

VOLVO WHEEL LOADER

L120D



- **Engine output SAE J1995:**
gross 153 kW (208 hp)
ISO 9249, SAE J1349
net 148 kW (201 hp)

- **Operating weight:** 18,4–20,6 t

- **Buckets:** 3,0–9,5 m³

- **Volvo high performance-low emission engine**
 - with excellent low rpm performance
 - meets all exhaust emission regulations for off-road vehicles

- **Volvo transmission with APS II**

- 2nd generation Automatic Power Shift with mode selector
- optimizes performance

- **Wet disc brakes**

- fully sealed, oil-circulation cooled
- outboard mounted

- **Torque Parallel Linkage**

- high breakout torque throughout the working range
- excellent parallel lift-arm action

- **Care Cab II**

- pressurized cab with high comfort and safety

- **Contronic II monitoring system**

- **Load-sensing steering system**

- **Pilot-operated working hydraulics**

Optional Equipment

- Hydraulic attachment bracket
- Long Boom
- Boom Suspension System
- Comfort Drive Control

VOLVO



SERVICE REFILL CAPACITIES

The Contronic II monitoring system provides information on scheduled service intervals and machine condition. Minimizes time required for troubleshooting.

Service accessibility: Large, easy-to-open engine access doors with gas struts. Hinged radiator grille and radiator.

Fuel tank	255 l	Transmission	35 l
Engine coolant	65 l	Engine oil	24 l
Hydraulic tank	145 l	Axle front / rear	36/41 l



ENGINE

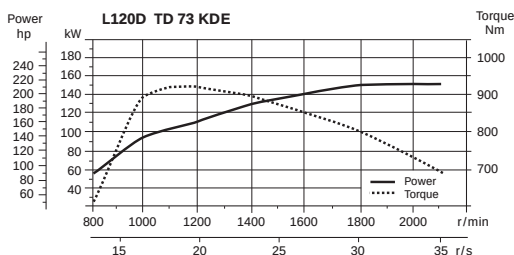
The Volvo engine offers high torque and quick response at low rpm. The machine operates efficiently at low engine speeds which contributes to good fuel economy, less noise, reduced wear and longer life.

Engine: 6-cylinder, in-line, direct-injected, turbocharged, intercooled 4-stroke diesel engine with wet replaceable cylinder liners.

Air cleaning: three-stage.

Engine	Volvo TD 73 KDE
Max. power at	35 r/s (2 100 r/min)
SAE J1995 gross	153 kW (208 hp)
ISO 9249, SAE J1349 net.	148 kW (201 hp)
ISO 9249, SAE J1349 net.	151 kW (205 hp)*
Max. torque at	18,3 r/s (1 100 r/min)
SAE J1995 gross	925 Nm
ISO 9249, SAE J1349 net.	920 Nm
Displacement	6,7 l

* With optional EU noise reduction kit



ELECTRICAL SYSTEM

Contronic II monitoring system with increased function control. Electrical system with circuit boards, well protected by fuses. The system is pre-wired for installation of optional equipment.

Central warning system: Central warning light for the following functions, (buzzer with gear engaged): Engine oil pressure, transmission oil pressure, brake pressure, parking brake, axle oil temperature, steering system pressure, coolant temperature, transmission oil temperature, hydraulic oil temperature, overspeeding in engaged gear, brake charging, computer malfunction.

Voltage	24 V
Batteries	2x12 V
Battery capacity	2x140 Ah
Cold cranking capacity, ea	1050 A
Reserve capacity, ea	290 min
Alternator rating	1 680 W / 60 A
Starter-motor output	5,4 kW (7,3 hp)



DRIVETRAIN

The drivetrain and working hydraulics are well-matched and of reliable design. Quick acceleration increases productivity. Extensive Volvo component coordination facilitates service work.

Torque converter: Single-stage

Transmission: Volvo Power Shift transmission of counter-shaft type with single lever control. Fast and smooth forward / reverse shifting.

Shifting system: Volvo Automatic Power Shift (APS II) with mode selector.

Axles: Volvo, fully floating axle shafts with planetary-type hub reductions. Cast-steel axle housing. Fixed front axle and oscillating rear axle. 100 % differential lock on front axle.

Transmission	Volvo HT 205
Torque multiplication	2,85:1
Speeds, max forward/reverse	
1	7,3 km/h
2	13,3 km/h
3	25,2 km/h
4	35,5 km/h
Measured with tires	23.5 R25* L2
Front axle	Volvo / AWB 31
Rear axle	Volvo / AWB 30
Oscillation, rear axle	± 13°
Ground clearance at	
13° oscillation	460 mm



BRAKE SYSTEM

A simple and reliable brake system with few moving parts. Self-adjusting oil circulation cooled wet disc brakes give long service intervals. Brake wear indicator and brake test in Contronic II are included in the brake system.

Service brakes: Volvo, dual-circuit system with nitrogen-charged accumulators for dead engine braking. Fully hydraulically operated, enclosed internal oil circulation-cooled, outboard mounted disc brakes. Transmission declutch during braking can be preselected with a switch on the instrument panel. Brake performance test in the Contronic II system.

Parking brake: Enclosed wet multi-disc brake built into the transmission. Spring-loaded application. Electro-hydraulic release via a switch on the instrument panel. Automatically applied when the key is turned off.

Secondary brake: Either of the service brake circuits or the parking brake fulfills ISO/SAE safety requirements.

Standards: The brake system complies with the requirements of ISO 3450, SAE J1473

Number of discs/wheel	1
Number of accumulators	3
Volume, each	1,0 l

OPERATIONAL DATA VOLVO L120D

		GENERAL PURPOSE						ROCK**	LIGHT MATERIAL	LONG BOOM	
Tires 23.5 R25 L2											
		Teeth	Bolt-on edge	Teeth	Bolt-on edge	Bolt-on edge	Bolt-on edge	Teeth Segments	Bolt-on edge	Bolt-on edge	Bolt-on edge
Volume, heaped ISO/SAE	m³	3,0	3,1	3,3	3,4	3,4	3,6	3,1	5,5	2,6	2,6
Actual volume, 110%	m³	3,3	3,4	3,6	3,7	3,7	4,0	–	6,1	2,9	2,9
Static tipping load, straight	kg	14 440	14 200	14 280	13 340	14 050	13 250	14 490	12 660	11 180	11 780
at 35° turn	kg	12 790	12 570	12 640	11 760	12 430	11 680	12 790	11 120	9 810	10 380
at full turn	kg	12 310	12 100	12 160	11 300	11 950	11 220	12 290	10 660	9 410	9 960
Breakout force	kN	159,1	150,7	151,1	132,7	143,5	129,0	150,3	104,8	156,7	171,2
A	mm	8 300	8 130	8 370	8 320	8 210	8 370	8 280	8 710	8 610	8 510
E	mm	1 350	1 200	1 420	1 370	1 260	1 410	1 280	1 730	1 220	1 120
H *)	mm	2 810	2 920	2 760	2 790	2 870	2 760	2 870	2 480	3 440	3 520
L	mm	5 630	5 630	5 700	5 750	5 700	5 800	5 750	5 910	6 080	6 020
M *)	mm	1 300	1 160	1 350	1 290	1 210	1 330	1 210	1 540	1 130	1 050
N *)	mm	1 870	1 780	1 890	1 850	1 810	1 860	1 830	1 880	2 220	2 170
V	mm	2 880	2 880	2 880	2 880	2 880	2 880	2 880	3 000	2 880	2 880
a, clearance circle	mm	12 770	12 680	12 810	12 770	12 710	12 800	12 760	13 120	13 090	13 020
Operating weight	kg	18 790	18 880	18 870	19 210	18 960	19 260	20 020	19 540	19 380	19 110

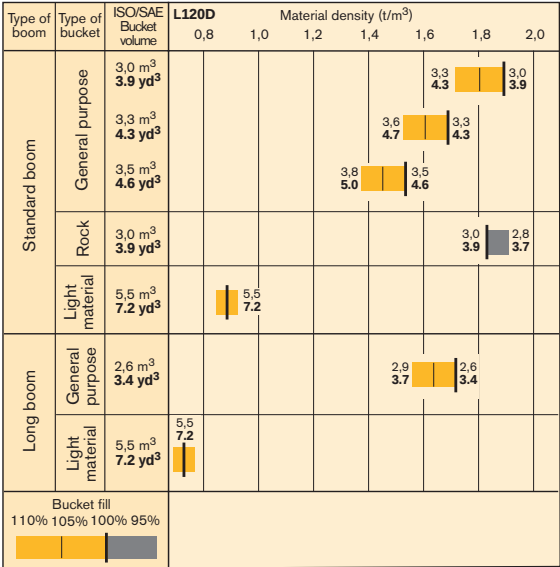
*) at dump angle 45°
**) with L5 tires

BUCKET SELECTION CHART

The choice of bucket is determined by the density of the material and the bucket fill factor. The TP-linkage uses a very open bucket design, has very good roll back in all positions and fills the bucket very well. This means that the actual volume carried is often larger than the rated capacity of the bucket. Bucket fill factors for different materials and how they affect the actual bucket volume are shown in the table. Example: Sand and gravel. Fill factor ~105%. Density 1,65 ton/m³. Result: The 3,3 m³ bucket carries 3,5 m³. For optimum stability always consult the bucket selection chart.

Material	Bucket fill %		Material density ton/m³	ISO/SAE bucket volume, m³	Actual volume, m³
Earth/Clay	~ 110		~ 1,7	3,0	~ 3,3
			~ 1,5	3,3	~ 3,6
			~ 1,4	3,5	~ 3,8
Sand/Gravel	~ 105		~ 1,75	3,0	~ 3,2
			~ 1,65	3,3	~ 3,5
			~ 1,5	3,5	~ 3,7
Aggregate	~ 100		~ 1,9	3,0	~ 3,0
			~ 1,7	3,3	~ 3,3
			~ 1,6	3,5	~ 3,5
Rock	≤ 100		~ 1,8	3,0	~ 3,0

The volume handled varies with the bucket fill and is often greater than indicated by the bucket's ISO/SAE volume. The table shows optimum bucket choice with regard to the material density.



SUPPLEMENTAL OPERATING DATA

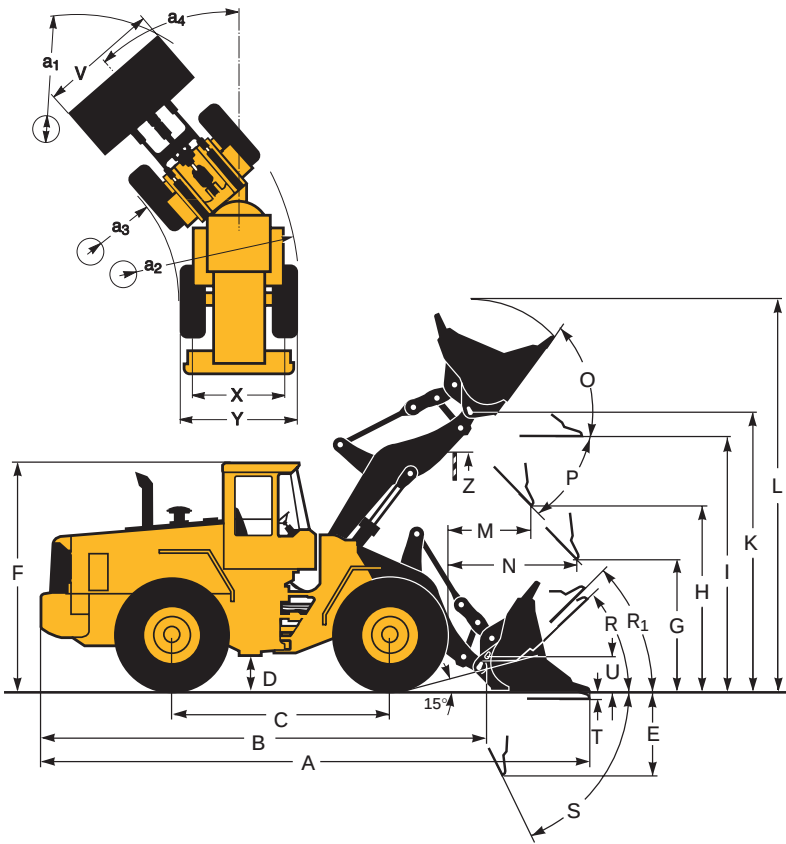
		Standard Boom	Long Boom
		23.5R25 L5	23.5R25 L5
Width over tires	mm	+10	+10
Ground clearance	mm	+10	+10
Tipping load, full turn	kg	+570	+460
Operating weight	kg	+820	+820

OPERATIONAL DATA & DIMENSIONS

Tires: 23.5 R25* L2		
	STANDARD BOOM	LONG BOOM
B	6 680 mm	7 170 mm
C	3 200 mm	3 200 mm
D	420 mm	420 mm
F	3 350 mm	3 350 mm
G	2 135 mm	2 135 mm
J	3 790 mm	4 310 mm
K	4 110 mm	4 620 mm
O	55°	55°
P	45° (P max. 49°)	45° (P max. 49°)
R	42°	43°
R ₁ *	47°	50°
S	67°	64°
T	90 mm	130 mm
U	510 mm	630 mm
X	2 060 mm	2 060 mm
Y	2 680 mm	2 680 mm
Z	3 350 mm	3 720 mm
a ₂	5 730 mm	5 730 mm
a ₃	3 060 mm	3 060 mm
a ₄	±40°	±40°

* Carry position SAE

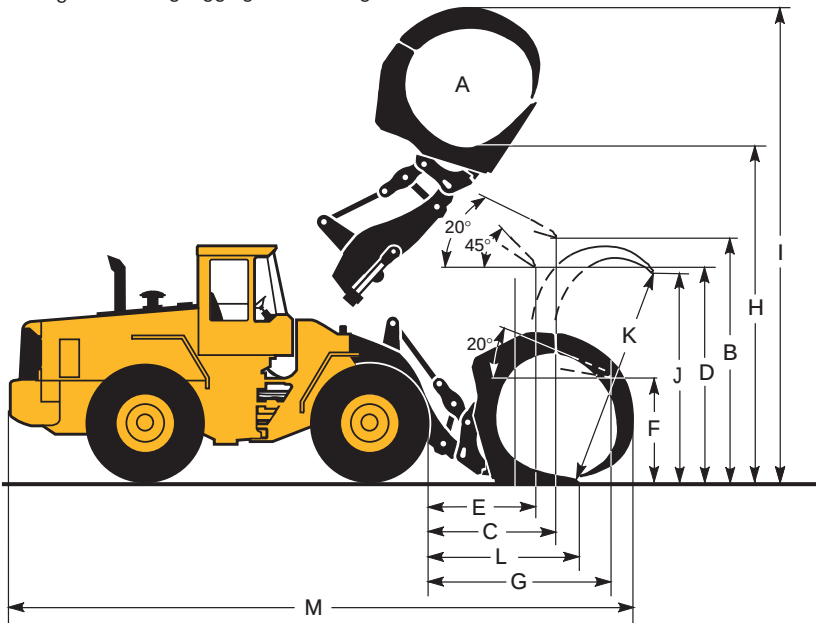
Where applicable, specifications and dimensions are in accordance with ISO 7131, SAE J732, ISO 7546, SAE J742, ISO 5998, SAE J818, ISO 8313.



SORTING GRAPPLE (Hook-on)

Tires: 23.5 R25* L3	
A	2,4 m²
B	3 570 mm
C	1 850 mm
D	2 950 mm
E	1 470 mm
F	1 540 mm
G	2 780 mm
H	4 690 mm
I	6 710 mm
J	2 750 mm
K	2 960 mm
L	2 130 mm
M	8 950 mm

Order No: 92746
Operating weight: 19 860 kg (including logging counterweight)
Operating load: 6 400 kg (including logging counterweight)





STEERING SYSTEM

Easily operated steering results in fast work cycles. The power-efficient system results in good fuel economy, good directional stability and a smooth ride.

Steering system: Load-sensing hydrostatic articulated steering with power amplification.

System supply: The steering system is supplied by a separate steering pump.

Pump: Double variable-flow axial piston pump.

Cylinders: Two double-acting cylinders.

Steering cylinders	2
Bore	80 mm
Piston rod diameter	50 mm
Stroke	476 mm
Relief pressure	21 MPa
Max. flow	91 l / min
Articulation	± 40 °



CAB

Care Cab II with wide door opening and easy entry. Inside of cab lined with noise-absorbent materials. Noise and vibration suppressing suspension. Good all-round visibility through large glass areas. Curved front windshield of greentinted glass. Ergonomically positioned controls and instruments permit a comfortable operating position.

Instrumentation: All important information is centrally located in the operator's field of vision. Display for Contronic II monitoring system in center console on dashboard.

Heater and defroster: Heater coil with filtered fresh air and fan with four speeds. Defroster vents for all windows.

Operator's seat: Operator's seat with adjustable suspension and retractable seatbelt. The seat is mounted on a bracket on the rear cab wall. The forces from the retractable seatbelt are absorbed by the seat rails.

Standards: The cab is tested and approved according to ROPS (ISO/CD 3471, SAE J1040), FOPS (ISO 3449, SAE J231). The cab meets with requirements according to ISO 6055 ("protective roof for high-lift vehicles") and SAE J386 ("Operator Restraint System").

Emergency exits	2
Sound level in cab	
According to ISO 6396	LpA 77 dB(A)
External sound level	
According to ISO 6395	LwA 109 dB(A)
External sound level	
Optional EU noise red. kit	LwA 106 dB(A)
According to EU 2002/2006 requirements	
Ventilation	9 m³/min
Heating capacity	11 kW
Air conditioning (optional equipment)	8 kW



HYDRAULIC SYSTEM

Open center hydraulic system with efficient, high capacity vane pumps allows precision control and quick movements at low rpm.

Pump: Vane pump fitted to a power take-off on the transmission. The pilot system is supplied from a combined pilot/brake pump which is mounted in series with the steering pump.

Valve: Double-acting 3-spool valve. The control valve is actuated by a 3-spool pilot valve.

Lift function: The valve has four functions: raise, hold, lower and float. Inductive/magnetic automatic boom kickout can be switched on and off and is adjustable to any position between maximum reach and full lift height.

Tilt function: The valve has three functions: rollback, hold and dump. Inductive/magnetic automatic bucket positioner that can be switched on and off.

Cylinders: Double-acting

Filter: Full-flow filtration through 20 µm (absolute) filter cartridge.

Vane pump	
Relief pressure	22,5 MPa
Flow	275 l/min
at	10 MPa
and engine speed	35 r/s (2 100 r/min)
Pilot system	
Relief pressure	3,0 MPa
Cycle times	
Raise*	5,8 s
Dump*	1,7 s
Lower, empty	2,8 s
Total cycle time	10,3 s

* with load as per ISO 5998 and SAE J818



LIFT-ARM SYSTEM

TP Linkage combines high breakout torque throughout the working range with nearly exact parallel lift-arm action. These features, together with high lift height and long reach, make the lift-arm system equally good for bucket loading and work with attachments.

Lift cylinder	2
Bore	160 mm
Piston rod diameter	80 mm
Stroke	676 mm
Tilt cylinder	1
Bore	230 mm
Piston rod diameter	110 mm
Stroke	412 mm

STANDARD EQUIPMENT

Engine Air cleaner, dry type, dual element, exhaust aspirated pre-cleaner Water separator Dual fuel filters Crankcase ventilation oil trap Coolant level, sight gauge Engine intake manifold preheater Muffler, spark arresting Fan guard	• Low engine oil pressure • High transmission oil temperature Neutral start interlock Brake performance test Test function for warning and indicator lights Warning and indicator lights: • Charging • Oil pressure, engine • Oil pressure, transmission • Brake pressure • Parking brake applied • Axle oil temperature • Primary steering • Secondary steering • High beams • Turn signals • Rotating beacon • Preheating coil • Differential lock • Coolant temperature • Transmission oil temperature • Low fuel level • Brake charging	Differentials: • front 100 % hydraulic differential lock • rear, conventional Tires 23.5 R-25* L2	Windshield wiper, front & rear Windshield washer, front & rear Intermittent wiper, front Cab access steps and handrails Speedometer (in Contronic II display)
Electrical system Alternator, 24 V/60 A Battery disconnect switch Fuel gauge Engine coolant temp. gauge Transmission oil temp. gauge Hour meter Electric horn Instrument panel with symbols Lighting: • Twin halogen front headlights with high and low beams • Parking lights • Double brake and tail lights • Turn signals with flashing hazard light function • Halogen working lights (2 front and 2 rear) • Instrument lighting	Drivetrain Transmission: modulated with single lever control, Automatic Power Shift II, and operator controlled declutch Forward/reverse switch on hydraulic lever console	Brake system Wet, internal oil circulation cooled, disc brakes, 4-wheel, dual circuit Brake system, secondary Parking brake alarm - brake applied and machine in gear (buzzer)	Hydraulic system Main valve, 3-Spool, pilot operated Pilot valve, 3-spool Vane pump Bucket lever detent Bucket leveler, automatic with position indicator, adjustable Boom lever detent Boom kickout, automatic, adjustable Hydraulic control lever lock Boom lowering system Hydraulic pressure test ports, Quick connect Hydraulic fluid level, sight gauge Hydraulic oil cooler
Contronic II monitoring system Contronic II ECU Contronic II display Engine shutdown to idle function: • High engine coolant temperature		Cab ROPS (SAE J10400C) (ISO 3471), FOPS (SAE J 231) (ISO 3449). Acoustical lining Ashtray Cigarette lighter Door lockable (left side access) Heater/defroster/pressurizer with four speed blower fan Filtered air Floor mat Interior light Interior rearview mirrors(2) Exterior rearview mirrors(2) Openable window, right-hand side Safety glass, tinted Adjustable hydraulic lever console Seat, ergonomically designed, adjustable suspension Retractable seat belt (SAE J386) Storage compartment Sun visor Beverage holder	External equipment Isolation mounts: cab, engine, transmission Lifting lugs Side panels, engine hood Steering frame lock Vandalism lock, provision for: batteries, engine oil, transmission oil, hydraulic oil, fuel tank Fenders, front & rear with anti-skid-tape Towing hitch with pin

OPTIONAL EQUIPMENT *(May be standard in certain markets)*

Service and maintenance equipment Tool box Tool kit Wheel nut wrench kit Refill pump for automatic lubrication system Automatic lubrication system Automatic lubrication system for attachment bracket	Drivetrain Speed limiter, 3-speed version Limited-slip differential, rear Limited-slip differential, front/rear	Hydraulic system Hydraulic control, 3rd function 3rd function detent Hydraulic control, 4th function Hydraulic single acting lifting function Boom Suspension System Biodegradable hydraulic fluid Pilot hoses, 3rd function and separate attachment locking Attachment bracket Separate attachment locking system Single lever hydraulic control Single lever hydraulic control plus 3rd function	Tires 23.5–25 23.5 R25*
Engine Coolant filter Extra fuel filter Cold starting aid, engine coolant preheater (220V/1500 W) Pre-cleaner, oil bath type Pre-cleaner, turbo type Radiator, corrosion protected	Cab Installation kit for radio Hand throttle Sliding window, door Sliding window, right side Air suspended operator's seat Heated operator's seat Seat belt, 3 inch Air conditioner 8 kW, 27 300 Btu/h Air conditioner with corrosion protected condensor Spinner knob on steering wheel Sun blinds, front and rear windows Sun blinds, side windows AM/FM radio with cassette deck Lunch box holder Dual service brake pedals Armrest (left) Cab filter for asbestos contaminated environment Instructor seat Noise reduction kit, cab Steering wheel, adjustable tilt, telescopic	External equipment Fenders, full coverage, swingout Logging counterweight Fenders, axle mounted	Protective equipment Protective grids for front running lights Radiator guard Protective grids for rear working lights Window guards for side and rear windows Windshield guard Protective grids for tail lights Bellyguard, front Bellyguard, rear Heavy-duty main valve cover
Electrical system Reverse alarm (SAE J994) Attachment light Working lights front, extra Working lights rear, extra Rotating beacon, amber with collapsible mount Alternator, brushless, 50A Alternator 100A Head lights assym. left Light, license plate Side marker lights Parking brake alarm, audible buzzer if brake not applied when operator leaves seat		Other equipment Comfort Drive Control (CDC) Slow moving vehicle emblem Secondary steering 50 km/h sign Fuel fill strainer Long boom Noise reduction kit, acc. EU stagell 2006	Attachments Buckets Fork equipment Material handling arms Log grapples Snow blades Brooms Cutting edge, 3 pc reversible, bolt-on Bucket teeth, bolt-on Bucket teeth, weld-on Wear segments, bolt on Bale clamp Drum rotator

Under our policy of continuous product improvement, we reserve the right to change specifications and design without prior notice. The illustrations do not necessarily show the standard version of the machine.





Volvo Construction
Equipment

Installation Instruction

Genuine Accessories

Ref. no. 12 2 779 3705	Kit no. 11707401 (80287)	Date/Dept. 2002-11 CEE-47	Product L120D	Page 1/7
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3:e hydraulfunktion

Satslista

Art.nr.	Antal	Benämning
935054	1	Slang
941754	2	Nippel
943907	2	Packning
945441	2	Flänsskruv
946470	2	Flänsskruv
946671	2	Flänsskruv
976944	2	Bricka
4880575	6	Klamma
4880578	6	Täckplatta
4881440	8	Bandklamma
4881453	2	Märkhylsa
11003221	2	Upphångningsring
11006226	1	Kåpa
11014127	2	Märkhylsa
11015731	1	Rör
11015787	1	Rör
11020356	4	Överfall
11021010	1	Slang
11025637	1	Spak
11043022	2	Nippel
11104713	1	Dekal
11133030	1	Slang
11133033	1	Slang
11147586	2	Dammskydd
11300266	2	Fäste
13932835	1	Slang
13933180	1	Slang
13944524	2	Nippel
13945653	2	Planpackning
13948217	4	Flänsskruv
13948700	2	O-ring
13949873	2	Distansbricka
13965180	2	Skruv
14013070	2	Packning



VARNING!

Läs alla skyltar och anvisningar som finns på maskinen och säkerhetsinstruktionerna i instruktionsboken innan Du börjar arbetet på maskinen.

Monteringsanvisningen är baserad på användning av specialverktyg, E-verktyg och i allmänna handeln tillgängliga standardverktyg samt instruktions- och verkstadshandböcker.

Utrustningen ska monteras av behörig person på auktoriserad verkstad.

Volvo CE Customer Support AB fransäger sig allt ansvar om andra verktyg eller arbetsmetoder än de i anvisningen beskrivna kommer till användning.

3:e hydraulfunktion

Arbetsbeskrivning

Manöverventil

- 1 Höj lyftramverket och säkra med stöd 9993831.
- 2 Gör rent manöverventilen samt slangarna vid manöverventilen.
- 3 Anslut en vakuumpump till hydrauloljetanken. I annat fall måste hydrauloljetanken tömmas.
- 4 Ta bort befintliga pluggar på manöverventilens fjäderkåpor till den 3:e sektionen. Sätt dit nippel och packningar.

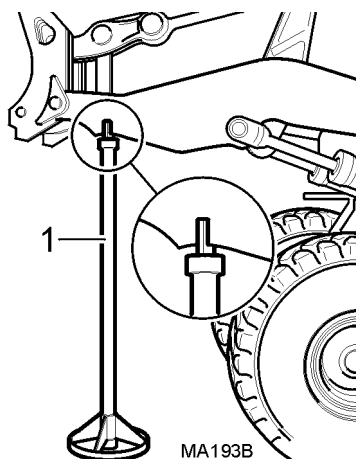


Fig. 1

1 Stöd, 9993831

Art.nr.	Benämning	Antal	Pos. i Fig. 5
13944524	Nippel	2	27
943907	Packning	2	28

- 5 För in slangarna i ramledens befintliga skyddsslang. Märk slangarna med märkhylsor och anslut dem till manöverventilen. Slang med violett märkhylsa ansluts till den nedre fjäderkåpan.

Art.nr.	Benämning	Antal	Pos. i Fig. 5
13932835	Slang (3/8x2850)	1	26
13933180	Slang (3/8x1950)	1	25
11014127	Märkhylsa, grå	2	32
4881453	Märkhylsa, violett	2	34
4881440	Bandklamma	4	33

- 6 Ta bort kulorna på lyft- och tiltspakarna, plattan med borstarna samt täckåporna på servoventilen.
- 7 Ta bort befintliga pluggar på servoventilens 3:e sektion. Sätt dit nipplar och packningar på servoventilens 3:e sektion, port A och B.

Art.nr.	Benämning	Antal	Pos. i Fig. 5
941754	Nippel	2	27
13945653	Planpackning	2	28

- 8 Anslut slangarna från ramleden till servoventilen. Anslut slangarna med violett märkhylsa till port A.

- 9 Sätt dit spaken till den 3:e servosektionen. Sätt dit den nya kåpan och kulorna på spakarna. Sätt dit dekalen.

Art.nr.	Benämning	Antal	Pos. i Fig. 2
11025637	Spak	1	29
11006226	Kåpa	1	30
11104713	Dekal	1	-

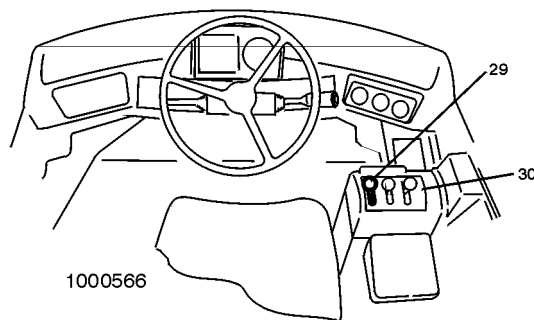


Fig. 2

- 10 Sätt dit täckåporna på servoventilen.

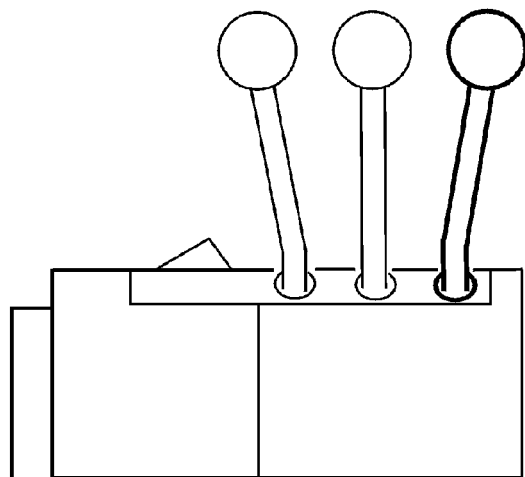
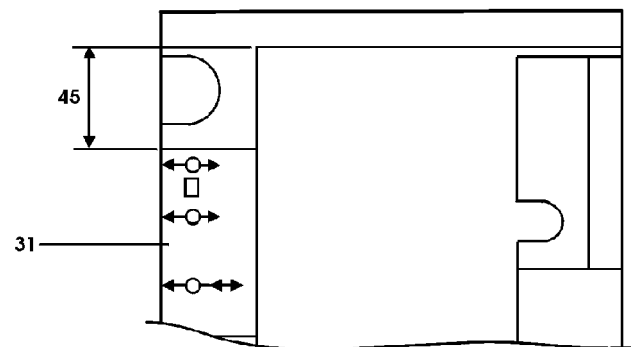


Fig. 3



MA 196

Manöverventil - lyftarmar

- 11 Ta bort pluggarna på manöverventilens 3:e sektion, vänster sida. Sätt dit höger och vänster slang med O-ringar.

Art.nr.	Benämning	Antal	Pos.	Fig.
13948700	O-ring (32.9x3.5)	2	23	5
11021010	Slang, höger	1	1	6
935054	Slang, vänster	1	2	6

12 Klamma fast höger och vänster slang mot ramen.

Art.nr.	Benämning	Antal	Pos. i Fig. 5
11020356	Överfall	2	3
946470	Flänsskruv	2	4
13949873	Distansbricka	2	5

13 Sätt dit rören på höger respektive vänster slang.

Art.nr.	Benämning	Antal	Pos. i Fig. 6
11015787	Rör, höger	1	6
11015731	Rör, vänster	1	7

14 Klamma fast höger och vänster rör mot ramen.

Art.nr.	Benämning	Antal	Pos. i Fig. 5
11020356	Överfall	2	8
946671	Flänsskruv	2	9
4880575	Klamma	2	10
4880578	Täckplatta	2	11
13965180	Skruv	2	12
976944	Bricka (8.4x22x2)	2	36

15 Sätt dit fästen på lyftramverket.

Art.nr.	Benämning	Antal	Pos. i Fig. 6
11300266	Fäste	2	14
945441	Flänsskruv	2	35

16 Sätt dit och klamma fast slangarna på lyftramverket.

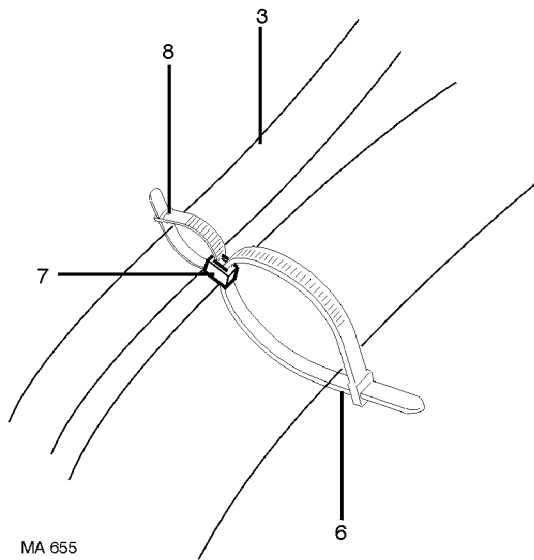
Art.nr.	Benämning	Antal	Pos. i Fig. 6
11133033	Slang, höger	1	13
11133030	Slang, vänster	1	15

17 Klamma fast slangarna mot lyftramverket.

Art.nr.	Benämning	Antal	Pos. i Fig. 5
4880575	Klamma	4	17
4880578	Täckplatta	4	18
13948217	Flänsskruv	2	19
13948217	Flänsskruv	2	37

18 Sätt dit nipplar och skyddshylsor på rören.

Art.nr.	Benämning	Antal	Pos. i Fig. 6
11043022	Nippel	2	20
14013070	Packning	2	21
11147586	Dammskydd	2	22



MA 655

Fig. 4

3 Befintlig slang

19 Klamma fast befintliga ledningar.

Art.nr.	Benämning	Antal	Pos. i fig. 4
11003221	Upphångningsring	2	7
4881440	Bandklamma	4	5 och 6

20 Ta bort vakuumpumpen eller fyll på olja i hydrauloljetanken.

21 Starta motorn och kontrollera funktionen.
När spaken förs framåt uppstår tryck i den vänstra slangen.

22 Kontrollera att inget läckage förekommer.

23 Sätt dit täckplåten framför manöverventilen och sänk
ner lyftramverket.

24 Skriv in utrustningsnumret 80287 på maskinkortet.

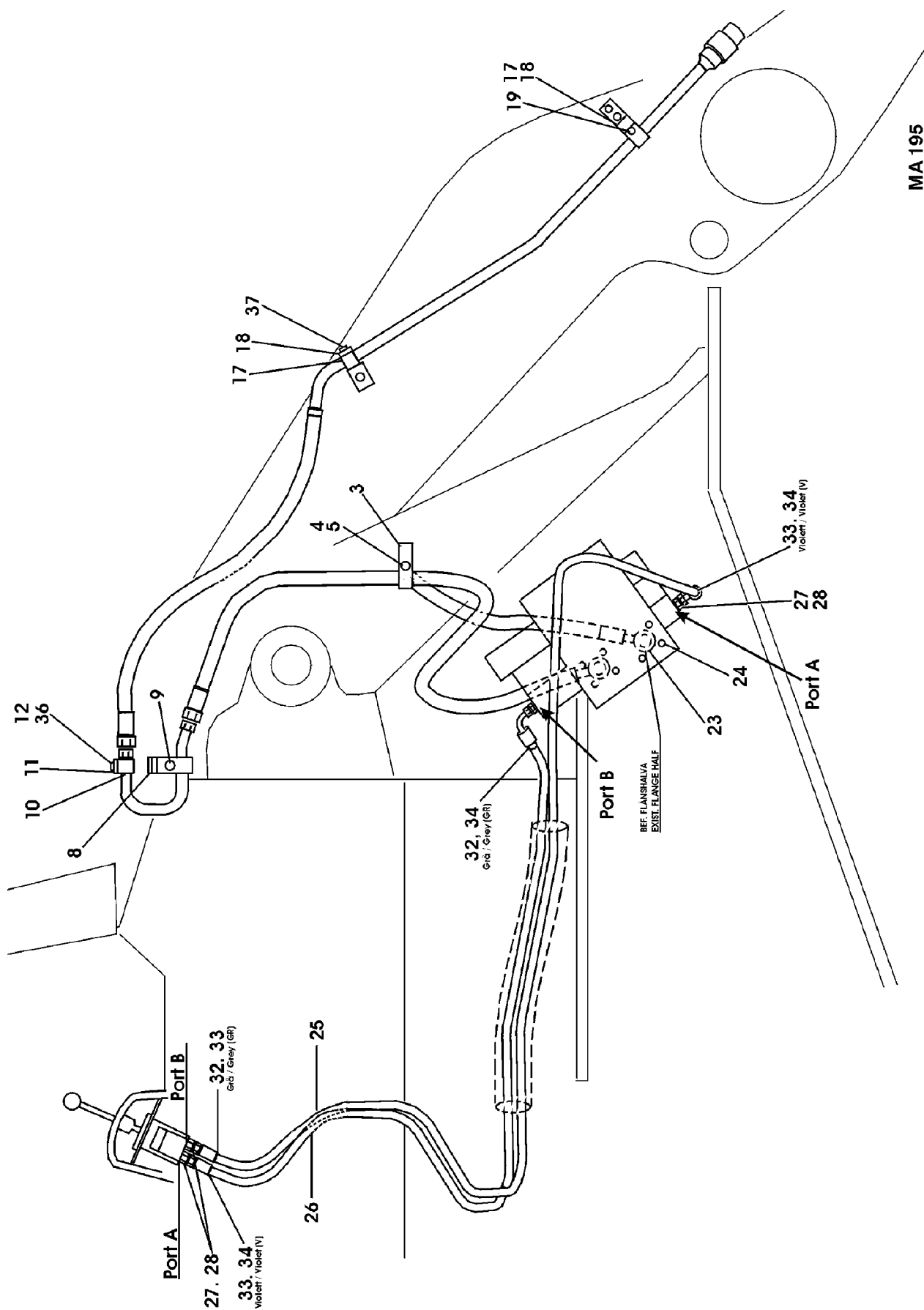


Fig. 5

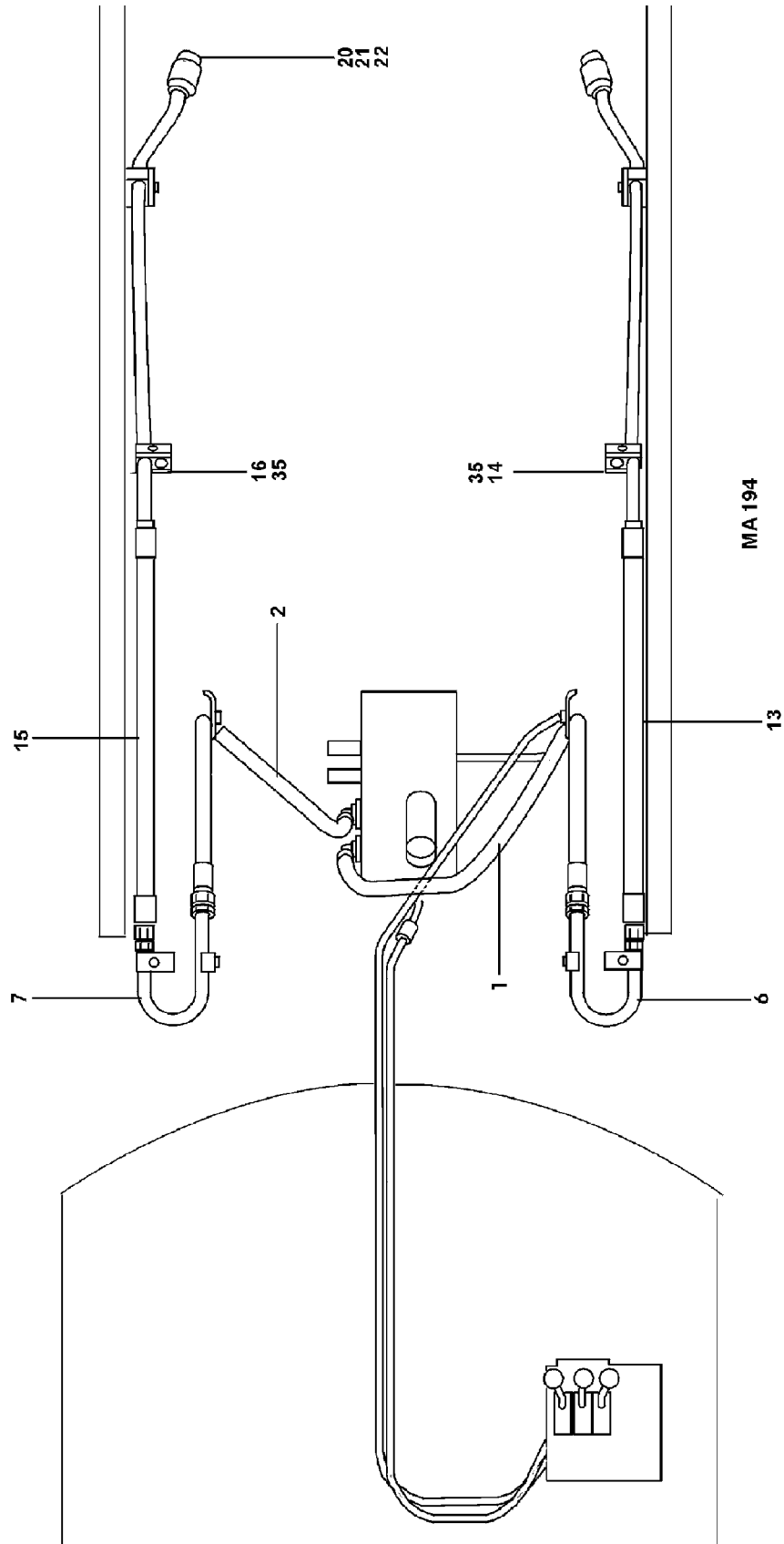


Fig. 6



Volvo Construction
Equipment

Installation Instruction

Genuine Accessories

Ref. no. 21 1 779 3706	Kit no. 11707635 (80288)	Date/Dept. 2002-02 CEE-47	Product L120D	Page 1/8
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4th hydraulic function

Kit list

Part No.	Qty.	Description
935053	1	Hose
935054	1	Hose
935182	2	Hose
943907	4	Gasket
946472	24	Flange screw
959193	4	Hexagon socket head bolt
4786696	1	Switch
4974291	1	Terminal block
11003548	1	Solenoid valve
11015455	12	Flange half
11015729	1	Pipe
11015785	1	Pipe
11018391	1	Change-over valve
11025792	1	Decal
11043022	2	Nipple
11132105	1	Clamp
11133036	1	Hose
11133039	1	Hose
11133112	1	Cable harness
11147586	2	Dust cover
13933650	2	Hose
13944524	4	Nipple
13945408	3	Nut
13948700	6	O-ring
13949746	4	Clamp
13960168	2	O-ring
13965183	2	Flange screw
13974896	3	Control rod
14013070	2	Sealing washer



WARNING!

Read all signs and instructions on the machine and the safety instructions in the operators manual, before you start working on the machine.

The installation instructions are based on the use of special tools, the E-tool and standard tools generally available on the market, and also on our operators manuals and service manuals.

The equipment should be installed by qualified personnel of an authorised workshop.

Volvo CE Customer Support AB disclaims all responsibility if tools and work methods other than those described in the instructions are used.

4th hydraulic function

Work description

Requirement: The machine is equipped with 3rd hydraulic function.

- 1 Raise lifting frame and secure with support 9993831.
- 2 Disconnect the main switch.
- 3 Connect a vacuum pump to the tank or in other case empty the hydraulic oil tank.
- 4 Remove the cover plate on the front frame.

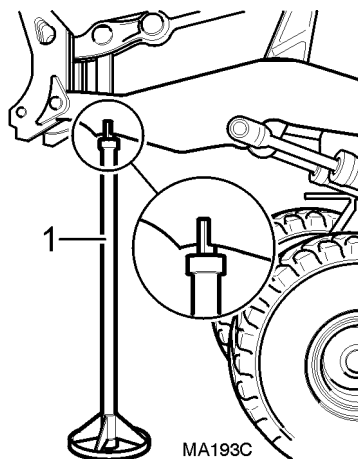


Fig. 1
Support, 9993831

Valve

- 5 Fit the change-over valve on the front frame.
See Fig. 4, 5 and Fig. 6.

Part No.	Description	Qty.	Pos.	Fig.
11018391	Change-over valve	1	1	4, 5
13965183	Flange screw	2	2	4, 5

- 6 Move the existing servo hoses from the control valve's 3rd section, port A1 and B1, to the change-over valve's upper ports. Connect the hose from the left lifting arm to the left port on the change-over valve, marked A1.
Connect the hose from the right lifting arm to the right port on the change-over valve, marked B1. Use the existing flange halves and the flange bolts. See Fig 4, 5 and Fig. 6.

- 7 Fit the hoses and O-rings on the change-over valve for the 4th function. Connect the hose 7 to port B2 and the hose 9 to port A2. See Fig. 4, 5 and Fig. 6.

Part No.	Description	Qty.	Pos. in Fig. 4, 5 and 6
13948700	O-ring	2	4
11015455	Flange half	4	5
946472	Flange screw	8	6
935054	Hose	1	7
935053	Hose	1	9

- 8 Fit the pipes on the hoses 7 and 9. See Fig. 4.

Part No.	Description	Qty.	Pos. in Fig. 4
11015729	Pipe	1	8
11015785	Pipe	1	10

- 9 Fit the hoses on the lifting frame. Fit the nipples, sealing washers and the dust cover. Use the existing clamps and attachments for the 3rd hydraulic function. See Fig. 4.

Part No.	Description	Qty.	Pos. in Fig. 4
11133036	Hose	1	11
11133039	Hose	1	12
11043022	Nipple	2	13
14013070	Sealing washer	2	14
11147586	Dust cover	2	15

- 10 Fit two hoses from the control valves' 3rd section to the centre ports change-over valve, marked PA and PB. The hose from the control valve's port, marked B1, connects to the change-over valve's left port, marked PA. The second hose connects between the control valve's port, marked A1 and the change-over valve's right port, marked PB.

See Fig. 4, 5 and Fig. 6.

Part No.	Description	Qty.	Pos. in Fig. 4, 5 and 6
13933650	Hose	2	16
13948700	O-ring	4	17
946472	Flange screw	16	6
11015455	Flange half	8	5

- 11 Clean the existing terminal block for the front frame's differential lock.

Note! In those cases the machine is equipped with an attachment lock, must the terminal block removes and moves to the left side of the terminal block for the 4th hydraulic function.

- 12 Fit the terminal block and the solenoid valve on the front frame. See Fig. 4 and Fig. 5.

Part No.	Description	Qty.	Pos. in Fig. 4 and 5
4974291	Terminal block	1	20
11003548	Solenoid valve	1	21
13960168	O-ring	2	22
13974896	Control rod	3	23
13945408	Nut	3	24
959193	Hexagon socket head bolt	4	25
13944524	Nipple	4	26
943907	Gasket	4	27

- 13 Fit the hoses between the front frame's terminal block and the change-over valve. The hose from port A on the terminal block connects to port PS on the right side of the change-over valve. The hose from port B on the terminal block connects to port PS on the left side of the change-over valve. See Fig. 4, 5 and Fig. 6.

Part No.	Description	Qty.	Pos. in Fig. 4, 5 and 6
935182	Hose	2	28

Electrical installation

- 14 Remove the cover over the control lever carrier in the cab.

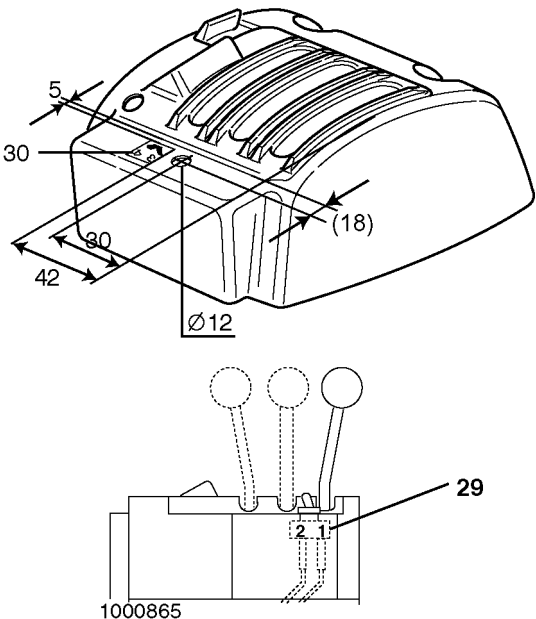


Fig. 2

- 15 Drill a hole, Ø12 mm (0.47 in), in the cover. See Fig. 2.

- 16 Fit the switch SW906 and the decal on the cover. See Fig. 2.

Part No.	Description	Qty.	Pos. in Fig. 2
4786696	Switch	1	29
11025792	Decal	1	30

- 17 Connect the switch contact SW906 to the existing cable harness under the control lever carrier. Contact marked SW906. See Fig. 2.

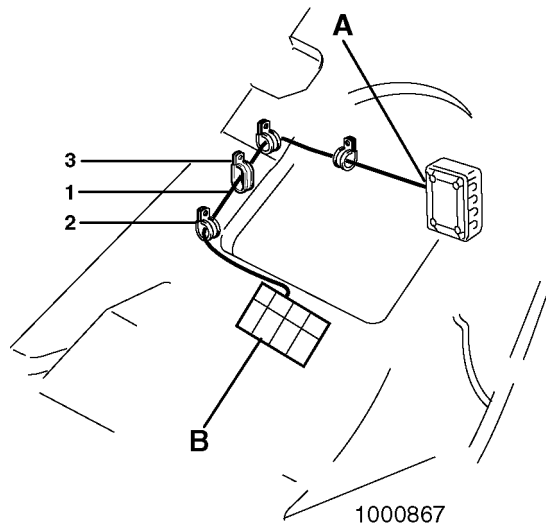


Fig. 3

- A Contact FR in the electrical box
B Solenoid valve, MA907

- 18 Connect the contact marked MA907 on the cable harness to the solenoid valve MA907 on the front frame. Connect the contact marked FR on the cable harness to the connection on the electrical box marked FR on the front frame's inside. Clamp the cable harness tight to the existing point of the attachment. See Fig. 3.

Part No.	Description	Qty.	Pos. in Fig. 3
11133112	Cable harness	1	1
13949746	Clamp	4	2

Note! In those cases the machine is equipped with the differential lock, replace the clamp with a double clamp.

Part No.	Description	Qty.	Pos. in Fig. 3
11132105	Clamp	1	3

- 19 Remove the vacuum pump or fill up with oil in the hydraulic oil tank.

- 20 Check the function as shown in the service manual.

- 21 Write equipment number 80288 on the machine card.

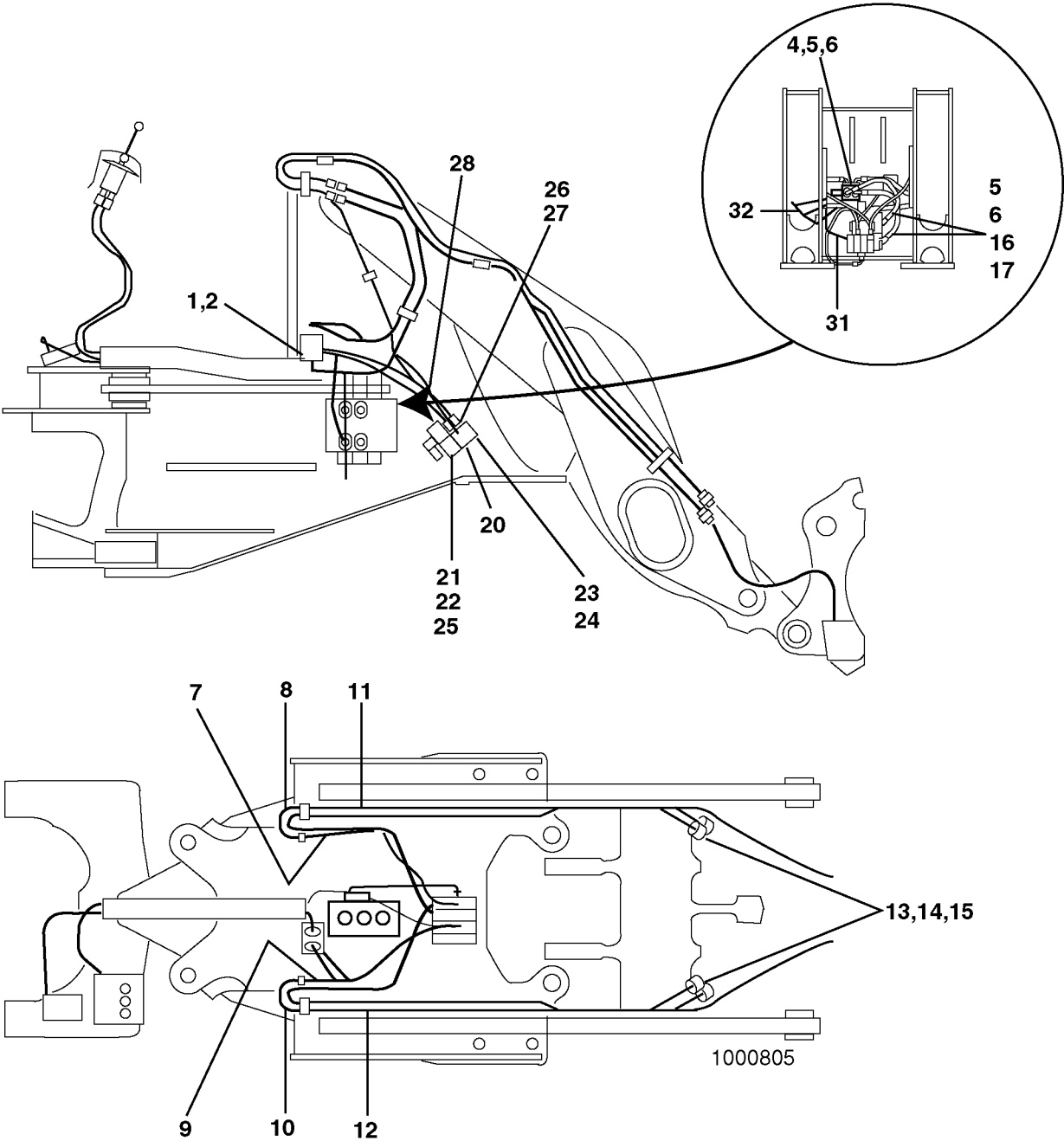


Fig. 4

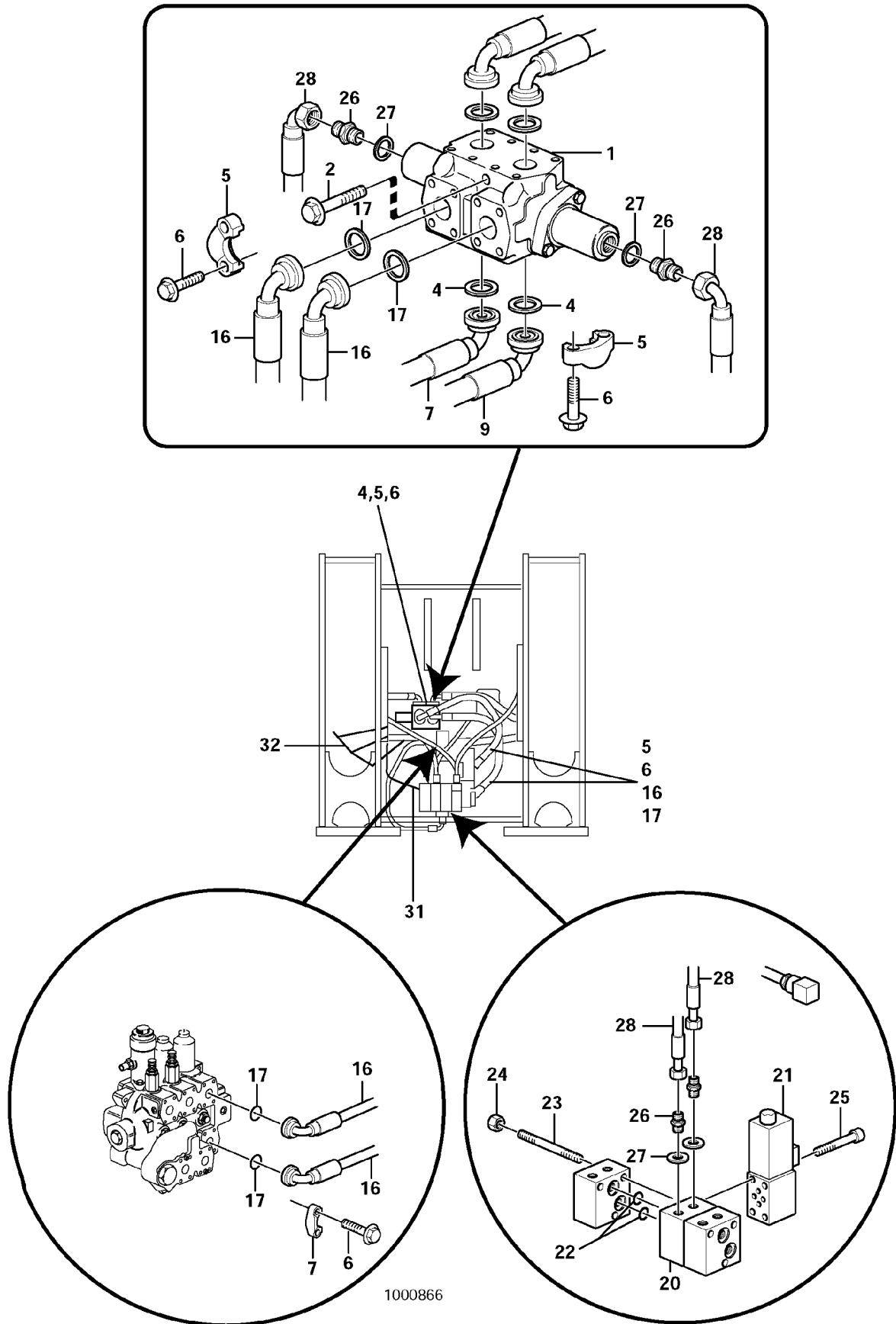


Fig. 5

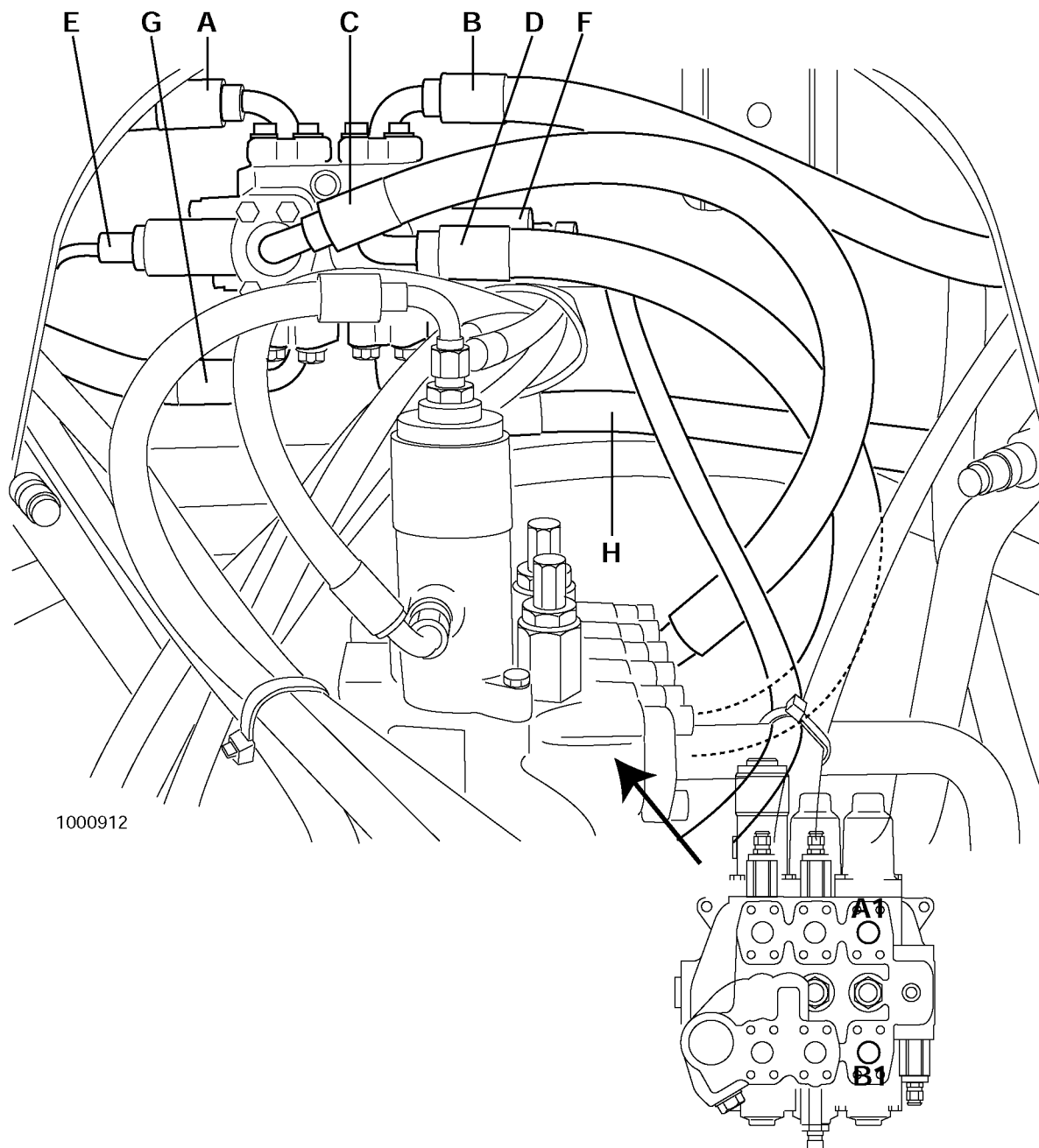


Fig. 6

- A The 3rd function to the right lifting arm, port B1 on the change-over valve.
- B The 3rd function to the left lifting arm, port A1 on the change-over valve.
- C Port PB on the change-over valve to the port A1 on the control valve.
- D Port PA on the change-over valve to the port B1 on the control valve.
- E Port PS, right side on the change-over valve to the port A on the terminal block on the front frame.
- F Port PS, left side on the change-over valve to the port B on the terminal block on the front frame.
- G The 4th function to the right lifting arm, port B2 on the change-over valve.
- H The 4th function to the left lifting arm, port A2 on the change-over valve.

Language Code GB	Product WLO	Group 874	https://truckmanualshub.com/	No. 84	Version 1	Date 11/06/2012
Applies to Wheel Loaders						

AC compressor, fill with oil



Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.

Cause

Remanufactured AC compressors are not filled with oil when delivered from the warehouse. Investigations of failed remanufactured AC compressors have shown that approximately 40% suffers from lack of oil. The most common reason for claiming remanufactured AC compressors is seized AC compressor.

Action

To make sure the remanufactured AC compressor is filled with oil before installing it to the machine, a tag with information about the need to fill the AC compressor with oil prior to installation has been added.

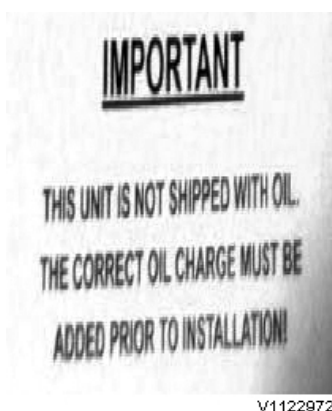


Figure 1

Tag on remanufactured AC compressor

The service operation 874–006 will be updated with information about making sure the compressor is filled with oil prior to installation.

AC safety, description

<https://truckmanualshub.com/>

If system pressure becomes too high, above 21–25 bar (305–363 psi), or too low, below 1–2 bar (14.5–29 psi), SE804 breaks the operating current to RE802 which is deactivated and the current supplied to MA801 and RE801 (connection 85) is turned off. SE804 closes the circuit again at 3 bar and 14–18 bar (203–261 psi) respectively.

RE801's coil (connection 85) is now connected to earth via SE803–MA801 and is activated.

RE801 will now remain activated until its supply of current is broken with SW806.

Even if the pressure is normal and SE804 closes the operating current circuit so that RE802 is activated, the air-conditioning unit will not restart because RE801 is activated and so does not supply current to MA801 via RE802 (connection 30).

If the pressure monitor turns off the air-conditioning unit because system pressure is too high or too low, the operator must turn off the air-conditioning unit and then turn it on again so that it will restart.

This function is provided to inform the operator that the pressure has been abnormal.



After a stoppage caused by a pressure fault in the system, the air-conditioning unit must always be checked by authorized personnel.

Accumulator, checking (removed)<https://truckmanualshub.com/>

Op nbr 52701

[11 666 020 Pressure gauge 0–25 MPa \(0–3626 psi\)](#)

[11 666 037 Hose](#)

[11 666 030 Hydraulic jack \(pump only\)](#)

[999 3335 Hose](#)

[999 3522 Quick-coupling](#)

[E 1234 Nipple](#)

[E 1281 Nipple](#)

NOTE!

Maintain greatest possible cleanliness during all work with the brake system. Wipe off all pipe and hose connections before they are disconnected. Plug all pipes, hoses, etc. immediately after disconnecting.

If the functional check of the brake system indicates that one or more of the accumulators has insufficient precharge pressure or is missing precharge pressure, each accumulator can be checked individually as follows:

Removing

1. **WARNING**

Even if the engine has been stopped, there remains an accumulated pressure in the brake system of approx. 15 MPa (150 bar) (2175 psi). If the system is opened without first releasing the pressure, oil under high pressure will rush out.

Release the brake system pressure by depressing the brake pedal repeatedly (30–40 times).

2. Carefully remove the connection pipes to the accumulators and plug the connections.

CAUTION

The brake system may still contain pressure.

3. Remove the accumulators.

Pressure checking

4. Check the accumulators one at a time.
Connect the checking equipment according to [Invalid linktarget].

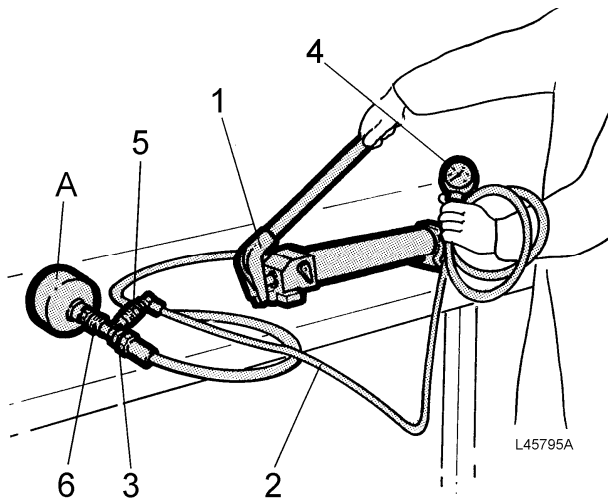


Figure 1
Checking removed accumulator

A. Accumulator

1. 11 666 030
2. 11 666 037
3. E 1234
4. 11 666 019
5. Included in 11 666 037
6. E 1281

<https://truckmanualshub.com/>

5. Pump oil into the accumulator.

After a few pump strokes, the pressure will increase rapidly to the precharge pressure and will then continue to increase slowly.

Precharge pressure: **min. 3.5 MPa (508 psi)**

If the precharge pressure falls below 3.5 MPa (508 psi), the accumulator must be discarded, see [Invalid linktarget].

Installing

6. Install the accumulators.
7. Start the engine and let it run with slightly increased engine speed until the unloading pressure is 15–15.5 MPa (2175 - 2248 psi).
8. Check functionality according to [Invalid linktarget].

Language Code GB	Product WLO	Group 000	https://truckmanualshub.com/	No. 61	Version 2	Date 10/01/2000
Applies to 4200 Volvo BM, 4200B Volvo BM, 4300 Volvo BM, 4300B Volvo BM, 4400 Volvo BM, 4500 Volvo BM, 4600 Volvo BM, 4600B Volvo BM, 6300 Volvo BM, EL70 Volvo BM, EL70C Volvo BM, L50 Volvo BM, L50B Volvo BM, L50C OR Volvo, L50C Volvo, L50C Volvo BM, L50D Volvo, L70 Volvo BM, L70B Volvo BM, L70C Volvo, L70C Volvo BM, L70D Volvo, L90 Volvo BM, L90B Volvo BM, L90C OR Volvo, L90C Volvo, L90C Volvo BM, L90D OR Volvo, L90D Volvo, L120 Volvo BM, L120B Volvo BM, L120C Volvo, L120C Volvo BM, L120D Volvo, L150 Volvo BM, L150C Volvo, L150C Volvo BM, L150D Volvo, L160 Volvo BM, L180 CO Volvo BM, L180 HL Volvo BM, L180 Volvo BM, L180C CO Volvo, L180C HL Volvo, L180C Volvo, L180C Volvo BM, L180D HL Volvo, L180D Volvo, L220D Volvo, L330C LL Volvo, L330C Volvo, L330C Volvo BM, L330D Volvo						

Action for reducing risk of fire



Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

It frequently happens that construction machines work in environments where inflammable material collects on the machine. Machine fires can be caused by different reasons, such as:

- Heating up through the exhaust system
- Sparks in the electrical system

To reduce the risk of fire, check the following points when carrying out maintenance work on the machine.

General

It is important that the machine is provided with suitable equipment to reduce the risk of inflammable material collecting on the machine in its working environment and then catching fire:

- Guard over silencer
- Protective screen for radiator to prevent collection and blockage by wood chips, sawdust and similar.
- Cyclone pre-cleaner of turbo II type to increase the cleaning capacity, particularly against coarse dust, sawdust, wood chips etc. This is self-emptying and is not connected to the ejector connection on the exhaust pipe. This connection is plugged, meaning that the spark extinguishing function of the silencer is still effective.
- Keep the machine and equipment free from dirt, waste material, fuel and oil spillage.
Instruct the machine owner to keep the machine clean at all times.

NOTE!

If high-pressure washing is used for cleaning, take care not to damage the insulation on the electric cables, which can happen even at a relatively low water pressure and temperature.

Engine

Clean off all debris from the engine, particularly around the exhaust system, turbocharger and alternator.

- Check that there is no fuel or oil leakage and that the hoses are clamped in such a way that no chafing occurs.
- Fuel filling.
Take care when filling up with fuel that none is spilt outside the filling pipe.
If fuel has run out when filling up, wipe it up immediately.
Do not fill up with fuel near an open fire.

Electrical system

- If the machine is left unattended, always turn off the battery disconnection switch.
- Check the electric cables for abrasion and that they are not subjected to wear. This particularly applies to unfused cables, which are red and marked R (B+).
E.g., cables between:
 - Batteries
 - Battery and starter motor
 - Alternator and starter motor
 - Cable to engine starter element
 - Wire to engine stop solenoid

In cases where these cables have been disconnected it is important to make sure that they are fitted and clamped in such a way that there is no risk of abrasion. Unfused cables must not come into contact with oil or fuel hoses.

- When fitting any extra equipment, make sure that all cables are fused and arranged and clamped in such a way that there is

no risk of abrasion.

<https://truckmanualshub.com/>

Transmission

- Clean off all debris.
- Check that there is no oil leakage.

Brake system (hydraulic)

- Check that there is no oil leakage and that pipes and hoses are protected, undamaged and properly clamped.

Protecting plates (bottom guard plates)

On machines which are provided with bottom guard plates it is important that debris which has collected inside and on the plates is removed every day.

The guard plates must be handled with care as they are very heavy.

Instructions for correct handling of the plates can be found in the instruction book or supplement for the respective machine.

Hydraulic system

Check that there is no leakage.

Welding

Take great care when carrying out welding work on the machine. Make sure that fire extinguishing equipment is available.

Take particular care when welding close to fuel and oil lines and tanks.

If fire breaks out

At the slightest sign of fire, and if the situation permits, take the following action:

- Drive the machine away from the hazardous area
- Let down the lifting arms to bottom position
- Stop the engine with the stop control and turn the key switch to "0"-position.
Later model wheel loaders engine stop is controlled through the ignition switch.
Turn the key switch to the "0"-position only.
- Get out of the cab
- Turn off the main current with the battery disconnection switch
- Start fire extinguishing work and alert the fire service if necessary

In connection with delivery instructions or at other service visits, please inform the owner/driver of the contents of this SB.

Language Code GB	Product ART/WLO	Group 210	https://truckmanualshub.com/	No. 8	Version 4	Date 06/05/2008
Applies to Wheel Loaders, Articulated Haulers						

Action to be taken in case of abnormal lubricating oil consumption



WARNING

Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

Introduction

The oil consumption is in many cases used as a measure of the condition of the engine. Normally all engines use a certain amount of oil. The film of oil that lubricates the upper piston rings is combusted at the same time as the fuel, which gradually causes the oil level to drop. There are of course also other factors that affects the oil consumption, e.g. operating conditions and the condition of the engine. Here follows a short description of influencing factors, checking and measuring methods and which action can be taken to manage any problems.

Factors influencing the oil consumption

Larger engines have as a rule a higher oil consumption than small engines.

Oil has the ability to penetrate the smallest openings. Therefore, proceed as follows:

- Check for oil leakage around the engine and components
- Check for oil leakage at the turbocharger
- Check for oil leakage at induction manifold / charge air pipe
- Take a lubricating oil sample

All affected bolts should be check-tightened.

A too high oil level causes more oil to be thrown up on the cylinder walls and this increases the oil consumption. The oil level should be kept slightly below the full mark on the oil dipstick. Only check the oil level a few minutes after the engine has stopped to allow the oil to run back to the sump, see Fig. 1.

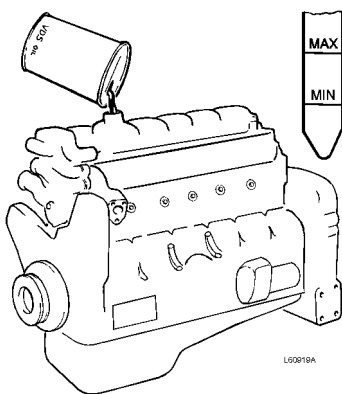


Figure 1

Too thin oil will result in a higher oil consumption because of difficulties of maintaining a sealing film of oil between piston rings and cylinder wall at high temperatures. Too thick oil provides unsatisfactory lubrication and thereby increased wear, which in the long run will result in increased oil consumption. Always use the recommended oil grade and type according to the Operator's Manual.

Continuously high engine speed will result in warmer and thereby thinner oil. Increased oil consumption as described above.

Frequent use of engine retarding causes increased oil consumption.

Also long periods of idling / operating at low speed may cause increased oil consumption.

Faulty and worn piston rings, oil scraper rings, ring grooves, pistons, cylinders, valve guides result in high oil consumption, as oil leaks into the combustion chamber.

Abnormally low oil consumption

Some attention should also be given to low oil consumption, because the low oil consumption may be illusory. Used up oil may have been compensated through condensation water, coolant or fuel dilution, thus keeping the level unchanged. Intermixed coolant gives the oil a greyish tint, whereas intermixed fuel does not show. These factors result in impaired lubrication and should lead to more frequent oil changes. Intermixed fuel also mean an additional safety risk as the flash point of the oil is lowered. Take samples of lubricating oil and have them analysed.

Checking and estimating oil consumption

The duration of the check / test period should be at least 250 hours (suitably between two oil changes and filter replacements) in

order to avoid jumping to conclusions and taking unnecessary action. On an engine that has reached working temperature, the oil dipstick can be read off three minutes after stop. If the engine has been started, but not reached working temperature, wait for at least five minutes.

- Copy the enclosed report form and make a note of the hour recorder reading at the start of the test period.
- Begin with full fuel tank and new oil filled to the upper marking on oil the dipstick.
- Note the hour recorder reading and amounts every time you fill fuel, oil or coolant.
- Do not top up the oil until the level has reached the minimum line.
- Never fill oil to above the maximum line.
- In case the oil is changed during the test period, check the oil level before draining and then fill to the same level.
- At the end of the test period, top up with oil to the maximum line and make a note of the amount.

Add up the noted information which then forms the base for calculating the oil consumption. The oil consumption is always stated as a relation between consumed oil and the amount of used fuel during the same period.

Example: An engine has during 250 hours used 18 litres of oil and 3000 litres of fuel.

$18/3000 \times 100 \% = 0.6 \%$

Normal consumption

A new or fully overhauled engine often uses more oil than a run-in engine. Only after 1000–1500 operating hours, when the piston rings have bedded-in in the cylinders, is it possible correctly to determine the oil consumption.

- Oil consumption of 0.3% or less = OK at full-load operation
- Oil consumption of 0.3–0.75% = OK at light-load operation
- If these limit values are exceeded, proceed as follows:
Carefully check the oil consumption (see instructions on the previous page) and contact the respective dealer regarding whether any action can be approved as a warranty job. A copy of the report form should be enclosed with the claim.

<https://truckmanualshub.com/>

Oil/

L60925AG

Air cleaner, description

<https://truckmanualshub.com/>

The air cleaning system consists of three stages and it is of decisive importance for the engine's reliability and service life. In stage 1 a cyclone cleaner separates heavier particles which are automatically carried away through an ejector in the exhaust system. Approximately 85% of the impurities are filtered out in this first stage and this means that the main filter has a light load.

The main filter (stage two) is a paper filter that can be cleaned and therefore has lengthy replacement intervals. However, it should be changed after it has been cleaned five times, or if it is damaged. If the main filter becomes clogged the informative text "clogged air filter" will be displayed.

The safety filter/secondary filter (stage three) comes into play if the main filter has become damaged and impurities can pass through it. It catches the impurities and so quickly becomes clogged, which is indicated by the warning lamp.

To improve reliability in demanding environments the machine can be equipped with an oil-bath air cleaner. This is connected in series before the regular air cleaner, the filter changing intervals of which are thus extended.

Op nbr

NOTE!

Components such as the recirculation filter, evaporator and condenser must be clean

1. Warm up the machine to normal working temperature and park it in the shade.
2. Measure the ambient temperature and relative humidity. Do this in the shade.
3. Close windows and doors. Ventilation hatches should be closed and all air outlets in the cab should be fully open.

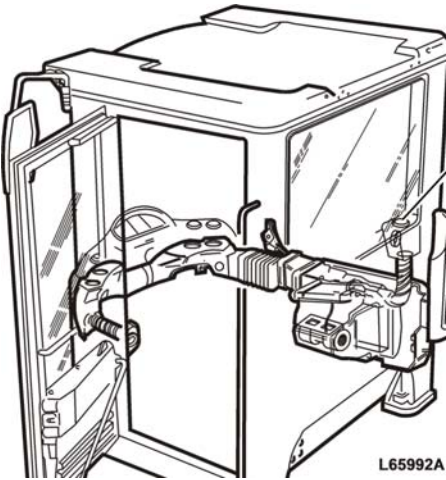


Figure 1
Cab

1. Rear wall, right air nozzle
4. Run the engine at 1500 rpm. Set the cab fan switch to position 4, set the recirculation control to maximum and the heater control to minimum.
5. Turn on the air conditioning.
6. The performance of the air conditioning is checked by measuring the temperature of the air coming out of the right air vent on the rear wall.
7. Within a time period of max. 30 minutes, the temperature should drop to or fall slightly below the temperature values given in the specifications.
8. If the specified temperatures are not achieved in the performance test, see VHB "Heating, ventilation and air conditioning unit R134a" under fault diagnosis.

Air-conditioning unit temperatures in performance tests				
Temperatures in °C at different ambient temperatures in relation to the relative humidity. Measured at the right-hand air nozzle in the rear wall.				
	Ambient temperature Air conditioning temperature values			
Relative humidity of the air	25 °C (77 °F)	30 °C (86 °F)	35 °C (95 °F)	40 °C (104 °F)
10%	7 °C (45 °F)	7 °C (45 °F)	7 °C (45 °F)	7 °C (45 °F)
20%	7 °C (45 °F)	7 °C (45 °F)	7 °C (45 °F)	7 °C (45 °F)
30%	7 °C (45 °F)	7 °C (45 °F)	7 °C (45 °F)	7 °C (45 °F)
40%	7 °C (45 °F)	7 °C (45 °F)	7 °C (45 °F)	8 °C (46 °F)
50%	7 °C (45 °F)	7 °C (45 °F)	8 °C (46 °F)	11 °C (52 °F)
60%	7 °C (45 °F)	8 °C (46 °F)	10 °C (50 °F)	14 °C (57 °F)

70%	https://truckmanualshub.com/ 7 °C (45 °F)	10 °C (50 °F)	13 °C (55 °F)	17 °C (63 °F)
80%	7 °C (45 °F)	11 °C (52 °F)	15 °C (59 °F)	20 °C (68 °F)
90%	7 °C (45 °F)	12 °C (54 °F)	18 °C (64 °F)	23 °C (73 °F)



**Volvo Construction
Equipment Group**

Installation Instruction

Genuine Accessories

REF. NO	KIT NO	DATE/DEPT.	PRODUCT	PAGE
12 6 779 3701	11707412 (80281)	2006-11 CEE-43	L120D	1/17

Luftkonditionering

Satslista

Art.nr	Antal	Benämning
930431	4	Distansring
930434	2	Distansring
930760	2	Expander Mutter
946440	2	Flänsskruv
946671	4	Flänsskruv
947107	1	Flänsskruv
949921	1	Fjädermutter
952628	2	Klamma
952634	2	Klamma
955286	2	Skruv
955896	1	Bricka
960139	6	Bricka
967116	1	Kilrem
967851	1	Säkring
971322	2	Sextandhålskruv
973096	1	Flänsskruv
976945	2	Bricka
981750	1	Skruv
3537499	1	O-ring
3537507	6	O-ring
3537521	1	O-ring
4786044	1 m	Skyddslist
4786690	2	Relä
4803455	1	Strömställare
4881440	22	Bandklamma
4932353	1 m	Gummilist
4955056	1	Tryckvakt
6848760	2	O-ring
8143240	1	Isolator
11003291	1 m	Tejp
11006249	1	Låsfjäder
11006259	1	Slang
11006260	1	Slang
11007005	1 m	Tättningslist
11007056	1	Fäste
11007057	1	Fäste
11007137	1	Packning

Art.nr	Antal	Benämning
11007139	1	Konsol
11007291	1	Fäste
11007675	12	Fiberbricka
11014573	1	Fästplåt
11015720	1	Klamma
11019169	4	Klamma
11039205	1	Lins
11039491	1 m	Slang
11039550	1	Tidrelä
11040625	1	Ledningsmatta
11041913	1	Ledning
11104044	1	Dekal
11104071	1	Dekal
11104241	1	Termostat
11104419	1	Kompressor
11104561	1	Kondensor
11104567	1	Torkare
11104788	1	Skål
11104793	1	Fäste
11130637	1	Sexkantstång
11132335	2	Bussning
11132338	1	Bygel
11132339	1	Plåt
11132361	1	Täckplåt
11133108	1	Ledningsmatta
11133566	1	Stöd
11133567	1	Plåt
11133710	1	Slang
11133716	1	Slang
11147868	1	Plastmutter
11412984	1	Evaporator
11173677	1	Konsol
11173697	1	Spännjärn
13935003	1	Dekal
13945407	2	Mutter
13945408	11	Mutter
13945461	1 m	Plaströr
13947542	2	Skruv
13947760	2	Skruv
13948438	2	Skruv
13949278	1	Flänslåsmutter
13949746	3	Klamma
13961962	2	Skyddsbussning
13965182	1	Skruv
13965183	4	Flänsskruv
13965185	1	Flänsskruv
13965188	1	Skruv
13969278	4	Sextandhålskruv
13970879	2	Skruv
13971095	3	Flänsmutter
13974598	1	Klamma



VARNING!

Läs alla skyltar och anvisningar som finns på maskinen och säkerhetsinstruktionerna i instruktionsboken innan Du börjar arbetet på maskinen.

Monteringsanvisningen är baserad på användning av specialverktyg, E-verktyg och i allmänna handeln tillgängliga standardverktyg samt instruktions- och verkstadshandböcker.

Utrustningen ska monteras av behörig person på auktoriserad verkstad.

Volvo Construction Equipment Group fransäger sig allt ansvar om andra verktyg eller arbetsmetoder än de i anvisningen beskrivna kommer till användning.

Luftkonditionering

Arbetsbeskrivning

Evaporator

1 Bryt huvudströmmen.

2 Sätt dit fästena på evaporatorn.

OBS! Placera brickorna under skruvskallarna.
Såga av plaströret och sätt dit plaströrsbitarna på skruvarna. Se Fig. 1 och Fig. 13.

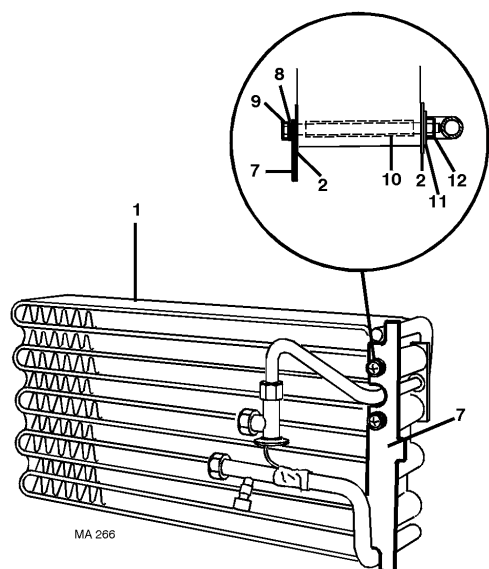


Fig. 1

Art.nr	Benämning	Antal	Pos. i Fig. 1
11412984	Evaporator	1	1
11007291	Fäste	1	7
11007057	Fäste	1	11
955286	Skruv (M6x100)	2	9
960139	Bricka (6.4x18x2)	4	8
13945407	Mutter (M6)	2	12
13945461	Plaströr, 70 mm	2	10
11007675	Fiberbricka	4	2

3 Sätt dit en tätningslist på evaporatorn.

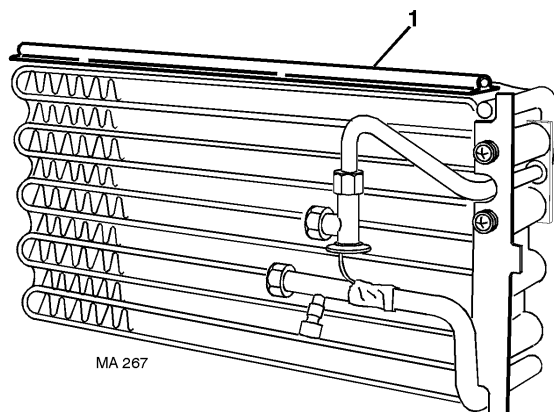


Fig. 2

Art.nr	Benämning	Antal	Pos. i Fig. 2
11007005	Tätningslist, 500 mm	1	1

- 4 Öppna luckan till klimatenheten vid den högra stegen.
Ta bort filtret och plåten som täcker klimatenheten.

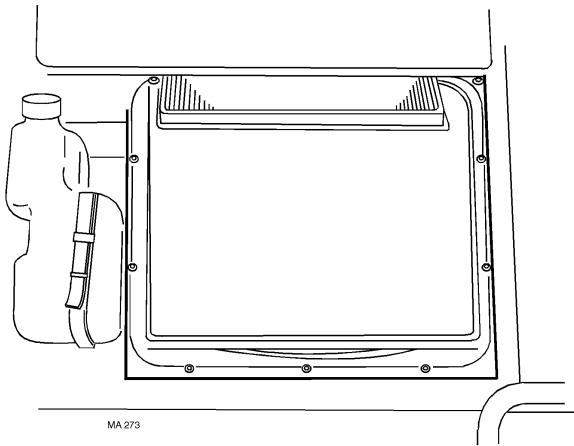


Fig. 3

- 5 Sätt dit en gummilist i plastkåpan och en packning på gaveln.

Art.nr	Benämning	Antal	Pos.	Fig.
11007137	Packning	1	1	4
4932353	Gummilist, 40 mm	1	1	5

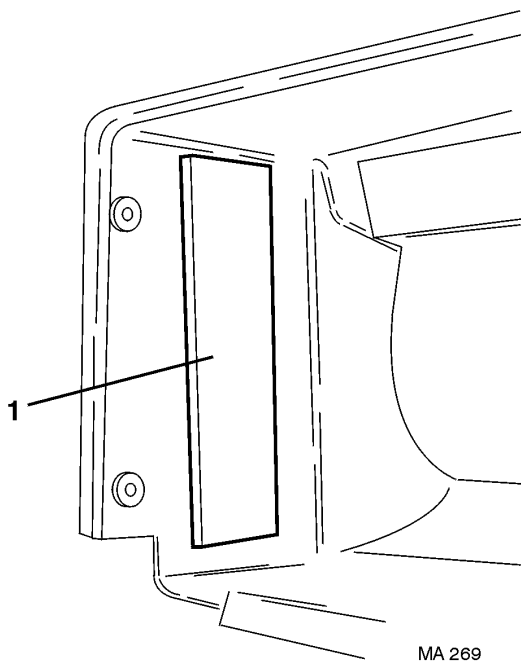


Fig. 4

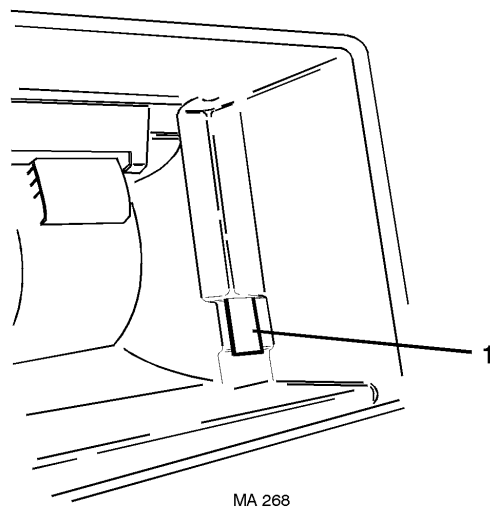


Fig. 5

- 6 Sätt dit evaporatorn i klimatenheten genom att sticka in fästet i befintligt hål i plastkåpan. Använd en plåt 1 för att skydda packningen och skjut in evaporatorn. Se Fig. 6.

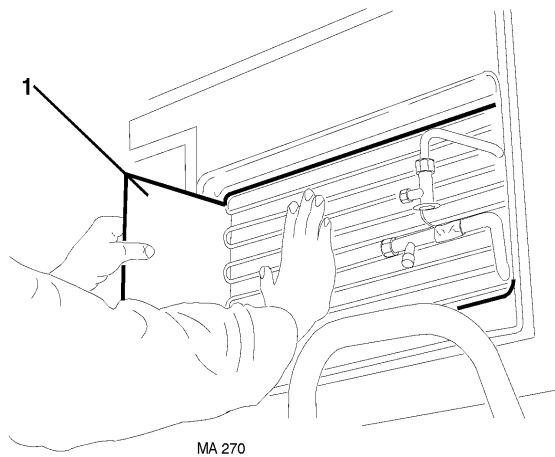


Fig. 6

- 7 Sätt fast gummilisten på fästet. Skruva fast evaporatorn med fästet i plastkåpan. Sätt samtidigt dit konsolen 20 för slangklamning. Se Fig. 7.

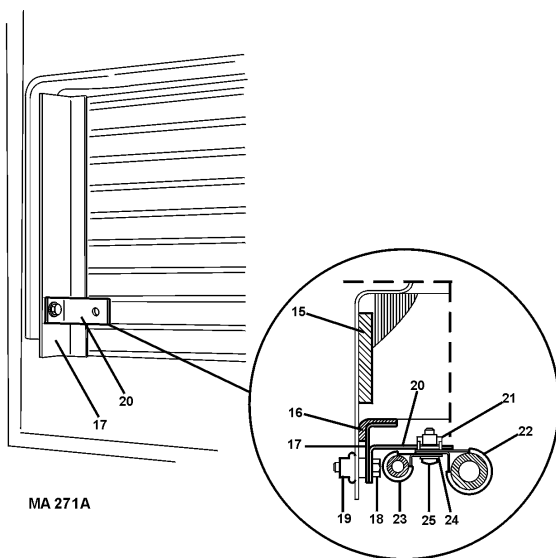


Fig. 7

Art.nr	Benämning	Antal	Pos. i Fig. 7
11007056	Fäste, tidigare utförande	1	17
11104793	Fäste, senare utförande	1	17
4932353	Gummilist, 235 mm	1	16
930760	Expandermutter (M6)	2	19
13947542	Skruv (M6x25)	2	18
11007139	Konsol	1	20

- 8 Sätt dit två dekaler på plastkåpans insida.

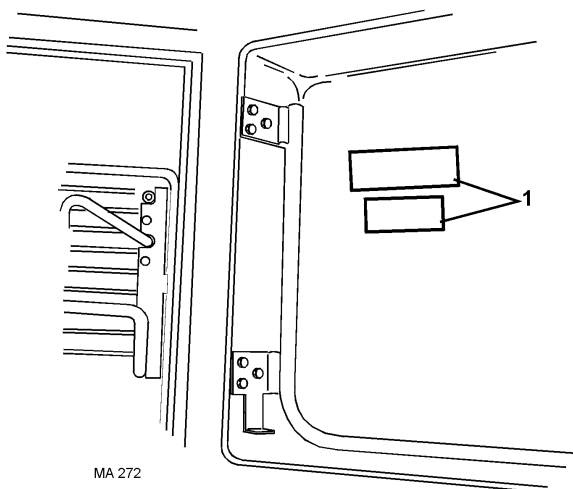


Fig. 8

Art.nr	Benämning	Antal	Pos. i Fig. 8
11104044	Dekal	1	1
11104071	Dekal	1	1

Torkare

9 Ta bort täckplåten bakom vänster hyttfäste.

10 Sätt dit torkaren på befintligt fäste. Sätt dit en dekal på torkaren. Se Fig. 9 och Fig. 10.

Art.nr	Benämning	Antal	Pos. i Fig. 9
11015720	Klamma	1	3
13945408	Mutter (M8)	2	5
11104567	Torkare	1	1
13935003	Dekal	1	4

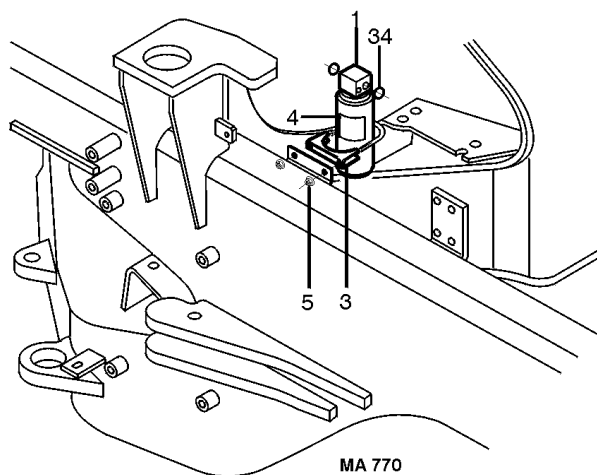


Fig. 9

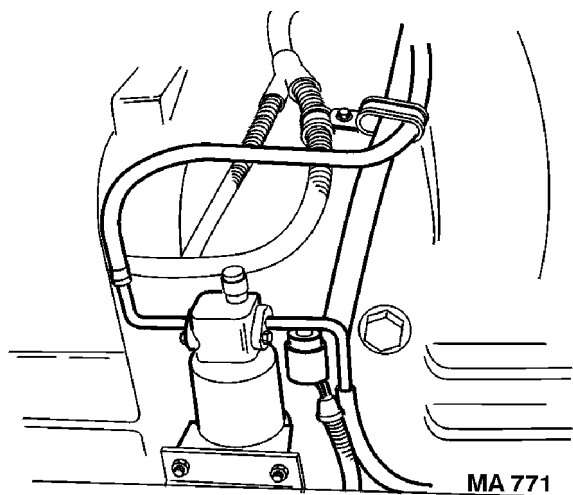


Fig. 10

Kompressor

11 Sätt dit ett konsol på motorns vänstra sida. Se Fig. 11 och Fig. 12.

Art.nr	Benämning	Antal	Pos. i Fig. 11
11173697	Spännjärn	1	13
11173677	Konsol	1	13
13970879	Skruv (M10x45)	2	11
976945	Bricka (10.5x22x2)	2	7

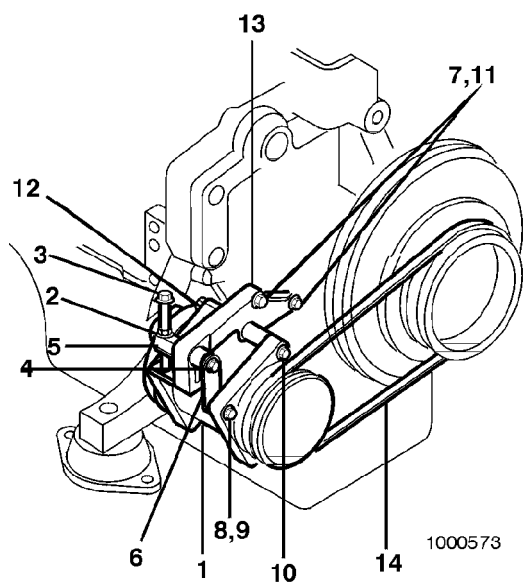


Fig. 11

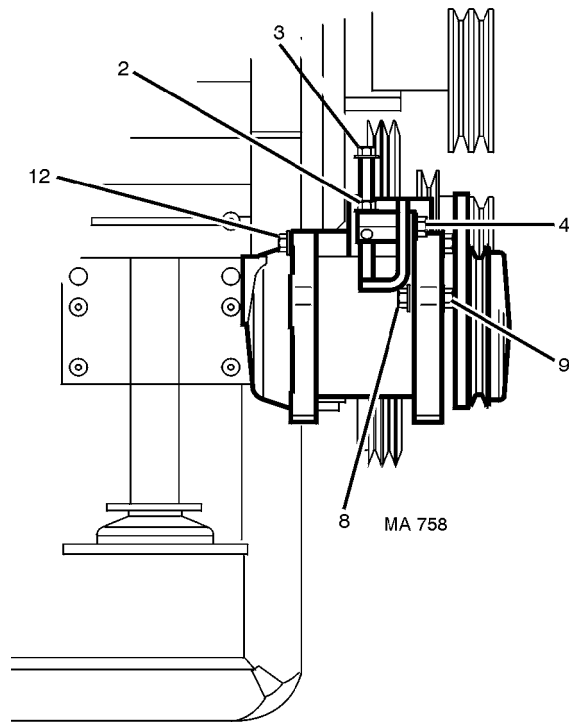


Fig. 12

12 Sätt dit kompressorn på fästet.

Art.nr	Benämning	Antal	Pos.	Fig.
11104419	Kompressor	1	1	11
973096	Flänsskruv (M10x130)	1	12	11, 12
13971095	Flänsmutter (M10)	1	10	11

13 Sätt dit kilremmen. Dra fast kompressorn.

Art.nr	Benämning	Antal	Pos.	Fig.
967116	Kilrem	1	14	11
11130637	Sexkantstång	1	5	11
13971095	Flänsmutter	1	2	11, 12
981750	Skruv (M10x100)	1	3	11, 12
13965188	Skruv (M10x70)	1	4	11, 12
13965185	Flänsskruv (M10x40)	1	8	11, 12
13971095	Flänsmutter (M10)	1	9	11, 12

Kondensor

14 Sätt dit bygeln och plåten mot kondensorn.
Placera fiberbrickorna mot kondensorn.

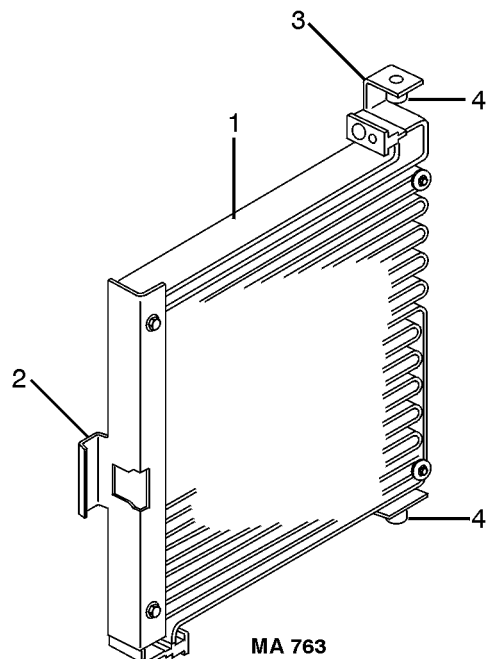


Fig. 13

Art.nr	Benämning	Antal	Pos.	Fig.
11104561	Kondensor	1	1	13
11132339	Plåt	1	2	13
11132338	Bygel	1	3	13
11132335	Bussning	2	4	13
11007675	Fiberbricka	8	5	14
13965183	Flänsskruv	4	6	14
13945408	Mutter (M8)	4	7	14

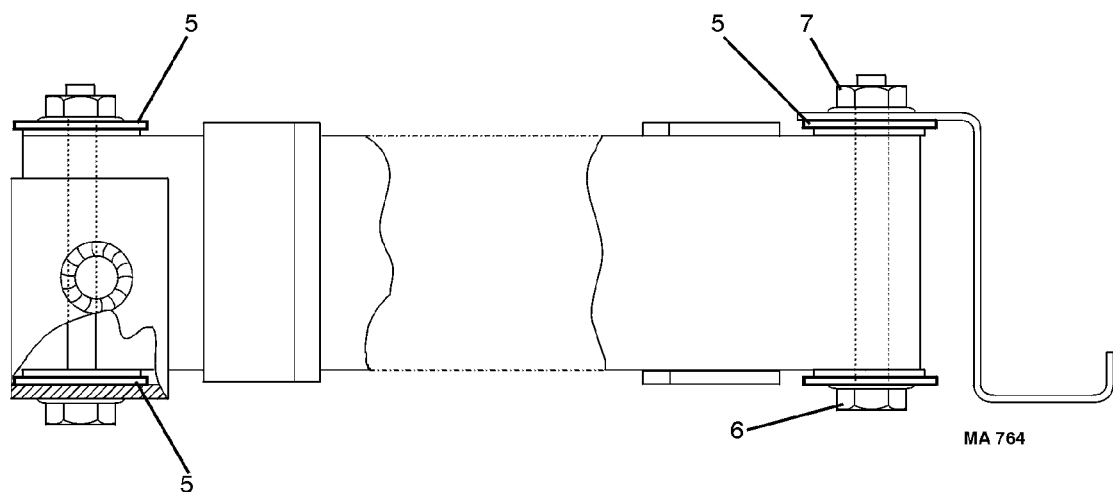


Fig. 14

15 Sätt dit ett stöd på flätkåpens högra insida.

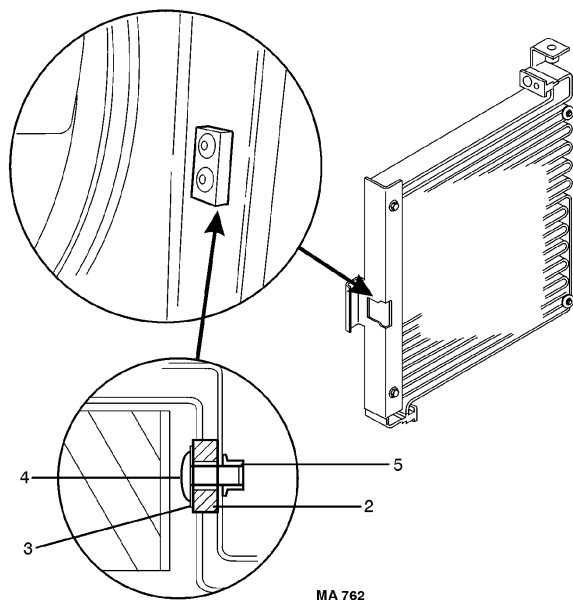
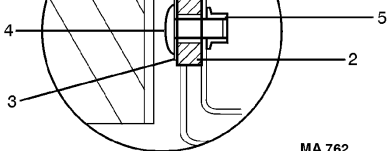


Fig. 15

Art.nr	Benämning	Antal	Pos. i Fig. 15
11133566	Stöd	1	2
11133567	Plåt	1	3
13948438	Skruv (M8x20)	2	4
13945408	Mutter (M8)	2	5

16 Sätt dit kondensorn. Tapparna med bussningarna placeras i de befintliga hålen.



17 Sätt dit en skyddslist på plåtkanten för att skydda slangarna.

Art.nr	Benämning	Antal	Pos. i Fig. 16
4786044	Skyddslist, 150 mm	1	1

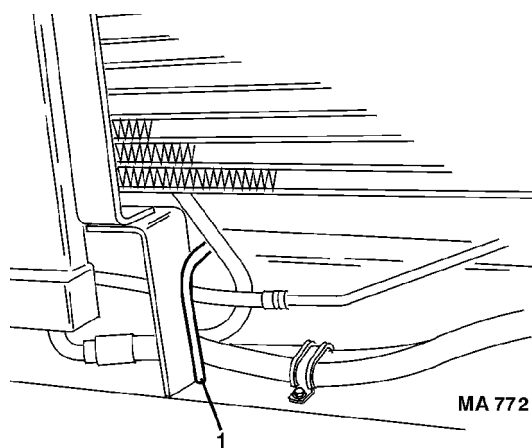


Fig. 16

Slangar och rör

OBS! Slangarna får inte böjas så mycket att veck uppstår, dvs plaströret i slangarna bryts. I de fall detta har inträffat ska dessa slangar kasseras. Placera kylslangarna så att de inte behöver tas bort vid borttagning av motor.

OBS! Samtliga O-ringar ska vara väl smorda med PAG-olja (Poly-Alkylene-Glykol) före ditsättning.

- 18 Sätt dit en slang från kondensorns övre port till kompressorns inre port.

Art.nr	Benämning	Antal	Pos. i Fig. 17
11133716	Slang	1	1
3537507	O-ring	2	2
946671	Flänsskruv (M8x30)	2	3
930431	Distansring (10x15x12)	2	4
13961962	Skyddsbussning	1	6

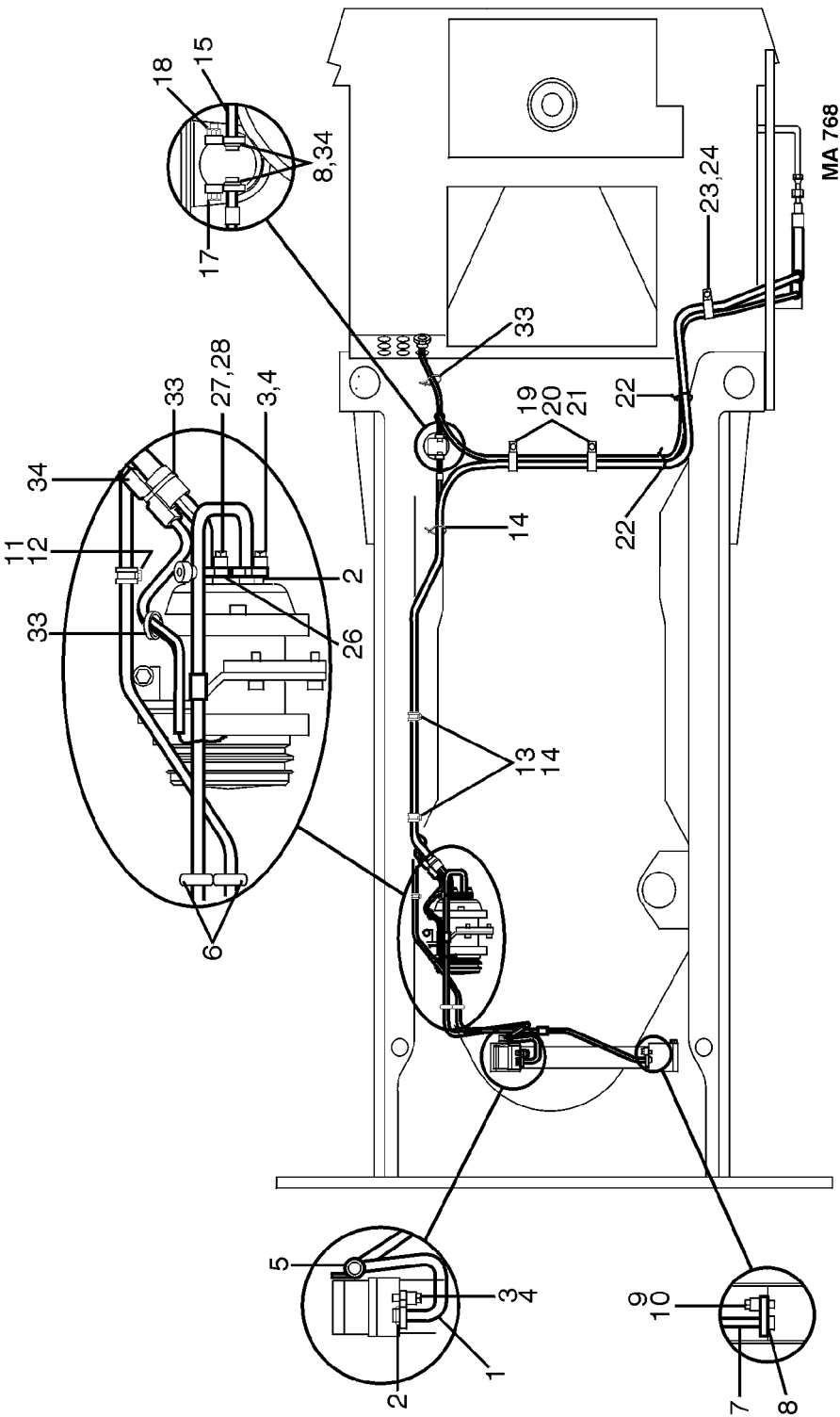


Fig. 17

19 Klamma slangen mot kondensorns skruvar.

Art.nr	Benämning	Antal	Pos. i Fig. 18
13949746	Klamma (12.7)	2	5

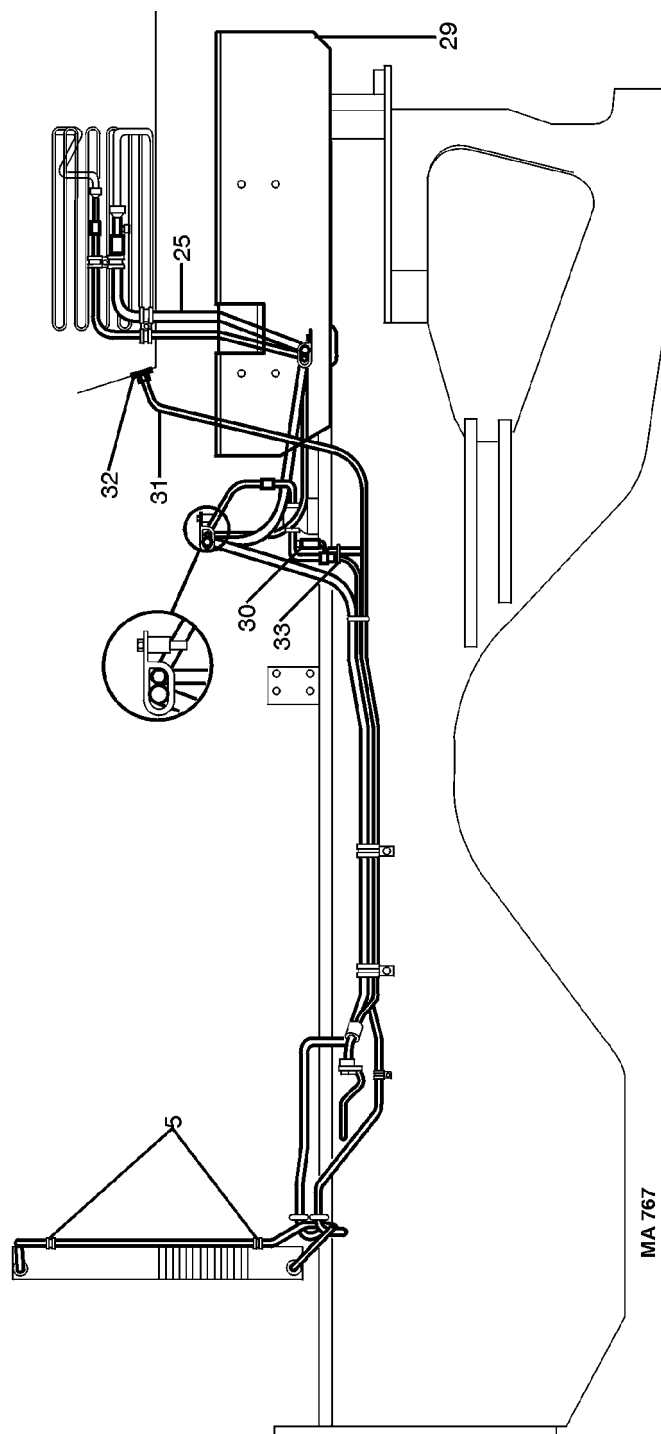


Fig. 18

20 Sätt dit en tryckvakt på slang med rör.

Art.nr	Benämning	Antal	Pos.	Fig.
4955056	Tryckvakt (SE804)	1	30	18
11133710	Slang	1	7	17

- 21 Sätt dit slangen från kondensorns nedre port till torkaren.
Klamma slangen mot ramen.

OBS! Slangen med rör ansluts till torkaren när köldmedium ska fyllas.

Art.nr	Benämning	Antal	Pos. i Fig. 17
3537507	O-ring	1	8
946671	Flänsskruv (M8x30)	1	9
930431	Distansring (10x15x12)	1	10
13949746	Klamma (12.7)	1	11
946440	Flänsskruv (M8x16)	1	12
13961962	Skyddsbussning	1	6

- 22 Sätt dit en slang från torkaren till evaporatorn.

OBS! Slangen med rör ansluts till torkaren när köldmedium ska fyllas.

Art.nr	Benämning	Antal	Pos. i Fig. 19
11006259	Slang	1	4
3537499	O-ring	1	27

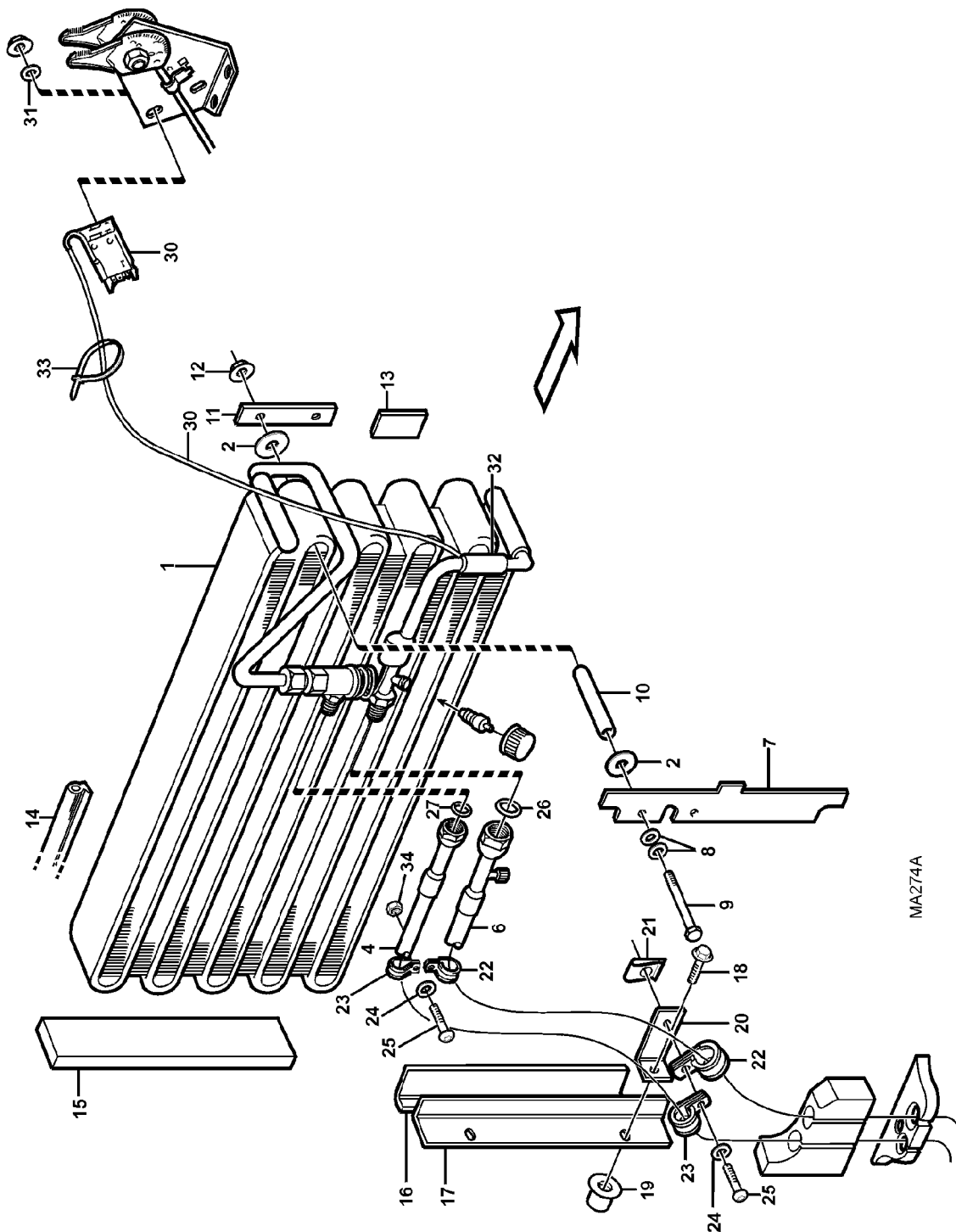


Fig. 19

23 Sätt dit en slang från kompressorn till evaporatorn.

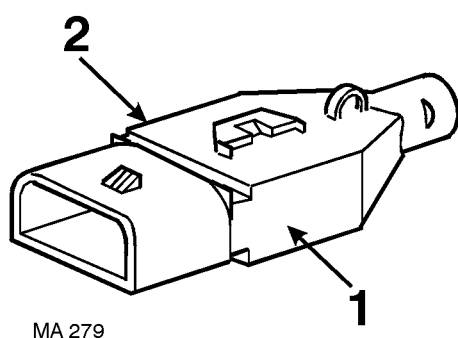
Art.nr	Benämning	Antal	Pos.	Fig.
11006260	Slang	1	6	19
3537507	O-ring	1	26	19
946671	Flänsskruv (M8x30)	1	27	17
930431	Distansring (10x15x12)	1	28	17
3537521	O-ring	1	24	17

24 Klamma slangarna mot evaporatorns fäste.

Art.nr	Benämning	Antal	Pos. i Fig. 19
952634	Klamma (23.8)	1	23
952628	Klamma (14.3)	1	22
960139	Bricka (6.4x18x2)	1	24
971322	Sextandhålskruv (M6x20)	1	25
949921	Fjädermutter (M6)	1	21

25 Klamma slangarna vid evaporatorn.

Art.nr	Benämning	Antal	Pos. i Fig. 19
952634	Klamma (23.8)	1	23
952628	Klamma (14.3)	1	22
971322	Sextandhålskruv (M6x20)	1	25
13949278	Flänslåsmutter (M6)	1	34
960139	Bricka (6.4x18x2)	1	24



MA 279

Fig. 20

Elinstallation

26 Ta bort befintlig plasthylsa på ledningsmattan 11133108. Sätt dit plasthylsan på kompressorns ledning. Sätt dit ledningen i isolatorn, port 2. Se Fig. 16 och Fig. 19.

Art.nr	Benämning	Antal	Pos. i Fig. 17
8143240	Isolator	1	34

27 Ta bort plastskyddet på hyttväggen bakom förarstolen.

28 Sätt dit ledningsmattan från kompressorn MA801 och tryckvakten SE804 till hyttgenomgången OG.

Art.nr	Benämning	Antal	Pos.	Fig.
11133108	Ledningsmatta	1	31	18
4881440	Bandklamma	1	33	18
11147868	Plastmutter	1	40	23

- 29 Klamma slangarna och ledningsmattan mot ramen.
Klamma slangarna på svänghjulskåpan.

Art.nr	Benämning	Antal	Pos. i Fig. 19
11019169	Klamma	2	13
11019169	Klamma	2	20
13947760	Skruv (M8x40)	2	19
930434	Distansring (10x15x20)	2	21
4881440	Bandklamma	3	14

- 30 Klamma slangarna och ledningsmattan mot ramen.

Art.nr	Benämning	Antal	Pos. i Fig. 17
13974598	Klamma	1	24
946440	Flänsskruv	1	23
4881440	Bandklamma	2	22

Hytt

- 31 Öppna höger fönster. Ta bort skruvarna och lyft upp höger instrumentpanel.

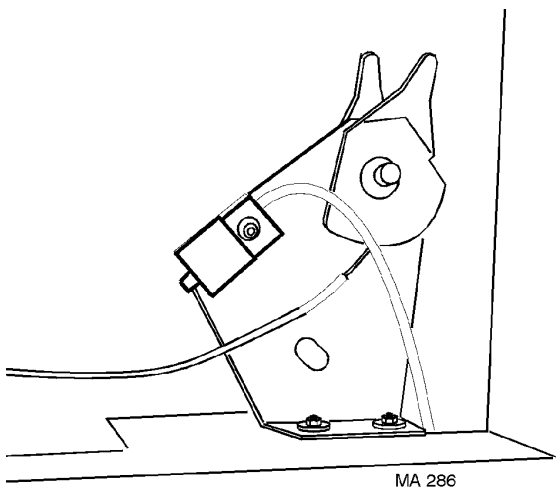


Fig. 21

- 32 Sätt dit termostaten på konsolen, se Fig. 21. För ner termostatsens kapillärrör i befintligt hål i plastkåpan till evaporatorn. Kontrollera att termostaten är vriden medurs till maximalt "på".

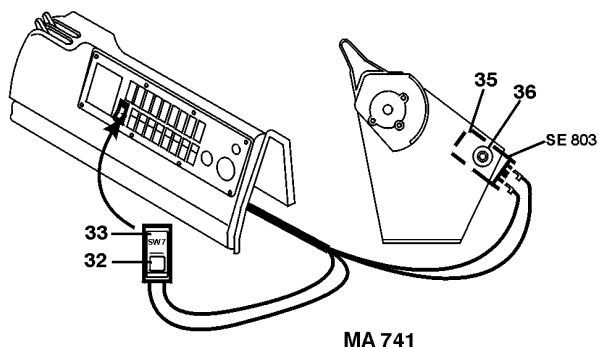
Art.nr	Benämning	Antal	Pos. i Fig. 19
955896	Bricka (12x22x2)	1	31
11104241	Termostat	1	30
4881440	Bandklamma	1	33

- 33 Linda termostatsens kapillärrör 4 - 5 varv, tätt mot evaporatorns stora rör. Se Fig. 19.

OBS! Kapillärröret får inte bockas i skarpa veck.
Använd inte verktyg. Isolera kapillärrörets lindning mot röret med den svarta tejp.

Art.nr	Benämning	Antal	Pos. i Fig. 19
11003291	Tejp, 150 mm	1	32

34 Sätt dit strömställaren SW806 på höger instrumentpanel.



Art.nr	Benämning	Antal	Pos. i Fig. 22
11039205	Lins	1	32
4803455	Strömställare	1	33

35 Anslut befintliga kontakter till strömställaren SW806 och termostaten SE803.

36 Sätt dit en ledningsmatta med reläsocklar och reläer i elcentralen.

Art.nr	Benämning	Antal	Pos. i Fig. 23
11040625	Ledningsmatta	1	38
4786690	Relä	2	41
13969278	Sextandhålskruv (4.8x13)	4	42
11039550	Tidrelä	1	51
11014573	Fästplåt	1	48
4881440	Bandklamma	7	-

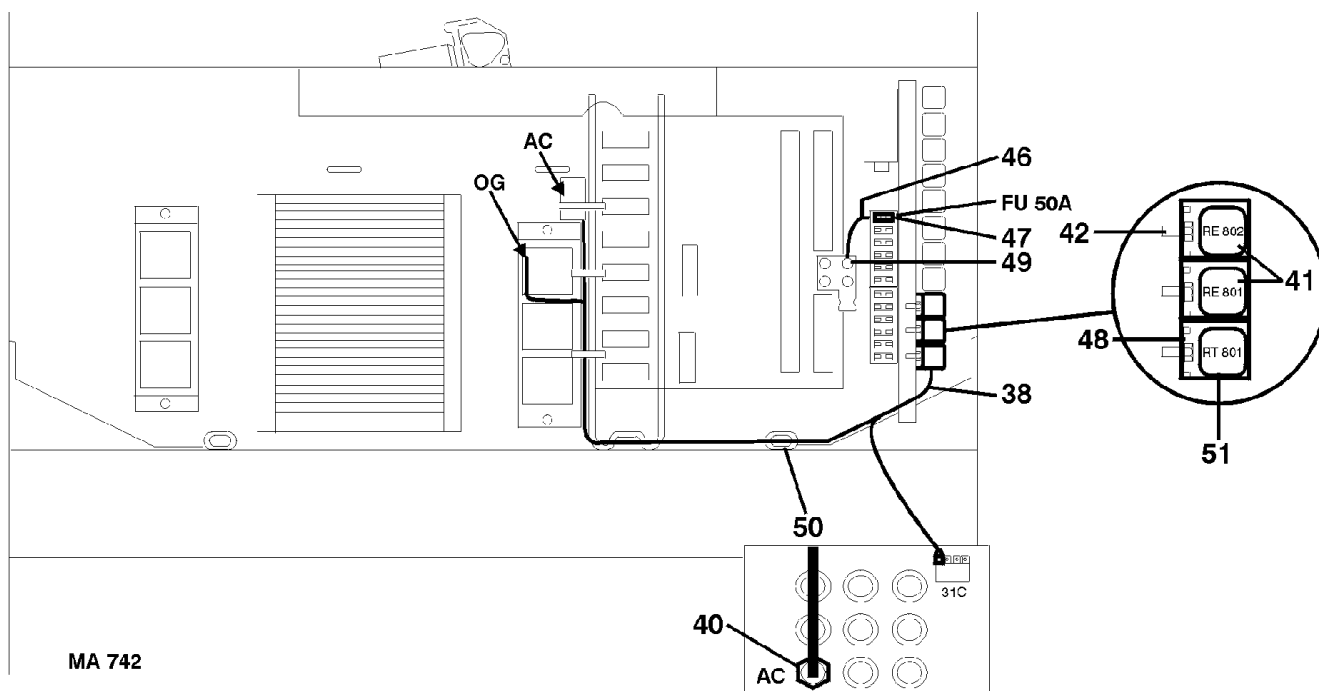


Fig. 23

37 Sätt dit en ledning från strömförande plåt till säkringshållaren, FU50A. Sätt dit en säkring.

Art.nr	Benämning	Antal	Pos. i Fig. 23
947107	Flänsskruv	1	49
11041913	Ledning	1	46
967851	Säkring (5A)	1	47

38 Sätt dit plastskyddet på hyttväggen bakom förarstolen.

Fyll köldmedium (R 134a)

39 Sätt dit slangarna till torkaren.

Art.nr	Benämning	Antal	Pos. i Fig. 17
6848760	O-ring	2	34
3537507	O-ring	2	8
13965182	Skruv (M8x80)	1	17
13945408	Mutter (M8)	1	18

40 Fyll köldmedium i kylanläggningen, se verkstadshandboken.

41 Sätt dit täckplåten och luftfiltren i hytten.

42 Öppna luckan till klimatenheten, skär hål i gummigenomföringen. Sätt dit låsfjädern i slangändan så att hullingen hamnar inuti och sätt dit slangen på skålen. Sätt dit skålen.

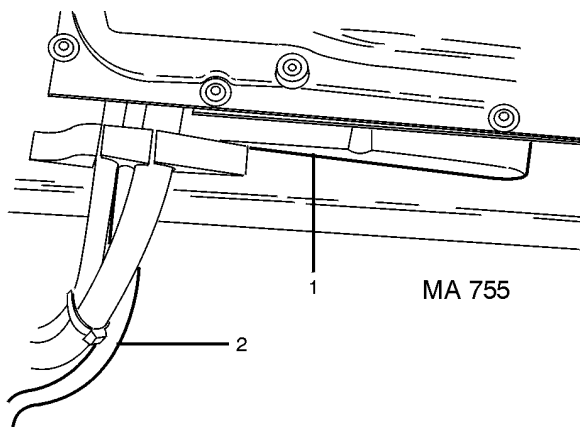


Fig. 24

Art.nr	Benämning	Antal	Pos. i Fig. 24
11104788	Skål	1	1
11039491	Slang, 500mm	1	2
11006249	Låsfjäder	1	-

43 Sätt dit täckplåten mellan klimatenheten och den högra stegen.

Art.nr	Benämning	Antal	Pos. i Fig. 18
11132361	Täckplåt	1	29

44 Skriv in utrustningsnumret 80281 på maskinkortet.

Air filter pressure

<https://truckmanualshub.com/>

The function monitors how clogged the air filter is and informs the operator when it is time to change it or if there is a system malfunction.

Input signals	Output function conditions	Output functions
○ Air filter pressure, SE208	○ High negative pressure (blocked filter)	○ Amber central warning lamp ○ ----- INFO ----- Clogged Engine Air Filter
○ Monitoring, SE208	○ System malfunction, signal outside limits	○ Amber central warning lamp ○ ----- ERROR ----- Monitoring Engine Air Filter

Air-conditioning unit, specifications

Air-conditioning unit temperatures in performance tests				
Temperatures in °C at different ambient temperatures in relation to the relative humidity. Measured at the right-hand air nozzle in the rear wall.				
Relative humidity of the air	Ambient temperature Air conditioning temperature values			
	25 °C (77 °F)	30 °C (86 °F)	35 °C (95 °F)	40 °C (104 °F)
10%	7 °C (45 °F)	7 °C (45 °F)	7 °C (45 °F)	7 °C (45 °F)
20%	7 °C (45 °F)	7 °C (45 °F)	7 °C (45 °F)	7 °C (45 °F)
30%	7 °C (45 °F)	7 °C (45 °F)	7 °C (45 °F)	7 °C (45 °F)
40%	7 °C (45 °F)	7 °C (45 °F)	7 °C (45 °F)	8 °C (46 °F)
50%	7 °C (45 °F)	7 °C (45 °F)	8 °C (46 °F)	11 °C (52 °F)
60%	7 °C (45 °F)	8 °C (46 °F)	10 °C (50 °F)	14 °C (57 °F)
70%	7 °C (45 °F)	10 °C (50 °F)	13 °C (55 °F)	17 °C (63 °F)
80%	7 °C (45 °F)	11 °C (52 °F)	15 °C (59 °F)	20 °C (68 °F)
90%	7 °C (45 °F)	12 °C (54 °F)	18 °C (64 °F)	23 °C (73 °F)

Normal air-conditioning unit system pressure, engine speed 1500 rpm	
System pressure varies with the ambient temperature. The values should be regarded as guiding values. A lower pressure on the low-pressure side may occasionally be observed.	
At ambient temperatures below +30 °C (+86 °F)	
Low-pressure side	0.3–2.7 bar (4.4–39.2 psi)
High-pressure side	6.5–15.5 bar (94.3–224.8 psi)
At ambient temperatures above +30 °C (+86 °F)	
Low-pressure side	0.7–2.3 bar (10.2–33.4 psi)
High-pressure side	14–18 bar (203–261 psi)

Language Code GB	Product ART/BHL/WLO	Group 160	https://truckmanualshub.com/	No. 65	Version 2	Date 02/03/2010
Applies to Articulated Haulers, Backhoe Loaders, Wheel Loaders						

Alternative lubricants for axles with wet brakes



Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.

Cause

97303, WB101

Volvo Wet Brake Transaxle Oil 97303, WB101 is intended for use in axles with built in wet brakes. For these applications **Volvo Wet Brake Transaxle Oil** (Volvo product denomination), should be used.

Action

Performance requirements for **Volvo Wet Brake Transaxle Oil 97303** are described in Volvo Construction Equipment Standard 1273.03.

NOTE!

Using non-approved products may affect warranties in case of component problems.

Volvo Super Wet Brake Transaxle Oil 97304, WB102

Volvo Super Wet Brake Transaxle Oil 97304, WB102 is intended for long drain intervals or severe service in axles with built in wet brakes. WB102 gives lower fuel consumption, maximizes machine performance and improves the durability of the machine. For these applications, **Volvo Super Wet Brake Transaxle Oil** (Volvo product denomination), should be used.

Performance requirements for Volvo Super Wet Brake Transaxle Oil 97304 are described in Volvo Construction Equipment Standard 1273.04.

If Volvo Super Wet Brake Transaxle Oil is not available, then Volvo Wet Brake Transaxle Oil, WB101, can be used as an alternative.

NOTE!

Only when using Volvo Super Wet Brake Transaxle Oil WB102 will the machine achieve maximum performance and service life, as well as the best possible fuel economy. Service intervals may also be shorter when using other oil than Volvo Super Wet Brake Transaxle Oil WB102

In the future, Volvo Construction Equipment will not officially state alternative products.

Alternator, description

<https://truckmanualshub.com/>

The alternator is a 60A alternating current generator with a normal charging voltage of 28.5 V and a built-in charging regulator.

Machines operating in an aggressive environment may as an alternative be fitted with a brushless 50 A alternator.

Machines that have been equipped with a large number of components using electric power, such as extra work lights, can be equipped with a 100 A alternator as an alternative.

When the engine is turned off, the batteries normally give a voltage of approx. 24-26 V, depending on their charging status. When the engine is running, the batteries are normally charged by the alternator, since the alternator's normal charging voltage is higher than the battery voltage.

If the batteries do not seem to take a charge, this may be due to incorrect charging voltage from the alternator. Also check the acidity in the battery electrolyte, see [Invalid linktarget].

Alternator, specifications

<https://truckmanualshub.com/>

Alternator, 60 A, with regulator	
Type	Alternating current
Output (rated output)	1680 W
Voltage, at + 20 °C (68 °F)	28.5 ± 0.15 V
Current, max.	60 A
Resistance across rotor winding	13.5 Ω
Resistance in stator winding	0.12 Ω

Alternator, 50 A, with regulator	
Type	Alternating current
Output (rated output)	1400 W
Voltage, at + 20 °C (68 °F)	28 ± 0.3 V
Current, max.	50 A
Resistance across rotor winding	8.3 Ω
Resistance in stator winding	0.15 Ω

Alternator 100 with regulator	
Type	Alternating current
Output (rated output)	2800 W
Voltage, at + 20 °C (68 °F)	28 ± 0.5 V
Current, max.	100 A
Resistance across rotor winding	7.4 Ω
Resistance in stator winding	0.15 Ω

VOLVO**Construction Equipment****Installation Instruction****Genuine Accessories**

Ref. no. VOE65A1001623	Kit no. 11707710 (80272)	Date/Dept. 2004-11 CEE	Product L90D, L120D	Page 1/3
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Alternator / Generator**Kit list / Satslista**

Art.nr Part No.	Antal Qty.	Designation	Benämning	Pos. i Fig. 1 Pos. in Fig. 1
11132331	1	Bracket	Konsol	1
965193	1	Flange screw	Flänsskruv	2
979935	1	Flange screw	Flänsskruv	3
971099	1	Flange lock nut	Flänslåsmutter	4
1676488	2	Spacer	Distans	5
930843	1	Washer	Bricka	7
11039152	1	Alternator	Generator	8
4898414	1	Pulley	Remskiva	9
11013713	1	Spacer ring	Distansring	10
966642	1	V-belt	Kilrem	11
11019269	1	Tensioner	Spännjärn	12
924302	1	Hexagon screw	Sexkantskruv	13
11015690	1	Protection	Skydd	15
11132319	1	Wire (Cable)	Ledning	16
11147694	1	Wire (Cable)	Ledning	17
11039153	1	Cover	Kåpa	18
956084	3	Cross recessed screw	Krysskruv	19
969439	3	Six point socket screw	Sextandhålskruv	19
940090	3	Washer	Bricka	20
11033214	1	Air filter	Luftfilter	21
11003508	1	Hose connection	Slanganslutning	22
946440	3	Flange screw	Flänsskruv	23
955894	3	Washer BRB	Bricka BRB	24
930870	1	Clamp	Klamma	25
11100940	1	Ventilation hose	Ventilationsslang	26
11014496	1	Attachment	Fäste	27
943481	2	Hose clamp	Slangklamma	28
4861705	3	Belt	Rem	29

We consider that no special installations instructions are required for fitting this equipment.

För montering av denna utrustning anser vi att någon speciell monteringsanvisning inte erfordras.

To facilitate the fitting we enclose:

- Kit list
- Installation drawing

För att underlätta montering inkluderas:

- Satslista
- Monteringsritning

**WARNING!**

Read all signs and instructions on the machine and the safety instructions in the operators manual, before you start working on the machine.

The installation instructions are based on the use of special tools, the E-tool and standard tools generally available on the market, and also on our operators manuals and service manuals.

The equipment should be installed by qualified personnel of an authorised workshop.

Volvo CE Customer Support AB disclaims all responsibility if tools and work methods other than those described in the instructions are used.

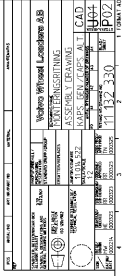
**WARNING!**

Läs alla skyltar och anvisningar som finns på maskinen och säkerhetsinstruktionerna i instruktionsboken innan Du börjar arbetet på maskinen.

Monteringsanvisningen är baserad på användning av specialverktyg, E-verktyg och i allmänna handeln tillgängliga standardverktyg samt instruktions- och verkstadshandböcker.

Utrustningen ska monteras av behörig person på auktoriserad verkstad.

Volvo CE Customer Support AB fransäger sig allt ansvar om andra verktyg eller arbetsmetoder än de i anvisningen beskrivna kommer till användning.



Language Code GB	Product WLO	Group 030	https://truckmanualshub.com/	No. 16	Version 1	Date 05/28/2004
Applies to 616B Volvo BM, 646 Volvo BM, 4200 Volvo BM, 4200B Volvo BM, 4300 Volvo BM, 4300B Volvo BM, 4400 Volvo BM, 4500 Volvo BM, 4600 Volvo BM, 4600B Volvo BM, 6300 Volvo BM, EL70 Volvo BM, EL70C Volvo BM, L50 Volvo BM, L50B Volvo BM, L50C OR Volvo, L50C Volvo, L50C Volvo BM, L50D Volvo, L50E Volvo, L60E Volvo, L70 Volvo BM, L70B Volvo BM, L70C Volvo, L70C Volvo BM, L70D Volvo, L70E Volvo, L90 CO Volvo BM, L90 Volvo BM, L90B Volvo BM, L90C OR Volvo, L90C Volvo, L90C Volvo BM, L90D OR Volvo, L90D Volvo, L90E Volvo, L110E Volvo, L120 Volvo BM, L120B Volvo BM, L120C Volvo, L120C Volvo BM, L120D Volvo, L120E Volvo, L150 Volvo BM, L150C LB Volvo, L150C Volvo, L150C Volvo BM, L150D Volvo, L150E Volvo, L160 CO Volvo BM, L160 Volvo BM, L180 CO Volvo BM, L180 HL Volvo BM, L180 Volvo BM, L180C CO Volvo, L180C HL Volvo, L180C Volvo, L180C Volvo BM, L180D HL Volvo, L180D Volvo, L180E HL Volvo, L180E Volvo, L220D Volvo, L220E Volvo, L330C LL Volvo, L330C Volvo, L330C Volvo BM, L330D Volvo, L330E Volvo						

Amendments in Service Manual Engine, D10B; Drive Axle, AWB 40B and Drive Axle, AWB 41/AWB 50



Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.

Cause

We have discovered errors in the Service Manuals for Engine, D10B; Drive Axle, AWB 40B and Drive Axle, AWB 41/AWB 50 Please enter the following amendments in your Service Manuals immediately.

Publication numbers for the Service Manuals concerned.

Service Manual	Pub. No.
Engine D10B	VOExxA1000052
Drive Axle, AWB 40B	VOExxA1000915
Drive Axle, AWB 41/AWB 50	VOExx16696678

NOTE!

xx in the publication number refers to the language code.

Action

SM Engine, D10B

On page 8 the text for the figure V1001313 must be changed to
 Black = Exhaust 0.70 mm (0.0275 in)
 White = Inlet 0.40 mm (0.0157 in)

On page 87 the text for the figure A0098000 must be changed to
 White = Exhaust
 Black = Inlet

On page 20 the tightening torque for bearing bracket, rocker arm shaft must be changed to 40 ±4 N m (29.5 ±3 lbf ft)

SM, Drive Axle, AWB 40B

On page 47 the tightening torque for the crown wheel bolts in point 58 must be changed to 290 ±10 N m (7.4 lbf ft) (213.9 ±7.4 lbf ft)

On page 48 the tightening torque for the crown wheel bolts in point 61 must be changed to 480 ±20 N m (354 ±14.8 lbf ft)

SM, Drive Axle, AWB 41/50

On page 213 the text in point 35 should read:
 "Screw in both adjusting screws against the now applied brake piston. Then unscrew the screws $\frac{1}{2}$ a turn. Lock the adjusting screws with the lock nuts."

Language Code GB	Product WLO	Group 252	https://truckmanualshub.com/	No. 21	Version 2	Date 12/05/2001
Applies to L50D Volvo, L70D Volvo, L90C Volvo, L90C Volvo BM, L120C Volvo, L120C Volvo BM, L120D Volvo, L150D Volvo, L180D Volvo, L220D Volvo						

Approved silencers



Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

Spark arresting test has been carried out 2000-12-12 under supervision of personnel from the Swedish Machinery Testing Institute (SMP), earlier the National Swedish Testing Institute for Machinery.

The following silencers have been tested and been given approval numbers according to the table below.

Machine	Silencer part No.	SMP approval number
L50D	11110330	SE 29964/00/C1
L90C	11110153	SE 2964/00/C3
L90D	11110238	SE 2964/00/C3
L120C	11110153	SE 2964/00/C3
L120D	11110238	SE 2964/00/C3
L150D	11110154	SE 2964/00/C2
L180D	11110154	SE 2964/00/C2
L220D	11110154	SE 2964/00/C2

NOTE!

The silencer with part No. 11110201 which is fitted on L70D has been approved since 2000-09-01 and has the approval number 59B.

This SB is to be considered as a technical information and comprises normal warranties within the rules for the same.

APS II

<https://truckmanualshub.com/>

The function controls gearshifting based on the current operating mode and determines which gear should be used and when shifting should take place to protect the transmission.

Mode selector SW412 has two ranges "MANUAL" and "AUTOMATIC".

With "MANUAL" in position "MAN", gears are shifted manually.

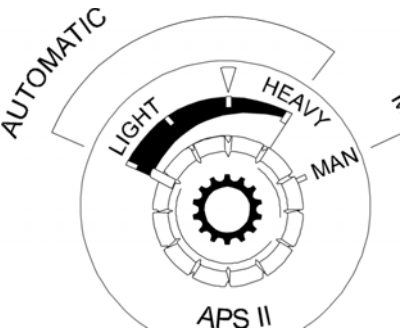


Figure 1
Mode selector, SW412

In "AUTOMATIC" there are four shifting program positions, "LIGHT position 1, LIGHT position 2, V (Normal), HEAVY", that the operator can select, depending on operating conditions.

Input signals	Output function conditions	Output functions
○ Mode selector, SW412 ○ Gear selector travel direction, SW402 ○ Gear selector, SW401B ○ Transmission disengagement, SW411 ○ Kickdown steering column, SW401C ○ Kickdown lever steering, SW410 ○ Kickdown lever console, SW405 ○ Engine brake, SW406 ○ Engine speed, SE201 ○ Travel speed, SE403 ○ Engine speed relationship	○ Mode selector in position MAN	○ Gears are shifted manually with gear selector
	Mode selector in range AUTOMATIC ○ LIGHT position 1 ○ LIGHT position 2 ○ V (Normal) ○ HEAVY	○ Directional gear F, N, R ○ Travel speed gear 1, 2, 3, 4 ○ Engine speed limitation ○ Kickdown ○ Warning overspeed transmission
	○ Transmission disengagement in position On	○ Transmission disengagement
	○ Engine brake in position On	○ Engine brake (downshifting)
	○ Kickdown activated ○ Travel speed < 9 km/h (5.6 mph)	○ Kickdown
	○ Incorrect input signal from APS II System selects LIGHT position 1	○ Amber central warning lamp
	Acknowledgement by turning off machine	-----ERROR----- APS II- switch

Mode selector in position MAN

Travel speed gears are shifted manually with gear selector SW401B to the desired gear position 1-4.

Directional gear is shifted manually with gear selector SW402 to the desired gear position F-N-R.

Engine brake (downshifting) is activated with SW406.

Kickdown is activated with SW401C or SW405 or SW410.

Transmission disengagement is activated with SW402.

Directional gear

When shifting from N (neutral) to F or R, the travel speed gear is changed from selected to engaged gear as in the following:

Selected - Engaged gear	Travel speed
1 - 2	> 9 km/h (5.6 mph)
1 - 3	> 16 km/h (9.9 mph)
1 - 4	> 34 km/h (21.1 mph)
2 - 3	> 16 km/h (9.9 mph)
2 - 4	> 34 km/h (21.1 mph)
3 - 4	> 34 km/h (21.1 mph)

Mode selector set in range AUTOMATIC, automatic shifting

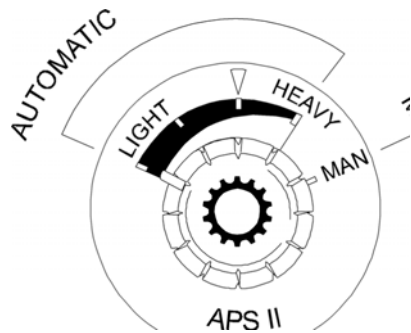


Figure 2
Mode selector, SW412

Start

When starting from a stationary machine with the gear selector in position 3 or 4, directional gear F or R is selected and the machine starts in 2nd gear. When the machine is in motion, starting takes place in 3rd gear, as in the table.

Travel speed (Rpm output shaft)	Starting gear
> 7 km/h (4.3 mph) (458 rpm)	3

Changing travel direction

Change of travel direction at lower travel speed takes place in 2nd gear. If travel speed is too high, 3rd gear is engaged first and then, when the machine is stationary, 2nd gear engages as in the table below.

Gear	Travel speed conditions
2	<= 15 km/h (9.3 mph)
3	> 15 km/h (9.3 mph)
3-2	0 km/h (0 mph)

Manual travel speed shifting with SW401B and mode selector SW412 in AUTOMATIC range

When shifting manually from one speed gear to another, the gear is changed from **Selected gear** to **Obtained gear** according to travel speed conditions in the table below.

Selected Gear	Obtained gear	Travel speed conditions
1	2	> 9 km/h (5.6 mph)
1	3	> 16 km/h (9.9 mph)
1	4	> 34 km/h (21.1 mph)
2	3	> 16 km/h (9.9 mph)
2	4	> 34 km/h (21.1 mph)
3	2	< 16 km/h (9.9 mph) and depending on upshift and downshift conditions, see below.
3	3	
3	4	> 34 km/h (21.1 mph)
4	2	< 16 km/h (9.9 mph) and depending on upshift and downshift conditions, see below.
	3	
	4	
4	3	> 34 km/h (21.1 mph) and depending on upshift and downshift conditions, see below.
	4	

Automatic shifting

Shifting is automatic. Conditions for shifting are combinations of mode selector (SW412) setting, engine speed and the machine's travel speed.

Automatic shifting takes place between gears,

Forward: 2nd – 3rd – 4th; Reverse: 2nd – 3rd – 4th.

Downshifting to 1st gear does not take place until Kickdown has been activated with any of the Kickdown controls on the steering column, lever console or lever steering (if lever steering is installed).

Upshifting to 2nd gear takes place on further activation of any of the Kickdown controls or if certain critical engine speed and travel speed limits are exceeded.

The gearshifting points vary depending on whether the engine is pulling or retarding.

At least 1 second must elapse between two upshifts or downshifts. The time between an upshift and a downshift (or the reverse) must be at least 3 seconds.

Shifting programs

- LIGHT position 1, shifting at low engine speed
- LIGHT position 2, shifting at slightly higher engine speed than in position 1
- ▽ (Normal), shifting at slightly higher engine speed than in position 2
- HEAVY, shifting at slightly higher engine speed than in position ▽

Kickdown

Kick-down means downshifting to 1st gear by activating the Kick-down function on the gear selector control, or on the control lever console. The time for downshifting to 1st gear depends on the mode selector setting as well as the engine and travel speeds.

1st gear will be engaged if the machine has a sufficiently low speed, or if the speed becomes sufficiently low, 5 km/h (3.1 mph), within 8 seconds after the Kick-down function was activated. Engagement of 1st gear is indicated by a short signal from the buzzer.

In order to then upshift to 2nd gear, the Kick-down button must be activated once again.

Changing travel direction

Change of travel direction at a lower speed takes place in 2nd gear. If travel speed is too high, 3rd gear will be engaged first and then, when speed has been reduced, 2nd gear will be engaged.

Engine retarding / downshifting

2nd gear is the basic gear in which the machine always starts when the gear selector is in the position for 3rd or 4th gear. Engine retarding is obtained when the throttle pedal is fully released and the engine retardation/downshift button SW406 is pressed. Downshifting then takes place in stages, one gear each time that the button is pressed, from 4th to 3rd and after another press of the button, from 3rd to 2nd, if the speed is below speed 22 km/h (13.6 mph).

Additional downshifting to 1st gear, see kickdown.

If the engine retarding/downshifting button SW406 is pressed in while at the same time pressing down the throttle pedal, upshifting is prevented.

NOTE!

As a safety feature, upshifting to a higher gear takes place if certain critical engine and travel speeds are exceeded.

Language Code GB	Product WLO	Group 924	https://truckmanualshub.com/	No. 9	Version 1	Date 03/08/2002
Applies to L50D Volvo, L70D Volvo, L90D Volvo, L120D Volvo						

Attachment bracket, cylinder



Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This SB is to be considered as a technical information and comprises normal warranties within the rules for the same.

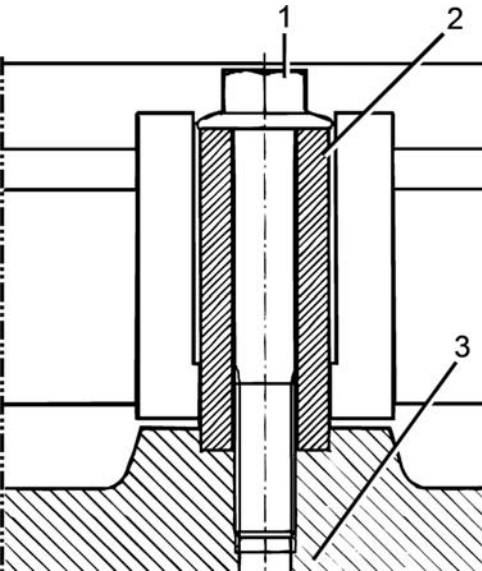


Figure 1

- 1. Bolt
- 2. Socket
- 3. Attachment bracket

Locking cylinder for attachment bracket with part Nos 80209, 80096, 80283, 80286

There have been cases where the locking cylinder in the cast attachment bracket, with part Nos 80209, 80096, 80283, 80286, has worked loose in its attachment. Because of this, the attachment has been altered in that bolt and support sleeve have been replaced. The bolt has been replaced with one with a bigger diameter and the support sleeve has been replaced with a longer sleeve. The new bolt and sleeve can also be installed on earlier attachment brackets.

Item in Fig. 1	Designation	New part No.	Discontinued part No.	Qty
1	Bolt	965196	959241	1
2	Socket	11157678	11142475	1

Working instructions

- 1. Secure the lifting frame at normal working height.
- 2. Remove the cover plate over the locking cylinder.
- 3. Remove the bolt and the sleeve, which fix the cylinder.
- 4. Drill so that the existing hole will run through the lower member of the attachment bracket, see item 3 in Fig. 1. Use an 8.5 mm drill bit.
- 5. Then make the hole wider from the other side. Use a 10.2 mm drill bit. Tap the hole to M12x1.75.
- 6. Fix the cylinder and install the new bolt 1 and sleeve 2, see Fig. 1.
Tightening torque 85 Nm (85 kgf m) (63 lbf ft).
- 7. Re-install the cover plate and restore the machine.

Language Code GB	Product WLO	Group 993	https://truckmanualshub.com/	No. 6	Version 1	Date 03/06/2008
Applies to Wheel Loaders						

Automatic greasing systems of foreign manufacture



Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.

Cause and action

It has come to our attention that our customers and dealers are equipping our machines with automatic greasing systems of foreign manufacture. The following is our policy with regards to this:

Among factors that determine the lifespan of bearings and bushings are: the type of lubrication used, dosage, frequency and operational reliability of the lubricating apparatus. Warranty responsibility presumes that we can influence factors that affect lifespan and thereby the overall quality impression given by the machine.

Operational reliability is regularly discussed with current subsuppliers of our factory-installed automatic greasing systems with a view to optimising quality. These suppliers have been specially selected because they are able to supply a product that corresponds to our quality requirements.

Consequently warranty liability concerning abnormal bearing and bushing wear and also other matters related to lubrication is acceptable only where the machine is equipped with automatic greasing systems supplied and approved by Volvo Construction Equipment.

Language Code GB	Product ART/WLO	Group 160	https://truckmanualshub.com/	No. 64	Version 2	Date 11/10/2011
Applies to Articulated Haulers, Wheel Loaders						

Automatic transmission lubricants



Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.

NOTE!

The special lubricants (SAE10W and 30) are required to be used for L330E and L350F.

Cause and action

Volvo Automatic Transmission Fluid AT101(Volvo transmission oil 97341)

AT101 is intended for use in automatic transmissions in trucks and construction equipment. AT101 is required for filling/topping up at service where we earlier made demands that the transmission oil should meet quality standards Dexron II, Dexron III, or other Dexron levels.

Performance requirements for AT101 are described in Volvo Corporate Standard 1273,41.

The recommended oil change interval for AT101 is:

- 1000 h for Articulated Haulers, E-Series.
- 2000 h for Wheel Loaders, F-series.
— **L220F with serial number 8026– excluded!**
AT101 not approved, instead AT102 MUST be used.
— **All Wheel Loaders equipped with Optishift excluded!**
AT101 not approved, instead AT102 MUST be used

NOTE!

For L330E and L350F must the Volvo Super Transmission Oil (SAE 10W and 30) be used with service interval 1000h.

A new type of transmission oil has been introduced:

Volvo Automatic Transmission Fluid AT102. (Volvo transmission oil 97342)

Performance requirements for AT102 are described in Volvo Corporate Standard 1273,42.

Volvo Automatic Transmission Fluid AT102 is factory fill for F-series Articulated Haulers and G-series Wheel Loaders.

NOTE!

The recommendation is to use AT102 when changing transmission oil for:

- Articulated Haulers, E-Series and F-Series.
- Wheel Loaders, F-series and G-series. (**L350F excluded!**)

The recommended oil change interval for AT102 is:

- 2000h for Articulated Haulers, E-series and F-Series.
- 4000h for Wheel Loaders, F-series and G-series (**L350F excluded!**)

When changing oil on machines where AT101 has been used, small amounts of remaining old oil can be mixed with the new oil AT102 without causing damage.

AT102 can also be used in connection with service on earlier generations equipped with HT-transmissions.

NOTE!

For L350F must the Volvo Super Transmission Oil (SAE 10W and 30) be used with service interval 1000h.

Part number for **AT101** in the different markets:

Europe and international	
VOE 11706206	20 litres (5,3 US gal)
VOE 11706207	208 litres (55 US gal)
North America	
VOE 11710960	1 US gal

VOE 11988312	https://truckmanuals.hub.com/	5 US gal
VOE 11988313		55 US gal
VOE 11988305		Bulk / 1 US gal each
VOE 11716497		Bulk / 1 litres each

China		
VOE 11714008		4 litres (1,1 US gal)
VOE 11714009		18 litres (4,8 US gal)
VOE 11714010		208 litres (55 US gal)

Korea		
VOE 14529828		20 litres (5,3 US gal)

Brazil		
SBR 11915161		18 litres (4,8 US gal)
SBR 11915162		208 litres (55 US gal)

Part number for AT102		
North America		
VOE 15143347		5 gal
VOE 15143064		1 US gal
VOE 15143389		55 US gal
VOE 15143406		Bulk / 1 litres each
VOE 15143493		Bulk / 1 US gal each
Europe / INT / Asia		
VOE 15142942		208 litres (55 US gal)
VOE 15142868		20 litres (5,3 US gal)

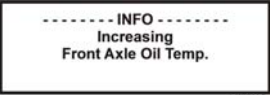
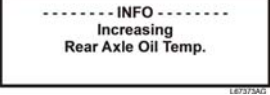
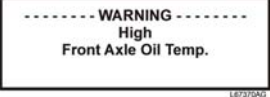
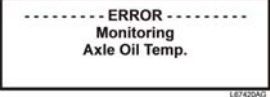
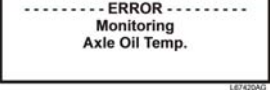
Axle oil temperature

<https://truckmanualshub.com/>

The function monitors the front and rear axle oil temperatures and informs the operator if the temperature is too high or if there is a system malfunction.

If axle oil level is high, warning is given in two levels per axle.

Front and rear axle oil temperatures are used as input signals for radiator fan control, see [Invalid linktarget].

Input signals	Output function conditions	Output functions
○ Axle oil temperature front, SE410 ○ Axle oil temperature rear, SE411 ○ Directional gear	○ Front axle temperature (SE410) exceeds 110 °C (230 °F) The alarm remains activated until the temperature drops below 108 °C (226.4 °F)	○ 
	○ The rear axle temperature (SE411) exceeds 110 °C (230 °F). The alarm remains activated until the temperature drops below 108 °C (226.4 °F)	○ 
	○ Front axle temperature (SE410) exceeds 140 °C (284 °F) The alarm remains activated until the temperature drops below 138 °C (280 °F)	○ Warning lamp ○ Red central warning lamp ○ 
	○ The rear axle temperature (SE411) exceeds 140 °C (284 °F). The alarm remains activated until the temperature drops below 138 °C (280 °F)	○ Warning lamp ○ Red central warning lamp ○ 
	Output functions as above and: ○ Directional gear in Forward or Reverse	○ Buzzer
○ Monitoring, SE410	○ System malfunction, signal outside limits	○ 
○ Monitoring, SE411	○ System malfunction, signal outside limits ^(a)	○ 

Axles, oil change

<https://truckmanualshub.com/>

Change the oil every 1000 hours.



WARNING

Hot oil can cause burns.

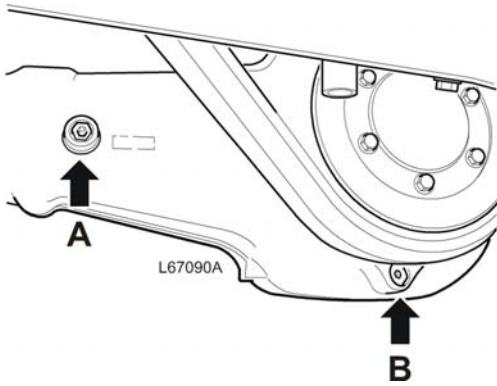


Figure 1
Rear axle

- A. Level checking and filling up
- B. draining

- Run the machine for a minute or so and check the level again. Topping up may be necessary.

Dispose of waste oil and fluids in an environmentally safe and sound manner.

Axles, capacities

Oil capacity, front axle, changing: 36 litres (9.5 US gal) (including differential carrier assembly and hub).

Oil capacity, rear axle, changing: 41 litres (10.8 US gal) (including differential carrier assembly and hub).

Oil grade, see [Invalid linktarget].

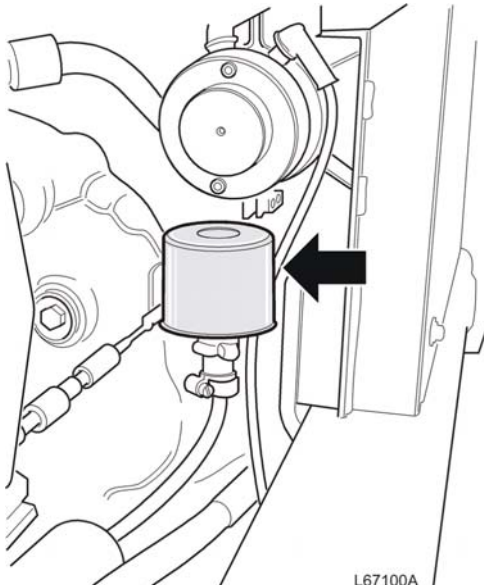


Figure 2
Breather filter, rear axle

Breather filter, axles

Change the filter every 2000 hours.

The rear axle breather filter is located behind the engine cover on the right-hand side of the machine.

The front axle breather filter is located behind the front cover under the boom.

Lubrication of the propeller shafts

Lubricate the axles every 500 hours.

<https://truckmanualshub.com/>

Back-up alarm

<https://truckmanualshub.com/>

The function informs bystanders and surroundings that the machine is reversing.

Input signals	Output function conditions	Output functions
Directional gear	Directional gear in position Reverse	Reversing alarm SE 803

Back-up valve, opening pressure, checking

Op nbr

[11 666 018 Pressure gauge, range 0–2.5 MPa \(0–363 psi\)](#)

[11 666 037 Hose](#)

The following applies when checking:

Temperature: **Normal operating temperature**

Engine speed: **Low idle speed**



The bucket must be tilted forward. If the bucket is tilted back, pressure may increase to maximum working pressure and damage the pressure gauge.

1. Lower the lift arms so that the bucket is positioned flat on the ground.
2. Connect a pressure gauge to the pressure outlet.
3. Start the engine and let it run at low idle. Tilt forward slowly so that the machine is raised and read off the pressure.
Opening pressure: **1.0–2.0 MPa (145–290 psi)**

NOTE!

The valve is not adjustable.

Language Code GB	Product WLO	Group 321	https://truckmanualshub.com/	No. 25	Version 1	Date 06/17/2013
Applies to Wheel Loaders						

Battery and alternator test procedure

NOTE!

Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.

Cause

Some alternators without any failure have been returned. Also batteries without failure have been replaced.

Action

Before replacing alternators and/or batteries, follow the work instruction in this Service bulletin. Both alternator and battery can be checked under field conditions to find the root cause by following the work instruction.

The work instruction is valid for all 24 Volt machines.

Work instruction

Tools	Part No.
Multimeter	88890074
Clip-on ampere meter	88890091

Battery capacity check

Op nbr



1. V1131869

Figure 1

The battery should not be used for minimum 2 hours before the test.

2. Test the battery voltage.

Battery voltage	Equivalent approx. capacity
25.44 V	100%
24.24 V	50%
23.20 V	5–10%

NOTE!

If the battery voltage is low, check if the batteries need to be charged. If so, check the battery voltage again after charging. If the voltage is still low, the batteries are damaged and should be replaced.

Alternator check

Op nbr

1. Check the battery voltage (see above).

- <https://truckmanualshub.com/>
2. Start the engine and raise the engine rpm for a short time (charging warning lamp off).
 3. Switch off all possible electrical consumers.
 4. Monitor the battery voltage for approx. 2 minutes on low idle.
 5. The battery voltage should increase depending on the battery capacity. The voltage should reach between 26.00 V – 28.50 V.

NOTE!

If the battery voltage does not increase with the engine running, the alternator is damaged and should be replaced.

Alternator output check



Figure 2

Op nbr

1. Install the clip-on ampere meter (testing range 100 A) on the alternator wire B+, connect the clip-on ampere meter to the multimeter for displaying the value.
2. Start the engine and raise the engine rpm for a short time, check that the charging warning lamp is off.
3. With the engine on low idle, check the alternator output current on the multimeter. Note the value.
4. Switch on as many electrical consumers as possible, e.g. the cab fan on max speed and lamps (head lamps, working lamp on cab and fenders).
5. Raise the engine rpm to maximum (high idle).
6. With the engine on high idle and electrical consumers on, check the alternator output current on the multimeter. Note the value. The output value on high idle should be higher than on low idle. (Each lamp raises the current with approx. 2.5 A. If work lamp on cab front and fenders are on at the same time as the headlamps and fan, the high idle value shall be 10–20 A higher.)
7. After check, shut down the engine and remove tools.

NOTE!

If the alternator output is the same, or not significantly higher on high idle with electrical consumers on than on low idle, the alternator is damaged.

Battery, charging

<https://truckmanualshub.com/>

WARNING

During battery charging, hydrogen is formed. Hydrogen is flammable and may be explosive. A short circuit, open flame or spark near the battery can cause a powerful explosion. Therefore, ventilate well. Never smoke near batteries.

- Batteries must only be charged using a battery charger.
- Check the battery terminal connections and make sure that they are adequately tightened and free from corrosion and dirt.
- Check the battery voltage when the batteries are at rest, that is, before starting. Each battery must be at least half-charged.

CAUTION

Always disconnect the electric power to the battery charger before the charging clamps are removed.

WARNING

Corrosive sulphuric acid

The battery electrolyte contains corrosive sulphuric acid. Electrolyte spilled on bare skin must be removed immediately. Wash with soap and plenty of water. If electrolyte has splashed into the eyes or on any other sensitive part of the body, rinse immediately with plenty of water and contact a physician immediately.

Battery, description

<https://truckmanualshub.com/>

The battery consists of two 12 V batteries connected in series, which together give 24 V with a capacity of 340 Ah. The batteries are located one on each side of the rear frame, behind the rear wheels, with the battery disconnect switch located at the rear of the machine on the right side under the radiator casing.

The batteries must be in good condition when troubleshooting is performed on the electrical system. If necessary, charge the batteries with a battery charger. If the batteries fail to accept charging, check the level of the electrolyte in the battery cells.

Battery, specifications

<https://truckmanualshub.com/>

Battery	
Number of thermostats	2 batteries connected in series
Battery disconnect switch (Frame connection)	Connected to negative terminal
Voltage	12 V
Battery capacity	2 x 170 Ah

Charge level	Voltage
Fully charged battery	12.7 V
Half-charged battery	12.4 V
Discharged battery	11.6 V and lower

Battery electrolyte density	
Fully charged battery	1.275 –1.285 kg/dm³
The battery must be recharged at	1.250 kg/dm³

Language Code GB	Product WLO	Group 160	https://truckmanualshub.com/	No. 17	Version 2	Date 04/01/1999
Applies to 4200 Volvo BM, 4200B Volvo BM, 4300 Volvo BM, 4300B Volvo BM, 4400 Volvo BM, 4500 Volvo BM, 4600 Volvo BM, 4600B Volvo BM, 6300 Volvo BM, EL70 Volvo BM, EL70C Volvo BM, L50 Volvo BM, L50B Volvo BM, L50C OR Volvo, L50C Volvo, L50C Volvo BM, L50D Volvo, L70 Volvo BM, L70B Volvo BM, L70C Volvo, L70C Volvo BM, L70D Volvo, L90 Volvo BM, L90B Volvo BM, L90C OR Volvo, L90C Volvo, L90C Volvo BM, L90D OR Volvo, L90D Volvo, L120 Volvo BM, L120B Volvo BM, L120C Volvo, L120C Volvo BM, L120D Volvo, L150 Volvo BM, L150C Volvo, L150C Volvo BM, L150D Volvo, L160 Volvo BM, L180 CO Volvo BM, L180 HL Volvo BM, L180 Volvo BM, L180C CO Volvo, L180C HL Volvo, L180C Volvo, L180C Volvo BM, L180D HL Volvo, L180D Volvo, L220D Volvo, L330C LL Volvo, L330C Volvo, L330C Volvo BM, L330D Volvo						

Biodegradable hydraulic fluids



Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

Since the middle of the 1980's, our customers have expressed the desire to use biodegradable hydraulic fluids for our construction equipment. To meet the requirement Volvo approved first a synthetic ester in 1992 and then another one in 1995.

The reason why Volvo has not been able to issue a general approval but has been compelled to mention two makes, is partly due to the uneven quality of the fluids and the complexity of international standards.

To come to grips with this problem and at the same time contribute to a greater increase in the use of biodegradable fluids, VCE has published a technical regulation, no. 766107, see appendix to this SB.

The technical regulation, which contains technical criterias on biodegradation and toxicity, should be applied as follows:

A biodegradable hydraulic fluid, that complies with technical regulation 766107, can be filled in a wheel loader on the aftermarket on condition that the following points are fulfilled:

- A written assurance from the suppliers that their product complies with regulation 766107.
- When the hydraulic fluid is filled in a machine for the first time, filling must follow the instructions in SB L-160-WLO 09, see pages 2 and 3.
- Should a fault occur in the machine's hydraulic system that is caused by the use of an hydraulic fluid not approved according to this SB, any compensation claims in connection herewith will not be accepted.

NOTE!

This applies to the after-market and not to filling at the factory.

Where a machine is ordered with biodegradable hydraulic fluid, it will be filled with an hydraulic fluid that is approved by Volvo for filling at the factory. The following hydraulic fluids are currently approved for filling at the factory:

- BP Biohyd SE-S 46
- Panolin HLP synth 46

Both these fluids can also be filled on the after-market without any prior approval of the hydraulic fluid manufacturer.

Instructions



The greatest possible care must be used when emptying the system of old fluid before filling with the new fluid, since the additives in both fluids can negatively affect the individual qualities of the fluids.

With fluid change, biodegradable fluid shall be regarded as environmentally dangerous waste. This means that it may not be emptied into the ground. The criterias are the same as those that apply to waste oil.

Storage: Biodegradable fluid shall be stored in sealed containers to prevent water absorption. Avoid exposing biodegradable fluid to sunlight and large swings in temperature.

NOTE!

Biodegradable oil may only be used in the hydraulic system.

Technical requirements for biodegradable hydraulic fluid

The fluid is intended for use as a pressure medium in mobile system for construction equipment, where high requirements for a good protection against wear at a wide temperature range have been specified.

Working conditions

Temperature Working temp.: 20 °C to 90 °C

Ambient temp.: -40 °C to 50 °C
<https://truckmanualshub.com/>
 Max. peak temp.: 110 °C

Type of systems Open centre system, open circuit
 Load-sensing closed centre system, open circuit
 Hydrostatic transmission, closed circuit

Reservoir The reservoir is placed over the pumps. Atmospheric pressure in the reservoir, which is zinc-phosphated on the inside.

Filter Full-flow cartridge inside the reservoir. Filter capacity down to 10 µm absolute.
 Bypass pressure 0.08 - 0.15 MPa (0.8 - 1.5 bar). Max. degree of contamination 18/13 according to ISO 4406.

Technical criterias ^{1, 2}

Property	Unit	Requirement		Test method
		46	68	
Density at 15 °C	kg/m³	Specify	Specify	ISO 3675
Viscosity in delivery condition, at: 40 °C 100 °C -20 °C	mm³/s (cSt)	41,4 - 50,6 Specify Max. 2400	61,2 - 74,8 Specify Max. 5000	SS-ISO 3104
Shearstability		Reported	Reported	CEC-L-45-T93/ DIN 52350, part 6, 20 hours.
Viscosity at 100 °C after shearing as per above.	mm³/s (cSt)	Min. 7,0	Min. 8,0	SS-ISO 3104
Viscosity after 72 hours at: -20 °C.	mm³/s (cSt)	Max. 2400	Max. 5000	SS-ISO 3104 Cooling, etc. ASTM D 2532
Pour point	°C	Max. -39	Max. -36	ISO 3016
Flash point, open cup	°C	Min 200		ISO 2592
Air separation at 50 °C	Min.	Max. 7	Max. 10	DIN 51381
Copper corrosion		Max. 1b		SS-ISO 2160 100 °C, 3 ηουρσ
Rust protection, steel		Approved		ISO 7120 A, 24 ηουρσ, 60 °C
Elastomer	Shore	Difference in hardness, max. 10		ISO 1817 NBR at 100 °C, 1000 ηουρσ
	%	Difference in volume, max.-3/+10		
		Tensile strength max., max. 50% reduced		
		Elongation at fracture, max. 50% reduced		
Foam	ml	Max. 150/0		ASTM D 892-89 Sequence I
		Max. 75/0		Sequence II
		Max. 150/0		Sequence III

Property	Unit	Requirement		Test method
		46	68	
Water separation	Min.	Max. 30		ASTM D 1401 to 40-40-0
Filterability	%	Min. 80		CETOP RP124H Step I
		Min. 60		Step II
Anti-wear, properties	mg	Total weight loss vanes, max. 15 Weigh loss ring, max. 75		Vickers M-2952-S
Load carrying capacity, FZG	Load stage	> 10		DIN 51354

Hydrolysis stability	mgKOH/g	Increasing TAN max. 2.0 measured in the oil part https://truckmanualshub.com/	RR 1006 ⁷ 120 hours, 90 °C, 10 % H ₂ O.
Mixing		No technical problems with hydraulic fluids.	
Water content	PPM	Max. 300	DIN 51777
Low temperature		Fluid must be clear and bright after storage at -25 °C for 7 days.	
Degree of contamination at delivery		Max. 15/13	ISO 4406
Oxidation stability	h	Min. 1000	ASTM D943, to increasing TAN 2.0 Modified ⁸

Environment criterias ³

Main components 5 - 100 %

Biodegradability > 60 % according to OECD-test 301 for poorly soluble substances for each of the main components ⁴.

Acute aquatic toxicity (toxicity degree to water) (LC₅₀/EC₅₀) > 100 mg/ml for each of the main components ⁵.

Minor components 0 - 5 %

Criteria for minor components are valid up to a total maximum of 5 % of the product.

Components with acute aquatic toxicity (toxicity degree to water)

(LC₅₀/EC₅₀) > 1 mg/ml are only allowed up to a total maximum of 1 % of the product ⁵.

Whole product

The product may not contain components that leads to classification dangerous to the health (Xn), irritant (Xi) or worse. (Classification according to KIFS 1994:12, National Chemicals Inspectorate of Sweden ⁶.)

The product should be approved according to the "Blue Angel", RAL-UZ 79.

Notes

- The technical criterias are based on the SMR (Swedish Society of Mechanical Engineers) standard for hydraulic fluids, 1996-2.
- The test should be done by a EN45000 or GLP certified laboratory.
- These criterias are the same as those in the Swedish National Standard SS 15 54 34.
- For the time being OECD 301B may be used. If the product contains more than one component, biodegradation data must be shown for each component.
If only one main component is included, biodegradation data on the whole product is acceptable. Acceptable if the "time window" of 10 days in the OECD test 301 is not completely fulfilled, on condition that 60 % or more of the component is degraded after 28 days and an ultimate degradation course is indicated. results according to test method CEC-L-33-A-93 must either be supplemented with DOC studies of the water phase in the test, or be correlated to an OECD 301 test for that type of component. Biodegradation test corresponding to OECD 301 according to ISO-EU standard may be accepted. Biodegradation tests must be carried out by laboratories certified according to EN45000 or Good Laboratory Practice (GLP).
- Acute aquatic toxicity can be measured according to OECD - 201, 202 or 203. Other standardized test methods may be accepted such as ISO, DIN, EPA-FIFRA standards. Chronic toxicity can be studied as alternative or complement. In this case NOEC should be > 0,01mg/l when using an OECD test. Test carried out according to the WAF-principle (Water Accomodated Fraction) is acceptable for separate components. Testing should generally be done at laboratories certified according to EN45000 or Good Laboratory Practice (GLP). Of technically comparable additives, the less harmful should be chosen.
- The Swedish Chemicals Inspectorate regulations KIFS 1994:12.
Some interpretations are:
Substances mutagenic to man: < 0,1 % of the product.
Substances with high/medium high cancerogeni potential to man:
< 0,1 % of the product.
Substances teratogenic to man: < 0,5 % of the product.
Substances allergic by inhalation or skin contact: < 1 % of the product.
Substances irritating skin, eyes and respiratory system: < 20 % of the product.
Definition of above features of substances is also done according to KIFS 1994:12.
- If it is impossible to run the RR 1006-test, the hydrolysis stability has to be verified in another documented test.
- Follow the procedure in ASTM D943 except for the addition of water.

Boom Suspension System (BSS)<https://truckmanualshub.com/>

The purpose of the function is to activate and deactivate the boom suspension system and to inform the operator about activation or if there is a system malfunction.

Switch SW907 is used to activate the Boom Suspension System while switch SW908 is used to select speed-dependent or gear-dependent Boom Suspension. The Boom Suspension System is engaged in accordance with the conditions in the following table.

Whether boom suspension is engaged or disengaged can be seen on the display panel under the HYDRAULICS function group, see [\[Invalid linktarget\]](#).

Input signals	Output function conditions	Output functions
○ Boom suspension system, SW907 ○ Boom suspension system, SW908 ○ Engine On/Off ○ Travel speed, SE403 ○ Kickdown ○ Directional gear ○ Active gear	Travel speed dependent: ○ SW907 in activated mode (boom suspension system control lamp on) ○ SW908 in Boom Suspension System travel speed dependent mode[T1] ⓘ ○ Engine On ○ Travel speed > 6 km/h (3.7 mph)	○ Activation of boom suspension system ○ Information display "HYDRAULICS" BSS ON
	Deactivation if one of the following conditions is fulfilled: ○ Directional gear in position F and travel speed < 5 km/h (3.1 mph) ○ Directional gear in position R and travel speed < 2 km/h (1.2 mph) ○ Directional gear in position N and travel speed < 2 km/h (1.2 mph)	○ Disengagement Boom Suspension System ○ Information display "HYDRAULICS" BSS OFF
	Gear dependent: ○ SW907 in activated mode (Boom Suspension System control lamp on) ^(a) ○ SW908 in Boom Suspension System gear-dependent mode ○ Engine On ○ Gear not in position F1 or R1 ○ Kickdown not requested	○ Activation of boom suspension system ○ Information display "HYDRAULICS" BSS ON
	Deactivation if one of the following conditions is fulfilled: ○ Gear in position F1 or R1 ○ Kickdown requested	○ Disengagement Boom Suspension System ○ Information display "HYDRAULICS" BSS OFF
○ Monitoring, RE7	○ System malfunction, open circuit or short circuit	○ Amber central warning lamp ○ -----ERROR----- Relay BSS

[T1]The control lamp is on constantly when the function is activated.

Boom Suspension System (BSS400), checking function

Op nbr

Checking pressure limitation

1. Start the engine and raise the lift arms to the horizontal position.
2. Charge the accumulator unit by tilting in (roll-back) against stop for approx. 4 seconds at full throttle. Then tilt away from the stop.
3. Activate the boom suspension system with the switch SW907.
The lift arms must not move. The pressure balance is then correct.
NOTE! Switch SW908 should not be activated (pressed in at the top).

Checking flow path between lift cylinder and accumulator

4. Switch SW908 should not be activated (pressed in at the top).
5. Fit a standard bucket and place it in a level position approx. 100 mm (4 in) above the ground.
6. Tilt the bucket forward so that the front wheels start to lift off the ground.
7. Engage the float position with switch SW903 and the machine should "fall" to the ground.
8. Engage the boom suspension system with switch SW907 and disengage the float position, switch SW903. The engine should run at idle speed.
9. Tilt in (roll-back) the bucket to the level position. The lift arms should "give" so that the bucket sinks to the ground. If this occurs, the flow path is correct.

Checking electrical functions

10. Switch SW908 is not activated (pressed in at the top, Kick-down dependent disengagement of boom suspension system).
11. Raise the lift arms to horizontal position. Activate the boom suspension system with switch SW907 and tilt in (roll-back) against the stop and hold the lever in that position.
Go to the "Hydraulics" menu on the operator display unit.
12. The lift arms must not move. (Indicator light is always green).
Menu "Hydraulics" should show that BSS is activated (on).
13. Place the bucket in a level position, approx. 100 mm (4 in) above ground.
Tilt the bucket forward (against the ground). The lift arms should "give" and move upward. The "Hydraulics" menu should show that BSS is activated (on).
14. Place the bucket in a level position, approx. 100 mm (4 in) above ground.
Apply the parking brake. Engage 1st gear. Tilt the bucket forward (against the ground). The lift arms should be rigid and not move upward.
The "Hydraulics" menu should show that BSS is not activated (off).
15. Place the bucket in a level position, approx. 100 mm (4 in) above ground. Servo levers in neutral position.
Deactivate the boom suspension system with switch SW907. The indicator light goes out.
16. Engage 1st gear and activate the Boom Suspension System. The indicator light should shine with a fixed green light.
Turn off the engine and check that the boom suspension system is disengaged when the ignition key is turned to position 1; indicator light goes out.
17. Start the engine and activate switch SW908 (lower part pressed in, speed dependent disengagement of boom suspension system) at approx. 5 km/h (3.1 mph).
18. Engage the boom suspension system with switch SW907.
The "Hydraulics" menu should show that BSS is not activated (off).

19. Fill the bucket with a full load. Operate the machine forward at a speed exceeding 5 km/h (3.1 mph).
Menu "Hydraulics" should show that BSS is activated (on).
<https://truckmanualshub.com/>
20. Reduce speed to below 5 km/h (3.1 mph).
The "Hydraulics" menu should show that BSS is not activated (off).
21. Operate the machine at a speed exceeding 5 km/h (3.1 mph).
Menu "Hydraulics" should show that BSS is activated (on).
22. Reduce speed to below 5 km/h (3.1 mph).
The "Hydraulics" menu should show that BSS is not activated (off).

Checking BSS function when operating with a load

23. Start the machine, switches SW907 and SW908 not activated. Green indicator light is off.
24. Fill the bucket with a full load. Raise the lift arms to carry position.
NOTE!
Do not tilt the bucket against the stop.
25. Engage 2nd gear and operate the machine at 0–10 km/h (0–6.2 mph).
The lift arms should not move. The green indicator light is off.
26. Activate switch SW907. Repeat step 3.
Menu "Hydraulics" should show that BSS is activated (on).
27. Engage 1st gear and activate switch SW907. Repeat step 3.
The "Hydraulics" menu should show that BSS is not activated (off).
28. Activate switches SW907 and SW908.
29. Engage 1st gear and operate the machine at a speed of 0 - 10 km/h (0 - 6.2 mph).
Check the following:
Speed below 5 km/h (3.1 mph). The lift arms should not move.
The "Hydraulics" menu should show that BSS is not activated (off).
Speed over 6 km/h (3.7 mph). The lift arms should move (spring action).
The "Hydraulics" menu should show that BSS is activated (on).

Boom Suspension System (BSS400), electrical system description

Electrical system

NOTE!

Boom Suspension System (BSS400) is described in wiring diagram 23.

Gear-dependent disengagement, upper end of SW908 pressed in

Activate the Boom Suspension System by pressing in switch SW907 and releasing it. When SW907 is pressed in, a voltage pulse is fed to connection EA23 on the V-ECU. From connection EC10 on the V-ECU, connection 86 on relay RE7 is fed with a hold current.

RE7 is activated and current is now fed via fuse FU2 to relay RE7, (30 - 87 are connected), solenoid valves MA910, MA911 and MA908 are fed and the system is engaged.

The indicator light is illuminated with a fixed glow on the centre instrument panel by the I-ECU.

If 1st gear is selected, the V-ECU interrupts the fed to 86 on RE7 and thus the current to solenoid valves MA910, MA911 and MA908 is interrupted, and the system is disengaged.

The operator's display "Hydraulics" shows that BSS is not activated (off).

The indicator light will still light with a fixed glow.

The system will automatically be engaged again when 2nd, 3rd or 4th gear is selected.

The operator display unit "Hydraulics" will show that BSS is activated (on).

Speed dependent disengagement, lower end of SW908 pressed in

When the lower end of switch SW908 is pressed in, the I-ECU receives a voltage signal on connection P2.4 via fuse FU30. This signal indicates to the system that it should be disengaged if the travel speed is below approx. 5 km/h (3.1 mph).

The operator display unit "Hydraulics" will show that BSS is not activated (off).

When the travel speed is above 5 km/h (3.1 mph), the system will be engaged again.

The operator display unit "Hydraulics" will show that BSS is activated (on).

The indicator light will light the whole time with a fixed glow.

Deactivating Boom Suspension System

Deactivate the Boom Suspension System by pressing in switch SW907 and then releasing it. Via the V-ECU, the current is interrupted to connection 86 on RE7 which is deactivated and interrupts the current to solenoid valves MA910, MA911 and MA908, and the system is disengaged.

The operator's display "Hydraulics" shows that BSS is not activated (off).

The indicator light will go out.

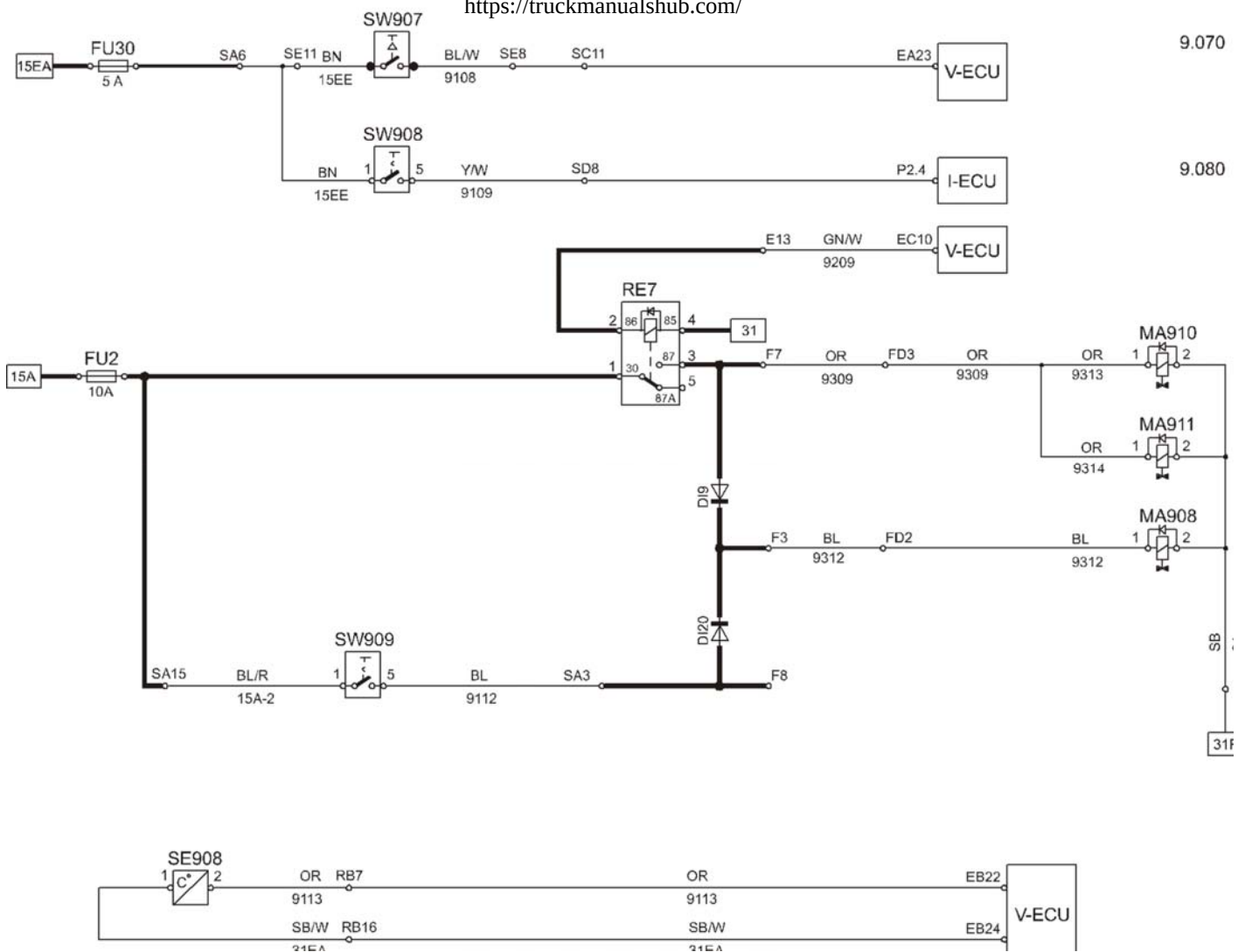


Figure 1
Wiring diagram 23 Boom Suspension System

Boom Suspension System (BSS400), hydraulic system description

System deactivated

Logic element 1 is closed because MA911 is open and MA910 is closed.

When the system is not activated, the pressure will be different in the lift cylinders and the accumulator.

For logic element 1 to remain closed, its top must be connected to the unit with the highest pressure.

If the lift cylinders have the highest pressure, the connection will be via restriction C10, MA911 and non-return valve CT6. The small logic element 2 is then closed.

If the accumulator has the highest pressure, the connection will be via logic element 2 as it then is open.

Non-return valve CT6 prevents flow through the back way from the accumulator to the lift cylinders.

Valve block, single-acting lift

Logic element 3 is closed when MA908 is closed.

Charging accumulator(s)

The accumulator(s) are charged when the system is not activated.

This is in order to prevent the lift arms (the boom) from sinking when the system is engaged.

Charging is done via pressure reducing valve (CT8), pressure copying valve (CT7) and non-return valve (CT5) when the pressure from the working hydraulics pump exceeds the pressure in the accumulator(s).

Charging can only take place when the system is temporarily disengaged or not activated.

When the system is active, pressure copying valve (CT7) is open as long as the pressure in the accumulator(s) is less than the pressure in the lift cylinders. That is, pressure copying valve (CT7) makes sure that the maximum pressure created in the lift cylinders is copied to the accumulators.

Pressure reducing valve (CT8) limits the maximum charging pressure to 12 MPa (1740 psi), which corresponds to the pressure needed in the lifting cylinders to support the maximum load.

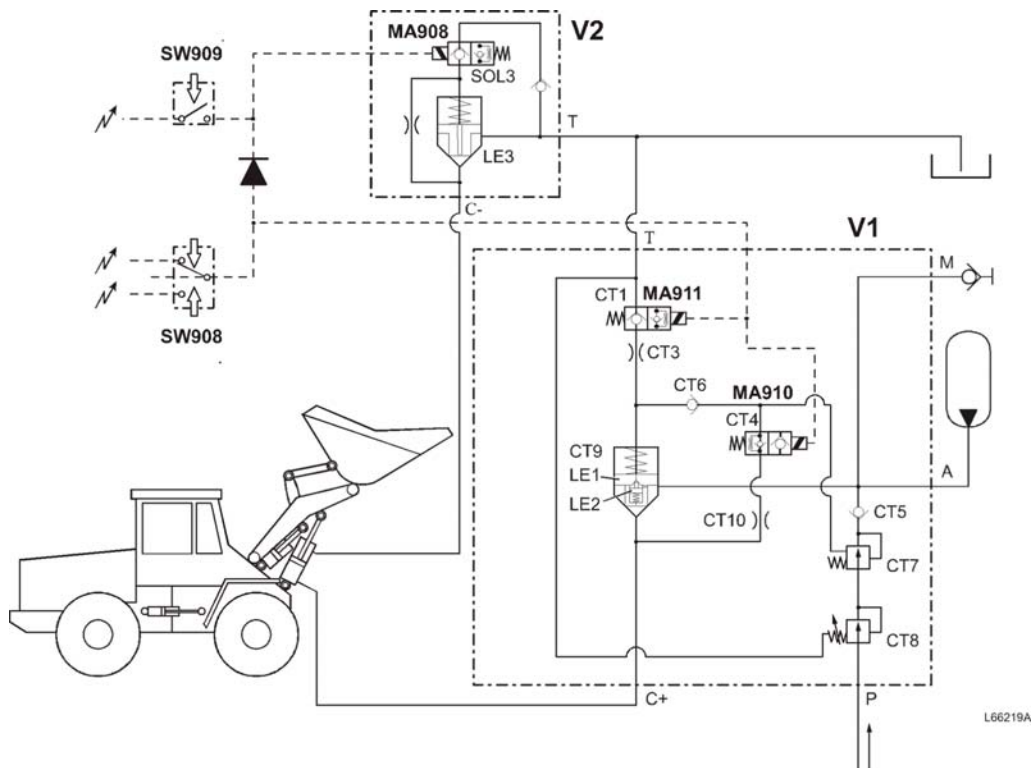


Figure 1
Boom Suspension System, overview

SW908	Switch, function selection, gear dependent alternatively speed dependent
SW909	Switch, single-acting lift function
V1	Valve block for Boom Suspension System
V2	Valve block for single-acting lift function

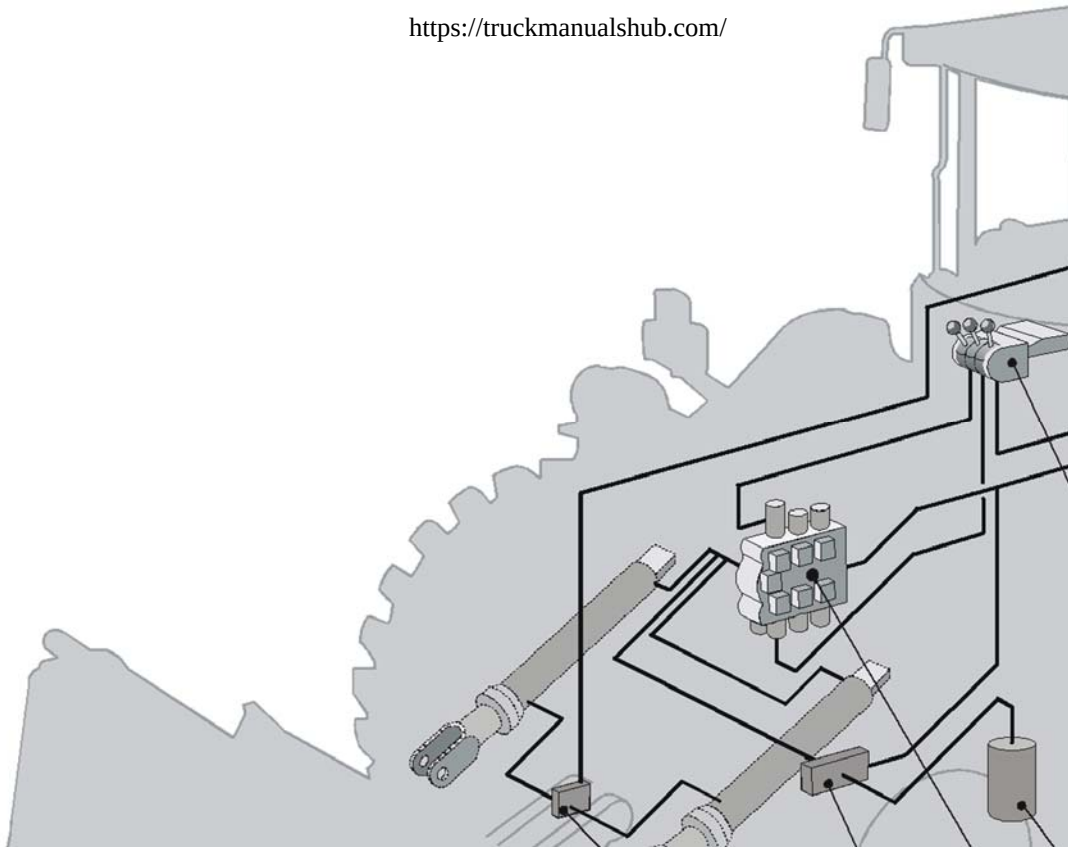


Figure 2
Boom Suspension System, BSS

1. BSS, valve block V2
2. BSS, valve block V1
3. Control valve
4. Accumulator
5. Servo valve
6. Hydraulic oil pump
7. Hydraulic oil tank

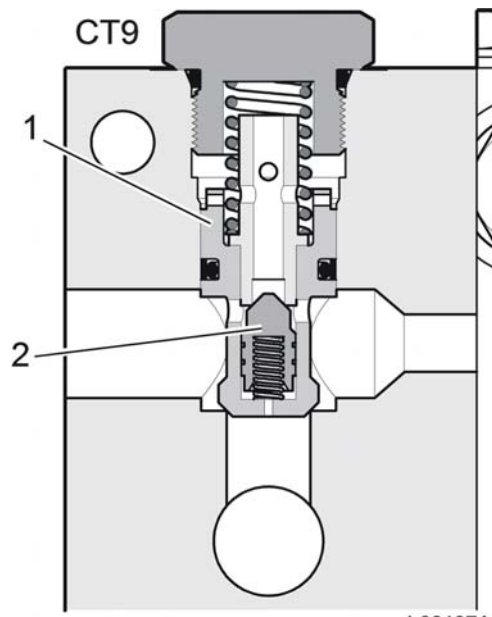


Figure 3
Logic element in port CT9

CT9

Logic element 1 and logic element 2

1
2

Logic element 1
Logic element 2

<https://truckmanualshub.com/>

Activating the system

Valve block Boom Suspension System, V1

Before activation takes place and if the accumulator and the lift cylinders have the same pressure, then logic element 2 is closed.

The top of logic element 1 is then connected to the lift cylinders via restriction (CT10), MA911 and non-return valve (CT6).

When the system is activated, MA911 and MA910 close, causing the top of logic element 1 to be drained to tank via restriction (CT3) and MA910.

This means that logic element 1 opens and a connection is established between lift cylinders and accumulators.

Before activation takes place and if the accumulator pressure is higher than in the lift cylinders, then logic element 2 is open.

The top of logic element 1 is then connected to the accumulator via logic element 2.

When the system is activated, MA911 closes and MA910 opens, causing the top of the logic element to be drained to tank via restriction (CT3) and MA910.

Since logic element 1 is open, oil is fed from the accumulators to the top of logic element 1 and thus, the top of logic element 1 will have the same pressure as the accumulators (restriction CT3 maintains the pressure).

In this way, logic element 1 remains closed until the accumulators have been drained to the pressure level existing in the lift cylinders. When this happens, logic element 1 is closed, which means that the top of the logic element is drained via restriction (CT3) and MA910. Logic element 1 opens and a connection is obtained between lift cylinders and accumulators. In this manner, a balance in pressure is obtained between accumulators and lift cylinders before a connection is created.

Without pressure balancing, the oil from the accumulators would flow in to the lift cylinders and the lift arms would then rise in a quick and uncontrolled movement.

Valve block, single-acting lift, V2

Logic element 3 is opened when MA908 is opened. When this occurs, a connection is created between piston rod ends (-) of the lift cylinders and the tank. The lift arms have unrestricted upward movement when there is a springing action of the lift arms.

If only single-acting lift is desired without after-filling on the +sides of the lift cylinders, MA908 can be activated by itself with a switch on the right instrument panel (depending on machine model).

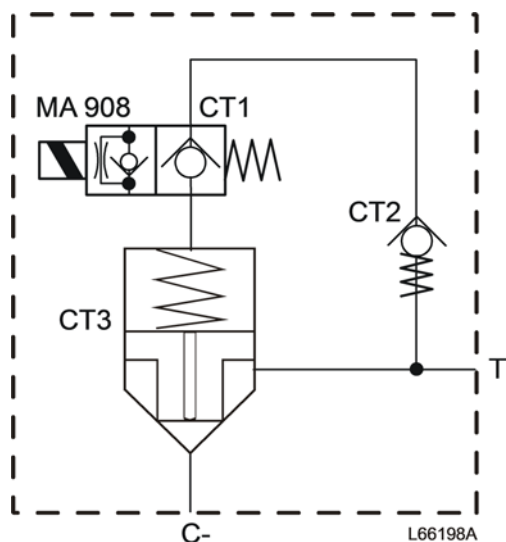
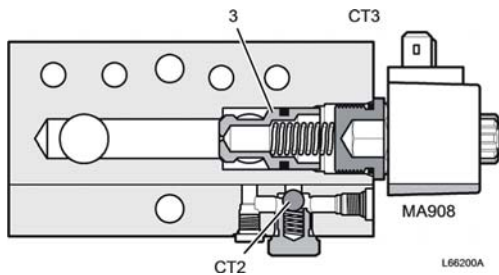


Figure 4
Hydraulic diagram with marking of ports on valve block V2

- | | |
|-----|---------------------------------------|
| CT1 | Position of MA908 |
| CT2 | Non-return valve |
| CT3 | Position of logic element 3 |
| C- | Connection to -side of lift cylinders |
| T | Connection to tank |



<https://truckmanualshub.com/>

Figure 5
Valve block single-acting lift, V2

CT2	Non-return valve
CT3	Position of logic element 3
3	Logic element 3

Description of fault symptoms, BSS

RE7 is monitored by V-ECU. In the event of a break or short circuit in the coil, the message "ERROR Relay BSS" will appear on the display panel in the cab.

If a fault develops in the individual solenoid valves the following description of symptoms may be of help in determining where the fault is located.

MA908 (closed in disengaged position)

1. MA closed in engaged position
 - Boom Suspension System functionality poor or non-existent
 - single-acting lift inoperative

2. MA jammed in open position

- the machine cannot be lifted by means of the lift unit with disengaged Boom Suspension System because no pressure build-up can be achieved.

MA910 (closed in disengaged position)

1. MA closed in engaged position
 - Boom Suspension System functionality poor or non-existent

Check functionality by undoing the connection to MA 911 and then engaging the Boom Suspension System. If the lifting arms sink, MA 910 is open and consequently in working order.

2. MA jammed in open position

- the lifting arms sink with the Boom Suspension System disengaged. The accumulators cannot be precharged.

MA911 (open in disengaged position)

1. MA open in engaged position
 - the lifting arms sink with the Boom Suspension System engaged.

2. MA jammed in closed position

- The lifting arms can sink just when the Boom Suspension System is engaged.

Pressure copying valve CT7

1. If the pressure copying valve has jammed in the closed position, the lifting arms may sink on engagement of the Boom Suspension System.

2. If the pressure copying valve has jammed in the open position it may cause a slight delay in engagement of the Boom Suspension System because the accumulator has to be drained via LE2. The accumulator will be charged with 120 bar (174 psi) irrespective of the pressure prevailing in the lifting cylinder if any hydraulic function is run.

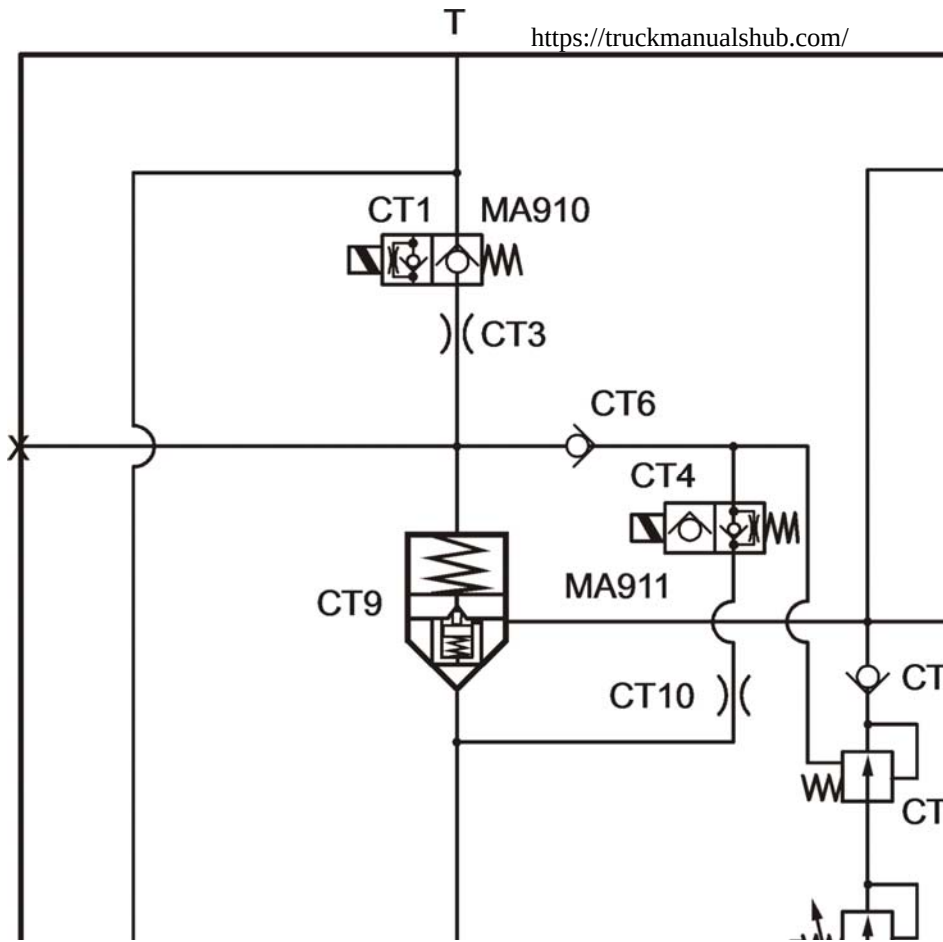


Figure 6
Hydraulic diagram with marking of ports on Boom Suspension System valve block, V1

CT1	Position of MA910
CT3	Restriction
CT4	Position of MA911
CT5	Non-return valve
CT6	Non-return valve
CT7	Valve for copying max. pressure in lift cylinder to accumulator
CT8	Pressure reducing valve
CT9	Logic element 1 and logic element 2
CT10	Restriction
T	To tank
M	Pressure check connection
A	To accumulator
C+	To lift cylinder +side
P	Oil from pump

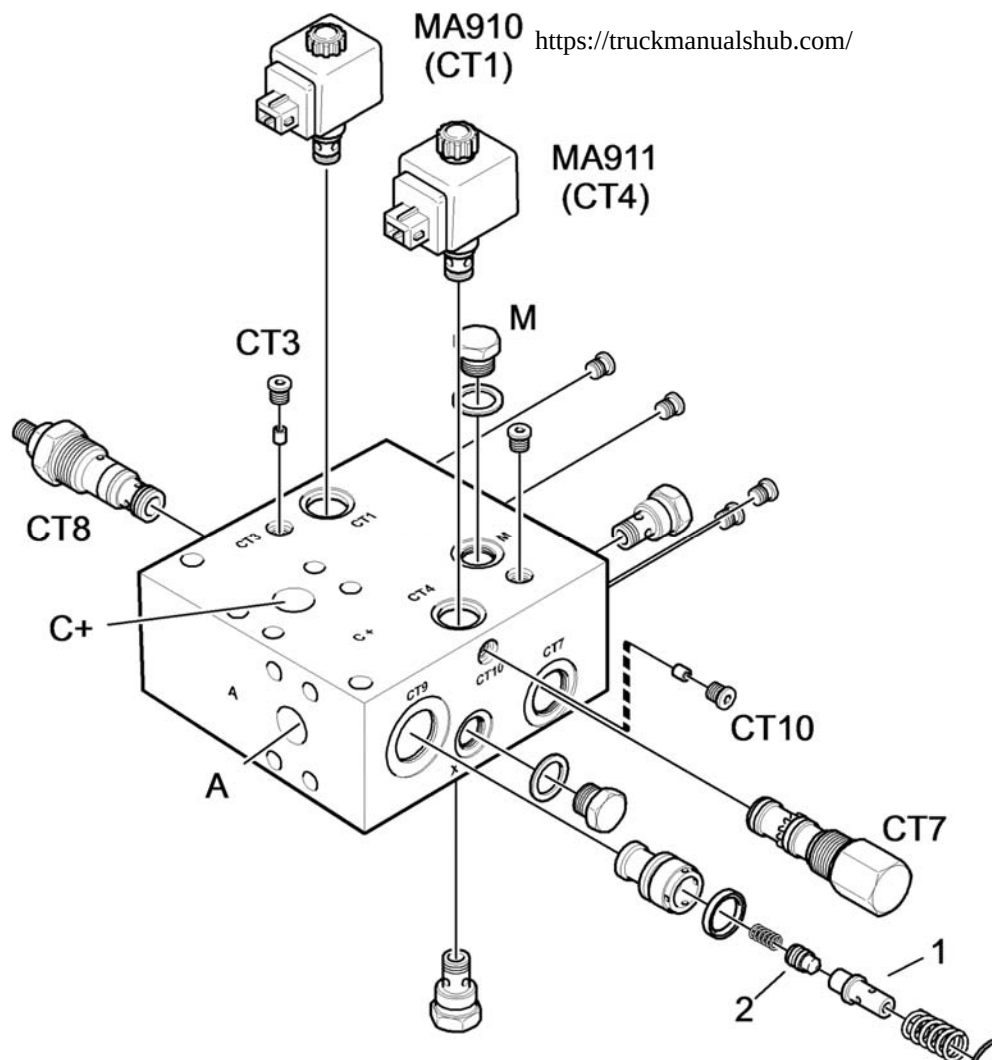


Figure 7
Component positions on valve block, V1

CT1	Position of MA910
CT3	Restriction
CT4	Position of MA911
CT7	Valve for copying max. pressure in lift cylinder to accumulator
CT8	Pressure reducing valve
CT9	Logic element 1 and logic element 2
1	Logic element 1
2	Logic element 2
CT10	Restriction
M	Pressure check connection
A	To accumulator
C+	To lift cylinder +side

Boom Suspension System (BSS400), <http://truckmanualshub.com/>

BSS400 makes operation with or without a load even and smooth at all speeds and prevents the machine from bouncing and rocking.

The system consists of 1 accumulator which is in communication via a valve system with the machine's lifting cylinders. BSS400 has accumulators with a maximum working pressure of 400 bar (5800 psi). The accumulators, which are of the piston type, are precharged with nitrogen gas.

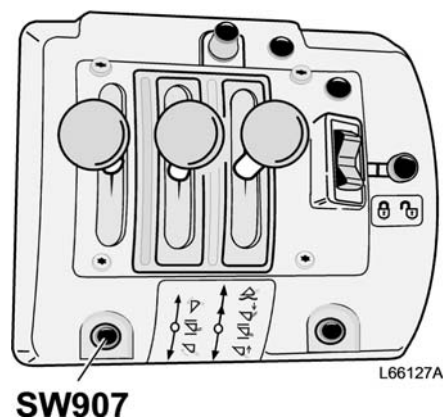


Figure 1
Control lever carrier

SW907 Switch, activation of Boom Suspension System

Activating Boom Suspension System

The system is activated with switch SW907.

The indicator light on the centre instrument panel, I-ECU, lights with a fixed glow as long as the system is activated.

When the system is activated and engaged, a connection is opened between the +side of the lift cylinders and the accumulators as well as between the -side of the lift cylinders and the tank, which means that oil can pass freely in both directions.

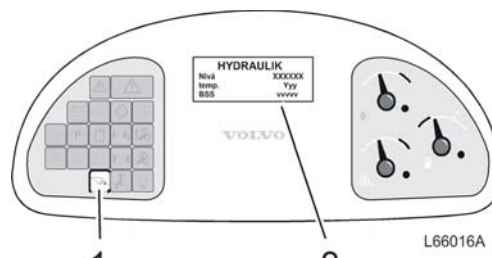
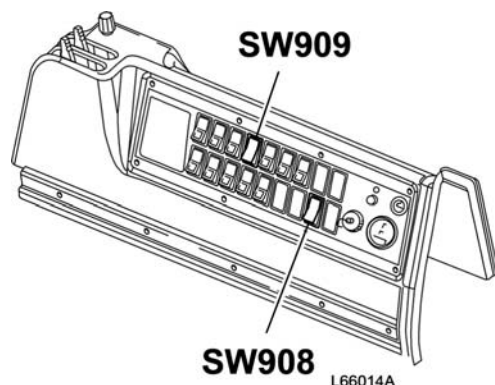


Figure 2
Centre instrument panel

1. Indicator light
2. Operator display unit

If the system is to operate efficiently, it is important that the lift arms can move freely up and down. For example, the bucket must not rest against a mechanical stop.



SW908	Switch, function selection, gear dependent alternatively speed dependent
SW909	Switch, single-acting lift function

Gear-dependent disengagement of Boom Suspension System

If the Boom Suspension System is activated with SW907 and the upper end of switch SW908 is pressed in, the system is activated and engaged when 2nd, 3rd, or 4th gear is selected. It disengages automatically when 1st gear is selected.

In this way, the system is activated but disengaged during the bucket filling stage when 1st gear is selected. The system is automatically engaged when upshifting takes place.

In the hydraulic menu on the operator display unit, it is shown whether the Boom Suspension System is engaged or temporarily disengaged.

Speed dependent disengagement of the Boom Suspension System

When the lower part of SW908 is pressed in, the system is engaged if the travel speed exceeds 5 km/h (3.1 mph). At a travel speed below 5 km/h (3.1 mph), the system is disengaged regardless of which gear is used.

Speed dependent disengagement is advantageous in i.e. log handling where 2nd gear is normally used.

In the hydraulic menu on the operator display unit, it is shown whether the Boom Suspension System is engaged or temporarily disengaged.

Charging of accumulators

Accumulators can only be charged when the Boom Suspension System is disengaged or not activated. MA908, MA910 and MA911 do not receive any voltage.

In this way, unwanted movements are avoided when another hydraulic function is used (i.e. tilt or 3rd/4th function) when the system is activated and engaged.

With the boom suspension system disengaged, the accumulators always have the same pressure as the pressure in the hydraulic system.

Op nbr 51704

[999 3802 Lifting device](#)

[999 3875 Adjusting tool](#)

Removing

NOTE!

As a spare part, the brake disc is supplied without a pump rotor. Transfer the pump rotor to the new disc and centre it. Use the new bolt, lock nuts and spring pins supplied with the new disc.

1. Lift up the machine and position axle stands under the axle. Remove the wheels.
2. Drain the oil from the hub reductions and the axle housing.
Oil capacity, AWB30: **approx. 41 l (10.8 US gal)**
Oil capacity, AWB31: **approx. 33 l (8.7 US gal)**
3. Release the brake system pressure by depressing the brake pedal repeatedly (30–40 times).
4. Mark up the hub reduction position in relation to the axle housing, connect lifting device 999 3802 to the hub reduction. Remove the attaching bolts and the hub reduction.
Hub reduction weight: **approx. 250 kg (552 lbs)**

NOTE!

In certain cases, the stub axle and the brake disc may remain in the hub reduction.

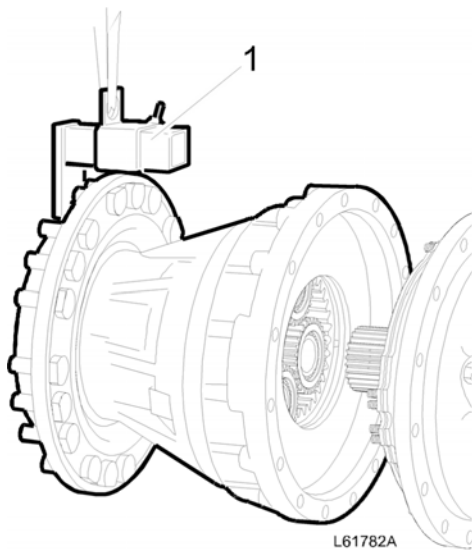


Figure 1
Removing hub reduction

1. 999 3802
5. Remove the brake disc.
Remove the brake plate and the guide pins.

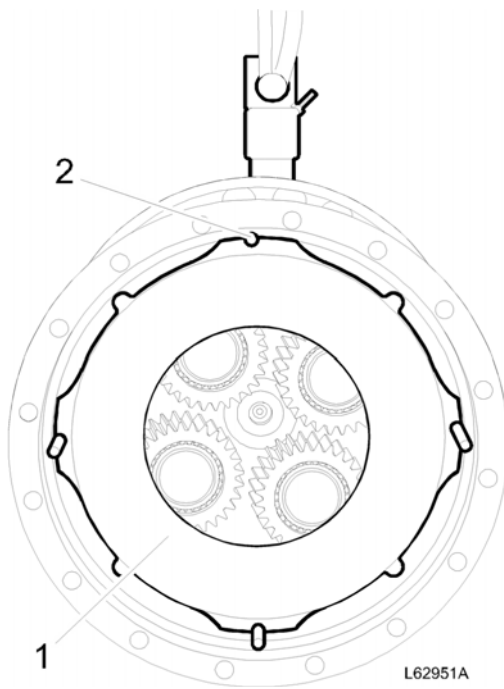


Figure 2
Brake plate and guide pins

1. Brake plate
2. Guide pins, 4 pcs

6. Loosen the lock nuts. Turn out the adjusting screws for the brake piston approx. 1 turn. Clean and check the parts for any wear and damage.

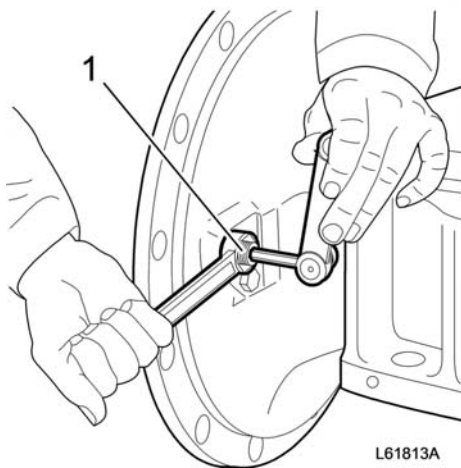


Figure 3

1. Adjusting screws with lock nuts

7. On certain axles, the wear indicator pin must be fitted from the hub side. Check if this is the case. In such cases, the brake piston must be removed and the seal rings must be changed, see [Invalid linktarget].

Centring the pump rotor on brake disc

8. Remove the pump rotor from the old brake disc.
9. Centre the pump rotor on the new brake disc as follows:
 - Position the new brake disc on a flat surface with a pump housing half on each side. Centre the pump housing halves

on the brake disc by knocking in two spring pins (6.35 x 24 mm) in two diametrically opposed bolt holes.

- Fit the bolts in the other two holes.
Tightening torque: **12 Nm (8.9 lbf ft)**
- Knock out the spring pins and fit the bolts.
Tightening torque: **12 Nm (8.9 lbf ft)**

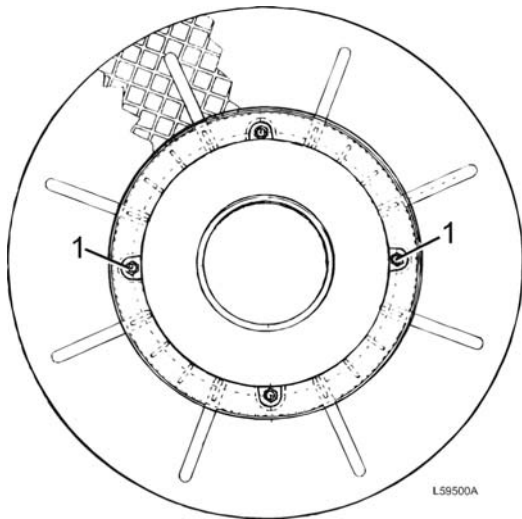


Figure 4
Centring pump housing halves on brake disc

1. Spring pins for centring of pump housing halves

NOTE!

Applies only to axles on which the wear indicators must be fitted from the hub side. Otherwise, continue under heading [Invalid linktarget].

Brake piston, removing and installing

10. Fully depress the brake pedal and block it in that position with a suitable tool. When the brake pedal is blocked in the depressed position, the hydraulic tank oil is prevented from running out to respective brake caliper.

NOTE!

The brake pedal must remain blocked until the front axle has been installed again.

11. Remove the brake piston with a pry bar.
Collect any oil that drains.
Brake piston weight: **approx. 17 kg (38 lbs)**
Clean and check the parts for any wear and damage.

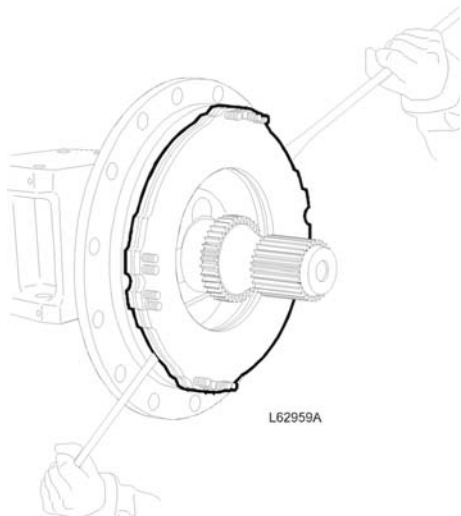


Figure 5
Removing brake piston

12. Grease the brake piston and the O-rings. <https://truckmanualshub.com/>
Fit the O-rings with the flat surface against the bottom of the groove in the brake piston.

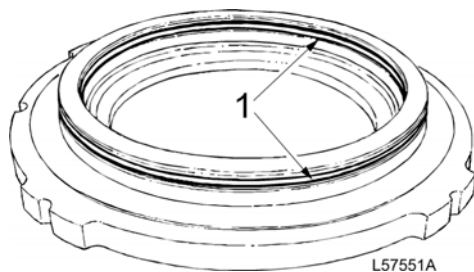


Figure 6

1. O-rings

13. If the wear indicator pin cannot be fitted after the brake piston has been installed;
Adjust the length of the wear indicator pin so that it is 89 mm (3.5 in) (basic adjustment).

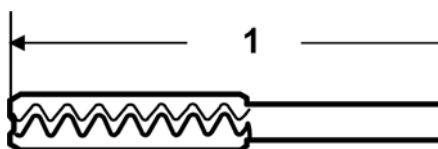


Figure 7
Basic adjustment of wear indicator

1. 89 mm (3.5 in)

14. Fit the wear indicator pin.

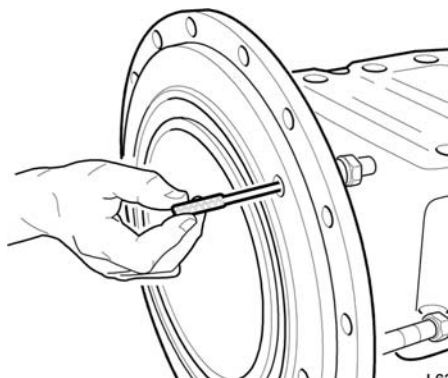


Figure 8
Installing wear indicator pin

15. Fit the brake piston.
Any extra slots in the brake piston must not line up with the hole for the wear indicator.
Fit the bleeder screw.

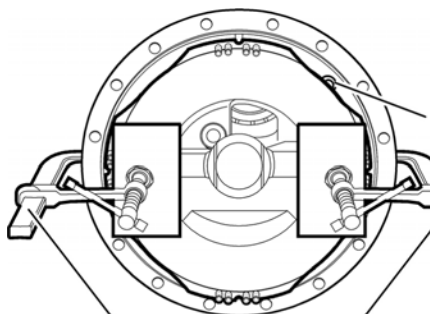


Figure 9
Installing brake piston

1. Hole for wear indicator
2. Clamps

<https://truckmanualshub.com/>

Installing

16. Fit the O-ring on the axle housing.
Fit the brake disc.

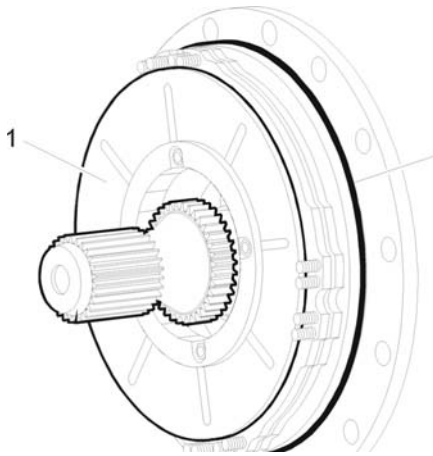


Figure 10
Installing brake disc (principle illustration)

1. Brake disc
2. O-ring

17. Fit the brake plate and the guide pins, 4 pins.

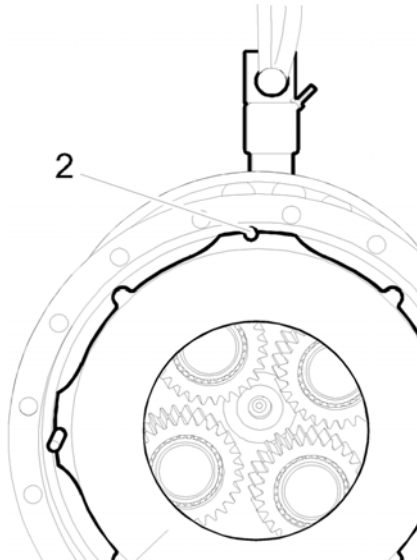


Figure 11

1. Brake plate
2. Guide pins, 4 pcs

18. Attach lifting device 999 3802 to the hub reduction.
Hub reduction weight: **approx. 250 kg (552 lbs)**
Fit the hub reduction.

NOTE!

Check to make sure that the guide pins in the hub reduction fit in the brake piston slots.

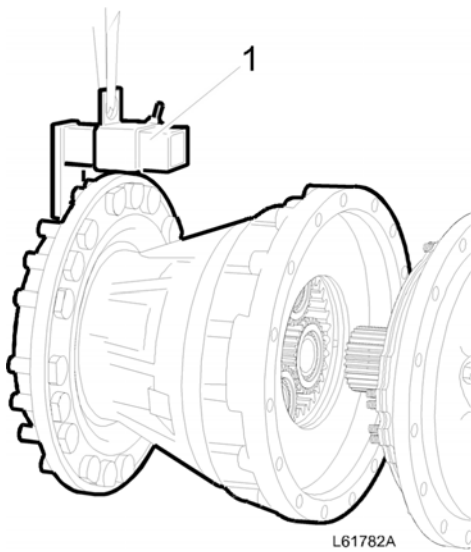


Figure 12
Installing hub reduction

1. 999 3802

19. Fit and tighten the hub reduction attaching bolts.
Tightening torque: **310 Nm (229 lbf ft)**

Brake piston, adjusting stroke

20. Bleed the brake circuit, see [Invalid linktarget].



Oil under high pressure.

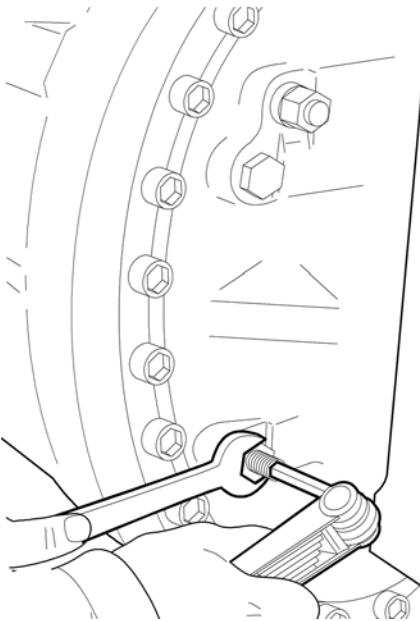


Figure 13

21. Start the engine and run up the brake pressure. Stop the engine and apply the foot brake.

NOTE!

The brake must be applied until the wear indicator has been adjusted and adjusting tool 999 3875 has been removed.

22. Turn in the adjusting screws against the activated brake piston.
Then, turn out the adjusting screws 1/2 turn. Lock the adjusting screws with the lock nuts.

NOTE!

This work should only be done if a new brake disc has been installed.

Adjusting wear indicator

23. Remove the wear indicator.
24. Adjust the length of the wear indicator pin so that it is 89 mm (3.5 in) (basic adjustment).

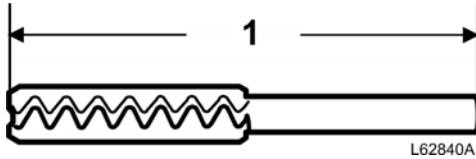


Figure 14
Basic adjustment of wear indicator

1. 89 mm (3.5 in)

25. Fit the wear indicator.
Fit adjusting tool 999 3875 for the wear indicator and tighten until it bottoms out.

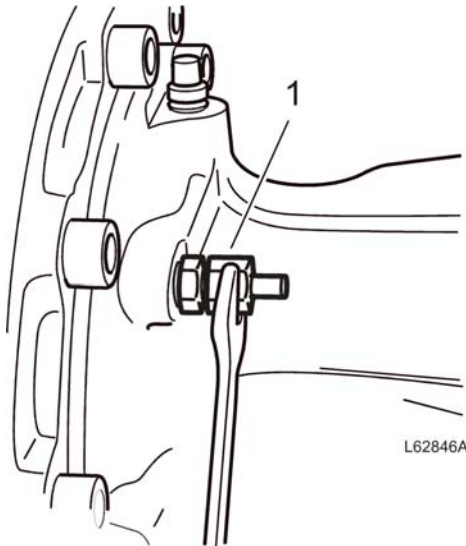


Figure 15
Adjusting wear indicator

1. 999 3785

26. Remove the adjusting tool, still with the brake applied. Fit and tighten the plug on the wear indicator.
27. Release the brake.
28. Fill oil in the axle.
Oil capacity, AWB30: **approx. 41 l** (10.8 US gal)
Oil capacity, AWB31: **approx. 33 l** (8.7 US gal)
29. Fit the wheels and remove the supports.
30. Check function.

Op nbr 5160151701

[999 3831 Support](#)

The following applies when checking:

Brakes must be applied.

NOTE!

Maintain greatest possible cleanliness when working on the brakes.

1. Start the engine and charge the accumulators. Raise and secure the boom with support 999 3831. Stop the engine and apply the brake.

CAUTION

The brake must be applied the entire time when checking wear.

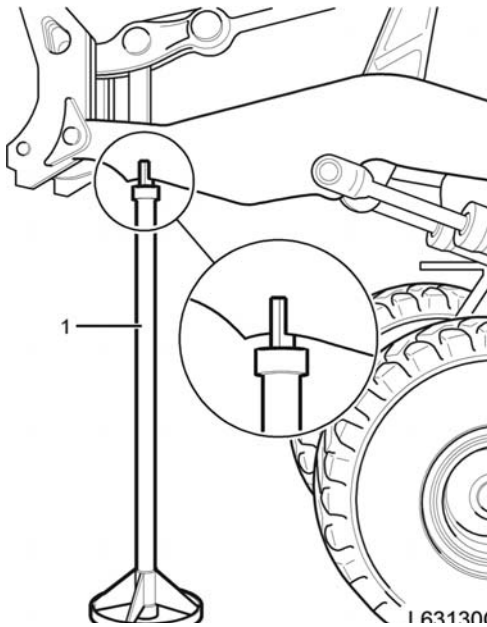


Figure 1

1. 999 3831 Support
2. Remove the plug on the wear indicator.

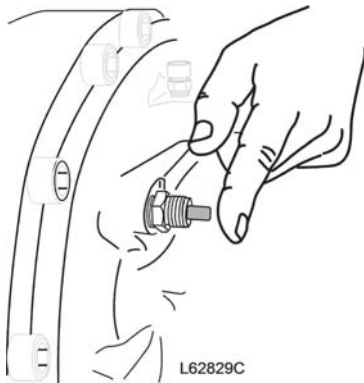


Figure 2

<https://truckmanualshub.com/>

1. Plug
3. Press in the wear indicator pin until it stops.

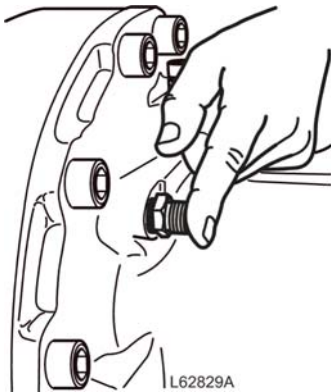


Figure 3

Press in the wear indicator pin

4. Brake disc wear is indicated by the position of the flat surface B on the wear indicator pin in relation to the flat surface of the nipple A, see [Invalid linktarget].
The position of the flat surface of the pin varies depending on how much the brake disc is worn. For a new brake disc, the indicator pin cannot be pressed in more than to a position where its flat surface is 2.3 mm (0.1 in) outside the flat surface of the nipple.

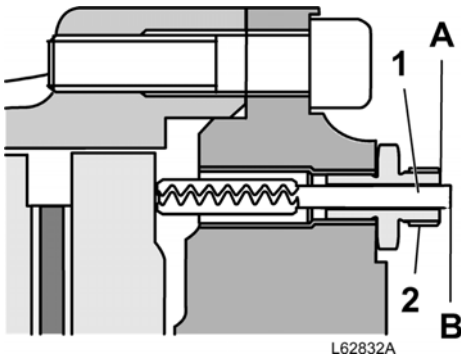


Figure 4

Checking brake disc wear

- A. Nipple, flat surface
- B. Indicator pin, flat surface
1. Wear indicator pin
2. Nipple
5. The brake disc is worn down and must be changed when the flat surface B of the wear indicator pin is lined up with the flat surface A of the nipple.

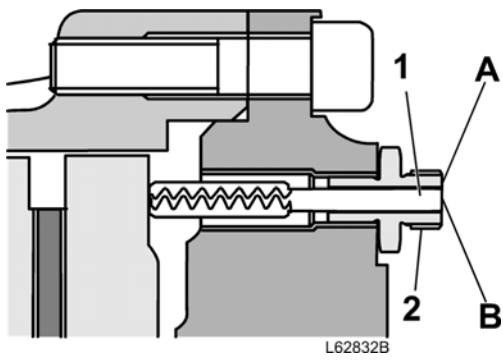


Figure 5
Brake disc is worn down

- A. Nipple, flat surface
 - B. Indicator pin, flat surface
 - 1. Wear indicator pin
 - 2. Nipple
6. Fit the plug on the wear indicator.
Release the brake pedal.
 7. Check the remaining brake discs according to the same method.
 8. Remove the support and lower the boom.

Input signals	Output function conditions	Output functions
○ Brake pressure, SE502 ○ Engine On/Off ○ Directional gear	○ Low brake pressure < 90 bar (1305 psi) ○ Engine = Off	○ Warning lamp
	○ Low brake pressure < 90 bar (1305 psi) ○ Engine On	○ Red central warning lamp ----- WARNING ----- Low Brake Pressure ○ 167305AC
	According to above, also: ○ Directional gear in Forward or Reverse	○ Buzzer

Language Code GB	Product WLO	Group 510	https://truckmanualshub.com/	No. 25	Version 2	Date 10/23/2007
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Applies to
L50B Volvo BM, L50C Volvo, L50D Volvo, L50E Volvo, L60E Volvo, L70B Volvo BM, L70C Volvo, L70D Volvo, L70E Volvo, L90C Volvo, L90D Volvo, L90E Volvo, L110E Volvo, L120C Volvo, L120D Volvo, L120E Volvo, L150 Volvo BM, L150C Volvo, L150D Volvo, L150E Volvo, L180 HL Volvo BM, L180 Volvo BM, L180C HL Volvo, L180C Volvo, L180D HL Volvo, L180D Volvo, L180E HL Volvo, L180E Volvo, L220D Volvo, L220E Volvo

Brake return spring moved



Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.

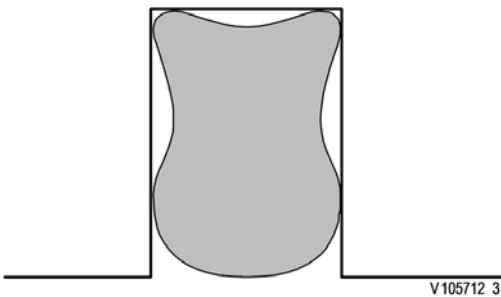
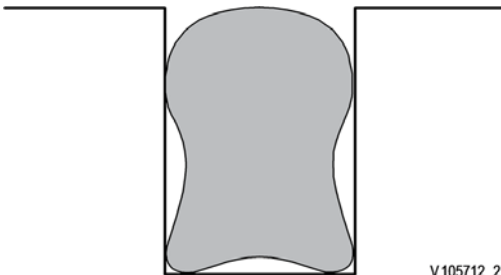
Cause and action

To facilitate assembling, the brake return springs have been moved from the brake piston to the brake plate.

The moving of the brake return springs means that the brake piston and the brake plate have been changed. On certain axles also the seal rings have been changed.

Brake plates and brake pistons of the earlier type cannot be ordered as spare parts. This means that when replacing for example the brake piston on an axle of earlier type, also the brake plate and in certain cases also the seal rings must be replaced.

Designation	New Part No.	Discontinued Part No.	Axle
Brake piston	11103421	11035637	23836 AWB10 23820 AWB10 23819 AWB10 23932 AWB15 23930 AWB15 23929 AWB15 23951 AWB20 23950 AWB20 23922 AWB20 23920 AWB20 23918 AWB20 23916 AWB20
Brake piston	11103332	11102320	23952 AWB40C 23948 AWB40C 23941 AWB40B 23940 AWB40B 23895 AWB40B 23882 AWB40B 23881 AWB40B 23896 AWB41 23883 AWB41
Brake piston	11103422	11103370	23919 AWB25 23915 AWB25 23949 AWB25 23899 AWB30 23956 AWB30 23955 AWB30 23943 AWB30 23897 AWB31
Brake plate	11103424	11102864	23932 AWB15 23930 AWB15 23929 AWB15 23951 AWB20 23950 AWB20 23922 AWB20 23920 AWB20 23918 AWB20 23916 AWB20
Brake plate	11103423	11035638	23836 AWB10 23820 AWB10

Brake plate	11103426	https://truckmanualshub.com/ 11102354	23819 AWB10
			23941 AWB40B 23940 AWB40B 23895 AWB40B 23882 AWB40B 23881 AWB40B 23896 AWB41 23883 AWB41
Brake plate	11103427	11103192	23952 AWB40C 23948 AWB40C
Brake plate	11103425	11102249	23919 AWB25 23915 AWB25 23949 AWB25 23899 AWB30 23943 AWB30 23956 AWB30 23955 AWB30 23897 AWB31
Seal ring	11103387  Figure 1 Installation		23952 AWB40C 23948 AWB40C 23941 AWB40B 23940 AWB40B 23895 AWB40B 23882 AWB40B 23881 AWB40B 23896 AWB41 23883 AWB41
Seal ring	11103386  Figure 2 Installation		23952 AWB40C 23948 AWB40C 23941 AWB40B 23940 AWB40B 23895 AWB40B 23882 AWB40B 23881 AWB40B 23896 AWB41 23883 AWB41

NOTE!

The kit 11703987 includes seal rings of both earlier and later type. Which seal rings are to be used depends on the type of piston and brake plate.

The change has been introduced in production according to the table below:

Product number	Axle	Serial No. ESK	Serial No. PED	Changed design of seal rings
23819	AWB10		80144–	No
23820	AWB10		80402–	No
23836	AWB10		80234–	No
23929	AWB15	13375–	80372–	No
23930	AWB15	13291–	80367–	No
23932	AWB15	10045–		No
23916	AWB20	13107–	80503–	No

23918	AWB20	10140-	https://truckmanualshub.com/	No
23920	AWB20	13458-	80794-	No
23922	AWB20	10142-		No
23950	AWB20	10008-	80104-	No
23951	AWB20	10001-		No
23915	AWB25	13368-	80517-	No
23919	AWB25	9999999-	80821-	No
23949	AWB25	15482-	80106-	No
23899	AWB30	10318-		No
23943	AWB30	10175-	80596-	No
23955	AWB30	10007-	80001-	No
23956	AWB30	10001-		No
23897	AWB31	17131-	80649-	No
23881	AWB40B	17879-		Yes
23882	AWB40B	15128-		Yes
23895	AWB40B	10216-		Yes
23940	AWB40B	10006-		Yes
23941	AWB40B	10001-		Yes
23948	AWB40C	12540-		Yes
23952	AWB40C	10004-		Yes
23883	AWB41	12330-		Yes
23896	AWB41	10078-		Yes

Op nbr 52037

Plastic hose, inside diameter approx. 6 mm (0.236 in), length approx. 1 m (3 ft)

The brake system is divided into two circuits. This means that if only one circuit has been opened (a line has been disconnected, etc.), only that circuit needs to be bled free of air.

WARNING

Oil under high pressure!

1. Check the oil level in the hydraulic oil tank.
Oil capacity L90D: approx. **95 l (25.1 US gal)**
Oil capacity L120D: approx. **155 l (40.9 US gal)**
2. Fully depress the brake pedal and block it in that position with a suitable tool.
3. Start the engine and run it at a low idle.
4. Connect the plastic hose and carefully open the bleeder screw. Close the bleeder screw when oil free of air flows out.

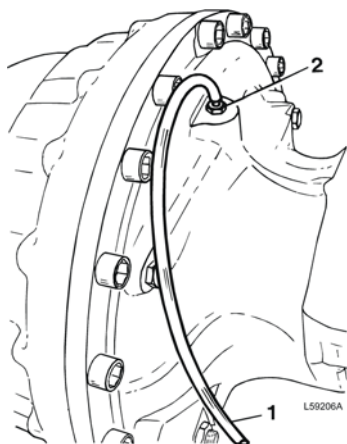


Figure 1
Bleeding brakes

1. Plastic hose
 2. Bleeder screw
5. Turn off the engine. Adjust the oil level in the hydraulic oil tank.
Oil capacity L90D: approx. **95 l (25.1 US gal)**
Oil capacity L120D: approx. **155 l (40.9 US gal)**
 6. Check function.

Op nbr 52002

[999 3721 Service display unit](#)

The following applies when checking:

- The machine must be without load.
- Machine speed must exceed 20 km/h (12.4 mph).
- The ground surface must be level and have good friction, dry asphalt, dry concrete or similar surface.
- Brakes must be applied without locking up the wheels.
- Do not pump or release the brake pedal during braking.
- Together with the supervisor, select a location where the brake test can be performed without risking accidents or being run into from behind, etc.



The brake test must only be performed in a place where there is no risk of accidents.

1. Connect the service display unit to the socket on the right instrument panel.
2. Start the engine and activate the service display unit.
3. Scroll to the function group "BRAKES".

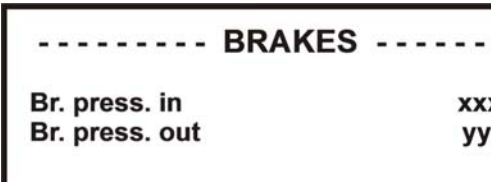


Figure 1

4. Scroll to the sub-menu "BRAKE TEST LOG".



Figure 2

5. Turn the gear selector to position A (automatic).
6. If the menu for the brake test is selected, the buzzer will emit a short signal when the travel speed exceeds 20 km/h (12.4 mph), indicating that the brake test can be performed.
7. Brake the machine maximally without locking the wheels or releasing the pedal.
8. Read off the value for retardation.
9. The service display unit shows the four most recent measured values, with the latest data far to the left.



10. If the latest measured retardation is below 4.75 m/s^2 (0.48 g), the test should be repeated. If that test also gives a result below 4.75 m/s^2 , the brake system must be checked according to [Invalid linktarget] and [Invalid linktarget].

This function calculates the machine's retarding ability to obtain information on the condition of the brakes.

The brake test can be performed when the machine is driven at a travel speed of > 20 km/h (12.4 mph). Retardation is calculated and the result and average brake pressure are shown on the display panel.

If the test is not approved, no test results will be shown on the display panel.

When travel speed exceeds 10 km/h (6.2 mph) for the first time after completion of the test, the test result disappears until a new test has been performed.

The latest three approved measurements are saved for presentation in the service display unit.

NOTE!

The test result is strongly dependent on the road surface and the road gradient.

Input signals	Output function conditions	Output functions
Brake test display Travel speed, SE403 Output brake pressure, SE 501	Brake test display should be open Travel speed >20 km/h (12.4 mph) when measurement is started; short signal from buzzer when the speed is exceeded. Retardation is calculated from the time it takes to decelerate from 15 to 5 km/h (3.1 mph) when braking and may be maximum 8 m/s² (16.4 ft/s²)	Buzzer ----- BRAKE TEST ----- Speed z.zz m/ s2 See instructions xx yyy vvv bar ↑ LEIFSDAHL

Break in computer communication

This function informs the operator that a system malfunction is interfering with communication between the ECUs and that continued operation could result in damage.

Input signals	Output function conditions	Output functions
Break in communication between the ECUs	Break in communication "bus off"	Break ----- STOP ! ----- Computer Failure STOP THE VEHICLE



**Volvo Construction
Equipment Group**

Installation Instruction

Genuine Accessories

REF. NO	KIT NO	DATE/DEPT.	PRODUCT	PAGE
21 4 779 3702	11707407 (80142)	2006-03 CEE-47	L120D	1/13

Boom suspension system

Kit list

Part No.	Qty.	Description
931225	1	Nipple
931228	1	Nipple
935312	10	Flange half
935477	1	Hose
935478	1	Hose
946471	8	Flange screw
946472	4	Flange screw
3171420	1	Relay
4803455	1	Switch
4803509	1	Switch
4803548	1	Lens
4821861	2	Nipple
4821881	1	T-nipple
4864926	1	Coupling
4881171	1	Nipple
4881440	5	Strip clamp
4881498	1	Nipple
4881644	1	Nipple
4897257	1	Elbow nipple
11006184	1	Decal
11015454	2	Flange half
11039482	1	Lens
11101827	1	Valve
11133107	1	Cable harness
11133321	4	Clamp
11133322	4	Clamp
11411596	1	Block
11133437	1	Hose
11133438	1	Hose
11133439	1	Hose
11133463	1	Hose
11133679	1	Hose
11170675	1	Cable harness
11410639	1	Valve
11704948	2	Ackumulator
13933251	1	Testing nipple

Part No.	Qty.	Description
13946752	12	Bolt
13947790	4	Bolt
13948699	7	O-ring
13949746	1	Clamp
13965185	4	Bolt
13965189	4	Bolt



WARNING!

Read all signs and instructions on the machine and the safety instructions in the operators manual, before you start working on the machine.

The installation instructions are based on the use of special tools, the E-tool and standard tools generally available on the market, and also on our operators manuals and service manuals.

The equipment should be installed by qualified personnel of an authorised workshop.

Volvo Construction Equipment Group disclaims all responsibility if tools and work methods other than those described in the instructions are used.

Boom suspension system

Work description

- 1 Raise lifting frame and secure with support 9993831.
- 2 Disconnect the main switch.
- 3 Remove the cover plate in front of the control valve.
- 4 Connect a vacuum pump to the tank or in other case empty the hydraulic oil tank.
- 5 In case the machine is equipped with the single-acting lifting function the switch to solenoid valve MA908 has to be disconnected.

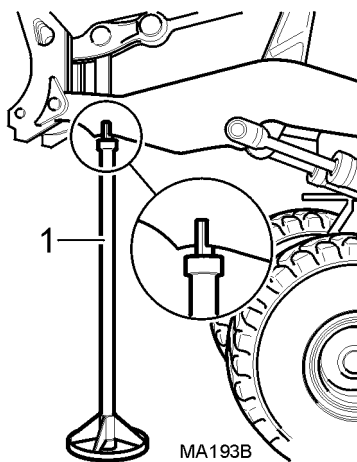


Fig. 1

- 1 Support, 9993831

Accumulators

The accumulators have no charging pressure when delivered and therefore must be charged either to 2.0 MPa (290 psi) respective 6.0 MPa (870 psi). See the service manual. Mark accumulators with respective load pressure.

- 6 Fit the clamps to the accumulators on the inside of the frame.

Part No.	Description	Qty.	Pos. in Fig. 2
11133321	Clamp	4	18
946471	Flange screw (M10x16)	8	20

- 7 Fit the accumulators in the attachments. The accumulator, which has 6.0 MPa (870 psi), charging pressure, place the accumulator on the right inside of the frame.

Part No.	Description	Qty.	Pos.	Fig.
11704948	Accumulator	2	22 and 26	2
11133322	Clamp	4	19	2
13965185	Bolt (M10x40)	4	21	1

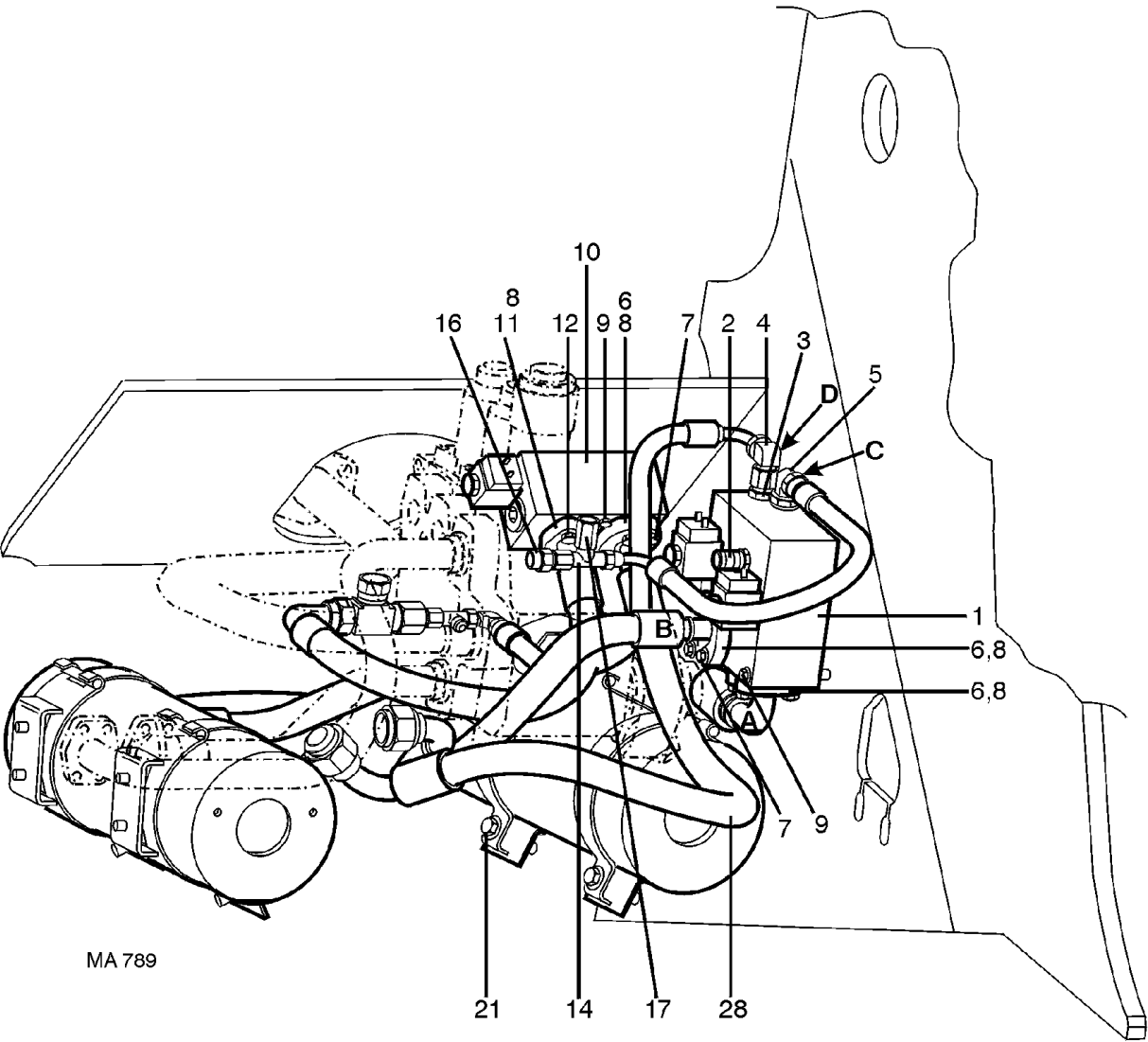


Fig. 2

Valve

- 8 Fit solenoid valve MA908, for the single-acting lifting function, on the inside of the frame. See Fig. 3 and Fig. 4.

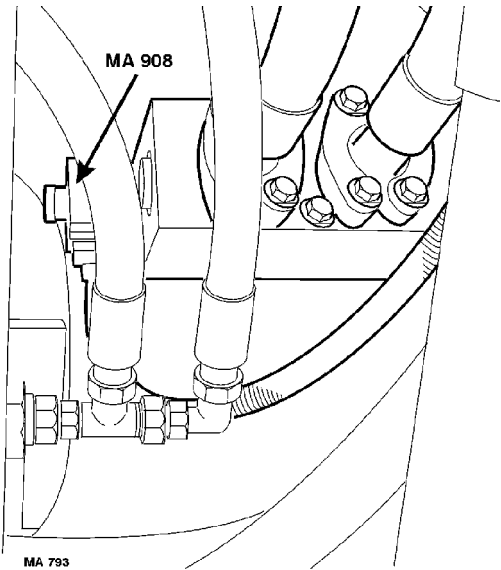


Fig. 3

Part No.	Description	Qty.	Pos. in Fig. 4
11101827	Valve	1	10
13965189	Bolt (M10x90)	2	9

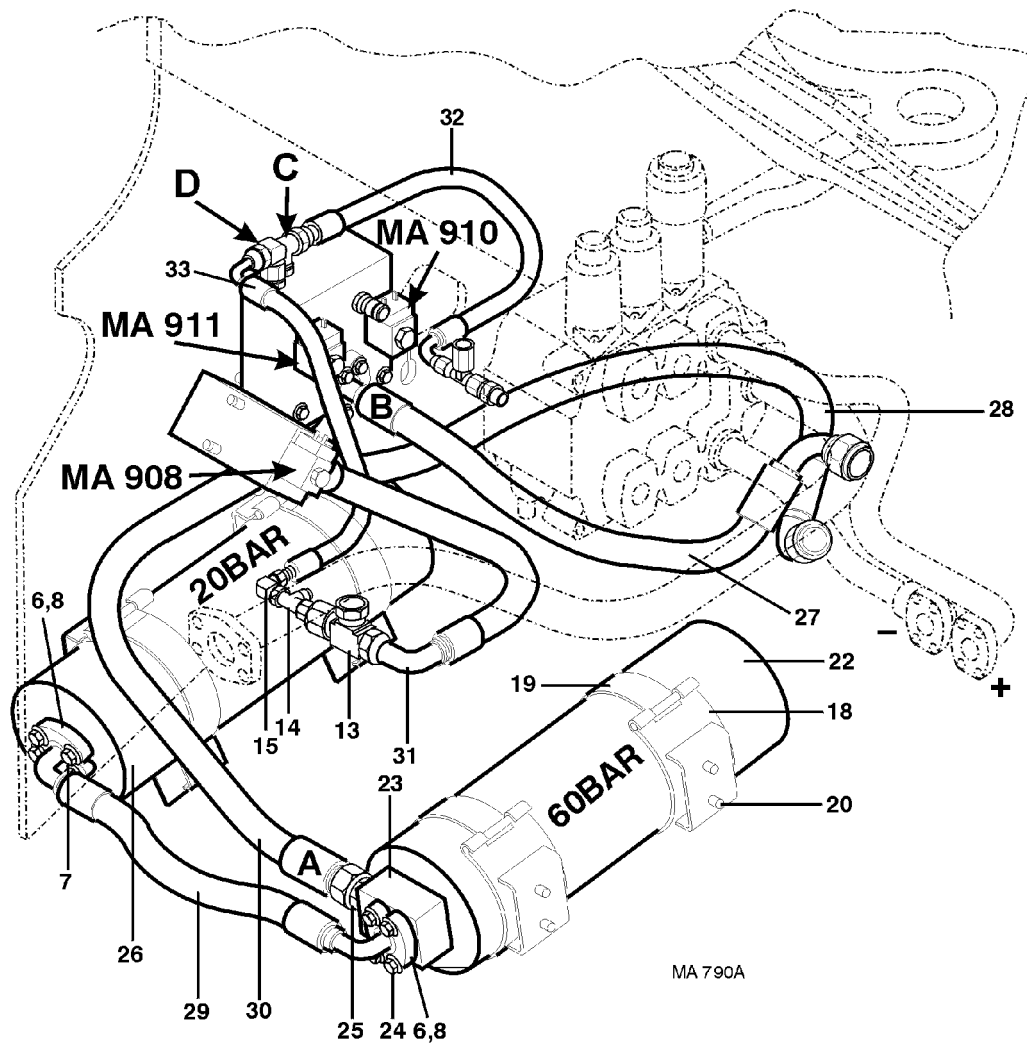


Fig. 4

- 9 Fit the testing nipple and nipples on the boom suspension system valve.

Part No.	Description	Qty.	Pos. in Fig. 2
11410639	Valve	1	1
13933251	Testing nipple	1	2
4881644	Nipple	1	3
4897257	Elbow nipple	1	4
4881171	Nipple	1	5

- 10 Fit the valve on the left inside of the frame.

Part No.	Description	Qty.	Pos. in Fig. 2
13965189	Bolt (M10x90)	2	9

Hoses

11 Fit a nipple on the block.

Part No.	Description	Qty.	Pos. in Fig. 4
11411596	Block	1	23
931228	Nipple	1	25

12 Fit the block on the right accumulator. Fit a hose between the accumulators.

Part No.	Description	Qty.	Pos. in Fig. 4
935312	Flange half	4	6
13948699	O-ring (25x3.5)	3	8
11133679	Hose (3/4x750)	1	29
13946752	Flange screw (M10x35)	4	7
13947790	Flange screw (M10x80)	4	24

13 Fit a hose between the boom suspension system valve, port A and the accumulator.

Part No.	Description	Qty.	Pos.	Fig.
11133439	Hose (3/4x750)	1	30	4
935312	Flange half	2	6	2
13948699	O-ring (25x3.5)	1	8	2

14 Remove the existing plug on the plus side of the lifting cylinder. Fit a hose between the valve of the boom suspension system, port B and the plus side of the lifting cylinder. See Fig. 2, 4 and Fig. 7.

Part No.	Description	Qty.	Pos.	Fig.
11133437	Hose (3/4x950)	1	27	4
935312	Flange half	2	6	2
13948699	O-ring (25x3.5)	1	8	2
13946752	Flange screw (M10x35)	4	7	2

15 Remove the existing testing nipple on the control valve's left side. Fit nipples and the existing testing nipple. See Fig. 2 and Fig. 5.

Part No.	Description	Qty.	Pos. in Fig. 2
4821861	Nipple	1	14
931225	Nipple	1	16
4881498	Nipple	1	17

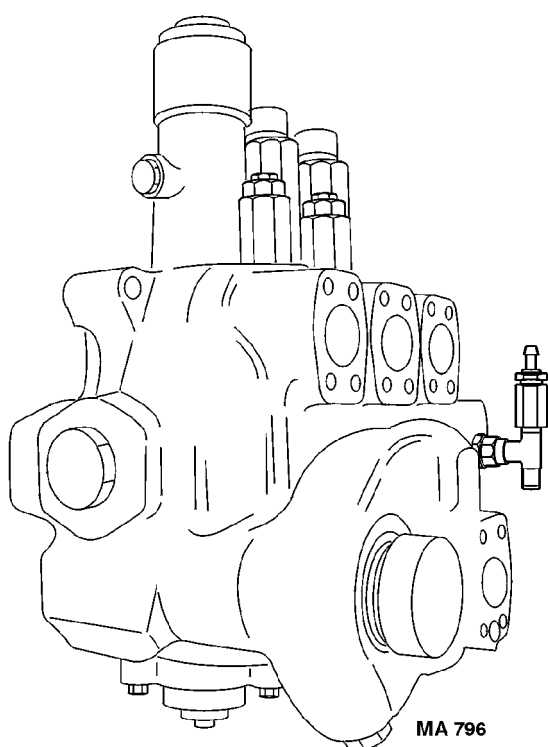


Fig. 5

- 16 Fit a hose between the valve, port C and nipple of the control valve. See Fig. 2, pos. C in Fig. 4 and Fig. 5.

Part No.	Description	Qty.	Pos. in Fig. 4
935477	Hose (3/8x550)	1	32

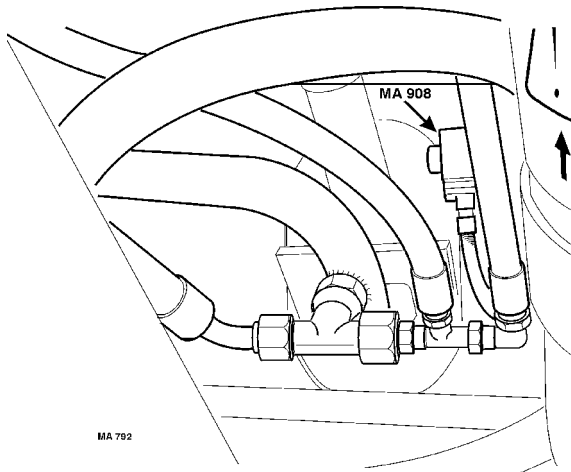


Fig. 6

- 17 Remove the existing hose and nipple from the return pipe. Fit nipples and existing hose on the return pipe. See Fig. 4 and Fig. 6.

Part No.	Description	Qty.	Pos. in Fig. 4
4821881	T-nipple	1	13
4821861	Nipple	1	14
4864926	Coupling	1	15

- 18 Fit a hose between the valve, port D and the return pipe. See Fig. 4 and Fig. 6.

Part No.	Description	Qty.	Pos. in Fig. 4
935478	Hose (3/8x550)	1	33

- 19 Fit the hose between the return pipe and the solenoid valve MA908.

Part No.	Description	Qty.	Pos.	Fig.
11133463	Hose (3/4x700)	1	31	4
13948699	O-ring (25x3.5)	1	8	2
11015454	Flange half (19)	2	11	2
946472	Flange screw (M10x30)	4	12	2

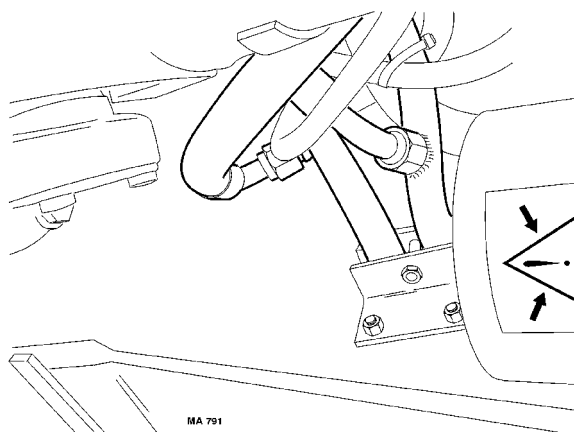


Fig. 7

- 20 Remove the existing plug on the minus side of the lifting cylinder. Fit a hose between the valve for the single-acting lifting function and the lifting cylinder minus side. See Fig. 2, 4 and Fig. 7.

Part No.	Description	Qty.	Pos.	Fig.
11133438	Hose (3/4x950)	1	28	4
935312	Flange half	2	6	2
13948699	O-ring (25x3.5)	1	8	2
13946752	Flange screw (M10x35)	4	7	2

- 21 Remove the vacuum pump or fill up with oil in the hydraulic oil tank.

Electrical installation on front frame

- 22 Connect the cable harness from solenoid valve MA908, MA910, MA911 and FD contact in the plastic box. The plastic box is placed over the control valve.

Part No.	Description	Qty.
11133107	Cable harness	1
13949746	Clamp	1
4881440	Strip clamp	5

Electrical part in the cabin

- 23 Fit two switches on the right instrument panel and connect the existing cable harness.

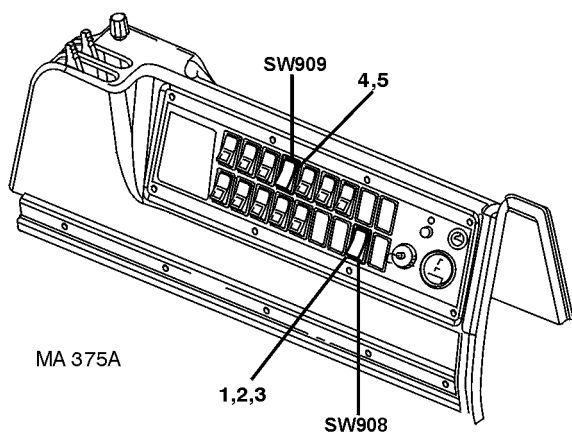


Fig. 8

Part No.	Description	Qty.	Pos. in Fig. 8
4803509	Switch (SW908)	1	1
4803548	Lens to SW908	1	2
11006184	Decal	1	3
4803455	Switch (SW909)	1	4
11039482	Lens to SW909	1	5

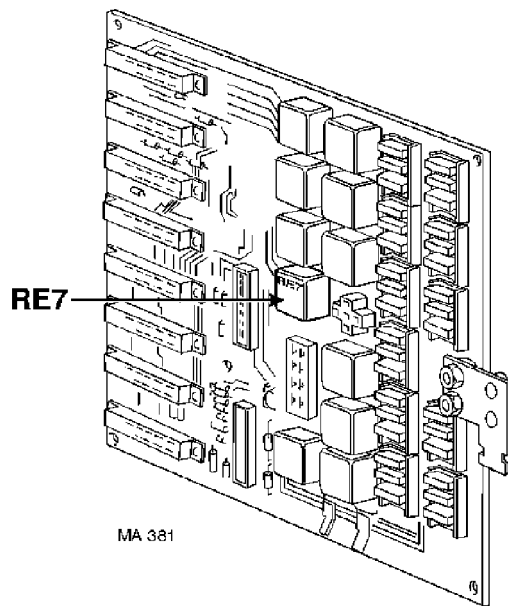


Fig. 9

- 24 Remove the plastic cover in front of the electrical distributor box fuses. Fit relay RE7 in the electrical distribution box.

Part No.	Description	Qty.	Pos. in Fig. 9
3171420	Relay	1	RE7

- 25 Remove the levers balls, the plastic cover and the plastic round the servo valve.

- 26 Drill a hole in the plastic cover and fit switch SW907 with the cable harness.

Part No.	Description	Qty.	Pos. in Fig. 10
11170675	Cable harness	1	1

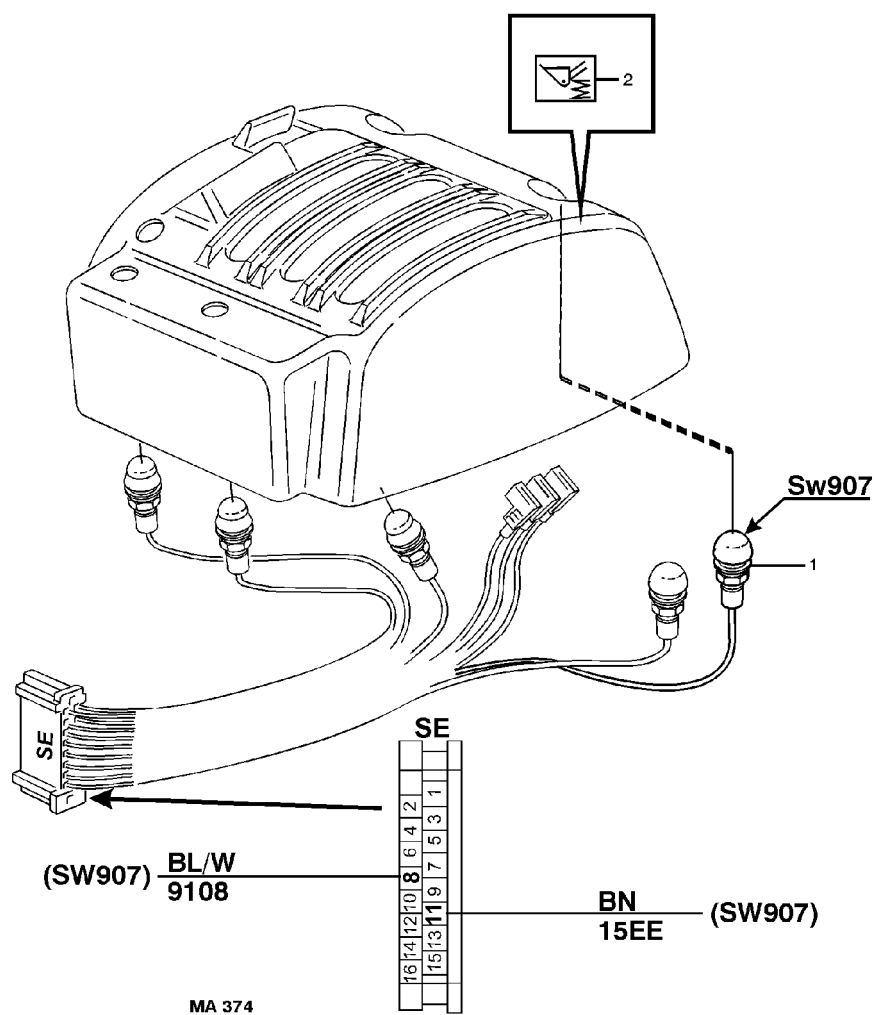


Fig. 10

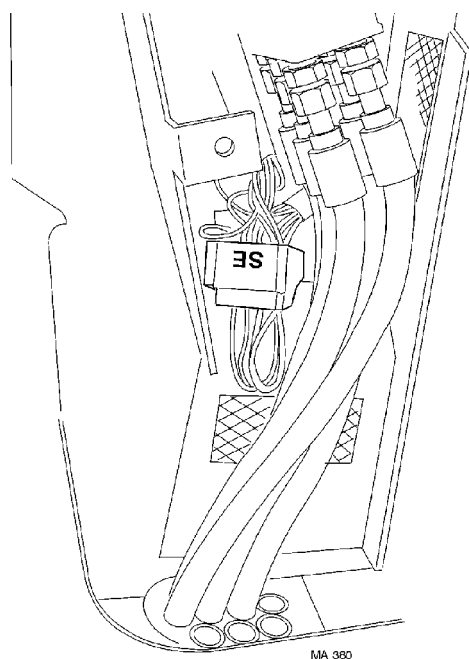


Fig. 11

- 27 Fit switch SW907 with the cable harness to the existing SE contact under the servo valve. See Fig. 11.
- 28 Test drive and check function also for leakage. Check oil level in hydraulic oil tank.
- 29 Fit the cover plate in front of the control valve and the other protections.
- 30 Write equipment number 80142 on the machine card.

Function check

Note! Applies to machines equipped with the 400 bars boom suspension system.

The system consists of two valve blocks: A boom suspension system and a system with a single-acting lifting function.

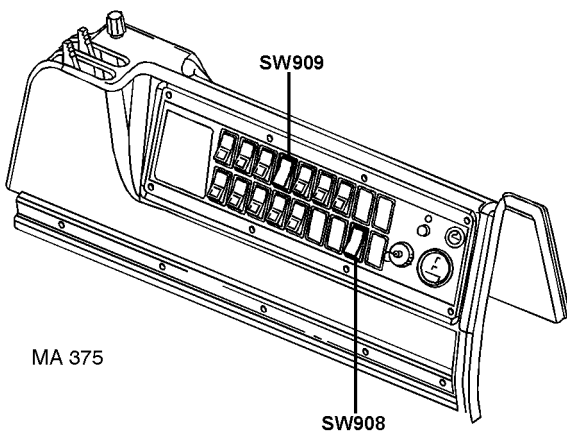
The boom suspensions system valve block = Lifting cylinder, piston side - accumulators.

The single-acting lifting function valve block = Lifting cylinder, piston rod side - tank.

Checking pressure limitation

- 1 Start the engine and raise the lifting arms to the horizontal position.
- 2 Change the accumulator unit by tilting in towards stop for about 4 seconds at full throttle. Then tilt back from stop.
- 3 Engage the boom suspension system with switch SW907. The lifting arms must not move. The pressure balance is correct.

Note! Switch SW908 to off position, i.e. upper half pushed in.



MA 375

Fig. 12

Checking flow path between lifting cylinder and accumulator

- 1 Switch SW908 to off position, i.e. upper half pushed in.
- 2 Attach a standard bucket and position it level approx. 100 mm (4 in) above the ground.
- 3 Tilt the bucket forwards so that the front wheels start to lift from the ground.
- 4 Engage floating position with switch SW909. The machine should sink to the ground.
- 5 Engage the boom suspension system with switch SW907, and disengage floating position with switch SW909. Let the engine run at idle speed.
- 6 Tilt the bucket back to level position. The lifting arms should drop so that the bucket sinks to the ground. This will indicate correct flow path.

Checking and setting of pressure-reduction valve CT8 in valve block

Note! Setting on delivery, 12 MPa.

- 7 Fit the load weight or select full load for standard bucket.
- 8 Run engine to approx. 2000 rpm, tilt towards stop and hold lever in this position, max. 15 seconds.

Activate the boom suspension system with SW907. In those cases where the lifting arms sinks is the pressure lower than 12 MPa (CT8).

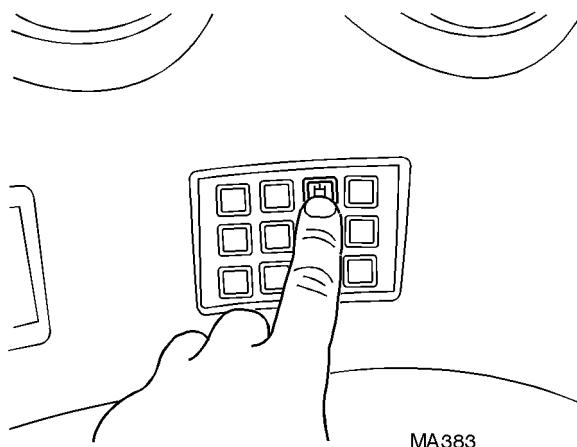


Fig. 13

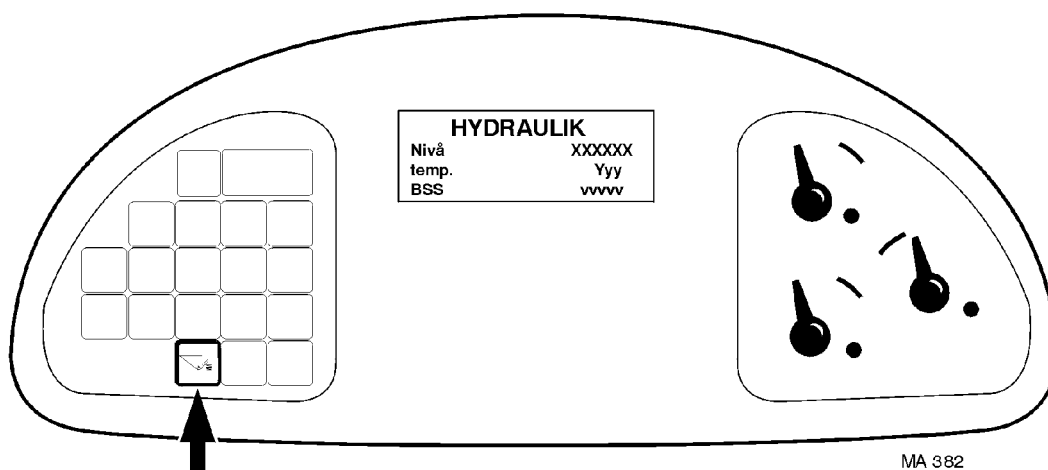


Fig. 14

- 9 The lifting arms must not move. Control lamp green light on. The hydraulics-menu should show that the boom suspension system is on.
- 10 Approx the bucket level, approx. 100 mm (4 in) above the ground.
Tilt the bucket towards the ground. The lifting arms should move upwards. The hydraulics-menu should show that the boom suspension system is on.
- 11 Approx the bucket level, approx. 100 mm (4 in) above the ground.
Apply the parking brake and engage 1st gear. Tilt the bucket towards the ground. The lifting arms should remain in the fixed position and not move.
The hydraulics-menu should show that the boom suspension system is off.
- 12 Approx the bucket level, approx. 100 mm (4 in) above the ground. Servo levers in neutral.
Disengage the boom suspension system with switch SW907. Control lamp off.

Test driving with load

- 1 Start the machine. Switches SW907 and SW908 off.
The green control lamp off.
- 2 Fill the bucket full. Raise the lifting arms to the transport position.

Note! Do not tilt the bucket towards stop.

- 3 Engage 2nd gear and drive the machine at speed of 0-10 km/h.
No movement from lifting arms. The green control lamp off.
- 4 Activate switch SW907. Repeat step 3.
The hydraulics-menu should show that the boom suspension system is on.
- 5 Engage 1st gear and activate switch SW907.
Repeat step 3.
The hydraulics-menu should show that the boom suspension system is off.
- 6 Activate switches SW907 and SW908.
- 7 Engage 1st gear and drive the machine at speed of 0-10 km/h.
Check the following:
Speed below 5 km/h. No movement from lifting arms.
The hydraulics-menu should show that the boom suspension system is off.
Speed above 6 km/h. Slight movement from lifting arms.
The hydraulics-menu should show that the boom suspension system is on.

Cab suspension, description

<https://truckmanualshub.com/>

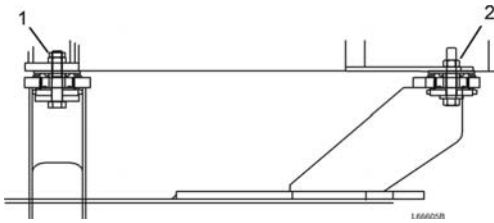


Figure 1
Cab suspension

1. Rear cab element
2. Front cab element

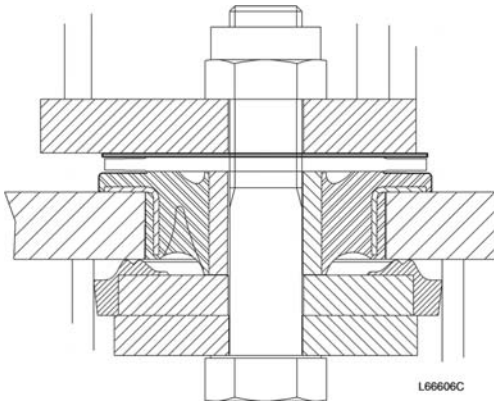


Figure 2
Rear cab element

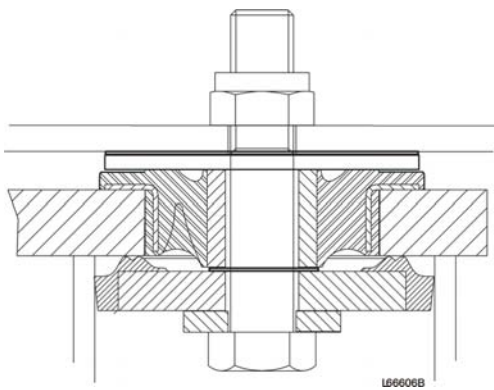


Figure 3
Front cab element

Op nbr 81002

Total procedure time (hr): NaN

[Sling, 4 metres \(13 ft\) 4](#)

1. Attach the lifting device.

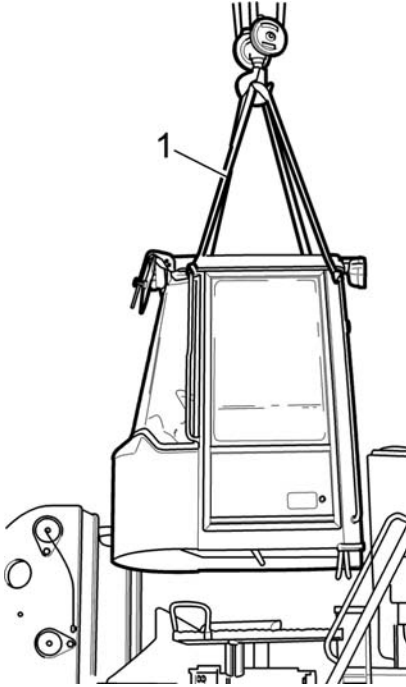


Figure 1

1. Sling, 4 m (13 ft) (4)
2. Place washer B and, if necessary, adjusting shims A and F on each cab element.



The adjusting shims must be refitted on the same cab element as they were removed from to ensure that no changes occur in the functionality of the cab elements.

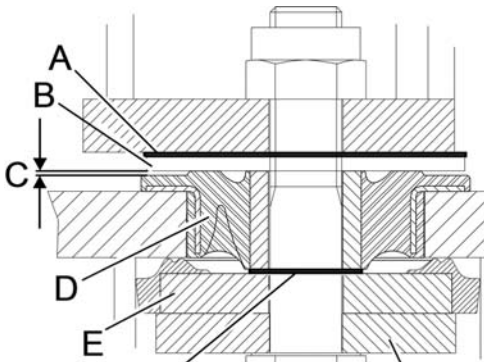


Figure 2
Cab element (diagrammatic drawing)

- A. Adjusting shim
- B. Washer
- C. Air slot
- D. Attachment

- E. Plate
- F. Adjusting shim, approx. 1 mm (0.039 in) thick
- G. Washer

3. Lift the cab into place.

Cab weight: **approx. 800 kg (1764 lbs)**

Fit plate E, washer G and, if necessary, adjusting shim F together with each bolt.

4. Tighten the bolts.

Tightening torque, rear attachment – frame: 580 Nm (428 lbf ft)

Tightening torque, front attachment – frame: 400 Nm (295 lbf ft)

5. Check air slot C on each cab element.

The air slot should be visible at some place, all or part of the way round.

6. If no air slot is visible, remove the bolt and fit an extra adjusting shim, pos. F.

Then tighten the bolt to the correct torque.

A maximum of 2 adjusting shims F can be fitted on each cab element.

7. Remove the lifting device

8. Pull the wiring through the hole in the wall of the cab.

Plug the wiring connectors into the electrical distribution box.

Bolt the lead-through plate into place.

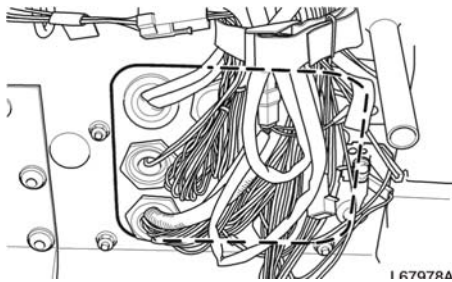


Figure 3

9. Fit the steering valve.

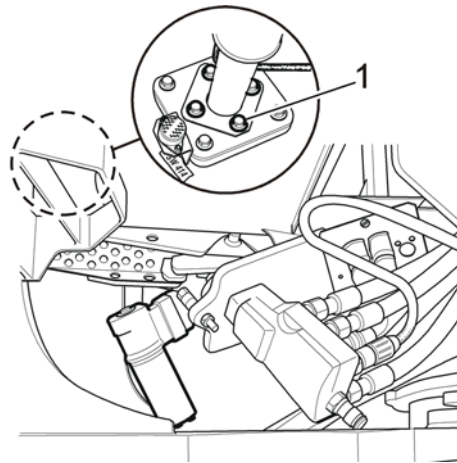


Figure 4

- 1. Retaining bolts (4)

10. Fit the foot-brake valve.

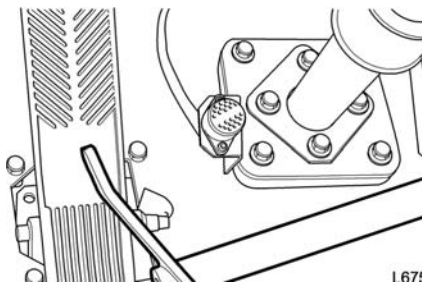


Figure 5

11. Fit the extra pedal for operating the foot brake.

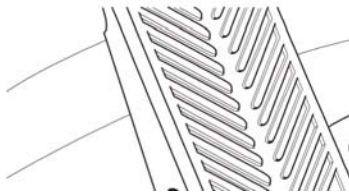


Figure 6

12. Plug the connector into the servo valve
Fit the servo valve on the control lever carrier.
Fit the front floor plate.

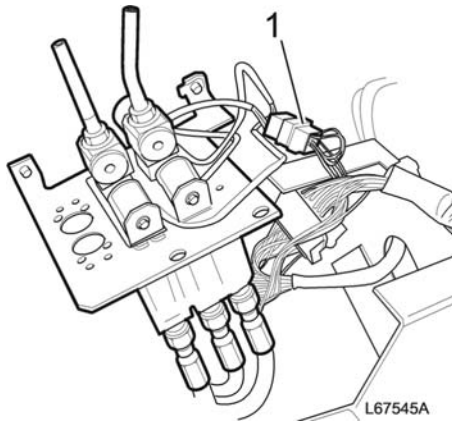


Figure 7

1. Connector

13. Fit the plastic casing on the side of the control lever carrier and the lever for angle adjustment of the control lever carrier.
Fit the casing over the servo levers. Fit the knobs on the servo levers.

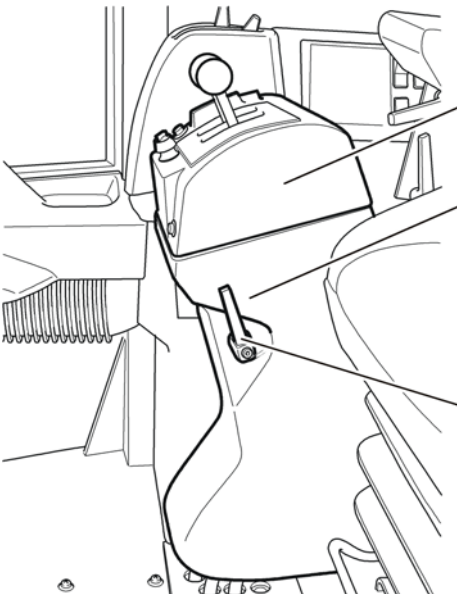


Figure 8

1. Upper casing
2. Side casing
3. Lever for regulating inclination

14. Fit the floor mat. Where applicable, bolt the throttle pedal in place.
15. Connect the coolant hoses to the heater unit.
16. Points 17 to 20 concern machines equipped with an air conditioning unit.
17. Fit the evaporator.

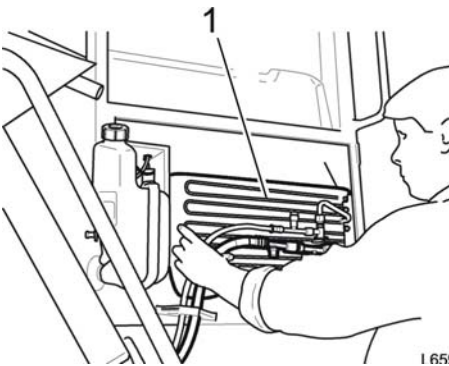


Figure 9
Evaporator

1. Evaporator

18. Fit the support plate securing the evaporator.

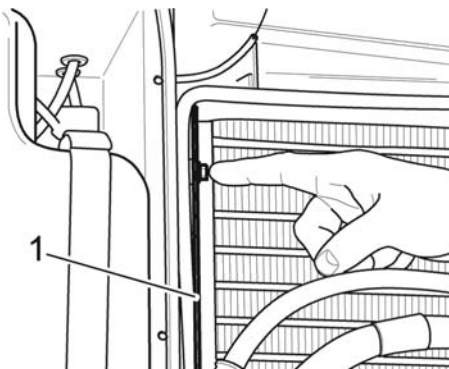


Figure 10
Support plate

<https://truckmanualshub.com/>

1. Support plate

19. Carefully wind on the capillary tube. Fit the insulating compound.

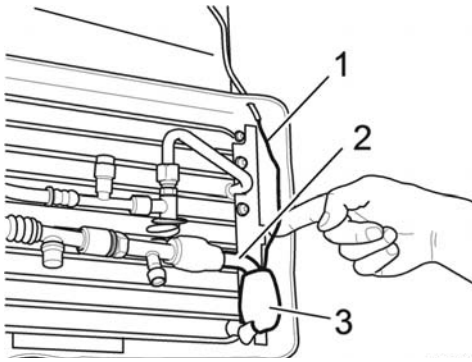


Figure 11
Capillary tube

1. Capillary tube
2. Evaporator pipe
3. Insulating compound

20. Fit the plate together with the recirculation damper.
Fit the control wire for the recirculation damper. Fit the filter casing together with the air filters.

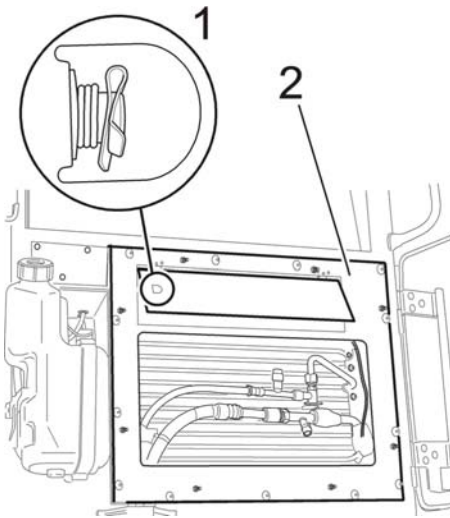


Figure 12

1. Striker plate, recirculation damper
2. Plate

Cab, removing

<https://truckmanualshub.com/>

Op nbr 81001

Total procedure time (hr): NaN

[Sling, 4 metres \(13 ft\) 4](#)

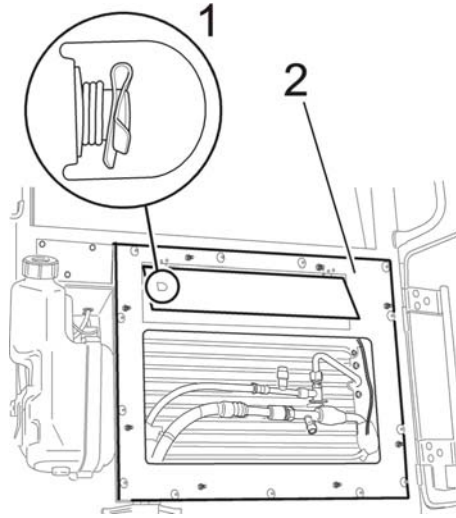


Figure 1

1. Striker plate, recirculation damper
2. Plate

CAUTION

When working on a machine with air conditioning.

Do not detach any hoses or air conditioning unit connections and so inadvertently allow refrigerant to escape.

Points 2–4 concern machines equipped with air conditioning.

1. Remove the filter casing together with the air filters.
Remove the plate together with the recirculation damper.
2. Remove the support plate that holds the evaporator.

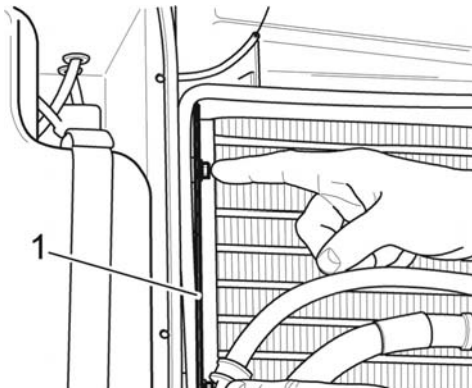


Figure 2
Support plate

1. Support plate

3. Remove the insulating compound. Carefully unwind the capillary tube and detach it from the evaporator and filter casing.

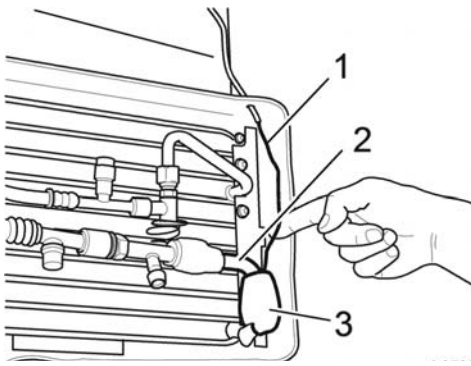


Figure 3
Capillary tube

1. Capillary tube
2. Evaporator pipe
3. Insulating compound

4. Carefully fold out the evaporator and place it on the step with some protective padding to rest on.

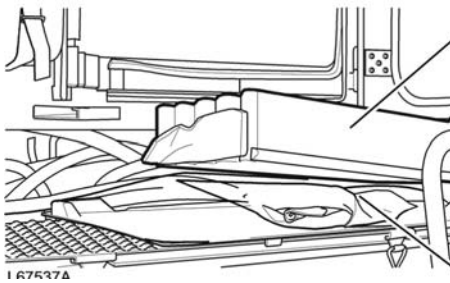


Figure 4

1. Evaporator
2. Padding

5. Fit pinch-off pliers on the coolant hoses or else drain off the coolant. Then detach the coolant hoses from the cab heater unit.
6. Remove the floor mat. It might be necessary to remove the throttle pedal from the floor.
7. Remove the knobs from the servo levers. Remove the casing from the servo levers. Remove the plastic casing on the side of the control lever carrier and the lever for angle adjustment of the control lever carrier.

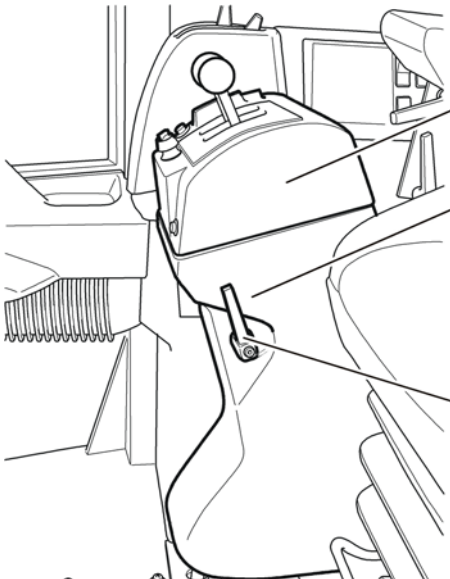


Figure 5

1. Upper casing
 2. Side casing
 3. Lever for regulating inclination
8. Remove the servo valve from the control lever carrier.
Unplug the connector from the servo valve.

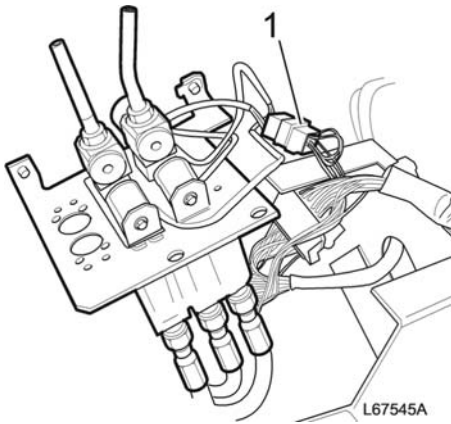


Figure 6

1. Connector
9. Remove the front floor plate.
Lower the servo valve down through the hole in the floor.

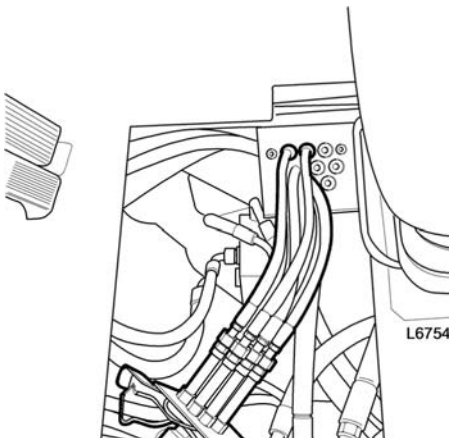


Figure 7

10. Remove the extra pedal for operating the foot brake.

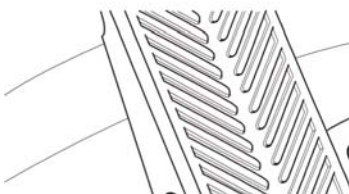


Figure 8

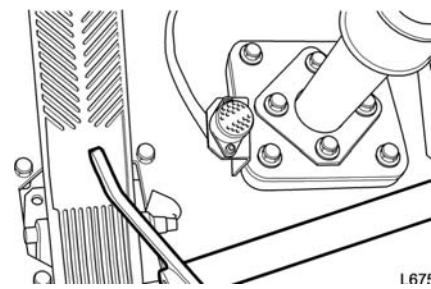


Figure 9

11. Detach the foot brake valve from the cab floor and place it on the frame.

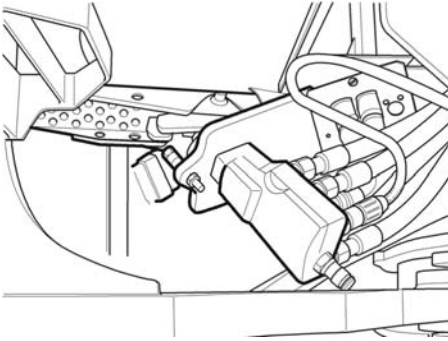


Figure 10

12. Detach the steering valve from the cab floor and place it on the frame.

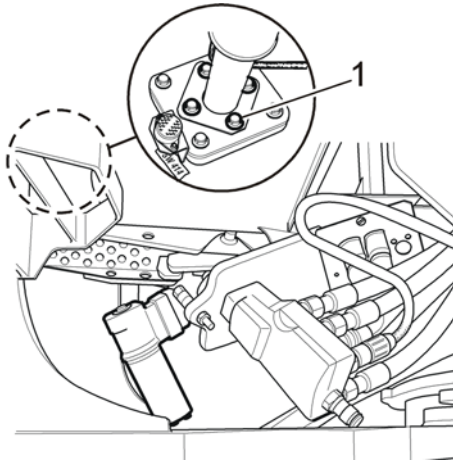


Figure 11

1. Retaining bolts (4)

13. Detach the wiring from the electrical distribution box. Remove the lead-through plate from the rear wall of the cab and withdraw the wiring through the hole.

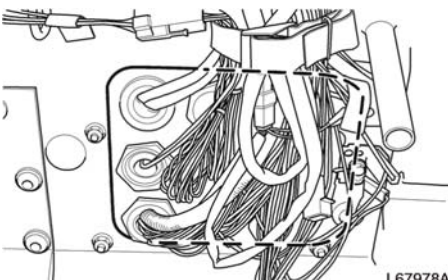


Figure 12

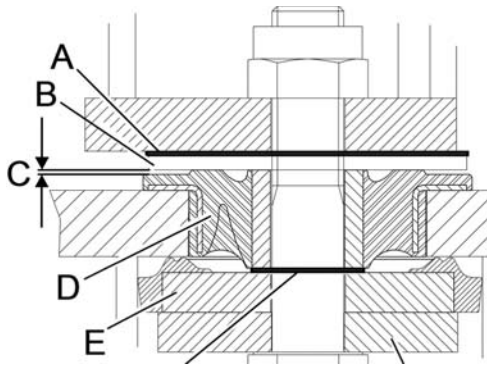


Figure 13
Cab element (diagrammatic drawing)

- A. Adjusting shims, selected before the rubber elements are fitted in place, for compensating for dimensional differences between cab and cab mounting
- B. Washer
- C. Air slot
- D. Attachment
- E. Plate
- F. Adjusting shim, approx. 1 mm (0.039 in) thick (front cab element only)

NOTE!

Important to prevent excessive compression of the rubber element.

- G. Washer

14. Remove the cab's four retaining bolts, washers, plate and, if fitted, adjusting shims.



The adjusting shims must be refitted on the same cab element as they were removed from. This is to ensure that no change occurs in the functionality of the cab elements.

15. Attach the lifting device and sling as shown in the illustration.

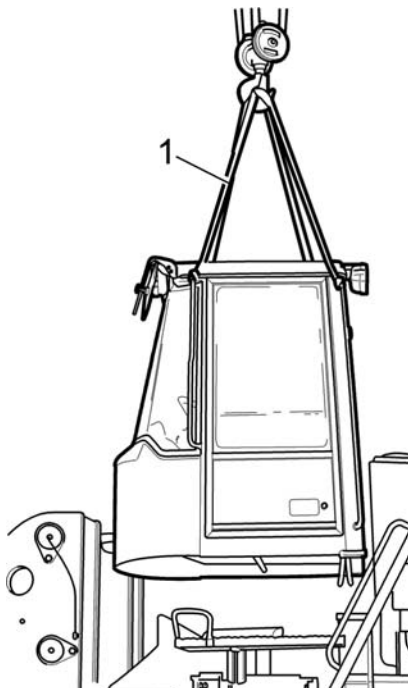


Figure 14

1. Sling, 4 m (4)

16. Lift away the cab.

Cab weight: **approx. 800 kg (1764 lbs)**

<https://truckmanualshub.com/>

17. Collect the washer (pos. B) and adjusting shims (pos. A, F) from each cab element, [Invalid linktarget].



The adjusting shims must be refitted on the same cab element as they were removed from to ensure that no changes occur in the functionality of the cab elements.

Capacities

<https://truckmanualshub.com/>

Engine, when changing oil incl. filter	16 l (4.2 US gal)
Fuel tank	210 l (55.4 US gal)
Cooling system, total	53 l (14.0 US gal)
Hydraulic transmission, total	33 l (8.7 US gal)
Hydraulic transmission, when changing oil incl. filter	25 l (6.6 US gal)
Dropbox when changing oil	4.7 l (1.2 US gal)
Front axle, when changing oil	33 l (8.7 US gal)
Rear axle	41 l (10.8 US gal)
Amount of refrigerant R134a	2.0 + 0.1 kg (4.4 + 0.2 lbs)
Hydraulic system, total	130 l (34.3 US gal)
Hydraulic oil tank	102 l (26.9 US gal)

Capacities

Engine, when changing oil incl. filter	24 l (6.3 US gal)
Fuel tank	255 l (67.3 US gal)
Cooling system, total	65 l (17.2 US gal)
Hydraulic transmission, total	45 l (11.9 US gal)
Hydraulic transmission, when changing oil incl. filter	35 l (9.2 US gal)
Front axle, when changing oil	33 l (8.7 US gal)
Rear axle	41 l (10.8 US gal)
Amount of refrigerant R134a	2.0 + 0.1 kg (4.4 + 0.2 lbs)
Hydraulic system, total	210 l (55.4 US gal)
Hydraulic oil tank	145 l (38.3 US gal)

INSTALLATION INSTRUCTION

<https://truckmanualshub.com/>

VOLVO CONSTRUCTION EQUIPMENT



Ref. no. VOE21G1003017	Kit no. 11171864	Option no. ---	Operation no. ---	Issuer WLO	Date 2015-01-22	Page 1/6
Regarding Non-Volvo units (machine without Can-Bus integration)						

CareTrack



WARNING!

Read all signs and instructions on the machine and the safety instructions in the operators manual, before you start working on the machine.

The installation instructions are based on the use of special tools, the E-tool and standard tools generally available on the market, and also on our operators manuals and service manuals.

The equipment should be installed by qualified personnel of an authorised workshop.

Volvo Construction Equipment AB, Customer Support Division disclaims all responsibility if tools and work methods other than those described in the instructions are used.

Kit list: 11171864

Part No.	Qty.	Designation
11171864	1	Cable harness

Op. no. 390-902

Tools:
Tech Tool



Kit no. 11171864			Option no.	

Order the W-ECU suitable for the appropriate market according to table below.
W-ECU are ordered separately.

Description	W-ECU kit	Basic Conversion kit Non ESW**	Advanced Conversion kit ESW**	Conversion kit SW
W-ECU 2G	VOE 17202839 (contains W-ECU: 11381209 Antenna: 17413636)	11720511	11720495	11720602
W-ECU 2G with Satellite	VOE 17202841 (contains W-ECU: 11381207 Antenna: 17413636 SAT antenna: 17437414)	11720510	11720494	11720602
W-ECU 2G China	VOE 17202851 (contains W-ECU: 11381465 Antenna: 17413636)	11720516	11720500	11720602
W-ECU 2G Brazil	VOE 17202843 (contains W-ECU 11381560 Antenna: 17413636)	11720515	11720499	11720602
W-ECU 2G with Satellite Brazil	VOE 17202849 (contains W-ECU: 11381460 Antenna: 17413636 SAT antenna: 17437414)	11720514	11720498	11720602
W-ECU 3G *	W-ECU: 11384310 Antenna: 17413636	11720794	11720796 (Other machines) 11720896 (ART F(A0xx) and ART G)*** 11720835 (WLO H)*** 11720859 (EXC E)*** 11720897 (GRD C)***	11720602
W-ECU 3G with Satellite *	W-ECU: 11384320 Antenna: 17413636 SAT antenna: 17437414	11720793	11720795 (Other machines) 11720806 (ART F(A0xx) and ART G)*** 11720835 (WLO H)*** 11720859 (EXC E)*** 11720887 (GRD C)***	11720602

V1153304

*** Do not use 11720602 for these applications

** ESW = Embedded Software

*Only in markets where CareTrack is launched with 3G

Ref. no.	Kit no. 11171864	Option no. ---	Operation no. ---	Issuer WLO	Date	Page 3/6
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Work description

- 1 Start Tech Tool. In the identify window, chose machine, type " Other" and chose model "CARETRACK"
- 2 Create a chassis-ID for the CareTrack W-ECU by running the operation 17061-3 "Central system, update, create Care-Track chassis-ID". Make a note of the chassis-ID.
- 3 Update the machine in the central system with the operation 17056-3 "Central System, Updating, Chang Software ". If asked for the chassis-ID, use the newly created chassis-ID from the previous step. Check W-ECU Part No.
- 4 See table for conversion kit number in table on previously page.
- 5 Download the software for CareTrack.
- 6 Turn of the battery disconnect switch.

Antenna mounting.

NOTE! Mount antenna with unobstructed view to sky, with no metal structure covering antenna. Antenna should also be placed as far away from each other as practical and away from other radio communication devices to avoid possible signal interference.

- 7 Measure antenna locations on cab roof. Quantity of location will depend upon quantity of antennas being utilized. One for the GPS/GSM antenna (oval Area) and one for the satellite antenna (round area). The recommended hole size is 15mm. Mount the antenna. Antennas may also be mounted on mirror brackets, or even inside the cab, close to the vehicle windscreen. using locally manufactured mounting brackets.



Fig. 1 Suggested antenna positions on roof.

NOTE! When drilling in the cab, avoid any ROPS/FOPS structure.

NOTE!

When the bracket and satellite antenna have been mounted, ensure that the antenna and the bracket are grounded properly to the rest of the machine. A poor ground will affect the performance of the satellite antenna.

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Fig. 2 Antennas mounted

Part nr.	Qty.	Designation	Pos. in fig.
15198186	1	Satellite antenna	-
17413636	1	GPS/GSM antenna	-
8 Route the antenna cables into the cab at a suitable location. Use an existing hole or drill a new hole $\varnothing$ 16 mm to allow routing. Protect the cables from the hole edges using a cable grommet.			
9 Measure out a location inside the cab that if possible, is hidden from view. Drill 3 holes $\varnothing$ 4 mm that match the hole pattern on the W-ECU.			

Ref. no.	Kit no. 11171864	Option no. ---	Operation no. ---	Issuer WLO	Date	Page 5/6
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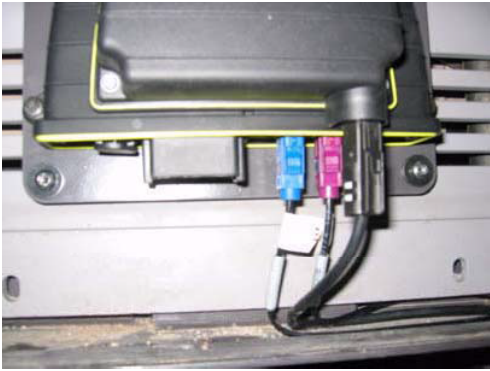


Fig. 4



Fig. 5

Inside the Cab

Mount the W-ECU where it is suitable.

- 10 Connect the antenna cables. Blue and violet connectors (GPS/GSM antenna). Black connector (optional satellite antenna) See figure 4.
- 11 Connect the 18 pin connector on the cable harness to the W-ECU.
- 12 Connect the cable harness as follows. Further holes may need to be drilled to gain access to the engine compartment. See also wiring diagram on last page.
- 13 Cable No 101 (white) to generator signal (active low)
Cable No 105 (Red) Battery feed + (30)
Cable No 110 (Red) Ignition key, active high (15)
Cable No 111 (Black) Earth (31)
- 14 Reset the battery disconnect switch.
- 15 Program the W-ECU with downloaded software by using operation 39736-3 "MID 142 Control unit, Programming".
- 16 If satellite modem used run operation 17030-3 "Parameter programming" and set parameter "IGU Satellite Modem Installed" set to "1"
- 17 Run operation 39796-3 "MID 142 Control unit, reset".
- 18 A flashing diode on the W-ECU indicates that the unit is receiving power correctly
- 19 The vehicle/CareTrack unit can now be registered on the CareTrack web page.



Volvo Construction
Equipment Group

Installation Instruction

Genuine Accessories

REF. NO	KIT NO	DATE/DEPT.	PRODUCT	PAGE
12 2 779 3703	11707409 (80264)	2003-03 CEE-43	L120D	1/14

Spakstyrning

Satslista

Art.nr	Antal	Benämning
930445	3	Distansring
931216	2	Stödring
931224	1	Nippel
931228	1	Nippel
931961	1	Slang
932395	1	Slang
935680	1	Slang
946036	1	Låsmutter
946472	2	Skruv
969436	3	Sextandhålskruv
971304	1	Skruv
976944	3	Bricka
4821860	1	T-nippel
4821862	1	T-nippel
4821878	1	Vinkelnippel
4880281	4	Nippel
4880429	1	Nippel
4880701	1	Växelventil
4881440	4	Bandklamma
4881441	1	Vinkelnippel
4897257	3	Vinkelnippel
4974017	1	Koppling
11006059	1	Bricka
11006824	1	Skyddshuv
11007385	1	Fäste
11007861	1	Arm
11007864	1	Lock
11007869	1	Fäste
11007958	1	Fot
11014375	1	Konsol
11039561	1	Ventil
11040513	1	Ledningsmatta
11104606	2	Spännrem
11104695	1	Låsspak
11104730	1	Ratt
11104747	1	Armstöd
11147868	1	Plastmutter
11152082	1	Ledningsmatta
13933153	2	Slang
13955295	4	Skruv
13971380	2	Sextandhålskruv



VARNING!

Läs alla skyltar och anvisningar som finns på maskinen och säkerhetsinstruktionerna i instruktionsboken innan Du börjar arbetet på maskinen.

Monteringsanvisningen är baserad på användning av specialverktyg, E-verktyg och i allmänna handeln tillgängliga standardverktyg samt instruktions- och verkstadshandböcker.

Utrustningen ska monteras av behörig person på auktoriserad verkstad.

Volvo Construction Equipment Group fransäger sig allt ansvar om andra verktyg eller arbetsmetoder än de i anvisningen beskrivna kommer till användning.

Spakstyrning

Arbetsbeskrivning

- 1 Avlasta lyftframverket mot golvet.
- 2 Anslut en vakuumpump till hydrauloljetanken. I annat fall måste hydrauloljetanken tömmas.

Ventil

- 3 Ta bort täckplåten under hyttgolvet vid den vänstra stegen.
- 4 Sätt dit nipplar och packningar i ventilen, port A och B.

Art.nr	Benämning	Ant.	Pos. i Fig. 1
11039561	Ventil	1	3
4880281	Nippel	2	15
4897257	Vinkelnippel	2	16

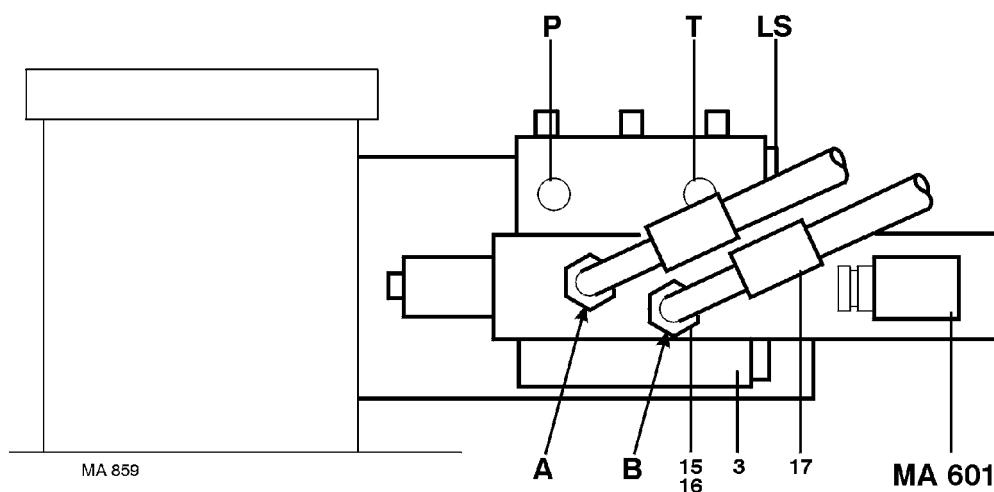


Fig. 1

- 5 Sätt dit nipplar och packningar i ventilen, port P och T.
Se Fig. 1 och Fig. 4.

Art.nr	Benämning	Ant.	Pos. i Fig. 4
931228	Nippel	1	7
4880429	Nippel	1	11
4897257	Vinkelnippel	1	12

- 6 Sätt dit en nippel i ventilens LS port. Se Fig. 1 och Fig. 4.

Art.nr	Benämning	Ant.	Pos. i Fig. 4
931224	Nippel (8-R1/4)	1	24

- 7 Sätt dit ventilen på en konsol.

Art.nr	Benämning	Ant.	Pos. i Fig. 4
11014375	Konsol	1	1
13955295	Skruv (M8x20)	4	4

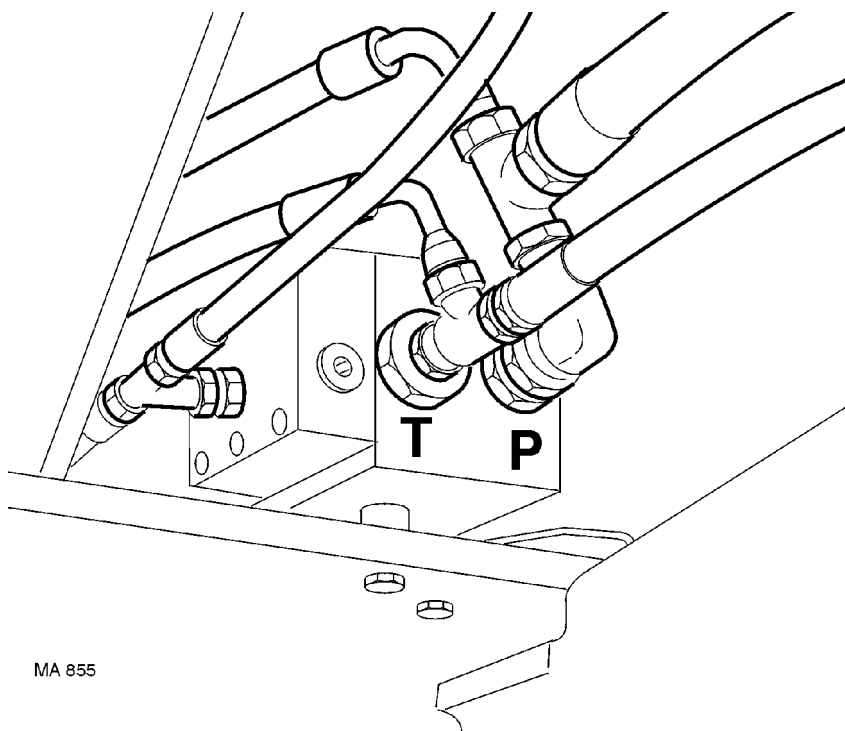
- 8 Sätt dit konsolen med ventilen på vänster hyttstolpe.

Art.nr	Benämning	Ant.	Pos. i Fig. 4
946472	Skruv (M10x30)	2	2

- 9 Ta bort täckplåten under hyttgolvet vid den högra stegen.

Slang

- 10 Ta bort de befintliga slangarna från port T och P på skiftventilen.
Se Fig. 2 och Fig. 4.



MA 855

Fig. 2

- 11 Sätt dit T-nipplar och anslut befintliga slangar på skiftventilens portar T och P. Se Fig. 2 och Fig. 4.

Art.nr	Benämning	Ant.	Pos. i Fig. 4
4821878	Vinkelnippel	1	9
4821860	T-nippel	1	10
4821862	T-nippel	1	14

- 12 Sätt dit slangarna från skiftventilens portar T och P, till den vänstra ventilens portar. Se Fig. 2 och Fig. 4.

Art.nr	Benämning	Ant.	Pos. i Fig. 4
932395	Slang (5/8x1100)	1	8
935680	Slang (5/8x1100)	1	13

- 13 Ta bort den befintliga slangen och nippeln från port LS på styrventilen. Sätt dit vinkelnippeln, kopplingen och växelventilen. Sätt tillbaka slangen på styrventilen.

Art.nr	Benämning	Ant.	Pos. i Fig. 3
4881441	Vinkelnippel	1	19
4974017	Koppling	1	20
4880701	Växelventil	1	21
931216	Stödring	2	22

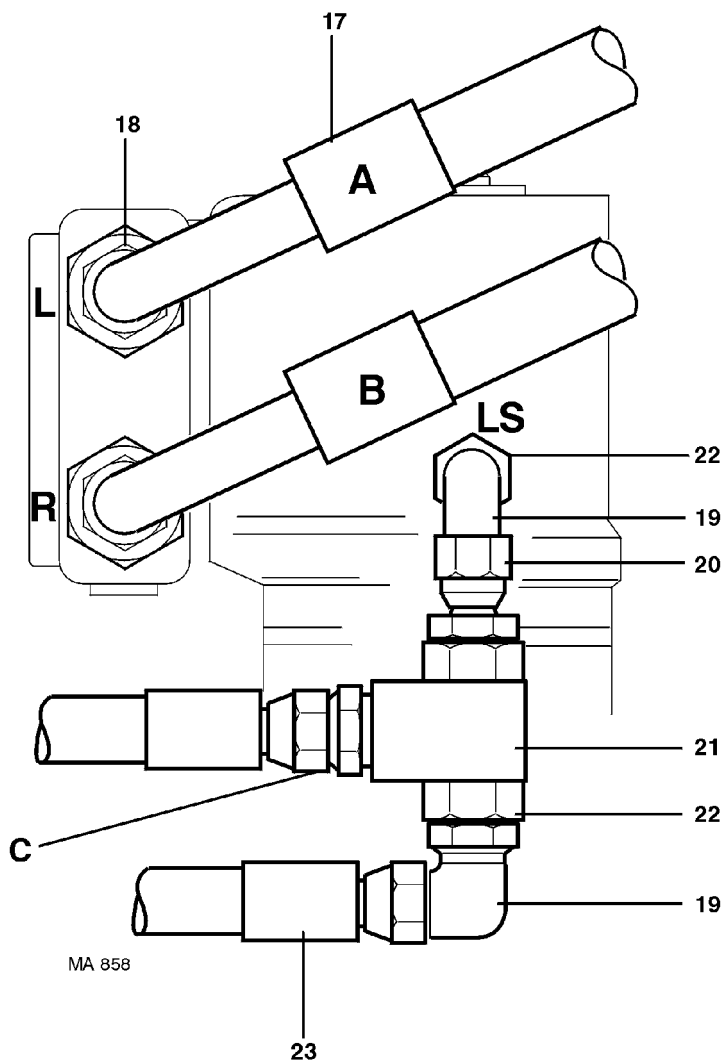


Fig. 3
C Flyttad från LS porten

- 14 Sätt dit slangen från port LS på styrventilen till port LS på vänster ventil.

Art.nr	Benämning	Ant.	Pos. i Fig. 3
931961	Slang (1/4x1400)	1	23

- 15 Ta bort pluggarna och sätt dit nipplar i port L och R på styrventilens chock- och efterfyllnadsventil.

Art.nr	Benämning	Ant.	Pos. i Fig. 3
4880281	Nippel	2	18

- 16 Sätt dit två slangar från styrventilens chock- och efterfyllnadsventil, port A och B.

Port L till port A.

Klamra fast slangarna. Se Fig. 1, 3 och Fig. 4.

Art.nr	Benämning	Ant.	Pos. i Fig. 3
13933153	Slang (3/8x1500)	2	17
11104606	Spännrem	2	-

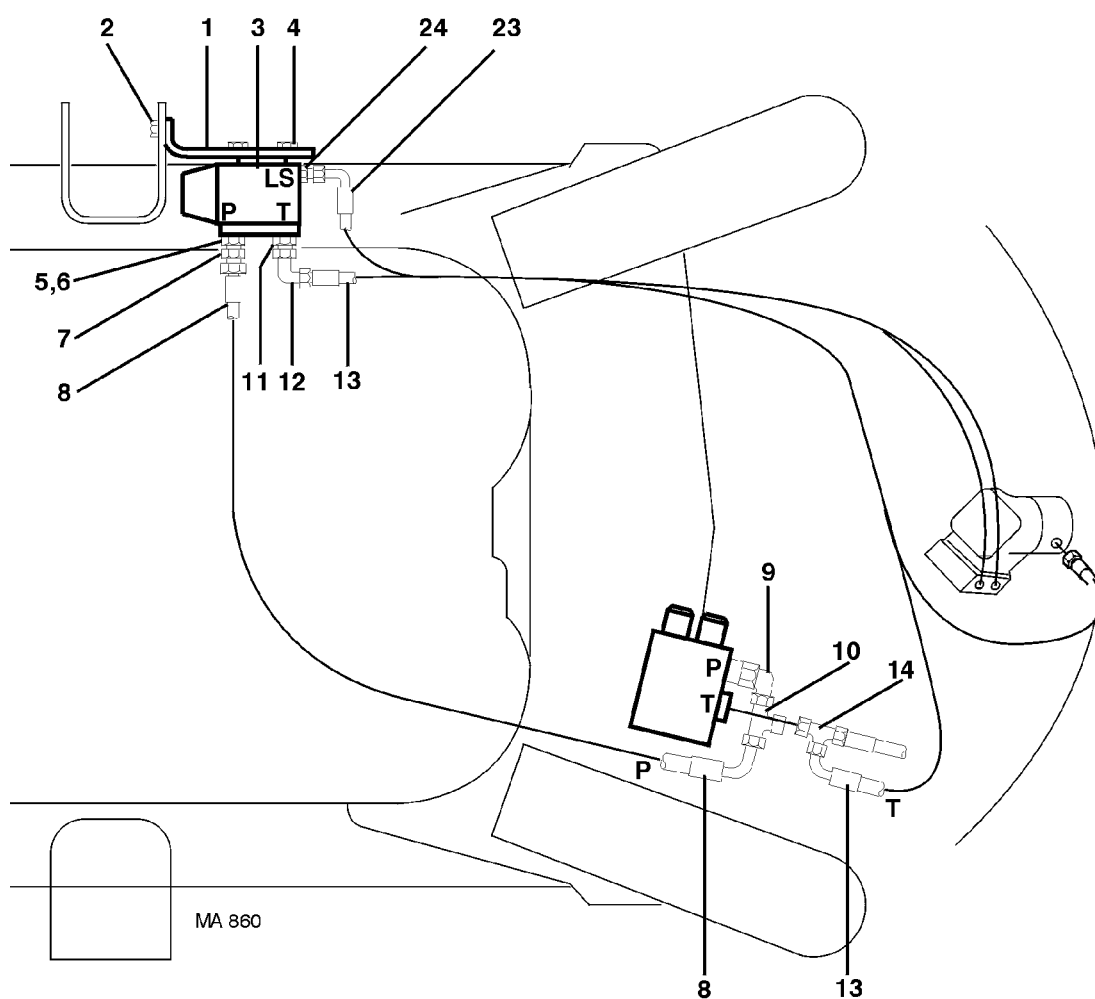


Fig. 4

- 17 Ta bort vakuumpumpen eller fyll på olja i hydrauloljetanken.

Förarstol

- 18 Gör tre hål i klädseln och sätt dit två fästen på ryggstödetets baksida, se Fig. 5 och Fig. 6.

OBS! De gängade hålen är i nederkant på ryggstödet.

Se Fig. 9 för respektive stolfabrikat.

Art.nr	Benämning	Ant.	Pos. i Fig. 9
11007385	Fäste	1	4
11007869	Fäste	1	1
930445	Distansring (12x10)	3	3
969436	Sextandhålskruv (M8x40)	3	2
13971380	Sextandhålskruv (M8x16)	2	5

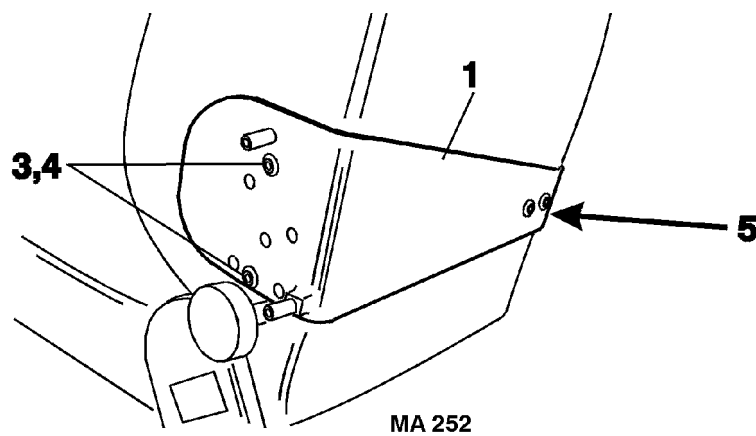


Fig. 5

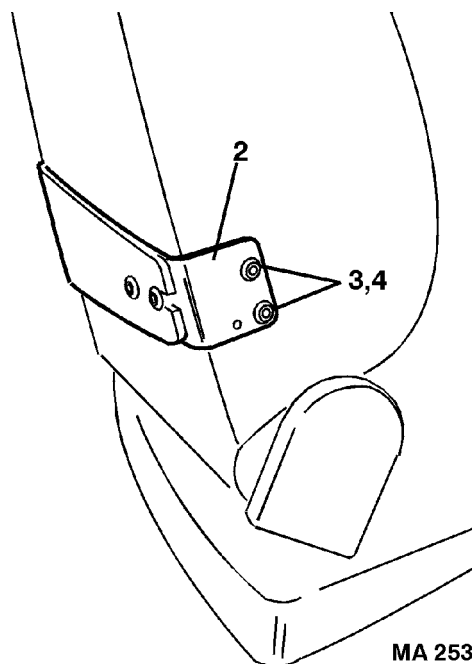


Fig. 6

19 Sätt dit armen på ryggstödetets fäste.

Art.nr	Benämning	Ant.	Pos. i Fig. 9
11007861	Arm	1	6
976944	Bricka (8.4x16x1.5)	1	7
946036	Låsmutter (M8)	1	8
11006824	Skyddshuv	1	9
976944	Bricka (8.4x16x1.5)	1	10
11104730	Ratt	1	11

20 Sätt dit armstödet på fästet.

Art.nr	Benämning	Ant.	Pos. i Fig. 9
11147868	Armstöd	1	15
11007864	Lock	1	12
976944	Bricka (8.4x22x1.5)	1	13
11104695	Låsspak	1	14
11006059	Bricka	1	18

21 Klamma fast ledningsmattan på armen.

Art.nr	Benämning	Ant.	Pos. i Fig. 9
11007958	Fot	1	16
971304	Skruv (M5x12)	1	17

Elinstallation i hytt

22 Ta bort skyddet på hyttväggen bakom förarstolen och gum-mikåpan.

23 Klamma armstödetets ledningsmatta mot den befintliga ledningsmattan.

Art.nr	Benämning	Ant.	Pos. i Fig. 7
4881440	Bandklamma	1	18

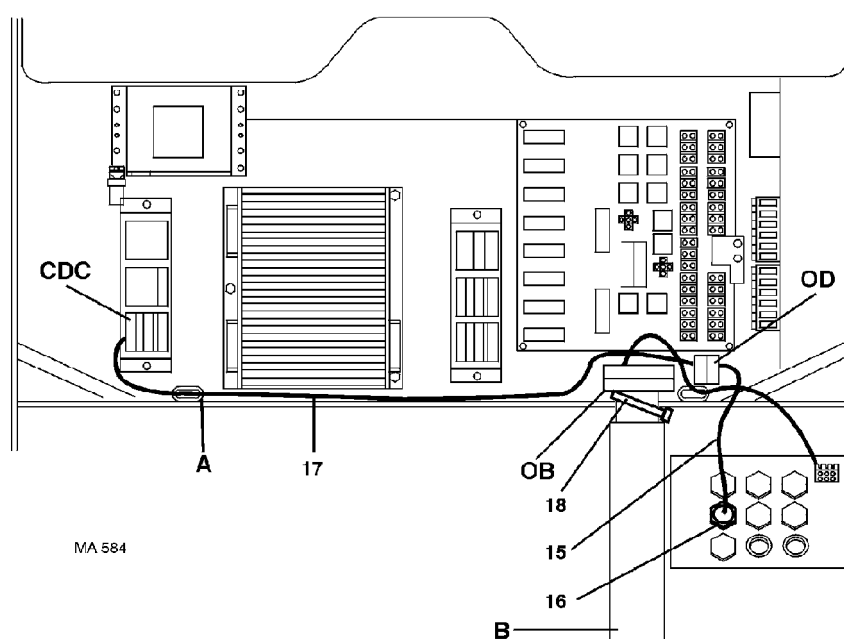


Fig. 7

- A Klammas med befintliga remmar
B Ledningsmatta från armstödet

24 Sätt dit en ledningsmatta mellan magnetventilen MA601 på manöverventilen och hyttgenomgången vid vänster hytts-
tolpe. Se Fig. 1, 5 och Fig. 6.

Art.nr	Benämning	Ant.	Pos. i Fig. 7
11152082	Ledningsmatta	1	15
11147868	Plastmutter	1	16
4881440	Bandklamma	3	-

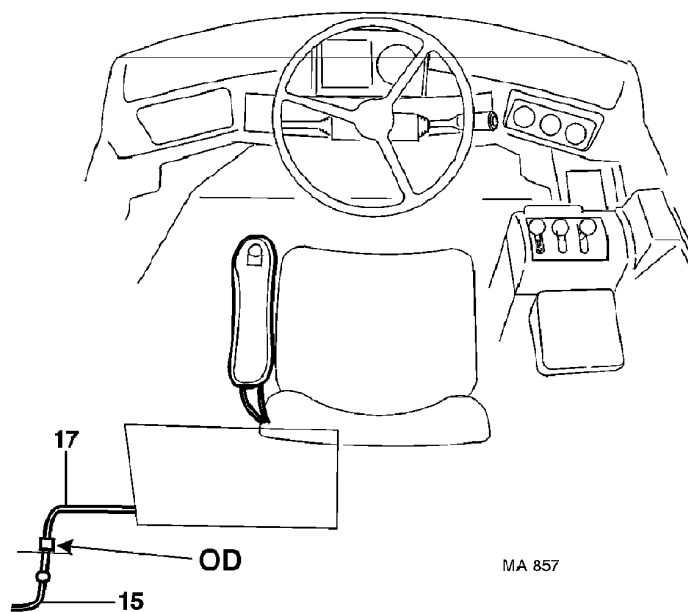


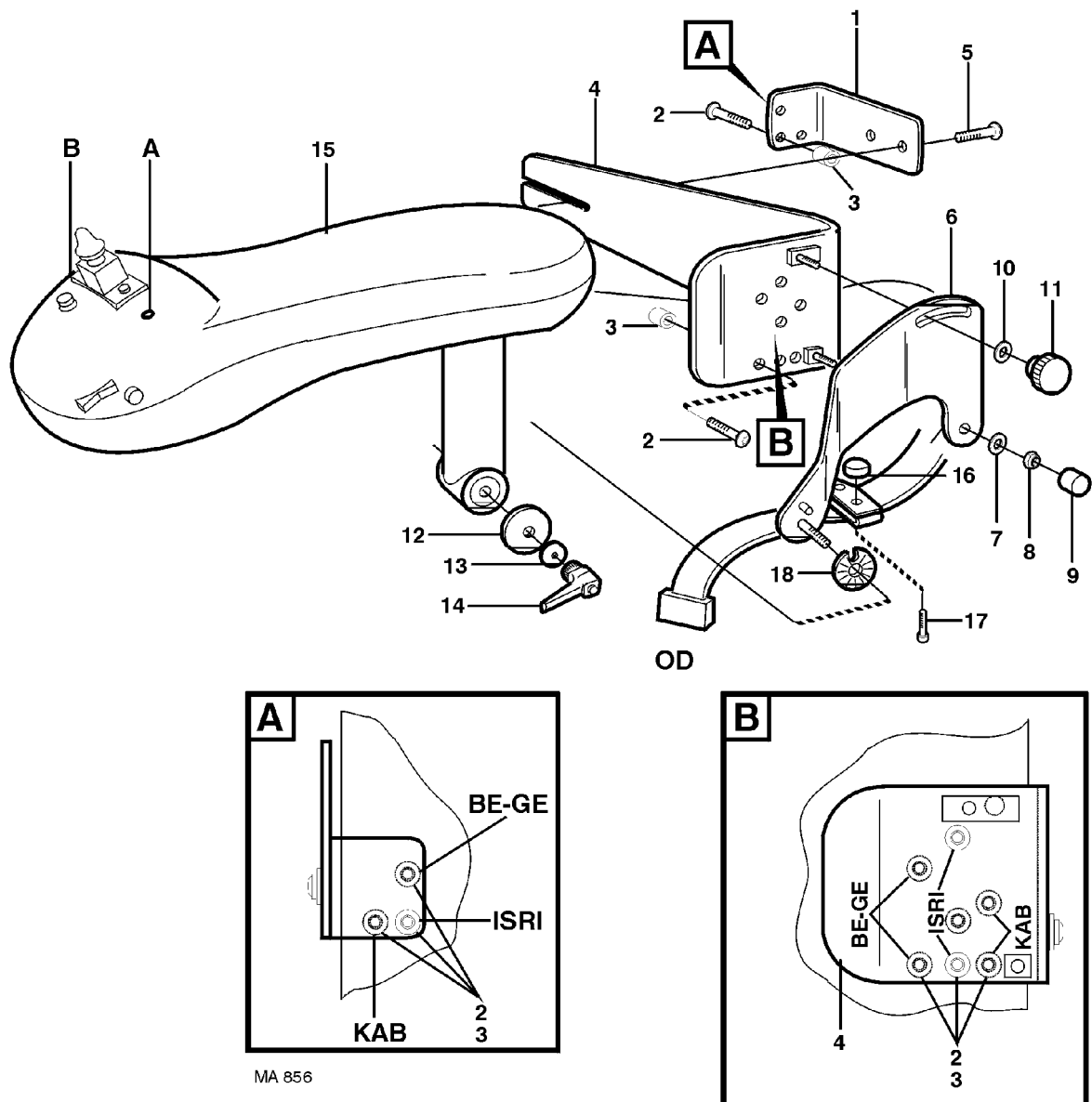
Fig. 8

25 Sätt dit ledningsmattan och anslut kontakterna.

Art.nr	Benämning	Ant.	Pos. i Fig. 8
11040513	Ledningsmatta	1	17

26 Sätt dit skyddet på hyttväggen bakom förarstolen.

27 Skriv in utrustningsnumret 80264 på maskinkortet.



MA 856

Fig. 9

Provningsföreskrifter för spakstyrning (CDC)

Efter installation enligt gällande monteringsritningar för respektive produkt, ska styrningens egenskaper trimmas in.

Detta sker med två trimskruvar på styrreglagets ovansida.

OBS! Borra hål i plasten vid A och B, se Fig. 14.

Vänster skruv A är för justering av styrhastigheten åt vänster och höger skruv B är för justering av styrhastigheten åt höger.

Vridning medurs ökar och vridning moturs minskar hastigheten.

Justering av styrhastigheten ska ske efter varmkörning av maskinen och vid ett motorvarvtal på 25 r/s (1500 r/min).

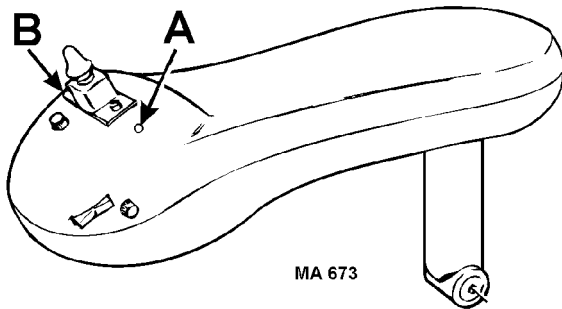


Fig. 10

- 1 Se till att det finns utrymme kring maskinen och att det inte finns folk inom riskzonen för styrmanöver.
Starta och låt motorn gå på tomgång.
- 2 Fäll ner vänster armstöd på förarstolen.
- 3 Aktivera strömställaren för "Dubbelkommando" på armstödet till höger om styrspaken.
Grön kontrollampa lyser för aktiverat "Dubbelkommando" på instrumentpanelen.
- 4 För styrspaken sakta åt vänster respektive höger för kontroll av styrfunktionen.
- 5 Justera trimskruvarna så att tiden från fullt höger till fullt vänster blir 3,5-4,0 sekunder.
OBS! Spaken ska vara fullt utstyrd åt respektive håll och motorvarvtalet 25 r/s (1500 r/min).
Styrhastigheten åt vänster respektive höger ska vara så lika som möjligt.
- 6 Låt motorn gå på tomgång.
- 7 Lyft armstödet till uppfällt läge.
Den gröna kontrollampan för aktiverat "Dubbelkommando" ska automatiskt släckas när mikrobrytaren i armstödet påverkas, samtidigt som armstödet passerar ca 45° vinkel från horisontalplanet.

- 8 Fäll ner vänster armstöd på förarstolen.
- 9 Aktivera strömställaren för "Dubbelkommando" på armstödet till höger om styrspaken.
Grön kontrollampa lyser för aktiverat "Dubbelkommando" på instrumentpanelen.
- 10 För växelspaken vid ratten till läge "fram". Den gröna kontrollampan för aktiverat "dubbelkommando" ska då automatiskt släckas = Prioriterad rattstångsomkopplare, fram/back.
- 11 Aktivera strömställaren för "Dubbelkommando" på armstödet till höger om styrspaken.
Grön kontrollampa lyser för aktiverat "Dubbelkommando" på instrumentpanelen.
- 12 För växelspaken vid ratten till läge "back". Den gröna kontrollampan för aktiverat "Dubbelkommando" ska då automatiskt släckas = Prioriterad rattstångskopplare, fram/back.
- 13 Aktivera strömställaren för "Dubbelkommando" på armstödet till höger om styrspaken.
Grön kontrollampa lyser för aktiverat "Dubbelkommando" på instrumentpanelen.
- 14 Fram till vänster på armstödet sitter en vippströmbrytare för växellägena fram, neutral och back.
Kontrollera att denna funktion blir rätt när det gäller fram och back.
- 15 På armstödet vänstra sida sitter en liten svart knapp för funktionen "Kick down". Den kan endast användas när strömställaren för "Dubbelkommando" är aktiverad och den gröna lampan lyser.

Kontroll av fram/back - funktionen

- 1 Kontrollera att maskinen reagerar normalt på den ordinarie växelspakens funktioner.
- 2 Kontrollera att maskinen inte reagerar på fram/back - manöver från vänster armstöd.

- 3 Aktivera strömställaren för "Dubbelkommando".
Den gröna lampan ska lysa.
- 4 Kontrollera att maskinen reagerar på manöver från fram/
back- reglaget på vänster armstöd.
- 5 Kontrollera att den ordinarie styrningen fungerar även när
"Dubbelkommando" är aktiverat.

OBS! När styrspaken inte är påverkad samtidigt som
rattstyrningen används.

- 6 Avaktivera "Dubbelkommando" genom att fälla upp armstö-
det.
- 7 Kör maskinen med aktiverad spakstyrning. Kontrollera på
maskindisplayen att 4:e växeln går in.

Central lubrication

<https://truckmanualshub.com/>

The function engages central lubrication and prevents unnecessary lubrication of the machine, such as when the machine is idling with the gear selector in Neutral.

To ensure lubrication even in the event of no signal, such as due to a break in the cable, the signal to central lubrication is inverted, in other words no signal activates central lubrication.

Input signals	Output function conditions	Output functions
○ Directional gear ○ Engine On/Off	○ Directional gear in Forward or Reverse ○ Engine On	○ Activation of central lubrication

Charging of batteries

<https://truckmanualshub.com/>

Explosion hazard

When a battery is being charged, an explosive mixture of oxygen and hydrogen gas is formed. A short circuit, an naked flame or a spark near the battery can cause a powerful explosion. Always switch off the charging current before removing the charging clamps. Ventilate well, especially if the battery is charged in a confined space.

Corrosive sulphuric acid

The battery electrolyte contains corrosive sulphuric acid. Electrolyte spilled on bare skin must be removed immediately. Wash with soap and plenty of water. If electrolyte gets into your eyes or any other sensitive part of the body, rinse off immediately with plenty of water and seek immediate medical attention.

Designation	Function
31R1	Battery disconnect switch
31R2	Alternator
31R3	Starter motor
31R4	Rear frame
31R	Cab framework (rear frame)
31C	Cab frame, ground terminals
31S	Cab frame, ground terminals, cable harness SW-panel
31D	Cab frame, ground terminals, cable harness front panel
31C	Cab frame, ground terminals, cable harness rear wall
31U	Cab frame, ground terminals, cable harness under cab
31F	Cab frame, front frame
31F1	Front frame
31F2	"Black box" front frame
31M	Cab frame, ground terminals, engine
31	Circuit board
31T	Cab frame, ground terminals, cable harness transmission
31I	Cab frame, ground terminals, I-ECU
31AC	Cab frame, ground terminals, AC relays

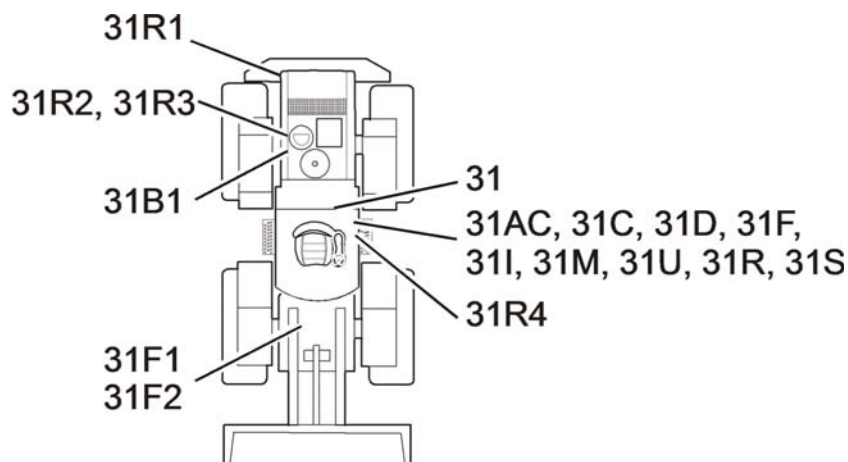


Figure 1

Op nbr 52001

[11 666 020 Pressure gauge 0–25 MPa \(0 - 3626 psi\)](#)

[11 666 037 Hose](#)

The following applies when checking:

Temperature: **Normal operating temperature**

Engine speed: **Low idle speed**

Unloading (cut-out) pressure (max. pressure): **15–15.5 MPa (2176–2248 psi)**

Cut-in pressure: **12–13 MPa (1740–1885 psi)**

Checking

1. Release the brake system pressure by depressing the brake pedal repeatedly (30–40 times).
2. Connect the pressure gauge to the pressure outlet on the brake valve.

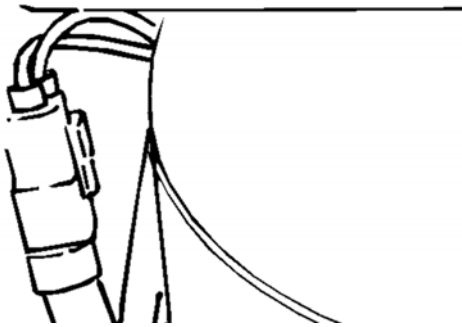


Figure 1
Connecting pressure gauge

1. Hose 11 666 037 with pressure gauge 11 666 020
 2. Adjusting screw, unloading pressure
3. Start the engine and let it run at a slow idle. The pressure gauge will show a rapid increase in pressure up to the lowest precharge pressure of any of the accumulators. The pressure will then rise slowly, see also [Invalid linktarget]. Check that the warning lamp for low brake pressure goes out at approx. 9 MPa (1305 psi), see [Invalid linktarget].

Precharge pressure: **min. 3.5 MPa (508 psi)**

Max. pressure: **15.0–15.5 MPa (2176–2248 psi)**

NOTE!

If an accumulator has lost all precharge pressure, it will not be detected during this check.

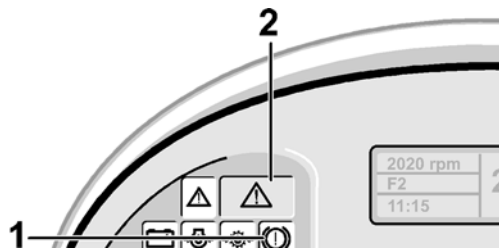


Figure 2
Instrument panel

1. Warning light, low brake pressure
2. Central warning

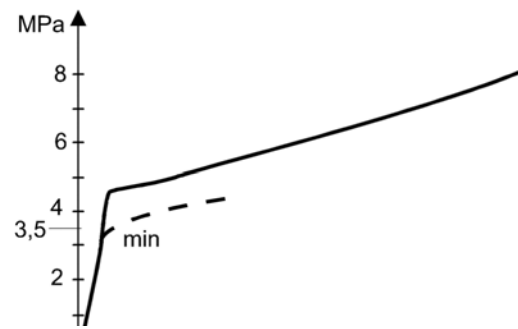


Figure 3
Diagram, brake pressure

4. Any adjustment of the unloading pressure (max. pressure) is done on the adjusting screw on the underside of the foot brake valve, pos. 2 [Invalid linktarget].
5. Apply the brake a few times with the engine running at low idle. When the pressure has dropped to 12 MPa (1740 psi), the brake pump should cut in so that the pressure increases to the max. pressure for the brake system.
6. Run the engine until max. pressure is obtained, then turn off the engine.
Max. pressure: **15.0–15.5 MPa (2176–2248 psi)**
7. Carefully brake until the pressure has dropped to 13 MPa. Then check that the number of "full brake applications" is at least three (pedal slowly depressed fully and then released) before the pressure drops to 9 MPa and the warning lamp for low brake pressure lights up.
If the pressure has dropped below 9.0 MPa (1305 psi), it is an indication of a malfunction in the brake system. The problem may be due to:
 - air in the brake lines, see Brake system, bleeding air.
 - an accumulator has a precharge pressure which is too low or is missing precharge pressure altogether, i.e., defective diaphragm, see also Accumulator, checking.
8. Depress the brake pedal repeatedly and check that the brake pressure stops at the previously measured value for lowest accumulator pressure. Release the brake system pressure according to step 1.
If the precharge pressure in any one accumulator has dropped below 3.5 MPa (508 psi), then it must be changed.

Checking stall speed

<https://truckmanualshub.com/>

Op nbr 23602

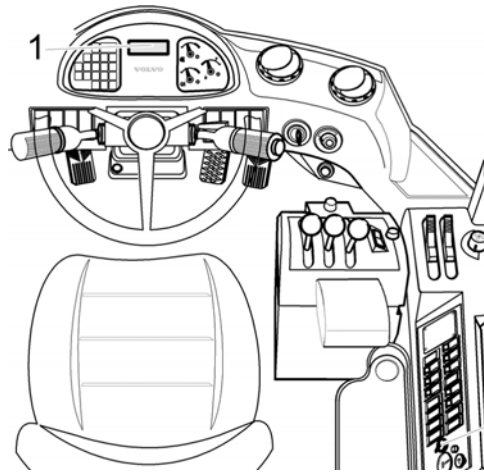


Figure 1
Checking idle speed

1. Display panel
2. Connection point for service display panel

Before checking the stalling speeds, make sure that the engine, hydraulic transmission and hydraulic system have reached normal operating temperature.

When carrying out this check, all major current consuming equipment and the air conditioning system, if fitted, must be switched off.

NOTE!

For reasons of safety, engine rpm should only be checked from the cab. Reading should be carried out within 10 seconds. If the engine is run for longer periods it could overheat.

1. Select information about the engine and engine speed on the information display unit.
2. Check the high idle speed and adjust if necessary.
3. Engage third gear (forward or reverse). Apply the service brake and parking brake so that the wheels are locked and the machine cannot move.
4. Run the engine at maximum revs. Read off the stall speed.

Stall speed, 3, gear L90D: 2190 ±75 rpm.

Stall speed, 3, gear and working hydraulics L120D: 2120 ± 75 rpm.

Keep third gear engaged and move the lever for 3/4 function all the way forward. On machines not equipped with 3- or 3/4 function, the lifting arm is lowered with full lever movement.

Stall speed L90D/L120D: 1580 ±100 rpm.

If the speed reading obtained is higher than the specified stalling speed, this could be due to the torque converter, hydraulic transmission or hydraulic system, e.g. pressure too low.

If the speed is lower than that specified, this could be because the torque converter or engine (or its peripheral equipment) is in poor condition and perhaps because of too high a working pressure in the hydraulic system.

A divergent stalling speed is not in itself a fault that calls for repair but should be used as an aid in connection with fault tracing.

Circuit list

<https://truckmanualshub.com/>

Circuit No.	Wiring diagram	Function
2.010	3	Starter motor with starter inhibitor
2.020	3, 14	Preheating
2.030	3	Engine shutdown / key-turn engine shutoff
2.040	4	Engine speed
2.050	4	Engine oil pressure
2.070	4	Coolant temperature
2.100	4	Fuel level
2.110	5	Air filter pressure
2.130	5	Radiator fan adjustment
3.010	6	Left, front parking light
3.020	6	Right front side light
3.030	6	Parking light right rear
3.040	6	Parking light right front
3.050	6	Right front side light
3.060	6	Parking light left rear
3.080	6	Guide lights in switches
3.090	6	Low beam, left
3.100	6	Low beam, right
3.110	6	High beam, left
3.120	6	High beam, right
3.130	6	Indicator light, high beam
3.140	7	Interior light
3.150	7	Work light cab, front left
3.160	7	Work light cab, front right
3.170	7	Work light front mudguard, left
3.180	7	Work lights attachment
3.190	7	Work light, front mudguard, right
3.200	7	Work light, radiator casing, left
3.210	7	Work light, radiator casing, right
3.220	7	Indicator light, work lights
3.230	7	Work light, cab, rear left
3.240	7	Work light, cab, rear right
3.250	8	Instrument lighting
3.260	8	Rotating beacon
3.270	8	Brake lights
3.280	8	Brake lights
3.285	8	Hazard flashers
3.290	8	Control lamp, direction indicators
3.295	8	Travel direction
3.300	8	Direction indicator, front left
3.310	8	Direction indicator, rear left
3.320	8	Direction indicator, front right
3.330	8	Direction indicator, rear right
4.010	9, 14	Gearshifting
4.020	9, 14	Kick-down
4.030	9, 14	Forward/Reverse
4.040	9	Control lever carrier activation, dual control
4.050	9	Lever console Front/Rear
4.060	9	Lever console, Kickdown
4.070	9	Lever console, Engine brake (downshifting)

4.080	17	CDC Armrest
4.090	17	CDC Activation
4.100	17	CDC Forward/Reverse
4.110	17	CDC Kickdown
4.120	10	Filter indicator, transmission
4.140	10	Travel speed
4.150	11	Gearshifting solenoid, N/D/F/R
4.160	11	Gearshifting solenoid, gears
4.170	11	Transmission disengagement activation
4.180	12	Oil pressure, transmission
4.190	12	Oil temperature, transmission
4.210	12	Mode selector
4.220	190	Limited slip
4.230	13	Oil temperature, front axle
4.240	13	Oil temperature, rear axle
4.260	190	Travel speed limited machine
5.010	15	Output brake pressure
5.020	15	Brake pressure accumulator
5.030	15, 14	Low brake pressure
5.040	15, 14	Parking brake
5.045	32B	Parking brake with rider truck safety norms
6.010	16	Secondary steering
6.020	17	CDC steering
8.010	18	Wiper front
8.020	18	Washer front
8.030	18	Horn
8.040	18	Wiper rear
8.050	18	Washer rear
8.080	19	Cab fan
8.090	19	Air conditioning (AC)
8.150	20	Radio
8.170	20	Heating, operator's seat
8.180	20	Operator's seat with air suspension
8.190	20	Cigarette lighter
8.200	20	Back-up alarm
8.210	20	Buzzer
9.010	21, 21C	Bucket positioner
9.020	21, 21C	Boom kick-out
9.030	21	Attachment change
9.040	21	Attachment locking
9.050	21, 21C	Float position
9.060	22	4th hydraulic function
9.065	21C	Lever lock, single lever control
9.070	23	Boom Suspension System, activation
9.080	23	Boom Suspension System, function selection
9.090	23	Boom Suspension System, left
9.100	23	Boom Suspension System, right
9.120	23	Hydraulic oil tank, temperature
9.160	22	5th hydraulic function
9.310	140	Detent, 3rd hydraulic function

Language Code GB	Product WLO	Group 173	https://truckmanualshub.com/	No. 5	Version 2	Date 03/23/2012
Applies to Wheel Loaders						

Cleaning of the machine



Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.

Cause

- Information concerning corrosion protective coating applied to all Volvo Construction Equipment.
- Information concerning removal of the corrosion protective coating once the machines arrive at the Volvo Dealership.

Action

The corrosion protective coating that is applied to all Construction Equipment is a proven coating that provides excellent protection to metal exposed to harsh outdoor conditions.

There is a trend to use more and stronger chemicals with a pressure water jet. It is important that the proper mixture of concentration with water is correct. Use of higher concentration of chemicals and washing sponges with hard surfaces for frequent use will remove the surface protection.

Volvo Construction Equipment is using the following rust protection:

- Rust protector Dinitrol 4010 is mainly used under the cabin, for zink coated tubes, fittings and around the engine. It is sprayed over the whole engine and it is durable for up to 160 °C (320 °F). This protection is almost impossible to remove and should not be removed. Strong solvents will damage the paint work inside and outside.
- If the rust protector has to be removed on outside painted surfaces, hot water under high pressure is recommended.

We advice you to follow below recommendations for cleaning

The machine should be cleaned regularly using conventional car wash products or conventional machine wash products to minimize the risk of damage to the lacquer and other surfaces on the machine.

In order to minimize damage caused by road/sea salts or other corrosion compounds on newly delivered machines Volvo Construction Equipment requires that the machine be thoroughly washed within 2 days of arrival.

Recommendations for cleaning the machine

- Place the machine in a cleaning area where washing chemicals are normally collected.
- Use a normal car wash/machine wash product. Follow the instruction with the product.
- The water temperature must not exceed 60 °C (140 °F).
- If a pressure water jet is used, keep at least a 20–30 cm (8–12 in) distance between the nozzle and the machine surface.
- Use a sponge with a soft surface.
- Always finish with a complete wash only with just water.

NOTE!

If a high-pressure jet is used for cleaning, take great care. The electrical components and electrical leads can be damaged even at a fairly low pressure and temperature. Protect electrical leads in an appropriate way. The engine should be turned off and the battery disconnect switch switched off.

Removal of asphalt or other special hard dirt

- Use Whitespirit or conventional degreaser in a cold process. Follow the recommendation for use of the product.
- All removal (cleaning) should be followed by a normal wash procedure with the cleaner and be finished by a complete wash with only water.
- Please keep in mind that the use of degreaser agents may require special places for this work or you have to clean up the remains from the washing.

Keep the equipment in a good condition

- Frequent cleaning of the equipment.
- Polishing of surfaces, especially areas such as Cab or other similar once a year.
- Damaged surfaces should be repaired with recommended paint products as needed.
- Because of UV rays machines are best kept under cover for better paint protection. Machines stored in open hot sun light

could dull the paint work if not regularly cleaned and waxed.
<https://truckmanualshub.com/>

Cleaning engine compartment, instruction

- Machines operating in dusty environment or environment exposed to fire hazards, e. g. wood-processing, woodchip handling or grain handling and animal feed industries require daily attention and cleaning of the engine compartment and surrounding areas.
- When operating in other environments, inspection and cleaning is required at least once a week.

WARNING

Beware of rotating parts. Keep a safe distance.

WARNING

The engine must not be running when cleaning as rotating parts may cause injuries.

Please pay attention to the following:

- Loose material is removed with, for example, compressed air.
- Cleaning should preferably be carried out at the end of the working shift before the machine is parked.
- Begin with the highest areas and end with the lowest on top of the fuel tank and areas near the fuel tank.
- Use personal protective equipment such as protective goggles, gloves and respirator.
- After cleaning, check and rectify any leaks. Close all covers and hoods.

Cleanliness, brake and hydraulic systems

<http://www.manualshub.com/>

The utmost cleanliness must be observed in connection with all work on these systems. Wipe off all pipe and hose connections before they are disconnected, remove flakes of paint, etc. Plug all pipes, hoses, cylinders, etc. immediately after they have been disconnected. Never refit an unplugged hydraulic hose until it has been thoroughly cleaned.

Clutch pressure chart, L90D*

<https://truckmanualshub.com/>

	Lubricating oil pressure	Torque converter pressure	Main pressure	Clutch pressure					
				F	B	1	2	3	4
N	X	X	X	0	0	0	0	X	0
1F	X	X	X	X	0	X	0	0	0
2F	X	X	X	X	0	0	X	0	0
3F	X	X	X	X	0	0	0	X	0
4F	X	X	X	X	0	0	0	0	X
1R	X	X	X	0	X	X	0	0	0
2R	X	X	X	0	X	0	X	0	0
3R	X	X	X	0	X	0	0	X	0
4R	X	X	X	0	X	0	0	0	X

X = Pressure
0 = No pressure

Clutch pressure chart, L120D*

<https://truckmanualshub.com/>

	Lubricating oil pressure	Torque converter pressure	Main pressure	Clutch pressure						
				F	1	B	2	3	4	
N	X	X	X	0	0	0	0	X	0	
1F	X	X	X	X	X	0	0	0	0	
2F	X	X	X	X	0	0	X	0	0	
3F	X	X	X	X	0	0	0	X	0	
4F	X	X	X	X	0	0	0	0	X	
1R	X	X	X	0	X	X	0	0	0	
2R	X	X	X	0	0	X	X	0	0	
3R	X	X	X	0	0	X	0	X	0	
4R	X	X	X	0	0	X	0	0	X	

X = Pressure

0 = No pressure

*) Any malfunctioning due to internal leakage in the gear selector valve or between the clutch shaft and the oil distributor can be detected if all transmission pressures are checked simultaneously as described below.

Combined tank unit, removing and installing https://www.manualslib.com/

Op nbr 234XX

Removing

1. Cut the current with the battery disconnect switch.

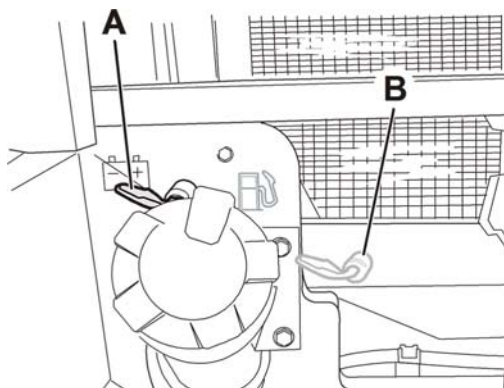


Figure 1
Battery disconnect switch

- A. L120D
- B. L90D

2. Open the engine cover on the left-hand side of the machine.
3. Disconnect the cable to the level sensor (SE207) from the combined tank unit. Undo the cable clamp.

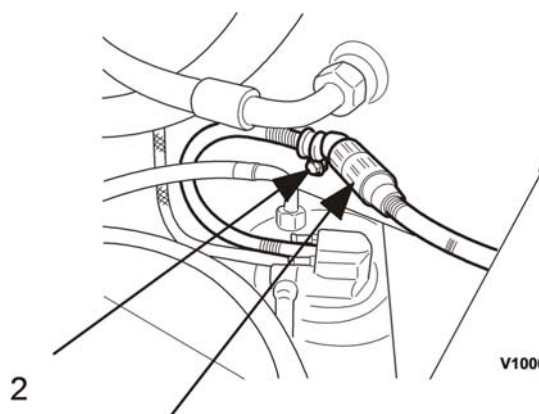


Figure 2

- 1. Connector
- 2. Cable clamp

4. Detach the bleed line.

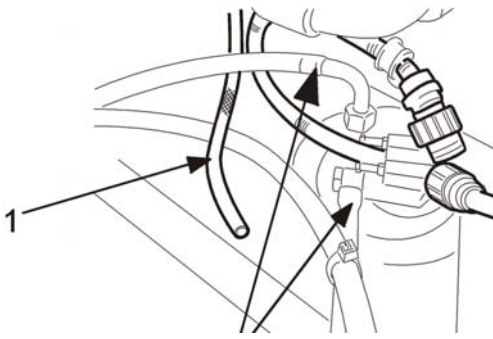


Figure 3

1. Bleed line
2. Fuel lines

5. Detach the fuel lines from the combined tank unit.
6. Unscrew the detached combined tank unit.

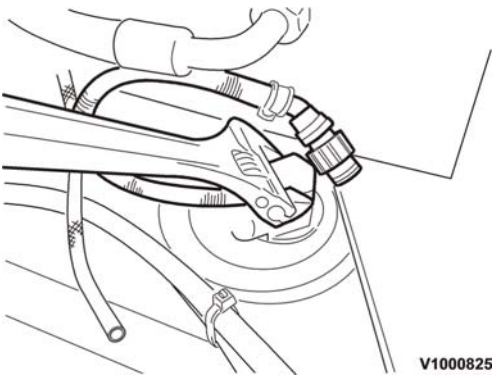


Figure 4

7. Lift up the unit and remove it.

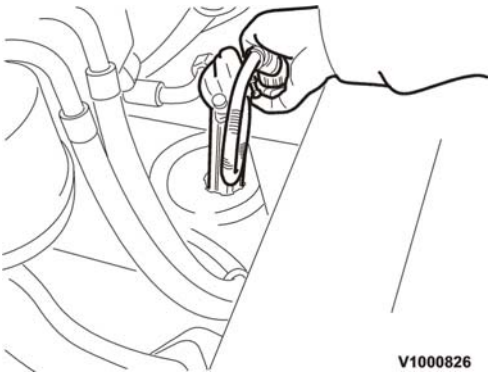


Figure 5

Installing

8. Position the unit and screw it in place.

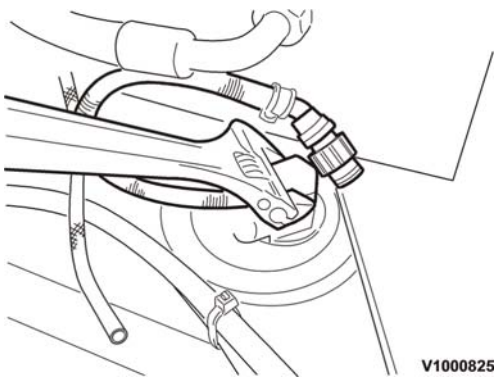


Figure 6

9. Connect the two fuel lines and bleed line.

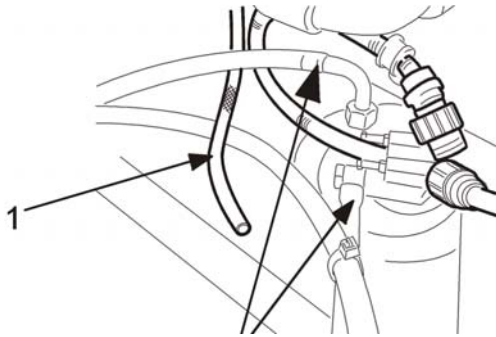


Figure 7

1. Fuel lines
2. Bleed line

10. Connect the cable to the combined tank unit and fit the cable clamp.

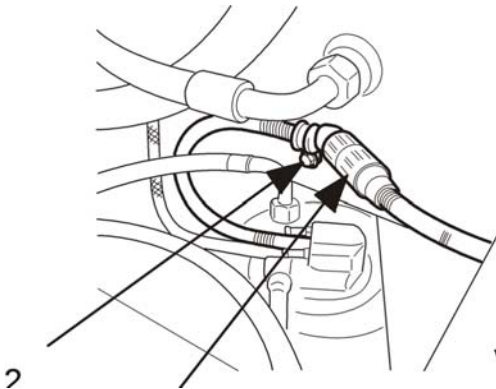


Figure 8

1. Connector
2. Cable clamp

11. Restore the machine to operating condition.

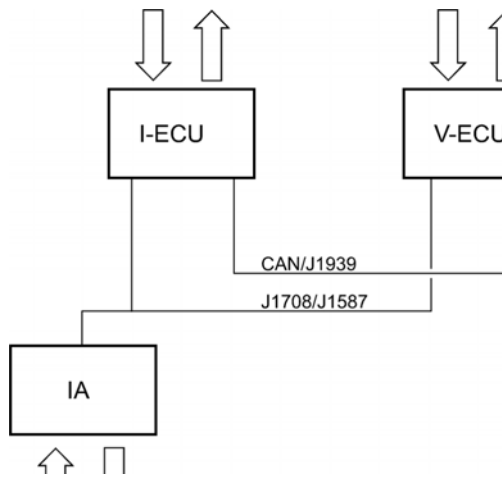


Figure 1
Communication

I-ECU	Instrument control unit
V-ECU	Vehicle control unit
IA	Service socket for service display unit

General

Vehicle electronics are based on the principle that all communication between control units takes place via two data buses. The machine's two control units are connected to the buses so that they can communicate with each other.

The different control units communicate with each other and report to the service sockets on data buses CAN/J1939 and J1708/J1587.

The buses conform to SAE standards and consist of two pair-twisted cables. The purpose of the twisted cabling is to protect the bus from electrical interference.

If a malfunction should occur in a system, a signal is sent out on the information bus which makes it possible to read the information on the operator's instruments or via the service display unit or VCADS Pro.

The illustration shows the principle on which the control units and service sockets are connected to the buses.

CAN/J1939 Control bus

System **control signals** are sent via this bus. The control bus is very fast, which is a prerequisite for efficient control of the entire system and rapid adjustment to varying operating conditions.

The primary communication alternative is the CAN/J1939 bus.

J1708/J1587 information bus

The information bus is connected to the control units and service sockets. **Information and diagnostics signals** are sent on this bus.

The bus also functions as a "backup" for the control bus, if it should fail for some reason.

The system status is continuously updated and available for reading by way of the information bus.

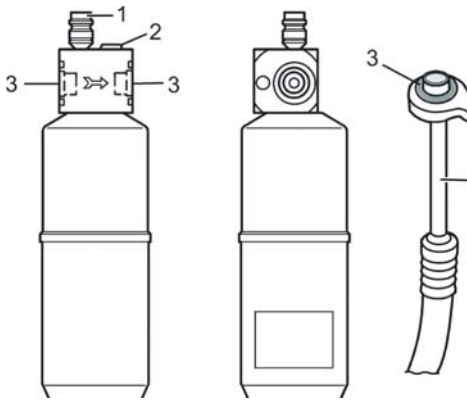


Figure 1
Some air-conditioning unit components

1. Service connection, high-pressure side
2. Sight glass
3. O-ring connections (R134a standard)
4. Steel pipe connections on all AC hoses

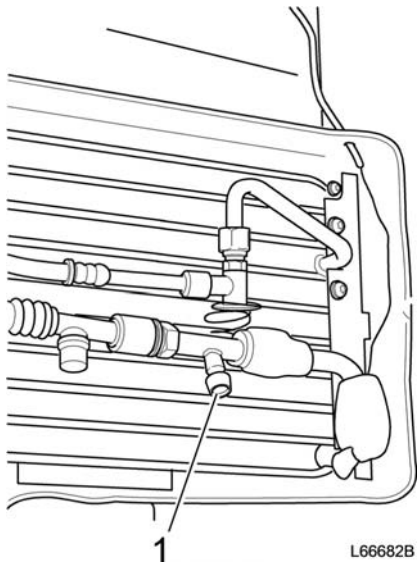


Figure 2
Air-conditioning unit, service connections

1. Service connection, low-pressure side

<https://truckmanualshub.com/>

The following describes the conditions for the control functions that the software performs in the control units.

The functions are divided according to the following two-digit function group levels.

2 Engine

22 Lubrication and oil system

- [Invalid linktarget]

23 Fuel system

- [Invalid linktarget]

25 Inlet and exhaust systems

- [Invalid linktarget]
- [Invalid linktarget]

26 Cooling system

- [Invalid linktarget]
- [Invalid linktarget]
- [Invalid linktarget]

27 Engine controls

- [Invalid linktarget]
- [Invalid linktarget]

3 Electrical system

31 Battery

- [Invalid linktarget]

32 Starting system

- [Invalid linktarget]
- [Invalid linktarget]

36 Other electrical equipment

- [Invalid linktarget]
- [Invalid linktarget]

38 Instruments and warning system

- [Invalid linktarget]
- [Invalid linktarget]
- [Invalid linktarget]

4 Power transmission

42 Hydraulically controlled transmission

- [illegible]

- ☐ [Invalid linktarget]
- ☐ [Invalid linktarget]
- ☐ [Invalid linktarget]
- ☐ [Invalid linktarget]

<https://truckmanualshub.com/>

46 Drive axles

- ☐ [Invalid linktarget]
- ☐ [Invalid linktarget]

5 Brakes

52 Hydraulic brake system

- ☐ [Invalid linktarget]
- ☐ [Invalid linktarget]
- ☐ [Invalid linktarget]

52 Parking brake

- ☐ [Invalid linktarget]
- ☐ [Invalid linktarget]

6 Steering

64 Steering

- ☐ [Invalid linktarget]

9 Hydraulic system

91 Hydraulic system

- ☐ [Invalid linktarget]
- ☐ [Invalid linktarget]

99 Miscellaneous

- ☐ [Invalid linktarget]

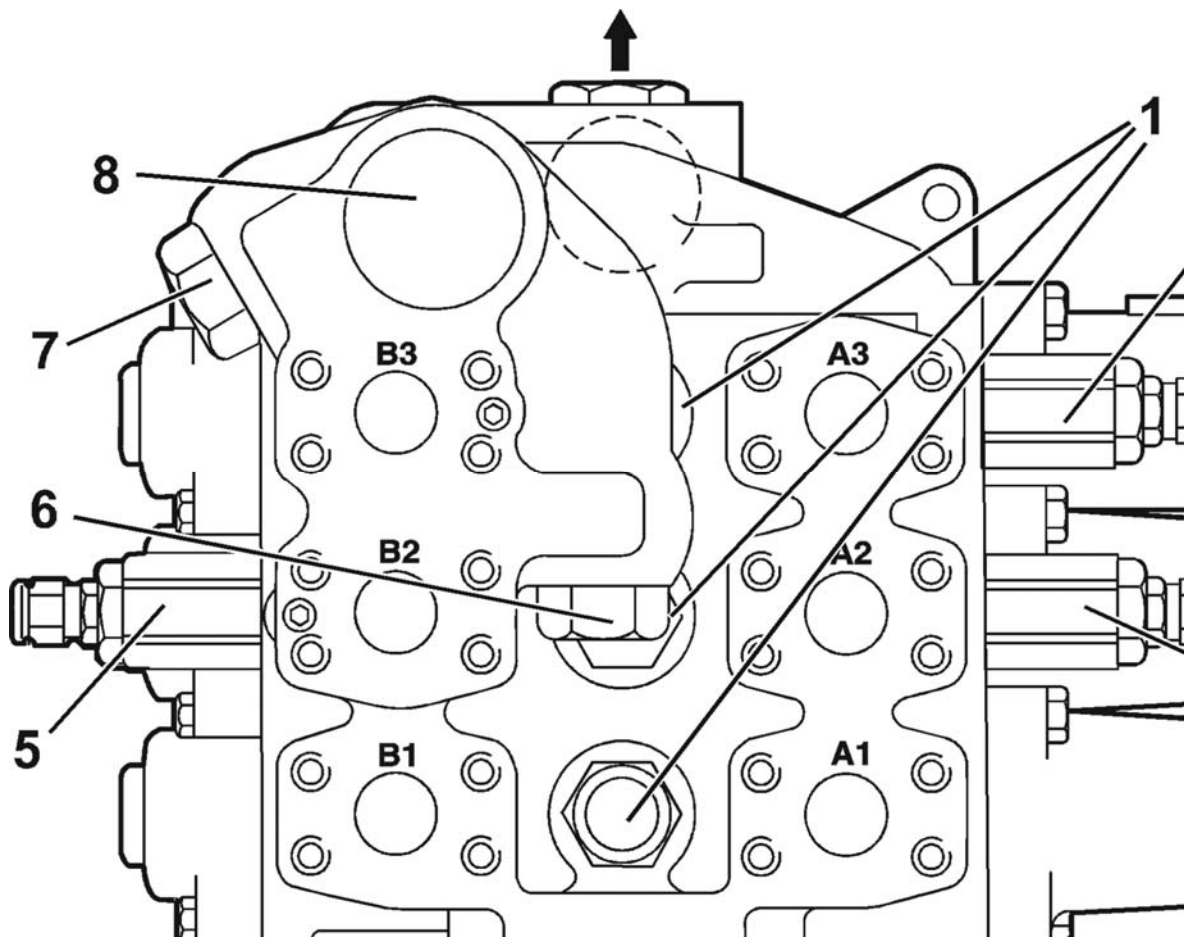


Figure 1
Control valve

1. Load-holding valve
2. Shock and anti-cavitation valve, lift (+ side)
3. Shock and anti-cavitation valve, rear tilt (+ side)
4. Pressure limiting valve, working pressure
5. Shock and anti-cavitation valve, forward tilt (- side)
6. Anti-cavitation valve, forward tilt
7. Anti-cavitation valve, lower
8. Back-up valve for return pressure, 1.0–2.0 MPa (145–290 psi)

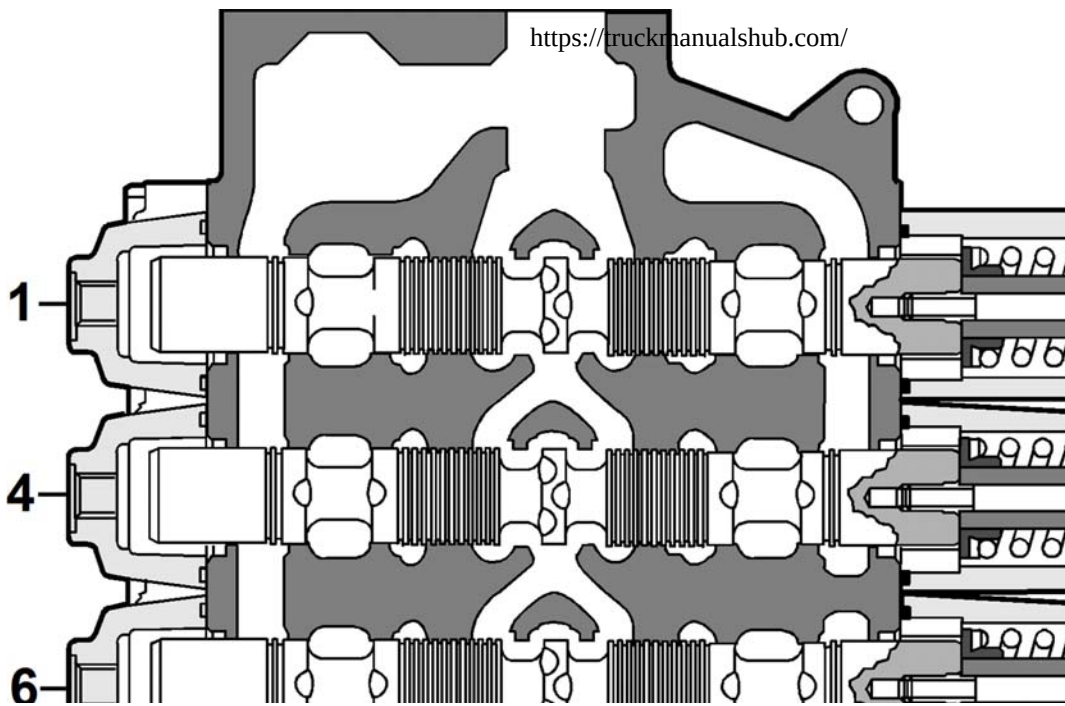


Figure 2
Control valve, connections for servo pressure

1. Lower function
2. Lift function
3. Float position function
4. Tilt function, forward
5. Tilt function, roll-back (rear tilt)
6. Extra hydraulic function

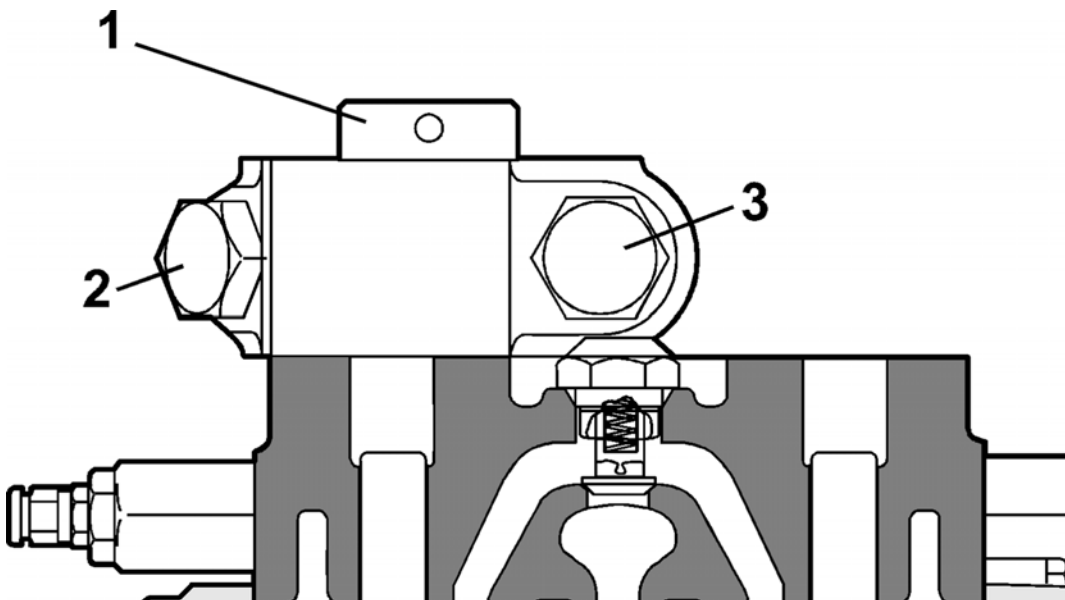


Figure 3
Section of control valve

1. Back-up valve for return pressure
2. Anti-cavitation valve, lower (lift cylinder -side)
3. Anti-cavitation valve, forward tilt (tilt cylinder -side)

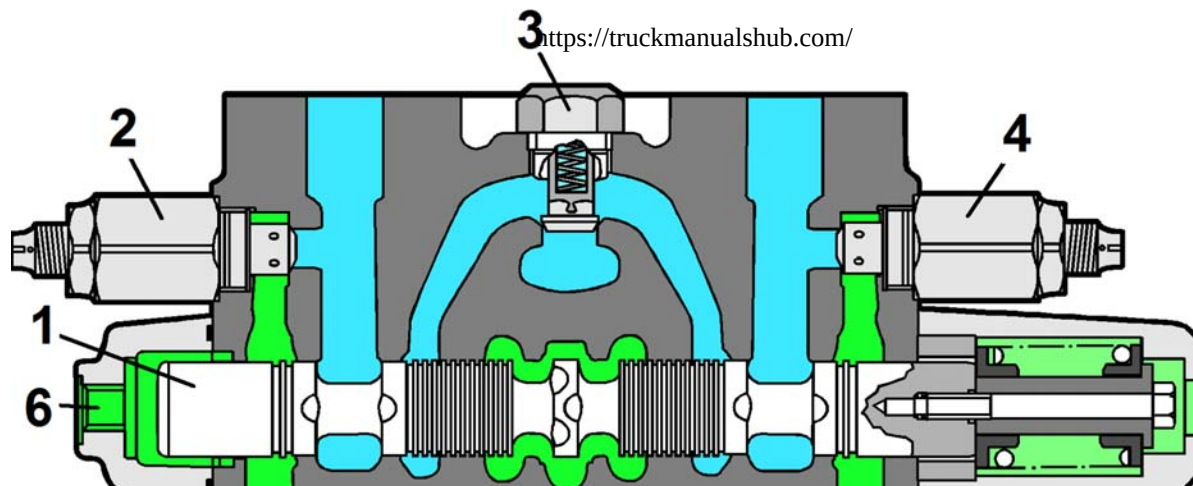


Figure 4
Control valve, neutral position

Valve spool for tilt function with shock valves and anti-cavitation valves as well as load-holding valve in neutral position

1. Valve spool for tilt function
2. Shock and anti-cavitation valve, forward tilt (-side)
3. Load-holding valve
4. Shock and anti-cavitation valve, rear tilt (+side)
5. Connection for servo pressure, roll-back (rear tilt)
6. Connection for servo pressure, forward tilt

Green Atmospheric pressure
Blue Increased return pressure

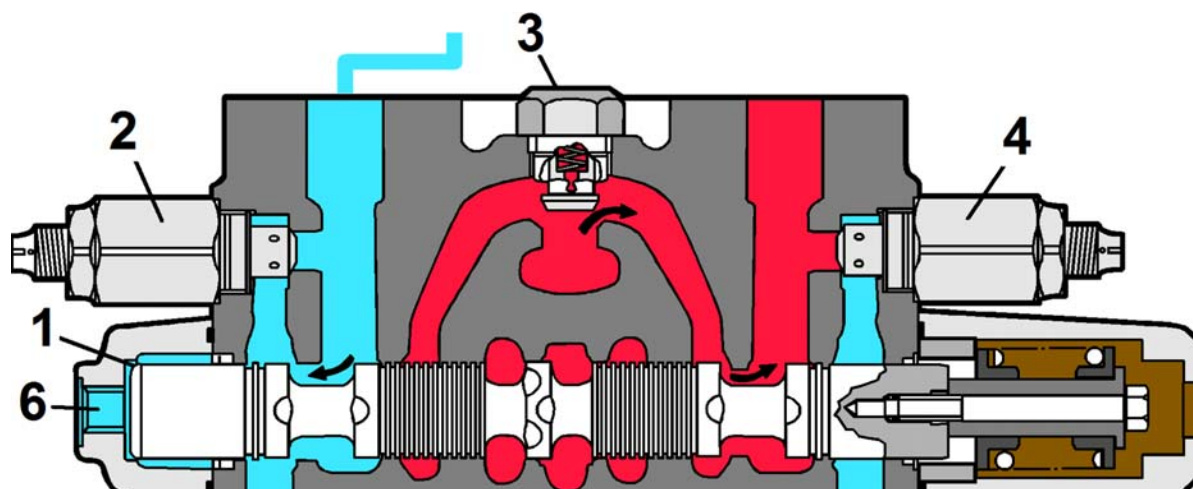


Figure 5
Control valve, roll-back (rear tilt)

Valve spool for tilt function, in position for roll-back (rear tilt) with shock and anti-cavitation valves as well as load-holding valve

1. Valve spool for tilt function
2. Shock and anti-cavitation valve, forward tilt (-side)
3. Load-holding valve
4. Shock and anti-cavitation valve, rear tilt (+side)
5. Connection for servo pressure, roll-back (rear tilt)
6. Connection for servo pressure, forward tilt

Red Working pressure
Blue Increased return pressure
Orange Servo pressure

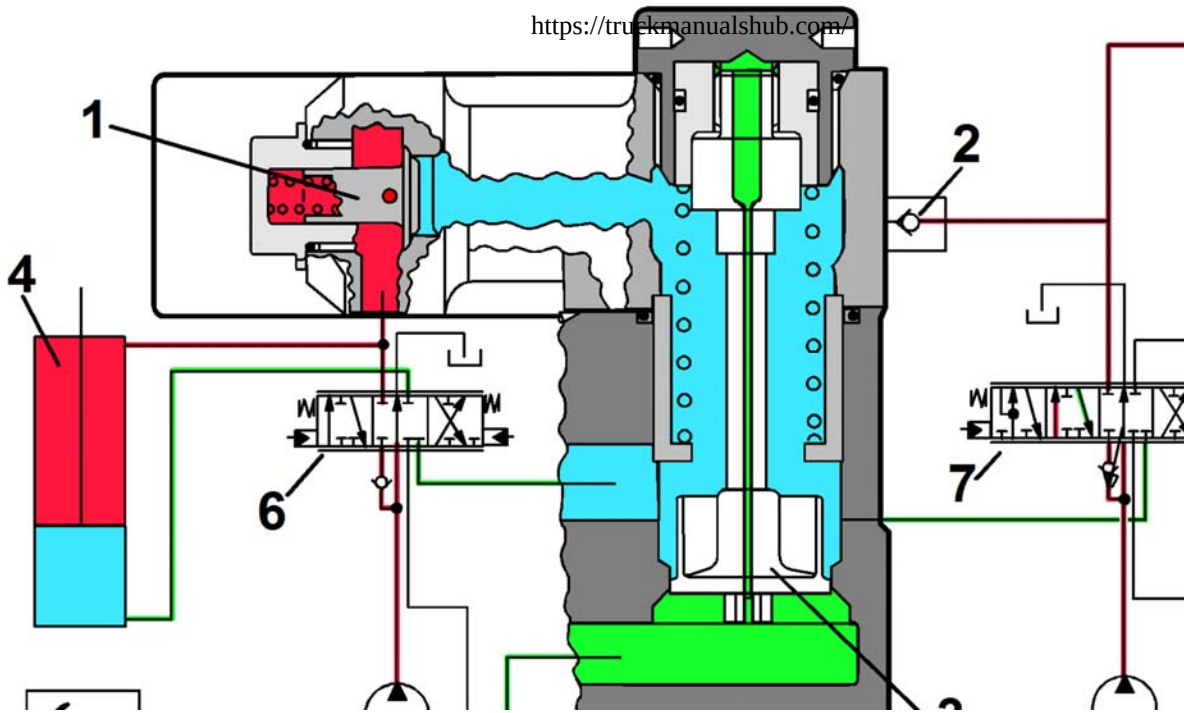


Figure 6
Back-up valve for return pressure, unaffected position

1. Anti-cavitation valve, forward tilt
2. Anti-cavitation valve, lower
3. Back-up valve
4. Tilt cylinder
5. Lift cylinder
6. Control spool, tilt function
7. Control spool, lift, lower function

Red	Working pressure
Blue	Increased return pressure
Green	Atmospheric pressure

Conversion tables

Length

Unit	cm	m	km	in	ft	yd	mile
cm	1	0.01	0.00001	0.3937	0.03281	0.01094	0.000006
m	100	1	0.001	39.37	3.2808	1.0936	0.00062
km	100000	1000	1	39370.7	3280.8	1093.6	0.62137
in	2.54	0.0254	0.000025	1	0.08333	0.02777	0.000015
ft	30.48	0.3048	0.000304	12	1	0.3333	0.000189
yd	91.44	0.9144	0.000914	36	3	1	0.000568
mile	160930	1609.3	1.6093	63360	5280	1760	1
1 mm = 0.1 cm - 1 mm = 0.001 mm							

Area

Unit	cm²	m²	km²	a	ft²	yd²	in²
cm²	1	0.0001	-	0.000001	0.001076	0.000012	0.155000
m²	10000	1	0.000001	0.01	10.764	1.1958	1550.000
km²	-	1000000	1	10000	1076400	1195800	-
a	0.01	100	0.0001	1	1076.4	119.58	-
ft²	-	0.092903	-	0.000929	1	0.1111	144.000
yd²	-	0.83613	-	0.008361	9	1	1296.00
in²	6.4516	0.000645	-	-	0.006943	0.000771	1
1 ha = 100 a - 1 mile² = 259 ha = 2.59 km²							

Capacity

Unit	cm³ = cc	m³	l	in³	ft³	yd³
cm³ = ml	1	0.000001	0.001	0.061024	0.000035	0.000001
m³	1000000	1	1000	61024	35.315	1.30796
dm³(l)	1000	0.001	1	61.024	0.035315	0.001308
in³	16.387	0.000016	0.01638	1	0.000578	0.000021
ft³	28316.8	0.028317	28.317	1728	1	0.03704
yd³	764529.8	0.76453	764.53	46656	27	1
1 gal (US) = 3785.41 cm³ = 231 in³ = 0.83267 gal (UK)						

Weight

Unit	g	kg	t	oz	lb
g	1	0.001	0.000001	0.03527	0.0022
kg	1000	1	0.001	35.273	2.20459
t	1000000	1000	1	35273	2204.59
oz	28.3495	0.02835	0.000028	1	0.0625
lb	453.592	0.45359	0.000454	16	1
1 tonne (metric) = 1.1023 tons (US) = 0.9842 tons (UK)					

Pressure

Unit	kgfm/cm²	bar	Pa=N/m²	kPa	lbf / in²	lbf / ft²
kgfm / cm²	1	0.98067	98066.5	98.0665	14.2233	2048.16
bar	1.01972	1	100000	100	14.5037	2088.6
Pa=N / m²	0.00001	0.001	1	0.001	0.00015	0.02086

kPa	0.01020	0.01	https://truckmanualshub.com/	1000	1	0.14504	20.886
lbf / in ²	0.07032	0.0689		6894.76	6.89476	1	144
lbf / ft ²	0.00047	0.00047		47.88028	0.04788	0.00694	1
kg/ cm ² = 735.56 Dry (mmHg) = 0.96784 atm							

Explanation of units

Unit	abbreviation
Newtonmetre	Nm
Kilopondmetre	kgf m
Kilopascal	kPa
Megapascal	MPa
Kilowatt	kW
kilojoule	kJ
British Thermal Unit	BTU
Calorie	approx.

Approximate conversion

SI unit	Conversion factor	Non-SI	Conversion factor	SI
Torque				
N·m	x 10.2	= kg·cm	x 0.8664	= lb·in
N·m	x 0.74	= lbf·ft	x 1.36	= N·m
N·m	x 0.102	= kg·m	x 7.22	= lb·ft
Pressure (Pa = N / m²)				
kPa	x 4.0	= in.H₂ O	x 0.249	= kPa
kPa	x 0.30	= in.Hg	x 3.38	= kPa
kPa	x 0.145	= psi	x 6.89	= kPa
bar	x 14.5	= psi	x 0.069	= bar
kgfm / cm²	x 14.22	= psi	x 0.070	= kgfm / cm²
N/ mm²	x 145.04	= psi	x 0.069	= bar
MPa	x 145	= psi	x 0.00689	= MPa
Power (W = J/ s)				
kW	x 1.36	= hp (cv)	x 0.736	= kW
kW	x 1.34	= bhp	x 0.746	= kW
kW	x 0.948	= BTU / s	x 1.055	= kW
W	x 0.74	= ft·lb / s	x 1.36	= W
Energy (J = Nm)				
kJ	x 0.948	= BTU	x 1.055	= kJ
J	x 0.239	= calorie	x 4.19	= J
Speed and acceleration				
m / s²	x 3.28	= ft / s²	x 0.305	= m / s²
m / s	x 3.28	= ft / s	x 0.305	= m / s
km / h	x 0.62	= mph	x 1.61	= km / h
Horsepower/ torque				
Bhp x 5252 rpm = TQ (lb·ft)			TQ x rpm 5252 = bhp	
Temperature				
°C = (°F – 32)/1.8	°F = (°C x 1.8) + 32			
Flow factor				
l / min (dm³/ min)	x 0.264	= US gal / min	x 3.785	= litres/min



Coolant pump for Intercooler, reconditioning

Op nbr

[999 3673 Fixture, bolt, drilled-through bolt, drift](#)

[999 8039 Drift](#)

[Kukko 20 - 1 Puller](#)

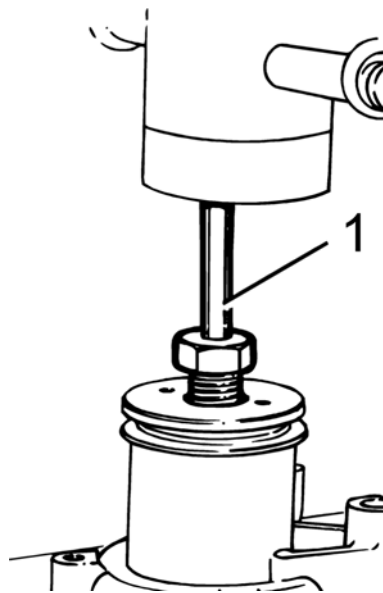


Figure 1

1. 999 3673 Drift, drilled-through bolt

Dismantling

1. Remove the end plate and the pipes from the end plate.
NOTE!
Mark the housing and the end plate in relation to each other.
2. Press out the impeller and the shaft.
3. Remove the belt pulley.

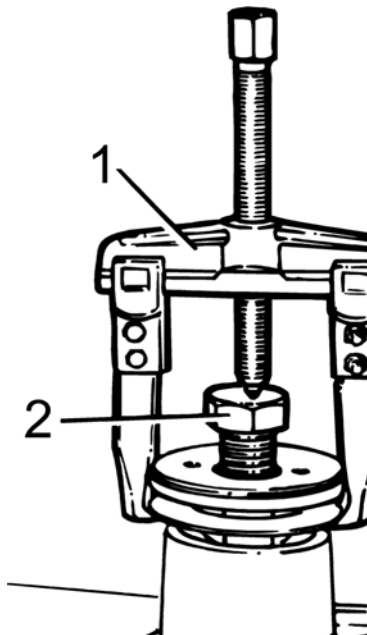


Figure 2

<https://truckmanualshub.com/>

1. Kukko 20 - 1
 2. 999 3673 Bolt
4. Remove the lock ring (2) for the bearing, spacer sleeve (10), washer (3) and protective plate (9) [Invalid linktarget] and [Invalid linktarget].

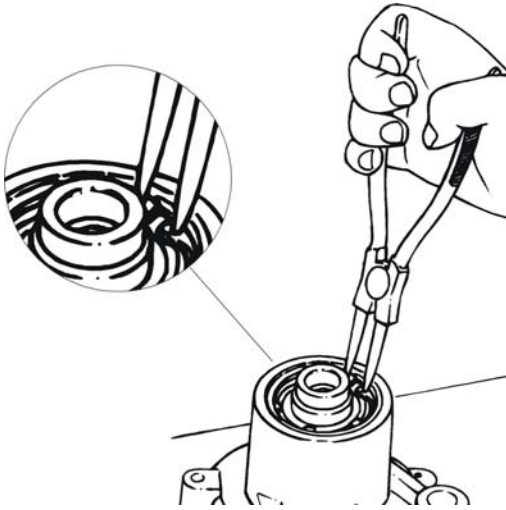


Figure 3

2

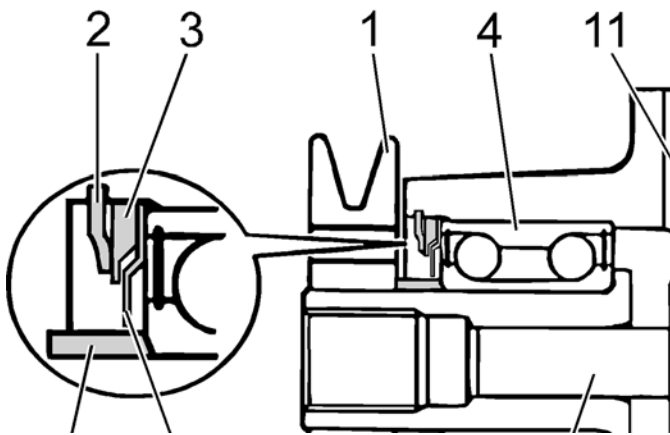


Figure 4
Coolant pump

1. Belt pulley
2. Lock ring
3. Washer
4. Bearing
5. Seal
6. Impeller
7. O-ring
8. Shaft
9. Protective plate
10. Spacer sleeve
11. Drain hole
12. Pump housing

5. Press out the bearing and the bearing pin.

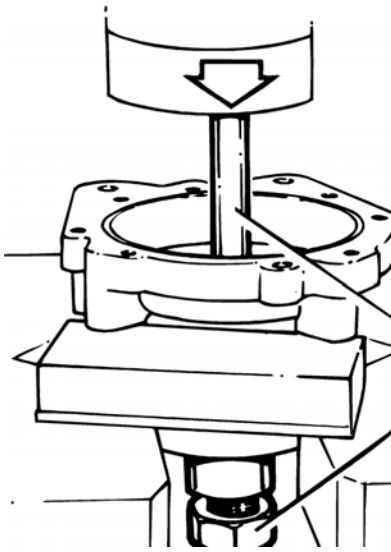


Figure 5

1. 999 3673 Bolt and drift
6. Remove the seal and enlarge the existing drain holes (11) in the pump housing to a diameter of 7 mm (0.276 in). See [Invalid linktarget].
7. Clean and check the parts with regards to wear and other damage.

Assembling

8. Grease the bearing pin and press the bearing onto the pin.

NOTE!

Press in the inner bearing race.

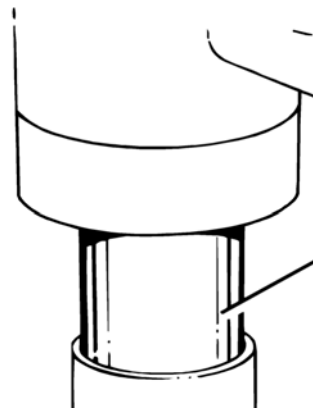


Figure 6

1. Pipe, Ø 31 mm (1.220 in)
 9. Grease the bearing position and press the bearing, together with the bearing pin, into the pump housing together.
- NOTE!**
Press in the outer bearing race.

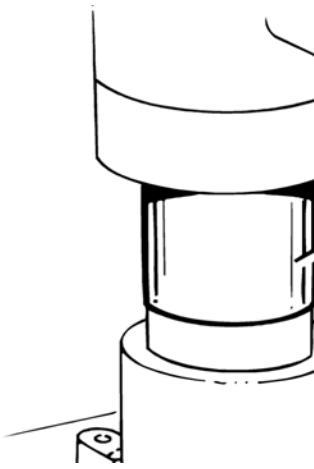


Figure 7

1. Pipe, Ø 60 mm (2.362 in)
10. Fit the protective plate (9), washer (3), spacer sleeve (10) and lock ring (2), [Invalid linktarget].
NOTE!
The chamfer on the spacer sleeve and the lock ring lugs must face the bearing.
11. Press on the belt pulley using a suitable pipe.
NOTE!
Position a support against the bearing pin, for example, a pipe with inside diameter 27 mm (1.06 in) and outside diameter 34 mm (1.34 in).

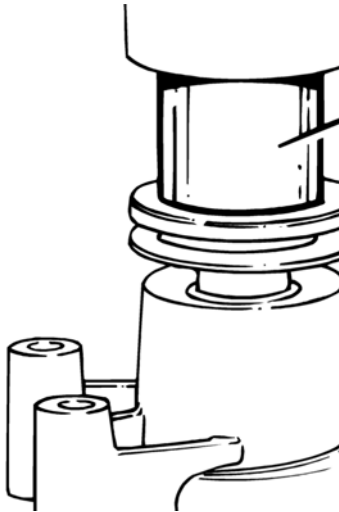


Figure 8

1. Suitable pipe.
2. Support against bearing trunnion, a suitable pipe having an inside diameter of 27 mm (1.06 in) and an outside diameter of 34 mm (1.34 in).
12. Apply a thin film of locking compound, normal type, on the coolant seal contact face.
13. Press in the coolant seal with tool 999 8039. Check that the shaft is not moved from its position in the bearing pin. The bolt from 999 3673 may be used to fix the position of the shaft.

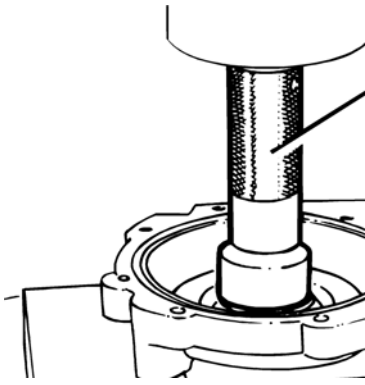


Figure 9
Pressing in coolant seal

1. 999 8039

14. Press the impeller onto the pump shaft, see [Invalid linktarget] . Screw bolt 999 3673 against the pump shaft. Use 999 3673, fixture and a spacer such as a washer.
Press-in measurement: $2 \pm 0.2 \text{ mm}$ ($0.08 \pm 0.008 \text{ in}$)

NOTE!

The spacer must have a thickness of 2 mm (0.08 in) and an inside diameter greater than the pump shaft diameter. Correct press-in measurement is obtained with the spacer between the fixture and the impeller.

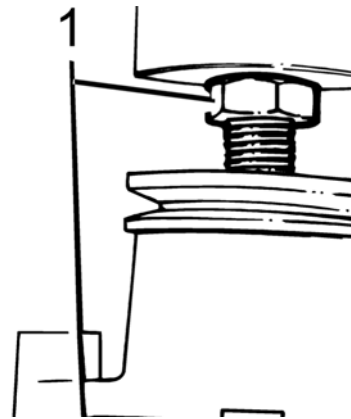


Figure 10

1. 999 3673 Bolt, fixture
2. Spacer, i.e. a washer

15. Fit the end plate according to the markings. Use a new O-ring.
Fit the pipes, use new seals.

Op nbr 26203

1. Remove the protective fan grating.

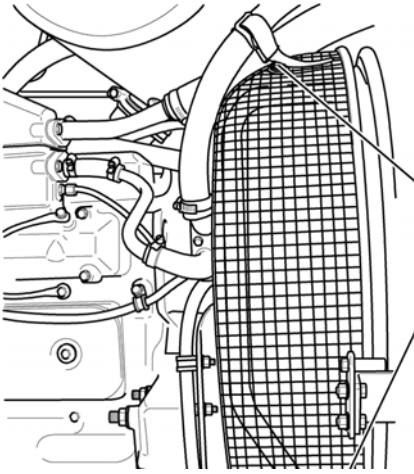


Figure 1
Fan grating

1. Screws for fastening the fan grating

Removing

2. Open the left engine hood.
3. Disconnect the hoses from the pump.

NOTE!

Clamp off the hoses with hose pliers to prevent the coolant from draining.

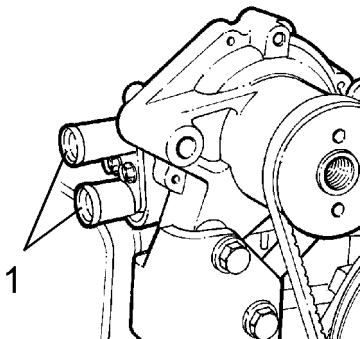


Figure 2

1. Hose connections
2. Belt for coolant pump

4. Loosen the belt tension and remove the belt for the coolant pump.

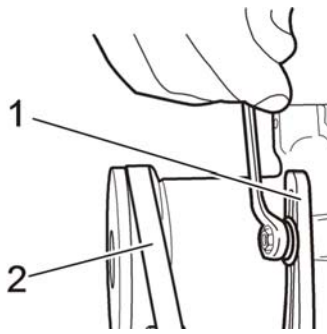


Figure 3

1. Belt tensioner
2. Belt for coolant pump

5. Remove the bolts for the pump, then remove the pump itself.

Installing

6. Plug the two upper drain holes in the pump. Use plastic plugs with part no. 11030155-3.



Figure 4

Plug the two upper drain holes.

1. Upper drain hole
2. 11030155-3 Plastic plugs
3. Lower drain hole

7. Fit the coolant pump for the intercooler with the bolts.

8. Fit the belt for the coolant pump and adjust the belt tension.

When the belt is correctly tensioned, it should be possible to depress the belt about 15 mm (0.6 in) by exerting a relatively high pressure.

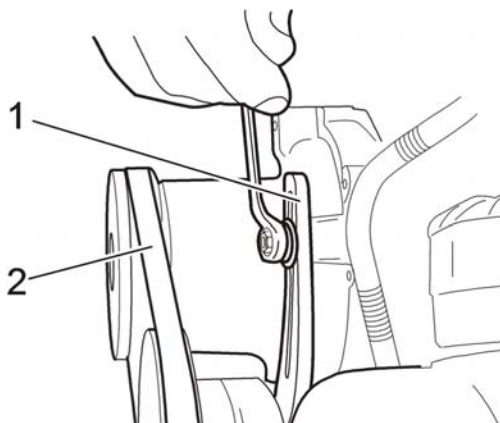


Figure 5

1. Belt tensioner
2. Belt for coolant pump

9. Refit the hoses on the pump connections. <https://truckmanualshub.com/>
10. Start the engine and check to make sure that there are no leaks.
11. Check the coolant level in the system. Top up if needed.
12. Fit the protective grille.

Op nbr 26202

Removing

1. Cut the current with the battery disconnect switch.

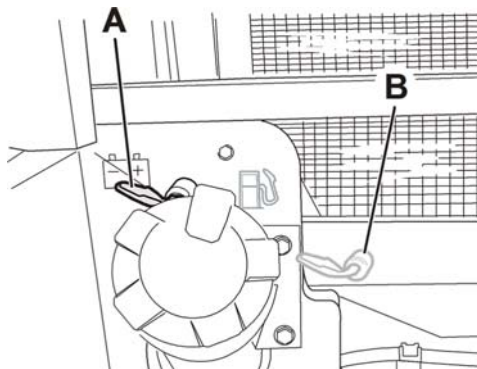


Figure 1
Battery disconnect switch

- A. L120D
- B. L90D

2. Remove the filler cap from the header tank.

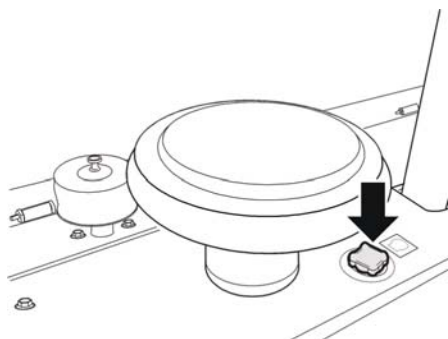


Figure 2

3. Drain the coolant.
Coolant capacity: **approx. 42 litres** (11.1 US gal)

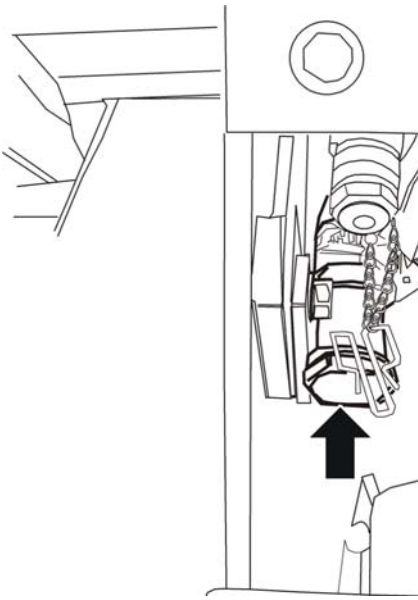


Figure 3

4. Open the radiator cowl.
Release the gas spring and swing out the radiator cowl as far as possible.
5. Swing out the radiator.
6. Remove the bolts securing the fan and remove the fan rearwards.

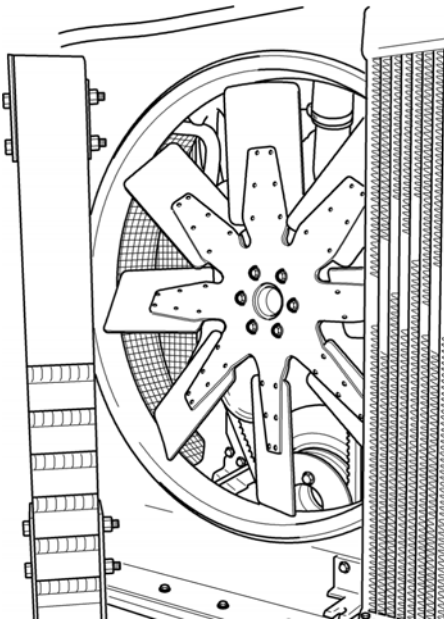


Figure 4

7. Open the engine cover on the right-hand side of the machine.
8. Remove the protective grille for the fan.

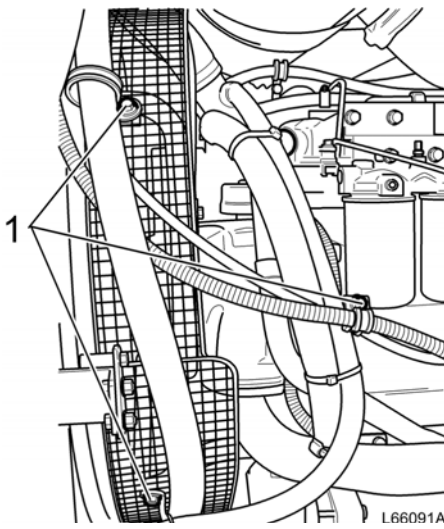


Figure 5

9. Remove the fan grille's upper attachment.

NOTE!

Note the positions of the spacers.

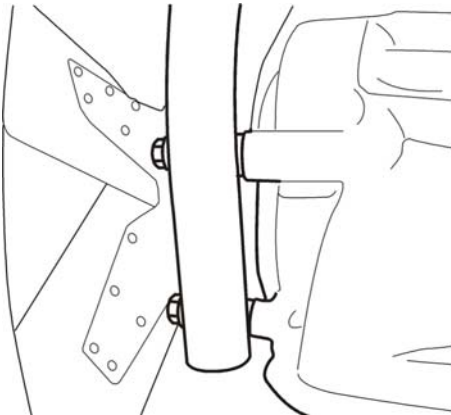


Figure 6

10. Open the engine cover on the left-hand side of the machine.
11. Remove the protective grille for the fan.

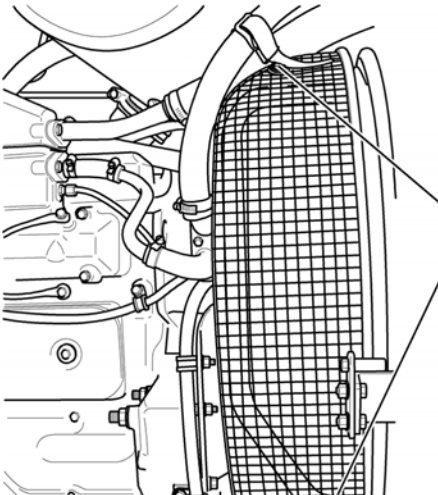


Figure 7

12. Remove the belt tension for the intercooler coolant pump.
<https://truckmanualshub.com/>

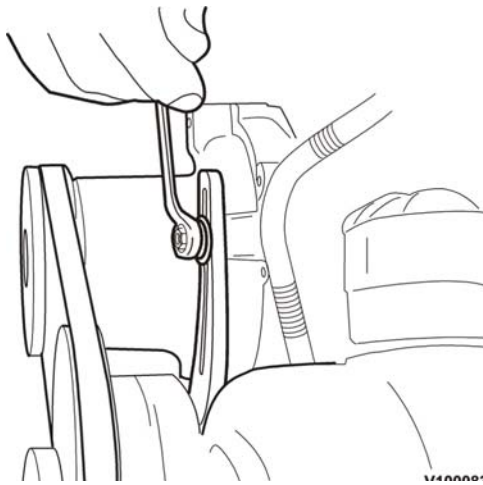


Figure 8

13. Remove the bolts securing the intercooler pump and put the pump aside.

NOTE!

Do not remove the pump's hose connections.

14. Prise the tensioning wheel in and remove the fan belts.

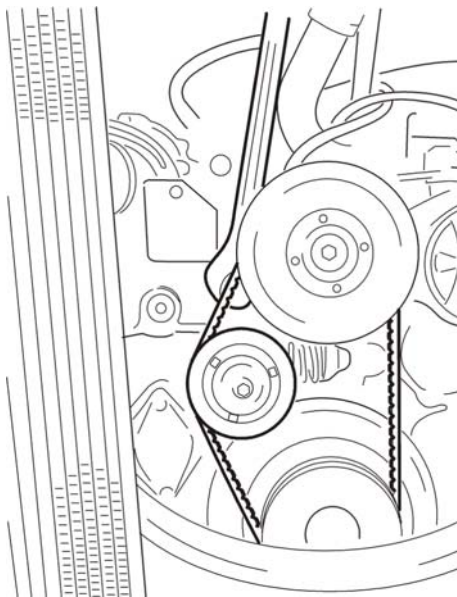


Figure 9

1. PU spanner, 36 mm (1.417 in)

15. Remove the belt pulley of the fan, including hub, bracket, and tension wheel.

NOTE!

It will be easiest to remove the belt pulley from the rear of the machine.

16. Remove the bolts securing the coolant pump.

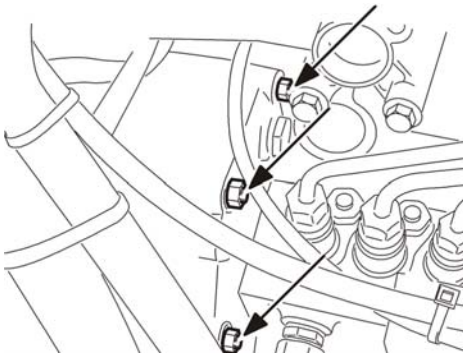


Figure 10

1. Retaining bolts

17. Remove the bolts from the coolant pipe and the pipe bracket.

NOTE!

A little coolant runs out.

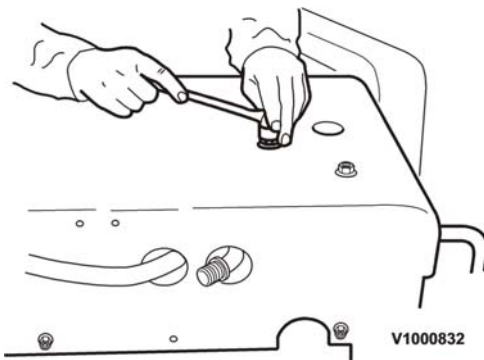


Figure 11

18. Remove the coolant pump.

Installing

19. Change the 3 O-rings and the rubber seal.

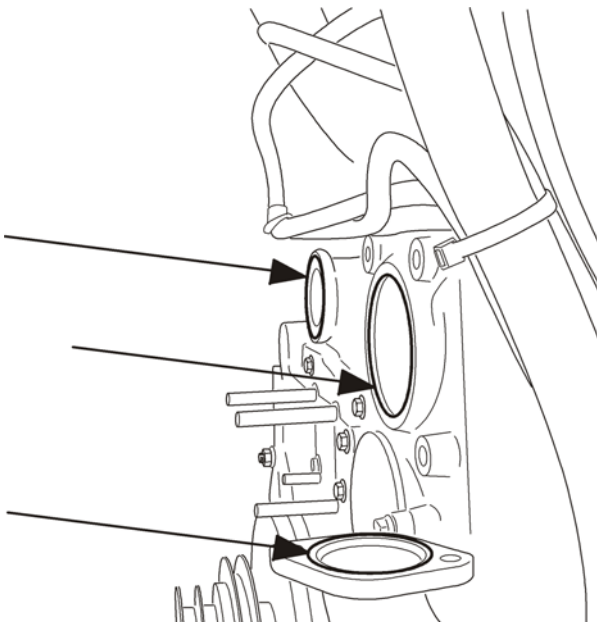


Figure 12

1. O-ring
2. Rubber seal

<https://truckmanualshub.com/>

20. Fit the coolant pump and bolt it in place.

21. Fit the bolts securing the coolant pipe and the pipe bracket.

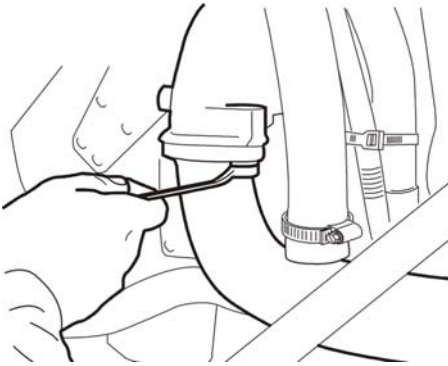


Figure 13

22. Fit the upper bracket for the fan grille.

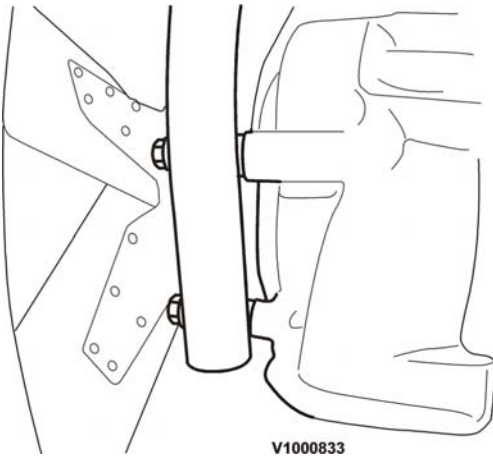


Figure 14

23. Fit the protective fan grille.

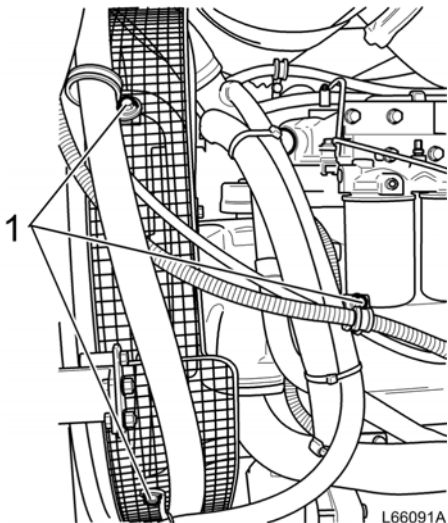


Figure 15

<https://truckmanualshub.com/>

24. Fit the fan belt pulley complete with hub, bracket and tensioning wheel.
25. Prise the tensioning wheel in and fit the fan belts.

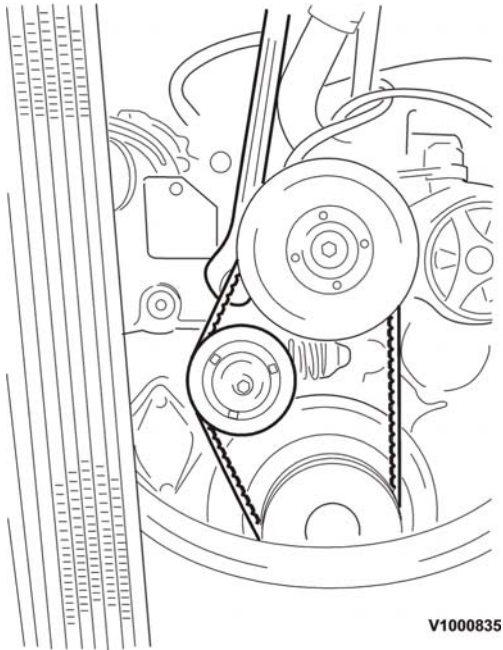


Figure 16

1. PU spanner, 36 mm (1.417 in)
26. Fit the coolant pump for the intercooler.
27. Fit the bolt for the intercooler coolant pump and tension the belt.
28. Bolt the pump in place.
29. Fit the protective fan grille.

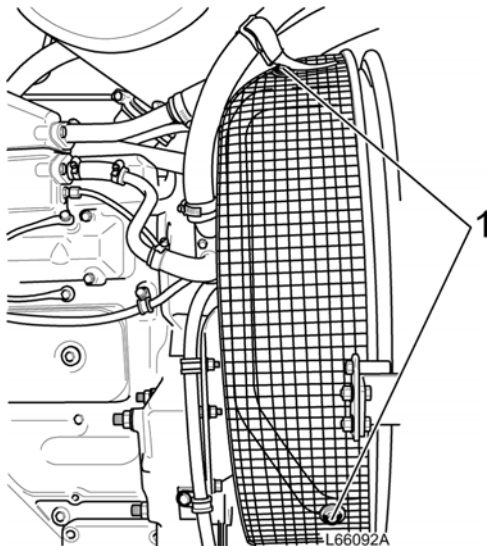


Figure 17

30. Fit the fan.

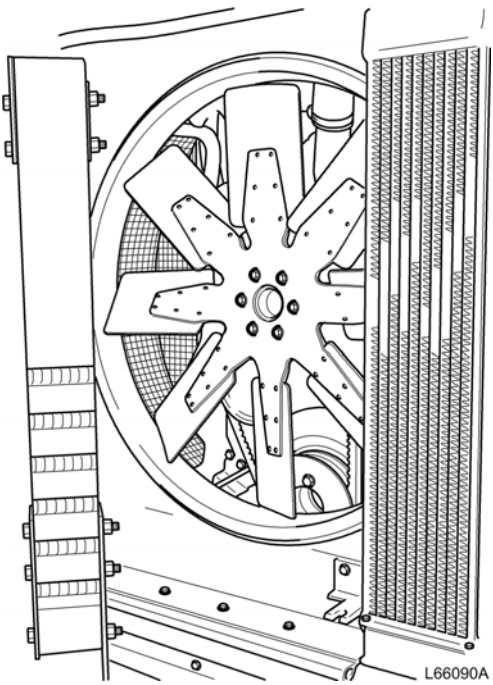


Figure 18

31. Restore the machine to operating condition.
32. Warm up the engine and top up with coolant as necessary.
33. Check for leaks.

Coolant temperature, engine <https://truckmanualshub.com/>

The function monitors the engine coolant temperature and informs the operator if the temperature is too high or if there is a system malfunction.

The Engine Shut Down function, which limits engine speed to 900 rpm, will be engaged if the coolant temperature is high, see [Invalid linktarget].

The coolant temperature is also used as an input signal for:

- [Invalid linktarget]
- [Invalid linktarget]

Input signals	Output function conditions	Output functions
○ Coolant temperature engine, SE205 ○ Directional gear	○ High coolant temperature > 103 °C (217 °F) The alarm remains active until the coolant temperature has dropped to < 102 °C (216 °F)	○ Warning lamp The gauge reading increases more than the temperature, so that the pointer ends up in the red area. ○ Red central warning lamp ----- WARNING ----- High Engine Coolant Temp LB734762 ○ Engine Shutdown
	According to above, also: ○ Directional gear in Forward or Reverse	○ Buzzer

Coolant temperature, outlet, radiator

The function monitors the coolant temperature after the radiator and warns the operator if there is a system malfunction.
The coolant temperature is used as an input signal for radiator fan control, see [Invalid linktarget].

Input signals	Output function conditions	Output functions
Coolant temperature, outlet, radiator, SE210		Signal to radiator fan control
Monitoring, SE210	System malfunction, signal outside limits	- Amber central warning lamp -----ERROR----- Monitoring Coolant Outlet Temp. LE7380AC

Coolant

<https://truckmanualshub.com/>

To ensure reliable and trouble-free functioning of the cooling system, the following measures should be taken at regular intervals:

- Check the coolant level.
- Blow the radiator clean.

Coolant with antifreeze and corrosion protection

As supplied, the cooling system is normally filled with a mixture of tap water and Volvo's concentrated antifreeze giving protection against freezing down to a temperature of -25°C (-13°F). If there is a risk that the machine will be exposed to lower temperatures, the antifreeze should be adjusted, see below.

To protect the engine from corrosion and the radiator from clogging, the concentrated antifreeze contains active corrosion protection additives.

These additives have a limited life so the coolant should be changed once a year or every 2000 hours.

NOTE!

Do not mix coolants or additives from a different manufacturer as this could have adverse effects.

The proportion of antifreeze should not be less than 40%

Cooling system capacity:

L90D, approx. 53 litres.

L120D, approx. 65 litres.

L90D, 40% (21 litres (5.5 US gal)) = -25°C (-13°F) and 50% (26.5 litres (7 US gal)) = -37°C (-35°F).

L120D, 40% (26 litres (6.9 US gal)) = -25°C (-13°F) and 50% (32.5 litres (8.6 US gal)) = -37°C (-35°F).

Coolant with corrosion protection only

If the climate is such that antifreeze is not needed, a coolant consisting of Volvo's corrosion protection additive and tap water is recommended.

- add about 3 litres (0.8 US gal) of corrosion protection additive to 40 litres (10.6 US gal) of water.

To maintain the level of corrosion protection, add 0.5 litres (0.13 US gal) of corrosion protection additive to the coolant every 400 running hours.

Coolant, checking

Check the coolant level every 50 hours.

The level should be up to the max. mark on the header tank. Top up as necessary.

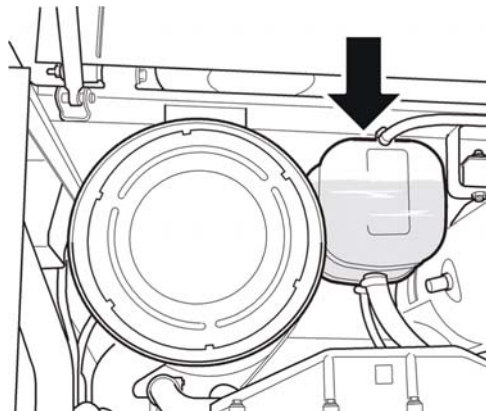


Figure 1
Header tank

Coolant, change



There is a danger of scalding when opening the filler cap on the header tank (radiator filler cap) on account of the pressure in the system.

Change the coolant every 2000 hours.

The coolant in machines with a coolant filter need only be changed every 3000 hours or every other year.

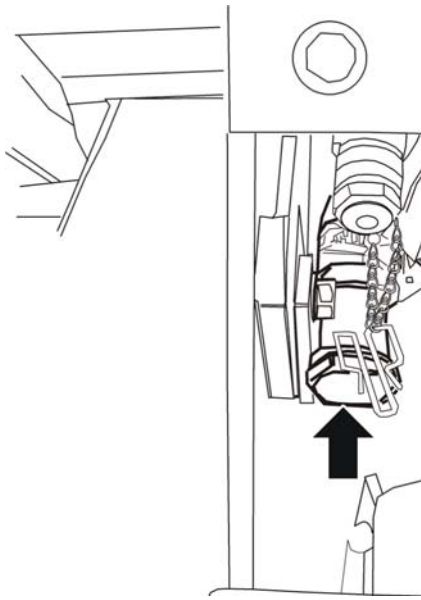


Figure 2
Draining, coolant
Draining

1. remove the header tank filler cap.
2. open the drain nipple on the cylinder block.
3. Press in the clamp on the drain nipple so that the coolant can run out.

Dispose of waste oil and fluids in an environmentally safe and sound manner.

Filling up

The system is filled with coolant via the header tank, see [Invalid linktarget].

- the engine must be switched off and the heater control turned on.
- fill with coolant up to the max. mark on the header tank.
- warm up the engine and top up the cooling system until it is completely full and bled of air.
- the level should be checked after the engine has been warmed up and then cooled down.

NOTE!

The system can also be filled through the drain nipple.



Never fill up with cold coolant when the engine is hot as this could lead to cracks developing in the cylinder block and cylinder head.

Neglecting to change the coolant could result in clogging and lead to engine damage.

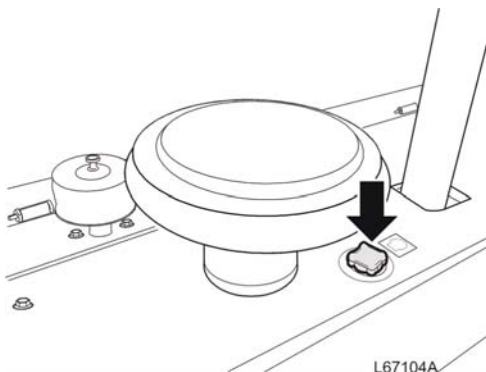


Figure 3
Filling up, coolant

Copper tubes for injectors, changing http://truckmanualshub.com/

Op nbr 23716

[999 6419 Puller](#)

[999 6421 Press, TD63](#)

[998 6420 Press, TD73](#)

[999 6861 Press tool](#)

[998 6867 Base](#)

[999 8134 Thread-cutting tool](#)

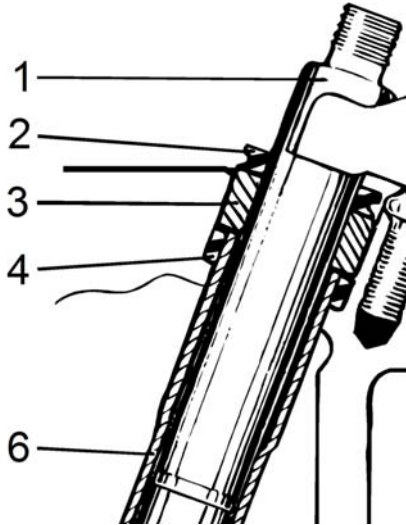


Figure 1
Cross-section view, copper sleeve

1. Injectors
2. Dust cap
3. Steel ring
4. Upper sealing ring, copper sleeve
5. Lower sealing ring, copper sleeve
6. Copper sleeve
7. Copper washer (all TD73)
8. Cylinder head

CAUTION

To obtain the correct clearance between copper sleeve and steel ring (0.10–0.45 mm (0.004–0.018 in)), these two parts should always be changed together.

CAUTION

The copper sleeves fitted in production on TD63/TD73 are approx. 1 mm (0.039 in) shorter than those supplied as spare parts. This means that on replacement of the copper sleeve the new steel ring will be approx. 1 mm (0.039 in) higher up in the cylinder head.

Removing

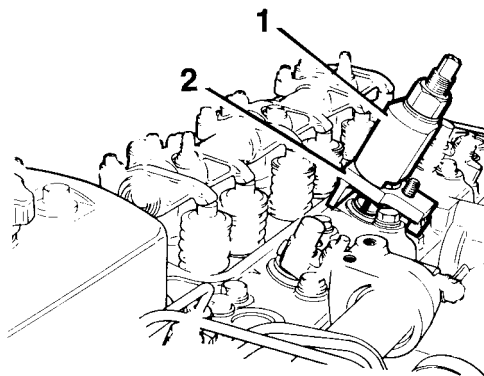


Figure 2
Removing the steel ring

<https://truckmanualshub.com/>

1. 999 6419
2. 999 6867

1. Remove the steel ring using puller 6419 and base 6867, see [Invalid linktarget].
2. Remove the copper sleeve by first cutting threads in its pin using tool 8134, see [Invalid linktarget].
3. Remove the screw stud for the injector retaining yoke and screw tool 8140 in the copper sleeve, see [Invalid linktarget]. Pull out the copper sleeve.
4. Check that the copper sleeve's lower sealing surface in the cylinder head is free from impurities. Clean the sealing surface using a steel scraper. Also check the situation for the upper seal.

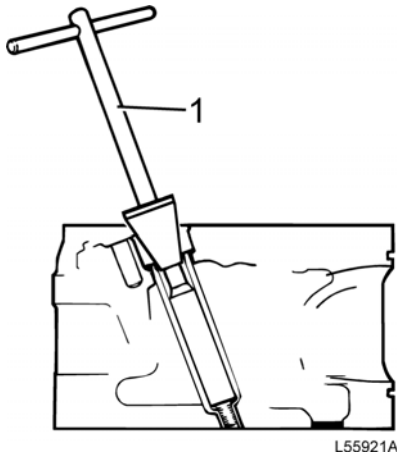


Figure 3
Thread-cutting tool, copper sleeve

1. 999 8134

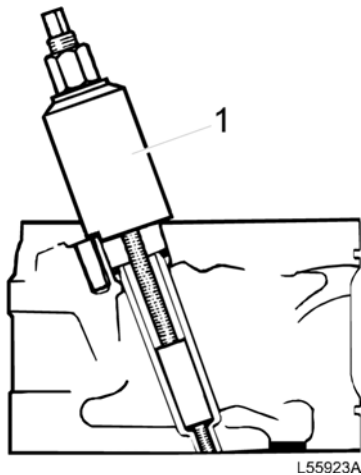


Figure 4
Removing the copper sleeve

1. 999 8140

Installing

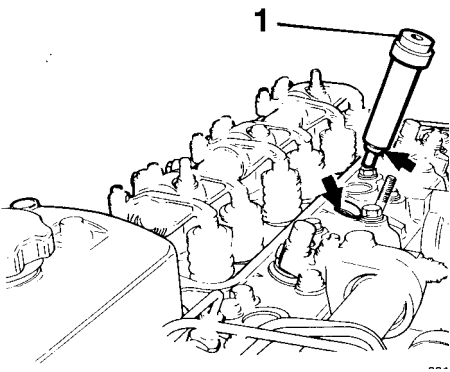


Figure 5
Installing the steel ring and copper sleeve

1. 6420 (TD73)
2. 6421 (TD63)

CAUTION

To obtain the correct clearance between copper sleeve and steel ring (0.10–0.45 mm (0.004–0.018 in)), these two parts should always be changed together.

1. Smear vaseline or a soap solution on the upper sealing ring and fit it in the cylinder head. Fit the lower sealing ring on the copper sleeve. Fit the steel ring and copper sleeve on the drift as per [Invalid linktarget] and insert the copper sleeve in the cylinder head.
2. Fit press tool 6861 over the drift and press down the steel ring and copper sleeve by tightening the tool to the prescribed torque, see [Invalid linktarget] and [Invalid linktarget].

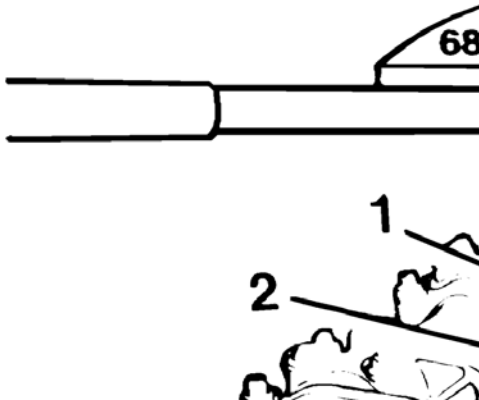


Figure 6
Pressing down the steel ring and copper sleeve

1. 6861
2. 6420

CAUTION

The support welded onto press tool 6861 should face up on TD63 and face down on TD73.

Tightening torque, L90D: 68 Nm (50 lbf ft)

Tightening torque, L120D: 50 Nm (37 lbf ft)

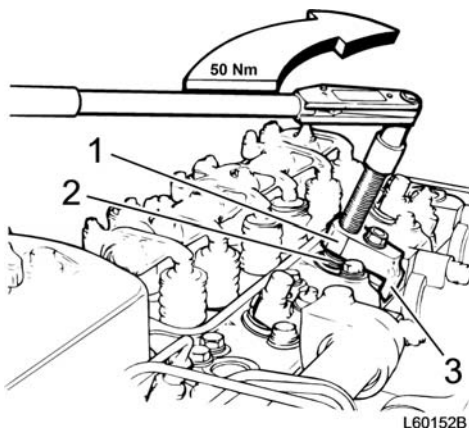


Figure 7
Pressing down the steel ring and copper sleeve (TD73)

1. 6861
 2. 6420
 3. Support
3. Remove the press tool and drift

Language Code GB	Product WLO	Group 945	https://truckmanualshub.com/	No. 90	Version 2	Date 04/17/2013
Applies to L60E Volvo, L60F Volvo, L60G Volvo, L70D Volvo, L70E Volvo, L70F Volvo, L70G Volvo, L90D Volvo, L90E Volvo, L90F Volvo, L90G Volvo, L110E Volvo, L110F Volvo, L110G Volvo, L120D Volvo, L120E Volvo, L120F Volvo, L120G Volvo, L150D Volvo, L150E Volvo, L150F Volvo, L150G Volvo, L180D Volvo, L180E Volvo, L180F Volvo, L180G Volvo, L220D Volvo, L220E Volvo, L220F Volvo, L220G Volvo, L250G Volvo						

D- arm cracks



WARNING

Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.

Cause

A number of cases have been reported regarding cracks in D-arms on L120E and L120F lift frame at low operating hours.

Action

Most of the cases of this type of cracks have been found on models L120E & L120F and directed to those models, however all models listed may encounter similar cracks. The repair method for all listed wheel loaders is common.

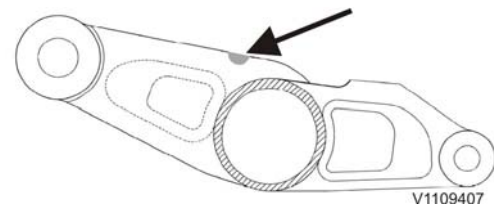


Figure 1

Carbon arc to an U-shaped groove

Lifting frame, repair instruction for cracks in “D”-arms on the cross tube.

The welding rod to use in the repair should be of a stainless steel type. A high alloy welding rod containing 18-30% Chrome and 8% Nickel.

These types of welding rods are in general easy to use and have less impact on the heat treatment than standard rods for steel.

Recommended welding rods:

OK 67.45 (EN 1600 E 18 8 Mn B, AWS A5.4) ESAB

OK 68.81 (EN 1600 E 29 9R 32,SFA7AWS A5.4) ESAB

Elgaloy Mix 18 (EN 1600 E 18 8 Mn R 53,AWS A5.4-92), ELGA

Repair instruction.

It's crucial that the repair is carried out as soon as the crack is discovered. Crack should not be deeper than 30mm on the D-arm.

Carbon Arc the crack to a u-shaped groove. Grind if necessary to remove slag and sharp edges. Do not remove more material than needed, just enough to get rid of the crack. The corners are sensitive areas and should be left as untouched as possible due to the risk of new cracks may develop if too much material is removed. If necessary use copper plate to support the weld.

The area has to be pre-heated up to 150-200 C° (300 - 400 degrees F) before welding.

Important! The weld seam has to be wider than the depth to reduce the risk of heat cracks.

Remove all slag between each new seam.

Cold hammering of repaired area after the welding procedure is recommended.

This to remove stress built in during the welding process.

Grind to a smooth and even surface, apply primer and touch up.

The ground connection must be safely secured as close to the point of welding as possible.

For additional information see SB 000WLO122 Instructions for shielded metal arc welding and PROSIS descriptions 170 Electric welding.

Language Code GB	Product ART/EXC/WLO	Group 160	https://truckmanualshub.com/	No. 118	Version 1	Date 08/28/2014
Applies to Excavators, Wheel Loaders, Articulated Haulers						

DEF/AdBlue/AUS32 sampling, method

NOTE!

Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.

Cause and action



Figure 1

Sample kit (Black) including sample bottle.

A new test for AdBlue/DEF sampling has been developed.

Applies to models

Valid for all products specified in the header of this Service bulletin equipped with Tier 4 Final engines.

Required parts

Designation	Qty.	Part no.
AdBlue sample kit (Black)	As required	VOE17412114 (Europe)

Work instructions

Sampling technique

It is vital to take a correct sample for receiving representative result of the analysis. Irrespective if you want to take the sample from the AdBlue/DEF tank on the machine or a storage tank the technique is the same.

AdBlue/DEF sampling with vacuum pump

If sampling on a machine - Please note that there is a strainer in the filler tube that has to be removed.

Op nbr

1. Use a new hose for each sampling. Cut the hose to a suitable length and connect it to the vacuum pump.
2. Install the sample bottle on the vacuum pump.
3. Insert the hose in the tank. Make sure that the sample is not taken from the bottom. The sample should be taken slightly above the middle range of the liquid.

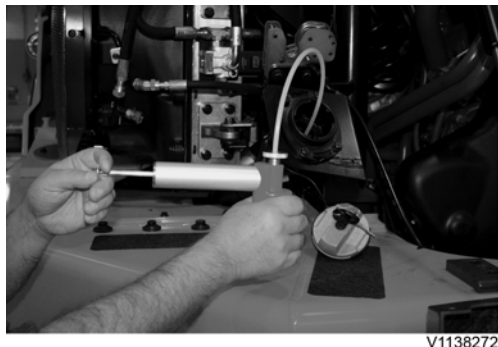


Figure 2

Example of AdBlue/DEF sampling.

4. Draw up liquid to flush the hose.
5. Remove the sample bottle and empty it. Make sure that the AdBlue/DEF is taken care of in an environmentally safe way.
6. Install the sample bottle on the vacuum pump and fill the sample bottle $\frac{3}{4}$ full.
7. Attach one label on the sample bottle and one on the submission form.

Submission form

Fill in the Submission form. The Submission form can be downloaded from the Oil Analysis web site.

It's important to fill in the submission form correctly. Fill in the top section as normal with machine data etc.

There is no prefilled fields for AdBlue/DEF system, please use the field Others and write in "AdBlue/DEF".

In the comments field you should fill in where the sample is taken. AdBlue/DEF tank on machine, Storage tank id: xx etc.

Tick in from where the sample is sent in at the bottom and send the sample to the laboratory together with the submission form.

V1138273

Example of how to fill in Submission form

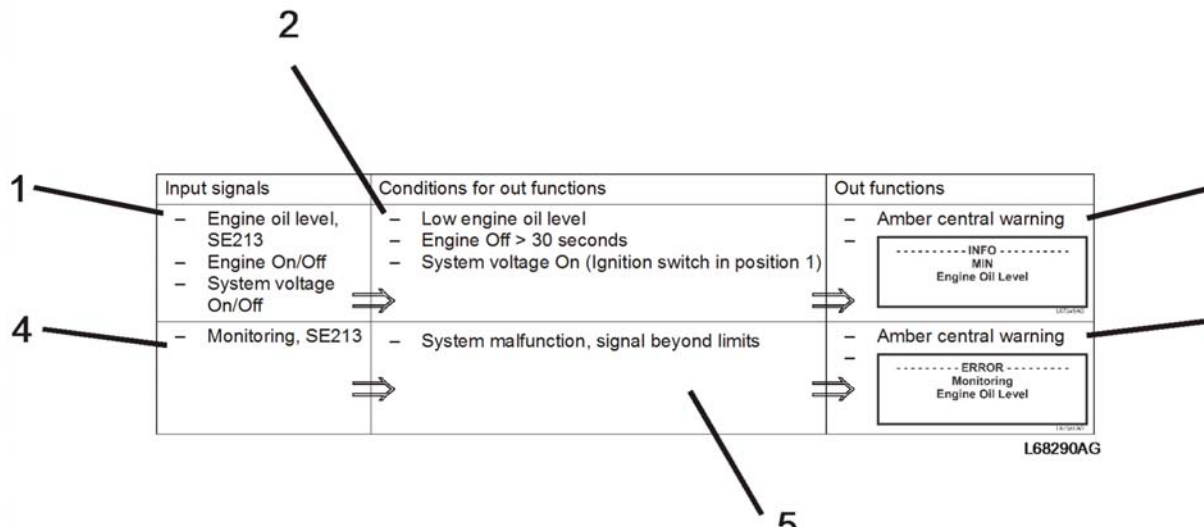


Figure 1
Table with output function conditions

- 1. Signals from sensors and functions
- 2. Conditions for obtaining output signals. All conditions must be fulfilled (AND functions)
- 3. Output functions: Warnings, menu displays and signals used as input signals by other functions
- 4. Monitoring of concerned component for fault detection
- 5. Fault detection of concerned component
- 6. Output functions: Error display and central warning

Description, camshaft

<https://truckmanualshub.com/>

The camshaft runs in seven bearings. Axial clearance is determined by the camshaft gear, the shoulder on the camshaft's front bearing trunnion and the thrust washer screwed to the front surface of the cylinder block.

Description, connecting rods

<https://truckmanualshub.com/>

The connecting rods are of I section with perforations for forced feed lubrication of the gudgeon pin. Since the big ends of the connecting rods are split diagonally the con rods can be pulled up through the cylinder liners on disassembly.

On **TD73** the connecting rods have a trapezoidal small end. As a result, the piston can be made stronger, see [Invalid linktarget].

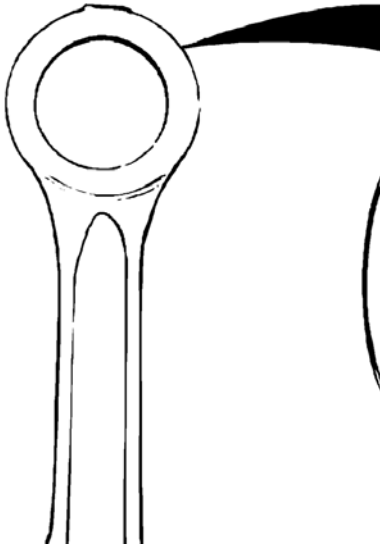


Figure 1

TD71 and TD73

Connecting rod with trapezoidal gudgeon pin end

Description, crankshaft

<https://truckmanualshub.com/>

The crankshaft runs in seven main bearings. Its axial bearings consist of thrust washers located at the middle main bearing. The crankshaft is balanced statically and dynamically. At the front the crankshaft has a "polygon section" (polygon hub) and at the rear a flange on which the flywheel is bolted.

The crankshaft is hardened through nitrocarburizing. Provided that the it does not first need straightening it can be reground to a maximum of 2nd undersize without renewed nitrocarburizing.

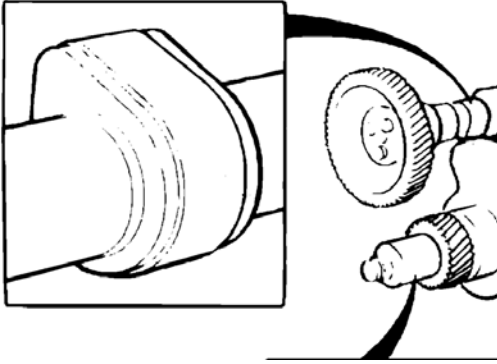


Figure 1

Crankshaft and camshaft

The front and rear crankshaft seals consist of rubber sealing rings. The rear crankshaft seal also has an oil deflector ring (not on hauler).

Description, cylinder block

<https://truckmanualshub.com/>

The cylinder is a one-piece casting and has wet replaceable cylinder liners. The compression pressure gives rise to tensile stresses in the cylinder head bolts and these stresses are carried directly to the main bearings through stiffening parts of the cylinder block walls.

The camshaft bearings are drilled to the correct size after assembly.

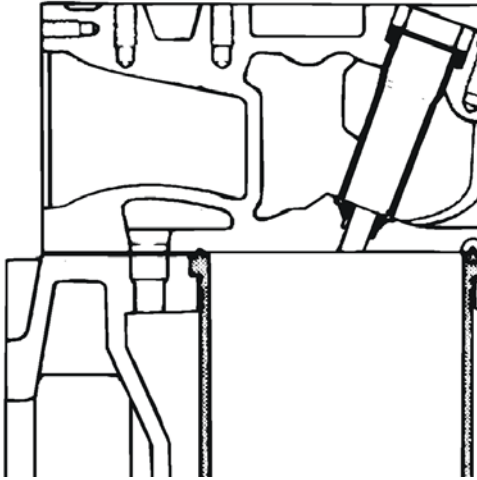


Figure 1
Cylinder liner with flame lip

1. Flame lip
2. Sealing rings

Description, cylinder head

<https://truckmanualshub.com/>

The engine has two cylinder heads, each covering three cylinders. Each cylinder head is secured by 20 bolts (M11) equally distributed round the cylinders.

In the surface of the cylinder head are channels formed by two wide concentric grooves recessed in the cylinder head immediately above the cylinder liner collar, see [Invalid linktarget]. The size of the sealing surface is determined by these grooves so that the necessary sealing pressure is obtained without necessitating such a high tightening torque as to constitute a risk of deformation damage to the liner shoulder in the cylinder block. There is also a groove for the cylinder liner's flame lip.

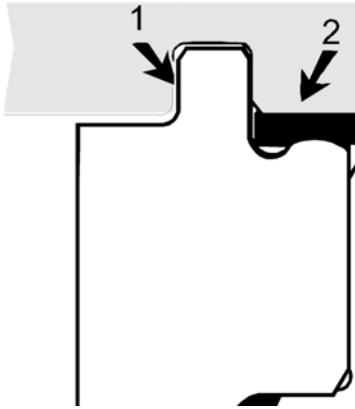


Figure 1
Gasket, cylinder block – cylinder head

1. Cylinder liner flame lip
2. Sealing groove in the gasket. The groove is made by the channel in the cylinder head.
3. Gasket (cylinder head)

The cylinder head gasket is made of solid sheet steel.

-The channels deform the gasket and hold it in place.

-The cylinder liner's flame lip protects the gasket from the combustion pressure and temperature.

Due to emission requirements, the position of the injectors relative to the piston must be determined with extremely high precision and for this reason the seat of the copper sleeve must not be milled and the cylinder head must not be surface ground.

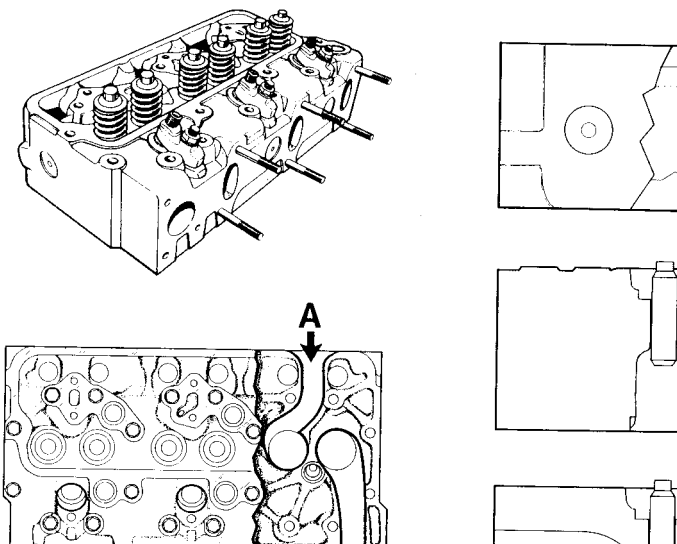


Figure 2

Cylinder head

A Inlet passage

B Exhaust passage

Description, cylinder liner

<https://truckmanualshub.com/>

The cylinder liners are replaceable and of wet type. The cylinder liners have a "flame lip", see [Invalid linktarget]. This flame lip, which fits in a groove in the cylinder head, reduces the stresses on the cylinder head gasket.

Four rubber O-rings are used for the outer sealing of the cylinder liner. The three lower rings fit in grooves machined in the cylinder block. These rings are made of different materials. The two upper sealing rings are identical and made of fluor rubber (black). The lower sealing ring is violet and made of ethylene propylene rubber (EPDM).

Sealing at the upper part of the cylinder liner is effected partly by an O-ring under the liner flange and partly through the cylinder head gasket pressing the liner flange down against the shoulder in the cylinder block.

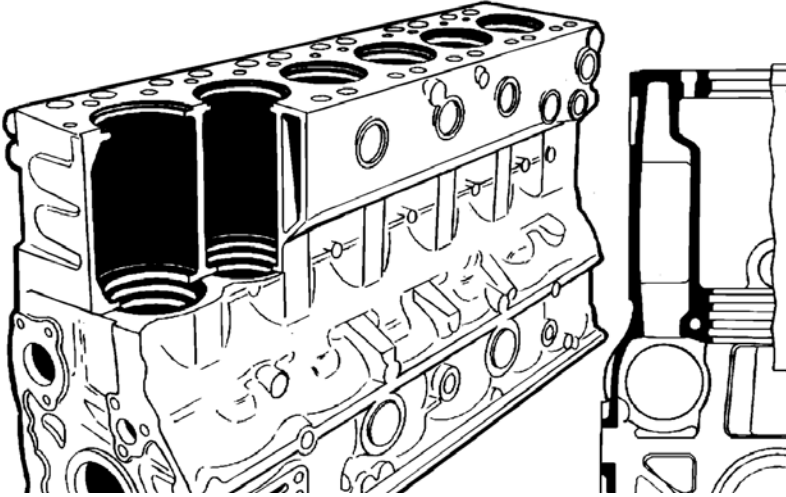


Figure 1

Cylinder block

Description, engine transmission <https://truckmanualshub.com/>

The transmission consists of helical spur gears. The injection pump and camshaft are driven from the crankshaft gear via an idler gear. The engine lubricating oil pump is also driven from the crankshaft via an idler gear.

TD63 has a transmission gear with two different surface treatment methods: case hardening and nitrocarburizing. The injection pump gear has no marking vis-a-vis the idler gear.

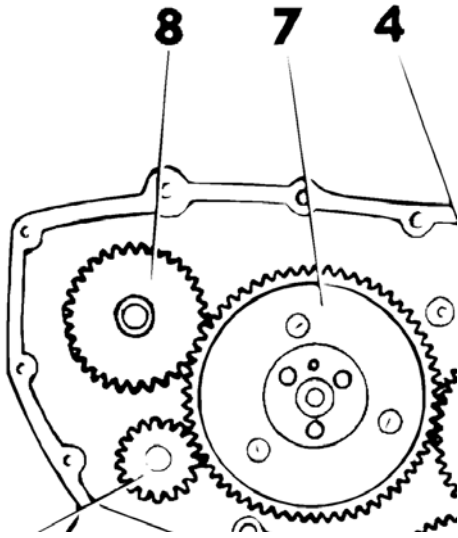


Figure 1

1. Crankshaft gear
2. Idler gear for oil pump
3. Oil pump gear
4. Idler gear
5. Gear, injection pump
6. Gear, coolant pump
7. Gear, camshaft
8. Gear, compressor
9. Gear, oil pump

TD73 has a transmission gear with two different surface treatment methods: case hardening and nitrocarburizing. The injection pump gear has no marking relative to the idler gear.

Description, flywheel

<https://truckmanualshub.com/>

The flywheel is bolted to a flange at the rear of the crankshaft. It is balanced statically. The starter ring gear is a shrink fit on the flywheel.

Description, frame and big-end bearing

<http://www.mitsubishimanualshub.com/>

The bearings are precision manufactured and ready for direct assembly. Five oversizes are available as spare parts. The thrust washers for the crankshaft are available in three oversizes.

Description, general

<https://truckmanualshub.com/>

Fuel is sucked from the fuel tank by the feed pump and passed through the fine filter to the injection pump. Surplus fuel is returned through the overflow valve located on the injection pump. The injection pump then pumps at high pressure the amount of fuel corresponding to the power requirement through the delivery pipes to the injectors which atomize the fuel under high pressure in the engine's combustion chambers. The return fuel from the injectors passes through the leak-off fuel line via the overflow valve and return line back to the tank.

Description, general

<https://truckmanualshub.com/>

The equipment allows that steering, forward/reverse shifting, as well as Kick-down engagement can be controlled through controls located in the left armrest.

When operating on a public road, the steering wheel must be used and lever steering must be disengaged.

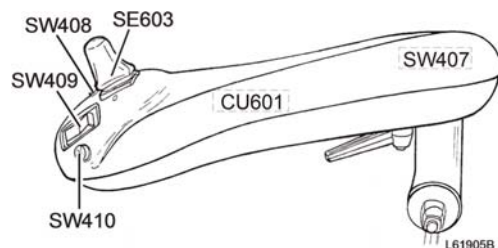


Figure 1
Armrest, CDC

SE603	Steering lever
SW408	Activation, CDC
SW409	Shifting, forward/reverse
SW410	Kick-down
SW407	Activation, CDC in armrest
CU601	Electronic unit

The steering lever has two adjusting screws for adjusting steering speed. The electronic unit CU601 is not adjustable, it has fixed dampening.

The CDC steering control valve is located under the cab on the right side. The control valve is connected in parallel with the primary steering valve.

The shuttle valve for LS-pressure is located by the primary steering valve.

The primary gear selector has priority in relation to the forward/reverse switch on the armrest. This means that lever steering is disengaged if the gear selector is moved to the forward or reverse position.

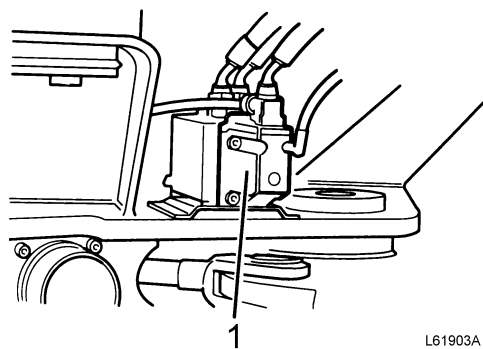


Figure 2
Control valve, CDC

1. MA601

An indicator light on the centre instrument panel is lit when lever steering is engaged.



Figure 3

Description, lubrication and oil system

The engines incorporate a force-feed lubrication system with an oil filter of full-flow type, and in certain cases a part-flow filter, and an oil cooler.

Basically, the lubrication system is of the same design on the different engine versions. Engines having piston cooling differ externally in that they have an extra part-flow oil filter. All valves for the lubrication system are grouped in the filter head.

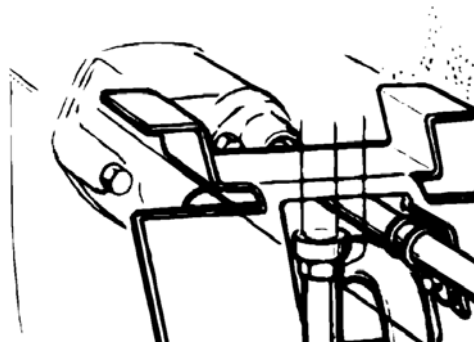


Figure 1

Lubricating oil pump (single pump)

NOTE!
The U-shaped pipe between the cylinder block walls is fitted only on engines with piston cooling.

All bearings and gudgeon pins, as well as the valve mechanism and gear transmission bearing arrangements, are lubricated by force-feed lubrication.

Lubrication of the transmission gears is accomplished by shot lubrication from the idler gear bearing trunnions which are in communication through channels with the main oilway.

The injection pump and turbocharger are force-feed lubricated.

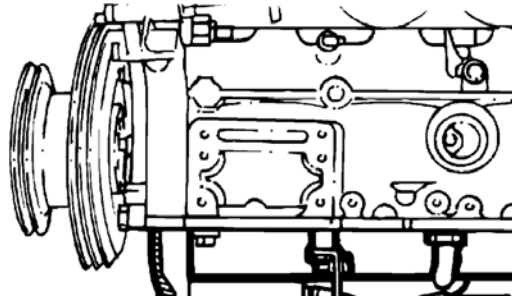


Figure 2

Lubricating oil pump (double pump)

1. Oil pumps
2. Oil housing
3. Oil strainer for rear pump

Lubricating oil pump

The lubricating oil pump is located in the sump at the front and driven by the crankshaft via an idler gear. The pump is of gear type. Oil is sucked through the strainer and suction pipe to the suction side of the pump.

Oil filter

The oil filter is of full-flow type, which means that all oil is filtered before it continues to the lubricating points. The filter is mounted on the right-hand side of the cylinder block. The filter element consists of folded filter paper.

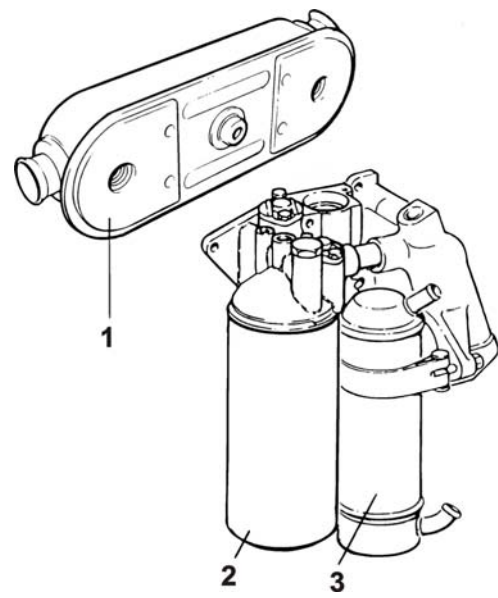


Figure 3

Lubricating oil pump (double pump)

1. Oil cooler TD73
2. Oil filter TD63 and TD73
3. Oil cooler TD63

Description, pistons and piston rings, L90D

TD63

The pistons are made of light alloy and fitted with two compression rings and one oil ring. The shape of the combustion bowl in the piston is different to TD61 and the piston rings are positioned higher up. The top piston ring is of "Keystone" type (double trapezium cross-section). The gudgeon pin is displaced laterally 0.50 mm, which reduces the stresses on the piston during the combustion phase.

Piston rings

Each piston is fitted with two compression rings and one oil ring, see [Invalid linktarget].

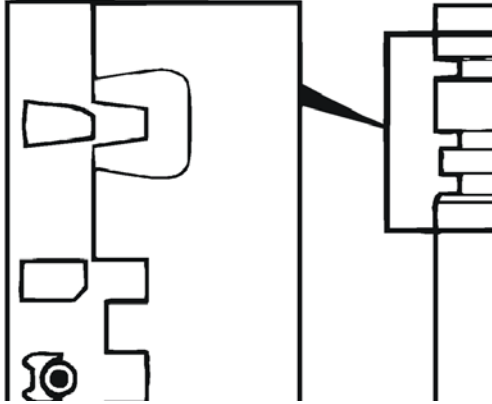


Figure 1

A. Piston and piston rings TD63

The compression rings should be fitted with the marking facing upwards.

The oil ring can be fitted either way round. It has two scraper edges that are pressed against the cylinder wall by the ring's own spring pressure and also by an expander spring on the inside of the ring. The opening in the expander spring should be positioned opposite the oil ring's opening.

Description, pistons, L120D

<https://truckmanualshub.com/>

TD73

The pistons are made of light alloy. They are oil cooled.

Piston rings

Each piston is fitted with two compression rings and one oil ring, see [Invalid linktarget].

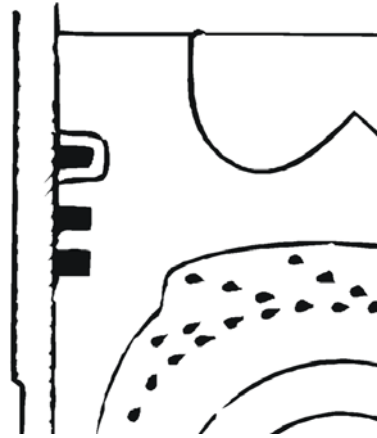


Figure 1

Piston cooling TD73 (outline diagram)

the compression rings should be fitted with the marking facing upwards.

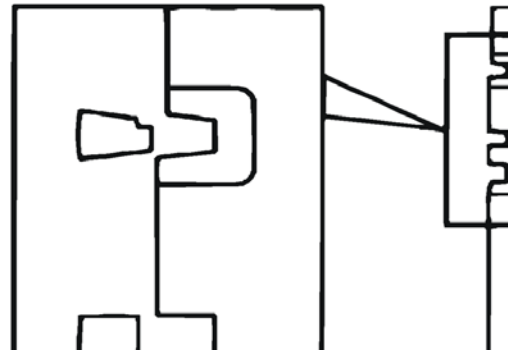


Figure 2

Piston TD73

The oil ring can be fitted either way round. It has two scraper edges that are pressed against the cylinder wall by the ring's own spring pressure and also by an expander spring on the inside of the ring. The opening in the expander spring should be positioned opposite the oil ring's opening.

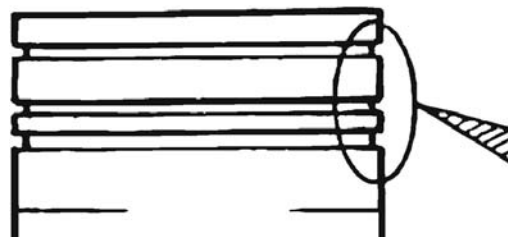


Figure 3

Piston TD73

Description, vibration damper

<https://truckmanualshub.com/>

The vibration damper consists of a hermetically sealed housing containing a steel flywheel mass of rectangular cross-section. The flywheel mass (damper ring) is carried on a bush in the centre and surrounded on all other sides by a viscous liquid (silicone).

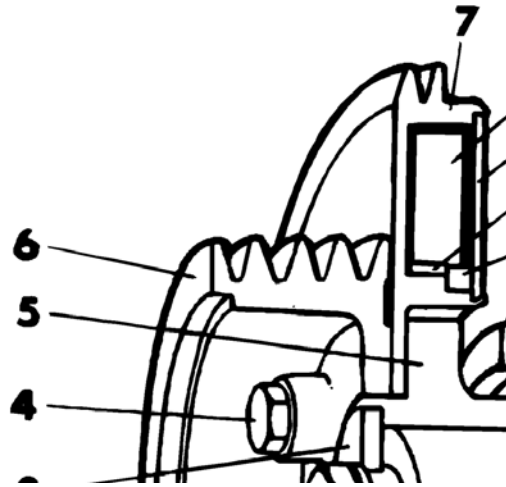


Figure 1
Vibration damper

1. Crankshaft
2. Centre bolt
3. Flat washer
4. Belt pulley retaining bolts
5. Hub
6. Crankshaft pulley
7. Damper housing
8. Flywheel mass
9. Cover
10. Bushing
11. Liquid space
12. Oil seal

Description

<https://truckmanualshub.com/>

The L90D is equipped with an engine having the designation TD63KBE and the L120D is equipped with an engine having the designation TD73KDE. Both engines are low-emission, six-cylinder, four-stroke, direct-injected, turbocharged diesel engines with intercooler.

The engine has wet replaceable cylinder liners and two separate cylinder heads that cover three cylinders each. The cylinder heads are interchangeable.

Lubrication is achieved with a force-feed lubrication system where an oil pump presses lubricating oil to all lubrication points.

The turbocharger supplies the engine with pressurised fresh air, resulting in a surplus of air. Thus, the injected fuel amount can be increased, giving more engine power. The turbocharger is lubricated and cooled by the engine's lubricating oil, and is driven by the engine exhausts and makes use of energy that otherwise would remain unused.

The intercooler, located in the induction manifold, cools the air which contributes to cleaner exhausts and improved engine power. A separate pump circulates coolant counter-clockwise in the intercooler.

Description

<https://truckmanualshub.com/>

The turbocharger consists of turbine and compressor sections with a bearing housing between them. The shaft joining the turbine and compressor wheel is journalled in the housing in "floating" plain bearings. The compressor is lubricated by the engine's lubricating oil. The return oil outlet is of large diameter to ensure that the oil will run quickly back to the engine. Seals of piston ring type are used to prevent oil from leaking out of the bearing housing.

The turbocharger is mounted directly on the outlet pipe and it is the energy of the exhaust utilised by the turbine that drives the compressor.

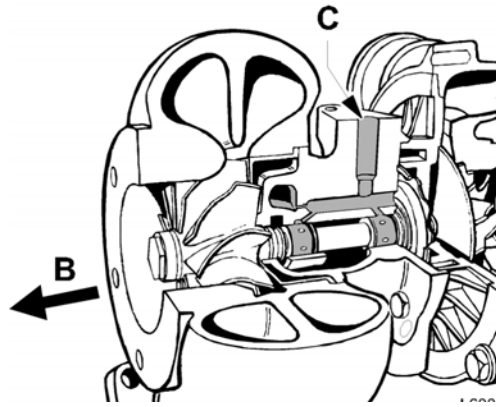


Figure 1
Turbocharger, cross-section view

- A. Air intake
- B. Exhaust gases
- C. Lubricating oil

Description

<https://truckmanualshub.com/>

The engines are equipped with a piston-type thermostat whose sensitive element contains wax. When the engine is cold the thermostat keeps the passage to the radiator completely closed. The coolant is then carried through a by-pass line directly back to the engine. This by-pass line closes as the engine successively opens the passage to the radiator.

For opening temperature, see the specifications.

Description

<https://truckmanualshub.com/>

Wheel loader L90D is equipped with hydraulic transmission HT131. Wheel loader L120D is equipped with hydraulic transmission HT205. Both HT131 and HT205 are hydro-mechanical, four-speed Power Shift transmissions, with torque converter, cylindrical spur gears and hydraulically operated disc clutches.

The engine power is transmitted hydraulically to the wheels and mechanically through the hydraulic transmission, via a torque converter that adapts its output torque to the torque demand.

The clutch drums for the different gears rotate freely on the clutch shafts. When a gear is engaged, the clutch drum that transfers the power mechanically, is connected to respective clutch shaft by the hydraulically affected clutch discs. The mechanical power transfer in the hydraulic transmission takes place through gears which are in constant mesh.

The L90D is equipped with AWB30 drive axles and the L120D with a WB31 drive axle at the front and an AWB30 drive axle at the rear. The front axle is equipped with a differential lock.

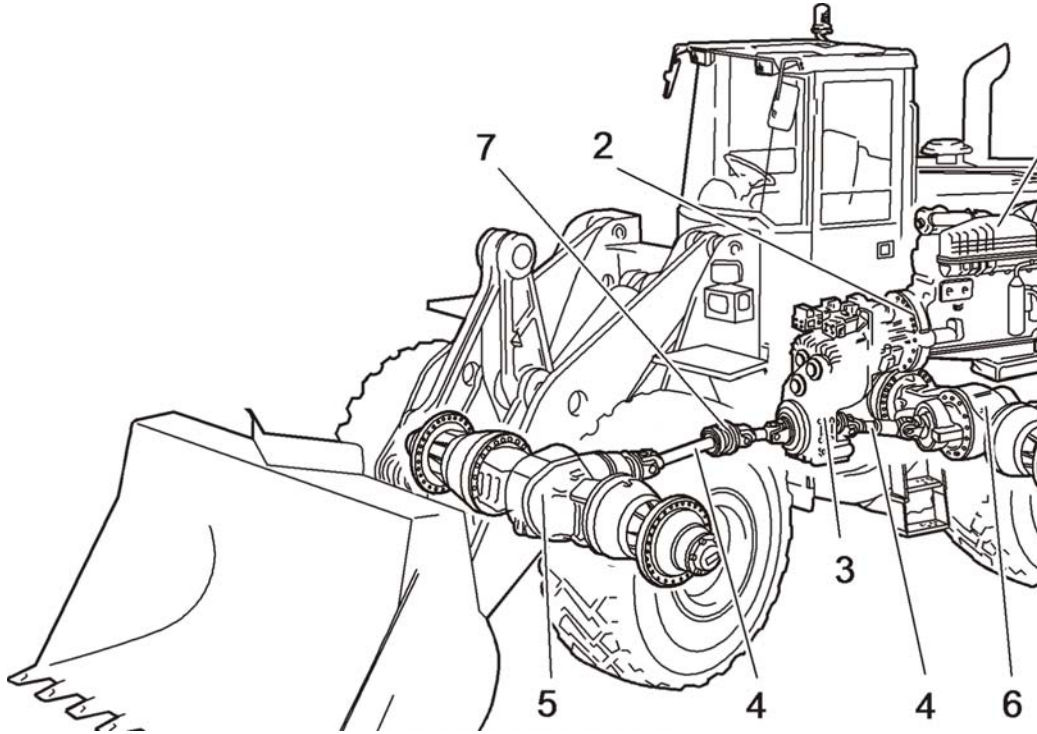


Figure 1
Power transmission, principle illustration

1. Engine
2. Torque converter
3. Hydraulic transmission with dropbox
4. Propeller shafts
5. Front axle
6. Rear axle
7. Support bearing

Description

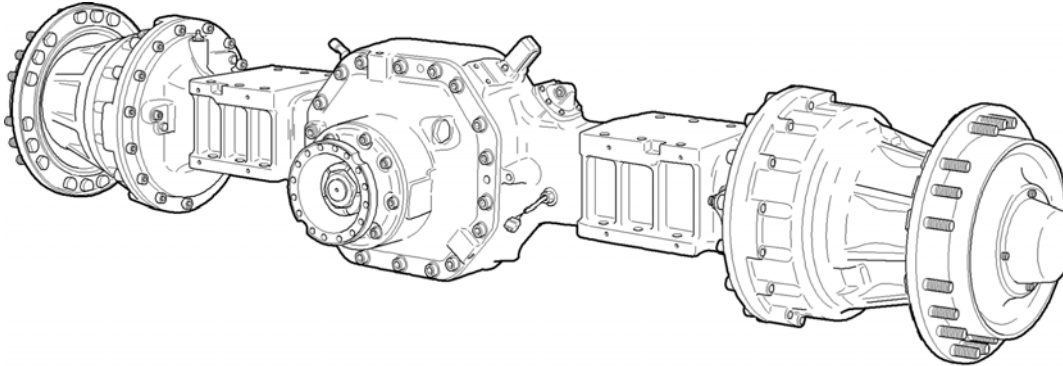
<https://truckmanualshub.com/>

Drive axles AWB 30 and AWB31 have floating axle shafts and planetary gear hub reductions with sealed oil-cooled disc brakes.

The brakes are controlled hydraulically and are joined to the hub reductions in such a way that the brakes, through the planetary gears, utilise the reduction ratio of the planetary gears.

Pump rotors are mounted on each side of the brake discs, and they direct oil along the sides of the brake discs for circulation of oil in the axle as well as cooling of the brakes. The axles have a common oil space for the hub reductions and the final drive.

The front axle version of the drive axles is equipped with a hydraulically controlled differential lock with dog clutch. As an alternative, certain drive axle versions can be equipped with an automatic differential brake of "Limited Slip" type.



L63126A

Figure 1
Drive axle AWB30

Description

<https://truckmanualshub.com/>

Service brake

The machine is equipped with a fully hydraulically controlled brake system divided into two circuits, where one circuit acts on the front axle brakes and the other circuit acts on the rear axle brakes.

Both the front axle and rear axle are equipped with wet disc brakes.

The system also includes a hydraulic oil pump, a brake valve and accumulators.

The hydraulic oil pump is common to the brake and servo systems. the oil is drawn from the hydraulic oil tank.

Each circuit has its own accumulator. The L120D also has a third accumulator that is common to both circuits. The accumulators are pre-charged with nitrogen gas and their function is to store oil under pressure and to ensure good braking capacity with a wide margin, even if the engine stops.

L90D: There is a pressure reducing valve in the rear circuit. If the output brake pressure is lower than 1.5 MPa, only the front circuit is used to brake the machine. This allows for softer braking. The valve has internal leakage through a restriction parallel with the valve itself.

L120D: There are damper accumulators on the front and rear circuits that allow for soft, comfortable brake application through a slow build-up of pressure.

If the pressure drops below 9 MPa (1305 psi) in the accumulator circuit, an indication is given by the brake system warning light, the central warning is activated, and the buzzer will sound if the gear selector is moved to a forward or reverse gear. The information display unit will also issue a warning about low brake pressure.

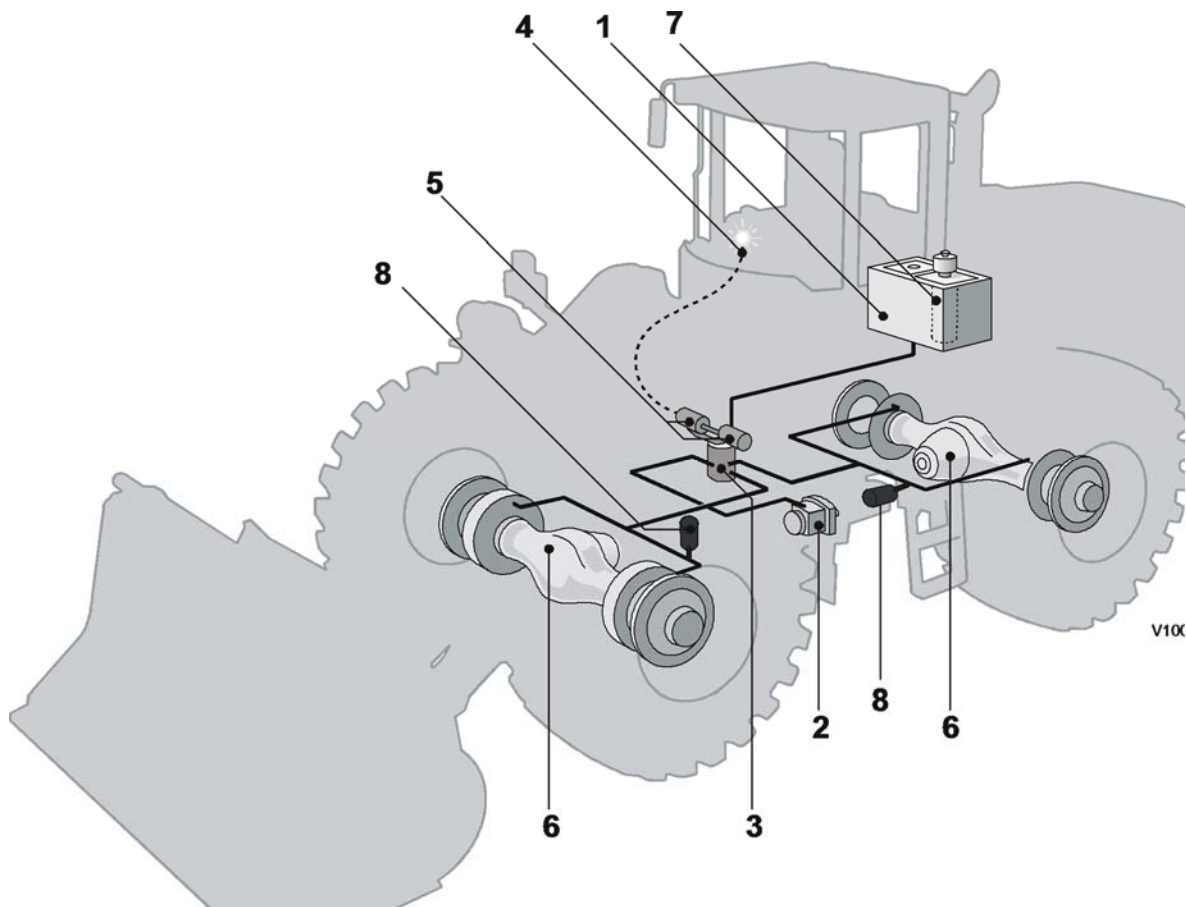


Figure 1
Brakes, principle illustration

1. Hydraulic tank
2. Brake pump
3. Foot brake valve
4. Warning light, low brake pressure
5. Accumulator
6. Axle with wet disc brakes
7. Return oil filter
8. Accumulator

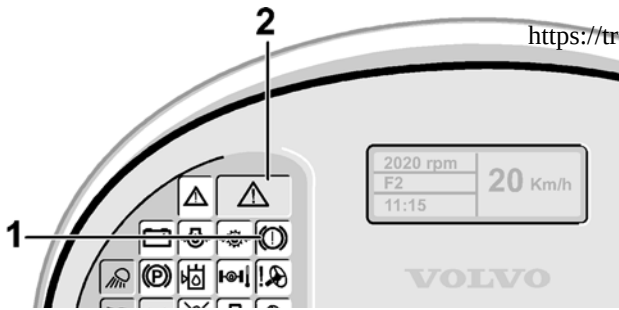


Figure 2
Instrument panel

1. Warning light, low brake pressure
2. Central warning

Brake valve

The brake valve includes a **control valve**, **unloading valve** and a **foot brake valve**.

The control valve (located in the foot brake valve) distributes the oil flow from the pump to the brake system and the servo system.

The foot brake valve is divided into two circuits, where one circuit acts on the front axle brakes and the other circuit acts on the rear axle brakes.

The function of the unloading valve is to distribute the oil flow to the different brake circuits as well as to control the system pressure.

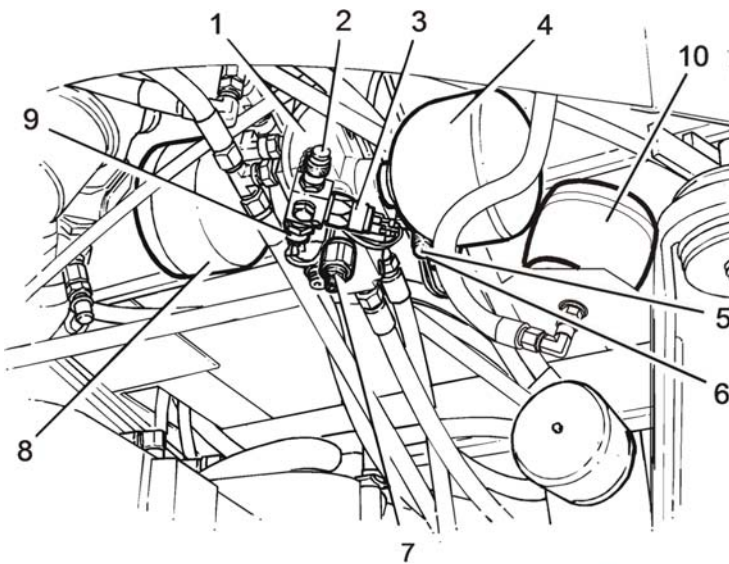


Figure 3
Brake valve

1. Brake valve
2. Pressure outlet for checking output brake pressure to circuit
3. Pressure sensor, transmission disengagement
4. Accumulator, rear circuit
5. Pressure outlet, unloading pressure
6. Pressure sensor, low brake pressure
7. Adjusting screw, unloading pressure
8. Accumulator, front circuit
9. Pressure sensor, brake light
10. Accumulator, (only on L120D)

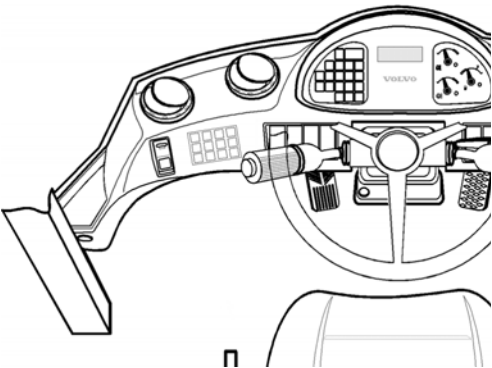


Figure 1
mechanically operated parking brake

Standard equipment L90D

- 1. Parking brake lever

mechanically operated parking brake

The parking brake is controlled mechanically, application and release takes place via a brake rod that affects the parking brake caliper.

NOTE!
If the engine is started with switch SW501 released, a gear (F or R) is engaged and engine speed rises to above 1600 rpm, the parking brake will be released automatically.

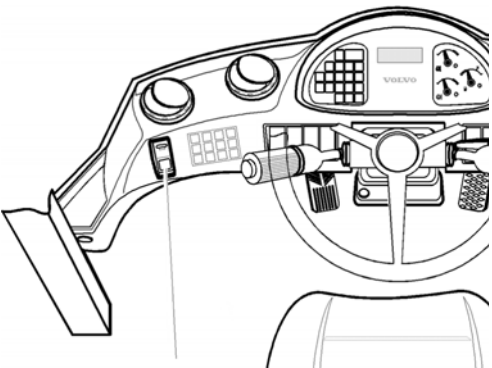


Figure 2
Electrically controlled parking brake

Optional equipment L90D

- 1. Switch SW501

Electrically controlled parking brake, optional equipment

Manufacturing location	Serial number
Arvika	17558
Ashville	64279
Pedeneiras	70549

The parking brake is electrically controlled with a switch on the instrument panel. The parking brake is applied by a hydraulically controlled spring brake cylinder that acts on the brake caliper. The parking brake is released with hydraulic pressure.

NOTE!
Applies to electrically controlled parking brake:
When the engine is turned off (ignition key in position 0), the parking brake is automatically applied. when the engine is started again, the parking brake must be released by moving switch SW501 first to position 1 (parking brake applied) and then to position 0

(parking brake released).

<https://truckmanualshub.com/>

Description

<https://truckmanualshub.com/>

The parking brake on the L120D is of the wet disc brake type and is located in the hydraulic transmission on the output shaft.

The parking brake is electrically controlled with a switch on the instrument panel. The parking brake is applied by a hydraulically controlled spring brake cylinder that acts on the brake caliper. The parking brake is released with hydraulic pressure.

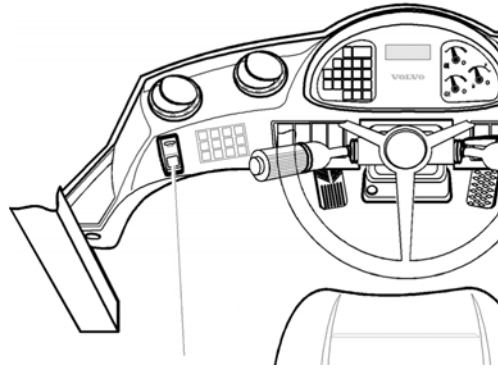


Figure 1
Electrically controlled parking brake

1. Switch SW501

NOTE!

When the engine is turned off (ignition key in position 0), the parking brake is automatically applied. When the engine is started again, the parking brake must be released by moving switch SW501 first to position 1 (parking brake applied) and then to position 0 (parking brake released).

Description

<https://truckmanualshub.com/>

The wheel loader is equipped with hydrostatic articulated frame steering consisting of pump, steering valve and two cylinders. The machine can be equipped with lever steering (CDC) and secondary steering. The steering system hydraulic pump, driven by the right power take-off on the transmission, is a load-sensing axial piston pump. The hydraulic oil tank is common to the steering system, working hydraulics and brake system. The steering valve pressure outlet is connected to the plus side of one steering cylinder and the minus side of the other steering cylinder for steering in one direction, and vice versa for steering in the other direction.

Introduction of steering accumulators L90D	
country	from and including serial number
Arvika, Sweden	17372
Ashville, USA	64134
Pedeneiras, Brazil	70530

Introduction of steering accumulators L120D	
country	from and including serial number
Arvika, Sweden	14445
Ashville, USA	63078
Pedeneiras, Brazil	70522

Description

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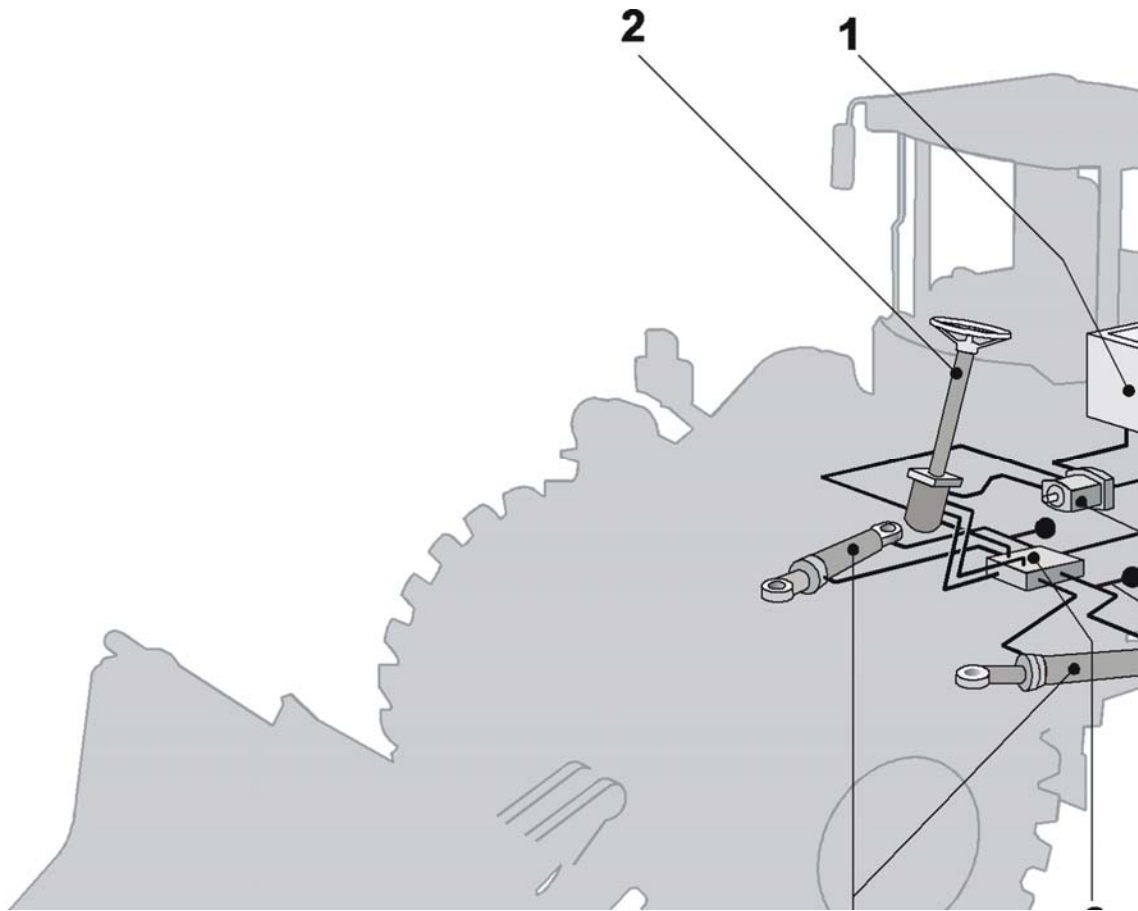


Figure 1
Steering system L90D

1. Hydraulic tank
2. Steering valve
3. Valve block
4. Steering pump
5. Steering cylinders
6. Return oil filter
7. Steering accumulators

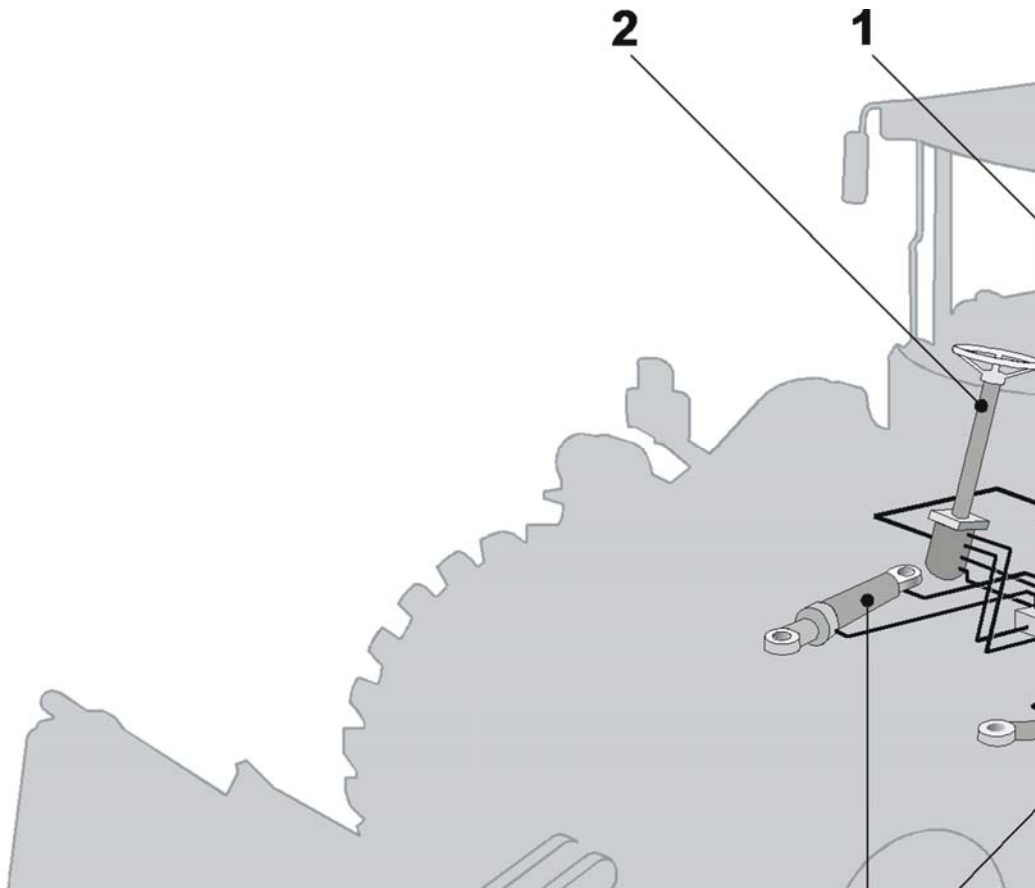


Figure 1
Steering system L120D

1. Hydraulic tank
2. Steering valve
3. Shift valve
4. Steering pump
5. Steering cylinders
6. Return oil filter
7. Steering accumulators

Description

<https://truckmanualshub.com/>

The system includes an electrically driven hydraulic pump controlled by the ECUs. The pump is located on the right side of the engine.

The I-ECU receives its signals from test switch SW601.

The V-ECU receives its signals from two sensors, SE601 and SE602.



Figure 1
SW601

The flow and pressure differential sensor SE601 senses the flow from the primary steering pump as well as the difference between the main pressure and the LS-pressure.

Pressure sensor SE602 senses the main pressure.



Figure 2

1. Indicator light, indicates malfunction in primary steering system
2. Indicator light, indicates that secondary steering pump starts

Before starting the engine

If test switch SW601, flow and differential pressure sensor SE601 or pressure sensor SE602 is connected, the ECUs consider the equipment installed.

The ECU's check the sensor circuits. With the ignition in position 1 and the engine turned off, the indicator light showing malfunction in the primary steering system when there is an open sensor circuit blinks.

While operating

If the flow and differential pressure sensor SE601 (sensor closed) is activated, the secondary steering pump starts if travel speed exceeds 5 km/h (3.1 mph).

The indicator light showing that the secondary steering pumps starts lights up and the pump continues to operate for as long as the sensor is closed.

In case of a primary steering system pressure loss, the flow and differential pressure sensor SE601 and the primary steering pressure sensor SE602 will close. This causes the secondary steering pump to start if travel speed exceeds 5 km/h (3.1 mph). The indicator lights for the secondary steering pump and steering system malfunction light illuminate at the same time as the central warning light begins to flash. In this case, the pump will continue to operate for as long as travel speed exceeds 5 km/h (3.1 mph).

Valve with flow and differential pressure sensor, SE601

Valve and function diagram, [Invalid linktarget] shows situation before start.

Prior to start, the peg (1) is held in the closed position by the spring (5) via the guide (4) and the piston (2). At the same time, the guide keeps the pin (3) in, which results in sensor SE601 being closed. Pressure sensor SE602 is also closed.

After starting, sensor SE602 remains open as long as the steering pressure in connection PP stays above 1.0 MPa (145 psi). Sensor SE601 opens when the pin (3) is pressed outwards (towards SE601) and the PP-PU connection opens. When the flow of oil from the steering pump through connection PU exceeds 10 litres/minute the cone (1) is held in the open position and the pin (3) is thus pressed outwards (towards SE601) via the piston (2). This function is independent of the pressure differential between the steering pressure and the LS pressure.

The pressure in connection PU acts on the piston (2), pressing it against the guide (4), the pin (3) and the spring (5). LS pressure

enters the valve via the LS connection and endeavours to press the piston in the opposite direction. When the difference between the steering pressure and the LS pressure is greater than 0.7 MPa (102 psi), the spring will be compressed and the pin opens sensor SE601.

The LS-pressure also acts directly on the pin (3), and when the LS-pressure exceeds 7 MPa (1015 psi), the pin will compress the spring via the guide regardless of the steering pressure, and the sensor will open. This occurs, for example, when steering against the lock (end) position when the steering pressure and the LS-pressure reach the same value.

Secondary steering starts:

- 1: When travel speed exceeds 5 km/h (3.1 mph).
- 2: When the flow of oil from the regular steering pump drops below approx. 10 l/min (2.6 US gal/min).
- 3: When the difference between steering pressure and LS pressure is less than 0.7 MPa (102 psi).
- 4: When LS pressure is below 7 MPa (1015 psi).

NOTE!

During limp-home operation, the secondary steering system is disconnected and 3rd and 4th gear are blocked.

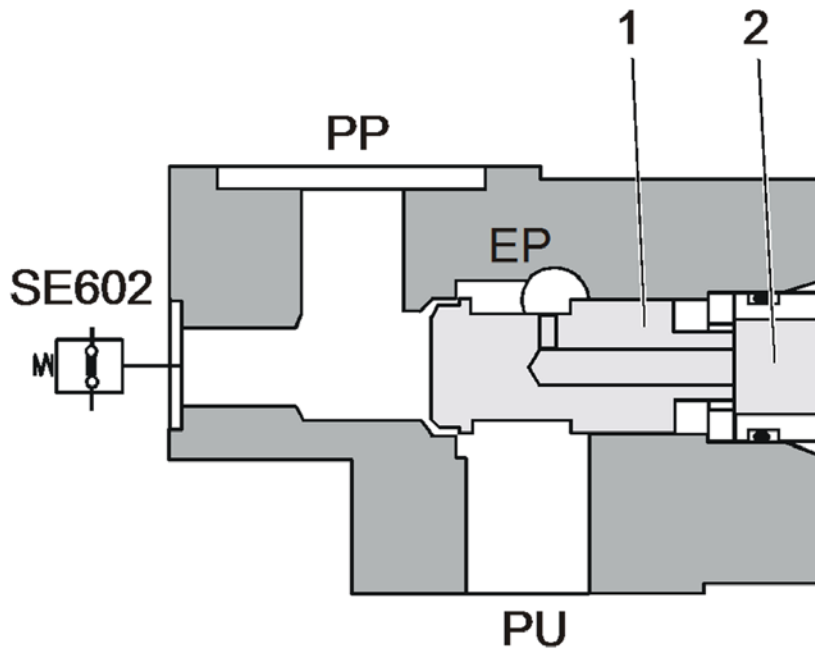


Figure 3
Valve with flow and pressure diagram plus function diagram

A. Steering valve

1. Peg
2. Piston
3. Pin
4. Steering
5. Spring

On the L120D the flow- and differential pressure sensor is replaced by a purely differential pressure sensor. This does not sense the flow but only registers the difference between the pump pressure/LS pressure relative to the LS pressure.

Functional test

The functional test of the secondary steering system is performed with the machine stationary and the engine turned off. The ignition must be in position 1. When switch SW601 is pressed, the connection to the I-ECU is opened. When sensors SE602 and SE601 are closed, the secondary steering pump starts and the indicator light for the secondary steering pump lights up. The pump will operate as long as the switch is pressed down.

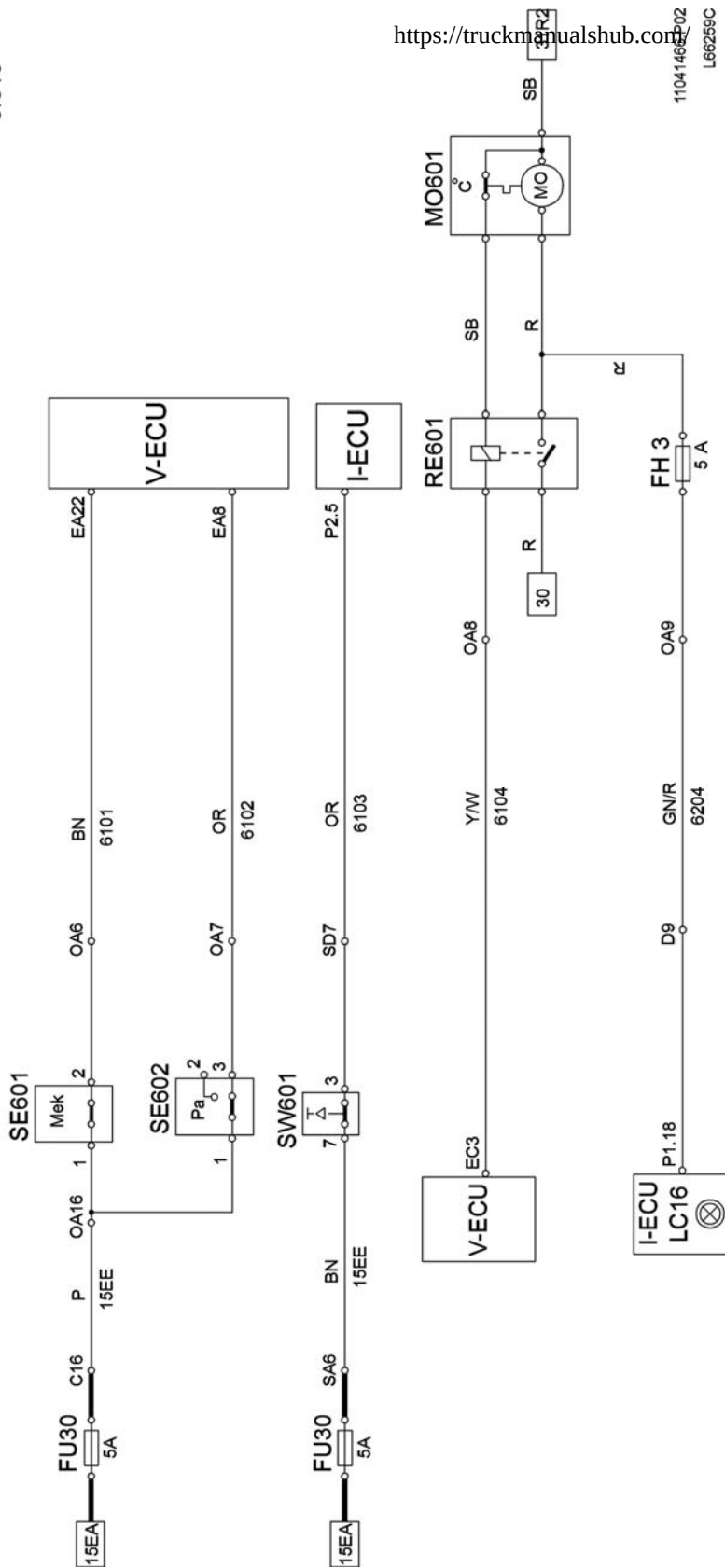


Figure 4
Wiring diagram 16, secondary steering

The pump consists of an inlet housing, an outlet housing two side plates, a drive shaft and a pump unit.

The pump unit consists of an elliptical cam ring, a rotor with 12 vanes and pressure pins, mounted to the drive shaft with splines.

The hydraulic oil flows into the pump units through the inlet, is forced out through the side plate and leaves the pump through the outlet.

Function

The rotor is turned inside the cam ring by the drive shaft. When the rotor turns, the centrifugal force and the pressurized pins press out the vanes so that they follow the inside of the cam ring. The radial movement of the vanes and the rotation of the rotor causes the spaces between the vanes to increase when they pass the inlet to the cam ring, resulting in the creation of a vacuum and oil being drawn into the spaces between the vanes.

When the oil has passed the inlet, it is trapped between the vanes, cam ring, rotor and the side plates. The closer the oil gets to the outlet, the higher the pressure. As the oil reaches the outlet, the distance between the rotor and the cam ring is reduced, and the oil is forced out.

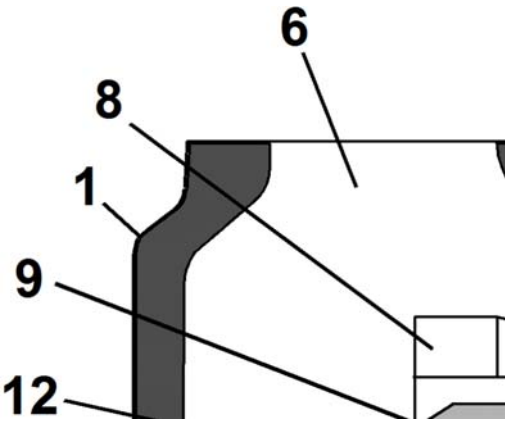


Figure 1
Vane pump, diagrammatic drawing

1	Inlet housing	7	Outlet port
2	Outlet housing	8	Cam ring
3	Side plates	9	Rotor
4	Drive shaft	10	Pressure pin
5	Pump unit	11	Vane
6	Inlet port	12	Pressure channel

Descriptions

<https://truckmanualshub.com/>

For the injection pump to work it must be supplied with fuel at a certain pressure. This is ensured by the feed pump, which is of piston type, see [Invalid linktarget].

The feed pump is located on the injection pump and driven by the injection pump camshaft. Feed pressure is determined by the fuel system's overflow valve.

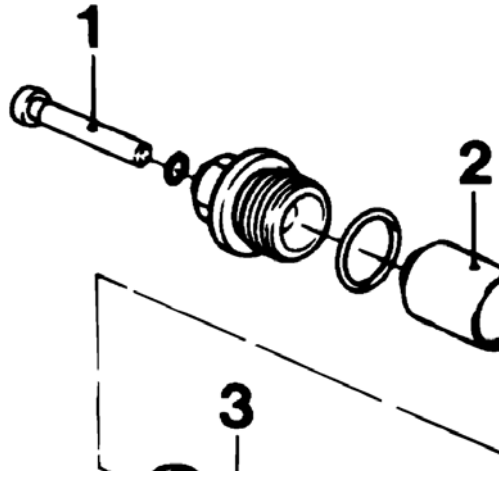


Figure 1

Feed pump

1. Push rod
2. Piston
3. Non-return valve
4. Hand pump

The pump camshaft's eccentric presses the feed pump piston (2) down by means of the push rod (1). This causes a certain quantity of fuel to be carried from the suction strainer by the piston via the non-return valve (3) to its delivery side while the piston spring is tensioned at the same time.

By means of the feed pump's hand pump (4) it is possible to pump fuel to the filter and injection pump when the engine is not running.

Language Code GB	Product WLO	Group 870	https://truckmanualshub.com/	No. 6	Version 1	Date 10/29/2003
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Applies to
616B Volvo BM, 646 Volvo BM, 4200 Volvo BM, 4200B Volvo BM, 4300 Volvo BM, 4300B Volvo BM, 4400 Volvo BM, 4500 Volvo BM, 4600 Volvo BM, 4600B Volvo BM, 6300 Volvo BM, EL70 Volvo BM, EL70C Volvo BM, L50 Volvo BM, L50B Volvo BM, L50C OR Volvo, L50C Volvo, L50C Volvo BM, L50D Volvo, L50E Volvo, L60E Volvo, L70 Volvo BM, L70B Volvo BM, L70C Volvo, L70C Volvo BM, L70D Volvo, L70E Volvo, L90 CO Volvo BM, L90 Volvo BM, L90B Volvo BM, L90C OR Volvo, L90C Volvo, L90C Volvo BM, L90D OR Volvo, L90D Volvo, L90E Volvo, L110E Volvo, L120 Volvo BM, L120B Volvo BM, L120C Volvo, L120C Volvo BM, L120D Volvo, L120E Volvo, L150 Volvo BM, L150C LB Volvo, L150C Volvo, L150C Volvo BM, L150D Volvo, L150E Volvo, L160 CO Volvo BM, L160 Volvo BM, L180 CO Volvo BM, L180 HL Volvo BM, L180 Volvo BM, L180C CO Volvo, L180C HL Volvo, L180C Volvo, L180C Volvo BM, L180D HL Volvo, L180D Volvo, L180E HL Volvo, L180E Volvo, L220D Volvo, L220E Volvo, L330C LL Volvo, L330C Volvo, L330C Volvo BM, L330D Volvo, L330E Volvo

Detecting leaks with inspection lamp



WARNING
Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.

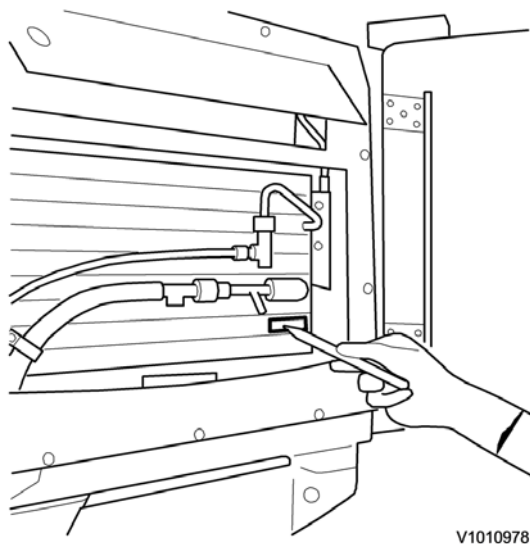


Figure 1

For this work the following tools are used

Inspection lamp 9812517



Always wear protective gloves and use safety glasses for all work with refrigerant. Risk of frostbite.

The receiver drier part No. 11164457 contains fluorescent paint to facilitate detecting leaks. A leak can be made visible with the aid of inspection lamp and associated glasses. In case of a leak the paint appears as luminous green. Shine the inspection lamp on the components included in the AC system and also on its pipes and couplings.

Removing fluorescent paint

When the leak has been rectified, it is important that the area around the leak is cleaned. Use water and then wipe dry. Check with the inspection lamp and the glasses that there is no paint left.

NOTE!

Very small leaks are difficult to discover with the aid of inspection lamp and the fluorescent compound.

Op nbr 46805

[999 3831 Support](#)

[999 3806 Adjusting plate](#)

[11666140 Multimeter](#)

1. Place axle stands under the front axle so that both front wheels can rotate freely over the ground.
2. Place support 999 3831 under the lifting frame.

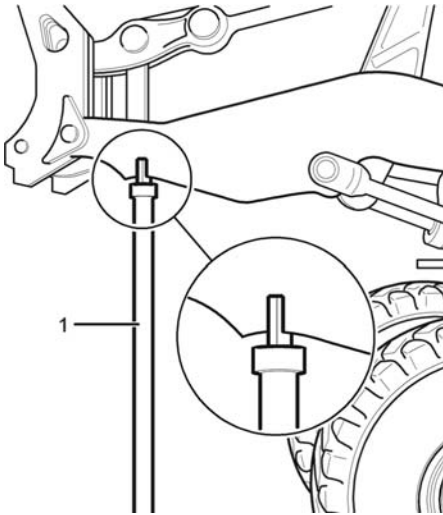


Figure 1
Securing the lifting frame

1. 999 3831
3. Remove the guard over the differential contact.
4. Remove the differential cover over the diaphragm sleeve.
5. Remove the lock screw in the diaphragm sleeve.
6. Fit an M10 bolt with jam nut in the diaphragm sleeve. See [Invalid linktarget].

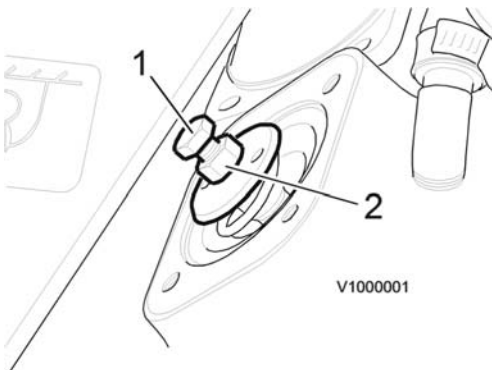


Figure 2
M10 bolt with jam nut

1. M10 bolt
2. Jam nut
7. Fit tool 999 3806 over the diaphragm sleeve. See illustration.

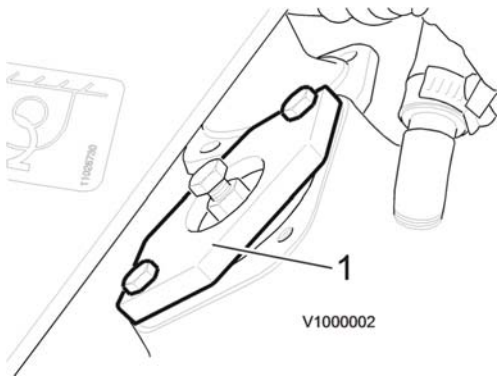


Figure 3

1. 999 3806
8. Check that the drive flange lies tooth top to tooth top by rotating a gear. A ticking should be heard. Adjust as needed. Screw the diaphragm sleeve anticlockwise to move the drive flange closer or clockwise to move it farther away.
9. Remove the M10 bolt with jam nut and fit the lock screw in the diaphragm sleeve **without changing the setting**.
10. Adjust the sensor so that it comes to its break position. Use tool 11666140 or the like to check this. Then screw the sensor **anticlockwise 3/4 turn** to obtain the right setting.
11. Remove tool 999 3806 and refit the differential cover.
12. Check the function.

Activate the differential lock and make sure it is engaged securely (drive flanges meshed).

Adjust the sensor so that it comes to its break position. Use tool 11666140 or the like to check this.

Screw the sensor **clockwise 2 3/4 turn** to obtain the correct setting.

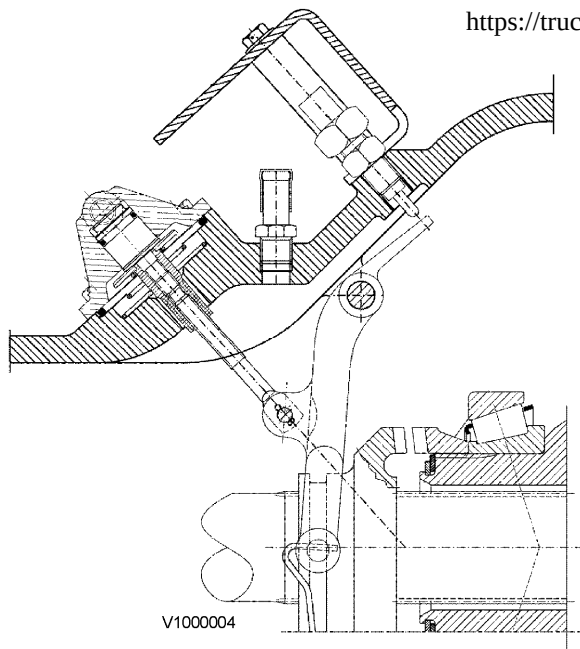


Figure 4

Differential lock sensor, adjusting (Differential cover fitted)

Differential lock

<https://truckmanualshub.com/>

The function controls differential lock engagement and informs the operator if the differential lock is engaged or if there is a system malfunction.

Engagement of the differential lock takes place with the foot switch which, via I-ECU and V-ECU, operates solenoid valve MA407. When the differential lock is engaged, pressure monitor SE408 sends a signal to V-ECU acknowledging that and the control lamp on the instrument panel comes on to indicate it also.

Input signals	Output function conditions	Output functions
Foot switch, SW414 Acknowledgement of engaged differential lock, SE408	Foot switch in position On Travel speed < 10 km/h (6.2 mph)	Differential lock MA407
	Engaged differential lock	Amber control lamp differential lock engaged
Monitoring. MA407	System malfunction, open circuit or short circuit	Amber central warning lamp -----ERROR----- Differential Lock Control

Op nbr

WARNING

A discarded accumulator that has not been punctured may still contain high pressure, always handle it with care. If the accumulator is exposed to high heat in, for example, an incineration plant, there is a serious risk of personal injuries.

WARNING

Use safety glasses.

1. Accumulators that are to be discarded must first be relieved of all pressure.
This is done by carefully drilling and puncturing the accumulator with a 3 mm (1/8 in) drill bit.

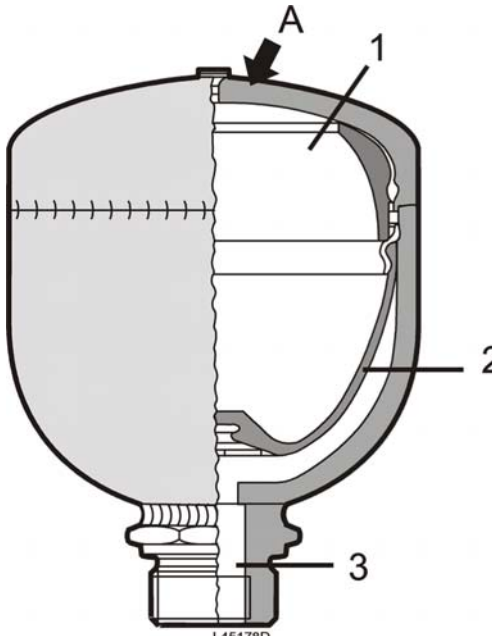


Figure 1
Accumulator

- A. drill here, use a 3 mm (1/8 in) drill bit
- 1. Nitrogen gas space
- 2. Rubber diaphragm
- 3. Connection for oil

Language Code GB	Product WLO	Group 260	https://truckmanualshub.com/	No. 11	Version 1	Date 12/20/2006
Applies to Wheel Loaders						

Discontinued recommendation for usage of anti-corrosion agent in cooling system



Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.

Corrosion-protection with part no. 1129709 will be removed from stock since it does not meet the standards from Volvo Construction Equipment and shall not be used in Volvo engines. The corrosion-protection cannot be combined with the coolant Volvo Coolant VCS. Only coolants recommended by Volvo shall be used in our engines to obtain correct heat transfer and to avoid cavitation as well as corrosion on aluminum, copper, brass, steel, and soldering.

Display panel, general

<https://truckmanualshub.com/>

The purpose of the display panel is to give the operator information about the functions that are monitored by instrument control unit I-ECU.

In case of abnormal operating values or malfunctions, the display unit shows a warning/info display, a warning lamp is activated and the red central warning lamp flashes. If directional gear Forward or Reverse is engaged, the buzzer is also activated.

When a function is activated/deactivated, or needs to be kept under observation, a flashing amber central warning lamp is activated at the same time as information is shown on the display panel.

- In cases that generate warnings:
Flashing amber central warning lamp – investigate the cause at the next stop
- In cases that generate warnings:
Flashing red central warning lamp – stop the machine immediately and investigate the cause

Communication with the display panel takes place by way of the keypad, located to the left on the instrument panel.

Two unit combinations can be selected:

- **SI/Metric** (°C, km/h, km, bar, litres)
- **Foot-pound** (°F, mph, mile, psi, US gal)

When the machine is started, a start display is shown for approx. 4 seconds, then operating display, see [Invalid linktarget].

Display panel, information displays<https://truckmanualshub.com/>

Information displays, general

Each function group consists of one or more displays.

To scroll within the function group, press arrow up or arrow down.

"Er" (Error) indicates that a system malfunction has arisen (fault in electrical circuits or functions).

When "Er" is displayed the following occurs:

- Fault messages are shown for 2 seconds. The previous display is then shown for 3 seconds. This is repeated as long as the malfunction situation persists.
- Amber central warning lamp flashes

"—" indicates that no information is available.

Engine



- x = Coolant temperature / Er / —, Unit °C / °F
(temperature shown down to 0 °C (32 °F) and below 0 °C (32 °F) the following is shown
< 0 / < 32)
- y = Engine speed / Er / —
- z = Engine oil pressure: Normal / Low / Er / —
- x = On (Activated)
- x = Off (Not activated)

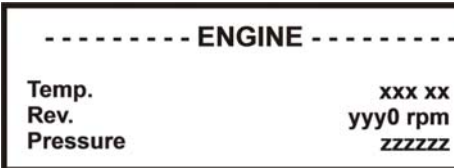


Figure 1

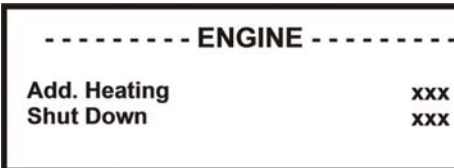


Figure 2

Power transmission



- x = Gear selector position: N / F1 / F2 / F3 / FA / R1 / R2 / R3 / RA / Er /—
- y = Selected gear: N / F1 / F2 / F3 / FA / R1 / R2 / R3 / RA / Er / —
- z = Transmission oil temperature / Er / —, Unit °C / °F
(temperature shown down to 0 °C (32 °F) and below 0 °C (32 °F) < 0 / < 32 is shown)
- v = Transmission oil pressure: Normal / Low / Er / —
- x = APS II (mode selector): Light 1 / Light 2 / Normal / Heavy / Er / —
- y = Transmission disengagement: On (Activated) / Off (Not activated) / —

----- TRANSMISSION -----	
Lever xx	Gear yy
Temp.	zzz zz
Pressure	vvvvvv

Figure 3

----- TRANSMISSION -----	
APS II	xxxxxx
Transm.diseng.	yyy

Figure 4

Hydraulics



v = Boom suspension system: On (Engaged) / Off (Disengaged) / –

----- HYDRAULICS -----	
BSS	vvv

Figure 5

L120D with hydraulically driven radiator fan

y = Temperature hydraulic oil: Normal / High / Er / –

v = Boom suspension system: On (Engaged) / Off (Disengaged) / –

----- HYDRAULICS -----	
Temp. BSS	yyyyyy vvv

Figure 6

Axles / Brakes



x = Brake pressure: Normal / Fill / Low / Er / –

y = Temperature front axle: Normal / High / Er / –

z = Temperature rear axle: Normal / High / Er / –

x = Machine travel speed in / km/h / mph / –

z = Measured retardation in m/s² / –

v = Output brake pressure in bar / –

----- AXLES/BRAKES -----	
Br.Pressure	xxxxxx
Temp.Front	yyyyyy
Temp.Rear	zzzzzz

Figure 7

----- BRAKE TEST -----	
Speed	xx yyy
z.zz m/ s2	vvv bar
See Instructions	

Figure 8

Electrical system



x = Current voltage in electrical system in V (volts) / –

---- ELECTRICAL SYSTEM ---	
Voltage	xx.x V

Figure 9

Other information



Date / time

x = Date / –

y = Time: 24h / am/pm / –

Set with the SETUP menu.

----- DATE/TIME -----	
xxxx-xx-xx	yy:yy

Figure 10

Wheel loaders / tyres

x = Machine type: L50X, L70X, etc. / –

y = Tyre size: 15.5, 17.5, 20.5, 23.5, 26.5, 29.5 / –

Set with the service display panel.

----- INFORMATION I -----	
Wheelloader	xxx x
Tyres	yyyy

Figure 11**Stop watch / trip meter / cycle counter**

x = Machine time: Hours, minutes, seconds / –
y = Distance: km or miles / –
z = F/R Count / –
Cl = Sel. SELECT, Reset (also resets fuel consumption)

Service interval

x = Time to next service / –
y = Interval, 250/500/1000/2000 hours / –
Sel. = SELECT, Acknowledge that service has been performed / –

----- INFORMATION II -----	
Time	xx;xx,xx
Distance	yy.y yy
Cycles zzz	Cl=Sel.

Figure 12

When 8 hours remain until the next service, "SERVICE INFO" "Time For Service" is displayed and the amber central warning lamp flashes.

----- NEXT SERVICE -----	
Resid. Time	xxxx h
Interval	yyyy h
Acknowledge	Sel.

Figure 13

To acknowledge this after service has been carried out, press SELECT (also applies to oil changes).

----- SERVICE INFO -----	
Time For Service	

Figure 14

Display panel, initial display

<https://truckmanualshub.com/>

Starting sequence

Ignition key in position 1, operating position.

The start sequence takes approx. 4 - 5 seconds and entails the running of a test program in order to verify the system.

The test is 'stepped up' on the display panel with black square markings from 1 to 7.

During the first part, the indicator lights will light up and the needles in the gauges will go to positions at 12 o'clock.

The operator is not prevented from starting the machine immediately.

The ignition switch has five different positions

- 0 = Stop engine
- R = Radio position
- 1 = Operating position
- 2 = No electric function[T1] ⓘ
- 3 = Starter motor

[T1]Position 2 prevents re-engagement of starter motor from position 1 when engine is running.



Figure 1
Initial display

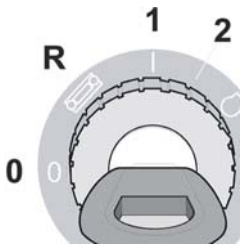


Figure 2
Ignition

Display panel, operating display <https://truckmanualshub.com/>

- "Operating information" is shown on the display panel after starting (if the operator did not have another display set when the current was turned off).
- At a travel speed above 20 km/h, "operating information" shows the current travel speed (regardless of whether another display has been selected).

xxxx rpm	VV ww
ppp: yy	
zz:zz rr	

Figure 1
Operating display

- If a display other than "operating information" has been selected, the system will return to that display when travel speed drops below 20 km/h.
- Change of display with the keypad is only possible if travel speed is below 20 km/h.

- x = Engine speed / Er / –
- y = Selected gear: N / F1 / F2 / F3 / F4 / R1 / R2 / R3 / R4 / Er / –
- p = Active gear selector: CDC / F / R / Er / –
- z = Clock, Hours and minutes, 24 h or 12 h display mode
- v = Speed / Er / –
- w = km/h or mph

"Er" (Error) indicates that a system malfunction has arisen (fault in electrical circuits or functions).

When "Er" is displayed the following occurs:

- Fault messages are shown for 2 seconds. The previous display is then shown for 3 seconds. This is repeated as long as the malfunction situation persists.
- Amber central warning lamp flashes

"–" indicates that no information is available.

Setup



L66371A

- Press SETUP to end up in the "SETUP" menu.
- Press SELECT to choose language. (If setting is not required, press SELECT to go to the "Units" line.)

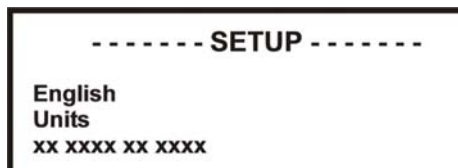


Figure 1

- Scroll to desired language with the arrow keys.
- After selecting language, press SELECT to go to the "Units" line.
- Perform settings for the units you want with the arrow keys, and press SELECT.
- Press arrow down to go to the next menu "MACHINE HOURS".

Setting machine hours

NOTE!

Setting of machine hours can only be carried out after changing vehicle control unit (V-ECU), if necessary. This is to restore the total operating hours of the machine.

- Press SELECT to change the existing machine hours.



Figure 2

- Scroll to the number value for the existing machine hours with the arrow keys.
- When the first digit is selected, press SELECT and the marking moves to the next digit, and so on.

If setting is not needed, only press SELECT for each digit.

To confirm setting of machine hours, press SELECT after entering the last digit.

- Press arrow down to go to the next menu "Shut Down".

Setting Shut Down

- Select On or Off with the arrow keys.
- After selecting, press SELECT.



Figure 3

- Press arrow down to go to the next menu "Additional heating".

Setting additional heating

- Select On or Off with the arrow keys.
- After selecting, press SELECT.

<https://truckmanualshub.com/>



Figure 4

- Press arrow down to go to the next menu "DATE/TIME".

Setting date and time

- Press SELECT to change display alternative.
- Select display alternative 1-5 with the arrow keys.

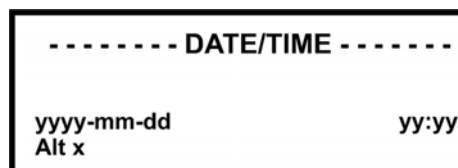


Figure 5

The following display alternatives are available for date/time:

1. yyyy-mm-dd, yy:yy, 24 h
2. yyyy-mm-dd, yy:yy, am/pm
3. mm-dd-yyyy, yy:yy, 24 h
4. mm-dd-yyyy, yy:yy, am/pm
5. dd-mm-yyyy, yy:yy, 24 h
6. dd-mm-yyyy, yy:yy, 24 h

- After selecting display alternative, press SELECT
- To change a digit value, scroll to the next digit with the arrow keys and confirm with SELECT. The marking moves to the next digit, and so on.

NOTE!

If you want to cancel a setting, press ESC. In this case, you go to the top of the selected menu and can start again with the setting.

Downshift audible signal (beep) <https://truckmanualshub.com/>

By briefly sounding a buzzer the function notifies the operator that a downshift to 1st gear has been made.

Input signals	Output function conditions	Output functions
☐ Active gear	☐ Downshifting to 1st gear	☐ Buzzer

Language Code GB	Product WLO	Group 366	https://truckmanualshub.com/	No. 94	Version 5	Date 04/25/2014
Applies to Wheel Loaders						

ECU, functional check

NOTE!

Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.

Cause

The purpose of this service bulletin is to provide support to ongoing quality investigation on ECUs.

Action

To increase the value of the information concerning ECUs, the described work instruction has to be performed before any troubleshooting work is started based on symptoms.

The information collected according to the work instructions makes up the basis for a support request and shall be attached to the Techline call that is sent to the regional support.

Work instructions

Op nbr

1. Fill in table 1, "Machine data".
2. Read off the active and saved error codes, vehicle information test, as well as parameter read-off using VCADS Pro and attach the job card with the completed tables in this service bulletin. (Error codes, vehicle information test, parameter) Save the job card in the following text format:
"machine model"- "machine serial number"- "read-off date".xml
Example: L110F-3971-20081215.XML Document.
3. Do a function check of the machine according to table 2, 3, 4, 5 "Function check". When the test is finished (Designation), enter an "X" in the right column if read-off was performed. If any deviations are detected during the "Function test", describe how the malfunction behaves or how to reproduce it to give maximal information for continued investigation.
4. Attach the completed tables in this SB together with TechTool job card if there is a Techline call.

Machine data

Model	Serial no.	Machine hours	Customer

Function check with VCADS Pro

Group	Op. no.	Designation	OK	
1. Service and maintenance			Yes	No
17 - Service and maintenance	17012-3	Error codes		
	Remark if not OK:			
	17034-3	Vehicle information, test		
	Remark if not OK:			
	17030-3	Parameter, programming		
	Remark if not OK:			

Function check with VCADS Pro

Group	Op. no.	Designation	OK	
2. Engine and engine mounting equipment			Yes	No
25 - Intake and exhaust system. Turbo	25410-3 25456-3 25411-3 25412-3 25537-3	Air pump exhaust aftertreatment test. Exhaust aftertreatment, diagnostic Burner exhaust after treatment test Components ASU, test Variable geometry turbo function test		
	Remark if not OK:			
27-	27102-3	Accelerator pedal, test		
	Remark if not OK:			
28-	28407-3	Sensor values monitoring		
	Remark if not OK:			

Function check with VCADS Pro

Group	Op. no.	Designation	OK	
3. Electrical system and Instruments			Yes	No
30- General	30901-3	Voltage feed control unit (ECU), check		
	Remark if not OK:			
38- Instrument	38117-3	Instrument test		
	Remark if not OK:			
39- Miscellaneous	39797-3	CareTrack status check		
	Remark if not OK:			

Function check with VCADS Pro

Group	Op. no.	Designation	OK	
8. Body, cab and interior			Yes	No
87- Temperature and control system	87373-3 87376-3	ECC input and output signals status, test Sensor values, ECC check		
	Remark if not OK:			

Questions regarding machine's behaviour:			Yes	No
Is the loader equipped with "NON-VOLVO" optional equipment?				
What optional equipment is used or installed?				
.....				
What defects/malfunctions are there?				
Description:				
.....				
When does the problem/error message occur?				
After "Turning on ignition"?		after seconds		
During start attempt?		after seconds		

After "Engine running"?	after seconds		
After activation of a function (state which function)?			
Other:			
Any specific situations that result in the problem? If YES, which?			
.....			
What operating modes were selected for the machine when the problem occurred? (E.g., CDC, automatic lift and tilt, etc.)			
Note during which special situation or activation of function that the problem occurs.			
What other functions are activated?			
How often does the problem occur?			
	Seldom (no pattern)		
	Sometimes		
	Regularly		
	Periodically		
	Other:		

Questions regarding machine's behaviour:	Y e s	N o
Does the engine's behaviour change when the problem occurs?		
Does the I-ECU work as it should when the problem occurs?		
Does the machine's functions work as they should when the problem occurs?		
What does not work?		
If central warning generates alarm:	Y e s	N o
Red central warning		
Amber central		

[illegible]

Important information before the ECU is replaced:

First, the relevant ECU shall always be reprogrammed (with existing software before the ECU is replaced and normal diagnostics of cable harnesses, ECU connectors and pins, etc. has been performed. If new ECU + programming of the same solves the problem, then reinstall the old ECU. If the problem returns the root cause may be traced to the ECU and not the machine configuration.

Replaced ECU:

Part number	Serial number:	
.		
.....		
.....		
.....		
..		

Replaced ECU:

Part number	Serial number:	
*	*****	
*		
*****	*****	
*****	*****	
*****	***	
**		

Notes:

[Handwritten notes area]

https://truckmanualshub.com/	Yes	No
Are additional components replaced during this repair time?		
Notes:		
Has the machine had problems in the past that led to replacement of components in the electric system?		
Notes:		
Has the machine been in for repair again after ECU exchange with similar symptoms as before the ECU change?		
Notes:		

Name of person submitting information:

In case of a "Techline call" regarding problems that concern an ECU, the completed document as well as TechTool job card can be requested from regional or global technical support.

NOTE!
Causing part in the Techline call shall be the part number of the ECU that was replaced.

Electric welding

<https://truckmanualshub.com/>

Before electric welding is performed on the machine or any attachments connected to the machine, electric power must be interrupted by turning off the battery disconnect switch or disconnecting the battery ground connection.

Connect the welding unit as close as possible to the welding point.

Alternator

Designation	Wiring diagram	Circuit No.	Function
ALT. 1	1	—	Alternator
ALT. 1	190	—	Alternator 100A

Batteries

Designation	Wiring diagram	Circuit No.	Function
BA1	1	—	Battery
BA2	1	—	Battery

Capacitors

Designation	Wiring diagram	Circuit No.	Function
C1	1	—	Delayed cut-out, RE12
C801	19	8.090	Delayed cut-in, RE801 (AC)

Electronic control units

Designation	Wiring diagram	Circuit No.	Function
V-ECU	—	—	Vehicle-ECU
I-ECU	—	—	Instrument-ECU
CU201	3	2.030	Engine shutdown / key-turn engine shutoff
CU601	17	6.020	CDC steering
CU801	20	8.150	Voltage converter, radio
CU802	26	—	Automatic greasing system

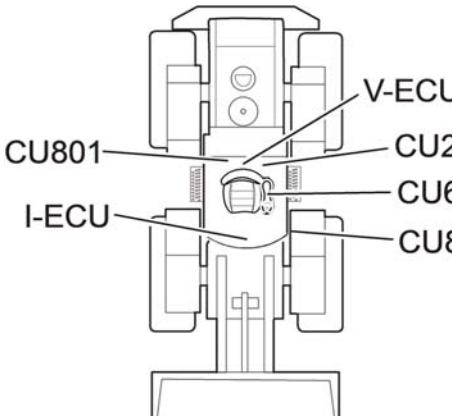


Figure 1

Diodes

Designation	Wiring diagram	Circuit No.	Function
Di1	7	3.210	Work light dependent parking lights
Di2	7	3.210	Work light indicator light
Di3	7	3.210	Work light indicator light
Di4	6	3.060	Guide light voltage reduction
Di5	6	3.060	Guide light voltage reduction
Di6	6	3.070	Guide light voltage reduction
Di7	6	3.080	Guide light voltage reduction
Di8	6	3.080	Guide light voltage reduction
Di9	23	9.090	Blocking diode
Di10	9, 14	4.030	Forward signal
Di11	9, 14	4.020	Reverse signal

Di20	23	9.090	Blocking diode
Di21	21, 21C	9.010	—
Di22	21, 21C	9.010	Quench diode MA901, bucket positioner
Di23	21, 21C	9.020	—
Di24	21, 21C	9.020	Quench diode MA902, boom kick-out
Di25	5, 14	2.130	Quench diode MA202, limp-home
Di26	9	4.030	Quench diode S1, limp-home
Di27	1	—	Delayed disengagement, RE12
Di28	1	—	Delayed disengagement, RE12
Di29	21, 21C	9.020	Quench diode, boom kick-out
Di30	21	9.050	Quenching diodes MA903, MA904, float position
Di31	2, 9	4.020	Quench diode S2, limp-home
Di32	2	—	Quench diode, RE11
Di801	19	8.090	Quench diode, compressor clutch
Di802	19	8.090	Soft start, Air conditioning
Di903	22	9.060	5th hydraulic function
Di908	22	9.060	Automatic float position

! CAUTION

Always use a fuse with the correct current rating. If the wrong fuse is used, the circuit board in the electrical distribution box may be damaged.

Fuses					
Designation	Feed	AMP	Wiring diagram	Circuit No.	Circuits
FU1	15A	10	21, 21C	9.010-9.050	Bucket positioner and boom kick-out, float position, attachment change, brake pressure charging
			22	9.060	3rd / 4th hydraulic function
			140	9.310	Single lever control
FU2	15A	10	23	9.090 9.100	Boom Suspension System, solenoids
FU3	15A	10	18	8.010	Front wiper and washer, horn
FU4	15B	20	19	8.080	Cab fan, air conditioning (AC)
FU5	15B	5	1	—	—
			20	8.170	Heated seat
			26	—	Automatic greasing system
FU6	30K via SW301	5	6	3.040-3.080	Front right and rear left parking lights, front right side light, number plate lighting, guide light switches
FU7	30K via SW301	5	6	3.010-3.030, 3.250	Front left and right rear parking lights, instrument lighting
FU8	30K	15	3	2.010	Starter motor with starter inhibitor
FU9	30K	5	8	3.285	Hazard flashers
FU10	RA	5	20	8.150	Voltage converter for radio
FU11	30K via SW301	5	6	3.100	Low beam, right
FU12	30K via SW301	5	6	3.090	Low beam, left
FU13	30K	10	7	3.170-3.190	Work lights, attachments and radiator casing
FU14	15EA	5	1	—	Spare
			3	2.020	Preheating
			9	4.010-4.030	Gearshifting, kickdown
			11	4.170	Transmission disengagement
			12	4.210	Mode selector
				4.220	Differential lock

14	2.020	Preheating
	4.020, 4.150	Gearshifting
24	—	Service socket IA
190	4.260	3-speed machine
	4.220	Limited slip

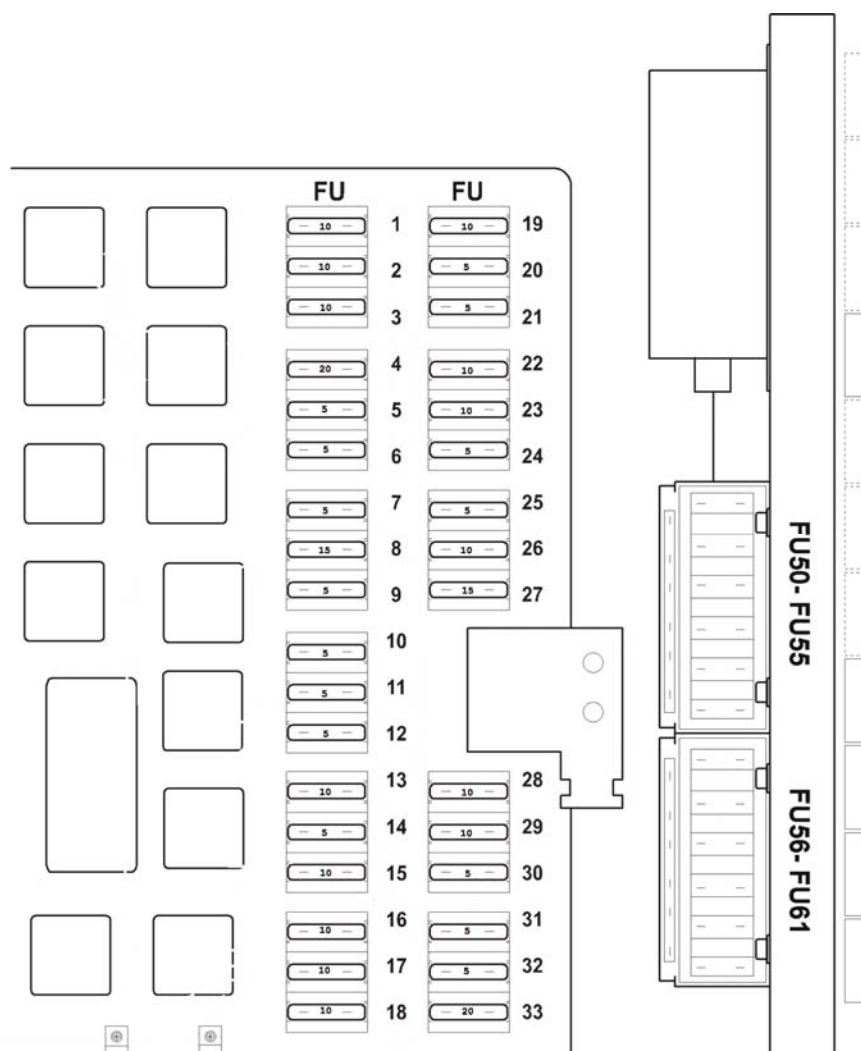


Figure 2
Fuses in electrical distribution box

Fuses					
Designation	Feed	AMP	Wiring diagram	Circuit No.	Circuits
FU15	15EA	10	2	—	Feed I-ECU, V-ECU
			5	2.130	Radiator fan adjustment
			14	5.040	Parking brake
			15	5.040	Parking brake
			32, 32B	5.045	Parking brake with rider truck safety norms
FU16	15EA	10	1	—	15EA feed
FU17	30K	10	2	—	Feed I-ECU, V-ECU
FU18	30K	20 (10) [T1] ⓘ	2	—	Rear frame
FU19	30K	10	20	8.190	Cigarette lighter
FU20	15A	5	8	3.270-3.330	Brake lights, direction indicators
FU21	15A	5	1	—	Pre-magnetization, alternator
			8	3.250	Instrument lighting

			18	8.040	Wiper rear
				8.050	Washer rear
			24	—	Instrument lighting service display unit
FU22	30K	10	7	3.230, 3.240	Work lights cab, rear
FU23	30K	10	20	8.150	Voltage converter for radio
FU24	30K via SW301	5	6	3.110	Main beam, right, main beam control lamp
FU25	30K via SW301	5	6	3.110	High beam, left
FU26	30K	10	7	3.140-3.190	Work lights cab, front, interior lighting
FU27	30K	15	6	3.010-3.130	Travel lights, parking lights
FU28	30K	10	7	3.200-3.220	Work lights radiator casing and cab, control lamp work lighting
			8	3.260	Rotating beacon
FU29	30K	10	1	—	Ignition switch feed
FU30	15EA	5	3	2.030	Key-turn engine stop
			9	4.040-4.070	Control lever carrier
			14	4.030, 5.040	Low brake pressure
			15	5.020-5.040	Parking brake, brake pressure
			16	6.010	Secondary steering
			17	4.080	CDC gearshifting
			23	9.070	Boom Suspension System
			32, 32B	5.045	Parking brake with rider truck safety norms

[T1]Earlier circuit board version.

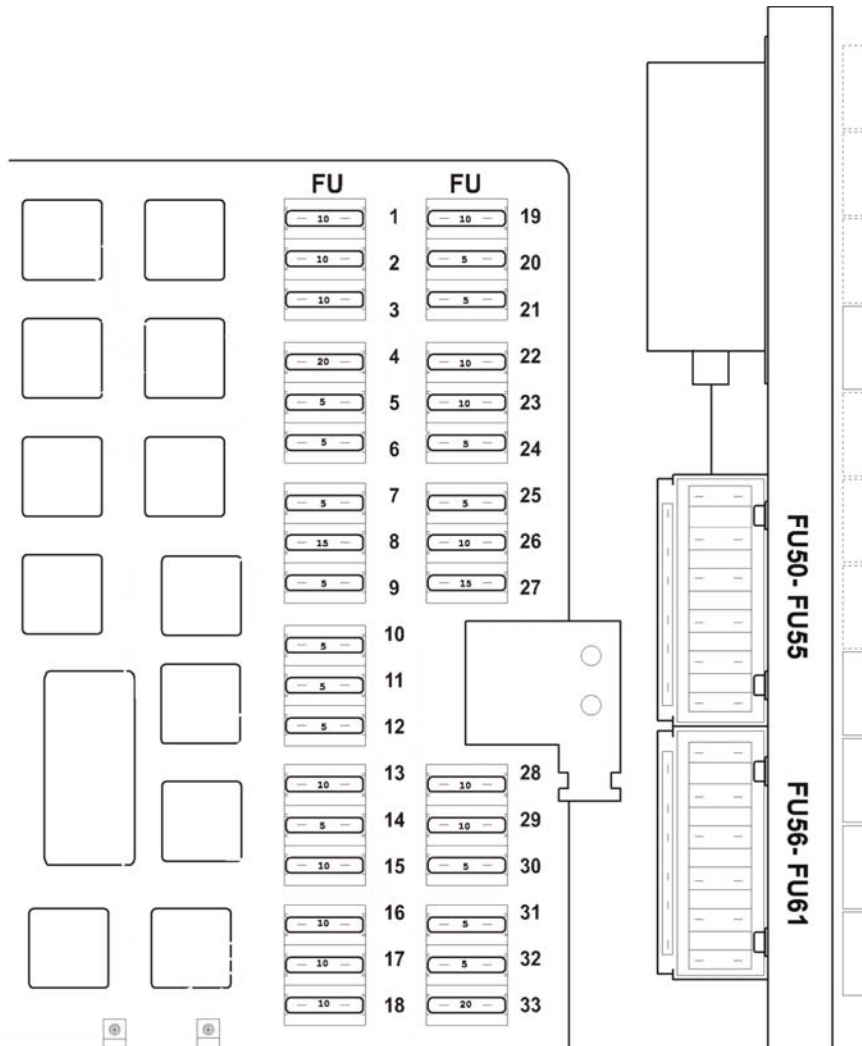


Figure 3
Fuses in electrical distribution box

Fuses					
Designat ion	Feed	AMP	Wiring diagram	Circuit No.	Circuits
FU31	15EA	5	1	—	Feed rear frame
			5	2.110	Air filter
FU32	15EA	5	1	—	Feed front frame, transmission
			12	4.220	Differential lock (re-engagement)
			190	—	Limited slip
FU33	30K	20	3	2.030	Key-turn engine stop
FU50	30	5	19	8.090	Air conditioning (AC)
FU52	30A	10	20	8.180	Operator's seat with air suspension
FU53	30A	5	32, 32B	5.045	Rider truck safety norms, parking brake
FU54	15B	5	20	8.180	Operator's seat with air suspension
FU55	15B FU5	via 5	190	—	Alternator 100A
FH1	30 RE201	via 5	3, 14	2.020	Preheating, indicator light
FH2	30 RE201	via —	3, 14	2.020	Preheating
FH3	30 RE601	via 5	16	6.010	Secondary steering, indicator light
FH4	—	5	20	8.150	Voltage converter, ground

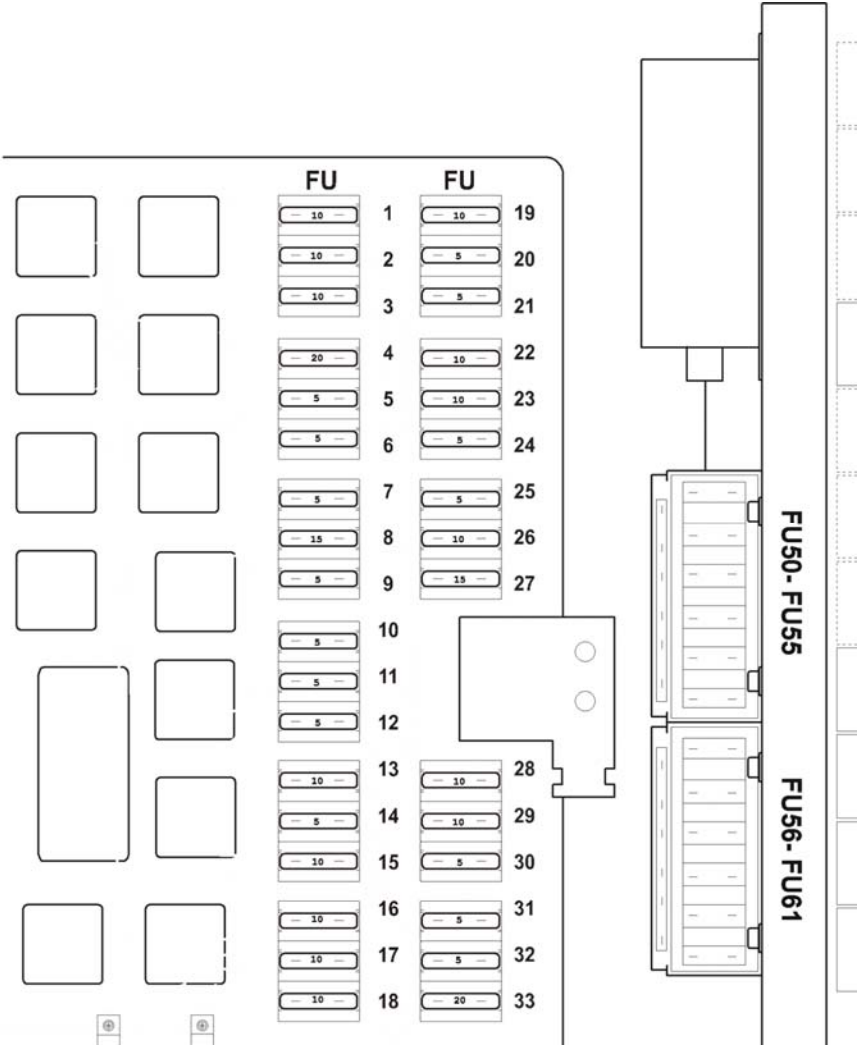


Figure 4
Fuses in electrical distribution box

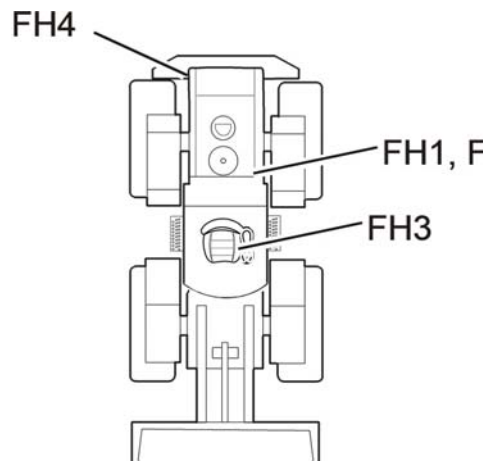


Figure 5
Uses located outside electrical distribution box

Heating coils

Designation	Wiring diagram	Circuit No.	Function
HE201	3, 14	2.020	Preheating
HE801	20	8.190	Cigarette lighter
HE802	20	8.170	Heating, operator's seat

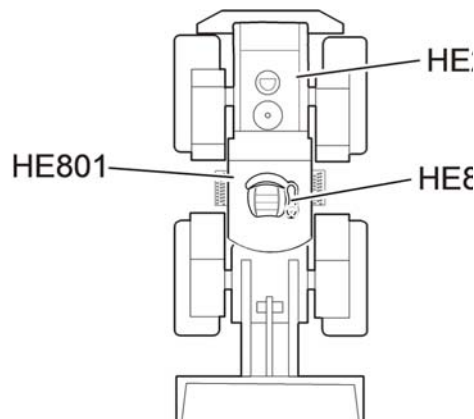


Figure 6

Instruments

Designation	Wiring diagram	Circuit No.	Function
IM201	1	—	Hour recorder

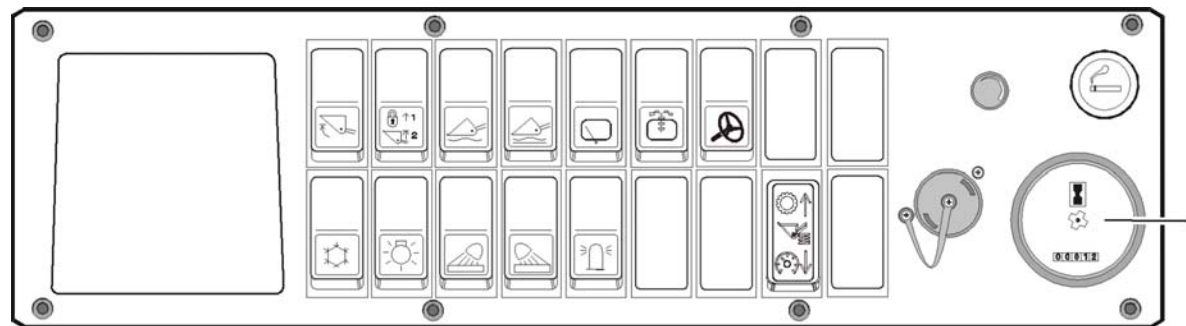


Figure 7

Lights

Designation	Wiring diagram	Circuit No.	Function
LA1-LA5	8	3.250	Instrument lighting
LA301	6	3.010	Parking light, front left
LA302	6	3.020	Left front Side light
LA303	6	3.030	Right rear parking light
LA304	6	3.040	Right front parking light
LA305	6	3.050	Right front side light
LA306	6	3.060	Left rear parking light
LA307	6	3.070	Number plate lighting
LA308	6	3.080	Guide lights in switches
LA309	6	3.080	Guide light front panel
LA310	6	3.090	Low beam, left
LA311	6	3.100	Low beam, right
LA312	6	3.110	High beam, left
LA313	6	3.120	High beam, right
LA314	7	3.140	Interior light
LA315	7	3.150	Work light cab, front left
LA316	7	3.160	Work light cab, front right
LA317	7	3.170	Work light front mudguard, left
LA318	7	3.180	Work lights attachment
LA319	7	3.190	Work light, front mudguard, right
LA320	7	3.200	Work light, radiator casing, left
LA321	7	3.210	Work light, radiator casing, right
LA322	7	3.230	Work light, cab, rear left
LA323	7	3.240	Work light, cab, rear right
LA325	8	3.260	Rotating beacon
LA326	8	3.270	Brake light left
LA327	8	3.280	Brake light right
LA328	8	3.300	Direction indicator, front left
LA329	8	3.310	Direction indicator, rear left
LA330	8	3.320	Direction indicator, front right
LA331	8	3.330	Direction indicator, rear right

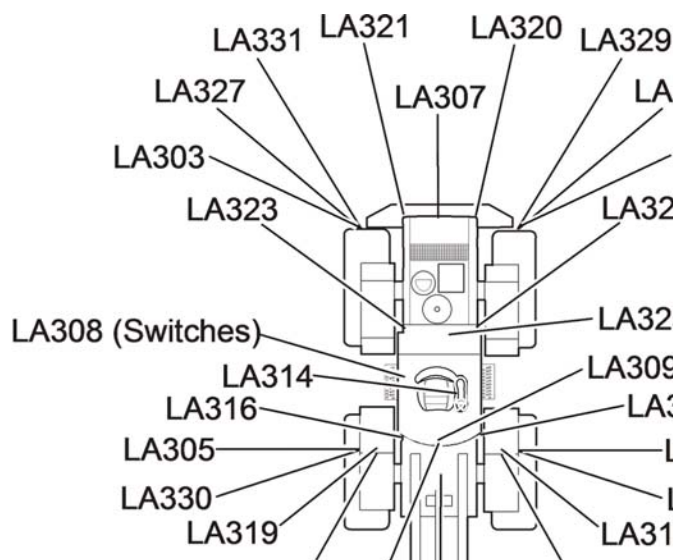


Figure 8

Designation	Function
LC1	Amber central warning lamp
LC2	Red central warning lamp
LC3	Charging
LC4	Low engine oil pressure
LC5	Low transmission oil pressure
LC6	Low brake pressure
LC7	Work lights, radiator casing
LC8	Applied parking brake
LC9	Function not present
LC10	High axle oil temperature, front and rear axles
LC11	Malfunction in primary steering system
LC12	High beam
LC13	Direction indicators
LC14	Rotating beacon
LC15	Preheating
LC16	Secondary steering engaged
LC17	Differential lock engaged
LC18	Boom suspension system activated
LC19	Lever steering activated
LC20	Warning lamp high coolant temperature
LC21	Warning lamp low fuel level
LC22	Warning lamp high transmission oil temperature

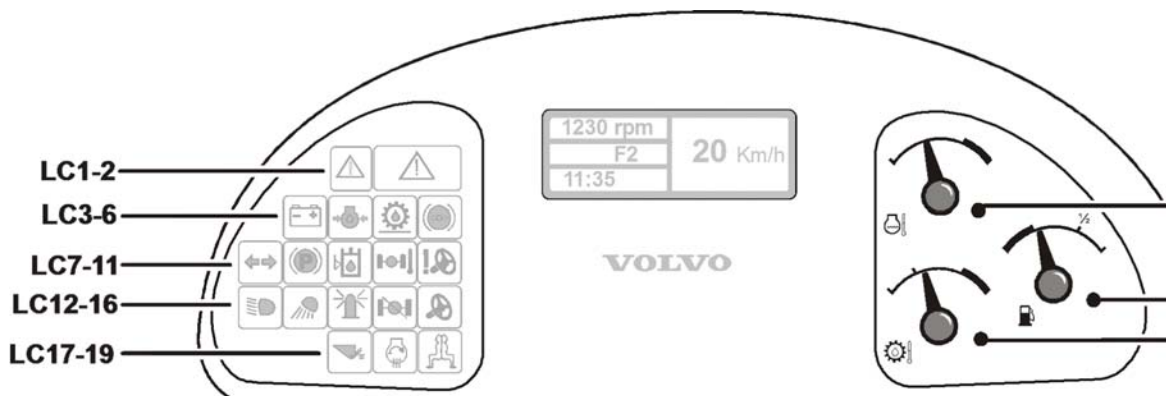


Figure 9

Solenoid valves

Designation	Wiring diagram	Circuit No.	Type	Function
MA201	3	2.030	Pull solenoid	Engine stop
MA202	5, 14	2.130	Proportional valve	Cooling fan motor
MA407	12	4.220	Hydraulic valve	Differential lock
MA501	14, 15	5.040	Hydraulic valve	Parking brake
MA501	32B	5.045	Hydraulic valve	Parking brake
MA601	17	6.020	Proportional valve	CDC steering
MA801	19	8.090	Magnetic clutch	Compressor, air conditioning
MA901	21, 21C	9.010	Hold (detent) solenoid	Bucket positioner
MA902	21, 21C	9.020	Hold (detent) solenoid	Boom kick-out
MA903	21, 21C	9.050	Hydraulic valve	Float position
MA904	21, 21C	9.050	Hold (detent) solenoid	Float position
MA905	21	9.040	Hydraulic valve	Attachment locking

MA906	140	9.310	Hold (detent) solenoid	Detent, 3rd hydraulic function
MA907	22	9.060	Hydraulic valve	4th hydraulic function
MA908	23	9.090	Hydraulic valve	Boom suspension system, (single-acting lift)
MA910	23	9.100	Hydraulic valve	Boom Suspension System
MA911	23	9.100	Hydraulic valve	Boom Suspension System
MA913	21	9.030	Hydraulic valve	Attachment change
MA915	22	9.160	Hydraulic valve	5th hydraulic function
MA916	21C	9.065	Hydraulic valve	Single lever, lever lock

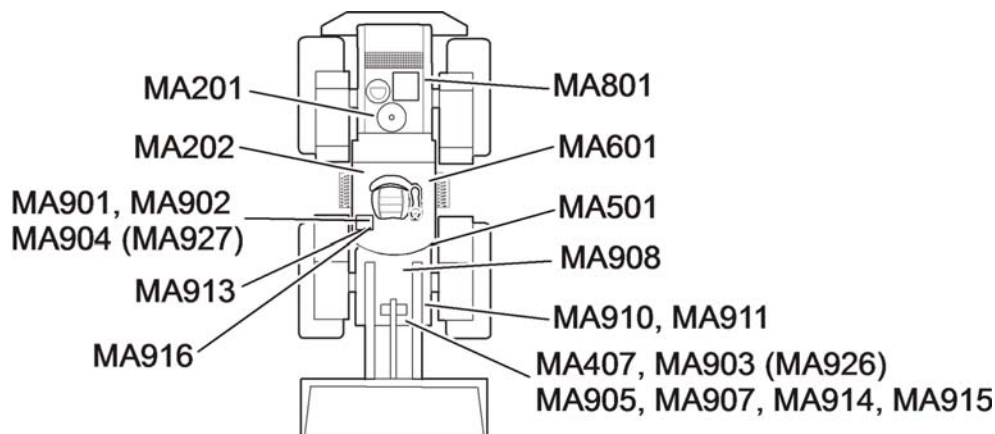


Figure 10

Motors

Designation	Wiring diagram	Circuit No.	Function
MO201	1	2.010	Starter motor
MO601	16	6.010	Pump motor, secondary steering
MO801	18	8.010	Wiper motor, front
MO802	18	8.020	Washer pump, front
MO803	18	8.040	Wiper motor, rear
MO804	18	8.050	Washer pump, rear
MO805	19	8.080	Cab fan
MO810	20	8.180	Operator's seat with air suspension

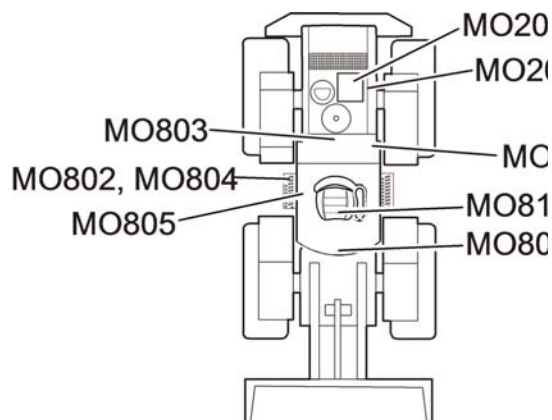


Figure 11

Resistors

Designation	Wiring diagram	Circuit No.	Function
R1	1	—	Pre-magnetization, alternator

R2	9, 14	4.030	Load resistor, forward signal
R11	1	—	Delayed disengagement, RE12
R301	8, 24	3.250	Rheostat, instrument lighting
R401	190	4.220	Replaces MA407 with Limited slip

Relays

Designation	Wiring diagram	Circuit No.	Function
RE1	21, 21C	9.010	Bucket positioner
RE2	1	—	15A-feed, unloading ignition switch
RE3	21, 21C	9.020	Boom kick-out
RE4	1	—	15B-feed, unloading ignition switch
RE5	18	8.040	Interval wiper, rear
RE6	18	8.010	Interval wiper, front
RE10	7	3.170	Work lights, optional
RE11	2	—	30-feed controlled by I-ECU
RE12	1	—	15EA-feed, unloading ignition switch
RE101	26	—	Unloading, 15B-feed
RE201	3, 14	2.020	Preheating
RE601	16	6.010	Secondary steering pump
RE602	17	4.110	Activation of lever steering (CDC)[T1]
RE7	23	9.080	Boom Suspension System
RE8	3	2.010	50 signal to starter motor, unloading ignition switch
RE801	19	8.090	Air conditioning (AC)
RE802	19	8.090	Air conditioning (AC)
RE803	20	8.180	Operator's seat with air suspension
RE804	32, 32B	5.045	Automatic activation, parking brake, rider truck safety norms
RE9	3	2.010	Starter inhibitor, only Limp-home
RF1	8	3.285	Flasher relay
RT801	19	8.090	Air conditioning (AC)
RT802	32, 32B	5.045	Time relay, rider truck safety norms

[T1]RE602 is located in the armrest.

Earlier machines are equipped with relays with diodes (shiny caps) and later machines are equipped with relays with resistors (black caps).

The relays on the circuit board are interchangeable with each other but note that relay RE11 must always have a diode (shiny cap) to protect the ECUs.

NOTE!

A new circuit board with diode for RE11 mounted on the circuit board was introduced in 2001. This means that all relays are fitted with resistors (black caps).

L90D

The circuit board is introduced in cabs manufactured in Hallsberg from and including serial number 3145 and in cabs manufactured in Pederneiras from and including serial number 70527.

L120D

The circuit board is introduced in cabs manufactured in Hallsberg from and including serial number 3416 and in cabs manufactured in Pederneiras from and including serial number 70600.

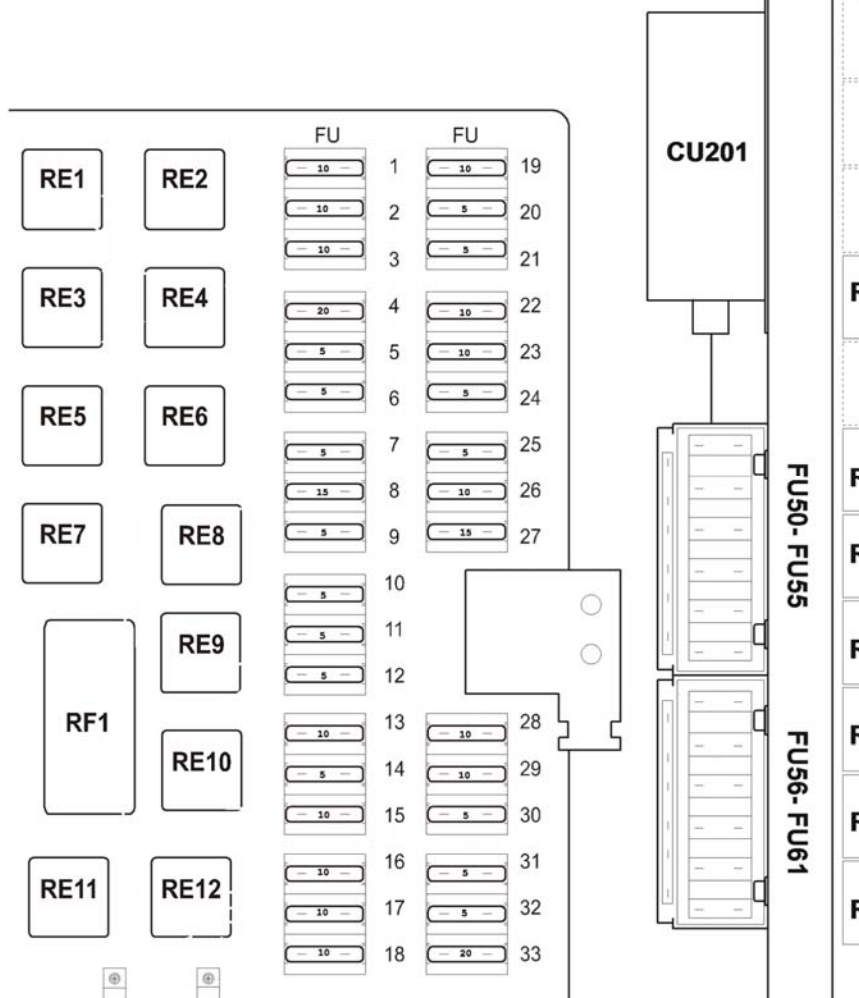


Figure 12
Relays located in electrical distribution box

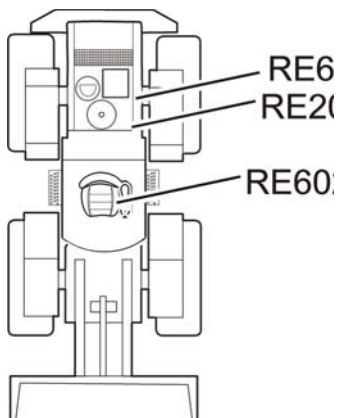


Figure 13
Relays located outside cab

Horn

Designation	Wiring diagram	Circuit No.	Function
SA801	18	8.030	Horn
SA802	20	8.210	Buzzer, central warning
SA803	20	8.200	Back-up alarm
SA804	32B	5.045	Buzzer, rider truck safety norms

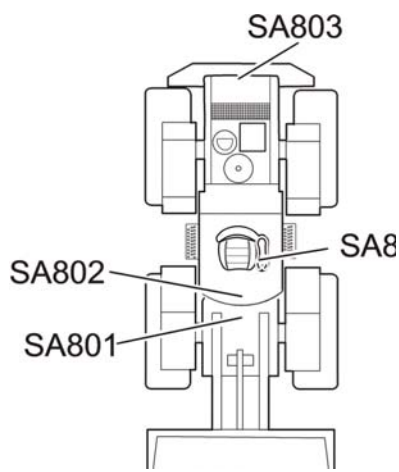


Figure 14

Gearshifting solenoids

Designation	Wiring diagram	Circuit No.	Type	Function
S1	11, 14	4.150, 4.030	Hydraulic valve	Gearshifting solenoid, N/D
S2	11, 14	4.150, 4.020	Hydraulic valve	Gearshifting solenoid, F/R
S3	11, 14	4.160, 4.010	Hydraulic valve	Gearshifting solenoid
S4	11	4.160	Hydraulic valve	Gearshifting solenoid
S5	11	4.160	Hydraulic valve	Gearshifting solenoid

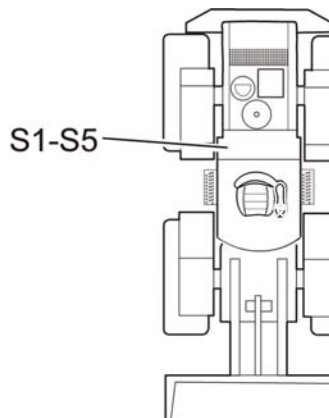


Figure 15

Sensor				
Designation	Wiring diagram	Circuit No.	Type of sensor	Function
SE201	4	2.040	Frequency	Engine speed
SE202	4	2.050	Pressure	Engine oil pressure
SE205	4	2.070	Temp.	Coolant temperature, engine
SE207	4	2.100	Level	Fuel level
SE208	5, 190	2.110	Pressure monitor	Air filter monitor
SE210	5	2.130	Temp.	Coolant temperature, outlet radiator
SE211	5	2.130	Frequency	Fan speed
SE301	8	3.270	Pressure	Brake lights
SE401	10	4.120	Pressure	Filter indicator
SE403	10	4.140	Frequency	Travel speed
SE405	12	4.180	Pressure	Transmission oil pressure
SE406	12	4.190	Temp.	Transmission oil temperature

SE408	12, 190	4.220	Mechanical	Differential lock
SE410	13	4.230	Temp.	Oil temperature, front axle
SE411	13	4.240	Temp.	Oil temperature, rear axle
SE501	15	5.010	Pressure	Output brake pressure log/Transmission disengagement
SE502	14, 15	5.020	Pressure	Brake pressure accumulator/Low brake pressure
SE503	14, 15	5.040	Pressure	Parking brake
SE503	32B	5.045	Pressure	Parking brake with rider truck safety norms
SE601	16	6.010	Mechanical	Secondary steering, Differential pressure
SE602	16	6.010	Pressure	Secondary steering, steering pressure
SE603	17	6.020	Mech.	Steering lever, CDC
SE803	19	8.090	Temp.	Air conditioning, AC thermostat
SE804	19	8.090	Pressure	Air conditioning, AC pressure monitor
SE805	26	—	Mechanical	Central lubrication
SE806	32, 32B	5.045	Mechanical	Seat sensor, rider truck safety norms
SE901	21, 21C	9.010	Inductive	Bucket positioner
SE902	21, 21C	9.020	Inductive	Boom kick-out
SE903	21, 21C	9.050	Mechanical	Float position
SE908	23	9.120	Temp.	Hydraulic oil tank, temperature

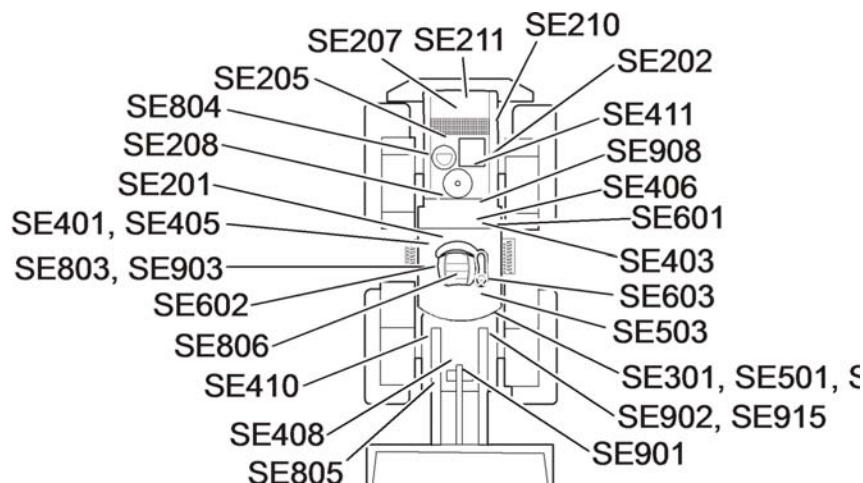


Figure 16

Switches

Designation	Wiring diagram	Circuit No.	Function
SW100	1	—	Battery disconnect switch
SW101	1, 3, 19	2.010, 8.090	Ignition
SW201	3, 14	2.020	Preheating
SW301	6	3.010-3.130	Parking and running lights
SW302	6	3.090-3.130	Main/dipped beam function selector
SW303	7	3.150-3.190	Work lights cab front / front mudguard
SW304	7	3.200-3.240	Work lights, radiator casing and cab rear
SW305	8	3.260	Rotating beacon
SW306	8	3.285-3.330	Hazard flashers
SW307	8	3.300-3.330	Direction indicators right, left
SW401B, C	9	4.010-4.020	Gearshifting, kickdown
SW402	9, 14	4.030	Forward/Reverse
SW403	9	4.040	Lever console/single lever, Activation
SW404	9	4.050	Lever console Front/Rear

SW405	9	4.060	Control lever carrier Kick-down
SW406	9	4.070	Lever console/single lever, Engine brake (downshifting)
SW407	17	4.080	Lever steering (CDC), armrest
SW408	17	4.090	Lever steering (CDC), Activation
SW409	17	4.100	Lever steering (CDC) Forward/Reverse
SW410	17	4.110	Lever steering (CDC) kickdown
SW411	11	4.170	Transmission disengagement activation
SW412	12	4.210	Mode selector
SW414	12, 190	4.220	Differential lock
SW501	14, 15	5.040	Parking brake
SW501	32, 32B	5.045	Parking brake with rider truck safety norms
SW601	16	6.010	Secondary steering test
SW801A, B, C	18	8.010-8.030	Front wiper and washer, Horn
SW802	18	8.030	Horn, Lever console/single lever
SW803	18	8.040	Wiper rear
SW804	18	8.050	Washer rear
SW805	19	8.080	Fan
SW806	19	8.090	Air conditioning, AC
SW807	25	—	Keypad
SW808	26	—	Automatic greasing system
SW901	21, 21C	9.010	Bucket positioner
SW902	21, 21C	9.020	Boom kick-out
SW903	21, 21C	9.050	Float position
SW904	21	9.040	Attachment locking
SW906	22	9.060	4th Hydraulic function
SW907	23	9.070	Boom Suspension System, activation
SW908	23	9.080	Boom Suspension System, function selection, gear dependent or speed dependent
SW909	23	9.090	Boom Suspension System, single-acting lift function
SW910	21	9.030	Increased servo pressure
SW913	140	9.310	Emergency stop detent, 3rd hydraulic function
SW918	140	9.310	Detent, 3rd hydraulic function
SW920	21C	9.065	Single lever, lever lock

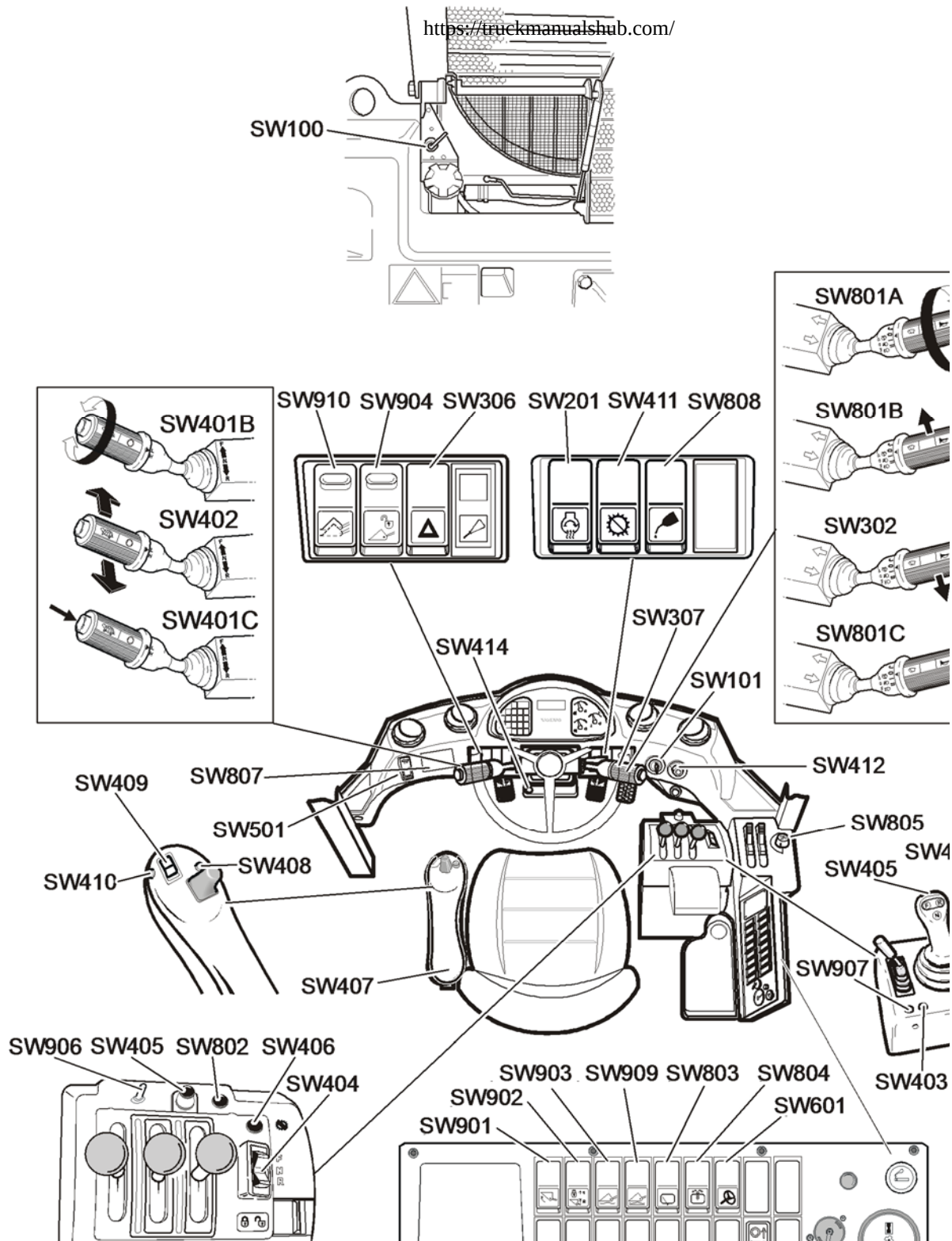


Figure 17

Electrical distribution box, description

Relays and fuses are mainly located in the electrical distribution box behind the operator's seat and can be accessed once the distribution box cover has been opened. The inside of the cover is provided with a decal which specifies what power consumer (component) is connected to the respective relay and fuse.

NOTE!

Relays on the circuit board are interchangeable with each other. See [Invalid linktarget].

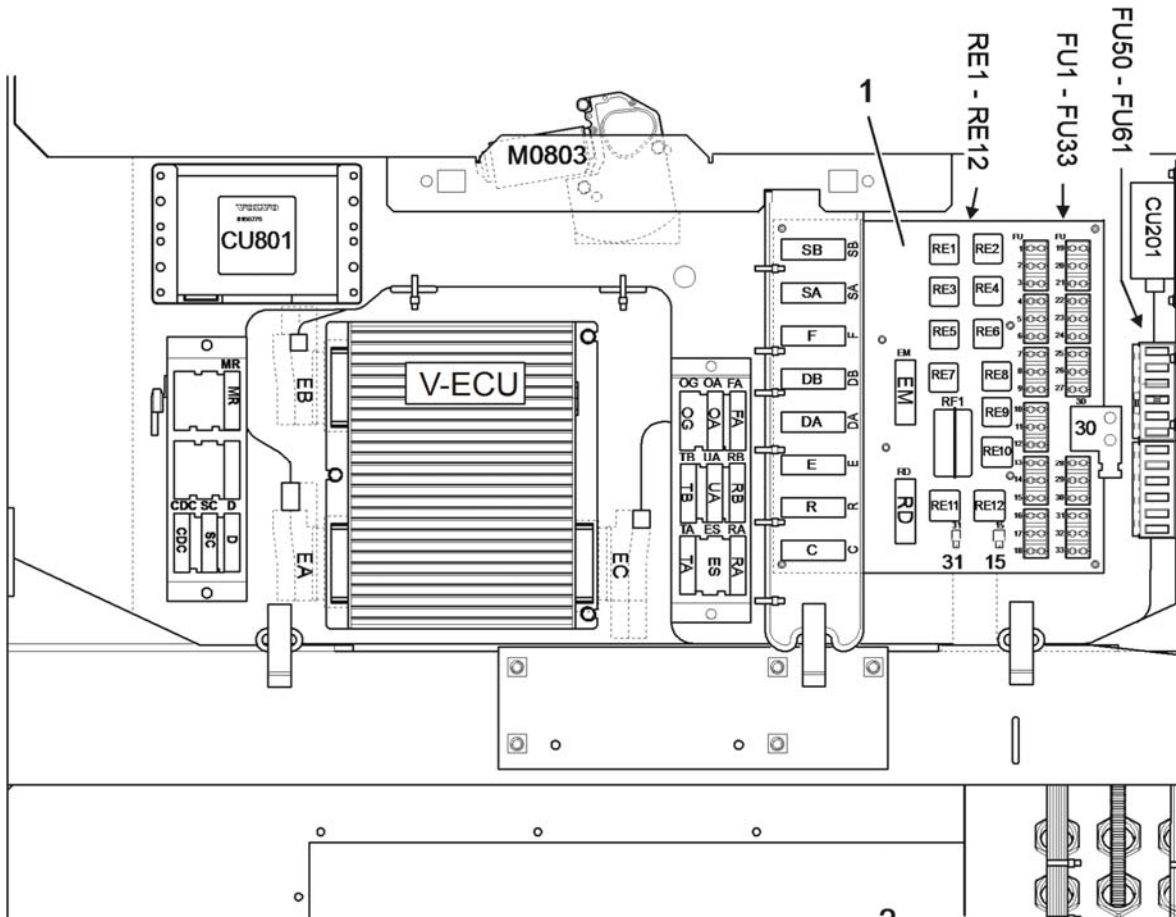
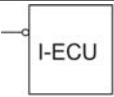
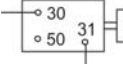
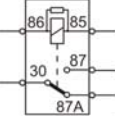
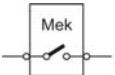


Figure 1
Rear cab wall with electrical distribution box

1	Circuit board	15	15-feed to circuit board
2	Cable conduit, rear cab wall	30	30-feed to circuit board
FU1 - FU33	Fuses on circuit board	31	Chassis connection on circuit board
FU50 - FU61	Separate fuses	31C	Earth connection, cab
RE-	Separate relays	M0803	Wiper motor, rear
RE1 - RE12	Relays on circuit board	V-ECU	Vehicle control unit
RF1	Flasher relay	CU201	Engine shutdown / key-turn engine shutoff
		CU801	Voltage converter, radio

Electrical symbols and designations

Designation	Symbol	Key
ALT		Alternator with charging regulator
BA	 L68202A	Battery
C	 L68219A	Capacitor
DI	 L68203A	Diode
FC FH FU	 L68207A	Fuse
I-ECU	 L68205A	Instrument control unit
IM	 L68222A	Instrument, e.g. hour meter
LA	 L68229A	Lamp, steady light
	 L68231A	Lamp, flashing light
LC	 L68218A	LED, steady light
MA	 L68227A	Solenoid valve or PWM valve for control of oil
MO	 L68230A	Electric motor
	 L68215A	Starter motor
R	 L68216A	Resistor
	 L68228A	Rheostat
RE	 L68220A	Relay: No operating current on 86–85 contact position 30–87A Operating current on 86–85 contact position 30–87
SE	 L68224A	Frequency sensor, e.g. trasmission speed
	 L68225A	Level sensor
	 L68226A	Temperature sensor
	 L68233A	Pressure sensor
	 V1000288	Inductive sensor
	 L68234A	Mechanical monitor
SW	 L68217A	Single-pole switch with manual On/Off, e.g. engagement of air-conditioning unit
	 L68223A	Single-pole switch with manual On and automatic Off, e.g. horn
V-ECU	 L68206A	Vehicle control unit

	 L68208A	https://truckmanualshub.com/ Chassis connections
	 L68209A	Earth connection cylinder block

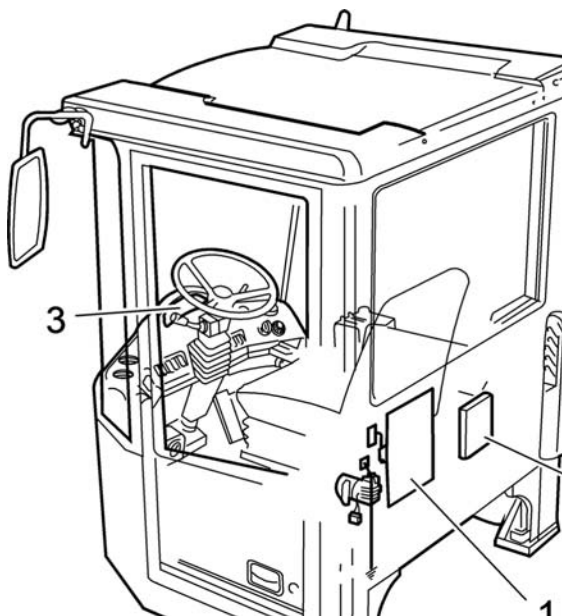


Figure 1
Location

1. Circuit board
2. Vehicle control unit V-ECU
3. Instrument control unit I-ECU

The machine has a 24 V electrical system with two 12-volt batteries connected in series and located on both sides of the rear frame, behind the rear wheels.

The battery disconnect switch is located under the radiator casing.

Relays and fuses are mainly located in the electrical distribution box behind the operator's seat and can be accessed once the distribution box cover has been opened. The inside of the cover is provided with a decal which specifies what power consumer (component) is connected to the respective relay and fuse.

The components are marked according to function group. The first digit in the marking, e.g. SE201, indicates that the component belongs to engine (group 2). Other digits are sequential numbers.

The machine is equipped with an electronic control system having two control units as follows:

- **Instrument control unit I-ECU** is integrated with the display panel, warning lamps and instruments and gives the operator information by means of them.
- **Vehicle control unit V-ECU** processes values from sensors and operating controls and also controls machine components.

For a more detailed description, see [Invalid linktarget].

Cab fan MO805 is controlled with switch SW805.

The air-conditioning unit is turned on and off with switch SW806.

When SW806 is turned on, MO805 is supplied with current via connection 5–7 on SW805 and the cab fan runs at its lowest speed. RE802 is activated via pressure monitor SE804.

When RE802 is activated, compressor electromagnet MA801 is supplied with current from FU4 via SW806, RE801, RE802 and thermostat SE803 at the same time as RE801 receives current on connection 85. Since RE801 was previously supplied with current on connection 86 it will not be activated.

To ensure that RE802 is activated before RE801, capacitor C801 is connected in parallel with RE801.

When the diesel engine is started the air-conditioning unit is turned on for 10 seconds by means of time-delay relay RT801. Time-delay relay RT801 is supplied with current from FU50 via connection 50 on SW101 (start position) and is activated. The air-conditioning unit is turned on via DI802 as above except that the cab fan is not started.

The air-conditioning unit is then turned on for 10 seconds. This is to prevent water hammer in the compressor and so extend its service life.

Summary

When the air-conditioning unit is in operation, SW806, RE802 and pressure monitor SE804 are activated. The temperature is regulated by thermostat SE803.

RE801 is not activated and receives positive current on both 86 and 85.

Diode DI801 is a quenching diode that protects thermostat SE803 when it breaks the supply of current to compressor clutch MA801.

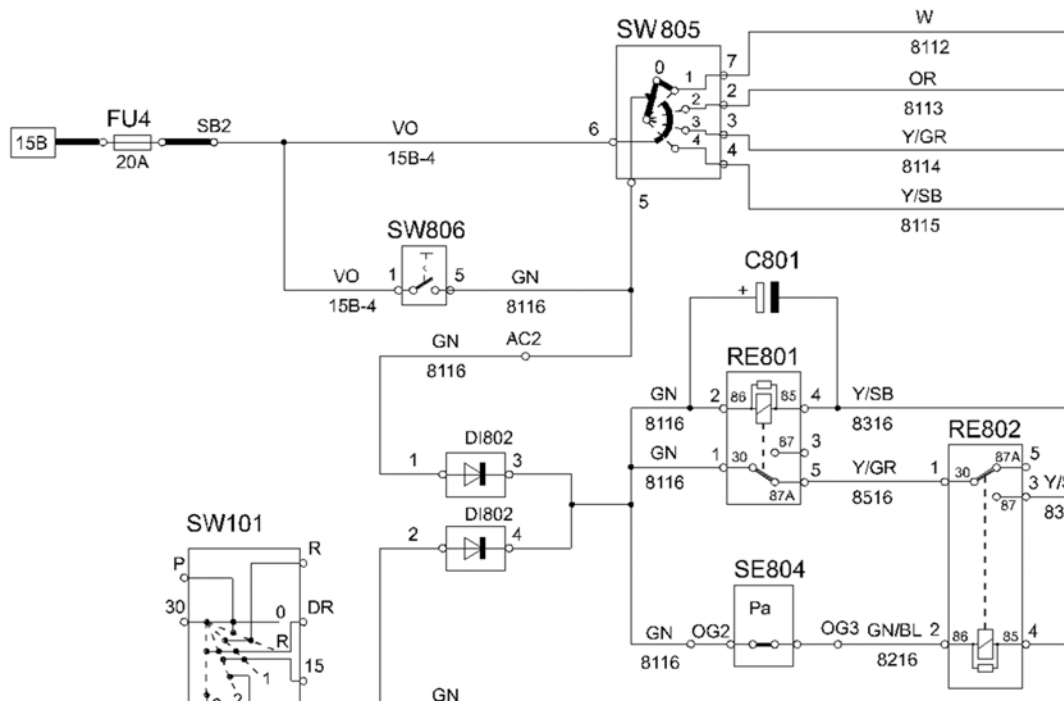


Figure 1
Wiring diagram 19. Cab

Electrical system, instructions for working on the electrical system

1. Fully charged and otherwise functional batteries must always be used for all checking of the electrical system.
2. Test the batteries with an acid tester and a cell tester. The battery disconnect switch must be turned off.
3. When installing a battery, make sure that the battery is connected with the correct polarity.
4. When changing batteries connected in series they must have the same capacity, e.g. 2 batteries of 105 Ah. The batteries should be approximately the same age (equally good). The reason for this is that the charging current needed to give the battery a certain charge varies with battery age.
5. If a booster battery is needed to start the engine, the instructions in the operator's manual must be strictly followed. See also the Safety section.
6. Before any test are done on the alternator or regulator, the batteries must be checked for insulation, loose connections and corrosion. Check the alternator belts. All eventual problems with the above must be corrected before any electrical tests are started.
7. During all testing of alternating current equipment, "secure" connections must be used. A loose lead can result in destruction of both the alternator and regulator.
8. Never disconnect the alternator cables while the engine is running. This could damage both the alternator and governor.
9. Grounding the alternator power outlet will damage the alternator and may also damage the regulator.
10. When removing or installing components in the electrical system, the ground connection must first be disconnected or the battery disconnect switch must be turned off.
11. Before performing any electric welding on the machine or attachments connected to the machine, the ground connection must be opened using the battery disconnect switch or by disconnecting the battery ground lead (chassis connection). Connect the welding unit as close as possible to the welding point.

Electrical system, specifications <https://truckmanualshub.com/>

Electrical system	
System voltage	24 V

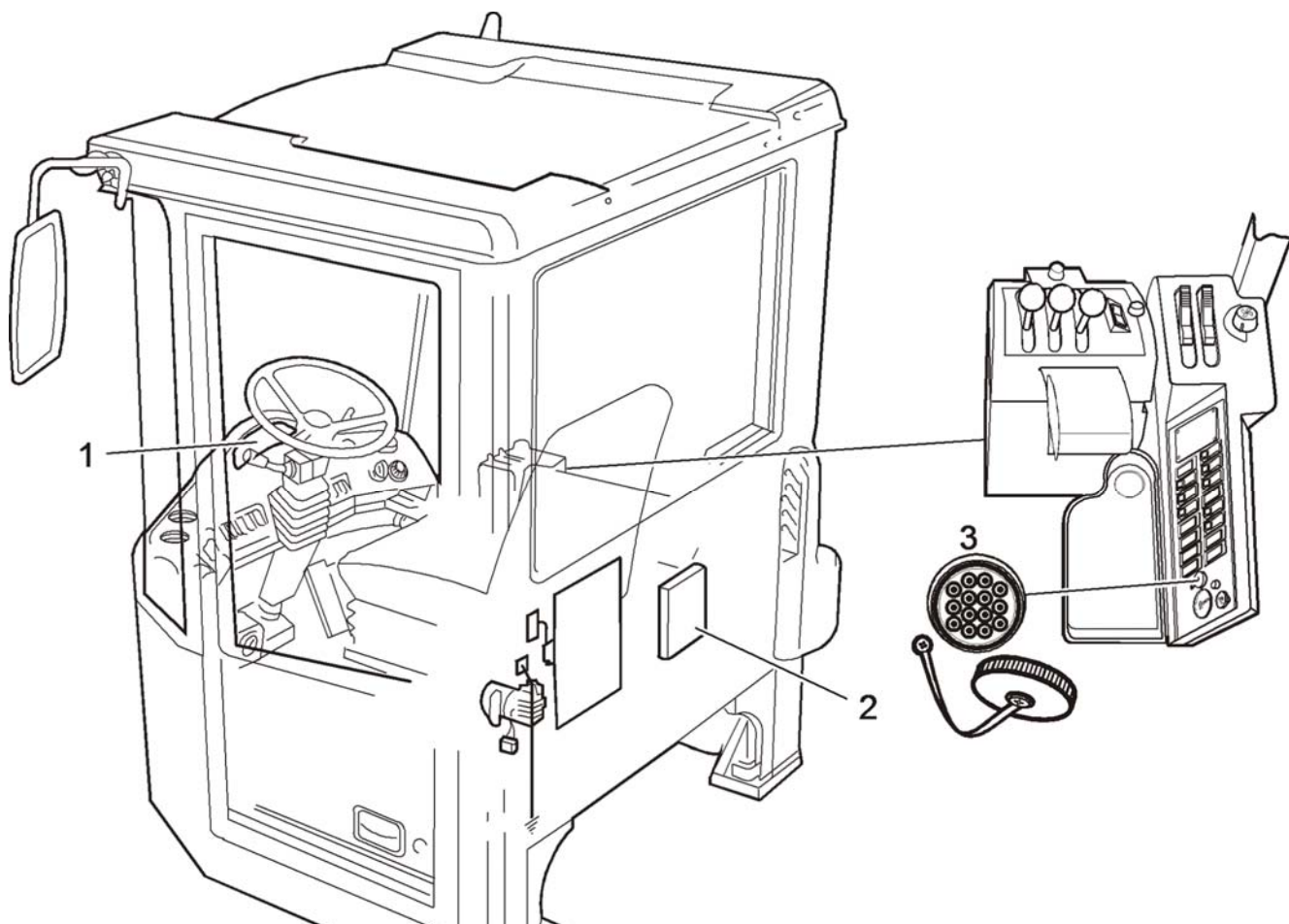


Figure 1

1. Vehicle control unit V-ECU
2. Instrument control unit I-ECU
3. Service socket for service display unit

Vehicle electronics contain two control units, instrument control unit I-ECU and vehicle control unit V-ECU, which communicate with each other through two data links. Each control unit not only processes values from sensors and operating controls but also controls components so as to obtain the desired function.

The vehicle electronics facilitate troubleshooting through an extensive diagnostics system. The operator is informed of the location of the malfunction through a warning lamp accompanied by a text message.

For service personnel, the service display unit can be connected to the service socket located on the right-hand side panel.

Instrument control unit I-ECU is located in the instrument panel and contains software for presentation of operator information on the display panel and for warning and control lamps. The control unit also receives information from V-ECU via a data link.

Vehicle control unit V-ECU is located by the electrical distribution box behind the operator's seat and contains software to control components and handle information from sensors located outside the cab. The vehicle control unit sends information to I-ECU via a data link.

The service display unit is used for obtaining readings of input and output signals on ECUs, making settings, reading vehicle information, etc.

If a fault arises in any system, information is sent via the data link, which makes it possible to read the information on the operator display panel or by using the service display unit.

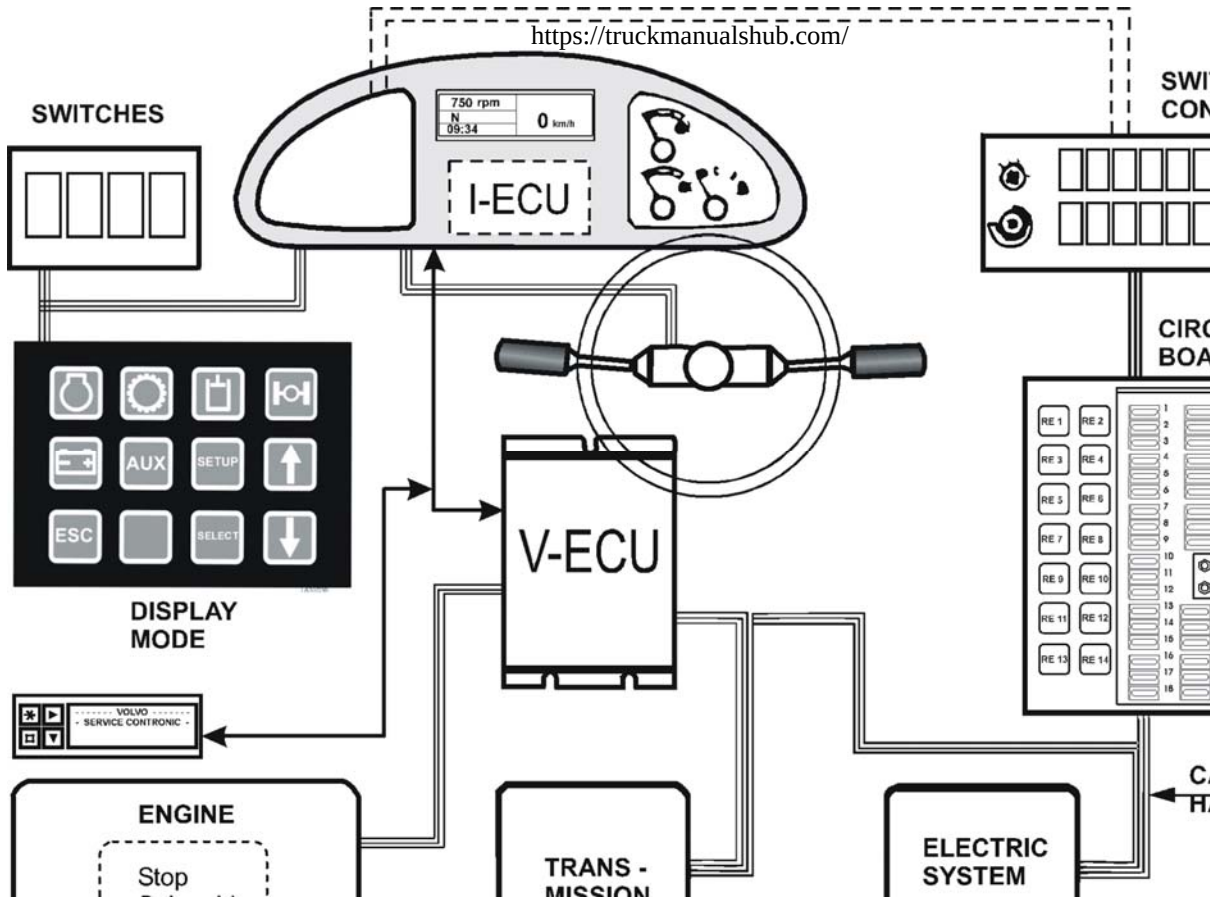


Figure 2
Schematic diagram with ECU's

Language Code GB	Product WLO	Group 321	https://truckmanualshub.com/	No. 10	Version 1	Date 11/14/2001
Applies to L70D Volvo, L90D Volvo, L120D Volvo, L150D Volvo, L180D Volvo, L220D Volvo						

Encasing alternator



WARNING

Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

The following service solution has been developed to increase the service life of the alternator. The alternator, with part No. 873757, is encased and cleaner cooling air is taken from a different place. See the following working instructions.

This SB is to be considered as a technical information and comprises normal warranties within the rules for the same.

Type of compensation	Yes	No	Note
Material cost	x	-	-
Labour cost	x	-	2.0 hours
Travel cost	-	x	-
Other costs	-	x	-
Expenses, etc.	-	x	-

The following parts are required and can be ordered from the respective parts department:

Item in Figs 1 and 2	Designation	Part No.	Qty
1	Casing	11152236	1
2	Hose	9518555	2
3	Hose connection	11172340	1
4	Air filter	11033214	1
-	Nut	942530	4
-	Grommet	11039154	2
-	Cover	11152242	1
-	Bolt	971309	4
-	Hose clip	943480	2
-	Strip clamp	4881440	3
-	Bolt	13946173	3
-	Washer	976944	3
-	Grommet	11094574	1
-	Plate	11152262	1
-	Flange bolt	946671	3
-	Hose clip	13927480	2

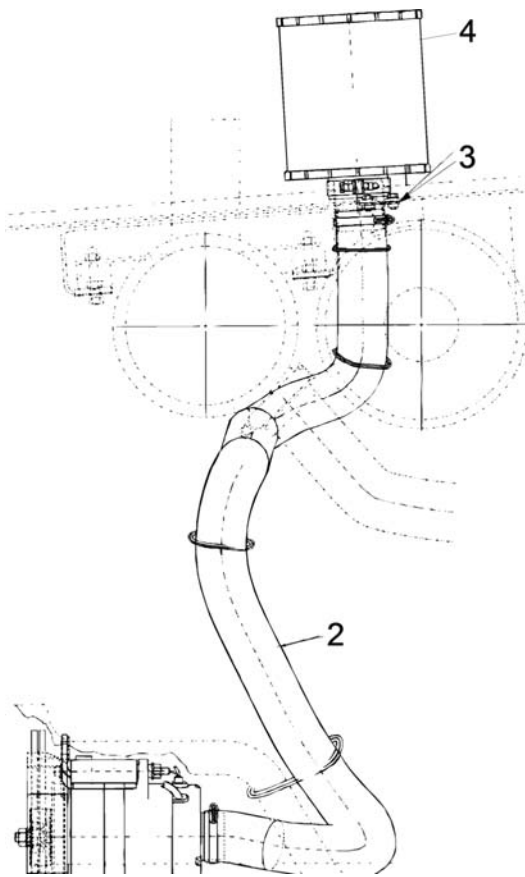


Figure 1

Working instructions

Item designations in the text refer to the figures.

1. Switch off the main current.
2. Remove the alternator.
3. Clean the alternator and replace carbon brushes when required.
4. In case the alternator is not functioning, replace it with a new or remanufactured unit.
5. Remove the plastic casing over the diode bridge.
6. Install casing 1, part No. 11152236, at the rear end of the alternator.
Use four nuts, part No. 942530.

NOTE!

Make sure that the cut-outs for the + and – leads are pointing in the correct direction.

7. Install the alternator and connect the leads.
8. Connect hose 2, part No. 9518555, to the casing on the alternator.
9. Route the hose in the most suitable way from the alternator to the engine hood.

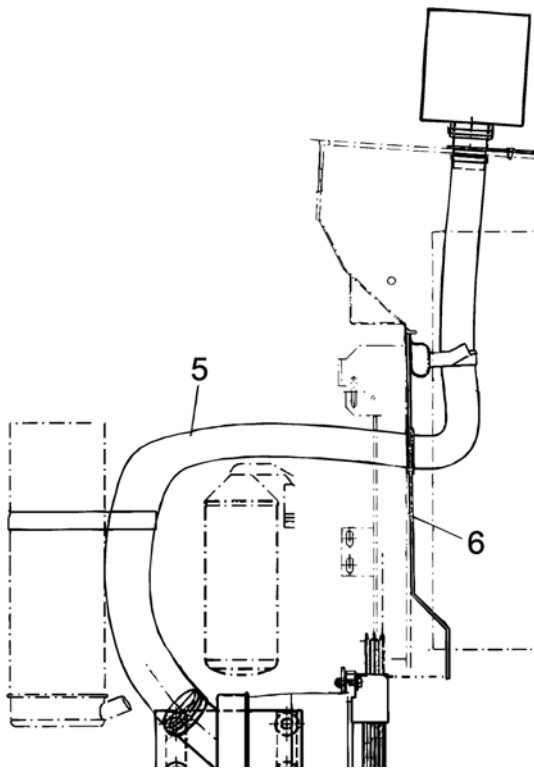


Figure 2

NOTE!

The following applies to L150D and L180D: Hose 5 is routed through the engine compartment wall 6. Regarding the making of a hole in the engine compartment wall, see the dimensional drawing.

10. Make a hole in the engine hood in a suitable place. Hole diameter, $\varnothing$ 79 mm (3.11 in).
11. Drill three, $\varnothing$ 8.5 mm (0.33 in) holes, for hose connection, see item 3.

NOTE!

Plate, part No. 11152262, may be used as a template.

12. Install hose connection 3 to the underside of the engine hood and plate 11152262 on top of the engine hood. Use bolts and washers (3 pcs), part Nos 946671 and 976944.
13. Connect hose 2, part No. 9518555.
14. Install filter 4, part No. 11032214.
15. Route the hose so that it does not form sharp bends. Check that the hose does not lie too close to hot parts.

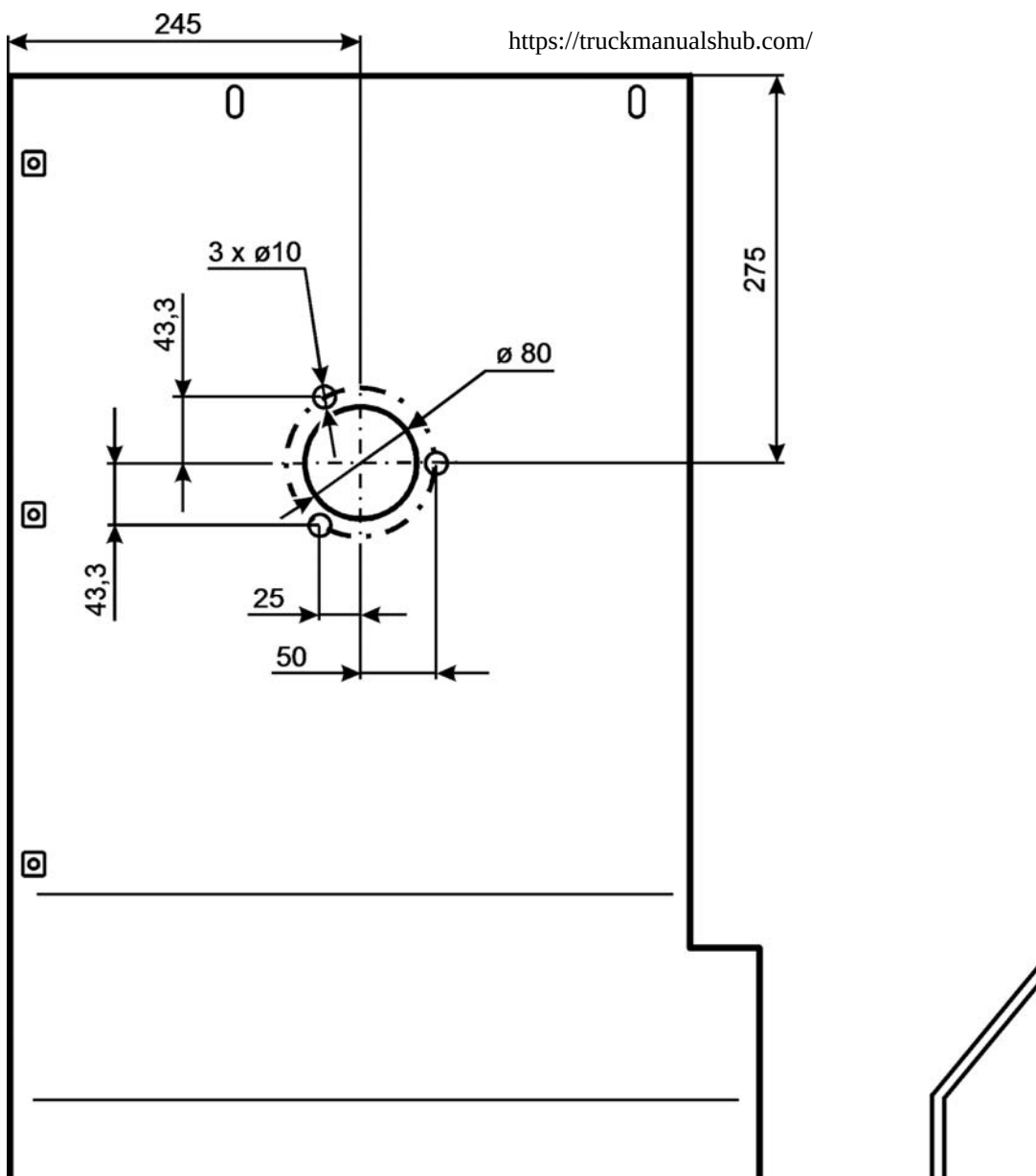


Figure 3



**Volvo Construction
Equipment Group**

Installation Instruction

Genuine Accessories

REF. NO	KIT NO	DATE/DEPT.	PRODUCT	PAGE
21 1 779 3741	11707444 (80259)	2000-11 CML-32	L90D, L120D	1/3

Electrical engine heater

220V/1500W

Kit list

Part No.	Qty.	Description
941950	1	Clamp
970791	1	Cable terminal
3986351	1	Connecting cable
4881440	4	Strip clamp
4881752	1	Engine heater
11004943	1	Locking
11115555	1	Sleeve
11152160	1	Bracket
11152167	1	Cable
13946173	3	Flange bolt
13960141	2	Washer
13970948	2	Bolt



WARNING!

Read all signs and instructions on the machine and the safety instructions in the operators manual, before you start working on the machine.

The installation instructions are based on the use of special tools, the E-tool and standard tools generally available on the market, and also on our operators manuals and service manuals.

The equipment should be installed by qualified personnel of an authorised workshop.

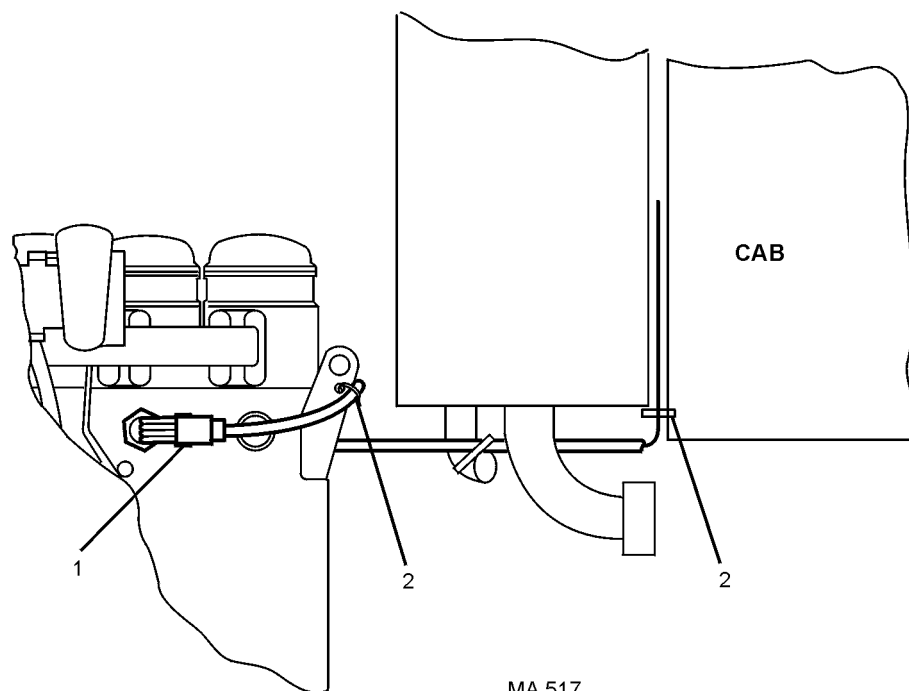
Volvo Construction Equipment Group disclaims all responsibility if tools and work methods other than those described in the instructions are used.

Electrical engine heater, 220V/1500 W

Work description

1. Drain the coolant.
2. Remove the plug on the right side of the engine. Check that the gasket sealing surface is free from dirt. Fit the engine heater element. Make sure the engine heater element is not lying against the engine block, see Fig. 1.

Part No.	Description	Qty.	Pos. in Fig. 1
4881752	Engine heater	1	1



MA 517

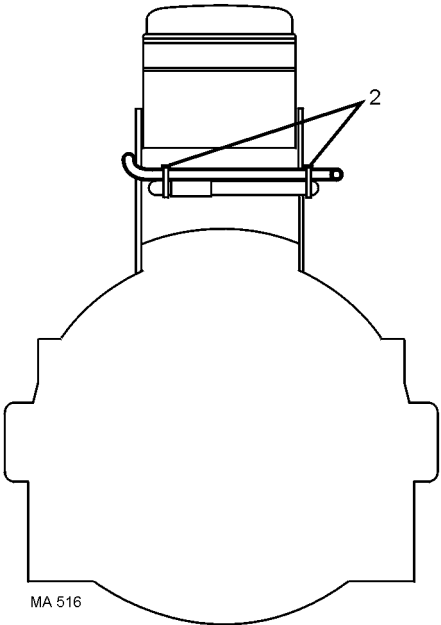
Fig. 1
Machine viewed from right side



3. Fit the attachment and the engine heater contact. Clamp the cable in the contact attaching lug. Earth the cable.

Part No.	Description	Qty.	Pos. in Fig. 2
11152160	Bracket	1	3
13946173	Flange bolt (M8x20)	3	4
13960141	Washer (8.4x22x2)	2	5
941950	Clamp (14.3mm)	1	6
11152167	Cable	1	7
11115555	Sleeve	1	8
970791	Cable terminal	1	
3986351	Connecting cable	1	-

Fig. 2
Place at the cab rear end, left-hand side



4. Clamp tight the cable and connect it to the engine heater element. Make sure it does not chafe against the engine hood.

Part No.	Description	Qty.	Pos.	Fig.
4881440	Strip clamp	4	2	1, 3
11004943	Locking	1	-	-

5. Fill with coolant. Test run the function of the engine heater contact. Check for leakage.
6. Write equipment number 80259 on the machine card.

Fig. 3
Engine viewed from the front

Engine oil filter, changing

<https://truckmanualshub.com/>

Change the oil filters at every oil change, i.e. every 500 hours.

The oil filters are of disposable type, i.e. they cannot be cleaned and must be changed.

Removing

- use a filter wrench or undo the centre screw (depending on type of filter).

Installing

- fill the filters with oil and smear oil on the gasket, see [Invalid linktarget].



Figure 1

- Screw the filters in place so that the gasket just touches the sealing surface. Then tighten another 1/2 turn by hand.
- Start the engine and check that the gaskets seal properly. If they do not, remove the filters and inspect the sealing surface. Harder tightening does not usually help matters.

NOTE!

After an oil filter change the engine should be run at idling speed for at least one minute to ensure that it is properly lubricated before the machine is put to work.

CAUTION

Fill the filters with oil before fitting them in place. This is important and ensures proper lubrication of the engine immediately after starting.

Engine oil pressure

<https://truckmanualshub.com/>

The function monitors engine oil pressure and warns the operator if it is too low or if there is a system malfunction.

If engine oil pressure is too low the Engine Shut Down function is activated, limiting engine speed to 900 rpm, see [Invalid linktarget].

Input signals	Output function conditions	Output functions
○ Engine oil pressure, SE202 ○ Directional gear	○ Low engine oil pressure Alarm limits for low engine oil pressure: < 80 kPa (11.6 psi) at 400 rpm for 2 seconds < 300 kPa (43.5 psi) at 1200 rpm for 10 seconds	○ Warning lamp ○ Red central warning lamp ----- WARNING ----- Low Engine Oil Pressure 167346A2 ○ Engine Shutdown
	According to above, also: ○ Directional gear in Forward or Reverse	○ Buzzer
○ Monitoring, SE202	○ System malfunction, signal outside limits	○ Amber central warning lamp ----- ERROR ----- Monitoring Engine Oil Pressure 167352A2 ○

Engine oil, changing

<https://truckmanualshub.com/>

WARNING

Hot oil can cause burns.

Change the oil every 500 hours.

Conditions for the 500-hour interval to be applicable are:

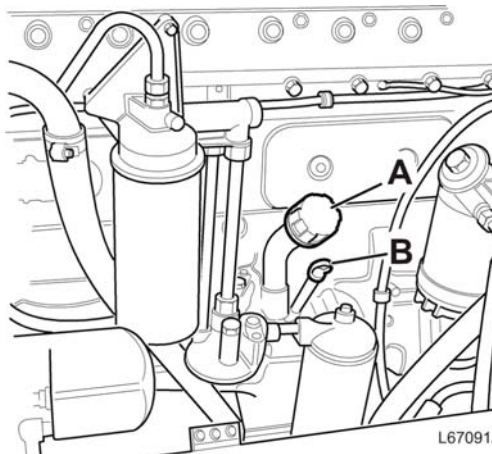


Figure 1
Releasing the parking brake

- A. dipstick
- B. filler pipe

- ☐ the oil filters are changed at every oil change.
- ☐ genuine Volvo long-life filters and by-pass filter for the L120D and genuine Volvo long-life filters for the L90D are fitted.
- ☐ the fuel sulphur content does not exceed 0.2% by weight.
- ☐ fuel consumption between oil changes (500 hours) must not exceed 8000 litres (2112 US gal) (L120D) and 6000 litres (1584 US gal) (L90D).
- ☐ the grade of oil is, see [Invalid linktarget].
- ☐ the correct viscosity for the prevailing temperature conditions according to the diagram is used, see [Invalid linktarget].

If any of these conditions is not satisfied, the oil should be changed every 250 hours and must be at least to API CE or ACEA-E3 specification.

If the machine is used in an aggressive, corrosive or extremely dusty environment, the oil should be changed every 125 hours.

Draining

Drain the oil while the engine is still hot.

The drain nipple is located on the right-hand side of the machine (behind the rear axle).

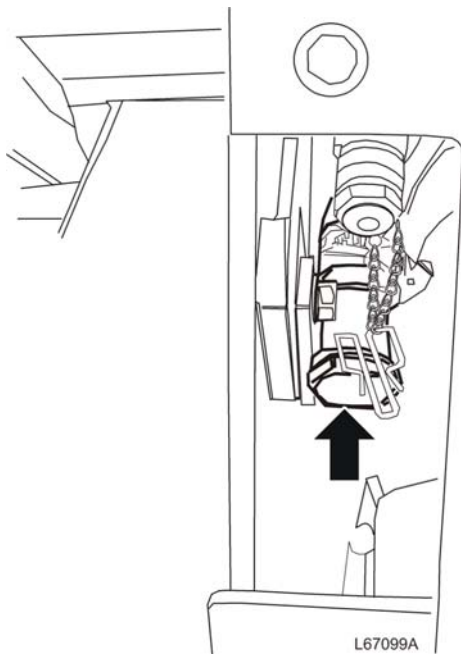


Figure 2

CAUTION

Dispose of waste oil and fluids in an environmentally safe and sound manner.

Filling up

Oil is refilled via the oil filler pipe (A), see [Invalid linktarget] .

Oil capacity when changing:

L90D, approx. 16 litres, including filter.

L120D, approx. 21 litres, including filter.

Oil grade, see [Invalid linktarget].

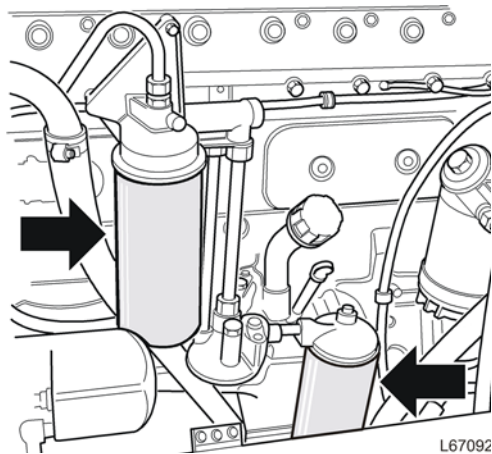


Figure 3
Engine oil filter

Engine Shut Down (power reduction) <http://truckmanualshub.com/>

This function protects the transmission by limiting engine speed when direction is changed.

Input signals	Output function conditions	Output functions
○ Engine speed, SE201 ○ Engine speed limitation parameter from APS	○ Engine speed > requested rpm from engine speed limitation APS	○ Engine power reduction via hold (detent) solenoid MA201

Engine Shutdown

This function makes limited machine travel possible even though the alarm level has been reached for coolant temperature, engine oil pressure or transmission oil temperature.

Input signals	Output function conditions	Output functions
○ Engine speed ○ High coolant temperature, SE205 ○ Low engine oil pressure, SE202 ○ High transmission oil temperature, SE406 ○ Setting "Engine Shut Down"	○ Setting "Engine Shut Down" selected on display panel If any of the following conditions are met, Engine Shut Down will be engaged: ○ High coolant temperature ○ Low engine oil pressure ○ High transmission oil temperature	○ Signal to CU201 on engine speed limitation via MA201 The engine is stopped at > 1500 rpm and started at < 800 rpm

Engine speed for V-ECU

<https://truckmanualshub.com/>

The function measures engine rpm on the transmission input shaft and warns the operator if there is a system malfunction. Engine rpm is used for different functions in the system and is presented in the operating display on the display panel. Engine On and Off are used for different functions in the system.

Input signals	Output function conditions	Output functions
○ Engine speed, SE201	○ Machine in operation	○ Engine speed, rpm 1230 rpm F2 09:34 20° 22 km/h LB73032
	○ Engine speed < 50 rpm	○ Engine = Off
	○ Engine speed > 300 rpm	○ Engine = On
○ Monitoring, SE201	○ System malfunction, open circuit or short circuit	○ Amber central warning lamp ----- ERROR ----- Monitoring Engine Revolutions LB7301A2 ○ Er rpm Er rpm F2 09:34 20° 22 km/h LB73032

Engine, air cleaner

<https://truckmanualshub.com/>

Engine wear depends to a very large extent on the cleanliness of the intake air. The air cleaner prevents dust and other impurities from entering the engine. It is therefore extremely important to inspect the air cleaner periodically and maintain it correctly.

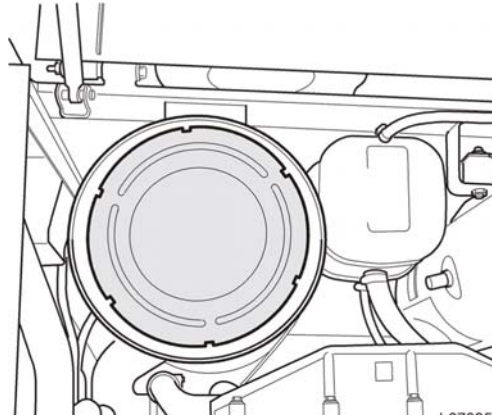


Figure 1
Air filter

Primary filter maintenance

The air filter should be changed or cleaned every 1000 hours or when the informative text "Clogged engine air filter" is displayed.

If the informative text is still displayed after a primary filter change, the secondary filter should also be changed, see [Invalid linktarget] .

Operating time between filter changes will vary, depending on the environment in which the machine works. In certain types of environment the filter will need changing at more frequent intervals.

The filter can be cleaned as directed by an authorised workshop. After it has been cleaned five times or if it is damaged, it must be changed.

NOTE!

Mark the number of times the primary filter has been changed or cleaned on the decal by the end plate of the secondary filter.

Changing the primary filter

- when changing the filter the air cleaner cover should also be cleaned, as it acts as a container for the particles that are not trapped in the filter.
- Check that all hose and pipe connections from the air cleaner to the engine intake pipe are tight. Retighten hose clips.

Do not under any circumstances run the engine without a filter or with a damaged filter.

Always have a spare filter to hand and keep it well protected from dirt.

Op nbr 21072

Lifting sling, 3 m (9.8 ft)

Shackle 3/8"

Ratchet block, 750 kg (1654 lbs)

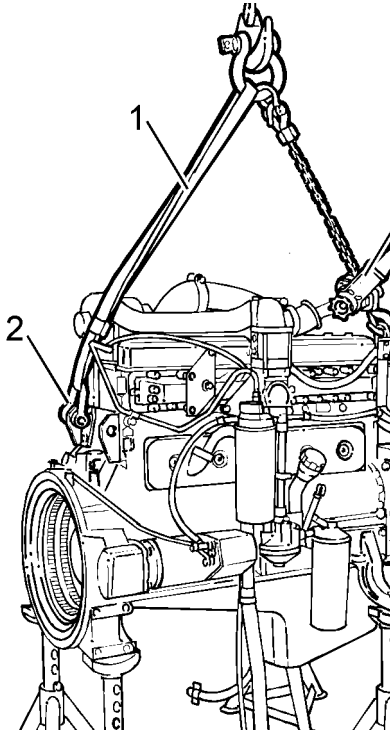


Figure 1
Attaching a lifting device (outline diagram)

1. Lifting sling, 3 m (9.8 ft)
2. Shackle 3/8"
3. Ratchet block, 750 kg (1654 lbs)

1. Attach a lifting device to the engine, see [Invalid linktarget].
Weight: **approx. 750 kg (app. 1653.5 lbs)**
2. Lower the engine into the machine.
NOTE!
Make sure that no air conditioning hoses are damaged.
3. Fit the engine in with the hydraulic transmission and refit the screws.
Tightening torque: **85 ±8 Nm (63 ±6 lbf ft)**
Remove the supports from under the transmission.
4. Refit the screws between the engine mounts and the rubber elements.
Tightening torque: **220 ±22 Nm (162 ±16 lbf ft)**
5. Screw the transmission oil cooler to the bracket on the engine.
6. Refit the belt pulley, hub, bracket, and tension wheel.

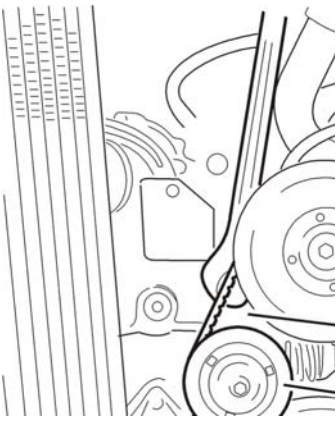


Figure 2
Fitting belt parts.

1. Belt pulley
 2. Bracket
 3. Tensioning wheel
 4. Hub
-
7. Bolt on the air conditioning compressor, if any, and fit its drive belt and fan belts.
 8. Refit the rod between the engine and the air deflection disc.
 9. Refit the fan.
 10. Install the coolant pipe between the water pump and the transmission oil cooler; change the o-ring. Connect the hose of the expansion tank and the air conditioning to the pipe and any coolant filter hose.
 11. Screw the water trap of the fuel system to the bracket on the frame. Attach the fuel lines to the fuel pump and the fuel injection pump.
 12. Connect the cables to the B+ generator, connector BB to the stop solenoid, and SE1 to the temperature sensor. Clamp the cables in the screw clips.
 13. Attach the throttle control to the fuel injection pump.

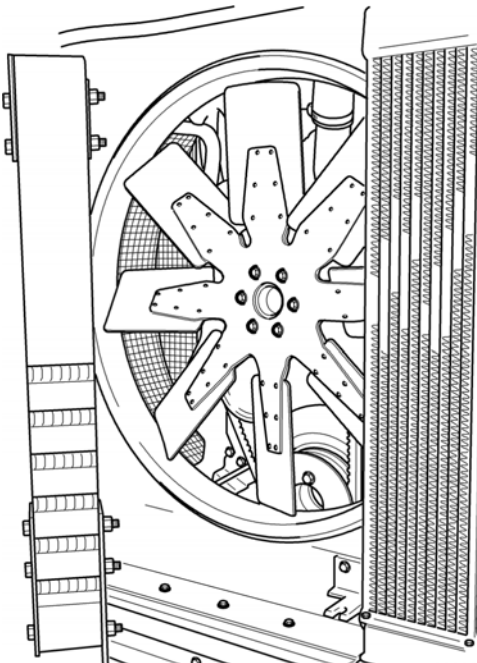


Figure 3

14. Screw in the preheating coil's relay console and console for any air conditioning receiver-drier to the bracket at the inlet line of the engine. Connect the lead to the preheating coil.

15. Connect the ground lead to the starter motor (black connection).
Connect the red leads of the cable harnesses to the starter motor (red connections).
16. Connect the leads to the oil pressure sensor and the air cleanliness indicator. Clamp the cables in the screw clips.
17. Refit the upper radiator hose.
18. Refit the breather filter and screw in any pumps for secondary steering.
19. Refit the cover unit.
Weight: **approx. 100 kg (app. 220 lbs)**

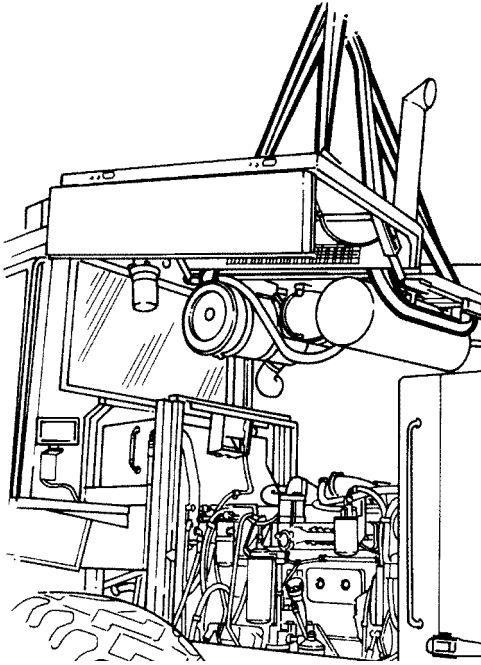


Figure 4
Installing the cover unit

20. Connect the following:
- The exhaust pipe to the silencer.
 - The hoses to the expansion tank, 3 pcs.
 - The hose to the hydraulic oil tank breather filter.
 - The suction hose to the turbocharger.
 - The hoses to the air cleanliness indicator.
21. Refit the hood plates on top of and on both sides of the hydraulic oil tank.
22. Fill the coolant.
Volume: **53 litre (11.66 US gal.)**
Fill the engine oil.
Volume: **16 litre (3.52 US gal.)**
23. Remove the joint locks. Start the engine and make sure there are no leaks.

Op nbr 21070

Lifting sling, 3 m (9.8 ft)

Shackle 3/8"

Ratchet block, 750 kg (1654 lbs)

1. Secure the frame joint with the joint lock.
2. Cut the current with the battery disconnect switch.

3. **WARNING**

Pressure in the cooling system may cause burns when the cap of the expansion tank (radiator cap) is opened.

Open the expansion tank filler cap and drain the coolant.

Volume: **53 litre (11.66 US gal.)**

Drain the engine oil.

Volume: **16 litre (3.52 US gal.)**

4. Remove the hood plates on top of and from both sides of the hydraulic oil tank.
5. Loosen the following:
 - Exhaust pipe from the silencer.
 - Hoses from the expansion tank.
 - Hose from hydraulic oil tank breather filter.
 - Suction hose from the turbocharger.
 - Hoses from the air cleanliness indicator.
6. Remove the hood plate above the engine and the side covers as a unit together with the silencer, air cleaner, and expansion tank.
Weight: **approx. 100 kg (app. 220 lbs)**

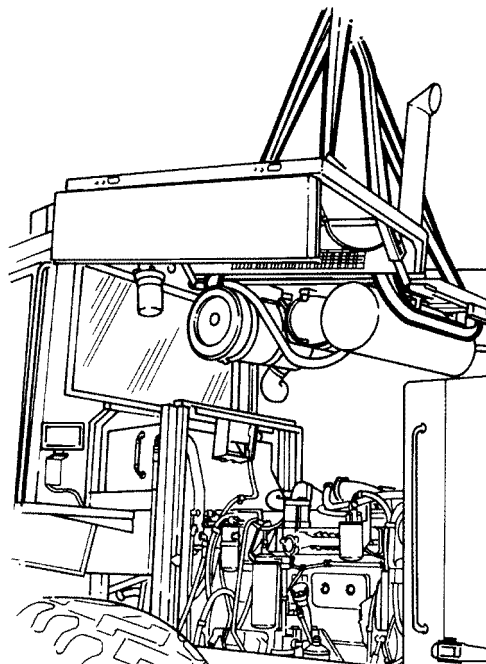


Figure 1
Removing hood plate

7. Disconnect the throttle control from the fuel injection pump.
8. Disconnect the necessary cables and clamps from:

- the starter motor
 - the preheating coil
 - the alternator
 - the temperature sensor
 - the oil pressure sensor and the stop solenoid.
- <https://truckmanualshub.com/>

9. Disconnect the preheating coil's relay console and console for any air conditioning receiver-drier from the bracket at the inlet line of the engine.
Place the receiver-drier on the frame without loosening the hoses.

⚠ WARNING

10. **Do not loosen hoses of the air conditioning unit (AC) because gas will leak out.**

Disconnect the compressor of the air conditioning unit, including brackets and hoses, and place it on the fuel tank.

11. Loosen the bracket for the engine's oil and coolant drain hoses.
Disconnect the fuel lines from the fuel injection pump and feed pump.
Loosen the water trap and lay it on the frame.
12. Swing out the radiator and condenser, if any. Remove the fan.
Remove the attachment rods of the air deflection disc, 3 pcs.
Remove the fan belts.
13. Remove the belt pulley of the fan, including hub, bracket, and tension wheel.

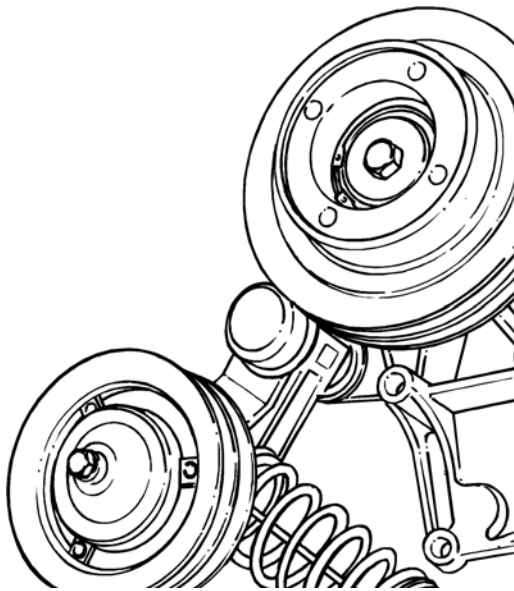


Figure 2
The belt pulley of the fan complete with hub, bracket, and tension wheel

14. Remove the axle ventilation filter and loosen any secondary steering pumps.
15. Remove the lead for the air filter's air cleanliness indicator from the tank.
16. Attach a lifting device to the engine, see [Invalid linktarget].
Remove the screws between the engine mounts and the rubber elements.
Remove the screws between the engine and the transmission.

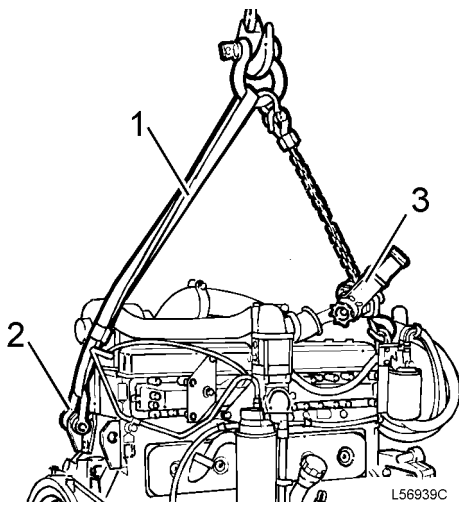


Figure 3
Attaching a lifting device (outline diagram)

1. Lifting sling, 3 m (9.8 ft)
2. Shackle 3/8"
3. Ratchet block, 750 kg (1654 lbs)

17. Place supports against the front rear axle mounting to support the transmission.

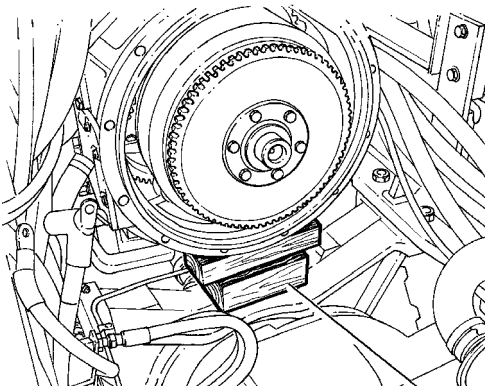


Figure 4
Supporting the transmission

1. Wood blocks

18. Lift out the engine.
Weight: **approx. 750 kg (app. 1653.5 lbs)**

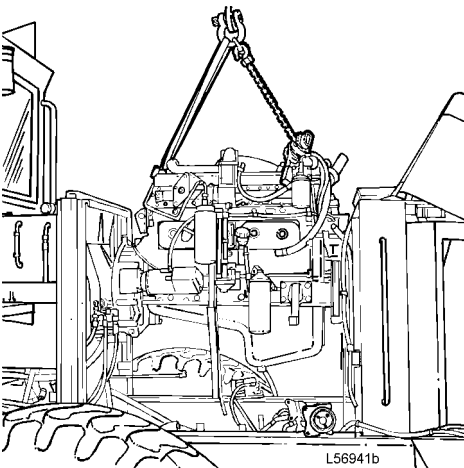


Figure 5
Lifting out the engine (outline diagram)

Evaporator in the air-conditioning unit, cleaning

Op nbr 87459

CAUTION

Refrigerant under pressure. Do not detach any hoses or connections to the air-conditioning unit and so inadvertently allow refrigerant to escape.

1. Open the cab filter access cover.
2. Remove the filter casing.

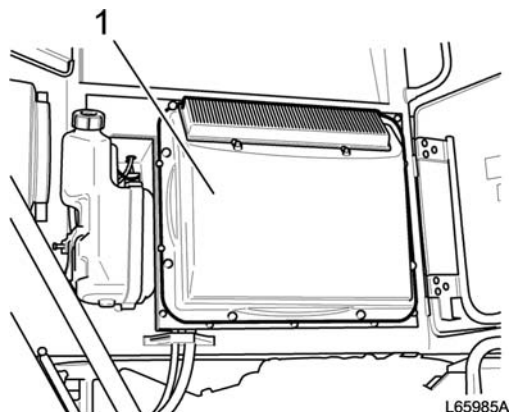


Figure 1
Filter casing

1. Filter casing
3. Disconnect the wire from the recirculation damper.
Remove the plate together with the recirculation damper.

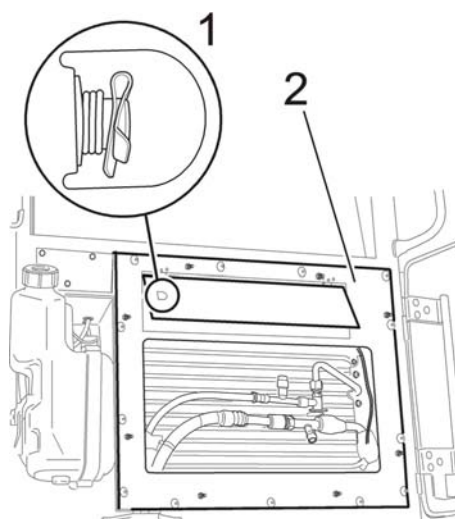


Figure 2

1. Striker plate, recirculation damper
2. Plate
4. Remove the support plate that holds the evaporator.

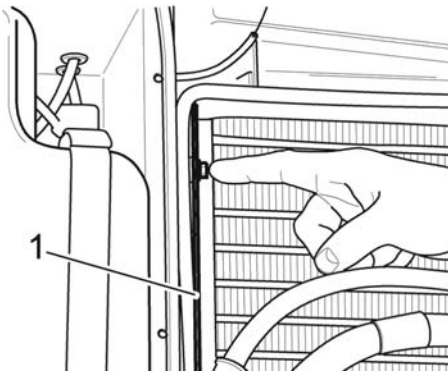


Figure 3
Support plate

1. Support plate
5. Make sure that the capillary tube to the thermostat does not become pinched when the evaporator is folded out. Alternatively, the capillary tube can be removed from the evaporator pipe by first removing the insulating compound and then carefully removing the capillary tube.

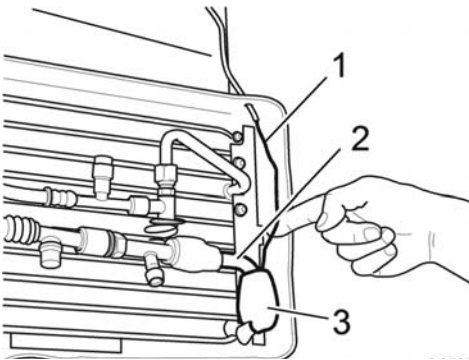


Figure 4
Capillary tube

1. Capillary tube
2. Evaporator pipe
3. Insulating compound
6. Carefully fold out the evaporator.

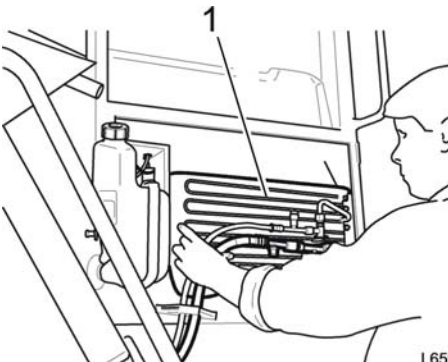


Figure 5
Evaporator

1. Evaporator
7. Clean the evaporator by blowing it with compressed air or hosing it with water. (Do not use high-pressure washing equipment.)

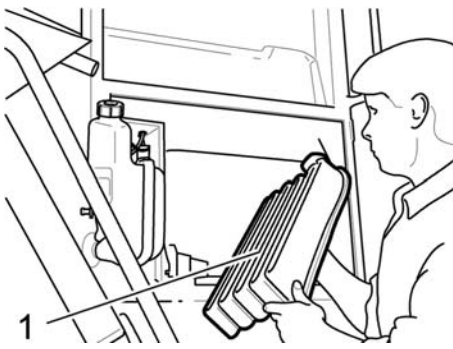


Figure 6
Cleaning evaporator

1. Evaporator
8. Refit the evaporator.
9. Refit the support plate that holds the evaporator.
10. If the capillary tube has been removed, carefully refit it on the evaporator pipe together with the insulating compound.
11. Refit the plate together with the recirculation damper.
Reconnect the wire to the recirculation damper.
12. Refit the filter casing.
13. Close the cab filter access cover.

Explanations of cable and component markings

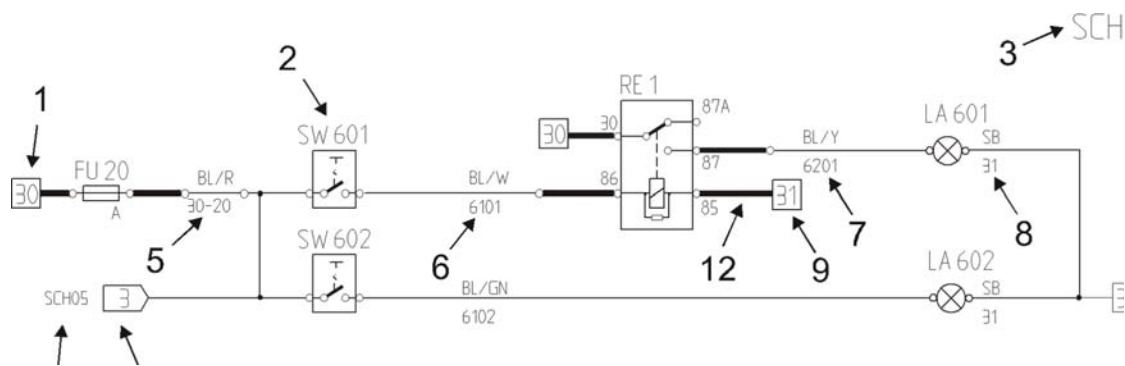


Figure 1
Principle illustration, wiring diagram

Example of cable and component designations				
1	30	Box with designation for feed	Positive feed (30, 15, 15E, etc.)	
2	SW601	SW = switch	6 = Function group	01 = Running number
3	SCH16	Diagram number		
4	6.100	6 = Function group	100 = Running number	
5	30 –20	30 = Feed (30, 15, 15E, etc.)	20 = Fuse number	
6	6101	6 = Function group	1 = Electrical event[1] ⓘ	01 = Running number
7	6201	6 = Function group	2 = Electrical event	01 = Running number
8	31	31 = DIN marking (30, 15, 31, etc.)		
9	31	Box with designation for chassis connection	Earth connection (31, etc.)	
10	SCH05	Diagram number next to an arrow-shaped box is a reference to another diagram		
11	3	A reference number in an arrow-shaped box can be found in an arrow-shaped box in the diagram that is referred to.		
12	Lead	A lead drawn with a thick line shows that it is a printed circuit on the circuit board		

Cable and component designations

Cables and components on wiring diagrams are designated by function group division.

Cable designations:

A cable marked 30–20, for example, indicates that it is 30-feed via fuse 20 to a component. After the component, the marking may be 6101, for example, where 6 indicates function group, 1 indicates electrical event (the digit changes for each electrical event, 1 becomes 2 and so on), 01 is the running number.

Component designation

A component marked SW601, for example: SW stands for switch, 6 indicates function group, 01 is the running number.

NOTE!

Relays and fuses located on the circuit board are not marked according to function group division.

Function group division

- 1 Feeds and earth connections
- 2 Engine
- 3 Electrical system, lighting, etc.
- 4 Power transmission
- 5 Brakes
- 6 Steering
- 7 Miscellaneous
- 8 Cab
- 9 Hydraulics

Positive feed

<https://truckmanualshub.com/>

Designation 30, 15, 15E, etc. in the boxes

The current direction is from large box drawn with a thick line to a small box drawn with a thin line.

Boxes with the same designation are connected to each other on the circuit board via printed circuits.

Chassis connections

Designation 31xx in the boxes

The current direction is from a small box drawn with a thin line to a large box drawn with a thick line.

Boxes with the same designation are connected to each other on the circuit board via printed circuits.

Colour marking of leads

Y	=	Yellow	BN/W	=	Brown/White
GN	=	Green	BL/W	=	Blue/White
BL	=	Blue	VO	=	Violet
GR	=	Grey	GN/W	=	Green/White
W	=	White	BL/Y	=	Blue/Yellow
BN	=	Brown	BL/R	=	Blue/Red
OR	=	Orange	P	=	Pink
Y/W	=	Yellow/White	SB	=	Black
GN/R	=	Green/Red			

NOTE!

There are more combinations of lead colour markings.

Colour marking of leads, positive feed / chassis connection

30-feed	=	Red
15-feed	=	Red/White
5 volt feed	=	Red/Grey
24-volt feed[T1] ⓘ	=	Red/black
Chassis connections	=	Black
Chassis connection, electronics	=	Black/White

[T1]24 V stabilized voltage from I-ECU.

[1]An electrical event is when a lead has passed something, for example, a switch or a relay, which may have caused an electrical change (an electrical event). With each such electrical event, the digit changes, 1 becomes 2 and so on.

Filter indicator, checking

<https://truckmanualshub.com/>

Check the functionality of the filter indicator every 1000 hours. Proceed as follows:

1. run the engine at idling speed.

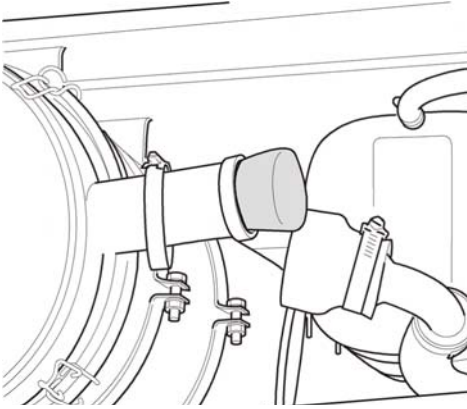


Figure 1
Ejector hose

2. remove the air cleaner ejector hose and plug the opening.
3. Remove the air intake cover and cover the air filter intake with a stiff panel.
4. Leave an air gap of about 10 mm (0.394 in).
5. Slowly increase engine speed. The text "Clogged engine air filter" will appear on the display panel.

Listen and feel for possible leakage.

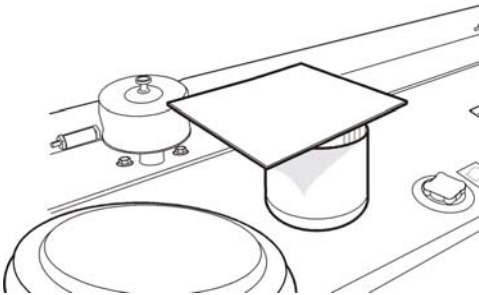


Figure 2
Air filter intake

Language Code GB	Product WLO	Group 000	https://truckmanualshub.com/	No. 117	Version 2	Date 03/15/2000
Applies to 4200 Volvo BM, 4200B Volvo BM, 4300 Volvo BM, 4300B Volvo BM, 4400 Volvo BM, 4500 Volvo BM, 4600 Volvo BM, 4600B Volvo BM, 6300 Volvo BM, EL70 Volvo BM, EL70C Volvo BM, L50 Volvo BM, L50B Volvo BM, L50C OR Volvo, L50C Volvo, L50C Volvo BM, L50D Volvo, L70 Volvo BM, L70B Volvo BM, L70C Volvo, L70C Volvo BM, L70D Volvo, L90 Volvo BM, L90B Volvo BM, L90C OR Volvo, L90C Volvo, L90C Volvo BM, L90D OR Volvo, L90D Volvo, L120 Volvo BM, L120B Volvo BM, L120C Volvo, L120C Volvo BM, L120D Volvo, L150 Volvo BM, L150C Volvo, L150C Volvo BM, L150D Volvo, L160 Volvo BM, L180 CO Volvo BM, L180 HL Volvo BM, L180 Volvo BM, L180C CO Volvo, L180C HL Volvo, L180C Volvo, L180C Volvo BM, L180D HL Volvo, L180D Volvo, L220D Volvo, L330C LL Volvo, L330C Volvo, L330C Volvo BM, L330D Volvo						

Fluid levels



Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

It has been decided that the approved levels for all fluids, oils and other fluids, should be between medium and max on the various fluid level marks on the machines.

To repeat: approved level is between medium and max levels.

If the level is below medium level top-up and charge the extra cost involved as a delivery inspection cost.

For approval, each individual case must be reported when submitting a claim. This does not apply if the dealer has installed extra equipment, e.g., hydraulic equipment.

Compensation for oils or other fluids in connection with repairs:

- We will approve, via normal claims procedure, compensation for complete fluid loss or substantially reduced fluid level as a result of hose or pipe failure.
This does not apply to normal or high engine oil consumption.
- Systems that have to be emptied of fluid in conjunction with component repairs must be refilled via the filter unit. No compensation will be paid for any new fluid related to such repairs.

Foot brake pedal, adjusting angle and pedal clearance

Op nbr

1. Remove the foot brake pedal.
2. Move the bolt under the pedal in order to adjust the pedal to a 35°, 40°, 45° or 50° angle. Pos. A in [Invalid linktarget] corresponds to a 45° pedal angle.

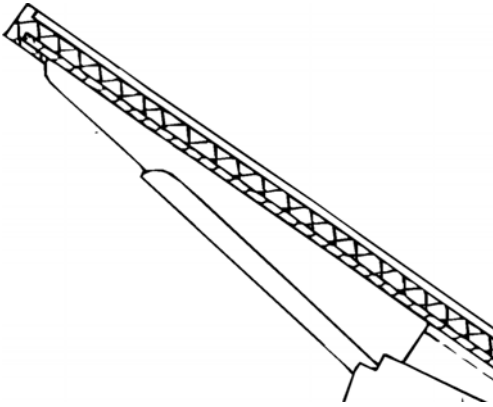


Figure 1
Adjusting foot brake pedal angle

3. Adjust the "free pedal travel" by turning the adjusting screw (B) until the travel between the brake pedal (1) and the piston (2) is 0.4 ± 0.2 mm (0.016 ± 0.008 in).

The numbers in parenthesis refer to the figures in the text as well as the figure on page 33.

Dismantling

1. Secure the valve in a vice.
2. Remove the lock ring, tap out the pin (37) and remove the pedal.
3. Remove the three bolts (32) with lock washers (35) and remove the bracket plate (1).
NOTE!
The bolts are locked with thread locking compound.
4. Remove the springs (12 and 13), the stroke limiter (5), the O-ring (14) and scraper seal (17).
5. Remove the lock ring (15) and lift out the washer (19).
6. Screw out the plug (22) and the O-ring (23). The spring (9) is located in the plug.
NOTE!
The plug is locked with thread locking compound.
7. Press out the spools (24 and 25) and the spring (8) downward.
8. Remove the packing box (20).
9. Screw out the plug (16) and lift out one non-return valve (A) and the spacer pin (B).

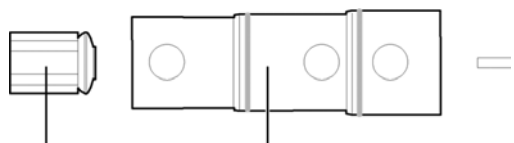


Figure 1

10. Lift out the valve retainer (11), including the two O-rings as well as the other non-return valve (A).
NOTE!
The valve retainer may be difficult to remove. Make sure not to damage it.
11. Screw out the plugs (27 and 27A).
12. Press out the piston (28) and the spring (10) upward.
13. Screw out the plug (4) and the O-ring (29) without breaking the safety seal (21).
14. Remove the thrust washers (7A) and the spring (7).
15. Screw out the plug (31) and the O-ring (30).
16. Screw out the valve body (3) including the valve peg and the spring (5).
17. Lift out the sleeve (5A) and the compression spring (6).
18. Pull out the spool (A) downward.

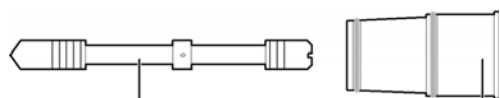


Figure 2

<https://truckmanualshub.com/>

19. Tap out the valve housing (36), guide sleeve (2), including O-rings, back-up rings, washer (B) and the piston (C) upward.
20. Clean and inspect the parts with regards to any damage or wear. Change all worn or damaged parts. Change all O-rings, back-up rings as well as the scraper seal (17) and the packing box (20).

Assembling

21. Refit the valve housing (36).
NOTE!
Make sure that the top O-ring is positioned correctly.
22. Assemble the guide sleeve (2) and the washer (B).
Refit the parts.

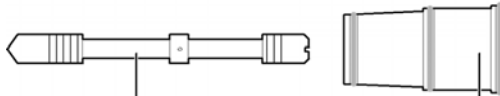


Figure 3

23. Refit the piston (C) and the spring (6).
24. Refit the sleeve (5A), spring (5), the valve and screw in the valve body (3).
25. Screw in the plug (31).
26. Refit the spool (A) in the valve housing (36) from underneath.
27. Refit the thrust washers (7A) and the spring (7).
28. Screw in the plug (4).
29. Screw in the plug (27A).
30. Refit the spring (10) and the piston (28).
31. Screw in the plug (27).
Tightening torque: **60 Nm (44 lbf ft)**
32. Assemble the non-return valves (A), the spacer pin (B) as well as the valve retainer (11). Then refit the parts in the foot brake valve.
NOTE!
Make sure that the valve retainer is securely installed.

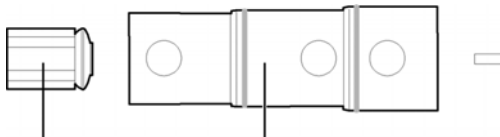


Figure 4

33. Screw in the plug (16).
34. Install the packing box (20).
35. Fit the washer (19) and lock it with the lock ring (15).
36. Press up the spools (24 and 25) as well as the spring (8) from underneath.
37. Screw in the plug (22) with the spring (9).

Tightening torque: **60 Nm (44 lbf ft)**

<https://truckmanualshub.com/>

NOTE!

The plug must be locked with thread locking compound.

38. Press out the piston (18) from the bracket plate and change the scraper seal (17).
39. Grease the piston (18) with lithium grease and refit it in the bracket plate (1).
40. Refit the springs (12 and 13) as well as the stroke limiter (5) in the foot brake valve.
41. Refit the bracket plate and tighten the bolts (32).
Tightening torque: **22 Nm (16 lbf ft)**
NOTE!
The bolts must be locked with thread locking compound.
42. Refit the pedal.
NOTE!
Make sure that the spring is turned the correct way.

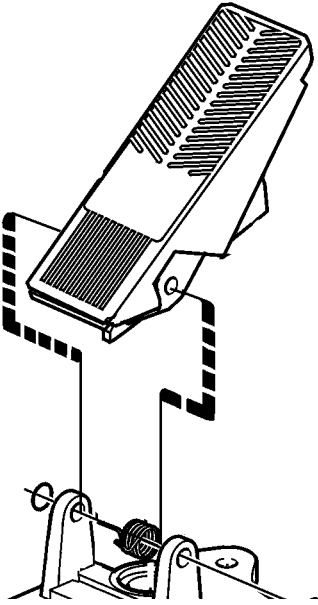


Figure 5

Language Code GB	Product WLO	Group 926	https://truckman18.com/	No. 18	Version 1	Date 11/07/2006
Applies to Wheel Loaders						

Fork arms, information warranty matters, altered procedures



Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.

Cause and action

If fork arms are the subject of a claim and need to be replaced, photographs and a copy of the report on the last page of this SB should be sent to the regional office and from there passed on to the marketing person who is responsible for technical questions at Volvo Construction Equipment AB Customer Support Division. A copy of a filled-in report is required for each repair.

NOTE!

The report is also available in Word format in Techline. It can be downloaded, filled in digitally and sent in by E-mail.

The report must contain machine data, which type of claim is intended and an explanatory text about the cause of the replacement. In case of a break, the fracture area and the position of the break must be photographed. The fracture area must be photographed at the latest within one week. It is important that a sharp photograph is obtained. After photographing, spray the fracture area with anti-rust agent.

NOTE!

The fork arms must then be stored for six months in order to be available for further investigation.

A precondition for the damage to be considered as a warranty matter is that the requested information has been filled in on the report on the last page.

Fork arms, which are replaced because of wear or incorrect use, will not be compensated through a claim.

Report, fork arms, information regarding warranty matters

Machine type	
Serial number, machine	
Operating time, hours	
Time of usage, fork arms (approximate):	
Type number of fork arms:	
Serial number of fork arms (stamped-in on the side of the fork arm):	
Date of repair:	
Claim number:	

Factory warranty

Parts warranty

Cause of repair:

[illegible]

NOTE!

Attach a photograph of the fracture area taken within a week of when the fracture occurred and one photograph taken at a greater distance showing the location of the fracture on the fork arm.

Op nbr 46103

[999 3831 Support](#)

[999 3742 Socket](#)

Sling 2 m (6.5 ft), 2 slings.

Sling 6 m (19 ft), 2 slings.

Torque amplifier

1. Position the axle correctly under the machine.
Connect a lifting device.
Axle weight: **approx. 1500 kg (3308 lbs)**
2. Lift up the axle with the lifting device, and secure the axle with a hydraulic jack to prevent it from turning during the lift.
Fit the attaching bolts.
Tightening torque: **804 Nm (593 lbf ft)**
3. Fit the propeller shaft to the front axle.
Fit the attaching bolts.
Tightening torque: **50 Nm (37 lbf ft)**
4. Fit the electrical cabling and the hoses to the differential lock and brake as well as the breather hose for the axle. Fit the cabling for the temperature sensor.
5. Fill oil in the front axle.
Oil capacity: **approx. 36 litres (new axle), 33 litres (at oil change)**
6. Fit the front wheels.
Tightening torque: **600 Nm (443 lbf ft)**
Fit the mudguards.
7. Remove the support under the boom, the axle stands and the steering joint lock.
8. Bleed the front brake circuit, see *Section 5, Brake system, bleeding*.

Front axle, removing

<https://truckmanualshub.com/>

Op nbr 46102

[999 3831 Support](#)

[999 3742 Socket](#)

Sling 2 m (6.5 ft), 2 slings.

Sling 6 m (19 ft), 2 slings.

Torque amplifier

1. Lock the steering joint.

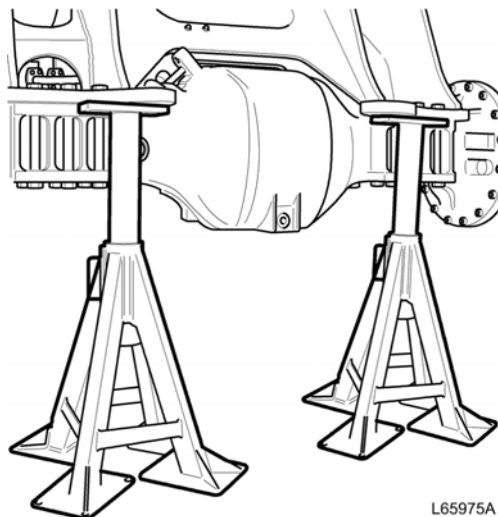


Figure 1

2. Lift the front wheels using the lift arms.
Position axle stands under the tie-down eyes in the front frame.
3. Run up the lift arms and position the support (999 3831) under the raised boom, see [Invalid linktarget].
Release pressure and put the bucket in the empty position.

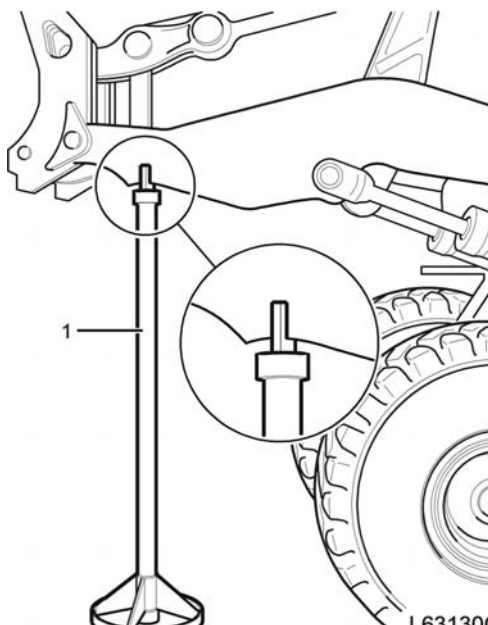


Figure 2

1. 999 3831 Support

4. Remove the front mudguards and the front wheels.
5. Drain the axle oil.
Oil capacity: **approx. 33 litres (8.7 US gal)**
6. Tie up the propeller shaft and remove the drive flange attaching bolts at the front axle.
7. Release the pressure in the brake system by depressing the brake pedal repeatedly (30–40 times).
8. Fully depress the brake pedal and block it in that position with a suitable tool. When the brake pedal is blocked in the depressed position, the hydraulic tank oil is prevented from running out to respective brake caliper.

NOTE!

The brake pedal must remain blocked until the front axle has been installed again.

9. Remove all electrical cabling and hoses for the differential lock and brake as well as the breather hose for the axle. Use plastic plugs to plug all hoses. Remove the cabling to the temperature sensor.
10. Connect a lifting device to the front axle and remove the attaching bolts.
Front axle weight: **approx. 1500 kg (3308 lbs)**
11. Lower the axle on two pallets, each pallet standing on a pallet forklift. Secure the axle (with a hydraulic jack or the like) to prevent it from falling over.
Pull out the axle.

Fuel feed pump, checking feed pressure, L90D

Op nbr 23304

[11 666 017 Pressure gauge, 600 kPa \(87 psi\)](#)

[11 666 037 Hose](#)

[999 3871 Nipple](#)

[999 3720 Nipple](#)

NOTE!

Observe the strictest cleanliness when working on the fuel system.

1. Park the machine on a level surface and turn off the engine. Apply the parking brake. Open the engine hood on the right side of the machine.
2. Remove the bleeder screw from the secondary filter housing.

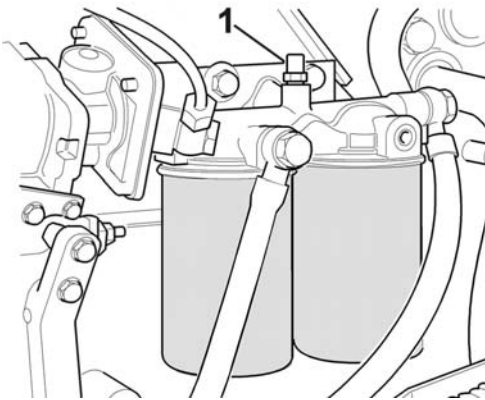


Figure 1

1. Bleeder screw

3. Fit nipple 999 3871 on the bleed screw and connect to the pressure gauge using the hose.

NOTE!

Make sure that the hose is cleaned.

4. Start the engine and run it at about 1000 rpm for half a minute. Release the accelerator and let the engine run at idling speed for one minute. Read off the feed pressure.
Feed pressure: **130–180 kPa (19–26 psi)**

5. Check the feed pressure once again, this time with the engine fully loaded.

6. Run the engine to stall speed and read off the pressure gauge at the same time. The pressure must not drop below 100 kPa (1 bar) (15 psi) during the test.

NOTE!

Keep in mind that the pressure gauge reading may be delayed due to stroke/diameter, temperature and poorly cleaned hose.

Pressure too high:

If the pressure is too high, the overflow valve needs to be changed.

Pressure too low:

If the feed pressure is too low, the cause may be a clogged suction line, malfunction of the feed pump, clogged fuel filter or malfunction of the overflow valve.

Check the filters by checking the feed pressure before the filters (1) with nipple 999 3720. The plate (2) may have to be removed to make room for the nipple and hose.

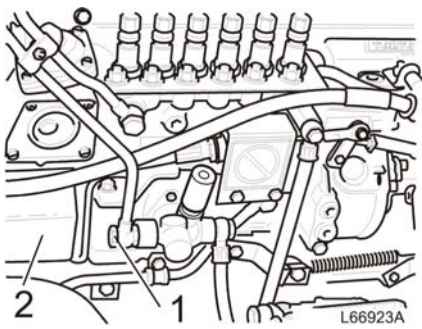


Figure 2

7. Repair any malfunctions and check the feed pressure again.
8. Remove the measuring nipple and refit the bleeder screw.

Fuel feed pump, checking feed pressure http://www.manualshub.com/

Op nbr 23304

[11 666 017 Pressure gauge, 600 kPa \(6 bar\) \(87 psi\)](#)

[11 666 037 Hose](#)

[999 3871 Nipple](#)

[999 3720 Nipple](#)

NOTE!

Observe the strictest cleanliness when working on the fuel system.

1. Park the machine on a level surface and turn off the engine. Apply the parking brake. Open the engine hood on the right side of the machine.
2. Remove the bleeder screw from the secondary filter housing.

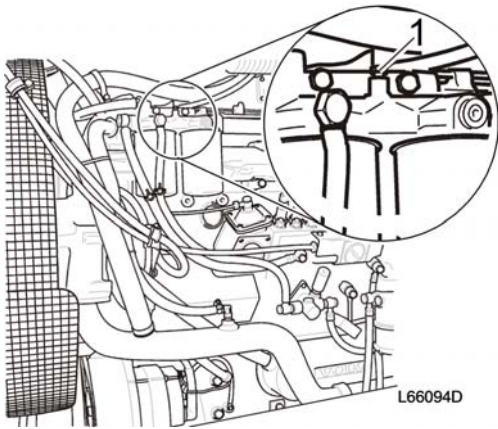


Figure 1

1. Bleeder screw

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NOTE!

Make sure that the hose is cleaned.

4. Start the engine and run it at about 1000 rpm for half a minute. Release the accelerator and let the engine run at idling speed for one minute. Read off the feed pressure.
Feed pressure: **130–180 kPa** (19–26 psi)

5. Check the feed pressure once again, this time with the engine fully loaded.

6. Run the engine to stall speed and read off the pressure gauge at the same time. The pressure must not be below 100 Kpa (15 psi) during the test.

NOTE!

Keep in mind that the pressure gauge reading may be delayed due to stroke/diameter, temperature and poorly cleaned hose.

Pressure too high:

If the pressure is too high, the overflow valve needs to be changed.

Pressure too low:

If the feed pressure is too low, the cause may be a clogged suction line, malfunction of the feed pump, clogged fuel filter or malfunction of the overflow valve.

Check the filters by checking the feed pressure before the filters (1) with nipple 999 3720.

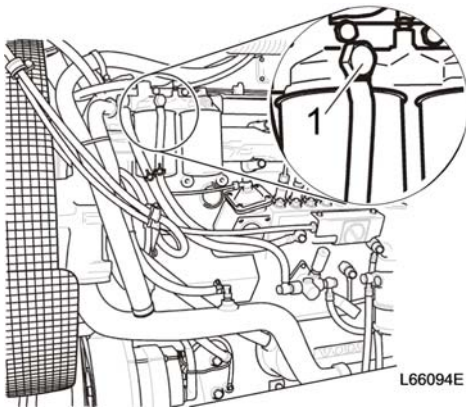


Figure 2

7. Repair any malfunctions and check the feed pressure again.
8. Remove the measuring nipple and refit the bleeder screw.

Fuel injection pump, TD63

<https://truckmanualshub.com/>

The injection pump is flange mounted in the timing gear casing and driven by a gear from the engine transmission. Lubrication takes place through connection to the engine lubrication system. The delivery oil line is located externally and the return oil flows through a hole in the injection pump connection flange to the timing gear casing.

The pump is of constant stroke piston type. The pump pistons can be rotated during operation by means of the control rod to change the quantity of fuel that is injected.

The overflow valve is located in the return fuel line.

The pump is fitted with a centrifugal governor, see [Invalid linktarget] .

The injection angle is checked by means of a test instrument. The instrument sensor is located in an outlet on the governor.

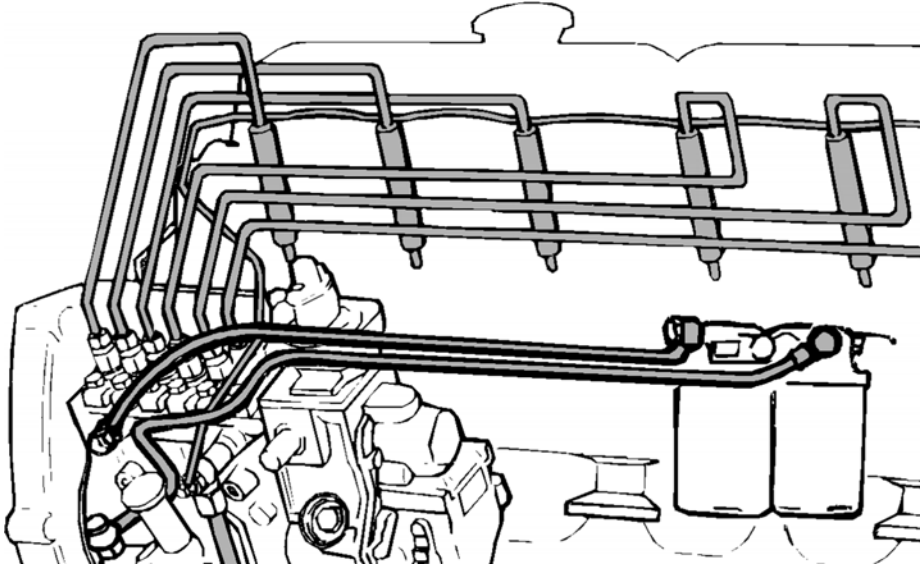


Figure 1
Fuel system, outline diagram, TD63

Fuel injection pump, TD73

<https://truckmanualshub.com/>

The injection pump is located on a shelf on the left-hand side of the engine via a pump coupling from the engine transmission. Lubrication is through connection to the engine lubrication system. The delivery oil line is located externally and the return oil flows via an external oil pipe back to the sump.

The pump is of constant stroke piston type. The pump pistons can be rotated during operation by means of the control rod to change the quantity of fuel that is injected.

The overflow valve is located in the return fuel line.

The pump is fitted with a centrifugal governor, see [Invalid linktarget] .

The injection angle is checked by means of a test instrument. The instrument sensor is located in an outlet on the governor.

Fuel injection pump

<https://truckmanualshub.com/>

In the in-line pump there is a pump element for each cylinder in the engine. Each pump element consists of a piston and a cylinder. The pump piston is pressed up by a camshaft and down by a spring.

When the piston is at BDC the pressure chamber above the piston is filled with fuel by the feed pump. The fuel flows into the cylinder through the inlet holes.

When the piston is pressed up it closes the inlet holes and presses fuel through the delivery valve to the pressure pipe.

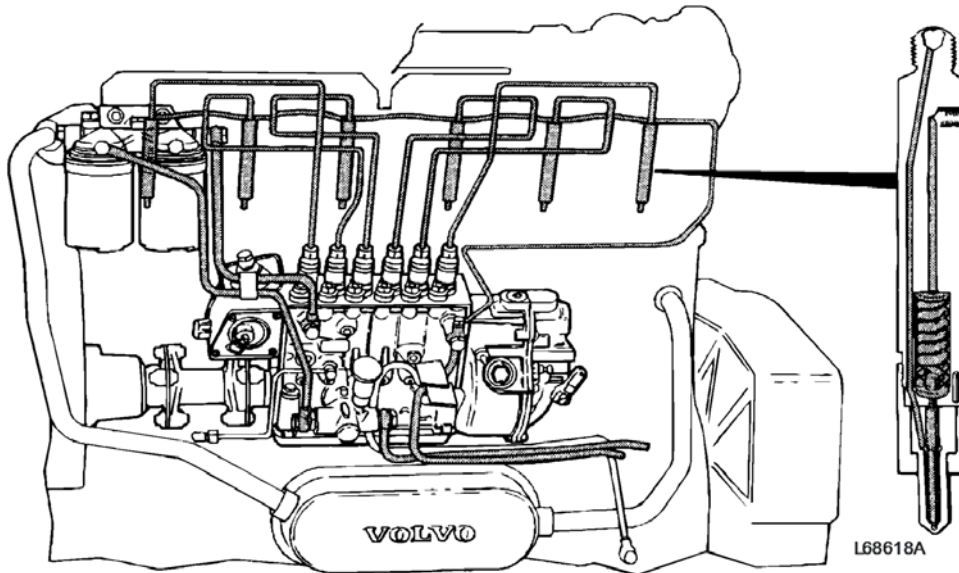


Figure 1

Fuel system. Outline diagram for TD73.

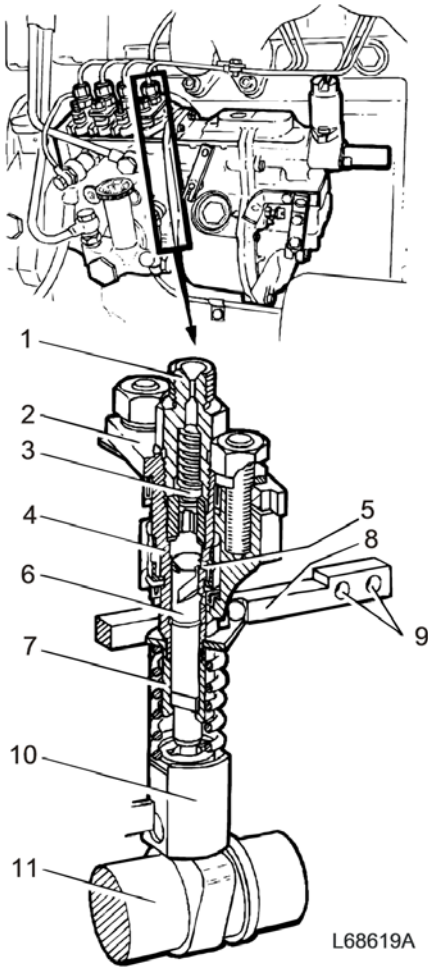


Figure 2

Outline diagram showing injection pump construction.

1. Pressure pipe connection
2. Pump element mounting flange
3. Delivery valve
4. Pump cylinder
5. Filling hole
6. Pump piston
7. Control sleeve
8. Control rod
9. Control rod attachment to the governor
10. Tappet
11. Camshaft (pump shaft)

Injection is interrupted when the piston's spiral groove exposes the discharge hole. If the pump piston is turned, the spiral groove will expose the discharge hole earlier or later, depending on which direction it is turned. The duration of the injection time thus varies and with it also the amount of fuel injected. If the piston is turned so that its vertical groove is opposite the hole in the pump cylinder, it will exert no pressure on the fuel. Injection then comes to a complete stop. The pump pistons are turned by means of a control rod. This rod is connected to the governor by a linkage system.

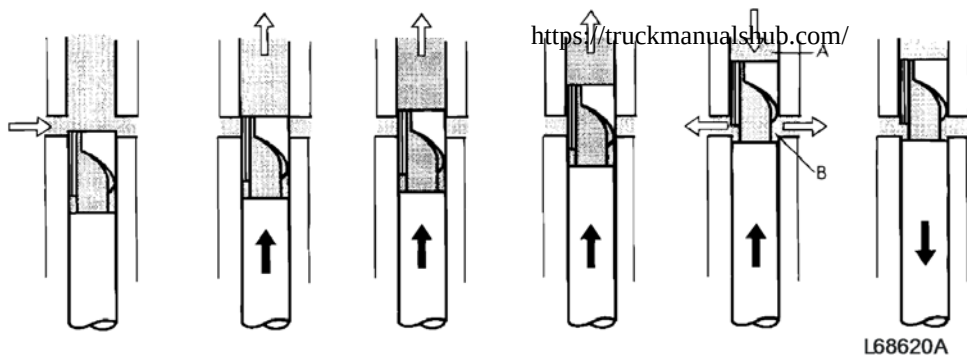


Figure 3

- A. Pressure chamber
- B. Fuel chamber

Fuel flows from the injection pump fuel chamber into the pump element's high-pressure chamber	The top of the piston closes the filling hole and the pressure starts to rise	The pressure is sufficiently high to open the delivery valve	The filling holes are opened by the control edge (overflow) and fuel feed stops	The fuel flows back to the pump's fuel chamber	The pump piston changes direction
---	---	--	---	--	-----------------------------------

Delivery valve

The delivery valve, [Invalid linktarget] point 3, is located between the pressure chamber above the pump piston and the delivery pipe. The valve has a dual function. It must break the connection between the pressure chamber and the delivery pipe as soon as the pump piston's spiral groove has exposed the relief hole and injection has finished. It must lower the pressure in the pipe after injection so that the nozzle closes quickly without letting any subsequent drops of fuel pass out, particularly under full load and high engine rpm. Otherwise, powerful pressure waves would be reflected towards the nozzle needle and cause it to open. This is also called an "echo".

Governor

On a diesel engine the air intake passages are restricted as little as possible. The system is completely separate from the fuel system.

This principle entails a risk of the engine overrevving or stopping if the load changes. The fuel supplied to the engine must therefore be controlled by a governor that senses engine speed and varies the supply of fuel accordingly.

The governor forms part of a closed system consisting of the engine, injection pump and governor. The governor must react very quickly to all changes in engine speed. At the same time the system must have sufficient stability to avoid continuous variations in rpm as the engine "hunts" above and below the correct value.

Mechanical centrifugal governors are used in these engines.

All-speed governor, RQV

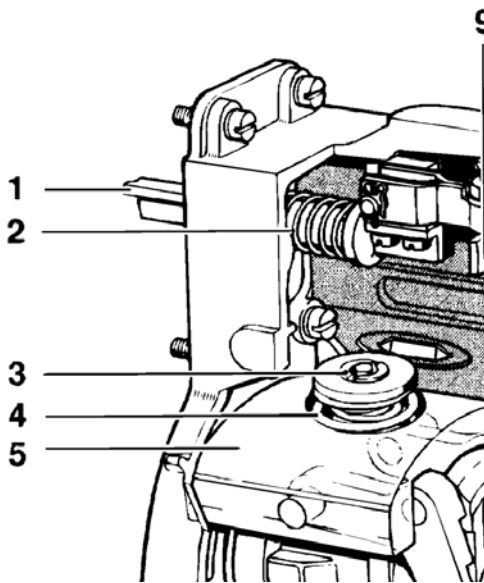


Figure 4

All-speed governor, RQV

1. Injection pump control rod
2. Clearance equalisation spring
3. Adjusting nut
4. Governor springs
5. Centrifugal weight
6. Angle arm
7. Thrust ring
8. Spring-loaded governor sleeve
9. Full-load stop
10. Link rod
11. Governor arm
12. Guide piston
13. Link arm
14. Guide plate

The regulator springs are mounted in the centrifugal weights. The weights move constantly outwards at increasing speed within the prescribed control range. Each position of the governor control arm corresponds to a definite engine speed at which governing starts. The movement of the governor control arm is transferred to the control rod over the two-piece link arm (toggle joint) and guide piston in the governor arm. The pivot point of the governor arm is adjustable in the link guide. It is also controlled by a guide plate mounted in the governor cover so that the gear ratio of the governor arm can be changed.

The governor sleeve, which is the connecting link between the centrifugal weights and the governor arm, is so designed as to be resilient to compression and extension (safety spring).

Pressure-dependent full load stop (smoke limiter) and cold starting device

On TD63 the pressure-dependent full load stop (smoke limiter) is located on top of the centrifugal governor, see [Invalid linktarget].

[Invalid linktarget] shows smoke limiter on TD73.

Smoke limiter, TD73)
A Full load amount without or with limited charge pressure
B Full load amount with full charge pressure
1 Charge pressure
2 Control rod
3 Full load stop (without or with limited charge pressure)
4 Full load stop (max. fuel amount at max. turbo pressure)

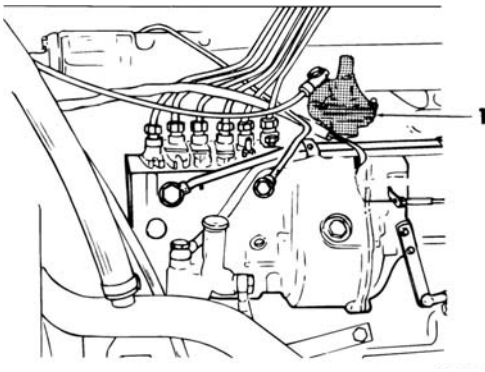


Figure 5

Engine TD63

1. smoke limiter

Pressure equaliser

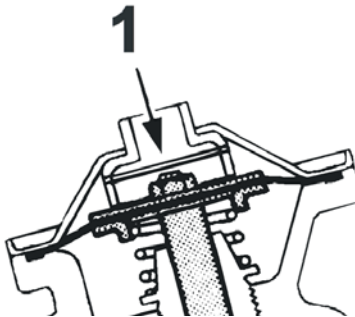


Figure 6

Smoke limiter, engine, TD73

To reduce pressure variations in the pump housing a pressure equaliser of steel diaphragm type (Roco diaphragm) is used. Those engines without a pressure equaliser have instead an overflow valve with a pressure equalising function known as a compensation overflow valve, see [Invalid linktarget].

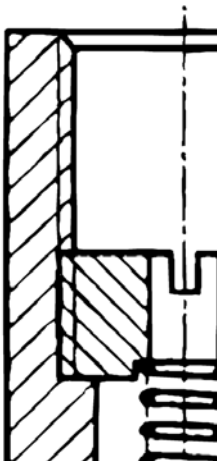


Figure 7

Compensation overflow valve

Overflow valve

The purpose of the valve is to limit feed pressure and also to ensure continuous venting of the fuel system.

A "compensation overflow valve" also has an integral pressure equalisation function.

When the valve opens the fuel passes through the return line and back to the tank.

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The overflow valve is located on the injection pump. This means that the return fuel passes through the injection pump before it flows back to the tank. The flow of fuel thus cools the fuel in the pump's fuel chamber at the same time as the temperature, and with it the viscosity, of the fuel in the fuel chamber is equalised. As a result, the amount of fuel injected into the cylinders is more evenly distributed.

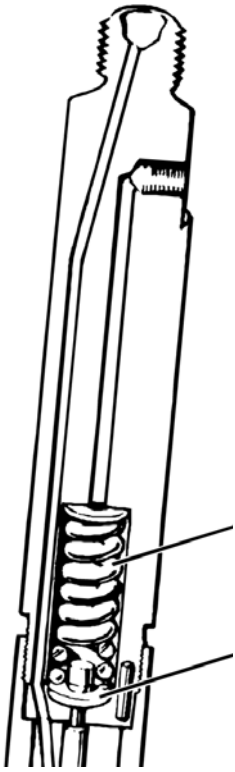


Figure 8

Injectors

1. Compression spring
2. Adjusting washers
3. Nozzle needle

Injectors

Figures in parentheses refer to [Invalid linktarget]

Each injector consists principally of a nozzle holder and a nozzle.

When fuel pressure has increased to the preset value (opening pressure) the nozzle needle (3), which is held against its seat by the compression spring (1), is lifted and atomised fuel is injected into the engine through precisely calibrated holes in the nozzle sleeve.

The tension of the compression spring determines the opening pressure of the injector. It is adjusted by adjusting washers (2).

The injectors are designed to:

- atomise the fuel to ensure ignition and combustion.
- together with the turbulence of the air, to atomise the fuel jets in the combustion chamber so that a mixture of air and fuel is obtained.

To avoid unnecessary replacement and adjustment of injectors, they should not be checked unless they display unmistakable symptoms of abnormal functioning, e.g. through:

- heavily increased exhaust smoke
- engine reluctant to start
- engine runs rough
- fuel consumption too high
- poor performance

Delivery fuel pipes

TD63 and TD73 are fitted with pressure prestressed delivery fuel pipes. Under no circumstances should the pipes be bent or re-

routed. If a pressure prestressed pipe is bent or deformed there is a high degree of probability that it will break. A damaged pipe should always be changed.

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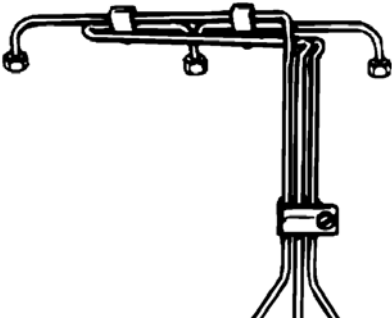


Figure 9

Delivery fuel pipes. Under no circumstances should the pipes be bent or re-routed.

When removing an injector or injection pump the complete set of pipes must be removed. Do not remove the clamps but remove the pipes three at a time. If the entire set of pipes is clamped together, remove the complete set.

Delivery fuel pipes for earlier TD61 must not be used on TD63 and delivery fuel pipes for earlier YD71 must not be used on TD73.

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Fuel filters

The fuel system is fitted with fuel filters connected in parallel with a common cover. The fuel filters are of disposable type and the filter insert consists of spirally wound paper.

Fuel level

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The function monitors the fuel level in the fuel tank and warns the operator if it is too low or if there is a system malfunction. Low fuel level is indicated on the L90D when approx. 5 litres (1.3 US gal)of fuel remain and on the L120D when approx. 7 litres (1.9 US gal) remain.

Input signals	Output function conditions	Output functions
Fuel level, SE207	Low fuel level > 10 seconds	Warning lamp
Monitoring, SE207	System malfunction, signal outside limits	Amber central warning lamp -----ERROR----- Monitoring Fuel Level

Language Code GB	Product ART/BHL/CEX/ COA/COS/CWL/ EXC/GRD/MET/ MEW/PAT/PAW/ PIP/SSL/WLO	Group 160	https://truckmanualshub.com/	No. 72	Version 1	Date 08/28/2014
Applies to Articulated Haulers, Backhoe Loaders, Compact Excavators, Asphalt Compactors, Soil Compactors, Compact Wheel Loaders, Excavators, Motor Graders, Tracked Milling Equipment, Wheeled Milling Equipment, Tracked Pavers, Wheeled Pavers, Pipelayers, Skid Steer Loaders, Wheel Loaders						

Fuel sampling, method



WARNING
Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.

Cause and action

A new test for fuel sampling has been developed.



V1101812

Figure 1
Sample kit including aluminum sample bottle

Applies to models

Valid for all product lines specified in the header of this Service bulletin.

Required parts

Designation	Qty.	New Part No.
Fuel sample kit (Europe)	As required	VOE17210950

Work instructions

Sampling technique

It is vital to take a correct sample for receiving representative result of the analysis. Irrespective if you want to take the sample from the fuel tank on the machine or a storage tank the technique is the same. Please note that on some machines there is a strainer in the filler tube that has to be removed.

Op nbr

1. Fuel sampling with vacuum pump

Use a new hose for each sampling. Cut the hose to a suitable length and connect it to the vacuum pump.

2. Install the fuel sample bottle on the vacuum pump.

3. Insert the hose in the fuel tank. Make sure that the sample is not taken from the bottom. The fuel sample should be taken slightly above the middle range of the fuel.



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V1101813

Figure 2
Example of fuel sampling

4. Draw up fuel to flush the hose.
5. Remove the sample bottle and empty it. Make sure that the fuel is taken care of in an environmentally safe way
6. Install the sample bottle on the vacuum pump and fill the sample bottle $\frac{3}{4}$ full. The sample bottle is made of aluminium and makes it a bit tricky to control the volume that is sampled.
7. Attach one label on the sample bottle and one on the submission form.

Submission form

Fill in the Submission form. It's important to fill in the submission form correctly. Fill in the top section as normal with machine data etc.

There is no prefilled fields for fuel system, please use the field Others and write in "Fuel, Sulphur".

In the comments field you should fill in where the fuel sample is taken. Fuel tank on machine, Storage tank id: xx etc.

Tick in from where the sample is sent in at the bottom and send the sample to the laboratory together with the submission form.

	Hydraulic (H)	Swing gearbox (S)	Swing gearbox 2 (G) only EC460 & EC700	Wet brakes (W)	Coolant (C), please specify:	Other, please specify: Fuel, Sulphur
Oil Changed	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Oil Brand						
Oil Hours						
Oil Grade						
	Affix label here	Affix label here	Affix label here	Affix label here	Affix label here	V0000498
Reason for sampling (Please tick)						
	☐ Routine	☐ Failure	☐ Comments: Fuel tank on machine			

V1101814

Figure 3
Example of how to fill in Submission form

<https://truckmanualshub.com/>

Op nbr 23301

1. Open the bleeder hose of the primary filter housing. Connect a hose and collect the fuel that is pumped out into a suitable container.

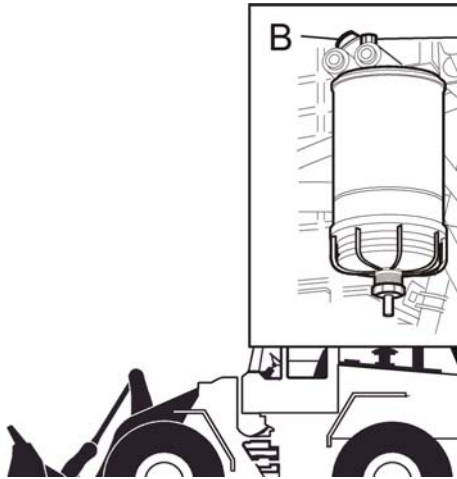


Figure 1
Primary fuel filter

- A. Bleeder screw
- B. Hand pump

2. Pump with the hand pump of the primary filter until fuel free of air bubbles flows out.
3. Remove the hose and tighten the bleeder screw.
4. Loosen the bleeder screw of the secondary filter housing. Connect a hose and collect the fuel that is pumped out in a suitable container.

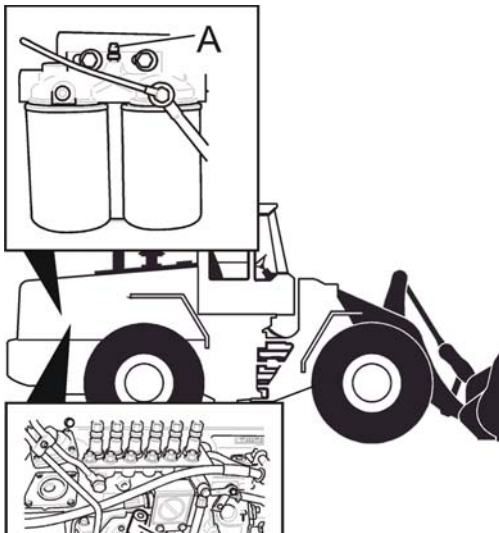


Figure 2
Secondary fuel filter

- A. Bleeder screw, filter head
- B. Hand pump, feed pump

5. Pump with the hand pump until fuel free of air bubbles flows out.

6. Remove the hose and tighten the bleeder screw.
<https://truckmanualshub.com/>
7. Start the engine and check to make sure that there are no leaks.

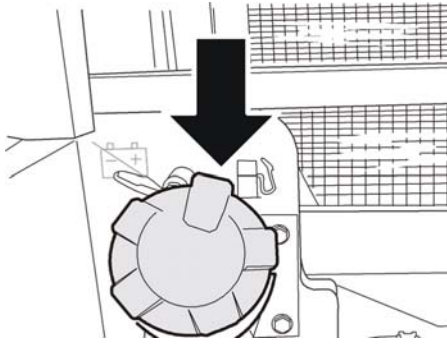


Figure 1
Refuelling

Fuel tank

Clean fuel is essential for trouble-free operation of the diesel engine.

- Thoroughly clean the area round the fuel tank filler cap before removing it.
- Avoid spillage when refuelling - spilt fuel collects dirt and could constitute a fire hazard if it gets onto hot surfaces.
- Keep the fuel tank full in wintertime to counteract the formation of condensate.
- If necessary, remove the plug in the bottom of the fuel tank and drain off any sludge that might be present.

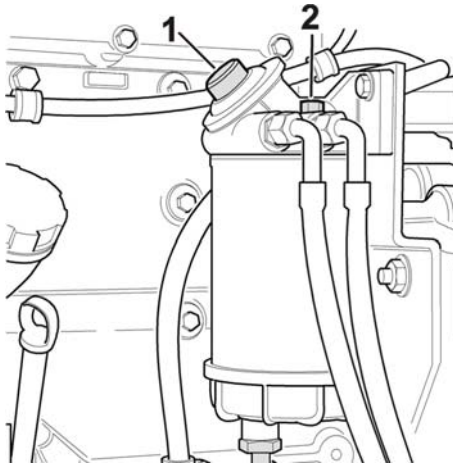


Figure 2
Air filter

1. hand pump
2. bleed screw
3. drain nipple

Fuel filters

Change the fuel filters every 1000 hours.

The fuel filters consist of a primary fuel filter integrated with the water trap and two secondary fuel filters.

The primary fuel filter and water trap are integrated into a single unit and located inside the engine cover on the left-hand side of the machine. Mounted on the filter head is a separate built-in feed pump that is used for bleeding the system and draining off water. The primary filter acts as a prefilter for the feed pump.

The two secondary fuel filters are located inside the engine cover on the right-hand side of the machine.

When fitting the filters they should be tightened by hand only. The filter insert should be changed by service personnel at an authorised workshop.

The path taken by the fuel as it leaves the fuel tank is as follows:

tank - primary fuel filter with water trap - feed pump on injection pump - secondary fuel filter - injection pump - engine.

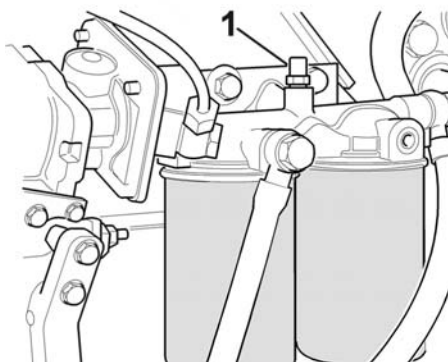


Figure 3
Secondary fuel filter

1. bleed screw

Fuel system, air bleeding

The large volume of air in the water trap precludes filling and bleeding via the regular feed pump.

Filling and bleeding must be carried out in two stages, as follows:

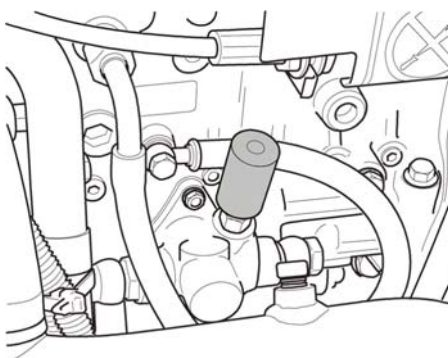


Figure 4
Hand pump

1. Fill up with fuel.
2. Open the bleed screw on the primary filter head.
3. Pump with the hand pump on the primary filter head until the fuel flowing out is free from air bubbles.
4. Close the bleed screw.
5. Open the bleed screw on the secondary fuel filter head.
6. Pump with the feed pump on the injection pump until the fuel flowing out is free from air bubbles.
7. Close the bleed screw.

After starting, check that no leakage occurs.

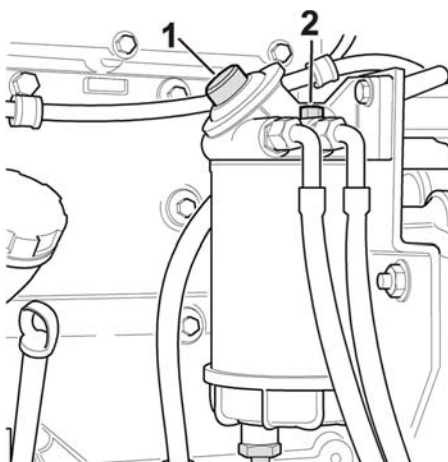


Figure 5
Primary fuel filter/water trap

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1. hand pump
2. bleed screw
3. drain nipple

Fuel system, water trap

Drain the water trap every 250 hours.

Draining off water from the fuel must be done by hand.

A non-return valve in the filter head prevents the fuel from running back to the tank. Since no fuel can run back, the pressure will remain and prevent the water from being drained unless fresh fuel is pumped in.

Proceed as follows:

1. fit a hose on the drain nipple.
2. undo the drain nut
3. pump with the hand pump on the primary filter head until all the water has been pumped out of the water trap.

Tighten the drain nut and remove the hose.

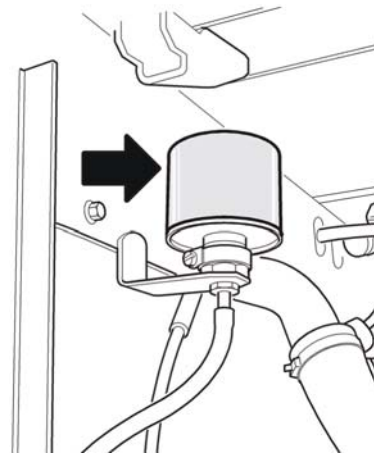


Figure 6
Breather filter

Fuel system, breather filter

Change the filter every 2000 hours.

The filter is located behind the access cover on the top surface of the engine cover.

Function

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Charging, brake in resting position

When the engine is started, the oil flows from the pump (1) into the brake valve through connection P.

The oil flow from the pump is greater than what the restriction (2) lets through. This causes the piston (3) in the control valve to open and oil flows to the servo system through the connection marked N.

All oil to the brake system flows through the restriction (2). If the system pressure is below 12 MPa (1740 psi), the unloading valve spool (4) will be in its upper position. Oil flows to the unloading spool through the channel (5), and from there, the oil is directed to the control valve and in at the back of the piston (3). The oil is also directed through the channel in the unloading valve spool to the space above the unloading spool.

From the restriction (2), the oil also flows across the non-return valve (6). The oil is directed through the channel (7) to the parking brake circuit. The non-return valve (9) lets oil flow to the accumulator (11) at the connection marked S1 and through a channel to the spool (13) in the foot brake valve.

The non-return valve (10) lets oil flow to the accumulator (12) at the connection marked S2 and through a channel to the spool (14) in the foot brake valve.

When the pressure has increased to the pre-charge pressure, approx. 5 MPa (725 psi), the nitrogen gas will be compressed and the accumulators will fill with oil during the increase in the system pressure.

During the charging phase, there is equal pressure on both sides of the piston (15). The system pressure acts directly on the unloading valve spool (4) and works against the spring (16).

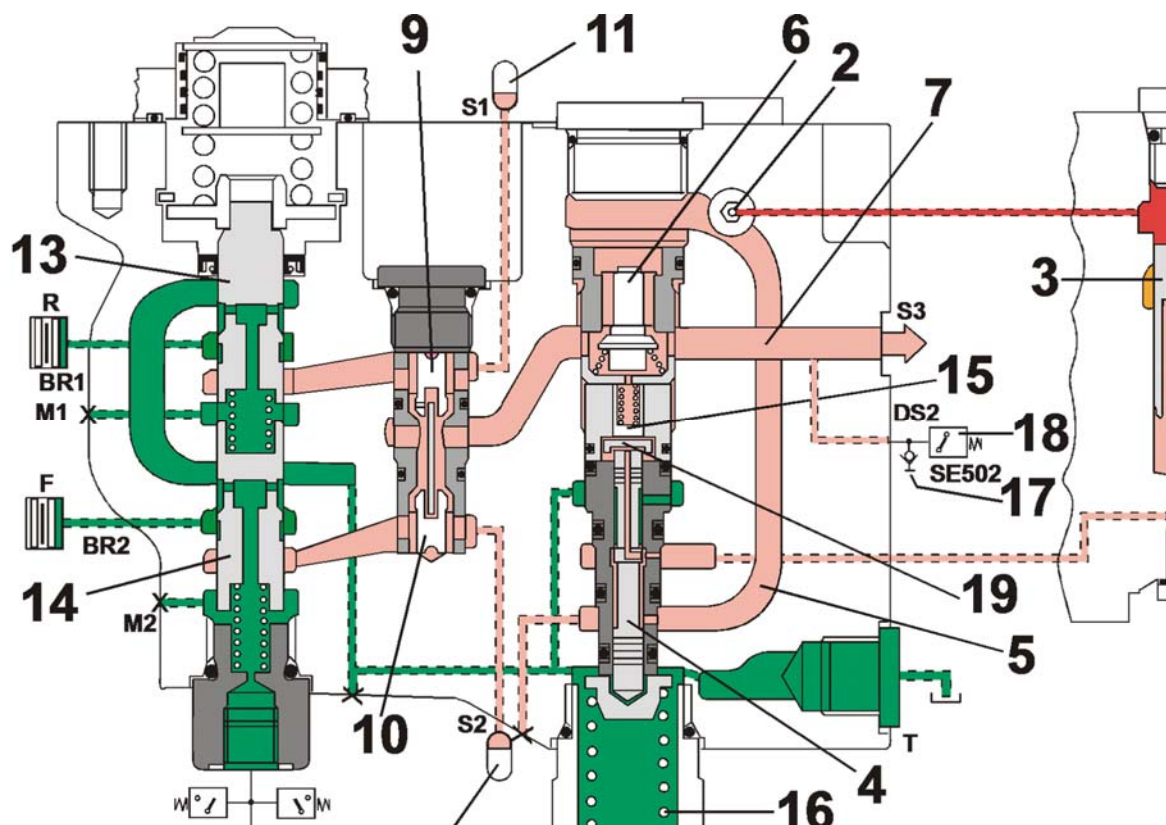


Figure 1
Charging

- | | |
|----|--|
| 1 | Brake and servo pump |
| 2 | Restriction (behind plug) |
| 3 | Piston |
| 4 | Unloading spool |
| 5 | Channel |
| 6 | Non-return valve |
| 7 | Channel |
| 9 | Non-return valve |
| 10 | Non-return valve |
| 11 | Accumulator, rear circuit (L120D)/front circuit (L90D) |
| 12 | Accumulator, front circuit (L120D)/rear circuit (L90D) |
| 13 | Spool, rear circuit (L120D)/front circuit (L90D) |

- 14 Spool, front circuit (L120D)/rear circuit (L90D) <https://truckmanualshub.com/>
- 15 Piston
- 16 Spring
- 17 Pressure check connection
- 18 Pressure sensor, low system pressure
- 19 Stroke limiter
- A To hydraulic parking brake (optional equipment L90D, standard equipment L120D)
- N To servo system

- Orange = Servo pressure
- Pink = pressure during charging
- Red = System pressure
- Green = Return pressure

Unloading, brake in resting position

When the accumulators (one for each brake circuit and one for the parking brake) are being filled with oil, the system pressure increases towards max. pressure 15.5 MPa (2248 psi). The oil pressing on the unloading valve (4) overcomes the spring force (16) and the spool is pushed down. A return connection to the tank is then created for the space above the unloading valve spool (4). The spool will be kept in the lower position by the system pressure acting on the piston (15). The active area of the piston is slightly larger than the corresponding area on the spool. A return connection to the tank is also created for the space behind the piston (3) in the control valve. The pressure required to keep the valve open is reduced. This results in the closing of the non-return valve (6) by the system pressure.

All oil flow from the pump (1), in this position, passes the piston (3) and flows to the servo system.

When the brakes are activated and the accumulated pressure drops to approx. 12 MPa (1740 psi), the unloading spool (4) will be pushed up by the spring force.

The return connection to the tank through the unloading spool (4) closes and the oil will be directed to the underside of the piston (3) in the control valve. This results in a pressure increase on top of the piston and the pump flow will supply the brake system through the non-return valve (6). The difference between the unloading (cut-out) pressure and the charging (cut-in) pressure is determined by the area difference on the piston (15) and the unloading spool (4).

Brake in resting position (not activated)

When the foot brake valve is not activated, the return springs (19 and 20) push up the spools (13 and 14).

The pressure channels (21 and 22) are then closed and the brake connections marked B1 and B2 are, through channels in the valve housing, connected to tank from the connection marked T, see [Invalid linktarget] .

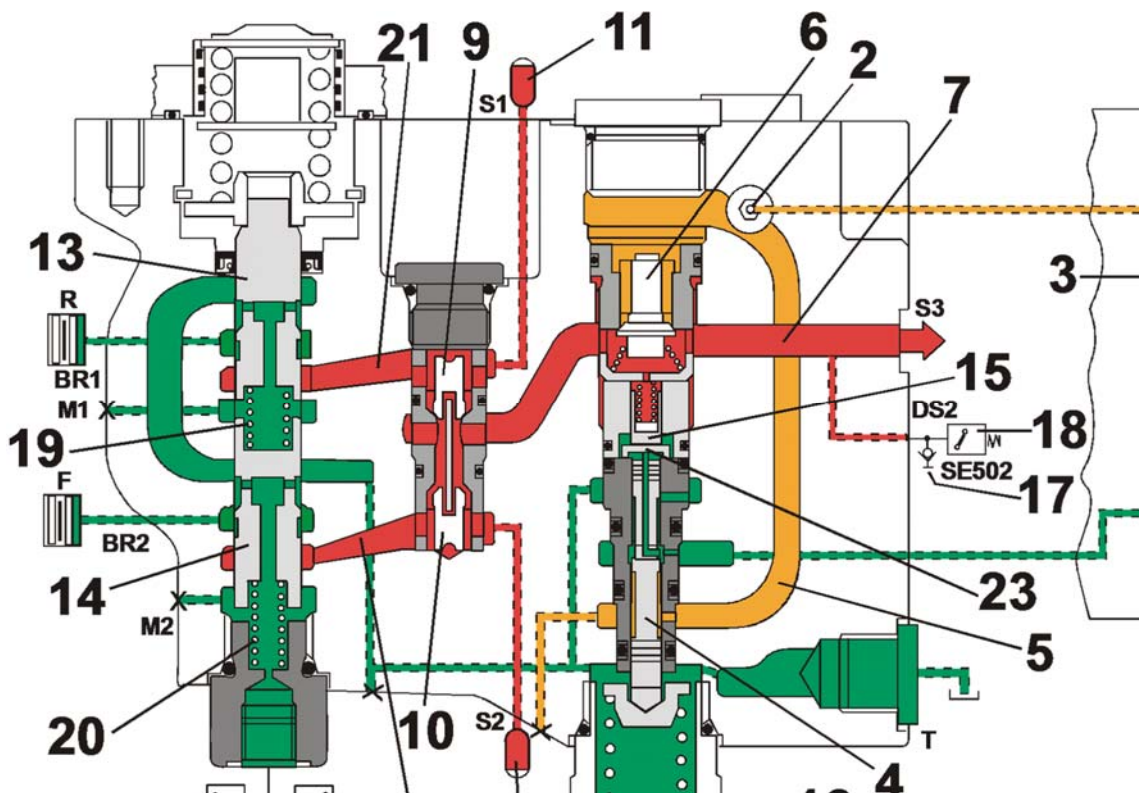


Figure 2

- 1 Brake and servo pump
- 2 Restriction (behind plug)
- 3 Piston
- 4 Unloading spool
- 5 Channel
- 6 Non-return valve
- 7 Channel
- 9 Non-return valve
- 10 Non-return valve
- 11 Accumulator, rear circuit (L120D)/front circuit (L90D)
- 12 Accumulator, front circuit (L120D)/rear circuit (L90D)
- 13 Spool, rear circuit (L120D)/front circuit (L90D)
- 14 Spool, front circuit (L120D)/rear circuit (L90D)
- 15 Piston
- 16 Spring
- 17 Pressure check connection
- 18 Pressure sensor, low system pressure
- 19 Return spring, rear circuit (L120D)/front circuit (L90D)
- 20 Return spring, front circuit (L120D)/rear circuit (L90D)
- 21 Pressure channel, rear circuit (L120D)/front circuit (L90D)
- 22 Pressure channel, front circuit (L120D)/rear circuit (L90D)
- 23 Stroke limiter
- N To servo system

- Orange = Servo pressure
 Red = System pressure
 Green = Return pressure

Partial brake application

If the brake pedal is depressed slightly, pressure will be exerted on the spring (23). The spools (13 and 14) will then be pushed down, closing the tank connection for the brakes, and oil from the pressure channels (21 and 22) can flow to the brakes through the connections marked B1 and B2. The brakes are thus applied and the pressure increases in connections B1 and B2. When this pressure corresponds to the force that the pedal exerts on the spring (23), it helps the return spring (19) to push up the spool (13) and the spring (20) to push up the spool (14). In this way, the oil flow to the brakes is closed and a braking force, corresponding to the brake pedal depression, is obtained.

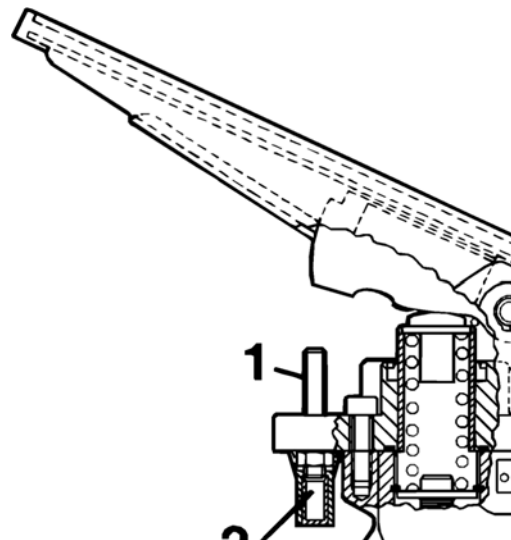


Figure 3

1. Adjusting screw for output brake pressure <https://truckmanualshub.com/>
2. Security seal

Full brake application

The downward movement of the brake pedal is limited by the adjusting screw for the foot brake pedal, see Fig. 6. When the pedal is pressed down to its end position, the valve still assumes a partial brake position and the pressure to the brakes is restricted to approx. 8 MPa (1160 psi).

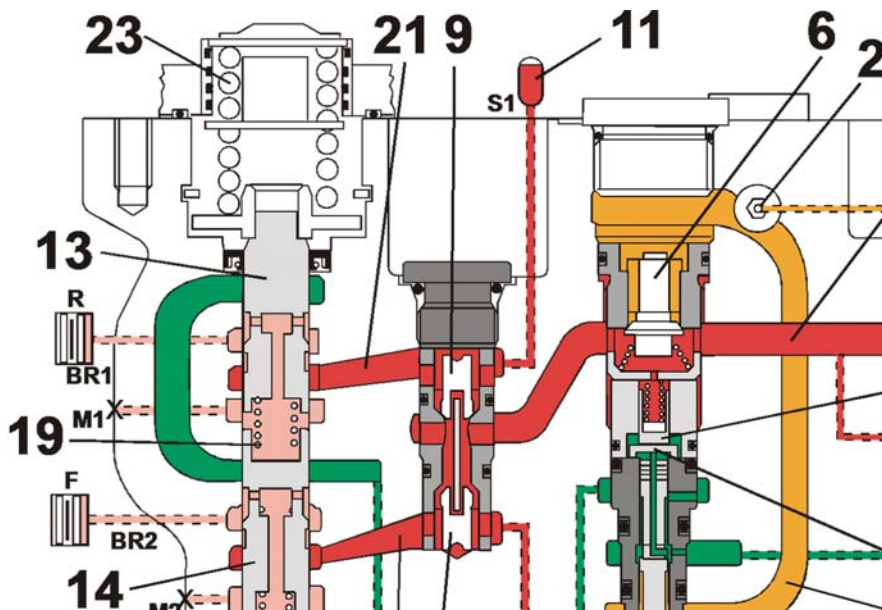


Figure 4
Partial brake application

- 1 Brake and servo pump
- 2 Restriction
- 3 Piston
- 4 Unloading spool
- 5 Channel
- 6 Non-return valve
- 7 Channel
- 9 Non-return valve
- 10 Non-return valve
- 11 Accumulator, front circuit (L90D), rear circuit (L120D)
- 12 Accumulator, rear circuit (L90D), front circuit (L120D)
- 13 Spool, front circuit (L90D), rear circuit (L120D)
- 14 Spool, rear circuit (L90D), front circuit (L120D)
- 15 Piston
- 16 Spring
- 17 Pressure check connection
- 18 Pressure sensor, low system pressure
- 19 Return spring, front circuit (L90D), rear circuit (L120D)
- 20 Return spring, rear circuit (L90D), front circuit (L120D)
- 21 Pressure channel, front circuit (L90D), rear circuit (L120D)
- 22 Pressure channel, rear circuit (L90D), front circuit (L120D)
- 23 Spring
- 24 Pressure check connection
- 25 Pressure sensor, transmission disengagement
- 26 Pressure sensor, brake light
- 27 Stroke limiter

Orange = Servo pressure
Pink = Partial pressure
Red = System pressure
Green = Return pressure

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Function

<https://truckmanualshub.com/>

Engaging, operating and disengaging

In order to engage CDC lever steering, the armrest must first be lowered, which causes switch SW407 to close. Check to make sure that the primary gear selector is in neutral and, at the same time, turn the handle to 4 (automatic).

Now, engage lever steering with switch SW408 on the armrest. The indicator light on the centre instrument panel should light up.

Move the steering lever to the desired steering position. The steering speed will increase proportionally according to the lever stroke. Move the lever distinctly toward the neutral position when the steering movement is to be interrupted.

Select forward, neutral and reverse gear with switch SW409. The Kick-down function is engaged with switch SW410 on the side of the armrest.

CDC lever steering can be disengaged by lifting up the armrest or by moving the primary gear selector to the forward or reverse position.

In order to engage lever steering again, switch SW408 must be pressed.

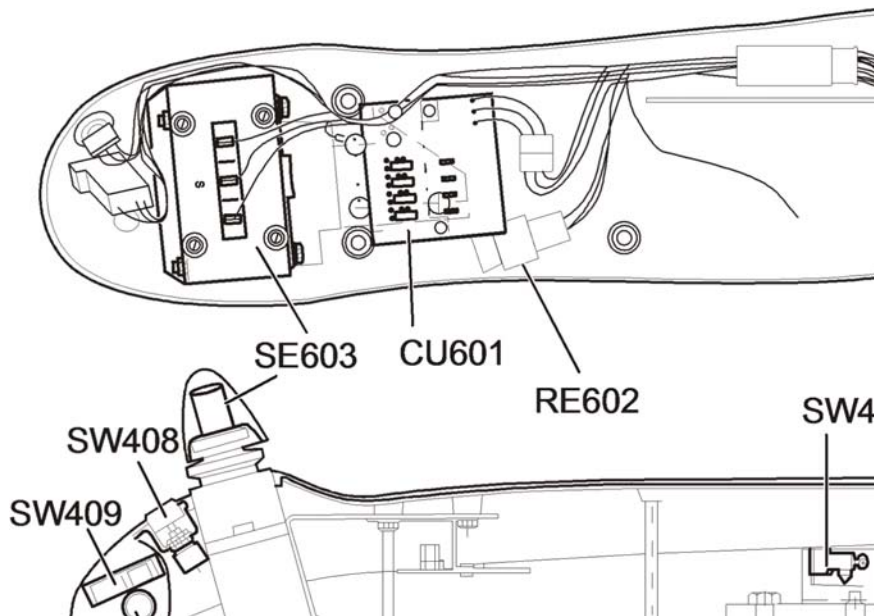


Figure 1

SE603	Steering lever
SW408	Activation, CDC
SW409	Shifting, forward/reverse
SW410	Kick-down
SW407	Activation, CDC in armrest
CU601	Electronic unit

Electronic unit CU601

Power for the equipment is supplied by FU30 and via relay RE602 which is controlled by the V-ECU. Before lever steering can be engaged the engine must be running and machine travel speed must be below 5 km/h (3.1 mph). In addition, the primary gear selector must be in the N position. With the armrest lowered (SW407 closed), lever steering can be activated with SW408 if the above-mentioned conditions are fulfilled. RE602 is then supplied with current via the V-ECU.

RE602 supplies current to switch SW410 for kickdown, CDC valve MA601 and electronic unit CU601. By means of lever steering SE603 the CDC valve, and consequently steering speed, can subsequently be modulated in proportion to lever deflection.

More agreeable steering can be obtained by means of electronic unit CU601 in that the signal to the CDC valve is damped. This means that the output current from the CDC valve builds up slowly even if the steering lever is moved rapidly from neutral to full lock or vice versa.

Shifting, forward or reverse

Shifting, forward or reverse, takes place by means of switch SW409. In the case of dual command (see wiring diagram 9), SW409 has priority over SW404 and the F/R switch by the control lever carrier cannot then be used when CDC is activated.

Kick-down

Kickdown can be selected either by SW401C (primary gear selector), SW405 (by the control lever carrier) or by SW410 on the armrest. SW410 can only be used when CDC is activated. <https://truckmanualshub.com/>

If the armrest is raised or if primary gear selector SW401 is actuated (F or R), SW407 opens and lever steering is disengaged. To engage lever steering again SW 408 must be re-activated. The armrest must then still be in the lowered position and the primary gear selector in the N position.

Gear selector valve, description <https://truckmanualshub.com/>

The gear selector valve has two different types of spools, where the N/D spool are different from the rest.

NOTE!

The spools can be turned the wrong way (not the N/D spool). The spools must be turned with the shorter end towards the solenoid.

When the solenoid is not activated, the valve spool control side has a connection to the tank via the solenoid (connection 2 – 3). The return spring, located on the opposite side, presses the valve spool against the solenoid.

When the solenoid is activated, the solenoid core closes connection 3 to tank, the connection from the pump to the valve spool opens (connection 1 – 2), and the valve spool is pressed over to the opposite side.

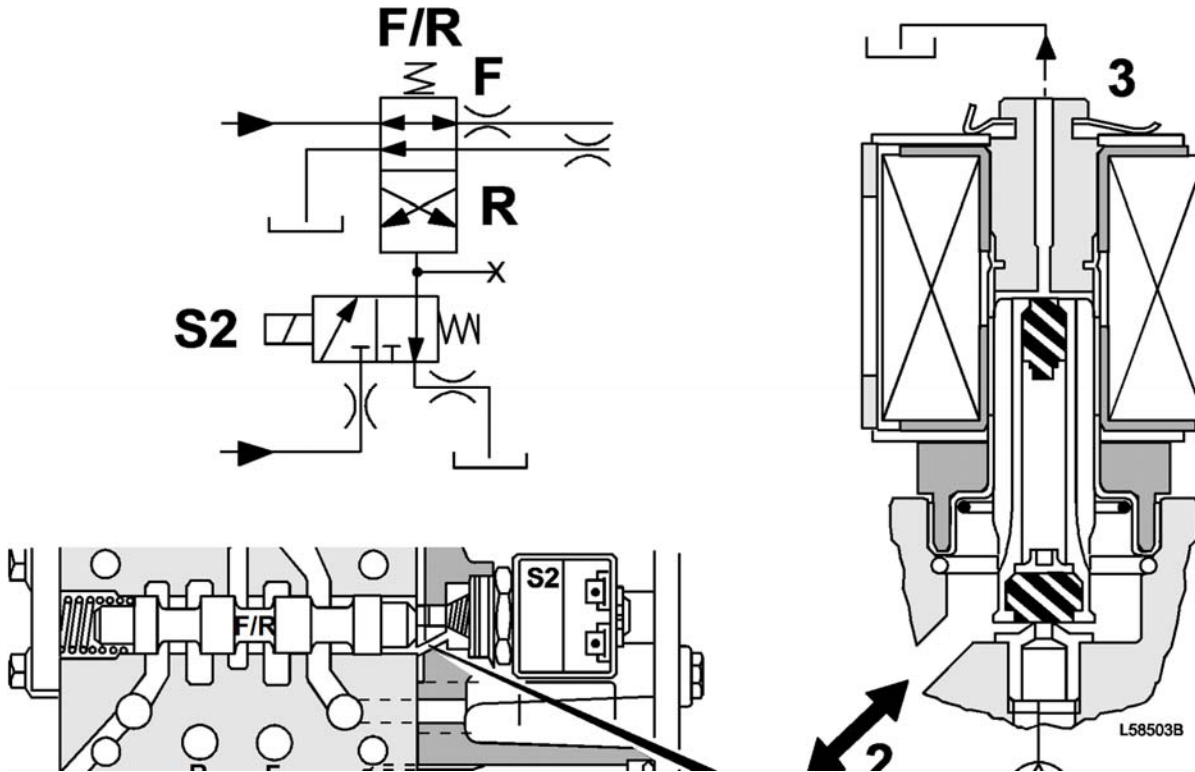


Figure 1

1. Pressure connection from transmission pump
2. Connection to valve spool
3. Return to tank

Gearshifting diagram

The gearshifting diagram shows the solenoids that are activated when respective gear is engaged. For example: When 1F is engaged, S1, S3 and S4 are activated.

VÄXEL GEAR	SPOLE/COIL				
	S1	S2	S3	S4	S5
1F	●		●	●	
2F	●		●		
3F	●				
4F	●				●
N					
1B	●	●	●	●	
2B	●	●	●		
3B	●	●			
4B	●	●			●

L58614A

Figure 2
Gearshifting diagram

Solenoid

Activated

Not activated

S1	Drive	Neutral
S2	Reverse	Forward
S3	Low (1st - 2nd)	High (3rd - 4th)
S4	1st	2nd
S5	4th	3rd

Gear selector

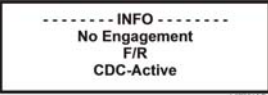
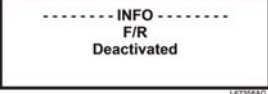
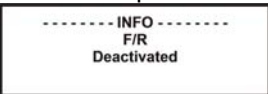
<https://truckmanualshub.com/>

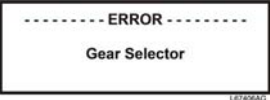
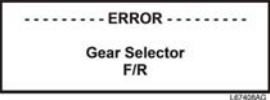
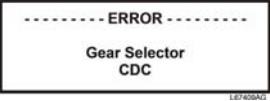
The purpose of the function is to coordinate the three gear selectors for travel direction and inform the operator which control is active or if there is a system malfunction.

- The three gear selectors for travel direction (**Forward/Reverse**) are located on the steering column, lever console and armrest lever steering (CDC).
- To coordinate the three steering column, lever console and lever steering (CDC) kickdown controls.

The function allows shifting **Forward/Reverse** to be performed with the steering column, lever console or armrest gear selector, depending on which control is active. Activation of **kickdown** can be effected with any of the three kickdown controls. In order to obtain kickdown with the armrest control, the armrest must be lowered and lever steering activated.

Gear selector priority means that if a gear selector with higher priority than the active gear selector is activated, the gear selector having a lower priority will be deactivated.

Input signals	Output function conditions	Output functions
○ Gear selector, steering column, SW401B ○ Gear selector, lever steering, SW409 ○ Gear selector, lever console, SW404 ○ Activation of lever console, SW403 ○ Activation of lever steering, SW408 ○ Kickdown steering column, SW401C ○ Kickdown lever console, SW405 ○ Kickdown lever steering, SW410 ○ Armrest, SW407 ○ Engine On/Off ○ Travel speed	Activation of lever console (F/R): ○ Gear selector, steering column in position N ○ Gear selector, lever steering in position N ○ Travel speed < 5 km/h (3.1 mph) (Off) ○ Engine On ○ Armrest in position Off (raised) ○ Gear selector F/R lever console in position N ○ Control activation F/R lever console in position On	○ Activation gear selector lever console ○ Operating display: Active gear selector F/R
	Attempt to activate lever console (F/R) when lever steering (CDC) is active: ○ Control activation F/R lever console in position On	○ Gear selector lever steering remains active 
	Deactivation of lever console (F/R) takes place if any of the following functions are activated: ○ Gear selector steering column in position F or R ○ Engine Off and travel speed < 5 km/h (3.1 mph) (Off) ○ Armrest lowered and lever steering activation control in On position (see Activation of lever steering when lever console (F/R) is active)	○ Deactivation gear selector lever console ○ Activation of gear selector steering column 
	Activation of lever steering (CDC): ○ Gear selector, steering column in position N ○ Gear selector, lever steering in position N ○ Travel speed < 5 km/h (3.1 mph) (Off) ○ Engine On ○ Armrest lowered ○ Control activation lever steering in position On	○ Activation gear selector lever steering ○ Control lamp lever steering ○ Operating display: Active gear selector control CDC
	Activation of lever steering when lever console (F/R) is active: ○ Gear selector, steering column in position N ○ Gear selector, lever steering in position N ○ Travel speed < 5 km/h (3.1 mph) (Off) ○ Engine On ○ Armrest lowered ○ Control activation lever steering in position On	○ Deactivation of gear selector lever console ○ Activation gear selector lever steering ○ Control lamp lever steering 

		Deactivation of lever steering takes place if any of the following functions are activated: ○ Gear selector steering column in position F or R ○ Armrest raised ○ Engine speed < 50 rpm and travel speed < 5 km/h (3.1 mph)	○ Deactivation of gear selector lever steering ○ Activation gear selector steering column
		Activation of Kickdown if any of the following functions are activated: ○ Steering column kickdown control ○ Lever console kickdown control ○ Lever steering kickdown control (if lever steering is installed)	○ Request for Kickdown, See [Invalid linktarget]
○ Monitoring, SW401B	○ System malfunction, incorrect signal combination	○ Amber central warning lamp 	
○ Monitoring, SW404	○ System malfunction, simultaneous F and R signals	○ Amber central warning lamp 	
○ Monitoring, SW409	○ System malfunction, simultaneous F and R signals	○ Amber central warning lamp 	

Gearshifting solenoids

<https://truckmanualshub.com/>

The shifting solenoids are controlled in accordance with the shifting program for gear engagement. In the event of system malfunction, the operator is informed.

Input signals	Output function conditions	Output functions
Selected gear from V-ECU	Gearshifting solenoids S1-S5 are controlled according to the shifting program	F gear R gear 1st gear 2nd gear 3rd gear 4th gear
Monitoring S1-S5	System malfunction, open circuit or short circuit S1-S5	Amber central warning lamp -----ERROR----- Gear Shifting Solenoids

General

<https://truckmanualshub.com/>

The machine is an articulated four-wheel drive wheel loader.

The engine is a six-cylinder, four-stroke, direct injection, turbocharged diesel engine with the designations TD63KBE (for the L90D) and TD73KDE (for the L120D).

Hydraulic transmissions HT131 for the L90D and HT 205 for the L120D are hydromechanical and of the Power Shift type where all gear wheels are in constant mesh.

There is a single-stage hydraulic torque converter between engine and transmission.

The front and rear axles are fully floating drive axles with planetary gears in the hubs. The front axle is equipped with a dog-clutch type differential lock.

The service brake is of wet disc type, built together with each hub's planetary gear. The parking brake on the L90D is of type dry disc type and located externally on the hydraulic transmission output shaft. The parking brake on the L120D is of wet disc type and is located internally on the hydraulic transmission output shaft.

The steering system is hydrostatic with a variable displacement axial piston pump and two hydraulic cylinders (steering cylinders).

More detailed descriptions of functions and components are available in respective sections.

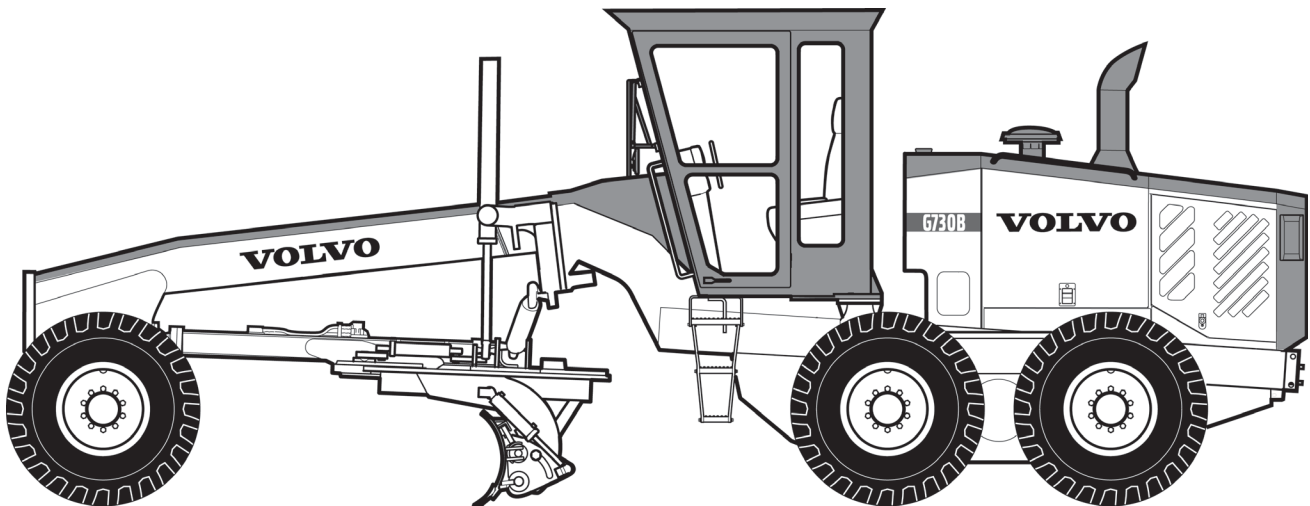


Figure 1

LABOUR TIME GUIDE

G700B

SERIAL NO. 35000 –



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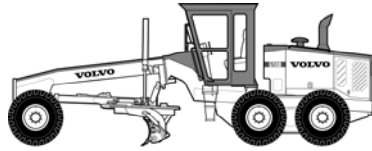
160 Maitland Road,
Goderich, Ontario, Canada N7A 3Y6
Tel: 519-524-2601 • Fax: 519-524-3021
www.volvograders.com

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Labour Time Guide

Foreword, Labour Time Guide

The Labour Time Guide sets the standard times for repairs of current Volvo Motor Graders G700B models S/N 35000 and up.

The standard times are issued for the purpose of:

- Planning and preparation of work in the workshop
- Estimations of repair work
- Invoicing customers for completed work
- Basis for completed warranty work

The standard times are based on the time required by the service technician to carry out a particular job, provided that all needed and recommended equipment, tools, parts and material are available. An allowance of 20% is included in every operation, in order to cover normal interruptions.

The following is not included in the listed times:

- Additional time because of rusted or sheared bolts
- Cleaning before work
- Procuring parts, materials and tools
- Work which is more difficult because of optional equipment
- Diagnostic or fault tracing time

The operations and times are listed per machine according to Volvo Construction Equipment Functional Group system, 0-9. Each repair job is designated by a title and a classification code:

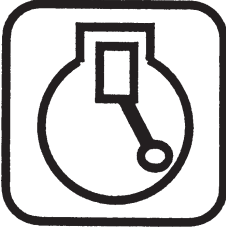
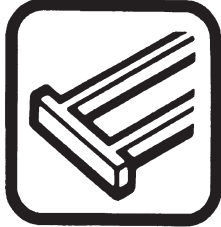
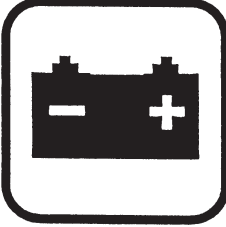
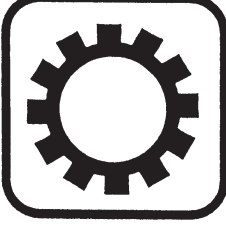
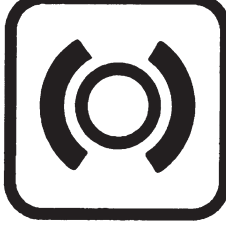
- 1 = Replaced
- 2 = Repaired
- 3 = Overhauled
- 4 = Adjusted

During the continuous follow up and development of methods and equipment, times may change and times will be added. **Information about changes or new times will be issued as they occur.**

The Labour Time Guide is intended for internal use of Volvo Construction Equipment authorized distributors and must not be distributed outside the organization without written permission from Volvo Construction Equipment Customer Support.

LABOUR TIME GUIDE

G700B

 100 Standard parts and service	600 Steering 
 200 Engine	700 Frame and wheels 
 300 Electrical	800 Cab 
 400 Power transmission	900 Hydraulics, attachments and grading unit 
 500 Brakes	

**Revised Labor Time Guide for Models G700B.
3-Aug**

Function	Repair #	GROUP 0 GENERAL Repair Description	Repair Code / Allowance			
			1	2	3	4
00		DESCRIPTION, COMPLETE MACHINE				
	O10	General	/	/	/	/
02		TABLES FOR DESIGNING				
	O20	General	/	/	/	/
03		SPECIFICATIONS				
	O30	General	/	/	/	/
05		TRANSPORT, STORAGE AND OPERATING INSTRUCTIONS				
	O50	General	/	/	/	/
07		STANDARD TIME				
	O70	General	/	/	/	/
08		TOOLS				
	O80	General	/	/	/	/
09		MISCELLANEOUS				
	O90	General	/	/	/	/
	O91	Service Instruction; Safety Instruction G710B - 780B	/	/	/	/
	O92	Design Document; Manufacturing Document G710B - 780B	/	/	/	/

Classification of Codes

1 = Replaced	3 = Overhauled
2 = Repaired	4 = Adjusted

GROUP 1 STANDARD PARTS SERVICE						
Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
11		STANDARD PARTS				
	110	General	/	/	/	/
16		LUBRICANT; FUEL; OTHER FLUIDS.				
	160	General	/	/	/	/
17		SERVICE				
	170	General	/	/	/	/
	171	Pre-Delivery Inspections; Delivery Service G710B - 780B	/	/	/	/
	172	Warranty Service G710B - 780B	/	/	/	/
	173	Maintenance G710B - 780B	/	/	/	/
	176	Emergency Measures G710B - 780B	/	/	/	/
	179	Miscellaneous G710B - 780B	/	/	/	/

Classification of Codes

1 = Replaced	3 = Overhauled
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GROUP 2 ENGINE WITH MOUNTING AND EQUIPMENT						
Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
20		GENERAL				
	200	General, engine installation and it function G710B - G780B	/	/	/	/
21		ENGINE				
	210	General, common info about 211 - 218 G710B - G780B				
	21002	Compression test; engine at operating temperature	/	1.75	/	/
	21070	Engine; removing	/	/	8	/
	21071	Engine removed; general overhaul	/	/	40	1.5
	21072	Engine; replacing	/	/	8	/
	211	Cylinder Head G710B - G730B				
	2111	Cylinder head c/w valve cover/ gaskets	8	/	2	1.5
	2112	Gasket; cylinder head c/w cleaning.	/	10	/	/
	2115	Cover; valve cover.	2	/	/	0.5
	2116	Gasket; valve cover.	1	/	/	/
	211	Cylinder Head G740B - G780B				
	2111	Cylinder head c/w valve cover/ gaskets	8.5	/	2	1.5
	2112	Gasket; cylinder head c/w cleaning.	/	10	/	/
	2115	Cover; valve cover. (1 only)	0.5	/	/	0.5
	2116	Gasket; valve cover. (1 only)	0.5	/	/	/
	212	Cylinder Block c/w Crankcase Ventilation G710B - G730B				
	2121	Block; cylinder block stripped bare.	8	/	10	/
	2122	Block; cylinder block build up c/w all related parts.	8	2	10	/
	2123	Tube; crankcase ventilation.	1	0.5	/	0.5
	2124	Cover; crankcase ventilation.	1	0.5	0.5	/
	212	Cylinder Block c/w Crankcase Ventilation G740B - G780B				
	2121	Block; cylinder block stripped bare.	10	/	8	/
	2122	Block; cylinder block build up c/w all related parts.	10	2	8	/
	2123	Tube; crankcase ventilation.	0.75	0.5	/	0.5
	2124	Cover; crankcase ventilation.	0.75	0.5	0.5	/

Classification of Codes

1 = Replaced

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GROUP 2 ENGINE WITH MOUNTING AND EQUIPMENT						
Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
21		ENGINE				
		Continued				
	213	Cylinder Liner; Pistons				
		G710B - G730B				
	213	Liner; c/w sealing rings and piston. (1 only)	2.5	1	1.5	/
	213	Liner; piston liner only no piston. (1 only).	2	/	2	0.5
	213	Piston; c/w rings and bearings. (1only).	2	1	2	0.5
	213	Piston; only replace. (1 only).	2	/	2	0.5
	213	Bearing; connecting rod. (1 only).	0.5	/	/	/
	213	Cylinder Liner; Pistons				
		G740B - G780B				
	213	Liner; c/w sealing rings and piston. (1 only)	3	1	1.5	/
	213	Liner; piston liner only no piston. (1 only).	2.5	/	2	0.5
	213	Piston; c/w rings and bearings. (1only).	2.5	1	2	0.5
	213	Piston; only replace. (1 only).	2	/	2	0.5
	213	Bearing; connecting rod. (1 only).	0.5	/	/	/
	214	Valve Mechanism				
		G710B - G730B				
	2141	Valve; Intake c/w seating process. (1 only).	0.5	0.5	1.5	/
	2142	Valve; Exhaust c/w seating process. (1 only).	0.5	0.5	1.5	/
	2143	Guide; Valve Stem c/w seals. (1 only).	1	0.5	/	0.5
	2144	Spring; Valve Spring c/w keepers. (1 only).	0.5	0.5	/	/
	2145	Arm; Rocker arm c/w locks and keepers. (1 only).	1	0.5	1.5	/
	2146	Shaft; Rocker Arm c/w mounting hardware. (1 only).	2.5	1	1	0.5
	2147	Lifter; Valve c/w seals and locks. (1 only).	0.5	0.5	1	/
	2148	Rod; Push rod c/w locks. (1 only).	0.5	0.5	0.5	0.5
	2149	Miscellaneous.	/	/	/	/
	214	Valve Mechanism				
		G740B - G780B				
	2141	Valve; Intake c/w seating process. (1 only).	0.75	0.5	1.5	/
	2142	Valve; Exhaust c/w seating process. (1 only).	0.75	0.5	1.5	/
	2143	Guide; Valve Stem c/w seals. (1 only).	1.5	0.5	/	0.5
	2144	Spring; Valve Spring c/w keepers. (1 only).	0.75	0.5	/	/
	2145	Arm; Rocker arm c/w locks and keepers. (1 only).	1.5	0.5	1.5	/
	2146	Shaft; Rocker Arm c/w mounting hardware. (1 only).	3	1	1	0.5
	2147	Lifter; Valve c/w seals and locks. (1 only).	0.75	0.5	1	/
	2148	Rod; Push rod c/w locks. (1 only).	0.75	0.5	0.5	0.5
	2149	Miscellaneous.	/	/	/	/

Classification of Codes

1 = Replaced

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GROUP 2 ENGINE WITH MOUNTING AND EQUIPMENT						
Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
21		Engine Continued				
	215	Engine transmission; camshaft G710B - G730B				
2151	2151	Case; Transmission case c/w mounting hardware.	4.5	2	2.5	0.5
	2152	Gasket; transmission case.	1.5	0.5	/	/
	2153	Gears; transmission geartrain. (1 only).	2	1	1.5	/
	2154	Shaft; camshaft c/w seals and locks Valve train removed.	2	1	2	1
	2154	Shaft; camshaft c/w seals, locks inframe no valves removed.	6	2	2	1
		G740B - G780B				
2151	2151	Case; Transmission case c/w mounting hardware.	6	2	2.5	0.5
	2152	Gasket; transmission case.	2	0.5	/	/
	2153	Gears; transmission geartrain. (1 only).	1.75	1	1.5	/
	2154	Shaft; camshaft c/w seals and locks Valve train removed.	2.75	1	2	1
	2154	Shaft; camshaft c/w seals, locks inframe no valves removed.	7	2	2	1
	216	Crankshaft; Connecting Rods; Vibration Damper; Flywheel G710B - G730B				
2161	2161	Shaft; Crankshaft c/w seals and pistons removed.	3	2	/	1
	2162	Shaft; Crankshaft c/w pistons and rods and bearings. Re & Re.	8	/	/	/
	2162	Bearing; Main crankshaft bearing. (1 only).	0.5	/	/	0.5
	2163	Rod; Con rod c/w main bearing, piston keeper, hardware. (1 only).	2.5	1.5	/	1
	2163	Bearing; Connecting Rod. (1 only).	0.5	/	/	0.5
	2164	Damper; Vibration c/w mounting hardware	2.5	1.5	/	0.5
	2165	Flywheel; Crankshaft c/w mounting hardware clutch removed.	8	2	2	0.5
	2165	Flywheel; Crankshaft c/w mounting hardware, inframe.	10	2	2	0.5
	2167	Seal; front crankshaft c/w mounting hardware inframe.	4	/	/	1
	2167	Seal; rear crankshaft c/w clutch removed and inframe.	4	/	/	1
	216	Crankshaft; Connecting Rods; Vibration Damper; Flywheel G740B - G780B				
2161	2161	Shaft; Crankshaft c/w seals and pistons removed.	2.5	2.5	/	1
	2162	Shaft; Crankshaft c/w pistons and rods and bearings. Re & Re.	8.5	/	/	/
	2162	Bearing; Main crankshaft bearing. (1 only).	0.5	/	/	0.5
	2163	Rod; Con rod c/w main bearing, piston keeper, hardware. (1 only).	3	1.5	/	1
	2163	Bearing; Connecting Rod. (1 only).	0.5	/	/	0.5
	2164	Damper; Vibration c/w mounting hardware	2.5	1.5	/	0.5
	2165	Flywheel; Crankshaft c/w mounting hardware clutch removed.	8.5	2	2	0.5
	2165	Flywheel; Crankshaft c/w mounting hardware, inframe.	10.5	2	2	0.5
	2167	Seal; front crankshaft c/w mounting hardware inframe.	3.5	/	/	1
	2167	Seal; rear crankshaft c/w clutch removed and inframe.	3.5	/	/	1

Classification of Codes

1 = Replaced

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GROUP 2 ENGINE WITH MOUNTING AND EQUIPMENT						
Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
21		Engine Continued				
	217	Oil Sump; dipstick G710B - G780B				
2171	2171	Sump; oil c/w mounting hardware, In-frame.	4	1	/	/
	2171	Sump; oil c/w mounting hardware, Engine Out.	1.5	1	/	/
	2172	Gasket; oil sump c/w clean and treat surface, In - frame.	2	/	/	/
	2172	Gasket; oil sump c/w clean and treat surface,Engine-out.	1	/	/	/
	2173	Drain; Line c/w fittings and clamps.	1	0.5	0.5	/
	2173	Hose; Oil sump drain c/w mounting hardware.	0.5	0.5	/	0.5
	218	Engine Mounting G710B - G780B				
2181	2181	Mount; engine to frame G710B - G730B Front L/H. (1 only).	1.5	1	/	0.5
	2181	Mount; engine to frame G710B - G730B Front R/H. (1 only).	2	1	/	0.5
	2181	Mount; engine to frame G710B - G730B Rear L/H. (1 only).	1.5	1	/	0.5
	2181	Mount; engine to frame G710B - G730B Rear R/H. (1 only).	2	1	/	0.5
	2182	Mount; engine to frame G740B - G780B Front L/H. (1 only).	2	1	/	0.5
	2182	Mount; engine to frame G740B - G780B Front R/H. (1 only).	2.5	1	/	0.5
	2182	Mount; engine to frame G740B - G780B Rear L/H. (1 only).	2	1	/	0.5
	2182	Mount; engine to frame G740B - G780B Rear R/H. (1 only).	2.5	1	/	0.5
	2183	Rubber; engine mount any 1 of 4. G710B - G780B. (1 only).	1	/	/	0.5

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GROUP 2 ENGINE WITH MOUNTING AND EQUIPMENT						
Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
22		Engine Lubrication System				
	220	General Common Info about 221 - 223 G710B - G780B	/	/	/	/
	221	Oil Pump and Lines G710B - G780B				
	221	Line; Oil Pump any 1 of 4. G710B - G730B	1	0.5	/	/
	221	Line; Oil Pump any 1 of 4. G740B - G780B.	1	0.5	/	/
	222	Oil Filter and Oil Filter Housing G710B - G780B				
	222	Filter; oil replace with new. (1 only)	0.5	/	/	/
	222	Oil; engine sump c/w fill to level.	1	/	/	/
	222	Housing; Engine Oil filter. Re & Re.	2.5	/	/	/
	223	Oil Cooler G710 - G780B				
	223	Cooler; Engine oil c/w mounting hardware and sealing rings.	6	2	/	0.5
23		Engine Fuel System				
	230	General Common Info about 233 - 238 G710B - G780B	/	/	/	/
	233	Fuel Pump; Filter and Strainer G710B - G780B				
	233	Fuel pumps, individual c/w mounting hardware. 1 each.	2.5	1	/	0.5
	2331	2331 Pump; fuel primer c/w mounting hardware and fittings.	2	0.5	0.5	/
	2334	2334 Filter; Fuel filter standard c/w fitting / element. G740B - B780B.	0.75	/	/	0.25
	2334	2334 Filter; Fuel filter Racor filter c/w fittings / element. G740B - G780B.	0.75	/	/	0.25
	2334	2334 Filter; Fuel filter standard c/w fittings / element. G710B - G730B.	0.75			0.25
	2334	2334 Filter; strainer c/w mounting hardware. G710B - G730B.	1.5	/	/	0.5
	23341	23341 Separator; water c/w element and hardware new install.	2	/	1	/
	23341	23341 Element; water separator c/w seals and hardware.	1	/	/	0.5
	23341	23341 Coil; water separator heater c/w electrical harness.	1.5	0.5	1	/

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GROUP 2 ENGINE WITH MOUNTING AND EQUIPMENT						
Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
23		Engine Fuel System continued				
	234	Fuel Tank G710B - G780B				
	2341	Tank; Fuel c/w mounting hardware and breather.	6	2	/	/
	2342	Cap; Filling c/w locking device.	0.5	/	0.5	/
	2343	Sender; Fuel level c/w mounting hardware.	1	0.5	0.5	0.5
	2344	Insulation; Sound any 1 of 4 c/w fastening device.	0.75	0.5	/	/
	2345	Door; washer anti-freeze.	1	0.5	/	/
	2345	Door; Clutch Slave access.	1	0.5	/	/
	2349	Valve; Main Fuel Shut off. Any 1 of 2.	1	0.5	/	0.5
	235	Fuel Lines and Fittings. G710B - G730B				
	235	Valve; Main Fuel Shut off. Any 1 of 2.				
	235	Hose; Main fuel shut off to Fuel Primer pump. P/N 12731117.	0.5	/	/	/
	235	Hose; Fuel primer pump to Separator filter. P/N 12731118.	0.5	/	/	/
	235	Hose; Separator to Engine fuel pump. P/N 12731119.	0.5	/	/	/
	235	Hose; Fuel tank return to Fuel Cooler. P/N 12730225.	0.75	/	/	/
	235	Hose; Fuel cooler to engine. P/N 12731127.	0.75	/	/	/
	235	Fuel Lines and Fittings. G740B - G780B Standard Filter.				
	235	Hose; Fuel tank suction to Filter In side. P/N 12725440.	0.5	/	/	/
	235	Hose; Fuel filter to Engine fuel pump. P/N 12725442.	0.75	/	/	/
	235	Hose; Fuel tank return from Engine return. P/N 12725445.	0.75	/	/	/
	235	Fuel Lines and Fittings G740B - G780B Racor Filter.				
	235	Pump; Fuel system primer c/w fittings and hardware.	2.5	1	/	/
	235	Bracket; Fuel Primer pump c/w mounting hardware.	2	/	/	/
	235	Bracket; Fuel Separator c/w mounting hardware.	2.5	1	/	/
	235	Hose; Fuel tank suction to Primer In. P/N 12725441	1	/	/	/
	235	Hose; Racor Filter out to Engine Fuel Pump. P/N 12725443.	0.75	/	/	/
	235	Hose; Engine return to Fuel tank. P/N 12725445.	0.75	/	/	/
	235	Hose; Racor Filter in from Primer pump. P/N 12725447.	0.75	/	/	/

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GROUP 2 ENGINE WITH MOUNTING AND EQUIPMENT						
Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
23		Engine Fuel System				
		continued				
	236	Injector Pump; Regulator and Pump Companion				
		G710B - G730B				
	236	Pump; Injector c/w metering solenoid / hardware / seals. 1 each of 6.	2.5	1	1.5	0.5
	236	Solenoid; Injector regulator c/w hardware / wiring harness. 1 of 6.	1	/	1	0.5
	236	Setting; Injector adjustment c/w VCADS Test. 1 each of 6.	/	/	/	0.5
	236	Injector Pump; Regulator and Pump Companion				
		G740B - G780B				
	236	Pump; Injector c/w electrical harness.	4	2	2.5	0.5
	236	Solenoid; injector Pump calibration. 1 each of 2.	1	0.5	0.5	/
	237	Injector; Delivery pipe.				
		G710B - G730B				
	237	Injector; Not Applicable, see 236 above.				
	237	Pipe; Delivery from Fuel pump to injector. 1 each of 6.	1	/	/	0.5
	237	Injector; Delivery pipe				
		G740B - G780B				
	237	Pipe; Injector delivery c/w sealing rings. 1 each of 6.	1	0.5	/	0.5
	2371	Injector; main engine. 1 each of 6 c/w sealing rings and gaskets.	2.5	1	1	0.5
	2371	Adjustment; Main Injector. 1 each of 6.	/	/	/	1
	2379	Miscellaneous; Not Applicable.	/	/	/	/
	238	Control System; Control Unit; Injector Timing adjuster				
		G710B - G780B				
	238	ECU; Engine control Unit c/w software set-up and hardware.	2	1	1	/
	238	Harness; Main ECU control unit.	4	2	/	1
	238	Throttle; Control Unit c/w mounting hardware.	2.5	1	1	1
	238	Harness; Throttle control to Engine ECU.	3	/	1	/
	239	Fuel Cooler				
		G710B - G730B Only				
	239	Cooler; Fuel c/w mounting hardware. New install.	3	/	1	0.5

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GROUP 2 ENGINE WITH MOUNTING AND EQUIPMENT						
Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
25		Engine Inlet Systems; Exhaust System				
	250	General and Common Info about 251 - 258 G710B - G780B	/	/	/	/
	251	Intake Manifold; Exhaust Manifold G710B - G780B				
	251	Manifold; Intake c/w mounting hardware. Re & Re. G710B - G730B.	6.5	2	2	0.5
	251	Manifold; Intake c/w mounting hardware. Re & Re. G740B - G780B.	8	2	2	0.5
	251	Gasket; Intake manifold c/w clean old / sealing liquid. G710B - G730B.	1	/	/	0.5
	251	Gasket; Intake manifold c/w clean old / sealing liquid. G740B - G780B.	1	/	/	0.5
	251	Tube; Intake manifold crossover from Charge cooler. G710B - G730B.	0.5	0.5	/	0.5
	251	Tube; Intake manifold crossover from Charge cooler. G740B - G780B.	0.5	0.5	/	0.5
	2511	Manifold; Exhaust c/w mounting hardware. Re & Re. G710B - G730B.	4	1.5	/	0.5
	2511	Manifold; Exhaust c/w mounting hardware. Re & Re. G740B - G780B.	5	2	/	0.5
	2512	Gasket; Exhaust manifold c/w clean old / seals. G710B - G730B.	0.75	/	/	0.5
	2512	Gasket; Exhaust manifold c/w clean old / seals. G740B - G780B.	0.75	/	/	0.5
	252	Muffler; Exhaust Pipe G710B - G780B				
	252	Muffler; Exhaust c/w mount. hardware and gaskets. G710B - G730B.	4	1	/	0.5
	252	Muffler; Exhaust c/w mount. hardware and gaskets. G740B - G780B.	4	1	/	0.5
	252	Gasket; Muffler between exhaust pipe and muffler. G710B - G730B.	0.5	/	/	0.5
	252	Gasket; Muffler between exhaust pipe and muffler. G740B - G780B.	0.5	/	/	0.5
	2521	2521 Pipe; Exhaust between Turbo flange and muffler. P/N 12726485.	1.5	1	/	0.5
	2522	2522 Pipe; Exhaust flange, between Turbo and muffler. P/N 12726468.	2	1	/	0.5
	2523	2523 Clamp; Exhaust flange to exhaust pipe elbow. P/N 12726548.	0.75	/	/	0.5
	2523	2523 Clamp; Exhaust flange to exhaust pipe elbow. G740B - G780B.	1	0.5	/	0.5
	2524	2524 Stack; Exhaust pipe from muffler to Ejector pipe. P/N 11110171.	2.5	/	/	0.5
	2525	2525 Pipe; Ejector c/w mounting hardware and clamps. P/N 11148403.	1.5	/	/	0.5
	2528	2528 Shield; Exhaust Heat c/w mounting clamps.	2	/	/	0.5
	254	Exhaust Emission Control Equipment G710B - G780B see Specific Engine Manual	/	/	/	/
	255	Turbocharger G710B - G780B				
	255	255 Turbocharger; c/w mounting hardware. G710B - G730B.	4	1	2	/
	255	255 Turbocharger; c/w mounting hardware. G740B - G780B.	4	2	3	/
	255	255 Gasket; Turbocharger mounting. G710B - G780B.	1	/	/	/

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GROUP 2 ENGINE WITH MOUNTING AND EQUIPMENT

Function	Repair #	Repair Description	Repair Code / Allowance			
25		Engine Inlet Systems; Exhaust System				
		continued				
	256	Air Cleaner with Connections; Air Pre-Heater				
		G710B - G730B				
2561	2561	Air Cleaner; c/w primary / secondary filters. P/N 12724059.	4.5	1	1	0.5
	2561	Switch; Air Filter Vacuum c/w mount. adapter, hose P/N 20409365.	2.5	0.5	/	0.5
	2561	Bracket; Air Cleaner c/w mounting hardware / clamps.	2	0.5	0.5	0.5
	2562	Element; primary c/w sealing rings. P/N 11110022.	0.75	/	/	/
	2562	Element; secondary c/w sealing rings. P/N 11110023.	0.75	/	/	/
	2563	Tube; Air Cleaner to Turbo Elbow. P/N 12723646.	1	/	/	0.5
	2564	Tube; Turbo Elbow. P/N 12726467.	1	/	/	0.5
	2565	Clamps; Air Cleaner any 1 of 4.	0.5	/	/	0.5
	2565	Tube; c/w clamps, mounting hardware. Aspirated air intake.	2	1	/	0.5
	2566	Pre-Heater; Air intake element c/w mounting hardware / harness.	2	0.5	1	/
	2567	Filter; Air Pre Filter c/w mounting Hardware.	2.5	1	/	0.5
	2567	Cover; Winter operation c/w mounting hardware.	1	0.5	/	0.5
	256	Air Cleaner with Connections; Air Pre-Heater				
		G740B - G780B				
2561	2561	Air Cleaner; c/w primary / secondary filters. P/N 12724060.	4.5	1	1	0.5
	2561	Switch; Air Filter Vacuum c/w mount. adapter, hose P/N 20409365.	2.5	0.5	/	0.5
	2561	Bracket; Air Cleaner c/w mounting hardware / clamps.	2	0.5	0.5	0.5
	2562	Element; primary c/w sealing rings. P/N 11033996.	0.75	/	/	/
	2562	Element; secondary c/w sealing rings. P/N 11033997.	0.75	/	/	/
	2563	Tube; Air Cleaner to Turbo Elbow. P/N 12730076.	1	/	/	0.5
	2564	Tube; Turbo Elbow. P/N 12730061.	1	/	/	0.5
	2564	Tube; Turbo Elbow #2. P/N 12730077.	1	/	/	0.5
	2565	Clamps; Air Cleaner any 1 of 5.	0.5	/	/	0.5
	2565	Tube; c/w clamps, mounting hardware. Aspirated air intake.	2	1	/	0.5
	2566	Pre-Heater; Air intake element c/w mounting hardware / harness.	2	0.5	1	/
	2567	Filter; Air Pre Filter c/w mounting Hardware.	2.5	1	/	0.5
	2567	Cover; Winter operation c/w mounting hardware.	1	0.5	/	0.5
	258	Charge Air Cooler with Connections				
		G710B - G730B				
2581	2581	Cooler; Charge Air c/w mounting brackets and clamps. New Install	4	1	1	0.5
	2581	Hood; Engine compartment cover c/w mounting hardware.	1.5	1	/	0.5
	2581	Brackets; Charge Air Cooler c/w mounting hardware. 1 each of 2.	1.5	/	/	0.5
	2582	Pipe; Charge Air Cooler from Turbo connection. P/N 12731110.	2	0.5	/	0.5
	2582	Pipe; Charge Air Cooler air inlet pipe. P/N 12731108	2	0.5	/	0.5
	2582	Pipe; Charge Air Cooler from cooler to Intake manifold.	1	0.5	/	0.5
	2582	Hose; Charge Air Cooler pipe connection. Any 1 of 6.	0.75	/	/	/
	2582	Clamps; Charge Air Cooler pipe connection clamps. Any 1 of 16.	0.5	/	/	/

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GROUP 2 ENGINE WITH MOUNTING AND EQUIPMENT						
Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
25		Engine Inlet Systems; Exhaust System				
		continued				
	258	Charge Air Cooler with Connections				
		G710B - G730B				
2582	2582	Bracket; Charge Air Cooler Support Arm c/w mounting hardware.	1.5	0.5	/	0.5
	2582	Bracket; Charge Air Cooler Support member c/w mounting hardware.	1.5	0.5	/	0.5
	2583	Pump; Charge Air Coolant. Not Applicable.	/	/	/	/
	2584	Sensor; Air Temperature c/w harness.	1	/	/	0.5
	258	Charge Air Cooler with Connections				
		G740B - G780B	/	/	/	/
2581	2581	Cooler; Charge Air c/w mounting brackets and clamps. New Install	4	1	1	0.5
	2581	Hood; Engine compartment cover c/w mounting hardware.	1.5	1	/	0.5
	2581	Brackets; Charge Air Cooler c/w mounting hardware. 1 each of 2.	1.5	/	/	0.5
	2582	Pipe; Charge Air Cooler from Turbo connection. P/N 12729994.	1	/	/	0.5
	2582	Pipe; Charge Air Cooler air inlet pipe. P/N 12731342.	1	/	/	0.5
	2582	Hose; Charge Air Cooler pipe connection. Any 1 of 4.	0.75	/	/	0.5
	2582	Clamps; Charge Air Cooler pipe connection clamps. Any 1 of 10.	0.5	/	/	0.5
	2583	Coolant Pump; Charge Air Cooler. Not Applicable.	/	/	/	/
	2584	Sensor; Air Temperature c/w harness.	1	/	/	0.5
26		Engine Coolant Systems				
	260	General Common Info about 261 - 269				
		G710B - G780B	/	/	/	/
	261	Radiator, Mounting and Connections Included				
		G710B - G730B	/	/	/	/
2611	2611	Radiator; c/w drain and refill, Cooling Module removed. P/N 12726381.	6	2	/	0.5
	2611	Coolant; Drain and Refill.	1.5	/	/	0.5
	2612	Tank; Expansion c/w drain and refill. P/N 11110410.	2.5	/	/	0.5
	2612	Cap; Expansion c/w sealing rings and neck.	0.5	/	/	/
	2612	Hose; Overflow, Radiator to Surge Tank. P/N 12730327.	1	/	/	/
	2612	Hose; Surge Tank Aeration from Engine. P/N 949564.	1	/	/	/
	2612	Hose; Surge Tank Overflow. P/N 983114.	1	/	/	/
	2612	Grommet; Overflow Hose, any 1 of 4. P/N 961960.	0.25	/	/	/
	2612	Bracket; Surge Tank c/w mounting hardware.	1	/	/	0.5
	2614	Shutters; Radiator. None Applicable.	/	/	/	/
	2615	Hose; Coolant Lower Rad to Pipe elbow. P/N 12729973.	1	/	/	0.5
	2615	Hose; Coolant, Pipe elbow to Engine In-side. P/N 12729974.	1	/	/	0.5
	2615	Pipe; Elbow, Lower Rad to Engine In-side. P/N 12730180.	1	/	/	0.5
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GROUP 2 ENGINE WITH MOUNTING AND EQUIPMENT

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
26	Engine Cooling Systems					
	continued					
2615	2615	Coupler; Upper Rad hose to Steel pipe. P/N 12726540.	0.75	/	/	0.5
	2615	Pipe; Steel, Upper Rad to Engine out. P/N 12730177.	1.25	/	/	0.5
	2615	Hose; Upper Rad from Engine out. P/N 12729974.	1	/	/	0.5
	2615	Clamps; Radiator Hose, any 1 of 8.	0.25	/	/	/
	2617	Filter; Coolant c/w refill.	0.5	/	/	/
	2618	Mounts; Radiator to frame. Any 1 of 3. P/N 12726650.	1.5	/	/	/
	261	Radiator, Mounting and Connections Included				
	G740B - G780B					
2611	2611	Radiator;c/w drain and refill. P/N 12726381.	6	2	/	0.5
	2611	Coolant; Drain and Refill.	1.5	/	/	0.5
	2612	Tank; Expansion c/w drain and refill. P/N 12730465.	2.5	/	/	0.5
	2612	Cap; Expansion c/w sealing rings and neck.	0.5	/	/	/
	2612	Hose; Overflow, Radiator to Surge Tank. P/N 12730327.	1	/	/	/
	2612	Hose; Surge Tank Aeration from Engine. P/N 949564.	1	/	/	/
	2612	Hose; Surge Tank Overflow. P/N 983114.	1	/	/	/
	2612	Grommet; Overflow Hose, any 1 of 2. P/N 961960.	0.25	/	/	/
	2612	Bracket; Surge Tank c/w mounting hardware.	1	/	/	/
	2614	Shutters; Radiator. None Applicable.	/	/	/	/
	2615	Hose; Coolant Lower Rad to Pipe elbow. P/N 12729988.	1	/	/	0.5
	2615	Inlet; Coolant, Pipe elbow to Engine In-side. P/N 12730114.	1.5	/	/	0.5
	2615	Coupler; Upper Rad hose to Steel pipe. P/N 12726540.	0.75	/	/	0.5
	2615	Pipe; Steel, Upper Rad to Engine out. P/N 12729986.	1	/	/	0.5
	2615	Hose; Upper Rad from Engine out. P/N 12729987.	1	/	/	0.5
	2615	Clamps; Radiator Hose, any 1 of 6.	0.25	/	/	/
	2617	Filter; Coolant c/w refill.	0.5	/	/	/
	2617	Bracket; Coolant Filter c/w mounting hardware.	1	/	/	/
	2618	Mounts; Radiator to frame. Any 1 of 3. P/N 12726650.	1.5	/	/	/
	262	Coolant pump; Thermostat				
	G710B - G730B					
2621	2621	Pump; Engine Coolant c/w sealing ring, gasket, drain and fill.	3.5	1	2.5	/
	2627	Thermostat; Engine Coolant c/w sealing rings, drain and fill.	1.5	/	/	/
262	Coolant pump; Thermostat					
	G740B - G780B					
2621	2621	Pump; Engine Coolant c/w sealing ring, gasket, drain and fill.	4.5	2	3.5	/
	2627	Thermostat; Engine Coolant c/w sealing rings, drain and fill.	2	/	/	/

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GROUP 2 ENGINE WITH MOUNTING AND EQUIPMENT							
Function	Repair #	Repair Description		Repair Code / Allowance			
				1	2	3	4
26		Engine Cooling Systems continued					
	263	Fan; Fan Shroud; Fan Coupling G710B - G780B		/	/	/	/
	2631	2631	Fan; Cooling Module c/w mounting hardware. P/N 12726854.	3	1	/	1
		2631	Housing; Fan c/w fan, fan drive guards and hinges. P/N 12731201.	6	3	/	1
		2631	Latch; Cooling Module c/w mounting hardware. P/N 12726831.	1	/	/	0.5
		2631	Lock; Cooling Module c/w mounting hardware. P/N 12730338.	1	/	/	0.5
		2631	Hinge; Cooling module c/w mounting hardware. P/N 12726697.	0.5	/	/	/
		2631	Bar; Retainer cooling module door. P/N 12726867.	0.5	/	/	/
		2632	Grille; Cooling module door c/w mounting hardware. P/N 12730154.	1.5	/	/	/
		2632	Emblem; Cooling module grille. P/N 14343602.	1	/	/	/
		2632	Protector; Cooling Fan c/w mounting hardware. P/N 12730710.	1.5	/	/	0.5
		2632	Hub; cooling fan c/w mounting hardware. P/N 12730108.	1	/	/	/
		2632	Housing; Fan, bare no attachments.	4	/	/	1
		2632	Shroud; Cooling Module fan c/w mounting hardware. P/N 12731209.	2.5	/	/	0.5
		2632	Support; Cooling Module Shroud c/w hardware. P/N 12730220.	1.5	/	/	0.5
		2632	Plate; Cooling Module front c/w mounting hardware. P/N 12730907.	1.5	/	/	0.5
		2634	Drive; Mechanical Fan. None Applicable.	/	/	/	/
		2635	Pump; Cooling Module Fan Drive. See Function Group 9.	/	/	/	/
		2636	Motor; Cooling Module Fan Drive c/w hardware. P/N 12726470.	2.5	1	2	/
	269	Miscellaneous G710B - G730B		/	/	/	/
	2691	2691	Heater; Engine Coolant c/w harness / sealing gasket. P/N 12727253.	2.5	/	/	/
		2691	Heater; Immersion c/w cord. P/N 11141597.	2	/	/	/
		2692	Heater; Engine Oil Pan c/w harness. P/N 44007.	2	/	/	/
	269	Miscellaneous G740B - G780B		/	/	/	/
	2691	2691	Heater; Engine Coolant c/w harness / sealing gasket. P/N 11141597.	2.5	/	/	/
		2691	Heater; Immersion c/w cord. P/N 12727407.	2.5	/	/	/
		2692	Heater; Engine Oil Pan c/w harness. P/N 15828.	2.5	/	/	/

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GROUP 2 ENGINE WITH MOUNTING AND EQUIPMENT							
Function	Repair #	Repair Description		Repair Code / Allowance			
				1	2	3	4
27		Engine Control					
	270	General and Common Info about 272 - 278 G710B - G780B		/	/	/	/
	271	Accelerator Pedal G710B - G780B					
	271	Pedal; Accelerator c/w mounting frame / hardware.	P/N 12725040.	1	/	/	0.5
	271	Mechanism; Foot Control c/w hardware.	P/N 12726941.	2.5	1	1.5	/
	271	Sensor; Accelerator control c/w harness.	P/N 11706717.	2	/	/	0.5
	271	Cannister; Accelerator control.	P/N 37068	1	/	/	0.5
	271	Kit; Accelerator Sensor c/w harness.	P/N 11706270.	2	1	1	0.5
	271	Cable; Hand to Pedal control c/w mounting hardware.	P/N 84710.	1.5	/	/	0.5
	272	Hand Throttle G710B - G780B					
	272	Throttle; Hand control c/w mounting bracket.	P/N 84663.	2	0.5	0.5	/
	272	Cable; Hand to Pedal control. See 271 above.		/	/	/	/
	273	Stop Control G710B - G780B Not Applicable.		/	/	/	/
	274	Cold Start Control G710B - G780B					
	274	Switch; Cold Start c/w harness and hardware, new install.		1.5	/	/	0.5
	274	Sensor; Engine Temperature sensor c/w harness.		1.5	/	/	0.5
	274	Element; Engine Intake heater c/w harness. See Function 2566.					
	275	Speed Control G710B - G780B Not Applicable.		/	/	/	/
	277	Automatic Speed Control G710B - G780B Not Apllicable.		/	/	/	/
	278	Variable Horse Power System (VHP) G710B - G780B					
	278	see Specific D-7 / D-10 Engine Parts Manual.		/	/	/	/

Classification of Codes

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GROUP 3 ELECTRICAL SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM

INSTRUMENTS

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
30		GENERAL				
	300	Comprehensive info re: Electrical System; Function Tests G710B - 780B	/	/	/	/
31		BATTERY				
	310	General and Common Info about 311 - 313 G710B - 780B	/	/	/	/
	311	Battery; Related areas G710B - 780B				
	311	Battery; c/w cable removal.	1	/	/	0.5
	311	Re-charge; battery complete from new/replacement.	/	/	/	0.5
	313	Battery Box; Mounting Parts G710B - 780B				
	313	Box; battery complete new install c/w batteries and lid.	2.5	0.5	/	0.5
	313	Lid; battery box c/w mounting hardware.	1	0.5	/	0.5
	313	Box; battery c/w mounting hardware.	1	/	/	0.5
	313	Plate; battery clamp plate. (1 each of 2).	0.5	0.5	/	0.5
	313	Channel; battery box rubber.	0.5	/	/	/
	313	Underpad; battery box. (1 each of 2).	0.5	/	/	0.5
32		ALTERNATOR; CHARGE REGULATOR				
	320	General and Common Info about 311 - 313 G710B - G780B	/	/	/	/
	321	Alternator Circuit G710B - 780B				
	321	Alternator; c/w pulley and mounting hardware.	1.5	0.5	1	/
	321	Pulley; alternator drive c/w new mounting nut.	1	/	/	0.5
	321	Support; alternator main c/w mounting bolt.	1	0.5	0.5	0.5
	321	Brace; alternaotr belt adjustment c/w mounting hardware.	1	0.5	0.5	0.5
	321	Shield; Alternator Belt c/w mounting hardware.	1	/	/	0.5
	322	Voltage Regulator G710B - 780B Note: N/A.	/	/	/	/

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GROUP 3 ELECTRICAL SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM

INSTRUMENTS

Function	Repair #	Repair Description	Repair Code / Allowance			
33		STARTING SYSTEM continued	1	2	3	4
	330	General and Common Info about 331 - 334 G710B - 780B	/	/	/	/
	331	Starter Motor inclusive solenoid. G710B - 780B	/	/	/	/
3314	3314	Motor; starter c/w mounting hardware.	2	/	1.5	0.5
	3314	Shield; starter solenoid protection.	1	/	/	/
	3315	Kit; Brush Coal c/w mounting hardware.	1			
	3318	Relay; starter c/w mounting hardware.	1.5	/	1	/
	333	Electric Air Pre-Heater, excluding element G710B - G780B				
	333	Solenoid; Pre-Heater complete install. P/N 12725810.				
	333	Solenoid; Bare c/w mounting hardware. P/N 20367490.				
	333	Casing; Pre-Heater Solenoid. P/N 1581123.				
	333	Holder; Pre-Heater Fuse c/w mounting hardware. P/N 12725811.				
	333	Harness; Pre-Heater wiring c/w plug-in's. P/N 12725813.				
	333	Fuse; Pre-Heater main power. P/N 12725812.				
	333	Bracket; Pre-Heater assembly c/w mount. Hardware. P/N 12729859.				
334		Starter Lock G710B - G780B Not Applicable.	/	/	/	/

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**GROUP 3 ELECTRICAL SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM
INSTRUMENTS**

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
35		LIGHTING CIRCUIT				
	350	General and Common Info about 351 - 356 G710B - G780B	/	/	/	/
	352	Lighting Front; Including Parking Light/Day Running Light G710B - 780B				
	352	Light Bar; identification lights upper cab amber c/w mount hardware.	1	/	0.5	0.5
	352	Guard; brush identification lights c/w mounting hardware.	1	/	0.5	0.5
	352	Harness; identification lights c/w plug-in's.	0.5	0.5	/	/
	352	Lamp; sealed c/w none replacement bulb. (each of 3).	0.5	/	/	0.5
	352	Headlight; L or R/H c/w mounting hardware.	1.5	0.5	0.5	0.5
	352	Bulb; headlight directional/parking. (1 of 2).	1	0.5	/	0.5
	352	Lens; amber directional/parking.	0.5	0.5	/	0.5
	352	Guard; brush headlight assembly c/w mounting hardware.	1.5	/	/	0.5
	352	Bracket; front headlamp EEC ONLY .	1	0.5	/	0.5
	352	Headlight; front c/w mounting hardware EEC ONLY .	1	0.5	/	0.5
	352	Bulb; headlamp directional/parking EEC ONLY .	0.5	/	/	/
	352	Harness; front headlamp c/w mounting hardware. EEC ONLY .	1.5	0.5	/	/
	352	Reflector; mouldboard or cab side. EEC ONLY .	0.5	/	/	/
	352	Extension; side marker c/w mounting hardware. EEC ONLY .	1.5	/	/	0.5
	352	Light; side marker c/w turn/parking lamp. EEC ONLY .	0.5	0.5	/	0.5
	352	Lamp; sealed c/w none replacement bulb. (each of 3).	0.5	/	/	0.5
	352	Headlight; L or R/H c/w mounting hardware.	1.5	0.5	0.5	0.5
	352	Bulb; headlight directional/parking. (1 of 2).	1	0.5	/	0.5
	352	Lens; amber directional/parking.	0.5	0.5	/	0.5
	352	Guard; brush headlight assembly c/w mounting hardware.	1.5	/	/	0.5
	352	Bracket; front headlamp EEC ONLY .	1	0.5	/	0.5
	352	Headlight; front c/w mounting hardware EEC ONLY .	1	0.5	/	0.5
	352	Bulb; headlamp directional/parking EEC ONLY .	0.5	/	/	/
	352	Harness; front headlamp c/w mounting hardware. EEC ONLY .	1.5	0.5	/	/
	352	Reflector; mouldboard or cab side. EEC ONLY .	0.5	/	/	/
	352	Extension; side marker c/w mounting hardware. EEC ONLY .	1.5	/	/	0.5
	352	Light; side marker c/w turn/parking lamp. EEC ONLY .	0.5	0.5	/	0.5

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GROUP 3 ELECTRICAL SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM

INSTRUMENTS

Function	Repair #	Repair Description	Repair Code / Allowance			
35		LIGHTING continued	1	2	3	4
353		Lighting Rear; Including Parking Light / Directional Light G710B - 780B				
	353	Light Bar; identification lights upper cab red c/w mount hardware.	1	/	0.5	0.5
	353	Guard; brush identification lights c/w mounting hardware.	1	/	0.5	0.5
	353	Harness; identification lights c/w plug-in's.	0.5	0.5	/	/
	353	Tail Lamp; c/w identification/directional/stop lamp.	1.5	0.5	0.5	0.5
	353	Housing; c/w mounting hardware Blank only .	1	/	/	0.5
	353	Plate; backing tail lamp assembly.	0.5	/	0.5	0.5
	353	Bulb; identification or directional or stop.	0.5	0.5	0.5	0.5
	353	Arm; rear tail lamp c/w mounting hardware. (each of 2). EEC ONLY .	1.5	/	1	0.5
	353	Lamp; tail lamp c/w identification/stop/directional bulb. EEC ONLY .	1.5	0.5	0.5	/
354		Lighting; Interior G710B - 780B	/	/	/	/
3541	3541	Lamp; dome c/w mounting hardware. New Install.	1.5	/	0.5	/
	3541	Lens; dome lamp.	0.5	/	0.5	/
	3541	Bulb; dome lamp.	0.5	/	0.5	/
355		Lighting; Side G710B - 780B				
	355	Light; cab side c/w mounting hardware. (1 of 2).	1.5	1	0.5	0.5
	355	Bracket; side cab light.	0.5	/	/	0.5
	355	Bezel; side cab light c/w seal ring.	0.5	0.5	0.5	/
	355	Bulb; halogen side cab light.	0.5	/	/	0.5
	355	Lens; side cab light.	0.5	/	/	0.5
	355	Guard; brush side cab light c/w mounting hardware.	1	0.5	0.5	/
	355	Harness; side cab lighting.	1.5	/	/	0.5
356		Lighting; Extra including Working Lighting G710B - 780B	/	/	/	/
3565	3565	Light; mouldboard c/w mounting bracket.	1	0.5	0.5	/
	3565	Bracket; mouldboard light.	0.5	/	/	0.5
	3565	Lens; mouldboard light.	0.5	0.5	/	/
	3565	Guard; mouldboard brush guard.	1	/	/	0.5
	3565	Bracket; high or low headlight.	0.5	/	/	0.5
	3565	Light; front plow headlamp extra.	1.5	0.5	/	0.5
	3565	Lamp; flood c/w mounting hardware.	1.5	/	/	0.5

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**GROUP 3 ELECTRICAL SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM
INSTRUMENTS**

Function	Repair #	Repair Description	Repair Code / Allowance			
35		LIGHTING continued	1	2	3	4
	356	Lighting; Extra including Working Lights G710B - G780B	/	/	/	/
	3565	3565 Guard; flood lamp c/w mounting hardware.	1.5	0.5	0.5	0.5
		3565 Harness; flood lamp.	1.5	0.5	/	/
		3565 Light; license plate c/w mounting hardware.	1	0.5	/	0.5
		3565 Lamp; sealed license plate lamp.	0.5	/	/	/
		3565 Reflector; side, front or rear. (any 1).	0.5	/	/	/
36		OTHER ELECTRICAL EQUIPMENT				
	360	General and Common Info about 361 - 367 G710B - 780B	/	/	/	/
	361	Direction Indicator; Turn Signal G710B - 780B				
		361 Switch; turn signal c/w mounting bracket and hardware.	2.5	1	/	0.5
		361 Housing; turn signal c/w mounting screws.	1	0.5	/	0.5
		361 Plate; mounting flasher or float.	0.5	0.5	/	0.5
	362	Outside Warning System G710B -G780B	/	/	/	/
	3621	3621 Horn; audible outside c/w mounting bracket and hardware.	1	/	/	/
		3621 Harness; adapter c/w plug in.	0.5	/	/	/
		3621 Horn; back-up alarm.	1.5	/	/	0.5
		3621 Harness; back-up alarm.	1.5	0.5	0.5	/
		3624 Beacon; rotating outside cab c/w coloured lens and mounting kit.	4	1.5	/	0.5
		3624 Lens; beacon outside.	0.5	/	/	/
		3624 Bulb; halogen outside beacon.	1	/	/	0.5
		3624 Guard; brush guard beacon.	2	1	/	0.5
		3624 Bracket; flasher or beacon c/w mounting hardware.	3	1	1	1
		3624 Bracket; hinged c/w mounting hardware.	1	1	1	0.5
		3624 Bracket; fixed c/w mounting hardware.	1	1	1	0.5
		3624 Latch; handle assembly.	0.5	/	/	/

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**GROUP 3 ELECTRICAL SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM
INSTRUMENTS**

Function	Repair #	Repair Description	Repair Code / Allowance				
			1	2	3	4	
36	OTHER ELECTRICAL EQUIPMENT						
	continued						
	363	Cleaner; Outside. G710B - 780B	/	/	/	/	
3631	3631	Motor; wiper assembly windscreen c/w mounting hardware.	3	1.5	/	0.5	
	3631	Pantograph; pivot wiper arm c/w hardware.	1.5	0.5	/	0.5	
	3631	Wiper; c/w wiper arm and mounting hardware.	1	0.5	/	0.5	
	3631	Arm; wiper c/w mounting bracket.	1	0.5	/	0.5	
	3631	Motor; wiper assembly windscreen LOW-PROFILE CAB.	3	1.5	/	0.5	
	3631	Link; wiper arm c/w mountnig hardware. LOW-PROFILE CAB.	1	/	/	0.5	
	3631	Wiper; c/w wiper arm mountng hardware. LOW-PROFILE CAB.	1	0.5	/	0.5	
	3631	Arm; wiper c/w mounting bracket. LOW-PROFILE CAB.	1	0.5	/	0.5	
	3632	Motor; rear window c/w mounting hardware.	3	1.5	/	0.5	
	3632	Pantograph; pivot rear wiper arm c/w hardware.	1.5	0.5	/	0.5	
	3632	Wiper; c/w wiper arm rear window and mountng hardware.	1	0.5	/	0.5	
	3632	Arm; wiper rear window c/w mounting bracket.	1	0.5	/	0.5	
	3632	Motor; rear window c/w mounting hardware.	3	1.5	/	0.5	
	3632	Motor; wiper assembly rear window LOW-PROFILE CAB.	3	1.5	/	0.5	
	3632	Link; wiper arm rear window. LOW-PROFILE CAB.	1	/	/	0.5	
	3632	Wiper; c/w wiper arm rear window. LOW-PROFILE CAB.	1	0.5	/	0.5	
	3632	Arm; wiper c/w rear window. LOW-PROFILE CAB.	1	0.5	/	0.5	
	3632	Motor; lower front window c/w mounting hardware.	3	1.5	/	0.5	
	3632	Blade; wiper front lower window.	1	0.5	/	0.5	
	3632	Arm; wiper front lower window.	1	0.5	/	0.5	
	3632	Fastener; kit front lower window.	1.5	0.5	/	0.5	
	3632	Harness; L or R/H front lower window.	1.5	/	/	/	
	3634	Washer; single pump front c/w mounting hardware.	1	0.5	/	0.5	
	3634	Washer; triple pump front/rear c/w mounting hardware.	1	0.5	/	0.5	
	3634	Washer; double pump front/rear c/w mounting hardware.	1	0.5	/	0.5	
	3634	Nozzle; front or rear window c/w sealing kit.	1	0.5	/	0.5	
	3634	Hose; washer fluid supply c/w mounting clamps. (1 of 3).	1.5	/	/	0.5	
		364	Switch; Connector; Potentiometer G710B - 780B	/	/	/	/
	3641	3641	Switch; any side console c/w bezel. (any 1).	1	/	/	/
		3641	Switch; front pedastal head c/w bezel. (any 1).	1	/	/	/
3641		Switch; side door post panel c/w bezel. (any 1).	1	/	/	/	
3641		Lighter; Cigar c/w mounting bezel.	1	/	/	0.5	
36431	36431	Potentiometer, Sensing Injector Pump Lever position.	1.5	/	/	0.5	
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**GROUP 3 ELECTRICAL SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM
INSTRUMENTS**

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
36		OTHER ELECTRICAL EQUIPMENT continued				
	366	Automatic Control / Blocking function G710B - G780B				
	366	Switch; Parking Brake c/w mounting hardware.	3	1	/	/
	366	Cover; Parking Brake c/w mounting hardware.	1	/	/	/
	366	Bracket; Parking Brake mount.	1.5	/	/	0.5
3661	3661	ECU; AWD c/w Programing. See Function Group 4.	/	/	/	/
	3662	ECU; Transmission c/w Programing. See Function Group 4.	/	/	/	/
	3663	ECU; Engine c/w Programing. See D7, D10 engine parts manual.	/	/	/	/
	3664	ECU; Instrument c/w Programing. See Function Group 3 - 387.	/	/	/	/
	3665	Control; Electric Blade Float c/w mounting and configuration.	4	1.5	/	0.5
	3665	Module; Blade Float c/w hardware. P/N 12731271.	1	/	/	/
	3665	Lamp; Blade Float c/w mount. And Decal. P/N 12725778.	1.5	/	/	0.5
	3665	Switch; Blade Float c/w mount.	1	/	/	/
	3665	Harness; Blade Float. See Function Group 3 - 371 - 27.	/	/	/	/
	3665	Harness; Front Float. See Function Group 3 - 371 - 27.	/	/	/	/
	3665	Harness; Front Cab. See Function Group 3 - 371 - 29.	/	/	/	/
367		Electronic Standard Components G710B - 780B. Note: N/A	/	/	/	/

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GROUP 3 ELECTRICAL SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM

INSTRUMENTS

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
37		CABLE; FUSE; RELAY				
		continued				
	370	General and Common Info about 371 - 379				
		G710B - G780B	/	/	/	/
	371	Cable; Battery Disconnect				
		G710B - 780B				
	371	Harness; wiring upper cab c/w mounting clamps.	2	1	/	/
	371	Harness; wiring front pedestal c/w mounting hardware.	3	1	/	/
	371	Harness; wiring console c/w mounting hardware.	3	1	/	/
	371	Harness; wiring rear chassis to engine.	2	1	/	/
	371	Harness; wiring rear tail lights.	1.5	1	/	/
	371	Harness; wiring fuse panel to receptacle for accessory.	3.5		/	/
	371	Harness; wiring radio / cassette c/w mounting hardware.	3	1	/	/
	371	Harness; wiring loud speaker L or R/H side.	1	0.5	/	/
	371	Harness; wiring 5amp converter c/w mounting clamps.	1	1	/	/
	371	Harness; wiring 10amp converter c/w mounting clamps.	1	1	/	/
	3711					
	3711	Harness; wiring front c/w mounting clamps.	2.5	1	/	/
	3712	Harness; wiring cabin c/w mounting clamps.	3	1	/	/
	3713	Harness; wiring rear c/w mounting clamps.	3	1	/	/
	3714					
	37141	Cable; battery to disconnect switch. (each of 3).	0.5	/	0.5	0.5
	37141	Cable; disconnect switch to starter ground.	0.5	0.5	/	/
	37141	Cable; disconnect switch to starter positive.	0.5	0.5	/	/
	37143	Switch; battery disconnect c/w mounting hardware.	1	/	/	0.5
	3718					
	37181	Cable; starter positive.	1	/	/	0.5
	37182	Cable; starter negative.	1	/	/	0.5
	3719					
	3719	Cable; cab to articulation frame.	0.5	0.5	/	/

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INSTRUMENTS**

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
37		CABLE; FUSE; RELAY continued				
	372	Electrical Distribution Box; relay; circuit breaker G710B - 780B	/	/	/	/
	3721	3721 Box; distribution main console c/w mounting hardware.	4	2	/	/
	3722	3722 Fuse; any 5amp, 7.5 amp, 10 amp, 25 amp.	0.5	/	/	/
	37221	37221 Breaker; circuit any 3 amp, 5 amp, 7.5 amp, 15 amp.	0.5	/	/	/
	3723	37231 Relay; power any 1 of 6.	1	/	/	0.5
		37233 Solenoid; power any 1 of 2.	1	/	/	/
	379	Miscellaneous G710B - 780B Available for future use.	/	/	/	/

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**GROUP 3 ELECTRICAL SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM
INSTRUMENTS**

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
38		INSTRUMENTS; SENSOR; WARNING and INFO SYSTEM				
	380	General and Common Info about 383 - 388 G710B - 780B	/	/	/	/
	383	Speedometer; Trip Meter; Hour Meter G710B - 780B				
	383	Speedometer; c/w mounting bracket and Programing Software.	2	0.5	/	0.5
	383	Tachometer; c/w mounting hardware and Programing Software.	0.5	/	/	0.5
	383	Hourmeter; c/w mounting hardware.	1.5	/	/	0.5
	386	Sender; Monitor System G710B - 780B	/	/	/	/
	3861	3861 Sender; engine coolant temperature..	1.5	/	/	/
	3862	Sender; engine oil level warning.	1.5	/	/	/
	3862	Sender; engine coolant warning.	1.5	/	/	/
	3863	Sender; engine auxiliary coolant warning.	1.5	/	/	/
	3863	Sender; fuel solenoid warning.	1	/	/	/
	3864	Sender; engine oil pressure.	1.5	/	/	/
	387	Warning / Information Unit; Display Unit G710B - 780B				
	3871	3871 Central Computer; Contronics c/w Program Software.	4	1	/	0.5
	3871	Cover; Contronics unit c/w mounting hardware.	1	/	/	0.5
	3871	Keypad; Contronics unit c/w facepalte and mounting hardware.	1.5	/	/	0.5
	3871	Bezel; Contronics cover c/w mounting screws.	1	/	/	0.5
	3872	3872 Display; M4 or M44 module.	2.5	1	/	0.5
	3872	Harness; M4 or M44 module.	1.5	/	/	0.5
	388	Engine Automatic Override Shutdown System G710B - 780B				
	388	Module; alarm and shut down c/w mounting hardware.	4	1	/	0.5
	388	Lamp; alarm display c/w mounting fixture.	1	/	/	/
	388	Sender; any 1 of 4 replace.	1.5	/	/	/

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**GROUP 3 ELECTRICAL SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM
INSTRUMENTS**

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
39		MISCELLANEOUS				
	390	General and Common Info about 393 - 395 G710B - G780B	/	/	/	/
	393	Radio with Tape or CD Player; Voltage Divider. G710B - 780B	/	/	/	/
	3932	3932 Radio; c/w tape or cassette player. New Install.	4	/	/	1
	3937	3937 Converter; radio/cd/tape c/w mounting hardware.	1.5	0.5	/	/
		3937 Converter; 24 to 12 Volt 25amp c/w mounting hardware.	2.5	/	/	0.5
		3937 Converter; 24 to 12 Volt 5amp c/w mounting hardware.	1.5	/	/	0.5
		3937 Harness; 25amp converter.	2	/	/	0.5
		3937 Harness; 5amp converter.	1	/	/	0.5
	3939	3939 Antenna; radio outside c/w mounting hardware.	2	1	/	0.5
		3939 Speaker; radio/cd/tape c/w mounting hardware.	1	/	/	0.5

Classification of Codes

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GROUP 4 POWER TRANSMISSION						
Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
41		ENGINE CLUTCH				
	410	General and Common Info about 413 - 436 G710B - G780B	/	/	/	/
	413	Clutch Control system. G710B - 780B				
	413	Clutch Pedal Boot.	1.5	/	/	/
	413	Clutch Pedal c/w arm.	1	/	/	/
	413	Clutch Pedal Cross shaft c/w Bushings.	1.5	0.5	/	/
	413	Clutch Pedal return Spring.	0.5	/	/	/
	413	Clutch Slave cylinder.	1	0.5	/	/
	413	Clutch Cross Shaft c/w Thrust Brg.	1.5	/	/	0.5
	413	Clutch Output Seal c/w Bearing.	1.5	/	/	/
	413	Clutch Ouput Shaft.	2.5	/	/	0.5
	413	Yoke; clutch output.	1.5	/	/	0.5
	413	Housing; Steel output shaft c/w bearings.	2.5	/	/	0.5
	413	Bearing; Inner steel housing.	1.5	/	/	0.5
	413	Bearing; Pilot, clutch removed.	1	/	/	0.5
	413	Bearing; Release, clutch removed.	1	/	/	0.5
	413	Sleeve; clutch release, clutch removed.	1	/	/	/
	413	Seal; clutch crossshaft. Any 1 of 2.	0.5	/	/	/
	413	Housing; clutch bare. New Install.	4	/	/	/
	4134	4134 Master cylinder c/w Booster.	2	1	/	/
	4134	4134 Master cylinder c/w Line.	1	1	/	/
	4134	4134 Clutch Booster c/w Lines.	1.5	1	/	/
	4134	4134 Master cylinder repair Kit.	/	1	/	/
	4134	4134 Booster repair Kit.	/	1	/	/
	4138	4138 Clutch Assembly c/w Drive Ring.	6	/	/	1
	415	Flexible Coupling G710B - G780B				
	415	Disc; Clutch drive coupler.	2	/	/	/
	415	Cover; Clutch assembly.	1	/	/	/
	415	Clutch; Main flex coupling c/w drive disc and cover.	4	3	2	0.5
	415	Ring; Clutch drive ring.	1	/	/	0.5
	415	Plate; Clutch pressure.	1	/	/	/

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GROUP 4 POWER TRANSMISSION

(continued)

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
42		TRANSMISSION; HYDRAULIC; CONTROL				
	420	General and Common Info about 421 - 426 G710B - 780B	/	/	/	/
	4201	4201 Kit; Transmission Gasket.	2	/	/	/
	421	Transmission; Hydraulic; Control G710B - 780B				
	421	421 Transmission Regulator valve.	2.5	1	/	0.5
	421	421 Switch; Transmission Temp.	1	/	/	/
	421	421 Switch; Transmission Pressure.	1	/	/	/
	421	421 Heater; Transmission Immersion.	2	/	/	/
	4212	4212 Cap - Main Control valve.	2.5	/	/	/
	4212	4212 Cap - Range Control valve.	2	/	/	/
	4212	4212 Cap - Reverse Control valve.	2	/	/	/
	4213	4213 Shaft; Input Clutchpack c/w packs and seals. Re & Re.	2	/	3	0.5
	4213	4213 Shaft; Reverse Clutchpack c/w seals. Re & Re.	2	/	3	0.5
	4213	4213 Shaft; Output Clutchpack c/w seals. Re & Re.	2	/	3	0.5
	4213	4213 Shaft; Intermediate Clutchpack c/w seals. Re & Re.	2	/	3	0.5
	4214	4214 Gear; Transmission clutchpack drive c/w bearings. Any 1 of 8.	1.5	/	/	0.5
	4214	4214 Bearing; Transmission Clutchpack shaft. Any 1 of 15 sets.	0.5	/	/	/
	4215	4215 8400 Transmission Hydraulic Pump.	2	/	1.5	0.5
	4215	4215 Strainer; transmission sump.	1	/	/	/
	4215	4215 Filter; main-transmission.	0.5	/	/	/
	4215	4215 Fluid; transmission Drain or Fill.	1	/	/	/
	4215	4215 Hose; Transmission Pump to Transmission filter In. P/N 12731126.	2	/	1	/
	4215	4215 Hose; Transmission filter Out to Transmission Regulator In.	2	/	1	/
	4215	4215 Hose; Transmission Cooler In from Transmission Regulator.	2	/	1	/
	4215	4215 Hose; Transmission Cooler Out to Transmission Regulator line.	2	/	1	/
	4215	4215 Hose; Transmission Suction. P/N 12724863.	2	/	1	/
	4215	4215 Hose; Main Engine Clutch drain to Transmission sump.	1	/	1	/
	4215	4215 Hose; Clutch to transmission breather. P/N 14388x48.	1	/	0.5	/
	4215	4215 Hose; Transmission to Clutch input shaft supply. P/N 12731231.	1	/	0.5	/
	4215	4215 Hose; Transmission Pump to Clutch booster. P/N 78216x74.	1	/	0.5	/
	4215	4215 Hose; Clutch Booster to Clutch housing return. P/N 66686x50.	1	/	0.5	/
	4215	4215 Hose; Brake Booster to Clutch Booster. P/N 48849x35.	1	/	0.5	/
	4215	4215 Hose; Clutch Booster to Transmission return. P/N 78216x27.	1	/	0.5	/

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GROUP 4 POWER TRANSMISSION

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
42		TRANSMISSION; HYDRAULIC; CONTROL continued				
4216	4216	Shift Cartridge-any. (1)	1	/	/	/
	4216	Cartridge c/w Shift coil. (1)	1	/	/	/
	4216	Shift Coil-any. (1)	0.5	/	/	/
	4216	8400 Transmission Shift Coil. (1)	1	/	/	/
424		Control System. G710B - 780B				
	424	8400 Transmission Controller.	2	/	/	0.5
	424	Transmission Shifter Assy c/w Printed circuit board.	2.5	/	1.5	0.5
	424	Transmission Shifter Bellows.	0.5	/	/	/
	424	8400 Transmission Harness (Lower).	1.5	0.5	/	/
	424	8400 Transmission Harness (Upper).	1	0.5	/	/
426		Gearbox; Transmission mounting. G710B - 780B				
	426	Transmission Mounts c/w bolts, nuts. (each)	0.5	/	/	0.5
	426	Transmission Frame Mounts. (cut off/ reweld each)	2.5	/	/	/
43		GEARBOX, TRANSFER CASE				
430		General and Common Info about 431 - 436 G710B - G780B	/	/	/	/
431		Gearbox; Transfer Case; G710B - 780B				
	431	8400 Transmission Input Seal. (Upper).	2	/	/	0.5
	431	8400 transmission Output Seal. (Lower).	2	/	/	0.5
	431	Transmission - split case.	1	/	/	/
	431	Transmission Bearing Kit.	4	/	/	2.5
	431	Transmission Seal Kit.	4	/	/	2
4314	4314	8400 Transmission Guard.	1	/	/	0.5
	4314	8400 Transmission c/w Lines, driveshafts.Re & Re to / from Chassis.	4	/	/	/
	4314	8400 Transmission, c/w drain and refill. Complete Re & Re.	/	/	30	1
43141	43141	Input Clutch and Shaft c/w seals.	2	/	3	1
	43141	Reverse Clutch and Shaft c/w seals.	2	/	3	1
	43141	Output Clutch and Shaft c/w seals.	2	/	3	1
	43141	Intermediate Clutch and Shaft c/w seals.	2	/	3	1
		Classification of Codes				
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GROUP 4 POWER TRANSMISSION

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
44		HYDROSTATIC DRIVE and ALL WHEEL DRIVE SYSTEM				
	440	General and Common Info about 441- 445 G710B - G780B	/	/	/	/
	441	Hydraulic motor including operating system G726B & G746B				
	441	Accumulator c/w line and fittings. (1).	2.5	/	/	1
	441	Hose Guard. (1).	1.5	/	/	0.5
	441	Wheel Hub Assy. (1).	4.5	/	/	1
	441	Hose c/w fitting; Motor to Frame bulkhead. (2).	0.5	/	/	/
	441	Hose c/w fitting; Bulkhead to Motor By-pass valve. (2).	0.5	/	/	/
	441	Hose c/w fittings; Motor to Motor displacement valve. (2).	0.5	/	/	/
	4411	4411 Hydraulic motor c/w Planetary drive L/H. (1).	5	/	/	1
	4413	4413 Hydraulic motor c/w Planetary drive R/H. (1).	5	/	/	1
	4414	44141 Pump; Suction c/w fittings and gasket. P/N 12723224. 44142 Cooler; Main AWD Coller c/w fittings. See Function Group 911-8.				
	4419	Miscellaneous G726B & G746B	/	/	/	/
	442	Hydraulic Pump; Hydraulic hoses for AWD System G726B & G746B (AWD Hydraulic Oil Cooler Circuit)				
	442	Hose; AWD Cooler return to Tank. P/N 12730889.	1	/	/	/
	442	Hose; AWD Cooler to Distribution valve. P/N 12726767.	1	/	/	/
	442	Hose; AWD Left Pump to Distribution Valve. P/N 12730898.	1	/	/	/
	442	Hose; AWD Right Pump to Distribution Valve. P/N 12726769.	1	/	/	/
	442	Valve; By-pass c/w mounting hardware. P/N 12724805.	1	/	/	0.5
	4421	4421 Pump; AWD Hydraulic pump L/H or R/H c/w fittings. 4421 Pumps; AWD Hydraulic pump stack c/w 2 pumps.	4 5	/ /	2.5 /	0.5 1
	44211	44211 Gearbox; AWD Pump Drive c/w drain and fill. P/N 12727448. 44211 Gear; L/H Main pump drive gear c/w bearings. P/N 12730456. 44211 Gear; R/H AWD pump drive gear c/w bearings. P/N 12730456. 44211 Gear; Input shaft drive gear c/w bearings. P/N 12730457. 44211 Bearing; Drive gear bearing inner or outer. Any 1 of 6. 44211 Seal; Input shaft seal. P/N 29577. 44211 Yoke; Input shaft drive. P/N 73620.	6 2 2 2 1 1.5 1.5	/ / / / / / /	3.5 1.5 1.5 1.5 / / /	1 / / / / / /

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GROUP 4 POWER TRANSMISSION

Function	Repair #	Repair Description	Repair Code / Allowance				
			1	2	3	4	
44	HYDROSTATIC DRIVE and ALL WHEEL DRIVE SYSTEM						
	continued						
4422	4422	Valve; L/H Motor By-pass c/w Coil / Cartridge.	P/N 97637.	1.5	/	1	/
	4422	Valve; R/H Motor By-pass c/w Coil / Cartridge.	P/N 97638.	1.5	/	1	/
	4422	Coil; Motor By-pass c/w mounting nut / seal. Any 1 of 2	P/N 87737.	0.5	/	/	/
	4422	Cartridge; Motor By-pass c/w seals. Any 1 of 2.	P/N 97795.	0.5	/	0.5	/
	4422	Valve; Motor by-pass shuttle c/w seals. Any 1 of 4.	P/N 97799.	1.5	/	1	/
	4422	Kit; Motor By-pass solenoid cartridge seal kit.	P/N 97796.	/	/	0.5	/
	4422	Kit; Motor By-pass logic element.	P/N 97796.	/	/	0.5	/
	4422	Valve; Free Wheeling Solenoid c/w Coil / Cartridge.	P/N 58740.	1.5	/	1	/
	4422	Cartridge; Free Wheeling Valve c/w seal / nut.	P/N 66123.	0.5	/	0.5	/
	4422	Coil; Free Wheeing valve.	P/N 66125.	0.5	/	/	/
	4422	Kit; Seal kit for 58740.	P/N 63120.	/	/	0.5	/
	4422	Valve; 2 Speed c/w Coil / Cartridge.	P/N 97639.	1.5	/	1	/
	4422	Cartridge; 2 Speed c/w seal / nut.	P/N 66123.	0.5	/	0.5	/
	4422	Coil; 2 Speed valve.	P/N 66125.	0.5	/	/	/
	4422	Kit; Seal kit for 97639.	P/N 63120.	/	/	0.5	/
	4422	Valve; Free Wheeling valve L/H c/w cartridge.	P/N 87966.	1.5	/	1	/
	4422	Cartridge; Free Wheeling valve L/H.	P/N 87968.	0.5	/	0.5	/
	4422	Kit; Seal kit for 87968.	P/N 97801.	/	/	0.5	/
	4422	Valve; Free Wheeling valve R/H c/w cartridge.	P/N 87967.	1.5	/	1	/
	4422	Cartridge; Free Wheeling valve R/H. See L/H above.		/	/	/	/
	4422	Kit; Seal Kit for 87968 R/H. See L/H above.		/	/	/	/
4424	4424	Tank; AWD Hydraulic tank c/w ret. manifold / fittings.	P/N 12731522.	4	/	2	/
	4424	Unit; AWD Pump By-pass c/w fittings.	P/N 12724805.	1	/	0.5	/
	4424	Plate; AWD Hydraulic tank access cover.	P/N 12724589.	0.75	/	/	/
	4424	Tube; AWD tank filler c/w Cap and dipstick.	P/N 12724596.	1	/	/	0.5
	4424	Dipstick; AWD tank level.	P/N 12724597.	0.5	/	/	0.5
	4424	Sensor; AWD Oil temperature c/w drain / fill oil.	P/N 87864.	1	/	/	/
	4424	Sensor; AWD Oil Level c/w drain / fill tank.	P/N 87842.	1	/	/	/
	4424	Sensor; AWD Liquid Fan temperature c/w drain/fill.	P/N 12723260.	1	/	/	/

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GROUP 4 POWER TRANSMISSION

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
44		HYDROSTATIC DRIVE and ALL WHEEL DRIVE SYSTEM				
		continued				
	444	Hydraulic Pump; Hydraulic hoses for AWD System G726B & G746B (Wheel Motor Circuit)				
	444	Hose; AWD L/H Motor By-pass to Frame bulkhead. Any 1 of 2.	0.5	/	/	0.25
	444	Hose; AWD R/H Motor By-pass to Frame bulkhead. Any 1 of 2.	0.5	/	/	0.25
	444	Hose; AWD L/H Frame bulkhead to L/H Drive motor. Any 1 of 2.	0.75	/	/	0.25
	444	Hose; AWD R/H Frame bulkhead to R/H Drive motor. Any 1 of 2.	0.75	/	/	0.25
	444	Hose; AWD L/H Drive Motor to L/H 2-speed Valve. Any 1 of 2.	0.75	/	/	0.25
	444	Hose; AWD R/H Drive Motor to R/H 2-speed Valve. Any 1 of 2.	0.75	/	/	0.25
	444	Protector; Hose Front Left or Right Hand side. P/N 97823.	0.5	/	/	0.25
	444	Hydraulic Pump; Hydraulic hoses for AWD System G726B & G746B (AWD Speed Sensors Circuit)				
	444	Sensor; AWD Front Speed c/w jam nut. Any 1 of 2. P/N 87990.	1	/	/	0.5
	444	Sensor; AWD Rear Speed c/w jam nut. P/N 12726333.	1.5	/	/	0.5
	444	Disc; AWD Rear pick-up c/w mounting hardware. P/N 12725865.	3.5	/	/	1
	444	Bracket; AWD Rear sensor mounting c/w hardware. P/N 12725997.	1	/	/	0.5
	444	Hydraulic Pump; Hydraulic hoses for AWD System G726B & G746B (AWD Speed Sensor Circuit / Main Harness)				
	444	Harness; AWD Front Speed sensor. P/N 12726780.	3	/	/	1
	444	Harness; AWD Rear Main harness. P/N 12726779.	3	/	/	1
	444	Harness; AWD Console. P/N 12726825.	2.5	/	/	0.5
	444	Switch; Clutch pressure. P/N 400220.	0.5	/	/	/
	444	Switch; AWD Hydraulic oil pressure. P/N 402101.	0.5	/	/	/
	444	Switch; Hydraulic Pressure. Any 1 of 2. P/N 400220.	0.5	/	/	/
	445	Hydraulic Pump; Hydraulic hoses for AWD System G726B & G746B (Free Wheeling Circuit)				
	445	Hose; AWD L/H Pump to L/H Free Wheel Valve. Any 1 of 2.	1	/	/	0.25
	445	Hose; AWD R/H Pump to R/H Free Wheel Valve. Any 1 of 2.	1	/	/	0.25
	445	Hose; AWD L/H Free Wheel valve to Tank return.	0.75	/	/	0.25
	445	Hose; AWD R/H Free Wheel valve to Tank return.	0.75	/	/	0.25
	445	Hose; AWD L/H Free wheel valve to Free Wheel Solenoid.	1	/	/	0.25
	445	Hose; AWD R/H Free wheel valve to Free Wheel Solenoid.	1	/	/	0.25
	445	Hose; AWD Free wheel solenoid to Main pump case drain.	1	/	/	0.25
	445	Hose; AWD Free wheel solenoid to Tank return manifold.	1	/	/	0.25
	445	Hose; AWD Free wheel solenoid to R/H 2-Speed valve.	1.5	/	/	0.25
	445	Hose; AWD R/H Free wheel valve to R/H Motor By-pass Valve.	1.5	/	/	0.25
	445	Hose; AWD L/H Free wheel valve to L/H Motor By-pass Valve.	1.5	/	/	0.25
	445	Hose; AWD R/H Free wheel valve to R/H Lower Motor by-pass.	1.5	/	/	0.25

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GROUP 4 POWER TRANSMISSION

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
44		HYDROSTATIC DRIVE and ALL WHEEL DRIVE SYSTEM				
		continued				
	445	Hydraulic Pump; Hydraulic hoses for AWD System G726B & G746B (Free Wheeling Circuit)				
	445	Hose; AWD L/H Free wheel valve to L/H Lower Motor by-pass.	1.5	/	/	0.25
	445	Hose; AWD R/H 2-speed valve to Tank return line.	0.75	/	/	0.25
	445	Hose; AWD L/H 2-speed valve to Tank return line.	0.75	/	/	0.25
	445	Hose; AWD R/H Motor By-pass to Tank Return line.	0.75	/	/	0.25
	445	Hose; AWD R/H Free Wheel valve to Tank return.	0.75	/	/	0.25
	445	Hose; AWD L/H Free wheel valve to Free Wheel Solenoid.	1	/	/	0.25
	445	Hose; AWD R/H Free wheel valve to Free Wheel Solenoid.	1	/	/	0.25
	445	Hose; AWD Free wheel solenoid to Main pump case drain.	1	/	/	0.25
	445	Hose; AWD Free wheel solenoid to Tank return manifold.	1	/	/	0.25
	445	Hose; AWD Free wheel solenoid to R/H 2-Speed valve.	1.5	/	/	0.25
	445	Hose; AWD R/H Free wheel valve to R/H Motor By-pass Valve.	1.5	/	/	0.25
	445	Hose; AWD L/H Free wheel valve to L/H Motor By-pass Valve.	1.5	/	/	0.25
	445	Hose; AWD R/H Free wheel valve to R/H Lower Motor by-pass.	1.5	/	/	0.25
	445	Hose; AWD L/H Free wheel valve to L/H Lower Motor by-pass.	1.5	/	/	0.25
	445	Hose; AWD R/H 2-speed valve to Tank return line.	0.75	/	/	0.25
	445	Hose; AWD L/H 2-speed valve to Tank return line.	0.75	/	/	0.25
	445	Hose; AWD R/H Motor By-pass to Tank Return line.	0.75	/	/	0.25
	445	Hydraulic Pump; Hydraulic hoses for AWD System G726B & G746B (Charge Circuit)				
	445	Hose; R/H AWD Pump from AWD Filter Out. P/N 12727572.	1.5	/	/	0.5
	445	Hose; L/H AWD Pump from AWD Filter Out. P/N 12726652.	1.5	/	/	0.5
	445	Hose; AWD Charge pump to AWD Filter In. P/N 12727567.	1.5	/	/	0.5
	445	Hose; AWD Charge pump Suction. P/N 12726753.	1	/	/	0.5
	445	Filter; AWD Hydraulic Cannister c/w fittings. See Function 911-9.	/	/	/	/
	445	Fitting; AWD Filter In. P/N 935013.	0.5	/	/	/
	445	Fitting; AWD Hydraulic Filter Tee. P/N 97681.	0.5	/	/	/
	445	Fitting; AWD Hydraulic Filter Connector. P/N 12726752.	0.5	/	/	/
	445	Fitting; AWD Charge Pump Suction Connector. P/N 12724693.	0.5	/	/	/

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GROUP 4 POWER TRANSMISSION

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
45		DRIVESHAFT				
	450	General and Common Info about 451 G710B - G780B	/	/	/	/
	451	Driveshaft, None - AWD Pump Drive G710B - G730B				
	451	Driveshaft; Gearbox Driveshaft c/w universal joint. P/N 12730390.	3	/	2	/
	451	Tube; Gearbox driveshaft. P/N 12724812.	2	/	1	/
	451	Yoke; Flanged c/w mounting hardware. P/N 73633.	1.5	/	/	/
	451	Coupler; Driveshaft to Gearbox c/w hardware. P/N 73632.	1	/	/	/
	451	Washer; Star Driveshaft coupler. P/N 81156.	0.5	/	/	0.5
	451	Driveshaft, None - AWD Pump Drive G740B - G780B				
	451	Driveshaft; Gearbox Driveshaft c/w universal joint. P/N 12726572.	3.5	/	2	/
	451	Tube; Gearbox driveshaft. P/N 12730686.	2.5	/	1.5	/
	451	Yoke; Flanged c/w mounting hardware. P/N 73633.	2	/	/	/
	451	Coupler; Driveshaft to Gearbox c/w hardware. P/N 73632.	1	/	/	/
	451	Washer; Star Driveshaft coupler. P/N 81156.	1	/	/	0.5
	451	Driveshaft, AWD complete G726B only				
	451	Driveshaft; Gearbox Driveshaft c/w universal joint. P/N 12724811.	3	/	2	/
	451	Tube; Gearbox driveshaft. P/N 12724813.	2	/	1	/
	451	Yoke; Flanged c/w mounting hardware. P/N 73633.	1.5	/	/	/
	451	Coupler; Driveshaft to Gearbox c/w hardware. P/N 73632.	1	/	/	/
	451	Washer; Star Driveshaft coupler. P/N 81156.	1	/	/	0.5
	451	Driveshaft, AWD complete G746B only				
	451	Driveshaft; Gearbox Driveshaft c/w universal joint. P/N 12730942.	3	/	2	/
	451	Tube; Gearbox driveshaft. P/N 12730941.	2	/	1	/
	451	Yoke; Flanged c/w mounting hardware. P/N 73633.	1.5	/	/	/
	451	Coupler; Driveshaft to Gearbox c/w hardware. P/N 73632.	1	/	/	/
	451	Washer; Star Driveshaft coupler. P/N 81156.	1	/	/	0.5
	4513	Driveshaft, Pump Gearbox U-Joint G710B - G780B				
	4513	Joinjt; Universal Gearbox driveshaft. Any 1on all Models.	1	/	/	/

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GROUP 4 POWER TRANSMISSION						
Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
46		FRONT AXLE; REAR AXLE				
	460	General and Common Info about 461 - 468 G710B - G780B	/	/	/	/
	461	Front axle. G710B - G780B Note: Steering components are in Group 6.	/	/	/	/
	4619	Miscellaneous G710B - G780B	/	/	/	/
	463	Rear axle; Differential; Driveshaft G710B - 780B	/	/	/	/
	4631	Tandem Drive G710B - G780B				
	4631	Tire; Tandem Drive. Any 1 of 4.	1	/	/	0.5
	4631	Tandem; Drive case c/w brakes, main & stub axle assy. Any 1 of 2.	8	/	/	1
	4631	Chain; Tandem drive c/w Cover plate removed. Any 1 of 4.	2.5	/	/	1
	4631	Sprocket; Tandem drive Main Axle. Any 1 of 2.	1	/	/	0.5
	4631	Sprocket; Stub axle c/w Brake housing. See Function 517-3.	/	/	/	/
	4631	Plate; Tandem case Centre cover. Any 1 of 2.	0.5	/	/	/
	4631	Axle; Main tandem drive c/w seal and bearing. See Function 4632.	/	/	/	/
	4631	Seal; main axle, tandem drive. See Function 4632.	/	/	/	/
	4631	Bearing; main axle. See Function 4632.	/	/	/	/
	4631	Drain/Flush; Tandem case. Any 1 of 2.	2	/	/	/
	4631	Cover; Tandem Brake Line protection. Any 1 of 4.	1	/	/	0.5
	4631	Step; Tandem Man c/w mounting hardware. Any 1 of 2.	1	/	/	/
	4631	Dipstick; Tandem level c/w sealing ring. Any 1 of 2.	0.5	/	/	/
	4632	Differential G710B - 740B				
	4632	Differential c/w tandem and wheels. (Roll Out / Roll In).	6	/	/	/
	4632	Differential c/w axles and tandem sleeves, Tandems Off. Re & Re.	4	/	/	/
	4632	Differential Carrier c/w bearings and Lock- Unlock. Re & Re.	/	/	6	2
	4632	Case and Nest c/w bearings and Seals. Re & Re.	4	1	1	/
	4632	Gears; Crown and Pinion.	2	1.5	/	1
	4632	Sleeves: tandem c/w bushings. Any 1 of 2.	2	1.5	/	/
	4632	Seal; differential input.	1.5	/	/	/
	4632	Axle; Main tandem drive c/w seal and bearing. Any 1 of 2.	3	/	/	1
	4632	Seal; main axle, tandem drive. Any 1 of 2.	1	/	/	0.5
	4632	Bearing; main axle. Any 1 of 2.	1	/	/	0.5
	4632	Housing; Differential c/w total tear down and built up.	/	/	8	/
		Classification of Codes				
		1 = Replaced			3 = Overhauled	
		2 = Repaired			4 = Adjusted	

GROUP 4 POWER TRANSMISSION

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
46		FRONT AXLE; REAR AXLE continued				
	463	Differential G780B only.				
	4632	Differential; c/w tandem and wheels. (Roll Out / Roll In).	8	/	/	/
	4632	Differential; c/w axles and tandem sleeves, Tandems Off. Re & Re.	6	/	/	/
	4632	Differential; Carrier c/w bearings and Lock- Unlock. Re & Re.	/	/	8	2
	4632	Shaft; Input c/w bearings, Yoke, Seals. Re & Re.	4	/	6	1
	4632	Seal; Input shaft c/w New Locking nut.	3	/	/	/
	4632	Bushing; Tandem Sleeve, Short (Inner). Any 1 of 2.	1.5			
	4632	Bushing; Tandem Sleeve, Long (Outer). Any 1 of 2.	1.5			
	4632	Spur gear; Final drive c/w bearings, Side Housing. Re & Re.	3	/	1	/
	4632	Bull gear; Final drive c/w bearings. Re & Re.	3	/	/	/
	4632	Pump; Differential Lube Oil pump.	2	/	1	/
	4632	Crown gear; Differential.	2	/	/	1
	4632	Pinion gear; Differential .	2	/	/	1
	4632	Axle; Main c/w bearing and seal. Any 1 of 2.	3	/	/	1
	4632	Sleeve; Tandem c/w bushings.	2	/	/	/
	4632	Differential; Drain / Flush / Fill.	/	/	/	1.5
	4632	Lock - unlock; c/w piston and housing. See Function 4686.	/	/	/	/
	4632	Valve; Lock - unlock. See Function 4686.	/	/	/	/
	4632	Fork; Lock - unlock. See Function 4686.	/	/	/	/
	4632	Collar; Lock - unlock. See Function 4686.	/	/	/	/
	4632	Line; Hydraulic lock cylinder to valve. See Function 4686.	/	/	/	/
	4633	Hub; Hub reduction unit. G710B - 780B Note: Not Applicable.	/	/	/	/
	4634	Driveshaft G710B - G780B				
	4634	Shaft; Driveshaft Upper c/w U-joints.	2	/	1	/
	4634	Tube; Driveshaft Upper.	1	/	/	/
	4634	Yoke; Driveshaft Upper.	1	/	/	/
	4634	Joint; Universal c/w mounting hardware. Any 1 of 2.	1	/	/	/
	4634	Shaft; Driveshaft Lower c/w U-joints.	3.5	/	2	/
	4634	Tube; Driveshaft Lower.	1	/	/	/
	4634	Yoke; Driveshaft Lower.	1	/	/	/
	4634	Joint; Universal c/w mounting hardware. Any 1 of 2.	1	/	/	/
	4635	Gearbox; Distributing G710B - G780B Note: Not Applicable.	/	/	/	/
		Classification of Codes				
		1 = Replaced				
		2 = Repaired				
		3 = Overhauled				
		4 = Adjusted				

GROUP 4 POWER TRANSMISSION

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
46		FRONT AXLE; REAR AXLE continued				
	4636	Axle Casing G710B - G780B Note: Not Applicable	/	/	/	/
	4637	Drive Shaft bearing / Joint G710B - G780B Note: See Function 4634	/	/	/	/
	4638	Drive Shaft seal G710B - G780B Note: Not Applicable	/	/	/	/
	4639	Miscellaneous G710B - G780B Note: Not Applicable	/	/	/	/
	468	Differential Lock, with Control G710B - G746B	/	/	/	/
	4686	Differential Lock, with Control G710B - G746B				
	4686	Collar; Differential Locking.	0.5	/	/	/
	4686	Fork; Differential Locking.	1.5	/	/	0.5
	4686	Cylinder; Differential Lock c/w piston and spring.	1.5	/	/	0.5
	4686	Switch; Differential Lock c/w harness.	1	/	/	0.5
	4686	Kit; Differential Lock cylinder.	/	/	1	/
	4686	Differential Lock, with Control G780B only				
	4686	Sleeve; Differential Pinion.	1	/	/	/
	4686	Gear; Spider Pinion.	1	/	/	/
	4686	Gear; Shift Clutch.	1.5	/	/	/
	4686	Clutch; Shifter c/w mounting hardware.	1.5	/	/	/
	4686	Fork; Differential Lock shifter.	1	/	/	/
	4686	Cylinder; Differential Lock c/w Piston, Rail, Spring.	3	/	2	0.5
	4686	Cylinder; Diff Lock Re-seal.	/	/	2	/
	4686	Differential Hydraulic Circuit G710B - G746B				
	4686	Hose; Transmission filter supply to Solenoid valve. P/N 78220 x 28.	1.5	/	/	0.5
	4686	Hose; Solenoid valve to Clutch housing return. P/N 78221 x 17.	1	/	/	0.5
	4686	Hose; Solenoid valve to Lock cylinder apply. P/N 78221 x 36.	2	/	/	0.5
	4686	Hose; Lock cylinder to Solenoid return. P/N 78220 x 36.	2	/	/	0.5
		Classification of Codes				
		1 = Replaced				
		2 = Repaired				
		3 = Overhauled				
		4 = Adjusted				

GROUP 4 POWER TRANSMISSION

Function	Repair #	Repair Description	Repair Code / Allowance			
46		FRONT AXLE; REAR AXLE continued				
	4686	Differential Hydraulic Circuit G710B - G746B				
	4686	Valve; Lock - Unlock Solenoid c/w mounting hardware.	2	/	1	/
	4686	Cartridge; Locking solenoid c/w seals.	1	/	0.5	/
	4686	Coil; Locking solenoid.	0.5	/	/	/
	4686	Kit; Seal kit.	/	/	1	/
	4686	Differential Hydraulic Circuit G780B only				
	4686	Hose; Transmission filter supply to Solenoid valve. P/N 78220 x 28.	1.5	/	/	0.5
	4686	Hose; Solenoid valve to Clutch housing return. P/N 78220 x 48.	1.5	/	/	0.5
	4686	Hose; Solenoid valve to Lock cylinder apply. P/N 78221 x 12.	2.5	/	/	0.5
	4686	Hose; Lock cylinder to Solenoid return. P/N 78220 x 18.	2.5	/	/	0.5
	4686	Valve; Lock - Unlock Solenoid c/w mounting hardware.	2.5	/	1	/
	4686	Cartridge; Locking solenoid c/w seals.	1	/	0.5	/
	4686	Coil; Locking solenoid.	0.5	/	/	/
	4686	Kit; Seal kit.	/	/	1	/
49		MISCELLANEOUS				
	490	General and Common Info about 491 G710B - G780B				
			/	/	/	/
	491	Oil Cooler; transmission. G710B -G780B				
			/	/	/	/
	4911	Oil Cooler; Transmission G710B - G780B				
	4911	Oil cooler; transmission.	2	/	/	/
	4912	Line G710B - G780B				
	4912	Hose; Cooler to transmission In circuit.	2	/	/	/
	4912	Hose; Cooler return to Transmission.	0.5	/	/	/
	4918	Mounting Parts G710B - G780B Note: Not Applicable				
			/	/	/	/
	4919	Miscellaneous G710B - G780B Note: Not Applicable				
			/	/	/	/
		Classification of Codes				
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		2 = Repaired			4 = Adjusted	

GROUP 5 BRAKES

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
50		GENERAL				
	500	Comprehensive Info about Brakes G710B - 780B	/	/	/	/
51		WHEEL BRAKE				
	510	General and Common Info about 511 - 517 G710B - G780B	/	/	/	/
	517	Rear Wheel Brake; Wet Brake G710B - G780B	/	/	/	/
	5173	Disc G710B - G780B				
	5173	Disc; Reaction complete set. P/N 37935.	2	/	/	0.5
	5173	Disc; Friction complete set. P/N 37934.	2	/	/	0.5
	5174	Pressure Plate G710B - G780B Note: Not Applicable.	/	/	/	/
	5175	Piston; Piston Seals G710B - G780B				
	5175	Piston; Brake apply c/w sealing rings. P/N 37861.	2	/	/	/
	5175	Rings; Brake piston sealing complete set.	/	/	1	/
	5175	Rings; Sealing Rings Back-up.	/	/	0.5	/
	5176	Housing; Inner Housing G710B - G780B				
	5176	Housing; Brake c/w piston, sealing rings, stub axle. Tires off. Re & Re.	4	/	2	/
	5176	Housing; Brake bare.	2	/	1	/
	5176	Housing; Inner Brake.	2	/	1	/
	5176	Hub; Inner drive c/w lock rings.	2	/	1	/
	5176	Bearing; Inner hub support.	1	/	/	/
	5176	Bearing; Outer Brake housing support.	1	/	/	/
	5176	Axle; Stub axle c/w seal and support bearing.	2	/	1	/
	5176	Axle; Stub axle only.	1.5	/	/	0.5
	5176	Brake Adjustment / Bleed. Any 1 of 4.	/	/	/	1

Classification of Codes

1 = Replaced

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GROUP 5 BRAKES

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
52		HYDRAULIC BRAKE SYSTEM				
		continued				
	520	General and Common Info about 520 - 527				
		G710B - G780B	/	/	/	/
	520	Pedal; Brake pedal and arm c/w bushing.	2	/	/	0.5
	520	Flange; Boot mounting c/w screws.	0.5	/	/	/
	520	Boot; Brake pedal c/w mounting flange.	1	/	/	0.5
	520	Rod; extension c/w clevis and locking nut.	2	/	/	0.5
	520	Plate; Brake pivot c/w shoulder screw.	0.5	/	/	/
	520	Plate; Inner pivot.	0.5	/	/	/
	520	Plate; Outer pivot.	0.5	/	/	/
	520	Switch; Brake light c/w mounting bracket.	1.5	/	/	0.5
	520	Bracket; Brake Booster mounting c/w mounting hardware.	4	/	/	1
	521	Master cylinder; brake servo.				
		G710B - 780B				
	521	Master cylinder c/w booster assy.	3	/	1.5	0.5
	521	Master cylinder only.	1.5	/	1	/
	521	Master cylinder repair kit.	1	/	/	/
	521	Switch; Brake Master / Booster. P/N 53034.	1	/	/	/
	521	Reservoir; Brake Master / Booster. P/N 58747.	1.5	/	2	/
	521	Motor; Brake Back-up c/w pump and seal. P/N 76287.	2	/	1	/
	521	Kit; Brake Booster seal kit. P/N 76285.	/	/	1.5	/
	521	Master Cylinder; Drain and Fill.	/	/	0.5	/
	522	Brake Line				
		G710B - G780B				
	522	Hose; Clutch Booster to Brake Booster.	1	/	/	/
	522	Hose; Transmission Regulator to Brake Booster.	1	/	/	/
	522	Hose; Brake Master to Tandem Wheel brake housings. Any 1 of 4.	1.5	/	/	/
	522	Brake System; Prime / Bleed / Adjust. Any 1 of 4.	/	/	1	/
	527	Brake Booster				
		G710B - G780B	/	/	/	/
	5272	Brake Accumulator				
		G710B - G780B	/	/	/	/
	5273	Pressure Converter; Booster				
		G710B - G780B				
	5273	Booster assembly only.	1.5	/	1	/
	5273	Booster repair Kit.	/	/	1	/

Classification of Codes

1 = Replaced 3 = Overhauled
 2 = Repaired 4 = Adjusted

GROUP 5 BRAKES

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
55		PARKING BRAKE				
		continued				
	550	General and Common Info about 551 - 555				
		G710B - G780B	/	/	/	/
	551	Brake Linkage				
		G710B - G780B				
	551	Disc; Parking Brake c/w mounting hardware. P/N 12725865.	4	/	1	/
	551	Yoke; Lower Parking brake mount c/w hardware. P/N 87575.	1.5	/	/	/
	551	Intensifier; Parking Brake c/w mounting hardware. P/N 12726367.	2.5	/	/	0.5
	551	Bracket; Parking brake intensifier c/w hardware. P/N 12726411.	1.5	/	/	/
	551	Line; Parking brake solenoid valve to intensifier. P/N 12730053.	1	/	/	/
	551	Valve; Parking Brake apply c/w coil / cartridge. P/N 12726409.	2.5	/	1.5	/
	551	Accumulator; Parking Brake. P/N 12726408.	1	/	/	/
	551	Cartridge; Solenoid valve. P/N 66123.	1	/	0.5	/
	551	Coil; 24-volt solenoid valve. P/N 66125.	1	/	/	/
	551	Valve; Check valve solenoid valve. P/N 12727442.	1	/	0.5	0.5
	551	Valve; Relief valve solenoid valve. P/N 12727443.	1	/	0.5	0.5
	552	Caliper Brake				
		G710B - G780B				
	552	Brake; Parking brake unit c/w Piston and seals. P/N 11145151.	2	/	1	1
	552	Switch; Parking Brake pressure c/w fittings. P/N 12726662.	1	/	/	/
	552	Hose; Parking brake supply from valve assy. P/N 12726409.	1	/	/	/
	5522	Brake Friction Lining				
		G710B - G780B				
	5522	Disc; Parking brake friction.	1	/	0.5	0.5
	5522	Lock; Friction disc to caliper.	0.5	/	/	/
	5522	Disc; Parking Brake Adjustment.	/	/	/	1
	5529	Miscellaneous				
		G710B - G780B	/	/	/	/
	555	Failsafe Brake				
		G710B - G780B	/	/	/	/
	5551	Failsafe Brake Valve				
		G710B - G780B	/	/	/	/

Classification of Codes

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GROUP 6 STEERING

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
60		GENERAL				
	600	Comprehensive Info about Sterring G710B - G780B	/	/	/	/
62		STEERING AXLE				
	620	General and Common Info about 622 - 648 G710B - G780B	/	/	/	/
	622	Steering axle; steering spindle; driving. G710B - G746B				
	622	Front axle; c/w pivot bearings.	4	/	10	1.5
	622	Front axle Hub c/w bearings (1).	2	/	2	0.5
	622	Front axle king pin (1).	2	/	1	/
	6221	Steering Spindle G710B - G746B				
	6221	Spindle; Front Axle spindle c/w bearings and King Pin. Any 1 of 2.	2	/	1	/
	6221	Spacer; Spindle Upper or Lower spacer. Any 1 of 2.	0.5	/	/	/
	6222	Steering Knuckle; Retainer G710B - G746B				
	6222	Knuckle; Steering Axle c/w mounting hardware. Any 1 of 2.	4	/	1	/
	6222	Knuckle; Spacer c/w lock pin. Any 1 of 4.	2	/	0.5	/
	6222	Pin; Knuckle swivel pin c/w bushings / seals. Any 1 of 2.	1	/	0.5	/
	6222	Shim; Knuckle Shim adjust pack.	/	/	/	1
	6223	Steering Knuckle Joint Bearing G710B - G746B				
	6223	Bearing; Knuckle Pin. Any 1 of 4.	1.5	/	/	0.5
	6223	Seal; Knuckle bearing.	0.5	/	/	/
	6223	Cap; Knuckle Pin End cap. Any 1 of 4.	0.5	/	/	0.5
	6225	Steering Drag Link G710B - G746B				
	6225	Link; Front Axle Drag c/w L/H / R/H Yokes.	1	/	1	/
	6225	Yoke; Drag Link L/H c/w jam nut.	1.5	/	0.5	0.5
	6225	Yoke; Drag Link R/H c/w jam nut.	1.5	/	0.5	0.5

Classification of Codes

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GROUP 6 STEERING

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
62		STEERING AXLE continued				
	6226	Pivot Block G710B - G746B				
	6226	Pivot Block; c/w bearings R/H.	1.5	/	1	0.5
	6226	Pivot Block; c/w bearings L/H.	1.5	/	1	0.5
	6226	Pin; Pivot Block locking c/w thrust / lock nut. Any 1 of 2.	1	/	/	0.5
	6226	Bushing; Pivot Block small. Any 1 of 4.	0.5	/	0.5	/
	6226	Bushing; Pivot Block large. Any 1 of 4.	0.5	/	0.5	/
	622	Steering axle. G780B only				
	622	Front axle; c/w pivot bearings.	5	/	10	1.5
	622	Front axle Hub c/w bearings. Any 1 of 2.	3	/	2	0.5
	622	Bearing; Inner Hub c/w seal. Any 1 of 2.	1	/	/	0.5
	622	Bearing; Outer Hub c/w locking hardware. Any 1 of 2.	1	/	/	0.5
	622	Front axle king pin. Any 1 of 2.	3	/	1	/
	622	Pin; Front Axle Pivot.	3	/	/	1
	622	Bearings; Front Axle pivot.	2	/	1	0.5
	622	Block; Front Axle pivot mount c/w Arc Air off / Re-weld On.	8	/	/	1
	6221	Steering Spindle G780B only				
	6221	Spindle; Front Axle spindle c/w bearings and King Pin. Any 1 of 2.	4	/	1.5	/
	6221	Spacer; Spindle Upper or Lower spacer. Any 1 of 2.	0.5	/	/	/
	6221	Bearing; Spindle Thrust. Any 1 of 4.	1	/	/	/
	6221	Seal; Hub rear seal c/w backing plate. Any 1 of 2.	1	/	/	/
	6221	Pin; Spindle to drag link c/w locking hardware. Any 1 of 2.	1	/	/	/
	6222	Steering Knuckle; Retainer G780B only				
	6222	Knuckle; Steering Axle c/w mounting hardware. Any 1 of 2.	4	/	1	0.5
	6222	Pin; Knuckle swivel pin c/w bushings / seals. Any 1 of 2.	2	/	1	0.5
	6223	Steering Knuckle Joint Bearing G780B only				
	6223	Bearing; Knuckle Pin. Any 1 of 4.	2	/	/	1
	6223	Seal; Knuckle bearing.	0.5	/	/	/
	6223	Cap; Knuckle Pin End cap. Any 1 of 4.	0.5	/	/	0.5

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GROUP 6 STEERING

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
62		STEERING AXLE continued				
	6225	Steering Drag Link G780B only				
	6225	Link; Front Axle Drag c/w L/H / R/H Yokes.	2.5	/	/	1
	6225	Yoke; Drag Link L/H c/w jam nut.	1.5	/	0.5	1
	6225	Yoke; Drag Link R/H c/w jam nut.	1.5	/	0.5	1
	6226	Pivot Block G710B - G746B				
	6226	Pivot Block; c/w bearings R/H.	1.5	/	1	0.5
	6226	Pivot Block; c/w bearings L/H.	1.5	/	1	0.5
	6226	Pin; Pivot Block locking c/w thrust / lock nut.	1	/	/	0.5
	6226	Bushing; Pivot Block small.	0.5	/	0.5	/
	6226	Bushing; Pivot Block large.	0.5	/	0.5	/
	622	Front Axle Hub and Knuckle G726B and G746B Note: AWD Only				
	622	Hub; AWD Front Axle c/w mounting hardware L/H.	5	/	/	1
	622	Hub; AWD Front Axle c/w mounting hardware R/H.	5	/	/	1
	622	Guard; AWD Hose c/w mounting hardware.	1.5	/	/	1
	622	Knuckle; AWD Front Axle c/w mounting hardware.	3	/	2	1
	622	Pin; AWD Hub King Pin.	1.5	/	/	/
	622	Bushing; AWD Axle King Pin.	1.5	/	/	1.5

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GROUP 6 STEERING

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
64		STEERING				
	640	General and Common Info about 641 - 648 G710B - G780B	/	/	/	/
	641	Steering Wheel; Steering Column; Tilt Steering G710B - G780B				
	641	Steering wheel c/w Steering Column.	2	/	1	0.5
	641	Steering wheel.	1	/	/	/
	641	Steering column c/w mounting brkt.	1.5	/	1	0.5
	641	Steering column Boot.	1	/	/	0.5
	641	Support; Steering Column c/w mounting hardware.	1.5	/	/	0.5
	641	Head; Pedastal c/w switch plate / covers.	2.5	/	1.5	1
	641	Plate; Switch / Gauge c/w mounting hardware.	1	/	/	/
	641	Bracket; Wheel Tilt U-Bracket c/w mounting hardware.	3	/	2	/
	641	Spring; Head Tilt return.	0.5	/	/	/
	641	Bearing; Wheel Tilt support.	1	/	/	/
	641	Support; Pedastal support c/w Lower tilt bearing / bracket.	4	/	2	1
	641	Plate; Lower Pedastal side c/w bearings. Any 1 of 2.	1.5	/	0.5	/
	641	Bearing; Flanged Lower side plate. Any 1 of 2.	1	/	/	/
	641	Link; Pedastal Upper Side link c/w bearings. Any 1 of 2.	1.5	/	1	/
	641	Bearing; Flanged Upper side plate. Any 1 of 2.	1	/	/	0.5
	641	Beam; Pedastal Support c/w upper / lower bushings.	1.5	/	/	/
	641	Shaft; Upper Pedastal Pivot.	2	/	/	/
	641	Lever; Wheel tilt lever c/w lock.	1.5	/	/	/
	641	Spring; Pedastal Locking c/w mounting hardware.	2.5	/	/	1
	641	Lever; Pedastal tilt locking c/w mounting hardware.	1.5	/	/	0.5
	643	Steering arm; steering link; Wheel lean tie bar. G710B - G746B				
	643	Wheel lean tie bar c/w Pins.	1.5	/	0.5	/
	643	Wheel lean; Tie Bar Pin. Any 1 of 2.	0.5	/	0.5	/
	643	Bearing; Lean Wheel Tie bar. Any 1 of 2.	0.5	/	/	/
	643	Steering arm; steering link; Wheel lean tie bar. G780B only				
	643	Wheel lean tie bar c/w Pins.	2.5	/	1	/
	643	Wheel lean; Tie Bar Pin. Any 1 of 2.	1	/	1	/
	643	Bearing; Lean Wheel Tie bar. Any 1 of 2.	1	/	/	/

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GROUP 6 STEERING

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
64		STEERING continued				
	645	Hydraulic equipment.				
		G710B - 746B				
	6451	6451 Cylinder; Steering c/w pins, bearings. Any 1 of 2.	2	/	1.5	/
		6451 Bearings; Steering Cylinder mounting. Any 1 of 4.	0.5	/	/	/
		6451 Kit; Steering Cylinder packing. Any 1 of 2.	/	/	1.5	/
		6451 Rod; Steering Cylinder. Any 1 of 2.	1	/	0.5	/
		6451 Piston; Steering Cylinder. Any 1 of 2.	0.5	/	/	/
		6451 Barrel; Steering Cylinder. Any 1 of 2.	1.5	/	/	/
		6451 Valve; Steering Cushion c/w mounting hardware.	1.5	/	0.5	1
	6451	Hydraulic equipment.				
		G780B only				
		6451 Cylinder; Steering c/w pins, bearings. Any 1 of 2.	2.5	/	2	/
		6451 Bearings; Steering Cylinder mounting. Any 1 of 4.	1.5	/	/	/
		6451 Kit; Steering Cylinder packing. Any 1 of 2.	/	/	2	/
		6451 Rod; Steering Cylinder. Any 1 of 2.	1.5	/	1	/
		6451 Piston; Steering Cylinder. Any 1 of 2.	1.5	/	/	/
		6451 Barrel; Steering Cylinder. Any 1 of 2.	1.5	/	/	/
		6451 Valve; Steering Cushion c/w mounting hardware.	1.5	/	0.5	1
	6453	Steering Pump				
		G710B - G780B Note: See Function 4215	/	/	/	/
	6457	Control Valve				
		G710B - G780B				
		6457 Valve; Steering Orbital c/w mounting hardware.	2.5	/	1.5	/
		6457 Valve; Steering Cushion.	2.5	/	1.5	1
		6457 Kit; Seal kit steering cushion.	/	/	1.5	/
		6457 Cartridge; steering cushion.	1	/	/	0.5
	6459	Line; Fitting; Miscellaneous; Front; Rear.				
		G710B - G780B plus AWD				
	64591	64591 Hose; Steering cylinder to front frame bulkhead. Any 1 of 2.	1	/	0.5	/
		64591 Hose; Front frame bulkhead to Cushion valve. Any 1 of 2.	1	/	0.5	/
		64591 Hose; Orbital pump to Steering Cushion. Any 1 of 2.	1	/	0.5	/
		64591 Hose; Steering Orbital to Tank return.	1	/	0.5	/
		64591 Hose; Priority valve to Steering Orbital.	1	/	0.5	/
		64591 Hose; Orbital Load Sense.	1	/	0.5	/

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GROUP 6 STEERING

Function	Repair	Repair Description	Repair Code / Allowance			
			1	2	3	4
64		STEERING continued				
	6459	Line, Fitting, Miscellaneous, Front, Rear. G710B - G780B plus AWD	/	/	/	/
	64592	Line, Fitting, Miscellaneous, Rear G710B - G780B plus AWD	/	/	/	/
	647	Supplementary steering. G710B - 780B	/	/	/	/
	6471	Supplementary Steering, Lines, Fittings. G710B - G780B Plus AWD				
	6471	Hose; Supplementary Steering Unit to Check valve. G780B only.	1	/	/	/
	6471	Hose; Supplementary Steering Unit to Check valve.	1	/	/	/
	6471	Hose; Main Hydraulic pump to Supplementary Unit. G780B only.	1.5	/	/	/
	6471	Hose; Main Hydraulic pump to Supplementary Unit.	1.5	/	/	/
	6471	Hose; Supplementary Unit to Tank return. G780B only.	1	/	/	/
	6471	Hose; Supplementary Unit to Tank return.	1	/	/	/
	6472	Supplementary Steering Pump and Motor G710B - G780B Plus AWD				
	6472	Supplementary steering c/w pump/motor. New Install.	24	/	4	1
	6472	Supplementary steering Control System.	12	/	4	1
	6472	Supplementary pump.	4	/	/	1
	6472	Supplementary motor.	4	/	/	1
	6473	Supplemental Steering Control System G710B - G780B Plus AWD				
	6473	Pump check valve.	1.5	/	0.5	0.5
	6473	Pump relief valve.	1	/	0.5	0.5
	6473	Coupler; electric motor to hydraulic pump	5	1	/	1
	6473	Motor Solenoid.	1.5	/	/	0.5
	6473	Motor Pressure switch.	1.5	/	/	0.5
	6473	Wiring Harness.	2.5	/	/	/

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GROUP 6 STEERING

Function	Repair	Repair Description	Repair Code / Allowance			
			1	2	3	4
64		STEERING continued				
648		Wheel Lean System. G710B - G780B				
	648	Bearing; Leaning wheel mount c/w snap ring. Any 1 of 2.	1	/	0.5	/
	648	Valve; Leaning wheel Relief c/w mounting studs.	1	/	0.5	0.5
	648	Valve; Leaning wheel Check valve.	1	/	0.5	0.5
	648	Leaning wheel counter balance valve. EEC.	1	/	/	/
	648	Hose; Leaning wheel Cylinder to Frame Bulkhead. Any 1 of 2.	1.5	/	0.5	/
	648	Hose;Frame Bulkhead to Counterbalance valve. Any 1 of 2.	1.5	/	0.5	/
	648	Hose; Counterbalance valve to Main Control Manifold. Any 1 of 2.	1.5	/	0.5	/
6481		Wheel Lean Cylinder G710B - G780B				
	6481	Cylinder; Leaning wheel c/w bearings. Any 1 of 2.	2	/	1.5	/
	6481	Kit;Leaning wheel cylinder. Any 1 of 2.	/	/	1.5	/
	6481	Rod;Leaning wheel cylinder. Any 1 of 2.	1.5	/	1	/
	6481	Barrel;Leaning wheel cylinder. Any 1 of 2.	1.5	/	1	/
	6481	Nut; Leaning Wheel cylinder. Any 1 of 2.	1	/	/	0.5

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GROUP 7 FRAME WHEEL UNIT

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
70		GENERAL				
	700	Comprehensive Info about Frame and Wheels G710B - G780B	/	/	/	/
71		FRAME				
	710	General and Common Info about 711 - 716 G710B - G780B	/	/	/	/
	711	Frame, complete G710B - G780B				
	711	Frame; c/w Front and Rear section, replace new. Re & Re.	110	/	/	/
	711	Paint; c/w Sandblast / Wash / Prime / Mask / Paint.	/	/	16	/
	7117	Frame Front G710B - G780B				
	7117	Frame; Front Section only, replace new. Re & Re.	52	/	/	/
	7117	Paint; c/w Sandblast / Wash / Prime / Mask / Paint.	/	/	10	/
	7118	Frame Rear G710B - G780B				
	7118	Frame; Rear Section only, replace new. Re & Re.	52	/	/	/
	7118	Paint; c/w Sandblast / Wash / Prime / Mask / Paint.	/	/	8	/
	715	Protection, Transmission Guard, Belly Pan, Front Hose Guard G710B - G780B				
	715	Guard; transmission upper.	1	/	/	/
	715	Guard; transmission lower.	1	/	/	/
	715	Guard; bellypan.	2	/	/	/
	715	Cover; front hose.	1	/	/	/
	715	Cover; rear hose.	1	/	/	/
	715	Cover; Hydraulic Manifold c/w mounting hardware.	8	/	/	1
	715	Cover; Hydraulic Manifold section. L/H or R/H. Any 1 of 2.	1.5	/	/	0.5
	715	Cover; Front Frame Bulhead c/w mounting hardware. Any 1 of 5.	1	/	/	0.5
	715	Support; Belly Pan Rear c/w weld / Clean / Prime / Paint. Any 1 of 2.	4	/	/	/
	715	Support; Belly Pan Front c/w weld / Clean / Prime / Paint. Any 1 of 2.	4	/	/	/
	716	Counterweight, Push Block. G710B - G780B				
	716	Push Block; front.	2	/	/	/
	716	Wear Plates; Push Block. Any 1 of 3.	0.5	/	/	/
	716	Decal; Push Block.	0.5	/	/	/

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GROUP 7 FRAME WHEEL UNIT

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
74		FRAME LINK / ARTICULATION continued				
	740	General Info about Frame Link complete.				
		G710B - G780B				
	740	Lug; Pivot Front Hinge L/H and R/H. Any 1 of 2.	4	/	/	0.5
	740	Lug; Pivot Rear Hinge L/H and R/H. Any 1 of 2.	4	/	/	0.5
	740	Restrictor; Wing Articulation R/H.	1	/	/	/
	740	Restrictor; Wing Articulation L/H.	1	/	/	/
	740	Pin; Articulation Locking. L/H and R/H. Any 1 of 2.	1	/	/	0.5
	741	Bearings				
		G710B - G780B				
	741	Bearings; upper / lower. (1).	4	/	/	1
	741	Retainer; bearing upper / lower. (1)	2.5	/	/	0.5
	741	Pin; upper.	1	/	0.5	0.5
	741	Pin; lower.	1	/	0.5	0.5
	741	Lug; pivot, rear hinge. (1).	3	1	/	/
	741	Lug; pivot, front hinge. (1).	3	1	/	/
	741	Bearing; pivot lug. (1).	3	1	/	/
	742	Frame Link.				
		G710B - G780B				
	742	Pin; cylinder mounting. (1).	1	/	0.5	/
	742	Restrictor block; articulation. (1).	0.5	/	0.5	/
	7421	Hydraulic Control				
		G710B - G780B				
	7421	Cylinder; frame link. (1).	3	/	1	/
	7421	Rod; articulation cylinder. (1).	4	/	1	/
	7421	Valve; counterbalance. (1).	1.5	/	1	0.5
	7421	Hose; main control to counterbalance. (1)	1	/	0.5	/
	7421	Hose; counterbalance to cylinder. (1).	1	/	0.5	/
	7421	Hose; cylinder to cylinder. (1).	1	/	0.5	/
	7421	Kit; cylinder packing. (1).	1.5	/	/	/
	7421	Valve; main control.	4	/	1	/

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GROUP 7 FRAME WHEEL UNIT

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
74		FRAME LINK / ARTICULATION continued				
	7422	Articulation Indicator G710B - G780B				
	7422	Gauge; articulation indicator c/w mounting hardware.	2	/	/	0.5
	7422	Sender; Articulation Indicator c/w mounting hardware.	1.5	/	/	0.5
	7422	Bracket; Articulation Sender c/w mounting hardware.	1	/	/	0.5
	7422	Harness; Articulation Indicator.	1	/	/	0.5
	7422	Linkage; Articulation Sender.	1	/	/	0.5
77		WHEELS				
	770	General and Common Info about 771 G710B - G780B	/	/	/	/
	771	Wheels, Tire, Rim, Tube. G710B - 780B				
	771	Wheel; c/w tire, tube and rim. (1). Re & Re.	1	/	/	/
	771	Weights; wheel. (1). Re & Re.	1.5	/	/	0.5
	7713	Tire, Tube G710B - G780B				
	7713	Tire; c/w tube and valve stem. (1). Re & Re.	1.5	/	/	0.5
	7715	Rim G710B - G780B				
	7715	Rim; c/w lock rings. (1). Re & Re.	1	/	0.5	/
	774	Miscellaneous; spare tire mount. G710B - G780B				
	774	Spare wheel mount c/w nuts and hold- down.	1.5	/	/	0.5
	774	Weights; wheel c/w mounting bolts.	1	/	/	0.5

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GROUP 8 CAB / EXTERIOR / INTERIOR TRIM PARTS / EQUIPMENT

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
80		General				
	800	Comprehensive Info about Cab G710B - G780B	/	/	/	/
	801	Surface Treatment; Paint and Finish. G710B - G780B All Models				
	801	Paint; c/w sandblasting and primer.	16	/	/	/
	801	Paint; Cab only c/w sandblasting and primer.	8	/	/	/
81		CAB W/O DOOR; WINDOWS; PANES				
	810	General and Common Info about 810 - 818 G710B - G780B				
	810	Manifold brkt; Cab main hydraulic.	3	/	1	0.5
	810	Cover; upper door post.	1	/	0.5	0.5
	810	Plate; retainer hydraulic linkage.	1	/	/	0.5
	8102	Cab Body G710B - G780B				
	8102	Cab; Standard.	8	/	/	/
	8102	Cab; Low Profile.	8	/	/	/
	8109	Miscellaneous G710B - G780B	/	/	/	/
	818	Cab mounting. G710B -G780B				
	818	Rubber mount; front cab c/w bolt and nut. (1)	3	/	1	0.5
	818	Rubber mount; rear cab c/w bolt and nut. (1)	3	/	1	0.5
82		ENGINE HOOD; MUDGUARD; FOOT STEP; FENDER.				
	820	General and Common Info about 821 - 827 G710B - G780B	/	/	/	/

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GROUP 8 CAB / EXTERIOR TRIM PARTS / EQUIPMENT

(continued)

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
82		ENGINE HOOD; MUDGUARD; FOOT STEP; FENDER				
	821	Engine Hood; Mudguard; Foot Step; Fender.				
		G710B - G780B				
	821	Engine Hood; Top c/w mounting bolts and fasteners. (1).	2	/	1.5	0.5
	821	Engine Hood; Side c/w mounting bolts and fasteners. (1).	1.5	/	1	0.5
	821	Hand Rail; any side or rear c/w mounting bolts.	1	/	0.5	/
	821	Spring; Gas Spring door holding c/w mounting parts. (1).	1	/	/	0.5
	821	Side Panel; right side or left side c/w mounting hardware. (1).	1	/	0.5	0.5
	821	Latch; c/w key and tumbler. (1).	1	/	0.5	0.5
	821	Hinge; Engine Compartment side doors. (1).	1	/	/	0.5
	823	Radiator Frame				
		G710B - G780B				
	823	Housing; Radiator c/w Side Doors / Air Deflector / fasteners. (1).	6	/	2	0.5
	823	Housing; Radiator paint and finish.	3	/	/	/
	823	Door; Side Access c/w Latch / Hinge / Gas Spring / fasteners. (1).	1	/	1	0.5
	823	Deflector; Air Flow c/w mounting hardware. (1).	2	/	1	0.5
	823	Spring; Gas Spring door holder c/w fasteners. (1).	1	/	0.5	0.5
	825	Mud guards; mud flaps; fenders, front.				
		G710B - G780B				
	825	Fenders; front c/w mud flaps. (1).	3	/	1	0.5
	825	Mud flap; front c/w fasteners. (1).	1	/	0.5	0.5
	825	Fenders; paint and finish, Front. (1set).	4	/	/	/
	826	Mud guards; mud flaps; fenders, rear.				
		G710B - G780B				
	826	Fenders; rear c/w mud flaps. (1).	4	/	1	0.5
	826	Brackets; fenders rear. (1set).	2	/	1	0.5
	826	Fenders; paint and finish, rear. (1set).	4	/	/	/
	827	Foot step; hand rail; safety rail; slip protection.				
		G710B - G780B				
	827	Foot step; cab L/R hand side. (1).	2	/	0.5	0.5
	827	Foot step; rear tandem L/R hand side. (1).	1	/	/	0.5
	827	Hand rail; rear engine compartment. (1).	1	/	/	0.5

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GROUP 8 CAB / EXTERIOR / INTERIOR TRIM PARTS / EQUIPMENT

(continued)

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
83		DOORS; HATCH; COVER PLATE				
	830	General and Common Info about 831 - 837				
		G710B - G780B	/	/	/	/
	831	Door; c/w catch, hinges. (No Glass).				
		G710B - G780B				
	8311	Door; c/w catch, hinges.(1).	1.5	/	0.5	0.5
	8311	Door; stripped. (1).	1	/	0.5	0.5
	8313	Hinges; door c/w fasteners. (1).	0.5	/	/	0.5
	8314	Sealing; door c/w protection molding. (1)	1	/	/	0.5
	8315	Catch; door stop. (1).	1	/	0.5	0.5
	834	Lock; Handle.				
		G710B - G780B	/	/	/	/
	8341	Lock; Handle.				
		G710B - G780B				
	8341	Lock; c/w handle and key. (1).	1	/	0.5	0.5
	8341	Latch; door left/right hand. (1).	1	/	0.5	0.5
	8341	Activator; lock left/right hand. (1).	0.5	/	0.5	0.5
	8341	Rod; activator left/right hand. (1).	0.5	/	0.5	0.5
	837	Hatch; Cover plate; floor plate; seat deck.				
		G710B - G780B				
	837	Deck: seat left/right hand. (1).	4	/	/	0.5
	837	Cover; seat riser. (1).	1	/	/	0.5
	837	Cover; seat deck. (1).	1	/	0.5	0.5

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GROUP 8 CAB / EXTERIOR / INTERIOR TRIM PARTS / EQUIPMENT

(continued)

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
84		TRIM PART, OUTSIDE; GLASS; SEALING MOLDING continued				
	840	General and Common Info about 841 - 844 G710B - G780B	/	/	/	/
	841	Outside trim parts G710B - 780B				
	841	Decal; outside small. (any 1).	0.5	/	/	/
	841	Decal; outside medium. (any 1).	0.5	/	/	/
	841	Decal; outside large. (any 1).	1	/	/	/
	841	Decal; grader model. (any 1).	1	/	/	/
	841	Decal; safety signs. (any 1).	0.5	/	/	/
	841	Kit; safety sign. (1).	2.5	/	/	/
	8416	Rear View Mirror, Outside G710B - G780B				
	8416	Mirror; rear view outside. (1)	2.5	/	1	0.5
	8416	Mirror; rear view heated. (1).	2.5	/	1	0.5
	8416	Mirror; rear view inside. (1)	1.5	/	0.5	0.5
	8416	Mirror; outside convex. (1).	0.5	/	0.5	0.5
	8416	Mirror; outside convex heated. (1).	0.5	/	0.5	0.5
	8416	Bracket; mirror left or right hand. (1).	1	/	0.5	0.5
	8417	Reflectors; Reflecting Material G710B - G780B				
	8417	Reflector; amber / red. (any 1).	0.5	/	/	/
	8417	Sign; Slow moving rear.	2	/	0.5	0.5
	843	Cab Glass, sealing molding. G710B - G780B	/	/	/	/
	8431	Windshield G710B - G780B				
	843	Glass; front windshield c/w rubber channel/lock.	2	/	/	0.5
	843	Glass; lower front c/w rubber channel/lock. (1).	1	/	/	0.5
	8433	Rear Window Pane G710B - G780B				
	8433	Glass; rear c/w rubber channel/lock.	1.5	/	/	0.5
	8433	Moulding; rear window.	1	/	/	0.5

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GROUP 8 CAB / EXTERIOR / INTERIOR TRIM PARTS / EQUIPMENT

(continued)

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
84		TRIM PART, OUTSIDE; GLASS; SEALING MOLDING				
		continued				
	843	Glass; side c/w rubber channel/lock.	1	/	/	0.5
	843	Glass; side, split cab c/w rubber channel/lock. (1).	1	/	/	0.5
8439		Other Panes				
		G710B - G780B				
	8439	Door glass; c/w molding. Upper (1).	2	/	/	0.5
	8439	Door glass; c/w molding. Lower (1).	2	/	/	0.5
	8439	Molding; Door glass. (1).	1	/	/	0.5
844		Window, openable.				
		G710B - 780B	/	/	/	/
8445		Window, Openable w/o Lifting Device				
		G710B - G780B				
	8445	Window; lower vent c/w wiper motor. (1)	2.5	/	1	0.5
	8445	Window; lower vent w/o wiper motor.	2	/	1	0.5
	8445	Hinge; lower window. (1).	0.5	/	0.5	0.5
	8445	Latch; lower window. (1).	0.5	/	0.5	0.5
	8445	Glass; lower window c/w molding. (1).	1	/	/	/
	8445	Window; side slider c/w latch. (1).	2.5	/	1	0.5
	8445	Window; side slider c/w latch, Std. Cab. (1)	2.5	/	1	0.5
	8445	Window; side slider c/w latch, Low Profile Cab. (1).	2.5	/	1	0.5
	8445	Window; side slider c/w latch, Split Cab. (1).	2.5	/	1	0.5
	8445	Glass; side slider c/w molding. (any 1).	1	/	0.5	0.5

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GROUP 8 CAB / EXTERIOR / INTERIOR TRIM PARTS / EQUIPMENT

(continued)

Function	Repair #	Repair Description	Repair Code / Allowance			
85		CAB INTERIOR / UPHOLSTERY				
		continued				
	850	General and Common Info about 851 - 852				
		G710B - G780B	/	/	/	/
	851	Upholstery				
		G710B - 780B	/	/	/	/
	8511	Upholstery, Door				
		G710B - G780B	/	/	/	/
	8512	Upholstery, Wall				
		G710B - G780B				
	8512	Upholstery; Sound suppression - cab rear.	2	/	1	/
	8512	Upholstery; Sound suppression - ceiling.	3	/	1	/
	8512	Cover; upholstery upper front or lower front. (any 1).	1	/	/	0.5
	8512	Headliner; front any cab. (1).	1	/	/	0.5
	8512	Headliner; rear any cab. (1).	1	/	/	0.5
	8512	Headliner; left or right hand any cab. (1).	1	/	/	0.5
	8513	Upholstery, Floor				
		G710B - G780B				
	8513	Upholstery; Sound suppression - floor.	3	/	1	/
	8513	Upholstery; Sound suppression - deck riser. (1).	1	/	1	/
	8513	Upholstery; Sound suppression - seat deck. (1).	2	/	1	/
	8513	Upholstery; Sound suppression - seat deck centre.	1	/	1	/
	8513	Upholstery; Sound suppression - under seat deck. (any 1).	1	/	1	/
	852	Operator's Seat.				
		G710B - G780B	/	/	/	/
	8521	Operators Seat complete				
		G710B - G780B				
	8521	Seat; bucket operator c/w fasteners.	1.5	/	1.5	0.5
	8521	Seat; suspension operator c/w fasteners.	2.5	/	1	0.5
	8521	Bracket; seat riser c/w uper and lower.	1.5	/	0.5	0.5
	8521	Arm rest; suspension c/w fasteners. (any 1).	0.5	/	0.5	0.5
	8521	Backrest; suspension seat.	1	/	/	0.5
	8521	Shock absorber; suspension seat.	1.5	/	/	0.5
	8521	Cushion; seat, suspension c/w screws.	1	/	/	0.5
	8521	Cushion; backrest c/w screws.	1	/	/	0.5
	851	Console; upholstery c/w fasteners.	1	/	/	/

Classification of Codes

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4 = Adjusted

GROUP 8 CAB / EXTERIOR / INTERIOR TRIM PARTS / EQUIPMENT

(continued)

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
85		CAB INTERIOR / UPHOLSTERY				
		continued				
	8529	Miscellaneous, Fastening equipment, Operators Convenience Package				
		G710B - G780B				
	8529	Convenience package; driver c/w mount and screws.	2	/	/	0.5
	8529	Ashtray; convenience package.	1	/	/	0.5
86	8529	Louver; convenience package.	1	/	/	0.5
	8529	Console; upholstery c/w fasteners.	1	/	/	0.5
		PROTECTIVE EQUIPMENT				
	860	General and Common Info about 865 - 867				
		G710B - G780B	/	/	/	/
	865	Noise Protection.				
86		G710B - G780B				
	865	Protection; noise engine compartment. (any 1).	1.5	/	/	0.5
	867	Protecting frame.				
		G710B - G780B	/	/	/	/
	8671	Protecting Frame (ROPS)				
		G710B - G780B				
86	8671	Protecting frame; c/w Std cab shell.	24	/	/	/
	8671	Protecting frame; c/w LP cab shell.	24	/	/	/
	8671	Protecting frame; Upper split cab shell.	16	/	/	/
	8671	Protecting frame; Lower split cab shell.	14	/	/	/
	8671	Link; Protecting frame, c/w fittings Std cab. (any 1).	4	/	/	/
	8671	Link; Protecting frame, c/w fittings Low-Profile cab. (any1).	4	/	/	/
86	8672	Protecting Frame (FOPS)				
		G710B - G780B				
86	8672	Protecting cover; FOPS c/w fittings and fasteners.	10	/	/	/

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GROUP 8 CAB / EXTERIOR / INTERIOR TRIM PARTS / EQUIPMENT

(continued)

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
87						
		AIR CONDITIONING UNIT				
	870	General				
	872	Air Distribution.				
		G710B - 780B				
	872	Air intake; c/w filter and screen.	3	/	1	/
	872	Filter; air intake.	1	/	/	/
	872	Tube; air intake left hand all cab's.	1	/	/	/
	872	Louver; air intake. (any 1).	0.5	/	/	/
	872	Grille; air distribution lower.	0.5	/	0.5	/
	872	Louver; lower cab outlet. (any 1).	0.5	/	/	/
	872	Vent; seat deck air distribution. (any 1).	0.5	/	/	/
	872	Filter; fresh air.	0.5	/	/	/
	872	Cover; air conditioner unit, under seat.	5	/	1	/
	872	Cover; inside air distribution.	1	/	1	0.5
	872	Hose; air distribution. (any 1).	1	/	0.5	0.5

GROUP 8 CAB / EXTERIOR / INTERIOR TRIM PARTS / EQUIPMENT

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
87		(continued)				
	873	Heating Unit.				
		G710B - 780B				
	873	Control; heat control panel.	2	/	0.5	/
	873	Coil; heater under seat location.	5	/	2	/
	873	Fan motor; heat/A/C. (1).	1	/	0.5	/
	873	Fan; heater motor. (1).	1	/	/	/
	873	Heat; flow control unit.	1.5	/	/	0.5
	873	Hose; heater to flow control c/w clamps. (1).	1	/	/	/
	873	Hose; flow control to engine c/w clamps. (1).	1	/	/	/
	873	Hose; main box drain c/w clamps.	1	/	/	/
	873	Relay; electrical motor control. (1).	1	/	/	0.5
	873	Resistor;electrical motor safety.	1	/	/	0.5

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GROUP 8 CAB / EXTERIOR / INTERIOR TRIM PARTS / EQUIPMENT

(continued)

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
87						
	874	Cooling Unit.				
		G710B - 780B				
	874	Compressor; A/C .	2.5	/	1	0.5
	874	Belt; compressor A/C.	1	/	/	0.5
	874	Coil; compressor control.	2	/	1	0.5
	874	Condensor; A/C c/w fittings and fasteners.	2	/	1	/
	874	Evaporator; A/C c/w fittings.	5	/	1	/
	874	Valve; A/C block, c/w bracket.	1	/	1	0.5
	874	Receiver/Dryer; A/C c/w fittings.	1.5	/	/	/
	874	Hose; condensor - receiver dryer.	1	/	/	/
	874	Hose; receiver dryer - evaporator.	1	/	/	/
	874	Hose; condensor - compressor.	1	/	/	/
	874	Hose; compressor - evaporator.	1	/	/	/
	874	Switch; Pressure A/C receiver dryer.	1	/	/	/
	874	Brkt; A/C compressor c/w tensioners.	1.5	0.5	0.5	0.5
	874	Bolts; A/C mounting bracket - engine block. (1)	0.5	0.5	/	/
	874	Tensioner; A/C brkt. C/w mounting bolts. (1)	0.5	0.5	0.5	0.5
	874	Charge A/C system; c/w receiver dryer.	2	/	/	1
	875	Auxilliary heater; diesel fuel operated.				
	876	Auxilliary heater; electrically operated.				
	877	Auxilliary heater; miscellaneous.				

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GROUP 8 CAB / EXTERIOR / INTERIOR TRIM PARTS / EQUIPMENT

(continued)

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
88		INTERIOR EQUIPMENT				
	880	General				
	881	Instrument Panel, Console, Control Panel				
		G710B - 780B				
	881	Console; side c/w switches and Gauges.	3	1	/	/
	881	Console; side No switches and No gauges.	1	0.5	/	/
	881	Screw; thumb screw c/w fasteners. (1).	0.5	/	/	0.25
	881	Retainer; thumscrew side console. (1).	0.25	/	/	/
	881	Rubber strip; side console.	1	0.5	/	/
	881	Instrument panel; front console, blank.	1.5	0.5	/	/
	881	Instrument panel; front c/w switches.	3	/	/	/
	881	Control panel; A/C control, blank.	1	/	/	/
	881	Control panel; A/C control c/w switches.	1.5	/	/	/
	882	Other Interior equipment, Pedestal.				
		G710B - 780B				
	882	Convenience Package: SEE 852 in Section 85.	/	/	/	/
	882	Pedestal Support; c/w pedestal head and linkages.	3	1	/	/
	882	Head; pedestal c/w gauge/switch plate.	2	/	/	0.5
	882	Tilt Bracket; pedestal head c/w bearings and spring.	1	/	/	0.5
	882	Support; pedestal c/w linkages and lower mount.	2.5	/	/	0.5
	882	Support; pedestal only.	2	/	/	0.5
	882	Beam; pedestal support.	1.5	/	/	/
	882	Link; side pedestal c/w bearings. (1).	1	/	/	/
	882	Shaft; pedestal pivot- upper c/w bushings.	1.5	/	/	/
	882	Lever; wheel tilt c/w grip, spring, lock.	0.5	/	/	0.5
	882	Plate; lower pedestal c/w bearings. (1).	1	/	/	/
	882	Bearings; upper pedestal side link. (1).	1	/	/	0.5
	882	Cable; pedestal adjuster.	1.5	/	/	0.5
	882	Spring; gas, pedestal.	1.5	/	/	0.5
	882	Pedal; foot, pedestal release lower.	1	/	/	0.5

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GROUP 8 CAB / EXTERIOR / INTERIOR TRIM PARTS

(continued)

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
88		INTERIOR EQUIPMENT				
		General				
	880					
	882	Other Interior equipment, Pedastal.				
		G710B - 780B (continued)				
	882	Rod; lower control. (1).	0.5	/	/	0.5
	882	Ball Joint; lower control rod. (1).	0.5	/	/	0.5
	882	Bolt; control rod ball joint. (1).	0.25	/	/	0.5
	882	Housing; turn signal.	1	/	/	0.5
	882	Plate; flasher mounting.	1	/	/	0.5
	884	Seat Belt, other Restraining System				
		G710B - 780B				
	884	Seat Belt; standard, c/w mounting hardware. (1).	1.5	/	/	0.5
	884	Seat Belt; retractable 3", c/w mounting hardware. (1).	1.5	/	/	0.5
89		MISCELLANEOUS				
		General				
	890					
	891	Exterior Equipment.				
		G710B - 780B				
	891	Cover; Hydraulic Manifold c/w hardware.	4	/	/	0.5
	891	Seal; trim manifold cover.	1	/	/	/
	891	Pan; belly, c/w hardware.	2	/	/	/
	891	Fire Extinguisher; external c/w mounting hardware.	2	/	/	/
	891	Kit; anti-vandalism c/w hardware.	6	/	/	/
	891	Guard; fuel cap c/w hardware.	1	/	/	/
	891	Guard; radiator surge tank.	1	/	/	/
	891	Guard; transmission filler.	1	/	/	/
	891	Guard; pedastal head cover.	1	/	/	/
	891	Guard; interior console.	1	/	/	/
	891	Plate; rear lift. (1).	0.5	/	/	/
	891	Lug; lift, rear side. (1).	0.5	/	/	/
	891	Plate; front lift. (1).	0.5	/	/	/
896	896	Tool Box, Tools.				
		G710B - 780B				
	896	Box; tool c/w mounting hardware.	2.5	/	/	/
	896	Cover; tool box c/w hardware.	1	/	/	/
	896	Paint; sand, prime and paint.	4	/	/	/
897						
	897	Instruction Plates, Information Plates. See sub-section 841				

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GROUP 9 HYDRAULIC SYSTEM, MECHANICAL EQUIPMENT and GRADING UNIT

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
90						
	900	General Information				
91						
		WORKING HYDRAULICS				
	910	General Information				
	9101	Central test connection; function test connection G710B - G780B				
	9109	Miscellaneous G710B - G780B				
	911					
	9111	Tank, Lines, Oil Cooling, Filter, Filling Pump. G710B - 780B.				
	9111	Tank; c/w filler, level stick, diffuser. Tank Empty.	4	/	/	0.5
	9111	Tank; drain tank or fill.	2	/	/	0.5
	9111	Cap; hydraulic tank.	0.5	/	/	/
	9111	Filler; hydraulic tank c/w hardware.	1.5	/	/	/
	9111	Dipstick; c/w neck and hardware.	0.5	/	/	0.5
	9111	Cover; main hydraulic tank/	1	/	/	0.5
	9111	Sensor, oil temperature.	0.5	/	/	/
	9111	Sensor, oil level.	0.5	/	/	/
	9111	Heater, hydraulic oil immersion	1	/	/	/
	9111	Plug, magnetic hydraulic tank.	0.5	/	/	/
	9111	Sensor, liquid temperature fan.	0.5	/	/	/
	9112	Line; Fittings; Connecting Block; retainer G710B - G780B	/	/	/	/
	91121	Line; fitting; connecting block; retainer; tilt hydraulics G710B - G780B				
	91121	Line; main manifold to swivel valve c/w fittings. Any 1 of 4.	1	/	/	/
	91121	Line; blade tilt from swivel valve to counterbalance valve. Any 1 of 2.	0.5	/	/	/
	91121	Line; blade tilt from counterbalance valve to Tilt cylinder. Any 1 of 2.	0.5	/	/	/
	91121	Arm; Swivel valve drive arm c/w mounting hardware.	2	/	/	0.5
	91121	Swivel Valve; see function group 984	/	/	/	/
	91121	Counterbalance Valve; see function group 912.	/	/	/	/

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GROUP 9 HYDRAULIC SYSTEM, MECHANICAL EQUIPMENT and GRADING UNIT

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
91		WORKING HYDRAULICS				
	911	(continued)				
	91122	Line; fitting; connecting block; retainer; lift hydraulics				
		G710B - G780B				
	91122	Line; blade lift from main manifold upper bulkhead. Any 1 of 4.	0.5	/	/	/
	91122	Line; blade lift from bulkhead to counterbalance valve. Any 1 of 4.	0.5	/	/	/
	91122	Line; blade lift from counterbalance valve to upper or lower cylinder.	0.5	/	/	/
	91122	Line; blade lift from counterbalance to accumulator. Any 1 of 2.	0.5	/	/	/
	91122	Line; blade lift from counterbalance valve to tank return. Any 1.	0.5	/	/	/
	91122	Valve; counterbalance. See function group 912.	/	/	/	/
	91122	Valve; electric float. See function group 912.	/	/	/	/
	91122	Accumulator. See function group 983.	/	/	/	/
	91123	Line; fitting; connecting block; retainer, front and rear frame.				
		G710B - G780B				
	91123	Line; PN 12725702 return manifold to main pump.	1	/	/	/
	91123	Line; PN 12725700 return manifold to min pump return.	0.5	/	/	/
	91123	Line; PN 12727566 return manifold to fan motor case drain.	0.5	/	/	/
	91123	Line; PN 12725694 return manifold to Hydraulic filter.	1	/	/	/
	91123	Line; PN 12726597 Hydraulic filter to fan motor.	1	/	/	/
	91123	Line; PN 12726598 fan motor to fan control valve.	1	/	/	/
	91123	Line; PN 12724347 priority valve to main hydraulic pump.	1	/	/	/
	91123	Line; PN 12724349 load sense valve to shuttle block.	1	/	/	/
	91123	Line; PN 12725648 main hydraulic manifold to frame bulk head.	0.5	/	/	/
	91123	Line; PN 12725712 bulkhead priority valve.	0.5	/	/	/
	91123	Line; PN 12730764 priority valve to fan control valve.	0.5	/	/	/
	91123	Line; PN 12725713 priority valve to shuttle block.	0.5	/	/	/
	91123	Line; PN 12725666 fan control valve to shuttle block.	0.5	/	/	/
	91123	Line; PN 78219x73 main control valve bulkhead.	0.5	/	/	/
	91123	Line; PN 12724865 return manifold to bulkhead.	0.5	/	/	/
	91123	Line; PN 12720533 return manifold to oil cooler.	0.5	/	/	/
	91123	Line; PN 12730532 return manifold check valve to oil cooler.	0.5	/	/	/
	91123	Line; PN 12730036 priority valve to return manifold.	0.5	/	/	/
	91123	Line; PN 12726660 fan control valve to bulkhead fitting.	0.5	/	/	/

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GROUP 9 HYDRAULIC SYSTEM, MECHANICAL EQUIPMENT and GRADING UNIT

Function 91	Repair #	Repair Description WORKING HYDRAULICS (continued)	Repair Code / Allowance			
			1	2	3	4
911	9113	Oil Cooling system G710B - G780B	/	/	/	/
	91134	Thermostat G710B - G780B	/	/	/	/
	91135	Oil Cooler G710B - G780B				
	91135	Cooler; Hydraulic oil c/w mounting hardware.	2.5	/	/	0.5
	9114	Filters; Hydraulic G710B - G780B				
	9114	Filter; hydraulic oil assy., c/w filter head and mounting hardware.	1.5	/	/	0.5
	9114	Filter; hydraulic filter only.	0.5	/	/	
	9114	Bracket; hydraulic filter c/w mounting hardware.	1	/	/	0.25
	9116	Filling Pump G710B - 780B				
	9116	Pump; filling AWD. See Function Group 445	2	/	/	0.5
912	912	Working Hydraulics G710B - 780B	/	/	/	/
	9121	Directional valve; control valve G710B - G780B	/	/	/	/
	91215	Float position valve G710B - G780B				
	91215	Valve; blade lift float c/w detent. Any 1 of 2.	1	/	/	/
	91215	Detent; blade lift float section. Any 1 of 2.	0.5	/	/	/
	91215	Harness; blade lift float to blade lift cylinder valve. Any 1 of 2.	1.5	/	/	/
	91215	Switch; blade lift float energize.	1	/	/	/
	91215	Module; blade lift float c/w mounting hardware.	1.5	/	/	/
	91215	Float valve; blade lift c/w coil and cartridge. (1).	2	/	0.5	0.5
	91215	Float valve; blade lift c/w coil and cartridge. EEC. (1).	2	/	0.5	0.5
	91215	Valve; electric solenoid. (1).	0.5	/	/	0.5
	91215	Coil; electric solenoid. (1).	0.5	/	/	0.5
	91215	Kit; seal kit float cartridge. (1).	/	/	0.5	/
	91215	Harness; electric float - cab bulk head to float valve. (1).	1.5	/	/	0.5
	91215	Harness; electric float - cab bulk head to scarifier/plow/dozer.	1.5	/	/	0.5
Classification of Codes						
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GROUP 9 HYDRAULIC SYSTEM, MECHANICAL EQUIPMENT and GRADING UNIT

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
91		WORKING HYDRAULICS				
	912	(continued)				
	91216	Directional valve; stabilizer/dozer blade				
		G710B - G780B				
	91216	Hose; PN 12730464 main manifold to rear ripper lock valve. Any 1 of 2.	0.5	/	/	/
	91216	Hose; PN 74429 x 113 ripper lock valve to left cylinder. Any 1 of 2.	0.5	/	/	/
	91216	Hose; PN 12730672 lock valve to right cylinder. Any 1 of 2.	0.5	/	/	/
	91216	Valve; ripper or dozer blade c/w mounting hardware. Any 1 of 2.	1.5	/	1	0.5
	9121	Directional valve; control valve				
		G710B - G780B (continued)	/	/	/	/
	91217	Directional Valve; extra equipment				
		G710B - G780B	/	/	/	/
	91218	High Speed Valve				
		G710B - G780B Note - None applicable.	/	/	/	/
	91219	Other directional/control valve; auxiliary manifold valve				
		G710B - G780B.				
	91219	Valve; sectional auxiliary c/w mounting hardware. Any 1 of 5.	1	/	0.5	/
	91219	Kit; sectional auxiliary seal kit. Any 1 of 5.	/	/	1	/
	91219	Rods; auxiliary manifold connecting. Any 1 of 3.	0.5	/	/	0.25
	91219	Caps; end caps auxiliary manifold. Any 1 of 2.	1	/	0.25	/
	91219	Manifold; 3 or 5 bank c/w mounting hardware.	2	/	/	0.5
	9122	Pressure limiting valve; relief valve				
		G710B - G780B	/	/	/	/
	91221	Overflow valve, P1				
		G710B - G780B Note- None applicable	/	/	/	/
	91222	Overflow valve, P2				
		G710B - G780B Note - None applicable	/	/	/	/
	91223	Overflow valve, P3				
		G710B - G780B Note - None applicable	/	/	/	/

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GROUP 9 HYDRAULIC SYSTEM, MECHANICAL EQUIPMENT and GRADING UNIT

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
91		WORKING HYDRAULICS				
	912	(continued)				
	9122	(continued)				
	91224	Chock valve; cushion valve; counterbalance valve				
		G710B - G780B				
	91224	Valve; counterbalance c/w mounting hardware. Any 1 of 6	1.5	/	/	/
	91224	Cartridge; relief valve.	1	/	/	/
	91224	Reseal; priority valve.	1	/	/	/
	91224	Seal Kit; counterbalance valve . All including EEC. (1).	/	/	1	/
	91224	Cartridge; counterbalance valve. All including EEC. (1).	0.5	/	/	0.5
	91224	Valve; cushion, c/w fittings.	1.5	/	/	0.5
	91224	Cartridge; cushion valve. (1).	/	1	/	0.5
	91224	Seal Kit; cushion valve. (1).	/	/	0.5	/
	91224	Valve; single lock c/w fittings. All including EEC. (1)	1.5	/	/	0.5
	9123	Hydraulic Lock valve				
		G710B - G780B	/	/	/	/
	91231	Hydraulic Lock valve; stabilizer				
		G710B - G780B				
	91231	Valve; lock valve c/w mounting hardware.	1	/	0.5	/
	91231	Check valve; single lock. (1).	0.5	/	/	/
	91231	Reilief valve; single lock. (1)	0.5	/	/	/
	91231	Seal Kit; single lock check valve. (1).	/	/	0.5	/
	91232	Hydraulic Lock valve; dozer blade				
		G710B - G780B				
	91232	Valve, lock valve c/w mounting hardware.	1	/	0.5	/
	91232	Cartridge, lock valve.	0.5	/	/	/
	91232	Kit; seal kitlock valve.	/	/	0.5	/
	91233	Hydraulic Lock valve; pendulum locking cylinder				
		G710B - G780B. Note- Non applicable.	/	/	/	/
	91234	Hydraulic Lock valve, extra equipment				
		G710B - G780B				
	91234	Valve, lock valve, hydraulic snow wing. Any 1 of 3.	1	/	0.5	/
	91234	Cartridge, lock valve.	0.5	/	/	/
	91234	Kit; seal kitlock valve.	/	/	0.5	/

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 2 = Repaired 4 = Adjusted

GROUP 9 HYDRAULIC SYSTEM, MECHANICAL EQUIPMENT and GRADING UNIT

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
91		WORKING HYDRAULICS				
	912	(continued)				
	9124	Electric valve; working hydraulics; counterbalance/electric float.				
		G710B - G780B				
	9124	Valve; blade lift float c/w mounting hardware. Any 1 of 2.	2	/	1	/
	9124	Coil; blade lift float valve. Any 1 of 4.	0.5	/	/	/
	9124	Cartridge; blade lift float. Any 1 of 4.	0.5	/	0.5	/
	9124	Kit; float valve cartridge. Any 1 of 4.	/	/	/	/
	9124	Bracket; blade lift float mounting. Any 1 of 2.	1	/	/	/
	9124	Valve; dozer blade float c/w mounting hardware.	2	/	1	/
	9125	Block for Valve assembly				
		G710B - G780B	/	/	/	/
	91252	Main Valve block				
		G710B - G780B				
	91252	Main Control Valve; main hydraulic c/w fittings.	10	/	/	0.5
	91252	Valve; manifold section c/w fittings. Any 1 of 10.	/	1	/	0.5
	91252	Kit; re- seal main control valve. Any 1 of 10.	/	/	1	/
	91252	Section; main control valve inlet.	1	/	0.5	/
	91252	Section; main control valve outlet.	1	/	0.5	/
	91253	Other Valve block				
		G710B - G780B				
	91253	Main Control; auxiliary 3 or 5 section c/w fittings and hardware.	2	/	/	0.5
	91253	Section; auxiliary valve, c/w fittings. (1).	1	/	0.5	/
	91253	Section; auxiliary inlet, c/w fittings and hardware.	1	/	0.5	/
	91253	Section; auxiliary outlet, c/w fittings and hardware.	1	/	0.5	/
	91253	Rod; tie, auxiliary manifold. (1).	0.5	/	/	0.5
	91253	Kit; re-seal kit, auxiliary manifold. (1).	/	/	0.5	/
	91253	Rod; control, auxiliary manifold. (1).	0.5	/	/	0.5
	91253	Bracket; auxiliary mounting c/w hardware. 3 or 5 section.	2.5	/	/	/

Classification of Codes

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GROUP 9 HYDRAULIC SYSTEM, MECHANICAL EQUIPMENT and GRADING UNIT

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
91		WORKING HYDRAULICS				
	912	(continued)				
	9126	Connecting valve; shuttle valve				
		G710B - 780B				
	9126	Valve; shuttle c/w mounting hardware. Any 1 of 2	1	/	/	/
	9126	Valve; pilot to close shuttle.	0.5	/	/	/
	9126	Check Valve; supplementary steering.	1	/	/	/
	9126	Coupler; quick disconnect.	0.5	/	/	/
	9127	Refilling Valve				
		G710B - G780B Note- None applicable	/	/	/	/
	9128	Control				
		G710B - G780B				
	9128	Shaft; upper control levers. (1).	1	/	/	0.5
	9128	Knob; control lever. (1).	0.5	/	/	0.5
	9128	Lever; hydraulic control. (1).	0.75	/	/	0.5
	9128	Bushing; control lever. (1).	0.5	/	/	0.5
	9128	Locknut; shaft- control lever. (1).	0.5	/	/	0.5
	9128	Thrust; bearing - control lever - upper shaft.	0.25	/	/	/
	9128	Rod End; upper, control rod. (1).	0.25	/	/	0.5
	9128	Shaft; bell crank, lower pedastal.	1.5	/	/	0.5
	9128	Thrust; bearing, bell crank shaft. (1).	0.5	/	/	/
	9128	Bell Crank; lower pedastal control. (1).	0.5	/	/	0.5
	9128	Pin; pivot, bell crank. (1).	0.5	/	/	0.5
	9129	Miscellaneous				
		G710B - 780B	/	/	/	/
913						
	9139	Pump, Working Hydraulics.				
		G710B - 780B				
	9139	Pump; main hydraulic.	3	/	2	0.5
	9139	4 - Way Valve	1.5	/	0.5	0.5
	9139	Cover; front c/w bushings and hardware.	2	0.5	/	0.5
	9139	Cover; rear c/w bushings and hardware.	1	0.5	/	/
	9139	Kit; swashplate .	1.5	0.5	/	/
	9139	Seal Kit; main hydraulic pump.	/	/	1.5	/
	9139	Compensator; cartridge.	1	/	1	0.5
	9139	Cartridge; main relief.	0.5	/	/	0.5

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GROUP 9 HYDRAULIC SYSTEM, MECHANICAL EQUIPMENT and GRADING UNIT

(continued)

Function 91	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
		MECHANICAL EQUIPMENT				
		(continued)				
	913	9139 Pump, Working hydraulics				
		G710B - G780B				
	9139	Pump, transmission hydraulic.	2	/	1	0.5
	9139	Kit; transmission pump seal kit.	/	/	1.5	/
	9139	Idler; transmission gear.	1	/	/	/
	9139	Gear; transmission drive c/w shaft and seals.	1	/	/	/
	9139	Cover; transmission case	1.5	/	/	/
	9139	Body; transmission pump.	1	/	/	/
	916	Other Hydraulic Equipment				
		G710B - 780B	/	/	/	/
	9161	Motor				
		G710B - G780B				
	9161	Motor; AWD c/w mounting hardware, Right or Left hand.	4	/	/	1
	9161	Motor; AWD bleed and prime.	/	/	/	0.5
	9161	Plug; AWD bleeder c/w copper washer.	0.5	/	/	/
	9161	Zert; AWD motor grease zert.	0.5	/	/	/
	9161	Motor; AWD service (grease).	/	/	0.5	/
	9162	Pump				
		G710B - G780B				
	9162	See Function group 9139.	/	/	/	/
	9162	See Function group 9139.	/	/	/	/
	9162	See Function group 9139.	/	/	/	/
	9162	See Function group 9139.	/	/	/	/
	9162	See Function group 9139.	/	/	/	/
	9162	See Function group 9139.	/	/	/	/
	9163	Valve				
		G710B - G780B				
	9163	Valve; priority flow c/w mounting hardware.	2	/	1	0.5
	9163	Kit; priority valve seal kit.	/	/	1	/
	9163	Spool; priority valve c/w sealing rings.	1	/	/	0.5
	9163	Valve; fan control c/w mounting hardware.	2	/	/	0.5
	9163	Kit; fan control seal kit.	/	/	1	/
	9163	Coil; fan control.	0.5	/	/	/
	9163	Cartridge; fan control c/w sealing rings.	0.5	/	/	/
	9163	Valve; external load sense valve c/w mounting hardware.	1	/	/	0.5
	9163	Cartridge; external load sense relief.	0.5	/	/	/

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GROUP 9 HYDRAULIC SYSTEM, MECHANICAL EQUIPMENT and GRADING UNIT

(continued)

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
91		MECHANICAL EQUIPMENT				
	916	(continued)				
	9164	Tubing; hose				
		G710B - G780B				
	9164	Hose; 3 or 5 section sense line to shuttle (27").	0.5	/	/	/
	9164	Hose; 3 or 5 section supply to priority valve (31").	0.5	/	/	/
	9164	Hose; 3 or 5 section return to filter (28").	0.5	/	/	/
	9164	Hose; auxiliary valvebank to front frame (each of 4 240").	1	/	/	/
	9164	Hose; auxiliary valvebank to rear frame (each of 4 150").	1	/	/	/
	9165	Hydraulics mounted on machine for attachments				
		G710B - G780B Note- Not used at this time.	/	/	/	/
	9169	Other hydraulic equipment				
		G710B - G780B Note- None applicable	/	/	/	/

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GROUP 9 HYDRAULIC SYSTEM, MECHANICAL EQUIPMENT and GRADING UNIT

(continued)

Function 92	Repair #	Repair Description MECHANICAL EQUIPMENT	Repair Code / Allowance			
			1	2	3	4
922	922	Push-Pull Unit; Towing hook.				
		G710B - 780B				
	922	Lug; towing c/w pin and cotter pin.	4	/	/	/
	922	Pin; towing pin rear.	0.5	/	/	/
923		Attachments, Grader Misc. (for future use).				
		G710B - 780B	/	/	/	/
925		Bucket, c/w Cylinders / Tubes and Hoses. (C-Series units)				
		C50 - C80. Note - Not applicable.	/	/	/	/
926		Attachments, Others.				
		G710B - 780B				
	9268	Ripper; rear c/w fit to machine.	6	/	/	1
	9268	Box; ripper c/w mounting pins.	3	/	/	0.5
	9268	Pull Arm; lower ripper c/w mounting hardware. Any 1 of 2.	2	/	/	1
	9268	Bearings; lower control arm. (each).	0.5	/	/	/
	9268	Rod; control assembly Left or Right c/w bearings.	0.5	/	/	/
	9268	Bearings; control arm. (each).	0.5	/	/	/
	9268	Bracket; mounting to frame Left or Right side c/w hardware.	2.5	/	/	0.5
	9268	Pins; frame to lift cylinder.	0.5	/	/	/
	9268	Cylinder; ripper lift c/w pins and fittings. (each).	1	/	1.5	/
	9268	Spacer; ripper cylinder mounting. (each).	0.5	/	/	/
	9268	Repair Kit; ripper cylinder.	2.5	/	/	/
	9268	Rod; ripper cylinder c/w seal kit.	2	/	/	/
	9268	Shanks; ripper c/w pins and locks.	0.5	/	/	/
	9268	Points; ripper shanks c/w locks.	0.25	/	/	/
	9268	Tooth Shank; ripper c/w wedge.	0.25	/	/	/
	9268	Tip; ripper tooth shank.	0.25	/	/	/
	9268	Repaint; ripper c/w clean, sandblast and paint.	8	/	/	1
	9268	Scarifier; clean, sandblast and paint complete.	6	/	/	/
	9268	Box; scarifier c/w mounting hardware.	2	/	/	0.5
	9268	Drawbar; scarifier c/w mounting hardware Left or Right (1 Only).	1	/	/	/
	9268	Scarifier; mid mount complete new install c/w hardware and lines.	6	/	/	1
	9268	Cylinder; scarifier mid mount c/w pins and bushings.	1.5	/	1	0.5
	9268	Scarifier; front mount complete install c/w mounting hardware.	4	/	/	1
	9268	Cylinder; front mount c/w pins and bushings.	1.5	/	1	0.5

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GROUP 9 HYDRAULIC SYSTEM, MECHANICAL EQUIPMENT and GRADING UNIT

(continued)

Function	Repair #	Repair Description	Repair Code / Allowance			
92		MECHANICAL EQUIPMENT	1	2	3	4
926		(continued)				
	9268	Attachments, Others. (continued)				
		G710B - 780B Non-Float				
	9268	Bracket; scarifier cross shaft complete new install or replace.	4	/	/	/
	9268	Cross Shaft; scarifier control c/w mounting hardware.	2	/	/	1
	9268	Lift Link; scarifier c/w mounting hardware Left or Right. (1 only).	1	/	/	0.5
	9268	Cylinder; scarifier lift / lower c/w mounting hardware.	2	/	/	0.5
	9268	Tooth Shank; scarifierbox. (each of 11).	0.5	/	/	/
	9268	Tooth Tip; scarifier tooth shank. (each of 11).	0.5	/	/	/
	9268	Bearing; drawbar arm.	0.5	/	/	0.5
	9268	Hose; main control valve to front bulkhead, scarifier (185"). (each of 2).	1	0.5	/	/
	9268	Hose; front bulkhead to counterbalance valve (23" or 25").	0.5	0.5	/	/
	9268	Hose; counterbalance valve to scarifier cylinder. (steel tube).	0.5	/	/	0.5
	9268	Attachments, Others.				
		G710B Float valve.				
	9268	Hose; main control to front bulkhead scarifier (185" or 218").	0.5	/	/	/
	9268	Hose; scarifier float valve to front bulkhead (22").	0.5	/	/	/
	9268	Hose; front bulkhead to cylinder (12" or 30").	0.5	/	/	/
	9268	Valve; electric float scarifier circuit c/w fittings.	1.5	1	/	0.5
	9268	Harness; front float valve scarifier circuit.	1.5	/	/	/
	9268	Cylinder; scarifier c/w fittings and mounting hardware.	1	/	/	0.5
	9268	Repair Kit; scarifier cylinder.	/	/	2	/
	9268	Rod; scarifier cylinder c/w packing kit.	/	/	2	/
	9268	Attachments, Others.				
		G710B - 780B A-frame (std.)				
	9268	A-Frame; front frame c/w hardware fittings, New install or Remove.	3	/	/	1
	9268	Repaint; clean, sandblast paint complete A-frame.	6	/	/	/
	9268	Yoke; front a-frame c/w mounting hardware.	1	/	/	/
	9268	Pin; upper yoke.	0.5	/	/	/
	9268	Pin; drop down block.	0.5	/	/	/
	9268	Cylinder; a-frame lift c/w mounting hardware and fittings.	1	/	/	/
	9268	Hose; main control valve to front bulkhead (185") (each of 2).	0.5	/	/	/
	9268	Hose; front bulkhead to counterbalance valve (42") (each of 2).	0.5	/	/	/
	9268	Hose; counterbalance valve to cylinder (steel tube) (each of 2).	0.5	/	/	0.5
	9268	Hose; main control valve to float valve (185" or 218").	0.5	/	/	/

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GROUP 9 HYDRAULIC SYSTEM, MECHANICAL EQUIPMENT and GRADING UNIT

(continued)

Function	Repair #	Repair Description	Repair Code / Allowance			
92		MECHANICAL EQUIPMENT	1	2	3	4
	926	(continued)				
	9268	Hose; front bulkhead to A-frame cylinder (48") (each of 2).	0.5	/	/	/
	9268	Float Valve; front A-frame c/w hardware and fittings.	1.5	1	/	0.5
	9268	Harness; front A-frame c/w mounting hardware.	1.5	/	/	/
	9268	Attachments, Others.				
		G710B - 780B A-frame continued				
	9268	Cylinder; A-frame c/w mounting hardware and fittings.	1	/	/	/
	9268	Repair Kit; A-frame cylinder.	/	2	/	/
	9268	Rod; A-frame cylinder c/w packing kit.	/	2	/	/
	9268	Attachments, Others.				
		G710B - 780B Windrow Eliminator				
	9268	Windrow Eliminator; c/w mounting hardware / fittings. New Install.	8.5	/	/	1.5
	9268	A-Frame; windrow eliminator c/w mounting brackets / hardware.	4	/	/	1
	9268	Brackets; windrow eliminator A-frame c/w mounting hardware.	1.5	/	/	0.5
	9268	Arm; lifting c/w mounting hardware.	1.5	/	/	0.5
	9268	Pull Tube; windrow eliminator Left or Right side.	1	/	/	0.5
	9268	Arm; stabilizer complete with mounting hardware.	1.5	/	/	0.5
	9268	Mouldboard; windrow eliminator c/w mounting hardware.	2.5	/	/	1
	9268	Cutting Edge; mouldboard c/w mounting hardware.	1	/	/	/
	9268	Bracket; pull tube mounting plate.	1	/	/	0.5
	9268	Wheel; mouldboard height control assy., c/w mounting hardware.	2.5	/	/	1
	9268	Swivel; wheel c/w guard and hardware.	1	/	/	0.5
	9268	Wheel; wheel and rim assy, mouldboard gauge.	1	/	/	0.5
	9268	Hub; wheel for mouldboard gauge.	1	/	/	0.5
	9268	Bearings; wheel hub.	1	0.5	/	/
	9268	Axle; wheel hub.	1.5	/	/	0.5
	9268	Adjuster; gage wheel height c/w mounting hardware.	2	/	/	0.5
	9268	Repaint; clean, sandblast and paint complete.	6	/	/	/
	9268	Hose; rear bulkhead to lock valve (11" or 12.5") (each of 2).	0.5	/	/	/
	9268	Hose; lock valve to lift cylinder (28" or 31") (each of 2).	0.5	/	/	/
	9268	Cylinder; mouldboard lift c/w mounting hardware.	1	/	/	0.5
	9268	Repair Kit; mouldboard lift.	1.5	/	/	0.5
	9268	Rod; cylinder lift c/w packing.	/	2	/	/

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GROUP 9 HYDRAULIC SYSTEM, MECHANICAL EQUIPMENT and GRADING UNIT

(continued)

Function 92	Repair #	Repair Description MECHANICAL EQUIPMENT	Repair Code / Allowance			
			1	2	3	4
927	927	Dozer Equipment; Snow Equipment G710B - 780B	/	/	/	/
	9271	Dozer Blade G710B - G780B				
	9271	Blade; dozer complete new install c/w mounting hardware.	6	/	/	1
	9271	Arms; dozer blade support c/w mounting pins. Any 1 of 4.	1	/	5	/
	9271	Frame; plow harness c/w mounting hardware.	2.5	/	/	0.5
	9271	Cylinder; dozer blade c/w mounting hardware.	1.5	/	1	/
	9271	Chain; support c/w mounting pins.	0.5	/	/	/
	9271	Edge; cutting edge c/w mounting hardware. 8', 9' or 10'.	1	/	/	/
	9275	Cylinder G710B -G780B				
	9275	Scarifier; see Function group 9268	/	/	/	/
	9275	Dozer; see Function group 9268	/	/	/	/
	9275	Windrow eliminator; see Function group 9268	/	/	/	/
	9275	Ripper; see Function group 9268	/	/	/	/
	9275	Plow; see Function group 9277	/	/	/	/
	9275	A-frame; see Function group 9271	/	/	/	/
	9277	Snow Wing G710B - G780B	/	/	/	/
	92771	Snow wing; cable G710B - G780B				
	92771	Snow Wing; cable, complete installation. New Install / Remove.	16	/	6	2
	92771	Wing; cable, front mast c/w mounting hardware.	4	/	/	1
	92771	Wing; cable, rear mast c/w mounting hardware.	8	/	/	1
	92771	Mast; front, bare.	3	1	/	0.5
	92771	Mast; front c/w slide and guides.	3	1	/	0.5
	92771	Guides; front mast c/w mounting hardware. (each of 2).	1	/	/	0.25
	92771	Slide; front mast c/w mounting hardware.	1	/	/	0.5
	92771	Bracket; front mast c/w mounting hardware.	2	/	/	0.5
	92771	Bar; support front mast c/w mounting hardware. (any 1).	1	/	/	/
	92771	Swivel; wing board, front mast.	1	/	/	/
	92771	Cable; lift/lower front mast c/w hardware. (313").	1.5	/	/	1
	92771	Cylinder; front mast c/w mounting hardware.	4	/	2	0.5
	92771	Sheave; front mast upper or lower. (each of 2).	1.5	/	/	0.5
	92771	Repair Kit; front mast lift.	/	2	/	/
	92771	Barrel; front mast lift c/w mounting hardware.	1	/	/	/

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GROUP 9 HYDRAULIC SYSTEM, MECHANICAL EQUIPMENT and GRADING UNIT

(continued)

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
92		MECHANICAL EQUIPMENT				
	927	(continued)				
	92771	Rod; c/w mounting hardware and packing.	1.5	/	/	/
	92771	Rear Mast; c/w mounting hardware, bare.	4	/	/	1
	92771	Rear Mast; c/w guides and slide, mounting hardware.	6	/	/	1
	92771	Swivel; rear mast c/w mounting hardware.	1	/	/	0.5
	92771	Brace; support rear mast c/w mounting hardware. (any 1).	1	/	/	/
	92771	Cable; rear mast lift c/w mounting hardware. (44').	1.5	/	/	0.5
	92771	Rod; c/w mounting hardware and packing.	1.5	/	/	/
	92771	Swivel; wing board, front mast.	1	/	/	/
	92771	Cable; lift/lower front mast c/w hardware. (313").	1.5	/	/	1
	92771	Cylinder; front mast c/w mounting hardware.	4	/	2	0.5
	92771	Sheave; front mast upper or lower. (each of 2).	1.5	/	/	0.5
	92771	Repair Kit; front mast lift.	/	2	/	/
	92771	Barrel; front mast lift c/w mounting hardware.	1	/	/	/
	92771	Rod; c/w mounting hardware and packing.	1.5	/	/	/
	92771	Cylinder; rear lift c/w mounting hardware.	2.5	3	/	0.5
	92771	Cylinder; rear slide c/w mounting hardware.	2.5	3	/	0.5
	92771	Shield; ice rear mast c/w mounting hardware.	1	/	/	1
	92771	Chain; rear or front mast c/w hardware.	1.5	/	/	/
	92771	Repair Kit; rear lift cylinder.	/	1.5	/	/
	92771	Barrel; rear mast lift cylinder c/w mounting hardware.	2	/	/	/
	92771	Rod; rear mast lift cylinder c/w packing kit.	2.5	/	/	/
	92771	Sheave; rear mast c/w mounting hardware.	1.5	/	/	0.5
	92771	Barrel; rear mast slide cylinder c/w mounting hardware.	2.5	/	/	0.5
	92771	Rod; rear mast slide cylinder c/w mounting hardware.	2.5	/	/	0.5
	92771	Board; wing board, bare.	2	/	/	1
	92771	Board; wing board c/w mounting hardware.	2.5	/	/	1
	92771	Edge; wing board c/w bolts.	1	/	/	/
	92771	Shoe; wing board cutting edge c/w hardware.	1	/	/	0.5
	92771	Trip; wing board c/w hardware.	1.5	/	/	/
	92771	Stand-offs; wing board complete, either trip or std., c/w hardware.	1	/	/	0.5
	92771	Spring; stand - off c/w hardware, trip or std. wing.	1.5	/	/	0.5
	92771	Hose; auxiliary valve to front lift cylinder lock valve (20") (each of 2).	1	/	/	/
	92771	Hose; front lift cylinder lock to front lift cylinder (60" or 80").	1	/	/	/
	92771	Hose; rear bulkhead to rear cylinder lock valve (24" or 28").	1	/	/	/
	92771	Hose; rear cylinder lock valve to lift cylinder (27" or 60").	1	/	/	/
	92771	Hose; rear cylinder lock valve to slide cylinder (60" or 106").	1	/	/	/

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GROUP 9 HYDRAULIC SYSTEM, MECHANICAL EQUIPMENT and GRADING UNIT

(continued)

Function 92	Repair #	Repair Description MECHANICAL EQUIPMENT (continued)	Repair Code / Allowance			
			1	2	3	4
	92772	Snow Wing Rear Mount Hydraulic. G710B - 780B				
	92772	Rear Mount; Complete install Lo-Bank hydraulic wing.	24	/	/	2
	92772	Bracket; rear mount c/w hardware. Lo-mount.	4	/	/	1
	92772	Bracket; front mount stand-off c/w hardware. Lo-mount.	6	/	/	2
	92772	Post; front mount c/w hardware, slide and supports.	8	/	/	/
	92772	Plate; inner sldier c/w mounting hardware.	4	/	2	0.5
	92772	Bar; spacer front post c/w mounting hardware.	2	/	/	0.5
	92772	Rail; front post slider c/w hardware.	2	/	2	0.5
	92772	Plate; outer slider c/w mounting hardware.	2.5	/	/	0.5
	92772	Mount; swivel c/w mounting hardware.	1.5	/	/	/
	92772	Guard; front post cylinder.	1	/	/	0.5
	92772	Rail; slider front post. (each of 4).	1.5	/	/	0.5
	92772	Brace; wing support. (each of 3).	1	/	/	/
	92772	Cylinder; dual slide ass'y c/w mounting hardware.	4.5	/	/	1
	92772	Repair Kit; front cylinder lift.	/	2	/	/
	92772	Tube; cylinder supply cross-over circuit. (each of 2).	2.5	/	/	0.5
	92772	Barrel; cylinder lift c/w mounting hardware.	2.5	/	/	0.5
	92772	Rod; cylinder lift c/w packing and hardware. (long or short).	2	/	/	/
	92772	Cylinder; wing lift c/w mounting hardware.	4.5	/	/	1.5
	92772	Barrel; cylinder wing lift.	2	/	/	/
	92772	Rod; cylinder wing lift c/w packing.	2	/	/	/
	92772	Repair Kit; cylinder wing lift.	/	2.5	/	/
	92772	Hose; auxiliary valve to front mast lock valve (22" each of 2).	1	/	/	/
	92772	Hose; front mast lock valve to cylinder (41" each of 2).	1	/	/	/
	92772	Hose; rear bulkhead to rear mast lock valve (18" each of 2)	1	/	/	/
	92772	Hose; rear lock valve to dual cylinder circuit (36" each of 2).	1	/	/	/
	92772	Hose; auxiliary valve to lift cylinder lock valve (35" each of 2).	1	/	/	/
	92772	Hose; lift cylinder lock valve to lift cylinder (49" or 85").	1.5	/	/	/
	92772	Hose; lift cylinder lock valve to cushion valve (27" each of 2).	1	/	/	/
	92772	Valve; cushion c/w mounting hardware.	1.5	/	/	/
	92772	Stand-off; rear mast inner sleeve (any of 2).	1.5	/	/	0.5
	92772	Stand-off; rear mast outer sleeve upper c/w mounting hardware.	1.5	/	/	0.5
	92772	Stand-off; rear mast outer lower sleeve.	1.5	/	/	0.5
	92772	Arm; stand-off complete ass'y upper.	1	/	/	0.5
	92772	Arm; stand-off complete ass'y lower.	1	/	/	0.5
	92772	Arm; stand-off complete ass'y front mast.	1	/	/	0.5
	92772	Arm; float c/w mounting hardware.	1.5	/	/	0.5
	92772	Wingboard; complete ass'y.	3	/	/	1
	92772	Edge; wingboard c/w mounting hardware.	1.5	/	/	/

Classification of Codes

1 = Replaced

3 = Overhauled

2 = Repaired

4 = Adjusted

GROUP 9 HYDRAULIC SYSTEM, MECHANICAL EQUIPMENT and GRADING UNIT

(continued)

Function 92	Repair #	Repair Description MECHANICAL EQUIPMENT	Repair Code / Allowance			
			1	2	3	4
	9277	(continued)				
	92772	Shoe; wingboard edge c/w mounting hardware.	1	/	/	0.5
	92772	Chain; rear safety c/w mounting hardware new install.	1.5	/	/	/
	92772	Chain; front safety c/w mounting hardware new install.	1.5	/	/	/
	92772	One Way Plow G710B - 780B				
	92772	Plow; complete install New or Remove.	10	/	/	1
	92772	Plow; c/w edges, No Push Frame.	4	/	/	1
	92772	Frame; plow push c/w mounting hardware.	3	/	2	0.5
	92772	Arm; inner or outer c/w mounting hardware.	1.5	/	/	0.5
	92772	Spring; return trip c/w eye bolts and hardware	1.5	/	/	0.5
	92772	Nose; plate c/w hardware.	1	/	/	/
	92772	Chain; lift c/w shackle and hardware.	1.5	/	/	0.5
	92772	Shoe; plow c/w mounting hardware. (1).	3	/	1.5	1
	92772	Holder; plow shoe c/w mounting hardware. (1).	2	/	1.5	0.5
	92772	Adjuster; plow frame adjuster c/w mounting hardware. (1).	2	/	/	0.5
	92772	Swivel; pushframe c/w centre bolt.	1.5	/	/	0.5
	92772	Extension; pushframe. (1).	1	/	/	/
	9278					
	92781	Snow plow; one-way G710B - G780B				
	92781	Plow; "One-way" complete installation New or Remove.	10	/	/	1
	92781	Adjuster; plow c/w shoe/holder. (1).	2	/	/	0.5
	92781	Shoe; adjuster replace c/w mounting hardware. (1).	3	/	1.5	1
	92781	Tube; inner adjuster c/w mounting hardware. (1).	2	/	1	0.5
	92782	Snow plow; V-Plow G710B - G780B				
	92782	Plow; "V" complete installation New and Remove.	10	/	/	1
	92782	Frame; push frame lower c/w mounting hardware	2	/	/	0.5
	92782	Arms; upper control arms c/w hardware.	1	/	/	/
	92782	Frame; "A" lifting device c/w hardware.	1	/	/	0.5
	92782	Runner; plow runner c/w new install.	2	/	/	1
	92782	Rod; push frame rod c/w hardware.	0.5	/	/	/
	9279					
	9279	Miscellaneous G710B - G780B				

Classification of Codes

1 = Replaced 3 = Overhauled
2 = Repaired 4 = Adjusted

GROUP 9 HYDRAULIC SYSTEM, MECHANICAL EQUIPMENT and GRADING UNIT

(continued)

Function 92	Repair #	Repair Description MECHANICAL EQUIPMENT (continued)	Repair Code / Allowance			
			1	2	3	4
	929	Miscellaneous equipment G710B - G780B	/	/	/	/
	9292	Lifting and Tie down items. G710B - G780B				
	9292	Plate; front lifting c/w mounting hardware.				
	9292	Plate; side lifting c/w hardware. Any 1 of 2.				
	9292	Plate; rear tie down c/w mounting hardware. Any 1 of 2.				
	9292	Lug; front side tie down. Any 1 of 2.				
	9299	Miscellaneous G710B - G780B	/	/	/	/
929		Miscellaneous Equipment; Lifting and Tie-Downs. G710B - 780B.				
	929	Lug; rear frame tie down. (each of 2).	1.5	/	/	/
	929	Lug; side frame tie down. (each of 2).	1.5	/	/	/
	929	Plate; lifting front nose.	2	/	/	/
	929	Lug; mid frame New install or Remove. (each of 2).	4	/	/	/

Classification of Codes

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4 = Adjusted

GROUP 9 HYDRAULIC SYSTEM, MECHANICAL EQUIPMENT and GRADING UNIT

(continued)

Function	Repair #	Repair Description	Repair Code / Allowance				
98		GRADING UNIT	1	2	3	4	
981	981	Moldboard G710B - G780B					
	9811	Cutting edge G710B - G780B					
	9811	Edge; cutting c/w mounting hardware. Any 6' or 7' edge.	1.5	/	/	0.5	
	9811	Bit; end bit c/w moun ting hardware. Any 1 of 2.	1	/	/	0.5	
	9812	End plate G710B - G780B					
	9812	Extension; mouldboard c/w mounting hardware. Left or Right side.	4.5	/	/	0.5	
	9813	End shoe G710B - G780B					
	9813	Shoe; end shoe mouldboard c/w mounting hardware.	1	/	/	0.5	
	982		Moldboard Blade Tilt Circuit. G710B				
		982	Cylinder; moldboard tilt c/w mounting hardware.	2.5	/	/	0.5
		982	Repair Kit; moldboard tilt.	/	2	/	/
		982	Rod; moldboard cylinder c/w packing.	3	/	/	/
982		Barrel; moldboard tilt cylinder.	3	/	/	/	
982		Quadrant; moldboard tilt c/w slides and bushings.(each of 2)	4	1	/	1	
982		Tube; moldboard slide tube c/w duramide. (each of 2).	2	/	/	1	
982		Duramide; moldboard slide tube. (each of 2).	/	1	/	/	
982		Guard; moldboard stone Left or Right side.	1	/	/	0.5	
982		Re-shim; moldboard slide upper and lower.	4	/	/	1	
982		Pins; moldboard tilt cylinder mounting.	1.5	/	/	/	
982			Moldboard Blade Tilt Circuit G720 - G746B only.				
	982	Cylinder; moldboard tilt c/w mounting hardware. (each of 2).	2	1	/	/	
	982	Repair Kit; moldboard tilt cylinder. (each of 2).	/	2.5	/	/	
	982	Rod; moldboard cylinder c/w packing.(each of 2).	3	/	/	/	
	982	Barrel; moldboard tilt cylinder. (each of 2).	3	/	/	/	
	982	Quadrant; moldboard tilt c/w slides and bushings. (each of 2).	4.5	/	1	1	
	982	Tube; moldboard slide tube c/w duramide. (each of 2).	2	/	/	1	
	982	Duramide; moldboard slide tube. (each of 2).	/	1	/	/	
	982	Guard; moldboard stoneguard.	1.5	/	/	0.5	

Classification of Codes

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2 = Repaired

4 = Adjusted

GROUP 9 HYDRAULIC SYSTEM, MECHANICAL EQUIPMENT and GRADING UNIT

(continued)

Function 98	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
		GRADING UNIT				
		(continued)				
	982					
	982	Moldboard Blade Tilt Circuit				
		G720 - 746B only.				
	982	Re-shim; moldboard slide upper and lower.	4	/	/	1
	982	Pins; moldboard tilt cylinder mounting.(each of 4pins).	1	/	/	0.5
	982	Bolt; quadrant retainer. (each of 2).	1	/	1	0.5
	982	Moldboard Blade Tilt Circuit				
		G780B only.				
	982	Cylinder; moldboard tilt c/w mounting hardware. (each of 2).	2	/	/	1
	982	Repair Kit; moldboard tilt cylinder. (each of 2).	/	2.5	/	/
	982	Rod; moldboard cylinder c/w packing. (each of 2).	/	3	/	/
	982	Barrel; moldboard tilt cylinder. (each of 2).	/	3	/	/
	982	Quadrant; moldboard tilt c/w slides and bushings. (each of 2).	4.5	/	2	1
	982	Shims; moldboard upper and lower slide bar. (each of 2 sets).	2	/	1	1
	982	Bushing; moldboard pivot lower. (each of 2).	4	/	/	1
	982	Tie-Bar; moldboard mounting c/w hardware.	4	/	1	1
	982	Re-shim; moldboard slide upper and lower.	6	/	/	1
	982	Pins; moldboard tilt cylinder mounting.(each of 2 pins).	1.5	/	/	/
	982	Mount; slide shift cylinder c/w mounting hardware.	1	/	/	1
	982	Blade Tilt Circuit; Hydraulics				
		G710B				
	982	Hose; main control valve to swivel joint. (127") (each of 2).	1	/	/	/
	982	Hose; swivel joint to counterbalce valve. (14") (each of 2).	1	/	/	/
	982	Hose; counterbalance valve to tilt cylinder. (14") (each of 2).	1	/	/	/
	982	Blade Tilt Circuit; Hydraulics				
		G720B - 780B only.				
	982	Hose; main control valve to swivel joint. (133") (each of 2).	1	/	/	/
	982	Hose; swivel joint to tube connector. (31") (each of 2).	1	/	/	/
	982	Hose; tube connector to counterbalance valve. (each of 4).	1	/	/	/
	982	Hose; counterbalance valve to tilt cylinder. (each of 4).	1	/	/	/
	982	Barrel; moldboard tilt cylinder. (each of 2).	/	3	/	/
	982	Quadrant; moldboard tilt c/w slides and bushings. (each of 2).	4.5	/	2	1
	982	Shims; moldboard upper and lower slide bar. (each of 2 sets).	2	/	1	1
	982	Bushing; moldboard pivot lower. (each of 2).	4	/	/	1
	982	Tie-Bar; moldboard mounting c/w hardware.	4	/	1	1
	982	Re-shim; moldboard slide upper and lower.	6	/	/	1
	982	Pins; moldboard tilt cylinder mounting.(each of 2 pins).	1.5	/	/	/
	982	Mount; slide shift cylinder c/w mounting hardware.	1	/	/	1

Classification of Codes

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4 = Adjusted

GROUP 9 HYDRAULIC SYSTEM, MECHANICAL EQUIPMENT and GRADING UNIT

(continued)

Function 98	Repair #	Repair Description GRADING UNIT	Repair Code / Allowance			
			1	2	3	4
	982	(continued)				
	982	Blade Tilt Circuit; Hydraulics				
		G710B				
	982	Hose; main control valve to swivel joint. (127") (each of 2).	1	/	/	/
	982	Hose; swivel joint to counterbalance valve. (14") (each of 2).	1	/	/	/
	982	Hose; counterbalance valve to tilt cylinder. (14") (each of 2).	1	/	/	/
	982	Blade Tilt Circuit; Hydraulics				
		G720B - 780B only.				
	982	Hose; main control valve to swivel joint. (133") (each of 2).	1	/	/	/
	982	Hose; swivel joint to tube connector. (31") (each of 2).	1	/	/	/
	982	Hose; tube connector to counterbalance valve. (each of 4).	1	/	/	/
	982	Hose; counterbalance valve to tilt cylinder. (each of 4).	1	/	/	/
	983	Blade High Lift Circuit				
		G710B - 746B MBCS only.				
	983	Cylinder; blade lift c/w mounting hardware. (each of 2).	3	/	/	/
	983	Rod; blade lift cylinder c/w packing kit. (each of 2).	/	1.5	/	1
	983	Barrel; blade lift cylinder c/w mounting hardware. (each of 2).	/	1.5	/	1
	983	Housing; blade lift cylinder bushing mount c/w bushing. (each of 4).	1	/	/	0.5
	983	Bushing; blade lift cylinder housing mount. (each of 4).	2	/	/	0.5
	983	Stirrup; blade lift cylinder c/w mounting hardware. (each of 2).	2.5	/	/	1
	983	Bushing; stirrup mount c/w spacers and seals. (each of 4).	1.5	/	/	1
	983	Thrust; washer stirrup mount. (each of 4).	1	1	1	1
	983	Blade High Lift Circuit (continued)				
		G710B - 746B MBCS only.				
	983	Arm; blade lift c/w mounting hardware. (each of 2).	4	1	1	1
	983	Pin; retaining blade lift arm c/w bushings and seals. (each of 2).	2	/	1	1
	983	Bushing; retainer pin c/w mounting hardware. (each of 2).	1.5	1.5	/	0.5
	983	Lockbar; blade lift side shift c/w mounting hardware.	2.5	/	/	0.5
	983	Cylinder; lock bar c/w mounting hardware.	2	2.5	/	1
	983	Cylinder; circle side shift. See section 985 for repair.				

Classification of Codes

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4 = Adjusted

GROUP 9 HYDRAULIC SYSTEM, MECHANICAL EQUIPMENT and GRADING UNIT

(continued)

Function 98	Repair #	Repair Description GRADING UNIT (continued)	Repair Code / Allowance			
			1	2	3	4
983	983	Blade High Lift Circuit. G780B HMBCS only.				
	983	Cylinder; blade lift c/w mounting hardware. (each of 2).	3	/	/	/
	983	Rod; blade lift cylinder c/w packing kit. (each of 2).	/	2	/	/
	983	Barrel; blade lift cylinder c/w mounting hardware. (each of 2).	/	2	/	/
	983	Housing; blade lift cylinder bushing mount c/w bushing. (each of 4).	1	/	/	0.5
	983	Bushing; blade lift cylinder housing mount. (each of 4).	2	/	/	0.5
	983	Stirrup; blade lift cylinder c/w mounting hardware. (each of 2).	2.5	/	/	1
	983	Bushing; stirrup mount c/w spacers and seals. (each of 4).	1.5	/	/	1
	983	Thrust; washer stirrup mount. (each of 4).	1	1	1	1
	983	Arm; blade lift c/w mounting hardware. (each of 2).	4	1	1	1
	983	Pin; retaining blade lift arm c/w bushings and seals. (each of 2).	2	/	1	1
	983	Bushing; retainer pin c/w mounting hardware. (each of 2).	1.5	1.5	/	0.5
	983	Lockbar; blade lift side shift c/w mounting hardware.	2.5	/	/	0.5
	983	Cylinder; lock bar c/w mounting hardware.	2	2.5	/	1
	983	Cylinder; circle side shift. See section 985 for repair.				
983		Blade High Lift Circuit; Hydraulics. G710B - 780B MBCS Counterbalance Valve.				
	983	Accumulators; c/w fittings and mounting hardware. (each of 2).	3	/	2	1
	983	Valve; accumulator shut off c/w fittings. (each of 2).	1	/	/	/
	983	Recharge; accumulators. (each of 2).	/	/	2	/
	983	Hose; accumulator to blade cylinder counterbalance valve. (48").	1	/	/	/
	983	Hose; blade cylinder counterbalance valve to top or bottom.	1	/	/	/
	983	Hose; main control valve to frame bulkhead. (52" or 58") (1 of 2).	1	/	/	/
	983	Hose; frame bulkhead to blade cyl. counterbalance valve. (40")	1	/	/	/
983		Blade High Lift Circuit; Hydraulics. G710B - 780B MBCS Float Valve.				
	983	Accumulators; c/w fittings and mounting hardware. (each of 2).	3	/	2	1
	983	Valve; accumulator shut off c/w fittings. (each of 2).	1	/	/	/
	983	Recharge; accumulators. (each of 2).	/	/	2	/
	983	Hose; accumulator to blade cylinder counterbalance valve. (48").	1	/	/	/
	983	Hose; blade cylinder counterbalance valve to top or bottom.	1	/	/	/
	983	Hose; main hyd. valve bank to frame bulkhead. (52" or 58") (1 of 2).	1	/	/	/
	983	Hose; frame bulkhead to return filter. (24" or 103") (1 of 2).	1	/	/	/
	983	Hose; frame bulkhead to blade float valve. (40") (any 1 of 3).	1	/	/	/
	983	Repair Kit; blade lift cylinder c/w mounting hardware.	/	2.5	/	/
	983	Repair Kit; blade lift accumulator c/w mounting hardware.	/	2.5	/	/

Classification of Codes

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GROUP 9 HYDRAULIC SYSTEM, MECHANICAL EQUIPMENT and GRADING UNIT

(continued)

Function	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
98		GRADING UNIT				
		(continued)				
984		Blade Slide and Swivel Joint Circuit				
		G710B - 780B				
	984	Swivel; joint assembly c/w fittings and mounting hardware.	3	/	1.5	/
	984	Spool; swivel joint c/w 'O' rings.	1	1	1	/
	984	Arm; swivel joint drive arm c/w hardware.	1.5	0.5	/	0.5
	984	Protector; hose front drawbar for swivel circuit.	0.5	/	/	/
	984	Repack; swivel joint assembly.	1.5	/	/	/
	984	Hose; main hydraulic valve to Swivel joint. (133") (each of 2).	0.5	/	/	/
	984	Hose; swivel joint to slide cylinder. (69") (each of 2).	0.5	/	/	/
	984	Cylinder; mouldboard slide c/w fittings.	2	/	2.5	/
	984	Rod; slide cylinder c/w packing kit.	2.5	1	/	/
	984	Barrel; slide cylinder c/w fittings.	2.5	1	/	/
	984	Repair kit; mouldboard slide.	/	/	1.5	/
	984	Cylinder; mouldboard slide. Note: 780 Only.	3	/	2.5	/
	984	Rod; slide cylinder c/w packing kit. Note: 780 Only.	2	/	1.5	/
	984	Barrel; slide cylinder c/w fittings. Note: 780 Only.	2	/	1.5	/
	984	Repair kit; mouldboard slide. Note: 780 Only.	/	/	2.5	/

Classification of Codes

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4 = Adjusted

GROUP 9 HYDRAULIC SYSTEM, MECHANICAL EQUIPMENT and GRADING UNIT

(continued)

Function 98	Repair #	Repair Description GRADING UNIT	Repair Code / Allowance			
			1	2	3	4
		(continued)				
	985	Circle Turn Circuit - Front and Rear.				
		G710B - 740B MBCS				
	985	Circle; remove c/w drawbar and moldboard.	4	/	/	4
	985	Circle; remove and re-install only.	6	/	4	4
	985	Drawbar; remove and re-install only.	6	/	2	2
	985	Teeth; re-weld to contour. (1 tooth only).	/	/	2	/
	985	Segment; circle tooth replace. (1 segment only).	4	/	2	/
	985	Pivot; circle arm replace. (re-weld) (1 only).	8	/	2	/
	985	Straddle; mount replace. (re-weld) (1 only).	8	/	2	/
	985	Crank; circle turn c/w bearings. (1 only).	1.5	/	0.5	/
	985	Pinion; circle turn c/w bearing and seal. (1 only).	1.5	/	0.5	/
	985	Cylinder; circle turn. (1 only).	1	/	1.5	/
	985	Bearing; circle turn cylinder. (each 1of 4).	0.5	/	/	/
	985	Clamp plate; c/w mounting hardware. (1 of 3).	1	/	1	0.5
	985	Duramide; clamp plate c/w rivets. (1 of 3).	1	/	0.5	0.5
	985	Duramide; guide plate c/w rivets. (1of 3).	1	/	0.5	/
	985	Duramide; circle deck. (1 of 3).	1	/	/	/
	985	Re-shim; circle c/w shims and hardware.	/	/	6	/
	985	Valve; circle timing valve c/w fittings and packing kit.	2	/	1	/
	985	Circle Turn Circuit - Front and Rear				
		G780B HMBCS				
	985	Circle; remove c/w drawbar and moldboard.	6	/	6	/
	985	Circle; remove and re-install only.	8	/	6	6
	985	Drawbar; remove and re-install only.	6	/	3	3
	985	Teeth; re-weld to contour. (1 tooth only).	/	/	2	/
	985	Segment; circle tooth replace. (1 segment only).	5	/	3	/
	985	Bushing; circle arm replace. (re-weld) (1 only).	6	/	3	/
	985	Straddle; mount replace. (re-weld) (1 only).	6	/	3	/
	985	Crank; circle turn c/w bearings. (1 only).	2	/	1	/
	985	Pinion; circle turn c/w bearing and seal. (1 only).	2	/	1	/
	985	Cylinder; circle turn. (1 only).	1	/	1.5	/
	985	Bearing; circle turn cylinder. (each 1of 4).	0.5	/	/	/
	985	Clamp plate; c/w mounting hardware. (1 of 5).	1.5	/	1.5	1
	985	Duramide; clamp plate c/w rivets. (1 of 5).	1	/	0.5	0.5
	985	Duramide; guide plate c/w rivets. (1of 5).	1	/	0.5	/
	985	Duramide; circle deck. (1 of 5).	1.5	/	/	/
	985	Re-shim; circle c/w shims and hardware.	/	/	8	/
	985	Valve; circle timing c/w fitting and packing kit.	2	/	1	/

Classification of Codes

1 = Replaced

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2 = Repaired

4 = Adjusted

GROUP 9 HYDRAULIC SYSTEM, MECHANICAL EQUIPMENT and GRADING UNIT

(continued)

Function	Repair #	Repair Description	Repair Code / Allowance			
98		GRADING UNIT	1	2	3	4
		(continued)				
985		Circle Turn Circuit; Hydraulics.				
		G710B - 780B				
	985	Hose; main control valve to counterbalance valve.(127" or 133")	1	/	0.5	/
	985	Hose; counterbalance valve to circle timing valve. (20") (each of 2).	0.5	/	0.5	/
	985	Hose; circle timing to dead end of circle turn cylinder. (28" or 33").	0.5	/	0.5	/
	985	Hose; circle timing to live end of cicle turn cylinder. (28" or 33").	0.5	/	0.5	/
	985	Hose; main hydraulic valve extension to counterbalance valve.	0.5	/	/	/
	985	Cylinder; circle timing c/w fittings and bearings. (each of 2).	1.5	/	1	/
	985	Rod; circle turn c/w packing kit. (each of 2).	1.5	/	1	/
	985	Barrel; circle turn c/w fittings.	1.5	0.5	1	/
	985	Valve; pinion valve circle timing c/w shaft and bushing.	1	0.5	0.5	/
	985	Bushing; circle timing through shaft.	2	1	/	0.5
	985	Repack; circle timing valve.	/	1	0.5	0.5
986		Circle Shift Cicuit - MBCS/HMBCS				
		G710B - 780B				
	986	Cylinder; circle side shift c/w fittings.	2.5	/	2	/
	986	Accumulator; circle side shift c/w fittings and mounting hardware.	3	1	1	0.5
	986	Re-charge; accumulators c/w gate valve. (1 only)	/	/	1.5	/
	986	Hose; main hydraulic valve to c/balance valve. (127" or 133").	1	/	0.5	/
	986	Hose; c/balance valve to accumulator. (16" or 24").	0.5	/	0.5	/
	986	Hose; accumulator to side shift cylinder. (52" or 56").	0.75	/	/	/
	986	Hose; drawbar bulkhead to c/balance valve. (24"). None accum.	1	/	/	/
	986	Hose; c/balance valve to s/shift cylinder. (41" or 57"). None accum.	1	/	/	/
	986	Seal Kit; side shift cylinder.	/	/	2	/
	986	End Cap; side shift cylinder, re-shim. (each 1 of 2).	0.5	/	/	0.5
	986	Cylinder; mbc lock cylinder c/w switch and fittings.	2	1	1	0.5
	986	Re-seal; lock cylinder.	/	/	1.5	/
	986	Rod; lock cylinder rod c/w seal kit.	2	/	0.5	/
	986	Switch; lock cylinder indicator.	0.5	/	/	0.5
	986	Barrel; lock cylinder.	1.5	/	0.5	/
	986	Harness; lock cylinder c/w end plugs.	1.5	/	/	/
	986	Valve; lock cylinder control valve c/w coil.	1.5	1	1	0.5
	986	Hose; transmission filter to solenoid valve. (72").	1	/	/	/
	986	Hose; transmission regulator valve to solenoid valve. (67").	1	/	/	/
	986	Hose; solenoid valve to charge side lock valve.	1	/	/	/
	986	Hose; solenoid valve to return of lock valve.	1	/	/	/

Classification of Codes

1 = Replaced

3 = Overhauled

2 = Repaired

4 = Adjusted

GROUP 9 HYDRAULIC SYSTEM, MECHANICAL EQUIPMENT and GRADING UNIT

(continued)

Function	Repair #	Repair Description	Repair Code / Allowance			
98		GRADING UNIT	1	2	3	4
		(continued)				
987	Drawbar Circuit; Front and Rear					
	G710B - 740B					
	987	Re-finish; drawbar c/w with steam, sandblast and paint.	10	/	/	/
	987	Install; remove or install complete drawbar w/o circle/moldboard.	8	/	2	2
	987	Plate; cover c/w mounting hardware.	1	/	0.5	0.5
	987	Plate; mounting for valve.	1.5	/	/	/
	987	Valve; timing c/w fitting and mounting hardware.	1.5	/	1	1
	987	Block; screw adjusting for circle adjustment. (each 1 of 3).	2	/	1	1
	987	Ball Pin; highlift c/w grease fitting and hardware. (each 1 of 2).	2.5	/	1.5	0.5
	987	Ball Pin; circle side shift c/w grease fitting and hardware.	2.5	/	1.5	0.5
	987	Lug; anchor circle turn cylinder c/w mounting plate; install or remove.	2	1	1	/
	987	Plate; wear circle top deck to cross-bar; install or remove.	2	/	1	1
	987	Ball Stud; drawbar side c/w mounting plate.	2	1	1	0.5
	987	Ball Stud; re-shim c/w adjuster shims.	/	/	1.5	/
	987	Ball Cap; split c/w mounting hardware.	2	0.5	0.5	0.5
	987	Ball Seat; front drawbar c/w mounting hardware.	4	/	2	0.5
	987	Mount; drive pinion c/w mounting hardware; Re + Re.	8	/	4	2
987	Cover; circle pinion crank c/w mounting hardware.	0.5	/	/	/	
987	Drawbar Circuit; Front and Rear					
	G780B					
	987	Re-finish; drawbar c/w with steam, sandblast and paint.	10	/	/	/
	987	Install; remove or install complete drawbar w/o circle/moldboard.	9	/	3	2
	987	Plate; cover c/w mounting hardware.	1	/	0.5	0.5
	987	Plate; mounting for valve.	1.5	/	/	/
	987	Valve; timing c/w fitting and mounting hardware.	1.5	/	1	1
	987	Block; screw adjusting for circle adjustment. (each 1 of 5).	2	/	1	1
	987	Ball Pin; highlift c/w grease fitting and hardware. (each 1 of 2).	3	/	2	1
	987	Ball Pin; circle side shift c/w grease fitting and hardware.	3	/	2	1
	987	Lug; anchor circle turn cylinder c/w mounting plate; install or remove.	3	1	1	/
	987	Plate; wear circle top deck to cross-bar; install or remove.	3	/	1	1
	987	Ball Stud; drawbar side c/w mounting plate.	2.5	1.5	1.5	1
	987	Ball Stud; re-shim c/w adjuster shims.	/	/	2	/
	987	Ball Cap; split c/w mounting hardware.	2.5	1	1	1
	987	Ball Seat; front drawbar c/w mounting hardware.	5	/	2	1
	987	Mount; drive pinion c/w mounting hardware; Re + Re.	10	/	5	1
987	Cover; circle pinion crank c/w mounting hardware.	0.5	/	/	/	

Classification of Codes

1 = Replaced 3 = Overhauled
2 = Repaired 4 = Adjusted

GROUP 9 HYDRAULIC SYSTEM, MECHANICAL EQUIPMENT and GRADING UNIT

(continued)

Function 99	Repair #	Repair Description	Repair Code / Allowance			
			1	2	3	4
		MISCELLANEOUS				
	990	General; Common Info.				
	992	Fire Protection; Anti-Vandalism System				
		G710B - 780B				
	992	Fire Extinguisher; new install c/w mounting hardware.	2	/	/	0.5
	992	Fire Extinguisher re-charge.	/	/	1	0.5
	992	Cover; anti-vandal pedestal c/w mounting hardware, New install.	1	/	1	0.5
	992	Cover; anti-vandal console c/w mounting hardware, New install.	1	/	1	0.5
	992	Transmission; anti-vandal filler tube c/w mounting hardware.	1.5	/	1	0.5
	992	Latch; anti-vandal auxiliary tank c/w mounting hardware.	1	/	1	0.5
	992	Lug; anti-vandal fuel tank c/w mounting hardware.	1.5	/	1	0.5
	992	Anti-Vandal; complete new install c/w mounting hardware.	8	/	2	1
	993	Accessories; Modifications.				
		G710B - 780B	/	/	/	/
	996	Other Equipment/Attachments; Laser Blade Control System				
		G710B - 780B				
	996	Tire Pump; complete install c/w mounting hardware.	8	/	2	1
	996	Repair Kit; tire pump c/w packing and seals.	/	/	4	1
	996	Harness; tire pump c/w mounting harness.	1	/	1	1
	996	Relay; tire pump start c/w mounting hardware.	1	/	/	0.5
	996	Bracket; tire pump mounting c/w hardware.	1	/	1	0.5
	996	Grease Kit; remote grease terminal c/w mounting hardware.	8	/	4	1
	996	Bracket; remote grease terminal.	2	/	1	0.5
	996	Fittings; grease.	0.5	/	/	/
	996	Line; remote grease locations. (each 1 of 4).	1.5	/	/	0.5

Classification of Codes

1 = Replaced

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Language Code GB	Product WLO	Group 913	https://truckmanualshub.com/	No. 47	Version 1	Date 03/11/2010
Applies to Wheel Loaders						

Greasing of hydraulic pump drive shaft



Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.

Cause and action

For some time now standard procedure has been to grease the hydraulic pumps' drive shaft in connection with bolting down the pumps on the transmission when installing them on the assembly lines in our different factories.

The purpose of this is to increase the service life and to counteract wear of the pump shaft's splines joint as well as the corresponding drive sleeve in the transmission's power take-off.

For the same reason we want to recommend use of splines grease in connection with changing or repairing hydraulic pumps in the field.

Part	Part number	Quantity	Temperature range
Ultra grease lithium complex ep2 (Splines grease)	VOE 15026328	400 g	- 20° C — + 150° C

Heating, ventilation and air conditioning unit, description

The machine is equipped with a heating, ventilation and air conditioning unit which maintains a constant overpressure in the cab by means of the fan to keep out pollutants. In addition, all air is filtered, i.e. including recirculated air. The cab is equipped with a heater unit as standard but is also available with an air-conditioning unit (AC) as an optional extra.

All controls for the heating, ventilation and air-conditioning unit are mounted on the right-hand side panel.

The four-speed cab fan is regulated by means of a switch (1).

The temperature is adjusted by means of a slide control (3) which via wires actuates a valve that regulates the flow of coolant through the heater unit. The slide control (2) regulates the amount of air that is recirculated. The air-conditioning unit is turned on by means of button (4).

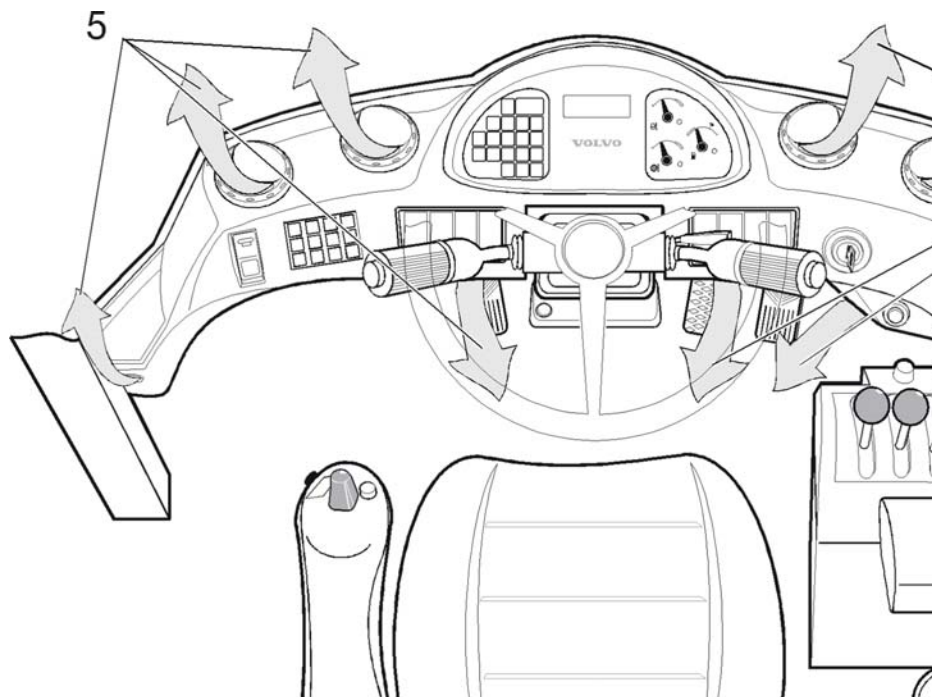


Figure 1

1. Switch, fan speed
2. Recirculation control
3. Temperature control
4. Switch for air-conditioning unit
5. Air nozzles

Air which is sucked into the cab first passes through the air intake (2), see [Invalid linktarget]. From there the air continues through a replaceable primary filter (8), [Invalid linktarget], which is accessible via a cover panel on the right-hand side of the cab. The primary filter is supplemented by a replaceable cab filter (9), see [Invalid linktarget].

During recirculation the main volume of air will follow the path shown by arrow C in [Invalid linktarget] via recirculation damper (7). With the control (1) at maximum about 90% of the air will be recirculated and only about 10% comes from outside in order to maintain the overpressure in the cab.

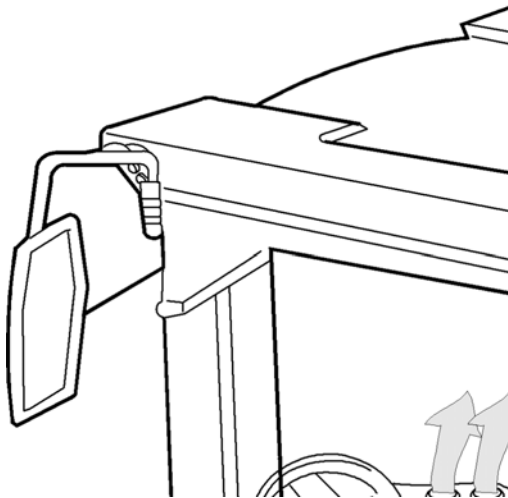


Figure 2
Heating, ventilation and air conditioning unit/air duct system

1. Controls
2. Air inlet
3. Fan motor

After the air has passed the cab filter it is drawn via the evaporator (5) (optional equipment) into the fan (4) and then forced through the heater unit (3) and distributed throughout the cab, see [Invalid linktarget].

The air is distributed in the cab by means of 10 air nozzles that are individually adjustable and can also be turned on and off individually.

The cab air is ventilated out through shutters with valves in the cab door.

A certain over-pressure is required in order to open the valves, and this high pressure also helps to keep the cab dust-free.

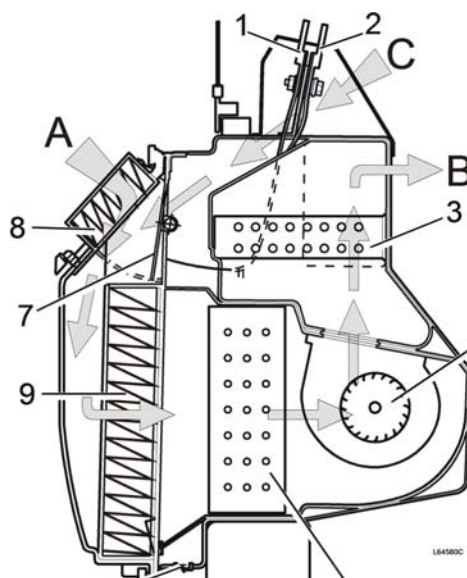


Figure 3
Air conditioning, cut-away view

1. Recirculation control
 2. Heat control
 3. Heater unit
 4. Cab fan
 5. Evaporator
 6. Drain valve for condensation water
 7. Recirculation damper
 8. Pre-filter
 9. Cab filter
- A. Outdoor air

- B. Air into cab
- C. Recirculation air

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Heating, ventilation and air conditioning unit, description

The evaporator (5) is located between the cab filter (9) and the cab fan (4), see [Invalid linktarget].

When the air-conditioning unit starts the evaporator is cold and the air passing its fins is cooled down. If the air becomes too cold it can be adjusted by selecting a different cab fan speed or by means of the heater control (2).

The air-conditioning unit, [Invalid linktarget] is filled with a refrigerant (R134a) that is pumped round the system by the compressor (D).

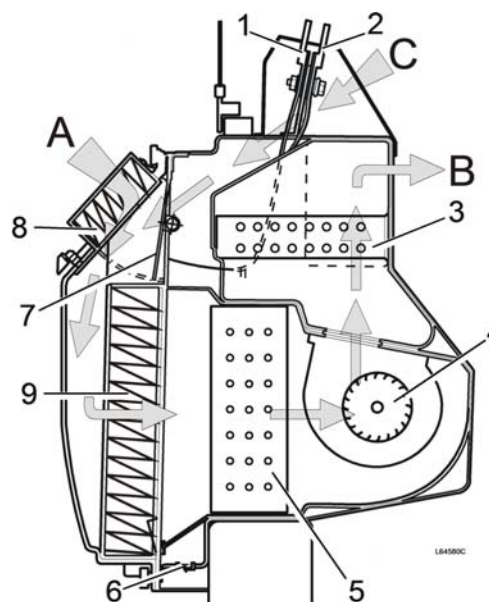


Figure 1
Air conditioning, cut-away view

1. Recirculation control
 2. Heat control
 3. Heater unit
 4. Cab fan
 5. Evaporator
 6. Drain valve for condensation water
 7. Recirculation damper
 8. Pre-filter
 9. Cab filter
-
- A. Outdoor air
 - B. Air into cab
 - C. Recirculation air

The compressor is driven from the diesel engine by means of a V-belt and has an electromagnetic clutch for turning it on and off. Safety valve H opens at 35 bar (508 psi) and closes at 25 bar (363 psi).

Compressor D pumps the refrigerant to condenser E and increases the pressure so that the refrigerant condenses (liquefies). Compression of the refrigerant generates heat which is carried away from the condenser by means of the diesel engine's regular radiator fan.

Dryer filter F absorbs any moisture that may be present in the refrigerant and also serves as a storage place for it. The dryer filter is located in the space between the engine bay and the radiator fan on the right-hand side of the machine. Pressure monitor G breaks when the pressure is both too high and too low. It breaks at 1–2 bar (14.5–29) and at 21–25 bar (305–363).

The amount of refrigerant flowing through evaporator B is controlled by expansion valve A which senses the temperature at the evaporator outlet by means of capillary tube I. The restriction in the expansion valve lowers the pressure so that the refrigerant changes from liquid to gas. This evaporation substantially lowers the temperature of the refrigerant.

When the cold refrigerant passes through the evaporator, heat is removed from the air passing into the cab through the evaporator fins. As a result, the air blown into the cab is cold.

The temperature of the evaporator is regulated by means of a thermostat C which senses its temperature via capillary tube J, [Invalid linktarget]. It is used for preventing the formation of ice on the evaporator. When there is a danger of ice forming, the thermostat disconnects the compressor until the temperature has increased.

Condensate that forms on the evaporator is drained through a valve (6) underneath it, see [Invalid linktarget].

In order to obtain maximum cooling of the cab, a recirculation damper (7) can be opened and approximately 90% of the air flow is drawn from the cab through this damper.

The recirculated air is filtered through the ordinary cab filter (9).

For more detailed descriptions of the included components as well as repair instructions, see Service Manual "AIR CONDITIONING, R134a" and any service bulletins.

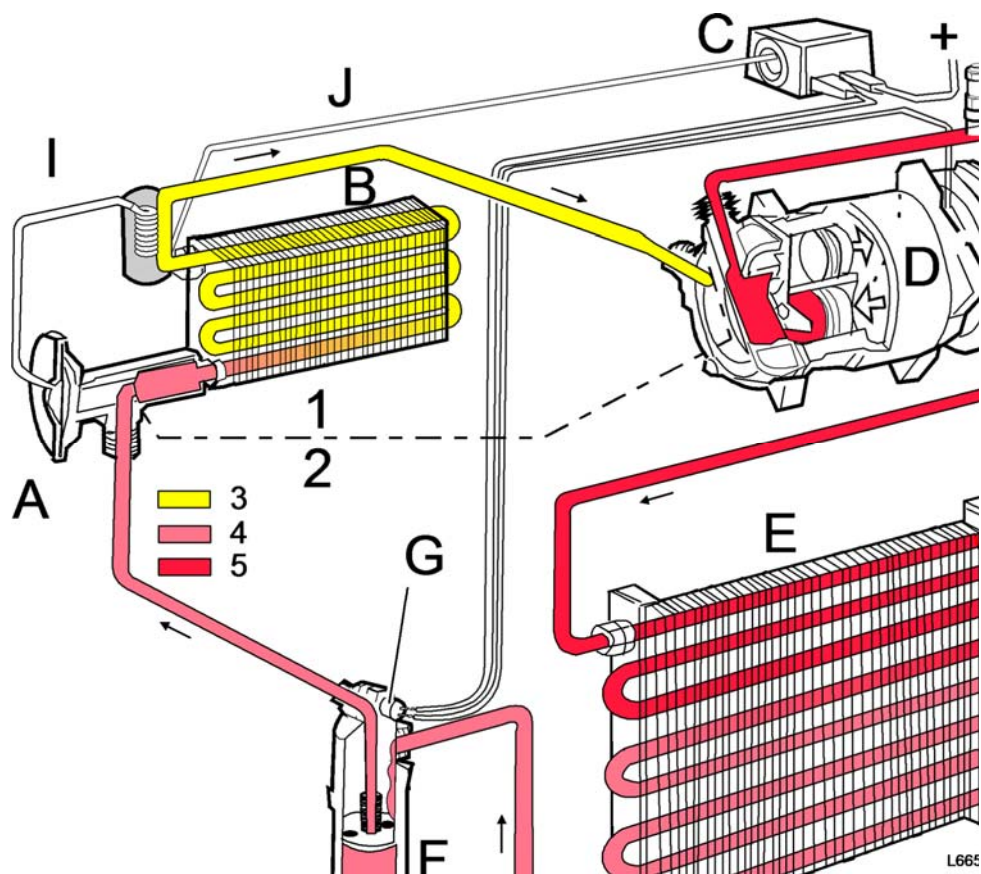


Figure 2
Air conditioning, principle illustration

1. Low-pressure side, cold
 2. High-pressure side, warm
 3. Gas
 4. Liquid
 5. Gas-liquid mixture
-
- A. Expansion valve
 - B. Evaporator
 - C. Thermostat (always adjusted to max. position, thus not adjustable by operator, located under side panel in the cab)
 - D. Compressor
 - E. Condenser
 - F. Receiver dryer
 - G. Pressure monitor
 - H. Safety valve
 - I. Capillary tube to expansion valve
 - J. Capillary tube to thermostat

Hold (stand-by) pressure and working pressure

Op nbr 6451564528

[11 666 019 Pressure gauge 0–6 MPa \(0–870 psi\)](#)

[11 666 020 Pressure gauge 0–25 MPa \(0–3625 psi\)](#)

[11 666 037 Hose](#)

The following applies when checking:

Temperature: **Normal operating temperature**

Hold (stand-by) pressure (Op no. 64515)

CAUTION

When checking hold (stand-by) pressure, the steering wheel must absolutely not be moved. The smallest deviation from neutral position will cause the pressure to increase, which may damage the pressure gauge.

1. Connect the frame joint lock.

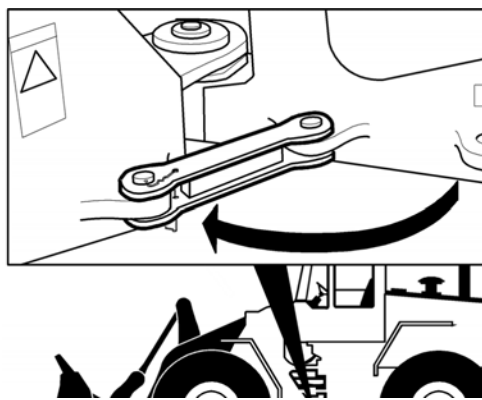


Figure 1

2. Connect pressure gauge 11 666 019 (0–6 MPa) (0–870 psi) to the pressure outlet on the steering valve.

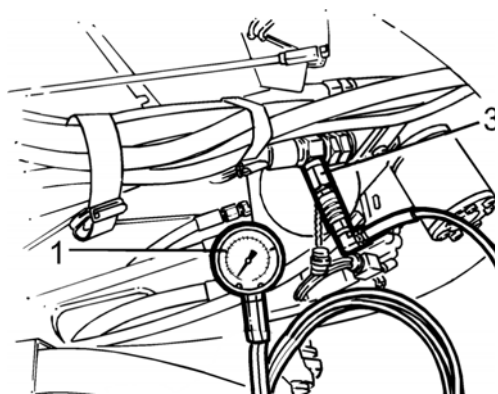


Figure 2
Checking hold (stand-by) pressure

1. 11 666 019 (0–6 MPa) (0–870 psi)
2. 11 666 037
3. Pressure outlet

3. Start the engine and let it run at low idle.
4. Check the hold (stand-by) pressure with the steering in neutral position (steering not activated).
Hold (stand-by) pressure: **3.0 ±0.3 MPa (435 ±43.5 psi)**

CAUTION

Do not hold the hose while taking the pressure reading. Hang up the pressure gauge so that it can be read.
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Adjusting

- Any adjustment is done on the steering pump flow compensator (located behind the plate under the cab). Remove the plug over the adjusting screw, adjust the pressure.

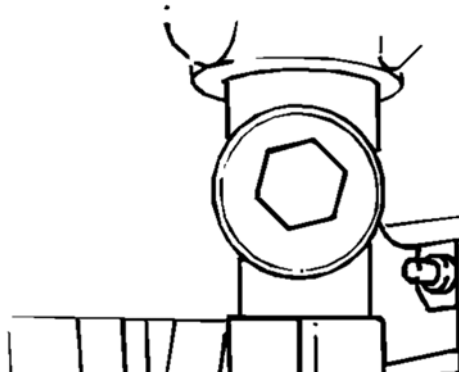


Figure 3
Adjusting hold (stand-by) pressure

- Hold (stand-by) pressure (during adjustment)

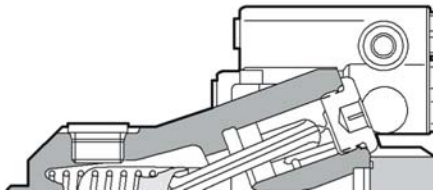


Figure 4

- Hold (stand-by) pressure
- Working pressure

Working pressure (Op no. 64528)

- Connect the frame joint lock.

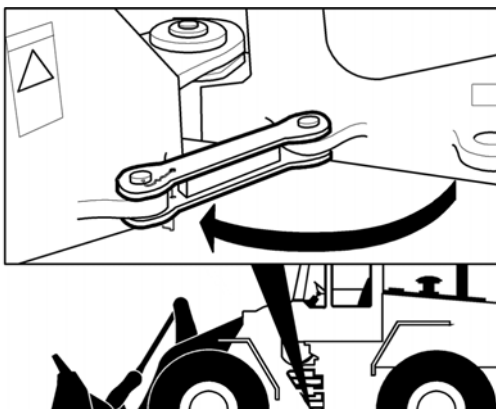


Figure 5

- Connect pressure gauge 11 666 020 (0–25 MPa, 0–3626 psi) to the pressure outlet on the steering valve. Start the engine and let it run at a fast idle.

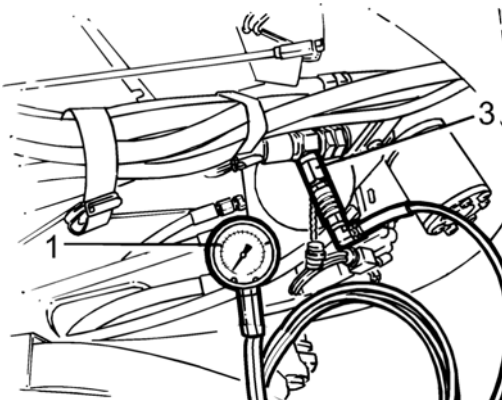


Figure 6
Checking working pressure

1. 11 666 020 (0–25 MPa) (0–3625 psi)
 2. 11 666 037
 3. Pressure outlet
8. Steer to full lock (end) position and check the working pressure.
Working pressure: **21 ±0.35 MPa (3045 ±51)**



Do not hold the hose while taking the pressure reading. Hang up the pressure gauge so that it can be read.

Adjusting

9. Any adjustment is done with the screw on the steering pump pressure compensator. Lock the screw with paint after adjusting.

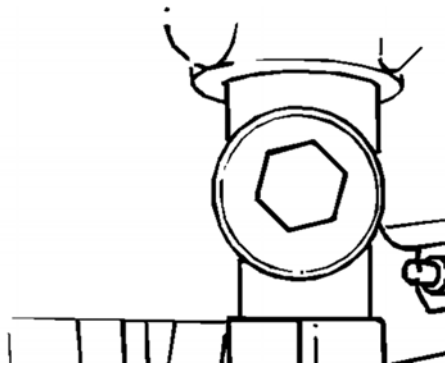


Figure 7
Adjusting working pressure

- 2 Working pressure (upper adjustment)

Hydraulic diagram L90D, complete

<https://truckmanualshub.com/>

A	Steering pump
B	Hydraulic pump working hydraulics as well as brake and servo systems
C*	Secondary steering pump
D	Return oil filter
E	Hydraulic oil cooler
G	Pressure limiting valve
H	Brake valve
I*	Parking brake valve
J	Servo valve
K	Control valve
L*	CDC lever steering
M	Steering valve
O*	Secondary steering valve
P	Solenoid valve block
R	Attachment locking
S	Shuttle valve, 3rd/4th hydraulic function
U*	Boom Suspension System (BSS)
V	Steering accumulator
X	Sequence valve

1	Rear axle
2	Front axle
3	Left steering cylinder
4	Right steering cylinder
5	Lift cylinder
6	Tilt cylinder
7*	3rd function
8*	4th function
9*	3rd function

* Optional equipment

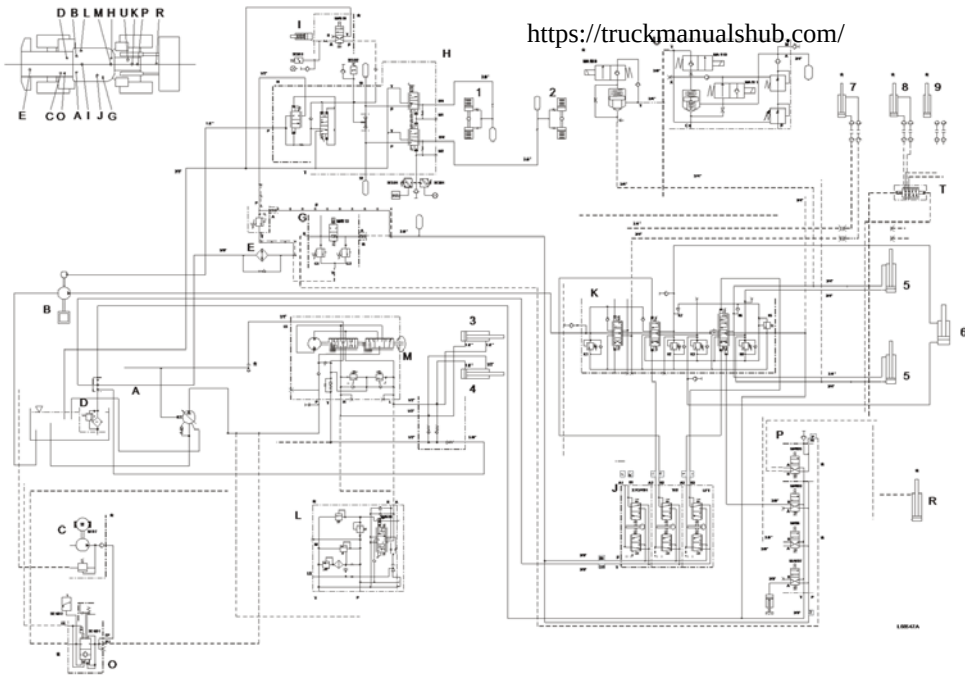


Figure 1

Hydraulic diagram L120D, complete

<http://truckmanualshub.com/>

A	Steering pump and fan pump
B	Hydraulic pump working hydraulics as well as brake and servo systems
C*	Secondary steering pump
D	Return oil filter
E	Hydraulic oil cooler
G	Pressure limiting valve
H	Brake valve
I	Parking brake valve
J	Servo valve
K	Control valve
L*	CDC lever steering
M	Steering valve
N	Shift valve
O*	Secondary steering valve
P	Solenoid valve block
R	Attachment locking
S	Shuttle valve, 3rd/4th hydraulic function
U*	Boom Suspension System (BSS)
V	Steering accumulator

1	Rear axle
2	Front axle
3	Left steering cylinder
4	Right steering cylinder
5	Lift cylinder
6	Tilt cylinder
7*	3rd function
8*	4th function
9*	3rd function

* Optional equipment

V D B L M H U K P R

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E C O A I J G N

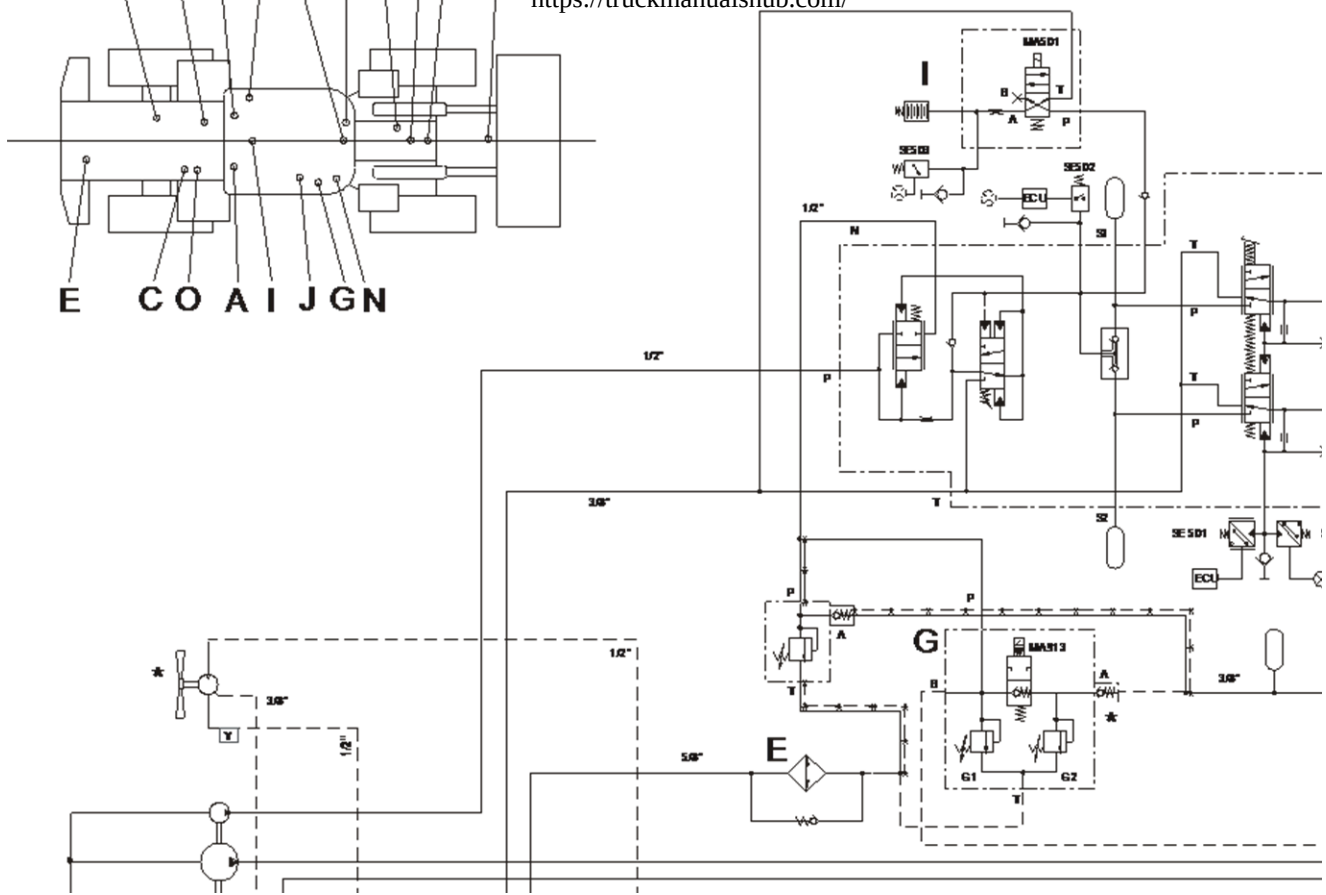


Figure 1

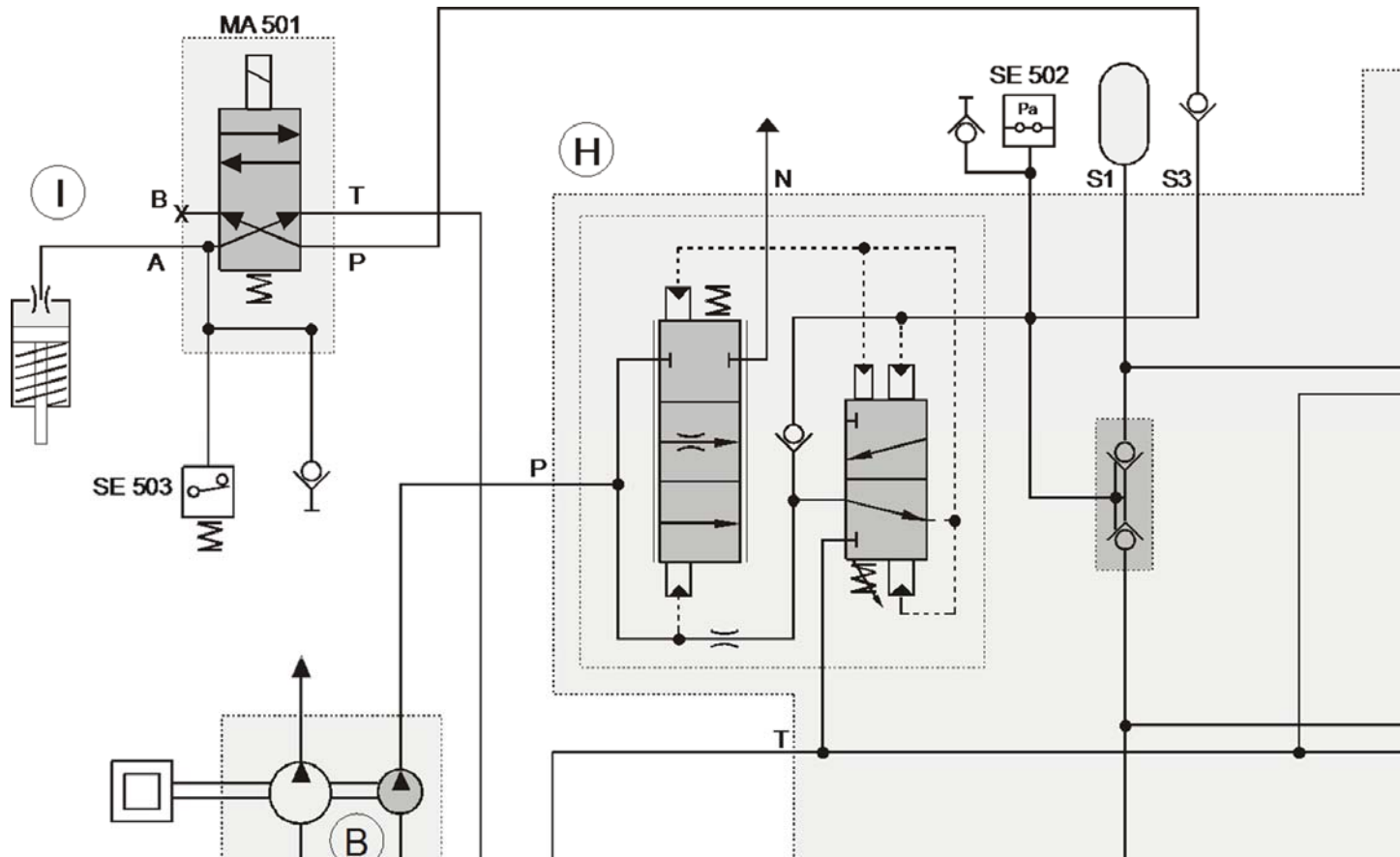


Figure 1
Hydraulic diagram, brake system

- B Brake pump
- H Foot brake valve
- I Parking brake valve (optional equipment)
- R Rear axle
- F Front axle

hydraulically driv



Figure 1
Hydraulically driven cooling (optional equipment for L120D)

A	Fan pump
D	Return oil filter

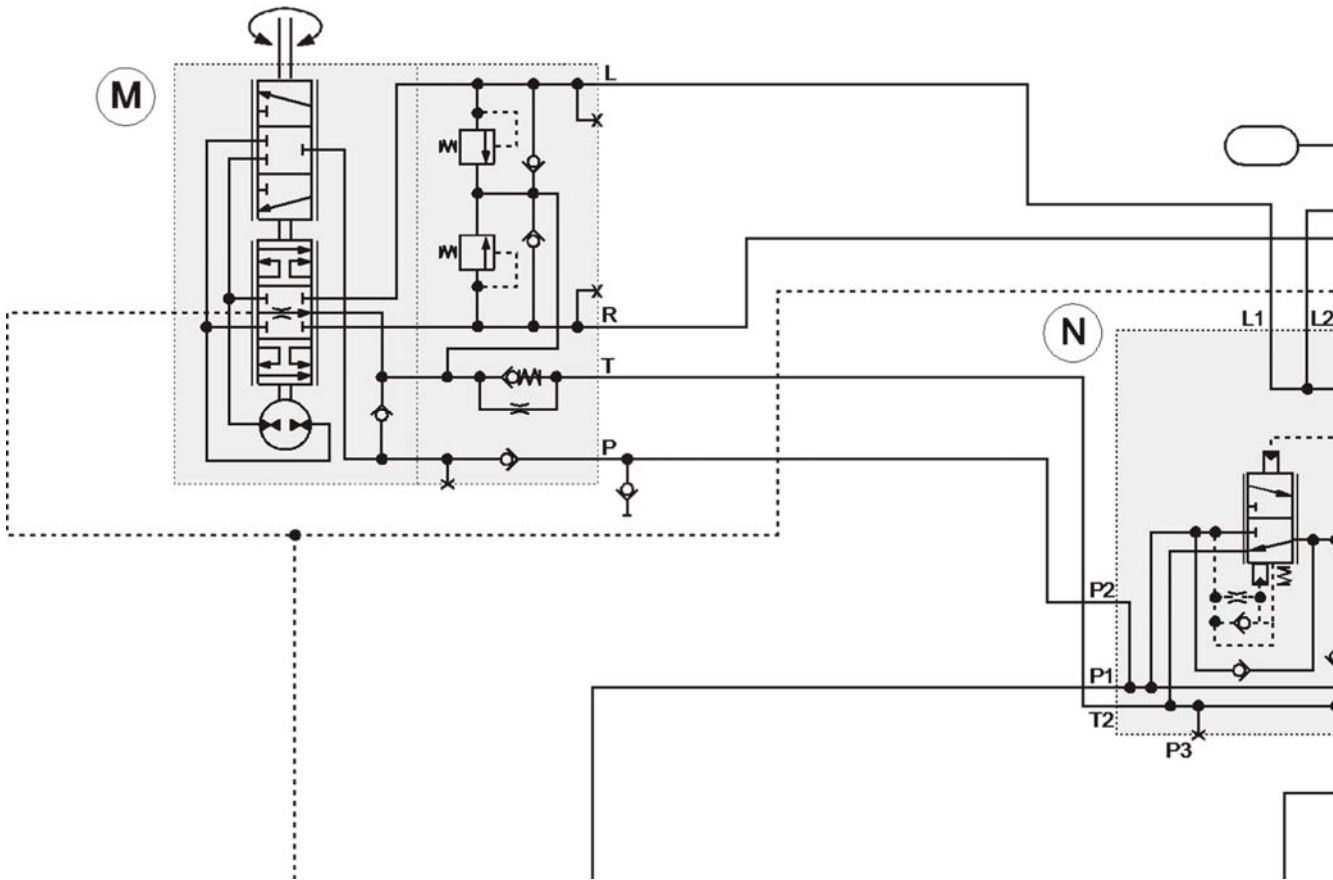


Figure 1
Hydraulic diagram, steering

A	Steering pump
D	Return oil filter
M	Steering valve
N	Shift valve

Hydraulic diagram, steering, incl. lever steering (CDC) and secondary steering

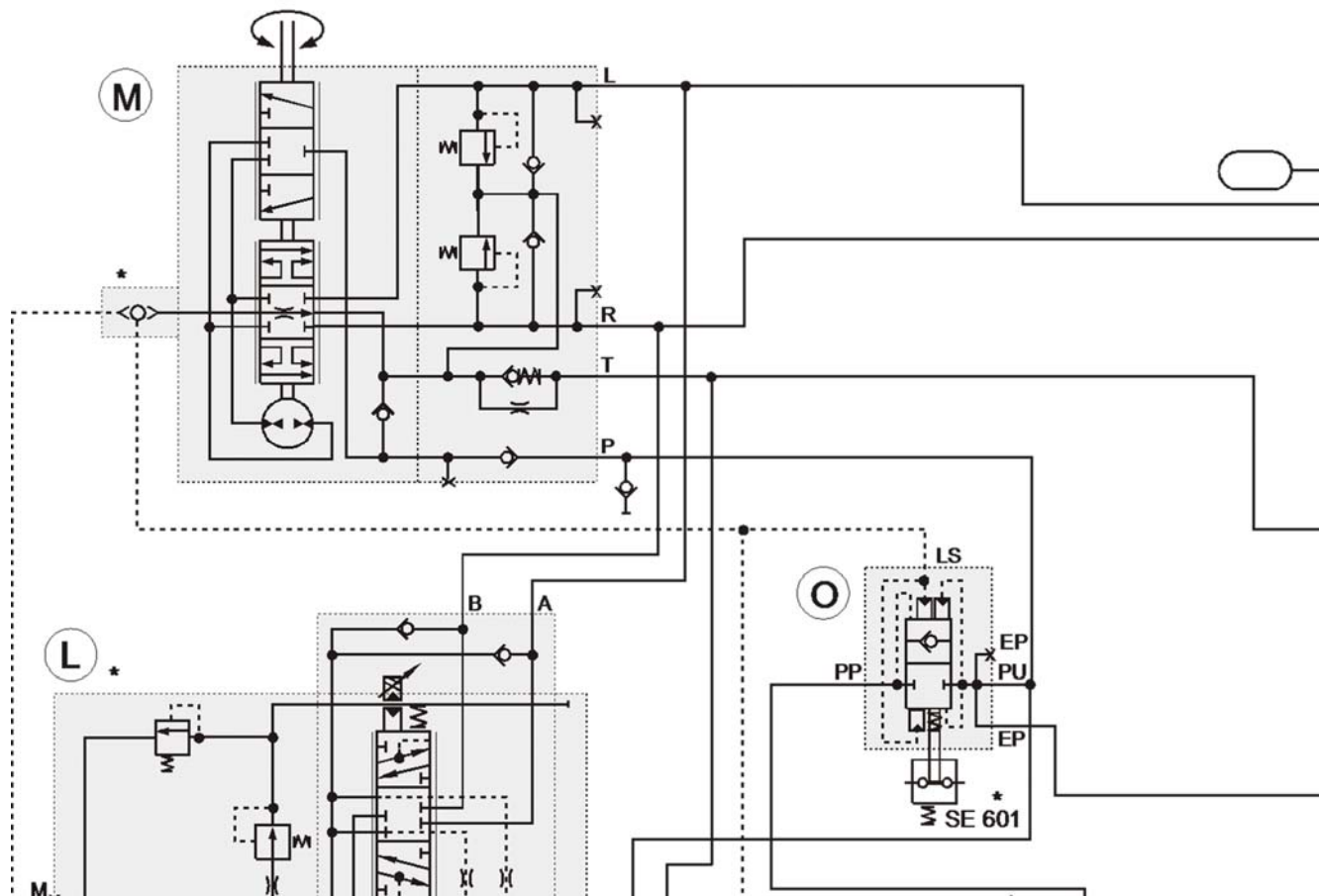


Figure 1
Hydraulic diagram, steering, incl. lever steering and secondary steering

A	Steering pump
C	Secondary steering pump
D	Return oil filter
L	CDC lever steering
M	Steering valve
O	Flow/differential pressure sensor

Hydraulic diagram, steering, incl. lever steering (CDC)

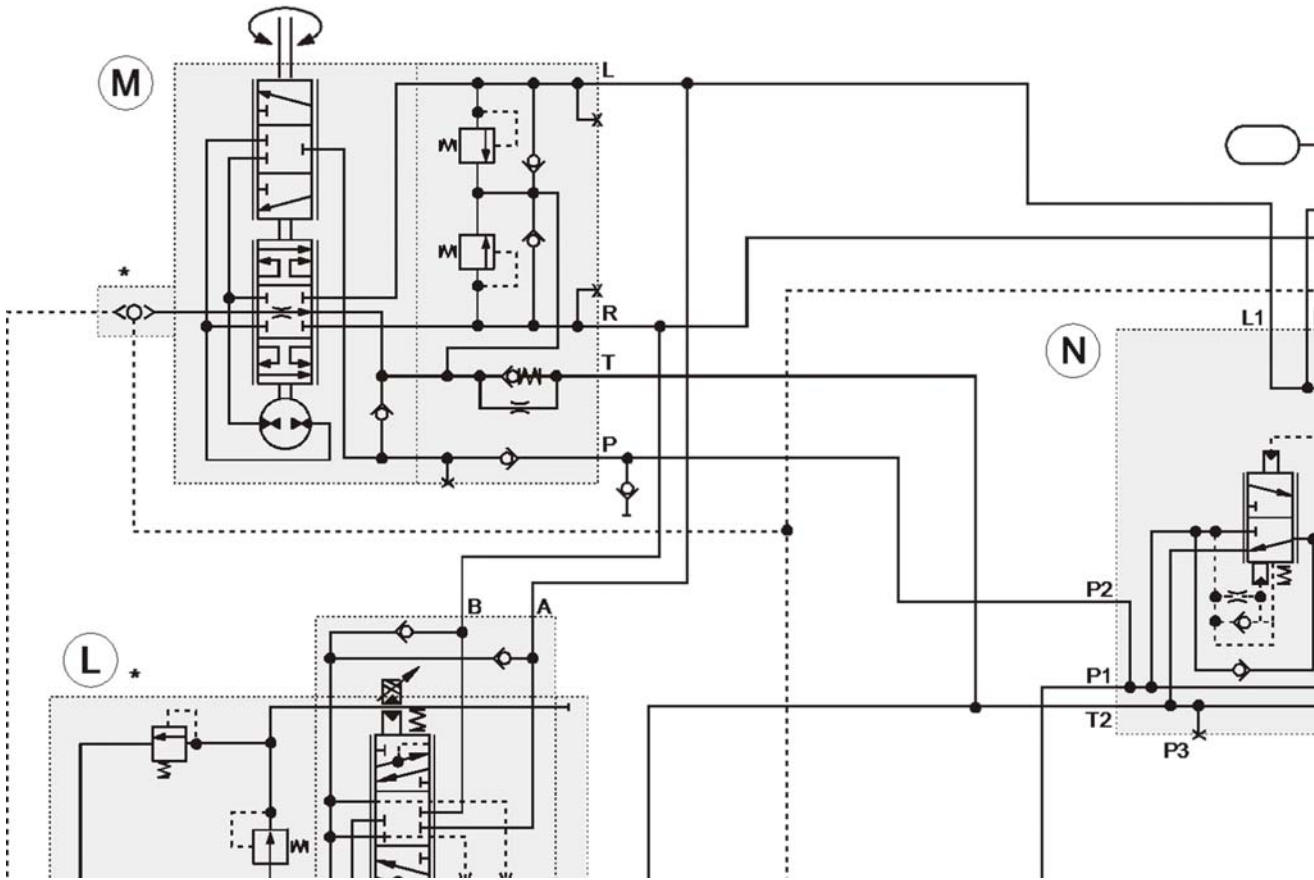


Figure 1
Hydraulic diagram, steering, incl. lever steering

A	Steering pump
D	Return oil filter
L	Lever steering (CDC)
M	Steering valve
N	Shift valve

Hydraulic diagram, steering, incl. lever steering (CDC)

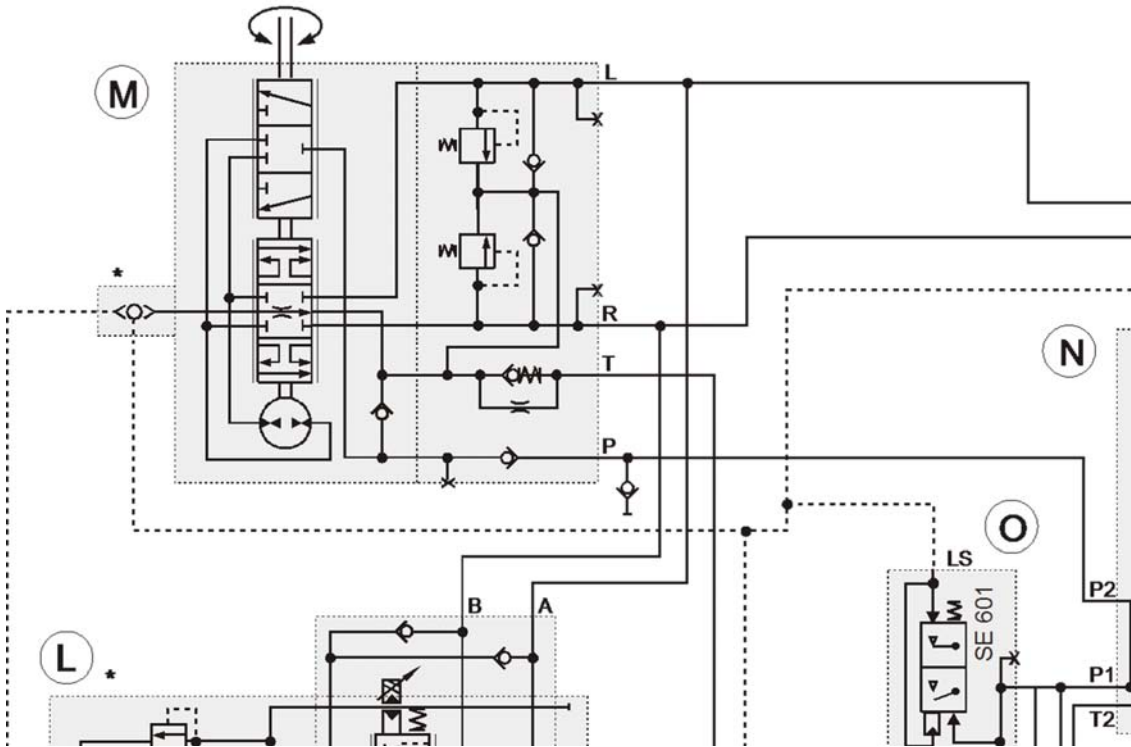


Figure 1
Hydraulic diagram, steering, incl. lever steering (CDC) and secondary steering

A	Steering pump
C	Secondary steering pump
D	Return oil filter
L	Lever steering (CDC)
M	Steering valve
N	Shift valve
O	Differential pressure sensor

Hydraulic diagram, steering, incl. lever steering (CDC)

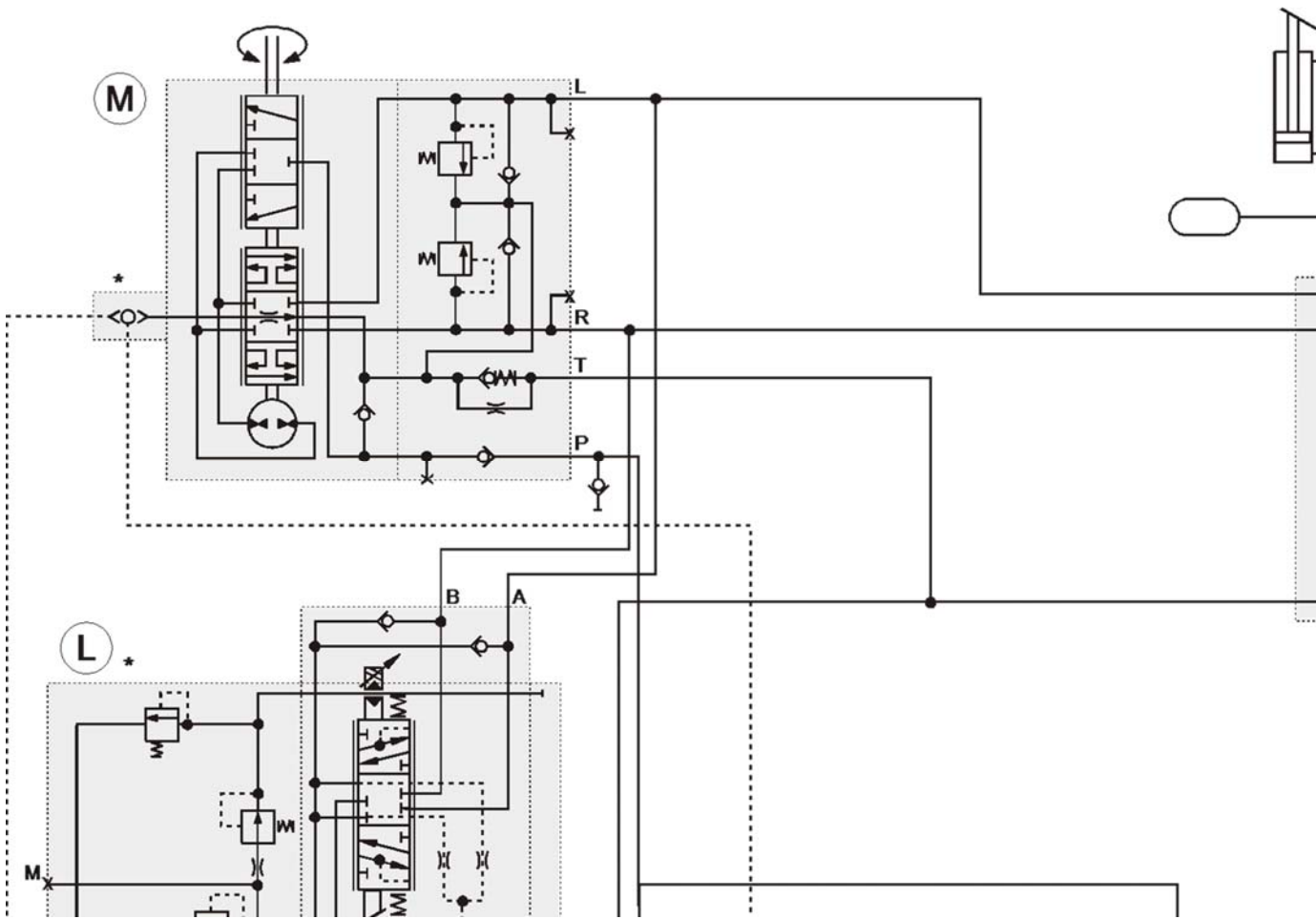


Figure 1
Hydraulic diagram, steering, incl. lever steering

A	Steering pump
D	Return oil filter
L	Lever steering (CDC)
M	Steering valve
O	Flow/differential pressure sensor

Hydraulic diagram, steering, incl. secondary steering

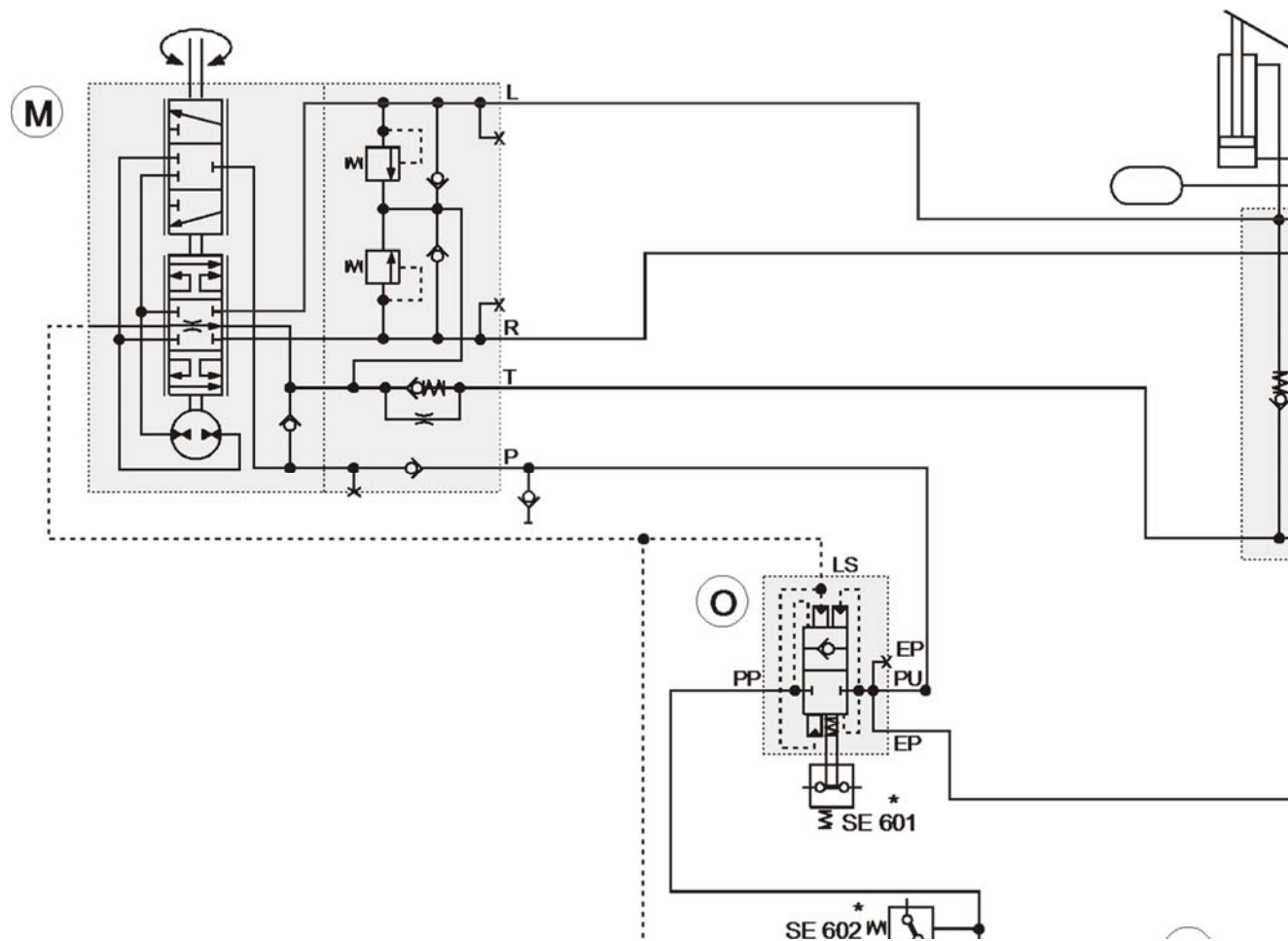


Figure 1
Hydraulic diagram, steering, incl. secondary steering

A	Steering pump
C	Secondary steering pump
D	Return oil filter
M	Steering valve
O	Flow/differential pressure sensor

Hydraulic diagram, steering, incl. secondary steering

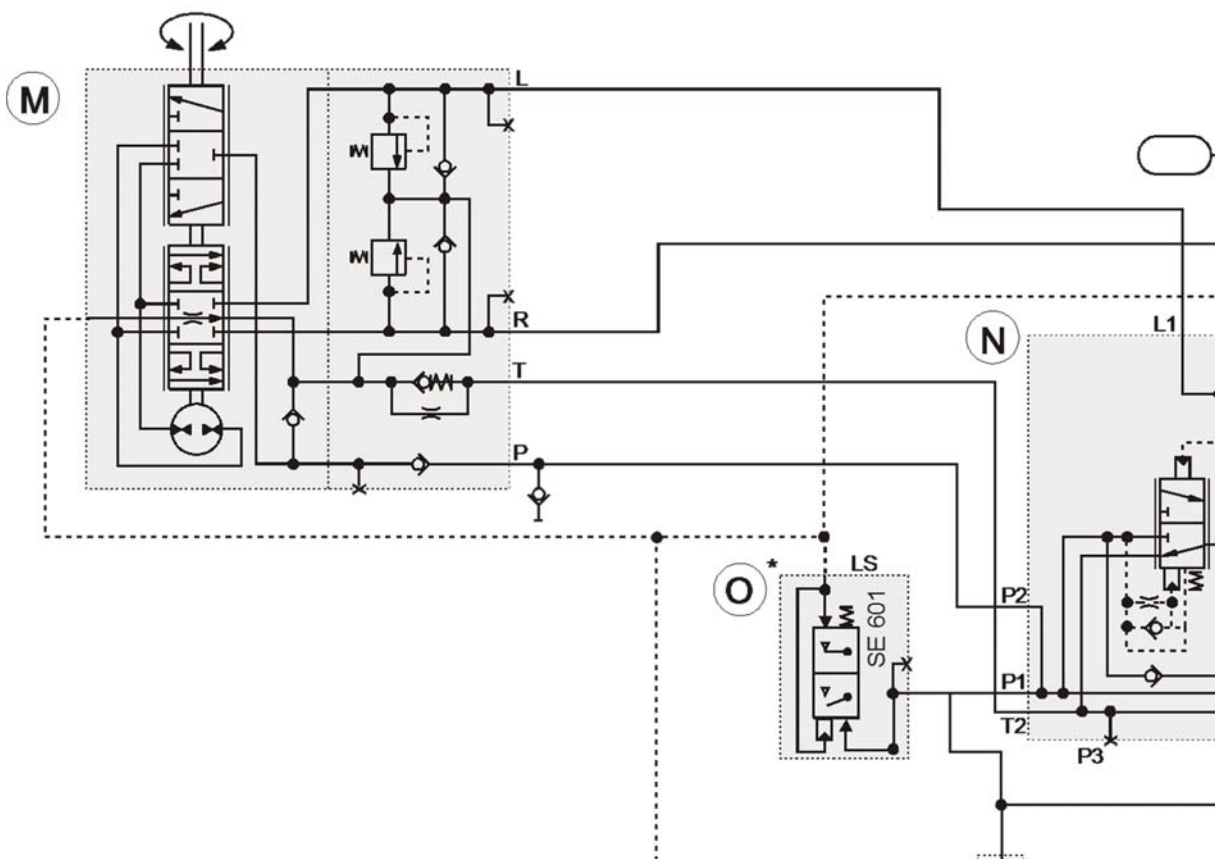


Figure 1
Hydraulic diagram, steering, incl. secondary steering

A	Steering pump
C	Secondary steering pump
D	Return oil filter
M	Steering valve
N	Shift valve
O	Differential pressure sensor

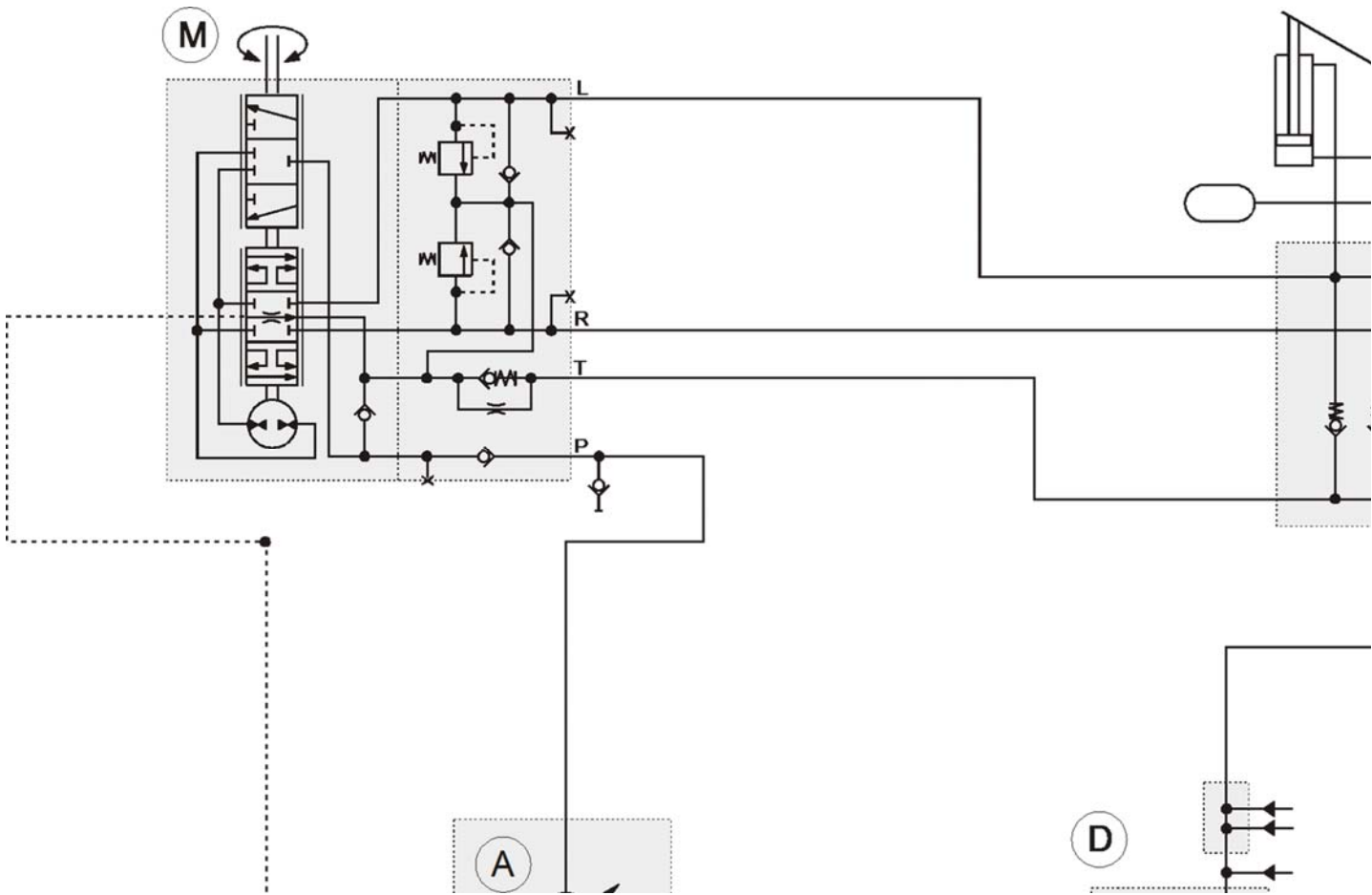


Figure 1
Hydraulic diagram, steering

A	Steering pump
D	Return oil filter
M	Steering valve

Hydraulic diagram, working hydraulic system

<https://www.researchgate.net/publication/331111111>

- B Hydraulic pump working hydraulics as well as brake and servo systems
- D Return oil filter
- E Hydraulic oil cooler
- G Pressure limiting valve
- H Brake valve
- J Servo valve
- K Control valve
- P Solenoid valve block
- Z Pressure back-up, servo circuit

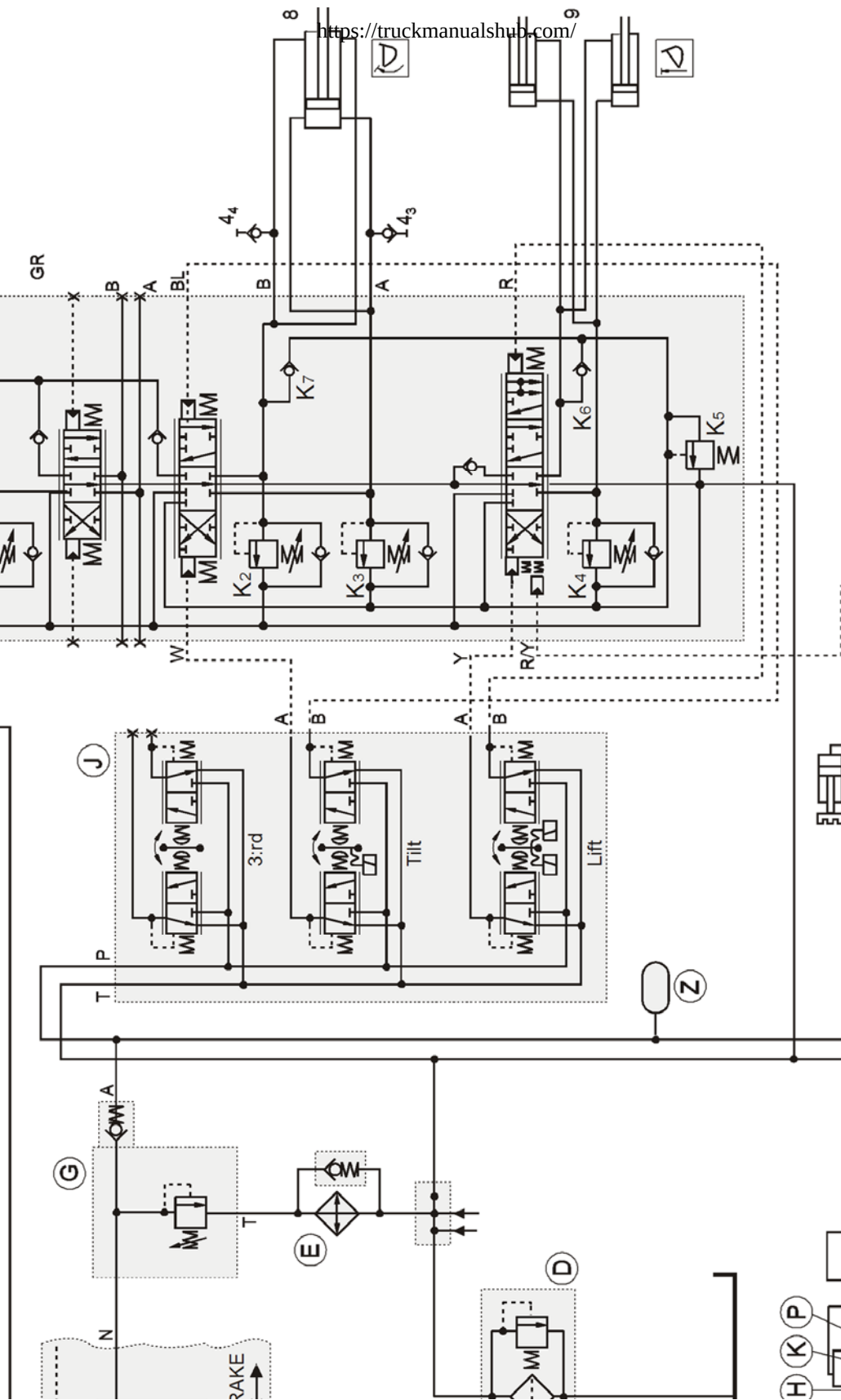


Figure 1

Hydraulic diagram, working hydraulic system

- B Hydraulic pump working hydraulics as well as brake and servo systems
- D Return oil filter
- E Hydraulic oil cooler
- G Pressure limiting valve
- H Brake valve
- J Servo valve
- K Control valve
- P Solenoid valve block
- R Attachment locking
- S Shuttle valve, 3rd/4th hydraulic function
- Z Pressure back-up, servo circuit

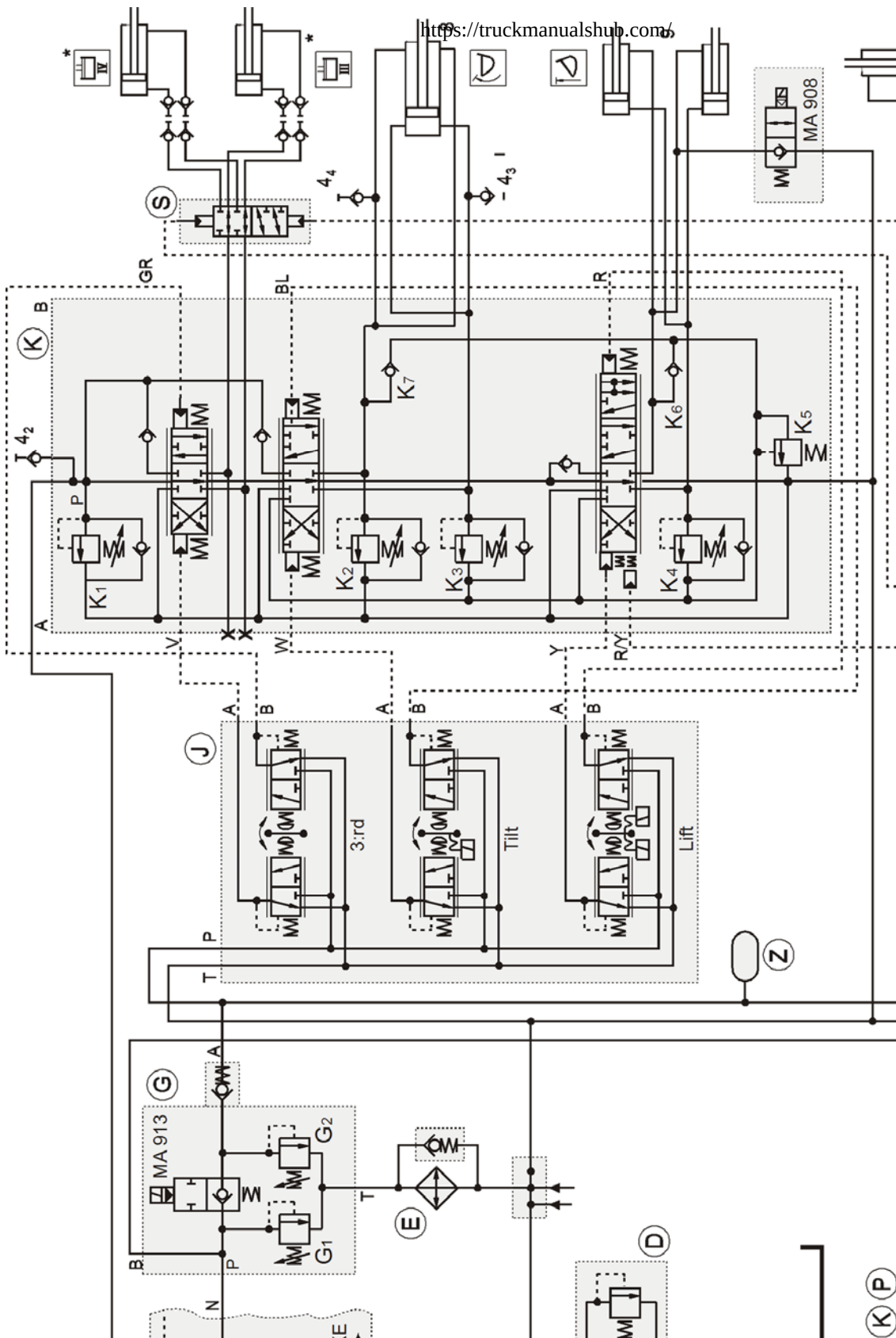


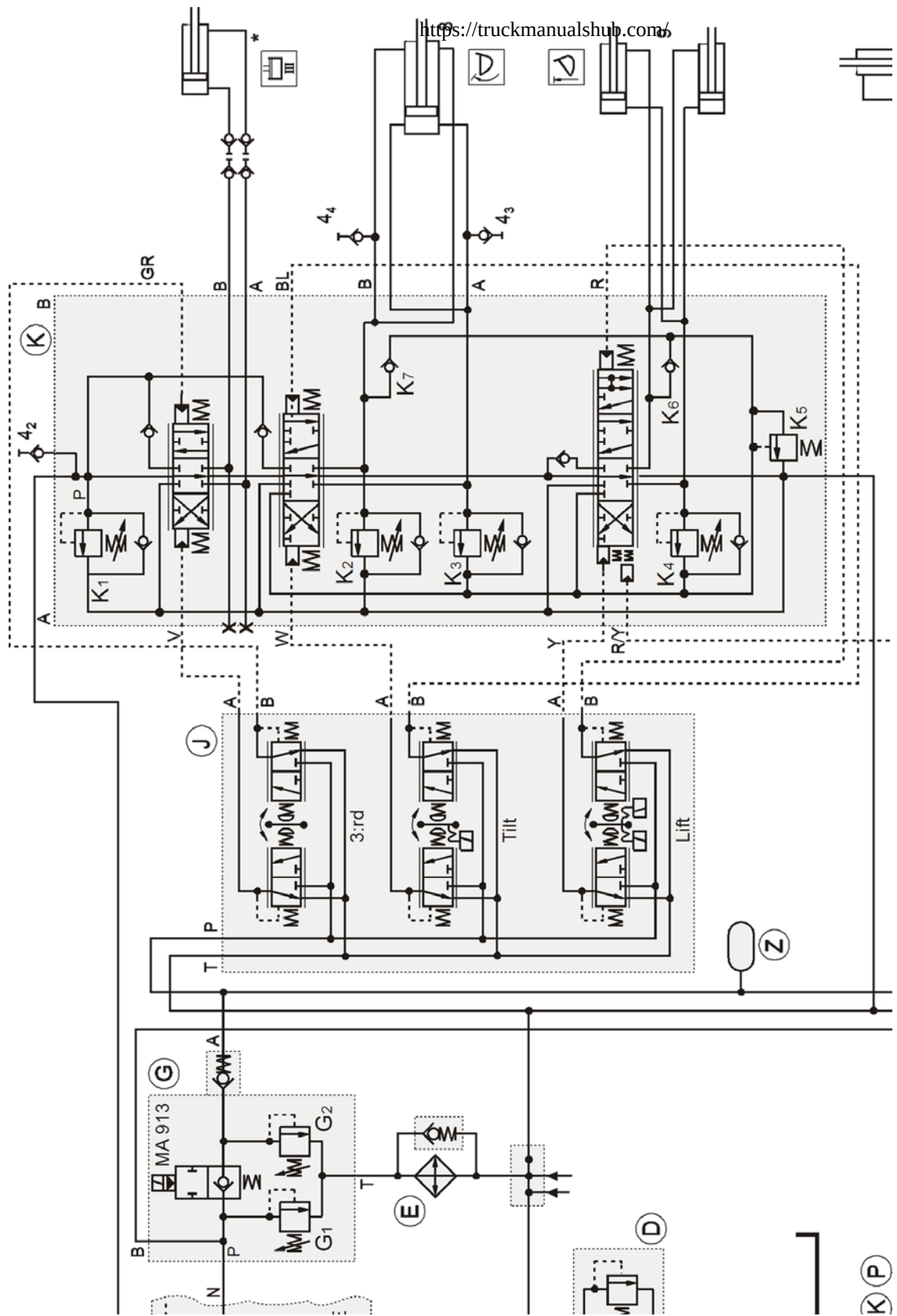
Figure 1

Hydraulic diagram, working hydraulic system

<http://www.hydraulic-systems-sub.com/>

- B Hydraulic pump working hydraulics as well as brake and servo systems
- D Return oil filter
- E Hydraulic oil cooler
- G Pressure limiting valve
- H Brake valve
- J Servo valve
- K Control valve
- P Solenoid valve block
- R Attachment locking
- Z Pressure back-up, servo circuit

Figure 1



Hydraulic oil temperature

<https://truckmanualshub.com/>

The function monitors the hydraulic oil temperature and informs the operator if it is too high or if there is a system malfunction. Hydraulic oil temperature is used as an input signal for radiator fan control, see [Invalid linktarget].

Input signals	Output function conditions	Output functions
○ Hydraulic oil temperature, SE908 ○ Directional gear	○ High hydraulic oil temperature for 2 seconds	○ Red central warning lamp ○ ----- WARNING ----- High Hydraulic Oil Temp.
	According to above, also: ○ Directional gear in Forward or Reverse	○ Buzzer

Hydraulic system, bleeding

<https://truckmanualshub.com/>

Bleeding in connection with repairs or replacement of hydraulic pumps

A breakdown in a hydraulic pump may be due to several different causes. Before a new or repaired hydraulic pump is installed, the following points should be followed:

1. Inspect the hydraulic tank and clean it if necessary.
2. Clean the return oil filter's magnetic rod (if fitted).
3. Inspect the return oil filter and change it if visible impurities are present. If the machine's running time is more than 50% of the filter's normal change interval, the filter should be changed.
4. Top up all hydraulic oil, both fresh and re-used, via the hydraulic tank's return filter.
5. Before starting the machine, the pressure limiting valve for working pressure should be adjusted downwards by unscrewing the adjusting screw about 1 turn. The reason for this is that the pressure will frequently have been adjusted upwards when a worn hydraulic pump is used.

NOTE!

To reduce the risk of cavitation damage when starting, the following should be observed:

6. Start the engine and run it at a **slow idle** for about 15 minutes without activating any hydraulic functions.
7. Use all the hydraulic functions a few times with the engine running at a **slow idle**.

NOTE!

The hydraulic cylinders must not be run to their end positions.

8. Check that the oil in the hydraulic tank's level indicating pipe **does not contain any air bubbles**. If it does, repeat points 6 and 7.
9. Activate all hydraulic functions a few times to overflow (hydraulic cylinder to its end position) with the engine running at higher speed, about 1200-1500 rpm.
10. Warm up the hydraulic system. Check and adjust the working pressure.

Control valve

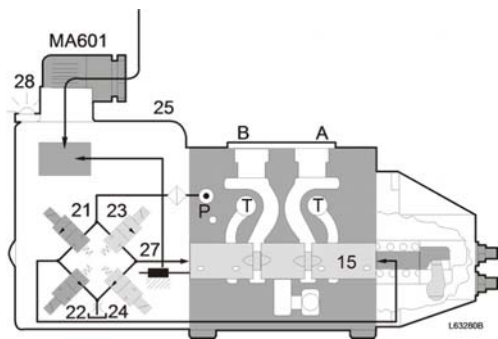


Figure 1
Control valve with control unit

15	Control spool	24	Solenoid valve
21	Solenoid valve	25	Control unit, CU601
22	Solenoid valve	27	Position sensor
23	Solenoid valve	28	Light-emitting diode

When the steering lever SE603 is activated, an electric signal is sent via the electronic unit CU601 to the control unit (25) on the control valve (11 V or lower for left turn, 13 V or higher for right turn).

Two of the solenoid valves (21 and 22 or 23 and 24) in the control unit are activated, which causes oil to be let in on one side of the control spool (15). The control spool is moved and opens a controlled oil flow to one of the steering cylinders. The position sensor (27) sends signals back to the control unit, indicating the position of the spool. Oil is let in until the control spool (15) has been moved a distance that corresponds to the lever stroke, and the desired steering speed is obtained.

When the spool has assumed the position that corresponds to the signal to the control unit, then the control unit interrupts the feed to the solenoid valve (21) or (23) depending on the steering direction.

The control unit of the control valve has a light-emitting diode (28) which shines green when steering. If the control spool jams in the activated position when the lever is returned to the neutral position, the light-emitting diode will switch to a red light. If such a malfunction occurs, the machine will continue to turn even though the steering lever is not activated.

Hydraulic system, general

<https://truckmanualshub.com/>

The hydraulic oil tank is common to the working hydraulics, brake system and steering system.

The hydraulic system's pressure limiting valve is set at the factory to the correct pressure. If the valve is altered other than by service personnel from an authorised workshop the manufacturer's warranty will be invalidated.

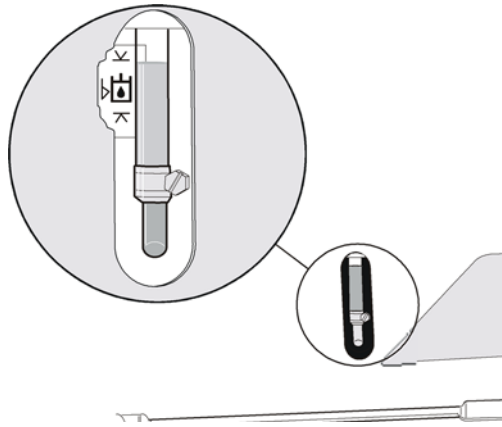


Figure 1

Oil level, hydraulic oil

Hydraulic system, checking the oil level

Check the oil level daily. It should be between the max. and min. marks on the level indicating pipe.

NOTE!

The oil level should be checked when the lifting arms are in their lower position and the attachment is in a level position.

Oil is filled up through the plug on the top of the tank.

Hydraulic system, oil change

(working hydraulics, brake system and steering system)



WARNING

Hot oil can cause burns.

Change the oil every 2000 hours (engine oil and biodegradable hydraulic oil).

Change every 4000 hours if the system is filled with hydraulic oil.

Oil capacity of the hydraulic tank when changing:

L90D, approx. 95 litres (25.1 US gal)

L120D, approx. 155 litres (40.9 US gal)

Oil grade, see [Invalid linktarget].

NOTE!

When other hydraulic equipment is used, such as brushes, drills and snow slingers, the oil should be changed at more frequent intervals, i.e. every 1000 hours.

Proceed as follows when changing the hydraulic oil:

1. run the machine until the oil in the hydraulic system is at normal operating temperature.

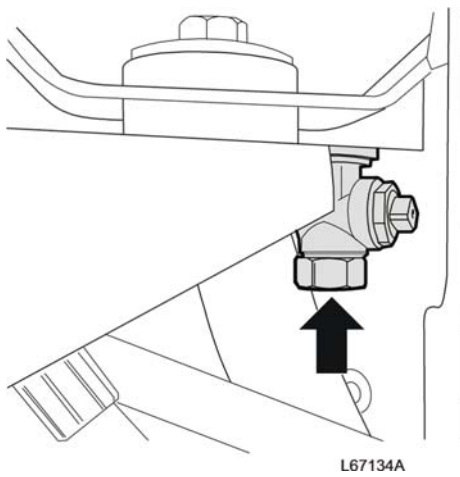


Figure 2

Oil filter, transmission, L90D

2. Park the machine on a level surface with the bucket (attachment) lowered to the ground.
3. switch off the engine and depressurise the brake system by depressing the brake pedal repeatedly.
4. drain the hydraulic oil via the drain cock in the bottom of the tank.
5. fill up with oil to the correct level.
6. start the engine and operate the lifting and tilting cylinders to both end positions.
7. top up with oil as necessary.
8. check that no leakage occurs.

Dispose of waste oil and fluids in an environmentally safe and sound manner.

Filling up with hydraulic oil or carrying out other work on the system calls for a high degree of cleanliness. Even extremely small particles can damage the system or bring it to a halt. Clean the area round the filling point before filling the hydraulic oil tank with oil.

Hydraulic system, draining sludge

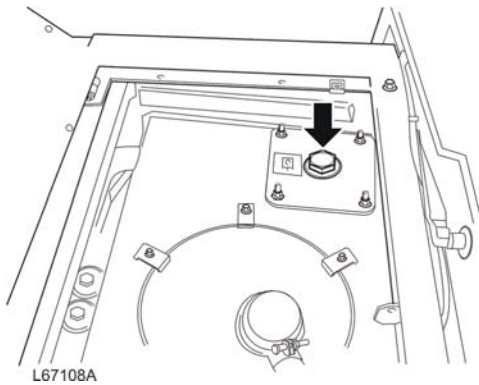


Figure 3

Filling up, hydraulic oil

Drain sludge and condensate from the hydraulic oil tank via the drain cock in the bottom of the tank every 1000 hours, see changing the hydraulic oil, points 1–8 above.

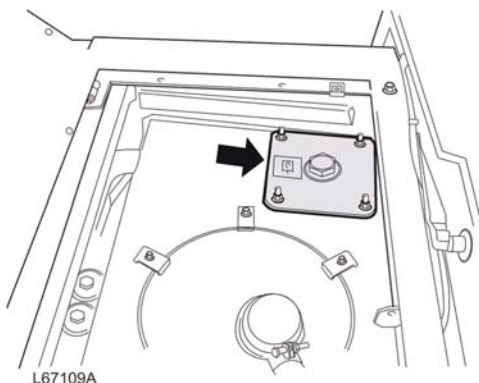


Figure 4
Hydraulic system, return oil filter
Hydraulic system, return oil filter
Change the return oil filter every 2000 hours.

Proceed as follows:

1. remove the cover.
2. lift out the filter and dismantle it by removing the split pin, nut, spring retainer and spring.
3. remove the filter, which is of disposable type, and fit a new one. Inspect the sealing rings when fitting them in place.

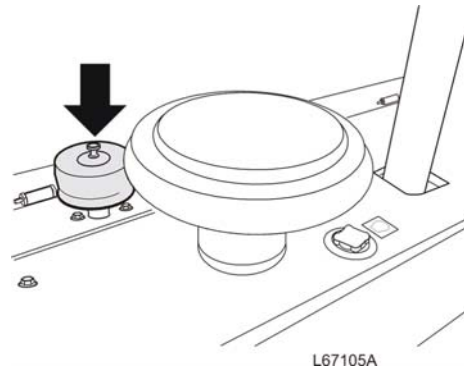


Figure 5
Hydraulic system, breather filter
Hydraulic system, breather filter
The filter should be changed every 2000 hours.
The filter cannot be cleaned but must be changed.

Hydraulic transmission, checking oil pressure

Op nbr 42102

[11 666 017 Pressure gauge, range 0–0.6 MPa \(0–87 psi\)](#)

[11 666 018 Pressure gauge, range 0–2.5 MPa \(0–363 psi\)](#)

[11 666 037 Hose](#)

[999 3721 Service display unit](#)

[930032 Measuring nipple](#)

The following applies when checking:

operating temperature and complete engine speed range.

Use measuring nipple 930032 where it is not already mounted.

NOTE!

When checking pressure, apply the service brake and the parking brake. Also make sure that the transmission disengagement function is **not** activated.

NOTE!

The Mode Selector (SW412) should be in position MAN.

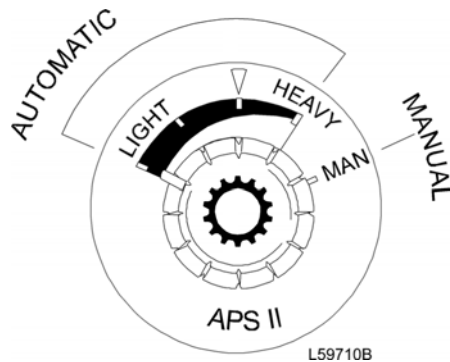


Figure 1

Mode Selector (SW412)

Main pressure (alternative 1)

1. The main pressure can be checked and read using the service display unit.
2. Connect service display unit 999 3721 to connector 1A on the right-hand side panel, to the right of the operator in the cab.
3. The gear selector must be in the neutral position, start the engine and check the pressure throughout the complete engine speed range.
Main pressure L90D: **1.45–1.68 MPa (210–244 psi)**
Main pressure L120D: **1.37–1.58 MPa (199–229 psi)**

Main pressure (alternative 2)

4. Connect pressure gauge 11 666 018 to the pressure outlet marked M on the measuring ramp located under the left boarding step of the cab.

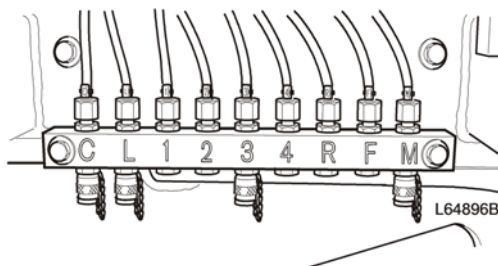


Figure 2

Pressure outlet

M Pressure outlet, main pressure (equipped with quick-coupling) <https://truckmanualshub.com/>

5. The gear selector must be in the neutral position, start the engine and check the pressure throughout the complete engine speed range.

Main pressure L90D: **1.45–1.68 MPa (210–244 psi)**

Main pressure L120D: **1.37–1.58 MPa (199–229 psi)**

Clutch pressure, 1st – 4th gear

6. Connect pressure gauge 11 666 018 to the pressure outlet marked 1, 2, 3 or 4.
7. The gear selector must be in neutral, check both in forward and reverse gear positions, and check throughout the entire engine speed range.
Clutch pressure L90D: **1.35–1.58 Mpa (196–229 psi)**
Clutch pressure L120D: **1.37–1.58 Mpa (199–229 psi)**

Clutch pressure, forward and reverse gear

8. Connect pressure gauge 11 666 018 to the pressure outlet marked F or R.
9. The gear selector must be in the forward respective reverse position with 3rd gear engaged, check the pressure throughout the entire engine speed range.
Clutch pressure L90D: **1.35–1.58 Mpa (196–229 psi)**
Clutch pressure L120D: **1.37–1.58 Mpa (199–229 psi)**

Lubricating oil pressure

10. Connect pressure gauge 11 666 017 to the pressure outlet marked L. Check the pressure at fast idle speed.
Lubricating oil pressure L90D: **0.35–0.45 MPa (51–65 psi)**
Lubricating oil pressure L120D: **0.16–0.22 MPa (23–32 psi)**

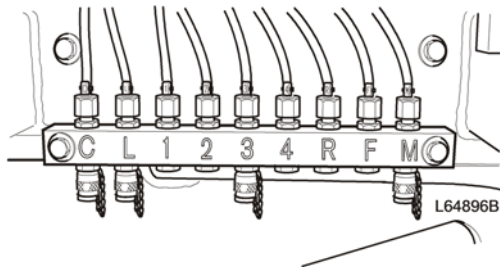


Figure 3
Pressure outlet

L Pressure outlet, lubricating oil pressure (equipped with quick-coupling)

Torque converter pressure

11. Connect pressure gauge 11 666 017 to the pressure outlet marked C.

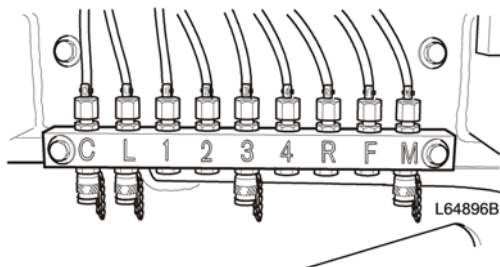


Figure 4
Pressure outlet

C Pressure outlet, torque converter pressure

12. The gear selector must be in neutral, high idle speed.
Torque converter pressure L90D: **0.57–0.69 MPa (83–100 psi)**
Torque converter pressure L120D: **0.20–0.50 MPa (29–73 psi)**

Hydraulic transmission, description

<https://truckmanualshub.com/>

Design

The hydraulic transmission is a four-speed hydro-mechanical Power Shift transmission which consists of three main sections:

- A front section with torque converter, transmission oil pump and two power take-offs for driving hydraulic pumps.
- A middle section (transmission) with spur gears for forward and rearward propulsion as well as gears 1–4, hydraulic clutches for the spur gears as well as a control valve for these.
- A rear/lower dropbox part consisting of dropbox with parking brake.

The hydraulic power transmission takes place via a torque converter both transmits torque and amplifies the same.

The mechanical torque transmission takes place via the clutch shafts, where the drive gears for directional and speed gears are in constant mesh. The drive gears on the clutch shafts rotate freely and are locked with hydraulic pressure in different drive gear combinations when a gear is engaged.

Gearshifting

Gearshifting takes place electro-hydraulically. When a gear is selected, one or several solenoids are activated in the gear selector valve. The solenoids act on the spools in the gear selector valve, which in turn control the oil flow to the clutch shafts.

In order to engage the desired gear, a voltage supply is required to one or several solenoids, which in turn control the spools.

The gear shifting spools have two positions: In one direction they are affected hydraulically via the solenoids, and the in the other direction (resting position), they are held in position by a spring.

The neutral spool as well as the forward/reverse spool can also be force-operated hydraulically in case of an electrical malfunction.

Hydraulically driven cooling fan L120D, description

The system consists of the components shown in [Invalid linktarget].

The V-ECU receives an input signal from the engine speed sensor (SE201) which tells whether the engine has started or not. When the engine has started and is cold, the fan will rotate at 400 rpm. The V-ECU then receives information from the various temperature sensors indicating whether or not the system requires cooling, i.e. higher fan speed. The system is controlled mainly by the radiator outlet temperature sensor (SE210). The other sensors do not have any effect until the temperature in these systems approaches close to the alarm limits.

The V-ECU will control MA202.

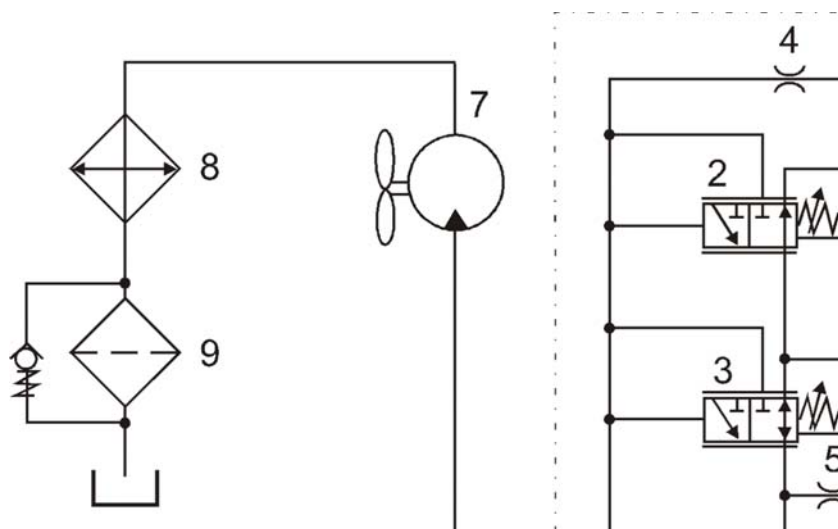


Figure 1
Hydraulically driven cooling fan (optional equipment for L120D)

1. Control piston
2. Flow compensator
3. Pressure compensator
4. Restriction
5. Restriction
6. Fan pump
7. Hydraulically driven fan
8. Radiator
9. Return oil filter

The pressure built up in the main circuit is led into the pressure/flow compensator (2, 3 and 5) and MA202 via the restriction (4). A control pressure is built up between restriction 4 and MA202 (see diagram [Invalid linktarget]). This control pressure acts on the rear of the flow compensator. If the signal to MA202 changes, the control pressure changes and so also does the pressure in the main circuit which in its turn has an effect on fan speed.

The pressure in the main circuit will be the control pressure plus the pressure needed to overcome the flow compensator's preset spring force (2). Through feedback from the fan speed sensor (SE211) the V-ECU can compensate for the signal to MA202 to obtain a correct fan speed.

Cold machine

If none of the temperature sensors requests increased cooling the V-ECU will send out the current (approx. 3 V) that is needed for the fan to rotate at approx. 400 rpm.

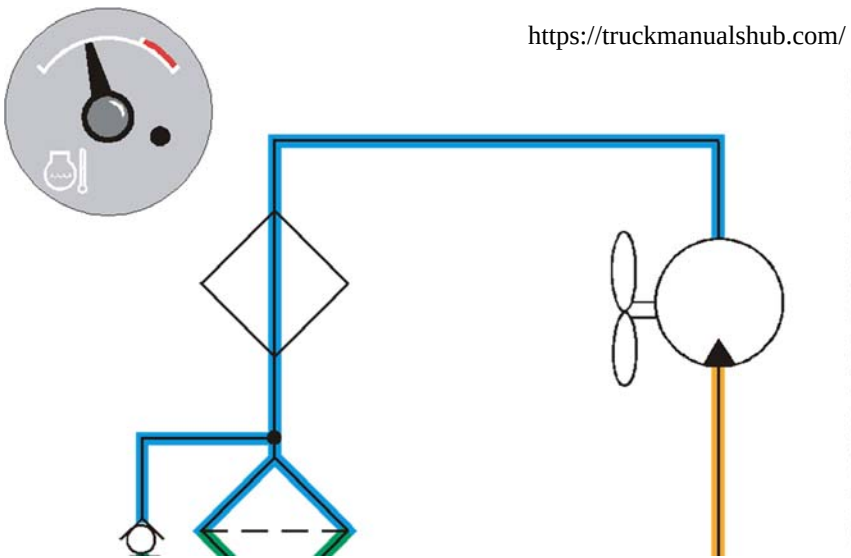


Figure 2

Normal operation

The output signal to MA202 and, in turn, the control pressure are continuously controlled within the temperature interval 60–80°C (140–176 °F) on the temperature sensor for the output temperature of the radiator (SE210).

If the temperature of one of the other circuits concerned nears its alarm limits, they will also control MA202.

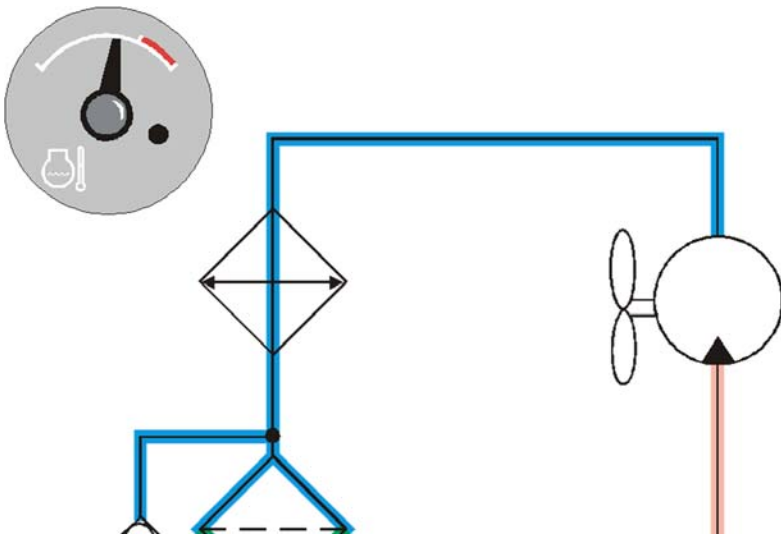


Figure 3

If there is a request for maximum fan speed, the signal to MA202 will be 14–16 V, depending on if fan programme A, B, or C was chosen.

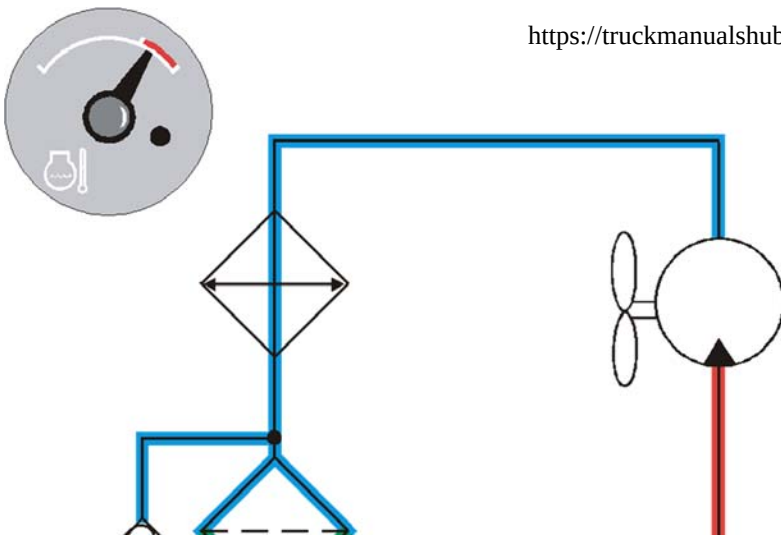


Figure 4

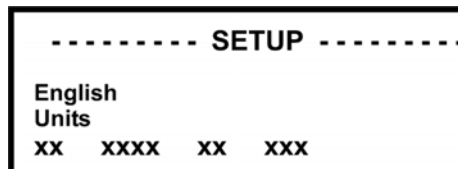


Figure 5

- X= Max. fan speed that can be selected in three levels:
 A = Noise Reduction Kit
 B = EU execution
 C = High cooling performance
- * = Selection of cooling fan speed

Temperature limits

Fan speed	<400 rpm	Max. rotation speed 1200–1550 rpm
Coolant temperature (SE210)	60 °C (140 °F)	80 °C (176 °F)
Hydraulic oil temperature (SE906)	70 °C (158 °F)	95 °C (203 °F)
Transmission oil temperature (SE406)	90 °C (194 °F)	133 °C (271 °F)
Engine temperature (SE205)	85 °C (185 °F)	95 °C (203 °F)

For SE406 or SE205 to control the fan, they must both be within their temperature limits.

Sensor errors are indicated in the driver panel.

If there are errors with SE210 or SE211 (sensors for fan speed), V-ECU will control MA202 for max. cooling.

Pressure check

When the pressure check mode has been activated via the service display unit, the V-ECU sends a signal of approx. 22 V to MA202, which makes it close. The flow compensator (2) will then remain closed and the pump will deliver maximum flow. This flow makes pressure build up until the pressure compensator opens and regulates max. pressure to 21 MPa (3045 psi).

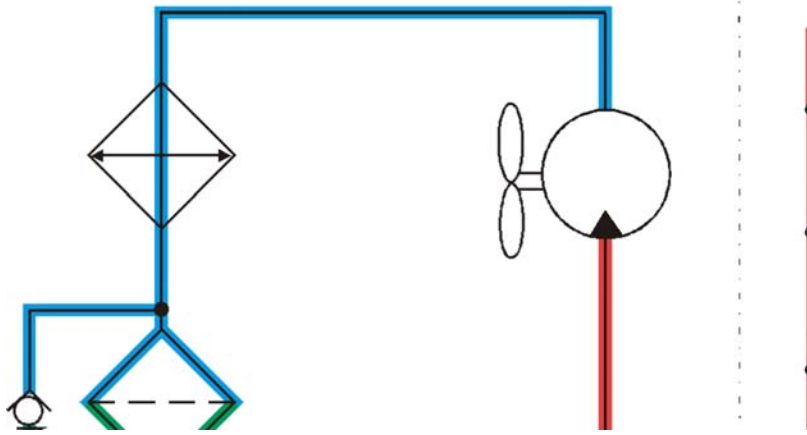


Figure 6

Hydraulically driven cooling fan, <https://truckmanualshub.com/>

Op nbr 26304

[999 3721 Service display unit](#)

1. Place the machine in a location that allows 2 m (6.6 ft) free space behind it. Check that all radiators (hydraulic oil cooler, condenser, radiator) are well cleaned.
2. Loosen the connection to SE210 (output radiator temperature), located at the coolant pipe, from the partition wall to the engine on the right side of the machine.
3. Connect the service display unit to the socket on the right-hand instrument panel.

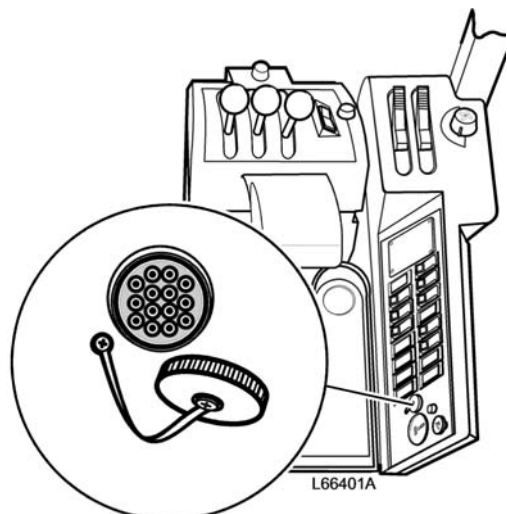


Figure 1
Socket for the service display unit

4. Start the engine.
5. Scroll to the "SETUP" menu and make sure alternative C is selected.

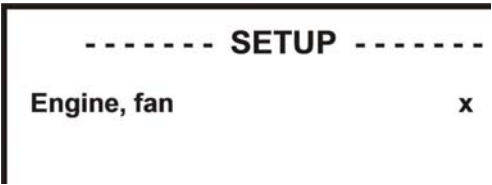


Figure 2

6. Scroll to the "FAN PRESSURE TEST" menu.

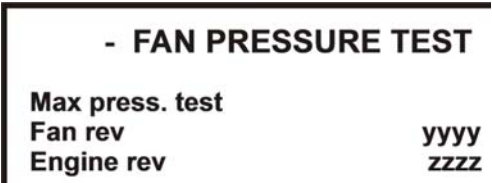


Figure 3

7. Run the engine at high idling speed and read off the fan speed.
Fan speed: **1550 rpm**
Any adjustments should be made to the pump's flow compensator.
NOTE!
The side plate on the right side of the machine must be removed to adjust the flow.

If the rotation speed is incorrect:

Check the output signal to MA202 on pin EM7. The signal should be 16 ± 1 V. Use a frequency meter to check that the output signal of EM7 is 200 Hz. An incorrect output signal could possibly be caused by a problem in the V-ECU.

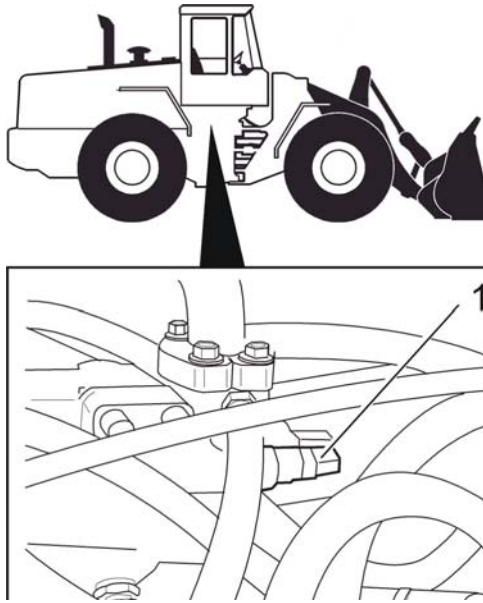


Figure 4

1. Flow compensator

If the rotation speed is too high despite adjustments, check the max. pressure according to [Invalid linktarget].

8. Restore the machine to operating condition.

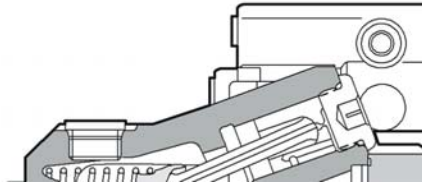


Figure 5

1. Flow compensator (fan speed)
2. Pressure compensator (max. pressure)

Hydraulically driven cooling fan, <https://truckmanualshub.com/>

Op nbr 26315

[999 3721 Service display unit](#)

[11 666 037 Hose](#)

[11 666 020 Pressure gauge, 0–25 MPa \(0–3625 psi\)](#)

1. Place the machine in a location that allows 2 m free space behind it. Check that all radiators (hydraulic oil cooler, condenser, radiator) are well cleaned.

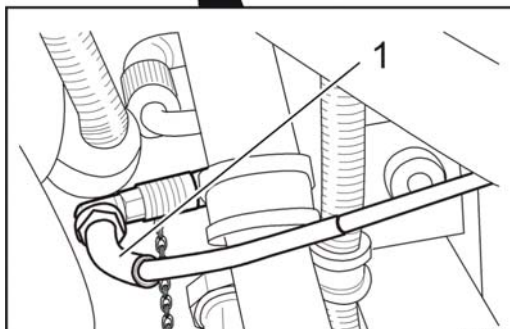


Figure 1

1. 11 666 037
2. Remove the right rear fender of the machine.
Weight: **approx. 26 kg (app. 57 lbs)**
3. Remove the plate inside the rear fender.
4. Attach 11 666 037 and 11 666 020 to the pressure outlet of the proportional valve.
5. Connect the service display unit to the socket on the right-hand instrument panel.

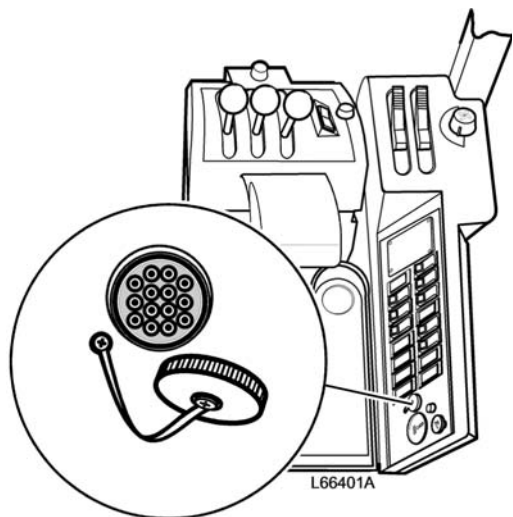


Figure 2
Socket for the service display unit

6. Start the engine.

<https://truckmanualshub.com/>

7. Scroll to the "FAN PRESSURE TEST" menu.

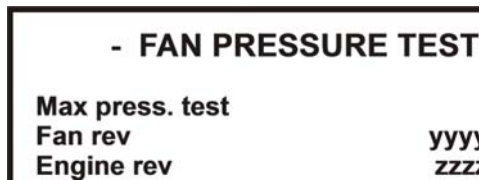


Figure 3

8. Select max. pressure check by pressing *.

9. Read the max. pressure from the pressure gauge at high idling speed.

Max. pressure: **21 MPa (3045 psi)**

Any adjustments should be made to the pump's pressure compensator.

NOTE!

The side plate on the right side of the machine must be removed to adjust the pressure.

If the pressure is too low:

Check the output signal to MA202 on pin EM7. The signal should be 22 ± 1 V. Measure the frequency of the output signal of EM7 to ensure that it is 200 Hz. An error in the signal would probably be caused by a problem in the V-ECU.

If the necessary pressure cannot be attained it could also be due to internal leakage in the hydraulic motor/pump or solenoid valve.

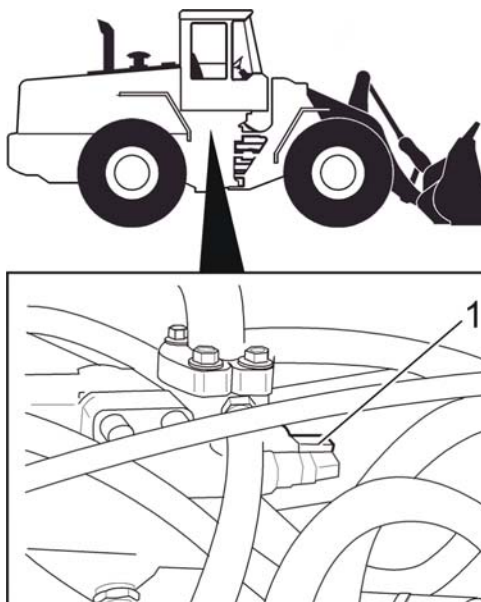


Figure 4

1. Pressure compensator

10. Restore the machine to operating condition.

Idle speed, checking and adjusting

Op nbr 23601

The following applies when checking:

Normal operating temperature.

Units and equipment that use a lot of electricity and air conditioning (if installed) must be turned off.

The engine is equipped with protection against unauthorised work on the fuel injection pump. Adjustment of high idle speed must only be performed by diesel workshops authorised by Bosch.

1. Select information about the engine and engine speed on the information display unit.

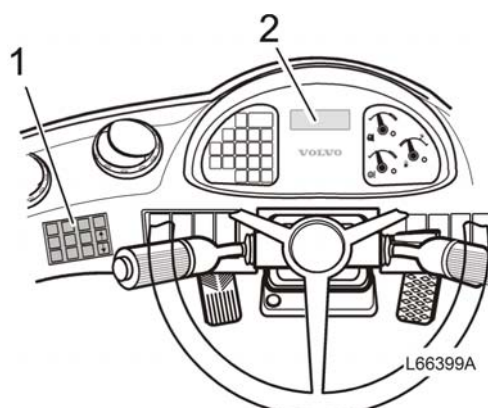


Figure 1
Checking idle speed

1. Keypad, display panel
2. Display panel

Low idle speed, checking, adjusting

2. Check that the throttle arm fits up against the adjusting screw (3). Start the engine and read off the low idle speed on the display panel.

Low idle speed: **670 ±50 rpm**

Adjust on the adjusting screw (3). After adjustment is completed, lock the adjusting screw with the nut and check the idle speed again.

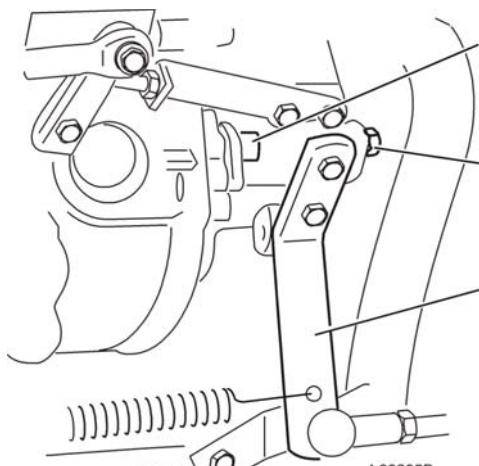


Figure 2
Adjusting low idle speed

1. Adjusting screw, high idle speed (affixed with seal)
2. Throttle arm, throttle control
3. Adjusting screw, low idle speed

NOTE! <https://truckmanualshub.com/>
Adjustments on sealed pumps must only be performed by diesel workshops authorised by Bosch.

High idle speed, checking, adjusting

3. Check that the throttle arm is limited by the adjusting screw (1), see [Invalid linktarget], with the engine turned off and the throttle pedal completely depressed. Start the engine, depress the throttle pedal completely and read off the high idle speed on the display unit.
High idle speed L90D: **2420 ±60 rpm**
High idle speed L120D: **2345 ±60 rpm**
Adjust on the adjusting screw (1), after the seal has been broken.
After adjustment is complete, lock the adjusting screw with the nut and check the idle speed again. Affix a seal to the adjusting screw and nut.

Language Code GB	Product WLO	Group 383	https://truckmanualshub.com/	No. 6	Version 1	Date 09/02/2013
Applies to L50D Volvo, L50E Volvo, L60E Volvo, L60F Volvo, L60G Volvo, L70D Volvo, L70E Volvo, L70F Volvo, L70G Volvo, L90D Volvo, L90E Volvo, L90F Volvo, L90G Volvo, L105 Volvo, L110E Volvo, L110F Volvo, L110G Volvo, L120D Volvo, L120E Volvo, L120F Volvo, L120G Volvo, L150D Volvo, L150E Volvo, L150F Volvo, L150G Volvo, L180D HL Volvo, L180D Volvo, L180E HL Volvo, L180E Volvo, L180F HL Volvo, L180F Volvo, L180G HL Volvo, L180G Volvo, L220D Volvo, L220E Volvo, L220F Volvo, L220G Volvo, L250G Volvo, L330D Volvo, L330E Volvo, L350F Volvo						

Improved hour recorder



Figure 1

NOTE!

Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.

Cause

The number wheel on the hour recorder gets stuck, sometimes only after one hour's use, It is caused by a friction between the number wheel and the pinion gear.

Action

The affected part number is VOE15047153 and improvements are introduced from manufacturing date 04-06-13 (shown on the sticker on the rear side of the hour recorder).

Injection timing, checking and setting <http://truckmanualshub.com/>

Op nbr 23630

[999 3590 Gear](#)

[998 7057 Adjusting tool](#)

[999 3824 Bolts](#)

NOTE!

Impurities and dust particles must not enter the injection pump.

Checking timing

1. Remove the cover over the flywheel marking.
Remove the cover over the flywheel ring gear and fit 999 3590 together with a ratchet handle on the flywheel ring gear.

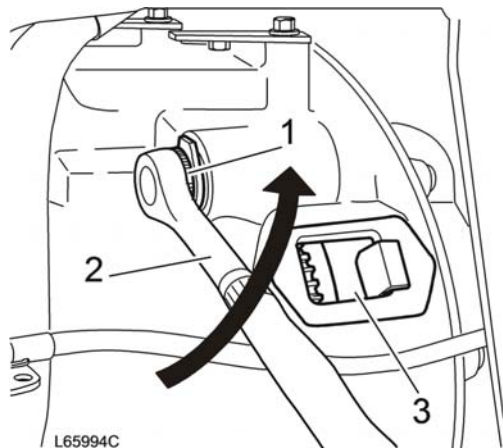


Figure 1
L90D

- | | |
|---|------------------|
| 1 | 999 3590 |
| 2 | Ratchet handle |
| 3 | Flywheel marking |

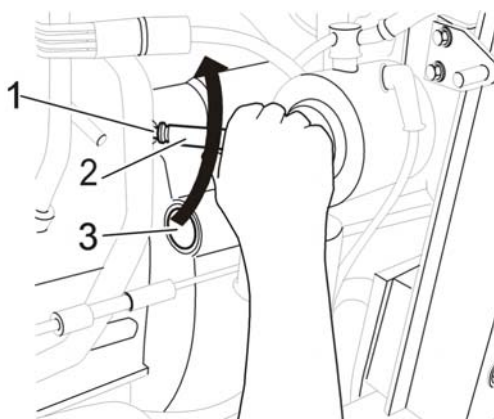


Figure 2
L120D

- | | |
|---|------------------|
| 1 | 999 3590 |
| 2 | Ratchet handle |
| 3 | Flywheel marking |

2. Check the injection timing tool by pressing the sensor point against the clamp. When one side of the sensor point is pressed in, the light marked A lights up. When the other side is pressed in, light B lights up.

If the sensor is too dirty, the tool will not work. [Clean the tool and try again.](https://truckmanualshub.com/)

3. Remove the plug in the governor housing and fit the sensor for injection timing tool 998 7057.

NOTE!

Oil drains from the pump, collect in a suitable container.

Fit the chassis connection (clamp) for the injection timing tool.

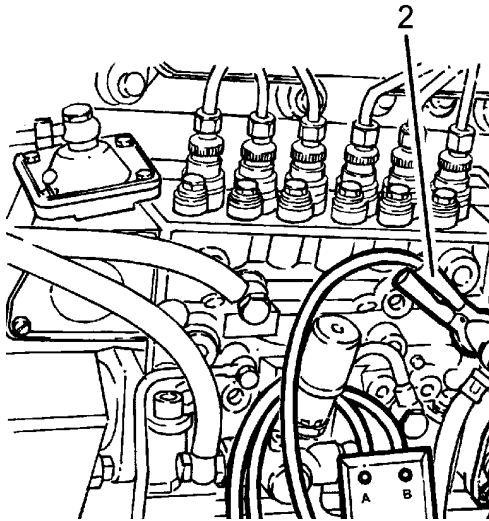


Figure 3
Checking timing

1. Sensor
2. Chassis connection (clamp)
3. Injection timing tool, 998 7057

4. Rotate the crankshaft in engine rotational direction until both light-emitting diodes on the injection timing tool light up (light A will light first, but the flywheel degree marking must not be read off until light B also lights up). If the engine is cranked too far, light A will go out first, then light B.

Read off the flywheel degree markings.

Timing setting L90D: **13° BTDC**

Timing setting L120D: **9° BTDC**

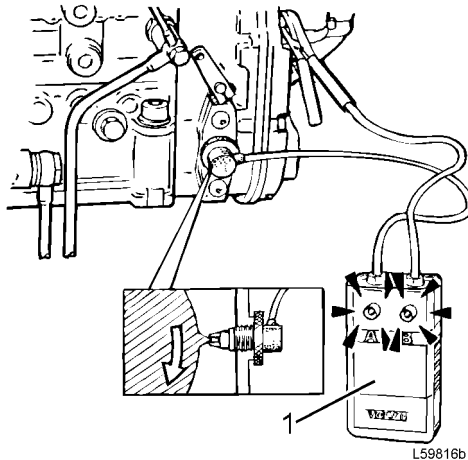


Figure 4
Checking timing (principle illustration)

1. Injection timing tool 998 7057

5. If the crankshaft is rotated too far, it must be rotated back against the rotational direction of the engine approx. 1/4 turn. Then rotate forward until both light-emitting diodes light up. Read off the flywheel degree markings.

NOTE!

The diodes also light if the engine stands 360° wrong. Thus, check that the valves on no. 1 cylinder are closed when the diodes are lit.

6. After checking or adjusting is completed, remove the injection timing tool sensor and refit the plug in the governor housing. Remove 999 3590 and fit the cover. Fit the cover over the flywheel marking.

Setting injection timing

7. Remove the cover over the flywheel marking.
Remove the cover over the flywheel ring gear and fit 999 3590 together with a ratchet handle on the flywheel ring gear.

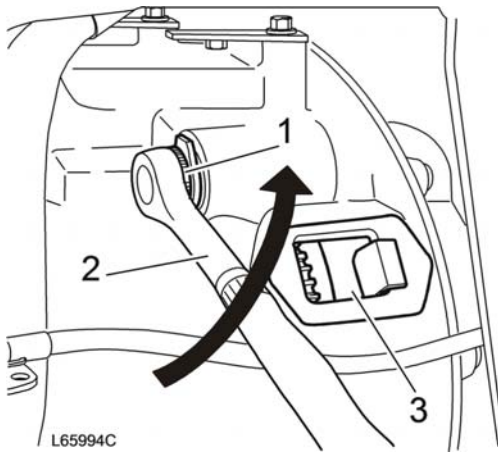


Figure 5
L90D

- | | |
|---|------------------|
| 1 | 999 3590 |
| 2 | Ratchet handle |
| 3 | Flywheel marking |

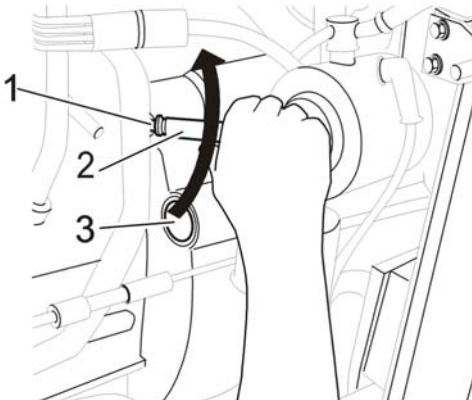


Figure 6
L120D

- | | |
|---|------------------|
| 1 | 999 3590 |
| 2 | Ratchet handle |
| 3 | Flywheel marking |

8. Check the injection timing tool by pressing the sensor point against the clamp. When one side of the sensor point is pressed in, the light marked A lights up. When the other side is pressed in, light B lights up.
If the sensor is too dirty, the tool will not work. Clean the tool and try again.

9. Remove the plug in the governor housing and fit the sensor for injection timing tool 998 7057.

NOTE!

Oil drains from the pump, collect in a suitable container.

Fit the chassis connection (clamp) for the injection timing tool.

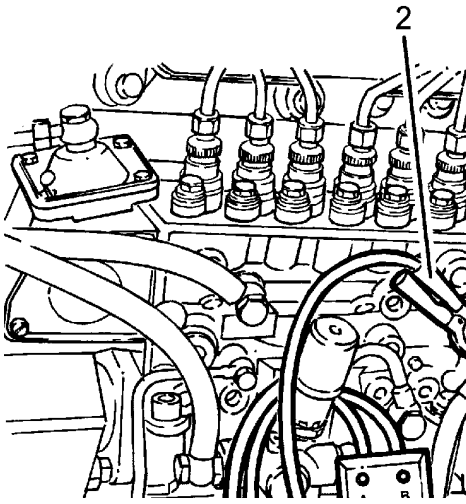


Figure 7
Pump timing setting

1. Sensor
2. Chassis connection (clamp)
3. Injection timing tool, 998 7057

10. Rotate the crankshaft with 999 3590 to the compression stroke for no. 1 cylinder (0° on the flywheel and the valves for no. 1 cylinder closed). Check that the flywheel marking is visible by the arrow in the flywheel housing.

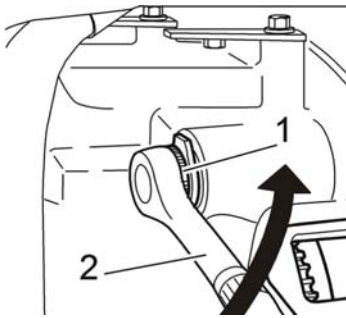


Figure 8
L90D

- 1 999 3590
- 2 Ratchet handle
- 3 Flywheel marking

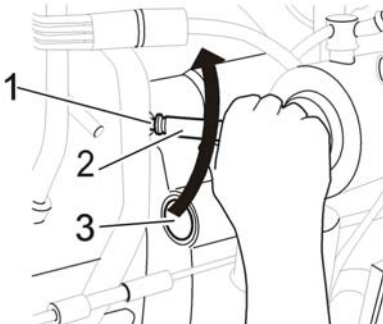


Figure 9
L120D

- 1 999 3590
- 2 Ratchet handle
- 3 Flywheel marking

11. Rotate the crankshaft against the rotational direction of the engine, approx. 1/4 turn.
12. Rotate the crankshaft forward until the degree marking, according to specification, is directly lined up with the marking on the flywheel housing. Remove the guard over the pump coupling.
13. Use 999 3824 to remove the lock sleeve before the clamping bolt can be loosened. Loosen the pump coupling clamping bolt and rotate the pump coupling, approx. 1/4 turn in the rotational direction of the pump.

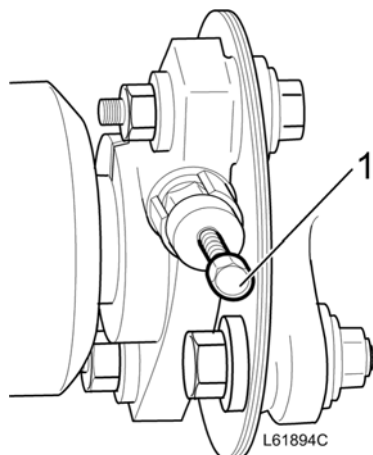


Figure 10
Removing lock sleeve over clamping bolt

1. 999 3824

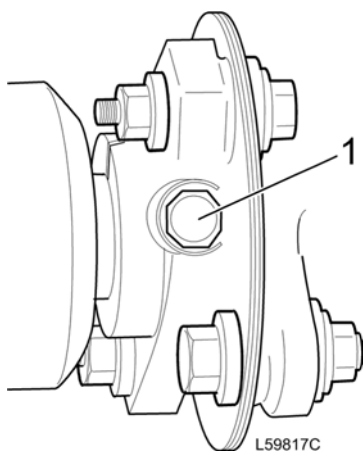


Figure 11
Pump coupling

1. Clamping bolt
14. Tighten the pump coupling clamping bolt until the coupling can just about be rotated against the rotational direction.
- NOTE!**
The pump coupling must always be rotated against the rotational direction when setting the injection angle in order to eliminate any clearance between the timing gears.
15. Rotate the pump coupling against the rotational direction until both light-emitting diodes light up on injection timing tool 998 7057. Tighten the pump coupling.
If the pump coupling is rotated too far, adjustment must be repeated according to points 14 - 16.
Tightening torque: **60 ±5 Nm** (44 ±3.7 lbf ft)
16. Check the injection timing setting by rotating the crankshaft approx. 1/4 turn contrary to the rotational direction of the engine. Then rotate the crankshaft in the engine's rotational direction until both light-emitting diodes on injection timing tool 998 7057

light up. Read off the flywheel marking.

<https://truckmanualshub.com/>

Timing setting L90D: **13° BTDC**

Timing setting L120D: **9° BTDC**

Remember to refit the lock sleeve.

17. After checking or adjusting is completed, remove the injection timing tool sensor and refit the plug in the governor housing. Remove 999 3590 and fit the cover. Fit the cover over the flywheel marking.

REF NR REF NO	SATS NR KIT NO	DATUM/DATE ENHET/DEPT	PRODUKT/PRODUCT
65 1 779 3732	(80506) 11707994	2000-08 CML-32	*

*) L50D, L70D, L90D, L120D, L150D, L180D, L180D High Lift, L220D

Monteringssats för Luftfjädrande förarstol, (ISRI) 11104274

Obs! Stol 11104274 beställs separat

För montering av denna utrustning anser vi,
att någon speciell monteringsanvisning
inte erfordras.

För underlättande av montering bifogar vi:

- Satslista
- Monteringsbild
- Användarinstruktion

Satslista / Kit list

Ant Qty.	Art nr Part No.	Benämning	Description
1	969161	Säkring	Fuse
1	3171420	Relä	Relay
4	4881438	Bandklamma	Strip clamp
1	11040658	Ledningsmatta	Cable harness
1	11041913	Ledning	Cable
4	11104790	Distans	Spacer
1	13940090	Bricka 5.3x10	Washer 5.3x10
1	13969160	Säkring 5A	Fuse 5A
1	13969278	Sextandhålskruv	Six point socket screw
4	13980338	Insexskruv	Allen head screw
4	13960141*	Bricka 8.4x22x2	Washer 8.4x22x2

* Använd befintliga brickor monterad på maskinen

Installation kit for Air sprung operator's seat, (ISRI) 11104274

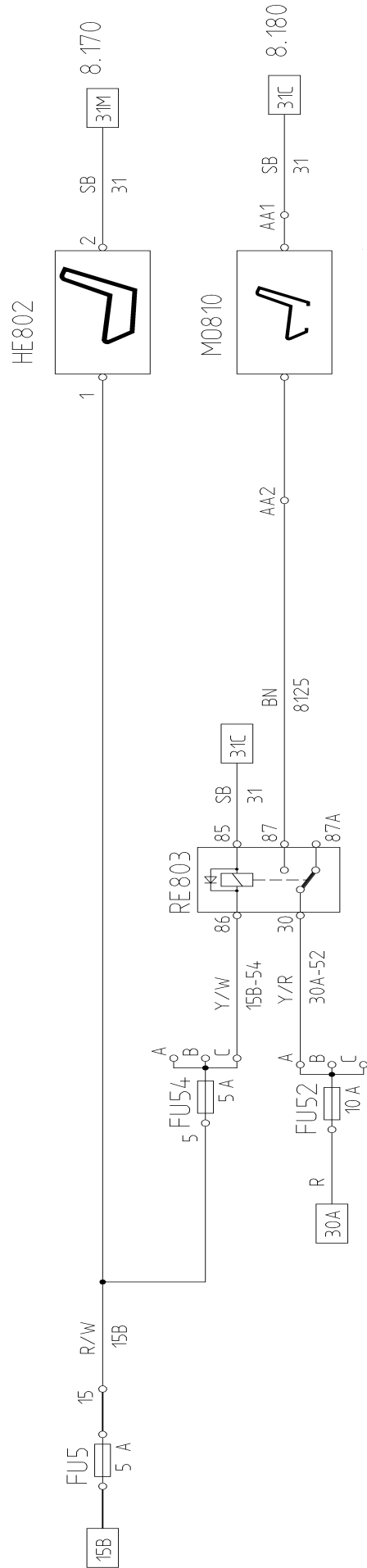
Note! Seat 11104274 to be ordered seperately

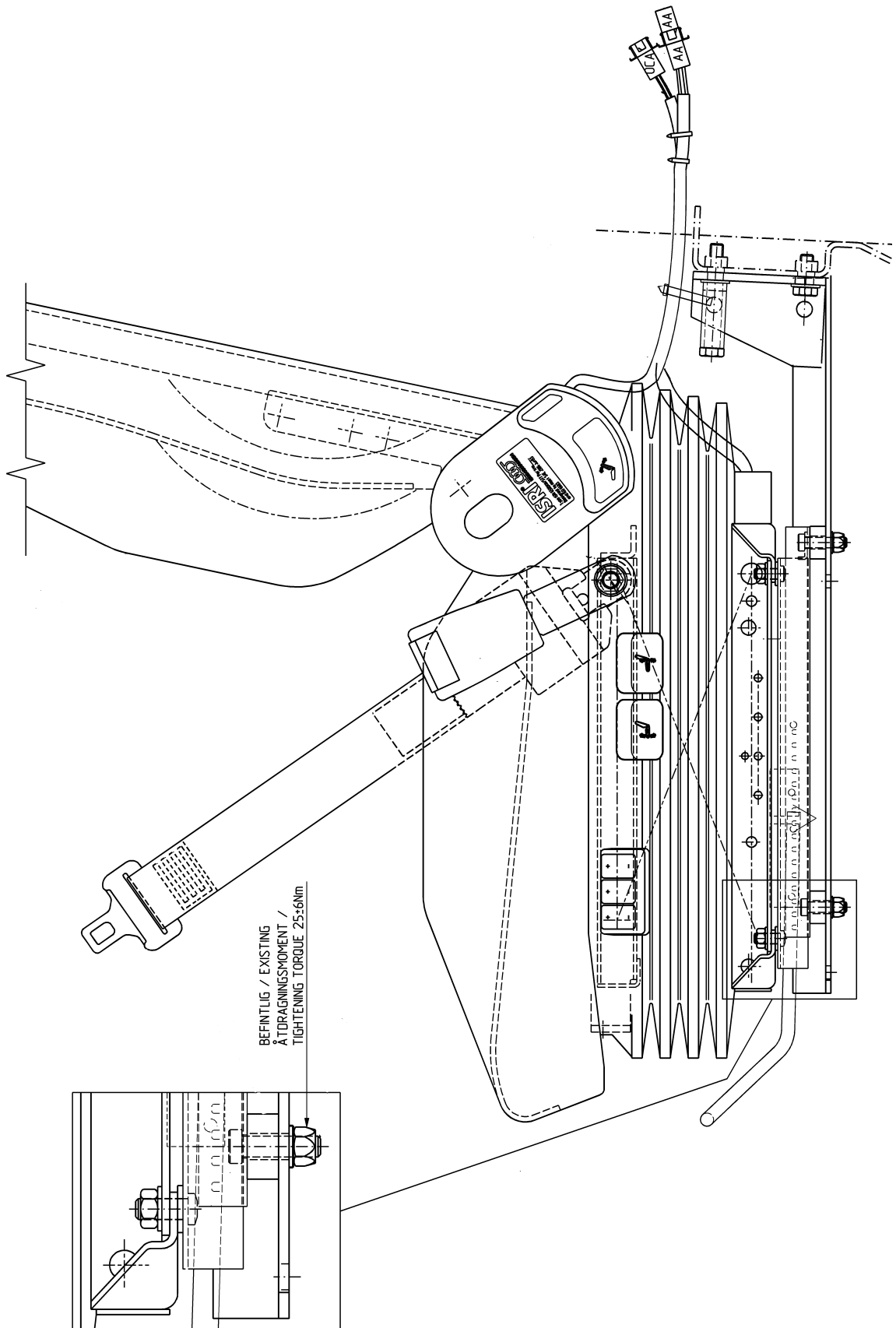
We consider that no special installation
instructions are required for fitting
this equipment.

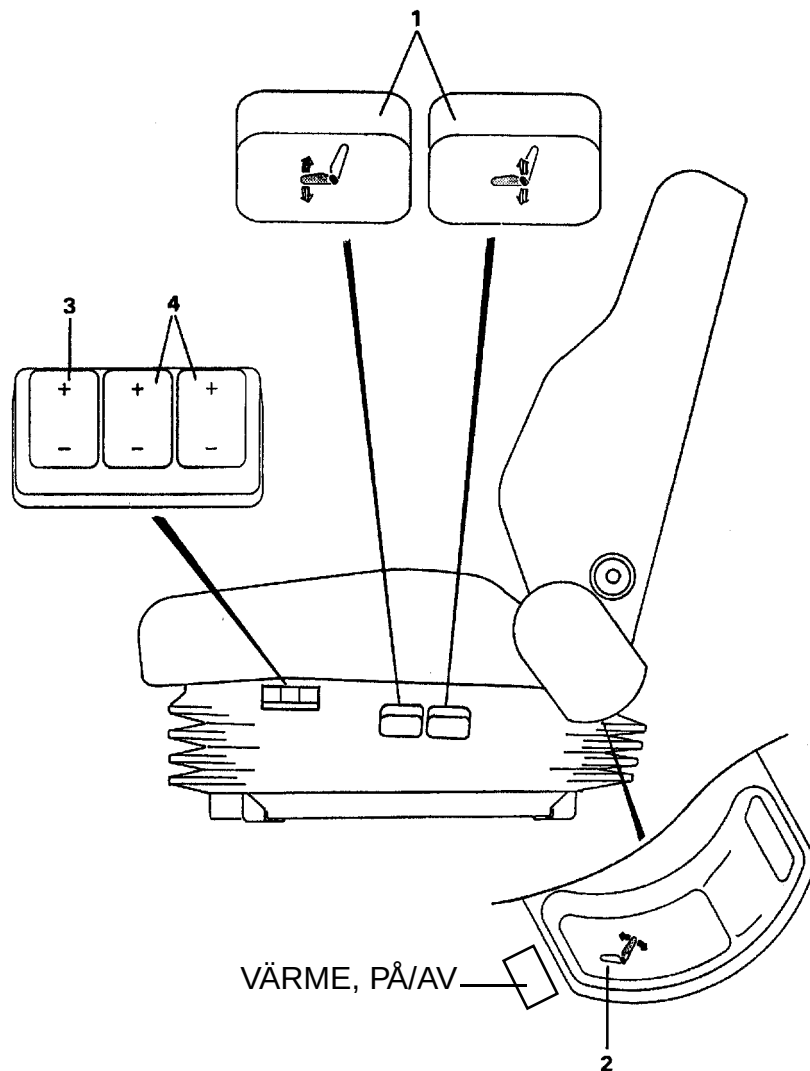
To facilitate fitting we enclose:

- Kit list
- Installation drawing
- User instruction

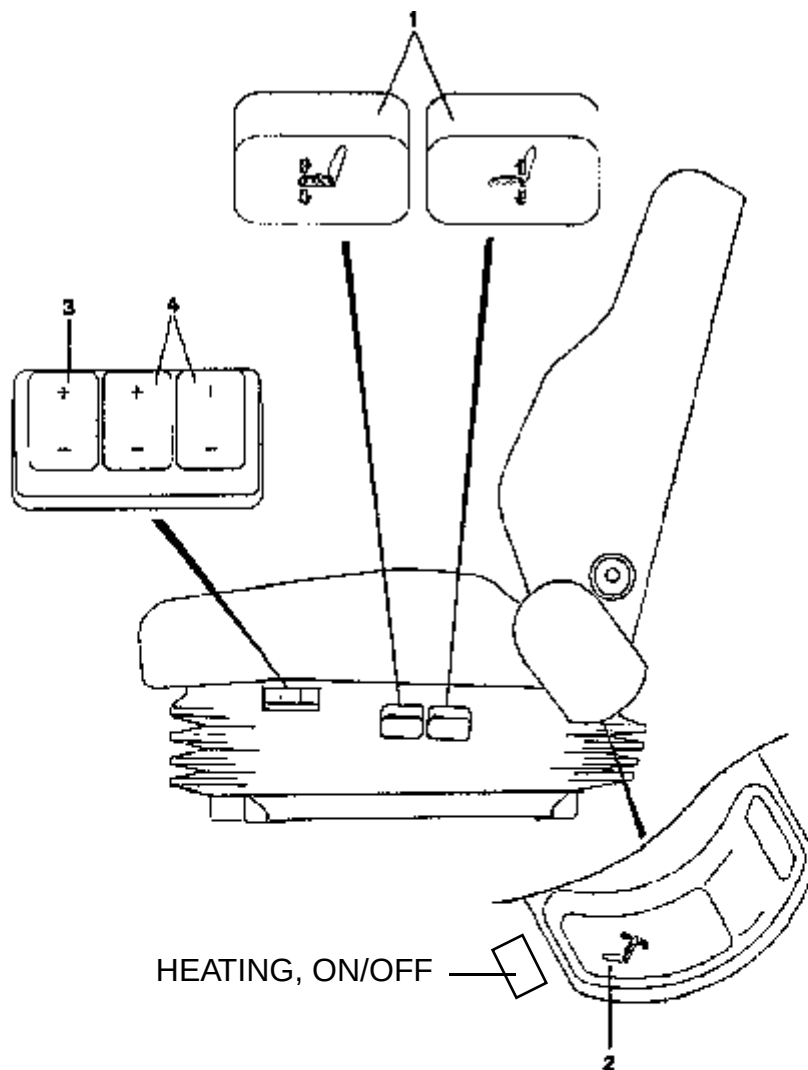
*Use existing washers fitted to machine







- ① **Handtag för inställning av sitthöjd och sittvinkel.** Genom inställning med de båda handtagen och samtidig avlastning av sittdynans fram- resp. bakdel kan önskad sitthöjd och sittvinkel erhållas.
- ② **Handtag för ryggstödsinställning.** Inställning av ryggstödet sker genom att dra i handtaget och samtidigt med ryggen trycka mot ryggdynan. Låsning av inställd position sker när handtaget släpps.
- ③ **Viktinställning.** Genom att trycka på knappen märkt med(+) för fyllning och (-) för tömning, kan lämplig hårdhet i sitsfjädringen ske individuellt efter förarvikt. **Observera!** Ska ej användas som höjdinställning.
- ④ **Svankstödsinställning.** Med de båda knapparna kan man var för sig fylla resp. tömma övre och nedre svanksöd.



- ① **Handles for adjusting the height and angle of the seat.** The desired seat height and angle can be adjusted using both handles and simultaneously relieving the load on the front and back of the seat cushion.
- ② **Handle for adjusting the backrest.** The angle of the backrest is adjusted by pulling the handle and simultaneously pressing your back against the backrest cushion. The desired position is locked when the handle is released.
- ③ **Weight adjustment.** The hardness of the seat springs can be adjusted to suit the weight of the individual driver. This is done by pressing the buttons marked (+) for filling and (-) for emptying.
Note! This is not to be used for adjusting the height.
- ④ **Lumbar support adjustment.** Both buttons can be used to individually fill and empty the upper and lower lumbar supports.

Language Code GB	Product WLO	Group 945	https://truckmanualshub.com/	No. 89	Version 1	Date 09/14/2011
Applies to Wheel Loaders						

Instructions for crack in lifting frame

WARNING

Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.

Cause and action

In the event of wheel loader frame cracks, it is necessary to have the correct information for investigation follow up. It is important to have correct information to access the problem properly.

Clear photos, both close up shots and overview shots, to identify the crack in relation to the total lifting frame are needed.

These photos are required in your Techline report along with other descriptive information.

Casting numbers as show on following pages are also required to identify production runs.

Portions of lifting frames may be requested to be returned for examination.

Rust proof any cracks in the lifting frame immediately to preserve original metallurgy, as rusted/corroded metal are extremely difficult to analyse.

Coat the crack areas with oil to protect the metal.



V1105386

Figure 1

Broken not corroded link

Examples of casting numbers.



V1105387

Figure 2

Casting number 1



V1105388

Figure 3

Casting number 2



V1105389

Figure 4

Casting number 3

Language Code GB	Product WLO	Group 810	https://truckmanualshub.com/	No. 4	Version 1	Date 02/03/2004
Applies to L50D Volvo, L50E Volvo, L60E Volvo, L70D Volvo, L70E Volvo, L90D Volvo, L90E Volvo, L110E Volvo, L120D Volvo, L120E Volvo, L150D Volvo, L150E Volvo, L180D HL Volvo, L180D Volvo, L180E HL Volvo, L180E Volvo, L220D Volvo, L220E Volvo, L330D Volvo, L330E Volvo						

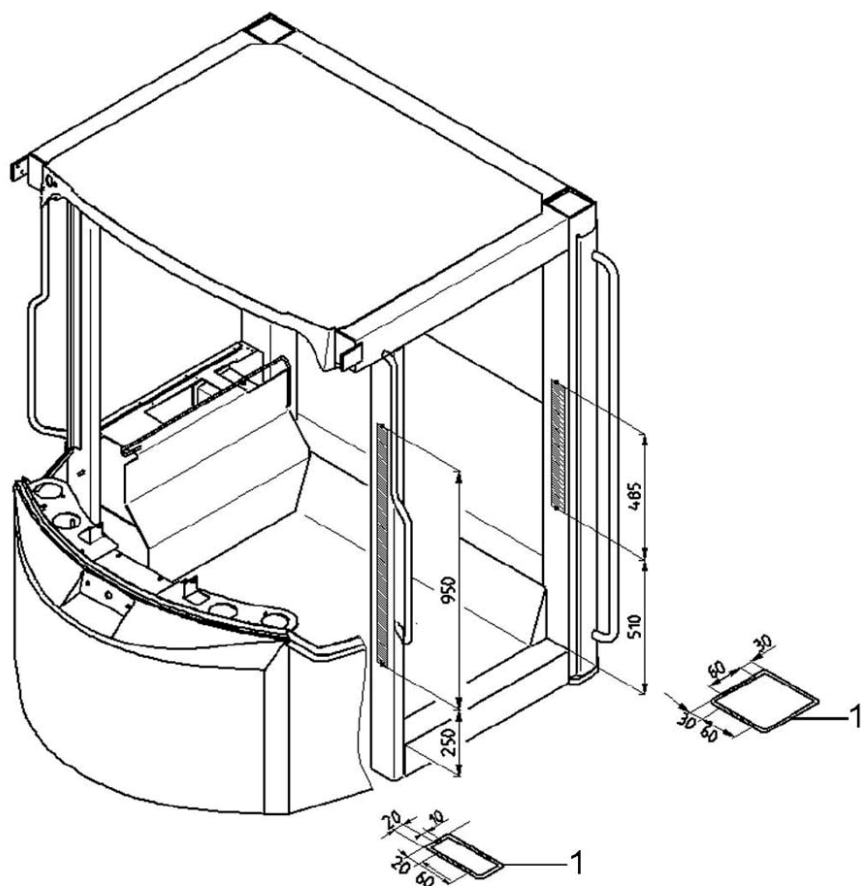
Instructions for drilling in ROPS structure

WARNING

Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.

It is permissible to drill holes in the ROPS structure on the wheel loaders within marked areas, see Fig. 1. At the most three holes with a maximum diameter of 9.5 mm (0.374 in) may be drilled within each area and there must be at least 100 mm (3.937 in) between the holes.



V1024829

Figure 1

1. Illustration showing cross sections of posts indicating where it is permissible to drill holes

Language Code GB	Product WLO	Group 000	https://truckmanualshub.com/	No. 122	Version 2	Date 05/31/2011
Applies to Wheel Loaders						

Instructions for shielded metal arc welding



Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

Scope

These instructions have been provided to ensure that modifications or repairs involving welding on Volvo Wheel Loader's machines will be of the highest quality.

These are general welding instructions that must be supplemented with drawings, sketches and specifications from Volvo CE Customer Support.

In cases where the use of MIG, TIG, Fluxcore or submerged arc welding is required, contact VCE Customer Support for approval.

Welder competence, qualifications and requirements

Unless otherwise specified or approved, all welding must be carried out by a welder whose competence meets the requirements according to the American Welding Society, Specification D1.1 or D14.3, or ASME Pressure Vessel Code, Section IX.

NOTE!

Each country has its own welding standards and specifications. All welding must be carried out by a competent welder in order to meet the requirements specified by the country where the work is to be carried out.

Base materials

Refer to drawings, sketches and specifications which are made available by VCE Customer Support.

Filler materials (Coated electrodes)

Electrode classification must be according designations on accompanying drawings, sketches or specifications which are made available by VCE Customer Support.

The welding electrodes must meet the following requirements:

EN 499-95	E 42 4 B 42 H5
Swedish National Standard 79	SS 3211-H10
AWS A5. 1-91	E 7018-M
DIN 1913-84	E 51 55 B10 120
ISO 2560-73	E 51 5 B 120 20 H

These electrodes may be used:

- E 8018: AWS A5.5, class E 8018-D3
- E 9018: AWS A5.5, class E 9018-D1 or E 9018-M
- E 10018: AWS A5.5, class E 10018-D2 or E 10018-M
- E 11018: AWS A5.5, class E 11018-M
- OK 67.45 (EN 1600 E 18 8 Mn B, AWS A5.4) ESAB
- OK 68.81 (EN 1600 E 29 9R 32, SFA7AWS A5.4) ESAB
- Elgaloy Mix 18 (EN 1600 E 18 8 Mn R 53, AWS A5.4-92)), ELGA

Electrode sizes

The electrode size must be adapted and be suitable for the type of material, type of weld joint, welding position and other circumstances affecting the work.

The maximum size of electrodes and current strength are as follows:

Position	3.17 mm	3.97 mm	4.76 mm	6.35 mm
	1/8"	5/32"	3/16"	1/4"
Flat/horizontal	100/150	175/225	225/275	350
Vertical	120/140	140/160	-	-
Overhead	110/135	140/170	-	-

6.35 mm (1/4") max. diameter for horizontal fillet welds.

6.35 mm (1/4") max. diameter for root passes or fillet welds made in the flat position and for weld joints made in the flat position with backing bar (root passes) and with an root opening of 6.35 mm (1/4") or greater.

3.97 mm (5/32") max. diameter for welding made in the vertical and overhead positions.

<https://truckmanualshub.com/>

Care and storage of electrodes

Electrodes in hermetically sealed containers may be used immediately from the container for a specific period of time after the container has been opened.

Time periods are as follows:

E7018 - 4 hours

E8018 - 2 hours

E9018 - 1 hours

E10018- 30 minutes

E11018- 30 minutes

All electrodes which are not used within the above specified times must be stored in an oven at a temperature of at least 121 °Celsius (250 °F).

Electrodes which have been exposed to the atmosphere for a longer time than specified above, must be dried for at least one hour at a temperature between 371 and 427 °C (700 and 800 °F) before they are used.

Preparation of materials

The surface, which is to be welded, must be free from moisture, slag, rust, paint, grease, oil or other foreign material which prevent proper welding.

In cases where original parts have been removed by carbon arc welding, all oxides, slag and carbon deposits must be removed by grinding to remove sharp undercuts, cracks, nicks or gouges. This is to be followed by welding and grinding if required to provide a smooth and even surface.

Assembling

Aligning parts:

Parts to be joined by fillet welding must be placed as close together as piratically possible.

The distance between the two parts must normally not exceed 3.17 mm (1/8"). If the distance exceeds 1.58 mm (1/16"), the leg of the filled weld must be increased by the distance between the parts.

All parts must be supported to provide the best possible alignment between the parts and to minimise stresses on tack welds and root passes.

Tack welds are subjected to the same quality requirements and limitations as the final welds.

All tack welds must be thoroughly cleaned from slag prior to incorporating them in the final welds.

Cracked or faulty tack welds must be removed by grinding prior to final welding.

Position

The pieces to be welded should be placed flat where possible.

Preheating and temperature of the work pieces

- Interpass temperature – the temperature throughout the material

The material to be welded must be preheated, when required, to reach a minimum preheating temperature which is specified in supplemental drawings, sketches and specifications supplied by VCE Customer Support

Unless otherwise specified, the temperature must not be less than 10 °C (50 °F).

The preheating temperature must be measured 75 mm (3") from the centre line of the weld and at the opposite side of the work piece from where the heat was supplied. This technique will assists in ensuring that the heat has penetrated through the material.

Maximum interpass temperature are 204 °C (400 °F) unless otherwise specified. If possible all welding should be carried out in an order that balances the supplied heat during the progress of the welding.

A device for measuring the surface temperature is to be used to check the preheating temperature and the interpass temperature throughout the material. In cases where temperature sensitive crayons are used, all remaining crayon residue or other contaminants must removed from the surface to be welded.

Welding must not be carried out when the workpiece is exposed to strong wind, draught or moisture.

Electrical specifications

Use direct current, reverse polarity (electrode positive) at amperages and voltages recommended by the electrode manufacturer.

The ground connection must be safely secured as close to the point of welding as possible. Do not connect the ground connection so that the electrical current of the welding circuit has to pass across a bearing. For example, when welding on the front frame of the wheel loader, do not attach the ground connection to the rear frame.

Welding technique

Electrode handling:

The arc length must be kept as small as possible during the entire welding work.

All welding beads, except vertical ones, are to be deposited as stringer beads, the width of which must not exceed four times the diameter of the electrode. When welding vertically, a partial weaving technique may be used.

The width should be limited to twice the diameter of the electrode. When starting a new electrode, back puddle slightly to heat surrounding base material and to fill the crater in the previous welding bead.

Fill all arc craters at the end of each bead.

<https://truckmanualshub.com/>

Interpass Cleaning

Slag must be removed from all welding beads before starting on the next bead.

Remove all visible defects such as cracks, pores and undercuts by grinding before beginning the next bead.

Welding bead size

Groove welds:

The maximum thickness of layers deposited after the root pass in fillet welds and all layers of groove welds is:

6 mm (1/4") for root passes of groove welds.

3 mm (1/8") for subsequent layers of welds made in the flat position.

5 mm (3/16") for subsequent layers of welds made in the vertically, overhead and horizontal positions.

Fillet welds:

The maximum size of fillet welds which may be made in one pass is:

10 mm (3/8") in the flat position.

8 mm (5/16") in the horizontal or overhead positions.

12 mm (1/2") in the vertical position.

Welding sequence

The welding sequence must be arranged so as to minimise distortion and shrinkage.

If possible, all welds should be made in a sequence that balances the applied heat of welding while welding progresses. Backstep welding technique is recommended.

Backstep welding technique

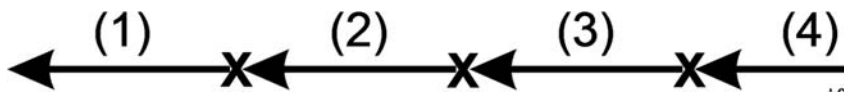


Figure 1

Backstep welding

- Weld in the direction of the arrow
- X = Start
- (n) = Welding sequence

Peening

Welded metal may be peened after each pass, while the bead is still very hot to reduce stresses and distortion. Peening can be carried out using a heavy hammer (especially intended for peening), but it is much more effective to use a 7 or a 9 kg (15 or 20 lb) air hammer with a blunt chisel point tip with a diameter of 6.35 mm (1/4") to peen each layer of welded metal.

NOTE!

Peening is not permissible on the first or final layers.

Back gouging

Complete joint penetration groove welds made without the use of steel backing must have the root gouged down to sound metal before welding is started from the other side. Gouging may be done by grinding or carbon-arc cutting. Gouging with oxy-fuel gas cutting torch is not permitted.

Inspection

The surface of the final weld beads must be free of slag, abrupt peaks or valleys, overlaps or undercuts and the surface must be smooth and even.

All completed welded joints should be magnetic particle inspected.

Additional inspection requirements may be specified by accompanying instructions for assembling, sketches or drawings which are made available by VCE Customer Support.

This SB is to be considered as a technical information and comprises normal warranties within the rules for the same.



**Volvo Construction
Equipment**

Installation Instruction

Genuine Accessories

Ref. no. 21 2 779 3766	Kit no. 11707315 (80556)	Date/Dept. 2001-10 CEE-43	Product L50D, L70D, L90D, L120D/E, L150D/E, L180D/E L220D/E, L330D/E	Page 1/3
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Seat for the instructor

Kit list

Part No.	Qty.	Description	Pos. in Fig. 1
946472	2	Flange screw	2
4850822	1	Spacer	6
11006129	1	Bracket	1
11006132	1	Seat	4
11006133	1	Upholstery	12
11006134	1	Cushion	13
11007080	1	Gas spring	8
11007110	2	Bushing	5
11704348	4	Push button	14
13947542	1	Bolt	10
13949278	2	Flange lock nut	11
13960143	2	Washer	3
13965176	1	Bolt	9
13965191	1	Bolt	7



WARNING!

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The equipment should be installed by qualified personnel of an authorised workshop.

Volvo CE Customer Support AB disclaims all responsibility if tools and work methods other than those described in the instructions are used.

Seat for the instructor

Work description

- 1 Assemble the parts as shown in Fig. 1.

Note! Tighten the bolts 9 and 10 and loosen 0.5 turn.

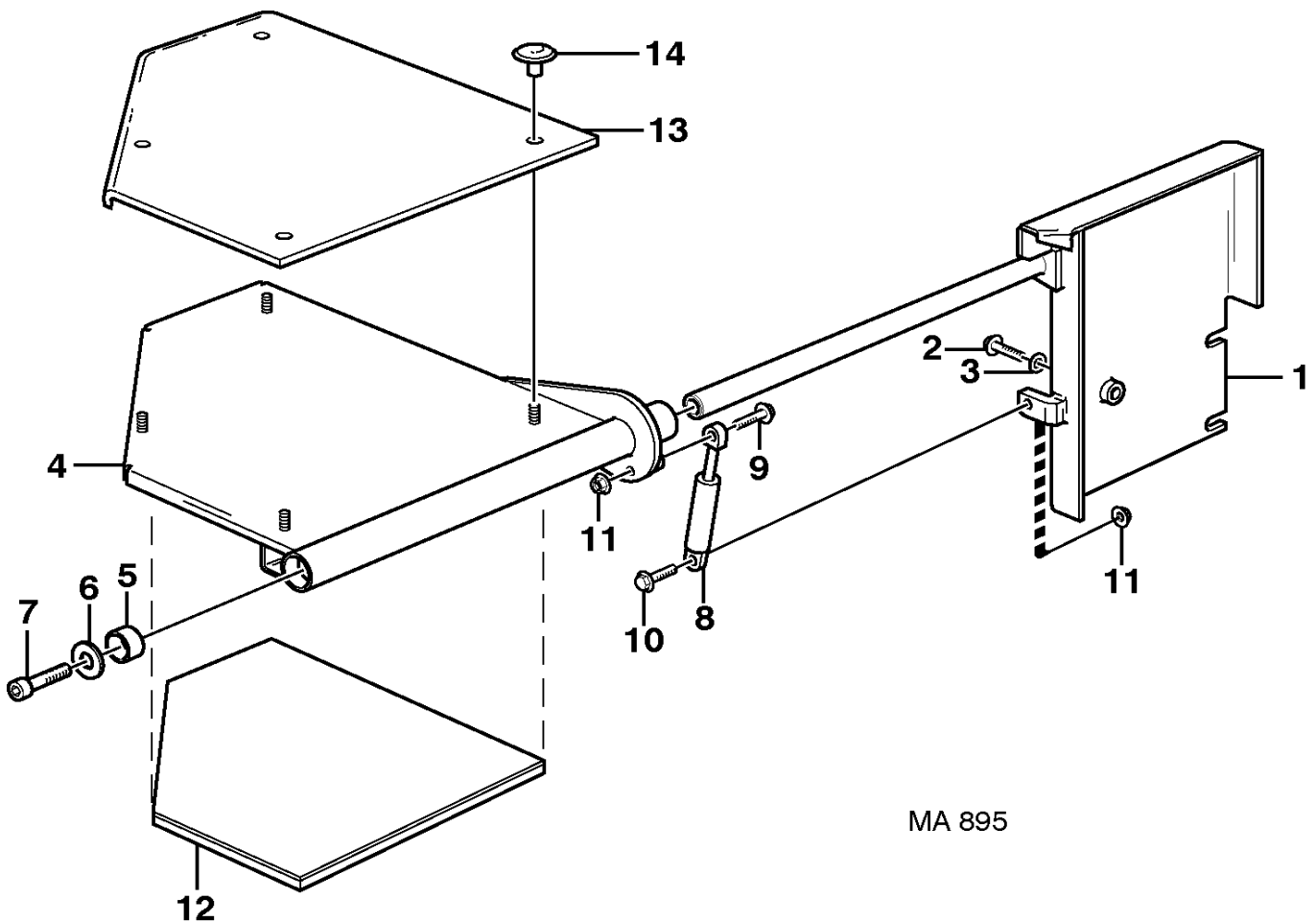


Fig. 1

- 2 Screw the seat tight behind the operator seat, see Fig. 2.
- 3 Write equipment number 80556 on the machine card.

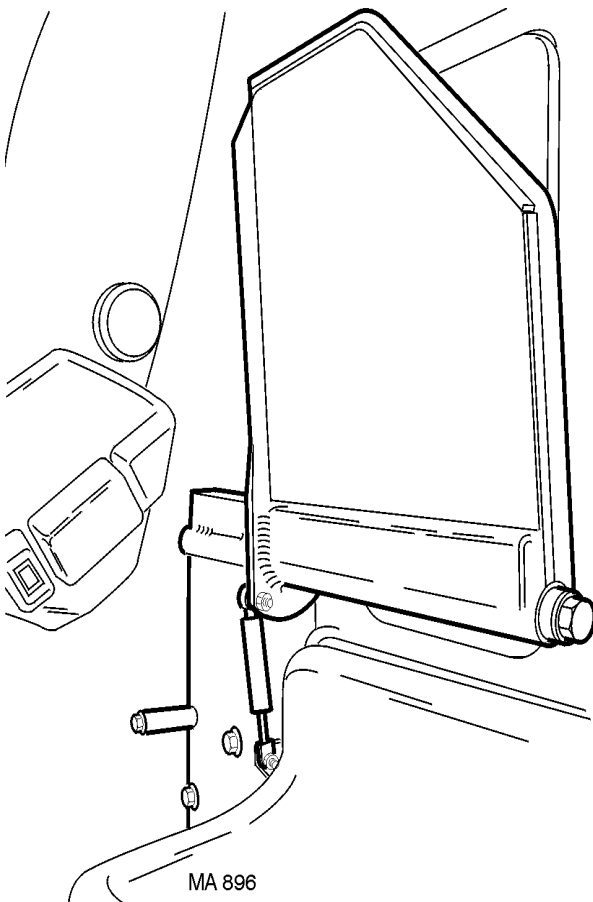


Fig. 2

Instrument control unit I-ECU, functional description

The instrument control unit is integrated with the main instrument and receives information by way of the data bus. The information is processed and shown via gauges, control lamps, warning lamps and the display panel.

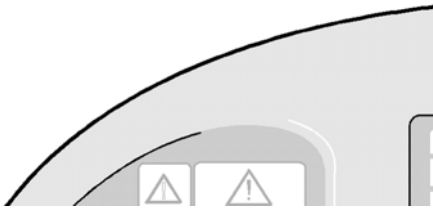


Figure 1
Instrument control unit with display panel

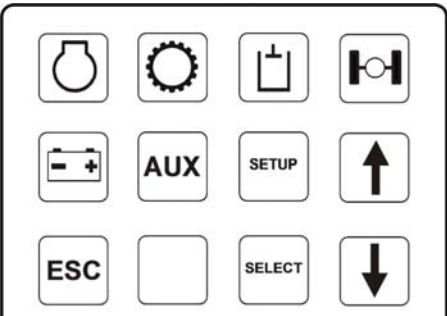
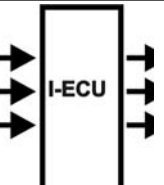


Figure 2
Keypad for display panel
Functions

- Values for gear position, machine hours as well as status values for parking brake and warning messages are processed and result in a number of displays on the display unit.
- Special warnings, such as central warnings, low engine oil pressure, etc. are detected and the corresponding warning lamp is activated.
- Values for transmission oil temperature, coolant temperature and fuel level are shown on gauges.
- Setting of display alternatives and parameter alternatives for the display panel.
- Storage and display of operating hours

Inputs and outputs

Digital input			Digital output	
Work lights front	SW303		Work lights	LC7
Work lights rear	SW304		Axle oil temperature	LC10
Direction indicators	RF1		Charging	LC3
Brake pressure with by-passed V-ECU	SE502		Direction indicators	LC13
Differential lock	SW414		Brake charging malfunction	LC6
Preheating	SW201		Low brake pressure	LC6
High beam	SW302		Low fuel level	Warning lamp
Interval wiper, front	SW801A		Boom suspension system activated	LC18
Interval wiper, rear	SW803		Differential lock engaged	LC17
Kickdown	SW401C		Preheating engaged	LC15
Charging	ALT. 1		Amber central warning lamp	LC1
Parking brake	SW501		High coolant temperature	Warning lamp
Rotating beacon	SW305		Low engine oil pressure	LC4
Keypad	SW807		Applied parking brake	LC8
Test, Secondary steering	SW601		Secondary steering engaged	LC16
Transmission disengagement	SW411		Rotating beacon	LC14
Windscreen washer rear	SW804		Red central warning lamp	LC2
Windscreen washer front	SW801B	High beam	LC12	

Gear selector positions	SW401B
Mode selector (APS II)	SW412
Bulb test	-
Forward/Reverse	SW402
Boom Suspension System, function selection	SW908
Preheating engaged	RE201
Analogue input	
Instrument lighting	R301

<https://truckmanualshub.com/>

Steering system pressure	LC11
Buzzer	SA802
Wiper and washer rear	
Wiper and washer front	
High transmission oil temperature	Warning lamp
Low transmission oil pressure	LC5
Lever steering activated	LC19
Analogue output	
Fuel level (gauge)	
Instrument lighting	
Transmission oil temperature (gauge)	
Coolant temperature (gauge)	

Instruments

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Instrument panels, position

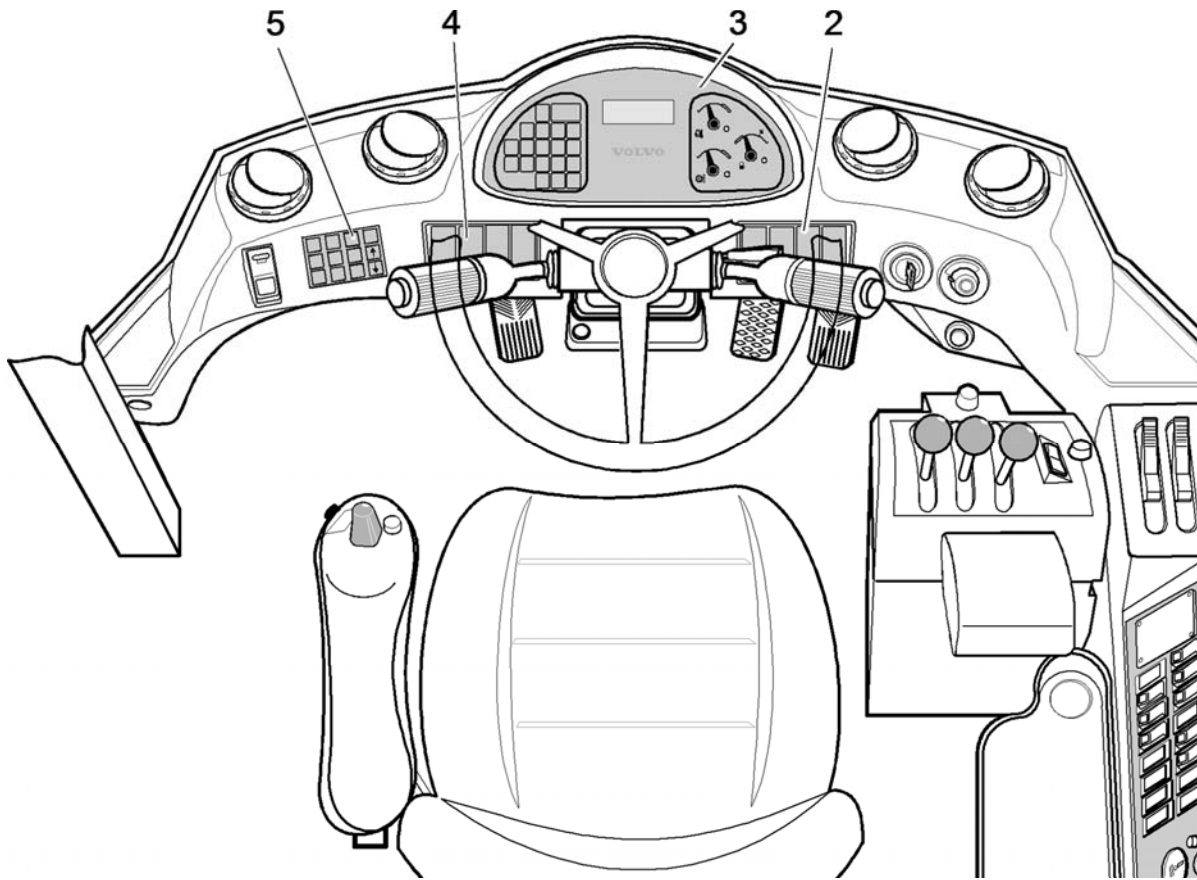


Figure 1
Instrument panels

1. Side panel, (switches, gauges)
2. Right instrument panel (switches, gauges)
3. Centre instrument panel (instrument panel, indicator lights, gauges)
4. Left instrument panel (switches)
5. Keypad

Interval wiper

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The function controls the front and rear interval wipers and informs the operator if there is a system malfunction.

The wiper is engaged for 0.5 seconds with a pause of 5 seconds. This sequence is repeated until the control is moved to the 0 position.

Input signals	Output function conditions	Output functions
Control front interval wiper, SW801A	Control in position J	Control of front wiper MO801 in intervals via relay RE6
Control rear interval wiper, SW803	Control in position Interval	Control of rear wiper MO803 in intervals via relay RE5
Monitoring, RE5	System malfunction, faulty relay	Amber central warning lamp -----ERROR----- Relay Intermitten Wiper
Monitoring, RE6	System malfunction, faulty relay ⁽¹⁾	Amber central warning lamp -----ERROR----- Relay Intermitten Wiper

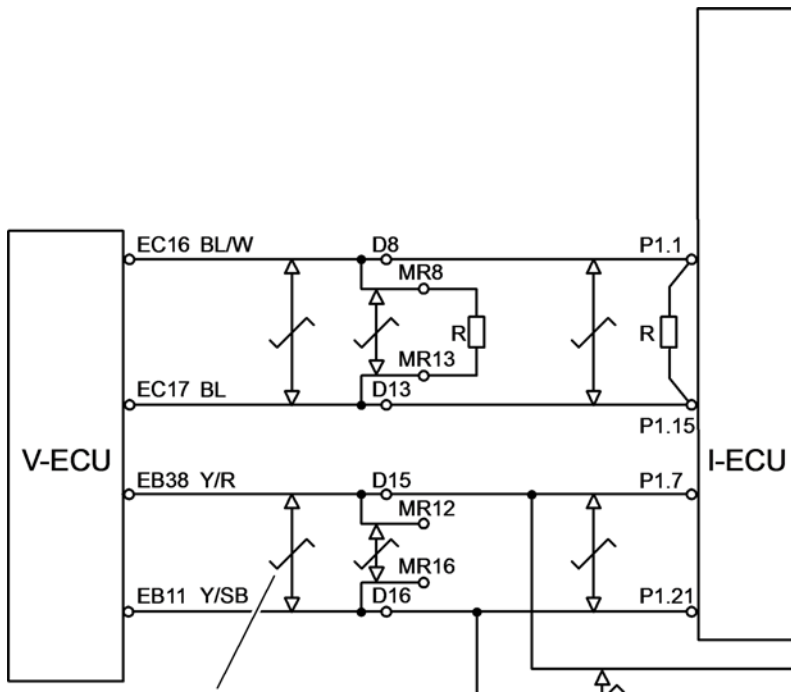


Figure 1
Communication leads between V-ECU and I-ECU

1. Symbol for twisted cables

Twisted leads reduce sensitivity to interference with regards to electromagnetic radiation (EMC).

L90D specifications, weight

<https://truckmanualshub.com/>

Front frame	1200 kg (2646 lbs)
Rear frame	950 kg (2095 lbs)

L90D specifications, weight

<https://truckmanualshub.com/>

Counterweight	1700 kg (3749 lbs)
---------------	--------------------

L90D specifications, weight

<https://truckmanualshub.com/>

Wheel without fluid	340 kg (750 lbs)
Wheel with fluid CaCl ₂	750 kg (1654 lbs)

L90D specifications, weight

<https://truckmanualshub.com/>

Hydraulic oil pump, working hydraulics (double-mounted with pump for servo system and brakes)	48 kg (106 lbs)
---	-----------------

L90D specifications, weight

<https://truckmanualshub.com/>

Boom, incl. links, pins and cylinders	1800 kg (3969 lbs)
Lift cylinder	125 kg (276 lbs)
Tilt cylinder	170 kg (375 lbs)

L120D specifications, weight

<https://truckmanualshub.com/>

Front frame	1450 kg (3197 lbs)
Rear frame	1200 kg (2646 lbs)

L120D specifications, weight

<https://truckmanualshub.com/>

Counterweight	2490 kg (5490 lbs)
---------------	--------------------

L120D specifications, weight

<https://truckmanualshub.com/>

Wheel without fluid	535 kg (1180 lbs)
Wheel with fluid CaCl ₂	1120 kg (2470 lbs)

L120D specifications, weight

<https://truckmanualshub.com/>

Hydraulic oil pump, working hydraulics (double-mounted with pump for servo system and brakes)	55 kg (121 lbs)
---	-----------------

L120D specifications, weight

<https://truckmanualshub.com/>

Boom, incl. links, pins and cylinders	2190 kg (4829 lbs)
Lift cylinder	135 kg (298 lbs)
Tilt cylinder	269 kg (593 lbs)



Volvo Construction
Equipment

Installation Instruction

Genuine Accessories

Ref. no. 21 2 779 3847	Kit no. 11707329 (80098)	Date/Dept. 2003-02 CEE-47	Product L50D, L50E, L60E, L70D, L70E, L90D, L90E, L110E, L120D, L120E	Page 1/4
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3rd hydraulic function / retaining function

Kit list

Part No.	Qty.	Designation
941266	1	Plug
960137	1	Washer
969556	2	Six point socket screw
972079	4	Six point socket screw
4786696	1	Switch
4940327	1	Diode
11003153	1	Solenoid
11003158	1	Spacer ring
11003417	1	Anchor plate
11003531	1	Bracket
11009043	1	Push button switch
11039341	1	Switch
11040682	1	Cable harness
11100854	1	Cable harness
11104975	1	Bracket
13948996	1	Insulator
13969513	1	Six point socket screw



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3rd hydraulic function / retaining function

Work description

- 1 Switch off the main current.
- 2 Loosen the instrument panel on the right side.
- 3 Drill two holes in the cover, $\varnothing 10$ mm (0.39 in) and one hole $\varnothing 22$ mm (0.87 in). See Fig. 1.
- 4 Remove the cover over the control lever carrier.

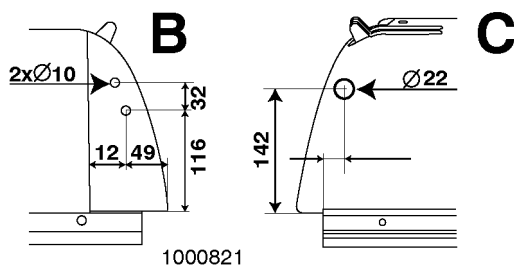


Fig. 1

View B: Two holes, $\varnothing 10$ mm (0.39 in)

View C: One hole $\varnothing 22$ mm (0.87 in)

- 5 Fit the bracket on the control lever carrier in the cab.
See Fig. 4.

Part No.	Designation	Qty.	Pos. in Fig. 4
13948996	Insulator	1	7
960137	Washer	1	6
13969513	Six point socket screw	1	5
969556	Six point socket screw	2	2
11003153	Solenoid	1	3
11003158	Spacer ring	1	4
11003417	Anchor plate	1	8
11003531	Bracket	1	1

- 6 Fit the push button switch on the side panel. See Fig. 4.

Part No.	Designation	Qty.	Pos. in Fig. 4
4940327	Diode	1	10
11039341	Switch	1	12
11009043	Push button switch	1	13

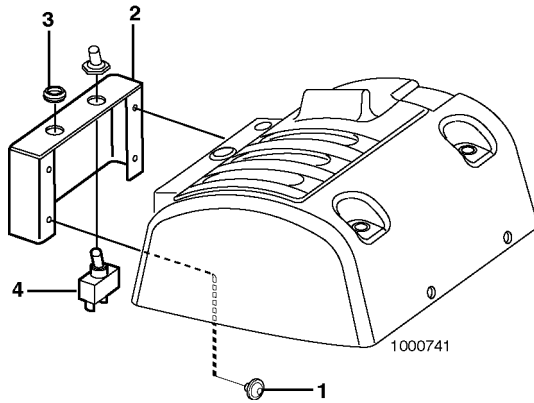


Fig. 2
Bracket with the switch SW906

D-machines

7 Fit the bracket and switch SW906 on the cover.

See Fig. 2.

Part No.	Designation	Qty.	Pos. in Fig. 2
4786696	Switch	1	4
11104975	Bracket	1	2
972079	Six point socket screw	4	1
941266	Plug	1	3

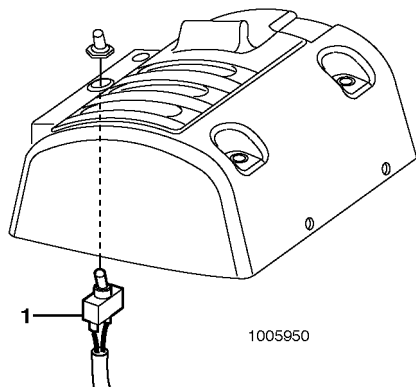


Fig. 3
Switch SW906 on the cover

E-machines

8 Fit the switch in the existing hole on the cover.

See Fig. 3.

Part No.	Designation	Qty.	Pos. in Fig. 3
4786696	Switch	1	1

9 Fit the cable harness and connect the contacts.

See Fig. 2.

Part No.	Designation	Qty.	Pos. in Fig. 4
11100854	Cable harness	1	11
11040682	Cable harness	1	14

10 Fit the cover on the control lever carrier and screw the instrument panel tight on the right side.

11 Start the engine and test the function.

12 Write equipment number 80098 on the machine card.

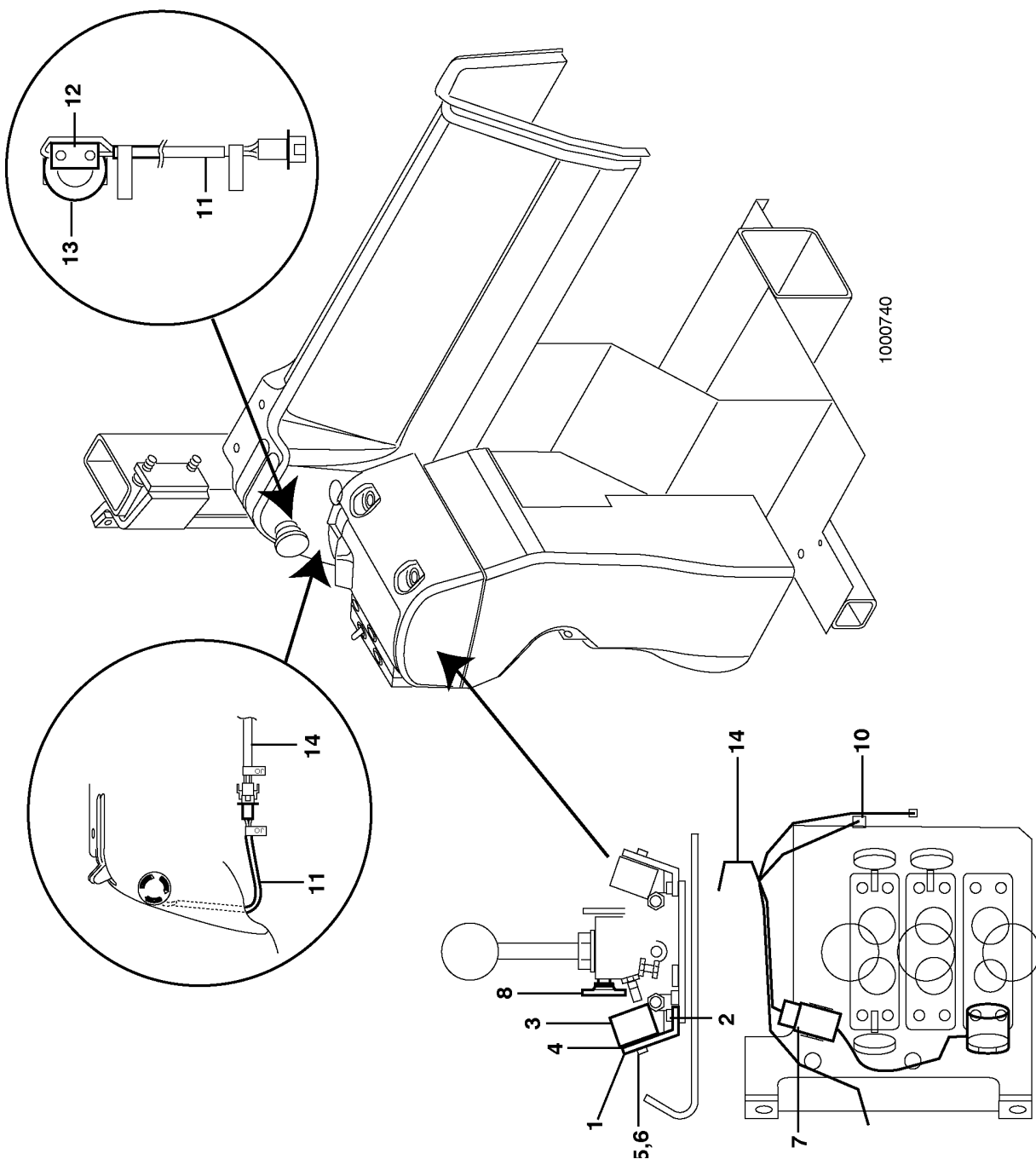


Fig. 4

1. The basic steering speed setting is 3.5–4.0 seconds from full lock to full lock (at 1500 rpm).
Steering speed is adjusted by turning the adjusting screws clockwise (increases speed) or counter-clockwise (reduces speed).
The steering speed to the left and right should be as equal as possible, and the steering lever must be fully deflected (maximum steering stroke) when the adjustment is performed.

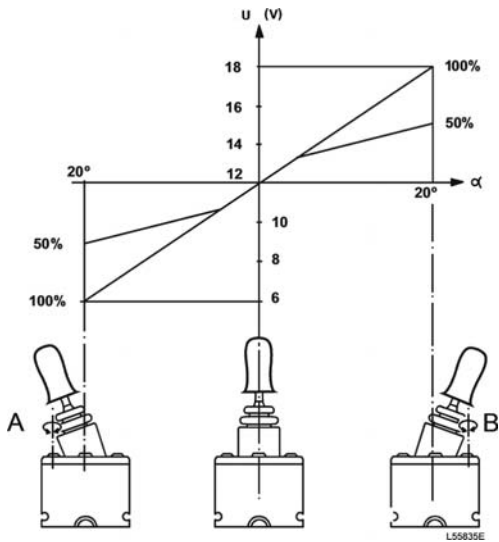


Figure 1
Adjusting screws for steering speed

- A. Steering, left
- B. Steering, right

Lever steering, checking and adjusting control valve

Op nbr

Lever for mechanical activation of control valve spool or suitable wrench

Checking

1. Connect the frame joint lock.
Apply the parking brake.

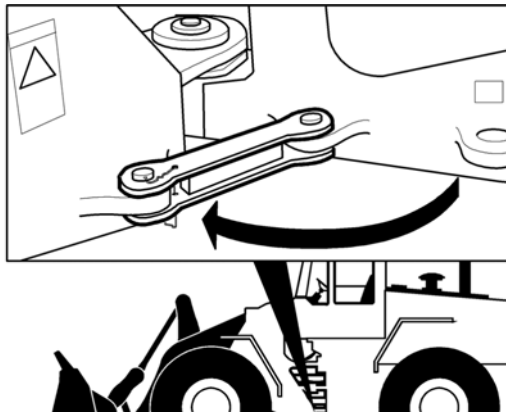


Figure 1

2. Fit the lever (wrench) for mechanical activation on the CDC valve, located under the cab on the right side of the machine.
3. Start the engine and engage CDC lever steering with SW408.
4. Check to make sure that lever for mechanical activation does not move back and forth (oscillate).
If the lever moves in any direction, the electronic and the hydraulic neutral positions are not the same, and the lever will move back and forth.
Max. clearance: **2 mm (0.08 in)**

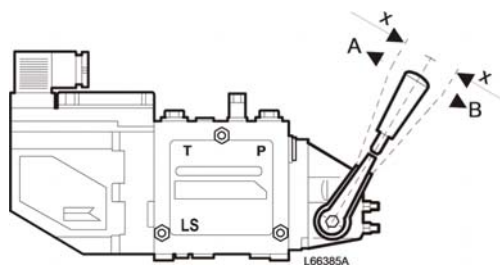


Figure 2

- | | |
|---|---------------------|
| x | Max. 2 mm (0.08 in) |
| A | Steering, left |
| B | Steering, right |

Adjusting

5. Any adjustment is done on the adjusting screw (1). Turn the adjusting screw counter-clockwise or clockwise depending on if the lever moves in direction A or B. 1/2 turn of the adjusting screw corresponds to a lever movement of 3 mm (0.12 in)

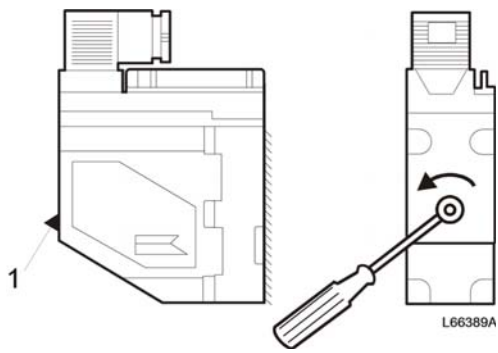


Figure 3
Adjusting lever movement in direction A

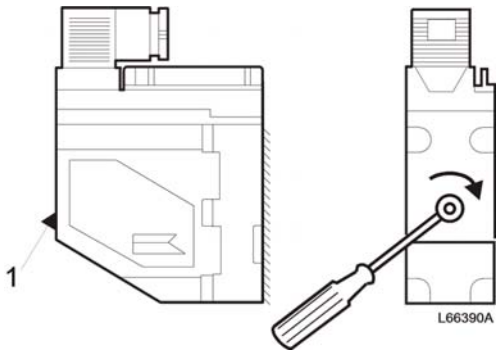


Figure 4
Adjusting lever movement in direction B

Lift cylinder

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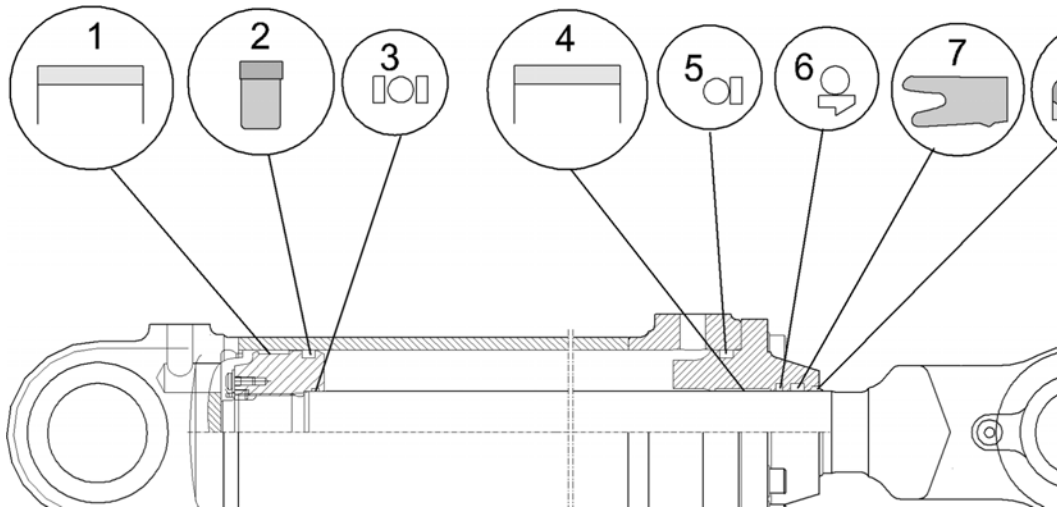


Figure 1
Lift cylinder

1. Steering
2. Piston seal
3. Back-up rings and O-ring
4. Bushing
5. O-ring and back-up ring
6. Piston rod seal
7. Piston rod seal
8. Scraper seal

Lighting, description

<https://truckmanualshub.com/>

Travel lights are operated with switch SW301, located on the right-hand instrument panel.

- Position 1: parking lights and instrument lighting
- Position 2: parking lights, instrument lighting and travel lights.

Main and dipped beams are controlled with SW302, the right-hand stalk switch on the steering column.

- Stalk switch in neutral position, dipped beams
- Stalk switch pressed away from steering wheel: main beams and control lamp LC12 on the instrument panel lights up.

The front work lights are controlled with switch SW303, located on the right-hand instrument panel. When the work lights are on, control lamp LC7 on the instrument panel is also on.

- Position 1: regular front work lights
- Position 2: regular front work lights and auxiliary front work lights (LA317, LA318, LA319) via relay RE10.

Rear work lights are controlled with switch SW304, located on the right-hand instrument panel. When the work lights are on, control lamp LC7 on the instrument panel is also on.

- Position 1: regular rear work lights
- Position 2: regular rear work lights and auxiliary rear work lights (LA322, LA323).
See [Invalid linktarget] and [Invalid linktarget].

Lighting, specifications

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Bulbs	Watt	Base
Headlights, asymmetric	75/70	P43t - 38 (H4)
Parking lights	4	BA 9 s
Tail lights	10	BA 15 s
Brake lights	21	BA 15 s
Direction indicators, rear	21	BA 15 s
Direction indicators, side	21	BA 15 s
Side lights	5	SV 8.5
Cab light	10	BA 15 s
Centre instrument panel	1.2	W 2x 4.6 d
Guide lights in switches	1.2	W 2x 4.6 d
Work lights, front halogen, cab	70	PK 22 s (H3)
Work lights, rear halogen	70	PK 22 s (H3)
Work lights, front halogen (optional)	70	PK 22 s (H3)
Work lights, rear halogen (optional)	70	PK 22 s (H3)

Language Code GB	Product WLO	Group 945	https://truckmanualshub.com/	No. 93	Version 1	Date 04/19/2012
Applies to L90C Volvo, L90C Volvo BM, L90D Volvo, L90E Volvo, L90F Volvo, L90G Volvo, L110E Volvo, L110F Volvo, L110G Volvo, L120C Volvo, L120C Volvo BM, L120D Volvo, L120E Volvo, L120F Volvo, L120G Volvo, L150C Volvo, L150C Volvo BM, L150D Volvo, L150E Volvo, L150F Volvo, L150G Volvo, L180C Volvo, L180C Volvo BM, L180D Volvo, L180E Volvo, L180F Volvo, L180G Volvo, L220D Volvo, L220E Volvo, L220F Volvo, L220G Volvo						

Limitation, TP-linkage



WARNING
Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.

Cause

There have been cases where the arm up to the B bearing, the B arm and the HIJ link has been exposed to mechanical wear, which may cause the GH link to collide with the tilting cylinder piston rod. Also, before the GH link collides with the tilting cylinder piston rod, the GDF link is exposed to great forces, as the geometry between the links no longer is according to the drawings because of the wear. The wear is visible on the B arm in that the material has been hammered.

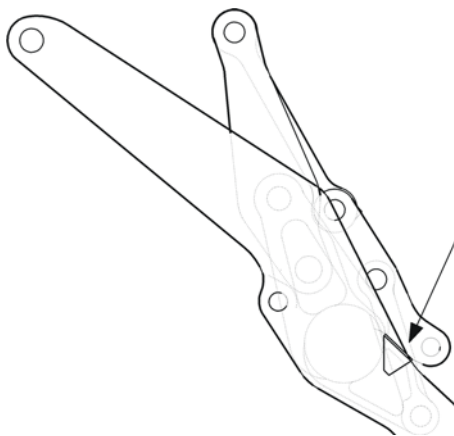


Figure 1

1. Wear plate

Action

In order to compensate for the wear on the B arm, a wear plate, which is to be attached to the B arm with one bolt, can be manufactured. See the following job description.

NOTE!

It is not permissible to weld on the B arm.

Required parts

Designation	Qty.	Part No.
Wear plate L90C, L90D, L120C, L120D	1	Manufacture plate acc. to Fig. 3
Bolt (M16x100) L90C, L90D, L120C, L120D	1	VOE968591
Lock nut (M16) L90C, L90D, L120C, L120D	1	VOE13967934
Wear plate L150C, L150D, L180C, L180D, L220D	2	Manufacture plate acc. to Fig. 3
Bolt (M16x100) L150C, L150D, L180C, L180D, L220D	2	VOE968591
Lock nut (M16) L150C, L150D, L180C, L180D, L220D	2	VOE13967934

NOTE!
The wear plate can be manufactured also for E, F and G generation wheel loaders with small changes due to lifting frame work updates.

<https://truckmanualshub.com/>

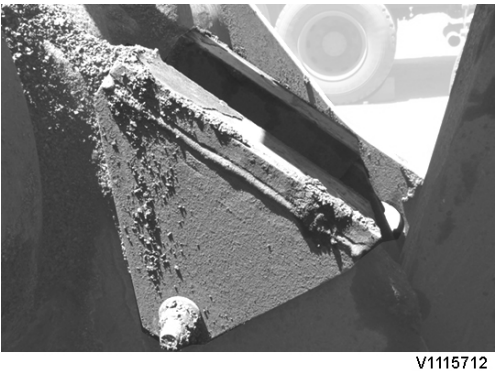


Figure 2
Wear plate on L180F
Work instruction

1.

Manufacture the wear plate in Hardox 440/XAR 400 according to Fig. 3.
2.

Use the plate as a template for drilling a hole in the B arm. The hole must have a Ø of 18 mm (0.709 in). On some machines the hole is there as standard.
3.

Install the wear plate and check the function.

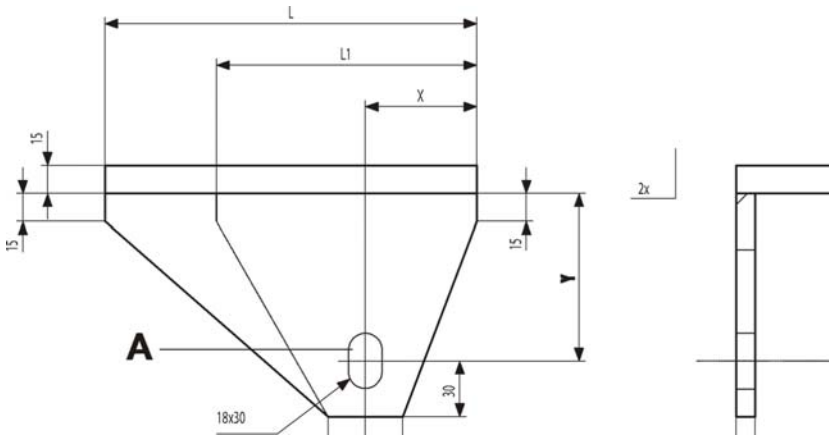


Figure 3

A. Use this hole as a template for drilling in the B arm

Machine	L	L1	B minimum	X	Y
L90C L90D	210	140	54	50	100
L120C L120D	255	255	53	100	100
L150C L150D	220	160	48	80	130
L180C L180D	220	220	48	80	130
L220D	220	220	53	110	150

NOTE!
The wear plate can be manufactured also for E, F and G generation wheel loaders with small changes due to lifting frame work updates.

Limp-home operation

<https://truckmanualshub.com/>

Op nbr

[930032 Nipple, 2 pcs. forward operation, 4 pcs reverse operation](#)
[11 666 037 Hose, 1 pc. forward operation, 2 pcs. reverse operation](#)

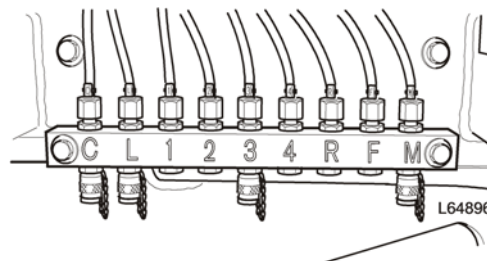


Figure 1
Pressure outlet

M Pressure outlet, main pressure
(equipped with quick-coupling)

WARNING

During limp-home operation, the gear will be engaged immediately when the engine is started. Apply the service brake when starting the engine.

Limp-home operation forward

1. Remove the N/D plug on the gear selector valve, [Invalid linktarget], and fit nipple having part no. 930032.

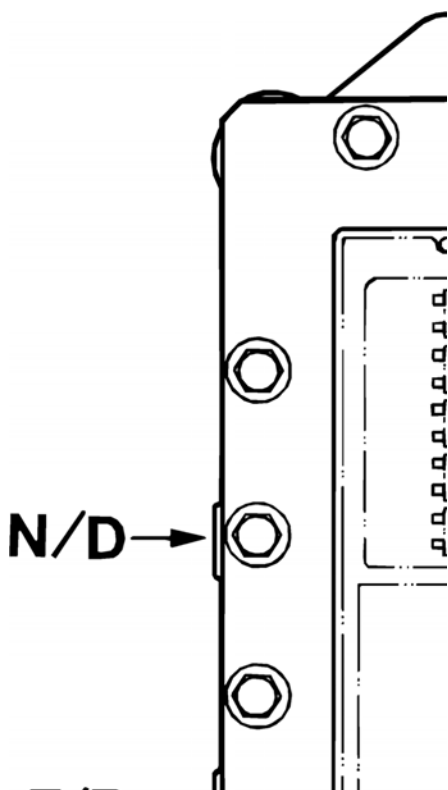


Figure 2
Gear selector valve

N/D Valve spool, neutral - drive

2. Connect hose 11 666 037 between the nipples.

3. Keep the gear selector in neutral, and start the engine. 3rd gear forward will now be engaged.
4. When limp-home operation has been completed, restore with pressure outlet and plugs.

Limp-home operation reverse

5. Remove the N/D and F/R plugs on the gear selector valve [Invalid linktarget], fit nipples having part no. 930032.

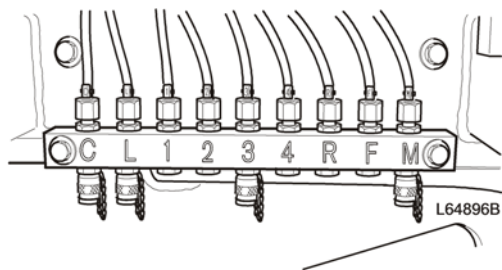


Figure 3
Pressure outlet

- 3 Pressure outlet, 3rd gear
(equipped with quick-coupling)

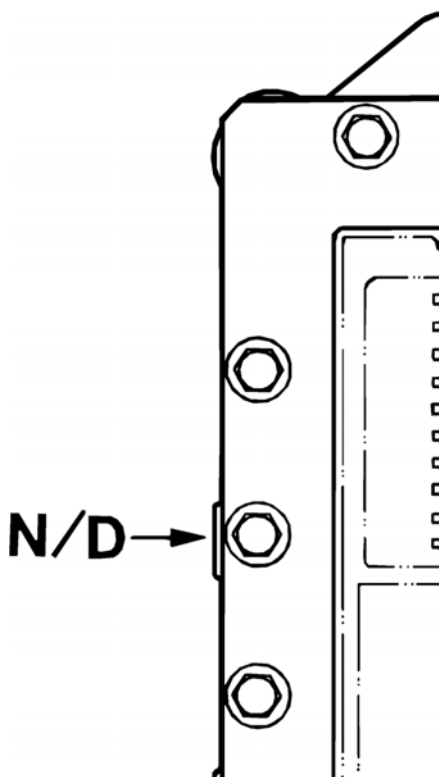


Figure 4
Gear selector valve

N/D	Valve spool, neutral - drive
F/R	Valve spool, forward - reverse

6. Connect hose 11 666 037 between the main pressure outlet on the measuring ramp and the N/D outlet on the gear selector valve. Connect the other hose between the pressure outlet for the 3rd gear's clutch on the measuring ramp and the F/R outlet on the gear selector valve.
7. Keep the gear selector in neutral and start the engine. 3rd gear reverse will now be engaged.
8. When limp-home operation has been completed, restore with plugs.

Limp-Home, by-passed V-ECU

<https://truckmanualshub.com/>

In the event of a V-ECU malfunction, the unit can be by-passed. The machine can then only be operated in second gear forward or reverse.

The by-pass is performed with separate cables hanging in the electrical distribution box with connectors marked TA and EM.

NOTE!

Operating with a by-passed V-ECU is only for the purpose of moving the machine to the nearest service location.

When the V-ECU is by-passed, the following functions will be present:

- The machine can only be operated in second gear forward or reverse.
- The parking brake can be applied and released.
- Engine preheating can be operated manually.
- Low brake pressure warning provided (warning lamp).
- The engine cooling fan will run at maximum speed (only on the L120D with hydraulically driven radiator fan).

NOTE!

If the machine has secondary steering it will be rendered inoperative.

By-passing V-ECU

- 1 Remove the upholstery from the rear cab wall.
- 2 Disconnect the wiring hanging loosely in the electrical distribution box, connectors marked TA and EM.
- 3 Unplug the regular wiring's TA connector from the sheet metal bracket (between the V-ECU and the circuit board)
- 4 Connect the regular wiring's TA connector to the loose wiring's TA connector.
- 5 Plug the loose wiring's EM connector into the circuit board socket marked EM.
- 6 Unplug all the connections from V-ECU: connectors EA, EB and EC.
- 7 It is now possible to move the machine with a by-passed V-ECU.

NOTE!

By-passed V-ECU is shown in wiring diagram 14.

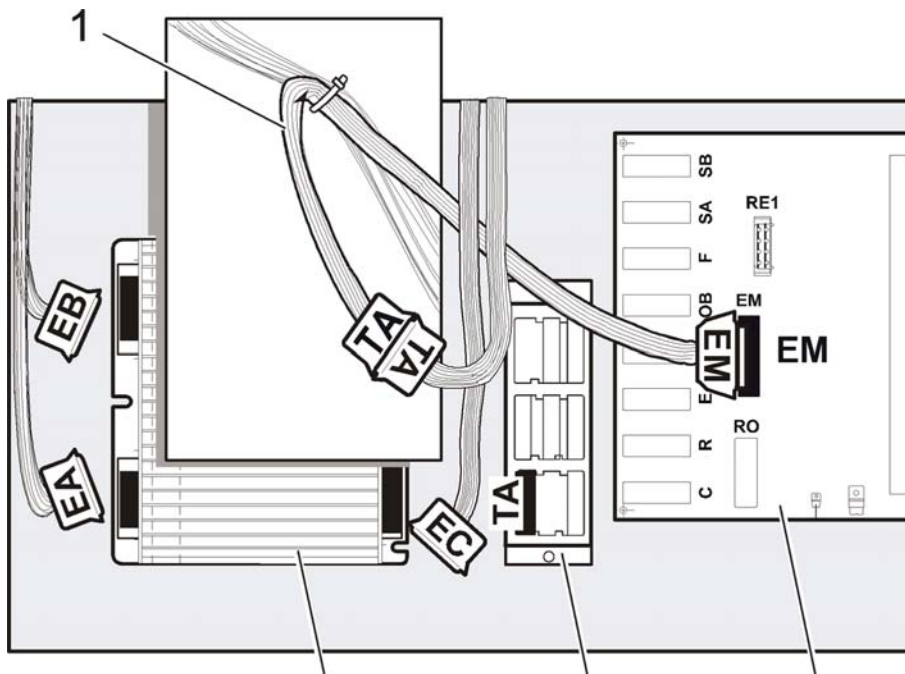


Figure 1
Electrical distribution box with by-passed V-ECU

1. The loose wiring connected to the regular wiring's connector marked TA and connected to EM on the circuit board
2. V-ECU with connectors EB, EA and EC unplugged
3. Sheet metal bracket with regular wiring's TA connector unplugged
4. Circuit board, with the loose wiring's EM connector plugged in

Re-engagement of V-ECU

- 1 After the machine has been moved and the necessary measures have been taken.
- 2 Unplug the loose wiring's EM connector from the circuit board.
- 3 Unplug the connectors marked TA.
- 4 Plug the regular wiring's TA connector back into the sheet metal bracket.
- 5 Plug the connectors into the loose wiring's connectors (marked TA and EM)
- 6 Plug in the connectors to V-ECU, EA, EB and EC.
- 7 Refit the upholstery on the rear cab wall.
- 8 The V-ECU is now re-connected.

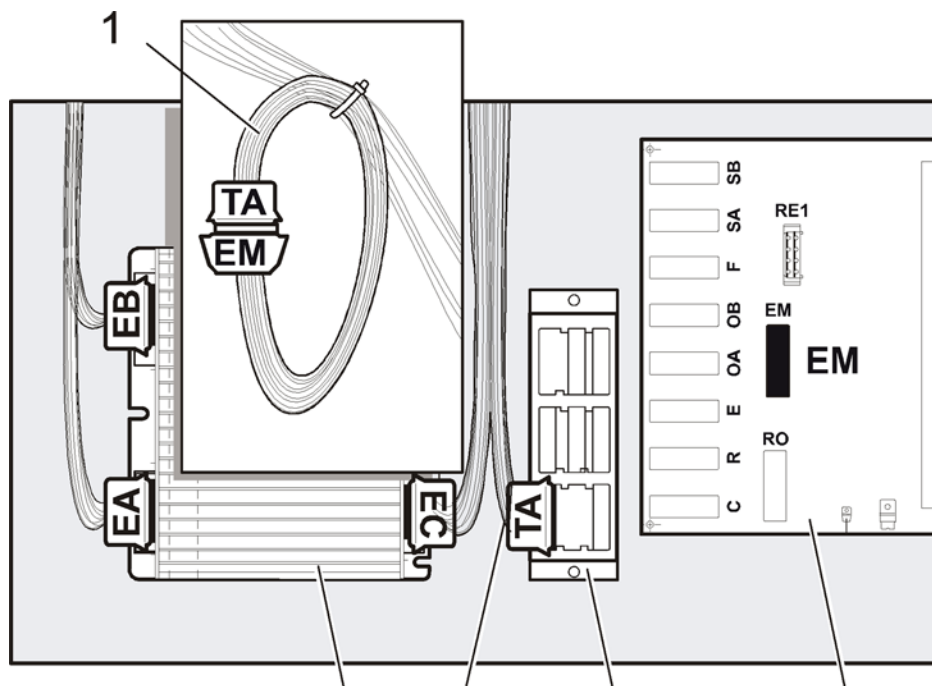


Figure 2
Electrical distribution box with V-ECU connected

1. Loosely hanging wiring in the electrical distribution box with connectors marked TA and EM
2. V-ECU
3. Regular wiring with TA connector
4. Sheet metal bracket
5. Circuit board

Lubrication system, TD63

<https://truckmanualshub.com/>

The lubrication system has three valves

A Overflow valve for oil filter The overflow valve opens if clogging of the filter(s) occurs and so ensures that oil continues to circulate.

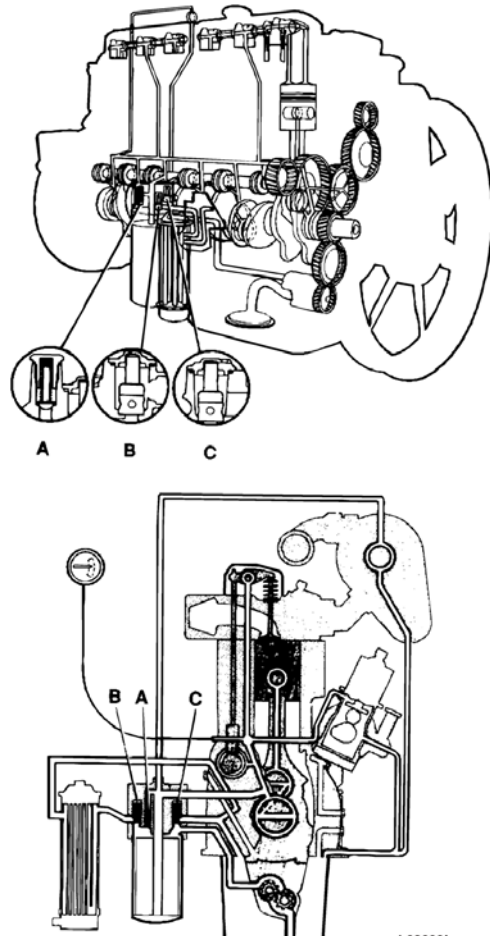


Figure 1

Lubricating oil system valves (without piston cooling), TD63

B Oil cooling valve This valve is also called a piston cooling valve when piston cooling nozzles are fitted. The valve controls the flow of oil to the oil cooler and, when fitted, to the piston cooling nozzles. The valve opens when engine rpm reaches just above idling speed and when the oil pressure increases. The oil then flows via an oil passage drilled in the cylinder block to the oil cooler and, if fitted, to the piston cooling nozzles. The valve shuts off the flow of oil at low engine rpm and all oil is then supplied to the lubrication system, ensuring the engine of good lubrication when starting and running at idling speed.

C Reducing valve The reducing valve opens when oil pressure is too high and directs the surplus oil back to the sump.

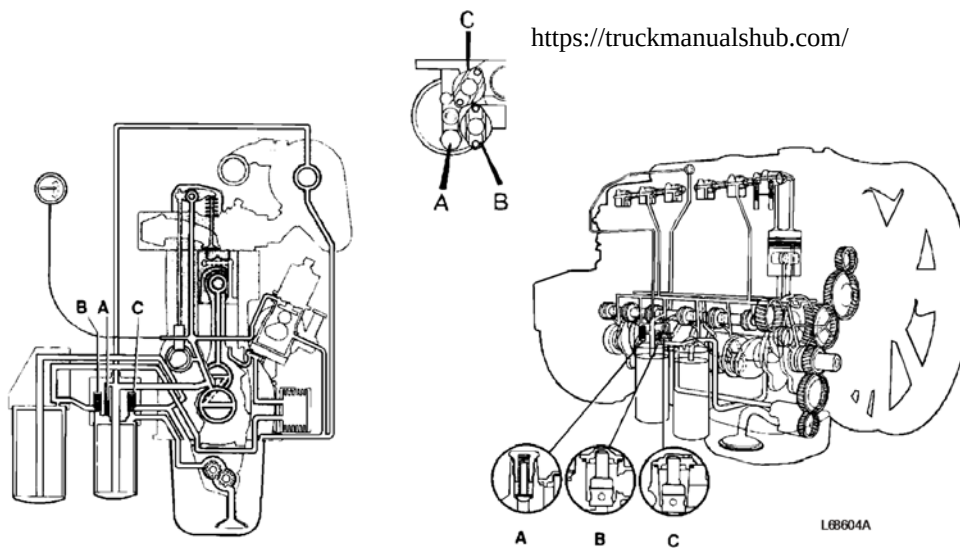


Figure 2

Lubrication system valves (with piston cooling), TD73 (outline diagram)

The oil filter is of full-flow type, which means that all oil is filtered before it continues to the lubricating points. The filter is mounted on the right-hand side of the cylinder block. The filter element consists of folded filter paper.

On TD73 there is also a part-flow filter for the lubricating oil.

Manual release of parking brake, L90D <http://truckmanualshub.com/>



Park the machine on a level surface. Fit blocks in front of and behind the wheels in order to prevent the machine from rolling.

Manufacturing location	Serial number
Arvika	17558
Ashville	64279
Pedeneiras	70549

1. Remove the cover (1).
2. To disable the parking brake, slacken the adjusting screw under the cover (1) two turns. This releases the parking brake.

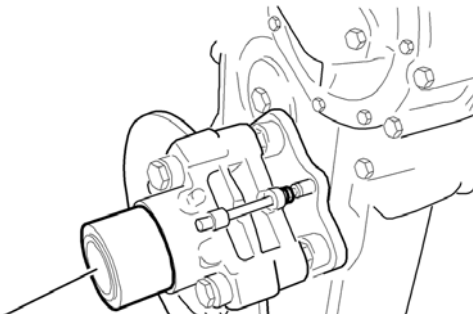


Figure 1
Releasing the parking brake, L90D, later version

1. cover

Manual release of parking brake, L90D <http://truckmanualshub.com/>

Block the wheels in order to prevent the machine from rolling.

If the parking brake cannot be released with the parking brake lever, release the parking brake manually as follows:

Release the parking brake by loosening the lock nut (1) and then turning the adjusting screw (2) counter-clockwise until the parking brake is released.

The machine can now be moved **but the parking brake is not functional**. The towed machine can only be braked by the towbar from the towing vehicle.

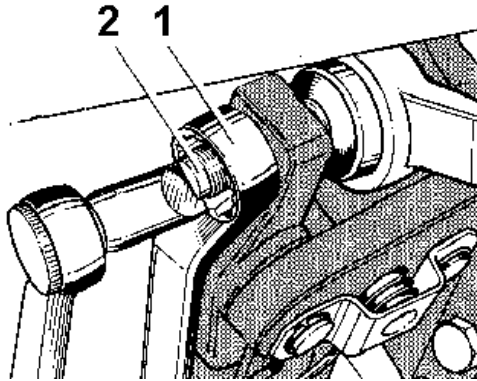


Figure 1
Releasing the parking brake

1. Lock nut
2. Adjusting screw

When restoring the parking brake, it is adjusted so that there is an approximate clearance of 0.25 mm (0.010 in) between the brake disc and the brake pads when the brake is released. The clearance between the brake disc and the brake pad can only be adjusted when the engine is running and the parking brake has been released with hydraulic pressure.

If the machine is left unattended after towing/recovering and without having restored the parking brake to working order, a notice must be attached to the steering wheel with the information that the parking brake has been released manually and that it is not working.

Manual release of parking brake, L120D <https://www.manualshub.com/>

Block the wheels to prevent the machine from rolling.

If the parking brake cannot be released with the parking brake lever, release the parking brake manually as follows:

WARNING

Hot oil can cause burns!

Release the parking brake by removing the three plugs on the front of the transmission and replace the plugs with M10 x 90 mm bolts that are available in the machine's tool kit. Replace the plugs one at a time and screw the bolts in by hand.

NOTE!

Oil will drain until the plug has been replaced. Thus, plugs should be replaced one at a time.

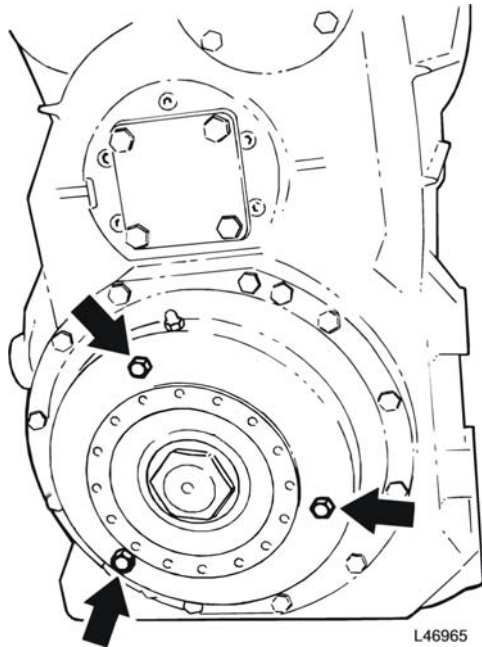


Figure 1
Releasing parking brake, L120D

When all plugs are replaced, the bolts should be alternately screwed incompletely to the bottom, until the parking brake is released.

The machine can now be moved **but the parking brake is not functional**. The towed machine can only be braked by the towbar from the towing vehicle.

The parking brake is restored by alternately unscrewing the bolts and refitting the plugs.

If the machine is left unattended after towing/recovering and without having restored the parking brake to working order, a notice must be attached to the steering wheel with the information that the parking brake has been released manually and that it is not working.

Middle instrument panel with warning lamps

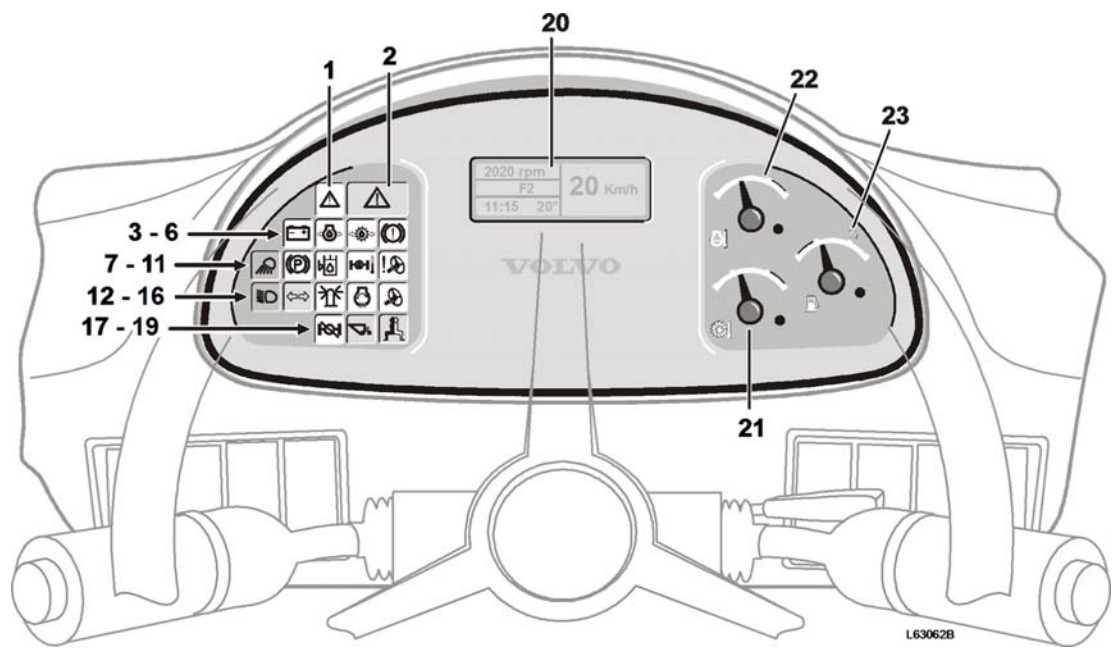


Figure 1
Middle instrument panel (control lamps, warning lamps, display panel, gauges)

- | | | | |
|----|--|----|--|
| 1 | Amber central warning lamp | 12 | Main beams (blue) |
| 2 | Red central warning lamp | 13 | Direction indicators (green) |
| 3 | Charging, battery (red) | 14 | Rotating beacon (amber) |
| 4 | Low engine oil pressure (red) | 15 | Preheating of engine activated (amber) |
| 5 | Low transmission oil pressure (red) | 16 | Secondary steering engaged (amber) |
| 6 | Low brake pressure or
brake pressure charging malfunction (red) | 17 | Differential lock engaged (amber) |
| 7 | Work lights (amber) | 18 | Boom suspension system activated (green) |
| 8 | Parking brake applied (red) | 19 | Lever steering activated (green) |
| 9 | Function not present | 20 | Display panel |
| 10 | High axle oil temperature (red) | 21 | Transmission oil temperature (gauge + warning lamp high temperature) |
| 11 | Primary steering system malfunction (red) | 22 | Coolant temperature engine (gauge + warning lamp high temperature) |
| | | 23 | Fuel level (gauge + warning lamp low level) |

Functions with warning lamps

1 Amber central warning lamp

Amber central warning lamp for Operator Information flashes to indicate that a function is activated/deactivated or that some function needs to be kept under observation (such as a clogged filter, etc.).

At the same time, information is shown on the display panel.

2 Red central warning lamp

Red central warning lamp flashes and a warning appears on the display panel at the same time. If the function has a warning lamp, this comes on.

If a directional gear is engaged (Forward or Reverse), the buzzer is also activated.

Buzzer (reinforces central warning)

The buzzer sounds and the red central warning lamp flashes simultaneously if there is a malfunction in any of the following functions:

- Serious engine malfunction
- Primary steering system malfunction (low steering pressure)

The buzzer sounds and the red central warning lamp flashes simultaneously if there is a malfunction in any of the following functions and a directional gear (Forward or Reverse) is engaged:

1. Low engine oil pressure
2. Low transmission oil pressure
3. Low brake pressure
4. Parking brake (applied during simultaneous operation)
5. High hydraulic oil temperature (L120D with hydraulically driven radiator fan)
6. High axle oil temperature, front and rear axles
7. High transmission oil temperature
8. High engine coolant temperature
9. Brake pressure charging malfunction

<https://truckmanualshub.com/>

Neutral position, HT205.

<https://truckmanualshub.com/>

The pumps P, [Invalid linktarget] suck oil from the tank N through strainer O. The flow from pump element P2 passes through filter S and continues to pressure-limiting valve A which is integrated with the gear selector valve in the form of a spool.

The oil passes from the pressure-limiting valve to the various selector spools. All selector spools are in the rest position.

Spool N/D (neutral and drive spool) blocks the oil to spool F/R (forward and reverse spool). Spool H/L (high and low spool) admits the oil to spool 3/4 (controls 3rd and 4th gears) which in this position routes the oil to 3rd gear in clutch 3 which is thus engaged. Since the neutral and drive spool is in the rest position and does not admit any oil to the forward and reverse spool, no driving can take place. Spool 1/2 (controls 1st and 2nd gears) receives no oil from spool H/L in this position.

When main pressure has been built up the spool in valve A moves to the open position and allows oil to pass through. This flow joins the flow from pump element P1 and passes through line X with safety valve B, which protects the torque converter, to torque converter M and through it to the cooling circuit which controls the pressure in the torque converter.

After the torque converter the oil passes through the oil cooler. The subsequently cooled oil is used for cooling and lubricating all bearings and clutches. Valve C controls lubricating oil pressure by directing surplus oil back to the suction side of the pump.

Flow diagram, neutral position, [Invalid linktarget]

A	Pressure limiting valve, clutch pressure
B	Safety valve, torque converter
C	Pressure limiting valve, lubricating oil pressure
M	Torque converter
N	Sump
O	Strainer
S	Filter
T	Oil cooler
1 – 4, F, R	Disc clutches
N/D	Selector spool, neutral and drive
F/R	Selector spool, forward and reverse
H/L	Selector spool, high and low
1/2	Selector spool, 1st and 2nd
3/4	Selector spool, 3rd and 4th
P1, P2	Pumps
R1	Damping valve, forward clutch
R2	Damping valve, reverse clutch
S1 – S5	Solenoids

Colour designation

Red = Clutch pressure

Blue = Torque converter pressure

Yellow = Lubricating oil pressure

Green = Barometric pressure

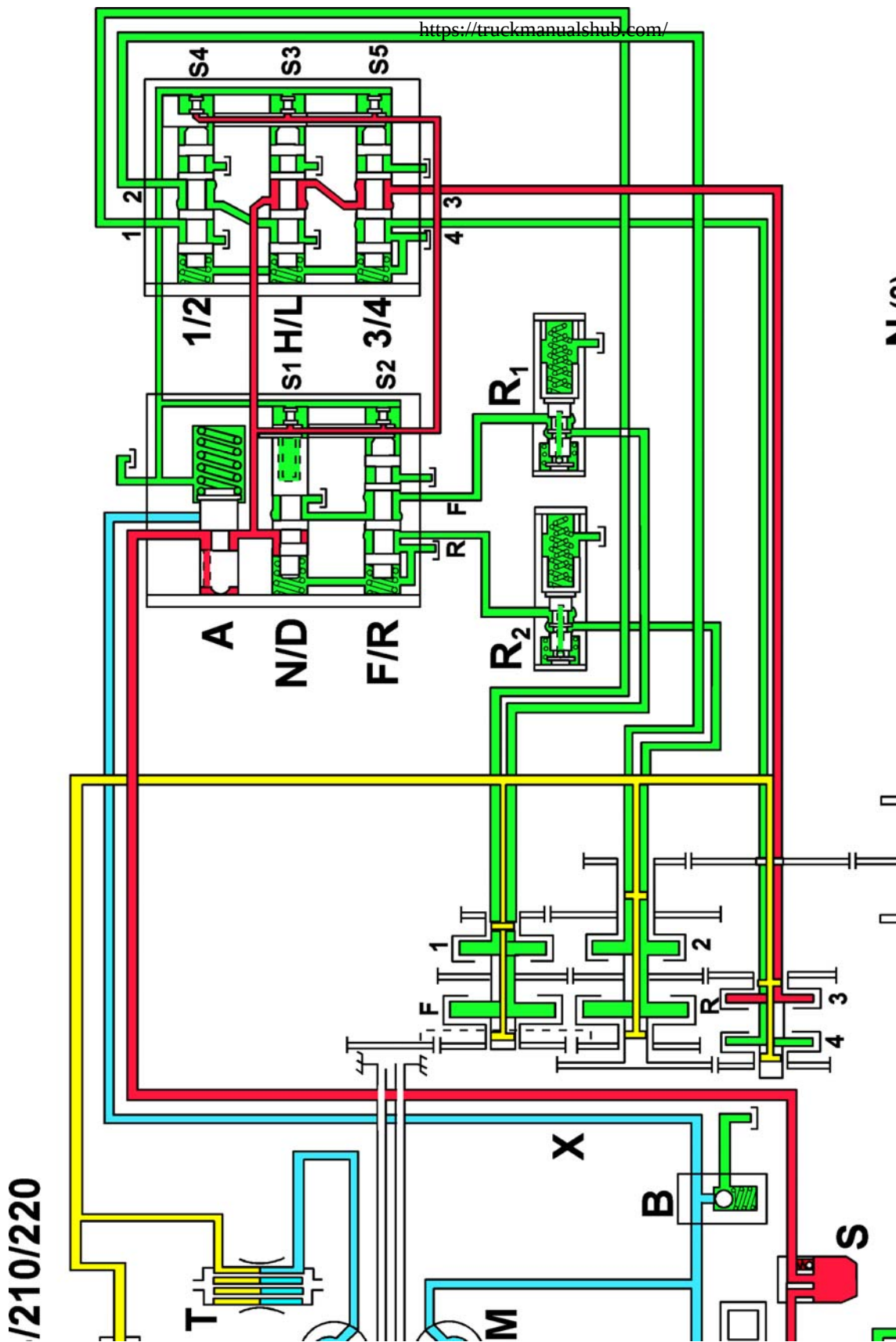


Figure 1
Outline diagram, neutral position

Flow diagram, gear 1F engaged, [Invalid linktarget]

- A Pressure limiting valve, clutch pressure
- B Safety valve, torque converter
- C Pressure limiting valve, lubricating oil pressure
- M Torque converter

N	Sump
O	Strainer
S	Filter
T	Oil cooler
1 – 4, F, R	Disc clutches
N/D	Selector spool, neutral and drive
F/R	Selector spool, forward and reverse
H/L	Selector spool, high and low
1/2	Selector spool, 1st and 2nd
3/4	Selector spool, 3rd and 4th
P1, P2	Pumps
R1	Damping valve, forward clutch
R2	Damping valve, reverse clutch
S1 – S5	Solenoids

Colour designation
Red = Clutch pressure
Blue = Torque converter pressure
Yellow = Lubricating oil pressure
Green = Barometric pressure

VÄXEL GEAR	SPOLE/COIL				
	S1	S2	S3	S4	S5
1F	●		●	●	
2F	●		●		
3F	●				
4F	●				●
N					
1B	●	●	●	●	
2B	●	●	●		
3B	●	●			
4B	●	●			●

Figure 2
Gearshifting diagram

-
- The diagram illustrates the hydraulic circuit for a truck's transmission and auxiliary systems. It features a pump (S) at the bottom right, which feeds into a control valve (X). The control valve has four positions: Forward (F), Reverse (R), Neutral (N/D), and a fourth position (A). The Forward and Reverse positions are further divided into sub-positions (1, 2, 3, 4). The Neutral position is labeled N/D. The fourth position (A) is labeled A. The control valve is connected to a selector valve (Y) at the top. The selector valve has five positions: 1, 2, 3, 4, and 5. The selector valve is connected to various solenoid valves (S1, S2, S3, S4, S5) and actuators (R1, R2, B). The actuators are connected to the hydraulic lines. The diagram also shows the flow paths for Forward (F), Reverse (R), and Neutral (N/D) operations. The flow is color-coded: red for pressure, green for return, and blue for pilot lines. The diagram is a detailed schematic of a truck's hydraulic system, showing the flow of fluid through various components including the pump, valves, and actuators.

S	Filter	https://truckmanualshub.com/
T	Oil cooler	
1 – 4, F, R	Disc clutches	
N/D	Selector spool, neutral and drive	
F/R	Selector spool, forward and reverse	
H/L	Selector spool, high and low	
1/2	Selector spool, 1st and 2nd	
3/4	Selector spool, 3rd and 4th	
P	Pump	
R1	Damping valve, forward clutch	
R2	Damping valve, reverse clutch	
S1 – S5	Solenoids	

Colour designation

Red = Clutch pressure

Blue = Torque converter pressure

Yellow = Lubricating oil pressure

Green = Barometric pressure

VÄXEL GEAR	SPOLE/COIL				
	S1	S2	S3	S4	S5
1F	●		●	●	
2F	●		●		
3F	●				
4F	●				●
N					
1B	●	●	●	●	
2B	●	●	●		
3B	●	●			
4B	●	●			●

Figure 4
Gearshifting diagram

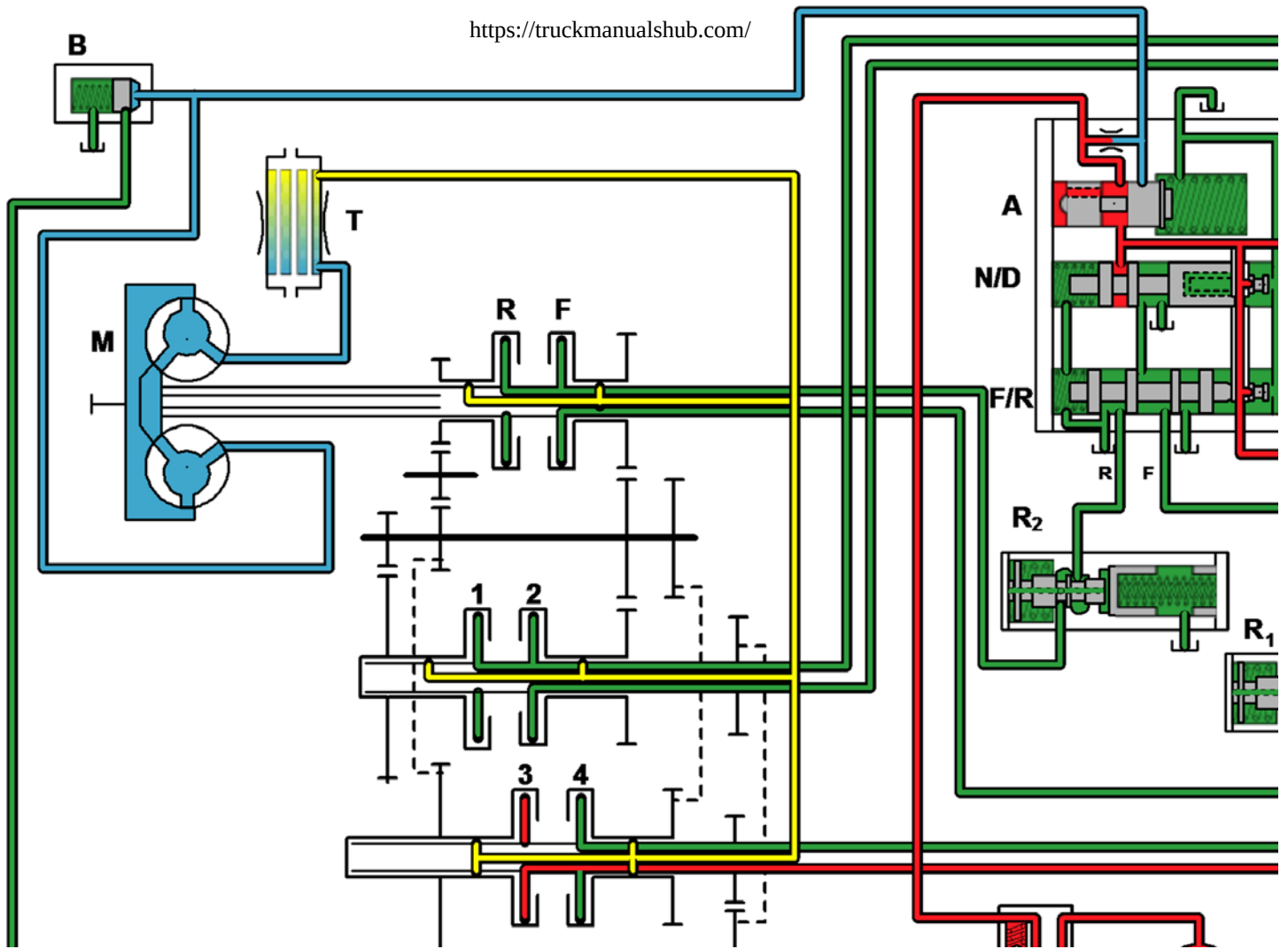


Figure 5
Outline diagram, flow diagram, HT 131, neutral
Gear selector valve, neutral

N(3)

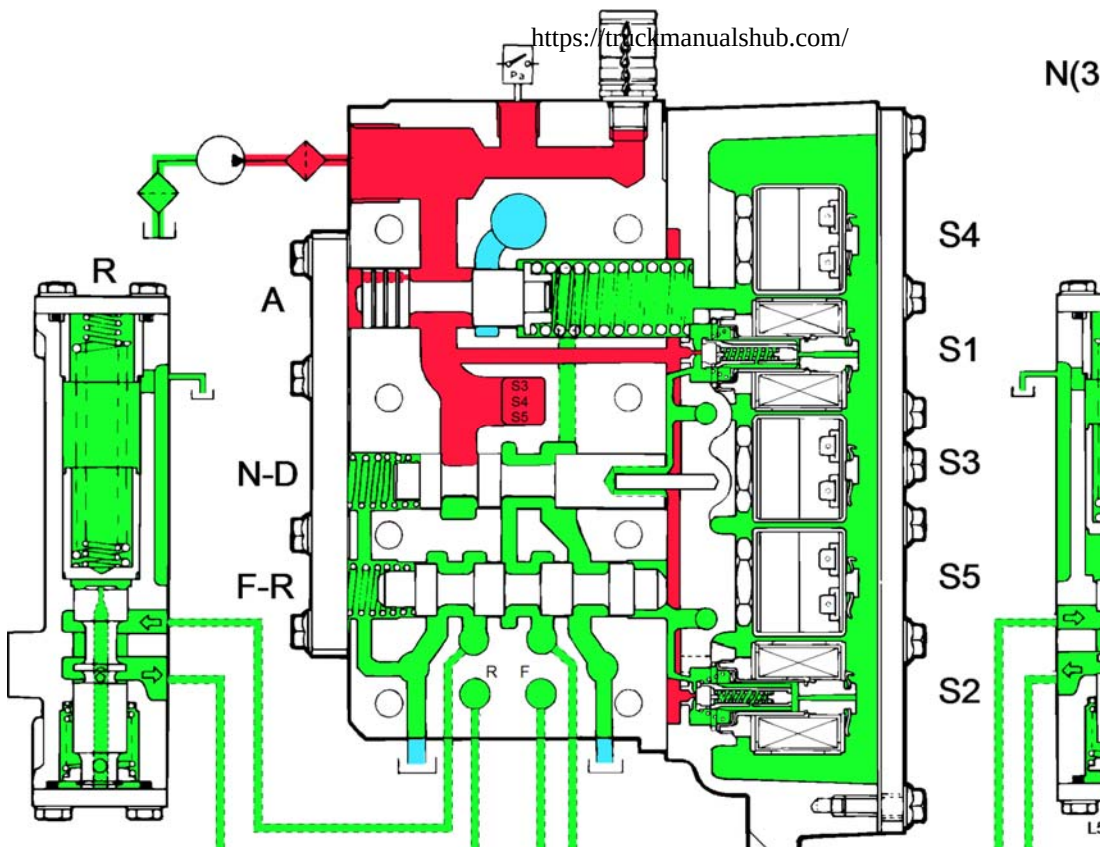


Figure 6
Gear selector valve. The cross-section shows the spools for the directional gears with damping valves.

N – D = Neutral and Drive spool

F – R = Forward and Reverse spool

S1 – S5 = Solenoids

R = Pressure oil outlet, reverse

F = Pressure oil outlet, forward

A = Pressure-limiting valve, clutch pressure

Colour designation

Red = Clutch pressure

Green = Barometric pressure

Blue = Torque converter pressure

Gear selector valve, engaged forward clutch

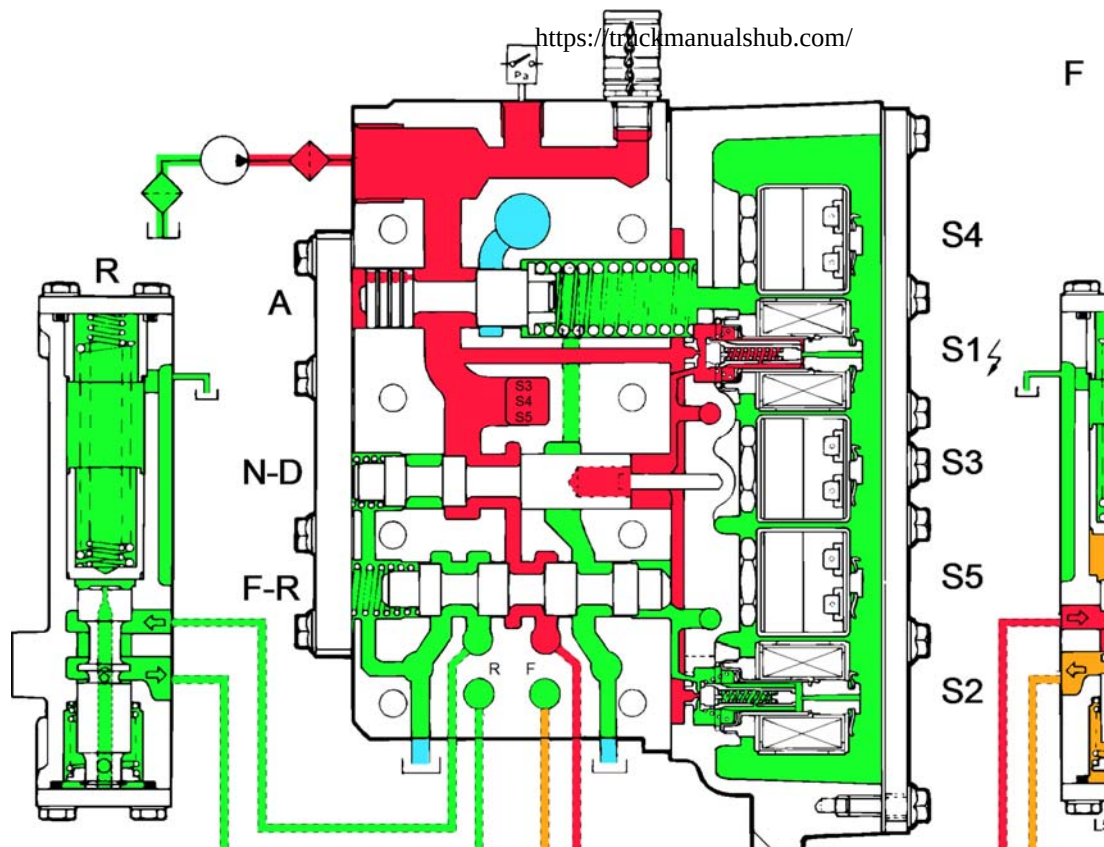


Figure 7
Gear selector valve. The cross-section shows the spools for the directional gears with damping valves.

N – D = Neutral and Drive spool
F – R = Forward and Reverse spool
S1 – S5 = Solenoids
R = Pressure oil outlet, reverse
F = Pressure oil outlet, forward
A = Pressure-limiting valve, clutch pressure

Colour designation

Red = Clutch pressure
Green = Barometric pressure
Orange = Clutch pressure build-up
Blue = Torque converter pressure



Figure 8
Gear selector valve

N/D Valve spool, neutral - drive
F/R Valve spool, forward - reverse



Figure 9

Gear selector valve cover with gearshifting diagram and cable colour coding.

The gearshifting diagram shows the solenoids that are activated for each gear selected. For example, 1st Forward activates S1, S3 and S4.

Solenoid	Activated	Not activated
S1	Drive	Neutral
S2	Reverse	Forward
S3	Low (1st - 2nd)	High (3rd - 4th)
S4	1st	2nd
S5	4th	3rd

Language Code GB	Product WLO	Group 321	https://truckmanualshub.com/	No. 26	Version 1	Date 12/13/2013
Applies to EL70 Volvo BM, L50 Volvo BM, L50B Volvo BM, L50C Volvo, L50D Volvo, L70 Volvo BM, L70B Volvo BM, L70C Volvo, L70D Volvo, L90 Volvo BM, L90B Volvo BM, L120C Volvo, L120D Volvo, L150 Volvo BM, L150C Volvo, L150D Volvo, L180 HL Volvo BM, L180 Volvo BM, L180C HL Volvo BM, L180C Volvo, L180D HL Volvo, L180D Volvo, L220D Volvo						

New alternator

NOTE!

Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

NOTE!

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.

Cause

To fulfill Volvo's quality demands, a new alternator has been developed.

Action

A new alternator with an installation kit is introduced for machines listed below. The electric connection of the new alternator differs from the old connection, but is the same for all machine models.

Images of different alternator installations with new adapter brackets are found at the end of this Service bulletin.

Model	New alternator	Alternator kit	Old alternator	Engine
L50, EL70, L70	VOE17204355	VOE17411589	VOE873757	TD45B
L70B, L70C, L70D, L90, L90B, L120, L120B		VOE17411591		TD61, TD63, TD71
L90C, L90D, L120C, L120D		VOE17411592		TD63, TD73
L150, L150C		VOE17411594		TD102, TD103
L150D		VOE17411595		TD103
L180, L180C, L180HL, L180CHL		VOE17411597		TD122
L180D, L180DHL		VOE17411622		TD122
L220D		VOE17411634		TD122
L50B, L50C		VOE17411635		TD40
L50D		VOE17411636		TD40

Electrical connection for the alternator

Below is the wiring diagram for the new alternator.

Op nbr

1. In addition to the already existing wires, a key-dependant 15 connection is required. Locate, by using a test light or a multimeter, a suitable key-dependant 15 connection in the machine.
2. Connect the long blue/green cable in the adapter harness.
3. After installation of the alternator, perform a charging test according to instructions in Service bulletin 321 WLO 25K.

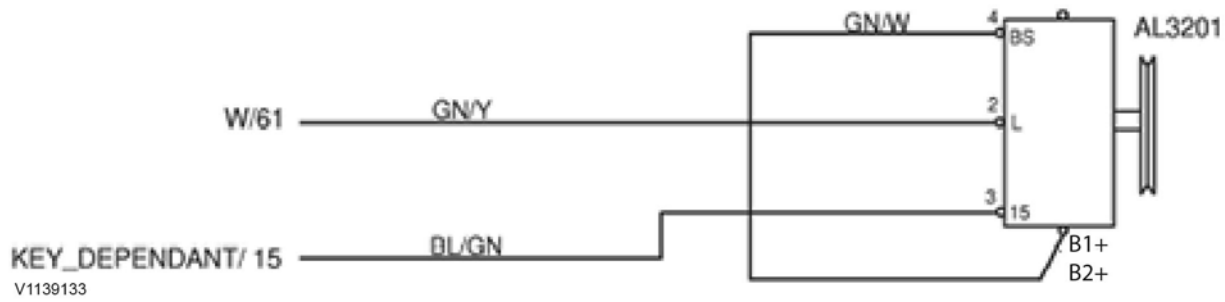


Figure 1
Wiring diagram

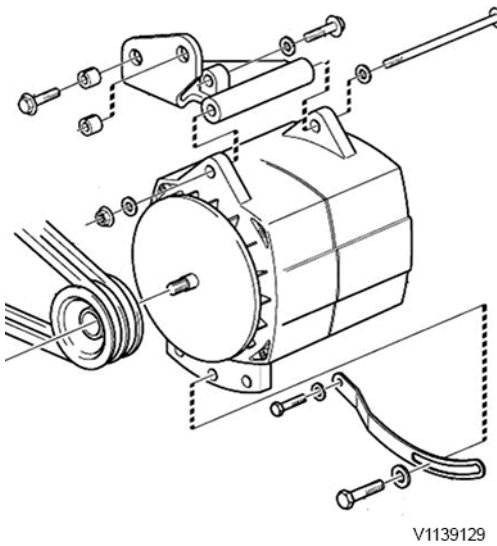


Figure 2
L70B-D, L90A-D, L120A-D

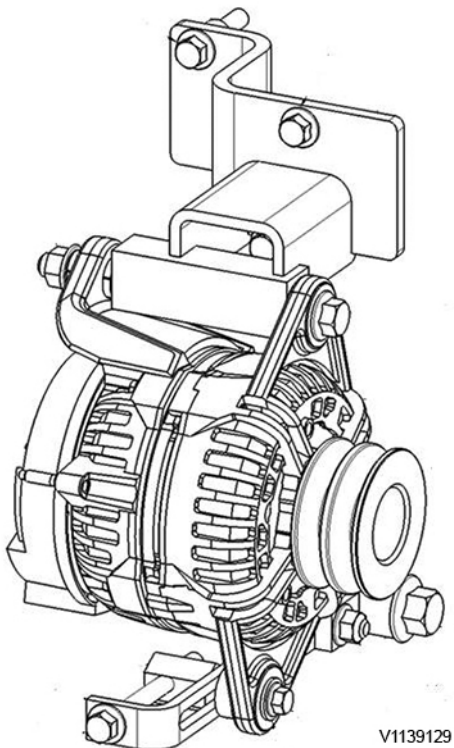


Figure 3

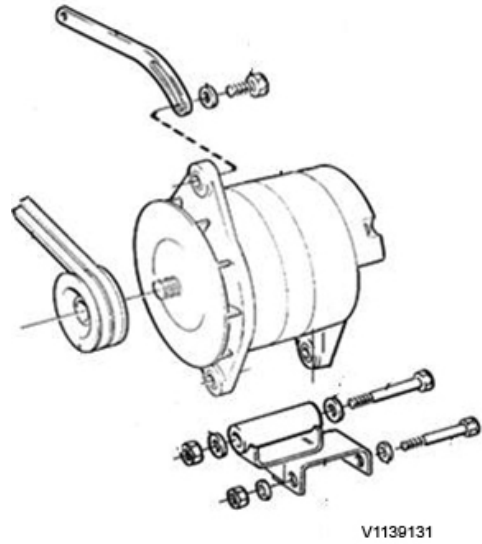


Figure 4
L70A, EL70A, L50A

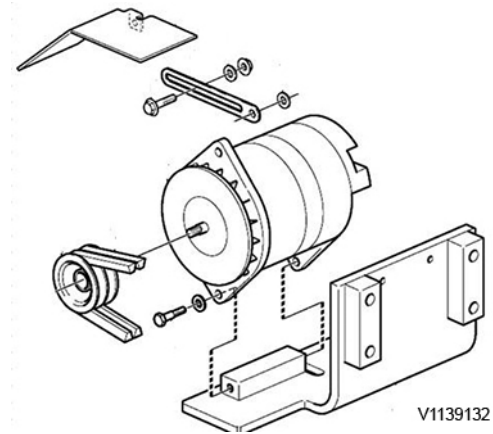


Figure 5
L150A-D, L180A-D, L220D

Language Code GB	Product WLO	Group 461	https://truckmanualshub.com/	No. 21	Version 1	Date 03/08/2002
Applies to L50D Volvo, L70D Volvo, L90D Volvo, L120D Volvo, L150D Volvo, L180D HL Volvo, L180D Volvo, L220D Volvo						

New differential lock



WARNING

Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This SB is to be considered as a technical information and comprises normal warranties within the rules for the same.

New type differential lock control on AWB axles

With effect from start of production of the D-type wheel loaders, a new type of differential lock control has been introduced. The new type has a simplified adjusting method and minimises the risk of internal leakage to the axle housing.

Working instructions

1. When adjusting the differential lock the dog clutches should be placed tooth against tooth.
2. The control arm piston should protrude 3 mm (0.12 in) above the axle housing face, see item 1 in Fig. 1.
3. Lock the screw, see Fig. 1.

NOTE!

To be able to keep the control arm piston at the measurement of 3 mm (0.12 in) during the adjustment procedure, there is a tool with part No. 9993806 available.

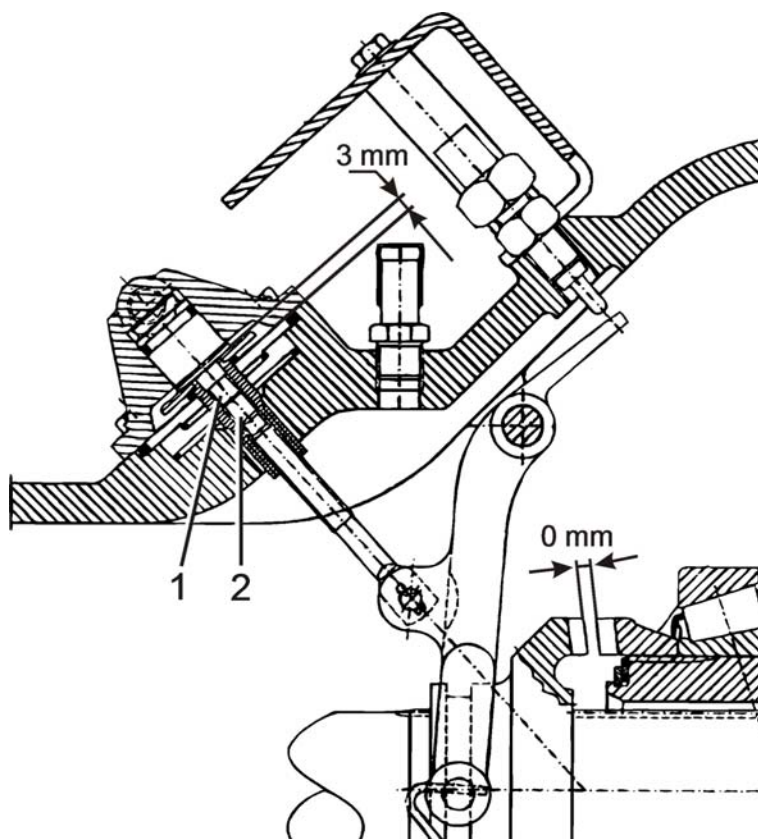


Figure 1

1. Piston
2. Lock screw

Language Code GB	Product WLO	Group 252	https://truckmanualshub.com/	No. 20	Version 3	Date 05/01/2001
Applies to L90D OR Volvo, L90D Volvo, L120D Volvo, L150D Volvo, L180D HL Volvo, L180D Volvo, L220D Volvo, L330D Volvo						

New muffler mounting



WARNING

Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

In order to improve mounting of the muffler, a new type of mounting has been introduced in production from and incl. the following serial numbers:

Machine	Serial no.
L90D	17226- (ARV)
L90D	64083- (ASH)
L90D	70523- (PED)
L90D Open ROPS	70523- (PED)
L120D	14284- (ARV)
L120D	63033- (ASH)
L120D	70515- (PED)
L150D	5197- (ARV)
L150D	62545- (ASH)
L180D	4173- (ARV)
L180D	62032- (ASH)
L180D High Lift	4173- (ARV)
L220D	1502- (ARV)
L330D	61055- (ASH)

Spare parts

Only the new version of the muffler bracket will be available as a spare part, however, only as an included part and not as a complete unit.

Designation	Additional Part no.	Quantity	Discontinued Part no.
Rubber cushion	11110276	3	9958348
Bracket	11105301	2	-
Washer	13960145	2	-
Washer	1130930	10	-
Nut	13971099	6	13971096
Bolt	13946817	4	-

Service

This SB should be regarded as technical information and is covered by normal warranties, according to governing regulations for warranties.

For L220D: Se work number 202 in Update 2000.

Only the above parts will be available as spare parts. When repairing C-generation machines, order parts from respective spare parts department.

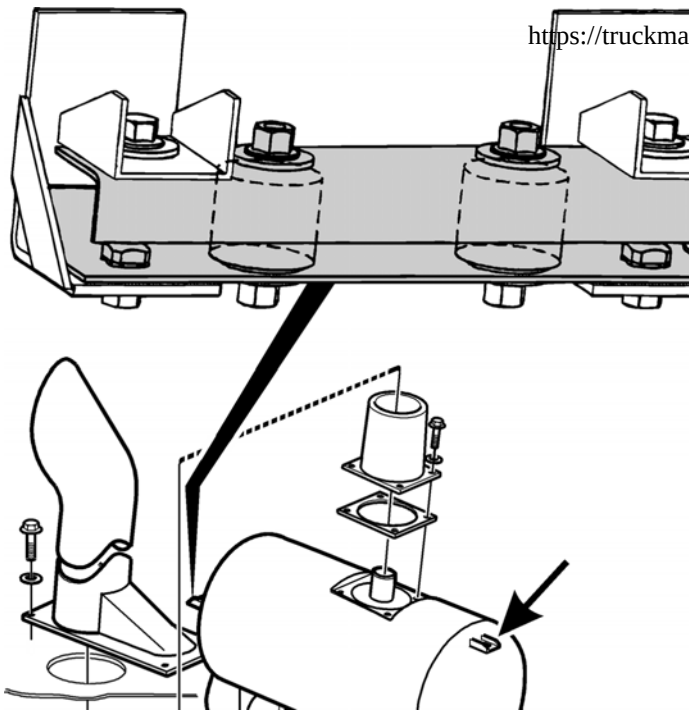


Figure 1
Muffler mounting

Language Code GB	Product WLO	Group 372	https://truckmanualshub.com/	No. 5	Version 1	Date 12/05/2001
Applies to L50D Volvo, L70D Volvo, L90D Volvo, L120D Volvo, L150D Volvo, L180D Volvo, L220D Volvo, L330D Volvo						

New relays



Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This SB is to be considered as a technical information and comprises normal warranties within the rules for the same.

Metal relay in production

We have previously notified you that RE11 should be replaced with a metal-encased relay with a quenching diode, part No. 4786690, in order to avoid damage to the V-ECU and the I-ECU (see L-372-WLO 4 R dated 2001-06).

With effect from the following serial numbers, the metal-encased relay has been introduced in the production:

Machine	W.e.fr. serial No.
L50D	13362– (ESK)
L70D	17960– (ESK)
L90D	17491– (ARV), 64198– (ASH)
L120D	14541– (ARV), 63110– (ASH)
L150D	5371– (ARV), 62540– (ASH)
L180D	4312– (ARV), 62025– (ASH)
L180D High Lift	4312– (ARV), 62025– (ARV)
L220D	1667– (ARV)
L330E	61051– (ASH)

Circuit board with improved quality

With effect from the following serial numbers, a new circuit board has been introduced, and because of this, the plastic relay has been re-introduced in production, see Table 2. Please also make a note of this in the Parts Catalogue.

Machine	W.e.fr. serial No.	W.e.fr. cab No. (ASH)
L50D	13580– (ESK)	-
L70D	18570– (ESK)	-
L90D	17711– (ARV)	3416–
L120D	14747– (ARV)	3416
L150D	5500– (ARV)	2313–
L180D	4447– (ARV)	2313–
L180D High Lift	4447– (ARV)	2313–
L220E	2001– (ARV)	-
L330D	61125– (ASH)	

The fuse FU18 has been changed from 10 A to 20 A on the new circuit board and a quenching diode DI32 for relay RE11 has been installed, see Fig. 1. These measures have been taken in order to avoid problems with the V-ECU and I-ECU. The new circuit board replaces the earlier one:

Designation	New part No.	Discontinued part No.
Circuit board	11170013	11040669

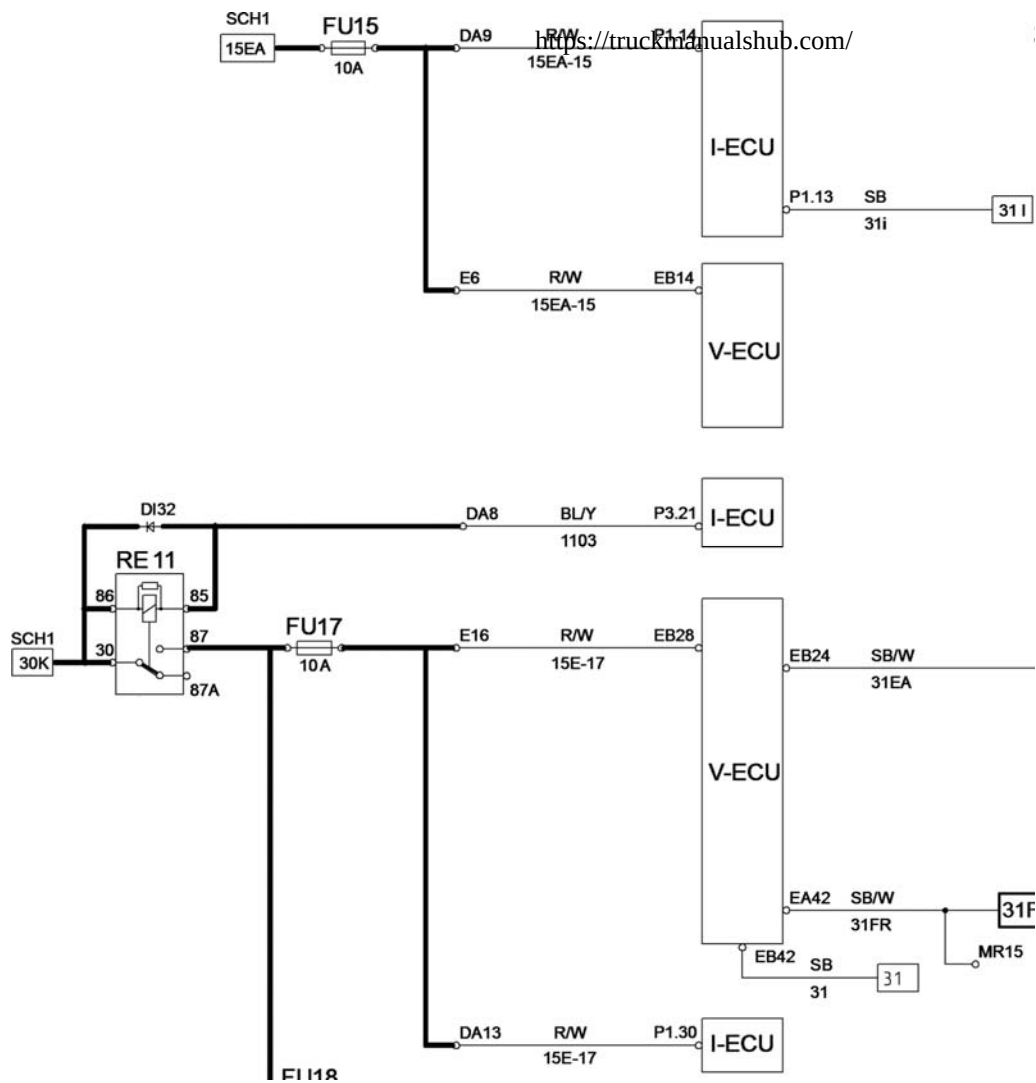


Figure 1

Language Code GB	Product ART/GRD/WLO	Group 380	https://truckmanualshub.com/	No. 29	Version 3	Date 12/22/2010
Applies to A20C Volvo, A25C 4x4 Volvo, A25C Volvo, A25D 4x4 Volvo, A25D Volvo, A25E 4x4 Volvo, A25E Volvo, A30C Volvo, A30D Volvo, A30E Volvo, A35C Volvo, A35D Volvo, A35E FS Volvo, A35E Volvo, A40 Volvo, A40D Volvo, A40E FS Volvo, A40E Volvo, T450D Volvo, G710B Volvo, G720B Volvo, G726B Volvo, G730B Volvo, G740B Volvo, G746B Volvo, G780B Volvo, G930 Volvo, G940 Volvo, G946 Volvo, G960 Volvo, G970 Volvo, G976 Volvo, G990 Volvo, L50D Volvo, L50E Volvo, L60E Volvo, L70C Volvo, L70D Volvo, L70E Volvo, L90C Volvo, L90D Volvo, L90E Volvo, L110E Volvo, L120C Volvo, L120D Volvo, L120E Volvo, L150C Volvo, L150D Volvo, L150E Volvo, L180C Volvo, L180D Volvo, L180E Volvo, L220D Volvo, L220E Volvo, L330C Volvo, L330D Volvo, L330E Volvo						

New starter switch



WARNING

Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.

Cause

There have been failures due to inadequate mechanical connection between ignition key lock and contact part.

(missing infotext)

Improved starter switch introduced in production from Serial No. according to table below.

New parts replaces discontinued parts on all models affected, see header in this Service bulletin.

ART models

Models	Ser. No. BRA	Ser. No. PED
A25E	13826–	73289–
A30E	12876–	72606–
A35E, A35E FS	11009–	N/A
A40E, A40E FS	13047–	N/A

GRD models

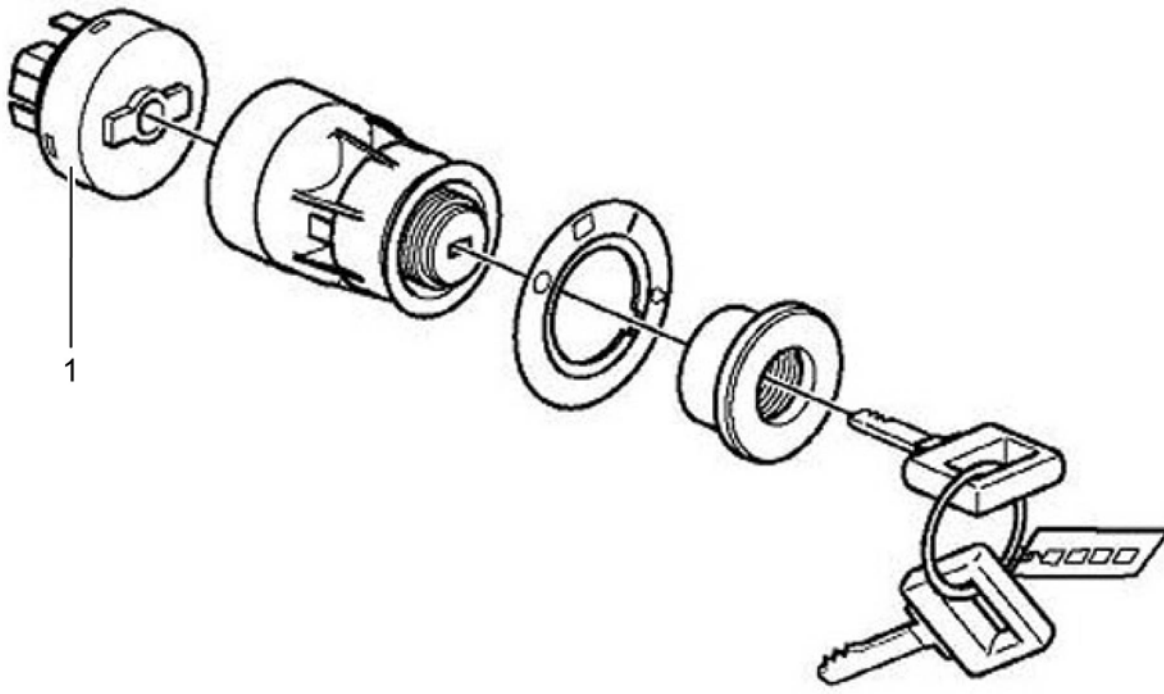
Models	Ser. No. SHP	Ser. No. PED
G930	525028–	501706–
G940	525028–	502821–
G946	525028–	504016–
G960	525028–	505105–
G970	525028–	506005–
G976	525028–	507005–
G990	525028–	508031–

Designation	New Part No.	Discontinued Part No.
Starter switch ^(a)	VOE15082289	VOE11039211
Starter switch (green key)[T1] ⓘ	VOE15082295	VOE11039220
Switch contact[T2] ⓘ	VOE15082297	VOE1626372
Lock kit[T3] ⓘ	VOE15082289	VOE11006988

[T1] See fig 1, complete

[T2] See pos 1 in Fig 1 below

[T3] Including starter switch and door lock cylinder



V1078520

Figure 1
Starter switch

1. Switch contact

Language Code GB	Product ART/BHL/CEX/ COA/COS/CWL/ EXC/GRD/MET/ MEW/PAT/PAW/ WLO	Group 000	https://truckmanualshub.com/	No. 313	Version 2	Date 05/29/2013
Applies to Backhoe Loaders, Compact Excavators, Asphalt Compactors, Soil Compactors, Tracked Milling Equipment, Wheeled Milling Equipment, Tracked Pavers, Wheeled Pavers, Articulated Haulers, Compact Wheel Loaders, Excavators, Motor Graders, Wheel Loaders						

New TechTool/VCADS Pro interface

NOTE!
Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

Cause and action

A new interface for TechTool/VCADS Pro is introduced. Two kits are available, but each part included in the kits can be ordered as a single part, see table on the next page.

The kits are also available as special tools with the same numbers as the kits; 17279144 and 17279159.



Figure 1

Kit, VOE17279144

- A. Tool (Interface), VOE88890300
- B. Cable, VOE88890305
- C. Cable, VOE88890306



Figure 2

Kit, VOE17279159

- A. Tool (Interface), VOE88890300
- B. Cable, VOE88890305
- C. Cable, VOE88890306
- D. Adapter, VOE9993832

Required parts

Designation	Qty.	New Part No.	Discontinued Part No.
Kit, including:[T1] ⓘ	1	VOE17279144	VOE11716274
Tool (Interface)	1	VOE88890300	VOE88890180
Cable	1	VOE88890305	—
Cable	1	VOE88890306	—
Kit, including:[T2] ⓘ	1	VOE17279159	VOE11716484
Tool (Interface)	1	VOE88890300	VOE88890180
Cable	1	VOE88890305	—
Cable	1	VOE88890306	—
Adapter	1	VOE9993832	—

[T1] or Special tool 17279144

[T2] or Special tool 17279159

Language Code GB	Product WLO	Group 000	https://truckmanualshub.com/	No. 106	Version 3	Date 02/03/2000
Applies to 4200 Volvo BM, 4200B Volvo BM, 4300 Volvo BM, 4300B Volvo BM, 4400 Volvo BM, 4500 Volvo BM, 4600 Volvo BM, 4600B Volvo BM, 6300 Volvo BM, EL70 Volvo BM, EL70C Volvo BM, L50 Volvo BM, L50B Volvo BM, L50C OR Volvo, L50C Volvo, L50C Volvo BM, L50D Volvo, L70 Volvo BM, L70B Volvo BM, L70C Volvo, L70C Volvo BM, L70D Volvo, L90 Volvo BM, L90B Volvo BM, L90C OR Volvo, L90C Volvo, L90C Volvo BM, L90D OR Volvo, L90D Volvo, L120 Volvo BM, L120B Volvo BM, L120C Volvo, L120C Volvo BM, L120D Volvo, L150 Volvo BM, L150C Volvo, L150C Volvo BM, L150D Volvo, L160 Volvo BM, L180 CO Volvo BM, L180 HL Volvo BM, L180 Volvo BM, L180C CO Volvo, L180C HL Volvo, L180C Volvo, L180C Volvo BM, L180D HL Volvo, L180D Volvo, L220D Volvo, L330C LL Volvo, L330C Volvo, L330C Volvo BM, L330D Volvo						

New warranty routines for Bosch diesel equipment



Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

For the more effective processing of warranty and claims routines with regard to Bosch diesel equipment, Bosch and the VCE-companies ART, EXC and WLO have reached an agreement on warranty matters covering ordinary warranty time.

The agreement applies with effect from 970101. This means that, in future, these warranty matters will be handled according to one of the following routines.

Alternative 1:

Simpler faults of such a kind that the VCE dealer or Bosch representative can remedy it.

Where the entire work is done by the VCE dealer, the costs involved will be settled by sending a claim to the VCE-company concerned.

In those cases where the Bosch representative does the whole job, the Bosch representative will bear the entire cost.

Examples of simpler faults: Replacing a feed pump, replacing nozzles or changing a pump shaft seal.

Alternative 2

Bigger faults of such a kind that the VCE dealer lets the Bosch representative repair the fault. Bosch pays for the repair costs, while removal and fitting costs are settled via a claim against the VCE-company concerned. Example: The fault is of such a kind that, after repairs, the injection pump has to be run on a test bench.

Alternative 3:

With bigger faults of such a kind that the VCE-dealer decides that the component in question must be replaced by an exchange component, the component is ordered according to standard routines.

Any claims demands are to be made to be VCE-company concerned.

Example: It has been established that an injection pump cannot be repaired, or it cannot be repaired within a reasonable time.

When a claim has been sent to a VCE-company, it shall state three groups of digits:

Code for manufacturing date; serial number; and the Bosch part number, see [Invalid linktarget].

Claims will be rejected unless they have these three groups of numbers.

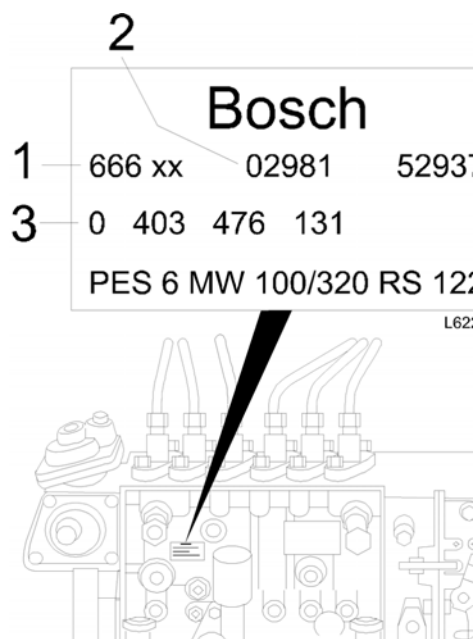


Figure 1
Example of identification plate

1. Code for manufacturing date
2. Serial number
3. Bosch, part number

<https://truckmanualshub.com/>

Language Code GB	Product WLO	Group 920	https://truckmanualshub.com/	No. 3	Version 2	Date 04/23/2008
Applies to L50B Volvo BM, L50C Volvo, L50C Volvo BM, L50D Volvo, L50E Volvo, L60E Volvo, L60F Volvo, L70B Volvo BM, L70C Volvo, L70C Volvo BM, L70D Volvo, L70E Volvo, L70F Volvo, L90C Volvo, L90C Volvo BM, L90D Volvo, L90E Volvo, L90F Volvo, L110E Volvo, L110F Volvo, L120C Volvo, L120C Volvo BM, L120D Volvo, L120E Volvo, L120F Volvo, L150 Volvo BM, L150C Volvo, L150C Volvo BM, L150D Volvo, L150E Volvo, L150F Volvo, L180 Volvo BM, L180C Volvo, L180C Volvo BM, L180D Volvo, L180E Volvo, L180F Volvo, L220D Volvo, L220E Volvo, L220F Volvo, L330C Volvo, L330C Volvo BM, L330D Volvo, L330E Volvo, L350F Volvo						

Non - VCE buckets and attachments



WARNING

Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

There are many situations where a non - VCE bucket or attachment is needed to do a specific job or meet a customer requirement. These applications should not and cannot be ignored as they are a significant portion of our loader business. Because of this we have established Allied Supplier Agreements with key equipment suppliers in most markets. We work closely with these suppliers to insure that they have the proper information to produce a quality attachment that fits our machine properly.

If a needed attachment is not available from VCE or one of our allied suppliers, every effort should be made to get the attachment in a Hook-on configuration. This insures proper pin fit up and proper stop locations in the linkage. Where this is impossible to do, precautions must be taken to insure that any Pin-on attachments purchased are properly manufactured.

The manufacturing control and tolerance of attachments are critical to the life of the attachment, loader pins, bushings and the linkage. Similar dimensional controls are needed in any Pin-on attachment used. All machining must be completed after final welding of the attachment. Not only is the accuracy of the pin bores critical in terms of size but also in terms of alignment. The location, alignment and parallelism is important to the proper function of the pin seals and bushing life. **This becomes even more critical when it comes to the tapered roller bearings and locking cones on the L330C.**

VCE does not accept responsibility for damage to a machine using a bucket or attachment not authorized by VCE.

Warranty claims for such will be unconditionally rejected.

Any questions on attachment usage and requests for technical assistance should be directed to your VCE representative.

Language Code GB	Product WLO	Group 160	https://truckmanualshub.com/	No. 8	Version 4	Date 05/31/2006
Applies to 4200 Volvo BM, 4200B Volvo BM, 4300 Volvo BM, 4300B Volvo BM, 4400 Volvo BM, 4500 Volvo BM, 4600 Volvo BM, 4600B Volvo BM, 6300 Volvo BM, EL70 Volvo BM, EL70C Volvo BM, L50 Volvo BM, L50B Volvo BM, L50C OR Volvo, L50C Volvo, L50C Volvo BM, L50D Volvo, L70 Volvo BM, L70B Volvo BM, L70C Volvo, L70C Volvo BM, L70D Volvo, L90 Volvo BM, L90B Volvo BM, L90C OR Volvo, L90C Volvo, L90C Volvo BM, L90D OR Volvo, L90D Volvo, L120 Volvo BM, L120B Volvo BM, L120C Volvo, L120C Volvo BM, L120D Volvo, L150 Volvo BM, L150C Volvo, L150C Volvo BM, L150D Volvo, L160 Volvo BM, L180 CO Volvo BM, L180 HL Volvo BM, L180 Volvo BM, L180C CO Volvo, L180C HL Volvo, L180C Volvo, L180C Volvo BM, L180D HL Volvo, L180D Volvo, L220D Volvo, L330C LL Volvo, L330C Volvo, L330C Volvo BM, L330D Volvo						

Oil analyses



Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

Various companies carry out oil analyses on VCE's machines. A great risk with these analyses is that their monitoring limits in certain cases lie at other levels as compared with ours.

This means that customers receive alarm reports and are worried entirely unnecessarily.

The reason for that other companies have different monitoring areas than VCE, is that they do not have detailed knowledge of the specific properties of our components, and believe that we have the same monitoring limits as our competitors. For VCE machines the monitoring limits according to tables 1 and 2 apply.

Table 1

Monitoring limits for components made by Volvo:

Particle		Engine	HT-transmission	PT-transmission	Dropbox	Note
Aluminium	Al	30	30	50	30	PPM
Lead	Pb	40	1200	50	30	PPM
Iron	Fe	200	100	100	500	PPM
Silica	Si	20	50	50	50	PPM
Copper	Cu	20	300	300	30	PPM
Chromium	Cr	20	20	20	20	PPM
Nickel	Ni	5	10	10	10	PPM
Tin	Sn	20	20	50	20	PPM
Water		0.20	0.20	0.20	0.20	%

The values are to be regarded as monitoring limits and not as absolute values.

It is important to establish a trend and not to make judgements based on isolated samples.

Table 2

Monitoring limits for components and hydraulic systems made by Volvo:

Particle		Axles, AWB (Axles with wet built-in brakes)	Axles, AH (Axles with dry external brakes)	Hydraulic system	Note
Aluminium	Al	30	30	20	PPM
Lead	Pb	50	50	20	PPM
Iron	Fe	500	900	50	PPM
Silica	Si	50	50	20	PPM
Copper	Cu	120	150	20	PPM
Chromium	Cr	20	20	20	PPM
Nickel	Ni	10	10	10	PPM
Tin	Sn	20	20	20	PPM
Water		0.20	0.20	0.20	%

The values are to be regarded as monitoring limits and not as absolute values.

It is important to establish a trend and not to make judgements based on isolated samples.

In cases where oil analysis shows a high PPM content, carry out:

1. Oil change and filter replacement. <https://truckmanualshub.com/>
2. Further oil analyses:
 - at first directly after the oil change and filter replacement.
 - and then three oil analyses at intervals of 100 hours.

These oil analyses provides an answer to the tendency, which may turn out as follows:

1. PPM content drops. Wear is normal.
2. PPM content remains at a high but stable level. Wear is normal.
3. PPM content continues to rise. This indicates abnormal wear and the customer should be informed.
4. PPM content varies greatly up and down. This indicates presence of foreign particles caused by working environment, storage of oil etc.

It is important to note that iron content rises with faulty air cleaner system before it is possible to note rising silicon content, that is, in the case of rising iron content, the air cleaner system should be checked.

Oil sampling should be carried out as follows:

- The oil should be at normal operating temperature.
- The engine should be running at low idling and a draining hose should be connected to a pressure outlet for the transmission.
- Regarding engines where there is no pressure outlet, the oil should be sucked up with the aid of a "hand pump".

The sample bottle must not be filled directly from the drain plug, as the oil at the bottom of the sump may have a higher concentration of contaminants and this will lead to a misleading analysis.

The possible origin of the different particles is shown in table 3.

Certain breakdowns can develop fairly quickly, that is, an oil analysis at x hours may show normal PPM contents and a breakdown may occur prior to the next oil sample.

When in doubt as to what action should be taken as a result of the oil analysis, contact VCE Service Department.

Other aspects of oil analyses

All oils contain a varying degree of different additives in order to achieve required quality and performance requirements.

These additives also contain the metals which show up in the analysis. Various amounts of metals occur depending on:

1. Which type of oil is being produced (engine, transmission, axle oil).
2. Which company is making the oil.
3. On which market the oil will be sold (price, quality, competition).
4. Which requirements the customer demands.

The following metals occur:

Barium	Ba
Calcium	Ca
Magnesium	Mg
Boron	B
Phosphorus	P
Zinc	Zn
Sodium	Na

Table 3

Probable origin of particles

Particle		Engine	Transmission
Iron	Fe	Cylinder liners, camshaft, valve tappets, valve guides and crankshaft.	Clutch discs and ferrous parts of the transmission.
Lead	Pb	Big-end bearings and crankshaft main bearings. (All types of slide bearing). Oil cooler	Clutch discs and oil cooler.
Copper	Cu	Big-end bearings and crankshaft main bearings. (All types of slide bearing). Water and oil coolers	Clutch discs and oil cooler.

Tin	Sn	Slide bearings	Clutch discs
Chromium	Cr	Piston rings and valves.	Alloy metals
Aluminium	Al	Pistons	Bearings, clutches and torque converter
Silica	Si	Dust, dirt etc.	Dust, dirt etc.
Water		Cooling and condensation water	Cooling and condensation water

Oil cooler, description

<https://truckmanualshub.com/>

The lubricating oil carries off heat from the engine's hottest parts and equalises the temperature differences in the engine as it circulates. In the oil cooler, heat is transferred from the lubricating oil to the coolant.

On TD63 the oil cooler is located on the right-hand side of the engine beside the oil filter head. The lubricating oil circulates inside the radiator core while the coolant passes between the cell plates.

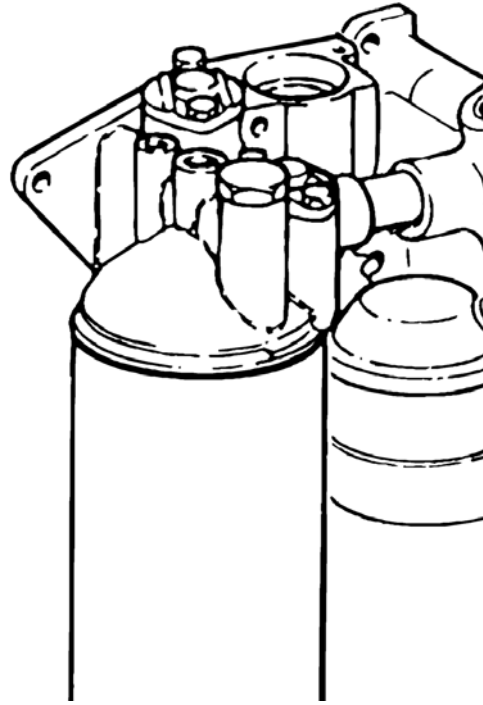


Figure 1

TD63.

1. Oil filter
2. Oil cooler

On TD73 the oil cooler is located on the left-hand side of the engine below the injection pump. The oil circulates inside the radiator core while the coolant passes between the cell plates.

Language Code GB	Product ART/WLO	Group 160	https://truckmanualshub.com/	No. 36	Version 1	Date 10/08/2007
Applies to Articulated Haulers, Wheel Loaders						

Oil sampling, method



WARNING

Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

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Cause and action

In order to achieve an oil analysis that is as correct as possible it is important that the oil is taken from the machine in a correct way (see also *Oil sampling, sampling points*) and that the form for the oil analysis is filled in correctly.

Form for oil analysis

Fill in the boxes for the respective samples with regard to oil brand, number of operating hours for the oil and the oil grade.

System Sampled		
	Engine (E)	
Oil Changed	Yes / ☒ No	
Oil Brand	Volvo	
Oil Hours	510	
Oil Grade	15W40 VDS-3	
V0013699		
		

V1057053

Figure 1

Example of filled in boxes and attached label for engine oil sample

Attach identical labels in the intended box on the form and on the bottle with the oil sample.



V1057054

Figure 2

Oil-sample bottle with attached label

Fill in to which workshop the test results should be sent.

Eskilstuna	100	X	C
Umeå	360		S
Uppsala	430		V
Södertälje	470		S
Skövde	530		J
Staffanstorps	570		

V1057055

<https://truckmanualshub.com/>

Figure 3

Example of to where the test result is to be sent

Send off the sample immediate according to local procedures in order to get the test result as early as possible.

VOLVO CONSTRUCTION EQUIPMENT



Oil Analysis

Model	A40D	Sample Date	2007-01-10
Serial Number	120XX	Job Number	12345
Machine Hours	2038	Sample drawn by	N. Nilsson

Volvo Construction Equipment Laboratory
Conwy, North Wales
United Kingdom LL32 8FA

Customer	V. Dumper AB	Site / Location	Grustaget
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Machine Type (Please tick)				
Compact Wheel Loader	Backhoe Loader	Wheeled Excavator	Articulated Hauler	☒
Compact Excavator	Wheel Loader	Crawler Excavator	Motor Grader	
Other (Please specify)				

Manufacturer (Please tick)		
Volvo	☒	Volvo BM
Åkerman		Samsung
Other (Please specify)		

System Sampled						
	Engine (E)	Transmission (T)	Drop box (D)	Front axle final drive (F)	Rear axle 1 final drive (Q)	Rear axle 2 final drive (R)
Oil Changed	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Oil Brand	Volvo					
Oil Hours	510					
Oil Grade	15W40 VDS-3					
	V0013699	Affix label here	Affix label here	Affix label here	Affix label here	Affix label here
(Please tick)	Front (N) ☐ Rear1 (P) ☐ Rear2 (U) ☐ axle left, hub reduction	Front (X) ☐ Rear1 (Y) ☐ Rear2 (Z) ☐ axle right, hub reduction	Travel gearbox left (J)	Travel gearbox right (K)	Tandem left (L)	Tandem right (M)
Oil Changed	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Oil Brand						
Oil Hours						
Oil Grade						
	Affix label here	Affix label here	Affix label here	Affix label here	Affix label here	Affix label here
	Hydraulic (H)	Swing gearbox (S)	Swing gearbox 2 (G) only EC460 & EC700	Wet brakes (W)	Coolant (C), please specify:	Other (O), please specify:
Oil Changed	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Oil Brand						
Oil Hours						
Oil Grade						
	Affix label here	Affix label here	Affix label here	Affix label here	Affix label here	Affix label here

Reason for sampling (Please tick)	Routine	☒ Failure	Comments:
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Duxford	Volvo1	☒ Barnsley	Volvo2	Stirling	Volvo3	Treforest	Volvo4
Birmingham	Volvo5	Warrington	Volvo6	Newcastle	Volvo8	Woking	Volvo9

Please tick as appropriate

V1057056

Figure 4
Example of a filled-in form for an oil sample

Instructions for vacuum pump

Use a new hose for each sampling.

Store the pump in a clean place, when it is not used.

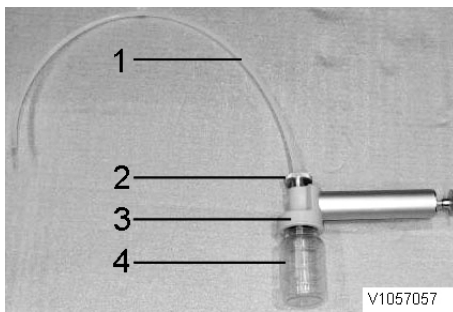


Figure 5

1. 941363 Hose
2. Lock nut
3. 11411003 Vacuum pump
4. Oil-sample bottle

Installing hose

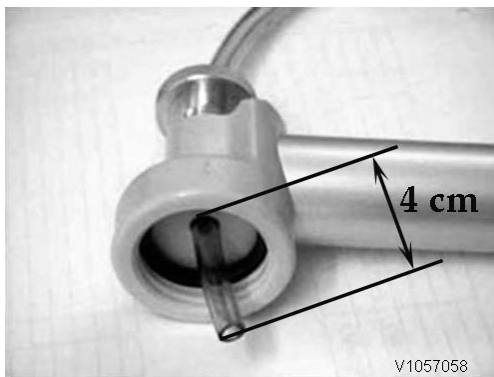


Figure 6

Installing hose

1. Cut a hose to a suitable length.
2. Insert the hose through the head of the vacuum pump.
The hose should protrude 4 cm (1.6 in) outside the base of the pump head.
3. Tighten the lock nut.

Removing hose



Figure 7

Removing hose

1. Loosen the lock nut.
2. Cut off the hose above the lock nut and pull the hose out of the pump.
NOTE!
Check that the hose ends do not contaminate the pump head with oil.
3. Take care of the hose in an environmentally safe way.

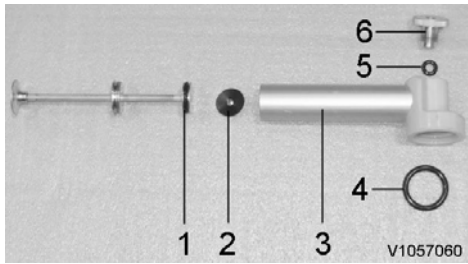


Figure 8
Vacuum pump

1. O-ring
2. Diaphragm
3. Cylinder
4. O-ring
5. O-ring
6. Lock nut

The vacuum pump must be cleaned after each sampling to prevent any residual oil in the vacuum pump from contaminating future oil samples.

1. Dismantle the vacuum pump.
2. Wipe the parts with a clean lint-free paper or rag. Apply a thin coat of silicone grease to the O-rings. When required, use compressed air for cleaning.
3. Assemble the vacuum pump and test its function.

NOTE!

The vacuum pump must not be cleaned with diesel fuel, petrol or cleaning agent.

Oil sampling methods

The following applies to all methods:

- Make sure that oil-sample bottle is completely clean.
- Operate the machine until all systems have reached normal working temperature. During the warming-up, all functions should be operated. It is important that all functions connected to the hydraulic system are operated to their respective end positions.
- Take the oil samples immediately after the warming up.
- Seal the oil-sample bottle thoroughly to avoid contamination and loss of oil during the transport.

A) Oil sample method with hose (pressurised system)

This method is used for engine, transmission and working hydraulics.

Tools:

14025152 Hose with nipple

1. Start the engine.



Figure 9
Example of sampling method with hose

2. Connect the hose to the machine so that oil begins to run out into the hose.

NOTE!

Collect the oil that is running out in a suitable vessel. <https://truckmanualshub.com/>

Drain off 2–4 dl (6.8–13.6 US fl oz) into the vessel.

3. Slacken the hose connection to stop the oil flow.
4. Remove the vessel with the oil and make sure that it is taken care of in an environmentally safe way.
5. Make sure that it is possible to collect oil in the oil-sample bottle.
6. Tighten the hose connection again and fill the sample bottle 3/4 full.
7. Put the cap on oil-sample bottle.
Attach one label to the bottle and one label to the form for oil analysis.
8. Remove the hose.
9. Stop the engine.

B) Oil sample method with vacuum pump

The same method is used for axles, engine, dropbox and hub reduction gears.

Tools:

11411003 Vacuum pump

941363 Hose

1. Cut the hose to a suitable length and connect it to the vacuum pump.

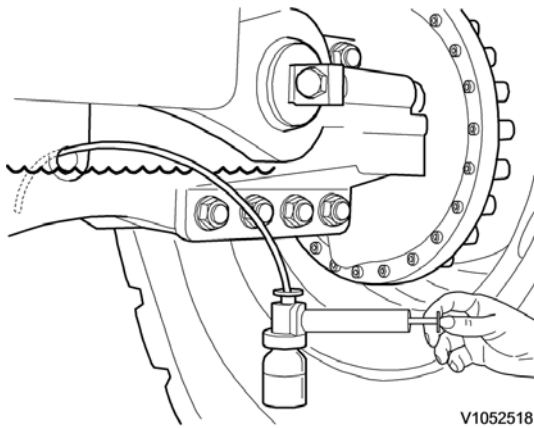


Figure 10

Example of test method with vacuum pump.

2. Install oil-sample bottle on the vacuum pump.
3. Insert the hose at the testing point.

NOTE!

Make sure that the oil sample is not taken from the bottom, but rather in the middle or within the working range of the oil.

4. Draw up oil to flush out the hose.
5. Remove the oil-sample bottle and empty it. Make sure that the oil is taken care of in an environmentally safe way.
6. Install oil-sample bottle on the vacuum pump and fill the sample bottle 3/4 full.
7. Remove the oil-sample bottle and put on the cap.
Attach one label to the bottle and one label to the form for oil analysis.

C) Oil sample method with quick-action coupling (pressurised systems), earlier machines

This method is used for engine, transmission and working hydraulics on earlier machines with TEMA-coupling.

Tools:

Snap-on coupling

941363 Hose

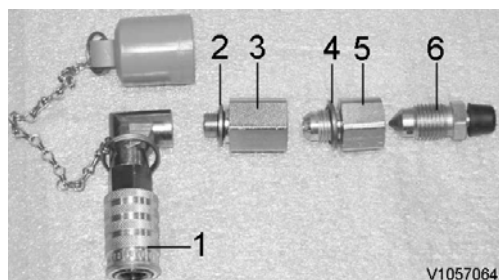


Figure 11

1. 9993522 Test nipple
2. 947083 Gasket
3. 963804 Nipple
4. 976928 Gasket
5. 4881092 Nipple
6. 4871469 Air vent valve

1. Cut the hose to a suitable length and connect it to the quick-action coupling.

NOTE!

A new hose should be used for each sampling.

2. Start the engine.



Figure 12

Example of sampling method with quick-action coupling

3. Connect the quick-action coupling to the machine and open the breather valve so that oil begins to run out into the hose.

NOTE!

Collect the oil that is running out in a suitable vessel.

Drain off 2–4 dl (6.8–13.6 US fl oz) into the vessel.

4. Close the breather valve to stop the oil flow.
5. Remove the vessel with the oil and make sure that it is taken care of in an environmentally safe way.
6. Make sure that it is possible to collect oil in the oil-sample bottle.
7. Open the breather valve again and fill the sample bottle 3/4 full.
8. Close the breather valve.
9. Put the cap on the oil-sample bottle.
Attach one label to the bottle and one label to the form for oil analysis.
10. Remove the quick-action coupling.
11. Stop the engine.

Oil-bath precleaner

<https://truckmanualshub.com/>

When working in a very dusty environment the fitting of an oil-bath precleaner in series with the existing standard dry-type air cleaner is recommended. This provides extra safety from engine damage.

The cleaning efficiency of the oil-bath precleaner is between 90 and 95%, which means in practice that the dry-type air cleaner fitted as standard will act as a safety filter with a changing interval at least twice as long, i.e. 2000 hours.

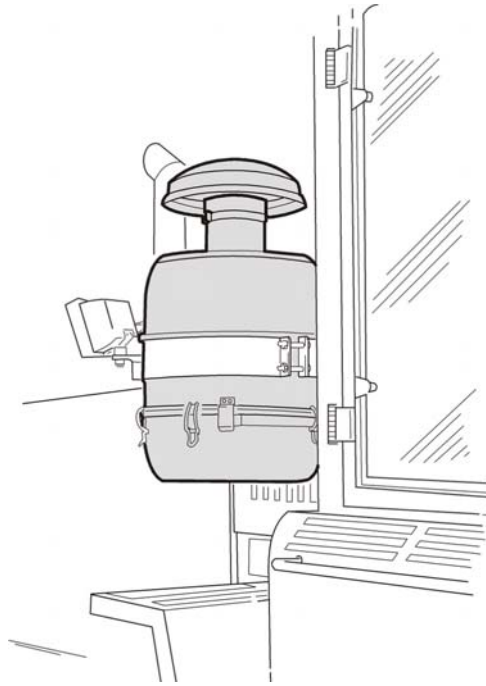


Figure 1
Oil-bath precleaner

Oil-bath precleaner, maintenance
Check the oil daily.

- the level should reach up to the "Normalölstand" mark but no higher.
- change the oil and clean the lower and upper wire mesh filters if:
 - the oil is sludgy and viscous.
 - deposits of sludge or dry places are present on the bottom of the lower wire mesh.
- the holder, the lower and upper wire mesh filters should be washed clean with diesel fuel.
- avoid using petrol for cleaning as residual petrol in the wire mesh filters could cause the engine to race on subsequent starting.
- when topping up or changing the oil it should have the same viscosity as that in the engine.

Clean the wire mesh filters every 2000 hours.

Language Code GB	Product WLO	Group 160	https://truckmanualshub.com/	No. 11	Version 2	Date 05/17/2002
Applies to 4200 Volvo BM, 4200B Volvo BM, 4300 Volvo BM, 4300B Volvo BM, 4400 Volvo BM, 4500 Volvo BM, 4600 Volvo BM, 4600B Volvo BM, 6300 Volvo BM, EL70 Volvo BM, EL70C Volvo BM, L50 Volvo BM, L50B Volvo BM, L50C OR Volvo, L50C Volvo, L50C Volvo BM, L50D Volvo, L60E Volvo, L70 Volvo BM, L70B Volvo BM, L70C Volvo, L70C Volvo BM, L70D Volvo, L70E Volvo, L90 Volvo BM, L90B Volvo BM, L90C OR Volvo, L90C Volvo, L90C Volvo BM, L90D OR Volvo, L90D Volvo, L90E Volvo, L110E Volvo, L120 Volvo BM, L120B Volvo BM, L120C Volvo, L120C Volvo BM, L120D Volvo, L120E Volvo, L150 Volvo BM, L150C LB Volvo, L150C Volvo, L150C Volvo BM, L150D Volvo, L150E Volvo, L160 Volvo BM, L180 CO Volvo BM, L180 HL Volvo BM, L180 Volvo BM, L180C CO Volvo, L180C HL Volvo, L180C Volvo, L180C Volvo BM, L180D HL Volvo, L180D Volvo, L180E HL Volvo, L180E Volvo, L220D Volvo, L220E Volvo, L330C LL Volvo, L330C Volvo, L330C Volvo BM, L330D Volvo, L330E Volvo						

Oils for Volvo"s wheel loaders equipped with AWB axles (Axle Wet Brakes)



WARNING
Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This SB is to be considered as technical information and comprises normal warranties within the rules for the same.

On certain markets there may be some problems with the availability of Axle Oil type VME WB 101, see SB L-160-6. For this reason Volvo Parts will supply an additive for mixing with engine oil and also whole barrels of ready-mixed axle oil type VME WB 101, which may be ordered via the respective parts departments.

- Axle oil type VME WB 101
Whole barrel, 208 litres (55 US gal)
Part No.11998770
- Additive, 4 litres (1.06 US gal)
Part No.11998605
Mixing instructions will be automatically supplied together with the additive. The Ref. No. of the instructions is 21 1 669 6623.

The additive is to be premixed with a straight (single grade) engine oil, SAE 30, according to the following table.

NOTE!

Multi grade oil type 10W/30 or synthetic oil must not be used.

To convert litters to US gal, multiply by 0.264, e.g. 3.8 litres times 0.264 equals 1 US gal.

Ready mixed Axle Oil, litres	Engine Oil, litres	Additive, litres	Note
208.0	181.0	27.0	Whole barrel
200.0	174.0	26.0	—
150.0	130.5	19.5	—
100.0	87.0	13.0	—
70.0	61.5	8.5	—
65.0	57.0	8.0	—
54.0	47.0	7.0	—
46.0	40.0	6.0	—
38.5	33.5	5.0	—
31.0	27.0	4.0	—
23.0	20.0	3.0	—
20.0	17.4	2.6	—
17.0	14.8	2.2	—
10.0	8.7	1.3	—
7.7	6.7	1.0	—
4.6	4.0	0.6	—

Mixture ratio: 13% additive and 87 % engine oil

The engine oil, SAE 30, must be mixed very thoroughly with the additive:

- Too much additive reduces the friction of the brake discs.
- Too little additive may cause the brakes to give off a chattering or jarring noise when braking.

If an incorrect mixture of axle oil has been filled, the oil must be changed.

To facilitate the mixing, the amount of engine oil should be adapted to suit a certain number of whole cans of additive.

Ready mixed Axle Oil, litres	Engine Oil, litres	Additive, litres	Number of Additive cans
184.5	160.5	24.0	6
92.0	80.0	12.0	3
61.5	53.5	8.0	2
31.0	27.0	4.0	1



Volvo Construction
Equipment

Installation Instruction

Genuine Accessories

Ref. no. 21 4 779 3774	Kit no. 11707295 (80361)	Date/Dept. 2004-07 CEE-43	Product L90D, L120D, L150D, L180D	Page 1/7
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Single lever control

Kit list

Part No.	Qty.	Designation
943907	7	Gasket
948645	1	Flange nut
949921	2	Spring nut
956983	1	Fitting nut
959223	4	Hexagon socket head bolt
980781	1	Ferrule
4881440	5	Strip clamp
11006031	1	Nipple
11006298	1	Decal
11039380	1	Switch
11039677	1	Pressure monitor
11039700	1	Lens
11040695	1	Cable harness
11041403	1	Cable harness
11104206	1	Single lever control
11104643	1	Cover
11104742	1	Attaching plate
11164348	1	Arm rest
11164355	1	Attachment
11164385	1	Rail
11170674	1	Cable harness
11170678	1	Cable harness
13944262	1	T-nipple
13944524	6	Nipple
13945357	1	Elbow nipple
13946173	1	Flange screw
13949278	4	Flange lock nut
13975980	4	Six point socket screw



WARNING!

Read all signs and instructions on the machine and the safety instructions in the operators manual, before you start working on the machine.

The installation instructions are based on the use of special tools, the E-tool and standard tools generally available on the market, and also on our operators manuals and service manuals.

The equipment should be installed by qualified personnel of an authorised workshop.

Volvo CE Customer Support AB disclaims all responsibility if tools and work methods other than those described in the instructions are used.

Single lever control

Work description

Servo valve

- 1 Offload the lifting frame by resting it on the floor. Stop the engine and move the servo valve levers forwards and backwards until servo pressure cuts out.
- 2 Connect a vacuum pump to the tank or in other case empty the hydraulic oil tank.
- 3 Remove the existing servo valve from the machine.
- 4 Fit nipples on the servo valve.

Part No.	Designation	Qty.	Pos. in Fig. 1
943907	Gasket	6	23
11104206	Single lever control	1	1
13944524	Nipple	6	22

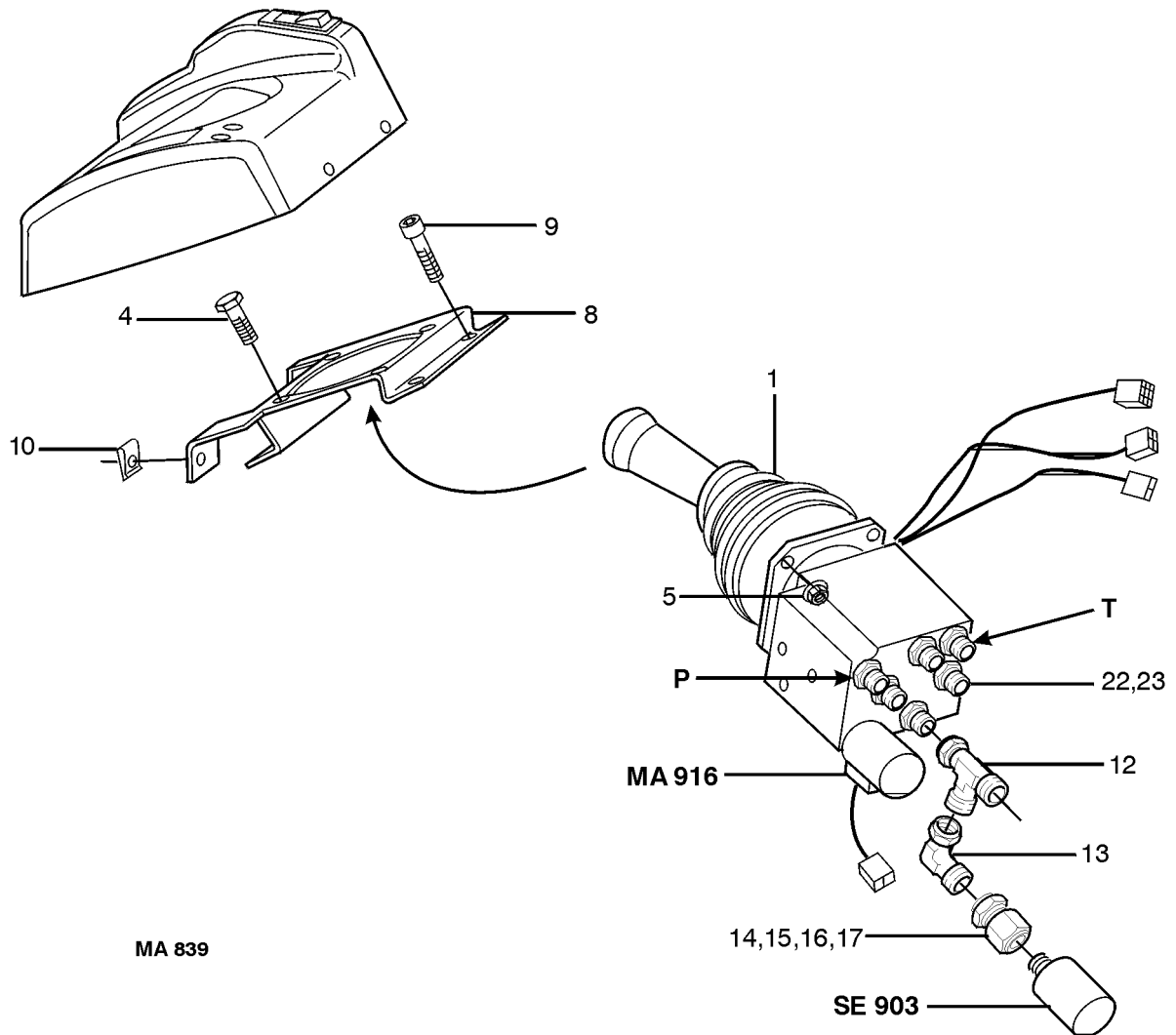


Fig. 1

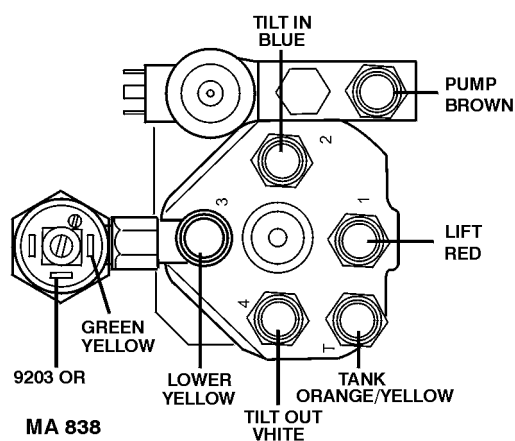


Fig. 2

5 Fit nipples in port 3.

Part No.	Designation	Qty.	Pos. in Fig. 1
943907	Gasket	1	17
980781	Ferrule	1	15
11006031	Nipple	1	16
11039677	Pressure monitor	1	SE 903
13944262	T-nipple	1	12
13945357	Elbow nipple	1	13
956983	Fitting nut	1	14

6 Replace the attaching plate.

Part No.	Designation	Qty.	Pos. in Fig. 1
949921	Spring nut	2	10
959223	Hexagon socket head bolt	4	9
11104742	Attaching plate	1	8

7 Fit the new servo valve and connect the existing hoses.

Part No.	Designation	Qty.	Pos. in Fig. 1
13949278	Flange lock nut	4	5
13975980	Six point socket screw	4	4

8 Replace the arm rest.

Part No.	Designation	Qty.	Pos. in Fig. 7
11164348	Arm rest	1	7
948645	Flange nut	1	12
13946173	Flange screw	1	11
11164385	Rail	1	5
11164355	Attachment	1	10

9 Stick the decal on the right window.

Part No.	Designation	Qty.	Pos. in Fig. 3
11006298	Decal	1	20

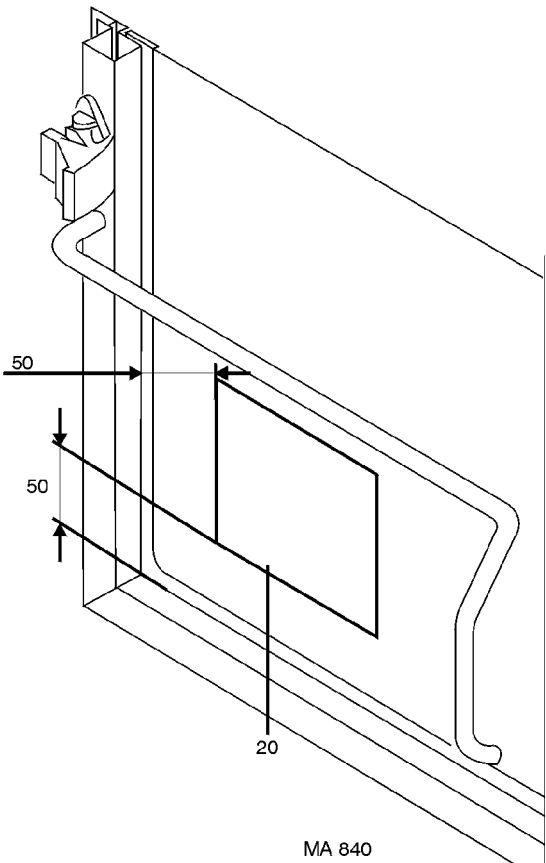


Fig. 3

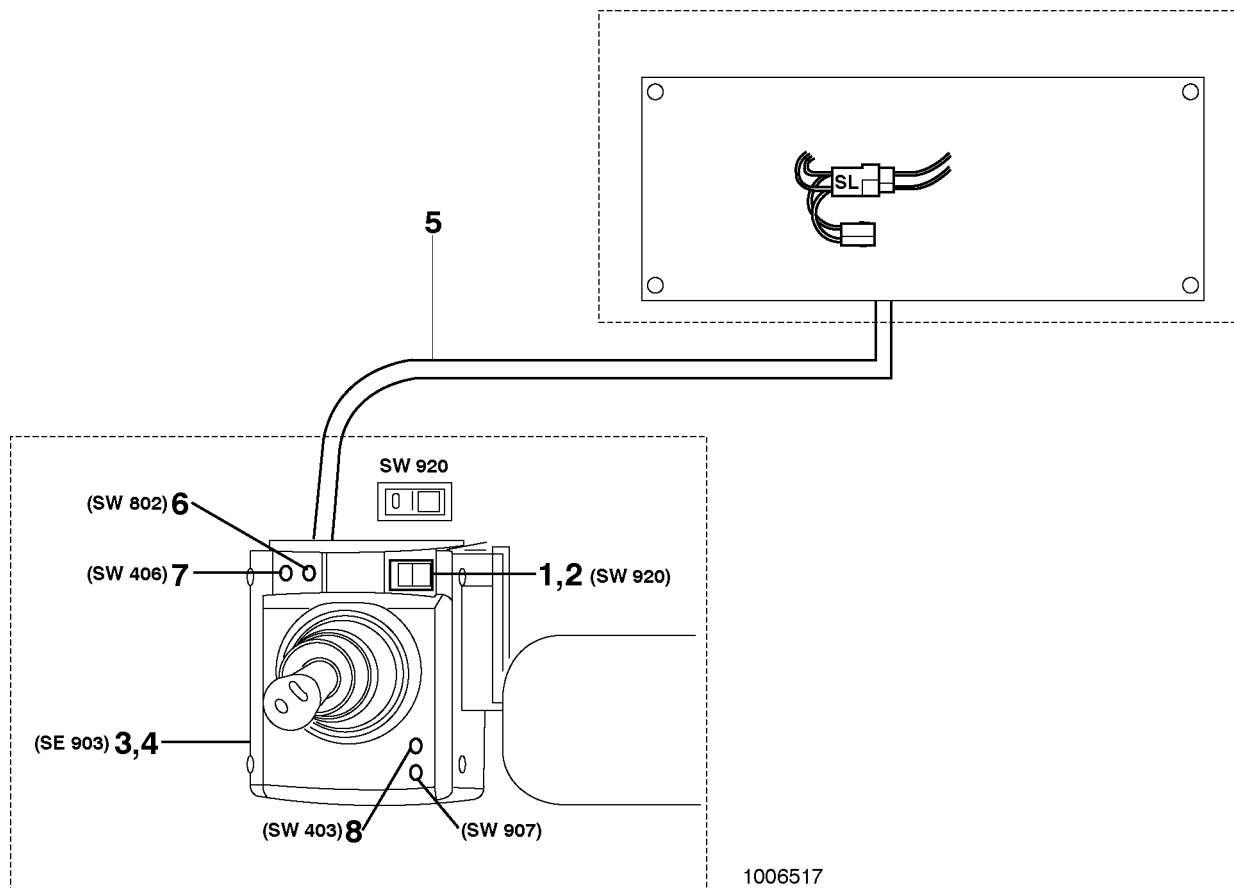


Fig. 4

Electrical installation

- 10 Fit the cable harness between the single lever control and right instrument panel. Connect up contact SL under the instrument panel.

Part No.	Designation	Qty.	Pos. in Fig. 4
11040695	Cable harness	1	5

- 11 Fit the cable harnesses, lens and switch in the cover.

Part No.	Designation	Qty.	Pos. in Fig. 4
4881440	Strip clamp	5	-
11039380	Switch (SW920)	1	1
11039700	Lens (SW920)	1	2
11170674	Cable harness (SW403)	1	8
11041403	Cable harness (SW406)	1	7
11170678	Cable harness (SW802)	1	6
11104643	Cover	1	-

12 In case the machine is activate with the boom suspension system drill a hole, $\varnothing 12$ mm, from the inside of the cover.

13 Fit the cover and connect up the cables in the cable harness SE contact. See Fig. 5 and Fig. 6.

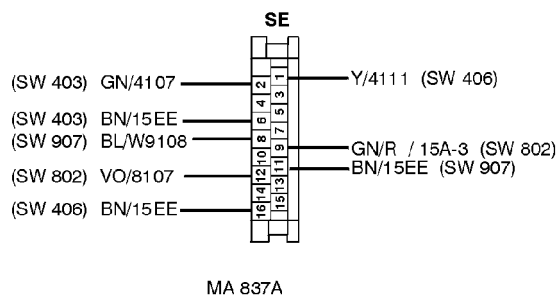


Fig. 5
Contact from the cable harness

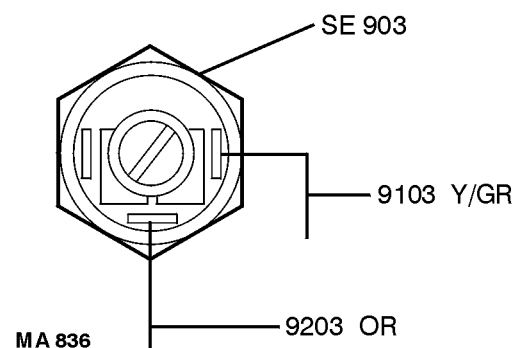


Fig. 6
Pressure monitor

14 Connect the other contacts from the single lever control.

15 Remove the vacuum pump or fill up with oil in the hydraulic oil tank.

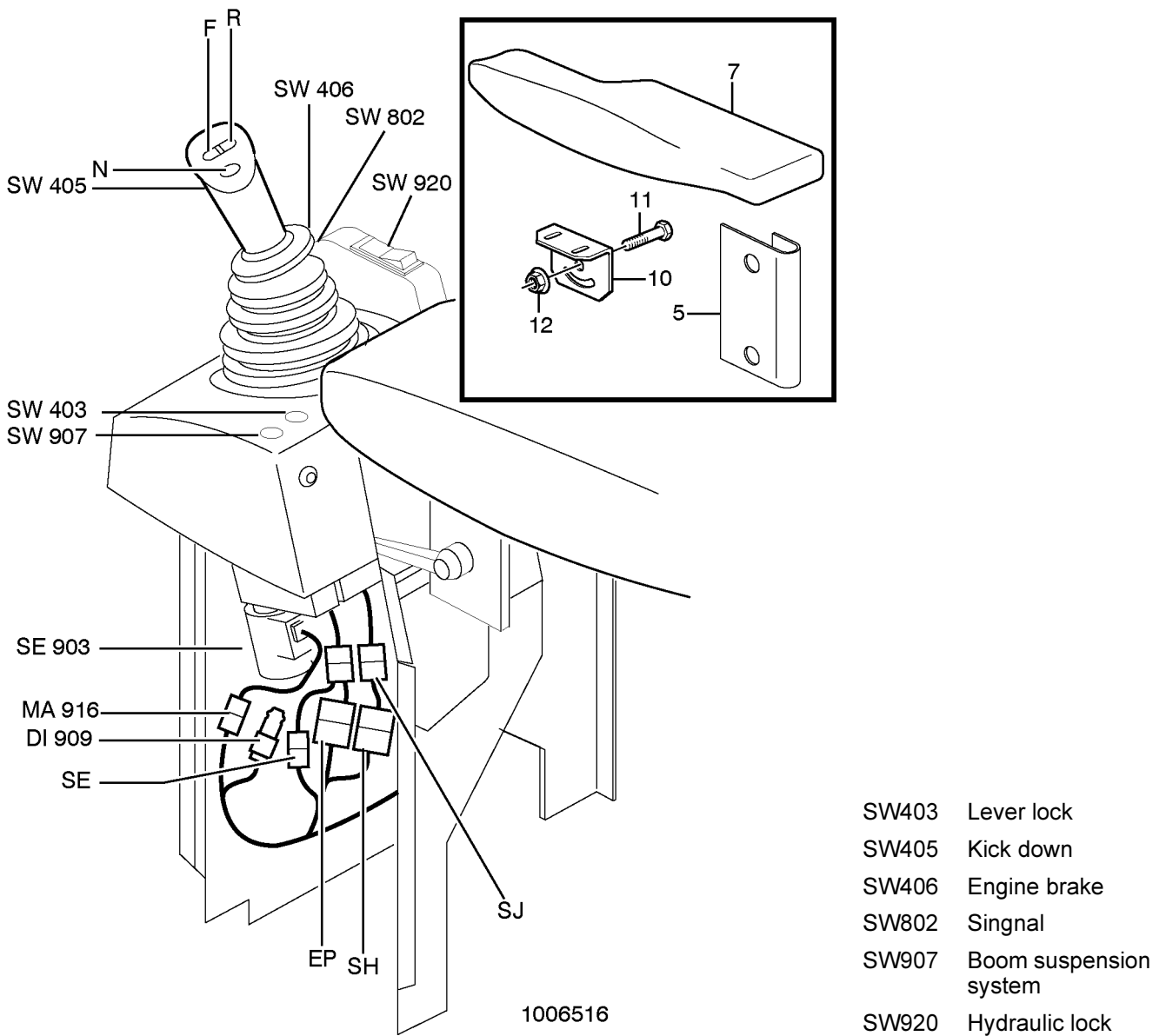


Fig. 7

- 16 Start the engine and test the function.
- 17 Check for leakage.
- 18 Restore the plastic cover and cover plates.
- 19 Write equipment number 80361 on the machine card.

Output brake pressure

<https://truckmanualshub.com/>

The function monitors the output brake pressure and warns the operator if there is a system malfunction.

The function is used as an input signal for:

- Transmission disengagement, see [Invalid linktarget]

Input signals	Output function conditions	Output functions
○ Monitoring. SE501	○ System malfunction, signal outside limits	○ Amber central warning lamp ○ -----ERROR----- Monitoring Output Brake Pressure 1207414AG

Overspeed transmission

<https://truckmanualshub.com/>

The function monitors the speed of the transmission and warns the operator if transmission speeds are too high. At even higher transmission speeds, shifting will take place to the nearest higher gear. The same rpm limit applies both to forward and reverse. The functions apply to both manual and automatic gearshifting,

Input signals	Output function conditions	Output functions
○ Output speed, transmission, SE403 ○ Travel speed gear	Level 1 (warning): ○ Rpm for active gear exceeded > 2 seconds ○ Travel speed gear 1-4	○ Red central warning lamp ○ Buzzer ----- WARNING ----- High Speed On Selected Gear LE755A01
	Level 2 (upshifting): ○ Rpm for active gear exceeded > 2 seconds ○ Travel speed gear 1-4	○ Upshifting

Op nbr

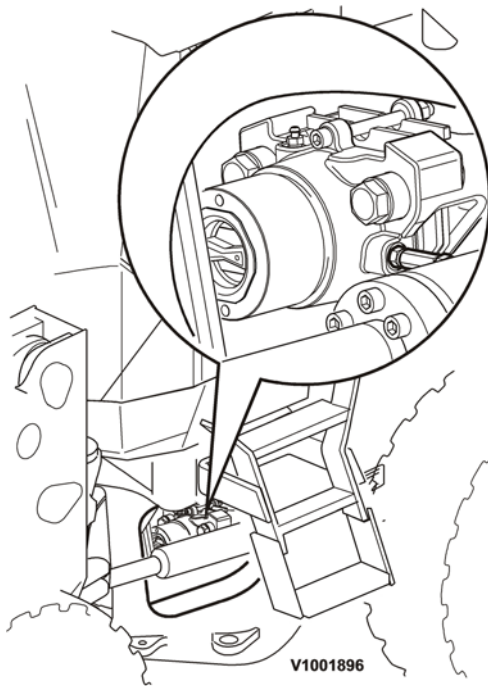


Figure 1
Exterior view of the Carlisle brake, L90D

WARNING

Park the machine on a level surface and place chocks in front of and behind the wheels to keep it from moving. The frame joint lock should be engaged, see service position in the Safety section, pos. 1.

Changing brake pads

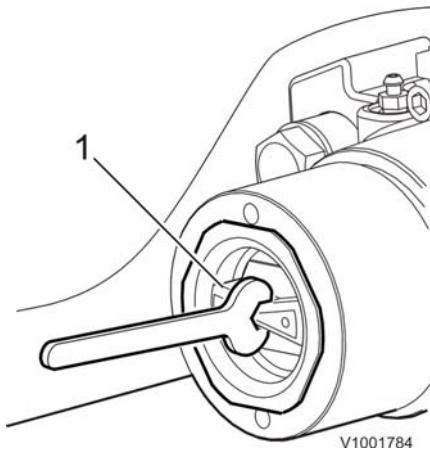


Figure 2

1. Cover

1. Unscrew the cover (1), see [Invalid linktarget]
2. Detach the hydraulic hose and the parking brake caliper union. Collect any leak-off oil in a receptacle.

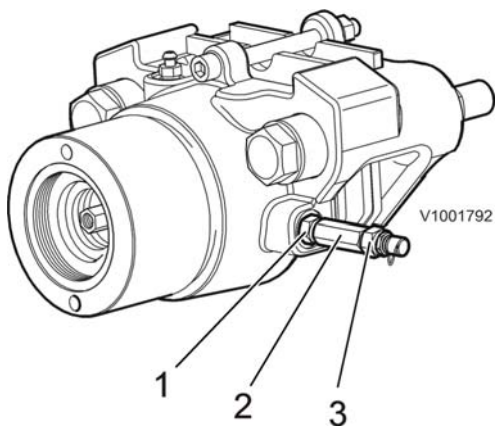


Figure 3

1. Threaded fitting 11147716
2. Connecting sleeve 4881498
3. Connecting union 9993758

3. Fit unions 1114716, 4881498 and 9993758, see [Invalid linktarget] . Connect pump 11666030 to connecting union 9993758.
4. Loosen the lock nut (1) and unscrew it half a turn, see [Invalid linktarget]

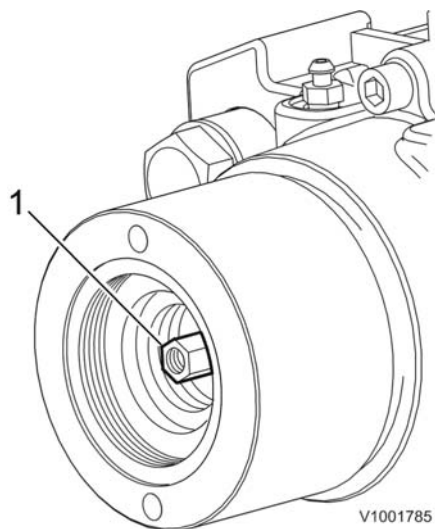


Figure 4

1. lock nut
5. Use pump 11666030 to release the parking brake.
6. Unscrew the jam nut (1) on the retaining bolt (2), see [Invalid linktarget].

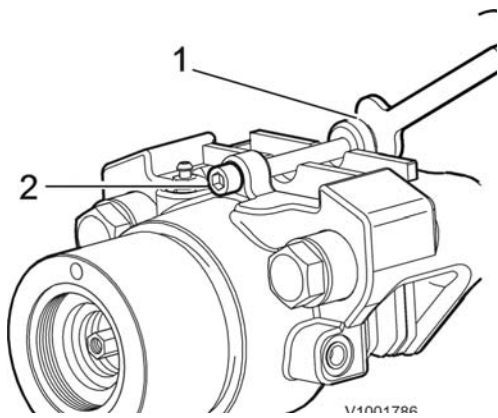


Figure 5

1. jam nut
2. Retaining bolt

7. Remove the retaining bolt (1), holding the jam nut while doing so, see [Invalid linktarget].

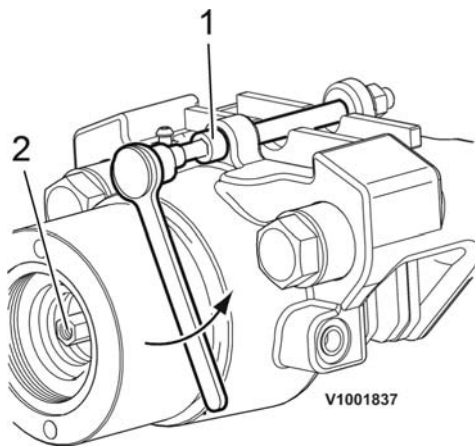


Figure 6

1. Retaining bolt

8. Undo the adjusting screw (2), see [Invalid linktarget], and remove the brake pads. Fit new brake pads.
9. Fit the retaining bolt (1), see [Invalid linktarget], and screw on the nut and jam nut but do not lock them.
10. Screw the adjusting screw (1) so that the total clearance between brake disc and pads is 0.9–1.1 mm (0.035–0.043 in), see [Invalid linktarget].

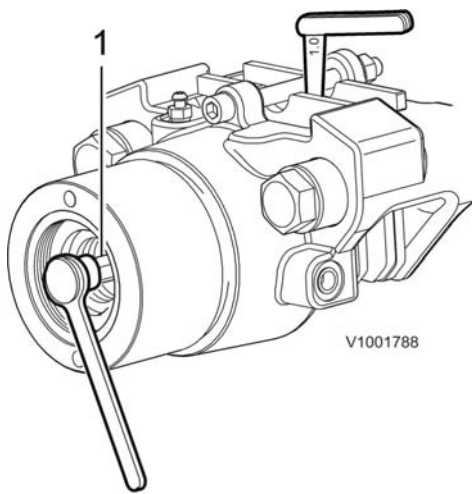


Figure 7

1. adjusting screw

11. Adjust the retaining bolt (1) so that a clearance of 0.5 mm (0.02 in) is obtained on both sides of the brake disc, see [Invalid linktarget]

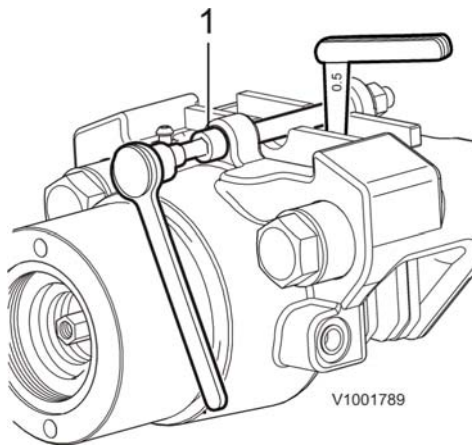


Figure 8

1. Retaining bolt

12. Tighten the jam nut (1), see [Invalid linktarget]

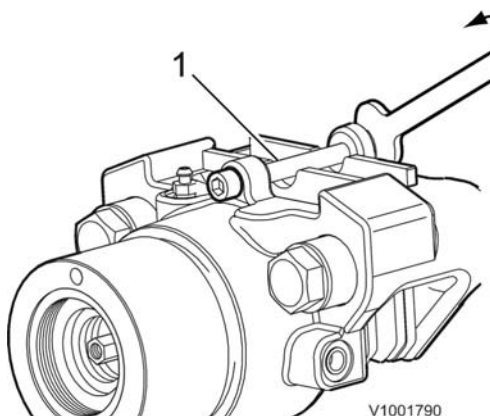


Figure 9

1. jam nut

13. Release the pressure on pump 11666030. <https://truckmanualshub.com/>

14. Tighten the lock nut (1) on the adjusting screw, see [Invalid linktarget]

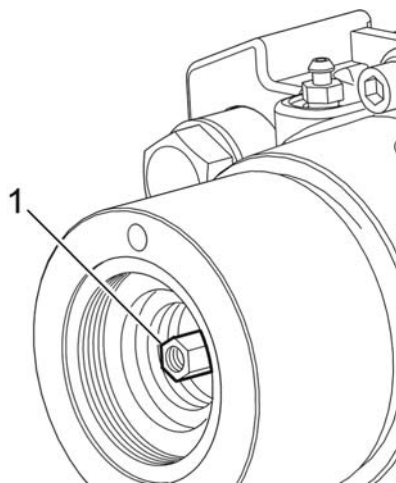


Figure 10

1. lock nut

15. Refit the connecting union and hydraulic hose that were mounted on the machine.

16. Refit the cover (1), see [Invalid linktarget]

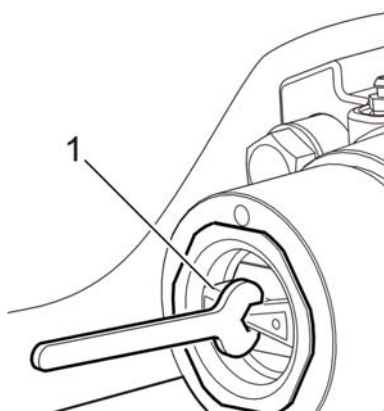
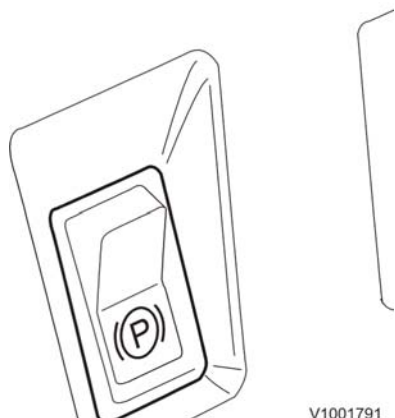


Figure 11

1. Cover

17. Checking function

Set the parking brake switch (SW501), see [Invalid linktarget] in the applied position. Remove the chocks from the wheels. Start the engine and check that the parking brake can hold the machine stationary in 3rd gear at full throttle.



1. Parking brake switch (SW501)

Parking brake (hydraulically controlled), checking and adjustment, later version

Op nbr

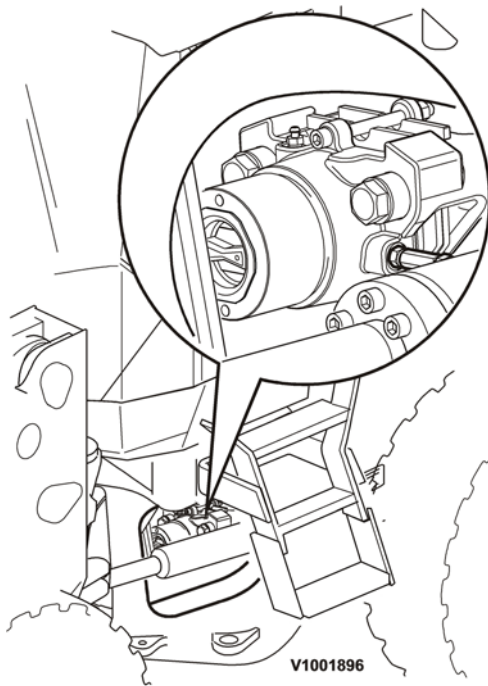


Figure 1
Exterior view of the Carlisle brake, L90D

WARNING

Park the machine on a level surface and place chocks in front of and behind the wheels to keep it from moving. The frame joint lock should be engaged, see service position in the Safety section, pos. 1.

Checking and adjusting parking brake

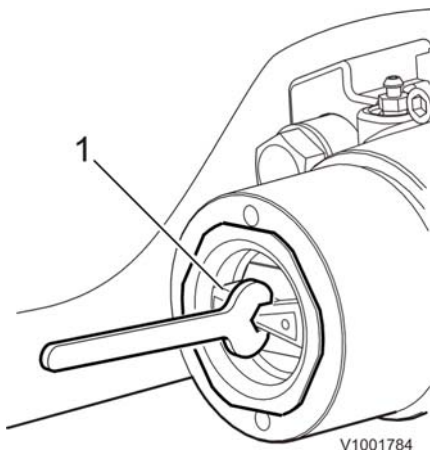


Figure 2

1. Cover

1. **Adjusting**

Unscrew the cover (1), see [Invalid linktarget]

2. Loosen the lock nut (1) and unscrew it half a turn, see [Invalid linktarget]

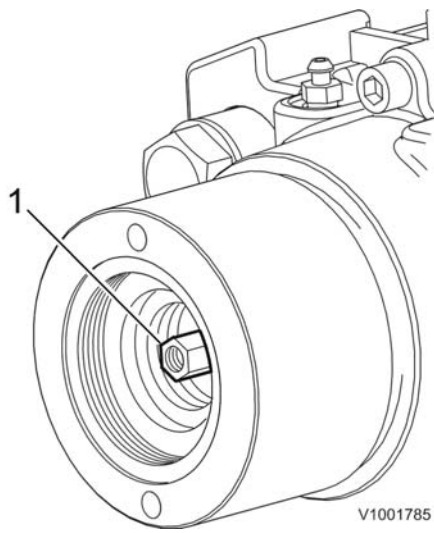


Figure 3

1. lock nut
3. Start the engine and release the parking brake.
4. Unscrew the jam nut (1) on the retaining bolt (2), see [Invalid linktarget].

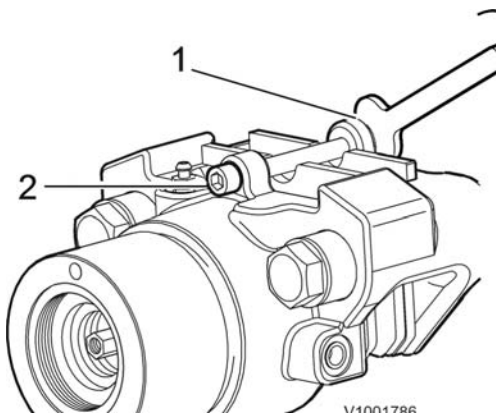


Figure 4

1. jam nut
2. Retaining bolt
5. Unscrew the retaining bolt (1) one full turn, see [Invalid linktarget] .

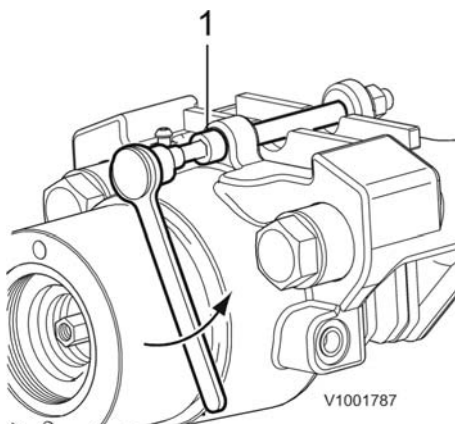


Figure 5

1. Retaining bolt

<https://truckmanualshub.com/>

6. Screw the adjusting screw (1) so that the total clearance between brake disc and pads is 0.9–1.1 mm (0.035–0.043 in), see [Invalid linktarget].

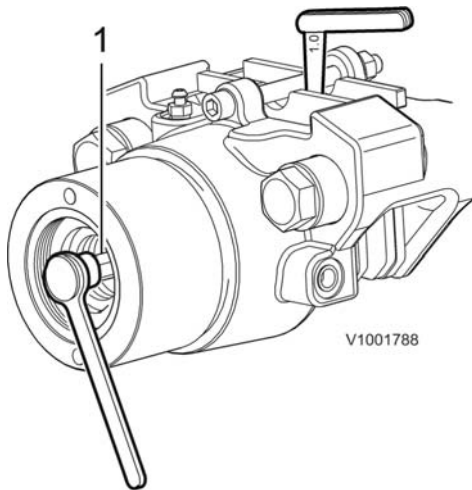


Figure 6

1. adjusting screw

7. Adjust the retaining bolt (1) so that a clearance of 0.5 mm (0.02 in) is obtained on both sides of the brake disc, see [Invalid linktarget].

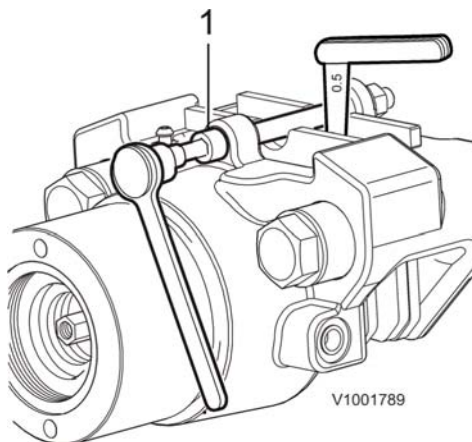


Figure 7

1. Retaining bolt

8. Tighten the jam nut (1), see [Invalid linktarget]

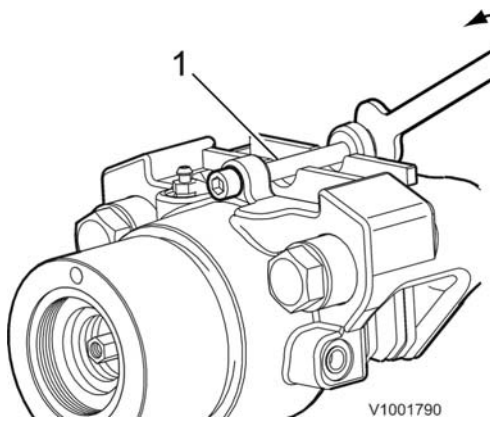


Figure 8

1. jam nut
9. Apply the parking brake and switch off the engine.
10. Tighten the lock nut (1) on the adjusting screw, see [Invalid linktarget]

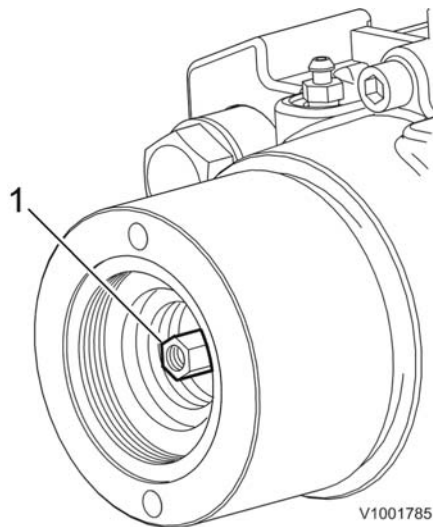


Figure 9

1. lock nut
11. Refit the cover (1), see [Invalid linktarget]

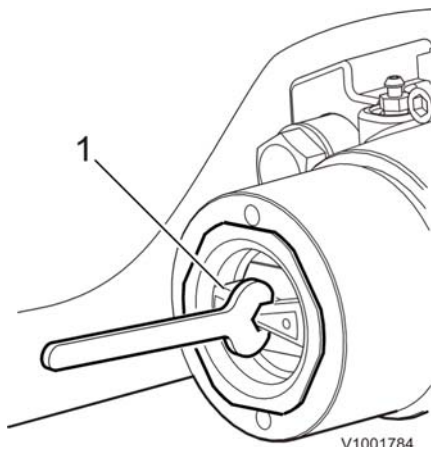


Figure 10

1. Cover

<https://truckmanualshub.com/>

12. **Checking function**

Set the parking brake switch (SW501), see [Invalid linktarget], in the applied position. Remove the chocks from the wheels. Start the engine and check that the parking brake can hold the machine stationary in 3rd gear at full throttle.

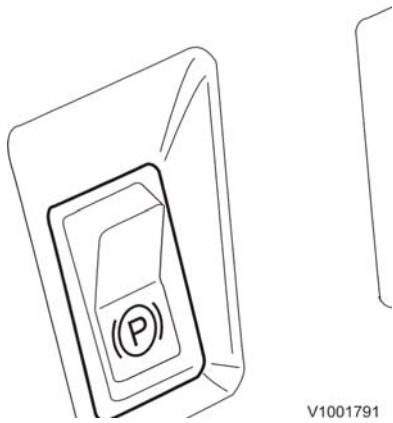


Figure 11

1. Parking brake switch (SW501)

Parking brake (mechanically operated), http://truckmanualshub.com/

Op nbr 55002

Socket



Park the machine on a level surface. Fit blocks in front of and behind the wheels in order to prevent the machine from rolling.

Checking adjustment of handle

1. Remove the plastic cover over the parking brake control.
2. Remove the lock pin between the cable and the handle, press the handle all the way down. Check that the hole in the cable and the hole in the handle line up. Any adjustment is done with the adjusting nut. Refit the lock pin after adjustment is completed.

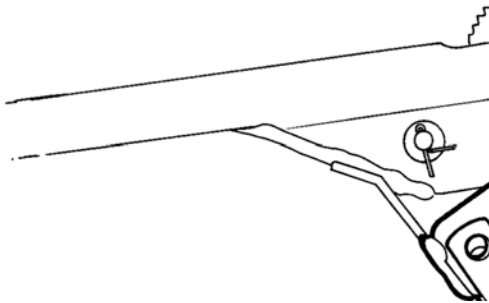


Figure 1
Checking adjustment of handle

1. Adjusting nut
3. Refit the plastic cover over the parking brake control.

Checking and adjusting parking brake

4. Remove the blocks in front of the wheels. Start the engine and check that the parking brake can keep the machine stationary with 3rd gear engaged and the engine at max. throttle. Any adjustment of the parking brake is done on the hydraulic transmission front output shaft.
 1. Release the pull rod for the parking brake by removing the cotter pin and the pivot pin.
 2. Screw in the adjusting screw so that both brake pads press against the brake disc.
 3. Loosen the adjusting screw so that a clearance of 0.25 mm (0.01 in) is obtained on each side of the brake disc. This corresponds to 1/5 turn of the adjusting screw.
 4. Lock the adjusting screw and adjust the pull rod so that its hole lines up with the hole in the lever.
 5. Refit the pivot pin and lock with the cotter pin.

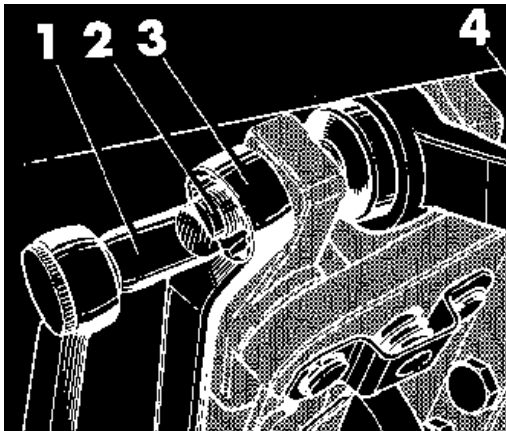


Figure 2

1. Socket
2. Adjusting screw
3. Wrench
4. Pull rod
5. Lever
6. Brake disc

Parking brake, electric

<https://truckmanualshub.com/>

The function controls the parking brake and notifies the operator if an attempt is made to drive away with the parking brake applied or if there is a system malfunction.

An applied parking brake is released with the parking brake switch when the engine is running.

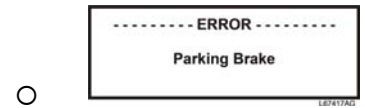
When the machine is switched off, the parking brake is applied irrespective of the position of the parking brake switch.

NOTE!

To protect the transmission there is a safety function which is activated when the parking brake has been applied by switching off the machine.

Parking brake, electric, available as equipment for the L90D.

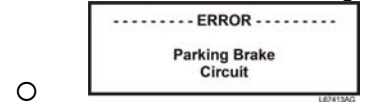
Input signals	Output function conditions	Output functions
○ Ignition switch, SW101 ○ Parking brake applied, SE503 ○ Engine speed, SE201 ○ Engine On/Off ○ Travel speed, SE403 ○ Directional gear ○ Switch, parking brake, SW501	Machine stationary: ○ Engine = Off ○ Travel speed = 0 ○ Ignition switch in position 0	○ Parking brake applied, no voltage to MA501 and no pressure to SE503
	Machine in starting position: ○ Engine = Off ○ Travel speed = 0 ○ Directional gear in position Neutral ○ Ignition switch in position 1	○ Parking brake applied, no voltage to MA501 and no pressure to SE503 ○ Warning lamp, parking brake
	Machine in operation with gear selector in Neutral position: ○ Parking brake switch in Applied position ○ Engine On ○ Directional gear in position Neutral	○ Parking brake applied, no voltage to MA501 and no pressure to SE503 ○ Warning lamp, parking brake
	Machine in operation with gear selector in Forward or Reverse position: ○ Parking brake switch in Applied position ○ Engine On ○ Directional gear in Forward or Reverse	○ Parking brake applied, no voltage to MA501 and no pressure to SE503 ○ Warning lamp, parking brake ○ Red central warning lamp ----- WARNING ----- Applied Parking Brake ○ Buzzer
	Release of parking brake when machine is running and parking brake is applied with parking brake switch: ○ Parking brake switch in Released position ○ Directional gear in position Neutral ○ Engine On	○ Parking brake is released, MA501 supplied with voltage and SE503 pressurized
See previous page	Safety function[T1] ⓘ "Release of parking brake" when the machine is in operation and the parking brake applied by the machine being stopped with the ignition switch in position 0: ○ Directional gear in Forward or Reverse ○ Parking brake applied ○ Engine speed > 1600 rpm ○ Parking brake switch in Released position	○ Parking brake released, MA501 supplied with voltage and SE503 pressurized
○ Monitoring, MA501	○ System malfunction, monitoring of MA501	○ Amber central warning lamp



☐ Monitoring, SE503

☐ System malfunction for monitoring of SE503

☐ Amber central warning lamp



[T1] The purpose of the safety function is to protect the transmission and must not be used instead of releasing the parking brake with the switch.

Parking brake, mechanical (L90D)

<https://truckmanualshub.com/>

The function controls the parking brake and informs the operator if an attempt is made to drive off with the parking brake applied.

Input signals	Output function conditions	Output functions
Parking brake applied, SE503 Engine On/Off Directional gear	Applied parking brake	Warning lamp, parking brake
	Applied parking brake Engine On Directional gear in Forward or Reverse	Warning lamp, parking brake Red central warning lamp ----- WARNING ----- Applied Parking Brake LE7385AC Buzzer

Language Code GB	Product ART/BHL/CEX/ COA/COS/CWL/ EXC/GRD/MET/ PAT/PAW/SSL/WLO	Group 910	https://truckmanualshub.com/	No. 24	Version 1	Date 04/29/2010
Applies to Wheel Loaders, Compact Wheel Loaders, Motor Graders, A25D 4x4 Volvo, A25D Volvo, A25E 4x4 Volvo, A25E Volvo, A30D Volvo, A30E Volvo, A35D Volvo, A35E FS Volvo, A35E Volvo, A40D Volvo, A40E FS Volvo, A40E Volvo, T450D Volvo, Tracked Pavers, Wheeled Pavers, Asphalt Compactors, Soil Compactors, Tracked Milling Equipment, Backhoe Loaders, Compact Excavators, Excavators, Skid Steer Loaders						

Portable/refillable O-ring kits



WARNING
Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.



Figure 1

Cause and action

A new O-ring kit has been introduced and replaces the earlier one that has not reached the quality expected of a Volvo spare part. The O-rings in the new kit are all made of HNBR material. The O-rings in the earlier kit only met this quality level to a certain extent. As well, the box for the O-rings is of a new design which prevents the O-rings from being mixed up if the box should be dropped accidentally, for example.

Designation	Earlier part number	New part number
O-ring kit	VOE 11708294	VOE 15155158

Feeds	
Designation	Function
30	30-feed direct from battery
30A	30-feed for optional equipment
30K	30-feed on circuit board
15	Feed from ignition switch "Operating position". Disconnected in 50 position (starter motor)
15A	15 feed via RE2
15B	15-feed via RE4 (AC, cab fan)
15EA	Electronics feed via RE12[T1] ⓘ
RA	Feed from ignition switch for radio

[T1]15-feed also connected during starter motor cranking

Precharge pressure in accumulators, <https://truckmanualshub.com/>

Op nbr 91602

[11666135 Gas filling kit](#)

[999 3831 Support \(2\)](#)

[13933251 Pressure check connection](#)

[11666037 Hose](#)

NOTE!

The hydraulic pressure must be fully released before the nitrogen pressure in the accumulators is adjusted.

Releasing the hydraulic oil pressure in accumulators

1. Place two supports 9993831 under the lifting frame.
Place the supports on a firm and level surface.

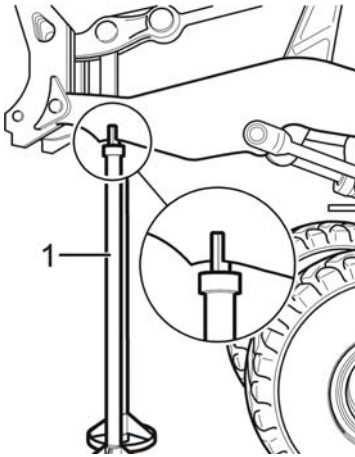


Figure 1

1. Support 9993831 (2)
2. Start the engine and engage the float position with switch SW903 on the instrument panel.
3. Activate the Boom Suspension System in gear-dependent mode.
4. Move the control lever (lift/lower) forwards to the float position and wait 30 seconds.

NOTE!

The engine should be running at idle speed as there is a danger of the machine lifting if the float position is not activated. Because the lever must pass the lowering position to reach the float position, it must be pulled quickly to the float position to minimize the lowering function.

5. Keep the servo lever in the float position and switch off the engine at the same time.
The accumulators should now be drained and the Boom Suspension System depressurized. Only a residual pressure of about 0.3 MPa (43.5 psi) should be present in the system. To make sure that the system is depressurized before service work is started, the following points should be observed:
6. Connect a pressure check connection 13933251 to hose 11666037.
7. Place the end of the hose with the loose pressure check connection in a suitable receptacle and connect the other end of the hose to the pressure check connection on the Boom Suspension System's valve block. If the hose cannot be connected to the Boom Suspension System's valve it may be because the residual pressure in the system is too high. Repeat points 1 to 5.
8. Any residual pressure in the system is drained through the hose.

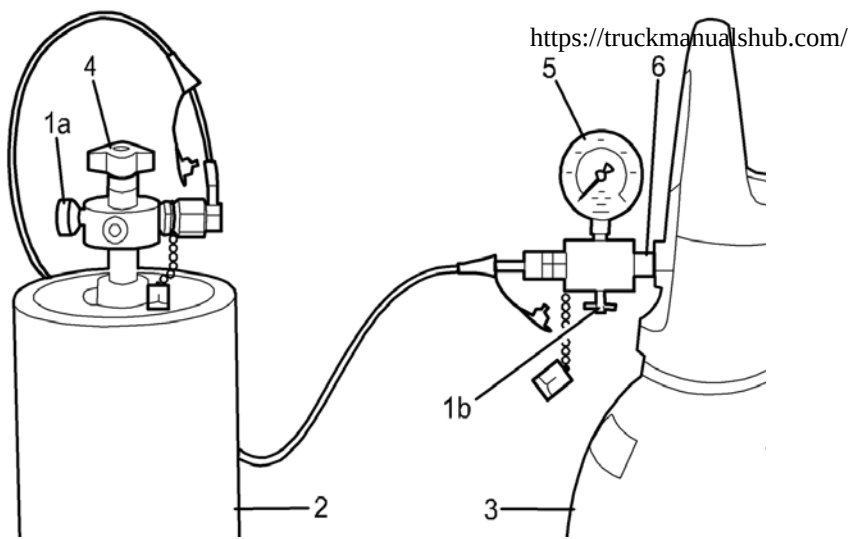


Figure 2
Gas filling kit

1. a. Unloading valve
b. Unloading valve
2. Accumulator
3. Nitrogen cylinder
4. Gas valve
5. Pressure gauge
6. Non-return valve

Checking precharge pressure

9. When checking and reducing the accumulator precharge pressure, there is no need for the gas cylinder to be connected.
10. Remove the cap nut from the accumulator valve.
11. Loosen the Allen head bolt in the accumulator valve approximately 1/4 turn anticlockwise. Use a 6 mm (0.24 in) Allen key.
12. Screw tool 11 666 135 onto the accumulator by hand. Make sure that there is an O-ring in position in the tool.
In some cases it may be necessary to undo the accumulator attachments and move the accumulator in order to fit the tool in place.
- NOTE!**
Put the accumulator back in its original position after carrying out adjustment. There is otherwise a risk that the hose will chafe.
13. Close unloading valves 1a and 1b.
14. Open valve 4 anticlockwise. When pressure gauge 5 begins to indicate, the valve should be opened one further turn. The pressure gauge shows the filling pressure in the accumulator. Non-return valve 6 prevents the gas from flowing out.

Reducing precharge pressure

15. Open unloading valve 1a or 1b carefully. Gas will flow out of the tool.

Increasing precharge pressure

16. Connect the tool to nitrogen cylinder 3.
17. Open gas valve 4 on the accumulator.
18. Carefully open the nitrogen cylinder's valve. Gas will now flow into the accumulator.
- NOTE!**
Adjust the pressure slowly so that gas valve 4 is not overloaded.
19. Close the nitrogen cylinder valve and read off the pressure on the pressure gauge.

20. Repeat this procedure until the correct precharging pressure is reached. Wait about 5 minutes while temperature equalization takes place and then check the pressure again.

<https://truckmanualshub.com/>

Restoring system

21. When the desired pressure is reached, close accumulator gas valve 4 clockwise.
22. Remove the tool from the accumulator. Retighten the Allen head screw in the gas valve on the accumulator.
Tightening torque: **25 Nm (18.4 lbf ft)**.
23. Check that the gas valve does not leak. Use a soap and water solution.
24. Fit an O-ring in the cap nut, then fit the cap nut.

Preheating of induction air

<https://truckmanualshub.com/>

The function activates preheating and warns the operator if there is a system malfunction.

Manual preheating is activated with switch SW201 and engages preheating if coolant temperature is below +30 °C (86 °F).

Automatic heating is selected by de-activating additional heating via the display panel. Heating is then engaged automatically if coolant temperature is below +10 °C (50 °F) and the motor rotates faster than 150 rpm when the engine starts.

If additional heating is selected the heating coil will be connected in circuit when the motor has been started for additional heating a maximum of 4 times or until the coolant temperature exceeds +35 °C (95 °F).

The overarching conditions for heating are to ensure that the heating coil will not take so much energy from the starter motor that the engine cannot be started.

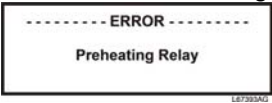
Engagement of preheating coil HE201 takes place via relay RE201 and is indicated by control lamp LC15 on the instrument panel.

Input signals	Output function conditions	Output functions
○ Activation of preheating, SW201 ○ Coolant temperature, SE205 ○ Engine speed, SE201 ○ Setting additional heating ○ System voltage	Overall conditions for heating Preheating cannot be activated at: ○ Engine speed < 100 rpm ○ System voltage < 12 V Preheating can be activated at: ○ Engine speed < 150 rpm ○ System voltage > 12 V for > 2 seconds	
	Manual preheating ○ Ignition switch SW101 in position 1 ○ SW201 depressed to activate preheating ○ Coolant temperature < +30 °C (86 °F)	○ Activation of preheating coil HE201 via relay RE201 ○ Control lamp LC15 Activation times ○ 50 seconds if coolant temperature < -10 °C (14 °F) ○ 50 –10 seconds if coolant temperature -10 – +30 °C (14 - 86 °F)
	Automatic heating ○ Additional heating not activated via the display panel ○ Engine speed has increased from 0 to > 150 rpm ○ Coolant temperature < +10 °C (50 °F)	○ Activation of preheating coil HE201 via relay RE201 ○ Control lamp LC15 Activation times ○ 50 seconds if coolant temperature < -10 °C (14 °F) ○ 50 –10 seconds if coolant temperature -10 – +10 °C (14 - 50 °F)
	Additional heating ○ Additional heating activated via the display panel ○ Coolant temperature < +35 °C (95 °F) ○ Engine speed has increased from 0 to > 400 rpm ○ Engine speed > 400 rpm for > 2 seconds	○ Activation of preheating coil HE201 via relay RE201 ○ Control lamp LC15 Activation times ○ 40 seconds activation at 20 second intervals. Activation maximum 4 times or until coolant temperature reaches > +35 °C (95 °F)

○ Monitoring, RE201

○ <https://truckmanualshub.com/>
System malfunction, open circuit or short circuit

○ Amber central warning lamp



○

Preheating, description

<https://truckmanualshub.com/>

The purpose of preheating is to heat the intake air so that starting in cold weather is facilitated and to reduce white smoke when the engine starts.

Preheating is engaged manually by means of switch SW201.

For heating after starting, either automatic heating or additional heating can be selected via the display panel.

Manual preheating

When the key is turned to position 1, switch SW201 and relay RE201 are fed with power.

Preheating is engaged by depressing SW201. An input signal then goes to I-ECU which activates RE201 via V-ECU.

RE201 activates preheating coil HE201 and control lamp LC15 on the centre instrument panel lights up. The control lamp remains on as long as the preheating element is activated.

The duration of activation depends on the temperature of the coolant. If the coolant temperature is above +30 °C (86 °F), the preheating coil is not activated.

Automatic heating

Automatic heating is selected by deactivating additional heating via the display panel.

When the engine has been started, heating is engaged automatically via V-ECU, which activates RE201, if the coolant temperature is below +10 °C (50 °F).

RE201 activates preheating coil HE201 and control lamp LC15 on the centre instrument panel lights up. The control lamp remains on as long as the preheating element is activated.

The duration of activation depends on the temperature of the coolant. If the coolant temperature is above +10 °C (50 °F), the preheating coil is not activated.

Additional heating

Additional heating is selected by activating it via the display panel. When the engine has been started, additional heating is engaged by V-ECU, which activates RE201, if the coolant temperature is below +35 °C (95 °F).

RE201 activates preheating coil HE201 and control lamp LC15 on the centre instrument panel lights up. The control lamp remains on as long as the preheating element is activated.

Heating is engaged four times up to a coolant temperature of +35 °C (95 °F).

For activation times and conditions see [Invalid linktarget].

Pressure back-up for servo circuit

<https://truckmanualshub.com/>

Op nbr

[999 3704 Nipple, 2 pcs.](#)

[11 666 019 Pressure gauge, range 0–6 MPa \(0–870 psi\), 2 pcs.](#)

[11 666 037 Hose, 2 pcs.](#)

1. Connect nipple 999 3704 to the upper side of the lift spool. Connect hose and pressure gauge.
2. Start the engine and run it at idling speed for about 30 seconds. Then stop the engine.
3. Move the lift lever from neutral to maximum lift position. Repeat this 10 times. The servo pressure should not drop below 10 bar (145 psi).

Pressure in circuit, checking and adjusting http://www.alshub.com/

Op nbr 52005

[11 666 020 Pressure gauge 0–25 MPa \(0–3626 psi\)](#)

[11 666 037 Hose](#)

The following applies when checking:

Temperature: **Normal operating temperature**

Pressure in brake circuits: **8 ±0.5 MPa (1160 73 psi)**

NOTE!

Before the system is checked, it must be free of air, see [Invalid linktarget].



WARNING

Oil under high pressure!

1. Release the brake system pressure by depressing the brake pedal repeatedly (30–40 times).
2. Connect a pressure gauge to the pressure outlet for the rear circuit on the brake valve.

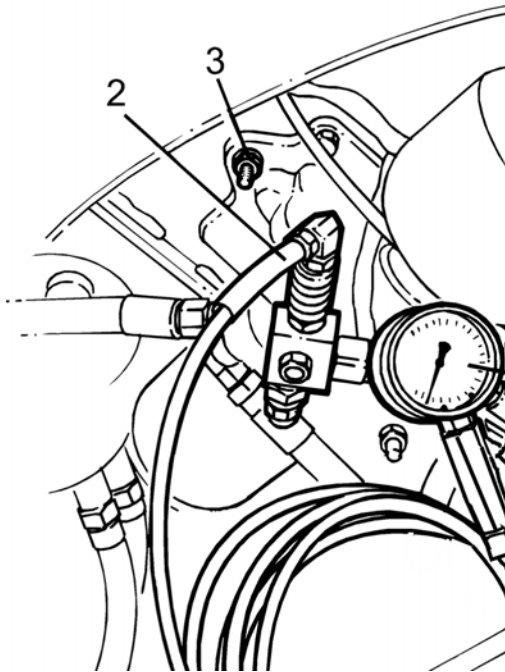


Figure 1
Checking pressure in brake circuit

1. 11 666 020
2. 11 666 037
3. Adjusting screw

3. Start the engine, charge the brake system accumulators and turn off the engine.
4. Depress the brake pedal so that it rests against the adjusting screw, see [Invalid linktarget]. At the same time, check that the pressure does not exceed 8.5 MPa (1233 psi).
5. Adjust the pressure in the circuit as follows: Depress the brake pedal fully so that it rests against the adjusting screw. Break off the security seal on the adjusting screw, see [Invalid linktarget], and adjust the pressure in the brake circuit. Release the brake pedal and affix a new security seal on the adjusting screw.

NOTE!

The adjustment should/must be performed by two persons.

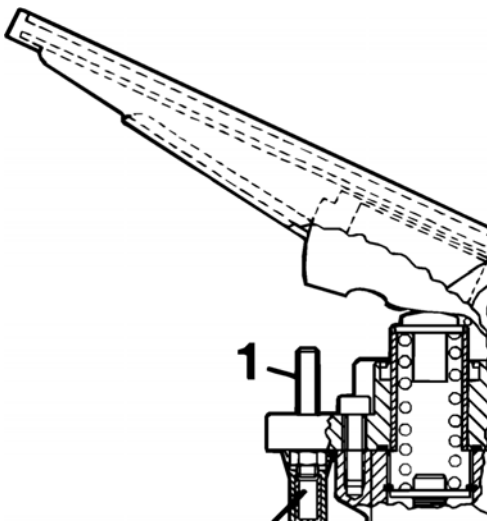


Figure 2

1. Adjusting screw for output brake pressure
2. Security seal

Pressure reducing valve (CT8) for <https://truckmanualshub.com/>

Op nbr

[11 666 003 Pressure gauge 0–40 MPa \(0–5800 psi\)](#)

1. Connect a pressure gauge to the pressure outlet, port M on the valve block, (quick-coupling).
2. Start the engine and raise the lift arms to their end position.
3. Stop the lifting function and read off the pressure gauge at the same time. The pressure should rise quickly to 12 MPa (1740 psi). If the correct pressure is not reached, carry out adjustment on the pressure reducing valve with the engine switched off. Check again after adjustment.
4. Turn off the engine, remove the pressure gauge and restore the machine to operating condition.

Product identification plates

<https://truckmanualshub.com/>

The illustration and text below show which product plates should be located on the machine.

When ordering spare parts and in all telephone enquiries or correspondence, the model designation and the Product Identification Number (PIN) must always be quoted.

Where applicable, the information on the additional plate, "INCL. PARTS" must be given.

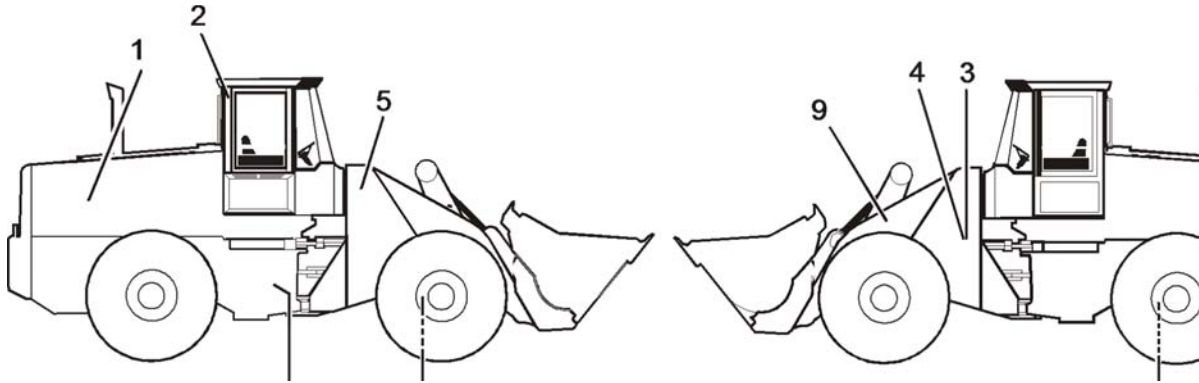


Figure 1
Product identification plates

1 Engine The engine type designation, part number and serial number are stamped into the cylinder block below the turbocharger (right-hand side of the machine).

3 Product identification plate Includes machine type, manufacturer's name and address. The PIN for the complete machine (includes model designation, engine code and serial number) is located on the left-hand side of the front frame.

5 Primary marking The PIN, model designation, engine code and serial number are stamped into the right-hand side of the front frame (shows the same PIN number as the product identification plate).

7 Transmission The transmission product identification number and serial number, as well as the manufacturer, are located on the right-hand side of the transmission.

8 Differential carrier assembly The differential carrier assembly product identification number and serial number, CIN and manufacturer are located on the differential housing.

2 Cab The serial number, machine type, manufacturer's name and address, ROPS/FOPS number and max. machine weight are located on the right-hand rear roof pillar inside the cab.

4 Additional plate Additional plate located below the product identification plate. Shows machine weight, engine output and year of manufacture as well as providing space for the CE-marking (only EU/EEA countries).

6 Rear axle The rear drive shaft component plate Component Identification Number, CIN, with product identification number and serial number, as well as the manufacturer, are located on the axle casing.

8 Front axle The front axle's component identification number (CIN), with product identification number, serial number and manufacturer is located on the axle casing.

9 Lifting frame The lifting frame's product identification number, serial number and manufacturer are located on its left-hand side.

Language Code GB	Product WLO	Group 420	https://truckmanualshub.com/	No. 15	Version 5	Date 02/01/1996
Applies to 4200 Volvo BM, 4200B Volvo BM, 4300 Volvo BM, 4300B Volvo BM, 4400 Volvo BM, 4500 Volvo BM, 4600 Volvo BM, 4600B Volvo BM, 6300 Volvo BM, EL70 Volvo BM, EL70C Volvo BM, L50 Volvo BM, L50B Volvo BM, L50C OR Volvo, L50C Volvo, L50C Volvo BM, L50D Volvo, L70 Volvo BM, L70B Volvo BM, L70C Volvo, L70C Volvo BM, L70D Volvo, L90 Volvo BM, L90B Volvo BM, L90C OR Volvo, L90C Volvo, L90C Volvo BM, L90D OR Volvo, L90D Volvo, L120 Volvo BM, L120B Volvo BM, L120C Volvo, L120C Volvo BM, L120D Volvo, L150 Volvo BM, L150C Volvo, L150C Volvo BM, L150D Volvo, L160 Volvo BM, L180 CO Volvo BM, L180 HL Volvo BM, L180 Volvo BM, L180C CO Volvo, L180C HL Volvo, L180C Volvo, L180C Volvo BM, L180D HL Volvo, L180D Volvo, L220D Volvo, L330C LL Volvo, L330C Volvo, L330C Volvo BM, L330D Volvo						

Production development list for Volvo BM transmissions

Regarding: HT90, HT130, HT131, HT132 and HT200

Supersedes SB G - 420 - IND K15 R3 dated 05.94



WARNING
Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

HT90

Machine	Serial No	Transmission	Product No.
4200B		HT90 4-speed	30824[1] ⓘ
4200B		HT90 8-speed	30825
L50	-6401 -60300 (USA)	HT90 4-speed HT90 8-speed	30824[2] ⓘ 30825
L50	6401- 60301- (USA)	HT90 4-speed HT90 8-speed	30824[3] ⓘ 30825
L70	-7401 -60500 (USA)	HT90 4-speed HT90 4-speed HT90 8-speed HT90 8-speed	30827[4] ⓘ 30859[5] ⓘ 30828[6] ⓘ 30860[7] ⓘ
L70	7401- 60501- (USA)	HT90 4-speed HT90 8-speed	30859[8] ⓘ 30860[9] ⓘ
L70	9636- 61391- (USA)	HT90 4-speed HT90 8-speed	30874[10] ⓘ 30875[11] ⓘ
L70B/L70C		HT90 4-speed HT90 8-speed	30872[12] ⓘ 30873
6300/EL70/EL70C		HT90 4-speed HT90 8-speed	30829[13] ⓘ 30839

HT130

Machine	Serial No	Transmission	Product No.
4500	2601-	HT130	30819

HT131

Machine	Serial No	Transmission	Product No.
L90		HT131	30846
L90 Compactor		HT131	30855
L90B	-12339 -61588 (USA)	HT131	30869[14] ⓘ
L90B	12440- 61589- (USA)	HT131	30879[15] ⓘ
L90C		HT131	30897
L120	-5154 and 5162-5167	HT131	30843
L120	5168- and 5030-5032, 5069-5071, 5155-5161	HT131	30854

L120B	-9030 -60948 (USA)	https://truckmanuals.net/	HT131	30870[16] ⓘ
L120B	9031- 60949- (USA)		HT131	30880[17] ⓘ

HT132

Machine	Serial No	Transmission	Product No.
A20	-2740	HT132	30842
A20	2741-	HT132	30881[18] ⓘ

HT200/201

Machine	Serial No	Transmission	Product No.
4600B		HT200	30832[19] ⓘ
4600B Compactor		HT200	30851[20] ⓘ
L160	-3908	HT200	30832[21] ⓘ
L160 Compactor		HT200	30851[22] ⓘ
L160	3909-	HT201	30864[23] ⓘ
L160 Compactor		HT201	30865[24] ⓘ

HT200R

Machine	Serial No	Transmission	Product No.
		HT200R	30885[25] ⓘ
		HT200R	30896[26] ⓘ

HT205

Machine	Serial No	Transmission	Product No.
L120C	-10159 -61378 (USA) -70007 (BRS)	HT205	30887[27] ⓘ
L120C	10160- 61379- (USA) 70008- (BRS)	HT205	22500[28] ⓘ

HT210

Machine	Serial No	Transmission	Product No.
L150	-1600 -60242 (USA)	HT201/HT210	30866
L150	1601- 60243- (USA)	HT210	30882[29] ⓘ
L150C	-2203 -60558 (USA)	HT210	30882[30] ⓘ
L150C	2204- 60559- (USA)	HT210	30893[31] ⓘ

HT220

Machine	Serial No	Transmission	Product No.
L180	-1329 -60098 (USA)	HT220	30868
L180	1330- 60099- (USA)	HT220	30883[32] ⓘ
L180C	-1962 -60336 (USA)	HT220	30883[33] ⓘ

L180C	1963-60337- (USA)	https://truckmanualshub.com/	HT220	30894
L180 Compactor	-1329-60098 (USA)		HT220	30884[34] ⓘ
L180 Compactor	1330-60099- (USA)		HT220	30886[35] ⓘ
L180C Compactor	-1962-60336 (USA)		HT220	30886[36] ⓘ
L180C Compactor	1963-60337- (USA)		HT220	30895[37] ⓘ

HT90

	Action	Introduced w. e. f. HT.No.	Date Year / month
1	A new green sealing ring of viton material has been introduced on the separator plate for 1st-2nd gear clutch shaft. The earlier sealing ring was affected by high oil temperatures resulting in intermittent drive failure. SB DEI-437-49	4200B, 1726-6300, 1798-	8504
2	To improve oil supply to the hydraulic clutch for 1st and 2nd gear a separate oil channel in the clutch shaft has been introduced. SB LX-421-K1	2712-	8510
3	To eliminate the risk of drive failure in cold weater the drain-off channels in the gear selector valve have been drilled out from 4 mm (0.157 in) to 6 mm (0.236 in). SB LX-421-K4	2844-	8608
4	Asbestos-free gaskets introduced.	3717-	8612
5	Fully-welded ring gear on torque converter introduced. Note also SB ALX-414-5	L50, 3929-L70, 3890-	8701
6	Oil channel on 2nd gear countershaft introduced. Improves lubrication of bearings. SB LX-421-K21	4619-	8706
7	New solenoid valve with separate holder for locking all solenoids introduced. ALX-421-8	5082-5052-5065 5069-5079	8710
8	New clutch shaft for 1st - 2nd gear introduced. New clutch drums for forward/3rd and reverse/4th gears and new friction discs introduced. New oil distributor for F/3rd gear clutch shaft, gear meaning that oil pipe between gear selector valve and oil distributor is discontinued. New, strengthened needle bearing for 3rd speed gear wheel. SB LX-421-33	5563-	8801
9	New type of gasket between gear selector valve and transmission. SB ALX-420-12	5720-	8712

10	New clutch drums and outer discs as spares. SB G-421-35	https://truckmanualshub.com/	-
11	New hardened locking ring halves for clutch shafts. SB LX-421-K66	-	9106
12	New valve spools in gear selector valve. SB AL-421-71	-	9203
13	New locking rings, hubs and pressure plates for clutch shafts. SB LX-421-K74	L50: 3082415230- L70: 3085915471- 6300: 3082915069-	9205
14	A new type of torque converter, (DAIKIN). SB L-414-IND 18R1	L70 : 3087410001 3087510001	9210
15	Countershaft for 2nd speed gear, bolt with higher tensile strength. SB LX-421-77	L50 : 3082415324- 3082515073- L70 : 3085915638- 3086015022- 3087410049- 3087510002- EL70 / 6300 : 3082915082- 3083915073-	9211
16	Countershaft for 2nd speed gear, longer bolts with higher tensile strength. SB L-420-IND 41	L70B : 3087210001 3087310001 EL70 : 3082915169- 3083915155:-	9401 9409

HT130

	Action	Introduced w. e. f. HT.No.	Date Year / month
1	Modified hardening of 3rd and 4th gear clutch shaft introduced. Acceleration piston also modified to give smoother engaging properties. SB D-437-K34	1437-	8402
2	Welded gear wheel, part no. 4718579, on countershaft replaced by forged gear wheel, part no. 4871029.	1837-	8406
3	Splash lubrication of power take-off replaced by force-feed lubrication.	1907-	8406
4	Strengthened clutch hub for 1st-2nd gear and Forward-Reverse gear	-	8410

	introduced.	https://truckmanualshub.com/	
5	A new green sealing ring of viton material introduced on the separator plate for 3rd-4th gear clutch shaft. The earlier sealing ring was affected by high oil temperatures resulting in intermittent drive failure. SB DEI-437-49	2590-	8504
6	Strengthened of hydraulic clutch for 1st-2nd gear introduced. Thickness of friction discs and a new hub for 2nd gear introduced. For co-ordination, these discs have also been introduced on the forward-reverse clutch	3041-	8511

Disc thicknesses as follows: (SB D-437-K50)

	Forward-reverse clutch	1st-2nd gear clutch
Steel disc	2.0 mm (0.079 in)	1.5 mm (0.059 in)
Friction disc	2.0 mm (0.079 in)	2.0 mm (0.079 in)

	Action	Introduced w. e. f. HT.No.	Date Year / month
7	Drilling-out of drain holes in transmission housing and 1st-2nd gear clutch shaft and changing pistons. Modification introduced to give quicker draining and application of hydraulic clutch. SB L-421-K5	-	8611
8	New clutch drums and outer discs as spares. SB G-421-35	-	-
9	New clutch shaft for Forward-Reverse gear as spare. SB AL-421-45	-	
10	Idler gear for power take-off, bolt with higher tensile strength for journals of intermediate gear bearings. SB AL-421-55	-	-
11	Intermediate bearing, power take-off. New torque converter housing as spare part.	-	-

12	New hardened locking ring halves for clutch shafts. SB LX-421-K66	—	—
13	New friction disc for forward and 1st - 2nd clutches. SB L-421-IND 83	—	9310

HT131

	Action	Introduced w. e. f. HT.No.	Date Year / month
1	Separate oil channel for 3rd - 4th gear hydraulic clutch introduced. Lubrication of splines on 1st - 2nd gear shaft introduced and strengthened bearing on splines side. New type of oil filter with improved degree of cleaning.	Start of manufacture of L90, L120	
2	Drilling-out of drain holes in transmission housing and 1st-2nd gear clutch shaft and changing pistons. Modification introduced to give quicker draining and application of hydraulic clutch. SB L-421-K5	L120, 3664- L90, 3750	8608
3	Asbestos-free gaskets introduced.	4193-	8612
4	Fully welded ring gear on torque converter introduced. See also SB ALX-414-5	4945- only L90	8704
5	New solenoid valve with separate holder for locking all solenoids introduced. SB ALX-421-8	L90, 5584- L120, 5576-	8710
6	New type of clutch shaft for 3rd - 4th gear introduced. SB AL-421-25	6140-	8801
7	New typ of gasket between gear selector valve and transmission housing. SB ALX-420-12	L90, 6335- L120, 6322-	8712
8	Modification 1st - 2nd gear clutch shaft. SB AL-421-39	7305-	8808
9	Modification of Forward-Reverse gear clutch shaft. SB AL-421-45	8013-	8811
10	Larger lubricating oil pipe. SB AL-420-21	9869-	8909
11	New clutch drums and outer discs as spares. SB G-421-35	-	-
12	Idler gear for power take-off, bolt with higher tensile strength for journals of intermediate gear bearings. SB AL-421-55	10597-	9002
13	Intermediate bearing, power take-off. SB AL-421-61 R1	L90, 13261- L120, 13276-	9104
14	New hardened locking ring halves for clutch shafts. SB LX-421-K66	-	9106
15	New valve spools in gear selector valve. SB AL-421-71	L90, 3084615312- L90B, 3086910001- L120, 3085415194- L120B, 3087015031-	9112

16	New locking rings, hubs and pressure plates for clutch shafts. SB AL-421-K72	https://trackmania.fanshub.com/ L90, 084615496- L90B, 3086910167- L120, 3085415349- L120B, 3087015180-	9204 9204
17	New type of transmission filter. SB AL-420-32	L90, 3084615536- L90B, 3086910358- L120, 3085415385- L120B, 3087015299-	9206
18	Improved draining of reverse clutch. SB AL-421-K73	L90, 3084615543- L90B, 3086910545- L120, 3085415385- L120B, 3087015303-	9210 9206
19	Countershaft, bolt with higher tensile strength. SB AL-420-37	L90: 3084615236- L90B: 3086910505- L120: 3085415415- L120B: 3087015442-	9209 9209
20	New damping valve for forward and reverse clutch. SB L-421-IND K85	L90: 3084615649- L90B: 3086911103- L120: 3085415506- L120B: 3087015919-	9306 9306
21	Idler gear bearing, power take-off. SB L-421-IND K82	L90: 3084615649- L90B: 3086911323- L120: 3085415506- L120B: 3087016134-	9310 9310
22	New friction disc for forward-reverse and 1st - 2nd clutches. SB L-421-IND 83	—	9310
23	Pipe between gear selector valve and oil distributor Forward / Reverse replaced by a hose. SB L-420-IND 38	L90B : 3086911385- L120B : 3088010025-	9310
24	Modified transmission		
	L90B with effect from serial no.: 12440- (EU) 61589- (USA)	3087910001-	9404
	L120B with effect from serial no.: 9031- (EU) 60949- (USA)	3088010001-	9310

SB L-421-IND K84 R1

25	Modified journalling for reverse gear. SB L-420-IND 39.	L90: 3084615649- L90B: 3087910149- L120: 308541516- L120B: 3088010524-	9405
26	New gear selector valve with increased diameter of restriction for 1st-2nd gear, 2.7mm (0.098 in) to 5mm (0.197 in).	L90C 3089710001-	9406
27	New rear bearing, torque converter. SB L-414-IND 24.	L120B 3088010793-	9408

HT132

	Action	Introduced w. e. f. HT.No.	Date Year / month
1	Separate oil channel for 3rd - 4th gear hydraulic clutch introduced.	Start of manufacture A20	
2	New safety valve, shorter.	3652-	8606
3	Temperature sender unit moved to transmission housing.	4014-	8610
4	Change of bearing retainer and bolt, 3rd - 4th gear shaft.	4119-	8611
5	Asbestos-free gaskets.	4184-	8604
6	Fully welded ring gear on torque converter. See also SB ALX-414-5	4385-	8701
7	New banjo screw, oil line, M12x1.5	4552-	8704
8	New solenoid valve with separate holder for locking all solenoids introduced. SB ALX-421-8	5599-	8710
9	Pressure build-up valve discontinued.	5659-	8710
10	New typ of clutch shaft for 3rd -4td gear introduced. SB AL-421-25	6140-	8801
11	New transmission housing together with new shaft for 3rd - 4th gear introduced.	6140-	8801
12	Change of gasket between gear selector valve and transmission housing. SB ALX-420-12	6367-	8712

13	Modification of clutch shaft 1 - 2. SB AL-421-39	7305- https://truckmanualshub.com/	8808
14	Modification of clutch shaft F - B. SB AL-421-45	7042-	8806
15	Larger oil pipe. Gear selector valve- transmission housing. SB AL-420-21	9937-	8911
16	Countershaft, bolt with higher tensile strength. SB AL-420-37	3084210428-	8912
17	New clutch drums and outer discs as spares. SB G-421-35	-	-
18	Idler gear for power take-off, bolt with higher tensile strength for shaft journals of intermediate bearings. SB AL-421-55	10597-	9002
19	Idler gear bearing, power take- off. SB AL-421-61 R1	13322-	9104
20	New hardened locking ring halves for clutch shafts. SB LX-421-K66	-	9106
21	New valve spools in gear selector valve. SB AL-421-71	3084215036-	9112
22	New locking rings, hubs and pressure plates for clutch shafts. SB AL-421-K72	3084215069-	9204
23	Improved draining of reverse clutch. SB AL-421-K73	3084215090-	9206
24	New type of transmission filter. SB AL-420-32	3084215087-	9206
25	New friction disc for forward- reverse and 1st - 2nd clutches. SB L-421-IND 83	—	9310
26	Idler gear bearing, power take- off. SB A-421-ART K81	3084215173-	9310
27	Pipe between gear selector valve and oil distributor Forward / Reverse, replaced by a hose. SB A-420-ART 40	3084215181-	9310
28	Modified transmission : SB A-421-ART K82	3088110001-	9404
29	Modified journalling for reverse gear. SB A-421-ART 84	3088110015-	9405

HT200

	Action	Introduced w. e. f. HT.No.	Date Year / month
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1	New type of oil filter with improved degree of cleaning.	1619- https://truckmanualshub.com/	8605
2	Locking ring introduced on turbine shaft to restrict its end float. SB L-414-4	1639-	8604
3	Asbestos-free gaskets introduced.	1800-	8612
4	New spool in damping valve introduced, giving smoother shifting between forward and reverse. New part nos.: 11036167-2 Valve complete 11036166-4 Spool	2004-	8706
5	New type of solenoid valve with separate holder for locking solenoid. SB ALX-421-8	2097-	8710
6	New typ of clutch shaft for 3rd - 4th gear introduced. SB L-421-23	2206-	8801
7	New typ of gasket between gear selector valve and transmission housing. SB ALX-420-12	2235-	8712
8	Support ring for thrust bearing in torque converter. SB L-414-12	2465-	8903
9	Nitrocarbonized clutch drums, 3rd - 4th gear clutch. SB L-421-44	2665-	8902
10	Smaller O-ring between hydraulic pump and power take-off for pump drive. SB L-421-46	2718-	8903
11	New design of dropbox. Altered position of bearing for output shaft. SB L-421-48	2791-	8905
12	HT200 replaced by HT201. SB L-420-25 R1 and L-421-K57 R2	3475-	9010
13	New friction disc for 1st and 2nd clutch. SB L-421-IND 83	—	9310
14	An improved PTO-drive has been introduced. SB L-421-IND K87 and L-421-IND 88	—	9411
15	For other details, see Production Development List for HT201.		

HT201 / HT205 / HT210 / HT220

	Action	Introduced w. e. f. HT.No.	Date Year / month
1	New material in friction linings for	3705-	9102

2	New hardened locking ring halves for clutch halves. SB LX-421-K66	-	9106
3	Restriction channel in gear selector valve plugged, which gives a higher clutch pressure with the engine running at low idling speed. SB L-421-K68	3824-	9207
4	Altered oil supply for front bearing of output shaft. SB L-421-K69	L150, 3086615045- L160, 3086415071-	9110
5	New locking rings, hubs and pressure plates for clutch shafts. SB L-421-K70	L150, 3086615115- L160, 3086415155-	9112
6	New valve spools in gear selector valve. SB AL-421-71	L150, 3086615081- L160, 3086415128-	9112
7	New type of transmission filter. SB AL-420-32	L150 3086615289- L180 3086810060-	9206
8	Strengthened locking ring joint for clutch shafts Forward / 1 and Reverse / 2. SB L-421-K76	L150 : 3086615329- L160 : 3086415155- L180 : 3086810072-	9208
9	Modified transmission : L150 with effect from serial no.: 1601- (EU) 60243- (USA) L180 with effect from serial no.: 1330- (EU) 60099- (USA) SB L-421-IND K78	3088210001- 3088310001-	9308
10	New friction disc for 1st and 2nd clutch. SB L-421-IND 83	—	9310
11	New torque converter with modified PTO-gear. SB L-414-IND 22	L150 3088210184- L180 3088310111-	9406
12	Modified lubrication valve on HT200 series. SB L-421-IND 86	—	9410
13	An improved PTO-drive has been introduced. SB L-421-IND K87	L120C: 3088710003- L150C: 3088210557- L180C: 3088310497- L180 Compactor: 3088610010- HT200R: 3088510016-	9411
14	Modified locking of PTO-drive. SB L-421-IND K88	L120C: 3088710185- L150C: 3088210799-	9507

		L180C: 3088310728- L180 Compactor: 3088610013- HT200R: 3088510031-	
15	New transmission housing with integrated PTO-drive: L120C with effect from serial No.: 10160- (EU) 61379- (USA) 70008- (BRS) L150C with effect from serial No.: 2204- (EU) 60559- (USA) L180C with effect from serial No.: 1963- (EU) 60337- (USA) L180C, Compactor with effect from serial No.: 1963- (EU) 60337- (USA) SB L-420-WLO 43	2250010001- 3089310001- 3089410001- 3089510001- HT200R 3089610001-	9505
16	New hose package for transmission with effect from serial No.: 10073- (EU) 61407- (USA) SB L-420-IND K42	L120C: 3088710240-	9505
17	Oil pressure, torque converter on HT200 series. A new modified safety valve pipe has been introduced. SB L-414-WLO K25	L120C: 2250010286- L150C: 3089310161- L180C: 3089410155- L180 Compactor: 3089510003- HT200R: 3089610001-	9510
18	The pressure sensor for the transmission has been moved to the gear selector valve. SB L-380-IND 4 R1	L120C: 2250010350-	9510

[1]Can be replaced by 30825

[2]Can be replaced by 30825

[3]Can be replaced by 30825

[4]Replaced by 30859 and flange part No. 4718656-4.

[5]New flanges for the propeller shafts, see SB LX-451-8Replaced by 30874.

[6]Replaced by 30860 and flange part No. 4718656-4.

[7]New flanges for the propeller shafts, see SB LX-451-8.Replaced by 30875.

[8]Replaced by 30874

<https://truckmanualshub.com/>

[9]Replaced by 30875

[10]DAIKIN torque converter, see SB L-414-IND 18 R1

[11]DAIKIN torque converter, see SB L-414-IND 18 R1

[12]One power take-off (RH), see SB L-420-IND 41.

[13]Can be replaced by 30839

[14]Replaced by 9000030869

[15]See SB 421-IND K84 R1.

[16]Replaced by 9000030870

[17]See SB 421-IND K84 R1

[18]See SB 421-ART 82.

[19]Replaced by 30864

[20]Replaced by 30865

[21]Replaced by 30864

[22]Replaced by 30865

[23]See SB L-420-25 R1

[24]See SB L-420-25 R1

[25]See SB L-400-IND 8.Replaced by 30896

[26]See SB L-420-WLO 43.

[27]Can be replaced by 22500

[28]See SB L-420-WLO 43.

[29]See SB L-421-IND K78.Can be replaced by 30893

[30]Can be replaced by 30893

[31]See SB L-420-WLO 43.

[32]See SB L-421-IND K78.Can be replaced by 30894

[33]Can be replaced by 30894

[34]Can be replaced by 30894

[35]See SB L-421-K78.Can be replaced by 30895

[36]Can be replaced by 30895

[37]See SB L-420-WLO 43.



Volvo Construction
Equipment

Installation Instruction

Genuine Accessories

Ref. no. 21 4 779 3774	Kit no. 11707295 (80361)	Date/Dept. 2004-07 CEE-43	Product L90D, L120D, L150D, L180D	Page 1/7
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Single lever control

Kit list

Part No.	Qty.	Designation
943907	7	Gasket
948645	1	Flange nut
949921	2	Spring nut
956983	1	Fitting nut
959223	4	Hexagon socket head bolt
980781	1	Ferrule
4881440	5	Strip clamp
11006031	1	Nipple
11006298	1	Decal
11039380	1	Switch
11039677	1	Pressure monitor
11039700	1	Lens
11040695	1	Cable harness
11041403	1	Cable harness
11104206	1	Single lever control
11104643	1	Cover
11104742	1	Attaching plate
11164348	1	Arm rest
11164355	1	Attachment
11164385	1	Rail
11170674	1	Cable harness
11170678	1	Cable harness
13944262	1	T-nipple
13944524	6	Nipple
13945357	1	Elbow nipple
13946173	1	Flange screw
13949278	4	Flange lock nut
13975980	4	Six point socket screw



WARNING!

Read all signs and instructions on the machine and the safety instructions in the operators manual, before you start working on the machine.

The installation instructions are based on the use of special tools, the E-tool and standard tools generally available on the market, and also on our operators manuals and service manuals.

The equipment should be installed by qualified personnel of an authorised workshop.

Volvo CE Customer Support AB disclaims all responsibility if tools and work methods other than those described in the instructions are used.

Single lever control

Work description

Servo valve

- 1 Offload the lifting frame by resting it on the floor. Stop the engine and move the servo valve levers forwards and backwards until servo pressure cuts out.
- 2 Connect a vacuum pump to the tank or in other case empty the hydraulic oil tank.
- 3 Remove the existing servo valve from the machine.
- 4 Fit nipples on the servo valve.

Part No.	Designation	Qty.	Pos. in Fig. 1
943907	Gasket	6	23
11104206	Single lever control	1	1
13944524	Nipple	6	22

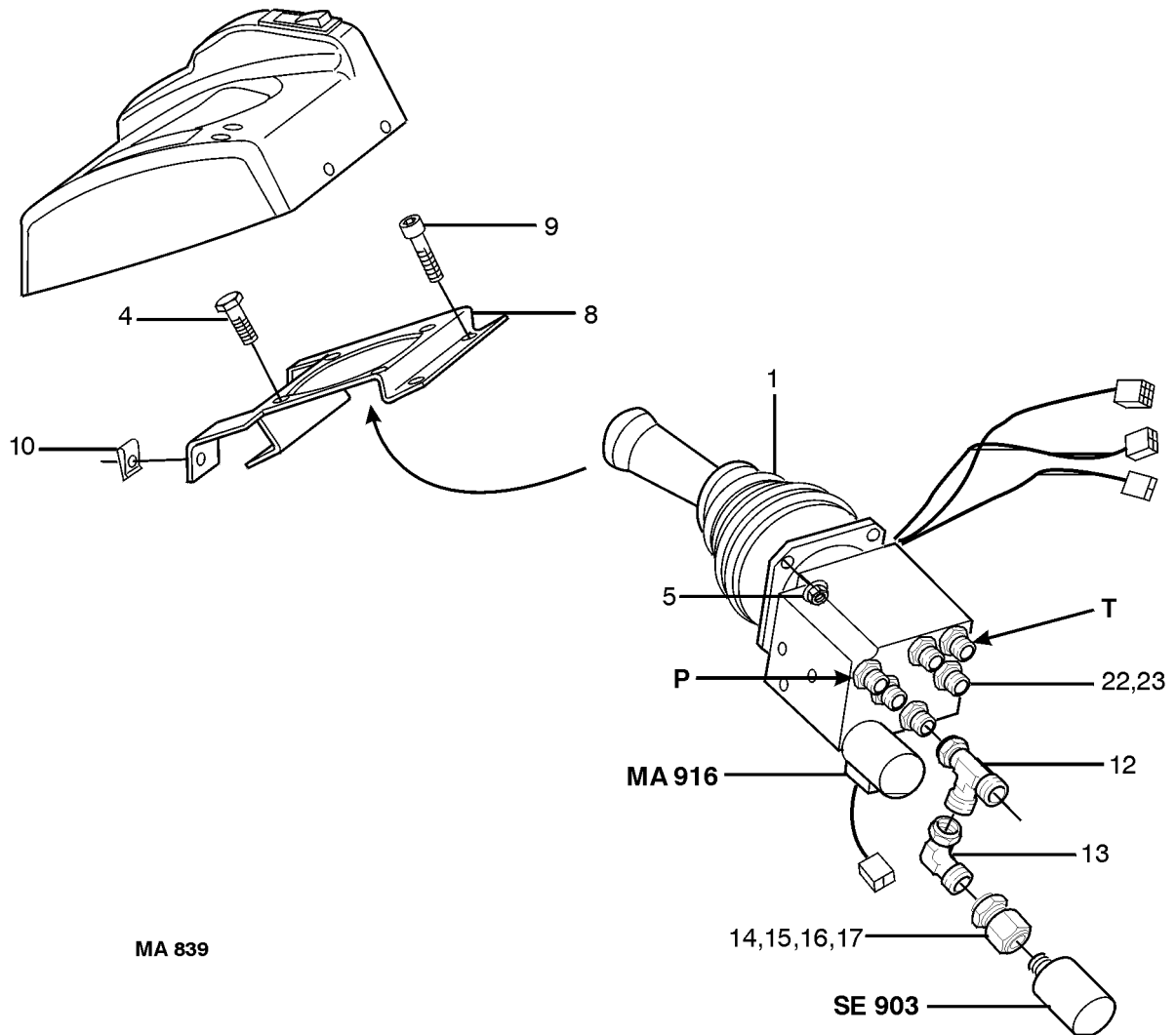


Fig. 1

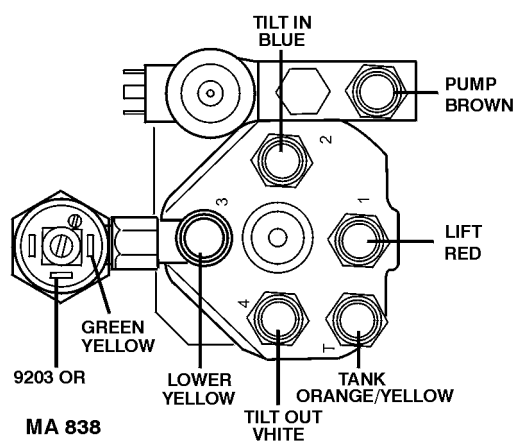


Fig. 2

5 Fit nipples in port 3.

Part No.	Designation	Qty.	Pos. in Fig. 1
943907	Gasket	1	17
980781	Ferrule	1	15
11006031	Nipple	1	16
11039677	Pressure monitor	1	SE 903
13944262	T-nipple	1	12
13945357	Elbow nipple	1	13
956983	Fitting nut	1	14

6 Replace the attaching plate.

Part No.	Designation	Qty.	Pos. in Fig. 1
949921	Spring nut	2	10
959223	Hexagon socket head bolt	4	9
11104742	Attaching plate	1	8

7 Fit the new servo valve and connect the existing hoses.

Part No.	Designation	Qty.	Pos. in Fig. 1
13949278	Flange lock nut	4	5
13975980	Six point socket screw	4	4

8 Replace the arm rest.

Part No.	Designation	Qty.	Pos. in Fig. 7
11164348	Arm rest	1	7
948645	Flange nut	1	12
13946173	Flange screw	1	11
11164385	Rail	1	5
11164355	Attachment	1	10

9 Stick the decal on the right window.

Part No.	Designation	Qty.	Pos. in Fig. 3
11006298	Decal	1	20

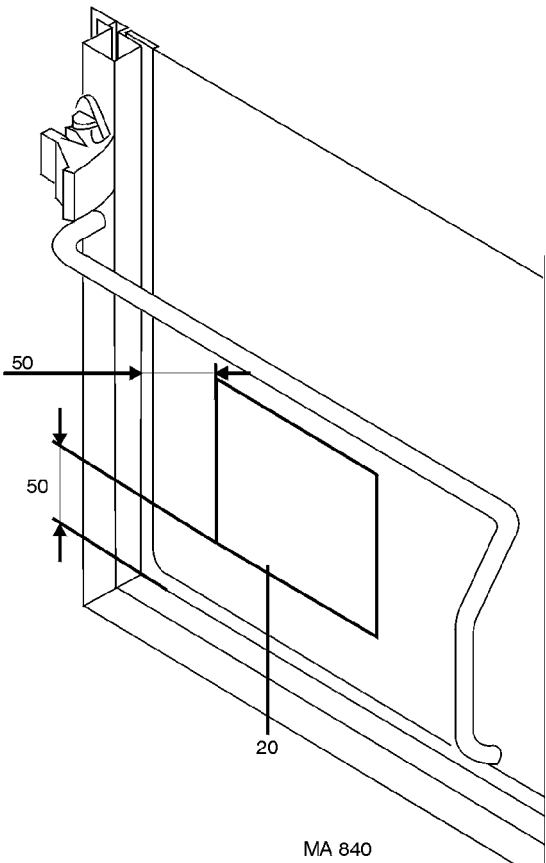


Fig. 3

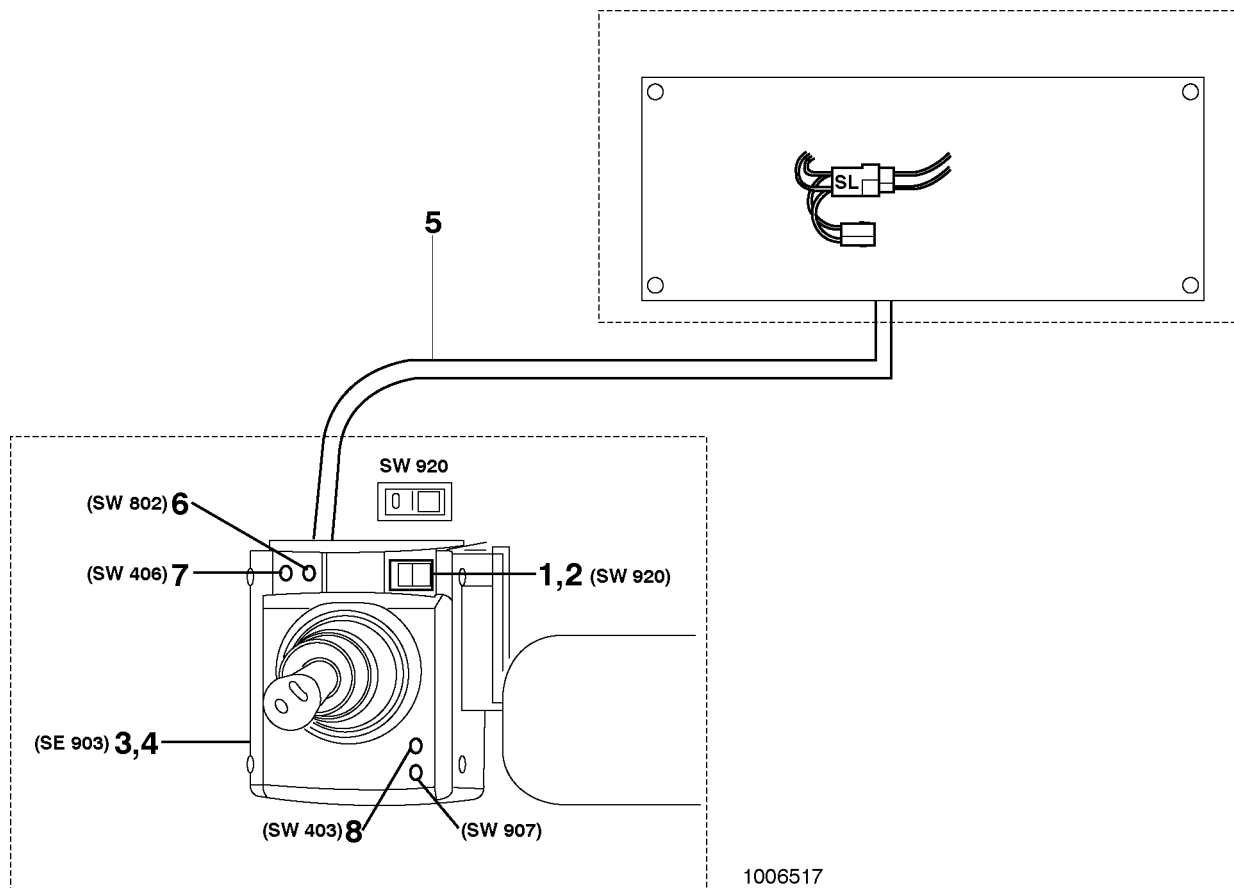


Fig. 4

Electrical installation

- 10 Fit the cable harness between the single lever control and right instrument panel. Connect up contact SL under the instrument panel.

Part No.	Designation	Qty.	Pos. in Fig. 4
11040695	Cable harness	1	5

- 11 Fit the cable harnesses, lens and switch in the cover.

Part No.	Designation	Qty.	Pos. in Fig. 4
4881440	Strip clamp	5	-
11039380	Switch (SW920)	1	1
11039700	Lens (SW920)	1	2
11170674	Cable harness (SW403)	1	8
11041403	Cable harness (SW406)	1	7
11170678	Cable harness (SW802)	1	6
11104643	Cover	1	-

12 In case the machine is activate with the boom suspension system drill a hole, $\varnothing 12$ mm, from the inside of the cover.

13 Fit the cover and connect up the cables in the cable harness SE contact. See Fig. 5 and Fig. 6.

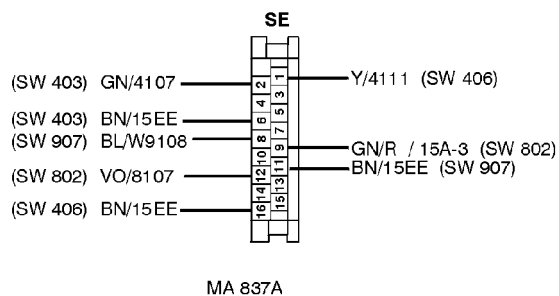


Fig. 5
Contact from the cable harness

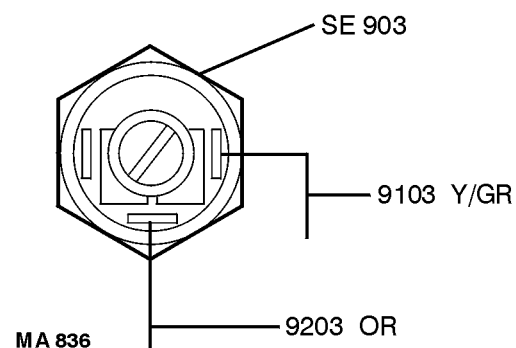


Fig. 6
Pressure monitor

14 Connect the other contacts from the single lever control.

15 Remove the vacuum pump or fill up with oil in the hydraulic oil tank.

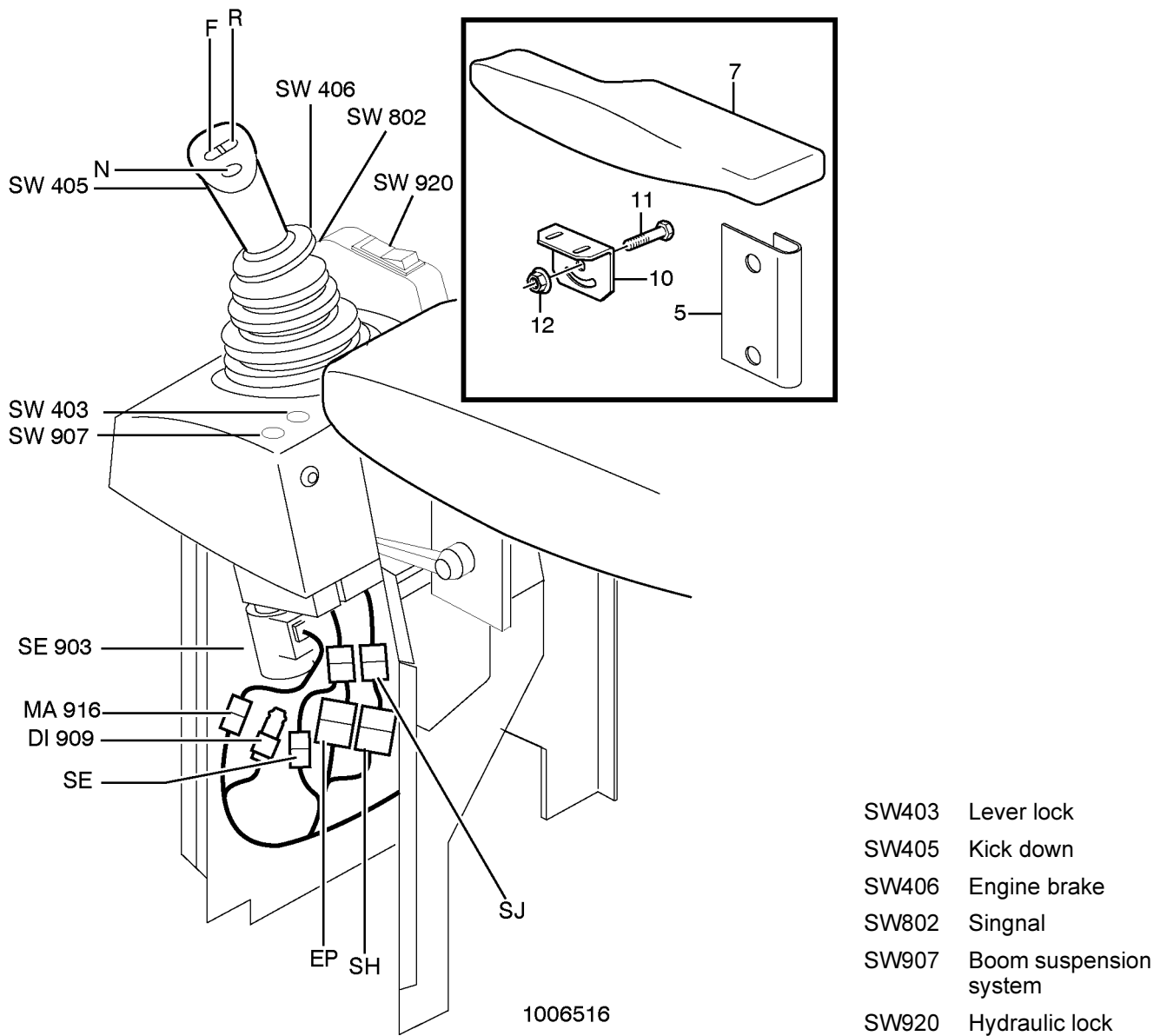


Fig. 7

- 16 Start the engine and test the function.
- 17 Check for leakage.
- 18 Restore the plastic cover and cover plates.
- 19 Write equipment number 80361 on the machine card.



Volvo Construction
Equipment

Installation Instruction

Genuine Accessories

Ref. no. 21 6 779 3660	Kit no. 11706945 (80561, 80143)	Date/Dept. 2004-04 CEE-43	Product L50D and L70D (80561) L90D, L120D/E, L150D/E, L180D/E, L220D/E and L330D/E (80143)	Page 1/4
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Protecting grating

Kit list

Part No.	Qty.	Designation	Pos. in Fig. 1
946671	4	Flange screw	-
965193 *	4	Flange screw	8
4746301	6	Washer	11
6513604	6	Mount	10
11006402	1	Support iron	2
11006403	1	Support iron	3
11006405	1	Plate	5
11006406	1	Plate	6
11079238	2	Plate	7
11104008	1	Plate	-
11141712	1	Guard	1
11141715	2	Plate, ordered separately for L330D	
11147041	1	Plate	-
11172623	2	Plate	-
13930447	8	Spacer ring	14
13945408	4	Nut	-
13960145	4	Washer	9
13965188	4	Bolt	4
13965196	6	Bolt	12
13970974 **	4	Hexagon screw	8
13971084	6	Lock nut	-
13971098	4	Flange nut	15
13971099	6	Flange lock nut	13

*) Apply to machine with equipment number 80143.

**) Apply to machine with equipment number 80561.



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Protecting grating

Work description

- 1 Remove the right and left side mirror.
- 2 Fit the upper- and lower attachment together with the rubber mounts on the protecting grating. Do not tighten the upper attachments at this moment.
- 3 Centre the protection of the cab and adjust the attachment over the mounting hole of the side mirrors. The lower attachment should rest against the front of the cab. Use the lower attachments 5 and 6 as pattern to mark the location for the four holes.
- 4 Remove the protecting grating.

In the cab

- 5 Loosen the instrument panel sufficient to the plates 7. The plates should rest against the cab wall to secure the attachment of the protecting grating. Drill four holes, $\varnothing 14$ mm, in the front of the cab.
Place the plate on the inside of the cab, see view A-A in Fig. 1.
- 6 Fit the protecting grating. Screw tight the upper attachment together with the rear view mirrors. Fit the plates on the inside of the cab and screw tight the lower attachments.
- 7 Refit the instrument panel.

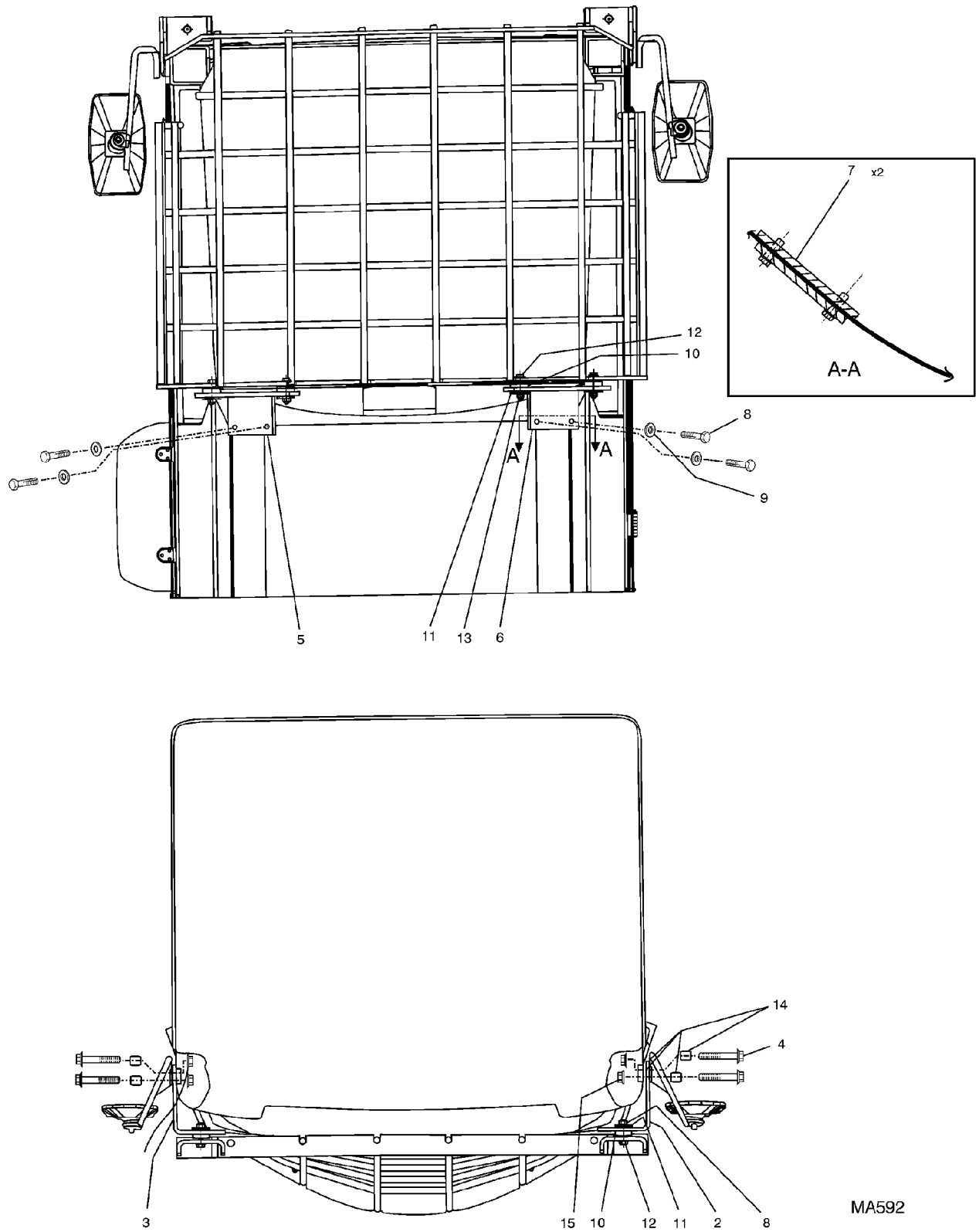


Fig. 1

MA592

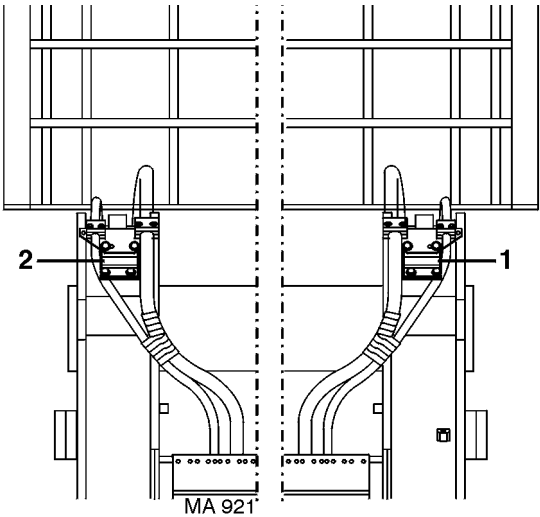


Fig. 2

L50D and L70D, equipped with 3rd and 4th hydraulic function

8 Fit the plates 1 and 2, see Fig. 2.

Part No.	Designation	Qty.	Pos.	Fig.
946671	Flange screw	4	4	3
11104008	Plate	1	2	2
11147041	Plate	1	1	2
11172623	Plate	2	3	3
13945408	Flange nut	4	5	3

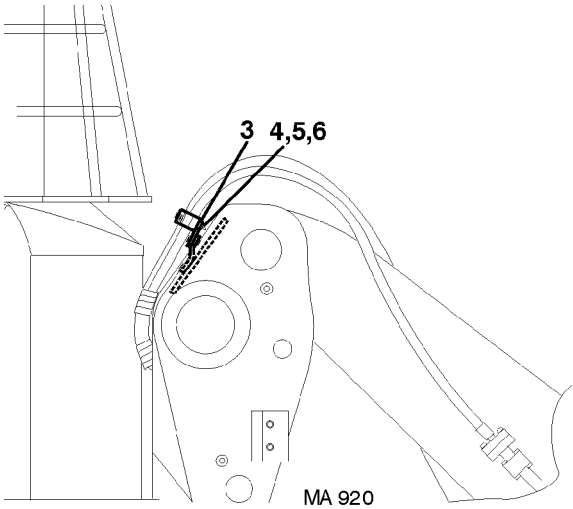


Fig. 3

L50D and L70D

9 Write equipment number 80561 on the machine card.

L90D, L120D, L120E, L150D, L150E, L180D, L180E, L220D, L220E, L330D and L330E

10 Write equipment number 80143 on the machine card.

Volvo Construction Equipment Group

REF NR REF NO	SATS NR KIT NO	DATUM/DATE ENHET/DEPT	PRODUKT/PRODUCT	PAGE
21 4 669 3826	11990393 (91585, 92654)	200110 CML-32	L50B, L50C, L50D, L70B, L70C, L70D, L120B, L120C, L120D, L120E *	1/2

*) L150, L150C, L150D, L150E, L180, L180C, L180D, L180D High Lift, L180E, L220D, L220E, L330C, L330D, L330E

Protective grille, headlamp**WARNING!**

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We consider that no special installation instructions are required for fitting this equipment.

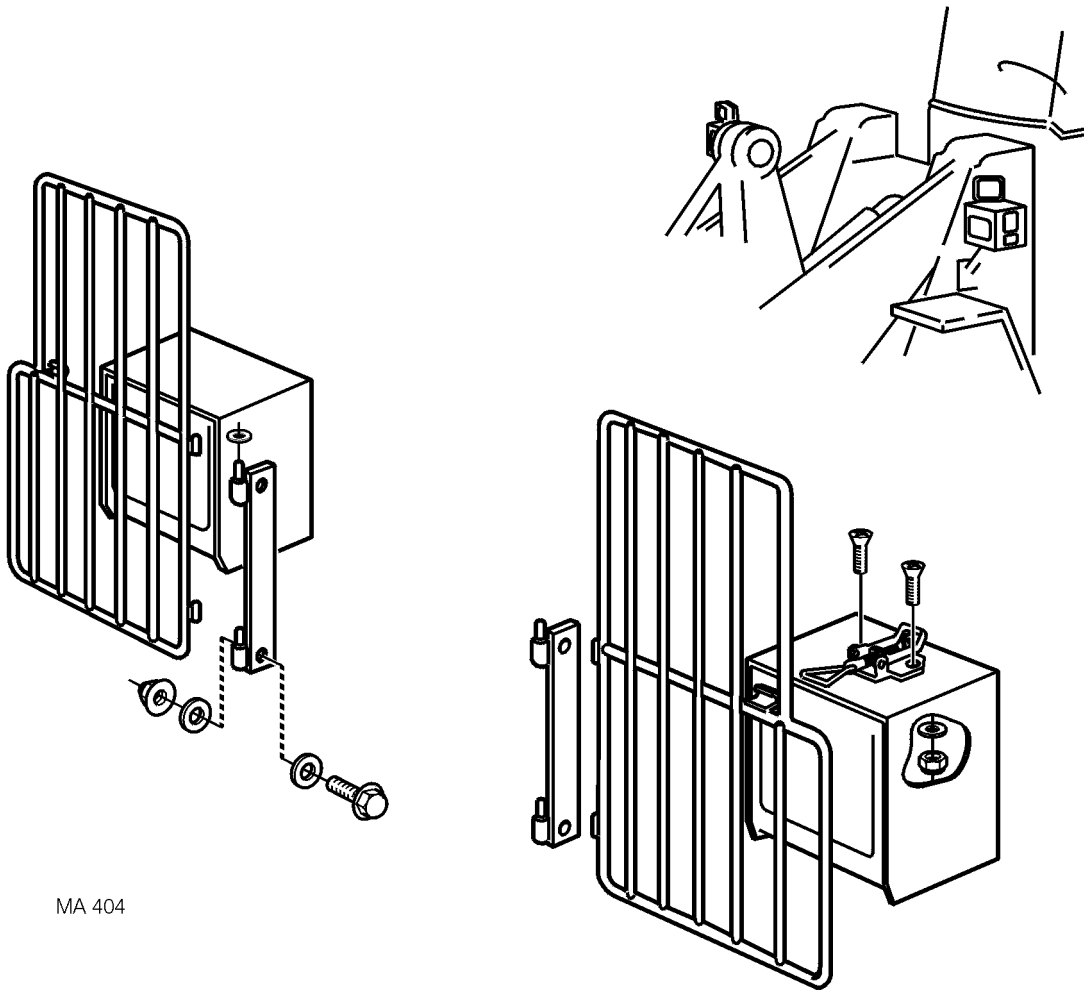
To facilitate the fitting we enclose:

- Kit list
- Installation drawing

Kit list

Qty.	Part No.	Description
6	946577	Lock nut
8	955892	Washer
4	956186	Bolt
2	956189	Bolt
4	4856486	Washer
1	4951893	Hinge flange
1	4951894	Hinge flange
2	11003499	Eccentric lock
1	11024749	Protecting grating
1	11024750	Protecting grating
6	13940090	Washer
4	13947542	Bolt
4	13949278	Flange lock nut

REF NR REF NO	SATS NR KIT NO	DATUM/DATE ENHET/DEPT	PRODUKT/PRODUCT	PAGE
21 4 669 3826	11990393 (91585, 92654)	200110 CML-32	L50B, L50C, L50D, L70B, L70C, L70D, L120B, L120C, L120D, L120E *	2/2



MA 404

Fig. 1 Protective grid, headlamp

Language Code GB	Product ART/GRD/WLO	Group 000	https://truckmanualshub.com/	No. 155	Version 1	Date 10/26/2007
Applies to Wheel Loaders, Articulated Haulers, G930 Volvo, G940 Volvo, G946 Volvo, G960 Volvo, G970 Volvo, G976 Volvo, G990 Volvo						

Quality of illustrations in technical reports



WARNING

Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.

Cause

Although, today, it is general practice to use a digital camera and/or scanner when producing pictures, it may be appropriate to determine a reasonable level of quality of such material. As Techline is now beginning to be used to greater extent it is even more important that the information made available in this way, is relevant and easy to interpret.

If the pictures are to be of any help to us during discussions with design engineers, suppliers or our own factories, these pictures must clearly show the problem in question.

If used correctly, the digital camera is an excellent tool which greatly improves our understanding of the written word.

Picture size

Depending on what is to be shown, the size of the picture may of course vary. However, sizes smaller than 800*600 pixels are not recommended. The picture can then also be printed with good results and be viewed on paper. A JPG picture in colour of this size requires approximately 300 kb when storing. This means that it is possible to store 4 pictures in a Techline call.

Focus

On most digital cameras it is possible to preview the image immediately after it has been taken. Use this function and check that the image is sharp in the right place. If this is not the case, take another picture. If the picture does not clearly show what is intended, it is of no use.



Figure 1
Picture with good sharpness

Figure 2
Picture with poor sharpness

NOTE!

If there are any doubts as to what the picture describes, it sometimes may be necessary to add notes or comments to enable those who have to analyse the picture to understand what is intended. It is possible to do this in most picture editing programmes available on the market.



Figure 2
Picture with poor sharpness

NOTE!

If there are any doubts as to what the picture describes, it sometimes may be necessary to add notes or comments to enable those who have to analyse the picture to understand what is intended. It is possible to do this in most picture editing programmes available on the market.

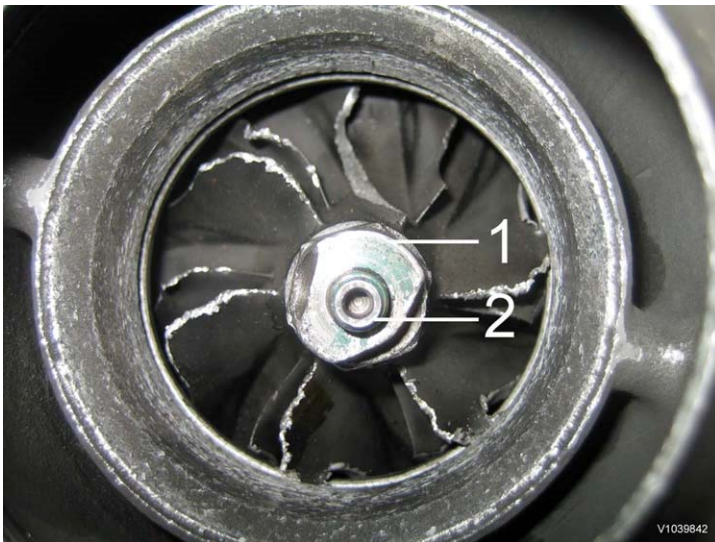


Figure 3
Example of how notes or comments can be presented in a picture (it is also OK to insert text boxes, arrows, circles etc. to describe the picture)

1. Example of note/comment
2. Example of note/comment

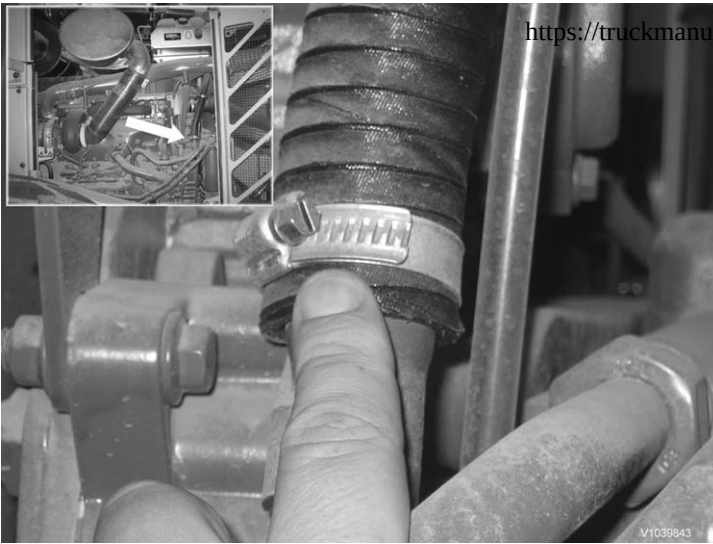


Figure 4
Example of general layout picture

If it is not clear which part or component is shown in the picture, it can be illustrated by inserting a general layout picture.

NOTE!

This layout should be used when the report applies to attachments, i.e. buckets etc. Insert then a picture of the product identification plate.

How many pictures?

As a rule it can be said that it is the quality of the pictures that determines the value of the pictures not the quantity. Try to show what is important with as few pictures as possible. It is also not a good idea to enclose several pictures showing the same thing. The thinking behind each picture must be to convey important information.

Radiator fan control

<https://truckmanualshub.com/>

The function controls radiator fan speed optimally so that energy consumption and sound level is minimized with adequate cooling capacity and also informs the operator if there is a system malfunction.

Using the service display unit, maximum radiator fan speed can be set by selecting the appropriate letter (A, B or C), depending on the engine cooling requirements.

A	=	400 - 1200 rpm
B	=	400 - 1400 rpm
C	=	400 - 1550 rpm

The basic speed of the radiator fan is 400 rpm ± 100 rpm for all settings.

See Section 2 Hydraulically driven radiator fan, description.

Input signals	Output function conditions	Output functions
○ Coolant temperature engine, SE205 ○ Coolant temperature, outlet, radiator, SE210 ○ Transmission oil temperature, SE406 ○ Hydraulic oil temperature, SE906 ○ Axle oil cooler installed ○ Engine speed, SE201 ○ Radiator fan speed, SE211 ○ Radiator fan mode A, B, C ○ Request pressure test ○ Request sound test	Radiator fan control with radiator fan mode A or B or C from service panel: ○ Coolant temperature, outlet, radiator ○ Coolant temperature, engine ○ Transmission oil temperature ○ Hydraulic oil temperature	○ Radiator fan speed control within selected radiator fan mode, MA202
	If incorrect input signal from one of these sensors: ○ Coolant temperature, outlet, radiator or ○ Hydraulic oil temperature	○ Maximum fan speed for selected radiator fan mode, MA202
	If incorrect input signal from sensor: ○ Coolant temperature, engine ○ Radiator fan speed	○ Control of radiator fan speed for selected radiator fan mode, MA202
	Sound test: ○ Radiator fan mode A or B or C ○ Request for sound test from service panel	○ Constant radiator fan speed 70% of maximum speed in selected radiator fan mode
	Pressure test: ○ Request for pressure test from service panel (maximum flow and thus hydraulic pressure to radiator fan)	○ Output signal = 1000 mA to MA202 Radiator fan speed approx. 1400-1600 rpm
○ Monitoring, SE211	○ System malfunction, no frequency	○ Amber central warning lamp ----- ERROR ----- Monitoring Radiator Fan Revolutions LE77380A1
○ Monitoring, MA202	○ System malfunction, open circuit or short circuit⁽¹⁾	○ Amber central warning lamp ----- ERROR ----- Radiator Fan Control LE77380A2

Radiator, removing and installing <https://truckmanualshub.com/>

Op nbr 26108

Sling, 3 m (9.8 ft)

Removing

1. Cut the current with the battery disconnect switch.

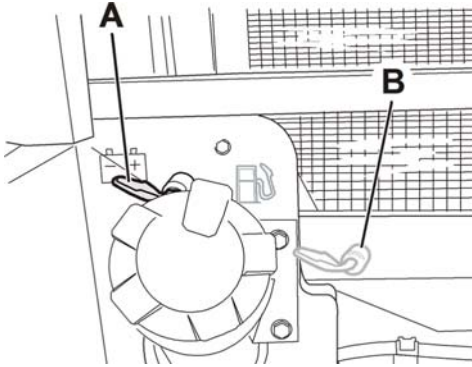


Figure 1
Battery disconnect switch

- A. L120D
- B. L90D

2. Remove the filler cap from the header tank.

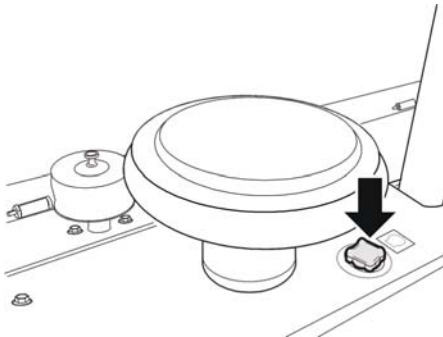


Figure 2

3. Drain the coolant.
Coolant capacity: **approx. 42 litres** (11.1 US gal)

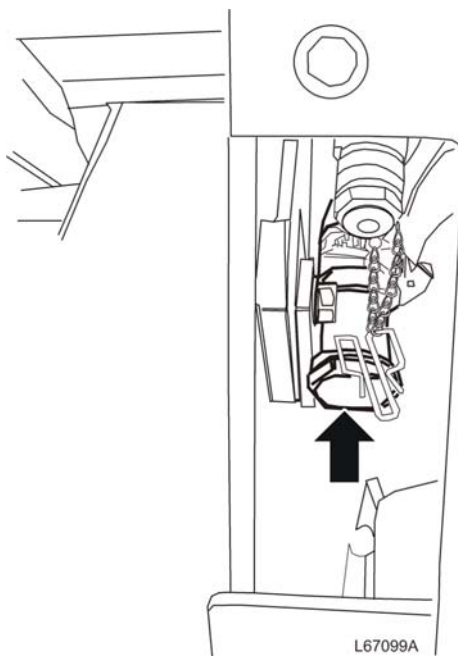


Figure 3

4. Open the radiator cowl.
Release the gas spring and swing out the radiator cowl as far as possible.
5. Swing out the radiator.
6. Detach the upper radiator hose.

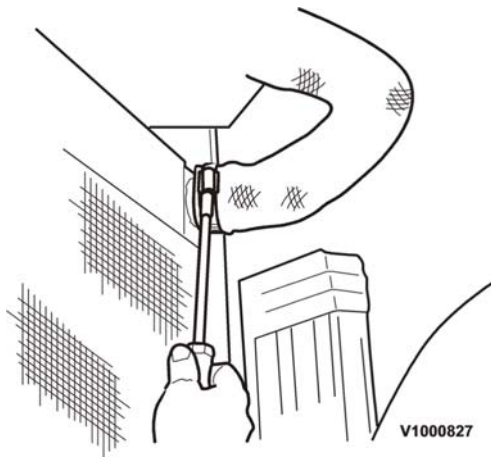


Figure 4

7. Detach the lower radiator hose.

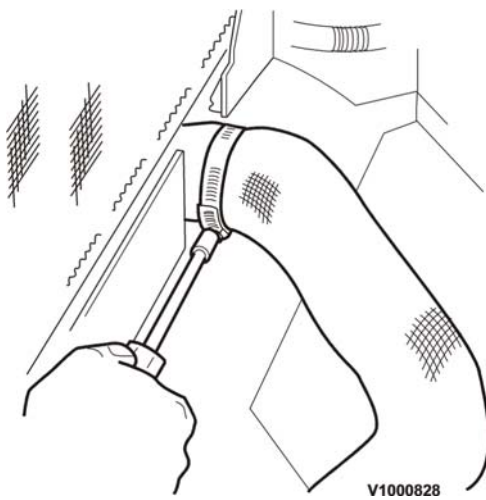


Figure 5

8. Detach the bleed line.

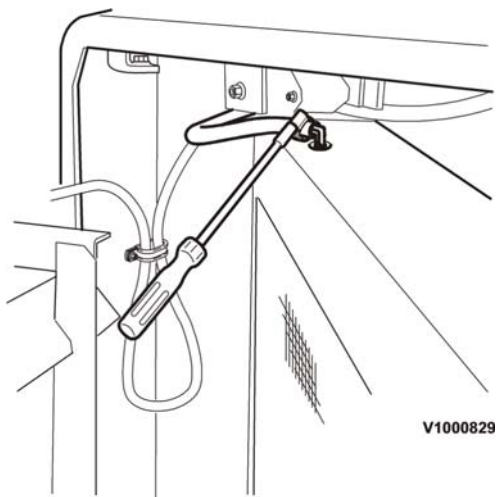


Figure 6

9. Remove the inner bolt securing the radiator's lower mounting.
10. Swing the radiator in and remove the outer bolt securing the radiator's lower mounting.
11. Swing out the radiator and attach a lifting device as per [Invalid linktarget].
Radiator weight, L90D: **75 kg** (165 lbs) (Dimensions 95*85*13)
Radiator weight, L120D: **xx kg**

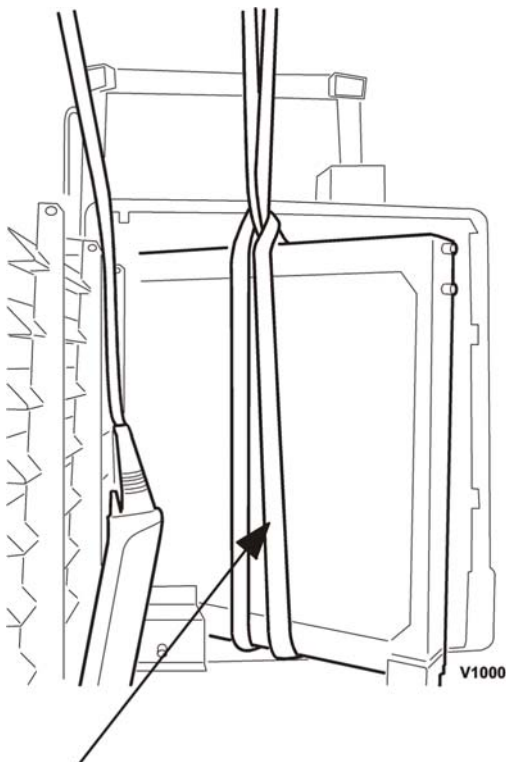


Figure 7

1. Sling, 3 m (9.8 ft)
12. Undo the bolts securing the radiator's upper mounting.
NOTE!
The bolts need be loosened only enough for the bracket to be angled down when it is released from the radiator frame.

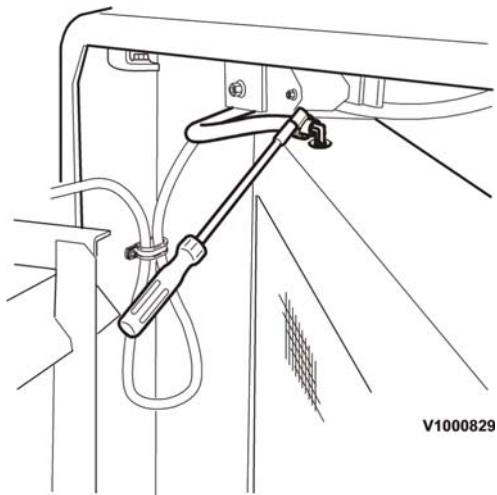


Figure 8

13. Release the bracket for the radiator's upper mounting from the radiator frame.

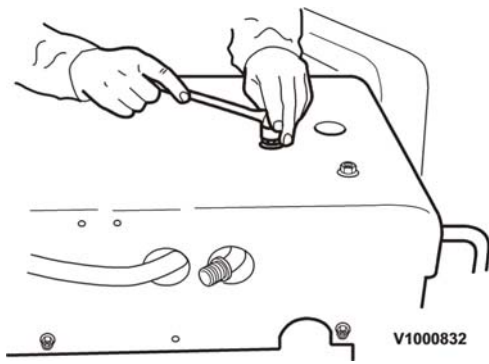


Figure 9

14. Carefully lift out the radiator.
Radiator weight, L90D: **75 kg (165 lbs)**
Radiator weight, L120D: **xx kg**
15. Remove the upper and lower mountings from the radiator.
NOTE!
Only if the removed radiator is to be changed for a new one.

Installing

16. Fit the upper and lower mountings on the radiator.
17. Carefully lift the radiator into position.
Radiator weight, L90D: **75 kg (165 lbs)**
Radiator weight, L120D: **xx kg**
18. Fit the bracket for the radiator's upper mounting on the radiator frame.

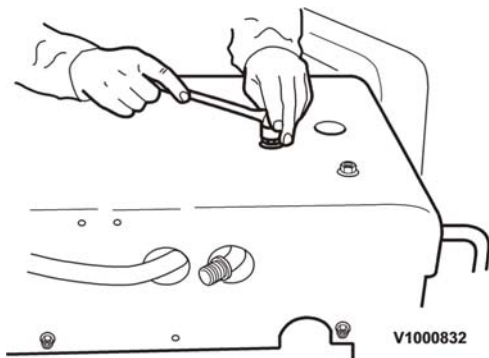


Figure 10

19. Tighten the bolts securing the radiator's upper mounting.

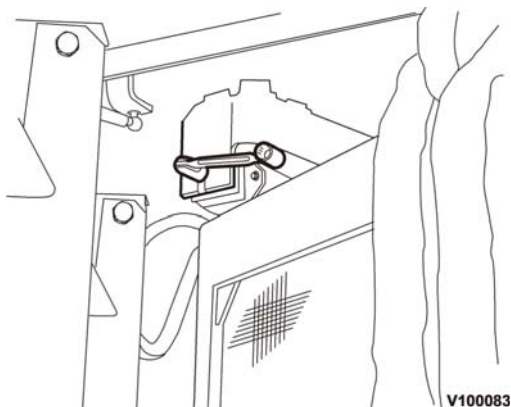


Figure 11

<https://truckmanualshub.com/>

20. Remove the lifting device and swing the radiator into place.
21. Fit the outer bolt securing the radiator's lower mounting.
22. Swing out the radiator and fit the inner bolt securing the its lower mounting.
23. Connect the bleed line.

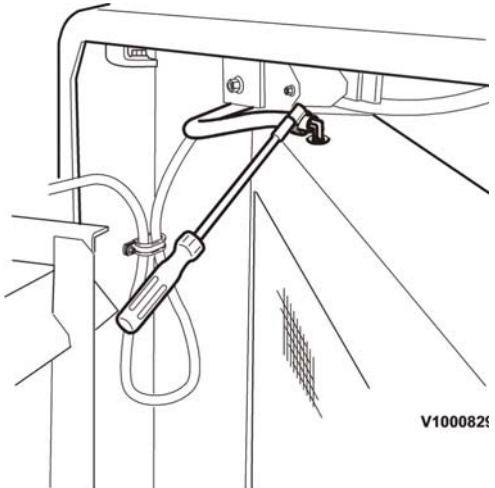


Figure 12

24. Connect the lower radiator hose.

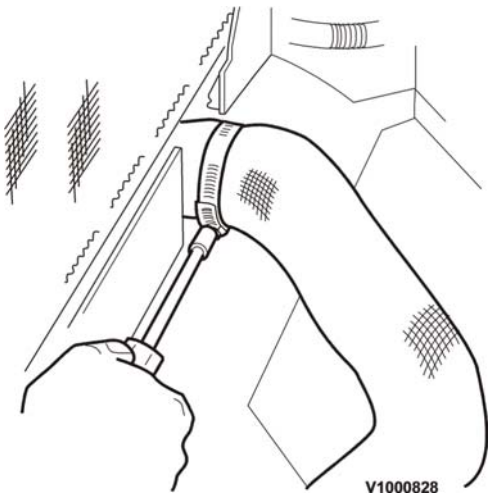


Figure 13

25. Connect the upper radiator hose.

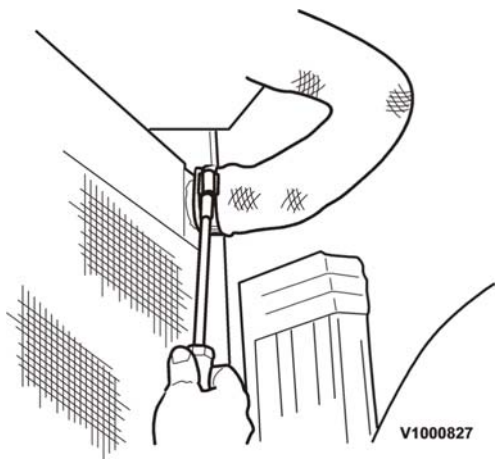


Figure 14

26. Swing the radiator into place and close the radiator casing.
27. Restore the machine to operating condition.
Coolant capacity: **approx. 42 litres (11.1 US gal)**

VOLVO**Construction Equipment****Installation Instruction**

Genuine Accessories

Ref. no. 21 5 779 3690	Kit no. 11707277 (80518)	Date/Dept. 2004-10 CEE-47	Product L50D, L70D, L120D, L150D, L150E, L180D, L180D High Lift, L180E, L220D, L220E, L330D, L330E	Page 1/6
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Radio installation kit**Kit list**

Part No.	Qty.	Designation
941262	1	Protecting bushing
949921	2	Spring nut
960139	2	Washer
965483	2	Flange nut
965958	1	Connector socket
969407	1	Six point socket screw
969478	8	Six point socket screw
971304	2	Six point socket screw
1083597	1	Aerial
1384583	1	Installation kit
4881440	1	Strip clamp
11006079	1	Aerial bracket
11006104	1	Bracket
11006119	2	Washer
11006120	1	Decal
11006880	4	Spacer sleeve
11006914	1	Radio bracket
11039750	1	Electrical outlet
11148477	1	Cable harness
11164693	8	Spring nut
11170724	1	Cable harness
11201898	2	Loud speaker
11201899	2	Loud speaker grille
13945407	4	Nut
13946934	2	Six point socket screw
13949874	1	Flange lock nut
13977599	1	Clamp
20555710	1	Voltage converter
24425174	1	Bracket

The radio kit is introduced on machine from and including the following cab numbers:

Machine	From and including cab number:
L60E	1826-
L70E	2022-
L90E	2364-
L110E	1605-
L120E	3172-
L150E	2449-
L180E	2043-
L180E High Lift	1075-
L220E	1884-



WARNING!

Read all signs and instructions on the machine and the safety instructions in the operators manual, before you start working on the machine.

The installation instructions are based on the use of special tools, the E-tool and standard tools generally available on the market, and also on our operators manuals and service manuals.

The equipment should be installed by qualified personnel of an authorised workshop.

Volvo CE Customer Support AB disclaims all responsibility if tools and work methods other than those described in the instructions are used.

Radio installation kit

Work description

Note! The kit is delivered without radio. Ordered separately.

- 1 Disconnect the main switch. Install the voltage converter in the electrical distribution behind the operator's seat.

Part No.	Designation	Qty.	Pos. in Fig. 1
965483	Flange nut	2	33
971304	Six point socket screw	2	32
24425174	Bracket	1	31
20555710	Voltage converter	1	4
13945407	Nut	4	5
11006880	Spacer sleeve	4	6
13977599	Clamp	1	34

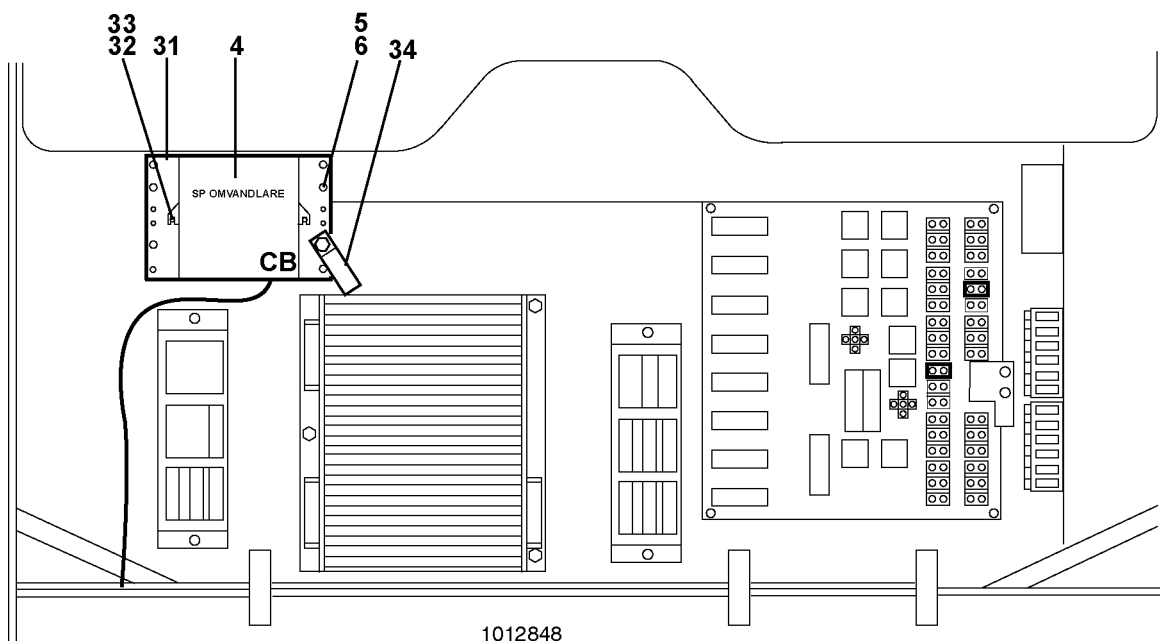


Fig. 1

2 Install the aerial on the cab roof.

Part No.	Designation	Qty.	Pos. in Fig. 2
11006079	Aerial bracket	1	7
1083597	Aerial	1	8
941262	Protecting bushing	1	9

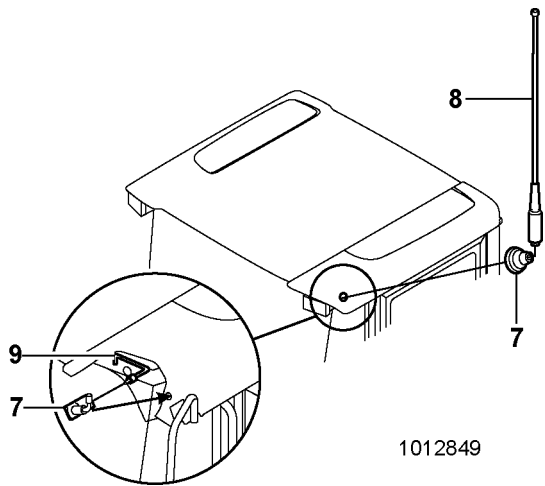


Fig. 2

3 Remove the ceiling in the cab. Install the radio console at the ceiling's right side. See Fig. 3 and Fig. 4.

Part No.	Designation	Qty.	Pos. in Fig. 3
11006914	Radio bracket	1	10
949921	Spring nut	2	11
13946934	Six point socket screw	2	12
960139	Washer	2	13

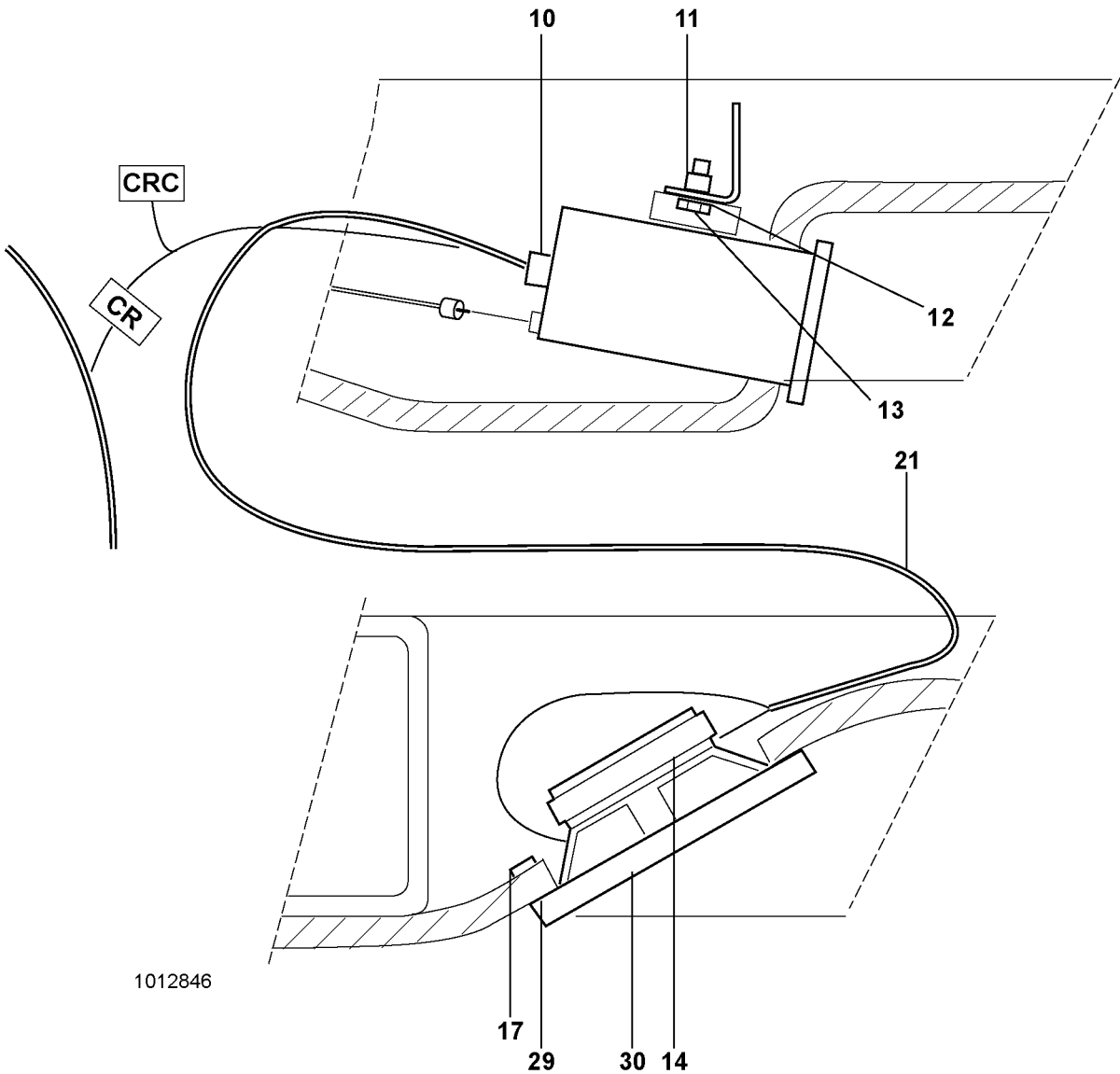


Fig. 3

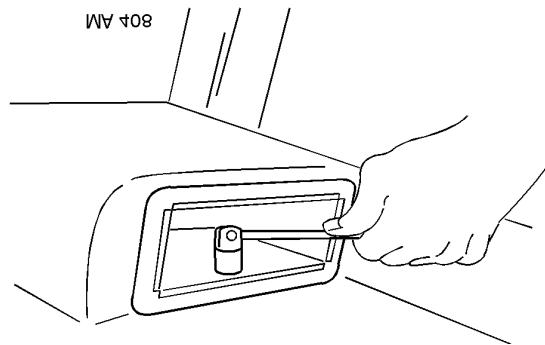


Fig. 4

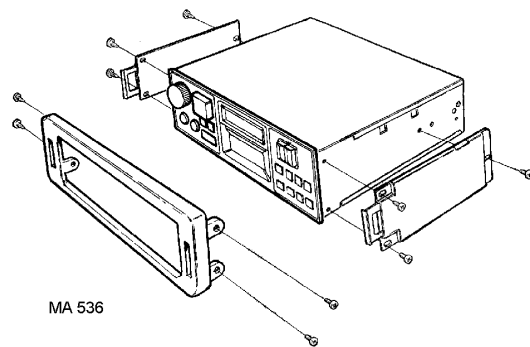


Fig. 5 Installation kit

4 The installation kit is secured on the radio. See Fig. 5.

Part No.	Designation	Qty.
1384583	Installation kit	1

5 Install the speakers and the speaker netting.

Part No.	Designation	Qty.	Pos. in Fig. 3
11201899	Loud speaker grille	2	30
11201898	Loud speaker	2	14
969478	Six point socket screw	8	29
11164693	Spring nut	8	17

6 Install the cable harness between the speakers. Later the cable harness is connected to the contact from the radio's connector, marked CR.

Part No.	Designation	Qty.	Pos. in Fig. 3
11170724	Cable harness	1	21

7 Cut out a hole, $\varnothing 25$ mm, for the electrical outlet.

Cut out the hole approx. 135 mm from the centre on the right speaker. Install the electrical outlet and the decal. Connect the electrical outlet to connector CRD under the ceiling.

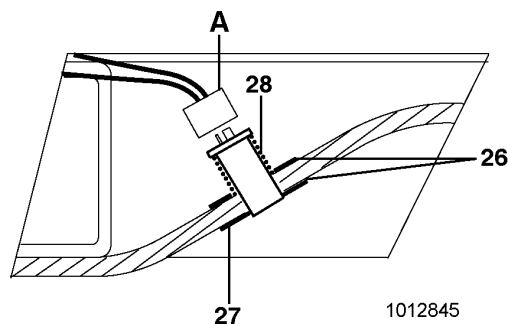


Fig. 6

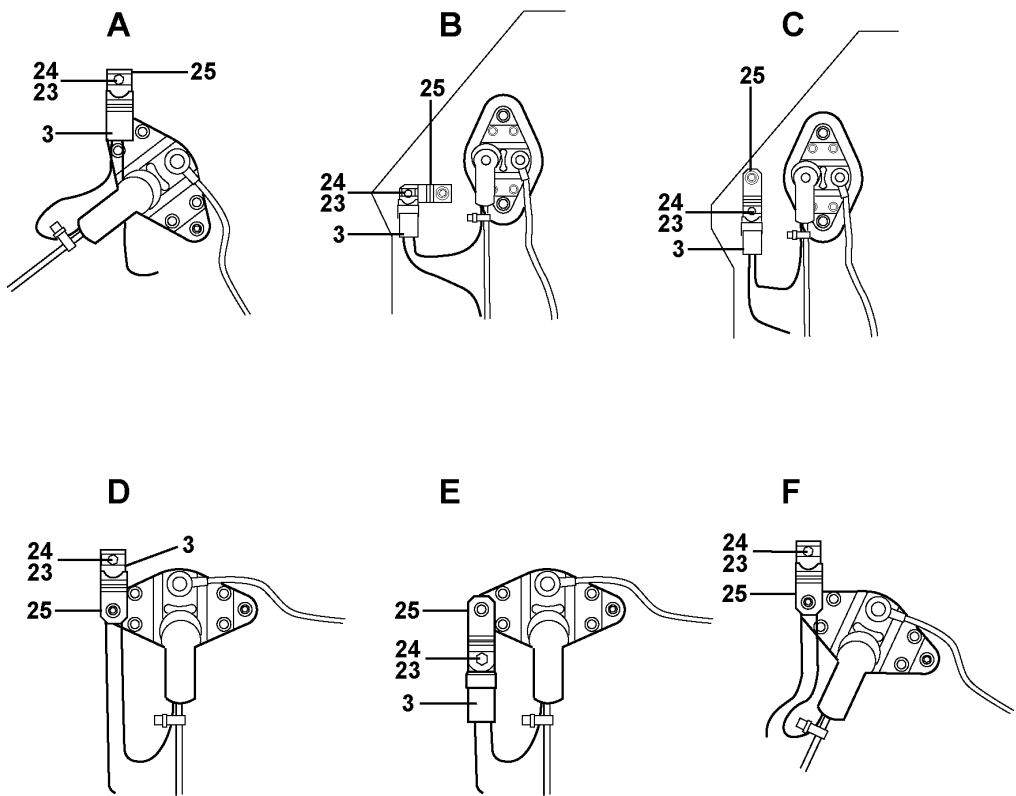
A Connector CRC on cable harness 11170724

Part No.	Designation	Qty.	Pos. in Fig. 6
11006119	Washer	2	26
11006120	Decal	1	27
11039750	Electrical outlet	1	28

8 Refit the ceiling.

- 9 Install the cable harness at the mains switch on the machine's rear frame. Connect the cable harness to existing connector RR. On earlier machines, L220D, there is no connector RR. On these machines splice sleeve 956958 is used. Clamp the cable harness against the existing cable harness.

Part No.	Designation	Qty.	Pos. in Fig. 7
11148477	Cable harness	1	3
11006104	Bracket	1	25
969407	Six point socket screw	1	23
13949874	Flange lock nut	1	24
4881440	Strip clamp	1	-
965958	Connector socket	1	-



1012847

Fig. 7
A L110E, L120D and L120E
B L150D, L150E, L180D and L180E
C L220D and L220E
D L50D
E L70D, L70E and L60E
F L90D and L90E

- 10 Turn on the main switch.
- 11 Write equipment number 80518 on the machine card.

Language Code GB	Product WLO	Group 170	https://truckmanualshub.com/	No. 19	Version 1	Date 02/03/2004
Applies to 616B Volvo BM, 646 Volvo BM, 4200 Volvo BM, 4200B Volvo BM, 4300 Volvo BM, 4300B Volvo BM, 4400 Volvo BM, 4500 Volvo BM, 4600 Volvo BM, 4600B Volvo BM, 6300 Volvo BM, EL70 Volvo BM, EL70C Volvo BM, L50 Volvo BM, L50B Volvo BM, L50C OR Volvo, L50C Volvo, L50C Volvo BM, L50D Volvo, L50E Volvo, L60E Volvo, L70 Volvo BM, L70B Volvo BM, L70C Volvo, L70C Volvo BM, L70D Volvo, L70E Volvo, L90 CO Volvo BM, L90 Volvo BM, L90B Volvo BM, L90C OR Volvo, L90C Volvo, L90C Volvo BM, L90D OR Volvo, L90D Volvo, L90E Volvo, L110E Volvo, L120 Volvo BM, L120B Volvo BM, L120C Volvo, L120C Volvo BM, L120D Volvo, L120E Volvo, L150 Volvo BM, L150C LB Volvo, L150C Volvo, L150C Volvo BM, L150D Volvo, L150E Volvo, L160 CO Volvo BM, L160 Volvo BM, L180 CO Volvo BM, L180 HL Volvo BM, L180 Volvo BM, L180C CO Volvo, L180C HL Volvo, L180C Volvo, L180C Volvo BM, L180D HL Volvo, L180D Volvo, L180E HL Volvo, L180E Volvo, L220D Volvo, L220E Volvo, L330C LL Volvo, L330C Volvo, L330C Volvo BM, L330D Volvo, L330E Volvo						

Raising and supporting machines (up to and including the E models)



WARNING
Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.



WARNING
Place the machine on a horizontal and solid surface and block the wheels securely so that there's no risk of the machine starting to roll.

NOTE!
Place the machine in the service position.

Persons, who do not follow the safety instructions and do not pay attention to the warnings in the Service Manuals, must make sure that their working method is safe. Otherwise there is a serious risk of severe or fatal accidents.

When, for example, work is carried out on the hub reduction gear, the brakes or when replacing wheels, the work must only be carried out on one axle at a time.

The most important step of the procedure is the supporting of the front or the rear part respectively in a safe way before proceeding with the next step.

To carry out work on a machine that is only supported on jacks is not recommended.

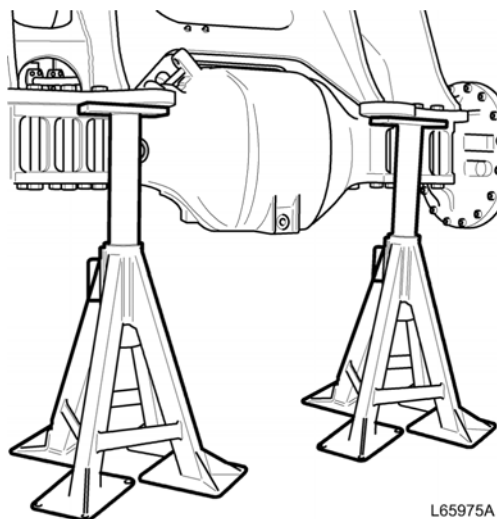


Figure 1

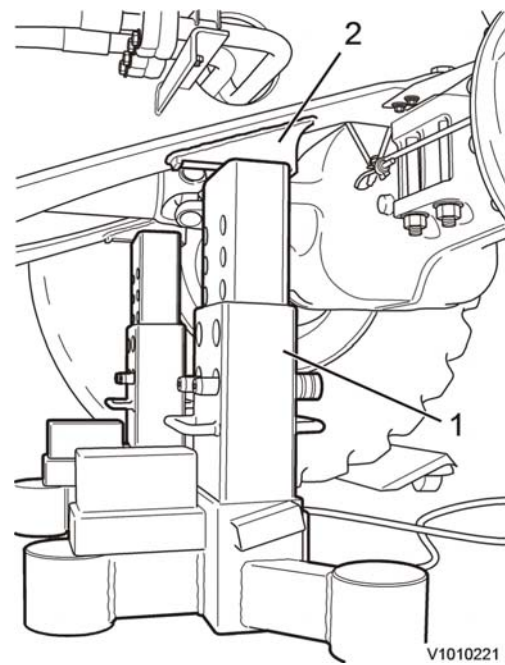


Figure 2

When positioning stand jacks or axle stands under model E machines, use surfaces intended for this purpose, see item 2.

1. Stand jack
2. Intended surface

Procedure for front axle

Raise the front end of the machine with the aid of the loader unit on the machine. Axle stands should be positioned on either side under the front frame according to Fig. 3. The axle stands must be dimensioned according to the size of the machine.

Fig. 2. shows how stand jacks should be positioned when raising and supporting model E machines. This also applies when axle stands are used.

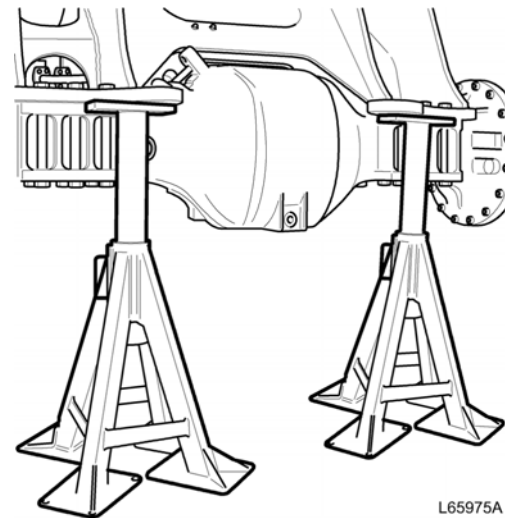


Figure 3

Axle stands

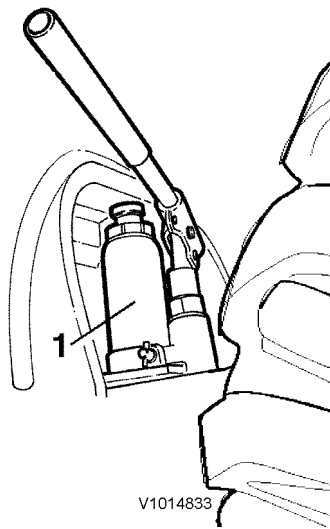


Figure 4

1. Jack or block of wood

Most suitable method for rear axle

Block the pivoting of the rear axle by positioning a jack or by pushing in a block, preferably of wood or rubber, on either side of the machine between the frame and the rear axle, see Fig. 4.

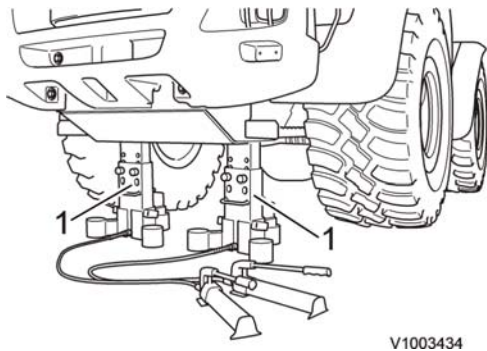


Figure 5

1. Stand jacks

The machine must be supported on axle stands, which have a capacity of 5–15 tonnes, or on so called stand jacks. Stand jacks, which are a combination of axle stands and jacks, may be ordered from Volvo Parts under part number 11668007. Axle stands are positioned on either side under the rear frame, where the frame is sufficiently level and the surface is sufficiently large. Regarding L50–L220, see Fig. 5.

When both wheels are raised off the ground, it is easier to turn the hubs so that the wheel bolts come in the correct position, see Fig. 5.

Alternative method

If stand jacks are not available, use two ordinary trolley jacks and make sure that there is enough space for positioning the axle stands.

NOTE!

This is only possible on machines L150–L220.



Figure 6

On machines L50–L120, use a jack under the differential. Axle stands must also be positioned under the rear part of the frame, according to Fig. 7.

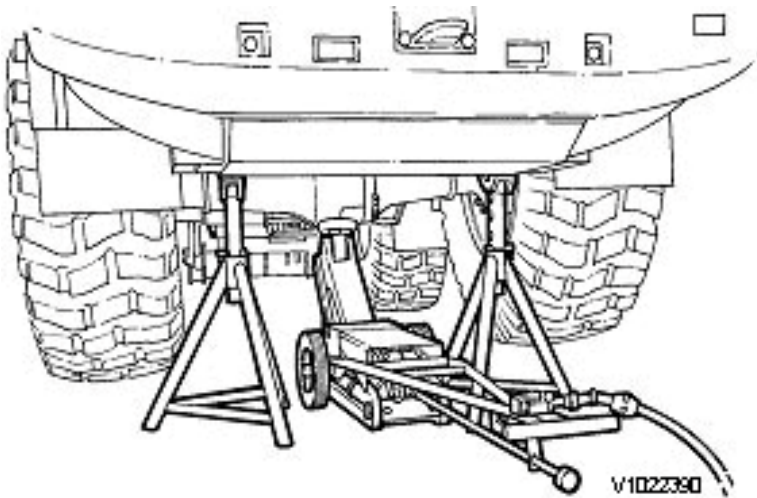


Figure 7

NOTE!

Avoid using bottle jacks. **Never use** a bottle jack for lifting under the axle housing.

NOTE!

Never work on or under a machine, which is not supported on axle stands.

A wheel trolley or similar, which may be ordered from Volvo Parts, part number 11668010, is recommended for handling the wheel in a safe and controlled way, see Figs 8 and 9.

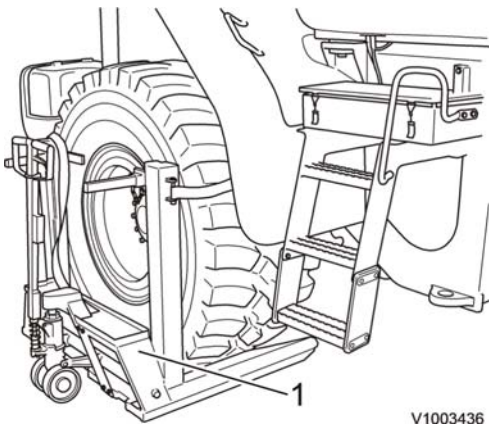


Figure 8

1. Wheel trolley

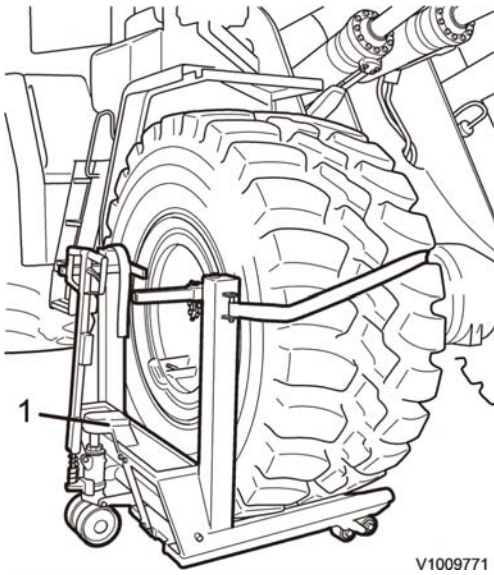


Figure 9

1. Wheel trolley

Op nbr 46303

[999 3742 Socket](#)

1. Position the axle correctly under the machine.
Attach a hoist, see [Invalid linktarget].
Axle weight incl. mounts: **approx. 1550 kg (3418 lbs)**

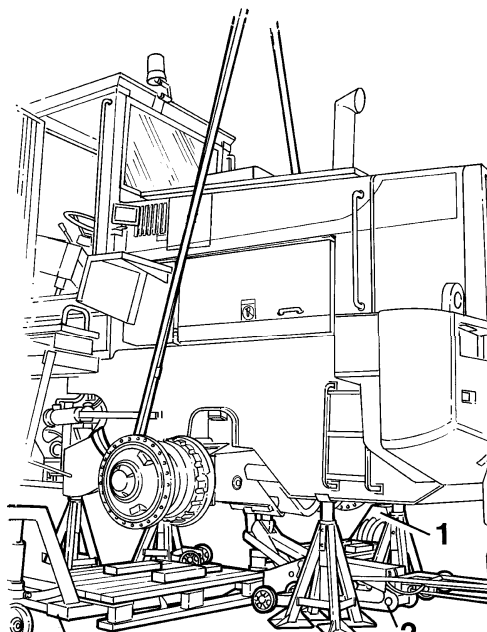


Figure 1
Connection of lifting device

2. Lift up the axle with the lifting device, and secure the axle with a hydraulic jack to prevent it from turning during the lift.
Fit the attaching bolts.
Tightening torque: **804 Nm (593 lbf ft)**
3. Fit the rear wheels.
Tightening torque: **600 Nm (443 lbf ft)**
4. Fit the brake hose, cabling to the temperature sensor, lubricating oil pipes and the hose for the breather filter on the axle.
5. Connect the propeller shaft to the rear axle, see [Invalid linktarget] .
Tightening torque: **57 Nm (42 lbf ft)**

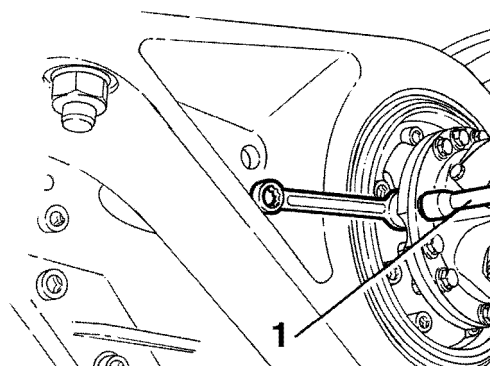


Figure 2
Installing propeller shaft

1. 999 3742
6. Grease the rear axle mounting.

Remove the supports.

<https://truckmanualshub.com/>

7. Bleed the rear brake circuit, see *Section 5, Brake system, bleeding*.

Rear axle, removing

<https://truckmanualshub.com/>

Op nbr 46302

[999 3742 Socket](#)

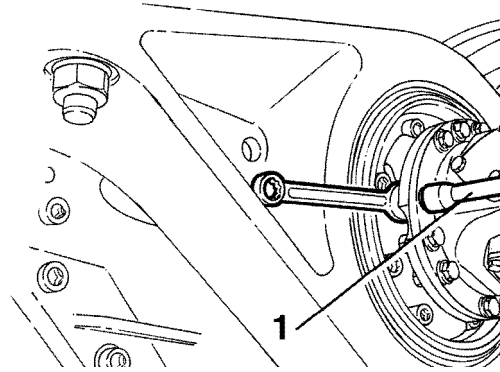


Figure 1
Removing propeller shaft

1. 999 3742

1. Raise the rear wheels and position supports under the rear frame.
2. Remove the propeller shaft from the final drive.
3. Release the pressure in the brake system by depressing the brake pedal repeatedly (30–40 times).
4. Fully depress the brake pedal and block it in that position with a suitable tool. When the brake pedal is blocked in the depressed position, the hydraulic tank oil is prevented from running out to respective brake caliper.

NOTE!

The brake pedal must remain blocked until the rear axle has been installed again.

5. Remove the lubricating oil pipes from the axle connections, also remove the brake hose from the brake pipe on the axle. Use protective plugs.
6. Remove the cabling from the temperature sensor on the axle as well as the hose from the breather filter.
7. Remove the rear wheels.
8. Attach a lifting device to the axle, see [Invalid linktarget].
Position a hydraulic jack under the axle.
Axle weight incl. mounts: **approx. 1550 kg (3418 lbs)**
Remove the bolts between the axle mount and the frame.

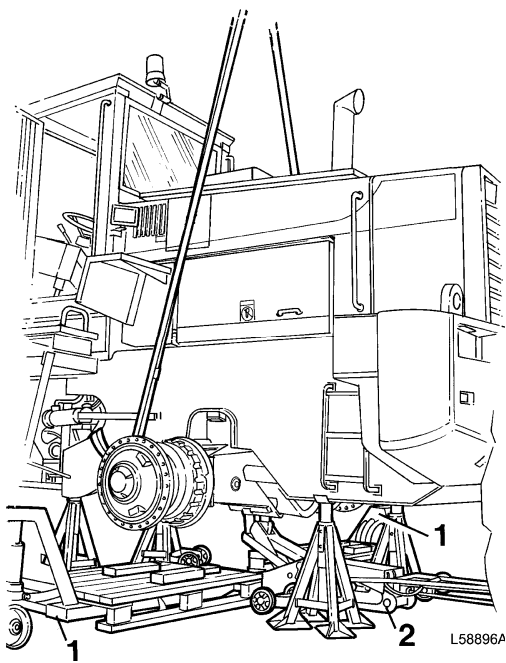


Figure 2
Lowering of rear axle

1. Pallet forklift
2. Jack securing the axle

9. Secure the axle with a jack underneath in order to prevent the axle from falling over, see [Invalid linktarget]. Lower the axle on two pallet forklifts with pallets. Pull out the axle.

NOTE!

Make sure that the front axle mount does not slide off the axle.

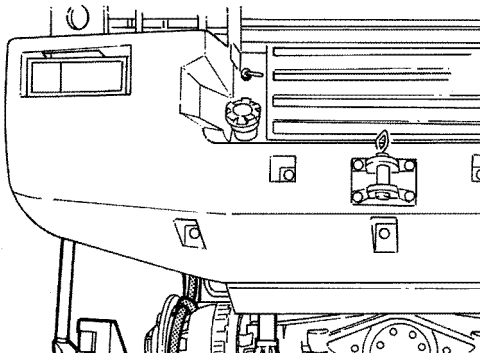


Figure 3

VOLVO

Construction Equipment

Installation Instruction

Genuine Accessories

Ref. no. 21 2 779 3901	Kit no. 11988158 (80830)	Date/Dept. 2004-05 CEE-47	Product L50D, L60D, L70D, L90D, L110D, L120D, L150D, L180D, L220D L50E, L60E, L70E, L90E, L110E, L120E, L150E, L180E, L220E	Page 1/3
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Electrically heated rear-view mirrors

Kit list

Part No	Qty.	Designation
941262	2	Grommet
968381	2	Insulator
969781	2	Cable terminal
4803455	1	Switch
4881438	12	Strip clamp
11039141	1	Lens
11040827	1	Cable harness
11121153	2	Rear-view mirror
11170075	2	Cable
13969160	1	Fuse



WARNING!

Read all signs and instructions on the machine and the safety instructions in the operators manual, before you start working on the machine.

The installation instructions are based on the use of special tools, the E-tool and standard tools generally available on the market, and also on our operators manuals and service manuals.

The equipment should be installed by qualified personnel of an authorised workshop.

Volvo CE Customer Support AB disclaims all responsibility if tools and work methods other than those described in the instructions are used.

Electrically heated rear-view mirrors

Work description

1 Disconnect the main switch.

2 Remove the outer rear-view mirrors.

3 Fit the new rear-view mirrors.

Use the existing bolts.

Part No.	Designation	Qty.	Pos. in Fig. 1
11121153	Rear-view mirror	2	4

4 Fit the grommets in the cab roof. Fit and clamp the cable harness tight.

Part No.	Designation	Qty.	Pos.	Fig.
941262	Grommet	2	8	1
11040827	Cable harness	1	6	2
4881438	Strip clamp	12	7	1
968381	Insulator	2	3	1

5 Fit the cables for the rear-view mirrors.

Part No.	Designation	Qty.	Pos. in Fig. 1
11170075	Cable	2	9

6 Fit the switch and the lens for the defroster on the control panel.

Part No.	Designation	Qty.	Pos. in Fig. 1
4803455	Switch (SW811)	1	1
11039141	Lens (SW811)	1	2

7 Fit the fuse in fuse holder.

Part No.	Designation	Qty.	Pos. in Fig. 2
13969160	Fuse	1	5

8 Turn on the main switch.

9 Write equipment number 80830 on the machine card.

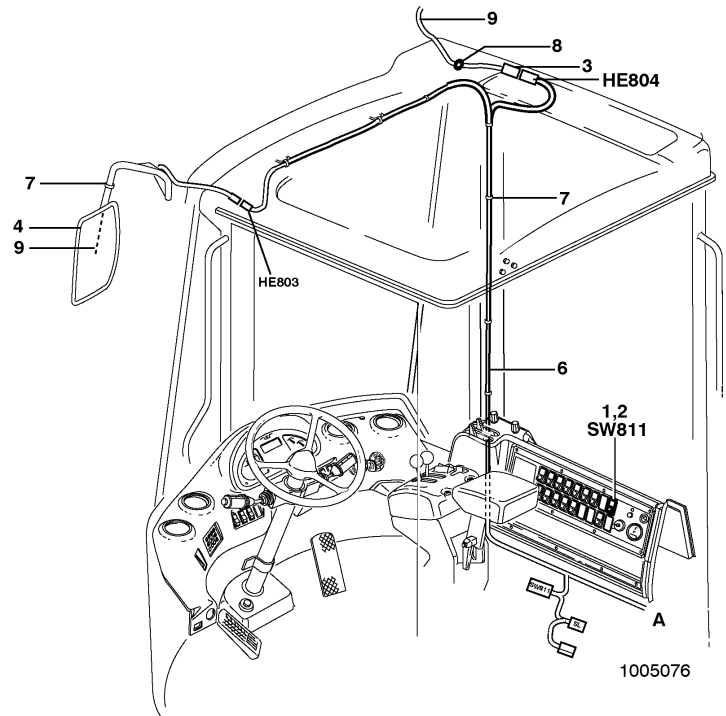


Fig. 1

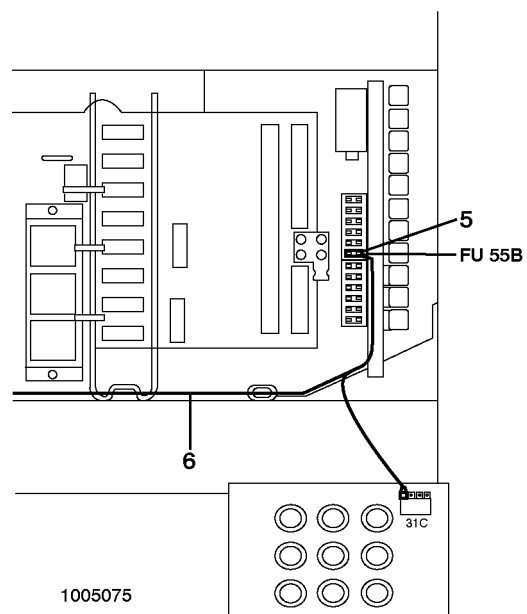


Fig. 2

Language Code GB	Product ART/EXC/GRD/ WLO	Group 160	https://truckmanualshub.com/	No. 117	Version 1	Date 09/10/2013
Applies to Excavators, Motor Graders, Wheel Loaders, Articulated Haulers						

Recommendations for Oil Sampling Intervals

NOTE!

Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.

Cause and action

Oil analysis detects contamination and fluid degradation before these conditions cause equipment failure.



V1135034

Figure 1

The success of an oil analysis program is the regularity of the oil sampling.

Based on our technical experience Volvo CE recommends the below intervals and numbers of samples when you start up your Volvo Oil Analysis program.

When you have got experienced on your actual market you may change the sampling intervals according to your knowledge about the need.

The Wear limitations or Monitoring limits for Volvo components can be found in Service Bulletins:

ART	160ART8K
EXC	160EXC8K
GRD	160GRD60K
WLO	160WLO27K

Oil Sampling Intervals

Articulated Haulers

Hours	Engine *	Transm.	DropBox	Axle FD	Hydraulic	Brake cooling	Coolant
500	1	1					
1000			1	3	1	1	12 month

Wheel Loaders

Hours	Engine*	Transm.	Axle FD	Hydraulic	Coolant
500	1	1			
1000			2	1	12 month

Excavators

Hours	Engine*	Axle (EW)	Gearbox (EW)	Swing Gearbox	Travel Gearbox	Hydraulic	Pump Gearbox	Coolant
500	1							
1000		2	1	1 (2)[T1] ⓘ	2	1	1	12 month

[T1]Excavators with 2 Swing gearboxes

Motor Graders

Hours	Engine*	Transm.	Pump Gearbox (G700)	Axle FD	Tandem	Hydrualic	All Wheel Drive Hydr. (G700)	Engine Clutch (G700)	Coolant
500	1	1							
1000			1	1	2	1	1	1	12 month

NOTE!

*If you have an oil drain interval for the engine less than 500 hours it's recommended to take an oil sample at every engine oil exchange.

Recommended lubricants

Oils

	Oil grade	Recommended viscosity at various outdoor temperatures										
		°C	-30	-20	-10	0	+10	+20	+30	+40	+50	
	Engine oil	°F	-22	-4	+14	+32	+50	+68	+86	+104	+122	
Engine	ACEA-E3 and VDS-2 or API CH-4 and VDS-2 Under severe operating conditions, ACEA E3-96 (CCMC D5) is recommended for optimum service life											
			SAE 5W/30									
			SAE 10W/30									
			SAE 15W/40									
			SAE 30									
			SAE 40									
Axles, hub reductions	Volvo WB 101											
	For oil brand names and quality requirements, see "Specifications, axles" in the Operator's Manual.											
Transmission Dropbox	Transmission oil which meets Allison C4 norm (DDAD C4) or Engine oil which meets Allison C4 norm (DDAD C4) or MIL 2104E.											
			SAE 5W/30									
			SAE 10W									
			SAE 10W/30									
			SAE 15W/40									
			SAE 30									
Hydraulic system Steering system Brake system Working hydraulics	Hydraulic oil Swedish norm SS 15 54 34 or international norms Vickers 35 VQ/25 test viscosity to ISO 3448 class as per ISO 6743-4 or Engine oil minimum requirement API SF/CE Note: As an alternative, biodegradable hydraulic oils are also available as an option.											
			V 46/AV 46									
			V 68/AV 68									
			ISO VG 46 HV									
			ISO VG 68 HV									
			SAE 10W/30									
			SAE 15W/40									
			SAE 30									
		°C	-30	-20	-10	±0	+10	+20	+30	+40	+50	
		°F	22	4	+14	+32	+50	+68	+86	+104	+122	

Language Code GB	Product WLO	Group 874	https://truckmanualshub.com/	No. 45	Version 1	Date 06/01/1996
Applies to 4200 Volvo BM, 4200B Volvo BM, 4300 Volvo BM, 4300B Volvo BM, 4400 Volvo BM, 4500 Volvo BM, 4600 Volvo BM, 4600B Volvo BM, 6300 Volvo BM, EL70 Volvo BM, EL70C Volvo BM, L50 Volvo BM, L50B Volvo BM, L50C OR Volvo, L50C Volvo, L50C Volvo BM, L50D Volvo, L70 Volvo BM, L70B Volvo BM, L70C Volvo, L70C Volvo BM, L70D Volvo, L90 Volvo BM, L90B Volvo BM, L90C OR Volvo, L90C Volvo, L90C Volvo BM, L90D OR Volvo, L90D Volvo, L120 Volvo BM, L120B Volvo BM, L120C Volvo, L120C Volvo BM, L120D Volvo, L150 Volvo BM, L150C Volvo, L150D Volvo, L160 Volvo BM, L180 CO Volvo BM, L180 HL Volvo BM, L180 Volvo BM, L180C CO Volvo, L180C HL Volvo, L180C Volvo, L180C Volvo BM, L180D HL Volvo, L180D Volvo, L220D Volvo, L330C LL Volvo, L330C Volvo, L330C Volvo BM, L330D Volvo						

Recovering/reclaiming refrigerant R134a using recovery unit FRS-10 GS

Regarding:

Recovering/reclaiming refrigerant R134a using recovery unit FRS-10 GS, part no. 9812443 (supersedes refrigerant station 11 666 070-5 and manometer set 11 666 072-1)



WARNING

Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

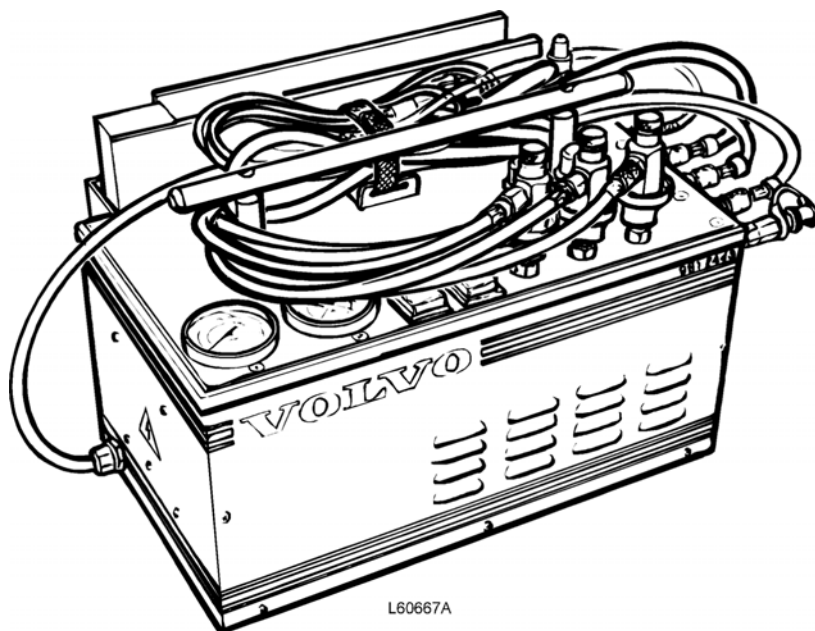


Figure 1

R134a "Tetrafluorethane" is the refrigerant that is used in the air conditioning system. Environmental legislation requires that different types of refrigerants be recovered and reclaimed in a safe manner. The following precautions must be observed at all times when there is a risk of R134a leaking out:

Accreditation

Service workshops must be accredited where it concerns the handling of refrigerant. An accredited workshop should have at least one person in a supervisory position with the required certified expertise.

General

Safety precautions



WARNING

R134a is moderately dangerous to one's health. When handling refrigerant, wear close-fitting goggles and protective gloves. In liquid form refrigerant can cause frost-bite and when in the form of a gas at high concentration it has an anaesthetising effect and at lower concentration it primarily affects the nervous system.

Causes of cooling unit malfunction

The most common causes of cooling unit malfunction are as follows:

Moisture in the refrigerant circuit, dirt or dust. Moisture in the refrigerant will cause icing and eventually a clogged expansion valve. To lessen the risk of moisture getting into the system during repairs, the following is important. Do the repair work quickly and keep the system clean and dry while the work is being carried out.

AC oil should be kept in sealed containers, otherwise there is a risk of the oil absorbing moisture from the air. The protective plugs on

new components must remain in place until the moment when the components are connected up.

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Important:

Do not clean by blowing with compressed air.

In the event of damage arising from vehicle collision, it is important that each component suspected of being damaged is thoroughly checked. Check in particular all soldered joints; dampness around the joint is a sign of leakage. Deformed or cracked piping must not be repaired. Should it be suspected that dirt has entered a component, it must be checked and cleaned. In the event of a major repair, component replacement, or if moisture is suspected in the system, the dryer must be replaced.

Fault tracing

To find the correct cause of the fault quickly, a performance test and a pressure test should be carried out. Refer to the respective service manual or separate service bulletin.

The service procedures and test are based on a 20°C ambient air temperature. The measurement values will increase with higher ambient temperatures.

The equipment

The equipment can be ordered from the respective Parts Department.

Recovery unit FRS-10GS With the FRS-10GS recovery unit, part number 9812443, the refrigerant can be emptied, cleaned, recycled, and refilled. The plant can also be vacuum pumped at the recovery unit.

Parts supplied together with the recovery unit:

- Nipples (2), part number 9812446, for connection to refrigerant bottle.
- Nipple, part number 9812447, for oil hose 9998237

Hose connections for high and low pressure hoses are available as spare parts. Red high pressure hose, part number 9812432, and blue low pressure hose, part number 9512210.

Equipment used together with the recovery unit, but supplied separately

- Scale FRV-100VBE with automatic setting function for draining and filling, located in the compartment at the rear of the recovery unit, part no. 9812444 (supersedes 11 666 074-7).
- Vacuum pump Royal 2 part no. 9812445. (supersedes 11 666 071-3).
- Vacuum pump hose with vacuum pressure gauge for vacuum pumping of AC unit, part no. 9812452, and nipple, part no. 9812453 for connecting the vacuum pump hose to the vacuum pump
- Rubber bag for non-condensable gases, part no. 9812448.
- Oil hose for filling AC oil, part no. 9988237
- Leak detector for indications of leaks, part no. 9511207. (supersedes 11 666 073-9).
- Refrigerant R134a

Design and function

Recovery unit 9812443

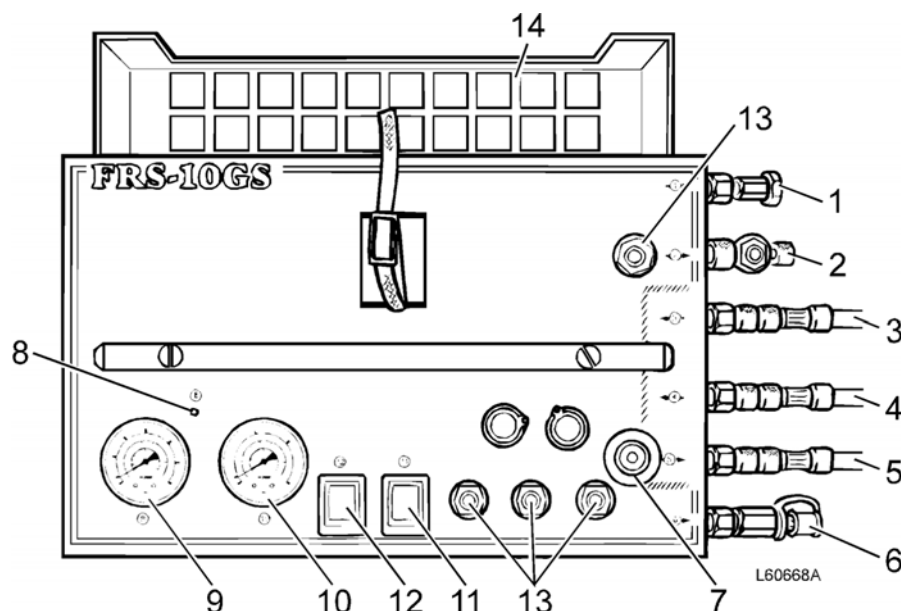


Figure 2

1. Service outlet for changing oil in recovery unit

2. Drain tap for oil separator
3. Refrigerant, in - blue
4. Refrigerant, in - yellow
5. Refrigerant, out - red
6. Connection for vacuum pump hose, and rubber bag for non-condensable gases
7. Sight glass
8. Indicator lamp, high-pressure alarm
9. Low pressure gauge
10. High pressure gauge
11. Switch, venting of non-condensable gases
12. Switch, start/stop
13. Blind plugs for hose connections
14. Box for scale

Technical data:

Net voltage: 230 V Single phase 50/60 Hz

Connection power rating: 205 W

Fused: 2 x 6.3 amp glass fuse 5 x 25 mm

Dimensions: depth 350 mm, width 320 mm,

Height: 230 mm

Weight: 28 kg

Capacity: 10 kg/h liquid refrigerant (R134a + 20° C) About 100 kg/h when connecting according to the pressure method.

Cleaning: Filter replacement at least 6 times a year or 50 drain operations, filter part no. 9812449 positioned inside the front panel.

Flow chart

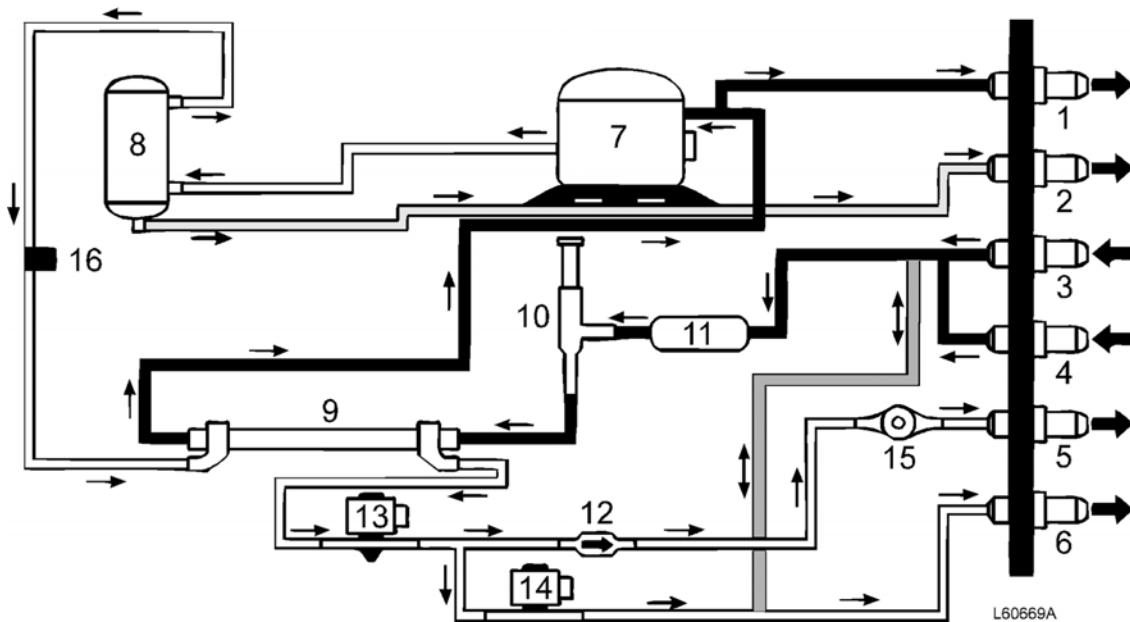


Figure 3

White line = Refrigerant under high pressure

Black line = Refrigerant under low pressure

Light grey line = Draining of AC oil

Dark grey line = Pressure equalisation and connection line when vacuum pumping the AC unit.

1. Service outlet for changing the oil in the recovery unit
2. Drain tap for oil separator
3. Refrigerant, in
4. Refrigerant, in
5. Refrigerant, out
6. Connection for vacuum pump hose and rubber bag for non-condensable gases
7. Compressor
8. Oil separator
9. Heat exchanger
10. Pressure regulator Värmeväxlare
11. Filter

12. Check valve <https://truckmanualshub.com/>
13. Solenoid valve, start / stop
14. Solenoid valve for venting of non-condensable gases
15. Sight glass
16. Safety valve 21.5 bar

Machine care

Changing the oil in the recovery unit

The oil in the recovery unit compressor should be changed at least 6 times a year. There are different types of AC oil, and these must not be confused. For the recovery unit compressor, ester oil part no. 9812442 should be used.

Open the side panel.

Place the recovery unit with the front facing up.

Slacken the sealing cap on the service outlet 1.

Slacken the sealing cap on air union inside the panel, and oil will start to run out. Facilitate draining by inclining the recovery unit to the right. Pull the recovery unit upright, put the sealing cap back into position on the air union, and fit the panel. Connect a hose and lower it in to a reservoir containing new oil.

Start the recovery unit by pressing button no. 12 and suck up the oil.

Turn off the recovery unit and fit the sealing cap.

Hoses and connections

Red hose

High pressure hose for refrigerant out. to be connected when filling to the high pressure outlet, and when draining to the refrigerant container

Yellow hose

High pressure hose for refrigerant in. To be connected when emptying to high pressure outlet, and when filling to refrigerant container.

Blue hose

Low pressure hose for refrigerant in. To be connected to the low pressure outlet.

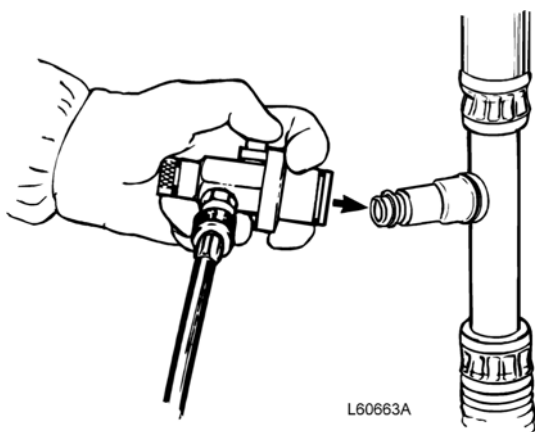


Figure 4

The connections are provided with safety coupling to prevent the hoses from slackening unintentionally. When fitting and removing the connections, proceed as follows:

Turn off the tap, you cannot remove the connection unless the tap is completely closed.

Pull the ring towards you whilst keeping the button pressed in.

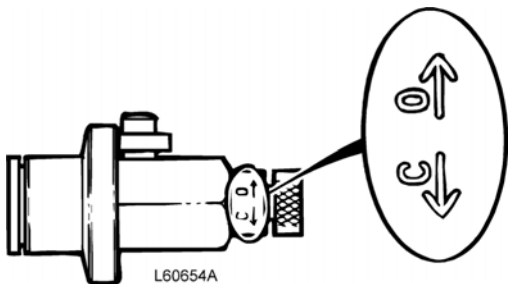


Figure 5

O = open C = closed

The connections should always be placed on the respective blind plug 13, on the recovery unit when they are not connected to the AC unit or refrigerant container.

Leak detector

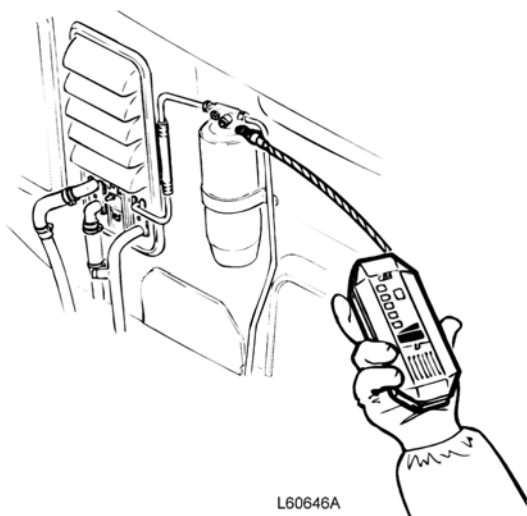


Figure 6

Technical data:

Batteries: 4 alkaline AA 1.5 V pen-light batteries.

Sensitivity:

Low sensitivity: down to 15 times a year R12, 30 times a year R134a.

High sensitivity: down to 3 times a year R12, 15 times a year R134a.

Temperature range: 0° C to 50° C

Leak detector 9511207 should be used to check the tightness of the AC unit. The leak detector indicates any refrigerant leakage by means of a audio signal, a visual signal, or a combination of both.

The instrument is based on a micro computer with a memory unit and a sensor unit at the end of the 46 cm long flexible cable. The sensor current is affected by the content of refrigerant gas in the air. The memory unit in the leak detector stores a normal reading when starting, from which deviations upwards are indicated by means of an alarm. When tracing for leakage, the highest measured reading recording so far is stored. This enables you to approach and find the point where there is leakage.

Handling

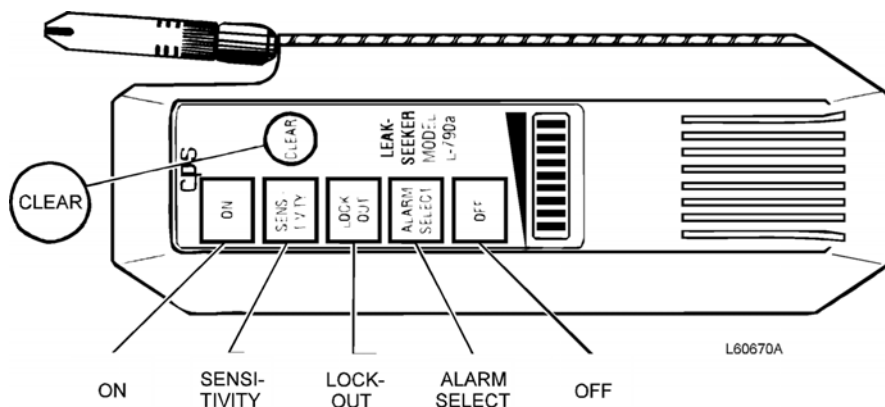


Figure 7

NOTICE

Make sure the leak detector is always turned off when replacing the sensor unit. The instrument generates a high voltage at the end of the flexible cable, and this can give rise to uncomfortable shocks if you touch it. The high voltage may be dangerous to people with a weak heart, for example.

NOTE!

The leak detector must not be forced to give a maximum alarm by removing the sensor casing or by adjusting high sensitivity.

Turn off the leak detector immediately by pressing the OFF button if the sensor is affected by foreign particles such as water. Make sure the parts are dry and clean before putting the leak detector back into operation.

Start/Stop

Start the leak detector by pressing the ON button. A start tone will first be heard and subsequently you will hear every other second a low base tone, the "zero value signal".

The "zero value signal" is given when the electronic unit in the leak detector is calibrated according to the content of any refrigerant gas in the surrounding air. The leak detector is re-calibrated automatically when it is moved to an area where there are lower contents of refrigerant gas.

NOTICE

The leak detector must not be forced to give a maximum alarm by removing the sensor casing or by adjusting high sensitivity.

Turn off the leak detector immediately by pressing the OFF button if the sensor is affected by foreign particles such as water. Make sure the parts are dry and clean before putting the leak detector back into operation.

NOTE!

The leak detector is turned off automatically and must be started again after 15 minutes

Turn off the leak detector by pressing the OFF button.

Alarm

When the sensor is moved to an area where there are larger contents of refrigerant gas, the "zero value signal" becomes a more high-frequency tone. The alarm signal indicates increasing contents of refrigerant gas, in the air by a successively higher tone.

By pressing the ALARM SELECT button, the alarm indication can be changed from giving just an audio alarm to a visual alarm instead. The visual alarm consists of 10 red LED bars. The "zero value signal" is displayed visually by the left-hand LED bar lighting up every other second.

The visual alarm signal indicates higher contents of refrigerant gas in the air by the LED bar showing a solid light. When there is a further increase on the contents, the lighted bar is moved one or more steps to the right. Moving the LED bar one step means that the contents of refrigerant gas increase by 10% in relation to the latest registered value.

The next time you select the ALARM SELECT button, you will get a combined audio and visual alarm.

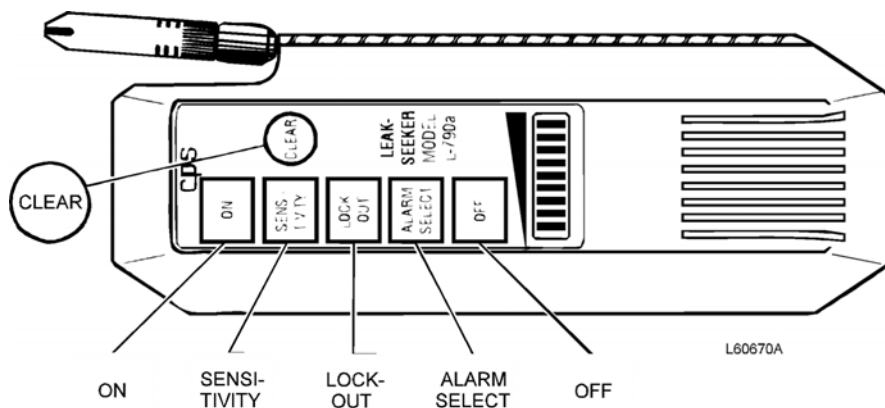


Figure 8

Leakage detection

By pressing the LOCK OUT button, the electronic unit proceeds to automatic detection of the leakage point. The highest measured concentration of refrigerant gas is stored in the memory unit. If the leak detector sensor is then moved to an area where there are lower contents of refrigerant gas, there will be no new calibration, but the highest level remains in the memory until the sensor is moved back to an area where there are higher contents.

With a refrigerant gas concentration of 95 %, compared with the value registered in the memory, the leak detector gives a characteristic audio signal at the same time as several LED bars start to flash intensely. If the leak detector sensor is moved to an area where there is a higher concentration of gas, compared with the value registered in the memory, the instrument gives an alarm as usual with a higher tone and/or by the LED bar being moved one or more steps to the right.

The highest measured value is stored continuously in the memory unit. By pressing the CLEAR button, you can erase the memory for the lock out function, and the leak detector will then be calibrated to a new zero value.

Adjustment

By pressing the SENSITIVITY button briefly, the left-hand LED bar will light up, and this corresponds to normal sensitivity. If you keep the button pressed in, the illuminated LED bar will be moved one step to the right for every second the button is kept pressed in. The sensitivity of the leak detector increases correspondingly. When the right-hand LED bar flashes, the leak detector is adjusted to the highest sensitivity.

In most cases, normal sensitivity is quite a sufficient setting as the leak detector detects extremely low incidences of refrigerant gas. When detecting very small leakage, and also when working with the R134a refrigerant, a sensitivity setting corresponding to LED bars 5-10 may be justified. However, the risk of a false alarm will increase correspondingly as other factors, such as air humidity, will have an effect. A moisture filter can then be used to dampen the effect of air humidity on the sensor.

NOTE!

When setting high sensitivity, the leak detector may give a ma. alarm indication. This should be avoided. Sensitivity must then be adjusted downwards a step or two.

NOTICE

The leak detector is turned off automatically and must be started again after 15 minutes.

Turn off the leak detector by pressing the OFF button.

Care

When there is too low a drive voltage, the fifth LED bar, marked *LO-BAT: will light up. This indicated that it is time to replace the 4 AA alkaline 1.5 V batteries.

The sensor element should be replaced at certain intervals to ensure a correct function of the leak detector. If the sensor is subjected to foreign bodies such as oil or water, the leak detector should be turned off immediately. Replace with dry and clean parts. It is important that the sensor element is turned the right way, see the reverse side of the instrument. A fouled sensor element must be cleaned in a spirit or a thinner.

The "Dirt protection" is used partly to protect the sensor against dirt, and partly to give clearer directional effect to the sensor when localising minor leakage.

Scale 9812444

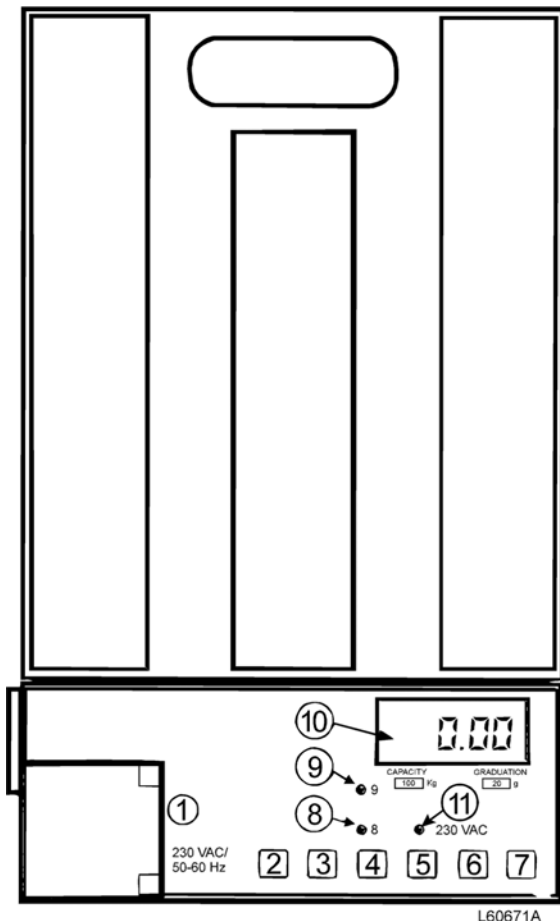


Figure 9

1. Controlled 230 V electrical outlet for connection of unit.
2. Push button for general setting, kilo.
3. Push button for fine setting, grams.
4. Push button for draining/filling.
5. Push button for engagement/disengagement for control 230 V electrical outlet 1.
6. Push button, off.
7. Push button, on, and zero setting of scale.
8. Indicator lamp, draining.
9. Indicator lamp, filling.
10. Display
11. Indicator lamp, controlled 230 V electrical outlet, marked 230 VAC.

Technical data:

Max. load weight = 100 kg, accuracy = 20 grams

Main voltage: 230V50/60 Hz or with battery 6F22U 9 V inside the lid on the end panel

Vakuum pump 9812445

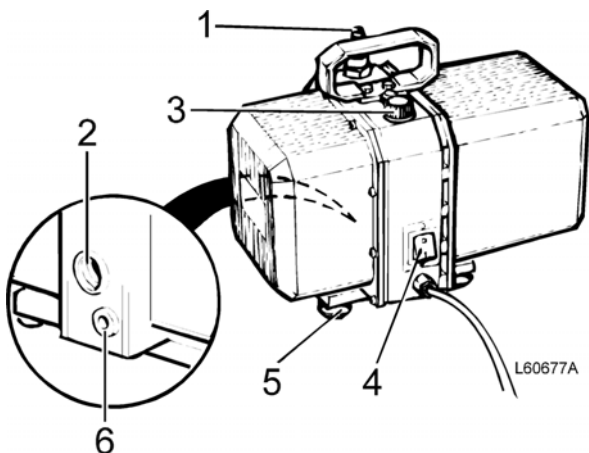


Figure 10

1. Connection nipple
2. Sight glass
3. Oil filling
4. Switch on/off
5. Adjustable feet
6. Oil drain plug

Technical data:

Number of steps = 2

Capacity = 30 l/min

Vacuum = 50 microns

Oil: part no 9812450, 0,25 l

Machine care

Check the oil level through the sight glass (2) on the side of the pump, the oil should be changed at least twice a year. Drain through the oil plug (6) next to the sight glass. Topping up with oil is made by means of the plug (3) on the top of the pump.

Special tools and other equipment

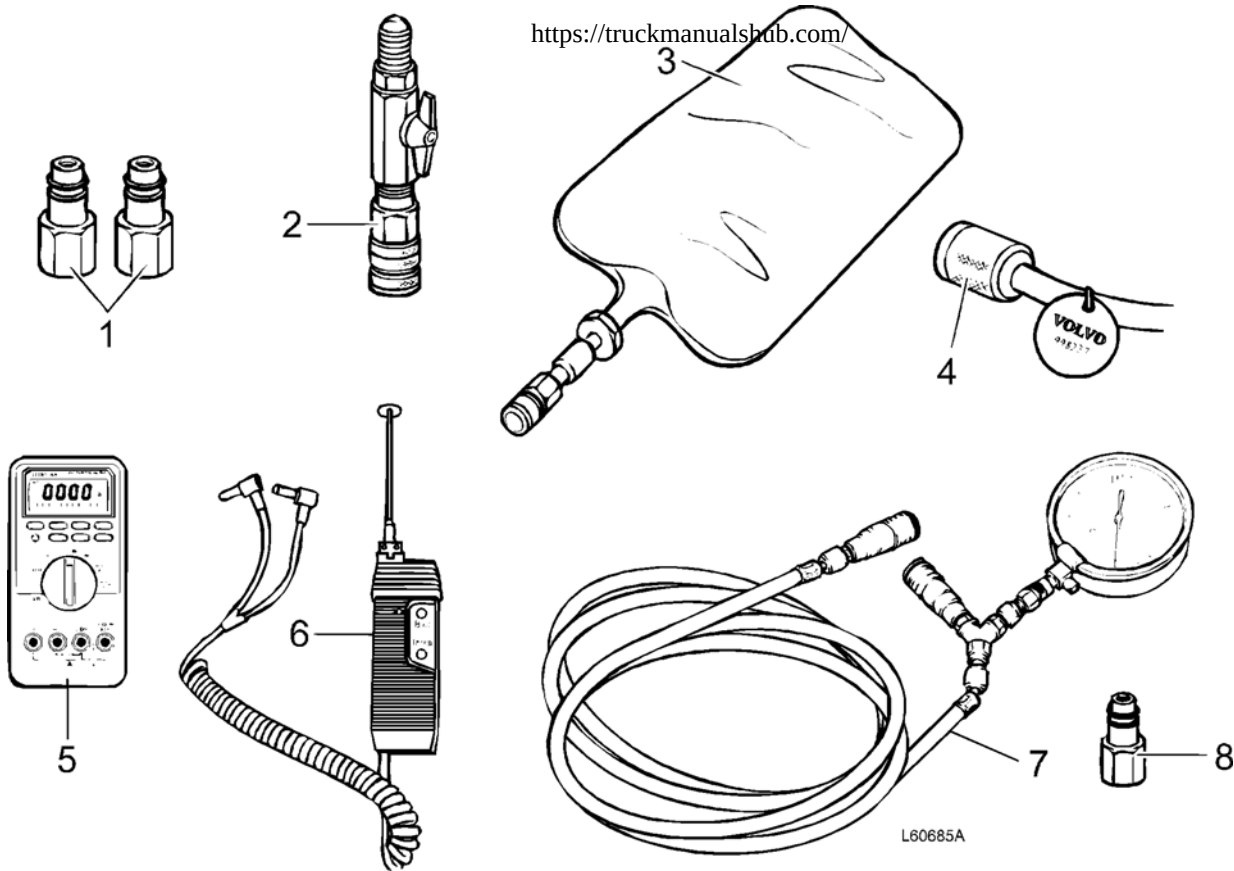


Figure 11

1. Nipple 9812446 (2) for connecting refrigerant container and vacuum pump.
2. Nipple with tap 9812447 for oil hose.
3. Rubber bag 9812448 for non-condensable gases.
4. Oil hose 9998237 for topping up of AC oil.
5. Multimeter 11666140 for measuring the temperature.
6. Temperature sensor 11666141 to be used together with multimeter 11666140.
7. Vacuum pump hose 9812452 with vacuum pressure gauge.
8. Nipple 9812453 for connecting the vacuum pump hose to the vacuum pump.

Service procedures

Emptying the AC unit, draining AC oil

NOTICE

When setting high sensitivity, the leak detector may give a ma. alarm indication. This should be avoided. Sensitivity must then be adjusted downwards a step or two.

NOTE!

the refrigerant container may be filled to a maximum of 75% of the filling weight. Other special equipment: 9812443, 9812444, 9812448

- Take the scale 9812444.
Connect the scale to a 230 V electrical outlet.
Take a refrigerant container.
- Find out the tare weight and filling weight of the refrigerant container.
Look at the marking on the refrigerant container.
Calculate 75% of the filling weight. Add the values and make a note of the total (Tare + 75% of the filling weight)..

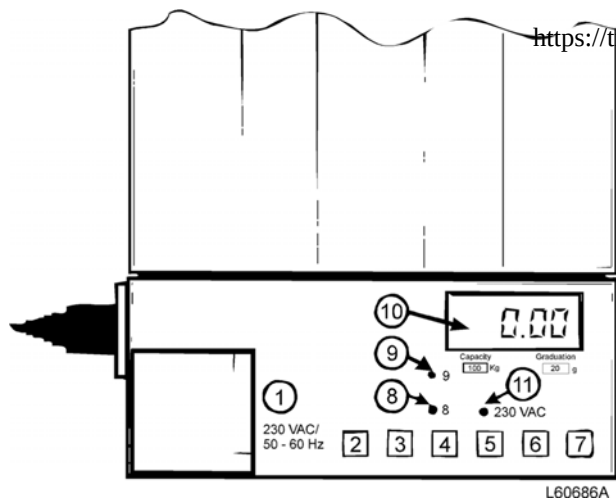


Figure 12

Exempel: The tare weight of the refrigerant container is 6.7kg. The maximum filling weight of the refrigerant container is 75% of 10kg. The set reading on the scale should be -14.2 kg. If these settings are made correctly, the scale will be turned off automatically when the refrigerant container is filled.

NOTE!

If too high a reading is set by mistake, press button 4 to change from - to +. Lamp 8 will light up. When the right reading is set, press button 4 so that lamp 9 lights once again.

the minus sign will disappear if the display shows less than -9.99.

NOTICE

The refrigerant container may be filled to a maximum of 75% of the filling weight. Other special equipment: 9812443, 9812444, 9812448.

Emptying the AC unit

- Place the recovery unit 9812443 close to the AC service valves at the machine. Remove the protective caps for low and high pressure outlets on the AC units.

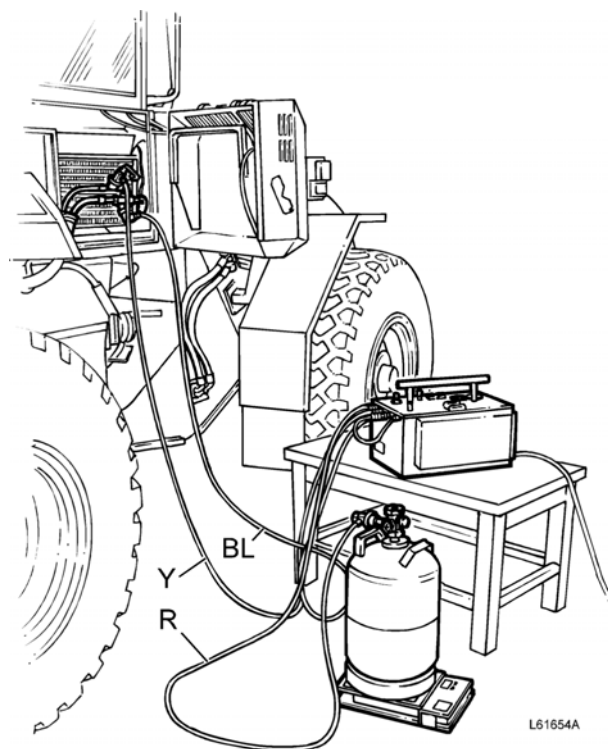


Figure 13

R Red hose, to nipple 2446 on the refrigerant container.
BL Blue hose, to the low pressure outlet on the AC unit.
Y Yellow hose, to the high pressure outlet on the AC-unit.

Place nipple 98124446 to the refrigerant container outlet. Place the refrigerant container on the scale. Connect the recovery unit to the scale 230 V outlet.

Connect

- red high pressure hose from the recovery unit to nipple 9812446 on the refrigerant container.
- blue low pressure hose to the low pressure outlet on the AC-unit.
- yellow hose to the high pressure outlet on the AC-unit.

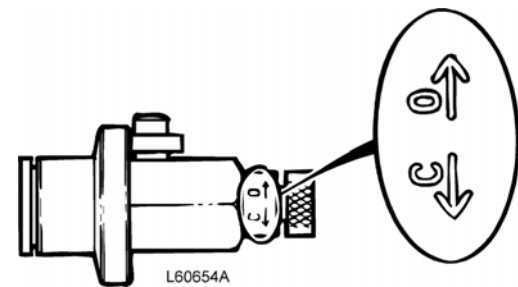


Figure 14

Open the refrigerant container tap.

O = open

- Open the taps on the connections to.
 - the refrigerant container, red hose
 - the low pressure, blue hose
 - the high pressure, yellow hose
- Press button 5 for connecting up the scale 230 V outlet. Lamp 230VAC will light up.

NOTICE

NOTE! If too high a reading is set by mistake, press button 4 to change from - to +. Lamp 8 will light up. When the right reading is set, press button 4 so that lamp 9 lights once again.

The minus sign will disappear if the display shows less than -9.99.

NOTE!

If button 7 on the scale is pressed in before button 5, the scale 230 V electrical outlet will lock until another button is pressed in, lamps 8 and 9 and 230 VAC will light up. This function can be used when the scale are not used and the recovery unit is to be engaged, such as when vacuum pumping.

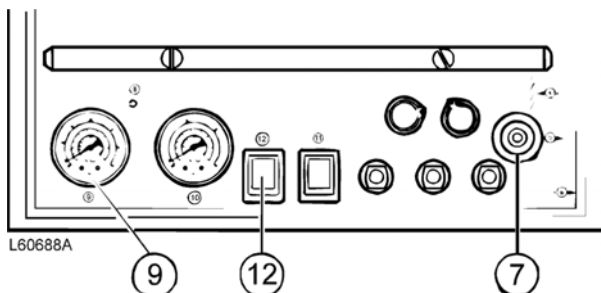


Figure 15

- Start the recovery unit by pressing button 12. Emptying then starts. After emptying for a while, the refrigerant can be seen through the sight glass 7. Emptying is completed when the indicator on the low pressure gage 9 (blue) shows a reading that is lower than 0 (vacuum) and the refrigerant can no longer be seen through the sight glass 7 in the recovery unit.
- The scale are closed automatically when the refrigerant container is full (the scale display shows -0), irrespective of whether the AC unit is completely empty or not. Close the recovery unit by pressing button 12. Turn off the taps on the connections. Change to another refrigerant container. Move nipple 9812446. Set the tear and maximum filling weight for the new refrigerant container as per items 2-3. Connect the red hose to the refrigerant container. Start emptying once again to item 6.

NOTICE

If button 7 on the scale is pressed in before button 5, the scale 230 V electrical outlet will lock until another button is pressed in, lamps 8 and 9 and 230 VAC will light up. This function can be used when the scale are not used and the recovery unit is to be engaged, such as when vacuum pumping.

NOTE!

If the pressure in the refrigerant container becomes too high, the indicator on the high pressure gauge (red) will start to rise. At about 18 bar, the recovery unit's high pressure alarm will be released, and lamp 8 on the recovery unit will start to light up. Close the recovery unit by pressing button 12. Turn off the taps on the connections. Vent the refrigerant container. Refer to "Taking care of non-condensable gases" in the service bulletin. Start emptying once again from item 6.

- Close the recovery unit by pressing button 12 when emptying is concluded

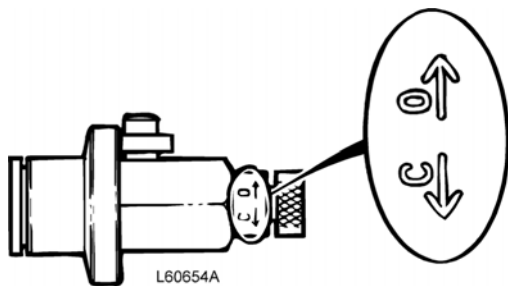


Figure 16

C = closed

Close the tap on the connection for

- the refrigerant container, red hose
- the low pressure outlet, blue hose
- the high pressure outlet, yellow hose close the refrigerant container tap
- Remove the connections and re-fit them on the respective blind plugs on the recovery unit. Remove the refrigerant container from the scale.

Draining AC oil

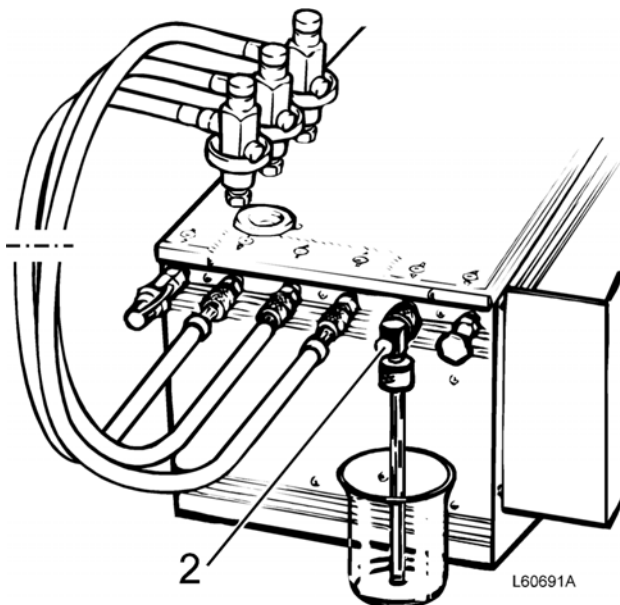


Figure 17

- Open tap 2 for the oil separator recovery unit by screwing it inwards. Drain any AC oil in to a measuring glass. Close the tap for the oil separator when all the oil has run out.

NOTICE

If the pressure in the refrigerant container becomes too high, the needle on the high pressure gauge will start to rise. At approx. 18 bar (261 psi), the station's high pressure alarm will be activated, and light 8 on the station will light up. Turn off the station using button 12. Close the valves at all connections. Bleed air from the refrigerant container. See "Handling non-condensable gases". Start discharging again from step 8.

NOTE!

The amount of oil that has been drained is to be refilled in the AC unit. Always refill with at least 40 ml PAG oil. Part no. 1161468-2 40 ml container.

Refilling with refrigerant in AC unit, vacuum pumping, and refilling with AC oil.

Scale 9812444 should be connected to the 230 V electrical outlet. The recovery unit 9812443 should be connected to the scale 230 V electrical outlet. Activate the scale's electrical outlet by pressing button 5.

Special tool: 9998237

Other special equipment: 9511207, 9812443, 9812444, 9812445, 9812447, 9812448, 9812452

Vakuum pumping

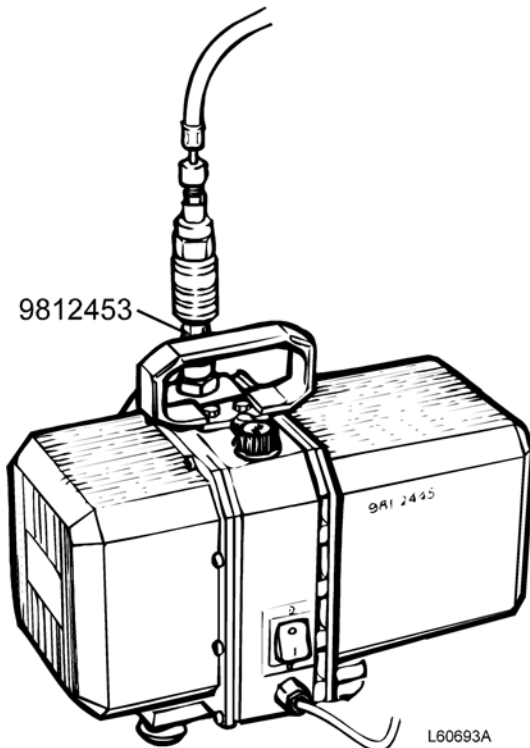


Figure 18

- Take the vacuum pump 9812445. Place nipple 9812453 on the vacuum pump. Connect the vacuum pump to the 230 V electrical outlet. Place vacuum pump hose 9812452 (X) on nipple 9812453.

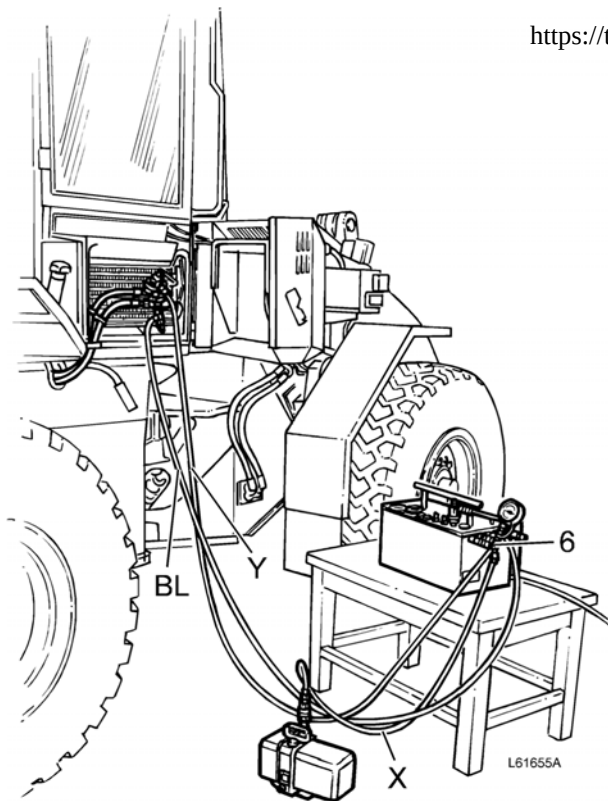


Figure 19

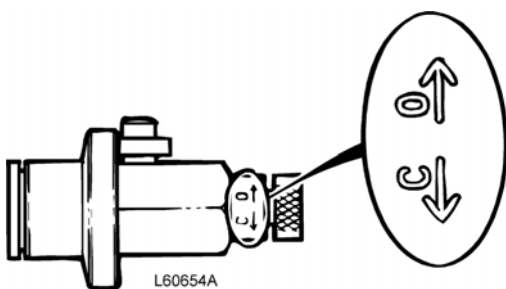
Y Yellow hose, to the high pres.sure outlet on the AC-unit.

X Vacuum pump hose 9812452 with vacuum pressure gage, from the recovery unit to nipple 2453 on the vacuum pump.

BL Blue hose, to the low pressure outlet on the AC-unit.

6 Connection for vacuum pump hose to recovery unit.

- Fit the vacuum pump hose 9812452 (X) with vacuum pressure gage to outlet 6 on the recovery unit
- Fit yellow hose to the high pressure outlet on the AC-unit.



L60654A

Figure 20

O = open

- Open the tap on the connection for the high pressure outlet for the dryer
- Start the vacuum pump.

NOTICE

The amount of oil that has been drained is to be refilled in the AC unit. Always refill with at least 40 ml PAG oil. Part no. 1161468-2 40 ml container.

NOTE!

Vacuum pumping the AC unit to ensure that all moisture is boiled and removed from the system takes about 50 minutes. It is appropriate to top up with AC oil in the beginning of the vacuum pumping

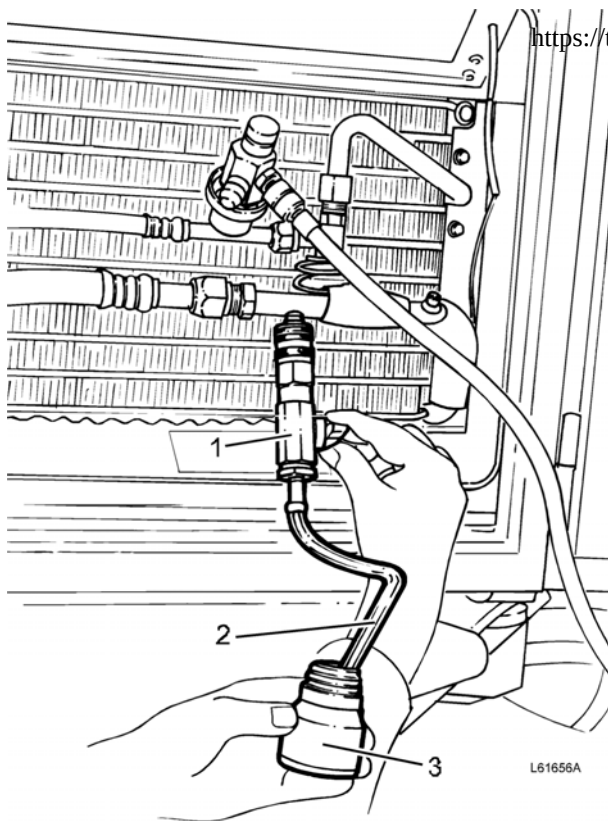


Figure 21

1. Part no. 9812447
2. Part no. 9998237
3. Part no. 1161468 (40 ml PAG oil)

- Remove blue hose and fit nipple 9812447 and oil hose 9998237 to the low pressure outlet on the AC unit. Dip the oil hose in to the measuring glass. Open the tap on nipple 9812447. The right amount of AC oil is sucked in to the AC unit. Close the tap on nipple 9812447. Remove oil hose 9998237 and nipple 9812447 from the low pressure outlet. Connect blue hose and continue vacuum pumping.
- Conclude vacuum pumping after at least 50 minutes. Close the vacuum pump. Check to make sure that the indicator on the vacuum pump hose pressure gauge shows 0.
- Remove the vacuum pump hose from the vacuum pump. Perform a leakage test according to the vacuum method. Check to make sure that the indicator on the vacuum pump hose vacuum pressure gauge does not rise. If it does rise, this means there is a leak in the unit.

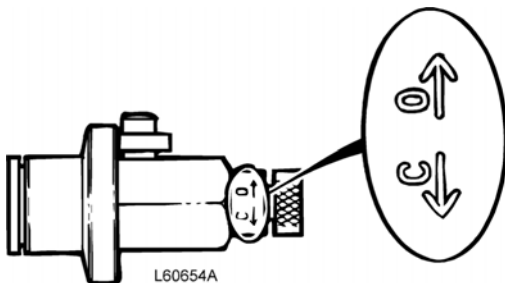


Figure 22

C = closed

- Close the tap on the connection to the high pressure outlet. Remove the connection and put it back on the blind plug.
- Remove the vacuum pump hose from the vacuum pump to outlet 6 on the recovery unit. Remove nipple 9812453 from the vacuum pump.

Refilling refrigerant in the AC unit

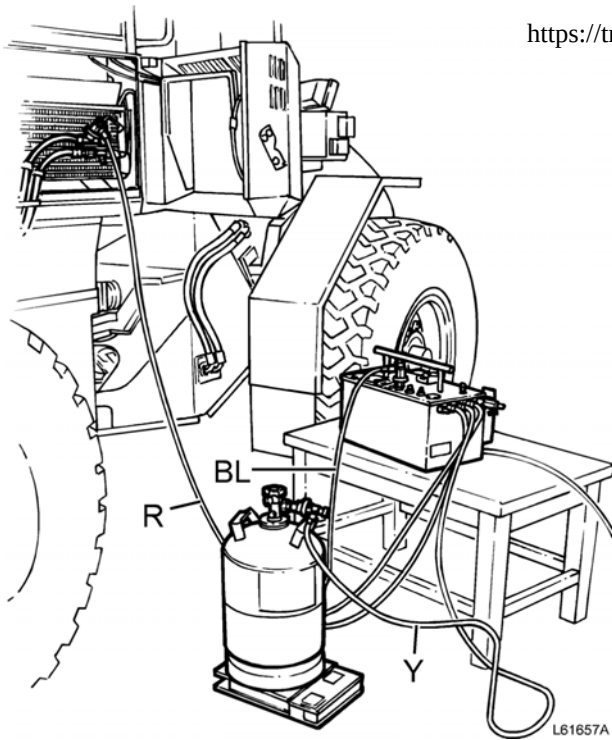


Figure 23

R Red hose, to high pressure outlet on the AC-unit.
Y Yellow hose, nipple 2446 on the refrigerant container.
BL Blue hose connected to blind plug at recovery unit.

- Nipple 9812446 should be placed on the refrigerant container. Connect the yellow hose to the refrigerant container and the red hose to the high pressure outlet on the AC-unit.

NOTICE

Vacuum pumping the AC unit to ensure that all moisture is boiled and removed from the system takes about 50 minutes. It is appropriate to top up with AC oil in the beginning of the vacuum pumping.

NOTE!

Filling of refrigerant should only be done through red hose to high pressure side.

- Open the tap on the refrigerant container and also the tap on the connection to therefrigerant container.

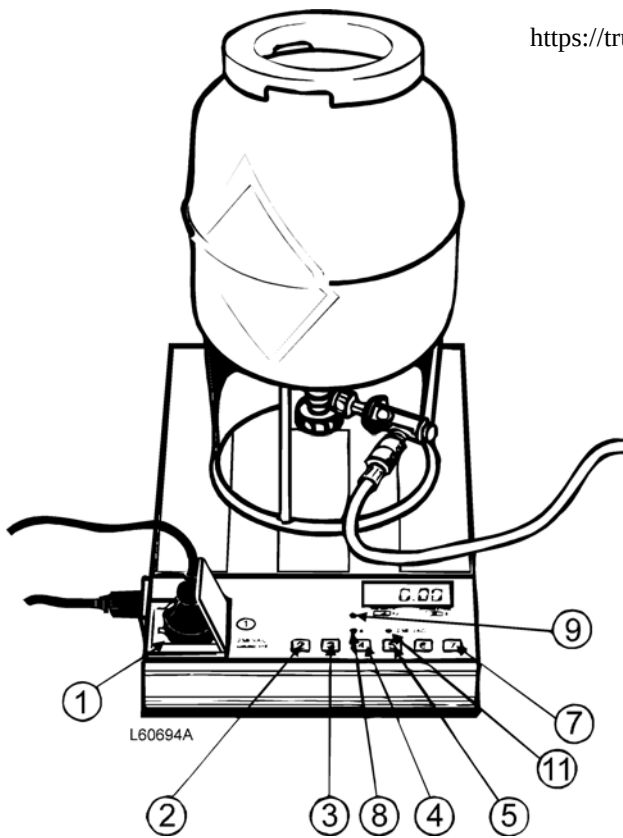


Figure 24

- Place the refrigerant container on the scale with the button facing up. Press button 7, the scale are set to zero. Press button 4, lamp 8 (emptying) will light up.
- Find out the amount of refrigerant that should be included in the machines AC unit. See the specifications in the respective service manuals. Alternatively, you can look at the plate next to the evaporator. Set the prescribed amount of refrigerant that is to be included in the machine AC unit by pressing buttons 2 (kilograms) and 3 (grams) on the scale.

NOTICE

Filling of refrigerant should only be done through red hose to high pressure side.

NOTE!

If too high a reading is set by mistake, press button 4 to shift from + to -. Lamp 9 will light up. When the right reading is set, press button 4 so that lamp 8 lights up again.

- Press button 5 to activate the scale 230 V electrical outlet. Lamp 230 VAC lights up. Start the recovery unit by pressing button 12.
- Open the tap on the connection to high pressure outlet, red hose, and top up with about 200 grams of refrigerant. Close the tap on the connection to the high pressure outlet, red hose. Close the station by pressing button 12.

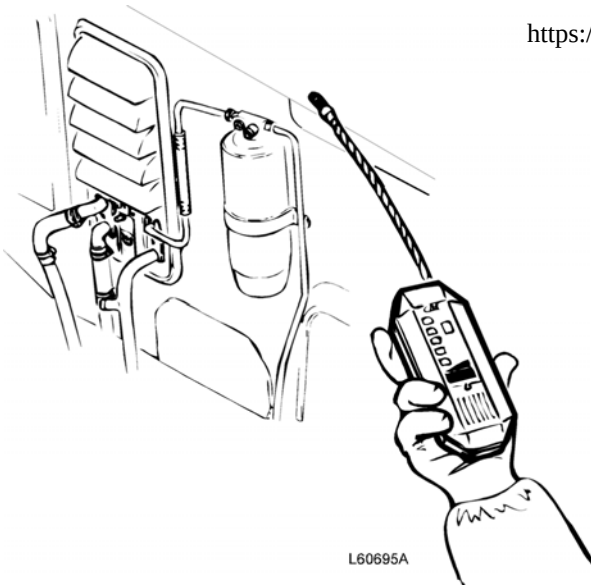


Figure 25

- Search for leaks in the machine AC unit using leak detector 9511207.
- Top up with the remaining amount of refrigerant. Start the recovery unit by pressing button 12. Open the tap on the connection to the high pressure outlet, red hose. The recovery unit will stop automatically and topping up will cease when the scale show -0. Remove the refrigerant container from the scale. Close the tap on the connection to the refrigerant container and also the tap on the refrigerant container.

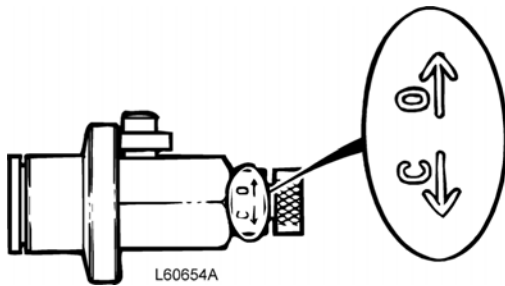


Figure 26

C = closed

- Close the tap on the connection 2:
 - The high pressure outlet
 - The refrigerant container
- Remove the yellow hose from the refrigerant container and refit it on the blind plug.
- Perform a performance test. Refer to the respective service manual or separate service bulletin.
- Fit the protective plugs on to the high and low pressure outlets. Close the front hatch. Place the equipment back in to position.

Handling procedures for non-condensable gases

Non-condensable gases are a mixture of air and a very small amount of refrigerant. These gases should be evacuated from the refrigerant container at regular intervals so that the container can take the amount of refrigerant normally contained in the AC unit when emptying. When there is a over pressure in the refrigerant container, emptying is discontinued when the pressure at the high pressure gage (red) proceeds 18 bar, and a high pressure alarm is indicated by lamp 8 on the recovery unit.

By comparing the temperature of the non-condensable gases in the refrigerant container, with the temperature of the refrigerant, you can determine the increasing g pressure in the refrigerant container. A pressure scale in bar is given on the edge of the pressure gages, and the temperature scale (°C) towards the centre.

Example: The pressure gauge shows a pressure of 18 bar, which corresponds to about + 66° C. The temperature of the bottom of the refrigerant container that is read is +20°C, which corresponds to a pressure of about 4.8 bar. The difference between these two readings is an over pressure of about 13.2 bar, which must be evacuated until a pressure of just over 4.8 bar is reached in the refrigerant container.

NOTICE

If too high a reading is set by mistake, press button 4 to shift from + to -. Lamp 9 will light up. When the right reading is set, press button 4 so that lamp 8 lights up again.

NOTE!

To avoid the risk of emptying the refrigerant container of pure refrigerant, the overpressure in the refrigerant container should be evacuated at a pressure that is slightly higher than what is corresponded by the measured refrigerant temperature.

The non-condensable gases contained in the refrigerant container should be handled by means of recycling unit FRS-10 GS and a rubber bag, part no. 981 2448. When the rubber bag is full, the gases are transferred to another refrigerant container designed only for non-condensable gases. When the container is full, it should be sent to a special place where the non-condensable gases can be taken care of correctly from an environmental point of view.

NOTICE

To avoid the risk of emptying the refrigerant container of pure refrigerant, the overpressure in the refrigerant container should be evacuated at a pressure that is slightly higher than what is corresponded by the measured refrigerant temperature.

The recovery unit 9812443 should be connected to a 230 V electrical outlet.

Special tools: 11666140, 11666141. Other special equipment: 9812443, 9812446, 9812448.

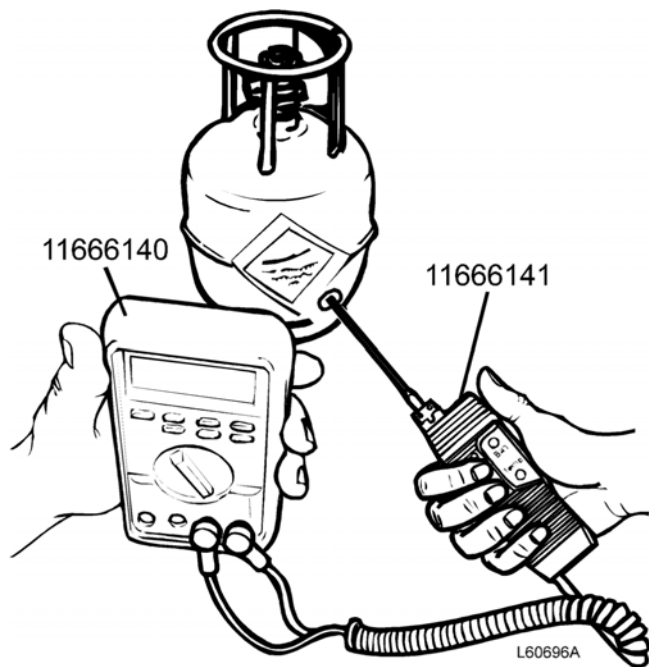


Figure 27

- Take the temperature of the refrigerant. Connect multimeter 11666140 to temperature sensor 11666141. Hold the sensor tip of the temperature sensor against the bottom of the refrigerant container. Place the multimeter handle in the mV position, and read off the temperature of the refrigerant.

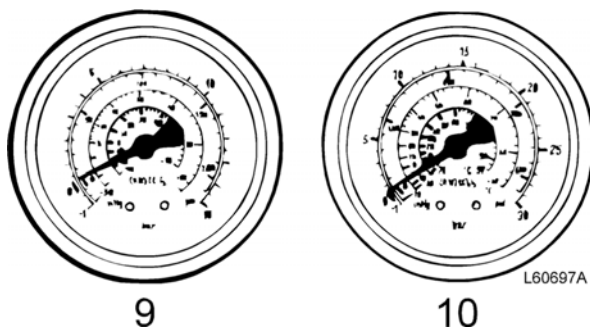


Figure 28

Low pressure gauge 9 (blue)
High pressure gauge 10 (red)

- Read the pressure which corresponds to the temperature on the refrigerant in the refrigerant container by looking at one of the pressure gauges. See also vapour table on page 20..

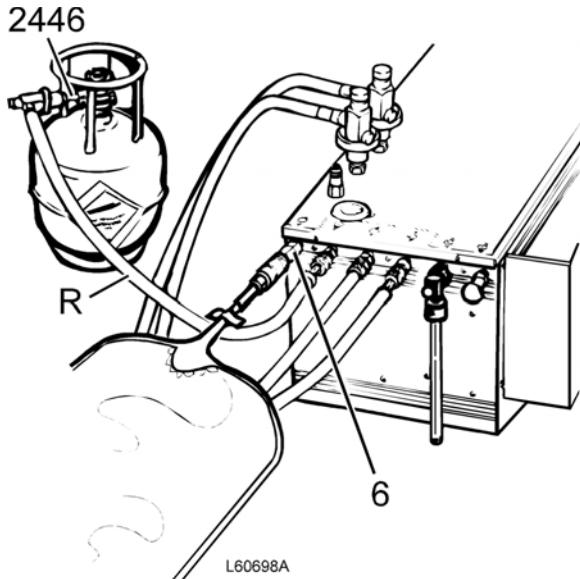


Figure 29

R Red hose, to refrigerant container
2446 Nipple for connection to refrigerant container

- Connect red hose to nipple 9812446 on the refrigerant container. Connect rubber bag 9812448 to connection 6 on the recovery unit.
- Open the tap on the connection to refrigerant container, and a tap on the refrigerant container. Read off the pressure in the refrigerant container on high pressure gauge 10.
- Press button 11 and keep it pressed in until the indicator on the high pressure gauge has fallen to a level just above the pressure corresponding to the measured refrigerant temperature.

NOTICE

If the pressure is allowed to drop too much, clean refrigerant will flow out of the refrigerant container and into the rubber container.

NOTE!

If the pressure is allowed to fall too low, pure refrigerant will start to flow from the refrigerant container into the rubber bag.

- Max. filling amount for rubber bag 9812448 is 140 g. (Tare + 140 g).

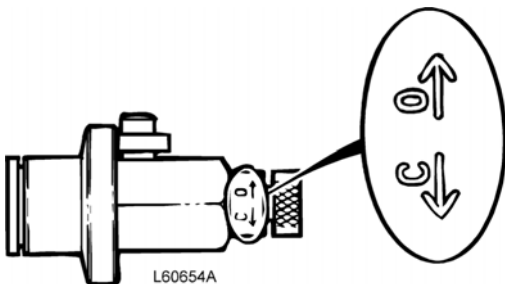


Figure 30

C = closed

<https://truckmanualshub.com/>

- Close the tap on the refrigerant container and also the tap on the connection to therefrigerant container.
- Take a refrigerant container that is used specially for non-condensable gases. Fit nipple 9812446 to the refrigerant container. Connect the red hose to the refrigerant container.
- Transfer the non-condensable gases from the rubber bag to the refrigerant container. (Specially used for none condensable gases)Start the recovery unit by pressing button 12.
- Conclude when the rubber bag is completely empty. Close the recovery unit by pressing button 12.
- Close the tap for the refrigerant container, and also the tap for the connection to the refrigerant container. Remove the red hose from the refrigerant container and refit it on the blind plug. Remove nipple 9812446 from the refrigerant container. Remove the rubber bag from connection 6 on the recovery unit.

R134a

Vapour table for the wet vapour range(manometer readings)

Temperature	Pressure
t °C	P bar
15	3,883
16	4,042
17	4,204
18	4,371
19	4,541
20	4,716
21	4,894
22	5,077
23	5,264
24	5,456
25	5,651
26	5,852
27	6,056
28	6,266
29	6,480
30	6,698
31	6,922
32	7,150
33	7,384
34	7,622
35	7,865

Reduced computer communication

This function informs the operator that a system malfunction is interfering with communication between the ECUs and that continued operation is only possible with reduced performance.

Input signals	Output function conditions	Output functions
Break in communication between the ECUs	Break in communication "bus off"	Reduced computer function ----- ATTENTION ! ----- Reduced Computer Function

Language Code GB	Product WLO	Group 852	https://truckmanualshub.com/	No. 14	Version 1	Date 03/08/2002
Applies to L50D Volvo, L70D Volvo, L90D Volvo, L120D Volvo, L150D Volvo, L150E Volvo, L180D Volvo, L180E Volvo, L220D Volvo, L220E Volvo, L330D Volvo, L330E Volvo						

Reinforcement of seat with air suspension



Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This SB is to be considered as a technical information and comprises normal warranties within the rules for the same.

Seat with air suspension with part No. 11104274

During certain type operations there have been cases where the frame on the air-suspended operator seat has broken due to overload. The cause is that the lower front cross stay, to which the shock absorber is attached, under certain operating conditions, has not coped with the actual load within acceptable time frames. To avoid damage and to increase the service life of the cross stay in question, a reinforcement kit with part No. 11164364 has been made available in co-operation with the supplier, in order to make the stay stiffer. The reinforcement kit may be ordered from the respective Spare Parts Departments.

Designation	Part No.
Reinforcement kit	11164364

The reinforcement has been introduced in production w.e.fr. seat with serial No. 67010032580 and w.e.fr. machines with serial numbers according to table 1. Seats with serial numbers up to incl. 67010032579 and seats installed in machines with serial numbers lower than those stated in table 1, ought thus to be reinforced according to the following work description.

Machine	Ser. No.
L50D	13789
L70D	19126
L90D	18163
L120D	15365
L150D	all
L150E	6012
L180D	all
L180E	5013
L220E	2228
L330D	all
L330E	62011

With the exception of L220D the information in the text preceding table 1 concerns the mentioned seat on all D-series machines up to the listed serial numbers. On L220D the seat concerned was introduced w.e.fr. machines with serial No. 1492–. This concerns all machines of the E-series prior to the serial numbers stated in table 1.

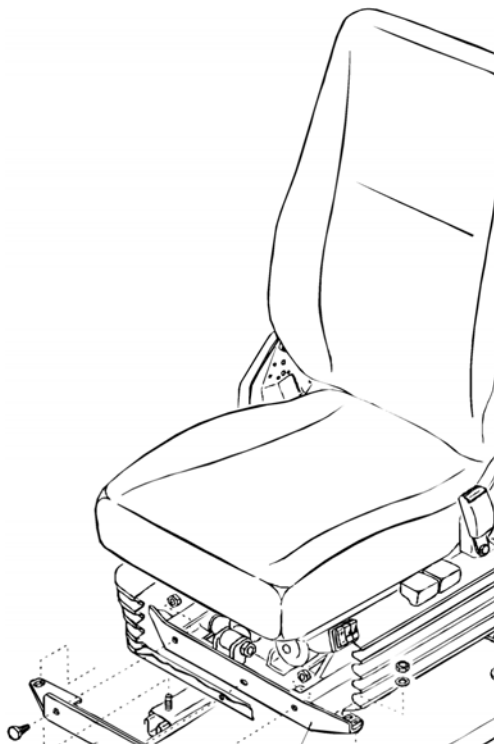


Figure 1

1. Seat frame
2. Nuts
3. Reinforcement frame
4. Spacer washers
5. Bellows fixation

Working instructions

1. Loosen the bellows from the seat frame 1.
2. Unscrew the four nuts 2.
3. Bolt on reinforcement frame 3. Tightening torque:
20 ±5 N m (2 ±0.5 kgf m) (15 ±3.7 lbf ft). Install the two spacer washers 4, see Fig. 1.

Compensation etc.

Type of compensation	Yes	No	Notes
Material cost	X		
Labour cost	X		0.5 hour
Travel cost		X	
Other costs		X	
Expenses etc.		X	

Instructions for coding claims

The work must have been completed at the latest by the 15th of November 2002 in order to qualify for compensation.

Type of code	Claims report form	SAS-system
Claim type	0	–
Claim object type	–	0
Campaign code	WLO0202	WLO0202
Mfgc	–	5
Warranty code	5	–
Causing part No.	11164364	=
Defect code	02	02

Function group	852	https://truckmanualshub.com/	=
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Removing propeller shafts

<https://truckmanualshub.com/>



The parking brake will not function when the propeller shafts have been removed!

1. Place the machine in the service position.
2. Block the wheels in order to prevent the machine from rolling.
3. Remove the propeller shafts.

If the machine is left unattended with the propeller shafts removed, a notice must be attached to the steering wheel with the information that the propeller shafts have been removed.

Language Code GB	Product WLO	Group 925	https://truckmanualshub.com/	No. 24	Version 1	Date 01/03/2011
Applies to Wheel Loaders						

Repair instructions for attachments



WARNING

Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.

Cause and action

In some cases it is necessary to repair Volvo manufactured attachments e.g. buckets due to cracks or other problems. The timeframe for response is approx. 1 week.

If a repair instruction is needed a request must be sent using Techline. In order to get a fast and correct repair instruction the following information needs to be added to the Techline call:

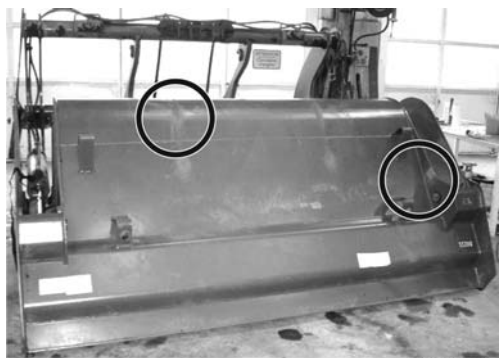
- Information about model, serial number and attachment.
- Photo of the ID-plate of the attachment. **Make certain all photo information on the ID plate is clear and readable.**



V1096165

Figure 1

- Photo showing the complete attachment with the cracked/worn parts highlighted.



V1096166

Figure 2

- Close up photo of the crack/wear.



V1096167

Figure 3

- Photo of the site, if possible showing the machine in action.



V1096168

Figure 4

Repairing the hydraulic system <https://truckmanualshub.com/>

In connection with pump replacement or other work on the hydraulic system when air may be present in the system, see Hydraulic system, bleeding, page 9:27.

Language Code GB	Product WLO	Group 234	https://truckmanualshub.com/	No. 13	Version 2	Date 03/29/2006
Applies to L50D Volvo, L60E Volvo, L70D Volvo, L70E Volvo, L90D Volvo, L90E Volvo, L110E Volvo, L120D Volvo, L120E Volvo						

Replaced fuel level sensor



Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.

Cause

The manufacture of the fuel level sensor for L50D–L120D and for early E-series machines within the size range of L60E–120E has ceased and must therefore be replaced by a new level sensor from a new supplier.

The new sensor with part No. 11170252 is 369 mm (14.528 in) which is slightly longer than the earlier sensor which was 365 mm (14.370 in). This results in the positive secondary effect that the capacity of the fuel tank is better utilised with the longer sensor.

Sensor with part No. 11170356 has the same length as previously, i.e. 350 mm (13.780 in).

However, there is a complication with the new sensors. Because their shape differ slightly, they cannot be installed in the plastic tanks of the E-series machines unless both sensor and tank are shaped to permit installation of the sensor in its position in the tank.

The steel plate tanks on the D-series machines do not require any additional measures.

NOTE!

Because of altered thread size of the hose connection on the new fuel level sensors with part No. 11170252 and 11170356, the sensors must be supplemented with the following additional parts:

L50D, L70D, L90D with plastic tank	L120D/E with metal tank	E-series models with plastic tank		
11039821 replaced with:	11039701 replaced with:	11039821 replaced with:	Designation	New Part No.
2 pcs	1 pc	1 pc	Banjo bolt	941686
2 pcs	1 pc	1 pc	Banjo nipple	977754
–	1 pc	1 pc	Plug	13966143
–	1 pcs	1 pcs	Fitting	14213266
4 pcs	4 pcs	4 pcs	Gasket	976930
–	1 pc	1 pc	Fuel pipe	11411056
1 pc	1 pc	1 pc	Cable harness	11171480
1 pc	–	1 pc	Fuel gauge sensor, 396 mm (15.591 in)	11170252
–	1 pc	–	Fuel gauge sensor, 350 mm (13.780 in)	11170356

Action

For the E-series machines up to incl. the following serial numbers, the fuel level sensor and the fuel tank must be shaped according to work instructions.

Machine	Up to incl. ser. No. ARV	Up to incl. ser. No. ASH	Up to incl. ser. No. PED
L60E	–1736	–60349	–70175
L70E	–21614	–60463	–71065
L90E	–20962	–66548	–70909
L110E	–1439	–60228	–70221
L120E	–17993	–64489	–70834

Working instructions

1. Disconnect the cable harness from the fuel level sensor and lower the tank to the ground.
2. Grind off one of the corners on the fuel level sensor according to figure.

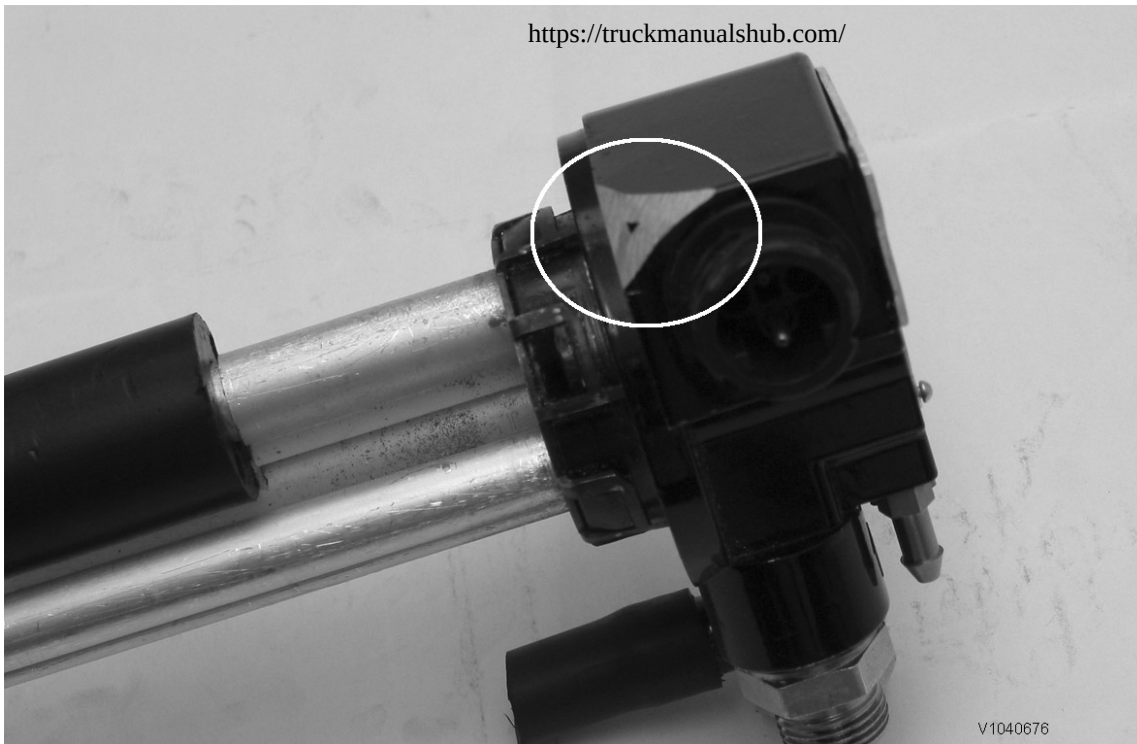


Figure 1

3. Remove the old sensor from the fuel tank and lower the new sensor into position.
4. Note the master splines on the sensor! Identify and mark where on the tank material needs to be removed to allow the sensor to be turned to correct position.
5. Take out the level sensor and then carefully cover the opening for the sensor with masking tape.
6. Ream away the required amount of material from the circumference of the plastic edge around the plate on the tank.

NOTE!

Distance that needs to be treated: approx. 5 cm (2 in) on either side.

7. In a suitable way remove all plastic dust and pull off the masking tape and test whether it is possible to install the sensor in its bayonet mount.

If further material must be removed, identify where, and repeat the procedure.

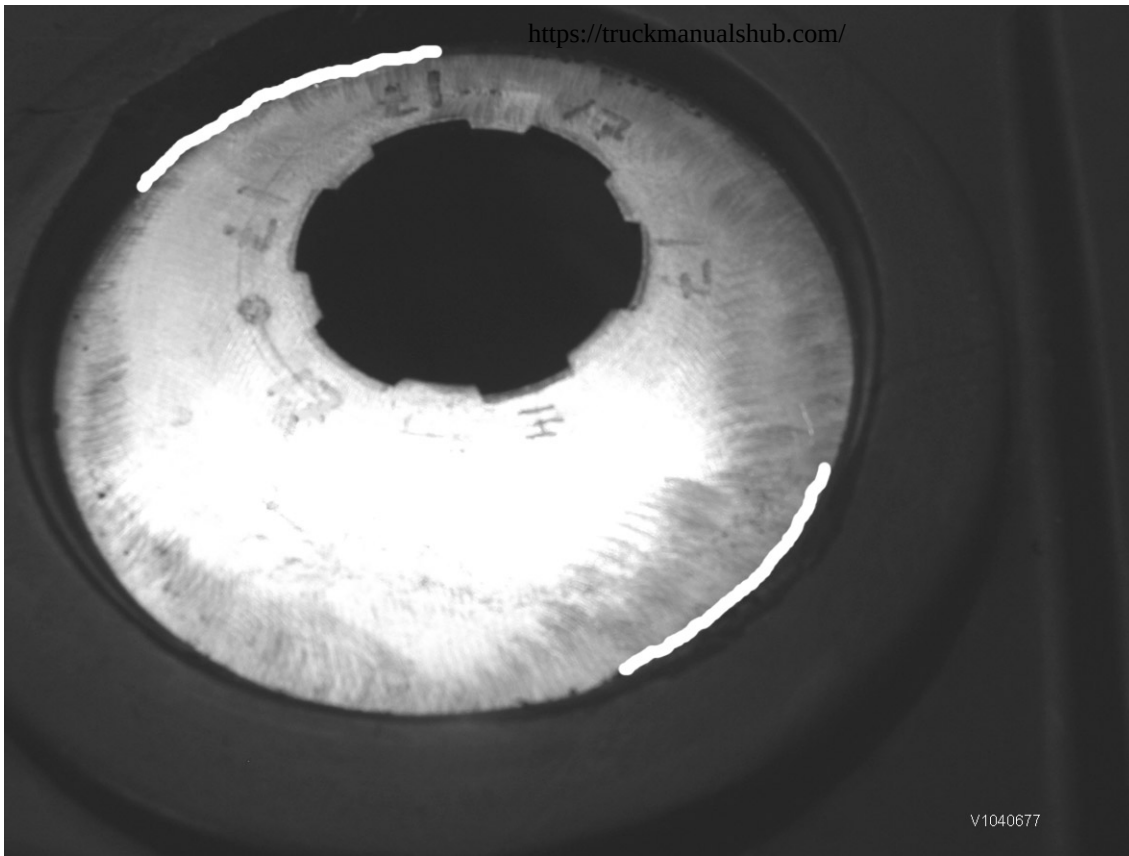


Figure 2

Hole in the fuel tank

NOTE!

The new sensor does not require a new parameter setting via VCADS Pro.

Language Code GB	Product WLO	Group 386	https://truckmanualshub.com/	No. 9	Version 2	Date 08/30/2002
Applies to L50D Volvo, L70D Volvo, L90D OR Volvo, L90D Volvo, L120D Volvo, L120E Volvo, L150D Volvo, L180D HL Volvo, L180D Volvo, L180E Volvo, L220D Volvo, L220E Volvo, L330D Volvo						

Replacing brake pressure sensor



WARNING
Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This SB is to be considered as a technical information and comprises normal warranties within the rules for the same.

New brake pressure sensors, SE502 and SE503, of improved quality, have been introduced in production of wheel loaders, see table 1. If orders are placed using the discontinued part numbers, a cable harness will also be supplied, in addition to the new sensor. The cable harness, with part No. 11170743, is to be connected to the circuit board between UA, item 2, and RD, item 3, see Fig. 1. On ceratin older machines the new cable harness may be installed together with the old sensor. The existing cable harness "under the cab" is to be connected to 11170743, see Fig. 2.

Designation	New part No.	Discontinued part No.
Sensor SE502/503	11170071	11039580
Sensor SE502/503	11170072	11039738

The new sensors have been introduced in production according to table 1.

Machine	Ser. No.
L50D	13829– (ESK), 70236– (PED)
L70D	19234– (ESK), 70601– (PED)
L70D Open ROPS	37050– (ESK)
L90D	64734– (ASH), 18205– (ARV), 70638– (PED)
L90D Open ROPS	70801– (PED)
L120D	70603– (PED)*
L120E	64001– (ASH), 16006– (ARV), 70701– (PED)
L150D	*
L150E	63015– (ASH), 6033– (ARV)
L180D	*
L180E	62505– (ASH), 5033– (ARV)
L180E High Lift	5033– (ARV)
L220E	2253– (ARV)
L330D	**
L330E	62007– (ASH)

* Not introduced on machines made in Asheville (ASH) and Arvika (ARV).

** Not introduced on machines made in Asheville (ASH).

Compensation

The work should be carried out at the latest by 2003-05-01.

Type of compensation	Yes	No	Notes
Material cost	X		
Labour cost	X		1 hour
Travel cost		X	
Other costs		X	

Type of code	Claim form	SAS-system
Claim type	0	—
Claimed object type	—	0

Campaign code	—	https://truckmanualshub.com/	—
Mfgc	—		*
Warranty code	*		—
Causing part No.	11039580/11039738		11039580/11039738
Defect code	30		30
Function group	38000		38000

* Within standard warranty, 12 months/2500 hours = 001
 After 12 months/2500 hours = 538

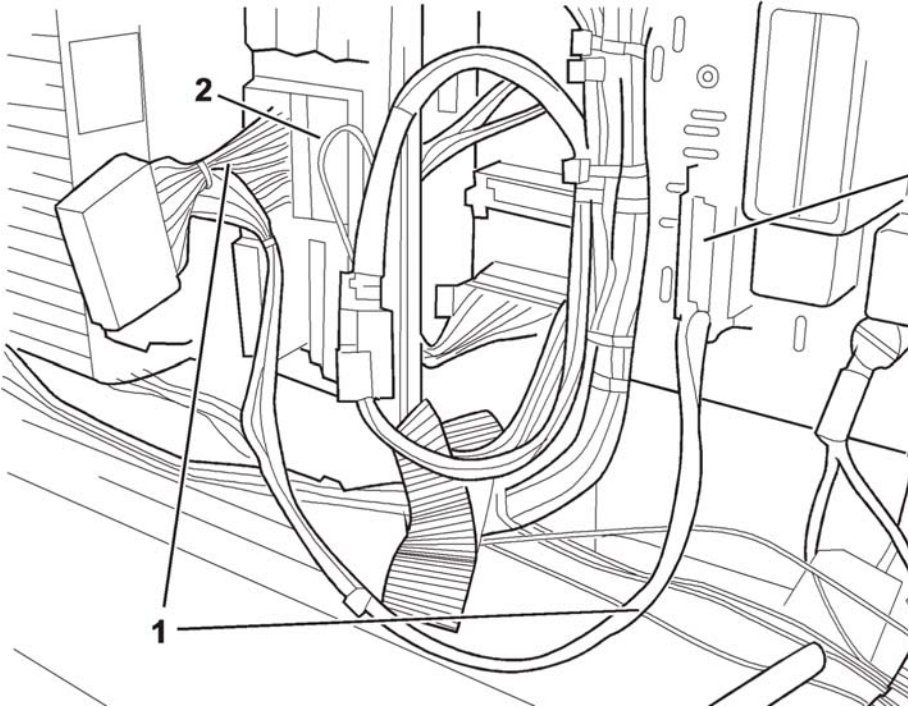
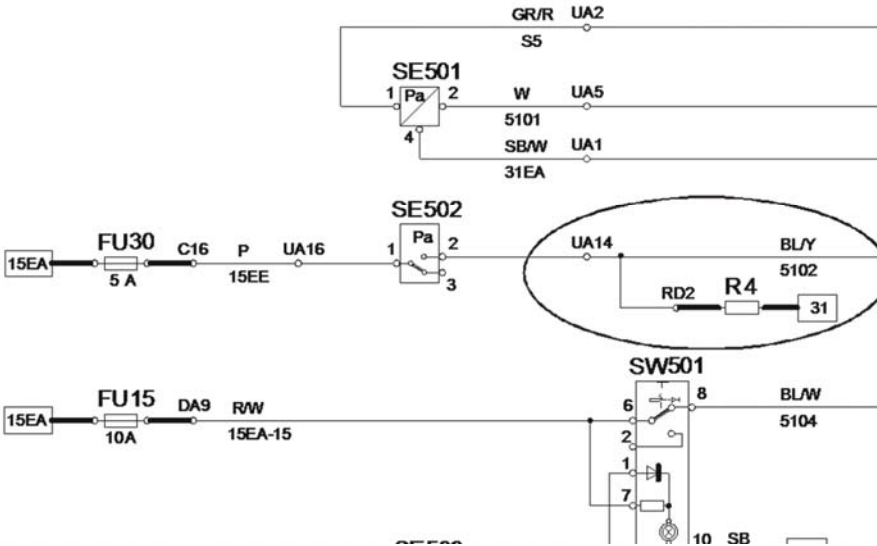


Figure 1

1. Cable harness
2. UA
3. RD



Language Code GB	Product WLO	Group 852	https://truckmanualshub.com/	No. 13	Version 1	Date 01/18/2002
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Applies to
 4200 Volvo BM, 4200B Volvo BM, 4300 Volvo BM, 4300B Volvo BM, 4400 Volvo BM, 4500 Volvo BM, 4600 Volvo BM, 4600B Volvo BM, 6300 Volvo BM, EL70 Volvo BM, EL70C Volvo BM, L50 Volvo BM, L50B Volvo BM, L50C OR Volvo, L50C Volvo, L50C Volvo BM, L50D Volvo, L60E Volvo, L70 Volvo BM, L70B Volvo BM, L70C Volvo, L70C Volvo BM, L70D Volvo, L70E Volvo, L90 Volvo BM, L90B Volvo BM, L90C OR Volvo, L90C Volvo, L90C Volvo BM, L90D OR Volvo, L90D Volvo, L90E Volvo, L110E Volvo, L120 Volvo BM, L120B Volvo BM, L120C Volvo, L120C Volvo BM, L120D Volvo, L120E Volvo, L150 Volvo BM, L150C LB Volvo, L150C Volvo, L150C Volvo BM, L150D Volvo, L150E Volvo, L160 Volvo BM, L180 CO Volvo BM, L180 HL Volvo BM, L180 Volvo BM, L180C CO Volvo, L180C HL Volvo, L180C Volvo, L180C Volvo BM, L180D HL Volvo, L180D Volvo, L180E HL Volvo, L180E Volvo, L220D Volvo, L220E Volvo, L330C LL Volvo, L330C Volvo, L330C Volvo BM, L330D Volvo, L330E Volvo

Replacing operator seat shock absorber



Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This SB is to be considered as a technical information and comprises normal warranties within the rules for the same.

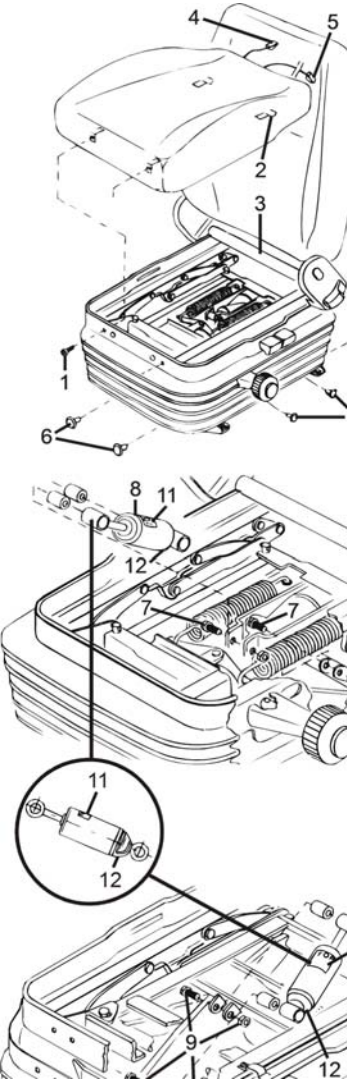


Figure 1

Operator seats concerned

Mechanical	Isringhausen ISRI 6000
Air-suspended	Isringhausen ISRI 6500KM

NOTE!
The shock absorber will only work as intended if the instructions for removing and installing are followed.

Removing, ISRI 6000

<https://truckmanualshub.com/>

The numbers in the text refer to Fig. 1.

1. Remove the seat cushion.
2. Remove bolts 1 as well as clamps 2 from the seat frame cross pipe 3.
3. Disconnect, where required, the electrical connections for the seat heating and switch 5.
4. Remove plastic studs 6 and pull up the bellows from the bottom frame in the area around the lower attachment for the shock absorber.
5. Remove bolts 7 and take out the shock absorber.

Removing, ISRI 6500KM

The numbers in the text refer to Fig. 1.

1. Remove the seat cushion.
2. Remove bolts 1 as well as clamps 2 from the seat frame cross pipe 3.
3. Disconnect, where required, the electrical connections for the seat heating and switch 5.
4. Pull up and secure the seat suspension in its highest position in a suitable way.
5. Remove plastic studs 6 and pull up the bellows from the bottom frame.
6. Remove bolts 9 and shock absorber 10.

Installing

Install the new shock absorber in the reverse order.

NOTE!

The label "Top" must face upwards and oil reservoir 12, visible as a bulge by the base of the shock absorber, must be pointing downward.

Language Code GB	Product ART/BHL/CEX/ CWL/SSL/WLO	Group 000	https://truckmanualshub.com/	No. 204	Version 1	Date 10/29/2008
Applies to Articulated Haulers, Wheel Loaders, Skid Steer Loaders, Compact Wheel Loaders, Compact Excavators, Backhoe Loaders						

Reporting of product misuse & near-miss report



WARNING

Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.

A **Product misuse & near-miss report** is used to report an unplanned event that did not result in injury, illness, or damage - but had the potential to do so. Any use of a product that Volvo CE has specifically warned against in its instructions is a misuse. Only a fortunate break in the chain of events prevented an injury, fatality or damage.

To support our effort in building safe products, and because of increasing demands by various authorities, we would like to encourage you to report each Product misuse & near-miss with this report. The report documents events which you have become aware of and VCE machines have been involved. We regard the report as a mutual obligation to report and to follow up on such misuse and near-miss occurrences.

Please copy and fill in the enclosed form.

NOTE!

The report is also available in Word format in Techline. It can be downloaded, filled in digitally and sent in by E-mail. Send the form to the respective VCE regional office to be forwarded on to the person responsible for the market and technical matters at Volvo Construction Equipment AB Customer Support Division

The description of the Product misuse & near-miss report must be objective. Personal opinions should be avoided. However, it is of great importance that facts are reported.

OK to write: The insulation burnt off at...

Do not write: The damage was probably caused by the fact that the insulation was damaged at...

Also other observations should be noted in the report, for example lack of maintenance, carelessness and other circumstances which may be of importance. For example, slippery conditions, poor visibility, previous repairs etc.

VOLVO CE Product Misuse & Near-Miss Report

Articulated Haulers - Excavators - Graders - Wheel Loaders - Compact Equipment - Compaction - Pavers

Machine Model

Serial Number

Customer's Name

Site Location

Date Identified

Person(s) Involved

**Identify the Misuse
and/or the near-miss**

**Instructions or
comments provided**

Reported by

Representing

V1068262

Figure 1

How to fill in the form

English text in the form

How to fill in the form

Machine model	https://truckmanualshub.com/	Fill in the machine model.
Serial number		Fill in the serial number of the machine.
Customer's name		Fill in the name and address of the owner or user of the machine.
Site location		Fill in the name of the location where the event occurred.
Date identified		Fill in the date this event was seen.
Person(s) involved		Fill in the names of the people involved in this event.
Identify the misuse and/or the near miss		Fill in all information about what was seen, how this was a hazard and what could have happened.
Instructions or comments provided		Fill in the instruction or comments you provided to avoid this type of event and to whom this was given.
Reported by		Fill in the name of the person completing this report. .
Representing		Fill in the name and address of your company.

Language Code GB	Product ART/COA/COS/ CWL/EXC/GRD/ PAT/PAW/PIP/SSL/ WLO	Group 000	https://truckmanualshub.com/	No. 294	Version 9	Date 01/15/2015
Applies to Asphalt Compactors, Soil Compactors, Compact Wheel Loaders, Tracked Pavers, Wheeled Pavers, Pipelayers, Wheel Loaders, Excavators, Motor Graders, Skid Steer Loaders, Articulated Haulers						

Reports

NOTE!

Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.

Cause and action

To facilitate root cause analysis and recovery handling, technical support and warranty department need reports when claiming some focused items.

The requests for the different reports have been sent out in different service bulletins and this service bulletin is only a summary.

Requested reports

These referenced service bulletins must be filled out completely, otherwise warranty claim will not be approved. The respective dealer/distributor must send a completed form to the regional tech support through Techline within five days of the date of inspection.

Item	Product	SB number	Applies to models	Latest release
Engine issues	SSL	210SSL61K Inspection form for engine failure or suspected failure	MC110C, MC115C, MC125C, MC135C, MC155C, MCT110C, MCT125C, MCT135C, MCT145C	2014-08-22
Oil consumption	ART	210ART8 Action to be taken in case of abnormal lubricating oil consumption	All Articulated Haulers	2008-06-05
	EXC	220EXC2K Check method on engine oil consumption	All Excavators	2014-01-13
	WLO	210WLO8 Action to be taken in case of abnormal lubricating oil consumption	All Wheel Loaders	2008-06-05
Dropped cylinder liners	EXC	212EXC12K D6/D7 Exhaust gas leakage into the cooling system	EC160C, EC180C, EC210B, EC210C, EC235C, EC240B, EC240C, EC290B, EC290C, ECR235C, ECR305C, EW160C, EW180C, EW210C, EW230C, FC2121C, FC2421C, FC2924C, FC3329C	2014-10-29
	GRD	212GRD13K D6/D7 Exhaust gas leakage into the cooling system	G930, G940, G946, G960	2014-11-05
	WLO	212WLO13K D6/D7 Exhaust gas leakage into the cooling system	L110E, L110F, L120E, L120F, L60E, L60F, L70E, L70F, L90E, L90F	2014-11-05
Broken cylinder liner	EXC	212EXC18K D6E Cylinder liner broken	EC200B, EC210B, EC210C, EC210C, EW145B, EW180C, EW230C, FC2421C	2013-03-15
	WLO	212WLO18K D6E Cylinder liner broken	L60F, L70F, L90F	2013-03-15
Camshaft, insufficient hardening	EXC	214EXC33K D6E Camshaft, insufficient hardening	EC160C, EC180C, EC200B, EC210B, EC210C, EC235C, ECR235C, EW145B, EW160C, EW180C, EW210C, EW230C, FC2421C	2013-03-15
		214EXC40K	EC250D, EC300D, PL3005D	2014-03-05

	WLO	D8H Camshaft, insufficient hardening https://truckmanualshub.com/		
		214WLO33K D6E Camshaft, insufficient hardening	L60F, L70F, L90F	2013-03-15
		214WLO40K D8H Camshaft, insufficient hardening	L110G, L120G	2014-03-05
	GRD	214GRD40K D8H Camshaft, insufficient hardening	G930B, G940B, G946B, G960B	2014-03-05
Camshaft, hardening process update	COS/COA/ CWL/EXC/ GRD/PAT/ PAW, PIP/ WLO	214COA/COS/CWL/EXC/ GRD/PAT/PAW/PIP/WLO43K	L110G, L120G, G930B, G940B, G946B, G960B, L45G, L50G, EW140D, EW160C, EW160D, EW180C, EW180D, EW210C, EW210D, EW145B, EC140D, EC160C, EC160D, EC180C, EC180D, EC210B, EC210C, EC220D, EC235C, EC235D, EC240B, EC240C, EC250D, EC290B, EC290C, EC300D, EC350D, ECR145D, ECR235C, ECR235D, ECR305C, FC2121C, FC2421C, FC2924C, FC3329C, ABG7820B, ABG8820B, P5770C ABG, P5870C ABG, P6820C ABG, P6870C ABG, P7110, P7170, P7820C ABG, P8720B, P8820C ABG, DD110B, DD120B, DD140B, SD115, SD135	2014-12-19
Transmission	ART	420ART41K Transmission, inspection form	A25D, A25D 4x4, A25E, A25E 4x4, A30, A30C, A30D, A30E, A35, A35C, A35D, A35E, A35E FS, A40, A40D, A40E, A40E FS, T450D	2011-12-07
		420ART61K Transmission, functional check	A25D, A25D 4x4, A25E, A25E 4x4, A30D, A30E, A35D, A35E, A35E FS, A40D, A40E, A40E FS	2011-11-30
		420ART81Kv2 Transmission, inspection form	A25F, A25G, A30F, A30G, A35F, A35F FS, A35G, A35G FS, A40F, A40F FS, A40G, A40G FS	2014-11-12
		420ART82Kv2 Transmission, functional check	A25F, A25G, A30F, A30G, A35F, A35F FS, A35G, A35G FS, A40F, A40F FS, A40G, A40G FS	2014-11-12
	GRD	421GRD117 Transmission pressure test procedure and test sheet	G930, G940, G946, G960, G970, G976, G990	2010-03-04
Electric servo lever/ Angle sensor	WLO	914WLO68K Control measurement for electric servo lever and tilt/lift angle sensor	L110F, L110G, L120F, L120G, L150F, L150G, L180F, L180G, L220F, L220G, L250G, L350F	2013-03-19
Central lubrication pump	WLO	993WLO19K Repair report for central lubrication pumps	L110F, L110G, L120F, L120G, L150F, L150G, L180F, L180FHL, L180G, L180GHL, L220F, L350F, L220G, L250G, L60F, L60G, L70F, L70G, L90F, L90G, L110H, L120H, L150H, L180H, L180HHL, L220H, L250H	2014-11-13

See specific bulletins for more information about how and when to make the reports.

This is a time guide for RM Compaction ABG machines.

This time guide is **not** created with the conditions that we described for the normal time guide.

All times in this list has also a different layout comparing to the normal time guide.

There are no operation numbers for the jobs available.

This is a temporary solution to help our dealers with information and when new machines are released they will be found in the normal time guide and with a related repair method connected.

This Time Guide will only be available in English and in PDF format.

Machines covered in this list are:

ABG DD22, ABG DD24, ABG DD85-1, ABG DD 95-1

Drum ABG

System	Sub-System	Component	Sub-Component	Action	ABG DD 22	ABG DD24	ABG DD 85-1	ABG DD 95-1
Drum	Eccentric	Spline Shaft		Replace	8,00	8,00	8,00	8,00
Drum	Eccentric	Housing	O-ring	Replace	8,00	8,00	8,00	8,00
Drum	Eccentric	Seal		Replace	4,00	4,00	4,00	4,00
Drum	Drive Plate			Replace	3,00	3,00	3,00	3,00
Drum	Shock			Replace	1,50	1,50	1,50	1,50
Drum				Replace	8,00	8,00	8,00	8,00
Drum	Scraper Bar	Inside		Replace	1,50	1,50	1,50	1,50
Drum	Scraper Bar	Inside		Repair	2,00	2,00	2,00	2,00
Drum	Scraper Bar	Outside		Replace	1,00	1,00	1,00	1,00
Drum	Scraper Bar	Outside		Repair	1,00	1,00	1,00	1,00

Hydraulic ABG

System	Sub-System	Component	Sub-Component	Action	ABG DD22	ABG DD24	ABG DD85-1	ABG DD95-1
Hydraulic	Plumbing	Hose		Replace	1,00	1,00	1,00	1,00
Hydraulic	Plumbing	Hose		Reroute	0,50	0,50	0,50	0,50
Hydraulic	Plumbing	Hose		Tighten	0,50	0,50	0,50	0,50
Hydraulic	Plumbing	Tubeline		Replace	1,00	1,00		
Hydraulic	Plumbing	Tubeline		Tighten	0,50	0,50		
Hydraulic	Plumbing	Fitting		Tighten	1,00	1,00	1,00	1,00
Hydraulic	Plumbing	O Ring		Replace	1,00	1,00	1,00	1,00
Hydraulic	Pump	Propulsion		Replace	4,00	4,00	6,00	6,00
Hydraulic	Pump	Propulsion		Repair	2,00	2,00	2,00	2,00
Hydraulic	Pump	Vibration		Replace	4,00	4,00	3,00	3,00
Hydraulic	Pump	Vibration		Repair	2,00	2,00	2,00	2,00
Hydraulic	Pump	Steering		Replace			3,00	3,00
Hydraulic	Pump	Steering		Repair			1,00	1,00
Hydraulic	Cylinder	Steering		Replace	1,00	1,00	4,00	4,00
Hydraulic	Cylinder	Steering		Repair	1,00	1,00	4,00	4,00
Hydraulic	Valve	Steering	Orbital	Replace	2,00	2,00		
Hydraulic	Valve	Brake		Replace	2,00	2,00	2,00	2,00
Hydraulic	Valve	Brake	Solenoid	Replace	0,25	0,25	0,25	0,25
Hydraulic	Valve	Vibration		Replace	1,50	1,50	1,50	1,50
Hydraulic	Motor	Drive	Drum	Replace	4,00	4,00	8,00	8,00
Hydraulic	Motor	Vibration		Replace	3,00	3,00	3,00	
Hydraulic	Motor	Vibration		Repair	3,00	3,00	3,00	3,00

Electrical ABG

System	Sub-System	Component	Sub-Component	Action	ABG DD22	ABG DD24	ABD DD85-1	ABG DD95-1
Electrical	chassis	harness		repair	2,00	2,00	2,00	2,00
Electrical	chassis	harness		replace	4,00	4,00	6,00	6,00
Electrical	water	harness		repair	2,00	2,00	2,00	2,00
Electrical	water	harness		replace	1,00	1,00	1,00	1,00
Electrical	Instrument Panel	Gauge/Hourmeter		replace	1,00	1,00		
Electrical	Instrument Panel	Cluster		replace	1,00	1,00		
Electrical	switch	Ignition		replace	1,00	1,00	1,00	1,00
Electrical	switch	limit		replace	1,00	1,00		
Electrical	switch	misc.		replace	1,00	1,00		
Electrical	switch	toggle		replace	1,00	1,00		
Electrical	switch	neutral		replace	1,00	1,00		
Electrical	Engine	Alternator		replace	1,00	1,00	2,00	2,00
Electrical	battery			replace	0,50	0,50	1,00	1,00
Electrical	battery	cable		replace	1,00	1,00	1,00	1,00
Electrical	back-up alarm			replace	0,50	0,50	0,50	0,50
Electrical	beacon			replace	0,50	0,50	0,50	0,50
Electrical	fuse			replace	0,50	0,50	0,50	0,50
Electrical	diode			replace	0,50	0,50	0,50	0,50
Electrical	fuel level sender			replace			1,00	1,00
Electrical	horn			replace	0,50	0,50	0,50	0,50
Electrical	light bulb			replace	0,50	0,50	0,50	0,50
Electrical	relay			replace	0,50	0,50	0,50	0,50
Electrical	oil sender			replace	0,50	0,50	0,50	0,50
Electrical	temp sender	misc.		replace	1,00	1,00	1,00	1,00
Electrical	sensor	misc.		replace	1,00	1,00	1,00	1,00
Electrical	solenoid			replace	0,50	0,50	0,50	0,50
Electrical	starter			replace	1,00	1,00	2,00	2,00
Electrical	work light			replace	0,50	0,50	0,50	0,50
Electrical	emergency stop button			replace	1,00	1,00	1,00	1,00
Electrical	Control Panel			replace			2,00	2,00
Electrical	MPC			replace			2,00	2,00
Electrical	MPC	Software/Kalibration		repair			3,00	3,00
Electrical	EMR	Engine		replace			2,00	2,00
Electrical	sensor	Drive		replace			2,00	2,00

ENGINE ABG

System	Sub-System	Component	Sub-Component	Action	ABG DD 22	ABG DD 24	ABG DD85-1	ABG DD 95-1
Engine	Fuel	Throttle	Cable	Replace	3,00	3,00		
Engine	Fuel	Filter		Replace	0,50	0,50	1,00	1,00
Engine	Fuel	Fuel Line/Hose		Replace	1,00	1,00	1,00	1,00
Engine	Fuel	Fuel Line/Hose		Reroute	0,50	0,50	0,50	0,50
Engine	Fuel	Fuel Line/Hose	Clamp	Tighten	0,50	0,50	0,50	0,50
Engine	Fuel	Fuel Line/Hose	Clamp	Replace	0,50	0,50	0,50	0,50
Engine	Cooling	Fan Belt		Replace	0,50	0,50	0,50	0,50
Engine	Cooling	Fan Belt		Adjust	0,50	0,50	0,50	0,50
Engine	Cooling	Radiator		Replace	3,00	3,00	3,00	3,00
Engine	Cooling	Radiator		Repair	0,50	0,50	0,50	0,50
Engine	Cooling	Radiator	Cap	Replace	0,50	0,50		
Engine	Cooling	Radiator	Hose	Replace	2,00	2,00	2,00	2,00
Engine	Cooling	Radiator	Clamp	Replace	0,50	0,50		
Engine	Cooling	Radiator	Clamp	Tighten	0,50	0,50		
Engine	Intake	Air Cleaner		Replace	1,00	1,00	1,00	1,00
Engine	Intake	Air Cleaner	Hose	Replace	0,50	0,50	0,50	0,50
Engine	Intake	Air Cleaner	Clamp	Replace	0,50	0,50	0,50	0,50
Engine	Intake	Air Cleaner	Clamp	Tighten	0,50	0,50	0,50	0,50
Engine	Intake	Air Cleaner	Air Filter	Replace	0,50	0,50	0,50	0,50
Engine	Intake	Air Cleaner	Condition Indicator	Replace	0,50	0,50	0,50	0,50
Engine	Exhaust	Exhaust Pipe		Replace	2,00	2,00	2,00	2,00
Engine	Exhaust	Exhaust Pipe		Tighten	0,50	0,50	0,50	0,50
Engine	Exhaust	Exhaust Pipe	Gasket	Replace	0,50	0,50	0,50	0,50
Engine	Exhaust	Exhaust Pipe	Clamp	Tighten	0,50	0,50	0,50	0,50
Engine	Exhaust	Exhaust Pipe	Clamp	Replace	0,50	0,50	0,50	0,50
Engine	Exhaust	Muffler		Replace	1,00	1,00	1,00	1,00

Structual ABG

System	Sub-System	Component	Sub-Component	Action	ABG DD 22	ABG DD 24	ABG DD 85-1	ABG DD 95-1
Structural	Cab	Air Conditioning		Replace			10,00	10,00
Structural	Cab	Air Conditioning	Misc.	Repair			2,00	2,00
Structural	Cab	Door		Replace			1,50	1,50
Structural	Cab	Door		Repair			2,00	2,00
Structural	Cab	Door Latch		Replace			1,00	1,00
Structural	Cab	Door Latch		Adjustment			0,50	0,50
Structural	Cab	Heater		Replace			8,00	0,80
Structural	Cab	Heater	Misc.	Repair			2,00	2,00
Structural	Cab	Isolator		Replace	1,50	1,50	1,50	1,50
Structural	Cab	Liner		Replace	0,50	0,50	0,50	0,50
Structural	Cab	Misc.		Repair	0,50	0,50	0,50	0,50
Structural	Cab	Wipers	Motor	Replace			1,00	1,00
Structural	Cab	Wipers		Replace			0,50	0,50
Structural	Cutting edge			Replace	2,00	2,00	2,00	2,00
Structural	Cutting wheel			Repair	0,50	0,50	0,50	0,50
Structural	Decal			Replace	0,50	0,50	0,50	0,50
Structural	Frame	Battery Box	Cover/Hold Down	Replace	0,50	0,50	1,00	1,00
Structural	Frame	Fender		Replace	2,00	2,00	2,00	2,00
Structural	Frame	Hydraulic Filter Box	Cover	Replace	2,00	2,00	2,00	2,00
Structural	Hood	Gas Shocks/Tether		Replace	0,50	0,50	2,00	2,00
Structural	Hood	Hinge		replace	2,00	2,00	2,00	2,00
Structural	Hood			Replace	2,00	2,00	2,00	2,00
Structural	Operators Platform	Isolator mount		Replace	2,50	2,50	3,00	3,00
Structural	Operators Platform	Seat		Repair	1,00	1,00	1,00	1,00
Structural	Operators Platform	Seat		Replace	1,50	1,50	1,50	1,50
Structural	Operators Platform	Steering	Column	Replace			3,50	3,50
Structural	Operators Platform	Steering	Knob	Replace	0,50	0,50	0,50	0,50
Structural	Operators Platform	Steering	Wheel	Replace	0,75	0,75	0,75	0,75
Structural	Operators Platform	Lift Mechanism		Replace			2,00	2,00
Structural	ROPS			Replace	1,00	1,00		
Structural	Tank	Fuel	Cap	Replace	0,50	0,50	0,50	0,50
Structural	Tank	Fuel		Replace	6,00	6,00	12,00	12,00
Structural	Tank	Hydraulic	Cap	Replace	0,50	0,50	0,50	0,50
Structural	Tank	Hydraulic	Misc.	Repair	1,00	1,00	1,00	1,00
Structural	Tank	Hydraulic		Replace	4,00	4,00	12,00	12,00

Drive System ABG

System	Sub-System	Component	Sub-Component	Action	ABG DD 22	ABG DD24	ABG DD85-1	ABG DD95-1
Drive System	Brake	Hose		Replace	2,00	2,00	4,00	4,00
Drive System	Brake	Hose		Reroute	2,00	2,00	4,00	4,00
Drive System	Brake	Hose		Tighten	0,50	0,50	0,50	0,50
Drive System	Brake	Tubeline		Replace	1,00	1,00		
Drive System	Brake	Tubeline		Tighten	0,50	0,50		
Drive System	Brake	Fitting		Replace	1,00	1,00	1,00	1,00
Drive System	Brake	Fitting		Tighten	0,50	0,50	0,50	0,50
Drive System	Brake	Park Brake Lever		Replace	1,00	1,00		

WATER ABG

System	Sub-System	Component	Sub-Component	Action	ABG DD 22	ABG DD 24	ABG DD85-1	ABG DD95-1
Water	System	Filter	Element	Replace	0,50	0,50	1,00	1,00
Water	System	Filter Assembly		Replace	1,00	1,00	2,00	2,00
Water	System	Fitting		Replace	0,50	0,50	0,50	0,50
Water	System	Fitting		Tighten	0,50	0,50	0,50	0,50
Water	System	Line / Piping		Replace	0,50	0,50	0,50	0,50
Water	System	Line / Piping		Repair	0,50	0,50	0,50	0,50
Water	System	Tank		Replace	3,50	3,50	3,50	3,50
Water	System	Tank	Fill Strainer	Replace	0,50	0,50	0,50	0,50
Water	System	Valve, Shut-off		Replace	1,00	1,00	1,00	1,00
Water	System	Pump		Replace	2,00	2,00	3,00	3,00
Water	System	Spray Bar		Replace	1,50	1,50	1,50	1,50
Water	System	Spray Bar	Nozzle	Replace	0,50	0,50	0,50	0,50
Water	System	Tank	Cap	Replace	0,50	0,50	0,50	0,50
Water	System	Misc		Replace	0,50	0,50	0,50	0,50

This is a time guide for RM Compaction machines.

This time guide is **not** created with the conditions that we described for the normal time guide.

All times in this list has also a different layout comparing to the normal time guide.

There are no operation numbers for the jobs available.

This is a temporary solution to help our dealers with information and when new machines are released they will be found in the normal time guide and with a related repair method connected.

This Time Guide will only be available in English and in PDF format.

Machines covered in this list are:

CR24 CR30 CR32 CR34 CR36 CR70

DD110 DD110HF DD118HF DD118HFA DD118HFX DD12S DD130 DD130HF DD132HF DD138HF DD138HFA DD138HFX DD14S

DD158HFA DD158HFX DD16 DD22 DD24 DD32 DD70 DD70HF DD90 DD90HF

SD100D TF SD100F C SD105DA SD105DX SD105F SD116DX SD116F SD122D SD122DX SD122F SD160DX SD160F SD200DX

SD25D SD25F SD45D SD45F SD70D TF SD77DA SD77DX SD77F TC13 PT125R PT240

TIME GUIDE

System	Sub-System	Component	Sub-Component	Action	CR24	CR30	CR32	CR34	CR36	CR70	DD110	DD110HF	DD112	DD118HF	DD118HFA	DD118HFX	DD12S	DD130	DD130HF	DD132HF	DD138HF
Drum	Carrier	Bearings		Replace	3,00	3,00	3,00	3,00	3,00	4,00	10,00	10,00	10,00	10,00	10,00	10,00	3,00	10,00	10,00	10,00	10,00
Drum	Carrier	Oil Seal		Replace	3,00	3,00	3,00	3,00	3,00	4,00	10,00	10,00	10,00	10,00	10,00	10,00	3,00	10,00	10,00	10,00	10,00
Drum	Carrier	Spindel		Replace	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00
Drum	Carrier	Carrier Hsg		Replace	3,00	3,00	3,00	3,00	3,00	4,00	10,00	10,00	10,00	10,00	10,00	10,00	3,00	10,00	10,00	10,00	10,00
Drum	Carrier	Wear Sleeve		Replace	3,00	3,00	3,00	3,00	3,00	4,00	10,00	10,00	10,00	10,00	10,00	10,00	3,00	10,00	10,00	10,00	10,00
Drum	Carrier	V-Ring Seal		Replace	3,00	3,00	3,00	3,00	3,00	4,00	10,00	10,00	10,00	10,00	10,00	10,00	3,00	10,00	10,00	10,00	10,00
Drum	Carrier	Spacer		Replace	3,00	3,00	3,00	3,00	3,00	4,00	10,00	10,00	10,00	10,00	10,00	10,00	3,00	10,00	10,00	10,00	10,00
Drum	Eccentric	Fixed Weight		Replace	8,00	8,00	8,00	8,00	8,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	8,00	10,00	10,00	10,00	10,00
Drum	Eccentric	Inner Weight		Replace	8,00	8,00	8,00	8,00	8,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	8,00	10,00	10,00	10,00	10,00
Drum	Eccentric	Journal		Replace	8,00	8,00	8,00	8,00	8,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	8,00	10,00	10,00	10,00	10,00
Drum	Eccentric	Bearings		Replace	8,00	8,00	8,00	8,00	8,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	8,00	10,00	10,00	10,00	10,00
Drum	Eccentric	Bearing Hsg		Replace	8,00	8,00	8,00	8,00	8,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	8,00	10,00	10,00	10,00	10,00
Drum	Eccentric	Oil Slinger		Replace	8,00	8,00	8,00	8,00	8,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	8,00	10,00	10,00	10,00	10,00
Drum	Eccentric	Journal	Drive Coupling	Replace	8,00	8,00	8,00	8,00	8,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	8,00	10,00	10,00	10,00	10,00
Drum	Eccentric	Vib Motor	Drive Coupling	Replace	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50
Drum	Eccentric	Spline Shaft		Replace	8,00	8,00	8,00	8,00	8,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	8,00	10,00	10,00	10,00	10,00
Drum	Eccentric	Bolts		Replace	8,00	8,00	8,00	8,00	8,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	8,00	10,00	10,00	10,00	10,00
Drum	Eccentric	Housing	O-ring	Replace	8,00	8,00	8,00	8,00	8,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	8,00	10,00	10,00	10,00	10,00
Drum	Eccentric	Seal		Replace	4,00	4,00	4,00	4,00	4,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	4,00	5,00	5,00	5,00	5,00
Drum	Amplitude Adj.	Wheel		Replace						1,50	1,50	1,50		1,50	1,50	1,50		1,50	1,50		1,50
Drum	Amplitude Adj.	Indicator		Replace						2,00	2,00	2,00		2,00	2,00	2,00		2,00	2,00		2,00
Drum	Amplitude Adj.	Seal		Replace						3,00	3,00	3,00		3,00	3,00	3,00		3,00	3,00		3,00
Drum	Amplitude Adj.	Drive Key		Replace						3,00	3,00	3,00		3,00	3,00	3,00		3,00	3,00		3,00
Drum	Amplitude Adj.	Bearing		Replace						10,00	10,00	10,00		10,00	10,00	10,00		10,00	10,00		10,00
Drum	Amplitude Adj.	Spring		Replace						10,00	10,00	10,00		10,00	10,00	10,00		10,00	10,00		10,00
Drum	Amplitude Adj.	Coupling		Replace						10,00	10,00	10,00		10,00	10,00	10,00		10,00	10,00		10,00
Drum	Amplitude Adj.	Shaft		Replace						10,00	10,00	10,00		10,00	10,00	10,00		10,00	10,00		10,00
Drum	Drive Plate			Replace	3,00	3,00	3,00	3,00	3,00	4,00	8,00	8,00	8,00	8,00	8,00	8,00	3,00	8,00	8,00	8,00	8,00
Drum	Shock			Replace	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50
Drum				Replace	8,00	8,00	8,00	8,00	8,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	8,00	10,00	10,00	10,00	10,00
Drum	Scraper Bar	Inside		Replace																	
Drum	Scraper Bar	Inside		Repair																	
Drum	Scraper Bar	Outside		Replace																	
Drum	Scraper Bar	Outside		Repair																	
Drum	Scraper Bar	Blade	Stike Off	Replace																	
Drum	Scraper Bar	Mnt. Hardware		Replace																	
Drum	Wiper Bar			Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Drum	Wiper Bar			Repair	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Drum	Wiper Bar	Drum Wiper		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Drum	Wiper Bar	Spring / Shock		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Drum	Wiper Bar	Mnt. Hardware		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Drum	Cocoa Mat Assy.	Mnt. Bracket		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Drum	Cocoa Mat Assy.	Cocoa Mat		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Drum	Bolt On Shell			Replace																	
Drum	Bolt On Shell			Repair																	

TIME GUIDE

System	Sub-System	Component	Sub-Component	Action	DD138HFA	DD138HFX	DD14S	DD158HFA	DD158HFX	DD16	DD22	DD24	DD32	DD70	DD70HF	DD90	DD90HF	SD100 C	SD100D C	SD100D TF
Drum	Carrier	Bearings		Replace	10,00	10,00	3,00	10,00	10,00	3,00	3,00	3,00	3,00	4,00	4,00	10,00	10,00	10,00	10,00	10,00
Drum	Carrier	Oil Seal		Replace	10,00	10,00	3,00	10,00	10,00	3,00	3,00	3,00	3,00	4,00	4,00	10,00	10,00	10,00	10,00	10,00
Drum	Carrier	Spindel		Replace	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00
Drum	Carrier	Carrier Hsg		Replace	10,00	10,00	3,00	10,00	10,00	3,00	3,00	3,00	3,00	4,00	4,00	10,00	10,00	10,00	10,00	10,00
Drum	Carrier	Wear Sleeve		Replace	10,00	10,00	3,00	10,00	10,00	3,00	3,00	3,00	3,00	4,00	4,00	10,00	10,00	10,00	10,00	10,00
Drum	Carrier	V-Ring Seal		Replace	10,00	10,00	3,00	10,00	10,00	3,00	3,00	3,00	3,00	4,00	4,00	10,00	10,00	10,00	10,00	10,00
Drum	Carrier	Spacer		Replace	10,00	10,00	3,00	10,00	10,00	3,00	3,00	3,00	3,00	4,00	4,00	10,00	10,00	10,00	10,00	10,00
Drum	Eccentric	Fixed Weight		Replace	10,00	10,00	8,00	10,00	10,00	8,00	8,00	8,00	8,00	10,00	10,00	10,00	10,00	20,00	20,00	20,00
Drum	Eccentric	Inner Weight		Replace	10,00	10,00	8,00	10,00	10,00	8,00	8,00	8,00	8,00	10,00	10,00	10,00	10,00	20,00	20,00	20,00
Drum	Eccentric	Journal		Replace	10,00	10,00	8,00	10,00	10,00	8,00	8,00	8,00	8,00	10,00	10,00	10,00	10,00	20,00	20,00	20,00
Drum	Eccentric	Bearings		Replace	10,00	10,00	8,00	10,00	10,00	8,00	8,00	8,00	8,00	10,00	10,00	10,00	10,00	20,00	20,00	20,00
Drum	Eccentric	Bearing Hsg		Replace	10,00	10,00	8,00	10,00	10,00	8,00	8,00	8,00	8,00	10,00	10,00	10,00	10,00	20,00	20,00	20,00
Drum	Eccentric	Oil Slinger		Replace	10,00	10,00	8,00	10,00	10,00	8,00	8,00	8,00	8,00	10,00	10,00	10,00	10,00	20,00	20,00	20,00
Drum	Eccentric	Journal	Drive Coupling	Replace	10,00	10,00	8,00	10,00	10,00	8,00	8,00	8,00	8,00	10,00	10,00	10,00	10,00	20,00	20,00	20,00
Drum	Eccentric	Vib Motor	Drive Coupling	Replace	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50
Drum	Eccentric	Spline Shaft		Replace	10,00	10,00	8,00	10,00	10,00	8,00	8,00	8,00	8,00	10,00	10,00	10,00	10,00	20,00	20,00	20,00
Drum	Eccentric	Bolts		Replace	10,00	10,00	8,00	10,00	10,00	8,00	8,00	8,00	8,00	10,00	10,00	10,00	10,00	20,00	20,00	20,00
Drum	Eccentric	Housing	O-ring	Replace	10,00	10,00	8,00	10,00	10,00	8,00	8,00	8,00	8,00	10,00	10,00	10,00	10,00	20,00	20,00	20,00
Drum	Eccentric	Seal		Replace	5,00	5,00	4,00	5,00	5,00	4,00	4,00	4,00	4,00	5,00	5,00	5,00	5,00	10,00	10,00	10,00
Drum	Amplitude Adj.	Wheel		Replace	1,50	1,50		1,50	1,50					1,50	1,50	1,50	1,50			
Drum	Amplitude Adj.	Indicator		Replace	2,00	2,00		2,00	2,00					2,00	2,00	2,00	2,00			
Drum	Amplitude Adj.	Seal		Replace	3,00	3,00		3,00	3,00					3,00	3,00	3,00	3,00			
Drum	Amplitude Adj.	Drive Key		Replace	3,00	3,00		3,00	3,00					3,00	3,00	3,00	3,00			
Drum	Amplitude Adj.	Bearing		Replace	10,00	10,00		10,00	10,00					10,00	10,00	10,00	10,00			
Drum	Amplitude Adj.	Spring		Replace	10,00	10,00		10,00	10,00					10,00	10,00	10,00	10,00			
Drum	Amplitude Adj.	Coupling		Replace	10,00	10,00		10,00	10,00					10,00	10,00	10,00	10,00			
Drum	Amplitude Adj.	Shaft		Replace	10,00	10,00		10,00	10,00					10,00	10,00	10,00	10,00			
Drum	Drive Plate			Replace	8,00	8,00	3,00	8,00	8,00	3,00	3,00	3,00	3,00	4,00	4,00	8,00	8,00	8,00	8,00	8,00
Drum	Shock			Replace	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50
Drum				Replace	10,00	10,00	8,00	10,00	10,00	8,00	8,00	8,00	8,00	10,00	10,00	10,00	10,00	20,00	20,00	20,00
Drum	Scraper Bar	Inside		Replace														1,50	1,50	1,50
Drum	Scraper Bar	Inside		Repair														2,00	2,00	2,00
Drum	Scraper Bar	Outside		Replace														1,00	1,00	1,00
Drum	Scraper Bar	Outside		Repair														1,00	1,00	1,00
Drum	Scraper Bar	Blade	Stike Off	Replace														1,00	1,00	1,00
Drum	Scraper Bar	Mnt. Hardware		Replace														0,50	0,50	0,50
Drum	Wiper Bar			Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00			
Drum	Wiper Bar			Repair	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50			
Drum	Wiper Bar	Drum Wiper		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50			
Drum	Wiper Bar	Spring / Shock		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50			
Drum	Wiper Bar	Mnt. Hardware		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50			
Drum	Cocoa Mat Assy.	Mnt. Bracket		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00			
Drum	Cocoa Mat Assy.	Cocoa Mat		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00			
Drum	Bolt On Shell			Replace																4,00
Drum	Bolt On Shell			Repair																2,00

TIME GUIDE

System	Sub-System	Component	Sub-Component	Action	SD100F C	SD105DA	SD105DX	SD105F	SD116DX	SD116F	SD122D	SD122DX	SD122F	SD160DX	SD160F	SD200DX	SD25D	SD25F	SD45D	SD45F
Drum	Carrier	Bearings		Replace	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	8,00	8,00	8,00	8,00
Drum	Carrier	Oil Seal		Replace	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	8,00	8,00	8,00	8,00
Drum	Carrier	Spindel		Replace	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00
Drum	Carrier	Carrier Hsg		Replace	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	8,00	8,00	8,00	8,00
Drum	Carrier	Wear Sleeve		Replace	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	8,00	8,00	8,00	8,00
Drum	Carrier	V-Ring Seal		Replace	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	8,00	8,00	8,00	8,00
Drum	Carrier	Spacer		Replace	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	8,00	8,00	8,00	8,00
Drum	Eccentric	Fixed Weight		Replace	20,00	10,00	10,00	10,00	20,00	20,00	20,00	20,00	20,00	20,00	20,00	20,00	8,00	8,00	8,00	8,00
Drum	Eccentric	Inner Weight		Replace	20,00	10,00	10,00	10,00	20,00	20,00	20,00	20,00	20,00	20,00	20,00	20,00	8,00	8,00	8,00	8,00
Drum	Eccentric	Journal		Replace	20,00	10,00	10,00	10,00	20,00	20,00	20,00	20,00	20,00	20,00	20,00	20,00	8,00	8,00	8,00	8,00
Drum	Eccentric	Bearings		Replace	20,00	10,00	10,00	10,00	20,00	20,00	20,00	20,00	20,00	20,00	20,00	20,00	8,00	8,00	8,00	8,00
Drum	Eccentric	Bearing Hsg		Replace	20,00	10,00	10,00	10,00	20,00	20,00	20,00	20,00	20,00	20,00	20,00	20,00	8,00	8,00	8,00	8,00
Drum	Eccentric	Oil Slinger		Replace	20,00	10,00	10,00	10,00	20,00	20,00	20,00	20,00	20,00	20,00	20,00	20,00	8,00	8,00	8,00	8,00
Drum	Eccentric	Journal	Drive Coupling	Replace	20,00	10,00	10,00	10,00	20,00	20,00	20,00	20,00	20,00	20,00	20,00	20,00	8,00	8,00	8,00	8,00
Drum	Eccentric	Vib Motor	Drive Coupling	Replace	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50
Drum	Eccentric	Spline Shaft		Replace	20,00	10,00	10,00	10,00	20,00	20,00	20,00	20,00	20,00	20,00	20,00	20,00	8,00	8,00	8,00	8,00
Drum	Eccentric	Bolts		Replace	20,00	10,00	10,00	10,00	20,00	20,00	20,00	20,00	20,00	20,00	20,00	20,00	8,00	8,00	8,00	8,00
Drum	Eccentric	Housing	O-ring	Replace	20,00	10,00	10,00	10,00	20,00	20,00	20,00	20,00	20,00	20,00	20,00	20,00	8,00	8,00	8,00	8,00
Drum	Eccentric	Seal		Replace	10,00	5,00	5,00	5,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	4,00	4,00	4,00	4,00
Drum	Amplitude Adj.	Wheel		Replace		1,50														
Drum	Amplitude Adj.	Indicator		Replace		2,00														
Drum	Amplitude Adj.	Seal		Replace		3,00														
Drum	Amplitude Adj.	Drive Key		Replace		3,00														
Drum	Amplitude Adj.	Bearing		Replace		10,00														
Drum	Amplitude Adj.	Spring		Replace		10,00														
Drum	Amplitude Adj.	Coupling		Replace		10,00														
Drum	Amplitude Adj.	Shaft		Replace		10,00														
Drum	Drive Plate			Replace	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00
Drum	Shock			Replace	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50
Drum				Replace	20,00	10,00	10,00	10,00	20,00	20,00	20,00	20,00	20,00	20,00	20,00	20,00	8,00	8,00	8,00	8,00
Drum	Scraper Bar	Inside		Replace	1,50		1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50
Drum	Scraper Bar	Inside		Repair	2,00		2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Drum	Scraper Bar	Outside		Replace	1,00		1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Drum	Scraper Bar	Outside		Repair	1,00		1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Drum	Scraper Bar	Blade	Stike Off	Replace	1,00		1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00		1,00	1,00	1,00	1,00
Drum	Scraper Bar	Mnt. Hardware		Replace	0,50		0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Drum	Wiper Bar			Replace		1,00														
Drum	Wiper Bar			Repair		0,50														
Drum	Wiper Bar	Drum Wiper		Replace		0,50														
Drum	Wiper Bar	Spring / Shock		Replace		0,50														
Drum	Wiper Bar	Mnt. Hardware		Replace		0,50														
Drum	Cocoa Mat Assy.	Mnt. Bracket		Replace		1,00														
Drum	Cocoa Mat Assy.	Cocoa Mat		Replace		1,00														
Drum	Bolt On Shell			Replace			4,00		4,00		4,00	4,00					4,00		4,00	
Drum	Bolt On Shell			Repair			2,00		2,00		2,00	2,00					2,00		2,00	

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System	Sub-System	Component	Sub-Component	Action	SD70D TF	SD77DA	SD77DX	SD77F	TC13	PT125R	PT240
Drum	Carrier	Bearings		Replace	10,00	10,00	10,00	10,00			
Drum	Carrier	Oil Seal		Replace	10,00	10,00	10,00	10,00			
Drum	Carrier	Spindel		Replace	15,00	15,00	15,00	15,00			
Drum	Carrier	Carrier Hsg		Replace	10,00	10,00	10,00	10,00			
Drum	Carrier	Wear Sleeve		Replace	10,00	10,00	10,00	10,00			
Drum	Carrier	V-Ring Seal		Replace	10,00	10,00	10,00	10,00			
Drum	Carrier	Spacer		Replace	10,00	10,00	10,00	10,00			
Drum	Eccentric	Fixed Weight		Replace	8,00	10,00	10,00	10,00	3,00		
Drum	Eccentric	Inner Weight		Replace	8,00	10,00	10,00	10,00	3,00		
Drum	Eccentric	Journal		Replace	8,00	10,00	10,00	10,00	3,00		
Drum	Eccentric	Bearings		Replace	8,00	10,00	10,00	10,00	3,00		
Drum	Eccentric	Bearing Hsg		Replace	8,00	10,00	10,00	10,00	3,00		
Drum	Eccentric	Oil Slinger		Replace	8,00	10,00	10,00	10,00	3,00		
Drum	Eccentric	Journal	Drive Coupling	Replace	8,00	10,00	10,00	10,00	3,00		
Drum	Eccentric	Vib Motor	Drive Coupling	Replace	1,50	1,50	1,50	1,50	1,50		
Drum	Eccentric	Spline Shaft		Replace	8,00	10,00	10,00	10,00	3,00		
Drum	Eccentric	Bolts		Replace	8,00	10,00	10,00	10,00	3,00		
Drum	Eccentric	Housing	O-ring	Replace	8,00	10,00	10,00	10,00	3,00		
Drum	Eccentric	Seal		Replace	4,00	5,00	5,00	5,00	1,50		
Drum	Amplitude Adj.	Wheel		Replace		1,50					
Drum	Amplitude Adj.	Indicator		Replace		2,00					
Drum	Amplitude Adj.	Seal		Replace		3,00					
Drum	Amplitude Adj.	Drive Key		Replace		3,00					
Drum	Amplitude Adj.	Bearing		Replace		10,00					
Drum	Amplitude Adj.	Spring		Replace		10,00					
Drum	Amplitude Adj.	Coupling		Replace		10,00					
Drum	Amplitude Adj.	Shaft		Replace		10,00					
Drum	Drive Plate			Replace	8,00	8,00	8,00	8,00			
Drum	Shock			Replace	1,50	1,50	1,50	1,50			
Drum				Replace	8,00	10,00	10,00	10,00	3,00		
Drum	Scraper Bar	Inside		Replace	1,50		1,50	1,50	1,50		
Drum	Scraper Bar	Inside		Repair	2,00		2,00	2,00	2,00		
Drum	Scraper Bar	Outside		Replace	1,00		1,00	1,00	1,00		
Drum	Scraper Bar	Outside		Repair	1,00		1,00	1,00	1,00		
Drum	Scraper Bar	Blade	Stike Off	Replace	1,00		1,00	1,00	1,00		
Drum	Scraper Bar	Mnt. Hardware		Replace	0,50		0,50	0,50	0,50		
Drum	Wiper Bar			Replace		1,00				1,00	1,00
Drum	Wiper Bar			Repair		0,50				0,50	0,50
Drum	Wiper Bar	Drum Wiper		Replace		0,50				0,50	0,50
Drum	Wiper Bar	Spring / Shock		Replace		0,50				0,50	0,50
Drum	Wiper Bar	Mnt. Hardware		Replace		0,50				0,50	0,50
Drum	Cocoa Mat Assy.	Mnt. Bracket		Replace		1,00				1,00	1,00
Drum	Cocoa Mat Assy.	Cocoa Mat		Replace		1,00				1,00	1,00
Drum	Bolt On Shell			Replace	4,00		4,00				
Drum	Bolt On Shell			Repair	2,00		2,00				

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System	Sub-System	Component	Sub-Component	Action	CR24	CR30	CR32	CR34	CR36	CR70	DD110	DD110HF	DD118HF	DD118HFA	DD118HFX	DD12S	DD130	DD130HF	DD132HF	DD138HF	DD138HFA
Hydraulic	Plumbing	Hose		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Hydraulic	Plumbing	Hose		Reroute	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Hydraulic	Plumbing	Hose		Tighten	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Hydraulic	Plumbing	Tubeline		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Hydraulic	Plumbing	Tubeline		Tighten	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Hydraulic	Plumbing	Fitting		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Hydraulic	Plumbing	Fitting		Tighten	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Hydraulic	Plumbing	O Ring		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Hydraulic	Plumbing	Filter		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Hydraulic	Plumbing	Filter Head		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Hydraulic	Pump	Propulsion		Replace	2,00	2,00	2,00	2,00	2,00	4,00	4,00	4,00	5,00	5,00	5,00	3,00	4,00	4,00	5,00	5,00	5,00
Hydraulic	Pump	Propulsion		Repair	4,00	4,00	4,00	4,00	4,00	6,00	6,00	6,00	7,00	7,00	7,00	5,00	6,00	6,00	7,00	7,00	7,00
Hydraulic	Pump	Propulsion	Control	Replace	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50
Hydraulic	Pump	Vibration		Replace	2,00	2,00	2,00	2,00	2,00	2,00	3,00	3,00	2,50	2,50	2,50	3,00	3,00	3,00	2,50	2,50	2,50
Hydraulic	Pump	Vibration		Repair	4,00	4,00	4,00	4,00	4,00	4,00	5,00	5,00	5,00	5,00	5,00	0,00	5,00	5,00	5,00	5,00	5,00
Hydraulic	Pump	Vibration	Control	Replace								1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50
Hydraulic	Pump	Vibration	Control	Repair																	
Hydraulic	Pump	Steering		Replace	2,00	2,00	2,00	2,00	2,00	3,00	2,00	2,00	3,00	3,00	3,00	3,00	2,00	2,00	3,00	3,00	3,00
Hydraulic	Pump	Steering		Repair																	
Hydraulic	Cylinder	Blade		Replace																	
Hydraulic	Cylinder	Blade		Repair																	
Hydraulic	Cylinder	Steering		Replace	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50
Hydraulic	Cylinder	Steering		Repair	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
Hydraulic	Valve	Steering	Orbital	Replace	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	5,00	5,00	5,00	1,50	5,00	5,00	5,00	5,00	5,00
Hydraulic	Valve	Steering	Orbital	Repair																	
Hydraulic	Valve	Main		Replace																	
Hydraulic	Valve	Main		Repair																	
Hydraulic	Valve	Main	Spool	Replace																	
Hydraulic	Valve	Brake		Replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00		2,00	2,00	3,00	3,00	3,00
Hydraulic	Valve	Brake	Solenoid	Replace	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25		0,25	0,25	0,25	0,25	0,25
Hydraulic	Valve	Brake	gauge	Replace							0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25
Hydraulic	Valve	check		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Hydraulic	Valve	Propulsion	2-Speed	Replace									3,00	3,00	3,00				3,00	3,00	3,00
Hydraulic	Valve	Vibration		Replace	2,00	2,00	2,00	2,00	2,00	2,00						1,00					
Hydraulic	Valve	Vibration	Spool	Replace	0,25	0,25	0,25	0,25	0,25	0,25						0,25					
Hydraulic	Oil Cooler			Replace	2,00	2,00	2,00	2,00	2,00	3,00	3,00	3,00	3,00	3,00	3,00		3,00	3,00	3,00	3,00	3,00
Hydraulic	Motor	Propulsion	Drum	Replace	4	4	4	4	4	6	8	8	8	8	8	4	8	8	8	8	8
Hydraulic	Motor	Propulsion	Drum	Reseal	8	8	8	8	8	10	12	12	12	12	12	8	12	12	12	12	12
Hydraulic	Motor	Propulsion	Axle	Replace																	
Hydraulic	Motor	Propulsion	Axle	Reseal																	
Hydraulic	Motor	Vibration		Replace	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Hydraulic	Motor	Vibration		Repair	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

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System	Sub-System	Component	Sub-Component	Action	DD138HFX	DD14S	DD158HFA	DD158HFX	DD16	DD22	DD24	DD32	DD70	DD70HF	DD90	DD90HF	SD100D TF	SD100F C	SD105DA	SD105DX	SD105F
Hydraulic	Plumbing	Hose		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Hydraulic	Plumbing	Hose		Reroute	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Hydraulic	Plumbing	Hose		Tighten	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Hydraulic	Plumbing	Tubeline		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Hydraulic	Plumbing	Tubeline		Tighten	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Hydraulic	Plumbing	Fitting		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Hydraulic	Plumbing	Fitting		Tighten	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Hydraulic	Plumbing	O Ring		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Hydraulic	Plumbing	Filter		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Hydraulic	Plumbing	Filter Head		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Hydraulic	Pump	Propulsion		Replace	5,00	3,00	5,00	5,00	3,00	3,00	3,00	3,00	4,00	4,00	4,00	4,00	6,00	6,00	6,00	6,00	6,00
Hydraulic	Pump	Propulsion		Repair	7,00	5,00	7,00	7,00	5,00	5,00	5,00	5,00	6,00	6,00	6,00	6,00	8,00	8,00	8,00	8,00	8,00
Hydraulic	Pump	Propulsion	Control	Replace	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50
Hydraulic	Pump	Vibration		Replace	2,50	3,00	2,50	2,50	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	5,00	5,00	5,00	5,00	5,00
Hydraulic	Pump	Vibration		Repair	5,00		5,00	5,00							5,00	5,00	7,00	7,00	7,00	7,00	7,00
Hydraulic	Pump	Vibration	Control	Replace	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	2,00	2,00	2,00	2,00	2,00
Hydraulic	Pump	Vibration	Control	Repair																	
Hydraulic	Pump	Steering		Replace	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	2,00	2,00	2,00	2,00	2,50	2,50	2,50	2,50	2,50
Hydraulic	Pump	Steering		Repair																	
Hydraulic	Cylinder	Blade		Replace													2,00	2,00	2,00	2,00	2,00
Hydraulic	Cylinder	Blade		Repair													4,00	4,00	4,00	4,00	4,00
Hydraulic	Cylinder	Steering		Replace	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	2,50	2,50	2,50	2,50	2,50
Hydraulic	Cylinder	Steering		Repair	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	5,00	5,00	5,00	5,00	5,00
Hydraulic	Valve	Steering	Orbital	Replace	5,00	2,50	5,00	5,00	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	1,00	1,00	1,00	1,00	1,00
Hydraulic	Valve	Steering	Orbital	Repair																	
Hydraulic	Valve	Main		Replace																	
Hydraulic	Valve	Main		Repair																	
Hydraulic	Valve	Main	Spool	Replace																	
Hydraulic	Valve	Brake		Replace	3,00	2,00	3,00	3,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	3,00	3,00	3,00	3,00	3,00
Hydraulic	Valve	Brake	Solenoid	Replace	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25
Hydraulic	Valve	Brake	gauge	Replace	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25
Hydraulic	Valve	check		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Hydraulic	Valve	Propulsion	2-Speed	Replace	3,00		3,00	3,00									3,00	3,00	3,00	3,00	3,00
Hydraulic	Valve	Vibration		Replace		2,00			2,00	2,00	2,00	2,00	2,00	2,00							
Hydraulic	Valve	Vibration	Spool	Replace		0,50			0,50	0,50	0,50	0,50	0,50	0,50							
Hydraulic	Oil Cooler			Replace	3,00	2,50	3,00	3,00	2,50	2,50	2,50	2,50	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
Hydraulic	Motor	Propulsion	Drum	Replace	8	4	8	8	4	4	4	4	6	6	8	8	8	8	8	8	8
Hydraulic	Motor	Propulsion	Drum	Reseal	12	8	12	12	8	8	8	8	10	10	10	10	10	10	10	10	10
Hydraulic	Motor	Propulsion	Axle	Replace													3	3	3	3	3
Hydraulic	Motor	Propulsion	Axle	Reseal													4	4	4	4	4
Hydraulic	Motor	Vibration		Replace	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Hydraulic	Motor	Vibration		Repair	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

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System	Sub-System	Component	Sub-Component	Action	SD116DX	SD116F	SD122D	SD122DX	SD122F	SD160DX	SD160F	SD200DX	SD25D	SD25F	SD45D	SD45F	SD70D TF	SD77DA	SD77DX	SD77F	TC13
Hydraulic	Plumbing	Hose		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Hydraulic	Plumbing	Hose		Reroute	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Hydraulic	Plumbing	Hose		Tighten	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Hydraulic	Plumbing	Tubeline		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Hydraulic	Plumbing	Tubeline		Tighten	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Hydraulic	Plumbing	Fitting		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Hydraulic	Plumbing	Fitting		Tighten	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Hydraulic	Plumbing	O Ring		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Hydraulic	Plumbing	Filter		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Hydraulic	Plumbing	Filter Head		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Hydraulic	Pump	Propulsion		Replace	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	8,00	8,00	6,00	6,00	6,00	7,00	6,00	7,00	6,00
Hydraulic	Pump	Propulsion		Repair	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	10,00	10,00	8,00	8,00	8,00	9,00	8,00	9,00	8,00
Hydraulic	Pump	Propulsion	Control	Replace	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	
Hydraulic	Pump	Vibration		Replace	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	6,00	6,00	6,00	6,00	5,00	5,00	5,00	5,00	
Hydraulic	Pump	Vibration		Repair	7,00	7,00	7,00	7,00	7,00	7,00	7,00	7,00	8,00	8,00	8,00	8,00	7,00	7,00	7,00	7,00	
Hydraulic	Pump	Vibration	Control	Replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	
Hydraulic	Pump	Vibration	Control	Repair																	
Hydraulic	Pump	Steering		Replace	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	
Hydraulic	Pump	Steering		Repair																	
Hydraulic	Cylinder	Blade		Replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	
Hydraulic	Cylinder	Blade		Repair	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	
Hydraulic	Cylinder	Steering		Replace	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	
Hydraulic	Cylinder	Steering		Repair	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	
Hydraulic	Valve	Steering	Orbital	Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	
Hydraulic	Valve	Steering	Orbital	Repair																	
Hydraulic	Valve	Main		Replace																	3,00
Hydraulic	Valve	Main		Repair																	
Hydraulic	Valve	Main	Spool	Replace																	0,25
Hydraulic	Valve	Brake		Replace	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	
Hydraulic	Valve	Brake	Solenoid	Replace	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25
Hydraulic	Valve	Brake	gauge	Replace	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25
Hydraulic	Valve	check		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Hydraulic	Valve	Propulsion	2-Speed	Replace	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	
Hydraulic	Valve	Vibration		Replace									2,00	2,00	2,00	2,00					
Hydraulic	Valve	Vibration	Spool	Replace									0,50	0,50	0,50	0,50					0,50
Hydraulic	Oil Cooler			Replace	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	
Hydraulic	Motor	Propulsion	Drum	Replace	8	8	8	8	8	8	8	8	6	6	6	6	8	8	8	8	6
Hydraulic	Motor	Propulsion	Drum	Reseal	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Hydraulic	Motor	Propulsion	Axle	Replace	3	3	3	3	3	3	3	3	4	4	3	3	3	3	3	3	
Hydraulic	Motor	Propulsion	Axle	Reseal	4	4	4	4	4	4	4	4	5	5	4	4	4	4	4	4	
Hydraulic	Motor	Vibration		Replace	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Hydraulic	Motor	Vibration		Repair	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

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System	Sub-System	Component	Sub-Component	Action	PT125R	PT240
Hydraulic	Plumbing	Hose		Replace	1,00	1,00
Hydraulic	Plumbing	Hose		Reroute	0,50	0,50
Hydraulic	Plumbing	Hose		Tighten	0,50	0,50
Hydraulic	Plumbing	Tubeline		Replace	1,00	1,00
Hydraulic	Plumbing	Tubeline		Tighten	1,00	1,00
Hydraulic	Plumbing	Fitting		Replace	1,00	1,00
Hydraulic	Plumbing	Fitting		Tighten	1,00	1,00
Hydraulic	Plumbing	O Ring		Replace	1,00	1,00
Hydraulic	Plumbing	Filter		Replace	0,50	0,50
Hydraulic	Plumbing	Filter Head		Replace	1,00	1,00
Hydraulic	Pump	Propulsion		Replace	4,00	
Hydraulic	Pump	Propulsion		Repair	6,00	
Hydraulic	Pump	Propulsion	Control	Replace	1,50	
Hydraulic	Pump	Vibration		Replace		
Hydraulic	Pump	Vibration		Repair		
Hydraulic	Pump	Vibration	Control	Replace	1,50	
Hydraulic	Pump	Vibration	Control	Repair		
Hydraulic	Pump	Steering		Replace	2,50	2,50
Hydraulic	Pump	Steering		Repair		
Hydraulic	Cylinder	Blade		Replace		
Hydraulic	Cylinder	Blade		Repair		
Hydraulic	Cylinder	Steering		Replace	3,50	2,50
Hydraulic	Cylinder	Steering		Repair	6,00	5,00
Hydraulic	Valve	Steering	Orbital	Replace	1,50	1,50
Hydraulic	Valve	Steering	Orbital	Repair		
Hydraulic	Valve	Main		Replace		
Hydraulic	Valve	Main		Repair		
Hydraulic	Valve	Main	Spool	Replace		
Hydraulic	Valve	Brake		Replace	2,00	2,00
Hydraulic	Valve	Brake	Solenoid	Replace	0,25	0,25
Hydraulic	Valve	Brake	gauge	Replace		
Hydraulic	Valve	check		Replace	0,50	0,50
Hydraulic	Valve	Propulsion	2-Speed	Replace	3,00	
Hydraulic	Valve	Vibration		Replace		
Hydraulic	Valve	Vibration	Spool	Replace		
Hydraulic	Oil Cooler			Replace	3,00	
Hydraulic	Motor	Propulsion	Drum	Replace		
Hydraulic	Motor	Propulsion	Drum	Reseal		
Hydraulic	Motor	Propulsion	Axle	Replace	4	
Hydraulic	Motor	Propulsion	Axle	Reseal	5	
Hydraulic	Motor	Vibration		Replace		
Hydraulic	Motor	Vibration		Repair		

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System	Sub-System	Component	Sub-Component	Action	CR24	CR30	CR32	CR34	CR36	CR70	DD110	DD110HF	DD112HF	DD118HF	DD118HFA	DD118HFX	DD12S	DD130HF	DD132HF	DD138HF	DD138HFA
Electrical	chassis	harness		repair	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Electrical	chassis	harness		replace	4,00	4,00	4,00	4,00	4,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00
Electrical	console/pedestal	harness		repair	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Electrical	console/pedestal	harness		replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Electrical	water	harness		repair									2,00	2,00	2,00	2,00	2,00		2,00	2,00	2,00
Electrical	water	harness		replace									3,00	3,00	3,00	3,00	3,00		3,00	3,00	3,00
Electrical	Instrument Panel	Gauge/Hourmeter		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	Instrument Panel	Cluster		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	switch	Ignition		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	switch	limit		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	switch	pressure		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	switch	misc.		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	switch	toggle		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	switch	neutral		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	Engine	Alternator		replace	2,00	2,00	2,00	2,00	2,00	2,00	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50
Electrical	battery			replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	battery	cable		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	back-up alarm			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	beacon			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	circuit breaker			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	fuse			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	diode			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	fuel level sender			replace									6,00	6,00	6,00				6,00	6,00	6,00
Electrical	horn			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	indicator light			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	light bulb			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	relay			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	sending unit			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	oil sender			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	temp sender	misc.		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	sensor	misc.		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	solenoid			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	starter			replace	1,50	1,50	1,50	1,50	1,50	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Electrical	work light			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	emergency stop button			replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	radio control	receiver/transmitter		replace																	
Electrical	umbilical control			replace																	
Electrical	FSR Control	vibration on/off button		replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Electrical	FSR Control			replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Electrical	Potentiometer			replace																	

TIME GUIDE

System	Sub-System	Component	Sub-Component	Action	DD138HFX	DD14S	DD158HFA	DD158HFX	DD16	DD22	DD24	DD32	DD70	DD70HF	DD90	DD90HF	SD100 C	SD100D	SD100D C	SD100D TF	SD100F C
Electrical	chassis	harness		repair	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Electrical	chassis	harness		replace	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00
Electrical	console/pedestal	harness		repair	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Electrical	console/pedestal	harness		replace	8,00	2,00	8,00	8,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	3,00	3,00	3,00	3,00	3,00
Electrical	water	harness		repair	2,00		2,00	2,00													
Electrical	water	harness		replace	3,00		3,00	3,00													
Electrical	Instrument Panel	Gauge/Hourmeter		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	Instrument Panel	Cluster		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	switch	Ignition		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	switch	limit		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	switch	pressure		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	switch	misc.		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	switch	toggle		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	switch	neutral		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	Engine	Alternator		replace	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,00	2,00	2,00	2,00	2,00
Electrical	battery			replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	battery	cable		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	back-up alarm			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	beacon			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	circuit breaker			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	fuse			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	diode			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	fuel level sender			replace	6,00		6,00	6,00					1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	horn			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	indicator light			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	light bulb			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	relay			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	sending unit			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	oil sender			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	temp sender	misc.		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	sensor	misc.		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	solenoid			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	starter			replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Electrical	work light			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	emergency stop button			replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	radio control	receiver/transmitter		replace																	
Electrical	umbilical control			replace																	
Electrical	FSR Control	vibration on/off button		replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Electrical	FSR Control			replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Electrical	Potentiometer			replace													1,00	1,00	1,00	1,00	1,00

TIME GUIDE

System	Sub-System	Component	Sub-Component	Action	SD105DA	SD105DX	SD105F	SD116DX	SD116F	SD122D	SD122DX	SD122F	SD160DX	SD160F	SD200DX	SD25D	SD25F	SD40	SD45D	SD45F	SD70D TF
Electrical	chassis	harness		repair	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Electrical	chassis	harness		replace	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00
Electrical	console/pedestal	harness		repair	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Electrical	console/pedestal	harness		replace	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
Electrical	water	harness		repair	2,00																
Electrical	water	harness		replace	3,00																
Electrical	Instrument Panel	Gauge/Hourmeter		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	Instrument Panel	Cluster		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	switch	Ignition		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	switch	limit		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	switch	pressure		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	switch	misc.		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	switch	toggle		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	switch	neutral		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	Engine	Alternator		replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Electrical	battery			replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	battery	cable		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	back-up alarm			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	beacon			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	circuit breaker			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	fuse			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	diode			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	fuel level sender			replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	horn			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	indicator light			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	light bulb			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	relay			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	sending unit			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	oil sender			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	temp sender	misc.		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	sensor	misc.		replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	solenoid			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	starter			replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Electrical	work light			replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	emergency stop button			replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	radio control	receiver/transmitter		replace																	
Electrical	umbilical control			replace																	
Electrical	FSR Control	vibration on/off button		replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Electrical	FSR Control			replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Electrical	Potentiometer			replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

TIME GUIDE

System	Sub-System	Component	Sub-Component	Action	SD77DA	SD77DX	SD77F	TC13	PT125R	PT240
Electrical	chassis	harness		repair	2,00	2,00	2,00	2,00	2,00	2,00
Electrical	chassis	harness		replace	6,00	6,00	6,00	4,00	4,00	6,00
Electrical	console/pedestal	harness		repair	2,00	2,00	2,00			2,00
Electrical	console/pedestal	harness		replace	3,00	3,00	3,00			3,00
Electrical	water	harness		repair	2,00					
Electrical	water	harness		replace	3,00					
Electrical	Instrument Panel	Gauge/Hourmeter		replace	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	Instrument Panel	Cluster		replace	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	switch	Ignition		replace	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	switch	limit		replace	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	switch	pressure		replace	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	switch	misc.		replace	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	switch	toggle		replace	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	switch	neutral		replace	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	Engine	Alternator		replace	2,00	2,00	2,00	2,00	2,00	2,00
Electrical	battery			replace	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	battery	cable		replace	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	back-up alarm			replace	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	beacon			replace	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	circuit breaker			replace	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	fuse			replace	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	diode			replace	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	fuel level sender			replace	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	horn			replace	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	indicator light			replace	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	light bulb			replace	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	relay			replace	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	sending unit			replace	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	oil sender			replace	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	temp sender	misc.		replace	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	sensor	misc.		replace	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	solenoid			replace	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	starter			replace	2,00	2,00	2,00	1,50	1,50	1,50
Electrical	work light			replace	0,50	0,50	0,50	0,50	0,50	0,50
Electrical	emergency stop button			replace	1,00	1,00	1,00	1,00	1,00	1,00
Electrical	radio control	receiver/transmitter		replace				2,00		
Electrical	umbilical control			replace				0,50		
Electrical	FSR Control	vibration on/off button		replace	2,00	2,00	2,00			
Electrical	FSR Control			replace	2,00	2,00	2,00			
Electrical	Potentiometer			replace	1,00	1,00	1,00			

TIME GUIDE

System	Sub-System	Component	Sub-Component	Action	CR24	CR30	CR32	CR34	CR36	CR70	DD110	DD110HF	DD112	DD118HF	DD118HFA	DD118HFX	DD12S	DD130	DD130HF	DD132HF	DD138HF
Engine	Lubrication	Filter	Filter base	Replace							1,00	1,00	1,00	1,00	1,00	1,00		1,00	1,00	1,00	1,00
Engine	Lubrication	Oil drain hose		Replace	1,00	1,00	1,00	1,00	1,00								1,00				
Engine	Main Drive	Belt	Steering Pump	Replace						1,00											
Engine	Main Drive	Belt		Adjust						0,50											
Engine	Main Drive	Drive coupling		Replace	3,00	3,00	3,00	3,00	3,00	4,00	6,00	6,00	4,00	4,00	4,00	4,00	2,50	6,00	6,00	4,00	4,00
Engine	Fuel	Shut off cable/choke		Replace													1,00				
Engine	Fuel	Throttle	Cable	Replace	2,00	2,00	2,00	2,00	2,00	2,00	3,00	3,00					2,00	3,00	3,00		
Engine	Fuel	Cap		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Fuel	Filter		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Fuel	Pump		Replace	1,50	1,50	1,50	1,50	1,50												
Engine	Fuel	Fuel Line/Hose		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Engine	Fuel	Fuel Line/Hose		Reroute	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Fuel	Fuel Line/Hose	Clamp	Tighten	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Fuel	Fuel Line/Hose	Clamp	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Fuel	Fuel Tank		Replace													1,00				
Engine	Fuel	Throttle	Lever	Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00					1,00	1,00	1,00		
Engine	Fuel	Throttle	Cable	Adjust	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50					0,50	0,50	0,50		
Engine	Fuel	Throttle	Linkage/Solenoid	Replace														1,00	1,00	1,00	1,00
Engine	Cooling	Alternator Belt		Replace	0,50	0,50	0,50	0,50	0,50												
Engine	Cooling	Alternator Belt		Adjust	0,50	0,50	0,50	0,50	0,50												
Engine	Cooling	Coolant recovery tank		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50		0,50	0,50	0,50	0,50
Engine	Cooling	Fan shroud		Replace	0,50	0,50	0,50	0,50	0,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50		2,50	2,50	2,50	2,50
Engine	Cooling	Fan		Replace	1,50	1,50	1,50	1,50	1,50	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
Engine	Cooling	Fan Belt		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Cooling	Fan Belt		Adjust	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Cooling	Radiator		Replace	2,50	2,50	2,50	2,50	2,50	3,00	2,50	2,50	4,00	4,00	4,00	4,00		2,50	2,50	4,00	4,00
Engine	Cooling	Radiator		Repair	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50		0,50	0,50	0,50	0,50
Engine	Cooling	Radiator	Cap	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50		0,50	0,50	0,50	0,50
Engine	Cooling	Radiator	Hose	Replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00		2,00	2,00	2,00	2,00
Engine	Cooling	Radiator	Clamp	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50		0,50	0,50	0,50	0,50
Engine	Cooling	Radiator	Clamp	Tighten	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50		0,50	0,50	0,50	0,50
Engine	Intake	Air Cleaner		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	0,50	1,00	1,00	1,00	1,00
Engine	Intake	Air Cleaner	Hose	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50		0,50	0,50	0,50	0,50
Engine	Intake	Air Cleaner	Clamp	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50		0,50	0,50	0,50	0,50
Engine	Intake	Air Cleaner	Clamp	Tighten	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50		0,50	0,50	0,50	0,50
Engine	Intake	Air Cleaner	Air Filter	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50		0,50	0,50	0,50	0,50
Engine	Intake	Air Cleaner	Condition Indicator	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50		0,50	0,50	0,50	0,50
Engine	Exhaust	Exhaust Pipe		Replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Engine	Exhaust	Exhaust Pipe		Tighten	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Exhaust	Exhaust Pipe	Gasket	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Exhaust	Exhaust Pipe	Clamp	Tighten	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Exhaust	Exhaust Pipe	Clamp	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Exhaust	Muffler		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

TIME GUIDE

System	Sub-System	Component	Sub-Component	Action	DD138HFA	DD138HFX	DD14S	DD158HFA	DD158HFX	DD16	DD22	DD24	DD32	DD70	DD70HF	DD90	DD90HF	SD100 C	SD100D C	SD100D TF
Engine	Lubrication	Filter	Filter base	Replace	1,00	1,00		1,00	1,00											
Engine	Lubrication	Oil drain hose		Replace			1,00			1,00	1,00	1,00	1,00							
Engine	Main Drive	Belt	Steering Pump	Replace										1,00	1,00					
Engine	Main Drive	Belt		Adjust										0,50	0,50					
Engine	Main Drive	Drive coupling		Replace	4,00	4,00	3,00	4,00	4,00	3,00	3,00	3,00	3,00	4,00	4,00	6,00	6,00	6,00	6,00	6,00
Engine	Fuel	Shut off cable/choke		Replace																
Engine	Fuel	Throttle	Cable	Replace			2,50			2,50	2,50	2,50	2,50	2,50	2,50	3,00	3,00	2,00	2,00	2,00
Engine	Fuel	Cap		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Fuel	Filter		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Fuel	Pump		Replace			2,00			2,00	1,50	1,50	1,50							
Engine	Fuel	Fuel Line/Hose		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Engine	Fuel	Fuel Line/Hose		Reroute	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Fuel	Fuel Line/Hose	Clamp	Tighten	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Fuel	Fuel Line/Hose	Clamp	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Fuel	Fuel Tank		Replace																
Engine	Fuel	Throttle	Lever	Replace			1,00			1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Engine	Fuel	Throttle	Cable	Adjust			0,50			0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Fuel	Throttle	Linkage/Solenoid	Replace	1,00	1,00		1,00	1,00											1,00
Engine	Cooling	Alternator Belt		Replace								0,50								
Engine	Cooling	Alternator Belt		Adjust								0,50								
Engine	Cooling	Coolant recovery tank		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Cooling	Fan shroud		Replace	2,50	2,50	0,50	2,50	2,50	0,50	0,50	0,50	0,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50
Engine	Cooling	Fan		Replace	3,00	3,00	3,00	3,00	3,00	1,50	1,50	1,50	1,50	3,00	3,00	3,00	3,00	3,00	3,00	3,00
Engine	Cooling	Fan Belt		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Cooling	Fan Belt		Adjust	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Cooling	Radiator		Replace	4,00	4,00	2,50	4,00	4,00	2,50	2,50	2,50	2,50	3,00	3,00	2,50	2,50	4,00	4,00	3,00
Engine	Cooling	Radiator		Repair	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Cooling	Radiator	Cap	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Cooling	Radiator	Hose	Replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Engine	Cooling	Radiator	Clamp	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Cooling	Radiator	Clamp	Tighten	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Intake	Air Cleaner		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Engine	Intake	Air Cleaner	Hose	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Intake	Air Cleaner	Clamp	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Intake	Air Cleaner	Clamp	Tighten	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Intake	Air Cleaner	Air Filter	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Intake	Air Cleaner	Condition Indicator	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Exhaust	Exhaust Pipe		Replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Engine	Exhaust	Exhaust Pipe		Tighten	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Exhaust	Exhaust Pipe	Gasket	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Exhaust	Exhaust Pipe	Clamp	Tighten	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Exhaust	Exhaust Pipe	Clamp	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Exhaust	Muffler		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

TIME GUIDE

System	Sub-System	Component	Sub-Component	Action	SD100F C	SD105DA	SD105DX	SD105F	SD116DX	SD116F	SD122D	SD122DX	SD122F	SD160DX	SD160F	SD200DX	SD25D	SD25F	SD45D
Engine	Lubrication	Filter	Filter base	Replace															
Engine	Lubrication	Oil drain hose		Replace															
Engine	Main Drive	Belt	Steering Pump	Replace															
Engine	Main Drive	Belt		Adjust															
Engine	Main Drive	Drive coupling		Replace	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00
Engine	Fuel	Shut off cable/choke		Replace															
Engine	Fuel	Throttle	Cable	Replace	2,00												2,00	2,00	2,00
Engine	Fuel	Cap		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Fuel	Filter		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Fuel	Pump		Replace															
Engine	Fuel	Fuel Line/Hose		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Engine	Fuel	Fuel Line/Hose		Reroute	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Fuel	Fuel Line/Hose	Clamp	Tighten	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Fuel	Fuel Line/Hose	Clamp	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Fuel	Fuel Tank		Replace															
Engine	Fuel	Throttle	Lever	Replace	1,00												1,00	1,00	1,00
Engine	Fuel	Throttle	Cable	Adjust	0,50												0,50	0,50	0,50
Engine	Fuel	Throttle	Linkage/Solenoid	Replace		1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Engine	Cooling	Alternator Belt		Replace															
Engine	Cooling	Alternator Belt		Adjust															
Engine	Cooling	Coolant recovery tank		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Cooling	Fan shroud		Replace	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50
Engine	Cooling	Fan		Replace	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
Engine	Cooling	Fan Belt		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Cooling	Fan Belt		Adjust	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Cooling	Radiator		Replace	4,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	2,50	2,50	2,50
Engine	Cooling	Radiator		Repair	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Cooling	Radiator	Cap	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Cooling	Radiator	Hose	Replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Engine	Cooling	Radiator	Clamp	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Cooling	Radiator	Clamp	Tighten	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Intake	Air Cleaner		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Engine	Intake	Air Cleaner	Hose	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Intake	Air Cleaner	Clamp	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Intake	Air Cleaner	Clamp	Tighten	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Intake	Air Cleaner	Air Filter	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Intake	Air Cleaner	Condition Indicator	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Exhaust	Exhaust Pipe		Replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Engine	Exhaust	Exhaust Pipe		Tighten	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Exhaust	Exhaust Pipe	Gasket	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Exhaust	Exhaust Pipe	Clamp	Tighten	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Exhaust	Exhaust Pipe	Clamp	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Exhaust	Muffler		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

TIME GUIDE

System	Sub-System	Component	Sub-Component	Action	SD45F	SD70D TF	SD77DA	SD77DX	SD77F	TC13	PT125R	PT240
Engine	Lubrication	Filter	Filter base	Replace								
Engine	Lubrication	Oil drain hose		Replace						1,00	1,00	1,00
Engine	Main Drive	Belt	Steering Pump	Replace								
Engine	Main Drive	Belt		Adjust								
Engine	Main Drive	Drive coupling		Replace	6,00	6,00	6,00	6,00	6,00		6,00	
Engine	Fuel	Shut off cable/choke		Replace								
Engine	Fuel	Throttle	Cable	Replace	2,00						3,00	3,00
Engine	Fuel	Cap		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Fuel	Filter		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Fuel	Pump		Replace								
Engine	Fuel	Fuel Line/Hose		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Engine	Fuel	Fuel Line/Hose		Reroute	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Fuel	Fuel Line/Hose	Clamp	Tighten	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Fuel	Fuel Line/Hose	Clamp	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Fuel	Fuel Tank		Replace								
Engine	Fuel	Throttle	Lever	Replace	1,00						1,00	1,00
Engine	Fuel	Throttle	Cable	Adjust	0,50						0,50	0,50
Engine	Fuel	Throttle	Linkage/Solenoid	Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Engine	Cooling	Alternator Belt		Replace						0,50		
Engine	Cooling	Alternator Belt		Adjust						0,50		
Engine	Cooling	Coolant recovery tank		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Cooling	Fan shroud		Replace	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50
Engine	Cooling	Fan		Replace	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
Engine	Cooling	Fan Belt		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Cooling	Fan Belt		Adjust	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Cooling	Radiator		Replace	2,50	3,00	3,00	3,00	3,00	2,50	3,00	3,00
Engine	Cooling	Radiator		Repair	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Cooling	Radiator	Cap	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Cooling	Radiator	Hose	Replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Engine	Cooling	Radiator	Clamp	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Cooling	Radiator	Clamp	Tighten	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Intake	Air Cleaner		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Engine	Intake	Air Cleaner	Hose	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Intake	Air Cleaner	Clamp	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Intake	Air Cleaner	Clamp	Tighten	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Intake	Air Cleaner	Air Filter	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Intake	Air Cleaner	Condition Indicator	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Exhaust	Exhaust Pipe		Replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Engine	Exhaust	Exhaust Pipe		Tighten	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Exhaust	Exhaust Pipe	Gasket	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Exhaust	Exhaust Pipe	Clamp	Tighten	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Exhaust	Exhaust Pipe	Clamp	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Engine	Exhaust	Muffler		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

TIME GUIDE

System	Sub-System	Component	Sub-Component	Action	CR24	CR30	CR32	CR34	CR36	CR70	DD110	DD110HF	DD112	DD118HF	DD118HFA	DD118HFX	DD12S	DD130	DD130HF	DD132HF
Structural	Arm			Replace																
Structural	Arm			Repair																
Structural	Cab	Air Conditioning		Replace						10,00	10,00	10,00	10,00	10,00	10,00	10,00		10,00	10,00	10,00
Structural	Cab	Air Conditioning	Misc.	Repair						2,00	2,00	2,00	2,00	2,00	2,00	2,00		2,00	2,00	2,00
Structural	Cab	Door		Replace						1,00	1,00	1,00	1,00	1,00	1,00	1,00		1,00	1,00	1,00
Structural	Cab	Door		Repair						2,00	2,00	2,00	2,00	2,00	2,00	2,00		2,00	2,00	2,00
Structural	Cab	Door Latch		Replace						1,00	1,00	1,00	1,00	1,00	1,00	1,00		1,00	1,00	1,00
Structural	Cab	Door Latch		Adjustment						0,50	0,50	0,50	0,50	0,50	0,50	0,50		0,50	0,50	0,50
Structural	Cab	Heater		Replace						8,00	8,00	8,00	8,00	8,00	8,00	8,00		8,00	8,00	8,00
Structural	Cab	Heater	Misc.	Repair						2,00	2,00	2,00	2,00	2,00	2,00	2,00		2,00	2,00	2,00
Structural	Cab	Isolator		Replace						2,00	2,00	2,00	2,00	2,00	2,00	2,00		2,00	2,00	2,00
Structural	Cab	Liner		Replace						2,00	2,00	2,00	2,00	2,00	2,00	2,00		2,00	2,00	2,00
Structural	Cab	Misc.		Repair						0,50	0,50	0,50	0,50	0,50	0,50	0,50		0,50	0,50	0,50
Structural	Cab	Wipers	Motor	Replace						1,00	1,00	1,00	1,00	1,00	1,00	1,00		1,00	1,00	1,00
Structural	Cab	Wipers		Replace						0,50	0,50	0,50	0,50	0,50	0,50	0,50		0,50	0,50	0,50
Structural	Cab			Replace						6,00	6,00	6,00	6,00	6,00	6,00	6,00		6,00	6,00	6,00
Structural	Cab			Repair						2,00	2,00	2,00	2,00	2,00	2,00	2,00		2,00	2,00	2,00
Structural	Canopy			Replace																
Structural	Canopy			Repair																
Structural	Cutting edge			Replace																
Structural	Cutting wheel			Repair																
Structural	Decal			Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Frame	Battery Box	Cover/Hold Down	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Frame	Door/Cover	Latch	Adjustment	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Frame	Door/Cover	Latch	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Frame	Door/Cover		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Frame	Door/Cover		Repair	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Frame	Door/Cover		Repaint	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Frame	Fender		Replace																
Structural	Frame	Front		Replace	16,00	16,00	16,00	16,00	16,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	10,00	15,00	15,00	15,00
Structural	Frame	Front		Repair	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Structural	Frame	Front		Repaint	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Structural	Frame	Hood support		Repair																
Structural	Frame	Hydraulic Filter Box	Cover	Replace																
Structural	Frame	Isolator		Replace																
Structural	Frame	Misc.		Repair																
Structural	Frame	Misc.		Repaint																
Structural	Frame	Misc.		Reweld																
Structural	Frame	Rear		Replace	10,00	10,00	10,00	10,00	10,00	15,00	16,00	16,00	16,00	16,00	16,00	16,00	8,00	16,00	16,00	16,00
Structural	Frame	Rear		Repair	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Structural	Frame	Rear		Repaint	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Structural	Frame	Rear		Reweld	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Structural	Frame	Reverse stop		Repair																
Structural	Frame	Swivel Assembly	Vertical Bearings	Replace	4,00	4,00	4,00	4,00	4,00	6,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00
Structural	Frame	Swivel Assembly	Horizontal Bearings	Replace						6,00	12,00	12,00	12,00	12,00	12,00	12,00		12,00	12,00	12,00
Structural	Frame	Swivel Assembly	Pin Horizontal	Replace						6,00	12,00	12,00	12,00	12,00	12,00	12,00		12,00	12,00	12,00
Structural	Frame	Swivel Assembly	Pin Vertical	Replace	4,00	4,00	4,00	4,00	4,00	6,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00
Structural	Frame	Swivel Assembly		Repair	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Structural	Frame	Side Shift	Drum Offset	Replace																
Structural	Frame	Lock Bar		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Structural	Frame	Misc.		Repair	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Hood	Gas Shocks/Tether		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Hood	Grill		replace																
Structural	Hood	Hinge		replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Structural	Hood	Latch		Replace	0,50	0,50	0,50	0,50	0,50	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

TIME GUIDE

System	Sub-System	Component	Sub-Component	Action	CR24	CR30	CR32	CR34	CR36	CR70	DD110	DD110HF	DD112	DD118HF	DD118HFA	DD118HFX	DD12S	DD130	DD130HF	DD132HF
Structural	Hood	Springs		Replace																
Structural	Hood	Springs		Adjustment																
Structural	Hood	Misc.		Repair	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Hood			Replace	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50
Structural	Operators Platform	Isolator mount		Replace	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50
Structural	Operators Platform	Console		Replace	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00
Structural	Operators Platform	Rails		Repair	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Structural	Operators Platform	Rails		Replace						1,00	1,00	1,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Structural	Operators Platform	Seat		Repair	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Structural	Operators Platform	Seat		Replace	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50
Structural	Operators Platform	Seat	Slide Bar	Replace	1,00	1,00	1,00	1,00	1,00											
Structural	Operators Platform	Steering	Column	Replace	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	3,50	3,50	3,50	3,50	2,50	2,50	2,50	2,50
Structural	Operators Platform	Steering	Knob	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Operators Platform	Steering	Wheel	Replace	0,75	0,75	0,75	0,75	0,75	0,75	0,75	0,75	0,75	0,75	0,75	0,75	0,75	0,75	0,75	0,75
Structural	Operators Platform	Lift Mechanism		Replace																
Structural	ROPS			Replace	1,00	1,00	1,00	1,00	1,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	1,00	2,00	2,00	2,00
Structural	Single point lift			Repair																
Structural	Tank	Emulsion	Cap	Replace																
Structural	Tank	Emulsion	Mount Bolts	Replace																
Structural	Tank	Emulsion		Repair																
Structural	Tank	Emulsion		Replace																
Structural	Tank	Fuel	Cap	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Tank	Fuel	Misc.	Repair	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Tank	Fuel		Replace	6,00	6,00	6,00	6,00	6,00											
Structural	Tank	Hydraulic	Cap	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Tank	Hydraulic	Misc.	Repair	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Structural	Tank	Hydraulic		Replace							4,00	4,00						4,00	4,00	

TIME GUIDE

System	Sub-System	Component	Sub-Component	Action	DD138HF	DD138HFA	DD138HFX	DD14S	DD158HFA	DD158HFX	DD16	DD22	DD24	DD32	DD70	DD70HF	DD90	DD90HF	SD100 C
Structural	Arm			Replace															
Structural	Arm			Repair															
Structural	Cab	Air Conditioning		Replace	10,00	10,00	10,00		10,00	10,00					10,00	10,00	10,00	10,00	10,00
Structural	Cab	Air Conditioning	Misc.	Repair	2,00	2,00	2,00		2,00	2,00					2,00	2,00	2,00	2,00	2,00
Structural	Cab	Door		Replace	1,00	1,00	1,00		1,00	1,00					1,00	1,00	1,00	1,00	1,00
Structural	Cab	Door		Repair	2,00	2,00	2,00		2,00	2,00					2,00	2,00	2,00	2,00	2,00
Structural	Cab	Door Latch		Replace	1,00	1,00	1,00		1,00	1,00					1,00	1,00	1,00	1,00	1,00
Structural	Cab	Door Latch		Adjustment	0,50	0,50	0,50		0,50	0,50					0,50	0,50	0,50	0,50	0,50
Structural	Cab	Heater		Replace	8,00	8,00	8,00		8,00	8,00					8,00	8,00	8,00	8,00	8,00
Structural	Cab	Heater	Misc.	Repair	2,00	2,00	2,00		2,00	2,00					2,00	2,00	2,00	2,00	2,00
Structural	Cab	Isolator		Replace	2,00	2,00	2,00		2,00	2,00					2,00	2,00	2,00	2,00	1,50
Structural	Cab	Liner		Replace	2,00	2,00	2,00		2,00	2,00					2,00	2,00	2,00	2,00	2,00
Structural	Cab	Misc.		Repair	0,50	0,50	0,50		0,50	0,50					0,50	0,50	0,50	0,50	0,50
Structural	Cab	Wipers	Motor	Replace	1,00	1,00	1,00		1,00	1,00					1,00	1,00	1,00	1,00	1,00
Structural	Cab	Wipers		Replace	0,50	0,50	0,50		0,50	0,50					0,50	0,50	0,50	0,50	0,50
Structural	Cab			Replace	6,00	6,00	6,00		6,00	6,00					6,00	6,00	6,00	6,00	6,00
Structural	Cab			Repair	2,00	2,00	2,00		2,00	2,00					2,00	2,00	2,00	2,00	2,00
Structural	Canopy			Replace															
Structural	Canopy			Repair															
Structural	Cutting edge			Replace													1,00	1,00	
Structural	Cutting wheel			Repair													1,00	1,00	
Structural	Decal			Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Frame	Battery Box	Cover/Hold Down	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Frame	Door/Cover	Latch	Adjustment	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Frame	Door/Cover	Latch	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Frame	Door/Cover		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Frame	Door/Cover		Repair	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Frame	Door/Cover		Repaint	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Frame	Fender		Replace															0,50
Structural	Frame	Front		Replace	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00
Structural	Frame	Front		Repair	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Structural	Frame	Front		Repaint	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Structural	Frame	Hood support		Repair															
Structural	Frame	Hydraulic Filter Box	Cover	Replace															
Structural	Frame	Isolator		Replace															
Structural	Frame	Misc.		Repair															
Structural	Frame	Misc.		Repaint															
Structural	Frame	Misc.		Reweld															
Structural	Frame	Rear		Replace	16,00	16,00	16,00	8,00	16,00	16,00	8,00	8,00	8,00	8,00	15,00	15,00	16,00	16,00	40,00
Structural	Frame	Rear		Repair	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Structural	Frame	Rear		Repaint	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Structural	Frame	Rear		Reweld	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Structural	Frame	Reverse stop		Repair															
Structural	Frame	Swivel Assembly	Vertical Bearings	Replace	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	6,00	6,00	4,00	4,00	4,00
Structural	Frame	Swivel Assembly	Horizontal Bearings	Replace	12,00	12,00	12,00		12,00	12,00					6,00	6,00	12,00	12,00	6,00
Structural	Frame	Swivel Assembly	Pin Horizontal	Replace	12,00	12,00	12,00		12,00	12,00					6,00	6,00	12,00	12,00	6,00
Structural	Frame	Swivel Assembly	Pin Vertical	Replace	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	6,00	6,00	4,00	4,00	4,00
Structural	Frame	Swivel Assembly		Repair	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Structural	Frame	Side Shift	Drum Offset	Replace											8,00	8,00			
Structural	Frame	Lock Bar		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Structural	Frame	Misc.		Repair	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Hood	Gas Shocks/Tether		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	
Structural	Hood	Grill		replace															0,50
Structural	Hood	Hinge		replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Structural	Hood	Latch		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	2,00

TIME GUIDE

System	Sub-System	Component	Sub-Component	Action	DD138HF	DD138HFA	DD138HFX	DD14S	DD158HFA	DD158HFX	DD16	DD22	DD24	DD32	DD70	DD70HF	DD90	DD90HF	SD100 C
Structural	Hood	Springs		Replace															
Structural	Hood	Springs		Adjustment															
Structural	Hood	Misc.		Repair	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Hood			Replace	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50
Structural	Operators Platform	Isolator mount		Replace	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50
Structural	Operators Platform	Console		Replace	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	3,00
Structural	Operators Platform	Rails		Repair	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Structural	Operators Platform	Rails		Replace	2,00	2,00	2,00		2,00	2,00					2,00	2,00	2,00	1,00	1,00
Structural	Operators Platform	Seat		Repair	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Structural	Operators Platform	Seat		Replace	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50
Structural	Operators Platform	Seat	Slide Bar	Replace								1,00	1,00	1,00					
Structural	Operators Platform	Steering	Column	Replace	2,50	2,50	2,50	2,50	3,50	3,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	1,50
Structural	Operators Platform	Steering	Knob	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Operators Platform	Steering	Wheel	Replace	0,75	0,75	0,75	0,75	0,75	0,75	0,75	0,75	0,75	0,75	0,75	0,75	0,75	0,75	0,75
Structural	Operators Platform	Lift Mechanism		Replace															
Structural	ROPS			Replace	2,00	2,00	2,00	1,00	2,00	2,00	1,00	1,00	1,00	1,00	2,00	2,00	2,00	2,00	2,00
Structural	Single point lift			Repair															
Structural	Tank	Emulsion	Cap	Replace															
Structural	Tank	Emulsion	Mount Bolts	Replace															
Structural	Tank	Emulsion		Repair															
Structural	Tank	Emulsion		Replace															
Structural	Tank	Fuel	Cap	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Tank	Fuel	Misc.	Repair	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Tank	Fuel		Replace				6,00			6,00	6,00	6,00	6,00					2,00
Structural	Tank	Hydraulic	Cap	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Tank	Hydraulic	Misc.	Repair	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Structural	Tank	Hydraulic		Replace													4,00	4,00	4,00

TIME GUIDE

System	Sub-System	Component	Sub-Component	Action	SD100D C	SD100D TF	SD100F C	SD105DA	SD105DX	SD105F	SD116DX	SD116F	SD122D	SD122DX	SD122F	SD160DX	SD160F
Structural	Arm			Replace													
Structural	Arm			Repair													
Structural	Cab	Air Conditioning		Replace	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00
Structural	Cab	Air Conditioning	Misc.	Repair	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Structural	Cab	Door		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Structural	Cab	Door		Repair	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Structural	Cab	Door Latch		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Structural	Cab	Door Latch		Adjustment	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Cab	Heater		Replace	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00
Structural	Cab	Heater	Misc.	Repair	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Structural	Cab	Isolator		Replace	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50
Structural	Cab	Liner		Replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Structural	Cab	Misc.		Repair	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Cab	Wipers	Motor	Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Structural	Cab	Wipers		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Cab			Replace	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00
Structural	Cab			Repair	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Structural	Canopy			Replace													
Structural	Canopy			Repair													
Structural	Cutting edge			Replace													
Structural	Cutting wheel			Repair													
Structural	Decal			Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Frame	Battery Box	Cover/Hold Down	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Frame	Door/Cover	Latch	Adjustment	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Frame	Door/Cover	Latch	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Frame	Door/Cover		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Frame	Door/Cover		Repair	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Frame	Door/Cover		Repaint	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Frame	Fender		Replace	0,50	1,00											
Structural	Frame	Front		Replace	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00
Structural	Frame	Front		Repair	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Structural	Frame	Front		Repaint	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Structural	Frame	Hood support		Repair													
Structural	Frame	Hydraulic Filter Box	Cover	Replace		2,00		2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Structural	Frame	Isolator		Replace													
Structural	Frame	Misc.		Repair													
Structural	Frame	Misc.		Repaint													
Structural	Frame	Misc.		Reweld													
Structural	Frame	Rear		Replace	40,00	40,00	40,00	40,00	40,00	40,00	40,00	40,00	40,00	40,00	40,00	40,00	40,00
Structural	Frame	Rear		Repair	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Structural	Frame	Rear		Repaint	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Structural	Frame	Rear		Reweld	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Structural	Frame	Reverse stop		Repair													
Structural	Frame	Swivel Assembly	Vertical Bearings	Replace	4,00	8,00	4,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00
Structural	Frame	Swivel Assembly	Horizontal Bearings	Replace	6,00	12,00	6,00	12,00	12,00	12,00	12,00	12,00	12,00	12,00	12,00	12,00	12,00
Structural	Frame	Swivel Assembly	Pin Horizontal	Replace	6,00	12,00	6,00	12,00	12,00	12,00	12,00	12,00	12,00	12,00	12,00	12,00	12,00
Structural	Frame	Swivel Assembly	Pin Vertical	Replace	4,00	8,00	4,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00
Structural	Frame	Swivel Assembly		Repair	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Structural	Frame	Side Shift	Drum Offset	Replace													
Structural	Frame	Lock Bar		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Structural	Frame	Misc.		Repair	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Hood	Gas Shocks/Tether		Replace													
Structural	Hood	Grill		replace	0,50		0,50										
Structural	Hood	Hinge		replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Structural	Hood	Latch		Replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00

TIME GUIDE

System	Sub-System	Component	Sub-Component	Action	SD100D C	SD100D TF	SD100F C	SD105DA	SD105DX	SD105F	SD116DX	SD116F	SD122D	SD122DX	SD122F	SD160DX	SD160F
Structural	Hood	Springs		Replace		2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Structural	Hood	Springs		Adjustment		0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Hood	Misc.		Repair	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Hood			Replace	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50
Structural	Operators Platform	Isolator mount		Replace	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50
Structural	Operators Platform	Console		Replace	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
Structural	Operators Platform	Rails		Repair	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Structural	Operators Platform	Rails		Replace	1,00	0,50	1,00	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Operators Platform	Seat		Repair	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Structural	Operators Platform	Seat		Replace	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50
Structural	Operators Platform	Seat	Slide Bar	Replace													
Structural	Operators Platform	Steering	Column	Replace	1,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50
Structural	Operators Platform	Steering	Knob	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Operators Platform	Steering	Wheel	Replace	0,75	0,75	0,75	0,75	0,75	0,75	0,75	0,75	0,75	0,75	0,75	0,75	0,75
Structural	Operators Platform	Lift Mechanism		Replace		1,00		1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Structural	ROPS			Replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Structural	Single point lift			Repair													
Structural	Tank	Emulsion	Cap	Replace				0,50									
Structural	Tank	Emulsion	Mount Bolts	Replace				0,50									
Structural	Tank	Emulsion		Repair				1,00									
Structural	Tank	Emulsion		Replace				3,00									
Structural	Tank	Fuel	Cap	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Tank	Fuel	Misc.	Repair	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Tank	Fuel		Replace	2,00	6,00	2,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00
Structural	Tank	Hydraulic	Cap	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Tank	Hydraulic	Misc.	Repair	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Structural	Tank	Hydraulic		Replace	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00

TIME GUIDE

System	Sub-System	Component	Sub-Component	Action	SD200DX	SD25D	SD25F	SD45D	SD45F	SD70D TF	SD77DA	SD77DX	SD77F	TC13	PT125R	PT240
Structural	Arm			Replace											3,00	
Structural	Arm			Repair											4,00	
Structural	Cab	Air Conditioning		Replace	10,00					10,00	10,00	10,00	10,00			10,00
Structural	Cab	Air Conditioning	Misc.	Repair	2,00					2,00	2,00	2,00	2,00			2,00
Structural	Cab	Door		Replace	1,00					1,00	1,00	1,00	1,00			1,00
Structural	Cab	Door		Repair	2,00					2,00	2,00	2,00	2,00			2,00
Structural	Cab	Door Latch		Replace	1,00					1,00	1,00	1,00	1,00			1,00
Structural	Cab	Door Latch		Adjustment	0,50					0,50	0,50	0,50	0,50			0,50
Structural	Cab	Heater		Replace	8,00					8,00	8,00	8,00	8,00			8,00
Structural	Cab	Heater	Misc.	Repair	2,00					2,00	2,00	2,00	2,00			2,00
Structural	Cab	Isolator		Replace	1,50					1,50	1,50	1,50	1,50			1,50
Structural	Cab	Liner		Replace	2,00					2,00	2,00	2,00	2,00			2,00
Structural	Cab	Misc.		Repair	0,50					0,50	0,50	0,50	0,50			0,50
Structural	Cab	Wipers	Motor	Replace	1,00					1,00	1,00	1,00	1,00			1,00
Structural	Cab	Wipers		Replace	0,50					0,50	0,50	0,50	0,50			0,50
Structural	Cab			Replace	6,00					6,00	6,00	6,00	6,00			6,00
Structural	Cab			Repair	2,00					2,00	2,00	2,00	2,00			2,00
Structural	Canopy			Replace												8,00
Structural	Canopy			Repair												2,00
Structural	Cutting edge			Replace												
Structural	Cutting wheel			Repair												
Structural	Decal			Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Frame	Battery Box	Cover/Hold Down	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Frame	Door/Cover	Latch	Adjustment	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Frame	Door/Cover	Latch	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Frame	Door/Cover		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Frame	Door/Cover		Repair	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Frame	Door/Cover		Repaint	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Frame	Fender		Replace												
Structural	Frame	Front		Replace	10,00	8,00	8,00	8,00	8,00	10,00	10,00	10,00	10,00			
Structural	Frame	Front		Repair	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00			
Structural	Frame	Front		Repaint	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00			
Structural	Frame	Hood support		Repair												
Structural	Frame	Hydraulic Filter Box	Cover	Replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00			
Structural	Frame	Isolator		Replace												
Structural	Frame	Misc.		Repair												
Structural	Frame	Misc.		Repaint												
Structural	Frame	Misc.		Reweld												
Structural	Frame	Rear		Replace	40,00	30,00	30,00	30,00	30,00	40,00	40,00	40,00	40,00			
Structural	Frame	Rear		Repair	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00			
Structural	Frame	Rear		Repaint	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00			
Structural	Frame	Rear		Reweld	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00			
Structural	Frame	Reverse stop		Repair												
Structural	Frame	Swivel Assembly	Vertical Bearings	Replace	8,00	4,00	4,00	4,00	4,00	6,00	6,00	6,00	6,00			
Structural	Frame	Swivel Assembly	Horizontal Bearing	Replace	12,00	4,00	4,00	4,00	4,00	10,00	10,00	10,00	10,00			
Structural	Frame	Swivel Assembly	Pin Horizontal	Replace	12,00	4,00	4,00	4,00	4,00	10,00	10,00	10,00	10,00			
Structural	Frame	Swivel Assembly	Pin Vertical	Replace	8,00	4,00	4,00	4,00	4,00	6,00	6,00	6,00	6,00			
Structural	Frame	Swivel Assembly		Repair	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00			
Structural	Frame	Side Shift	Drum Offset	Replace												
Structural	Frame	Lock Bar		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00			
Structural	Frame	Misc.		Repair	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Hood	Gas Shocks/Tether		Replace										0,50	0,50	0,50
Structural	Hood	Grill		replace											0,50	0,50
Structural	Hood	Hinge		replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	1,00		
Structural	Hood	Latch		Replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	0,50		

Structural

TIME GUIDE

System	Sub-System	Component	Sub-Component	Action	SD200DX	SD25D	SD25F	SD45D	SD45F	SD70D TF	SD77DA	SD77DX	SD77F	TC13	PT125R	PT240
Structural	Hood	Springs		Replace	2,00					2,00	2,00	2,00	2,00			
Structural	Hood	Springs		Adjustment	0,50					0,50	0,50	0,50	0,50			
Structural	Hood	Misc.		Repair	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50		
Structural	Hood			Replace	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	2,50		
Structural	Operators Platform	Isolator mount		Replace	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50	2,50			
Structural	Operators Platform	Console		Replace	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00		3,00	3,00
Structural	Operators Platform	Rails		Repair	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00		1,00	1,00
Structural	Operators Platform	Rails		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50		0,50	0,50
Structural	Operators Platform	Seat		Repair	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00		1,00	1,00
Structural	Operators Platform	Seat		Replace	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50		1,50	1,50
Structural	Operators Platform	Seat	Slide Bar	Replace												
Structural	Operators Platform	Steering	Column	Replace	3,50	1,50	1,50	1,50	1,50	3,50	3,50	3,50	3,50		1,50	1,50
Structural	Operators Platform	Steering	Knob	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50		0,50	0,50
Structural	Operators Platform	Steering	Wheel	Replace	0,75	0,75	0,75	0,75	0,75	0,75	0,75	0,75	0,75		0,75	0,75
Structural	Operators Platform	Lift Mechanism		Replace	1,00	1,00				1,00	1,00	1,00	1,00			
Structural	ROPS			Replace	2,00	1,00	1,00	1,00	1,00	2,00	2,00	2,00	2,00		2,00	2,00
Structural	Single point lift			Repair										1,00		
Structural	Tank	Emulsion	Cap	Replace							0,50					
Structural	Tank	Emulsion	Mount Bolts	Replace							0,50					
Structural	Tank	Emulsion		Repair							1,00					
Structural	Tank	Emulsion		Replace							3,00					
Structural	Tank	Fuel	Cap	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Tank	Fuel	Misc.	Repair	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Tank	Fuel		Replace	6,00	3,00	3,00	3,00	3,00	6,00	6,00	6,00	6,00	2,00	3,00	3,00
Structural	Tank	Hydraulic	Cap	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Structural	Tank	Hydraulic	Misc.	Repair	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Structural	Tank	Hydraulic		Replace	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	3,00	3,00	3,00

TIME GUIDE

System	Sub-System	Component	Sub-Component	Action	CR24	CR30	CR32	CR34	CR36	CR70	DD110	DD110HF	DD118HF	DD118HFA	DD118HFX	DD12S	DD130	DD130HF	DD132HF	DD138HF	DD138HFA
Drive System	Axle			Replace																	
Drive System	Axle	Wheel Stud/Nut		Replace																	
Drive System	Axle	Wheel	Seal	Replace																	
Drive System	Axle	Brakes		Replace																	
Drive System	Axle	Brakes		Adjust																	
Drive System	Axle	Bearing		Replace																	
Drive System	Axle	Differential		Replace																	
Drive System	Axle	Mount Bolts		Replace																	
Drive System	Axle	Oil		Replace																	
Drive System	Wheel/Rim			Replace	3,00	3,00	3,00	3,00	3,00	3,00											
Drive System	Sprocket			Replace																	
Drive System	Chain			Replace																	
Drive System	Chain	Tightener		Repair																	
Drive System	Brake	Disc/Drum		Replace																	
Drive System	Brake	Shoe		Replace																	
Drive System	Brake	Master Cylinder		Replace																	
Drive System	Brake	Brake Cylinder		Replace																	
Drive System	Brake	Hose		Replace																	
Drive System	Brake	Hose		Reroute																	
Drive System	Brake	Hose		Tighten																	
Drive System	Brake	Tubeline		Replace																	
Drive System	Brake	Tubeline		Tighten																	
Drive System	Brake	Fitting		Replace																	
Drive System	Brake	Fitting		Tighten																	
Drive System	Brake	Cable		Replace																	
Drive System	Brake	Park Brake Lever		Replace																	
Drive System	Brake	Pedal		Replace																	
Drive System	Chain Case Cover			Reseal																	
Drive System	Chain Case Cover			Replace																	
Drive System	Suspension	Air Spring		Replace																	
Drive System	Steering	Ball Joint		Replace																	
Drive System	Steering	Tie Rod		Replace																	
Drive System	Steering	Tie Rod		Adjust																	
Drive System	Steering	Tie Rod	Tie Rod End	Replace																	
Drive System	Drive Shaft			Replace																	
Drive System	U-Joint			Replace																	
Drive System	Planetary			Replace																	
Drive System	Planetary			Reseal																	

TIME GUIDE

System	Sub-System	Component	Sub-Component	Action	DD138HFX	DD14S	DD158HFA	DD158HFX	DD16	DD22	DD24	DD32	DD70	DD70HF	DD90	DD90HF	SD100 C	SD100D C	SD100D TF	SD100F C
Drive System	Axle			Replace													8,00	8,00	8,00	8,00
Drive System	Axle	Wheel Stud/Nut		Replace													2,00	2,00	2,00	2,00
Drive System	Axle	Wheel	Seal	Replace													6,00	6,00	6,00	6,00
Drive System	Axle	Brakes		Replace													16,00	16,00	16,00	16,00
Drive System	Axle	Brakes		Adjust													2,00	2,00	2,00	2,00
Drive System	Axle	Bearing		Replace													16,00	16,00	16,00	16,00
Drive System	Axle	Differential		Replace															8,00	8,00
Drive System	Axle	Mount Bolts		Replace													2,00	2,00	2,00	2,00
Drive System	Axle	Oil		Replace													1,00	1,00	1,00	1,00
Drive System	Wheel/Rim			Replace													1,00	1,00	1,00	1,00
Drive System	Sprocket			Replace																
Drive System	Chain			Replace																
Drive System	Chain	Tightener		Repair																
Drive System	Brake	Disc/Drum		Replace																
Drive System	Brake	Shoe		Replace																
Drive System	Brake	Master Cylinder		Replace																
Drive System	Brake	Brake Cylinder		Replace																
Drive System	Brake	Hose		Replace																
Drive System	Brake	Hose		Reroute																
Drive System	Brake	Hose		Tighten																
Drive System	Brake	Tubeline		Replace																
Drive System	Brake	Tubeline		Tighten																
Drive System	Brake	Fitting		Replace																
Drive System	Brake	Fitting		Tighten																
Drive System	Brake	Cable		Replace																
Drive System	Brake	Park Brake Lever		Replace																
Drive System	Brake	Pedal		Replace																
Drive System	Chain Case Cover			Reseal																
Drive System	Chain Case Cover			Replace																
Drive System	Suspension	Air Spring		Replace																
Drive System	Steering	Ball Joint		Replace																
Drive System	Steering	Tie Rod		Replace																
Drive System	Steering	Tie Rod		Adjust																
Drive System	Steering	Tie Rod	Tie Rod End	Replace																
Drive System	Drive Shaft			Replace																
Drive System	U-Joint			Replace																
Drive System	Planetary			Replace													16,00	16,00	16,00	16,00
Drive System	Planetary			Reseal													25,00	25,00	25,00	25,00

TIME GUIDE

System	Sub-System	Component	Sub-Component	Action	SD105DA	SD105DX	SD105F	SD116DX	SD116F	SD122D	SD122DX	SD122F	SD160DX	SD160F	SD200DX	SD25D	SD25F	SD45D	SD45F	SD70D TF
Drive System	Axle			Replace	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00
Drive System	Axle	Wheel Stud/Nut		Replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Drive System	Axle	Wheel	Seal	Replace	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00
Drive System	Axle	Brakes		Replace	16,00	16,00	16,00	16,00	16,00	16,00	16,00	16,00	16,00	16,00	16,00	16,00	16,00	16,00	16,00	16,00
Drive System	Axle	Brakes		Adjust	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Drive System	Axle	Bearing		Replace	16,00	16,00	16,00	16,00	16,00	16,00	16,00	16,00	16,00	16,00	16,00	16,00	16,00	16,00	16,00	16,00
Drive System	Axle	Differential		Replace	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00	8,00
Drive System	Axle	Mount Bolts		Replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Drive System	Axle	Oil		Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Drive System	Wheel/Rim			Replace	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Drive System	Sprocket			Replace																
Drive System	Chain			Replace																
Drive System	Chain	Tightener		Repair																
Drive System	Brake	Disc/Drum		Replace																
Drive System	Brake	Shoe		Replace																
Drive System	Brake	Master Cylinder		Replace																
Drive System	Brake	Brake Cylinder		Replace																
Drive System	Brake	Hose		Replace																
Drive System	Brake	Hose		Reroute																
Drive System	Brake	Hose		Tighten																
Drive System	Brake	Tubeline		Replace																
Drive System	Brake	Tubeline		Tighten																
Drive System	Brake	Fitting		Replace																
Drive System	Brake	Fitting		Tighten																
Drive System	Brake	Cable		Replace																
Drive System	Brake	Park Brake Lever		Replace																
Drive System	Brake	Pedal		Replace																
Drive System	Chain Case Cover			Reseal																
Drive System	Chain Case Cover			Replace																
Drive System	Suspension	Air Spring		Replace																
Drive System	Steering	Ball Joint		Replace																
Drive System	Steering	Tie Rod		Replace																
Drive System	Steering	Tie Rod		Adjust																
Drive System	Steering	Tie Rod	Tie Rod End	Replace																
Drive System	Drive Shaft			Replace																
Drive System	U-Joint			Replace																
Drive System	Planetary			Replace	16,00	16,00	16,00	16,00	16,00	16,00	16,00	16,00	16,00	16,00	16,00	16,00	16,00	16,00	16,00	16,00
Drive System	Planetary			Reseal	25,00	25,00	25,00	25,00	25,00	25,00	25,00	25,00	25,00	25,00	25,00	25,00	25,00	25,00	25,00	25,00

TIME GUIDE

System	Sub-System	Component	Sub-Component	Action	SD77DA	SD77DX	SD77F	TC13	PT125R	PT240
Drive System	Axle			Replace	8,00	8,00	8,00		4,00	4,00
Drive System	Axle	Wheel Stud/Nut		Replace	2,00	2,00	2,00			
Drive System	Axle	Wheel	Seal	Replace	6,00	6,00	6,00			
Drive System	Axle	Brakes		Replace	16,00	16,00	16,00			
Drive System	Axle	Brakes		Adjust	2,00	2,00	2,00			
Drive System	Axle	Bearing		Replace	16,00	16,00	16,00			
Drive System	Axle	Differential		Replace	8,00	8,00	8,00			
Drive System	Axle	Mount Bolts		Replace	2,00	2,00	2,00			
Drive System	Axle	Oil		Replace	1,00	1,00	1,00			
Drive System	Wheel/Rim			Replace	1,00	1,00	1,00		3,00	3,00
Drive System	Sprocket			Replace						0,25
Drive System	Chain			Replace						0,25
Drive System	Chain	Tightener		Repair						0,25
Drive System	Brake	Disc/Drum		Replace						6,00
Drive System	Brake	Shoe		Replace						6,00
Drive System	Brake	Master Cylinder		Replace						2,00
Drive System	Brake	Brake Cylinder		Replace						6,00
Drive System	Brake	Hose		Replace						1,00
Drive System	Brake	Hose		Reroute						1,00
Drive System	Brake	Hose		Tighten						0,50
Drive System	Brake	Tubeline		Replace						1,00
Drive System	Brake	Tubeline		Tighten						0,50
Drive System	Brake	Fitting		Replace						1,00
Drive System	Brake	Fitting		Tighten						0,50
Drive System	Brake	Cable		Replace						2,00
Drive System	Brake	Park Brake Lever		Replace						1,00
Drive System	Brake	Pedal		Replace						2,00
Drive System	Chain Case Cover			Reseal						
Drive System	Chain Case Cover			Replace						
Drive System	Suspension	Air Spring		Replace					4,00	
Drive System	Steering	Ball Joint		Replace						
Drive System	Steering	Tie Rod		Replace						0,50
Drive System	Steering	Tie Rod		Adjust						0,50
Drive System	Steering	Tie Rod	Tie Rod End	Replace						0,50
Drive System	Drive Shaft			Replace						3,00
Drive System	U-Joint			Replace						3,00
Drive System	Planetary			Replace	16,00	16,00	16,00			
Drive System	Planetary			Reseal	25,00	25,00	25,00			

TIME GUIDE

System	Sub-System	Component	Sub-Component	Action	CR24	CR30	CR32	CR34	CR36	CR70	DD110	DD110HF	DD112	DD118HF	DD118HFA	DD118HFX	DD12S	DD130	DD130HF	DD132HF	DD138HF	DD138HFA	DD138HFX	DD14S
Water	System	Filter	Element	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Water	System	Filter Assembly		Replace	2,00	2,00	2,00	2,00	2,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	2,00
Water	System	Fitting		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Water	System	Fitting		Tighten	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Water	System	Line / Piping		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Water	System	Line / Piping		Repair	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Water	System	Tank		Replace	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50
Water	System	Tank	Fill Strainer	Replace						0,50	0,50	0,50	0,50	0,50	0,50	0,50		0,50	0,50	0,50	0,50	0,50	0,50	
Water	System	Valve, Shut-off		Replace	2,00	2,00	2,00	2,00	2,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	2,00
Water	System	Flow Control Valve		Replace	2,00	2,00	2,00	2,00	2,00					1,00	1,00	1,00	2,00				1,00	1,00	1,00	2,00
Water	System	Mounting Bracket		Replace									2,00	2,00	2,00	2,00				2,00	2,00	2,00	2,00	
Water	System	Pump		Replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00		2,00	2,00	2,00	2,00	2,00	2,00	2,00
Water	System	Spray Bar		Replace	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50
Water	System	Spray Bar	Nozzle	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50		0,50	0,50	0,50	0,50	0,50	0,50	0,50
Water	System	Tank	Cap	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Water	System	Misc		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

TIME GUIDE

System	Sub-System	Component	Sub-Component	Action	DD158HFA	DD158HFX	DD16	DD22	DD24	DD32	DD70	DD70HF	DD90	DD90HF	SD105DA	SD77DA	PT125R	PT240
Water	System	Filter	Element	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Water	System	Filter Assembly		Replace	1,00	1,00	2,00	2,00	2,00	2,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Water	System	Fitting		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Water	System	Fitting		Tighten	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Water	System	Line / Piping		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Water	System	Line / Piping		Repair	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Water	System	Tank		Replace	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50
Water	System	Tank	Fill Strainer	Replace	0,50	0,50					0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Water	System	Valve, Shut-off		Replace	1,00	1,00	2,00	2,00	2,00	2,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Water	System	Flow Control Valve		Replace	1,00	1,00	2,00	2,00	2,00	2,00								
Water	System	Mounting Bracket		Replace	2,00	2,00												
Water	System	Pump		Replace	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Water	System	Spray Bar		Replace	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50
Water	System	Spray Bar	Nozzle	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Water	System	Tank	Cap	Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
Water	System	Misc		Replace	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

This is a time guide for RM ABG Paving systems.

This time guide is **not** created with the conditions that we described for the normal time guide.

All times in this list has also a different layout comparing to the normal time guide.

There are no operation numbers for the jobs available.

This is a temporary solution to help our dealers with information and when new machines are released they will be found in the normal time guide and with a related repair method connected.

This Time Guide will only be available in English and in PDF format.

Machines covered in this list are:

Screeds:

VB30, VB78, VB88, VDT-V78, VDT V-88, MB120, MB122, VDT120, VDT 121

Pavers.

ABG 5770, ABG 5870, ABG 6870, ABG 2820, ABG 5820, ABG 6820ABG 7820, ABG 8820, ABG 9820

Warranty Job Codes Screeds

	Time target VB 30	Time target Extension VB 30	Time target VB 78	Time target VB 88	Time target Extesion VB	Time target VDT-V78	Time target VDT-V 88	Time target Extension VDT-V	Time target MB 122	Time target MB120	Time target Extension MB	Time target VDT121	Time target VDT120	Time target Extension VDT	Time target Vario Screed MB/VDT
Screed dismount	2	0,5	2	2	0,5	2	2	0,5	2	2	1	2	2	1	2
Screed dismantled and cleaning	8	3	8	8	3	12	12	3	3	3	3	4	4	3	4
Tamper Bearing replace	4		4	4	4	8	8	8	4	4	4	8	8	8	4
Vibration Bearing replace	1		1	1	1	1	1	1	1	1	1	1	1	1	1
Wearing Bar u. Base-Plate replace	12	1	12	12	1	12	12	1	6	6	2	6	6	2	4
Gas-Hose replace			2	2	0,5	2	2	0,5	0,5	0,5	0,5	0,5	0,5	0,5	1,5
Gasheating repair			2	2	2	2	2	2	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Baffle-Plate replace			3	3	3	3	3	3							1
Tamper Knife replace and adjust	6	1	6	6	1,5	9	9	2	3	3	1,5	4	4	1,5	3
Tamper-Plate flattening /replace		1		1					1	1	1	2	2	2	2
Center Rocker Bearing replace	5		5	5		5	5		5	5		5	5		
Vario Cylinder repair	1		1	1		1	1								1
Guide Ring replace	4		4	4		4	4								2
Hydraulic-Motor repair /replace	1		1	1		1	1			1		1	1		1
V-Belt Tamper									1	1		1	1		
V-Belt Vibration									1	1		1	1		
Synchronizing Cylinder replace			3	3		3	3								
Greace-Hose replace			1	1	1	1	1	1							1
Connection Block for Hydr.-Hose			3	3		3	3		2	2					3
Hydraulic Hose replace	0,5		0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5		0,5	0,5		0,5
Distrupor-Bocks with Cable replace/repair	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5							1,5
Flat Tube Heating Elementan (Tamper Knife)	2	1	2	2	2	2	2	2							
Flat Tube Heating Element (Base Plate)	2	2	2	2	2	2	2	2							
Heating System kplt. Check	0,5		0,5	0,5		0,5	0,5		0,5	0,5		0,5	0,5		
Catwalk flattening	1	1	1	1	1	1	1	1	0,5	0,5	1	0,5	0,5	1	1
End-Plates flattening	1	1	1	1	1	1	1	1	0,5	0,5		0,5	0,5		0,5
Lateral Limitation repair	2		2	2		2	2		3	3		3	3		
Screed attach	2	1	2	2	0,5	2	2	0,5	2	2		2	2		2
Crown Control repair	3		3	3		3	3		3	3		3	3		
Hydr.Heigth Adjustment Ext.Screed			1	1		1	1								
Hydr.Heigth Adjustment Ext.Screed			1	1		1	1								
Hydr.Heigth Adjustment Ext.Screed			2	2		2	2								
Hydr.Heigth Adjustment Ext.Screed					2			2							
Screed with Articulated Join VB891				8			8								
Auger Element u.Screw Replace		0,5			0,5			0,5			0,5			0,5	
Support Plates cleaning u.repair		0,5			1			1			2			2	
Brace cleaning und flattening					1,5			1,5			1,5			1,5	
Channel Plates cleaning and repair			1,5	1,5		1,5	1,5	1							
Control Line für ASS replace	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Screed Cover repair	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Screed adjust	0,5		0,5	0,5		0,5	0,5		0,5	0,5		0,5	0,5		
Screed adjust		0,5			0,5			0,5			0,5			0,5	0,5

Hydraulics ABG PAVER

System	Sub-System	Component	Sub-Component	Action	ABG 5770	ABG 5870	ABG6870	ABG 2820	ABG 5820	ABG 6820	ABG 7820	ABG 8820	ABG 9820
Hydraulic	Cylinder	Auger Lift		Replace	1	1	1	1	1	1	1	1	2
Hydraulic	Cylinder	Auger Lift		Repair	2	2	2	2	2	2	2	2	4
Hydraulic	Cylinder	Hopper		Replace	1	1	1	1	1	1	1	1	1
Hydraulic	Cylinder	Hopper		Repair	2	2	2	2	2	2	2	2	2
Hydraulic	Cylinder	Screed Lift		Replace	1	1	1	1	1	1	1	1	1
Hydraulic	Cylinder	Screed Lift		Repair	2	2	2	2	2	2	2	2	2
Hydraulic	Cylinder	Screed Load Device	one Cylinder	Replace			1				1	1	1
Hydraulic	Cylinder	Screed Load Device	one Cylinder	Repair			2				2	2	2
Hydraulic	Cylinder	Screed Tensioning Device		Replace			1				1	1	1
Hydraulic	Cylinder	Screed Tensioning Device		Repair			2				2	2	2
Hydraulic	Cylinder	Steering		Replace	4	4	4						
Hydraulic	Cylinder	Tow Point		Replace	1	1	1	1	1	1	1	1	1
Hydraulic	Cylinder	Tow Point		Repair	2	2	2	2	2	2	2	2	2
Hydraulic	Motor	Auger		Replace	2	2	2	2	2	2	2	2	2
Hydraulic	Motor	Auger	only Shaft Seal	Repair							1,5	0,5	0,5
Hydraulic	Motor	Conveyor		Replace	6	6	6	4	4	4	4	2	2
Hydraulic	Motor	Conveyor	only Shaft Seal	Repair								0,5	0,5
Hydraulic	Motor	Fan, Cooling		Replace	2	2	2	2	2	2	2	2	
Hydraulic	Motor	Fan, Cooling	Seal Kit	Repair	1	1	1	1	1	1	1	1	
Hydraulic	Motor	Front Wheel Assist	one Motor	Replace	2	2	2						
Hydraulic	Motor	Front Wheel Assist	one Motor Seal Kit	Repair	3	3	3						
Hydraulic	Motor	Travel	one Site	Replace	8	8	8	8	8	8	8	8	8
Hydraulic	Motor	Travel	only Shaft Seal	Repair	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Hydraulic	Motor	Smokeater	one Site	Replace	4	4	4	4	4	4	4	4	4
Hydraulic	Motor	Smokeater	Seal Kit	Repair	1	1	1	1	1	1	1	1	1
Hydraulic	Motor	Front Wheel Drive	one Motor	Replace	2	2	2						
Hydraulic	Oil Cooler			Replace	6	6	6	6	6	6	6	6	6
Hydraulic	Tank	Filter	alle Hy.Filter	Replace	1	1	1	1	1	1	1	1	1,5
Hydraulic	Tank	Filter Head		Replace				1					2
Hydraulic	Tank	Filter Head	Pressure Switch	Replace	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25
Hydraulic	Tank	Filter Head	Indicator Switch	Replace	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25
Hydraulic	Tank	Fitting	one	Replace	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25
Hydraulic	Tank	Fitting	ale Fittings	Tighten	2	2	2	2	2	2	2	2	2
Hydraulic	Tank	Hose	one	Replace	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Hydraulic	Tank	O Ring		Replace	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Hydraulic	Pump	Auger		Replace	4	4	4	4	4	4	4	4	4
Hydraulic	Pump	Auger	only Shaft Seal	Repair	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	
Hydraulic	Pump	Conveyor		Replace	2	2	2	2	2	2	2	2	2
Hydraulic	Pump	General Purpose		Replace	2	2	2	2	2	2	2	2	2
Hydraulic	Pump	Cylinder		Replace	2	2	2	2	2	2	2	2	2
Hydraulic	Pump	Travel	one	Replace	5	5	5	5	5	5	5	5	5
Hydraulic	Pump	Travel	only Shaft Seal	Repair	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Hydraulic	Pump	Front Wheel Drive		Replace	2	2	2						
Hydraulic	Reservoir	Breather		Replace	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25
Hydraulic	Reservoir	Oil Level Indicator		Replace	1	1	1	1	1	1	1	1	1
Hydraulic	Reservoir	Temperature sender		Replace	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25
Hydraulic	Reservoir			Replace	16	16	16	16	16	16	16	16	16

Hydraulics ABG PAVER

System	Sub-System	Component	Sub-Component	Action	ABG 5770	ABG 5870	ABG6870	ABG 2820	ABG 5820	ABG 6820	ABG 7820	ABG 8820	ABG 9820
Hydraulic	Reservoir			Repair									1
Hydraulic	Reservoir			Clean	3	3	3	3	3	3	3	3	3
Hydraulic	Valve	Brake Valve		Replace	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5
Hydraulic	Valve	Brake	Solenoid	Replace	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25
Hydraulic	Valve	Cooler Bypass		Replace	2	2	2	2	2	2	2	2	2
Hydraulic	Valve	Cylinder	Main Valve	Replace	3	3	3	3	3				
Hydraulic	Valve	Main Control	Main Valve	Reseal						3	3	3	3
Hydraulic	Valve	Auger	Main Valve	Replace	3	3	3	3	3	3	3		
Hydraulic	Valve	Auger	one Site	Replace								1,5	1,5
Hydraulic	Valve	Conveyor	Valve Block	Replace	4	4	4	4	4	4	4	2	2
Hydraulic	Valve	Steering		Replace	2	2	2						
Hydraulic	Valve	Tow Point		Replace	1	1	1	1	1	1	1	1	1
Hydraulic	Valve	Track Adjuster		Replace				1,5	1,5	1,5	1,5	1,5	1,5
Hydraulic	Valve	Screed Load Device		Replace			2				2	2	2
Hydraulic	Valve	Screed Tensioning Device		Replace			2				2	2	2
Hydraulic	Valve	Screed Assist		Replace	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	2,5
Hydraulic	Valve	Front Wheel Drive		Replace	2	2	2	2	1,5	1,5	1,5	1,5	1,5

Structural ABG Paver

System	Sub-System	Component	Sub-Component	Action	ABG 2820	ABG 5820	ABG 6820	ABG 7820	ABG 8820	ABG9820	ABG 5770	ABG 5870	ABG 6870
Structural	Operators Platform	Seat		Replace	1	1	1	1	1	1	1	1	1
Structural	Operators Platform	Seat swivel/slide		Replace	1	1	1	1	1	1	1	1	1
Structural	Operators Platform	Console		Replace	2	2	2	2	2	2	2	2	2
Structural	Frame	Misc.		Repair	2	2	2	2	2	2	2	2	2
Structural	Frame	Misc.		Repaint	2	2	2	2	2	2	2	2	2
Structural	Frame	Misc.		Reweld	2	2	2	2	2	2	2	2	2
Structural	Frame	Auger Box		Replace	4	5	5	5	6	8	6	6	6
Structural	Frame	Auger Box	one Site	Repair	4	4	4	4	4	4	4	4	4
Structural	Frame	Auger Box		Repaint	1	1	1	1	1	1	1	1	1
Structural	Frame	Hood		Replace		1	1	1	1	4			
Structural	Frame	Hood support		Replace	1	1	1	1	1	1	1	1	1
Structural	Frame	Grill		Replace	1	1	1	1	1	1	1	1	1
Structural	Frame	Grill		Repaint	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Structural	Frame	Fender	one Site	Repair	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Structural	Frame	Fender	one Site	Replace	1	1	1	1	1	1	1	1	1
Structural	Generator			Replace	1,5	2	2	2	2	2	2	2	2
Structural	Generator	V-Belt		Replace	0,5	1	1	1	1	1	1,5	1,5	1,5
Structural	EL-heating	Switc Cabinet		Replace	1	1	1	1	1	1	1	1	1
Structural	Arm	Screed	one Site	Replace	3	2	2	2	2	2	2	2	2
Structural	Auger	Shaft	one Site	Replace	2	2	2	2	2	2	2	2	2
Structural	Auger	Segment	one	Replace	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25
Structural	Material Conveyoyr	Conveyor Chain	one Site	Replace	5	5	5	5	5	5	5	5	5
Structural	Material Conveyoyr	Conveyor Chain	Segment	Repair	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Structural	Material Conveyoyr	Base Plate		Replace	8	8	8	8	8	8	8	8	8
Structural	Material Conveyoyr	Drive Shaft	one Site	Replace	4	4	4	4	4	4	4	4	4
Structural	Material Conveyoyr	Drive Shaft	one Site	Repair	2	2	2	2	2	2	2	2	2
Structural	Material Conveyoyr	Tensioning Unit	one Site	Replace	0,5	4	4	4	4	4	4	4	4
Structural	Material Conveyoyr	Tensioning Unit	one Site	Repair	0,5	1	1	1	1	1	1	1	1
Structural	Material Conveyoyr	Chain Guard		Replace	8	8	8	8	8	8	8	8	8
Structural	Chain Case/Cover			Repair	1	1	1	1	1	1	1	1	1
Structural	Hopper	Wing	one Site	Replace	1	1	3	3	3	3	3	3	3
Structural	Hopper	Wing		Repair	1	1	1	1	1	1	1	1	1
Structural	Hopper	Lock		Replace	1	1	1	1	1	1	1	1	1
Structural	Oscillating Cross Beam			Replace	2	1	1	1	1	1	1	1	1
Structural	Oscillating Cross Beam			Repair	3	3	3	3	3	3	3	3	3
Structural	Central Lubrication Pump			Replace		1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5
Structural	Central Lubrication Pump			Repair		1	1	1	1	1	1	1	1
Structural	Central Lubrication	Grease Distruptor		Replace		2	2	2	2	2	2	2	2
Structural	Central Lubrication	Grease Distruptor		Repaire		1	1	1	1	1	1	1	1
Structural	Central Lubrication	Misc.		Repaire		1	1	1	1	1	1	1	1

Engine ABG Paver

System	Sub-System	Component	Sub-Component	Action	ABG 2820	ABG 5820	ABG 6820	ABG 7820	ABG 8820	ABG 9820	ABG 5770	ABG 5870	ABG 6870
Engine	Cooling	Alternator Belt		Replace	1	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5
Engine	Cooling	Alternator Belt		Adjust	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	
Engine	Cooling	Radiator		Replace	4	4	4	4	4	4	4	4	4
Engine	Cooling	Radiator	Cap	Replace	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Engine	Cooling	Radiator	Hose	Replace	1,5	2	2	2	2	2	2	2	2
Engine	Cooling	Radiator	Clamp	Replace	1	1	1	1	1	1	1	1	1
Engine	Cooling	Radiator	Clamp	Tighten	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Engine				Replace	16	24	24	24	24	36	24	24	24
Engine	Exhaust	Exhaust Pipe		Replace	2	2	2	2	2	2	2	2	2
Engine	Exhaust	Exhaust Pipe		Tighten	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Engine	Exhaust	Exhaust Pipe	Gasket	Replace	2	2	2	2	2	2	2	2	2
Engine	Exhaust	Exhaust Pipe	Clamp	Tighten	1	1	1	1	1	1	1	1	1
Engine	Exhaust	Exhaust Pipe	Clamp	Replace	1	1	1	1	1	1	1	1	1
Engine	Fuel	Cap		Replace	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Engine	Fuel	Filter		Replace	0,5	1	1	1	1	1	1	1	1
Engine	Fuel	Fuel Line/Hose		Replace	1	1,5	1,5	1,5	01-jan	1,5	1,5	1,5	1,5
Engine	Fuel	Fuel Line/Hose		Reroute	1	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5
Engine	Fuel	Fuel Line/Hose	Clamp	Tighten	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Engine	Fuel	Fuel Line/Hose	Clamp	Replace	1	1	1	1	1	1	1	1	1
Engine	Fuel	Fuel Line/Hose	Fitting	Tighten	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Engine	Fuel	Fuel Line/Hose	Fitting	Replace	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Engine	Fuel	Fuel Tank		Replace	2	4	4	4	4	4	4	4	4
Engine	Intake	Air Cleaner		Replace	2	2	2	2	2	2	2	2	2
Engine	Intake	Air Cleaner	Hose	Replace	2	2	2	2	2	2	2	2	2
Engine	Intake	Air Cleaner	Clamp	Replace	1	1	1	1	1	1	1	1	1
Engine	Intake	Air Cleaner	Clamp	Tighten	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Engine	Intake	Air Cleaner	Air Filter	Replace	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Engine	Intake	Air Cleaner	Condition Indicator	Replace	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5

Drive System ABG Paver

System	Sub-System	Component	Sub-Component	Action	ABG 5770	ABG 5870	ABG6870	ABG 2820	ABG 5820	ABG6820	ABG 7820	ABG 8820	ABG 9820
Drive System	Chain	Tightener		Repair				6	6	6	6	6	6
Drive System	Chain			Replace				2	2	2	2	2	2
Drive System	Forward/Reverse Lever			Replace	2	2	2	2	2	2	2	2	2
Drive System	Pump Drive	Gearbox		Replace	8	8	8		8	8	8	12	12
Drive System	Pump Drive	Gearbox		Reseal	4	4	4		4	4	4	4	4
Drive System	Steering	Tie Rod		Replace	3	3	3						
Drive System	Steering	Tie Rod		Adjust	1	1	1						
Drive System	Suspension	A-Arm Assy		Replace	16	16	16						
Drive System	Tire			Replace	4	4	4						
Drive System	Track	Drive Wheel		Replace	4	4	4						
Drive System	Track	Front Idler	bearing/seal	Replace				8	8	8	8	8	8
Drive System	Track	Front Idler		Replace				4	4	4	4	4	4

Electrical ABG Paver

System	Sub-System	Component	Sub-Component	Action	ABG2820	ABG 5820	ABG 6820	ABG 7820	ABG 8820	ABG 9820	ABG 5770	ABG5870	ABG 6870
Electrical	Controls	Grade Sensor		Replace	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Electrical	Controls	Grade/Slope Controller		Replace	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Electrical	Controls	Slope Sensor		Replace	1	1	1	1	1	1	1	1	1
Electrical	Controls	Ultra Eye 5		Replace	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Electrical	Engine	Alternator		Replace	3	3	3	3	3	3	3	3	3
Electrical	Engine	Battery		Replace	1	1	1	1	1	1	1	1	1
Electrical	Engine	Battery Cable		Replace	2	2	2	2	2	2	2	2	2
Electrical	Engine	Fuse/Circuit Breaker		Replace	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Electrical	Engine	Harness		Replace	8	8	8	8	8	8	8	8	8
Electrical	Engine	Harness		Repair	1	1	1	1	1	1	1	1	1
Electrical	Engine	Harness		Reroute	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5
Electrical	Engine	Oil Pressure Switch		Replace	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Electrical	Engine	Relay		Replace	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Electrical	Engine	RPM Sensor		Replace	1	1	1	1	1	1	1	1	1
Electrical	Engine	Solenoid	Starter	Replace	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Electrical	Engine	Temperature Sender		Replace	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Electrical	Fuel	Fuel Level Sender		Replace	1	1	1	1	1	1	1	1	1
Electrical	Generator	Harness		Replace	1	1	1	1	1	1	1	1	1
Electrical	Generator			Replace	2	4	4	4	4	4	4	4	4
Electrical	Hydraulic	Valves	Solenoid	Replace	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Electrical	Hydraulic	Temperature Sender		Replace	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Electrical	Operator Area	Backup Alarm		Replace	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Electrical	Operator Area	Emergency Stop Button		Replace	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Electrical	Operator Area	Forward/Reverse Lever		Replace	2	2	2	2	2	2	2	2	2
Electrical	Operator Area	Harness		Replace	2	2	2	2	2	2	2	2	2
Electrical	Operator Area	Horn		Replace	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Electrical	Operator Area	Indicator light		Replace	1						1	1	1
Electrical	Operator Area	Insturmant Panel		Replace	0,5	0,5	0,5	0,5	0,5	0,5	1,5	1,5	1,5
Electrical	Operator Area	Insturmant Panel	Potentiometer	Replace	2	2	2	2	2	2			
Electrical	Operator Area	Switch, Ignition		Replace	1	1	1	1	1	1	1	1	1
Electrical	Operator Area	Work Light		Replace	2	2	2	2	2	2	2	2	2
Electrical	Tractor	Control Station Box	Misc.	Repair	1	1	1	1	1	1	1	1	1

REF NR REF NO	SATS NR KIT NO	DATUM/DATE ENHET/DEPT	PRODUKT/PRODUCT	PAGE
65 4 779 3631	11705492 (93799)	200212 CML-32	L50D, L70D, L90D, L120D, L120E, L150D, L150E, L180D, L180E, L220D, L220E	1/2

Rotating warning beacon



WARNING!

Read all signs and instructions on the machine and the safety instructions in the operators manual, before you start working on the machine.

The installation instructions are based on the use of special tools, the E-tool and standard tools generally available on the market, and also on our operators manuals and service manuals.

The equipment should be installed by qualified personnel of an authorised workshop.

Volvo Construction Equipment Group disclaims all responsibility if tools and work methods other than those described in the instructions are used.

We consider that no special installation instructions are required for fitting this equipment.

To facilitate the fitting we enclose:

- Kit list
- Installation drawing

Kit list

Qty.	Part no.	Description	Remark
2	930428	Spacer ring	
3	946671	Flange screw	M8 x 30 without spotlight
1	4803455	Switch	SW305
2	4881440	Strip clamp	
1	11039140	Lens	
1	11039291	Rotating warning beacon	
1	11104111	Decal	
2	11104399	Rubber washer	
1	11104607	Release mechanism	
2	13960141	Washer	
1	13967545	Fuse	
3	19976154	Bolt	

REF NR REF NO	SATS NR KIT NO	DATUM/DATE ENHET/DEPT	PRODUKT/PRODUCT	PAGE
65 4 779 3631	11705492 (93799)	200212 CML-32	L50D, L70D, L90D, L120D, L120E, L150D, L150E, L180D, L180E, L220D, L220E	2/2

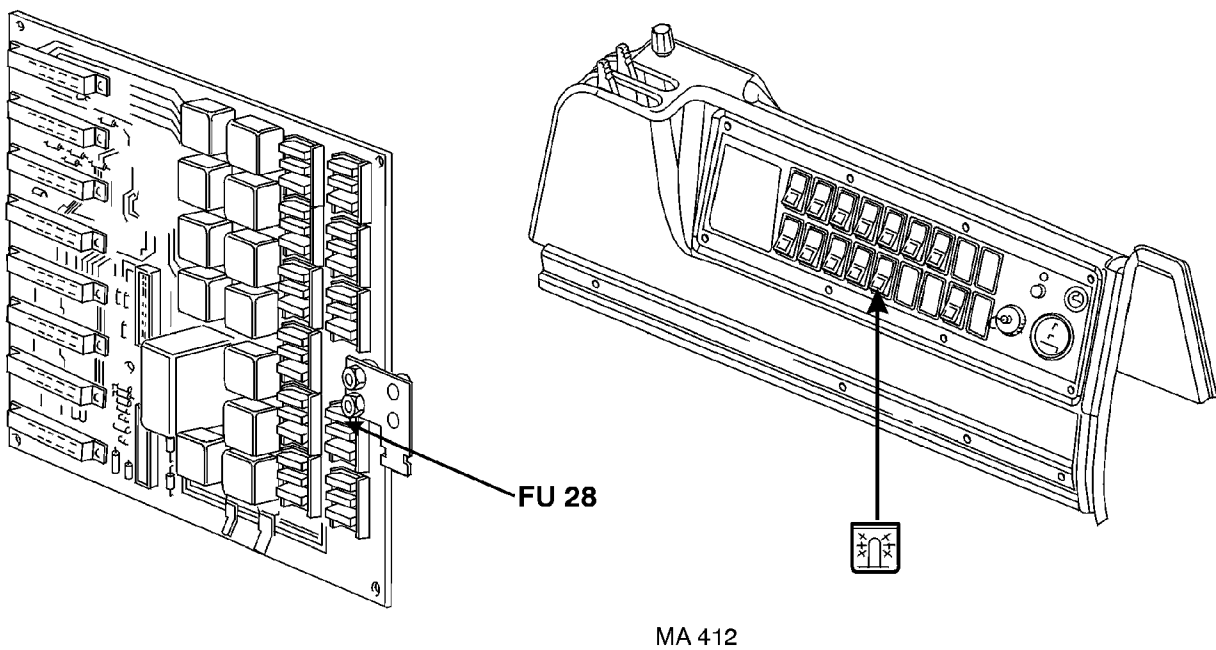
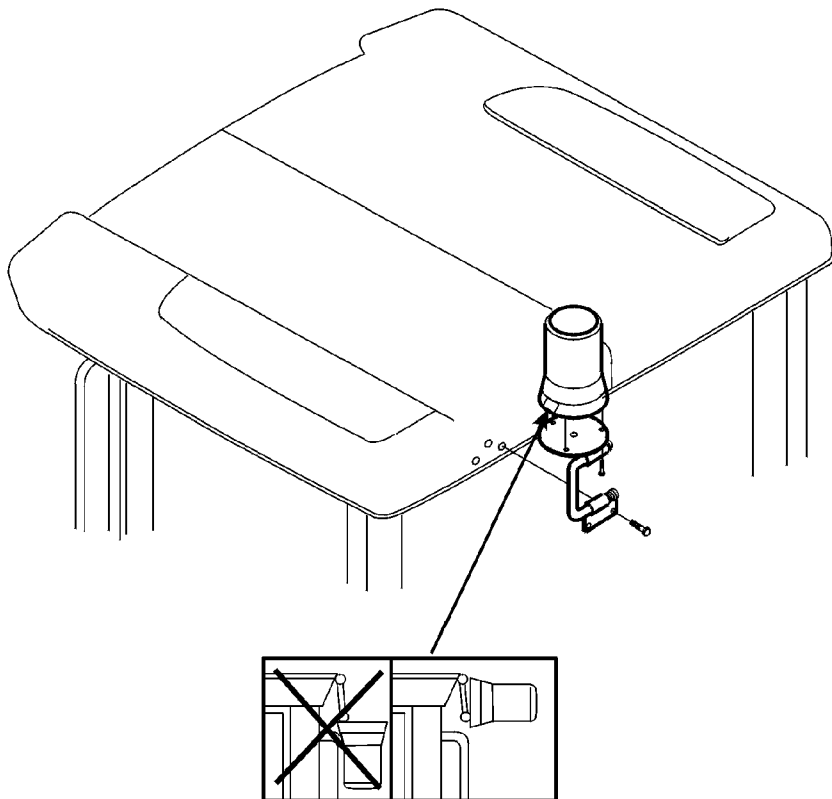


Fig. 1

REF NR REF NO	SATS NR KIT NO	DATUM/DATE ENHET/DEPT	PRODUKT/PRODUCT	PAGE
65 4 779 3631	11705492 (93799)	200212 CML-32	L50D, L70D, L90D, L120D, L120E, L150D, L150E, L180D, L180E, L220D, L220E	1/2

Roterande varningsljus



VARNING!

Läs alla skyltar och anvisningar som finns på maskinen och säkerhetsinstruktionerna i instruktionsboken innan Du börjar arbetet på maskinen.

Monteringsanvisningen är baserad på användning av specialverktyg, E-verktyg och i allmänna handeln tillgängliga standardverktyg samt instruktions- och verkstadshandböcker.

Utrustningen ska monteras av behörig person på auktoriserad verkstad.

Volvo Constuction Equipment Group fransäger sig allt ansvar om andra verktyg eller arbetsmetoder än de i anvisningen beskrivna kommer till användning.

För montering av denna utrustning anser vi, att någon speciell monteringsanvisning inte erfordras.

För underlättande av montering bifogar vi:

- Satslista
- Monteringsbild

Satslista

Antal	Art.nr.	Benämning	Anmärkning
2	930428	Distansring	
3	946671	Flänsskruv	M8 x 30 utan arbetsstrålkastare
1	4803455	Strömställare	SW305
2	4881440	Bandklamma	
1	11039140	Lins	
1	11039291	Roterande varningsljus	
1	11104111	Dekal	
2	11104399	Gummibricka	
1	11104607	Fällningsanordning	
2	13960141	Bricka	
1	13967545	Smältsäkring	
3	19976154	Skruv	

REF NR REF NO	SATS NR KIT NO	DATUM/DATE ENHET/DEPT	PRODUKT/PRODUCT	PAGE
65 4 779 3631	11705492 (93799)	200212 CML-32	L50D, L70D, L90D, L120D, L120E, L150D, L150E, L180D, L180E, L220D, L220E	2/2

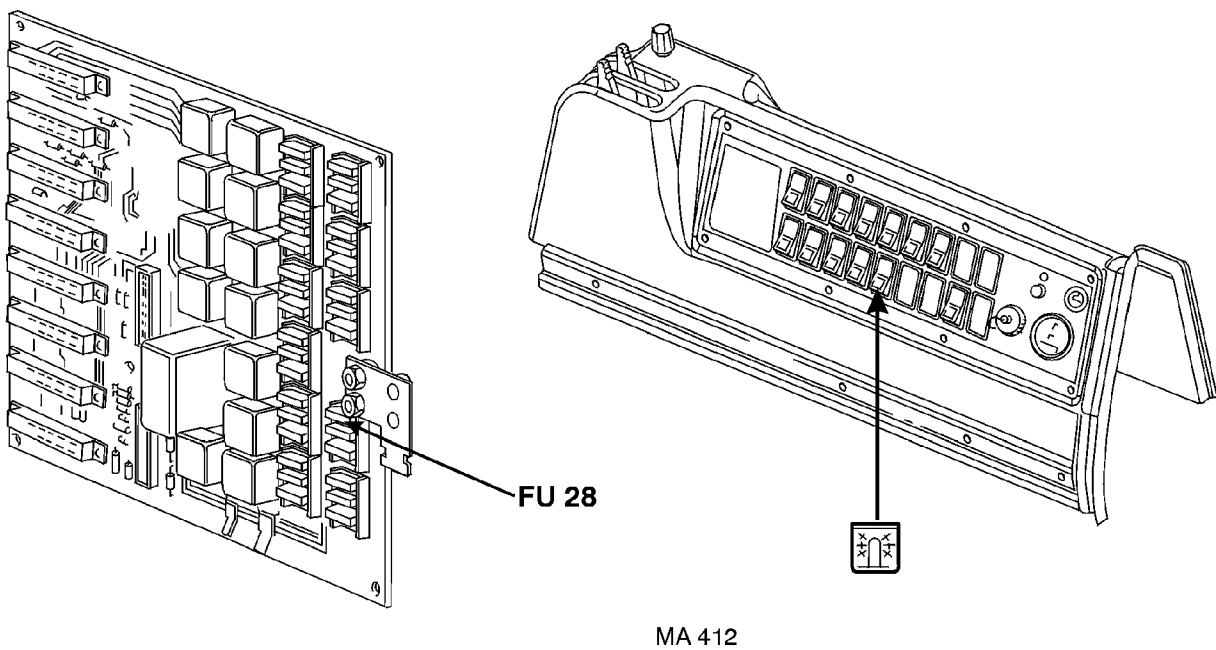
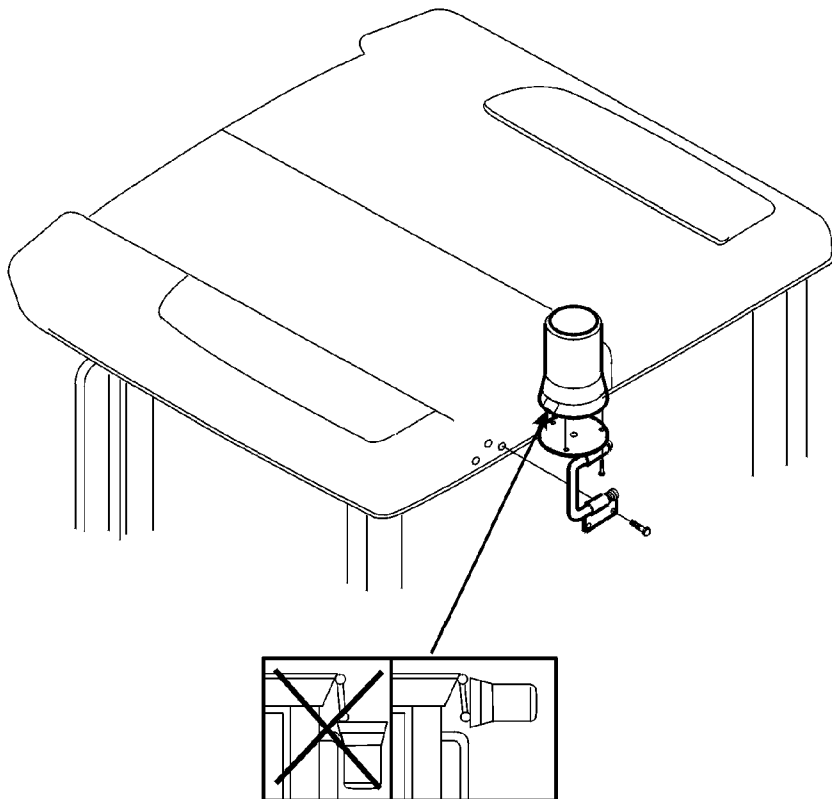


Fig. 1

Safety filter (secondary filter)

<https://truckmanualshub.com/>

The secondary filter acts as a safety filter if there is no primary filter.

If the warning lamp comes on, even though the primary filter has been changed or cleaned, it indicates that the secondary filter is clogged.

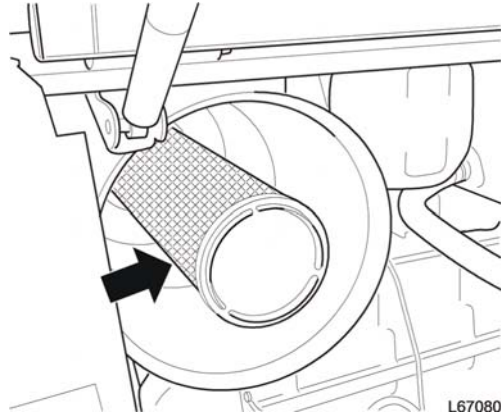


Figure 1

Safety filter (secondary filter)

The secondary filter must always be changed, never cleaned.

Also change the secondary filter when the primary filter has been changed three times, but not later than every 2000 hours.

Never remove the secondary filter if it is not to be changed.

Language Code GB	Product WLO	Group 900	https://truckmanualshub.com/	No. 8	Version 1	Date 06/21/2007
Applies to Wheel Loaders						

Seals



WARNING

Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.

Cause

"O-ring Face Seal fittings" (ORFS) have been used for about 20 years and have assisted in eliminating leaks in coupling systems. The ORFS coupling has always been a matter of discussion because of its ability of "loosing" the O-ring during transport or installation. After the problem of lost O-rings was solved through the introduction of CORG, encased O-rings, the next step in the development was finding a way of solving the problem with O-rings that slipped out of their location during installation of pipes.

(missing infotext)

A trapezoidal seal, Trap Seal, has turned out to counteract the tendency of seals slipping out of their locations during installation of pipes.



Figure 1

Trapezoidal seal, Trap Seal

The seal is trapezoidal for optimum seal between pipe and coupling. This eliminates the risk of the seal falling out or becoming pinched during installation. The Trap Seal is symmetrical and can be installed from either side.

When installing trapezoidal seals, it is important to make sure that the seal is correctly installed.

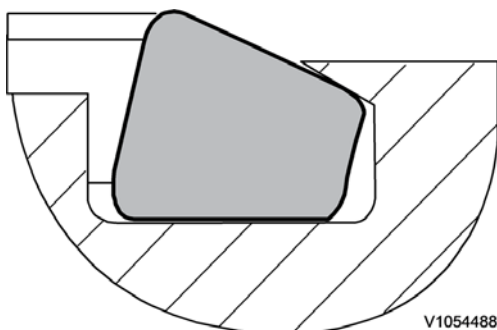


Figure 2

Correctly installed trapezoidal seal

As spare part, both standard shaped O-ring as well as trapezoidal seal may be used, if the coupling is of the CORG-type. Today trapezoidal seals are used to some extent in production, but will be gradually introduced fully.

Language Code GB	Product WLO	Group 647	https://truckmanualshub.com/	No. 2	Version 1	Date 08/30/2002
Applies to L50C Volvo, L50C Volvo BM, L50D Volvo, L70C Volvo, L70C Volvo BM, L70D Volvo, L90C Volvo, L90C Volvo BM, L90D Volvo, L120C Volvo, L120C Volvo BM, L120D Volvo, L150C Volvo, L150C Volvo BM, L150D Volvo, L180C Volvo, L180C Volvo BM, L180D Volvo, L220D Volvo, L220E Volvo						

Secondary steering: Introduction of non-return valve



WARNING

Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This SB is to be considered as a technical information and comprises normal warranties within the rules for the same.

The following non-return valve has been introduced to avoid damage to the valve block on the hydraulic pump for the secondary steering.

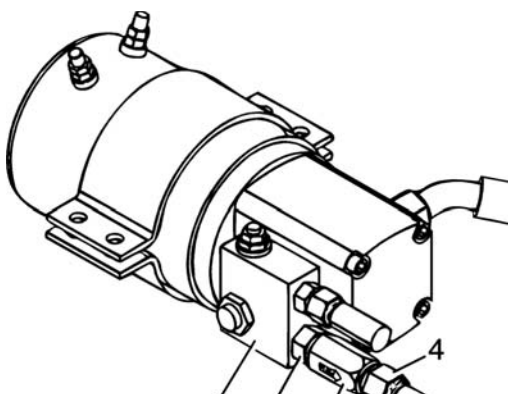


Figure 1

1. Valve block
2. Existing nipple
3. Non-return valve
4. Existing hose

L50D–L180D

The non-return valve for L50D–L180D, with part No. 11173385, has been introduced in running production w.e.fr. the serial numbers in table 1.

Non-return valve 11173385 introduced

Machine	W.e.fr. serial No.
L50D	13736–
L70D	19002–
L90D	18118–
L120D	15271–
L150D	5840–
L180D	4714–

L220E

The non-return valve for L220E, with part No. 11173386, has been introduced in running production w.e.fr. serial No. 2221–.

For previously supplied L220E machines, and for earlier machines belonging to the C and D generation it is recommended that, if crack formation has occurred on the hydraulic pump valve block, also these should be modified according to Fig. 1 in connection with a subsequent repair.

NOTE!

Also in connection with modification non-return valve with part No. 11173385 should be used for L50C/D–L180C/D and non-return valve with part No. 11173386 be used for L220D/E.

Secondary steering

<https://truckmanualshub.com/>

The purpose of the function is to make it possible for the operator to steer the machine when the primary steering pump fails and to notify the operator if there is a malfunction in the primary steering system or if there is a system malfunction.

The secondary steering pump is also engaged when the capacity of the primary steering pump is insufficient, such as at low engine speeds.

Input signals	Output function conditions	Output functions
○ Secondary steering installed ○ Control test secondary steering, SW601 ○ Differential pressure secondary steering, SE601 ○ Steering pressure, SE602 ○ Engine On/Off ○ Travel speed, SE403	Start of secondary steering pump for back-up of primary steering pump: ○ Secondary steering installed ○ Travel speed exceeds > 3 km/h (1.9 mph) for > 5 seconds ○ Differential pressure secondary steering high for > 0.5 seconds Secondary pump is activated for as long as the above conditions apply.	○ RE601, start secondary steering pump MO601 ○ Control lamp, Secondary steering engaged
	Start of secondary steering pump for secondary steering: ○ Secondary steering installed ○ Travel speed above > 3 km/h (1.9 mph) ○ Differential pressure secondary steering high for > 0.3 seconds ○ Steering pressure low for > 0.3 seconds Secondary steering pump is activated until travel speed drops < 3 km/h (1.9 mph)	○ RE601, start secondary steering pump MO601 ○ Warning lamp, Malfunction in primary steering system ○ Red central warning lamp ○ Buzzer
	Function test secondary steering: ○ Secondary steering installed ○ Engine = Off ○ Control test secondary steering pressed down ○ Differential pressure secondary steering low ○ Steering pressure low Secondary steering pump is activated until the control is released	○ RE601, start secondary steering pump MO601 ○ Control lamp, Secondary steering engaged
○ Monitoring, SE601 and SE602	○ System malfunction, open circuit ○ Engine = Off	○ Amber central warning lamp
○ Monitoring, RE601	○ System malfunction, open circuit or short circuit	○ Amber central warning lamp

Section 2 Engine

<https://truckmanualshub.com/>

Engine	
Type designation	TD63KBE, part no. 8188107
Flywheel output at 2100 rpm	113 kW SAE J 1349 Net 113 kW DIN 70020
Gross output at 2100 rpm	118 kW SAE J 1349 Gross
Max. torque at 1100 rpm	690 Nm SAE J 1349 Net 695 Nm SAE J 1349 Gross 690 Nm DIN 70020
Number of cylinders	6
Cylinder bore	98.43 mm (3.88 in)
Stroke	120 mm (4.72 in)
Cylinder displacement, total	5.48 dl ³
Compression ratio	18.3:1
Compression at starter motor speed, 200 rpm	2.4 MPa (348 psi)
Max. pressure difference allowed between cylinders at starter motor speed	0.3 MPa (44 psi)
Injection sequence	1-5-3-6-2-4
Idle speed, low	670 ±50 rpm
Idle speed, high	2420 ±60 rpm
Stall speed	2190 ±75 rpm
Stall speed, 3-speed + working hydraulics	1580 ±100 rpm

Valve system	
Valve clearance, (warm or cold engine)	
inlet valve	0.40 mm (0,016 in)
exhaust valve	0.55 mm (0,022 in)

Lubrication system	
Oil pressure	395–545 kPa (57–79 psi)
Oil pressure, idle min.	80 kPa (12 psi)

Fuel feed pump	
Type	Piston pump
Feed pressure	100–150 kPa (15–22 psi)

Fuel injection pump	
Type	In-line pump
Pump timing setting	13° BTDC

Injectors	
Type	Multi-hole nozzle (6 holes)
Opening pressure	25 + 0.8 MPa (3625 + 116 psi)
Setting pressure, for new spring	26 + 0.8 MPa (3770 + 116 psi)

Air cleaner	
Triple-stage air cleaning:	Pre-cleaner – primary filter – safety filter

Intercooler	
Type	Liquid/air-cooled with separate coolant pump

Cooling system	
Type	92

Header tank cap opens at

50 kPa (7 psi)

<https://truckmanualshub.com/>

Thermostat

Type	Piston thermostat
Number of thermostats	1
Begins to open at	82 °C (180 °F)
Fully open at	92 °C (198 °F)

Cold-start device

Preheating coil	In induction manifold
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Section 2 Engine

Engine	
Type designation	TD73KDE, part no. 8188126
Flywheel output at 2100 rpm	148 kW SAE J 1349 Net
Gross output at 2100 rpm	153 kW SAE J 1349 Gross
Max. torque at 1100 rpm	920 Nm (678.5 lbf ft) SAE J1349 Net 925 Nm (682.2 lbf ft) SAE J1349 Gross
Number of cylinders	6
Cylinder bore	104.77 mm (4.124 in)
Stroke	130 mm (5.12 in)
Cylinder displacement, total	6.7 dm ³ (1.77 US gal)
Compression ratio	17.5:1
Compression at starter motor speed, 200 rpm	2.4 MPa (348 psi)
Max. pressure difference allowed between cylinders at starter motor speed	0.3 MPa (44 psi)
Injection sequence	1-5-3-6-2-4
Idle speed, low	670 ±50 rpm
Idle speed, high	2345 ±60 rpm
Stall speed	2120 ±75 rpm

Valve system	
Valve clearance, (warm or cold engine)	
inlet valve	0.40 mm (0.016 in)
exhaust valve	0.55 mm (0.022 in)

Lubrication system	
Oil pressure	375–527 kPa (54–76 psi)
Oil pressure, idle min.	50 kPa (7 psi)

Fuel feed pump	
Type	Piston pump
Feed pressure	100–150 kPa (15–22 psi)

Fuel injection pump	
Type	In-line pump
Pump timing setting	9° BTDC

Injectors	
Type	Multi-hole nozzle (6 holes)
Opening pressure	25 + 0.8 MPa (3625 + 116 psi)
Setting pressure, for new spring	26 + 0.8 MPa (3770 + 116 psi)

Air cleaner	
Triple-stage air cleaning:	Pre-cleaner – primary filter – safety filter

Intercooler	
Type	Liquid/air-cooled with separate coolant pump

Cooling system	
Type	Closed system
Header tank cap opens at	50 kPa (7 psi)

Thermostat	
------------	--

Type	Piston thermostat https://truckmanualshub.com/
Number of thermostats	1
Begins to open at	82 °C (180 °F)
Fully open at	92 °C (198 °F)

Hydraulically driven cooling fan (optional equipment for L120D)	
Max. fan motor speed	1200 rpm with fan programme A
	1400 rpm with fan programme B
	1550 rpm with fan programme C
Base rotation speed	400 rpm
Max. pressure (for pressure check using the service display unit)	21.0 MPa (3045 psi)

Cold-start device	
Preheating coil	In induction manifold

Section 3 Electrical system

<https://truckmanualshub.com/>

System voltage	24 V
----------------	------

Battery	
Number of thermostats	2 (connected in series)
Battery disconnect switch (Frame connection)	connected to negative terminal
Voltage	12 V
Capacity	105 Ah/battery
Battery electrolyte density at fully charged battery	1.275–1.285 kg/dm ³ (10.65–10.73 lbs/US gal)
The battery must be recharged at a density of	1.250 kg/dm ³ (10.44 lbs/US gal)

Alternator with regulator	
Type	Alternating current
Output (rated output)	1680 W
Voltage, at + 20 °C (68 °F)	28.5 ±0.15V
Current, max.	60 A
Resistance across rotor winding	13.5 Ω
Resistance in stator winding	0.12 Ω

Starter motor	
Output	5.4 kW

Bulbs	Watt	Base
Headlights, asymmetric	75/70	P43t - 38 (H4)
Work lights, front (halogen)	70	PK 22 s (H3)
Parking lights	4	BA 9 s
Tail lights	10	BA 15 s
Work lights, rear (halogen)	70	PK 22 s (H3)
Cab light	10	BA 15 s
Centre instrument panel	1.2	W 2x 4.6 d
Guide lights in switches	1.2	W 2x 4.6 d
Side lights	5	SV 8.5
Brake lights	21	BA 15 s
Direction indicators, rear	21	BA 15 s
Direction indicators, side	21	BA 15 s

Section 3 Electrical system

<https://truckmanualshub.com/>

System voltage	24 V
----------------	------

Battery	
Number of thermostats	2 (connected in series)
Battery disconnect switch (Frame connection)	connected to negative terminal
Voltage	12 V
Capacity	140 Ah/battery
Battery electrolyte density at fully charged battery	1.275–1.285 kg/dm ³ (10.65–10.73 lbs/US gal)
The battery must be recharged at a density of	1.250 kg/dm ³ (10.44 lbs/US gal)

Alternator with regulator	
Type	Alternating current
Output (rated output)	1680 W
Voltage, at + 20 °C	28.5 ±0.15V
Current, max.	60 A
Resistance across rotor winding	13.5 Ω
Resistance in stator winding	0.12 Ω

Starter motor	
Output	5.4 kW

Bulbs	Watt	Base
Headlights, asymmetric	75/70	P43t - 38 (H4)
Work lights, front (halogen)	70	PK 22 s (H3)
Parking lights	4	BA 9 s
Tail lights	10	BA 15 s
Work lights, rear (halogen)	70	PK 22 s (H3)
Cab light	10	BA 15 s
Centre instrument panel	1.2	W 2x 4.6 d
Guide lights in switches	1.2	W 2x 4.6 d
Side lights	5	SV 8.5
Brake lights	21	BA 15 s
Direction indicators, rear	21	BA 15 s
Direction indicators, side	21	BA 15 s

E 985 Hose

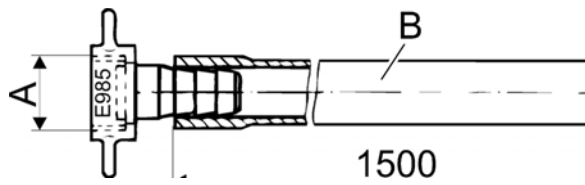


Figure 1

E 985

- A. Hose coupling Ø R1/2"
- B. PVC hose, 1/2"

Section 4 Power transmission

<https://truckmanualshub.com/>

Disengagement function	
Pressure sensor (SE 501), closing pressure (located on foot brake valve)	2.0 ±0.3 MPa (290 ±44 psi)

Torque converter	
Type	Single-stage
Torque amplification, at stall	2.66:1
Torque converter safety valve	1.0 MPa (145 psi)

Hydraulic transmission	
Type	Hydro-mechanical
Make	Volvo
Designation	HT131
Product number	22524
Number of gears	4 forward, 4 reverse
Gearshifting system	Electro-hydraulic

Speed range (tyre equipment 20.5–25)	
1st	0–7.1 km/h (0–4.4 mph))
2nd	0–13.3 km/h (0–8.3 mph))
3rd	0–27.7 km/h (0–17.2 mph))
4th	0–38.2 km/h (0–23.7 mph))

Oil pressure, at high idle speed	
Main pressure	1.45–1.68 MPa (210–244 psi)
Clutch pressure, 1st – 4th gear, F – R	1.35–1.58 MPa (196–229 psi)
Torque converter pressure, out	0.57–0.69 MPa (83–100 psi)
Lubricating oil pressure	0.35–0.45 MPa (51–65 psi)

Drive axles	
Type	Floating axle shafts with planetary gear hub reductions
Make	Volvo
Designation	
Front	AWB30
Rear	AWB30
Gear ratio, total	
Front	18.37:1
Rear	18.37:1
Differential lock	Front axle
Differential lock, control	Electro-hydraulic

Section 4 Power transmission

<https://truckmanualshub.com/>

Disengagement function	
Pressure sensor (SE 501), closing pressure (located on foot brake valve)	2.0 ±0.3 MPa (290 ±44 psi)

Torque converter	
Type	Single-stage
Torque amplification, at stall	2.85:1
Torque converter safety valve	0.84 ±0.18 MPa (122 ±26 psi)

Hydraulic transmission	
Type	Hydro-mechanical
Make	Volvo
Designation	HT205
Product number	22525
Number of gears	4 forward, 4 reverse
Gearshifting system	Electro-hydraulic

Speed range (tyre equipment 20.5-25)	
1st	0–7.3 km/h (0–4.5 mph)
2nd	0–13.3 km/h (0–8.3 mph)
3rd	0–25.2 km/h (0–15.6 mph)
4th	0–35.2 km/h (0–21.8 mph)

Oil pressure, at high idle speed	
Main pressure	1.37–1.58 MPa (199–229 psi)
Clutch pressure, 1st – 4th gear, F – R	1.37–1.58 MPa (199–229 psi)
Torque converter pressure, out	0.20–0.50 MPa (29–73 psi)
Lubricating oil pressure	0.16–0.22 MPa (23–32 psi)

Drive axles	
Type	Floating axle shafts with planetary gear hub reductions
Make	Volvo
Designation	
Front	AWB31
Rear	AWB30
Gear ratio, total	
Front	18.37:1
Rear	18.37:1
Differential lock	Front axle
Differential lock, control	Electro-hydraulic

Section 5 Brakes

<https://truckmanualshub.com/>

Wheel brake	
Type	Dual circuit, fully hydraulic wet disc brakes
Brake pad area per wheel	1290 cm ² (200 in ²)
Brake disc, min. thickness	7.2 mm (0.28 in)
Brake discs, thickness, new disc	9.6 mm (0.38 in)
Accumulator capacity	1.0 l, 2 accumulators
Precharge pressure, new accumulator	5 MPa (725 psi)
Min. allowed precharge pressure	3.5 MPa (508 psi)

Foot brake valve/unloading valve	
System pressure, unloading (cut-out) pressure	15.0–15.5 Mpa (2175–2248 psi)
System pressure, charging (cut-in) pressure	12.0–13.0 MPa (1740–1885 psi)
Max. output brake pressure	7.4–8.6 Mpa (1073–1247 psi)
Low pressure indication	8.1–9.9 Mpa (1175–1436 psi)

Brake pump (common with servo system) is included in the hydraulic system double-pump	
Type	Vane pump
Displacement	15.9 cm ³ (0.97 in ³)
Flow at 2200 rpm and 10 MPa pressure	31.0 l/min (8 US gal/min)
Servo pressure (throughout entire engine speed range)	3.0–4.0 MPa (435–580 psi)
Increased pressure, separate attachment locking (optional equipment)	15 ±0.5 MPa (2175 ±73 psi)
Accumulator 0.5 l (0.13 US gal) in servo circuit, precharge pressure	1.5 MPa (218 psi)

Parking brake	
Type	Mechanically or electrically operated disc brake, located externally on the hydraulic transmission front output shaft.
Brake pads	
thickness	10 mm (0.39 in)
thickness, min.	2 mm (0.08 in)
Brake disc	
thickness	22 mm (0.87 in)
thickness, min.	18 mm (0.71 in)
max. allowed wear	4 mm (0.16 in)

Section 5 Brakes

<https://truckmanualshub.com/>

E 1234 Nipple

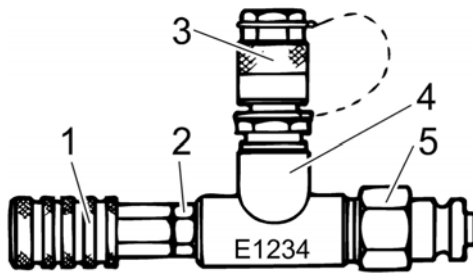


Figure 1
E 1234

1. 999 3522-3
2. Standard pipe bushing, R 1/4" - R 1/8"
3. Measuring nipple, part no. 930032
4. Standard T-pipe, R 1/4"
5. Nipple according to available pump, for example, 999 3070B

E 1281 Nipple

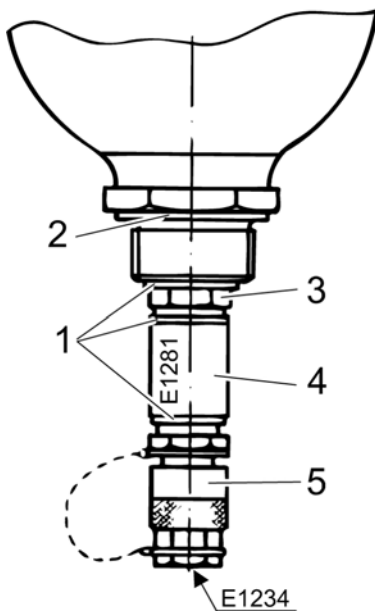


Figure 2
E 1281

1. Seal washer
2. Accumulator with threads, M16 x 1.5, internal
3. Nipple, part no. 957030
4. Sleeve, standard R 1/4"
5. Measuring nipple, part no. 930032N

Section 6 Steering system

<https://truckmanualshub.com/>

Steering	
Type	Load-sensing hydrostatic
Steering angle	±40°
Number of steering wheel turns, total	4.15 revolutions
Steering time (approx.), full lock – full lock, slow idling speed.	6.5 s
Steering time (approx.), full lock – full lock, fast idling speed	2.5 s

Oil pump	
Type	Axial piston pump, variable displacement
Flow at 2100 rpm and 10 MPa pressure	91 l/min (24 US gal/min)
Working pressure, high idle speed	21 ±0.35 MPa (3045 ±51 psi)
Hold (stand-by) pressure, low idle speed	2.8–3.3 MPa (406–479 psi)

Steering valve	
Type	"Closed centre"

Shock valves	
Number of valves	2
Opening pressure at 10 l/min (2.6 US gal/min)	28 MPa (4060 psi)

Steering cylinder	
Type	Double-acting
Piston rod diameter	40 mm (1.6 in)
Inside diameter/stroke	70/419 mm (2.76/16.5 in)

Section 6 Steering system

<https://truckmanualshub.com/>

Steering	
Type	Load-sensing hydrostatic
Steering angle	±40°
Number of steering wheel turns, total	3.75 revolutions
Steering time (approx.), full lock - full lock, slow idle	6.5 s
Steering time (approx.), full lock - full lock, fast idle	4 s

Oil pump	
Type	Axial piston pump, variable displacement
Displacement	45 cm ³ (2.7 in ³)
Flow at 2100 rpm and 10 MPa (1450 psi)	91 l/min (24 US gal/min)
Working pressure, high idle speed	21 ±0.35 MPa (3045 ±51 psi)
Hold (stand-by) pressure, low idle speed	2.8–3.3 MPa (406–479 psi)

Shift valve	
Cut-in pressure of steering cylinder piston rod end	17.5 ±1.0 MPa (2538 145 psi) pump pressure 16.0 MPa (2320 psi) LS-pressure

Steering valve	
Type	"Closed centre"

Shock valves	
Number of valves	2
Opening pressure at 10 l/min (2.6 US gal/min)	28 MPa (4060 psi)

Steering cylinder	
Type	Double-acting
Piston rod diameter	50 mm (2 in)
Inside diameter/stroke	80/476 mm (3.15/18.74 in)

Air-conditioning unit temperatures in performance tests				
	Ambient temperature Air conditioning temperature values			
Relative humidity of the air	25 °C (77° F)	30 °C (86° F)	35 °C (95 ° F)	40 °C (104° F)
10%	7 °C (45°F)	7 °C (45° F)	7 °C (45° F)	7°C (45 ° F)
20%	7 °C (45°F)	7 °C (45° F)	7 °C (45° F)	7 °C (45°F)
30%	7 °C (45°F)	7 °C (45° F)	7 °C (45° F)	7 °C (45°F)
40%	7 °C (45°F)	7 °C (45° F)	7 °C (45° F)	8 °C (46°F)
50%	7 °C (45°F)	7 °C (45° F)	8 °C (46° F)	11 °C (52°F)
60%	7 °C (45°F)	8 °C (46° F)	10 °C (50° F)	14 °C (57°F)
70%	7 °C (45°F)	10 °C (50° F)	13 °C (55° F)	17 °C (63°F)
80%	7 °C (45°F)	11 °C (52°F)	15 °C (59°F)	20 °C (68°F)
90%	7 °C (45°F)	12 °C (54°F)	18 °C (64°F)	23 °C (73°F)

Air-conditioning unit temperatures in performance tests				
	Ambient temperature Air conditioning temperature values			
Relative humidity of the air	25 °C (77 °F)	30 °C (86 °F)	35 °C (95 °F)	40 °C (104 °F)
10%	7 °C (45 °F)	7 °C (45 °F)	7 °C (45 °F)	7 °C (45 °F)
20%	7 °C (45 °F)	7 °C (45 °F)	7 °C (45 °F)	7 °C (45 °F)
30%	7 °C (45 °F)	7 °C (45 °F)	7 °C (45 °F)	7 °C (45 °F)
40%	7 °C (45 °F)	7 °C (45 °F)	7 °C (45 °F)	8 °C (46 °F)
50%	7 °C (45 °F)	7 °C (45 °F)	8 °C (46 °F)	11 °C (52 °F)
60%	7 °C (45 °F)	8 °C (46 °F)	10 °C (50 °F)	14 °C (57 °F)
70%	7 °C (45 °F)	10 °C (50 °F)	13 °C (55 °F)	17 °C (63 °F)
80%	7 °C (45 °F)	11 °C (52 °F)	15 °C (59 °F)	20 °C (68 °F)
90%	7 °C (45 °F)	12 °C (54 °F)	18 °C (64 °F)	23 °C (73 °F)

Section 9 Hydraulic system

<https://truckmanualshub.com/>

Hydraulic system	
Type	Servo-assisted of "open centre" type

Control valve	
Shock valve, rear tilt (plus side)	24.5 ±0.6 MPa (3553 87 psi)
Shock valve, forward tilt (minus side)	17.5 ±0.6 MPa (2538 87 psi)
Shock valve, lift	32.0 ±0.6 MPa (4640 87 psi)
Back-up valve, forward tilt and lower	1.0–2.0 MPa (145–290 psi)

Operating times (approx.), fast idle	Seconds
Lift, with SAE work load	5.5
Lower, without load	2.5
Forward tilt, with SAE work load	2
Forward tilt, without load	2.5

Hydraulic oil pump (working hydraulics) included in hydraulic system double-pump	
Type	Vane pump, fixed displacement
Displacement	98.3 cm ³ (6 in ³)
Working pressure, high idle speed	22.5 ±0.4 MPa (3263 ±58 psi)
Flow at 2200 rpm and 10 MPa (1450 psi)	212 l/min (56 US gal/min)

Servo pump (common with brake system) included in hydraulic system double-pump	
Type	Vane pump
Displacement	15.9 cm ³ (0.97 in ³)
Flow at 2200 rpm and 10 MPa	31.0 l/min (8 US gal/min)
Servo pressure (throughout entire engine speed range)	3.0–4.0 MPa (435–580 psi)
Increased pressure, separate attachment locking (optional equipment)	15 ±0.5 MPa (2175 ±73 psi)
Accumulator 0.5 l (0.13 US gal) in servo circuit, precharge pressure	1.5 MPa (218 psi)

Boom Suspension System	
Accumulator, precharge pressure, 1 pc.	3.0 MPa (435 psi)

Lift cylinder	
Type	Double-acting
Piston rod diameter	70 mm (2.76 in)
Inside diameter/stroke	130/710 mm (5.1/27.9 in)

Tilt cylinder	
Type	Double-acting
Piston rod diameter	90 mm (3.5 in)
Inside diameter/stroke	190/430 mm (7.5/16.9 in)

Section 9 Hydraulic system

<https://truckmanualshub.com/>

Hydraulic system	
Type	Servo-assisted of "open centre" type

Control valve	
Shock valve, rear tilt (plus side)	24.5 ±0.6 MPa (3553 87 psi)
Shock valve, forward tilt (minus side)	17.5 ±0.6 MPa (2538 87 psi)
Shock valve, lift	32.0 ±0.6 MPa (4640 87 psi)
Back-up valve, forward tilt and lower	1.0–2.0 MPa (145–290 psi)

Operating times (approx.), fast idle	Seconds
Lift, with SAE work load	6
Lower, without load	3
Forward tilt, with SAE work load	2
Forward tilt, without load	3

Hydraulic oil pump (working hydraulics) included in hydraulic system double-pump	
Type	Vane pump, fixed displacement
Displacement	136 cm ³ (8.3 in ³)
Working pressure, high idle speed	22.5 MPa (225 bar) (3263 psi)
Flow at 2100 rpm and 10 MPa (1450 psi)	275 l/min (73 US gal/min)

Servo pump (common with brake system) included in hydraulic system double-pump	
Type	Vane pump
Displacement	15.9 cm ³ (0.97 in ³)
Flow at 2100 rpm and 10 MPa (1450 psi) pressure	29.5 l/min (7.8 US gal/min)
Servo pressure (throughout entire engine speed range)	3.0–4.0 MPa (435–580 psi)
Increased pressure, separate attachment locking (optional equipment)	15 ±0.5 MPa (2175 ±73 psi)
Accumulator 0.5 l (0.13 US gal) in servo circuit, precharge pressure	1.5 MPa (218 psi)

Boom Suspension System	
Accumulator, precharge pressure	3.0 MPa (435 psi)
	6.0 MPa (870 psi)

The pressures of 3.0 MPa and 6.0 MPa are minimum and maximum values for the accumulator precharging pressure. Suspension characteristics can be adapted by individually precharging the accumulator/accumulators to a pressure between the min. and max. values, i.e. 3.0 MPa and 6.0 MPa.

Lift cylinder	
Type	Double-acting
Piston rod diameter	80 mm (3.1 in)
Inside diameter/stroke	160/676 mm (6.3/26.6 in)

Tilt cylinder	
Type	Double-acting
Piston rod diameter	110 mm (4.3 in)
Inside diameter/stroke	230/412 mm (9.1/16.2 in)

Service display unit, axles and brakes

- xx = Input brake pressure, normal/low.
- yy = Output brake pressure in bar / psi or ERo / ERs in case of sensor malfunction
- z = Retardation memory for the 3 most recent brake applications in m/s²
- x = Output brake pressure memory for the 3 most recent brake applications in bar / psi
- y = Result from the latest brake test ends up on the far left
- y = Unit in bar / psi

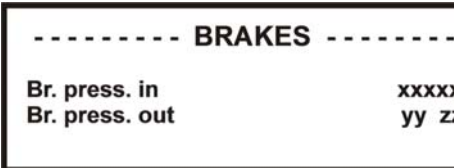


Figure 1
Image 5.1

- xx = Axle oil temperature in front axle in °C / °F or ERo / ERs in case of sensor malfunction
- yy = Axle oil temperature in rear axle in °C / °F or ERo / ERs in case of sensor malfunction

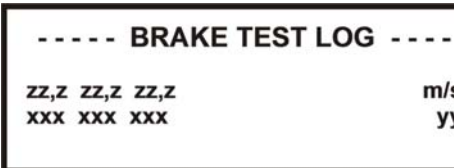


Figure 2
Image 5.2

- xx = Selects between two alarm limits for temperature in axles (selected in °C / °F)
It is possible to select the warning trigger points at 110 °C, (230 °F) or 140 °C, (284 °F).
- yy = Time (hours:min) with temperature above selected alarm limit for front axle
- zz = Time (hours:min) with temperature above selected alarm limit for rear axle
- Selection of alarm limit is performed with # control
- * = Resetting to zero



Figure 3
Image 5.3

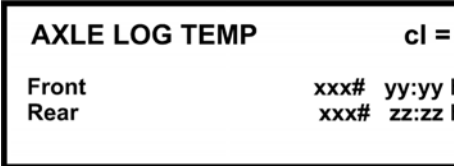


Figure 4
Image 5.4

Service display unit, electrical control input signals 1

Electrical control input signals 1 shows the current status of input signals to the vehicle control unit (V-ECU) from different controls and monitoring functions.

In the display, **x** represents different pins in connectors EA and EB. Connectors EA and EB are connected to the vehicle control unit (V-ECU).

- EL ON/OFF INPUT 1-		
V 1:	xxxx	xxxx xx
V 13:	xxxx	xxxx xx
V 25:	xxxx	xxxx xx

Figure 1
Image 3.2

The value of **x** may be 1 or 0, depending on whether the input signal is activated or not activated.

The pins are presented in numerical order from left to right and grouped in the following rows:

- V 1: position V1-V12
- V 13: position V13-V24
- V 25: position V25-V36

Signal description

Pos.	Value (x)	Meaning	Conditions	Connector pin	Wiring diagram
V1	Engine brake, status			EA1	SCH09
	0	Not activated			
	1	Activated	- SW406 depressed		
V2	Not connected			EA15	-
V3	Not connected			EA29	-
V4	Not connected			EA2	-
V5	Air filter engine, monitoring air pressure SE208			EA16	SCH05
	0	OK			
	1	Negative pressure	- engine on - clogged air filter		
V6	Not connected			EA30	-
V7	Activation of forward/reverse function, lever console, status			EA3	SCH09
	0	Not activated			
	1	Activated	- SW403 depressed		
V8	Gear selector lever console position F , status			EA17	SCH09
	0	Not activated			
	1	Activated	- SW404 in position F		
V9	Gear selector lever console position R , status			EA31	
	0	Not activated			
	1	Activated	- SW404 in position R		
V10	Activation of lever steering, status			EA4	SCH17
	0	Not activated			
	1	Activated	- SW408 depressed		
V11	Lever steering armrest switch SW407, status			EA18	SCH17
	0	Open	- armrest raised		
	1	Closed	- armrest lowered		
V12	Lever steering position F , status			EA32	SCH17
	0	Not activated			
	1	Activated	- SW409 in position F		
V13	Lever steering position R , status			EA5	
	0	Not activated			
	1	Activated	- SW409 in position R		

V14	Kickdown request from lever console/kickdown lever steering (CDC) status https://truckmanuals.hub.com/			EA19	SCH09/17
	0	Not activated			
	1	Activated	Control lever carrier - SW405 kickdown depressed Lever steering (CDC) Activation of lever steering: ○ engine speed > 0 rpm ○ travel speed < 5 km/h (3.1 mph) ○ primary gear selector in position N ○ armrest lowered ○ SW408 activation depressed ○ - SW410 kickdown depressed		
V15	Not connected			EA33	-
V16	Not connected			EA6	-
V17	Travel speed dependent Boom Suspension System (only as optional equipment): - SW925 in position travel speed dependent V26 also shows 1 and EA23 is supplied with power.			EA20	SCH23
V18	Not connected			EA34	-
V19	Not connected			EA7	-
V20	Not connected			EA21	-
V21	Differential lock re-engagement, status			EA35	SCH12
	0	Not engaged			
	1	Engaged	- SW414 in position On - SE408 closed (differential lock engaged)		
V22	Secondary steering, monitoring steering pressure SE602			EA8	SCH16
	0	Normal	- normal steering pressure		
	1	Low	- low steering pressure		
V23	Secondary steering, monitoring differential pressure SE601			EA22	
	0	Normal	- differential pressure > 7 bar[T1] (101.5 psi)		
	1	Low	- differential pressure < 7 bar (101.5 psi)		
V24	Brake pressure accumulator, monitoring operating pressure SE502			EA36	SCH15B
	0	Low	- operating pressure < 90 bar (1305 psi)		
	1	High	- operating pressure > 90 bar (1305 psi)		
V25	Parking brake, status SE503			EA9	SCH15B
	0	Low, applied	- operating pressure < 90 bar (1305 psi)		
	1	High, released	- operating pressure > 90 bar (1305 psi)		
V26	Boom suspension system, status			EA23	SCH23
	0	Not active	- SW907 boom suspension system not activated		
	1	Active	Gear dependent boom suspension system: - SW907 in gear-dependent position Travel speed dependent boom suspension system: - SW907 in travel-speed dependent position. V17 also shows 1 and EA20 is energized		
V27	Not connected			EA37	
V28	Not connected			EA10	
V29	Single lever control (only as optional equipment)			EA24	
	0	Not activated			
	1	Activated			
V30	Not connected			EB39	
V31	Reserved test			EB12	
V32	Transmission filter, monitoring condition SE401			EA38	SCH10
	0	Clogged	- pressure drop > 2.7 bar (39.2 psi)		
	1	OK	- pressure drop < 2.1 bar (30.5 psi)		

or <https://truckmanualshub.com/>
- incorrect signal

V33	Not connected	EA11	-
V34	Not connected	EA25	-
V35	Not connected	EA39	-
V36	Not connected	EA12	-

[T1]Refer to the description of secondary steering in section 6.

Service display unit, electrical control input signals 2

Electrical control input signals 2 shows the current status of input signals to the vehicle control unit (V-ECU) from monitoring functions.

In the display, **x** represents different pins in connectors EA and EC. Connectors EA and EC are connected to the vehicle control unit (V-ECU).



Figure 1
Image 3.3

The pins are presented in numerical order from left to right and grouped in the following rows:

V 37: position V37-V40

The value of **x** may be 1 or 0, depending on whether the input signal is activated or not activated.

Pos.	Value (x)	Meaning	Conditions	Connector pin	Wiring diagram
V37	Washer fluid level, monitoring MO802			EA26	SCH18
	0	Low	- low level		
	1	OK	- normal level or - incorrect input signal		
V38	Not connected			EA40	-
V39	Not connected			EA13	-
V40	Secondary steering, test MO601			EC3	SCH16
	0	Active	- SW601 in position On - primary steering pressure low SE602 - differential pressure low SE601 - engine off		
	1	Not active			

Service display unit, electrical control input signals 3

Electrical control input signals 3 shows the current status of input signals to the instrument control unit (I-ECU) from different controls and monitoring functions.

In the display, **x** represents different pins in connectors P1 and P2. Connectors P1 and P2 are connected to the instrument control unit (I-ECU).

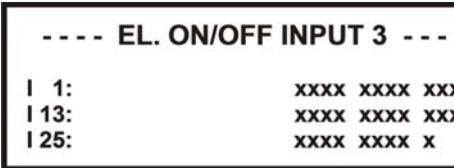


Figure 1
Image 3.4

The pins are presented in numerical order from left to right and grouped in the following rows:

- I 1: position I1-I12
- I 13: position I13-I24
- I 25: position I25-I33

The value of **x** may be 1 or 0, depending on whether the input signal is activated or not activated.

Signal description

Pos.	Value (x)	Meaning	Conditions	Connector pin	Wiring diagram
I1	Steering column gear selector position F , status			P2: 22	SCH09
	0	Not active			
	1	Active	- gear selector SW402 in position F		
I2	Steering column gear selector position R , status			P2: 9	
	0	Not active			
	1	Active	- gear selector SW402 in position R		
I3 and I4	Steering column gear selector position 1 , status			P2: 8 and P2: 21	SCH09
	0	Not active			
	1	Active	- gear selector SW401B in position 1		
I4	Gear selector, steering column positions 1 and 2, status			P2: 8	
	0	Not active			
	1	Active	- gear selector SW401B in position 2		
I5	Steering column gear selector position 4, status			P2: 20	
	0	Not active			
	1	Active	- gear selector SW401B in position 4		
I6	Kickdown steering column, status			P2: 7	SCH09
	0	Not active			
	1	Active	- kickdown SW401C activated		
I7	Not connected			P2: 19	
I8	Not connected			P2: 6	
I9	Preheating, status			P2: 18	SCH03
	0	Not active			
	1	Active	Manual preheating ○ Ignition switch SW101 in position 1 ○ SW201 depressed to activate preheating ○ Coolant temperature < +30 °C (86 °F) Automatic preheating ○ Additional post-heating not activated via display panel ○ Engine speed has increased from 0 to > 150 rpm ○ Coolant temperature < +10 °C (50 °F)		

I10	Transmission disengagement, status https://truckmanualshub.com/			P2: 17	SCH11
	0	Not active	- SW411 in position Off or - incorrect input signal		
	1	Active	- SW411 in position On		
I11	Differential lock, status			P2: 16	SCH12
	0	Not active	- SW414 not activated		
	1	Active	- SW414 activated		
I12	Secondary steering function test, status			P2: 5	SCH16
	0	Not active	- SW601 in position Off or - incorrect input signal		
	1	Active	- SW601 in position On Note: Secondary steering operation must not be tested for more than 1 minute due to the risk of the pump overheating.		
I13	Electric parking brake, status			P2: 15	SCH15B
	0	Not active (applied)	- SW501 in Applied position (depressed)		
	1	Active (released)	- SW501 in Released position (not depressed)		
I14	Boom Suspension System (BSS), function selection SW908			P2: 4	SCH23
	0	Gear dependent	SW908 in position Off		
	1	Travel speed dependent	SW908 in position On		
I15	Interval wiper front, status			P2: 14	SCH18
	0	Not active	- SW801A in position 0		
	1	Active	- SW801A in position J		
I16	Washer front, status			P2: 3	
	0	Not active	- SW801B in position Off		
	1	Active	- SW801B in position On		
I17	Interval wiper rear, status			P1: 23	SCH18
	0	Not active	- SW803 in position Off		
	1	Active	- SW803 in position Intermittent		
I18	Washer rear, status			P1: 8	
	0	Not activated	- SW804 in position Off		
	1	Activated	- SW804 in position On		
I19	-			P1: 9	
I20	Mode selector APS II position LIGHT 2 , status			P1: 24	SCH12
	0	Not activated			
	1	Activated	- SW412 in position LIGHT 2		
I21	Mode selector APS II position NORMAL , status			P1: 11	
	0	Not activated			
	1	Activated	- SW412 in position NORMAL		
I22	Mode selector APS II position HEAVY , status			P1: 2	
	0	Not activated			
	1	Activated	- SW412 in position HEAVY		
I23	Mode selector APS II position MAN , status			P1: 25	
	0	Not activated			
	1	Activated	- SW412 in position MAN		
I26	Service display unit key >, test			P2: 12	SCH24
	0	Not activated			
	1	Activated	- key actuated		
I27	Service display unit key V, test			P2: 11	
	0	Not activated			
	1	Activated	- key actuated		

I28	Service display unit key *, test https://truckmanualshub.com/			P2: 2	SCH25
	0	Not activated			
	1	Activated	- key actuated		
I29	Service display unit key #, test			P2: 1	
	0	Not activated			
	1	Activated	- key actuated		
I30	Keypad SW807, keys row 1, test			P1: 26	
	0	Not activated			
	1	Activated	- key actuated		
I31	Keypad SW807, keys row 2, test			P1: 28	
	0	Not activated			
	1	Activated	- key actuated		
I32	Keypad SW807, keys row 3, test			P1: 27	
	0	Not activated			
	1	Activated	- key actuated		
I33	Not connected			-	-

Service display unit, electrical control output signals 1

Electrical control output signals 1 shows the current status of output signals from the vehicle control unit (V-ECU).

In the display, **xy** represents different pins in connector EC. Connector EC is connected to the vehicle control unit (V-ECU).

EL ON/OFF OUT 1		cl =
V 1:	xyxyxy	xyxyxy
V 7:	xyxyxy	xyxyxy
V13:	xyxyxy	xyxyxy

Figure 1
Image 3.5

The pins are presented in numerical order from left to right and grouped in the following rows:

- V 1: position V1-V6 (connector pins EC1-EC6)
- V 7: position V7-V12 (connector pins EC7-EC12)
- V 13: position V13-V18 (connector pins EC13-EC24)

The value of **x** may be either 1 or 0, depending on whether the output signal is activated or not activated.

The value of **y** has meanings according to the table below.

Value (y)	Meaning
shiny	Normal and fully-functional circuit
o	Break in circuit
s	Short-circuit in circuit
m	Malfunction detected in last operating cycle/ignition switch activation
M	Malfunction detected in earlier operating cycle/operating cycles

Memory functions **m** and **M** are reset by pressing the * key.

Signal description

Pos.	Value (x)	Meaning	Conditions	Connector pin	Wiring diagram
V1	Manual preheating, status			EC1	SCH03
	0	Not activated	- SW201 in position Off		
	1	Activated	- SW201 in position On		
V2	Differential lock, status			EC2	SCH12
	0	Not activated	- SW414 in position Off or - incorrect input signal		
	1	Activated	- SW414 in position On - machine travel speed < 10 km/h (6.2 mph)		
V3	Secondary steering, status			EC3	SCH16
	0	Not activated	- activation conditions not fulfilled or - incorrect input signal		
	1	Activated	- travel speed > 3 km/h (1.9 mph) - steering differential pressure high ≥ 0.5 s or - travel speed > 3 km/h (1.9 mph) - steering differential pressure high 0.3 s - primary steering pressure low or - SW601 secondary steering test in position On - steering pressure low - steering differential pressure high - engine speed 0 rpm		
V4	Parking brake, status			EC4	SCH15B
	0	Not active (applied)	- ignition switch SW101 in position 0 or - ignition switch SW101 in position 1		

			- engine off https://truckmanualshub.com/ - or - SW501 in Applied position (depressed)		
	1	Active (not applied)	- engine running - SW501 from Applied position to Released position - or - SW501 parking brake in position Released - gear engaged - engine speed >1600 rpm		
V5	Reversing alarm, status			EC5	SCH20
	0	Not activated			
	1	Active	- ignition switch SW101 in position 1 - gear selector in position R		
V6	Lever steering, status			EC6	SCH17
	0	Not active	- steering column control in position F or R - or - engine off - or - armrest raised		
	1	Active	- steering column control in position N - lever steering control in position N - engine on - travel speed < 5 km/h - armrest lowered - SW408 lever steering in position On		
V7	Central lubrication, status			EC7	SCH26
	0	Not active	-		
	1	Active	-		
V8	-	-	-	-	-
V9	Engine power reduction upon change of direction, status			EC9	SCH03
	0	Not active			
	1	Active	○ Engine speed > requested rpm from engine speed limitation APS		
V10	Boom suspension system, status			EC10	SCH23
	0	Not active	Gear dependent boom suspension system: - gear in position F1 or R1 - or - kickdown requested - or - incorrect input signal Travel speed dependent boom suspension system: - directional gear in position F - travel speed < 5 km/h - or - directional gear in position R or N - travel speed < 2 km/h (1.2 mph) - or - incorrect input signal		
	1	Active	Gear dependent boom suspension system: - gear in position F2, F3, F4, R2, R3 or R4 - SW925 boom suspension system activated - kickdown not requested Travel speed dependent boom suspension system: - directional gear in position F, R or N - travel speed > 6 km/h (3.7 mph)		
V11	Interval wiper front, status			EC11	SCH18
	0	Not active			

V12	1	Active	- ignition switch SW101 in position 1 - SW801 in position J	EC12	SCH18
	Interval wiper rear, status				
	0	Not active			
	1	Active	- ignition switch SW101 in position 1 - SW803 in position Intermittent		
V13	-	-	-	-	-
V14	-	-	-	-	-
V15	Radiator fan, status (equipment L120D)			EC18	SCH05
	0	Not active			
	1	Active	- control of radiator fan speed		
V16	Gearshifting solenoid S1 N/D, status			EC20	SCH11
	0	Not active			
	1	Active	- gear selector in position F1, F2, F3 or F4		
V17	Gearshifting solenoid S2 F/R, status			EC22	
	0	Not active			
	1	Active	- gear selector in position R1, R2, R3 or R4		
V18	Gearshifting solenoid S3 F1, F2, R1, R2/ F3, F4, R3, R4, status			EC24	
	0	Not active			
	1	Active	- gear selector in position F1, F2 or R1, R2 and APS in manual position		

Service display unit, electrical control output signals 2

Electrical control output signals 2 shows the current status of certain output signals from the vehicle control unit (V-ECU). In the display, **xy** represents different pins in connector EC. Connector EC is connected to the vehicle control unit (V-ECU).

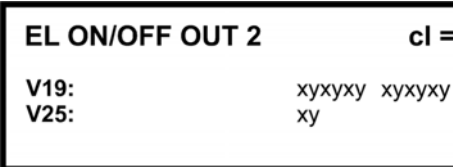


Figure 1
Image 3.6

The pins are presented in numerical order from left to right and grouped in the following rows:

- V 19:** position V19-V24 (connector pins EC26-EC39)
- V 25:** position V25 (connector pin EC41)

The value of **x** may be either 1 or 0, depending on whether the output signal is activated or not activated.

The value of **y** has meanings according to the table below.

Value (y)	Meaning
shiny	Normal and fully-functional circuit
o	Break in circuit
s	Short-circuit in circuit
m	Malfunction detected in last operating cycle/ignition switch activation
M	Malfunction detected in earlier operating cycle/operating cycles

Memory functions **m** and **M** are reset by pressing the ***** key.

Signal description

Pos.	Value (x)	Meaning	Condition	Connector pin	Wiring diagram
V19	Gearshifting solenoid S4 1/2, status			EC26	SCH11
	0	Not active			
	1	Active	- gear selector in position F1 or R1 and APS in manual position		
V20	Gearshifting solenoid S5 3/4, status			EC28	
	0	Not active			
	1	Active	- gear selector in position F4 or R4 and APS in manual position		
V21	-	-	-	-	-
V22	-	-	-	-	-
V23	-	-	-	-	-
V24	-	-	-	-	-
V25	-	-	-	-	-

Service display unit, electrical input sensor

Electrical feed sensor shows the current voltage feed to certain sensors from the vehicle control unit (V-ECU).

In the display, **x.xV** represents different pins in connector EB. Connector EB is connected to the vehicle control unit (V-ECU). The value of **x.x** indicates the feed in volts (**V**).

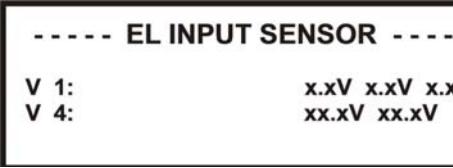


Figure 1
Image 3.7

The pins are presented in numerical order from left to right with the following meaning:

Pos.	Connector pin	Correct value	Feed to components
V1	EB26	5.0 V	–
V2	EB40	5.0 V	SE405 Transmission oil pressure SE501 Output brake pressure
V3	EB13	5.0 V	SE202 Engine oil pressure
V4	EB27	24 V	–
V5	EB41	24 V	–

Service display unit, electrical system battery voltage

- xx = Present battery voltage (V)
- yy = Time with battery voltage > 31 V (hours:min)
- * = Resetting to zero



Figure 1
Image 3.1

Engine

- xxx = Engine oil pressure in bar/psi or ERO/ERs in case of sensor malfunction
- yyy = Coolant temperature in °C / °F or ERO / ERs in case of sensor malfunction
- zzz = Temperature in radiator outlet in °C / °F or ERO / ERs in case of sensor malfunction

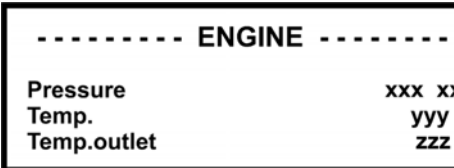


Figure 1
Image 2.1
Engine log

- xx = Time with engine oil pressure < alarm limit in min, seconds
- yy = Time with high coolant temperature, corresponding to > alarm limit in hours:min
- zz = Time with high pressure-drop in air filter, corresponding to > alarm limit in hours:min
- * = Resetting to zero



Figure 2
Image 2.2

Fan pressure test (L120D)

- x = Selected with * where z can be selected as Y or N
- J Setting for maximum hydraulic pressure to radiator fan.
- N Setting for normal radiator fan operating pressure.
At start-up, the maximum pressure test is set to N regardless of previous setting.
- yy = Shows current cooling fan speed in rpm
- zz = Shows engine speed in rpm

If no hydraulic radiator fan is installed, display 2.3.1 will be shown.

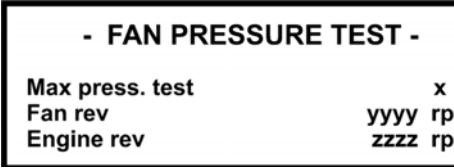


Figure 3
Display 2.3



Figure 4
Display 2.3.1
Fan sound test (L120D)

<https://truckmanualshub.com/>

----- FAN SOUND TEST -----
SEE SERVICE MANUAL

- FAN SOUND TEST -

Soundtest	x
Fan rev	yyyy rp
Test rev	zzzz rp

Service display unit, general

<https://truckmanualshub.com/>

The service display unit plugs into a socket in the electrical distribution box behind the operator's seat. The display unit is used for service/troubleshooting and gives additional information to that supplied by the display panel.

Using the service display unit, it is possible to read stored information such as pressures and temperatures. It is also possible to change settings and reset logged values.

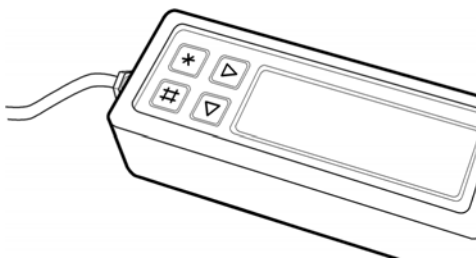


Figure 1
Service display unit 999 3721

The service display unit is started by pressing the keys  and  at the same time.

The displays are divided into 6 groups:

1. Start display and setup (settings)
2. Engine
3. Electrical system
4. Transmission
5. Axles/brakes
6. Hydraulics

With the upper display key  you go to the first display in the next group, regardless of which display is being shown.

With the lower display key  you go to the next display in the group. When the final display in the group has been reached, you are returned to the first display in that group.

To perform settings, use the  and  keys.

The display unit consists of 4 rows of information with 20 characters/row. It is updated at intervals of 0.5 seconds.

Five different languages can be selected: Swedish, English, German, Spanish and French.

There are two unit combinations that can be selected: Metric (°C, km, bar)/ Foot-pound (°F, mile, psi).

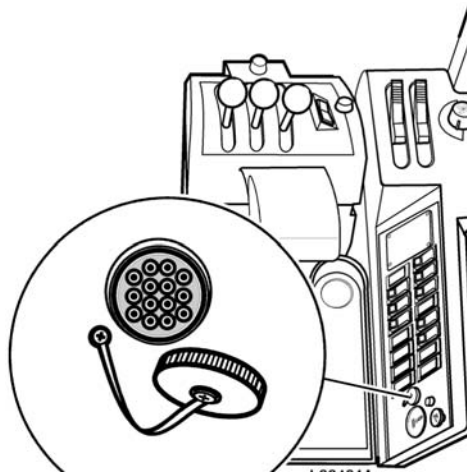
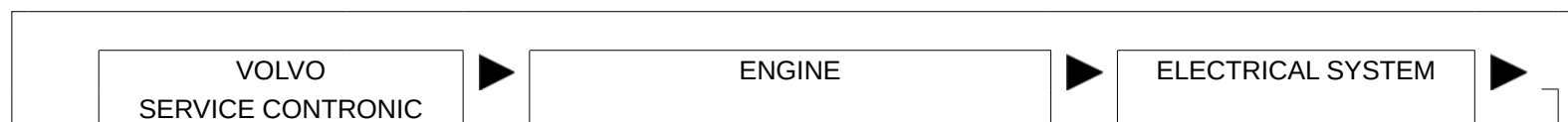


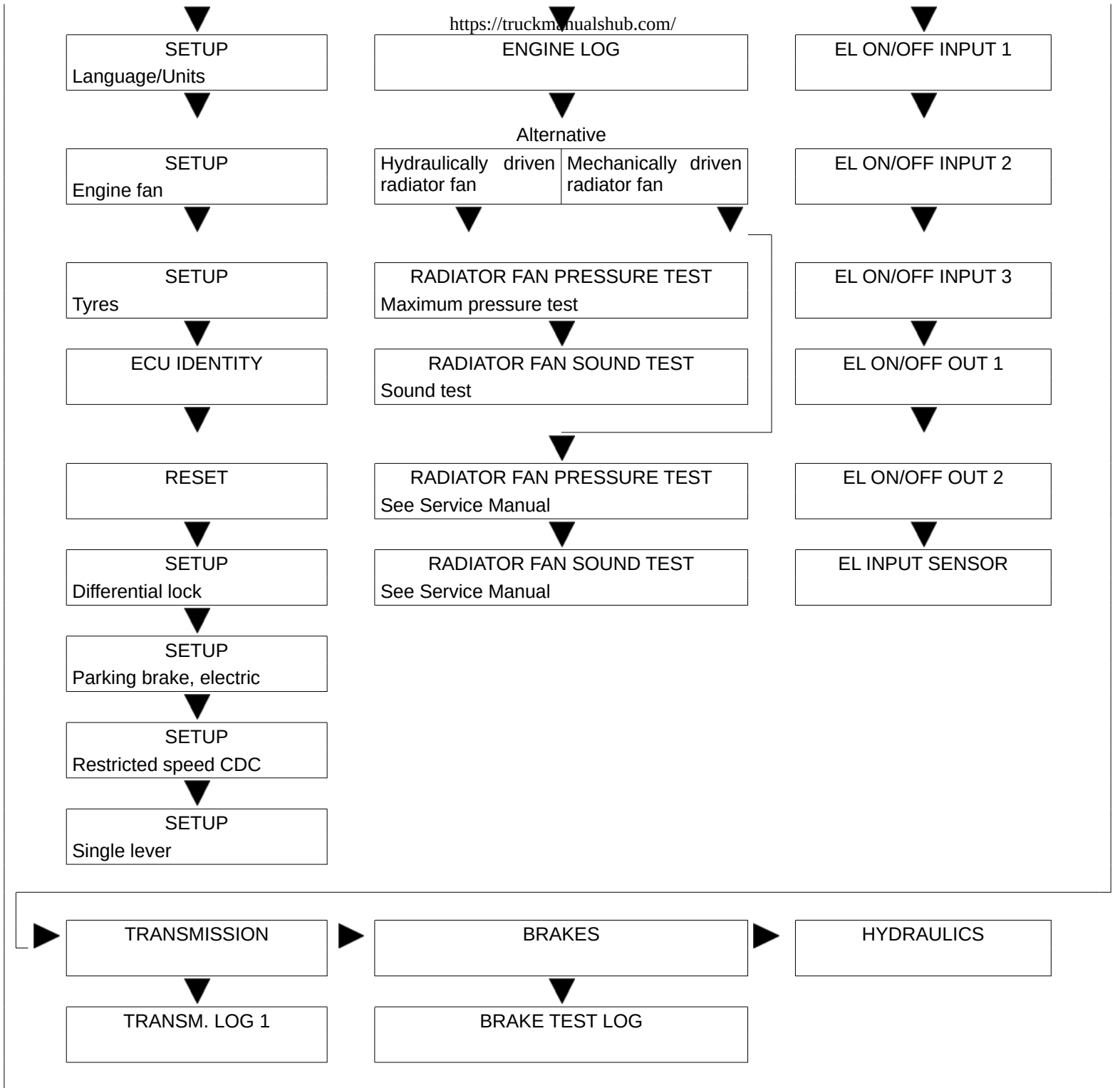
Figure 2
Socket for service display unit

Connection

The service display panel plugs into the socket on the side panel to the right.

Overview of service display unit displays





Service display unit, hydraulics <https://truckmanualshub.com/>

Applies to the L120D with hydraulically driven radiator fan.

xx = Oil temperature in the hydraulic oil tank °C / °F or ERo / ERs in case of sensor malfunction.

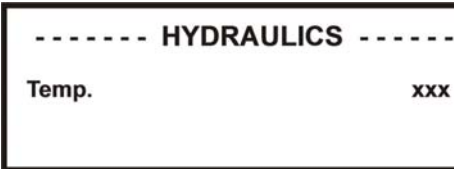


Figure 1
Display 6.1

Initial display

- xx = Machine model
- Machine model is selected with *
- yy = Machine serial no.
- Using #, the cursor is moved to the programming menu (see Fig. 1.1.1) for the machine serial no.

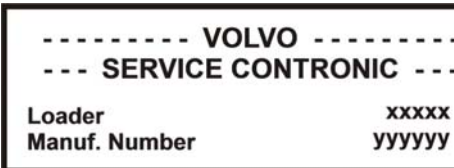


Figure 1
Image 1.1
Serial number

- yy = Programming of machine serial no.
- # = Used for selecting the digit that is to be changed, that is, to move the digit cursor (^) sideways.
- * = Used to change the selected digit
- ^ = Digit cursor
- With the arrow keys (> right arrow or v arrow down), return to display 1.1

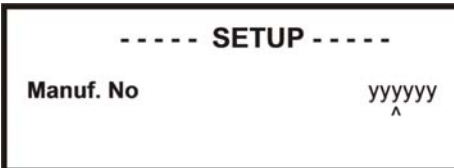


Figure 2
Image 1.1.1
Language and units

- xx = °C km/h km bar / °F mph mile psi
- * = Language selection
- # = Selection of units, alternatives: °C m/h km bar or °F mph mile psi

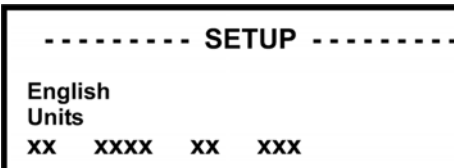


Figure 3
Image 1.2
Engine fan

- z= Selection if equipment hydraulic engine fan installed. Selected with # (Y / N).
- x = Max. radiator fan speed. Selected with * in three levels (A / B / C) as follows:
 - A = Noise Reduction Kit
 - B = EU execution
 - C = High cooling performance

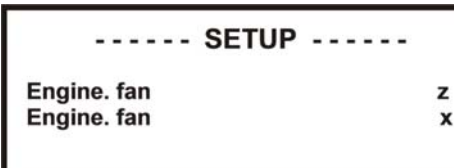


Figure 4
Display 1.3
Tyres

- x = Shows selected tyre size, e.g. 15.5, 17.5, 20.5, 23.5
- * = Selection of tyre dimension



Figure 5
Image 1.4
ECU identity

- x = Part no. I-ECU
- y = Part no. V-ECU

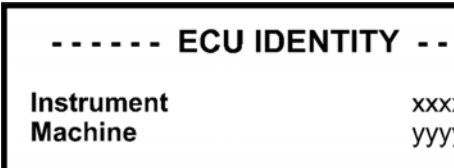


Figure 6
Image 1.5
Resetting data stored in machine and service display unit

Logged data for:	Image No.
Low engine oil pressure	2.1
High coolant temperature	2.1
High pressure-drop in air filter	2.2
Malfunction in electric feed output	3.5
Selected Gear	4.2
F/R Counter	4.2
Transmission oil pressure	4.2
Retardation during braking	5.2
Output brake pressure when braking	5.2

NOTE!
"RESET" resets all the logs described above. To reset an individual log, see the description for that log.

- * = Go to the menu as in display 1.6.1 for confirmation of reset
- # = Confirm reset and go to the menu as in display 1.6.2
With the arrow keys (> right arrow or v arrow down) return to display 1.6.



Figure 7
Image 1.6

With the arrow keys (> right arrow or v arrow down) return to display 1.6.



Figure 8
Image 1.6.1

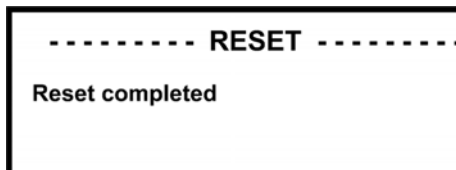


Figure 9
Image 1.6.2
Differential lock

- z = Selected with * where z can be selected as Y or N
- J = The machine is equipped with a differential lock
- N = The machine is not equipped with a differential lock

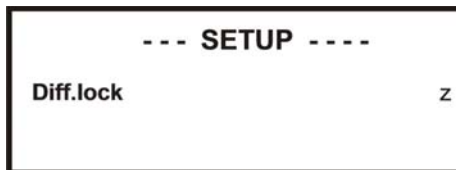


Figure 10
Display 1.8
Parking brake

- z = Selected with * where z can be selected as Y or N
- J = The machine is equipped with an electric parking brake
- N = The machine is equipped with a mechanical parking brake

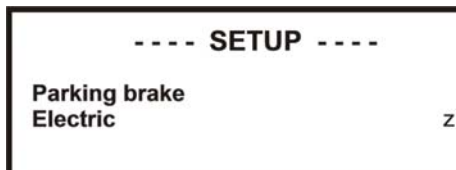


Figure 11
Display 1.8.1
Restricted speed CDC

- z = Selected with * where z can be selected as Y or N
- J = Travel speed limitation activated
- N = Travel speed limitation not activated

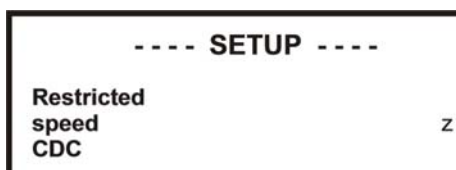


Figure 12
Display 1.10
Single lever

- z = Selected with * where z can be selected as Y or N
J = The machine is equipped with single lever control
N = The machine is not equipped with single lever control



Figure 13
Display 1.11

Service display unit, transmission

xx =	Temperature in °C / °F or ERo / ERs in case of sensor malfunction
yy =	Pressure in bar/psi or ERo / ERs in case of sensor malfunction
xx =	Selected gear (F1, F2, F3, F4, R1, R2, R3, R4). Gears are selected using the # key
yy =	Number of hours in selected gear
zz =	Number of F-R shifts
vv =	Time with low transmission pressure (alarm signal) in min, sec
* =	Resetting to zero



Figure 1
Image 4.1



Figure 2
Image 4.2

Service interval

https://truckmanualshub.com/

The function informs the operator of the time remaining to next service and the service interval that should be performed, and also indicates when 8 operating hours remain to next service.

Acknowledgement of service is done with the "SELECT" key when the display "NEXT SERVICE" is active.See [Invalid linktarget].

Service intervals:

- ☐ 250 hours
- ☐ 500 hours
- ☐ 1000 hours
- ☐ 2000 hours

Info is acknowledged with the "SELECT" key when the display "Time For Service" is active.

Input signals	Output function conditions	Output functions
☐ Number of machine hours ☐ Key "SELECT"	☐	☐ ----- NEXT SERVICE ----- Resid. Time xxxx h Interval yyyy h Acknowledge Sel. ↑ ↓ 167340A2 Next service Time to next service
	☐ Less than 8 hours to next service interval	☐ ☐ ----- SERVICE INFO ----- Time For Service 167356A2 Amber central warning lamp

Servo pressure, checking and adjusting

http://www.manualshub.com/

Op nbr 91455

[999 3831 Support](#)

[11 666 019 Pressure gauge 0–6 MPa \(0–870 psi\)](#)

[11 666 020 Pressure gauge 0–25 MPa \(0–3625 psi\)](#)

[11 666 037 Hose](#)

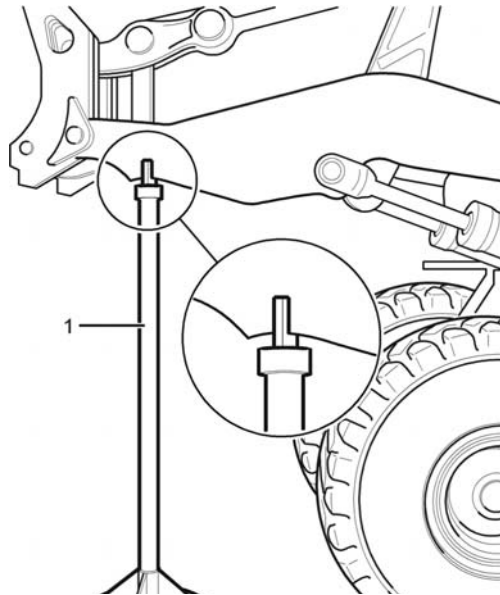


Figure 1
Securing boom

1. 999 3831

The following applies when checking:

Temperature: **Normal operating temperature**

Engine speed: **Entire engine speed range**

NOTE!

Always use the support to secure the boom when working under a raised boom.

1. Remove the cover plate from the front frame.

Servo pressure, checking

2. Connect pressure gauge 11 666 019 to the pressure outlet on the solenoid valve block, located in the front frame above the final drive, see [Invalid linktarget]. Start the engine and read off the servo pressure.
Servo pressure: **3.0–4.0 MPa (435–580 psi)**



The switch for increased servo pressure on the instrument panel must not be touched; the pressure will then increase to 15.5 MPa (2248 psi) at the pressure outlet.

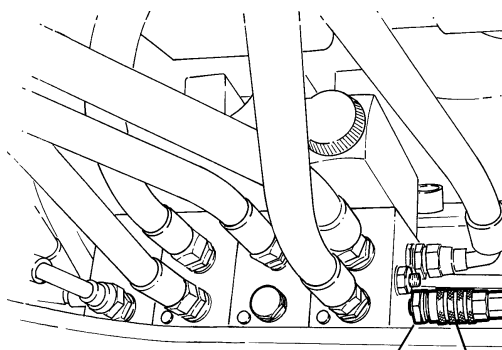


Figure 2

Checking servo pressure and increased servo pressure

<https://truckmanualshub.com/>

1. Pressure outlet for servo pressure and increased servo pressure, separate attachment locking
2. 11 666 037 and 11 666 019 (checking servo pressure) or 11 666 020 (checking increased servo pressure)

Servo pressure, adjusting

3. Remove the cover plate on the right side under the cab. Adjust the servo pressure on the right adjusting screw on the valve block, see [Invalid linktarget]. The pressure is increased if the screw is turned in.

Increased servo pressure, checking

4. Connect pressure gauge 11 666 020 to the pressure outlet on the solenoid valve block, located in the front frame above the final drive, see [Invalid linktarget]. Start the engine, activate the switch for increased servo pressure, see [Invalid linktarget], and read off the pressure.

Increased servo pressure: **15.0 ±0.5 MPa (2175 ±72.5)**



Figure 3

Switch, increased servo pressure

Increased servo pressure, adjusting

5. Remove the cover plate on the right side under the cab. Adjust the pressure on the left adjusting screw on the valve block. The pressure is increased when the screw is turned in. Remove the pressure gauge.

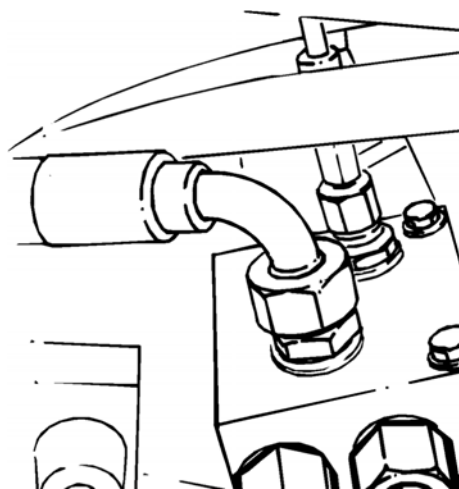


Figure 4

Valve block, separate attachment locking

1. Solenoid valve, increased servo pressure
 2. Adjusting screw, servo pressure
 3. Adjusting screw, increased servo pressure
6. Restore the machine to operating condition.

Servo pressure, checking and adjusting

<http://www.manualshub.com/>

Op nbr 91455

[999 3831 Support](#)

[11 666 019 Pressure gauge 0–6 MPa \(0–870 psi\)](#)

[11 666 037 Hose](#)

The following applies when checking:

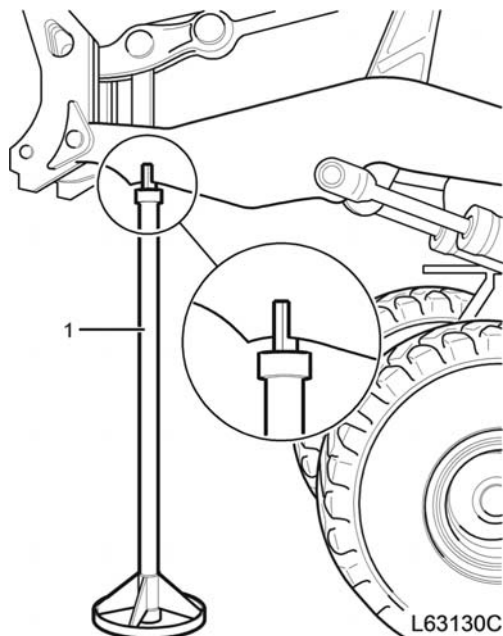


Figure 1
Securing boom

1. 999 3831

Temperature: **Normal operating temperature**

Engine speed: **Entire engine speed range**

NOTE!

Always use the support to secure the boom when working under a raised boom.

1. Remove the cover plate from the front frame.

Servo pressure, checking

2. Connect the pressure gauge to the pressure outlet on the solenoid valve block located in the front frame above the final drive.
Start the engine and read off the pressure.
Servo pressure: **3.0–4.0 MPa (435–580 psi)**

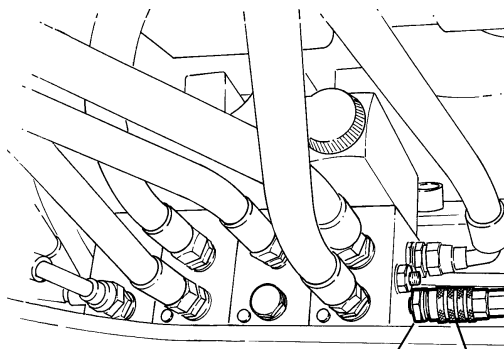


Figure 2
Checking servo pressure

1. Pressure outlet for servo pressure
2. 11 666 037 and 11 666 019

<https://truckmanualshub.com/>

Servo pressure, adjusting

3. Remove the cover plate on the right side under the cab. Adjust the servo pressure with the adjusting screw on the valve block.

The pressure is increased when the screw is turned in. Remove the pressure gauge.

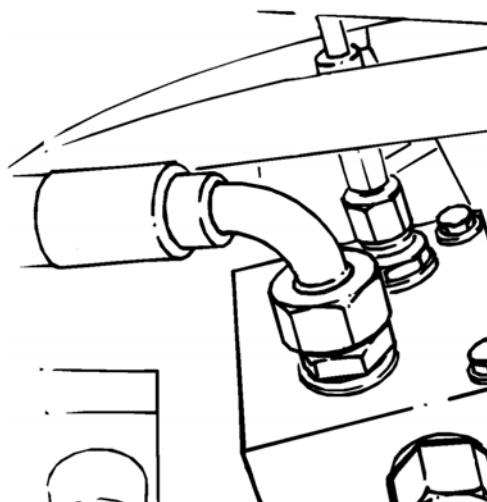


Figure 3
Valve block, servo pressure

1. Adjusting screw, servo pressure
4. Restore the machine to operating condition.

Servo pressure, checking by spool in control valve

Op nbr 91463

[999 3831 Support](#)

[999 3704 Nipple, 2 pcs.](#)

[11 666 019 Pressure gauge, range 0–6 MPa \(0–870 psi\), 2 pcs.](#)

[11 666 037 Hose, 2 pcs.](#)

The following applies when checking:

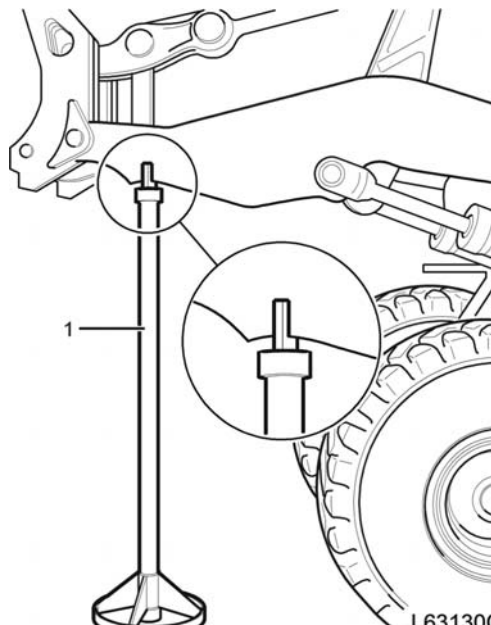


Figure 1
Securing boom

1. 999 3831

Temperature: **Normal operating temperature**

Engine speed: **Entire engine speed range**

In case of malfunction in any section, check to make sure that there are no leaks and that the output servo pressure is correct.

NOTE!

Always use the support to secure the boom when working under a raised boom.

1. Remove the cover plate in the front frame.

Servo pressure, checking by spool

2. Fit 999 3704 (2 pcs), one on each side of the valve spool for the function that is to be checked, connect hoses and the pressure gauge.

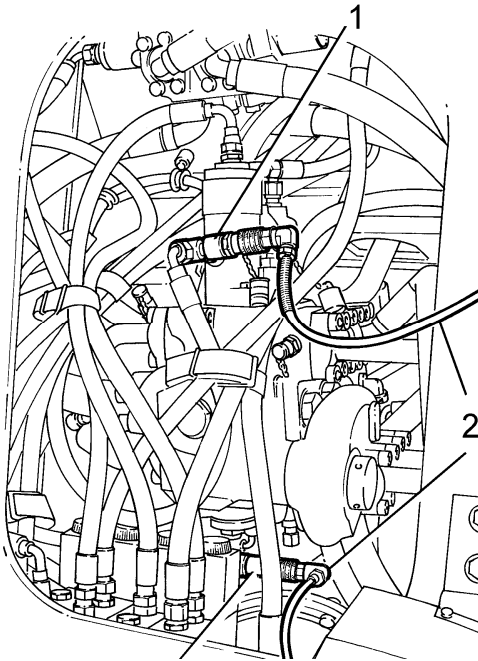


Figure 2
Checking servo pressure by valve spool

1. 999 3704 (connected one on each side of the valve spool)
2. 11 666 037 and 11 666 019 (two of each)
3. Start the engine and let it run at low idle. Check that there is no output pressure from the servo valve to the control valve with the servo valve in the neutral position. Check the output pressure from the servo valve. The pressure must, depending on the lever deflection, be approx. 0.6–4.0 MPa (87–580 psi) and no pressure on the opposite side.
4. Restore the machine to operating condition.



Volvo Construction
Equipment

Installation Instruction

Genuine Accessories

Ref. no. 21 2 779 3778	Kit no. 11707298 (80362)	Date/Dept. 2003-05 CEE-43	Product L90D, L120D, L150D, L180D	Page 1/3
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Servo valve, 3rd hydraulic function

Kit list

Part No.	Qty.	Designation
943907	2	Gasket
958226	2	O-ring
11006298	1	Decal
11104208	1	Servo valve
13944524	2	Nipple
13965179	2	Bolt



WARNING!

Read all signs and instructions on the machine and the safety instructions in the operators manual, before you start working on the machine.

The installation instructions are based on the use of special tools, the E-tool and standard tools generally available on the market, and also on our operators manuals and service manuals.

The equipment should be installed by qualified personnel of an authorised workshop.

Volvo CE Customer Support AB disclaims all responsibility if tools and work methods other than those described in the instructions are used.

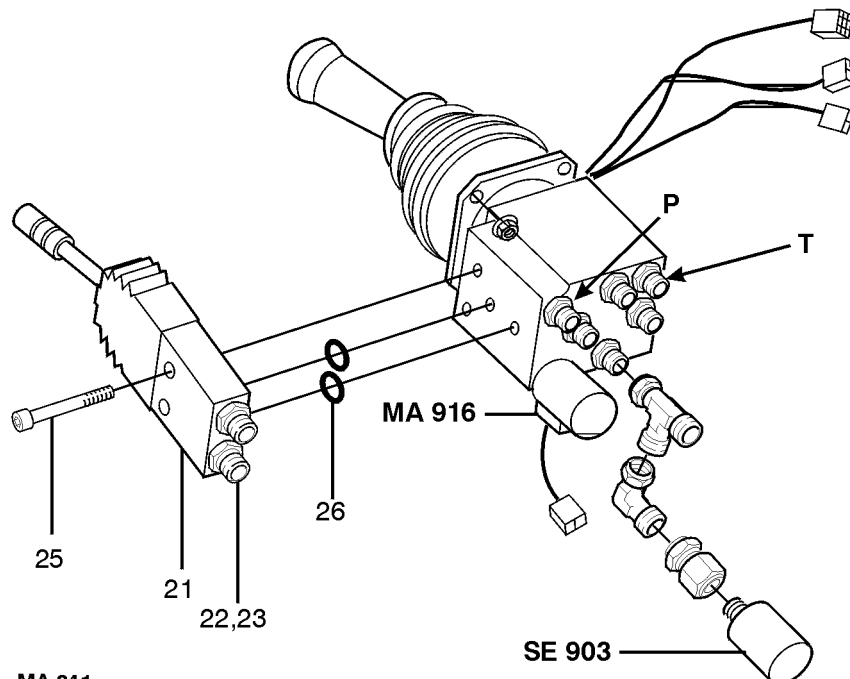
Servo valve, 3rd hydraulic function

Work description

Servo valve

- 1 Remove the plugs on the single lever control. Fit the servo valve on the single lever control.

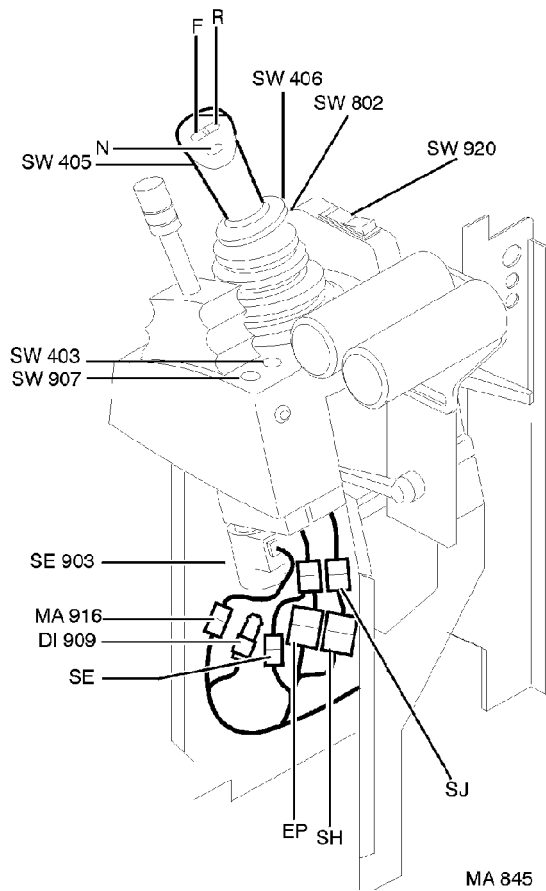
Part No.	Designation	Qty.	Pos. in Fig. 1
943907	Gasket	2	23
958226	O-ring	2	26
11104208	Servo valve	1	21
13944524	Nipple	2	22
13965179	Bolt	2	25



MA 841

Fig. 1

- 2 Make a hole from the inside in the cover for the valve to the 3rd hydraulic function.
- 3 Connect the cables and refit the cover.



SW403	Lever lock
SW405	Kick down
SW406	Engine brake
SW802	Signal
SW907	Boom suspension system
SW920	Hydraulic lock

Fig. 2

Place the decal on the right window.

Part No.	Designation	Qty.	Pos. in Fig. 3
11006298	Decal	1	20

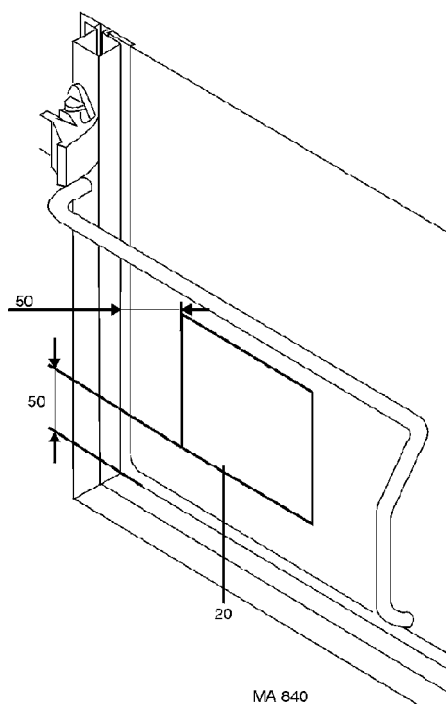


Fig. 3

- 4 Write equipment number 80362 on the machine card.

Servo valve, functional description <https://truckmanualshub.com/>

The servo valve consists of six valve spools, one for each hydraulic function.

In principle, the servo valve functions like a pressure reducing valve. In the neutral position, the valve spool closes off the servo pressure while the connection from the control valve is connected to tank. When the pressure pin is acted on by the lever (function activated), the valve spool is pressed down by the spring and first close the connection to tank. When the movement continues, the valve spool opens for the servo pressure out to the control valve. The output servo pressure also acts on the valve spool which is pressed up against the spring. When the output pressure reaches a value corresponding to the lever stroke and thus the spring force, the valve closes. This results in a controlled oil pressure acting on the spool in the control valve.

As the valve spool in the servo valve opens, an immediate so-called start pressure is obtained, which is the lowest pressure that is able to move the spool to the closed position. The start pressure results in the movement of respective spool in the control valve to a position just before the connection to the hydraulic cylinder is opened.

Between the start position and the so-called forced opening in the servo valve, the output pressure is regulated proportionally with the lever stroke. The forced opening results in a mechanical contact between the pressure pin and the valve spool.

The output servo pressure just before the forced opening, is the pressure required to press the spool in the control valve to its end position. When the forced opening has been reached, the output servo pressure increases to the same level as the input servo pressure. For the functions that are equipped with electromagnets (detent solenoids), forced opening should be obtained at the so-called sensing position. The servo valve is in the sensing position when extra resistance can be felt in the lever.

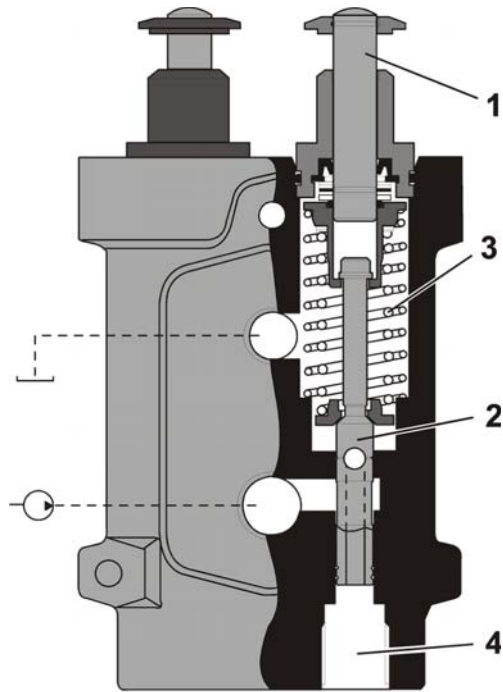


Figure 1
Servo valve

1. Pressure pin
2. Spring
3. Valve spool
4. Connection to control valve



Figure 2
Pressure diagram, output pressure from servo valve

1. Start pressure, 0.6 (87 psi) respective 0.7 MPa (101.5 psi), see table

2. Forced opening
3. Max. servo pressure
4. Stroke
5. Controlled servo pressure

Table for [Invalid linktarget] and [Invalid linktarget].

Servo valve	Valve spool A	Valve spool B
Output pressure		
1 Lift function		
Start pressure	0.7 MPa (101.5 psi)	0.6 MPa (87 psi)
Final pressure at forced opening	2.1 MPa (304.5 psi)	2.1 MPa (304.5 psi)
2 Tilt function		
Start pressure	0.7 MPa (101.5 psi)	0.6 MPa (87 psi)
Final pressure at forced opening	2.1 MPa (304.5 psi)	2.1 MPa (304.5 psi)
3 3rd/4th hydraulic function		
Start pressure	0.6 MPa (87 psi)	0.6 MPa (87 psi)
Final pressure at forced opening	2.1 MPa (304.5 psi)	2.1 MPa (304.5 psi)

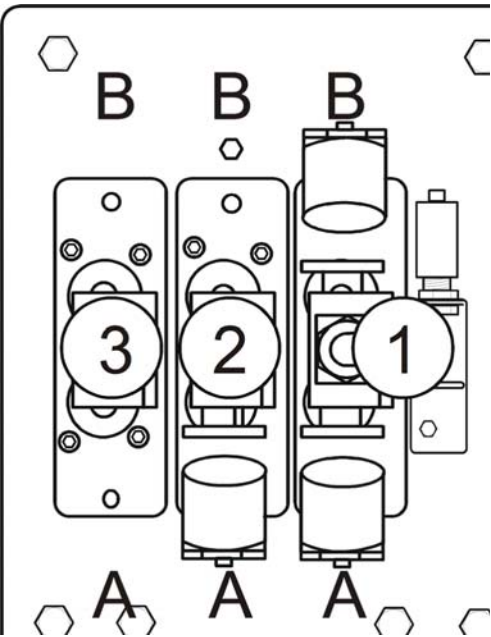


Figure 3
Servo valve
NOTE!

2.1 MPa (304.5 psi) is the highest controlled output servo pressure before forced opening is obtained.

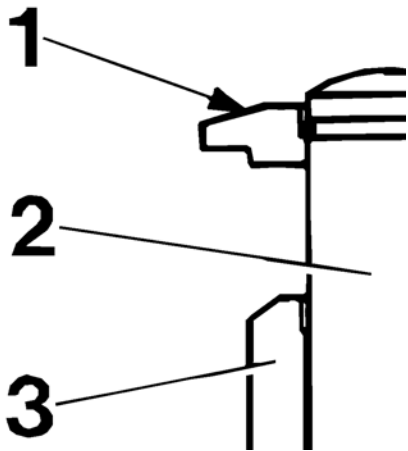


Figure 4

A. Pressure pin stroke

1. Washer
2. Pressure pin
3. Steering
4. O-ring
5. O-ring
6. Spacer washers for adjusting start position (1.2 mm/0.05 in. stroke) on pressure pin before the valve spool opens and "start pressure" is obtained.
7. Lock ring
8. Spacer washers
9. Lock ring
10. Seal

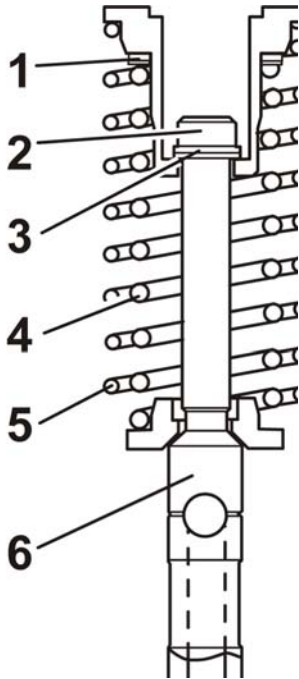


Figure 5
Spring package with valve spool

1. Spacer washers for adjusting start pressure
2. Screw
3. Spacer washers, forced opening
4. Spring
5. Spring
6. Valve spool

Op nbr 91454

1. Remove the cover and the switch.

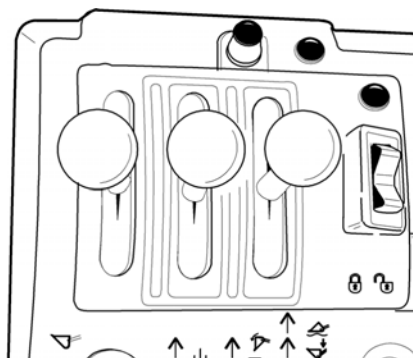


Figure 1

1. Cover with switch

Removing Control levers

2. Adjust the distance between the lever adjusting screw and the pressure pin.

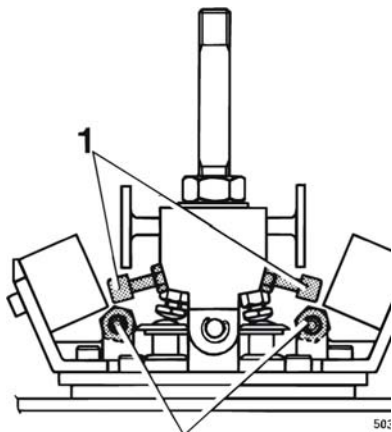


Figure 2

1. Adjusting screw
2. Pressure pin

NOTE!

The sensing position is the position that the lever must pass before the detent solenoid draws (hold position), as well as the transfer point between the lower and float positions.

Sensing position at 2.1 MPa (304.5 psi)

3. The sensing position is adjusted using the adjusting screws (1) [Invalid linktarget].

NOTE!

The adjusting screw must only be turned in complete turns.

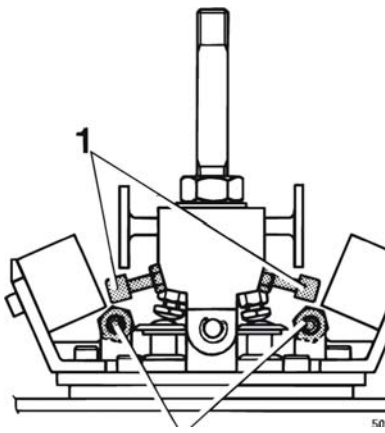


Figure 3
Sensing position

1. Adjusting screw
2. Pressure pin

4. The force required to pass the sensing position is adjusted with the pressure pin (2) [Invalid linktarget] (2 mm, 0.08 in. Allen key).

Alt. 1: the sensing position should be reached at a distance of 2–3 mm (0.08–0.12 in) between magnet (solenoid) and stop washer, see pos A [Invalid linktarget].

Alt. 2: Connect a pressure gauge according to [Invalid linktarget], adjust so that the sensing position is reached at 2.1 MPa (304.5 psi).

NOTE!

Alt. 1 requires that the hold (detent) solenoid is correctly adjusted.

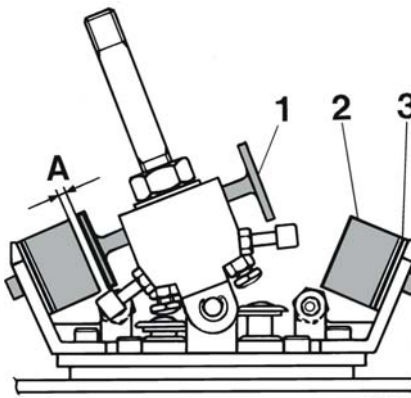


Figure 4

- A. 2–3 mm (0.08–0.12 in)
1. Stop washer
2. Hold (detent) solenoid
3. Spacer washers

Hold (detent) solenoid, bucket leveller, boom kick-out and float position

5. Move the lever to the sensing position. After adjusting the sensing position according to Alt. 2 step 4, adjust the clearance between the hold (detent) solenoid and the stop washer to 2–3 mm (0.08–0.12 in), see [Invalid linktarget]. Adjust with adjusting shims behind the hold (detent) solenoids.

Microswitch

6. The microswitch should be activated when the hold (detent) solenoid draws (hold position), i.e. the float position is engaged, but is unaffected in the sensing position. Adjustment is made by loosening and moving the microswitch, see [Invalid linktarget].

Note: Check that the switch for float position, see [Invalid linktarget], is activated.

NOTE!

The float position must never be engaged before the sensing position has been passed.

<https://truckmanualshub.com/>

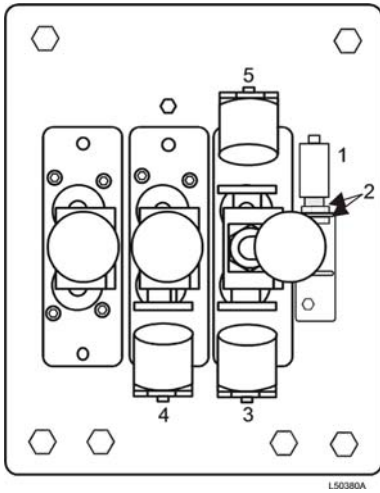


Figure 5

1. Microswitch
2. Lock nut
3. Hold (detent) solenoid, lift (MA902)
4. Hold (detent) solenoid, roll-back (rear tilt) (MA901)
5. Hold (detent) solenoid, float position (MA904)



Figure 6
SW903 Switch, float position
Installing

7. Fit the cover and the switch.

Shift valve L120D, description <https://truckmanualshub.com/>

The L120D has a shift valve the purpose of which is to disconnect the minus sides of the steering cylinders under light steering conditions. Only the plus side of a cylinder is then used for steering. If steering becomes heavy the shift valve connects the minus side of the opposite cylinder in circuit to obtain greater power.

Neutral position

Connection P1 is connected to the pump and connection P2 is connected to the steering valve. The steering valve is in the neutral position and only hold (stand-by) pressure is built up in the shift valve up to the regulating spools (7). The minus sides of the steering cylinders are connected to tank through the regulating spools (7). The oil on the plus sides of respective steering cylinder is trapped between the steering valve and its shock valves.

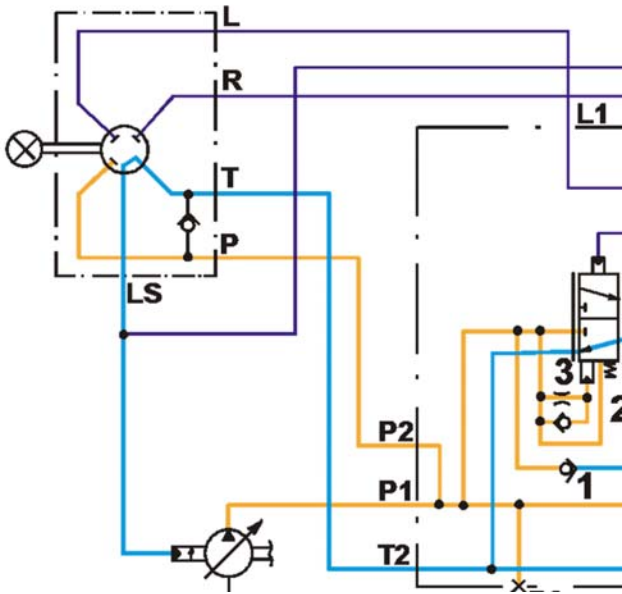


Figure 1
Neutral position

- | | |
|--------|-----------------------------|
| 1 | Non-return valve |
| 2 | Non-return valve |
| 3 | Restriction |
| 4 | Restriction |
| 5 | Damping piston |
| 6 | Piston |
| 7 | Regulating spool |
| 8 | Anti-cavitation valve |
| 9 | Directional spool |
| 10 | Non-return valve |
| Blue | = Increased return pressure |
| Violet | = Trapped oil |
| Orange | = Hold (stand-by) pressure |

Steering, right (light steering conditions)

Light steering conditions, LS-pressure below 16.0 MPa (2320 psi)

Oil from the steering valve enters at connection R1, flows on to the plus side of the left steering cylinder from connection R2, and acts on the directional spool (9). This shifts position so that oil from the LS-line reaches the piston (6). The LS-pressure is too low to move the regulating spool (7). The minus side of the right steering cylinder is filled with oil from the return side via the regulating slide (7) and one of the anti-cavitation valves (8). The machine is now steered with oil only on the plus side of the left steering cylinder. See [Invalid linktarget].

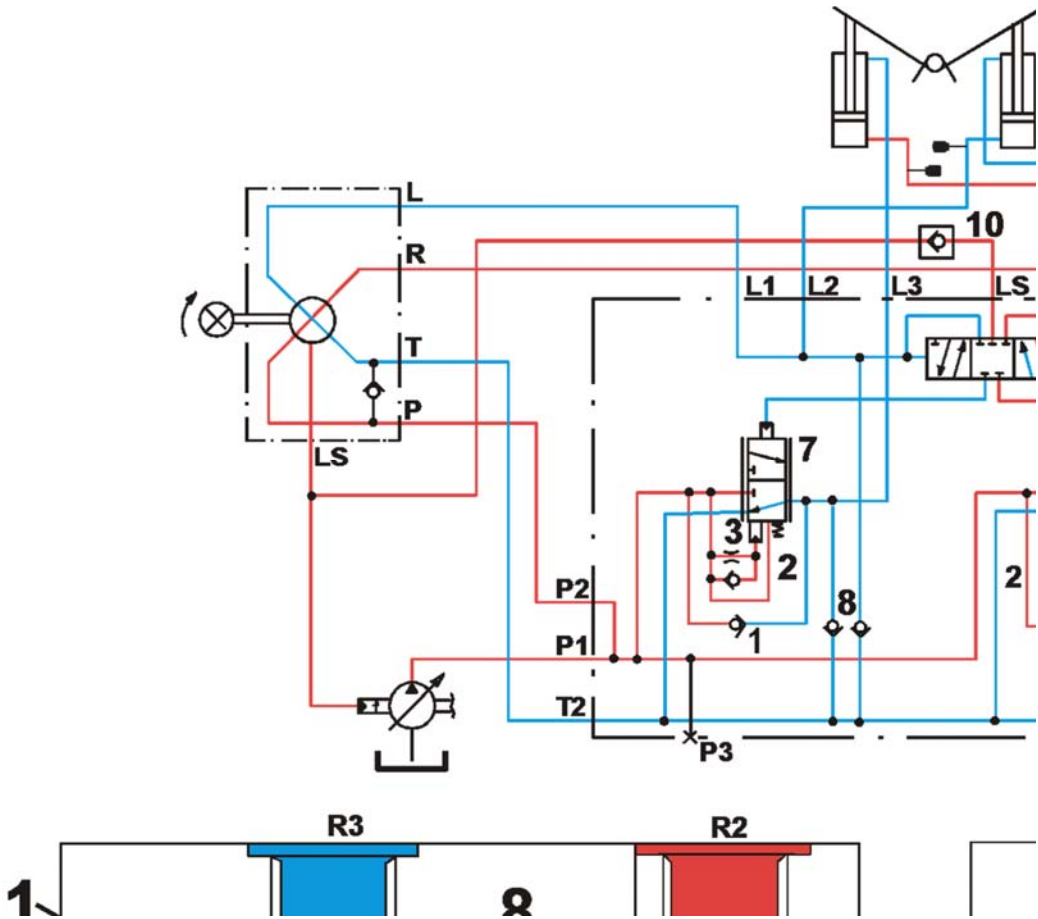


Figure 2
Steering, right (light steering conditions)

- | | |
|------|-----------------------------|
| 1 | Non-return valve |
| 2 | Non-return valve |
| 3 | Restriction |
| 4 | Restriction |
| 5 | Damping piston |
| 6 | Piston |
| 7 | Regulating spool |
| 8 | Anti-cavitation valve |
| 9 | Directional spool |
| 10 | Non-return valve |
| Red | = System pressure |
| Blue | = Increased return pressure |

Steering, right (heavy steering conditions)
Heavy steering conditions, LS-pressure above 16.0 MPa (2320 psi)

The starting position is the same as for steering during light conditions. The LS-pressure acting on the piston (6) wants, due to the area difference between the piston and the regulating slide (7), to start moving the regulating slide which presses on the damping piston (5). The oil in the piston is drained, to start with, through restrictions (3) and (4). Before the regulating slide (7) opens, the restriction (4) closes and the oil can then only drain through restriction (3), which gives a soft pressure increase out to the minus side of the right steering cylinder. The non-return valve (10) ensures engagement even if the LS-pressure drops to below 16.0 MPa (2320 psi) for a short period. The machine is thus steered with oil to the plus side of the left steering cylinder and to the minus side of the right steering cylinder. See [Invalid linktarget].

When steering left, the corresponding will take place.

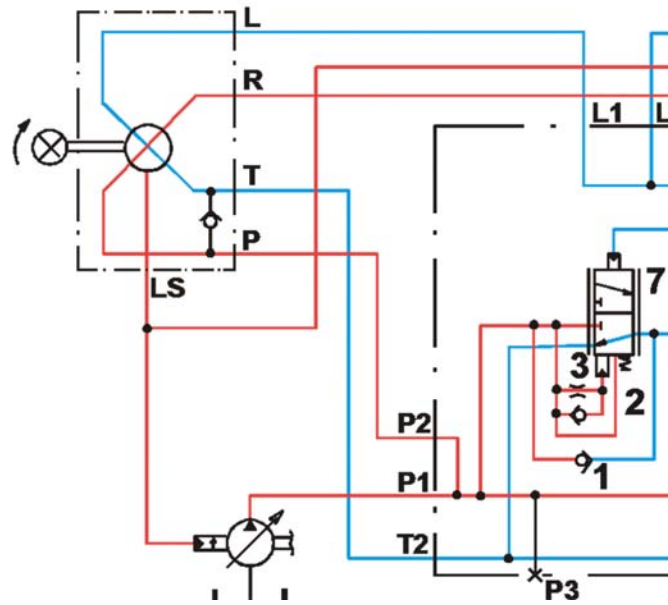


Figure 3
Steering, right (heavy steering conditions)

- | | |
|------|-----------------------------|
| 1 | Non-return valve |
| 2 | Non-return valve |
| 3 | Restriction |
| 4 | Restriction |
| 5 | Damping piston |
| 6 | Piston |
| 7 | Regulating spool |
| 8 | Anti-cavitation valve |
| 9 | Directional spool |
| 10 | Non-return valve |
| Red | = System pressure |
| Blue | = Increased return pressure |

Op nbr 64578

1. Remove the union fittings for the tank connections (marked T on the valve).

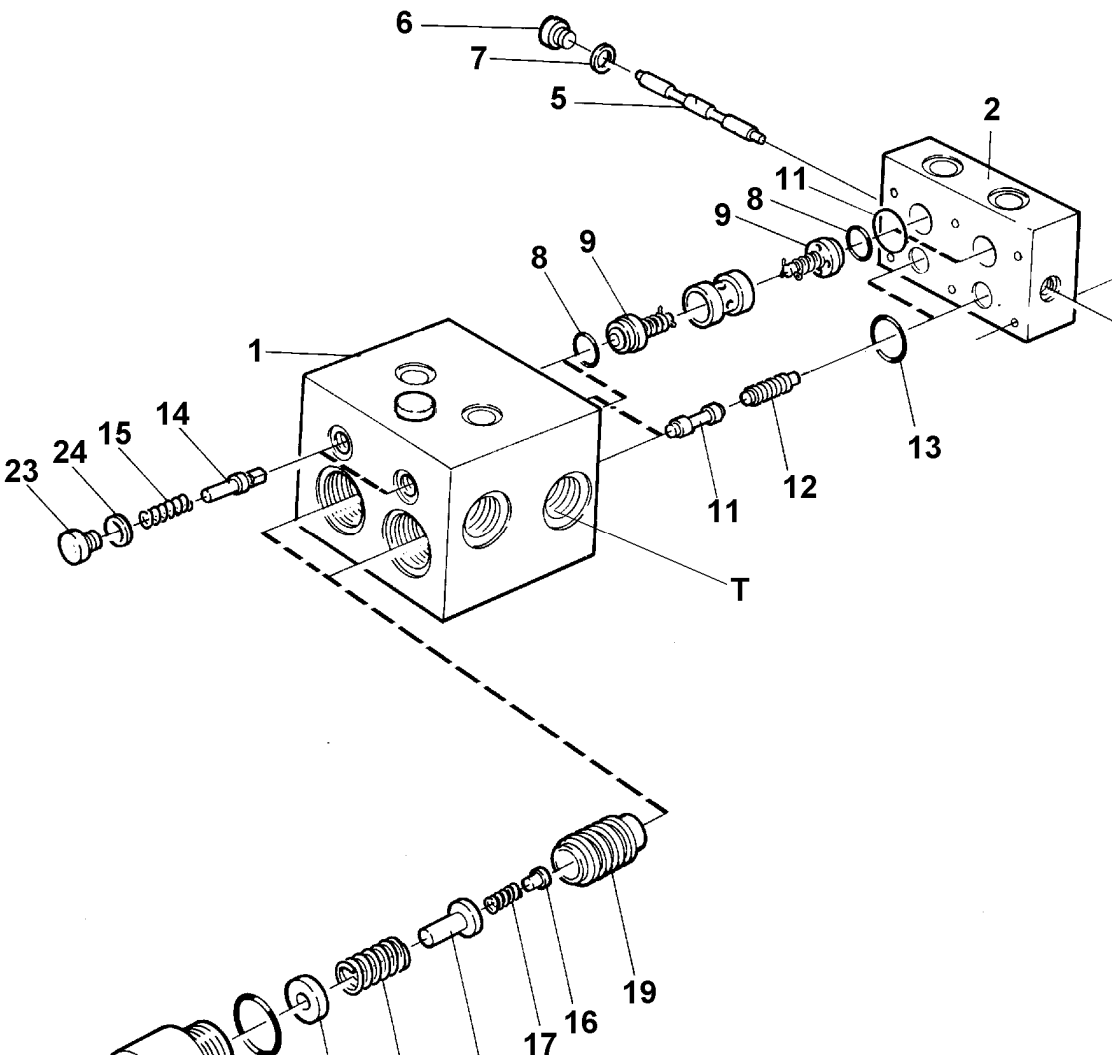


Figure 1
Shift valve

1	Valve housing	13	O-ring
2	End plate	14	Peg
3	Allen head screw	15	Spring
4	Washer	16	Non-return valve
5	Shuttle valve	17	Spring
6	Plug	18	Piston
7	Gasket	19	Piston
8	O-ring	20	Spring
9	Anti-cavitation valve	21	Adjusting shim
10	O-ring	22	Housing
11	Regulating spool	23	Plug
12	Piston	24	Gasket
T	Tank connection		

2. Remove the damping valves with the housing. <https://truckmanualshub.com/>

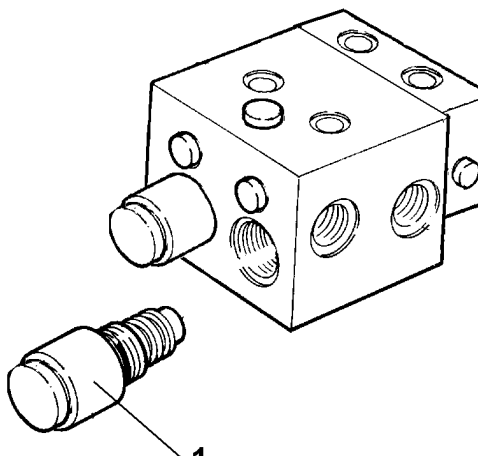


Figure 2

1. Damping valve with housing
3. Dismantle the damping valves. Clean and check the parts with regards to any wear and damage. Change O-rings and springs. Assemble the damping valves.

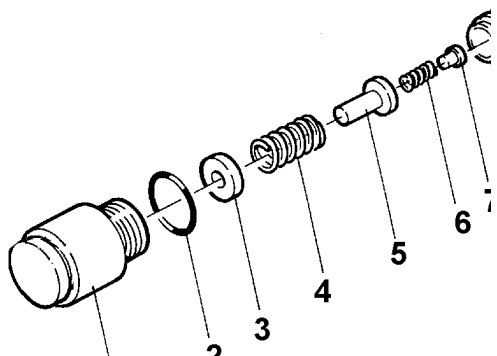


Figure 3

1. Housing
 2. O-ring
 3. Adjusting shim
 4. Spring
 5. Piston
 6. Spring
 7. Non-return valve
 8. Piston
4. Remove the plugs and press out the shuttle valve. Clean and check the parts with regards to any damage and wear. Fit the shuttle valve, washers and plugs.

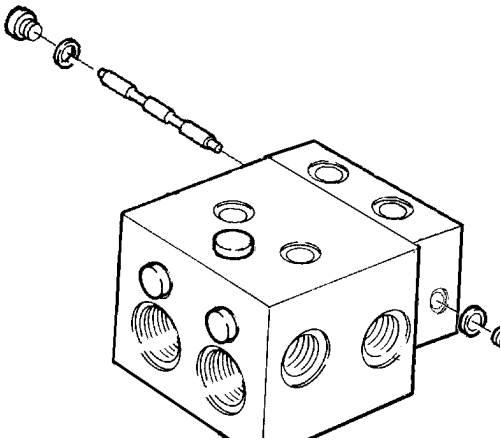


Figure 4
Shuttle valve

5. Remove the six Allen head screws and remove the end plate.
6. Use a bent screwdriver or an Allen key in the tank connection to press out the anti-cavitation valves. Clean and check the parts with regards to any damage and wear.

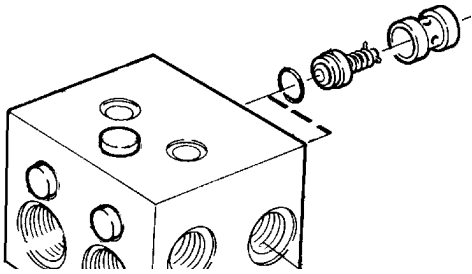


Figure 5

T Tank connection

7. Change the anti-cavitation valves as well as the O-rings. Fit the valves, spacers as well as the new O-rings.

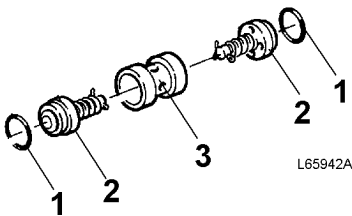


Figure 6

1. O-ring
2. Anti-cavitation valve
3. Spacer

8. Press out the regulating spools and pistons (press in the connections for the damping valves). Clean and check the parts with regards to any damage and wear. Change the O-rings. Fit the spools and pistons as well as the new O-rings.

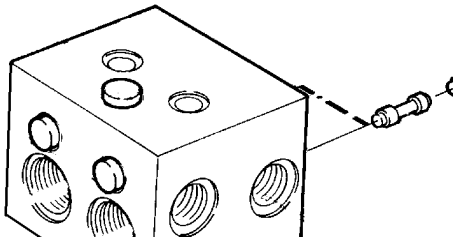


Figure 7

T Tank connection

9. Fit the damping valves with the housing.
10. Remove the plugs and press out the non-return valves (from the end). Clean and check the parts with regards to any damage and wear. Fit the non-return valves, the new springs and plugs.

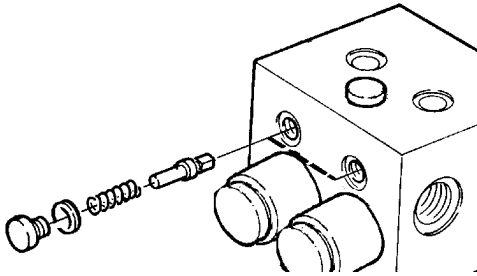


Figure 8

11. Fit the end plate and tighten down with the Allen head screws.
12. Fit the union fittings for the tank connections.

Shock and anti-cavitation valve <https://truckmanualshub.com/>

Functions of shock and anti-cavitation valve

- Shock function
- Anti-cavitation function

Shock function

When the pressure from the cylinder (6) increases, the pilot valve (1) will open at the preset opening pressure. When the oil starts to flow past the pilot valve, the pressure in the chamber (2) will drop in relation to the pressure from the cylinder. The pipe (3) which functions as a moveable restriction, will follow with the flow and seal against the pilot valve. At this point, the shock pressure acts on the entire area of the pipe. The oil in the chamber is connected to tank via the open pilot valve. The piston (5) can now open and the shock pressure is drained directly to the tank connection.

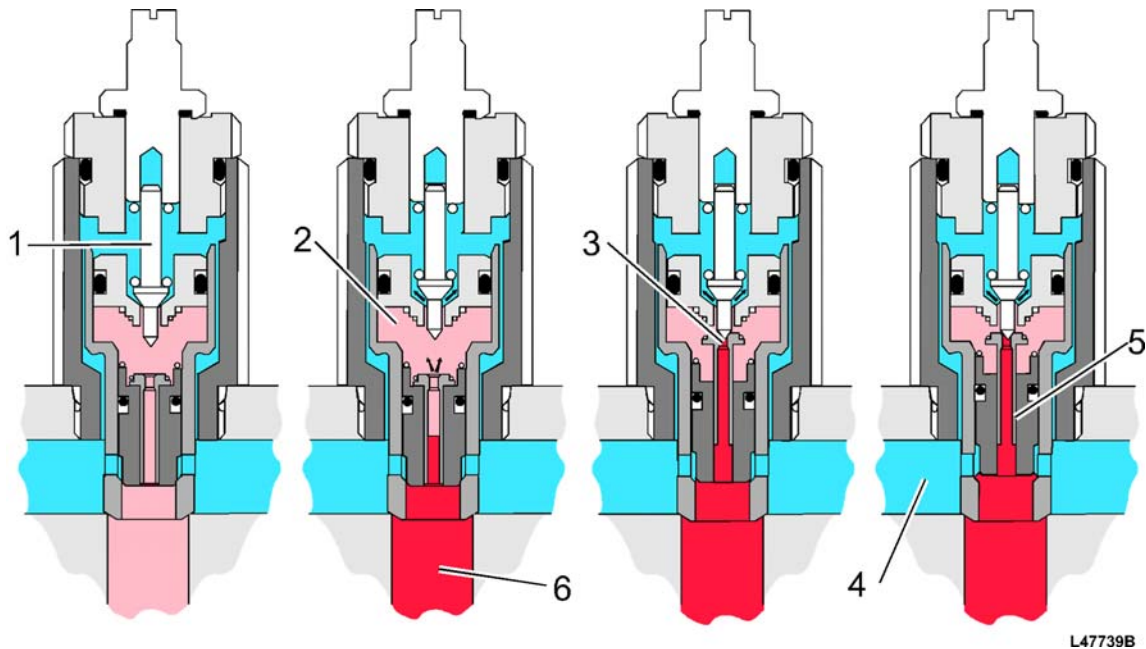


Figure 1
Shock function

The sequence of events is shown from left to right

1. Pilot valve
2. Chamber
3. Pipe
4. Tank connection
5. Piston
6. Connection to cylinder

Blue Increased return pressure
Pink Partial pressure of working pressure
Red Working pressure

Anti-cavitation function

When the pressure in the cylinder drops, the pressure in the chamber (1) also becomes lower than the tank pressure. Now, the tank pressure acts on the piston (4) and lifts it, and the anti-cavitation function is engaged.

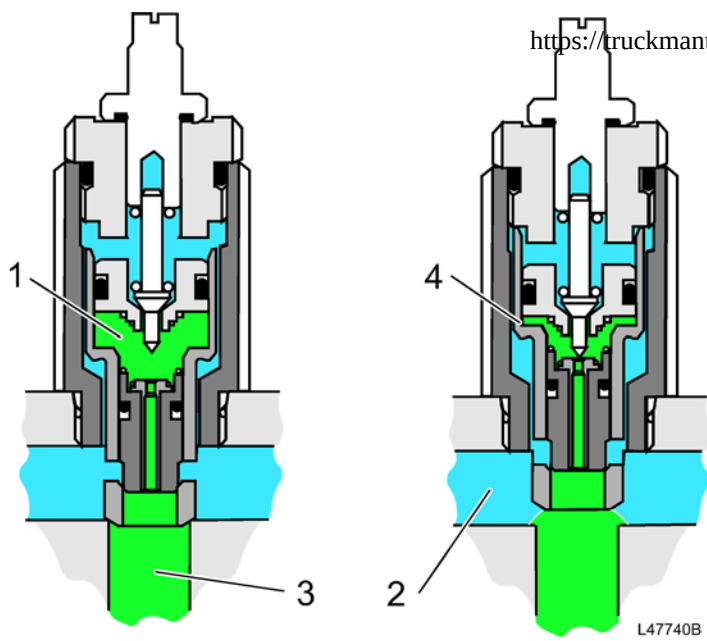


Figure 2
Anti-cavitation function

The sequence of events is shown from left to right

1. Chamber
2. Tank connection
3. Connection to cylinder
4. Piston

Blue
Green

Increased return pressure
Atmospheric pressure

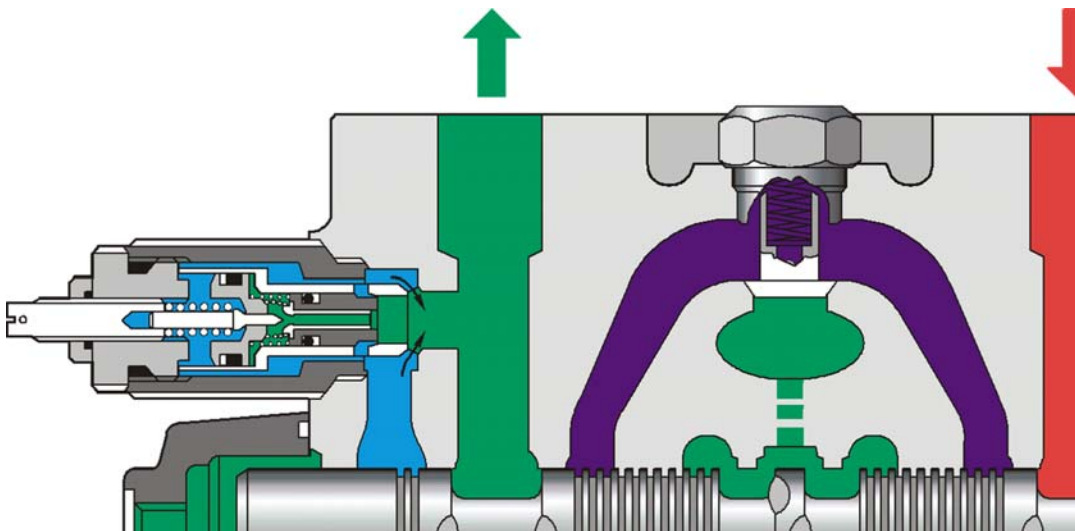


Figure 3
Anti-cavitation function, L120D

Shock valve, lift function, checking and adjusting

Op nbr 94523

[999 3831 Support](#)

[999 3723 Nipple](#)

[999 3749 Nipple](#)

[11 666 003 Pressure gauge](#)

[11 666 030 Pump](#)

[11 666 037 Hose](#)

[14 360 000 Vacuum pump](#)

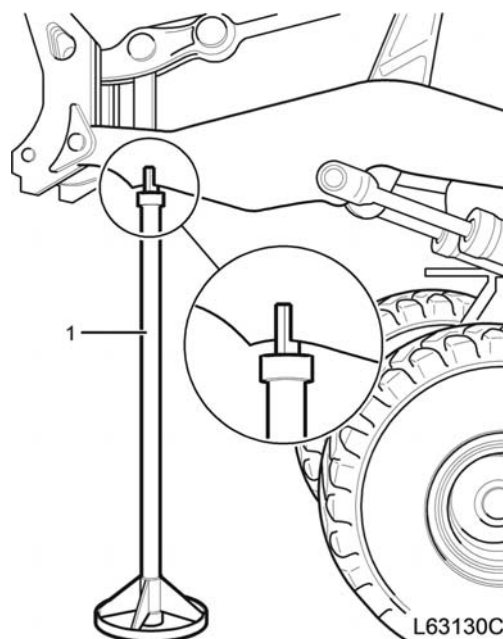


Figure 1
Securing boom

1. 999 3831

NOTE!

Always use the support to secure the boom when working under a raised boom.

1. Raise the boom and position the support, release the pressure. Tilt the bucket forward against its end position.
2. Connect the vacuum pump to the hydraulic tank, see [Invalid linktarget].

NOTE!

A condition for using vacuum pump 14 360 000 is that it is constantly connected and not shut off. Never leave the machine unattended. The negative pressure in the hydraulic oil tank must not exceed a maximum of 70 kPa (10.2 psi) (max. 0.3 bar absolute in the hydraulic tank).

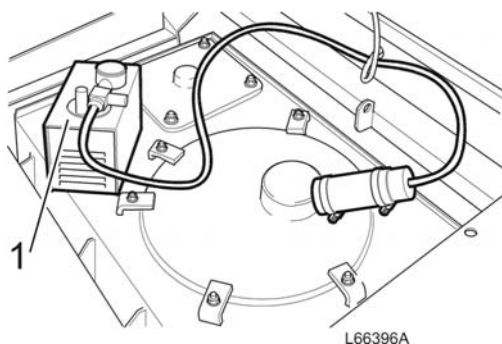


Figure 2
Shutting off hydraulic oil

<https://truckmanualshub.com/>

1. 14 360 000

3. Remove the shock valve for the lift function.

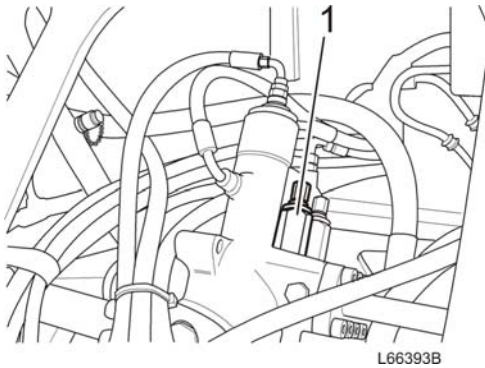


Figure 3

1. Shock valve, lift function

4. Connect the shock valve according to [Invalid linktarget], check the opening pressure, adjust if needed.
Opening pressure: **32 ±0.6 MPa (4640 ±87 psi)**

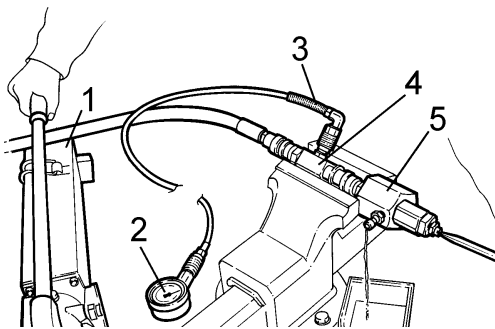


Figure 4
Adjusting shock valve

1. 11 666 030
2. 11 666 003
3. 11 666 037
4. 999 3723
5. 999 3749

5. Refit the shock valve on the control valve, remove the vacuum pump and lower the boom.

Shock valve, tilt function, checking and adjusting

Op nbr 94519

[999 3831 Support](#)

[11 666 003 Pressure gauge 0–40 MPa \(0–5800 psi\)](#)

[11 666 037 Hose](#)

The following applies when checking:

Temperature: **Normal operating temperature**

Engine speed: **Low idle speed**

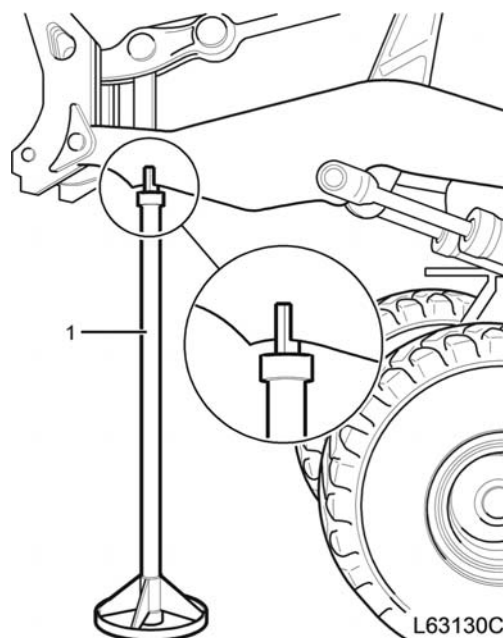


Figure 1
Securing boom

1. 999 3831

NOTE!

Always use the support to secure the boom when working under a raised boom.

1. Remove the cover plate on the front frame and connect the pressure gauge to the pressure outlet.

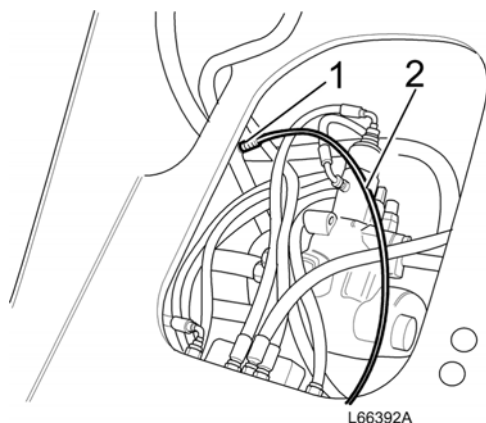


Figure 2
Checking shock pressure, rear tilt (roll-back)

1. Pressure outlet
2. 11 666 037 and 11 666 003

Checking shock pressure, rear tilt (roll-back) <https://truckmanualshub.com/>

2. Raise the lift arms approx. 1 metre (3 ft) and tilt back the bucket to the end position. Lower the lift arms. Read off the pressure when the stop lugs are next to each other and the tilt cylinder is forced in.
Shock pressure: **24.5 ± 0.6 MPa (3553 ± 87 psi)**

Shock pressure, adjusting

3. Adjust the pressure at pos 1, [Invalid linktarget]. The pressure increases when the screw is turned in. One full turn changes the pressure approx. 10 MPa (1450psi).

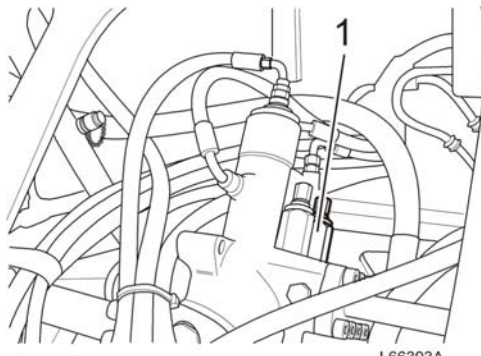


Figure 3
Adjusting shock pressure, rear tilt (roll-back)

1. Pressure limiting valve, shock pressure, rear tilt (roll-back)

Checking shock pressure, forward tilt

4. Connect the pressure gauge to the pressure outlet.

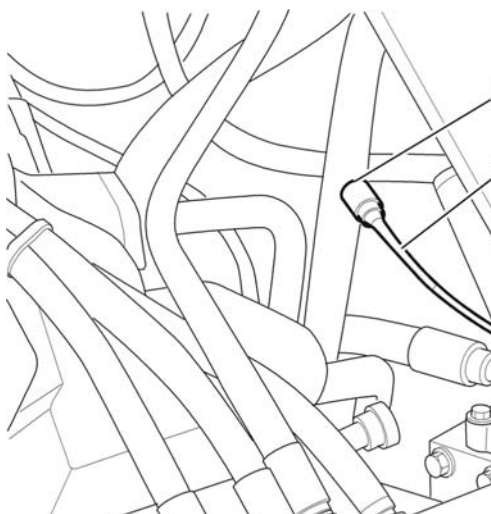


Figure 4
Checking shock pressure, forward tilt

1. Pressure outlet
 2. 11 666 037 and 11 666 003
5. Raise the lift arms approx. 2 m (6.6 ft) and tilt the bucket forward to its end position. Raise the lift arms. Read off the pressure when the stop lugs are next to each other and the tilt cylinder is forced out.
Shock pressure: **17.5 ± 0.6 MPa (2538 ± 87 psi)**

Shock pressure, adjusting

6. Adjust the pressure at pos 1, [Invalid linktarget]. The pressure increases when the screw is turned in. One full turn changes the pressure approx. 10 MPa (1450 psi).

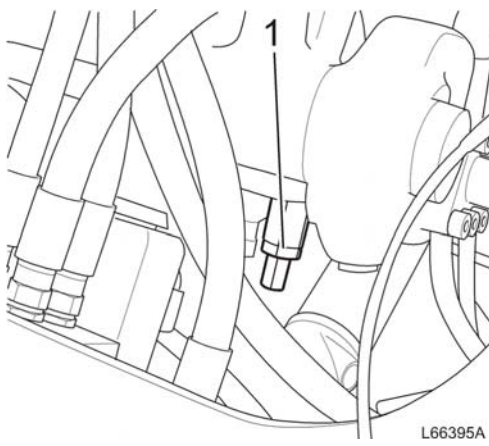


Figure 5
Adjusting shock pressure, forward tilt

1. Pressure limiting valve, shock pressure, forward tilt
7. Restore the machine to operating condition.

Signal earth

<https://truckmanualshub.com/>

Designation	Connected to	Serves
31EA	V-ECU (EB24)	Analogue earth
31FR	V-ECU (EA42)	Frequency earth

Language Code GB	Product WLO	Group 371	https://truckmanualshub.com/	No. 15	Version 1	Date 08/30/2002
Applies to 4200 Volvo BM, 4200B Volvo BM, 4300 Volvo BM, 4300B Volvo BM, 4400 Volvo BM, 4500 Volvo BM, 4600 Volvo BM, 4600B Volvo BM, 6300 Volvo BM, EL70 Volvo BM, EL70C Volvo BM, L50 Volvo BM, L50B Volvo BM, L50C OR Volvo, L50C Volvo, L50C Volvo BM, L50D Volvo, L70 Volvo BM, L70B Volvo BM, L70C Volvo, L70C Volvo BM, L70D Volvo, L90 Volvo BM, L90B Volvo BM, L90C OR Volvo, L90C Volvo, L90C Volvo BM, L90D OR Volvo, L90D Volvo, L120 Volvo BM, L120B Volvo BM, L120C Volvo, L120C Volvo BM, L120D Volvo, L120E Volvo, L150 Volvo BM, L150C LB Volvo, L150C Volvo, L150C Volvo BM, L150D Volvo, L150E Volvo, L160 Volvo BM, L180 CO Volvo BM, L180 HL Volvo BM, L180 Volvo BM, L180C CO Volvo, L180C HL Volvo, L180C Volvo, L180C Volvo BM, L180D HL Volvo, L180D Volvo, L180E Volvo, L220D Volvo, L220E Volvo, L330C LL Volvo, L330C Volvo, L330C Volvo BM, L330D Volvo						

Software in E-ECU for engines supplied as spare part



WARNING

Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This SB is to be considered as a technical information and comprises normal warranties within the rules for the same.

The engine control unit (E-ECU) on D6D and D7D is provided with software that is adapted to the serial number for the respective chassis. The engine manufacturer will make the software available by entering it in a database from which the respective product company then can download the software for the respective machines. This is done with VCADS Pro on the production line. At the same time the database will also be updated and will link the serial number of the engine with the serial number of the machine. The procedure is connected to the emission demands of the authority.

The procedure for engines ordered as a spare part is the same, i.e. the software is downloaded from the database. Subsequently the software must be stored in the machine to create an operational and certified machine. This can be done in the following way:

1. The engine, which physically is kept in Volvo CE's store, is ordered from Volvo CE by stating the serial number of the machine and its model designation. Volvo CE will download the software to the ECU in the engine and tie the software of the engine to the machine. It will then be possible for the workshop concerned to install the engine in the chassis without any further measures, such as using the VCADS Pro.
2. The engine is ordered from Volvo CE to be stored at the customer or similar. At a later date, when the engine is to be used, contact will have to be made with the person responsible for VCADS Pro within the respective sales company. Information about the model designation and serial number of the machine, and the engine serial number must be provided. Thereafter, the software can be downloaded to and stored in the machine using VCADS Pro. This is done by the workshop concerned using VCADS Pro.

Special Tools Recommendations

VOLVO

Construction Equipment

Models only

L120D Volvo

7/7/2016 3:34:17 PM

Class BAS

Part No	Designation
9511355	Break out harness
9813194	Break out harness
9990020	Break out harness
9990062	Cable
9990130	Template
9990133	Template
9993522	Quick coupling
9993590	Gear wheel
9993704	Nipple
9993720	Nipple
9993721	Service display
9993749	Nipple
9993824	Screw
9993831	Support
9993871	Nipple
9993892	Electronic unit
9998505	Break out harness
9998533	Break out harness
9998534	Break out harness
9998567	Break out harness
9998645	Setting tool
9998699	Adapter
11666003	Pressure gauge
11666017	Pressure gauge
11666018	Pressure gauge
11666019	Pressure gauge
11666020	Pressure gauge
11666037	Hose
11666135	Gas filling kit
14360000	Vacuum pump / 24V

Class EXT

Part No	Designation
6999007	Handle
6999025	Drift plate
6999034	Drift plate
9993723	Nipple
9993742	Socket
9993806	Adjusting plate
9993875	Gauge

9998039	Drift
88830163	Lifting tool
88830175	Pump

Specification L90D, general

<https://truckmanualshub.com/>

Servo pump (common with brake system) included in hydraulic system double-pump	
Type	Vane pump
Displacement	15.9 cm ³ (1.0 in ³)
Flow rate at 2200 rpm and 10 MPa (1450 psi) pressure	31.0 l/min (8.2 US gal/min)
Servo pressure (throughout entire engine speed range)	3.0–4.0 MPa (435–580 psi)
Increased pressure, separate attachment locking (optional equipment)	15 ±0.5 MPa (2175 ±72.5 psi)
Accumulator 0.5 l (0.13 US gal) in servo circuit, precharge pressure	1.5 MPa (217.5 psi)

Steering	
Type	Load-sensing hydrostatic
Steering angle	±40°
Number of steering wheel turns, total	4.15 revolutions
Steering time (approx.), full lock –full lock, slow idle speed	6.5 sec
Steering time (approx.), full lock –full lock, fast idle speed	2.5 sec

Specification L90D, general

<https://truckmanualshub.com/>

Oil pump	
Type	Axial piston pump, variable displacement
Displacement	45 litres (12 US gal)
Flow rate at 2100 rpm and 10 MPa pressure	91 l/min (24 US gal/min)
Working pressure, high idle speed	21 ±0.35 MPa (3045 ±51 psi)
Hold (stand-by) pressure, low idle speed	2.8–3.3 MPa (406–479 psi)

Steering valve	
Type	"Closed centre"

Shock valves	
Number of valves	2
Opening pressure at 10 l/min (2.6 US gal/min)	28 MPa (4060 psi)

Steering cylinder	
Type	Double-acting
Piston rod diameter	40 mm (1.6 in)
Inside diameter/stroke	70/419 mm (2.8/16.5 in)

Specification L90D, general

<https://truckmanualshub.com/>

Operating times (approx.), fast idle speed	
Lift, with SAE work load	5.5 s
Lower, without load	2.5 s
Forward tilt, with SAE work load	2 s
Forward tilt, without load	2.5 s

Specification L90D, general

<https://truckmanualshub.com/>

Hydraulic oil pump (working hydraulics) included in hydraulic system double-pump	
Type	Vane pump, fixed displacement
Displacement	98.3 cm ³ (6 in ³)
Working pressure, high idle speed	22.5 ±0.4 MPa (3263 ±58 psi)
Flow rate at 2200 rpm and 10 MPa (1450 psi) pressure	212 l/min (56 US gal/min)

Boom Suspension System	
Accumulator, precharge pressure, 1 pc.	3.0 MPa (435 psi)

Specification L90D, general

<https://truckmanualshub.com/>

Lift cylinder	
Type	Double-acting
Piston rod diameter	70 mm (2.76 in)
Inside diameter/stroke	130/710 mm (5.1/28.0 in)

Tilt cylinder	
Type	Double-acting
Piston rod diameter	90 mm (3.5 in)
Inside diameter/stroke	190/430 mm (7.5/16.9 in)

Specification L120D, general

<https://truckmanualshub.com/>

Steering	
Type	Load-sensing hydrostatic
Steering angle	±40°
Number of steering wheel turns, total	3.75 revolutions
Steering time (approx.), full lock –full lock, slow idle speed	6.5 sec
Steering time (approx.), full lock –full lock, fast idle speed	4 sec

Specification L120D, general

<https://truckmanualshub.com/>

Operating times (approx.), fast idle speed	
Lift, with SAE work load	6 s
Lower, without load	3 s
Forward tilt, with SAE work load	2 s
Forward tilt, without load	3 s

Specification L120D, general

<https://truckmanualshub.com/>

Hydraulic oil pump (working hydraulics) included in hydraulic system double-pump	
Type	Vane pump, fixed displacement
Displacement	136 cm ³ (8.3 in ³)
Working pressure, high idle speed	22.5 MPa (225 bar) (3263 psi)
Flow rate at 2100 rpm and 10 MPa (1450 psi) pressure	275 l/min (73 US gal/min)

Specification L120D, general

<https://truckmanualshub.com/>

Servo pump (common with brake system) included in hydraulic system double-pump	
Type	Vane pump
Displacement	15.9 cm ³ (1.0 in ³)
Flow rate at 2100 rpm and 10 MPa (1450 psi) pressure	29.5 l/min (7.8 US gal/min)
Servo pressure (throughout entire engine speed range)	3.0–4.0 MPa (435–580 psi)
Increased pressure, separate attachment locking (optional equipment)	15 ±0.5 MPa (2175 ±72.5 psi)
Accumulator 0.5 l (0.13 US gal) in servo circuit, precharge pressure	1.5 MPa (217.5 psi)

Boom Suspension System	
Accumulator, precharge pressure	3.0 MPa (435 psi)
	6.0 MPa (870 psi)

The pressures 3.0 MPa (435 psi) and 6.0 MPa (870 psi) are minimum and maximum values for accumulator precharging pressure. Suspension characteristics can be adapted by individually precharging the accumulator or accumulators between the minimum and maximum values, 3.0-6.0 MPa (435-870 psi).

Specification L120D, general

<https://truckmanualshub.com/>

Lift cylinder	
Type	Double-acting
Piston rod diameter	80 mm (3.1 in)
Inside diameter/stroke	160/676 mm (6.3/26.6 in)

Tilt cylinder	
Type	Double-acting
Piston rod diameter	110 mm (4.3 in)
Inside diameter/stroke	230/412 mm (9.1/16.2 in)

Specifications, air cleaner

<https://truckmanualshub.com/>

Air cleaner	
Triple-stage air cleaning:	Pre-cleaner - primary filter - safety filter

Fuel tank	210 dm ³ (55 US gal)
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Fuel tank	255 dm ³ (67.3 US gal)
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Specifications, capacities

<https://truckmanualshub.com/>

Engine, when changing oil incl. filter	21 l (5.5 US gal)
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Engine, when changing oil incl. filter	16 l (4.2 US gal)
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Cooling system, total	53 l (14.0 US gal)
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Specifications, capacities

<https://truckmanualshub.com/>

Hydraulic transmission, total	45 l (11.9 US gal)
Hydraulic transmission, when changing oil incl. filter	35 l (9.2 US gal)

Specifications, capacities

<https://truckmanualshub.com/>

Hydraulic transmission, total	33 l (8.7 US gal)
Hydraulic transmission, when changing oil incl. filter	25 l (6.6 US gal)

Dropbox when changing oil	4.7 l (1.2 US gal)
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Specifications, general, L90D and L120D

<https://manualshub.com/>

Injectors	
Type	Multi-hole nozzle (6 holes)
Opening pressure	25 + 0.8 MPa (3625+116 psi)
Setting pressure, for new spring	26 + 0.8 MPa (3770+116 psi)

Specifications, general, L90D/L120D

<https://truckmanualshub.com/>

Valve system	
Valve clearance, (warm or cold engine)	
inlet valve	0.40 mm (0.016 in)
exhaust valve	0.55 mm (0.022 in)

Specifications, general, L90D/L120D

<https://truckmanualshub.com/>

Fuel feed pump	
Type	Piston pump
Feed pressure	100–150 kPa (15–22 psi)

Specifications, general, L90D

<https://truckmanualshub.com/>

Fuel injection pump	
Type	In-line pump
Pump timing setting	13° BTDC

Specifications, general, L120D

<https://truckmanualshub.com/>

Fuel injection pump	
Type	In-line pump
Pump timing setting	9° BTDC

Specifications, general

<https://truckmanualshub.com/>

Engine	
Type designation	TD73KDE, part no. 8188126
Flywheel output at 2100 rpm	148 kW SAE J 1349 Net
Gross output at 2100 rpm	153 kW SAE J 1349 Gross
Max. torque at 1100 rpm	920 Nm (678.5 lbf ft) SAE J 1349 Net 925 Nm (682.2 lbf ft) SAE J 1349 Gross
Number of cylinders	6
Cylinder bore	104.77 mm (4.124 in)
Stroke	130 mm (5.12 in)
Cylinder displacement, total	6.7 l (1.8 US gal)
Compression ratio	17.5:1
Compression at starter motor speed, 200 rpm	2.4 MPa (348 psi)
Max. pressure difference allowed between cylinders at starter motor speed	0.3 MPa (44 psi)
Injection sequence	1-5-3-6-2-4
Idle speed, low	670 ±50 rpm
Idle speed, high	2345 ±60 rpm
Stall speed	2120 ±75 rpm

Specifications, general

<https://truckmanualshub.com/>

Engine	
Type designation	TD63KBE, part no. 8188107
Flywheel output at 2100 rpm	113 kW SAE J 1349 Net 113 kW DIN 70020
Gross output at 2100 rpm	118 kW SAE J 1349 Gross
Max. torque at 1100 rpm	690 Nm (508.9 lbf ft) SAE J 1349 Net 695 Nm (512.6 lbf ft) SAE J 1349 Gross 690 Nm (508.9 lbf ft) DIN 70020
Number of cylinders	6
Cylinder bore	98.43 mm (3.875 in)
Stroke	120 mm (4.72 in)
Cylinder displacement, total	5.48 dm ³ (334 in ³)
Compression ratio	18.3:1
Compression at starter motor speed, 200 rpm	2.4 MPa (348 psi)
Max. pressure difference allowed between cylinders at starter motor speed	0.3 MPa (44 psi)
Injection sequence	1-5-3-6-2-4
Idle speed, low	670 ±50 rpm
Idle speed, high	2420 ±60 rpm
Stall speed	2190 ±75 rpm

Specifications, general

<https://truckmanualshub.com/>

Cooling system	
Type	Closed system
Header tank cap opens at	50 kPa (7 psi)

Hydraulic transmission	
Type	Hydro-mechanical
Make	Volvo
Designation	HT205
Product number	22525
Number of gears	4 forward, 4 reverse
Gearshifting system	Electro-hydraulic

Speed range (tyres 20.5–25)	
1st	0–7.3 km/h (0–4.5 mph)
2nd	0–13.3 km/h (0–8.3 mph)
3rd	0–25.2 km/h (0–15.6 mph)
4th	0–35.2 km/h (0–21.8 mph)

Specifications, general

<https://truckmanualshub.com/>

Hydraulic transmission	
Type	Hydro-mechanical
Make	Volvo
Designation	HT131
Product number	22524
Number of gears	4 forward, 4 reverse
Gearshifting system	Electro-hydraulic

Speed range (tyre equipment 20.5–25)	
1st	0–7.1 km/h (0–4.4 mph)
2nd	0–13.3 km/h (0–8.3 mph)
3rd	0–27.7 km/h (0–17.2 mph)
4th	0–38.2 km/h (0–23.7 mph)

Wheel brake	
Type	Dual circuit, fully hydraulic wet disc brakes
Brake pad area per wheel	1290 cm ² (200 in ²)
Brake disc, min. thickness	7.2 mm (0.28 in)
Brake discs, thickness, new disc	9.6 mm (3.8 in)
Accumulator capacity	1.0 litre (2.6 US gal), 2
Precharge pressure, new accumulator	5 MPa (725 psi)
Min. allowed precharge pressure	3.5 MPa (508 psi)

Foot brake valve/unloading valve	
System pressure, unloading (cut-out) pressure	15.0–15.5 MPa (2175–2247 psi)
System pressure, charging (cut-in) pressure	12.0–13.0 MPa (1740–1885 psi)
Max. output brake pressure	7.4–8.6 MPa (1073–1247 psi)
Low pressure indication	8.1–9.9 MPa (1175–1436 psi)

Parking brake	
Type	Mechanically or electrically operated disc brake, located externally on the hydraulic transmission front output shaft.
Brake pads	
thickness	10 mm (0.39 in)
thickness, min.	2 mm (0.08 in)
Brake disc	
thickness	22 mm (0.87 in)
thickness, min.	18 mm (0.71 in)
max. allowed wear	4 mm (0.16 in)

Parking brake	
Type	Electrically controlled wet disc brake, located internally on the hydraulic transmission output shaft.
Brake pads	
thickness, min.	4.5 mm (0.18 in)
Control pressure	12.0–15.5 MPa (1740–2248 psi)

Hydraulic system	
Type	Servo-assisted, of "open centre" type

Control valve	
Shock valve, rear tilt (plus side)	24.5 ±0.6 MPa (3553 ±87 psi)
Shock valve, forward tilt (minus side)	17.5 ±0.69 MPa (2538 ±100 psi)
Shock valve, lift	32.0 ±0.6 MPa (4640 ±87 psi)
Back-up valve, forward tilt and lower	1.0–2.0 MPa (145–290 psi)

Specifications, L90D and L120D, general

<http://www.manualshub.com/>

Disengagement function	
Pressure sensor (SE 501), closing pressure (located on foot brake valve)	2.0 ±0.3 MPa (290 ±44 psi)

Front axle, when changing oil	33 l (8.7 US gal)
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Specifications, L90D, capacities <https://truckmanualshub.com/>

Hydraulic system, total	130 l (34 US gal)
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Hydraulic oil tank	95 l (25 US gal)
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Specifications, L90D, general

<https://truckmanualshub.com/>

Drive axles	
Type	Floating axle shafts with planetary gear hub reductions
Make	Volvo
Designation	
Front	AWB30
Rear	AWB30
Gear ratio, total	
Front	18.37:1
Rear	18.37:1
Differential lock	Front axle
Differential lock, control	Electro-hydraulic

Specifications, L90D, general

<https://truckmanualshub.com/>

Brake pump (common with servo system) is included in the hydraulic system double-pump	
Type	Vane pump
Displacement	15.9 cm ³ (0.97 in ³)
Flow at 2200 rpm and 10 MPa (1450 psi) pressure	31.0 l/min (8.2 US gal/min)

Specifications, L90D, weight

<https://truckmanualshub.com/>

Front mounting, rear axle	90 kg (199 lbs)
Rear mounting, rear axle	165 kg (364 lbs)

Specifications, L90D, weight

<https://truckmanualshub.com/>

Front axle	1500 kg (3308 lbs)
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Specifications, L90D, weight

<https://truckmanualshub.com/>

Front axle	1500 kg (3308 lbs)
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Specifications, L90D

<https://truckmanualshub.com/>

Lubrication system	
Oil pressure	395–545 kPa (57–79 psi)
Oil pressure, idle min.	130 kPa (19 psi)

Specifications, L90D

<https://truckmanualshub.com/>

Weight	L90D
	45 kg (99 lbs)

Specifications, L90D

<https://truckmanualshub.com/>

Torque converter	
Type	Single-stage
Torque amplification, at stall	2.66:1
Torque converter safety valve	1.0 MPa (145 psi)

Front axle, when changing oil	33 l (8.7 US gal)
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Specifications, L120D, capacities<https://truckmanualshub.com/>

Hydraulic system, total	210 l (55 US gal)
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Hydraulic oil tank	155 l (41 US gal)
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Specifications, L120D, general

<https://truckmanualshub.com/>

Oil pressure, at high idle speed	
Main pressure	1.37–1.58 MPa (199–229 psi)
Clutch pressure, 1st – 4th gear, F – R	1.37–1.58 MPa (199–229 psi)
Torque converter pressure, out	0.20–0.50 MPa (29–73 psi)
Lubricating oil pressure	0.16–0.22 MPa (23–32 psi)

Specifications, L120D, general

<https://truckmanualshub.com/>

Drive axles	
Type	Floating axle shafts with planetary gear hub reductions
Make	Volvo
Designation	
Front	AWB31
Rear	AWB30
Gear ratio, total	
Front	18.37:1
Rear	18.37:1
Differential lock	Front axle
Differential lock, control	Electro-hydraulic

Specifications, L120D, general

<https://truckmanualshub.com/>

Brake pump (common with servo system) is included in the hydraulic system double-pump	
Type	Vane pump
Displacement	15.9 cm ³ (0.97 in ³)
Flow at 2100 rpm and 10 MPa (1450 psi) pressure	29.5 l/min (7.8 US gal/min)

Specifications, L120D, weight

<https://truckmanualshub.com/>

Front mounting, rear axle	90 kg (199 lbs)
Rear mounting, rear axle	190 kg (419 lbs)

Specifications, L120D

<https://truckmanualshub.com/>

Lubrication system	
Oil pressure	375–527 kPa (54–76 psi)
Oil pressure, idle min.	50 kPa (7 psi)

Specifications, L120D

<https://truckmanualshub.com/>

Weight	L120D	
	Mannesmann & Sachs	Rockford Division
	40	110

Specifications, L120D

<https://truckmanualshub.com/>

Torque converter	
Type	Single-stage
Torque amplification, at stall	2.85:1
Torque converter safety valve	0.84 ±0.18 MPa (122 ±26 psi)

Specifications, tightening torques

<https://truckmanualshub.com/>

Engine	
Engine - engine mount	85 ±8 Nm (63 ±6 lbf ft)
Flywheel housing - hydraulic transmission	85 ±8 Nm (63 ±6 lbf ft)
Engine mount - tapered rubber damper	220 ±22 Nm (162 ±16 lbf ft)
Tapered rubber damper - frame	45 ±4.5 Nm (33 ±3 lbf ft)

Specifications, tightening torques

<https://truckmanualshub.com/>

Engine	Nm
Engine - engine mount	85 ±8 Nm (63 ±6 lbf ft)
Flywheel housing - hydraulic transmission	85 ±8 Nm (63 ±6 lbf ft)
Engine mount - tapered rubber damper	220 ±22 Nm (162 ±16 lbf ft)
Tapered rubber damper - frame	45 ±4.5 Nm (33 ±3 lbf ft)

Specifications, tightening torques

<https://truckmanualshub.com/>

Hydraulic transmission	
Transmission mount – transmission	220 ±22 Nm (162 ±16 lbf ft)
Transmission mount – rear frame	220 ±22 Nm (162 ±16 lbf ft)
Lock bolt for rubber bushing	220 ±22 Nm (162 ±16 lbf ft)

Specifications, tightening torques

<https://truckmanualshub.com/>

Frame	
Counterweight - frame	430 ±43 Nm (317 ±31.7 lbf ft)
Hitch - frame	430 ±43 Nm (317 ±31.7 lbf ft)

Specifications, tightening torques

<https://truckmanualshub.com/>

Hydraulic system	
Hydraulic oil pump (working hydraulics)	220 ±22 Nm (162 ±16.2 lbf ft)

Specifications, tightening torques

<https://truckmanualshub.com/>

Lift cylinder/tilt cylinder	
Piston – piston rod	25 Nm (18.4 lbf ft)

Specifications, weight

<https://truckmanualshub.com/>

Engine, standard	660 kg (1455 lbs)
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Specifications, weight

<https://truckmanualshub.com/>

Engine, standard	750 kg (1654 lbs)
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Specifications, weight

<https://truckmanualshub.com/>

Hydraulic transmission, incl. pumps	730 kg (1610 lbs)
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Specifications, weight

<https://truckmanualshub.com/>

Hydraulic transmission, incl. pumps	840 kg (1852 lbs)
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Specifications, weight

<https://truckmanualshub.com/>

Dropbox	165 kg (364 lbs)
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Specifications, weight

<https://truckmanualshub.com/>

Rear axle	1500 kg (3308 lbs)
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Specifications, weight

<https://truckmanualshub.com/>

Underbody skid plate	54 kg (119 lbs)
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Specifications, weight

<https://truckmanualshub.com/>

Control valve	50 kg (110 lbs)
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Specifications, weight

<https://truckmanualshub.com/>

Control valve	50 kg (110 lbs)
---------------	-----------------

Specifications

Thermostat	
Type	Piston thermostat
Number of thermostats	1
Begins to open at	82 °C (180 °F)
Fully open at	92 °C (198 °F)

Starter inhibitor

<https://truckmanualshub.com/>

This function is intended to prevent the machine from rolling when the engine is started with the gear selector in position F or R.

Input signals	Output function conditions	Output functions
○ Engine On/Off ○ Directional gear	○ Start of engine, input signal "Engine Off" is changed to input signal "Engine On" ○ Directional gear position F-R-N	○ Order to APS system for position N until the gear selector control has been in position N for > 2 seconds. Then the gear selector positions apply.

Starter motor engagement

<https://truckmanualshub.com/>

The function monitors the time that the starter motor is engaged to prevent it from overheating.

Input signals	Output function conditions	Output functions
○ Engine speed, SE201	○ Engine speed has been between 50 and 400 rpm for 40 seconds ○ or ○ If less than 5 minutes has elapsed since the previous condition and engine speed again enters the range of 50 - 400 rpm	○ Amber central warning lamp ○ ----- INFO ----- High Temp. Engine Starter Motor

Starter motor, specifications

<https://truckmanualshub.com/>

Starter motor	
Output	6.6 kW

Starting system, description

<https://truckmanualshub.com/>

When battery disconnecter SW101 is closed, ignition switch SW101, relay RE8 and relay RE202 are supplied with power.

When the key is turned to position 1, relay RE2 is energized and supplies alternator ALT1 with a pre-magnetization voltage. Resistor R1 limits this voltage to 3 volts.

When the key is turned to position 3, relay RE8 is activated and via relay RE9 supplies voltage to the starter motor (MO201).

When a Forward or Reverse gear is engaged (SW401), engagement of the starter motor is prevented by relay RE9 (starter inhibitor).

The key cannot be turned to position 3 to prevent the engagement of the starter motor while the engine is running.

If starting fails, the key must be turned back to position 0 before a new attempt can be made.

Wiring diagram 3

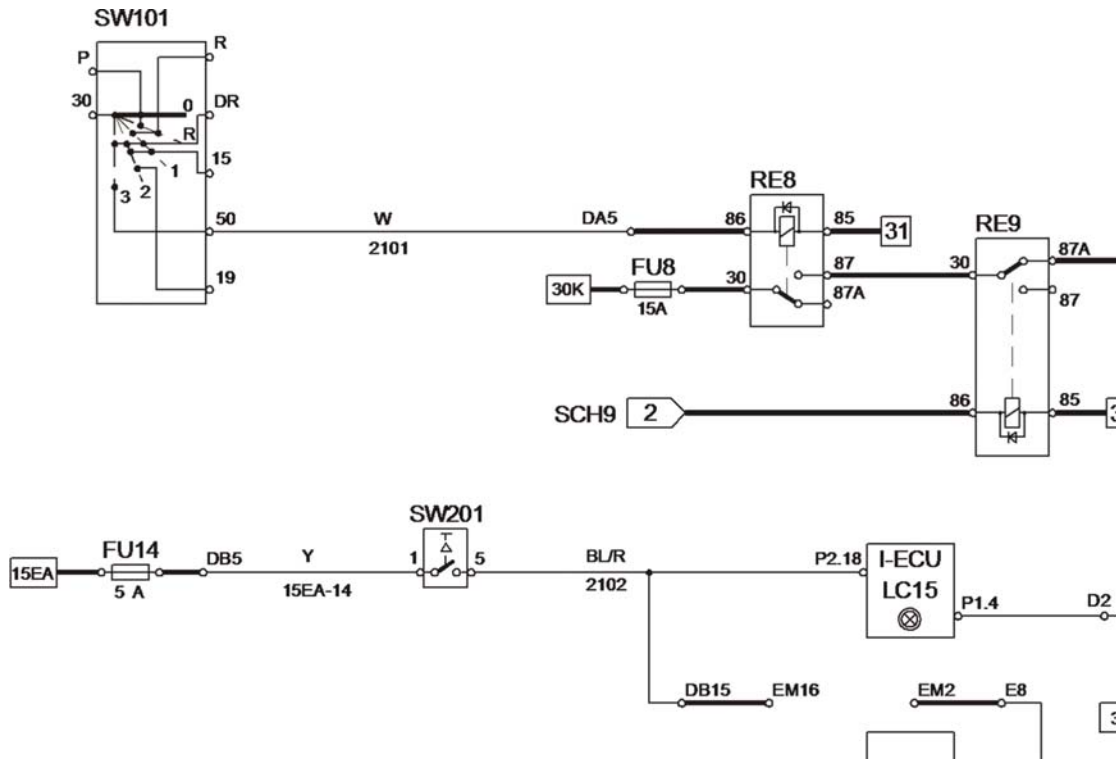


Figure 1

Starting with booster batteries

<https://truckmanualshub.com/>

When starting with booster batteries, the following must be noted:

Check that the booster batteries or other power source have **the same voltage** as the regular batteries.

WARNING

The batteries could explode due to the current surge if a fully charged battery is connected to a completely discharged battery. Injuries could then be caused.

Take the following precautions:

1. Move the gear selector to neutral.
2. Apply the parking brake.
3. Make sure that the booster batteries or other power source have the same voltage as the regular batteries.
4. Under no circumstances disconnect the leads connected to the regular batteries.
5. Connect the positive terminal (+) on the booster battery to the positive terminal (+) on the battery nearest the starter motor.
6. Connect the other cable from the negative terminal (-) on the booster battery to the machine chassis (earth), e.g. a frame member near the starter motor.
7. Start the engine using the ignition key in the cab.
8. When the engine starts, first remove the jumper cable between the chassis and the booster battery's negative terminal (-). Then remove the jumper cable between the positive (+) terminals.
9. Refit the protective caps on the battery terminals.

Steering cylinder, description

<https://truckmanualshub.com/>

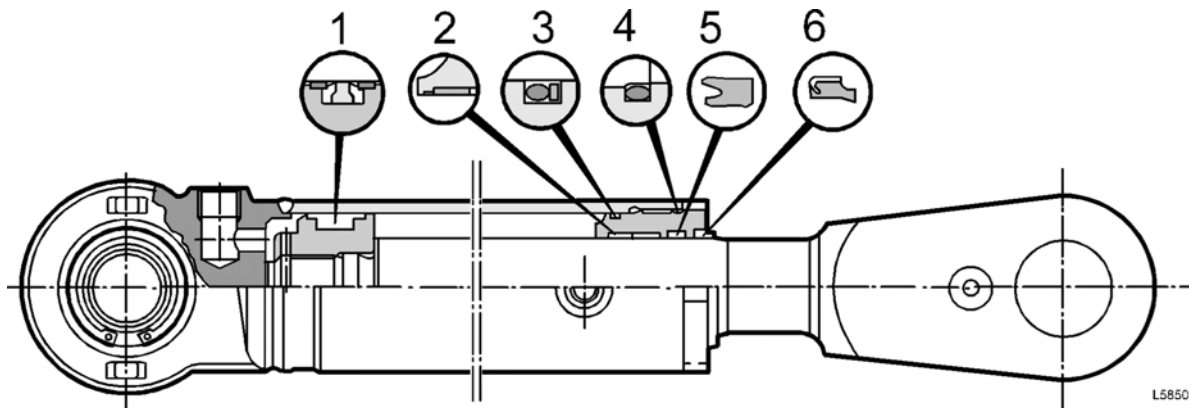


Figure 1
Steering cylinder

1. Piston seal
2. Bakelite bushings
3. O-ring with back-up ring
4. O-ring
5. Seal
6. Scraper seal

Steering pump, description

<https://truckmanualshub.com/>

Steering pump

The steering pump is a nine cylinder axial piston pump with variable displacement. The principle for such a pump is described in [Invalid linktarget]. The drive shaft (9) rotates, causing the cylinder block (6), pistons (7) and swash plate (8) to rotate as well. The stroke of the pistons will then be dependent on the angle of the yoke (10). The angle is determined by the pressure difference from the spring and oil pressure on the control piston. When the piston is in its innermost position and is on its way outward, it passes a bow-shaped groove (4) in the distribution plate (5). The oil is drawn (or more correctly, forced by the atmospheric pressure) from the inlet port (3) via the inlet groove (4) into the cylinder. When the piston has passed its outermost position and is on its way into the cylinder, oil is forced out through the outlet groove (2) and on to the outlet port (1). See [Invalid linktarget] and [Invalid linktarget] .

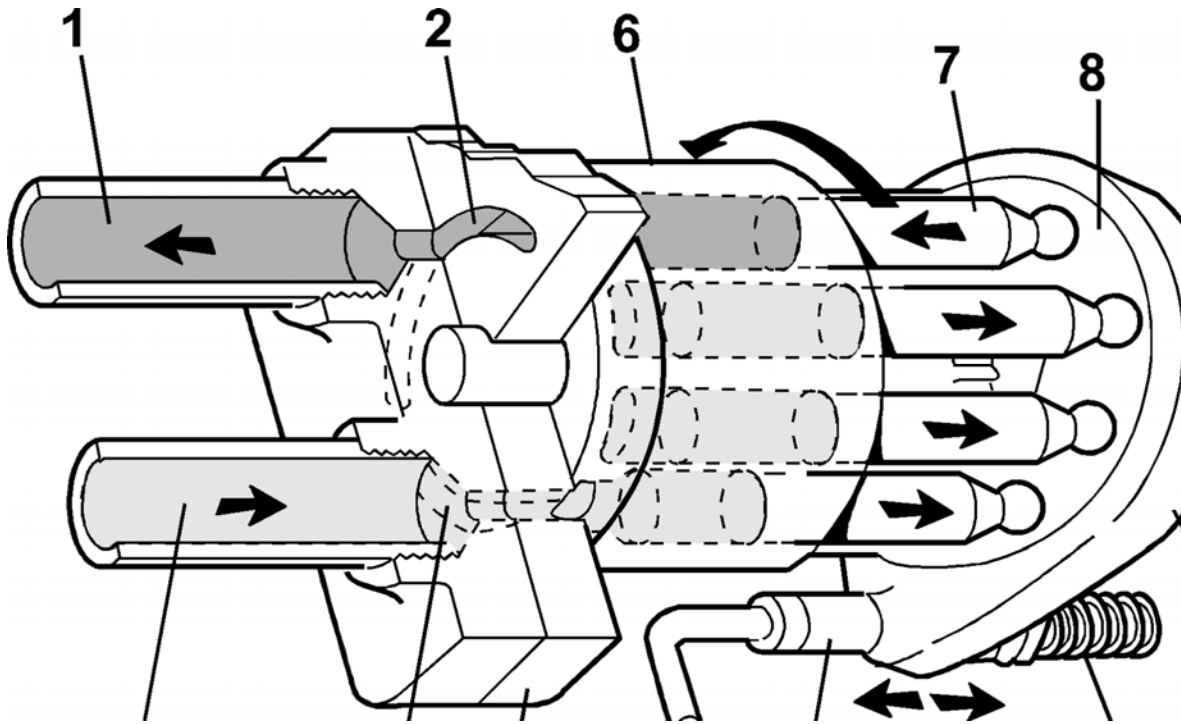


Figure 1
Steering pump (principle illustration)

1. Outlet port
2. Outlet groove in distribution plate
3. Inlet port
4. Inlet groove in distribution plate
5. Distribution plate
6. Cylinder block
7. Piston
8. Swash plate
9. Drive shaft
10. Yoke
11. Spring
12. Control piston

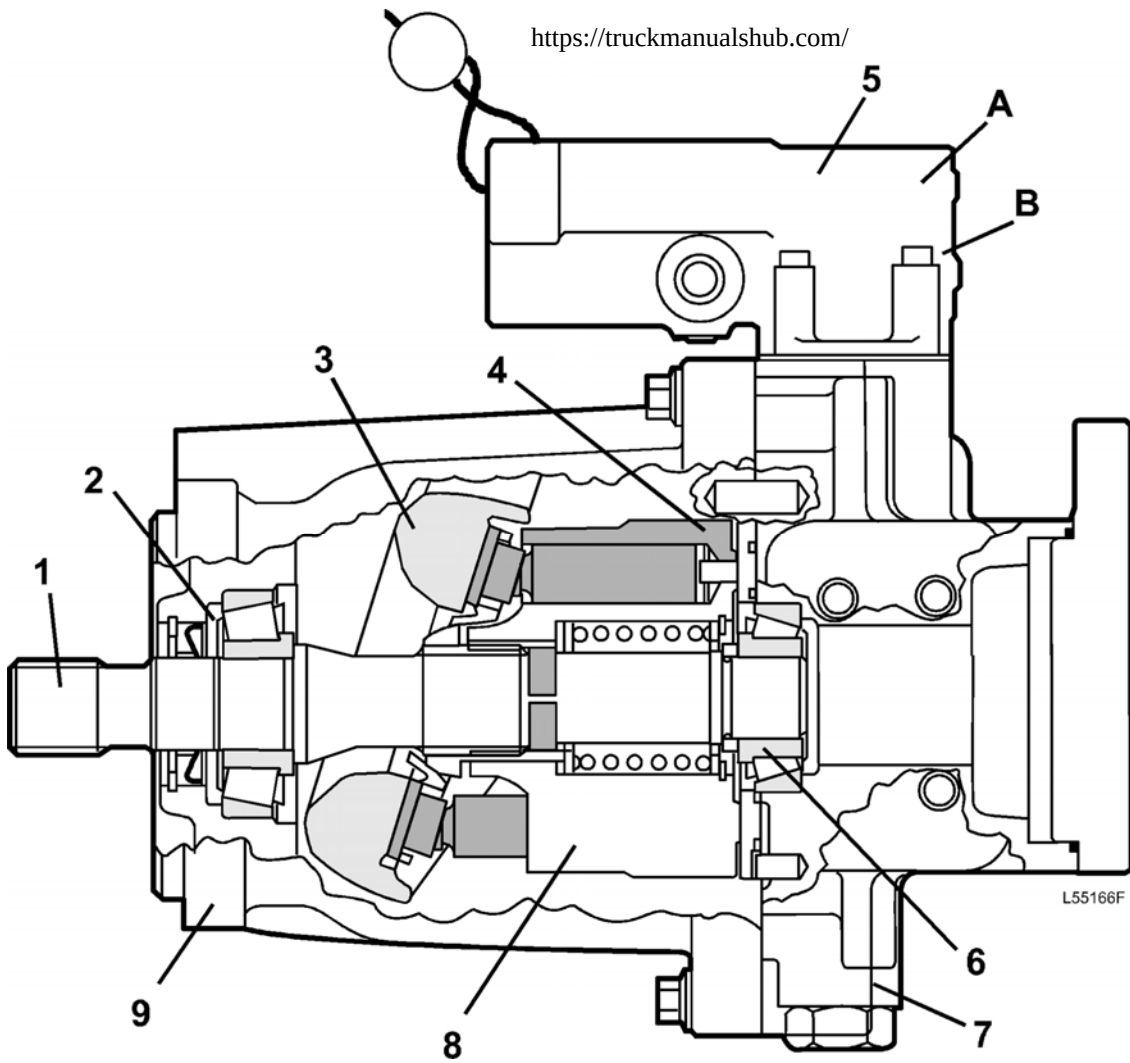


Figure 2
Steering pump

- A. Pressure compensator
- B. Flow compensator
- 1. Drive shaft
- 2. Bearing
- 3. Yoke
- 4. Distribution plate
- 5. Pressure and flow compensator
- 6. Bearing
- 7. End plate
- 8. Pump unit (with cylinder block and pistons)
- 9. Housing

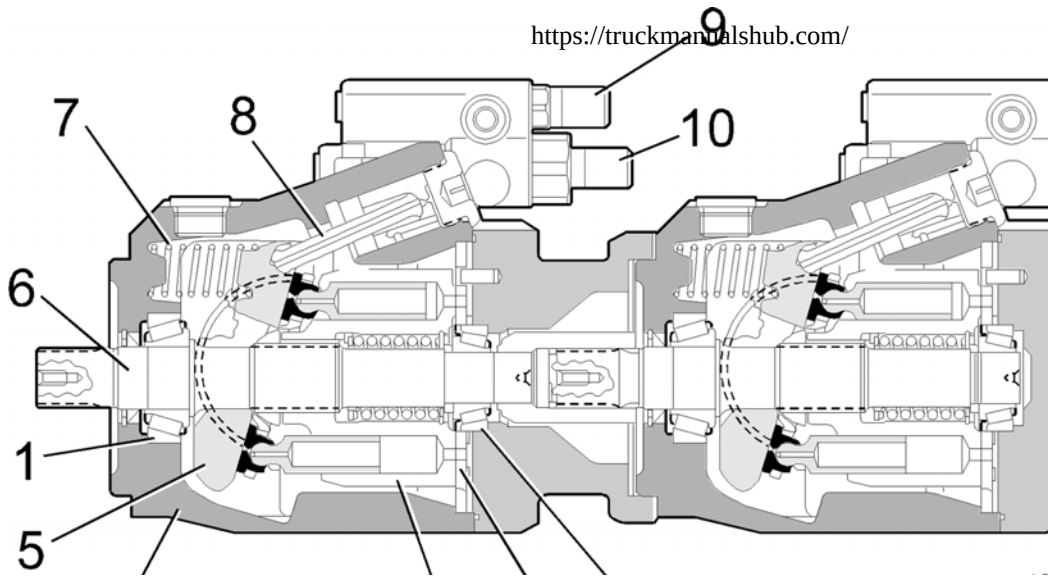


Figure 3
Steering pump L120D, soundproofed version

- A. Steering pump
- B. Fan pump
- 1. Bearing
- 2. Distribution plate
- 3. Pump unit
- 4. Housing
- 5. Yoke
- 6. Drive shaft
- 7. Spring
- 8. Control piston
- 9. Flow compensator (hold/standby pressure)
- 10. Pressure compensator (Working pressure)

Pressure/flow compensator

The function of the flow compensator is to reduce the pump displacement when steering is not used. In the neutral position, there is only hold (stand-by) pressure and no flow.

The function of the pressure compensator is to control the pump via the control piston so that the max. pressure is limited.

Neutral position

Steering valve C in neutral position. Diesel engine running. Pressure compensator spool (2) held in lower position by the spring (1). When the pump tries to direct a flow to a closed centre the pressure in the outlet (5) rises. The pressure on the underside of the flow compensator spool (3) is able to compress the spring (12) so that oil can pass out to the control piston (7) with the result that the swash plate angle is reduced and no flow occurs. The pressure from the pump is regulated to a holding pressure that depends on the force of the spring (12) plus the pressure in the LS line (9), which in neutral is the same as the pressure in the tank line from the steering valve.

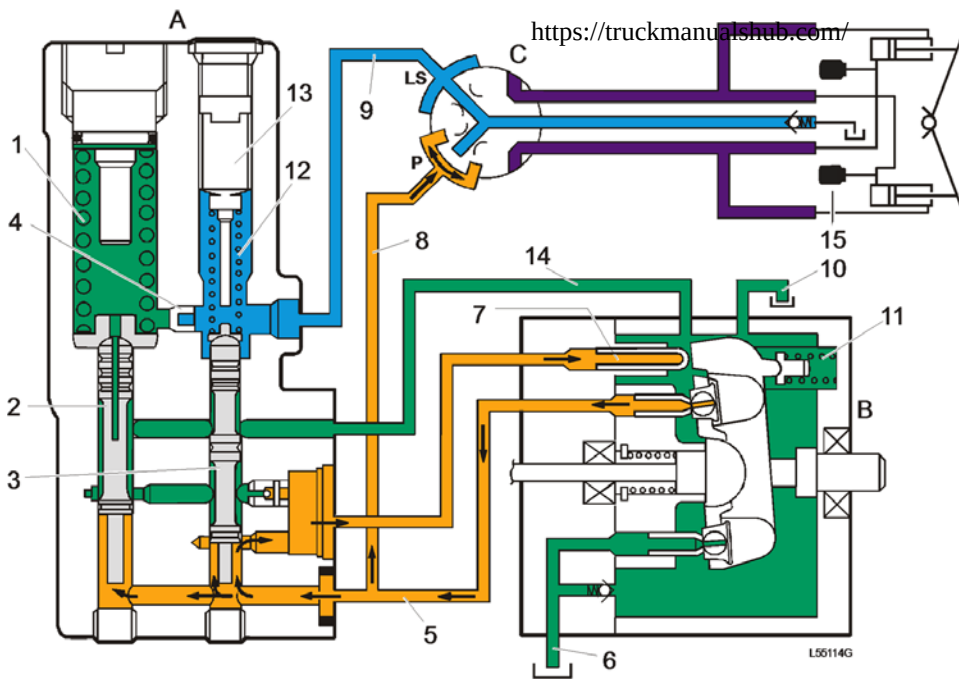


Figure 4
Neutral position (stand-by)

A	Pressure/flow compensator	10	Drain to tank
B	Pump	11	Spring
C	Steering valve	12	Spring
1	Spring	13	Adjusting screw
2	Pressure compensator spool	14	Drain to pump
3	Flow compensator spool	15	Accumulator
4	Restriction (plug serial no. 12363-)		
5	Outlet from pump		
6	Inlet to pump		
7	Control piston		
8	Pressure line		
9	Load-sensing line (LS)		
		Green	= Return, no pressure
		Blue	= Increased return pressure
		Violet	= Trapped oil
		Orange	= Hold (stand-by) pressure

Steering

When the steering wheel is turned (and the steering valve is thus opened), oil from the pump flows to the steering cylinder. At the same time, a connection between the LS line (9) and the pressure line in the steering valve (C) is opened so that the pressure on the top of the flow compensator spool (3), together with the spring force, endeavours to press the spool down. The oil behind the control piston (7) can now be drained back to the pump housing via the spools (3 and 2) and the swash plate is angled for maximum flow by means of the spring (11). If the pump delivers more oil than is needed, the outgoing pressure rises. This pressure then overcomes the LS pressure and the spring force on the top of spool 3. Oil can again pass to the control piston (7) and angle the pump for the correct flow rate. The accumulator (15) ensures smooth engagement and disengagement of the steering.

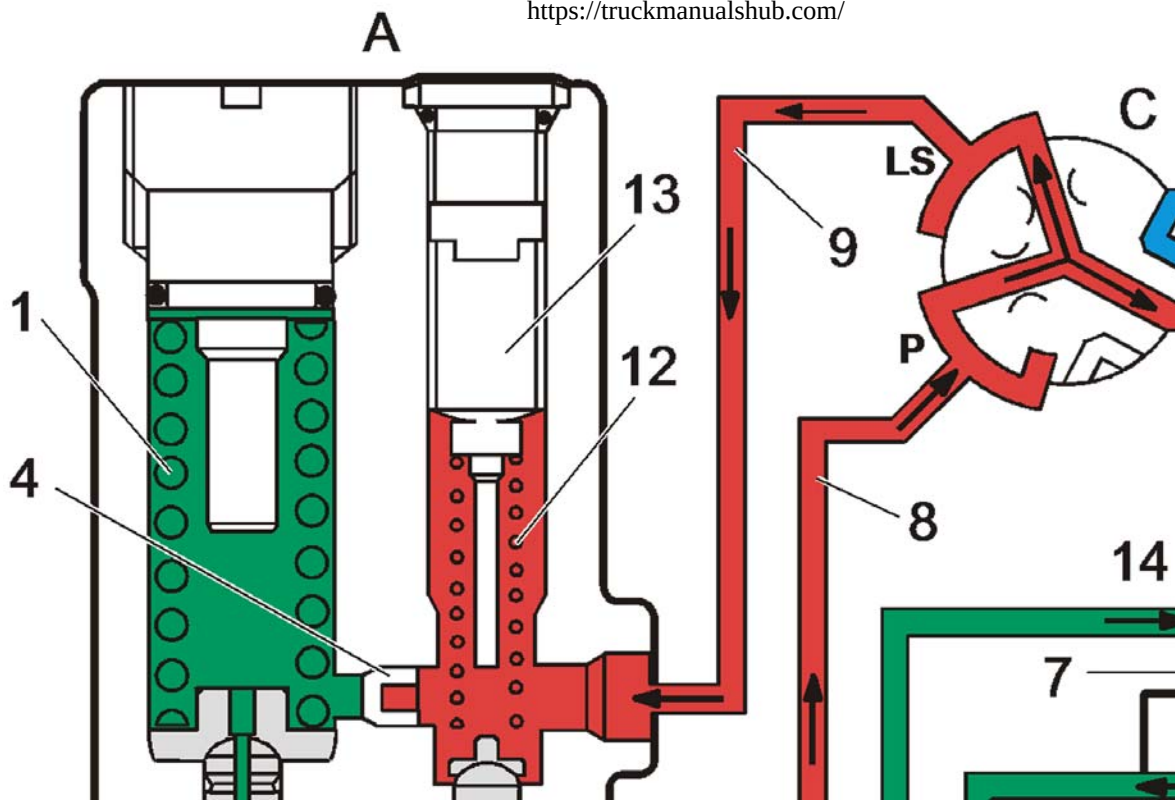


Figure 5
Steering, normal

A	Pressure/flow compensator	10	Drain to tank
B	Pump	11	Spring
C	Steering valve	12	Spring
1	Spring	13	Adjusting screw
2	Pressure compensator spool	14	Drain to pump
3	Flow compensator spool	15	Accumulator
4	Restriction (plug serial no. 12363-)		
5	Outlet from pump	Red	
6	Inlet to pump	Green	= Return, no pressure
7	Control piston	Blue	= Increased return pressure
8	Pressure line		
9	Load-sensing line (LS)		

Steering to full lock (end) position

The pressure in the LS-line (9) increases, and the pressure combined with the spring force is able to press the flow compensator spool (3) to the closed position (downward). The pressure below the pressure compensator spool (2) moves the spool towards the open position, and thus the oil passes the spool (3) and on to the control piston (7). The angle of the yoke is reduced and thus also the flow, but maximum pressure is maintained.

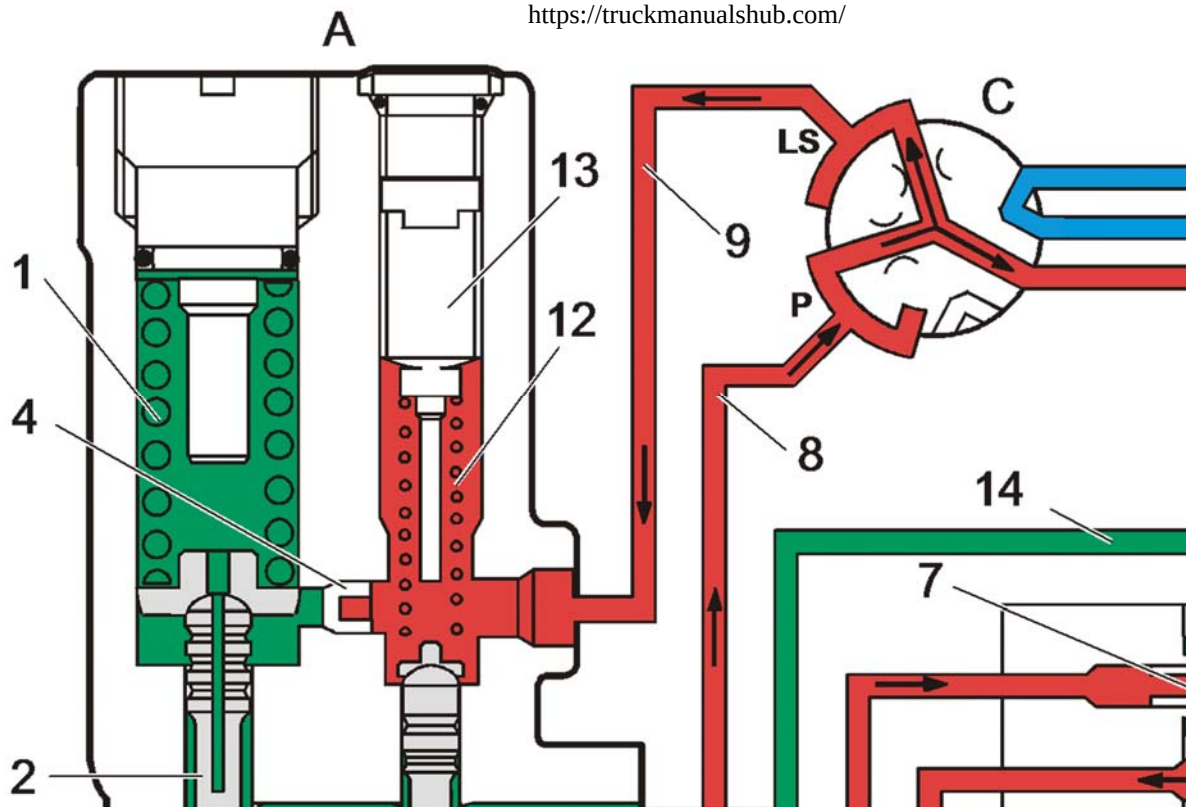


Figure 6
Steering, to full lock

A	Pressure/flow compensator	10	Drain to tank
B	Pump	11	Spring
C	Steering valve	12	Spring
1	Spring	13	Adjusting screw
2	Pressure compensator spool	14	Drain to pump
3	Flow compensator spool	15	Accumulator
4	Restriction (plug serial no. 12363-)		
5	Outlet from pump		
6	Inlet to pump		
7	Control piston		
8	Pressure line		
9	Load-sensing line (LS)		

Red = Pressure oil
Green = Return, no pressure
Blue = Increased return pressure

Steering valve, description

<https://truckmanualshub.com/>

The steering valve is a non-reaction type with closed centre. The steering valve has a load-sensing port (LS) from which a steering pressure is obtained for the flow compensator on the pump.

Function

The steering valve is in the neutral position when the steering wheel is stationary, which means a closed centre. The pump is angled down and only supplies hold (stand-by) pressure. When the steering wheel is turned in any direction, it causes turning of the inner and outer spools. When the turn reaches 1.5°, the channels to the metering unit and the load-sensing port (LS) begin to open. The pressure from the steering pump is directed to the load-sensing port, which causes the pump to angle up and to supply a flow. Oil is supplied via the metering unit to the steering cylinders proportional to the steering wheel movement. When the steering wheel is released, the inner and outer spools spring back to the closed position and the pump now only supplies hold (stand-by) pressure.

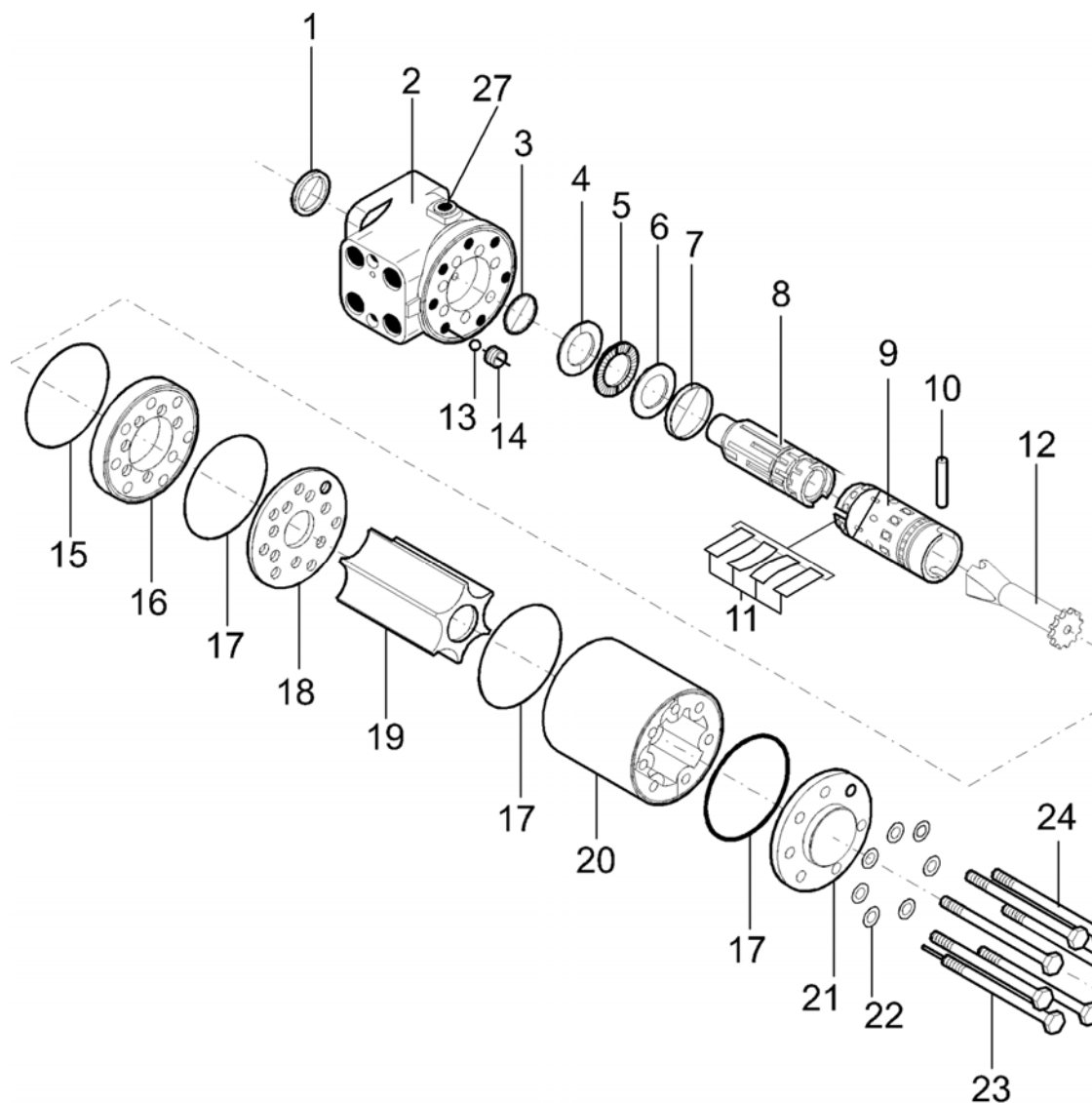


Figure 1

Steering valve

1	Seal	15	O-ring
2	Valve housing	16	Distribution plate
3	O-ring/back-up ring	17	O-ring
4	Axial disc	18	Distribution plate
5	Needle bearing	19	Rotor
6	Bearing race	20	Rotor ring
7	Ring (retainer)	21	Cover
8	Inner valve spool	22	Washer

9	Outer valve spool	23	Screw with guide pin
10	Cross-pin	24	Screw (6 pcs.)
11	Leaf springs (4 pcs.)	25	Type plate
12	Rotor shaft	26	Blind rivet
13	Ball (non-return valve)	27	LS-connection (load-sensing port)
14	Bushing		

No. 19 and 20 = metering unit

Steering valve, reconditioning (removed) https://www.manualshub.com/

Op nbr 64581

[6999 007 Handle](#)

[6999 025 Plate](#)

[6999 034 Plate](#)

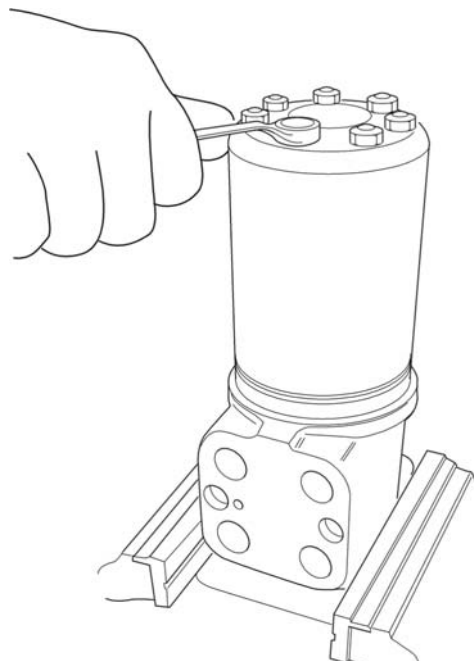


Figure 1

Dismantling

1. Mark the steering valve parts in relation to each other in order to facilitate assembling.
Secure the steering valve in a vice. Use soft protective jaws.
Remove the cover.
2. Remove the metering unit as well as the rotor shaft and the distribution plates.
Remove the O-ring.

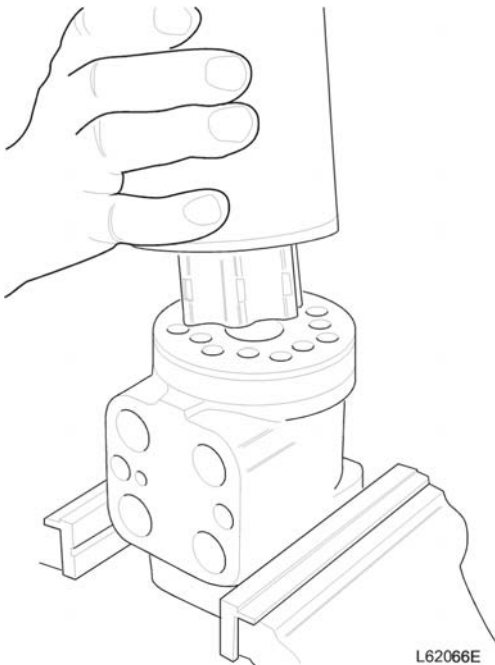


Figure 2

3. Remove the cross-pin.
Remove the steering valve from the vice and remove the ball.

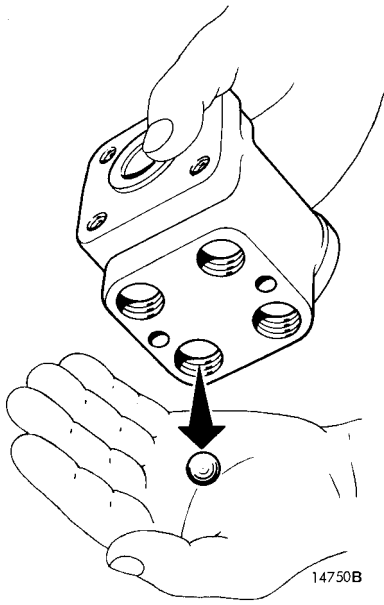


Figure 3
Removing ball

4. Remove the inner and outer spools.

NOTE!

Do not pull on the outer spool. There is a risk that the parts will fall apart, causing the return springs to lock the inner spool in the housing.

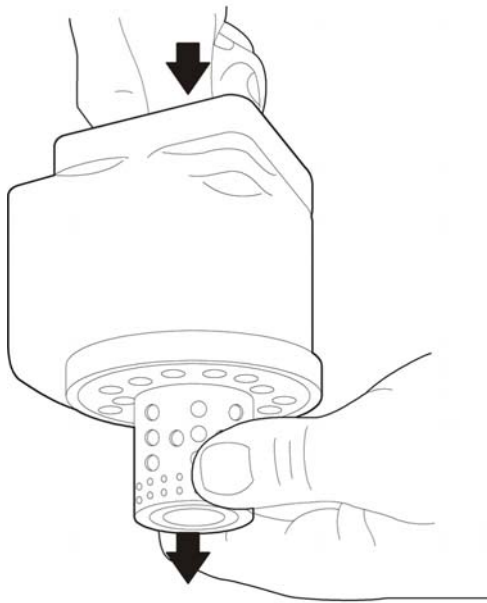


Figure 4
Removing inner and outer spools

5. Remove the axial disc, needle bearing, bearing race and the ring.

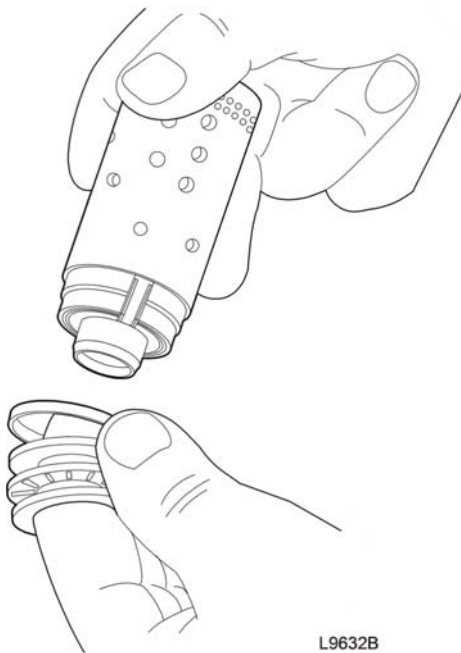


Figure 5
Removing needle bearing and ring

6. Remove the inner and outer seals.
7. Carefully press the inner spool out from the outer spool.
Remove the leaf springs.
Clean and check all parts with regards to wear and any damage.
Change worn and damaged parts.
Change all seals and washers.
Remove any small burrs with a fine-grain whetstone.
Lapping paste must **not** be used.

Lubricate all parts with hydraulic oil before assembling.

Assembling

8. Fit the outer seal ring.
Secure the valve housing in a vice. Use soft protective jaws.

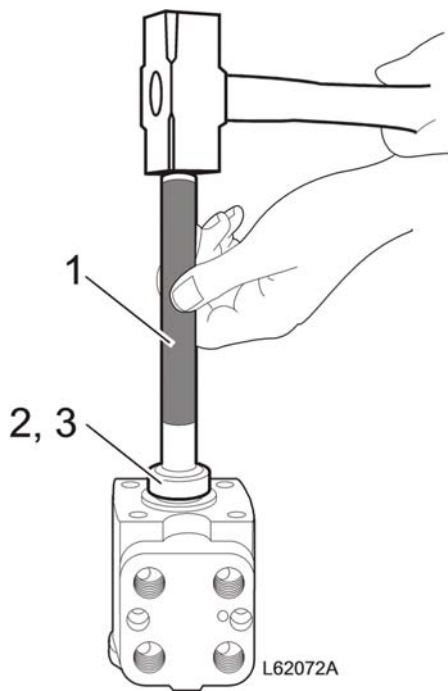


Figure 6
Installing seal ring

1. 6999 007
2. 6999 025
3. 6999 034

9. Place the assembled seal on the drift plate and press the seal into the housing.

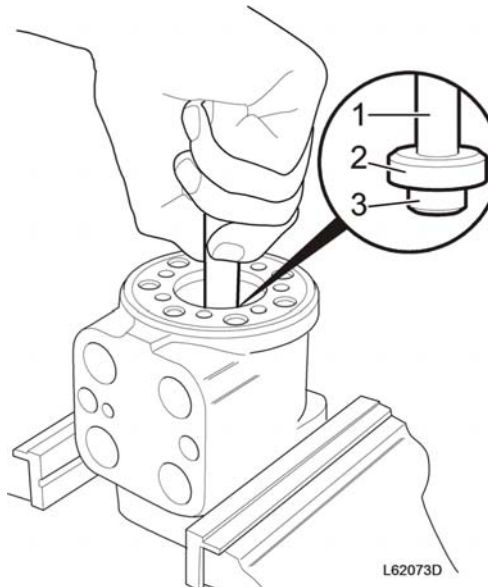


Figure 7
Installing seal ring

1. 6999 007
2. 6999 025
3. 6999 034

10. Assemble the inner and outer spools so that the grooves for the leaf springs line up and the T-shaped groove (A) in the inner spool lines up with the small holes (B) in the outer spool. Check that the punch marks on top of the spools line up.

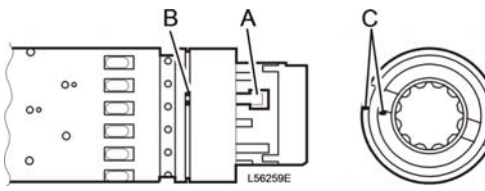


Figure 8

- A. T-shaped groove (inner spool)
- B. Hole (outer spool)
- C. Scribing

11. Fit the leaf springs. Make sure that they are positioned correctly.

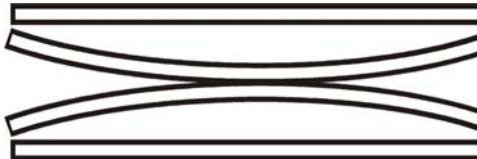


Figure 9

Position of leaf springs

12. Fit the axial disc, needle bearing, bearing race and the ring on the inner and outer spools.

NOTE!

Fit the bearing race with the chamfer towards the inner spool. Fit the cross-pin on the inner and outer spools.

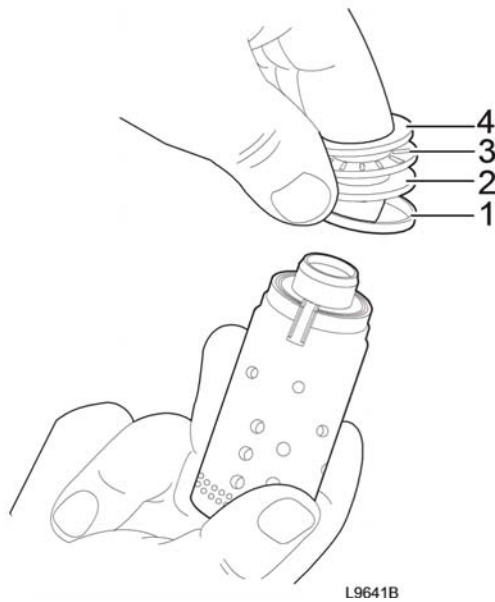


Figure 10

Positioning axial disc, needle bearing, bearing race and ring

- 1. Ring
- 2. Bearing race
- 3. Needle bearing
- 4. Axial disc

13. Fit the inner and outer spools in the valve housing. Rotate the inner and outer spools so that drive pin ends up at 90° in relation to surface A.



If the inner and outer spools are installed incorrectly in the steering valve, the steering valve may function as a motor and the machine will steer uncontrollably by itself.

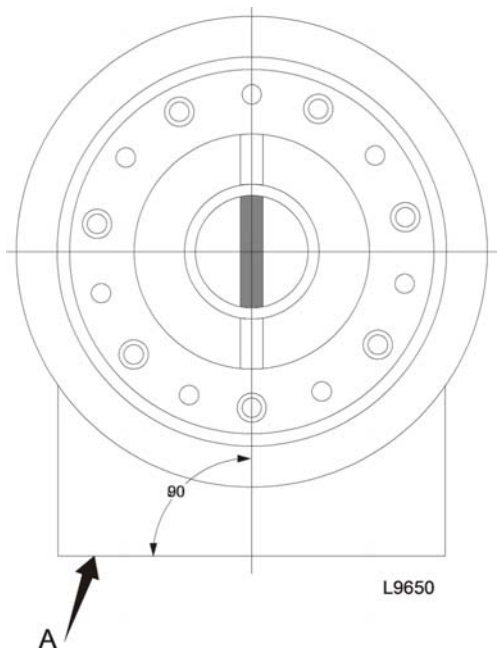


Figure 11
Position of inner and outer spools as well as drive pin in valve housing

14. Fit the O-ring. Fit the distributor plates so that the channel holes line up with the corresponding holes in the valve housing.

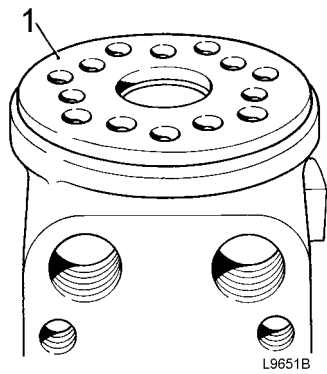


Figure 12
Distributor plate on valve housing

15. Fit the rotor shaft. Fit the O-ring and fit the rotor kit so that the top of two rotor teeth are parallel with surface "A".

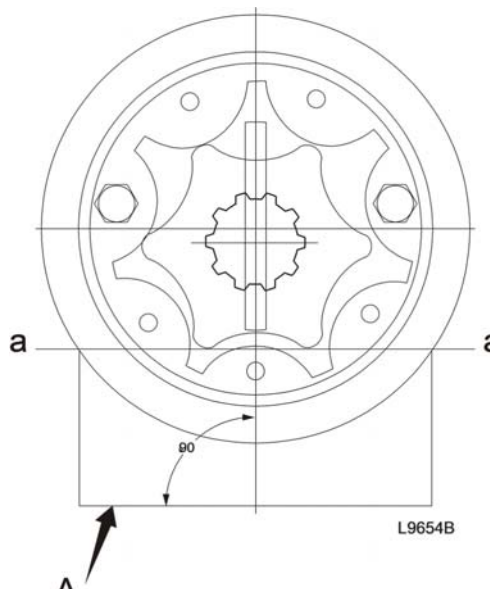


Figure 13
Position of metering unit in relation to valve housing

16. Fit the cover and the screws.
Fit the ball through pressure connection (P) and then fit the screw with the lock pin. Wiggle the valve and listen to hear if the ball moves freely.
Tighten the screws crosswise.
Tightening torque: **30–35 Nm (22–26 lbf ft)**

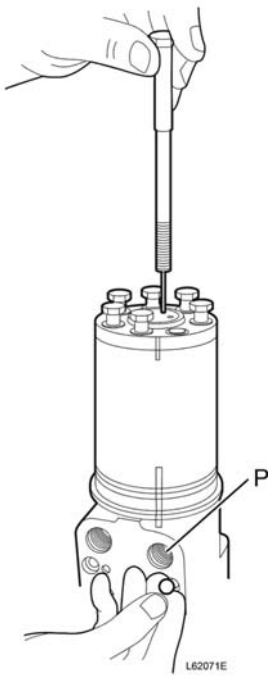


Figure 14
Position of ball in valve housing

Op nbr 27323

1. Adjust the distance between the lever (2) and the stop (1) on the injection pump, using the adjusting nuts (3) on the control cable.

The lever should just touch the stop.

NOTE!

The stop solenoid must be free of voltage when adjusting.

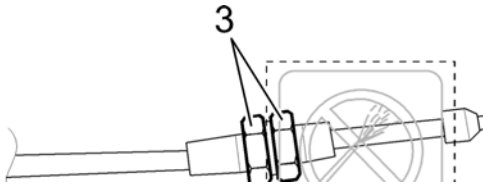


Figure 1

1. Stop
2. Lever
3. Adjusting nuts
4. Protective plate

Stop solenoid, description

<https://truckmanualshub.com/>

The engine's fuel injection pump is equipped with a stop solenoid that is activated through the ignition SW101 and the electronic unit CU201.

The function of CU201 is to provide a ground connection for the pull coil and hold coil in stop solenoid MA201.

Depending on the position of the ignition and the output signal from the ECU, voltage is provided to the three connections on CU201 as follows:

Ignition in position	Connection	Voltage to electronic unit CU201
0	1	0 V
	2	0 V
	7, 8	24 V
	6, 12	24 V
	3, 9	24 V
	11	24 V
1, 2 or 3	1	24 V
	2	0 V (24 V at engine shutdown)
	7, 8	24 V
	6, 12	24 V
	3, 9, 11	0 V (pull position, MA201) 0.3 sec.
	3, 9	24 V (hold position, MA201)
	11	0 V (hold position, MA201)

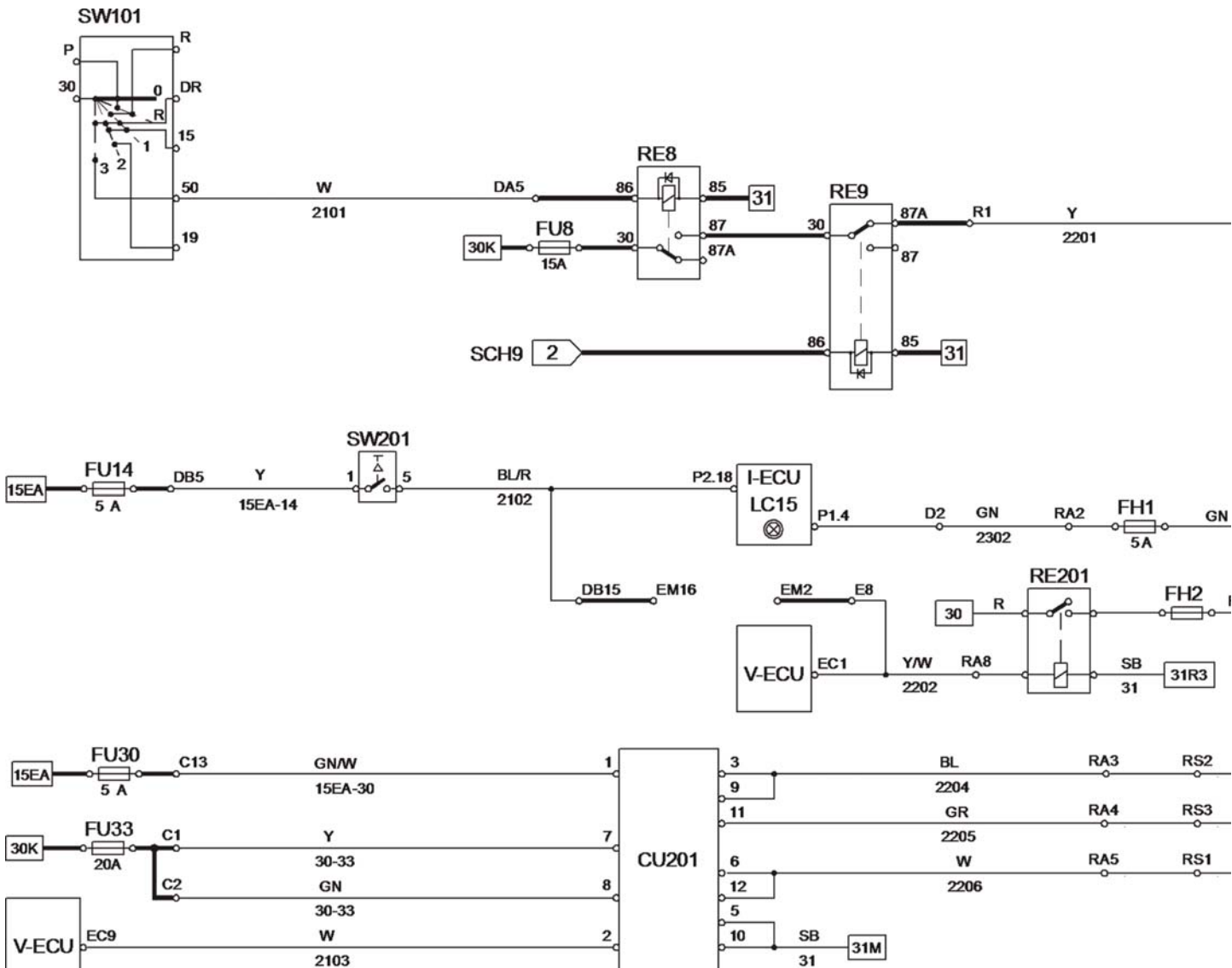


Figure 1

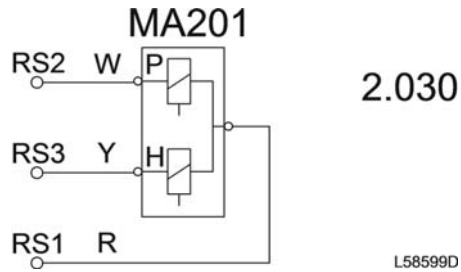
<https://truckmanualshub.com/>

Turning off engine

With the ignition in position 0, voltage to connection 1 on electronic unit CU201 is interrupted. The current to stop solenoid MA201 is then interrupted and the solenoid control spring moves the injection pump to the stop position.

Starting engine

With the ignition in position 1, 2 or 3, voltage is supplied to connection 1 on electronic unit CU201. Stop solenoid MA201 is now supplied with current through connections 6 and 12 on electronic unit CU201. Stop solenoid MA 201 is activated and the injection pump assumes normal operating position.

**Figure 2**

Stop solenoid MA201

P Pull coil (approx. 1 Ω)

H Hold coil (approx. 55 Ω)

Stop solenoid MA201

The stop solenoid consists of two coils, a pull coil (approx. 1 Ω) and a hold coil (approx. 55 Ω). When the stop solenoid is activated, the pull coil receives a stronger current (approx. 20 A) for a very short period of time (approx. 0.3 s) and then it is disconnected. The hold coil is now supplied with current of approx. 0.5 A and holds the stop solenoid in the normal operating position.

The pull coil for stop solenoid MA201 is disconnected since its ground connection is interrupted via electronic unit CU201 (connection 3, 9 to 5, 10).

See also *wiring diagram 3, Section 3*.

Stop solenoid, troubleshooting advice

<https://truckmanualshub.com/>

If the stop solenoid remains in its operating position when the ignition key is turned to position 1, this may be due to:

- ☐ Electric malfunction.
- ☐ Open circuit in solenoid hold coil.
- ☐ Incorrectly adjusted linkage so that the inner stop position of the injection pump limits the solenoid stroke. This means that the solenoid does not reach the hold position. The solenoid disengages from its hold position after approx. 0.3 seconds.

If the stop solenoid remains in its operating position when the ignition key is turned to position 0, this may be due to:

- ☐ Binding injection pump governor or cable.
- ☐ Malfunction in stop solenoid.
- ☐ Malfunction in control unit for electric key engine shut-off.



Volvo Construction
Equipment

Installation Instruction

Genuine Accessories

Ref. no. 65 2 779 3776	Kit no. 11707319 (80308)	Date/Dept. 2001-05 CEE-43	Product L50D, L70D, L90D, L120D/E, L150D/E, L180D/E L220D/E, L330D/E	Page 1/3
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Sun blind / Solskyddsgardin

Kit list / Satslista

Art.nr Part No.	Antal Qty.	Description	Benämning	Pos., Fig. 1, Fig. 2
972071	2	Six point socket screw	Sextandhålskruv	5
972079	4	Six point socket screw	Sextandhålskruv	3
11006034	1	Sun blind	Solskyddsgardin	2
11006036	1	Sun blind	Solskyddsgardin	4
11007425	1	Attachment	Fäste	1
11104180	1	Attaching plate	Fästplåt	7
11104181	3	Nut	Mutter	6

We consider that no special installation instructions are required for fitting this equipment.

För montering av denna utrustning anser vi, att någon speciell monteringsanvisning inte erfordras.

To facilitate the fitting we enclose:

- Kit list
- Installation drawing

För underlättande av montering inkluderas:

- Satslista
- Monteringsritning



WARNING!

Read all signs and instructions on the machine and the safety instructions in the operators manual, before you start working on the machine.

The installation instructions are based on the use of special tools, the E-tool and standard tools generally available on the market, and also on our operators manuals and service manuals.

The equipment should be installed by qualified personnel of an authorised workshop.

Volvo CE Customer Support AB disclaims all responsibility if tools and work methods other than those described in the instructions are used.



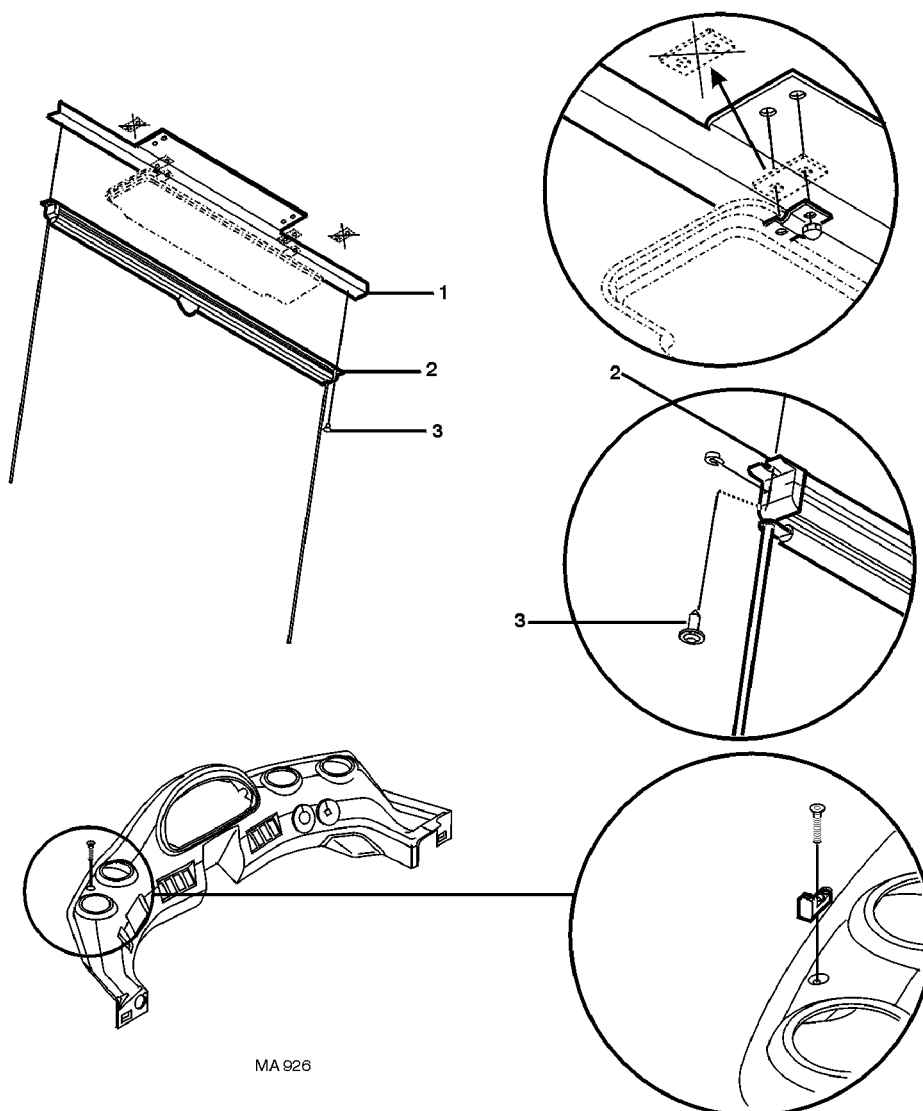
VARNING!

Läs alla skyltar och anvisningar som finns på maskinen och säkerhetsinstruktionerna i instruktionsboken innan Du börjar arbetet på maskinen.

Monteringsanvisningen är baserad på användning av specialverktyg, E-verktyg och i allmänna handeln tillgängliga standardverktyg samt instruktions- och verkstadshandböcker.

Utrustningen ska monteras av behörig person på auktoriserad verkstad.

Volvo CE Customer Support AB fransäger sig allt ansvar om andra verktyg eller arbetsmetoder än de i anvisningen beskrivna kommer till användning.



MA 926

Fig. 1

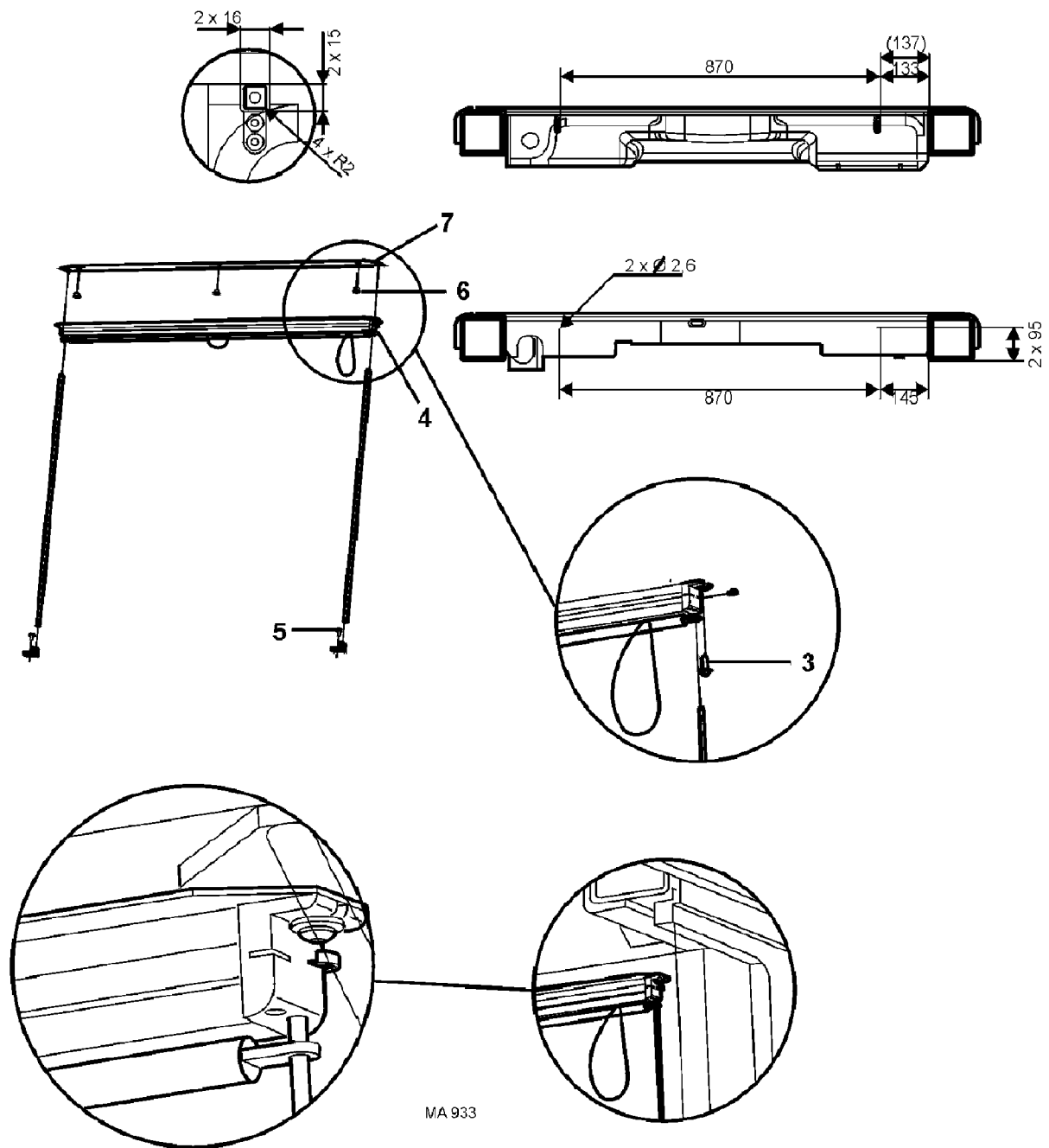


Fig. 2

Write equipment number 80308 on the machine card. Skriv in utrustningsnumret 80308 på maskinkortet.

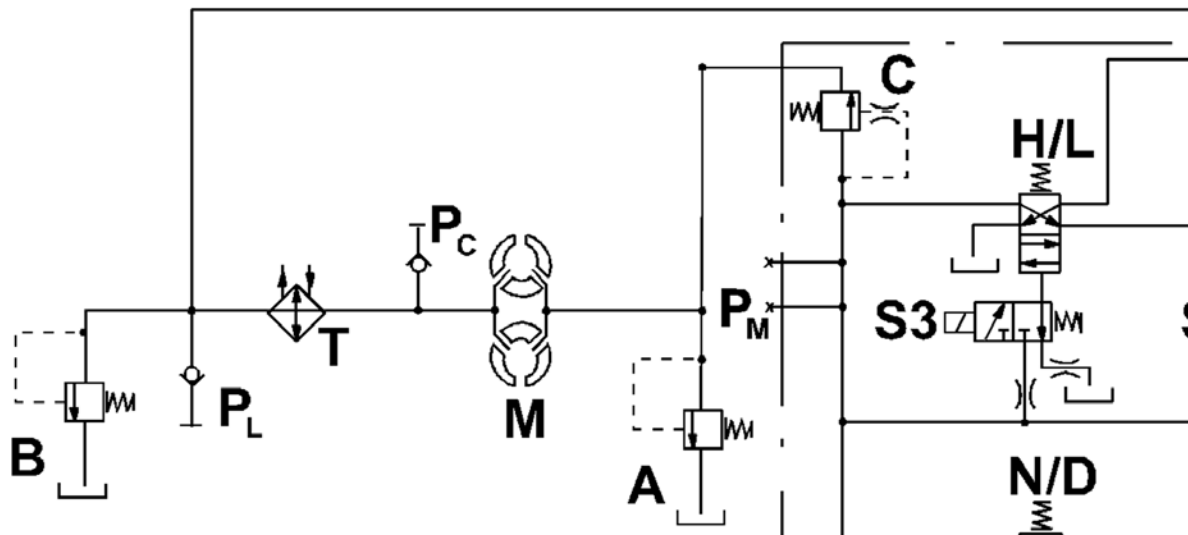


Figure 1
Symbol diagram, HT131, L90D

A	Pressure limiting valve, input torque converter pressure
C	Pressure-limiting valve, main pressure
PM	Pressure outlet, main pressure
PC	Pressure outlet, torque converter pressure
PL	Pressure outlet, lubricating oil pressure
N/D	Selector spool, neutral - drive
F/R	Selector spool, forward - reverse
H/L	Selector spool, high - low
1/2	Selector spool, 1st - 2nd
3/4	Selector spool, 3rd - 4th
R1	Damping valve, forward gear
R2	Damping valve, reverse gear
S1	Solenoid, neutral - drive
S2	Solenoid, forward - reverse
S3	Solenoid, high - low
S4	Solenoid, 1st - 2nd
S5	Solenoid, 3rd - 4th
1	1st disc clutch
2	2nd disc clutch
3	3rd disc clutch
4	4th disc clutch
F	Forward gear disc clutch
R	Reverse gear disc clutch
M	Torque converter
P	Pump
S	Filter
T	Oil cooler

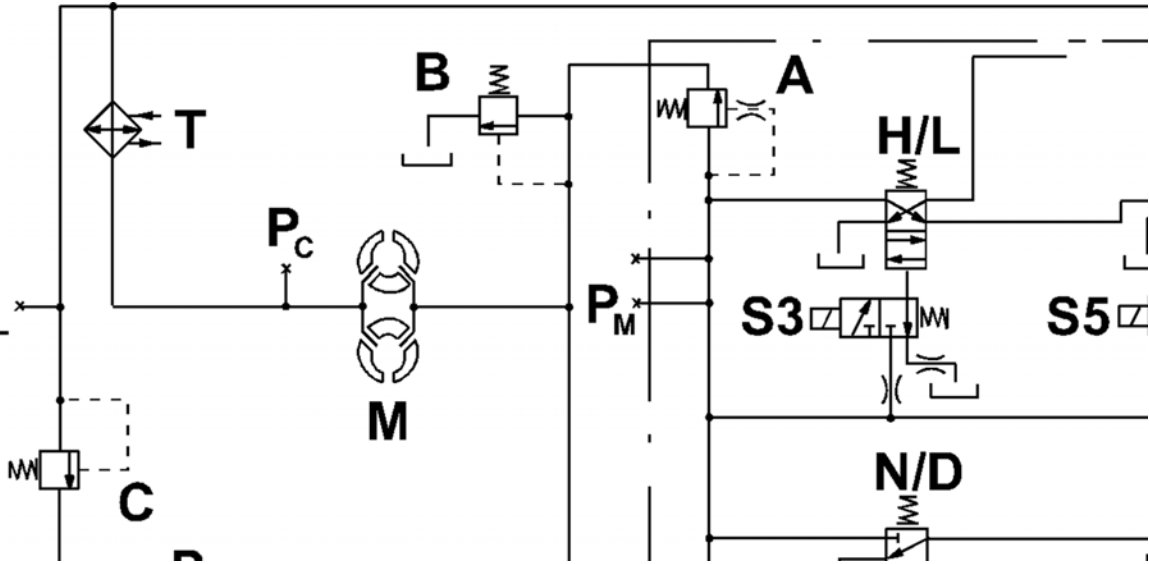


Figure 1
Symbol diagram, HT205, L120D

A	Pressure-limiting valve, main pressure
B	Safety valve, torque converter
C	Pressure limiting valve, lubricating oil pressure
PM	Pressure outlet, main pressure
PC	Pressure outlet, torque converter pressure
PL	Pressure outlet, lubricating oil pressure
N/D	Selector spool, neutral - drive
F/R	Selector spool, forward - reverse
H/L	Selector spool, high - low
1/2	Selector spool, 1st - 2nd
3/4	Selector spool, 3rd - 4th
R1	Damping valve, forward clutch
R2	Damping valve, reverse clutch
S1	Solenoid, neutral - drive
S2	Solenoid, forward - reverse
S3	Solenoid, high - low
S4	Solenoid, 1st - 2nd
S5	Solenoid, 3rd - 4th
1	1st disc clutch
2	2nd disc clutch
3	3rd disc clutch
4	4th disc clutch
F	Forward gear disc clutch
R	Reverse gear disc clutch
P ₁ , P ₂	Pumps
M	Torque converter
T	Oil cooler
S	Filter

System voltage

<https://truckmanualshub.com/>

The function monitors system voltage and warns the operator if the system voltage is too high or too low.

Input signals	Output function conditions	Output functions
○ Engine On/Off ○ System voltage	○ Voltage level > 31 V	○ Amber central warning lamp ----- INFO ----- High Voltage LB7375AG
	○ Engine On ○ Voltage level < 19 V	○ Amber central warning lamp ----- INFO ----- Low Voltage LB7375AG

Tightening torques

<https://truckmanualshub.com/>



Refer to Volvo standard tightening torques for bolted joints not listed here.

Engine	
Engine – engine mount	85 ±8 Nm (63 ±6 lbf ft)
Flywheel housing – hydraulic transmission	85 ±8 Nm (63 ±6 lbf ft)
Engine mount – tapered rubber damper	220 ±22 Nm (162 ±16 lbf ft)
Tapered rubber damper – frame	45 ±4.5 Nm (33 ±3 lbf ft)
Hydraulic transmission	
Transmission mount – transmission	220 ±22 Nm (162 ±16 lbf ft)
Transmission mount – rear frame	220 ±22 Nm (162 ±16 lbf ft)
Lock bolt for rubber bushing	220 ±22 Nm (162 ±16 lbf ft)
Frame	
Counterweight – frame	430 ±43 Nm (317 ±32 lbf ft)
Hitch – frame	430 ±43 Nm (317 ±32 lbf ft)
Cab	
Cab, rear mount – frame	400–450 Nm (295–332 lbf ft)
Cab, front mount – frame	400–450 Nm (295–332 lbf ft)
Hydraulic system	
Hydraulic oil pump (working hydraulics)	220 ±22 Nm (162 ±16 lbf ft)
Lift/tilt cylinder	
Piston – piston rod	25 Nm (18 lbf ft)

Tightening torques

<https://truckmanualshub.com/>



Refer to Volvo standard tightening torques for bolted joints not listed here.

Engine	
Engine – engine mount	85 ±8 Nm (63 ±6 lbf ft)
Flywheel housing – hydraulic transmission	85 ±8 Nm (63 ±6 lbf ft)
Engine mount – tapered rubber damper	220 ±22 Nm (162 ±16 lbf ft)
Tapered rubber damper – frame	45 ±4.5 Nm (33 ±3 lbf ft)
Hydraulic transmission	
Transmission mount – transmission	430 ±43 Nm (317 ±32 lbf ft)
Transmission mount – rear frame	220 ±22 Nm (162 ±16 lbf ft)
Lock bolt for rubber bushing	220 ±22 Nm (162 ±16 lbf ft)
Frame	
Counterweight – frame	430 ±43 Nm (317 ±32 lbf ft)
Hitch – frame	430 ±43 Nm (317 ±32 lbf ft)
Cab	
Cab, rear mount – frame	400–450 Nm (295–332 lbf ft)
Cab, front mount – frame	400–450 Nm (295–332 lbf ft)
Hydraulic system	
Hydraulic oil pump (working hydraulics)	220 ±22 Nm (162 ±16 lbf ft)
Lift/tilt cylinder	
Piston – piston rod	25 Nm (18 lbf ft)

Tightening torques

<https://truckmanualshub.com/>



Refer to Volvo standard tightening torques for bolted joints not listed here.

Cab element	
Rear attachment – frame	580 Nm (430 lbf ft)
Front attachment – frame	400 Nm (295 lbf ft)

Tilt cylinder

<https://truckmanualshub.com/>

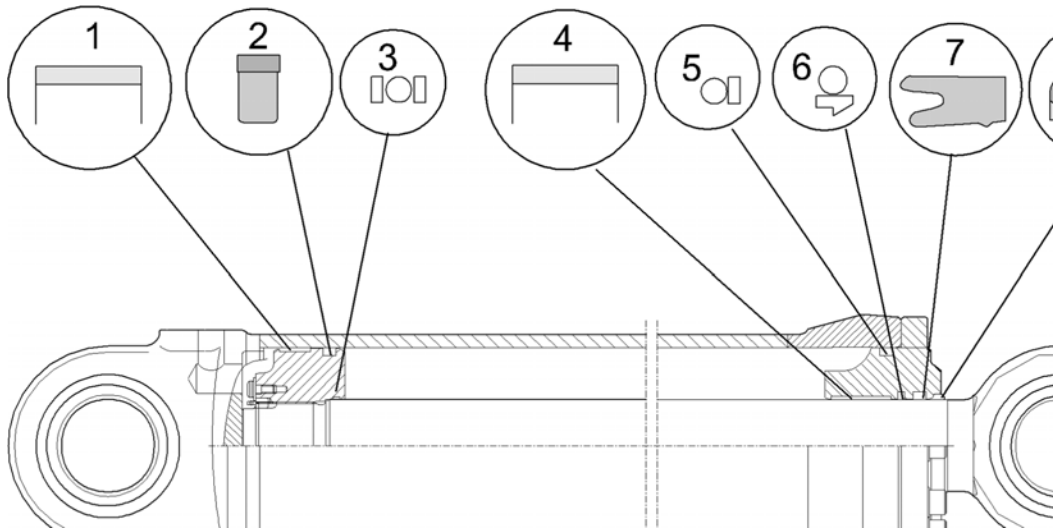


Figure 1
Tilt cylinder

1. Steering
2. Piston seal
3. Back-up rings and O-ring
4. Bushing
5. O-ring and back-up ring
6. Piston rod seal
7. Piston rod seal
8. Scraper seal

The following applies to the use of Volvo Construction Equipment guideline times

Listed times indicate **guideline times** for maintenance and repairs of machines manufactured by Volvo CE (Volvo Construction Equipment AB).

Guideline time is the time that the mechanic normally needs to perform an operation according to the instructions normally found in each machine's service manual or component manual, and that is performed according to the conditions listed below.

Feedback address for Time Guide: servicemanuals@volvo.com

Applicability

The time for performing an operation varies with a number of parameters, e.g., environment (where the work is done), training and equipment. Guideline times are developed with the following conditions:

- Workshop in an indoor environment with a solid and level concrete floor.
- Workshop equipped with lifting device that has lifting capacity and lifting height adapted to a majority of operations (except lifting complete machine units/machine frames) performed on machines handled by the workshop.
- Use of approved support and lifting equipment, in addition to the equipment indicated in each machine's service manual.
- Workshop equipped with compressed air, electricity and lighting.
- Use of indicated Volvo CE special tools.
- Tools stored in easily accessed location, in the immediate vicinity of the workplace.
- Where applicable, oils/fluids are handled in an environmentally correct manner.

For guideline times to apply it is required, in addition to the above conditions, that the mechanic has the training and experience required for the machine and the work that is being done (e.g., Basic Course Electricity and hydraulics as well as machine course step 1 Volvo CE Service school).

Guideline times apply when one person performs the operation. However, in the operations actions may be performed that require help from another person. In these cases, the time for that step which requires two persons has been doubled. The guideline times do not apply if more than one mechanic performs the entire operation.

Actions not included in guideline times are:

- Transport of machine to and from workshop site.
- Troubleshooting not described as a separate operation.
- Retrieval of spare parts, consumables and tools that are not stored in easily accessed location.
- Washing of the whole or parts of the machine before repair/maintenance.
- Actions that due to deformation, corrosion or external damage increase the repair time.
- Additional work that due to retrofitted equipment reduces access, unless these work steps are mentioned in the method description in each service manual.

Other

For every operation there is an operation number, heading and guideline time. The description for how the work is done is normally found in the service manual for each machine under the corresponding operation number.

Foreword

New format of operation number

In the time guide, each operation number has a heading with a three-digit function group number (see **function group** below) as well as a three-digit running number.

Example: Op no. 210-070 Engine removing

210-	070
Function group	Running number (Sequential number)

Example of discontinued op. no. is 21070 alt. 21070-1 (Engine removing).

Function group:

According to Volvo Construction Equipment function group index, where the first digit indicates section and is divided in the following functions, which follows the same design as other service information:

1. Standard parts, service
2. Engine with mounting and equipment
3. Elec.system; Warning system; Information system; Instruments
4. Power transmission
5. Brakes
6. Steering
7. Frame; Springs; Damping; Axle suspension; Wheel/track unit
8. Machinery house; Cab; Exterior trim parts anywhere
9. Hydraulic system; Digging/handling/grading equipment; Misc. Equip. hydraulics

The second and third digit (10) indicate sub-group, which in turn divides the functions within the group, also this follows the same design as other service information.

Running number:

Running number or sequential number 001 to 899 (in the example 070) is a number to identify each operation.

Other

Equipment:

Running number 901 to 999 are reserved for installation times for equipment (installation instructions).

Earlier (discontinued) format of operation numbers:

From 2005-03-08, only the new format for operation numbers shall be used, with the exception of operations for VCADS Pro. Already published service information makes use of the earlier format for operation numbers.

VCADS Pro:

For the time being, VCADS Pro operations will adhere to the same design as before, XXXXX-X, and will have a code digit (-3) for test procedures.

Foreword	1
A25F (SN 300000–)	7
A25G	17
A30F (SN 300000–)	27
A30G	37
A35F (SN 300000–)	47
A35F FS (SN 300000–)	55
A35G	65
A35G FS	75
A40F (SN 300000–)	85
A40F FS (SN 300000–)	93
A40G	103
A40G FS	113
ABG5820	123
ABG7820B	127
ABG8820B	131
BL60B	135
BL61B	143
BL70B	151
BL71B	159
DD100	167
DD110B	173
DD120	177
DD120B	181
DD140	185
DD140B	189
DD25B	193
EC140D L	197
EC140D LM	205
EC15C	213
EC160D L	219
EC160D NL	227
EC17C	235
EC180D L	241
EC18C	249
EC20C	255
EC220D L	261
EC220D LR	275
EC220D N	289
EC220D NL	299
EC235D NL	309
EC250D L	317
EC250D LR	331
EC250D NL	345
EC250E L	355
EC250E LD	363
EC250E LR	371
EC250E NL	379
EC250E NLD	387
EC27C	395
EC300D L	401
EC300D LD	413
EC300D LR	423
EC300D NL	435

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EC300D WH	445
EC300E L	453
EC300E LD	461
EC300E LR	469
EC300E NL	477
EC300E NLD	485
EC340D L	493
EC350E L	501
EC35C	509
EC380D HR	515
EC380D L	523
EC380D NL	537
EC380E HR	547
EC380E L	555
EC380E LD	563
EC380E LR	571
EC380E NL	579
EC380E NLD	587
EC480D HR	595
EC480D L	603
EC480E L	617
EC480E LD	625
EC480E LR	633
EC55C	641
EC60C	649
EC80D	653
ECR25D	659
ECR38	665
ECR50D	671
ECR58D	677
ECR88D	683
EW140D	689
EW160D	699
EW180D	709
EW205D	719
EW210D	727
EW230C	737
EW60C	745
G930	751
G930C	763
G940	767
G940C	779
G946	783
G946C	795
G960	799
G960C	811
G970	815
G976	827
G990	839
L110H	851
L120H	859
L150H	867
L180H	875
L180H HL	883

L20F	891
L220H	895
L250H	903
L25F	911
L30G	915
L350F	919
L35G	927
L40B	931
L45G	939
L50G	945
L60H	951
L70H	957
L90H	963
MC105C	969
MC110C	971
MC115C	973
MC135C	975
MC155C	977
MC60C	979
MC70C	981
MC85C	983
MC95C	985
MCT110C	987
MCT125C	989
MCT135C	991
MCT145C	993
MCT85C	995
MCT95C	997
MT2000	999
MW500	1013
Omni 1000	1019
Omni 318	1021
P4370B	1023
P5770C ABG	1025
P5870C ABG	1031
P6820C ABG	1037
P6870C ABG	1045
P7110	1051
P7170	1057
P7820C ABG	1063
P8820C ABG	1071
PF2181	1079
PF4410	1083
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PT220	1091
SD105	1099
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SD115	1119
SD130	1125
SD135	1131
SD160	1137
SD200	1139
SD45	1143
SD70	1147

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SD75	1151
Ultimat 200	1157
VB78 ETC	1161
VB78 GTC	1163
VB88 ETC	1165
VB88 GTC	1167
VDT-V78 ETC	1169
VDT-V78 GTC	1171
VDT-V88 ETC	1173
VDT-V88 GTC	1175

Op.no.	time (h)	Notes
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0 GENERAL

09 MISCELLANEOUS

090-001	0.70	Engine, basic check
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1 STANDARD PARTS, SERVICE

17 SERVICE

173-007	0.60	Maintenance service, every 250 hours
173-010	2.00	Maintenance service, every 500 hours
173-012	5.00	Maintenance service, every 1000 hours
173-014	8.00	Maintenance service, every 2000 hours
173-018	16.00	Maintenance service, every 4000 hours
173-022	1.25	Maintenance service, every 6000 hours
173-042	2.50	Maintenance service, first 1000 hours
173-457	1.25	Coolant, changing
176-002	0.70	Propeller shafts, removing

19 GENERAL

191-021	0.20	Service position 1
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2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-068	2.00	E-ECU, MID 128, changing non-programmed ECU
200-070	1.50	E-ECU, MID 128, changing pre-programmed ECU

21 ENGINE

210-002	8.50	Compression test
210-073	11.00	Engine and transmission, removing
210-074	13.00	Engine and transmission, mounting
210-092	0.50	Engine rotation speed sensor (camshaft), replacing
214-012	3.00	Valves, adjusting
215-042	8.00	Camshaft, replacing
215-043	2.50	Camshaft setting, checking
216-014	1.75	Crankshaft, replacing front oil seal
216-018	18.00	Crankshaft, replacing rear oil seal
216-049	1.75	Crankshaft, axial clearance, checking
218-001	1.50	Rubber cushion, replacing
218-007	4.00	Engine mounting rear, changing

Op.no.	time (h)	Notes
22		LUBRICATING SYSTEM
221-020	1.00	Lubrication pressure rocker arm shaft, check
221-022	0.60	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
230-002	0.70	Air in fuel system, checking
233-001	1.25	Fuel system, bleeding
233-004	0.80	Feed pump, checking feed pressure
236-002	0.90	Stall speed, checking
237-007	1.25	Overflow valve, replacing
237-010	0.90	Unit injectors, adjusting pretension
237-012	7.50	Unit injector, replacing
237-017	11.00	Injector sleeves, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
254-022	1.00	ACM (After treatment control module), replacing, non-programmed
254-023	1.25	ACM (After treatment control module), replacing, pre-programmed
255-002	1.25	Turbocharger, inspection
255-071	2.00	Turbocharger, replacing
258-016	1.00	Cooling fan motor, intercooler, checking/adjusting low rpm
258-017	1.00	Cooling fan motor, intercooler, checking/adjusting high rpm
26		COOLING SYSTEM
260-001	0.50	Carbon dioxide in coolant system, checking
263-063	1.25	Cooling fan motor, radiator, checking/adjusting low rpm
263-092	1.25	Cooling fan motor, radiator, checking high rpm
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-075	1.00	HMIM, MID 140, changing pre-programmed ECU
300-076	1.25	HMIM, MID 140, changing non-programmed ECU
31		BATTERY
311-002	1.00	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.25	Alternator, replacing incl function check

Op.no.	time (h)	Notes
321-002	1.25	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	1.75	Starter motor, replacing
35		LIGHTING
352-001	0.40	Lamp bulb, replacing
352-002	0.50	Headlights, adjusting
352-024	0.60	Headlight, complete, changing (high beam 1 pc.) incl. setting
352-060	0.60	Headlight, complete, changing (low beam 1 pc.) incl. setting/adjustment
353-051	0.60	Tail lamp, replacing
36		OTHER ELECTRICAL EQUIPMENT
361-005	0.60	Flasher lamp front glass or bulb, replacing
361-006	0.60	Flasher lamp sidelight glass or bulb, replacing
363-002	2.00	Windscreen wiper front, replacing motor
366-064	1.25	V-ECU, MID 187, changing non-programmed ECU
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU
366-111	0.90	Engine Gateway, MID 165, replacing non-programmed ECU
366-112	0.90	Engine gateway, MID 165, replacing pre-programmed ECU
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-008	0.60	Engine rotation speed sensor, replacing
39		MISCELLANEOUS
398-001	0.50	CareTrack antenna, replacing
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU
398-003	1.00	W-ECU, MID142, changing non-programmed ECU
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.70	Transmission oil pressure, checking
421-046	2.50	PWM-valve control system, changing
421-054	2.00	Seal for rear output shaft, replacing
421-062	1.50	Induction sensor for turbine speed, changing
421-070	8.00	Transmission, removing
421-072	9.50	Transmission, installing
421-083	1.25	Transmission, remove from a non mounted engine
421-084	1.50	Transmission, fitting on a non mounted engine

Op.no.	time (h)	Notes
43		GEARBOX,
434-002	1.75	Dropbox, replacing seal for front output shaft
434-004	2.00	Dropbox, replacing seal for rear output shaft
434-064	0.60	Differential lock longitudinal, adjustment of sender unit
434-073	3.50	Dropbox, installing
434-074	3.00	Dropbox, removing
436-001	7.00	Dropbox rubber bushing, replacing
46		FRONT AXLE; REAR AXLE
461-011	6.00	Centre gear , removing and fitting
461-046	1.75	Input shaft, seal, replacing
463-011	5.50	Centre gear, removing and fitting
463-045	3.00	Hub reduction, removing
463-046	4.00	Hub reduction, installing
463-047	0.90	Hub reduction gear, disassembly and assembly
463-048	0.90	Dog clutch 6-wheel drive, adjusting
463-049	3.00	Output shaft, bearing and seal, replacing
463-103	1.75	Input shaft, seal, replacing
464-011	5.00	Centre gear, removing and fitting
464-014	1.50	Input shaft seal, replacing
468-062	0.70	Transverse differential lock/axle, checking and adjusting
5		BRAKE
51		WHEEL BRAKE
516-005	5.00	Brake disc, replacing
52		HYDRAULIC BRAKE SYSTEM
520-001	0.70	Brake system, checking function, hydraulic
520-010	0.10	Brake system, relieve pressure
520-037	0.90	Brake system, bleeding
523-045	1.75	Pump unit brake cooling, replacing
525-008	3.50	Foot brake valve, replacing
527-001	0.10	Accumulator removed, checking charging pressure
527-002	1.25	Accumulator, replacing
55		PARKING BRAKE
550-002	1.75	Parking brake, adjusting
550-005	3.00	Parking brake, replacing brake disc
550-009	1.50	Spring brake cylinder, replacing
550-014	1.50	Parking brake, replacing brake pads

Op.no.	time (h)	Notes
550-015	0.30	Parking brake, manually releasing
550-023	0.20	Parking brake, function checking
553-000	0.50	Load and dump brake, working pressure, checking and adjusting
553-001	0.40	Load and Dump brake, servo pressure, checking
553-002	0.30	Load and Dump brake, function check
56		COMPRESSED-AIR BRAKE
561-004	2.50	Compressor, replacing
561-023	0.30	Relief/Cut-in pressure, check
561-024	0.30	Relief/Cut-in pressure, adjusting
59		MISCELLANEOUS
590-001	0.30	Quick coupling compressed air, replacing
 6		 STEERING
64		STEERING
642-026	3.00	Steering gear, replacing
642-058	1.25	Steering gear, check and adj.
643-010	1.75	Steering linkage, checking and adjusting
643-012	0.40	Steering angle, checking and adjusting
643-013	0.90	Steering times, checking and adjusting
643-014	1.00	Steering valve, neutral position, checking and adjusting
643-017	2.50	Lever bracket, steering bearing, replacing
645-004	1.00	Steering cylinder, removing
645-005	1.75	Steering cylinder, installing
645-019	2.00	Steering system, bleeding
645-052	1.00	Steering cylinder removed, reconditioning excl replacing bearings
645-054	0.60	Steering cylinder, replacing bearings
645-054	2.50	Steering cylinder, replacing bearings
645-084	1.25	Damping cylinder, checking spring force
645-085	1.25	Damping cylinder, changing seal
647-095	1.00	Auxiliary steering, adjusting working- and stand-by pressure
647-096	1.00	Auxiliary steering, hydraulic pump, removing
647-097	2.00	Auxiliary steering, hydraulic pump, installation

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-015	0.90	Protecting plate, removal
715-016	1.50	Protecting plate, installation
72		SUSPENSION
720-020	0.70	Hydraulic cylinder bushing, suspension system, replacing
720-021	1.75	Hydraulic cylinder, suspension system, overhaul
725-001	1.00	Suspension cylinder, removal
725-002	0.90	Suspension cylinder, installation
725-010	1.75	Suspension cylinder (GHS), oil changing
725-012	0.20	Suspension cylinder (GHS), discarding
725-015	0.80	Suspension cylinder (GHS), checking and adjusting
74		FRAME LINK
741-001	6.00	Frame joint, separating machine
741-040	1.50	Frame joint bearing, replacing (machine separated)
741-044	4.50	Hitch, removing
741-045	6.00	Hitch, installing
741-046	2.00	Steering joint bearing, replacing (Hitch removed)
742-040	5.00	Steering joint, replacing bearings
75		AXLE SUSPENSION
751-001	1.75	A-frame bushing, tractor unit, replacing
751-013	1.00	Cross stay, rubber bushing, replacing
751-014	0.40	Cross stay, removing
751-015	0.40	Cross stay, installing
756-013	1.00	Cross stay, rubber bushing, replacing
756-017	0.40	Cross stay, removing
756-018	0.40	Cross stay, installing
756-024	2.00	Bogie beam, changing rubber spring, one side (front)
756-027	2.00	A-frame bushing, front on load unit, changing
756-028	2.50	A-frame bushing, rear on load unit, changing
756-029	0.90	Bogie beam, changing rubber bushing on removed beam
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-007	0.70	Wheel, installing
771-008	0.70	Wheel, removing

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.80	Engine hood, removing
821-002	0.70	Engine hood, installing
821-035	0.60	Hood pump, oil, changing
821-060	0.70	Electric hood pump, changing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.25	Door, replacing
831-006	0.60	Door lock, replacing
831-007	0.50	Door, gas spring, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	3.00	Windscreen, replacing
843-012	3.00	Rear window, replacing
843-013	3.00	Side window, replacing
843-014	3.00	Side window, rear, replacing
843-048	2.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.70	Operator's seat, removing
852-004	0.70	Operator's seat, installing
852-004	0.50	Operator's seat, installing
852-092	0.50	Operator's seat, shock absorber, replacing
852-096	1.50	Operator's seat, air bellows, replacing
852-096	1.75	Operator's seat, air bellows, replacing
852-097	1.50	Compressor operator's seat, replacing
87		AIR CONDITIONING UNIT
870-010	0.80	ECC, MID 146, changing pre-programmed ECU
870-011	0.80	ECC, MID 146, changing non-programmed ECU
870-015	1.25	Cab heating/cab ventilation timer, pump, replacing
873-004	4.00	Heater core, replacing
873-006	4.00	Fan motor, replacing
873-008	3.00	Heat control valve, replacing
873-009	0.50	Heat control, replacing
874-001	1.75	Refrigerant, filling incl vacuum pumping
874-002	1.25	Refrigerant, draining
874-003	0.30	Cooling unit, performance test
874-006	4.00	Compressor, replacing incl draining and filling

Op.no.	time (h)	Notes
874-010	4.00	Condenser, replacing incl draining and filling
874-011	3.50	Receiver, replacing incl draining and filling
874-012	5.00	Evaporator, replacing incl draining and filling
874-012	5.00	Evaporator, replacing incl draining and filling
874-059	5.50	Evaporator, cleaning
875-013	2.00	Auxiliary heater, replacing

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

90 GENERAL

900-002	0.40	Hydraulic system, bleeding
900-003	0.10	Hydraulic system, relieve pressure
900-005	0.30	Vacuum pump, connection
900-006	0.20	Vacuum pump, disconnection
900-031	1.00	V2-ECU, MID 249, changing non-programmed ECU
900-032	0.90	V2-ECU, MID 249, changing pre-programmed ECU

91 WORKING HYDRAULICS; SERVO HYDRAULICS

912-078	0.60	Dump lever, changing
912-115	4.50	Steering and tipping valve, removal
912-116	4.50	Steering and tipping valve, installation
913-003	0.90	Hydraulic pump, checking and adjusting standby pressure
913-004	0.80	Hydraulic pump, checking and adjusting max working pressure
913-004	0.80	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-023	0.90	Pump, removal
913-024	1.50	Pump, installation
913-042	0.50	Working pumps, checking function
913-068	1.50	Pump regulator, checking
914-094	0.70	Dump function, checking pressure

95 LOAD CARRIER

951-005	1.00	Hoist cylinder bearing, changing
951-006	3.00	Hoist cylinder removed, reconditioning
951-007	1.00	Hoist cylinder, removal
951-008	1.00	Hoist cylinder, installation
951-011	0.30	Cylinder, rear flap, gas pressure, checking and adjusting
951-030	0.40	Dump body alternative, lowering

Op.no.	time (h)	Notes
951-030	0.40	Dump body alternative, lowering
951-040	2.00	Dump body joint, changing tipping bearing
951-041	2.50	Dump body, adjusting against frame
951-042	0.20	Dump body angle sensor, calibration
99		MISCELLANEOUS
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
0		GENERAL
09		MISCELLANEOUS
090-001	0.70	Engine, basic check
1		STANDARD PARTS, SERVICE
17		SERVICE
173-007	0.60	Maintenance service, every 250 hours
173-010	2.00	Maintenance service, every 500 hours
173-012	5.00	Maintenance service, every 1000 hours
173-014	8.00	Maintenance service, every 2000 hours
173-018	16.00	Maintenance service, every 4000 hours
173-022	1.50	Maintenance service, every 6000 hours
173-042	2.50	Maintenance service, first 1000 hours
173-457	1.25	Coolant, changing
176-002	0.70	Propeller shafts, removing
19		GENERAL
191-021	0.20	Service position 1
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	1.50	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
210-002	9.00	Compression test
210-073	11.00	Engine and transmission, removing
210-074	13.00	Engine and transmission, mounting
210-092	0.50	Engine rotation speed sensor (camshaft), replacing
214-012	3.00	Valves, adjusting
214-012	3.00	Valves, adjusting
215-042	8.00	Camshaft, replacing
215-043	2.50	Camshaft setting, checking
216-014	1.75	Crankshaft, replacing front oil seal
216-018	18.00	Crankshaft, replacing rear oil seal
216-049	1.75	Crankshaft, axial clearance, checking
218-001	1.50	Rubber cushion, replacing
218-007	4.00	Engine mounting rear, changing

Op.no.	time (h)	Notes
22		LUBRICATING SYSTEM
221-020	1.00	Lubrication pressure rocker arm shaft, check
221-022	0.60	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
230-002	0.70	Air in fuel system, checking
233-001	1.25	Fuel system, bleeding
233-004	0.80	Feed pump, checking feed pressure
236-002	0.90	Stall speed, checking
237-007	1.25	Overflow valve, replacing
237-010	0.90	Unit injectors, adjusting pretension
237-012	7.50	Unit injector, replacing
237-017	11.00	Injector sleeves, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
254-022	1.00	ACM (After treatment control module), replacing, non-programmed
254-023	1.25	ACM (After treatment control module), replacing, pre-programmed
254-056	0.80	NOx sensor, replacing
254-103	1.75	AdBlue®/DEF tank, tank armature, replacing
254-107	1.25	AdBlue®/DEF pump unit, replacing
254-114	1.25	AdBlue®/DEF, draining
254-118	1.50	SCR system, dosing test
254-120	1.25	AdBlue®/DEF dosing injector, replacing
254-121	0.50	AdBlue®/DEF quality, checking
255-002	1.25	Turbocharger, inspection
255-071	2.00	Turbocharger, replacing
258-016	1.00	Cooling fan motor, intercooler, checking/adjusting low rpm
258-017	1.00	Cooling fan motor, intercooler, checking/adjusting high rpm
26		COOLING SYSTEM
260-001	0.50	Carbon dioxide in coolant system, checking
263-063	1.25	Cooling fan motor, radiator, checking/adjusting low rpm
263-092	1.25	Cooling fan motor, radiator, checking high rpm

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-075	1.00	HMIM, MID 140, changing pre-programmed ECU
300-076	1.25	HMIM, MID 140, changing non-programmed ECU
31		BATTERY
311-002	1.00	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.25	Alternator, replacing incl function check
321-002	1.25	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	1.75	Starter motor, replacing
35		LIGHTING
352-001	0.40	Lamp bulb, replacing
352-002	0.50	Headlights, adjusting
352-024	0.60	Headlight, complete, changing (high beam 1 pc.) incl. setting
352-060	0.60	Headlight, complete, changing (low beam 1 pc.) incl. setting/adjustment
353-051	0.60	Tail lamp, replacing
36		OTHER ELECTRICAL EQUIPMENT
361-005	0.60	Flasher lamp front glass or bulb, replacing
361-006	0.60	Flasher lamp sidelight glass or bulb, replacing
363-002	2.00	Windscreen wiper front, replacing motor
366-064	1.25	V-ECU, MID 187, changing non-programmed ECU
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU
366-111	0.90	Engine Gateway, MID 165, replacing non- programmed ECU
366-112	0.90	Engine gateway, MID 165, replacing pre- programmed ECU
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-008	0.60	Engine rotation speed sensor, replacing
39		MISCELLANEOUS
398-001	0.50	CareTrack antenna, replacing
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU
398-003	1.00	W-ECU, MID142, changing non-programmed ECU

Op.no.	time (h)	Notes
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.70	Transmission oil pressure, checking
421-046	2.50	PWM-valve control system, changing
421-054	2.00	Seal for rear output shaft, replacing
421-062	1.50	Induction sensor for turbine speed, changing
421-070	8.00	Transmission, removing
421-072	9.50	Transmission, installing
421-083	1.25	Transmission, remove from a non mounted engine
421-084	1.50	Transmission, fitting on a non mounted engine
43		GEARBOX,
434-002	1.75	Dropbox, replacing seal for front output shaft
434-004	2.00	Dropbox, replacing seal for rear output shaft
434-064	0.60	Differential lock longitudinal, adjustment of sender unit
434-073	3.50	Dropbox, installing
434-074	3.00	Dropbox, removing
436-001	7.00	Dropbox rubber bushing, replacing
46		FRONT AXLE; REAR AXLE
461-011	6.00	Centre gear , removing and fitting
461-046	1.75	Input shaft, seal, replacing
463-011	5.50	Centre gear, removing and fitting
463-045	3.00	Hub reduction, removing
463-046	4.00	Hub reduction, installing
463-047	0.90	Hub reduction gear, disassembly and assembly
463-048	0.90	Dog clutch 6-wheel drive, adjusting
463-049	3.00	Output shaft, bearing and seal, replacing
463-103	1.75	Input shaft, seal, replacing
464-011	5.00	Centre gear, removing and fitting
464-014	1.50	Input shaft seal, replacing
468-062	0.70	Transverse differential lock/axle, checking and adjusting
5		BRAKE
51		WHEEL BRAKE
516-005	5.00	Brake disc, replacing
52		HYDRAULIC BRAKE SYSTEM
520-001	0.70	Brake system, checking function, hydraulic
520-010	0.10	Brake system, relieve pressure
520-037	0.90	Brake system, bleeding

Op.no.	time (h)	Notes
523-045	1.75	Pump unit brake cooling, replacing
525-008	3.50	Foot brake valve, replacing
527-001	0.10	Accumulator removed, checking charging pressure
527-002	1.25	Accumulator, replacing
55		PARKING BRAKE
550-002	1.75	Parking brake, adjusting
550-005	3.00	Parking brake, replacing brake disc
550-009	1.50	Spring brake cylinder, replacing
550-014	1.50	Parking brake, replacing brake pads
550-015	0.30	Parking brake, manually releasing
550-023	0.20	Parking brake, function checking
553-000	0.50	Load and dump brake, working pressure, checking and adjusting
553-001	0.40	Load and Dump brake, servo pressure, checking
553-002	0.30	Load and Dump brake, function check
56		COMPRESSED-AIR BRAKE
561-004	2.50	Compressor, replacing
561-023	0.30	Relief/Cut-in pressure, check
561-024	0.30	Relief/Cut-in pressure, adjusting
59		MISCELLANEOUS
590-001	0.30	Quick coupling compressed air, replacing
6		STEERING
64		STEERING
642-026	3.00	Steering gear, replacing
642-058	1.25	Steering gear, check.and adj.
643-010	1.75	Steering linkage, checking and adjusting
643-012	0.40	Steering angle, checking and adjusting
643-013	0.90	Steering times, checking and adjusting
643-014	1.00	Steering valve, neutral position, checking and adjusting
643-017	2.50	Lever bracket, steering bearing, replacing
645-004	1.00	Steering cylinder, removing
645-005	1.75	Steering cylinder, installing
645-019	2.00	Steering system, bleeding
645-052	1.00	Steering cylinder removed, reconditioning excl replacing bearings
645-054	0.60	Steering cylinder, replacing bearings
645-054	2.50	Steering cylinder, replacing bearings
645-084	1.25	Damping cylinder, checking spring force

Op.no.	time (h)	Notes
645-085	1.25	Damping cylinder, changing seal
647-095	1.00	Auxiliary steering, adjusting working- and stand-by pressure
647-096	1.00	Auxiliary steering, hydraulic pump, removing
647-097	2.00	Auxiliary steering, hydraulic pump, installation
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-015	0.90	Protecting plate, removal
715-016	1.50	Protecting plate, installation
72		SUSPENSION
720-020	0.70	Hydraulic cylinder bushing, suspension system, replacing
720-021	1.75	Hydraulic cylinder, suspension system, overhaul
725-001	1.00	Suspension cylinder, removal
725-002	0.90	Suspension cylinder, installation
725-010	1.75	Suspension cylinder (GHS), oil changing
725-012	0.20	Suspension cylinder (GHS), discarding
725-015	0.80	Suspension cylinder (GHS), checking and adjusting
74		FRAME LINK
741-001	6.00	Frame joint, separating machine
741-040	1.50	Frame joint bearing, replacing (machine separated)
741-044	4.50	Hitch, removing
741-045	6.00	Hitch, installing
741-046	2.00	Steering joint bearing, replacing (Hitch removed)
742-040	5.00	Steering joint, replacing bearings
75		AXLE SUSPENSION
751-001	1.75	A-frame bushing, tractor unit, replacing
751-013	1.00	Cross stay, rubber bushing, replacing
751-014	0.40	Cross stay, removing
751-015	0.40	Cross stay, installing
756-013	1.00	Cross stay, rubber bushing, replacing
756-017	0.40	Cross stay, removing
756-018	0.40	Cross stay, installing
756-024	2.00	Bogie beam, changing rubber spring, one side (front)
756-027	2.00	A-frame bushing, front on load unit, changing
756-028	2.50	A-frame bushing, rear on load unit, changing

Op.no.	time (h)	Notes
756-029	0.90	Bogie beam, changing rubber bushing on removed beam
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-007	0.70	Wheel, installing
771-008	0.70	Wheel, removing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.80	Engine hood, removing
821-002	0.70	Engine hood, installing
821-035	0.60	Hood pump, oil, changing
821-060	0.70	Electric hood pump, changing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.25	Door, replacing
831-006	0.60	Door lock, replacing
831-007	0.50	Door, gas spring, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	3.00	Windscreen, replacing
843-012	3.00	Rear window, replacing
843-013	3.00	Side window, replacing
843-014	3.00	Side window, rear, replacing
843-048	2.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.70	Operator's seat, removing
852-004	0.70	Operator's seat, installing
852-004	0.50	Operator's seat, installing
852-092	0.50	Operator's seat, shock absorber, replacing
852-096	1.50	Operator's seat, air bellows, replacing
852-096	1.75	Operator's seat, air bellows, replacing
852-097	1.50	Compressor operator's seat, replacing
87		AIR CONDITIONING UNIT
870-010	0.80	ECC, MID 146, changing pre-programmed ECU
870-011	0.80	ECC, MID 146, changing non-programmed ECU
870-015	1.25	Cab heating/cab ventilation timer, pump, replacing
873-004	4.00	Heater core, replacing

Op.no.	time (h)	Notes
873-006	4.00	Fan motor, replacing
873-008	3.00	Heat control valve, replacing
873-009	0.50	Heat control, replacing
874-001	1.75	Refrigerant, filling incl vacuum pumping
874-002	1.25	Refrigerant, draining
874-003	0.30	Cooling unit, performance test
874-006	4.00	Compressor, replacing incl draining and filling
874-010	4.00	Condenser, replacing incl draining and filling
874-011	3.50	Receiver, replacing incl draining and filling
874-012	5.00	Evaporator, replacing incl draining and filling
874-059	5.50	Evaporator, cleaning
875-013	2.00	Auxiliary heater, replacing

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

90 GENERAL

900-002	0.40	Hydraulic system, bleeding
900-003	0.10	Hydraulic system, relieve pressure
900-005	0.30	Vacuum pump, connection
900-006	0.20	Vacuum pump, disconnection
900-031	1.00	V2-ECU, MID 249, changing non-programmed ECU
900-032	0.90	V2-ECU, MID 249, changing pre-programmed ECU

91 WORKING HYDRAULICS; SERVO HYDRAULICS

912-078	0.60	Dump lever, changing
912-115	4.50	Steering and tipping valve, removal
912-116	4.50	Steering and tipping valve, installation
913-003	0.90	Hydraulic pump, checking and adjusting standby pressure
913-004	0.80	Hydraulic pump, checking and adjusting max working pressure
913-004	0.80	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-023	0.90	Pump, removal
913-024	1.50	Pump, installation
913-042	0.50	Working pumps, checking function
913-068	1.50	Pump regulator, checking
914-094	0.70	Dump function, checking pressure

95 LOAD CARRIER

951-005	1.00	Hoist cylinder bearing, changing
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Op.no.	time (h)	Notes
951-006	3.00	Hoist cylinder removed, reconditioning
951-007	1.00	Hoist cylinder, removal
951-008	1.00	Hoist cylinder, installation
951-011	0.30	Cylinder, rear flap, gas pressure, checking and adjusting
951-030	0.40	Dump body alternative, lowering
951-030	0.40	Dump body alternative, lowering
951-040	2.00	Dump body joint, changing tipping bearing
951-041	2.50	Dump body, adjusting against frame
951-042	0.20	Dump body angle sensor, calibration
99		MISCELLANEOUS
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
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0 GENERAL

09 MISCELLANEOUS

090-001	0.70	Engine, basic check
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1 STANDARD PARTS, SERVICE

17 SERVICE

173-007	0.60	Maintenance service, every 250 hours
173-010	2.00	Maintenance service, every 500 hours
173-012	5.00	Maintenance service, every 1000 hours
173-014	8.00	Maintenance service, every 2000 hours
173-018	16.00	Maintenance service, every 4000 hours
173-022	1.25	Maintenance service, every 6000 hours
173-042	2.50	Maintenance service, first 1000 hours
173-457	1.25	Coolant, changing
176-002	0.70	Propeller shafts, removing

19 GENERAL

191-021	0.20	Service position 1
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2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-068	2.00	E-ECU, MID 128, changing non-programmed ECU
200-070	1.50	E-ECU, MID 128, changing pre-programmed ECU

21 ENGINE

210-002	8.50	Compression test
210-073	11.00	Engine and transmission, removing
210-074	13.00	Engine and transmission, mounting
210-092	0.50	Engine rotation speed sensor (camshaft), replacing
214-012	3.00	Valves, adjusting
215-042	8.00	Camshaft, replacing
215-043	2.50	Camshaft setting, checking
216-014	1.75	Crankshaft, replacing front oil seal
216-018	18.00	Crankshaft, replacing rear oil seal
216-049	1.75	Crankshaft, axial clearance, checking
218-001	1.50	Rubber cushion, replacing
218-007	4.00	Engine mounting rear, changing

Op.no.	time (h)	Notes
22		LUBRICATING SYSTEM
221-020	1.00	Lubrication pressure rocker arm shaft, check
221-022	0.60	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
230-002	0.70	Air in fuel system, checking
233-001	1.25	Fuel system, bleeding
233-004	0.80	Feed pump, checking feed pressure
236-002	0.90	Stall speed, checking
237-007	1.25	Overflow valve, replacing
237-010	0.90	Unit injectors, adjusting pretension
237-012	7.50	Unit injector, replacing
237-017	11.00	Injector sleeves, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
254-022	1.00	ACM (After treatment control module), replacing, non-programmed
254-023	1.25	ACM (After treatment control module), replacing, pre-programmed
255-002	1.25	Turbocharger, inspection
255-071	2.00	Turbocharger, replacing
258-016	1.00	Cooling fan motor, intercooler, checking/adjusting low rpm
258-017	1.00	Cooling fan motor, intercooler, checking/adjusting high rpm
26		COOLING SYSTEM
260-001	0.50	Carbon dioxide in coolant system, checking
263-063	1.25	Cooling fan motor, radiator, checking/adjusting low rpm
263-092	1.25	Cooling fan motor, radiator, checking high rpm
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-075	1.00	HMIM, MID 140, changing pre-programmed ECU
300-076	1.25	HMIM, MID 140, changing non-programmed ECU
31		BATTERY
311-002	1.00	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.25	Alternator, replacing incl function check

Op.no.	time (h)	Notes
321-002	1.25	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	1.75	Starter motor, replacing
35		LIGHTING
352-001	0.40	Lamp bulb, replacing
352-002	0.50	Headlights, adjusting
352-024	0.60	Headlight, complete, changing (high beam 1 pc.) incl. setting
352-060	0.60	Headlight, complete, changing (low beam 1 pc.) incl. setting/adjustment
353-051	0.60	Tail lamp, replacing
36		OTHER ELECTRICAL EQUIPMENT
361-005	0.60	Flasher lamp front glass or bulb, replacing
361-006	0.60	Flasher lamp sidelight glass or bulb, replacing
363-002	2.00	Windscreen wiper front, replacing motor
366-064	1.25	V-ECU, MID 187, changing non-programmed ECU
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU
366-111	0.90	Engine Gateway, MID 165, replacing non- programmed ECU
366-112	0.90	Engine gateway, MID 165, replacing pre- programmed ECU
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-008	0.60	Engine rotation speed sensor, replacing
39		MISCELLANEOUS
398-001	0.50	CareTrack antenna, replacing
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU
398-003	1.00	W-ECU, MID142, changing non-programmed ECU
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.70	Transmission oil pressure, checking
421-046	2.50	PWM-valve control system, changing
421-054	2.00	Seal for rear output shaft, replacing
421-062	1.50	Induction sensor for turbine speed, changing
421-070	8.00	Transmission, removing
421-072	9.50	Transmission, installing
421-083	1.25	Transmission, remove from a non mounted engine
421-084	1.50	Transmission, fitting on a non mounted engine

Op.no.	time (h)	Notes
43		GEARBOX,
434-002	1.75	Dropbox, replacing seal for front output shaft
434-004	2.00	Dropbox, replacing seal for rear output shaft
434-064	0.60	Differential lock longitudinal, adjustment of sender unit
434-073	3.50	Dropbox, installing
434-074	3.00	Dropbox, removing
436-001	7.00	Dropbox rubber bushing, replacing
46		FRONT AXLE; REAR AXLE
461-011	6.00	Centre gear , removing and fitting
461-046	1.75	Input shaft, seal, replacing
463-011	5.50	Centre gear, removing and fitting
463-045	3.00	Hub reduction, removing
463-046	4.00	Hub reduction, installing
463-047	0.90	Hub reduction gear, disassembly and assembly
463-048	0.90	Dog clutch 6-wheel drive, adjusting
463-049	3.00	Output shaft, bearing and seal, replacing
463-103	1.75	Input shaft, seal, replacing
464-011	5.00	Centre gear, removing and fitting
464-014	1.50	Input shaft seal, replacing
468-062	0.70	Transverse differential lock/axle, checking and adjusting
5		BRAKE
51		WHEEL BRAKE
516-005	5.00	Brake disc, replacing
52		HYDRAULIC BRAKE SYSTEM
520-001	0.70	Brake system, checking function, hydraulic
520-010	0.10	Brake system, relieve pressure
520-037	0.90	Brake system, bleeding
523-045	1.75	Pump unit brake cooling, replacing
525-008	3.50	Foot brake valve, replacing
527-001	0.10	Accumulator removed, checking charging pressure
527-002	1.25	Accumulator, replacing
55		PARKING BRAKE
550-002	1.75	Parking brake, adjusting
550-005	3.00	Parking brake, replacing brake disc
550-009	1.50	Spring brake cylinder, replacing
550-014	1.50	Parking brake, replacing brake pads

Op.no.	time (h)	Notes
550-015	0.30	Parking brake, manually releasing
550-023	0.20	Parking brake, function checking
553-000	0.50	Load and dump brake, working pressure, checking and adjusting
553-001	0.40	Load and Dump brake, servo pressure, checking
553-002	0.30	Load and Dump brake, function check
56		COMPRESSED-AIR BRAKE
561-004	2.50	Compressor, replacing
561-023	0.30	Relief/Cut-in pressure, check
561-024	0.30	Relief/Cut-in pressure, adjusting
59		MISCELLANEOUS
590-001	0.30	Quick coupling compressed air, replacing
 6		 STEERING
64		STEERING
642-026	3.00	Steering gear, replacing
642-058	1.25	Steering gear, check and adj.
643-010	1.75	Steering linkage, checking and adjusting
643-012	0.40	Steering angle, checking and adjusting
643-013	0.90	Steering times, checking and adjusting
643-014	1.00	Steering valve, neutral position, checking and adjusting
643-017	2.50	Lever bracket, steering bearing, replacing
645-004	1.00	Steering cylinder, removing
645-005	1.75	Steering cylinder, installing
645-052	1.00	Steering cylinder removed, reconditioning excl replacing bearings
645-054	1.00	Steering cylinder, replacing bearings
645-054	0.60	Steering cylinder, replacing bearings
645-054	2.50	Steering cylinder, replacing bearings
645-054	2.50	Steering cylinder, replacing bearings
645-084	1.25	Damping cylinder, checking spring force
645-085	1.25	Damping cylinder, changing seal
647-095	1.00	Auxiliary steering, adjusting working- and stand-by pressure
647-096	1.00	Auxiliary steering, hydraulic pump, removing
647-097	2.00	Auxiliary steering, hydraulic pump, installation

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-015	0.90	Protecting plate, removal
715-016	1.50	Protecting plate, installation
72		SUSPENSION
720-020	0.70	Hydraulic cylinder bushing, suspension system, replacing
720-021	1.75	Hydraulic cylinder, suspension system, overhaul
725-001	1.00	Suspension cylinder, removal
725-002	0.90	Suspension cylinder, installation
725-010	1.75	Suspension cylinder (GHS), oil changing
725-012	0.20	Suspension cylinder (GHS), discarding
725-015	0.80	Suspension cylinder (GHS), checking and adjusting
74		FRAME LINK
741-001	6.00	Frame joint, separating machine
741-040	1.50	Frame joint bearing, replacing (machine separated)
741-044	4.50	Hitch, removing
741-045	6.00	Hitch, installing
741-046	2.00	Steering joint bearing, replacing (Hitch removed)
742-040	5.00	Steering joint, replacing bearings
75		AXLE SUSPENSION
751-001	1.75	A-frame bushing, tractor unit, replacing
751-013	1.00	Cross stay, rubber bushing, replacing
751-014	0.40	Cross stay, removing
751-015	0.40	Cross stay, installing
756-013	1.00	Cross stay, rubber bushing, replacing
756-017	0.40	Cross stay, removing
756-018	0.40	Cross stay, installing
756-024	2.00	Bogie beam, changing rubber spring, one side (front)
756-027	2.00	A-frame bushing, front on load unit, changing
756-028	2.50	A-frame bushing, rear on load unit, changing
756-029	0.90	Bogie beam, changing rubber bushing on removed beam
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-007	0.70	Wheel, installing
771-008	0.70	Wheel, removing

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.80	Engine hood, removing
821-002	0.70	Engine hood, installing
821-035	0.60	Hood pump, oil, changing
821-060	0.70	Electric hood pump, changing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.25	Door, replacing
831-006	0.60	Door lock, replacing
831-007	0.50	Door, gas spring, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	3.00	Windscreen, replacing
843-012	3.00	Rear window, replacing
843-013	3.00	Side window, replacing
843-014	3.00	Side window, rear, replacing
843-048	2.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.70	Operator's seat, removing
852-004	0.70	Operator's seat, installing
852-004	0.50	Operator's seat, installing
852-092	0.50	Operator's seat, shock absorber, replacing
852-096	1.50	Operator's seat, air bellows, replacing
852-096	1.75	Operator's seat, air bellows, replacing
852-097	1.50	Compressor operator's seat, replacing
87		AIR CONDITIONING UNIT
870-010	0.80	ECC, MID 146, changing pre-programmed ECU
870-011	0.80	ECC, MID 146, changing non-programmed ECU
870-015	1.25	Cab heating/cab ventilation timer, pump, replacing
873-004	4.00	Heater core, replacing
873-006	4.00	Fan motor, replacing
873-008	3.00	Heat control valve, replacing
873-009	0.50	Heat control, replacing
874-001	1.75	Refrigerant, filling incl vacuum pumping
874-002	1.25	Refrigerant, draining
874-003	0.30	Cooling unit, performance test
874-006	4.00	Compressor, replacing incl draining and filling

Op.no.	time (h)	Notes
874-010	4.00	Condenser, replacing incl draining and filling
874-011	3.50	Receiver, replacing incl draining and filling
874-012	5.00	Evaporator, replacing incl draining and filling
874-059	5.50	Evaporator, cleaning
875-013	2.00	Auxiliary heater, replacing

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

90 GENERAL

900-002	0.40	Hydraulic system, bleeding
900-003	0.10	Hydraulic system, relieve pressure
900-005	0.30	Vacuum pump, connection
900-006	0.20	Vacuum pump, disconnection
900-031	1.00	V2-ECU, MID 249, changing non-programmed ECU
900-032	0.90	V2-ECU, MID 249, changing pre-programmed ECU

91 WORKING HYDRAULICS; SERVO HYDRAULICS

912-078	0.60	Dump lever, changing
912-115	4.50	Steering and tipping valve, removal
912-116	4.50	Steering and tipping valve, installation
913-003	0.90	Hydraulic pump, checking and adjusting standby pressure
913-004	0.80	Hydraulic pump, checking and adjusting max working pressure
913-004	0.80	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-023	0.90	Pump, removal
913-024	1.50	Pump, installation
913-042	0.50	Working pumps, checking function
913-068	1.50	Pump regulator, checking
914-094	0.70	Dump function, checking pressure

95 LOAD CARRIER

951-005	1.00	Hoist cylinder bearing, changing
951-006	3.00	Hoist cylinder removed, reconditioning
951-007	1.00	Hoist cylinder, removal
951-008	1.00	Hoist cylinder, installation
951-011	0.30	Cylinder, rear flap, gas pressure, checking and adjusting
951-030	0.40	Dump body alternative, lowering
951-030	0.40	Dump body alternative, lowering

Op.no.	time (h)	Notes
951-040	2.00	Dump body joint, changing tipping bearing
951-041	2.50	Dump body, adjusting against frame
951-042	0.20	Dump body angle sensor, calibration
99		MISCELLANEOUS
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
0		GENERAL
09		MISCELLANEOUS
090-001	0.70	Engine, basic check
1		STANDARD PARTS, SERVICE
17		SERVICE
173-007	0.60	Maintenance service, every 250 hours
173-010	2.00	Maintenance service, every 500 hours
173-012	5.00	Maintenance service, every 1000 hours
173-014	8.00	Maintenance service, every 2000 hours
173-018	16.00	Maintenance service, every 4000 hours
173-022	1.50	Maintenance service, every 6000 hours
173-042	2.50	Maintenance service, first 1000 hours
173-457	1.25	Coolant, changing
176-002	0.70	Propeller shafts, removing
19		GENERAL
191-021	0.20	Service position 1
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	1.50	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
210-002	9.00	Compression test
210-073	11.00	Engine and transmission, removing
210-074	13.00	Engine and transmission, mounting
210-092	0.50	Engine rotation speed sensor (camshaft), replacing
214-012	3.00	Valves, adjusting
215-042	8.00	Camshaft, replacing
215-043	2.50	Camshaft setting, checking
216-014	1.75	Crankshaft, replacing front oil seal
216-018	18.00	Crankshaft, replacing rear oil seal
216-049	1.75	Crankshaft, axial clearance, checking
218-001	1.50	Rubber cushion, replacing
218-007	4.00	Engine mounting rear, changing

Op.no.	time (h)	Notes
22		LUBRICATING SYSTEM
221-020	1.00	Lubrication pressure rocker arm shaft, check
221-022	0.60	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
230-002	0.70	Air in fuel system, checking
233-001	1.25	Fuel system, bleeding
233-004	0.80	Feed pump, checking feed pressure
236-002	0.90	Stall speed, checking
237-007	1.25	Overflow valve, replacing
237-010	0.90	Unit injectors, adjusting pretension
237-012	7.50	Unit injector, replacing
237-017	11.00	Injector sleeves, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
254-022	1.00	ACM (After treatment control module), replacing, non-programmed
254-023	1.25	ACM (After treatment control module), replacing, pre-programmed
254-056	0.80	NOx sensor, replacing
254-103	1.75	AdBlue®/DEF tank, tank armature, replacing
254-107	1.25	AdBlue®/DEF pump unit, replacing
254-114	1.25	AdBlue®/DEF, draining
254-118	1.50	SCR system, dosing test
254-120	1.25	AdBlue®/DEF dosing injector, replacing
254-121	0.50	AdBlue®/DEF quality, checking
255-002	1.25	Turbocharger, inspection
255-071	2.00	Turbocharger, replacing
258-016	1.00	Cooling fan motor, intercooler, checking/adjusting low rpm
258-017	1.00	Cooling fan motor, intercooler, checking/adjusting high rpm
26		COOLING SYSTEM
260-001	0.50	Carbon dioxide in coolant system, checking
263-063	1.25	Cooling fan motor, radiator, checking/adjusting low rpm
263-092	1.25	Cooling fan motor, radiator, checking high rpm

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-075	1.00	HMIM, MID 140, changing pre-programmed ECU
300-076	1.25	HMIM, MID 140, changing non-programmed ECU
31		BATTERY
311-002	1.00	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.25	Alternator, replacing incl function check
321-002	1.25	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	1.75	Starter motor, replacing
35		LIGHTING
352-001	0.40	Lamp bulb, replacing
352-002	0.50	Headlights, adjusting
352-024	0.60	Headlight, complete, changing (high beam 1 pc.) incl. setting
352-060	0.60	Headlight, complete, changing (low beam 1 pc.) incl. setting/adjustment
353-051	0.60	Tail lamp, replacing
36		OTHER ELECTRICAL EQUIPMENT
361-005	0.60	Flasher lamp front glass or bulb, replacing
361-006	0.60	Flasher lamp sidelight glass or bulb, replacing
366-064	1.25	V-ECU, MID 187, changing non-programmed ECU
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU
366-111	0.90	Engine Gateway, MID 165, replacing non-programmed ECU
366-112	0.90	Engine gateway, MID 165, replacing pre-programmed ECU
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-008	0.60	Engine rotation speed sensor, replacing
39		MISCELLANEOUS
398-001	0.50	CareTrack antenna, replacing
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU
398-003	1.00	W-ECU, MID142, changing non-programmed ECU

Op.no.	time (h)	Notes
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.70	Transmission oil pressure, checking
421-046	2.50	PWM-valve control system, changing
421-054	2.00	Seal for rear output shaft, replacing
421-062	1.50	Induction sensor for turbine speed, changing
421-070	8.00	Transmission, removing
421-072	9.50	Transmission, installing
421-083	1.25	Transmission, remove from a non mounted engine
421-084	1.50	Transmission, fitting on a non mounted engine
43		GEARBOX,
434-002	1.75	Dropbox, replacing seal for front output shaft
434-004	2.00	Dropbox, replacing seal for rear output shaft
434-064	0.60	Differential lock longitudinal, adjustment of sender unit
434-073	3.50	Dropbox, installing
434-074	3.00	Dropbox, removing
436-001	7.00	Dropbox rubber bushing, replacing
46		FRONT AXLE; REAR AXLE
461-011	6.00	Centre gear , removing and fitting
461-046	1.75	Input shaft, seal, replacing
463-011	5.50	Centre gear, removing and fitting
463-045	3.00	Hub reduction, removing
463-046	4.00	Hub reduction, installing
463-047	0.90	Hub reduction gear, disassembly and assembly
463-048	0.90	Dog clutch 6-wheel drive, adjusting
463-049	3.00	Output shaft, bearing and seal, replacing
463-103	1.75	Input shaft, seal, replacing
464-011	5.00	Centre gear, removing and fitting
464-014	1.50	Input shaft seal, replacing
468-062	0.70	Transverse differential lock/axle, checking and adjusting
5		BRAKE
51		WHEEL BRAKE
516-005	5.00	Brake disc, replacing
52		HYDRAULIC BRAKE SYSTEM
520-001	0.70	Brake system, checking function, hydraulic
520-010	0.10	Brake system, relieve pressure
520-037	0.90	Brake system, bleeding

Op.no.	time (h)	Notes
523-045	1.75	Pump unit brake cooling, replacing
525-008	3.50	Foot brake valve, replacing
527-001	0.10	Accumulator removed, checking charging pressure
527-002	1.25	Accumulator, replacing
55		PARKING BRAKE
550-002	1.75	Parking brake, adjusting
550-005	3.00	Parking brake, replacing brake disc
550-009	1.50	Spring brake cylinder, replacing
550-014	1.50	Parking brake, replacing brake pads
550-015	0.30	Parking brake, manually releasing
550-023	0.20	Parking brake, function checking
553-000	0.50	Load and dump brake, working pressure, checking and adjusting
553-001	0.40	Load and Dump brake, servo pressure, checking
553-002	0.30	Load and Dump brake, function check
56		COMPRESSED-AIR BRAKE
561-004	2.50	Compressor, replacing
561-023	0.30	Relief/Cut-in pressure, check
561-024	0.30	Relief/Cut-in pressure, adjusting
59		MISCELLANEOUS
590-001	0.30	Quick coupling compressed air, replacing
6		STEERING
64		STEERING
642-026	3.00	Steering gear, replacing
642-058	1.25	Steering gear, check.and adj.
643-010	1.75	Steering linkage, checking and adjusting
643-012	0.40	Steering angle, checking and adjusting
643-013	0.90	Steering times, checking and adjusting
643-014	1.00	Steering valve, neutral position, checking and adjusting
643-017	2.50	Lever bracket, steering bearing, replacing
645-004	1.00	Steering cylinder, removing
645-005	1.75	Steering cylinder, installing
645-052	1.00	Steering cylinder removed, reconditioning excl replacing bearings
645-054	0.60	Steering cylinder, replacing bearings
645-054	2.50	Steering cylinder, replacing bearings
645-084	1.25	Damping cylinder, checking spring force
645-085	1.25	Damping cylinder, changing seal

Op.no.	time (h)	Notes
647-095	1.00	Auxiliary steering, adjusting working- and stand-by pressure
647-096	1.00	Auxiliary steering, hydraulic pump, removing
647-097	2.00	Auxiliary steering, hydraulic pump, installation
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-015	0.90	Protecting plate, removal
715-016	1.50	Protecting plate, installation
72		SUSPENSION
720-020	0.70	Hydraulic cylinder bushing, suspension system, replacing
720-021	1.75	Hydraulic cylinder, suspension system, overhaul
725-001	1.00	Suspension cylinder, removal
725-002	0.90	Suspension cylinder, installation
725-010	1.75	Suspension cylinder (GHS), oil changing
725-012	0.20	Suspension cylinder (GHS), discarding
725-015	0.80	Suspension cylinder (GHS), checking and adjusting
74		FRAME LINK
741-001	6.00	Frame joint, separating machine
741-040	1.50	Frame joint bearing, replacing (machine separated)
741-044	4.50	Hitch, removing
741-045	6.00	Hitch, installing
741-046	2.00	Steering joint bearing, replacing (Hitch removed)
742-040	5.00	Steering joint, replacing bearings
75		AXLE SUSPENSION
751-001	1.75	A-frame bushing, tractor unit, replacing
751-013	1.00	Cross stay, rubber bushing, replacing
751-014	0.40	Cross stay, removing
751-015	0.40	Cross stay, installing
756-013	1.00	Cross stay, rubber bushing, replacing
756-017	0.40	Cross stay, removing
756-018	0.40	Cross stay, installing
756-024	2.00	Bogie beam, changing rubber spring, one side (front)
756-027	2.00	A-frame bushing, front on load unit, changing
756-028	2.50	A-frame bushing, rear on load unit, changing

Op.no.	time (h)	Notes
756-029	0.90	Bogie beam, changing rubber bushing on removed beam
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-007	0.70	Wheel, installing
771-008	0.70	Wheel, removing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.80	Engine hood, removing
821-002	0.70	Engine hood, installing
821-035	0.60	Hood pump, oil, changing
821-060	0.70	Electric hood pump, changing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.25	Door, replacing
831-006	0.60	Door lock, replacing
831-007	0.50	Door, gas spring, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	3.00	Windscreen, replacing
843-012	3.00	Rear window, replacing
843-013	3.00	Side window, replacing
843-014	3.00	Side window, rear, replacing
843-048	2.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.70	Operator's seat, removing
852-004	0.70	Operator's seat, installing
852-004	0.50	Operator's seat, installing
852-092	0.50	Operator's seat, shock absorber, replacing
852-096	1.50	Operator's seat, air bellows, replacing
852-096	1.75	Operator's seat, air bellows, replacing
852-097	1.50	Compressor operator's seat, replacing
87		AIR CONDITIONING UNIT
870-010	0.80	ECC, MID 146, changing pre-programmed ECU
870-011	0.80	ECC, MID 146, changing non-programmed ECU
870-015	1.25	Cab heating/cab ventilation timer, pump, replacing
873-004	4.00	Heater core, replacing

Op.no.	time (h)	Notes
873-006	4.00	Fan motor, replacing
873-008	3.00	Heat control valve, replacing
873-009	0.50	Heat control, replacing
874-001	1.75	Refrigerant, filling incl vacuum pumping
874-002	1.25	Refrigerant, draining
874-003	0.30	Cooling unit, performance test
874-006	4.00	Compressor, replacing incl draining and filling
874-010	4.00	Condenser, replacing incl draining and filling
874-011	3.50	Receiver, replacing incl draining and filling
874-012	5.00	Evaporator, replacing incl draining and filling
874-059	5.50	Evaporator, cleaning
875-013	2.00	Auxiliary heater, replacing

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

90 GENERAL

900-002	0.40	Hydraulic system, bleeding
900-003	0.10	Hydraulic system, relieve pressure
900-005	0.30	Vacuum pump, connection
900-006	0.20	Vacuum pump, disconnection
900-031	1.00	V2-ECU, MID 249, changing non-programmed ECU
900-032	0.90	V2-ECU, MID 249, changing pre-programmed ECU

91 WORKING HYDRAULICS; SERVO HYDRAULICS

912-078	0.60	Dump lever, changing
912-115	4.50	Steering and tipping valve, removal
912-116	4.50	Steering and tipping valve, installation
913-003	0.90	Hydraulic pump, checking and adjusting standby pressure
913-004	0.80	Hydraulic pump, checking and adjusting max working pressure
913-004	0.80	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-023	0.90	Pump, removal
913-024	1.50	Pump, installation
913-042	0.50	Working pumps, checking function
913-068	1.50	Pump regulator, checking
914-094	0.70	Dump function, checking pressure

95 LOAD CARRIER

951-005	1.00	Hoist cylinder bearing, changing
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Op.no.	time (h)	Notes
951-006	3.00	Hoist cylinder removed, reconditioning
951-007	1.00	Hoist cylinder, removal
951-008	1.00	Hoist cylinder, installation
951-011	0.30	Cylinder, rear flap, gas pressure, checking and adjusting
951-030	0.40	Dump body alternative, lowering
951-030	0.40	Dump body alternative, lowering
951-040	2.00	Dump body joint, changing tipping bearing
951-041	2.50	Dump body, adjusting against frame
951-042	0.20	Dump body angle sensor, calibration
99		MISCELLANEOUS
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
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0 GENERAL

09 MISCELLANEOUS

090-001	0.70	Engine, basic check
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1 STANDARD PARTS, SERVICE

17 SERVICE

173-007	0.60	Maintenance service, every 250 hours
173-010	2.00	Maintenance service, every 500 hours
173-012	5.00	Maintenance service, every 1000 hours
173-014	8.00	Maintenance service, every 2000 hours
173-018	15.00	Maintenance service, every 4000 hours
173-022	1.25	Maintenance service, every 6000 hours
173-042	2.50	Maintenance service, first 1000 hours
173-457	1.00	Coolant, changing
176-002	0.70	Propeller shafts, removing

19 GENERAL

191-021	0.20	Service position 1
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2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-068	1.75	E-ECU, MID 128, changing non-programmed ECU
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU

21 ENGINE

210-002	9.00	Compression test
210-073	9.00	Engine and transmission, removing
210-074	13.00	Engine and transmission, mounting
210-092	0.50	Engine rotation speed sensor (camshaft), replacing
214-012	3.50	Valves, adjusting
215-042	7.00	Camshaft, replacing
215-043	2.50	Camshaft setting, checking
216-014	1.75	Crankshaft, replacing front oil seal
216-018	17.00	Crankshaft, replacing rear oil seal
216-049	1.75	Crankshaft, axial clearance, checking
218-001	1.50	Rubber cushion, replacing
218-007	4.00	Engine mounting rear, changing

Op.no.	time (h)	Notes
22		LUBRICATING SYSTEM
221-020	1.00	Lubrication pressure rocker arm shaft, check
221-022	0.60	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
230-002	0.70	Air in fuel system, checking
233-001	1.25	Fuel system, bleeding
233-004	0.80	Feed pump, checking feed pressure
236-002	0.90	Stall speed, checking
237-007	1.25	Overflow valve, replacing
237-010	0.90	Unit injectors, adjusting pretension
237-012	8.00	Unit injector, replacing
237-017	11.00	Injector sleeves, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
254-022	1.00	ACM (After treatment control module), replacing, non-programmed
254-023	1.25	ACM (After treatment control module), replacing, pre-programmed
255-002	1.25	Turbocharger, inspection
255-071	3.00	Turbocharger, replacing
258-016	1.00	Cooling fan motor, intercooler, checking/adjusting low rpm
258-017	1.00	Cooling fan motor, intercooler, checking/adjusting high rpm
26		COOLING SYSTEM
260-001	0.50	Carbon dioxide in coolant system, checking
262-008	2.50	Secondary coolant pump, replacing
263-063	1.25	Cooling fan motor, radiator, checking/adjusting low rpm
263-092	1.25	Cooling fan motor, radiator, checking high rpm
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-075	1.00	HMIM, MID 140, changing pre-programmed ECU
300-076	1.25	HMIM, MID 140, changing non-programmed ECU
31		BATTERY
311-002	1.00	Batteries, replacing

Op.no.	time (h)	Notes
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.25	Alternator, replacing incl function check
321-002	1.25	Alternator, replacing incl function check
35		LIGHTING
352-001	0.40	Lamp bulb, replacing
352-002	0.50	Headlights, adjusting
352-024	0.60	Headlight, complete, changing (high beam 1 pc.) incl. setting
352-060	0.60	Headlight, complete, changing (low beam 1 pc.) incl. setting/adjustment
353-051	0.60	Tail lamp, replacing
36		OTHER ELECTRICAL EQUIPMENT
361-005	0.60	Flasher lamp front glass or bulb, replacing
361-006	0.60	Flasher lamp sidelight glass or bulb, replacing
363-002	2.00	Windscreen wiper front, replacing motor
366-064	1.25	V-ECU, MID 187, changing non-programmed ECU
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU
366-111	0.90	Engine Gateway, MID 165, replacing non- programmed ECU
366-112	0.90	Engine gateway, MID 165, replacing pre- programmed ECU
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-008	0.90	Engine rotation speed sensor, replacing
39		MISCELLANEOUS
398-001	0.50	CareTrack antenna, replacing
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU
398-003	1.00	W-ECU, MID142, changing non-programmed ECU
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.70	Transmission oil pressure, checking
421-046	2.50	PWM-valve control system, changing
421-054	2.00	Seal for rear output shaft, replacing
421-062	1.50	Induction sensor for turbine speed, changing
421-070	6.50	Transmission, removing
421-072	8.00	Transmission, installing
421-083	1.50	Transmission, remove from a non mounted engine
421-084	1.50	Transmission, fitting on a non mounted engine

Op.no.	time (h)	Notes
43		GEARBOX,
434-002	1.75	Dropbox, replacing seal for front output shaft
434-004	2.00	Dropbox, replacing seal for rear output shaft
434-064	0.60	Differential lock longitudinal, adjustment of sender unit
434-073	3.50	Dropbox, installing
434-074	3.00	Dropbox, removing
436-001	7.00	Dropbox rubber bushing, replacing
46		FRONT AXLE; REAR AXLE
461-011	12.00	Centre gear , removing and fitting
461-037	2.50	Hub reduction, removing
461-038	3.50	Hub reduction, installing
461-046	1.75	Input shaft, seal, replacing
463-011	12.00	Centre gear, removing and fitting
463-016	13.00	Dog clutch 6x6, checking and adjusting
463-049	3.00	Output shaft, bearing and seal, replacing
463-079	3.00	Output shaft 6-wheel drive, sealing and bearing, replacing
463-100	0.40	Rotation speed sensor, replacing
463-101	0.40	Rotation speed sensor, adjusting
463-103	2.00	Input shaft, seal, replacing
464-011	12.00	Centre gear, removing and fitting
464-014	1.75	Input shaft seal, replacing
5		BRAKE
52		HYDRAULIC BRAKE SYSTEM
520-001	0.70	Brake system, checking function, hydraulic
520-010	0.10	Brake system, relieve pressure
520-037	1.00	Brake system, bleeding
525-008	3.50	Foot brake valve, replacing
527-001	0.10	Accumulator removed, checking charging pressure
527-002	1.25	Accumulator, replacing
55		PARKING BRAKE
550-002	1.75	Parking brake, adjusting
550-005	3.00	Parking brake, replacing brake disc
550-009	1.50	Spring brake cylinder, replacing
550-014	1.50	Parking brake, replacing brake pads
550-015	0.30	Parking brake, manually releasing
550-023	0.20	Parking brake, function checking

Op.no.	time (h)	Notes
553-000	0.40	Load and dump brake, working pressure, checking and adjusting
553-001	0.40	Load and Dump brake, servo pressure, checking
553-002	0.30	Load and Dump brake, function check
56		COMPRESSED-AIR BRAKE
561-004	1.75	Compressor, replacing
561-023	0.30	Relief/Cut-in pressure, check
561-024	0.30	Relief/Cut-in pressure, adjusting
59		MISCELLANEOUS
590-001	0.30	Quick coupling compressed air, replacing
6		STEERING
64		STEERING
642-026	2.50	Steering gear, replacing
642-058	2.00	Steering gear, check.and adj.
643-010	1.75	Steering linkage, checking and adjusting
643-012	0.40	Steering angle, checking and adjusting
643-013	0.80	Steering times, checking and adjusting
643-014	1.00	Steering valve, neutral position, checking and adjusting
645-004	0.90	Steering cylinder, removing
645-005	1.00	Steering cylinder, installing
645-052	1.25	Steering cylinder removed, reconditioning excl replacing bearings
645-084	1.25	Damping cylinder, checking spring force
645-085	1.25	Damping cylinder, changing seal
647-095	1.00	Auxiliary steering, adjusting working- and stand-by pressure
647-096	1.00	Auxiliary steering, hydraulic pump, removing
647-097	1.50	Auxiliary steering, hydraulic pump, installation
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
711-001	3.00	Frame extension, removing
711-002	4.00	Frame extension, installing
715-015	0.90	Protecting plate, removal
715-016	1.50	Protecting plate, installation

Op.no.	time (h)	Notes
74		FRAME LINK
741-001	6.00	Frame joint, separating machine
741-040	1.50	Frame joint bearing, replacing (machine separated)
741-044	5.00	Hitch, removing
741-045	6.50	Hitch, installing
741-046	2.50	Steering joint bearing, replacing (Hitch removed)
742-040	6.00	Steering joint, replacing bearings
75		AXLE SUSPENSION
751-001	3.00	A-frame bushing, tractor unit, replacing
751-013	1.00	Cross stay, rubber bushing, replacing
751-014	0.40	Cross stay, removing
751-015	0.40	Cross stay, installing
756-013	1.00	Cross stay, rubber bushing, replacing
756-017	0.40	Cross stay, removing
756-018	0.40	Cross stay, installing
756-024	2.00	Bogie beam, changing rubber spring, one side (front)
756-027	4.50	A-frame bushing, front on load unit, changing
756-028	2.50	A-frame bushing, rear on load unit, changing
756-029	0.90	Bogie beam, changing rubber bushing on removed beam
756-030	7.00	Bogie beam, changing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-007	0.70	Wheel, installing
771-008	0.70	Wheel, removing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.80	Engine hood, removing
821-002	0.70	Engine hood, installing
821-035	0.60	Hood pump, oil, changing
821-060	0.70	Electric hood pump, changing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.25	Door, replacing
831-006	0.60	Door lock, replacing

Op.no.	time (h)	Notes
831-007	0.50	Door, gas spring, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	3.00	Windscreen, replacing
843-012	3.00	Rear window, replacing
843-013	3.00	Side window, replacing
843-014	3.00	Side window, rear, replacing
843-048	2.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.70	Operator's seat, removing
852-004	0.70	Operator's seat, installing
852-004	0.50	Operator's seat, installing
852-092	0.50	Operator's seat, shock absorber, replacing
852-096	1.50	Operator's seat, air bellows, replacing
852-096	1.75	Operator's seat, air bellows, replacing
852-097	1.50	Compressor operator's seat, replacing
87		AIR CONDITIONING UNIT
870-010	0.80	ECC, MID 146, changing pre-programmed ECU
870-011	0.80	ECC, MID 146, changing non-programmed ECU
870-015	1.25	Cab heating/cab ventilation timer, pump, replacing
873-004	4.00	Heater core, replacing
873-006	4.00	Fan motor, replacing
873-008	3.00	Heat control valve, replacing
873-009	0.50	Heat control, replacing
874-001	1.75	Refrigerant, filling incl vacuum pumping
874-002	1.25	Refrigerant, draining
874-003	0.30	Cooling unit, performance test
874-006	4.00	Compressor, replacing incl draining and filling
874-010	4.00	Condenser, replacing incl draining and filling
874-011	3.50	Receiver, replacing incl draining and filling
874-012	5.00	Evaporator, replacing incl draining and filling
874-059	5.50	Evaporator, cleaning
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-002	0.40	Hydraulic system, bleeding
900-003	0.10	Hydraulic system, relieve pressure
900-005	0.30	Vacuum pump, connection
900-006	0.20	Vacuum pump, disconnection

Op.no.	time (h)	Notes
900-031	1.00	V2-ECU, MID 249, changing non-programmed ECU
900-032	0.90	V2-ECU, MID 249, changing pre-programmed ECU
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-912	1.75	Rubber connection, suction line, replacing
912-078	0.60	Dump lever, changing
912-115	3.00	Steering and tipping valve, removal
912-116	3.50	Steering and tipping valve, installation
913-003	0.90	Hydraulic pump, checking and adjusting standby pressure
913-004	0.80	Hydraulic pump, checking and adjusting max working pressure
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-042	0.50	Working pumps, checking function
913-052	1.00	Hydraulic pump, removing
913-053	1.75	Hydraulic pump, installing
913-068	1.50	Pump regulator, checking
914-094	0.70	Dump function, checking pressure
94		UNIT, LOAD HANDLING
948-002	2.50	Load cell, replacing
95		LOAD CARRIER
951-005	1.00	Hoist cylinder bearing, changing
951-006	3.00	Hoist cylinder removed, reconditioning
951-007	1.25	Hoist cylinder, removal
951-008	1.25	Hoist cylinder, installation
951-011	0.30	Cylinder, rear flap, gas pressure, checking and adjusting
951-030	0.40	Dump body alternative, lowering
951-030	0.40	Dump body alternative, lowering
951-040	2.00	Dump body joint, changing tipping bearing
951-041	2.50	Dump body, adjusting against frame
951-042	0.20	Dump body angle sensor, calibration
99		MISCELLANEOUS
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-007	0.60	Maintenance service, every 250 hours
173-010	2.00	Maintenance service, every 500 hours
173-012	5.00	Maintenance service, every 1000 hours
173-014	10.00	Maintenance service, every 2000 hours
173-018	16.00	Maintenance service, every 4000 hours
173-022	1.25	Maintenance service, every 6000 hours
173-042	2.50	Maintenance service, first 1000 hours
173-371	0.30	Service position 2
173-457	1.00	Coolant, changing
176-002	0.70	Propeller shafts, removing
19		GENERAL
191-025	0.50	Service position 3
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
210-002	9.00	Compression test
210-073	9.00	Engine and transmission, removing
210-074	13.00	Engine and transmission, mounting
210-092	0.50	Engine rotation speed sensor (camshaft), replacing
214-012	3.50	Valves, adjusting
215-042	7.00	Camshaft, replacing
215-043	2.50	Camshaft setting, checking
216-014	1.75	Crankshaft, replacing front oil seal
216-018	17.00	Crankshaft, replacing rear oil seal
216-049	1.75	Crankshaft, axial clearance, checking
218-001	1.50	Rubber cushion, replacing
218-007	4.00	Engine mounting rear, changing
22		LUBRICATING SYSTEM
221-020	1.00	Lubrication pressure rocker arm shaft, check
221-022	0.60	Lubrication oil pressure, checking with pressure gauge

Op.no.	time (h)	Notes
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
230-002	0.70	Air in fuel system, checking
233-001	1.25	Fuel system, bleeding
233-004	0.80	Feed pump, checking feed pressure
236-002	0.90	Stall speed, checking
237-007	1.25	Overflow valve, replacing
237-010	0.90	Unit injectors, adjusting pretension
237-012	8.00	Unit injector, replacing
237-017	11.00	Injector sleeves, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
254-022	1.00	ACM (After treatment control module), replacing, non-programmed
254-023	1.25	ACM (After treatment control module), replacing, pre-programmed
255-002	1.25	Turbocharger, inspection
255-071	3.00	Turbocharger, replacing
258-016	1.00	Cooling fan motor, intercooler, checking/adjusting low rpm
258-017	1.00	Cooling fan motor, intercooler, checking/adjusting high rpm
26		COOLING SYSTEM
260-001	0.50	Carbon dioxide in coolant system, checking
262-008	2.50	Secondary coolant pump, replacing
263-063	1.25	Cooling fan motor, radiator, checking/adjusting low rpm
263-092	1.25	Cooling fan motor, radiator, checking high rpm
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-075	1.00	HMIM, MID 140, changing pre-programmed ECU
300-076	1.25	HMIM, MID 140, changing non-programmed ECU
31		BATTERY
311-002	1.00	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.25	Alternator, replacing incl function check
321-002	1.25	Alternator, replacing incl function check

Op.no.	time (h)	Notes
33		STARTING SYSTEM
331-018	1.50	Starter motor, replacing
35		LIGHTING
352-001	0.40	Lamp bulb, replacing
352-002	0.50	Headlights, adjusting
352-024	0.60	Headlight, complete, changing (high beam 1 pc.) incl. setting
352-060	0.60	Headlight, complete, changing (low beam 1 pc.) incl. setting/adjustment
353-051	0.60	Tail lamp, replacing
36		OTHER ELECTRICAL EQUIPMENT
361-005	0.60	Flasher lamp front glass or bulb, replacing
361-006	0.60	Flasher lamp sidelight glass or bulb, replacing
363-002	2.00	Windscreen wiper front, replacing motor
366-064	1.25	V-ECU, MID 187, changing non-programmed ECU
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU
366-111	0.90	Engine Gateway, MID 165, replacing non- programmed ECU
366-112	0.90	Engine gateway, MID 165, replacing pre- programmed ECU
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-008	0.90	Engine rotation speed sensor, replacing
39		MISCELLANEOUS
398-001	0.50	CareTrack antenna, replacing
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU
398-003	1.00	W-ECU, MID142, changing non-programmed ECU
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.70	Transmission oil pressure, checking
421-046	2.50	PWM-valve control system, changing
421-054	2.00	Seal for rear output shaft, replacing
421-062	1.50	Induction sensor for turbine speed, changing
421-070	6.50	Transmission, removing
421-072	8.00	Transmission, installing
421-083	1.50	Transmission, remove from a non mounted engine
421-084	1.50	Transmission, fitting on a non mounted engine

Op.no.	time (h)	Notes
43		GEARBOX,
434-002	1.75	Dropbox, replacing seal for front output shaft
434-004	2.00	Dropbox, replacing seal for rear output shaft
434-064	0.60	Differential lock longitudinal, adjustment of sender unit
434-073	3.50	Dropbox, installing
434-074	3.00	Dropbox, removing
436-001	7.00	Dropbox rubber bushing, replacing
46		FRONT AXLE; REAR AXLE
461-011	12.00	Centre gear , removing and fitting
461-037	2.50	Hub reduction, removing
461-038	3.50	Hub reduction, installing
461-046	1.75	Input shaft, seal, replacing
463-011	12.00	Centre gear, removing and fitting
463-016	13.00	Dog clutch 6x6, checking and adjusting
463-049	3.00	Output shaft, bearing and seal, replacing
463-079	3.00	Output shaft 6-wheel drive, sealing and bearing, replacing
463-100	0.40	Rotation speed sensor, replacing
463-101	0.40	Rotation speed sensor, adjusting
463-103	2.00	Input shaft, seal, replacing
464-011	12.00	Centre gear, removing and fitting
464-014	1.75	Input shaft seal, replacing
5		BRAKE
52		HYDRAULIC BRAKE SYSTEM
520-001	0.70	Brake system, checking function, hydraulic
520-010	0.10	Brake system, relieve pressure
520-037	1.00	Brake system, bleeding
525-008	3.50	Foot brake valve, replacing
527-001	0.10	Accumulator removed, checking charging pressure
527-002	1.25	Accumulator, replacing
55		PARKING BRAKE
550-002	1.75	Parking brake, adjusting
550-005	3.00	Parking brake, replacing brake disc
550-009	1.50	Spring brake cylinder, replacing
550-014	1.50	Parking brake, replacing brake pads
550-015	0.30	Parking brake, manually releasing
550-023	0.20	Parking brake, function checking

Op.no.	time (h)	Notes
553-000	0.40	Load and dump brake, working pressure, checking and adjusting
553-001	0.40	Load and Dump brake, servo pressure, checking
553-002	0.30	Load and Dump brake, function check
56		COMPRESSED-AIR BRAKE
561-004	1.75	Compressor, replacing
561-023	0.30	Relief/Cut-in pressure, check
561-024	0.30	Relief/Cut-in pressure, adjusting
59		MISCELLANEOUS
590-001	0.30	Quick coupling compressed air, replacing
 6		 STEERING
64		STEERING
642-026	2.50	Steering gear, replacing
642-058	2.00	Steering gear, check.and adj.
643-010	1.75	Steering linkage, checking and adjusting
643-012	0.40	Steering angle, checking and adjusting
643-013	0.80	Steering times, checking and adjusting
643-014	1.00	Steering valve, neutral position, checking and adjusting
645-004	0.90	Steering cylinder, removing
645-005	1.00	Steering cylinder, installing
645-052	1.25	Steering cylinder removed, reconditioning excl replacing bearings
645-054	1.00	Steering cylinder, replacing bearings
645-054	2.50	Steering cylinder, replacing bearings
645-084	1.25	Damping cylinder, checking spring force
645-085	1.25	Damping cylinder, changing seal
647-095	1.00	Auxiliary steering, adjusting working- and stand-by pressure
647-096	1.00	Auxiliary steering, hydraulic pump, removing
647-097	1.50	Auxiliary steering, hydraulic pump, installation
 7		 FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-015	0.90	Protecting plate, removal
715-016	1.50	Protecting plate, installation

Op.no.	time (h)	Notes
72		SUSPENSION
720-008	1.25	Position sensor, complete replacement
720-010	0.50	Forced Raising/lowering, Full suspension
720-011	0.30	Relieve pressure
720-012	0.80	Manual lowering
720-012	0.50	Manual lowering
720-013	0.20	Suspension system, bleeding air
720-020	0.70	Hydraulic cylinder bushing, suspension system, replacing
720-021	1.75	Hydraulic cylinder, suspension system, overhaul
720-022	1.50	Accumulator, suspension system, overhaul
720-023	0.60	Hydraulic pump, max pressure, checking and adjusting
725-001	1.50	Suspension cylinder, removal
725-002	1.75	Suspension cylinder, installation
725-003	0.60	Accumulator, removal
725-004	1.25	Accumulator, installation
725-008	1.50	Position sensor front, replacing
725-009	0.80	Accumulator, precharge pressure, checking and adjusting
726-001	1.75	Suspension cylinder, removal
726-001	1.75	Suspension cylinder, removal
726-002	2.00	Suspension cylinder, installation
726-002	2.00	Suspension cylinder, installation
726-003	0.30	Accumulator, removal
726-003	0.20	Accumulator, removal
726-004	0.60	Accumulator, installation
726-004	0.80	Accumulator, installation
726-006	2.00	Accumulator bank, removal
726-007	1.75	Accumulator bank, installation
726-008	1.25	Position sensor rear, replacing
726-009	1.00	Accumulator, precharge pressure, checking and adjusting
74		FRAME LINK
741-001	6.00	Frame joint, separating machine
741-040	1.50	Frame joint bearing, replacing (machine separated)
741-044	5.00	Hitch, removing
741-045	6.50	Hitch, installing
741-046	2.50	Steering joint bearing, replacing (Hitch removed)
742-040	6.00	Steering joint, replacing bearings
75		AXLE SUSPENSION
751-001	3.00	A-frame bushing, tractor unit, replacing

Op.no.	time (h)	Notes
751-013	1.00	Cross stay, rubber bushing, replacing
751-014	0.40	Cross stay, removing
751-015	0.40	Cross stay, installing
756-013	1.00	Cross stay, rubber bushing, replacing
756-017	0.40	Cross stay, removing
756-018	0.40	Cross stay, installing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-007	0.70	Wheel, installing
771-008	0.70	Wheel, removing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.80	Engine hood, removing
821-002	0.70	Engine hood, installing
821-035	0.60	Hood pump, oil, changing
821-060	0.70	Electric hood pump, changing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.25	Door, replacing
831-006	0.60	Door lock, replacing
831-007	0.50	Door, gas spring, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	3.00	Windscreen, replacing
843-012	3.00	Rear window, replacing
843-013	3.00	Side window, replacing
843-014	3.00	Side window, rear, replacing
843-048	2.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.70	Operator's seat, removing
852-004	0.70	Operator's seat, installing
852-004	0.50	Operator's seat, installing
852-092	0.50	Operator's seat, shock absorber, replacing
852-096	1.50	Operator's seat, air bellows, replacing
852-096	1.75	Operator's seat, air bellows, replacing
852-097	1.50	Compressor operator's seat, replacing

Op.no.	time (h)	Notes
87		AIR CONDITIONING UNIT
870-010	0.80	ECC, MID 146, changing pre-programmed ECU
870-011	0.80	ECC, MID 146, changing non-programmed ECU
870-015	1.25	Cab heating/cab ventilation timer, pump, replacing
873-004	4.00	Heater core, replacing
873-006	4.00	Fan motor, replacing
873-008	3.00	Heat control valve, replacing
873-009	0.50	Heat control, replacing
874-001	1.75	Refrigerant, filling incl vacuum pumping
874-002	1.25	Refrigerant, draining
874-003	0.30	Cooling unit, performance test
874-006	4.00	Compressor, replacing incl draining and filling
874-010	4.00	Condenser, replacing incl draining and filling
874-011	3.50	Receiver, replacing incl draining and filling
874-012	5.00	Evaporator, replacing incl draining and filling
874-059	5.50	Evaporator, cleaning
 9		 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-002	0.40	Hydraulic system, bleeding
900-003	0.10	Hydraulic system, relieve pressure
900-005	0.30	Vacuum pump, connection
900-006	0.20	Vacuum pump, disconnection
900-031	1.00	V2-ECU, MID 249, changing non-programmed ECU
900-032	0.90	V2-ECU, MID 249, changing pre-programmed ECU
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-912	1.75	Rubber connection, suction line, replacing
912-078	0.60	Dump lever, changing
912-115	3.00	Steering and tipping valve, removal
912-116	3.50	Steering and tipping valve, installation
913-003	0.90	Hydraulic pump, checking and adjusting standby pressure
913-004	0.80	Hydraulic pump, checking and adjusting max working pressure
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-042	0.50	Working pumps, checking function
913-052	1.00	Hydraulic pump, removing

Op.no.	time (h)	Notes
913-053	1.75	Hydraulic pump, installing
913-068	1.50	Pump regulator, checking
914-094	0.70	Dump function, checking pressure
95		LOAD CARRIER
951-005	1.00	Hoist cylinder bearing, changing
951-006	3.00	Hoist cylinder removed, reconditioning
951-007	1.25	Hoist cylinder, removal
951-008	1.25	Hoist cylinder, installation
951-011	0.30	Cylinder, rear flap, gas pressure, checking and adjusting
951-030	0.40	Dump body alternative, lowering
951-030	0.40	Dump body alternative, lowering
951-040	2.00	Dump body joint, changing tipping bearing
951-041	2.50	Dump body, adjusting against frame
951-042	0.20	Dump body angle sensor, calibration
99		MISCELLANEOUS
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
0		GENERAL
09		MISCELLANEOUS
090-001	0.70	Engine, basic check
1		STANDARD PARTS, SERVICE
17		SERVICE
173-007	0.60	Maintenance service, every 250 hours
173-010	2.00	Maintenance service, every 500 hours
173-012	5.00	Maintenance service, every 1000 hours
173-014	8.50	Maintenance service, every 2000 hours
173-018	15.00	Maintenance service, every 4000 hours
173-019	2.00	Maintenance service, every 4500 hours
173-022	2.50	Maintenance service, every 6000 hours
173-028	1.00	Maintenance service, every 12000 hours
173-042	2.50	Maintenance service, first 1000 hours
173-457	1.00	Coolant, changing
176-002	0.70	Propeller shafts, removing
19		GENERAL
191-021	0.20	Service position 1
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
21		ENGINE
210-002	9.00	Compression test
210-073	9.00	Engine and transmission, removing
210-074	13.00	Engine and transmission, mounting
210-092	0.50	Engine rotation speed sensor (camshaft), replacing
214-012	3.50	Valves, adjusting
215-042	7.00	Camshaft, replacing
215-043	2.50	Camshaft setting, checking
216-014	1.75	Crankshaft, replacing front oil seal
216-018	17.00	Crankshaft, replacing rear oil seal
216-049	1.75	Crankshaft, axial clearance, checking
218-001	1.50	Rubber cushion, replacing
218-007	4.00	Engine mounting rear, changing

Op.no.	time (h)	Notes
22		LUBRICATING SYSTEM
221-020	1.00	Lubrication pressure rocker arm shaft, check
221-022	0.60	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
230-002	0.70	Air in fuel system, checking
233-001	1.25	Fuel system, bleeding
233-004	0.80	Feed pump, checking feed pressure
236-002	0.90	Stall speed, checking
237-007	1.25	Overflow valve, replacing
237-010	0.90	Unit injectors, adjusting pretension
237-012	8.00	Unit injector, replacing
237-017	11.00	Injector sleeves, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
254-001	2.50	Diesel particulate filter, check and clean
254-022	2.50	ACM (After treatment control module), replacing, non-programmed
254-023	2.50	ACM (After treatment control module), replacing, pre-programmed
254-056	1.25	NOx sensor, replacing
254-064	1.50	High pressure air system, pressure, checking
254-069	0.40	Exhaust aftertreatment system fuel flow, checking
254-102	1.25	AdBlue®/DEF nozzle, replacing
254-103	2.00	AdBlue®/DEF tank, tank armature, replacing
254-104	0.70	Aftertreatment fuel nozzle, replacing
254-105	1.50	EATS cooling fan, replacing
254-106	1.75	AdBlue®/DEF hoses, replacing
254-107	2.50	AdBlue®/DEF pump unit, replacing
254-108	3.00	Aftertreatment fuel dosing unit, replacing
254-114	1.25	AdBlue®/DEF, draining
254-117	1.25	AdBlue®/DEF pump unit, components, replacing
254-118	1.50	SCR system, dosing test
254-121	0.50	AdBlue®/DEF quality, checking
255-002	1.25	Turbocharger, inspection
255-003	1.50	Actuator, variable turbocharger, replacing
255-071	3.00	Turbocharger, replacing
258-016	1.00	Cooling fan motor, intercooler, checking/adjusting low rpm
258-017	1.00	Cooling fan motor, intercooler, checking/adjusting high rpm

Op.no.	time (h)	Notes
26		COOLING SYSTEM
260-001	0.50	Carbon dioxide in coolant system, checking
262-008	2.50	Secondary coolant pump, replacing
263-063	1.25	Cooling fan motor, radiator, checking/adjusting low rpm
263-092	1.25	Cooling fan motor, radiator, checking high rpm
29		Miscellaneous
293-001	4.50	EGR cooler, replacing
293-002	2.50	EGR cooler, pressure test
293-004	6.50	EGR cooler, cleaning
293-005	1.00	EGR valve, replacing
293-013	0.90	EGR venturi tube, cleaning
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-075	1.00	HMIM, MID 140, changing pre-programmed ECU
300-076	1.25	HMIM, MID 140, changing non-programmed ECU
31		BATTERY
311-002	1.00	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.25	Alternator, replacing incl function check
321-002	1.25	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	1.50	Starter motor, replacing
35		LIGHTING
352-001	0.40	Lamp bulb, replacing
352-002	0.50	Headlights, adjusting
352-024	0.60	Headlight, complete, changing (high beam 1 pc.) incl. setting
352-060	0.60	Headlight, complete, changing (low beam 1 pc.) incl. setting/adjustment
353-051	0.60	Tail lamp, replacing
36		OTHER ELECTRICAL EQUIPMENT
361-005	0.60	Flasher lamp front glass or bulb, replacing
361-006	0.60	Flasher lamp sidelight glass or bulb, replacing
363-002	2.00	Windscreen wiper front, replacing motor
366-064	1.25	V-ECU, MID 187, changing non-programmed ECU

Op.no.	time (h)	Notes
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU
366-111	0.90	Engine Gateway, MID 165, replacing non-programmed ECU
366-112	0.90	Engine gateway, MID 165, replacing pre-programmed ECU
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-008	0.90	Engine rotation speed sensor, replacing
39		MISCELLANEOUS
398-001	0.50	CareTrack antenna, replacing
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU
398-003	1.00	W-ECU, MID142, changing non-programmed ECU
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.70	Transmission oil pressure, checking
421-046	2.50	PWM-valve control system, changing
421-054	2.00	Seal for rear output shaft, replacing
421-062	1.50	Induction sensor for turbine speed, changing
421-070	6.50	Transmission, removing
421-072	8.00	Transmission, installing
421-083	1.50	Transmission, remove from a non mounted engine
421-084	1.50	Transmission, fitting on a non mounted engine
43		GEARBOX,
434-002	1.75	Dropbox, replacing seal for front output shaft
434-004	2.00	Dropbox, replacing seal for rear output shaft
434-064	0.60	Differential lock longitudinal, adjustment of sender unit
434-073	3.50	Dropbox, installing
434-074	3.00	Dropbox, removing
436-001	7.00	Dropbox rubber bushing, replacing
46		FRONT AXLE; REAR AXLE
461-011	12.00	Centre gear , removing and fitting
461-037	2.50	Hub reduction, removing
461-038	3.50	Hub reduction, installing
461-046	1.75	Input shaft, seal, replacing
463-011	12.00	Centre gear, removing and fitting
463-049	3.00	Output shaft, bearing and seal, replacing
463-079	3.00	Output shaft 6-wheel drive, sealing and bearing, replacing
463-103	2.00	Input shaft, seal, replacing

Op.no.	time (h)	Notes
464-011	12.00	Centre gear, removing and fitting
464-014	1.75	Input shaft seal, replacing

5**BRAKE****52****HYDRAULIC BRAKE SYSTEM**

520-001	0.70	Brake system, checking function, hydraulic
520-010	0.10	Brake system, relieve pressure
520-037	1.00	Brake system, bleeding
525-008	3.50	Foot brake valve, replacing
527-001	0.10	Accumulator removed, checking charging pressure
527-002	1.25	Accumulator, replacing

55**PARKING BRAKE**

550-002	1.75	Parking brake, adjusting
550-005	3.00	Parking brake, replacing brake disc
550-009	1.50	Spring brake cylinder, replacing
550-014	1.50	Parking brake, replacing brake pads
550-015	0.30	Parking brake, manually releasing
550-023	0.20	Parking brake, function checking
553-000	0.40	Load and dump brake, working pressure, checking and adjusting
553-001	0.40	Load and Dump brake, servo pressure, checking
553-002	0.30	Load and Dump brake, function check

56**COMPRESSED-AIR BRAKE**

561-004	1.75	Compressor, replacing
561-023	0.30	Relief/Cut-in pressure, check
561-024	0.30	Relief/Cut-in pressure, adjusting

59**MISCELLANEOUS**

590-001	0.30	Quick coupling compressed air, replacing
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6**STEERING****64****STEERING**

642-026	2.50	Steering gear, replacing
642-058	2.00	Steering gear, check and adj.
643-010	1.75	Steering linkage, checking and adjusting
643-012	0.40	Steering angle, checking and adjusting
643-013	0.80	Steering times, checking and adjusting
643-014	1.00	Steering valve, neutral position, checking and adjusting

Op.no.	time (h)	Notes
645-004	0.90	Steering cylinder, removing
645-005	1.00	Steering cylinder, installing
645-052	1.25	Steering cylinder removed, reconditioning excl replacing bearings
645-054	1.00	Steering cylinder, replacing bearings
645-054	2.50	Steering cylinder, replacing bearings
645-084	1.25	Damping cylinder, checking spring force
645-085	1.25	Damping cylinder, changing seal
647-095	1.00	Auxiliary steering, adjusting working- and stand-by pressure
647-096	1.00	Auxiliary steering, hydraulic pump, removing
647-097	1.50	Auxiliary steering, hydraulic pump, installation

7 FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT

71 FRAME

711-001	3.00	Frame extension, removing
711-002	4.00	Frame extension, installing
715-015	0.90	Protecting plate, removal
715-016	1.50	Protecting plate, installation

74 FRAME LINK

741-001	6.00	Frame joint, separating machine
741-040	1.50	Frame joint bearing, replacing (machine separated)
741-044	5.00	Hitch, removing
741-045	6.50	Hitch, installing
741-046	2.50	Steering joint bearing, replacing (Hitch removed)
742-040	6.00	Steering joint, replacing bearings

75 AXLE SUSPENSION

751-001	3.00	A-frame bushing, tractor unit, replacing
751-013	1.00	Cross stay, rubber bushing, replacing
751-014	0.40	Cross stay, removing
751-015	0.40	Cross stay, installing
756-013	1.00	Cross stay, rubber bushing, replacing
756-017	0.40	Cross stay, removing
756-018	0.40	Cross stay, installing
756-024	2.00	Bogie beam, changing rubber spring, one side (front)
756-027	4.50	A-frame bushing, front on load unit, changing
756-028	2.50	A-frame bushing, rear on load unit, changing
756-029	0.90	Bogie beam, changing rubber bushing on removed beam

Op.no.	time (h)	Notes
756-030	7.00	Bogie beam, changing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-007	0.70	Wheel, installing
771-008	0.70	Wheel, removing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.80	Engine hood, removing
821-002	0.70	Engine hood, installing
821-035	0.60	Hood pump, oil, changing
821-060	0.70	Electric hood pump, changing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.25	Door, replacing
831-006	0.60	Door lock, replacing
831-007	0.50	Door, gas spring, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	3.00	Windscreen, replacing
843-012	3.00	Rear window, replacing
843-013	3.00	Side window, replacing
843-014	3.00	Side window, rear, replacing
843-048	2.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.70	Operator's seat, removing
852-004	0.70	Operator's seat, installing
852-004	0.50	Operator's seat, installing
852-092	0.50	Operator's seat, shock absorber, replacing
852-096	1.50	Operator's seat, air bellows, replacing
852-096	1.75	Operator's seat, air bellows, replacing
852-097	1.50	Compressor operator's seat, replacing
87		AIR CONDITIONING UNIT
870-010	0.80	ECC, MID 146, changing pre-programmed ECU
870-011	0.80	ECC, MID 146, changing non-programmed ECU
870-015	1.25	Cab heating/cab ventilation timer, pump, replacing
873-004	4.00	Heater core, replacing

Op.no.	time (h)	Notes
873-006	4.00	Fan motor, replacing
873-008	3.00	Heat control valve, replacing
873-009	0.50	Heat control, replacing
874-001	1.75	Refrigerant, filling incl vacuum pumping
874-002	1.25	Refrigerant, draining
874-003	0.30	Cooling unit, performance test
874-006	4.00	Compressor, replacing incl draining and filling
874-010	4.00	Condenser, replacing incl draining and filling
874-011	3.50	Receiver, replacing incl draining and filling
874-012	5.00	Evaporator, replacing incl draining and filling
874-059	5.50	Evaporator, cleaning

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

90 GENERAL

900-002	0.40	Hydraulic system, bleeding
900-003	0.10	Hydraulic system, relieve pressure
900-005	0.30	Vacuum pump, connection
900-006	0.20	Vacuum pump, disconnection
900-031	1.00	V2-ECU, MID 249, changing non-programmed ECU
900-032	0.90	V2-ECU, MID 249, changing pre-programmed ECU

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-912	1.75	Rubber connection, suction line, replacing
912-078	0.60	Dump lever, changing
912-115	3.00	Steering and tipping valve, removal
912-116	3.50	Steering and tipping valve, installation
913-003	0.90	Hydraulic pump, checking and adjusting standby pressure
913-004	0.80	Hydraulic pump, checking and adjusting max working pressure
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-042	0.50	Working pumps, checking function
913-052	1.00	Hydraulic pump, removing
913-053	1.75	Hydraulic pump, installing
913-068	1.50	Pump regulator, checking
914-094	0.70	Dump function, checking pressure

94 UNIT, LOAD HANDLING

948-002	2.50	Load cell, replacing
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Op.no.	time (h)	Notes
95		LOAD CARRIER
951-005	1.00	Hoist cylinder bearing, changing
951-006	3.00	Hoist cylinder removed, reconditioning
951-007	1.25	Hoist cylinder, removal
951-008	1.25	Hoist cylinder, installation
951-011	0.30	Cylinder, rear flap, gas pressure, checking and adjusting
951-030	0.40	Dump body alternative, lowering
951-030	0.40	Dump body alternative, lowering
951-040	2.00	Dump body joint, changing tipping bearing
951-041	2.50	Dump body, adjusting against frame
951-042	0.20	Dump body angle sensor, calibration
99		MISCELLANEOUS
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
0		GENERAL
09		MISCELLANEOUS
090-001	0.70	Engine, basic check
1		STANDARD PARTS, SERVICE
17		SERVICE
173-007	0.60	Maintenance service, every 250 hours
173-010	2.00	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	10.00	Maintenance service, every 2000 hours
173-018	17.00	Maintenance service, every 4000 hours
173-019	2.00	Maintenance service, every 4500 hours
173-022	2.50	Maintenance service, every 6000 hours
173-028	1.00	Maintenance service, every 12000 hours
173-042	2.50	Maintenance service, first 1000 hours
173-371	0.30	Service position 2
173-457	1.00	Coolant, changing
176-002	0.70	Propeller shafts, removing
19		GENERAL
191-025	0.50	Service position 3
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
210-002	9.00	Compression test
210-073	9.00	Engine and transmission, removing
210-074	13.00	Engine and transmission, mounting
210-092	0.50	Engine rotation speed sensor (camshaft), replacing
214-012	3.50	Valves, adjusting
215-042	7.00	Camshaft, replacing
215-043	2.50	Camshaft setting, checking
216-014	1.75	Crankshaft, replacing front oil seal
216-018	17.00	Crankshaft, replacing rear oil seal
216-049	1.75	Crankshaft, axial clearance, checking

Op.no.	time (h)	Notes
218-001	1.50	Rubber cushion, replacing
218-007	4.00	Engine mounting rear, changing
22		LUBRICATING SYSTEM
221-020	1.00	Lubrication pressure rocker arm shaft, check
221-022	0.60	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
230-002	0.70	Air in fuel system, checking
233-001	1.25	Fuel system, bleeding
233-004	0.80	Feed pump, checking feed pressure
236-002	0.90	Stall speed, checking
237-007	1.25	Overflow valve, replacing
237-010	0.90	Unit injectors, adjusting pretension
237-012	8.00	Unit injector, replacing
237-017	11.00	Injector sleeves, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
254-001	2.50	Diesel particulate filter, check and clean
254-022	2.50	ACM (After treatment control module), replacing, non-programmed
254-023	2.50	ACM (After treatment control module), replacing, pre-programmed
254-056	1.25	NOx sensor, replacing
254-064	1.50	High pressure air system, pressure, checking
254-069	0.40	Exhaust aftertreatment system fuel flow, checking
254-102	1.25	AdBlue®/DEF nozzle, replacing
254-103	2.00	AdBlue®/DEF tank, tank armature, replacing
254-104	0.70	Aftertreatment fuel nozzle, replacing
254-105	1.50	EATS cooling fan, replacing
254-106	1.75	AdBlue®/DEF hoses, replacing
254-107	2.50	AdBlue®/DEF pump unit, replacing
254-108	3.00	Aftertreatment fuel dosing unit, replacing
254-114	1.25	AdBlue®/DEF, draining
254-117	1.25	AdBlue®/DEF pump unit, components, replacing
254-118	1.50	SCR system, dosing test
254-121	0.50	AdBlue®/DEF quality, checking
255-002	1.25	Turbocharger, inspection
255-003	1.50	Actuator, variable turbocharger, replacing
255-071	3.00	Turbocharger, replacing
258-016	1.00	Cooling fan motor, intercooler, checking/adjusting low rpm
258-017	1.00	Cooling fan motor, intercooler, checking/adjusting high rpm

Op.no.	time (h)	Notes
26		COOLING SYSTEM
260-001	0.50	Carbon dioxide in coolant system, checking
262-008	2.50	Secondary coolant pump, replacing
263-063	1.25	Cooling fan motor, radiator, checking/adjusting low rpm
263-092	1.25	Cooling fan motor, radiator, checking high rpm
29		Miscellaneous
293-001	4.50	EGR cooler, replacing
293-002	2.50	EGR cooler, pressure test
293-004	6.50	EGR cooler, cleaning
293-005	1.00	EGR valve, replacing
293-013	0.90	EGR venturi tube, cleaning
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-075	1.00	HMIM, MID 140, changing pre-programmed ECU
300-076	1.25	HMIM, MID 140, changing non-programmed ECU
31		BATTERY
311-002	1.00	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.25	Alternator, replacing incl function check
321-002	1.25	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	1.50	Starter motor, replacing
35		LIGHTING
352-001	0.40	Lamp bulb, replacing
352-002	0.50	Headlights, adjusting
352-024	0.60	Headlight, complete, changing (high beam 1 pc.) incl. setting
352-060	0.60	Headlight, complete, changing (low beam 1 pc.) incl. setting/adjustment
353-051	0.60	Tail lamp, replacing
36		OTHER ELECTRICAL EQUIPMENT
361-005	0.60	Flasher lamp front glass or bulb, replacing
361-006	0.60	Flasher lamp sidelight glass or bulb, replacing
363-002	2.00	Windscreen wiper front, replacing motor
366-064	1.25	V-ECU, MID 187, changing non-programmed ECU

Op.no.	time (h)	Notes
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU
366-111	0.90	Engine Gateway, MID 165, replacing non-programmed ECU
366-112	0.90	Engine gateway, MID 165, replacing pre-programmed ECU
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-008	0.90	Engine rotation speed sensor, replacing
39		MISCELLANEOUS
398-001	0.50	CareTrack antenna, replacing
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU
398-003	1.00	W-ECU, MID142, changing non-programmed ECU
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.70	Transmission oil pressure, checking
421-046	2.50	PWM-valve control system, changing
421-054	2.00	Seal for rear output shaft, replacing
421-062	1.50	Induction sensor for turbine speed, changing
421-070	6.50	Transmission, removing
421-072	8.00	Transmission, installing
421-083	1.50	Transmission, remove from a non mounted engine
421-084	1.50	Transmission, fitting on a non mounted engine
43		GEARBOX,
434-002	1.75	Dropbox, replacing seal for front output shaft
434-004	2.00	Dropbox, replacing seal for rear output shaft
434-064	0.60	Differential lock longitudinal, adjustment of sender unit
434-073	3.50	Dropbox, installing
434-074	3.00	Dropbox, removing
436-001	7.00	Dropbox rubber bushing, replacing
46		FRONT AXLE; REAR AXLE
461-011	12.00	Centre gear , removing and fitting
461-037	2.50	Hub reduction, removing
461-038	3.50	Hub reduction, installing
461-046	1.75	Input shaft, seal, replacing
463-011	12.00	Centre gear, removing and fitting
463-049	3.00	Output shaft, bearing and seal, replacing
463-079	3.00	Output shaft 6-wheel drive, sealing and bearing, replacing
463-103	2.00	Input shaft, seal, replacing

Op.no.	time (h)	Notes
464-011	12.00	Centre gear, removing and fitting
464-014	1.75	Input shaft seal, replacing

5**BRAKE****52****HYDRAULIC BRAKE SYSTEM**

520-001	0.70	Brake system, checking function, hydraulic
520-010	0.10	Brake system, relieve pressure
520-037	1.00	Brake system, bleeding
525-008	3.50	Foot brake valve, replacing
527-001	0.10	Accumulator removed, checking charging pressure
527-002	1.25	Accumulator, replacing

55**PARKING BRAKE**

550-002	1.75	Parking brake, adjusting
550-005	3.00	Parking brake, replacing brake disc
550-009	1.50	Spring brake cylinder, replacing
550-014	1.50	Parking brake, replacing brake pads
550-015	0.30	Parking brake, manually releasing
550-023	0.20	Parking brake, function checking
553-000	0.40	Load and dump brake, working pressure, checking and adjusting
553-001	0.40	Load and Dump brake, servo pressure, checking
553-002	0.30	Load and Dump brake, function check

56**COMPRESSED-AIR BRAKE**

561-004	1.75	Compressor, replacing
561-023	0.30	Relief/Cut-in pressure, check
561-024	0.30	Relief/Cut-in pressure, adjusting

59**MISCELLANEOUS**

590-001	0.30	Quick coupling compressed air, replacing
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6**STEERING****64****STEERING**

642-026	2.50	Steering gear, replacing
642-058	2.00	Steering gear, check and adj.
643-010	1.75	Steering linkage, checking and adjusting
643-012	0.40	Steering angle, checking and adjusting
643-013	0.80	Steering times, checking and adjusting
643-014	1.00	Steering valve, neutral position, checking and adjusting

Op.no.	time (h)	Notes
645-004	0.90	Steering cylinder, removing
645-005	1.00	Steering cylinder, installing
645-052	1.25	Steering cylinder removed, reconditioning excl replacing bearings
645-054	1.00	Steering cylinder, replacing bearings
645-054	2.50	Steering cylinder, replacing bearings
645-084	1.25	Damping cylinder, checking spring force
645-085	1.25	Damping cylinder, changing seal
647-095	1.00	Auxiliary steering, adjusting working- and stand-by pressure
647-096	1.00	Auxiliary steering, hydraulic pump, removing
647-097	1.50	Auxiliary steering, hydraulic pump, installation

7 FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT

71 FRAME

715-015	0.90	Protecting plate, removal
715-016	1.50	Protecting plate, installation

72 SUSPENSION

720-008	1.25	Position sensor, complete replacement
720-010	0.50	Forced Raising/lowering, Full suspension
720-011	0.30	Relieve pressure
720-012	0.80	Manual lowering
720-012	0.50	Manual lowering
720-013	0.20	Suspension system, bleeding air
720-020	0.70	Hydraulic cylinder bushing, suspension system, replacing
720-021	1.75	Hydraulic cylinder, suspension system, overhaul
720-022	1.50	Accumulator, suspension system, overhaul
720-023	0.60	Hydraulic pump, max pressure, checking and adjusting
725-001	1.50	Suspension cylinder, removal
725-002	1.75	Suspension cylinder, installation
725-003	0.60	Accumulator, removal
725-004	1.25	Accumulator, installation
725-008	1.50	Position sensor front, replacing
725-009	0.80	Accumulator, precharge pressure, checking and adjusting
726-001	1.75	Suspension cylinder, removal
726-001	1.75	Suspension cylinder, removal
726-002	2.00	Suspension cylinder, installation
726-002	2.00	Suspension cylinder, installation

Op.no.	time (h)	Notes
726-003	0.30	Accumulator, removal
726-003	0.20	Accumulator, removal
726-004	0.60	Accumulator, installation
726-004	0.80	Accumulator, installation
726-006	2.00	Accumulator bank, removal
726-007	1.75	Accumulator bank, installation
726-008	1.25	Position sensor rear, replacing
726-009	1.00	Accumulator, precharge pressure, checking and adjusting
74		FRAME LINK
741-001	6.00	Frame joint, separating machine
741-040	1.50	Frame joint bearing, replacing (machine separated)
741-044	5.00	Hitch, removing
741-045	6.50	Hitch, installing
741-046	2.50	Steering joint bearing, replacing (Hitch removed)
742-040	6.00	Steering joint, replacing bearings
75		AXLE SUSPENSION
751-001	3.00	A-frame bushing, tractor unit, replacing
751-013	1.00	Cross stay, rubber bushing, replacing
751-014	0.40	Cross stay, removing
751-015	0.40	Cross stay, installing
756-013	1.00	Cross stay, rubber bushing, replacing
756-017	0.40	Cross stay, removing
756-018	0.40	Cross stay, installing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-007	0.70	Wheel, installing
771-008	0.70	Wheel, removing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.80	Engine hood, removing
821-002	0.70	Engine hood, installing
821-035	0.60	Hood pump, oil, changing
821-060	0.70	Electric hood pump, changing

Op.no.	time (h)	Notes
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.25	Door, replacing
831-006	0.60	Door lock, replacing
831-007	0.50	Door, gas spring, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	3.00	Windscreen, replacing
843-012	3.00	Rear window, replacing
843-013	3.00	Side window, replacing
843-014	3.00	Side window, rear, replacing
843-048	2.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.70	Operator's seat, removing
852-004	0.70	Operator's seat, installing
852-004	0.50	Operator's seat, installing
852-092	0.50	Operator's seat, shock absorber, replacing
852-096	1.50	Operator's seat, air bellows, replacing
852-096	1.75	Operator's seat, air bellows, replacing
852-097	1.50	Compressor operator's seat, replacing
87		AIR CONDITIONING UNIT
870-010	0.80	ECC, MID 146, changing pre-programmed ECU
870-011	0.80	ECC, MID 146, changing non-programmed ECU
870-015	1.25	Cab heating/cab ventilation timer, pump, replacing
873-004	4.00	Heater core, replacing
873-006	4.00	Fan motor, replacing
873-008	3.00	Heat control valve, replacing
873-009	0.50	Heat control, replacing
874-001	1.75	Refrigerant, filling incl vacuum pumping
874-002	1.25	Refrigerant, draining
874-003	0.30	Cooling unit, performance test
874-006	4.00	Compressor, replacing incl draining and filling
874-010	4.00	Condenser, replacing incl draining and filling
874-011	3.50	Receiver, replacing incl draining and filling
874-012	5.00	Evaporator, replacing incl draining and filling
874-059	5.50	Evaporator, cleaning
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-002	0.40	Hydraulic system, bleeding
900-003	0.10	Hydraulic system, relieve pressure

Op.no.	time (h)	Notes
900-005	0.30	Vacuum pump, connection
900-006	0.20	Vacuum pump, disconnection
900-031	1.00	V2-ECU, MID 249, changing non-programmed ECU
900-032	0.90	V2-ECU, MID 249, changing pre-programmed ECU
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-912	1.75	Rubber connection, suction line, replacing
912-078	0.60	Dump lever, changing
912-115	3.00	Steering and tipping valve, removal
912-116	3.50	Steering and tipping valve, installation
913-003	0.90	Hydraulic pump, checking and adjusting standby pressure
913-004	0.80	Hydraulic pump, checking and adjusting max working pressure
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-042	0.50	Working pumps, checking function
913-052	1.00	Hydraulic pump, removing
913-053	1.75	Hydraulic pump, installing
913-068	1.50	Pump regulator, checking
914-094	0.70	Dump function, checking pressure
95		LOAD CARRIER
951-005	1.00	Hoist cylinder bearing, changing
951-006	3.00	Hoist cylinder removed, reconditioning
951-007	1.25	Hoist cylinder, removal
951-008	1.25	Hoist cylinder, installation
951-011	0.30	Cylinder, rear flap, gas pressure, checking and adjusting
951-030	0.40	Dump body alternative, lowering
951-030	0.40	Dump body alternative, lowering
951-040	2.00	Dump body joint, changing tipping bearing
951-041	2.50	Dump body, adjusting against frame
951-042	0.20	Dump body angle sensor, calibration
99		MISCELLANEOUS
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
0		GENERAL
09		MISCELLANEOUS
090-001	0.70	Engine, basic check
1		STANDARD PARTS, SERVICE
17		SERVICE
173-007	0.60	Maintenance service, every 250 hours
173-010	2.00	Maintenance service, every 500 hours
173-012	5.00	Maintenance service, every 1000 hours
173-014	8.00	Maintenance service, every 2000 hours
173-018	15.00	Maintenance service, every 4000 hours
173-022	1.25	Maintenance service, every 6000 hours
173-042	2.50	Maintenance service, first 1000 hours
173-457	1.00	Coolant, changing
176-002	0.70	Propeller shafts, removing
19		GENERAL
191-021	0.20	Service position 1
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
210-002	9.00	Compression test
210-073	9.00	Engine and transmission, removing
210-074	13.00	Engine and transmission, mounting
210-092	0.50	Engine rotation speed sensor (camshaft), replacing
214-012	3.50	Valves, adjusting
215-042	7.00	Camshaft, replacing
215-043	2.50	Camshaft setting, checking
216-014	1.75	Crankshaft, replacing front oil seal
216-018	17.00	Crankshaft, replacing rear oil seal
216-049	1.75	Crankshaft, axial clearance, checking
218-001	1.50	Rubber cushion, replacing
218-007	4.00	Engine mounting rear, changing

Op.no.	time (h)	Notes
22		LUBRICATING SYSTEM
221-020	1.00	Lubrication pressure rocker arm shaft, check
221-022	0.60	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
230-002	0.70	Air in fuel system, checking
233-001	1.25	Fuel system, bleeding
233-004	0.80	Feed pump, checking feed pressure
236-002	0.90	Stall speed, checking
237-007	1.25	Overflow valve, replacing
237-010	0.90	Unit injectors, adjusting pretension
237-012	8.00	Unit injector, replacing
237-017	11.00	Injector sleeves, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
254-022	1.00	ACM (After treatment control module), replacing, non-programmed
254-023	1.25	ACM (After treatment control module), replacing, pre-programmed
255-002	1.25	Turbocharger, inspection
255-071	3.00	Turbocharger, replacing
258-016	1.00	Cooling fan motor, intercooler, checking/adjusting low rpm
258-017	1.00	Cooling fan motor, intercooler, checking/adjusting high rpm
26		COOLING SYSTEM
260-001	0.50	Carbon dioxide in coolant system, checking
262-008	2.50	Secondary coolant pump, replacing
263-063	1.25	Cooling fan motor, radiator, checking/adjusting low rpm
263-092	1.25	Cooling fan motor, radiator, checking high rpm
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-075	1.00	HMIM, MID 140, changing pre-programmed ECU
300-076	1.25	HMIM, MID 140, changing non-programmed ECU
31		BATTERY
311-002	1.00	Batteries, replacing

Op.no.	time (h)	Notes
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.25	Alternator, replacing incl function check
321-002	1.25	Alternator, replacing incl function check
35		LIGHTING
352-001	0.40	Lamp bulb, replacing
352-002	0.50	Headlights, adjusting
352-024	0.60	Headlight, complete, changing (high beam 1 pc.) incl. setting
352-060	0.60	Headlight, complete, changing (low beam 1 pc.) incl. setting/adjustment
353-051	0.60	Tail lamp, replacing
36		OTHER ELECTRICAL EQUIPMENT
361-005	0.60	Flasher lamp front glass or bulb, replacing
361-006	0.60	Flasher lamp sidelight glass or bulb, replacing
363-002	2.00	Windscreen wiper front, replacing motor
366-064	1.25	V-ECU, MID 187, changing non-programmed ECU
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU
366-111	0.90	Engine Gateway, MID 165, replacing non- programmed ECU
366-112	0.90	Engine gateway, MID 165, replacing pre- programmed ECU
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-008	0.90	Engine rotation speed sensor, replacing
39		MISCELLANEOUS
398-001	0.50	CareTrack antenna, replacing
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU
398-003	1.00	W-ECU, MID142, changing non-programmed ECU
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.70	Transmission oil pressure, checking
421-046	2.50	PWM-valve control system, changing
421-054	2.00	Seal for rear output shaft, replacing
421-062	1.50	Induction sensor for turbine speed, changing
421-070	6.50	Transmission, removing
421-072	8.00	Transmission, installing
421-083	1.50	Transmission, remove from a non mounted engine
421-084	1.50	Transmission, fitting on a non mounted engine

Op.no.	time (h)	Notes
43		GEARBOX,
434-002	1.75	Dropbox, replacing seal for front output shaft
434-004	2.00	Dropbox, replacing seal for rear output shaft
434-064	0.60	Differential lock longitudinal, adjustment of sender unit
434-073	3.50	Dropbox, installing
434-074	3.00	Dropbox, removing
436-001	7.00	Dropbox rubber bushing, replacing
46		FRONT AXLE; REAR AXLE
461-011	12.00	Centre gear , removing and fitting
461-037	2.50	Hub reduction, removing
461-038	3.50	Hub reduction, installing
461-046	1.75	Input shaft, seal, replacing
463-011	12.00	Centre gear, removing and fitting
463-016	13.00	Dog clutch 6x6, checking and adjusting
463-049	3.00	Output shaft, bearing and seal, replacing
463-079	3.00	Output shaft 6-wheel drive, sealing and bearing, replacing
463-100	0.40	Rotation speed sensor, replacing
463-101	0.40	Rotation speed sensor, adjusting
463-103	2.00	Input shaft, seal, replacing
464-011	12.00	Centre gear, removing and fitting
464-014	1.75	Input shaft seal, replacing
5		BRAKE
52		HYDRAULIC BRAKE SYSTEM
520-001	0.70	Brake system, checking function, hydraulic
520-010	0.10	Brake system, relieve pressure
520-037	1.00	Brake system, bleeding
525-008	3.50	Foot brake valve, replacing
527-001	0.10	Accumulator removed, checking charging pressure
527-002	1.25	Accumulator, replacing
55		PARKING BRAKE
550-002	1.75	Parking brake, adjusting
550-005	3.00	Parking brake, replacing brake disc
550-009	1.50	Spring brake cylinder, replacing
550-014	1.50	Parking brake, replacing brake pads
550-015	0.30	Parking brake, manually releasing
550-023	0.20	Parking brake, function checking

Op.no.	time (h)	Notes
553-000	0.40	Load and dump brake, working pressure, checking and adjusting
553-001	0.40	Load and Dump brake, servo pressure, checking
553-002	0.30	Load and Dump brake, function check
56		COMPRESSED-AIR BRAKE
561-004	1.75	Compressor, replacing
561-023	0.30	Relief/Cut-in pressure, check
561-024	0.30	Relief/Cut-in pressure, adjusting
59		MISCELLANEOUS
590-001	0.30	Quick coupling compressed air, replacing
 6		 STEERING
64		STEERING
642-026	2.50	Steering gear, replacing
642-058	2.00	Steering gear, check.and adj.
643-010	1.75	Steering linkage, checking and adjusting
643-012	0.40	Steering angle, checking and adjusting
643-013	0.80	Steering times, checking and adjusting
643-014	1.00	Steering valve, neutral position, checking and adjusting
645-004	0.90	Steering cylinder, removing
645-005	1.00	Steering cylinder, installing
645-052	1.25	Steering cylinder removed, reconditioning excl replacing bearings
645-054	1.00	Steering cylinder, replacing bearings
645-054	2.50	Steering cylinder, replacing bearings
645-084	1.25	Damping cylinder, checking spring force
645-085	1.25	Damping cylinder, changing seal
647-095	1.00	Auxiliary steering, adjusting working- and stand-by pressure
647-096	1.00	Auxiliary steering, hydraulic pump, removing
647-097	1.50	Auxiliary steering, hydraulic pump, installation
 7		 FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
711-001	3.00	Frame extension, removing
711-002	4.00	Frame extension, installing
715-015	0.90	Protecting plate, removal
715-016	1.50	Protecting plate, installation

Op.no.	time (h)	Notes
74		FRAME LINK
741-001	6.00	Frame joint, separating machine
741-040	1.50	Frame joint bearing, replacing (machine separated)
741-044	5.00	Hitch, removing
741-045	6.50	Hitch, installing
741-046	2.50	Steering joint bearing, replacing (Hitch removed)
742-040	6.00	Steering joint, replacing bearings
75		AXLE SUSPENSION
751-001	3.00	A-frame bushing, tractor unit, replacing
751-013	1.00	Cross stay, rubber bushing, replacing
751-014	0.40	Cross stay, removing
751-015	0.40	Cross stay, installing
756-013	1.00	Cross stay, rubber bushing, replacing
756-017	0.40	Cross stay, removing
756-018	0.40	Cross stay, installing
756-024	2.00	Bogie beam, changing rubber spring, one side (front)
756-027	4.50	A-frame bushing, front on load unit, changing
756-028	2.50	A-frame bushing, rear on load unit, changing
756-029	0.90	Bogie beam, changing rubber bushing on removed beam
756-030	7.00	Bogie beam, changing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-007	0.70	Wheel, installing
771-008	0.70	Wheel, removing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.80	Engine hood, removing
821-002	0.70	Engine hood, installing
821-035	0.60	Hood pump, oil, changing
821-060	0.70	Electric hood pump, changing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.25	Door, replacing
831-006	0.60	Door lock, replacing

Op.no.	time (h)	Notes
831-007	0.50	Door, gas spring, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	3.00	Windscreen, replacing
843-012	3.00	Rear window, replacing
843-013	3.00	Side window, replacing
843-014	3.00	Side window, rear, replacing
843-048	2.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.70	Operator's seat, removing
852-004	0.70	Operator's seat, installing
852-004	0.50	Operator's seat, installing
852-092	0.50	Operator's seat, shock absorber, replacing
852-096	1.50	Operator's seat, air bellows, replacing
852-096	1.75	Operator's seat, air bellows, replacing
852-097	1.50	Compressor operator's seat, replacing
87		AIR CONDITIONING UNIT
870-010	0.80	ECC, MID 146, changing pre-programmed ECU
870-011	0.80	ECC, MID 146, changing non-programmed ECU
870-015	1.25	Cab heating/cab ventilation timer, pump, replacing
873-004	4.00	Heater core, replacing
873-006	4.00	Fan motor, replacing
873-008	3.00	Heat control valve, replacing
873-009	0.50	Heat control, replacing
874-001	1.75	Refrigerant, filling incl vacuum pumping
874-002	1.25	Refrigerant, draining
874-003	0.30	Cooling unit, performance test
874-006	4.00	Compressor, replacing incl draining and filling
874-010	4.00	Condenser, replacing incl draining and filling
874-011	3.50	Receiver, replacing incl draining and filling
874-012	5.00	Evaporator, replacing incl draining and filling
874-059	5.50	Evaporator, cleaning
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-002	0.40	Hydraulic system, bleeding
900-003	0.10	Hydraulic system, relieve pressure
900-005	0.30	Vacuum pump, connection
900-006	0.20	Vacuum pump, disconnection

Op.no.	time (h)	Notes
900-031	1.00	V2-ECU, MID 249, changing non-programmed ECU
900-032	0.90	V2-ECU, MID 249, changing pre-programmed ECU
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-912	1.75	Rubber connection, suction line, replacing
912-078	0.60	Dump lever, changing
912-115	3.00	Steering and tipping valve, removal
912-116	3.50	Steering and tipping valve, installation
913-003	0.90	Hydraulic pump, checking and adjusting standby pressure
913-004	0.80	Hydraulic pump, checking and adjusting max working pressure
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-042	0.50	Working pumps, checking function
913-052	1.00	Hydraulic pump, removing
913-053	1.75	Hydraulic pump, installing
913-068	1.50	Pump regulator, checking
914-094	0.70	Dump function, checking pressure
94		UNIT, LOAD HANDLING
948-002	2.50	Load cell, replacing
95		LOAD CARRIER
951-005	1.00	Hoist cylinder bearing, changing
951-006	3.00	Hoist cylinder removed, reconditioning
951-007	1.25	Hoist cylinder, removal
951-008	1.25	Hoist cylinder, installation
951-011	0.30	Cylinder, rear flap, gas pressure, checking and adjusting
951-030	0.40	Dump body alternative, lowering
951-030	0.40	Dump body alternative, lowering
951-040	2.00	Dump body joint, changing tipping bearing
951-041	2.50	Dump body, adjusting against frame
951-042	0.20	Dump body angle sensor, calibration
99		MISCELLANEOUS
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-007	0.60	Maintenance service, every 250 hours
173-010	2.00	Maintenance service, every 500 hours
173-012	5.00	Maintenance service, every 1000 hours
173-014	10.00	Maintenance service, every 2000 hours
173-018	17.00	Maintenance service, every 4000 hours
173-022	1.25	Maintenance service, every 6000 hours
173-042	2.50	Maintenance service, first 1000 hours
173-371	0.30	Service position 2
173-457	1.00	Coolant, changing
176-002	0.70	Propeller shafts, removing
19		GENERAL
191-025	0.50	Service position 3
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
210-002	9.00	Compression test
210-073	9.00	Engine and transmission, removing
210-074	13.00	Engine and transmission, mounting
210-092	0.50	Engine rotation speed sensor (camshaft), replacing
214-012	3.50	Valves, adjusting
215-042	7.00	Camshaft, replacing
215-043	2.50	Camshaft setting, checking
216-014	1.75	Crankshaft, replacing front oil seal
216-018	17.00	Crankshaft, replacing rear oil seal
216-049	1.75	Crankshaft, axial clearance, checking
218-001	1.50	Rubber cushion, replacing
218-007	4.00	Engine mounting rear, changing
22		LUBRICATING SYSTEM
221-020	1.00	Lubrication pressure rocker arm shaft, check
221-022	0.60	Lubrication oil pressure, checking with pressure gauge

Op.no.	time (h)	Notes
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
230-002	0.70	Air in fuel system, checking
233-001	1.25	Fuel system, bleeding
233-004	0.80	Feed pump, checking feed pressure
236-002	0.90	Stall speed, checking
237-007	1.25	Overflow valve, replacing
237-010	0.90	Unit injectors, adjusting pretension
237-012	8.00	Unit injector, replacing
237-017	11.00	Injector sleeves, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
254-022	1.00	ACM (After treatment control module), replacing, non-programmed
254-023	1.25	ACM (After treatment control module), replacing, pre-programmed
255-002	1.25	Turbocharger, inspection
255-071	3.00	Turbocharger, replacing
258-016	1.00	Cooling fan motor, intercooler, checking/adjusting low rpm
258-017	1.00	Cooling fan motor, intercooler, checking/adjusting high rpm
26		COOLING SYSTEM
260-001	0.50	Carbon dioxide in coolant system, checking
262-008	2.50	Secondary coolant pump, replacing
263-063	1.25	Cooling fan motor, radiator, checking/adjusting low rpm
263-092	1.25	Cooling fan motor, radiator, checking high rpm
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-075	1.00	HMIM, MID 140, changing pre-programmed ECU
300-076	1.25	HMIM, MID 140, changing non-programmed ECU
31		BATTERY
311-002	1.00	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.25	Alternator, replacing incl function check
321-002	1.25	Alternator, replacing incl function check

Op.no.	time (h)	Notes
33		STARTING SYSTEM
331-018	1.50	Starter motor, replacing
35		LIGHTING
352-001	0.40	Lamp bulb, replacing
352-002	0.50	Headlights, adjusting
352-024	0.60	Headlight, complete, changing (high beam 1 pc.) incl. setting
352-060	0.60	Headlight, complete, changing (low beam 1 pc.) incl. setting/adjustment
353-051	0.60	Tail lamp, replacing
36		OTHER ELECTRICAL EQUIPMENT
361-005	0.60	Flasher lamp front glass or bulb, replacing
361-006	0.60	Flasher lamp sidelight glass or bulb, replacing
363-002	2.00	Windscreen wiper front, replacing motor
366-064	1.25	V-ECU, MID 187, changing non-programmed ECU
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU
366-111	0.90	Engine Gateway, MID 165, replacing non- programmed ECU
366-112	0.90	Engine gateway, MID 165, replacing pre- programmed ECU
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-008	0.90	Engine rotation speed sensor, replacing
39		MISCELLANEOUS
398-001	0.50	CareTrack antenna, replacing
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU
398-003	1.00	W-ECU, MID142, changing non-programmed ECU
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.70	Transmission oil pressure, checking
421-046	2.50	PWM-valve control system, changing
421-054	2.00	Seal for rear output shaft, replacing
421-062	1.50	Induction sensor for turbine speed, changing
421-070	6.50	Transmission, removing
421-072	8.00	Transmission, installing
421-083	1.50	Transmission, remove from a non mounted engine
421-084	1.50	Transmission, fitting on a non mounted engine

Op.no.	time (h)	Notes
43		GEARBOX,
434-002	1.75	Dropbox, replacing seal for front output shaft
434-004	2.00	Dropbox, replacing seal for rear output shaft
434-064	0.60	Differential lock longitudinal, adjustment of sender unit
434-073	3.50	Dropbox, installing
434-074	3.00	Dropbox, removing
436-001	7.00	Dropbox rubber bushing, replacing
46		FRONT AXLE; REAR AXLE
461-011	12.00	Centre gear , removing and fitting
461-037	2.50	Hub reduction, removing
461-038	3.50	Hub reduction, installing
461-046	1.75	Input shaft, seal, replacing
463-011	12.00	Centre gear, removing and fitting
463-016	13.00	Dog clutch 6x6, checking and adjusting
463-049	3.00	Output shaft, bearing and seal, replacing
463-079	3.00	Output shaft 6-wheel drive, sealing and bearing, replacing
463-100	0.40	Rotation speed sensor, replacing
463-101	0.40	Rotation speed sensor, adjusting
463-103	2.00	Input shaft, seal, replacing
464-011	12.00	Centre gear, removing and fitting
464-014	1.75	Input shaft seal, replacing
5		BRAKE
52		HYDRAULIC BRAKE SYSTEM
520-001	0.70	Brake system, checking function, hydraulic
520-010	0.10	Brake system, relieve pressure
520-037	1.00	Brake system, bleeding
525-008	3.50	Foot brake valve, replacing
527-001	0.10	Accumulator removed, checking charging pressure
527-002	1.25	Accumulator, replacing
55		PARKING BRAKE
550-002	1.75	Parking brake, adjusting
550-005	3.00	Parking brake, replacing brake disc
550-009	1.50	Spring brake cylinder, replacing
550-014	1.50	Parking brake, replacing brake pads
550-015	0.30	Parking brake, manually releasing
550-023	0.20	Parking brake, function checking

Op.no.	time (h)	Notes
553-000	0.40	Load and dump brake, working pressure, checking and adjusting
553-001	0.40	Load and Dump brake, servo pressure, checking
553-002	0.30	Load and Dump brake, function check
56		COMPRESSED-AIR BRAKE
561-004	1.75	Compressor, replacing
561-023	0.30	Relief/Cut-in pressure, check
561-024	0.30	Relief/Cut-in pressure, adjusting
59		MISCELLANEOUS
590-001	0.30	Quick coupling compressed air, replacing
 6		 STEERING
64		STEERING
642-026	2.50	Steering gear, replacing
642-058	2.00	Steering gear, check and adj.
643-010	1.75	Steering linkage, checking and adjusting
643-012	0.40	Steering angle, checking and adjusting
643-013	0.80	Steering times, checking and adjusting
643-014	1.00	Steering valve, neutral position, checking and adjusting
645-004	0.90	Steering cylinder, removing
645-005	1.00	Steering cylinder, installing
645-052	1.25	Steering cylinder removed, reconditioning excl replacing bearings
645-054	1.00	Steering cylinder, replacing bearings
645-054	2.50	Steering cylinder, replacing bearings
645-084	1.25	Damping cylinder, checking spring force
645-085	1.25	Damping cylinder, changing seal
647-095	1.00	Auxiliary steering, adjusting working- and stand-by pressure
647-096	1.00	Auxiliary steering, hydraulic pump, removing
647-097	1.50	Auxiliary steering, hydraulic pump, installation
 7		 FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-015	0.90	Protecting plate, removal
715-016	1.50	Protecting plate, installation

Op.no.	time (h)	Notes
72		SUSPENSION
720-008	1.25	Position sensor, complete replacement
720-010	0.50	Forced Raising/lowering, Full suspension
720-011	0.30	Relieve pressure
720-012	0.80	Manual lowering
720-012	0.50	Manual lowering
720-013	0.20	Suspension system, bleeding air
720-020	0.70	Hydraulic cylinder bushing, suspension system, replacing
720-021	1.75	Hydraulic cylinder, suspension system, overhaul
720-022	1.50	Accumulator, suspension system, overhaul
720-023	0.60	Hydraulic pump, max pressure, checking and adjusting
725-001	1.50	Suspension cylinder, removal
725-002	1.75	Suspension cylinder, installation
725-003	0.60	Accumulator, removal
725-004	1.25	Accumulator, installation
725-008	1.50	Position sensor front, replacing
725-009	0.80	Accumulator, precharge pressure, checking and adjusting
726-001	1.75	Suspension cylinder, removal
726-001	1.75	Suspension cylinder, removal
726-002	2.00	Suspension cylinder, installation
726-002	2.00	Suspension cylinder, installation
726-003	0.30	Accumulator, removal
726-003	0.20	Accumulator, removal
726-004	0.60	Accumulator, installation
726-004	0.80	Accumulator, installation
726-006	2.00	Accumulator bank, removal
726-007	1.75	Accumulator bank, installation
726-008	1.25	Position sensor rear, replacing
726-009	1.00	Accumulator, precharge pressure, checking and adjusting
74		FRAME LINK
741-001	6.00	Frame joint, separating machine
741-040	1.50	Frame joint bearing, replacing (machine separated)
741-044	5.00	Hitch, removing
741-045	6.50	Hitch, installing
741-046	2.50	Steering joint bearing, replacing (Hitch removed)
742-040	6.00	Steering joint, replacing bearings
75		AXLE SUSPENSION
751-001	3.00	A-frame bushing, tractor unit, replacing

Op.no.	time (h)	Notes
751-013	1.00	Cross stay, rubber bushing, replacing
751-014	0.40	Cross stay, removing
751-015	0.40	Cross stay, installing
756-013	1.00	Cross stay, rubber bushing, replacing
756-017	0.40	Cross stay, removing
756-018	0.40	Cross stay, installing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-007	0.70	Wheel, installing
771-008	0.70	Wheel, removing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.80	Engine hood, removing
821-002	0.70	Engine hood, installing
821-035	0.60	Hood pump, oil, changing
821-060	0.70	Electric hood pump, changing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.25	Door, replacing
831-006	0.60	Door lock, replacing
831-007	0.50	Door, gas spring, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	3.00	Windscreen, replacing
843-012	3.00	Rear window, replacing
843-013	3.00	Side window, replacing
843-014	3.00	Side window, rear, replacing
843-048	2.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.70	Operator's seat, removing
852-004	0.70	Operator's seat, installing
852-004	0.50	Operator's seat, installing
852-092	0.50	Operator's seat, shock absorber, replacing
852-096	1.50	Operator's seat, air bellows, replacing
852-096	1.75	Operator's seat, air bellows, replacing
852-097	1.50	Compressor operator's seat, replacing

Op.no.	time (h)	Notes
87		AIR CONDITIONING UNIT
870-010	0.80	ECC, MID 146, changing pre-programmed ECU
870-011	0.80	ECC, MID 146, changing non-programmed ECU
870-015	1.25	Cab heating/cab ventilation timer, pump, replacing
873-004	4.00	Heater core, replacing
873-006	4.00	Fan motor, replacing
873-008	3.00	Heat control valve, replacing
873-009	0.50	Heat control, replacing
874-001	1.75	Refrigerant, filling incl vacuum pumping
874-002	1.25	Refrigerant, draining
874-003	0.30	Cooling unit, performance test
874-006	4.00	Compressor, replacing incl draining and filling
874-010	4.00	Condenser, replacing incl draining and filling
874-011	3.50	Receiver, replacing incl draining and filling
874-012	5.00	Evaporator, replacing incl draining and filling
874-059	5.50	Evaporator, cleaning
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-002	0.40	Hydraulic system, bleeding
900-003	0.10	Hydraulic system, relieve pressure
900-005	0.30	Vacuum pump, connection
900-006	0.20	Vacuum pump, disconnection
900-031	1.00	V2-ECU, MID 249, changing non-programmed ECU
900-032	0.90	V2-ECU, MID 249, changing pre-programmed ECU
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-912	1.75	Rubber connection, suction line, replacing
912-078	0.60	Dump lever, changing
912-115	3.00	Steering and tipping valve, removal
912-116	3.50	Steering and tipping valve, installation
913-003	0.90	Hydraulic pump, checking and adjusting standby pressure
913-004	0.80	Hydraulic pump, checking and adjusting max working pressure
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-042	0.50	Working pumps, checking function
913-052	1.00	Hydraulic pump, removing

Op.no.	time (h)	Notes
913-053	1.75	Hydraulic pump, installing
913-068	1.50	Pump regulator, checking
914-094	0.70	Dump function, checking pressure
95		LOAD CARRIER
951-005	1.00	Hoist cylinder bearing, changing
951-006	3.00	Hoist cylinder removed, reconditioning
951-007	1.25	Hoist cylinder, removal
951-008	1.25	Hoist cylinder, installation
951-011	0.30	Cylinder, rear flap, gas pressure, checking and adjusting
951-030	0.40	Dump body alternative, lowering
951-030	0.40	Dump body alternative, lowering
951-040	2.00	Dump body joint, changing tipping bearing
951-041	2.50	Dump body, adjusting against frame
951-042	0.20	Dump body angle sensor, calibration
99		MISCELLANEOUS
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
0		GENERAL
09		MISCELLANEOUS
090-001	0.70	Engine, basic check
1		STANDARD PARTS, SERVICE
17		SERVICE
173-007	0.60	Maintenance service, every 250 hours
173-010	2.00	Maintenance service, every 500 hours
173-012	5.00	Maintenance service, every 1000 hours
173-014	8.50	Maintenance service, every 2000 hours
173-018	15.00	Maintenance service, every 4000 hours
173-019	2.00	Maintenance service, every 4500 hours
173-022	2.50	Maintenance service, every 6000 hours
173-028	1.00	Maintenance service, every 12000 hours
173-042	2.50	Maintenance service, first 1000 hours
173-457	1.00	Coolant, changing
176-002	0.70	Propeller shafts, removing
19		GENERAL
191-021	0.20	Service position 1
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
21		ENGINE
210-002	9.00	Compression test
210-073	9.00	Engine and transmission, removing
210-074	13.00	Engine and transmission, mounting
210-092	0.50	Engine rotation speed sensor (camshaft), replacing
214-012	3.50	Valves, adjusting
215-042	7.00	Camshaft, replacing
215-043	2.50	Camshaft setting, checking
216-014	1.75	Crankshaft, replacing front oil seal
216-018	17.00	Crankshaft, replacing rear oil seal
216-049	1.75	Crankshaft, axial clearance, checking
218-001	1.50	Rubber cushion, replacing
218-007	4.00	Engine mounting rear, changing

Op.no.	time (h)	Notes
22		LUBRICATING SYSTEM
221-020	1.00	Lubrication pressure rocker arm shaft, check
221-022	0.60	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
230-002	0.70	Air in fuel system, checking
233-001	1.25	Fuel system, bleeding
233-004	0.80	Feed pump, checking feed pressure
236-002	0.90	Stall speed, checking
237-007	1.25	Overflow valve, replacing
237-010	0.90	Unit injectors, adjusting pretension
237-012	8.00	Unit injector, replacing
237-017	11.00	Injector sleeves, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
254-001	2.50	Diesel particulate filter, check and clean
254-022	2.50	ACM (After treatment control module), replacing, non-programmed
254-023	2.50	ACM (After treatment control module), replacing, pre-programmed
254-056	1.25	NOx sensor, replacing
254-064	1.50	High pressure air system, pressure, checking
254-069	0.40	Exhaust aftertreatment system fuel flow, checking
254-102	1.25	AdBlue®/DEF nozzle, replacing
254-103	2.00	AdBlue®/DEF tank, tank armature, replacing
254-104	0.70	Aftertreatment fuel nozzle, replacing
254-105	1.50	EATS cooling fan, replacing
254-106	1.75	AdBlue®/DEF hoses, replacing
254-107	2.50	AdBlue®/DEF pump unit, replacing
254-108	3.00	Aftertreatment fuel dosing unit, replacing
254-114	1.25	AdBlue®/DEF, draining
254-117	1.25	AdBlue®/DEF pump unit, components, replacing
254-118	1.50	SCR system, dosing test
254-121	0.50	AdBlue®/DEF quality, checking
255-002	1.25	Turbocharger, inspection
255-003	1.50	Actuator, variable turbocharger, replacing
255-071	3.00	Turbocharger, replacing
258-016	1.00	Cooling fan motor, intercooler, checking/adjusting low rpm
258-017	1.00	Cooling fan motor, intercooler, checking/adjusting high rpm

Op.no.	time (h)	Notes
26		COOLING SYSTEM
260-001	0.50	Carbon dioxide in coolant system, checking
262-008	2.50	Secondary coolant pump, replacing
263-063	1.25	Cooling fan motor, radiator, checking/adjusting low rpm
263-092	1.25	Cooling fan motor, radiator, checking high rpm
29		Miscellaneous
293-001	4.50	EGR cooler, replacing
293-002	2.50	EGR cooler, pressure test
293-004	6.50	EGR cooler, cleaning
293-005	1.00	EGR valve, replacing
293-013	0.90	EGR venturi tube, cleaning
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-075	1.00	HMIM, MID 140, changing pre-programmed ECU
300-076	1.25	HMIM, MID 140, changing non-programmed ECU
31		BATTERY
311-002	1.00	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.25	Alternator, replacing incl function check
321-002	1.25	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	1.50	Starter motor, replacing
35		LIGHTING
352-001	0.40	Lamp bulb, replacing
352-002	0.50	Headlights, adjusting
352-024	0.60	Headlight, complete, changing (high beam 1 pc.) incl. setting
352-060	0.60	Headlight, complete, changing (low beam 1 pc.) incl. setting/adjustment
353-051	0.60	Tail lamp, replacing
36		OTHER ELECTRICAL EQUIPMENT
361-005	0.60	Flasher lamp front glass or bulb, replacing
361-006	0.60	Flasher lamp sidelight glass or bulb, replacing
363-002	2.00	Windscreen wiper front, replacing motor
366-064	1.25	V-ECU, MID 187, changing non-programmed ECU

Op.no.	time (h)	Notes
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU
366-111	0.90	Engine Gateway, MID 165, replacing non-programmed ECU
366-112	0.90	Engine gateway, MID 165, replacing pre-programmed ECU
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-008	0.90	Engine rotation speed sensor, replacing
39		MISCELLANEOUS
398-001	0.50	CareTrack antenna, replacing
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU
398-003	1.00	W-ECU, MID142, changing non-programmed ECU
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.70	Transmission oil pressure, checking
421-046	2.50	PWM-valve control system, changing
421-054	2.00	Seal for rear output shaft, replacing
421-062	1.50	Induction sensor for turbine speed, changing
421-070	6.50	Transmission, removing
421-072	8.00	Transmission, installing
421-083	1.50	Transmission, remove from a non mounted engine
421-084	1.50	Transmission, fitting on a non mounted engine
43		GEARBOX,
434-002	1.75	Dropbox, replacing seal for front output shaft
434-004	2.00	Dropbox, replacing seal for rear output shaft
434-064	0.60	Differential lock longitudinal, adjustment of sender unit
434-073	3.50	Dropbox, installing
434-074	3.00	Dropbox, removing
436-001	7.00	Dropbox rubber bushing, replacing
46		FRONT AXLE; REAR AXLE
461-011	12.00	Centre gear , removing and fitting
461-037	2.50	Hub reduction, removing
461-038	3.50	Hub reduction, installing
461-046	1.75	Input shaft, seal, replacing
463-011	12.00	Centre gear, removing and fitting
463-049	3.00	Output shaft, bearing and seal, replacing
463-079	3.00	Output shaft 6-wheel drive, sealing and bearing, replacing
463-103	2.00	Input shaft, seal, replacing

Op.no.	time (h)	Notes
464-011	12.00	Centre gear, removing and fitting
464-014	1.75	Input shaft seal, replacing

5**BRAKE****52****HYDRAULIC BRAKE SYSTEM**

520-001	0.70	Brake system, checking function, hydraulic
520-010	0.10	Brake system, relieve pressure
520-037	1.00	Brake system, bleeding
525-008	3.50	Foot brake valve, replacing
527-001	0.10	Accumulator removed, checking charging pressure
527-002	1.25	Accumulator, replacing

55**PARKING BRAKE**

550-002	1.75	Parking brake, adjusting
550-005	3.00	Parking brake, replacing brake disc
550-009	1.50	Spring brake cylinder, replacing
550-014	1.50	Parking brake, replacing brake pads
550-015	0.30	Parking brake, manually releasing
550-023	0.20	Parking brake, function checking
553-000	0.40	Load and dump brake, working pressure, checking and adjusting
553-001	0.40	Load and Dump brake, servo pressure, checking
553-002	0.30	Load and Dump brake, function check

56**COMPRESSED-AIR BRAKE**

561-004	1.75	Compressor, replacing
561-023	0.30	Relief/Cut-in pressure, check
561-024	0.30	Relief/Cut-in pressure, adjusting

59**MISCELLANEOUS**

590-001	0.30	Quick coupling compressed air, replacing
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6**STEERING****64****STEERING**

642-026	2.50	Steering gear, replacing
642-058	2.00	Steering gear, check and adj.
643-010	1.75	Steering linkage, checking and adjusting
643-012	0.40	Steering angle, checking and adjusting
643-013	0.80	Steering times, checking and adjusting
643-014	1.00	Steering valve, neutral position, checking and adjusting

Op.no.	time (h)	Notes
645-004	0.90	Steering cylinder, removing
645-005	1.00	Steering cylinder, installing
645-052	1.25	Steering cylinder removed, reconditioning excl replacing bearings
645-054	2.50	Steering cylinder, replacing bearings
645-054	1.00	Steering cylinder, replacing bearings
645-084	1.25	Damping cylinder, checking spring force
645-085	1.25	Damping cylinder, changing seal
647-095	1.00	Auxiliary steering, adjusting working- and stand-by pressure
647-096	1.00	Auxiliary steering, hydraulic pump, removing
647-097	1.50	Auxiliary steering, hydraulic pump, installation

7 FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT

71 FRAME

711-001	3.00	Frame extension, removing
711-002	4.00	Frame extension, installing
715-015	0.90	Protecting plate, removal
715-016	1.50	Protecting plate, installation

74 FRAME LINK

741-001	6.00	Frame joint, separating machine
741-040	1.50	Frame joint bearing, replacing (machine separated)
741-044	5.00	Hitch, removing
741-045	6.50	Hitch, installing
741-046	2.50	Steering joint bearing, replacing (Hitch removed)
742-040	6.00	Steering joint, replacing bearings

75 AXLE SUSPENSION

751-001	3.00	A-frame bushing, tractor unit, replacing
751-013	1.00	Cross stay, rubber bushing, replacing
751-014	0.40	Cross stay, removing
751-015	0.40	Cross stay, installing
756-013	1.00	Cross stay, rubber bushing, replacing
756-017	0.40	Cross stay, removing
756-018	0.40	Cross stay, installing
756-024	2.00	Bogie beam, changing rubber spring, one side (front)
756-027	4.50	A-frame bushing, front on load unit, changing
756-028	2.50	A-frame bushing, rear on load unit, changing
756-029	0.90	Bogie beam, changing rubber bushing on removed beam

Op.no.	time (h)	Notes
756-030	7.00	Bogie beam, changing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-007	0.70	Wheel, installing
771-008	0.70	Wheel, removing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.80	Engine hood, removing
821-002	0.70	Engine hood, installing
821-035	0.60	Hood pump, oil, changing
821-060	0.70	Electric hood pump, changing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.25	Door, replacing
831-006	0.60	Door lock, replacing
831-007	0.50	Door, gas spring, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	3.00	Windscreen, replacing
843-012	3.00	Rear window, replacing
843-013	3.00	Side window, replacing
843-014	3.00	Side window, rear, replacing
843-048	2.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.70	Operator's seat, removing
852-004	0.70	Operator's seat, installing
852-004	0.50	Operator's seat, installing
852-092	0.50	Operator's seat, shock absorber, replacing
852-096	1.50	Operator's seat, air bellows, replacing
852-096	1.75	Operator's seat, air bellows, replacing
852-097	1.50	Compressor operator's seat, replacing
87		AIR CONDITIONING UNIT
870-010	0.80	ECC, MID 146, changing pre-programmed ECU
870-011	0.80	ECC, MID 146, changing non-programmed ECU
870-015	1.25	Cab heating/cab ventilation timer, pump, replacing
873-004	4.00	Heater core, replacing

Op.no.	time (h)	Notes
873-006	4.00	Fan motor, replacing
873-008	3.00	Heat control valve, replacing
873-009	0.50	Heat control, replacing
874-001	1.75	Refrigerant, filling incl vacuum pumping
874-002	1.25	Refrigerant, draining
874-003	0.30	Cooling unit, performance test
874-006	4.00	Compressor, replacing incl draining and filling
874-010	4.00	Condenser, replacing incl draining and filling
874-011	3.50	Receiver, replacing incl draining and filling
874-012	5.00	Evaporator, replacing incl draining and filling
874-059	5.50	Evaporator, cleaning

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

90 GENERAL

900-002	0.40	Hydraulic system, bleeding
900-003	0.10	Hydraulic system, relieve pressure
900-005	0.30	Vacuum pump, connection
900-006	0.20	Vacuum pump, disconnection
900-031	1.00	V2-ECU, MID 249, changing non-programmed ECU
900-032	0.90	V2-ECU, MID 249, changing pre-programmed ECU

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-912	1.75	Rubber connection, suction line, replacing
912-078	0.60	Dump lever, changing
912-115	3.00	Steering and tipping valve, removal
912-116	3.50	Steering and tipping valve, installation
913-003	0.90	Hydraulic pump, checking and adjusting standby pressure
913-004	0.80	Hydraulic pump, checking and adjusting max working pressure
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-042	0.50	Working pumps, checking function
913-052	1.00	Hydraulic pump, removing
913-053	1.75	Hydraulic pump, installing
913-068	1.50	Pump regulator, checking
914-094	0.70	Dump function, checking pressure

94 UNIT, LOAD HANDLING

948-002	2.50	Load cell, replacing
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Op.no.	time (h)	Notes
95		LOAD CARRIER
951-005	1.00	Hoist cylinder bearing, changing
951-006	3.00	Hoist cylinder removed, reconditioning
951-007	1.25	Hoist cylinder, removal
951-008	1.25	Hoist cylinder, installation
951-011	0.30	Cylinder, rear flap, gas pressure, checking and adjusting
951-030	0.40	Dump body alternative, lowering
951-030	0.40	Dump body alternative, lowering
951-040	2.00	Dump body joint, changing tipping bearing
951-041	2.50	Dump body, adjusting against frame
951-042	0.20	Dump body angle sensor, calibration
99		MISCELLANEOUS
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
0		GENERAL
09		MISCELLANEOUS
090-001	0.70	Engine, basic check
1		STANDARD PARTS, SERVICE
17		SERVICE
173-007	0.60	Maintenance service, every 250 hours
173-010	2.00	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	10.00	Maintenance service, every 2000 hours
173-018	17.00	Maintenance service, every 4000 hours
173-019	2.00	Maintenance service, every 4500 hours
173-022	2.50	Maintenance service, every 6000 hours
173-028	1.00	Maintenance service, every 12000 hours
173-042	2.50	Maintenance service, first 1000 hours
173-371	0.30	Service position 2
173-457	1.00	Coolant, changing
176-002	0.70	Propeller shafts, removing
19		GENERAL
191-025	0.50	Service position 3
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
210-002	9.00	Compression test
210-073	9.00	Engine and transmission, removing
210-074	13.00	Engine and transmission, mounting
210-092	0.50	Engine rotation speed sensor (camshaft), replacing
214-012	3.50	Valves, adjusting
215-042	7.00	Camshaft, replacing
215-043	2.50	Camshaft setting, checking
216-014	1.75	Crankshaft, replacing front oil seal
216-018	17.00	Crankshaft, replacing rear oil seal
216-049	1.75	Crankshaft, axial clearance, checking

Op.no.	time (h)	Notes
218-001	1.50	Rubber cushion, replacing
218-007	4.00	Engine mounting rear, changing
22		LUBRICATING SYSTEM
221-020	1.00	Lubrication pressure rocker arm shaft, check
221-022	0.60	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
230-002	0.70	Air in fuel system, checking
233-001	1.25	Fuel system, bleeding
233-004	0.80	Feed pump, checking feed pressure
236-002	0.90	Stall speed, checking
237-007	1.25	Overflow valve, replacing
237-010	0.90	Unit injectors, adjusting pretension
237-012	8.00	Unit injector, replacing
237-017	11.00	Injector sleeves, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
254-001	2.50	Diesel particulate filter, check and clean
254-022	2.50	ACM (After treatment control module), replacing, non-programmed
254-023	2.50	ACM (After treatment control module), replacing, pre-programmed
254-056	1.25	NOx sensor, replacing
254-064	1.50	High pressure air system, pressure, checking
254-069	0.40	Exhaust aftertreatment system fuel flow, checking
254-102	1.25	AdBlue®/DEF nozzle, replacing
254-103	2.00	AdBlue®/DEF tank, tank armature, replacing
254-104	0.70	Aftertreatment fuel nozzle, replacing
254-105	1.50	EATS cooling fan, replacing
254-106	1.75	AdBlue®/DEF hoses, replacing
254-107	2.50	AdBlue®/DEF pump unit, replacing
254-108	3.00	Aftertreatment fuel dosing unit, replacing
254-114	1.25	AdBlue®/DEF, draining
254-117	1.25	AdBlue®/DEF pump unit, components, replacing
254-118	1.50	SCR system, dosing test
254-121	0.50	AdBlue®/DEF quality, checking
255-002	1.25	Turbocharger, inspection
255-003	1.50	Actuator, variable turbocharger, replacing
255-071	3.00	Turbocharger, replacing
258-016	1.00	Cooling fan motor, intercooler, checking/adjusting low rpm
258-017	1.00	Cooling fan motor, intercooler, checking/adjusting high rpm

Op.no.	time (h)	Notes
26		COOLING SYSTEM
260-001	0.50	Carbon dioxide in coolant system, checking
262-008	2.50	Secondary coolant pump, replacing
263-063	1.25	Cooling fan motor, radiator, checking/adjusting low rpm
263-092	1.25	Cooling fan motor, radiator, checking high rpm
29		Miscellaneous
293-001	4.50	EGR cooler, replacing
293-002	2.50	EGR cooler, pressure test
293-004	6.50	EGR cooler, cleaning
293-005	1.00	EGR valve, replacing
293-013	0.90	EGR venturi tube, cleaning
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-075	1.00	HMIM, MID 140, changing pre-programmed ECU
300-076	1.25	HMIM, MID 140, changing non-programmed ECU
31		BATTERY
311-002	1.00	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.25	Alternator, replacing incl function check
321-002	1.25	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	1.50	Starter motor, replacing
35		LIGHTING
352-001	0.40	Lamp bulb, replacing
352-002	0.50	Headlights, adjusting
352-024	0.60	Headlight, complete, changing (high beam 1 pc.) incl. setting
352-060	0.60	Headlight, complete, changing (low beam 1 pc.) incl. setting/adjustment
353-051	0.60	Tail lamp, replacing
36		OTHER ELECTRICAL EQUIPMENT
361-005	0.60	Flasher lamp front glass or bulb, replacing
361-006	0.60	Flasher lamp sidelight glass or bulb, replacing
363-002	2.00	Windscreen wiper front, replacing motor
366-064	1.25	V-ECU, MID 187, changing non-programmed ECU

Op.no.	time (h)	Notes
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU
366-111	0.90	Engine Gateway, MID 165, replacing non-programmed ECU
366-112	0.90	Engine gateway, MID 165, replacing pre-programmed ECU
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-008	0.90	Engine rotation speed sensor, replacing
39		MISCELLANEOUS
398-001	0.50	CareTrack antenna, replacing
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU
398-003	1.00	W-ECU, MID142, changing non-programmed ECU
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.70	Transmission oil pressure, checking
421-046	2.50	PWM-valve control system, changing
421-054	2.00	Seal for rear output shaft, replacing
421-062	1.50	Induction sensor for turbine speed, changing
421-070	6.50	Transmission, removing
421-072	8.00	Transmission, installing
421-083	1.50	Transmission, remove from a non mounted engine
421-084	1.50	Transmission, fitting on a non mounted engine
43		GEARBOX,
434-002	1.75	Dropbox, replacing seal for front output shaft
434-004	2.00	Dropbox, replacing seal for rear output shaft
434-064	0.60	Differential lock longitudinal, adjustment of sender unit
434-073	3.50	Dropbox, installing
434-074	3.00	Dropbox, removing
436-001	7.00	Dropbox rubber bushing, replacing
46		FRONT AXLE; REAR AXLE
461-011	12.00	Centre gear , removing and fitting
461-037	2.50	Hub reduction, removing
461-038	3.50	Hub reduction, installing
461-046	1.75	Input shaft, seal, replacing
463-011	12.00	Centre gear, removing and fitting
463-049	3.00	Output shaft, bearing and seal, replacing
463-079	3.00	Output shaft 6-wheel drive, sealing and bearing, replacing
463-103	2.00	Input shaft, seal, replacing

Op.no.	time (h)	Notes
464-011	12.00	Centre gear, removing and fitting
464-014	1.75	Input shaft seal, replacing

5**BRAKE****52****HYDRAULIC BRAKE SYSTEM**

520-001	0.70	Brake system, checking function, hydraulic
520-010	0.10	Brake system, relieve pressure
520-037	1.00	Brake system, bleeding
525-008	3.50	Foot brake valve, replacing
527-001	0.10	Accumulator removed, checking charging pressure
527-002	1.25	Accumulator, replacing

55**PARKING BRAKE**

550-002	1.75	Parking brake, adjusting
550-005	3.00	Parking brake, replacing brake disc
550-009	1.50	Spring brake cylinder, replacing
550-014	1.50	Parking brake, replacing brake pads
550-015	0.30	Parking brake, manually releasing
550-023	0.20	Parking brake, function checking
553-000	0.40	Load and dump brake, working pressure, checking and adjusting
553-001	0.40	Load and Dump brake, servo pressure, checking
553-002	0.30	Load and Dump brake, function check

56**COMPRESSED-AIR BRAKE**

561-004	1.75	Compressor, replacing
561-023	0.30	Relief/Cut-in pressure, check
561-024	0.30	Relief/Cut-in pressure, adjusting

59**MISCELLANEOUS**

590-001	0.30	Quick coupling compressed air, replacing
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6**STEERING****64****STEERING**

642-026	2.50	Steering gear, replacing
642-058	2.00	Steering gear, check and adj.
643-010	1.75	Steering linkage, checking and adjusting
643-012	0.40	Steering angle, checking and adjusting
643-013	0.80	Steering times, checking and adjusting
643-014	1.00	Steering valve, neutral position, checking and adjusting

Op.no.	time (h)	Notes
645-004	0.90	Steering cylinder, removing
645-005	1.00	Steering cylinder, installing
645-052	1.25	Steering cylinder removed, reconditioning excl replacing bearings
645-054	1.00	Steering cylinder, replacing bearings
645-054	2.50	Steering cylinder, replacing bearings
645-084	1.25	Damping cylinder, checking spring force
645-085	1.25	Damping cylinder, changing seal
647-095	1.00	Auxiliary steering, adjusting working- and stand-by pressure
647-096	1.00	Auxiliary steering, hydraulic pump, removing
647-097	1.50	Auxiliary steering, hydraulic pump, installation

7 FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT

71 FRAME

715-015	0.90	Protecting plate, removal
715-016	1.50	Protecting plate, installation

72 SUSPENSION

720-008	1.25	Position sensor, complete replacement
720-010	0.50	Forced Raising/lowering, Full suspension
720-011	0.30	Relieve pressure
720-012	0.80	Manual lowering
720-012	0.50	Manual lowering
720-013	0.20	Suspension system, bleeding air
720-020	0.70	Hydraulic cylinder bushing, suspension system, replacing
720-021	1.75	Hydraulic cylinder, suspension system, overhaul
720-022	1.50	Accumulator, suspension system, overhaul
720-023	0.60	Hydraulic pump, max pressure, checking and adjusting
725-001	1.50	Suspension cylinder, removal
725-002	1.75	Suspension cylinder, installation
725-003	0.60	Accumulator, removal
725-004	1.25	Accumulator, installation
725-008	1.50	Position sensor front, replacing
725-009	0.80	Accumulator, precharge pressure, checking and adjusting
726-001	1.75	Suspension cylinder, removal
726-001	1.75	Suspension cylinder, removal
726-002	2.00	Suspension cylinder, installation
726-002	2.00	Suspension cylinder, installation

Op.no.	time (h)	Notes
726-003	0.30	Accumulator, removal
726-003	0.20	Accumulator, removal
726-004	0.60	Accumulator, installation
726-004	0.80	Accumulator, installation
726-006	2.00	Accumulator bank, removal
726-007	1.75	Accumulator bank, installation
726-008	1.25	Position sensor rear, replacing
726-009	1.00	Accumulator, precharge pressure, checking and adjusting
74		FRAME LINK
741-001	6.00	Frame joint, separating machine
741-040	1.50	Frame joint bearing, replacing (machine separated)
741-044	5.00	Hitch, removing
741-045	6.50	Hitch, installing
741-046	2.50	Steering joint bearing, replacing (Hitch removed)
742-040	6.00	Steering joint, replacing bearings
75		AXLE SUSPENSION
751-001	3.00	A-frame bushing, tractor unit, replacing
751-013	1.00	Cross stay, rubber bushing, replacing
751-014	0.40	Cross stay, removing
751-015	0.40	Cross stay, installing
756-013	1.00	Cross stay, rubber bushing, replacing
756-017	0.40	Cross stay, removing
756-018	0.40	Cross stay, installing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-007	0.70	Wheel, installing
771-008	0.70	Wheel, removing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.80	Engine hood, removing
821-002	0.70	Engine hood, installing
821-035	0.60	Hood pump, oil, changing
821-060	0.70	Electric hood pump, changing

Op.no.	time (h)	Notes
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.25	Door, replacing
831-006	0.60	Door lock, replacing
831-007	0.50	Door, gas spring, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	3.00	Windscreen, replacing
843-012	3.00	Rear window, replacing
843-013	3.00	Side window, replacing
843-014	3.00	Side window, rear, replacing
843-048	2.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.70	Operator's seat, removing
852-004	0.70	Operator's seat, installing
852-004	0.50	Operator's seat, installing
852-092	0.50	Operator's seat, shock absorber, replacing
852-096	1.50	Operator's seat, air bellows, replacing
852-096	1.75	Operator's seat, air bellows, replacing
852-097	1.50	Compressor operator's seat, replacing
87		AIR CONDITIONING UNIT
870-010	0.80	ECC, MID 146, changing pre-programmed ECU
870-011	0.80	ECC, MID 146, changing non-programmed ECU
870-015	1.25	Cab heating/cab ventilation timer, pump, replacing
873-004	4.00	Heater core, replacing
873-006	4.00	Fan motor, replacing
873-008	3.00	Heat control valve, replacing
873-009	0.50	Heat control, replacing
874-001	1.75	Refrigerant, filling incl vacuum pumping
874-002	1.25	Refrigerant, draining
874-003	0.30	Cooling unit, performance test
874-006	4.00	Compressor, replacing incl draining and filling
874-010	4.00	Condenser, replacing incl draining and filling
874-011	3.50	Receiver, replacing incl draining and filling
874-012	5.00	Evaporator, replacing incl draining and filling
874-059	5.50	Evaporator, cleaning
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-002	0.40	Hydraulic system, bleeding
900-003	0.10	Hydraulic system, relieve pressure

Op.no.	time (h)	Notes
900-005	0.30	Vacuum pump, connection
900-006	0.20	Vacuum pump, disconnection
900-031	1.00	V2-ECU, MID 249, changing non-programmed ECU
900-032	0.90	V2-ECU, MID 249, changing pre-programmed ECU
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-912	1.75	Rubber connection, suction line, replacing
912-078	0.60	Dump lever, changing
912-115	3.00	Steering and tipping valve, removal
912-116	3.50	Steering and tipping valve, installation
913-003	0.90	Hydraulic pump, checking and adjusting standby pressure
913-004	0.80	Hydraulic pump, checking and adjusting max working pressure
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-042	0.50	Working pumps, checking function
913-052	1.00	Hydraulic pump, removing
913-053	1.75	Hydraulic pump, installing
913-068	1.50	Pump regulator, checking
914-094	0.70	Dump function, checking pressure
95		LOAD CARRIER
951-005	1.00	Hoist cylinder bearing, changing
951-006	3.00	Hoist cylinder removed, reconditioning
951-007	1.25	Hoist cylinder, removal
951-008	1.25	Hoist cylinder, installation
951-011	0.30	Cylinder, rear flap, gas pressure, checking and adjusting
951-030	0.40	Dump body alternative, lowering
951-030	0.40	Dump body alternative, lowering
951-040	2.00	Dump body joint, changing tipping bearing
951-041	2.50	Dump body, adjusting against frame
951-042	0.20	Dump body angle sensor, calibration
99		MISCELLANEOUS
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
172-002	3.00	Warranty inspection 100 hours	701261 - 999999
173-001	2.00	Maintenance service, as required	701261 - 999999
173-001	1.50	Maintenance service, as required	19144 - 701260
173-003	1.00	Maintenance service, every 10 hours	701261 - 999999
173-010	5.00	Maintenance service, every 500 hours	701261 - 999999
173-012	12.00	Maintenance service, every 1000 hours	701261 - 999999
173-014	14.00	Maintenance service, every 2000 hours	701261 - 701910
173-014	12.00	Maintenance service, every 2000 hours	701911 - 999999
173-016	14.00	Maintenance service, every 3000 hours	701261 - 999999
173-018	14.00	Maintenance service, every 4000 hours	701911 - 999999
173-302	0.20	Service position 1	
19		GENERAL	
191-021	0.20	Service position 1	
191-022	2.50	Service position 2	701261 - 999999
191-022	2.50	Service position 2	701261 - 999999
191-025	3.00	Service position 3	701261 - 999999
191-025	3.00	Service position 3	701261 - 999999
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
301-001	0.40	Control panel, software update	
301-003	0.40	Machine, Calibration	
301-003	0.30	Machine, Calibration	
301-004	0.20	Control panel, parameter setting	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
387-032	1.50	Main control unit memory battery, replacing	17309 - 999999
4		POWER TRANSMISSION	
44		HYDROSTATIC DRIVE	
441-111	4.00	Track motor, replacing	

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-009	5.00	Front idler, removing
775-010	4.50	Front idler, installing
775-025	1.50	Assembling the guide sprocket
775-034	6.00	Track chain assembly, removing
775-035	9.50	Track chain assembly, installing
775-051	1.25	Top roller, replacing one
775-062	1.00	Bottom roller, removing
775-063	0.90	Bottom roller, installing
775-074	0.30	Track pad, removing
775-075	0.20	Track pad, installing
775-080	1.50	Track tension cylinder, replacing
775-095	0.70	Track tension, adjusting
775-108	0.40	Road scraper, removing
775-109	0.20	Road scraper, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-051	3.00	Canopy, removal
810-052	4.50	Canopy, installation
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
98		FUNCTION FOR ROAD CONSTRUCTION
982-001	1.00	Tow arm, removing
982-002	0.80	Tow arm, installing
982-003	2.50	Screed, removing
982-003	2.00	Screed, removing
982-004	3.00	Screed, installing
982-004	4.00	Screed, installing
983-042	1.50	Conveyor cover, removing
983-043	1.75	Conveyor cover, installing
983-052	3.00	Conveyor chain, removing
983-053	2.50	Conveyor chain, installing
983-055	5.00	Conveyor floor plate, removing
983-056	2.50	Conveyor floor plate, installing

Op.no.	time (h)	Notes
983-057	7.50	Conveyor drive shaft, removing
983-058	6.50	Conveyor drive shaft, installing
983-065	1.50	Auger bearing hanger, removing
983-066	0.90	Auger bearing hanger, installing
983-067	4.50	Auger bearing, removing
983-068	2.50	Auger bearing, installing
983-069	3.50	Auger shaft, removing
983-070	1.00	Auger shaft, installing
983-101	2.50	Auger drive chain, replacing
983-102	1.75	Auger motor, removing
983-103	1.50	Auger motor, installing
983-118	0.60	Conveyor drive chain, removing
983-119	0.60	Conveyor drive chain, installing
983-120	1.75	Conveyor idler assembly, removing
983-121	1.50	Conveyor idler assembly, installing
983-122	1.75	Conveyor idler assembly, disassembly and assembly
983-142	0.30	Auger flight, removing
983-143	0.10	Auger flight, installing

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
172-002	3.00	Warranty inspection 100 hours	700162 - 999999
173-001	1.50	Maintenance service, as required	700162 - 999999
173-001	1.50	Maintenance service, as required	51 - 700161
173-003	1.00	Maintenance service, every 10 hours	700162 - 999999
173-010	5.00	Maintenance service, every 500 hours	700162 - 999999
173-012	13.00	Maintenance service, every 1000 hours	700162 - 999999
173-014	15.00	Maintenance service, every 2000 hours	700162 - 701910
173-014	14.00	Maintenance service, every 2000 hours	701911 - 999999
173-016	15.00	Maintenance service, every 3000 hours	700162 - 999999
173-018	15.00	Maintenance service, every 4000 hours	701911 - 999999
173-302	0.20	Service position 1	
19		GENERAL	
191-021	0.20	Service position 1	
191-022	2.50	Service position 2	700162 - 999999
191-022	2.50	Service position 2	700162 - 999999
191-025	3.00	Service position 3	700162 - 999999
191-025	3.00	Service position 3	700162 - 999999
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
301-001	0.40	Control panel, software update	
301-003	0.40	Machine, Calibration	
301-003	0.30	Machine, Calibration	
301-004	0.20	Control panel, parameter setting	
33		STARTING SYSTEM	
331-016	1.50	Starter motor, removing	
331-017	1.00	Starter motor, installing	
36		OTHER ELECTRICAL EQUIPMENT	
360-012	1.25	Generator screed heating regulator, checking	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
387-032	1.50	Main control unit memory battery, replacing	

Op.no.	time (h)	Notes
4		POWER TRANSMISSION
44		HYDROSTATIC DRIVE
441-111	4.00	Track motor, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-009	5.00	Front idler, removing
775-010	4.50	Front idler, installing
775-025	1.50	Assembling the guide sprocket
775-034	6.00	Track chain assembly, removing
775-035	9.50	Track chain assembly, installing
775-051	1.25	Top roller, replacing one
775-062	1.00	Bottom roller, removing
775-063	0.90	Bottom roller, installing
775-074	0.30	Track pad, removing
775-075	0.20	Track pad, installing
775-080	1.50	Track tension cylinder, replacing
775-095	0.70	Track tension, adjusting
775-108	0.40	Road scraper, removing
775-109	0.20	Road scraper, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-051	3.00	Canopy, removal
810-052	4.50	Canopy, installation
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
98		FUNCTION FOR ROAD CONSTRUCTION
982-001	1.00	Tow arm, removing
982-002	0.80	Tow arm, installing
982-003	2.50	Screed, removing
982-003	2.00	Screed, removing
982-004	3.00	Screed, installing
982-004	4.00	Screed, installing

Op.no.	time (h)	Notes
983-042	1.50	Conveyor cover, removing
983-043	1.75	Conveyor cover, installing
983-052	3.00	Conveyor chain, removing
983-053	2.50	Conveyor chain, installing
983-055	5.00	Conveyor floor plate, removing
983-056	2.50	Conveyor floor plate, installing
983-057	7.50	Conveyor drive shaft, removing
983-058	6.50	Conveyor drive shaft, installing
983-065	1.50	Auger bearing hanger, removing
983-066	0.90	Auger bearing hanger, installing
983-067	4.50	Auger bearing, removing
983-068	2.50	Auger bearing, installing
983-069	3.50	Auger shaft, removing
983-070	1.00	Auger shaft, installing
983-101	2.50	Auger drive chain, replacing
983-102	1.75	Auger motor, removing
983-103	1.75	Auger motor, installing
983-118	0.60	Conveyor drive chain, removing
983-119	0.60	Conveyor drive chain, installing
983-120	1.75	Conveyor idler assembly, removing
983-121	1.50	Conveyor idler assembly, installing
983-122	1.75	Conveyor idler assembly, disassembly and assembly
983-142	0.30	Auger flight, removing
983-143	0.10	Auger flight, installing
986-010	1.75	Generator screed heating, checking

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
172-002	3.50	Warranty inspection 100 hours	700187 - 999999
173-001	1.50	Maintenance service, as required	700187 - 999999
173-001	1.50	Maintenance service, as required	51 - 700186
173-003	1.00	Maintenance service, every 10 hours	700187 - 999999
173-010	5.00	Maintenance service, every 500 hours	700187 - 999999
173-012	13.00	Maintenance service, every 1000 hours	700187 - 999999
173-014	15.00	Maintenance service, every 2000 hours	701911 - 999999
173-014	16.00	Maintenance service, every 2000 hours	700187 - 701910
173-016	18.00	Maintenance service, every 3000 hours	700187 - 999999
173-018	16.00	Maintenance service, every 4000 hours	701911 - 999999
173-302	0.20	Service position 1	
19		GENERAL	
191-021	0.20	Service position 1	
191-022	2.50	Service position 2	700187 - 999999
191-022	2.50	Service position 2	700187 - 999999
191-025	3.00	Service position 3	700187 - 999999
191-025	3.00	Service position 3	700187 - 999999
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
301-001	0.40	Control panel, software update	
301-003	0.40	Machine, Calibration	
301-003	0.30	Machine, Calibration	
301-004	0.20	Control panel, parameter setting	
33		STARTING SYSTEM	
331-016	1.50	Starter motor, removing	
331-017	1.00	Starter motor, installing	
36		OTHER ELECTRICAL EQUIPMENT	
360-012	1.25	Generator screed heating regulator, checking	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
387-032	1.50	Main control unit memory battery, replacing	

Op.no.	time (h)	Notes
4		POWER TRANSMISSION
44		HYDROSTATIC DRIVE
441-111	2.00	Track motor, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-009	5.00	Front idler, removing
775-010	4.50	Front idler, installing
775-025	1.50	Assembling the guide sprocket
775-034	6.00	Track chain assembly, removing
775-035	9.50	Track chain assembly, installing
775-051	1.25	Top roller, replacing one
775-062	1.00	Bottom roller, removing
775-063	0.90	Bottom roller, installing
775-074	0.30	Track pad, removing
775-075	0.20	Track pad, installing
775-080	1.50	Track tension cylinder, replacing
775-095	0.70	Track tension, adjusting
775-108	0.40	Road scraper, removing
775-109	0.20	Road scraper, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-051	3.00	Canopy, removal
810-052	4.50	Canopy, installation
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-180	0.70	Valve block, removing
912-181	0.60	Valve block, installing
912-240	0.70	Valve block, chain tensioner, removing
912-241	0.70	Valve block, chain tensioner, installing
912-242	0.70	Valve block, brake valve, removing
912-243	0.60	Valve block, brake valve, installing

Op.no.	time (h)	Notes
912-246	1.25	Valve block, auger, removing
912-247	1.25	Valve block, auger, installing
912-250	1.25	Valve block, conveyor/vibration, removing
912-251	1.50	Valve block, conveyor/vibration, installing
912-252	1.75	Valve block, cylinder functions, removing
912-253	1.75	Valve block, cylinder functions, installing
912-254	0.60	Valve block, leveling, removing
912-254	0.50	Valve block, leveling, removing
912-255	0.70	Valve block, leveling, installing
912-255	0.50	Valve block, leveling, installing
912-256	0.50	Valve block, hopper wing lock, removing
912-257	0.30	Valve block, hopper wing lock, installing
912-258	0.90	Valve block, screed assist, removing
912-259	0.90	Valve block, screed assist, installing
912-260	0.50	Valve block, screed anti-climbing lock, removing
912-261	0.50	Valve block, screed anti-climbing lock, installing
912-262	0.90	Valve block, fan, removing
912-263	0.90	Valve block, fan, installing
912-264	0.70	Valve block, screed tensioner, removing
912-265	0.70	Valve block, screed tensioner, installing
912-266	0.90	Valve block, screed extension, height adjustment, removing
912-267	0.90	Valve block, screed extension, height adjustment, installing
912-268	0.90	Valve block, screed load, removing
912-269	0.90	Valve block, screed load, installing
98		FUNCTION FOR ROAD CONSTRUCTION
982-001	1.00	Tow arm, removing
982-002	0.80	Tow arm, installing
982-003	2.50	Screed, removing
982-003	2.00	Screed, removing
982-004	3.00	Screed, installing
982-004	4.00	Screed, installing
983-042	1.50	Conveyor cover, removing
983-043	1.75	Conveyor cover, installing
983-052	3.00	Conveyor chain, removing
983-053	2.50	Conveyor chain, installing
983-055	5.00	Conveyor floor plate, removing
983-056	2.50	Conveyor floor plate, installing
983-057	7.50	Conveyor drive shaft, removing
983-058	6.50	Conveyor drive shaft, installing
983-065	1.50	Auger bearing hanger, removing
983-066	0.90	Auger bearing hanger, installing

Op.no.	time (h)	Notes
983-067	4.50	Auger bearing, removing
983-068	2.50	Auger bearing, installing
983-069	3.50	Auger shaft, removing
983-070	1.00	Auger shaft, installing
983-101	2.50	Auger drive chain, replacing
983-102	1.75	Auger motor, removing
983-103	1.75	Auger motor, installing
983-118	0.60	Conveyor drive chain, removing
983-119	0.60	Conveyor drive chain, installing
983-120	1.75	Conveyor idler assembly, removing
983-121	1.50	Conveyor idler assembly, installing
983-122	1.75	Conveyor idler assembly, disassembly and assembly
983-142	0.30	Auger flight, removing
983-143	0.10	Auger flight, installing
986-010	1.75	Generator screed heating, checking

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.60	Maintenance service, daily	
173-004	1.75	Maintenance service, every 50 hours	130101 - 140000
173-004	1.75	Maintenance service, every 50 hours	2121123 - 2130000
173-007	3.00	Maintenance service, every 250 hours	130101 - 140000
173-007	3.00	Maintenance service, every 250 hours	2121123 - 2130000
173-010	7.50	Maintenance service, every 500 hours	2121123 - 2130000
173-010	8.50	Maintenance service, every 500 hours	130101 - 140000
173-012	13.00	Maintenance service, every 1000 hours	2121123 - 2130000
173-012	17.00	Maintenance service, every 1000 hours	130101 - 140000
173-013	14.00	Maintenance service, every 1500 hours	130101 - 140000
173-014	17.00	Maintenance service, every 2000 hours	130101 - 140000
173-014	16.00	Maintenance service, every 2000 hours	2121123 - 2130000
173-016	25.00	Maintenance service, every 3000 hours	130101 - 140000
173-022	16.00	Maintenance service, every 6000 hours	2121123 - 2130000
173-022	1.25	Maintenance service, every 6000 hours	130101 - 140000
173-036	7.50	Maintenance service, first 100 hours	2121123 - 2130000
173-036	8.50	Maintenance service, first 100 hours	130101 - 140000
173-042	0.90	Maintenance service, first 1000 hours	130101 - 140000
173-042	14.00	Maintenance service, first 1000 hours	2121123 - 2130000
19		GENERAL	
191-021	0.20	Service position 1	
191-022	0.20	Service position 2	
191-025	0.20	Service position 3	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.25	E-ECU, MID 128, changing non-programmed ECU	130101 - 140000
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	130101 - 140000
21		ENGINE	
210-070	6.00	Engine, removing	2121123 - 2130000
210-070	4.50	Engine, removing	130101 - 140000
210-072	6.00	Engine, installing	2121123 - 2130000
210-072	5.00	Engine, installing	130101 - 140000
210-083	0.60	Engine protection plates, removing and installing	130101 - 140000
212-071	0.50	Crankcase ventilation separator, replacing	130101 - 140000
214-012	2.50	Valves, adjusting	130101 - 140000
214-012	2.50	Valves, adjusting	2121123 - 2130000

Op.no.	time (h)		Notes
218-009	1.25	Engine mounts, replacing	2121123 - 2130000
22		LUBRICATING SYSTEM	
221-021	0.40	Lubrication oil pressure, checking	2121123 - 2130000
23		FUEL SYSTEM	
233-001	0.10	Fuel system, bleeding	2121123 - 2130000
233-001	0.10	Fuel system, bleeding	130101 - 140000
233-002	0.40	Feed pump, replacing	130101 - 140000
233-011	0.80	Fuel pump, removing	2121123 - 2130000
233-012	0.70	Fuel pump, installing	2121123 - 2130000
233-014	0.40	Fuel filters, replacing	2121123 - 2130000
233-014	0.50	Fuel filters, replacing	130101 - 140000
234-011	0.60	Fuel tank, removing	
234-012	0.60	Fuel tank, installing	
236-079	2.00	Injection pumps, changing	130101 - 140000
237-002	3.50	Injectors, replacing all	130101 - 140000
237-040	0.40	Overflow pipe, checking for leakage	130101 - 140000
239-001	0.60	Fuel cooler, replacing	130101 - 140000
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.50	Silencer, replacing	2121123 - 2130000
252-021	0.40	Exhaust pipe, flexible tube, replacing	2121123 - 2130000
252-023	0.60	Exhaust pipe, replacing	130101 - 140000
254-001	3.00	Diesel particulate filter, check and clean	130101 - 140000
256-010	0.40	Air cleaner, removing	130101 - 140000
256-010	0.40	Air cleaner, removing	2121123 - 2130000
256-011	0.40	Air cleaner, installing	2121123 - 2130000
256-011	0.30	Air cleaner, installing	130101 - 140000
258-023	0.90	Charge air cooler, removing	130101 - 140000
258-024	0.90	Charge air cooler, installing	130101 - 140000
26		COOLING SYSTEM	
261-011	2.00	Radiator, removing	2121123 - 2130000
261-011	1.75	Radiator, removing	130101 - 140000
261-012	0.50	Radiator hose upper, replacing	130101 - 140000
261-012	0.40	Radiator hose upper, replacing	2121123 - 2130000
261-013	1.25	Radiator, installing	130101 - 140000
261-013	0.80	Radiator, installing	2121123 - 2130000
261-014	0.80	Radiator hoses lower, replacing	130101 - 140000
261-014	0.80	Radiator hoses lower, replacing	2121123 - 2130000
261-018	0.70	Expansion tank, replacing	130101 - 140000
261-018	0.80	Expansion tank, replacing	2121123 - 2130000
263-012	0.80	Fan belt and/or alternator belt, replacing	130101 - 140000
263-012	0.80	Fan belt and/or alternator belt, replacing	2121123 - 2130000

Op.no.	time (h)		Notes
263-013	0.80	Fan belt and/or alternator belt, checking and adjusting tension	130101 - 140000
263-084	2.50	Fan shroud, replacing	130101 - 140000
263-084	2.00	Fan shroud, replacing	2121123 - 2130000
27		ENGINE CONTROL	
271-002	0.60	Throttle control cable, removal	2121123 - 2130000
271-003	0.80	Throttle control cable, installation	2121123 - 2130000
29		Miscellaneous	
293-002	2.00	EGR cooler, pressure test	130101 - 140000
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
31		BATTERY	
311-002	0.30	Batteries, replacing	
36		OTHER ELECTRICAL EQUIPMENT	
366-064	2.00	V-ECU, MID 187, changing non-programmed ECU	130101 - 140000
366-066	1.50	V-ECU, MID 187, changing pre-programmed ECU	130101 - 140000
367-052	0.80	V-ECU, replacing	2121123 - 2130000
367-056	0.60	I-ECU, replacing	
367-056	0.50	I-ECU, replacing	
4		POWER TRANSMISSION	
41		CLUTCH; TORQUE CONVERTER	
414-004	5.50	Torque converter, removal	
414-005	4.50	Torque converter, installation	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-025	0.70	Transmission solenoid, replacing	
421-025	0.40	Transmission solenoid, replacing	
421-070	5.50	Transmission, removing	130101 - 140000
421-070	5.00	Transmission, removing	2121123 - 2130000
421-072	4.50	Transmission, installing	2121123 - 2130000
421-072	4.50	Transmission, installing	130101 - 140000
421-090	0.90	Oil filler pipe, replacing	2121123 - 2130000
421-090	1.00	Oil filler pipe, replacing	130101 - 140000
421-098	2.00	Powershift Transmission (option), oil pressures, checking	
421-101	2.00	Hydraulic control valve, reconditioning	

Op.no.	time (h)		Notes
43		GEARBOX,	
431-038	5.50	Gearbox, removing	2121123 - 2130000
431-038	5.50	Gearbox, removing	130101 - 140000
431-039	4.50	Gearbox, installing	2121123 - 2130000
431-039	4.50	Gearbox, installing	130101 - 140000
431-070	0.90	4WD control valve, reconditioning	
431-128	1.50	Transmission 2WD, oil pressures, checking	
431-129	1.50	Transmission 4WD, oil pressures, checking	
432-087	0.50	T-ECU, replacing	
45		PROPELLER SHAFT	
451-004	0.80	Propeller shaft, rear, replacing	
451-010	0.60	Propeller shaft, front, replacing	
46		FRONT AXLE; REAR AXLE	
460-002	1.75	Axle suspension, adjusting axial clearance	
461-002	2.00	Axle, removing	
461-003	2.00	Axle, installing	
463-002	1.75	Axle, removing	
463-003	2.00	Axle, installing	
5		BRAKE	
51		WHEEL BRAKE	
510-005	0.20	Service brakes, function check	
517-004	4.00	Brake disc, replacing both sides	
52		HYDRAULIC BRAKE SYSTEM	
520-003	0.80	Service brake pressure, checking	
520-037	0.20	Brake system, bleeding	
525-005	1.25	Foot brake valve, removal	
525-006	1.25	Foot brake valve, installation	
55		PARKING BRAKE	
550-001	1.00	Parking brake, replacing control cable	
550-023	0.20	Parking brake, function checking	
550-024	0.40	Parking brake cable, adjusting	
6		STEERING	
60		GENERAL	
600-001	0.70	Steering system, function check	

Op.no.	time (h)	Notes	
62		STEERING AXLE	
622-080	1.75	Toe - in, checking and adjusting	
64		STEERING	
641-001	0.40	Steering wheel, replacing	
641-026	0.70	Steering column, removing	2121123 - 2130000
641-026	0.80	Steering column, removing	130101 - 140000
641-027	0.70	Steering column, installing	2121123 - 2130000
641-027	0.70	Steering column, installing	130101 - 140000
643-012	0.30	Steering angle, checking and adjusting	
645-003	0.60	Steering system working pressure, checking	
645-004	0.50	Steering cylinder, removing	
645-005	1.25	Steering cylinder, installing	
645-022	1.00	Steering valve, removal	
645-023	1.75	Steering valve, installation	
645-077	0.40	Steering cylinder removed, reconditioning incl replacing bearings	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	0.60	Counterweight, removing	2121123 - 2130000
716-001	1.25	Counterweight, removing	130101 - 140000
716-002	0.60	Counterweight, fitting	2121123 - 2130000
716-002	1.00	Counterweight, fitting	130101 - 140000
716-004	0.30	Additional counterweight, removing	
716-005	0.30	Additional counterweight, installing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-002	0.50	Front wheel, removal	
771-003	0.40	Front wheel, installation	
771-004	0.50	Rear wheel, removing	
771-005	0.50	Rear wheel, installing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-001	0.40	Engine hood, removing	130101 - 140000
821-001	0.40	Engine hood, removing	2121123 - 2130000
821-002	0.40	Engine hood, installing	2121123 - 2130000
821-002	0.30	Engine hood, installing	130101 - 140000

Op.no.	time (h)		Notes
85		CAB INTERIOR/UPHOLSTERY	
851-010	0.70	Front console, removing	130101 - 140000
851-010	0.70	Front console, removing	2121123 - 2130000
851-011	0.60	Front console, installing	130101 - 140000
851-011	0.60	Front console, installing	2121123 - 2130000
852-003	0.40	Operator's seat, removing	
852-004	0.30	Operator's seat, installing	
87		AIR CONDITIONING UNIT	
870-005	0.40	Cab filter box, assembly	
874-007	0.40	Belt, replacing	130101 - 140000
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-005	0.20	Vacuum pump, connection	
900-006	0.10	Vacuum pump, disconnection	
900-031	1.75	V2-ECU, MID 249, changing non-programmed ECU	130101 - 140000
900-032	1.00	V2-ECU, MID 249, changing pre-programmed ECU	130101 - 140000
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
910-002	1.75	Hydraulic system, bleeding air	
911-013	1.50	Hydraulic oil cooler, removing	130101 - 140000
911-014	1.25	Hydraulic oil cooler, installing	130101 - 140000
912-044	1.75	Main valve block, loader, removal	
912-045	1.50	Main valve block, loader, installation	
912-047	2.50	Main valve block, backhoe, removal	
912-048	2.50	Main valve block, backhoe, installation	
912-129	0.20	Hydraulic cylinders, cleaning	
913-010	2.50	Hydraulic pump, replacing	
915-002	2.00	Control lever, changing	
916-002	0.30	Boom suspension accumulator, check and adjusting	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
925-001	1.50	Multi-purpose bucket cylinder, replacing	
925-002	1.25	Multi-purpose bucket cylinder, reconditioning	
925-011	1.50	Bucket assembly, replacing	
94		UNIT, LOAD HANDLING	
945-017	1.25	Lift cylinder, reconditioning	
945-018	0.80	Lift cylinder, removing	

Op.no.	time (h)	Notes
945-019	1.00	Lift cylinder, installing
945-020	1.25	Tilt cylinder, reconditioning
945-021	0.90	Tilt cylinder, removing
945-022	0.80	Tilt cylinder, installing
97		UNIT, DIGGING
971-087	1.50	Boom swing cylinder, removing
971-088	1.50	Boom swing cylinder, installing
971-096	1.25	Swing cylinder, renovation
972-021	0.70	Stabilisers, removal hydraulic cylinder
972-022	1.25	Stabilisers, reconditioning hydraulic cylinder
972-023	0.70	Stabilisers, installation hydraulic cylinder
974-015	1.75	Boom, changing bushing
974-031	0.90	Boom cylinder, removal
974-032	0.80	Boom cylinder, installation
974-033	1.25	Boom cylinder, renovation
975-014	1.00	Dipper arm cylinder, removal
975-015	1.00	Dipper arm cylinder, installation
975-016	1.25	Dipper arm cylinder, renovation
975-052	0.80	Extendible dipper arm cylinder, removal
975-054	0.80	Extendible dipper arm cylinder, installation
975-057	1.25	Extendible dipper arm cylinder, renovation
975-062	1.00	Bucket cylinder, removal
975-065	0.80	Bucket cylinder, installation
975-066	1.25	Bucket cylinder, renovation

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.60	Maintenance service, daily	
173-004	1.75	Maintenance service, every 50 hours	230101 - 240000
173-004	1.75	Maintenance service, every 50 hours	1202054 - 1210000
173-007	3.00	Maintenance service, every 250 hours	230101 - 240000
173-007	3.00	Maintenance service, every 250 hours	1202054 - 1210000
173-010	7.50	Maintenance service, every 500 hours	1202054 - 1210000
173-010	8.50	Maintenance service, every 500 hours	230101 - 240000
173-012	13.00	Maintenance service, every 1000 hours	1202234 - 1210000
173-012	17.00	Maintenance service, every 1000 hours	230101 - 240000
173-012	13.00	Maintenance service, every 1000 hours	1202054 - 1202233
173-013	14.00	Maintenance service, every 1500 hours	230101 - 240000
173-014	17.00	Maintenance service, every 2000 hours	230101 - 240000
173-014	16.00	Maintenance service, every 2000 hours	1202054 - 1210000
173-016	25.00	Maintenance service, every 3000 hours	230101 - 240000
173-022	16.00	Maintenance service, every 6000 hours	1202054 - 1210000
173-022	1.25	Maintenance service, every 6000 hours	230101 - 240000
173-036	7.50	Maintenance service, first 100 hours	1202054 - 1210000
173-036	8.50	Maintenance service, first 100 hours	230101 - 240000
173-042	0.90	Maintenance service, first 1000 hours	230101 - 240000
173-042	14.00	Maintenance service, first 1000 hours	1202054 - 1210000
19		GENERAL	
191-021	0.20	Service position 1	
191-022	0.20	Service position 2	
191-025	0.20	Service position 3	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.25	E-ECU, MID 128, changing non-programmed ECU	230101 - 240000
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	230101 - 240000
21		ENGINE	
210-070	6.00	Engine, removing	1202054 - 1210000
210-070	4.50	Engine, removing	230101 - 240000
210-072	6.00	Engine, installing	1202054 - 1210000
210-072	5.00	Engine, installing	230101 - 240000
210-083	0.60	Engine protection plates, removing and installing	230101 - 240000
212-071	0.50	Crankcase ventilation separator, replacing	230101 - 240000
214-012	2.50	Valves, adjusting	230101 - 240000

Op.no.	time (h)		Notes
214-012	2.50	Valves, adjusting	1202054 - 1210000
218-009	1.25	Engine mounts, replacing	1202054 - 1210000
22		LUBRICATING SYSTEM	
221-021	0.40	Lubrication oil pressure, checking	1202054 - 1210000
23		FUEL SYSTEM	
233-001	0.10	Fuel system, bleeding	1202054 - 1210000
233-001	0.10	Fuel system, bleeding	230101 - 240000
233-002	0.40	Feed pump, replacing	230101 - 240000
233-011	0.80	Fuel pump, removing	1202054 - 1210000
233-012	0.70	Fuel pump, installing	1202054 - 1210000
233-014	0.40	Fuel filters, replacing	1202054 - 1210000
233-014	0.50	Fuel filters, replacing	230101 - 240000
234-011	0.60	Fuel tank, removing	
234-012	0.60	Fuel tank, installing	
236-079	2.00	Injection pumps, changing	230101 - 240000
237-002	3.50	Injectors, replacing all	230101 - 240000
237-040	0.40	Overflow pipe, checking for leakage	230101 - 240000
239-001	0.60	Fuel cooler, replacing	230101 - 240000
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.50	Silencer, replacing	1202054 - 1210000
252-021	0.40	Exhaust pipe, flexible tube, replacing	1202054 - 1210000
252-023	0.60	Exhaust pipe, replacing	230101 - 240000
254-001	3.00	Diesel particulate filter, check and clean	230101 - 240000
256-010	0.40	Air cleaner, removing	230101 - 240000
256-010	0.40	Air cleaner, removing	1202054 - 1210000
256-011	0.40	Air cleaner, installing	1202054 - 1210000
256-011	0.30	Air cleaner, installing	230101 - 240000
258-023	0.90	Charge air cooler, removing	230101 - 240000
258-024	0.90	Charge air cooler, installing	230101 - 240000
26		COOLING SYSTEM	
261-011	2.00	Radiator, removing	1202054 - 1210000
261-011	1.75	Radiator, removing	230101 - 240000
261-012	0.50	Radiator hose upper, replacing	230101 - 240000
261-012	0.40	Radiator hose upper, replacing	1202054 - 1210000
261-013	1.25	Radiator, installing	230101 - 240000
261-013	0.80	Radiator, installing	1202054 - 1210000
261-014	0.80	Radiator hoses lower, replacing	230101 - 240000
261-014	0.80	Radiator hoses lower, replacing	1202054 - 1210000
261-018	0.70	Expansion tank, replacing	230101 - 240000
261-018	0.80	Expansion tank, replacing	1202054 - 1210000
263-012	0.80	Fan belt and/or alternator belt, replacing	230101 - 240000

Op.no.	time (h)		Notes
263-012	0.80	Fan belt and/or alternator belt, replacing	1202054 - 1210000
263-013	0.80	Fan belt and/or alternator belt, checking and adjusting tension	230101 - 240000
263-084	2.50	Fan shroud, replacing	230101 - 240000
263-084	2.00	Fan shroud, replacing	1202054 - 1210000
27		ENGINE CONTROL	
271-002	0.60	Throttle control cable, removal	1202054 - 1210000
271-003	0.80	Throttle control cable, installation	1202054 - 1210000
29		Miscellaneous	
293-002	2.00	EGR cooler, pressure test	230101 - 240000

3 ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS

31		BATTERY	
311-002	0.30	Batteries, replacing	
36		OTHER ELECTRICAL EQUIPMENT	
366-064	2.00	V-ECU, MID 187, changing non-programmed ECU	230101 - 240000
366-066	1.50	V-ECU, MID 187, changing pre-programmed ECU	230101 - 240000
367-052	0.80	V-ECU, replacing	1202054 - 1210000
367-056	0.60	I-ECU, replacing	
367-056	0.50	I-ECU, replacing	

4 POWER TRANSMISSION

41		CLUTCH; TORQUE CONVERTER	
414-004	5.50	Torque converter, removal	
414-005	4.50	Torque converter, installation	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-025	0.70	Transmission solenoid, replacing	
421-025	0.40	Transmission solenoid, replacing	
421-070	5.50	Transmission, removing	230101 - 240000
421-070	5.00	Transmission, removing	1202054 - 1210000
421-072	4.50	Transmission, installing	1202054 - 1210000
421-072	4.50	Transmission, installing	230101 - 240000
421-090	0.90	Oil filler pipe, replacing	1202054 - 1210000
421-090	1.00	Oil filler pipe, replacing	230101 - 240000
421-098	2.00	Powershift Transmission (option), oil pressures, checking	1202054 - 1202233

Op.no.	time (h)		Notes
421-098	2.00	Powershift Transmission (option), oil pressures, checking	1202234 - 1210000
421-098	2.00	Powershift Transmission (option), oil pressures, checking	230101 - 240000
421-101	2.00	Hydraulic control valve, reconditioning	
43		GEARBOX,	
431-038	5.50	Gearbox, removing	1202054 - 1210000
431-038	5.50	Gearbox, removing	230101 - 240000
431-039	4.50	Gearbox, installing	1202054 - 1210000
431-039	4.50	Gearbox, installing	230101 - 240000
431-070	0.90	4WD control valve, reconditioning	
431-128	1.50	Transmission 2WD, oil pressures, checking	1202234 - 1210000
431-128	1.50	Transmission 2WD, oil pressures, checking	230101 - 240000
431-128	1.50	Transmission 2WD, oil pressures, checking	1202054 - 1202233
431-129	1.50	Transmission 4WD, oil pressures, checking	1202054 - 1202233
431-129	1.50	Transmission 4WD, oil pressures, checking	1202234 - 1210000
431-129	1.50	Transmission 4WD, oil pressures, checking	230101 - 240000
432-087	0.50	T-ECU, replacing	
45		PROPELLER SHAFT	
451-004	0.80	Propeller shaft, rear, replacing	
451-010	0.60	Propeller shaft, front, replacing	
46		FRONT AXLE; REAR AXLE	
460-002	1.75	Axle suspension, adjusting axial clearance	
461-002	2.00	Axle, removing	
461-003	2.00	Axle, installing	
463-002	1.75	Axle, removing	
463-003	2.00	Axle, installing	
5		BRAKE	
51		WHEEL BRAKE	
510-005	0.20	Service brakes, function check	
517-004	4.00	Brake disc, replacing both sides	
52		HYDRAULIC BRAKE SYSTEM	
520-003	0.80	Service brake pressure, checking	
520-037	0.20	Brake system, bleeding	
525-005	1.25	Foot brake valve, removal	
525-006	1.25	Foot brake valve, installation	
55		PARKING BRAKE	
550-001	1.00	Parking brake, replacing control cable	

Op.no.	time (h)		Notes
550-023	0.20	Parking brake, function checking	1202054 - 1202233
550-023	0.20	Parking brake, function checking	1202234 - 1210000
550-023	0.20	Parking brake, function checking	230101 - 240000
550-024	0.40	Parking brake cable, adjusting	

6**STEERING****60****GENERAL**

600-001	0.70	Steering system, function check	
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62**STEERING AXLE**

622-080	1.75	Toe - in, checking and adjusting	
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64**STEERING**

641-001	0.40	Steering wheel, replacing	
641-026	0.70	Steering column, removing	1202054 - 1210000
641-026	0.80	Steering column, removing	230101 - 240000
641-027	0.70	Steering column, installing	1202054 - 1210000
641-027	0.70	Steering column, installing	230101 - 240000
643-012	0.30	Steering angle, checking and adjusting	
645-003	0.60	Steering system working pressure, checking	
645-004	0.50	Steering cylinder, removing	
645-005	1.25	Steering cylinder, installing	
645-022	1.00	Steering valve, removal	
645-023	1.75	Steering valve, installation	
645-077	0.40	Steering cylinder removed, reconditioning incl replacing bearings	

7**FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT****71****FRAME**

716-001	0.60	Counterweight, removing	1202054 - 1210000
716-001	1.25	Counterweight, removing	230101 - 240000
716-002	0.60	Counterweight, fitting	1202054 - 1210000
716-002	1.00	Counterweight, fitting	230101 - 240000
716-004	0.30	Additional counterweight, removing	
716-005	0.30	Additional counterweight, installing	

77**WHEELS; TRACKS; TYRE; HUB; DRUM**

771-002	0.50	Front wheel, removal	
771-003	0.40	Front wheel, installation	
771-004	0.50	Rear wheel, removing	
771-005	0.50	Rear wheel, installing	

Op.no.	time (h)		Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-001	0.40	Engine hood, removing	230101 - 240000
821-001	0.40	Engine hood, removing	1202054 - 1210000
821-002	0.40	Engine hood, installing	1202054 - 1210000
821-002	0.30	Engine hood, installing	230101 - 240000
85		CAB INTERIOR/UPHOLSTERY	
851-010	0.70	Front console, removing	230101 - 240000
851-010	0.70	Front console, removing	1202054 - 1210000
851-011	0.60	Front console, installing	230101 - 240000
851-011	0.60	Front console, installing	1202054 - 1210000
852-003	0.40	Operator's seat, removing	
852-004	0.30	Operator's seat, installing	
87		AIR CONDITIONING UNIT	
870-005	0.40	Cab filter box, assembly	
874-007	0.40	Belt, replacing	230101 - 240000
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-005	0.20	Vacuum pump, connection	
900-006	0.10	Vacuum pump, disconnection	
900-031	1.75	V2-ECU, MID 249, changing non-programmed ECU	230101 - 240000
900-032	1.00	V2-ECU, MID 249, changing pre-programmed ECU	230101 - 240000
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
910-002	1.75	Hydraulic system, bleeding air	
911-013	1.50	Hydraulic oil cooler, removing	230101 - 240000
911-014	1.25	Hydraulic oil cooler, installing	230101 - 240000
912-038	0.50	Hose rupture valve, checking	
912-044	1.75	Main valve block, loader, removal	
912-045	1.50	Main valve block, loader, installation	
912-047	2.50	Main valve block, backhoe, removal	
912-048	2.50	Main valve block, backhoe, installation	
912-129	0.20	Hydraulic cylinders, cleaning	
913-010	2.50	Hydraulic pump, replacing	
915-002	2.00	Control lever, changing	

Op.no.	time (h)	Notes
916-002	0.30	Boom suspension accumulator, check and adjusting
92		MECHANICAL EQUIPMENT/ATTACHMENT
925-001	1.50	Multi-purpose bucket cylinder, replacing
925-002	1.25	Multi-purpose bucket cylinder, reconditioning
925-011	1.50	Bucket assembly, replacing
94		UNIT, LOAD HANDLING
945-017	1.25	Lift cylinder, reconditioning
945-018	0.80	Lift cylinder, removing
945-019	1.00	Lift cylinder, installing
945-020	1.25	Tilt cylinder, reconditioning
945-021	0.90	Tilt cylinder, removing
945-022	0.80	Tilt cylinder, installing
97		UNIT, DIGGING
971-087	1.50	Boom swing cylinder, removing
971-088	1.50	Boom swing cylinder, installing
971-096	1.25	Swing cylinder, renovation
972-013	0.30	Stabilisers, adjusting wearpads
972-021	1.25	Stabilisers, removal hydraulic cylinder
972-022	1.25	Stabilisers, reconditioning hydraulic cylinder
972-023	1.25	Stabilisers, installation hydraulic cylinder
972-090	0.50	Stabiliser wear pads, replacing
974-015	1.75	Boom, changing bushing
974-031	0.90	Boom cylinder, removal
974-032	0.80	Boom cylinder, installation
974-033	1.25	Boom cylinder, renovation
975-014	1.00	Dipper arm cylinder, removal
975-015	1.00	Dipper arm cylinder, installation
975-016	1.25	Dipper arm cylinder, renovation
975-052	0.80	Extendible dipper arm cylinder, removal
975-054	0.80	Extendible dipper arm cylinder, installation
975-057	1.25	Extendible dipper arm cylinder, renovation
975-062	1.00	Bucket cylinder, removal
975-065	0.80	Bucket cylinder, installation
975-066	1.25	Bucket cylinder, renovation

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.60	Maintenance service, daily	
173-004	1.75	Maintenance service, every 50 hours	330101 - 340000
173-004	1.75	Maintenance service, every 50 hours	2326013 - 2330000
173-007	3.00	Maintenance service, every 250 hours	330101 - 340000
173-007	3.00	Maintenance service, every 250 hours	2326013 - 2330000
173-010	7.50	Maintenance service, every 500 hours	2326013 - 2330000
173-010	8.50	Maintenance service, every 500 hours	330101 - 340000
173-012	13.00	Maintenance service, every 1000 hours	2326013 - 2330000
173-012	17.00	Maintenance service, every 1000 hours	330101 - 340000
173-013	14.00	Maintenance service, every 1500 hours	330101 - 340000
173-014	17.00	Maintenance service, every 2000 hours	330101 - 340000
173-014	16.00	Maintenance service, every 2000 hours	2326013 - 2330000
173-016	25.00	Maintenance service, every 3000 hours	330101 - 340000
173-022	16.00	Maintenance service, every 6000 hours	2326013 - 2330000
173-022	1.25	Maintenance service, every 6000 hours	330101 - 340000
173-036	7.50	Maintenance service, first 100 hours	2326013 - 2330000
173-036	8.50	Maintenance service, first 100 hours	330101 - 340000
173-042	0.90	Maintenance service, first 1000 hours	330101 - 340000
173-042	14.00	Maintenance service, first 1000 hours	2326013 - 2330000
19		GENERAL	
191-021	0.20	Service position 1	
191-022	0.20	Service position 2	
191-025	0.20	Service position 3	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.25	E-ECU, MID 128, changing non-programmed ECU	330101 - 340000
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	330101 - 340000
21		ENGINE	
210-070	6.00	Engine, removing	2326013 - 2330000
210-070	4.50	Engine, removing	330101 - 340000
210-072	6.00	Engine, installing	2326013 - 2330000
210-072	5.00	Engine, installing	330101 - 340000
210-083	0.60	Engine protection plates, removing and installing	330101 - 340000
212-071	0.50	Crankcase ventilation separator, replacing	330101 - 340000
214-012	2.50	Valves, adjusting	330101 - 340000
214-012	2.50	Valves, adjusting	2326013 - 2330000

Op.no.	time (h)		Notes
218-009	1.25	Engine mounts, replacing	2326013 - 2330000
22		LUBRICATING SYSTEM	
221-021	0.40	Lubrication oil pressure, checking	2326013 - 2330000
23		FUEL SYSTEM	
233-001	0.10	Fuel system, bleeding	2326013 - 2330000
233-001	0.10	Fuel system, bleeding	330101 - 340000
233-002	0.40	Feed pump, replacing	330101 - 340000
233-011	0.80	Fuel pump, removing	2326013 - 2330000
233-012	0.70	Fuel pump, installing	2326013 - 2330000
233-014	0.40	Fuel filters, replacing	2326013 - 2330000
233-014	0.50	Fuel filters, replacing	330101 - 340000
234-011	0.60	Fuel tank, removing	
234-012	0.60	Fuel tank, installing	
236-079	2.00	Injection pumps, changing	330101 - 340000
237-002	3.50	Injectors, replacing all	330101 - 340000
237-040	0.40	Overflow pipe, checking for leakage	330101 - 340000
239-001	0.60	Fuel cooler, replacing	330101 - 340000
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.50	Silencer, replacing	2326013 - 2330000
252-021	0.40	Exhaust pipe, flexible tube, replacing	2326013 - 2330000
252-023	0.60	Exhaust pipe, replacing	330101 - 340000
254-001	3.00	Diesel particulate filter, check and clean	330101 - 340000
256-010	0.40	Air cleaner, removing	330101 - 340000
256-010	0.40	Air cleaner, removing	2326013 - 2330000
256-011	0.30	Air cleaner, installing	330101 - 340000
256-011	0.40	Air cleaner, installing	2326013 - 2330000
258-023	0.90	Charge air cooler, removing	330101 - 340000
258-024	0.90	Charge air cooler, installing	330101 - 340000
26		COOLING SYSTEM	
261-011	2.00	Radiator, removing	2326013 - 2330000
261-011	1.75	Radiator, removing	330101 - 340000
261-012	0.50	Radiator hose upper, replacing	330101 - 340000
261-012	0.40	Radiator hose upper, replacing	2326013 - 2330000
261-013	1.25	Radiator, installing	330101 - 340000
261-013	0.80	Radiator, installing	2326013 - 2330000
261-014	0.80	Radiator hoses lower, replacing	330101 - 340000
261-014	0.80	Radiator hoses lower, replacing	2326013 - 2330000
261-018	0.70	Expansion tank, replacing	330101 - 340000
261-018	0.80	Expansion tank, replacing	2326013 - 2330000
263-012	0.80	Fan belt and/or alternator belt, replacing	330101 - 340000
263-012	0.80	Fan belt and/or alternator belt, replacing	2326013 - 2330000

Op.no.	time (h)		Notes
263-013	0.80	Fan belt and/or alternator belt, checking and adjusting tension	330101 - 340000
263-084	2.50	Fan shroud, replacing	330101 - 340000
263-084	2.00	Fan shroud, replacing	2326013 - 2330000
27		ENGINE CONTROL	
271-002	0.60	Throttle control cable, removal	2326013 - 2330000
271-003	0.80	Throttle control cable, installation	2326013 - 2330000
29		Miscellaneous	
293-002	2.00	EGR cooler, pressure test	330101 - 340000
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
302-130	0.50	Loader lever, electrical measuring	
31		BATTERY	
311-002	0.30	Batteries, replacing	
36		OTHER ELECTRICAL EQUIPMENT	
366-064	2.00	V-ECU, MID 187, changing non-programmed ECU	330101 - 340000
366-066	1.50	V-ECU, MID 187, changing pre-programmed ECU	330101 - 340000
367-052	0.80	V-ECU, replacing	2326013 - 2330000
367-056	0.60	I-ECU, replacing	
367-056	0.50	I-ECU, replacing	
4		POWER TRANSMISSION	
41		CLUTCH; TORQUE CONVERTER	
414-004	5.50	Torque converter, removal	
414-005	4.50	Torque converter, installation	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-025	0.70	Transmission solenoid, replacing	
421-025	0.40	Transmission solenoid, replacing	
421-070	5.50	Transmission, removing	330101 - 340000
421-070	5.00	Transmission, removing	2326013 - 2330000
421-072	4.50	Transmission, installing	2326013 - 2330000
421-072	4.50	Transmission, installing	330101 - 340000
421-090	0.90	Oil filler pipe, replacing	2326013 - 2330000
421-090	1.00	Oil filler pipe, replacing	330101 - 340000

Op.no.	time (h)		Notes
421-098	2.00	Powershift Transmission (option), oil pressures, checking	
421-101	2.00	Hydraulic control valve, reconditioning	
43		GEARBOX,	
431-038	5.50	Gearbox, removing	2326013 - 2330000
431-038	5.50	Gearbox, removing	330101 - 340000
431-039	4.50	Gearbox, installing	2326013 - 2330000
431-039	4.50	Gearbox, installing	330101 - 340000
431-070	0.90	4WD control valve, reconditioning	
431-129	1.50	Transmission 4WD, oil pressures, checking	
432-087	0.50	T-ECU, replacing	
45		PROPELLER SHAFT	
451-004	0.80	Propeller shaft, rear, replacing	
451-010	0.60	Propeller shaft, front, replacing	
46		FRONT AXLE; REAR AXLE	
460-002	1.75	Axle suspension, adjusting axial clearance	
461-002	2.00	Axle, removing	
461-003	2.00	Axle, installing	
463-002	1.75	Axle, removing	
463-003	2.00	Axle, installing	
5		BRAKE	
51		WHEEL BRAKE	
510-005	0.20	Service brakes, function check	
517-004	4.00	Brake disc, replacing both sides	
52		HYDRAULIC BRAKE SYSTEM	
520-003	0.80	Service brake pressure, checking	
520-037	0.20	Brake system, bleeding	
525-005	1.25	Foot brake valve, removal	
525-006	1.25	Foot brake valve, installation	
55		PARKING BRAKE	
550-001	1.00	Parking brake, replacing control cable	
550-023	0.20	Parking brake, function checking	
550-024	0.40	Parking brake cable, adjusting	
6		STEERING	
60		GENERAL	
600-001	0.70	Steering system, function check	

Op.no.	time (h)		Notes
62		STEERING AXLE	
622-080	1.75	Toe - in, checking and adjusting	
64		STEERING	
641-001	0.40	Steering wheel, replacing	
641-026	0.70	Steering column, removing	2326013 - 2330000
641-026	0.80	Steering column, removing	330101 - 340000
641-027	0.70	Steering column, installing	2326013 - 2330000
641-027	0.70	Steering column, installing	330101 - 340000
643-012	0.30	Steering angle, checking and adjusting	
645-003	0.60	Steering system working pressure, checking	
645-004	0.50	Steering cylinder, removing	
645-005	1.25	Steering cylinder, installing	
645-022	1.00	Steering valve, removal	
645-023	1.75	Steering valve, installation	
645-077	0.40	Steering cylinder removed, reconditioning incl replacing bearings	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	0.60	Counterweight, removing	2326013 - 2330000
716-001	1.25	Counterweight, removing	330101 - 340000
716-002	0.60	Counterweight, fitting	2326013 - 2330000
716-002	1.00	Counterweight, fitting	330101 - 340000
716-004	0.30	Additional counterweight, removing	
716-005	0.30	Additional counterweight, installing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-002	0.50	Front wheel, removal	
771-003	0.40	Front wheel, installation	
771-004	0.50	Rear wheel, removing	
771-005	0.50	Rear wheel, installing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-001	0.40	Engine hood, removing	330101 - 340000
821-001	0.40	Engine hood, removing	2326013 - 2330000
821-002	0.40	Engine hood, installing	2326013 - 2330000
821-002	0.30	Engine hood, installing	330101 - 340000

Op.no.	time (h)		Notes
85		CAB INTERIOR/UPHOLSTERY	
851-010	0.70	Front console, removing	2326013 - 2330000
851-010	0.70	Front console, removing	330101 - 340000
851-011	0.60	Front console, installing	330101 - 340000
851-011	0.60	Front console, installing	2326013 - 2330000
852-003	0.40	Operator's seat, removing	
852-004	0.30	Operator's seat, installing	
87		AIR CONDITIONING UNIT	
870-005	0.40	Cab filter box, assembly	
874-007	0.40	Belt, replacing	330101 - 340000
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-005	0.20	Vacuum pump, connection	
900-006	0.10	Vacuum pump, disconnection	
900-031	1.75	V2-ECU, MID 249, changing non-programmed ECU	330101 - 340000
900-032	1.00	V2-ECU, MID 249, changing pre-programmed ECU	330101 - 340000
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
910-002	2.00	Hydraulic system, bleeding air	
911-013	1.50	Hydraulic oil cooler, removing	330101 - 340000
911-014	1.25	Hydraulic oil cooler, installing	330101 - 340000
912-041	3.00	Main valve block, removal	
912-041	3.00	Main valve block, removal	
912-042	3.00	Main valve block, installation	
912-042	3.00	Main valve block, installation	
912-129	0.20	Hydraulic cylinders, cleaning	
913-010	3.50	Hydraulic pump, replacing	330101 - 340000
913-010	3.50	Hydraulic pump, replacing	2326013 - 2330000
913-031	0.70	Flow regulation valve, changing	2326013 - 2330000
913-031	0.70	Flow regulation valve, changing	330101 - 340000
914-031	0.70	Servo pump, removal	2326013 - 2330000
914-032	0.50	Servo pump, installation	2326013 - 2330000
914-058	2.50	Servo valve, replacing	
915-002	1.75	Control lever, changing	
915-002	2.00	Control lever, changing	
916-002	0.30	Boom suspension accumulator, check and adjusting	

Op.no.	time (h)	Notes
92		MECHANICAL EQUIPMENT/ATTACHMENT
925-001	1.50	Multi-purpose bucket cylinder, replacing
925-002	1.25	Multi-purpose bucket cylinder, reconditioning
925-011	1.50	Bucket assembly, replacing
94		UNIT, LOAD HANDLING
945-017	1.25	Lift cylinder, reconditioning
945-018	0.80	Lift cylinder, removing
945-019	1.00	Lift cylinder, installing
945-020	1.25	Tilt cylinder, reconditioning
945-021	0.90	Tilt cylinder, removing
945-022	0.80	Tilt cylinder, installing
97		UNIT, DIGGING
971-087	1.50	Boom swing cylinder, removing
971-088	1.50	Boom swing cylinder, installing
971-096	1.25	Swing cylinder, renovation
972-021	0.70	Stabilisers, removal hydraulic cylinder
972-022	1.25	Stabilisers, reconditioning hydraulic cylinder
972-023	0.70	Stabilisers, installation hydraulic cylinder
974-015	1.75	Boom, changing bushing
974-031	0.90	Boom cylinder, removal
974-032	0.80	Boom cylinder, installation
974-033	1.25	Boom cylinder, renovation
975-014	1.00	Dipper arm cylinder, removal
975-015	1.00	Dipper arm cylinder, installation
975-016	1.25	Dipper arm cylinder, renovation
975-052	0.80	Extendible dipper arm cylinder, removal
975-054	0.80	Extendible dipper arm cylinder, installation
975-057	1.25	Extendible dipper arm cylinder, renovation
975-062	1.00	Bucket cylinder, removal
975-065	0.80	Bucket cylinder, installation
975-066	1.25	Bucket cylinder, renovation

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.60	Maintenance service, daily	
173-004	1.75	Maintenance service, every 50 hours	430101 - 440000
173-004	1.75	Maintenance service, every 50 hours	1415047 - 1420000
173-007	3.00	Maintenance service, every 250 hours	430101 - 440000
173-007	3.00	Maintenance service, every 250 hours	1415047 - 1420000
173-010	7.50	Maintenance service, every 500 hours	1415047 - 1420000
173-010	8.50	Maintenance service, every 500 hours	430101 - 440000
173-012	13.00	Maintenance service, every 1000 hours	1415372 - 1420000
173-012	17.00	Maintenance service, every 1000 hours	430101 - 440000
173-012	13.00	Maintenance service, every 1000 hours	1415047 - 1415371
173-013	14.00	Maintenance service, every 1500 hours	430101 - 440000
173-014	17.00	Maintenance service, every 2000 hours	430101 - 440000
173-014	16.00	Maintenance service, every 2000 hours	1415047 - 1420000
173-016	25.00	Maintenance service, every 3000 hours	430101 - 440000
173-022	16.00	Maintenance service, every 6000 hours	1415047 - 1420000
173-022	1.25	Maintenance service, every 6000 hours	430101 - 440000
173-036	7.50	Maintenance service, first 100 hours	1415047 - 1420000
173-036	8.50	Maintenance service, first 100 hours	430101 - 440000
173-042	0.90	Maintenance service, first 1000 hours	430101 - 440000
173-042	14.00	Maintenance service, first 1000 hours	1415047 - 1420000
19		GENERAL	
191-021	0.20	Service position 1	
191-022	0.20	Service position 2	
191-025	0.20	Service position 3	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.25	E-ECU, MID 128, changing non-programmed ECU	430101 - 440000
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	430101 - 440000
21		ENGINE	
210-070	6.00	Engine, removing	1415047 - 1420000
210-070	4.50	Engine, removing	430101 - 440000
210-072	6.00	Engine, installing	1415047 - 1420000
210-072	5.00	Engine, installing	430101 - 440000
210-083	0.60	Engine protection plates, removing and installing	430101 - 440000
212-071	0.50	Crankcase ventilation separator, replacing	430101 - 440000
214-012	2.50	Valves, adjusting	430101 - 440000

Op.no.	time (h)		Notes
214-012	2.50	Valves, adjusting	1415047 - 1420000
218-009	1.25	Engine mounts, replacing	1415047 - 1420000
22		LUBRICATING SYSTEM	
221-021	0.40	Lubrication oil pressure, checking	1415047 - 1420000
23		FUEL SYSTEM	
233-001	0.10	Fuel system, bleeding	1415047 - 1420000
233-001	0.10	Fuel system, bleeding	430101 - 440000
233-002	0.40	Feed pump, replacing	430101 - 440000
233-011	0.80	Fuel pump, removing	1415047 - 1420000
233-012	0.70	Fuel pump, installing	1415047 - 1420000
233-014	0.40	Fuel filters, replacing	1415047 - 1420000
233-014	0.50	Fuel filters, replacing	430101 - 440000
234-011	0.60	Fuel tank, removing	
234-012	0.60	Fuel tank, installing	
236-079	2.00	Injection pumps, changing	430101 - 440000
237-002	3.50	Injectors, replacing all	430101 - 440000
237-040	0.40	Overflow pipe, checking for leakage	430101 - 440000
239-001	0.60	Fuel cooler, replacing	430101 - 440000
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.50	Silencer, replacing	1415047 - 1420000
252-021	0.40	Exhaust pipe, flexible tube, replacing	1415047 - 1420000
252-023	0.60	Exhaust pipe, replacing	430101 - 440000
254-001	3.00	Diesel particulate filter, check and clean	430101 - 440000
256-010	0.40	Air cleaner, removing	430101 - 440000
256-010	0.40	Air cleaner, removing	1415047 - 1420000
256-011	0.40	Air cleaner, installing	1415047 - 1420000
256-011	0.30	Air cleaner, installing	430101 - 440000
258-023	0.90	Charge air cooler, removing	430101 - 440000
258-024	0.90	Charge air cooler, installing	430101 - 440000
26		COOLING SYSTEM	
261-011	2.00	Radiator, removing	1415047 - 1420000
261-011	1.75	Radiator, removing	430101 - 440000
261-012	0.50	Radiator hose upper, replacing	430101 - 440000
261-012	0.40	Radiator hose upper, replacing	1415047 - 1420000
261-013	1.25	Radiator, installing	430101 - 440000
261-013	0.80	Radiator, installing	1415047 - 1420000
261-014	0.80	Radiator hoses lower, replacing	430101 - 440000
261-014	0.80	Radiator hoses lower, replacing	1415047 - 1420000
261-018	0.70	Expansion tank, replacing	430101 - 440000
261-018	0.80	Expansion tank, replacing	1415047 - 1420000
263-012	0.80	Fan belt and/or alternator belt, replacing	430101 - 440000

Op.no.	time (h)		Notes
263-012	0.80	Fan belt and/or alternator belt, replacing	1415047 - 1420000
263-013	0.80	Fan belt and/or alternator belt, checking and adjusting tension	430101 - 440000
263-084	2.50	Fan shroud, replacing	430101 - 440000
263-084	2.00	Fan shroud, replacing	1415047 - 1420000
27		ENGINE CONTROL	
271-002	0.60	Throttle control cable, removal	1415047 - 1420000
271-003	0.80	Throttle control cable, installation	1415047 - 1420000
29		Miscellaneous	
293-002	2.00	EGR cooler, pressure test	430101 - 440000
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
302-130	0.50	Loader lever, electrical measuring	
31		BATTERY	
311-002	0.30	Batteries, replacing	
36		OTHER ELECTRICAL EQUIPMENT	
366-064	2.00	V-ECU, MID 187, changing non-programmed ECU	430101 - 440000
366-066	1.50	V-ECU, MID 187, changing pre-programmed ECU	430101 - 440000
367-052	0.80	V-ECU, replacing	1415047 - 1420000
367-056	0.60	I-ECU, replacing	
367-056	0.50	I-ECU, replacing	
4		POWER TRANSMISSION	
41		CLUTCH; TORQUE CONVERTER	
414-004	5.50	Torque converter, removal	
414-005	4.50	Torque converter, installation	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-025	0.70	Transmission solenoid, replacing	
421-025	0.40	Transmission solenoid, replacing	
421-070	5.50	Transmission, removing	430101 - 440000
421-070	5.00	Transmission, removing	1415047 - 1420000
421-072	4.50	Transmission, installing	1415047 - 1420000
421-072	4.50	Transmission, installing	430101 - 440000
421-090	0.90	Oil filler pipe, replacing	1415047 - 1420000
421-090	1.00	Oil filler pipe, replacing	430101 - 440000

Op.no.	time (h)		Notes
421-098	2.00	Powershift Transmission (option), oil pressures, checking	1415047 - 1415371
421-098	2.00	Powershift Transmission (option), oil pressures, checking	1415372 - 1420000
421-098	2.00	Powershift Transmission (option), oil pressures, checking	430101 - 440000
421-101	2.00	Hydraulic control valve, reconditioning	
43		GEARBOX,	
431-038	5.50	Gearbox, removing	1415047 - 1420000
431-038	5.50	Gearbox, removing	430101 - 440000
431-039	4.50	Gearbox, installing	1415047 - 1420000
431-039	4.50	Gearbox, installing	430101 - 440000
431-070	0.90	4WD control valve, reconditioning	
431-129	1.50	Transmission 4WD, oil pressures, checking	1415047 - 1415371
431-129	1.50	Transmission 4WD, oil pressures, checking	1415372 - 1420000
431-129	1.50	Transmission 4WD, oil pressures, checking	430101 - 440000
432-087	0.50	T-ECU, replacing	
45		PROPELLER SHAFT	
451-004	0.80	Propeller shaft, rear, replacing	
451-010	0.60	Propeller shaft, front, replacing	
46		FRONT AXLE; REAR AXLE	
460-002	1.75	Axle suspension, adjusting axial clearance	
461-002	2.00	Axle, removing	
461-003	2.00	Axle, installing	
463-002	1.75	Axle, removing	
463-003	2.00	Axle, installing	
5		BRAKE	
51		WHEEL BRAKE	
510-005	0.20	Service brakes, function check	
517-004	4.00	Brake disc, replacing both sides	
52		HYDRAULIC BRAKE SYSTEM	
520-003	0.80	Service brake pressure, checking	
520-037	0.20	Brake system, bleeding	
525-005	1.25	Foot brake valve, removal	
525-006	1.25	Foot brake valve, installation	
55		PARKING BRAKE	
550-001	1.00	Parking brake, replacing control cable	
550-023	0.20	Parking brake, function checking	1415047 - 1415371
550-023	0.20	Parking brake, function checking	1415372 - 1420000

Op.no.	time (h)		Notes
550-023	0.20	Parking brake, function checking	430101 - 440000
550-024	0.40	Parking brake cable, adjusting	
6		STEERING	
60		GENERAL	
600-001	0.70	Steering system, function check	
62		STEERING AXLE	
622-080	1.75	Toe - in, checking and adjusting	
622-080	1.75	Toe - in, checking and adjusting	
64		STEERING	
641-001	0.40	Steering wheel, replacing	
641-026	0.70	Steering column, removing	1415047 - 1420000
641-026	0.80	Steering column, removing	430101 - 440000
641-027	0.70	Steering column, installing	1415047 - 1420000
641-027	0.70	Steering column, installing	430101 - 440000
643-012	0.30	Steering angle, checking and adjusting	
645-003	0.60	Steering system working pressure, checking	
645-004	0.50	Steering cylinder, removing	
645-005	1.25	Steering cylinder, installing	
645-022	1.00	Steering valve, removal	
645-023	1.75	Steering valve, installation	
645-077	0.40	Steering cylinder removed, reconditioning incl replacing bearings	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	0.60	Counterweight, removing	1415047 - 1420000
716-001	1.25	Counterweight, removing	430101 - 440000
716-002	0.60	Counterweight, fitting	1415047 - 1420000
716-002	1.00	Counterweight, fitting	430101 - 440000
716-004	0.30	Additional counterweight, removing	
716-005	0.30	Additional counterweight, installing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-002	0.50	Front wheel, removal	
771-003	0.40	Front wheel, installation	
771-004	0.50	Rear wheel, removing	
771-005	0.50	Rear wheel, installing	

Op.no.	time (h)		Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-001	0.40	Engine hood, removing	430101 - 440000
821-001	0.40	Engine hood, removing	1415047 - 1420000
821-002	0.40	Engine hood, installing	1415047 - 1420000
821-002	0.30	Engine hood, installing	430101 - 440000
85		CAB INTERIOR/UPHOLSTERY	
851-010	0.70	Front console, removing	1415047 - 1420000
851-010	0.70	Front console, removing	430101 - 440000
851-011	0.60	Front console, installing	430101 - 440000
851-011	0.60	Front console, installing	1415047 - 1420000
852-003	0.40	Operator's seat, removing	
852-004	0.30	Operator's seat, installing	
87		AIR CONDITIONING UNIT	
870-005	0.40	Cab filter box, assembly	
874-007	0.40	Belt, replacing	430101 - 440000
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-005	0.20	Vacuum pump, connection	
900-006	0.10	Vacuum pump, disconnection	
900-031	1.75	V2-ECU, MID 249, changing non-programmed ECU	430101 - 440000
900-032	1.00	V2-ECU, MID 249, changing pre-programmed ECU	430101 - 440000
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
910-002	2.00	Hydraulic system, bleeding air	
911-013	1.50	Hydraulic oil cooler, removing	430101 - 440000
911-014	1.25	Hydraulic oil cooler, installing	430101 - 440000
912-038	0.50	Hose rupture valve, checking	
912-041	3.00	Main valve block, removal	
912-041	3.00	Main valve block, removal	
912-042	3.00	Main valve block, installation	
912-042	3.00	Main valve block, installation	
912-129	0.20	Hydraulic cylinders, cleaning	
913-010	3.50	Hydraulic pump, replacing	1415047 - 1420000
913-010	3.50	Hydraulic pump, replacing	430101 - 440000

Op.no.	time (h)		Notes
913-031	0.70	Flow regulation valve, changing	1415047 - 1420000
913-031	0.70	Flow regulation valve, changing	430101 - 440000
914-031	0.70	Servo pump, removal	1415047 - 1420000
914-032	0.50	Servo pump, installation	1415047 - 1420000
914-058	2.50	Servo valve, replacing	
915-002	1.75	Control lever, changing	
915-002	2.00	Control lever, changing	
916-002	0.30	Boom suspension accumulator, check and adjusting	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
925-001	1.50	Multi-purpose bucket cylinder, replacing	
925-002	1.25	Multi-purpose bucket cylinder, reconditioning	
925-011	1.50	Bucket assembly, replacing	
94		UNIT, LOAD HANDLING	
945-017	1.25	Lift cylinder, reconditioning	
945-018	0.80	Lift cylinder, removing	
945-019	1.00	Lift cylinder, installing	
945-020	1.25	Tilt cylinder, reconditioning	
945-021	0.90	Tilt cylinder, removing	
945-022	0.80	Tilt cylinder, installing	
97		UNIT, DIGGING	
971-087	1.50	Boom swing cylinder, removing	
971-088	1.50	Boom swing cylinder, installing	
971-096	1.25	Swing cylinder, renovation	
972-013	0.30	Stabilisers, adjusting wearpads	
972-021	1.25	Stabilisers, removal hydraulic cylinder	
972-022	1.25	Stabilisers, reconditioning hydraulic cylinder	
972-023	1.25	Stabilisers, installation hydraulic cylinder	
972-090	0.50	Stabiliser wear pads, replacing	
974-015	1.75	Boom, changing bushing	
974-031	0.90	Boom cylinder, removal	
974-032	0.80	Boom cylinder, installation	
974-033	1.25	Boom cylinder, renovation	
974-084	0.40	Boom lock cylinder, replacing	
975-014	1.00	Dipper arm cylinder, removal	
975-015	1.00	Dipper arm cylinder, installation	
975-016	1.25	Dipper arm cylinder, renovation	
975-052	0.80	Extendible dipper arm cylinder, removal	
975-054	0.80	Extendible dipper arm cylinder, installation	
975-057	1.25	Extendible dipper arm cylinder, renovation	
975-062	1.00	Bucket cylinder, removal	
975-065	0.80	Bucket cylinder, installation	

Op.no.	time (h)	Notes
975-066	1.25	Bucket cylinder, renovation

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	1.25	Maintenance service, daily
173-004	2.00	Maintenance service, every 50 hours
173-007	4.00	Maintenance service, every 250 hours
173-010	4.50	Maintenance service, every 500 hours
173-012	12.00	Maintenance service, every 1000 hours
173-014	13.00	Maintenance service, every 2000 hours
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	7.00	Engine, removing
210-072	6.50	Engine, installing
218-009	3.50	Engine mounts, replacing
23		FUEL SYSTEM
234-017	0.70	Fuel tank lid,cover plate gasket, replacing
234-019	0.40	Fuel tank sight gauge, replacing
234-043	0.80	Fuel tank lid, replacing
235-005	1.50	Fuel lines, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	0.40	Silencer, replacing
252-021	0.50	Exhaust pipe, flexible tube, replacing
256-010	0.40	Air cleaner, removing
256-011	0.30	Air cleaner, installing
256-012	0.30	Air cleaner vacuum indicator, replacing
256-020	0.30	Pre-cleaner, replacing
258-023	1.25	Charge air cooler, removing
258-024	1.25	Charge air cooler, installing
258-025	0.30	Charge air cooler pipe, removing
258-026	0.20	Charge air cooler pipe, installing
26		COOLING SYSTEM
261-011	1.25	Radiator, removing
261-012	1.00	Radiator hose upper, replacing
261-013	1.25	Radiator, installing
261-014	1.00	Radiator hoses lower, replacing
261-018	1.25	Expansion tank, replacing
261-022	1.25	Cooling package, removing
261-023	1.25	Cooling package, installing
263-012	2.50	Fan belt and/or alternator belt, replacing

Op.no.	time (h)	Notes
263-041	2.50	Cooling fan, replacing
263-042	3.00	Fan shroud, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.50	Batteries, replacing
35		LIGHTING
352-009	0.30	Head lamp, replacing
353-050	0.40	Licence plate lamp, replacing
353-051	0.30	Tail lamp, replacing
353-051	0.40	Tail lamp, replacing
356-050	0.30	Work lamp, replacing
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.40	Horn, replacing
362-016	0.50	Horn switch, replacing
362-041	0.40	Rotating beacon, replacing
362-052	0.40	Dual function alarm, replacing
362-053	0.40	Back up alarm, replacing
364-004	0.60	Switch, replacing
364-004	0.60	Switch, replacing
364-004	0.60	Switch, replacing
364-011	0.50	Reverse alarm switch, replacing
364-013	0.50	Emergency stop switch, replacing
364-014	0.40	Ignition switch, replacing
364-014	0.40	Ignition switch, replacing
364-015	0.50	Indicator lamp High beam , replacing
364-050	0.40	Relay (general), replacing
364-050	0.40	Relay (general), replacing
364-050	0.50	Relay (general), replacing
364-050	0.50	Relay (general), replacing
364-050	0.50	Relay (general), replacing
364-063	0.70	Circuit breaker, replacing
364-065	0.50	Drum selection switch, replacing
364-066	0.50	Turn signal switch, replacing
364-067	0.50	Hazard light switch, replacing
366-094	0.50	Diode, replacing
366-094	0.50	Diode, replacing
366-094	0.50	Diode, replacing
366-094	0.40	Diode, replacing

Op.no.	time (h)	Notes
37		CABLE; FUSE; RELAY
371-011	9.00	Main wire harness, replacing
371-011	11.00	Main wire harness, replacing
371-021	2.50	Instrument wire harness, replacing
371-021	1.75	Instrument wire harness, replacing
371-040	0.80	Battery cable negative, replacing
371-041	0.90	Battery cable +, replacing
371-046	0.40	Seat switch wiring harness, replacing
371-047	1.00	Water tank wiring harness, replacing
371-048	1.50	FSR wiring harness, replacing
371-050	3.50	Tail lamp harness, replacing
371-051	1.75	Sensor wire harness, replacing
372-020	0.40	Fuse (general), replacing
372-020	0.50	Fuse (general), replacing
372-020	0.40	Fuse (general), replacing
372-026	0.40	Flasher relay, replacing
372-051	0.40	Latching relay, replacing
372-054	0.50	Auto vibration control relay, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
380-002	0.50	Water flow control, replacing
380-002	0.50	Water flow control, replacing
380-006	4.00	Vibration controller, replacing
380-006	4.00	Vibration controller, replacing
383-001	0.60	Hour meter, replacing
387-022	0.60	Impact meter gauge, replacing
387-023	0.60	Volt meter gauge, replacing
387-024	0.60	Engine water temperature gauge, replacing
387-025	0.50	Engine-stop indicator, replacing
387-026	0.50	Check-engine indicator, replacing
387-027	0.50	Seat belt indicator, replacing
387-028	0.50	Turn signal light indicator (left and right), replacing
387-041	0.60	Engine oil pressure gauge, replacing
387-049	0.60	Speedometer, replacing
387-050	0.60	VPM meter gauge, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
424-003	1.50	Propulsion control cable, replacing
424-005	0.40	Neutral safety switch, replacing
424-021	1.50	Control group assembly, replacing

Op.no.	time (h)		Notes
43		GEARBOX,	
431-031	15.00	Pump gearbox coupling assembly, replacing	
431-038	7.00	Gearbox, removing	
431-039	7.50	Gearbox, installing	
44		HYDROSTATIC DRIVE	
441-061	0.80	Thermal bypass valve, replacing	
442-068	0.80	Loop flushing valve, replacing	
442-080	0.50	Drum drive motor speed sensor, replacing	
442-082	1.75	Propulsion pump, removing	
442-083	1.75	Propulsion pump, installing	
442-164	1.75	Propulsion pump coupling, installing	
442-165	2.50	Vibration pump coupling, removing	
442-166	2.50	Vibration pump coupling, installing	
5		BRAKE	
52		HYDRAULIC BRAKE SYSTEM	
525-014	0.60	Brake solenoid valve, replacing	
55		PARKING BRAKE	
551-012	0.40	Parking brake pressure switch, replacing	
6		STEERING	
64		STEERING	
641-001	0.30	Steering wheel, replacing	50001 - 50322
641-026	0.40	Steering column, removing	
641-027	0.50	Steering column, installing	
645-004	0.30	Steering cylinder, removing	
645-005	0.50	Steering cylinder, installing	
645-016	0.90	Steering pump, removing	
645-017	0.80	Steering pump, installing	
645-022	0.50	Steering valve, removal	
645-023	0.70	Steering valve, installation	
645-054	0.80	Steering cylinder, replacing bearings	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
711-040	1.25	Hydraulic oil level gauge, replacing	

Op.no.	time (h)	Notes
711-041	0.70	Hydraulic tank lid, cover plate gasket, replacing
711-042	0.30	Hydraulic tank breather cap, replacing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
777-003	2.50	Vibration pump, removing
777-004	3.00	Vibration pump, installing
777-005	0.40	Vibration motor, removing
777-006	0.50	Vibration motor, installing
777-007	4.00	Eccentric weight, removing
777-008	4.50	Eccentric weight, installing
777-014	8.00	Carrier bearings, replacing
777-015	10.00	Eccentric weight, overhaul
777-018	6.50	Drum drive motor, replacing
777-021	2.00	Smooth drum scrapers, replacing
777-025	3.00	Carrier, removing
777-026	3.50	Carrier, installing
777-073	8.00	Carrier V-ring seal, replacing
777-081	1.00	Drum shock mount (single), replacing
777-081	0.90	Drum shock mount (single), replacing
777-082	2.50	Drum assembly (front), removing
777-083	3.50	Drum assembly (front), installing
777-084	1.75	Drum assembly (rear), removing
777-085	2.50	Drum assembly (rear), installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
818-010	1.50	Operator's platform mounts, replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.60	Engine hood, removing
821-002	0.60	Engine hood, installing
821-029	0.60	Engine hood hinge, replacing
821-031	0.60	Engine hood, changing gas spring
827-003	0.50	Hand rail, removing
827-004	0.60	Hand rail, installing
83		DOORS; HATCH; COVER PLATE, (all)
837-001	0.60	Deck plate, removing
837-002	0.70	Deck plate, installing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.30	Operator's seat, removing
852-004	0.30	Operator's seat, installing

Op.no.	time (h)	Notes	
86		PROTECTIVE EQUIPMENT, not specified in a special group	
867-002	0.80	ROPS (Roll Over Protection), removing	
867-003	1.25	ROPS (Roll Over Protection), installing	
88		INTERIOR EQUIPMENT	
881-003	2.50	Instrument panel, replacing (left)	
881-003	2.50	Instrument panel, replacing (left)	
881-005	2.00	Instrument panel, replacing (right)	
881-008	4.50	Instrument console bearing, replacing	
884-001	0.40	Seat safety belt, replacing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-013	1.50	Hydraulic oil cooler, removing	
911-014	1.50	Hydraulic oil cooler, installing	
911-036	1.75	Hydraulic oil tank, removing	
911-037	1.50	Hydraulic oil tank, installing	
98		FUNCTION FOR ROAD CONSTRUCTION	
985-001	0.30	Water system assembly, removing	
985-001	0.50	Water system assembly, removing	
985-002	0.30	Water system assembly, installing	
985-002	0.50	Water system assembly, installing	
985-003	0.40	Water tank, removing	
985-004	0.50	Water tank, installing	
985-007	0.50	Water pump, removing	50001 - 50488
985-007	0.40	Water pump, removing	50489 - 99999
985-008	0.50	Water pump, installing	50001 - 50488
985-008	0.50	Water pump, installing	50489 - 99999
985-016	0.80	Water spray system components, replacing	
985-017	0.50	Water strainer, replacing	
985-018	0.60	Ball valve, replacing	
985-019	0.50	Water level indicator, replacing	
985-020	0.50	Water tank mounting straps, replacing	
988-087	2.50	Drum drive, removing	
988-088	2.50	Drum drive, installing	

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	1.00	Maintenance service, daily
173-004	2.50	Maintenance service, every 50 hours
173-010	4.50	Maintenance service, every 500 hours
173-012	7.00	Maintenance service, every 1000 hours
173-014	12.00	Maintenance service, every 2000 hours
173-019	0.30	Maintenance service, every 4500 hours
173-022	2.00	Maintenance service, every 6000 hours
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
210-092	0.40	Engine rotation speed sensor (camshaft), replacing
210-093	0.60	Engine rotation speed sensor (crank shaft), replacing
212-071	0.50	Crankcase ventilation separator, replacing
214-012	1.25	Valves, adjusting
22		LUBRICATING SYSTEM
221-022	0.50	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.40	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-001	0.30	Fuel system, bleeding
233-008	1.50	Fuel pump, replacing
237-002	4.00	Injectors, replacing all
237-034	0.80	Pressure relief valve (PRV), replacing
237-035	0.90	Fuel rail pressure sensor, replacing
237-124	0.50	High pressure fuel system, pressure relief
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.60	Exhaust pipe, flexible tube, replacing
254-001	1.50	Diesel particulate filter, check and clean
254-022	1.00	ACM (After treatment control module), replacing, non-programmed

Op.no.	time (h)	Notes
254-023	1.25	ACM (After treatment control module), replacing, pre-programmed
254-031	0.80	Air pump, replacing
254-033	1.50	Burner, replacing
254-038	1.50	DPF inlet temperature sensor, replacing
254-039	1.50	DPF outlet temperature sensor, replacing
254-043	0.50	Spark plug control unit, replacing
254-044	0.30	Glow plug, replacing
254-046	0.30	Spark plug, replacing
254-048	0.30	Spark plug cable, replacing
254-050	0.90	Fuel metering unit A, replacing
254-051	2.50	Fuel metering unit B, replacing
254-055	1.50	DPF bracket, replacing
255-009	0.40	Waste gate, testing
255-071	1.50	Turbocharger, replacing
26		COOLING SYSTEM
262-002	1.75	Coolant pump, replacing
262-098	1.25	Thermostat, replacing
29		Miscellaneous
293-001	2.00	EGR cooler, replacing
293-004	2.50	EGR cooler, cleaning
293-008	2.50	EGR Actuator, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.50	I-ECU, MID 140, changing non-programmed ECU
300-074	1.00	I-ECU, MID 140, changing pre-programmed ECU
36		OTHER ELECTRICAL EQUIPMENT
366-064	1.25	V-ECU, MID 187, changing non-programmed ECU
366-066	0.80	V-ECU, MID 187, changing pre-programmed ECU
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
424-004	0.60	Propulsion control lever, replacing
44		HYDROSTATIC DRIVE
442-082	3.50	Propulsion pump, removing

Op.no.	time (h)	Notes
442-083	3.50	Propulsion pump, installing
442-153	0.30	Propulsion pump charge pressure, checking
442-154	0.40	Propulsion pump system pressure, checking
442-159	0.30	Propel, calibrating
5		BRAKE
55		PARKING BRAKE
550-023	0.20	Parking brake, function checking
6		STEERING
64		STEERING
645-006	0.70	Steering cylinder, replacing
645-016	1.50	Steering pump, removing
645-017	1.25	Steering pump, installing
645-018	0.30	Steering pressure, checking
645-082	1.50	Steering valve, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
777-001	2.00	Drum, removing
777-002	2.00	Drum, installing
777-003	1.50	Vibration pump, removing
777-003	3.00	Vibration pump, removing
777-004	2.50	Vibration pump, installing
777-004	1.25	Vibration pump, installing
777-005	0.50	Vibration motor, removing
777-006	0.40	Vibration motor, installing
777-007	4.50	Eccentric weight, removing
777-008	4.50	Eccentric weight, installing
777-013	11.00	Eccentric weight bearings, replacing
777-014	6.50	Carrier bearings, replacing
777-015	9.50	Eccentric weight, overhaul
777-018	6.00	Drum drive motor, replacing
777-025	3.00	Carrier, removing
777-026	3.00	Carrier, installing
777-086	0.30	Vibration pump charge pressure, checking
777-087	0.50	Vibration system pressure, checking

Op.no.	time (h)	Notes
777-089	0.40	Vibration pump charge pressure relief valve, adjusting
777-090	0.50	Vibration pump charge pressure relief valve, replacing
777-091	0.70	Vibration pump SCR (system check/relief) valve, replacing
777-093	2.50	Drum drive assembly, removing
777-094	2.50	Drum drive assembly, installing

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

98 FUNCTION FOR ROAD CONSTRUCTION

985-003	0.80	Water tank, removing
985-004	0.60	Water tank, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	1.50	Maintenance service, daily
173-004	0.50	Maintenance service, every 50 hours
173-004	0.50	Maintenance service, every 50 hours
173-010	1.50	Maintenance service, every 500 hours
173-012	3.50	Maintenance service, every 1000 hours
173-078	0.20	Engine, air cleaner maintenance
173-089	0.70	Drum carrier, changing oil
173-451	1.25	Hydraulic oil, changing
173-457	0.70	Coolant, changing
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	3.00	Engine, removing
210-072	4.00	Engine, installing
218-009	1.25	Engine mounts, replacing
23		FUEL SYSTEM
233-001	0.30	Fuel system, bleeding
233-014	0.30	Fuel filters, replacing
235-002	1.25	Fuel line, water separator, check and drain
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
256-003	0.40	Air cleaner, primary filter replacing
256-004	0.40	Air cleaner, secondary filter replacing
256-010	0.60	Air cleaner, removing
256-011	0.70	Air cleaner, installing
258-023	0.30	Charge air cooler, removing
258-024	0.40	Charge air cooler, installing
258-025	0.20	Charge air cooler pipe, removing
258-026	0.20	Charge air cooler pipe, installing
26		COOLING SYSTEM
261-008	5.00	Radiator, replacing
263-012	0.70	Fan belt and/or alternator belt, replacing
263-041	3.50	Cooling fan, replacing

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	1.25	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-003	1.50	Alternator, removing
321-004	1.75	Alternator, installing
33		STARTING SYSTEM
331-018	2.50	Starter motor, replacing
334-011	1.25	Starter switch (engine start switch), replacing
36		OTHER ELECTRICAL EQUIPMENT
362-003	0.30	Reverse alarm, replacing
366-071	0.60	Electric and hydraulic control unit, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-011	1.75	Fuel level sender, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-088	4.00	Two speed valve solenoid and cartridge, replacing
44		HYDROSTATIC DRIVE
440-021	1.25	Hydrostatic controller, removing
440-022	1.25	Hydrostatic controller, installing
441-035	4.50	Drive motor, removing
442-021	3.50	Hydrostatic pump, removing
442-022	3.00	Hydrostatic pump, installing
442-045	3.00	Pump coupling, removing
442-046	2.50	Pump coupling, installing
442-068	0.50	Loop flushing valve, replacing
442-080	0.30	Drum drive motor speed sensor, replacing
442-090	2.50	Vibration speed sensor, replacing
5		BRAKE
55		PARKING BRAKE
551-012	1.25	Parking brake pressure switch, replacing

Op.no.	time (h)	Notes
6		STEERING
64		STEERING
641-021	4.50	Adjustable steering column, replacing
645-006	2.00	Steering cylinder, replacing
645-010	4.00	Hydraulic pump, replacing
645-031	3.00	Steering control unit, removing
645-035	3.50	Steering control unit, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
777-001	4.00	Drum, removing
777-002	4.50	Drum, installing
777-003	1.50	Vibration pump, removing
777-004	1.50	Vibration pump, installing
777-007	4.50	Eccentric weight, removing
777-008	8.00	Eccentric weight, installing
777-009	2.00	Drum shock mount, replacing
777-010	13.00	Eccentric shaft coupling, replacing
777-011	3.50	Torque hub, removing
777-012	6.50	Torque hub, installing
777-013	10.00	Eccentric weight bearings, replacing
777-014	13.00	Carrier bearings, replacing
777-015	13.00	Eccentric weight, overhaul
777-021	1.25	Smooth drum scrapers, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
818-010	3.00	Operator's platform mounts, replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	2.50	Engine hood, removing
821-002	2.50	Engine hood, installing
821-031	0.50	Engine hood, changing gas spring
827-003	1.50	Hand rail, removing
827-004	1.25	Hand rail, installing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.90	Operator's seat, removing

Op.no.	time (h)	Notes
852-004	1.00	Operator's seat, installing
86		PROTECTIVE EQUIPMENT, not specified in a special group
867-002	1.25	ROPS (Roll Over Protection), removing
867-003	1.50	ROPS (Roll Over Protection), installing
88		INTERIOR EQUIPMENT
884-001	0.40	Seat safety belt, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-003	0.70	Hydraulic oil filter, replacing
911-013	0.60	Hydraulic oil cooler, removing
911-014	0.70	Hydraulic oil cooler, installing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
98		FUNCTION FOR ROAD CONSTRUCTION
985-003	2.50	Water tank, removing
985-004	2.50	Water tank, installing
985-007	1.25	Water pump, removing
985-008	1.25	Water pump, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	0.90	Maintenance service, daily
173-004	2.00	Maintenance service, every 50 hours
173-010	4.50	Maintenance service, every 500 hours
173-012	6.00	Maintenance service, every 1000 hours
173-014	10.00	Maintenance service, every 2000 hours
173-019	0.30	Maintenance service, every 4500 hours
173-022	2.00	Maintenance service, every 6000 hours
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
210-092	0.40	Engine rotation speed sensor (camshaft), replacing
210-093	0.60	Engine rotation speed sensor (crank shaft), replacing
212-071	0.50	Crankcase ventilation separator, replacing
214-012	1.25	Valves, adjusting
22		LUBRICATING SYSTEM
221-022	0.50	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.40	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-001	0.30	Fuel system, bleeding
233-008	1.50	Fuel pump, replacing
237-002	4.00	Injectors, replacing all
237-034	0.80	Pressure relief valve (PRV), replacing
237-035	0.90	Fuel rail pressure sensor, replacing
237-124	0.50	High pressure fuel system, pressure relief
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.60	Exhaust pipe, flexible tube, replacing
254-001	1.50	Diesel particulate filter, check and clean
254-022	1.00	ACM (After treatment control module), replacing, non-programmed

Op.no.	time (h)	Notes
254-023	1.25	ACM (After treatment control module), replacing, pre-programmed
254-031	0.80	Air pump, replacing
254-033	1.50	Burner, replacing
254-038	1.50	DPF inlet temperature sensor, replacing
254-039	1.50	DPF outlet temperature sensor, replacing
254-043	0.50	Spark plug control unit, replacing
254-044	0.30	Glow plug, replacing
254-046	0.30	Spark plug, replacing
254-048	0.30	Spark plug cable, replacing
254-050	0.90	Fuel metering unit A, replacing
254-051	2.50	Fuel metering unit B, replacing
254-055	1.50	DPF bracket, replacing
255-009	0.40	Waste gate, testing
255-071	1.50	Turbocharger, replacing
26		COOLING SYSTEM
262-002	1.75	Coolant pump, replacing
262-098	1.25	Thermostat, replacing
29		Miscellaneous
293-001	2.00	EGR cooler, replacing
293-004	2.50	EGR cooler, cleaning
293-008	2.50	EGR Actuator, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.50	I-ECU, MID 140, changing non-programmed ECU
300-074	1.00	I-ECU, MID 140, changing pre-programmed ECU
36		OTHER ELECTRICAL EQUIPMENT
366-064	1.25	V-ECU, MID 187, changing non-programmed ECU
366-066	0.80	V-ECU, MID 187, changing pre-programmed ECU
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
424-004	0.60	Propulsion control lever, replacing
44		HYDROSTATIC DRIVE
442-082	3.00	Propulsion pump, removing

Op.no.	time (h)	Notes
442-083	2.50	Propulsion pump, installing
442-153	0.30	Propulsion pump charge pressure, checking
442-154	0.40	Propulsion pump system pressure, checking
442-159	0.30	Propel, calibrating
5		BRAKE
55		PARKING BRAKE
550-023	0.20	Parking brake, function checking
6		STEERING
64		STEERING
645-006	0.70	Steering cylinder, replacing
645-016	0.60	Steering pump, removing
645-017	0.60	Steering pump, installing
645-018	0.30	Steering pressure, checking
645-082	1.50	Steering valve, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
777-001	2.00	Drum, removing
777-002	2.00	Drum, installing
777-003	1.25	Vibration pump, removing
777-004	1.00	Vibration pump, installing
777-005	0.50	Vibration motor, removing
777-006	0.40	Vibration motor, installing
777-007	4.50	Eccentric weight, removing
777-008	4.50	Eccentric weight, installing
777-013	11.00	Eccentric weight bearings, replacing
777-014	6.50	Carrier bearings, replacing
777-015	9.50	Eccentric weight, overhaul
777-018	6.00	Drum drive motor, replacing
777-025	3.00	Carrier, removing
777-026	3.00	Carrier, installing
777-086	0.30	Vibration pump charge pressure, checking
777-087	0.50	Vibration system pressure, checking
777-089	0.40	Vibration pump charge pressure relief valve, adjusting

Op.no.	time (h)	Notes
777-090	0.60	Vibration pump charge pressure relief valve, replacing
777-091	0.80	Vibration pump SCR (system check/relief) valve, replacing
777-093	2.50	Drum drive assembly, removing
777-094	2.50	Drum drive assembly, installing

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HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

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FUNCTION FOR ROAD CONSTRUCTION

985-003	0.80	Water tank, removing
985-004	0.60	Water tank, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	1.50	Maintenance service, daily
173-004	0.50	Maintenance service, every 50 hours
173-004	0.50	Maintenance service, every 50 hours
173-010	1.50	Maintenance service, every 500 hours
173-012	3.50	Maintenance service, every 1000 hours
173-078	0.20	Engine, air cleaner maintenance
173-089	0.70	Drum carrier, changing oil
173-451	1.25	Hydraulic oil, changing
173-457	0.70	Coolant, changing
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	3.00	Engine, removing
210-072	4.00	Engine, installing
218-009	1.25	Engine mounts, replacing
23		FUEL SYSTEM
233-001	0.30	Fuel system, bleeding
233-014	0.30	Fuel filters, replacing
235-002	1.25	Fuel line, water separator, check and drain
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
256-003	0.40	Air cleaner, primary filter replacing
256-004	0.40	Air cleaner, secondary filter replacing
256-010	0.60	Air cleaner, removing
256-011	0.70	Air cleaner, installing
258-023	0.30	Charge air cooler, removing
258-024	0.40	Charge air cooler, installing
258-025	0.20	Charge air cooler pipe, removing
258-026	0.20	Charge air cooler pipe, installing
26		COOLING SYSTEM
261-008	5.00	Radiator, replacing
263-012	0.70	Fan belt and/or alternator belt, replacing
263-041	3.50	Cooling fan, replacing

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	1.25	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-003	1.50	Alternator, removing
321-004	1.75	Alternator, installing
33		STARTING SYSTEM
331-018	2.50	Starter motor, replacing
334-011	1.25	Starter switch (engine start switch), replacing
36		OTHER ELECTRICAL EQUIPMENT
362-003	0.30	Reverse alarm, replacing
366-071	0.60	Electric and hydraulic control unit, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-011	1.75	Fuel level sender, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-088	4.00	Two speed valve solenoid and cartridge, replacing
44		HYDROSTATIC DRIVE
440-021	1.25	Hydrostatic controller, removing
440-022	1.25	Hydrostatic controller, installing
441-035	4.50	Drive motor, removing
442-021	3.50	Hydrostatic pump, removing
442-022	3.00	Hydrostatic pump, installing
442-045	3.00	Pump coupling, removing
442-046	2.50	Pump coupling, installing
442-068	0.50	Loop flushing valve, replacing
442-080	0.30	Drum drive motor speed sensor, replacing
442-090	2.50	Vibration speed sensor, replacing
5		BRAKE
55		PARKING BRAKE
551-012	1.25	Parking brake pressure switch, replacing

Op.no.	time (h)	Notes
6		STEERING
64		STEERING
641-021	4.50	Adjustable steering column, replacing
645-006	2.00	Steering cylinder, replacing
645-010	4.00	Hydraulic pump, replacing
645-031	3.00	Steering control unit, removing
645-035	3.50	Steering control unit, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
777-001	4.00	Drum, removing
777-002	4.50	Drum, installing
777-003	1.50	Vibration pump, removing
777-004	1.50	Vibration pump, installing
777-007	4.50	Eccentric weight, removing
777-008	8.00	Eccentric weight, installing
777-009	2.00	Drum shock mount, replacing
777-010	13.00	Eccentric shaft coupling, replacing
777-011	3.50	Torque hub, removing
777-012	6.50	Torque hub, installing
777-013	10.00	Eccentric weight bearings, replacing
777-014	13.00	Carrier bearings, replacing
777-015	13.00	Eccentric weight, overhaul
777-021	1.25	Smooth drum scrapers, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
818-010	3.00	Operator's platform mounts, replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	2.50	Engine hood, removing
821-002	2.50	Engine hood, installing
821-031	0.50	Engine hood, changing gas spring
827-003	1.50	Hand rail, removing
827-004	1.25	Hand rail, installing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.90	Operator's seat, removing

Op.no.	time (h)	Notes
852-004	1.00	Operator's seat, installing
86		PROTECTIVE EQUIPMENT, not specified in a special group
867-002	1.25	ROPS (Roll Over Protection), removing
867-003	1.50	ROPS (Roll Over Protection), installing
88		INTERIOR EQUIPMENT
884-001	0.40	Seat safety belt, replacing
 9		 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-003	0.70	Hydraulic oil filter, replacing
911-013	0.60	Hydraulic oil cooler, removing
911-014	0.70	Hydraulic oil cooler, installing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
98		FUNCTION FOR ROAD CONSTRUCTION
985-003	2.50	Water tank, removing
985-004	2.50	Water tank, installing
985-007	1.25	Water pump, removing
985-008	1.25	Water pump, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	0.90	Maintenance service, daily
173-004	2.00	Maintenance service, every 50 hours
173-010	4.50	Maintenance service, every 500 hours
173-012	6.00	Maintenance service, every 1000 hours
173-014	10.00	Maintenance service, every 2000 hours
173-019	0.30	Maintenance service, every 4500 hours
173-022	2.00	Maintenance service, every 6000 hours
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
210-092	0.40	Engine rotation speed sensor (camshaft), replacing
210-093	0.60	Engine rotation speed sensor (crank shaft), replacing
212-071	0.50	Crankcase ventilation separator, replacing
214-012	1.25	Valves, adjusting
22		LUBRICATING SYSTEM
221-022	0.50	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.40	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-001	0.30	Fuel system, bleeding
233-008	1.50	Fuel pump, replacing
237-002	4.00	Injectors, replacing all
237-034	0.80	Pressure relief valve (PRV), replacing
237-035	0.90	Fuel rail pressure sensor, replacing
237-124	0.50	High pressure fuel system, pressure relief
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.60	Exhaust pipe, flexible tube, replacing
254-001	1.50	Diesel particulate filter, check and clean
254-022	1.00	ACM (After treatment control module), replacing, non-programmed

Op.no.	time (h)	Notes
254-023	1.25	ACM (After treatment control module), replacing, pre-programmed
254-031	0.80	Air pump, replacing
254-033	1.50	Burner, replacing
254-038	1.50	DPF inlet temperature sensor, replacing
254-039	1.50	DPF outlet temperature sensor, replacing
254-043	0.50	Spark plug control unit, replacing
254-044	0.30	Glow plug, replacing
254-046	0.30	Spark plug, replacing
254-048	0.30	Spark plug cable, replacing
254-050	0.90	Fuel metering unit A, replacing
254-051	2.50	Fuel metering unit B, replacing
254-055	1.50	DPF bracket, replacing
255-009	0.40	Waste gate, testing
255-071	1.50	Turbocharger, replacing
26		COOLING SYSTEM
262-002	1.75	Coolant pump, replacing
262-098	1.25	Thermostat, replacing
29		Miscellaneous
293-001	2.00	EGR cooler, replacing
293-004	2.50	EGR cooler, cleaning
293-008	2.50	EGR Actuator, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.50	I-ECU, MID 140, changing non-programmed ECU
300-074	1.00	I-ECU, MID 140, changing pre-programmed ECU
36		OTHER ELECTRICAL EQUIPMENT
366-064	1.25	V-ECU, MID 187, changing non-programmed ECU
366-066	0.80	V-ECU, MID 187, changing pre-programmed ECU
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
424-004	0.60	Propulsion control lever, replacing
44		HYDROSTATIC DRIVE
442-082	3.00	Propulsion pump, removing

Op.no.	time (h)	Notes
442-083	2.50	Propulsion pump, installing
442-153	0.30	Propulsion pump charge pressure, checking
442-154	0.40	Propulsion pump system pressure, checking
5		BRAKE
55		PARKING BRAKE
550-023	0.20	Parking brake, function checking
6		STEERING
64		STEERING
645-006	0.70	Steering cylinder, replacing
645-016	0.60	Steering pump, removing
645-017	0.60	Steering pump, installing
645-018	0.30	Steering pressure, checking
645-082	1.50	Steering valve, replacing
645-112	2.50	Steering actuation valve, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
777-001	2.00	Drum, removing
777-002	2.00	Drum, installing
777-003	1.25	Vibration pump, removing
777-004	1.00	Vibration pump, installing
777-005	0.50	Vibration motor, removing
777-006	0.40	Vibration motor, installing
777-007	4.50	Eccentric weight, removing
777-008	4.50	Eccentric weight, installing
777-013	11.00	Eccentric weight bearings, replacing
777-014	6.50	Carrier bearings, replacing
777-015	9.50	Eccentric weight, overhaul
777-018	6.00	Drum drive motor, replacing
777-025	3.00	Carrier, removing
777-026	3.00	Carrier, installing
777-086	0.30	Vibration pump charge pressure, checking
777-087	0.50	Vibration system pressure, checking
777-089	0.60	Vibration pump charge pressure relief valve, adjusting

Op.no.	time (h)	Notes
777-090	0.80	Vibration pump charge pressure relief valve, replacing
777-091	1.00	Vibration pump SCR (system check/relief) valve, replacing
777-093	2.50	Drum drive assembly, removing
777-094	2.50	Drum drive assembly, installing

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

98 FUNCTION FOR ROAD CONSTRUCTION

985-003	0.80	Water tank, removing
985-004	0.60	Water tank, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	1.50	Maintenance service, every 10 hours
173-004	1.50	Maintenance service, every 50 hours
173-010	3.00	Maintenance service, every 500 hours
173-012	4.00	Maintenance service, every 1000 hours
173-013	5.00	Maintenance service, every 1500 hours
173-014	6.50	Maintenance service, every 2000 hours
173-022	0.90	Maintenance service, every 6000 hours
173-313	0.20	Hydraulic pressure, checking
19		GENERAL
191-020	0.20	Service position
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
214-012	0.70	Valves, adjusting
218-009	1.00	Engine mounts, replacing
22		LUBRICATING SYSTEM
221-022	0.40	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
233-001	0.20	Fuel system, bleeding
233-011	0.40	Fuel pump, removing
233-012	0.20	Fuel pump, installing
237-002	1.00	Injectors, replacing all
237-030	4.00	High pressure fuel pump, checking
237-032	3.50	High pressure fuel pump, replacing
237-126	1.00	Fuel injector, testing
25		INLET SYSTEM; EXHAUST SYSTEM
254-044	0.40	Glow plug, replacing
26		COOLING SYSTEM
261-011	1.25	Radiator, removing
261-013	1.50	Radiator, installing
262-002	3.00	Coolant pump, replacing
262-098	0.60	Thermostat, replacing

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
32		ALTERNATOR; CHARGE REGULATOR
321-003	0.60	Alternator, removing
321-004	0.30	Alternator, installing
35		LIGHTING
352-001	0.50	Lamp bulb, replacing
36		OTHER ELECTRICAL EQUIPMENT
362-003	0.50	Reverse alarm, replacing
37		CABLE; FUSE; RELAY
371-044	0.40	Battery disconnecter, removal
371-045	0.20	Battery disconnecter, installation
4		POWER TRANSMISSION
44		HYDROSTATIC DRIVE
441-035	0.90	Drive motor, removing
441-036	1.50	Drive motor, installing
442-160	1.00	Travel lever throttle cable, removing
442-161	1.25	Travel lever throttle cable, installing
442-162	0.60	Travel lever throttle cable, adjusting
5		BRAKE
55		PARKING BRAKE
550-026	0.30	Parking brake, activate manually
550-027	0.30	Parking brake, deactivate manually
6		STEERING
64		STEERING
645-004	1.00	Steering cylinder, removing
645-005	1.25	Steering cylinder, installing
645-016	0.60	Steering pump, removing
645-017	0.80	Steering pump, installing

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
740-001	2.00	Articulation hinge, disassembly
740-002	2.50	Articulation hinge, assembly
77		WHEELS; TRACKS; TYRE; HUB; DRUM
777-001	1.00	Drum, removing
777-002	1.25	Drum, installing
777-003	0.60	Vibration pump, removing
777-004	0.80	Vibration pump, installing
777-005	0.60	Vibration motor, removing
777-006	0.80	Vibration motor, installing
777-034	0.50	Scraper strip, replacing
777-035	0.40	Scraper set, removing
777-036	0.30	Scraper set, installing
777-039	0.50	Offset drum, adjusting
777-041	0.90	Drum drive, installing
777-042	5.00	Eccentric shaft, removing
777-043	5.50	Eccentric shaft, installing
777-044	1.50	Travel bearings, removing
777-045	1.75	Travel bearings, installing
777-078	1.25	Drum rubber cushions, replacing
777-078	1.50	Drum rubber cushions, replacing
777-079	3.50	Eccentric shaft bearings, removing
777-079	3.50	Eccentric shaft bearings, removing
777-080	2.50	Eccentric shaft bearings, installing
777-080	4.50	Eccentric shaft bearings, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.40	Engine hood, removing
821-002	0.30	Engine hood, installing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.40	Operator's seat, removing
852-004	0.30	Operator's seat, installing
86		PROTECTIVE EQUIPMENT, not specified in a special group
867-002	0.20	ROPS (Roll Over Protection), removing
867-003	0.20	ROPS (Roll Over Protection), installing

Op.no.	time (h)	Notes
88		INTERIOR EQUIPMENT
884-001	0.60	Seat safety belt, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-036	0.90	Hydraulic oil tank, removing
911-037	1.00	Hydraulic oil tank, installing
98		FUNCTION FOR ROAD CONSTRUCTION
985-007	0.60	Water pump, removing
985-008	0.60	Water pump, installing

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.80	Maintenance service, daily	
173-004	1.50	Maintenance service, every 50 hours	
173-007	2.50	Maintenance service, every 250 hours	
173-010	4.00	Maintenance service, every 500 hours	
173-012	6.00	Maintenance service, every 1000 hours	
173-014	10.00	Maintenance service, every 2000 hours	
173-016	7.50	Maintenance service, every 3000 hours	210001 - 210588
173-018	11.00	Maintenance service, every 4000 hours	
173-019	0.30	Maintenance service, every 4500 hours	
173-022	3.00	Maintenance service, every 6000 hours	210589 - 230000
173-022	0.70	Maintenance service, every 6000 hours	210001 - 210588
173-040	1.50	Maintenance service, first 500 hours	
173-079	0.60	Swing motor gearbox, changing oil	
173-101	0.40	Track motor gearbox, changing oil	
173-401	0.50	Engine oil and filter, changing	
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.00	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	

2 ENGINE WITH MOUNTING AND EQUIPMENT

20		GENERAL	
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-070	5.00	Engine, removing	
210-070	5.50	Engine, removing	
214-012	3.00	Valves, adjusting	
217-005	1.50	Oil level sensor, changing	
22		LUBRICATING SYSTEM	
221-022	0.80	Lubrication oil pressure, checking with pressure gauge	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
233-001	0.30	Fuel system, bleeding	
233-004	0.60	Feed pump, checking feed pressure	
234-041	0.50	Fuel filling pump, removing	
234-042	0.50	Fuel filling pump, installing	

Op.no.	time (h)	Notes
237-124	0.70	High pressure fuel system, pressure relief
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.90	Exhaust pipe, flexible tube, replacing
254-001	2.00	Diesel particulate filter, check and clean
254-022	0.90	ACM (After treatment control module), replacing, non-programmed
254-023	0.80	ACM (After treatment control module), replacing, pre-programmed
254-031	0.90	Air pump, replacing
254-046	0.30	Spark plug, replacing
254-047	0.40	Spark plug, checking
255-071	2.50	Turbocharger, replacing
256-001	0.30	Air cleaner, cleaning filter element
256-003	0.20	Air cleaner, primary filter replacing
256-004	0.20	Air cleaner, secondary filter replacing
256-006	1.00	Preheating coil, replacing
258-002	4.50	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.60	Coolant, changing
261-008	5.00	Radiator, replacing
261-016	0.60	Radiator hoses all, replacing
261-018	0.80	Expansion tank, replacing
262-098	1.00	Thermostat, replacing
263-012	1.25	Fan belt and/or alternator belt, replacing
263-022	1.25	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	1.00	Batteries, replacing
311-006	0.60	Earth lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-075	0.50	Alternator, test

Op.no.	time (h)	Notes
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.90	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-014	0.50	Ignition switch, replacing
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
367-075	0.90	Engine speed control switch, replacing
37		CABLE; FUSE; RELAY
371-043	0.80	Battery disconnecter, replacing
371-090	3.50	Engine wire harness, replacing
372-002	0.50	Electrical distribution box, circuit board replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
383-001	0.30	Hour meter, replacing
386-006	1.50	Engine temperature sensor, replacing
386-007	0.60	Engine oil pressure sensor, replacing
386-011	0.30	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing
386-038	0.60	Engine rotation speed sensor, replacing
386-088	0.90	Engine rotation speed sensor (camshaft), replacing
39		MISCELLANEOUS
393-001	0.50	Voltage converter, replacing
393-021	0.60	Radio, replacing
395-021	0.70	Antenna, replacing
395-031	0.40	Speaker, replacing
398-001	0.60	CareTrack antenna, replacing
398-002	0.90	W-ECU, MID142, changing pre-programmed ECU210036 - 240000

Op.no.	time (h)	Notes	
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU	210001 - 210035
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	210036 - 240000
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	210001 - 210035
398-004	0.50	CareTrack battery, replacing	

4 POWER TRANSMISSION

43 GEARBOX,

431-021	4.50	Swing gearbox, replacing	
431-026	2.50	Swing gearbox removed, replacing seal	
431-027	4.00	Swing gearbox removed, replacing shaft	
431-031	3.00	Pump gearbox coupling assembly, replacing	
431-053	6.50	Swing unit, replacing	
431-117	1.25	Track gearbox, replacing cover	
431-127	5.00	Track unit, replacing	

44 HYDROSTATIC DRIVE

441-021	3.00	Swing motor, replacing	
441-022	0.90	Swing motor relief valve, replacing	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	0.40	Swing motor removed, replacing seal	
441-112	0.70	Track motor relief valve, replacing	
443-037	5.50	Center passage, replacing	
443-038	7.00	Center passage, replacing seal kit	

49 MISCELLANEOUS

492-021	11.00	Swing ring gear, replacing	
492-031	3.00	Swing ring gear outer seal, replacing	210286 - 240000
492-031	3.00	Swing ring gear outer seal, replacing	210001 - 210285
492-032	9.00	Swing ring gear inner seal, replacing	210001 - 210285
492-032	9.00	Swing ring gear inner seal, replacing	210286 - 240000
492-091	0.40	Ring gear grease pipe, replacing	

7 FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT

71 FRAME

710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	
716-001	0.70	Counterweight, removing	

Op.no.	time (h)	Notes
716-002	0.90	Counterweight, fitting
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	3.00	Front idler, replacing one
775-021	3.50	Sprocket, replacing one
775-034	1.25	Track chain assembly, removing
775-035	1.75	Track chain assembly, installing
775-036	9.50	Track links, replacing
775-051	1.00	Top roller, replacing one
775-061	1.50	Bottom roller, replacing one
775-066	3.00	Bottom roller, replacing seal
775-071	0.90	Track guard, replacing one
775-081	3.00	Track recoil spring (tensioner) assembly, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.90	Engine hood, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.30	Rear-view mirror, changing
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
870-010	0.70	ECC, MID 146, changing pre-programmed ECU
870-011	1.00	ECC, MID 146, changing non-programmed ECU

Op.no.	time (h)	Notes
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	1.75	Pump suction hose and pipe, replacing
911-011	4.00	Oil cooler, replacing
911-015	0.40	Oil level gauge, replacing
911-024	0.40	Pipe and hose (pump - valve), replacing
911-033	2.50	Oil cooler line bypass valve (check valve), replacing
911-038	2.50	Hydraulic oil tank, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	8.50	Control valve, replacing
912-067	0.90	Main pressure relief valve, replacing
912-073	0.70	Rupture valve, replacing (dipper arm cylinder)
912-160	0.90	Port relief valve pressure, checking and adjusting
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	5.50	Hydraulic pump, replacing
913-029	0.50	Pump regulator, replacing
914-041	0.80	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-060	0.80	Servo pump, replacing

Op.no.	time (h)	Notes
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.50	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-005	0.80	Quickfit, removal
924-006	1.00	Quickfit, installation
925-013	1.00	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	4.50	Boom, removal
974-014	5.50	Boom, installation
974-021	3.00	Boom cylinder, replacing
974-031	1.50	Boom cylinder, removal
974-032	1.25	Boom cylinder, installation
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-006	1.25	Dipper arm connecting rod, removal
975-007	1.25	Dipper arm connecting rod, installation
975-011	3.00	Dipper arm, removal
975-012	3.00	Dipper arm, installation
975-014	1.25	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-024	1.50	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-028	1.50	Connecting rod yoke, replacing
975-032	1.25	Connecting rod yoke, removal
975-035	1.25	Connecting rod yoke, installation
975-039	8.00	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.00	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-065	1.25	Bucket cylinder, installation
975-072	3.00	Bucket cylinder bushing on dipper arm, changing
975-073	3.00	Bucket cylinder bushing lever-link, replacing

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.80	Maintenance service, daily	
173-004	1.50	Maintenance service, every 50 hours	
173-007	2.50	Maintenance service, every 250 hours	
173-010	4.00	Maintenance service, every 500 hours	
173-012	6.00	Maintenance service, every 1000 hours	
173-014	10.00	Maintenance service, every 2000 hours	
173-016	7.50	Maintenance service, every 3000 hours	210001 - 210588
173-018	11.00	Maintenance service, every 4000 hours	
173-019	0.30	Maintenance service, every 4500 hours	
173-022	3.00	Maintenance service, every 6000 hours	210589 - 230000
173-022	0.70	Maintenance service, every 6000 hours	210001 - 210588
173-040	1.50	Maintenance service, first 500 hours	
173-079	0.60	Swing motor gearbox, changing oil	
173-101	0.40	Track motor gearbox, changing oil	
173-401	0.50	Engine oil and filter, changing	
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.00	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-070	5.00	Engine, removing	
210-070	5.50	Engine, removing	
214-012	3.00	Valves, adjusting	
217-005	1.50	Oil level sensor, changing	
22		LUBRICATING SYSTEM	
221-022	0.80	Lubrication oil pressure, checking with pressure gauge	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
233-001	0.30	Fuel system, bleeding	
233-004	0.60	Feed pump, checking feed pressure	
234-041	0.50	Fuel filling pump, removing	
234-042	0.50	Fuel filling pump, installing	

Op.no.	time (h)	Notes
237-124	0.70	High pressure fuel system, pressure relief
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.90	Exhaust pipe, flexible tube, replacing
254-001	2.00	Diesel particulate filter, check and clean
254-022	0.90	ACM (After treatment control module), replacing, non-programmed
254-023	0.80	ACM (After treatment control module), replacing, pre-programmed
254-031	0.90	Air pump, replacing
254-046	0.30	Spark plug, replacing
254-047	0.40	Spark plug, checking
255-071	2.50	Turbocharger, replacing
256-001	0.30	Air cleaner, cleaning filter element
256-003	0.20	Air cleaner, primary filter replacing
256-004	0.20	Air cleaner, secondary filter replacing
256-006	1.00	Preheating coil, replacing
258-002	4.50	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.60	Coolant, changing
261-008	5.00	Radiator, replacing
261-016	0.60	Radiator hoses all, replacing
261-018	0.80	Expansion tank, replacing
262-098	1.00	Thermostat, replacing
263-012	1.25	Fan belt and/or alternator belt, replacing
263-022	1.25	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	1.00	Batteries, replacing
311-006	0.60	Earth lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-075	0.50	Alternator, test

Op.no.	time (h)	Notes
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.90	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-014	0.50	Ignition switch, replacing
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
367-075	0.90	Engine speed control switch, replacing
37		CABLE; FUSE; RELAY
371-043	0.80	Battery disconnecter, replacing
371-090	3.50	Engine wire harness, replacing
372-002	0.50	Electrical distribution box, circuit board replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
383-001	0.30	Hour meter, replacing
386-006	1.50	Engine temperature sensor, replacing
386-007	0.60	Engine oil pressure sensor, replacing
386-011	0.30	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing
386-038	0.60	Engine rotation speed sensor, replacing
386-088	0.90	Engine rotation speed sensor (camshaft), replacing
39		MISCELLANEOUS
393-001	0.50	Voltage converter, replacing
393-021	0.60	Radio, replacing
395-021	0.70	Antenna, replacing
395-031	0.40	Speaker, replacing
398-001	0.60	CareTrack antenna, replacing
398-002	0.90	W-ECU, MID142, changing pre-programmed ECU210036 - 240000

Op.no.	time (h)	Notes	
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU	210035 - 240000
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	210036 - 240000
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	210035 - 240000
398-004	0.50	CareTrack battery, replacing	

4**POWER TRANSMISSION****43****GEARBOX,**

431-021	4.50	Swing gearbox, replacing	
431-026	2.50	Swing gearbox removed, replacing seal	
431-027	4.00	Swing gearbox removed, replacing shaft	
431-031	3.00	Pump gearbox coupling assembly, replacing	
431-053	6.50	Swing unit, replacing	
431-115	1.75	Track gearbox (removed), replacing floating seal	
431-117	1.25	Track gearbox, replacing cover	
431-127	6.50	Track unit, replacing	

44**HYDROSTATIC DRIVE**

441-021	3.00	Swing motor, replacing	
441-022	0.90	Swing motor relief valve, replacing	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	0.40	Swing motor removed, replacing seal	
441-112	0.70	Track motor relief valve, replacing	
443-037	5.50	Center passage, replacing	
443-038	7.00	Center passage, replacing seal kit	

49**MISCELLANEOUS**

492-021	11.00	Swing ring gear, replacing	
492-031	3.00	Swing ring gear outer seal, replacing	210286 - 240000
492-031	3.00	Swing ring gear outer seal, replacing	210001 - 210285
492-032	9.00	Swing ring gear inner seal, replacing	210001 - 210285
492-032	9.00	Swing ring gear inner seal, replacing	210286 - 240000
492-091	0.40	Ring gear grease pipe, replacing	

7**FRAME; SPRINGS; DAMPING; AXLE SUSPENSION;
WHEEL/TRACK UNIT****71****FRAME**

710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	

Op.no.	time (h)	Notes
716-001	0.70	Counterweight, removing
716-002	0.90	Counterweight, fitting
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	3.00	Front idler, replacing one
775-021	3.50	Sprocket, replacing one
775-034	1.25	Track chain assembly, removing
775-035	1.75	Track chain assembly, installing
775-036	9.50	Track links, replacing
775-051	1.00	Top roller, replacing one
775-061	1.50	Bottom roller, replacing one
775-066	3.00	Bottom roller, replacing seal
775-071	0.90	Track guard, replacing one
775-081	3.00	Track recoil spring (tensioner) assembly, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.90	Engine hood, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.30	Rear-view mirror, changing
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
870-010	0.70	ECC, MID 146, changing pre-programmed ECU

Op.no.	time (h)	Notes
870-011	1.00	ECC, MID 146, changing non-programmed ECU
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	1.75	Pump suction hose and pipe, replacing
911-011	4.00	Oil cooler, replacing
911-015	0.40	Oil level gauge, replacing
911-024	0.40	Pipe and hose (pump - valve), replacing
911-033	2.50	Oil cooler line bypass valve (check valve), replacing
911-038	2.50	Hydraulic oil tank, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	8.50	Control valve, replacing
912-067	0.90	Main pressure relief valve, replacing
912-073	0.70	Rupture valve, replacing (dipper arm cylinder)
912-160	0.90	Port relief valve pressure, checking and adjusting
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	5.50	Hydraulic pump, replacing
913-029	0.50	Pump regulator, replacing
914-041	0.80	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing

Op.no.	time (h)	Notes
914-060	0.80	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.50	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-005	0.80	Quickfit, removal
924-006	1.00	Quickfit, installation
925-013	1.00	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	4.50	Boom, removal
974-014	5.50	Boom, installation
974-021	3.00	Boom cylinder, replacing
974-031	1.50	Boom cylinder, removal
974-032	1.25	Boom cylinder, installation
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-006	1.25	Dipper arm connecting rod, removal
975-007	1.25	Dipper arm connecting rod, installation
975-011	3.00	Dipper arm, removal
975-012	3.00	Dipper arm, installation
975-014	1.25	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-024	1.50	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-028	1.50	Connecting rod yoke, replacing
975-032	1.25	Connecting rod yoke, removal
975-035	1.25	Connecting rod yoke, installation
975-039	8.00	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.00	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-065	1.25	Bucket cylinder, installation
975-072	3.00	Bucket cylinder bushing on dipper arm, changing
975-073	3.00	Bucket cylinder bushing lever-link, replacing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
172-002	2.00	Warranty inspection 100 hours
172-004	7.50	Warranty inspection 1000 hours
173-002	0.90	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	7.50	Maintenance service, every 1000 hours
173-013	5.00	Maintenance service, every 1500 hours
173-014	8.00	Maintenance service, every 2000 hours
173-016	11.00	Maintenance service, every 3000 hours
173-093	0.30	Track tension, checking
19		GENERAL
191-021	0.10	Service position 1
191-022	0.10	Service position 2
191-025	0.10	Service position 3
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-002	2.50	Compression test
210-070	3.50	Engine, removing
210-072	3.50	Engine, installing
211-002	6.00	Cylinder head, replacing gasket
211-079	3.00	Cylinder head, removing
214-012	2.50	Valves, adjusting
214-036	1.25	Valve covers, fitting new gasket
214-037	0.60	Valve cover, removing
214-038	0.60	Valve cover, installing
23		FUEL SYSTEM
233-011	0.20	Fuel pump, removing
233-012	0.20	Fuel pump, installing
236-001	0.30	Idling speed, checking and adjusting
236-030	1.25	Injection timing, checking
236-070	3.00	Injection pump, removing
237-002	1.50	Injectors, replacing all
25		INLET SYSTEM; EXHAUST SYSTEM
252-017	0.50	Silencer, removing
252-018	0.60	Silencer, installing

Op.no.	time (h)	Notes
256-010	0.20	Air cleaner, removing
256-011	0.20	Air cleaner, installing
26		COOLING SYSTEM
261-011	1.00	Radiator, removing
261-012	0.80	Radiator hose upper, replacing
261-013	0.80	Radiator, installing
261-014	0.90	Radiator hoses lower, replacing
261-020	0.20	Expansion tank, removing
261-021	0.10	Expansion tank, installing
262-002	2.50	Coolant pump, replacing
262-098	1.25	Thermostat, replacing
263-012	0.80	Fan belt and/or alternator belt, replacing
263-013	0.20	Fan belt and/or alternator belt, checking and adjusting tension
27		ENGINE CONTROL
272-020	0.30	Throttle control cable, removing
272-021	0.40	Throttle control cable, installing
272-024	0.20	Throttle controls, setting
273-021	0.30	Stop magnet, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.40	Batteries, replacing
311-005	0.60	Battery condition, check
32		ALTERNATOR; CHARGE REGULATOR
321-003	0.30	Alternator, removing
321-004	0.30	Alternator, installing
33		STARTING SYSTEM
331-016	0.30	Starter motor, removing
331-017	0.40	Starter motor, installing
333-002	0.80	Glow plug, removal
333-003	0.60	Glow plug, installation
35		LIGHTING
352-001	0.20	Lamp bulb, replacing
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-051	0.30	Travel alarm, replacing
363-002	0.60	Windscreen wiper front, replacing motor

Op.no.	time (h)	Notes
367-056	0.40	I-ECU, replacing
367-057	0.40	A-ECU (anti theft), replacing
37		CABLE; FUSE; RELAY
372-002	0.60	Electrical distribution box, circuit board replacing
4		POWER TRANSMISSION
44		HYDROSTATIC DRIVE
441-030	1.50	Swing motor, removing
441-031	2.00	Swing motor, installing
441-034	3.00	Swing motor removed, overhaul
441-113	1.25	Track motor, removing
441-114	1.50	Track motor, installing
443-034	2.00	Centre passage, removing
443-035	2.00	Centre passage, installing
49		MISCELLANEOUS
492-023	3.50	Swing ring, removing
492-024	4.50	Swing ring, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-009	0.30	Front idler, removing
775-010	0.50	Front idler, installing
775-022	0.40	Sprocket, removal
775-023	0.70	Sprocket, installation
775-041	0.30	Rubber track, removing
775-042	0.40	Rubber track, installing
775-062	0.30	Bottom roller, removing
775-063	0.30	Bottom roller, installing
775-092	0.30	Chain guide, removing
775-093	0.30	Chain guide, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	0.90	Cab, removing
810-002	0.90	Cab, installing

Op.no.	time (h)	Notes
810-004	2.50	Cab platform, removal
810-005	3.00	Cab platform, installation
810-005	3.00	Cab platform, installation
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.50	Engine hood, replacing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.60	Operator's seat, removing
852-004	0.70	Operator's seat, installing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-013	0.40	Hydraulic oil cooler, removing
911-014	0.50	Hydraulic oil cooler, installing
911-036	1.25	Hydraulic oil tank, removing
911-037	1.50	Hydraulic oil tank, installing
912-088	2.00	Main Control Valve - Disassembly
912-089	2.00	Main Control Valve - Assembly
912-091	3.00	Main control valve, removal
912-092	2.50	Main control valve, installation
912-117	0.70	LS-pressure relief valve, replacing
912-150	0.60	Working pressure, checking and adjusting
912-174	0.40	Flushing valve, replacing
912-175	0.30	Secondary pressure limiting valve, replacing
912-176	0.30	Anti-cavitation check valve, replacing
913-006	0.40	LS (load sense) pressure, checking
913-023	0.50	Pump, removal
913-024	0.80	Pump, installation
913-031	0.40	Flow regulation valve, changing
914-047	0.40	Servo accumulator, removal
914-048	0.50	Servo accumulator, installation
914-057	0.40	Servo pressure, check
914-064	0.40	Servo valve, removal
914-065	0.60	Servo valve, installation
914-104	0.70	Travel valve (pedal), removing
914-105	0.90	Travel valve (pedal), installing
915-004	0.40	Control lever, removal
915-005	0.60	Control lever, installation
915-005	0.60	Control lever, installation

Op.no.	time (h)	Notes
97		UNIT, DIGGING
974-013	1.25	Boom, removal
974-014	1.75	Boom, installation
974-031	0.40	Boom cylinder, removal
974-032	0.60	Boom cylinder, installation
975-011	0.70	Dipper arm, removal
975-012	0.90	Dipper arm, installation
975-014	0.50	Dipper arm cylinder, removal
975-015	0.60	Dipper arm cylinder, installation
975-062	0.50	Bucket cylinder, removal
975-065	0.60	Bucket cylinder, installation

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.80	Maintenance service, daily	
173-004	1.50	Maintenance service, every 50 hours	
173-007	2.00	Maintenance service, every 250 hours	
173-010	4.00	Maintenance service, every 500 hours	
173-012	6.00	Maintenance service, every 1000 hours	
173-014	10.00	Maintenance service, every 2000 hours	
173-016	8.00	Maintenance service, every 3000 hours	210001 - 220000 220001 - 220453
173-018	10.00	Maintenance service, every 4000 hours	
173-019	0.30	Maintenance service, every 4500 hours	
173-022	3.00	Maintenance service, every 6000 hours	210001 - 220000 220001 - 220453
173-022	0.70	Maintenance service, every 6000 hours	210001 - 220000 220001 - 220453
173-040	1.75	Maintenance service, first 500 hours	
173-079	0.70	Swing motor gearbox, changing oil	
173-101	0.40	Track motor gearbox, changing oil	
173-401	0.50	Engine oil and filter, changing	
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.00	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-070	5.50	Engine, removing	
214-012	3.00	Valves, adjusting	
217-005	1.50	Oil level sensor, changing	
22		LUBRICATING SYSTEM	
221-022	0.80	Lubrication oil pressure, checking with pressure gauge	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
233-001	0.30	Fuel system, bleeding	
233-004	0.60	Feed pump, checking feed pressure	

Op.no.	time (h)	Notes
234-041	0.50	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-124	0.70	High pressure fuel system, pressure relief
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.90	Exhaust pipe, flexible tube, replacing
254-001	2.00	Diesel particulate filter, check and clean
254-022	0.90	ACM (After treatment control module), replacing, non-programmed
254-023	0.80	ACM (After treatment control module), replacing, pre-programmed
254-031	0.90	Air pump, replacing
254-046	0.30	Spark plug, replacing
254-047	0.40	Spark plug, checking
255-071	2.50	Turbocharger, replacing
256-001	0.20	Air cleaner, cleaning filter element
256-003	0.10	Air cleaner, primary filter replacing
256-004	0.10	Air cleaner, secondary filter replacing
256-006	1.00	Preheating coil, replacing
258-002	4.50	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.60	Coolant, changing
261-008	5.00	Radiator, replacing
261-016	0.60	Radiator hoses all, replacing
261-018	0.80	Expansion tank, replacing
262-098	0.70	Thermostat, replacing
263-012	1.00	Fan belt and/or alternator belt, replacing
263-022	1.00	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	1.00	Batteries, replacing
311-006	0.60	Earth lead to battery, replacing

Op.no.	time (h)	Notes
32		ALTERNATOR; CHARGE REGULATOR
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.90	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-014	0.50	Ignition switch, replacing
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
367-075	0.90	Engine speed control switch, replacing
37		CABLE; FUSE; RELAY
371-043	0.80	Battery disconnecter, replacing
371-090	3.50	Engine wire harness, replacing
372-002	0.50	Electrical distribution box, circuit board replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
383-001	0.30	Hour meter, replacing
386-006	1.50	Engine temperature sensor, replacing
386-007	0.60	Engine oil pressure sensor, replacing
386-011	0.30	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing
386-038	0.60	Engine rotation speed sensor, replacing
386-088	0.90	Engine rotation speed sensor (camshaft), replacing
39		MISCELLANEOUS
393-001	0.50	Voltage converter, replacing
393-021	0.60	Radio, replacing
395-021	0.70	Antenna, replacing

Op.no.	time (h)	Notes
395-031	0.40	Speaker, replacing
398-001	0.60	CareTrack antenna, replacing
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU
398-002	0.90	W-ECU, MID142, changing pre-programmed ECU
398-003	1.50	W-ECU, MID142, changing non-programmed ECU
398-003	1.50	W-ECU, MID142, changing non-programmed ECU
398-004	0.50	CareTrack battery, replacing

4 POWER TRANSMISSION

43 GEARBOX,

431-021	5.50	Swing gearbox, replacing
431-031	3.00	Pump gearbox coupling assembly, replacing
431-053	6.50	Swing unit, replacing
431-117	1.25	Track gearbox, replacing cover
431-127	6.50	Track unit, replacing

44 HYDROSTATIC DRIVE

441-021	2.50	Swing motor, replacing
441-022	0.70	Swing motor relief valve, replacing
441-024	1.50	Swing motor, replacing plate (brake)
441-025	1.25	Swing motor, replacing brake piston seal
441-112	0.70	Track motor relief valve, replacing
443-037	5.50	Center passage, replacing
443-038	7.00	Center passage, replacing seal kit
443-039	1.00	Center passage hose (valve – center passage), replacing
443-040	1.50	Center passage hose (center passage – motor), replacing

49 MISCELLANEOUS

492-021	11.00	Swing ring gear, replacing
492-031	3.00	Swing ring gear outer seal, replacing
492-032	9.00	Swing ring gear inner seal, replacing
492-091	0.40	Ring gear grease pipe, replacing

7 FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT

71 FRAME

710-001	3.50	Superstructure, removing
710-002	4.50	Superstructure, installing

Op.no.	time (h)	Notes
716-001	0.70	Counterweight, removing
716-002	0.90	Counterweight, fitting
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	3.00	Front idler, replacing one
775-021	3.50	Sprocket, replacing one
775-034	1.25	Track chain assembly, removing
775-035	1.75	Track chain assembly, installing
775-036	9.50	Track links, replacing
775-051	1.00	Top roller, replacing one
775-061	1.50	Bottom roller, replacing one
775-066	3.00	Bottom roller, replacing seal
775-071	0.90	Track guard, replacing one
775-081	3.00	Track recoil spring (tensioner) assembly, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.90	Engine hood, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.30	Rear-view mirror, changing
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
870-010	0.70	ECC, MID 146, changing pre-programmed ECU

Op.no.	time (h)	Notes
870-011	1.00	ECC, MID 146, changing non-programmed ECU
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	1.75	Pump suction hose and pipe, replacing
911-015	0.50	Oil level gauge, replacing
911-024	0.30	Pipe and hose (pump - valve), replacing
911-033	1.75	Oil cooler line bypass valve (check valve), replacing
911-038	2.50	Hydraulic oil tank, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	8.00	Control valve, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.80	Rupture valve, replacing (dipper arm cylinder)
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.50	Hydraulic pump, replacing
913-029	0.50	Pump regulator, replacing
914-041	0.80	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-060	0.70	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing

Op.no.	time (h)	Notes
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.00	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-005	0.80	Quickfit, removal
924-006	1.00	Quickfit, installation
925-011	1.25	Bucket assembly, replacing
925-012	0.60	Bucket assembly, removal
925-013	1.00	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	4.50	Boom, removal
974-014	4.00	Boom, installation
974-021	3.00	Boom cylinder, replacing
974-031	1.50	Boom cylinder, removal
974-032	1.25	Boom cylinder, installation
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-006	1.50	Dipper arm connecting rod, removal
975-007	1.50	Dipper arm connecting rod, installation
975-011	3.00	Dipper arm, removal
975-012	3.00	Dipper arm, installation
975-014	1.25	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-028	1.00	Connecting rod yoke, replacing
975-032	1.25	Connecting rod yoke, removal
975-035	1.25	Connecting rod yoke, installation
975-039	8.00	Dipper arm, replacing
975-040	3.00	Dipper arm cylinder bushing on boom, replacing
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-065	1.50	Bucket cylinder, installation

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.80	Maintenance service, daily	
173-004	1.50	Maintenance service, every 50 hours	
173-007	2.00	Maintenance service, every 250 hours	
173-010	4.00	Maintenance service, every 500 hours	
173-012	6.00	Maintenance service, every 1000 hours	
173-014	10.00	Maintenance service, every 2000 hours	
173-016	8.00	Maintenance service, every 3000 hours	220001 - 220453 210001 - 220000
173-018	10.00	Maintenance service, every 4000 hours	
173-019	0.30	Maintenance service, every 4500 hours	
173-022	3.00	Maintenance service, every 6000 hours	
173-022	0.70	Maintenance service, every 6000 hours	
173-040	1.75	Maintenance service, first 500 hours	
173-079	0.70	Swing motor gearbox, changing oil	
173-101	0.40	Track motor gearbox, changing oil	
173-401	0.50	Engine oil and filter, changing	
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.00	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-070	5.50	Engine, removing	
214-012	3.00	Valves, adjusting	
217-005	1.50	Oil level sensor, changing	
22		LUBRICATING SYSTEM	
221-022	0.80	Lubrication oil pressure, checking with pressure gauge	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
233-001	0.30	Fuel system, bleeding	
233-004	0.60	Feed pump, checking feed pressure	
234-041	0.50	Fuel filling pump, removing	
234-042	0.50	Fuel filling pump, installing	

Op.no.	time (h)	Notes
237-124	0.70	High pressure fuel system, pressure relief
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.90	Exhaust pipe, flexible tube, replacing
254-001	2.00	Diesel particulate filter, check and clean
254-022	0.90	ACM (After treatment control module), replacing, non-programmed
254-023	0.80	ACM (After treatment control module), replacing, pre-programmed
254-031	0.90	Air pump, replacing
254-046	0.30	Spark plug, replacing
254-047	0.40	Spark plug, checking
255-071	2.50	Turbocharger, replacing
256-001	0.20	Air cleaner, cleaning filter element
256-003	0.10	Air cleaner, primary filter replacing
256-004	0.10	Air cleaner, secondary filter replacing
256-006	1.00	Preheating coil, replacing
258-002	4.50	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.60	Coolant, changing
261-008	5.00	Radiator, replacing
261-016	0.60	Radiator hoses all, replacing
261-018	0.80	Expansion tank, replacing
262-098	0.70	Thermostat, replacing
263-012	1.00	Fan belt and/or alternator belt, replacing
263-022	1.00	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	1.00	Batteries, replacing
311-006	0.60	Earth lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-075	0.50	Alternator, test

Op.no.	time (h)	Notes
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.90	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-014	0.50	Ignition switch, replacing
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
367-075	0.90	Engine speed control switch, replacing
37		CABLE; FUSE; RELAY
371-043	0.80	Battery disconnecter, replacing
371-090	3.50	Engine wire harness, replacing
372-002	0.50	Electrical distribution box, circuit board replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
383-001	0.30	Hour meter, replacing
386-006	1.50	Engine temperature sensor, replacing
386-007	0.60	Engine oil pressure sensor, replacing
386-011	0.30	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing
386-038	0.60	Engine rotation speed sensor, replacing
386-088	0.90	Engine rotation speed sensor (camshaft), replacing
39		MISCELLANEOUS
393-001	0.50	Voltage converter, replacing
393-021	0.60	Radio, replacing
395-021	0.70	Antenna, replacing
395-031	0.40	Speaker, replacing
398-001	0.60	CareTrack antenna, replacing
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU

Op.no.	time (h)	Notes
398-002	0.90	W-ECU, MID142, changing pre-programmed ECU
398-003	1.50	W-ECU, MID142, changing non-programmed ECU
398-003	1.50	W-ECU, MID142, changing non-programmed ECU
398-004	0.50	CareTrack battery, replacing

4 POWER TRANSMISSION

43 GEARBOX,

431-021	5.50	Swing gearbox, replacing
431-031	3.00	Pump gearbox coupling assembly, replacing
431-053	6.50	Swing unit, replacing
431-117	1.25	Track gearbox, replacing cover
431-127	6.50	Track unit, replacing

44 HYDROSTATIC DRIVE

441-021	2.50	Swing motor, replacing
441-022	0.70	Swing motor relief valve, replacing
441-024	1.50	Swing motor, replacing plate (brake)
441-025	1.25	Swing motor, replacing brake piston seal
441-112	0.70	Track motor relief valve, replacing
443-037	5.50	Center passage, replacing
443-038	7.00	Center passage, replacing seal kit
443-039	1.00	Center passage hose (valve – center passage), replacing
443-040	1.50	Center passage hose (center passage – motor), replacing

49 MISCELLANEOUS

492-021	11.00	Swing ring gear, replacing
492-031	3.00	Swing ring gear outer seal, replacing
492-032	9.00	Swing ring gear inner seal, replacing
492-091	0.40	Ring gear grease pipe, replacing

7 FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT

71 FRAME

710-001	3.50	Superstructure, removing
710-002	4.50	Superstructure, installing
716-001	0.70	Counterweight, removing
716-002	0.90	Counterweight, fitting

Op.no.	time (h)	Notes
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	3.00	Front idler, replacing one
775-021	3.50	Sprocket, replacing one
775-034	1.25	Track chain assembly, removing
775-035	1.75	Track chain assembly, installing
775-036	9.50	Track links, replacing
775-051	1.00	Top roller, replacing one
775-061	1.50	Bottom roller, replacing one
775-066	3.00	Bottom roller, replacing seal
775-071	0.90	Track guard, replacing one
775-081	3.00	Track recoil spring (tensioner) assembly, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.90	Engine hood, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.30	Rear-view mirror, changing
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
870-010	0.70	ECC, MID 146, changing pre-programmed ECU
870-011	1.00	ECC, MID 146, changing non-programmed ECU
873-004	3.00	Heater core, replacing

Op.no.	time (h)	Notes
873-006	0.80	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	1.75	Pump suction hose and pipe, replacing
911-015	0.50	Oil level gauge, replacing
911-024	0.30	Pipe and hose (pump - valve), replacing
911-033	1.75	Oil cooler line bypass valve (check valve), replacing
911-038	2.50	Hydraulic oil tank, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	8.00	Control valve, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.80	Rupture valve, replacing (dipper arm cylinder)
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.50	Hydraulic pump, replacing
913-029	0.50	Pump regulator, replacing
914-041	0.80	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-060	0.70	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.00	Solenoid valve, replacing

Op.no.	time (h)	Notes
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-005	0.80	Quickfit, removal
924-006	1.00	Quickfit, installation
925-011	1.25	Bucket assembly, replacing
925-012	0.60	Bucket assembly, removal
925-013	1.00	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	4.50	Boom, removal
974-014	4.00	Boom, installation
974-021	3.00	Boom cylinder, replacing
974-031	1.50	Boom cylinder, removal
974-032	1.25	Boom cylinder, installation
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-006	1.50	Dipper arm connecting rod, removal
975-007	1.50	Dipper arm connecting rod, installation
975-011	3.00	Dipper arm, removal
975-012	3.00	Dipper arm, installation
975-014	1.25	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-028	1.00	Connecting rod yoke, replacing
975-032	1.25	Connecting rod yoke, removal
975-035	1.25	Connecting rod yoke, installation
975-039	8.00	Dipper arm, replacing
975-040	3.00	Dipper arm cylinder bushing on boom, replacing
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-065	1.50	Bucket cylinder, installation

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
172-002	2.00	Warranty inspection 100 hours
172-004	7.50	Warranty inspection 1000 hours
173-002	0.90	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	7.50	Maintenance service, every 1000 hours
173-013	5.00	Maintenance service, every 1500 hours
173-014	8.00	Maintenance service, every 2000 hours
173-016	11.00	Maintenance service, every 3000 hours
173-093	0.30	Track tension, checking
19		GENERAL
191-021	0.10	Service position 1
191-022	0.10	Service position 2
191-025	0.10	Service position 3
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-002	2.50	Compression test
210-070	3.50	Engine, removing
210-072	3.50	Engine, installing
211-002	6.00	Cylinder head, replacing gasket
211-079	3.00	Cylinder head, removing
214-012	2.50	Valves, adjusting
214-036	1.25	Valve covers, fitting new gasket
214-037	0.60	Valve cover, removing
214-038	0.60	Valve cover, installing
23		FUEL SYSTEM
233-011	0.20	Fuel pump, removing
233-012	0.20	Fuel pump, installing
236-001	0.30	Idling speed, checking and adjusting
236-030	1.25	Injection timing, checking
236-070	3.00	Injection pump, removing
237-002	1.50	Injectors, replacing all
25		INLET SYSTEM; EXHAUST SYSTEM
252-017	0.50	Silencer, removing
252-018	0.60	Silencer, installing

Op.no.	time (h)	Notes
256-010	0.20	Air cleaner, removing
256-011	0.20	Air cleaner, installing
26		COOLING SYSTEM
261-011	1.00	Radiator, removing
261-012	0.80	Radiator hose upper, replacing
261-013	0.80	Radiator, installing
261-014	0.90	Radiator hoses lower, replacing
261-020	0.20	Expansion tank, removing
261-021	0.10	Expansion tank, installing
262-002	2.50	Coolant pump, replacing
262-098	1.25	Thermostat, replacing
263-012	0.80	Fan belt and/or alternator belt, replacing
263-013	0.20	Fan belt and/or alternator belt, checking and adjusting tension
27		ENGINE CONTROL
272-020	0.30	Throttle control cable, removing
272-021	0.40	Throttle control cable, installing
272-024	0.20	Throttle controls, setting
273-021	0.30	Stop magnet, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.40	Batteries, replacing
311-005	0.60	Battery condition, check
32		ALTERNATOR; CHARGE REGULATOR
321-003	0.30	Alternator, removing
321-004	0.30	Alternator, installing
33		STARTING SYSTEM
331-016	0.30	Starter motor, removing
331-017	0.40	Starter motor, installing
333-002	0.80	Glow plug, removal
333-003	0.60	Glow plug, installation
35		LIGHTING
352-001	0.20	Lamp bulb, replacing
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-051	0.30	Travel alarm, replacing
363-002	0.60	Windscreen wiper front, replacing motor

Op.no.	time (h)	Notes
367-056	0.40	I-ECU, replacing
367-057	0.40	A-ECU (anti theft), replacing
37		CABLE; FUSE; RELAY
372-002	0.60	Electrical distribution box, circuit board replacing
4		POWER TRANSMISSION
44		HYDROSTATIC DRIVE
441-014	3.50	Travel motor removed, overhaul
441-030	1.50	Swing motor, removing
441-031	2.00	Swing motor, installing
441-034	3.00	Swing motor removed, overhaul
441-113	1.25	Track motor, removing
441-114	1.50	Track motor, installing
443-034	2.00	Centre passage, removing
443-035	2.00	Centre passage, installing
49		MISCELLANEOUS
492-023	3.50	Swing ring, removing
492-024	4.50	Swing ring, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-009	0.30	Front idler, removing
775-010	0.50	Front idler, installing
775-022	0.40	Sprocket, removal
775-023	0.70	Sprocket, installation
775-041	0.30	Rubber track, removing
775-042	0.40	Rubber track, installing
775-062	0.30	Bottom roller, removing
775-063	0.30	Bottom roller, installing
775-092	0.30	Chain guide, removing
775-093	0.30	Chain guide, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	0.90	Cab, removing

Op.no.	time (h)	Notes
810-002	0.90	Cab, installing
810-004	2.50	Cab platform, removal
810-005	3.00	Cab platform, installation
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.50	Engine hood, replacing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.60	Operator's seat, removing
852-004	0.70	Operator's seat, installing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-034	0.30	H-ECU (hydraulic), replacing pre-programmed ECU
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-013	0.40	Hydraulic oil cooler, removing
911-014	0.50	Hydraulic oil cooler, installing
911-036	1.25	Hydraulic oil tank, removing
911-037	1.50	Hydraulic oil tank, installing
912-088	2.00	Main Control Valve - Disassembly
912-089	2.00	Main Control Valve - Assembly
912-091	3.00	Main control valve, removal
912-092	2.50	Main control valve, installation
912-117	0.70	LS-pressure relief valve, replacing
912-150	0.60	Working pressure, checking and adjusting
912-174	0.40	Flushing valve, replacing
912-175	0.30	Secondary pressure limiting valve, replacing
912-176	0.30	Anti-cavitation check valve, replacing
913-006	0.40	LS (load sense) pressure, checking
913-023	0.50	Pump, removal
913-024	0.80	Pump, installation
913-031	0.40	Flow regulation valve, changing
914-047	0.40	Servo accumulator, removal
914-048	0.50	Servo accumulator, installation
914-055	0.70	Servo pressure, checking and adjusting
914-064	0.40	Servo valve, removal
914-065	0.60	Servo valve, installation
914-104	0.70	Travel valve (pedal), removing
914-105	0.90	Travel valve (pedal), installing
915-004	0.40	Control lever, removal

Op.no.	time (h)	Notes
915-005	0.60	Control lever, installation
915-005	0.60	Control lever, installation
97		UNIT, DIGGING
974-013	1.25	Boom, removal
974-014	1.75	Boom, installation
974-031	0.40	Boom cylinder, removal
974-032	0.60	Boom cylinder, installation
975-011	0.70	Dipper arm, removal
975-012	0.90	Dipper arm, installation
975-014	0.50	Dipper arm cylinder, removal
975-015	0.60	Dipper arm cylinder, installation
975-062	0.50	Bucket cylinder, removal
975-065	0.60	Bucket cylinder, installation

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.80	Maintenance service, daily	
173-004	1.50	Maintenance service, every 50 hours	
173-007	2.00	Maintenance service, every 250 hours	
173-010	4.00	Maintenance service, every 500 hours	
173-012	6.00	Maintenance service, every 1000 hours	
173-014	10.00	Maintenance service, every 2000 hours	
173-016	8.00	Maintenance service, every 3000 hours	220001 - 220091
173-018	10.00	Maintenance service, every 4000 hours	
173-019	0.30	Maintenance service, every 4500 hours	
173-022	3.00	Maintenance service, every 6000 hours	
173-022	0.70	Maintenance service, every 6000 hours	
173-040	1.75	Maintenance service, first 500 hours	
173-079	0.70	Swing motor gearbox, changing oil	
173-101	0.40	Track motor gearbox, changing oil	
173-401	0.50	Engine oil and filter, changing	
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.00	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-070	5.50	Engine, removing	
214-012	3.00	Valves, adjusting	
217-005	1.50	Oil level sensor, changing	
22		LUBRICATING SYSTEM	
221-022	0.80	Lubrication oil pressure, checking with pressure gauge	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
233-001	0.30	Fuel system, bleeding	
233-004	0.60	Feed pump, checking feed pressure	
234-041	0.50	Fuel filling pump, removing	
234-042	0.50	Fuel filling pump, installing	
237-124	0.70	High pressure fuel system, pressure relief	

Op.no.	time (h)	Notes
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.90	Exhaust pipe, flexible tube, replacing
254-001	2.00	Diesel particulate filter, check and clean
254-022	0.90	ACM (After treatment control module), replacing, non-programmed
254-023	0.80	ACM (After treatment control module), replacing, pre-programmed
254-031	0.90	Air pump, replacing
254-046	0.30	Spark plug, replacing
254-047	0.40	Spark plug, checking
255-071	2.50	Turbocharger, replacing
256-001	0.20	Air cleaner, cleaning filter element
256-003	0.10	Air cleaner, primary filter replacing
256-004	0.10	Air cleaner, secondary filter replacing
256-006	1.00	Preheating coil, replacing
258-002	4.50	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.60	Coolant, changing
261-008	5.00	Radiator, replacing
261-016	0.60	Radiator hoses all, replacing
261-018	0.80	Expansion tank, replacing
262-098	0.70	Thermostat, replacing
263-012	1.00	Fan belt and/or alternator belt, replacing
263-022	1.00	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	1.00	Batteries, replacing
311-006	0.60	Earth lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-075	0.50	Alternator, test

Op.no.	time (h)	Notes
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.90	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-014	0.50	Ignition switch, replacing
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
367-075	0.90	Engine speed control switch, replacing
37		CABLE; FUSE; RELAY
371-043	0.80	Battery disconnecter, replacing
371-090	3.50	Engine wire harness, replacing
372-002	0.50	Electrical distribution box, circuit board replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
383-001	0.30	Hour meter, replacing
386-006	1.50	Engine temperature sensor, replacing
386-007	0.60	Engine oil pressure sensor, replacing
386-011	0.30	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing
386-038	0.60	Engine rotation speed sensor, replacing
386-088	0.90	Engine rotation speed sensor (camshaft), replacing
39		MISCELLANEOUS
393-001	0.50	Voltage converter, replacing
393-021	0.60	Radio, replacing
395-021	0.70	Antenna, replacing
395-031	0.40	Speaker, replacing
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU
398-002	0.90	W-ECU, MID142, changing pre-programmed ECU

Op.no.	time (h)	Notes
398-003	1.50	W-ECU, MID142, changing non-programmed ECU
398-003	1.50	W-ECU, MID142, changing non-programmed ECU
398-004	0.50	CareTrack battery, replacing

4 POWER TRANSMISSION

43 GEARBOX,

431-021	5.50	Swing gearbox, replacing
431-031	3.00	Pump gearbox coupling assembly, replacing
431-053	6.50	Swing unit, replacing
431-117	1.25	Track gearbox, replacing cover
431-127	6.50	Track unit, replacing

44 HYDROSTATIC DRIVE

441-021	2.50	Swing motor, replacing
441-022	0.70	Swing motor relief valve, replacing
441-024	1.50	Swing motor, replacing plate (brake)
441-025	1.25	Swing motor, replacing brake piston seal
441-112	0.70	Track motor relief valve, replacing
443-037	5.50	Center passage, replacing
443-038	7.00	Center passage, replacing seal kit
443-039	1.00	Center passage hose (valve – center passage), replacing
443-040	1.50	Center passage hose (center passage – motor), replacing

49 MISCELLANEOUS

492-021	11.00	Swing ring gear, replacing
492-031	3.00	Swing ring gear outer seal, replacing
492-032	9.00	Swing ring gear inner seal, replacing
492-091	0.40	Ring gear grease pipe, replacing

7 FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT

71 FRAME

710-001	3.50	Superstructure, removing
710-002	4.50	Superstructure, installing
716-001	0.70	Counterweight, removing
716-002	0.90	Counterweight, fitting

Op.no.	time (h)	Notes
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	3.00	Front idler, replacing one
775-021	3.50	Sprocket, replacing one
775-034	1.25	Track chain assembly, removing
775-035	1.75	Track chain assembly, installing
775-036	9.50	Track links, replacing
775-051	1.00	Top roller, replacing one
775-061	1.50	Bottom roller, replacing one
775-066	3.00	Bottom roller, replacing seal
775-071	0.90	Track guard, replacing one
775-081	3.00	Track recoil spring (tensioner) assembly, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.90	Engine hood, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.30	Rear-view mirror, changing
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
870-010	0.70	ECC, MID 146, changing pre-programmed ECU
870-011	1.00	ECC, MID 146, changing non-programmed ECU
873-004	3.00	Heater core, replacing

Op.no.	time (h)	Notes
873-006	0.80	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	1.75	Pump suction hose and pipe, replacing
911-015	0.50	Oil level gauge, replacing
911-024	0.30	Pipe and hose (pump - valve), replacing
911-033	1.75	Oil cooler line bypass valve (check valve), replacing
911-038	2.50	Hydraulic oil tank, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	8.00	Control valve, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.80	Rupture valve, replacing (dipper arm cylinder)
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.50	Hydraulic pump, replacing
913-029	0.50	Pump regulator, replacing
914-041	0.80	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-060	0.70	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.00	Solenoid valve, replacing

Op.no.	time (h)	Notes
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-005	0.80	Quickfit, removal
924-006	1.00	Quickfit, installation
925-011	1.25	Bucket assembly, replacing
925-012	0.60	Bucket assembly, removal
925-013	1.00	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	4.50	Boom, removal
974-014	4.00	Boom, installation
974-021	3.00	Boom cylinder, replacing
974-031	1.50	Boom cylinder, removal
974-032	1.25	Boom cylinder, installation
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-006	1.50	Dipper arm connecting rod, removal
975-007	1.50	Dipper arm connecting rod, installation
975-011	3.00	Dipper arm, removal
975-012	3.00	Dipper arm, installation
975-014	1.25	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-028	1.00	Connecting rod yoke, replacing
975-032	1.25	Connecting rod yoke, removal
975-035	1.25	Connecting rod yoke, installation
975-039	8.00	Dipper arm, replacing
975-040	3.00	Dipper arm cylinder bushing on boom, replacing
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-065	1.50	Bucket cylinder, installation

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
172-002	2.00	Warranty inspection 100 hours
172-004	7.50	Warranty inspection 1000 hours
173-002	0.90	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	7.50	Maintenance service, every 1000 hours
173-013	5.00	Maintenance service, every 1500 hours
173-014	8.00	Maintenance service, every 2000 hours
173-016	11.00	Maintenance service, every 3000 hours
173-093	0.30	Track tension, checking
19		GENERAL
191-021	0.10	Service position 1
191-022	0.10	Service position 2
191-025	0.10	Service position 3
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-002	2.50	Compression test
210-070	3.50	Engine, removing
210-072	3.50	Engine, installing
211-002	6.00	Cylinder head, replacing gasket
211-079	3.00	Cylinder head, removing
214-012	2.50	Valves, adjusting
214-036	1.25	Valve covers, fitting new gasket
214-037	0.60	Valve cover, removing
214-038	0.60	Valve cover, installing
23		FUEL SYSTEM
233-011	0.20	Fuel pump, removing
233-012	0.20	Fuel pump, installing
236-001	0.30	Idling speed, checking and adjusting
236-030	1.25	Injection timing, checking
236-070	3.00	Injection pump, removing
237-002	1.50	Injectors, replacing all
25		INLET SYSTEM; EXHAUST SYSTEM
252-017	0.50	Silencer, removing
252-018	0.60	Silencer, installing

Op.no.	time (h)	Notes
256-010	0.20	Air cleaner, removing
256-011	0.20	Air cleaner, installing
26		COOLING SYSTEM
261-011	1.00	Radiator, removing
261-012	0.80	Radiator hose upper, replacing
261-013	0.80	Radiator, installing
261-014	0.90	Radiator hoses lower, replacing
261-020	0.20	Expansion tank, removing
261-021	0.10	Expansion tank, installing
262-002	2.50	Coolant pump, replacing
262-098	1.25	Thermostat, replacing
263-012	0.80	Fan belt and/or alternator belt, replacing
263-013	0.20	Fan belt and/or alternator belt, checking and adjusting tension
27		ENGINE CONTROL
272-020	0.30	Throttle control cable, removing
272-021	0.40	Throttle control cable, installing
272-024	0.20	Throttle controls, setting
273-021	0.30	Stop magnet, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.40	Batteries, replacing
311-005	0.60	Battery condition, check
32		ALTERNATOR; CHARGE REGULATOR
321-003	0.30	Alternator, removing
321-004	0.30	Alternator, installing
33		STARTING SYSTEM
331-016	0.30	Starter motor, removing
331-017	0.40	Starter motor, installing
333-002	0.80	Glow plug, removal
333-003	0.60	Glow plug, installation
35		LIGHTING
352-001	0.20	Lamp bulb, replacing
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-051	0.30	Travel alarm, replacing
363-002	0.60	Windscreen wiper front, replacing motor

Op.no.	time (h)	Notes
367-056	0.40	I-ECU, replacing
367-057	0.40	A-ECU (anti theft), replacing
37		CABLE; FUSE; RELAY
372-002	0.60	Electrical distribution box, circuit board replacing
4		POWER TRANSMISSION
44		HYDROSTATIC DRIVE
441-014	3.50	Travel motor removed, overhaul
441-030	1.50	Swing motor, removing
441-031	2.00	Swing motor, installing
441-034	3.00	Swing motor removed, overhaul
441-113	1.25	Track motor, removing
441-114	1.50	Track motor, installing
443-034	2.00	Centre passage, removing
443-035	2.00	Centre passage, installing
49		MISCELLANEOUS
492-023	3.50	Swing ring, removing
492-024	4.50	Swing ring, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-009	0.30	Front idler, removing
775-010	0.50	Front idler, installing
775-022	0.40	Sprocket, removal
775-023	0.70	Sprocket, installation
775-041	0.30	Rubber track, removing
775-042	0.40	Rubber track, installing
775-062	0.30	Bottom roller, removing
775-063	0.30	Bottom roller, installing
775-092	0.30	Chain guide, removing
775-093	0.30	Chain guide, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	0.90	Cab, removing

Op.no.	time (h)	Notes
810-002	0.90	Cab, installing
810-004	2.50	Cab platform, removal
810-005	3.00	Cab platform, installation
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.50	Engine hood, replacing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.60	Operator's seat, removing
852-004	0.70	Operator's seat, installing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-034	0.30	H-ECU (hydraulic), replacing pre-programmed ECU
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-013	0.40	Hydraulic oil cooler, removing
911-014	0.50	Hydraulic oil cooler, installing
911-036	1.25	Hydraulic oil tank, removing
911-037	1.50	Hydraulic oil tank, installing
912-088	2.00	Main Control Valve - Disassembly
912-089	2.00	Main Control Valve - Assembly
912-091	3.00	Main control valve, removal
912-092	2.50	Main control valve, installation
912-117	0.70	LS-pressure relief valve, replacing
912-150	0.60	Working pressure, checking and adjusting
912-174	0.40	Flushing valve, replacing
912-175	0.30	Secondary pressure limiting valve, replacing
912-176	0.30	Anti-cavitation check valve, replacing
913-006	0.40	LS (load sense) pressure, checking
913-023	0.70	Pump, removal
913-024	0.80	Pump, installation
913-031	0.40	Flow regulation valve, changing
913-064	0.90	Hydraulic pump, power control checking
914-047	0.40	Servo accumulator, removal
914-048	0.50	Servo accumulator, installation
914-055	0.70	Servo pressure, checking and adjusting
914-064	0.40	Servo valve, removal
914-065	0.60	Servo valve, installation
914-104	0.70	Travel valve (pedal), removing
914-105	0.90	Travel valve (pedal), installing

Op.no.	time (h)	Notes
915-004	0.40	Control lever, removal
915-005	0.60	Control lever, installation
915-005	0.60	Control lever, installation
97		UNIT, DIGGING
974-013	1.25	Boom, removal
974-014	1.75	Boom, installation
974-031	0.40	Boom cylinder, removal
974-032	0.60	Boom cylinder, installation
975-011	0.70	Dipper arm, removal
975-012	0.90	Dipper arm, installation
975-014	0.50	Dipper arm cylinder, removal
975-015	0.60	Dipper arm cylinder, installation
975-062	0.50	Bucket cylinder, removal
975-065	0.60	Bucket cylinder, installation

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
172-002	2.00	Warranty inspection 100 hours
172-004	7.50	Warranty inspection 1000 hours
173-002	0.90	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	7.50	Maintenance service, every 1000 hours
173-013	5.00	Maintenance service, every 1500 hours
173-014	8.00	Maintenance service, every 2000 hours
173-016	11.00	Maintenance service, every 3000 hours
173-093	0.30	Track tension, checking
19		GENERAL
191-021	0.10	Service position 1
191-022	0.10	Service position 2
191-025	0.10	Service position 3
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-002	2.50	Compression test
210-070	3.50	Engine, removing
210-072	3.50	Engine, installing
211-002	6.00	Cylinder head, replacing gasket
211-079	3.00	Cylinder head, removing
214-012	2.50	Valves, adjusting
214-036	1.25	Valve covers, fitting new gasket
214-037	0.60	Valve cover, removing
214-038	0.60	Valve cover, installing
23		FUEL SYSTEM
233-011	0.20	Fuel pump, removing
233-012	0.20	Fuel pump, installing
236-001	0.30	Idling speed, checking and adjusting
236-030	1.25	Injection timing, checking
236-070	3.00	Injection pump, removing
237-002	1.50	Injectors, replacing all
25		INLET SYSTEM; EXHAUST SYSTEM
252-017	0.50	Silencer, removing
252-018	0.60	Silencer, installing

Op.no.	time (h)	Notes
256-010	0.20	Air cleaner, removing
256-011	0.20	Air cleaner, installing
26		COOLING SYSTEM
261-011	1.00	Radiator, removing
261-012	0.80	Radiator hose upper, replacing
261-013	0.80	Radiator, installing
261-014	0.90	Radiator hoses lower, replacing
261-020	0.20	Expansion tank, removing
261-021	0.10	Expansion tank, installing
262-002	2.50	Coolant pump, replacing
262-098	1.25	Thermostat, replacing
263-012	0.80	Fan belt and/or alternator belt, replacing
263-013	0.20	Fan belt and/or alternator belt, checking and adjusting tension
27		ENGINE CONTROL
272-020	0.30	Throttle control cable, removing
272-021	0.40	Throttle control cable, installing
272-024	0.20	Throttle controls, setting
273-021	0.30	Stop magnet, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.40	Batteries, replacing
311-005	0.60	Battery condition, check
32		ALTERNATOR; CHARGE REGULATOR
321-003	0.30	Alternator, removing
321-004	0.30	Alternator, installing
33		STARTING SYSTEM
331-016	0.30	Starter motor, removing
331-017	0.40	Starter motor, installing
333-002	0.80	Glow plug, removal
333-003	0.60	Glow plug, installation
35		LIGHTING
352-001	0.20	Lamp bulb, replacing
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-051	0.30	Travel alarm, replacing
363-002	0.60	Windscreen wiper front, replacing motor

Op.no.	time (h)	Notes
367-056	0.40	I-ECU, replacing
367-057	0.40	A-ECU (anti theft), replacing
37		CABLE; FUSE; RELAY
372-002	0.60	Electrical distribution box, circuit board replacing
4		POWER TRANSMISSION
44		HYDROSTATIC DRIVE
441-014	3.50	Travel motor removed, overhaul
441-030	1.50	Swing motor, removing
441-031	2.00	Swing motor, installing
441-034	3.00	Swing motor removed, overhaul
441-113	1.25	Track motor, removing
441-114	1.50	Track motor, installing
443-034	2.00	Centre passage, removing
443-035	2.00	Centre passage, installing
49		MISCELLANEOUS
492-023	3.50	Swing ring, removing
492-024	4.50	Swing ring, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-009	0.30	Front idler, removing
775-010	0.50	Front idler, installing
775-022	0.40	Sprocket, removal
775-023	0.70	Sprocket, installation
775-041	0.30	Rubber track, removing
775-042	0.40	Rubber track, installing
775-062	0.30	Bottom roller, removing
775-063	0.30	Bottom roller, installing
775-092	0.30	Chain guide, removing
775-093	0.30	Chain guide, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	0.90	Cab, removing

Op.no.	time (h)	Notes
810-002	0.90	Cab, installing
810-004	2.50	Cab platform, removal
810-005	3.00	Cab platform, installation
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.50	Engine hood, replacing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.60	Operator's seat, removing
852-004	0.70	Operator's seat, installing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-034	0.30	H-ECU (hydraulic), replacing pre-programmed ECU
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-013	0.40	Hydraulic oil cooler, removing
911-014	0.50	Hydraulic oil cooler, installing
911-036	1.25	Hydraulic oil tank, removing
911-037	1.50	Hydraulic oil tank, installing
912-088	2.00	Main Control Valve - Disassembly
912-089	2.00	Main Control Valve - Assembly
912-091	3.00	Main control valve, removal
912-092	2.50	Main control valve, installation
912-117	0.70	LS-pressure relief valve, replacing
912-150	0.60	Working pressure, checking and adjusting
912-174	0.40	Flushing valve, replacing
912-175	0.30	Secondary pressure limiting valve, replacing
912-176	0.30	Anti-cavitation check valve, replacing
913-006	0.40	LS (load sense) pressure, checking
913-023	0.70	Pump, removal
913-024	0.80	Pump, installation
913-031	0.40	Flow regulation valve, changing
913-064	0.90	Hydraulic pump, power control checking
914-047	0.40	Servo accumulator, removal
914-048	0.50	Servo accumulator, installation
914-055	0.70	Servo pressure, checking and adjusting
914-064	0.40	Servo valve, removal
914-065	0.60	Servo valve, installation
914-104	0.70	Travel valve (pedal), removing
914-105	0.90	Travel valve (pedal), installing

Op.no.	time (h)	Notes
915-004	0.40	Control lever, removal
915-005	0.60	Control lever, installation
915-005	0.60	Control lever, installation
916-060	0.30	Calibration of X1 hydraulic with flow control
97		UNIT, DIGGING
974-013	1.75	Boom, removal
974-014	2.00	Boom, installation
974-031	0.50	Boom cylinder, removal
974-032	0.60	Boom cylinder, installation
975-011	0.70	Dipper arm, removal
975-012	0.90	Dipper arm, installation
975-014	0.50	Dipper arm cylinder, removal
975-015	0.60	Dipper arm cylinder, installation
975-062	0.50	Bucket cylinder, removal
975-065	0.60	Bucket cylinder, installation

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.80	Maintenance service, daily	
173-004	1.50	Maintenance service, every 50 hours	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
173-004	1.50	Maintenance service, every 50 hours	210001 - 220000 220001 - 230000
173-007	2.00	Maintenance service, every 250 hours	210001 - 220000 220001 - 230000
173-007	2.00	Maintenance service, every 250 hours	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
173-010	4.00	Maintenance service, every 500 hours	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
173-010	4.50	Maintenance service, every 500 hours	210001 - 220000 220001 - 230000
173-012	6.00	Maintenance service, every 1000 hours	210001 - 220000 220001 - 230000
173-012	6.00	Maintenance service, every 1000 hours	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
173-014	11.00	Maintenance service, every 2000 hours	210001 - 220000 220001 - 230000
173-014	11.00	Maintenance service, every 2000 hours	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
173-016	8.00	Maintenance service, every 3000 hours	210001 - 210539 220001 - 220848
173-018	11.00	Maintenance service, every 4000 hours	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
173-018	11.00	Maintenance service, every 4000 hours	210001 - 220000 220001 - 230000
173-019	0.30	Maintenance service, every 4500 hours	210001 - 220000 220001 - 230000

Op.no.	time (h)		Notes
173-022	0.70	Maintenance service, every 6000 hours	210540 - 220000 220849 - 230000
173-022	0.70	Maintenance service, every 6000 hours	210001 - 210539 220001 - 220848
173-022	0.70	Maintenance service, every 6000 hours	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
173-040	1.75	Maintenance service, first 500 hours	
173-079	1.50	Swing motor gearbox, changing oil	
173-101	0.40	Track motor gearbox, changing oil	
173-401	0.60	Engine oil and filter, changing	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
173-401	0.60	Engine oil and filter, changing	210001 - 220000 220001 - 230000
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.25	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	

2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	210001 - 220000 220001 - 230000
200-070	1.00	E-ECU, MID 128, changing pre-programmed ECU	210001 - 220000 220001 - 230000
200-070	1.00	E-ECU, MID 128, changing pre-programmed ECU	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000

21 ENGINE

210-070	5.00	Engine, removing	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
210-070	5.50	Engine, removing	210001 - 220000

Op.no.	time (h)		Notes
			220001 - 230000
210-072	5.50	Engine, installing	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
210-072	5.00	Engine, installing	210001 - 220000 220001 - 230000
214-012	3.00	Valves, adjusting	280001 - 310000 230001 - 240000
214-012	3.00	Valves, adjusting	210001 - 220000 220001 - 230000
214-012	2.50	Valves, adjusting	240001 - 250000 250001 - 260000 270001 - 280000 260001 - 270000
217-005	1.50	Oil level sensor, changing	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
217-005	1.50	Oil level sensor, changing	210001 - 220000 220001 - 230000
22		LUBRICATING SYSTEM	
221-022	0.80	Lubrication oil pressure, checking with pressure gauge	210001 - 220000 220001 - 230000
221-022	0.80	Lubrication oil pressure, checking with pressure gauge	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
223-006	1.25	Oil cooler, replacing	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
233-001	0.30	Fuel system, bleeding	
233-002	0.70	Feed pump, replacing	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
233-004	0.60	Feed pump, checking feed pressure	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000

Op.no.	time (h)		Notes
233-004	0.60	Feed pump, checking feed pressure	210001 - 220000 220001 - 230000
234-041	0.40	Fuel filling pump, removing	
234-042	0.50	Fuel filling pump, installing	
237-124	0.70	High pressure fuel system, pressure relief	210001 - 220000 220001 - 230000
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.25	Silencer, replacing	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
252-021	1.00	Exhaust pipe, flexible tube, replacing	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
252-021	0.90	Exhaust pipe, flexible tube, replacing	
254-001	2.00	Diesel particulate filter, check and clean	210001 - 220000 220001 - 230000
254-022	0.90	ACM (After treatment control module), replacing, non-programmed	210001 - 220000 220001 - 230000
254-023	0.80	ACM (After treatment control module), replacing, pre-programmed	210001 - 220000 220001 - 230000
254-031	0.90	Air pump, replacing	210001 - 220000 220001 - 230000
254-033	1.50	Burner, replacing	210001 - 220000 220001 - 230000
254-046	0.30	Spark plug, replacing	210001 - 220000 220001 - 230000
254-047	0.40	Spark plug, checking	210001 - 220000 220001 - 230000
254-056	0.60	NOx sensor, replacing	210001 - 220000 220001 - 230000
255-071	2.50	Turbocharger, replacing	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
255-071	2.50	Turbocharger, replacing	210001 - 220000 220001 - 230000
256-001	0.20	Air cleaner, cleaning filter element	
256-003	0.10	Air cleaner, primary filter replacing	
256-004	0.10	Air cleaner, secondary filter replacing	
256-006	0.70	Preheating coil, replacing	210001 - 220000 220001 - 230000
256-006	0.70	Preheating coil, replacing	230001 - 240000 240001 - 250000

Op.no.	time (h)		Notes
			250001 - 260000
			270001 - 310000
			260001 - 270000
258-002	4.50	Intercooler, replacing	210001 - 220000
			220001 - 230000
258-002	4.00	Intercooler, replacing	230001 - 240000
			240001 - 250000
			250001 - 260000
			270001 - 310000
			260001 - 270000
26		COOLING SYSTEM	
260-001	0.70	Carbon dioxide in coolant system, checking	
261-002	0.10	Coolant, checking anti-freeze resistance	
261-004	0.60	Coolant, changing	230001 - 240000
			240001 - 250000
			250001 - 260000
			270001 - 310000
			260001 - 270000
261-004	0.60	Coolant, changing	210001 - 220000
			220001 - 230000
261-008	5.00	Radiator, replacing	210001 - 220000
			220001 - 230000
261-008	4.50	Radiator, replacing	230001 - 240000
			240001 - 250000
			250001 - 260000
			270001 - 310000
			260001 - 270000
261-016	0.60	Radiator hoses all, replacing	230001 - 240000
			240001 - 250000
			250001 - 260000
			270001 - 310000
			260001 - 270000
261-016	0.60	Radiator hoses all, replacing	210001 - 220000
			220001 - 230000
261-018	0.80	Expansion tank, replacing	230001 - 240000
			240001 - 250000
			250001 - 260000
			270001 - 310000
			260001 - 270000
261-018	0.80	Expansion tank, replacing	210001 - 220000
			220001 - 230000
262-098	0.90	Thermostat, replacing	230001 - 240000
			240001 - 250000
			250001 - 260000
			270001 - 310000
			260001 - 270000
262-098	0.80	Thermostat, replacing	210001 - 220000
			220001 - 230000
263-012	0.80	Fan belt and/or alternator belt, replacing	230001 - 240000

Op.no.	time (h)		Notes
			240001 - 250000
			250001 - 260000
			270001 - 310000
			260001 - 270000
263-012	0.80	Fan belt and/or alternator belt, replacing	210001 - 220000
			220001 - 230000
263-022	0.80	Fan belt and/or alternator-, compressor belt, replacing all belts	210001 - 220000
			220001 - 230000
263-022	0.80	Fan belt and/or alternator-, compressor belt, replacing all belts	230001 - 240000
			240001 - 250000
			250001 - 260000
			270001 - 310000
			260001 - 270000
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-001	0.80	Battery charging capacity, checking	210001 - 220000
			220001 - 230000
311-001	0.60	Battery charging capacity, checking	230001 - 240000
			240001 - 250000
			250001 - 260000
			270001 - 310000
			260001 - 270000
311-002	1.00	Batteries, replacing	210001 - 220000
			220001 - 230000
311-002	1.00	Batteries, replacing	230001 - 240000
			240001 - 250000
			250001 - 260000
			270001 - 310000
			260001 - 270000
311-006	0.50	Earth lead to battery, replacing	230001 - 240000
			240001 - 250000
			250001 - 260000
			270001 - 310000
			260001 - 270000
311-006	0.60	Earth lead to battery, replacing	210001 - 220000
			220001 - 230000
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.25	Alternator, replacing incl function check	230001 - 240000
			240001 - 250000
			250001 - 260000
			270001 - 310000

Op.no.	time (h)		Notes
			260001 - 270000
321-075	0.50	Alternator, test	
33		STARTING SYSTEM	
331-018	4.00	Starter motor, replacing	210001 - 220000 220001 - 230000
331-018	0.90	Starter motor, replacing	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
331-021	0.30	Starter motor, tests	
331-081	0.30	Starter relay, replacing	
334-002	0.70	Starter switch, testing	
35		LIGHTING	
356-056	0.50	Work lighting, replacing one head lamp assy	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.30	Horn, replacing	
362-041	0.30	Rotating beacon, replacing	
362-051	0.50	Travel alarm, replacing	
363-002	1.25	Windscreen wiper front, replacing motor	
363-003	0.90	Windscreen wiper, replacing switch	
363-004	0.50	Windscreen flusher pump, replacing	210001 - 220000 220001 - 230000
363-004	0.50	Windscreen flusher pump, replacing	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
363-091	0.50	Windscreen wiper, replacing controller	
364-003	0.60	Control lockout lever switch, replacing	
364-014	0.50	Ignition switch, replacing	
364-056	0.80	Pre-heating relay, replacing	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	
367-075	0.90	Engine speed control switch, replacing	
37		CABLE; FUSE; RELAY	
371-043	0.60	Battery disconnecter, replacing	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000

Op.no.	time (h)		Notes
			260001 - 270000
371-043	0.80	Battery disconnecter, replacing	210001 - 220000 220001 - 230000
371-090	2.00	Engine wire harness, replacing	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
371-090	2.00	Engine wire harness, replacing	210001 - 220000 220001 - 230000
372-002	0.50	Electrical distribution box, circuit board replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-006	1.50	Engine temperature sensor, replacing	210001 - 220000 220001 - 230000
386-006	1.50	Engine temperature sensor, replacing	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
386-007	0.60	Engine oil pressure sensor, replacing	
386-011	0.30	Fuel level sender, replacing	
386-017	0.50	Hydraulic oil temperature sensor, replacing	
386-038	0.60	Engine rotation speed sensor, replacing	210001 - 220000 220001 - 230000
386-038	1.25	Engine rotation speed sensor, replacing	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
386-088	0.90	Engine rotation speed sensor (camshaft), replacing	210001 - 220000 220001 - 230000
386-088	0.90	Engine rotation speed sensor (camshaft), replacing	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
39		MISCELLANEOUS	
393-001	0.50	Voltage converter, replacing	
393-021	0.60	Radio, replacing	
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
398-001	0.60	CareTrack antenna, replacing	
398-002	0.90	W-ECU, MID142, changing pre-programmed ECU	210044 - 270000
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU	210001 - 210043
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	210044 - 270000

Op.no.	time (h)		Notes
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	210001 - 210043
398-004	0.50	CareTrack battery, replacing	

4 POWER TRANSMISSION

43

GEARBOX,

431-021	5.50	Swing gearbox, replacing	
431-026	0.50	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	4.00	Pump gearbox coupling assembly, replacing	
431-053	6.50	Swing unit, replacing	
431-115	1.25	Track gearbox (removed), replacing floating seal	
431-115	1.75	Track gearbox (removed), replacing floating seal	
431-117	1.25	Track gearbox, replacing cover	
431-127	6.50	Track unit, replacing	

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HYDROSTATIC DRIVE

441-021	2.50	Swing motor, replacing	
441-022	0.80	Swing motor relief valve, replacing	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	0.30	Swing motor removed, replacing seal	
441-111	6.50	Track motor, replacing	
441-112	0.70	Track motor relief valve, replacing	210001 - 210677 220001 - 230000 270001 - 270380 280001 - 280079
441-112	0.70	Track motor relief valve, replacing	210678 - 220000 270381 - 310000 280080 - 310000
443-037	5.50	Center passage, replacing	
443-038	7.00	Center passage, replacing seal kit	

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MISCELLANEOUS

492-021	11.00	Swing ring gear, replacing	
492-031	3.00	Swing ring gear outer seal, replacing	210311 - 220000 220554 - 230000
492-031	3.00	Swing ring gear outer seal, replacing	210001 - 210310 230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000 220001 - 220553
492-032	9.00	Swing ring gear inner seal, replacing	210311 - 220000

Op.no.	time (h)		Notes
			220554 - 230000
492-032	9.00	Swing ring gear inner seal, replacing	210001 - 210310 230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000 220001 - 220553
492-091	0.40	Ring gear grease pipe, replacing	
492-095	0.70	Swing ring gear cover, removal	220001 - 230000 210001 - 220000
492-096	0.70	Swing ring gear cover, installation	220001 - 230000 210001 - 220000

7 FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT

71 FRAME

710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	
715-019	0.60	Boom cylinder protecting guard, removal	220001 - 230000 210001 - 220000
715-020	1.25	Boom cylinder protecting guard, installation	220001 - 230000 210001 - 220000
715-023	0.90	Bucket cylinder protecting guard, removal	220001 - 230000 210001 - 220000
715-024	1.25	Bucket cylinder protecting guard, installation	220001 - 230000 210001 - 220000
716-003	2.00	Counterweight, replacing	

77 WHEELS; TRACKS; TYRE; HUB; DRUM

775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-034	1.25	Track chain assembly, removing	
775-035	1.75	Track chain assembly, installing	
775-036	9.50	Track links, replacing	
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	
775-066	3.00	Bottom roller, replacing seal	
775-071	0.90	Track guard, replacing one	
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	
775-094	1.75	Full track guard, replacing	

Op.no.	time (h)	Notes	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.75	Cab, removing	
810-001	1.75	Cab, removing	
810-002	2.50	Cab, installing	
810-070	1.00	Electric pedal control on X1 (on/off), replacing	270001 - 310000
810-071	0.90	Electric pedal control on X1 (proportional), replacing	270001 - 310000
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	0.90	Engine hood, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.30	Rear-view mirror, changing	
843-002	1.50	Windscreen, replacing	
843-012	4.00	Rear window, replacing	
843-013	4.50	Side window, replacing	
843-048	0.70	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	
852-012	1.75	Longitudinal adjustment cable, replacing	
852-013	0.60	Longitudinal suspension cable, replacing	
852-089	0.30	Seat cushion, replacing	
852-090	0.60	Backrest, replacing	
852-091	2.50	Seat support, replacing	
87		AIR CONDITIONING UNIT	
870-001	5.00	Cooler and Heater assembly, replacing	210001 - 220000 220001 - 230000
870-001	3.50	Cooler and Heater assembly, replacing	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
870-011	1.00	ECC, MID 146, changing non-programmed ECU	
872-001	0.50	Cab filter, replacing	
873-004	3.00	Heater core, replacing	
873-006	0.80	Fan motor, replacing	
873-011	0.70	Air mix door actuator, replacing	
874-006	1.75	Compressor, replacing incl draining and filling	210001 - 220000 220001 - 230000
874-006	2.50	Compressor, replacing incl draining and filling	230001 - 240000 240001 - 250000 250001 - 260000

Op.no.	time (h)		Notes
			270001 - 310000
			260001 - 270000
874-010	1.75	Condenser, replacing incl draining and filling	210001 - 220000
			220001 - 230000
874-010	1.50	Condenser, replacing incl draining and filling	230001 - 240000
			240001 - 250000
			250001 - 260000
			270001 - 310000
			260001 - 270000
874-011	1.50	Receiver, replacing incl draining and filling	230001 - 240000
			240001 - 250000
			250001 - 260000
			270001 - 310000
			260001 - 270000
874-011	1.75	Receiver, replacing incl draining and filling	210001 - 220000
			220001 - 230000
874-012	3.00	Evaporator, replacing incl draining and filling	230001 - 240000
			240001 - 250000
			250001 - 260000
			270001 - 310000
			260001 - 270000
874-012	3.00	Evaporator, replacing incl draining and filling	210001 - 220000
			220001 - 230000
874-013	3.00	Expansion valve, replacing incl draining and filling	210001 - 220000
			220001 - 230000
874-013	3.00	Expansion valve, replacing incl draining and filling	230001 - 240000
			240001 - 250000
			250001 - 260000
			270001 - 310000
			260001 - 270000
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)	
874-094	0.60	Vent actuator, replacing	
874-095	0.60	Mode (foot) actuator, replacing	
874-096	0.60	Intake actuator, replacing	
88		INTERIOR EQUIPMENT	
881-003	1.00	Instrument panel, replacing (left)	
881-005	1.25	Instrument panel, replacing (right)	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-005	1.75	Pump suction hose and pipe, replacing	230001 - 240000
			240001 - 250000
			250001 - 260000
			270001 - 310000

Op.no.	time (h)		Notes
			260001 - 270000
911-005	1.75	Pump suction hose and pipe, replacing	210001 - 220000 220001 - 230000
911-011	5.50	Oil cooler, replacing	
911-015	0.50	Oil level gauge, replacing	
911-024	0.70	Pipe and hose (pump - valve), replacing	
911-033	1.75	Oil cooler line bypass valve (check valve), replacing	
911-038	2.50	Hydraulic oil tank, replacing	
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
911-051	0.20	Breather, replacing	
912-001	8.00	Control valve, replacing	
912-067	0.50	Main pressure relief valve, replacing	
912-071	0.80	Rupture valve, replacing (boom cylinder)	
912-073	0.80	Rupture valve, replacing (dipper arm cylinder)	
912-160	0.80	Port relief valve pressure, checking and adjusting	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	4.00	Hydraulic pump, replacing	210001 - 220000 220001 - 230000
913-010	4.50	Hydraulic pump, replacing	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
913-029	0.60	Pump regulator, replacing	
914-041	0.80	Proportional solenoid valve (power shift), replacing	
914-051	0.30	Accumulator, replacing	
914-060	0.70	Servo pump, replacing	
914-081	1.75	Remote control valve (lever), replacing	
914-084	1.75	Remote control valve (pedal), replacing	
914-091	1.00	Solenoid valve, replacing	
916-096	0.80	Hammer and shear pedal valve (RCV), replacing	
916-096	0.80	Hammer and shear pedal valve (RCV), replacing	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-005	0.80	Quickfit, removal	
924-006	1.00	Quickfit, installation	
924-040	0.80	Quickfit, replacing	
925-011	1.25	Bucket assembly, replacing	
925-012	0.60	Bucket assembly, removal	
925-013	1.00	Bucket assembly, installation	

Op.no.	time (h)	Notes
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	4.00	Boom, removal
974-014	4.00	Boom, installation
974-021	3.00	Boom cylinder, replacing
974-031	1.50	Boom cylinder, removal
974-032	1.25	Boom cylinder, installation
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-006	1.50	Dipper arm connecting rod, removal
975-007	1.50	Dipper arm connecting rod, installation
975-011	3.00	Dipper arm, removal
975-012	3.00	Dipper arm, installation
975-014	1.25	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-028	1.00	Connecting rod yoke, replacing
975-032	1.25	Connecting rod yoke, removal
975-035	1.25	Connecting rod yoke, installation
975-039	8.00	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-065	1.50	Bucket cylinder, installation
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing
99		MISCELLANEOUS
992-002	5.50	Fire suppression system, actions after activation
992-003	6.50	Fire suppression system, actions after manual activation

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.80	Maintenance service, daily	
173-004	1.50	Maintenance service, every 50 hours	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
173-004	1.50	Maintenance service, every 50 hours	210001 - 220000 220001 - 230000
173-007	2.00	Maintenance service, every 250 hours	210001 - 220000 220001 - 230000
173-007	2.00	Maintenance service, every 250 hours	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
173-010	4.00	Maintenance service, every 500 hours	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
173-010	4.50	Maintenance service, every 500 hours	210001 - 220000 220001 - 230000
173-012	6.00	Maintenance service, every 1000 hours	210001 - 220000 220001 - 230000
173-012	6.00	Maintenance service, every 1000 hours	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
173-014	11.00	Maintenance service, every 2000 hours	210001 - 220000 220001 - 230000
173-014	11.00	Maintenance service, every 2000 hours	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
173-016	8.00	Maintenance service, every 3000 hours	210001 - 210539 220001 - 220848
173-018	11.00	Maintenance service, every 4000 hours	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
173-018	11.00	Maintenance service, every 4000 hours	210001 - 220000 220001 - 230000
173-019	0.30	Maintenance service, every 4500 hours	210001 - 220000 220001 - 230000

Op.no.	time (h)		Notes
173-022	0.70	Maintenance service, every 6000 hours	210001 - 210539 220001 - 220848
173-022	0.70	Maintenance service, every 6000 hours	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
173-022	0.70	Maintenance service, every 6000 hours	210540 - 220000 220849 - 230000
173-040	1.75	Maintenance service, first 500 hours	
173-079	1.50	Swing motor gearbox, changing oil	
173-101	0.40	Track motor gearbox, changing oil	
173-401	0.60	Engine oil and filter, changing	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
173-401	0.60	Engine oil and filter, changing	210001 - 220000 220001 - 230000
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.25	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	

2

ENGINE WITH MOUNTING AND EQUIPMENT

20

GENERAL

200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	210001 - 220000 220001 - 230000
200-070	1.00	E-ECU, MID 128, changing pre-programmed ECU	210001 - 220000 220001 - 230000
200-070	1.00	E-ECU, MID 128, changing pre-programmed ECU	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000

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ENGINE

210-070	5.00	Engine, removing	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
210-070	5.50	Engine, removing	210001 - 220000

Op.no.	time (h)		Notes
			220001 - 230000
210-072	5.50	Engine, installing	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
210-072	5.00	Engine, installing	210001 - 220000 220001 - 230000
214-012	3.00	Valves, adjusting	280001 - 310000 230001 - 240000
214-012	3.00	Valves, adjusting	210001 - 220000 220001 - 230000
214-012	2.50	Valves, adjusting	240001 - 250000 250001 - 260000 270001 - 280000 260001 - 270000
217-005	1.50	Oil level sensor, changing	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
217-005	1.50	Oil level sensor, changing	210001 - 220000 220001 - 230000
22		LUBRICATING SYSTEM	
221-022	0.80	Lubrication oil pressure, checking with pressure gauge	210001 - 220000 220001 - 230000
221-022	0.80	Lubrication oil pressure, checking with pressure gauge	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
223-006	1.25	Oil cooler, replacing	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
233-001	0.30	Fuel system, bleeding	
233-002	0.70	Feed pump, replacing	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
233-004	0.60	Feed pump, checking feed pressure	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000

Op.no.	time (h)		Notes
233-004	0.60	Feed pump, checking feed pressure	210001 - 220000 220001 - 230000
234-041	0.40	Fuel filling pump, removing	
234-042	0.50	Fuel filling pump, installing	
237-124	0.70	High pressure fuel system, pressure relief	210001 - 220000 220001 - 230000
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.25	Silencer, replacing	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
252-021	1.00	Exhaust pipe, flexible tube, replacing	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
252-021	0.90	Exhaust pipe, flexible tube, replacing	
254-001	2.00	Diesel particulate filter, check and clean	210001 - 220000 220001 - 230000
254-022	0.90	ACM (After treatment control module), replacing, non-programmed	210001 - 220000 220001 - 230000
254-023	0.80	ACM (After treatment control module), replacing, pre-programmed	210001 - 220000 220001 - 230000
254-031	0.90	Air pump, replacing	210001 - 220000 220001 - 230000
254-033	1.50	Burner, replacing	210001 - 220000 220001 - 230000
254-046	0.30	Spark plug, replacing	210001 - 220000 220001 - 230000
254-047	0.40	Spark plug, checking	210001 - 220000 220001 - 230000
254-056	0.60	NOx sensor, replacing	210001 - 220000 220001 - 230000
255-071	2.50	Turbocharger, replacing	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
255-071	2.50	Turbocharger, replacing	210001 - 220000 220001 - 230000
256-001	0.20	Air cleaner, cleaning filter element	
256-003	0.10	Air cleaner, primary filter replacing	
256-004	0.10	Air cleaner, secondary filter replacing	
256-006	0.70	Preheating coil, replacing	210001 - 220000 220001 - 230000
256-006	0.70	Preheating coil, replacing	230001 - 240000 240001 - 250000

Op.no.	time (h)		Notes
			250001 - 260000
			270001 - 310000
			260001 - 270000
258-002	4.50	Intercooler, replacing	210001 - 220000
			220001 - 230000
258-002	4.00	Intercooler, replacing	230001 - 240000
			240001 - 250000
			250001 - 260000
			270001 - 310000
			260001 - 270000
26		COOLING SYSTEM	
260-001	0.70	Carbon dioxide in coolant system, checking	
261-002	0.10	Coolant, checking anti-freeze resistance	
261-004	0.60	Coolant, changing	230001 - 240000
			240001 - 250000
			250001 - 260000
			270001 - 310000
			260001 - 270000
261-004	0.60	Coolant, changing	210001 - 220000
			220001 - 230000
261-008	5.00	Radiator, replacing	210001 - 220000
			220001 - 230000
261-008	4.50	Radiator, replacing	230001 - 240000
			240001 - 250000
			250001 - 260000
			270001 - 310000
			260001 - 270000
261-016	0.60	Radiator hoses all, replacing	230001 - 240000
			240001 - 250000
			250001 - 260000
			270001 - 310000
			260001 - 270000
261-016	0.60	Radiator hoses all, replacing	210001 - 220000
			220001 - 230000
261-018	0.80	Expansion tank, replacing	230001 - 240000
			240001 - 250000
			250001 - 260000
			270001 - 310000
			260001 - 270000
261-018	0.80	Expansion tank, replacing	210001 - 220000
			220001 - 230000
262-098	0.90	Thermostat, replacing	230001 - 240000
			240001 - 250000
			250001 - 260000
			270001 - 310000
			260001 - 270000
262-098	0.80	Thermostat, replacing	210001 - 220000
			220001 - 230000
263-012	0.80	Fan belt and/or alternator belt, replacing	230001 - 240000

Op.no.	time (h)		Notes
			240001 - 250000
			250001 - 260000
			270001 - 310000
			260001 - 270000
263-012	0.80	Fan belt and/or alternator belt, replacing	210001 - 220000
			220001 - 230000
263-022	0.80	Fan belt and/or alternator-, compressor belt, replacing all belts	230001 - 240000
			240001 - 250000
			250001 - 260000
			270001 - 310000
			260001 - 270000
263-022	0.80	Fan belt and/or alternator-, compressor belt, replacing all belts	210001 - 220000
			220001 - 230000
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-001	0.80	Battery charging capacity, checking	210001 - 220000
			220001 - 230000
311-001	0.60	Battery charging capacity, checking	230001 - 240000
			240001 - 250000
			250001 - 260000
			260001 - 270000
			270001 - 310000
311-002	1.00	Batteries, replacing	210001 - 220000
			220001 - 230000
311-002	1.00	Batteries, replacing	230001 - 240000
			240001 - 250000
			250001 - 260000
			260001 - 270000
			270001 - 310000
311-006	0.50	Earth lead to battery, replacing	230001 - 240000
			240001 - 250000
			250001 - 260000
			260001 - 270000
			270001 - 310000
311-006	0.60	Earth lead to battery, replacing	210001 - 220000
			220001 - 230000
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.25	Alternator, replacing incl function check	230001 - 240000
			240001 - 250000
			250001 - 260000
			260001 - 270000

Op.no.	time (h)		Notes
			270001 - 310000
321-075	0.50	Alternator, test	
33		STARTING SYSTEM	
331-018	4.00	Starter motor, replacing	210001 - 220000 220001 - 230000
331-018	0.90	Starter motor, replacing	230001 - 240000 240001 - 250000 250001 - 260000 260001 - 270000 270001 - 310000
331-021	0.30	Starter motor, tests	
331-081	0.30	Starter relay, replacing	
334-002	0.70	Starter switch, testing	
35		LIGHTING	
356-056	0.50	Work lighting, replacing one head lamp assy	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.30	Horn, replacing	
362-041	0.30	Rotating beacon, replacing	
362-051	0.50	Travel alarm, replacing	
363-002	1.25	Windscreen wiper front, replacing motor	
363-003	0.90	Windscreen wiper, replacing switch	
363-004	0.50	Windscreen flusher pump, replacing	210001 - 220000 220001 - 230000
363-004	0.50	Windscreen flusher pump, replacing	230001 - 240000 240001 - 250000 250001 - 260000 260001 - 270000 270001 - 310000
363-091	0.50	Windscreen wiper, replacing controller	
364-003	0.60	Control lockout lever switch, replacing	
364-014	0.50	Ignition switch, replacing	
364-056	0.80	Pre-heating relay, replacing	230001 - 240000 240001 - 250000 250001 - 260000 260001 - 270000 270001 - 310000
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	
367-075	0.90	Engine speed control switch, replacing	
37		CABLE; FUSE; RELAY	
371-043	0.60	Battery disconnecter, replacing	230001 - 240000 240001 - 250000 250001 - 260000 260001 - 270000

Op.no.	time (h)		Notes
			270001 - 310000
371-043	0.80	Battery disconnecter, replacing	210001 - 220000 220001 - 230000
371-090	2.00	Engine wire harness, replacing	230001 - 240000 240001 - 250000 250001 - 260000 260001 - 270000 270001 - 310000
371-090	2.00	Engine wire harness, replacing	210001 - 220000 220001 - 230000
372-002	0.50	Electrical distribution box, circuit board replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
383-001	0.30	Hour meter, replacing	
386-006	1.50	Engine temperature sensor, replacing	210001 - 220000 220001 - 230000
386-006	1.50	Engine temperature sensor, replacing	230001 - 240000 240001 - 250000 250001 - 260000 260001 - 270000 270001 - 310000
386-007	0.60	Engine oil pressure sensor, replacing	
386-011	0.30	Fuel level sender, replacing	
386-017	0.50	Hydraulic oil temperature sensor, replacing	
386-038	0.60	Engine rotation speed sensor, replacing	210001 - 220000 220001 - 230000
386-038	1.25	Engine rotation speed sensor, replacing	230001 - 240000 240001 - 250000 250001 - 260000 260001 - 270000 270001 - 310000
386-088	0.90	Engine rotation speed sensor (camshaft), replacing	210001 - 220000 220001 - 230000
386-088	0.90	Engine rotation speed sensor (camshaft), replacing	230001 - 240000 240001 - 250000 250001 - 260000 260001 - 270000 270001 - 310000
39		MISCELLANEOUS	
393-001	0.50	Voltage converter, replacing	
393-021	0.60	Radio, replacing	
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
398-001	0.60	CareTrack antenna, replacing	
398-002	0.90	W-ECU, MID142, changing pre-programmed ECU	210044 - 270000
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU	210001 - 210043
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	210044 - 270000

Op.no.	time (h)		Notes
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	210001 - 210043
398-004	0.50	CareTrack battery, replacing	

4 POWER TRANSMISSION

43

GEARBOX,

431-021	5.50	Swing gearbox, replacing	
431-026	0.50	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	4.00	Pump gearbox coupling assembly, replacing	
431-053	6.50	Swing unit, replacing	
431-115	1.25	Track gearbox (removed), replacing floating seal	
431-115	1.75	Track gearbox (removed), replacing floating seal	
431-117	1.25	Track gearbox, replacing cover	
431-127	6.50	Track unit, replacing	

44

HYDROSTATIC DRIVE

441-021	2.50	Swing motor, replacing	
441-022	0.80	Swing motor relief valve, replacing	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	0.30	Swing motor removed, replacing seal	
441-111	6.50	Track motor, replacing	
441-112	0.70	Track motor relief valve, replacing	210001 - 210677 220001 - 230000 270001 - 270380 280001 - 280079
441-112	0.70	Track motor relief valve, replacing	210678 - 220000 270381 - 310000 280080 - 310000
443-037	5.50	Center passage, replacing	
443-038	7.00	Center passage, replacing seal kit	

49

MISCELLANEOUS

492-021	11.00	Swing ring gear, replacing	
492-031	3.00	Swing ring gear outer seal, replacing	210311 - 220000 220554 - 230000
492-031	3.00	Swing ring gear outer seal, replacing	260001 - 270000 270001 - 310000 250001 - 260000 240001 - 250000 230001 - 240000 210001 - 210310 220001 - 220553
492-032	9.00	Swing ring gear inner seal, replacing	210311 - 220000

Op.no.	time (h)		Notes
			220554 - 230000
492-032	9.00	Swing ring gear inner seal, replacing	260001 - 270000 270001 - 310000 250001 - 260000 240001 - 250000 230001 - 240000 210001 - 210310 220001 - 220553
492-091	0.40	Ring gear grease pipe, replacing	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	
716-003	2.00	Counterweight, replacing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-034	1.25	Track chain assembly, removing	
775-035	1.75	Track chain assembly, installing	
775-036	9.50	Track links, replacing	
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	
775-066	3.00	Bottom roller, replacing seal	
775-071	0.90	Track guard, replacing one	
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	
775-094	1.75	Full track guard, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.75	Cab, removing	
810-001	1.75	Cab, removing	
810-002	2.50	Cab, installing	
810-070	1.00	Electric pedal control on X1 (on/off), replacing	270001 - 310000
810-071	0.90	Electric pedal control on X1 (proportional), replacing	270001 - 310000
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	0.90	Engine hood, replacing	

Op.no.	time (h)	Notes	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.30	Rear-view mirror, changing	
843-002	1.50	Windscreen, replacing	
843-012	4.00	Rear window, replacing	
843-013	4.50	Side window, replacing	
843-048	0.70	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	
852-012	1.75	Longitudinal adjustment cable, replacing	
852-013	0.60	Longitudinal suspension cable, replacing	
852-089	0.30	Seat cushion, replacing	
852-090	0.60	Backrest, replacing	
852-091	2.50	Seat support, replacing	
87		AIR CONDITIONING UNIT	
870-001	5.00	Cooler and Heater assembly, replacing	210001 - 220000 220001 - 230000
870-001	3.50	Cooler and Heater assembly, replacing	230001 - 240000 240001 - 250000 250001 - 260000 260001 - 270000 270001 - 310000
870-010	0.70	ECC, MID 146, changing pre-programmed ECU	
870-011	1.00	ECC, MID 146, changing non-programmed ECU	
872-001	0.50	Cab filter, replacing	
873-004	3.00	Heater core, replacing	
873-006	0.80	Fan motor, replacing	
873-011	0.70	Air mix door actuator, replacing	
874-006	1.75	Compressor, replacing incl draining and filling	210001 - 220000 220001 - 230000
874-006	2.50	Compressor, replacing incl draining and filling	230001 - 240000 240001 - 250000 250001 - 260000 260001 - 270000 270001 - 310000
874-010	1.75	Condenser, replacing incl draining and filling	210001 - 220000 220001 - 230000
874-010	1.50	Condenser, replacing incl draining and filling	230001 - 240000 240001 - 250000 250001 - 260000 260001 - 270000 270001 - 310000
874-011	1.50	Receiver, replacing incl draining and filling	230001 - 240000 240001 - 250000 250001 - 260000 260001 - 270000

Op.no.	time (h)		Notes
			270001 - 310000
874-011	1.75	Receiver, replacing incl draining and filling	210001 - 220000 220001 - 230000
874-012	3.00	Evaporator, replacing incl draining and filling	210001 - 220000 220001 - 230000
874-012	3.00	Evaporator, replacing incl draining and filling	230001 - 240000 240001 - 250000 250001 - 260000 260001 - 270000 270001 - 310000
874-013	3.00	Expansion valve, replacing incl draining and filling	210001 - 220000 220001 - 230000
874-013	3.00	Expansion valve, replacing incl draining and filling	230001 - 240000 240001 - 250000 250001 - 260000 260001 - 270000 270001 - 310000
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)	
874-094	0.60	Vent actuator, replacing	
874-095	0.60	Mode (foot) actuator, replacing	
874-096	0.60	Intake actuator, replacing	
88		INTERIOR EQUIPMENT	
881-003	1.00	Instrument panel, replacing (left)	
881-005	1.25	Instrument panel, replacing (right)	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-005	1.75	Pump suction hose and pipe, replacing	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
911-005	1.75	Pump suction hose and pipe, replacing	210001 - 220000 220001 - 230000
911-011	5.50	Oil cooler, replacing	
911-015	0.50	Oil level gauge, replacing	
911-024	0.70	Pipe and hose (pump - valve), replacing	
911-033	1.75	Oil cooler line bypass valve (check valve), replacing	
911-038	2.50	Hydraulic oil tank, replacing	
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
911-051	0.20	Breather, replacing	

Op.no.	time (h)		Notes
912-001	8.00	Control valve, replacing	
912-067	0.50	Main pressure relief valve, replacing	
912-071	0.80	Rupture valve, replacing (boom cylinder)	
912-073	0.80	Rupture valve, replacing (dipper arm cylinder)	
912-160	0.80	Port relief valve pressure, checking and adjusting	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	4.00	Hydraulic pump, replacing	210001 - 220000 220001 - 230000
913-010	4.50	Hydraulic pump, replacing	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
913-029	0.60	Pump regulator, replacing	
914-041	0.80	Proportional solenoid valve (power shift), replacing	
914-051	0.30	Accumulator, replacing	
914-060	0.70	Servo pump, replacing	
914-081	1.75	Remote control valve (lever), replacing	
914-084	1.75	Remote control valve (pedal), replacing	
914-091	1.00	Solenoid valve, replacing	
916-096	0.80	Hammer and shear pedal valve (RCV), replacing	
916-096	0.80	Hammer and shear pedal valve (RCV), replacing	230001 - 240000 240001 - 250000 250001 - 260000 270001 - 310000 260001 - 270000
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-005	0.80	Quickfit, removal	
924-006	1.00	Quickfit, installation	
924-040	0.80	Quickfit, replacing	
925-011	1.25	Bucket assembly, replacing	
925-012	0.60	Bucket assembly, removal	
925-013	1.00	Bucket assembly, installation	
97		UNIT, DIGGING	
974-010	12.00	Boom, replacing	
974-013	4.00	Boom, removal	
974-014	4.00	Boom, installation	
974-021	3.00	Boom cylinder, replacing	
974-031	1.50	Boom cylinder, removal	
974-032	1.25	Boom cylinder, installation	
974-038	3.50	Lower boom cylinder bushing, replacing	
974-039	3.50	Upper boom cylinder bushing, replacing	
975-006	1.50	Dipper arm connecting rod, removal	

Op.no.	time (h)	Notes
975-007	1.50	Dipper arm connecting rod, installation
975-011	3.00	Dipper arm, removal
975-012	3.00	Dipper arm, installation
975-014	1.25	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-028	1.00	Connecting rod yoke, replacing
975-032	1.25	Connecting rod yoke, removal
975-035	1.25	Connecting rod yoke, installation
975-039	8.00	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-065	1.50	Bucket cylinder, installation
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.80	Maintenance service, daily	
173-004	1.50	Maintenance service, every 50 hours	210001 - 220000 220001 - 230000
173-007	2.00	Maintenance service, every 250 hours	210001 - 220000 220001 - 230000
173-010	4.50	Maintenance service, every 500 hours	210001 - 220000 220001 - 230000
173-012	6.00	Maintenance service, every 1000 hours	210001 - 220000 220001 - 230000
173-014	11.00	Maintenance service, every 2000 hours	210001 - 220000 220001 - 230000
173-016	8.00	Maintenance service, every 3000 hours	210001 - 210539 220001 - 220848
173-018	11.00	Maintenance service, every 4000 hours	210001 - 220000 220001 - 230000
173-019	0.30	Maintenance service, every 4500 hours	210001 - 220000 220001 - 230000
173-022	0.70	Maintenance service, every 6000 hours	210001 - 210539 220001 - 220848
173-022	0.70	Maintenance service, every 6000 hours	210540 - 220000 220849 - 230000
173-040	1.75	Maintenance service, first 500 hours	
173-079	1.50	Swing motor gearbox, changing oil	
173-101	0.40	Track motor gearbox, changing oil	
173-401	0.60	Engine oil and filter, changing	210001 - 220000 220001 - 230000
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.25	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	210001 - 220000 220001 - 230000
200-070	1.00	E-ECU, MID 128, changing pre-programmed ECU	210001 - 220000 220001 - 230000
21		ENGINE	
210-070	5.50	Engine, removing	210001 - 220000 220001 - 230000
210-072	5.00	Engine, installing	210001 - 220000 220001 - 230000

Op.no.	time (h)		Notes
214-012	3.00	Valves, adjusting	210001 - 220000 220001 - 230000
217-005	1.50	Oil level sensor, changing	210001 - 220000 220001 - 230000
22		LUBRICATING SYSTEM	
221-022	0.80	Lubrication oil pressure, checking with pressure gauge	210001 - 220000 220001 - 230000
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
233-001	0.30	Fuel system, bleeding	
233-004	0.60	Feed pump, checking feed pressure	210001 - 220000 220001 - 230000
234-041	0.40	Fuel filling pump, removing	
234-042	0.50	Fuel filling pump, installing	
237-124	0.70	High pressure fuel system, pressure relief	210001 - 220000 220001 - 230000
25		INLET SYSTEM; EXHAUST SYSTEM	
252-021	0.90	Exhaust pipe, flexible tube, replacing	
254-001	2.00	Diesel particulate filter, check and clean	210001 - 220000 220001 - 230000
254-022	0.90	ACM (After treatment control module), replacing, non-programmed	210001 - 220000 220001 - 230000
254-023	0.80	ACM (After treatment control module), replacing, pre-programmed	210001 - 220000 220001 - 230000
254-031	0.90	Air pump, replacing	210001 - 220000 220001 - 230000
254-033	1.50	Burner, replacing	210001 - 220000 220001 - 230000
254-046	0.30	Spark plug, replacing	210001 - 220000 220001 - 230000
254-047	0.40	Spark plug, checking	210001 - 220000 220001 - 230000
254-056	0.60	NOx sensor, replacing	210001 - 220000 220001 - 230000
255-071	2.50	Turbocharger, replacing	210001 - 220000 220001 - 230000
256-001	0.20	Air cleaner, cleaning filter element	
256-003	0.10	Air cleaner, primary filter replacing	
256-004	0.10	Air cleaner, secondary filter replacing	
256-006	0.70	Preheating coil, replacing	210001 - 220000 220001 - 230000
258-002	4.50	Intercooler, replacing	210001 - 220000 220001 - 230000

Op.no.	time (h)		Notes
26		COOLING SYSTEM	
260-001	0.70	Carbon dioxide in coolant system, checking	
261-002	0.10	Coolant, checking anti-freeze resistance	
261-004	0.60	Coolant, changing	210001 - 220000 220001 - 230000
261-008	5.00	Radiator, replacing	210001 - 220000 220001 - 230000
261-016	0.60	Radiator hoses all, replacing	210001 - 220000 220001 - 230000
261-018	0.80	Expansion tank, replacing	210001 - 220000 220001 - 230000
262-098	0.80	Thermostat, replacing	210001 - 220000 220001 - 230000
263-012	0.80	Fan belt and/or alternator belt, replacing	210001 - 220000 220001 - 230000
263-022	0.80	Fan belt and/or alternator-, compressor belt, replacing all belts	210001 - 220000 220001 - 230000
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-001	0.80	Battery charging capacity, checking	210001 - 220000 220001 - 230000
311-002	1.00	Batteries, replacing	210001 - 220000 220001 - 230000
311-006	0.60	Earth lead to battery, replacing	210001 - 220000 220001 - 230000
32		ALTERNATOR; CHARGE REGULATOR	
321-075	0.50	Alternator, test	
33		STARTING SYSTEM	
331-018	4.00	Starter motor, replacing	210001 - 220000 220001 - 230000
331-021	0.30	Starter motor, tests	
331-081	0.30	Starter relay, replacing	
334-002	0.70	Starter switch, testing	
35		LIGHTING	
356-056	0.50	Work lighting, replacing one head lamp assy	

Op.no.	time (h)		Notes
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.30	Horn, replacing	
362-041	0.30	Rotating beacon, replacing	
362-051	0.50	Travel alarm, replacing	
363-002	1.25	Windscreen wiper front, replacing motor	
363-003	0.90	Windscreen wiper, replacing switch	
363-004	0.50	Windscreen flusher pump, replacing	210001 - 220000 220001 - 230000
363-091	0.50	Windscreen wiper, replacing controller	
364-003	0.60	Control lockout lever switch, replacing	
364-014	0.50	Ignition switch, replacing	
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	
367-075	0.90	Engine speed control switch, replacing	
37		CABLE; FUSE; RELAY	
371-043	0.80	Battery disconnecter, replacing	210001 - 220000 220001 - 230000
371-090	2.00	Engine wire harness, replacing	210001 - 220000 220001 - 230000
372-002	0.50	Electrical distribution box, circuit board replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
383-001	0.30	Hour meter, replacing	
386-006	1.50	Engine temperature sensor, replacing	210001 - 220000 220001 - 230000
386-007	0.60	Engine oil pressure sensor, replacing	
386-011	0.30	Fuel level sender, replacing	
386-017	0.50	Hydraulic oil temperature sensor, replacing	
386-038	0.60	Engine rotation speed sensor, replacing	210001 - 220000 220001 - 230000
386-088	0.90	Engine rotation speed sensor (camshaft), replacing	210001 - 220000 220001 - 230000
39		MISCELLANEOUS	
393-001	0.50	Voltage converter, replacing	
393-021	0.60	Radio, replacing	
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
398-001	0.60	CareTrack antenna, replacing	
398-002	0.90	W-ECU, MID142, changing pre-programmed ECU	210044 - 270000
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU	210001 - 210043
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	210044 - 270000

Op.no.	time (h)		Notes
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	210001 - 210043
398-004	0.50	CareTrack battery, replacing	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	5.50	Swing gearbox, replacing	220001 - 230000 210001 - 220000
431-026	0.50	Swing gearbox removed, replacing seal	220001 - 230000 210001 - 220000
431-027	2.50	Swing gearbox removed, replacing shaft	220001 - 230000 210001 - 220000
431-031	4.00	Pump gearbox coupling assembly, replacing	220001 - 230000 210001 - 220000
431-053	6.50	Swing unit, replacing	220001 - 230000 210001 - 220000
431-115	1.75	Track gearbox (removed), replacing floating seal	220001 - 230000 210001 - 220000
431-117	1.25	Track gearbox, replacing cover	220001 - 230000 210001 - 220000
431-127	6.50	Track unit, replacing	210001 - 220000 220001 - 230000
44		HYDROSTATIC DRIVE	
441-021	2.50	Swing motor, replacing	220001 - 230000 210001 - 220000
441-022	0.80	Swing motor relief valve, replacing	220001 - 230000 210001 - 220000
441-024	1.50	Swing motor, replacing plate (brake)	220001 - 230000 210001 - 220000
441-025	1.50	Swing motor, replacing brake piston seal	220001 - 230000 210001 - 220000
441-026	0.30	Swing motor removed, replacing seal	220001 - 230000 210001 - 220000
441-111	6.50	Track motor, replacing	
441-112	0.70	Track motor relief valve, replacing	210678 - 220000 270381 - 310000 280080 - 310000
441-112	0.70	Track motor relief valve, replacing	220001 - 230000 210001 - 210677 270001 - 270380 280001 - 280079
443-037	5.50	Center passage, replacing	220001 - 230000 210001 - 220000
443-038	7.00	Center passage, replacing seal kit	220001 - 230000 210001 - 220000

Op.no.	time (h)		Notes
49		MISCELLANEOUS	
492-021	11.00	Swing ring gear, replacing	220001 - 230000 210001 - 220000
492-031	3.00	Swing ring gear outer seal, replacing	210311 - 220000 220554 - 230000
492-031	3.00	Swing ring gear outer seal, replacing	210001 - 210310 220001 - 220553 260001 - 270000 270001 - 310000 250001 - 260000 240001 - 250000 230001 - 240000
492-032	9.00	Swing ring gear inner seal, replacing	210311 - 220000 220554 - 230000
492-032	9.00	Swing ring gear inner seal, replacing	210001 - 210310 220001 - 220553 260001 - 270000 270001 - 310000 250001 - 260000 240001 - 250000 230001 - 240000
492-091	0.40	Ring gear grease pipe, replacing	220001 - 230000 210001 - 220000
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	3.50	Superstructure, removing	220001 - 230000 210001 - 220000
710-002	4.50	Superstructure, installing	220001 - 230000 210001 - 220000
716-003	2.00	Counterweight, replacing	220001 - 230000 210001 - 220000
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	220001 - 230000 210001 - 220000
775-021	3.50	Sprocket, replacing one	220001 - 230000 210001 - 220000
775-034	1.25	Track chain assembly, removing	220001 - 230000 210001 - 220000
775-035	1.75	Track chain assembly, installing	220001 - 230000 210001 - 220000
775-036	9.50	Track links, replacing	220001 - 230000 210001 - 220000
775-051	1.00	Top roller, replacing one	220001 - 230000

Op.no.	time (h)		Notes
			210001 - 220000
775-061	1.50	Bottom roller, replacing one	220001 - 230000
			210001 - 220000
775-066	3.00	Bottom roller, replacing seal	220001 - 230000
			210001 - 220000
775-071	0.90	Track guard, replacing one	
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	220001 - 230000
			210001 - 220000

8 MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE

81 CAB, NAKED; CANOPY

810-001	1.75	Cab, removing	
810-001	1.75	Cab, removing	
810-002	2.50	Cab, installing	
810-070	1.00	Electric pedal control on X1 (on/off), replacing	270001 - 310000
810-071	0.90	Electric pedal control on X1 (proportional), replacing	270001 - 310000

82 ENGINE HOOD; MUDGUARD; FOOT STEP

821-005	0.90	Engine hood, replacing	
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84 TRIM PART, OUTSIDE; GLASS; SEALING MOULDING

841-061	0.30	Rear-view mirror, changing	
843-002	1.50	Windscreen, replacing	
843-012	4.00	Rear window, replacing	
843-013	4.50	Side window, replacing	
843-048	0.70	Door window, replacing	

85 CAB INTERIOR/UPHOLSTERY

852-008	1.25	Seat, replacing	
852-012	1.75	Longitudinal adjustment cable, replacing	
852-013	0.60	Longitudinal suspension cable, replacing	
852-089	0.30	Seat cushion, replacing	
852-090	0.60	Backrest, replacing	
852-091	2.50	Seat support, replacing	

87 AIR CONDITIONING UNIT

870-001	5.00	Cooler and Heater assembly, replacing	210001 - 220000
			220001 - 230000
870-010	0.70	ECC, MID 146, changing pre-programmed ECU	
870-011	1.00	ECC, MID 146, changing non-programmed ECU	
872-001	0.50	Cab filter, replacing	
873-004	3.00	Heater core, replacing	
873-006	0.80	Fan motor, replacing	

Op.no.	time (h)		Notes
873-011	0.70	Air mix door actuator, replacing	
874-006	1.75	Compressor, replacing incl draining and filling	210001 - 220000 220001 - 230000
874-010	1.75	Condenser, replacing incl draining and filling	210001 - 220000 220001 - 230000
874-011	1.75	Receiver, replacing incl draining and filling	210001 - 220000 220001 - 230000
874-012	3.00	Evaporator, replacing incl draining and filling	210001 - 220000 220001 - 230000
874-013	3.00	Expansion valve, replacing incl draining and filling	210001 - 220000 220001 - 230000
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)	
874-094	0.60	Vent actuator, replacing	
874-095	0.60	Mode (foot) actuator, replacing	
874-096	0.60	Intake actuator, replacing	
88		INTERIOR EQUIPMENT	
881-003	1.00	Instrument panel, replacing (left)	
881-005	1.25	Instrument panel, replacing (right)	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-005	1.75	Pump suction hose and pipe, replacing	210001 - 220000 220001 - 230000
911-011	5.50	Oil cooler, replacing	
911-015	0.50	Oil level gauge, replacing	
911-024	0.70	Pipe and hose (pump - valve), replacing	
911-033	1.75	Oil cooler line bypass valve (check valve), replacing	
911-038	2.50	Hydraulic oil tank, replacing	
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
911-051	0.20	Breather, replacing	
912-001	8.00	Control valve, replacing	
912-067	0.50	Main pressure relief valve, replacing	
912-071	0.80	Rupture valve, replacing (boom cylinder)	
912-073	0.80	Rupture valve, replacing (dipper arm cylinder)	
912-160	0.80	Port relief valve pressure, checking and adjusting	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	4.00	Hydraulic pump, replacing	210001 - 220000 220001 - 230000
913-029	0.60	Pump regulator, replacing	

Op.no.	time (h)	Notes
914-041	0.80	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-060	0.70	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.00	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-005	0.80	Quickfit, removal
924-006	1.00	Quickfit, installation
924-040	0.80	Quickfit, replacing
925-011	1.25	Bucket assembly, replacing
925-012	0.60	Bucket assembly, removal
925-013	1.00	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	4.00	Boom, removal
974-014	4.00	Boom, installation
974-021	3.00	Boom cylinder, replacing
974-031	1.50	Boom cylinder, removal
974-032	1.25	Boom cylinder, installation
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-006	1.50	Dipper arm connecting rod, removal
975-007	1.50	Dipper arm connecting rod, installation
975-011	3.00	Dipper arm, removal
975-012	3.00	Dipper arm, installation
975-014	1.25	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-028	1.00	Connecting rod yoke, replacing
975-032	1.25	Connecting rod yoke, removal
975-035	1.25	Connecting rod yoke, installation
975-039	8.00	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-065	1.50	Bucket cylinder, installation
975-072	3.50	Bucket cylinder bushing on dipper arm, changing

Op.no.	time (h)	Notes
975-073	3.50	Bucket cylinder bushing lever-link, replacing

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.80	Maintenance service, daily	
173-004	1.50	Maintenance service, every 50 hours	220001 - 230000 210001 - 220000
173-007	2.00	Maintenance service, every 250 hours	220001 - 230000 210001 - 220000
173-010	4.50	Maintenance service, every 500 hours	220001 - 230000 210001 - 220000
173-012	6.00	Maintenance service, every 1000 hours	220001 - 230000 210001 - 220000
173-014	11.00	Maintenance service, every 2000 hours	220001 - 230000 210001 - 220000
173-016	8.00	Maintenance service, every 3000 hours	220001 - 220848 210001 - 210539
173-018	11.00	Maintenance service, every 4000 hours	220001 - 230000 210001 - 220000
173-019	0.30	Maintenance service, every 4500 hours	220001 - 230000 210001 - 220000
173-022	0.70	Maintenance service, every 6000 hours	220001 - 220848 210001 - 210539
173-022	0.70	Maintenance service, every 6000 hours	220849 - 230000 210540 - 220000
173-040	1.75	Maintenance service, first 500 hours	
173-079	1.50	Swing motor gearbox, changing oil	
173-101	0.40	Track motor gearbox, changing oil	
173-401	0.60	Engine oil and filter, changing	220001 - 230000 210001 - 220000
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.25	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	220001 - 230000 210001 - 220000
200-070	1.00	E-ECU, MID 128, changing pre-programmed ECU	220001 - 230000 210001 - 220000
21		ENGINE	
210-070	5.50	Engine, removing	220001 - 230000 210001 - 220000
210-072	5.00	Engine, installing	220001 - 230000 210001 - 220000

Op.no.	time (h)		Notes
214-012	3.00	Valves, adjusting	220001 - 230000 210001 - 220000
217-005	1.50	Oil level sensor, changing	220001 - 230000 210001 - 220000
22		LUBRICATING SYSTEM	
221-022	0.80	Lubrication oil pressure, checking with pressure gauge	220001 - 230000 210001 - 220000
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
233-001	0.30	Fuel system, bleeding	
233-004	0.60	Feed pump, checking feed pressure	220001 - 230000 210001 - 220000
234-041	0.40	Fuel filling pump, removing	
234-042	0.50	Fuel filling pump, installing	
237-124	0.70	High pressure fuel system, pressure relief	220001 - 230000 210001 - 220000
25		INLET SYSTEM; EXHAUST SYSTEM	
252-021	0.90	Exhaust pipe, flexible tube, replacing	
254-001	2.00	Diesel particulate filter, check and clean	220001 - 230000 210001 - 220000
254-022	0.90	ACM (After treatment control module), replacing, non-programmed	220001 - 230000 210001 - 220000
254-023	0.80	ACM (After treatment control module), replacing, pre-programmed	220001 - 230000 210001 - 220000
254-031	0.90	Air pump, replacing	220001 - 230000 210001 - 220000
254-033	1.50	Burner, replacing	220001 - 230000 210001 - 220000
254-046	0.30	Spark plug, replacing	220001 - 230000 210001 - 220000
254-047	0.40	Spark plug, checking	220001 - 230000 210001 - 220000
254-056	0.60	NOx sensor, replacing	220001 - 230000 210001 - 220000
255-071	2.50	Turbocharger, replacing	220001 - 230000 210001 - 220000
256-001	0.20	Air cleaner, cleaning filter element	
256-003	0.10	Air cleaner, primary filter replacing	
256-004	0.10	Air cleaner, secondary filter replacing	
256-006	0.70	Preheating coil, replacing	220001 - 230000 210001 - 220000
258-002	4.50	Intercooler, replacing	220001 - 230000 210001 - 220000

Op.no.	time (h)		Notes
26		COOLING SYSTEM	
260-001	0.70	Carbon dioxide in coolant system, checking	
261-002	0.10	Coolant, checking anti-freeze resistance	
261-004	0.60	Coolant, changing	220001 - 230000 210001 - 220000
261-008	5.00	Radiator, replacing	220001 - 230000 210001 - 220000
261-016	0.60	Radiator hoses all, replacing	220001 - 230000 210001 - 220000
261-018	0.80	Expansion tank, replacing	220001 - 230000 210001 - 220000
262-098	0.80	Thermostat, replacing	220001 - 230000 210001 - 220000
263-012	0.80	Fan belt and/or alternator belt, replacing	220001 - 230000 210001 - 220000
263-022	0.80	Fan belt and/or alternator-, compressor belt, replacing all belts	220001 - 230000 210001 - 220000
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-001	0.80	Battery charging capacity, checking	210001 - 220000 220001 - 230000
311-002	1.00	Batteries, replacing	210001 - 220000 220001 - 230000
311-006	0.60	Earth lead to battery, replacing	210001 - 220000 220001 - 230000
32		ALTERNATOR; CHARGE REGULATOR	
321-075	0.50	Alternator, test	
33		STARTING SYSTEM	
331-018	4.00	Starter motor, replacing	210001 - 220000 220001 - 230000
331-021	0.30	Starter motor, tests	
331-081	0.30	Starter relay, replacing	
334-002	0.70	Starter switch, testing	
35		LIGHTING	
356-056	0.50	Work lighting, replacing one head lamp assy	

Op.no.	time (h)		Notes
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.30	Horn, replacing	
362-041	0.30	Rotating beacon, replacing	
362-051	0.50	Travel alarm, replacing	
363-002	1.25	Windscreen wiper front, replacing motor	
363-003	0.90	Windscreen wiper, replacing switch	
363-004	0.50	Windscreen flusher pump, replacing	210001 - 220000 220001 - 230000
363-091	0.50	Windscreen wiper, replacing controller	
364-003	0.60	Control lockout lever switch, replacing	
364-014	0.50	Ignition switch, replacing	
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	
367-075	0.90	Engine speed control switch, replacing	
37		CABLE; FUSE; RELAY	
371-043	0.80	Battery disconnecter, replacing	210001 - 220000 220001 - 230000
371-090	2.00	Engine wire harness, replacing	210001 - 220000 220001 - 230000
372-002	0.50	Electrical distribution box, circuit board replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
383-001	0.30	Hour meter, replacing	
386-006	1.50	Engine temperature sensor, replacing	210001 - 220000 220001 - 230000
386-007	0.60	Engine oil pressure sensor, replacing	
386-011	0.30	Fuel level sender, replacing	
386-017	0.50	Hydraulic oil temperature sensor, replacing	
386-038	0.60	Engine rotation speed sensor, replacing	210001 - 220000 220001 - 230000
386-088	0.90	Engine rotation speed sensor (camshaft), replacing	210001 - 220000 220001 - 230000
39		MISCELLANEOUS	
393-001	0.50	Voltage converter, replacing	
393-021	0.60	Radio, replacing	
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
398-001	0.60	CareTrack antenna, replacing	
398-002	0.90	W-ECU, MID142, changing pre-programmed ECU	210044 - 270000
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU	210001 - 210043
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	210044 - 270000

Op.no.	time (h)		Notes
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	210001 - 210043
398-004	0.50	CareTrack battery, replacing	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	5.50	Swing gearbox, replacing	220001 - 230000 210001 - 220000
431-026	0.50	Swing gearbox removed, replacing seal	220001 - 230000 210001 - 220000
431-027	2.50	Swing gearbox removed, replacing shaft	220001 - 230000 210001 - 220000
431-031	4.00	Pump gearbox coupling assembly, replacing	220001 - 230000 210001 - 220000
431-053	6.50	Swing unit, replacing	220001 - 230000 210001 - 220000
431-115	1.75	Track gearbox (removed), replacing floating seal	220001 - 230000 210001 - 220000
431-117	1.25	Track gearbox, replacing cover	220001 - 230000 210001 - 220000
431-127	6.50	Track unit, replacing	220001 - 230000 210001 - 220000
44		HYDROSTATIC DRIVE	
441-021	2.50	Swing motor, replacing	220001 - 230000 210001 - 220000
441-022	0.80	Swing motor relief valve, replacing	220001 - 230000 210001 - 220000
441-024	1.50	Swing motor, replacing plate (brake)	220001 - 230000 210001 - 220000
441-025	1.50	Swing motor, replacing brake piston seal	220001 - 230000 210001 - 220000
441-026	0.30	Swing motor removed, replacing seal	220001 - 230000 210001 - 220000
441-111	6.50	Track motor, replacing	
441-112	0.70	Track motor relief valve, replacing	210678 - 220000 270381 - 310000 280080 - 310000
441-112	0.70	Track motor relief valve, replacing	210001 - 210677 220001 - 230000 270001 - 270380 280001 - 280079
443-037	5.50	Center passage, replacing	220001 - 230000 210001 - 220000
443-038	7.00	Center passage, replacing seal kit	220001 - 230000 210001 - 220000

Op.no.	time (h)		Notes
49		MISCELLANEOUS	
492-021	11.00	Swing ring gear, replacing	220001 - 230000 210001 - 220000
492-031	3.00	Swing ring gear outer seal, replacing	210311 - 220000 220554 - 230000
492-031	3.00	Swing ring gear outer seal, replacing	220001 - 220553 210001 - 210310
492-032	9.00	Swing ring gear inner seal, replacing	210311 - 220000 220554 - 230000
492-032	9.00	Swing ring gear inner seal, replacing	220001 - 220553 210001 - 210310
492-091	0.40	Ring gear grease pipe, replacing	220001 - 230000 210001 - 220000
492-095	0.70	Swing ring gear cover, removal	220001 - 230000 210001 - 220000
492-096	0.70	Swing ring gear cover, installation	220001 - 230000 210001 - 220000
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	3.50	Superstructure, removing	220001 - 230000 210001 - 220000
710-002	4.50	Superstructure, installing	220001 - 230000 210001 - 220000
716-003	2.00	Counterweight, replacing	220001 - 230000 210001 - 220000
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	220001 - 230000 210001 - 220000
775-021	3.50	Sprocket, replacing one	220001 - 230000 210001 - 220000
775-034	1.25	Track chain assembly, removing	220001 - 230000 210001 - 220000
775-035	1.75	Track chain assembly, installing	220001 - 230000 210001 - 220000
775-036	9.50	Track links, replacing	220001 - 230000 210001 - 220000
775-051	1.00	Top roller, replacing one	220001 - 230000 210001 - 220000
775-061	1.50	Bottom roller, replacing one	220001 - 230000 210001 - 220000
775-066	3.00	Bottom roller, replacing seal	220001 - 230000 210001 - 220000

Op.no.	time (h)		Notes
775-071	0.90	Track guard, replacing one	220001 - 230000 210001 - 220000
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	220001 - 230000 210001 - 220000
775-094	1.75	Full track guard, replacing	220001 - 230000 210001 - 220000

8 MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE

81 CAB, NAKED; CANOPY

810-001	1.75	Cab, removing	
810-001	1.75	Cab, removing	
810-002	2.50	Cab, installing	
810-070	1.00	Electric pedal control on X1 (on/off), replacing	270001 - 310000
810-071	0.90	Electric pedal control on X1 (proportional), replacing	270001 - 310000

82 ENGINE HOOD; MUDGUARD; FOOT STEP

821-005	0.90	Engine hood, replacing	
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84 TRIM PART, OUTSIDE; GLASS; SEALING MOULDING

841-061	0.30	Rear-view mirror, changing	
843-002	1.50	Windscreen, replacing	
843-012	4.00	Rear window, replacing	
843-013	4.50	Side window, replacing	
843-048	0.70	Door window, replacing	

85 CAB INTERIOR/UPHOLSTERY

852-008	1.25	Seat, replacing	
852-012	1.75	Longitudinal adjustment cable, replacing	
852-013	0.60	Longitudinal suspension cable, replacing	
852-089	0.30	Seat cushion, replacing	
852-090	0.60	Backrest, replacing	
852-091	2.50	Seat support, replacing	

87 AIR CONDITIONING UNIT

870-001	5.00	Cooler and Heater assembly, replacing	210001 - 220000 220001 - 230000
870-010	0.70	ECC, MID 146, changing pre-programmed ECU	
870-011	1.00	ECC, MID 146, changing non-programmed ECU	
872-001	0.50	Cab filter, replacing	
873-004	3.00	Heater core, replacing	
873-006	0.80	Fan motor, replacing	
873-011	0.70	Air mix door actuator, replacing	

Op.no.	time (h)		Notes
874-006	1.75	Compressor, replacing incl draining and filling	210001 - 220000 220001 - 230000
874-010	1.75	Condenser, replacing incl draining and filling	210001 - 220000 220001 - 230000
874-011	1.75	Receiver, replacing incl draining and filling	210001 - 220000 220001 - 230000
874-012	3.00	Evaporator, replacing incl draining and filling	210001 - 220000 220001 - 230000
874-013	3.00	Expansion valve, replacing incl draining and filling	210001 - 220000 220001 - 230000
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)	
874-094	0.60	Vent actuator, replacing	
874-095	0.60	Mode (foot) actuator, replacing	
874-096	0.60	Intake actuator, replacing	
88		INTERIOR EQUIPMENT	
881-003	1.00	Instrument panel, replacing (left)	
881-005	1.25	Instrument panel, replacing (right)	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-005	1.75	Pump suction hose and pipe, replacing	210001 - 220000 220001 - 230000
911-011	5.50	Oil cooler, replacing	
911-015	0.50	Oil level gauge, replacing	
911-024	0.70	Pipe and hose (pump - valve), replacing	
911-033	1.75	Oil cooler line bypass valve (check valve), replacing	
911-038	2.50	Hydraulic oil tank, replacing	
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
911-051	0.20	Breather, replacing	
912-001	8.00	Control valve, replacing	
912-067	0.50	Main pressure relief valve, replacing	
912-071	0.80	Rupture valve, replacing (boom cylinder)	
912-073	0.80	Rupture valve, replacing (dipper arm cylinder)	
912-160	0.80	Port relief valve pressure, checking and adjusting	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	4.00	Hydraulic pump, replacing	210001 - 220000 220001 - 230000
913-029	0.60	Pump regulator, replacing	

Op.no.	time (h)	Notes
914-041	0.80	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-060	0.70	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.00	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-005	0.80	Quickfit, removal
924-006	1.00	Quickfit, installation
924-040	0.80	Quickfit, replacing
925-011	1.25	Bucket assembly, replacing
925-012	0.60	Bucket assembly, removal
925-013	1.00	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	4.00	Boom, removal
974-014	4.00	Boom, installation
974-021	3.00	Boom cylinder, replacing
974-031	1.50	Boom cylinder, removal
974-032	1.25	Boom cylinder, installation
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-006	1.50	Dipper arm connecting rod, removal
975-007	1.50	Dipper arm connecting rod, installation
975-011	3.00	Dipper arm, removal
975-012	3.00	Dipper arm, installation
975-014	1.25	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-028	1.00	Connecting rod yoke, replacing
975-032	1.25	Connecting rod yoke, removal
975-035	1.25	Connecting rod yoke, installation
975-039	8.00	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-065	1.50	Bucket cylinder, installation
975-072	3.50	Bucket cylinder bushing on dipper arm, changing

Op.no.	time (h)	Notes
975-073	3.50	Bucket cylinder bushing lever-link, replacing

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.80	Maintenance service, daily	
173-004	1.50	Maintenance service, every 50 hours	
173-007	2.00	Maintenance service, every 250 hours	
173-010	4.50	Maintenance service, every 500 hours	
173-012	6.00	Maintenance service, every 1000 hours	
173-014	11.00	Maintenance service, every 2000 hours	
173-016	8.00	Maintenance service, every 3000 hours	220001 - 220025
173-018	11.00	Maintenance service, every 4000 hours	
173-019	0.30	Maintenance service, every 4500 hours	
173-022	0.70	Maintenance service, every 6000 hours	220001 - 220025
173-022	0.70	Maintenance service, every 6000 hours	220026 - 310000
173-040	1.75	Maintenance service, first 500 hours	
173-079	1.50	Swing motor gearbox, changing oil	
173-101	0.40	Track motor gearbox, changing oil	
173-401	0.60	Engine oil and filter, changing	
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.25	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	
200-070	1.00	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-070	5.50	Engine, removing	
210-072	5.00	Engine, installing	
214-012	3.00	Valves, adjusting	
217-005	1.50	Oil level sensor, changing	
22		LUBRICATING SYSTEM	
221-022	0.80	Lubrication oil pressure, checking with pressure gauge	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
233-001	0.30	Fuel system, bleeding	
233-004	0.60	Feed pump, checking feed pressure	
234-041	0.40	Fuel filling pump, removing	
234-042	0.50	Fuel filling pump, installing	

Op.no.	time (h)	Notes
237-124	0.70	High pressure fuel system, pressure relief
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.90	Exhaust pipe, flexible tube, replacing
254-001	2.00	Diesel particulate filter, check and clean
254-022	0.90	ACM (After treatment control module), replacing, non-programmed
254-023	0.80	ACM (After treatment control module), replacing, pre-programmed
254-031	0.90	Air pump, replacing
254-033	1.50	Burner, replacing
254-046	0.30	Spark plug, replacing
254-047	0.40	Spark plug, checking
254-056	0.60	NOx sensor, replacing
255-071	2.50	Turbocharger, replacing
256-001	0.20	Air cleaner, cleaning filter element
256-003	0.10	Air cleaner, primary filter replacing
256-004	0.10	Air cleaner, secondary filter replacing
256-006	0.70	Preheating coil, replacing
258-002	4.50	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.60	Coolant, changing
261-008	5.00	Radiator, replacing
261-016	0.60	Radiator hoses all, replacing
261-018	0.80	Expansion tank, replacing
262-098	0.80	Thermostat, replacing
263-012	0.80	Fan belt and/or alternator belt, replacing
263-022	0.80	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	1.00	Batteries, replacing
311-006	0.60	Earth lead to battery, replacing

Op.no.	time (h)	Notes
32		ALTERNATOR; CHARGE REGULATOR
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	4.00	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.90	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-014	0.50	Ignition switch, replacing
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
367-075	0.90	Engine speed control switch, replacing
37		CABLE; FUSE; RELAY
371-043	0.80	Battery disconnecter, replacing
371-090	2.00	Engine wire harness, replacing
372-002	0.50	Electrical distribution box, circuit board replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
383-001	0.30	Hour meter, replacing
386-006	1.50	Engine temperature sensor, replacing
386-038	0.60	Engine rotation speed sensor, replacing
386-088	0.90	Engine rotation speed sensor (camshaft), replacing
39		MISCELLANEOUS
393-001	0.50	Voltage converter, replacing
393-021	0.60	Radio, replacing
395-021	0.70	Antenna, replacing
395-031	0.40	Speaker, replacing
398-001	0.60	CareTrack antenna, replacing
398-002	0.90	W-ECU, MID142, changing pre-programmed ECU

Op.no.	time (h)	Notes	
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU	
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	
398-004	0.50	CareTrack battery, replacing	
4	POWER TRANSMISSION		
43	GEARBOX,		
431-021	5.50	Swing gearbox, replacing	
431-026	0.50	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	4.00	Pump gearbox coupling assembly, replacing	
431-053	6.50	Swing unit, replacing	
431-115	1.75	Track gearbox (removed), replacing floating seal	
431-115	1.25	Track gearbox (removed), replacing floating seal	
431-117	1.25	Track gearbox, replacing cover	
431-127	6.50	Track unit, replacing	
44	HYDROSTATIC DRIVE		
441-021	2.50	Swing motor, replacing	
441-022	0.80	Swing motor relief valve, replacing	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	0.30	Swing motor removed, replacing seal	
441-111	6.50	Track motor, replacing	
441-112	0.70	Track motor relief valve, replacing	
443-037	5.50	Center passage, replacing	
443-038	7.00	Center passage, replacing seal kit	
49	MISCELLANEOUS		
492-021	11.00	Swing ring gear, replacing	
492-031	3.00	Swing ring gear outer seal, replacing	220023 - 999999
492-031	3.00	Swing ring gear outer seal, replacing	220001 - 220022
492-032	9.00	Swing ring gear inner seal, replacing	220023 - 999999
492-032	9.00	Swing ring gear inner seal, replacing	220001 - 220022
492-091	0.40	Ring gear grease pipe, replacing	

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
710-001	3.50	Superstructure, removing
710-002	4.50	Superstructure, installing
716-003	2.00	Counterweight, replacing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	3.00	Front idler, replacing one
775-021	3.50	Sprocket, replacing one
775-034	1.25	Track chain assembly, removing
775-035	1.75	Track chain assembly, installing
775-036	9.50	Track links, replacing
775-051	1.00	Top roller, replacing one
775-061	1.50	Bottom roller, replacing one
775-066	3.00	Bottom roller, replacing seal
775-081	4.00	Track recoil spring (tensioner) assembly, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.90	Engine hood, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.30	Rear-view mirror, changing
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing

Op.no.	time (h)	Notes
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
870-010	0.70	ECC, MID 146, changing pre-programmed ECU
870-011	1.00	ECC, MID 146, changing non-programmed ECU
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	1.75	Pump suction hose and pipe, replacing
911-011	5.50	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-024	0.70	Pipe and hose (pump - valve), replacing
911-033	1.75	Oil cooler line bypass valve (check valve), replacing
911-038	2.50	Hydraulic oil tank, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	8.00	Control valve, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.80	Rupture valve, replacing (dipper arm cylinder)
912-160	0.80	Port relief valve pressure, checking and adjusting
913-007	0.30	Hydraulic pump (removed), changing shaft seal

Op.no.	time (h)	Notes
913-010	4.00	Hydraulic pump, replacing
913-029	0.60	Pump regulator, replacing
914-041	0.80	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-060	0.70	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.00	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-005	0.80	Quickfit, removal
924-006	1.00	Quickfit, installation
924-040	0.80	Quickfit, replacing
925-011	1.25	Bucket assembly, replacing
925-012	0.60	Bucket assembly, removal
925-013	1.00	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	4.00	Boom, removal
974-014	4.00	Boom, installation
974-021	3.00	Boom cylinder, replacing
974-031	1.50	Boom cylinder, removal
974-032	1.25	Boom cylinder, installation
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-006	1.50	Dipper arm connecting rod, removal
975-007	1.50	Dipper arm connecting rod, installation
975-011	3.00	Dipper arm, removal
975-012	3.00	Dipper arm, installation
975-014	1.25	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-028	1.00	Connecting rod yoke, replacing
975-032	1.25	Connecting rod yoke, removal
975-035	1.25	Connecting rod yoke, installation
975-039	8.00	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal

Op.no.	time (h)	Notes
975-065	1.50	Bucket cylinder, installation
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.80	Maintenance service, daily	210001 - 220000 220001 - 230000
173-002	0.80	Maintenance service, daily	230001 - 240000 270001 - 310000 240001 - 260000 260001 - 270000
173-004	1.50	Maintenance service, every 50 hours	230001 - 240000 270001 - 310000 240001 - 260000 260001 - 270000
173-004	1.50	Maintenance service, every 50 hours	210001 - 220000 220001 - 230000
173-007	2.50	Maintenance service, every 250 hours	230001 - 240000 270001 - 310000 240001 - 260000 260001 - 270000
173-007	2.50	Maintenance service, every 250 hours	210001 - 220000 220001 - 230000
173-010	4.50	Maintenance service, every 500 hours	230001 - 240000 270001 - 310000 240001 - 260000 260001 - 270000
173-010	4.50	Maintenance service, every 500 hours	210001 - 220000 220001 - 230000
173-012	6.50	Maintenance service, every 1000 hours	210001 - 220000 220001 - 230000
173-012	6.50	Maintenance service, every 1000 hours	230001 - 240000 270001 - 310000 240001 - 260000 260001 - 270000
173-014	12.00	Maintenance service, every 2000 hours	230001 - 240000 270001 - 310000 240001 - 260000 260001 - 270000
173-014	11.00	Maintenance service, every 2000 hours	210001 - 220000 220001 - 230000
173-018	12.00	Maintenance service, every 4000 hours	210001 - 220000 220001 - 230000
173-018	12.00	Maintenance service, every 4000 hours	230001 - 240000 270001 - 310000 240001 - 260000 260001 - 270000
173-019	3.00	Maintenance service, every 4500 hours	210001 - 210373
173-019	0.40	Maintenance service, every 4500 hours	210373 - 220000 220001 - 230000
173-022	0.60	Maintenance service, every 6000 hours	230001 - 240000

Op.no.	time (h)		Notes
			270001 - 310000
			240001 - 260000
			260001 - 270000
173-022	3.00	Maintenance service, every 6000 hours	210001 - 210373
173-022	0.60	Maintenance service, every 6000 hours	210001 - 210373
173-040	1.75	Maintenance service, first 500 hours	230001 - 240000
			270001 - 310000
			240001 - 260000
			260001 - 270000
173-040	1.75	Maintenance service, first 500 hours	210001 - 220000
			220001 - 230000
173-079	0.90	Swing motor gearbox, changing oil	
173-101	0.50	Track motor gearbox, changing oil	
173-401	0.60	Engine oil and filter, changing	230001 - 240000
			270001 - 310000
			240001 - 260000
			260001 - 270000
173-401	0.60	Engine oil and filter, changing	210001 - 220000
			220001 - 230000
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.25	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	

2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	210001 - 220000
			220001 - 230000
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	230001 - 240000
			270001 - 310000
			240001 - 260000
			260001 - 270000
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU	230001 - 240000
			270001 - 310000
			240001 - 260000
			260001 - 270000
200-070	1.00	E-ECU, MID 128, changing pre-programmed ECU	210001 - 220000
			220001 - 230000

21 ENGINE

210-002	4.00	Compression test	210001 - 220000
			220001 - 230000
210-070	4.50	Engine, removing	210001 - 210009
210-070	4.50	Engine, removing	230001 - 240000
			270001 - 310000
			240001 - 260000
			260001 - 270000
210-070	4.50	Engine, removing	210001 - 220000

Op.no.	time (h)		Notes
			220001 - 230000
210-072	5.50	Engine, installing	230001 - 240000 270001 - 310000 240001 - 260000 260001 - 270000
210-072	5.00	Engine, installing	210001 - 220000 220001 - 230000
214-012	3.00	Valves, adjusting	230001 - 240000 280001 - 310000
214-012	3.00	Valves, adjusting	270001 - 280000 240001 - 260000 260001 - 270000
214-012	3.00	Valves, adjusting	210001 - 220000 220001 - 230000
217-005	1.50	Oil level sensor, changing	230001 - 240000 270001 - 310000 240001 - 260000 260001 - 270000
217-005	1.50	Oil level sensor, changing	210001 - 220000 220001 - 230000
22		LUBRICATING SYSTEM	
221-022	0.70	Lubrication oil pressure, checking with pressure gauge	230001 - 240000 270001 - 310000 240001 - 260000 260001 - 270000
221-022	0.90	Lubrication oil pressure, checking with pressure gauge	210001 - 220000 220001 - 230000
223-006	1.25	Oil cooler, replacing	230001 - 240000 270001 - 310000 240001 - 260000 260001 - 270000
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
233-001	0.30	Fuel system, bleeding	210001 - 220000 220001 - 230000
233-001	0.30	Fuel system, bleeding	230001 - 240000 270001 - 310000 240001 - 260000 260001 - 270000
233-004	0.60	Feed pump, checking feed pressure	230001 - 240000 270001 - 310000 240001 - 260000 260001 - 270000
233-004	0.60	Feed pump, checking feed pressure	210001 - 220000 220001 - 230000
234-041	0.40	Fuel filling pump, removing	
234-042	0.50	Fuel filling pump, installing	
237-124	0.70	High pressure fuel system, pressure relief	210001 - 220000

Op.no.	time (h)		Notes
			220001 - 230000
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.00	Silencer, replacing	230001 - 240000 270001 - 310000 240001 - 260000 260001 - 270000
252-021	1.00	Exhaust pipe, flexible tube, replacing	230001 - 240000 270001 - 310000 240001 - 260000 260001 - 270000
252-021	0.60	Exhaust pipe, flexible tube, replacing	210001 - 220000 220001 - 230000
254-001	2.50	Diesel particulate filter, check and clean	210001 - 220000 220001 - 230000
254-022	0.90	ACM (After treatment control module), replacing, non-programmed	210001 - 220000 220001 - 230000
254-023	0.80	ACM (After treatment control module), replacing, pre-programmed	210001 - 220000 220001 - 230000
254-031	0.90	Air pump, replacing	210001 - 220000 220001 - 230000
254-033	1.50	Burner, replacing	210001 - 220000 220001 - 230000
254-046	0.40	Spark plug, replacing	210001 - 220000 220001 - 230000
254-047	0.40	Spark plug, checking	210001 - 220000 220001 - 230000
254-056	0.50	NOx sensor, replacing	210001 - 220000 220001 - 230000
254-066	0.40	Exhaust Aftertreatment System, T-junction, replacing	210001 - 220000 220001 - 230000
255-071	2.50	Turbocharger, replacing	210001 - 220000 220001 - 230000
255-071	2.50	Turbocharger, replacing	230001 - 240000 270001 - 310000 240001 - 260000 260001 - 270000
256-001	0.20	Air cleaner, cleaning filter element	
256-003	0.10	Air cleaner, primary filter replacing	
256-004	0.10	Air cleaner, secondary filter replacing	
256-006	0.70	Preheating coil, replacing	210001 - 220000 220001 - 230000
256-006	0.50	Preheating coil, replacing	230001 - 240000 270001 - 310000 240001 - 260000 260001 - 270000
258-002	4.00	Intercooler, replacing	230001 - 240000 270001 - 310000 240001 - 260000

Op.no.	time (h)		Notes
			260001 - 270000
258-002	4.00	Intercooler, replacing	210001 - 220000 220001 - 230000
26		COOLING SYSTEM	
260-001	0.70	Carbon dioxide in coolant system, checking	
261-002	0.10	Coolant, checking anti-freeze resistance	
261-004	0.50	Coolant, changing	230001 - 240000 270001 - 310000 240001 - 260000 260001 - 270000
261-004	0.50	Coolant, changing	210001 - 220000 220001 - 230000
261-008	4.50	Radiator, replacing	210001 - 220000 220001 - 230000
261-008	4.50	Radiator, replacing	230001 - 240000 270001 - 310000 240001 - 260000 260001 - 270000
261-016	0.80	Radiator hoses all, replacing	230001 - 240000 270001 - 310000 240001 - 260000 260001 - 270000
261-016	0.80	Radiator hoses all, replacing	210001 - 220000 220001 - 230000
261-018	0.90	Expansion tank, replacing	210001 - 220000 220001 - 230000
261-018	0.80	Expansion tank, replacing	230001 - 240000 270001 - 310000 240001 - 260000 260001 - 270000
262-098	0.80	Thermostat, replacing	210001 - 220000 220001 - 230000
262-098	0.80	Thermostat, replacing	230001 - 240000 270001 - 310000 240001 - 260000 260001 - 270000
263-012	0.80	Fan belt and/or alternator belt, replacing	230001 - 240000 270001 - 310000 240001 - 260000 260001 - 270000
263-012	0.50	Fan belt and/or alternator belt, replacing	210001 - 220000 220001 - 230000
263-022	0.50	Fan belt and/or alternator-, compressor belt, replacing all belts	230001 - 240000 270001 - 310000 240001 - 260000 260001 - 270000
263-022	0.50	Fan belt and/or alternator-, compressor belt, replacing all belts	210001 - 220000 220001 - 230000

Op.no.	time (h)		Notes
29		Miscellaneous	
293-001	3.00	EGR cooler, replacing	210001 - 220000 220001 - 230000
293-004	3.00	EGR cooler, cleaning	210001 - 220000 220001 - 230000
293-005	3.00	EGR valve, replacing	210001 - 220000 220001 - 230000
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-001	0.80	Battery charging capacity, checking	
311-001	0.70	Battery charging capacity, checking	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
311-002	1.00	Batteries, replacing	
311-002	1.00	Batteries, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
311-006	0.60	Earth lead to battery, replacing	
311-006	0.60	Earth lead to battery, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
32		ALTERNATOR; CHARGE REGULATOR	
321-002	0.70	Alternator, replacing incl function check	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
321-075	0.50	Alternator, test	
33		STARTING SYSTEM	
331-018	1.25	Starter motor, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
331-018	1.25	Starter motor, replacing	
331-021	0.30	Starter motor, tests	
331-081	0.30	Starter relay, replacing	230001 - 240000

Op.no.	time (h)		Notes
			240001 - 260000 270001 - 310000 260001 - 270000
331-081	0.30	Starter relay, replacing	
334-002	0.70	Starter switch, testing	
35		LIGHTING	
356-056	0.50	Work lighting, replacing one head lamp assy	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.30	Horn, replacing	
362-041	0.30	Rotating beacon, replacing	
362-051	0.50	Travel alarm, replacing	
363-002	1.25	Windscreen wiper front, replacing motor	
363-003	0.90	Windscreen wiper, replacing switch	
363-004	0.60	Windscreen flusher pump, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
363-004	0.50	Windscreen flusher pump, replacing	
363-091	0.50	Windscreen wiper, replacing controller	
364-003	0.60	Control lockout lever switch, replacing	
364-014	0.50	Ignition switch, replacing	
364-056	0.80	Pre-heating relay, replacing	
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	
367-075	0.90	Engine speed control switch, replacing	
37		CABLE; FUSE; RELAY	
371-043	0.80	Battery disconnecter, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
371-043	0.80	Battery disconnecter, replacing	
371-090	2.00	Engine wire harness, replacing	
371-090	1.50	Engine wire harness, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
372-002	0.50	Electrical distribution box, circuit board replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
383-001	0.30	Hour meter, replacing	
386-006	0.50	Engine temperature sensor, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000

Op.no.	time (h)		Notes
386-006	1.50	Engine temperature sensor, replacing	
386-007	0.60	Engine oil pressure sensor, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
386-007	0.60	Engine oil pressure sensor, replacing	
386-011	0.30	Fuel level sender, replacing	
386-017	0.50	Hydraulic oil temperature sensor, replacing	
386-038	0.60	Engine rotation speed sensor, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
386-038	0.60	Engine rotation speed sensor, replacing	
386-088	0.40	Engine rotation speed sensor (camshaft), replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
386-088	0.90	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
393-001	0.50	Voltage converter, replacing	
393-021	0.60	Radio, replacing	
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
398-001	0.60	CareTrack antenna, replacing	
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU	210001 - 210126
398-002	0.90	W-ECU, MID142, changing pre-programmed ECU	210127 - 270000
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	210127 - 270000
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	210001 - 210126
398-004	0.50	CareTrack battery, replacing	

4 POWER TRANSMISSION

43		GEARBOX,	
431-021	6.50	Swing gearbox, replacing	
431-031	3.50	Pump gearbox coupling assembly, replacing	
431-115	1.75	Track gearbox (removed), replacing floating seal	
431-115	1.25	Track gearbox (removed), replacing floating seal	
431-117	1.00	Track gearbox, replacing cover	210013 - 220000
431-117	1.25	Track gearbox, replacing cover	210001 - 210012
431-127	6.00	Track unit, replacing	

Op.no.	time (h)		Notes
44		HYDROSTATIC DRIVE	
441-021	2.50	Swing motor, replacing	
441-022	0.80	Swing motor relief valve, replacing	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	0.70	Swing motor removed, replacing seal	
441-112	0.70	Track motor relief valve, replacing	220001 - 230000 210001 - 210441
441-112	0.70	Track motor relief valve, replacing	260001 - 270000 270001 - 310000 240001 - 260000 230001 - 240000 210443 - 220000
443-037	5.50	Center passage, replacing	
443-038	7.00	Center passage, replacing seal kit	
49		MISCELLANEOUS	
492-021	11.00	Swing ring gear, replacing	
492-031	3.00	Swing ring gear outer seal, replacing	210001 - 210257
492-031	3.00	Swing ring gear outer seal, replacing	210258 - 220000
492-032	9.50	Swing ring gear inner seal, replacing	210001 - 210257
492-032	9.00	Swing ring gear inner seal, replacing	210258 - 220000
492-091	0.40	Ring gear grease pipe, replacing	
492-095	0.70	Swing ring gear cover, removal	220001 - 230000 210001 - 220000
492-096	0.70	Swing ring gear cover, installation	220001 - 230000 210001 - 220000
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	
715-020	1.25	Boom cylinder protecting guard, installation	
715-023	0.90	Bucket cylinder protecting guard, removal	
715-024	1.00	Bucket cylinder protecting guard, installation	
716-001	0.90	Counterweight, removing	
716-002	0.90	Counterweight, fitting	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-034	1.25	Track chain assembly, removing	
775-035	1.75	Track chain assembly, installing	

Op.no.	time (h)	Notes	
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	
775-066	3.00	Bottom roller, replacing seal	
775-081	4.00	Track recoil spring (tensioner) assembly, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.75	Cab, removing	
810-001	1.75	Cab, removing	
810-002	2.50	Cab, installing	
810-070	1.00	Electric pedal control on X1 (on/off), replacing	
810-071	0.90	Electric pedal control on X1 (proportional), replacing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	0.90	Engine hood, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.30	Rear-view mirror, changing	
843-002	1.50	Windscreen, replacing	
843-012	4.00	Rear window, replacing	
843-013	4.50	Side window, replacing	
843-048	0.70	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	
852-012	1.75	Longitudinal adjustment cable, replacing	
852-013	0.60	Longitudinal suspension cable, replacing	
852-089	0.30	Seat cushion, replacing	
852-090	0.60	Backrest, replacing	
852-091	2.50	Seat support, replacing	
87		AIR CONDITIONING UNIT	
870-001	3.50	Cooler and Heater assembly, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
870-001	5.00	Cooler and Heater assembly, replacing	210001 - 220000 220001 - 230000
870-010	0.70	ECC, MID 146, changing pre-programmed ECU	
870-011	1.00	ECC, MID 146, changing non-programmed ECU	
872-001	0.50	Cab filter, replacing	
873-004	3.00	Heater core, replacing	

Op.no.	time (h)		Notes
873-006	0.80	Fan motor, replacing	
873-011	0.70	Air mix door actuator, replacing	
874-006	2.50	Compressor, replacing incl draining and filling	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
874-006	1.75	Compressor, replacing incl draining and filling	210001 - 220000 220001 - 230000
874-010	1.75	Condenser, replacing incl draining and filling	210001 - 220000 220001 - 230000
874-010	1.50	Condenser, replacing incl draining and filling	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
874-011	1.75	Receiver, replacing incl draining and filling	210001 - 220000 220001 - 230000
874-011	1.75	Receiver, replacing incl draining and filling	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
874-012	3.00	Evaporator, replacing incl draining and filling	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
874-012	3.00	Evaporator, replacing incl draining and filling	210001 - 220000 220001 - 230000
874-013	3.00	Expansion valve, replacing incl draining and filling	210001 - 220000 220001 - 230000
874-013	3.00	Expansion valve, replacing incl draining and filling	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)	
874-094	0.60	Vent actuator, replacing	
874-095	0.60	Mode (foot) actuator, replacing	
874-096	0.60	Intake actuator, replacing	
88		INTERIOR EQUIPMENT	
881-003	1.00	Instrument panel, replacing (left)	
881-005	1.25	Instrument panel, replacing (right)	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-011	4.50	Oil cooler, replacing	

Op.no.	time (h)		Notes
911-015	0.50	Oil level gauge, replacing	
911-024	0.70	Pipe and hose (pump - valve), replacing	
911-033	1.50	Oil cooler line bypass valve (check valve), replacing	
911-038	3.50	Hydraulic oil tank, replacing	
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
911-051	0.20	Breather, replacing	
912-001	8.00	Control valve, replacing	
912-067	0.50	Main pressure relief valve, replacing	
912-071	0.80	Rupture valve, replacing (boom cylinder)	
912-073	0.80	Rupture valve, replacing (dipper arm cylinder)	
912-160	0.80	Port relief valve pressure, checking and adjusting	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	3.50	Hydraulic pump, replacing	210001 - 220000 220001 - 230000
913-010	4.00	Hydraulic pump, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
913-029	0.40	Pump regulator, replacing	
914-041	0.80	Proportional solenoid valve (power shift), replacing	
914-051	0.30	Accumulator, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
914-051	0.50	Accumulator, replacing	210001 - 220000 220001 - 230000
914-060	0.70	Servo pump, replacing	
914-081	1.75	Remote control valve (lever), replacing	
914-084	1.75	Remote control valve (pedal), replacing	
914-091	1.00	Solenoid valve, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
914-091	1.00	Solenoid valve, replacing	210001 - 220000 220001 - 230000
916-096	0.80	Hammer and shear pedal valve (RCV), replacing	
916-096	0.80	Hammer and shear pedal valve (RCV), replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-005	0.80	Quickfit, removal	
924-006	1.00	Quickfit, installation	

Op.no.	time (h)	Notes
924-040	0.80	Quickfit, replacing
925-011	1.25	Bucket assembly, replacing
925-012	0.60	Bucket assembly, removal
925-013	1.00	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	4.00	Boom, removal
974-014	4.00	Boom, installation
974-021	3.00	Boom cylinder, replacing
974-031	1.50	Boom cylinder, removal
974-032	1.50	Boom cylinder, installation
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-006	1.50	Dipper arm connecting rod, removal
975-007	1.50	Dipper arm connecting rod, installation
975-011	3.00	Dipper arm, removal
975-012	3.00	Dipper arm, installation
975-014	1.25	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-028	1.00	Connecting rod yoke, replacing
975-032	1.25	Connecting rod yoke, removal
975-035	1.25	Connecting rod yoke, installation
975-039	8.00	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-065	1.50	Bucket cylinder, installation
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing
99		MISCELLANEOUS
992-002	5.50	Fire suppression system, actions after activation
992-003	6.50	Fire suppression system, actions after manual activation

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.80	Maintenance service, daily	210001 - 220000 220001 - 230000
173-002	0.80	Maintenance service, daily	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
173-004	1.50	Maintenance service, every 50 hours	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
173-004	1.50	Maintenance service, every 50 hours	210001 - 220000 220001 - 230000
173-007	2.50	Maintenance service, every 250 hours	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
173-007	2.50	Maintenance service, every 250 hours	210001 - 220000 220001 - 230000
173-010	4.50	Maintenance service, every 500 hours	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
173-010	4.50	Maintenance service, every 500 hours	210001 - 220000 220001 - 230000
173-012	6.50	Maintenance service, every 1000 hours	210001 - 220000 220001 - 230000
173-012	6.50	Maintenance service, every 1000 hours	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
173-014	12.00	Maintenance service, every 2000 hours	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
173-014	11.00	Maintenance service, every 2000 hours	210001 - 220000 220001 - 230000
173-018	12.00	Maintenance service, every 4000 hours	210001 - 220000 220001 - 230000
173-018	12.00	Maintenance service, every 4000 hours	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
173-019	3.00	Maintenance service, every 4500 hours	210001 - 210373
173-019	0.40	Maintenance service, every 4500 hours	210374 - 220000 220001 - 230000
173-022	0.60	Maintenance service, every 6000 hours	230001 - 240000

Op.no.	time (h)		Notes
			240001 - 260000
			270001 - 310000
			260001 - 270000
173-022	3.00	Maintenance service, every 6000 hours	210001 - 210373
173-022	0.60	Maintenance service, every 6000 hours	210001 - 210373
173-040	1.75	Maintenance service, first 500 hours	230001 - 240000
			240001 - 260000
			270001 - 310000
			260001 - 270000
173-040	1.75	Maintenance service, first 500 hours	210001 - 220000
			220001 - 230000
173-079	0.90	Swing motor gearbox, changing oil	
173-101	0.50	Track motor gearbox, changing oil	
173-401	0.60	Engine oil and filter, changing	230001 - 240000
			240001 - 260000
			270001 - 310000
			260001 - 270000
173-401	0.60	Engine oil and filter, changing	210001 - 220000
			220001 - 230000
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.25	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	

2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	210001 - 220000
			220001 - 230000
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	230001 - 240000
			240001 - 260000
			270001 - 310000
			260001 - 270000
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU	230001 - 240000
			240001 - 260000
			270001 - 310000
			260001 - 270000
200-070	1.00	E-ECU, MID 128, changing pre-programmed ECU	210001 - 220000
			220001 - 230000

21 ENGINE

210-002	4.00	Compression test	210001 - 220000
			220001 - 230000
210-070	4.50	Engine, removing	230001 - 240000
			240001 - 260000
			270001 - 310000
			260001 - 270000
210-070	4.50	Engine, removing	210001 - 220000
			220001 - 230000

Op.no.	time (h)		Notes
210-072	5.50	Engine, installing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
210-072	5.00	Engine, installing	210001 - 220000 220001 - 230000
214-012	3.00	Valves, adjusting	230001 - 240000 280001 - 310000
214-012	3.00	Valves, adjusting	240001 - 260000 270001 - 280000 260001 - 270000
214-012	3.00	Valves, adjusting	210001 - 220000 220001 - 230000
217-005	1.50	Oil level sensor, changing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
217-005	1.50	Oil level sensor, changing	210001 - 220000 220001 - 230000
22		LUBRICATING SYSTEM	
221-022	0.70	Lubrication oil pressure, checking with pressure gauge	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
221-022	0.90	Lubrication oil pressure, checking with pressure gauge	210001 - 220000 220001 - 230000
223-006	1.25	Oil cooler, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
233-001	0.30	Fuel system, bleeding	210001 - 220000 220001 - 230000
233-001	0.30	Fuel system, bleeding	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
233-004	0.60	Feed pump, checking feed pressure	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
233-004	0.60	Feed pump, checking feed pressure	210001 - 220000 220001 - 230000
234-041	0.40	Fuel filling pump, removing	
234-042	0.50	Fuel filling pump, installing	
237-124	0.70	High pressure fuel system, pressure relief	210001 - 220000 220001 - 230000

Op.no.	time (h)		Notes
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.00	Silencer, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
252-021	1.00	Exhaust pipe, flexible tube, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
252-021	0.60	Exhaust pipe, flexible tube, replacing	210001 - 220000 220001 - 230000
254-001	2.50	Diesel particulate filter, check and clean	210001 - 220000 220001 - 230000
254-022	0.90	ACM (After treatment control module), replacing, non-programmed	210001 - 220000 220001 - 230000
254-023	0.80	ACM (After treatment control module), replacing, pre-programmed	210001 - 220000 220001 - 230000
254-031	0.90	Air pump, replacing	210001 - 220000 220001 - 230000
254-033	1.50	Burner, replacing	210001 - 220000 220001 - 230000
254-046	0.40	Spark plug, replacing	210001 - 220000 220001 - 230000
254-047	0.40	Spark plug, checking	210001 - 220000 220001 - 230000
254-056	0.50	NOx sensor, replacing	210001 - 220000 220001 - 230000
254-066	0.40	Exhaust Aftertreatment System, T-junction, replacing	210001 - 220000 220001 - 230000
255-071	2.50	Turbocharger, replacing	210001 - 220000 220001 - 230000
255-071	2.50	Turbocharger, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
256-001	0.20	Air cleaner, cleaning filter element	
256-003	0.10	Air cleaner, primary filter replacing	
256-004	0.10	Air cleaner, secondary filter replacing	
256-006	0.70	Preheating coil, replacing	210001 - 220000 220001 - 230000
256-006	0.50	Preheating coil, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
258-002	4.00	Intercooler, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000

Op.no.	time (h)		Notes
258-002	4.00	Intercooler, replacing	210001 - 220000 220001 - 230000
26		COOLING SYSTEM	
260-001	0.70	Carbon dioxide in coolant system, checking	
261-002	0.10	Coolant, checking anti-freeze resistance	
261-004	0.50	Coolant, changing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
261-004	0.50	Coolant, changing	210001 - 220000 220001 - 230000
261-008	4.50	Radiator, replacing	210001 - 220000 220001 - 230000
261-008	4.50	Radiator, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
261-016	0.80	Radiator hoses all, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
261-016	0.80	Radiator hoses all, replacing	210001 - 220000 220001 - 230000
261-018	0.90	Expansion tank, replacing	210001 - 220000 220001 - 230000
261-018	0.80	Expansion tank, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
262-098	0.80	Thermostat, replacing	210001 - 220000 220001 - 230000
262-098	0.80	Thermostat, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
263-012	0.80	Fan belt and/or alternator belt, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
263-012	0.50	Fan belt and/or alternator belt, replacing	210001 - 220000 220001 - 230000
263-022	0.50	Fan belt and/or alternator-, compressor belt, replacing all belts	210001 - 220000 220001 - 230000
263-022	0.50	Fan belt and/or alternator-, compressor belt, replacing all belts	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000

Op.no.	time (h)		Notes
29		Miscellaneous	
293-001	3.00	EGR cooler, replacing	210001 - 220000 220001 - 230000
293-005	3.00	EGR valve, replacing	210001 - 220000 220001 - 230000
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-001	0.80	Battery charging capacity, checking	
311-001	0.70	Battery charging capacity, checking	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
311-002	1.00	Batteries, replacing	
311-002	1.00	Batteries, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
311-006	0.60	Earth lead to battery, replacing	
311-006	0.60	Earth lead to battery, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
32		ALTERNATOR; CHARGE REGULATOR	
321-002	0.70	Alternator, replacing incl function check	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
321-075	0.50	Alternator, test	
33		STARTING SYSTEM	
331-018	1.25	Starter motor, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
331-018	1.25	Starter motor, replacing	
331-021	0.30	Starter motor, tests	
331-081	0.30	Starter relay, replacing	230001 - 240000 240001 - 260000 270001 - 310000

Op.no.	time (h)		Notes
			260001 - 270000
331-081	0.30	Starter relay, replacing	
334-002	0.70	Starter switch, testing	
35		LIGHTING	
356-056	0.50	Work lighting, replacing one head lamp assy	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.30	Horn, replacing	
362-041	0.30	Rotating beacon, replacing	
362-051	0.50	Travel alarm, replacing	
363-002	1.25	Windscreen wiper front, replacing motor	
363-003	0.90	Windscreen wiper, replacing switch	
363-004	0.60	Windscreen flusher pump, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
363-004	0.50	Windscreen flusher pump, replacing	
363-091	0.50	Windscreen wiper, replacing controller	
364-003	0.60	Control lockout lever switch, replacing	
364-014	0.50	Ignition switch, replacing	
364-056	0.80	Pre-heating relay, replacing	
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	
367-075	0.90	Engine speed control switch, replacing	
37		CABLE; FUSE; RELAY	
371-043	0.80	Battery disconnecter, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
371-043	0.80	Battery disconnecter, replacing	
371-090	2.00	Engine wire harness, replacing	
371-090	1.50	Engine wire harness, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
372-002	0.50	Electrical distribution box, circuit board replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
383-001	0.30	Hour meter, replacing	
386-006	0.50	Engine temperature sensor, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
386-006	1.50	Engine temperature sensor, replacing	
386-007	0.60	Engine oil pressure sensor, replacing	230001 - 240000

Op.no.	time (h)		Notes
			240001 - 260000
			270001 - 310000
			260001 - 270000
386-007	0.60	Engine oil pressure sensor, replacing	
386-011	0.30	Fuel level sender, replacing	
386-017	0.50	Hydraulic oil temperature sensor, replacing	
386-038	0.60	Engine rotation speed sensor, replacing	230001 - 240000
			240001 - 260000
			270001 - 310000
			260001 - 270000
386-038	0.60	Engine rotation speed sensor, replacing	
386-088	0.40	Engine rotation speed sensor (camshaft), replacing	230001 - 240000
			240001 - 260000
			270001 - 310000
			260001 - 270000
386-088	0.90	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
393-001	0.50	Voltage converter, replacing	
393-021	0.60	Radio, replacing	
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
398-001	0.60	CareTrack antenna, replacing	
398-002	0.90	W-ECU, MID142, changing pre-programmed ECU	210127 - 270000
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU	210001 - 210126
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	210127 - 270000
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	210001 - 210126
398-004	0.50	CareTrack battery, replacing	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.50	Swing gearbox, replacing	
431-031	3.50	Pump gearbox coupling assembly, replacing	
431-115	1.75	Track gearbox (removed), replacing floating seal	
431-115	1.25	Track gearbox (removed), replacing floating seal	
431-117	1.00	Track gearbox, replacing cover	210013 - 220000
431-117	1.25	Track gearbox, replacing cover	210001 - 210012
431-127	6.00	Track unit, replacing	
44		HYDROSTATIC DRIVE	
441-021	2.50	Swing motor, replacing	
441-022	0.80	Swing motor relief valve, replacing	

Op.no.	time (h)		Notes
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	0.70	Swing motor removed, replacing seal	
441-112	0.70	Track motor relief valve, replacing	220001 - 230000 210001 - 210441
441-112	0.70	Track motor relief valve, replacing	260001 - 270000 270001 - 310000 240001 - 260000 230001 - 240000 210443 - 220000
443-037	5.50	Center passage, replacing	
443-038	7.00	Center passage, replacing seal kit	
49		MISCELLANEOUS	
492-021	11.00	Swing ring gear, replacing	
492-031	3.00	Swing ring gear outer seal, replacing	210001 - 210257
492-031	3.00	Swing ring gear outer seal, replacing	210258 - 220000
492-032	9.50	Swing ring gear inner seal, replacing	210001 - 210257
492-032	9.00	Swing ring gear inner seal, replacing	210258 - 220000
492-091	0.40	Ring gear grease pipe, replacing	

7 FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT

71		FRAME	
710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	
716-001	0.90	Counterweight, removing	
716-002	0.90	Counterweight, fitting	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-034	1.25	Track chain assembly, removing	
775-035	1.75	Track chain assembly, installing	
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	
775-066	3.00	Bottom roller, replacing seal	
775-081	4.00	Track recoil spring (tensioner) assembly, replacing	

Op.no.	time (h)	Notes	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.75	Cab, removing	
810-001	1.75	Cab, removing	
810-002	2.50	Cab, installing	
810-070	1.00	Electric pedal control on X1 (on/off), replacing	
810-071	0.90	Electric pedal control on X1 (proportional), replacing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	0.90	Engine hood, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.30	Rear-view mirror, changing	
843-002	1.50	Windscreen, replacing	
843-012	4.00	Rear window, replacing	
843-013	4.50	Side window, replacing	
843-048	0.70	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	
852-012	1.75	Longitudinal adjustment cable, replacing	
852-013	0.60	Longitudinal suspension cable, replacing	
852-089	0.30	Seat cushion, replacing	
852-090	0.60	Backrest, replacing	
852-091	2.50	Seat support, replacing	
87		AIR CONDITIONING UNIT	
870-001	3.50	Cooler and Heater assembly, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
870-001	5.00	Cooler and Heater assembly, replacing	210001 - 220000 220001 - 230000
870-010	0.70	ECC, MID 146, changing pre-programmed ECU	
870-011	1.00	ECC, MID 146, changing non-programmed ECU	
872-001	0.50	Cab filter, replacing	
873-004	3.00	Heater core, replacing	
873-006	0.80	Fan motor, replacing	
873-011	0.70	Air mix door actuator, replacing	
874-006	2.50	Compressor, replacing incl draining and filling	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
874-006	1.75	Compressor, replacing incl draining and filling	210001 - 220000

Op.no.	time (h)		Notes
			220001 - 230000
874-010	1.75	Condenser, replacing incl draining and filling	210001 - 220000 220001 - 230000
874-010	1.50	Condenser, replacing incl draining and filling	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
874-011	1.75	Receiver, replacing incl draining and filling	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
874-011	1.75	Receiver, replacing incl draining and filling	210001 - 220000 220001 - 230000
874-012	3.00	Evaporator, replacing incl draining and filling	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
874-012	3.00	Evaporator, replacing incl draining and filling	210001 - 220000 220001 - 230000
874-013	3.00	Expansion valve, replacing incl draining and filling	210001 - 220000 220001 - 230000
874-013	3.00	Expansion valve, replacing incl draining and filling	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)	
874-094	0.60	Vent actuator, replacing	
874-095	0.60	Mode (foot) actuator, replacing	
874-096	0.60	Intake actuator, replacing	
88		INTERIOR EQUIPMENT	
881-003	1.00	Instrument panel, replacing (left)	
881-005	1.25	Instrument panel, replacing (right)	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-011	4.50	Oil cooler, replacing	
911-015	0.50	Oil level gauge, replacing	
911-024	0.70	Pipe and hose (pump - valve), replacing	
911-033	1.50	Oil cooler line bypass valve (check valve), replacing	
911-038	3.50	Hydraulic oil tank, replacing	
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	

Op.no.	time (h)		Notes
911-051	0.20	Breather, replacing	
912-001	8.00	Control valve, replacing	
912-067	0.50	Main pressure relief valve, replacing	
912-071	0.80	Rupture valve, replacing (boom cylinder)	
912-073	0.80	Rupture valve, replacing (dipper arm cylinder)	
912-160	0.80	Port relief valve pressure, checking and adjusting	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	3.50	Hydraulic pump, replacing	210001 - 220000 220001 - 230000
913-010	4.00	Hydraulic pump, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
913-029	0.40	Pump regulator, replacing	
914-041	0.80	Proportional solenoid valve (power shift), replacing	
914-051	0.30	Accumulator, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
914-051	0.50	Accumulator, replacing	210001 - 220000 220001 - 230000
914-060	0.70	Servo pump, replacing	
914-081	1.75	Remote control valve (lever), replacing	
914-084	1.75	Remote control valve (pedal), replacing	
914-091	1.00	Solenoid valve, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
914-091	1.00	Solenoid valve, replacing	210001 - 220000 220001 - 230000
916-096	0.80	Hammer and shear pedal valve (RCV), replacing	
916-096	0.80	Hammer and shear pedal valve (RCV), replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-005	0.80	Quickfit, removal	
924-006	1.00	Quickfit, installation	
924-040	0.80	Quickfit, replacing	
925-011	1.25	Bucket assembly, replacing	
925-012	0.60	Bucket assembly, removal	
925-013	1.00	Bucket assembly, installation	
97		UNIT, DIGGING	
974-010	12.00	Boom, replacing	

Op.no.	time (h)	Notes
974-013	4.00	Boom, removal
974-014	4.00	Boom, installation
974-021	3.00	Boom cylinder, replacing
974-031	1.50	Boom cylinder, removal
974-032	1.50	Boom cylinder, installation
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-006	1.50	Dipper arm connecting rod, removal
975-007	1.50	Dipper arm connecting rod, installation
975-011	3.00	Dipper arm, removal
975-012	3.00	Dipper arm, installation
975-014	1.25	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-028	1.00	Connecting rod yoke, replacing
975-032	1.25	Connecting rod yoke, removal
975-035	1.25	Connecting rod yoke, installation
975-039	8.00	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-065	1.50	Bucket cylinder, installation
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.80	Maintenance service, daily	210001 - 220000 220001 - 230000
173-004	1.50	Maintenance service, every 50 hours	210001 - 220000 220001 - 230000
173-007	2.50	Maintenance service, every 250 hours	210001 - 220000 220001 - 230000
173-010	4.50	Maintenance service, every 500 hours	210001 - 220000 220001 - 230000
173-012	6.50	Maintenance service, every 1000 hours	210001 - 220000 220001 - 230000
173-014	11.00	Maintenance service, every 2000 hours	210001 - 220000 220001 - 230000
173-018	12.00	Maintenance service, every 4000 hours	210001 - 220000 220001 - 230000
173-019	3.00	Maintenance service, every 4500 hours	210001 - 210373
173-019	0.40	Maintenance service, every 4500 hours	210374 - 220000 220001 - 230000
173-022	3.00	Maintenance service, every 6000 hours	210001 - 210373
173-022	0.60	Maintenance service, every 6000 hours	210001 - 210373
173-040	1.75	Maintenance service, first 500 hours	210001 - 220000 220001 - 230000
173-079	0.90	Swing motor gearbox, changing oil	
173-101	0.50	Track motor gearbox, changing oil	
173-401	0.60	Engine oil and filter, changing	210001 - 220000 220001 - 230000
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.25	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	210001 - 220000 220001 - 230000
200-070	1.00	E-ECU, MID 128, changing pre-programmed ECU	210001 - 220000 220001 - 230000
21		ENGINE	
210-002	4.00	Compression test	210001 - 220000 220001 - 230000
210-070	4.50	Engine, removing	210001 - 220000 220001 - 230000
210-072	5.00	Engine, installing	210001 - 220000

Op.no.	time (h)		Notes
			220001 - 230000
214-012	3.00	Valves, adjusting	210001 - 220000 220001 - 230000
217-005	1.50	Oil level sensor, changing	210001 - 220000 220001 - 230000
22		LUBRICATING SYSTEM	
221-022	0.90	Lubrication oil pressure, checking with pressure gauge	210001 - 220000 220001 - 230000
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
233-001	0.30	Fuel system, bleeding	210001 - 220000 220001 - 230000
233-004	0.60	Feed pump, checking feed pressure	210001 - 220000 220001 - 230000
234-041	0.40	Fuel filling pump, removing	
234-042	0.50	Fuel filling pump, installing	
237-124	0.70	High pressure fuel system, pressure relief	210001 - 220000 220001 - 230000
25		INLET SYSTEM; EXHAUST SYSTEM	
252-021	0.60	Exhaust pipe, flexible tube, replacing	210001 - 220000 220001 - 230000
254-001	2.50	Diesel particulate filter, check and clean	210001 - 220000 220001 - 230000
254-022	0.90	ACM (After treatment control module), replacing, non-programmed	210001 - 220000 220001 - 230000
254-023	0.80	ACM (After treatment control module), replacing, pre-programmed	210001 - 220000 220001 - 230000
254-031	0.90	Air pump, replacing	210001 - 220000 220001 - 230000
254-033	1.50	Burner, replacing	210001 - 220000 220001 - 230000
254-046	0.40	Spark plug, replacing	210001 - 220000 220001 - 230000
254-047	0.40	Spark plug, checking	210001 - 220000 220001 - 230000
254-056	0.50	NOx sensor, replacing	210001 - 220000 220001 - 230000
254-066	0.40	Exhaust Aftertreatment System, T-junction, replacing	210001 - 220000 220001 - 230000
255-071	2.50	Turbocharger, replacing	210001 - 220000 220001 - 230000
256-001	0.20	Air cleaner, cleaning filter element	
256-003	0.10	Air cleaner, primary filter replacing	
256-004	0.10	Air cleaner, secondary filter replacing	
256-006	0.70	Preheating coil, replacing	210001 - 220000

Op.no.	time (h)		Notes
			220001 - 230000
258-002	4.00	Intercooler, replacing	210001 - 220000 220001 - 230000
26		COOLING SYSTEM	
260-001	0.70	Carbon dioxide in coolant system, checking	
261-002	0.10	Coolant, checking anti-freeze resistance	
261-004	0.50	Coolant, changing	210001 - 220000 220001 - 230000
261-008	4.50	Radiator, replacing	210001 - 220000 220001 - 230000
261-016	0.80	Radiator hoses all, replacing	210001 - 220000 220001 - 230000
261-018	0.90	Expansion tank, replacing	210001 - 220000 220001 - 230000
262-098	0.80	Thermostat, replacing	210001 - 220000 220001 - 230000
263-012	0.50	Fan belt and/or alternator belt, replacing	210001 - 220000 220001 - 230000
263-022	0.50	Fan belt and/or alternator-, compressor belt, replacing all belts	210001 - 220000 220001 - 230000
29		Miscellaneous	
293-001	3.00	EGR cooler, replacing	210001 - 220000 220001 - 230000
293-004	3.00	EGR cooler, cleaning	210001 - 220000 220001 - 230000
293-005	3.00	EGR valve, replacing	210001 - 220000 220001 - 230000
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-001	0.80	Battery charging capacity, checking	
311-001	0.70	Battery charging capacity, checking	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
311-002	1.00	Batteries, replacing	
311-002	1.00	Batteries, replacing	230001 - 240000 240001 - 260000 270001 - 310000

Op.no.	time (h)		Notes
			260001 - 270000
311-006	0.60	Earth lead to battery, replacing	
311-006	0.60	Earth lead to battery, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
32		ALTERNATOR; CHARGE REGULATOR	
321-002	0.70	Alternator, replacing incl function check	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
321-075	0.50	Alternator, test	
33		STARTING SYSTEM	
331-018	1.25	Starter motor, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
331-018	1.25	Starter motor, replacing	
331-021	0.30	Starter motor, tests	
331-081	0.30	Starter relay, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
331-081	0.30	Starter relay, replacing	
334-002	0.70	Starter switch, testing	
35		LIGHTING	
356-056	0.50	Work lighting, replacing one head lamp assy	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.30	Horn, replacing	
362-041	0.30	Rotating beacon, replacing	
362-051	0.50	Travel alarm, replacing	
363-002	1.25	Windscreen wiper front, replacing motor	
363-003	0.90	Windscreen wiper, replacing switch	
363-004	0.60	Windscreen flusher pump, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
363-004	0.50	Windscreen flusher pump, replacing	
363-091	0.50	Windscreen wiper, replacing controller	
364-003	0.60	Control lockout lever switch, replacing	
364-014	0.50	Ignition switch, replacing	
364-056	0.80	Pre-heating relay, replacing	
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU	

Op.no.	time (h)	Notes	
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	
367-075	0.90	Engine speed control switch, replacing	
37		CABLE; FUSE; RELAY	
371-043	0.80	Battery disconnecter, replacing	
371-090	2.00	Engine wire harness, replacing	
372-002	0.50	Electrical distribution box, circuit board replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
383-001	0.30	Hour meter, replacing	
386-006	0.50	Engine temperature sensor, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
386-006	1.50	Engine temperature sensor, replacing	
386-007	0.60	Engine oil pressure sensor, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
386-007	0.60	Engine oil pressure sensor, replacing	
386-011	0.30	Fuel level sender, replacing	
386-017	0.50	Hydraulic oil temperature sensor, replacing	
386-038	0.60	Engine rotation speed sensor, replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
386-038	0.60	Engine rotation speed sensor, replacing	
386-088	0.40	Engine rotation speed sensor (camshaft), replacing	230001 - 240000 240001 - 260000 270001 - 310000 260001 - 270000
386-088	0.90	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
393-001	0.50	Voltage converter, replacing	
393-021	0.60	Radio, replacing	
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
398-001	0.60	CareTrack antenna, replacing	
398-002	0.90	W-ECU, MID142, changing pre-programmed ECU	210127 - 270000
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU	210001 - 210126
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	210127 - 270000
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	210001 - 210126
398-004	0.50	CareTrack battery, replacing	

Op.no.	time (h)		Notes
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.50	Swing gearbox, replacing	
431-031	3.50	Pump gearbox coupling assembly, replacing	
431-115	1.75	Track gearbox (removed), replacing floating seal	
431-115	1.25	Track gearbox (removed), replacing floating seal	
431-117	1.00	Track gearbox, replacing cover	210013 - 220000
431-117	1.25	Track gearbox, replacing cover	210001 - 210012
431-127	6.00	Track unit, replacing	
44		HYDROSTATIC DRIVE	
441-021	2.50	Swing motor, replacing	
441-022	0.80	Swing motor relief valve, replacing	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	0.70	Swing motor removed, replacing seal	
441-112	0.70	Track motor relief valve, replacing	220001 - 230000 210001 - 210441
443-037	5.50	Center passage, replacing	
443-038	7.00	Center passage, replacing seal kit	
49		MISCELLANEOUS	
492-021	11.00	Swing ring gear, replacing	
492-031	3.00	Swing ring gear outer seal, replacing	210001 - 210257
492-031	3.00	Swing ring gear outer seal, replacing	210258 - 220000
492-032	9.50	Swing ring gear inner seal, replacing	210001 - 210257
492-032	9.00	Swing ring gear inner seal, replacing	210258 - 220000
492-091	0.40	Ring gear grease pipe, replacing	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	
716-001	0.90	Counterweight, removing	
716-002	0.90	Counterweight, fitting	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-034	1.25	Track chain assembly, removing	
775-035	1.75	Track chain assembly, installing	
775-051	1.00	Top roller, replacing one	

Op.no.	time (h)		Notes
775-061	1.50	Bottom roller, replacing one	
775-066	3.00	Bottom roller, replacing seal	
775-081	4.00	Track recoil spring (tensioner) assembly, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.75	Cab, removing	
810-001	1.75	Cab, removing	
810-002	2.50	Cab, installing	
810-070	1.00	Electric pedal control on X1 (on/off), replacing	
810-071	0.90	Electric pedal control on X1 (proportional), replacing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	0.90	Engine hood, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.30	Rear-view mirror, changing	
843-002	1.50	Windscreen, replacing	
843-012	4.00	Rear window, replacing	
843-013	4.50	Side window, replacing	
843-048	0.70	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	
852-012	1.75	Longitudinal adjustment cable, replacing	
852-013	0.60	Longitudinal suspension cable, replacing	
852-089	0.30	Seat cushion, replacing	
852-090	0.60	Backrest, replacing	
852-091	2.50	Seat support, replacing	
87		AIR CONDITIONING UNIT	
870-001	5.00	Cooler and Heater assembly, replacing	210001 - 220000 220001 - 230000
870-010	0.70	ECC, MID 146, changing pre-programmed ECU	
870-011	1.00	ECC, MID 146, changing non-programmed ECU	
872-001	0.50	Cab filter, replacing	
873-004	3.00	Heater core, replacing	
873-006	0.80	Fan motor, replacing	
873-011	0.70	Air mix door actuator, replacing	
874-006	1.75	Compressor, replacing incl draining and filling	210001 - 220000 220001 - 230000

Op.no.	time (h)		Notes
874-010	1.75	Condenser, replacing incl draining and filling	210001 - 220000 220001 - 230000
874-011	1.75	Receiver, replacing incl draining and filling	210001 - 220000 220001 - 230000
874-012	3.00	Evaporator, replacing incl draining and filling	210001 - 220000 220001 - 230000
874-013	3.00	Expansion valve, replacing incl draining and filling	210001 - 220000 220001 - 230000
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)	
874-094	0.60	Vent actuator, replacing	
874-095	0.60	Mode (foot) actuator, replacing	
874-096	0.60	Intake actuator, replacing	
88		INTERIOR EQUIPMENT	
881-003	1.00	Instrument panel, replacing (left)	
881-005	1.25	Instrument panel, replacing (right)	

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-011	4.50	Oil cooler, replacing	
911-015	0.50	Oil level gauge, replacing	
911-024	0.70	Pipe and hose (pump - valve), replacing	
911-033	1.50	Oil cooler line bypass valve (check valve), replacing	
911-038	3.50	Hydraulic oil tank, replacing	
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
911-051	0.20	Breather, replacing	
912-001	8.00	Control valve, replacing	
912-067	0.50	Main pressure relief valve, replacing	
912-071	0.80	Rupture valve, replacing (boom cylinder)	
912-073	0.80	Rupture valve, replacing (dipper arm cylinder)	
912-160	0.80	Port relief valve pressure, checking and adjusting	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	3.50	Hydraulic pump, replacing	210001 - 220000 220001 - 230000
913-029	0.40	Pump regulator, replacing	
914-041	0.80	Proportional solenoid valve (power shift), replacing	
914-051	0.50	Accumulator, replacing	210001 - 220000 220001 - 230000
914-060	0.70	Servo pump, replacing	

Op.no.	time (h)		Notes
914-081	1.75	Remote control valve (lever), replacing	
914-084	1.75	Remote control valve (pedal), replacing	
914-091	1.00	Solenoid valve, replacing	210001 - 220000 220001 - 230000
916-096	0.80	Hammer and shear pedal valve (RCV), replacing	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-005	0.80	Quickfit, removal	
924-006	1.00	Quickfit, installation	
924-040	0.80	Quickfit, replacing	
925-011	1.25	Bucket assembly, replacing	
925-012	0.60	Bucket assembly, removal	
925-013	1.00	Bucket assembly, installation	
97		UNIT, DIGGING	
974-010	12.00	Boom, replacing	
974-013	4.00	Boom, removal	
974-014	4.00	Boom, installation	
974-021	3.00	Boom cylinder, replacing	
974-031	1.50	Boom cylinder, removal	
974-032	1.50	Boom cylinder, installation	
974-038	3.50	Lower boom cylinder bushing, replacing	
974-039	3.50	Upper boom cylinder bushing, replacing	
975-006	1.50	Dipper arm connecting rod, removal	
975-007	1.50	Dipper arm connecting rod, installation	
975-011	3.00	Dipper arm, removal	
975-012	3.00	Dipper arm, installation	
975-014	1.25	Dipper arm cylinder, removal	
975-015	1.50	Dipper arm cylinder, installation	
975-024	1.25	Dipper arm connecting rod, replacing	
975-025	3.00	Dipper arm cylinder, replacing	
975-028	1.00	Connecting rod yoke, replacing	
975-032	1.25	Connecting rod yoke, removal	
975-035	1.25	Connecting rod yoke, installation	
975-039	8.00	Dipper arm, replacing	
975-040	3.50	Dipper arm cylinder bushing on boom, replacing	
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing	
975-061	2.50	Bucket cylinder, replacing	
975-062	1.25	Bucket cylinder, removal	
975-065	1.50	Bucket cylinder, installation	
975-072	3.50	Bucket cylinder bushing on dipper arm, changing	
975-073	3.50	Bucket cylinder bushing lever-link, replacing	

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.90	Maintenance service, every 10 hours
173-004	1.50	Maintenance service, every 50 hours
173-007	1.75	Maintenance service, every 250 hours
173-010	4.00	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	8.50	Maintenance service, every 2000 hours
173-018	8.50	Maintenance service, every 4000 hours
173-019	2.50	Maintenance service, every 4500 hours
173-022	1.00	Maintenance service, every 6000 hours
173-040	1.75	Maintenance service, first 500 hours
173-314	1.25	Valves, adjusting
173-319	2.50	Diesel particulate filter, checking and cleaning
173-332	0.40	MATRIS and Tech Tool, reading
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-066	1.50	ECM (Engine control module), replacing pre-programmed
200-067	2.00	ECM (Engine control module), replacing non-programmed
200-200	0.60	Engine belts, replacing
21		ENGINE
210-002	2.50	Compression test
210-070	5.00	Engine, removing
210-072	6.00	Engine, installing
210-092	0.60	Engine rotation speed sensor (camshaft), replacing
210-093	0.50	Engine rotation speed sensor (crank shaft), replacing
214-012	1.25	Valves, adjusting
214-037	0.40	Valve cover, removing
214-038	0.40	Valve cover, installing
217-005	1.25	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.90	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check

Op.no.	time (h)	Notes
233-001	0.30	Fuel system, bleeding
233-004	0.30	Feed pump, checking feed pressure
237-002	3.00	Injectors, replacing all
237-017	7.50	Injector sleeves, replacing
237-031	1.25	Fuel rail, replacing
237-032	2.00	High pressure fuel pump, replacing
237-033	1.25	Fuel control valve (FCV), replacing
237-034	1.50	Pressure relief valve (PRV), replacing
237-035	0.60	Fuel rail pressure sensor, replacing
237-127	0.80	High pressure fuel pipes, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.70	Exhaust pipe, flexible tube, replacing
254-001	2.50	Diesel particulate filter, check and clean
254-022	1.00	ACM (After treatment control module), replacing, non-programmed
254-023	0.60	ACM (After treatment control module), replacing, pre-programmed
254-059	0.40	Inlet throttle, replacing
254-060	1.75	Diesel oxidation catalyst, replacing
254-103	1.50	AdBlue®/DEF tank, tank armature, replacing
254-107	1.50	AdBlue®/DEF pump unit, replacing
254-112	3.00	AdBlue®/DEF tank, replacing
254-114	1.50	AdBlue®/DEF, draining
254-118	1.00	SCR system, dosing test
254-119	0.40	Coolant valve, replacing
254-120	0.50	AdBlue®/DEF dosing injector, replacing
254-124	0.30	AdBlue®/DEF pump unit, filter, replacing
254-124	0.30	AdBlue®/DEF pump unit, filter, replacing
254-126	0.80	AdBlue®/DEF mixing tube, replacing
254-127	2.00	SCR muffler, replacing
255-009	0.40	Waste gate, testing
255-071	1.25	Turbocharger, replacing
258-002	4.50	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-004	0.70	Coolant, changing
261-008	4.50	Radiator, replacing
261-018	1.00	Expansion tank, replacing
262-002	1.25	Coolant pump, replacing
262-098	1.00	Thermostat, replacing
29		Miscellaneous
293-001	1.25	EGR cooler, replacing

Op.no.	time (h)	Notes
293-008	1.25	EGR Actuator, replacing
293-009	1.25	EGR reed valve, replacing
293-010	0.70	EGR Venturi tube, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.60	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-006	0.50	Earth lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.25	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
334-002	0.70	Starter switch, testing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.40	Horn, replacing
362-041	0.40	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.60	Windscreen flusher pump, replacing
364-003	0.80	Control lockout lever switch, replacing
364-014	0.50	Ignition switch, replacing
364-056	0.60	Pre-heating relay, replacing
366-103	0.80	HMICU, changing pre-programmed ECU
366-104	1.50	HMICU, changing non-programmed ECU
366-105	0.70	GPMECU1, changing pre-programmed ECU
366-106	1.25	GPMECU1, changing non-programmed ECU
37		CABLE; FUSE; RELAY
371-090	2.00	Engine wire harness, replacing
371-092	0.70	Electrical battery disconnect switch, replacing
372-002	0.80	Electrical distribution box, circuit board replacing

Op.no.	time (h)	Notes
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
383-001	0.30	Hour meter, replacing
386-006	0.40	Engine temperature sensor, replacing
386-007	0.40	Engine oil pressure sensor, replacing
386-011	0.60	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing
39		MISCELLANEOUS
393-001	0.80	Voltage converter, replacing
393-021	0.70	Radio, replacing
395-021	0.50	Antenna, replacing
395-031	0.40	Speaker, replacing
398-001	0.60	CareTrack antenna, replacing
398-004	0.50	CareTrack battery, replacing
398-005	1.25	W-ECU, replacing, non-programmed
398-006	0.90	W-ECU, replacing, pre-programmed
4		POWER TRANSMISSION
43		GEARBOX,
431-021	6.50	Swing gearbox, replacing
431-031	4.00	Pump gearbox coupling assembly, replacing
431-053	6.50	Swing unit, replacing
431-115	1.75	Track gearbox (removed), replacing floating seal
431-115	1.25	Track gearbox (removed), replacing floating seal
431-117	1.50	Track gearbox, replacing cover
431-127	6.00	Track unit, replacing
44		HYDROSTATIC DRIVE
441-021	2.50	Swing motor, replacing
441-022	0.80	Swing motor relief valve, replacing
441-024	1.50	Swing motor, replacing plate (brake)
441-025	1.50	Swing motor, replacing brake piston seal
441-026	0.70	Swing motor removed, replacing seal
441-111	6.50	Track motor, replacing
441-112	0.70	Track motor relief valve, replacing
443-037	5.50	Center passage, replacing
443-038	7.00	Center passage, replacing seal kit
49		MISCELLANEOUS
492-021	11.00	Swing ring gear, replacing
492-031	3.00	Swing ring gear outer seal, replacing
492-032	9.00	Swing ring gear inner seal, replacing
492-091	0.40	Ring gear grease pipe, replacing

Op.no.	time (h)	Notes
492-095	0.70	Swing ring gear cover, removal
492-096	0.70	Swing ring gear cover, installation
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
710-001	3.50	Superstructure, removing
710-002	4.50	Superstructure, installing
715-019	0.60	Boom cylinder protecting guard, removal
715-020	1.25	Boom cylinder protecting guard, installation
715-023	0.90	Bucket cylinder protecting guard, removal
715-024	1.00	Bucket cylinder protecting guard, installation
716-001	0.90	Counterweight, removing
716-002	0.90	Counterweight, fitting
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	3.00	Front idler, replacing one
775-034	1.25	Track chain assembly, removing
775-035	1.75	Track chain assembly, installing
775-036	9.50	Track links, replacing
775-051	1.00	Top roller, replacing one
775-061	1.50	Bottom roller, replacing one
775-066	3.00	Bottom roller, replacing seal
775-081	4.00	Track recoil spring (tensioner) assembly, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
810-070	1.00	Electric pedal control on X1 (on/off), replacing
810-071	0.90	Electric pedal control on X1 (proportional), replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-091	1.00	Tool box assembly, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.50	Windscreen, replacing
843-012	4.50	Rear window, replacing
843-013	4.50	Side window, replacing

Op.no.	time (h)	Notes
843-048	0.90	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	3.50	Cooler and Heater assembly, replacing
870-017	1.75	CCM, changing non-programmed ECU
870-018	1.75	CCM, changing pre-programmed ECU
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.50	Air mix door actuator, replacing
874-006	2.50	Compressor, replacing incl draining and filling
874-010	1.50	Condenser, replacing incl draining and filling
874-011	1.50	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	4.00	Expansion valve, replacing incl draining and filling
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-094	0.50	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.50	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	0.60	Instrument panel, replacing (left)
881-005	0.80	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-011	4.50	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-033	2.00	Oil cooler line bypass valve (check valve), replacing
911-035	1.75	Oil cooler fan pump, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing

Op.no.	time (h)	Notes
912-001	8.00	Control valve, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.80	Rupture valve, replacing (dipper arm cylinder)
912-160	0.80	Port relief valve pressure, checking and adjusting
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.50	Hydraulic pump, replacing
913-029	0.60	Pump regulator, replacing
913-085	1.75	Power take-off (PTO), replacing
914-041	0.40	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-060	0.70	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.00	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-040	1.25	Quickfit, replacing
924-040	1.25	Quickfit, replacing
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-021	3.00	Boom cylinder, replacing
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-024	3.00	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-028	1.50	Connecting rod yoke, replacing
975-039	6.50	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.00	Bucket cylinder, replacing
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing
99		MISCELLANEOUS
992-002	5.50	Fire suppression system, actions after activation
992-003	6.50	Fire suppression system, actions after manual activation

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.90	Maintenance service, every 10 hours
173-004	1.50	Maintenance service, every 50 hours
173-007	1.75	Maintenance service, every 250 hours
173-010	4.00	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	8.50	Maintenance service, every 2000 hours
173-018	8.50	Maintenance service, every 4000 hours
173-019	2.50	Maintenance service, every 4500 hours
173-022	1.00	Maintenance service, every 6000 hours
173-040	1.75	Maintenance service, first 500 hours
173-314	1.25	Valves, adjusting
173-319	2.50	Diesel particulate filter, checking and cleaning
173-332	0.40	MATRIS and Tech Tool, reading
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-066	1.50	ECM (Engine control module), replacing pre-programmed
200-067	2.00	ECM (Engine control module), replacing non-programmed
200-200	0.60	Engine belts, replacing
21		ENGINE
210-002	2.50	Compression test
210-070	5.00	Engine, removing
210-072	6.00	Engine, installing
210-092	0.60	Engine rotation speed sensor (camshaft), replacing
210-093	0.50	Engine rotation speed sensor (crank shaft), replacing
214-012	1.25	Valves, adjusting
214-037	0.40	Valve cover, removing
214-038	0.40	Valve cover, installing
217-005	1.25	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.90	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check

Op.no.	time (h)	Notes
233-001	0.30	Fuel system, bleeding
233-004	0.30	Feed pump, checking feed pressure
237-002	3.00	Injectors, replacing all
237-017	7.50	Injector sleeves, replacing
237-031	1.25	Fuel rail, replacing
237-032	2.00	High pressure fuel pump, replacing
237-033	1.25	Fuel control valve (FCV), replacing
237-034	1.50	Pressure relief valve (PRV), replacing
237-035	0.60	Fuel rail pressure sensor, replacing
237-127	0.80	High pressure fuel pipes, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.70	Exhaust pipe, flexible tube, replacing
254-001	2.50	Diesel particulate filter, check and clean
254-022	1.00	ACM (After treatment control module), replacing, non-programmed
254-023	0.60	ACM (After treatment control module), replacing, pre-programmed
254-059	0.40	Inlet throttle, replacing
254-060	1.75	Diesel oxidation catalyst, replacing
254-103	1.50	AdBlue®/DEF tank, tank armature, replacing
254-107	1.50	AdBlue®/DEF pump unit, replacing
254-112	3.00	AdBlue®/DEF tank, replacing
254-114	1.50	AdBlue®/DEF, draining
254-118	1.00	SCR system, dosing test
254-119	0.40	Coolant valve, replacing
254-120	0.50	AdBlue®/DEF dosing injector, replacing
254-124	0.30	AdBlue®/DEF pump unit, filter, replacing
254-124	0.30	AdBlue®/DEF pump unit, filter, replacing
254-126	0.80	AdBlue®/DEF mixing tube, replacing
254-127	2.00	SCR muffler, replacing
255-009	0.40	Waste gate, testing
255-071	1.25	Turbocharger, replacing
258-002	4.50	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-004	0.70	Coolant, changing
261-008	4.50	Radiator, replacing
261-018	1.00	Expansion tank, replacing
262-002	1.25	Coolant pump, replacing
262-098	1.00	Thermostat, replacing
29		Miscellaneous
293-001	1.25	EGR cooler, replacing

Op.no.	time (h)	Notes
293-008	1.25	EGR Actuator, replacing
293-009	1.25	EGR reed valve, replacing
293-010	0.70	EGR Venturi tube, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.60	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-006	0.50	Earth lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.25	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
334-002	0.70	Starter switch, testing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.40	Horn, replacing
362-041	0.40	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.60	Windscreen flusher pump, replacing
364-003	0.80	Control lockout lever switch, replacing
364-014	0.50	Ignition switch, replacing
364-056	0.60	Pre-heating relay, replacing
366-103	0.80	HMICU, changing pre-programmed ECU
366-104	1.50	HMICU, changing non-programmed ECU
366-105	0.70	GPMECU1, changing pre-programmed ECU
366-106	1.25	GPMECU1, changing non-programmed ECU
37		CABLE; FUSE; RELAY
371-090	2.00	Engine wire harness, replacing
371-092	0.70	Electrical battery disconnect switch, replacing
372-002	0.80	Electrical distribution box, circuit board replacing

Op.no.	time (h)	Notes
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
383-001	0.30	Hour meter, replacing
386-006	0.40	Engine temperature sensor, replacing
386-007	0.40	Engine oil pressure sensor, replacing
386-011	0.60	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing
39		MISCELLANEOUS
393-001	0.80	Voltage converter, replacing
393-021	0.70	Radio, replacing
395-021	0.50	Antenna, replacing
395-031	0.40	Speaker, replacing
398-001	0.60	CareTrack antenna, replacing
398-004	0.50	CareTrack battery, replacing
398-005	1.25	W-ECU, replacing, non-programmed
398-006	0.90	W-ECU, replacing, pre-programmed
4		POWER TRANSMISSION
43		GEARBOX,
431-021	6.50	Swing gearbox, replacing
431-031	4.00	Pump gearbox coupling assembly, replacing
431-053	6.50	Swing unit, replacing
431-115	1.75	Track gearbox (removed), replacing floating seal
431-115	1.25	Track gearbox (removed), replacing floating seal
431-117	1.50	Track gearbox, replacing cover
431-127	6.00	Track unit, replacing
44		HYDROSTATIC DRIVE
441-021	2.50	Swing motor, replacing
441-022	0.80	Swing motor relief valve, replacing
441-024	1.50	Swing motor, replacing plate (brake)
441-025	1.50	Swing motor, replacing brake piston seal
441-026	0.70	Swing motor removed, replacing seal
441-111	6.50	Track motor, replacing
441-112	0.70	Track motor relief valve, replacing
443-037	5.50	Center passage, replacing
443-038	7.00	Center passage, replacing seal kit
49		MISCELLANEOUS
492-021	11.00	Swing ring gear, replacing
492-031	3.00	Swing ring gear outer seal, replacing
492-032	9.00	Swing ring gear inner seal, replacing
492-091	0.40	Ring gear grease pipe, replacing

Op.no.	time (h)	Notes
492-095	0.70	Swing ring gear cover, removal
492-096	0.70	Swing ring gear cover, installation
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
710-001	3.50	Superstructure, removing
710-002	4.50	Superstructure, installing
715-019	0.60	Boom cylinder protecting guard, removal
715-020	1.25	Boom cylinder protecting guard, installation
715-023	0.90	Bucket cylinder protecting guard, removal
715-024	1.00	Bucket cylinder protecting guard, installation
716-001	0.90	Counterweight, removing
716-002	0.90	Counterweight, fitting
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	3.00	Front idler, replacing one
775-034	1.25	Track chain assembly, removing
775-035	1.75	Track chain assembly, installing
775-036	9.50	Track links, replacing
775-051	1.00	Top roller, replacing one
775-061	1.50	Bottom roller, replacing one
775-066	3.00	Bottom roller, replacing seal
775-081	4.00	Track recoil spring (tensioner) assembly, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
810-070	1.00	Electric pedal control on X1 (on/off), replacing
810-071	0.90	Electric pedal control on X1 (proportional), replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-091	1.00	Tool box assembly, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.50	Windscreen, replacing
843-012	4.50	Rear window, replacing
843-013	4.50	Side window, replacing

Op.no.	time (h)	Notes
843-048	0.90	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	3.50	Cooler and Heater assembly, replacing
870-017	1.75	CCM, changing non-programmed ECU
870-018	1.75	CCM, changing pre-programmed ECU
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.50	Air mix door actuator, replacing
874-006	2.50	Compressor, replacing incl draining and filling
874-010	1.50	Condenser, replacing incl draining and filling
874-011	1.50	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	4.00	Expansion valve, replacing incl draining and filling
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-094	0.50	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.50	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	0.60	Instrument panel, replacing (left)
881-005	0.80	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-011	4.50	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-033	2.00	Oil cooler line bypass valve (check valve), replacing
911-035	1.75	Oil cooler fan pump, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing

Op.no.	time (h)	Notes
912-001	8.00	Control valve, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.80	Rupture valve, replacing (dipper arm cylinder)
912-160	0.80	Port relief valve pressure, checking and adjusting
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.50	Hydraulic pump, replacing
913-029	0.60	Pump regulator, replacing
913-085	1.75	Power take-off (PTO), replacing
914-041	0.40	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-060	0.70	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.00	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-040	1.25	Quickfit, replacing
924-040	1.25	Quickfit, replacing
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-021	3.00	Boom cylinder, replacing
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-024	3.00	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-028	1.50	Connecting rod yoke, replacing
975-039	6.50	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.00	Bucket cylinder, replacing
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.90	Maintenance service, every 10 hours
173-004	1.50	Maintenance service, every 50 hours
173-007	1.75	Maintenance service, every 250 hours
173-010	4.00	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	8.50	Maintenance service, every 2000 hours
173-018	8.50	Maintenance service, every 4000 hours
173-019	2.50	Maintenance service, every 4500 hours
173-022	1.00	Maintenance service, every 6000 hours
173-040	1.75	Maintenance service, first 500 hours
173-314	1.25	Valves, adjusting
173-319	2.50	Diesel particulate filter, checking and cleaning
173-332	0.40	MATRIS and Tech Tool, reading
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-066	1.50	ECM (Engine control module), replacing pre-programmed
200-067	2.00	ECM (Engine control module), replacing non-programmed
200-200	0.60	Engine belts, replacing
21		ENGINE
210-002	2.50	Compression test
210-070	5.00	Engine, removing
210-072	6.00	Engine, installing
210-092	0.60	Engine rotation speed sensor (camshaft), replacing
210-093	0.50	Engine rotation speed sensor (crank shaft), replacing
214-012	1.25	Valves, adjusting
214-037	0.40	Valve cover, removing
214-038	0.40	Valve cover, installing
217-005	1.25	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.90	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check

Op.no.	time (h)	Notes
233-001	0.30	Fuel system, bleeding
233-004	0.30	Feed pump, checking feed pressure
237-002	3.00	Injectors, replacing all
237-017	7.50	Injector sleeves, replacing
237-031	1.25	Fuel rail, replacing
237-032	2.00	High pressure fuel pump, replacing
237-033	1.25	Fuel control valve (FCV), replacing
237-034	1.50	Pressure relief valve (PRV), replacing
237-035	0.60	Fuel rail pressure sensor, replacing
237-127	0.80	High pressure fuel pipes, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.70	Exhaust pipe, flexible tube, replacing
254-001	2.50	Diesel particulate filter, check and clean
254-022	1.00	ACM (After treatment control module), replacing, non-programmed
254-023	0.60	ACM (After treatment control module), replacing, pre-programmed
254-059	0.40	Inlet throttle, replacing
254-060	1.75	Diesel oxidation catalyst, replacing
254-103	1.50	AdBlue®/DEF tank, tank armature, replacing
254-107	1.50	AdBlue®/DEF pump unit, replacing
254-112	3.00	AdBlue®/DEF tank, replacing
254-114	1.50	AdBlue®/DEF, draining
254-118	1.00	SCR system, dosing test
254-119	0.40	Coolant valve, replacing
254-120	0.50	AdBlue®/DEF dosing injector, replacing
254-124	0.30	AdBlue®/DEF pump unit, filter, replacing
254-124	0.30	AdBlue®/DEF pump unit, filter, replacing
254-126	0.80	AdBlue®/DEF mixing tube, replacing
254-127	2.00	SCR muffler, replacing
255-009	0.40	Waste gate, testing
255-071	1.25	Turbocharger, replacing
258-002	4.50	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-004	0.70	Coolant, changing
261-008	4.50	Radiator, replacing
261-018	1.00	Expansion tank, replacing
262-002	1.25	Coolant pump, replacing
262-098	1.00	Thermostat, replacing
29		Miscellaneous
293-001	1.25	EGR cooler, replacing

Op.no.	time (h)	Notes
293-008	1.25	EGR Actuator, replacing
293-009	1.25	EGR reed valve, replacing
293-010	0.70	EGR Venturi tube, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.60	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-006	0.50	Earth lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.25	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
334-002	0.70	Starter switch, testing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.40	Horn, replacing
362-041	0.40	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.60	Windscreen flusher pump, replacing
364-003	0.80	Control lockout lever switch, replacing
364-014	0.50	Ignition switch, replacing
364-056	0.60	Pre-heating relay, replacing
366-103	0.80	HMICU, changing pre-programmed ECU
366-104	1.50	HMICU, changing non-programmed ECU
366-105	0.70	GPMECU1, changing pre-programmed ECU
366-106	1.25	GPMECU1, changing non-programmed ECU
37		CABLE; FUSE; RELAY
371-090	2.00	Engine wire harness, replacing
371-092	0.70	Electrical battery disconnect switch, replacing
372-002	0.80	Electrical distribution box, circuit board replacing

Op.no.	time (h)	Notes
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
383-001	0.30	Hour meter, replacing
386-006	0.40	Engine temperature sensor, replacing
386-007	0.40	Engine oil pressure sensor, replacing
386-011	0.60	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing
39		MISCELLANEOUS
393-001	0.80	Voltage converter, replacing
393-021	0.70	Radio, replacing
395-021	0.50	Antenna, replacing
395-031	0.40	Speaker, replacing
398-001	0.60	CareTrack antenna, replacing
398-004	0.50	CareTrack battery, replacing
398-005	1.25	W-ECU, replacing, non-programmed
398-006	0.90	W-ECU, replacing, pre-programmed
4		POWER TRANSMISSION
43		GEARBOX,
431-021	6.50	Swing gearbox, replacing
431-031	4.00	Pump gearbox coupling assembly, replacing
431-053	6.50	Swing unit, replacing
431-115	1.75	Track gearbox (removed), replacing floating seal
431-115	1.25	Track gearbox (removed), replacing floating seal
431-117	1.50	Track gearbox, replacing cover
431-127	6.00	Track unit, replacing
44		HYDROSTATIC DRIVE
441-021	2.50	Swing motor, replacing
441-022	0.80	Swing motor relief valve, replacing
441-024	1.50	Swing motor, replacing plate (brake)
441-025	1.50	Swing motor, replacing brake piston seal
441-026	0.70	Swing motor removed, replacing seal
441-111	6.50	Track motor, replacing
441-112	0.70	Track motor relief valve, replacing
443-037	5.50	Center passage, replacing
443-038	7.00	Center passage, replacing seal kit
49		MISCELLANEOUS
492-021	11.00	Swing ring gear, replacing
492-031	3.00	Swing ring gear outer seal, replacing
492-032	9.00	Swing ring gear inner seal, replacing
492-091	0.40	Ring gear grease pipe, replacing

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
710-001	3.50	Superstructure, removing
710-002	4.50	Superstructure, installing
716-001	0.90	Counterweight, removing
716-002	0.90	Counterweight, fitting
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	3.00	Front idler, replacing one
775-034	1.25	Track chain assembly, removing
775-035	1.75	Track chain assembly, installing
775-036	9.50	Track links, replacing
775-051	1.00	Top roller, replacing one
775-061	1.50	Bottom roller, replacing one
775-066	3.00	Bottom roller, replacing seal
775-081	4.00	Track recoil spring (tensioner) assembly, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
810-070	1.00	Electric pedal control on X1 (on/off), replacing
810-071	0.90	Electric pedal control on X1 (proportional), replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-091	1.00	Tool box assembly, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.50	Windscreen, replacing
843-012	4.50	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.90	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing

Op.no.	time (h)	Notes
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	3.50	Cooler and Heater assembly, replacing
870-017	1.75	CCM, changing non-programmed ECU
870-018	1.75	CCM, changing pre-programmed ECU
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.50	Air mix door actuator, replacing
874-006	2.50	Compressor, replacing incl draining and filling
874-010	1.50	Condenser, replacing incl draining and filling
874-011	1.50	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	4.00	Expansion valve, replacing incl draining and filling
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-094	0.50	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.50	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	0.60	Instrument panel, replacing (left)
881-005	0.80	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-011	4.50	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-033	2.00	Oil cooler line bypass valve (check valve), replacing
911-035	1.75	Oil cooler fan pump, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	8.00	Control valve, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.80	Rupture valve, replacing (dipper arm cylinder)
912-160	0.80	Port relief valve pressure, checking and adjusting
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.50	Hydraulic pump, replacing

Op.no.	time (h)	Notes
913-029	0.60	Pump regulator, replacing
913-085	1.75	Power take-off (PTO), replacing
914-041	0.40	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-060	0.70	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.00	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-040	1.25	Quickfit, replacing
924-040	1.25	Quickfit, replacing
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-021	3.00	Boom cylinder, replacing
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-024	3.00	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-028	1.50	Connecting rod yoke, replacing
975-039	6.50	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.00	Bucket cylinder, replacing
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.90	Maintenance service, every 10 hours
173-004	1.50	Maintenance service, every 50 hours
173-007	1.75	Maintenance service, every 250 hours
173-010	4.00	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	8.50	Maintenance service, every 2000 hours
173-018	8.50	Maintenance service, every 4000 hours
173-019	2.50	Maintenance service, every 4500 hours
173-022	1.00	Maintenance service, every 6000 hours
173-040	1.75	Maintenance service, first 500 hours
173-314	1.25	Valves, adjusting
173-319	2.50	Diesel particulate filter, checking and cleaning
173-332	0.40	MATRIS and Tech Tool, reading
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-066	1.50	ECM (Engine control module), replacing pre-programmed
200-067	2.00	ECM (Engine control module), replacing non-programmed
200-200	0.60	Engine belts, replacing
21		ENGINE
210-002	2.50	Compression test
210-070	5.00	Engine, removing
210-072	6.00	Engine, installing
210-092	0.60	Engine rotation speed sensor (camshaft), replacing
210-093	0.50	Engine rotation speed sensor (crank shaft), replacing
214-012	1.25	Valves, adjusting
214-037	0.40	Valve cover, removing
214-038	0.40	Valve cover, installing
217-005	1.25	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.90	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check

Op.no.	time (h)	Notes
233-001	0.30	Fuel system, bleeding
233-004	0.30	Feed pump, checking feed pressure
237-002	3.00	Injectors, replacing all
237-017	7.50	Injector sleeves, replacing
237-031	1.25	Fuel rail, replacing
237-032	2.00	High pressure fuel pump, replacing
237-033	1.25	Fuel control valve (FCV), replacing
237-034	1.50	Pressure relief valve (PRV), replacing
237-035	0.60	Fuel rail pressure sensor, replacing
237-127	0.80	High pressure fuel pipes, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.70	Exhaust pipe, flexible tube, replacing
254-001	2.50	Diesel particulate filter, check and clean
254-022	1.00	ACM (After treatment control module), replacing, non-programmed
254-023	0.60	ACM (After treatment control module), replacing, pre-programmed
254-059	0.40	Inlet throttle, replacing
254-060	1.75	Diesel oxidation catalyst, replacing
254-103	1.50	AdBlue®/DEF tank, tank armature, replacing
254-107	1.50	AdBlue®/DEF pump unit, replacing
254-112	3.00	AdBlue®/DEF tank, replacing
254-114	1.50	AdBlue®/DEF, draining
254-118	1.00	SCR system, dosing test
254-119	0.40	Coolant valve, replacing
254-120	0.50	AdBlue®/DEF dosing injector, replacing
254-124	0.30	AdBlue®/DEF pump unit, filter, replacing
254-124	0.30	AdBlue®/DEF pump unit, filter, replacing
254-126	0.80	AdBlue®/DEF mixing tube, replacing
254-127	2.00	SCR muffler, replacing
255-009	0.40	Waste gate, testing
255-071	1.25	Turbocharger, replacing
258-002	4.50	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-004	0.70	Coolant, changing
261-008	4.50	Radiator, replacing
261-018	1.00	Expansion tank, replacing
262-002	1.25	Coolant pump, replacing
262-098	1.00	Thermostat, replacing
29		Miscellaneous
293-001	1.25	EGR cooler, replacing

Op.no.	time (h)	Notes
293-008	1.25	EGR Actuator, replacing
293-009	1.25	EGR reed valve, replacing
293-010	0.70	EGR Venturi tube, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.60	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-006	0.50	Earth lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.25	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
334-002	0.70	Starter switch, testing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.40	Horn, replacing
362-041	0.40	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.60	Windscreen flusher pump, replacing
364-003	0.80	Control lockout lever switch, replacing
364-014	0.50	Ignition switch, replacing
364-056	0.60	Pre-heating relay, replacing
366-103	0.80	HMICU, changing pre-programmed ECU
366-104	1.50	HMICU, changing non-programmed ECU
366-105	0.70	GPMECU1, changing pre-programmed ECU
366-106	1.25	GPMECU1, changing non-programmed ECU
37		CABLE; FUSE; RELAY
371-090	2.00	Engine wire harness, replacing
371-092	0.70	Electrical battery disconnect switch, replacing
372-002	0.80	Electrical distribution box, circuit board replacing

Op.no.	time (h)	Notes
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
383-001	0.30	Hour meter, replacing
386-006	0.40	Engine temperature sensor, replacing
386-007	0.40	Engine oil pressure sensor, replacing
386-011	0.60	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing
39		MISCELLANEOUS
393-001	0.80	Voltage converter, replacing
393-021	0.70	Radio, replacing
395-021	0.50	Antenna, replacing
395-031	0.40	Speaker, replacing
398-001	0.60	CareTrack antenna, replacing
398-004	0.50	CareTrack battery, replacing
398-005	1.25	W-ECU, replacing, non-programmed
398-006	0.90	W-ECU, replacing, pre-programmed
4		POWER TRANSMISSION
43		GEARBOX,
431-021	6.50	Swing gearbox, replacing
431-031	4.00	Pump gearbox coupling assembly, replacing
431-053	6.50	Swing unit, replacing
431-115	1.75	Track gearbox (removed), replacing floating seal
431-115	1.25	Track gearbox (removed), replacing floating seal
431-117	1.50	Track gearbox, replacing cover
431-127	6.00	Track unit, replacing
44		HYDROSTATIC DRIVE
441-021	2.50	Swing motor, replacing
441-022	0.80	Swing motor relief valve, replacing
441-024	1.50	Swing motor, replacing plate (brake)
441-025	1.50	Swing motor, replacing brake piston seal
441-026	0.70	Swing motor removed, replacing seal
441-111	6.50	Track motor, replacing
441-112	0.70	Track motor relief valve, replacing
443-037	5.50	Center passage, replacing
443-038	7.00	Center passage, replacing seal kit
49		MISCELLANEOUS
492-021	11.00	Swing ring gear, replacing
492-031	3.00	Swing ring gear outer seal, replacing
492-032	9.00	Swing ring gear inner seal, replacing
492-091	0.40	Ring gear grease pipe, replacing

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
710-001	3.50	Superstructure, removing
710-002	4.50	Superstructure, installing
716-001	0.90	Counterweight, removing
716-002	0.90	Counterweight, fitting
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	3.00	Front idler, replacing one
775-034	1.25	Track chain assembly, removing
775-035	1.75	Track chain assembly, installing
775-036	9.50	Track links, replacing
775-051	1.00	Top roller, replacing one
775-061	1.50	Bottom roller, replacing one
775-066	3.00	Bottom roller, replacing seal
775-081	4.00	Track recoil spring (tensioner) assembly, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
810-070	1.00	Electric pedal control on X1 (on/off), replacing
810-071	0.90	Electric pedal control on X1 (proportional), replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-091	1.00	Tool box assembly, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.50	Windscreen, replacing
843-012	4.50	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.90	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing

Op.no.	time (h)	Notes
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	3.50	Cooler and Heater assembly, replacing
870-017	1.75	CCM, changing non-programmed ECU
870-018	1.75	CCM, changing pre-programmed ECU
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.50	Air mix door actuator, replacing
874-006	2.50	Compressor, replacing incl draining and filling
874-010	1.50	Condenser, replacing incl draining and filling
874-011	1.50	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	4.00	Expansion valve, replacing incl draining and filling
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-094	0.50	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.50	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	0.60	Instrument panel, replacing (left)
881-005	0.80	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-011	4.50	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-033	2.00	Oil cooler line bypass valve (check valve), replacing
911-035	1.75	Oil cooler fan pump, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	8.00	Control valve, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.80	Rupture valve, replacing (dipper arm cylinder)
912-160	0.80	Port relief valve pressure, checking and adjusting
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.50	Hydraulic pump, replacing

Op.no.	time (h)	Notes
913-029	0.60	Pump regulator, replacing
913-085	1.75	Power take-off (PTO), replacing
914-041	0.40	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-060	0.70	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.00	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-040	1.25	Quickfit, replacing
924-040	1.25	Quickfit, replacing
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-021	3.00	Boom cylinder, replacing
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-024	3.00	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-028	1.50	Connecting rod yoke, replacing
975-039	6.50	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.00	Bucket cylinder, replacing
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.90	Maintenance service, every 10 hours
173-004	1.50	Maintenance service, every 50 hours
173-007	1.75	Maintenance service, every 250 hours
173-010	4.00	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	8.50	Maintenance service, every 2000 hours
173-018	8.50	Maintenance service, every 4000 hours
173-019	2.50	Maintenance service, every 4500 hours
173-022	1.00	Maintenance service, every 6000 hours
173-040	1.75	Maintenance service, first 500 hours
173-314	1.25	Valves, adjusting
173-319	2.50	Diesel particulate filter, checking and cleaning
173-332	0.40	MATRIS and Tech Tool, reading
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-066	1.50	ECM (Engine control module), replacing pre-programmed
200-067	2.00	ECM (Engine control module), replacing non-programmed
200-200	0.60	Engine belts, replacing
21		ENGINE
210-002	2.50	Compression test
210-070	5.00	Engine, removing
210-072	6.00	Engine, installing
210-092	0.60	Engine rotation speed sensor (camshaft), replacing
210-093	0.50	Engine rotation speed sensor (crank shaft), replacing
214-012	1.25	Valves, adjusting
214-037	0.40	Valve cover, removing
214-038	0.40	Valve cover, installing
217-005	1.25	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.90	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check

Op.no.	time (h)	Notes
233-001	0.30	Fuel system, bleeding
233-004	0.30	Feed pump, checking feed pressure
237-002	3.00	Injectors, replacing all
237-017	7.50	Injector sleeves, replacing
237-031	1.25	Fuel rail, replacing
237-032	2.00	High pressure fuel pump, replacing
237-033	1.25	Fuel control valve (FCV), replacing
237-034	1.50	Pressure relief valve (PRV), replacing
237-035	0.60	Fuel rail pressure sensor, replacing
237-127	0.80	High pressure fuel pipes, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.70	Exhaust pipe, flexible tube, replacing
254-001	2.50	Diesel particulate filter, check and clean
254-022	1.00	ACM (After treatment control module), replacing, non-programmed
254-023	0.60	ACM (After treatment control module), replacing, pre-programmed
254-059	0.40	Inlet throttle, replacing
254-060	1.75	Diesel oxidation catalyst, replacing
254-103	1.50	AdBlue®/DEF tank, tank armature, replacing
254-107	1.50	AdBlue®/DEF pump unit, replacing
254-112	3.00	AdBlue®/DEF tank, replacing
254-114	1.50	AdBlue®/DEF, draining
254-118	1.00	SCR system, dosing test
254-119	0.40	Coolant valve, replacing
254-120	0.50	AdBlue®/DEF dosing injector, replacing
254-124	0.30	AdBlue®/DEF pump unit, filter, replacing
254-124	0.30	AdBlue®/DEF pump unit, filter, replacing
254-126	0.80	AdBlue®/DEF mixing tube, replacing
254-127	2.00	SCR muffler, replacing
255-009	0.40	Waste gate, testing
255-071	1.25	Turbocharger, replacing
258-002	4.50	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-004	0.70	Coolant, changing
261-008	4.50	Radiator, replacing
261-018	1.00	Expansion tank, replacing
262-002	1.25	Coolant pump, replacing
262-098	1.00	Thermostat, replacing
29		Miscellaneous
293-001	1.25	EGR cooler, replacing

Op.no.	time (h)	Notes
293-008	1.25	EGR Actuator, replacing
293-009	1.25	EGR reed valve, replacing
293-010	0.70	EGR Venturi tube, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.60	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-006	0.50	Earth lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.25	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
334-002	0.70	Starter switch, testing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.40	Horn, replacing
362-041	0.40	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.60	Windscreen flusher pump, replacing
364-003	0.80	Control lockout lever switch, replacing
364-014	0.50	Ignition switch, replacing
364-056	0.60	Pre-heating relay, replacing
366-103	0.80	HMICU, changing pre-programmed ECU
366-104	1.50	HMICU, changing non-programmed ECU
366-105	0.70	GPMECU1, changing pre-programmed ECU
366-106	1.25	GPMECU1, changing non-programmed ECU
37		CABLE; FUSE; RELAY
371-090	2.00	Engine wire harness, replacing
371-092	0.70	Electrical battery disconnect switch, replacing
372-002	0.80	Electrical distribution box, circuit board replacing

Op.no.	time (h)	Notes
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
383-001	0.30	Hour meter, replacing
386-006	0.40	Engine temperature sensor, replacing
386-007	0.40	Engine oil pressure sensor, replacing
386-011	0.60	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing
39		MISCELLANEOUS
393-001	0.80	Voltage converter, replacing
393-021	0.70	Radio, replacing
395-021	0.50	Antenna, replacing
395-031	0.40	Speaker, replacing
398-001	0.60	CareTrack antenna, replacing
398-004	0.50	CareTrack battery, replacing
398-005	1.25	W-ECU, replacing, non-programmed
398-006	0.90	W-ECU, replacing, pre-programmed
4		POWER TRANSMISSION
43		GEARBOX,
431-021	6.50	Swing gearbox, replacing
431-031	4.00	Pump gearbox coupling assembly, replacing
431-053	6.50	Swing unit, replacing
431-115	1.75	Track gearbox (removed), replacing floating seal
431-115	1.25	Track gearbox (removed), replacing floating seal
431-117	1.50	Track gearbox, replacing cover
431-127	6.00	Track unit, replacing
44		HYDROSTATIC DRIVE
441-021	2.50	Swing motor, replacing
441-022	0.80	Swing motor relief valve, replacing
441-024	1.50	Swing motor, replacing plate (brake)
441-025	1.50	Swing motor, replacing brake piston seal
441-026	0.70	Swing motor removed, replacing seal
441-111	6.50	Track motor, replacing
441-112	0.70	Track motor relief valve, replacing
443-037	5.50	Center passage, replacing
443-038	7.00	Center passage, replacing seal kit
49		MISCELLANEOUS
492-021	11.00	Swing ring gear, replacing
492-031	3.00	Swing ring gear outer seal, replacing
492-032	9.00	Swing ring gear inner seal, replacing
492-091	0.40	Ring gear grease pipe, replacing

Op.no.	time (h)	Notes
492-095	0.70	Swing ring gear cover, removal
492-096	0.70	Swing ring gear cover, installation
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
710-001	3.50	Superstructure, removing
710-002	4.50	Superstructure, installing
715-019	0.60	Boom cylinder protecting guard, removal
715-020	1.25	Boom cylinder protecting guard, installation
715-023	0.90	Bucket cylinder protecting guard, removal
715-024	1.00	Bucket cylinder protecting guard, installation
716-001	0.90	Counterweight, removing
716-002	0.90	Counterweight, fitting
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	3.00	Front idler, replacing one
775-034	1.25	Track chain assembly, removing
775-035	1.75	Track chain assembly, installing
775-036	9.50	Track links, replacing
775-051	1.00	Top roller, replacing one
775-061	1.50	Bottom roller, replacing one
775-066	3.00	Bottom roller, replacing seal
775-081	4.00	Track recoil spring (tensioner) assembly, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
810-070	1.00	Electric pedal control on X1 (on/off), replacing
810-071	0.90	Electric pedal control on X1 (proportional), replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-091	1.00	Tool box assembly, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.50	Windscreen, replacing
843-012	4.50	Rear window, replacing
843-013	4.50	Side window, replacing

Op.no.	time (h)	Notes
843-048	0.90	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	3.50	Cooler and Heater assembly, replacing
870-017	1.75	CCM, changing non-programmed ECU
870-018	1.75	CCM, changing pre-programmed ECU
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.50	Air mix door actuator, replacing
874-006	2.50	Compressor, replacing incl draining and filling
874-010	1.50	Condenser, replacing incl draining and filling
874-011	1.50	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	4.00	Expansion valve, replacing incl draining and filling
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-094	0.50	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.50	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	0.60	Instrument panel, replacing (left)
881-005	0.80	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-011	4.50	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-033	2.00	Oil cooler line bypass valve (check valve), replacing
911-035	1.75	Oil cooler fan pump, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing

Op.no.	time (h)	Notes
912-001	8.00	Control valve, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.80	Rupture valve, replacing (dipper arm cylinder)
912-160	0.80	Port relief valve pressure, checking and adjusting
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.50	Hydraulic pump, replacing
913-029	0.60	Pump regulator, replacing
913-085	1.75	Power take-off (PTO), replacing
914-041	0.40	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-060	0.70	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.00	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-040	1.25	Quickfit, replacing
924-040	1.25	Quickfit, replacing
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-021	3.00	Boom cylinder, replacing
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-024	3.00	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-028	1.50	Connecting rod yoke, replacing
975-039	6.50	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.00	Bucket cylinder, replacing
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing

Op.no.	time (h)	Notes
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1 STANDARD PARTS, SERVICE

17 SERVICE

172-002	3.00	Warranty inspection 100 hours
172-004	6.50	Warranty inspection 1000 hours
173-002	1.00	Maintenance service, daily
173-004	1.25	Maintenance service, every 50 hours
173-007	2.00	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	6.50	Maintenance service, every 1000 hours
173-013	5.00	Maintenance service, every 1500 hours
173-014	7.00	Maintenance service, every 2000 hours
173-016	10.00	Maintenance service, every 3000 hours
173-059	0.60	Engine, changing oil and filter
173-073	0.80	Hydraulic oil tank, changing oil
173-081	0.70	Travel motor gearbox, changing oil
173-087	0.70	Coolant, changing
173-093	0.30	Track tension, checking
173-093	0.30	Track tension, checking

19 GENERAL

191-022	0.10	Service position 2
191-025	0.10	Service position 3

2 ENGINE WITH MOUNTING AND EQUIPMENT

21 ENGINE

210-002	2.00	Compression test
210-070	2.00	Engine, removing
210-072	2.50	Engine, installing
214-012	1.50	Valves, adjusting
216-014	3.00	Crankshaft, replacing front oil seal

22 LUBRICATING SYSTEM

221-014	3.50	Oil pump, replacing
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23 FUEL SYSTEM

233-011	0.20	Fuel pump, removing
233-012	0.20	Fuel pump, installing
234-011	1.00	Fuel tank, removing
234-012	0.70	Fuel tank, installing
236-001	0.30	Idling speed, checking and adjusting
236-030	1.00	Injection timing, checking
236-070	3.00	Injection pump, removing

Op.no.	time (h)	Notes
25		INLET SYSTEM; EXHAUST SYSTEM
252-017	0.40	Silencer, removing
252-018	0.40	Silencer, installing
256-010	0.30	Air cleaner, removing
256-011	0.20	Air cleaner, installing
26		COOLING SYSTEM
261-011	1.00	Radiator, removing
261-013	0.80	Radiator, installing
262-005	0.80	Coolant pump, removing
262-006	0.90	Coolant pump, installing
262-098	0.80	Thermostat, replacing
263-012	0.40	Fan belt and/or alternator belt, replacing
263-013	0.20	Fan belt and/or alternator belt, checking and adjusting tension
27		ENGINE CONTROL
275-014	0.20	Automatic idling device, removing
275-015	0.30	Automatic idling device, installing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.40	Batteries, replacing
311-005	0.60	Battery condition, check
32		ALTERNATOR; CHARGE REGULATOR
321-003	0.20	Alternator, removing
321-004	0.30	Alternator, installing
33		STARTING SYSTEM
331-016	0.40	Starter motor, removing
331-017	0.30	Starter motor, installing
333-002	0.60	Glow plug, removal
333-003	0.60	Glow plug, installation
35		LIGHTING
352-001	0.20	Lamp bulb, replacing
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
367-052	0.40	V-ECU, replacing
37		CABLE; FUSE; RELAY
372-002	1.00	Electrical distribution box, circuit board replacing

Op.no.	time (h)	Notes	
39		MISCELLANEOUS	
390-902	2.50	CareTrack, installing new	
4		POWER TRANSMISSION	
44		HYDROSTATIC DRIVE	
441-030	3.50	Swing motor, removing	3374 - 4613
441-030	3.50	Swing motor, removing	1 - 3373
441-030	1.25	Swing motor, removing	4614 - 9999
441-031	5.00	Swing motor, installing	1 - 4613
441-031	1.75	Swing motor, installing	4614 - 9999
441-033	0.90	Swing motor, replacing counterbalance valve	4614 - 9999
441-033	0.80	Swing motor, replacing counterbalance valve	1 - 3373
441-033	0.80	Swing motor, replacing counterbalance valve	3374 - 4613
441-034	5.00	Swing motor removed, overhaul	
441-113	1.25	Track motor, removing	
441-114	1.50	Track motor, installing	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	0.40	Counterweight, removing	
716-002	0.50	Counterweight, fitting	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-009	0.30	Front idler, removing	
775-010	0.50	Front idler, installing	
775-022	0.40	Sprocket, removal	
775-023	0.70	Sprocket, installation	
775-041	0.30	Rubber track, removing	
775-042	0.40	Rubber track, installing	
775-052	0.30	Top roller, removal	
775-053	0.30	Top roller, installation	
775-062	0.20	Bottom roller, removing	
775-063	0.30	Bottom roller, installing	

Op.no.	time (h)		Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	0.60	Cab, removing	
810-002	0.90	Cab, installing	
810-004	3.00	Cab platform, removal	1 - 3373
810-004	3.00	Cab platform, removal	4614 - 9999
810-004	3.00	Cab platform, removal	3374 - 4613
810-005	3.50	Cab platform, installation	1 - 4613
810-005	3.50	Cab platform, installation	4614 - 9999
810-013	0.40	Cab, roof panel, removing	
810-014	0.40	Cab, roof panel, installing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-031	0.20	Engine hood, changing gas spring	
85		CAB INTERIOR/UPHOLSTERY	
852-003	0.40	Operator's seat, removing	
852-004	0.30	Operator's seat, installing	
852-011	0.40	Seat retention cable, replacement	1 - 4613
88		INTERIOR EQUIPMENT	
881-001	0.10	Instrument console, removing	
881-002	0.20	Instrument console, installing	
884-001	0.30	Seat safety belt, replacing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-034	0.40	H-ECU (hydraulic), replacing pre-programmed ECU	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-013	0.50	Hydraulic oil cooler, removing	
911-014	0.60	Hydraulic oil cooler, installing	
911-036	3.00	Hydraulic oil tank, removing	
911-037	3.00	Hydraulic oil tank, installing	
912-088	2.00	Main Control Valve - Disassembly	1 - 3373
912-088	2.00	Main Control Valve - Disassembly	3374 - 9999
912-089	2.50	Main Control Valve - Assembly	4614 - 9999
912-089	2.50	Main Control Valve - Assembly	1 - 4613
912-091	2.50	Main control valve, removal	4614 - 9999
912-091	2.00	Main control valve, removal	1 - 3373

Op.no.	time (h)		Notes
912-091	2.00	Main control valve, removal	3374 - 4613
912-092	2.00	Main control valve, installation	1 - 4613
912-092	2.50	Main control valve, installation	4614 - 9999
912-117	0.70	LS-pressure relief valve, replacing	3374 - 9999
912-117	0.70	LS-pressure relief valve, replacing	1 - 3373
912-141	5.00	Directional valve, drive, disassembling spool and replacing seals	1 - 3373
912-141	5.00	Directional valve, drive, disassembling spool and replacing seals	3374 - 9999
912-142	4.50	Directional valve, dozer blade, disassembling spool and replacing seals	1 - 3373
912-142	4.50	Directional valve, dozer blade, disassembling spool and replacing seals	3374 - 9999
912-143	0.50	Load check valve, replacing	3374 - 9999
912-143	0.50	Load check valve, replacing	1 - 3373
912-150	0.50	Working pressure, checking and adjusting	
912-160	0.70	Port relief valve pressure, checking and adjusting	3374 - 9999
912-160	0.70	Port relief valve pressure, checking and adjusting	1 - 3373
912-167	4.50	Directional valve, hydraulically operated, disassembling spool and replacing seals	1 - 3373
912-167	4.50	Directional valve, hydraulically operated, disassembling spool and replacing seals	3374 - 9999
912-168	0.50	Compensator valve, replacing	3374 - 9999
912-168	0.50	Compensator valve, replacing	1 - 3373
912-175	0.60	Secondary pressure limiting valve, replacing	3374 - 9999
912-175	0.60	Secondary pressure limiting valve, replacing	1 - 3373
913-003	0.30	Hydraulic pump, checking and adjusting standby pressure	
913-006	0.30	LS (load sense) pressure, checking	1 - 4613
913-006	0.30	LS (load sense) pressure, checking	4614 - 9999
913-023	1.00	Pump, removal	
913-024	1.25	Pump, installation	
913-031	0.50	Flow regulation valve, changing	3374 - 9999
913-031	0.50	Flow regulation valve, changing	1 - 3373
913-064	1.25	Hydraulic pump, power control checking	
913-065	0.40	Hydraulic pump, power control adjusting	
913-066	0.40	FR pressure control valve, checking and adjusting	
913-066	0.40	FR pressure control valve, checking and adjusting	
914-047	0.30	Servo accumulator, removal	1 - 3373
914-047	0.30	Servo accumulator, removal	3374 - 9999
914-048	0.50	Servo accumulator, installation	3374 - 9999
914-048	0.50	Servo accumulator, installation	1 - 3373
914-055	0.50	Servo pressure, checking and adjusting	
914-064	0.60	Servo valve, removal	3374 - 9999
914-064	0.60	Servo valve, removal	1 - 3373

Op.no.	time (h)		Notes
914-065	0.90	Servo valve, installation	
914-104	0.50	Travel valve (pedal), removing	4614 - 9999
914-105	0.60	Travel valve (pedal), installing	4614 - 9999
915-004	0.90	Control lever, removal	1 - 3373
915-004	0.90	Control lever, removal	3374 - 9999
915-005	1.00	Control lever, installation	
97		UNIT, DIGGING	
974-013	1.75	Boom, removal	1 - 3373
974-013	1.75	Boom, removal	3374 - 9999
974-014	2.50	Boom, installation	
974-031	0.50	Boom cylinder, removal	1 - 3373
974-031	0.50	Boom cylinder, removal	3374 - 9999
974-032	0.50	Boom cylinder, installation	
975-011	0.70	Dipper arm, removal	1 - 3373
975-011	0.70	Dipper arm, removal	3374 - 9999
975-012	0.70	Dipper arm, installation	
975-014	0.40	Dipper arm cylinder, removal	1 - 3373
975-014	0.40	Dipper arm cylinder, removal	3374 - 9999
975-015	0.60	Dipper arm cylinder, installation	
975-062	0.40	Bucket cylinder, removal	1 - 3373
975-062	0.40	Bucket cylinder, removal	3374 - 9999
975-065	0.60	Bucket cylinder, installation	

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.80	Maintenance service, daily	210001 - 230000
173-002	0.80	Maintenance service, daily	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
173-004	1.50	Maintenance service, every 50 hours	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
173-004	1.50	Maintenance service, every 50 hours	210001 - 230000
173-007	2.50	Maintenance service, every 250 hours	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
173-007	2.50	Maintenance service, every 250 hours	210001 - 230000
173-010	4.50	Maintenance service, every 500 hours	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
173-010	4.50	Maintenance service, every 500 hours	210001 - 230000
173-012	6.50	Maintenance service, every 1000 hours	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
173-012	6.50	Maintenance service, every 1000 hours	210001 - 230000
173-014	12.00	Maintenance service, every 2000 hours	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
173-014	11.00	Maintenance service, every 2000 hours	210001 - 230000
173-018	12.00	Maintenance service, every 4000 hours	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
173-018	12.00	Maintenance service, every 4000 hours	210001 - 230000
173-019	3.00	Maintenance service, every 4500 hours	210001 - 210940
173-019	0.40	Maintenance service, every 4500 hours	210941 - 230000
173-022	0.60	Maintenance service, every 6000 hours	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
173-022	3.00	Maintenance service, every 6000 hours	210001 - 210940
173-022	0.60	Maintenance service, every 6000 hours	210001 - 210940
173-040	1.75	Maintenance service, first 500 hours	230001 - 250000
			270001 - 310000

Op.no.	time (h)		Notes
			250001 - 260000
			260001 - 270000
173-040	1.75	Maintenance service, first 500 hours	210001 - 230000
173-079	0.90	Swing motor gearbox, changing oil	
173-101	0.50	Track motor gearbox, changing oil	
173-401	0.60	Engine oil and filter, changing	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
173-401	0.60	Engine oil and filter, changing	210001 - 230000
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.25	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	

2 ENGINE WITH MOUNTING AND EQUIPMENT

20		GENERAL	
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	210001 - 230000
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
200-070	1.00	E-ECU, MID 128, changing pre-programmed ECU	210001 - 230000
21		ENGINE	
210-002	4.00	Compression test	210001 - 230000
210-070	4.50	Engine, removing	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
210-070	4.50	Engine, removing	210001 - 230000
210-072	5.50	Engine, installing	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
210-072	5.00	Engine, installing	210001 - 230000
214-012	3.00	Valves, adjusting	210001 - 230000
214-012	3.00	Valves, adjusting	230001 - 250000
			280001 - 310000
214-012	3.00	Valves, adjusting	270001 - 280000
			250001 - 260000
			260001 - 270000

Op.no.	time (h)		Notes
217-005	1.50	Oil level sensor, changing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
217-005	1.50	Oil level sensor, changing	210001 - 230000
22		LUBRICATING SYSTEM	
221-022	0.70	Lubrication oil pressure, checking with pressure gauge	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
221-022	0.90	Lubrication oil pressure, checking with pressure gauge	210001 - 230000
223-006	1.25	Oil cooler, replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
233-001	0.30	Fuel system, bleeding	210001 - 230000
233-001	0.30	Fuel system, bleeding	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
233-004	0.60	Feed pump, checking feed pressure	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
233-004	0.60	Feed pump, checking feed pressure	210001 - 230000
234-041	0.40	Fuel filling pump, removing	
234-042	0.50	Fuel filling pump, installing	
237-124	0.70	High pressure fuel system, pressure relief	210001 - 230000
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.00	Silencer, replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
252-021	1.00	Exhaust pipe, flexible tube, replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
252-021	0.60	Exhaust pipe, flexible tube, replacing	210001 - 230000
254-001	2.50	Diesel particulate filter, check and clean	210001 - 230000
254-022	0.90	ACM (After treatment control module), replacing, non-programmed	210001 - 230000
254-023	0.80	ACM (After treatment control module), replacing, pre-programmed	210001 - 230000

Op.no.	time (h)		Notes
254-031	0.90	Air pump, replacing	210001 - 230000
254-033	1.50	Burner, replacing	210001 - 230000
254-046	0.40	Spark plug, replacing	210001 - 230000
254-047	0.40	Spark plug, checking	210001 - 230000
254-056	0.50	NOx sensor, replacing	210001 - 230000
254-066	0.40	Exhaust Aftertreatment System, T-junction, replacing	210001 - 230000
255-071	2.50	Turbocharger, replacing	210001 - 230000
255-071	2.50	Turbocharger, replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
256-001	0.20	Air cleaner, cleaning filter element	
256-003	0.10	Air cleaner, primary filter replacing	
256-004	0.10	Air cleaner, secondary filter replacing	
256-006	0.70	Preheating coil, replacing	210001 - 230000
256-006	0.50	Preheating coil, replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
258-002	4.00	Intercooler, replacing	210001 - 230000
258-002	4.00	Intercooler, replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
26		COOLING SYSTEM	
260-001	0.70	Carbon dioxide in coolant system, checking	
261-002	0.10	Coolant, checking anti-freeze resistance	
261-004	0.50	Coolant, changing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
261-004	0.50	Coolant, changing	210001 - 230000
261-008	4.50	Radiator, replacing	210001 - 230000
261-008	4.50	Radiator, replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
261-016	0.80	Radiator hoses all, replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
261-016	0.80	Radiator hoses all, replacing	210001 - 230000
261-018	0.90	Expansion tank, replacing	210001 - 230000
261-018	0.80	Expansion tank, replacing	230001 - 250000 270001 - 310000 250001 - 260000

Op.no.	time (h)		Notes
			260001 - 270000
262-098	0.80	Thermostat, replacing	210001 - 230000
262-098	0.80	Thermostat, replacing	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
263-012	0.80	Fan belt and/or alternator belt, replacing	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
263-012	0.50	Fan belt and/or alternator belt, replacing	210001 - 230000
263-022	0.50	Fan belt and/or alternator-, compressor belt, replacing all belts	210001 - 230000
263-022	0.50	Fan belt and/or alternator-, compressor belt, replacing all belts	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
29		Miscellaneous	
293-001	3.00	EGR cooler, replacing	210001 - 230000
293-004	3.00	EGR cooler, cleaning	210001 - 230000
293-005	3.00	EGR valve, replacing	210001 - 230000

3 ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS

30 GENERAL

300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU	

31 BATTERY

311-001	0.80	Battery charging capacity, checking	
311-001	0.70	Battery charging capacity, checking	270001 - 310000
			250001 - 260000
			260001 - 270000
			230001 - 250000
311-002	1.00	Batteries, replacing	
311-002	1.00	Batteries, replacing	270001 - 310000
			250001 - 260000
			260001 - 270000
			230001 - 250000
311-006	0.60	Earth lead to battery, replacing	
311-006	0.60	Earth lead to battery, replacing	270001 - 310000
			250001 - 260000
			260001 - 270000
			230001 - 250000

Op.no.	time (h)		Notes
32		ALTERNATOR; CHARGE REGULATOR	
321-002	0.70	Alternator, replacing incl function check	270001 - 310000 250001 - 260000 260001 - 270000 230001 - 250000
321-075	0.50	Alternator, test	
33		STARTING SYSTEM	
331-018	1.25	Starter motor, replacing	270001 - 310000 250001 - 260000 260001 - 270000 230001 - 250000
331-018	1.25	Starter motor, replacing	
331-021	0.30	Starter motor, tests	
331-081	0.30	Starter relay, replacing	270001 - 310000 250001 - 260000 260001 - 270000 230001 - 250000
331-081	0.30	Starter relay, replacing	
334-002	0.70	Starter switch, testing	
35		LIGHTING	
356-056	0.50	Work lighting, replacing one head lamp assy	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.30	Horn, replacing	
362-041	0.30	Rotating beacon, replacing	
362-051	0.50	Travel alarm, replacing	
363-002	1.25	Windscreen wiper front, replacing motor	
363-003	0.90	Windscreen wiper, replacing switch	
363-004	0.60	Windscreen flusher pump, replacing	270001 - 310000 250001 - 260000 260001 - 270000 230001 - 250000
363-004	0.50	Windscreen flusher pump, replacing	
363-091	0.50	Windscreen wiper, replacing controller	
364-003	0.60	Control lockout lever switch, replacing	
364-014	0.50	Ignition switch, replacing	
364-056	0.80	Pre-heating relay, replacing	
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	
367-075	0.90	Engine speed control switch, replacing	
37		CABLE; FUSE; RELAY	
371-043	0.80	Battery disconnecter, replacing	270001 - 310000
371-043	0.80	Battery disconnecter, replacing	

Op.no.	time (h)		Notes
371-090	2.00	Engine wire harness, replacing	
371-090	1.50	Engine wire harness, replacing	270001 - 310000
372-002	0.50	Electrical distribution box, circuit board replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
383-001	0.30	Hour meter, replacing	
386-006	0.50	Engine temperature sensor, replacing	270001 - 310000 250001 - 260000 260001 - 270000 230001 - 250000
386-006	1.50	Engine temperature sensor, replacing	
386-007	0.60	Engine oil pressure sensor, replacing	270001 - 310000 250001 - 260000 260001 - 270000 230001 - 250000
386-007	0.60	Engine oil pressure sensor, replacing	
386-011	0.30	Fuel level sender, replacing	
386-017	0.50	Hydraulic oil temperature sensor, replacing	
386-038	0.60	Engine rotation speed sensor, replacing	270001 - 310000 250001 - 260000 260001 - 270000 230001 - 250000
386-038	0.60	Engine rotation speed sensor, replacing	
386-088	0.40	Engine rotation speed sensor (camshaft), replacing	270001 - 310000 250001 - 260000 260001 - 270000 230001 - 250000
386-088	0.90	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
393-001	0.50	Voltage converter, replacing	
393-021	0.60	Radio, replacing	
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
398-001	0.60	CareTrack antenna, replacing	
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU	210001 - 210319
398-002	0.90	W-ECU, MID142, changing pre-programmed ECU	210320 - 270000
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	210320 - 270000
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	210001 - 210319
398-004	0.50	CareTrack battery, replacing	

Op.no.	time (h)		Notes
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.50	Swing gearbox, replacing	
431-031	3.50	Pump gearbox coupling assembly, replacing	
431-053	6.50	Swing unit, replacing	
431-115	1.25	Track gearbox (removed), replacing floating seal	
431-117	1.50	Track gearbox, replacing cover	
431-127	6.00	Track unit, replacing	
44		HYDROSTATIC DRIVE	
441-021	2.50	Swing motor, replacing	
441-022	0.70	Swing motor relief valve, replacing	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	0.70	Swing motor removed, replacing seal	
441-112	0.70	Track motor relief valve, replacing	
443-037	5.50	Center passage, replacing	
443-038	7.00	Center passage, replacing seal kit	
49		MISCELLANEOUS	
492-021	11.00	Swing ring gear, replacing	
492-031	3.00	Swing ring gear outer seal, replacing	210001 - 210615
492-031	3.00	Swing ring gear outer seal, replacing	210616 - 230000
492-032	9.50	Swing ring gear inner seal, replacing	210001 - 210615
492-032	9.00	Swing ring gear inner seal, replacing	210616 - 230000
492-091	0.40	Ring gear grease pipe, replacing	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	
716-001	0.90	Counterweight, removing	
716-002	0.90	Counterweight, fitting	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-034	1.75	Track chain assembly, removing	
775-035	2.00	Track chain assembly, installing	
775-036	11.00	Track links, replacing	
775-051	1.00	Top roller, replacing one	

Op.no.	time (h)	Notes	
775-061	1.50	Bottom roller, replacing one	
775-066	3.00	Bottom roller, replacing seal	
775-081	4.00	Track recoil spring (tensioner) assembly, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.75	Cab, removing	
810-001	1.75	Cab, removing	
810-002	2.50	Cab, installing	
810-070	1.00	Electric pedal control on X1 (on/off), replacing	
810-071	0.90	Electric pedal control on X1 (proportional), replacing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	0.90	Engine hood, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.30	Rear-view mirror, changing	
843-002	1.50	Windscreen, replacing	
843-012	4.00	Rear window, replacing	
843-013	4.50	Side window, replacing	
843-048	0.70	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	
852-012	1.75	Longitudinal adjustment cable, replacing	
852-013	0.60	Longitudinal suspension cable, replacing	
852-089	0.30	Seat cushion, replacing	
852-090	0.60	Backrest, replacing	
852-091	2.50	Seat support, replacing	
87		AIR CONDITIONING UNIT	
870-001	5.00	Cooler and Heater assembly, replacing	210001 - 230000
870-001	3.50	Cooler and Heater assembly, replacing	270001 - 310000
			250001 - 260000
			260001 - 270000
			230001 - 250000
870-010	0.70	ECC, MID 146, changing pre-programmed ECU	
870-011	1.00	ECC, MID 146, changing non-programmed ECU	
872-001	0.50	Cab filter, replacing	
873-004	3.00	Heater core, replacing	
873-006	0.80	Fan motor, replacing	

Op.no.	time (h)		Notes
873-011	0.70	Air mix door actuator, replacing	
874-006	2.50	Compressor, replacing incl draining and filling	270001 - 310000 250001 - 260000 260001 - 270000 230001 - 250000
874-006	1.75	Compressor, replacing incl draining and filling	210001 - 230000
874-010	1.75	Condenser, replacing incl draining and filling	210001 - 230000
874-010	1.50	Condenser, replacing incl draining and filling	270001 - 310000 250001 - 260000 260001 - 270000 230001 - 250000
874-011	1.75	Receiver, replacing incl draining and filling	210001 - 230000
874-011	1.75	Receiver, replacing incl draining and filling	270001 - 310000 250001 - 260000 260001 - 270000 230001 - 250000
874-012	3.00	Evaporator, replacing incl draining and filling	270001 - 310000 250001 - 260000 260001 - 270000 230001 - 250000
874-012	3.00	Evaporator, replacing incl draining and filling	210001 - 230000
874-013	3.00	Expansion valve, replacing incl draining and filling	210001 - 230000
874-013	3.00	Expansion valve, replacing incl draining and filling	270001 - 310000 250001 - 260000 260001 - 270000 230001 - 250000
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)	
874-094	0.60	Vent actuator, replacing	
874-095	0.60	Mode (foot) actuator, replacing	
874-096	0.60	Intake actuator, replacing	
88		INTERIOR EQUIPMENT	
881-003	1.00	Instrument panel, replacing (left)	
881-005	1.25	Instrument panel, replacing (right)	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-005	1.75	Pump suction hose and pipe, replacing	
911-011	4.50	Oil cooler, replacing	
911-015	0.50	Oil level gauge, replacing	
911-024	0.70	Pipe and hose (pump - valve), replacing	
911-033	1.50	Oil cooler line bypass valve (check valve), replacing	

Op.no.	time (h)		Notes
911-038	3.50	Hydraulic oil tank, replacing	
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
911-051	0.20	Breather, replacing	
912-001	8.00	Control valve, replacing	
912-067	0.50	Main pressure relief valve, replacing	
912-071	0.80	Rupture valve, replacing (boom cylinder)	
912-073	0.80	Rupture valve, replacing (dipper arm cylinder)	
912-160	0.80	Port relief valve pressure, checking and adjusting	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	4.00	Hydraulic pump, replacing	210001 - 230000
913-010	4.00	Hydraulic pump, replacing	270001 - 310000
			250001 - 270000
			230001 - 250000
			260001 - 270000
913-029	0.40	Pump regulator, replacing	
914-041	0.80	Proportional solenoid valve (power shift), replacing	
914-051	0.30	Accumulator, replacing	270001 - 310000
			250001 - 270000
			230001 - 250000
			260001 - 270000
914-051	0.50	Accumulator, replacing	210001 - 230000
914-060	0.70	Servo pump, replacing	
914-081	1.75	Remote control valve (lever), replacing	
914-084	1.75	Remote control valve (pedal), replacing	
914-091	1.00	Solenoid valve, replacing	270001 - 310000
			250001 - 270000
			230001 - 250000
			260001 - 270000
914-091	1.00	Solenoid valve, replacing	210001 - 230000
916-096	0.80	Hammer and shear pedal valve (RCV), replacing	
916-096	0.80	Hammer and shear pedal valve (RCV), replacing	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-005	0.80	Quickfit, removal	
924-006	1.00	Quickfit, installation	
924-040	0.80	Quickfit, replacing	
925-011	1.25	Bucket assembly, replacing	
925-012	0.60	Bucket assembly, removal	
925-013	1.00	Bucket assembly, installation	
97		UNIT, DIGGING	
970-006	1.50	Digging equipment, removal	

Op.no.	time (h)	Notes
970-007	1.75	Digging equipment, installation
974-010	12.00	Boom, replacing
974-013	4.00	Boom, removal
974-014	4.00	Boom, installation
974-021	3.00	Boom cylinder, replacing
974-031	1.50	Boom cylinder, removal
974-032	1.50	Boom cylinder, installation
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-006	1.50	Dipper arm connecting rod, removal
975-007	1.50	Dipper arm connecting rod, installation
975-011	3.00	Dipper arm, removal
975-012	3.00	Dipper arm, installation
975-014	1.25	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-028	1.00	Connecting rod yoke, replacing
975-032	1.25	Connecting rod yoke, removal
975-035	1.25	Connecting rod yoke, installation
975-039	8.00	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-065	1.50	Bucket cylinder, installation
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing
99		MISCELLANEOUS
992-002	5.50	Fire suppression system, actions after activation
992-003	6.50	Fire suppression system, actions after manual activation

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.80	Maintenance service, daily	210001 - 230000
173-004	1.50	Maintenance service, every 50 hours	210001 - 230000
173-007	2.50	Maintenance service, every 250 hours	210001 - 230000
173-010	4.50	Maintenance service, every 500 hours	210001 - 230000
173-012	6.50	Maintenance service, every 1000 hours	210001 - 230000
173-014	11.00	Maintenance service, every 2000 hours	210001 - 230000
173-018	12.00	Maintenance service, every 4000 hours	210001 - 230000
173-019	3.00	Maintenance service, every 4500 hours	
173-019	0.40	Maintenance service, every 4500 hours	
173-022	3.00	Maintenance service, every 6000 hours	
173-022	0.60	Maintenance service, every 6000 hours	
173-040	1.75	Maintenance service, first 500 hours	210001 - 230000
173-079	0.90	Swing motor gearbox, changing oil	
173-101	0.50	Track motor gearbox, changing oil	
173-401	0.60	Engine oil and filter, changing	210001 - 230000
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.25	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	210001 - 230000
200-070	1.00	E-ECU, MID 128, changing pre-programmed ECU	210001 - 230000
21		ENGINE	
210-002	4.00	Compression test	210001 - 230000
210-070	4.50	Engine, removing	210001 - 230000
210-072	5.00	Engine, installing	210001 - 230000
214-012	3.00	Valves, adjusting	210001 - 230000
217-005	1.50	Oil level sensor, changing	210001 - 230000
22		LUBRICATING SYSTEM	
221-022	0.90	Lubrication oil pressure, checking with pressure gauge	210001 - 230000
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
233-001	0.30	Fuel system, bleeding	210001 - 230000
233-004	0.60	Feed pump, checking feed pressure	210001 - 230000
234-041	0.40	Fuel filling pump, removing	

Op.no.	time (h)		Notes
234-042	0.50	Fuel filling pump, installing	
237-124	0.70	High pressure fuel system, pressure relief	210001 - 230000
25		INLET SYSTEM; EXHAUST SYSTEM	
252-021	0.60	Exhaust pipe, flexible tube, replacing	210001 - 230000
254-001	2.50	Diesel particulate filter, check and clean	210001 - 230000
254-022	0.90	ACM (After treatment control module), replacing, non-programmed	210001 - 230000
254-023	0.80	ACM (After treatment control module), replacing, pre-programmed	210001 - 230000
254-031	0.90	Air pump, replacing	210001 - 230000
254-033	1.50	Burner, replacing	210001 - 230000
254-046	0.40	Spark plug, replacing	210001 - 230000
254-047	0.40	Spark plug, checking	210001 - 230000
254-056	0.50	NOx sensor, replacing	210001 - 230000
254-066	0.40	Exhaust Aftertreatment System, T-junction, replacing	210001 - 230000
255-071	2.50	Turbocharger, replacing	210001 - 230000
256-001	0.20	Air cleaner, cleaning filter element	
256-003	0.10	Air cleaner, primary filter replacing	
256-004	0.10	Air cleaner, secondary filter replacing	
256-006	0.70	Preheating coil, replacing	210001 - 230000
258-002	4.00	Intercooler, replacing	210001 - 230000
26		COOLING SYSTEM	
260-001	0.70	Carbon dioxide in coolant system, checking	
261-002	0.10	Coolant, checking anti-freeze resistance	
261-004	0.50	Coolant, changing	210001 - 230000
261-008	4.50	Radiator, replacing	210001 - 230000
261-016	0.80	Radiator hoses all, replacing	210001 - 230000
261-018	0.90	Expansion tank, replacing	210001 - 230000
262-098	0.80	Thermostat, replacing	210001 - 230000
263-012	0.50	Fan belt and/or alternator belt, replacing	210001 - 230000
263-022	0.50	Fan belt and/or alternator-, compressor belt, replacing all belts	210001 - 230000
29		Miscellaneous	
293-001	3.00	EGR cooler, replacing	210001 - 230000
293-004	3.00	EGR cooler, cleaning	210001 - 230000
293-005	3.00	EGR valve, replacing	210001 - 230000

Op.no.	time (h)		Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-001	0.80	Battery charging capacity, checking	
311-001	0.70	Battery charging capacity, checking	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
311-002	1.00	Batteries, replacing	
311-002	1.00	Batteries, replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
311-006	0.60	Earth lead to battery, replacing	
311-006	0.60	Earth lead to battery, replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
32		ALTERNATOR; CHARGE REGULATOR	
321-002	0.70	Alternator, replacing incl function check	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
321-075	0.50	Alternator, test	
33		STARTING SYSTEM	
331-018	1.25	Starter motor, replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
331-018	1.25	Starter motor, replacing	
331-021	0.30	Starter motor, tests	
331-081	0.30	Starter relay, replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
331-081	0.30	Starter relay, replacing	
334-002	0.70	Starter switch, testing	
35		LIGHTING	
356-056	0.50	Work lighting, replacing one head lamp assy	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.30	Horn, replacing	

Op.no.	time (h)		Notes
362-041	0.30	Rotating beacon, replacing	
362-051	0.50	Travel alarm, replacing	
363-002	1.25	Windscreen wiper front, replacing motor	
363-003	0.90	Windscreen wiper, replacing switch	
363-004	0.60	Windscreen flusher pump, replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
363-004	0.50	Windscreen flusher pump, replacing	
363-091	0.50	Windscreen wiper, replacing controller	
364-003	0.60	Control lockout lever switch, replacing	
364-014	0.50	Ignition switch, replacing	
364-056	0.80	Pre-heating relay, replacing	
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	
367-075	0.90	Engine speed control switch, replacing	
37		CABLE; FUSE; RELAY	
371-090	2.00	Engine wire harness, replacing	
372-002	0.50	Electrical distribution box, circuit board replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
383-001	0.30	Hour meter, replacing	
386-006	0.50	Engine temperature sensor, replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
386-006	1.50	Engine temperature sensor, replacing	
386-007	0.60	Engine oil pressure sensor, replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
386-007	0.60	Engine oil pressure sensor, replacing	
386-011	0.30	Fuel level sender, replacing	
386-017	0.50	Hydraulic oil temperature sensor, replacing	
386-038	0.60	Engine rotation speed sensor, replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
386-038	0.60	Engine rotation speed sensor, replacing	
386-088	0.40	Engine rotation speed sensor (camshaft), replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
386-088	0.90	Engine rotation speed sensor (camshaft), replacing	

Op.no.	time (h)	Notes	
39		MISCELLANEOUS	
393-001	0.50	Voltage converter, replacing	
393-021	0.60	Radio, replacing	
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
398-001	0.60	CareTrack antenna, replacing	
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU210001 - 210319	
398-002	0.90	W-ECU, MID142, changing pre-programmed ECU210320 - 270000	
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	210320 - 270000
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	210001 - 210319
398-004	0.50	CareTrack battery, replacing	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.50	Swing gearbox, replacing	
431-031	3.50	Pump gearbox coupling assembly, replacing	
431-053	6.50	Swing unit, replacing	
431-115	1.25	Track gearbox (removed), replacing floating seal	
431-117	1.50	Track gearbox, replacing cover	
431-127	6.00	Track unit, replacing	
44		HYDROSTATIC DRIVE	
441-021	2.50	Swing motor, replacing	
441-022	0.70	Swing motor relief valve, replacing	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	0.70	Swing motor removed, replacing seal	
441-112	0.70	Track motor relief valve, replacing	
443-037	5.50	Center passage, replacing	
443-038	7.00	Center passage, replacing seal kit	
49		MISCELLANEOUS	
492-021	11.00	Swing ring gear, replacing	
492-031	3.00	Swing ring gear outer seal, replacing	210001 - 210615
492-032	9.50	Swing ring gear inner seal, replacing	210001 - 210615
492-091	0.40	Ring gear grease pipe, replacing	
492-095	0.70	Swing ring gear cover, removal	
492-095	0.70	Swing ring gear cover, removal	
492-096	0.70	Swing ring gear cover, installation	
492-096	0.70	Swing ring gear cover, installation	

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
710-001	3.50	Superstructure, removing
710-002	4.50	Superstructure, installing
715-019	0.60	Boom cylinder protecting guard, removal
715-020	1.25	Boom cylinder protecting guard, installation
715-023	0.90	Bucket cylinder protecting guard, removal
715-024	1.00	Bucket cylinder protecting guard, installation
716-001	0.90	Counterweight, removing
716-002	0.90	Counterweight, fitting
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	3.00	Front idler, replacing one
775-021	3.50	Sprocket, replacing one
775-034	1.75	Track chain assembly, removing
775-035	2.00	Track chain assembly, installing
775-036	11.00	Track links, replacing
775-051	1.00	Top roller, replacing one
775-061	1.50	Bottom roller, replacing one
775-066	3.00	Bottom roller, replacing seal
775-081	4.00	Track recoil spring (tensioner) assembly, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
810-070	1.00	Electric pedal control on X1 (on/off), replacing
810-071	0.90	Electric pedal control on X1 (proportional), replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.90	Engine hood, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.30	Rear-view mirror, changing
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing

Op.no.	time (h)	Notes
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-010	0.70	ECC, MID 146, changing pre-programmed ECU
870-011	1.00	ECC, MID 146, changing non-programmed ECU
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	1.75	Pump suction hose and pipe, replacing
911-011	4.50	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-024	0.70	Pipe and hose (pump - valve), replacing
911-033	1.50	Oil cooler line bypass valve (check valve), replacing
911-038	3.50	Hydraulic oil tank, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	8.00	Control valve, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.80	Rupture valve, replacing (dipper arm cylinder)

Op.no.	time (h)		Notes
912-160	0.80	Port relief valve pressure, checking and adjusting	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	4.00	Hydraulic pump, replacing	210001 - 230000
913-029	0.40	Pump regulator, replacing	
914-041	0.80	Proportional solenoid valve (power shift), replacing	
914-051	0.50	Accumulator, replacing	
914-060	0.70	Servo pump, replacing	
914-081	1.75	Remote control valve (lever), replacing	
914-084	1.75	Remote control valve (pedal), replacing	
916-096	0.80	Hammer and shear pedal valve (RCV), replacing	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-005	0.80	Quickfit, removal	
924-006	1.00	Quickfit, installation	
924-040	0.80	Quickfit, replacing	
925-011	1.25	Bucket assembly, replacing	
925-012	0.60	Bucket assembly, removal	
925-013	1.00	Bucket assembly, installation	
97		UNIT, DIGGING	
970-006	1.50	Digging equipment, removal	
970-007	1.75	Digging equipment, installation	
974-010	12.00	Boom, replacing	
974-013	4.00	Boom, removal	
974-014	4.00	Boom, installation	
974-021	3.00	Boom cylinder, replacing	
974-031	1.50	Boom cylinder, removal	
974-032	1.50	Boom cylinder, installation	
974-038	3.50	Lower boom cylinder bushing, replacing	
974-039	3.50	Upper boom cylinder bushing, replacing	
975-006	1.50	Dipper arm connecting rod, removal	
975-007	1.50	Dipper arm connecting rod, installation	
975-011	3.00	Dipper arm, removal	
975-012	3.00	Dipper arm, installation	
975-014	1.25	Dipper arm cylinder, removal	
975-015	1.50	Dipper arm cylinder, installation	
975-024	1.25	Dipper arm connecting rod, replacing	
975-025	3.00	Dipper arm cylinder, replacing	
975-028	1.00	Connecting rod yoke, replacing	
975-032	1.25	Connecting rod yoke, removal	
975-035	1.25	Connecting rod yoke, installation	
975-039	8.00	Dipper arm, replacing	
975-040	3.50	Dipper arm cylinder bushing on boom, replacing	

Op.no.	time (h)	Notes
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-065	1.50	Bucket cylinder, installation
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.80	Maintenance service, daily	210001 - 230000
173-002	0.80	Maintenance service, daily	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
173-004	1.50	Maintenance service, every 50 hours	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
173-004	1.50	Maintenance service, every 50 hours	210001 - 230000
173-007	2.50	Maintenance service, every 250 hours	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
173-007	2.50	Maintenance service, every 250 hours	210001 - 230000
173-010	4.50	Maintenance service, every 500 hours	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
173-010	4.50	Maintenance service, every 500 hours	210001 - 230000
173-012	6.50	Maintenance service, every 1000 hours	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
173-012	6.50	Maintenance service, every 1000 hours	210001 - 230000
173-014	12.00	Maintenance service, every 2000 hours	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
173-014	11.00	Maintenance service, every 2000 hours	210001 - 230000
173-018	12.00	Maintenance service, every 4000 hours	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
173-018	12.00	Maintenance service, every 4000 hours	210001 - 230000
173-019	3.00	Maintenance service, every 4500 hours	
173-019	0.40	Maintenance service, every 4500 hours	
173-022	0.60	Maintenance service, every 6000 hours	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
173-022	3.00	Maintenance service, every 6000 hours	
173-022	0.60	Maintenance service, every 6000 hours	
173-040	1.75	Maintenance service, first 500 hours	230001 - 250000
			270001 - 310000

Op.no.	time (h)		Notes
			250001 - 260000
			260001 - 270000
173-040	1.75	Maintenance service, first 500 hours	210001 - 230000
173-079	0.90	Swing motor gearbox, changing oil	
173-101	0.50	Track motor gearbox, changing oil	
173-401	0.60	Engine oil and filter, changing	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
173-401	0.60	Engine oil and filter, changing	210001 - 230000
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.25	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	

2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	210001 - 230000
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
200-070	1.00	E-ECU, MID 128, changing pre-programmed ECU	210001 - 230000

21 ENGINE

210-002	4.00	Compression test	210001 - 230000
210-070	4.50	Engine, removing	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
210-070	4.50	Engine, removing	210001 - 230000
210-072	5.50	Engine, installing	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
210-072	5.00	Engine, installing	210001 - 230000
214-012	3.00	Valves, adjusting	210001 - 230000
214-012	3.00	Valves, adjusting	230001 - 250000
214-012	3.00	Valves, adjusting	250001 - 260000
			260001 - 270000
			270001 - 280000
217-005	1.50	Oil level sensor, changing	230001 - 250000

Op.no.	time (h)		Notes
			270001 - 310000
			250001 - 260000
			260001 - 270000
217-005	1.50	Oil level sensor, changing	210001 - 230000
22		LUBRICATING SYSTEM	
221-022	0.70	Lubrication oil pressure, checking with pressure gauge	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
221-022	0.90	Lubrication oil pressure, checking with pressure gauge	210001 - 230000
223-006	1.25	Oil cooler, replacing	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
233-001	0.30	Fuel system, bleeding	210001 - 230000
233-001	0.30	Fuel system, bleeding	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
233-004	0.60	Feed pump, checking feed pressure	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
233-004	0.60	Feed pump, checking feed pressure	210001 - 230000
234-041	0.40	Fuel filling pump, removing	
234-042	0.50	Fuel filling pump, installing	
237-124	0.70	High pressure fuel system, pressure relief	210001 - 230000
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.00	Silencer, replacing	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
252-021	1.00	Exhaust pipe, flexible tube, replacing	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
252-021	0.60	Exhaust pipe, flexible tube, replacing	210001 - 230000
254-001	2.50	Diesel particulate filter, check and clean	210001 - 230000
254-022	0.90	ACM (After treatment control module), replacing, non-programmed	210001 - 230000
254-023	0.80	ACM (After treatment control module), replacing, pre-programmed	210001 - 230000
254-031	0.90	Air pump, replacing	210001 - 230000

Op.no.	time (h)		Notes
254-033	1.50	Burner, replacing	210001 - 230000
254-046	0.40	Spark plug, replacing	210001 - 230000
254-047	0.40	Spark plug, checking	210001 - 230000
254-056	0.50	NOx sensor, replacing	210001 - 230000
254-066	0.40	Exhaust Aftertreatment System, T-junction, replacing	210001 - 230000
255-071	2.50	Turbocharger, replacing	210001 - 230000
255-071	2.50	Turbocharger, replacing	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
256-001	0.20	Air cleaner, cleaning filter element	
256-003	0.10	Air cleaner, primary filter replacing	
256-004	0.10	Air cleaner, secondary filter replacing	
256-006	0.70	Preheating coil, replacing	210001 - 230000
256-006	0.50	Preheating coil, replacing	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
258-002	4.00	Intercooler, replacing	210001 - 230000
258-002	4.00	Intercooler, replacing	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
26		COOLING SYSTEM	
260-001	0.70	Carbon dioxide in coolant system, checking	
261-002	0.10	Coolant, checking anti-freeze resistance	
261-004	0.50	Coolant, changing	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
261-004	0.50	Coolant, changing	210001 - 230000
261-008	4.50	Radiator, replacing	210001 - 230000
261-008	4.50	Radiator, replacing	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
261-016	0.80	Radiator hoses all, replacing	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
261-016	0.80	Radiator hoses all, replacing	210001 - 230000
261-018	0.90	Expansion tank, replacing	210001 - 230000
261-018	0.80	Expansion tank, replacing	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000

Op.no.	time (h)		Notes
262-098	0.80	Thermostat, replacing	210001 - 230000
262-098	0.80	Thermostat, replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
263-012	0.80	Fan belt and/or alternator belt, replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
263-012	0.50	Fan belt and/or alternator belt, replacing	210001 - 230000
263-022	0.50	Fan belt and/or alternator-, compressor belt, replacing all belts	210001 - 230000
263-022	0.50	Fan belt and/or alternator-, compressor belt, replacing all belts	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
29		Miscellaneous	
293-001	3.00	EGR cooler, replacing	210001 - 230000
293-004	3.00	EGR cooler, cleaning	210001 - 230000
293-005	3.00	EGR valve, replacing	210001 - 230000
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-001	0.80	Battery charging capacity, checking	
311-001	0.70	Battery charging capacity, checking	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
311-002	1.00	Batteries, replacing	
311-002	1.00	Batteries, replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
311-006	0.60	Earth lead to battery, replacing	
311-006	0.60	Earth lead to battery, replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
32		ALTERNATOR; CHARGE REGULATOR	
321-002	0.70	Alternator, replacing incl function check	230001 - 250000

Op.no.	time (h)		Notes
			270001 - 310000
			250001 - 260000
			260001 - 270000
321-075	0.50	Alternator, test	
33		STARTING SYSTEM	
331-018	1.25	Starter motor, replacing	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
331-018	1.25	Starter motor, replacing	
331-021	0.30	Starter motor, tests	
331-081	0.30	Starter relay, replacing	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
331-081	0.30	Starter relay, replacing	
334-002	0.70	Starter switch, testing	
35		LIGHTING	
356-056	0.50	Work lighting, replacing one head lamp assy	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.30	Horn, replacing	
362-041	0.30	Rotating beacon, replacing	
362-051	0.50	Travel alarm, replacing	
363-002	1.25	Windscreen wiper front, replacing motor	
363-003	0.90	Windscreen wiper, replacing switch	
363-004	0.60	Windscreen flusher pump, replacing	230001 - 250000
			270001 - 310000
			250001 - 260000
			260001 - 270000
363-004	0.50	Windscreen flusher pump, replacing	
363-091	0.50	Windscreen wiper, replacing controller	
364-003	0.60	Control lockout lever switch, replacing	
364-014	0.50	Ignition switch, replacing	
364-056	0.80	Pre-heating relay, replacing	
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	
367-075	0.90	Engine speed control switch, replacing	
37		CABLE; FUSE; RELAY	
371-043	0.80	Battery disconnecter, replacing	270001 - 310000
371-043	0.80	Battery disconnecter, replacing	
371-090	2.00	Engine wire harness, replacing	
371-090	1.50	Engine wire harness, replacing	270001 - 310000
372-002	0.50	Electrical distribution box, circuit board replacing	

Op.no.	time (h)	Notes	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
383-001	0.30	Hour meter, replacing	
386-006	0.50	Engine temperature sensor, replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
386-006	1.50	Engine temperature sensor, replacing	
386-007	0.60	Engine oil pressure sensor, replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
386-007	0.60	Engine oil pressure sensor, replacing	
386-011	0.30	Fuel level sender, replacing	
386-017	0.50	Hydraulic oil temperature sensor, replacing	
386-038	0.60	Engine rotation speed sensor, replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
386-038	0.60	Engine rotation speed sensor, replacing	
386-088	0.40	Engine rotation speed sensor (camshaft), replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
386-088	0.90	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
393-001	0.50	Voltage converter, replacing	
393-021	0.60	Radio, replacing	
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
398-001	0.60	CareTrack antenna, replacing	
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU	210001 - 210319
398-002	0.90	W-ECU, MID142, changing pre-programmed ECU	210320 - 270000
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	210320 - 270000
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	210001 - 210319
398-004	0.50	CareTrack battery, replacing	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.50	Swing gearbox, replacing	
431-031	3.50	Pump gearbox coupling assembly, replacing	

Op.no.	time (h)		Notes
431-053	6.50	Swing unit, replacing	
431-115	1.25	Track gearbox (removed), replacing floating seal	
431-117	1.50	Track gearbox, replacing cover	
431-127	6.00	Track unit, replacing	
44		HYDROSTATIC DRIVE	
441-021	2.50	Swing motor, replacing	
441-022	0.70	Swing motor relief valve, replacing	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	0.70	Swing motor removed, replacing seal	
441-112	0.70	Track motor relief valve, replacing	
443-037	5.50	Center passage, replacing	
443-038	7.00	Center passage, replacing seal kit	
49		MISCELLANEOUS	
492-021	11.00	Swing ring gear, replacing	
492-031	3.00	Swing ring gear outer seal, replacing	210001 - 210615
492-031	3.00	Swing ring gear outer seal, replacing	210616 - 230000
492-032	9.50	Swing ring gear inner seal, replacing	210001 - 210615
492-032	9.00	Swing ring gear inner seal, replacing	210616 - 230000
492-091	0.40	Ring gear grease pipe, replacing	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	
716-001	0.90	Counterweight, removing	
716-002	0.90	Counterweight, fitting	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-034	1.75	Track chain assembly, removing	
775-035	2.00	Track chain assembly, installing	
775-036	11.00	Track links, replacing	
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	
775-066	3.00	Bottom roller, replacing seal	
775-081	4.00	Track recoil spring (tensioner) assembly, replacing	

Op.no.	time (h)	Notes	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.75	Cab, removing	
810-001	1.75	Cab, removing	
810-002	2.50	Cab, installing	
810-070	1.00	Electric pedal control on X1 (on/off), replacing	
810-071	0.90	Electric pedal control on X1 (proportional), replacing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	0.90	Engine hood, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.30	Rear-view mirror, changing	
843-002	1.50	Windscreen, replacing	
843-012	4.00	Rear window, replacing	
843-013	4.50	Side window, replacing	
843-048	0.70	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	
852-012	1.75	Longitudinal adjustment cable, replacing	
852-013	0.60	Longitudinal suspension cable, replacing	
852-089	0.30	Seat cushion, replacing	
852-090	0.60	Backrest, replacing	
852-091	2.50	Seat support, replacing	
87		AIR CONDITIONING UNIT	
870-001	5.00	Cooler and Heater assembly, replacing	210001 - 230000
870-001	3.50	Cooler and Heater assembly, replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
870-010	0.70	ECC, MID 146, changing pre-programmed ECU	
870-011	1.00	ECC, MID 146, changing non-programmed ECU	
872-001	0.50	Cab filter, replacing	
873-004	3.00	Heater core, replacing	
873-006	0.80	Fan motor, replacing	
873-011	0.70	Air mix door actuator, replacing	
874-006	2.50	Compressor, replacing incl draining and filling	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
874-006	1.75	Compressor, replacing incl draining and filling	210001 - 230000
874-010	1.75	Condenser, replacing incl draining and filling	210001 - 230000

Op.no.	time (h)		Notes
874-010	1.50	Condenser, replacing incl draining and filling	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
874-011	1.75	Receiver, replacing incl draining and filling	210001 - 230000
874-011	1.75	Receiver, replacing incl draining and filling	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
874-012	3.00	Evaporator, replacing incl draining and filling	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
874-012	3.00	Evaporator, replacing incl draining and filling	210001 - 230000
874-013	3.00	Expansion valve, replacing incl draining and filling	210001 - 230000
874-013	3.00	Expansion valve, replacing incl draining and filling	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)	
874-094	0.60	Vent actuator, replacing	
874-095	0.60	Mode (foot) actuator, replacing	
874-096	0.60	Intake actuator, replacing	
88		INTERIOR EQUIPMENT	
881-003	1.00	Instrument panel, replacing (left)	
881-005	1.25	Instrument panel, replacing (right)	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-005	1.75	Pump suction hose and pipe, replacing	
911-011	4.50	Oil cooler, replacing	
911-015	0.50	Oil level gauge, replacing	
911-024	0.70	Pipe and hose (pump - valve), replacing	
911-033	1.50	Oil cooler line bypass valve (check valve), replacing	
911-038	3.50	Hydraulic oil tank, replacing	
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
911-051	0.20	Breather, replacing	
912-001	8.00	Control valve, replacing	
912-067	0.50	Main pressure relief valve, replacing	
912-071	0.80	Rupture valve, replacing (boom cylinder)	

Op.no.	time (h)		Notes
912-073	0.80	Rupture valve, replacing (dipper arm cylinder)	
912-160	0.80	Port relief valve pressure, checking and adjusting	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	4.00	Hydraulic pump, replacing	
913-010	4.00	Hydraulic pump, replacing	250001 - 270000 270001 - 310000 230001 - 250000 260001 - 270000
913-029	0.40	Pump regulator, replacing	
914-041	0.80	Proportional solenoid valve (power shift), replacing	
914-051	0.30	Accumulator, replacing	250001 - 270000 270001 - 310000 230001 - 250000 260001 - 270000
914-051	0.50	Accumulator, replacing	210001 - 230000
914-060	0.70	Servo pump, replacing	
914-081	1.75	Remote control valve (lever), replacing	
914-084	1.75	Remote control valve (pedal), replacing	
914-091	1.00	Solenoid valve, replacing	250001 - 270000 270001 - 310000 230001 - 250000 260001 - 270000
914-091	1.00	Solenoid valve, replacing	210001 - 230000
916-096	0.80	Hammer and shear pedal valve (RCV), replacing	
916-096	0.80	Hammer and shear pedal valve (RCV), replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-005	0.80	Quickfit, removal	
924-006	1.00	Quickfit, installation	
924-040	0.80	Quickfit, replacing	
925-011	1.25	Bucket assembly, replacing	
925-012	0.60	Bucket assembly, removal	
925-013	1.00	Bucket assembly, installation	
97		UNIT, DIGGING	
970-006	1.50	Digging equipment, removal	
970-007	1.75	Digging equipment, installation	
974-010	12.00	Boom, replacing	
974-013	4.00	Boom, removal	
974-014	4.00	Boom, installation	
974-021	3.00	Boom cylinder, replacing	
974-031	1.50	Boom cylinder, removal	
974-032	1.50	Boom cylinder, installation	

Op.no.	time (h)	Notes
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-006	1.50	Dipper arm connecting rod, removal
975-007	1.50	Dipper arm connecting rod, installation
975-011	3.00	Dipper arm, removal
975-012	3.00	Dipper arm, installation
975-014	1.25	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-028	1.00	Connecting rod yoke, replacing
975-032	1.25	Connecting rod yoke, removal
975-035	1.25	Connecting rod yoke, installation
975-039	8.00	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-065	1.50	Bucket cylinder, installation
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.80	Maintenance service, daily	210001 - 230000
173-004	1.50	Maintenance service, every 50 hours	210001 - 230000
173-007	2.50	Maintenance service, every 250 hours	210001 - 230000
173-010	4.50	Maintenance service, every 500 hours	210001 - 230000
173-012	6.50	Maintenance service, every 1000 hours	210001 - 230000
173-014	11.00	Maintenance service, every 2000 hours	210001 - 230000
173-018	12.00	Maintenance service, every 4000 hours	210001 - 230000
173-019	3.00	Maintenance service, every 4500 hours	
173-019	0.40	Maintenance service, every 4500 hours	
173-022	3.00	Maintenance service, every 6000 hours	
173-022	0.60	Maintenance service, every 6000 hours	
173-040	1.75	Maintenance service, first 500 hours	210001 - 230000
173-079	0.90	Swing motor gearbox, changing oil	
173-101	0.50	Track motor gearbox, changing oil	
173-401	0.60	Engine oil and filter, changing	210001 - 230000
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.25	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	210001 - 230000
200-070	1.00	E-ECU, MID 128, changing pre-programmed ECU	210001 - 230000
21		ENGINE	
210-002	4.00	Compression test	210001 - 230000
210-070	4.50	Engine, removing	210001 - 230000
210-072	5.00	Engine, installing	210001 - 230000
214-012	3.00	Valves, adjusting	210001 - 230000
217-005	1.50	Oil level sensor, changing	210001 - 230000
22		LUBRICATING SYSTEM	
221-022	0.90	Lubrication oil pressure, checking with pressure gauge	210001 - 230000
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
233-001	0.30	Fuel system, bleeding	210001 - 230000
233-004	0.60	Feed pump, checking feed pressure	210001 - 230000
234-041	0.40	Fuel filling pump, removing	

Op.no.	time (h)		Notes
234-042	0.50	Fuel filling pump, installing	
237-124	0.70	High pressure fuel system, pressure relief	210001 - 230000
25		INLET SYSTEM; EXHAUST SYSTEM	
252-021	0.60	Exhaust pipe, flexible tube, replacing	210001 - 230000
254-001	2.50	Diesel particulate filter, check and clean	210001 - 230000
254-022	0.90	ACM (After treatment control module), replacing, non-programmed	210001 - 230000
254-023	0.80	ACM (After treatment control module), replacing, pre-programmed	210001 - 230000
254-031	0.90	Air pump, replacing	210001 - 230000
254-033	1.50	Burner, replacing	210001 - 230000
254-046	0.40	Spark plug, replacing	210001 - 230000
254-047	0.40	Spark plug, checking	210001 - 230000
254-056	0.50	NOx sensor, replacing	210001 - 230000
254-066	0.40	Exhaust Aftertreatment System, T-junction, replacing	210001 - 230000
255-071	2.50	Turbocharger, replacing	210001 - 230000
256-001	0.20	Air cleaner, cleaning filter element	
256-003	0.10	Air cleaner, primary filter replacing	
256-004	0.10	Air cleaner, secondary filter replacing	
256-006	0.70	Preheating coil, replacing	210001 - 230000
258-002	4.00	Intercooler, replacing	210001 - 230000
26		COOLING SYSTEM	
260-001	0.70	Carbon dioxide in coolant system, checking	
261-002	0.10	Coolant, checking anti-freeze resistance	
261-004	0.50	Coolant, changing	210001 - 230000
261-008	4.50	Radiator, replacing	210001 - 230000
261-016	0.80	Radiator hoses all, replacing	210001 - 230000
261-018	0.90	Expansion tank, replacing	210001 - 230000
262-098	0.80	Thermostat, replacing	210001 - 230000
263-012	0.50	Fan belt and/or alternator belt, replacing	210001 - 230000
263-022	0.50	Fan belt and/or alternator-, compressor belt, replacing all belts	210001 - 230000
29		Miscellaneous	
293-001	3.00	EGR cooler, replacing	210001 - 230000
293-004	3.00	EGR cooler, cleaning	210001 - 230000
293-005	3.00	EGR valve, replacing	210001 - 230000

Op.no.	time (h)		Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-001	0.80	Battery charging capacity, checking	
311-001	0.70	Battery charging capacity, checking	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
311-002	1.00	Batteries, replacing	
311-002	1.00	Batteries, replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
311-006	0.60	Earth lead to battery, replacing	
311-006	0.60	Earth lead to battery, replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
32		ALTERNATOR; CHARGE REGULATOR	
321-002	0.70	Alternator, replacing incl function check	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
321-075	0.50	Alternator, test	
33		STARTING SYSTEM	
331-018	1.25	Starter motor, replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
331-018	1.25	Starter motor, replacing	
331-021	0.30	Starter motor, tests	
331-081	0.30	Starter relay, replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
331-081	0.30	Starter relay, replacing	
334-002	0.70	Starter switch, testing	
35		LIGHTING	
356-056	0.50	Work lighting, replacing one head lamp assy	

Op.no.	time (h)		Notes
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.30	Horn, replacing	
362-041	0.30	Rotating beacon, replacing	
362-051	0.50	Travel alarm, replacing	
363-002	1.25	Windscreen wiper front, replacing motor	
363-003	0.90	Windscreen wiper, replacing switch	
363-004	0.60	Windscreen flusher pump, replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
363-004	0.50	Windscreen flusher pump, replacing	
363-091	0.50	Windscreen wiper, replacing controller	
364-003	0.60	Control lockout lever switch, replacing	
364-014	0.50	Ignition switch, replacing	
364-056	0.80	Pre-heating relay, replacing	
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	
367-075	0.90	Engine speed control switch, replacing	
37		CABLE; FUSE; RELAY	
371-043	0.80	Battery disconnecter, replacing	270001 - 310000
371-043	0.80	Battery disconnecter, replacing	
371-090	2.00	Engine wire harness, replacing	
371-090	1.50	Engine wire harness, replacing	270001 - 310000
372-002	0.50	Electrical distribution box, circuit board replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
383-001	0.30	Hour meter, replacing	
386-006	0.50	Engine temperature sensor, replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
386-006	1.50	Engine temperature sensor, replacing	
386-007	0.60	Engine oil pressure sensor, replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
386-007	0.60	Engine oil pressure sensor, replacing	
386-011	0.30	Fuel level sender, replacing	
386-017	0.50	Hydraulic oil temperature sensor, replacing	
386-038	0.60	Engine rotation speed sensor, replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
386-038	0.60	Engine rotation speed sensor, replacing	

Op.no.	time (h)		Notes
386-088	0.40	Engine rotation speed sensor (camshaft), replacing	230001 - 250000 270001 - 310000 250001 - 260000 260001 - 270000
386-088	0.90	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
393-001	0.50	Voltage converter, replacing	
393-021	0.60	Radio, replacing	
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
398-001	0.60	CareTrack antenna, replacing	
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU	210001 - 210319
398-002	0.90	W-ECU, MID142, changing pre-programmed ECU	210320 - 270000
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	210320 - 270000
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	210001 - 210319
398-004	0.50	CareTrack battery, replacing	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.50	Swing gearbox, replacing	
431-031	3.50	Pump gearbox coupling assembly, replacing	
431-053	6.50	Swing unit, replacing	
431-115	1.25	Track gearbox (removed), replacing floating seal	
431-117	1.50	Track gearbox, replacing cover	
431-127	6.00	Track unit, replacing	
44		HYDROSTATIC DRIVE	
441-021	2.50	Swing motor, replacing	
441-022	0.70	Swing motor relief valve, replacing	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	0.70	Swing motor removed, replacing seal	
441-112	0.70	Track motor relief valve, replacing	
443-037	5.50	Center passage, replacing	
443-038	7.00	Center passage, replacing seal kit	
49		MISCELLANEOUS	
492-021	11.00	Swing ring gear, replacing	
492-031	3.00	Swing ring gear outer seal, replacing	210001 - 210615
492-031	3.00	Swing ring gear outer seal, replacing	210616 - 230000

Op.no.	time (h)		Notes
492-032	9.50	Swing ring gear inner seal, replacing	210001 - 210615
492-032	9.00	Swing ring gear inner seal, replacing	210616 - 230000
492-091	0.40	Ring gear grease pipe, replacing	

7 FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT

71 FRAME

710-001	3.50	Superstructure, removing
710-002	4.50	Superstructure, installing
716-001	0.90	Counterweight, removing
716-002	0.90	Counterweight, fitting

77 WHEELS; TRACKS; TYRE; HUB; DRUM

775-011	3.00	Front idler, replacing one
775-021	3.50	Sprocket, replacing one
775-034	1.75	Track chain assembly, removing
775-035	2.00	Track chain assembly, installing
775-036	11.00	Track links, replacing
775-051	1.00	Top roller, replacing one
775-061	1.50	Bottom roller, replacing one
775-066	3.00	Bottom roller, replacing seal
775-081	4.00	Track recoil spring (tensioner) assembly, replacing

8 MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE

81 CAB, NAKED; CANOPY

810-001	1.75	Cab, removing
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
810-070	1.00	Electric pedal control on X1 (on/off), replacing
810-071	0.90	Electric pedal control on X1 (proportional), replacing

82 ENGINE HOOD; MUDGUARD; FOOT STEP

821-005	0.90	Engine hood, replacing
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84 TRIM PART, OUTSIDE; GLASS; SEALING MOULDING

841-061	0.30	Rear-view mirror, changing
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing

Op.no.	time (h)	Notes	
843-048	0.70	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	
852-012	1.75	Longitudinal adjustment cable, replacing	
852-013	0.60	Longitudinal suspension cable, replacing	
852-089	0.30	Seat cushion, replacing	
852-090	0.60	Backrest, replacing	
852-091	2.50	Seat support, replacing	
87		AIR CONDITIONING UNIT	
870-001	5.00	Cooler and Heater assembly, replacing	210001 - 230000
870-010	0.70	ECC, MID 146, changing pre-programmed ECU	
870-011	1.00	ECC, MID 146, changing non-programmed ECU	
872-001	0.50	Cab filter, replacing	
873-004	3.00	Heater core, replacing	
873-006	0.80	Fan motor, replacing	
873-011	0.70	Air mix door actuator, replacing	
874-006	1.75	Compressor, replacing incl draining and filling	210001 - 230000
874-010	1.75	Condenser, replacing incl draining and filling	210001 - 230000
874-011	1.75	Receiver, replacing incl draining and filling	210001 - 230000
874-012	3.00	Evaporator, replacing incl draining and filling	210001 - 230000
874-013	3.00	Expansion valve, replacing incl draining and filling	210001 - 230000
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)	
874-094	0.60	Vent actuator, replacing	
874-095	0.60	Mode (foot) actuator, replacing	
874-096	0.60	Intake actuator, replacing	
88		INTERIOR EQUIPMENT	
881-003	1.00	Instrument panel, replacing (left)	
881-005	1.25	Instrument panel, replacing (right)	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-005	1.75	Pump suction hose and pipe, replacing	
911-011	4.50	Oil cooler, replacing	
911-015	0.50	Oil level gauge, replacing	
911-024	0.70	Pipe and hose (pump - valve), replacing	
911-033	1.50	Oil cooler line bypass valve (check valve), replacing	
911-038	3.50	Hydraulic oil tank, replacing	

Op.no.	time (h)		Notes
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
911-051	0.20	Breather, replacing	
912-001	8.00	Control valve, replacing	
912-067	0.50	Main pressure relief valve, replacing	
912-071	0.80	Rupture valve, replacing (boom cylinder)	
912-073	0.80	Rupture valve, replacing (dipper arm cylinder)	
912-160	0.80	Port relief valve pressure, checking and adjusting	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	4.00	Hydraulic pump, replacing	210001 - 230000
913-029	0.40	Pump regulator, replacing	
914-041	0.80	Proportional solenoid valve (power shift), replacing	
914-051	0.50	Accumulator, replacing	210001 - 230000
914-060	0.70	Servo pump, replacing	
914-081	1.75	Remote control valve (lever), replacing	
914-084	1.75	Remote control valve (pedal), replacing	
914-091	1.00	Solenoid valve, replacing	210001 - 230000
916-096	0.80	Hammer and shear pedal valve (RCV), replacing	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-005	0.80	Quickfit, removal	
924-006	1.00	Quickfit, installation	
924-040	0.80	Quickfit, replacing	
925-011	1.25	Bucket assembly, replacing	
925-012	0.60	Bucket assembly, removal	
925-013	1.00	Bucket assembly, installation	
97		UNIT, DIGGING	
970-006	1.50	Digging equipment, removal	
970-007	1.75	Digging equipment, installation	
974-010	12.00	Boom, replacing	
974-013	4.00	Boom, removal	
974-014	4.00	Boom, installation	
974-021	3.00	Boom cylinder, replacing	
974-031	1.50	Boom cylinder, removal	
974-032	1.50	Boom cylinder, installation	
974-038	3.50	Lower boom cylinder bushing, replacing	
974-039	3.50	Upper boom cylinder bushing, replacing	
975-006	1.50	Dipper arm connecting rod, removal	
975-007	1.50	Dipper arm connecting rod, installation	
975-011	3.00	Dipper arm, removal	
975-012	3.00	Dipper arm, installation	
975-014	1.25	Dipper arm cylinder, removal	
975-015	1.50	Dipper arm cylinder, installation	

Op.no.	time (h)	Notes
975-024	1.25	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-028	1.00	Connecting rod yoke, replacing
975-032	1.25	Connecting rod yoke, removal
975-035	1.25	Connecting rod yoke, installation
975-039	8.00	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-065	1.50	Bucket cylinder, installation
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.80	Maintenance service, daily	
173-004	1.50	Maintenance service, every 50 hours	
173-007	2.50	Maintenance service, every 250 hours	
173-010	4.50	Maintenance service, every 500 hours	
173-012	6.50	Maintenance service, every 1000 hours	
173-014	11.00	Maintenance service, every 2000 hours	
173-018	12.00	Maintenance service, every 4000 hours	
173-019	3.00	Maintenance service, every 4500 hours	210001 - 210940
173-019	0.40	Maintenance service, every 4500 hours	210941 - 999999
173-022	3.00	Maintenance service, every 6000 hours	210001 - 210940
173-022	0.60	Maintenance service, every 6000 hours	210001 - 210940
173-040	1.75	Maintenance service, first 500 hours	
173-079	0.90	Swing motor gearbox, changing oil	
173-101	0.50	Track motor gearbox, changing oil	
173-401	0.60	Engine oil and filter, changing	
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.25	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	
200-070	1.00	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-002	4.00	Compression test	
210-070	4.50	Engine, removing	
210-072	5.00	Engine, installing	
214-012	3.00	Valves, adjusting	
217-005	1.50	Oil level sensor, changing	
22		LUBRICATING SYSTEM	
221-022	0.90	Lubrication oil pressure, checking with pressure gauge	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
233-001	0.30	Fuel system, bleeding	
233-004	0.60	Feed pump, checking feed pressure	
234-041	0.40	Fuel filling pump, removing	

Op.no.	time (h)	Notes
234-042	0.50	Fuel filling pump, installing
237-124	0.70	High pressure fuel system, pressure relief
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.60	Exhaust pipe, flexible tube, replacing
254-001	2.50	Diesel particulate filter, check and clean
254-022	0.90	ACM (After treatment control module), replacing, non-programmed
254-023	0.80	ACM (After treatment control module), replacing, pre-programmed
254-031	0.90	Air pump, replacing
254-033	1.50	Burner, replacing
254-046	0.40	Spark plug, replacing
254-047	0.40	Spark plug, checking
254-056	0.50	NOx sensor, replacing
254-066	0.40	Exhaust Aftertreatment System, T-junction, replacing
255-071	2.50	Turbocharger, replacing
256-001	0.20	Air cleaner, cleaning filter element
256-003	0.10	Air cleaner, primary filter replacing
256-004	0.10	Air cleaner, secondary filter replacing
256-006	0.70	Preheating coil, replacing
258-002	4.00	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.50	Coolant, changing
261-008	4.50	Radiator, replacing
261-016	0.80	Radiator hoses all, replacing
261-018	0.90	Expansion tank, replacing
262-098	0.80	Thermostat, replacing
263-012	0.50	Fan belt and/or alternator belt, replacing
263-022	0.50	Fan belt and/or alternator-, compressor belt, replacing all belts
29		Miscellaneous
293-001	3.00	EGR cooler, replacing
293-004	3.00	EGR cooler, cleaning
293-005	3.00	EGR valve, replacing

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	1.00	Batteries, replacing
311-006	0.60	Earth lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.90	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-014	0.50	Ignition switch, replacing
364-056	0.80	Pre-heating relay, replacing
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
367-075	0.90	Engine speed control switch, replacing
37		CABLE; FUSE; RELAY
371-043	0.80	Battery disconnecter, replacing
371-090	2.00	Engine wire harness, replacing
372-002	0.50	Electrical distribution box, circuit board replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
383-001	0.30	Hour meter, replacing

Op.no.	time (h)	Notes	
386-006	1.50	Engine temperature sensor, replacing	
386-007	0.60	Engine oil pressure sensor, replacing	
386-011	0.30	Fuel level sender, replacing	
386-017	0.50	Hydraulic oil temperature sensor, replacing	
386-038	0.60	Engine rotation speed sensor, replacing	
386-088	0.90	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
393-001	0.50	Voltage converter, replacing	
393-021	0.60	Radio, replacing	
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
398-001	0.60	CareTrack antenna, replacing	
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU210001 - 210319	
398-002	0.90	W-ECU, MID142, changing pre-programmed ECU210320 - 270000	
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	210320 - 270000
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	210001 - 210319
398-004	0.50	CareTrack battery, replacing	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.50	Swing gearbox, replacing	
431-031	3.50	Pump gearbox coupling assembly, replacing	
431-053	6.50	Swing unit, replacing	
431-115	1.25	Track gearbox (removed), replacing floating seal	
431-117	1.50	Track gearbox, replacing cover	
431-127	6.00	Track unit, replacing	
44		HYDROSTATIC DRIVE	
441-021	2.50	Swing motor, replacing	
441-022	0.70	Swing motor relief valve, replacing	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	0.70	Swing motor removed, replacing seal	
441-112	0.70	Track motor relief valve, replacing	
443-037	5.50	Center passage, replacing	
443-038	7.00	Center passage, replacing seal kit	
49		MISCELLANEOUS	
492-021	11.00	Swing ring gear, replacing	
492-031	3.00	Swing ring gear outer seal, replacing	210001 - 210615

Op.no.	time (h)		Notes
492-032	9.50	Swing ring gear inner seal, replacing	210001 - 210615
492-091	0.40	Ring gear grease pipe, replacing	
492-095	0.70	Swing ring gear cover, removal	
492-095	0.70	Swing ring gear cover, removal	
492-096	0.70	Swing ring gear cover, installation	
492-096	0.70	Swing ring gear cover, installation	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	
716-001	0.90	Counterweight, removing	
716-002	0.90	Counterweight, fitting	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-034	1.75	Track chain assembly, removing	
775-035	2.00	Track chain assembly, installing	
775-036	11.00	Track links, replacing	
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	
775-066	3.00	Bottom roller, replacing seal	
775-081	4.00	Track recoil spring (tensioner) assembly, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.75	Cab, removing	
810-001	1.75	Cab, removing	
810-002	2.50	Cab, installing	
810-070	1.00	Electric pedal control on X1 (on/off), replacing	
810-071	0.90	Electric pedal control on X1 (proportional), replacing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	0.90	Engine hood, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.30	Rear-view mirror, changing	

Op.no.	time (h)	Notes
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
870-010	0.70	ECC, MID 146, changing pre-programmed ECU
870-011	1.00	ECC, MID 146, changing non-programmed ECU
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	1.75	Pump suction hose and pipe, replacing
911-011	4.50	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-024	0.70	Pipe and hose (pump - valve), replacing

Op.no.	time (h)		Notes
911-033	1.50	Oil cooler line bypass valve (check valve), replacing	
911-038	3.50	Hydraulic oil tank, replacing	
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
911-051	0.20	Breather, replacing	
912-001	8.00	Control valve, replacing	
912-067	0.50	Main pressure relief valve, replacing	
912-071	0.80	Rupture valve, replacing (boom cylinder)	
912-073	0.80	Rupture valve, replacing (dipper arm cylinder)	
912-160	0.80	Port relief valve pressure, checking and adjusting	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	4.00	Hydraulic pump, replacing	
913-029	0.40	Pump regulator, replacing	
914-041	0.80	Proportional solenoid valve (power shift), replacing	
914-051	0.50	Accumulator, replacing	210001 - 230000
914-060	0.70	Servo pump, replacing	
914-081	1.75	Remote control valve (lever), replacing	
914-084	1.75	Remote control valve (pedal), replacing	
914-091	1.00	Solenoid valve, replacing	
916-096	0.80	Hammer and shear pedal valve (RCV), replacing	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-005	0.80	Quickfit, removal	
924-006	1.00	Quickfit, installation	
924-040	0.80	Quickfit, replacing	
925-011	1.25	Bucket assembly, replacing	
925-012	0.60	Bucket assembly, removal	
925-013	1.00	Bucket assembly, installation	
97		UNIT, DIGGING	
970-006	1.50	Digging equipment, removal	
970-007	1.75	Digging equipment, installation	
974-010	12.00	Boom, replacing	
974-013	4.00	Boom, removal	
974-014	4.00	Boom, installation	
974-021	3.00	Boom cylinder, replacing	
974-031	1.50	Boom cylinder, removal	
974-032	1.50	Boom cylinder, installation	
974-038	3.50	Lower boom cylinder bushing, replacing	
974-039	3.50	Upper boom cylinder bushing, replacing	
975-006	1.50	Dipper arm connecting rod, removal	
975-007	1.50	Dipper arm connecting rod, installation	
975-011	3.00	Dipper arm, removal	

Op.no.	time (h)	Notes
975-012	3.00	Dipper arm, installation
975-014	1.25	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-028	1.00	Connecting rod yoke, replacing
975-032	1.25	Connecting rod yoke, removal
975-035	1.25	Connecting rod yoke, installation
975-039	8.00	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-065	1.50	Bucket cylinder, installation
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.90	Maintenance service, every 10 hours
173-004	1.50	Maintenance service, every 50 hours
173-007	1.75	Maintenance service, every 250 hours
173-010	4.00	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	8.50	Maintenance service, every 2000 hours
173-018	8.50	Maintenance service, every 4000 hours
173-019	2.50	Maintenance service, every 4500 hours
173-022	1.00	Maintenance service, every 6000 hours
173-040	1.75	Maintenance service, first 500 hours
173-314	1.25	Valves, adjusting
173-319	2.50	Diesel particulate filter, checking and cleaning
173-332	0.40	MATRIS and Tech Tool, reading
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-066	1.50	ECM (Engine control module), replacing pre-programmed
200-067	2.00	ECM (Engine control module), replacing non-programmed
200-200	0.60	Engine belts, replacing
21		ENGINE
210-002	2.50	Compression test
210-070	5.00	Engine, removing
210-072	6.00	Engine, installing
210-092	0.60	Engine rotation speed sensor (camshaft), replacing
210-093	0.50	Engine rotation speed sensor (crank shaft), replacing
214-012	1.25	Valves, adjusting
214-037	0.40	Valve cover, removing
214-038	0.40	Valve cover, installing
217-005	1.25	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.90	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check

Op.no.	time (h)	Notes
233-001	0.30	Fuel system, bleeding
233-004	0.30	Feed pump, checking feed pressure
237-002	3.00	Injectors, replacing all
237-017	7.50	Injector sleeves, replacing
237-031	1.25	Fuel rail, replacing
237-032	2.00	High pressure fuel pump, replacing
237-033	1.25	Fuel control valve (FCV), replacing
237-034	1.50	Pressure relief valve (PRV), replacing
237-035	0.60	Fuel rail pressure sensor, replacing
237-127	0.80	High pressure fuel pipes, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.70	Exhaust pipe, flexible tube, replacing
254-001	2.50	Diesel particulate filter, check and clean
254-022	1.00	ACM (After treatment control module), replacing, non-programmed
254-023	0.60	ACM (After treatment control module), replacing, pre-programmed
254-059	0.40	Inlet throttle, replacing
254-060	1.75	Diesel oxidation catalyst, replacing
254-103	1.50	AdBlue®/DEF tank, tank armature, replacing
254-107	1.50	AdBlue®/DEF pump unit, replacing
254-112	3.00	AdBlue®/DEF tank, replacing
254-114	1.50	AdBlue®/DEF, draining
254-118	1.00	SCR system, dosing test
254-119	0.40	Coolant valve, replacing
254-120	0.50	AdBlue®/DEF dosing injector, replacing
254-124	0.30	AdBlue®/DEF pump unit, filter, replacing
254-124	0.30	AdBlue®/DEF pump unit, filter, replacing
254-126	0.80	AdBlue®/DEF mixing tube, replacing
254-127	2.00	SCR muffler, replacing
255-009	0.40	Waste gate, testing
255-071	1.25	Turbocharger, replacing
258-002	4.50	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-004	0.70	Coolant, changing
261-008	4.50	Radiator, replacing
261-018	1.00	Expansion tank, replacing
262-002	1.25	Coolant pump, replacing
262-098	1.00	Thermostat, replacing
29		Miscellaneous
293-001	1.25	EGR cooler, replacing

Op.no.	time (h)	Notes
293-008	1.25	EGR Actuator, replacing
293-009	1.25	EGR reed valve, replacing
293-010	0.70	EGR Venturi tube, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.60	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-006	0.50	Earth lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.25	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
334-002	0.70	Starter switch, testing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.40	Horn, replacing
362-041	0.40	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.60	Windscreen flusher pump, replacing
364-003	0.80	Control lockout lever switch, replacing
364-014	0.50	Ignition switch, replacing
364-056	0.60	Pre-heating relay, replacing
366-103	0.80	HMICU, changing pre-programmed ECU
366-104	1.50	HMICU, changing non-programmed ECU
366-105	0.70	GPMECU1, changing pre-programmed ECU
366-106	1.25	GPMECU1, changing non-programmed ECU
37		CABLE; FUSE; RELAY
371-090	2.00	Engine wire harness, replacing
371-092	0.70	Electrical battery disconnect switch, replacing
372-002	0.80	Electrical distribution box, circuit board replacing

Op.no.	time (h)	Notes
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
383-001	0.30	Hour meter, replacing
386-006	0.40	Engine temperature sensor, replacing
386-007	0.40	Engine oil pressure sensor, replacing
386-011	0.60	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing
39		MISCELLANEOUS
393-001	0.80	Voltage converter, replacing
393-021	0.70	Radio, replacing
395-021	0.50	Antenna, replacing
395-031	0.40	Speaker, replacing
398-001	0.60	CareTrack antenna, replacing
398-004	0.50	CareTrack battery, replacing
398-005	1.25	W-ECU, replacing, non-programmed
398-006	0.90	W-ECU, replacing, pre-programmed
4		POWER TRANSMISSION
43		GEARBOX,
431-021	6.50	Swing gearbox, replacing
431-031	4.00	Pump gearbox coupling assembly, replacing
431-053	6.50	Swing unit, replacing
431-115	1.25	Track gearbox (removed), replacing floating seal
431-117	1.50	Track gearbox, replacing cover
431-127	6.00	Track unit, replacing
44		HYDROSTATIC DRIVE
441-021	2.50	Swing motor, replacing
441-022	0.70	Swing motor relief valve, replacing
441-024	1.50	Swing motor, replacing plate (brake)
441-025	1.50	Swing motor, replacing brake piston seal
441-026	0.70	Swing motor removed, replacing seal
441-112	0.70	Track motor relief valve, replacing
443-037	5.50	Center passage, replacing
443-038	7.00	Center passage, replacing seal kit
49		MISCELLANEOUS
492-021	11.00	Swing ring gear, replacing
492-031	3.00	Swing ring gear outer seal, replacing
492-032	9.00	Swing ring gear inner seal, replacing
492-091	0.40	Ring gear grease pipe, replacing
492-095	0.70	Swing ring gear cover, removal
492-096	0.70	Swing ring gear cover, installation

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
710-001	3.50	Superstructure, removing
710-002	4.50	Superstructure, installing
715-019	0.60	Boom cylinder protecting guard, removal
715-020	1.25	Boom cylinder protecting guard, installation
715-023	0.90	Bucket cylinder protecting guard, removal
715-024	1.00	Bucket cylinder protecting guard, installation
716-001	0.90	Counterweight, removing
716-002	0.90	Counterweight, fitting
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	3.00	Front idler, replacing one
775-021	3.50	Sprocket, replacing one
775-034	1.75	Track chain assembly, removing
775-035	2.00	Track chain assembly, installing
775-036	11.00	Track links, replacing
775-051	1.00	Top roller, replacing one
775-061	1.50	Bottom roller, replacing one
775-066	3.00	Bottom roller, replacing seal
775-081	4.00	Track recoil spring (tensioner) assembly, replacing
775-094	1.75	Full track guard, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
810-070	1.00	Electric pedal control on X1 (on/off), replacing
810-071	0.90	Electric pedal control on X1 (proportional), replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-091	1.00	Tool box assembly, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.50	Windscreen, replacing
843-012	4.50	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.90	Door window, replacing

Op.no.	time (h)	Notes
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	3.50	Cooler and Heater assembly, replacing
870-017	1.75	CCM, changing non-programmed ECU
870-018	1.75	CCM, changing pre-programmed ECU
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.50	Air mix door actuator, replacing
874-006	2.50	Compressor, replacing incl draining and filling
874-010	1.50	Condenser, replacing incl draining and filling
874-011	1.50	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	4.00	Expansion valve, replacing incl draining and filling
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-094	0.50	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.50	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	0.60	Instrument panel, replacing (left)
881-005	0.80	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-011	4.50	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-033	2.00	Oil cooler line bypass valve (check valve), replacing
911-035	1.75	Oil cooler fan pump, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	8.00	Control valve, replacing

Op.no.	time (h)	Notes
912-067	0.50	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.80	Rupture valve, replacing (dipper arm cylinder)
912-160	0.80	Port relief valve pressure, checking and adjusting
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.50	Hydraulic pump, replacing
913-029	0.60	Pump regulator, replacing
913-085	1.75	Power take-off (PTO), replacing
914-041	0.40	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-060	0.70	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.00	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-040	1.25	Quickfit, replacing
924-040	1.25	Quickfit, replacing
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-021	3.00	Boom cylinder, replacing
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-024	3.00	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-028	1.50	Connecting rod yoke, replacing
975-039	6.50	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.00	Bucket cylinder, replacing
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing
99		MISCELLANEOUS
992-002	5.50	Fire suppression system, actions after activation
992-003	6.50	Fire suppression system, actions after manual activation

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.90	Maintenance service, every 10 hours
173-004	1.50	Maintenance service, every 50 hours
173-007	1.75	Maintenance service, every 250 hours
173-010	4.00	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	8.50	Maintenance service, every 2000 hours
173-018	8.50	Maintenance service, every 4000 hours
173-019	2.50	Maintenance service, every 4500 hours
173-022	1.00	Maintenance service, every 6000 hours
173-040	1.75	Maintenance service, first 500 hours
173-314	1.25	Valves, adjusting
173-319	2.50	Diesel particulate filter, checking and cleaning
173-332	0.40	MATRIS and Tech Tool, reading
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-066	1.50	ECM (Engine control module), replacing pre-programmed
200-067	2.00	ECM (Engine control module), replacing non-programmed
200-200	0.60	Engine belts, replacing
21		ENGINE
210-002	2.50	Compression test
210-070	5.00	Engine, removing
210-072	6.00	Engine, installing
210-092	0.60	Engine rotation speed sensor (camshaft), replacing
210-093	0.50	Engine rotation speed sensor (crank shaft), replacing
214-012	1.25	Valves, adjusting
214-037	0.40	Valve cover, removing
214-038	0.40	Valve cover, installing
217-005	1.25	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.90	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check

Op.no.	time (h)	Notes
233-001	0.30	Fuel system, bleeding
233-004	0.30	Feed pump, checking feed pressure
237-002	3.00	Injectors, replacing all
237-017	7.50	Injector sleeves, replacing
237-031	1.25	Fuel rail, replacing
237-032	2.00	High pressure fuel pump, replacing
237-033	1.25	Fuel control valve (FCV), replacing
237-034	1.50	Pressure relief valve (PRV), replacing
237-035	0.60	Fuel rail pressure sensor, replacing
237-127	0.80	High pressure fuel pipes, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.70	Exhaust pipe, flexible tube, replacing
254-001	2.50	Diesel particulate filter, check and clean
254-022	1.00	ACM (After treatment control module), replacing, non-programmed
254-023	0.60	ACM (After treatment control module), replacing, pre-programmed
254-059	0.40	Inlet throttle, replacing
254-060	1.75	Diesel oxidation catalyst, replacing
254-103	1.50	AdBlue®/DEF tank, tank armature, replacing
254-107	1.50	AdBlue®/DEF pump unit, replacing
254-112	3.00	AdBlue®/DEF tank, replacing
254-114	1.50	AdBlue®/DEF, draining
254-118	1.00	SCR system, dosing test
254-119	0.40	Coolant valve, replacing
254-120	0.50	AdBlue®/DEF dosing injector, replacing
254-124	0.30	AdBlue®/DEF pump unit, filter, replacing
254-124	0.30	AdBlue®/DEF pump unit, filter, replacing
254-126	0.80	AdBlue®/DEF mixing tube, replacing
254-127	2.00	SCR muffler, replacing
255-009	0.40	Waste gate, testing
255-071	1.25	Turbocharger, replacing
258-002	4.50	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-004	0.70	Coolant, changing
261-008	4.50	Radiator, replacing
261-018	1.00	Expansion tank, replacing
262-002	1.25	Coolant pump, replacing
262-098	1.00	Thermostat, replacing
29		Miscellaneous
293-001	1.25	EGR cooler, replacing

Op.no.	time (h)	Notes
293-008	1.25	EGR Actuator, replacing
293-009	1.25	EGR reed valve, replacing
293-010	0.70	EGR Venturi tube, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.60	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-006	0.50	Earth lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.25	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
334-002	0.70	Starter switch, testing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.40	Horn, replacing
362-041	0.40	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.60	Windscreen flusher pump, replacing
364-003	0.80	Control lockout lever switch, replacing
364-014	0.50	Ignition switch, replacing
364-056	0.60	Pre-heating relay, replacing
366-103	0.80	HMICU, changing pre-programmed ECU
366-104	1.50	HMICU, changing non-programmed ECU
366-105	0.70	GPMECU1, changing pre-programmed ECU
366-106	1.25	GPMECU1, changing non-programmed ECU
37		CABLE; FUSE; RELAY
371-090	2.00	Engine wire harness, replacing
371-092	0.70	Electrical battery disconnect switch, replacing
372-002	0.80	Electrical distribution box, circuit board replacing

Op.no.	time (h)	Notes
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
383-001	0.30	Hour meter, replacing
386-006	0.40	Engine temperature sensor, replacing
386-007	0.40	Engine oil pressure sensor, replacing
386-011	0.60	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing
39		MISCELLANEOUS
393-001	0.80	Voltage converter, replacing
393-021	0.70	Radio, replacing
395-021	0.50	Antenna, replacing
395-031	0.40	Speaker, replacing
398-001	0.60	CareTrack antenna, replacing
398-004	0.50	CareTrack battery, replacing
398-005	1.25	W-ECU, replacing, non-programmed
398-006	0.90	W-ECU, replacing, pre-programmed
4		POWER TRANSMISSION
43		GEARBOX,
431-021	6.50	Swing gearbox, replacing
431-031	4.00	Pump gearbox coupling assembly, replacing
431-053	6.50	Swing unit, replacing
431-115	1.25	Track gearbox (removed), replacing floating seal
431-117	1.50	Track gearbox, replacing cover
431-127	6.00	Track unit, replacing
44		HYDROSTATIC DRIVE
441-021	2.50	Swing motor, replacing
441-022	0.70	Swing motor relief valve, replacing
441-024	1.50	Swing motor, replacing plate (brake)
441-025	1.50	Swing motor, replacing brake piston seal
441-026	0.70	Swing motor removed, replacing seal
441-112	0.70	Track motor relief valve, replacing
443-037	5.50	Center passage, replacing
443-038	7.00	Center passage, replacing seal kit
49		MISCELLANEOUS
492-021	11.00	Swing ring gear, replacing
492-031	3.00	Swing ring gear outer seal, replacing
492-032	9.00	Swing ring gear inner seal, replacing
492-091	0.40	Ring gear grease pipe, replacing
492-095	0.70	Swing ring gear cover, removal
492-095	0.70	Swing ring gear cover, removal

Op.no.	time (h)	Notes
492-096	0.70	Swing ring gear cover, installation
492-096	0.70	Swing ring gear cover, installation
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
710-001	3.50	Superstructure, removing
710-002	4.50	Superstructure, installing
715-019	0.60	Boom cylinder protecting guard, removal
715-020	1.25	Boom cylinder protecting guard, installation
715-023	0.90	Bucket cylinder protecting guard, removal
715-024	1.00	Bucket cylinder protecting guard, installation
716-001	0.90	Counterweight, removing
716-002	0.90	Counterweight, fitting
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	3.00	Front idler, replacing one
775-021	3.50	Sprocket, replacing one
775-034	1.75	Track chain assembly, removing
775-035	2.00	Track chain assembly, installing
775-036	11.00	Track links, replacing
775-051	1.00	Top roller, replacing one
775-061	1.50	Bottom roller, replacing one
775-066	3.00	Bottom roller, replacing seal
775-081	4.00	Track recoil spring (tensioner) assembly, replacing
775-094	1.75	Full track guard, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
810-070	1.00	Electric pedal control on X1 (on/off), replacing
810-071	0.90	Electric pedal control on X1 (proportional), replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-091	1.00	Tool box assembly, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.50	Windscreen, replacing

Op.no.	time (h)	Notes
843-012	4.50	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.90	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	3.50	Cooler and Heater assembly, replacing
870-017	1.75	CCM, changing non-programmed ECU
870-018	1.75	CCM, changing pre-programmed ECU
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.50	Air mix door actuator, replacing
874-006	2.50	Compressor, replacing incl draining and filling
874-010	1.50	Condenser, replacing incl draining and filling
874-011	1.50	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	4.00	Expansion valve, replacing incl draining and filling
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-094	0.50	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.50	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	0.60	Instrument panel, replacing (left)
881-005	0.80	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-011	4.50	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-033	2.00	Oil cooler line bypass valve (check valve), replacing
911-035	1.75	Oil cooler fan pump, replacing

Op.no.	time (h)	Notes
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	8.00	Control valve, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.80	Rupture valve, replacing (dipper arm cylinder)
912-160	0.80	Port relief valve pressure, checking and adjusting
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.50	Hydraulic pump, replacing
913-029	0.60	Pump regulator, replacing
913-085	1.75	Power take-off (PTO), replacing
914-041	0.40	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-060	0.70	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.00	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-040	1.25	Quickfit, replacing
924-040	1.25	Quickfit, replacing
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-021	3.00	Boom cylinder, replacing
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-024	3.00	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-028	1.50	Connecting rod yoke, replacing
975-039	6.50	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.00	Bucket cylinder, replacing
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.90	Maintenance service, every 10 hours
173-004	1.50	Maintenance service, every 50 hours
173-007	1.75	Maintenance service, every 250 hours
173-010	4.00	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	8.50	Maintenance service, every 2000 hours
173-018	8.50	Maintenance service, every 4000 hours
173-019	2.50	Maintenance service, every 4500 hours
173-022	1.00	Maintenance service, every 6000 hours
173-040	1.75	Maintenance service, first 500 hours
173-314	1.25	Valves, adjusting
173-319	2.50	Diesel particulate filter, checking and cleaning
173-332	0.40	MATRIS and Tech Tool, reading
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-066	1.50	ECM (Engine control module), replacing pre-programmed
200-067	2.00	ECM (Engine control module), replacing non-programmed
200-200	0.60	Engine belts, replacing
21		ENGINE
210-002	2.50	Compression test
210-070	5.00	Engine, removing
210-072	6.00	Engine, installing
210-092	0.60	Engine rotation speed sensor (camshaft), replacing
210-093	0.50	Engine rotation speed sensor (crank shaft), replacing
214-012	1.25	Valves, adjusting
214-037	0.40	Valve cover, removing
214-038	0.40	Valve cover, installing
217-005	1.25	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.90	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check

Op.no.	time (h)	Notes
233-001	0.30	Fuel system, bleeding
233-004	0.30	Feed pump, checking feed pressure
237-002	3.00	Injectors, replacing all
237-017	7.50	Injector sleeves, replacing
237-031	1.25	Fuel rail, replacing
237-032	2.00	High pressure fuel pump, replacing
237-033	1.25	Fuel control valve (FCV), replacing
237-034	1.50	Pressure relief valve (PRV), replacing
237-035	0.60	Fuel rail pressure sensor, replacing
237-127	0.80	High pressure fuel pipes, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.70	Exhaust pipe, flexible tube, replacing
254-001	2.50	Diesel particulate filter, check and clean
254-022	1.00	ACM (After treatment control module), replacing, non-programmed
254-023	0.60	ACM (After treatment control module), replacing, pre-programmed
254-059	0.40	Inlet throttle, replacing
254-060	1.75	Diesel oxidation catalyst, replacing
254-103	1.50	AdBlue®/DEF tank, tank armature, replacing
254-107	1.50	AdBlue®/DEF pump unit, replacing
254-112	3.00	AdBlue®/DEF tank, replacing
254-114	1.50	AdBlue®/DEF, draining
254-118	1.00	SCR system, dosing test
254-119	0.40	Coolant valve, replacing
254-120	0.50	AdBlue®/DEF dosing injector, replacing
254-124	0.30	AdBlue®/DEF pump unit, filter, replacing
254-124	0.30	AdBlue®/DEF pump unit, filter, replacing
254-126	0.80	AdBlue®/DEF mixing tube, replacing
254-127	2.00	SCR muffler, replacing
255-009	0.40	Waste gate, testing
255-071	1.25	Turbocharger, replacing
258-002	4.50	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-004	0.70	Coolant, changing
261-008	4.50	Radiator, replacing
261-018	1.00	Expansion tank, replacing
262-002	1.25	Coolant pump, replacing
262-098	1.00	Thermostat, replacing
29		Miscellaneous
293-001	1.25	EGR cooler, replacing

Op.no.	time (h)	Notes
293-008	1.25	EGR Actuator, replacing
293-009	1.25	EGR reed valve, replacing
293-010	0.70	EGR Venturi tube, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.60	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-006	0.50	Earth lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.25	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
334-002	0.70	Starter switch, testing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.40	Horn, replacing
362-041	0.40	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.60	Windscreen flusher pump, replacing
364-003	0.80	Control lockout lever switch, replacing
364-014	0.50	Ignition switch, replacing
364-056	0.60	Pre-heating relay, replacing
366-103	0.80	HMICU, changing pre-programmed ECU
366-104	1.50	HMICU, changing non-programmed ECU
366-105	0.70	GPMECU1, changing pre-programmed ECU
366-106	1.25	GPMECU1, changing non-programmed ECU
37		CABLE; FUSE; RELAY
371-090	2.00	Engine wire harness, replacing
371-092	0.70	Electrical battery disconnect switch, replacing
372-002	0.80	Electrical distribution box, circuit board replacing

Op.no.	time (h)	Notes
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
383-001	0.30	Hour meter, replacing
386-006	0.40	Engine temperature sensor, replacing
386-007	0.40	Engine oil pressure sensor, replacing
386-011	0.60	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing
39		MISCELLANEOUS
393-001	0.80	Voltage converter, replacing
393-021	0.70	Radio, replacing
395-021	0.50	Antenna, replacing
395-031	0.40	Speaker, replacing
398-001	0.60	CareTrack antenna, replacing
398-004	0.50	CareTrack battery, replacing
398-005	1.25	W-ECU, replacing, non-programmed
398-006	0.90	W-ECU, replacing, pre-programmed
4		POWER TRANSMISSION
43		GEARBOX,
431-021	6.50	Swing gearbox, replacing
431-031	4.00	Pump gearbox coupling assembly, replacing
431-053	6.50	Swing unit, replacing
431-115	1.25	Track gearbox (removed), replacing floating seal
431-117	1.50	Track gearbox, replacing cover
431-127	6.00	Track unit, replacing
44		HYDROSTATIC DRIVE
441-021	2.50	Swing motor, replacing
441-022	0.70	Swing motor relief valve, replacing
441-024	1.50	Swing motor, replacing plate (brake)
441-025	1.50	Swing motor, replacing brake piston seal
441-026	0.70	Swing motor removed, replacing seal
441-112	0.70	Track motor relief valve, replacing
443-037	5.50	Center passage, replacing
443-038	7.00	Center passage, replacing seal kit
49		MISCELLANEOUS
492-021	11.00	Swing ring gear, replacing
492-031	3.00	Swing ring gear outer seal, replacing
492-032	9.00	Swing ring gear inner seal, replacing
492-091	0.40	Ring gear grease pipe, replacing

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
710-001	3.50	Superstructure, removing
710-002	4.50	Superstructure, installing
716-001	0.90	Counterweight, removing
716-002	0.90	Counterweight, fitting
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	3.00	Front idler, replacing one
775-021	3.50	Sprocket, replacing one
775-034	1.75	Track chain assembly, removing
775-035	2.00	Track chain assembly, installing
775-036	11.00	Track links, replacing
775-051	1.00	Top roller, replacing one
775-061	1.50	Bottom roller, replacing one
775-066	3.00	Bottom roller, replacing seal
775-081	4.00	Track recoil spring (tensioner) assembly, replacing
775-094	1.75	Full track guard, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
810-070	1.00	Electric pedal control on X1 (on/off), replacing
810-071	0.90	Electric pedal control on X1 (proportional), replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-091	1.00	Tool box assembly, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.50	Windscreen, replacing
843-012	4.50	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.90	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing

Op.no.	time (h)	Notes
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	3.50	Cooler and Heater assembly, replacing
870-017	1.75	CCM, changing non-programmed ECU
870-018	1.75	CCM, changing pre-programmed ECU
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.50	Air mix door actuator, replacing
874-006	2.50	Compressor, replacing incl draining and filling
874-010	1.50	Condenser, replacing incl draining and filling
874-011	1.50	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	4.00	Expansion valve, replacing incl draining and filling
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-094	0.50	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.50	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	0.60	Instrument panel, replacing (left)
881-005	0.80	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-011	4.50	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-033	2.00	Oil cooler line bypass valve (check valve), replacing
911-035	1.75	Oil cooler fan pump, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	8.00	Control valve, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.80	Rupture valve, replacing (dipper arm cylinder)
912-160	0.80	Port relief valve pressure, checking and adjusting

Op.no.	time (h)	Notes
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.50	Hydraulic pump, replacing
913-029	0.60	Pump regulator, replacing
913-085	1.75	Power take-off (PTO), replacing
914-041	0.40	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-060	0.70	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.00	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-040	1.25	Quickfit, replacing
924-040	1.25	Quickfit, replacing
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-021	3.00	Boom cylinder, replacing
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-024	3.00	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-028	1.50	Connecting rod yoke, replacing
975-039	6.50	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.00	Bucket cylinder, replacing
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.90	Maintenance service, every 10 hours
173-004	1.50	Maintenance service, every 50 hours
173-007	1.75	Maintenance service, every 250 hours
173-010	4.00	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	8.50	Maintenance service, every 2000 hours
173-018	8.50	Maintenance service, every 4000 hours
173-019	2.50	Maintenance service, every 4500 hours
173-022	1.00	Maintenance service, every 6000 hours
173-040	1.75	Maintenance service, first 500 hours
173-314	1.25	Valves, adjusting
173-319	2.50	Diesel particulate filter, checking and cleaning
173-332	0.40	MATRIS and Tech Tool, reading
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-066	1.50	ECM (Engine control module), replacing pre-programmed
200-067	2.00	ECM (Engine control module), replacing non-programmed
200-200	0.60	Engine belts, replacing
21		ENGINE
210-002	2.50	Compression test
210-070	5.00	Engine, removing
210-072	6.00	Engine, installing
210-092	0.60	Engine rotation speed sensor (camshaft), replacing
210-093	0.50	Engine rotation speed sensor (crank shaft), replacing
214-012	1.25	Valves, adjusting
214-037	0.40	Valve cover, removing
214-038	0.40	Valve cover, installing
217-005	1.25	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.90	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check

Op.no.	time (h)	Notes
233-001	0.30	Fuel system, bleeding
233-004	0.30	Feed pump, checking feed pressure
237-002	3.00	Injectors, replacing all
237-017	7.50	Injector sleeves, replacing
237-031	1.25	Fuel rail, replacing
237-032	2.00	High pressure fuel pump, replacing
237-033	1.25	Fuel control valve (FCV), replacing
237-034	1.50	Pressure relief valve (PRV), replacing
237-035	0.60	Fuel rail pressure sensor, replacing
237-127	0.80	High pressure fuel pipes, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.70	Exhaust pipe, flexible tube, replacing
254-001	2.50	Diesel particulate filter, check and clean
254-022	1.00	ACM (After treatment control module), replacing, non-programmed
254-023	0.60	ACM (After treatment control module), replacing, pre-programmed
254-059	0.40	Inlet throttle, replacing
254-060	1.75	Diesel oxidation catalyst, replacing
254-103	1.50	AdBlue®/DEF tank, tank armature, replacing
254-107	1.50	AdBlue®/DEF pump unit, replacing
254-112	3.00	AdBlue®/DEF tank, replacing
254-114	1.50	AdBlue®/DEF, draining
254-118	1.00	SCR system, dosing test
254-119	0.40	Coolant valve, replacing
254-120	0.50	AdBlue®/DEF dosing injector, replacing
254-124	0.30	AdBlue®/DEF pump unit, filter, replacing
254-124	0.30	AdBlue®/DEF pump unit, filter, replacing
254-126	0.80	AdBlue®/DEF mixing tube, replacing
254-127	2.00	SCR muffler, replacing
255-009	0.40	Waste gate, testing
255-071	1.25	Turbocharger, replacing
258-002	4.50	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-004	0.70	Coolant, changing
261-008	4.50	Radiator, replacing
261-018	1.00	Expansion tank, replacing
262-002	1.25	Coolant pump, replacing
262-098	1.00	Thermostat, replacing
29		Miscellaneous
293-001	1.25	EGR cooler, replacing

Op.no.	time (h)	Notes
293-008	1.25	EGR Actuator, replacing
293-009	1.25	EGR reed valve, replacing
293-010	0.70	EGR Venturi tube, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.60	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-006	0.50	Earth lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.25	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
334-002	0.70	Starter switch, testing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.40	Horn, replacing
362-041	0.40	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.60	Windscreen flusher pump, replacing
364-003	0.80	Control lockout lever switch, replacing
364-014	0.50	Ignition switch, replacing
364-056	0.60	Pre-heating relay, replacing
366-103	0.80	HMICU, changing pre-programmed ECU
366-104	1.50	HMICU, changing non-programmed ECU
366-105	0.70	GPMECU1, changing pre-programmed ECU
366-106	1.25	GPMECU1, changing non-programmed ECU
37		CABLE; FUSE; RELAY
371-090	2.00	Engine wire harness, replacing
371-092	0.70	Electrical battery disconnect switch, replacing
372-002	0.80	Electrical distribution box, circuit board replacing

Op.no.	time (h)	Notes
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
383-001	0.30	Hour meter, replacing
386-006	0.40	Engine temperature sensor, replacing
386-007	0.40	Engine oil pressure sensor, replacing
386-011	0.60	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing
39		MISCELLANEOUS
393-001	0.80	Voltage converter, replacing
393-021	0.70	Radio, replacing
395-021	0.50	Antenna, replacing
395-031	0.40	Speaker, replacing
398-001	0.60	CareTrack antenna, replacing
398-004	0.50	CareTrack battery, replacing
398-005	1.25	W-ECU, replacing, non-programmed
398-006	0.90	W-ECU, replacing, pre-programmed
4		POWER TRANSMISSION
43		GEARBOX,
431-021	6.50	Swing gearbox, replacing
431-031	4.00	Pump gearbox coupling assembly, replacing
431-053	6.50	Swing unit, replacing
431-115	1.25	Track gearbox (removed), replacing floating seal
431-117	1.50	Track gearbox, replacing cover
431-127	6.00	Track unit, replacing
44		HYDROSTATIC DRIVE
441-021	2.50	Swing motor, replacing
441-022	0.70	Swing motor relief valve, replacing
441-024	1.50	Swing motor, replacing plate (brake)
441-025	1.50	Swing motor, replacing brake piston seal
441-026	0.70	Swing motor removed, replacing seal
441-112	0.70	Track motor relief valve, replacing
443-037	5.50	Center passage, replacing
443-038	7.00	Center passage, replacing seal kit
49		MISCELLANEOUS
492-021	11.00	Swing ring gear, replacing
492-031	3.00	Swing ring gear outer seal, replacing
492-032	9.00	Swing ring gear inner seal, replacing
492-091	0.40	Ring gear grease pipe, replacing

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
710-001	3.50	Superstructure, removing
710-002	4.50	Superstructure, installing
716-001	0.90	Counterweight, removing
716-002	0.90	Counterweight, fitting
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	3.00	Front idler, replacing one
775-021	3.50	Sprocket, replacing one
775-034	1.75	Track chain assembly, removing
775-035	2.00	Track chain assembly, installing
775-036	11.00	Track links, replacing
775-051	1.00	Top roller, replacing one
775-061	1.50	Bottom roller, replacing one
775-066	3.00	Bottom roller, replacing seal
775-081	4.00	Track recoil spring (tensioner) assembly, replacing
775-094	1.75	Full track guard, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
810-070	1.00	Electric pedal control on X1 (on/off), replacing
810-071	0.90	Electric pedal control on X1 (proportional), replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-091	1.00	Tool box assembly, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.50	Windscreen, replacing
843-012	4.50	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.90	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing

Op.no.	time (h)	Notes
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	3.50	Cooler and Heater assembly, replacing
870-017	1.75	CCM, changing non-programmed ECU
870-018	1.75	CCM, changing pre-programmed ECU
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.50	Air mix door actuator, replacing
874-006	2.50	Compressor, replacing incl draining and filling
874-010	1.50	Condenser, replacing incl draining and filling
874-011	1.50	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	4.00	Expansion valve, replacing incl draining and filling
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-094	0.50	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.50	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	0.60	Instrument panel, replacing (left)
881-005	0.80	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-011	4.50	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-033	2.00	Oil cooler line bypass valve (check valve), replacing
911-035	1.75	Oil cooler fan pump, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	8.00	Control valve, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.80	Rupture valve, replacing (dipper arm cylinder)
912-160	0.80	Port relief valve pressure, checking and adjusting

Op.no.	time (h)	Notes
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.50	Hydraulic pump, replacing
913-029	0.60	Pump regulator, replacing
913-085	1.75	Power take-off (PTO), replacing
914-041	0.40	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-060	0.70	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.00	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-040	1.25	Quickfit, replacing
924-040	1.25	Quickfit, replacing
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-021	3.00	Boom cylinder, replacing
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-024	3.00	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-028	1.50	Connecting rod yoke, replacing
975-039	6.50	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.00	Bucket cylinder, replacing
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.90	Maintenance service, every 10 hours
173-004	1.50	Maintenance service, every 50 hours
173-007	1.75	Maintenance service, every 250 hours
173-010	4.00	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	8.50	Maintenance service, every 2000 hours
173-018	8.50	Maintenance service, every 4000 hours
173-019	2.50	Maintenance service, every 4500 hours
173-022	1.00	Maintenance service, every 6000 hours
173-040	1.75	Maintenance service, first 500 hours
173-314	1.25	Valves, adjusting
173-319	2.50	Diesel particulate filter, checking and cleaning
173-332	0.40	MATRIS and Tech Tool, reading
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-066	1.50	ECM (Engine control module), replacing pre-programmed
200-067	2.00	ECM (Engine control module), replacing non-programmed
200-200	0.60	Engine belts, replacing
21		ENGINE
210-002	2.50	Compression test
210-070	5.00	Engine, removing
210-072	6.00	Engine, installing
210-092	0.60	Engine rotation speed sensor (camshaft), replacing
210-093	0.50	Engine rotation speed sensor (crank shaft), replacing
214-012	1.25	Valves, adjusting
214-037	0.40	Valve cover, removing
214-038	0.40	Valve cover, installing
217-005	1.25	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.90	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check

Op.no.	time (h)	Notes
233-001	0.30	Fuel system, bleeding
233-004	0.30	Feed pump, checking feed pressure
237-002	3.00	Injectors, replacing all
237-017	7.50	Injector sleeves, replacing
237-031	1.25	Fuel rail, replacing
237-032	2.00	High pressure fuel pump, replacing
237-033	1.25	Fuel control valve (FCV), replacing
237-034	1.50	Pressure relief valve (PRV), replacing
237-035	0.60	Fuel rail pressure sensor, replacing
237-127	0.80	High pressure fuel pipes, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.70	Exhaust pipe, flexible tube, replacing
254-001	2.50	Diesel particulate filter, check and clean
254-022	1.00	ACM (After treatment control module), replacing, non-programmed
254-023	0.60	ACM (After treatment control module), replacing, pre-programmed
254-059	0.40	Inlet throttle, replacing
254-060	1.75	Diesel oxidation catalyst, replacing
254-103	1.50	AdBlue®/DEF tank, tank armature, replacing
254-107	1.50	AdBlue®/DEF pump unit, replacing
254-112	3.00	AdBlue®/DEF tank, replacing
254-114	1.50	AdBlue®/DEF, draining
254-118	1.00	SCR system, dosing test
254-119	0.40	Coolant valve, replacing
254-120	0.50	AdBlue®/DEF dosing injector, replacing
254-124	0.30	AdBlue®/DEF pump unit, filter, replacing
254-124	0.30	AdBlue®/DEF pump unit, filter, replacing
254-126	0.80	AdBlue®/DEF mixing tube, replacing
254-127	2.00	SCR muffler, replacing
255-009	0.40	Waste gate, testing
255-071	1.25	Turbocharger, replacing
258-002	4.50	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-004	0.70	Coolant, changing
261-008	4.50	Radiator, replacing
261-018	1.00	Expansion tank, replacing
262-002	1.25	Coolant pump, replacing
262-098	1.00	Thermostat, replacing
29		Miscellaneous
293-001	1.25	EGR cooler, replacing

Op.no.	time (h)	Notes
293-008	1.25	EGR Actuator, replacing
293-009	1.25	EGR reed valve, replacing
293-010	0.70	EGR Venturi tube, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.60	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-006	0.50	Earth lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.25	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
334-002	0.70	Starter switch, testing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.40	Horn, replacing
362-041	0.40	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.60	Windscreen flusher pump, replacing
364-003	0.80	Control lockout lever switch, replacing
364-014	0.50	Ignition switch, replacing
364-056	0.60	Pre-heating relay, replacing
366-103	0.80	HMICU, changing pre-programmed ECU
366-104	1.50	HMICU, changing non-programmed ECU
366-105	0.70	GPMECU1, changing pre-programmed ECU
366-106	1.25	GPMECU1, changing non-programmed ECU
37		CABLE; FUSE; RELAY
371-090	2.00	Engine wire harness, replacing
371-092	0.70	Electrical battery disconnect switch, replacing
372-002	0.80	Electrical distribution box, circuit board replacing

Op.no.	time (h)	Notes
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
383-001	0.30	Hour meter, replacing
386-006	0.40	Engine temperature sensor, replacing
386-007	0.40	Engine oil pressure sensor, replacing
386-011	0.60	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing
39		MISCELLANEOUS
393-001	0.80	Voltage converter, replacing
393-021	0.70	Radio, replacing
395-021	0.50	Antenna, replacing
395-031	0.40	Speaker, replacing
398-001	0.60	CareTrack antenna, replacing
398-004	0.50	CareTrack battery, replacing
398-005	1.25	W-ECU, replacing, non-programmed
398-006	0.90	W-ECU, replacing, pre-programmed
4		POWER TRANSMISSION
43		GEARBOX,
431-021	6.50	Swing gearbox, replacing
431-031	4.00	Pump gearbox coupling assembly, replacing
431-053	6.50	Swing unit, replacing
431-115	1.25	Track gearbox (removed), replacing floating seal
431-117	1.50	Track gearbox, replacing cover
431-127	6.00	Track unit, replacing
44		HYDROSTATIC DRIVE
441-021	2.50	Swing motor, replacing
441-022	0.70	Swing motor relief valve, replacing
441-024	1.50	Swing motor, replacing plate (brake)
441-025	1.50	Swing motor, replacing brake piston seal
441-026	0.70	Swing motor removed, replacing seal
441-112	0.70	Track motor relief valve, replacing
443-037	5.50	Center passage, replacing
443-038	7.00	Center passage, replacing seal kit
49		MISCELLANEOUS
492-021	11.00	Swing ring gear, replacing
492-031	3.00	Swing ring gear outer seal, replacing
492-032	9.00	Swing ring gear inner seal, replacing
492-091	0.40	Ring gear grease pipe, replacing
492-095	0.70	Swing ring gear cover, removal
492-095	0.70	Swing ring gear cover, removal

Op.no.	time (h)	Notes
492-096	0.70	Swing ring gear cover, installation
492-096	0.70	Swing ring gear cover, installation
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
710-001	3.50	Superstructure, removing
710-002	4.50	Superstructure, installing
715-019	0.60	Boom cylinder protecting guard, removal
715-020	1.25	Boom cylinder protecting guard, installation
715-023	0.90	Bucket cylinder protecting guard, removal
715-024	1.00	Bucket cylinder protecting guard, installation
716-001	0.90	Counterweight, removing
716-002	0.90	Counterweight, fitting
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	3.00	Front idler, replacing one
775-021	3.50	Sprocket, replacing one
775-034	1.75	Track chain assembly, removing
775-035	2.00	Track chain assembly, installing
775-036	11.00	Track links, replacing
775-051	1.00	Top roller, replacing one
775-061	1.50	Bottom roller, replacing one
775-066	3.00	Bottom roller, replacing seal
775-081	4.00	Track recoil spring (tensioner) assembly, replacing
775-094	1.75	Full track guard, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
810-070	1.00	Electric pedal control on X1 (on/off), replacing
810-071	0.90	Electric pedal control on X1 (proportional), replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-091	1.00	Tool box assembly, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.50	Windscreen, replacing

Op.no.	time (h)	Notes
843-012	4.50	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.90	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	3.50	Cooler and Heater assembly, replacing
870-017	1.75	CCM, changing non-programmed ECU
870-018	1.75	CCM, changing pre-programmed ECU
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.50	Air mix door actuator, replacing
874-006	2.50	Compressor, replacing incl draining and filling
874-010	1.50	Condenser, replacing incl draining and filling
874-011	1.50	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	4.00	Expansion valve, replacing incl draining and filling
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-094	0.50	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.50	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	0.60	Instrument panel, replacing (left)
881-005	0.80	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-011	4.50	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-033	2.00	Oil cooler line bypass valve (check valve), replacing
911-035	1.75	Oil cooler fan pump, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump

Op.no.	time (h)	Notes
911-051	0.20	Breather, replacing
912-001	8.00	Control valve, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.80	Rupture valve, replacing (dipper arm cylinder)
912-160	0.80	Port relief valve pressure, checking and adjusting
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.50	Hydraulic pump, replacing
913-029	0.60	Pump regulator, replacing
913-085	1.75	Power take-off (PTO), replacing
914-041	0.40	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-060	0.70	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.00	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-040	1.25	Quickfit, replacing
924-040	1.25	Quickfit, replacing
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-021	3.00	Boom cylinder, replacing
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-024	3.00	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-028	1.50	Connecting rod yoke, replacing
975-039	6.50	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.00	Bucket cylinder, replacing
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
171-002	3.00	Delivery Inspection, according to Inspection Programme
173-002	0.80	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	4.50	Maintenance service, every 500 hours
173-012	7.00	Maintenance service, every 1000 hours
173-014	9.00	Maintenance service, every 2000 hours
173-018	12.00	Maintenance service, every 4000 hours
173-019	3.00	Maintenance service, every 4500 hours
173-022	0.60	Maintenance service, every 6000 hours
173-024	0.40	Maintenance service, every 8000 hours
173-028	0.40	Maintenance service, every 12000 hours
173-040	2.50	Maintenance service, first 500 hours
173-079	1.00	Swing motor gearbox, changing oil
173-101	0.50	Track motor gearbox, changing oil
173-401	0.70	Engine oil and filter, changing
173-412	0.20	Hydraulic oil tank breather filter, replacing
173-451	1.25	Hydraulic oil, changing
173-649	0.20	Hydraulic oil return filter, replacing
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-009	1.75	VCADS Pro, MID 128, programming E-ECU
200-068	2.00	E-ECU, MID 128, changing non-programmed ECU
200-070	1.50	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
210-070	6.50	Engine, removing
210-072	7.50	Engine, installing
212-071	1.00	Crankcase ventilation separator, replacing
214-012	2.50	Valves, adjusting
214-092	9.50	Rocker arms, replacing
215-042	6.50	Camshaft, replacing
217-005	1.25	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.50	Lubrication oil pressure, checking with pressure gauge

Op.no.	time (h)	Notes
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
230-002	0.90	Air in fuel system, checking
233-001	0.30	Fuel system, bleeding
233-004	0.20	Feed pump, checking feed pressure
233-010	1.25	Fuel pump, inspection
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-007	0.80	Overflow valve, replacing
237-010	1.50	Unit injectors, adjusting pretension
237-012	5.50	Unit injector, replacing
237-017	10.00	Injector sleeves, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.60	Exhaust pipe, flexible tube, replacing
254-001	2.50	Diesel particulate filter, check and clean
254-021	3.00	Atomization unit, replacing
254-022	0.90	ACM (After treatment control module), replacing, non-programmed
254-023	0.80	ACM (After treatment control module), replacing, pre-programmed
254-031	1.50	Air pump, replacing
254-033	2.50	Burner, replacing
254-034	1.25	Compressor, replacing
254-046	1.25	Spark plug, replacing
254-047	1.25	Spark plug, checking
254-048	0.40	Spark plug cable, replacing
254-061	3.50	Exhaust aftertreatment system, fuel pump, replacing
254-063	2.50	Aftertreatment support unit (ASU), replacing
254-064	0.50	High pressure air system, pressure, checking
254-065	1.00	Air pump flow, checking
254-069	0.70	Exhaust aftertreatment system fuel flow, checking
254-125	1.75	Exhaust aftertreatment fuel injector, replacing
255-003	1.75	Actuator, variable turbocharger, replacing
255-071	2.50	Turbocharger, replacing
256-006	0.40	Preheating coil, replacing
258-002	4.00	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.70	Coolant, changing
261-008	5.50	Radiator, replacing

Op.no.	time (h)	Notes
261-012	0.60	Radiator hose upper, replacing
261-014	1.25	Radiator hoses lower, replacing
261-018	0.80	Expansion tank, replacing
262-098	0.90	Thermostat, replacing
263-012	0.50	Fan belt and/or alternator belt, replacing
263-022	0.90	Fan belt and/or alternator-, compressor belt, replacing all belts
29		Miscellaneous
293-001	4.00	EGR cooler, replacing
293-002	2.50	EGR cooler, pressure test
293-003	4.00	EGR Venturi tube, checking
293-004	4.50	EGR cooler, cleaning
293-005	1.25	EGR valve, replacing
293-007	0.40	EGR pressure sensor, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	1.00	Batteries, replacing
311-006	0.60	Earth lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor

Op.no.	time (h)	Notes
363-003	0.90	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-014	0.50	Ignition switch, replacing
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
367-075	0.90	Engine speed control switch, replacing
37		CABLE; FUSE; RELAY
371-043	0.80	Battery disconnecter, replacing
371-090	2.00	Engine wire harness, replacing
372-002	0.50	Electrical distribution box, circuit board replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
383-001	0.30	Hour meter, replacing
386-006	1.50	Engine temperature sensor, replacing
386-007	0.60	Engine oil pressure sensor, replacing
386-011	0.30	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing
386-038	1.75	Engine rotation speed sensor, replacing
386-044	0.40	Auto idling sensor, replacing
386-088	1.75	Engine rotation speed sensor (camshaft), replacing
39		MISCELLANEOUS
393-001	0.50	Voltage converter, replacing
393-021	0.60	Radio, replacing
395-021	0.70	Antenna, replacing
395-031	0.40	Speaker, replacing
398-001	0.60	CareTrack antenna, replacing
398-002	0.90	W-ECU, MID142, changing pre-programmed ECU210169 - 280000
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU210001 - 210168
398-003	1.50	W-ECU, MID142, changing non-programmed ECU 210169 - 280000
398-003	1.50	W-ECU, MID142, changing non-programmed ECU 210001 - 210168
398-004	0.50	CareTrack battery, replacing
4		POWER TRANSMISSION
43		GEARBOX,
431-021	6.50	Swing gearbox, replacing
431-026	1.75	Swing gearbox removed, replacing seal

Op.no.	time (h)		Notes
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	4.00	Pump gearbox coupling assembly, replacing	
431-053	6.50	Swing unit, replacing	
431-115	1.75	Track gearbox (removed), replacing floating seal	
431-115	1.25	Track gearbox (removed), replacing floating seal	
431-117	1.50	Track gearbox, replacing cover	
431-127	6.00	Track unit, replacing	
44		HYDROSTATIC DRIVE	
441-021	3.50	Swing motor, replacing	
441-022	0.70	Swing motor relief valve, replacing	
441-026	0.80	Swing motor removed, replacing seal	
441-111	6.50	Track motor, replacing	
441-112	0.70	Track motor relief valve, replacing	
443-037	6.00	Center passage, replacing	
443-038	6.00	Center passage, replacing seal kit	
49		MISCELLANEOUS	
492-021	11.00	Swing ring gear, replacing	
492-031	3.00	Swing ring gear outer seal, replacing	210001 - 210267
492-031	3.00	Swing ring gear outer seal, replacing	210268 - 280000
492-032	9.50	Swing ring gear inner seal, replacing	210001 - 210267
492-032	9.00	Swing ring gear inner seal, replacing	210268 - 280000
492-091	0.50	Ring gear grease pipe, replacing	
492-095	0.70	Swing ring gear cover, removal	
492-096	0.70	Swing ring gear cover, installation	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	
716-001	1.50	Counterweight, removing	
716-002	1.50	Counterweight, fitting	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-009	2.50	Front idler, removing	
775-010	3.00	Front idler, installing	
775-011	4.50	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-034	1.75	Track chain assembly, removing	
775-035	2.00	Track chain assembly, installing	
775-036	11.00	Track links, replacing	

Op.no.	time (h)	Notes
775-066	3.00	Bottom roller, replacing seal
775-081	4.50	Track recoil spring (tensioner) assembly, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.90	Engine hood, replacing
827-091	1.75	Tool box assembly, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.30	Rear-view mirror, changing
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
870-010	0.70	ECC, MID 146, changing pre-programmed ECU
870-011	1.00	ECC, MID 146, changing non-programmed ECU
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)

Op.no.	time (h)	Notes
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	2.50	Pump suction hose and pipe, replacing
911-011	3.50	Oil cooler, replacing
911-015	0.40	Oil level gauge, replacing
911-033	1.25	Oil cooler line bypass valve (check valve), replacing
911-034	2.50	Oil cooler fan motor, replacing
911-035	1.00	Oil cooler fan pump, replacing
911-038	3.50	Hydraulic oil tank, replacing
911-040	0.60	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-067	0.70	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-029	0.30	Pump regulator, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-060	1.50	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.75	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-005	0.80	Quickfit, removal
924-006	1.00	Quickfit, installation
924-040	0.80	Quickfit, replacing
925-011	1.75	Bucket assembly, replacing
925-012	1.25	Bucket assembly, removal
925-013	1.50	Bucket assembly, installation

Op.no.	time (h)	Notes
97		UNIT, DIGGING
974-013	4.00	Boom, removal
974-014	4.00	Boom, installation
974-021	3.00	Boom cylinder, replacing
974-031	1.50	Boom cylinder, removal
974-032	1.50	Boom cylinder, installation
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-006	1.75	Dipper arm connecting rod, removal
975-007	1.75	Dipper arm connecting rod, installation
975-011	4.50	Dipper arm, removal
975-012	4.50	Dipper arm, installation
975-014	1.50	Dipper arm cylinder, removal
975-015	1.75	Dipper arm cylinder, installation
975-024	2.00	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-028	1.75	Connecting rod yoke, replacing
975-032	1.50	Connecting rod yoke, removal
975-035	1.25	Connecting rod yoke, installation
975-039	11.00	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	3.00	Bucket cylinder, replacing
975-062	1.75	Bucket cylinder, removal
975-065	1.75	Bucket cylinder, installation
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing
99		MISCELLANEOUS
992-002	5.50	Fire suppression system, actions after activation
992-003	6.50	Fire suppression system, actions after manual activation

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.90	Maintenance service, every 10 hours
173-004	1.25	Maintenance service, every 50 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	5.00	Maintenance service, every 1000 hours
173-014	7.50	Maintenance service, every 2000 hours
173-018	10.00	Maintenance service, every 4000 hours
173-019	1.25	Maintenance service, every 4500 hours
173-022	1.50	Maintenance service, every 6000 hours
173-040	2.00	Maintenance service, first 500 hours
173-303	0.30	Lubrication, every 50 hours
173-319	1.25	Diesel particulate filter, checking and cleaning
173-332	0.40	MATRIS and Tech Tool, reading
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-066	2.50	ECM (Engine control module), replacing pre-programmed
200-067	3.00	ECM (Engine control module), replacing non-programmed
200-200	0.60	Engine belts, replacing
21		ENGINE
210-002	11.00	Compression test
210-070	5.50	Engine, removing
210-072	6.50	Engine, installing
210-092	0.70	Engine rotation speed sensor (camshaft), replacing
210-093	0.60	Engine rotation speed sensor (crank shaft), replacing
212-071	1.00	Crankcase ventilation separator, replacing
214-012	2.50	Valves, adjusting
214-092	9.50	Rocker arms, replacing
215-042	6.50	Camshaft, replacing
215-043	1.50	Camshaft setting, checking
217-005	1.00	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.50	Lubrication oil pressure, checking with pressure gauge

Op.no.	time (h)	Notes
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
230-002	0.90	Air in fuel system, checking
233-001	0.30	Fuel system, bleeding
233-004	0.20	Feed pump, checking feed pressure
237-002	9.50	Injectors, replacing all
237-010	1.50	Unit injectors, adjusting pretension
237-017	8.50	Injector sleeves, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.80	Exhaust pipe, flexible tube, replacing
254-001	1.25	Diesel particulate filter, check and clean
254-022	1.00	ACM (After treatment control module), replacing, non-programmed
254-023	0.60	ACM (After treatment control module), replacing, pre-programmed
254-034	2.50	Compressor, replacing
254-056	0.60	NOx sensor, replacing
254-059	0.70	Inlet throttle, replacing
254-064	1.00	High pressure air system, pressure, checking
254-069	0.40	Exhaust aftertreatment system fuel flow, checking
254-101	1.25	AdBlue®/DEF pump, replacing
254-102	0.80	AdBlue®/DEF nozzle, replacing
254-103	1.50	AdBlue®/DEF tank, tank armature, replacing
254-104	0.30	Aftertreatment fuel nozzle, replacing
254-106	1.50	AdBlue®/DEF hoses, replacing
254-107	2.50	AdBlue®/DEF pump unit, replacing
254-108	1.00	Aftertreatment fuel dosing unit, replacing
254-109	0.20	Aftertreatment fuel nozzle, cleaning
254-111	1.50	Muffler, replacing
254-112	2.50	AdBlue®/DEF tank, replacing
254-114	1.50	AdBlue®/DEF, draining
254-117	1.25	AdBlue®/DEF pump unit, components, replacing
254-118	0.80	SCR system, dosing test
254-121	0.50	AdBlue®/DEF quality, checking
255-003	1.25	Actuator, variable turbocharger, replacing
255-071	2.50	Turbocharger, replacing
258-002	5.50	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.70	Coolant, changing
261-008	5.50	Radiator, replacing

Op.no.	time (h)	Notes
29		Miscellaneous
293-001	4.50	EGR cooler, replacing
293-002	2.00	EGR cooler, pressure test
293-004	6.50	EGR cooler, cleaning
293-005	1.25	EGR valve, replacing
293-007	0.40	EGR pressure sensor, replacing
293-010	0.70	EGR Venturi tube, replacing
293-013	1.00	EGR venturi tube, cleaning
 3		 ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.60	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-006	0.50	Earth lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.90	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
334-002	0.70	Starter switch, testing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.40	Horn, replacing
362-041	0.40	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.60	Windscreen flusher pump, replacing
364-003	0.80	Control lockout lever switch, replacing
364-014	0.50	Ignition switch, replacing
364-056	0.90	Pre-heating relay, replacing
366-103	0.80	HMICU, changing pre-programmed ECU
366-104	1.50	HMICU, changing non-programmed ECU
366-105	0.70	GPMECU1, changing pre-programmed ECU
366-106	1.25	GPMECU1, changing non-programmed ECU

Op.no.	time (h)	Notes
37		CABLE; FUSE; RELAY
371-090	3.50	Engine wire harness, replacing
371-092	0.70	Electrical battery disconnect switch, replacing
372-002	0.80	Electrical distribution box, circuit board replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
383-001	0.30	Hour meter, replacing
386-006	0.70	Engine temperature sensor, replacing
386-007	0.80	Engine oil pressure sensor, replacing
386-011	0.60	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing
39		MISCELLANEOUS
393-001	0.80	Voltage converter, replacing
393-021	0.70	Radio, replacing
395-021	0.50	Antenna, replacing
395-031	0.40	Speaker, replacing
398-001	0.60	CareTrack antenna, replacing
398-004	0.50	CareTrack battery, replacing
398-005	1.25	W-ECU, replacing, non-programmed
398-006	0.90	W-ECU, replacing, pre-programmed
4		POWER TRANSMISSION
43		GEARBOX,
431-021	6.50	Swing gearbox, replacing
431-026	1.75	Swing gearbox removed, replacing seal
431-027	2.50	Swing gearbox removed, replacing shaft
431-031	4.00	Pump gearbox coupling assembly, replacing
431-053	6.50	Swing unit, replacing
431-115	1.75	Track gearbox (removed), replacing floating seal
431-115	1.25	Track gearbox (removed), replacing floating seal
431-117	1.50	Track gearbox, replacing cover
431-127	6.00	Track unit, replacing
44		HYDROSTATIC DRIVE
441-021	3.50	Swing motor, replacing
441-022	0.70	Swing motor relief valve, replacing
441-024	1.75	Swing motor, replacing plate (brake)
441-025	1.50	Swing motor, replacing brake piston seal
441-026	0.80	Swing motor removed, replacing seal
441-111	6.50	Track motor, replacing
441-112	0.70	Track motor relief valve, replacing
443-037	6.00	Center passage, replacing

Op.no.	time (h)	Notes
443-038	6.00	Center passage, replacing seal kit
49		MISCELLANEOUS
492-021	11.00	Swing ring gear, replacing
492-031	3.00	Swing ring gear outer seal, replacing
492-032	9.00	Swing ring gear inner seal, replacing
492-091	0.50	Ring gear grease pipe, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
710-001	3.50	Superstructure, removing
710-002	4.50	Superstructure, installing
716-003	2.00	Counterweight, replacing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-009	2.50	Front idler, removing
775-010	3.00	Front idler, installing
775-011	4.50	Front idler, replacing one
775-021	3.50	Sprocket, replacing one
775-034	1.75	Track chain assembly, removing
775-035	2.00	Track chain assembly, installing
775-036	11.00	Track links, replacing
775-081	4.50	Track recoil spring (tensioner) assembly, replacing
775-094	1.75	Full track guard, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
810-070	1.00	Electric pedal control on X1 (on/off), replacing
810-071	0.90	Electric pedal control on X1 (proportional), replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-091	1.00	Tool box assembly, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.50	Windscreen, replacing
843-012	4.50	Rear window, replacing

Op.no.	time (h)	Notes
843-013	4.50	Side window, replacing
843-048	0.90	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-017	1.75	CCM, changing non-programmed ECU
870-018	1.75	CCM, changing pre-programmed ECU
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.50	Air mix door actuator, replacing
874-010	1.50	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	4.00	Expansion valve, replacing incl draining and filling
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-094	0.50	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.50	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	0.60	Instrument panel, replacing (left)
881-005	0.80	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-011	5.50	Oil cooler, replacing
911-015	0.40	Oil level gauge, replacing
911-033	1.25	Oil cooler line bypass valve (check valve), replacing
911-034	4.00	Oil cooler fan motor, replacing
911-035	1.75	Oil cooler fan pump, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing

Op.no.	time (h)	Notes
912-001	8.50	Control valve, replacing
912-067	0.60	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)
912-160	0.80	Port relief valve pressure, checking and adjusting
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.50	Hydraulic pump, replacing
913-029	0.40	Pump regulator, replacing
914-041	0.50	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-060	1.75	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.25	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-040	1.25	Quickfit, replacing
924-040	1.25	Quickfit, replacing
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-021	3.00	Boom cylinder, replacing
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-024	2.00	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-028	1.75	Connecting rod yoke, replacing
975-039	6.50	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.00	Bucket cylinder, replacing
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
172-002	3.00	Warranty inspection 100 hours	
172-004	6.50	Warranty inspection 1000 hours	
173-002	1.00	Maintenance service, daily	
173-004	1.25	Maintenance service, every 50 hours	
173-007	2.00	Maintenance service, every 250 hours	
173-010	3.50	Maintenance service, every 500 hours	
173-012	6.50	Maintenance service, every 1000 hours	
173-013	5.00	Maintenance service, every 1500 hours	
173-014	7.00	Maintenance service, every 2000 hours	
173-016	10.00	Maintenance service, every 3000 hours	
173-059	0.60	Engine, changing oil and filter	
173-073	0.80	Hydraulic oil tank, changing oil	
173-081	0.70	Travel motor gearbox, changing oil	
173-087	0.70	Coolant, changing	
173-093	0.30	Track tension, checking	
173-093	0.30	Track tension, checking	
19		GENERAL	
191-022	0.10	Service position 2	
191-025	0.10	Service position 3	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
210-002	2.50	Compression test	
210-070	1.75	Engine, removing	
210-072	2.50	Engine, installing	
214-012	1.75	Valves, adjusting	
214-036	0.60	Valve covers, fitting new gasket	
214-036	0.60	Valve covers, fitting new gasket	
216-014	3.00	Crankshaft, replacing front oil seal	
22		LUBRICATING SYSTEM	
221-014	3.50	Oil pump, replacing	3538 - 4104
221-014	3.50	Oil pump, replacing	4105 - 9999
23		FUEL SYSTEM	
233-011	0.20	Fuel pump, removing	
233-012	0.20	Fuel pump, installing	
234-011	1.00	Fuel tank, removing	
234-012	0.70	Fuel tank, installing	

Op.no.	time (h)		Notes
236-001	0.30	Idling speed, checking and adjusting	
236-030	1.00	Injection timing, checking	
236-070	3.00	Injection pump, removing	
25		INLET SYSTEM; EXHAUST SYSTEM	
252-017	0.40	Silencer, removing	
252-018	0.40	Silencer, installing	
256-006	0.40	Preheating coil, replacing	3538 - 4104
256-010	0.30	Air cleaner, removing	
256-011	0.20	Air cleaner, installing	
26		COOLING SYSTEM	
261-011	0.90	Radiator, removing	
261-013	0.80	Radiator, installing	
262-005	0.70	Coolant pump, removing	
262-006	0.90	Coolant pump, installing	
262-098	0.70	Thermostat, replacing	
263-012	0.40	Fan belt and/or alternator belt, replacing	
263-013	0.20	Fan belt and/or alternator belt, checking and adjusting tension	
27		ENGINE CONTROL	
275-014	0.20	Automatic idling device, removing	
275-015	0.30	Automatic idling device, installing	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
31		BATTERY	
311-002	0.40	Batteries, replacing	
311-005	0.60	Battery condition, check	
32		ALTERNATOR; CHARGE REGULATOR	
321-003	0.20	Alternator, removing	
321-004	0.30	Alternator, installing	
33		STARTING SYSTEM	
331-016	0.40	Starter motor, removing	
331-017	0.30	Starter motor, installing	
333-002	0.60	Glow plug, removal	4105 - 9999
333-003	0.60	Glow plug, installation	4105 - 9999
35		LIGHTING	
352-001	0.20	Lamp bulb, replacing	

Op.no.	time (h)	Notes	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.30	Horn, replacing	
367-052	0.40	V-ECU, replacing	
37		CABLE; FUSE; RELAY	
372-002	1.00	Electrical distribution box, circuit board replacing	
39		MISCELLANEOUS	
390-902	2.50	CareTrack, installing new	
4		POWER TRANSMISSION	
44		HYDROSTATIC DRIVE	
441-030	3.50	Swing motor, removing	4706 - 5935
441-030	3.50	Swing motor, removing	3538 - 4705
441-030	1.25	Swing motor, removing	5936 - 9999
441-031	5.00	Swing motor, installing	3538 - 5935
441-031	1.75	Swing motor, installing	5936 - 9999
441-033	0.90	Swing motor, replacing counterbalance valve	5936 - 9999
441-033	0.80	Swing motor, replacing counterbalance valve	3538 - 4705
441-033	0.80	Swing motor, replacing counterbalance valve	4706 - 5935
441-034	5.00	Swing motor removed, overhaul	
441-113	1.25	Track motor, removing	
441-114	1.50	Track motor, installing	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	0.60	Counterweight, removing	
716-002	0.60	Counterweight, fitting	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-009	0.30	Front idler, removing	
775-010	0.50	Front idler, installing	
775-022	0.40	Sprocket, removal	
775-023	0.70	Sprocket, installation	
775-041	0.30	Rubber track, removing	
775-042	0.40	Rubber track, installing	
775-052	0.30	Top roller, removal	
775-053	0.30	Top roller, installation	
775-062	0.20	Bottom roller, removing	
775-063	0.30	Bottom roller, installing	

Op.no.	time (h)		Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	0.60	Cab, removing	
810-002	0.90	Cab, installing	
810-004	3.00	Cab platform, removal	3538 - 4705
810-004	3.00	Cab platform, removal	5936 - 9999
810-004	3.00	Cab platform, removal	4706 - 5935
810-005	3.50	Cab platform, installation	3538 - 5935
810-005	3.50	Cab platform, installation	5936 - 9999
810-013	0.40	Cab, roof panel, removing	
810-014	0.40	Cab, roof panel, installing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-031	0.20	Engine hood, changing gas spring	
85		CAB INTERIOR/UPHOLSTERY	
852-003	0.40	Operator's seat, removing	
852-004	0.30	Operator's seat, installing	
852-011	0.40	Seat retention cable, replacement	3538 - 5935
88		INTERIOR EQUIPMENT	
881-001	0.10	Instrument console, removing	
881-002	0.20	Instrument console, installing	
884-001	0.30	Seat safety belt, replacing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-034	0.40	H-ECU (hydraulic), replacing pre-programmed ECU	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-013	0.50	Hydraulic oil cooler, removing	
911-014	0.60	Hydraulic oil cooler, installing	
911-036	3.00	Hydraulic oil tank, removing	
911-037	3.00	Hydraulic oil tank, installing	
912-088	2.00	Main Control Valve - Disassembly	4706 - 9999
912-088	2.00	Main Control Valve - Disassembly	3538 - 4705
912-089	2.50	Main Control Valve - Assembly	5936 - 9999
912-089	2.50	Main Control Valve - Assembly	3538 - 5935
912-091	2.00	Main control valve, removal	3538 - 4705
912-091	2.00	Main control valve, removal	4706 - 5935

Op.no.	time (h)		Notes
912-091	2.50	Main control valve, removal	5936 - 9999
912-092	2.00	Main control valve, installation	3538 - 5935
912-092	2.50	Main control valve, installation	5936 - 9999
912-117	0.70	LS-pressure relief valve, replacing	4706 - 9999
912-117	0.70	LS-pressure relief valve, replacing	3538 - 4705
912-141	5.00	Directional valve, drive, disassembling spool and replacing seals	3538 - 4705
912-141	5.00	Directional valve, drive, disassembling spool and replacing seals	4706 - 9999
912-142	4.50	Directional valve, dozer blade, disassembling spool and replacing seals	3538 - 4705
912-142	4.50	Directional valve, dozer blade, disassembling spool and replacing seals	4706 - 9999
912-143	0.50	Load check valve, replacing	4706 - 9999
912-143	0.50	Load check valve, replacing	3538 - 4705
912-150	0.50	Working pressure, checking and adjusting	
912-160	0.70	Port relief valve pressure, checking and adjusting	4706 - 9999
912-160	0.70	Port relief valve pressure, checking and adjusting	3538 - 4705
912-167	4.50	Directional valve, hydraulically operated, disassembling spool and replacing seals	3538 - 4705
912-167	4.50	Directional valve, hydraulically operated, disassembling spool and replacing seals	4706 - 9999
912-168	0.50	Compensator valve, replacing	4706 - 9999
912-168	0.50	Compensator valve, replacing	3538 - 4705
912-175	0.60	Secondary pressure limiting valve, replacing	4706 - 9999
912-175	0.60	Secondary pressure limiting valve, replacing	3538 - 4705
913-003	0.30	Hydraulic pump, checking and adjusting standby pressure	
913-006	0.30	LS (load sense) pressure, checking	3538 - 5935
913-006	0.30	LS (load sense) pressure, checking	5936 - 9999
913-023	1.00	Pump, removal	
913-024	1.25	Pump, installation	
913-031	0.50	Flow regulation valve, changing	4706 - 9999
913-031	0.50	Flow regulation valve, changing	3538 - 4705
913-064	1.25	Hydraulic pump, power control checking	
913-065	0.40	Hydraulic pump, power control adjusting	
913-066	0.40	FR pressure control valve, checking and adjusting	
913-067	0.50	LR pressure relief valve, checking and adjusting	
914-047	0.30	Servo accumulator, removal	3538 - 4705
914-047	0.30	Servo accumulator, removal	4706 - 9999
914-048	0.50	Servo accumulator, installation	4706 - 9999
914-048	0.50	Servo accumulator, installation	3538 - 4705
914-055	0.50	Servo pressure, checking and adjusting	
914-064	0.60	Servo valve, removal	4706 - 9999
914-064	0.60	Servo valve, removal	3538 - 4705

Op.no.	time (h)		Notes
914-065	0.90	Servo valve, installation	
914-104	0.50	Travel valve (pedal), removing	5936 - 9999
914-105	0.60	Travel valve (pedal), installing	5936 - 9999
915-004	0.90	Control lever, removal	3538 - 4705
915-004	0.90	Control lever, removal	4706 - 9999
915-005	1.00	Control lever, installation	
97		UNIT, DIGGING	
974-013	1.50	Boom, removal	3538 - 4705
974-013	1.50	Boom, removal	4706 - 9999
974-014	2.00	Boom, installation	
974-031	0.50	Boom cylinder, removal	4706 - 9999
974-031	0.50	Boom cylinder, removal	3538 - 4705
974-032	0.60	Boom cylinder, installation	
975-011	0.60	Dipper arm, removal	4706 - 9999
975-011	0.60	Dipper arm, removal	3538 - 4705
975-012	0.80	Dipper arm, installation	
975-014	0.50	Dipper arm cylinder, removal	4706 - 9999
975-014	0.50	Dipper arm cylinder, removal	3538 - 4705
975-015	0.50	Dipper arm cylinder, installation	
975-062	0.40	Bucket cylinder, removal	3538 - 4705
975-062	0.40	Bucket cylinder, removal	4706 - 9999
975-065	0.50	Bucket cylinder, installation	

Op.no.	time (h)	Notes
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1 STANDARD PARTS, SERVICE

17 SERVICE

173-002	0.80	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	4.50	Maintenance service, every 500 hours
173-012	7.00	Maintenance service, every 1000 hours
173-014	9.00	Maintenance service, every 2000 hours
173-018	12.00	Maintenance service, every 4000 hours
173-019	3.00	Maintenance service, every 4500 hours
173-022	0.60	Maintenance service, every 6000 hours
173-024	0.40	Maintenance service, every 8000 hours
173-028	0.40	Maintenance service, every 12000 hours
173-040	2.50	Maintenance service, first 500 hours
173-079	1.00	Swing motor gearbox, changing oil
173-101	0.50	Track motor gearbox, changing oil
173-401	0.70	Engine oil and filter, changing
173-412	0.20	Hydraulic oil tank breather filter, replacing
173-451	1.25	Hydraulic oil, changing
173-649	0.20	Hydraulic oil return filter, replacing

2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-009	1.75	VCADS Pro, MID 128, programming E-ECU
200-068	2.00	E-ECU, MID 128, changing non-programmed ECU
200-070	1.50	E-ECU, MID 128, changing pre-programmed ECU

21 ENGINE

210-070	6.50	Engine, removing
210-072	7.50	Engine, installing
212-071	1.00	Crankcase ventilation separator, replacing
214-012	2.50	Valves, adjusting
214-092	9.50	Rocker arms, replacing
215-042	6.50	Camshaft, replacing
217-005	1.25	Oil level sensor, changing

22 LUBRICATING SYSTEM

221-022	0.50	Lubrication oil pressure, checking with pressure gauge
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23 FUEL SYSTEM

230-001	0.50	Carbon dioxide in fuel system, check
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Op.no.	time (h)	Notes
230-002	0.90	Air in fuel system, checking
233-001	0.30	Fuel system, bleeding
233-004	0.20	Feed pump, checking feed pressure
233-010	1.25	Fuel pump, inspection
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-007	0.80	Overflow valve, replacing
237-010	1.50	Unit injectors, adjusting pretension
237-012	5.50	Unit injector, replacing
237-017	10.00	Injector sleeves, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.60	Exhaust pipe, flexible tube, replacing
254-001	2.50	Diesel particulate filter, check and clean
254-021	3.00	Atomization unit, replacing
254-022	0.90	ACM (After treatment control module), replacing, non-programmed
254-023	0.80	ACM (After treatment control module), replacing, pre-programmed
254-031	1.50	Air pump, replacing
254-033	2.50	Burner, replacing
254-034	1.25	Compressor, replacing
254-046	1.25	Spark plug, replacing
254-047	1.25	Spark plug, checking
254-048	0.40	Spark plug cable, replacing
254-061	3.50	Exhaust aftertreatment system, fuel pump, replacing
254-063	2.50	Aftertreatment support unit (ASU), replacing
254-064	0.50	High pressure air system, pressure, checking
254-065	1.00	Air pump flow, checking
254-069	0.70	Exhaust aftertreatment system fuel flow, checking
254-125	1.75	Exhaust aftertreatment fuel injector, replacing
255-003	1.75	Actuator, variable turbocharger, replacing
255-071	2.50	Turbocharger, replacing
256-006	0.40	Preheating coil, replacing
258-002	4.00	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.70	Coolant, changing
261-008	5.50	Radiator, replacing
261-012	0.60	Radiator hose upper, replacing
261-014	1.25	Radiator hoses lower, replacing
261-018	0.80	Expansion tank, replacing

Op.no.	time (h)	Notes
262-098	0.90	Thermostat, replacing
263-012	0.50	Fan belt and/or alternator belt, replacing
263-022	0.90	Fan belt and/or alternator-, compressor belt, replacing all belts
29		Miscellaneous
293-001	4.00	EGR cooler, replacing
293-002	2.50	EGR cooler, pressure test
293-003	4.00	EGR Venturi tube, checking
293-004	4.50	EGR cooler, cleaning
293-005	1.25	EGR valve, replacing
293-007	0.40	EGR pressure sensor, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	1.00	Batteries, replacing
311-006	0.60	Earth lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.90	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-014	0.50	Ignition switch, replacing

Op.no.	time (h)	Notes
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
367-075	0.90	Engine speed control switch, replacing
37		CABLE; FUSE; RELAY
371-043	0.80	Battery disconnecter, replacing
371-090	2.00	Engine wire harness, replacing
372-002	0.50	Electrical distribution box, circuit board replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
383-001	0.30	Hour meter, replacing
386-006	1.50	Engine temperature sensor, replacing
386-007	0.60	Engine oil pressure sensor, replacing
386-011	0.30	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing
386-038	1.75	Engine rotation speed sensor, replacing
386-044	0.40	Auto idling sensor, replacing
386-088	1.75	Engine rotation speed sensor (camshaft), replacing
387-019	0.30	Rear view camera, replacing
387-031	0.50	Total moment indicator (TMI), replacing
39		MISCELLANEOUS
393-001	0.50	Voltage converter, replacing
393-021	0.60	Radio, replacing
395-021	0.70	Antenna, replacing
395-031	0.40	Speaker, replacing
398-001	0.60	CareTrack antenna, replacing
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU210001 - 210301
398-003	1.50	W-ECU, MID142, changing non-programmed 210001 - 210301 ECU
398-004	0.50	CareTrack battery, replacing
4		POWER TRANSMISSION
43		GEARBOX,
431-021	6.50	Swing gearbox, replacing
431-026	1.75	Swing gearbox removed, replacing seal
431-027	2.50	Swing gearbox removed, replacing shaft
431-031	4.00	Pump gearbox coupling assembly, replacing
431-053	6.50	Swing unit, replacing
431-115	1.75	Track gearbox (removed), replacing floating seal
431-115	1.25	Track gearbox (removed), replacing floating seal
431-117	1.50	Track gearbox, replacing cover

Op.no.	time (h)		Notes
431-127	6.00	Track unit, replacing	
44		HYDROSTATIC DRIVE	
441-021	3.50	Swing motor, replacing	
441-022	0.70	Swing motor relief valve, replacing	
441-024	1.75	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	0.80	Swing motor removed, replacing seal	
441-111	6.50	Track motor, replacing	
441-112	0.70	Track motor relief valve, replacing	
443-037	6.00	Center passage, replacing	
443-038	6.00	Center passage, replacing seal kit	
49		MISCELLANEOUS	
492-021	11.00	Swing ring gear, replacing	
492-027	0.50	Swing limitation sensor, adjusting	
492-031	3.00	Swing ring gear outer seal, replacing	290001 - 290011
492-031	3.00	Swing ring gear outer seal, replacing	290012 - 310000
492-032	9.50	Swing ring gear inner seal, replacing	290001 - 290011
492-032	9.00	Swing ring gear inner seal, replacing	290012 - 310000
492-091	0.50	Ring gear grease pipe, replacing	
492-095	0.70	Swing ring gear cover, removal	
492-096	0.70	Swing ring gear cover, installation	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
715-019	0.60	Boom cylinder protecting guard, removal	
715-020	1.25	Boom cylinder protecting guard, installation	
715-023	0.90	Bucket cylinder protecting guard, removal	
715-024	1.00	Bucket cylinder protecting guard, installation	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-009	2.50	Front idler, removing	
775-010	3.00	Front idler, installing	
775-011	4.50	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-034	1.75	Track chain assembly, removing	
775-035	2.00	Track chain assembly, installing	
775-036	11.00	Track links, replacing	
775-066	3.00	Bottom roller, replacing seal	
775-081	4.50	Track recoil spring (tensioner) assembly, replacing	

Op.no.	time (h)	Notes
775-094	1.75	Full track guard, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.90	Engine hood, replacing
827-091	1.75	Tool box assembly, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.30	Rear-view mirror, changing
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
86		PROTECTIVE EQUIPMENT, not specified in a special group
867-000	0.90	Falling object guard, removal
867-001	1.25	Falling object guard, installation
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
870-010	0.70	ECC, MID 146, changing pre-programmed ECU
870-011	1.00	ECC, MID 146, changing non-programmed ECU
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling

Op.no.	time (h)	Notes
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	2.50	Pump suction hose and pipe, replacing
911-011	3.50	Oil cooler, replacing
911-015	0.40	Oil level gauge, replacing
911-033	1.25	Oil cooler line bypass valve (check valve), replacing
911-034	1.75	Oil cooler fan motor, replacing
911-034	2.50	Oil cooler fan motor, replacing
911-035	1.00	Oil cooler fan pump, replacing
911-038	3.50	Hydraulic oil tank, replacing
911-040	0.60	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-067	0.70	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-029	0.30	Pump regulator, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-060	1.50	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.75	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-005	0.80	Quickfit, removal
924-006	1.00	Quickfit, installation
924-040	0.80	Quickfit, replacing
925-011	1.75	Bucket assembly, replacing

Op.no.	time (h)	Notes	
925-012	1.25	Bucket assembly, removal	
925-013	1.50	Bucket assembly, installation	
94		UNIT, LOAD HANDLING	
944-005	2.50	Middle dipper arm cylinder, replacing	
945-057	1.75	Cab tilting cylinder, replacing	
97		UNIT, DIGGING	
975-006	1.75	Dipper arm connecting rod, removal	
975-007	1.75	Dipper arm connecting rod, installation	
975-011	4.50	Dipper arm, removal	
975-012	4.50	Dipper arm, installation	
975-014	1.50	Dipper arm cylinder, removal	
975-015	1.75	Dipper arm cylinder, installation	
975-024	2.00	Dipper arm connecting rod, replacing	
975-025	3.00	Dipper arm cylinder, replacing	
975-028	1.75	Connecting rod yoke, replacing	
975-032	1.50	Connecting rod yoke, removal	
975-035	1.25	Connecting rod yoke, installation	
975-039	11.00	Dipper arm, replacing	
975-040	3.50	Dipper arm cylinder bushing on boom, replacing	
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing	
975-061	3.00	Bucket cylinder, replacing	
975-062	1.75	Bucket cylinder, removal	
975-065	1.75	Bucket cylinder, installation	
975-072	3.50	Bucket cylinder bushing on dipper arm, changing 210389 - 230000	
975-073	3.50	Bucket cylinder bushing lever-link, replacing	210389 - 230000
975-085	3.00	Demolition dipper arm cylinder, replacing	

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
171-002	3.00	Delivery Inspection, according to Inspection Programme	
173-002	0.80	Maintenance service, daily	210001 - 230000
173-002	0.80	Maintenance service, daily	270001 - 310000 230001 - 270000 260001 - 270000
173-004	1.50	Maintenance service, every 50 hours	210001 - 230000
173-004	1.50	Maintenance service, every 50 hours	270001 - 310000 230001 - 270000 260001 - 270000
173-007	2.50	Maintenance service, every 250 hours	210001 - 230000
173-007	2.50	Maintenance service, every 250 hours	270001 - 310000 230001 - 270000 260001 - 270000
173-010	4.50	Maintenance service, every 500 hours	210001 - 230000
173-010	4.50	Maintenance service, every 500 hours	270001 - 310000 230001 - 270000 260001 - 270000
173-012	7.00	Maintenance service, every 1000 hours	210001 - 230000
173-012	7.00	Maintenance service, every 1000 hours	270001 - 310000 230001 - 270000 260001 - 270000
173-014	9.00	Maintenance service, every 2000 hours	210001 - 230000
173-014	9.00	Maintenance service, every 2000 hours	270001 - 310000 230001 - 270000 260001 - 270000
173-018	12.00	Maintenance service, every 4000 hours	
173-018	12.00	Maintenance service, every 4000 hours	270001 - 310000 230001 - 270000 260001 - 270000
173-019	3.00	Maintenance service, every 4500 hours	210001 - 230000
173-022	0.60	Maintenance service, every 6000 hours	210001 - 230000
173-022	0.60	Maintenance service, every 6000 hours	270001 - 310000 230001 - 270000 260001 - 270000
173-024	0.40	Maintenance service, every 8000 hours	210001 - 230000
173-028	0.40	Maintenance service, every 12000 hours	210001 - 230000
173-040	2.50	Maintenance service, first 500 hours	270001 - 310000 230001 - 270000 260001 - 270000
173-040	2.50	Maintenance service, first 500 hours	210001 - 230000
173-079	1.00	Swing motor gearbox, changing oil	
173-101	0.50	Track motor gearbox, changing oil	
173-401	0.70	Engine oil and filter, changing	

Op.no.	time (h)	Notes	
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.25	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	
2	ENGINE WITH MOUNTING AND EQUIPMENT		
20	GENERAL		
200-009	0.30	VCADS Pro, MID 128, programming E-ECU	270001 - 310000 230001 - 270000 260001 - 270000
200-009	1.75	VCADS Pro, MID 128, programming E-ECU	210001 - 230000
200-068	2.00	E-ECU, MID 128, changing non-programmed ECU	270001 - 310000 230001 - 270000 260001 - 270000
200-068	2.00	E-ECU, MID 128, changing non-programmed ECU	210001 - 230000
200-070	1.50	E-ECU, MID 128, changing pre-programmed ECU	210001 - 230000
200-070	1.50	E-ECU, MID 128, changing pre-programmed ECU	270001 - 310000 230001 - 270000 260001 - 270000
21	ENGINE		
210-070	6.50	Engine, removing	210001 - 230000
210-070	6.00	Engine, removing	270001 - 310000 230001 - 270000 260001 - 270000
210-072	6.50	Engine, installing	270001 - 310000 230001 - 270000 260001 - 270000
210-072	7.50	Engine, installing	210001 - 230000
212-071	1.00	Crankcase ventilation separator, replacing	210001 - 230000
214-012	2.50	Valves, adjusting	270001 - 310000 230001 - 270000 260001 - 270000
214-012	2.50	Valves, adjusting	
214-092	9.50	Rocker arms, replacing	210001 - 230000
215-042	6.50	Camshaft, replacing	210001 - 230000
217-005	1.25	Oil level sensor, changing	210001 - 230000
217-005	1.25	Oil level sensor, changing	270001 - 310000 230001 - 270000 260001 - 270000
22	LUBRICATING SYSTEM		
221-022	0.50	Lubrication oil pressure, checking with pressure gauge	

Op.no.	time (h)		Notes
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
230-002	0.90	Air in fuel system, checking	210001 - 230000
233-001	0.30	Fuel system, bleeding	270001 - 310000 230001 - 270000 260001 - 270000
233-001	0.30	Fuel system, bleeding	210001 - 230000
233-004	0.20	Feed pump, checking feed pressure	
233-010	1.25	Fuel pump, inspection	
234-041	0.40	Fuel filling pump, removing	
234-042	0.50	Fuel filling pump, installing	
237-007	0.80	Overflow valve, replacing	
237-010	1.50	Unit injectors, adjusting pretension	
237-012	5.50	Unit injector, replacing	
237-017	10.00	Injector sleeves, replacing	
25		INLET SYSTEM; EXHAUST SYSTEM	
252-021	0.60	Exhaust pipe, flexible tube, replacing	210001 - 230000
254-001	2.50	Diesel particulate filter, check and clean	210001 - 230000
254-021	3.00	Atomization unit, replacing	210001 - 230000
254-022	0.90	ACM (After treatment control module), replacing, non-programmed	210001 - 230000
254-023	0.80	ACM (After treatment control module), replacing, pre-programmed	210001 - 230000
254-031	1.50	Air pump, replacing	210001 - 230000
254-033	2.50	Burner, replacing	210001 - 230000
254-034	1.25	Compressor, replacing	210001 - 230000
254-046	1.25	Spark plug, replacing	210001 - 230000
254-047	1.25	Spark plug, checking	210001 - 230000
254-048	0.40	Spark plug cable, replacing	210001 - 230000
254-061	3.50	Exhaust aftertreatment system, fuel pump, replacing	210001 - 230000
254-063	2.50	Aftertreatment support unit (ASU), replacing	210001 - 230000
254-064	0.50	High pressure air system, pressure, checking	210001 - 230000
254-065	1.00	Air pump flow, checking	210001 - 230000
254-069	0.70	Exhaust aftertreatment system fuel flow, checking	210001 - 230000
254-125	1.75	Exhaust aftertreatment fuel injector, replacing	210001 - 230000
255-003	1.75	Actuator, variable turbocharger, replacing	210001 - 230000
255-071	2.50	Turbocharger, replacing	210001 - 230000
255-071	3.00	Turbocharger, replacing	270001 - 310000 230001 - 270000 260001 - 270000
256-006	0.40	Preheating coil, replacing	210001 - 230000
256-006	0.50	Preheating coil, replacing	270001 - 310000 230001 - 270000

Op.no.	time (h)		Notes
			260001 - 270000
258-002	5.00	Intercooler, replacing	270001 - 310000
			230001 - 270000
			260001 - 270000
258-002	4.00	Intercooler, replacing	210001 - 230000
26		COOLING SYSTEM	
260-001	0.70	Carbon dioxide in coolant system, checking	
261-002	0.10	Coolant, checking anti-freeze resistance	
261-004	0.70	Coolant, changing	
261-008	5.50	Radiator, replacing	
261-012	0.60	Radiator hose upper, replacing	
261-014	1.25	Radiator hoses lower, replacing	
261-018	0.80	Expansion tank, replacing	
262-098	0.90	Thermostat, replacing	
263-012	0.50	Fan belt and/or alternator belt, replacing	
263-022	0.90	Fan belt and/or alternator-, compressor belt, replacing all belts	270001 - 310000
			230001 - 270000
			260001 - 270000
263-022	0.90	Fan belt and/or alternator-, compressor belt, replacing all belts	210001 - 230000
29		Miscellaneous	
293-001	4.00	EGR cooler, replacing	210001 - 230000
293-002	2.50	EGR cooler, pressure test	210001 - 230000
293-003	4.00	EGR Venturi tube, checking	210001 - 230000
293-004	4.50	EGR cooler, cleaning	210001 - 230000
293-005	1.25	EGR valve, replacing	210001 - 230000
293-007	0.40	EGR pressure sensor, replacing	210001 - 230000
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-001	0.80	Battery charging capacity, checking	
311-002	1.00	Batteries, replacing	210001 - 230000
311-006	0.60	Earth lead to battery, replacing	210001 - 230000
311-006	0.60	Earth lead to battery, replacing	270001 - 310000
			230001 - 270000
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.00	Alternator, replacing incl function check	

Op.no.	time (h)		Notes
321-075	0.50	Alternator, test	
33		STARTING SYSTEM	
331-018	1.25	Starter motor, replacing	270001 - 310000 230001 - 270000 260001 - 270000
331-018	1.25	Starter motor, replacing	210001 - 230000
331-021	0.30	Starter motor, tests	
331-081	0.30	Starter relay, replacing	210001 - 230000
334-002	0.70	Starter switch, testing	
35		LIGHTING	
356-056	0.50	Work lighting, replacing one head lamp assy	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.30	Horn, replacing	
362-041	0.30	Rotating beacon, replacing	
362-051	0.50	Travel alarm, replacing	
363-002	1.25	Windscreen wiper front, replacing motor	
363-003	0.90	Windscreen wiper, replacing switch	
363-004	0.50	Windscreen flusher pump, replacing	
363-091	0.50	Windscreen wiper, replacing controller	
364-003	0.60	Control lockout lever switch, replacing	
364-014	0.50	Ignition switch, replacing	
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	
367-075	0.90	Engine speed control switch, replacing	
37		CABLE; FUSE; RELAY	
371-043	0.80	Battery disconnecter, replacing	210001 - 230000
371-043	0.80	Battery disconnecter, replacing	270001 - 310000 230001 - 270000 260001 - 270000 280001 - 310000
371-090	2.00	Engine wire harness, replacing	210001 - 230000
371-090	2.00	Engine wire harness, replacing	270001 - 310000 230001 - 270000
372-002	0.50	Electrical distribution box, circuit board replacing	210001 - 230000 270001 - 280000 230001 - 260000 280001 - 310000 260001 - 270000
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
383-001	0.30	Hour meter, replacing	210001 - 230000 270001 - 280000 230001 - 260000

Op.no.	time (h)		Notes
			280001 - 310000
			260001 - 270000
386-006	1.50	Engine temperature sensor, replacing	210001 - 230000
			270001 - 280000
			230001 - 260000
			280001 - 310000
			260001 - 270000
386-007	0.60	Engine oil pressure sensor, replacing	210001 - 230000
386-007	0.60	Engine oil pressure sensor, replacing	270001 - 310000
			230001 - 270000
			260001 - 270000
			280001 - 310000
386-011	0.30	Fuel level sender, replacing	210001 - 230000
			270001 - 280000
			230001 - 260000
			280001 - 310000
			260001 - 270000
386-017	0.50	Hydraulic oil temperature sensor, replacing	210001 - 230000
			270001 - 280000
			230001 - 260000
			280001 - 310000
			260001 - 270000
386-038	1.75	Engine rotation speed sensor, replacing	210001 - 230000
			270001 - 280000
			230001 - 260000
			280001 - 310000
			260001 - 270000
386-044	0.40	Auto idling sensor, replacing	210001 - 230000
			270001 - 280000
			230001 - 260000
			280001 - 310000
			260001 - 270000
386-088	1.75	Engine rotation speed sensor (camshaft), replacing	210001 - 230000
			270001 - 280000
			230001 - 260000
			280001 - 310000
			260001 - 270000
387-019	0.30	Rear view camera, replacing	210001 - 230000
			270001 - 280000
			230001 - 260000
			280001 - 310000
			260001 - 270000
39		MISCELLANEOUS	
393-001	0.50	Voltage converter, replacing	210001 - 230000
			270001 - 280000
			230001 - 260000
			280001 - 310000
			260001 - 270000
393-021	0.60	Radio, replacing	210001 - 230000
			270001 - 280000

Op.no.	time (h)		Notes
			230001 - 260000
			280001 - 310000
			260001 - 270000
395-021	0.70	Antenna, replacing	210001 - 230000
			270001 - 280000
			230001 - 260000
			280001 - 310000
			260001 - 270000
395-031	0.40	Speaker, replacing	210001 - 230000
			270001 - 280000
			230001 - 260000
			280001 - 310000
			260001 - 270000
398-001	0.60	CareTrack antenna, replacing	210001 - 230000
			270001 - 280000
			230001 - 260000
			280001 - 310000
			260001 - 270000
398-002	0.90	W-ECU, MID142, changing pre-programmed ECU	270001 - 310000
			230001 - 270000
			260001 - 270000
			280001 - 310000
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU	210001 - 230000
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	270001 - 310000
			230001 - 270000
			260001 - 270000
			280001 - 310000
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	210001 - 230000
398-004	0.50	CareTrack battery, replacing	210001 - 230000
			270001 - 280000
			230001 - 260000
			280001 - 310000
			260001 - 270000

4

POWER TRANSMISSION

43

GEARBOX,

431-021	6.50	Swing gearbox, replacing
431-026	1.75	Swing gearbox removed, replacing seal
431-027	2.50	Swing gearbox removed, replacing shaft
431-031	4.00	Pump gearbox coupling assembly, replacing
431-053	6.50	Swing unit, replacing
431-115	1.75	Track gearbox (removed), replacing floating seal
431-115	1.75	Track gearbox (removed), replacing floating seal
431-115	1.25	Track gearbox (removed), replacing floating seal
431-117	1.50	Track gearbox, replacing cover
431-127	6.00	Track unit, replacing

Op.no.	time (h)		Notes
44		HYDROSTATIC DRIVE	
441-021	3.50	Swing motor, replacing	
441-022	0.70	Swing motor relief valve, replacing	
441-024	1.75	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	0.80	Swing motor removed, replacing seal	
441-111	6.50	Track motor, replacing	
441-112	0.70	Track motor relief valve, replacing	
443-037	6.00	Center passage, replacing	
443-038	6.00	Center passage, replacing seal kit	
49		MISCELLANEOUS	
492-021	11.00	Swing ring gear, replacing	
492-031	3.00	Swing ring gear outer seal, replacing	230001 - 230112 210001 - 210479 270001 - 270282 280001 - 280107
492-031	3.00	Swing ring gear outer seal, replacing	210480 - 230000 270283 - 280000 280108 - 310000 230113 - 260000
492-032	9.50	Swing ring gear inner seal, replacing	230001 - 230112 210001 - 210479 270001 - 270282 280001 - 280107
492-032	9.00	Swing ring gear inner seal, replacing	210480 - 230000 270283 - 280000 280108 - 310000 230113 - 260000
492-091	0.50	Ring gear grease pipe, replacing	
492-095	0.70	Swing ring gear cover, removal	210001 - 230000
492-096	0.70	Swing ring gear cover, installation	210001 - 230000
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	
716-001	1.50	Counterweight, removing	
716-002	1.50	Counterweight, fitting	
716-003	2.00	Counterweight, replacing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-009	2.50	Front idler, removing	

Op.no.	time (h)		Notes
775-010	3.00	Front idler, installing	
775-011	4.50	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-034	1.75	Track chain assembly, removing	
775-035	2.00	Track chain assembly, installing	
775-036	11.00	Track links, replacing	
775-066	3.00	Bottom roller, replacing seal	
775-081	4.50	Track recoil spring (tensioner) assembly, replacing	
775-094	1.75	Full track guard, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.75	Cab, removing	210001 - 230000 270001 - 280000 230001 - 260000 280001 - 310000 260001 - 270000
810-002	2.50	Cab, installing	210001 - 230000 270001 - 280000 230001 - 260000 280001 - 310000 260001 - 270000
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	0.90	Engine hood, replacing	270001 - 310000 230001 - 270000 260001 - 270000 280001 - 310000
821-005	0.90	Engine hood, replacing	210001 - 230000
827-091	1.75	Tool box assembly, replacing	210001 - 230000 270001 - 280000 230001 - 260000 280001 - 310000 260001 - 270000
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.30	Rear-view mirror, changing	210001 - 230000 270001 - 280000 230001 - 260000 280001 - 310000 260001 - 270000
843-002	1.50	Windscreen, replacing	210001 - 230000 270001 - 280000 230001 - 260000 280001 - 310000

Op.no.	time (h)		Notes
			260001 - 270000
843-012	4.00	Rear window, replacing	210001 - 230000 270001 - 280000 230001 - 260000 280001 - 310000 260001 - 270000
843-013	4.50	Side window, replacing	210001 - 230000 270001 - 280000 230001 - 260000 280001 - 310000 260001 - 270000
843-048	0.70	Door window, replacing	210001 - 230000 270001 - 280000 230001 - 260000 280001 - 310000 260001 - 270000
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	210001 - 230000
852-008	1.75	Seat, replacing	270001 - 310000 230001 - 270000 260001 - 270000 280001 - 310000
852-012	1.75	Longitudinal adjustment cable, replacing	210001 - 230000 270001 - 280000 230001 - 260000 280001 - 310000 260001 - 270000
852-013	0.60	Longitudinal suspension cable, replacing	210001 - 230000 270001 - 280000 230001 - 260000 280001 - 310000 260001 - 270000
852-089	0.30	Seat cushion, replacing	210001 - 230000 270001 - 280000 230001 - 260000 280001 - 310000 260001 - 270000
852-090	0.60	Backrest, replacing	210001 - 230000 270001 - 280000 230001 - 260000 280001 - 310000 260001 - 270000
852-091	2.50	Seat support, replacing	210001 - 230000
852-091	1.75	Seat support, replacing	270001 - 310000 230001 - 270000 260001 - 270000 280001 - 310000
87		AIR CONDITIONING UNIT	
870-001	5.00	Cooler and Heater assembly, replacing	210001 - 230000

Op.no.	time (h)		Notes
			270001 - 280000
			230001 - 260000
			280001 - 310000
			260001 - 270000
870-010	0.70	ECC, MID 146, changing pre-programmed ECU	210001 - 230000
			270001 - 280000
			230001 - 260000
			280001 - 310000
			260001 - 270000
870-011	1.00	ECC, MID 146, changing non-programmed ECU	210001 - 230000
			270001 - 280000
			230001 - 260000
			280001 - 310000
			260001 - 270000
872-001	0.50	Cab filter, replacing	210001 - 230000
			270001 - 280000
			230001 - 260000
			280001 - 310000
			260001 - 270000
873-004	3.00	Heater core, replacing	210001 - 230000
			270001 - 280000
			230001 - 260000
			280001 - 310000
			260001 - 270000
873-006	0.80	Fan motor, replacing	210001 - 230000
			270001 - 280000
			230001 - 260000
			280001 - 310000
			260001 - 270000
873-011	0.70	Air mix door actuator, replacing	210001 - 230000
			270001 - 280000
			230001 - 260000
			280001 - 310000
			260001 - 270000
874-006	1.75	Compressor, replacing incl draining and filling	210001 - 230000
			270001 - 280000
			230001 - 260000
			280001 - 310000
			260001 - 270000
874-010	1.75	Condenser, replacing incl draining and filling	210001 - 230000
			270001 - 280000
			230001 - 260000
			280001 - 310000
			260001 - 270000
874-011	1.75	Receiver, replacing incl draining and filling	210001 - 230000
			270001 - 280000
			230001 - 260000
			280001 - 310000
			260001 - 270000
874-012	3.00	Evaporator, replacing incl draining and filling	210001 - 230000
			270001 - 280000

Op.no.	time (h)		Notes
			230001 - 260000
			280001 - 310000
			260001 - 270000
874-013	3.00	Expansion valve, replacing incl draining and filling	210001 - 230000
			270001 - 280000
			230001 - 260000
			280001 - 310000
			260001 - 270000
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)	210001 - 230000
			270001 - 280000
			230001 - 260000
			280001 - 310000
			260001 - 270000
874-094	0.60	Vent actuator, replacing	210001 - 230000
			270001 - 280000
			230001 - 260000
			280001 - 310000
			260001 - 270000
874-095	0.60	Mode (foot) actuator, replacing	210001 - 230000
			270001 - 280000
			230001 - 260000
			280001 - 310000
			260001 - 270000
874-096	0.60	Intake actuator, replacing	210001 - 230000
			270001 - 280000
			230001 - 260000
			280001 - 310000
			260001 - 270000
88		INTERIOR EQUIPMENT	
881-003	1.00	Instrument panel, replacing (left)	210001 - 230000
			270001 - 280000
			230001 - 260000
			280001 - 310000
			260001 - 270000
881-005	1.25	Instrument panel, replacing (right)	210001 - 230000
			270001 - 280000
			230001 - 260000
			280001 - 310000
			260001 - 270000
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-005	2.50	Pump suction hose and pipe, replacing	
911-011	3.50	Oil cooler, replacing	
911-015	0.40	Oil level gauge, replacing	

Op.no.	time (h)	Notes
911-033	1.25	Oil cooler line bypass valve (check valve), replacing
911-034	2.50	Oil cooler fan motor, replacing
911-035	1.00	Oil cooler fan pump, replacing
911-038	3.50	Hydraulic oil tank, replacing
911-040	0.60	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-067	0.70	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-029	0.30	Pump regulator, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-060	1.50	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.75	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-005	0.80	Quickfit, removal
924-006	1.00	Quickfit, installation
924-040	0.80	Quickfit, replacing
925-011	1.75	Bucket assembly, replacing
925-012	1.25	Bucket assembly, removal
925-013	1.50	Bucket assembly, installation
97		UNIT, DIGGING
974-013	4.00	Boom, removal
974-014	4.00	Boom, installation
974-021	3.00	Boom cylinder, replacing
974-031	1.50	Boom cylinder, removal
974-032	1.50	Boom cylinder, installation
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-006	1.75	Dipper arm connecting rod, removal
975-007	1.75	Dipper arm connecting rod, installation
975-011	4.50	Dipper arm, removal
975-012	4.50	Dipper arm, installation
975-014	1.50	Dipper arm cylinder, removal
975-015	1.75	Dipper arm cylinder, installation
975-024	2.00	Dipper arm connecting rod, replacing

Op.no.	time (h)	Notes
975-025	3.00	Dipper arm cylinder, replacing
975-028	1.75	Connecting rod yoke, replacing
975-032	1.50	Connecting rod yoke, removal
975-035	1.25	Connecting rod yoke, installation
975-039	11.00	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	3.00	Bucket cylinder, replacing
975-062	1.75	Bucket cylinder, removal
975-065	1.75	Bucket cylinder, installation
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.80	Maintenance service, daily	210001 - 230000
173-004	1.50	Maintenance service, every 50 hours	210001 - 230000
173-007	2.50	Maintenance service, every 250 hours	210001 - 230000
173-010	4.50	Maintenance service, every 500 hours	210001 - 230000
173-012	7.00	Maintenance service, every 1000 hours	210001 - 230000
173-014	9.00	Maintenance service, every 2000 hours	210001 - 230000
173-018	12.00	Maintenance service, every 4000 hours	
173-019	3.00	Maintenance service, every 4500 hours	210001 - 230000
173-022	0.60	Maintenance service, every 6000 hours	210001 - 230000
173-024	0.40	Maintenance service, every 8000 hours	210001 - 230000
173-028	0.40	Maintenance service, every 12000 hours	210001 - 230000
173-040	2.50	Maintenance service, first 500 hours	210001 - 230000
173-079	1.00	Swing motor gearbox, changing oil	
173-101	0.50	Track motor gearbox, changing oil	
173-401	0.70	Engine oil and filter, changing	
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.25	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-009	1.75	VCADS Pro, MID 128, programming E-ECU	210001 - 230000
200-068	2.00	E-ECU, MID 128, changing non-programmed ECU	210001 - 230000
200-070	1.50	E-ECU, MID 128, changing pre-programmed ECU	210001 - 230000
21		ENGINE	
210-070	6.50	Engine, removing	210001 - 230000
210-072	7.50	Engine, installing	210001 - 230000
212-071	1.00	Crankcase ventilation separator, replacing	210001 - 230000
214-012	2.50	Valves, adjusting	210001 - 230000
214-092	9.50	Rocker arms, replacing	210001 - 230000
215-042	6.50	Camshaft, replacing	210001 - 230000
217-005	1.25	Oil level sensor, changing	210001 - 230000
22		LUBRICATING SYSTEM	
221-022	0.50	Lubrication oil pressure, checking with pressure gauge	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	

Op.no.	time (h)		Notes
230-002	0.90	Air in fuel system, checking	210001 - 230000
233-001	0.30	Fuel system, bleeding	210001 - 230000
233-004	0.20	Feed pump, checking feed pressure	
233-010	1.25	Fuel pump, inspection	
234-041	0.40	Fuel filling pump, removing	
234-042	0.50	Fuel filling pump, installing	
237-007	0.80	Overflow valve, replacing	
237-010	1.50	Unit injectors, adjusting pretension	
237-012	5.50	Unit injector, replacing	
237-017	10.00	Injector sleeves, replacing	
25		INLET SYSTEM; EXHAUST SYSTEM	
252-021	0.60	Exhaust pipe, flexible tube, replacing	210001 - 230000
254-001	2.50	Diesel particulate filter, check and clean	210001 - 230000
254-021	3.00	Atomization unit, replacing	210001 - 230000
254-022	0.90	ACM (After treatment control module), replacing, non-programmed	210001 - 230000
254-023	0.80	ACM (After treatment control module), replacing, pre-programmed	210001 - 230000
254-031	1.50	Air pump, replacing	210001 - 230000
254-033	2.50	Burner, replacing	210001 - 230000
254-034	1.25	Compressor, replacing	210001 - 230000
254-046	1.25	Spark plug, replacing	210001 - 230000
254-047	1.25	Spark plug, checking	210001 - 230000
254-048	0.40	Spark plug cable, replacing	210001 - 230000
254-061	3.50	Exhaust aftertreatment system, fuel pump, replacing	210001 - 230000
254-063	2.50	Aftertreatment support unit (ASU), replacing	210001 - 230000
254-064	0.50	High pressure air system, pressure, checking	210001 - 230000
254-065	1.00	Air pump flow, checking	210001 - 230000
254-069	0.70	Exhaust aftertreatment system fuel flow, checking	210001 - 230000
254-125	1.75	Exhaust aftertreatment fuel injector, replacing	210001 - 230000
255-003	1.75	Actuator, variable turbocharger, replacing	210001 - 230000
255-071	2.50	Turbocharger, replacing	210001 - 230000
256-006	0.40	Preheating coil, replacing	210001 - 230000
258-002	4.00	Intercooler, replacing	210001 - 230000
26		COOLING SYSTEM	
260-001	0.70	Carbon dioxide in coolant system, checking	
261-002	0.10	Coolant, checking anti-freeze resistance	
261-004	0.70	Coolant, changing	
261-008	5.50	Radiator, replacing	
261-012	0.60	Radiator hose upper, replacing	
261-014	1.25	Radiator hoses lower, replacing	
261-018	0.80	Expansion tank, replacing	

Op.no.	time (h)		Notes
262-098	0.90	Thermostat, replacing	
263-012	0.50	Fan belt and/or alternator belt, replacing	
263-022	0.90	Fan belt and/or alternator-, compressor belt, replacing all belts	210001 - 230000
29		Miscellaneous	
293-001	4.00	EGR cooler, replacing	210001 - 230000
293-002	2.50	EGR cooler, pressure test	210001 - 230000
293-003	4.00	EGR Venturi tube, checking	210001 - 230000
293-004	4.50	EGR cooler, cleaning	210001 - 230000
293-005	1.25	EGR valve, replacing	210001 - 230000
293-007	0.40	EGR pressure sensor, replacing	210001 - 230000
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-001	0.80	Battery charging capacity, checking	
311-002	1.00	Batteries, replacing	210001 - 230000
311-006	0.60	Earth lead to battery, replacing	210001 - 230000
311-006	0.60	Earth lead to battery, replacing	270001 - 310000 230001 - 270000
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.00	Alternator, replacing incl function check	
321-075	0.50	Alternator, test	
33		STARTING SYSTEM	
331-018	1.25	Starter motor, replacing	270001 - 310000 230001 - 270000 280001 - 310000 260001 - 270000
331-018	1.25	Starter motor, replacing	210001 - 230000
331-021	0.30	Starter motor, tests	
331-081	0.30	Starter relay, replacing	270001 - 280000 230001 - 270000 260001 - 270000 280001 - 310000
331-081	0.30	Starter relay, replacing	210001 - 230000
334-002	0.70	Starter switch, testing	

Op.no.	time (h)		Notes
35		LIGHTING	
356-056	0.50	Work lighting, replacing one head lamp assy	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.30	Horn, replacing	
362-041	0.30	Rotating beacon, replacing	
362-051	0.50	Travel alarm, replacing	
363-002	1.25	Windscreen wiper front, replacing motor	
363-003	0.90	Windscreen wiper, replacing switch	
363-004	0.50	Windscreen flusher pump, replacing	
363-091	0.50	Windscreen wiper, replacing controller	
364-003	0.60	Control lockout lever switch, replacing	
364-014	0.50	Ignition switch, replacing	
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	
367-075	0.90	Engine speed control switch, replacing	
37		CABLE; FUSE; RELAY	
371-043	0.80	Battery disconnecter, replacing	210001 - 230000
371-090	2.00	Engine wire harness, replacing	210001 - 230000
371-090	2.00	Engine wire harness, replacing	270001 - 310000 230001 - 270000
372-002	0.50	Electrical distribution box, circuit board replacing	210001 - 230000
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
383-001	0.30	Hour meter, replacing	210001 - 230000
386-006	1.50	Engine temperature sensor, replacing	210001 - 230000
386-007	0.60	Engine oil pressure sensor, replacing	210001 - 230000
386-011	0.30	Fuel level sender, replacing	210001 - 230000
386-017	0.50	Hydraulic oil temperature sensor, replacing	210001 - 230000
386-038	1.75	Engine rotation speed sensor, replacing	210001 - 230000
386-044	0.40	Auto idling sensor, replacing	210001 - 230000
386-088	1.75	Engine rotation speed sensor (camshaft), replacing	210001 - 230000
387-019	0.30	Rear view camera, replacing	210001 - 230000
39		MISCELLANEOUS	
393-001	0.50	Voltage converter, replacing	210001 - 230000
393-021	0.60	Radio, replacing	210001 - 230000
395-021	0.70	Antenna, replacing	210001 - 230000
395-031	0.40	Speaker, replacing	210001 - 230000
398-001	0.60	CareTrack antenna, replacing	210001 - 230000
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU	210001 - 230000
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	210001 - 230000

Op.no.	time (h)		Notes
398-004	0.50	CareTrack battery, replacing	210001 - 230000
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.50	Swing gearbox, replacing	
431-026	1.75	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	4.00	Pump gearbox coupling assembly, replacing	
431-053	6.50	Swing unit, replacing	
431-115	1.75	Track gearbox (removed), replacing floating seal	
431-115	1.25	Track gearbox (removed), replacing floating seal	
431-117	1.50	Track gearbox, replacing cover	
431-127	6.00	Track unit, replacing	
44		HYDROSTATIC DRIVE	
441-021	3.50	Swing motor, replacing	
441-022	0.70	Swing motor relief valve, replacing	
441-024	1.75	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	0.80	Swing motor removed, replacing seal	
441-111	6.50	Track motor, replacing	
441-112	0.70	Track motor relief valve, replacing	
443-037	6.00	Center passage, replacing	
443-038	6.00	Center passage, replacing seal kit	
49		MISCELLANEOUS	
492-021	11.00	Swing ring gear, replacing	
492-031	3.00	Swing ring gear outer seal, replacing	230001 - 230112 210001 - 210479 270001 - 270282 280001 - 280107
492-031	3.00	Swing ring gear outer seal, replacing	210480 - 230000 270283 - 280000 280108 - 310000 230113 - 260000
492-032	9.50	Swing ring gear inner seal, replacing	230001 - 230112 210001 - 210479 270001 - 270282 280001 - 280107
492-032	9.00	Swing ring gear inner seal, replacing	210480 - 230000 270283 - 280000 280108 - 310000 230113 - 260000
492-091	0.50	Ring gear grease pipe, replacing	

Op.no.	time (h)	Notes	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	
716-001	1.50	Counterweight, removing	
716-002	1.50	Counterweight, fitting	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-009	2.50	Front idler, removing	
775-010	3.00	Front idler, installing	
775-011	4.50	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-034	1.75	Track chain assembly, removing	
775-035	2.00	Track chain assembly, installing	
775-036	11.00	Track links, replacing	
775-066	3.00	Bottom roller, replacing seal	
775-081	4.50	Track recoil spring (tensioner) assembly, replacing	
775-094	1.75	Full track guard, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.75	Cab, removing	210001 - 230000
810-002	2.50	Cab, installing	210001 - 230000
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	0.90	Engine hood, replacing	210001 - 230000
827-091	1.75	Tool box assembly, replacing	210001 - 230000
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.30	Rear-view mirror, changing	210001 - 230000
843-002	1.50	Windscreen, replacing	210001 - 230000
843-012	4.00	Rear window, replacing	210001 - 230000
843-013	4.50	Side window, replacing	210001 - 230000
843-048	0.70	Door window, replacing	210001 - 230000
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	210001 - 230000
852-012	1.75	Longitudinal adjustment cable, replacing	210001 - 230000
852-013	0.60	Longitudinal suspension cable, replacing	210001 - 230000
852-089	0.30	Seat cushion, replacing	210001 - 230000

Op.no.	time (h)		Notes
852-090	0.60	Backrest, replacing	210001 - 230000
852-091	2.50	Seat support, replacing	210001 - 230000
87		AIR CONDITIONING UNIT	
870-001	5.00	Cooler and Heater assembly, replacing	210001 - 230000
870-010	0.70	ECC, MID 146, changing pre-programmed ECU	210001 - 230000
870-011	1.00	ECC, MID 146, changing non-programmed ECU	210001 - 230000
872-001	0.50	Cab filter, replacing	210001 - 230000
873-004	3.00	Heater core, replacing	210001 - 230000
873-006	0.80	Fan motor, replacing	210001 - 230000
873-011	0.70	Air mix door actuator, replacing	210001 - 230000
874-006	1.75	Compressor, replacing incl draining and filling	210001 - 230000
874-010	1.75	Condenser, replacing incl draining and filling	210001 - 230000
874-011	1.75	Receiver, replacing incl draining and filling	210001 - 230000
874-012	3.00	Evaporator, replacing incl draining and filling	210001 - 230000
874-013	3.00	Expansion valve, replacing incl draining and filling	210001 - 230000
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)	210001 - 230000
874-094	0.60	Vent actuator, replacing	210001 - 230000
874-095	0.60	Mode (foot) actuator, replacing	210001 - 230000
874-096	0.60	Intake actuator, replacing	210001 - 230000
88		INTERIOR EQUIPMENT	
881-003	1.00	Instrument panel, replacing (left)	210001 - 230000
881-005	1.25	Instrument panel, replacing (right)	210001 - 230000

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-005	2.50	Pump suction hose and pipe, replacing	
911-011	3.50	Oil cooler, replacing	
911-015	0.40	Oil level gauge, replacing	
911-033	1.25	Oil cooler line bypass valve (check valve), replacing	
911-034	2.50	Oil cooler fan motor, replacing	
911-035	1.00	Oil cooler fan pump, replacing	
911-038	3.50	Hydraulic oil tank, replacing	
911-040	0.60	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
911-051	0.20	Breather, replacing	
912-067	0.70	Main pressure relief valve, replacing	
912-071	0.80	Rupture valve, replacing (boom cylinder)	
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)	

Op.no.	time (h)	Notes
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-029	0.30	Pump regulator, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-060	1.50	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.75	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-005	0.80	Quickfit, removal
924-006	1.00	Quickfit, installation
924-040	0.80	Quickfit, replacing
925-011	1.75	Bucket assembly, replacing
925-012	1.25	Bucket assembly, removal
925-013	1.50	Bucket assembly, installation
97		UNIT, DIGGING
974-013	4.00	Boom, removal
974-014	4.00	Boom, installation
974-021	3.00	Boom cylinder, replacing
974-031	1.50	Boom cylinder, removal
974-032	1.50	Boom cylinder, installation
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-006	1.75	Dipper arm connecting rod, removal
975-007	1.75	Dipper arm connecting rod, installation
975-011	4.50	Dipper arm, removal
975-012	4.50	Dipper arm, installation
975-014	1.50	Dipper arm cylinder, removal
975-015	1.75	Dipper arm cylinder, installation
975-024	2.00	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-028	1.75	Connecting rod yoke, replacing
975-032	1.50	Connecting rod yoke, removal
975-035	1.25	Connecting rod yoke, installation
975-039	11.00	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	3.00	Bucket cylinder, replacing
975-062	1.75	Bucket cylinder, removal
975-065	1.75	Bucket cylinder, installation

Op.no.	time (h)	Notes
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.90	Maintenance service, every 10 hours
173-004	1.25	Maintenance service, every 50 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	5.00	Maintenance service, every 1000 hours
173-014	7.50	Maintenance service, every 2000 hours
173-018	10.00	Maintenance service, every 4000 hours
173-019	1.25	Maintenance service, every 4500 hours
173-022	1.50	Maintenance service, every 6000 hours
173-040	2.00	Maintenance service, first 500 hours
173-303	0.30	Lubrication, every 50 hours
173-319	1.25	Diesel particulate filter, checking and cleaning
173-332	0.40	MATRIS and Tech Tool, reading
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-066	2.50	ECM (Engine control module), replacing pre-programmed
200-067	3.00	ECM (Engine control module), replacing non-programmed
200-200	0.60	Engine belts, replacing
21		ENGINE
210-002	11.00	Compression test
210-070	5.50	Engine, removing
210-072	6.50	Engine, installing
210-092	0.70	Engine rotation speed sensor (camshaft), replacing
210-093	0.60	Engine rotation speed sensor (crank shaft), replacing
212-071	1.00	Crankcase ventilation separator, replacing
214-012	2.50	Valves, adjusting
214-092	9.50	Rocker arms, replacing
215-042	6.50	Camshaft, replacing
215-043	1.50	Camshaft setting, checking
217-005	1.00	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.50	Lubrication oil pressure, checking with pressure gauge

Op.no.	time (h)	Notes
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
230-002	0.90	Air in fuel system, checking
233-001	0.30	Fuel system, bleeding
233-004	0.20	Feed pump, checking feed pressure
237-002	9.50	Injectors, replacing all
237-010	1.50	Unit injectors, adjusting pretension
237-017	8.50	Injector sleeves, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.80	Exhaust pipe, flexible tube, replacing
254-001	1.25	Diesel particulate filter, check and clean
254-022	1.00	ACM (After treatment control module), replacing, non-programmed
254-023	0.60	ACM (After treatment control module), replacing, pre-programmed
254-034	2.50	Compressor, replacing
254-056	0.60	NOx sensor, replacing
254-059	0.70	Inlet throttle, replacing
254-064	1.00	High pressure air system, pressure, checking
254-069	0.40	Exhaust aftertreatment system fuel flow, checking
254-101	1.25	AdBlue®/DEF pump, replacing
254-102	0.80	AdBlue®/DEF nozzle, replacing
254-103	1.50	AdBlue®/DEF tank, tank armature, replacing
254-104	0.30	Aftertreatment fuel nozzle, replacing
254-106	1.50	AdBlue®/DEF hoses, replacing
254-107	2.50	AdBlue®/DEF pump unit, replacing
254-108	1.00	Aftertreatment fuel dosing unit, replacing
254-109	0.20	Aftertreatment fuel nozzle, cleaning
254-111	1.50	Muffler, replacing
254-112	2.50	AdBlue®/DEF tank, replacing
254-114	1.50	AdBlue®/DEF, draining
254-117	1.25	AdBlue®/DEF pump unit, components, replacing
254-118	0.80	SCR system, dosing test
254-121	0.50	AdBlue®/DEF quality, checking
255-003	1.25	Actuator, variable turbocharger, replacing
255-071	2.50	Turbocharger, replacing
258-002	5.50	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.70	Coolant, changing
261-008	5.50	Radiator, replacing

Op.no.	time (h)	Notes
29		Miscellaneous
293-001	4.50	EGR cooler, replacing
293-002	2.00	EGR cooler, pressure test
293-004	6.50	EGR cooler, cleaning
293-005	1.25	EGR valve, replacing
293-007	0.40	EGR pressure sensor, replacing
293-010	0.70	EGR Venturi tube, replacing
293-013	1.00	EGR venturi tube, cleaning
 3		 ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.60	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-006	0.50	Earth lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.90	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
334-002	0.70	Starter switch, testing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.40	Horn, replacing
362-041	0.40	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.60	Windscreen flusher pump, replacing
364-003	0.80	Control lockout lever switch, replacing
364-014	0.50	Ignition switch, replacing
364-056	0.90	Pre-heating relay, replacing
366-103	0.80	HMICU, changing pre-programmed ECU
366-104	1.50	HMICU, changing non-programmed ECU
366-105	0.70	GPMECU1, changing pre-programmed ECU
366-106	1.25	GPMECU1, changing non-programmed ECU

Op.no.	time (h)	Notes
37		CABLE; FUSE; RELAY
371-090	3.50	Engine wire harness, replacing
371-092	0.70	Electrical battery disconnect switch, replacing
372-002	0.80	Electrical distribution box, circuit board replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
383-001	0.30	Hour meter, replacing
386-006	0.70	Engine temperature sensor, replacing
386-007	0.80	Engine oil pressure sensor, replacing
386-011	0.60	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing
387-031	0.50	Total moment indicator (TMI), replacing
39		MISCELLANEOUS
393-001	0.80	Voltage converter, replacing
393-021	0.70	Radio, replacing
395-021	0.50	Antenna, replacing
395-031	0.40	Speaker, replacing
398-001	0.60	CareTrack antenna, replacing
398-004	0.50	CareTrack battery, replacing
398-005	1.25	W-ECU, replacing, non-programmed
398-006	0.90	W-ECU, replacing, pre-programmed
4		POWER TRANSMISSION
43		GEARBOX,
431-021	6.50	Swing gearbox, replacing
431-026	1.75	Swing gearbox removed, replacing seal
431-027	2.50	Swing gearbox removed, replacing shaft
431-031	4.00	Pump gearbox coupling assembly, replacing
431-053	6.50	Swing unit, replacing
431-115	1.75	Track gearbox (removed), replacing floating seal
431-115	1.25	Track gearbox (removed), replacing floating seal
431-117	1.50	Track gearbox, replacing cover
431-127	6.00	Track unit, replacing
44		HYDROSTATIC DRIVE
441-021	3.50	Swing motor, replacing
441-022	0.70	Swing motor relief valve, replacing
441-024	1.75	Swing motor, replacing plate (brake)
441-025	1.50	Swing motor, replacing brake piston seal
441-026	0.80	Swing motor removed, replacing seal
441-111	6.50	Track motor, replacing
441-112	0.70	Track motor relief valve, replacing

Op.no.	time (h)	Notes
443-037	6.00	Center passage, replacing
443-038	6.00	Center passage, replacing seal kit
49		MISCELLANEOUS
492-021	11.00	Swing ring gear, replacing
492-027	0.80	Swing limitation sensor, adjusting
492-031	3.00	Swing ring gear outer seal, replacing
492-032	9.00	Swing ring gear inner seal, replacing
492-032	9.00	Swing ring gear inner seal, replacing
492-091	0.50	Ring gear grease pipe, replacing
492-095	0.70	Swing ring gear cover, removal
492-096	0.70	Swing ring gear cover, installation
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-019	0.60	Boom cylinder protecting guard, removal
715-020	1.25	Boom cylinder protecting guard, installation
715-023	1.75	Bucket cylinder protecting guard, removal
715-024	2.50	Bucket cylinder protecting guard, installation
716-003	2.00	Counterweight, replacing
716-004	1.00	Additional counterweight, removing
716-005	1.25	Additional counterweight, installing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-009	2.50	Front idler, removing
775-010	3.00	Front idler, installing
775-011	4.50	Front idler, replacing one
775-021	3.50	Sprocket, replacing one
775-034	1.75	Track chain assembly, removing
775-035	2.00	Track chain assembly, installing
775-036	11.00	Track links, replacing
775-081	4.50	Track recoil spring (tensioner) assembly, replacing
775-094	1.75	Full track guard, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing

Op.no.	time (h)	Notes
810-070	1.00	Electric pedal control on X1 (on/off), replacing
810-071	0.90	Electric pedal control on X1 (proportional), replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-091	1.00	Tool box assembly, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.50	Windscreen, replacing
843-012	4.50	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.90	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	3.50	Cooler and Heater assembly, replacing
870-017	1.75	CCM, changing non-programmed ECU
870-018	1.75	CCM, changing pre-programmed ECU
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.50	Air mix door actuator, replacing
874-006	2.00	Compressor, replacing incl draining and filling
874-010	1.50	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	4.00	Expansion valve, replacing incl draining and filling
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-094	0.50	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.50	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	0.60	Instrument panel, replacing (left)
881-005	0.80	Instrument panel, replacing (right)

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-011	5.50	Oil cooler, replacing
911-015	0.40	Oil level gauge, replacing
911-033	1.25	Oil cooler line bypass valve (check valve), replacing
911-034	4.00	Oil cooler fan motor, replacing
911-035	1.75	Oil cooler fan pump, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	8.50	Control valve, replacing
912-067	0.60	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-160	0.80	Port relief valve pressure, checking and adjusting
912-177	1.75	Demolition control valve, replacing
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.50	Hydraulic pump, replacing
913-029	0.40	Pump regulator, replacing
914-041	0.50	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-060	1.75	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.25	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-040	1.25	Quickfit, replacing
924-040	1.25	Quickfit, replacing
94		UNIT, LOAD HANDLING
944-005	2.50	Middle dipper arm cylinder, replacing
97		UNIT, DIGGING
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-024	2.00	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-028	1.75	Connecting rod yoke, replacing
975-039	6.50	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing

Op.no.	time (h)	Notes
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.00	Bucket cylinder, replacing
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing
975-085	3.00	Demolition dipper arm cylinder, replacing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.90	Maintenance service, every 10 hours
173-004	1.25	Maintenance service, every 50 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	5.00	Maintenance service, every 1000 hours
173-014	7.50	Maintenance service, every 2000 hours
173-018	10.00	Maintenance service, every 4000 hours
173-019	1.25	Maintenance service, every 4500 hours
173-022	1.50	Maintenance service, every 6000 hours
173-040	2.00	Maintenance service, first 500 hours
173-303	0.30	Lubrication, every 50 hours
173-319	1.25	Diesel particulate filter, checking and cleaning
173-332	0.40	MATRIS and Tech Tool, reading
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-066	2.50	ECM (Engine control module), replacing pre-programmed
200-067	3.00	ECM (Engine control module), replacing non-programmed
200-200	0.60	Engine belts, replacing
21		ENGINE
210-002	11.00	Compression test
210-070	5.50	Engine, removing
210-072	6.50	Engine, installing
210-092	0.70	Engine rotation speed sensor (camshaft), replacing
210-093	0.60	Engine rotation speed sensor (crank shaft), replacing
212-071	1.00	Crankcase ventilation separator, replacing
214-012	2.50	Valves, adjusting
214-092	9.50	Rocker arms, replacing
215-042	6.50	Camshaft, replacing
215-043	1.50	Camshaft setting, checking
217-005	1.00	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.50	Lubrication oil pressure, checking with pressure gauge

Op.no.	time (h)	Notes
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
230-002	0.90	Air in fuel system, checking
233-001	0.30	Fuel system, bleeding
233-004	0.20	Feed pump, checking feed pressure
237-002	9.50	Injectors, replacing all
237-010	1.50	Unit injectors, adjusting pretension
237-017	8.50	Injector sleeves, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.80	Exhaust pipe, flexible tube, replacing
254-001	1.25	Diesel particulate filter, check and clean
254-022	1.00	ACM (After treatment control module), replacing, non-programmed
254-023	0.60	ACM (After treatment control module), replacing, pre-programmed
254-034	2.50	Compressor, replacing
254-056	0.60	NOx sensor, replacing
254-059	0.70	Inlet throttle, replacing
254-064	1.00	High pressure air system, pressure, checking
254-069	0.40	Exhaust aftertreatment system fuel flow, checking
254-101	1.25	AdBlue®/DEF pump, replacing
254-102	0.80	AdBlue®/DEF nozzle, replacing
254-103	1.50	AdBlue®/DEF tank, tank armature, replacing
254-104	0.30	Aftertreatment fuel nozzle, replacing
254-106	1.50	AdBlue®/DEF hoses, replacing
254-107	2.50	AdBlue®/DEF pump unit, replacing
254-108	1.00	Aftertreatment fuel dosing unit, replacing
254-109	0.20	Aftertreatment fuel nozzle, cleaning
254-111	1.50	Muffler, replacing
254-112	2.50	AdBlue®/DEF tank, replacing
254-114	1.50	AdBlue®/DEF, draining
254-117	1.25	AdBlue®/DEF pump unit, components, replacing
254-118	0.80	SCR system, dosing test
254-121	0.50	AdBlue®/DEF quality, checking
255-003	1.25	Actuator, variable turbocharger, replacing
255-071	2.50	Turbocharger, replacing
258-002	5.50	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.70	Coolant, changing
261-008	5.50	Radiator, replacing

Op.no.	time (h)	Notes
29		Miscellaneous
293-001	4.50	EGR cooler, replacing
293-002	2.00	EGR cooler, pressure test
293-004	6.50	EGR cooler, cleaning
293-005	1.25	EGR valve, replacing
293-007	0.40	EGR pressure sensor, replacing
293-010	0.70	EGR Venturi tube, replacing
293-013	1.00	EGR venturi tube, cleaning
 3		 ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.60	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-006	0.50	Earth lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.90	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
334-002	0.70	Starter switch, testing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.40	Horn, replacing
362-041	0.40	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.60	Windscreen flusher pump, replacing
364-003	0.80	Control lockout lever switch, replacing
364-014	0.50	Ignition switch, replacing
364-056	0.90	Pre-heating relay, replacing
366-103	0.80	HMICU, changing pre-programmed ECU
366-104	1.50	HMICU, changing non-programmed ECU
366-105	0.70	GPMECU1, changing pre-programmed ECU
366-106	1.25	GPMECU1, changing non-programmed ECU

Op.no.	time (h)	Notes
37		CABLE; FUSE; RELAY
371-090	3.50	Engine wire harness, replacing
371-092	0.70	Electrical battery disconnect switch, replacing
372-002	0.80	Electrical distribution box, circuit board replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
383-001	0.30	Hour meter, replacing
386-006	0.70	Engine temperature sensor, replacing
386-007	0.80	Engine oil pressure sensor, replacing
386-011	0.60	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing
39		MISCELLANEOUS
393-001	0.80	Voltage converter, replacing
393-021	0.70	Radio, replacing
395-021	0.50	Antenna, replacing
395-031	0.40	Speaker, replacing
398-001	0.60	CareTrack antenna, replacing
398-004	0.50	CareTrack battery, replacing
398-005	1.25	W-ECU, replacing, non-programmed
398-006	0.90	W-ECU, replacing, pre-programmed
4		POWER TRANSMISSION
43		GEARBOX,
431-021	6.50	Swing gearbox, replacing
431-026	1.75	Swing gearbox removed, replacing seal
431-027	2.50	Swing gearbox removed, replacing shaft
431-031	4.00	Pump gearbox coupling assembly, replacing
431-053	6.50	Swing unit, replacing
431-115	1.75	Track gearbox (removed), replacing floating seal
431-115	1.25	Track gearbox (removed), replacing floating seal
431-117	1.50	Track gearbox, replacing cover
431-127	6.00	Track unit, replacing
44		HYDROSTATIC DRIVE
441-021	3.50	Swing motor, replacing
441-022	0.70	Swing motor relief valve, replacing
441-024	1.75	Swing motor, replacing plate (brake)
441-025	1.50	Swing motor, replacing brake piston seal
441-026	0.80	Swing motor removed, replacing seal
441-111	6.50	Track motor, replacing
441-112	0.70	Track motor relief valve, replacing
443-037	6.00	Center passage, replacing

Op.no.	time (h)	Notes
443-038	6.00	Center passage, replacing seal kit
49		MISCELLANEOUS
492-021	11.00	Swing ring gear, replacing
492-031	3.00	Swing ring gear outer seal, replacing
492-032	9.00	Swing ring gear inner seal, replacing
492-032	9.00	Swing ring gear inner seal, replacing
492-091	0.50	Ring gear grease pipe, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
710-001	3.50	Superstructure, removing
710-002	4.50	Superstructure, installing
716-003	2.00	Counterweight, replacing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-009	2.50	Front idler, removing
775-010	3.00	Front idler, installing
775-011	4.50	Front idler, replacing one
775-021	3.50	Sprocket, replacing one
775-034	1.75	Track chain assembly, removing
775-035	2.00	Track chain assembly, installing
775-036	11.00	Track links, replacing
775-081	4.50	Track recoil spring (tensioner) assembly, replacing
775-094	1.75	Full track guard, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
810-070	1.00	Electric pedal control on X1 (on/off), replacing
810-071	0.90	Electric pedal control on X1 (proportional), replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-091	1.00	Tool box assembly, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.50	Windscreen, replacing

Op.no.	time (h)	Notes
843-012	4.50	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.90	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	3.50	Cooler and Heater assembly, replacing
870-017	1.75	CCM, changing non-programmed ECU
870-018	1.75	CCM, changing pre-programmed ECU
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.50	Air mix door actuator, replacing
874-006	2.00	Compressor, replacing incl draining and filling
874-010	1.50	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	4.00	Expansion valve, replacing incl draining and filling
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-094	0.50	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.50	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	0.60	Instrument panel, replacing (left)
881-005	0.80	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-011	5.50	Oil cooler, replacing
911-015	0.40	Oil level gauge, replacing
911-033	1.25	Oil cooler line bypass valve (check valve), replacing
911-034	4.00	Oil cooler fan motor, replacing

Op.no.	time (h)	Notes
911-035	1.75	Oil cooler fan pump, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	8.50	Control valve, replacing
912-067	0.60	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)
912-160	0.80	Port relief valve pressure, checking and adjusting
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.50	Hydraulic pump, replacing
913-029	0.40	Pump regulator, replacing
914-041	0.50	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-060	1.75	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.25	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-040	1.25	Quickfit, replacing
924-040	1.25	Quickfit, replacing
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-021	3.00	Boom cylinder, replacing
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-024	2.00	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-028	1.75	Connecting rod yoke, replacing
975-039	6.50	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.00	Bucket cylinder, replacing
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.90	Maintenance service, every 10 hours
173-004	1.25	Maintenance service, every 50 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	5.00	Maintenance service, every 1000 hours
173-014	7.50	Maintenance service, every 2000 hours
173-018	10.00	Maintenance service, every 4000 hours
173-019	1.25	Maintenance service, every 4500 hours
173-022	1.50	Maintenance service, every 6000 hours
173-040	2.00	Maintenance service, first 500 hours
173-303	0.30	Lubrication, every 50 hours
173-319	1.25	Diesel particulate filter, checking and cleaning
173-332	0.40	MATRIS and Tech Tool, reading
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-066	2.50	ECM (Engine control module), replacing pre-programmed
200-067	3.00	ECM (Engine control module), replacing non-programmed
200-200	0.60	Engine belts, replacing
21		ENGINE
210-002	11.00	Compression test
210-070	5.50	Engine, removing
210-072	6.50	Engine, installing
210-092	0.70	Engine rotation speed sensor (camshaft), replacing
210-093	0.60	Engine rotation speed sensor (crank shaft), replacing
212-071	1.00	Crankcase ventilation separator, replacing
214-012	2.50	Valves, adjusting
214-092	9.50	Rocker arms, replacing
215-042	6.50	Camshaft, replacing
215-043	1.50	Camshaft setting, checking
217-005	1.00	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.50	Lubrication oil pressure, checking with pressure gauge

Op.no.	time (h)	Notes
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
230-002	0.90	Air in fuel system, checking
233-001	0.30	Fuel system, bleeding
233-004	0.20	Feed pump, checking feed pressure
237-002	9.50	Injectors, replacing all
237-010	1.50	Unit injectors, adjusting pretension
237-017	8.50	Injector sleeves, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.80	Exhaust pipe, flexible tube, replacing
254-001	1.25	Diesel particulate filter, check and clean
254-022	1.00	ACM (After treatment control module), replacing, non-programmed
254-023	0.60	ACM (After treatment control module), replacing, pre-programmed
254-034	2.50	Compressor, replacing
254-056	0.60	NOx sensor, replacing
254-059	0.70	Inlet throttle, replacing
254-064	1.00	High pressure air system, pressure, checking
254-069	0.40	Exhaust aftertreatment system fuel flow, checking
254-101	1.25	AdBlue®/DEF pump, replacing
254-102	0.80	AdBlue®/DEF nozzle, replacing
254-103	1.50	AdBlue®/DEF tank, tank armature, replacing
254-104	0.30	Aftertreatment fuel nozzle, replacing
254-106	1.50	AdBlue®/DEF hoses, replacing
254-107	2.50	AdBlue®/DEF pump unit, replacing
254-108	1.00	Aftertreatment fuel dosing unit, replacing
254-109	0.20	Aftertreatment fuel nozzle, cleaning
254-111	1.50	Muffler, replacing
254-112	2.50	AdBlue®/DEF tank, replacing
254-114	1.50	AdBlue®/DEF, draining
254-117	1.25	AdBlue®/DEF pump unit, components, replacing
254-118	0.80	SCR system, dosing test
254-121	0.50	AdBlue®/DEF quality, checking
255-003	1.25	Actuator, variable turbocharger, replacing
255-071	2.50	Turbocharger, replacing
258-002	5.50	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.70	Coolant, changing
261-008	5.50	Radiator, replacing

Op.no.	time (h)	Notes
29		Miscellaneous
293-001	4.50	EGR cooler, replacing
293-002	2.00	EGR cooler, pressure test
293-004	6.50	EGR cooler, cleaning
293-005	1.25	EGR valve, replacing
293-007	0.40	EGR pressure sensor, replacing
293-010	0.70	EGR Venturi tube, replacing
293-013	1.00	EGR venturi tube, cleaning
 3		 ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.60	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-006	0.50	Earth lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.90	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
334-002	0.70	Starter switch, testing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.40	Horn, replacing
362-041	0.40	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.60	Windscreen flusher pump, replacing
364-003	0.80	Control lockout lever switch, replacing
364-014	0.50	Ignition switch, replacing
364-056	0.90	Pre-heating relay, replacing
366-103	0.80	HMICU, changing pre-programmed ECU
366-104	1.50	HMICU, changing non-programmed ECU
366-105	0.70	GPMECU1, changing pre-programmed ECU
366-106	1.25	GPMECU1, changing non-programmed ECU

Op.no.	time (h)	Notes
37		CABLE; FUSE; RELAY
371-090	3.50	Engine wire harness, replacing
371-092	0.70	Electrical battery disconnect switch, replacing
372-002	0.80	Electrical distribution box, circuit board replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
383-001	0.30	Hour meter, replacing
386-006	0.70	Engine temperature sensor, replacing
386-007	0.80	Engine oil pressure sensor, replacing
386-011	0.60	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing
39		MISCELLANEOUS
393-001	0.80	Voltage converter, replacing
393-021	0.70	Radio, replacing
395-021	0.50	Antenna, replacing
395-031	0.40	Speaker, replacing
398-001	0.60	CareTrack antenna, replacing
398-004	0.50	CareTrack battery, replacing
398-005	1.25	W-ECU, replacing, non-programmed
398-006	0.90	W-ECU, replacing, pre-programmed
4		POWER TRANSMISSION
43		GEARBOX,
431-021	6.50	Swing gearbox, replacing
431-026	1.75	Swing gearbox removed, replacing seal
431-027	2.50	Swing gearbox removed, replacing shaft
431-031	4.00	Pump gearbox coupling assembly, replacing
431-053	6.50	Swing unit, replacing
431-115	1.75	Track gearbox (removed), replacing floating seal
431-115	1.25	Track gearbox (removed), replacing floating seal
431-117	1.50	Track gearbox, replacing cover
431-127	6.00	Track unit, replacing
44		HYDROSTATIC DRIVE
441-021	3.50	Swing motor, replacing
441-022	0.70	Swing motor relief valve, replacing
441-024	1.75	Swing motor, replacing plate (brake)
441-025	1.50	Swing motor, replacing brake piston seal
441-026	0.80	Swing motor removed, replacing seal
441-111	6.50	Track motor, replacing
441-112	0.70	Track motor relief valve, replacing
443-037	6.00	Center passage, replacing

Op.no.	time (h)	Notes
443-038	6.00	Center passage, replacing seal kit
49		MISCELLANEOUS
492-021	11.00	Swing ring gear, replacing
492-031	3.00	Swing ring gear outer seal, replacing
492-032	9.00	Swing ring gear inner seal, replacing
492-032	9.00	Swing ring gear inner seal, replacing
492-091	0.50	Ring gear grease pipe, replacing
492-095	0.70	Swing ring gear cover, removal
492-096	0.70	Swing ring gear cover, installation
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
710-001	3.50	Superstructure, removing
710-002	4.50	Superstructure, installing
715-019	0.60	Boom cylinder protecting guard, removal
715-020	1.25	Boom cylinder protecting guard, installation
715-023	1.75	Bucket cylinder protecting guard, removal
715-024	2.50	Bucket cylinder protecting guard, installation
716-003	2.00	Counterweight, replacing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-009	2.50	Front idler, removing
775-010	3.00	Front idler, installing
775-011	4.50	Front idler, replacing one
775-021	3.50	Sprocket, replacing one
775-034	1.75	Track chain assembly, removing
775-035	2.00	Track chain assembly, installing
775-036	11.00	Track links, replacing
775-081	4.50	Track recoil spring (tensioner) assembly, replacing
775-094	1.75	Full track guard, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
810-070	1.00	Electric pedal control on X1 (on/off), replacing

Op.no.	time (h)	Notes
810-071	0.90	Electric pedal control on X1 (proportional), replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-091	1.00	Tool box assembly, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.50	Windscreen, replacing
843-012	4.50	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.90	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	3.50	Cooler and Heater assembly, replacing
870-017	1.75	CCM, changing non-programmed ECU
870-018	1.75	CCM, changing pre-programmed ECU
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.50	Air mix door actuator, replacing
874-006	2.00	Compressor, replacing incl draining and filling
874-010	1.50	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	4.00	Expansion valve, replacing incl draining and filling
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-094	0.50	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.50	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	0.60	Instrument panel, replacing (left)
881-005	0.80	Instrument panel, replacing (right)

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-011	5.50	Oil cooler, replacing
911-015	0.40	Oil level gauge, replacing
911-033	1.25	Oil cooler line bypass valve (check valve), replacing
911-034	4.00	Oil cooler fan motor, replacing
911-035	1.75	Oil cooler fan pump, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	8.50	Control valve, replacing
912-067	0.60	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)
912-160	0.80	Port relief valve pressure, checking and adjusting
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.50	Hydraulic pump, replacing
913-029	0.40	Pump regulator, replacing
914-041	0.50	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-060	1.75	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.25	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-040	1.25	Quickfit, replacing
924-040	1.25	Quickfit, replacing
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-021	3.00	Boom cylinder, replacing
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-024	2.00	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-028	1.75	Connecting rod yoke, replacing
975-039	6.50	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing

Op.no.	time (h)	Notes
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.00	Bucket cylinder, replacing
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.90	Maintenance service, every 10 hours
173-004	1.25	Maintenance service, every 50 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	5.00	Maintenance service, every 1000 hours
173-014	7.50	Maintenance service, every 2000 hours
173-018	10.00	Maintenance service, every 4000 hours
173-019	1.25	Maintenance service, every 4500 hours
173-022	1.50	Maintenance service, every 6000 hours
173-040	2.00	Maintenance service, first 500 hours
173-303	0.30	Lubrication, every 50 hours
173-319	1.25	Diesel particulate filter, checking and cleaning
173-332	0.40	MATRIS and Tech Tool, reading
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-066	2.50	ECM (Engine control module), replacing pre-programmed
200-067	3.00	ECM (Engine control module), replacing non-programmed
200-200	0.60	Engine belts, replacing
21		ENGINE
210-002	11.00	Compression test
210-070	5.50	Engine, removing
210-072	6.50	Engine, installing
210-092	0.70	Engine rotation speed sensor (camshaft), replacing
210-093	0.60	Engine rotation speed sensor (crank shaft), replacing
212-071	1.00	Crankcase ventilation separator, replacing
214-012	2.50	Valves, adjusting
214-092	9.50	Rocker arms, replacing
215-042	6.50	Camshaft, replacing
215-043	1.50	Camshaft setting, checking
217-005	1.00	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.50	Lubrication oil pressure, checking with pressure gauge

Op.no.	time (h)	Notes
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
230-002	0.90	Air in fuel system, checking
233-001	0.30	Fuel system, bleeding
233-004	0.20	Feed pump, checking feed pressure
237-002	9.50	Injectors, replacing all
237-010	1.50	Unit injectors, adjusting pretension
237-017	8.50	Injector sleeves, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.80	Exhaust pipe, flexible tube, replacing
254-001	1.25	Diesel particulate filter, check and clean
254-022	1.00	ACM (After treatment control module), replacing, non-programmed
254-023	0.60	ACM (After treatment control module), replacing, pre-programmed
254-034	2.50	Compressor, replacing
254-056	0.60	NOx sensor, replacing
254-059	0.70	Inlet throttle, replacing
254-064	1.00	High pressure air system, pressure, checking
254-069	0.40	Exhaust aftertreatment system fuel flow, checking
254-101	1.25	AdBlue®/DEF pump, replacing
254-102	0.80	AdBlue®/DEF nozzle, replacing
254-103	1.50	AdBlue®/DEF tank, tank armature, replacing
254-104	0.30	Aftertreatment fuel nozzle, replacing
254-106	1.50	AdBlue®/DEF hoses, replacing
254-107	2.50	AdBlue®/DEF pump unit, replacing
254-108	1.00	Aftertreatment fuel dosing unit, replacing
254-109	0.20	Aftertreatment fuel nozzle, cleaning
254-111	1.50	Muffler, replacing
254-112	2.50	AdBlue®/DEF tank, replacing
254-114	1.50	AdBlue®/DEF, draining
254-117	1.25	AdBlue®/DEF pump unit, components, replacing
254-118	0.80	SCR system, dosing test
254-121	0.50	AdBlue®/DEF quality, checking
255-003	1.25	Actuator, variable turbocharger, replacing
255-071	2.50	Turbocharger, replacing
258-002	5.50	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.70	Coolant, changing
261-008	5.50	Radiator, replacing

Op.no.	time (h)	Notes
29		Miscellaneous
293-001	4.50	EGR cooler, replacing
293-002	2.00	EGR cooler, pressure test
293-004	6.50	EGR cooler, cleaning
293-005	1.25	EGR valve, replacing
293-007	0.40	EGR pressure sensor, replacing
293-010	0.70	EGR Venturi tube, replacing
293-013	1.00	EGR venturi tube, cleaning
 3		 ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.60	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-006	0.50	Earth lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.90	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
334-002	0.70	Starter switch, testing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.40	Horn, replacing
362-041	0.40	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.60	Windscreen flusher pump, replacing
364-003	0.80	Control lockout lever switch, replacing
364-014	0.50	Ignition switch, replacing
364-056	0.90	Pre-heating relay, replacing
366-103	0.80	HMICU, changing pre-programmed ECU
366-104	1.50	HMICU, changing non-programmed ECU
366-105	0.70	GPMECU1, changing pre-programmed ECU
366-106	1.25	GPMECU1, changing non-programmed ECU

Op.no.	time (h)	Notes
37		CABLE; FUSE; RELAY
371-090	3.50	Engine wire harness, replacing
371-092	0.70	Electrical battery disconnect switch, replacing
372-002	0.80	Electrical distribution box, circuit board replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
383-001	0.30	Hour meter, replacing
386-006	0.70	Engine temperature sensor, replacing
386-007	0.80	Engine oil pressure sensor, replacing
386-011	0.60	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing
39		MISCELLANEOUS
393-001	0.80	Voltage converter, replacing
393-021	0.70	Radio, replacing
395-021	0.50	Antenna, replacing
395-031	0.40	Speaker, replacing
398-001	0.60	CareTrack antenna, replacing
398-004	0.50	CareTrack battery, replacing
398-005	1.25	W-ECU, replacing, non-programmed
398-006	0.90	W-ECU, replacing, pre-programmed
4		POWER TRANSMISSION
43		GEARBOX,
431-021	6.50	Swing gearbox, replacing
431-026	1.75	Swing gearbox removed, replacing seal
431-027	2.50	Swing gearbox removed, replacing shaft
431-031	4.00	Pump gearbox coupling assembly, replacing
431-053	6.50	Swing unit, replacing
431-115	1.75	Track gearbox (removed), replacing floating seal
431-115	1.25	Track gearbox (removed), replacing floating seal
431-117	1.50	Track gearbox, replacing cover
431-127	6.00	Track unit, replacing
44		HYDROSTATIC DRIVE
441-021	3.50	Swing motor, replacing
441-022	0.70	Swing motor relief valve, replacing
441-024	1.75	Swing motor, replacing plate (brake)
441-025	1.50	Swing motor, replacing brake piston seal
441-026	0.80	Swing motor removed, replacing seal
441-111	6.50	Track motor, replacing
441-112	0.70	Track motor relief valve, replacing
443-037	6.00	Center passage, replacing

Op.no.	time (h)	Notes
443-038	6.00	Center passage, replacing seal kit
49		MISCELLANEOUS
492-021	11.00	Swing ring gear, replacing
492-031	3.00	Swing ring gear outer seal, replacing
492-032	9.00	Swing ring gear inner seal, replacing
492-032	9.00	Swing ring gear inner seal, replacing
492-091	0.50	Ring gear grease pipe, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
710-001	3.50	Superstructure, removing
710-002	4.50	Superstructure, installing
716-003	2.00	Counterweight, replacing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-009	2.50	Front idler, removing
775-010	3.00	Front idler, installing
775-011	4.50	Front idler, replacing one
775-021	3.50	Sprocket, replacing one
775-034	1.75	Track chain assembly, removing
775-035	2.00	Track chain assembly, installing
775-036	11.00	Track links, replacing
775-081	4.50	Track recoil spring (tensioner) assembly, replacing
775-094	1.75	Full track guard, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
810-070	1.00	Electric pedal control on X1 (on/off), replacing
810-071	0.90	Electric pedal control on X1 (proportional), replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-091	1.00	Tool box assembly, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.50	Windscreen, replacing

Op.no.	time (h)	Notes
843-012	4.50	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.90	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	3.50	Cooler and Heater assembly, replacing
870-017	1.75	CCM, changing non-programmed ECU
870-018	1.75	CCM, changing pre-programmed ECU
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.50	Air mix door actuator, replacing
874-006	2.00	Compressor, replacing incl draining and filling
874-010	1.50	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	4.00	Expansion valve, replacing incl draining and filling
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-094	0.50	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.50	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	0.60	Instrument panel, replacing (left)
881-005	0.80	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-011	5.50	Oil cooler, replacing
911-015	0.40	Oil level gauge, replacing
911-033	1.25	Oil cooler line bypass valve (check valve), replacing
911-034	4.00	Oil cooler fan motor, replacing

Op.no.	time (h)	Notes
911-035	1.75	Oil cooler fan pump, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	8.50	Control valve, replacing
912-067	0.60	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)
912-160	0.80	Port relief valve pressure, checking and adjusting
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.50	Hydraulic pump, replacing
913-029	0.40	Pump regulator, replacing
914-041	0.50	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-060	1.75	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.25	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-040	1.25	Quickfit, replacing
924-040	1.25	Quickfit, replacing
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-021	3.00	Boom cylinder, replacing
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-024	2.00	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-028	1.75	Connecting rod yoke, replacing
975-039	6.50	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.00	Bucket cylinder, replacing
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.90	Maintenance service, every 10 hours
173-004	1.25	Maintenance service, every 50 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	5.00	Maintenance service, every 1000 hours
173-014	7.50	Maintenance service, every 2000 hours
173-018	10.00	Maintenance service, every 4000 hours
173-019	1.25	Maintenance service, every 4500 hours
173-022	1.50	Maintenance service, every 6000 hours
173-040	2.00	Maintenance service, first 500 hours
173-303	0.30	Lubrication, every 50 hours
173-319	1.25	Diesel particulate filter, checking and cleaning
173-332	0.40	MATRIS and Tech Tool, reading
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-066	2.50	ECM (Engine control module), replacing pre-programmed
200-067	3.00	ECM (Engine control module), replacing non-programmed
200-200	0.60	Engine belts, replacing
21		ENGINE
210-002	11.00	Compression test
210-070	5.50	Engine, removing
210-072	6.50	Engine, installing
210-092	0.70	Engine rotation speed sensor (camshaft), replacing
210-093	0.60	Engine rotation speed sensor (crank shaft), replacing
212-071	1.00	Crankcase ventilation separator, replacing
214-012	2.50	Valves, adjusting
214-092	9.50	Rocker arms, replacing
215-042	6.50	Camshaft, replacing
215-043	1.50	Camshaft setting, checking
217-005	1.00	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.50	Lubrication oil pressure, checking with pressure gauge

Op.no.	time (h)	Notes
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
230-002	0.90	Air in fuel system, checking
233-001	0.30	Fuel system, bleeding
233-004	0.20	Feed pump, checking feed pressure
237-002	9.50	Injectors, replacing all
237-010	1.50	Unit injectors, adjusting pretension
237-017	8.50	Injector sleeves, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.80	Exhaust pipe, flexible tube, replacing
254-001	1.25	Diesel particulate filter, check and clean
254-022	1.00	ACM (After treatment control module), replacing, non-programmed
254-023	0.60	ACM (After treatment control module), replacing, pre-programmed
254-034	2.50	Compressor, replacing
254-056	0.60	NOx sensor, replacing
254-059	0.70	Inlet throttle, replacing
254-064	1.00	High pressure air system, pressure, checking
254-069	0.40	Exhaust aftertreatment system fuel flow, checking
254-101	1.25	AdBlue®/DEF pump, replacing
254-102	0.80	AdBlue®/DEF nozzle, replacing
254-103	1.50	AdBlue®/DEF tank, tank armature, replacing
254-104	0.30	Aftertreatment fuel nozzle, replacing
254-106	1.50	AdBlue®/DEF hoses, replacing
254-107	2.50	AdBlue®/DEF pump unit, replacing
254-108	1.00	Aftertreatment fuel dosing unit, replacing
254-109	0.20	Aftertreatment fuel nozzle, cleaning
254-111	1.50	Muffler, replacing
254-112	2.50	AdBlue®/DEF tank, replacing
254-114	1.50	AdBlue®/DEF, draining
254-117	1.25	AdBlue®/DEF pump unit, components, replacing
254-118	0.80	SCR system, dosing test
254-121	0.50	AdBlue®/DEF quality, checking
255-003	1.25	Actuator, variable turbocharger, replacing
255-071	2.50	Turbocharger, replacing
258-002	5.50	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.70	Coolant, changing
261-008	5.50	Radiator, replacing

Op.no.	time (h)	Notes
29		Miscellaneous
293-001	4.50	EGR cooler, replacing
293-002	2.00	EGR cooler, pressure test
293-004	6.50	EGR cooler, cleaning
293-005	1.25	EGR valve, replacing
293-007	0.40	EGR pressure sensor, replacing
293-010	0.70	EGR Venturi tube, replacing
293-013	1.00	EGR venturi tube, cleaning
 3		 ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.60	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-006	0.50	Earth lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.90	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
334-002	0.70	Starter switch, testing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.40	Horn, replacing
362-041	0.40	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.60	Windscreen flusher pump, replacing
364-003	0.80	Control lockout lever switch, replacing
364-014	0.50	Ignition switch, replacing
364-056	0.90	Pre-heating relay, replacing
366-103	0.80	HMICU, changing pre-programmed ECU
366-104	1.50	HMICU, changing non-programmed ECU
366-105	0.70	GPMECU1, changing pre-programmed ECU
366-106	1.25	GPMECU1, changing non-programmed ECU

Op.no.	time (h)	Notes
37		CABLE; FUSE; RELAY
371-090	3.50	Engine wire harness, replacing
371-092	0.70	Electrical battery disconnect switch, replacing
372-002	0.80	Electrical distribution box, circuit board replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
383-001	0.30	Hour meter, replacing
386-006	0.70	Engine temperature sensor, replacing
386-007	0.80	Engine oil pressure sensor, replacing
386-011	0.60	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing
39		MISCELLANEOUS
393-001	0.80	Voltage converter, replacing
393-021	0.70	Radio, replacing
395-021	0.50	Antenna, replacing
395-031	0.40	Speaker, replacing
398-001	0.60	CareTrack antenna, replacing
398-004	0.50	CareTrack battery, replacing
398-005	1.25	W-ECU, replacing, non-programmed
398-006	0.90	W-ECU, replacing, pre-programmed
4		POWER TRANSMISSION
43		GEARBOX,
431-021	6.50	Swing gearbox, replacing
431-026	1.75	Swing gearbox removed, replacing seal
431-027	2.50	Swing gearbox removed, replacing shaft
431-031	4.00	Pump gearbox coupling assembly, replacing
431-053	6.50	Swing unit, replacing
431-115	1.75	Track gearbox (removed), replacing floating seal
431-115	1.25	Track gearbox (removed), replacing floating seal
431-117	1.50	Track gearbox, replacing cover
431-127	6.00	Track unit, replacing
44		HYDROSTATIC DRIVE
441-021	3.50	Swing motor, replacing
441-022	0.70	Swing motor relief valve, replacing
441-024	1.75	Swing motor, replacing plate (brake)
441-025	1.50	Swing motor, replacing brake piston seal
441-026	0.80	Swing motor removed, replacing seal
441-111	6.50	Track motor, replacing
441-112	0.70	Track motor relief valve, replacing
443-037	6.00	Center passage, replacing

Op.no.	time (h)	Notes
443-038	6.00	Center passage, replacing seal kit
49		MISCELLANEOUS
492-021	11.00	Swing ring gear, replacing
492-031	3.00	Swing ring gear outer seal, replacing
492-032	9.00	Swing ring gear inner seal, replacing
492-032	9.00	Swing ring gear inner seal, replacing
492-091	0.50	Ring gear grease pipe, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
710-001	3.50	Superstructure, removing
710-002	4.50	Superstructure, installing
716-003	2.00	Counterweight, replacing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-009	2.50	Front idler, removing
775-010	3.00	Front idler, installing
775-011	4.50	Front idler, replacing one
775-021	3.50	Sprocket, replacing one
775-034	1.75	Track chain assembly, removing
775-035	2.00	Track chain assembly, installing
775-036	11.00	Track links, replacing
775-081	4.50	Track recoil spring (tensioner) assembly, replacing
775-094	1.75	Full track guard, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
810-070	1.00	Electric pedal control on X1 (on/off), replacing
810-071	0.90	Electric pedal control on X1 (proportional), replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-091	1.00	Tool box assembly, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.50	Windscreen, replacing

Op.no.	time (h)	Notes
843-012	4.50	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.90	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	3.50	Cooler and Heater assembly, replacing
870-017	1.75	CCM, changing non-programmed ECU
870-018	1.75	CCM, changing pre-programmed ECU
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.50	Air mix door actuator, replacing
874-006	2.00	Compressor, replacing incl draining and filling
874-010	1.50	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	4.00	Expansion valve, replacing incl draining and filling
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-094	0.50	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.50	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	0.60	Instrument panel, replacing (left)
881-005	0.80	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-011	5.50	Oil cooler, replacing
911-015	0.40	Oil level gauge, replacing
911-033	1.25	Oil cooler line bypass valve (check valve), replacing
911-034	4.00	Oil cooler fan motor, replacing

Op.no.	time (h)	Notes
911-035	1.75	Oil cooler fan pump, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	8.50	Control valve, replacing
912-067	0.60	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)
912-160	0.80	Port relief valve pressure, checking and adjusting
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.50	Hydraulic pump, replacing
913-029	0.40	Pump regulator, replacing
914-041	0.50	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-060	1.75	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.25	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-040	1.25	Quickfit, replacing
924-040	1.25	Quickfit, replacing
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-021	3.00	Boom cylinder, replacing
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-024	2.00	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-028	1.75	Connecting rod yoke, replacing
975-039	6.50	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.00	Bucket cylinder, replacing
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.90	Maintenance service, every 10 hours
173-004	1.25	Maintenance service, every 50 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	5.00	Maintenance service, every 1000 hours
173-014	7.50	Maintenance service, every 2000 hours
173-018	10.00	Maintenance service, every 4000 hours
173-019	1.25	Maintenance service, every 4500 hours
173-022	1.50	Maintenance service, every 6000 hours
173-040	2.00	Maintenance service, first 500 hours
173-303	0.30	Lubrication, every 50 hours
173-319	1.25	Diesel particulate filter, checking and cleaning
173-332	0.40	MATRIS and Tech Tool, reading
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-066	2.50	ECM (Engine control module), replacing pre-programmed
200-067	3.00	ECM (Engine control module), replacing non-programmed
200-200	0.60	Engine belts, replacing
21		ENGINE
210-002	11.00	Compression test
210-070	5.50	Engine, removing
210-072	6.50	Engine, installing
210-092	0.70	Engine rotation speed sensor (camshaft), replacing
210-093	0.60	Engine rotation speed sensor (crank shaft), replacing
212-071	1.00	Crankcase ventilation separator, replacing
214-012	2.50	Valves, adjusting
214-092	9.50	Rocker arms, replacing
215-042	6.50	Camshaft, replacing
215-043	1.50	Camshaft setting, checking
217-005	1.00	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.50	Lubrication oil pressure, checking with pressure gauge

Op.no.	time (h)	Notes
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
230-002	0.90	Air in fuel system, checking
233-001	0.30	Fuel system, bleeding
233-004	0.20	Feed pump, checking feed pressure
237-002	9.50	Injectors, replacing all
237-010	1.50	Unit injectors, adjusting pretension
237-017	8.50	Injector sleeves, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.80	Exhaust pipe, flexible tube, replacing
254-001	1.25	Diesel particulate filter, check and clean
254-022	1.00	ACM (After treatment control module), replacing, non-programmed
254-023	0.60	ACM (After treatment control module), replacing, pre-programmed
254-034	2.50	Compressor, replacing
254-056	0.60	NOx sensor, replacing
254-059	0.70	Inlet throttle, replacing
254-064	1.00	High pressure air system, pressure, checking
254-069	0.40	Exhaust aftertreatment system fuel flow, checking
254-101	1.25	AdBlue®/DEF pump, replacing
254-102	0.80	AdBlue®/DEF nozzle, replacing
254-103	1.50	AdBlue®/DEF tank, tank armature, replacing
254-104	0.30	Aftertreatment fuel nozzle, replacing
254-106	1.50	AdBlue®/DEF hoses, replacing
254-107	2.50	AdBlue®/DEF pump unit, replacing
254-108	1.00	Aftertreatment fuel dosing unit, replacing
254-109	0.20	Aftertreatment fuel nozzle, cleaning
254-111	1.50	Muffler, replacing
254-112	2.50	AdBlue®/DEF tank, replacing
254-114	1.50	AdBlue®/DEF, draining
254-117	1.25	AdBlue®/DEF pump unit, components, replacing
254-118	0.80	SCR system, dosing test
254-121	0.50	AdBlue®/DEF quality, checking
255-003	1.25	Actuator, variable turbocharger, replacing
255-071	2.50	Turbocharger, replacing
258-002	5.50	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.70	Coolant, changing
261-008	5.50	Radiator, replacing

Op.no.	time (h)	Notes
29		Miscellaneous
293-001	4.50	EGR cooler, replacing
293-002	2.00	EGR cooler, pressure test
293-004	6.50	EGR cooler, cleaning
293-005	1.25	EGR valve, replacing
293-007	0.40	EGR pressure sensor, replacing
293-010	0.70	EGR Venturi tube, replacing
293-013	1.00	EGR venturi tube, cleaning
 3		 ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.60	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-006	0.50	Earth lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.90	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
334-002	0.70	Starter switch, testing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.40	Horn, replacing
362-041	0.40	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.60	Windscreen flusher pump, replacing
364-003	0.80	Control lockout lever switch, replacing
364-014	0.50	Ignition switch, replacing
364-056	0.90	Pre-heating relay, replacing
366-103	0.80	HMICU, changing pre-programmed ECU
366-104	1.50	HMICU, changing non-programmed ECU
366-105	0.70	GPMECU1, changing pre-programmed ECU
366-106	1.25	GPMECU1, changing non-programmed ECU

Op.no.	time (h)	Notes
37		CABLE; FUSE; RELAY
371-090	3.50	Engine wire harness, replacing
371-092	0.70	Electrical battery disconnect switch, replacing
372-002	0.80	Electrical distribution box, circuit board replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
383-001	0.30	Hour meter, replacing
386-006	0.70	Engine temperature sensor, replacing
386-007	0.80	Engine oil pressure sensor, replacing
386-011	0.60	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing
39		MISCELLANEOUS
393-001	0.80	Voltage converter, replacing
393-021	0.70	Radio, replacing
395-021	0.50	Antenna, replacing
395-031	0.40	Speaker, replacing
398-001	0.60	CareTrack antenna, replacing
398-004	0.50	CareTrack battery, replacing
398-005	1.25	W-ECU, replacing, non-programmed
398-006	0.90	W-ECU, replacing, pre-programmed
4		POWER TRANSMISSION
43		GEARBOX,
431-021	6.50	Swing gearbox, replacing
431-026	1.75	Swing gearbox removed, replacing seal
431-027	2.50	Swing gearbox removed, replacing shaft
431-031	4.00	Pump gearbox coupling assembly, replacing
431-053	6.50	Swing unit, replacing
431-115	1.75	Track gearbox (removed), replacing floating seal
431-115	1.25	Track gearbox (removed), replacing floating seal
431-117	1.50	Track gearbox, replacing cover
431-127	6.00	Track unit, replacing
44		HYDROSTATIC DRIVE
441-021	3.50	Swing motor, replacing
441-022	0.70	Swing motor relief valve, replacing
441-024	1.75	Swing motor, replacing plate (brake)
441-025	1.50	Swing motor, replacing brake piston seal
441-026	0.80	Swing motor removed, replacing seal
441-111	6.50	Track motor, replacing
441-112	0.70	Track motor relief valve, replacing
443-037	6.00	Center passage, replacing

Op.no.	time (h)	Notes
443-038	6.00	Center passage, replacing seal kit
49		MISCELLANEOUS
492-021	11.00	Swing ring gear, replacing
492-031	3.00	Swing ring gear outer seal, replacing
492-032	9.00	Swing ring gear inner seal, replacing
492-032	9.00	Swing ring gear inner seal, replacing
492-091	0.50	Ring gear grease pipe, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
710-001	3.50	Superstructure, removing
710-002	4.50	Superstructure, installing
716-003	2.00	Counterweight, replacing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-009	2.50	Front idler, removing
775-010	3.00	Front idler, installing
775-011	4.50	Front idler, replacing one
775-021	3.50	Sprocket, replacing one
775-034	1.75	Track chain assembly, removing
775-035	2.00	Track chain assembly, installing
775-036	11.00	Track links, replacing
775-081	4.50	Track recoil spring (tensioner) assembly, replacing
775-094	1.75	Full track guard, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
810-070	1.00	Electric pedal control on X1 (on/off), replacing
810-071	0.90	Electric pedal control on X1 (proportional), replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-091	1.00	Tool box assembly, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.50	Windscreen, replacing

Op.no.	time (h)	Notes
843-012	4.50	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.90	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	3.50	Cooler and Heater assembly, replacing
870-017	1.75	CCM, changing non-programmed ECU
870-018	1.75	CCM, changing pre-programmed ECU
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.50	Air mix door actuator, replacing
874-006	2.00	Compressor, replacing incl draining and filling
874-010	1.50	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	4.00	Expansion valve, replacing incl draining and filling
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-094	0.50	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.50	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	0.60	Instrument panel, replacing (left)
881-005	0.80	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-011	5.50	Oil cooler, replacing
911-015	0.40	Oil level gauge, replacing
911-033	1.25	Oil cooler line bypass valve (check valve), replacing
911-034	4.00	Oil cooler fan motor, replacing

Op.no.	time (h)	Notes
911-035	1.75	Oil cooler fan pump, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	8.50	Control valve, replacing
912-067	0.60	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)
912-160	0.80	Port relief valve pressure, checking and adjusting
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.50	Hydraulic pump, replacing
913-029	0.40	Pump regulator, replacing
914-041	0.50	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-060	1.75	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.25	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-040	1.25	Quickfit, replacing
924-040	1.25	Quickfit, replacing
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-021	3.00	Boom cylinder, replacing
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-024	2.00	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-028	1.75	Connecting rod yoke, replacing
975-039	6.50	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.00	Bucket cylinder, replacing
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing

Op.no.	time (h)	Notes
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1 STANDARD PARTS, SERVICE

17 SERVICE

173-002	0.80	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	4.50	Maintenance service, every 500 hours
173-012	7.00	Maintenance service, every 1000 hours
173-014	9.00	Maintenance service, every 2000 hours
173-018	12.00	Maintenance service, every 4000 hours
173-019	3.00	Maintenance service, every 4500 hours
173-022	0.60	Maintenance service, every 6000 hours
173-024	0.40	Maintenance service, every 8000 hours
173-028	0.40	Maintenance service, every 12000 hours
173-040	2.50	Maintenance service, first 500 hours
173-079	1.50	Swing motor gearbox, changing oil
173-101	0.50	Track motor gearbox, changing oil
173-401	0.70	Engine oil and filter, changing
173-412	0.20	Hydraulic oil tank breather filter, replacing
173-451	1.25	Hydraulic oil, changing
173-649	0.20	Hydraulic oil return filter, replacing

2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-009	1.75	VCADS Pro, MID 128, programming E-ECU
200-068	2.00	E-ECU, MID 128, changing non-programmed ECU
200-070	1.50	E-ECU, MID 128, changing pre-programmed ECU

21 ENGINE

210-070	6.50	Engine, removing
210-072	7.50	Engine, installing
212-071	1.00	Crankcase ventilation separator, replacing
214-012	2.50	Valves, adjusting
214-092	9.50	Rocker arms, replacing
215-042	6.50	Camshaft, replacing
217-005	1.25	Oil level sensor, changing

22 LUBRICATING SYSTEM

221-022	0.50	Lubrication oil pressure, checking with pressure gauge
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23 FUEL SYSTEM

230-001	0.50	Carbon dioxide in fuel system, check
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Op.no.	time (h)	Notes
230-002	0.90	Air in fuel system, checking
233-001	0.30	Fuel system, bleeding
233-004	0.20	Feed pump, checking feed pressure
233-010	1.25	Fuel pump, inspection
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-007	0.80	Overflow valve, replacing
237-010	1.50	Unit injectors, adjusting pretension
237-012	5.50	Unit injector, replacing
237-017	10.00	Injector sleeves, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.60	Exhaust pipe, flexible tube, replacing
254-001	2.50	Diesel particulate filter, check and clean
254-021	3.00	Atomization unit, replacing
254-022	0.90	ACM (After treatment control module), replacing, non-programmed
254-023	0.80	ACM (After treatment control module), replacing, pre-programmed
254-031	1.50	Air pump, replacing
254-033	2.50	Burner, replacing
254-034	1.25	Compressor, replacing
254-046	1.25	Spark plug, replacing
254-047	1.25	Spark plug, checking
254-048	0.40	Spark plug cable, replacing
254-061	3.50	Exhaust aftertreatment system, fuel pump, replacing
254-063	2.50	Aftertreatment support unit (ASU), replacing
254-064	0.50	High pressure air system, pressure, checking
254-065	1.00	Air pump flow, checking
254-069	0.70	Exhaust aftertreatment system fuel flow, checking
254-125	1.75	Exhaust aftertreatment fuel injector, replacing
255-003	1.75	Actuator, variable turbocharger, replacing
255-071	2.50	Turbocharger, replacing
256-006	0.40	Preheating coil, replacing
258-002	4.00	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.70	Coolant, changing
261-008	5.50	Radiator, replacing
261-012	0.60	Radiator hose upper, replacing
261-014	1.25	Radiator hoses lower, replacing
261-018	0.80	Expansion tank, replacing

Op.no.	time (h)	Notes
262-098	0.90	Thermostat, replacing
263-012	0.50	Fan belt and/or alternator belt, replacing
263-022	0.90	Fan belt and/or alternator-, compressor belt, replacing all belts
29		Miscellaneous
293-001	4.00	EGR cooler, replacing
293-002	2.50	EGR cooler, pressure test
293-003	4.00	EGR Venturi tube, checking
293-004	4.50	EGR cooler, cleaning
293-005	1.25	EGR valve, replacing
293-007	0.40	EGR pressure sensor, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	1.00	Batteries, replacing
311-006	0.60	Earth lead to battery, replacing
311-006	0.60	Earth lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.90	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing

Op.no.	time (h)	Notes
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-014	0.50	Ignition switch, replacing
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
367-075	0.90	Engine speed control switch, replacing
37		CABLE; FUSE; RELAY
371-043	0.80	Battery disconnecter, replacing
371-090	2.00	Engine wire harness, replacing
372-002	0.50	Electrical distribution box, circuit board replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
383-001	0.30	Hour meter, replacing
386-006	1.50	Engine temperature sensor, replacing
386-007	0.60	Engine oil pressure sensor, replacing
386-011	0.30	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing
386-038	1.75	Engine rotation speed sensor, replacing
386-044	0.40	Auto idling sensor, replacing
386-088	1.75	Engine rotation speed sensor (camshaft), replacing
387-019	0.30	Rear view camera, replacing
387-031	0.50	Total moment indicator (TMI), replacing
39		MISCELLANEOUS
393-001	0.50	Voltage converter, replacing
393-021	0.60	Radio, replacing
395-021	0.70	Antenna, replacing
395-031	0.40	Speaker, replacing
398-001	0.60	CareTrack antenna, replacing
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU290001 - 310000
398-003	1.50	W-ECU, MID142, changing non-programmed ECU 290001 - 310000
398-004	0.50	CareTrack battery, replacing
4		POWER TRANSMISSION
43		GEARBOX,
431-021	6.00	Swing gearbox, replacing
431-026	0.70	Swing gearbox removed, replacing seal
431-031	4.00	Pump gearbox coupling assembly, replacing
431-036	3.50	Pump gearbox flange, replacing
431-053	6.50	Swing unit, replacing

Op.no.	time (h)	Notes
431-111	6.00	Track gearbox, replacing
431-115	1.25	Track gearbox (removed), replacing floating seal
431-117	1.50	Track gearbox, replacing cover
431-127	6.50	Track unit, replacing
44		HYDROSTATIC DRIVE
441-021	3.00	Swing motor, replacing
441-022	0.70	Swing motor relief valve, replacing
441-026	0.30	Swing motor removed, replacing seal
441-111	3.50	Track motor, replacing
441-111	3.50	Track motor, replacing
441-112	0.70	Track motor relief valve, replacing
441-112	0.70	Track motor relief valve, replacing
443-037	6.00	Center passage, replacing
443-038	6.00	Center passage, replacing seal kit
49		MISCELLANEOUS
492-021	11.00	Swing ring gear, replacing
492-027	0.50	Swing limitation sensor, adjusting
492-031	3.00	Swing ring gear outer seal, replacing
492-032	9.50	Swing ring gear inner seal, replacing
492-091	0.50	Ring gear grease pipe, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-019	0.60	Boom cylinder protecting guard, removal
715-020	1.25	Boom cylinder protecting guard, installation
715-023	0.90	Bucket cylinder protecting guard, removal
715-024	1.25	Bucket cylinder protecting guard, installation
716-004	0.90	Additional counterweight, removing
716-005	0.90	Additional counterweight, installing
716-006	1.75	Removable counterweight, removing
716-007	2.00	Removable counterweight, installing
718-002	2.50	Retractable track, removing
718-003	3.00	Retractable track, installing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-009	2.50	Front idler, removing
775-010	3.00	Front idler, installing
775-011	4.50	Front idler, replacing one
775-021	5.00	Sprocket, replacing one
775-022	2.50	Sprocket, removal

Op.no.	time (h)	Notes
775-023	3.00	Sprocket, installation
775-034	1.75	Track chain assembly, removing
775-035	2.00	Track chain assembly, installing
775-036	11.00	Track links, replacing
775-066	3.00	Bottom roller, replacing seal
775-081	4.50	Track recoil spring (tensioner) assembly, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.90	Engine hood, replacing
827-091	1.75	Tool box assembly, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.30	Rear-view mirror, changing
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
86		PROTECTIVE EQUIPMENT, not specified in a special group
867-000	0.90	Falling object guard, removal
867-001	1.25	Falling object guard, installation
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
870-010	0.70	ECC, MID 146, changing pre-programmed ECU
870-011	1.00	ECC, MID 146, changing non-programmed ECU
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing

Op.no.	time (h)	Notes
873-011	0.70	Air mix door actuator, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	2.50	Pump suction hose and pipe, replacing
911-011	3.50	Oil cooler, replacing
911-015	0.40	Oil level gauge, replacing
911-033	1.00	Oil cooler line bypass valve (check valve), replacing
911-034	2.50	Oil cooler fan motor, replacing
911-035	1.00	Oil cooler fan pump, replacing
911-040	0.60	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	8.50	Control valve, replacing
912-067	0.60	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-177	1.75	Demolition control valve, replacing
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.00	Hydraulic pump, replacing
913-029	0.30	Pump regulator, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.75	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing

Op.no.	time (h)	Notes
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-005	0.80	Quickfit, removal
924-006	1.00	Quickfit, installation
924-040	0.80	Quickfit, replacing
925-011	1.75	Bucket assembly, replacing
925-012	1.25	Bucket assembly, removal
925-013	1.50	Bucket assembly, installation
94		UNIT, LOAD HANDLING
944-004	2.00	Base boom modular joint cylinder, replacing
944-005	2.50	Middle dipper arm cylinder, replacing
944-006	1.25	Base boom modular joint cylinder pin, replacing
945-057	1.75	Cab tilting cylinder, replacing
97		UNIT, DIGGING
975-006	1.75	Dipper arm connecting rod, removal
975-007	1.75	Dipper arm connecting rod, installation
975-011	4.50	Dipper arm, removal
975-012	4.50	Dipper arm, installation
975-014	1.50	Dipper arm cylinder, removal
975-015	1.75	Dipper arm cylinder, installation
975-024	2.00	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-028	1.75	Connecting rod yoke, replacing
975-032	1.50	Connecting rod yoke, removal
975-035	1.25	Connecting rod yoke, installation
975-039	11.00	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	3.00	Bucket cylinder, replacing
975-062	1.75	Bucket cylinder, removal
975-065	1.75	Bucket cylinder, installation
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
171-001	1.00	Arrival Inspection, according to Inspection Programme	
171-002	3.00	Delivery Inspection, according to Inspection Programme	
173-002	0.80	Maintenance service, daily	210001 - 260000
173-002	0.80	Maintenance service, daily	270001 - 310000 260001 - 270000
173-004	1.50	Maintenance service, every 50 hours	210001 - 260000
173-004	1.50	Maintenance service, every 50 hours	270001 - 310000 260001 - 270000
173-007	2.50	Maintenance service, every 250 hours	270001 - 310000 260001 - 270000
173-007	2.50	Maintenance service, every 250 hours	210001 - 260000
173-010	4.50	Maintenance service, every 500 hours	210001 - 260000
173-010	4.50	Maintenance service, every 500 hours	270001 - 310000 260001 - 270000
173-012	7.00	Maintenance service, every 1000 hours	210001 - 260000
173-012	7.00	Maintenance service, every 1000 hours	270001 - 310000 260001 - 270000
173-014	9.00	Maintenance service, every 2000 hours	210001 - 260000
173-014	9.00	Maintenance service, every 2000 hours	270001 - 310000 260001 - 270000
173-018	12.00	Maintenance service, every 4000 hours	210001 - 260000
173-018	12.00	Maintenance service, every 4000 hours	270001 - 310000 260001 - 270000
173-019	3.00	Maintenance service, every 4500 hours	210001 - 260000
173-022	0.60	Maintenance service, every 6000 hours	210001 - 260000
173-022	0.60	Maintenance service, every 6000 hours	270001 - 310000 260001 - 270000
173-024	0.40	Maintenance service, every 8000 hours	210001 - 260000
173-028	0.40	Maintenance service, every 12000 hours	210001 - 260000
173-040	2.50	Maintenance service, first 500 hours	270001 - 310000 260001 - 270000
173-040	2.50	Maintenance service, first 500 hours	210001 - 260000
173-079	1.50	Swing motor gearbox, changing oil	
173-101	0.50	Track motor gearbox, changing oil	
173-401	0.70	Engine oil and filter, changing	
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.25	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	

Op.no.	time (h)	Notes	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-009	0.30	VCADS Pro, MID 128, programming E-ECU	270001 - 310000 260001 - 270000
200-009	1.75	VCADS Pro, MID 128, programming E-ECU	210001 - 260000
200-068	2.00	E-ECU, MID 128, changing non-programmed ECU	270001 - 310000 260001 - 270000
200-068	2.00	E-ECU, MID 128, changing non-programmed ECU	210001 - 260000
200-070	1.50	E-ECU, MID 128, changing pre-programmed ECU	210001 - 260000
200-070	1.50	E-ECU, MID 128, changing pre-programmed ECU	270001 - 310000 260001 - 270000
21		ENGINE	
210-070	6.50	Engine, removing	210001 - 260000
210-070	6.00	Engine, removing	270001 - 310000 260001 - 270000
210-072	6.50	Engine, installing	270001 - 310000 260001 - 270000
210-072	7.50	Engine, installing	210001 - 260000
212-071	1.00	Crankcase ventilation separator, replacing	210001 - 260000
214-012	2.50	Valves, adjusting	210001 - 260000
214-012	2.50	Valves, adjusting	270001 - 310000 260001 - 270000
214-092	9.50	Rocker arms, replacing	210001 - 260000
215-042	6.50	Camshaft, replacing	210001 - 260000
217-005	1.25	Oil level sensor, changing	210001 - 260000
217-005	1.25	Oil level sensor, changing	270001 - 310000 260001 - 270000
22		LUBRICATING SYSTEM	
221-022	0.50	Lubrication oil pressure, checking with pressure gauge	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
230-002	0.90	Air in fuel system, checking	210001 - 260000
233-001	0.30	Fuel system, bleeding	270001 - 310000 260001 - 270000
233-001	0.30	Fuel system, bleeding	210001 - 260000
233-004	0.20	Feed pump, checking feed pressure	
233-010	1.25	Fuel pump, inspection	
234-041	0.40	Fuel filling pump, removing	
234-042	0.50	Fuel filling pump, installing	
237-007	0.80	Overflow valve, replacing	
237-010	1.50	Unit injectors, adjusting pretension	

Op.no.	time (h)		Notes
237-012	5.50	Unit injector, replacing	
237-017	10.00	Injector sleeves, replacing	
25		INLET SYSTEM; EXHAUST SYSTEM	
252-021	0.60	Exhaust pipe, flexible tube, replacing	210001 - 260000
254-001	2.50	Diesel particulate filter, check and clean	210001 - 260000
254-021	3.00	Atomization unit, replacing	210001 - 260000
254-022	0.90	ACM (After treatment control module), replacing, non-programmed	210001 - 260000
254-023	0.80	ACM (After treatment control module), replacing, pre-programmed	210001 - 260000
254-031	1.50	Air pump, replacing	210001 - 260000
254-033	2.50	Burner, replacing	210001 - 260000
254-034	1.25	Compressor, replacing	210001 - 260000
254-046	1.25	Spark plug, replacing	210001 - 260000
254-047	1.25	Spark plug, checking	210001 - 260000
254-048	0.40	Spark plug cable, replacing	210001 - 260000
254-061	3.50	Exhaust aftertreatment system, fuel pump, replacing	210001 - 260000
254-063	2.50	Aftertreatment support unit (ASU), replacing	210001 - 260000
254-064	0.50	High pressure air system, pressure, checking	210001 - 260000
254-065	1.00	Air pump flow, checking	210001 - 260000
254-069	0.70	Exhaust aftertreatment system fuel flow, checking	210001 - 260000
254-125	1.75	Exhaust aftertreatment fuel injector, replacing	210001 - 260000
255-003	1.75	Actuator, variable turbocharger, replacing	210001 - 260000
255-071	2.50	Turbocharger, replacing	210001 - 260000
255-071	3.00	Turbocharger, replacing	270001 - 310000 260001 - 270000
256-006	0.40	Preheating coil, replacing	210001 - 260000
256-006	0.50	Preheating coil, replacing	270001 - 310000 260001 - 270000
258-002	5.00	Intercooler, replacing	270001 - 310000 260001 - 270000
258-002	4.00	Intercooler, replacing	210001 - 260000
26		COOLING SYSTEM	
260-001	0.70	Carbon dioxide in coolant system, checking	
261-002	0.10	Coolant, checking anti-freeze resistance	
261-004	0.70	Coolant, changing	
261-008	5.50	Radiator, replacing	
261-012	0.60	Radiator hose upper, replacing	
261-014	1.25	Radiator hoses lower, replacing	
261-018	0.80	Expansion tank, replacing	
262-098	0.90	Thermostat, replacing	
263-012	0.50	Fan belt and/or alternator belt, replacing	

Op.no.	time (h)		Notes
263-022	0.90	Fan belt and/or alternator-, compressor belt, replacing all belts	270001 - 310000 260001 - 270000
263-022	0.90	Fan belt and/or alternator-, compressor belt, replacing all belts	210001 - 260000
29		Miscellaneous	
293-001	4.00	EGR cooler, replacing	210001 - 260000
293-002	2.50	EGR cooler, pressure test	210001 - 260000
293-003	4.00	EGR Venturi tube, checking	210001 - 260000
293-004	4.50	EGR cooler, cleaning	210001 - 260000
293-005	1.25	EGR valve, replacing	210001 - 260000
293-007	0.40	EGR pressure sensor, replacing	210001 - 260000
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-001	0.80	Battery charging capacity, checking	
311-002	1.00	Batteries, replacing	210001 - 270000
311-006	0.60	Earth lead to battery, replacing	210001 - 270000
311-006	0.60	Earth lead to battery, replacing	270001 - 310000
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.00	Alternator, replacing incl function check	
321-075	0.50	Alternator, test	
33		STARTING SYSTEM	
331-018	1.25	Starter motor, replacing	270001 - 310000 260001 - 270000
331-018	1.25	Starter motor, replacing	210001 - 270000
331-021	0.30	Starter motor, tests	
331-081	0.30	Starter relay, replacing	270001 - 280000 280001 - 310000 260001 - 270000
331-081	0.30	Starter relay, replacing	210001 - 260000
334-002	0.70	Starter switch, testing	
35		LIGHTING	
356-056	0.50	Work lighting, replacing one head lamp assy	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.30	Horn, replacing	

Op.no.	time (h)		Notes
362-041	0.30	Rotating beacon, replacing	
362-051	0.50	Travel alarm, replacing	
363-002	1.25	Windscreen wiper front, replacing motor	
363-003	0.90	Windscreen wiper, replacing switch	
363-004	0.50	Windscreen flusher pump, replacing	
363-091	0.50	Windscreen wiper, replacing controller	
364-003	0.60	Control lockout lever switch, replacing	
364-014	0.50	Ignition switch, replacing	
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	
367-075	0.90	Engine speed control switch, replacing	
37		CABLE; FUSE; RELAY	
371-043	0.80	Battery disconnecter, replacing	210001 - 260000
371-043	0.80	Battery disconnecter, replacing	270001 - 280000 280001 - 310000 260001 - 270000
371-090	2.00	Engine wire harness, replacing	210001 - 260000
371-090	2.00	Engine wire harness, replacing	270001 - 310000
372-002	0.50	Electrical distribution box, circuit board replacing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
383-001	0.30	Hour meter, replacing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
386-006	1.50	Engine temperature sensor, replacing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
386-007	0.60	Engine oil pressure sensor, replacing	270001 - 280000 280001 - 310000 260001 - 270000
386-007	0.60	Engine oil pressure sensor, replacing	210001 - 260000
386-011	0.30	Fuel level sender, replacing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
386-017	0.50	Hydraulic oil temperature sensor, replacing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
386-038	1.75	Engine rotation speed sensor, replacing	210001 - 260000 270001 - 280000 280001 - 310000

Op.no.	time (h)		Notes
			260001 - 270000
386-044	0.40	Auto idling sensor, replacing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
386-088	1.75	Engine rotation speed sensor (camshaft), replacing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
387-019	0.30	Rear view camera, replacing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
39		MISCELLANEOUS	
393-001	0.50	Voltage converter, replacing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
393-021	0.60	Radio, replacing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
395-021	0.70	Antenna, replacing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
395-031	0.40	Speaker, replacing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
398-001	0.60	CareTrack antenna, replacing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
398-002	0.90	W-ECU, MID142, changing pre-programmed ECU	270001 - 280000 280001 - 310000 260001 - 270000
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU	210001 - 260000
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	270001 - 280000 280001 - 310000 260001 - 270000
398-003	1.50	W-ECU, MID142, changing non-programmed ECU	210001 - 260000
398-004	0.50	CareTrack battery, replacing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000

Op.no.	time (h)		Notes
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.00	Swing gearbox, replacing	
431-026	0.70	Swing gearbox removed, replacing seal	
431-031	4.00	Pump gearbox coupling assembly, replacing	
431-036	3.50	Pump gearbox flange, replacing	
431-053	6.50	Swing unit, replacing	
431-111	6.00	Track gearbox, replacing	
431-115	1.25	Track gearbox (removed), replacing floating seal	
431-117	1.75	Track gearbox, replacing cover	210305 - 260000 271750 - 280000 280119 - 310000
431-117	1.50	Track gearbox, replacing cover	210001 - 210304 280001 - 280118 270001 - 270001
431-127	6.50	Track unit, replacing	
44		HYDROSTATIC DRIVE	
441-021	3.00	Swing motor, replacing	
441-022	0.70	Swing motor relief valve, replacing	
441-026	0.30	Swing motor removed, replacing seal	
441-111	3.50	Track motor, replacing	210124 - 270000 270001 - 310000 260001 - 270000 280001 - 310000
441-111	3.50	Track motor, replacing	210058 - 270000
441-112	0.70	Track motor relief valve, replacing	210124 - 270000 270001 - 310000 260001 - 270000 280001 - 310000
441-112	0.70	Track motor relief valve, replacing	210058 - 270000
443-037	6.00	Center passage, replacing	
443-038	6.00	Center passage, replacing seal kit	
49		MISCELLANEOUS	
492-021	11.00	Swing ring gear, replacing	
492-031	3.00	Swing ring gear outer seal, replacing	270001 - 271616 280001 - 280113
492-032	9.50	Swing ring gear inner seal, replacing	270001 - 271616 280001 - 280113
492-032	9.00	Swing ring gear inner seal, replacing	271617 - 280000 280114 - 310000
492-091	0.50	Ring gear grease pipe, replacing	

Op.no.	time (h)	Notes	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	4.00	Superstructure, removing	
710-002	5.00	Superstructure, installing	
716-001	1.50	Counterweight, removing	
716-002	1.50	Counterweight, fitting	
716-006	1.25	Removable counterweight, removing	210001 - 270000
716-007	1.50	Removable counterweight, installing	210001 - 270000
718-002	2.50	Retractable track, removing	210001 - 270000
718-003	3.00	Retractable track, installing	210001 - 270000
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-009	2.50	Front idler, removing	
775-010	3.00	Front idler, installing	
775-011	4.50	Front idler, replacing one	
775-021	5.00	Sprocket, replacing one	
775-022	2.50	Sprocket, removal	
775-023	3.00	Sprocket, installation	
775-034	1.75	Track chain assembly, removing	
775-035	2.00	Track chain assembly, installing	
775-036	11.00	Track links, replacing	
775-066	3.00	Bottom roller, replacing seal	
775-081	4.50	Track recoil spring (tensioner) assembly, replacing	
775-094	1.75	Full track guard, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.75	Cab, removing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
810-002	2.50	Cab, installing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	0.90	Engine hood, replacing	270001 - 280000 280001 - 310000 260001 - 270000

Op.no.	time (h)		Notes
821-005	0.90	Engine hood, replacing	210001 - 260000
827-091	1.75	Tool box assembly, replacing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.30	Rear-view mirror, changing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
843-002	1.50	Windscreen, replacing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
843-012	4.00	Rear window, replacing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
843-013	4.50	Side window, replacing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
843-048	0.70	Door window, replacing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	210001 - 260000
852-008	1.75	Seat, replacing	270001 - 280000 280001 - 310000 260001 - 270000
852-012	1.75	Longitudinal adjustment cable, replacing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
852-013	0.60	Longitudinal suspension cable, replacing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
852-089	0.30	Seat cushion, replacing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
852-090	0.60	Backrest, replacing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
852-091	2.50	Seat support, replacing	210001 - 260000

Op.no.	time (h)		Notes
852-091	1.75	Seat support, replacing	270001 - 280000 280001 - 310000 260001 - 270000
87		AIR CONDITIONING UNIT	
870-001	5.00	Cooler and Heater assembly, replacing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
870-010	0.70	ECC, MID 146, changing pre-programmed ECU	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
870-011	1.00	ECC, MID 146, changing non-programmed ECU	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
872-001	0.50	Cab filter, replacing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
873-004	3.00	Heater core, replacing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
873-006	0.80	Fan motor, replacing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
873-011	0.70	Air mix door actuator, replacing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
874-006	1.75	Compressor, replacing incl draining and filling	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
874-010	1.75	Condenser, replacing incl draining and filling	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
874-011	1.75	Receiver, replacing incl draining and filling	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
874-012	3.00	Evaporator, replacing incl draining and filling	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
874-013	3.00	Expansion valve, replacing incl draining and filling	210001 - 260000 270001 - 280000

Op.no.	time (h)		Notes
			280001 - 310000
			260001 - 270000
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
874-094	0.60	Vent actuator, replacing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
874-095	0.60	Mode (foot) actuator, replacing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
874-096	0.60	Intake actuator, replacing	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
88		INTERIOR EQUIPMENT	
881-003	1.00	Instrument panel, replacing (left)	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
881-005	1.25	Instrument panel, replacing (right)	210001 - 260000 270001 - 280000 280001 - 310000 260001 - 270000
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-005	2.50	Pump suction hose and pipe, replacing	
911-011	3.50	Oil cooler, replacing	
911-015	0.40	Oil level gauge, replacing	
911-033	1.00	Oil cooler line bypass valve (check valve), replacing	
911-034	2.50	Oil cooler fan motor, replacing	
911-035	1.00	Oil cooler fan pump, replacing	
911-038	3.50	Hydraulic oil tank, replacing	270001 - 310000 260001 - 270000
911-038	3.50	Hydraulic oil tank, replacing	210001 - 260000
911-040	0.60	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
911-051	0.20	Breather, replacing	
912-001	8.50	Control valve, replacing	270001 - 310000 260001 - 270000

Op.no.	time (h)		Notes
912-001	8.50	Control valve, replacing	210001 - 260000
912-067	0.60	Main pressure relief valve, replacing	
912-071	0.80	Rupture valve, replacing (boom cylinder)	
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	5.00	Hydraulic pump, replacing	270001 - 310000 260001 - 270000
913-010	4.00	Hydraulic pump, replacing	210001 - 260000
913-029	0.30	Pump regulator, replacing	
914-041	0.60	Proportional solenoid valve (power shift), replacing	
914-051	0.40	Accumulator, replacing	
914-060	2.00	Servo pump, replacing	270001 - 310000 260001 - 270000
914-081	1.75	Remote control valve (lever), replacing	
914-084	1.75	Remote control valve (pedal), replacing	
914-091	1.75	Solenoid valve, replacing	
916-096	0.80	Hammer and shear pedal valve (RCV), replacing	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-005	0.80	Quickfit, removal	
924-006	1.00	Quickfit, installation	
924-040	0.80	Quickfit, replacing	
925-011	1.75	Bucket assembly, replacing	
925-012	1.25	Bucket assembly, removal	
925-013	1.50	Bucket assembly, installation	
97		UNIT, DIGGING	
974-010	16.00	Boom, replacing	
974-013	6.00	Boom, removal	210001 - 260000
974-013	6.00	Boom, removal	270001 - 310000 260001 - 270000
974-014	6.50	Boom, installation	210001 - 260000
974-014	6.50	Boom, installation	270001 - 310000 260001 - 270000
974-021	3.00	Boom cylinder, replacing	
974-025	6.00	Boom cylinder, repacking in machine	
974-031	1.75	Boom cylinder, removal	
974-032	1.50	Boom cylinder, installation	
974-038	3.50	Lower boom cylinder bushing, replacing	
974-039	3.50	Upper boom cylinder bushing, replacing	
975-006	1.75	Dipper arm connecting rod, removal	
975-007	1.75	Dipper arm connecting rod, installation	
975-011	4.50	Dipper arm, removal	
975-012	4.50	Dipper arm, installation	

Op.no.	time (h)		Notes
975-014	1.50	Dipper arm cylinder, removal	
975-015	1.75	Dipper arm cylinder, installation	
975-024	2.00	Dipper arm connecting rod, replacing	
975-025	3.00	Dipper arm cylinder, replacing	
975-028	1.75	Connecting rod yoke, replacing	
975-032	1.50	Connecting rod yoke, removal	
975-035	1.25	Connecting rod yoke, installation	
975-039	11.00	Dipper arm, replacing	
975-040	3.50	Dipper arm cylinder bushing on boom, replacing	
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing	
975-043	6.00	Dipper arm cylinder, repacking in machine	270001 - 310000
975-061	3.00	Bucket cylinder, replacing	
975-062	1.75	Bucket cylinder, removal	
975-063	6.00	Bucket cylinder, repacking in machine	270001 - 310000
975-065	1.75	Bucket cylinder, installation	
975-072	3.50	Bucket cylinder bushing on dipper arm, changing	
975-073	3.50	Bucket cylinder bushing lever-link, replacing	

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.90	Maintenance service, every 10 hours
173-004	1.25	Maintenance service, every 50 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	8.00	Maintenance service, every 2000 hours
173-018	10.00	Maintenance service, every 4000 hours
173-019	1.25	Maintenance service, every 4500 hours
173-022	1.50	Maintenance service, every 6000 hours
173-040	2.00	Maintenance service, first 500 hours
173-303	0.30	Lubrication, every 50 hours
173-319	1.25	Diesel particulate filter, checking and cleaning
173-332	0.40	MATRIS and Tech Tool, reading
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-066	2.50	ECM (Engine control module), replacing pre-programmed
200-067	3.00	ECM (Engine control module), replacing non-programmed
200-200	0.60	Engine belts, replacing
21		ENGINE
210-002	11.00	Compression test
210-070	5.50	Engine, removing
210-072	6.50	Engine, installing
210-092	0.70	Engine rotation speed sensor (camshaft), replacing
210-093	0.60	Engine rotation speed sensor (crank shaft), replacing
212-071	1.00	Crankcase ventilation separator, replacing
214-012	2.50	Valves, adjusting
214-092	9.50	Rocker arms, replacing
215-042	6.50	Camshaft, replacing
215-043	1.50	Camshaft setting, checking
217-005	1.00	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.50	Lubrication oil pressure, checking with pressure gauge

Op.no.	time (h)	Notes
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
230-002	0.90	Air in fuel system, checking
233-001	0.30	Fuel system, bleeding
233-004	0.20	Feed pump, checking feed pressure
237-002	9.50	Injectors, replacing all
237-010	1.50	Unit injectors, adjusting pretension
237-017	8.50	Injector sleeves, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.80	Exhaust pipe, flexible tube, replacing
254-001	1.25	Diesel particulate filter, check and clean
254-022	1.00	ACM (After treatment control module), replacing, non-programmed
254-023	0.60	ACM (After treatment control module), replacing, pre-programmed
254-034	2.50	Compressor, replacing
254-056	0.60	NOx sensor, replacing
254-059	0.70	Inlet throttle, replacing
254-064	1.00	High pressure air system, pressure, checking
254-069	0.40	Exhaust aftertreatment system fuel flow, checking
254-101	1.25	AdBlue®/DEF pump, replacing
254-102	0.80	AdBlue®/DEF nozzle, replacing
254-103	1.50	AdBlue®/DEF tank, tank armature, replacing
254-104	0.30	Aftertreatment fuel nozzle, replacing
254-106	1.50	AdBlue®/DEF hoses, replacing
254-107	2.50	AdBlue®/DEF pump unit, replacing
254-108	1.00	Aftertreatment fuel dosing unit, replacing
254-109	0.20	Aftertreatment fuel nozzle, cleaning
254-111	1.50	Muffler, replacing
254-112	2.50	AdBlue®/DEF tank, replacing
254-114	1.50	AdBlue®/DEF, draining
254-117	1.25	AdBlue®/DEF pump unit, components, replacing
254-118	0.80	SCR system, dosing test
254-121	0.50	AdBlue®/DEF quality, checking
255-003	1.25	Actuator, variable turbocharger, replacing
255-071	2.50	Turbocharger, replacing
258-002	5.50	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.70	Coolant, changing
261-008	5.50	Radiator, replacing

Op.no.	time (h)	Notes
29		Miscellaneous
293-001	4.50	EGR cooler, replacing
293-002	2.00	EGR cooler, pressure test
293-004	6.50	EGR cooler, cleaning
293-005	1.25	EGR valve, replacing
293-007	0.40	EGR pressure sensor, replacing
293-010	0.70	EGR Venturi tube, replacing
293-013	1.00	EGR venturi tube, cleaning
 3		 ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.60	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-006	0.50	Earth lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.90	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
334-002	0.70	Starter switch, testing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.40	Horn, replacing
362-041	0.40	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.60	Windscreen flusher pump, replacing
364-003	0.80	Control lockout lever switch, replacing
364-014	0.50	Ignition switch, replacing
364-056	0.90	Pre-heating relay, replacing
366-103	0.80	HMICU, changing pre-programmed ECU
366-104	1.50	HMICU, changing non-programmed ECU
366-105	0.70	GPMECU1, changing pre-programmed ECU
366-106	1.25	GPMECU1, changing non-programmed ECU

Op.no.	time (h)	Notes	
37		CABLE; FUSE; RELAY	
371-090	3.50	Engine wire harness, replacing	
371-092	0.70	Electrical battery disconnect switch, replacing	
372-002	0.80	Electrical distribution box, circuit board replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
383-001	0.30	Hour meter, replacing	
386-006	0.70	Engine temperature sensor, replacing	
386-007	0.80	Engine oil pressure sensor, replacing	
386-011	0.60	Fuel level sender, replacing	
386-017	0.50	Hydraulic oil temperature sensor, replacing	
39		MISCELLANEOUS	
393-001	0.80	Voltage converter, replacing	
393-021	0.70	Radio, replacing	
395-021	0.50	Antenna, replacing	
395-031	0.40	Speaker, replacing	
398-001	0.60	CareTrack antenna, replacing	
398-004	0.50	CareTrack battery, replacing	
398-005	1.25	W-ECU, replacing, non-programmed	
398-006	0.90	W-ECU, replacing, pre-programmed	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.00	Swing gearbox, replacing	
431-026	0.70	Swing gearbox removed, replacing seal	
431-031	6.00	Pump gearbox coupling assembly, replacing	
431-036	5.50	Pump gearbox flange, replacing	
431-053	6.50	Swing unit, replacing	
431-111	6.00	Track gearbox, replacing	310001 - 310010
431-117	1.75	Track gearbox, replacing cover	310001 - 310010
431-127	6.50	Track unit, replacing	310001 - 310010
44		HYDROSTATIC DRIVE	
441-021	3.00	Swing motor, replacing	
441-022	0.70	Swing motor relief valve, replacing	
441-026	0.30	Swing motor removed, replacing seal	
441-111	3.50	Track motor, replacing	310001 - 310010
441-112	0.70	Track motor relief valve, replacing	310001 - 310010
443-037	6.00	Center passage, replacing	
443-038	6.00	Center passage, replacing seal kit	

Op.no.	time (h)	Notes
49		MISCELLANEOUS
492-021	11.00	Swing ring gear, replacing
492-031	3.00	Swing ring gear outer seal, replacing
492-032	9.00	Swing ring gear inner seal, replacing
492-091	0.50	Ring gear grease pipe, replacing
 7		 FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
710-001	4.00	Superstructure, removing
710-002	5.00	Superstructure, installing
716-001	1.50	Counterweight, removing
716-002	1.50	Counterweight, fitting
716-006	1.25	Removable counterweight, removing
716-007	1.50	Removable counterweight, installing
718-002	2.50	Retractable track, removing
718-003	3.00	Retractable track, installing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-009	2.50	Front idler, removing
775-010	3.00	Front idler, installing
775-011	4.50	Front idler, replacing one
775-021	5.00	Sprocket, replacing one
775-022	2.50	Sprocket, removal
775-023	3.00	Sprocket, installation
775-034	1.75	Track chain assembly, removing
775-035	2.00	Track chain assembly, installing
775-036	11.00	Track links, replacing
775-066	3.00	Bottom roller, replacing seal
775-081	4.50	Track recoil spring (tensioner) assembly, replacing
775-094	1.75	Full track guard, replacing
 8		 MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
810-070	1.00	Electric pedal control on X1 (on/off), replacing

Op.no.	time (h)	Notes
810-071	0.90	Electric pedal control on X1 (proportional), replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-091	1.00	Tool box assembly, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.50	Windscreen, replacing
843-012	4.50	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.90	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-017	1.75	CCM, changing non-programmed ECU
870-018	1.75	CCM, changing pre-programmed ECU
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.50	Air mix door actuator, replacing
874-010	1.50	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	4.00	Expansion valve, replacing incl draining and filling
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-094	0.50	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.50	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	0.60	Instrument panel, replacing (left)
881-005	0.80	Instrument panel, replacing (right)

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-011	5.50	Oil cooler, replacing
911-015	0.40	Oil level gauge, replacing
911-033	1.25	Oil cooler line bypass valve (check valve), replacing
911-034	4.00	Oil cooler fan motor, replacing
911-035	1.75	Oil cooler fan pump, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	8.50	Control valve, replacing
912-067	0.60	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)
912-160	0.80	Port relief valve pressure, checking and adjusting
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	5.00	Hydraulic pump, replacing
913-029	0.60	Pump regulator, replacing
914-041	0.40	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-060	1.75	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.25	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-040	1.25	Quickfit, replacing
924-040	1.25	Quickfit, replacing
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-021	3.00	Boom cylinder, replacing
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-024	2.00	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-028	1.75	Connecting rod yoke, replacing
975-039	6.50	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing

Op.no.	time (h)	Notes
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.00	Bucket cylinder, replacing
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.90	Maintenance service, every 10 hours
173-004	1.25	Maintenance service, every 50 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	8.00	Maintenance service, every 2000 hours
173-018	10.00	Maintenance service, every 4000 hours
173-019	1.25	Maintenance service, every 4500 hours
173-022	1.50	Maintenance service, every 6000 hours
173-040	2.00	Maintenance service, first 500 hours
173-303	0.30	Lubrication, every 50 hours
173-319	1.25	Diesel particulate filter, checking and cleaning
173-332	0.40	MATRIS and Tech Tool, reading
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-066	2.50	ECM (Engine control module), replacing pre-programmed
200-067	3.00	ECM (Engine control module), replacing non-programmed
200-200	0.60	Engine belts, replacing
21		ENGINE
210-002	11.00	Compression test
210-070	5.50	Engine, removing
210-072	6.50	Engine, installing
210-092	0.70	Engine rotation speed sensor (camshaft), replacing
210-093	0.60	Engine rotation speed sensor (crank shaft), replacing
212-071	1.00	Crankcase ventilation separator, replacing
214-012	2.50	Valves, adjusting
214-092	9.50	Rocker arms, replacing
215-042	6.50	Camshaft, replacing
215-043	1.50	Camshaft setting, checking
217-005	1.00	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.50	Lubrication oil pressure, checking with pressure gauge

Op.no.	time (h)	Notes
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
230-002	0.90	Air in fuel system, checking
233-001	0.30	Fuel system, bleeding
233-004	0.20	Feed pump, checking feed pressure
237-002	9.50	Injectors, replacing all
237-010	1.50	Unit injectors, adjusting pretension
237-017	8.50	Injector sleeves, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.80	Exhaust pipe, flexible tube, replacing
254-001	1.25	Diesel particulate filter, check and clean
254-022	1.00	ACM (After treatment control module), replacing, non-programmed
254-023	0.60	ACM (After treatment control module), replacing, pre-programmed
254-034	2.50	Compressor, replacing
254-056	0.60	NOx sensor, replacing
254-059	0.70	Inlet throttle, replacing
254-064	1.00	High pressure air system, pressure, checking
254-069	0.40	Exhaust aftertreatment system fuel flow, checking
254-101	1.25	AdBlue®/DEF pump, replacing
254-102	0.80	AdBlue®/DEF nozzle, replacing
254-103	1.50	AdBlue®/DEF tank, tank armature, replacing
254-104	0.30	Aftertreatment fuel nozzle, replacing
254-106	1.50	AdBlue®/DEF hoses, replacing
254-107	2.50	AdBlue®/DEF pump unit, replacing
254-108	1.00	Aftertreatment fuel dosing unit, replacing
254-109	0.20	Aftertreatment fuel nozzle, cleaning
254-111	1.50	Muffler, replacing
254-112	2.50	AdBlue®/DEF tank, replacing
254-114	1.50	AdBlue®/DEF, draining
254-117	1.25	AdBlue®/DEF pump unit, components, replacing
254-118	0.80	SCR system, dosing test
254-121	0.50	AdBlue®/DEF quality, checking
255-003	1.25	Actuator, variable turbocharger, replacing
255-071	2.50	Turbocharger, replacing
258-002	5.50	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.70	Coolant, changing
261-008	5.50	Radiator, replacing

Op.no.	time (h)	Notes
29		Miscellaneous
293-001	4.50	EGR cooler, replacing
293-002	2.00	EGR cooler, pressure test
293-004	6.50	EGR cooler, cleaning
293-005	1.25	EGR valve, replacing
293-007	0.40	EGR pressure sensor, replacing
293-010	0.70	EGR Venturi tube, replacing
293-013	1.00	EGR venturi tube, cleaning
 3		 ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.60	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-006	0.50	Earth lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.90	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
334-002	0.70	Starter switch, testing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.40	Horn, replacing
362-041	0.40	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.60	Windscreen flusher pump, replacing
364-003	0.80	Control lockout lever switch, replacing
364-014	0.50	Ignition switch, replacing
364-056	0.90	Pre-heating relay, replacing
366-103	0.80	HMICU, changing pre-programmed ECU
366-104	1.50	HMICU, changing non-programmed ECU
366-105	0.70	GPMECU1, changing pre-programmed ECU
366-106	1.25	GPMECU1, changing non-programmed ECU

Op.no.	time (h)	Notes	
37		CABLE; FUSE; RELAY	
371-090	3.50	Engine wire harness, replacing	
371-092	0.70	Electrical battery disconnect switch, replacing	
372-002	0.80	Electrical distribution box, circuit board replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
383-001	0.30	Hour meter, replacing	
386-006	0.70	Engine temperature sensor, replacing	
386-007	0.80	Engine oil pressure sensor, replacing	
386-011	0.60	Fuel level sender, replacing	
386-017	0.50	Hydraulic oil temperature sensor, replacing	
39		MISCELLANEOUS	
393-001	0.80	Voltage converter, replacing	
393-021	0.70	Radio, replacing	
395-021	0.50	Antenna, replacing	
395-031	0.40	Speaker, replacing	
398-001	0.60	CareTrack antenna, replacing	
398-004	0.50	CareTrack battery, replacing	
398-005	1.25	W-ECU, replacing, non-programmed	
398-006	0.90	W-ECU, replacing, pre-programmed	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.00	Swing gearbox, replacing	
431-026	0.70	Swing gearbox removed, replacing seal	
431-031	6.00	Pump gearbox coupling assembly, replacing	
431-036	5.50	Pump gearbox flange, replacing	
431-053	6.50	Swing unit, replacing	
431-111	6.00	Track gearbox, replacing	310001 - 310010
431-117	1.75	Track gearbox, replacing cover	310001 - 310010
431-127	6.50	Track unit, replacing	310001 - 310010
44		HYDROSTATIC DRIVE	
441-021	3.00	Swing motor, replacing	
441-022	0.70	Swing motor relief valve, replacing	
441-026	0.30	Swing motor removed, replacing seal	
441-111	3.50	Track motor, replacing	310001 - 310010
441-112	0.70	Track motor relief valve, replacing	310001 - 310010
443-037	6.00	Center passage, replacing	
443-038	6.00	Center passage, replacing seal kit	

Op.no.	time (h)	Notes
49		MISCELLANEOUS
492-021	11.00	Swing ring gear, replacing
492-031	3.00	Swing ring gear outer seal, replacing
492-032	9.00	Swing ring gear inner seal, replacing
492-091	0.50	Ring gear grease pipe, replacing
 7		 FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
710-001	4.00	Superstructure, removing
710-002	5.00	Superstructure, installing
715-019	0.60	Boom cylinder protecting guard, removal
715-020	1.25	Boom cylinder protecting guard, installation
715-023	0.90	Bucket cylinder protecting guard, removal
715-024	1.25	Bucket cylinder protecting guard, installation
716-001	1.50	Counterweight, removing
716-002	1.50	Counterweight, fitting
716-006	1.25	Removable counterweight, removing
716-007	1.50	Removable counterweight, installing
718-002	2.50	Retractable track, removing
718-003	3.00	Retractable track, installing
 77		 WHEELS; TRACKS; TYRE; HUB; DRUM
775-009	2.50	Front idler, removing
775-010	3.00	Front idler, installing
775-011	4.50	Front idler, replacing one
775-021	5.00	Sprocket, replacing one
775-022	2.50	Sprocket, removal
775-023	3.00	Sprocket, installation
775-034	1.75	Track chain assembly, removing
775-035	2.00	Track chain assembly, installing
775-036	11.00	Track links, replacing
775-066	3.00	Bottom roller, replacing seal
775-081	4.50	Track recoil spring (tensioner) assembly, replacing
775-094	1.75	Full track guard, replacing

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
810-070	1.00	Electric pedal control on X1 (on/off), replacing
810-071	0.90	Electric pedal control on X1 (proportional), replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-091	1.00	Tool box assembly, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.50	Windscreen, replacing
843-012	4.50	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.90	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-017	1.75	CCM, changing non-programmed ECU
870-018	1.75	CCM, changing pre-programmed ECU
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.50	Air mix door actuator, replacing
874-010	1.50	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	4.00	Expansion valve, replacing incl draining and filling
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-094	0.50	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.50	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	0.60	Instrument panel, replacing (left)

Op.no.	time (h)	Notes
881-005	0.80	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-011	5.50	Oil cooler, replacing
911-015	0.40	Oil level gauge, replacing
911-033	1.25	Oil cooler line bypass valve (check valve), replacing
911-034	4.00	Oil cooler fan motor, replacing
911-035	1.75	Oil cooler fan pump, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	8.50	Control valve, replacing
912-067	0.60	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)
912-160	0.80	Port relief valve pressure, checking and adjusting
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	5.00	Hydraulic pump, replacing
913-029	0.60	Pump regulator, replacing
914-041	0.40	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-060	1.75	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.25	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-040	1.25	Quickfit, replacing
924-040	1.25	Quickfit, replacing
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-021	3.00	Boom cylinder, replacing
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-024	2.00	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-028	1.75	Connecting rod yoke, replacing

Op.no.	time (h)	Notes
975-039	6.50	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.00	Bucket cylinder, replacing
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.90	Maintenance service, every 10 hours
173-004	1.25	Maintenance service, every 50 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	8.00	Maintenance service, every 2000 hours
173-018	10.00	Maintenance service, every 4000 hours
173-019	1.25	Maintenance service, every 4500 hours
173-022	1.50	Maintenance service, every 6000 hours
173-040	2.00	Maintenance service, first 500 hours
173-303	0.30	Lubrication, every 50 hours
173-319	1.25	Diesel particulate filter, checking and cleaning
173-332	0.40	MATRIS and Tech Tool, reading
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-066	2.50	ECM (Engine control module), replacing pre-programmed
200-067	3.00	ECM (Engine control module), replacing non-programmed
200-200	0.60	Engine belts, replacing
21		ENGINE
210-002	11.00	Compression test
210-070	5.50	Engine, removing
210-072	6.50	Engine, installing
210-092	0.70	Engine rotation speed sensor (camshaft), replacing
210-093	0.60	Engine rotation speed sensor (crank shaft), replacing
212-071	1.00	Crankcase ventilation separator, replacing
214-012	2.50	Valves, adjusting
214-092	9.50	Rocker arms, replacing
215-042	6.50	Camshaft, replacing
215-043	1.50	Camshaft setting, checking
217-005	1.00	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.50	Lubrication oil pressure, checking with pressure gauge

Op.no.	time (h)	Notes
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
230-002	0.90	Air in fuel system, checking
233-001	0.30	Fuel system, bleeding
233-004	0.20	Feed pump, checking feed pressure
237-002	9.50	Injectors, replacing all
237-010	1.50	Unit injectors, adjusting pretension
237-017	8.50	Injector sleeves, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.80	Exhaust pipe, flexible tube, replacing
254-001	1.25	Diesel particulate filter, check and clean
254-022	1.00	ACM (After treatment control module), replacing, non-programmed
254-023	0.60	ACM (After treatment control module), replacing, pre-programmed
254-034	2.50	Compressor, replacing
254-056	0.60	NOx sensor, replacing
254-059	0.70	Inlet throttle, replacing
254-064	1.00	High pressure air system, pressure, checking
254-069	0.40	Exhaust aftertreatment system fuel flow, checking
254-101	1.25	AdBlue®/DEF pump, replacing
254-102	0.80	AdBlue®/DEF nozzle, replacing
254-103	1.50	AdBlue®/DEF tank, tank armature, replacing
254-104	0.30	Aftertreatment fuel nozzle, replacing
254-106	1.50	AdBlue®/DEF hoses, replacing
254-107	2.50	AdBlue®/DEF pump unit, replacing
254-108	1.00	Aftertreatment fuel dosing unit, replacing
254-109	0.20	Aftertreatment fuel nozzle, cleaning
254-111	1.50	Muffler, replacing
254-112	2.50	AdBlue®/DEF tank, replacing
254-114	1.50	AdBlue®/DEF, draining
254-117	1.25	AdBlue®/DEF pump unit, components, replacing
254-118	0.80	SCR system, dosing test
254-121	0.50	AdBlue®/DEF quality, checking
255-003	1.25	Actuator, variable turbocharger, replacing
255-071	2.50	Turbocharger, replacing
258-002	5.50	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.70	Coolant, changing
261-008	5.50	Radiator, replacing

Op.no.	time (h)	Notes
29		Miscellaneous
293-001	4.50	EGR cooler, replacing
293-002	2.00	EGR cooler, pressure test
293-004	6.50	EGR cooler, cleaning
293-005	1.25	EGR valve, replacing
293-007	0.40	EGR pressure sensor, replacing
293-010	0.70	EGR Venturi tube, replacing
293-013	1.00	EGR venturi tube, cleaning
 3		 ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.60	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-006	0.50	Earth lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.90	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
334-002	0.70	Starter switch, testing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.40	Horn, replacing
362-041	0.40	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.60	Windscreen flusher pump, replacing
364-003	0.80	Control lockout lever switch, replacing
364-014	0.50	Ignition switch, replacing
364-056	0.90	Pre-heating relay, replacing
366-103	0.80	HMICU, changing pre-programmed ECU
366-104	1.50	HMICU, changing non-programmed ECU
366-105	0.70	GPMECU1, changing pre-programmed ECU
366-106	1.25	GPMECU1, changing non-programmed ECU

Op.no.	time (h)	Notes	
37		CABLE; FUSE; RELAY	
371-090	3.50	Engine wire harness, replacing	
371-092	0.70	Electrical battery disconnect switch, replacing	
372-002	0.80	Electrical distribution box, circuit board replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
383-001	0.30	Hour meter, replacing	
386-006	0.70	Engine temperature sensor, replacing	
386-007	0.80	Engine oil pressure sensor, replacing	
386-011	0.60	Fuel level sender, replacing	
386-017	0.50	Hydraulic oil temperature sensor, replacing	
39		MISCELLANEOUS	
393-001	0.80	Voltage converter, replacing	
393-021	0.70	Radio, replacing	
395-021	0.50	Antenna, replacing	
395-031	0.40	Speaker, replacing	
398-001	0.60	CareTrack antenna, replacing	
398-004	0.50	CareTrack battery, replacing	
398-005	1.25	W-ECU, replacing, non-programmed	
398-006	0.90	W-ECU, replacing, pre-programmed	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.00	Swing gearbox, replacing	
431-026	0.70	Swing gearbox removed, replacing seal	
431-031	6.00	Pump gearbox coupling assembly, replacing	
431-036	5.50	Pump gearbox flange, replacing	
431-053	6.50	Swing unit, replacing	
431-111	6.00	Track gearbox, replacing	310001 - 310010
431-117	1.75	Track gearbox, replacing cover	310001 - 310010
431-127	6.50	Track unit, replacing	310001 - 310010
44		HYDROSTATIC DRIVE	
441-021	3.00	Swing motor, replacing	
441-022	0.70	Swing motor relief valve, replacing	
441-026	0.30	Swing motor removed, replacing seal	
441-111	3.50	Track motor, replacing	310001 - 310010
441-112	0.70	Track motor relief valve, replacing	310001 - 310010
443-037	6.00	Center passage, replacing	
443-038	6.00	Center passage, replacing seal kit	

Op.no.	time (h)	Notes
49		MISCELLANEOUS
492-021	11.00	Swing ring gear, replacing
492-031	3.00	Swing ring gear outer seal, replacing
492-032	9.00	Swing ring gear inner seal, replacing
492-091	0.50	Ring gear grease pipe, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
710-001	4.00	Superstructure, removing
710-002	5.00	Superstructure, installing
716-001	1.50	Counterweight, removing
716-002	1.50	Counterweight, fitting
716-006	1.25	Removable counterweight, removing
716-007	1.50	Removable counterweight, installing
718-002	2.50	Retractable track, removing
718-003	3.00	Retractable track, installing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-009	2.50	Front idler, removing
775-010	3.00	Front idler, installing
775-011	4.50	Front idler, replacing one
775-021	5.00	Sprocket, replacing one
775-022	2.50	Sprocket, removal
775-023	3.00	Sprocket, installation
775-034	1.75	Track chain assembly, removing
775-035	2.00	Track chain assembly, installing
775-036	11.00	Track links, replacing
775-066	3.00	Bottom roller, replacing seal
775-081	4.50	Track recoil spring (tensioner) assembly, replacing
775-094	1.75	Full track guard, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
810-070	1.00	Electric pedal control on X1 (on/off), replacing

Op.no.	time (h)	Notes
810-071	0.90	Electric pedal control on X1 (proportional), replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-091	1.00	Tool box assembly, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.50	Windscreen, replacing
843-012	4.50	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.90	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-017	1.75	CCM, changing non-programmed ECU
870-018	1.75	CCM, changing pre-programmed ECU
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.50	Air mix door actuator, replacing
874-010	1.50	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	4.00	Expansion valve, replacing incl draining and filling
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-094	0.50	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.50	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	0.60	Instrument panel, replacing (left)
881-005	0.80	Instrument panel, replacing (right)

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-011	5.50	Oil cooler, replacing
911-015	0.40	Oil level gauge, replacing
911-033	1.25	Oil cooler line bypass valve (check valve), replacing
911-034	4.00	Oil cooler fan motor, replacing
911-035	1.75	Oil cooler fan pump, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	8.50	Control valve, replacing
912-067	0.60	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)
912-160	0.80	Port relief valve pressure, checking and adjusting
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	5.00	Hydraulic pump, replacing
913-029	0.60	Pump regulator, replacing
914-041	0.40	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-060	1.75	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.25	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-040	1.25	Quickfit, replacing
924-040	1.25	Quickfit, replacing
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-021	3.00	Boom cylinder, replacing
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-024	2.00	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-028	1.75	Connecting rod yoke, replacing
975-039	6.50	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing

Op.no.	time (h)	Notes
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.00	Bucket cylinder, replacing
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
171-001	1.00	Arrival Inspection, according to Inspection Programme	
171-002	2.00	Delivery Inspection, according to Inspection Programme	
172-002	2.00	Warranty inspection 100 hours	
173-002	1.25	Maintenance service, daily	
173-004	1.25	Maintenance service, every 50 hours	
173-007	2.00	Maintenance service, every 250 hours	
173-010	4.50	Maintenance service, every 500 hours	
173-012	8.00	Maintenance service, every 1000 hours	120001 - 210000
173-012	7.50	Maintenance service, every 1000 hours	110001 - 120000
173-014	8.50	Maintenance service, every 2000 hours	110001 - 120000
173-014	9.00	Maintenance service, every 2000 hours	120001 - 210000
173-018	9.00	Maintenance service, every 4000 hours	120001 - 210000
173-018	8.50	Maintenance service, every 4000 hours	110001 - 120000
173-022	9.00	Maintenance service, every 6000 hours	120001 - 210000
173-022	8.50	Maintenance service, every 6000 hours	110001 - 120000
173-077	0.20	Hydraulic oil tank, changing breather filter	
173-079	0.80	Swing motor gearbox, changing oil	
173-101	0.40	Track motor gearbox, changing oil	
173-401	0.70	Engine oil and filter, changing	110001 - 120000
173-401	0.80	Engine oil and filter, changing	120001 - 210000
173-451	0.60	Hydraulic oil, changing	
173-649	0.30	Hydraulic oil return filter, replacing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	120001 - 210000
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	120001 - 210000
21		ENGINE	
210-070	4.50	Engine, removing	
210-072	5.00	Engine, installing	
211-002	5.00	Cylinder head, replacing gasket	
214-012	1.25	Valves, adjusting	
214-036	0.80	Valve covers, fitting new gasket	
216-014	3.00	Crankshaft, replacing front oil seal	
216-018	6.00	Crankshaft, replacing rear oil seal	

Op.no.	time (h)		Notes
22		LUBRICATING SYSTEM	
221-022	0.40	Lubrication oil pressure, checking with pressure gauge	120001 - 210000
223-006	0.60	Oil cooler, replacing	120001 - 210000
23		FUEL SYSTEM	
233-001	0.20	Fuel system, bleeding	
233-002	0.40	Feed pump, replacing	
233-014	0.40	Fuel filters, replacing	
234-010	2.50	Fuel tank, replacing	
234-041	0.40	Fuel filling pump, removing	
234-042	0.50	Fuel filling pump, installing	
236-073	2.75	Injection pump, replacing incl setting injection timing	
237-002	2.50	Injectors, replacing all	
237-004	1.75	Injector, replacing one	
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.25	Silencer, replacing	
252-021	1.25	Exhaust pipe, flexible tube, replacing	
256-001	0.20	Air cleaner, cleaning filter element	
256-003	0.20	Air cleaner, primary filter replacing	
256-004	0.20	Air cleaner, secondary filter replacing	
256-006	0.70	Preheating coil, replacing	120001 - 210000
256-006	0.70	Preheating coil, replacing	110001 - 120000
26		COOLING SYSTEM	
261-002	0.10	Coolant, checking anti-freeze resistance	
261-004	0.50	Coolant, changing	
261-008	3.00	Radiator, replacing	
261-012	0.60	Radiator hose upper, replacing	
261-014	1.25	Radiator hoses lower, replacing	120001 - 210000
261-014	1.25	Radiator hoses lower, replacing	110001 - 120000
261-018	0.30	Expansion tank, replacing	110001 - 111754
261-018	0.30	Expansion tank, replacing	120001 - 120562
261-018	0.30	Expansion tank, replacing	111755 - 120000
261-018	0.30	Expansion tank, replacing	120563 - 210000
262-098	0.90	Thermostat, replacing	
263-012	0.60	Fan belt and/or alternator belt, replacing	120001 - 210000
263-013	0.20	Fan belt and/or alternator belt, checking and adjusting tension	
263-022	0.60	Fan belt and/or alternator-, compressor belt, replacing all belts	120001 - 210000

Op.no.	time (h)	Notes	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	120001 - 210000
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU	120001 - 210000
31		BATTERY	
311-001	0.30	Battery charging capacity, checking	
311-002	1.25	Batteries, replacing	110001 - 120000
311-002	1.25	Batteries, replacing	120001 - 210000
311-003	1.25	Main switch, replacing	120001 - 210000
311-006	0.75	Earth lead to battery, replacing	
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.00	Alternator, replacing incl function check	
33		STARTING SYSTEM	
331-018	1.75	Starter motor, replacing	
331-081	0.40	Starter relay, replacing	120001 - 210000
334-011	0.90	Starter switch (engine start switch), replacing	120001 - 210000
35		LIGHTING	
356-056	0.60	Work lighting, replacing one head lamp assy	120001 - 210000
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.50	Horn, replacing	
362-041	0.50	Rotating beacon, replacing	
362-051	0.40	Travel alarm, replacing	120001 - 210000
363-002	0.80	Windscreen wiper front, replacing motor	120001 - 210000
363-003	0.40	Windscreen wiper, replacing switch	
363-004	0.70	Windscreen flusher pump, replacing	120001 - 210000
364-003	0.60	Control lockout lever switch, replacing	
364-056	0.40	Pre-heating relay, replacing	120001 - 210000
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	120001 - 210000
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	120001 - 210000
367-052	0.40	V-ECU, replacing	110001 - 120000
367-056	0.30	I-ECU, replacing	110001 - 120000
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-006	0.40	Engine temperature sensor, replacing	120001 - 210000
386-007	0.40	Engine oil pressure sensor, replacing	120001 - 210000
386-011	0.60	Fuel level sender, replacing	120001 - 210000
39		MISCELLANEOUS	
393-021	0.50	Radio, replacing	120001 - 210000

Op.no.	time (h)		Notes
395-021	0.50	Antenna, replacing	120001 - 210000
395-031	0.50	Speaker, replacing	120001 - 210000

4 POWER TRANSMISSION

43 GEARBOX,

431-021	7.00	Swing gearbox, replacing
431-026	1.00	Swing gearbox removed, replacing seal
431-027	2.00	Swing gearbox removed, replacing shaft
431-031	4.00	Pump gearbox coupling assembly, replacing
431-036	4.00	Pump gearbox flange, replacing
431-115	2.00	Track gearbox (removed), replacing floating seal
431-117	1.00	Track gearbox, replacing cover
431-127	3.50	Track unit, replacing

44 HYDROSTATIC DRIVE

441-022	0.70	Swing motor relief valve, replacing
441-024	1.75	Swing motor, replacing plate (brake)
441-025	1.75	Swing motor, replacing brake piston seal
441-026	1.50	Swing motor removed, replacing seal
441-032	0.80	Swing motor pressure, checking and adjusting
441-112	0.70	Track motor relief valve, replacing
441-115	1.50	Track motor removed, replacing seal
443-037	5.00	Center passage, replacing
443-038	7.50	Center passage, replacing seal kit
443-039	0.90	Center passage hose (valve – center passage), replacing
443-040	1.50	Center passage hose (center passage – motor), replacing

49 MISCELLANEOUS

492-031	2.00	Swing ring gear outer seal, replacing
492-091	0.50	Ring gear grease pipe, replacing

7 FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT

71 FRAME

716-001	0.70	Counterweight, removing
716-002	0.70	Counterweight, fitting
716-003	1.50	Counterweight, replacing

77 WHEELS; TRACKS; TYRE; HUB; DRUM

775-011	2.50	Front idler, replacing one
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Op.no.	time (h)		Notes
775-021	2.50	Sprocket, replacing one	
775-032	0.30	Track shoe, replacing one	
775-033	3.50	Track shoe, replacing each side	
775-034	0.90	Track chain assembly, removing	
775-035	1.25	Track chain assembly, installing	
775-036	4.50	Track links, replacing	
775-041	0.80	Rubber track, removing	
775-042	0.80	Rubber track, installing	
775-051	0.80	Top roller, replacing one	
775-061	0.90	Bottom roller, replacing one	
775-071	0.30	Track guard, replacing one	
775-080	2.50	Track tension cylinder, replacing	
775-081	2.50	Track recoil spring (tensioner) assembly, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.50	Cab, removing	120001 - 210000
810-001	1.50	Cab, removing	110001 - 120000
810-002	2.00	Cab, installing	120001 - 210000
810-002	2.00	Cab, installing	110001 - 120000
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	0.50	Engine hood, replacing	120001 - 210000
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-002	2.50	Windscreen, replacing	
843-012	2.00	Rear window, replacing	
843-013	1.25	Side window, replacing	
843-048	0.90	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-003	0.70	Operator's seat, removing	120001 - 210000
852-004	0.80	Operator's seat, installing	120001 - 210000
852-008	1.50	Seat, replacing	120001 - 210000
87		AIR CONDITIONING UNIT	
870-003	3.00	Cooler and Heater assembly, removal	120001 - 210000
870-004	4.00	Cooler and Heater assembly, installation	120001 - 210000
873-004	4.00	Heater core, replacing	120001 - 210000
873-006	5.50	Fan motor, replacing	120001 - 210000
873-014	0.90	Water valve, replacing	120001 - 210000
874-006	1.50	Compressor, replacing incl draining and filling	120001 - 210000

Op.no.	time (h)		Notes
874-010	1.50	Condenser, replacing incl draining and filling	120800 - 210000 111836 - 120000
874-012	6.50	Evaporator, replacing incl draining and filling	120001 - 210000
874-013	1.75	Expansion valve, replacing incl draining and filling	120001 - 210000
874-021	5.00	Defroster actuator, replacing	120001 - 210000
874-094	0.40	Vent actuator, replacing	120001 - 210000
874-095	5.00	Mode (foot) actuator, replacing	120001 - 210000
874-096	0.40	Intake actuator, replacing	120001 - 210000

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-005	2.50	Pump suction hose and pipe, replacing
911-011	3.50	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-024	1.75	Pipe and hose (pump - valve), replacing
911-025	1.00	Pipe and hose (valve - cylinder), replacing
911-026	1.00	Pipe and hose (valve - swing motor), replacing
911-031	1.00	Oil cooler line pipe and hose, replacing
911-038	2.00	Hydraulic oil tank, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	11.00	Control valve, replacing
912-067	1.50	Main pressure relief valve, replacing
912-070	0.80	Check valve, replacing
912-070	0.70	Check valve, replacing
912-071	0.70	Rupture valve, replacing (boom cylinder)
912-073	0.70	Rupture valve, replacing (dipper arm cylinder)
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)
912-136	1.25	Main relief valve, adjusting
912-160	1.00	Port relief valve pressure, checking and adjusting
913-007	0.20	Hydraulic pump (removed), changing shaft seal
913-010	3.50	Hydraulic pump, replacing
914-036	1.25	Servo pump block seal, replacing
914-051	0.30	Accumulator, replacing
914-055	0.50	Servo pressure, checking and adjusting
914-060	1.00	Servo pump, replacing
914-084	2.50	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	0.90	Solenoid valve, replacing

Op.no.	time (h)	Notes
914-099	2.50	Remote control valve (pedal), disassembly
914-100	2.00	Remote control valve (pedal), assembly
916-096	1.00	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-003	0.80	Quickfit solenoid valve, replacing
924-005	0.70	Quickfit, removal
924-006	0.70	Quickfit, installation
925-011	0.70	Bucket assembly, replacing
925-012	0.20	Bucket assembly, removal
925-013	0.50	Bucket assembly, installation
97		UNIT, DIGGING
970-008	0.50	Bushing general, replacing
974-010	5.50	Boom, replacing
974-017	1.00	Boom, replacing pin
974-021	1.50	Boom cylinder, replacing
974-022	1.50	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	1.50	Boom cylinder, repacking in machine
975-024	1.25	Dipper arm connecting rod, replacing
975-025	1.50	Dipper arm cylinder, replacing
975-026	1.50	Dipper arm cylinder removed, repacking
975-028	0.90	Connecting rod yoke, replacing
975-039	4.00	Dipper arm, replacing
975-043	1.50	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	1.50	Bucket cylinder, replacing
975-063	1.50	Bucket cylinder, repacking in machine
975-069	1.50	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing
98		FUNCTION FOR ROAD CONSTRUCTION
981-080	1.25	Dozer blade cylinder, replacing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
172-002	2.00	Warranty inspection 100 hours
173-002	1.25	Maintenance service, daily
173-004	1.25	Maintenance service, every 50 hours
173-007	2.00	Maintenance service, every 250 hours
173-010	4.50	Maintenance service, every 500 hours
173-012	7.50	Maintenance service, every 1000 hours
173-014	8.50	Maintenance service, every 2000 hours
173-018	8.50	Maintenance service, every 4000 hours
173-022	8.50	Maintenance service, every 6000 hours
173-079	0.80	Swing motor gearbox, changing oil
173-101	0.40	Track motor gearbox, changing oil
173-401	0.70	Engine oil and filter, changing
173-451	0.60	Hydraulic oil, changing
173-649	0.30	Hydraulic oil return filter, replacing
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
214-012	1.25	Valves, adjusting
214-036	0.80	Valve covers, fitting new gasket
23		FUEL SYSTEM
233-014	0.40	Fuel filters, replacing
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
236-073	2.75	Injection pump, replacing incl setting injection timing
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
252-021	1.25	Exhaust pipe, flexible tube, replacing
256-001	0.20	Air cleaner, cleaning filter element
256-003	0.20	Air cleaner, primary filter replacing
256-004	0.20	Air cleaner, secondary filter replacing
256-006	0.70	Preheating coil, replacing
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.50	Coolant, changing
261-008	3.00	Radiator, replacing
261-012	0.60	Radiator hose upper, replacing

Op.no.	time (h)		Notes
261-014	1.25	Radiator hoses lower, replacing	
261-018	0.30	Expansion tank, replacing	110001 - 110430
261-018	0.30	Expansion tank, replacing	110431 - 210000
262-098	0.90	Thermostat, replacing	
263-013	0.20	Fan belt and/or alternator belt, checking and adjusting tension	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
31		BATTERY	
311-002	1.25	Batteries, replacing	
36		OTHER ELECTRICAL EQUIPMENT	
367-052	0.40	V-ECU, replacing	
367-056	0.30	I-ECU, replacing	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	7.00	Swing gearbox, replacing	
431-031	4.00	Pump gearbox coupling assembly, replacing	
431-117	1.00	Track gearbox, replacing cover	
431-127	3.50	Track unit, replacing	
44		HYDROSTATIC DRIVE	
441-022	0.70	Swing motor relief valve, replacing	
443-039	0.90	Center passage hose (valve – center passage), replacing	
443-040	1.50	Center passage hose (center passage – motor), replacing	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	2.50	Front idler, replacing one	
775-021	2.50	Sprocket, replacing one	
775-032	0.30	Track shoe, replacing one	
775-034	0.90	Track chain assembly, removing	
775-035	1.25	Track chain assembly, installing	
775-036	4.50	Track links, replacing	
775-041	0.80	Rubber track, removing	

Op.no.	time (h)	Notes
775-042	0.80	Rubber track, installing
775-051	0.80	Top roller, replacing one
775-061	0.90	Bottom roller, replacing one
775-071	0.30	Track guard, replacing one
775-080	2.50	Track tension cylinder, replacing
775-081	2.50	Track recoil spring (tensioner) assembly, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.50	Cab, removing
810-002	2.00	Cab, installing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	2.50	Pump suction hose and pipe, replacing
911-011	3.50	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-024	1.75	Pipe and hose (pump - valve), replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-001	11.00	Control valve, replacing
912-067	1.50	Main pressure relief valve, replacing
912-070	0.80	Check valve, replacing
912-070	0.70	Check valve, replacing
912-071	0.70	Rupture valve, replacing (boom cylinder)
912-073	0.70	Rupture valve, replacing (dipper arm cylinder)
912-136	1.25	Main relief valve, adjusting
912-160	1.00	Port relief valve pressure, checking and adjusting
913-007	0.20	Hydraulic pump (removed), changing shaft seal
913-010	3.50	Hydraulic pump, replacing
914-055	0.50	Servo pressure, checking and adjusting
914-060	1.00	Servo pump, replacing
914-084	2.50	Remote control valve (pedal), replacing
914-091	0.90	Solenoid valve, replacing
914-099	2.50	Remote control valve (pedal), disassembly
914-100	2.00	Remote control valve (pedal), assembly

Op.no.	time (h)	Notes
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-005	0.70	Quickfit, removal
924-006	0.70	Quickfit, installation
97		UNIT, DIGGING
970-008	0.50	Bushing general, replacing
974-010	5.50	Boom, replacing
974-021	1.50	Boom cylinder, replacing
975-024	1.25	Dipper arm connecting rod, replacing
975-025	1.50	Dipper arm cylinder, replacing
975-028	0.90	Connecting rod yoke, replacing
975-039	4.00	Dipper arm, replacing
975-061	1.50	Bucket cylinder, replacing
98		FUNCTION FOR ROAD CONSTRUCTION
981-080	1.25	Dozer blade cylinder, replacing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	1.25	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	4.00	Maintenance service, every 500 hours
173-012	7.50	Maintenance service, every 1000 hours
173-014	8.50	Maintenance service, every 2000 hours
173-018	9.00	Maintenance service, every 4000 hours
173-039	0.50	Maintenance service, first 250 hours
173-040	0.50	Maintenance service, first 500 hours
173-101	0.40	Track motor gearbox, changing oil
173-401	0.60	Engine oil and filter, changing
173-451	0.70	Hydraulic oil, changing
173-649	0.30	Hydraulic oil return filter, replacing
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-200	1.00	Engine belts, replacing
21		ENGINE
210-070	4.50	Engine, removing
210-072	5.00	Engine, installing
214-012	1.50	Valves, adjusting
214-036	0.80	Valve covers, fitting new gasket
22		LUBRICATING SYSTEM
221-022	0.80	Lubrication oil pressure, checking with pressure gauge
223-006	0.60	Oil cooler, replacing
23		FUEL SYSTEM
233-014	0.40	Fuel filters, replacing
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
256-001	0.30	Air cleaner, cleaning filter element
256-003	0.20	Air cleaner, primary filter replacing
256-004	0.20	Air cleaner, secondary filter replacing
256-006	0.70	Preheating coil, replacing

Op.no.	time (h)	Notes
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.50	Coolant, changing
261-008	4.00	Radiator, replacing
261-016	0.70	Radiator hoses all, replacing
261-018	0.30	Expansion tank, replacing
262-098	0.90	Thermostat, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.80	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.90	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-081	0.40	Starter relay, replacing
334-011	0.90	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.40	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.50	Horn, replacing
362-041	0.40	Rotating beacon, replacing
362-051	0.40	Travel alarm, replacing
363-002	0.80	Windscreen wiper front, replacing motor
363-004	0.50	Windscreen flusher pump, replacing
364-056	0.40	Pre-heating relay, replacing
367-052	0.40	V-ECU, replacing
367-056	0.30	I-ECU, replacing
37		CABLE; FUSE; RELAY
371-043	0.60	Battery disconnecter, replacing
371-090	1.50	Engine wire harness, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	0.40	Engine temperature sensor, replacing
386-007	0.70	Engine oil pressure sensor, replacing
386-011	0.50	Fuel level sender, replacing

Op.no.	time (h)	Notes
39		MISCELLANEOUS
393-021	0.50	Radio, replacing
395-021	0.50	Antenna, replacing
395-031	0.50	Speaker, replacing
398-002	0.90	W-ECU, MID142, changing pre-programmed ECU
398-003	1.50	W-ECU, MID142, changing non-programmed ECU
398-004	0.40	CareTrack battery, replacing
4		POWER TRANSMISSION
43		GEARBOX,
431-031	4.00	Pump gearbox coupling assembly, replacing
431-117	1.25	Track gearbox, replacing cover
431-127	4.50	Track unit, replacing
44		HYDROSTATIC DRIVE
441-112	0.80	Track motor relief valve, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	0.80	Counterweight, removing
716-002	1.00	Counterweight, fitting
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	3.00	Front idler, replacing one
775-021	3.00	Sprocket, replacing one
775-032	0.30	Track shoe, replacing one
775-034	1.00	Track chain assembly, removing
775-035	1.50	Track chain assembly, installing
775-036	5.50	Track links, replacing
775-051	0.90	Top roller, replacing one
775-061	1.00	Bottom roller, replacing one
775-071	0.90	Track guard, replacing one
775-080	3.00	Track tension cylinder, replacing
775-081	3.00	Track recoil spring (tensioner) assembly, replacing
775-082	3.00	Recoil spring cylinder seal kit, replacing

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.50	Cab, removing
810-002	2.00	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.70	Engine hood, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	2.50	Windscreen, replacing
843-012	2.00	Rear window, replacing
843-013	1.25	Side window, replacing
843-048	0.90	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.70	Operator's seat, removing
852-004	0.80	Operator's seat, installing
852-008	1.50	Seat, replacing
87		AIR CONDITIONING UNIT
870-003	3.00	Cooler and Heater assembly, removal
870-004	4.00	Cooler and Heater assembly, installation
873-004	4.00	Heater core, replacing
873-006	5.50	Fan motor, replacing
873-014	0.90	Water valve, replacing
874-006	1.50	Compressor, replacing incl draining and filling
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	6.50	Evaporator, replacing incl draining and filling
874-013	1.75	Expansion valve, replacing incl draining and filling
874-094	0.40	Vent actuator, replacing
874-095	5.00	Mode (foot) actuator, replacing
874-096	0.40	Intake actuator, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	1.50	Pump suction hose and pipe, replacing
911-011	4.00	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-033	1.50	Oil cooler line bypass valve (check valve), replacing

Op.no.	time (h)	Notes
911-038	3.00	Hydraulic oil tank, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-001	6.50	Control valve, replacing
912-071	0.90	Rupture valve, replacing (boom cylinder)
913-005	1.75	Hydraulic pump, flow control
913-010	4.00	Hydraulic pump, replacing
914-051	0.30	Accumulator, replacing
914-060	0.50	Servo pump, replacing
914-081	1.50	Remote control valve (lever), replacing
914-084	2.00	Remote control valve (pedal), replacing
914-091	1.25	Solenoid valve, replacing
914-099	2.50	Remote control valve (pedal), disassembly
914-100	2.00	Remote control valve (pedal), assembly
92		MECHANICAL EQUIPMENT/ATTACHMENT
925-011	0.80	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.50	Bucket assembly, installation
97		UNIT, DIGGING
974-010	5.50	Boom, replacing
974-013	2.00	Boom, removal
974-014	2.00	Boom, installation
974-021	1.50	Boom cylinder, replacing
974-031	0.70	Boom cylinder, removal
974-032	0.80	Boom cylinder, installation
975-006	0.60	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-011	1.25	Dipper arm, removal
975-012	1.25	Dipper arm, installation
975-014	0.70	Dipper arm cylinder, removal
975-015	0.70	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	1.50	Dipper arm cylinder, replacing
975-028	0.90	Connecting rod yoke, replacing
975-032	0.50	Connecting rod yoke, removal
975-035	0.60	Connecting rod yoke, installation
975-039	3.00	Dipper arm, replacing
975-061	1.50	Bucket cylinder, replacing
975-062	0.50	Bucket cylinder, removal
975-065	0.70	Bucket cylinder, installation
98		FUNCTION FOR ROAD CONSTRUCTION
981-081	0.30	Blade lift cylinder, removing

Op.no.	time (h)		Notes
981-086	0.80	Blade lift cylinder, installing	

Op.no.	time (h)	Notes
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1 STANDARD PARTS, SERVICE

17 SERVICE

173-002	1.00	Maintenance service, daily
173-004	1.25	Maintenance service, every 50 hours
173-007	1.75	Maintenance service, every 250 hours
173-010	2.50	Maintenance service, every 500 hours
173-012	7.00	Maintenance service, every 1000 hours
173-013	4.00	Maintenance service, every 1500 hours
173-014	7.00	Maintenance service, every 2000 hours
173-016	8.50	Maintenance service, every 3000 hours
173-073	0.60	Hydraulic oil tank, changing oil
173-081	0.70	Travel motor gearbox, changing oil
173-087	0.70	Coolant, changing
173-093	0.30	Track tension, checking

2 ENGINE WITH MOUNTING AND EQUIPMENT

21 ENGINE

210-002	1.50	Compression test
210-070	4.00	Engine, removing
210-072	4.50	Engine, installing
211-079	2.50	Cylinder head, removing
211-081	2.50	Cylinder head, fitting
214-012	3.50	Valves, adjusting
214-037	1.25	Valve cover, removing
214-038	0.90	Valve cover, installing
217-003	1.50	Oil sump, replacing
218-009	8.50	Engine mounts, replacing

23 FUEL SYSTEM

233-011	0.30	Fuel pump, removing
233-012	0.30	Fuel pump, installing
234-011	4.50	Fuel tank, removing
234-012	5.00	Fuel tank, installing
236-001	0.40	Idling speed, checking and adjusting
236-080	3.00	Injection pump, checking
237-002	1.25	Injectors, replacing all
237-011	2.00	Unit injectors, checking

25 INLET SYSTEM; EXHAUST SYSTEM

251-002	0.70	Induction manifold, replacing gasket
251-009	2.00	Exhaust manifold, replacing
252-017	1.25	Silencer, removing

Op.no.	time (h)	Notes
252-018	1.25	Silencer, installing
256-010	0.20	Air cleaner, removing
256-011	0.20	Air cleaner, installing
26		COOLING SYSTEM
261-011	1.50	Radiator, removing
261-012	2.00	Radiator hose upper, replacing
261-013	0.80	Radiator, installing
261-014	2.00	Radiator hoses lower, replacing
261-016	0.60	Radiator hoses all, replacing
261-020	0.20	Expansion tank, removing
261-021	0.10	Expansion tank, installing
262-097	0.60	Thermostat, checking
262-098	2.00	Thermostat, replacing
263-012	0.40	Fan belt and/or alternator belt, replacing
263-013	0.20	Fan belt and/or alternator belt, checking and adjusting tension
27		ENGINE CONTROL
272-020	0.40	Throttle control cable, removing
272-021	0.50	Throttle control cable, installing
272-024	0.20	Throttle controls, setting
273-021	0.80	Stop magnet, replacing
275-014	0.50	Automatic idling device, removing
275-015	0.60	Automatic idling device, installing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-005	0.60	Battery condition, check
311-011	0.30	Battery, removing
311-012	0.30	Battery, installing
32		ALTERNATOR; CHARGE REGULATOR
321-003	0.70	Alternator, removing
321-004	1.25	Alternator, installing
33		STARTING SYSTEM
331-018	1.50	Starter motor, replacing
333-002	0.40	Glow plug, removal
333-003	0.30	Glow plug, installation
35		LIGHTING
352-001	0.20	Lamp bulb, replacing

Op.no.	time (h)	Notes
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-051	0.30	Travel alarm, replacing
363-002	0.60	Windscreen wiper front, replacing motor
364-004	0.30	Switch, replacing
367-052	0.30	V-ECU, replacing
367-056	0.40	I-ECU, replacing
367-057	0.60	A-ECU (anti theft), replacing
37		CABLE; FUSE; RELAY
372-002	0.50	Electrical distribution box, circuit board replacing
39		MISCELLANEOUS
398-002	2.50	W-ECU, MID142, changing pre-programmed ECU
398-003	3.00	W-ECU, MID142, changing non-programmed ECU
4		POWER TRANSMISSION
44		HYDROSTATIC DRIVE
441-030	2.50	Swing motor, removing
441-031	3.50	Swing motor, installing
441-113	1.25	Track motor, removing
441-114	1.50	Track motor, installing
443-034	3.00	Centre passage, removing
443-035	2.50	Centre passage, installing
49		MISCELLANEOUS
492-023	7.00	Swing ring, removing
492-024	8.00	Swing ring, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-003	0.40	Counterweight, replacing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-009	0.30	Front idler, removing
775-010	0.50	Front idler, installing
775-022	0.40	Sprocket, removal
775-023	0.70	Sprocket, installation
775-041	0.30	Rubber track, removing

Op.no.	time (h)	Notes
775-042	0.40	Rubber track, installing
775-052	0.30	Top roller, removal
775-053	0.30	Top roller, installation
775-062	0.20	Bottom roller, removing
775-063	0.30	Bottom roller, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	0.80	Cab, removing
810-002	1.00	Cab, installing
810-004	2.00	Cab platform, removal
810-005	2.50	Cab platform, installation
810-065	0.80	Cab, position 1
810-067	0.60	Cab, position 1, restoring
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.70	Engine hood, replacing
821-031	0.20	Engine hood, changing gas spring
85		CAB INTERIOR/UPHOLSTERY
852-003	1.25	Operator's seat, removing
852-004	1.25	Operator's seat, installing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-034	0.30	H-ECU (hydraulic), replacing pre-programmed ECU
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-013	0.70	Hydraulic oil cooler, removing
911-014	0.60	Hydraulic oil cooler, installing
911-036	1.75	Hydraulic oil tank, removing
911-037	1.50	Hydraulic oil tank, installing
912-036	0.40	Hose rupture valve, removal
912-037	0.30	Hose rupture valve, installation
912-088	1.75	Main Control Valve - Disassembly
912-089	1.75	Main Control Valve - Assembly
912-091	1.50	Main control valve, removal
912-092	1.75	Main control valve, installation
912-117	0.70	LS-pressure relief valve, replacing

Op.no.	time (h)	Notes
912-142	0.90	Directional valve, dozer blade, disassembling spool and replacing seals
912-143	0.90	Load check valve, replacing
912-150	0.50	Working pressure, checking and adjusting
912-167	0.80	Directional valve, hydraulically operated, disassembling spool and replacing seals
912-168	3.50	Compensator valve, replacing
912-174	0.40	Flushing valve, replacing
912-175	0.30	Secondary pressure limiting valve, replacing
912-176	0.30	Anti-cavitation check valve, replacing
913-003	0.50	Hydraulic pump, checking and adjusting standby pressure
913-006	0.40	LS (load sense) pressure, checking
913-023	1.75	Pump, removal
913-024	1.75	Pump, installation
913-031	0.40	Flow regulation valve, changing
913-065	0.40	Hydraulic pump, power control adjusting
913-066	0.50	FR pressure control valve, checking and adjusting
914-047	0.30	Servo accumulator, removal
914-048	0.60	Servo accumulator, installation
914-055	0.50	Servo pressure, checking and adjusting
914-064	0.50	Servo valve, removal
914-065	1.00	Servo valve, installation
914-104	0.70	Travel valve (pedal), removing
914-105	0.70	Travel valve (pedal), installing
915-004	0.40	Control lever, removal
915-004	0.40	Control lever, removal
915-005	0.60	Control lever, installation
915-005	0.60	Control lever, installation
916-060	0.30	Calibration of X1 hydraulic with flow control
916-060	0.30	Calibration of X1 hydraulic with flow control
916-106	0.50	Control pattern selector valve, removal
916-107	0.50	Control pattern selector valve, installation
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-003	0.70	Quickfit solenoid valve, replacing
97		UNIT, DIGGING
971-087	0.50	Boom swing cylinder, removing
971-088	0.70	Boom swing cylinder, installing
974-013	1.75	Boom, removal
974-014	2.50	Boom, installation
974-031	0.50	Boom cylinder, removal
974-032	0.60	Boom cylinder, installation
975-011	0.80	Dipper arm, removal

Op.no.	time (h)	Notes
975-012	1.00	Dipper arm, installation
975-014	0.50	Dipper arm cylinder, removal
975-015	0.60	Dipper arm cylinder, installation
975-062	0.50	Bucket cylinder, removal
975-065	0.60	Bucket cylinder, installation

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	3.00	Delivery Inspection, according to Inspection Programme
173-002	0.50	Maintenance service, daily
173-004	1.25	Maintenance service, every 50 hours
173-007	2.00	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	6.50	Maintenance service, every 1000 hours
173-014	7.00	Maintenance service, every 2000 hours
173-016	10.00	Maintenance service, every 3000 hours
173-059	0.60	Engine, changing oil and filter
173-073	0.90	Hydraulic oil tank, changing oil
173-074	1.00	Hydraulic oil tank, changing oil and filter
173-076	0.50	Hydraulic oil tank, return oil filter change
173-078	0.20	Engine, air cleaner maintenance
173-087	0.60	Coolant, changing
173-088	0.20	Fuel filter, replacing
173-093	0.30	Track tension, checking
19		GENERAL
191-022	0.10	Service position 2
191-025	0.10	Service position 3
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	1.50	Engine, removing
210-072	1.75	Engine, installing
214-012	1.75	Valves, adjusting
214-036	1.00	Valve covers, fitting new gasket
216-014	3.00	Crankshaft, replacing front oil seal
216-018	4.25	Crankshaft, replacing rear oil seal
218-008	0.70	Engine mounts, removing
218-009	0.80	Engine mounts, replacing
23		FUEL SYSTEM
233-001	0.50	Fuel system, bleeding
233-002	0.75	Feed pump, replacing
233-011	0.20	Fuel pump, removing
233-012	0.20	Fuel pump, installing

Op.no.	time (h)	Notes
233-014	0.50	Fuel filters, replacing
234-010	3.25	Fuel tank, replacing
234-011	1.00	Fuel tank, removing
234-012	0.70	Fuel tank, installing
235-002	0.20	Fuel line, water separator, check and drain
236-001	0.30	Idling speed, checking and adjusting
236-073	2.75	Injection pump, replacing incl setting injection timing
237-002	2.25	Injectors, replacing all
237-004	1.50	Injector, replacing one
237-018	0.25	Delivery pipe, replacing one
25		INLET SYSTEM; EXHAUST SYSTEM
252-017	0.50	Silencer, removing
252-018	0.50	Silencer, installing
252-020	1.75	Silencer, replacing
256-001	0.50	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing
256-010	0.40	Air cleaner, removing
256-011	0.50	Air cleaner, installing
26		COOLING SYSTEM
260-002	2.50	Cooling system, flushing
261-004	0.75	Coolant, changing
261-008	1.75	Radiator, replacing
261-011	0.80	Radiator, removing
261-012	0.75	Radiator hose upper, replacing
261-013	0.90	Radiator, installing
261-014	0.75	Radiator hoses lower, replacing
261-018	0.25	Expansion tank, replacing
262-002	1.75	Coolant pump, replacing
262-005	0.90	Coolant pump, removing
262-006	1.25	Coolant pump, installing
262-098	1.25	Thermostat, replacing
263-012	0.60	Fan belt and/or alternator belt, replacing
263-013	0.20	Fan belt and/or alternator belt, checking and adjusting tension
27		ENGINE CONTROL
275-014	0.30	Automatic idling device, removing
275-015	0.30	Automatic idling device, installing

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.70	Batteries, replacing
311-003	0.50	Main switch, replacing
311-005	0.70	Battery condition, check
311-006	0.25	Earth lead to battery, replacing
311-008	2.25	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	2.25	Alternator, replacing incl function check
321-003	0.30	Alternator, removing
321-004	0.50	Alternator, installing
33		STARTING SYSTEM
331-016	0.60	Starter motor, removing
331-017	0.40	Starter motor, installing
331-018	3.00	Starter motor, replacing
331-081	0.50	Starter relay, replacing
334-011	0.75	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.25	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.50	Horn, replacing
363-002	0.75	Windscreen wiper front, replacing motor
363-003	0.50	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-004	0.50	Switch, replacing
364-050	0.50	Relay (general), replacing
364-052	0.50	Battery relay, replacing
367-052	0.90	V-ECU, replacing
37		CABLE; FUSE; RELAY
372-020	0.25	Fuse (general), replacing
379-011	0.75	Boom wire harness, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	0.25	Engine temperature sensor, replacing
386-007	0.25	Engine oil pressure sensor, replacing
386-011	0.75	Fuel level sender, replacing

Op.no.	time (h)		Notes
4		POWER TRANSMISSION	
44		HYDROSTATIC DRIVE	
441-011	3.00	Travel motor, replacing one	
441-030	1.25	Swing motor, removing	10151 - 12027
441-030	1.25	Swing motor, removing	12028 - 99999
441-031	1.50	Swing motor, installing	10151 - 12027
441-031	1.75	Swing motor, installing	12028 - 99999
441-033	0.90	Swing motor, replacing counterbalance valve	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	0.50	Counterweight, removing	
716-002	0.60	Counterweight, fitting	
716-003	1.25	Counterweight, replacing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-009	1.50	Front idler, removing	
775-010	1.50	Front idler, installing	
775-021	3.00	Sprocket, replacing one	
775-022	1.25	Sprocket, removal	
775-023	1.75	Sprocket, installation	
775-024	0.30	Removing the guide sprocket	
775-025	0.30	Assembling the guide sprocket	
775-034	1.00	Track chain assembly, removing	
775-035	1.00	Track chain assembly, installing	
775-051	1.00	Top roller, replacing one	
775-052	0.50	Top roller, removal	
775-053	0.50	Top roller, installation	
775-061	1.25	Bottom roller, replacing one	
775-062	0.75	Bottom roller, removing	
775-063	0.50	Bottom roller, installing	
775-071	0.50	Track guard, replacing one	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	0.60	Cab, removing	
810-002	0.60	Cab, installing	
810-003	3.25	Operator cab, replacing	

Op.no.	time (h)	Notes
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.20	Engine hood, removing
821-002	0.30	Engine hood, installing
821-005	0.75	Engine hood, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	0.50	Door, replacing
831-051	0.50	Cab door, changing door catch
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.25	Rear-view mirror, changing
843-002	1.75	Windscreen, replacing
843-012	1.00	Rear window, replacing
843-013	1.75	Side window, replacing
843-048	1.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.40	Operator's seat, removing
852-004	0.30	Operator's seat, installing
852-008	0.75	Seat, replacing
87		AIR CONDITIONING UNIT
873-004	0.80	Heater core, replacing
88		INTERIOR EQUIPMENT
881-001	0.20	Instrument console, removing
881-002	0.20	Instrument console, installing
884-001	0.50	Seat safety belt, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-001	0.50	Oil return filter, replacing
911-003	0.70	Hydraulic oil filter, replacing
911-005	1.00	Pump suction hose and pipe, replacing
911-011	1.75	Oil cooler, replacing
911-013	0.50	Hydraulic oil cooler, removing
911-014	0.50	Hydraulic oil cooler, installing
911-036	1.25	Hydraulic oil tank, removing
911-037	1.25	Hydraulic oil tank, installing
911-038	3.50	Hydraulic oil tank, replacing
912-001	8.75	Control valve, replacing
912-071	1.00	Rupture valve, replacing (boom cylinder)

Op.no.	time (h)	Notes
912-073	1.50	Rupture valve, replacing (dipper arm cylinder)
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)
912-091	1.50	Main control valve, removal
912-092	1.50	Main control valve, installation
912-100	1.25	Hydraulic swivel joint, removing
912-101	1.50	Hydraulic swivel joint, installing
913-010	2.00	Hydraulic pump, replacing
913-013	3.75	Hydraulic pump, replacing seal for input shaft
916-044	0.50	Boom, replacing hose (boom cylinder)
916-045	0.50	Boom, replacing pipe (dipper arm cylinder)
916-046	0.50	Boom, replacing hose (dipper arm cylinder)
916-047	0.75	Boom, replacing pipe (bucket cylinder)
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)
916-049	0.50	Dipper arm, replacing pipe (bucket cylinder)
92		MECHANICAL EQUIPMENT/ATTACHMENT
925-012	0.25	Bucket assembly, removal
925-013	0.25	Bucket assembly, installation
97		UNIT, DIGGING
974-010	4.75	Boom, replacing
974-013	2.00	Boom, removal
974-014	2.75	Boom, installation
974-017	1.00	Boom, replacing pin
974-021	1.00	Boom cylinder, replacing
974-022	1.50	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-031	0.50	Boom cylinder, removal
974-032	0.50	Boom cylinder, installation
975-011	1.25	Dipper arm, removal
975-012	1.25	Dipper arm, installation
975-014	0.50	Dipper arm cylinder, removal
975-015	0.50	Dipper arm cylinder, installation
975-025	1.00	Dipper arm cylinder, replacing
975-039	2.50	Dipper arm, replacing
975-061	1.00	Bucket cylinder, replacing
975-062	0.50	Bucket cylinder, removal
975-065	0.50	Bucket cylinder, installation

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	0.70	Maintenance service, daily
173-004	0.90	Maintenance service, every 50 hours
173-010	1.75	Maintenance service, every 500 hours
173-012	4.00	Maintenance service, every 1000 hours
173-013	3.00	Maintenance service, every 1500 hours
173-014	4.00	Maintenance service, every 2000 hours
173-016	6.00	Maintenance service, every 3000 hours
173-022	6.00	Maintenance service, every 6000 hours
173-059	0.60	Engine, changing oil and filter
173-073	0.70	Hydraulic oil tank, changing oil
173-081	0.70	Travel motor gearbox, changing oil
173-087	0.70	Coolant, changing
173-093	0.30	Track tension, checking
173-094	0.40	Track tension, adjusting
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-002	2.00	Compression test
210-070	1.75	Engine, removing
210-072	2.50	Engine, installing
211-079	1.25	Cylinder head, removing
211-081	1.50	Cylinder head, fitting
214-012	1.00	Valves, adjusting
214-037	0.40	Valve cover, removing
214-038	0.60	Valve cover, installing
216-014	2.00	Crankshaft, replacing front oil seal
216-018	3.00	Crankshaft, replacing rear oil seal
217-003	4.50	Oil sump, replacing
218-009	1.25	Engine mounts, replacing
22		LUBRICATING SYSTEM
221-022	0.20	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
233-011	0.20	Fuel pump, removing
233-012	0.20	Fuel pump, installing
234-011	1.25	Fuel tank, removing
234-012	1.25	Fuel tank, installing
236-001	0.40	Idling speed, checking and adjusting

Op.no.	time (h)	Notes
236-070	0.70	Injection pump, removing
236-072	1.00	Injection pump, fitting incl setting injection timing
237-002	1.75	Injectors, replacing all
237-011	1.75	Unit injectors, checking
25		INLET SYSTEM; EXHAUST SYSTEM
252-017	0.30	Silencer, removing
252-018	0.30	Silencer, installing
252-023	0.30	Exhaust pipe, replacing
256-010	0.20	Air cleaner, removing
256-011	0.20	Air cleaner, installing
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-011	0.90	Radiator, removing
261-013	0.90	Radiator, installing
261-016	0.70	Radiator hoses all, replacing
261-020	0.20	Expansion tank, removing
261-021	0.10	Expansion tank, installing
262-002	1.50	Coolant pump, replacing
262-098	0.80	Thermostat, replacing
27		ENGINE CONTROL
275-014	0.20	Automatic idling device, removing
275-015	0.30	Automatic idling device, installing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.40	Batteries, replacing
311-005	0.60	Battery condition, check
32		ALTERNATOR; CHARGE REGULATOR
321-003	0.20	Alternator, removing
321-004	0.20	Alternator, installing
33		STARTING SYSTEM
331-016	0.30	Starter motor, removing
331-017	0.30	Starter motor, installing
333-002	0.30	Glow plug, removal
333-003	0.40	Glow plug, installation
35		LIGHTING
352-001	0.20	Lamp bulb, replacing

Op.no.	time (h)	Notes
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-051	0.60	Travel alarm, replacing
367-052	0.30	V-ECU, replacing
367-056	0.30	I-ECU, replacing
37		CABLE; FUSE; RELAY
372-002	0.30	Electrical distribution box, circuit board replacing
39		MISCELLANEOUS
398-002	0.90	W-ECU, MID142, changing pre-programmed ECU
398-003	1.50	W-ECU, MID142, changing non-programmed ECU
4		POWER TRANSMISSION
44		HYDROSTATIC DRIVE
441-030	1.25	Swing motor, removing
441-031	1.75	Swing motor, installing
441-113	1.25	Track motor, removing
441-114	1.50	Track motor, installing
443-034	2.50	Centre passage, removing
443-035	2.50	Centre passage, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	0.60	Counterweight, removing
716-002	0.60	Counterweight, fitting
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-009	0.30	Front idler, removing
775-010	0.50	Front idler, installing
775-022	0.40	Sprocket, removal
775-023	0.70	Sprocket, installation
775-041	0.30	Rubber track, removing
775-042	0.40	Rubber track, installing
775-052	0.30	Top roller, removal
775-053	0.30	Top roller, installation
775-062	0.20	Bottom roller, removing
775-063	0.30	Bottom roller, installing

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	0.70	Cab, removing
810-002	0.80	Cab, installing
810-004	2.50	Cab platform, removal
810-005	2.50	Cab platform, installation
810-013	0.40	Cab, roof panel, removing
810-014	0.40	Cab, roof panel, installing
810-065	0.70	Cab, position 1
810-067	0.60	Cab, position 1, restoring
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.40	Engine hood, replacing
821-031	0.30	Engine hood, changing gas spring
85		CAB INTERIOR/UPHOLSTERY
852-003	0.40	Operator's seat, removing
852-004	0.30	Operator's seat, installing
88		INTERIOR EQUIPMENT
884-001	0.30	Seat safety belt, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-013	0.80	Hydraulic oil cooler, removing
911-014	0.70	Hydraulic oil cooler, installing
911-036	3.00	Hydraulic oil tank, removing
911-037	2.50	Hydraulic oil tank, installing
912-036	0.40	Hose rupture valve, removal
912-037	0.30	Hose rupture valve, installation
912-088	1.75	Main Control Valve - Disassembly
912-089	2.50	Main Control Valve - Assembly
912-091	2.50	Main control valve, removal
912-092	2.00	Main control valve, installation
912-150	0.50	Working pressure, checking and adjusting
913-006	0.60	LS (load sense) pressure, checking
913-023	0.90	Pump, removal
913-024	0.90	Pump, installation
913-064	1.50	Hydraulic pump, power control checking
913-065	1.75	Hydraulic pump, power control adjusting

Op.no.	time (h)	Notes
914-051	0.40	Accumulator, replacing
914-055	0.50	Servo pressure, checking and adjusting
914-064	0.40	Servo valve, removal
914-065	0.90	Servo valve, installation
914-104	0.50	Travel valve (pedal), removing
914-105	0.60	Travel valve (pedal), installing
97		UNIT, DIGGING
974-013	1.50	Boom, removal
974-014	2.00	Boom, installation
974-031	0.50	Boom cylinder, removal
974-032	0.60	Boom cylinder, installation
975-011	0.60	Dipper arm, removal
975-012	0.80	Dipper arm, installation
975-014	0.50	Dipper arm cylinder, removal
975-015	0.50	Dipper arm cylinder, installation
975-062	0.40	Bucket cylinder, removal
975-065	0.50	Bucket cylinder, installation

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	1.00	Maintenance service, daily	
173-004	1.25	Maintenance service, every 50 hours	
173-007	1.75	Maintenance service, every 250 hours	
173-010	4.00	Maintenance service, every 500 hours	210001 - 280000
173-010	3.50	Maintenance service, every 500 hours	280001 - 310000
173-012	7.00	Maintenance service, every 1000 hours	210001 - 280000
173-012	6.00	Maintenance service, every 1000 hours	280001 - 310000
173-013	8.50	Maintenance service, every 1500 hours	210001 - 280000
173-013	6.00	Maintenance service, every 1500 hours	280001 - 310000
173-014	8.50	Maintenance service, every 2000 hours	210001 - 280000
173-014	7.50	Maintenance service, every 2000 hours	280001 - 310000
173-016	14.00	Maintenance service, every 3000 hours	210001 - 280000
173-016	11.00	Maintenance service, every 3000 hours	280001 - 310000
173-018	8.50	Maintenance service, every 4000 hours	210001 - 280000
173-018	7.50	Maintenance service, every 4000 hours	280001 - 310000
173-022	0.60	Maintenance service, every 6000 hours	210001 - 280000
173-022	0.60	Maintenance service, every 6000 hours	280001 - 310000
173-039	0.50	Maintenance service, first 250 hours	
173-040	0.50	Maintenance service, first 500 hours	
173-101	0.40	Track motor gearbox, changing oil	
173-401	0.60	Engine oil and filter, changing	210001 - 280000
173-401	0.60	Engine oil and filter, changing	280001 - 310000
173-451	0.70	Hydraulic oil, changing	
173-649	0.30	Hydraulic oil return filter, replacing	

2 ENGINE WITH MOUNTING AND EQUIPMENT

20		GENERAL	
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU	210001 - 280000
200-200	0.80	Engine belts, replacing	
21		ENGINE	
210-002	3.00	Compression test	210001 - 280000
210-002	2.50	Compression test	280001 - 310000
214-012	2.00	Valves, adjusting	210001 - 280000
214-012	1.50	Valves, adjusting	280001 - 310000
216-014	3.50	Crankshaft, replacing front oil seal	210001 - 280000
216-018	4.00	Crankshaft, replacing rear oil seal	210001 - 280000
216-018	4.00	Crankshaft, replacing rear oil seal	280001 - 310000

Op.no.	time (h)		Notes
22		LUBRICATING SYSTEM	
221-022	0.80	Lubrication oil pressure, checking with pressure gauge	
223-006	0.70	Oil cooler, replacing	
23		FUEL SYSTEM	
233-014	0.40	Fuel filters, replacing	210001 - 280000
233-014	0.40	Fuel filters, replacing	280001 - 310000
236-044	0.90	Injection timing, checking	280001 - 310000
236-080	1.25	Injection pump, checking	280001 - 310000
237-002	3.00	Injectors, replacing all	210001 - 280000
237-002	2.00	Injectors, replacing all	280001 - 310000
237-040	0.30	Overflow pipe, checking for leakage	280001 - 310000
237-040	0.30	Overflow pipe, checking for leakage	210001 - 280000
237-125	1.50	Fuel pump unit, replacing	210001 - 280000
237-125	1.25	Fuel pump unit, replacing	280001 - 310000
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.25	Silencer, replacing	280001 - 310000
254-001	1.75	Diesel particulate filter, check and clean	210001 - 280000
254-059	0.80	Inlet throttle, replacing	210001 - 280000
254-060	2.00	Diesel oxidation catalyst, replacing	210001 - 280000
255-002	0.70	Turbocharger, inspection	280001 - 310000
255-002	0.70	Turbocharger, inspection	210001 - 280000
255-009	0.70	Waste gate, testing	
255-071	2.50	Turbocharger, replacing	210001 - 280000
255-071	2.00	Turbocharger, replacing	280001 - 310000
256-003	0.20	Air cleaner, primary filter replacing	210001 - 280000
256-003	0.20	Air cleaner, primary filter replacing	280001 - 310000
256-004	0.20	Air cleaner, secondary filter replacing	210001 - 280000
256-004	0.20	Air cleaner, secondary filter replacing	280001 - 310000
26		COOLING SYSTEM	
261-002	0.10	Coolant, checking anti-freeze resistance	
261-004	0.50	Coolant, changing	210001 - 280000
261-004	0.50	Coolant, changing	
261-008	3.00	Radiator, replacing	210001 - 280000
261-008	4.00	Radiator, replacing	280001 - 310000
261-018	0.30	Expansion tank, replacing	
262-002	1.50	Coolant pump, replacing	210001 - 280000
262-002	1.25	Coolant pump, replacing	280001 - 310000
262-098	1.00	Thermostat, replacing	210001 - 280000
262-098	0.90	Thermostat, replacing	280001 - 310000

Op.no.	time (h)		Notes
29		Miscellaneous	
293-001	1.50	EGR cooler, replacing	210001 - 280000
293-002	2.00	EGR cooler, pressure test	210001 - 280000
293-005	0.70	EGR valve, replacing	210001 - 280000
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
31		BATTERY	
311-002	0.90	Batteries, replacing	
311-002	0.90	Batteries, replacing	280001 - 310000
32		ALTERNATOR; CHARGE REGULATOR	
321-002	0.70	Alternator, replacing incl function check	
33		STARTING SYSTEM	
331-018	0.70	Starter motor, replacing	
331-081	0.40	Starter relay, replacing	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.50	Horn, replacing	
362-051	0.60	Travel alarm, replacing	
363-004	0.60	Windscreen flusher pump, replacing	
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	
367-056	0.30	I-ECU, replacing	
37		CABLE; FUSE; RELAY	
371-043	0.60	Battery disconnecter, replacing	
371-090	1.50	Engine wire harness, replacing	280001 - 310000
371-090	1.75	Engine wire harness, replacing	210001 - 280000
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-006	0.50	Engine temperature sensor, replacing	210001 - 280000
386-007	0.50	Engine oil pressure sensor, replacing	210001 - 280000
386-011	0.70	Fuel level sender, replacing	
386-038	0.50	Engine rotation speed sensor, replacing	210001 - 280000
386-088	0.60	Engine rotation speed sensor (camshaft), replacing	210001 - 280000
39		MISCELLANEOUS	
393-021	0.50	Radio, replacing	
395-021	0.80	Antenna, replacing	210001 - 280000
395-031	0.50	Speaker, replacing	210001 - 280000

Op.no.	time (h)	Notes
398-001	2.50	CareTrack antenna, replacing
398-002	0.90	W-ECU, MID142, changing pre-programmed ECU
398-003	1.50	W-ECU, MID142, changing non-programmed ECU
398-004	0.40	CareTrack battery, replacing

4 POWER TRANSMISSION

43 GEARBOX,

431-031	4.50	Pump gearbox coupling assembly, replacing
431-053	8.00	Swing unit, replacing
431-117	1.25	Track gearbox, replacing cover
431-127	4.50	Track unit, replacing

44 HYDROSTATIC DRIVE

441-021	8.00	Swing motor, replacing
441-022	0.80	Swing motor relief valve, replacing
441-112	0.80	Track motor relief valve, replacing

7 FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT

71 FRAME

716-003	2.00	Counterweight, replacing
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77 WHEELS; TRACKS; TYRE; HUB; DRUM

775-011	3.00	Front idler, replacing one
775-021	3.00	Sprocket, replacing one
775-032	0.30	Track shoe, replacing one
775-034	1.00	Track chain assembly, removing
775-035	1.50	Track chain assembly, installing
775-036	5.50	Track links, replacing
775-041	0.80	Rubber track, removing
775-042	0.80	Rubber track, installing
775-051	0.80	Top roller, replacing one
775-061	1.00	Bottom roller, replacing one
775-061	1.25	Bottom roller, replacing one
775-066	3.00	Bottom roller, replacing seal
775-071	0.30	Track guard, replacing one
775-080	3.00	Track tension cylinder, replacing
775-081	3.00	Track recoil spring (tensioner) assembly, replacing
775-082	3.00	Recoil spring cylinder seal kit, replacing

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.25	Cab, removing
810-002	1.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.90	Engine hood, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	0.50	Door, replacing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.70	Operator's seat, removing
852-004	0.80	Operator's seat, installing
852-008	1.00	Seat, replacing
86		PROTECTIVE EQUIPMENT, not specified in a special group
867-000	0.50	Falling object guard, removal
867-001	0.60	Falling object guard, installation
87		AIR CONDITIONING UNIT
870-003	3.00	Cooler and Heater assembly, removal
870-004	3.50	Cooler and Heater assembly, installation
873-004	5.00	Heater core, replacing
873-006	4.50	Fan motor, replacing
873-014	0.80	Water valve, replacing
874-006	1.50	Compressor, replacing incl draining and filling
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	6.00	Evaporator, replacing incl draining and filling
874-013	1.75	Expansion valve, replacing incl draining and filling
874-021	0.50	Defroster actuator, replacing
874-095	0.50	Mode (foot) actuator, replacing
874-096	0.40	Intake actuator, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-011	4.00	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-033	3.00	Oil cooler line bypass valve (check valve), replacing

Op.no.	time (h)		Notes
911-040	0.30	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
912-070	0.70	Check valve, replacing	
912-071	0.70	Rupture valve, replacing (boom cylinder)	
912-073	0.70	Rupture valve, replacing (dipper arm cylinder)	
912-136	1.25	Main relief valve, adjusting	
912-160	1.00	Port relief valve pressure, checking and adjusting	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	4.00	Hydraulic pump, replacing	210001 - 210123 280001 - 280363
913-010	4.00	Hydraulic pump, replacing	210124 - 280000 280364 - 310000
914-041	0.50	Proportional solenoid valve (power shift), replacing	
914-051	0.50	Accumulator, replacing	
914-055	0.50	Servo pressure, checking and adjusting	
914-060	0.50	Servo pump, replacing	
914-081	1.50	Remote control valve (lever), replacing	
914-084	1.75	Remote control valve (pedal), replacing	
914-091	1.25	Solenoid valve, replacing	
914-099	2.50	Remote control valve (pedal), disassembly	
914-100	2.00	Remote control valve (pedal), assembly	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-003	0.80	Quickfit solenoid valve, replacing	
924-005	0.80	Quickfit, removal	
924-006	1.00	Quickfit, installation	
97		UNIT, DIGGING	
970-008	0.50	Bushing general, replacing	
971-089	1.50	Boom swing cylinder, replacing	
974-010	5.50	Boom, replacing	
974-021	1.50	Boom cylinder, replacing	
975-024	1.25	Dipper arm connecting rod, replacing	
975-025	1.50	Dipper arm cylinder, replacing	
975-028	0.90	Connecting rod yoke, replacing	
975-039	3.00	Dipper arm, replacing	
975-061	1.50	Bucket cylinder, replacing	
98		FUNCTION FOR ROAD CONSTRUCTION	
981-080	1.25	Dozer blade cylinder, replacing	

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	1.00	Maintenance service, daily
173-004	1.25	Maintenance service, every 50 hours
173-007	1.75	Maintenance service, every 250 hours
173-010	4.00	Maintenance service, every 500 hours
173-012	7.00	Maintenance service, every 1000 hours
173-013	8.50	Maintenance service, every 1500 hours
173-014	8.50	Maintenance service, every 2000 hours
173-016	14.00	Maintenance service, every 3000 hours
173-018	8.50	Maintenance service, every 4000 hours
173-022	0.60	Maintenance service, every 6000 hours
173-039	0.50	Maintenance service, first 250 hours
173-040	0.50	Maintenance service, first 500 hours
173-101	0.40	Track motor gearbox, changing oil
173-401	0.60	Engine oil and filter, changing
173-451	0.70	Hydraulic oil, changing
173-649	0.30	Hydraulic oil return filter, replacing
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU
200-200	0.80	Engine belts, replacing
21		ENGINE
210-002	3.00	Compression test
214-012	2.00	Valves, adjusting
216-014	3.50	Crankshaft, replacing front oil seal
216-018	4.00	Crankshaft, replacing rear oil seal
22		LUBRICATING SYSTEM
221-022	0.80	Lubrication oil pressure, checking with pressure gauge
223-006	0.70	Oil cooler, replacing
23		FUEL SYSTEM
233-014	0.40	Fuel filters, replacing
237-002	3.00	Injectors, replacing all
237-040	0.30	Overflow pipe, checking for leakage
237-125	1.50	Fuel pump unit, replacing

Op.no.	time (h)	Notes
25		INLET SYSTEM; EXHAUST SYSTEM
254-001	1.75	Diesel particulate filter, check and clean
254-059	0.80	Inlet throttle, replacing
254-060	2.00	Diesel oxidation catalyst, replacing
255-002	0.70	Turbocharger, inspection
255-009	0.70	Waste gate, testing
255-071	2.50	Turbocharger, replacing
256-003	0.20	Air cleaner, primary filter replacing
256-004	0.20	Air cleaner, secondary filter replacing
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.50	Coolant, changing
261-008	3.00	Radiator, replacing
261-018	0.30	Expansion tank, replacing
262-002	1.50	Coolant pump, replacing
262-098	1.00	Thermostat, replacing
29		Miscellaneous
293-001	1.50	EGR cooler, replacing
293-002	2.00	EGR cooler, pressure test
293-005	0.70	EGR valve, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.90	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.70	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	0.70	Starter motor, replacing
331-081	0.40	Starter relay, replacing
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.50	Horn, replacing
362-051	0.60	Travel alarm, replacing
363-004	0.70	Windscreen flusher pump, replacing
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU
367-056	0.30	I-ECU, replacing

Op.no.	time (h)	Notes
37		CABLE; FUSE; RELAY
371-043	0.60	Battery disconnecter, replacing
371-090	1.75	Engine wire harness, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	0.50	Engine temperature sensor, replacing
386-007	0.50	Engine oil pressure sensor, replacing
386-011	0.70	Fuel level sender, replacing
386-038	0.50	Engine rotation speed sensor, replacing
386-088	0.60	Engine rotation speed sensor (camshaft), replacing
387-003	0.60	Key pad, replacing
39		MISCELLANEOUS
393-021	0.50	Radio, replacing
395-021	0.80	Antenna, replacing
395-031	0.50	Speaker, replacing
398-001	2.50	CareTrack antenna, replacing
398-002	0.90	W-ECU, MID142, changing pre-programmed ECU
398-003	1.50	W-ECU, MID142, changing non-programmed ECU
398-004	0.40	CareTrack battery, replacing
4		POWER TRANSMISSION
43		GEARBOX,
431-031	4.50	Pump gearbox coupling assembly, replacing
431-053	8.00	Swing unit, replacing
431-117	1.25	Track gearbox, replacing cover
431-127	4.50	Track unit, replacing
44		HYDROSTATIC DRIVE
441-021	8.00	Swing motor, replacing
441-022	3.00	Swing motor relief valve, replacing
441-112	0.80	Track motor relief valve, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-003	2.00	Counterweight, replacing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	3.00	Front idler, replacing one

Op.no.	time (h)	Notes
775-021	3.00	Sprocket, replacing one
775-032	0.30	Track shoe, replacing one
775-034	1.00	Track chain assembly, removing
775-035	1.50	Track chain assembly, installing
775-036	5.50	Track links, replacing
775-041	0.80	Rubber track, removing
775-042	0.80	Rubber track, installing
775-051	0.80	Top roller, replacing one
775-051	0.90	Top roller, replacing one
775-061	1.00	Bottom roller, replacing one
775-061	1.25	Bottom roller, replacing one
775-066	3.00	Bottom roller, replacing seal
775-071	0.90	Track guard, replacing one
775-080	3.00	Track tension cylinder, replacing
775-081	3.00	Track recoil spring (tensioner) assembly, replacing
775-082	3.00	Recoil spring cylinder seal kit, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.25	Cab, removing
810-002	1.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.90	Engine hood, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	0.50	Door, replacing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.70	Operator's seat, removing
852-004	0.80	Operator's seat, installing
852-008	1.00	Seat, replacing
86		PROTECTIVE EQUIPMENT, not specified in a special group
867-000	0.50	Falling object guard, removal
867-001	0.60	Falling object guard, installation
87		AIR CONDITIONING UNIT
870-003	3.00	Cooler and Heater assembly, removal
870-004	3.50	Cooler and Heater assembly, installation
873-004	5.00	Heater core, replacing
873-006	4.50	Fan motor, replacing

Op.no.	time (h)	Notes
873-014	0.80	Water valve, replacing
874-006	1.50	Compressor, replacing incl draining and filling
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	6.00	Evaporator, replacing incl draining and filling
874-013	1.75	Expansion valve, replacing incl draining and filling
874-021	0.50	Defroster actuator, replacing
874-095	0.50	Mode (foot) actuator, replacing
874-096	0.40	Intake actuator, replacing

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-011	4.00	Oil cooler, replacing	
911-015	0.50	Oil level gauge, replacing	
911-033	3.00	Oil cooler line bypass valve (check valve), replacing	
911-040	0.30	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
912-001	10.00	Control valve, replacing	
912-067	0.70	Main pressure relief valve, replacing	
912-070	0.70	Check valve, replacing	
912-071	0.70	Rupture valve, replacing (boom cylinder)	
912-073	0.70	Rupture valve, replacing (dipper arm cylinder)	
912-136	1.25	Main relief valve, adjusting	
912-160	1.00	Port relief valve pressure, checking and adjusting	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	4.00	Hydraulic pump, replacing	210001 - 210620
913-010	4.00	Hydraulic pump, replacing	210621 - 310000
914-041	0.50	Proportional solenoid valve (power shift), replacing	
914-051	0.50	Accumulator, replacing	
914-055	0.50	Servo pressure, checking and adjusting	
914-060	0.50	Servo pump, replacing	
914-081	1.50	Remote control valve (lever), replacing	
914-084	1.75	Remote control valve (pedal), replacing	
914-091	1.25	Solenoid valve, replacing	
914-099	2.50	Remote control valve (pedal), disassembly	
914-100	2.00	Remote control valve (pedal), assembly	

92 MECHANICAL EQUIPMENT/ATTACHMENT

924-003	0.80	Quickfit solenoid valve, replacing
924-005	0.80	Quickfit, removal

Op.no.	time (h)	Notes
924-006	1.00	Quickfit, installation
97		UNIT, DIGGING
970-008	0.50	Bushing general, replacing
971-089	2.50	Boom swing cylinder, replacing
974-010	5.50	Boom, replacing
974-021	1.50	Boom cylinder, replacing
975-024	1.25	Dipper arm connecting rod, replacing
975-025	1.75	Dipper arm cylinder, replacing
975-028	0.90	Connecting rod yoke, replacing
975-039	3.00	Dipper arm, replacing
975-061	1.50	Bucket cylinder, replacing
98		FUNCTION FOR ROAD CONSTRUCTION
981-080	1.25	Dozer blade cylinder, replacing

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.50	Maintenance service, daily	
173-004	1.00	Maintenance service, every 50 hours	
173-007	1.50	Maintenance service, every 250 hours	
173-010	3.00	Maintenance service, every 500 hours	
173-012	4.50	Maintenance service, every 1000 hours	
173-014	8.00	Maintenance service, every 2000 hours	
173-016	6.50	Maintenance service, every 3000 hours	
173-018	9.00	Maintenance service, every 4000 hours	
173-019	0.30	Maintenance service, every 4500 hours	
173-022	2.50	Maintenance service, every 6000 hours	220433 - 999999
173-022	0.70	Maintenance service, every 6000 hours	220010 - 220432
173-040	0.50	Maintenance service, first 500 hours	

2 ENGINE WITH MOUNTING AND EQUIPMENT

20		GENERAL	
200-068	1.00	E-ECU, MID 128, changing non-programmed ECU	
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-070	4.50	Engine, removing	
210-072	5.00	Engine, installing	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
214-012	2.00	Valves, adjusting	
214-037	0.50	Valve cover, removing	
214-038	0.50	Valve cover, installing	
217-003	3.00	Oil sump, replacing	
217-005	0.80	Oil level sensor, changing	
218-002	1.75	Engine mount front, changing	
218-007	3.00	Engine mounting rear, changing	
22		LUBRICATING SYSTEM	
221-022	0.70	Lubrication oil pressure, checking with pressure gauge	
223-006	1.75	Oil cooler, replacing	
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	
233-002	0.90	Feed pump, replacing	
233-004	1.00	Feed pump, checking feed pressure	

Op.no.	time (h)	Notes
233-014	0.50	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
233-020	0.10	Fuel filter, checking
234-010	2.00	Fuel tank, replacing
234-041	0.40	Fuel filling pump, removing
234-042	0.60	Fuel filling pump, installing
235-003	0.30	Fuel return pressure, checking
237-002	4.50	Injectors, replacing all
237-030	1.25	High pressure fuel pump, checking
237-031	1.75	Fuel rail, replacing
237-032	1.50	High pressure fuel pump, replacing
237-033	0.90	Fuel control valve (FCV), replacing
237-034	1.25	Pressure relief valve (PRV), replacing
237-035	0.20	Fuel rail pressure sensor, replacing
237-036	1.50	Pressure relief valve (PRV), checking
237-037	1.50	Fuel rail pressure, checking
237-038	1.25	Fuel control valve (FCV), checking
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.80	Exhaust pipe, flexible tube, replacing
254-001	1.75	Diesel particulate filter, check and clean
254-022	0.90	ACM (After treatment control module), replacing, non-programmed
254-023	0.80	ACM (After treatment control module), replacing, pre-programmed
254-031	2.50	Air pump, replacing
254-032	1.00	Burner, checking
254-033	1.50	Burner, replacing
254-038	0.50	DPF inlet temperature sensor, replacing
254-039	0.50	DPF outlet temperature sensor, replacing
254-043	0.10	Spark plug control unit, replacing
254-044	0.20	Glow plug, replacing
254-046	0.20	Spark plug, replacing
254-048	0.20	Spark plug cable, replacing
254-050	1.00	Fuel metering unit A, replacing
254-051	1.25	Fuel metering unit B, replacing
255-071	1.25	Turbocharger, replacing
256-006	1.00	Preheating coil, replacing
258-002	5.00	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-002	0.20	Coolant, checking anti-freeze resistance
261-008	5.00	Radiator, replacing
261-011	3.00	Radiator, removing

Op.no.	time (h)	Notes
261-013	3.50	Radiator, installing
261-016	1.50	Radiator hoses all, replacing
261-018	1.25	Expansion tank, replacing
262-002	1.75	Coolant pump, replacing
262-097	0.40	Thermostat, checking
262-098	1.25	Thermostat, replacing
263-022	0.90	Fan belt and/or alternator-, compressor belt, replacing all belts
263-050	1.25	Cooling fan clutch, replacing
29		Miscellaneous
293-001	4.00	EGR cooler, replacing
293-005	4.50	EGR valve, replacing
293-008	4.50	EGR Actuator, replacing
293-009	3.50	EGR reed valve, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
301-016	0.40	Tiltrotator control system, software updating
31		BATTERY
311-002	0.70	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.80	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	3.00	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
352-002	0.50	Headlights, adjusting
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.70	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.40	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.40	Windscreen wiper, replacing switch

Op.no.	time (h)	Notes
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.40	Windscreen wiper, replacing controller
364-001	0.80	Electric center passage, replacing
364-004	0.30	Switch, replacing
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
37		CABLE; FUSE; RELAY
372-002	0.80	Electrical distribution box, circuit board replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-007	0.50	Engine oil pressure sensor, replacing
386-016	0.60	Temperature sensor cooling system, replacing
386-017	0.70	Hydraulic oil temperature sensor, replacing
386-018	0.50	Boost pressure / charge-air temperature sensor, replacing
386-038	0.60	Engine rotation speed sensor, replacing
386-088	0.30	Engine rotation speed sensor (camshaft), replacing
39		MISCELLANEOUS
395-021	0.70	Antenna, replacing
395-031	0.40	Speaker, replacing
398-001	0.60	CareTrack antenna, replacing
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU
398-003	1.50	W-ECU, MID142, changing non-programmed ECU
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
424-002	0.20	Transmission mode, function check
43		GEARBOX,
431-012	2.00	Travel gearbox, removal
431-013	2.50	Travel gearbox, installation
431-020	0.40	Travel gearbox, bleeding
44		HYDROSTATIC DRIVE
441-009	1.75	Travel motor, removing
441-010	2.00	Travel motor, installing
441-016	0.20	Travel motor removed, replacing seal
441-017	0.50	Travel motor pressure, checking and adjusting
441-018	0.90	Retardation valve, replacing

Op.no.	time (h)		Notes
441-020	0.80	Travel motor (electric proportional control) pressure, checking and adjusting	
441-027	2.50	Swing motor brake discs, replacing (motor removed)	
441-030	3.00	Swing motor, removing	
441-031	4.00	Swing motor, installing	
441-032	0.40	Swing motor pressure, checking and adjusting	
441-119	0.70	Travel motor regulation start, checking and adjusting	
441-120	0.80	Travel motor, calibrating	
442-045	2.50	Pump coupling, removing	
442-046	2.00	Pump coupling, installing	
443-033	0.90	Center passage, disassembly and assembly	
443-034	2.50	Centre passage, removing	
443-035	3.00	Centre passage, installing	
45		PROPELLER SHAFT	
451-004	1.00	Propeller shaft, rear, replacing	
451-010	1.00	Propeller shaft, front, replacing	
46		FRONT AXLE; REAR AXLE	
461-002	2.50	Axle, removing	
461-003	3.00	Axle, installing	
461-045	2.50	Drive shaft seal, replacing	
461-070	8.50	King pin and bushing, replacing	
463-002	1.50	Axle, removing	
463-003	2.50	Axle, installing	
49		MISCELLANEOUS	
492-025	0.40	Swing ring, measuring axial clearance	
492-031	2.50	Swing ring gear outer seal, replacing	220307 - 999999
492-031	2.50	Swing ring gear outer seal, replacing	220010 - 220306
5		BRAKE	
51		WHEEL BRAKE	
510-005	0.20	Service brakes, function check	
52		HYDRAULIC BRAKE SYSTEM	
520-005	0.70	Brake system, check and adjusting pressure in circuit	
520-037	0.50	Brake system, bleeding	
525-008	1.75	Foot brake valve, replacing	
527-012	0.50	Accumulator, removal	
527-013	0.80	Accumulator, installation	

Op.no.	time (h)	Notes
527-014	0.50	Brake accumulator charging pressure, adjusting
55		PARKING BRAKE
550-015	0.30	Parking brake, manually releasing
550-023	0.30	Parking brake, function checking
6		STEERING
60		GENERAL
600-001	0.30	Steering system, function check
64		STEERING
645-003	0.30	Steering system working pressure, checking
645-022	0.70	Steering valve, removal
645-023	0.70	Steering valve, installation
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	0.90	Counterweight, removing
716-002	1.25	Counterweight, fitting
76		SHOCK ABSORBER; AXLE LOCKING; ANTI ROLL BAR; LEVEL / SIDE CONTROL
763-001	0.40	Pivot axle lock cylinder, removing
763-002	0.50	Pivot axle lock cylinder, installing
763-003	0.70	Pivot axle lock cylinder, changing seals
763-004	0.20	Pivot axle lock cylinder, releasing for towing
763-006	0.30	Pivot axle lock, function check
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-007	0.50	Wheel, installing
771-008	0.40	Wheel, removing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
83		DOORS; HATCH; COVER PLATE, (all)
831-052	0.60	Cab door, removing door catch

Op.no.	time (h)	Notes
831-053	0.90	Cab door, installing door catch
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-088	0.30	Seat belt, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-010	0.70	ECC, MID 146, changing pre-programmed ECU
870-011	1.00	ECC, MID 146, changing non-programmed ECU
872-001	0.30	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
874-006	4.00	Compressor, replacing incl draining and filling
874-010	1.50	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	3.50	Expansion valve, replacing incl draining and filling
874-094	0.80	Vent actuator, replacing
874-095	0.70	Mode (foot) actuator, replacing
874-096	0.70	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	0.80	Instrument panel, replacing (left)
881-005	0.90	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-001	0.30	Hydraulic system, warming up
900-005	0.60	Vacuum pump, connection
900-006	0.30	Vacuum pump, disconnection

Op.no.	time (h)	Notes
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-018	0.70	Cooling fan speed, checking and adjusting with VCADS Pro
911-036	1.25	Hydraulic oil tank, removing
911-037	2.50	Hydraulic oil tank, installing
912-018	1.25	Back-up valve, checking and adjusting
912-071	1.00	Rupture valve, replacing (boom cylinder)
912-073	0.70	Rupture valve, replacing (dipper arm cylinder)
912-091	3.00	Main control valve, removal
912-092	4.00	Main control valve, installation
912-117	0.80	LS-pressure relief valve, replacing
912-150	0.60	Working pressure, checking and adjusting
912-162	1.00	Line rupture valve pressure, checking and adjusting
912-210	0.70	Rupture valve, replacing (2pcs boom tilt cylinder)
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-023	2.00	Pump, removal
913-024	3.50	Pump, installation
914-031	0.40	Servo pump, removal
914-032	0.50	Servo pump, installation
914-047	0.50	Servo accumulator, removal
914-048	0.80	Servo accumulator, installation
914-055	0.50	Servo pressure, checking and adjusting
914-064	0.60	Servo valve, removal
914-065	0.70	Servo valve, installation
914-103	0.20	Control lockout lever, function check
916-002	0.30	Boom suspension accumulator, check and adjusting
916-060	1.00	Calibration of X1 hydraulic with flow control
916-061	0.50	Calibration of X1 hydraulic with pressure control
916-062	1.25	X1 pressure relief valve, adjusting
916-062	0.90	X1 pressure relief valve, adjusting
916-071	1.50	Boom suspension system, changing accumulator
916-110	0.90	X3 pressure and flow, adjusting
916-112	0.20	X1, function check
916-113	0.20	X3, function check
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-005	0.40	Quickfit, removal
924-006	0.40	Quickfit, installation
924-007	0.50	Cylinder for hydraulic quickfit S1, removal
924-008	0.50	Cylinder for hydraulic quickfit S1, installation
924-009	0.70	Cylinder for hydraulic quickfit S6, removal
924-010	0.50	Cylinder for hydraulic quickfit S6, installation

Op.no.	time (h)		Notes
924-011	0.50	Hydraulic quickfit cylinder, removal	
924-012	0.70	Hydraulic quickfit cylinder, installation	
924-017	0.40	Cylinder for hydraulic quickfit Universal, removal	
924-018	0.40	Cylinder for hydraulic quickfit Universal, installation	
924-040	0.90	Quickfit, replacing	
924-046	0.10	Quickfit, function check	220010 - 220442
924-046	0.10	Quickfit, function check	220443 - 999999
97		UNIT, DIGGING	
975-011	0.70	Dipper arm, removal	
975-012	2.50	Dipper arm, installation	
975-062	0.70	Bucket cylinder, removal	
975-065	0.70	Bucket cylinder, installation	

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.50	Maintenance service, daily	
173-004	1.00	Maintenance service, every 50 hours	
173-007	1.50	Maintenance service, every 250 hours	
173-010	3.00	Maintenance service, every 500 hours	
173-012	4.50	Maintenance service, every 1000 hours	
173-014	8.00	Maintenance service, every 2000 hours	
173-016	6.50	Maintenance service, every 3000 hours	
173-018	9.00	Maintenance service, every 4000 hours	
173-019	0.30	Maintenance service, every 4500 hours	
173-022	2.50	Maintenance service, every 6000 hours	220741 - 999999
173-022	0.70	Maintenance service, every 6000 hours	220010 - 220740
173-040	0.50	Maintenance service, first 500 hours	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.00	E-ECU, MID 128, changing non-programmed ECU	
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-070	4.50	Engine, removing	
210-072	5.00	Engine, installing	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
214-012	2.00	Valves, adjusting	
214-037	0.50	Valve cover, removing	
214-038	0.50	Valve cover, installing	
217-003	3.50	Oil sump, replacing	
217-005	0.80	Oil level sensor, changing	
218-002	1.75	Engine mount front, changing	
218-007	3.00	Engine mounting rear, changing	
22		LUBRICATING SYSTEM	
221-022	0.70	Lubrication oil pressure, checking with pressure gauge	
223-006	1.75	Oil cooler, replacing	
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	
233-002	0.90	Feed pump, replacing	
233-004	1.00	Feed pump, checking feed pressure	

Op.no.	time (h)	Notes
233-014	0.50	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
233-020	0.10	Fuel filter, checking
234-010	2.50	Fuel tank, replacing
234-041	0.40	Fuel filling pump, removing
234-042	0.60	Fuel filling pump, installing
235-003	0.30	Fuel return pressure, checking
237-002	4.50	Injectors, replacing all
237-017	7.00	Injector sleeves, replacing
237-030	1.25	High pressure fuel pump, checking
237-031	1.75	Fuel rail, replacing
237-032	1.50	High pressure fuel pump, replacing
237-033	0.90	Fuel control valve (FCV), replacing
237-034	1.25	Pressure relief valve (PRV), replacing
237-035	0.20	Fuel rail pressure sensor, replacing
237-036	1.50	Pressure relief valve (PRV), checking
237-037	1.50	Fuel rail pressure, checking
237-038	1.25	Fuel control valve (FCV), checking
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.80	Exhaust pipe, flexible tube, replacing
254-001	1.75	Diesel particulate filter, check and clean
254-022	0.90	ACM (After treatment control module), replacing, non-programmed
254-023	0.80	ACM (After treatment control module), replacing, pre-programmed
254-031	2.50	Air pump, replacing
254-032	1.00	Burner, checking
254-033	1.50	Burner, replacing
254-038	0.50	DPF inlet temperature sensor, replacing
254-039	0.50	DPF outlet temperature sensor, replacing
254-043	0.10	Spark plug control unit, replacing
254-044	0.20	Glow plug, replacing
254-046	0.20	Spark plug, replacing
254-048	0.20	Spark plug cable, replacing
254-050	1.00	Fuel metering unit A, replacing
254-051	1.25	Fuel metering unit B, replacing
254-056	0.40	NOx sensor, replacing
255-071	1.25	Turbocharger, replacing
256-006	0.50	Preheating coil, replacing
258-002	5.00	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-002	0.20	Coolant, checking anti-freeze resistance

Op.no.	time (h)	Notes
261-008	5.00	Radiator, replacing
261-011	2.00	Radiator, removing
261-013	2.50	Radiator, installing
261-016	1.25	Radiator hoses all, replacing
261-018	1.25	Expansion tank, replacing
262-002	1.75	Coolant pump, replacing
262-097	0.40	Thermostat, checking
262-098	1.00	Thermostat, replacing
263-022	0.90	Fan belt and/or alternator-, compressor belt, replacing all belts
263-050	0.90	Cooling fan clutch, replacing
29		Miscellaneous
293-001	6.00	EGR cooler, replacing
293-005	6.00	EGR valve, replacing
293-006	0.20	EGR temperature sensor, replacing
293-007	0.30	EGR pressure sensor, replacing
293-008	1.75	EGR Actuator, replacing
293-009	1.50	EGR reed valve, replacing
293-010	0.50	EGR Venturi tube, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
301-016	0.40	Tiltrotator control system, software updating
31		BATTERY
311-002	0.70	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.80	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	3.00	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
352-002	0.50	Headlights, adjusting

Op.no.	time (h)	Notes
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.70	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.40	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.40	Windscreen wiper, replacing controller
364-001	0.80	Electric center passage, replacing
364-004	0.30	Switch, replacing
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
37		CABLE; FUSE; RELAY
372-002	0.80	Electrical distribution box, circuit board replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-007	0.50	Engine oil pressure sensor, replacing
386-008	0.40	Engine rotation speed sensor, replacing
386-016	0.60	Temperature sensor cooling system, replacing
386-017	0.70	Hydraulic oil temperature sensor, replacing
386-018	0.80	Boost pressure / charge-air temperature sensor, replacing
386-038	0.50	Engine rotation speed sensor, replacing
386-088	0.30	Engine rotation speed sensor (camshaft), replacing
39		MISCELLANEOUS
395-021	0.70	Antenna, replacing
395-031	0.40	Speaker, replacing
398-001	0.60	CareTrack antenna, replacing
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU
398-003	1.50	W-ECU, MID142, changing non-programmed ECU
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
424-002	0.20	Transmission mode, function check
43		GEARBOX,
431-012	2.00	Travel gearbox, removal
431-013	2.50	Travel gearbox, installation
431-020	0.40	Travel gearbox, bleeding

Op.no.	time (h)	Notes	
44		HYDROSTATIC DRIVE	
441-009	1.75	Travel motor, removing	
441-010	2.00	Travel motor, installing	
441-016	0.20	Travel motor removed, replacing seal	
441-017	0.50	Travel motor pressure, checking and adjusting	
441-018	0.90	Retardation valve, replacing	
441-020	0.80	Travel motor (electric proportional control) pressure, checking and adjusting	
441-027	2.50	Swing motor brake discs, replacing (motor removed)	
441-030	5.00	Swing motor, removing	
441-031	4.00	Swing motor, installing	
441-032	0.40	Swing motor pressure, checking and adjusting	
441-119	0.70	Travel motor regulation start, checking and adjusting	
441-120	0.80	Travel motor, calibrating	
442-045	2.50	Pump coupling, removing	
442-046	2.00	Pump coupling, installing	
443-033	0.90	Center passage, disassembly and assembly	
443-034	2.50	Centre passage, removing	
443-035	3.00	Centre passage, installing	
45		PROPELLER SHAFT	
451-004	1.00	Propeller shaft, rear, replacing	
451-010	1.00	Propeller shaft, front, replacing	
46		FRONT AXLE; REAR AXLE	
461-002	2.50	Axle, removing	
461-003	3.00	Axle, installing	
461-045	2.50	Drive shaft seal, replacing	
461-070	8.50	King pin and bushing, replacing	
463-002	1.50	Axle, removing	
463-003	2.50	Axle, installing	
49		MISCELLANEOUS	
492-025	0.40	Swing ring, measuring axial clearance	
492-031	2.50	Swing ring gear outer seal, replacing	220563 - 999999
492-031	2.50	Swing ring gear outer seal, replacing	220010 - 220562
5		BRAKE	
51		WHEEL BRAKE	
510-005	0.20	Service brakes, function check	

Op.no.	time (h)	Notes
52		HYDRAULIC BRAKE SYSTEM
520-005	0.70	Brake system, check and adjusting pressure in circuit
520-037	0.50	Brake system, bleeding
525-008	1.75	Foot brake valve, replacing
527-012	0.50	Accumulator, removal
527-013	0.80	Accumulator, installation
527-014	0.50	Brake accumulator charging pressure, adjusting
55		PARKING BRAKE
550-015	0.30	Parking brake, manually releasing
550-023	0.30	Parking brake, function checking
6		STEERING
60		GENERAL
600-001	0.30	Steering system, function check
64		STEERING
645-003	0.30	Steering system working pressure, checking
645-022	0.70	Steering valve, removal
645-023	0.70	Steering valve, installation
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	0.90	Counterweight, removing
716-002	1.25	Counterweight, fitting
76		SHOCK ABSORBER; AXLE LOCKING; ANTI ROLL BAR; LEVEL / SIDE CONTROL
763-001	0.40	Pivot axle lock cylinder, removing
763-002	0.50	Pivot axle lock cylinder, installing
763-003	0.70	Pivot axle lock cylinder, changing seals
763-004	0.20	Pivot axle lock cylinder, releasing for towing
763-006	0.30	Pivot axle lock, function check
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-007	0.50	Wheel, installing
771-008	0.40	Wheel, removing

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
83		DOORS; HATCH; COVER PLATE, (all)
831-052	0.60	Cab door, removing door catch
831-053	0.90	Cab door, installing door catch
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-088	0.30	Seat belt, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-010	0.70	ECC, MID 146, changing pre-programmed ECU
870-011	1.00	ECC, MID 146, changing non-programmed ECU
872-001	0.30	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
874-006	4.00	Compressor, replacing incl draining and filling
874-010	1.50	Condenser, replacing incl draining and filling
874-011	1.50	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	3.50	Expansion valve, replacing incl draining and filling
874-094	0.80	Vent actuator, replacing
874-095	0.70	Mode (foot) actuator, replacing
874-096	0.70	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	0.80	Instrument panel, replacing (left)
881-005	0.90	Instrument panel, replacing (right)

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-001	0.30	Hydraulic system, warming up
900-005	0.60	Vacuum pump, connection
900-006	0.30	Vacuum pump, disconnection
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-018	0.70	Cooling fan speed, checking and adjusting with VCADS Pro
911-036	1.25	Hydraulic oil tank, removing
911-037	2.50	Hydraulic oil tank, installing
912-018	1.25	Back-up valve, checking and adjusting
912-071	1.00	Rupture valve, replacing (boom cylinder)
912-073	0.70	Rupture valve, replacing (dipper arm cylinder)
912-091	3.00	Main control valve, removal
912-092	4.00	Main control valve, installation
912-117	0.80	LS-pressure relief valve, replacing
912-150	1.50	Working pressure, checking and adjusting
912-162	1.00	Line rupture valve pressure, checking and adjusting
912-169	0.60	Unload valve, checking and adjusting
912-170	1.00	Unload valve, replacing
912-210	0.70	Rupture valve, replacing (2pcs boom tilt cylinder)
913-023	2.00	Pump, removal
913-024	3.50	Pump, installation
914-031	0.40	Servo pump, removal
914-032	0.50	Servo pump, installation
914-047	0.50	Servo accumulator, removal
914-048	0.80	Servo accumulator, installation
914-055	0.50	Servo pressure, checking and adjusting
914-064	0.60	Servo valve, removal
914-065	0.70	Servo valve, installation
914-103	0.20	Control lockout lever, function check
916-002	0.30	Boom suspension accumulator, check and adjusting
916-060	1.00	Calibration of X1 hydraulic with flow control
916-061	0.50	Calibration of X1 hydraulic with pressure control
916-062	1.25	X1 pressure relief valve, adjusting
916-062	0.90	X1 pressure relief valve, adjusting
916-071	1.50	Boom suspension system, changing accumulator
916-110	0.90	X3 pressure and flow, adjusting
916-111	0.90	X3 shock and refilling valves, adjusting
916-112	0.20	X1, function check

Op.no.	time (h)		Notes
916-113	0.20	X3, function check	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-005	0.40	Quickfit, removal	
924-006	0.40	Quickfit, installation	
924-007	0.50	Cylinder for hydraulic quickfit S1, removal	
924-008	0.50	Cylinder for hydraulic quickfit S1, installation	
924-009	0.70	Cylinder for hydraulic quickfit S6, removal	
924-010	0.50	Cylinder for hydraulic quickfit S6, installation	
924-011	0.50	Hydraulic quickfit cylinder, removal	
924-012	0.70	Hydraulic quickfit cylinder, installation	
924-017	0.40	Cylinder for hydraulic quickfit Universal, removal	
924-018	0.40	Cylinder for hydraulic quickfit Universal, installation	
924-040	0.90	Quickfit, replacing	
924-046	0.10	Quickfit, function check	220863 - 999999
924-046	0.10	Quickfit, function check	220010 - 220862
97		UNIT, DIGGING	
975-011	0.70	Dipper arm, removal	
975-012	2.50	Dipper arm, installation	
975-062	0.70	Bucket cylinder, removal	
975-065	0.70	Bucket cylinder, installation	
99		MISCELLANEOUS	
996-001	1.50	Cab elevating cylinder, replacing	

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.50	Maintenance service, daily	
173-004	1.00	Maintenance service, every 50 hours	
173-007	1.75	Maintenance service, every 250 hours	
173-010	3.00	Maintenance service, every 500 hours	
173-012	5.50	Maintenance service, every 1000 hours	
173-014	8.50	Maintenance service, every 2000 hours	
173-016	7.00	Maintenance service, every 3000 hours	
173-018	9.50	Maintenance service, every 4000 hours	
173-019	0.30	Maintenance service, every 4500 hours	
173-022	2.50	Maintenance service, every 6000 hours	220237 - 999999
173-022	0.70	Maintenance service, every 6000 hours	220010 - 220236
173-040	1.25	Maintenance service, first 500 hours	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.00	E-ECU, MID 128, changing non-programmed ECU	
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-070	4.50	Engine, removing	
210-072	5.00	Engine, installing	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
214-012	2.00	Valves, adjusting	
214-037	0.50	Valve cover, removing	
214-038	0.50	Valve cover, installing	
217-003	3.50	Oil sump, replacing	
217-005	0.80	Oil level sensor, changing	
218-002	1.75	Engine mount front, changing	
218-007	3.00	Engine mounting rear, changing	
22		LUBRICATING SYSTEM	
221-022	0.70	Lubrication oil pressure, checking with pressure gauge	
223-006	1.75	Oil cooler, replacing	
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	
233-002	0.90	Feed pump, replacing	
233-004	1.00	Feed pump, checking feed pressure	

Op.no.	time (h)	Notes
233-014	0.50	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
233-020	0.10	Fuel filter, checking
234-010	2.00	Fuel tank, replacing
234-041	0.40	Fuel filling pump, removing
234-042	0.60	Fuel filling pump, installing
235-003	0.30	Fuel return pressure, checking
237-002	4.50	Injectors, replacing all
237-017	7.00	Injector sleeves, replacing
237-030	1.25	High pressure fuel pump, checking
237-031	1.75	Fuel rail, replacing
237-032	1.50	High pressure fuel pump, replacing
237-033	0.90	Fuel control valve (FCV), replacing
237-034	1.25	Pressure relief valve (PRV), replacing
237-035	0.20	Fuel rail pressure sensor, replacing
237-036	1.50	Pressure relief valve (PRV), checking
237-037	1.50	Fuel rail pressure, checking
237-038	1.25	Fuel control valve (FCV), checking
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.80	Exhaust pipe, flexible tube, replacing
254-001	1.75	Diesel particulate filter, check and clean
254-022	0.90	ACM (After treatment control module), replacing, non-programmed
254-023	0.80	ACM (After treatment control module), replacing, pre-programmed
254-031	2.50	Air pump, replacing
254-032	1.00	Burner, checking
254-033	1.50	Burner, replacing
254-038	0.50	DPF inlet temperature sensor, replacing
254-039	0.50	DPF outlet temperature sensor, replacing
254-043	0.10	Spark plug control unit, replacing
254-044	0.20	Glow plug, replacing
254-046	0.20	Spark plug, replacing
254-048	0.20	Spark plug cable, replacing
254-050	1.00	Fuel metering unit A, replacing
254-051	1.25	Fuel metering unit B, replacing
254-056	0.40	NOx sensor, replacing
255-071	1.25	Turbocharger, replacing
256-006	0.50	Preheating coil, replacing
258-002	5.00	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-002	0.20	Coolant, checking anti-freeze resistance

Op.no.	time (h)	Notes
261-008	5.00	Radiator, replacing
261-011	2.00	Radiator, removing
261-013	2.50	Radiator, installing
261-016	1.25	Radiator hoses all, replacing
261-018	1.25	Expansion tank, replacing
262-002	1.75	Coolant pump, replacing
262-097	0.40	Thermostat, checking
262-098	1.00	Thermostat, replacing
263-022	0.90	Fan belt and/or alternator-, compressor belt, replacing all belts
263-050	0.90	Cooling fan clutch, replacing
29		Miscellaneous
293-001	6.00	EGR cooler, replacing
293-005	6.00	EGR valve, replacing
293-006	0.20	EGR temperature sensor, replacing
293-007	0.30	EGR pressure sensor, replacing
293-008	1.75	EGR Actuator, replacing
293-009	1.50	EGR reed valve, replacing
293-010	0.50	EGR Venturi tube, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
301-016	0.40	Tiltrotator control system, software updating
31		BATTERY
311-002	0.70	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.80	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	3.00	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
352-002	0.50	Headlights, adjusting

Op.no.	time (h)	Notes
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.70	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.40	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.40	Windscreen wiper, replacing controller
364-001	0.80	Electric center passage, replacing
364-004	0.30	Switch, replacing
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
37		CABLE; FUSE; RELAY
372-002	0.80	Electrical distribution box, circuit board replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-007	0.50	Engine oil pressure sensor, replacing
386-008	0.40	Engine rotation speed sensor, replacing
386-016	0.60	Temperature sensor cooling system, replacing
386-017	0.70	Hydraulic oil temperature sensor, replacing
386-018	0.80	Boost pressure / charge-air temperature sensor, replacing
386-038	0.50	Engine rotation speed sensor, replacing
386-088	0.30	Engine rotation speed sensor (camshaft), replacing
39		MISCELLANEOUS
395-021	0.70	Antenna, replacing
395-031	0.40	Speaker, replacing
398-001	0.60	CareTrack antenna, replacing
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU
398-003	1.50	W-ECU, MID142, changing non-programmed ECU
4		POWER TRANSMISSION
43		GEARBOX,
431-012	2.00	Travel gearbox, removal
431-013	2.50	Travel gearbox, installation
431-020	0.40	Travel gearbox, bleeding
44		HYDROSTATIC DRIVE
441-009	1.75	Travel motor, removing

Op.no.	time (h)		Notes
441-010	2.00	Travel motor, installing	
441-016	0.20	Travel motor removed, replacing seal	
441-017	0.50	Travel motor pressure, checking and adjusting	
441-018	0.90	Retardation valve, replacing	
441-020	0.80	Travel motor (electric proportional control) pressure, checking and adjusting	
441-030	3.00	Swing motor, removing	
441-031	4.00	Swing motor, installing	
441-032	0.40	Swing motor pressure, checking and adjusting	
441-119	0.70	Travel motor regulation start, checking and adjusting	
441-120	0.80	Travel motor, calibrating	
442-045	2.50	Pump coupling, removing	
442-046	2.00	Pump coupling, installing	
443-033	0.90	Center passage, disassembly and assembly	
443-034	2.50	Centre passage, removing	
443-035	3.00	Centre passage, installing	
45		PROPELLER SHAFT	
451-004	1.00	Propeller shaft, rear, replacing	
451-010	1.00	Propeller shaft, front, replacing	
46		FRONT AXLE; REAR AXLE	
461-002	2.50	Axle, removing	
461-003	3.00	Axle, installing	
461-045	2.50	Drive shaft seal, replacing	
461-070	8.50	King pin and bushing, replacing	
463-002	1.50	Axle, removing	
463-003	2.50	Axle, installing	
49		MISCELLANEOUS	
492-025	0.40	Swing ring, measuring axial clearance	
492-031	2.50	Swing ring gear outer seal, replacing	220151 - 999999
492-031	2.50	Swing ring gear outer seal, replacing	220010 - 220150
5		BRAKE	
51		WHEEL BRAKE	
510-005	0.20	Service brakes, function check	
52		HYDRAULIC BRAKE SYSTEM	
520-005	0.70	Brake system, check and adjusting pressure in circuit	
520-037	0.50	Brake system, bleeding	
525-008	1.75	Foot brake valve, replacing	

Op.no.	time (h)	Notes
527-012	0.50	Accumulator, removal
527-013	0.80	Accumulator, installation
527-014	0.50	Brake accumulator charging pressure, adjusting
55		PARKING BRAKE
550-015	0.30	Parking brake, manually releasing
550-023	0.30	Parking brake, function checking
6		STEERING
60		GENERAL
600-001	0.30	Steering system, function check
64		STEERING
645-003	0.30	Steering system working pressure, checking
645-022	0.70	Steering valve, removal
645-023	0.70	Steering valve, installation
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	0.90	Counterweight, removing
716-002	1.25	Counterweight, fitting
76		SHOCK ABSORBER; AXLE LOCKING; ANTI ROLL BAR; LEVEL / SIDE CONTROL
763-001	0.40	Pivot axle lock cylinder, removing
763-002	0.50	Pivot axle lock cylinder, installing
763-003	0.70	Pivot axle lock cylinder, changing seals
763-004	0.20	Pivot axle lock cylinder, releasing for towing
763-006	0.30	Pivot axle lock, function check
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-007	0.50	Wheel, installing
771-008	0.40	Wheel, removing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing

Op.no.	time (h)	Notes
83		DOORS; HATCH; COVER PLATE, (all)
831-052	0.60	Cab door, removing door catch
831-053	0.90	Cab door, installing door catch
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-088	0.30	Seat belt, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-010	0.70	ECC, MID 146, changing pre-programmed ECU
870-011	1.00	ECC, MID 146, changing non-programmed ECU
872-001	0.30	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
874-006	4.00	Compressor, replacing incl draining and filling
874-010	1.50	Condenser, replacing incl draining and filling
874-011	1.50	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	3.50	Expansion valve, replacing incl draining and filling
874-094	0.80	Vent actuator, replacing
874-095	0.70	Mode (foot) actuator, replacing
874-096	0.70	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	0.80	Instrument panel, replacing (left)
881-005	0.90	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-001	0.30	Hydraulic system, warming up

Op.no.	time (h)	Notes
900-005	0.60	Vacuum pump, connection
900-006	0.30	Vacuum pump, disconnection
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-018	0.70	Cooling fan speed, checking and adjusting with VCADS Pro
911-036	1.25	Hydraulic oil tank, removing
911-037	2.50	Hydraulic oil tank, installing
912-018	1.25	Back-up valve, checking and adjusting
912-071	1.00	Rupture valve, replacing (boom cylinder)
912-073	0.70	Rupture valve, replacing (dipper arm cylinder)
912-091	3.00	Main control valve, removal
912-092	4.00	Main control valve, installation
912-117	0.80	LS-pressure relief valve, replacing
912-150	1.50	Working pressure, checking and adjusting
912-162	1.00	Line rupture valve pressure, checking and adjusting
912-169	0.60	Unload valve, checking and adjusting
912-170	1.00	Unload valve, replacing
912-210	0.70	Rupture valve, replacing (2pcs boom tilt cylinder)
913-023	2.00	Pump, removal
913-024	3.50	Pump, installation
914-031	0.40	Servo pump, removal
914-032	0.50	Servo pump, installation
914-047	0.50	Servo accumulator, removal
914-048	0.80	Servo accumulator, installation
914-055	0.50	Servo pressure, checking and adjusting
914-064	0.60	Servo valve, removal
914-065	0.70	Servo valve, installation
914-103	0.20	Control lockout lever, function check
916-002	0.30	Boom suspension accumulator, check and adjusting
916-060	1.00	Calibration of X1 hydraulic with flow control
916-061	0.50	Calibration of X1 hydraulic with pressure control
916-062	1.25	X1 pressure relief valve, adjusting
916-062	0.90	X1 pressure relief valve, adjusting
916-071	1.50	Boom suspension system, changing accumulator
916-110	0.90	X3 pressure and flow, adjusting
916-111	0.90	X3 shock and refilling valves, adjusting
916-112	0.20	X1, function check
916-113	0.20	X3, function check
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-005	0.40	Quickfit, removal
924-006	0.40	Quickfit, installation

Op.no.	time (h)		Notes
924-007	0.50	Cylinder for hydraulic quickfit S1, removal	
924-008	0.50	Cylinder for hydraulic quickfit S1, installation	
924-009	0.70	Cylinder for hydraulic quickfit S6, removal	
924-010	0.50	Cylinder for hydraulic quickfit S6, installation	
924-011	0.50	Hydraulic quickfit cylinder, removal	
924-012	0.70	Hydraulic quickfit cylinder, installation	
924-017	0.40	Cylinder for hydraulic quickfit Universal, removal	
924-018	0.40	Cylinder for hydraulic quickfit Universal, installation	
924-040	0.90	Quickfit, replacing	
924-046	0.10	Quickfit, function check	220307 - 999999
924-046	0.10	Quickfit, function check	220010 - 220306
97		UNIT, DIGGING	
975-011	0.70	Dipper arm, removal	
975-012	2.50	Dipper arm, installation	
975-062	0.70	Bucket cylinder, removal	
975-065	0.70	Bucket cylinder, installation	

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.50	Maintenance service, every 10 hours
173-004	0.80	Maintenance service, every 50 hours
173-007	1.25	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	5.00	Maintenance service, every 1000 hours
173-014	7.50	Maintenance service, every 2000 hours
173-018	10.00	Maintenance service, every 4000 hours
173-022	0.70	Maintenance service, every 6000 hours
173-040	2.00	Maintenance service, first 500 hours
173-300	0.40	Test running and checking
173-302	0.20	Service position 1
173-303	0.20	Lubrication, every 50 hours
173-304	0.20	Lubrication, every 250 hours
173-308	0.30	Brake disc wear, measuring
173-314	3.00	Valves, adjusting
173-332	0.40	MATRIS and Tech Tool, reading
173-336	0.10	Cab door, covers, hinges, joints and locks, lubricating
173-338	0.20	Tyre wear and air pressure, checking
173-340	0.20	Fan/alternator belt, checking
173-341	0.20	Air conditioner compressor belt, checking
173-344	0.10	Swing gearbox oil level, checking
173-345	0.10	Swing ring gear bearing, lubricating
173-346	0.20	Cab prefilter, cleaning
173-347	0.40	Radiator and hydraulic oil cooler, cleaning
173-348	0.10	Swing bath grease, checking
173-349	0.30	Hydraulic oil suction strainer, cleaning
173-356	0.20	Hydraulic oil level, checking
173-377	0.20	Drive axles and hubs oil level, checking
173-381	0.30	Wheel nuts torque, checking
173-401	0.60	Engine oil and filter, changing
173-403	0.10	Engine air cleaner primary filter, replacing
173-404	0.10	Engine air cleaner secondary filter, replacing
173-405	0.10	Cab prefilter, replacing
173-409	0.20	Fuel tank breather filter, replacing
173-412	0.20	Hydraulic oil tank breather filter, replacing
173-420	0.20	Brake system pressure oil filter, replacing
173-421	0.40	Water separator filter, replacing
173-422	0.20	Hydraulic oil drain filter, replacing
173-423	0.20	Hydraulic oil servo filter, replacing
173-427	0.30	Fuel filter, replacing

Op.no.	time (h)	Notes
173-451	1.00	Hydraulic oil, changing
173-453	0.80	Drive axles and hubs oil, changing
173-457	0.50	Coolant, changing
173-463	0.80	Swing gearbox oil, changing
173-464	0.20	Travel gearbox oil, changing
173-504	0.20	Oil-bath air cleaner reservoir oil, checking
173-521	0.30	Extra water separator filter element, replacing
173-639	0.10	Travel gearbox oil level, checking
173-649	0.20	Hydraulic oil return filter, replacing

2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	1.00	E-ECU, MID 128, changing pre-programmed ECU

21 ENGINE

210-070	5.00	Engine, removing
210-072	5.50	Engine, installing
214-012	3.00	Valves, adjusting
217-005	1.50	Oil level sensor, changing

22 LUBRICATING SYSTEM

221-022	0.80	Lubrication oil pressure, checking with pressure gauge
223-006	1.25	Oil cooler, replacing

23 FUEL SYSTEM

230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-002	0.70	Feed pump, replacing
233-004	0.60	Feed pump, checking feed pressure
237-124	0.70	High pressure fuel system, pressure relief

25 INLET SYSTEM; EXHAUST SYSTEM

252-020	1.25	Silencer, replacing
252-021	1.00	Exhaust pipe, flexible tube, replacing
255-071	2.50	Turbocharger, replacing
256-006	0.70	Preheating coil, replacing
258-002	4.00	Intercooler, replacing

26 COOLING SYSTEM

260-001	0.70	Carbon dioxide in coolant system, checking
261-002	0.10	Coolant, checking anti-freeze resistance

Op.no.	time (h)	Notes
261-004	0.60	Coolant, changing
261-008	4.50	Radiator, replacing
261-018	0.90	Expansion tank, replacing
262-098	0.90	Thermostat, replacing
263-012	0.80	Fan belt and/or alternator belt, replacing
263-022	0.80	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.50	Battery charging capacity, checking
311-002	1.50	Batteries, replacing
311-006	0.60	Earth lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.25	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	0.90	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
35		LIGHTING
352-002	0.50	Headlights, adjusting
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.90	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-014	0.50	Ignition switch, replacing
364-056	0.80	Pre-heating relay, replacing

Op.no.	time (h)	Notes
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
37		CABLE; FUSE; RELAY
371-043	0.60	Battery disconnecter, replacing
371-090	2.00	Engine wire harness, replacing
372-002	0.50	Electrical distribution box, circuit board replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
383-001	0.30	Hour meter, replacing
386-006	1.50	Engine temperature sensor, replacing
386-007	0.60	Engine oil pressure sensor, replacing
386-011	0.30	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing
386-038	1.25	Engine rotation speed sensor, replacing
386-088	0.90	Engine rotation speed sensor (camshaft), replacing
39		MISCELLANEOUS
393-001	0.50	Voltage converter, replacing
393-021	0.60	Radio, replacing
395-021	0.70	Antenna, replacing
395-031	0.40	Speaker, replacing
398-002	0.90	W-ECU, MID142, changing pre-programmed ECU
398-003	1.50	W-ECU, MID142, changing non-programmed ECU
398-004	0.50	CareTrack battery, replacing
4		POWER TRANSMISSION
43		GEARBOX,
431-009	1.50	Travel gearbox, disassembly
431-010	2.00	Travel gearbox, assembly
431-012	3.00	Travel gearbox, removal
431-013	4.50	Travel gearbox, installation
431-021	5.50	Swing gearbox, replacing
431-031	3.50	Pump gearbox coupling assembly, replacing
44		HYDROSTATIC DRIVE
441-009	3.00	Travel motor, removing
441-010	4.50	Travel motor, installing
441-016	0.30	Travel motor removed, replacing seal
441-021	2.50	Swing motor, replacing
441-022	1.25	Swing motor relief valve, replacing

Op.no.	time (h)	Notes
441-024	1.50	Swing motor, replacing plate (brake)
441-025	1.50	Swing motor, replacing brake piston seal
441-026	0.30	Swing motor removed, replacing seal
443-033	0.90	Center passage, disassembly and assembly
443-034	2.50	Centre passage, removing
443-035	3.00	Centre passage, installing
45		PROPELLER SHAFT
451-004	1.50	Propeller shaft, rear, replacing
451-004	1.00	Propeller shaft, rear, replacing
451-010	1.50	Propeller shaft, front, replacing
46		FRONT AXLE; REAR AXLE
461-002	4.00	Axle, removing
461-003	3.00	Axle, installing
461-003	4.50	Axle, installing
461-040	3.00	Hub reduction gear, replacing
461-040	3.00	Hub reduction gear, replacing
463-002	2.50	Axle, removing
49		MISCELLANEOUS
492-091	0.40	Ring gear grease pipe, replacing
5		BRAKE
55		PARKING BRAKE
550-015	0.70	Parking brake, manually releasing
6		STEERING
64		STEERING
640-001	0.50	Steering system, adjustment
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-003	2.00	Counterweight, replacing
76		SHOCK ABSORBER; AXLE LOCKING; ANTI ROLL BAR; LEVEL / SIDE CONTROL
763-001	1.25	Pivot axle lock cylinder, removing
763-002	1.50	Pivot axle lock cylinder, installing

Op.no.	time (h)	Notes
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-007	0.70	Wheel, installing
771-008	0.60	Wheel, removing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
810-071	0.90	Electric pedal control on X1 (proportional), replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.90	Engine hood, replacing
827-091	0.80	Tool box assembly, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.20	Rear-view mirror, changing
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	3.50	Cooler and Heater assembly, replacing
870-010	0.70	ECC, MID 146, changing pre-programmed ECU
870-011	1.00	ECC, MID 146, changing non-programmed ECU
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
874-006	2.50	Compressor, replacing incl draining and filling
874-010	1.50	Condenser, replacing incl draining and filling
874-011	1.50	Receiver, replacing incl draining and filling

Op.no.	time (h)	Notes
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-011	4.00	Oil cooler, replacing
911-015	0.70	Oil level gauge, replacing
911-033	3.00	Oil cooler line bypass valve (check valve), replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	8.00	Control valve, replacing
912-067	0.50	Main pressure relief valve, replacing
912-070	0.90	Check valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.80	Rupture valve, replacing (dipper arm cylinder)
912-160	0.80	Port relief valve pressure, checking and adjusting
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	5.00	Hydraulic pump, replacing
913-029	0.60	Pump regulator, replacing
914-041	0.80	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-060	0.70	Servo pump, replacing
914-081	2.00	Remote control valve (lever), replacing
914-084	1.50	Remote control valve (pedal), replacing
914-091	1.00	Solenoid valve, replacing
915-007	1.25	Control lever (dozer blade), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-040	1.25	Quickfit, replacing
927-001	1.00	Dozer blade, replacing

Op.no.	time (h)	Notes
97		UNIT, DIGGING
972-010	1.25	Stabilizer cylinder, replacing
974-010	10.00	Boom, replacing
974-021	3.00	Boom cylinder, replacing
974-038	3.50	Lower boom cylinder bushing, replacing
974-039	3.50	Upper boom cylinder bushing, replacing
975-024	3.00	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-028	1.50	Connecting rod yoke, replacing
975-039	6.50	Dipper arm, replacing
975-040	3.50	Dipper arm cylinder bushing on boom, replacing
975-042	3.50	Dipper arm cylinder bushing on dipper arm, replacing
975-061	2.00	Bucket cylinder, replacing
975-072	3.50	Bucket cylinder bushing on dipper arm, changing
975-073	3.50	Bucket cylinder bushing lever-link, replacing
98		FUNCTION FOR ROAD CONSTRUCTION
981-080	1.50	Dozer blade cylinder, replacing

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.50	Maintenance service, daily	
173-004	1.00	Maintenance service, every 50 hours	
173-007	1.75	Maintenance service, every 250 hours	
173-010	3.00	Maintenance service, every 500 hours	
173-012	5.50	Maintenance service, every 1000 hours	
173-014	8.50	Maintenance service, every 2000 hours	
173-016	7.00	Maintenance service, every 3000 hours	
173-018	9.50	Maintenance service, every 4000 hours	
173-019	0.30	Maintenance service, every 4500 hours	
173-022	2.50	Maintenance service, every 6000 hours	220079 - 999999
173-022	0.70	Maintenance service, every 6000 hours	220010 - 220078
173-040	1.25	Maintenance service, first 500 hours	

2 ENGINE WITH MOUNTING AND EQUIPMENT

20		GENERAL	
200-068	1.00	E-ECU, MID 128, changing non-programmed ECU	
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-070	4.50	Engine, removing	
210-072	5.00	Engine, installing	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
214-012	2.00	Valves, adjusting	
214-037	0.50	Valve cover, removing	
214-038	0.50	Valve cover, installing	
217-003	3.50	Oil sump, replacing	
217-005	0.80	Oil level sensor, changing	
218-002	1.75	Engine mount front, changing	
218-007	3.00	Engine mounting rear, changing	
22		LUBRICATING SYSTEM	
221-022	0.70	Lubrication oil pressure, checking with pressure gauge	
223-006	1.75	Oil cooler, replacing	
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	
233-002	0.90	Feed pump, replacing	
233-004	1.00	Feed pump, checking feed pressure	

Op.no.	time (h)	Notes
233-014	0.50	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
233-020	0.10	Fuel filter, checking
234-010	2.00	Fuel tank, replacing
234-041	0.40	Fuel filling pump, removing
234-042	0.60	Fuel filling pump, installing
235-003	0.30	Fuel return pressure, checking
237-002	4.50	Injectors, replacing all
237-017	7.00	Injector sleeves, replacing
237-030	1.25	High pressure fuel pump, checking
237-031	1.75	Fuel rail, replacing
237-032	1.50	High pressure fuel pump, replacing
237-033	0.90	Fuel control valve (FCV), replacing
237-034	1.25	Pressure relief valve (PRV), replacing
237-035	0.20	Fuel rail pressure sensor, replacing
237-036	1.50	Pressure relief valve (PRV), checking
237-037	1.50	Fuel rail pressure, checking
237-038	1.25	Fuel control valve (FCV), checking
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.80	Exhaust pipe, flexible tube, replacing
254-001	1.75	Diesel particulate filter, check and clean
254-022	0.90	ACM (After treatment control module), replacing, non-programmed
254-023	0.80	ACM (After treatment control module), replacing, pre-programmed
254-031	2.50	Air pump, replacing
254-032	1.00	Burner, checking
254-033	1.50	Burner, replacing
254-038	0.50	DPF inlet temperature sensor, replacing
254-039	0.50	DPF outlet temperature sensor, replacing
254-043	0.10	Spark plug control unit, replacing
254-044	0.20	Glow plug, replacing
254-046	0.20	Spark plug, replacing
254-048	0.20	Spark plug cable, replacing
254-050	1.00	Fuel metering unit A, replacing
254-051	1.25	Fuel metering unit B, replacing
254-056	0.40	NOx sensor, replacing
255-071	1.25	Turbocharger, replacing
256-006	0.50	Preheating coil, replacing
258-002	5.00	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-002	0.20	Coolant, checking anti-freeze resistance

Op.no.	time (h)	Notes
261-008	5.00	Radiator, replacing
261-011	2.00	Radiator, removing
261-013	2.50	Radiator, installing
261-016	1.25	Radiator hoses all, replacing
261-018	1.25	Expansion tank, replacing
262-002	1.75	Coolant pump, replacing
262-097	0.40	Thermostat, checking
262-098	1.00	Thermostat, replacing
263-022	0.90	Fan belt and/or alternator-, compressor belt, replacing all belts
263-050	0.90	Cooling fan clutch, replacing
29		Miscellaneous
293-001	6.00	EGR cooler, replacing
293-005	6.00	EGR valve, replacing
293-006	0.20	EGR temperature sensor, replacing
293-007	0.30	EGR pressure sensor, replacing
293-008	1.75	EGR Actuator, replacing
293-009	1.50	EGR reed valve, replacing
293-010	0.50	EGR Venturi tube, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
301-016	0.40	Tiltrotator control system, software updating
31		BATTERY
311-002	0.70	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.80	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	3.00	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
352-002	0.50	Headlights, adjusting

Op.no.	time (h)	Notes
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.70	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.40	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.40	Windscreen wiper, replacing controller
364-001	0.80	Electric center passage, replacing
364-004	0.30	Switch, replacing
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
37		CABLE; FUSE; RELAY
372-002	0.80	Electrical distribution box, circuit board replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-007	0.50	Engine oil pressure sensor, replacing
386-008	0.40	Engine rotation speed sensor, replacing
386-016	0.60	Temperature sensor cooling system, replacing
386-017	0.70	Hydraulic oil temperature sensor, replacing
386-018	0.80	Boost pressure / charge-air temperature sensor, replacing
386-038	0.50	Engine rotation speed sensor, replacing
386-088	0.30	Engine rotation speed sensor (camshaft), replacing
39		MISCELLANEOUS
395-021	0.70	Antenna, replacing
395-031	0.40	Speaker, replacing
398-001	0.60	CareTrack antenna, replacing
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU
398-003	1.50	W-ECU, MID142, changing non-programmed ECU
4		POWER TRANSMISSION
43		GEARBOX,
431-012	2.00	Travel gearbox, removal
431-013	2.50	Travel gearbox, installation
431-020	0.40	Travel gearbox, bleeding
44		HYDROSTATIC DRIVE
441-009	1.75	Travel motor, removing

Op.no.	time (h)		Notes
441-010	2.00	Travel motor, installing	
441-016	0.20	Travel motor removed, replacing seal	
441-017	0.50	Travel motor pressure, checking and adjusting	
441-018	0.90	Retardation valve, replacing	
441-020	0.80	Travel motor (electric proportional control) pressure, checking and adjusting	
441-030	3.00	Swing motor, removing	
441-031	4.00	Swing motor, installing	
441-032	0.40	Swing motor pressure, checking and adjusting	
441-119	0.70	Travel motor regulation start, checking and adjusting	
441-120	0.80	Travel motor, calibrating	
442-045	2.50	Pump coupling, removing	
442-046	2.00	Pump coupling, installing	
443-033	0.90	Center passage, disassembly and assembly	
443-034	2.50	Centre passage, removing	
443-035	3.00	Centre passage, installing	
45		PROPELLER SHAFT	
451-004	1.00	Propeller shaft, rear, replacing	
451-010	1.00	Propeller shaft, front, replacing	
46		FRONT AXLE; REAR AXLE	
461-002	2.50	Axle, removing	
461-003	3.00	Axle, installing	
461-045	2.50	Drive shaft seal, replacing	
461-070	8.50	King pin and bushing, replacing	
463-002	1.50	Axle, removing	
463-003	2.50	Axle, installing	
49		MISCELLANEOUS	
492-025	0.40	Swing ring, measuring axial clearance	
492-031	2.50	Swing ring gear outer seal, replacing	220061 - 999999
492-031	2.50	Swing ring gear outer seal, replacing	220010 - 220060
5		BRAKE	
51		WHEEL BRAKE	
510-005	0.20	Service brakes, function check	
52		HYDRAULIC BRAKE SYSTEM	
520-005	0.70	Brake system, check and adjusting pressure in circuit	
520-037	0.50	Brake system, bleeding	
525-008	1.75	Foot brake valve, replacing	

Op.no.	time (h)	Notes
527-012	0.50	Accumulator, removal
527-013	0.80	Accumulator, installation
527-014	0.50	Brake accumulator charging pressure, adjusting
55		PARKING BRAKE
550-015	0.30	Parking brake, manually releasing
550-023	0.30	Parking brake, function checking
6		STEERING
60		GENERAL
600-001	0.30	Steering system, function check
64		STEERING
645-003	0.30	Steering system working pressure, checking
645-022	0.70	Steering valve, removal
645-023	0.70	Steering valve, installation
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	0.90	Counterweight, removing
716-002	1.25	Counterweight, fitting
76		SHOCK ABSORBER; AXLE LOCKING; ANTI ROLL BAR; LEVEL / SIDE CONTROL
763-001	0.40	Pivot axle lock cylinder, removing
763-002	0.50	Pivot axle lock cylinder, installing
763-003	0.70	Pivot axle lock cylinder, changing seals
763-004	0.20	Pivot axle lock cylinder, releasing for towing
763-006	0.30	Pivot axle lock, function check
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-007	0.50	Wheel, installing
771-008	0.40	Wheel, removing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing

Op.no.	time (h)	Notes
83		DOORS; HATCH; COVER PLATE, (all)
831-052	0.60	Cab door, removing door catch
831-053	0.90	Cab door, installing door catch
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-088	0.30	Seat belt, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-010	0.70	ECC, MID 146, changing pre-programmed ECU
870-011	1.00	ECC, MID 146, changing non-programmed ECU
872-001	0.30	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.80	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
874-006	4.00	Compressor, replacing incl draining and filling
874-010	1.50	Condenser, replacing incl draining and filling
874-011	1.50	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	3.50	Expansion valve, replacing incl draining and filling
874-094	0.80	Vent actuator, replacing
874-095	0.70	Mode (foot) actuator, replacing
874-096	0.70	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	0.80	Instrument panel, replacing (left)
881-005	0.90	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-001	0.30	Hydraulic system, warming up

Op.no.	time (h)	Notes
900-005	0.60	Vacuum pump, connection
900-006	0.30	Vacuum pump, disconnection
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-018	0.70	Cooling fan speed, checking and adjusting with VCADS Pro
911-036	1.25	Hydraulic oil tank, removing
911-037	2.50	Hydraulic oil tank, installing
912-018	1.25	Back-up valve, checking and adjusting
912-071	1.00	Rupture valve, replacing (boom cylinder)
912-073	0.70	Rupture valve, replacing (dipper arm cylinder)
912-091	3.00	Main control valve, removal
912-092	4.00	Main control valve, installation
912-117	0.80	LS-pressure relief valve, replacing
912-150	1.50	Working pressure, checking and adjusting
912-162	1.00	Line rupture valve pressure, checking and adjusting
912-169	0.60	Unload valve, checking and adjusting
912-170	1.00	Unload valve, replacing
912-210	0.70	Rupture valve, replacing (2pcs boom tilt cylinder)
913-023	2.00	Pump, removal
913-024	3.50	Pump, installation
914-031	0.40	Servo pump, removal
914-032	0.50	Servo pump, installation
914-047	0.50	Servo accumulator, removal
914-048	0.80	Servo accumulator, installation
914-055	0.50	Servo pressure, checking and adjusting
914-064	0.60	Servo valve, removal
914-065	0.70	Servo valve, installation
914-103	0.20	Control lockout lever, function check
916-002	0.30	Boom suspension accumulator, check and adjusting
916-060	1.00	Calibration of X1 hydraulic with flow control
916-061	0.50	Calibration of X1 hydraulic with pressure control
916-062	1.25	X1 pressure relief valve, adjusting
916-062	0.90	X1 pressure relief valve, adjusting
916-071	1.50	Boom suspension system, changing accumulator
916-110	0.90	X3 pressure and flow, adjusting
916-111	0.90	X3 shock and refilling valves, adjusting
916-112	0.20	X1, function check
916-113	0.20	X3, function check
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-005	0.40	Quickfit, removal
924-006	0.40	Quickfit, installation

Op.no.	time (h)		Notes
924-007	0.50	Cylinder for hydraulic quickfit S1, removal	
924-008	0.50	Cylinder for hydraulic quickfit S1, installation	
924-009	0.70	Cylinder for hydraulic quickfit S6, removal	
924-010	0.50	Cylinder for hydraulic quickfit S6, installation	
924-011	0.50	Hydraulic quickfit cylinder, removal	
924-012	0.70	Hydraulic quickfit cylinder, installation	
924-017	0.40	Cylinder for hydraulic quickfit Universal, removal	
924-018	0.40	Cylinder for hydraulic quickfit Universal, installation	
924-040	0.90	Quickfit, replacing	
924-046	0.10	Quickfit, function check	220104 - 999999
924-046	0.10	Quickfit, function check	220010 - 220103
97		UNIT, DIGGING	
975-011	0.70	Dipper arm, removal	
975-012	2.50	Dipper arm, installation	
975-062	0.70	Bucket cylinder, removal	
975-065	0.70	Bucket cylinder, installation	
99		MISCELLANEOUS	
996-001	1.50	Cab elevating cylinder, replacing	

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
172-002	1.50	Warranty inspection 100 hours	
172-004	6.00	Warranty inspection 1000 hours	
173-002	0.60	Maintenance service, daily	
173-004	1.00	Maintenance service, every 50 hours	
173-007	1.75	Maintenance service, every 250 hours	
173-010	3.50	Maintenance service, every 500 hours	
173-012	4.50	Maintenance service, every 1000 hours	
173-014	7.50	Maintenance service, every 2000 hours	
173-018	8.50	Maintenance service, every 4000 hours	
173-022	9.00	Maintenance service, every 6000 hours	
173-040	4.00	Maintenance service, first 500 hours	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.00	E-ECU, MID 128, changing non-programmed ECU	
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-070	9.50	Engine, removing	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
214-012	2.00	Valves, adjusting	
215-032	9.00	Timing gear case, fitting new gasket in machine	
216-014	4.00	Crankshaft, replacing front oil seal	
217-003	4.00	Oil sump, replacing	
217-005	1.00	Oil level sensor, changing	
218-002	3.00	Engine mount front, changing	
218-007	1.25	Engine mounting rear, changing	
22		LUBRICATING SYSTEM	
221-014	6.50	Oil pump, replacing	
221-022	0.70	Lubrication oil pressure, checking with pressure gauge	
223-006	1.50	Oil cooler, replacing	
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	120028 - 999999
233-001	0.30	Fuel system, bleeding	120010 - 120027
233-002	0.70	Feed pump, replacing	
233-004	0.90	Feed pump, checking feed pressure	

Op.no.	time (h)		Notes
233-014	0.40	Fuel filters, replacing	
233-015	0.50	Fuel filter extra, replacing	120028 - 999999
233-015	0.50	Fuel filter extra, replacing	120010 - 120027
233-020	0.10	Fuel filter, checking	
234-010	2.00	Fuel tank, replacing	
234-041	0.40	Fuel filling pump, removing	
234-042	0.60	Fuel filling pump, installing	
235-003	0.30	Fuel return pressure, checking	
237-030	1.00	High pressure fuel pump, checking	
237-031	1.75	Fuel rail, replacing	
237-032	1.50	High pressure fuel pump, replacing	
237-033	0.70	Fuel control valve (FCV), replacing	
237-034	1.25	Pressure relief valve (PRV), replacing	
237-035	0.30	Fuel rail pressure sensor, replacing	
237-036	1.75	Pressure relief valve (PRV), checking	
237-037	1.50	Fuel rail pressure, checking	
237-038	1.25	Fuel control valve (FCV), checking	
25		INLET SYSTEM; EXHAUST SYSTEM	
251-004	1.50	Exhaust manifold, replacing gasket	
252-020	1.25	Silencer, replacing	
252-021	0.60	Exhaust pipe, flexible tube, replacing	
255-002	1.25	Turbocharger, inspection	
255-071	1.75	Turbocharger, replacing	
256-006	0.40	Preheating coil, replacing	
258-002	5.00	Intercooler, replacing	
26		COOLING SYSTEM	
261-002	0.20	Coolant, checking anti-freeze resistance	
261-008	5.50	Radiator, replacing	
261-012	1.25	Radiator hose upper, replacing	
261-014	1.25	Radiator hoses lower, replacing	
261-018	0.90	Expansion tank, replacing	
262-002	1.75	Coolant pump, replacing	
262-097	0.40	Thermostat, checking	
262-098	0.80	Thermostat, replacing	
263-012	0.90	Fan belt and/or alternator belt, replacing	
263-022	0.90	Fan belt and/or alternator-, compressor belt, replacing all belts	

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-002	0.40	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.25	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	0.70	Starter motor, replacing
331-021	1.25	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
352-002	0.50	Headlights, adjusting
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-001	0.80	Electric center passage, replacing
364-004	0.30	Switch, replacing
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
367-058	0.70	W-ECU, MID 142, replacing
37		CABLE; FUSE; RELAY
372-002	0.50	Electrical distribution box, circuit board replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-007	0.50	Engine oil pressure sensor, replacing
386-008	0.40	Engine rotation speed sensor, replacing
386-016	0.60	Temperature sensor cooling system, replacing
386-017	0.70	Hydraulic oil temperature sensor, replacing

Op.no.	time (h)	Notes	
386-018	0.30	Boost pressure / charge-air temperature sensor, replacing	
386-038	0.60	Engine rotation speed sensor, replacing	
386-088	0.70	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
424-002	0.20	Transmission mode, function check	
43		GEARBOX,	
431-012	2.00	Travel gearbox, removal	
431-013	2.50	Travel gearbox, installation	
431-020	0.40	Travel gearbox, bleeding	
44		HYDROSTATIC DRIVE	
441-009	1.75	Travel motor, removing	
441-010	2.00	Travel motor, installing	
441-016	0.20	Travel motor removed, replacing seal	
441-017	0.50	Travel motor pressure, checking and adjusting	
441-018	0.90	Retardation valve, replacing	
441-030	2.50	Swing motor, removing	
441-031	3.50	Swing motor, installing	120021 - 999999
441-031	3.50	Swing motor, installing	120010 - 120020
442-045	2.50	Pump coupling, removing	
442-046	3.00	Pump coupling, installing	
443-033	0.90	Center passage, disassembly and assembly	
443-034	2.50	Centre passage, removing	
443-035	3.00	Centre passage, installing	
45		PROPELLER SHAFT	
451-004	1.00	Propeller shaft, rear, replacing	
451-010	1.00	Propeller shaft, front, replacing	
46		FRONT AXLE; REAR AXLE	
461-002	4.00	Axle, removing	
461-003	4.00	Axle, installing	
461-045	2.50	Drive shaft seal, replacing	
461-070	8.50	King pin and bushing, replacing	

Op.no.	time (h)		Notes
49		MISCELLANEOUS	
492-031	2.50	Swing ring gear outer seal, replacing	120047 - 999999
492-031	2.50	Swing ring gear outer seal, replacing	120010 - 120046
5		BRAKE	
51		WHEEL BRAKE	
510-005	0.20	Service brakes, function check	
52		HYDRAULIC BRAKE SYSTEM	
520-005	0.70	Brake system, check and adjusting pressure in circuit	
525-008	1.75	Foot brake valve, replacing	
527-012	0.50	Accumulator, removal	
527-013	0.80	Accumulator, installation	
527-014	0.50	Brake accumulator charging pressure, adjusting	
55		PARKING BRAKE	
550-015	0.30	Parking brake, manually releasing	
550-023	0.30	Parking brake, function checking	
6		STEERING	
60		GENERAL	
600-001	0.30	Steering system, function check	
64		STEERING	
645-003	0.30	Steering system working pressure, checking	
645-016	0.70	Steering pump, removing	
645-017	1.25	Steering pump, installing	
645-022	0.70	Steering valve, removal	
645-023	0.70	Steering valve, installation	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	0.90	Counterweight, removing	
716-002	1.25	Counterweight, fitting	
76		SHOCK ABSORBER; AXLE LOCKING; ANTI ROLL BAR; LEVEL / SIDE CONTROL	
763-001	0.40	Pivot axle lock cylinder, removing	

Op.no.	time (h)	Notes
763-002	0.50	Pivot axle lock cylinder, installing
763-003	0.70	Pivot axle lock cylinder, changing seals
763-004	0.20	Pivot axle lock cylinder, releasing for towing
763-006	0.30	Pivot axle lock, function check
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-007	0.50	Wheel, installing
771-008	0.40	Wheel, removing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.25	Cab, removing
810-002	1.50	Cab, installing
83		DOORS; HATCH; COVER PLATE, (all)
831-052	0.60	Cab door, removing door catch
831-053	0.90	Cab door, installing door catch
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	0.80	Seat, replacing
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-088	0.30	Seat belt, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.70	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
873-019	0.90	ECC control unit, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.50	Condenser, replacing incl draining and filling

Op.no.	time (h)	Notes
874-011	1.50	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	0.80	Instrument panel, replacing (left)
881-005	0.90	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-001	0.30	Hydraulic system, warming up
900-005	0.60	Vacuum pump, connection
900-006	0.30	Vacuum pump, disconnection
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-013	1.50	Hydraulic oil cooler, removing
911-014	1.75	Hydraulic oil cooler, installing
911-018	0.70	Cooling fan speed, checking and adjusting with VCADS Pro
911-036	1.25	Hydraulic oil tank, removing
911-037	2.50	Hydraulic oil tank, installing
911-044	0.90	Oil cooler fan motor, removal
911-046	0.90	Cooling fan pump, removal
911-047	1.75	Cooling fan pump, installation
912-018	1.25	Back-up valve, checking and adjusting
912-019	0.40	Shock valve removed, checking
912-071	1.00	Rupture valve, replacing (boom cylinder)
912-073	0.70	Rupture valve, replacing (dipper arm cylinder)
912-091	3.00	Main control valve, removal
912-092	4.00	Main control valve, installation
912-117	1.50	LS-pressure relief valve, replacing
912-150	1.25	Working pressure, checking and adjusting
912-162	1.00	Line rupture valve pressure, checking and adjusting
912-169	0.60	Unload valve, checking and adjusting
912-170	1.00	Unload valve, replacing
912-210	0.70	Rupture valve, replacing (2pcs boom tilt cylinder)
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-023	2.50	Pump, removal

Op.no.	time (h)		Notes
913-024	3.00	Pump, installation	
913-071	0.80	Swing pump, removing	
913-072	2.50	Swing pump, installing	
913-073	0.30	Swash plate angle sensor, replacing	
913-074	3.50	Swing pump pressure, checking and adjusting	
914-055	0.30	Servo pressure, checking and adjusting	
914-060	1.00	Servo pump, replacing	
914-064	0.60	Servo valve, removal	120026 - 999999
914-064	0.60	Servo valve, removal	120010 - 120025
914-065	0.70	Servo valve, installation	120026 - 999999
914-065	0.70	Servo valve, installation	
914-067	0.60	Pressure relief valve, checking and adjusting	
914-103	0.20	Control lockout lever, function check	
915-004	3.50	Control lever, removal	
915-005	3.50	Control lever, installation	
916-059	0.70	Calibration of cruise control	
916-060	1.00	Calibration of X1 hydraulic with flow control	
916-061	0.50	Calibration of X1 hydraulic with pressure control	
916-110	0.90	X3 pressure and flow, adjusting	
916-111	0.90	X3 shock and refilling valves, adjusting	
916-112	0.20	X1, function check	
916-113	0.20	X3, function check	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-007	0.50	Cylinder for hydraulic quickfit S1, removal	
924-008	0.50	Cylinder for hydraulic quickfit S1, installation	
924-017	0.40	Cylinder for hydraulic quickfit Universal, removal	
924-018	0.40	Cylinder for hydraulic quickfit Universal, installation	
924-046	0.10	Quickfit, function check	
97		UNIT, DIGGING	
972-012	0.90	Stabilisers, installation	
972-021	0.70	Stabilisers, removal hydraulic cylinder	
974-031	2.50	Boom cylinder, removal	
974-032	1.75	Boom cylinder, installation	
975-011	0.70	Dipper arm, removal	
975-012	2.50	Dipper arm, installation	
975-014	1.50	Dipper arm cylinder, removal	
975-015	1.25	Dipper arm cylinder, installation	
975-062	0.70	Bucket cylinder, removal	
975-065	0.70	Bucket cylinder, installation	

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
172-002	2.50	Warranty inspection 100 hours
173-002	0.90	Maintenance service, daily
173-004	0.90	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	4.50	Maintenance service, every 500 hours
173-012	8.00	Maintenance service, every 1000 hours
173-014	11.00	Maintenance service, every 2000 hours
173-018	11.00	Maintenance service, every 4000 hours
173-022	11.00	Maintenance service, every 6000 hours
173-070	1.50	Axles, changing oil
173-079	0.80	Swing motor gearbox, changing oil
173-401	0.80	Engine oil and filter, changing
173-649	0.30	Hydraulic oil return filter, replacing
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
214-012	1.25	Valves, adjusting
214-036	0.80	Valve covers, fitting new gasket
22		LUBRICATING SYSTEM
221-022	0.40	Lubrication oil pressure, checking with pressure gauge
223-006	0.60	Oil cooler, replacing
23		FUEL SYSTEM
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
236-073	2.75	Injection pump, replacing incl setting injection timing
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
252-021	1.25	Exhaust pipe, flexible tube, replacing
256-001	0.20	Air cleaner, cleaning filter element
256-003	0.20	Air cleaner, primary filter replacing
256-004	0.20	Air cleaner, secondary filter replacing

Op.no.	time (h)		Notes
256-006	0.70	Preheating coil, replacing	
26		COOLING SYSTEM	
261-002	0.10	Coolant, checking anti-freeze resistance	
261-004	0.50	Coolant, changing	
261-008	3.00	Radiator, replacing	
261-012	0.60	Radiator hose upper, replacing	
261-014	1.25	Radiator hoses lower, replacing	
261-018	0.30	Expansion tank, replacing	110001 - 110243
261-018	0.30	Expansion tank, replacing	110244 - 210000
262-098	0.90	Thermostat, replacing	
263-012	0.60	Fan belt and/or alternator belt, replacing	
263-013	0.20	Fan belt and/or alternator belt, checking and adjusting tension	
263-022	0.60	Fan belt and/or alternator-, compressor belt, replacing all belts	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-002	1.25	Batteries, replacing	
311-003	1.25	Main switch, replacing	
33		STARTING SYSTEM	
334-011	0.90	Starter switch (engine start switch), replacing	
35		LIGHTING	
350-001	0.60	Combination switch, replacing	
352-002	0.50	Headlights, adjusting	
356-056	0.60	Work lighting, replacing one head lamp assy	
36		OTHER ELECTRICAL EQUIPMENT	
362-051	0.40	Travel alarm, replacing	
363-002	0.80	Windscreen wiper front, replacing motor	
363-004	0.70	Windscreen flusher pump, replacing	
364-025	1.25	Rotational connector, replacing	
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	

Op.no.	time (h)	Notes
37		CABLE; FUSE; RELAY
372-026	0.40	Flasher relay, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	0.40	Engine temperature sensor, replacing
386-007	0.40	Engine oil pressure sensor, replacing
386-011	0.60	Fuel level sender, replacing
39		MISCELLANEOUS
393-021	0.50	Radio, replacing
395-021	0.50	Antenna, replacing
395-031	0.50	Speaker, replacing
4		POWER TRANSMISSION
43		GEARBOX,
431-011	4.50	Travel gearbox, replacing
431-012	2.00	Travel gearbox, removal
431-013	2.50	Travel gearbox, installation
44		HYDROSTATIC DRIVE
441-009	0.70	Travel motor, removing
441-010	0.90	Travel motor, installing
441-016	0.30	Travel motor removed, replacing seal
441-022	0.70	Swing motor relief valve, replacing
442-045	2.50	Pump coupling, removing
442-046	2.00	Pump coupling, installing
45		PROPELLER SHAFT
451-004	1.25	Propeller shaft, rear, replacing
451-010	1.25	Propeller shaft, front, replacing
46		FRONT AXLE; REAR AXLE
461-002	3.50	Axle, removing
461-003	3.50	Axle, installing
461-040	1.50	Hub reduction gear, replacing
461-043	1.50	Hub, replacing seal
461-045	5.00	Drive shaft seal, replacing
463-002	2.00	Axle, removing
463-003	2.50	Axle, installing
463-005	1.50	Drive shaft, replacing one side
463-040	1.50	Hub reduction gear, replacing
463-043	1.50	Hub, replacing seal

Op.no.	time (h)	Notes
5		BRAKE
52		HYDRAULIC BRAKE SYSTEM
525-008	1.25	Foot brake valve, replacing
527-002	0.70	Accumulator, replacing
527-012	0.30	Accumulator, removal
527-013	0.30	Accumulator, installation
55		PARKING BRAKE
550-018	0.40	Parking brake assembly, removing
550-022	0.40	Parking Brake - Installation
6		STEERING
64		STEERING
645-004	1.50	Steering cylinder, removing
645-005	1.50	Steering cylinder, installing
645-006	2.50	Steering cylinder, replacing
645-022	0.90	Steering valve, removal
645-023	1.25	Steering valve, installation
645-082	2.50	Steering valve, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
76		SHOCK ABSORBER; AXLE LOCKING; ANTI ROLL BAR; LEVEL / SIDE CONTROL
763-001	0.50	Pivot axle lock cylinder, removing
763-002	0.50	Pivot axle lock cylinder, installing
763-003	1.00	Pivot axle lock cylinder, changing seals
763-005	2.50	Front axle pivot pin and bushing, replacing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-007	0.40	Wheel, installing
771-008	0.40	Wheel, removing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.50	Cab, removing
810-002	2.00	Cab, installing

Op.no.	time (h)	Notes
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.50	Engine hood, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	2.50	Windscreen, replacing
843-012	2.00	Rear window, replacing
843-013	1.25	Side window, replacing
843-048	0.90	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.70	Operator's seat, removing
852-004	0.80	Operator's seat, installing
852-008	1.50	Seat, replacing
87		AIR CONDITIONING UNIT
870-003	3.00	Cooler and Heater assembly, removal
870-004	4.00	Cooler and Heater assembly, installation
873-004	4.00	Heater core, replacing
873-006	5.50	Fan motor, replacing
873-014	0.90	Water valve, replacing
874-006	1.50	Compressor, replacing incl draining and filling
874-010	1.50	Condenser, replacing incl draining and filling
874-012	6.50	Evaporator, replacing incl draining and filling
874-013	1.75	Expansion valve, replacing incl draining and filling
874-021	5.00	Defroster actuator, replacing
874-094	0.40	Vent actuator, replacing
874-095	5.00	Mode (foot) actuator, replacing
874-096	0.40	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	0.90	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	2.50	Pump suction hose and pipe, replacing
911-011	3.50	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-024	1.75	Pipe and hose (pump - valve), replacing
911-033	0.60	Oil cooler line bypass valve (check valve), replacing

Op.no.	time (h)	Notes
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-001	11.00	Control valve, replacing
912-067	1.50	Main pressure relief valve, replacing
912-136	1.25	Main relief valve, adjusting
912-160	1.00	Port relief valve pressure, checking and adjusting
913-010	4.00	Hydraulic pump, replacing
914-055	0.50	Servo pressure, checking and adjusting
914-060	1.00	Servo pump, replacing
914-091	0.90	Solenoid valve, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-003	0.80	Quickfit solenoid valve, replacing
924-005	0.70	Quickfit, removal
924-006	0.70	Quickfit, installation
97		UNIT, DIGGING
974-010	5.00	Boom, replacing
974-021	1.50	Boom cylinder, replacing
975-024	1.25	Dipper arm connecting rod, replacing
975-025	1.50	Dipper arm cylinder, replacing
975-028	0.90	Connecting rod yoke, replacing
975-039	4.00	Dipper arm, replacing
975-061	1.50	Bucket cylinder, replacing

Op.no.	time (h)	Notes	
0		GENERAL	
05		TRANSPORT INSTRUCTION.; STORAGE INSTRUCTION; OPERATING INSTRUCTION	
050-001	10.00	Removing and assembly of machine from shipping container	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.20	Start of VCADS Pro computer and reading machine data	
173-002	0.60	Maintenance service, daily	
173-004	1.75	Maintenance service, every 50 hours	39300 - 526000 501000 - 502837
173-007	2.50	Maintenance service, every 250 hours	
173-010	4.00	Maintenance service, every 500 hours	
173-012	7.00	Maintenance service, every 1000 hours	
173-013	14.00	Maintenance service, every 1500 hours	
173-013	10.00	Maintenance service, every 1500 hours	
173-014	11.00	Maintenance service, every 2000 hours	
173-061	2.50	Transmission, changing oil and filter	
173-075	1.75	Hydraulic oil tank, changing oil and filter incl.cleaning tank	
173-080	1.50	Master cylinder, changing oil	39300 - 526000
173-080	1.50	Master cylinder, changing oil	501000 - 502837
173-401	0.80	Engine oil and filter, changing	
173-465	0.60	Rear axle oil, changing	
173-466	2.50	Tandem oil, changing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-009	0.70	VCADS Pro, MID 128, programming E-ECU	
200-009	0.80	VCADS Pro, MID 128, programming E-ECU	
21		ENGINE	
210-070	3.00	Engine, removing	
210-072	4.50	Engine, installing	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
212-070	0.40	Crankcase ventilation, changing	
214-012	4.00	Valves, adjusting	
214-021	0.40	Valve cover, fitting new gasket each	

Op.no.	time (h)	Notes
218-002	1.50	Engine mount front, changing
218-007	1.00	Engine mounting rear, changing
23		FUEL SYSTEM
233-001	0.20	Fuel system, bleeding
233-002	0.80	Feed pump, replacing
233-014	0.40	Fuel filters, replacing
234-011	1.00	Fuel tank, removing
234-012	0.50	Fuel tank, installing
235-002	0.20	Fuel line, water separator, check and drain
237-002	0.90	Injectors, replacing all
237-018	0.70	Delivery pipe, replacing one
237-030	1.00	High pressure fuel pump, checking
237-033	1.25	Fuel control valve (FCV), replacing
237-035	0.30	Fuel rail pressure sensor, replacing
237-038	0.70	Fuel control valve (FCV), checking
25		INLET SYSTEM; EXHAUST SYSTEM
252-017	0.80	Silencer, removing
252-018	1.25	Silencer, installing
255-002	0.80	Turbocharger, inspection
255-070	0.40	Turbocharger, removing
255-072	0.40	Turbocharger, installing
256-010	0.40	Air cleaner, removing
256-011	0.60	Air cleaner, installing
258-002	1.00	Intercooler, replacing
26		COOLING SYSTEM
260-002	2.50	Cooling system, flushing
261-004	0.50	Coolant, changing
261-008	1.50	Radiator, replacing
262-002	1.25	Coolant pump, replacing
263-012	0.50	Fan belt and/or alternator belt, replacing
263-013	0.20	Fan belt and/or alternator belt, checking and adjusting tension
263-016	0.50	Maximum fan speed, checking
263-016	0.90	Maximum fan speed, checking
263-019	0.80	Low fan speed, checking
263-042	1.50	Fan shroud, replacing
263-052	0.40	Fan pump flow, checking
263-062	3.00	Cooling fan motor, replacing
263-071	0.40	Fan control valve, removing
263-072	0.30	Fan control valve, seal replacement
263-073	0.60	Fan control valve, installing

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-007	1.00	VCADS Pro, MID 142, programming W-ECU
300-008	0.80	VCADS Pro, MID 140, programming I-ECU
31		BATTERY
311-001	0.70	Battery charging capacity, checking
311-002	0.40	Batteries, replacing
313-001	0.30	Battery box, removing
313-002	0.30	Battery box, installing
32		ALTERNATOR; CHARGE REGULATOR
321-003	0.40	Alternator, removing
321-004	0.40	Alternator, installing
33		STARTING SYSTEM
331-016	0.40	Starter motor, removing
331-017	0.30	Starter motor, installing
334-011	0.40	Starter switch (engine start switch), replacing
35		LIGHTING
352-002	0.60	Headlights, adjusting
36		OTHER ELECTRICAL EQUIPMENT
361-018	0.40	Direction indicator switch, replacing
362-003	0.40	Reverse alarm, replacing
363-001	0.60	Windscreen wiper rear, replacing motor
363-002	0.80	Windscreen wiper front, replacing motor
363-005	0.70	Lower window wiper, replacing
363-006	1.75	Windscreen wiper, replacing pivot linkage
363-007	1.00	Windscreen wiper, install and adjust
366-007	0.80	VCADS Pro, MID187, programming V-ECU
367-052	1.25	V-ECU, replacing
367-056	1.25	I-ECU, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-004	1.00	Transmission temperature sensor, replacing
386-005	0.60	Transmission, revolution sensor, replacing
386-009	0.70	Transmission sensor and connection, checking
386-011	0.30	Fuel level sender, replacing
386-032	1.25	Sensor unit (differential lock), replacing
386-061	0.50	Revolution sensor (hydraulic cooling fan), replacing
387-008	0.30	Display unit, replacing

Op.no.	time (h)	Notes
39		MISCELLANEOUS
390-902	3.00	CareTrack, installing new
393-001	1.50	Voltage converter, replacing
393-022	0.30	Radio, removal
393-023	0.20	Radio, installation
395-021	1.50	Antenna, replacing
395-031	0.90	Speaker, replacing
4		POWER TRANSMISSION
41		CLUTCH; TORQUE CONVERTER
413-018	0.50	Inching pedal, replacing
413-019	0.20	Inching pedal, function check
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	1.25	Transmission oil pressure, checking
421-025	0.90	Transmission solenoid, replacing
421-026	1.00	Transmission pressure sensor, replacing
421-027	0.80	Transmission oil filter restriction sensor, replacing
421-047	0.60	Gear selector, replacing
421-070	4.50	Transmission, removing
421-072	6.50	Transmission, installing
426-001	1.00	Rubber cushion, changing
44		HYDROSTATIC DRIVE
442-011	1.50	Transmission pump, removing
442-012	2.50	Transmission pump, installing
442-041	1.75	Pump drive, removing
442-042	3.50	Pump drive, installing
442-043	3.00	Pump Drive, reconditioning
442-044	5.00	Spring coupling, changing
442-047	1.50	Charge pump, replacing
442-054	0.80	Control neutral adjustment for EDC controls
45		PROPELLER SHAFT
451-002	1.50	Support or intermediate bearing, replacing
451-031	0.60	Drive shaft, removing
451-031	1.25	Drive shaft, removing
451-032	0.60	Drive shaft, installing
451-032	0.80	Drive shaft, installing
451-033	1.25	Universal joint, replacing
451-034	1.25	Drive shaft, repair

Op.no.	time (h)		Notes
46		FRONT AXLE; REAR AXLE	
463-002	5.00	Axle, removing	
463-003	7.00	Axle, installing	
463-053	0.80	Tandem inspection	
463-056	2.00	Tandem, removing	
463-058	1.50	Tandem drive chain, removing	
463-058	1.50	Tandem drive chain, removing	
463-059	1.75	Tandem drive chain, installing	
463-059	2.50	Tandem drive chain, installing	
463-060	1.75	Tandem drive sprocket, removing	
463-061	1.75	Tandem drive sprocket, installing	
463-062	3.50	Tandem, installing	
463-063	6.00	Four point bearing, replacing	
463-064	2.00	Final drive axle seal, removal	
463-065	3.00	Final drive axle seal, installation	
5		BRAKE	
51		WHEEL BRAKE	
510-005	0.20	Service brakes, function check	
510-006	0.20	Service brakes warning system, checking	39300 - 526000
510-006	0.20	Service brakes warning system, checking	501000 - 502837
517-071	1.00	Oil disc brake assembly, removing	
517-072	0.80	Oil disc brakes, disassembling	
517-074	0.50	Brake Housing Pre - Assembly	
517-076	0.70	Oil disc brakes , assembling	
517-078	1.25	Oil disc brake, installing	
52		HYDRAULIC BRAKE SYSTEM	
520-001	0.70	Brake system, checking function, hydraulic	526001 - 526999
520-001	0.70	Brake system, checking function, hydraulic	502838 - 502999
520-007	0.40	Brake pedal switch, replacing	39300 - 526000
520-007	0.40	Brake pedal switch, replacing	501000 - 502837
520-037	0.70	Brake system, bleeding	526001 - 526999
520-037	0.70	Brake system, bleeding	502838 - 502999
520-037	0.90	Brake system, bleeding	39300 - 526000
520-037	0.90	Brake system, bleeding	501000 - 502837
520-112	0.40	Brake pedal stop, adjusting	526001 - 526999
520-112	0.40	Brake pedal stop, adjusting	502838 - 502999
521-009	1.50	Brake master cylinder, installing	39300 - 526000
521-009	1.50	Brake master cylinder, installing	501000 - 502837
521-011	0.50	Brake Master Cylinder and Power Booster - Removal	39300 - 526000

Op.no.	time (h)		Notes
521-011	0.50	Brake Master Cylinder and Power Booster - Removal	501000 - 502837
521-012	0.20	Power booster, disassembling	39300 - 526000
521-012	0.20	Power booster, disassembling	501000 - 502837
521-013	0.20	Power booster, assembling	39300 - 526000
521-013	0.20	Power booster, assembling	501000 - 502837
521-014	0.50	Brake master cylinder, disassembling	39300 - 526000
521-014	0.50	Brake master cylinder, disassembling	501000 - 502837
521-015	0.50	Brake master cylinder, assembling	39300 - 526000
521-015	0.50	Brake master cylinder, assembling	501000 - 502837
525-005	0.70	Foot brake valve, removal	526001 - 526999
525-005	0.70	Foot brake valve, removal	502838 - 502999
525-006	1.50	Foot brake valve, installation	502838 - 502999
525-006	1.50	Foot brake valve, installation	526001 - 526999
525-017	0.20	Brake pedal angle, adjusting	502838 - 502999
525-017	0.20	Brake pedal angle, adjusting	526001 - 526999
527-001	0.10	Accumulator removed, checking charging pressure	502838 - 502999
527-001	0.10	Accumulator removed, checking charging pressure	526001 - 526999
527-012	0.40	Accumulator, removal	502838 - 502999
527-012	0.40	Accumulator, removal	526001 - 526999
527-013	0.80	Accumulator, installation	502838 - 502999
527-013	0.80	Accumulator, installation	526001 - 526999
55		PARKING BRAKE	
550-015	0.10	Parking brake, manually releasing	
550-018	1.25	Parking brake assembly, removing	
550-022	1.50	Parking Brake - Installation	
550-023	0.20	Parking brake, function checking	
550-056	1.75	Parking brake assembly, installing	

6**STEERING****60****GENERAL**

600-001	0.30	Steering system, function check	
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62**STEERING AXLE**

622-052	0.70	Wheel Hub - Removal	
622-054	0.30	Drag link, removing	
622-058	0.50	Tie bar, removing	
622-059	2.00	Knuckle, removing	
622-060	0.90	Front axle frame, removing	
622-061	1.50	Front axle frame, installing	

Op.no.	time (h)	Notes
622-062	2.00	Knuckle, installing
622-063	0.40	Tie bar, installing
622-067	0.90	Drag link, installing
622-069	1.25	Wheel Hub - Installation
622-071	0.70	Toe - in, adjustment
622-081	9.50	Front axle, overhaul
622-087	4.00	Front wheel bearing, repacking
64		STEERING
641-022	0.60	Steering column, disassembling
641-024	0.70	Steering column, assembling
641-025	0.90	Pedestal gas shock, replacing
645-008	0.50	Shock valve, testing
645-028	0.70	Steering system, checking and adjusting working pressure
645-031	0.80	Steering control unit, removing
645-035	0.60	Steering control unit, installing
647-089	0.40	Secondary steering relief valve, adjusting
647-099	0.10	Secondary steering function, checking
648-001	0.50	Wheel lean cylinder, removing
648-002	0.40	Wheel lean cylinder, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-011	0.20	Transmission guard, removing
715-012	0.20	Transmission guard, installing
715-031	0.50	Neck and nose cover, removing
715-032	0.50	Neck and nose cover, installing
74		FRAME LINK
741-001	6.00	Frame joint, separating machine
741-002	7.00	Frame joint, assembly of separated machine
742-054	0.60	Articulation Indicator - Setup and Adjustment
742-055	0.60	Articulation indicator cable, removing
742-056	0.90	Articulation indicator cable, installing
742-081	0.70	Articulation cylinder, removing
742-082	0.80	Articulation cylinder, installing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.80	Wheel, removing and fitting one

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	3.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	1.00	Engine hood, removing
821-002	1.25	Engine hood, installing
827-001	0.50	Cab ladder, replacing
85		CAB INTERIOR/UPHOLSTERY
851-001	0.60	Rear headliner, removing
851-002	0.70	Rear headliner, installing
851-003	0.50	Front headliner, removing
851-004	0.60	Front headliner, installing
851-005	2.00	Cab interior covers, replacing
851-006	0.90	Side console covers, replacing
851-007	0.90	Floor mats, replacing
852-003	0.40	Operator's seat, removing
852-004	0.60	Operator's seat, installing
87		AIR CONDITIONING UNIT
870-003	0.70	Cooler and Heater assembly, removal
870-004	1.25	Cooler and Heater assembly, installation
872-001	0.20	Cab filter, replacing
872-022	1.25	Defroster fan, replacing
873-004	3.00	Heater core, replacing
873-006	3.00	Fan motor, replacing
873-008	1.25	Heat control valve, replacing
873-011	3.00	Air mix door actuator, replacing
873-012	3.00	Stepless motor drive, replacing
873-013	2.50	Heater unit relays, replacing
874-010	2.50	Condenser, replacing incl draining and filling
874-011	2.00	Receiver, replacing incl draining and filling
874-012	5.00	Evaporator, replacing incl draining and filling
874-014	3.00	Thermostat, replacing
874-092	0.60	HVAC control switch, replacing
88		INTERIOR EQUIPMENT
884-001	0.40	Seat safety belt, replacing

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-051	1.75	Joystick control, replacing
900-052	0.20	Rear option controller, replacing
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-001	0.50	Oil return filter, replacing
911-002	0.30	Ventilation filter, replacing
911-002	0.30	Ventilation filter, replacing
911-013	0.60	Hydraulic oil cooler, removing
911-014	0.80	Hydraulic oil cooler, installing
911-033	0.70	Oil cooler line bypass valve (check valve), replacing
911-036	1.25	Hydraulic oil tank, removing
911-038	2.50	Hydraulic oil tank, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-100	0.60	Hydraulic swivel joint, removing
912-101	1.00	Hydraulic swivel joint, installing
912-102	0.60	Hydraulic swivel joint, disassembly
912-103	0.60	Hydraulic swivel joint, assembly
912-104	0.30	Circle Turn Valve Overhaul Procedure
912-106	0.30	Circle turn valve, disassembly
912-107	0.30	Circle turn valve, assembly
912-108	0.40	Circle turn valve, installing
912-109	0.40	Circle Timing
912-110	0.90	Accumulator precharge pressure, checking
912-111	0.60	Accumulator -Charging
912-112	0.20	Hydraulic Cylinder Overhaul Procedure
912-113	0.50	Hydraulic Cylinder - Disassembly
912-114	0.40	Hydraulic Cylinder - Assembly
912-130	2.00	Directional control valve, removing
912-131	2.00	Directional control valve, installing
912-132	7.00	Directional control valve, reconditioning
912-133	0.60	Directional control valve, reconditioning (1 valve section)
912-137	0.40	Priority flow valve, removing
912-138	0.60	Priority flow valve, installing
912-139	0.30	Priority flow valve, disassembly and inspection
912-140	0.20	Priority flow valve, assembly
912-229	0.80	Directional control valve solenoid, replacing

Op.no.	time (h)	Notes
913-001	0.70	Hydraulic pump, checking and adjusting standby pressure and working pressure
913-023	0.40	Pump, removal
913-023	1.25	Pump, removal
913-024	0.30	Pump, installation
913-024	0.30	Pump, installation
913-041	0.30	Test procedure for external load sense relief valve
913-045	0.40	Steering and implement pump controller, removing
913-046	0.40	Steering and implement pump controller, installing
913-047	0.40	Steering and implement pump controller, inspection and cleaning
913-048	1.25	Steering and implement pump, performance test
915-003	0.70	Control lever, adjusting
915-006	1.75	Control lever, overhaul and adjustment
916-116	0.90	Power supply unit, replacing
916-117	0.90	Relay, replacing
916-118	0.90	Counter balance steering valve, replacing
916-119	0.90	Steering valve solenoid, replacing
916-120	0.30	Articulation sensor, replacing
916-121	0.10	Articulation sensor, calibrating
916-122	0.90	J-ECU controller, replacing
916-123	0.20	Rear auxiliary valve solenoid, replacing
916-124	0.90	Steering pressure sensor, replacing
916-127	0.30	Left side controller, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
926-081	1.50	Ripper, removal
926-082	3.00	Ripper, installation
926-088	0.40	Support arch, removal
926-089	1.25	Support arch, installation
98		FUNCTION FOR ROAD CONSTRUCTION
981-011	1.25	Mouldboard lower slide tube bearing, replacing
981-012	0.70	Mouldboard upper slide wear plate, replacing
981-013	1.25	Mouldboard cutting edge, replacing
981-021	1.25	Blade tilt cylinder, replacing
981-031	1.75	Blade lift stirrup bearing, replacement
981-033	1.25	Accumulator, replacing
981-041	1.00	Blade slide cylinder, replacing
981-051	0.70	Circle crank arm, removing
981-052	0.70	Circle crank arm, installing
981-053	1.25	Circle, checking
981-061	0.80	Blade lift system lock cylinder, removing
981-062	0.20	Blade lift system lock cylinder, disassembly

Op.no.	time (h)	Notes
981-063	0.20	Blade lift cylinder lock cylinder seal, replacing
981-064	0.70	Blade lift system lock cylinder, installing
981-071	2.00	Circle and Drawbar - Removal and Disassembly
981-072	3.50	Circle and Drawbar - Assembly and Installation
981-076	0.60	Drawbar ball stud, disassembly
981-077	1.00	Drawbar ball stud, assembly
981-079	1.00	Drawbar Ball Stud – Adjusting
981-081	0.90	Blade lift cylinder, removing
981-082	1.25	Blade lift stirrup, removing
981-085	0.90	Blade lift stirrup, installing
981-086	1.50	Blade lift cylinder, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.40	Maintenance service, every 10 hours
173-004	1.25	Maintenance service, every 50 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	5.00	Maintenance service, every 500 hours
173-012	7.50	Maintenance service, every 1000 hours
173-013	6.50	Maintenance service, every 1500 hours
173-014	14.00	Maintenance service, every 2000 hours
173-019	3.00	Maintenance service, every 4500 hours
173-022	2.00	Maintenance service, every 6000 hours
173-302	0.20	Service position 1
19		GENERAL
191-020	0.20	Service position
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-066	1.00	ECM (Engine control module), replacing pre-programmed
200-067	1.50	ECM (Engine control module), replacing non-programmed
21		ENGINE
214-037	0.50	Valve cover, removing
214-038	0.40	Valve cover, installing
23		FUEL SYSTEM
233-001	0.40	Fuel system, bleeding
25		INLET SYSTEM; EXHAUST SYSTEM
254-022	1.50	ACM (After treatment control module), replacing, non-programmed
254-023	1.50	ACM (After treatment control module), replacing, pre-programmed
254-130	0.80	AdBlue®/DEF pump unit, flushing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
36		OTHER ELECTRICAL EQUIPMENT
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-066	0.90	V-ECU, MID 187, changing pre-programmed ECU
366-111	1.50	Engine Gateway, MID 165, replacing non-programmed ECU
366-112	0.40	Engine gateway, MID 165, replacing pre-programmed ECU
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
387-008	0.30	Display unit, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-011	0.30	Transmission guard, removing
715-012	0.30	Transmission guard, installing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-007	0.40	Wheel, installing
771-008	0.40	Wheel, removing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
85		CAB INTERIOR/UPHOLSTERY
851-006	0.60	Side console covers, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-051	0.60	Joystick control, replacing
900-052	0.20	Rear option controller, replacing

Op.no.	time (h)	Notes
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-229	0.30	Directional control valve solenoid, replacing
916-116	0.70	Power supply unit, replacing
916-117	0.30	Relay, replacing
916-118	0.30	Counter balance steering valve, replacing
916-119	0.30	Steering valve solenoid, replacing
916-120	0.40	Articulation sensor, replacing
916-121	0.20	Articulation sensor, calibrating
916-122	0.60	J-ECU controller, replacing
916-123	0.20	Rear auxiliary valve solenoid, replacing
916-124	0.30	Steering pressure sensor, replacing
916-127	0.30	Left side controller, replacing
916-128	0.30	Front option controller, replacing
916-129	0.20	Joysticks, calibrating

Op.no.	time (h)	Notes	
0		GENERAL	
05		TRANSPORT INSTRUCTION.; STORAGE INSTRUCTION; OPERATING INSTRUCTION	
050-001	10.00	Removing and assembly of machine from shipping container	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.20	Start of VCADS Pro computer and reading machine data	
173-002	0.60	Maintenance service, daily	
173-004	1.75	Maintenance service, every 50 hours	39300 - 525448 502000 - 503596
173-007	2.50	Maintenance service, every 250 hours	
173-010	4.00	Maintenance service, every 500 hours	
173-012	7.00	Maintenance service, every 1000 hours	
173-013	14.00	Maintenance service, every 1500 hours	
173-013	10.00	Maintenance service, every 1500 hours	
173-014	11.00	Maintenance service, every 2000 hours	
173-061	2.50	Transmission, changing oil and filter	
173-075	1.75	Hydraulic oil tank, changing oil and filter incl.cleaning tank	
173-080	1.50	Master cylinder, changing oil	39300 - 525448
173-080	1.50	Master cylinder, changing oil	502200 - 503596
173-401	0.80	Engine oil and filter, changing	
173-465	0.60	Rear axle oil, changing	
173-466	2.50	Tandem oil, changing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-009	0.70	VCADS Pro, MID 128, programming E-ECU	
200-009	0.80	VCADS Pro, MID 128, programming E-ECU	
21		ENGINE	
210-070	3.00	Engine, removing	
210-072	4.50	Engine, installing	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
212-070	0.40	Crankcase ventilation, changing	
214-012	4.00	Valves, adjusting	
214-021	0.40	Valve cover, fitting new gasket each	

Op.no.	time (h)	Notes
218-002	1.50	Engine mount front, changing
218-007	1.00	Engine mounting rear, changing
23		FUEL SYSTEM
233-001	0.20	Fuel system, bleeding
233-002	0.80	Feed pump, replacing
233-014	0.40	Fuel filters, replacing
234-011	1.00	Fuel tank, removing
234-012	0.50	Fuel tank, installing
235-002	0.20	Fuel line, water separator, check and drain
237-002	0.90	Injectors, replacing all
237-018	0.70	Delivery pipe, replacing one
237-030	1.00	High pressure fuel pump, checking
237-033	1.25	Fuel control valve (FCV), replacing
237-035	0.30	Fuel rail pressure sensor, replacing
237-038	0.70	Fuel control valve (FCV), checking
25		INLET SYSTEM; EXHAUST SYSTEM
252-017	0.80	Silencer, removing
252-018	1.25	Silencer, installing
255-002	0.80	Turbocharger, inspection
255-070	0.40	Turbocharger, removing
255-072	0.40	Turbocharger, installing
256-010	0.40	Air cleaner, removing
256-011	0.60	Air cleaner, installing
258-002	1.00	Intercooler, replacing
26		COOLING SYSTEM
260-002	2.50	Cooling system, flushing
261-004	0.50	Coolant, changing
261-008	1.50	Radiator, replacing
262-002	1.25	Coolant pump, replacing
263-012	0.50	Fan belt and/or alternator belt, replacing
263-013	0.20	Fan belt and/or alternator belt, checking and adjusting tension
263-016	0.50	Maximum fan speed, checking
263-016	0.90	Maximum fan speed, checking
263-019	0.80	Low fan speed, checking
263-042	1.50	Fan shroud, replacing
263-052	0.40	Fan pump flow, checking
263-062	3.00	Cooling fan motor, replacing
263-071	0.40	Fan control valve, removing
263-072	0.30	Fan control valve, seal replacement
263-073	0.60	Fan control valve, installing

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-007	1.00	VCADS Pro, MID 142, programming W-ECU
300-008	0.80	VCADS Pro, MID 140, programming I-ECU
31		BATTERY
311-001	0.70	Battery charging capacity, checking
311-002	0.40	Batteries, replacing
313-001	0.30	Battery box, removing
313-002	0.30	Battery box, installing
32		ALTERNATOR; CHARGE REGULATOR
321-003	0.40	Alternator, removing
321-004	0.40	Alternator, installing
33		STARTING SYSTEM
331-016	0.40	Starter motor, removing
331-017	0.30	Starter motor, installing
334-011	0.40	Starter switch (engine start switch), replacing
35		LIGHTING
352-002	0.60	Headlights, adjusting
36		OTHER ELECTRICAL EQUIPMENT
361-018	0.40	Direction indicator switch, replacing
362-003	0.40	Reverse alarm, replacing
363-001	0.60	Windscreen wiper rear, replacing motor
363-002	0.80	Windscreen wiper front, replacing motor
363-005	0.70	Lower window wiper, replacing
363-006	1.75	Windscreen wiper, replacing pivot linkage
363-007	1.00	Windscreen wiper, install and adjust
366-007	0.80	VCADS Pro, MID187, programming V-ECU
367-052	1.25	V-ECU, replacing
367-056	1.25	I-ECU, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-004	1.00	Transmission temperature sensor, replacing
386-005	0.60	Transmission, revolution sensor, replacing
386-009	0.70	Transmission sensor and connection, checking
386-011	0.30	Fuel level sender, replacing
386-032	1.25	Sensor unit (differential lock), replacing
386-061	0.50	Revolution sensor (hydraulic cooling fan), replacing
387-008	0.30	Display unit, replacing

Op.no.	time (h)	Notes
39		MISCELLANEOUS
390-902	3.00	CareTrack, installing new
393-001	1.50	Voltage converter, replacing
393-022	0.30	Radio, removal
393-023	0.20	Radio, installation
395-021	1.50	Antenna, replacing
395-031	0.90	Speaker, replacing
4		POWER TRANSMISSION
41		CLUTCH; TORQUE CONVERTER
413-018	0.50	Inching pedal, replacing
413-019	0.20	Inching pedal, function check
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	1.25	Transmission oil pressure, checking
421-025	0.90	Transmission solenoid, replacing
421-026	1.00	Transmission pressure sensor, replacing
421-027	0.80	Transmission oil filter restriction sensor, replacing
421-047	0.60	Gear selector, replacing
421-070	4.50	Transmission, removing
421-072	6.50	Transmission, installing
426-001	1.00	Rubber cushion, changing
44		HYDROSTATIC DRIVE
442-011	1.50	Transmission pump, removing
442-012	2.50	Transmission pump, installing
442-041	1.75	Pump drive, removing
442-042	3.50	Pump drive, installing
442-043	3.00	Pump Drive, reconditioning
442-044	5.00	Spring coupling, changing
442-047	1.50	Charge pump, replacing
442-054	0.80	Control neutral adjustment for EDC controls
45		PROPELLER SHAFT
451-002	1.50	Support or intermediate bearing, replacing
451-031	0.60	Drive shaft, removing
451-031	1.25	Drive shaft, removing
451-032	0.60	Drive shaft, installing
451-032	0.80	Drive shaft, installing
451-033	1.25	Universal joint, replacing
451-034	1.25	Drive shaft, repair

Op.no.	time (h)		Notes
46		FRONT AXLE; REAR AXLE	
463-002	5.00	Axle, removing	
463-003	7.00	Axle, installing	
463-053	0.80	Tandem inspection	
463-056	2.00	Tandem, removing	
463-058	1.50	Tandem drive chain, removing	
463-058	1.50	Tandem drive chain, removing	
463-059	1.75	Tandem drive chain, installing	
463-059	2.50	Tandem drive chain, installing	
463-060	1.75	Tandem drive sprocket, removing	
463-061	1.75	Tandem drive sprocket, installing	
463-062	3.50	Tandem, installing	
463-063	6.00	Four point bearing, replacing	
463-064	2.00	Final drive axle seal, removal	
463-065	3.00	Final drive axle seal, installation	
5		BRAKE	
51		WHEEL BRAKE	
510-005	0.20	Service brakes, function check	
510-006	0.20	Service brakes warning system, checking	39300 - 525448
510-006	0.20	Service brakes warning system, checking	502200 - 503596
517-071	1.00	Oil disc brake assembly, removing	
517-072	0.80	Oil disc brakes, disassembling	
517-074	0.50	Brake Housing Pre - Assembly	
517-076	0.70	Oil disc brakes , assembling	
517-078	1.25	Oil disc brake, installing	
52		HYDRAULIC BRAKE SYSTEM	
520-001	0.70	Brake system, checking function, hydraulic	525449 - 525999
520-001	0.70	Brake system, checking function, hydraulic	503597 - 503999
520-007	0.40	Brake pedal switch, replacing	39300 - 525448
520-007	0.40	Brake pedal switch, replacing	502200 - 503596
520-037	0.70	Brake system, bleeding	525449 - 525999
520-037	0.70	Brake system, bleeding	503597 - 503999
520-037	0.90	Brake system, bleeding	39300 - 525448
520-037	0.90	Brake system, bleeding	502200 - 503596
520-112	0.40	Brake pedal stop, adjusting	525449 - 525999
520-112	0.40	Brake pedal stop, adjusting	503597 - 503999
521-009	1.50	Brake master cylinder, installing	39300 - 525448
521-009	1.50	Brake master cylinder, installing	502200 - 503596
521-011	0.50	Brake Master Cylinder and Power Booster - Removal	39300 - 525448

Op.no.	time (h)		Notes
521-011	0.50	Brake Master Cylinder and Power Booster - Removal	502200 - 503596
521-012	0.20	Power booster, disassembling	39300 - 525448
521-012	0.20	Power booster, disassembling	502200 - 503596
521-013	0.20	Power booster, assembling	39300 - 525448
521-013	0.20	Power booster, assembling	502200 - 503596
521-014	0.50	Brake master cylinder, disassembling	39300 - 525448
521-014	0.50	Brake master cylinder, disassembling	502200 - 503596
521-015	0.50	Brake master cylinder, assembling	39300 - 525448
521-015	0.50	Brake master cylinder, assembling	502200 - 503596
525-005	0.70	Foot brake valve, removal	525449 - 525999
525-005	0.70	Foot brake valve, removal	503597 - 503999
525-006	1.50	Foot brake valve, installation	525449 - 525999
525-006	1.50	Foot brake valve, installation	503597 - 503999
525-017	0.20	Brake pedal angle, adjusting	525449 - 525999
525-017	0.20	Brake pedal angle, adjusting	503597 - 503999
527-001	0.10	Accumulator removed, checking charging pressure	525449 - 525999
527-001	0.10	Accumulator removed, checking charging pressure	503597 - 503999
527-012	0.40	Accumulator, removal	525449 - 525999
527-012	0.40	Accumulator, removal	503597 - 503999
527-013	0.80	Accumulator, installation	525449 - 525999
527-013	0.80	Accumulator, installation	503597 - 503999
55		PARKING BRAKE	
550-015	0.10	Parking brake, manually releasing	
550-018	1.25	Parking brake assembly, removing	
550-022	1.50	Parking Brake - Installation	
550-023	0.20	Parking brake, function checking	
550-056	1.75	Parking brake assembly, installing	

6**STEERING****60****GENERAL**

600-001	0.30	Steering system, function check	
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62**STEERING AXLE**

622-052	0.70	Wheel Hub - Removal	
622-054	0.30	Drag link, removing	
622-058	0.50	Tie bar, removing	
622-059	2.00	Knuckle, removing	
622-060	0.90	Front axle frame, removing	
622-061	1.50	Front axle frame, installing	

Op.no.	time (h)	Notes
622-062	2.00	Knuckle, installing
622-063	0.40	Tie bar, installing
622-067	0.90	Drag link, installing
622-069	1.25	Wheel Hub - Installation
622-071	0.70	Toe - in, adjustment
622-081	9.50	Front axle, overhaul
622-087	4.00	Front wheel bearing, repacking
64		STEERING
641-022	0.60	Steering column, disassembling
641-024	0.70	Steering column, assembling
641-025	0.90	Pedestal gas shock, replacing
645-008	0.50	Shock valve, testing
645-028	0.70	Steering system, checking and adjusting working pressure
645-031	0.80	Steering control unit, removing
645-035	0.60	Steering control unit, installing
647-089	0.40	Secondary steering relief valve, adjusting
647-099	0.10	Secondary steering function, checking
648-001	0.50	Wheel lean cylinder, removing
648-002	0.40	Wheel lean cylinder, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-011	0.20	Transmission guard, removing
715-012	0.20	Transmission guard, installing
715-031	0.50	Neck and nose cover, removing
715-032	0.50	Neck and nose cover, installing
74		FRAME LINK
741-001	6.00	Frame joint, separating machine
741-002	7.00	Frame joint, assembly of separated machine
742-054	0.60	Articulation Indicator - Setup and Adjustment
742-055	0.60	Articulation indicator cable, removing
742-056	0.90	Articulation indicator cable, installing
742-081	0.70	Articulation cylinder, removing
742-082	0.80	Articulation cylinder, installing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.80	Wheel, removing and fitting one

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	3.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	1.00	Engine hood, removing
821-002	1.25	Engine hood, installing
827-001	0.50	Cab ladder, replacing
85		CAB INTERIOR/UPHOLSTERY
851-001	0.60	Rear headliner, removing
851-002	0.70	Rear headliner, installing
851-003	0.50	Front headliner, removing
851-004	0.60	Front headliner, installing
851-005	2.00	Cab interior covers, replacing
851-006	0.90	Side console covers, replacing
851-007	0.90	Floor mats, replacing
852-003	0.40	Operator's seat, removing
852-004	0.60	Operator's seat, installing
87		AIR CONDITIONING UNIT
870-003	0.70	Cooler and Heater assembly, removal
870-004	1.25	Cooler and Heater assembly, installation
872-001	0.20	Cab filter, replacing
872-022	1.25	Defroster fan, replacing
873-004	3.00	Heater core, replacing
873-006	3.00	Fan motor, replacing
873-008	1.25	Heat control valve, replacing
873-011	3.00	Air mix door actuator, replacing
873-012	3.00	Stepless motor drive, replacing
873-013	2.50	Heater unit relays, replacing
874-010	2.50	Condenser, replacing incl draining and filling
874-011	2.00	Receiver, replacing incl draining and filling
874-012	5.00	Evaporator, replacing incl draining and filling
874-014	3.00	Thermostat, replacing
874-092	0.60	HVAC control switch, replacing
88		INTERIOR EQUIPMENT
884-001	0.40	Seat safety belt, replacing

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-051	1.75	Joystick control, replacing
900-052	0.20	Rear option controller, replacing
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-001	0.50	Oil return filter, replacing
911-002	0.30	Ventilation filter, replacing
911-002	0.30	Ventilation filter, replacing
911-013	0.60	Hydraulic oil cooler, removing
911-014	0.80	Hydraulic oil cooler, installing
911-033	0.70	Oil cooler line bypass valve (check valve), replacing
911-036	1.25	Hydraulic oil tank, removing
911-038	2.50	Hydraulic oil tank, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-100	0.60	Hydraulic swivel joint, removing
912-101	1.00	Hydraulic swivel joint, installing
912-102	0.60	Hydraulic swivel joint, disassembly
912-103	0.60	Hydraulic swivel joint, assembly
912-104	0.30	Circle Turn Valve Overhaul Procedure
912-106	0.30	Circle turn valve, disassembly
912-107	0.30	Circle turn valve, assembly
912-108	0.40	Circle turn valve, installing
912-109	0.40	Circle Timing
912-110	0.90	Accumulator precharge pressure, checking
912-111	0.60	Accumulator -Charging
912-112	0.20	Hydraulic Cylinder Overhaul Procedure
912-113	0.50	Hydraulic Cylinder - Disassembly
912-114	0.40	Hydraulic Cylinder - Assembly
912-130	2.00	Directional control valve, removing
912-131	2.00	Directional control valve, installing
912-132	7.00	Directional control valve, reconditioning
912-133	0.60	Directional control valve, reconditioning (1 valve section)
912-137	0.40	Priority flow valve, removing
912-138	0.60	Priority flow valve, installing
912-139	0.30	Priority flow valve, disassembly and inspection
912-140	0.20	Priority flow valve, assembly
912-229	0.80	Directional control valve solenoid, replacing

Op.no.	time (h)	Notes
913-001	0.70	Hydraulic pump, checking and adjusting standby pressure and working pressure
913-023	0.40	Pump, removal
913-023	1.25	Pump, removal
913-024	0.30	Pump, installation
913-024	0.30	Pump, installation
913-041	0.30	Test procedure for external load sense relief valve
913-045	0.40	Steering and implement pump controller, removing
913-046	0.40	Steering and implement pump controller, installing
913-047	0.40	Steering and implement pump controller, inspection and cleaning
913-048	1.25	Steering and implement pump, performance test
915-003	0.70	Control lever, adjusting
915-006	1.75	Control lever, overhaul and adjustment
916-116	0.90	Power supply unit, replacing
916-117	0.90	Relay, replacing
916-118	0.90	Counter balance steering valve, replacing
916-119	0.90	Steering valve solenoid, replacing
916-120	0.30	Articulation sensor, replacing
916-121	0.10	Articulation sensor, calibrating
916-122	0.90	J-ECU controller, replacing
916-123	0.20	Rear auxiliary valve solenoid, replacing
916-124	0.90	Steering pressure sensor, replacing
916-127	0.30	Left side controller, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
926-081	1.50	Ripper, removal
926-082	3.00	Ripper, installation
926-088	0.40	Support arch, removal
926-089	1.25	Support arch, installation
98		FUNCTION FOR ROAD CONSTRUCTION
981-011	1.25	Mouldboard lower slide tube bearing, replacing
981-012	0.70	Mouldboard upper slide wear plate, replacing
981-013	1.25	Mouldboard cutting edge, replacing
981-031	1.75	Blade lift stirrup bearing, replacement
981-033	1.25	Accumulator, replacing
981-041	1.00	Blade slide cylinder, replacing
981-051	0.70	Circle crank arm, removing
981-052	0.70	Circle crank arm, installing
981-053	1.25	Circle, checking
981-061	0.80	Blade lift system lock cylinder, removing
981-062	0.20	Blade lift system lock cylinder, disassembly
981-063	0.20	Blade lift cylinder lock cylinder seal, replacing

Op.no.	time (h)	Notes
981-064	0.70	Blade lift system lock cylinder, installing
981-071	2.00	Circle and Drawbar - Removal and Disassembly
981-072	3.50	Circle and Drawbar - Assembly and Installation
981-076	0.60	Drawbar ball stud, disassembly
981-077	1.00	Drawbar ball stud, assembly
981-079	1.00	Drawbar Ball Stud – Adjusting
981-081	0.90	Blade lift cylinder, removing
981-082	1.25	Blade lift stirrup, removing
981-085	0.90	Blade lift stirrup, installing
981-086	1.50	Blade lift cylinder, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.40	Maintenance service, every 10 hours
173-004	1.25	Maintenance service, every 50 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	5.00	Maintenance service, every 500 hours
173-012	7.50	Maintenance service, every 1000 hours
173-013	6.50	Maintenance service, every 1500 hours
173-014	14.00	Maintenance service, every 2000 hours
173-019	3.00	Maintenance service, every 4500 hours
173-022	2.00	Maintenance service, every 6000 hours
173-302	0.20	Service position 1
19		GENERAL
191-020	0.20	Service position
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-066	1.00	ECM (Engine control module), replacing pre-programmed
200-067	1.50	ECM (Engine control module), replacing non-programmed
21		ENGINE
214-037	0.50	Valve cover, removing
214-038	0.40	Valve cover, installing
23		FUEL SYSTEM
233-001	0.40	Fuel system, bleeding
25		INLET SYSTEM; EXHAUST SYSTEM
254-022	1.50	ACM (After treatment control module), replacing, non-programmed
254-023	1.50	ACM (After treatment control module), replacing, pre-programmed
254-130	0.80	AdBlue®/DEF pump unit, flushing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
36		OTHER ELECTRICAL EQUIPMENT
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-066	0.90	V-ECU, MID 187, changing pre-programmed ECU
366-111	1.50	Engine Gateway, MID 165, replacing non-programmed ECU
366-112	0.40	Engine gateway, MID 165, replacing pre-programmed ECU
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
387-008	0.30	Display unit, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-011	0.30	Transmission guard, removing
715-012	0.30	Transmission guard, installing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-007	0.40	Wheel, installing
771-008	0.40	Wheel, removing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
85		CAB INTERIOR/UPHOLSTERY
851-006	0.60	Side console covers, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-051	0.60	Joystick control, replacing
900-052	0.20	Rear option controller, replacing

Op.no.	time (h)	Notes
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-229	0.30	Directional control valve solenoid, replacing
916-116	0.70	Power supply unit, replacing
916-117	0.30	Relay, replacing
916-118	0.30	Counter balance steering valve, replacing
916-119	0.30	Steering valve solenoid, replacing
916-120	0.40	Articulation sensor, replacing
916-121	0.20	Articulation sensor, calibrating
916-122	0.60	J-ECU controller, replacing
916-123	0.20	Rear auxiliary valve solenoid, replacing
916-124	0.30	Steering pressure sensor, replacing
916-127	0.30	Left side controller, replacing
916-128	0.30	Front option controller, replacing
916-129	0.20	Joysticks, calibrating

Op.no.	time (h)	Notes	
0		GENERAL	
05		TRANSPORT INSTRUCTION.; STORAGE INSTRUCTION; OPERATING INSTRUCTION	
050-001	10.00	Removing and assembly of machine from shipping container	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.20	Start of VCADS Pro computer and reading machine data	
173-002	0.60	Maintenance service, daily	
173-004	1.75	Maintenance service, every 50 hours	39300 - 527999 504000 - 504114
173-007	2.50	Maintenance service, every 250 hours	
173-010	4.00	Maintenance service, every 500 hours	
173-012	7.00	Maintenance service, every 1000 hours	
173-013	14.00	Maintenance service, every 1500 hours	
173-013	10.00	Maintenance service, every 1500 hours	
173-014	11.00	Maintenance service, every 2000 hours	
173-061	2.50	Transmission, changing oil and filter	
173-075	1.75	Hydraulic oil tank, changing oil and filter incl.cleaning tank	
173-080	1.50	Master cylinder, changing oil	39300 - 527999
173-080	1.50	Master cylinder, changing oil	504000 - 504114
173-095	1.00	AWD hydraulic filter, replacing	
173-401	0.80	Engine oil and filter, changing	
173-465	0.60	Rear axle oil, changing	
173-466	2.50	Tandem oil, changing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-009	0.70	VCADS Pro, MID 128, programming E-ECU	
200-009	0.80	VCADS Pro, MID 128, programming E-ECU	
21		ENGINE	
210-070	3.00	Engine, removing	
210-072	4.50	Engine, installing	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
212-070	0.40	Crankcase ventilation, changing	
214-012	4.00	Valves, adjusting	

Op.no.	time (h)	Notes
214-021	0.40	Valve cover, fitting new gasket each
218-002	1.50	Engine mount front, changing
218-007	1.00	Engine mounting rear, changing
23		FUEL SYSTEM
233-001	0.20	Fuel system, bleeding
233-002	0.80	Feed pump, replacing
233-014	0.40	Fuel filters, replacing
234-011	1.00	Fuel tank, removing
234-012	0.50	Fuel tank, installing
235-002	0.20	Fuel line, water separator, check and drain
237-002	0.90	Injectors, replacing all
237-018	0.70	Delivery pipe, replacing one
237-030	1.00	High pressure fuel pump, checking
237-033	1.25	Fuel control valve (FCV), replacing
237-035	0.30	Fuel rail pressure sensor, replacing
237-038	0.70	Fuel control valve (FCV), checking
25		INLET SYSTEM; EXHAUST SYSTEM
252-017	0.80	Silencer, removing
252-018	1.25	Silencer, installing
255-002	0.80	Turbocharger, inspection
255-070	0.40	Turbocharger, removing
255-072	0.40	Turbocharger, installing
256-010	0.40	Air cleaner, removing
256-011	0.60	Air cleaner, installing
258-002	1.00	Intercooler, replacing
26		COOLING SYSTEM
260-002	2.50	Cooling system, flushing
261-004	0.50	Coolant, changing
261-008	1.50	Radiator, replacing
262-002	1.25	Coolant pump, replacing
263-012	0.50	Fan belt and/or alternator belt, replacing
263-013	0.20	Fan belt and/or alternator belt, checking and adjusting tension
263-016	0.50	Maximum fan speed, checking
263-016	0.90	Maximum fan speed, checking
263-019	0.80	Low fan speed, checking
263-042	1.50	Fan shroud, replacing
263-052	0.40	Fan pump flow, checking
263-062	3.00	Cooling fan motor, replacing
263-071	0.40	Fan control valve, removing
263-072	0.30	Fan control valve, seal replacement
263-073	0.60	Fan control valve, installing

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-007	1.00	VCADS Pro, MID 142, programming W-ECU
300-008	0.80	VCADS Pro, MID 140, programming I-ECU
31		BATTERY
311-001	0.70	Battery charging capacity, checking
311-002	0.40	Batteries, replacing
313-001	0.30	Battery box, removing
313-002	0.30	Battery box, installing
32		ALTERNATOR; CHARGE REGULATOR
321-003	0.40	Alternator, removing
321-004	0.40	Alternator, installing
33		STARTING SYSTEM
331-016	0.40	Starter motor, removing
331-017	0.30	Starter motor, installing
334-011	0.40	Starter switch (engine start switch), replacing
35		LIGHTING
352-002	0.60	Headlights, adjusting
36		OTHER ELECTRICAL EQUIPMENT
361-018	0.40	Direction indicator switch, replacing
362-003	0.40	Reverse alarm, replacing
363-001	0.60	Windscreen wiper rear, replacing motor
363-002	0.80	Windscreen wiper front, replacing motor
363-005	0.70	Lower window wiper, replacing
363-006	1.75	Windscreen wiper, replacing pivot linkage
363-007	1.00	Windscreen wiper, install and adjust
366-007	0.80	VCADS Pro, MID187, programming V-ECU
367-052	1.25	V-ECU, replacing
367-056	1.25	I-ECU, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-004	1.00	Transmission temperature sensor, replacing
386-005	0.60	Transmission, revolution sensor, replacing
386-009	0.70	Transmission sensor and connection, checking
386-011	0.30	Fuel level sender, replacing
386-032	1.25	Sensor unit (differential lock), replacing
386-061	0.50	Revolution sensor (hydraulic cooling fan), replacing
387-008	0.30	Display unit, replacing

Op.no.	time (h)	Notes
39		MISCELLANEOUS
390-902	3.00	CareTrack, installing new
393-001	1.50	Voltage converter, replacing
393-022	0.30	Radio, removal
393-023	0.20	Radio, installation
395-021	1.50	Antenna, replacing
395-031	0.90	Speaker, replacing
4		POWER TRANSMISSION
41		CLUTCH; TORQUE CONVERTER
413-018	0.50	Inching pedal, replacing
413-019	0.20	Inching pedal, function check
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	1.25	Transmission oil pressure, checking
421-025	0.90	Transmission solenoid, replacing
421-026	1.00	Transmission pressure sensor, replacing
421-027	0.80	Transmission oil filter restriction sensor, replacing
421-047	0.60	Gear selector, replacing
421-070	4.50	Transmission, removing
421-072	6.50	Transmission, installing
426-001	1.00	Rubber cushion, changing
44		HYDROSTATIC DRIVE
441-042	4.50	Wheel motor seal, disassembly
441-043	2.50	Wheel motor seal, assembly
441-051	2.00	All wheel drive motor, replacing
441-052	0.70	Freewheeling solenoid cartridge, replacing
441-053	1.75	Freewheeling valve, replacing
441-058	0.40	AWD speed sensor, replacing
441-059	0.80	AWD bypass switch, replacing
442-011	1.50	Transmission pump, removing
442-012	2.50	Transmission pump, installing
442-041	1.75	Pump drive, removing
442-042	3.50	Pump drive, installing
442-043	3.00	Pump Drive, reconditioning
442-044	5.00	Spring coupling, changing
442-047	1.50	Charge pump, replacing
442-050	3.00	All Wheel Drive pumps, replacing
442-054	0.80	Control neutral adjustment for EDC controls
442-055	1.75	EDC control module, housing removal and installation

Op.no.	time (h)	Notes	
442-055	1.75	EDC control module, housing removal and installation	
45		PROPELLER SHAFT	
451-002	1.50	Support or intermediate bearing, replacing	
451-031	0.60	Drive shaft, removing	
451-032	0.60	Drive shaft, installing	
451-033	1.25	Universal joint, replacing	
451-034	1.25	Drive shaft, repair	
46		FRONT AXLE; REAR AXLE	
463-002	5.00	Axle, removing	
463-003	7.00	Axle, installing	
463-053	0.80	Tandem inspection	
463-056	2.00	Tandem, removing	
463-058	1.50	Tandem drive chain, removing	
463-058	1.50	Tandem drive chain, removing	
463-059	1.75	Tandem drive chain, installing	
463-059	2.50	Tandem drive chain, installing	
463-060	1.75	Tandem drive sprocket, removing	
463-061	1.75	Tandem drive sprocket, installing	
463-062	3.50	Tandem, installing	
463-063	6.00	Four point bearing, replacing	
463-064	2.00	Final drive axle seal, removal	
463-065	3.00	Final drive axle seal, installation	
5		BRAKE	
51		WHEEL BRAKE	
510-005	0.20	Service brakes, function check	
510-006	0.20	Service brakes warning system, checking	504000 - 504114
510-006	0.20	Service brakes warning system, checking	39300 - 527999
517-071	1.00	Oil disc brake assembly, removing	
517-072	0.80	Oil disc brakes, disassembling	
517-074	0.50	Brake Housing Pre - Assembly	
517-076	0.70	Oil disc brakes , assembling	
517-078	1.25	Oil disc brake, installing	
52		HYDRAULIC BRAKE SYSTEM	
520-001	0.70	Brake system, checking function, hydraulic	528000 - 528999
520-001	0.70	Brake system, checking function, hydraulic	504115 - 504999
520-007	0.40	Brake pedal switch, replacing	39300 - 527999
520-007	0.40	Brake pedal switch, replacing	504000 - 504114
520-037	0.70	Brake system, bleeding	528000 - 528999

Op.no.	time (h)		Notes
520-037	0.70	Brake system, bleeding	504115 - 504999
520-037	0.90	Brake system, bleeding	39300 - 527999
520-037	0.90	Brake system, bleeding	504000 - 504114
520-112	0.40	Brake pedal stop, adjusting	528000 - 528999
520-112	0.40	Brake pedal stop, adjusting	504115 - 504999
521-009	1.50	Brake master cylinder, installing	39300 - 527999
521-009	1.50	Brake master cylinder, installing	504000 - 504114
521-011	0.50	Brake Master Cylinder and Power Booster - Removal	39300 - 527999
521-011	0.50	Brake Master Cylinder and Power Booster - Removal	504000 - 504114
521-012	0.20	Power booster, disassembling	39300 - 527999
521-012	0.20	Power booster, disassembling	504000 - 504114
521-013	0.20	Power booster, assembling	39300 - 527999
521-013	0.20	Power booster, assembling	504000 - 504114
521-014	0.50	Brake master cylinder, disassembling	39300 - 527999
521-014	0.50	Brake master cylinder, disassembling	504000 - 504114
521-015	0.50	Brake master cylinder, assembling	39300 - 527999
521-015	0.50	Brake master cylinder, assembling	504000 - 504114
525-005	0.70	Foot brake valve, removal	528000 - 528999
525-005	0.70	Foot brake valve, removal	504115 - 504999
525-006	1.50	Foot brake valve, installation	504115 - 504999
525-006	1.50	Foot brake valve, installation	528000 - 528999
525-017	0.20	Brake pedal angle, adjusting	504115 - 504999
525-017	0.20	Brake pedal angle, adjusting	528000 - 528999
527-001	0.10	Accumulator removed, checking charging pressure	504115 - 504999
527-001	0.10	Accumulator removed, checking charging pressure	528000 - 528999
527-012	0.40	Accumulator, removal	504115 - 504999
527-012	0.40	Accumulator, removal	528000 - 528999
527-013	0.80	Accumulator, installation	504115 - 504999
527-013	0.80	Accumulator, installation	528000 - 528999
55		PARKING BRAKE	
550-015	0.10	Parking brake, manually releasing	
550-018	1.25	Parking brake assembly, removing	
550-022	1.50	Parking Brake - Installation	
550-023	0.20	Parking brake, function checking	
550-056	1.75	Parking brake assembly, installing	

Op.no.	time (h)	Notes
6		STEERING
60		GENERAL
600-001	0.30	Steering system, function check
62		STEERING AXLE
622-054	0.30	Drag link, removing
622-058	0.50	Tie bar, removing
622-059	2.00	Knuckle, removing
622-060	0.90	Front axle frame, removing
622-061	1.50	Front axle frame, installing
622-062	2.00	Knuckle, installing
622-063	0.40	Tie bar, installing
622-067	0.90	Drag link, installing
622-071	0.70	Toe - in, adjustment
622-081	9.50	Front axle, overhaul
64		STEERING
641-022	0.60	Steering column, disassembling
641-024	0.70	Steering column, assembling
641-025	0.90	Pedestal gas shock, replacing
645-008	0.50	Shock valve, testing
645-028	0.70	Steering system, checking and adjusting working pressure
645-031	0.80	Steering control unit, removing
645-035	0.60	Steering control unit, installing
647-089	0.40	Secondary steering relief valve, adjusting
647-099	0.10	Secondary steering function, checking
648-001	0.50	Wheel lean cylinder, removing
648-002	0.40	Wheel lean cylinder, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-011	0.20	Transmission guard, removing
715-012	0.20	Transmission guard, installing
715-031	0.50	Neck and nose cover, removing
715-032	0.50	Neck and nose cover, installing
74		FRAME LINK
741-001	6.00	Frame joint, separating machine
741-002	7.00	Frame joint, assembly of separated machine
742-054	0.60	Articulation Indicator - Setup and Adjustment

Op.no.	time (h)	Notes
742-055	0.60	Articulation indicator cable, removing
742-056	0.90	Articulation indicator cable, installing
742-081	0.70	Articulation cylinder, removing
742-082	0.80	Articulation cylinder, installing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.80	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	3.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	1.00	Engine hood, removing
821-002	1.25	Engine hood, installing
827-001	0.50	Cab ladder, replacing
85		CAB INTERIOR/UPHOLSTERY
851-001	0.60	Rear headliner, removing
851-002	0.70	Rear headliner, installing
851-003	0.50	Front headliner, removing
851-004	0.60	Front headliner, installing
851-005	2.00	Cab interior covers, replacing
851-006	0.90	Side console covers, replacing
851-007	0.90	Floor mats, replacing
852-003	0.40	Operator's seat, removing
852-004	0.60	Operator's seat, installing
87		AIR CONDITIONING UNIT
870-003	0.70	Cooler and Heater assembly, removal
870-004	1.25	Cooler and Heater assembly, installation
872-001	0.20	Cab filter, replacing
872-022	1.25	Defroster fan, replacing
873-004	3.00	Heater core, replacing
873-006	3.00	Fan motor, replacing
873-008	1.25	Heat control valve, replacing
873-011	3.00	Air mix door actuator, replacing
873-012	3.00	Stepless motor drive, replacing
873-013	2.50	Heater unit relays, replacing
874-010	2.50	Condenser, replacing incl draining and filling
874-011	2.00	Receiver, replacing incl draining and filling
874-012	5.00	Evaporator, replacing incl draining and filling

Op.no.	time (h)	Notes
874-014	3.00	Thermostat, replacing
874-092	0.60	HVAC control switch, replacing
88		INTERIOR EQUIPMENT
884-001	0.40	Seat safety belt, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-051	1.75	Joystick control, replacing
900-052	0.20	Rear option controller, replacing
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-001	0.50	Oil return filter, replacing
911-002	0.30	Ventilation filter, replacing
911-002	0.30	Ventilation filter, replacing
911-013	0.60	Hydraulic oil cooler, removing
911-014	0.80	Hydraulic oil cooler, installing
911-033	0.70	Oil cooler line bypass valve (check valve), replacing
911-036	1.25	Hydraulic oil tank, removing
911-038	2.50	Hydraulic oil tank, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-100	0.60	Hydraulic swivel joint, removing
912-101	1.00	Hydraulic swivel joint, installing
912-102	0.60	Hydraulic swivel joint, disassembly
912-103	0.60	Hydraulic swivel joint, assembly
912-104	0.30	Circle Turn Valve Overhaul Procedure
912-106	0.30	Circle turn valve, disassembly
912-107	0.30	Circle turn valve, assembly
912-108	0.40	Circle turn valve, installing
912-109	0.40	Circle Timing
912-110	0.90	Accumulator precharge pressure, checking
912-111	0.60	Accumulator -Charging
912-112	0.20	Hydraulic Cylinder Overhaul Procedure
912-113	0.50	Hydraulic Cylinder - Disassembly
912-114	0.40	Hydraulic Cylinder - Assembly
912-130	2.00	Directional control valve, removing
912-131	2.00	Directional control valve, installing
912-132	7.00	Directional control valve, reconditioning

Op.no.	time (h)	Notes
912-133	0.60	Directional control valve, reconditioning (1 valve section)
912-137	0.40	Priority flow valve, removing
912-138	0.60	Priority flow valve, installing
912-139	0.30	Priority flow valve, disassembly and inspection
912-140	0.20	Priority flow valve, assembly
912-229	0.80	Directional control valve solenoid, replacing
913-001	0.70	Hydraulic pump, checking and adjusting standby pressure and working pressure
913-023	0.40	Pump, removal
913-024	0.30	Pump, installation
913-041	0.30	Test procedure for external load sense relief valve
913-045	0.40	Steering and implement pump controller, removing
913-046	0.40	Steering and implement pump controller, installing
913-047	0.40	Steering and implement pump controller, inspection and cleaning
913-048	1.25	Steering and implement pump, performance test
915-003	0.70	Control lever, adjusting
915-006	1.75	Control lever, overhaul and adjustment
916-116	0.90	Power supply unit, replacing
916-117	0.90	Relay, replacing
916-118	0.90	Counter balance steering valve, replacing
916-119	0.90	Steering valve solenoid, replacing
916-120	0.30	Articulation sensor, replacing
916-121	0.10	Articulation sensor, calibrating
916-122	0.90	J-ECU controller, replacing
916-123	0.20	Rear auxiliary valve solenoid, replacing
916-124	0.90	Steering pressure sensor, replacing
916-127	0.30	Left side controller, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
926-081	1.50	Ripper, removal
926-082	3.00	Ripper, installation
926-088	0.40	Support arch, removal
926-089	1.25	Support arch, installation
98		FUNCTION FOR ROAD CONSTRUCTION
981-011	1.25	Mouldboard lower slide tube bearing, replacing
981-012	0.70	Mouldboard upper slide wear plate, replacing
981-013	1.25	Mouldboard cutting edge, replacing
981-031	1.75	Blade lift stirrup bearing, replacement
981-033	1.25	Accumulator, replacing
981-041	1.00	Blade slide cylinder, replacing
981-051	0.70	Circle crank arm, removing

Op.no.	time (h)	Notes
981-052	0.70	Circle crank arm, installing
981-053	1.25	Circle, checking
981-061	0.80	Blade lift system lock cylinder, removing
981-062	0.20	Blade lift system lock cylinder, disassembly
981-063	0.20	Blade lift cylinder lock cylinder seal, replacing
981-064	0.70	Blade lift system lock cylinder, installing
981-071	2.00	Circle and Drawbar - Removal and Disassembly
981-072	3.50	Circle and Drawbar - Assembly and Installation
981-076	0.60	Drawbar ball stud, disassembly
981-077	1.00	Drawbar ball stud, assembly
981-079	1.00	Drawbar Ball Stud – Adjusting
981-081	0.90	Blade lift cylinder, removing
981-082	1.25	Blade lift stirrup, removing
981-085	0.90	Blade lift stirrup, installing
981-086	1.50	Blade lift cylinder, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.40	Maintenance service, every 10 hours
173-004	1.25	Maintenance service, every 50 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	5.00	Maintenance service, every 500 hours
173-012	8.00	Maintenance service, every 1000 hours
173-013	6.50	Maintenance service, every 1500 hours
173-014	12.00	Maintenance service, every 2000 hours
173-019	3.00	Maintenance service, every 4500 hours
173-022	2.00	Maintenance service, every 6000 hours
173-302	0.20	Service position 1
19		GENERAL
191-020	0.20	Service position
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-066	1.00	ECM (Engine control module), replacing pre-programmed
200-067	1.50	ECM (Engine control module), replacing non-programmed
21		ENGINE
214-037	0.50	Valve cover, removing
214-038	0.40	Valve cover, installing
23		FUEL SYSTEM
233-001	0.40	Fuel system, bleeding
25		INLET SYSTEM; EXHAUST SYSTEM
254-022	1.50	ACM (After treatment control module), replacing, non-programmed
254-023	1.50	ACM (After treatment control module), replacing, pre-programmed
254-130	0.80	AdBlue®/DEF pump unit, flushing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
36		OTHER ELECTRICAL EQUIPMENT
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-066	0.90	V-ECU, MID 187, changing pre-programmed ECU
366-111	1.50	Engine Gateway, MID 165, replacing non-programmed ECU
366-112	0.40	Engine gateway, MID 165, replacing pre-programmed ECU
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
387-008	0.30	Display unit, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-011	0.30	Transmission guard, removing
715-012	0.30	Transmission guard, installing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-007	0.40	Wheel, installing
771-008	0.40	Wheel, removing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
85		CAB INTERIOR/UPHOLSTERY
851-006	0.60	Side console covers, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-051	0.60	Joystick control, replacing
900-052	0.20	Rear option controller, replacing

Op.no.	time (h)	Notes
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-229	0.30	Directional control valve solenoid, replacing
916-116	0.70	Power supply unit, replacing
916-117	0.30	Relay, replacing
916-118	0.30	Counter balance steering valve, replacing
916-119	0.30	Steering valve solenoid, replacing
916-120	0.40	Articulation sensor, replacing
916-121	0.20	Articulation sensor, calibrating
916-122	0.60	J-ECU controller, replacing
916-123	0.20	Rear auxiliary valve solenoid, replacing
916-124	0.30	Steering pressure sensor, replacing
916-127	0.30	Left side controller, replacing
916-128	0.30	Front option controller, replacing
916-129	0.20	Joysticks, calibrating

Op.no.	time (h)	Notes	
0		GENERAL	
05		TRANSPORT INSTRUCTION.; STORAGE INSTRUCTION; OPERATING INSTRUCTION	
050-001	10.00	Removing and assembly of machine from shipping container	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.20	Start of VCADS Pro computer and reading machine data	
173-002	0.60	Maintenance service, daily	
173-004	1.75	Maintenance service, every 50 hours	39300 - 528999 505000 - 505154
173-007	2.50	Maintenance service, every 250 hours	
173-010	4.00	Maintenance service, every 500 hours	
173-012	7.00	Maintenance service, every 1000 hours	
173-013	14.00	Maintenance service, every 1500 hours	
173-013	10.00	Maintenance service, every 1500 hours	
173-014	11.00	Maintenance service, every 2000 hours	
173-061	2.50	Transmission, changing oil and filter	
173-075	1.75	Hydraulic oil tank, changing oil and filter incl.cleaning tank	
173-080	1.50	Master cylinder, changing oil	39300 - 528999
173-080	1.50	Master cylinder, changing oil	505000 - 505154
173-401	0.80	Engine oil and filter, changing	
173-465	0.60	Rear axle oil, changing	
173-466	2.50	Tandem oil, changing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-009	0.70	VCADS Pro, MID 128, programming E-ECU	
200-009	0.80	VCADS Pro, MID 128, programming E-ECU	
21		ENGINE	
210-070	3.00	Engine, removing	
210-072	4.50	Engine, installing	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
212-070	0.40	Crankcase ventilation, changing	
214-012	4.00	Valves, adjusting	
214-021	0.40	Valve cover, fitting new gasket each	

Op.no.	time (h)	Notes
218-002	1.50	Engine mount front, changing
218-007	1.00	Engine mounting rear, changing
23		FUEL SYSTEM
233-001	0.20	Fuel system, bleeding
233-002	0.80	Feed pump, replacing
233-014	0.40	Fuel filters, replacing
234-011	1.00	Fuel tank, removing
234-012	0.50	Fuel tank, installing
235-002	0.20	Fuel line, water separator, check and drain
237-002	0.90	Injectors, replacing all
237-018	0.70	Delivery pipe, replacing one
237-030	1.00	High pressure fuel pump, checking
237-033	1.25	Fuel control valve (FCV), replacing
237-035	0.30	Fuel rail pressure sensor, replacing
237-038	0.70	Fuel control valve (FCV), checking
25		INLET SYSTEM; EXHAUST SYSTEM
252-017	0.80	Silencer, removing
252-018	1.25	Silencer, installing
255-002	0.80	Turbocharger, inspection
255-070	0.40	Turbocharger, removing
255-072	0.40	Turbocharger, installing
256-010	0.40	Air cleaner, removing
256-011	0.60	Air cleaner, installing
258-002	1.00	Intercooler, replacing
26		COOLING SYSTEM
260-002	2.50	Cooling system, flushing
261-004	0.50	Coolant, changing
261-008	1.50	Radiator, replacing
262-002	1.25	Coolant pump, replacing
263-012	0.50	Fan belt and/or alternator belt, replacing
263-013	0.20	Fan belt and/or alternator belt, checking and adjusting tension
263-016	0.50	Maximum fan speed, checking
263-016	0.90	Maximum fan speed, checking
263-019	0.80	Low fan speed, checking
263-042	1.50	Fan shroud, replacing
263-052	0.40	Fan pump flow, checking
263-062	3.00	Cooling fan motor, replacing
263-071	0.40	Fan control valve, removing
263-072	0.30	Fan control valve, seal replacement
263-073	0.60	Fan control valve, installing

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-007	1.00	VCADS Pro, MID 142, programming W-ECU
300-008	0.80	VCADS Pro, MID 140, programming I-ECU
31		BATTERY
311-001	0.70	Battery charging capacity, checking
311-002	0.40	Batteries, replacing
313-001	0.30	Battery box, removing
313-002	0.30	Battery box, installing
32		ALTERNATOR; CHARGE REGULATOR
321-003	0.40	Alternator, removing
321-004	0.40	Alternator, installing
33		STARTING SYSTEM
331-016	0.40	Starter motor, removing
331-017	0.30	Starter motor, installing
334-011	0.40	Starter switch (engine start switch), replacing
35		LIGHTING
352-002	0.60	Headlights, adjusting
36		OTHER ELECTRICAL EQUIPMENT
361-018	0.40	Direction indicator switch, replacing
362-003	0.40	Reverse alarm, replacing
363-001	0.60	Windscreen wiper rear, replacing motor
363-002	0.80	Windscreen wiper front, replacing motor
363-005	0.70	Lower window wiper, replacing
363-006	1.75	Windscreen wiper, replacing pivot linkage
363-007	1.00	Windscreen wiper, install and adjust
366-007	0.80	VCADS Pro, MID187, programming V-ECU
367-052	1.25	V-ECU, replacing
367-056	1.25	I-ECU, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-004	1.00	Transmission temperature sensor, replacing
386-005	0.60	Transmission, revolution sensor, replacing
386-009	0.70	Transmission sensor and connection, checking
386-011	0.30	Fuel level sender, replacing
386-032	1.25	Sensor unit (differential lock), replacing
386-061	0.50	Revolution sensor (hydraulic cooling fan), replacing
387-008	0.30	Display unit, replacing

Op.no.	time (h)	Notes
39		MISCELLANEOUS
390-902	3.00	CareTrack, installing new
393-001	1.50	Voltage converter, replacing
393-022	0.30	Radio, removal
393-023	0.20	Radio, installation
395-021	1.50	Antenna, replacing
395-031	0.90	Speaker, replacing
4		POWER TRANSMISSION
41		CLUTCH; TORQUE CONVERTER
413-018	0.50	Inching pedal, replacing
413-019	0.20	Inching pedal, function check
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	1.25	Transmission oil pressure, checking
421-025	0.90	Transmission solenoid, replacing
421-026	1.00	Transmission pressure sensor, replacing
421-027	0.80	Transmission oil filter restriction sensor, replacing
421-047	0.60	Gear selector, replacing
421-070	4.50	Transmission, removing
421-072	6.50	Transmission, installing
426-001	1.00	Rubber cushion, changing
44		HYDROSTATIC DRIVE
442-011	1.50	Transmission pump, removing
442-012	2.50	Transmission pump, installing
442-041	1.75	Pump drive, removing
442-042	3.50	Pump drive, installing
442-043	3.00	Pump Drive, reconditioning
442-044	5.00	Spring coupling, changing
442-047	1.50	Charge pump, replacing
442-054	0.80	Control neutral adjustment for EDC controls
45		PROPELLER SHAFT
451-002	1.50	Support or intermediate bearing, replacing
451-031	0.60	Drive shaft, removing
451-031	1.25	Drive shaft, removing
451-032	0.60	Drive shaft, installing
451-032	0.80	Drive shaft, installing
451-033	1.25	Universal joint, replacing
451-034	1.25	Drive shaft, repair

Op.no.	time (h)		Notes
46		FRONT AXLE; REAR AXLE	
463-002	5.00	Axle, removing	
463-003	7.00	Axle, installing	
463-053	0.80	Tandem inspection	
463-056	2.00	Tandem, removing	
463-058	1.50	Tandem drive chain, removing	
463-058	1.50	Tandem drive chain, removing	
463-059	1.75	Tandem drive chain, installing	
463-059	2.50	Tandem drive chain, installing	
463-060	1.75	Tandem drive sprocket, removing	
463-061	1.75	Tandem drive sprocket, installing	
463-062	3.50	Tandem, installing	
463-063	6.00	Four point bearing, replacing	
463-064	2.00	Final drive axle seal, removal	
463-065	3.00	Final drive axle seal, installation	
 5		 BRAKE	
51		WHEEL BRAKE	
510-005	0.20	Service brakes, function check	
510-006	0.20	Service brakes warning system, checking	505000 - 505154
510-006	0.20	Service brakes warning system, checking	39300 - 528999
517-071	1.00	Oil disc brake assembly, removing	
517-072	0.80	Oil disc brakes, disassembling	
517-074	0.50	Brake Housing Pre - Assembly	
517-076	0.70	Oil disc brakes , assembling	
517-078	1.25	Oil disc brake, installing	
52		HYDRAULIC BRAKE SYSTEM	
520-001	0.70	Brake system, checking function, hydraulic	529000 - 529999
520-001	0.70	Brake system, checking function, hydraulic	505155 - 505999
520-007	0.40	Brake pedal switch, replacing	39300 - 528999
520-007	0.40	Brake pedal switch, replacing	505000 - 505154
520-037	0.70	Brake system, bleeding	529000 - 529999
520-037	0.70	Brake system, bleeding	505155 - 505999
520-037	0.90	Brake system, bleeding	39300 - 528999
520-037	0.90	Brake system, bleeding	505000 - 505154
520-112	0.40	Brake pedal stop, adjusting	529000 - 529999
520-112	0.40	Brake pedal stop, adjusting	505155 - 505999
521-009	1.50	Brake master cylinder, installing	39300 - 528999
521-009	1.50	Brake master cylinder, installing	505000 - 505154
521-011	0.50	Brake Master Cylinder and Power Booster - Removal	39300 - 528999

Op.no.	time (h)		Notes
521-011	0.50	Brake Master Cylinder and Power Booster - Removal	505000 - 505154
521-012	0.20	Power booster, disassembling	39300 - 528999
521-012	0.20	Power booster, disassembling	505000 - 505154
521-013	0.20	Power booster, assembling	39300 - 528999
521-013	0.20	Power booster, assembling	505000 - 505154
521-014	0.50	Brake master cylinder, disassembling	39300 - 528999
521-014	0.50	Brake master cylinder, disassembling	505000 - 505154
521-015	0.50	Brake master cylinder, assembling	39300 - 528999
521-015	0.50	Brake master cylinder, assembling	505000 - 505154
525-005	0.70	Foot brake valve, removal	529000 - 529999
525-005	0.70	Foot brake valve, removal	505155 - 505999
525-006	1.50	Foot brake valve, installation	505155 - 505999
525-006	1.50	Foot brake valve, installation	529000 - 529999
525-017	0.20	Brake pedal angle, adjusting	505155 - 505999
525-017	0.20	Brake pedal angle, adjusting	529000 - 529999
527-001	0.10	Accumulator removed, checking charging pressure	505155 - 505999
527-001	0.10	Accumulator removed, checking charging pressure	529000 - 529999
527-012	0.40	Accumulator, removal	505155 - 505999
527-012	0.40	Accumulator, removal	529000 - 529999
527-013	0.80	Accumulator, installation	505155 - 505999
527-013	0.80	Accumulator, installation	529000 - 529999
55		PARKING BRAKE	
550-015	0.10	Parking brake, manually releasing	
550-018	1.25	Parking brake assembly, removing	
550-022	1.50	Parking Brake - Installation	
550-023	0.20	Parking brake, function checking	
550-056	1.75	Parking brake assembly, installing	

6**STEERING****60****GENERAL**

600-001	0.30	Steering system, function check
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62**STEERING AXLE**

622-052	0.70	Wheel Hub - Removal
622-054	0.30	Drag link, removing
622-058	0.50	Tie bar, removing
622-059	2.00	Knuckle, removing
622-060	0.90	Front axle frame, removing
622-061	1.50	Front axle frame, installing

Op.no.	time (h)	Notes
622-062	2.00	Knuckle, installing
622-063	0.40	Tie bar, installing
622-067	0.90	Drag link, installing
622-069	1.25	Wheel Hub - Installation
622-071	0.70	Toe - in, adjustment
622-081	9.50	Front axle, overhaul
622-087	4.00	Front wheel bearing, repacking
64		STEERING
641-022	0.60	Steering column, disassembling
641-024	0.70	Steering column, assembling
641-025	0.90	Pedestal gas shock, replacing
645-008	0.50	Shock valve, testing
645-028	0.70	Steering system, checking and adjusting working pressure
645-031	0.80	Steering control unit, removing
645-035	0.60	Steering control unit, installing
647-089	0.40	Secondary steering relief valve, adjusting
647-099	0.10	Secondary steering function, checking
648-001	0.50	Wheel lean cylinder, removing
648-002	0.40	Wheel lean cylinder, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-011	0.20	Transmission guard, removing
715-012	0.20	Transmission guard, installing
715-031	0.50	Neck and nose cover, removing
715-032	0.50	Neck and nose cover, installing
74		FRAME LINK
741-001	6.00	Frame joint, separating machine
741-002	7.00	Frame joint, assembly of separated machine
742-054	0.60	Articulation Indicator - Setup and Adjustment
742-055	0.60	Articulation indicator cable, removing
742-056	0.90	Articulation indicator cable, installing
742-081	0.70	Articulation cylinder, removing
742-082	0.80	Articulation cylinder, installing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.80	Wheel, removing and fitting one

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	3.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	1.00	Engine hood, removing
821-002	1.25	Engine hood, installing
827-001	0.50	Cab ladder, replacing
85		CAB INTERIOR/UPHOLSTERY
851-001	0.60	Rear headliner, removing
851-002	0.70	Rear headliner, installing
851-003	0.50	Front headliner, removing
851-004	0.60	Front headliner, installing
851-005	2.00	Cab interior covers, replacing
851-006	0.90	Side console covers, replacing
851-007	0.90	Floor mats, replacing
852-003	0.40	Operator's seat, removing
852-004	0.60	Operator's seat, installing
87		AIR CONDITIONING UNIT
870-003	0.70	Cooler and Heater assembly, removal
870-004	1.25	Cooler and Heater assembly, installation
872-001	0.20	Cab filter, replacing
872-022	1.25	Defroster fan, replacing
873-004	3.00	Heater core, replacing
873-006	3.00	Fan motor, replacing
873-008	1.25	Heat control valve, replacing
873-011	3.00	Air mix door actuator, replacing
873-012	3.00	Stepless motor drive, replacing
873-013	2.50	Heater unit relays, replacing
874-010	2.50	Condenser, replacing incl draining and filling
874-011	2.00	Receiver, replacing incl draining and filling
874-012	5.00	Evaporator, replacing incl draining and filling
874-014	3.00	Thermostat, replacing
874-092	0.60	HVAC control switch, replacing
88		INTERIOR EQUIPMENT
884-001	0.40	Seat safety belt, replacing

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-051	1.75	Joystick control, replacing
900-052	0.20	Rear option controller, replacing
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-001	0.50	Oil return filter, replacing
911-002	0.30	Ventilation filter, replacing
911-002	0.30	Ventilation filter, replacing
911-013	0.60	Hydraulic oil cooler, removing
911-014	0.80	Hydraulic oil cooler, installing
911-033	0.70	Oil cooler line bypass valve (check valve), replacing
911-036	1.25	Hydraulic oil tank, removing
911-038	2.50	Hydraulic oil tank, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-100	0.60	Hydraulic swivel joint, removing
912-101	1.00	Hydraulic swivel joint, installing
912-102	0.60	Hydraulic swivel joint, disassembly
912-103	0.60	Hydraulic swivel joint, assembly
912-104	0.30	Circle Turn Valve Overhaul Procedure
912-106	0.30	Circle turn valve, disassembly
912-107	0.30	Circle turn valve, assembly
912-108	0.40	Circle turn valve, installing
912-109	0.40	Circle Timing
912-110	0.90	Accumulator precharge pressure, checking
912-111	0.60	Accumulator -Charging
912-112	0.20	Hydraulic Cylinder Overhaul Procedure
912-113	0.50	Hydraulic Cylinder - Disassembly
912-114	0.40	Hydraulic Cylinder - Assembly
912-130	2.00	Directional control valve, removing
912-131	2.00	Directional control valve, installing
912-132	7.00	Directional control valve, reconditioning
912-133	0.60	Directional control valve, reconditioning (1 valve section)
912-137	0.40	Priority flow valve, removing
912-138	0.60	Priority flow valve, installing
912-139	0.30	Priority flow valve, disassembly and inspection
912-140	0.20	Priority flow valve, assembly
912-229	0.80	Directional control valve solenoid, replacing

Op.no.	time (h)	Notes
913-001	0.70	Hydraulic pump, checking and adjusting standby pressure and working pressure
913-023	0.40	Pump, removal
913-023	1.25	Pump, removal
913-024	0.30	Pump, installation
913-024	0.30	Pump, installation
913-041	0.30	Test procedure for external load sense relief valve
913-045	0.40	Steering and implement pump controller, removing
913-046	0.40	Steering and implement pump controller, installing
913-047	0.40	Steering and implement pump controller, inspection and cleaning
913-048	1.25	Steering and implement pump, performance test
915-003	0.70	Control lever, adjusting
915-006	1.75	Control lever, overhaul and adjustment
916-116	0.90	Power supply unit, replacing
916-117	0.90	Relay, replacing
916-118	0.90	Counter balance steering valve, replacing
916-119	0.90	Steering valve solenoid, replacing
916-120	0.30	Articulation sensor, replacing
916-121	0.10	Articulation sensor, calibrating
916-122	0.90	J-ECU controller, replacing
916-123	0.20	Rear auxiliary valve solenoid, replacing
916-124	0.90	Steering pressure sensor, replacing
916-127	0.30	Left side controller, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
926-081	1.50	Ripper, removal
926-082	3.00	Ripper, installation
926-088	0.40	Support arch, removal
926-089	1.25	Support arch, installation
98		FUNCTION FOR ROAD CONSTRUCTION
981-011	1.25	Mouldboard lower slide tube bearing, replacing
981-012	0.70	Mouldboard upper slide wear plate, replacing
981-013	1.25	Mouldboard cutting edge, replacing
981-031	1.75	Blade lift stirrup bearing, replacement
981-033	1.25	Accumulator, replacing
981-041	1.00	Blade slide cylinder, replacing
981-051	0.70	Circle crank arm, removing
981-052	0.70	Circle crank arm, installing
981-053	1.25	Circle, checking
981-061	0.80	Blade lift system lock cylinder, removing
981-062	0.20	Blade lift system lock cylinder, disassembly
981-063	0.20	Blade lift cylinder lock cylinder seal, replacing

Op.no.	time (h)	Notes
981-064	0.70	Blade lift system lock cylinder, installing
981-071	2.00	Circle and Drawbar - Removal and Disassembly
981-072	3.50	Circle and Drawbar - Assembly and Installation
981-076	0.60	Drawbar ball stud, disassembly
981-077	1.00	Drawbar ball stud, assembly
981-079	1.00	Drawbar Ball Stud – Adjusting
981-081	0.90	Blade lift cylinder, removing
981-082	1.25	Blade lift stirrup, removing
981-085	0.90	Blade lift stirrup, installing
981-086	1.50	Blade lift cylinder, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.40	Maintenance service, every 10 hours
173-004	1.25	Maintenance service, every 50 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	5.00	Maintenance service, every 500 hours
173-012	7.50	Maintenance service, every 1000 hours
173-013	6.50	Maintenance service, every 1500 hours
173-014	14.00	Maintenance service, every 2000 hours
173-019	3.00	Maintenance service, every 4500 hours
173-022	2.00	Maintenance service, every 6000 hours
173-302	0.20	Service position 1
19		GENERAL
191-020	0.20	Service position
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-066	1.00	ECM (Engine control module), replacing pre-programmed
200-067	1.50	ECM (Engine control module), replacing non-programmed
21		ENGINE
214-037	0.50	Valve cover, removing
214-038	0.40	Valve cover, installing
23		FUEL SYSTEM
233-001	0.40	Fuel system, bleeding
25		INLET SYSTEM; EXHAUST SYSTEM
254-022	1.50	ACM (After treatment control module), replacing, non-programmed
254-023	1.50	ACM (After treatment control module), replacing, pre-programmed
254-130	0.80	AdBlue®/DEF pump unit, flushing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
36		OTHER ELECTRICAL EQUIPMENT
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-066	0.90	V-ECU, MID 187, changing pre-programmed ECU
366-111	1.50	Engine Gateway, MID 165, replacing non-programmed ECU
366-112	0.40	Engine gateway, MID 165, replacing pre-programmed ECU
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
387-008	0.30	Display unit, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-011	0.30	Transmission guard, removing
715-012	0.30	Transmission guard, installing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-007	0.40	Wheel, installing
771-008	0.40	Wheel, removing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
85		CAB INTERIOR/UPHOLSTERY
851-006	0.60	Side console covers, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-051	0.60	Joystick control, replacing
900-052	0.20	Rear option controller, replacing

Op.no.	time (h)	Notes
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-229	0.30	Directional control valve solenoid, replacing
916-116	0.70	Power supply unit, replacing
916-117	0.30	Relay, replacing
916-118	0.30	Counter balance steering valve, replacing
916-119	0.30	Steering valve solenoid, replacing
916-120	0.40	Articulation sensor, replacing
916-121	0.20	Articulation sensor, calibrating
916-122	0.60	J-ECU controller, replacing
916-123	0.20	Rear auxiliary valve solenoid, replacing
916-124	0.30	Steering pressure sensor, replacing
916-127	0.30	Left side controller, replacing
916-128	0.30	Front option controller, replacing
916-129	0.20	Joysticks, calibrating

Op.no.	time (h)	Notes	
0		GENERAL	
05		TRANSPORT INSTRUCTION.; STORAGE INSTRUCTION; OPERATING INSTRUCTION	
050-001	10.00	Removing and assembly of machine from shipping container	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.20	Start of VCADS Pro computer and reading machine data	
173-002	0.60	Maintenance service, daily	
173-004	1.75	Maintenance service, every 50 hours	39300 - 530030 506000 - 506052
173-007	2.50	Maintenance service, every 250 hours	
173-010	4.00	Maintenance service, every 500 hours	
173-012	7.00	Maintenance service, every 1000 hours	
173-013	14.00	Maintenance service, every 1500 hours	
173-013	10.00	Maintenance service, every 1500 hours	
173-014	11.00	Maintenance service, every 2000 hours	
173-061	2.50	Transmission, changing oil and filter	
173-075	1.75	Hydraulic oil tank, changing oil and filter incl.cleaning tank	
173-080	1.50	Master cylinder, changing oil	39300 - 530030
173-080	1.50	Master cylinder, changing oil	506000 - 506052
173-401	0.90	Engine oil and filter, changing	
173-465	0.60	Rear axle oil, changing	
173-466	2.50	Tandem oil, changing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-009	0.70	VCADS Pro, MID 128, programming E-ECU	
200-009	0.80	VCADS Pro, MID 128, programming E-ECU	
21		ENGINE	
210-070	5.50	Engine, removing	
210-072	6.50	Engine, installing	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
212-070	0.40	Crankcase ventilation, changing	
214-012	5.00	Valves, adjusting	
216-014	1.25	Crankshaft, replacing front oil seal	

Op.no.	time (h)	Notes
216-018	13.00	Crankshaft, replacing rear oil seal
218-002	1.50	Engine mount front, changing
218-007	2.00	Engine mounting rear, changing
23		FUEL SYSTEM
233-001	0.20	Fuel system, bleeding
233-014	0.40	Fuel filters, replacing
234-011	1.00	Fuel tank, removing
234-012	0.50	Fuel tank, installing
235-002	0.20	Fuel line, water separator, check and drain
25		INLET SYSTEM; EXHAUST SYSTEM
252-017	0.80	Silencer, removing
252-020	0.80	Silencer, replacing
255-070	0.90	Turbocharger, removing
255-072	0.80	Turbocharger, installing
256-010	0.40	Air cleaner, removing
256-011	0.60	Air cleaner, installing
258-002	1.00	Intercooler, replacing
26		COOLING SYSTEM
260-002	2.50	Cooling system, flushing
261-004	0.50	Coolant, changing
261-008	1.50	Radiator, replacing
261-012	0.70	Radiator hose upper, replacing
261-014	0.80	Radiator hoses lower, replacing
261-018	1.75	Expansion tank, replacing
262-002	1.50	Coolant pump, replacing
262-007	0.60	Coolant pump belt, replacing
262-098	1.50	Thermostat, replacing
263-016	0.50	Maximum fan speed, checking
263-016	0.90	Maximum fan speed, checking
263-019	0.80	Low fan speed, checking
263-042	1.50	Fan shroud, replacing
263-052	0.40	Fan pump flow, checking
263-062	3.00	Cooling fan motor, replacing
263-071	0.40	Fan control valve, removing
263-072	0.30	Fan control valve, seal replacement
263-073	0.60	Fan control valve, installing

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-007	1.00	VCADS Pro, MID 142, programming W-ECU
300-008	0.80	VCADS Pro, MID 140, programming I-ECU
31		BATTERY
311-001	0.70	Battery charging capacity, checking
311-002	0.40	Batteries, replacing
313-001	0.30	Battery box, removing
313-002	0.30	Battery box, installing
32		ALTERNATOR; CHARGE REGULATOR
321-003	0.40	Alternator, removing
321-004	0.50	Alternator, installing
321-007	0.80	Alternator, changing belt
33		STARTING SYSTEM
331-016	0.40	Starter motor, removing
331-017	0.50	Starter motor, installing
334-011	0.40	Starter switch (engine start switch), replacing
35		LIGHTING
352-002	0.60	Headlights, adjusting
36		OTHER ELECTRICAL EQUIPMENT
361-018	0.40	Direction indicator switch, replacing
362-003	0.40	Reverse alarm, replacing
363-001	0.60	Windscreen wiper rear, replacing motor
363-002	0.80	Windscreen wiper front, replacing motor
363-005	0.70	Lower window wiper, replacing
363-006	1.75	Windscreen wiper, replacing pivot linkage
363-007	1.00	Windscreen wiper, install and adjust
366-007	0.80	VCADS Pro, MID187, programming V-ECU
367-052	1.25	V-ECU, replacing
367-056	1.25	I-ECU, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-004	1.00	Transmission temperature sensor, replacing
386-005	0.60	Transmission, revolution sensor, replacing
386-009	0.70	Transmission sensor and connection, checking
386-011	0.30	Fuel level sender, replacing
386-032	1.25	Sensor unit (differential lock), replacing
386-061	0.50	Revolution sensor (hydraulic cooling fan), replacing

Op.no.	time (h)	Notes
387-008	0.30	Display unit, replacing
39		MISCELLANEOUS
390-902	3.00	CareTrack, installing new
393-001	1.50	Voltage converter, replacing
393-022	0.30	Radio, removal
393-023	0.20	Radio, installation
395-021	1.50	Antenna, replacing
395-031	0.90	Speaker, replacing
4		POWER TRANSMISSION
41		CLUTCH; TORQUE CONVERTER
413-018	0.50	Inching pedal, replacing
413-019	0.20	Inching pedal, function check
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	1.25	Transmission oil pressure, checking
421-025	0.90	Transmission solenoid, replacing
421-026	1.00	Transmission pressure sensor, replacing
421-027	0.80	Transmission oil filter restriction sensor, replacing
421-047	0.60	Gear selector, replacing
421-070	4.50	Transmission, removing
421-072	6.50	Transmission, installing
426-001	1.00	Rubber cushion, changing
44		HYDROSTATIC DRIVE
442-011	1.50	Transmission pump, removing
442-012	2.50	Transmission pump, installing
442-041	1.75	Pump drive, removing
442-042	3.50	Pump drive, installing
442-043	3.00	Pump Drive, reconditioning
442-044	5.00	Spring coupling, changing
442-047	1.50	Charge pump, replacing
442-054	0.80	Control neutral adjustment for EDC controls
45		PROPELLER SHAFT
451-002	1.50	Support or intermediate bearing, replacing
451-031	0.60	Drive shaft, removing
451-031	1.25	Drive shaft, removing
451-032	0.60	Drive shaft, installing
451-032	0.80	Drive shaft, installing
451-033	1.25	Universal joint, replacing
451-034	1.25	Drive shaft, repair

Op.no.	time (h)		Notes
46		FRONT AXLE; REAR AXLE	
463-002	5.00	Axle, removing	
463-003	7.00	Axle, installing	
463-053	0.80	Tandem inspection	
463-056	2.00	Tandem, removing	
463-058	1.50	Tandem drive chain, removing	
463-058	1.50	Tandem drive chain, removing	
463-059	1.75	Tandem drive chain, installing	
463-059	2.50	Tandem drive chain, installing	
463-060	1.75	Tandem drive sprocket, removing	
463-061	1.75	Tandem drive sprocket, installing	
463-062	3.50	Tandem, installing	
463-063	6.00	Four point bearing, replacing	
463-064	2.00	Final drive axle seal, removal	
463-065	3.00	Final drive axle seal, installation	
5		BRAKE	
51		WHEEL BRAKE	
510-005	0.20	Service brakes, function check	
510-006	0.20	Service brakes warning system, checking	39300 - 530030
510-006	0.20	Service brakes warning system, checking	506000 - 506052
517-071	1.00	Oil disc brake assembly, removing	
517-072	0.80	Oil disc brakes, disassembling	
517-074	0.50	Brake Housing Pre - Assembly	
517-076	0.70	Oil disc brakes , assembling	
517-078	1.25	Oil disc brake, installing	
52		HYDRAULIC BRAKE SYSTEM	
520-001	0.70	Brake system, checking function, hydraulic	530031 - 530999
520-001	0.70	Brake system, checking function, hydraulic	506053 - 506999
520-007	0.40	Brake pedal switch, replacing	39300 - 530030
520-007	0.40	Brake pedal switch, replacing	506000 - 506052
520-037	0.70	Brake system, bleeding	530031 - 530999
520-037	0.70	Brake system, bleeding	506053 - 506999
520-037	0.90	Brake system, bleeding	39300 - 530030
520-037	0.90	Brake system, bleeding	506000 - 506052
520-112	0.40	Brake pedal stop, adjusting	530031 - 530999
520-112	0.40	Brake pedal stop, adjusting	506053 - 506999
521-009	1.50	Brake master cylinder, installing	39300 - 530030
521-009	1.50	Brake master cylinder, installing	506000 - 506052
521-011	0.50	Brake Master Cylinder and Power Booster - Removal	39300 - 530030

Op.no.	time (h)		Notes
521-011	0.50	Brake Master Cylinder and Power Booster - Removal	506000 - 506052
521-012	0.20	Power booster, disassembling	39300 - 530030
521-012	0.20	Power booster, disassembling	506000 - 506052
521-013	0.20	Power booster, assembling	39300 - 530030
521-013	0.20	Power booster, assembling	506000 - 506052
521-014	0.50	Brake master cylinder, disassembling	39300 - 530030
521-014	0.50	Brake master cylinder, disassembling	506000 - 506052
521-015	0.50	Brake master cylinder, assembling	39300 - 530030
521-015	0.50	Brake master cylinder, assembling	506000 - 506052
525-005	0.70	Foot brake valve, removal	506053 - 506999
525-005	0.70	Foot brake valve, removal	530031 - 530999
525-006	1.50	Foot brake valve, installation	506053 - 506999
525-006	1.50	Foot brake valve, installation	530031 - 530999
525-017	0.20	Brake pedal angle, adjusting	506053 - 506999
525-017	0.20	Brake pedal angle, adjusting	530031 - 530999
527-001	0.10	Accumulator removed, checking charging pressure	506053 - 506999
527-001	0.10	Accumulator removed, checking charging pressure	530031 - 530999
527-012	0.40	Accumulator, removal	506053 - 506999
527-012	0.40	Accumulator, removal	530031 - 530999
527-013	0.80	Accumulator, installation	506053 - 506999
527-013	0.80	Accumulator, installation	530031 - 530999
55		PARKING BRAKE	
550-015	0.10	Parking brake, manually releasing	
550-018	1.25	Parking brake assembly, removing	
550-022	1.50	Parking Brake - Installation	
550-023	0.20	Parking brake, function checking	
550-056	1.75	Parking brake assembly, installing	

6**STEERING****60****GENERAL**

600-001	0.30	Steering system, function check
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62**STEERING AXLE**

622-052	0.70	Wheel Hub - Removal
622-054	0.30	Drag link, removing
622-058	0.50	Tie bar, removing
622-059	2.00	Knuckle, removing
622-060	0.90	Front axle frame, removing
622-061	1.50	Front axle frame, installing

Op.no.	time (h)	Notes
622-062	2.00	Knuckle, installing
622-063	0.40	Tie bar, installing
622-067	0.90	Drag link, installing
622-069	1.25	Wheel Hub - Installation
622-071	0.70	Toe - in, adjustment
622-081	9.50	Front axle, overhaul
622-087	4.00	Front wheel bearing, repacking
64		STEERING
641-022	0.60	Steering column, disassembling
641-024	0.70	Steering column, assembling
641-025	0.90	Pedestal gas shock, replacing
645-008	0.50	Shock valve, testing
645-028	0.70	Steering system, checking and adjusting working pressure
645-031	0.80	Steering control unit, removing
645-035	0.60	Steering control unit, installing
647-089	0.40	Secondary steering relief valve, adjusting
647-099	0.10	Secondary steering function, checking
648-001	0.50	Wheel lean cylinder, removing
648-002	0.40	Wheel lean cylinder, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-011	0.20	Transmission guard, removing
715-012	0.20	Transmission guard, installing
715-031	0.50	Neck and nose cover, removing
715-032	0.50	Neck and nose cover, installing
74		FRAME LINK
741-001	6.00	Frame joint, separating machine
741-002	7.00	Frame joint, assembly of separated machine
742-054	0.60	Articulation Indicator - Setup and Adjustment
742-055	0.60	Articulation indicator cable, removing
742-056	0.90	Articulation indicator cable, installing
742-081	0.70	Articulation cylinder, removing
742-082	0.80	Articulation cylinder, installing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.80	Wheel, removing and fitting one

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	3.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	1.00	Engine hood, removing
821-002	1.25	Engine hood, installing
827-001	0.50	Cab ladder, replacing
85		CAB INTERIOR/UPHOLSTERY
851-001	0.60	Rear headliner, removing
851-002	0.70	Rear headliner, installing
851-003	0.50	Front headliner, removing
851-004	0.60	Front headliner, installing
851-005	2.00	Cab interior covers, replacing
851-006	0.90	Side console covers, replacing
851-007	0.90	Floor mats, replacing
852-003	0.40	Operator's seat, removing
852-004	0.60	Operator's seat, installing
87		AIR CONDITIONING UNIT
870-003	0.70	Cooler and Heater assembly, removal
870-004	1.25	Cooler and Heater assembly, installation
872-001	0.20	Cab filter, replacing
872-022	1.25	Defroster fan, replacing
873-004	3.00	Heater core, replacing
873-006	3.00	Fan motor, replacing
873-008	1.25	Heat control valve, replacing
873-011	3.00	Air mix door actuator, replacing
873-012	3.00	Stepless motor drive, replacing
873-013	2.50	Heater unit relays, replacing
874-006	3.00	Compressor, replacing incl draining and filling
874-010	2.50	Condenser, replacing incl draining and filling
874-011	2.00	Receiver, replacing incl draining and filling
874-012	5.00	Evaporator, replacing incl draining and filling
874-014	3.00	Thermostat, replacing
874-092	0.60	HVAC control switch, replacing
88		INTERIOR EQUIPMENT
884-001	0.40	Seat safety belt, replacing

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-051	1.75	Joystick control, replacing
900-052	0.20	Rear option controller, replacing
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-001	0.50	Oil return filter, replacing
911-002	0.30	Ventilation filter, replacing
911-002	0.30	Ventilation filter, replacing
911-013	0.60	Hydraulic oil cooler, removing
911-014	0.80	Hydraulic oil cooler, installing
911-033	0.70	Oil cooler line bypass valve (check valve), replacing
911-036	1.25	Hydraulic oil tank, removing
911-038	2.50	Hydraulic oil tank, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-100	0.60	Hydraulic swivel joint, removing
912-101	1.00	Hydraulic swivel joint, installing
912-102	0.60	Hydraulic swivel joint, disassembly
912-103	0.60	Hydraulic swivel joint, assembly
912-104	0.30	Circle Turn Valve Overhaul Procedure
912-106	0.30	Circle turn valve, disassembly
912-107	0.30	Circle turn valve, assembly
912-108	0.40	Circle turn valve, installing
912-109	0.40	Circle Timing
912-110	0.90	Accumulator precharge pressure, checking
912-111	0.60	Accumulator -Charging
912-112	0.20	Hydraulic Cylinder Overhaul Procedure
912-113	0.50	Hydraulic Cylinder - Disassembly
912-114	0.40	Hydraulic Cylinder - Assembly
912-130	2.00	Directional control valve, removing
912-131	2.00	Directional control valve, installing
912-132	7.00	Directional control valve, reconditioning
912-133	0.60	Directional control valve, reconditioning (1 valve section)
912-137	0.40	Priority flow valve, removing
912-138	0.60	Priority flow valve, installing
912-139	0.30	Priority flow valve, disassembly and inspection
912-140	0.20	Priority flow valve, assembly
912-229	0.80	Directional control valve solenoid, replacing

Op.no.	time (h)	Notes
913-001	0.70	Hydraulic pump, checking and adjusting standby pressure and working pressure
913-023	0.40	Pump, removal
913-023	1.25	Pump, removal
913-024	0.30	Pump, installation
913-024	0.30	Pump, installation
913-041	0.30	Test procedure for external load sense relief valve
913-045	0.40	Steering and implement pump controller, removing
913-046	0.40	Steering and implement pump controller, installing
913-047	0.40	Steering and implement pump controller, inspection and cleaning
913-048	1.25	Steering and implement pump, performance test
915-003	0.70	Control lever, adjusting
915-006	1.75	Control lever, overhaul and adjustment
916-116	0.90	Power supply unit, replacing
916-117	0.90	Relay, replacing
916-118	0.90	Counter balance steering valve, replacing
916-119	0.90	Steering valve solenoid, replacing
916-120	0.30	Articulation sensor, replacing
916-121	0.10	Articulation sensor, calibrating
916-122	0.90	J-ECU controller, replacing
916-123	0.20	Rear auxiliary valve solenoid, replacing
916-124	0.90	Steering pressure sensor, replacing
916-127	0.30	Left side controller, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
926-081	1.50	Ripper, removal
926-082	3.00	Ripper, installation
926-088	0.40	Support arch, removal
926-089	1.25	Support arch, installation
98		FUNCTION FOR ROAD CONSTRUCTION
981-011	1.25	Mouldboard lower slide tube bearing, replacing
981-012	0.70	Mouldboard upper slide wear plate, replacing
981-013	1.25	Mouldboard cutting edge, replacing
981-031	1.75	Blade lift stirrup bearing, replacement
981-033	1.25	Accumulator, replacing
981-041	1.00	Blade slide cylinder, replacing
981-051	0.70	Circle crank arm, removing
981-052	0.70	Circle crank arm, installing
981-053	1.25	Circle, checking
981-061	0.80	Blade lift system lock cylinder, removing
981-062	0.20	Blade lift system lock cylinder, disassembly
981-063	0.20	Blade lift cylinder lock cylinder seal, replacing

Op.no.	time (h)	Notes
981-064	0.70	Blade lift system lock cylinder, installing
981-071	2.00	Circle and Drawbar - Removal and Disassembly
981-072	3.50	Circle and Drawbar - Assembly and Installation
981-076	0.60	Drawbar ball stud, disassembly
981-077	1.00	Drawbar ball stud, assembly
981-079	1.00	Drawbar Ball Stud – Adjusting
981-081	0.90	Blade lift cylinder, removing
981-082	1.25	Blade lift stirrup, removing
981-085	0.90	Blade lift stirrup, installing
981-086	1.50	Blade lift cylinder, installing

Op.no.	time (h)	Notes	
0		GENERAL	
05		TRANSPORT INSTRUCTION.; STORAGE INSTRUCTION; OPERATING INSTRUCTION	
050-001	10.00	Removing and assembly of machine from shipping container	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.20	Start of VCADS Pro computer and reading machine data	
173-002	0.60	Maintenance service, daily	
173-004	1.75	Maintenance service, every 50 hours	39300 - 531019 507000 - 507052
173-007	2.50	Maintenance service, every 250 hours	
173-010	4.00	Maintenance service, every 500 hours	
173-012	7.00	Maintenance service, every 1000 hours	
173-013	14.00	Maintenance service, every 1500 hours	
173-013	10.00	Maintenance service, every 1500 hours	
173-014	11.00	Maintenance service, every 2000 hours	
173-061	2.50	Transmission, changing oil and filter	
173-075	1.75	Hydraulic oil tank, changing oil and filter incl.cleaning tank	
173-080	1.50	Master cylinder, changing oil	39300 - 531019
173-080	1.50	Master cylinder, changing oil	507000 - 507052
173-095	1.00	AWD hydraulic filter, replacing	
173-401	0.90	Engine oil and filter, changing	
173-465	0.60	Rear axle oil, changing	
173-466	2.50	Tandem oil, changing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-009	0.70	VCADS Pro, MID 128, programming E-ECU	
200-009	0.80	VCADS Pro, MID 128, programming E-ECU	
21		ENGINE	
210-070	5.50	Engine, removing	
210-072	6.50	Engine, installing	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
212-070	0.40	Crankcase ventilation, changing	
214-012	5.00	Valves, adjusting	

Op.no.	time (h)	Notes
216-014	1.25	Crankshaft, replacing front oil seal
216-018	13.00	Crankshaft, replacing rear oil seal
218-002	1.50	Engine mount front, changing
218-007	2.00	Engine mounting rear, changing
23		FUEL SYSTEM
233-001	0.20	Fuel system, bleeding
233-014	0.40	Fuel filters, replacing
234-011	1.00	Fuel tank, removing
234-012	0.50	Fuel tank, installing
235-002	0.20	Fuel line, water separator, check and drain
25		INLET SYSTEM; EXHAUST SYSTEM
252-017	0.80	Silencer, removing
252-020	0.80	Silencer, replacing
255-070	0.90	Turbocharger, removing
255-072	0.80	Turbocharger, installing
256-010	0.40	Air cleaner, removing
256-011	0.60	Air cleaner, installing
258-002	1.00	Intercooler, replacing
26		COOLING SYSTEM
260-002	2.50	Cooling system, flushing
261-004	0.50	Coolant, changing
261-008	1.50	Radiator, replacing
261-012	0.70	Radiator hose upper, replacing
261-014	0.80	Radiator hoses lower, replacing
261-018	1.75	Expansion tank, replacing
262-002	1.50	Coolant pump, replacing
262-007	0.60	Coolant pump belt, replacing
262-098	1.50	Thermostat, replacing
263-016	0.50	Maximum fan speed, checking
263-016	0.90	Maximum fan speed, checking
263-019	0.80	Low fan speed, checking
263-042	1.50	Fan shroud, replacing
263-052	0.40	Fan pump flow, checking
263-062	3.00	Cooling fan motor, replacing
263-071	0.40	Fan control valve, removing
263-072	0.30	Fan control valve, seal replacement
263-073	0.60	Fan control valve, installing

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-007	1.00	VCADS Pro, MID 142, programming W-ECU
300-008	0.80	VCADS Pro, MID 140, programming I-ECU
31		BATTERY
311-001	0.70	Battery charging capacity, checking
311-002	0.40	Batteries, replacing
313-001	0.30	Battery box, removing
313-002	0.30	Battery box, installing
32		ALTERNATOR; CHARGE REGULATOR
321-003	0.40	Alternator, removing
321-004	0.50	Alternator, installing
321-007	0.80	Alternator, changing belt
33		STARTING SYSTEM
331-016	0.40	Starter motor, removing
331-017	0.50	Starter motor, installing
334-011	0.40	Starter switch (engine start switch), replacing
35		LIGHTING
352-002	0.60	Headlights, adjusting
36		OTHER ELECTRICAL EQUIPMENT
361-018	0.40	Direction indicator switch, replacing
362-003	0.40	Reverse alarm, replacing
363-001	0.60	Windscreen wiper rear, replacing motor
363-002	0.80	Windscreen wiper front, replacing motor
363-005	0.70	Lower window wiper, replacing
363-006	1.75	Windscreen wiper, replacing pivot linkage
363-007	1.00	Windscreen wiper, install and adjust
366-007	0.80	VCADS Pro, MID187, programming V-ECU
367-052	1.25	V-ECU, replacing
367-056	1.25	I-ECU, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-004	1.00	Transmission temperature sensor, replacing
386-005	0.60	Transmission, revolution sensor, replacing
386-009	0.70	Transmission sensor and connection, checking
386-011	0.30	Fuel level sender, replacing
386-032	1.25	Sensor unit (differential lock), replacing
386-061	0.50	Revolution sensor (hydraulic cooling fan), replacing

Op.no.	time (h)	Notes
387-008	0.30	Display unit, replacing
39		MISCELLANEOUS
390-902	3.00	CareTrack, installing new
393-001	1.50	Voltage converter, replacing
393-022	0.30	Radio, removal
393-023	0.20	Radio, installation
395-021	1.50	Antenna, replacing
395-031	0.90	Speaker, replacing
4		POWER TRANSMISSION
41		CLUTCH; TORQUE CONVERTER
413-018	0.50	Inching pedal, replacing
413-019	0.20	Inching pedal, function check
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	1.25	Transmission oil pressure, checking
421-025	0.90	Transmission solenoid, replacing
421-026	1.00	Transmission pressure sensor, replacing
421-027	0.80	Transmission oil filter restriction sensor, replacing
421-047	0.60	Gear selector, replacing
421-070	4.50	Transmission, removing
421-072	6.50	Transmission, installing
426-001	1.00	Rubber cushion, changing
44		HYDROSTATIC DRIVE
441-042	4.50	Wheel motor seal, disassembly
441-043	2.50	Wheel motor seal, assembly
441-051	2.00	All wheel drive motor, replacing
441-052	0.70	Freewheeling solenoid cartridge, replacing
441-053	1.75	Freewheeling valve, replacing
441-058	0.40	AWD speed sensor, replacing
441-059	0.80	AWD bypass switch, replacing
442-011	1.50	Transmission pump, removing
442-012	2.50	Transmission pump, installing
442-041	1.75	Pump drive, removing
442-042	3.50	Pump drive, installing
442-043	3.00	Pump Drive, reconditioning
442-044	5.00	Spring coupling, changing
442-047	1.50	Charge pump, replacing
442-050	3.00	All Wheel Drive pumps, replacing
442-054	0.80	Control neutral adjustment for EDC controls

Op.no.	time (h)		Notes
442-055	1.75	EDC control module, housing removal and installation	
442-055	1.75	EDC control module, housing removal and installation	
45		PROPELLER SHAFT	
451-002	1.50	Support or intermediate bearing, replacing	
451-031	0.60	Drive shaft, removing	
451-032	0.60	Drive shaft, installing	
451-033	1.25	Universal joint, replacing	
451-034	1.25	Drive shaft, repair	
46		FRONT AXLE; REAR AXLE	
463-002	5.00	Axle, removing	
463-003	7.00	Axle, installing	
463-053	0.80	Tandem inspection	
463-056	2.00	Tandem, removing	
463-058	1.50	Tandem drive chain, removing	
463-058	1.50	Tandem drive chain, removing	
463-059	1.75	Tandem drive chain, installing	
463-059	2.50	Tandem drive chain, installing	
463-060	1.75	Tandem drive sprocket, removing	
463-061	1.75	Tandem drive sprocket, installing	
463-062	3.50	Tandem, installing	
463-063	6.00	Four point bearing, replacing	
463-064	2.00	Final drive axle seal, removal	
463-065	3.00	Final drive axle seal, installation	
5		BRAKE	
51		WHEEL BRAKE	
510-005	0.20	Service brakes, function check	
510-006	0.20	Service brakes warning system, checking	39300 - 531019
510-006	0.20	Service brakes warning system, checking	507000 - 507052
517-071	1.00	Oil disc brake assembly, removing	
517-072	0.80	Oil disc brakes, disassembling	
517-074	0.50	Brake Housing Pre - Assembly	
517-076	0.70	Oil disc brakes , assembling	
517-078	1.25	Oil disc brake, installing	
52		HYDRAULIC BRAKE SYSTEM	
520-001	0.70	Brake system, checking function, hydraulic	531020 - 531999
520-001	0.70	Brake system, checking function, hydraulic	507053 - 507999
520-007	0.40	Brake pedal switch, replacing	39300 - 531019
520-007	0.40	Brake pedal switch, replacing	507000 - 507052

Op.no.	time (h)		Notes
520-037	0.70	Brake system, bleeding	531020 - 531999
520-037	0.70	Brake system, bleeding	507053 - 507999
520-037	0.90	Brake system, bleeding	39300 - 531019
520-037	0.90	Brake system, bleeding	507000 - 507052
520-112	0.40	Brake pedal stop, adjusting	531020 - 531999
520-112	0.40	Brake pedal stop, adjusting	507053 - 507999
521-009	1.50	Brake master cylinder, installing	39300 - 531019
521-009	1.50	Brake master cylinder, installing	507000 - 507052
521-011	0.50	Brake Master Cylinder and Power Booster - Removal	39300 - 531019
521-011	0.50	Brake Master Cylinder and Power Booster - Removal	507000 - 507052
521-012	0.20	Power booster, disassembling	39300 - 531019
521-012	0.20	Power booster, disassembling	507000 - 507052
521-013	0.20	Power booster, assembling	39300 - 531019
521-013	0.20	Power booster, assembling	507000 - 507052
521-014	0.50	Brake master cylinder, disassembling	39300 - 531019
521-014	0.50	Brake master cylinder, disassembling	507000 - 507052
521-015	0.50	Brake master cylinder, assembling	39300 - 531019
521-015	0.50	Brake master cylinder, assembling	507000 - 507052
525-005	0.70	Foot brake valve, removal	531020 - 531999
525-005	0.70	Foot brake valve, removal	507053 - 507999
525-006	1.50	Foot brake valve, installation	507053 - 507999
525-006	1.50	Foot brake valve, installation	531020 - 531999
525-017	0.20	Brake pedal angle, adjusting	507053 - 507999
525-017	0.20	Brake pedal angle, adjusting	531020 - 531999
527-001	0.10	Accumulator removed, checking charging pressure	507053 - 507999
527-001	0.10	Accumulator removed, checking charging pressure	531020 - 531999
527-012	0.40	Accumulator, removal	507053 - 507999
527-012	0.40	Accumulator, removal	531020 - 531999
527-013	0.80	Accumulator, installation	507053 - 507999
527-013	0.80	Accumulator, installation	531020 - 531999
55		PARKING BRAKE	
550-015	0.10	Parking brake, manually releasing	
550-018	1.25	Parking brake assembly, removing	
550-022	1.50	Parking Brake - Installation	
550-023	0.20	Parking brake, function checking	
550-056	1.75	Parking brake assembly, installing	

Op.no.	time (h)	Notes
6		STEERING
60		GENERAL
600-001	0.30	Steering system, function check
62		STEERING AXLE
622-054	0.30	Drag link, removing
622-058	0.50	Tie bar, removing
622-059	2.00	Knuckle, removing
622-060	0.90	Front axle frame, removing
622-061	1.50	Front axle frame, installing
622-062	2.00	Knuckle, installing
622-063	0.40	Tie bar, installing
622-067	0.90	Drag link, installing
622-071	0.70	Toe - in, adjustment
622-081	9.50	Front axle, overhaul
64		STEERING
641-022	0.60	Steering column, disassembling
641-024	0.70	Steering column, assembling
641-025	0.90	Pedestal gas shock, replacing
645-008	0.50	Shock valve, testing
645-028	0.70	Steering system, checking and adjusting working pressure
645-031	0.80	Steering control unit, removing
645-035	0.60	Steering control unit, installing
647-089	0.40	Secondary steering relief valve, adjusting
647-099	0.10	Secondary steering function, checking
648-001	0.50	Wheel lean cylinder, removing
648-002	0.40	Wheel lean cylinder, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-011	0.20	Transmission guard, removing
715-012	0.20	Transmission guard, installing
715-031	0.50	Neck and nose cover, removing
715-032	0.50	Neck and nose cover, installing
74		FRAME LINK
741-001	6.00	Frame joint, separating machine
741-002	7.00	Frame joint, assembly of separated machine
742-054	0.60	Articulation Indicator - Setup and Adjustment

Op.no.	time (h)	Notes
742-055	0.60	Articulation indicator cable, removing
742-056	0.90	Articulation indicator cable, installing
742-081	0.70	Articulation cylinder, removing
742-082	0.80	Articulation cylinder, installing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.80	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	3.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	1.00	Engine hood, removing
821-002	1.25	Engine hood, installing
827-001	0.50	Cab ladder, replacing
85		CAB INTERIOR/UPHOLSTERY
851-001	0.60	Rear headliner, removing
851-002	0.70	Rear headliner, installing
851-003	0.50	Front headliner, removing
851-004	0.60	Front headliner, installing
851-005	2.00	Cab interior covers, replacing
851-006	0.90	Side console covers, replacing
851-007	0.90	Floor mats, replacing
852-003	0.40	Operator's seat, removing
852-004	0.60	Operator's seat, installing
87		AIR CONDITIONING UNIT
870-003	0.70	Cooler and Heater assembly, removal
870-004	1.25	Cooler and Heater assembly, installation
872-001	0.20	Cab filter, replacing
872-022	1.25	Defroster fan, replacing
873-004	3.00	Heater core, replacing
873-006	3.00	Fan motor, replacing
873-008	1.25	Heat control valve, replacing
873-011	3.00	Air mix door actuator, replacing
873-012	3.00	Stepless motor drive, replacing
873-013	2.50	Heater unit relays, replacing
874-006	3.00	Compressor, replacing incl draining and filling
874-010	2.50	Condenser, replacing incl draining and filling
874-011	2.00	Receiver, replacing incl draining and filling

Op.no.	time (h)	Notes
874-012	5.00	Evaporator, replacing incl draining and filling
874-014	3.00	Thermostat, replacing
874-092	0.60	HVAC control switch, replacing
88		INTERIOR EQUIPMENT
884-001	0.40	Seat safety belt, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-051	1.75	Joystick control, replacing
900-052	0.20	Rear option controller, replacing
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-001	0.50	Oil return filter, replacing
911-002	0.30	Ventilation filter, replacing
911-002	0.30	Ventilation filter, replacing
911-013	0.60	Hydraulic oil cooler, removing
911-014	0.80	Hydraulic oil cooler, installing
911-033	0.70	Oil cooler line bypass valve (check valve), replacing
911-036	1.25	Hydraulic oil tank, removing
911-038	2.50	Hydraulic oil tank, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-100	0.60	Hydraulic swivel joint, removing
912-101	1.00	Hydraulic swivel joint, installing
912-102	0.60	Hydraulic swivel joint, disassembly
912-103	0.60	Hydraulic swivel joint, assembly
912-104	0.30	Circle Turn Valve Overhaul Procedure
912-106	0.30	Circle turn valve, disassembly
912-107	0.30	Circle turn valve, assembly
912-108	0.40	Circle turn valve, installing
912-109	0.40	Circle Timing
912-110	0.90	Accumulator precharge pressure, checking
912-111	0.60	Accumulator -Charging
912-112	0.20	Hydraulic Cylinder Overhaul Procedure
912-113	0.50	Hydraulic Cylinder - Disassembly
912-114	0.40	Hydraulic Cylinder - Assembly
912-130	2.00	Directional control valve, removing
912-131	2.00	Directional control valve, installing

Op.no.	time (h)	Notes
912-132	7.00	Directional control valve, reconditioning
912-133	0.60	Directional control valve, reconditioning (1 valve section)
912-137	0.40	Priority flow valve, removing
912-138	0.60	Priority flow valve, installing
912-139	0.30	Priority flow valve, disassembly and inspection
912-140	0.20	Priority flow valve, assembly
912-229	0.80	Directional control valve solenoid, replacing
913-001	0.70	Hydraulic pump, checking and adjusting standby pressure and working pressure
913-023	0.40	Pump, removal
913-024	0.30	Pump, installation
913-041	0.30	Test procedure for external load sense relief valve
913-045	0.40	Steering and implement pump controller, removing
913-046	0.40	Steering and implement pump controller, installing
913-047	0.40	Steering and implement pump controller, inspection and cleaning
913-048	1.25	Steering and implement pump, performance test
915-003	0.70	Control lever, adjusting
915-006	1.75	Control lever, overhaul and adjustment
916-116	0.90	Power supply unit, replacing
916-117	0.90	Relay, replacing
916-118	0.90	Counter balance steering valve, replacing
916-119	0.90	Steering valve solenoid, replacing
916-120	0.30	Articulation sensor, replacing
916-121	0.10	Articulation sensor, calibrating
916-122	0.90	J-ECU controller, replacing
916-123	0.20	Rear auxiliary valve solenoid, replacing
916-124	0.90	Steering pressure sensor, replacing
916-127	0.30	Left side controller, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
926-081	1.50	Ripper, removal
926-082	3.00	Ripper, installation
926-088	0.40	Support arch, removal
926-089	1.25	Support arch, installation
98		FUNCTION FOR ROAD CONSTRUCTION
981-011	1.25	Mouldboard lower slide tube bearing, replacing
981-012	0.70	Mouldboard upper slide wear plate, replacing
981-013	1.25	Mouldboard cutting edge, replacing
981-031	1.75	Blade lift stirrup bearing, replacement
981-033	1.25	Accumulator, replacing
981-041	1.00	Blade slide cylinder, replacing

Op.no.	time (h)	Notes
981-051	0.70	Circle crank arm, removing
981-052	0.70	Circle crank arm, installing
981-053	1.25	Circle, checking
981-061	0.80	Blade lift system lock cylinder, removing
981-062	0.20	Blade lift system lock cylinder, disassembly
981-063	0.20	Blade lift cylinder lock cylinder seal, replacing
981-064	0.70	Blade lift system lock cylinder, installing
981-071	2.00	Circle and Drawbar - Removal and Disassembly
981-072	3.50	Circle and Drawbar - Assembly and Installation
981-076	0.60	Drawbar ball stud, disassembly
981-077	1.00	Drawbar ball stud, assembly
981-079	1.00	Drawbar Ball Stud – Adjusting
981-081	0.90	Blade lift cylinder, removing
981-082	1.25	Blade lift stirrup, removing
981-085	0.90	Blade lift stirrup, installing
981-086	1.50	Blade lift cylinder, installing

Op.no.	time (h)	Notes	
0		GENERAL	
05		TRANSPORT INSTRUCTION.; STORAGE INSTRUCTION; OPERATING INSTRUCTION	
050-001	15.00	Removing and assembly of machine from shipping container	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.20	Start of VCADS Pro computer and reading machine data	
173-002	0.60	Maintenance service, daily	
173-004	1.75	Maintenance service, every 50 hours	39300 - 532005 508000 - 508109
173-007	2.50	Maintenance service, every 250 hours	
173-010	4.00	Maintenance service, every 500 hours	
173-012	7.00	Maintenance service, every 1000 hours	
173-013	14.00	Maintenance service, every 1500 hours	
173-013	10.00	Maintenance service, every 1500 hours	
173-014	11.00	Maintenance service, every 2000 hours	
173-061	2.50	Transmission, changing oil and filter	
173-075	1.75	Hydraulic oil tank, changing oil and filter incl.cleaning tank	
173-080	1.50	Master cylinder, changing oil	39300 - 532005
173-080	1.50	Master cylinder, changing oil	508000 - 508109
173-401	0.90	Engine oil and filter, changing	
173-465	0.60	Rear axle oil, changing	
173-466	2.50	Tandem oil, changing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-009	0.70	VCADS Pro, MID 128, programming E-ECU	
200-009	0.80	VCADS Pro, MID 128, programming E-ECU	
21		ENGINE	
210-070	5.50	Engine, removing	
210-072	6.50	Engine, installing	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
212-070	0.40	Crankcase ventilation, changing	
214-012	5.00	Valves, adjusting	
216-014	1.25	Crankshaft, replacing front oil seal	

Op.no.	time (h)	Notes
216-018	13.00	Crankshaft, replacing rear oil seal
218-002	1.50	Engine mount front, changing
218-007	2.00	Engine mounting rear, changing
23		FUEL SYSTEM
233-001	0.20	Fuel system, bleeding
233-014	0.40	Fuel filters, replacing
234-011	1.00	Fuel tank, removing
234-012	0.50	Fuel tank, installing
235-002	0.20	Fuel line, water separator, check and drain
25		INLET SYSTEM; EXHAUST SYSTEM
252-017	0.80	Silencer, removing
252-020	0.80	Silencer, replacing
255-070	0.90	Turbocharger, removing
255-072	0.80	Turbocharger, installing
256-010	0.40	Air cleaner, removing
256-011	0.60	Air cleaner, installing
258-002	1.00	Intercooler, replacing
26		COOLING SYSTEM
260-002	2.50	Cooling system, flushing
261-004	0.50	Coolant, changing
261-008	1.50	Radiator, replacing
261-012	0.70	Radiator hose upper, replacing
261-014	0.80	Radiator hoses lower, replacing
261-018	1.75	Expansion tank, replacing
262-002	1.50	Coolant pump, replacing
262-007	0.60	Coolant pump belt, replacing
262-098	1.50	Thermostat, replacing
263-016	0.50	Maximum fan speed, checking
263-016	0.90	Maximum fan speed, checking
263-019	0.80	Low fan speed, checking
263-042	1.50	Fan shroud, replacing
263-052	0.40	Fan pump flow, checking
263-062	3.00	Cooling fan motor, replacing
263-071	0.40	Fan control valve, removing
263-072	0.30	Fan control valve, seal replacement
263-073	0.60	Fan control valve, installing

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-007	1.00	VCADS Pro, MID 142, programming W-ECU
300-008	0.80	VCADS Pro, MID 140, programming I-ECU
31		BATTERY
311-001	0.70	Battery charging capacity, checking
311-002	0.40	Batteries, replacing
313-001	0.30	Battery box, removing
313-002	0.30	Battery box, installing
32		ALTERNATOR; CHARGE REGULATOR
321-003	0.40	Alternator, removing
321-004	0.50	Alternator, installing
321-007	0.80	Alternator, changing belt
33		STARTING SYSTEM
331-016	0.40	Starter motor, removing
331-017	0.50	Starter motor, installing
334-011	0.40	Starter switch (engine start switch), replacing
35		LIGHTING
352-002	0.60	Headlights, adjusting
36		OTHER ELECTRICAL EQUIPMENT
361-018	0.40	Direction indicator switch, replacing
362-003	0.40	Reverse alarm, replacing
363-001	0.60	Windscreen wiper rear, replacing motor
363-002	0.80	Windscreen wiper front, replacing motor
363-005	0.70	Lower window wiper, replacing
363-006	1.75	Windscreen wiper, replacing pivot linkage
363-007	1.00	Windscreen wiper, install and adjust
366-007	0.80	VCADS Pro, MID187, programming V-ECU
367-052	1.25	V-ECU, replacing
367-056	1.25	I-ECU, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-004	1.00	Transmission temperature sensor, replacing
386-005	0.60	Transmission, revolution sensor, replacing
386-009	0.70	Transmission sensor and connection, checking
386-011	0.30	Fuel level sender, replacing
386-032	1.25	Sensor unit (differential lock), replacing
386-061	0.50	Revolution sensor (hydraulic cooling fan), replacing

Op.no.	time (h)	Notes
387-008	0.30	Display unit, replacing
39		MISCELLANEOUS
390-902	3.00	CareTrack, installing new
393-001	1.50	Voltage converter, replacing
393-022	0.30	Radio, removal
393-023	0.20	Radio, installation
395-021	1.50	Antenna, replacing
395-031	0.90	Speaker, replacing
4		POWER TRANSMISSION
41		CLUTCH; TORQUE CONVERTER
413-018	0.50	Inching pedal, replacing
413-019	0.20	Inching pedal, function check
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	1.25	Transmission oil pressure, checking
421-025	0.90	Transmission solenoid, replacing
421-026	1.00	Transmission pressure sensor, replacing
421-027	0.80	Transmission oil filter restriction sensor, replacing
421-047	0.60	Gear selector, replacing
421-070	4.50	Transmission, removing
421-072	6.50	Transmission, installing
426-001	1.00	Rubber cushion, changing
44		HYDROSTATIC DRIVE
442-011	1.50	Transmission pump, removing
442-012	2.50	Transmission pump, installing
442-041	1.75	Pump drive, removing
442-042	3.50	Pump drive, installing
442-043	3.00	Pump Drive, reconditioning
442-044	5.00	Spring coupling, changing
442-047	1.50	Charge pump, replacing
442-054	0.80	Control neutral adjustment for EDC controls
45		PROPELLER SHAFT
451-002	1.50	Support or intermediate bearing, replacing
451-031	0.60	Drive shaft, removing
451-031	1.25	Drive shaft, removing
451-032	0.60	Drive shaft, installing
451-032	0.80	Drive shaft, installing
451-033	1.25	Universal joint, replacing
451-034	1.25	Drive shaft, repair

Op.no.	time (h)		Notes
46		FRONT AXLE; REAR AXLE	
463-002	5.00	Axle, removing	
463-003	7.00	Axle, installing	
463-053	0.80	Tandem inspection	
463-056	2.50	Tandem, removing	
463-058	1.50	Tandem drive chain, removing	
463-058	1.50	Tandem drive chain, removing	
463-059	1.75	Tandem drive chain, installing	
463-059	2.50	Tandem drive chain, installing	
463-060	1.75	Tandem drive sprocket, removing	
463-061	1.75	Tandem drive sprocket, installing	
463-062	4.00	Tandem, installing	
463-063	6.00	Four point bearing, replacing	
463-064	2.00	Final drive axle seal, removal	
463-065	3.00	Final drive axle seal, installation	
5		BRAKE	
51		WHEEL BRAKE	
510-005	0.20	Service brakes, function check	
510-006	0.20	Service brakes warning system, checking	39300 - 532005
510-006	0.20	Service brakes warning system, checking	508000 - 508109
517-071	1.00	Oil disc brake assembly, removing	
517-072	0.80	Oil disc brakes, disassembling	
517-074	0.50	Brake Housing Pre - Assembly	
517-076	0.70	Oil disc brakes , assembling	
517-078	1.25	Oil disc brake, installing	
52		HYDRAULIC BRAKE SYSTEM	
520-001	0.70	Brake system, checking function, hydraulic	532006 - 532999
520-001	0.70	Brake system, checking function, hydraulic	508110 - 508999
520-007	0.40	Brake pedal switch, replacing	39300 - 532005
520-007	0.40	Brake pedal switch, replacing	508000 - 508109
520-037	0.70	Brake system, bleeding	532006 - 532999
520-037	0.70	Brake system, bleeding	508110 - 508999
520-037	0.90	Brake system, bleeding	39300 - 532005
520-037	0.90	Brake system, bleeding	508000 - 508109
520-112	0.40	Brake pedal stop, adjusting	532006 - 532999
520-112	0.40	Brake pedal stop, adjusting	508110 - 508999
521-009	1.50	Brake master cylinder, installing	39300 - 532005
521-009	1.50	Brake master cylinder, installing	508000 - 508109
521-011	0.50	Brake Master Cylinder and Power Booster - Removal	39300 - 532005

Op.no.	time (h)		Notes
521-011	0.50	Brake Master Cylinder and Power Booster - Removal	508000 - 508109
521-012	0.20	Power booster, disassembling	39300 - 532005
521-012	0.20	Power booster, disassembling	508000 - 508109
521-013	0.20	Power booster, assembling	39300 - 532005
521-013	0.20	Power booster, assembling	508000 - 508109
521-014	0.50	Brake master cylinder, disassembling	39300 - 532005
521-014	0.50	Brake master cylinder, disassembling	508000 - 508109
521-015	0.50	Brake master cylinder, assembling	39300 - 532005
521-015	0.50	Brake master cylinder, assembling	508000 - 508109
525-005	0.70	Foot brake valve, removal	532006 - 532999
525-005	0.70	Foot brake valve, removal	508110 - 508999
525-006	1.50	Foot brake valve, installation	508110 - 508999
525-006	1.50	Foot brake valve, installation	532006 - 532999
525-017	0.20	Brake pedal angle, adjusting	508110 - 508999
525-017	0.20	Brake pedal angle, adjusting	532006 - 532999
527-001	0.10	Accumulator removed, checking charging pressure	508110 - 508999
527-001	0.10	Accumulator removed, checking charging pressure	532006 - 532999
527-012	0.40	Accumulator, removal	508110 - 508999
527-012	0.40	Accumulator, removal	532006 - 532999
527-013	0.80	Accumulator, installation	508110 - 508999
527-013	0.80	Accumulator, installation	532006 - 532999
55		PARKING BRAKE	
550-015	0.10	Parking brake, manually releasing	
550-018	1.25	Parking brake assembly, removing	
550-022	1.50	Parking Brake - Installation	
550-023	0.20	Parking brake, function checking	
550-056	1.75	Parking brake assembly, installing	

6**STEERING****60****GENERAL**

600-001	0.30	Steering system, function check	
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62**STEERING AXLE**

622-052	0.70	Wheel Hub - Removal	
622-054	0.30	Drag link, removing	
622-058	0.50	Tie bar, removing	
622-059	2.00	Knuckle, removing	
622-060	0.90	Front axle frame, removing	
622-061	1.50	Front axle frame, installing	

Op.no.	time (h)	Notes
622-062	2.00	Knuckle, installing
622-063	0.40	Tie bar, installing
622-067	0.90	Drag link, installing
622-069	1.25	Wheel Hub - Installation
622-071	0.70	Toe - in, adjustment
622-081	9.50	Front axle, overhaul
622-087	4.00	Front wheel bearing, repacking
64		STEERING
641-022	0.60	Steering column, disassembling
641-024	0.70	Steering column, assembling
641-025	0.90	Pedestal gas shock, replacing
645-008	0.50	Shock valve, testing
645-028	0.70	Steering system, checking and adjusting working pressure
645-031	0.80	Steering control unit, removing
645-035	0.60	Steering control unit, installing
647-089	0.40	Secondary steering relief valve, adjusting
647-099	0.10	Secondary steering function, checking
648-001	0.50	Wheel lean cylinder, removing
648-002	0.40	Wheel lean cylinder, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-011	0.20	Transmission guard, removing
715-012	0.20	Transmission guard, installing
715-031	0.50	Neck and nose cover, removing
715-032	0.50	Neck and nose cover, installing
74		FRAME LINK
741-001	6.00	Frame joint, separating machine
741-002	7.00	Frame joint, assembly of separated machine
742-054	0.60	Articulation Indicator - Setup and Adjustment
742-055	0.60	Articulation indicator cable, removing
742-056	0.90	Articulation indicator cable, installing
742-081	0.70	Articulation cylinder, removing
742-082	0.80	Articulation cylinder, installing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.80	Wheel, removing and fitting one

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	3.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	1.00	Engine hood, removing
821-002	1.25	Engine hood, installing
827-001	0.50	Cab ladder, replacing
85		CAB INTERIOR/UPHOLSTERY
851-001	0.60	Rear headliner, removing
851-002	0.70	Rear headliner, installing
851-003	0.50	Front headliner, removing
851-004	0.60	Front headliner, installing
851-005	2.00	Cab interior covers, replacing
851-006	0.90	Side console covers, replacing
851-007	0.90	Floor mats, replacing
852-003	0.40	Operator's seat, removing
852-004	0.60	Operator's seat, installing
87		AIR CONDITIONING UNIT
870-003	0.70	Cooler and Heater assembly, removal
870-004	1.25	Cooler and Heater assembly, installation
872-001	0.20	Cab filter, replacing
872-022	1.25	Defroster fan, replacing
873-004	3.00	Heater core, replacing
873-006	3.00	Fan motor, replacing
873-008	1.25	Heat control valve, replacing
873-011	3.00	Air mix door actuator, replacing
873-012	3.00	Stepless motor drive, replacing
873-013	2.50	Heater unit relays, replacing
874-006	3.00	Compressor, replacing incl draining and filling
874-010	2.50	Condenser, replacing incl draining and filling
874-011	2.00	Receiver, replacing incl draining and filling
874-012	5.00	Evaporator, replacing incl draining and filling
874-014	3.00	Thermostat, replacing
874-092	0.60	HVAC control switch, replacing
88		INTERIOR EQUIPMENT
884-001	0.40	Seat safety belt, replacing

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-051	1.75	Joystick control, replacing
900-052	0.20	Rear option controller, replacing
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-001	0.50	Oil return filter, replacing
911-002	0.30	Ventilation filter, replacing
911-002	0.30	Ventilation filter, replacing
911-013	0.60	Hydraulic oil cooler, removing
911-014	0.80	Hydraulic oil cooler, installing
911-033	0.70	Oil cooler line bypass valve (check valve), replacing
911-036	1.25	Hydraulic oil tank, removing
911-038	2.50	Hydraulic oil tank, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-100	0.60	Hydraulic swivel joint, removing
912-101	1.00	Hydraulic swivel joint, installing
912-102	0.60	Hydraulic swivel joint, disassembly
912-103	0.60	Hydraulic swivel joint, assembly
912-104	0.30	Circle Turn Valve Overhaul Procedure
912-106	0.30	Circle turn valve, disassembly
912-107	0.30	Circle turn valve, assembly
912-108	0.40	Circle turn valve, installing
912-109	0.40	Circle Timing
912-110	0.90	Accumulator precharge pressure, checking
912-111	0.60	Accumulator -Charging
912-112	0.20	Hydraulic Cylinder Overhaul Procedure
912-113	0.50	Hydraulic Cylinder - Disassembly
912-114	0.40	Hydraulic Cylinder - Assembly
912-130	2.00	Directional control valve, removing
912-131	2.00	Directional control valve, installing
912-132	7.00	Directional control valve, reconditioning
912-133	0.60	Directional control valve, reconditioning (1 valve section)
912-137	0.40	Priority flow valve, removing
912-138	0.60	Priority flow valve, installing
912-139	0.30	Priority flow valve, disassembly and inspection
912-140	0.20	Priority flow valve, assembly
912-229	0.80	Directional control valve solenoid, replacing

Op.no.	time (h)	Notes
913-001	0.70	Hydraulic pump, checking and adjusting standby pressure and working pressure
913-023	0.40	Pump, removal
913-023	1.25	Pump, removal
913-024	0.30	Pump, installation
913-024	0.30	Pump, installation
913-041	0.30	Test procedure for external load sense relief valve
913-045	0.40	Steering and implement pump controller, removing
913-046	0.40	Steering and implement pump controller, installing
913-047	0.40	Steering and implement pump controller, inspection and cleaning
913-048	1.25	Steering and implement pump, performance test
915-003	0.70	Control lever, adjusting
915-006	1.75	Control lever, overhaul and adjustment
916-116	0.90	Power supply unit, replacing
916-117	0.90	Relay, replacing
916-118	0.90	Counter balance steering valve, replacing
916-119	0.90	Steering valve solenoid, replacing
916-120	0.30	Articulation sensor, replacing
916-121	0.10	Articulation sensor, calibrating
916-122	0.90	J-ECU controller, replacing
916-123	0.20	Rear auxiliary valve solenoid, replacing
916-124	0.90	Steering pressure sensor, replacing
916-127	0.30	Left side controller, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
926-081	1.50	Ripper, removal
926-082	3.00	Ripper, installation
926-088	0.40	Support arch, removal
926-089	1.25	Support arch, installation
98		FUNCTION FOR ROAD CONSTRUCTION
981-011	1.25	Mouldboard lower slide tube bearing, replacing
981-012	0.70	Mouldboard upper slide wear plate, replacing
981-013	1.25	Mouldboard cutting edge, replacing
981-031	1.75	Blade lift stirrup bearing, replacement
981-033	1.25	Accumulator, replacing
981-041	1.00	Blade slide cylinder, replacing
981-051	0.70	Circle crank arm, removing
981-052	0.70	Circle crank arm, installing
981-053	1.25	Circle, checking
981-061	0.80	Blade lift system lock cylinder, removing
981-062	0.20	Blade lift system lock cylinder, disassembly
981-063	0.20	Blade lift cylinder lock cylinder seal, replacing

Op.no.	time (h)	Notes
981-064	0.70	Blade lift system lock cylinder, installing
981-071	5.50	Circle and Drawbar - Removal and Disassembly
981-072	4.50	Circle and Drawbar - Assembly and Installation
981-076	0.60	Drawbar ball stud, disassembly
981-077	1.00	Drawbar ball stud, assembly
981-079	1.00	Drawbar Ball Stud – Adjusting
981-081	0.90	Blade lift cylinder, removing
981-082	1.25	Blade lift stirrup, removing
981-085	0.90	Blade lift stirrup, installing
981-086	1.50	Blade lift cylinder, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-004	1.25	Maintenance service, every 50 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	5.00	Maintenance service, every 1000 hours
173-014	8.50	Maintenance service, every 2000 hours
173-018	11.00	Maintenance service, every 4000 hours
173-019	2.50	Maintenance service, every 4500 hours
173-022	1.50	Maintenance service, every 6000 hours
173-024	0.60	Maintenance service, every 8000 hours
173-042	0.90	Maintenance service, first 1000 hours
173-302	0.20	Service position 1
173-371	0.20	Service position 2
173-506	3.00	Fire suppression system, checking
176-001	0.80	Mechanical release of parking brake
19		GENERAL
191-021	0.20	Service position 1
191-022	0.20	Service position 2
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-066	0.80	ECM (Engine control module), replacing pre-programmed
200-067	0.90	ECM (Engine control module), replacing non-programmed
200-200	0.60	Engine belts, replacing
21		ENGINE
210-002	1.75	Compression test
210-070	5.00	Engine, removing
210-072	6.50	Engine, installing
214-012	2.50	Valves, adjusting
218-007	2.00	Engine mounting rear, changing
22		LUBRICATING SYSTEM
221-022	0.30	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding

Op.no.	time (h)	Notes
233-004	0.30	Feed pump, checking feed pressure
236-002	0.50	Stall speed, checking
237-002	3.00	Injectors, replacing all
237-031	1.25	Fuel rail, replacing
237-032	1.50	High pressure fuel pump, replacing
237-033	1.50	Fuel control valve (FCV), replacing
237-034	2.00	Pressure relief valve (PRV), replacing
237-035	0.50	Fuel rail pressure sensor, replacing
237-127	0.60	High pressure fuel pipes, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.80	Exhaust pipe, flexible tube, replacing
254-001	2.50	Diesel particulate filter, check and clean
254-022	0.90	ACM (After treatment control module), replacing, non-programmed
254-023	0.50	ACM (After treatment control module), replacing, pre-programmed
254-059	0.40	Inlet throttle, replacing
254-060	3.00	Diesel oxidation catalyst, replacing
254-103	1.50	AdBlue®/DEF tank, tank armature, replacing
254-107	0.90	AdBlue®/DEF pump unit, replacing
254-112	5.50	AdBlue®/DEF tank, replacing
254-114	1.00	AdBlue®/DEF, draining
254-118	0.80	SCR system, dosing test
254-119	0.30	Coolant valve, replacing
254-120	0.90	AdBlue®/DEF dosing injector, replacing
254-121	0.50	AdBlue®/DEF quality, checking
254-124	0.30	AdBlue®/DEF pump unit, filter, replacing
254-126	0.70	AdBlue®/DEF mixing tube, replacing
254-127	1.50	SCR muffler, replacing
254-130	0.80	AdBlue®/DEF pump unit, flushing
254-131	0.50	AdBlue®/DEF pump unit, inlet nipple, replacing
255-009	0.50	Waste gate, testing
255-071	0.80	Turbocharger, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
260-003	0.60	Cooling system, pressure control
261-008	1.25	Radiator, replacing
262-002	0.90	Coolant pump, replacing
262-098	0.60	Thermostat, replacing
263-081	0.60	Hydraulic pump P3, removal
263-082	1.25	Hydraulic pump P3, installation

Op.no.	time (h)	Notes
29		Miscellaneous
293-001	2.50	EGR cooler, replacing
293-005	0.80	EGR valve, replacing
293-009	0.70	EGR reed valve, replacing
293-010	0.30	EGR Venturi tube, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-077	0.60	CCM, replacing
31		BATTERY
311-002	0.30	Batteries, replacing
311-005	0.40	Battery condition, check
36		OTHER ELECTRICAL EQUIPMENT
366-103	1.00	HMICU, changing pre-programmed ECU
366-104	1.00	HMICU, changing non-programmed ECU
366-105	1.50	GPMECU1, changing pre-programmed ECU
366-106	1.50	GPMECU1, changing non-programmed ECU
366-107	0.70	GPMECU2, changing pre-programmed ECU
366-108	0.80	GPMECU2, changing non-programmed ECU
366-109	1.00	GPMECU3, changing non-programmed ECU
366-110	1.00	GPMECU3, changing pre-programmed ECU
39		MISCELLANEOUS
398-005	0.60	W-ECU, replacing, non-programmed
398-006	0.60	W-ECU, replacing, pre-programmed
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.90	Transmission oil pressure, checking
421-002	0.80	Transmission oil pressure, checking
421-048	0.90	Gear selector valve, replacing one solenoid
421-052	2.00	Seal for front output shaft, replacing
421-054	1.75	Seal for rear output shaft, replacing
421-091	1.50	Lock up valve, replacing
421-099	0.70	Transmission, calibration
421-100	0.30	Transmission, function check
421-100	0.30	Transmission, function check

Op.no.	time (h)	Notes
46		FRONT AXLE; REAR AXLE
461-037	1.00	Hub reduction, removing
461-038	1.25	Hub reduction, installing
461-043	4.50	Hub, replacing seal
463-002	3.00	Axle, removing
463-003	3.00	Axle, installing
463-037	5.50	Axle suspension, replacing bushes and seals
463-045	1.00	Hub reduction, removing
463-046	1.25	Hub reduction, installing
468-006	0.20	Differential lock, function check
468-051	1.25	Differential lock, adjusting
5		BRAKE
51		WHEEL BRAKE
510-003	0.40	Brake discs, measuring wear
516-005	3.00	Brake disc, replacing
516-050	2.50	Brake piston, replacing seals
517-005	3.00	Brake disc, replacing
517-050	2.50	Brake piston, replacing seals
52		HYDRAULIC BRAKE SYSTEM
520-002	0.20	Brake system, checking function, retardation
520-005	0.30	Brake system, check and adjusting pressure in circuit
520-036	0.80	Brake system charging, checking
520-037	0.60	Brake system, bleeding
520-111	0.20	Automatic brake, function check
527-001	0.40	Accumulator removed, checking charging pressure
527-003	0.50	Accumulators, checking in machine
527-012	0.60	Accumulator, removal
527-013	0.70	Accumulator, installation
55		PARKING BRAKE
550-006	4.00	Parking brake, replacing discs and seals
550-023	0.10	Parking brake, function checking
6		STEERING
60		GENERAL
600-001	0.50	Steering system, function check

Op.no.	time (h)	Notes
64		STEERING
645-011	0.90	Left steering cylinder, removal
645-012	1.75	Left steering cylinder, installation
645-013	0.80	Right steering cylinder, removal
645-014	1.75	Right steering cylinder, installation
645-028	0.40	Steering system, checking and adjusting working pressure
645-037	0.20	Steering accumulator removed, checking
645-113	0.40	Steering accumulator, removing
645-114	0.40	Steering accumulator, installing
647-091	0.70	Secondary steering pump, checking and adjusting working pressure
66		LEVER STEERING
660-006	1.50	Comfort drive control (CDC), angle sensor, changing
660-007	1.25	Comfort drive control (CDC), solenoid valve, changing
660-011	0.20	Lever steering (CDC), functional check
660-012	0.40	Comfort Drive Control, servo pressure, checking
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-036	12.00	Frame joint, replacing bearings
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-002	0.50	Front wheel, removal
771-003	0.60	Front wheel, installation
771-004	0.60	Rear wheel, removing
771-005	0.60	Rear wheel, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-002	1.00	Engine hood, installing
821-010	0.60	Actuator, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-054	0.30	Electric door opener, control unit, replacing
831-055	0.30	Electric door opener, locking motor, replacing
831-056	0.20	Electric door opener, rotor switch, replacing

Op.no.	time (h)	Notes
831-057	0.30	Electric door opener, opening support motor, replacing
834-013	0.30	Door lock cylinder, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	2.50	Windscreen, replacing
85		CAB INTERIOR/UPHOLSTERY
852-010	0.50	Operator's seat, securing
87		AIR CONDITIONING UNIT
870-012	1.00	Climate unit, removing
870-013	1.25	Climate unit, installing
873-004	2.50	Heater core, replacing
873-006	2.50	Fan motor, replacing
873-008	1.25	Heat control valve, replacing
873-011	0.70	Air mix door actuator, replacing
874-001	2.00	Refrigerant, filling incl vacuum pumping
874-002	1.00	Refrigerant, draining
874-009	0.50	Cooling unit, leak detection
874-018	4.50	Compressor, replacing
874-022	3.50	Drying filter, replacing
874-023	4.00	Condenser, replacing
874-024	4.50	Evaporator, replacing
874-025	4.00	Expansion valve, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-001	0.50	Hydraulic system, warming up
900-002	3.00	Hydraulic system, bleeding
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-018	0.20	Back-up valve, checking and adjusting
912-021	0.60	Shock valve, tilt function, checking
912-023	0.60	Shock valve lift function, checking
912-121	1.50	Lift, solenoid valve, changing
912-122	1.50	Lower, solenoid valve, changing
912-123	1.50	Tilt in, solenoid valve, changing
912-124	1.50	Tilt out, solenoid valve, changing
912-125	0.70	Lift/lower, angle sensor, changing
912-126	2.50	Tilt in/out, angle sensor, changing

Op.no.	time (h)	Notes
912-127	0.20	Tilt, functional check
912-226	0.20	Lift/lower function, checking
912-227	0.60	Pressure back-up valve, replacing
913-001	0.60	Hydraulic pump, checking and adjusting standby pressure and working pressure
913-050	1.25	Hydraulic pump P2, removal
913-051	2.00	Hydraulic pump P2, installation
913-059	1.50	Hydraulic pump P3, checking function
913-060	1.00	Hydraulic pump P1, removal
913-061	2.50	Hydraulic pump P1, installation
914-047	0.20	Servo accumulator, removal
914-048	0.10	Servo accumulator, installation
914-049	0.40	Accumulator removed, checking
914-055	0.20	Servo pressure, checking and adjusting
914-063	0.60	Servo pressure, checking at the spool in control valve
916-001	0.30	Boom suspension system, functional check
916-003	0.60	Boom suspension accumulator, reconditioning
916-006	1.00	Boom suspension system, pressure reduction, safety valve, checking and adjusting
916-008	1.00	Boom suspension system, right accumulator, removal
916-009	1.50	Boom suspension system, right accumulator, installation
916-010	1.00	Boom suspension system, left accumulator, removal
916-011	1.50	Boom suspension system, left accumulator, installation
916-017	0.50	3rd/4th hydraulic function, shock valve, checking
916-018	0.60	3rd/4th hydraulic function, solenoid valve, changing
916-020	0.30	3rd/4th hydraulic function, checking and adjusting pressure
916-070	0.50	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing
916-072	0.20	Accumulator, boom suspension system, discarding
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-036	0.10	Attachment locking, functional check
94		UNIT, LOAD HANDLING
945-005	4.50	Lift cylinder, repacking in machine
945-009	2.00	Tilt cylinder, repacking in machine
99		MISCELLANEOUS
992-002	6.50	Fire suppression system, actions after activation

Op.no.	time (h)	Notes
992-003	7.00	Fire suppression system, actions after manual activation
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-004	1.25	Maintenance service, every 50 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	5.00	Maintenance service, every 1000 hours
173-014	8.50	Maintenance service, every 2000 hours
173-018	11.00	Maintenance service, every 4000 hours
173-019	2.50	Maintenance service, every 4500 hours
173-022	1.50	Maintenance service, every 6000 hours
173-024	0.60	Maintenance service, every 8000 hours
173-042	0.90	Maintenance service, first 1000 hours
173-302	0.20	Service position 1
173-371	0.20	Service position 2
173-506	3.00	Fire suppression system, checking
176-001	0.80	Mechanical release of parking brake
19		GENERAL
191-021	0.20	Service position 1
191-022	0.20	Service position 2
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-066	0.80	ECM (Engine control module), replacing pre-programmed
200-067	0.90	ECM (Engine control module), replacing non-programmed
200-200	0.60	Engine belts, replacing
21		ENGINE
210-002	1.75	Compression test
210-070	5.00	Engine, removing
210-072	6.50	Engine, installing
214-012	2.50	Valves, adjusting
218-007	2.00	Engine mounting rear, changing
22		LUBRICATING SYSTEM
221-022	0.30	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding

Op.no.	time (h)	Notes
233-004	0.30	Feed pump, checking feed pressure
236-002	0.50	Stall speed, checking
237-002	3.00	Injectors, replacing all
237-031	1.25	Fuel rail, replacing
237-032	1.50	High pressure fuel pump, replacing
237-033	1.50	Fuel control valve (FCV), replacing
237-034	2.00	Pressure relief valve (PRV), replacing
237-035	0.50	Fuel rail pressure sensor, replacing
237-127	0.60	High pressure fuel pipes, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.80	Exhaust pipe, flexible tube, replacing
254-001	2.50	Diesel particulate filter, check and clean
254-022	0.90	ACM (After treatment control module), replacing, non-programmed
254-023	0.50	ACM (After treatment control module), replacing, pre-programmed
254-059	0.40	Inlet throttle, replacing
254-060	3.00	Diesel oxidation catalyst, replacing
254-103	1.50	AdBlue®/DEF tank, tank armature, replacing
254-107	0.90	AdBlue®/DEF pump unit, replacing
254-112	5.50	AdBlue®/DEF tank, replacing
254-114	1.00	AdBlue®/DEF, draining
254-118	0.80	SCR system, dosing test
254-119	0.30	Coolant valve, replacing
254-120	0.90	AdBlue®/DEF dosing injector, replacing
254-121	0.50	AdBlue®/DEF quality, checking
254-124	0.30	AdBlue®/DEF pump unit, filter, replacing
254-126	0.70	AdBlue®/DEF mixing tube, replacing
254-127	1.50	SCR muffler, replacing
254-130	0.80	AdBlue®/DEF pump unit, flushing
254-131	0.50	AdBlue®/DEF pump unit, inlet nipple, replacing
255-009	0.50	Waste gate, testing
255-071	0.80	Turbocharger, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
260-003	0.60	Cooling system, pressure control
261-008	1.25	Radiator, replacing
262-002	0.90	Coolant pump, replacing
262-098	0.60	Thermostat, replacing
263-081	0.60	Hydraulic pump P3, removal
263-082	1.25	Hydraulic pump P3, installation

Op.no.	time (h)	Notes
29		Miscellaneous
293-001	2.50	EGR cooler, replacing
293-005	0.80	EGR valve, replacing
293-009	0.70	EGR reed valve, replacing
293-010	0.30	EGR Venturi tube, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-077	0.60	CCM, replacing
31		BATTERY
311-002	0.30	Batteries, replacing
311-005	0.40	Battery condition, check
36		OTHER ELECTRICAL EQUIPMENT
366-103	1.00	HMICU, changing pre-programmed ECU
366-104	1.00	HMICU, changing non-programmed ECU
366-105	1.50	GPMECU1, changing pre-programmed ECU
366-106	1.50	GPMECU1, changing non-programmed ECU
366-107	0.70	GPMECU2, changing pre-programmed ECU
366-108	0.80	GPMECU2, changing non-programmed ECU
366-109	1.00	GPMECU3, changing non-programmed ECU
366-110	1.00	GPMECU3, changing pre-programmed ECU
39		MISCELLANEOUS
398-005	0.60	W-ECU, replacing, non-programmed
398-006	0.60	W-ECU, replacing, pre-programmed
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.90	Transmission oil pressure, checking
421-002	0.80	Transmission oil pressure, checking
421-048	0.90	Gear selector valve, replacing one solenoid
421-052	2.00	Seal for front output shaft, replacing
421-054	1.75	Seal for rear output shaft, replacing
421-091	1.50	Lock up valve, replacing
421-099	0.70	Transmission, calibration
421-100	0.30	Transmission, function check
421-100	0.30	Transmission, function check

Op.no.	time (h)	Notes
46		FRONT AXLE; REAR AXLE
461-037	1.00	Hub reduction, removing
461-038	1.25	Hub reduction, installing
461-043	4.50	Hub, replacing seal
463-002	3.00	Axle, removing
463-003	3.00	Axle, installing
463-037	5.50	Axle suspension, replacing bushes and seals
463-045	1.00	Hub reduction, removing
463-046	1.25	Hub reduction, installing
468-006	0.20	Differential lock, function check
468-051	1.25	Differential lock, adjusting
5		BRAKE
51		WHEEL BRAKE
510-003	0.40	Brake discs, measuring wear
516-005	3.00	Brake disc, replacing
516-050	2.50	Brake piston, replacing seals
517-005	3.00	Brake disc, replacing
517-050	2.50	Brake piston, replacing seals
52		HYDRAULIC BRAKE SYSTEM
520-002	0.20	Brake system, checking function, retardation
520-005	0.30	Brake system, check and adjusting pressure in circuit
520-036	0.80	Brake system charging, checking
520-037	0.60	Brake system, bleeding
520-111	0.20	Automatic brake, function check
527-001	0.40	Accumulator removed, checking charging pressure
527-003	0.50	Accumulators, checking in machine
527-012	0.60	Accumulator, removal
527-013	0.70	Accumulator, installation
55		PARKING BRAKE
550-006	4.00	Parking brake, replacing discs and seals
550-023	0.10	Parking brake, function checking
6		STEERING
60		GENERAL
600-001	0.50	Steering system, function check

Op.no.	time (h)	Notes
64		STEERING
645-011	0.90	Left steering cylinder, removal
645-012	1.75	Left steering cylinder, installation
645-013	0.80	Right steering cylinder, removal
645-014	1.75	Right steering cylinder, installation
645-028	0.40	Steering system, checking and adjusting working pressure
645-037	0.20	Steering accumulator removed, checking
645-113	0.40	Steering accumulator, removing
645-114	0.40	Steering accumulator, installing
647-091	0.70	Secondary steering pump, checking and adjusting working pressure
66		LEVER STEERING
660-006	1.50	Comfort drive control (CDC), angle sensor, changing
660-007	1.25	Comfort drive control (CDC), solenoid valve, changing
660-011	0.20	Lever steering (CDC), functional check
660-012	0.40	Comfort Drive Control, servo pressure, checking
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-036	12.00	Frame joint, replacing bearings
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-002	0.50	Front wheel, removal
771-003	0.60	Front wheel, installation
771-004	0.60	Rear wheel, removing
771-005	0.60	Rear wheel, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-002	1.00	Engine hood, installing
821-010	0.60	Actuator, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-054	0.30	Electric door opener, control unit, replacing
831-055	0.30	Electric door opener, locking motor, replacing
831-056	0.20	Electric door opener, rotor switch, replacing

Op.no.	time (h)	Notes
831-057	0.30	Electric door opener, opening support motor, replacing
834-013	0.30	Door lock cylinder, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	2.50	Windscreen, replacing
85		CAB INTERIOR/UPHOLSTERY
852-010	0.50	Operator's seat, securing
87		AIR CONDITIONING UNIT
870-012	1.00	Climate unit, removing
870-013	1.25	Climate unit, installing
873-004	2.50	Heater core, replacing
873-006	2.50	Fan motor, replacing
873-008	1.25	Heat control valve, replacing
873-011	0.70	Air mix door actuator, replacing
874-001	2.00	Refrigerant, filling incl vacuum pumping
874-002	1.00	Refrigerant, draining
874-009	0.50	Cooling unit, leak detection
874-018	4.50	Compressor, replacing
874-022	3.50	Drying filter, replacing
874-023	4.00	Condenser, replacing
874-024	4.50	Evaporator, replacing
874-025	4.00	Expansion valve, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-001	0.50	Hydraulic system, warming up
900-002	3.00	Hydraulic system, bleeding
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-018	0.20	Back-up valve, checking and adjusting
912-021	0.60	Shock valve, tilt function, checking
912-023	0.60	Shock valve lift function, checking
912-121	1.50	Lift, solenoid valve, changing
912-122	1.50	Lower, solenoid valve, changing
912-123	1.50	Tilt in, solenoid valve, changing
912-124	1.50	Tilt out, solenoid valve, changing
912-125	0.70	Lift/lower, angle sensor, changing
912-126	2.50	Tilt in/out, angle sensor, changing

Op.no.	time (h)	Notes
912-127	0.20	Tilt, functional check
912-226	0.20	Lift/lower function, checking
912-227	0.60	Pressure back-up valve, replacing
913-001	0.60	Hydraulic pump, checking and adjusting standby pressure and working pressure
913-050	1.25	Hydraulic pump P2, removal
913-051	2.00	Hydraulic pump P2, installation
913-059	1.50	Hydraulic pump P3, checking function
913-060	1.00	Hydraulic pump P1, removal
913-061	2.50	Hydraulic pump P1, installation
914-047	0.20	Servo accumulator, removal
914-048	0.10	Servo accumulator, installation
914-049	0.40	Accumulator removed, checking
914-055	0.20	Servo pressure, checking and adjusting
914-063	0.60	Servo pressure, checking at the spool in control valve
916-001	0.30	Boom suspension system, functional check
916-003	0.60	Boom suspension accumulator, reconditioning
916-006	1.00	Boom suspension system, pressure reduction, safety valve, checking and adjusting
916-008	1.00	Boom suspension system, right accumulator, removal
916-009	1.50	Boom suspension system, right accumulator, installation
916-010	1.00	Boom suspension system, left accumulator, removal
916-011	1.50	Boom suspension system, left accumulator, installation
916-017	0.50	3rd/4th hydraulic function, shock valve, checking
916-018	0.60	3rd/4th hydraulic function, solenoid valve, changing
916-020	0.30	3rd/4th hydraulic function, checking and adjusting pressure
916-070	0.50	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing
916-072	0.20	Accumulator, boom suspension system, discarding
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-036	0.10	Attachment locking, functional check
94		UNIT, LOAD HANDLING
945-005	4.50	Lift cylinder, repacking in machine
945-009	2.00	Tilt cylinder, repacking in machine
99		MISCELLANEOUS
992-002	6.50	Fire suppression system, actions after activation

Op.no.	time (h)	Notes
992-003	7.00	Fire suppression system, actions after manual activation
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-004	1.25	Maintenance service, every 50 hours	
173-007	1.50	Maintenance service, every 250 hours	
173-010	2.50	Maintenance service, every 500 hours	
173-012	4.00	Maintenance service, every 1000 hours	
173-014	5.00	Maintenance service, every 2000 hours	4001 - 9000
173-014	5.00	Maintenance service, every 2000 hours	9001 - 14000
173-018	13.00	Maintenance service, every 4000 hours	4001 - 9000
173-018	11.00	Maintenance service, every 4000 hours	9001 - 14000
173-019	1.75	Maintenance service, every 4500 hours	
173-022	1.25	Maintenance service, every 6000 hours	4001 - 9000
173-022	0.60	Maintenance service, every 6000 hours	9001 - 14000
173-024	0.60	Maintenance service, every 8000 hours	
173-042	0.80	Maintenance service, first 1000 hours	
173-506	3.00	Fire suppression system, checking	
176-001	0.80	Mechanical release of parking brake	
19		GENERAL	
191-021	0.20	Service position 1	
191-022	0.20	Service position 2	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-066	3.00	ECM (Engine control module), replacing pre-programmed	
200-067	1.50	ECM (Engine control module), replacing non-programmed	9001 - 14000
200-067	3.50	ECM (Engine control module), replacing non-programmed	4001 - 9000
200-200	1.00	Engine belts, replacing	
21		ENGINE	
210-002	14.00	Compression test	4001 - 9000
210-002	13.00	Compression test	9001 - 14000
210-070	6.00	Engine, removing	9001 - 14000
210-070	7.00	Engine, removing	4001 - 9000
210-072	7.50	Engine, installing	9001 - 14000
210-072	9.00	Engine, installing	4001 - 9000
210-092	0.80	Engine rotation speed sensor (camshaft), replacing	
210-093	0.50	Engine rotation speed sensor (crank shaft), replacing	

Op.no.	time (h)		Notes
212-071	0.70	Crankcase ventilation separator, replacing	4001 - 9000
214-012	6.00	Valves, adjusting	4001 - 9000
214-012	4.50	Valves, adjusting	9001 - 14000
214-092	9.50	Rocker arms, replacing	
214-100	3.00	EGR valve (internal), replacing	9001 - 14000
215-042	11.00	Camshaft, replacing	4001 - 9000
215-042	11.00	Camshaft, replacing	9001 - 14000
215-043	5.00	Camshaft setting, checking	9001 - 14000
215-043	5.00	Camshaft setting, checking	4001 - 9000
216-014	5.50	Crankshaft, replacing front oil seal	4001 - 9000
216-018	17.00	Crankshaft, replacing rear oil seal	
217-005	0.60	Oil level sensor, changing	
218-001	5.50	Rubber cushion, replacing	9001 - 14000
218-001	5.50	Rubber cushion, replacing	4001 - 9000
22		LUBRICATING SYSTEM	
221-022	0.50	Lubrication oil pressure, checking with pressure gauge	
223-006	3.50	Oil cooler, replacing	9001 - 14000
223-007	0.50	Oil cooler, leakage check	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
230-002	2.00	Air in fuel system, checking	
233-001	1.00	Fuel system, bleeding	
233-004	0.50	Feed pump, checking feed pressure	
236-002	0.50	Stall speed, checking	
237-002	14.00	Injectors, replacing all	4001 - 9000
237-002	6.50	Injectors, replacing all	9001 - 14000
237-017	8.50	Injector sleeves, replacing	4001 - 9000
237-017	8.50	Injector sleeves, replacing	9001 - 14000
25		INLET SYSTEM; EXHAUST SYSTEM	
252-017	0.90	Silencer, removing	9001 - 14000
252-018	1.25	Silencer, installing	9001 - 14000
252-021	0.60	Exhaust pipe, flexible tube, replacing	9001 - 14000
252-021	1.00	Exhaust pipe, flexible tube, replacing	4001 - 9000
254-001	1.75	Diesel particulate filter, check and clean	4001 - 9000
254-022	0.80	ACM (After treatment control module), replacing, non-programmed	
254-022	0.80	ACM (After treatment control module), replacing, non-programmed	4001 - 9000
254-034	1.75	Compressor, replacing	4001 - 9000
254-056	0.40	NOx sensor, replacing	4001 - 9000
254-059	0.70	Inlet throttle, replacing	4001 - 9000

Op.no.	time (h)		Notes
254-064	1.00	High pressure air system, pressure, checking	4001 - 9000
254-069	0.40	Exhaust aftertreatment system fuel flow, checking	4001 - 9000
254-102	0.50	AdBlue®/DEF nozzle, replacing	4001 - 9000
254-103	3.00	AdBlue®/DEF tank, tank armature, replacing	4001 - 9000
254-104	0.20	Aftertreatment fuel nozzle, replacing	4001 - 9000
254-107	1.25	AdBlue®/DEF pump unit, replacing	4001 - 9000
254-108	0.70	Aftertreatment fuel dosing unit, replacing	4001 - 9000
254-109	0.20	Aftertreatment fuel nozzle, cleaning	4001 - 9000
254-114	1.75	AdBlue®/DEF, draining	4001 - 9000
254-117	1.25	AdBlue®/DEF pump unit, components, replacing	4001 - 9000
254-118	0.50	SCR system, dosing test	4001 - 9000
254-121	0.50	AdBlue®/DEF quality, checking	4001 - 9000
254-128	2.50	Muffler with console, installing	4001 - 9000
254-129	1.50	Muffler with console, removing	4001 - 9000
255-003	1.25	Actuator, variable turbocharger, replacing	4001 - 9000
255-071	3.00	Turbocharger, replacing	9001 - 14000
255-071	1.75	Turbocharger, replacing	4001 - 9000
26		COOLING SYSTEM	
260-001	0.70	Carbon dioxide in coolant system, checking	
260-003	0.60	Cooling system, pressure control	
261-008	6.00	Radiator, replacing	
263-072	0.20	Fan control valve, seal replacement	
29		Miscellaneous	
293-001	3.00	EGR cooler, replacing	4001 - 9000
293-002	1.25	EGR cooler, pressure test	4001 - 9000
293-004	6.50	EGR cooler, cleaning	4001 - 9000
293-005	0.50	EGR valve, replacing	4001 - 9000
293-010	0.60	EGR Venturi tube, replacing	4001 - 9000
293-013	1.75	EGR venturi tube, cleaning	4001 - 9000
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-077	0.60	CCM, replacing	
31		BATTERY	
311-002	0.30	Batteries, replacing	
311-005	0.40	Battery condition, check	
33		STARTING SYSTEM	
331-018	0.80	Starter motor, replacing	

Op.no.	time (h)	Notes
36		OTHER ELECTRICAL EQUIPMENT
366-103	1.00	HMICU, changing pre-programmed ECU
366-104	1.00	HMICU, changing non-programmed ECU
366-105	1.50	GPMECU1, changing pre-programmed ECU
366-106	1.50	GPMECU1, changing non-programmed ECU
366-107	0.70	GPMECU2, changing pre-programmed ECU
366-108	0.80	GPMECU2, changing non-programmed ECU
366-109	1.00	GPMECU3, changing non-programmed ECU
366-110	1.00	GPMECU3, changing pre-programmed ECU
39		MISCELLANEOUS
398-005	0.60	W-ECU, replacing, non-programmed
398-006	0.60	W-ECU, replacing, pre-programmed
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.80	Transmission oil pressure, checking
421-052	2.00	Seal for front output shaft, replacing
421-054	1.75	Seal for rear output shaft, replacing
421-091	0.60	Lock up valve, replacing
421-099	0.70	Transmission, calibration
421-100	0.30	Transmission, function check
46		FRONT AXLE; REAR AXLE
461-037	1.00	Hub reduction, removing
461-038	1.50	Hub reduction, installing
461-043	5.50	Hub, replacing seal
463-002	2.50	Axle, removing
463-003	4.00	Axle, installing
463-037	6.00	Axle suspension, replacing bushes and seals
463-043	6.00	Hub, replacing seal
463-045	1.25	Hub reduction, removing
463-046	1.50	Hub reduction, installing
468-006	0.20	Differential lock, function check
468-051	1.25	Differential lock, adjusting
5		BRAKE
51		WHEEL BRAKE
510-003	0.40	Brake discs, measuring wear
516-005	3.00	Brake disc, replacing

Op.no.	time (h)	Notes
516-050	2.50	Brake piston, replacing seals
517-005	3.00	Brake disc, replacing
517-050	3.00	Brake piston, replacing seals
52		HYDRAULIC BRAKE SYSTEM
520-002	0.20	Brake system, checking function, retardation
520-005	0.30	Brake system, check and adjusting pressure in circuit
520-036	0.80	Brake system charging, checking
520-037	0.60	Brake system, bleeding
520-111	0.20	Automatic brake, function check
527-001	0.40	Accumulator removed, checking charging pressure
527-003	0.50	Accumulators, checking in machine
527-012	0.60	Accumulator, removal
527-013	0.80	Accumulator, installation
55		PARKING BRAKE
550-006	4.00	Parking brake, replacing discs and seals
550-023	0.10	Parking brake, function checking
6		STEERING
60		GENERAL
600-001	0.50	Steering system, function check
64		STEERING
645-011	1.50	Left steering cylinder, removal
645-012	2.50	Left steering cylinder, installation
645-013	1.00	Right steering cylinder, removal
645-014	2.50	Right steering cylinder, installation
645-028	0.40	Steering system, checking and adjusting working pressure
645-037	0.20	Steering accumulator removed, checking
645-113	0.50	Steering accumulator, removing
645-114	0.50	Steering accumulator, installing
647-091	0.70	Secondary steering pump, checking and adjusting working pressure
66		LEVER STEERING
660-006	1.50	Comfort drive control (CDC), angle sensor, changing
660-007	1.50	Comfort drive control (CDC), solenoid valve, changing
660-011	0.20	Lever steering (CDC), functional check
660-012	0.40	Comfort Drive Control, servo pressure, checking

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	1.25	Counterweight, removing
716-002	1.25	Counterweight, fitting
74		FRAME LINK
741-036	11.00	Frame joint, replacing bearings
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-002	0.70	Front wheel, removal
771-003	0.60	Front wheel, installation
771-004	0.70	Rear wheel, removing
771-005	0.60	Rear wheel, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-065	1.00	Cab, position 1
810-066	1.75	Cab, position 2
810-067	0.80	Cab, position 1, restoring
810-068	2.50	Cab, position 2, restoring
810-069	1.75	Cab, tilt cylinder, replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-002	1.00	Engine hood, installing
821-010	0.60	Actuator, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-054	0.30	Electric door opener, control unit, replacing
831-055	0.30	Electric door opener, locking motor, replacing
831-056	0.20	Electric door opener, rotor switch, replacing
831-057	0.30	Electric door opener, opening support motor, replacing
834-013	0.30	Door lock cylinder, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	2.50	Windscreen, replacing
85		CAB INTERIOR/UPHOLSTERY
852-010	0.50	Operator's seat, securing
87		AIR CONDITIONING UNIT
870-012	1.00	Climate unit, removing

Op.no.	time (h)	Notes
870-013	1.25	Climate unit, installing
873-004	2.50	Heater core, replacing
873-006	2.50	Fan motor, replacing
873-008	1.25	Heat control valve, replacing
873-011	0.70	Air mix door actuator, replacing
874-001	2.00	Refrigerant, filling incl vacuum pumping
874-002	1.00	Refrigerant, draining
874-009	0.50	Cooling unit, leak detection
874-018	4.50	Compressor, replacing
874-022	3.50	Drying filter, replacing
874-023	4.00	Condenser, replacing
874-024	4.50	Evaporator, replacing
874-025	4.00	Expansion valve, replacing

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

90 GENERAL

900-001	0.50	Hydraulic system, warming up
900-002	3.00	Hydraulic system, bleeding

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-018	0.20	Back-up valve, checking and adjusting
912-021	0.60	Shock valve, tilt function, checking
912-023	0.60	Shock valve lift function, checking
912-121	1.50	Lift, solenoid valve, changing
912-122	1.50	Lower, solenoid valve, changing
912-123	1.50	Tilt in, solenoid valve, changing
912-124	1.50	Tilt out, solenoid valve, changing
912-125	0.70	Lift/lower, angle sensor, changing
912-126	2.50	Tilt in/out, angle sensor, changing
912-127	0.20	Tilt, functional check
912-226	0.20	Lift/lower function, checking
912-227	0.60	Pressure back-up valve, replacing
913-001	1.00	Hydraulic pump, checking and adjusting standby pressure and working pressure
913-006	0.90	LS (load sense) pressure, checking
913-050	1.50	Hydraulic pump P2, removal
913-051	4.00	Hydraulic pump P2, installation
913-059	1.50	Hydraulic pump P3, checking function
913-060	1.25	Hydraulic pump P1, removal
913-061	2.50	Hydraulic pump P1, installation

Op.no.	time (h)	Notes
913-062	0.90	Hydraulic pump P3, removal
913-063	3.50	Hydraulic pump P3, installation
914-047	0.20	Servo accumulator, removal
914-048	0.10	Servo accumulator, installation
914-049	0.40	Accumulator removed, checking
914-049	0.40	Accumulator removed, checking
914-055	0.40	Servo pressure, checking and adjusting
914-063	0.60	Servo pressure, checking at the spool in control valve
916-001	0.30	Boom suspension system, functional check
916-003	0.60	Boom suspension accumulator, reconditioning
916-006	1.00	Boom suspension system, pressure reduction, safety valve, checking and adjusting
916-008	1.00	Boom suspension system, right accumulator, removal
916-009	1.50	Boom suspension system, right accumulator, installation
916-010	1.00	Boom suspension system, left accumulator, removal
916-011	1.50	Boom suspension system, left accumulator, installation
916-017	0.50	3rd/4th hydraulic function, shock valve, checking
916-018	0.60	3rd/4th hydraulic function, solenoid valve, changing
916-020	0.30	3rd/4th hydraulic function, checking and adjusting pressure
916-070	0.50	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing
916-072	0.20	Accumulator, boom suspension system, discarding
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-036	0.10	Attachment locking, functional check
94		UNIT, LOAD HANDLING
945-005	4.50	Lift cylinder, repacking in machine
945-009	5.50	Tilt cylinder, repacking in machine
99		MISCELLANEOUS
992-002	6.50	Fire suppression system, actions after activation
992-003	7.00	Fire suppression system, actions after manual activation
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-004	1.25	Maintenance service, every 50 hours	
173-007	1.50	Maintenance service, every 250 hours	
173-010	2.50	Maintenance service, every 500 hours	
173-012	4.00	Maintenance service, every 1000 hours	
173-014	5.00	Maintenance service, every 2000 hours	3001 - 8000
173-014	5.00	Maintenance service, every 2000 hours	8001 - 13000
173-018	13.00	Maintenance service, every 4000 hours	3001 - 8000
173-018	11.00	Maintenance service, every 4000 hours	8001 - 13000
173-019	1.75	Maintenance service, every 4500 hours	
173-022	1.25	Maintenance service, every 6000 hours	3001 - 8000
173-022	0.60	Maintenance service, every 6000 hours	8001 - 13000
173-024	0.60	Maintenance service, every 8000 hours	
173-042	0.80	Maintenance service, first 1000 hours	
173-506	3.00	Fire suppression system, checking	
176-001	0.80	Mechanical release of parking brake	
19		GENERAL	
191-021	0.20	Service position 1	
191-022	0.20	Service position 2	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-066	3.00	ECM (Engine control module), replacing pre-programmed	
200-067	1.50	ECM (Engine control module), replacing non-programmed	8001 - 13000
200-067	3.50	ECM (Engine control module), replacing non-programmed	3001 - 8000
200-200	1.00	Engine belts, replacing	
21		ENGINE	
210-002	14.00	Compression test	3001 - 8000
210-002	13.00	Compression test	8001 - 13000
210-070	6.00	Engine, removing	8001 - 13000
210-070	7.00	Engine, removing	3001 - 8000
210-072	7.50	Engine, installing	8001 - 13000
210-072	9.00	Engine, installing	3001 - 8000
210-092	0.80	Engine rotation speed sensor (camshaft), replacing	
210-093	0.50	Engine rotation speed sensor (crank shaft), replacing	

Op.no.	time (h)		Notes
212-071	0.70	Crankcase ventilation separator, replacing	3001 - 8000
214-012	6.00	Valves, adjusting	3001 - 8000
214-012	4.50	Valves, adjusting	8001 - 13000
214-092	9.50	Rocker arms, replacing	
214-100	3.00	EGR valve (internal), replacing	8001 - 13000
215-042	11.00	Camshaft, replacing	3001 - 8000
215-042	11.00	Camshaft, replacing	8001 - 13000
215-043	5.00	Camshaft setting, checking	8001 - 13000
215-043	5.00	Camshaft setting, checking	3001 - 8000
216-014	5.50	Crankshaft, replacing front oil seal	3001 - 8000
216-018	17.00	Crankshaft, replacing rear oil seal	
217-005	0.60	Oil level sensor, changing	
218-001	5.50	Rubber cushion, replacing	8001 - 13000
218-001	5.50	Rubber cushion, replacing	3001 - 8000
22		LUBRICATING SYSTEM	
221-022	0.50	Lubrication oil pressure, checking with pressure gauge	
223-006	3.50	Oil cooler, replacing	8001 - 13000
223-007	0.50	Oil cooler, leakage check	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
230-002	2.00	Air in fuel system, checking	
233-001	1.00	Fuel system, bleeding	
233-004	0.50	Feed pump, checking feed pressure	
236-002	0.50	Stall speed, checking	
237-002	14.00	Injectors, replacing all	3001 - 8000
237-002	6.50	Injectors, replacing all	8001 - 13000
237-017	8.50	Injector sleeves, replacing	3001 - 8000
237-017	8.50	Injector sleeves, replacing	8001 - 13000
25		INLET SYSTEM; EXHAUST SYSTEM	
252-017	0.90	Silencer, removing	8001 - 13000
252-018	1.25	Silencer, installing	8001 - 13000
252-021	0.60	Exhaust pipe, flexible tube, replacing	8001 - 13000
252-021	1.00	Exhaust pipe, flexible tube, replacing	3001 - 8000
254-001	1.75	Diesel particulate filter, check and clean	3001 - 8000
254-022	0.80	ACM (After treatment control module), replacing, non-programmed	
254-022	0.80	ACM (After treatment control module), replacing, non-programmed	3001 - 8000
254-034	1.75	Compressor, replacing	3001 - 8000
254-056	0.40	NOx sensor, replacing	3001 - 8000
254-059	0.70	Inlet throttle, replacing	3001 - 8000

Op.no.	time (h)		Notes
254-064	1.00	High pressure air system, pressure, checking	3001 - 8000
254-069	0.40	Exhaust aftertreatment system fuel flow, checking	3001 - 8000
254-102	0.50	AdBlue®/DEF nozzle, replacing	3001 - 8000
254-103	3.00	AdBlue®/DEF tank, tank armature, replacing	3001 - 8000
254-104	0.20	Aftertreatment fuel nozzle, replacing	3001 - 8000
254-107	1.25	AdBlue®/DEF pump unit, replacing	3001 - 8000
254-108	0.70	Aftertreatment fuel dosing unit, replacing	3001 - 8000
254-109	0.20	Aftertreatment fuel nozzle, cleaning	3001 - 8000
254-114	1.75	AdBlue®/DEF, draining	3001 - 8000
254-117	1.25	AdBlue®/DEF pump unit, components, replacing	3001 - 8000
254-118	0.50	SCR system, dosing test	3001 - 8000
254-121	0.50	AdBlue®/DEF quality, checking	3001 - 8000
254-128	2.50	Muffler with console, installing	3001 - 8000
254-129	1.50	Muffler with console, removing	3001 - 8000
255-003	1.25	Actuator, variable turbocharger, replacing	3001 - 8000
255-071	3.00	Turbocharger, replacing	8001 - 13000
255-071	1.75	Turbocharger, replacing	3001 - 8000
26		COOLING SYSTEM	
260-001	0.70	Carbon dioxide in coolant system, checking	
260-003	0.60	Cooling system, pressure control	
261-008	6.00	Radiator, replacing	
263-072	0.20	Fan control valve, seal replacement	
29		Miscellaneous	
293-001	3.00	EGR cooler, replacing	3001 - 8000
293-002	1.25	EGR cooler, pressure test	3001 - 8000
293-004	6.50	EGR cooler, cleaning	3001 - 8000
293-005	0.50	EGR valve, replacing	3001 - 8000
293-010	0.60	EGR Venturi tube, replacing	3001 - 8000
293-013	1.75	EGR venturi tube, cleaning	3001 - 8000
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-077	0.60	CCM, replacing	
31		BATTERY	
311-002	0.30	Batteries, replacing	
311-005	0.40	Battery condition, check	
33		STARTING SYSTEM	
331-018	0.80	Starter motor, replacing	

Op.no.	time (h)	Notes
36		OTHER ELECTRICAL EQUIPMENT
366-103	1.00	HMICU, changing pre-programmed ECU
366-104	1.00	HMICU, changing non-programmed ECU
366-105	1.50	GPMECU1, changing pre-programmed ECU
366-106	1.50	GPMECU1, changing non-programmed ECU
366-107	0.70	GPMECU2, changing pre-programmed ECU
366-108	0.80	GPMECU2, changing non-programmed ECU
366-109	1.00	GPMECU3, changing non-programmed ECU
366-110	1.00	GPMECU3, changing pre-programmed ECU
39		MISCELLANEOUS
398-005	0.60	W-ECU, replacing, non-programmed
398-006	0.60	W-ECU, replacing, pre-programmed
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.80	Transmission oil pressure, checking
421-052	2.00	Seal for front output shaft, replacing
421-054	1.75	Seal for rear output shaft, replacing
421-091	0.60	Lock up valve, replacing
421-099	0.70	Transmission, calibration
421-100	0.30	Transmission, function check
46		FRONT AXLE; REAR AXLE
461-037	1.00	Hub reduction, removing
461-038	1.50	Hub reduction, installing
461-043	5.50	Hub, replacing seal
463-002	2.50	Axle, removing
463-003	4.00	Axle, installing
463-037	6.00	Axle suspension, replacing bushes and seals
463-043	6.00	Hub, replacing seal
463-045	1.25	Hub reduction, removing
463-046	1.50	Hub reduction, installing
468-006	0.20	Differential lock, function check
468-051	1.25	Differential lock, adjusting
5		BRAKE
51		WHEEL BRAKE
510-003	0.40	Brake discs, measuring wear
516-005	3.00	Brake disc, replacing

Op.no.	time (h)	Notes
516-050	2.50	Brake piston, replacing seals
517-005	3.00	Brake disc, replacing
517-050	3.00	Brake piston, replacing seals
52		HYDRAULIC BRAKE SYSTEM
520-002	0.20	Brake system, checking function, retardation
520-005	0.30	Brake system, check and adjusting pressure in circuit
520-036	0.80	Brake system charging, checking
520-037	0.60	Brake system, bleeding
520-111	0.20	Automatic brake, function check
527-001	0.40	Accumulator removed, checking charging pressure
527-003	0.60	Accumulators, checking in machine
527-012	0.60	Accumulator, removal
527-013	0.70	Accumulator, installation
55		PARKING BRAKE
550-006	4.00	Parking brake, replacing discs and seals
550-023	0.10	Parking brake, function checking
6		STEERING
60		GENERAL
600-001	0.50	Steering system, function check
64		STEERING
645-011	1.50	Left steering cylinder, removal
645-012	2.50	Left steering cylinder, installation
645-013	1.00	Right steering cylinder, removal
645-014	2.50	Right steering cylinder, installation
645-028	0.40	Steering system, checking and adjusting working pressure
645-037	0.20	Steering accumulator removed, checking
645-113	0.50	Steering accumulator, removing
645-114	0.50	Steering accumulator, installing
647-091	0.70	Secondary steering pump, checking and adjusting working pressure
66		LEVER STEERING
660-006	1.50	Comfort drive control (CDC), angle sensor, changing
660-007	1.50	Comfort drive control (CDC), solenoid valve, changing
660-011	0.20	Lever steering (CDC), functional check
660-012	0.40	Comfort Drive Control, servo pressure, checking

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	1.25	Counterweight, removing
716-002	1.25	Counterweight, fitting
74		FRAME LINK
741-036	11.00	Frame joint, replacing bearings
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-002	0.70	Front wheel, removal
771-003	0.60	Front wheel, installation
771-004	0.70	Rear wheel, removing
771-005	0.60	Rear wheel, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-065	1.00	Cab, position 1
810-066	1.75	Cab, position 2
810-067	0.80	Cab, position 1, restoring
810-068	2.50	Cab, position 2, restoring
810-069	1.75	Cab, tilt cylinder, replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-002	1.00	Engine hood, installing
821-010	0.60	Actuator, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-054	0.30	Electric door opener, control unit, replacing
831-055	0.30	Electric door opener, locking motor, replacing
831-056	0.20	Electric door opener, rotor switch, replacing
831-057	0.30	Electric door opener, opening support motor, replacing
834-013	0.30	Door lock cylinder, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	2.50	Windscreen, replacing
85		CAB INTERIOR/UPHOLSTERY
852-010	0.50	Operator's seat, securing
87		AIR CONDITIONING UNIT
870-012	1.00	Climate unit, removing

Op.no.	time (h)	Notes
870-013	1.25	Climate unit, installing
873-004	2.50	Heater core, replacing
873-006	2.50	Fan motor, replacing
873-008	1.25	Heat control valve, replacing
873-011	0.70	Air mix door actuator, replacing
874-001	2.00	Refrigerant, filling incl vacuum pumping
874-002	1.00	Refrigerant, draining
874-009	0.50	Cooling unit, leak detection
874-018	4.50	Compressor, replacing
874-022	3.50	Drying filter, replacing
874-023	4.00	Condenser, replacing
874-024	4.50	Evaporator, replacing
874-025	4.00	Expansion valve, replacing

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

90 GENERAL

900-001	0.50	Hydraulic system, warming up
900-002	3.00	Hydraulic system, bleeding

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-018	0.20	Back-up valve, checking and adjusting
912-021	0.60	Shock valve, tilt function, checking
912-023	0.60	Shock valve lift function, checking
912-121	1.50	Lift, solenoid valve, changing
912-122	1.50	Lower, solenoid valve, changing
912-123	1.50	Tilt in, solenoid valve, changing
912-124	1.50	Tilt out, solenoid valve, changing
912-125	0.70	Lift/lower, angle sensor, changing
912-126	2.50	Tilt in/out, angle sensor, changing
912-127	0.20	Tilt, functional check
912-226	0.20	Lift/lower function, checking
912-227	0.60	Pressure back-up valve, replacing
913-001	1.00	Hydraulic pump, checking and adjusting standby pressure and working pressure
913-006	0.90	LS (load sense) pressure, checking
913-050	1.50	Hydraulic pump P2, removal
913-051	4.00	Hydraulic pump P2, installation
913-059	1.50	Hydraulic pump P3, checking function
913-060	1.25	Hydraulic pump P1, removal
913-061	2.50	Hydraulic pump P1, installation

Op.no.	time (h)	Notes
913-062	0.90	Hydraulic pump P3, removal
913-063	3.50	Hydraulic pump P3, installation
914-047	0.20	Servo accumulator, removal
914-048	0.10	Servo accumulator, installation
914-049	0.40	Accumulator removed, checking
914-049	0.40	Accumulator removed, checking
914-055	0.40	Servo pressure, checking and adjusting
914-063	0.60	Servo pressure, checking at the spool in control valve
916-001	0.30	Boom suspension system, functional check
916-003	0.60	Boom suspension accumulator, reconditioning
916-006	1.00	Boom suspension system, pressure reduction, safety valve, checking and adjusting
916-008	1.00	Boom suspension system, right accumulator, removal
916-009	1.50	Boom suspension system, right accumulator, installation
916-010	1.00	Boom suspension system, left accumulator, removal
916-011	1.50	Boom suspension system, left accumulator, installation
916-017	0.50	3rd/4th hydraulic function, shock valve, checking
916-018	0.60	3rd/4th hydraulic function, solenoid valve, changing
916-020	0.30	3rd/4th hydraulic function, checking and adjusting pressure
916-070	0.50	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing
916-072	0.20	Accumulator, boom suspension system, discarding
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-036	0.10	Attachment locking, functional check
94		UNIT, LOAD HANDLING
945-005	4.50	Lift cylinder, repacking in machine
945-009	5.50	Tilt cylinder, repacking in machine
99		MISCELLANEOUS
992-002	6.50	Fire suppression system, actions after activation
992-003	7.00	Fire suppression system, actions after manual activation
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-004	1.25	Maintenance service, every 50 hours	
173-007	1.25	Maintenance service, every 250 hours	
173-010	2.50	Maintenance service, every 500 hours	
173-012	4.00	Maintenance service, every 1000 hours	
173-014	4.50	Maintenance service, every 2000 hours	1001 - 2000
173-014	4.50	Maintenance service, every 2000 hours	2001 - 10000
173-018	13.00	Maintenance service, every 4000 hours	1001 - 2000
173-018	11.00	Maintenance service, every 4000 hours	2001 - 10000
173-019	1.75	Maintenance service, every 4500 hours	
173-022	1.25	Maintenance service, every 6000 hours	1001 - 2000
173-022	0.60	Maintenance service, every 6000 hours	2001 - 10000
173-024	1.25	Maintenance service, every 8000 hours	
173-343	0.10	Lubrication, every 2000 hours	
173-506	3.00	Fire suppression system, checking	
176-001	0.80	Mechanical release of parking brake	
19		GENERAL	
191-021	0.20	Service position 1	
191-022	0.20	Service position 2	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-066	3.00	ECM (Engine control module), replacing pre-programmed	
200-067	1.50	ECM (Engine control module), replacing non-programmed	2001 - 10000
200-067	3.50	ECM (Engine control module), replacing non-programmed	1001 - 2000
200-200	1.00	Engine belts, replacing	
21		ENGINE	
210-002	14.00	Compression test	1001 - 2000
210-002	13.00	Compression test	2001 - 10000
210-070	6.00	Engine, removing	2001 - 10000
210-070	7.00	Engine, removing	1001 - 2000
210-072	9.00	Engine, installing	1001 - 2000
210-072	7.50	Engine, installing	2001 - 10000
210-092	0.80	Engine rotation speed sensor (camshaft), replacing	
210-093	0.50	Engine rotation speed sensor (crank shaft), replacing	

Op.no.	time (h)		Notes
212-071	0.70	Crankcase ventilation separator, replacing	1001 - 2000
214-012	6.00	Valves, adjusting	1001 - 2000
214-012	4.50	Valves, adjusting	2001 - 10000
214-092	9.50	Rocker arms, replacing	
214-100	3.00	EGR valve (internal), replacing	2001 - 10000
215-042	11.00	Camshaft, replacing	1001 - 2000
215-042	11.00	Camshaft, replacing	2001 - 10000
215-043	5.00	Camshaft setting, checking	2001 - 10000
215-043	5.00	Camshaft setting, checking	1001 - 2000
216-014	5.50	Crankshaft, replacing front oil seal	1001 - 2000
216-018	17.00	Crankshaft, replacing rear oil seal	
217-005	0.60	Oil level sensor, changing	
218-001	5.50	Rubber cushion, replacing	1001 - 2000
218-001	5.50	Rubber cushion, replacing	2001 - 10000
22		LUBRICATING SYSTEM	
221-022	0.50	Lubrication oil pressure, checking with pressure gauge	
223-006	3.50	Oil cooler, replacing	2001 - 10000
223-007	0.50	Oil cooler, leakage check	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
230-002	2.00	Air in fuel system, checking	
233-001	1.00	Fuel system, bleeding	
233-004	0.50	Feed pump, checking feed pressure	
236-002	0.50	Stall speed, checking	
237-002	14.00	Injectors, replacing all	1001 - 2000
237-002	6.50	Injectors, replacing all	2001 - 10000
237-017	8.50	Injector sleeves, replacing	1001 - 2000
237-017	8.50	Injector sleeves, replacing	2001 - 10000
25		INLET SYSTEM; EXHAUST SYSTEM	
252-017	0.90	Silencer, removing	2001 - 10000
252-018	1.25	Silencer, installing	2001 - 10000
252-021	0.60	Exhaust pipe, flexible tube, replacing	2001 - 10000
252-021	1.00	Exhaust pipe, flexible tube, replacing	1001 - 2000
254-001	1.75	Diesel particulate filter, check and clean	1001 - 2000
254-022	0.80	ACM (After treatment control module), replacing, non-programmed	1001 - 2000
254-022	0.80	ACM (After treatment control module), replacing, non-programmed	
254-034	1.75	Compressor, replacing	1001 - 2000
254-056	0.40	NOx sensor, replacing	1001 - 2000
254-059	0.70	Inlet throttle, replacing	1001 - 2000

Op.no.	time (h)		Notes
254-064	1.00	High pressure air system, pressure, checking	1001 - 2000
254-069	0.40	Exhaust aftertreatment system fuel flow, checking	1001 - 2000
254-102	0.50	AdBlue®/DEF nozzle, replacing	1001 - 2000
254-103	3.00	AdBlue®/DEF tank, tank armature, replacing	1001 - 2000
254-104	0.20	Aftertreatment fuel nozzle, replacing	1001 - 2000
254-107	1.25	AdBlue®/DEF pump unit, replacing	1001 - 2000
254-108	0.70	Aftertreatment fuel dosing unit, replacing	1001 - 2000
254-109	0.20	Aftertreatment fuel nozzle, cleaning	1001 - 2000
254-114	1.75	AdBlue®/DEF, draining	1001 - 2000
254-117	1.25	AdBlue®/DEF pump unit, components, replacing	1001 - 2000
254-118	0.50	SCR system, dosing test	1001 - 2000
254-121	0.50	AdBlue®/DEF quality, checking	1001 - 2000
254-128	2.50	Muffler with console, installing	1001 - 2000
254-129	1.50	Muffler with console, removing	1001 - 2000
255-003	1.25	Actuator, variable turbocharger, replacing	1001 - 2000
255-071	3.00	Turbocharger, replacing	2001 - 10000
255-071	1.75	Turbocharger, replacing	1001 - 2000

26**COOLING SYSTEM**

260-001	0.70	Carbon dioxide in coolant system, checking	
260-003	0.60	Cooling system, pressure control	
261-008	6.00	Radiator, replacing	
263-072	0.20	Fan control valve, seal replacement	

29**Miscellaneous**

293-001	3.00	EGR cooler, replacing	1001 - 2000
293-002	1.25	EGR cooler, pressure test	1001 - 2000
293-004	6.50	EGR cooler, cleaning	1001 - 2000
293-005	0.50	EGR valve, replacing	1001 - 2000
293-010	0.60	EGR Venturi tube, replacing	1001 - 2000
293-013	1.75	EGR venturi tube, cleaning	1001 - 2000

3**ELEC. SYSTEM; WARNING SYSTEM;
INFORMATION SYSTEM; INSTRUMENTS****30****GENERAL**

300-077	0.60	CCM, replacing	
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31**BATTERY**

311-002	0.30	Batteries, replacing	
311-005	0.40	Battery condition, check	

33**STARTING SYSTEM**

331-018	0.80	Starter motor, replacing	
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Op.no.	time (h)	Notes
36		OTHER ELECTRICAL EQUIPMENT
366-103	1.00	HMICU, changing pre-programmed ECU
366-104	1.00	HMICU, changing non-programmed ECU
366-105	1.50	GPMECU1, changing pre-programmed ECU
366-106	1.50	GPMECU1, changing non-programmed ECU
366-107	0.70	GPMECU2, changing pre-programmed ECU
366-108	0.80	GPMECU2, changing non-programmed ECU
366-109	1.00	GPMECU3, changing non-programmed ECU
366-110	1.00	GPMECU3, changing pre-programmed ECU
39		MISCELLANEOUS
398-005	0.60	W-ECU, replacing, non-programmed
398-006	0.60	W-ECU, replacing, pre-programmed
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.80	Transmission oil pressure, checking
421-052	2.00	Seal for front output shaft, replacing
421-054	1.75	Seal for rear output shaft, replacing
421-091	0.60	Lock up valve, replacing
421-099	0.70	Transmission, calibration
421-100	0.30	Transmission, function check
46		FRONT AXLE; REAR AXLE
461-037	1.00	Hub reduction, removing
461-038	1.50	Hub reduction, installing
461-043	5.50	Hub, replacing seal
463-002	2.50	Axle, removing
463-003	4.00	Axle, installing
463-037	6.00	Axle suspension, replacing bushes and seals
463-043	6.00	Hub, replacing seal
463-045	1.25	Hub reduction, removing
463-046	1.50	Hub reduction, installing
468-006	0.20	Differential lock, function check
468-051	1.25	Differential lock, adjusting
5		BRAKE
51		WHEEL BRAKE
516-005	3.00	Brake disc, replacing
516-050	2.50	Brake piston, replacing seals

Op.no.	time (h)	Notes
517-005	3.00	Brake disc, replacing
517-050	3.00	Brake piston, replacing seals
52		HYDRAULIC BRAKE SYSTEM
520-002	0.20	Brake system, checking function, retardation
520-005	0.30	Brake system, check and adjusting pressure in circuit
520-036	0.80	Brake system charging, checking
520-037	0.60	Brake system, bleeding
520-111	0.20	Automatic brake, function check
527-001	0.40	Accumulator removed, checking charging pressure
527-003	0.60	Accumulators, checking in machine
527-012	0.60	Accumulator, removal
527-013	0.70	Accumulator, installation
55		PARKING BRAKE
550-006	4.00	Parking brake, replacing discs and seals
550-023	0.10	Parking brake, function checking
6		STEERING
60		GENERAL
600-001	0.50	Steering system, function check
64		STEERING
645-011	1.50	Left steering cylinder, removal
645-012	2.50	Left steering cylinder, installation
645-013	1.00	Right steering cylinder, removal
645-014	2.50	Right steering cylinder, installation
645-028	0.40	Steering system, checking and adjusting working pressure
645-037	0.20	Steering accumulator removed, checking
645-113	0.50	Steering accumulator, removing
645-114	0.50	Steering accumulator, installing
647-091	0.70	Secondary steering pump, checking and adjusting working pressure
66		LEVER STEERING
660-006	1.50	Comfort drive control (CDC), angle sensor, changing
660-007	1.50	Comfort drive control (CDC), solenoid valve, changing
660-011	0.20	Lever steering (CDC), functional check
660-012	0.40	Comfort Drive Control, servo pressure, checking

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	1.25	Counterweight, removing
716-002	1.25	Counterweight, fitting
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-002	0.70	Front wheel, removal
771-003	0.60	Front wheel, installation
771-004	0.70	Rear wheel, removing
771-005	0.60	Rear wheel, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-065	1.00	Cab, position 1
810-066	1.75	Cab, position 2
810-067	0.80	Cab, position 1, restoring
810-068	2.50	Cab, position 2, restoring
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-002	1.00	Engine hood, installing
821-010	0.60	Actuator, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-054	0.30	Electric door opener, control unit, replacing
831-055	0.30	Electric door opener, locking motor, replacing
831-056	0.20	Electric door opener, rotor switch, replacing
831-057	0.30	Electric door opener, opening support motor, replacing
834-013	0.30	Door lock cylinder, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	2.50	Windscreen, replacing
85		CAB INTERIOR/UPHOLSTERY
852-010	0.50	Operator's seat, securing
87		AIR CONDITIONING UNIT
870-012	1.00	Climate unit, removing
870-013	1.25	Climate unit, installing
873-004	2.50	Heater core, replacing
873-006	2.50	Fan motor, replacing
873-008	1.25	Heat control valve, replacing

Op.no.	time (h)	Notes
873-011	0.70	Air mix door actuator, replacing
874-001	2.00	Refrigerant, filling incl vacuum pumping
874-002	1.00	Refrigerant, draining
874-018	4.50	Compressor, replacing
874-022	3.50	Drying filter, replacing
874-023	4.00	Condenser, replacing
874-024	4.50	Evaporator, replacing
874-025	4.00	Expansion valve, replacing

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

90 GENERAL

900-001	0.70	Hydraulic system, warming up
900-002	3.00	Hydraulic system, bleeding

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-021	0.60	Shock valve, tilt function, checking
912-023	0.60	Shock valve lift function, checking
912-127	0.30	Tilt, functional check
912-159	0.70	Shock valve removed (Control valve 2), checking
912-164	0.20	Shock valves grapple tilt (Control valve 2), checking
912-226	0.20	Lift/lower function, checking
912-278	0.20	Log mover, function checking
912-279	0.30	Grapple, function checking
912-280	0.20	Rotator, function checking
912-281	0.20	Rotator, checking and adjusting
912-282	0.70	Rotator pin, replacing
913-001	1.00	Hydraulic pump, checking and adjusting standby pressure and working pressure
913-006	0.90	LS (load sense) pressure, checking
913-050	1.50	Hydraulic pump P2, removal
913-051	4.00	Hydraulic pump P2, installation
913-059	1.50	Hydraulic pump P3, checking function
913-060	1.25	Hydraulic pump P1, removal
913-061	2.50	Hydraulic pump P1, installation
913-062	0.90	Hydraulic pump P3, removal
913-063	3.50	Hydraulic pump P3, installation
914-047	0.20	Servo accumulator, removal
914-048	0.10	Servo accumulator, installation
914-049	0.40	Accumulator removed, checking

Op.no.	time (h)	Notes
914-055	0.40	Servo pressure, checking and adjusting
914-063	0.60	Servo pressure, checking at the spool in control valve
914-066	0.50	Servo pressure, checking at the spool in control valve 2
916-001	0.30	Boom suspension system, functional check
916-002	1.25	Boom suspension accumulator, check and adjusting
916-006	1.00	Boom suspension system, pressure reduction, safety valve, checking and adjusting
916-070	0.20	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing
916-072	0.20	Accumulator, boom suspension system, discarding
92		MECHANICAL EQUIPMENT/ATTACHMENT
926-035	1.25	Grapple complete, removal at cross member
926-036	2.00	Grapple complete, installing at cross member
99		MISCELLANEOUS
992-002	6.50	Fire suppression system, actions after activation
992-003	7.00	Fire suppression system, actions after manual activation
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
172-002	3.00	Warranty inspection 100 hours
172-004	6.00	Warranty inspection 1000 hours
173-002	0.70	Maintenance service, daily
173-006	1.50	Maintenance service, every 100 hours
173-010	1.50	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-013	3.50	Maintenance service, every 1500 hours
173-014	6.00	Maintenance service, every 2000 hours
173-018	6.00	Maintenance service, every 4000 hours
173-022	7.00	Maintenance service, every 6000 hours
176-004	0.30	Towing a disabled machine
19		GENERAL
191-021	0.20	Service position 1
191-022	0.20	Service position 2
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	2.00	Engine, removing
210-072	2.50	Engine, installing
214-012	1.00	Valves, adjusting
215-010	2.50	Belt, changing
22		LUBRICATING SYSTEM
221-014	3.00	Oil pump, replacing
223-006	0.60	Oil cooler, replacing
23		FUEL SYSTEM
233-011	0.20	Fuel pump, removing
233-012	0.30	Fuel pump, installing
234-011	2.50	Fuel tank, removing
234-012	2.50	Fuel tank, installing
234-016	0.50	Fuel tank level sensor, replacing
236-001	0.70	Idling speed, checking and adjusting
236-070	3.00	Injection pump, removing
237-002	1.00	Injectors, replacing all
25		INLET SYSTEM; EXHAUST SYSTEM
251-004	0.50	Exhaust manifold, replacing gasket
251-006	0.80	EGR (exhaust gas recirculation) sensor, replacing 1705001 - 1706300

Op.no.	time (h)	Notes
26		COOLING SYSTEM
262-098	0.60	Thermostat, replacing
263-012	0.40	Fan belt and/or alternator belt, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
32		ALTERNATOR; CHARGE REGULATOR
321-003	0.80	Alternator, removing
321-004	0.80	Alternator, installing
33		STARTING SYSTEM
331-018	0.60	Starter motor, replacing
36		OTHER ELECTRICAL EQUIPMENT
363-002	1.25	Windscreen wiper front, replacing motor
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-061	0.30	Induction sensor for output shaft, changing
44		HYDROSTATIC DRIVE
441-002	2.50	Hydraulic motor, replacing
442-001	3.50	Hydraulic pump, replacing
442-016	0.10	Hydrostatic pump charge pressure, check and adjust
442-017	0.70	Start hydraulic pump control, check and adjust
442-018	0.40	Hydrostatic pump cut off valve, check and adjust
442-020	0.30	Hydrostatic pump mechanical zero position, check and adjust
46		FRONT AXLE; REAR AXLE
463-002	1.50	Axle, removing
463-003	2.00	Axle, installing
5		BRAKE
51		WHEEL BRAKE
511-006	1.25	Brake pads, replacing
511-007	1.50	Brake cylinder, replacing

Op.no.	time (h)	Notes
52		HYDRAULIC BRAKE SYSTEM
520-037	0.30	Brake system, bleeding
520-040	0.40	Inching and brake pedal, adjusting
6		STEERING
64		STEERING
645-022	0.70	Steering valve, removal
645-023	1.25	Steering valve, installation
645-028	0.40	Steering system, checking and adjusting working pressure
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-001	7.00	Frame joint, separating machine
741-002	8.50	Frame joint, assembly of separated machine
741-022	0.80	Frame joint, Replacing the front pivot bearing with machine separated
741-023	0.70	Frame joint, replacing the rear pivot bearing with machine separated
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.30	Engine hood, removing
821-002	0.20	Engine hood, installing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.75	Windscreen, replacing
843-012	2.00	Rear window, replacing
87		AIR CONDITIONING UNIT
873-006	1.25	Fan motor, replacing

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-005	0.30	Vacuum pump, connection
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-036	2.50	Hydraulic oil tank, removing
911-037	2.50	Hydraulic oil tank, installing
912-172	0.40	Secondary pressure limiting valve, checking and adjusting
912-173	0.40	Primary pressure limiting valve, checking and adjusting
94		UNIT, LOAD HANDLING
945-004	1.00	Lift cylinder, replacing
945-008	0.90	Tilt cylinder, replacing
945-056	1.50	Implement attachment, repacking removed hydraulic cylinder

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-004	1.25	Maintenance service, every 50 hours	
173-007	1.50	Maintenance service, every 250 hours	
173-010	2.50	Maintenance service, every 500 hours	
173-012	4.00	Maintenance service, every 1000 hours	
173-014	5.50	Maintenance service, every 2000 hours	2001 - 7000
173-014	5.50	Maintenance service, every 2000 hours	7001 - 12000
173-018	13.00	Maintenance service, every 4000 hours	2001 - 7000
173-018	11.00	Maintenance service, every 4000 hours	7001 - 12000
173-019	1.75	Maintenance service, every 4500 hours	
173-022	1.25	Maintenance service, every 6000 hours	2001 - 7000
173-022	0.60	Maintenance service, every 6000 hours	7001 - 12000
173-024	0.60	Maintenance service, every 8000 hours	
173-036	0.70	Maintenance service, first 100 hours	
173-042	1.25	Maintenance service, first 1000 hours	
173-506	3.00	Fire suppression system, checking	
176-001	0.80	Mechanical release of parking brake	
19		GENERAL	
191-021	0.20	Service position 1	
191-022	0.20	Service position 2	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-066	3.00	ECM (Engine control module), replacing pre-programmed	
200-067	1.50	ECM (Engine control module), replacing non-programmed	7001 - 12000
200-067	3.50	ECM (Engine control module), replacing non-programmed	2001 - 7000
200-200	1.00	Engine belts, replacing	
21		ENGINE	
210-002	14.00	Compression test	2001 - 7000
210-002	13.00	Compression test	7001 - 12000
210-070	7.00	Engine, removing	2001 - 7000
210-070	6.00	Engine, removing	7001 - 12000
210-072	9.00	Engine, installing	2001 - 7000
210-072	7.50	Engine, installing	7001 - 12000
210-092	0.80	Engine rotation speed sensor (camshaft), replacing	

Op.no.	time (h)		Notes
210-093	0.50	Engine rotation speed sensor (crank shaft), replacing	
212-071	0.70	Crankcase ventilation separator, replacing	2001 - 7000
214-012	6.00	Valves, adjusting	2001 - 7000
214-012	4.50	Valves, adjusting	7001 - 12000
214-092	9.50	Rocker arms, replacing	
214-100	3.00	EGR valve (internal), replacing	7001 - 12000
215-042	11.00	Camshaft, replacing	2001 - 7000
215-042	11.00	Camshaft, replacing	7001 - 12000
215-043	5.00	Camshaft setting, checking	7001 - 12000
215-043	5.00	Camshaft setting, checking	2001 - 7000
216-014	5.50	Crankshaft, replacing front oil seal	2001 - 7000
216-018	17.00	Crankshaft, replacing rear oil seal	
217-005	0.60	Oil level sensor, changing	
218-001	5.50	Rubber cushion, replacing	2001 - 7000
218-001	5.50	Rubber cushion, replacing	7001 - 12000
22		LUBRICATING SYSTEM	
221-022	0.50	Lubrication oil pressure, checking with pressure gauge	
223-006	3.50	Oil cooler, replacing	7001 - 12000
223-007	0.50	Oil cooler, leakage check	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
230-002	2.00	Air in fuel system, checking	
233-001	1.00	Fuel system, bleeding	
233-004	0.50	Feed pump, checking feed pressure	
236-002	0.50	Stall speed, checking	
237-002	14.00	Injectors, replacing all	2001 - 7000
237-002	6.50	Injectors, replacing all	7001 - 12000
237-017	8.50	Injector sleeves, replacing	2001 - 7000
237-017	8.50	Injector sleeves, replacing	7001 - 12000
25		INLET SYSTEM; EXHAUST SYSTEM	
252-017	0.90	Silencer, removing	7001 - 12000
252-018	1.25	Silencer, installing	7001 - 12000
252-021	0.60	Exhaust pipe, flexible tube, replacing	7001 - 12000
252-021	1.00	Exhaust pipe, flexible tube, replacing	2001 - 7000
254-001	1.75	Diesel particulate filter, check and clean	2001 - 7000
254-022	0.80	ACM (After treatment control module), replacing, non-programmed	
254-022	0.80	ACM (After treatment control module), replacing, non-programmed	2001 - 7000
254-034	1.75	Compressor, replacing	2001 - 7000
254-056	0.40	NOx sensor, replacing	2001 - 7000

Op.no.	time (h)		Notes
254-059	0.70	Inlet throttle, replacing	2001 - 7000
254-064	1.00	High pressure air system, pressure, checking	2001 - 7000
254-069	0.40	Exhaust aftertreatment system fuel flow, checking	2001 - 7000
254-102	0.50	AdBlue®/DEF nozzle, replacing	2001 - 7000
254-103	3.00	AdBlue®/DEF tank, tank armature, replacing	2001 - 7000
254-104	0.20	Aftertreatment fuel nozzle, replacing	2001 - 7000
254-107	1.25	AdBlue®/DEF pump unit, replacing	2001 - 7000
254-108	0.70	Aftertreatment fuel dosing unit, replacing	2001 - 7000
254-109	0.20	Aftertreatment fuel nozzle, cleaning	2001 - 7000
254-114	1.75	AdBlue®/DEF, draining	2001 - 7000
254-117	1.25	AdBlue®/DEF pump unit, components, replacing	2001 - 7000
254-118	0.50	SCR system, dosing test	2001 - 7000
254-121	0.50	AdBlue®/DEF quality, checking	2001 - 7000
254-128	2.50	Muffler with console, installing	2001 - 7000
254-129	1.50	Muffler with console, removing	2001 - 7000
255-003	1.25	Actuator, variable turbocharger, replacing	2001 - 7000
255-071	3.00	Turbocharger, replacing	7001 - 12000
255-071	1.75	Turbocharger, replacing	2001 - 7000

26**COOLING SYSTEM**

260-001	0.70	Carbon dioxide in coolant system, checking	
260-003	0.60	Cooling system, pressure control	
261-008	6.00	Radiator, replacing	
263-072	0.20	Fan control valve, seal replacement	

29**Miscellaneous**

293-001	3.00	EGR cooler, replacing	2001 - 7000
293-002	1.25	EGR cooler, pressure test	2001 - 7000
293-004	6.50	EGR cooler, cleaning	2001 - 7000
293-005	0.50	EGR valve, replacing	2001 - 7000
293-010	0.60	EGR Venturi tube, replacing	2001 - 7000
293-013	1.75	EGR venturi tube, cleaning	2001 - 7000

3**ELEC. SYSTEM; WARNING SYSTEM;
INFORMATION SYSTEM; INSTRUMENTS****30****GENERAL**

300-077	0.60	CCM, replacing	
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31**BATTERY**

311-002	0.30	Batteries, replacing	
311-005	0.40	Battery condition, check	

33**STARTING SYSTEM**

331-018	0.80	Starter motor, replacing	
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Op.no.	time (h)	Notes
36		OTHER ELECTRICAL EQUIPMENT
366-103	1.00	HMICU, changing pre-programmed ECU
366-104	1.00	HMICU, changing non-programmed ECU
366-105	1.50	GPMECU1, changing pre-programmed ECU
366-106	1.50	GPMECU1, changing non-programmed ECU
366-107	0.70	GPMECU2, changing pre-programmed ECU
366-108	0.80	GPMECU2, changing non-programmed ECU
366-109	1.00	GPMECU3, changing non-programmed ECU
366-110	1.00	GPMECU3, changing pre-programmed ECU
39		MISCELLANEOUS
398-005	0.60	W-ECU, replacing, non-programmed
398-006	0.60	W-ECU, replacing, pre-programmed
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.80	Transmission oil pressure, checking
421-070	6.50	Transmission, removing
421-072	12.00	Transmission, installing
421-091	0.60	Lock up valve, replacing
421-099	0.70	Transmission, calibration
421-100	0.30	Transmission, function check
46		FRONT AXLE; REAR AXLE
461-037	1.25	Hub reduction, removing
461-038	1.25	Hub reduction, installing
461-043	5.50	Hub, replacing seal
463-002	2.00	Axle, removing
463-003	3.00	Axle, installing
463-037	7.00	Axle suspension, replacing bushes and seals
463-043	6.00	Hub, replacing seal
463-045	1.25	Hub reduction, removing
463-046	1.50	Hub reduction, installing
468-006	0.20	Differential lock, function check
468-051	1.00	Differential lock, adjusting
5		BRAKE
51		WHEEL BRAKE
510-003	0.40	Brake discs, measuring wear
516-005	4.00	Brake disc, replacing

Op.no.	time (h)	Notes
516-050	3.00	Brake piston, replacing seals
517-005	4.00	Brake disc, replacing
517-050	3.00	Brake piston, replacing seals
52		HYDRAULIC BRAKE SYSTEM
520-002	0.20	Brake system, checking function, retardation
520-005	0.30	Brake system, check and adjusting pressure in circuit
520-036	0.80	Brake system charging, checking
520-037	0.60	Brake system, bleeding
520-111	0.20	Automatic brake, function check
527-001	0.40	Accumulator removed, checking charging pressure
527-003	0.60	Accumulators, checking in machine
527-012	0.60	Accumulator, removal
527-013	0.70	Accumulator, installation
55		PARKING BRAKE
550-006	3.00	Parking brake, replacing discs and seals
550-023	0.10	Parking brake, function checking
6		STEERING
60		GENERAL
600-001	0.50	Steering system, function check
64		STEERING
645-011	1.50	Left steering cylinder, removal
645-012	2.50	Left steering cylinder, installation
645-013	1.00	Right steering cylinder, removal
645-014	2.50	Right steering cylinder, installation
645-028	0.40	Steering system, checking and adjusting working pressure
645-037	0.20	Steering accumulator removed, checking
645-113	0.50	Steering accumulator, removing
645-114	0.50	Steering accumulator, installing
647-091	0.70	Secondary steering pump, checking and adjusting working pressure
66		LEVER STEERING
660-006	1.50	Comfort drive control (CDC), angle sensor, changing
660-007	1.50	Comfort drive control (CDC), solenoid valve, changing
660-011	0.20	Lever steering (CDC), functional check
660-012	0.40	Comfort Drive Control, servo pressure, checking

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	1.25	Counterweight, removing
716-002	1.25	Counterweight, fitting
74		FRAME LINK
741-036	11.00	Frame joint, replacing bearings
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-002	0.80	Front wheel, removal
771-003	0.70	Front wheel, installation
771-004	0.70	Rear wheel, removing
771-005	0.70	Rear wheel, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-065	1.00	Cab, position 1
810-066	1.75	Cab, position 2
810-067	0.80	Cab, position 1, restoring
810-068	2.50	Cab, position 2, restoring
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-002	1.00	Engine hood, installing
821-010	0.60	Actuator, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-054	0.30	Electric door opener, control unit, replacing
831-055	0.30	Electric door opener, locking motor, replacing
831-056	0.20	Electric door opener, rotor switch, replacing
831-057	0.30	Electric door opener, opening support motor, replacing
834-013	0.30	Door lock cylinder, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	2.50	Windscreen, replacing
85		CAB INTERIOR/UPHOLSTERY
852-010	0.50	Operator's seat, securing
87		AIR CONDITIONING UNIT
870-012	1.00	Climate unit, removing
870-013	1.25	Climate unit, installing

Op.no.	time (h)	Notes
873-004	2.50	Heater core, replacing
873-006	2.50	Fan motor, replacing
873-008	1.25	Heat control valve, replacing
873-011	0.70	Air mix door actuator, replacing
874-001	2.00	Refrigerant, filling incl vacuum pumping
874-002	1.00	Refrigerant, draining
874-009	0.50	Cooling unit, leak detection
874-018	4.50	Compressor, replacing
874-022	3.50	Drying filter, replacing
874-023	4.00	Condenser, replacing
874-024	4.50	Evaporator, replacing
874-025	4.00	Expansion valve, replacing

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

90 GENERAL

900-001	0.50	Hydraulic system, warming up
900-002	3.00	Hydraulic system, bleeding

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-018	0.20	Back-up valve, checking and adjusting
912-021	0.60	Shock valve, tilt function, checking
912-023	0.60	Shock valve lift function, checking
912-121	1.50	Lift, solenoid valve, changing
912-122	1.50	Lower, solenoid valve, changing
912-123	1.50	Tilt in, solenoid valve, changing
912-124	1.50	Tilt out, solenoid valve, changing
912-125	0.70	Lift/lower, angle sensor, changing
912-126	2.50	Tilt in/out, angle sensor, changing
912-127	0.20	Tilt, functional check
912-226	0.20	Lift/lower function, checking
912-227	0.60	Pressure back-up valve, replacing
913-001	1.00	Hydraulic pump, checking and adjusting standby pressure and working pressure
913-006	0.90	LS (load sense) pressure, checking
913-050	1.50	Hydraulic pump P2, removal
913-051	4.00	Hydraulic pump P2, installation
913-059	1.50	Hydraulic pump P3, checking function
913-060	1.25	Hydraulic pump P1, removal
913-061	2.50	Hydraulic pump P1, installation
913-062	0.90	Hydraulic pump P3, removal

Op.no.	time (h)	Notes
913-063	3.50	Hydraulic pump P3, installation
914-047	0.20	Servo accumulator, removal
914-048	0.10	Servo accumulator, installation
914-049	0.40	Accumulator removed, checking
914-049	0.40	Accumulator removed, checking
914-055	0.40	Servo pressure, checking and adjusting
914-063	0.60	Servo pressure, checking at the spool in control valve
916-001	0.30	Boom suspension system, functional check
916-003	0.60	Boom suspension accumulator, reconditioning
916-006	1.00	Boom suspension system, pressure reduction, safety valve, checking and adjusting
916-008	1.50	Boom suspension system, right accumulator, removal
916-009	2.00	Boom suspension system, right accumulator, installation
916-010	0.90	Boom suspension system, left accumulator, removal
916-011	1.50	Boom suspension system, left accumulator, installation
916-017	0.50	3rd/4th hydraulic function, shock valve, checking
916-018	0.60	3rd/4th hydraulic function, solenoid valve, changing
916-020	0.30	3rd/4th hydraulic function, checking and adjusting pressure
916-070	0.50	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing
916-072	0.20	Accumulator, boom suspension system, discarding
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-036	0.10	Attachment locking, functional check
94		UNIT, LOAD HANDLING
945-005	4.50	Lift cylinder, repacking in machine
945-009	5.50	Tilt cylinder, repacking in machine
99		MISCELLANEOUS
992-002	6.50	Fire suppression system, actions after activation
992-003	7.00	Fire suppression system, actions after manual activation
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-004	1.25	Maintenance service, every 50 hours	
173-007	1.50	Maintenance service, every 250 hours	
173-010	2.50	Maintenance service, every 500 hours	
173-012	4.00	Maintenance service, every 1000 hours	
173-014	5.50	Maintenance service, every 2000 hours	1001 - 6000
173-014	5.50	Maintenance service, every 2000 hours	6001 - 11000
173-018	11.00	Maintenance service, every 4000 hours	6001 - 11000
173-018	13.00	Maintenance service, every 4000 hours	1001 - 6000
173-019	1.75	Maintenance service, every 4500 hours	
173-022	1.25	Maintenance service, every 6000 hours	1001 - 6000
173-022	0.60	Maintenance service, every 6000 hours	6001 - 11000
173-024	0.60	Maintenance service, every 8000 hours	
173-036	0.70	Maintenance service, first 100 hours	
173-042	1.25	Maintenance service, first 1000 hours	
173-506	3.00	Fire suppression system, checking	
176-001	0.80	Mechanical release of parking brake	
19		GENERAL	
191-021	0.20	Service position 1	
191-022	0.20	Service position 2	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-066	3.00	ECM (Engine control module), replacing pre-programmed	
200-067	1.50	ECM (Engine control module), replacing non-programmed	6001 - 11000
200-067	3.50	ECM (Engine control module), replacing non-programmed	1001 - 6000
200-200	1.00	Engine belts, replacing	
21		ENGINE	
210-002	14.00	Compression test	1001 - 6000
210-002	13.00	Compression test	6001 - 11000
210-070	7.00	Engine, removing	1001 - 6000
210-070	6.00	Engine, removing	6001 - 11000
210-072	9.00	Engine, installing	1001 - 6000
210-072	7.50	Engine, installing	6001 - 11000
210-092	0.80	Engine rotation speed sensor (camshaft), replacing	

Op.no.	time (h)		Notes
210-093	0.50	Engine rotation speed sensor (crank shaft), replacing	
212-071	0.70	Crankcase ventilation separator, replacing	1001 - 6000
214-012	6.00	Valves, adjusting	1001 - 6000
214-012	4.50	Valves, adjusting	6001 - 11000
214-092	9.50	Rocker arms, replacing	
214-100	3.00	EGR valve (internal), replacing	6001 - 11000
215-042	11.00	Camshaft, replacing	1001 - 6000
215-042	11.00	Camshaft, replacing	6001 - 11000
215-043	5.00	Camshaft setting, checking	6001 - 11000
215-043	5.00	Camshaft setting, checking	1001 - 6000
216-014	5.50	Crankshaft, replacing front oil seal	1001 - 6000
217-005	0.60	Oil level sensor, changing	
218-001	5.50	Rubber cushion, replacing	1001 - 6000
218-001	5.50	Rubber cushion, replacing	6001 - 11000
22		LUBRICATING SYSTEM	
221-022	0.50	Lubrication oil pressure, checking with pressure gauge	
223-006	3.50	Oil cooler, replacing	6001 - 11000
223-007	0.50	Oil cooler, leakage check	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
230-002	2.00	Air in fuel system, checking	
233-001	1.00	Fuel system, bleeding	
233-004	0.50	Feed pump, checking feed pressure	
236-002	0.50	Stall speed, checking	
237-002	14.00	Injectors, replacing all	1001 - 6000
237-002	6.50	Injectors, replacing all	6001 - 11000
237-017	8.50	Injector sleeves, replacing	1001 - 6000
237-017	8.50	Injector sleeves, replacing	6001 - 11000
25		INLET SYSTEM; EXHAUST SYSTEM	
252-017	0.90	Silencer, removing	6001 - 11000
252-018	1.25	Silencer, installing	6001 - 11000
252-021	0.60	Exhaust pipe, flexible tube, replacing	6001 - 11000
252-021	1.00	Exhaust pipe, flexible tube, replacing	1001 - 6000
254-001	1.75	Diesel particulate filter, check and clean	1001 - 6000
254-022	0.80	ACM (After treatment control module), replacing, non-programmed	
254-022	0.80	ACM (After treatment control module), replacing, non-programmed	1001 - 6000
254-034	1.75	Compressor, replacing	1001 - 6000
254-056	0.40	NOx sensor, replacing	1001 - 6000
254-059	0.70	Inlet throttle, replacing	1001 - 6000

Op.no.	time (h)		Notes
254-064	1.00	High pressure air system, pressure, checking	1001 - 6000
254-069	0.40	Exhaust aftertreatment system fuel flow, checking	1001 - 6000
254-102	0.50	AdBlue®/DEF nozzle, replacing	1001 - 6000
254-103	3.00	AdBlue®/DEF tank, tank armature, replacing	1001 - 6000
254-104	0.20	Aftertreatment fuel nozzle, replacing	1001 - 6000
254-107	1.25	AdBlue®/DEF pump unit, replacing	1001 - 6000
254-108	0.70	Aftertreatment fuel dosing unit, replacing	1001 - 6000
254-109	0.20	Aftertreatment fuel nozzle, cleaning	1001 - 6000
254-114	1.75	AdBlue®/DEF, draining	1001 - 6000
254-117	1.25	AdBlue®/DEF pump unit, components, replacing	1001 - 6000
254-118	0.50	SCR system, dosing test	1001 - 6000
254-121	0.50	AdBlue®/DEF quality, checking	1001 - 6000
254-128	2.50	Muffler with console, installing	1001 - 6000
254-129	1.50	Muffler with console, removing	1001 - 6000
255-003	1.25	Actuator, variable turbocharger, replacing	1001 - 6000
255-071	3.00	Turbocharger, replacing	6001 - 11000
255-071	1.75	Turbocharger, replacing	1001 - 6000

26**COOLING SYSTEM**

260-001	0.70	Carbon dioxide in coolant system, checking	
260-003	0.60	Cooling system, pressure control	
261-008	6.00	Radiator, replacing	
263-072	0.20	Fan control valve, seal replacement	

29**Miscellaneous**

293-001	3.00	EGR cooler, replacing	1001 - 6000
293-002	1.25	EGR cooler, pressure test	1001 - 6000
293-004	6.50	EGR cooler, cleaning	1001 - 6000
293-005	0.50	EGR valve, replacing	1001 - 6000
293-010	0.60	EGR Venturi tube, replacing	1001 - 6000
293-013	1.75	EGR venturi tube, cleaning	1001 - 6000

3**ELEC. SYSTEM; WARNING SYSTEM;
INFORMATION SYSTEM; INSTRUMENTS****30****GENERAL**

300-077	0.60	CCM, replacing	
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31**BATTERY**

311-002	0.30	Batteries, replacing	
311-005	0.40	Battery condition, check	

33**STARTING SYSTEM**

331-018	0.80	Starter motor, replacing	
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Op.no.	time (h)	Notes
36		OTHER ELECTRICAL EQUIPMENT
366-103	1.00	HMICU, changing pre-programmed ECU
366-104	1.00	HMICU, changing non-programmed ECU
366-105	1.50	GPMECU1, changing pre-programmed ECU
366-106	1.50	GPMECU1, changing non-programmed ECU
366-107	0.70	GPMECU2, changing pre-programmed ECU
366-108	0.80	GPMECU2, changing non-programmed ECU
366-109	1.00	GPMECU3, changing non-programmed ECU
366-110	1.00	GPMECU3, changing pre-programmed ECU
39		MISCELLANEOUS
398-005	0.60	W-ECU, replacing, non-programmed
398-006	0.60	W-ECU, replacing, pre-programmed
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.80	Transmission oil pressure, checking
421-070	6.50	Transmission, removing
421-072	12.00	Transmission, installing
421-091	0.60	Lock up valve, replacing
421-099	0.70	Transmission, calibration
421-100	0.30	Transmission, function check
46		FRONT AXLE; REAR AXLE
461-037	1.25	Hub reduction, removing
461-038	1.25	Hub reduction, installing
461-043	5.50	Hub, replacing seal
463-002	2.00	Axle, removing
463-003	3.00	Axle, installing
463-037	7.00	Axle suspension, replacing bushes and seals
463-043	6.00	Hub, replacing seal
463-045	1.25	Hub reduction, removing
463-046	1.50	Hub reduction, installing
468-006	0.20	Differential lock, function check
468-051	1.00	Differential lock, adjusting
5		BRAKE
51		WHEEL BRAKE
510-003	0.40	Brake discs, measuring wear
516-005	4.00	Brake disc, replacing

Op.no.	time (h)	Notes
516-050	3.00	Brake piston, replacing seals
517-005	4.00	Brake disc, replacing
517-050	3.00	Brake piston, replacing seals
52		HYDRAULIC BRAKE SYSTEM
520-002	0.20	Brake system, checking function, retardation
520-005	0.30	Brake system, check and adjusting pressure in circuit
520-036	0.80	Brake system charging, checking
520-037	0.60	Brake system, bleeding
520-111	0.20	Automatic brake, function check
527-001	0.40	Accumulator removed, checking charging pressure
527-003	0.60	Accumulators, checking in machine
527-012	0.60	Accumulator, removal
527-013	0.70	Accumulator, installation
55		PARKING BRAKE
550-006	3.00	Parking brake, replacing discs and seals
550-023	0.10	Parking brake, function checking
6		STEERING
60		GENERAL
600-001	0.50	Steering system, function check
64		STEERING
645-011	1.50	Left steering cylinder, removal
645-012	2.50	Left steering cylinder, installation
645-013	1.00	Right steering cylinder, removal
645-014	2.50	Right steering cylinder, installation
645-028	0.40	Steering system, checking and adjusting working pressure
645-037	0.20	Steering accumulator removed, checking
645-113	0.50	Steering accumulator, removing
645-114	0.50	Steering accumulator, installing
647-091	0.70	Secondary steering pump, checking and adjusting working pressure
66		LEVER STEERING
660-006	1.50	Comfort drive control (CDC), angle sensor, changing
660-007	1.50	Comfort drive control (CDC), solenoid valve, changing
660-011	0.20	Lever steering (CDC), functional check
660-012	0.40	Comfort Drive Control, servo pressure, checking

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	1.25	Counterweight, removing
716-002	1.25	Counterweight, fitting
74		FRAME LINK
741-036	11.00	Frame joint, replacing bearings
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-002	0.80	Front wheel, removal
771-003	0.70	Front wheel, installation
771-004	0.70	Rear wheel, removing
771-005	0.70	Rear wheel, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-065	1.00	Cab, position 1
810-066	1.75	Cab, position 2
810-067	0.80	Cab, position 1, restoring
810-068	2.50	Cab, position 2, restoring
810-069	1.75	Cab, tilt cylinder, replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-002	1.00	Engine hood, installing
821-010	0.60	Actuator, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-054	0.30	Electric door opener, control unit, replacing
831-055	0.30	Electric door opener, locking motor, replacing
831-056	0.20	Electric door opener, rotor switch, replacing
831-057	0.30	Electric door opener, opening support motor, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	2.50	Windscreen, replacing
85		CAB INTERIOR/UPHOLSTERY
852-010	0.50	Operator's seat, securing
87		AIR CONDITIONING UNIT
870-012	1.00	Climate unit, removing
870-013	1.25	Climate unit, installing

Op.no.	time (h)	Notes
873-004	2.50	Heater core, replacing
873-006	2.50	Fan motor, replacing
873-008	1.25	Heat control valve, replacing
873-011	0.70	Air mix door actuator, replacing
874-001	2.00	Refrigerant, filling incl vacuum pumping
874-002	1.00	Refrigerant, draining
874-009	0.50	Cooling unit, leak detection
874-018	4.50	Compressor, replacing
874-022	3.50	Drying filter, replacing
874-023	4.00	Condenser, replacing
874-024	4.50	Evaporator, replacing
874-025	4.00	Expansion valve, replacing

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

90 GENERAL

900-001	0.50	Hydraulic system, warming up
900-002	3.00	Hydraulic system, bleeding

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-018	0.20	Back-up valve, checking and adjusting
912-021	0.60	Shock valve, tilt function, checking
912-023	0.60	Shock valve lift function, checking
912-121	1.50	Lift, solenoid valve, changing
912-122	1.50	Lower, solenoid valve, changing
912-123	1.50	Tilt in, solenoid valve, changing
912-124	1.50	Tilt out, solenoid valve, changing
912-125	0.70	Lift/lower, angle sensor, changing
912-126	0.80	Tilt in/out, angle sensor, changing
912-127	0.20	Tilt, functional check
912-226	0.20	Lift/lower function, checking
912-227	0.60	Pressure back-up valve, replacing
913-001	1.00	Hydraulic pump, checking and adjusting standby pressure and working pressure
913-006	0.90	LS (load sense) pressure, checking
913-050	1.50	Hydraulic pump P2, removal
913-051	4.00	Hydraulic pump P2, installation
913-059	1.50	Hydraulic pump P3, checking function
913-060	1.25	Hydraulic pump P1, removal
913-061	2.50	Hydraulic pump P1, installation
913-062	0.90	Hydraulic pump P3, removal

Op.no.	time (h)	Notes
913-063	3.50	Hydraulic pump P3, installation
914-047	0.20	Servo accumulator, removal
914-048	0.10	Servo accumulator, installation
914-049	0.40	Accumulator removed, checking
914-049	0.40	Accumulator removed, checking
914-063	0.60	Servo pressure, checking at the spool in control valve
916-001	0.30	Boom suspension system, functional check
916-003	0.60	Boom suspension accumulator, reconditioning
916-006	1.00	Boom suspension system, pressure reduction, safety valve, checking and adjusting
916-008	0.80	Boom suspension system, right accumulator, removal
916-009	1.50	Boom suspension system, right accumulator, installation
916-010	0.80	Boom suspension system, left accumulator, removal
916-011	1.50	Boom suspension system, left accumulator, installation
916-017	0.50	3rd/4th hydraulic function, shock valve, checking
916-018	0.60	3rd/4th hydraulic function, solenoid valve, changing
916-020	0.30	3rd/4th hydraulic function, checking and adjusting pressure
916-070	0.50	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing
916-072	0.20	Accumulator, boom suspension system, discarding
94		UNIT, LOAD HANDLING
945-005	4.50	Lift cylinder, repacking in machine
945-009	5.50	Tilt cylinder, repacking in machine
99		MISCELLANEOUS
992-002	6.50	Fire suppression system, actions after activation
992-003	7.00	Fire suppression system, actions after manual activation
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
172-002	3.00	Warranty inspection 100 hours
172-004	6.00	Warranty inspection 1000 hours
173-002	0.70	Maintenance service, daily
173-006	1.50	Maintenance service, every 100 hours
173-010	1.50	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-013	3.50	Maintenance service, every 1500 hours
173-014	6.00	Maintenance service, every 2000 hours
173-018	6.00	Maintenance service, every 4000 hours
173-022	7.00	Maintenance service, every 6000 hours
176-004	0.30	Towing a disabled machine
19		GENERAL
191-021	0.20	Service position 1
191-022	0.20	Service position 2
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	2.00	Engine, removing
210-072	2.50	Engine, installing
214-012	1.00	Valves, adjusting
215-010	2.50	Belt, changing
22		LUBRICATING SYSTEM
221-014	3.00	Oil pump, replacing
223-006	0.60	Oil cooler, replacing
23		FUEL SYSTEM
233-011	0.20	Fuel pump, removing
233-012	0.30	Fuel pump, installing
234-011	2.50	Fuel tank, removing
234-012	2.50	Fuel tank, installing
234-016	0.50	Fuel tank level sensor, replacing
236-001	0.70	Idling speed, checking and adjusting
236-070	3.00	Injection pump, removing
237-002	1.00	Injectors, replacing all
25		INLET SYSTEM; EXHAUST SYSTEM
251-004	0.50	Exhaust manifold, replacing gasket
251-006	0.80	EGR (exhaust gas recirculation) sensor, replacing 1755001 - 1756300

Op.no.	time (h)	Notes
26		COOLING SYSTEM
262-098	0.60	Thermostat, replacing
263-012	0.40	Fan belt and/or alternator belt, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
32		ALTERNATOR; CHARGE REGULATOR
321-003	0.80	Alternator, removing
321-004	0.80	Alternator, installing
33		STARTING SYSTEM
331-018	0.60	Starter motor, replacing
36		OTHER ELECTRICAL EQUIPMENT
363-002	1.25	Windscreen wiper front, replacing motor
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-061	0.30	Induction sensor for output shaft, changing
44		HYDROSTATIC DRIVE
441-002	2.50	Hydraulic motor, replacing
442-001	3.50	Hydraulic pump, replacing
442-016	0.10	Hydrostatic pump charge pressure, check and adjust
442-017	0.70	Start hydraulic pump control, check and adjust
442-018	0.40	Hydrostatic pump cut off valve, check and adjust
442-020	0.30	Hydrostatic pump mechanical zero position, check and adjust
46		FRONT AXLE; REAR AXLE
463-002	1.50	Axle, removing
463-003	2.00	Axle, installing
5		BRAKE
51		WHEEL BRAKE
511-006	1.25	Brake pads, replacing
511-007	1.50	Brake cylinder, replacing

Op.no.	time (h)	Notes
52		HYDRAULIC BRAKE SYSTEM
520-037	0.30	Brake system, bleeding
520-040	0.40	Inching and brake pedal, adjusting
6		STEERING
64		STEERING
645-022	0.70	Steering valve, removal
645-023	1.25	Steering valve, installation
645-028	0.40	Steering system, checking and adjusting working pressure
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-001	7.00	Frame joint, separating machine
741-002	8.50	Frame joint, assembly of separated machine
741-022	0.80	Frame joint, Replacing the front pivot bearing with machine separated
741-023	0.70	Frame joint, replacing the rear pivot bearing with machine separated
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.30	Engine hood, removing
821-002	0.20	Engine hood, installing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.75	Windscreen, replacing
843-012	2.00	Rear window, replacing
87		AIR CONDITIONING UNIT
873-006	1.25	Fan motor, replacing

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-005	0.30	Vacuum pump, connection
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-036	2.50	Hydraulic oil tank, removing
911-037	2.50	Hydraulic oil tank, installing
912-172	0.40	Secondary pressure limiting valve, checking and adjusting
912-172	0.40	Secondary pressure limiting valve, checking and adjusting
912-173	0.40	Primary pressure limiting valve, checking and adjusting
94		UNIT, LOAD HANDLING
945-004	1.00	Lift cylinder, replacing
945-008	0.90	Tilt cylinder, replacing
945-056	1.50	Implement attachment, repacking removed hydraulic cylinder

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	0.20	Maintenance service, daily
173-004	0.50	Maintenance service, every 50 hours
173-006	0.70	Maintenance service, every 100 hours
173-010	3.00	Maintenance service, every 500 hours
173-012	6.00	Maintenance service, every 1000 hours
173-013	7.50	Maintenance service, every 1500 hours
173-014	6.50	Maintenance service, every 2000 hours
173-016	13.00	Maintenance service, every 3000 hours
173-022	0.40	Maintenance service, every 6000 hours
173-332	0.40	MATRIS and Tech Tool, reading
19		GENERAL
191-021	0.20	Service position 1
191-022	0.20	Service position 2
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
210-002	3.00	Compression test
210-070	4.00	Engine, removing
210-072	4.00	Engine, installing
214-012	2.50	Valves, adjusting
214-037	0.80	Valve cover, removing
214-038	0.90	Valve cover, installing
22		LUBRICATING SYSTEM
221-006	0.60	Oil pressure relief valve, replacing
221-021	0.40	Lubrication oil pressure, checking
223-006	0.80	Oil cooler, replacing
23		FUEL SYSTEM
234-010	7.00	Fuel tank, replacing
234-016	0.50	Fuel tank level sensor, replacing
237-002	2.50	Injectors, replacing all
237-125	2.00	Fuel pump unit, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
254-001	2.00	Diesel particulate filter, check and clean
254-059	0.70	Inlet throttle, replacing

Op.no.	time (h)	Notes	
26		COOLING SYSTEM	
262-002	1.50	Coolant pump, replacing	
262-098	0.80	Thermostat, replacing	
263-001	1.50	Fan motor, removing	
263-003	1.75	Fan motor, installing	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-061	0.30	Induction sensor for output shaft, changing	
44		HYDROSTATIC DRIVE	
441-002	6.00	Hydraulic motor, replacing	
442-001	4.00	Hydraulic pump, replacing	
442-016	0.10	Hydrostatic pump charge pressure, check and adjust	120001 - 129999
442-016	0.10	Hydrostatic pump charge pressure, check and adjust	220001 - 229999
442-017	0.40	Start hydraulic pump control, check and adjust	
442-018	0.40	Hydrostatic pump cut off valve, check and adjust	
442-019	0.30	Hydrostatic pump high pressure valve, check and adjust	120001 - 129999
442-019	0.30	Hydrostatic pump high pressure valve, check and adjust	220001 - 229999
442-020	0.50	Hydrostatic pump mechanical zero position, check and adjust	
46		FRONT AXLE; REAR AXLE	
463-002	2.50	Axle, removing	
463-003	3.00	Axle, installing	
5		BRAKE	
52		HYDRAULIC BRAKE SYSTEM	
520-037	0.30	Brake system, bleeding	120001 - 129999
520-037	0.30	Brake system, bleeding	220001 - 229999
520-040	0.40	Inching and brake pedal, adjusting	
6		STEERING	
64		STEERING	
645-018	0.40	Steering pressure, checking	

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	0.80	Counterweight, removing
716-002	0.70	Counterweight, fitting
74		FRAME LINK
741-001	3.00	Frame joint, separating machine
741-002	3.00	Frame joint, assembly of separated machine
741-036	1.50	Frame joint, replacing bearings
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.30	Engine hood, removing
821-002	0.20	Engine hood, installing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	2.50	Windscreen, replacing
843-012	3.00	Rear window, replacing
843-048	2.50	Door window, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-005	0.30	Vacuum pump, connection
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-091	1.50	Main control valve, removal
912-092	1.50	Main control valve, installation
912-160	0.90	Port relief valve pressure, checking and adjusting120001 - 229999
912-160	0.90	Port relief valve pressure, checking and adjusting220001 - 229999
913-004	0.50	Hydraulic pump, checking and adjusting max working pressure
913-010	1.25	Hydraulic pump, replacing
914-058	1.25	Servo valve, replacing

Op.no.	time (h)	Notes
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-031	1.50	Implemental attachment hydraulic cylinder, replacing
94		UNIT, LOAD HANDLING
945-004	1.00	Lift cylinder, replacing
945-008	0.90	Tilt cylinder, replacing

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-006	0.30	VCADS Pro, central systems updating, replace component	
172-002	3.00	Warranty inspection 100 hours	
172-004	12.00	Warranty inspection 1000 hours	
173-002	0.60	Maintenance service, daily	
173-004	1.25	Maintenance service, every 50 hours	
173-007	1.75	Maintenance service, every 250 hours	
173-010	3.50	Maintenance service, every 500 hours	
173-012	6.00	Maintenance service, every 1000 hours	
173-014	8.00	Maintenance service, every 2000 hours	
173-018	14.00	Maintenance service, every 4000 hours	
173-022	8.50	Maintenance service, every 6000 hours	
176-001	2.00	Mechanical release of parking brake	
19		GENERAL	
191-021	0.20	Service position 1	
191-022	0.20	Service position 2	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-009	0.30	VCADS Pro, MID 128, programming E-ECU	
200-068	0.80	E-ECU, MID 128, changing non-programmed ECU	
200-070	0.40	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-002	7.00	Compression test	
210-070	4.00	Engine, removing	
210-072	7.00	Engine, installing	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
210-092	0.40	Engine rotation speed sensor (camshaft), replacing	
214-012	3.50	Valves, adjusting	
216-014	2.00	Crankshaft, replacing front oil seal	1001 - 9999
22		LUBRICATING SYSTEM	
221-022	0.20	Lubrication oil pressure, checking with pressure gauge	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	

Op.no.	time (h)	Notes	
233-001	0.30	Fuel system, bleeding	
233-020	0.10	Fuel filter, checking	
236-002	0.50	Stall speed, checking	
237-012	6.50	Unit injector, replacing	
25		INLET SYSTEM; EXHAUST SYSTEM	
255-002	0.90	Turbocharger, inspection	
255-010	0.60	Waste gate actuator, replacing	
255-071	1.75	Turbocharger, replacing	
26		COOLING SYSTEM	
260-001	0.70	Carbon dioxide in coolant system, checking	
261-008	6.50	Radiator, replacing	
263-010	0.50	Pump 3 (P3) standby pressure, checking	
263-011	0.90	Pump 3 (P3) standby pressure, checking and adjusting (LS-line removed)	
263-021	0.70	Pump 3 (P3), max pressure and fan speed, checking and adjusting	
263-051	1.25	Cooling fan hydraulics, funktion check	
263-062	5.50	Cooling fan motor, replacing	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	0.80	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.30	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-002	0.50	Batteries, replacing	
311-005	0.40	Battery condition, check	
311-005	0.50	Battery condition, check	
36		OTHER ELECTRICAL EQUIPMENT	
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	
366-066	0.70	V-ECU, MID 187, changing pre-programmed ECU	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-008	0.40	Engine rotation speed sensor, replacing	
386-016	1.00	Temperature sensor cooling system, replacing	1232 - 9999
386-016	0.50	Temperature sensor cooling system, replacing	
39		MISCELLANEOUS	
390-902	2.00	CareTrack, installing new	
398-004	0.70	CareTrack battery, replacing	

Op.no.	time (h)	Notes	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-002	0.70	Transmission oil pressure, checking	
421-049	0.10	Transmission, functional check	
421-068	7.50	Transmission, removing (upwards)	
421-072	12.00	Transmission, installing	
421-099	0.70	Transmission, calibration	
43		GEARBOX,	
432-078	0.40	T-ECU, MID 130, changing pre-programmed ECU	
46		FRONT AXLE; REAR AXLE	
461-037	2.50	Hub reduction, removing	
461-038	4.00	Hub reduction, installing	
461-043	7.00	Hub, replacing seal	
5		BRAKE	
51		WHEEL BRAKE	
510-003	0.70	Brake discs, measuring wear	
52		HYDRAULIC BRAKE SYSTEM	
520-001	0.80	Brake system, checking function, hydraulic	
520-002	0.20	Brake system, checking function, retardation	
520-005	0.20	Brake system, check and adjusting pressure in circuit	
520-037	0.50	Brake system, bleeding	
523-041	0.80	Axle oil cooler (front) replacing	
523-042	1.00	Axle oil cooler (rear) replacing	
525-009	0.50	Foot brake valve removed, reconditioning	
527-001	0.10	Accumulator removed, checking charging pressure	
527-001	0.90	Accumulator removed, checking charging pressure	
55		PARKING BRAKE	
550-017	1.25	Parking brake, checking wear	
550-023	0.10	Parking brake, function checking	1250 - 9999
550-023	0.10	Parking brake, function checking	1001 - 1249

Op.no.	time (h)	Notes	
6		STEERING	
60		GENERAL	
600-001	0.10	Steering system, function check	
64		STEERING	
645-028	0.50	Steering system, checking and adjusting working pressure	
645-060	1.75	Steering cylinder, repacking in machine	
645-091	1.25	Shift valve, removing	
645-092	1.25	Shift valve, installing	
645-101	0.90	EHPS valve, removing	
645-102	1.50	EHPS valve, installing	
645-103	0.40	EHPS valve, regulated pressure, checking	
645-104	0.60	PVED valve, replacing	
66		LEVER STEERING	
660-006	0.90	Comfort drive control (CDC), angle sensor, changing	
660-011	0.20	Lever steering (CDC), functional check	
660-012	0.40	Comfort Drive Control, servo pressure, checking 1250 - 9999	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
74		FRAME LINK	
741-036	13.00	Frame joint, replacing bearings	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	2.00	Cab, removing	
810-002	2.50	Cab, installing	
818-020	1.75	Viscous cab suspension, changing one unit	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-001	0.60	Engine hood, removing	1001 - 9999
821-002	0.90	Engine hood, installing	1001 - 9999
83		DOORS; HATCH; COVER PLATE, (all)	
831-054	0.30	Electric door opener, control unit, replacing	
831-055	0.30	Electric door opener, locking motor, replacing	
831-056	0.20	Electric door opener, rotor switch, replacing	

Op.no.	time (h)		Notes
831-057	0.30	Electric door opener, opening support motor, replacing	
834-011	0.20	Door lock, changing	
834-013	0.30	Door lock cylinder, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-002	2.50	Windscreen, replacing	
843-013	1.25	Side window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-010	0.40	Operator's seat, securing	
87		AIR CONDITIONING UNIT	
870-010	0.50	ECC, MID 146, changing pre-programmed ECU	
870-011	0.70	ECC, MID 146, changing non-programmed ECU	
870-012	0.90	Climate unit, removing	1232 - 9999
870-013	1.25	Climate unit, installing	1232 - 9999
873-004	2.50	Heater core, replacing	1232 - 9999
873-004	1.50	Heater core, replacing	
873-006	2.50	Fan motor, replacing	1232 - 9999
873-008	0.70	Heat control valve, replacing	
873-011	0.80	Air mix door actuator, replacing	1232 - 9999
873-019	0.50	ECC control unit, replacing	
873-019	0.90	ECC control unit, replacing	1232 - 9999
874-006	2.00	Compressor, replacing incl draining and filling	
874-010	0.50	Condenser, replacing incl draining and filling	
874-011	1.75	Receiver, replacing incl draining and filling	
874-011	1.75	Receiver, replacing incl draining and filling	
874-012	2.50	Evaporator, replacing incl draining and filling	
874-012	3.00	Evaporator, replacing incl draining and filling	
874-013	2.00	Expansion valve, replacing incl draining and filling	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-002	3.00	Hydraulic system, bleeding	
900-031	0.80	V2-ECU, MID 249, changing non-programmed ECU	
900-032	0.50	V2-ECU, MID 249, changing pre-programmed ECU	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-036	4.00	Hydraulic oil tank, removing	
911-037	4.50	Hydraulic oil tank, installing	

Op.no.	time (h)		Notes
911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
912-007	0.40	Anti-cavitation valve, lowering function, checking	
912-021	0.60	Shock valve, tilt function, checking	
912-023	0.60	Shock valve lift function, checking	1561 - 9999
912-023	1.00	Shock valve lift function, checking	
912-120	0.20	Lift, functional check	
912-121	0.80	Lift, solenoid valve, changing	
912-122	0.80	Lower, solenoid valve, changing	
912-123	0.80	Tilt in, solenoid valve, changing	
912-124	0.80	Tilt out, solenoid valve, changing	
912-125	0.60	Lift/lower, angle sensor, changing	
912-125	0.60	Lift/lower, angle sensor, changing	
912-126	0.70	Tilt in/out, angle sensor, changing	
912-127	0.20	Tilt, functional check	
913-034	0.20	Lifting time, checking	
913-044	1.25	Hydraulic pump P1 and P2, checking function	
913-050	4.50	Hydraulic pump P2, removal	
913-051	8.50	Hydraulic pump P2, installation	
913-055	0.30	Hydraulic pump P1, standby pressure, checking	
913-056	0.40	Hydraulic pump P1 and P2, working pressure, checking	
913-057	0.30	Hydraulic pump P2, regulated pressure, checking	
913-060	5.00	Hydraulic pump P1, removal	
913-061	6.50	Hydraulic pump P1, installation	
913-062	4.50	Hydraulic pump P3, removal	
913-063	5.50	Hydraulic pump P3, installation	
914-047	0.20	Servo accumulator, removal	
914-048	0.20	Servo accumulator, installation	
914-049	0.10	Accumulator removed, checking	
914-055	0.80	Servo pressure, checking and adjusting	
914-063	0.60	Servo pressure, checking at the spool in control valve	
916-002	0.60	Boom suspension accumulator, check and adjusting	
916-003	0.60	Boom suspension accumulator, reconditioning	
916-006	0.90	Boom suspension system, pressure reduction, safety valve, checking and adjusting	
916-008	0.70	Boom suspension system, right accumulator, removal	
916-009	1.25	Boom suspension system, right accumulator, installation	
916-010	0.50	Boom suspension system, left accumulator, removal	

Op.no.	time (h)	Notes	
916-011	0.80	Boom suspension system, left accumulator, installation	
916-014	0.40	3rd hydraulic function, shock valve, checking	
916-015	0.60	3rd hydraulic function, solenoid valve, changing	
916-070	0.20	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing	
916-072	0.20	Accumulator, boom suspension system, discarding	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-036	0.10	Attachment locking, functional check	
925-014	1.50	Bucket, removal	
925-015	4.50	Bucket, installation	
94		UNIT, LOAD HANDLING	
945-002	6.50	Lift frame, replacing bearing in lower bucket- or implement attachment	
945-005	4.50	Lift cylinder, repacking in machine	
945-008	3.50	Tilt cylinder, replacing	
945-009	5.00	Tilt cylinder, repacking in machine	
99		MISCELLANEOUS	
993-025	2.50	Automatic lubrication pump unit, reconditioning	1436 - 9999
993-030	0.80	Shift valve, checking	

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	0.20	Maintenance service, daily
173-004	0.50	Maintenance service, every 50 hours
173-006	0.70	Maintenance service, every 100 hours
173-010	3.00	Maintenance service, every 500 hours
173-012	6.00	Maintenance service, every 1000 hours
173-013	7.50	Maintenance service, every 1500 hours
173-014	6.50	Maintenance service, every 2000 hours
173-016	13.00	Maintenance service, every 3000 hours
173-022	0.40	Maintenance service, every 6000 hours
173-332	0.40	MATRIS and Tech Tool, reading
19		GENERAL
191-021	0.20	Service position 1
191-022	0.20	Service position 2
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
210-002	3.00	Compression test
210-070	4.00	Engine, removing
210-072	4.00	Engine, installing
214-012	2.50	Valves, adjusting
214-037	0.80	Valve cover, removing
214-038	0.90	Valve cover, installing
22		LUBRICATING SYSTEM
221-006	0.60	Oil pressure relief valve, replacing
221-021	0.40	Lubrication oil pressure, checking
223-006	0.80	Oil cooler, replacing
23		FUEL SYSTEM
234-010	7.00	Fuel tank, replacing
234-016	0.50	Fuel tank level sensor, replacing
237-002	2.50	Injectors, replacing all
237-125	2.00	Fuel pump unit, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
254-001	2.00	Diesel particulate filter, check and clean
254-059	0.70	Inlet throttle, replacing

Op.no.	time (h)		Notes
26		COOLING SYSTEM	
262-002	1.50	Coolant pump, replacing	
262-098	0.80	Thermostat, replacing	
263-001	1.50	Fan motor, removing	
263-003	1.75	Fan motor, installing	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-061	0.30	Induction sensor for output shaft, changing	
44		HYDROSTATIC DRIVE	
441-002	6.00	Hydraulic motor, replacing	
442-001	4.00	Hydraulic pump, replacing	
442-016	0.30	Hydrostatic pump charge pressure, check and adjust	320001 - 329999
442-016	0.30	Hydrostatic pump charge pressure, check and adjust	420001 - 429999
442-016	0.30	Hydrostatic pump charge pressure, check and adjust	620001 - 629999
442-017	0.40	Start hydraulic pump control, check and adjust	
442-018	0.40	Hydrostatic pump cut off valve, check and adjust	
442-019	0.50	Hydrostatic pump high pressure valve, check and adjust	320001 - 329999
442-019	0.50	Hydrostatic pump high pressure valve, check and adjust	420001 - 429999
442-019	0.50	Hydrostatic pump high pressure valve, check and adjust	620001 - 629999
442-020	0.50	Hydrostatic pump mechanical zero position, check and adjust	
46		FRONT AXLE; REAR AXLE	
463-002	2.50	Axle, removing	
463-003	3.00	Axle, installing	
5		BRAKE	
52		HYDRAULIC BRAKE SYSTEM	
520-037	0.30	Brake system, bleeding	320001 - 329999
520-037	0.30	Brake system, bleeding	420001 - 429999
520-037	0.30	Brake system, bleeding	620001 - 629999
520-040	0.40	Inching and brake pedal, adjusting	

Op.no.	time (h)	Notes
6		STEERING
64		STEERING
645-018	0.40	Steering pressure, checking
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	0.80	Counterweight, removing
716-002	0.70	Counterweight, fitting
74		FRAME LINK
741-001	3.00	Frame joint, separating machine
741-002	3.00	Frame joint, assembly of separated machine
741-036	1.50	Frame joint, replacing bearings
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.30	Engine hood, removing
821-002	0.20	Engine hood, installing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	2.50	Windscreen, replacing
843-012	3.00	Rear window, replacing
843-048	2.50	Door window, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-005	0.30	Vacuum pump, connection
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-091	1.50	Main control valve, removal
912-092	1.50	Main control valve, installation
912-160	1.00	Port relief valve pressure, checking and adjusting620001 - 629999

Op.no.	time (h)	Notes
912-160	0.90	Port relief valve pressure, checking and adjusting320001 - 329999
912-160	0.90	Port relief valve pressure, checking and adjusting420001 - 429999
913-004	0.50	Hydraulic pump, checking and adjusting max working pressure
913-010	1.25	Hydraulic pump, replacing
914-058	1.25	Servo valve, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-031	1.50	Implemental attachment hydraulic cylinder, replacing
94		UNIT, LOAD HANDLING
945-004	1.00	Lift cylinder, replacing
945-008	0.90	Tilt cylinder, replacing

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
171-001	0.50	Arrival Inspection, according to Inspection Programme	
171-002	1.50	Delivery Inspection, according to Inspection Programme	
172-002	6.00	Warranty inspection 100 hours	
172-004	8.00	Warranty inspection 1000 hours	
173-010	3.00	Maintenance service, every 500 hours	
173-012	8.00	Maintenance service, every 1000 hours	
173-059	1.00	Engine, changing oil and filter	
173-061	1.00	Transmission, changing oil and filter	
173-068	1.00	Rear axle, changing oil	
173-069	1.00	Front axle, changing oil	
173-070	2.00	Axles, changing oil	
173-074	1.50	Hydraulic oil tank, changing oil and filter	
173-075	2.50	Hydraulic oil tank, changing oil and filter incl.cleaning tank	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
210-002	2.00	Compression test	
210-070	5.50	Engine, removing	
210-071	34.00	Engine removed, general overhaul	
210-072	6.00	Engine, installing	
211-002	4.00	Cylinder head, replacing gasket	
211-068	1.50	Cylinder heads all removed, decarbonizing and grinding in valves	
211-071	1.00	Cylinder head removed, pressure testing each	
212-011	0.75	Cylinder, cylinder heads removed, measuring wear in all cylinders	
214-012	0.10	Valves, adjusting	1911001 - 1913000
214-012	0.10	Valves, adjusting	1921001 - 1923000
214-012	1.00	Valves, adjusting	1913001 - 1919999
214-012	1.00	Valves, adjusting	1923001 - 1929999
215-002	0.75	Timing gear cover, fitting new gasket in machine	
216-014	2.00	Crankshaft, replacing front oil seal	
216-018	4.00	Crankshaft, replacing rear oil seal	
217-002	1.00	Sump gasket, replacing incl cleaning oil strainer	
22		LUBRICATING SYSTEM	
221-006	1.00	Oil pressure relief valve, replacing	

Op.no.	time (h)	Notes
223-006	1.75	Oil cooler, replacing
23		FUEL SYSTEM
233-001	0.50	Fuel system, bleeding
233-002	0.50	Feed pump, replacing
233-004	0.25	Feed pump, checking feed pressure
233-014	0.25	Fuel filters, replacing
234-010	6.00	Fuel tank, replacing
236-001	0.50	Idling speed, checking and adjusting
236-070	1.00	Injection pump, removing
237-002	1.50	Injectors, replacing all
237-004	1.00	Injector, replacing one
237-080	1.00	Injectors removed, reconditioning all
25		INLET SYSTEM; EXHAUST SYSTEM
251-002	1.00	Induction manifold, replacing gasket
251-004	2.00	Exhaust manifold, replacing gasket
252-020	1.00	Silencer, replacing
252-021	0.50	Exhaust pipe, flexible tube, replacing
255-071	2.00	Turbocharger, replacing
255-073	2.00	Turbocharger removed, reconditioning
256-002	0.50	Air cleaner, checking prssure drop indicator
256-006	1.50	Preheating coil, replacing
26		COOLING SYSTEM
261-004	1.00	Coolant, changing
261-008	4.00	Radiator, replacing
261-012	0.50	Radiator hose upper, replacing
261-014	1.00	Radiator hoses lower, replacing
262-002	1.25	Coolant pump, replacing
262-098	0.80	Thermostat, replacing
263-012	0.50	Fan belt and/or alternator belt, replacing
263-013	0.25	Fan belt and/or alternator belt, checking and adjusting tension
263-022	0.50	Fan belt and/or alternator-, compressor belt, replacing all belts
27		ENGINE CONTROL
273-021	0.50	Stop magnet, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.50	Batteries, replacing

Op.no.	time (h)	Notes
311-003	0.25	Main switch, replacing
311-006	0.25	Earth lead to battery, replacing
311-008	0.50	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.50	Alternator, replacing incl function check
321-025	1.00	Alternator, replacing carbon brush kit in machine
322-005	0.50	Charging regulator, replacing
33		STARTING SYSTEM
331-018	1.00	Starter motor, replacing
334-001	0.80	Starter lock, replacing
35		LIGHTING
352-024	0.50	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.50	Rear lamp, replacing one
353-018	0.25	Rear lamp, replacing glass or bulb
356-056	0.50	Work lighting, replacing one head lamp assy
356-057	0.50	Work lighting, replacing one insert
36		OTHER ELECTRICAL EQUIPMENT
360-001	0.80	Combination control (by steering wheel), changing
361-010	0.50	Flasher switch, replacing
361-017	0.25	Flasher lamp, replacing glass or bulb
362-002	0.25	Horn, replacing
362-003	0.25	Reverse alarm, replacing
362-016	0.50	Horn switch, replacing
363-001	1.00	Windscreen wiper rear, replacing motor
363-002	1.00	Windscreen wiper front, replacing motor
363-003	0.75	Windscreen wiper, replacing switch
363-004	0.25	Windscreen flusher pump, replacing
364-004	0.75	Switch, replacing
364-008	0.25	Brake light switch, replacing
367-020	1.50	ECU, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	0.25	Engine temperature sensor, replacing
386-007	0.25	Engine oil pressure sensor, replacing
386-011	1.00	Fuel level sender, replacing
386-013	0.50	Hydrostatic system temperature sensor, replacing
386-014	0.50	Hydrostatic system oil pressure sensor, replacing
387-003	0.80	Key pad, replacing
387-005	1.00	Information display, replacing
387-021	0.90	Instrument panel (display unit), replacing

Op.no.	time (h)	Notes
39		MISCELLANEOUS
390-902	1.75	CareTrack, installing new
393-001	1.00	Voltage converter, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-047	0.75	Gear selector, replacing
43		GEARBOX,
434-002	1.50	Dropbox, replacing seal for front output shaft
434-016	4.00	Dropbox, oil pump, replacing
434-029	2.00	Dropbox removed, reconditioning
434-073	2.00	Dropbox, installing
434-074	3.00	Dropbox, removing
44		HYDROSTATIC DRIVE
441-001	1.00	Hydrostatic system, checking oil pressure
441-002	1.50	Hydraulic motor, replacing
442-001	6.00	Hydraulic pump, replacing
45		PROPELLER SHAFT
451-010	1.00	Propeller shaft, front, replacing
46		FRONT AXLE; REAR AXLE
461-001	3.00	Axle, replacing
461-005	1.50	Drive shaft, replacing one side
461-013	2.00	Centre gear, axle removed, reconditioning
461-014	1.00	Pinion front, fitting new gasket
461-040	2.00	Hub reduction gear, replacing
461-041	3.00	Hub reduction gear, removed, reconditioning
461-043	1.50	Hub, replacing seal
463-001	6.00	Axle, replacing
463-002	2.50	Axle, removing
463-003	3.50	Axle, installing
463-005	1.50	Drive shaft, replacing one side
463-013	4.00	Centre gear, axle removed, reconditioning
463-040	2.00	Hub reduction gear, replacing
463-041	3.00	Hub reduction gear removed, reconditioning
463-043	1.50	Hub, replacing seal

Op.no.	time (h)		Notes
5		BRAKE	
51		WHEEL BRAKE	
511-002	1.25	Brake disc, replacing one	1921001 - 1929999
511-002	0.80	Brake disc, replacing one	1911001 - 1919999
511-081	0.90	Brake calliper removed, reconditioning	1921001 - 1929999
511-081	0.90	Brake calliper removed, reconditioning	
516-001	0.25	Brake linings, checking wear	
516-004	1.00	Brake discs, replacing on both sides	
516-050	1.50	Brake piston, replacing seals	
517-001	0.50	Brake linings, checking wear	
517-004	4.00	Brake disc, replacing both sides	
517-050	2.50	Brake piston, replacing seals	
52		HYDRAULIC BRAKE SYSTEM	
520-001	0.70	Brake system, checking function, hydraulic	
520-002	0.50	Brake system, checking function, retardation	
520-004	0.50	Brake system, adjusting unloading pressure	
520-005	0.50	Brake system, check and adjusting pressure in circuit	
520-038	0.50	Brake system, front, bleeding	
525-008	1.00	Foot brake valve, replacing	
527-003	0.40	Accumulators, checking in machine	
55		PARKING BRAKE	
550-002	0.50	Parking brake, adjusting	
6		STEERING	
64		STEERING	
641-021	1.50	Adjustable steering column, replacing	
645-006	1.50	Steering cylinder, replacing	
645-028	0.70	Steering system, checking and adjusting working pressure	
645-054	2.00	Steering cylinder, replacing bearings	
645-060	2.50	Steering cylinder, repacking in machine	
645-077	1.00	Steering cylinder removed, reconditioning incl replacing bearings	
645-082	1.50	Steering valve, replacing	
647-093	1.50	Auxiliary steering, replacing hydraulic pump	

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-005	0.50	Frame joint, checking clearance
741-036	15.00	Frame joint, replacing bearings
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.50	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
818-015	2.50	Cab suspension, rubber element replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	1.50	Engine hood, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.00	Door, replacing
831-006	0.50	Door lock, replacing
831-014	0.50	Door, replacing sealing strip
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	3.00	Windscreen, replacing
843-012	3.00	Rear window, replacing
843-013	3.00	Side window, replacing
843-048	2.50	Door window, replacing
87		AIR CONDITIONING UNIT
873-004	2.00	Heater core, replacing
873-006	2.50	Fan motor, replacing
873-008	0.75	Heat control valve, replacing
873-009	1.00	Heat control, replacing
874-002	1.00	Refrigerant, draining
874-003	1.00	Cooling unit, performance test
874-005	1.75	Refrigerant, filling excl vacuum pumping
874-006	3.00	Compressor, replacing incl draining and filling
874-007	0.75	Belt, replacing
874-010	2.00	Condenser, replacing incl draining and filling
874-011	2.50	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	2.50	Expansion valve, replacing incl draining and filling
874-014	1.00	Thermostat, replacing

Op.no.	time (h)	Notes
874-015	1.00	Compressor, replacing shaft seal (compressor removed)
874-016	1.00	Compressor, replacing magnetic clutch (compressor removed)
874-017	1.00	Compressor, replacing magnetic clutch in machine
874-019	0.50	Compressor, replacing valve plate (compressor removed)

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-005	1.00	Pump suction hose and pipe, replacing
911-011	4.00	Oil cooler, replacing
911-038	6.50	Hydraulic oil tank, replacing
912-001	2.00	Control valve, replacing
912-002	4.00	Control valve removed, reconditioning
912-009	1.00	Shock valve, tilt function, checking and adjusting
912-011	1.00	Shock valve lift function, adjusting
913-003	0.50	Hydraulic pump, checking and adjusting standby pressure
913-004	0.50	Hydraulic pump, checking and adjusting max working pressure
913-010	2.00	Hydraulic pump, replacing
914-054	0.50	Servo valve, adjusting control
914-055	0.50	Servo pressure, checking and adjusting
914-058	1.50	Servo valve, replacing
916-001	0.50	Boom suspension system, functional check
916-002	0.75	Boom suspension accumulator, check and adjusting
916-004	1.50	Boom suspension system, checking closing pressure
916-005	1.00	Boom suspension system, checking opening pressure

94 UNIT, LOAD HANDLING

945-002	3.00	Lift frame, replacing bearing in lower bucket- or implement attachment
945-004	1.00	Lift cylinder, replacing
945-006	1.50	Lift cylinder removed, repacking
945-008	1.00	Tilt cylinder, replacing
945-009	1.50	Tilt cylinder, repacking in machine
945-011	1.50	Implemental attachment, replacing hydraulic cylinder

Op.no.	time (h)	Notes
945-012	1.00	Lift cylinder removed, replacing bearings "C-P"
945-016	6.00	Lift frame, replacing bearing in upper mounting "O"
945-024	1.00	Tilting cylinder, changing bearing 'E-F' in machine
945-054	3.00	Implement attachment, replacing
945-056	1.50	Implement attachment, repacking removed hydraulic cylinder
945-063	1.50	T-link upper removed, replacing bearings "HIJ"
945-064	1.00	T-link, lower, replacing "IB"
945-066	1.00	Tilt link, replacing "GH"
945-067	1.00	Tilt link removed, replacing bearings "GH"
945-069	1.00	Tilt arm, replacing "GDF"
945-070	1.00	Tilt arm removed, replacing bearing "GDF"

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	0.50	Maintenance service, daily
173-004	1.00	Maintenance service, every 50 hours
173-007	1.25	Maintenance service, every 250 hours
173-010	3.00	Maintenance service, every 500 hours
173-012	8.50	Maintenance service, every 1000 hours
173-013	3.50	Maintenance service, every 1500 hours
173-014	11.00	Maintenance service, every 2000 hours
173-016	9.00	Maintenance service, every 3000 hours
173-019	9.50	Maintenance service, every 4500 hours
173-022	12.00	Maintenance service, every 6000 hours
173-332	0.40	MATRIS and Tech Tool, reading
19		GENERAL
191-021	0.20	Service position 1
191-022	0.20	Service position 2
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	4.00	Engine, removing
210-072	3.50	Engine, installing
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
214-012	1.00	Valves, adjusting
214-037	0.80	Valve cover, removing
214-038	1.00	Valve cover, installing
22		LUBRICATING SYSTEM
221-021	0.30	Lubrication oil pressure, checking
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.20	Fuel system, bleeding
233-008	0.90	Fuel pump, replacing
237-002	4.50	Injectors, replacing all
237-017	7.00	Injector sleeves, replacing
237-032	2.00	High pressure fuel pump, replacing
237-033	1.00	Fuel control valve (FCV), replacing
237-035	0.40	Fuel rail pressure sensor, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
254-001	0.90	Diesel particulate filter, check and clean

Op.no.	time (h)	Notes
254-022	0.90	ACM (After treatment control module), replacing, non-programmed
254-023	0.80	ACM (After treatment control module), replacing, pre-programmed
254-032	1.00	Burner, checking
254-033	0.50	Burner, replacing
254-044	0.20	Glow plug, replacing
254-046	0.20	Spark plug, replacing
26		COOLING SYSTEM
262-002	1.50	Coolant pump, replacing
262-098	1.25	Thermostat, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	0.80	I-ECU, MID 140, changing non-programmed ECU
300-074	0.30	I-ECU, MID 140, changing pre-programmed ECU
301-003	0.40	Machine, Calibration
33		STARTING SYSTEM
331-018	1.75	Starter motor, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-007	0.20	Engine oil pressure sensor, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-025	0.20	Transmission solenoid, replacing
421-028	0.40	Transmission sensor, replacing
421-061	0.30	Induction sensor for output shaft, changing
421-070	1.75	Transmission, removing
421-072	2.00	Transmission, installing
421-100	2.50	Transmission, function check
		220001 - 229999
44		HYDROSTATIC DRIVE
441-002	1.75	Hydraulic motor, replacing
441-060	0.40	Start hydraulic motor control, check and adjust
442-001	4.50	Hydraulic pump, replacing
442-016	0.30	Hydrostatic pump charge pressure, check and adjust
442-017	0.40	Start hydraulic pump control, check and adjust

Op.no.	time (h)	Notes
442-017	0.30	Start hydraulic pump control, check and adjust
442-018	0.30	Hydrostatic pump cut off valve, check and adjust
442-019	0.30	Hydrostatic pump high pressure valve, check and adjust
442-020	0.30	Hydrostatic pump mechanical zero position, check and adjust
46		FRONT AXLE; REAR AXLE
463-002	1.75	Axle, removing
463-003	1.75	Axle, installing
5		BRAKE
51		WHEEL BRAKE
511-002	0.80	Brake disc, replacing one
511-081	0.90	Brake calliper removed, reconditioning
52		HYDRAULIC BRAKE SYSTEM
520-001	1.00	Brake system, checking function, hydraulic
520-003	0.20	Service brake pressure, checking
520-004	0.40	Brake system, adjusting unloading pressure
520-037	0.20	Brake system, bleeding
527-001	0.20	Accumulator removed, checking charging pressure
527-009	0.40	Accumulator, check
6		STEERING
64		STEERING
645-028	0.70	Steering system, checking and adjusting working pressure
66		LEVER STEERING
660-006	2.50	Comfort drive control (CDC), angle sensor, changing
660-007	1.25	Comfort drive control (CDC), solenoid valve, changing
660-009	0.90	Comfort Drive Control (CDC), control valve, removal
660-010	1.25	Comfort drive control (CDC), control valve, installation
660-011	0.20	Lever steering (CDC), functional check
660-012	0.50	Comfort Drive Control, servo pressure, checking

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	0.50	Counterweight, removing
716-002	0.40	Counterweight, fitting
74		FRAME LINK
741-001	3.50	Frame joint, separating machine
741-002	4.50	Frame joint, assembly of separated machine
741-036	0.60	Frame joint, replacing bearings
75		AXLE SUSPENSION
755-003	4.00	Axle suspension, replacing bushes and seals
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	2.50	Cab, removing
810-002	2.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.40	Engine hood, removing
821-002	0.40	Engine hood, installing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	2.50	Windscreen, replacing
843-013	1.25	Side window, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-005	0.30	Vacuum pump, connection
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-091	1.25	Main control valve, removal
912-092	1.25	Main control valve, installation
912-160	0.70	Port relief valve pressure, checking and adjusting
913-003	0.40	Hydraulic pump, checking and adjusting standby pressure
913-004	0.40	Hydraulic pump, checking and adjusting max working pressure
913-010	2.00	Hydraulic pump, replacing

Op.no.	time (h)	Notes
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-031	1.50	Implemental attachment hydraulic cylinder, replacing
924-035	0.60	Attachment locking hydraulic cylinder (vision-optimised bracket), replacing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	0.50	Maintenance service, daily
173-004	1.00	Maintenance service, every 50 hours
173-007	1.25	Maintenance service, every 250 hours
173-010	3.00	Maintenance service, every 500 hours
173-012	8.50	Maintenance service, every 1000 hours
173-013	3.50	Maintenance service, every 1500 hours
173-014	11.00	Maintenance service, every 2000 hours
173-016	9.00	Maintenance service, every 3000 hours
173-019	9.50	Maintenance service, every 4500 hours
173-022	12.00	Maintenance service, every 6000 hours
173-332	0.40	MATRIS and Tech Tool, reading
19		GENERAL
191-021	0.20	Service position 1
191-022	0.20	Service position 2
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	4.00	Engine, removing
210-072	3.50	Engine, installing
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
214-012	1.00	Valves, adjusting
214-037	0.80	Valve cover, removing
214-038	1.00	Valve cover, installing
22		LUBRICATING SYSTEM
221-021	0.30	Lubrication oil pressure, checking
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.20	Fuel system, bleeding
233-008	0.90	Fuel pump, replacing
237-002	4.50	Injectors, replacing all
237-017	7.00	Injector sleeves, replacing
237-032	2.00	High pressure fuel pump, replacing
237-033	1.00	Fuel control valve (FCV), replacing
237-035	0.40	Fuel rail pressure sensor, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
254-001	0.90	Diesel particulate filter, check and clean

Op.no.	time (h)	Notes
254-022	0.90	ACM (After treatment control module), replacing, non-programmed
254-023	0.80	ACM (After treatment control module), replacing, pre-programmed
254-032	1.00	Burner, checking
254-033	0.50	Burner, replacing
254-044	0.20	Glow plug, replacing
254-046	0.20	Spark plug, replacing
26		COOLING SYSTEM
262-002	1.50	Coolant pump, replacing
262-098	1.25	Thermostat, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	0.80	I-ECU, MID 140, changing non-programmed ECU
300-074	0.30	I-ECU, MID 140, changing pre-programmed ECU
301-003	0.40	Machine, Calibration
33		STARTING SYSTEM
331-018	1.75	Starter motor, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-007	0.20	Engine oil pressure sensor, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-025	0.20	Transmission solenoid, replacing
421-028	0.40	Transmission sensor, replacing
421-061	0.30	Induction sensor for output shaft, changing
421-070	1.75	Transmission, removing
421-072	2.00	Transmission, installing
421-100	2.50	Transmission, function check
		420001 - 429999
44		HYDROSTATIC DRIVE
441-002	1.75	Hydraulic motor, replacing
441-060	0.40	Start hydraulic motor control, check and adjust
442-001	4.50	Hydraulic pump, replacing
442-016	0.30	Hydrostatic pump charge pressure, check and adjust
442-017	0.40	Start hydraulic pump control, check and adjust

Op.no.	time (h)	Notes
442-017	0.30	Start hydraulic pump control, check and adjust
442-018	0.30	Hydrostatic pump cut off valve, check and adjust
442-019	0.30	Hydrostatic pump high pressure valve, check and adjust
442-020	0.30	Hydrostatic pump mechanical zero position, check and adjust
46		FRONT AXLE; REAR AXLE
463-002	1.75	Axle, removing
463-003	1.75	Axle, installing
5		BRAKE
51		WHEEL BRAKE
511-002	0.80	Brake disc, replacing one
511-081	0.90	Brake calliper removed, reconditioning
52		HYDRAULIC BRAKE SYSTEM
520-001	1.00	Brake system, checking function, hydraulic
520-003	0.20	Service brake pressure, checking
520-004	0.40	Brake system, adjusting unloading pressure
520-037	0.20	Brake system, bleeding
527-001	0.20	Accumulator removed, checking charging pressure
527-009	0.40	Accumulator, check
6		STEERING
64		STEERING
645-028	0.70	Steering system, checking and adjusting working pressure
66		LEVER STEERING
660-006	2.50	Comfort drive control (CDC), angle sensor, changing
660-007	1.25	Comfort drive control (CDC), solenoid valve, changing
660-009	0.90	Comfort Drive Control (CDC), control valve, removal
660-010	1.25	Comfort drive control (CDC), control valve, installation
660-011	0.20	Lever steering (CDC), functional check
660-012	0.50	Comfort Drive Control, servo pressure, checking

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	0.50	Counterweight, removing
716-002	0.40	Counterweight, fitting
74		FRAME LINK
741-001	3.50	Frame joint, separating machine
741-002	4.50	Frame joint, assembly of separated machine
741-036	0.60	Frame joint, replacing bearings
75		AXLE SUSPENSION
755-003	4.00	Axle suspension, replacing bushes and seals
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	2.50	Cab, removing
810-002	2.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.40	Engine hood, removing
821-002	0.40	Engine hood, installing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	2.50	Windscreen, replacing
843-013	1.25	Side window, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-005	0.30	Vacuum pump, connection
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-091	1.25	Main control valve, removal
912-092	1.25	Main control valve, installation
912-160	0.70	Port relief valve pressure, checking and adjusting
913-003	0.40	Hydraulic pump, checking and adjusting standby pressure
913-004	0.40	Hydraulic pump, checking and adjusting max working pressure
913-010	2.00	Hydraulic pump, replacing

Op.no.	time (h)	Notes
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-031	1.50	Implemental attachment hydraulic cylinder, replacing
924-035	0.60	Attachment locking hydraulic cylinder (vision-optimised bracket), replacing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-004	1.25	Maintenance service, every 50 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	8.50	Maintenance service, every 2000 hours
173-018	11.00	Maintenance service, every 4000 hours
173-019	3.50	Maintenance service, every 4500 hours
173-022	1.50	Maintenance service, every 6000 hours
173-042	0.90	Maintenance service, first 1000 hours
173-302	0.20	Service position 1
173-371	0.20	Service position 2
173-506	3.00	Fire suppression system, checking
176-001	0.50	Mechanical release of parking brake
19		GENERAL
191-021	0.20	Service position 1
191-022	0.20	Service position 2
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-066	0.80	ECM (Engine control module), replacing pre-programmed
200-067	0.90	ECM (Engine control module), replacing non-programmed
200-067	0.90	ECM (Engine control module), replacing non-programmed
200-200	1.00	Engine belts, replacing
21		ENGINE
210-002	4.00	Compression test
214-012	2.00	Valves, adjusting
214-037	0.50	Valve cover, removing
214-038	0.40	Valve cover, installing
22		LUBRICATING SYSTEM
221-022	0.30	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding

Op.no.	time (h)	Notes
233-004	0.30	Feed pump, checking feed pressure
236-002	0.50	Stall speed, checking
237-002	3.50	Injectors, replacing all
237-017	8.00	Injector sleeves, replacing
237-031	1.50	Fuel rail, replacing
237-032	1.50	High pressure fuel pump, replacing
237-033	0.90	Fuel control valve (FCV), replacing
237-034	1.50	Pressure relief valve (PRV), replacing
237-035	0.60	Fuel rail pressure sensor, replacing
237-127	0.60	High pressure fuel pipes, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	1.00	Exhaust pipe, flexible tube, replacing
254-001	3.50	Diesel particulate filter, check and clean
254-022	0.90	ACM (After treatment control module), replacing, non-programmed
254-059	1.00	Inlet throttle, replacing
254-060	3.50	Diesel oxidation catalyst, replacing
254-103	3.50	AdBlue®/DEF tank, tank armature, replacing
254-107	1.00	AdBlue®/DEF pump unit, replacing
254-114	1.00	AdBlue®/DEF, draining
254-118	0.80	SCR system, dosing test
254-119	0.80	Coolant valve, replacing
254-120	0.90	AdBlue®/DEF dosing injector, replacing
254-121	0.50	AdBlue®/DEF quality, checking
254-124	0.80	AdBlue®/DEF pump unit, filter, replacing
254-126	1.25	AdBlue®/DEF mixing tube, replacing
254-127	3.00	SCR muffler, replacing
254-130	0.80	AdBlue®/DEF pump unit, flushing
255-071	1.00	Turbocharger, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
260-003	0.60	Cooling system, pressure control
262-002	1.00	Coolant pump, replacing
29		Miscellaneous
293-001	1.75	EGR cooler, replacing
293-005	0.80	EGR valve, replacing
293-009	0.60	EGR reed valve, replacing
293-010	0.50	EGR Venturi tube, replacing
293-013	0.70	EGR venturi tube, cleaning

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-077	0.60	CCM, replacing
31		BATTERY
311-002	0.30	Batteries, replacing
311-005	0.40	Battery condition, check
36		OTHER ELECTRICAL EQUIPMENT
366-103	1.00	HMICU, changing pre-programmed ECU
366-104	1.00	HMICU, changing non-programmed ECU
366-105	1.50	GPMECU1, changing pre-programmed ECU
366-106	1.50	GPMECU1, changing non-programmed ECU
366-107	0.70	GPMECU2, changing pre-programmed ECU
366-108	0.80	GPMECU2, changing non-programmed ECU
366-109	1.00	GPMECU3, changing non-programmed ECU
366-110	1.00	GPMECU3, changing pre-programmed ECU
39		MISCELLANEOUS
398-005	0.60	W-ECU, replacing, non-programmed
398-006	0.60	W-ECU, replacing, pre-programmed
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-052	2.50	Seal for front output shaft, replacing
421-054	0.90	Seal for rear output shaft, replacing
421-099	0.70	Transmission, calibration
421-100	0.30	Transmission, function check
46		FRONT AXLE; REAR AXLE
461-037	0.80	Hub reduction, removing
461-038	1.50	Hub reduction, installing
461-043	4.50	Hub, replacing seal
463-037	3.00	Axle suspension, replacing bushes and seals
463-043	4.50	Hub, replacing seal
463-045	0.80	Hub reduction, removing
463-046	1.50	Hub reduction, installing
468-006	0.20	Differential lock, function check
468-051	0.70	Differential lock, adjusting

Op.no.	time (h)	Notes
5		BRAKE
51		WHEEL BRAKE
510-003	0.40	Brake discs, measuring wear
516-005	3.00	Brake disc, replacing
516-050	3.00	Brake piston, replacing seals
517-005	3.00	Brake disc, replacing
52		HYDRAULIC BRAKE SYSTEM
520-002	0.20	Brake system, checking function, retardation
520-005	0.30	Brake system, check and adjusting pressure in circuit
520-036	0.80	Brake system charging, checking
520-037	0.30	Brake system, bleeding
527-001	0.40	Accumulator removed, checking charging pressure
527-003	0.50	Accumulators, checking in machine
55		PARKING BRAKE
550-002	0.30	Parking brake, adjusting
550-014	0.70	Parking brake, replacing brake pads
550-018	0.40	Parking brake assembly, removing
550-019	0.50	Parking Brake - Disassembly
550-021	0.30	Parking Brake - Assembly
550-022	0.90	Parking Brake - Installation
550-023	0.10	Parking brake, function checking
6		STEERING
60		GENERAL
600-001	0.50	Steering system, function check
64		STEERING
645-028	0.40	Steering system, checking and adjusting working pressure
645-037	0.20	Steering accumulator removed, checking
647-091	0.70	Secondary steering pump, checking and adjusting working pressure
66		LEVER STEERING
660-011	0.20	Lever steering (CDC), functional check
660-012	0.40	Comfort Drive Control, servo pressure, checking

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	1.50	Counterweight, removing
716-002	1.25	Counterweight, fitting
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-002	0.40	Front wheel, removal
771-003	0.40	Front wheel, installation
771-004	0.60	Rear wheel, removing
771-005	0.30	Rear wheel, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.40	Engine hood, removing
821-002	0.80	Engine hood, installing
821-010	0.50	Actuator, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-054	0.30	Electric door opener, control unit, replacing
831-055	0.30	Electric door opener, locking motor, replacing
831-056	0.20	Electric door opener, rotor switch, replacing
831-057	0.30	Electric door opener, opening support motor, replacing
834-013	0.30	Door lock cylinder, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	2.50	Windscreen, replacing
85		CAB INTERIOR/UPHOLSTERY
852-010	0.50	Operator's seat, securing
87		AIR CONDITIONING UNIT
870-012	1.00	Climate unit, removing
870-013	1.25	Climate unit, installing
873-004	2.50	Heater core, replacing
873-006	2.50	Fan motor, replacing
873-008	1.25	Heat control valve, replacing
873-011	0.70	Air mix door actuator, replacing
874-001	2.00	Refrigerant, filling incl vacuum pumping
874-002	1.00	Refrigerant, draining
874-009	0.50	Cooling unit, leak detection

Op.no.	time (h)	Notes
874-024	4.50	Evaporator, replacing
874-025	4.00	Expansion valve, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-001	0.50	Hydraulic system, warming up
900-002	3.00	Hydraulic system, bleeding
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-018	0.20	Back-up valve, checking and adjusting
912-021	0.80	Shock valve, tilt function, checking
912-023	0.60	Shock valve lift function, checking
912-127	0.20	Tilt, functional check
912-151	0.50	Back-up valve, replacing
912-226	0.50	Lift/lower function, checking
912-932	0.20	Inductive sensor, lift, adjusting
912-933	0.30	Inductive sensor, tilt, adjusting
913-001	0.60	Hydraulic pump, checking and adjusting standby pressure and working pressure
913-059	1.50	Hydraulic pump P3, checking function
914-055	0.20	Servo pressure, checking and adjusting
916-001	0.30	Boom suspension system, functional check
916-003	0.60	Boom suspension accumulator, reconditioning
916-006	0.80	Boom suspension system, pressure reduction, safety valve, checking and adjusting
916-017	1.75	3rd/4th hydraulic function, shock valve, checking
916-070	0.50	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing
916-072	0.20	Accumulator, boom suspension system, discarding
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-036	0.10	Attachment locking, functional check
99		MISCELLANEOUS
992-002	6.50	Fire suppression system, actions after activation
992-003	7.00	Fire suppression system, actions after manual activation
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-004	1.25	Maintenance service, every 50 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	8.50	Maintenance service, every 2000 hours
173-018	11.00	Maintenance service, every 4000 hours
173-019	3.50	Maintenance service, every 4500 hours
173-022	1.50	Maintenance service, every 6000 hours
173-042	0.90	Maintenance service, first 1000 hours
173-302	0.20	Service position 1
173-371	0.20	Service position 2
173-506	3.00	Fire suppression system, checking
176-001	0.50	Mechanical release of parking brake
19		GENERAL
191-021	0.20	Service position 1
191-022	0.20	Service position 2
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-066	0.80	ECM (Engine control module), replacing pre-programmed
200-067	0.90	ECM (Engine control module), replacing non-programmed
200-067	0.90	ECM (Engine control module), replacing non-programmed
200-200	1.00	Engine belts, replacing
21		ENGINE
210-002	4.00	Compression test
214-012	2.00	Valves, adjusting
214-037	0.50	Valve cover, removing
214-038	0.40	Valve cover, installing
22		LUBRICATING SYSTEM
221-022	0.30	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding

Op.no.	time (h)	Notes
233-004	0.30	Feed pump, checking feed pressure
236-002	0.50	Stall speed, checking
237-002	3.50	Injectors, replacing all
237-017	8.00	Injector sleeves, replacing
237-031	1.50	Fuel rail, replacing
237-032	1.50	High pressure fuel pump, replacing
237-033	0.90	Fuel control valve (FCV), replacing
237-034	1.50	Pressure relief valve (PRV), replacing
237-035	0.60	Fuel rail pressure sensor, replacing
237-127	0.60	High pressure fuel pipes, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	1.00	Exhaust pipe, flexible tube, replacing
254-001	3.50	Diesel particulate filter, check and clean
254-022	0.90	ACM (After treatment control module), replacing, non-programmed
254-059	1.00	Inlet throttle, replacing
254-060	3.50	Diesel oxidation catalyst, replacing
254-103	3.50	AdBlue®/DEF tank, tank armature, replacing
254-107	1.00	AdBlue®/DEF pump unit, replacing
254-114	1.00	AdBlue®/DEF, draining
254-118	0.80	SCR system, dosing test
254-119	0.80	Coolant valve, replacing
254-120	0.90	AdBlue®/DEF dosing injector, replacing
254-121	0.50	AdBlue®/DEF quality, checking
254-124	0.80	AdBlue®/DEF pump unit, filter, replacing
254-126	1.25	AdBlue®/DEF mixing tube, replacing
254-127	3.00	SCR muffler, replacing
254-130	0.80	AdBlue®/DEF pump unit, flushing
255-071	1.00	Turbocharger, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
260-003	0.60	Cooling system, pressure control
262-002	1.00	Coolant pump, replacing
29		Miscellaneous
293-001	1.75	EGR cooler, replacing
293-005	0.80	EGR valve, replacing
293-009	0.60	EGR reed valve, replacing
293-010	0.50	EGR Venturi tube, replacing
293-013	0.70	EGR venturi tube, cleaning

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-077	0.60	CCM, replacing
31		BATTERY
311-002	0.30	Batteries, replacing
311-005	0.40	Battery condition, check
36		OTHER ELECTRICAL EQUIPMENT
366-103	1.00	HMICU, changing pre-programmed ECU
366-104	1.00	HMICU, changing non-programmed ECU
366-105	1.50	GPMECU1, changing pre-programmed ECU
366-106	1.50	GPMECU1, changing non-programmed ECU
366-107	0.70	GPMECU2, changing pre-programmed ECU
366-108	0.80	GPMECU2, changing non-programmed ECU
366-109	1.00	GPMECU3, changing non-programmed ECU
366-110	1.00	GPMECU3, changing pre-programmed ECU
39		MISCELLANEOUS
398-005	0.60	W-ECU, replacing, non-programmed
398-006	0.60	W-ECU, replacing, pre-programmed
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-052	2.50	Seal for front output shaft, replacing
421-054	0.90	Seal for rear output shaft, replacing
421-099	0.70	Transmission, calibration
421-100	0.30	Transmission, function check
46		FRONT AXLE; REAR AXLE
461-037	0.80	Hub reduction, removing
461-038	1.50	Hub reduction, installing
461-043	4.50	Hub, replacing seal
463-037	3.00	Axle suspension, replacing bushes and seals
463-043	4.50	Hub, replacing seal
463-045	0.80	Hub reduction, removing
463-046	1.50	Hub reduction, installing
468-006	0.20	Differential lock, function check
468-051	0.70	Differential lock, adjusting

Op.no.	time (h)	Notes
5		BRAKE
51		WHEEL BRAKE
510-003	0.40	Brake discs, measuring wear
516-005	3.00	Brake disc, replacing
516-050	3.00	Brake piston, replacing seals
517-005	3.00	Brake disc, replacing
517-050	3.00	Brake piston, replacing seals
52		HYDRAULIC BRAKE SYSTEM
520-002	0.20	Brake system, checking function, retardation
520-005	0.30	Brake system, check and adjusting pressure in circuit
520-036	0.80	Brake system charging, checking
520-037	0.30	Brake system, bleeding
527-001	0.40	Accumulator removed, checking charging pressure
527-003	0.50	Accumulators, checking in machine
55		PARKING BRAKE
550-002	0.30	Parking brake, adjusting
550-014	0.70	Parking brake, replacing brake pads
550-018	0.40	Parking brake assembly, removing
550-019	0.50	Parking Brake - Disassembly
550-021	0.30	Parking Brake - Assembly
550-022	0.90	Parking Brake - Installation
550-023	0.10	Parking brake, function checking
6		STEERING
60		GENERAL
600-001	0.50	Steering system, function check
64		STEERING
645-028	0.40	Steering system, checking and adjusting working pressure
645-037	0.20	Steering accumulator removed, checking
647-091	0.70	Secondary steering pump, checking and adjusting working pressure
66		LEVER STEERING
660-011	0.20	Lever steering (CDC), functional check
660-012	0.40	Comfort Drive Control, servo pressure, checking

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	1.50	Counterweight, removing
716-002	1.25	Counterweight, fitting
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-002	0.40	Front wheel, removal
771-003	0.40	Front wheel, installation
771-004	0.60	Rear wheel, removing
771-005	0.30	Rear wheel, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.40	Engine hood, removing
821-002	0.80	Engine hood, installing
821-010	0.50	Actuator, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-054	0.30	Electric door opener, control unit, replacing
831-055	0.30	Electric door opener, locking motor, replacing
831-056	0.20	Electric door opener, rotor switch, replacing
831-057	0.30	Electric door opener, opening support motor, replacing
834-013	0.30	Door lock cylinder, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	2.50	Windscreen, replacing
85		CAB INTERIOR/UPHOLSTERY
852-010	0.50	Operator's seat, securing
87		AIR CONDITIONING UNIT
870-012	1.00	Climate unit, removing
870-013	1.25	Climate unit, installing
873-004	2.50	Heater core, replacing
873-006	2.50	Fan motor, replacing
873-008	1.25	Heat control valve, replacing
873-011	0.70	Air mix door actuator, replacing
874-001	2.00	Refrigerant, filling incl vacuum pumping
874-002	1.00	Refrigerant, draining
874-009	0.50	Cooling unit, leak detection

Op.no.	time (h)	Notes
874-024	4.50	Evaporator, replacing
874-025	4.00	Expansion valve, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-001	0.50	Hydraulic system, warming up
900-002	3.00	Hydraulic system, bleeding
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-018	0.20	Back-up valve, checking and adjusting
912-021	0.80	Shock valve, tilt function, checking
912-023	0.60	Shock valve lift function, checking
912-127	0.20	Tilt, functional check
912-151	0.50	Back-up valve, replacing
912-226	0.50	Lift/lower function, checking
912-932	0.20	Inductive sensor, lift, adjusting
912-933	0.30	Inductive sensor, tilt, adjusting
913-001	0.60	Hydraulic pump, checking and adjusting standby pressure and working pressure
913-059	1.50	Hydraulic pump P3, checking function
914-055	0.20	Servo pressure, checking and adjusting
916-001	0.30	Boom suspension system, functional check
916-003	0.60	Boom suspension accumulator, reconditioning
916-006	0.80	Boom suspension system, pressure reduction, safety valve, checking and adjusting
916-017	1.75	3rd/4th hydraulic function, shock valve, checking
916-070	0.50	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing
916-072	0.20	Accumulator, boom suspension system, discarding
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-036	0.10	Attachment locking, functional check
99		MISCELLANEOUS
992-002	6.50	Fire suppression system, actions after activation
992-003	7.00	Fire suppression system, actions after manual activation
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-004	1.25	Maintenance service, every 50 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	8.50	Maintenance service, every 2000 hours
173-018	11.00	Maintenance service, every 4000 hours
173-019	3.50	Maintenance service, every 4500 hours
173-022	1.50	Maintenance service, every 6000 hours
173-042	0.90	Maintenance service, first 1000 hours
173-302	0.20	Service position 1
173-371	0.20	Service position 2
173-506	3.00	Fire suppression system, checking
176-001	0.50	Mechanical release of parking brake
19		GENERAL
191-021	0.20	Service position 1
191-022	0.20	Service position 2
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-066	0.80	ECM (Engine control module), replacing pre-programmed
200-067	0.90	ECM (Engine control module), replacing non-programmed
200-067	0.90	ECM (Engine control module), replacing non-programmed
200-200	1.00	Engine belts, replacing
21		ENGINE
210-002	4.00	Compression test
214-012	2.00	Valves, adjusting
214-037	0.50	Valve cover, removing
214-038	0.40	Valve cover, installing
22		LUBRICATING SYSTEM
221-022	0.30	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding

Op.no.	time (h)	Notes
233-004	0.30	Feed pump, checking feed pressure
236-002	0.50	Stall speed, checking
237-002	3.50	Injectors, replacing all
237-017	8.00	Injector sleeves, replacing
237-031	1.50	Fuel rail, replacing
237-032	1.50	High pressure fuel pump, replacing
237-033	0.90	Fuel control valve (FCV), replacing
237-034	1.50	Pressure relief valve (PRV), replacing
237-035	0.60	Fuel rail pressure sensor, replacing
237-127	0.60	High pressure fuel pipes, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	1.00	Exhaust pipe, flexible tube, replacing
254-001	3.50	Diesel particulate filter, check and clean
254-022	0.90	ACM (After treatment control module), replacing, non-programmed
254-059	1.00	Inlet throttle, replacing
254-060	3.50	Diesel oxidation catalyst, replacing
254-103	3.50	AdBlue®/DEF tank, tank armature, replacing
254-107	1.00	AdBlue®/DEF pump unit, replacing
254-114	1.00	AdBlue®/DEF, draining
254-118	0.80	SCR system, dosing test
254-119	0.80	Coolant valve, replacing
254-120	0.90	AdBlue®/DEF dosing injector, replacing
254-121	0.50	AdBlue®/DEF quality, checking
254-124	0.80	AdBlue®/DEF pump unit, filter, replacing
254-126	1.25	AdBlue®/DEF mixing tube, replacing
254-127	3.00	SCR muffler, replacing
254-130	0.80	AdBlue®/DEF pump unit, flushing
255-071	1.00	Turbocharger, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
260-003	0.60	Cooling system, pressure control
262-002	1.00	Coolant pump, replacing
29		Miscellaneous
293-001	1.75	EGR cooler, replacing
293-005	0.80	EGR valve, replacing
293-009	0.60	EGR reed valve, replacing
293-010	0.50	EGR Venturi tube, replacing
293-013	0.70	EGR venturi tube, cleaning

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-077	0.60	CCM, replacing
31		BATTERY
311-002	0.30	Batteries, replacing
311-005	0.40	Battery condition, check
36		OTHER ELECTRICAL EQUIPMENT
366-103	1.00	HMICU, changing pre-programmed ECU
366-104	1.00	HMICU, changing non-programmed ECU
366-105	1.50	GPMECU1, changing pre-programmed ECU
366-106	1.50	GPMECU1, changing non-programmed ECU
366-107	0.70	GPMECU2, changing pre-programmed ECU
366-108	0.80	GPMECU2, changing non-programmed ECU
366-109	1.00	GPMECU3, changing non-programmed ECU
366-110	1.00	GPMECU3, changing pre-programmed ECU
39		MISCELLANEOUS
398-005	0.60	W-ECU, replacing, non-programmed
398-006	0.60	W-ECU, replacing, pre-programmed
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-052	2.50	Seal for front output shaft, replacing
421-054	0.90	Seal for rear output shaft, replacing
421-099	0.70	Transmission, calibration
421-100	0.30	Transmission, function check
46		FRONT AXLE; REAR AXLE
461-037	0.80	Hub reduction, removing
461-038	1.50	Hub reduction, installing
461-043	4.50	Hub, replacing seal
463-037	3.00	Axle suspension, replacing bushes and seals
463-043	4.50	Hub, replacing seal
463-045	0.80	Hub reduction, removing
463-046	1.50	Hub reduction, installing
468-006	0.20	Differential lock, function check
468-051	0.70	Differential lock, adjusting

Op.no.	time (h)	Notes
5		BRAKE
51		WHEEL BRAKE
510-003	0.40	Brake discs, measuring wear
516-005	3.00	Brake disc, replacing
516-050	3.00	Brake piston, replacing seals
517-005	3.00	Brake disc, replacing
517-050	3.00	Brake piston, replacing seals
52		HYDRAULIC BRAKE SYSTEM
520-002	0.20	Brake system, checking function, retardation
520-005	0.30	Brake system, check and adjusting pressure in circuit
520-036	0.80	Brake system charging, checking
520-037	0.30	Brake system, bleeding
527-001	0.40	Accumulator removed, checking charging pressure
527-003	0.50	Accumulators, checking in machine
55		PARKING BRAKE
550-002	0.30	Parking brake, adjusting
550-014	0.70	Parking brake, replacing brake pads
550-018	0.40	Parking brake assembly, removing
550-019	0.50	Parking Brake - Disassembly
550-021	0.30	Parking Brake - Assembly
550-022	0.90	Parking Brake - Installation
550-023	0.10	Parking brake, function checking
6		STEERING
60		GENERAL
600-001	0.50	Steering system, function check
64		STEERING
645-028	0.40	Steering system, checking and adjusting working pressure
645-037	0.20	Steering accumulator removed, checking
647-091	0.70	Secondary steering pump, checking and adjusting working pressure
66		LEVER STEERING
660-011	0.20	Lever steering (CDC), functional check
660-012	0.40	Comfort Drive Control, servo pressure, checking

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	1.50	Counterweight, removing
716-002	1.25	Counterweight, fitting
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-002	0.40	Front wheel, removal
771-003	0.40	Front wheel, installation
771-004	0.60	Rear wheel, removing
771-005	0.30	Rear wheel, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.40	Engine hood, removing
821-002	0.80	Engine hood, installing
821-010	0.50	Actuator, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-054	0.30	Electric door opener, control unit, replacing
831-055	0.30	Electric door opener, locking motor, replacing
831-056	0.20	Electric door opener, rotor switch, replacing
831-057	0.30	Electric door opener, opening support motor, replacing
834-013	0.30	Door lock cylinder, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	2.50	Windscreen, replacing
85		CAB INTERIOR/UPHOLSTERY
852-010	0.50	Operator's seat, securing
87		AIR CONDITIONING UNIT
870-012	1.00	Climate unit, removing
870-013	1.25	Climate unit, installing
873-004	2.50	Heater core, replacing
873-006	2.50	Fan motor, replacing
873-008	1.25	Heat control valve, replacing
873-011	0.70	Air mix door actuator, replacing
874-001	2.00	Refrigerant, filling incl vacuum pumping
874-002	1.00	Refrigerant, draining
874-009	0.50	Cooling unit, leak detection

Op.no.	time (h)	Notes
874-024	4.50	Evaporator, replacing
874-025	4.00	Expansion valve, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-001	0.50	Hydraulic system, warming up
900-002	3.00	Hydraulic system, bleeding
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-018	0.20	Back-up valve, checking and adjusting
912-021	0.80	Shock valve, tilt function, checking
912-023	0.60	Shock valve lift function, checking
912-127	0.20	Tilt, functional check
912-151	0.50	Back-up valve, replacing
912-226	0.50	Lift/lower function, checking
912-932	0.20	Inductive sensor, lift, adjusting
912-933	0.30	Inductive sensor, tilt, adjusting
913-001	0.60	Hydraulic pump, checking and adjusting standby pressure and working pressure
913-059	1.50	Hydraulic pump P3, checking function
914-055	0.20	Servo pressure, checking and adjusting
916-001	0.30	Boom suspension system, functional check
916-003	0.60	Boom suspension accumulator, reconditioning
916-006	0.80	Boom suspension system, pressure reduction, safety valve, checking and adjusting
916-017	1.75	3rd/4th hydraulic function, shock valve, checking
916-070	0.50	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing
916-072	0.20	Accumulator, boom suspension system, discarding
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-036	0.10	Attachment locking, functional check
99		MISCELLANEOUS
992-002	6.50	Fire suppression system, actions after activation
992-003	7.00	Fire suppression system, actions after manual activation
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.30	Maintenance service, daily	2211004 - 2216004
173-004	0.70	Maintenance service, every 50 hours	2211004 - 2216004
173-010	2.00	Maintenance service, every 500 hours	2211004 - 2216004
173-012	3.00	Maintenance service, every 1000 hours	2211004 - 2216004
173-013	2.00	Maintenance service, every 1500 hours	2211004 - 2216004
173-014	4.00	Maintenance service, every 2000 hours	2211004 - 2216004
2		ENGINE WITH MOUNTING AND EQUIPMENT	
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	2211004 - 2216004
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-003	0.20	Window pane, removal	
843-004	0.20	Window pane, installation	

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.30	Maintenance service, daily	2206003 - 2211003
173-004	0.40	Maintenance service, every 50 hours	2206003 - 2211003
173-010	1.25	Maintenance service, every 500 hours	2206003 - 2211003
173-012	2.50	Maintenance service, every 1000 hours	2206003 - 2211003
173-013	3.00	Maintenance service, every 1500 hours	2206003 - 2211003
173-014	7.00	Maintenance service, every 2000 hours	2206003 - 2211003
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
214-012	3.50	Valves, adjusting	2206003 - 2211003
4		POWER TRANSMISSION	
44		HYDROSTATIC DRIVE	
441-035	1.75	Drive motor, removing	
441-036	1.75	Drive motor, installing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-003	0.20	Window pane, removal	
843-004	0.20	Window pane, installation	
87		AIR CONDITIONING UNIT	
873-006	0.50	Fan motor, replacing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-038	0.80	Hydraulic oil tank, replacing	
915-008	0.80	Control lever, removing	
915-009	0.80	Control lever, installing	

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.30	Maintenance service, daily	2206003 - 2211003
173-004	0.40	Maintenance service, every 50 hours	2206003 - 2211003
173-010	1.25	Maintenance service, every 500 hours	2206003 - 2211003
173-012	2.50	Maintenance service, every 1000 hours	2206003 - 2211003
173-013	3.00	Maintenance service, every 1500 hours	2206003 - 2211003
173-014	7.00	Maintenance service, every 2000 hours	2206003 - 2211003
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
214-012	3.50	Valves, adjusting	2206003 - 2211003
4		POWER TRANSMISSION	
44		HYDROSTATIC DRIVE	
441-035	1.75	Drive motor, removing	
441-036	1.75	Drive motor, installing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-003	0.20	Window pane, removal	
843-004	0.20	Window pane, installation	
87		AIR CONDITIONING UNIT	
873-006	0.50	Fan motor, replacing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-038	0.80	Hydraulic oil tank, replacing	
915-008	0.80	Control lever, removing	
915-009	0.80	Control lever, installing	

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.30	Maintenance service, daily	2206003 - 2211003
173-004	0.40	Maintenance service, every 50 hours	2206003 - 2211003
173-010	1.25	Maintenance service, every 500 hours	2206003 - 2211003
173-012	2.50	Maintenance service, every 1000 hours	2206003 - 2211003
173-013	3.00	Maintenance service, every 1500 hours	2206003 - 2211003
173-014	7.00	Maintenance service, every 2000 hours	2206003 - 2211003
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
214-012	3.50	Valves, adjusting	2206003 - 2211003
4		POWER TRANSMISSION	
44		HYDROSTATIC DRIVE	
441-035	1.75	Drive motor, removing	
441-036	1.75	Drive motor, installing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-003	0.20	Window pane, removal	
843-004	0.20	Window pane, installation	
87		AIR CONDITIONING UNIT	
873-006	0.50	Fan motor, replacing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-038	0.80	Hydraulic oil tank, replacing	
915-008	0.80	Control lever, removing	
915-009	0.80	Control lever, installing	

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.30	Maintenance service, daily	2206003 - 2211003
173-004	0.40	Maintenance service, every 50 hours	2206003 - 2211003
173-010	1.25	Maintenance service, every 500 hours	2206003 - 2211003
173-012	2.50	Maintenance service, every 1000 hours	2206003 - 2211003
173-013	3.00	Maintenance service, every 1500 hours	2206003 - 2211003
173-014	7.00	Maintenance service, every 2000 hours	2206003 - 2211003
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
214-012	3.50	Valves, adjusting	2206003 - 2211003
4		POWER TRANSMISSION	
44		HYDROSTATIC DRIVE	
441-035	1.75	Drive motor, removing	
441-036	1.75	Drive motor, installing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-003	0.20	Window pane, removal	
843-004	0.20	Window pane, installation	
87		AIR CONDITIONING UNIT	
873-006	0.50	Fan motor, replacing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-038	0.80	Hydraulic oil tank, replacing	
915-008	0.80	Control lever, removing	
915-009	0.80	Control lever, installing	

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.30	Maintenance service, daily	2211004 - 2216004
173-004	0.70	Maintenance service, every 50 hours	2211004 - 2216004
173-010	2.00	Maintenance service, every 500 hours	2211004 - 2216004
173-012	3.00	Maintenance service, every 1000 hours	2211004 - 2216004
173-013	2.00	Maintenance service, every 1500 hours	2211004 - 2216004
173-014	4.00	Maintenance service, every 2000 hours	2211004 - 2216004
2		ENGINE WITH MOUNTING AND EQUIPMENT	
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	2211004 - 2216004
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-003	0.20	Window pane, removal	
843-004	0.20	Window pane, installation	

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.30	Maintenance service, daily	2211004 - 2216004
173-004	0.70	Maintenance service, every 50 hours	2211004 - 2216004
173-010	2.00	Maintenance service, every 500 hours	2211004 - 2216004
173-012	3.00	Maintenance service, every 1000 hours	2211004 - 2216004
173-013	2.00	Maintenance service, every 1500 hours	2211004 - 2216004
173-014	4.00	Maintenance service, every 2000 hours	2211004 - 2216004
2		ENGINE WITH MOUNTING AND EQUIPMENT	
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	2211004 - 2216004
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-003	0.20	Window pane, removal	
843-004	0.20	Window pane, installation	

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.30	Maintenance service, daily	2211004 - 2216004
173-004	0.70	Maintenance service, every 50 hours	2211004 - 2216004
173-010	2.00	Maintenance service, every 500 hours	2211004 - 2216004
173-012	3.00	Maintenance service, every 1000 hours	2211004 - 2216004
173-013	2.00	Maintenance service, every 1500 hours	2211004 - 2216004
173-014	4.00	Maintenance service, every 2000 hours	2211004 - 2216004
2		ENGINE WITH MOUNTING AND EQUIPMENT	
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	2211004 - 2216004
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-003	0.20	Window pane, removal	
843-004	0.20	Window pane, installation	

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.30	Maintenance service, daily	2211004 - 2216004
173-004	0.70	Maintenance service, every 50 hours	2211004 - 2216004
173-010	2.00	Maintenance service, every 500 hours	2211004 - 2216004
173-012	3.00	Maintenance service, every 1000 hours	2211004 - 2216004
173-013	2.00	Maintenance service, every 1500 hours	2211004 - 2216004
173-014	4.00	Maintenance service, every 2000 hours	2211004 - 2216004
2		ENGINE WITH MOUNTING AND EQUIPMENT	
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	2211004 - 2216004
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-003	0.20	Window pane, removal	
843-004	0.20	Window pane, installation	

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.30	Maintenance service, daily	2206003 - 2211003
173-004	0.40	Maintenance service, every 50 hours	2206003 - 2211003
173-010	1.25	Maintenance service, every 500 hours	2206003 - 2211003
173-012	2.50	Maintenance service, every 1000 hours	2206003 - 2211003
173-013	3.00	Maintenance service, every 1500 hours	2206003 - 2211003
173-014	7.00	Maintenance service, every 2000 hours	2206003 - 2211003
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
214-012	3.50	Valves, adjusting	2206003 - 2211003
4		POWER TRANSMISSION	
44		HYDROSTATIC DRIVE	
441-035	1.75	Drive motor, removing	
441-036	1.75	Drive motor, installing	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-112	1.00	Recoil unit, removing	
775-113	1.00	Recoil unit, installing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-003	0.20	Window pane, removal	
843-004	0.20	Window pane, installation	
87		AIR CONDITIONING UNIT	
873-006	0.50	Fan motor, replacing	

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-038	0.80	Hydraulic oil tank, replacing
915-008	0.80	Control lever, removing
915-009	0.80	Control lever, installing

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.30	Maintenance service, daily	2206003 - 2211003
173-004	0.40	Maintenance service, every 50 hours	2206003 - 2211003
173-010	1.25	Maintenance service, every 500 hours	2206003 - 2211003
173-012	2.50	Maintenance service, every 1000 hours	2206003 - 2211003
173-013	3.00	Maintenance service, every 1500 hours	2206003 - 2211003
173-014	7.00	Maintenance service, every 2000 hours	2206003 - 2211003
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
214-012	3.50	Valves, adjusting	2206003 - 2211003
4		POWER TRANSMISSION	
44		HYDROSTATIC DRIVE	
441-035	1.75	Drive motor, removing	
441-036	1.75	Drive motor, installing	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-112	1.00	Recoil unit, removing	
775-113	1.00	Recoil unit, installing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-003	0.20	Window pane, removal	
843-004	0.20	Window pane, installation	
87		AIR CONDITIONING UNIT	
873-006	0.50	Fan motor, replacing	

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-038	0.80	Hydraulic oil tank, replacing
915-008	0.80	Control lever, removing
915-009	0.80	Control lever, installing

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.30	Maintenance service, daily	2206003 - 2211003
173-004	0.40	Maintenance service, every 50 hours	2206003 - 2211003
173-010	1.25	Maintenance service, every 500 hours	2206003 - 2211003
173-012	2.50	Maintenance service, every 1000 hours	2206003 - 2211003
173-013	3.00	Maintenance service, every 1500 hours	2206003 - 2211003
173-014	7.00	Maintenance service, every 2000 hours	2206003 - 2211003
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
214-012	3.50	Valves, adjusting	2206003 - 2211003
4		POWER TRANSMISSION	
44		HYDROSTATIC DRIVE	
441-035	1.75	Drive motor, removing	
441-036	1.75	Drive motor, installing	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-112	1.00	Recoil unit, removing	
775-113	1.00	Recoil unit, installing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-003	0.20	Window pane, removal	
843-004	0.20	Window pane, installation	
87		AIR CONDITIONING UNIT	
873-006	0.50	Fan motor, replacing	

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-038	0.80	Hydraulic oil tank, replacing
915-008	0.80	Control lever, removing
915-009	0.80	Control lever, installing

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.30	Maintenance service, daily	2206003 - 2211003
173-004	0.40	Maintenance service, every 50 hours	2206003 - 2211003
173-010	1.25	Maintenance service, every 500 hours	2206003 - 2211003
173-012	2.50	Maintenance service, every 1000 hours	2206003 - 2211003
173-013	3.00	Maintenance service, every 1500 hours	2206003 - 2211003
173-014	7.00	Maintenance service, every 2000 hours	2206003 - 2211003
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
214-012	3.50	Valves, adjusting	2206003 - 2211003
4		POWER TRANSMISSION	
44		HYDROSTATIC DRIVE	
441-035	1.75	Drive motor, removing	
441-036	1.75	Drive motor, installing	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-112	1.00	Recoil unit, removing	
775-113	1.00	Recoil unit, installing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-003	0.20	Window pane, removal	
843-004	0.20	Window pane, installation	
87		AIR CONDITIONING UNIT	
873-006	0.50	Fan motor, replacing	

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-038	0.80	Hydraulic oil tank, replacing
915-008	0.80	Control lever, removing
915-009	0.80	Control lever, installing

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.30	Maintenance service, daily	2211004 - 2216004
173-004	0.80	Maintenance service, every 50 hours	2211004 - 2216004
173-010	2.00	Maintenance service, every 500 hours	2211004 - 2216004
173-012	2.00	Maintenance service, every 1000 hours	2211004 - 2216004
173-013	2.00	Maintenance service, every 1500 hours	2211004 - 2216004
173-014	3.00	Maintenance service, every 2000 hours	2211004 - 2216004
2		ENGINE WITH MOUNTING AND EQUIPMENT	
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	2211004 - 2216004
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-003	0.20	Window pane, removal	
843-004	0.20	Window pane, installation	

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.30	Maintenance service, daily	2211004 - 2216004
173-004	0.80	Maintenance service, every 50 hours	2211004 - 2216004
173-010	2.00	Maintenance service, every 500 hours	2211004 - 2216004
173-012	2.00	Maintenance service, every 1000 hours	2211004 - 2216004
173-013	2.00	Maintenance service, every 1500 hours	2211004 - 2216004
173-014	3.00	Maintenance service, every 2000 hours	2211004 - 2216004
2		ENGINE WITH MOUNTING AND EQUIPMENT	
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	2211004 - 2216004
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-003	0.20	Window pane, removal	
843-004	0.20	Window pane, installation	

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	1.50	Maintenance service, daily	1 - 475018
173-002	1.50	Maintenance service, daily	475019 - 479999
173-004	4.50	Maintenance service, every 50 hours	1 - 475018
173-004	4.50	Maintenance service, every 50 hours	475019 - 479999
173-007	6.00	Maintenance service, every 250 hours	1 - 475018
173-007	6.00	Maintenance service, every 250 hours	475019 - 479999
173-012	19.00	Maintenance service, every 1000 hours	1 - 475018
173-012	19.00	Maintenance service, every 1000 hours	475019 - 479999
173-035	7.50	Maintenance service, first 50 hours	1 - 475018
173-035	7.50	Maintenance service, first 50 hours	475019 - 479999

2 ENGINE WITH MOUNTING AND EQUIPMENT

21		ENGINE	
210-070	13.00	Engine, removing	1 - 475018
210-070	13.00	Engine, removing	475019 - 479999
210-072	9.50	Engine, installing	1 - 475018
210-072	9.50	Engine, installing	475019 - 479999
218-009	22.00	Engine mounts, replacing	1 - 475018
218-009	22.00	Engine mounts, replacing	475019 - 479999
25		INLET SYSTEM; EXHAUST SYSTEM	
252-017	1.25	Silencer, removing	1 - 475018
252-017	1.25	Silencer, removing	475019 - 479999
252-018	1.25	Silencer, installing	1 - 475018
252-018	1.25	Silencer, installing	475019 - 479999
252-022	2.50	Exhaust pipe, changing pipe between silencer and turbocharger	1 - 475018
252-022	2.50	Exhaust pipe, changing pipe between silencer and turbocharger	475019 - 479999
256-010	0.60	Air cleaner, removing	1 - 475018
256-010	0.60	Air cleaner, removing	475019 - 479999
256-011	0.50	Air cleaner, installing	1 - 475018
256-011	0.50	Air cleaner, installing	475019 - 479999
256-022	0.60	Scavenge pipe, replacing	1 - 475018
256-022	0.60	Scavenge pipe, replacing	475019 - 479999
258-023	0.70	Charge air cooler, removing	1 - 475018
258-023	0.70	Charge air cooler, removing	475019 - 479999
258-024	0.60	Charge air cooler, installing	1 - 475018
258-024	0.60	Charge air cooler, installing	475019 - 479999
258-025	0.40	Charge air cooler pipe, removing	1 - 475018

Op.no.	time (h)		Notes
258-025	0.40	Charge air cooler pipe, removing	475019 - 479999
258-026	0.20	Charge air cooler pipe, installing	1 - 475018
258-026	0.20	Charge air cooler pipe, installing	475019 - 479999
26		COOLING SYSTEM	
261-011	1.25	Radiator, removing	1 - 475018
261-011	1.25	Radiator, removing	475019 - 479999
261-013	1.00	Radiator, installing	1 - 475018
261-013	1.00	Radiator, installing	475019 - 479999
263-001	0.80	Fan motor, removing	1 - 475018
263-001	0.80	Fan motor, removing	475019 - 479999
263-003	0.50	Fan motor, installing	1 - 475018
263-003	0.50	Fan motor, installing	475019 - 479999
263-023	5.00	Fan pump, removing	1 - 475018
263-023	5.00	Fan pump, removing	475019 - 479999
263-024	1.50	Fan pump, installing	1 - 475018
263-024	1.50	Fan pump, installing	475019 - 479999
263-037	0.40	Fan louvre, removing	1 - 475018
263-037	0.40	Fan louvre, removing	475019 - 479999
263-038	0.30	Fan louvre, installing	1 - 475018
263-038	0.30	Fan louvre, installing	475019 - 479999
263-039	0.50	Cooling fan, removing	1 - 475018
263-039	0.50	Cooling fan, removing	475019 - 479999
263-040	0.40	Cooling fan, installing	1 - 475018
263-040	0.40	Cooling fan, installing	475019 - 479999
263-042	3.50	Fan shroud, replacing	1 - 475018
263-042	3.50	Fan shroud, replacing	475019 - 479999
263-043	0.40	Cooling fan, manual speed overriding	1 - 475018
263-043	0.40	Cooling fan, manual speed overriding	475019 - 479999
263-044	0.40	Cooling fan pump solenoid, replacing	1 - 475018
263-044	0.40	Cooling fan pump solenoid, replacing	475019 - 479999
263-045	0.50	Cooling fan motor reversing solenoid, replacing	1 - 475018
263-045	0.50	Cooling fan motor reversing solenoid, replacing	475019 - 479999
263-087	0.60	Cooling fan motor reversing valve, replacing	1 - 475018
263-087	0.60	Cooling fan motor reversing valve, replacing	475019 - 479999
263-088	0.40	Cooling fan speed, checking	1 - 475018
263-088	0.40	Cooling fan speed, checking	475019 - 479999
263-089	0.40	Cooling fan system pressure, checking	1 - 475018
263-089	0.40	Cooling fan system pressure, checking	475019 - 479999

Op.no.	time (h)		Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
31		BATTERY	
311-002	0.70	Batteries, replacing	1 - 475018
311-002	0.70	Batteries, replacing	475019 - 479999
311-009	0.40	Battery, disconnecting	1 - 475018
311-009	0.40	Battery, disconnecting	475019 - 479999
311-010	0.20	Battery, connecting	1 - 475018
311-010	0.20	Battery, connecting	475019 - 479999
313-001	0.40	Battery box, removing	1 - 475018
313-001	0.40	Battery box, removing	475019 - 479999
313-002	0.20	Battery box, installing	1 - 475018
313-002	0.20	Battery box, installing	475019 - 479999
35		LIGHTING	
352-003	0.40	Strobe, replacing	1 - 475018
352-003	0.40	Strobe, replacing	475019 - 479999
36		OTHER ELECTRICAL EQUIPMENT	
366-003	0.40	Front I/O box, removing	
366-004	0.40	Front I/O box, installing	
366-005	0.10	Front I/O box assembly, repairing	
366-084	0.70	Front RCE, replacing	
366-085	0.70	Rear RCE, replacing	
366-090	0.40	Grade sensor, removing	
366-091	0.40	Grade sensor, installing	
366-092	0.40	Ground panel, removing	
366-093	0.40	Ground panel, installing	
367-022	0.40	SMC panel, removing	1 - 475018
367-022	0.40	SMC panel, removing	475019 - 479999
367-023	0.40	SMC panel, installing	1 - 475018
367-023	0.40	SMC panel, installing	475019 - 479999
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-020	0.40	Object detection system sensor, adjusting	1 - 475018
386-020	0.40	Object detection system sensor, adjusting	475019 - 479999
387-021	1.25	Instrument panel (display unit), replacing	475019 - 479999
387-021	1.50	Instrument panel (display unit), replacing	1 - 475018
4		POWER TRANSMISSION	
41		CLUTCH; TORQUE CONVERTER	
413-012	1.75	Clutch assembly, removing	1 - 475018

Op.no.	time (h)		Notes
413-012	1.75	Clutch assembly, removing	475019 - 479999
413-013	2.50	Clutch assembly, installing	1 - 475018
413-013	2.50	Clutch assembly, installing	475019 - 479999
43		GEARBOX,	
431-113	2.00	Track gearbox, removing	1 - 475018
431-113	2.00	Track gearbox, removing	475019 - 479999
431-114	2.00	Track gearbox, installing	1 - 475018
431-114	2.00	Track gearbox, installing	475019 - 479999
44		HYDROSTATIC DRIVE	
441-110	0.30	Track drive motor solenoid, replacing	1 - 475018
441-110	0.30	Track drive motor solenoid, replacing	475019 - 479999
441-113	0.60	Track motor, removing	1 - 475018
441-113	0.60	Track motor, removing	475019 - 479999
441-114	0.40	Track motor, installing	1 - 475018
441-114	0.40	Track motor, installing	475019 - 479999
442-082	6.50	Propulsion pump, removing	1 - 475018
442-082	6.50	Propulsion pump, removing	475019 - 479999
442-082	6.50	Propulsion pump, removing	1 - 475018
442-082	6.50	Propulsion pump, removing	475019 - 479999
442-083	3.00	Propulsion pump, installing	1 - 475018
442-083	3.00	Propulsion pump, installing	475019 - 479999
442-083	3.50	Propulsion pump, installing	1 - 475018
442-083	3.50	Propulsion pump, installing	475019 - 479999
442-153	0.50	Propulsion pump charge pressure, checking	1 - 475018
442-153	0.50	Propulsion pump charge pressure, checking	475019 - 479999
442-154	1.25	Propulsion pump system pressure, checking	1 - 475018
442-154	1.25	Propulsion pump system pressure, checking	475019 - 479999
442-155	0.80	Right side propulsion pump EDC (Electronic Displacement Control), replacing	1 - 475018
442-155	0.80	Right side propulsion pump EDC (Electronic Displacement Control), replacing	475019 - 479999
442-156	0.80	Left side propulsion pump EDC (Electronic Displacement Control), replacing	1 - 475018
442-156	0.80	Left side propulsion pump EDC (Electronic Displacement Control), replacing	475019 - 479999
442-157	0.50	Pilot permissive valve, replacing	1 - 475018
442-157	0.50	Pilot permissive valve, replacing	475019 - 479999
442-158	0.40	Propulsion pump high pressure relief valve, replacing	1 - 475018
442-158	0.40	Propulsion pump high pressure relief valve, replacing	475019 - 479999
442-159	0.40	Propel, calibrating	1 - 475018
442-159	0.40	Propel, calibrating	475019 - 479999

Op.no.	time (h)		Notes
5		BRAKE	
55		PARKING BRAKE	
550-023	0.20	Parking brake, function checking	1 - 475018
550-023	0.20	Parking brake, function checking	475019 - 479999
550-055	0.80	Parking brake release valve, replacing	1 - 475018
550-055	0.80	Parking brake release valve, replacing	475019 - 479999
6		STEERING	
64		STEERING	
640-002	0.40	Steering limit switch, replacing	1 - 475018
640-002	0.40	Steering limit switch, replacing	475019 - 479999
641-002	0.90	Steering wheel sensor, replacing	1 - 475018
641-002	0.80	Steering wheel sensor, replacing	475019 - 479999
645-004	0.50	Steering cylinder, removing	1 - 475018
645-004	0.50	Steering cylinder, removing	475019 - 479999
645-005	0.40	Steering cylinder, installing	1 - 475018
645-005	0.40	Steering cylinder, installing	475019 - 479999
645-018	0.50	Steering pressure, checking	1 - 475018
645-018	0.50	Steering pressure, checking	475019 - 479999
645-024	0.40	Steering valve solenoid, replacing	1 - 475018
645-024	0.40	Steering valve solenoid, replacing	475019 - 479999
645-082	0.50	Steering valve, replacing	1 - 475018
645-082	0.50	Steering valve, replacing	475019 - 479999
645-109	0.30	Steering valve solenoid, overriding	1 - 475018
645-109	0.30	Steering valve solenoid, overriding	475019 - 479999
645-111	0.50	Track steering calibration, adjusting	1 - 475018
645-111	0.50	Track steering calibration, adjusting	475019 - 479999
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
715-025	0.40	Silencer housing panel, removing	1 - 475018
715-025	0.40	Silencer housing panel, removing	475019 - 479999
715-026	0.40	Silencer housing panel, installing	1 - 475018
715-026	0.40	Silencer housing panel, installing	475019 - 479999
715-027	0.40	Belt guard door, removing	1 - 475018
715-027	0.40	Belt guard door, removing	475019 - 479999
715-028	0.50	Belt guard door, installing	1 - 475018
715-028	0.50	Belt guard door, installing	475019 - 479999

Op.no.	time (h)		Notes
715-029	0.60	Silencer housing, removing	1 - 475018
715-029	0.60	Silencer housing, removing	475019 - 479999
715-030	0.70	Silencer housing, installing	1 - 475018
715-030	0.70	Silencer housing, installing	475019 - 479999
715-033	0.50	Exhaust ejector guard, removing	1 - 475018
715-033	0.50	Exhaust ejector guard, removing	475019 - 479999
715-034	0.50	Exhaust ejector guard, installing	1 - 475018
715-034	0.50	Exhaust ejector guard, installing	475019 - 479999
715-035	0.70	Front wrapper, removing	1 - 475018
715-035	0.70	Front wrapper, removing	475019 - 479999
715-036	0.70	Front wrapper, installing	1 - 475018
715-036	0.70	Front wrapper, installing	475019 - 479999
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-034	1.25	Track chain assembly, removing	1 - 475018
775-034	1.25	Track chain assembly, removing	475019 - 479999
775-035	1.25	Track chain assembly, installing	1 - 475018
775-035	1.25	Track chain assembly, installing	475019 - 479999
775-062	1.00	Bottom roller, removing	1 - 475018
775-062	1.00	Bottom roller, removing	475019 - 479999
775-063	0.70	Bottom roller, installing	1 - 475018
775-063	0.70	Bottom roller, installing	475019 - 479999
775-074	0.30	Track pad, removing	1 - 475018
775-074	0.30	Track pad, removing	475019 - 479999
775-075	0.20	Track pad, installing	1 - 475018
775-075	0.20	Track pad, installing	475019 - 479999
775-076	0.40	Track grouser, removing	1 - 475018
775-076	0.40	Track grouser, removing	475019 - 479999
775-077	0.30	Track grouser, installing	1 - 475018
775-077	0.30	Track grouser, installing	475019 - 479999
775-078	1.75	Leg cylinder, removing	1 - 475018
775-078	1.75	Leg cylinder, removing	475019 - 479999
775-078	0.90	Leg cylinder, removing	1 - 475018
775-078	0.90	Leg cylinder, removing	475019 - 479999
775-079	1.75	Leg cylinder, installing	1 - 475018
775-079	1.75	Leg cylinder, installing	475019 - 479999
775-079	1.25	Leg cylinder, installing	1 - 475018
775-079	1.25	Leg cylinder, installing	475019 - 479999
775-083	3.00	Leg, removing	1 - 475018
775-083	3.00	Leg, removing	475019 - 479999
775-084	4.50	Leg, installing	1 - 475018
775-084	4.50	Leg, installing	475019 - 479999
775-085	1.25	Leg cylinder support, removing	1 - 475018
775-085	1.25	Leg cylinder support, removing	475019 - 479999

Op.no.	time (h)		Notes
775-085	1.75	Leg cylinder support, removing	1 - 475018
775-085	1.75	Leg cylinder support, removing	475019 - 479999
775-085	1.50	Leg cylinder support, removing	1 - 475018
775-085	1.50	Leg cylinder support, removing	475019 - 479999
775-086	2.50	Leg cylinder support, installing	1 - 475018
775-086	2.50	Leg cylinder support, installing	475019 - 479999
775-086	2.50	Leg cylinder support, installing	1 - 475018
775-086	2.50	Leg cylinder support, installing	475019 - 479999
775-086	1.75	Leg cylinder support, installing	1 - 475018
775-086	1.75	Leg cylinder support, installing	475019 - 479999
775-087	1.50	Chain tension unit, removing	1 - 475018
775-087	1.50	Chain tension unit, removing	475019 - 479999
775-088	1.50	Chain tension unit, installing	1 - 475018
775-088	1.50	Chain tension unit, installing	475019 - 479999
775-090	7.00	Steering collar bearing, replacing	1 - 475018
775-090	7.00	Steering collar bearing, replacing	475019 - 479999
775-091	7.00	Bearing sleeve, replacing	1 - 475018
775-091	7.00	Bearing sleeve, replacing	475019 - 479999
775-100	0.80	Track assembly, removing	1 - 475018
775-100	0.80	Track assembly, removing	475019 - 479999
775-101	1.00	Track assembly, installing	1 - 475018
775-101	1.00	Track assembly, installing	475019 - 479999
775-114	0.40	Speed sensor, replacing	1 - 475018
775-114	0.40	Speed sensor, replacing	475019 - 479999
775-115	0.40	Leg valve solenoid, replacing	1 - 475018
775-115	0.40	Leg valve solenoid, replacing	475019 - 479999
775-116	0.50	Leg valve, replacing	1 - 475018
775-116	0.50	Leg valve, replacing	475019 - 479999

8 MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE

82 ENGINE HOOD; MUDGUARD; FOOT STEP

821-001	0.80	Engine hood, removing	1 - 475018
821-001	0.80	Engine hood, removing	475019 - 479999
821-002	0.80	Engine hood, installing	1 - 475018
821-002	0.80	Engine hood, installing	475019 - 479999
821-005	0.80	Engine hood, replacing	1 - 475018
821-005	0.80	Engine hood, replacing	475019 - 479999
821-031	0.70	Engine hood, changing gas spring	1 - 475018
821-031	0.70	Engine hood, changing gas spring	475019 - 479999
827-001	1.75	Cab ladder, replacing	1 - 475018
827-001	1.75	Cab ladder, replacing	475019 - 479999

Op.no.	time (h)		Notes
827-001	2.00	Cab ladder, replacing	1 - 475018
827-001	2.00	Cab ladder, replacing	475019 - 479999
827-002	0.90	Engine access ladder, replacing	1 - 475018
827-002	0.90	Engine access ladder, replacing	475019 - 479999
83		DOORS; HATCH; COVER PLATE, (all)	
831-040	0.30	Access panel, removing	1 - 475018
831-040	0.30	Access panel, removing	475019 - 479999
831-041	0.40	Access panel, installing	1 - 475018
831-041	0.40	Access panel, installing	475019 - 479999
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-001	0.30	Mirror, removing	1 - 475018
841-001	0.30	Mirror, removing	475019 - 479999
841-002	0.30	Mirror, installing	1 - 475018
841-002	0.30	Mirror, installing	475019 - 479999
85		CAB INTERIOR/UPHOLSTERY	
852-003	0.50	Operator's seat, removing	1 - 475018
852-003	0.50	Operator's seat, removing	475019 - 479999
852-003	0.60	Operator's seat, removing	1 - 475018
852-003	0.60	Operator's seat, removing	475019 - 479999
852-004	0.60	Operator's seat, installing	1 - 475018
852-004	0.60	Operator's seat, installing	475019 - 479999
852-004	0.50	Operator's seat, installing	1 - 475018
852-004	0.50	Operator's seat, installing	475019 - 479999
852-022	1.25	Seat channel guide, replacing	1 - 475018
852-022	1.25	Seat channel guide, replacing	475019 - 479999
852-091	1.50	Seat support, replacing	1 - 475018
852-091	1.50	Seat support, replacing	475019 - 479999
87		AIR CONDITIONING UNIT	
873-006	2.00	Fan motor, replacing	1 - 475018
873-006	2.00	Fan motor, replacing	475019 - 479999
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-011	7.00	Oil cooler, replacing	1 - 475018
911-011	7.00	Oil cooler, replacing	475019 - 479999
911-013	5.00	Hydraulic oil cooler, removing	1 - 475018
911-013	5.00	Hydraulic oil cooler, removing	475019 - 479999
911-014	1.50	Hydraulic oil cooler, installing	1 - 475018
911-014	1.50	Hydraulic oil cooler, installing	475019 - 479999

Op.no.	time (h)		Notes
911-036	7.00	Hydraulic oil tank, removing	1 - 475018
911-036	7.00	Hydraulic oil tank, removing	475019 - 479999
911-037	4.00	Hydraulic oil tank, installing	1 - 475018
911-037	4.00	Hydraulic oil tank, installing	475019 - 479999
911-041	7.00	Auxiliary hydraulic oil tank, replacing	1 - 475018
911-041	7.00	Auxiliary hydraulic oil tank, replacing	475019 - 479999
912-070	0.40	Check valve, replacing	1 - 475018
912-070	0.40	Check valve, replacing	475019 - 479999
912-180	0.90	Valve block, removing	1 - 475018
912-180	0.90	Valve block, removing	475019 - 479999
912-181	0.60	Valve block, installing	1 - 475018
912-181	0.60	Valve block, installing	475019 - 479999
912-200	0.50	General purpose distribution valve, removing	1 - 475018
912-200	0.50	General purpose distribution valve, removing	475019 - 479999
912-201	0.40	General purpose distribution valve, installing	1 - 475018
912-201	0.40	General purpose distribution valve, installing	475019 - 479999
913-052	0.80	Hydraulic pump, removing	1 - 475018
913-052	0.80	Hydraulic pump, removing	475019 - 479999
913-053	0.60	Hydraulic pump, installing	1 - 475018
913-053	0.60	Hydraulic pump, installing	475019 - 479999
913-076	5.00	General purpose pump, removing	1 - 475018
913-076	5.00	General purpose pump, removing	475019 - 479999
913-077	1.50	General purpose pump, installing	1 - 475018
913-077	1.50	General purpose pump, installing	475019 - 479999
913-078	0.50	General purpose pump system pressure, checking	1 - 475018
913-078	0.50	General purpose pump system pressure, checking	475019 - 479999
913-079	0.40	Left rear general purpose valve, overriding	1 - 475018
913-079	0.40	Left rear general purpose valve, overriding	475019 - 479999
913-080	0.50	General purpose system pressure valve, adjusting	1 - 475018
913-080	0.50	General purpose system pressure valve, adjusting	475019 - 479999
98		FUNCTION FOR ROAD CONSTRUCTION	
983-002	3.00	Gathering conveyor, removing	1 - 475018
983-002	3.00	Gathering conveyor, removing	475019 - 479999
983-003	2.00	Gathering conveyor, installing	1 - 475018
983-003	2.00	Gathering conveyor, installing	475019 - 479999
983-004	4.00	Gathering conveyor belt, removing	1 - 475018
983-004	4.00	Gathering conveyor belt, removing	475019 - 479999
983-005	3.00	Gathering conveyor belt, installing	1 - 475018
983-005	3.00	Gathering conveyor belt, installing	475019 - 479999
983-006	9.50	Conveyor slider rail, replacing	1 - 475018
983-006	9.50	Conveyor slider rail, replacing	475019 - 479999

Op.no.	time (h)		Notes
983-007	9.00	Rubber disc roller, replacing	1 - 475018
983-007	9.00	Rubber disc roller, replacing	475019 - 479999
983-008	0.40	Belt tension cylinder, removing	1 - 475018
983-008	0.40	Belt tension cylinder, removing	475019 - 479999
983-008	0.60	Belt tension cylinder, removing	1 - 475018
983-008	0.60	Belt tension cylinder, removing	475019 - 479999
983-008	0.50	Belt tension cylinder, removing	1 - 475018
983-008	0.50	Belt tension cylinder, removing	475019 - 479999
983-009	0.40	Belt tension cylinder, installing	1 - 475018
983-009	0.40	Belt tension cylinder, installing	475019 - 479999
983-009	0.50	Belt tension cylinder, installing	1 - 475018
983-009	0.50	Belt tension cylinder, installing	475019 - 479999
983-009	0.60	Belt tension cylinder, installing	1 - 475018
983-009	0.60	Belt tension cylinder, installing	475019 - 479999
983-010	0.50	Live shaft roller, removing	1 - 475018
983-010	0.50	Live shaft roller, removing	475019 - 479999
983-011	0.40	Live shaft roller, installing	1 - 475018
983-011	0.40	Live shaft roller, installing	475019 - 479999
983-012	2.00	Sideboard seal, replacing	1 - 475018
983-012	2.00	Sideboard seal, replacing	475019 - 479999
983-012	5.50	Sideboard seal, replacing	1 - 475018
983-012	5.50	Sideboard seal, replacing	475019 - 479999
983-022	3.00	Gathering conveyor rubber flap, removing	1 - 475018
983-022	3.00	Gathering conveyor rubber flap, removing	475019 - 479999
983-023	2.50	Gathering conveyor rubber flap, installing	1 - 475018
983-023	2.50	Gathering conveyor rubber flap, installing	475019 - 479999
983-024	0.40	Hopper, removing	1 - 475018
983-024	0.40	Hopper, removing	475019 - 479999
983-025	0.40	Hopper, installing	1 - 475018
983-025	0.40	Hopper, installing	475019 - 479999
983-026	1.00	Hopper, replacing	1 - 475018
983-026	1.00	Hopper, replacing	475019 - 479999
983-027	1.75	Discharge conveyor, removing	1 - 475018
983-027	1.75	Discharge conveyor, removing	475019 - 479999
983-028	1.50	Discharge conveyor, installing	1 - 475018
983-028	1.50	Discharge conveyor, installing	475019 - 479999
983-029	0.30	Conveyor cover, removing	1 - 475018
983-029	0.30	Conveyor cover, removing	475019 - 479999
983-030	0.50	Conveyor cover, installing	1 - 475018
983-030	0.50	Conveyor cover, installing	475019 - 479999
983-031	0.50	Conveyor lift cylinder, removing	1 - 475018
983-031	0.50	Conveyor lift cylinder, removing	475019 - 479999
983-032	0.50	Conveyor lift cylinder, installing	1 - 475018
983-032	0.50	Conveyor lift cylinder, installing	475019 - 479999

Op.no.	time (h)		Notes
983-033	0.50	Safety cable, removing	1 - 475018
983-033	0.50	Safety cable, removing	475019 - 479999
983-034	0.20	Safety cable, installing	1 - 475018
983-034	0.20	Safety cable, installing	475019 - 479999
983-035	6.00	Discharge conveyor belt, removing	1 - 475018
983-035	6.00	Discharge conveyor belt, removing	475019 - 479999
983-036	6.50	Discharge conveyor belt, installing	1 - 475018
983-036	6.50	Discharge conveyor belt, installing	475019 - 479999
983-037	1.75	Discharge conveyor folding hinge link, removing	1 - 475018
983-037	1.75	Discharge conveyor folding hinge link, removing	475019 - 479999
983-038	2.00	Discharge conveyor folding hinge link, installing	1 - 475018
983-038	2.00	Discharge conveyor folding hinge link, installing	475019 - 479999
983-039	15.00	Throughing idler, replacing	1 - 475018
983-039	15.00	Throughing idler, replacing	475019 - 479999
983-040	1.75	Conveyor support, removing	1 - 475018
983-040	1.75	Conveyor support, removing	475019 - 479999
983-041	2.50	Conveyor support, installing	1 - 475018
983-041	2.50	Conveyor support, installing	475019 - 479999
983-048	0.50	Conveyor swing cylinder, removing	1 - 475018
983-048	0.50	Conveyor swing cylinder, removing	475019 - 479999
983-049	0.40	Conveyor swing cylinder, installing	1 - 475018
983-049	0.40	Conveyor swing cylinder, installing	475019 - 479999
983-050	2.50	Conveyor swing pin bearing, replacing	1 - 475018
983-050	2.50	Conveyor swing pin bearing, replacing	475019 - 479999
983-202	0.30	Discharge conveyor speed sensor, replacing	1 - 475018
983-202	0.30	Discharge conveyor speed sensor, replacing	475019 - 479999
983-203	0.30	Conveyor drive pressure transducer, replacing	1 - 475018
983-203	0.30	Conveyor drive pressure transducer, replacing	475019 - 479999
983-204	1.25	Conveyor valve, replacing	1 - 475018
983-204	1.25	Conveyor valve, replacing	475019 - 479999
983-205	0.40	Conveyor load sensing pressure, checking	1 - 475018
983-205	0.40	Conveyor load sensing pressure, checking	475019 - 479999
983-206	0.50	Conveyor relief pressure, checking	1 - 475018
983-206	0.50	Conveyor relief pressure, checking	475019 - 479999
983-207	0.60	Conveyor joystick, replacing	475019 - 479999
983-207	0.80	Conveyor joystick, replacing	1 - 475018
983-208	0.70	Conveyor control valve, replacing	1 - 475018
983-208	0.70	Conveyor control valve, replacing	475019 - 479999
983-209	0.70	Gathering conveyor motor, removing	1 - 475018
983-209	0.70	Gathering conveyor motor, removing	475019 - 479999
983-210	0.60	Gathering conveyor motor, installing	1 - 475018
983-210	0.60	Gathering conveyor motor, installing	475019 - 479999
983-211	1.00	Discharge conveyor motor, removing	1 - 475018
983-211	1.00	Discharge conveyor motor, removing	475019 - 479999

Op.no.	time (h)		Notes
983-212	0.90	Discharge conveyor motor, installing	1 - 475018
983-212	0.90	Discharge conveyor motor, installing	475019 - 479999
983-213	0.60	Conveyor load sensing pressure valve, adjusting	1 - 475018
983-213	0.60	Conveyor load sensing pressure valve, adjusting	475019 - 479999
983-214	0.80	Conveyor pressure compensator valve, adjusting	1 - 475018
983-214	0.80	Conveyor pressure compensator valve, adjusting	475019 - 479999
9833-001	5.50	Conveyor drive pump, removing	1 - 475018
9833-001	5.50	Conveyor drive pump, removing	475019 - 479999
9833-002	2.00	Conveyor drive pump, installing	1 - 475018
9833-002	2.00	Conveyor drive pump, installing	475019 - 479999
985-001	0.60	Water system assembly, removing	1 - 475018
985-001	0.60	Water system assembly, removing	475019 - 479999
985-002	0.50	Water system assembly, installing	1 - 475018
985-002	0.50	Water system assembly, installing	475019 - 479999
988-002	0.70	Cutting drum tooth, replacing	1 - 475018
988-002	0.70	Cutting drum tooth, replacing	475019 - 479999
988-007	11.00	Cutting drum housing, removing	1 - 475018
988-007	11.00	Cutting drum housing, removing	475019 - 479999
988-009	0.50	Rubber flap, replacing	1 - 475018
988-009	0.50	Rubber flap, replacing	475019 - 479999
988-013	0.40	Gradation beam cylinder, removing	1 - 475018
988-013	0.40	Gradation beam cylinder, removing	475019 - 479999
988-014	0.40	Gradation beam cylinder, installing	1 - 475018
988-014	0.40	Gradation beam cylinder, installing	475019 - 479999
988-017	5.50	Cutting drum housing, installing	1 - 475018
988-017	5.50	Cutting drum housing, installing	475019 - 479999
988-018	0.60	Cutting drum flanged bearing, removing	1 - 475018
988-018	0.60	Cutting drum flanged bearing, removing	475019 - 479999
988-019	0.60	Cutting drum flanged bearing, installing	1 - 475018
988-019	0.60	Cutting drum flanged bearing, installing	475019 - 479999
988-020	0.70	Mouldboard cylinder, replacing	1 - 475018
988-020	0.70	Mouldboard cylinder, replacing	475019 - 479999
988-030	0.40	Wearing strip on mouldboard, removing	1 - 475018
988-030	0.40	Wearing strip on mouldboard, removing	475019 - 479999
988-031	0.60	Wearing strip on mouldboard, installing	1 - 475018
988-031	0.60	Wearing strip on mouldboard, installing	475019 - 479999
988-036	11.00	Rear mouldboard, removing	1 - 475018
988-036	11.00	Rear mouldboard, removing	475019 - 479999
988-037	0.40	Rear mouldboard, installing	1 - 475018
988-037	0.40	Rear mouldboard, installing	475019 - 479999
988-039	4.00	Gradation beam, removing	1 - 475018
988-039	4.00	Gradation beam, removing	475019 - 479999
988-040	2.50	Gradation beam, installing	1 - 475018
988-040	2.50	Gradation beam, installing	475019 - 479999

Op.no.	time (h)		Notes
988-041	0.40	Window door, removing	1 - 475018
988-041	0.40	Window door, removing	475019 - 479999
988-042	0.40	Window door, installing	1 - 475018
988-042	0.40	Window door, installing	475019 - 479999
988-047	0.40	Sideskirt cylinder, removing	1 - 475018
988-047	0.40	Sideskirt cylinder, removing	475019 - 479999
988-048	0.40	Sideskirt cylinder, installing	1 - 475018
988-048	0.40	Sideskirt cylinder, installing	475019 - 479999
988-049	0.80	Left side sideskirt, removing	1 - 475018
988-049	0.80	Left side sideskirt, removing	475019 - 479999
988-050	0.90	Left side sideskirt, installing	1 - 475018
988-050	0.90	Left side sideskirt, installing	475019 - 479999
988-051	0.70	Right side sideskirt, removing	1 - 475018
988-051	0.70	Right side sideskirt, removing	475019 - 479999
988-052	0.80	Right side sideskirt, installing	1 - 475018
988-052	0.80	Right side sideskirt, installing	475019 - 479999
988-053	0.70	Sideskirt ski, replacing	1 - 475018
988-053	0.70	Sideskirt ski, replacing	475019 - 479999
988-060	1.50	Baseplate, replacing	1 - 475018
988-060	1.50	Baseplate, replacing	475019 - 479999
988-070	0.60	Milling sheave, removing	1 - 475018
988-070	0.60	Milling sheave, removing	475019 - 479999
988-070	0.60	Milling sheave, removing	1 - 475018
988-070	0.60	Milling sheave, removing	475019 - 479999
988-071	0.50	Milling sheave, installing	1 - 475018
988-071	0.50	Milling sheave, installing	475019 - 479999
988-071	0.60	Milling sheave, installing	1 - 475018
988-071	0.60	Milling sheave, installing	475019 - 479999
988-072	0.50	Milling sheave idler removing	1 - 475018
988-072	0.50	Milling sheave idler removing	475019 - 479999
988-073	0.40	Milling sheave idler, installing	1 - 475018
988-073	0.40	Milling sheave idler, installing	475019 - 479999
988-074	0.80	Milling sheave idler bearing and pin, replacing	1 - 475018
988-074	0.80	Milling sheave idler bearing and pin, replacing	475019 - 479999
988-087	14.00	Drum drive, removing	1 - 475018
988-087	14.00	Drum drive, removing	475019 - 479999
988-088	8.00	Drum drive, installing	1 - 475018
988-088	8.00	Drum drive, installing	475019 - 479999
988-089	11.00	Drum carrier spindle, removing	1 - 475018
988-089	11.00	Drum carrier spindle, removing	475019 - 479999
988-090	0.50	Drum carrier spindle, installing	1 - 475018
988-090	0.50	Drum carrier spindle, installing	475019 - 479999
988-092	0.70	Drum drive belt tension arm, removing	1 - 475018
988-092	0.70	Drum drive belt tension arm, removing	475019 - 479999

Op.no.	time (h)		Notes
988-093	0.80	Drum drive belt tension arm, installing	1 - 475018
988-093	0.80	Drum drive belt tension arm, installing	475019 - 479999
988-094	1.25	Drum drive belt tension arm bushing, replacing	1 - 475018
988-094	1.25	Drum drive belt tension arm bushing, replacing	475019 - 479999
988-096	0.40	Drum drive belt, removing	1 - 475018
988-096	0.40	Drum drive belt, removing	475019 - 479999
988-097	0.30	Drum drive belt, installing	1 - 475018
988-097	0.30	Drum drive belt, installing	475019 - 479999
988-100	0.90	Cutting drum sleeve, replacing	1 - 475018
988-100	0.90	Cutting drum sleeve, replacing	475019 - 479999
988-101	12.00	Cutting drum, removing	1 - 475018
988-101	12.00	Cutting drum, removing	475019 - 479999
988-102	6.50	Cutting drum, installing	1 - 475018
988-102	6.50	Cutting drum, installing	475019 - 479999
988-103	1.25	Cutting drum coolant, draining	1 - 475018
988-103	1.25	Cutting drum coolant, draining	475019 - 479999
988-104	0.80	Cutting drum coolant, filling	1 - 475018
988-104	0.80	Cutting drum coolant, filling	475019 - 479999
988-105	0.60	Cutting drum housing door cylinder, replacing	1 - 475018
988-105	0.60	Cutting drum housing door cylinder, replacing	475019 - 479999
988-106	11.00	Cutting drum housing door, removing	1 - 475018
988-106	11.00	Cutting drum housing door, removing	475019 - 479999
988-107	6.00	Cutting drum housing door, installing	1 - 475018
988-107	6.00	Cutting drum housing door, installing	475019 - 479999

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
172-002	7.00	Warranty inspection 100 hours
173-001	1.50	Maintenance service, as required
173-003	0.70	Maintenance service, every 10 hours
173-006	1.75	Maintenance service, every 100 hours
173-010	3.00	Maintenance service, every 500 hours
173-012	7.00	Maintenance service, every 1000 hours
173-014	4.50	Maintenance service, every 2000 hours
173-050	0.10	Greasing, daily
173-305	0.10	Lubrication, every 500 hours
173-378	0.30	Lubrication, every 100 hours
19		GENERAL
191-021	0.20	Service position 1
191-022	0.30	Service position 2
191-025	0.20	Service position 3
191-026	0.20	Service position 4
191-027	0.40	Service position 5
191-028	0.40	Service position 6
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	6.00	Engine, removing
210-072	7.00	Engine, installing
23		FUEL SYSTEM
233-001	0.40	Fuel system, bleeding
25		INLET SYSTEM; EXHAUST SYSTEM
256-003	0.30	Air cleaner, primary filter replacing
256-004	0.10	Air cleaner, secondary filter replacing
258-002	1.75	Intercooler, replacing
26		COOLING SYSTEM
261-011	1.50	Radiator, removing
261-013	1.50	Radiator, installing
261-022	1.75	Cooling package, removing
261-023	2.50	Cooling package, installing
263-001	2.50	Fan motor, removing
263-003	1.75	Fan motor, installing

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
301-001	0.40	Control panel, software update
301-002	0.50	Control unit, software update
301-003	0.20	Machine, Calibration
301-003	0.40	Machine, Calibration
301-003	0.30	Machine, Calibration
301-003	0.20	Machine, Calibration
301-003	0.50	Machine, Calibration
301-004	0.20	Control panel, parameter setting
301-005	0.70	Pre-programmed ECU, replacing
301-011	0.60	Wheel support sensor, Calibrating
4		POWER TRANSMISSION
41		CLUTCH; TORQUE CONVERTER
413-012	2.50	Clutch assembly, removing
413-013	2.50	Clutch assembly, installing
44		HYDROSTATIC DRIVE
441-113	2.00	Track motor, removing
441-113	1.50	Track motor, removing
441-114	2.00	Track motor, installing
441-114	2.50	Track motor, installing
442-082	6.50	Propulsion pump, removing
442-083	7.00	Propulsion pump, installing
46		FRONT AXLE; REAR AXLE
461-002	3.00	Axle, removing
461-003	4.00	Axle, installing
6		STEERING
62		STEERING AXLE
622-058	0.80	Tie bar, removing
622-063	0.70	Tie bar, installing
64		STEERING
645-031	0.70	Steering control unit, removing
645-035	0.90	Steering control unit, installing

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-015	0.20	Protecting plate, removal
715-016	0.20	Protecting plate, installation
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-007	0.40	Wheel, installing
771-008	0.60	Wheel, removing
775-051	0.70	Top roller, replacing one
775-052	0.30	Top roller, removal
775-053	0.30	Top roller, installation
778-001	1.75	Support leg cylinder left, replacing
778-002	1.75	Support leg cylinder right, replacing
778-003	1.50	Front axle cylinder, replacing
778-004	1.25	Sliding plates, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-006	0.10	Ascent, removing
810-007	0.10	Ascent, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.80	Engine hood, removing
821-002	1.25	Engine hood, installing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-013	2.00	Hydraulic oil cooler, removing
911-014	2.50	Hydraulic oil cooler, installing
912-180	2.50	Valve block, removing
912-180	0.90	Valve block, removing
912-180	1.00	Valve block, removing
912-180	2.50	Valve block, removing
912-181	1.25	Valve block, installing
912-181	2.50	Valve block, installing
912-181	3.00	Valve block, installing
912-181	1.00	Valve block, installing

Op.no.	time (h)	Notes
913-023	3.50	Pump, removal
913-023	0.80	Pump, removal
913-024	0.80	Pump, installation
913-024	3.00	Pump, installation
97		UNIT, DIGGING
971-094	4.50	Slewing cylinder, replacing
98		FUNCTION FOR ROAD CONSTRUCTION
983-001	0.20	Conveyor belt tension, adjusting
983-013	0.90	Conveyor belt, removing
983-014	1.25	Conveyor belt, installing
983-015	0.20	Conveyor, removing
983-016	0.20	Conveyor, installing
983-017	1.25	Deflect pulley, replacing
983-018	0.60	Rubber stripes, replacing
983-019	0.50	Cover rubber, replacing
983-020	1.25	Conveyor head, removing
983-021	0.90	Conveyor head, installing
983-031	0.40	Conveyor lift cylinder, removing
983-032	0.70	Conveyor lift cylinder, installing
983-051	0.50	Conveyor drive pump belt, replacing
9833-001	0.80	Conveyor drive pump, removing
9833-002	0.80	Conveyor drive pump, installing
985-003	0.30	Water tank, removing
985-004	0.30	Water tank, installing
985-005	0.30	Sprinkling pipe, removing
985-006	0.20	Sprinkling pipe, installing
985-007	0.40	Water pump, removing
985-008	0.50	Water pump, installing
988-002	0.40	Cutting drum tooth, replacing
988-004	0.60	Scraper, replacing
988-009	0.80	Rubber flap, replacing
988-020	1.00	Mouldboard cylinder, replacing
988-021	0.90	Deflector cylinder, replacing
988-022	0.40	Deflector right, removing
988-023	0.40	Deflector right, installing
988-024	0.40	Deflector front, removing
988-025	0.40	Deflector front, installing
988-026	1.00	Intermediate shaft, adjusting
988-027	1.75	Milling gearbox, removing
988-028	2.00	Milling gearbox, installing
988-030	0.40	Wearing strip on mouldboard, removing
988-031	0.40	Wearing strip on mouldboard, installing

Op.no.	time (h)	Notes
988-032	1.75	Deflector left, removing
988-033	1.75	Deflector left, installing
988-034	2.50	Intermediate shaft, removing
988-035	3.00	Intermediate shaft, installing
988-036	1.25	Rear mouldboard, removing
988-037	1.25	Rear mouldboard, installing
988-043	0.50	Sliding device mouldboard, removing
988-044	0.50	Sliding device mouldboard, installing
988-098	0.70	Drum drive belt top, replacing
988-099	2.50	Drum drive belt down, replacing
988-101	0.70	Cutting drum, removing
988-102	0.60	Cutting drum, installing
988-106	0.20	Cutting drum housing door, removing
988-107	0.20	Cutting drum housing door, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.70	Maintenance service, every 10 hours
173-004	0.50	Maintenance service, every 50 hours
173-010	0.30	Maintenance service, every 500 hours
173-012	0.40	Maintenance service, every 1000 hours
173-050	0.30	Greasing, daily
173-303	0.20	Lubrication, every 50 hours
19		GENERAL
191-021	0.20	Service position 1
191-022	0.30	Service position 2
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
777-005	0.80	Vibration motor, removing
777-006	0.60	Vibration motor, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-005	0.50	Walkway, removing
827-006	0.40	Walkway, installing
827-007	0.60	Deck platform, removing
827-008	0.50	Deck platform, installing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
98		FUNCTION FOR ROAD CONSTRUCTION
982-003	2.50	Screed, removing
982-003	0.80	Screed, removing
982-004	4.00	Screed, installing
982-004	1.00	Screed, installing
982-015	2.00	Extension cylinder, removing
982-015	0.90	Extension cylinder, removing
982-016	3.00	Extension cylinder, installing
982-016	0.80	Extension cylinder, installing

Op.no.	time (h)	Notes
982-019	1.75	Slope cylinder, removing
982-020	2.00	Slope cylinder, installing
982-026	0.40	End plate, replacing
982-026	0.30	End plate, replacing
982-030	1.75	Sliding bearing, replacing
982-030	3.00	Sliding bearing, replacing
982-040	1.75	Brake cylinder, replacing
982-050	2.50	Crown control cylinder, replacing
982-050	1.00	Crown control cylinder, replacing
983-130	0.90	Vibration shaft, removing
983-131	0.80	Vibration shaft, installing
983-132	1.50	Vibration bearing, removing
983-133	1.25	Vibration bearing, installing
986-005	0.70	Heater bar, removing
986-005	1.25	Heater bar, removing
986-005	1.00	Heater bar, removing
986-005	1.25	Heater bar, removing
986-006	1.75	Heater bar, installing
986-006	1.25	Heater bar, installing
986-006	1.75	Heater bar, installing
986-006	0.50	Heater bar, installing
987-017	0.50	Edger guide, removing
987-018	0.60	Edger guide, installing
987-024	15.00	Screed plate, replacing
987-030	0.70	Extension height gear motor, removing
987-031	0.40	Extension height gear motor, installing
987-032	0.70	Outer height assembly, removing
987-033	0.60	Outer height assembly, installing
987-050	0.50	Deflector, removing
987-050	0.90	Deflector, removing
987-051	0.60	Deflector, installing
987-051	0.60	Deflector, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-303	0.60	Lubrication, every 50 hours
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
98		FUNCTION FOR ROAD CONSTRUCTION
982-003	0.80	Screed, removing
982-003	0.70	Screed, removing
982-004	1.00	Screed, installing
982-004	0.90	Screed, installing
982-007	0.60	Strike off plate, removing
982-008	0.70	Strike off plate, installing
982-009	4.50	Saddle assembly, removing
982-010	5.50	Saddle assembly, installing
982-011	2.00	Inner support tube, removing
982-012	2.50	Inner support tube, installing
982-013	2.50	Outer support tube, removing
982-014	2.50	Outer support tube, installing
982-015	4.50	Extension cylinder, removing
982-016	5.50	Extension cylinder, installing
982-019	0.60	Slope cylinder, removing
982-020	0.50	Slope cylinder, installing
982-021	1.25	Pre-Strike off, removing
982-022	1.50	Pre-Strike off, installing
982-023	11.00	Saddle bushing, replacing
982-024	5.00	Saddle, removing
982-025	6.00	Saddle, installing
982-502	0.90	Extension height adjustment chain, removing
982-503	0.90	Extension height adjustment chain, installing
983-130	0.90	Vibration shaft, removing
983-130	1.00	Vibration shaft, removing
983-130	0.40	Vibration shaft, removing
983-131	0.90	Vibration shaft, installing
983-131	0.60	Vibration shaft, installing
983-131	1.25	Vibration shaft, installing
983-132	0.60	Vibration bearing, removing
983-132	1.25	Vibration bearing, removing
983-133	0.60	Vibration bearing, installing
983-133	1.50	Vibration bearing, installing
983-134	0.70	Vibration motor, removing

Op.no.	time (h)	Notes
983-134	0.50	Vibration motor, removing
983-135	0.60	Vibration motor, installing
983-135	0.90	Vibration motor, installing
983-136	1.25	Vibration drive belt, replacing
986-005	0.80	Heater bar, removing
986-005	1.00	Heater bar, removing
986-006	1.50	Heater bar, installing
986-006	1.25	Heater bar, installing
987-008	0.60	Power crown motor, removing
987-009	0.60	Power crown motor, installing
987-010	1.50	Power crown, removing
987-011	2.00	Power crown, installing
987-012	4.50	Power crown, disassembly and assembly
987-013	1.75	Main screed strike off, removing
987-014	2.00	Main screed strike off, installing
987-015	4.00	Screed extension, removing
987-016	4.50	Screed extension, installing
987-017	0.50	Edger guide, removing
987-018	0.60	Edger guide, installing
987-019	0.50	Depth crank, removing
987-020	0.40	Depth crank, installing
987-021	0.80	Depth crank, disassembly and assembly
987-022	0.70	Side arm, removing
987-023	0.60	Side arm, installing
987-024	4.50	Screed plate, replacing
987-024	7.50	Screed plate, replacing
987-030	0.50	Extension height gear motor, removing
987-031	0.40	Extension height gear motor, installing
987-032	1.00	Outer height assembly, removing
987-033	0.90	Outer height assembly, installing
987-034	2.50	Outer height screw assembly, disassembling/ assembling
987-035	0.80	Inner height assembly, removing
987-036	0.90	Inner height assembly, installing
987-037	2.50	Inner height screw assembly, disassembling/ assembling
987-040	0.80	Edger guide bracket, removing
987-041	0.90	Edger guide bracket, installing
987-042	0.40	Edger guide jack, removing
987-043	0.40	Edger guide jack, installing
987-044	1.75	Edger plate, removing
987-045	1.50	Edger plate, installing
987-046	0.30	Edger shoe, removing
987-047	0.30	Edger shoe, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-004	2.50	Maintenance service, every 50 hours
173-006	5.00	Maintenance service, every 100 hours
173-007	5.00	Maintenance service, every 250 hours
173-010	11.00	Maintenance service, every 500 hours
173-012	15.00	Maintenance service, every 1000 hours
19		GENERAL
191-021	0.30	Service position 1
191-022	0.30	Service position 2
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
214-012	2.00	Valves, adjusting

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-001	4.00	Maintenance service, as required	
173-003	1.75	Maintenance service, every 10 hours	
173-010	8.50	Maintenance service, every 500 hours	
173-012	18.00	Maintenance service, every 1000 hours	
173-014	23.00	Maintenance service, every 2000 hours	
173-016	23.00	Maintenance service, every 3000 hours	805015 - 999999
173-016	20.00	Maintenance service, every 3000 hours	805015 - 999999
173-016	25.00	Maintenance service, every 3000 hours	1 - 805014
173-016	21.00	Maintenance service, every 3000 hours	1 - 805014
173-018	24.00	Maintenance service, every 4000 hours	
173-019	1.50	Maintenance service, every 4500 hours	
173-036	2.50	Maintenance service, first 100 hours	
19		GENERAL	
191-022	2.50	Service position 2	
191-025	3.00	Service position 3	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-002	7.00	Compression test	
210-070	14.00	Engine, removing	
210-070	14.00	Engine, removing	
210-072	15.00	Engine, installing	
210-072	16.00	Engine, installing	
210-092	0.90	Engine rotation speed sensor (camshaft), replacing	
210-093	0.40	Engine rotation speed sensor (crank shaft), replacing	
214-012	3.50	Valves, adjusting	
22		LUBRICATING SYSTEM	
221-022	0.70	Lubrication oil pressure, checking with pressure gauge	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	

Op.no.	time (h)	Notes
233-001	0.40	Fuel system, bleeding
233-002	0.70	Feed pump, replacing
233-004	0.50	Feed pump, checking feed pressure
233-014	2.00	Fuel filters, replacing
233-020	1.50	Fuel filter, checking
234-011	1.00	Fuel tank, removing
234-012	1.25	Fuel tank, installing
237-033	2.50	Fuel control valve (FCV), replacing
237-034	3.00	Pressure relief valve (PRV), replacing
237-035	2.50	Fuel rail pressure sensor, replacing
237-124	1.25	High pressure fuel system, pressure relief
239-002	0.60	Fuel cooler, removing
239-003	0.40	Fuel cooler, installing
25		INLET SYSTEM; EXHAUST SYSTEM
252-017	0.60	Silencer, removing
252-018	0.40	Silencer, installing
254-001	3.50	Diesel particulate filter, check and clean
254-022	1.75	ACM (After treatment control module), replacing, non-programmed
254-023	1.25	ACM (After treatment control module), replacing, pre-programmed
254-038	0.50	DPF inlet temperature sensor, replacing
254-039	0.70	DPF outlet temperature sensor, replacing
254-044	1.50	Glow plug, replacing
254-046	1.50	Spark plug, replacing
254-047	1.75	Spark plug, checking
254-056	0.90	NOx sensor, replacing
254-068	1.25	Muffler, adjusting
255-009	1.50	Waste gate, testing
258-023	1.75	Charge air cooler, removing
258-024	2.00	Charge air cooler, installing
26		COOLING SYSTEM
260-001	0.80	Carbon dioxide in coolant system, checking
261-011	2.50	Radiator, removing
261-013	3.00	Radiator, installing
261-020	1.25	Expansion tank, removing
261-021	1.00	Expansion tank, installing
261-022	4.00	Cooling package, removing
261-023	4.50	Cooling package, installing
263-001	3.50	Fan motor, removing
263-003	4.00	Fan motor, installing
263-090	3.00	Fan, installing
263-091	2.50	Fan, removing

Op.no.	time (h)	Notes
29		Miscellaneous
293-001	3.00	EGR cooler, replacing
293-004	3.00	EGR cooler, cleaning
293-006	0.50	EGR temperature sensor, replacing
293-007	0.50	EGR pressure sensor, replacing
293-008	3.00	EGR Actuator, replacing
293-009	1.50	EGR reed valve, replacing
293-010	0.90	EGR Venturi tube, replacing
 3		 ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
301-001	0.40	Control panel, software update
301-004	0.20	Control panel, parameter setting
301-005	0.70	Pre-programmed ECU, replacing
301-014	0.60	Trimming (offset adjustment)
31		BATTERY
311-011	0.50	Battery, removing
311-012	0.30	Battery, installing
33		STARTING SYSTEM
331-016	0.70	Starter motor, removing
331-017	0.70	Starter motor, installing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
36		OTHER ELECTRICAL EQUIPMENT
360-012	1.25	Generator screed heating regulator, checking
 4		 POWER TRANSMISSION
43		GEARBOX,
431-012	5.00	Travel gearbox, removal
431-013	5.50	Travel gearbox, installation
44		HYDROSTATIC DRIVE
440-024	3.00	Travel drive, calibrating
440-025	1.00	Gear shift valve pressure limiting valve, adjusting
441-035	4.50	Drive motor, removing
441-036	5.00	Drive motor, installing

Op.no.	time (h)	Notes
442-088	1.25	Propulsion pump pressure cut off valve, checking and adjusting
442-167	2.50	Propulsion pump mechanical zero position, checking and adjusting
6		STEERING
64		STEERING
643-025	0.30	Steering angle sensor, adjusting
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-039	1.25	Noise-absorbing mats, replacing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-002	0.70	Front wheel, removal
771-003	0.60	Front wheel, installation
771-004	3.00	Rear wheel, removing
771-005	3.00	Rear wheel, installing
775-108	0.30	Road scraper, removing
775-109	0.20	Road scraper, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-051	2.50	Canopy, removal
810-052	2.00	Canopy, installation
85		CAB INTERIOR/UPHOLSTERY
852-003	0.50	Operator's seat, removing
852-004	0.30	Operator's seat, installing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-013	4.00	Hydraulic oil cooler, removing
911-014	4.50	Hydraulic oil cooler, installing
911-036	5.00	Hydraulic oil tank, removing

Op.no.	time (h)	Notes
911-037	6.00	Hydraulic oil tank, installing
912-274	0.70	Screed assist, pressure regulating valve, replacing
912-275	0.30	Screed assist, pressure regulating valve, adjusting
912-276	0.70	Screed tensioning device, pressure regulating valve, replacing
912-277	0.30	Screed tensioning device, pressure regulating valve, adjusting
912-286	1.00	Cylinder valve block flow divider, adjusting
913-083	1.25	Auger drive pump max. working pressure, checking and adjusting
913-084	0.90	Auger drive pump standby pressure, checking and adjusting
98		FUNCTION FOR ROAD CONSTRUCTION
982-001	1.50	Tow arm, removing
982-001	0.80	Tow arm, removing
982-002	2.50	Tow arm, installing
982-002	1.00	Tow arm, installing
982-003	1.50	Screed, removing
982-003	2.50	Screed, removing
982-004	2.50	Screed, installing
982-004	3.50	Screed, installing
982-029	0.30	Levelling scales, adjusting
982-055	1.25	Screed spacer blocks, removing
982-056	1.25	Screed spacer blocks, installing
983-042	3.50	Conveyor cover, removing
983-043	3.50	Conveyor cover, installing
983-052	4.50	Conveyor chain, removing
983-053	4.50	Conveyor chain, installing
983-054	2.00	Conveyor drive shaft, disassembly and assembly
983-055	2.50	Conveyor floor plate, removing
983-056	2.50	Conveyor floor plate, installing
983-057	9.00	Conveyor drive shaft, removing
983-058	8.50	Conveyor drive shaft, installing
983-101	2.50	Auger drive chain, replacing
983-118	1.25	Conveyor drive chain, removing
983-119	0.90	Conveyor drive chain, installing
983-120	1.75	Conveyor idler assembly, removing
983-121	1.50	Conveyor idler assembly, installing
983-122	1.75	Conveyor idler assembly, disassembly and assembly
983-140	1.25	Front apron plate, removing
983-141	1.00	Front apron plate, installing
983-142	0.30	Auger flight, removing

Op.no.	time (h)	Notes
983-143	0.10	Auger flight, installing
986-005	0.70	Heater bar, removing
986-005	1.25	Heater bar, removing
986-005	1.25	Heater bar, removing
986-005	1.00	Heater bar, removing
986-006	0.50	Heater bar, installing
986-006	1.75	Heater bar, installing
986-006	1.75	Heater bar, installing
986-006	1.25	Heater bar, installing
986-010	1.75	Generator screed heating, checking
99		MISCELLANEOUS
993-022	0.20	Automatic lubrication pump, removing
993-023	0.60	Automatic lubrication pump, installing

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-001	4.00	Maintenance service, as required	
173-003	1.75	Maintenance service, every 10 hours	
173-010	8.50	Maintenance service, every 500 hours	
173-012	19.00	Maintenance service, every 1000 hours	
173-014	23.00	Maintenance service, every 2000 hours	
173-016	23.00	Maintenance service, every 3000 hours	805016 - 999999
173-016	20.00	Maintenance service, every 3000 hours	805016 - 999999
173-016	25.00	Maintenance service, every 3000 hours	1 - 805015
173-016	21.00	Maintenance service, every 3000 hours	1 - 805015
173-018	24.00	Maintenance service, every 4000 hours	
173-019	1.50	Maintenance service, every 4500 hours	
173-036	2.50	Maintenance service, first 100 hours	
19		GENERAL	
191-022	2.50	Service position 2	
191-025	3.00	Service position 3	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-002	7.00	Compression test	
210-070	14.00	Engine, removing	
210-070	14.00	Engine, removing	
210-072	15.00	Engine, installing	
210-072	16.00	Engine, installing	
210-092	0.90	Engine rotation speed sensor (camshaft), replacing	
210-093	0.40	Engine rotation speed sensor (crank shaft), replacing	
214-012	3.50	Valves, adjusting	
22		LUBRICATING SYSTEM	
221-022	0.70	Lubrication oil pressure, checking with pressure gauge	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	

Op.no.	time (h)	Notes
233-001	0.40	Fuel system, bleeding
233-002	0.70	Feed pump, replacing
233-004	0.50	Feed pump, checking feed pressure
233-014	2.00	Fuel filters, replacing
233-020	1.50	Fuel filter, checking
234-011	1.00	Fuel tank, removing
234-012	1.25	Fuel tank, installing
237-033	2.50	Fuel control valve (FCV), replacing
237-034	3.00	Pressure relief valve (PRV), replacing
237-035	2.50	Fuel rail pressure sensor, replacing
237-124	1.25	High pressure fuel system, pressure relief
239-002	0.60	Fuel cooler, removing
239-003	0.40	Fuel cooler, installing
25		INLET SYSTEM; EXHAUST SYSTEM
252-017	0.60	Silencer, removing
252-018	0.40	Silencer, installing
254-001	3.50	Diesel particulate filter, check and clean
254-022	1.75	ACM (After treatment control module), replacing, non-programmed
254-023	1.25	ACM (After treatment control module), replacing, pre-programmed
254-038	0.50	DPF inlet temperature sensor, replacing
254-039	0.70	DPF outlet temperature sensor, replacing
254-044	1.50	Glow plug, replacing
254-046	1.50	Spark plug, replacing
254-047	1.75	Spark plug, checking
254-056	0.90	NOx sensor, replacing
254-068	1.25	Muffler, adjusting
255-009	1.50	Waste gate, testing
258-023	1.75	Charge air cooler, removing
258-024	2.00	Charge air cooler, installing
26		COOLING SYSTEM
260-001	0.80	Carbon dioxide in coolant system, checking
261-011	2.50	Radiator, removing
261-013	3.00	Radiator, installing
261-020	1.25	Expansion tank, removing
261-021	1.00	Expansion tank, installing
261-022	4.00	Cooling package, removing
261-023	4.50	Cooling package, installing
263-001	3.50	Fan motor, removing
263-003	4.00	Fan motor, installing
263-090	3.00	Fan, installing
263-091	2.50	Fan, removing

Op.no.	time (h)	Notes
29		Miscellaneous
293-001	3.00	EGR cooler, replacing
293-004	3.00	EGR cooler, cleaning
293-006	0.50	EGR temperature sensor, replacing
293-007	0.50	EGR pressure sensor, replacing
293-008	3.00	EGR Actuator, replacing
293-009	1.50	EGR reed valve, replacing
293-010	0.90	EGR Venturi tube, replacing
 3		 ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
301-001	0.40	Control panel, software update
301-004	0.20	Control panel, parameter setting
301-005	0.70	Pre-programmed ECU, replacing
301-014	0.60	Trimming (offset adjustment)
31		BATTERY
311-011	0.50	Battery, removing
311-012	0.30	Battery, installing
33		STARTING SYSTEM
331-016	0.70	Starter motor, removing
331-017	0.70	Starter motor, installing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
36		OTHER ELECTRICAL EQUIPMENT
360-012	1.25	Generator screed heating regulator, checking
 4		 POWER TRANSMISSION
43		GEARBOX,
431-012	5.00	Travel gearbox, removal
431-013	5.50	Travel gearbox, installation
44		HYDROSTATIC DRIVE
440-024	3.00	Travel drive, calibrating
440-025	1.00	Gear shift valve pressure limiting valve, adjusting
441-035	4.50	Drive motor, removing
441-036	5.00	Drive motor, installing

Op.no.	time (h)	Notes
442-088	1.25	Propulsion pump pressure cut off valve, checking and adjusting
442-167	2.50	Propulsion pump mechanical zero position, checking and adjusting
6		STEERING
64		STEERING
643-025	0.30	Steering angle sensor, adjusting
645-004	1.25	Steering cylinder, removing
645-005	1.25	Steering cylinder, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-039	1.25	Noise-absorbing mats, replacing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-002	0.70	Front wheel, removal
771-003	0.60	Front wheel, installation
771-004	3.00	Rear wheel, removing
771-005	3.00	Rear wheel, installing
775-108	0.30	Road scraper, removing
775-109	0.20	Road scraper, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-051	2.50	Canopy, removal
810-052	2.00	Canopy, installation
85		CAB INTERIOR/UPHOLSTERY
852-003	0.50	Operator's seat, removing
852-004	0.30	Operator's seat, installing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-013	4.00	Hydraulic oil cooler, removing

Op.no.	time (h)	Notes
911-014	4.50	Hydraulic oil cooler, installing
911-036	5.00	Hydraulic oil tank, removing
911-037	6.00	Hydraulic oil tank, installing
912-274	0.70	Screed assist, pressure regulating valve, replacing
912-275	0.30	Screed assist, pressure regulating valve, adjusting
912-276	0.70	Screed tensioning device, pressure regulating valve, replacing
912-277	0.30	Screed tensioning device, pressure regulating valve, adjusting
912-286	1.00	Cylinder valve block flow divider, adjusting
913-083	1.25	Auger drive pump max. working pressure, checking and adjusting
913-084	0.90	Auger drive pump standby pressure, checking and adjusting
98		FUNCTION FOR ROAD CONSTRUCTION
982-001	1.50	Tow arm, removing
982-001	0.80	Tow arm, removing
982-002	2.50	Tow arm, installing
982-002	1.00	Tow arm, installing
982-003	1.50	Screed, removing
982-003	2.50	Screed, removing
982-004	2.50	Screed, installing
982-004	3.50	Screed, installing
982-029	0.30	Levelling scales, adjusting
982-055	1.25	Screed spacer blocks, removing
982-056	1.25	Screed spacer blocks, installing
983-042	3.50	Conveyor cover, removing
983-043	3.50	Conveyor cover, installing
983-052	4.50	Conveyor chain, removing
983-053	4.50	Conveyor chain, installing
983-054	2.00	Conveyor drive shaft, disassembly and assembly
983-055	2.50	Conveyor floor plate, removing
983-056	2.50	Conveyor floor plate, installing
983-057	9.00	Conveyor drive shaft, removing
983-058	8.50	Conveyor drive shaft, installing
983-096	0.60	Auger bearing protector, replacing
983-101	2.50	Auger drive chain, replacing
983-118	1.25	Conveyor drive chain, removing
983-119	0.90	Conveyor drive chain, installing
983-120	1.75	Conveyor idler assembly, removing
983-121	1.50	Conveyor idler assembly, installing
983-122	1.75	Conveyor idler assembly, disassembly and assembly

Op.no.	time (h)	Notes
983-140	1.25	Front apron plate, removing
983-141	1.00	Front apron plate, installing
983-142	0.30	Auger flight, removing
983-143	0.10	Auger flight, installing
986-005	0.70	Heater bar, removing
986-005	1.25	Heater bar, removing
986-005	1.25	Heater bar, removing
986-005	1.00	Heater bar, removing
986-006	0.50	Heater bar, installing
986-006	1.75	Heater bar, installing
986-006	1.75	Heater bar, installing
986-006	1.25	Heater bar, installing
986-010	1.75	Generator screed heating, checking
986-010	1.75	Generator screed heating, checking
99		MISCELLANEOUS
993-022	0.20	Automatic lubrication pump, removing
993-023	0.60	Automatic lubrication pump, installing

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-001	4.00	Maintenance service, as required	
173-003	2.00	Maintenance service, every 10 hours	
173-010	10.00	Maintenance service, every 500 hours	
173-012	20.00	Maintenance service, every 1000 hours	
173-014	26.00	Maintenance service, every 2000 hours	
173-014	25.00	Maintenance service, every 2000 hours	
173-016	22.00	Maintenance service, every 3000 hours	
173-018	27.00	Maintenance service, every 4000 hours	
173-018	27.00	Maintenance service, every 4000 hours	
173-019	4.00	Maintenance service, every 4500 hours	
173-036	3.50	Maintenance service, first 100 hours	
173-302	0.20	Service position 1	
19		GENERAL	
191-021	0.20	Service position 1	
191-022	2.50	Service position 2	
191-025	3.00	Service position 3	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	
200-070	1.50	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-092	0.40	Engine rotation speed sensor (camshaft), replacing	
210-093	0.40	Engine rotation speed sensor (crank shaft), replacing	715030 - 999999
210-093	0.50	Engine rotation speed sensor (crank shaft), replacing	51 - 715029
212-071	0.70	Crankcase ventilation separator, replacing	
214-012	4.00	Valves, adjusting	51 - 715029
214-012	4.50	Valves, adjusting	51 - 715029
214-012	4.00	Valves, adjusting	715030 - 999999
214-012	4.50	Valves, adjusting	715030 - 999999
22		LUBRICATING SYSTEM	
221-022	0.30	Lubrication oil pressure, checking with pressure gauge	

Op.no.	time (h)		Notes
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
233-002	0.80	Feed pump, replacing	
233-004	0.30	Feed pump, checking feed pressure	
234-011	1.25	Fuel tank, removing	51 - 715029
234-011	1.25	Fuel tank, removing	715030 - 999999
234-012	1.50	Fuel tank, installing	51 - 715029
234-012	1.50	Fuel tank, installing	715030 - 999999
237-002	5.50	Injectors, replacing all	
237-032	2.50	High pressure fuel pump, replacing	
237-033	0.50	Fuel control valve (FCV), replacing	
237-034	1.25	Pressure relief valve (PRV), replacing	
237-035	2.00	Fuel rail pressure sensor, replacing	
237-124	0.70	High pressure fuel system, pressure relief	
239-002	0.60	Fuel cooler, removing	
239-003	0.40	Fuel cooler, installing	
25		INLET SYSTEM; EXHAUST SYSTEM	
251-007	0.60	Air intake hose, replacing	
252-017	0.60	Silencer, removing	
252-018	0.40	Silencer, installing	
252-021	0.90	Exhaust pipe, flexible tube, replacing	51 - 715029
252-021	0.80	Exhaust pipe, flexible tube, replacing	715030 - 999999
254-001	3.50	Diesel particulate filter, check and clean	715030 - 999999
254-001	3.50	Diesel particulate filter, check and clean	51 - 715029
254-022	1.75	ACM (After treatment control module), replacing, non-programmed	
254-023	1.25	ACM (After treatment control module), replacing, pre-programmed	
254-031	1.50	Air pump, replacing	51 - 715029
254-031	1.50	Air pump, replacing	715030 - 999999
254-033	3.50	Burner, replacing	715030 - 999999
254-033	3.50	Burner, replacing	51 - 715029
254-038	0.70	DPF inlet temperature sensor, replacing	715030 - 999999
254-038	0.90	DPF inlet temperature sensor, replacing	51 - 715029
254-039	0.70	DPF outlet temperature sensor, replacing	
254-043	0.30	Spark plug control unit, replacing	
254-044	0.40	Glow plug, replacing	
254-045	1.25	Glow plug, checking	
254-046	0.30	Spark plug, replacing	
254-047	0.40	Spark plug, checking	
254-048	0.40	Spark plug cable, replacing	
254-050	0.90	Fuel metering unit A, replacing	
254-052	0.70	Air pump safety valve, replacing	

Op.no.	time (h)		Notes
254-053	0.70	Glow plug control unit, replacing	
254-056	0.90	NOx sensor, replacing	51 - 715029
254-056	0.80	NOx sensor, replacing	715030 - 999999
254-068	1.00	Muffler, adjusting	
255-009	0.50	Waste gate, testing	
255-070	1.25	Turbocharger, removing	51 - 715029
255-070	1.00	Turbocharger, removing	715030 - 999999
255-072	1.25	Turbocharger, installing	51 - 715029
255-072	1.25	Turbocharger, installing	715030 - 999999
258-023	1.25	Charge air cooler, removing	
258-024	1.25	Charge air cooler, installing	
26		COOLING SYSTEM	
260-001	0.70	Carbon dioxide in coolant system, checking	
261-011	2.00	Radiator, removing	51 - 715029
261-011	1.75	Radiator, removing	715030 - 999999
261-013	2.50	Radiator, installing	51 - 715029
261-013	2.50	Radiator, installing	715030 - 999999
261-016	3.00	Radiator hoses all, replacing	51 - 715029
261-016	2.50	Radiator hoses all, replacing	715030 - 999999
261-020	0.90	Expansion tank, removing	
261-021	0.70	Expansion tank, installing	
261-022	3.00	Cooling package, removing	
261-023	2.50	Cooling package, installing	
262-002	2.50	Coolant pump, replacing	
262-097	0.40	Thermostat, checking	
262-098	1.75	Thermostat, replacing	715030 - 999999
262-098	2.00	Thermostat, replacing	51 - 715029
263-001	2.50	Fan motor, removing	
263-003	3.50	Fan motor, installing	
263-090	4.00	Fan, installing	
263-091	2.50	Fan, removing	
29		Miscellaneous	
293-001	3.00	EGR cooler, replacing	
293-004	3.00	EGR cooler, cleaning	
293-006	0.50	EGR temperature sensor, replacing	
293-007	0.50	EGR pressure sensor, replacing	
293-008	3.00	EGR Actuator, replacing	
293-009	1.50	EGR reed valve, replacing	
293-010	0.90	EGR Venturi tube, replacing	

Op.no.	time (h)		Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
301-001	0.40	Control panel, software update	
301-004	0.20	Control panel, parameter setting	
301-005	0.70	Pre-programmed ECU, replacing	
301-014	0.40	Trimming (offset adjustment)	
301-015	0.30	Calibrate travel potentiometer and steering potentiometer	
33		STARTING SYSTEM	
331-016	1.75	Starter motor, removing	51 - 715029
331-016	1.50	Starter motor, removing	715030 - 999999
331-016	1.50	Starter motor, removing	715030 - 999999
331-016	1.75	Starter motor, removing	51 - 715029
331-017	1.00	Starter motor, installing	51 - 715029
331-017	1.25	Starter motor, installing	51 - 715029
331-017	1.00	Starter motor, installing	715030 - 999999
331-017	0.90	Starter motor, installing	715030 - 999999
331-021	0.30	Starter motor, tests	
36		OTHER ELECTRICAL EQUIPMENT	
360-012	1.25	Generator screed heating regulator, checking	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
387-032	1.50	Main control unit memory battery, replacing	
387-043	1.00	Steering potentiometer, installing	
387-044	0.80	Steering potentiometer, removing	
387-045	1.00	Speed potentiometer, installing	
387-046	0.80	Speed potentiometer, removing	
387-047	0.50	Drive lever, installing	
387-047	1.25	Drive lever, installing	
387-048	0.80	Drive lever, removing	
387-048	0.30	Drive lever, removing	
4		POWER TRANSMISSION	
43		GEARBOX,	
434-073	5.00	Dropbox, installing	
434-074	4.00	Dropbox, removing	
44		HYDROSTATIC DRIVE	
441-111	2.00	Track motor, replacing	
442-082	2.50	Propulsion pump, removing	

Op.no.	time (h)	Notes
442-082	1.50	Propulsion pump, removing
442-083	1.75	Propulsion pump, installing
442-083	3.00	Propulsion pump, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-039	1.25	Noise-absorbing mats, replacing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-009	5.00	Front idler, removing
775-010	4.50	Front idler, installing
775-025	1.50	Assembling the guide sprocket
775-034	6.00	Track chain assembly, removing
775-035	9.50	Track chain assembly, installing
775-051	1.25	Top roller, replacing one
775-062	1.00	Bottom roller, removing
775-063	0.90	Bottom roller, installing
775-074	0.30	Track pad, removing
775-075	0.20	Track pad, installing
775-080	1.50	Track tension cylinder, replacing
775-095	0.70	Track tension, adjusting
775-108	0.40	Road scraper, removing
775-109	0.20	Road scraper, installing
777-003	0.80	Vibration pump, removing
777-004	0.70	Vibration pump, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-051	2.50	Canopy, removal
810-052	2.00	Canopy, installation
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.60	Engine hood, removing
821-002	0.50	Engine hood, installing
88		INTERIOR EQUIPMENT
881-001	0.60	Instrument console, removing
881-002	0.60	Instrument console, installing

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-013	3.00	Hydraulic oil cooler, removing
911-014	4.50	Hydraulic oil cooler, installing
911-036	5.50	Hydraulic oil tank, removing
911-037	7.00	Hydraulic oil tank, installing
912-240	0.70	Valve block, chain tensioner, removing
912-241	0.70	Valve block, chain tensioner, installing
912-242	0.70	Valve block, brake valve, removing
912-243	0.60	Valve block, brake valve, installing
912-244	0.80	Valve block, tamper, removing
912-245	0.80	Valve block, tamper, installing
912-246	1.25	Valve block, auger, removing
912-247	1.25	Valve block, auger, installing
912-248	0.50	Valve block, rinsing valves, removing
912-249	0.50	Valve block, rinsing valves, installing
912-250	1.25	Valve block, conveyor/vibration, removing
912-251	1.50	Valve block, conveyor/vibration, installing
912-252	2.50	Valve block, cylinder functions, removing
912-253	2.50	Valve block, cylinder functions, installing
912-254	0.60	Valve block, leveling, removing
912-254	0.90	Valve block, leveling, removing
912-255	1.25	Valve block, leveling, installing
912-255	0.60	Valve block, leveling, installing
912-256	0.60	Valve block, hopper wing lock, removing
912-257	0.50	Valve block, hopper wing lock, installing
912-258	0.90	Valve block, screed assist, removing
912-259	0.90	Valve block, screed assist, installing
912-260	0.50	Valve block, screed anti-climbing lock, removing
912-261	0.50	Valve block, screed anti-climbing lock, installing
912-262	1.00	Valve block, fan, removing
912-263	0.90	Valve block, fan, installing
912-264	0.80	Valve block, screed tensioner, removing
912-265	0.80	Valve block, screed tensioner, installing
912-266	0.90	Valve block, screed extension, height adjustment, removing
912-267	0.90	Valve block, screed extension, height adjustment, installing
912-268	0.90	Valve block, screed load, removing
912-269	0.90	Valve block, screed load, installing
912-270	0.80	Valve block, auger, height adjustment, removing
912-271	0.80	Valve block, auger, height adjustment, installing

Op.no.	time (h)	Notes
98		FUNCTION FOR ROAD CONSTRUCTION
982-003	2.50	Screed, removing
982-003	2.00	Screed, removing
982-004	3.00	Screed, installing
982-004	4.00	Screed, installing
982-035	0.40	Screed assist, adjusting
982-055	1.25	Screed spacer blocks, removing
982-056	1.25	Screed spacer blocks, installing
983-042	0.50	Conveyor cover, removing
983-042	1.25	Conveyor cover, removing
983-043	0.30	Conveyor cover, installing
983-043	1.00	Conveyor cover, installing
983-052	3.00	Conveyor chain, removing
983-053	2.50	Conveyor chain, installing
983-054	2.00	Conveyor drive shaft, disassembly and assembly
983-055	2.50	Conveyor floor plate, removing
983-056	2.50	Conveyor floor plate, installing
983-057	7.50	Conveyor drive shaft, removing
983-058	6.50	Conveyor drive shaft, installing
983-065	0.80	Auger bearing hanger, removing
983-066	0.70	Auger bearing hanger, installing
983-067	4.50	Auger bearing, removing
983-068	2.50	Auger bearing, installing
983-069	3.50	Auger shaft, removing
983-070	1.00	Auger shaft, installing
983-081	0.60	Push roller, removing
983-081	0.60	Push roller, removing
983-082	0.60	Push roller, installing
983-082	0.60	Push roller, installing
983-086	1.75	Hopper flap, replacing
983-096	0.60	Auger bearing protector, replacing
983-101	2.50	Auger drive chain, replacing
983-102	1.75	Auger motor, removing
983-103	1.75	Auger motor, installing
983-106	1.25	Auger drive pump, removing
983-107	1.50	Auger drive pump, installing
983-118	0.80	Conveyor drive chain, removing
983-119	0.70	Conveyor drive chain, installing
983-120	1.75	Conveyor idler assembly, removing
983-121	1.50	Conveyor idler assembly, installing
983-122	1.75	Conveyor idler assembly, disassembly and assembly
983-142	0.30	Auger flight, removing

Op.no.	time (h)	Notes
983-143	0.10	Auger flight, installing
983-184	0.60	Conveyor pump, removing
983-184	0.80	Conveyor pump, removing
983-185	0.60	Conveyor pump, installing
983-185	0.70	Conveyor pump, installing
983-215	0.80	Conveyor pump right side/ tamper pump, removing
983-216	0.70	Conveyor pump right side/tamper pump, installing
9833-001	1.25	Conveyor drive pump, removing
9833-002	1.25	Conveyor drive pump, installing
986-003	1.50	Generator, removing
986-003	1.75	Generator, removing
986-004	4.00	Generator, installing
986-004	1.75	Generator, installing
986-005	0.70	Heater bar, removing
986-005	1.25	Heater bar, removing
986-005	1.25	Heater bar, removing
986-005	1.00	Heater bar, removing
986-006	0.50	Heater bar, installing
986-006	1.75	Heater bar, installing
986-006	1.75	Heater bar, installing
986-006	1.25	Heater bar, installing
986-009	2.00	Generator, adjusting
986-009	0.70	Generator, adjusting
986-010	1.75	Generator screed heating, checking

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-001	4.00	Maintenance service, as required	
173-003	1.75	Maintenance service, every 10 hours	
173-010	8.50	Maintenance service, every 500 hours	
173-012	18.00	Maintenance service, every 1000 hours	
173-014	23.00	Maintenance service, every 2000 hours	
173-016	23.00	Maintenance service, every 3000 hours	805015 - 999999
173-016	20.00	Maintenance service, every 3000 hours	805015 - 999999
173-016	25.00	Maintenance service, every 3000 hours	51 - 805014
173-016	21.00	Maintenance service, every 3000 hours	51 - 805014
173-018	24.00	Maintenance service, every 4000 hours	
173-019	1.50	Maintenance service, every 4500 hours	
173-036	2.50	Maintenance service, first 100 hours	
19		GENERAL	
191-022	2.50	Service position 2	
191-025	3.00	Service position 3	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-002	7.00	Compression test	
210-070	14.00	Engine, removing	
210-070	14.00	Engine, removing	
210-072	15.00	Engine, installing	
210-072	16.00	Engine, installing	
210-092	0.90	Engine rotation speed sensor (camshaft), replacing	
210-093	0.40	Engine rotation speed sensor (crank shaft), replacing	
214-012	3.50	Valves, adjusting	
22		LUBRICATING SYSTEM	
221-022	0.70	Lubrication oil pressure, checking with pressure gauge	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	

Op.no.	time (h)	Notes
233-001	0.40	Fuel system, bleeding
233-002	0.70	Feed pump, replacing
233-004	0.50	Feed pump, checking feed pressure
233-014	2.00	Fuel filters, replacing
233-020	1.50	Fuel filter, checking
234-011	1.00	Fuel tank, removing
234-012	1.25	Fuel tank, installing
237-033	2.50	Fuel control valve (FCV), replacing
237-034	3.00	Pressure relief valve (PRV), replacing
237-035	2.50	Fuel rail pressure sensor, replacing
237-124	1.25	High pressure fuel system, pressure relief
239-002	0.60	Fuel cooler, removing
239-003	0.40	Fuel cooler, installing
25		INLET SYSTEM; EXHAUST SYSTEM
252-017	0.60	Silencer, removing
252-018	0.40	Silencer, installing
254-001	3.50	Diesel particulate filter, check and clean
254-022	1.75	ACM (After treatment control module), replacing, non-programmed
254-023	1.25	ACM (After treatment control module), replacing, pre-programmed
254-038	0.50	DPF inlet temperature sensor, replacing
254-039	0.70	DPF outlet temperature sensor, replacing
254-044	1.50	Glow plug, replacing
254-046	1.50	Spark plug, replacing
254-047	1.75	Spark plug, checking
254-056	0.90	NOx sensor, replacing
254-068	1.25	Muffler, adjusting
255-009	1.50	Waste gate, testing
258-023	1.75	Charge air cooler, removing
258-024	2.00	Charge air cooler, installing
26		COOLING SYSTEM
260-001	0.80	Carbon dioxide in coolant system, checking
261-011	2.50	Radiator, removing
261-013	3.00	Radiator, installing
261-020	1.25	Expansion tank, removing
261-021	1.00	Expansion tank, installing
261-022	4.00	Cooling package, removing
261-023	4.50	Cooling package, installing
263-001	3.50	Fan motor, removing
263-003	4.00	Fan motor, installing
263-090	3.00	Fan, installing
263-091	2.50	Fan, removing

Op.no.	time (h)	Notes
29		Miscellaneous
293-001	3.00	EGR cooler, replacing
293-004	3.00	EGR cooler, cleaning
293-006	0.50	EGR temperature sensor, replacing
293-007	0.50	EGR pressure sensor, replacing
293-008	3.00	EGR Actuator, replacing
293-009	1.50	EGR reed valve, replacing
293-010	0.90	EGR Venturi tube, replacing
 3		 ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
301-001	0.40	Control panel, software update
301-004	0.20	Control panel, parameter setting
301-005	0.70	Pre-programmed ECU, replacing
301-014	0.60	Trimming (offset adjustment)
31		BATTERY
311-011	0.50	Battery, removing
311-012	0.30	Battery, installing
33		STARTING SYSTEM
331-016	0.70	Starter motor, removing
331-017	0.70	Starter motor, installing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
36		OTHER ELECTRICAL EQUIPMENT
360-012	1.25	Generator screed heating regulator, checking
 4		 POWER TRANSMISSION
43		GEARBOX,
431-012	5.00	Travel gearbox, removal
431-013	5.50	Travel gearbox, installation
44		HYDROSTATIC DRIVE
440-024	3.00	Travel drive, calibrating
440-025	1.00	Gear shift valve pressure limiting valve, adjusting
441-035	4.50	Drive motor, removing
441-036	5.00	Drive motor, installing

Op.no.	time (h)	Notes
442-088	1.25	Propulsion pump pressure cut off valve, checking and adjusting
442-167	2.50	Propulsion pump mechanical zero position, checking and adjusting
6		STEERING
64		STEERING
643-025	0.30	Steering angle sensor, adjusting
645-004	1.25	Steering cylinder, removing
645-005	1.25	Steering cylinder, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-039	1.25	Noise-absorbing mats, replacing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-002	0.70	Front wheel, removal
771-003	0.60	Front wheel, installation
771-004	3.00	Rear wheel, removing
771-005	3.00	Rear wheel, installing
775-108	0.30	Road scraper, removing
775-109	0.20	Road scraper, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-051	2.50	Canopy, removal
810-052	2.00	Canopy, installation
85		CAB INTERIOR/UPHOLSTERY
852-003	0.50	Operator's seat, removing
852-004	0.30	Operator's seat, installing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-013	4.00	Hydraulic oil cooler, removing

Op.no.	time (h)	Notes
911-014	4.50	Hydraulic oil cooler, installing
911-036	5.00	Hydraulic oil tank, removing
911-037	6.00	Hydraulic oil tank, installing
912-274	0.70	Screed assist, pressure regulating valve, replacing
912-275	0.30	Screed assist, pressure regulating valve, adjusting
912-276	0.70	Screed tensioning device, pressure regulating valve, replacing
912-277	0.30	Screed tensioning device, pressure regulating valve, adjusting
912-286	1.00	Cylinder valve block flow divider, adjusting
913-083	1.25	Auger drive pump max. working pressure, checking and adjusting
913-084	0.90	Auger drive pump standby pressure, checking and adjusting
98		FUNCTION FOR ROAD CONSTRUCTION
982-001	1.50	Tow arm, removing
982-001	0.80	Tow arm, removing
982-002	2.50	Tow arm, installing
982-002	1.00	Tow arm, installing
982-003	1.50	Screed, removing
982-003	2.50	Screed, removing
982-004	2.50	Screed, installing
982-004	3.50	Screed, installing
982-029	0.30	Levelling scales, adjusting
982-055	1.25	Screed spacer blocks, removing
982-056	1.25	Screed spacer blocks, installing
983-042	3.50	Conveyor cover, removing
983-043	3.50	Conveyor cover, installing
983-052	4.50	Conveyor chain, removing
983-053	4.50	Conveyor chain, installing
983-054	2.00	Conveyor drive shaft, disassembly and assembly
983-055	2.50	Conveyor floor plate, removing
983-056	2.50	Conveyor floor plate, installing
983-057	9.00	Conveyor drive shaft, removing
983-058	8.50	Conveyor drive shaft, installing
983-096	0.60	Auger bearing protector, replacing
983-101	2.50	Auger drive chain, replacing
983-118	1.25	Conveyor drive chain, removing
983-119	0.90	Conveyor drive chain, installing
983-120	1.75	Conveyor idler assembly, removing
983-121	1.50	Conveyor idler assembly, installing
983-122	1.75	Conveyor idler assembly, disassembly and assembly

Op.no.	time (h)	Notes
983-140	1.25	Front apron plate, removing
983-141	1.00	Front apron plate, installing
983-142	0.30	Auger flight, removing
983-143	0.10	Auger flight, installing
986-005	0.70	Heater bar, removing
986-005	1.25	Heater bar, removing
986-005	1.25	Heater bar, removing
986-005	1.00	Heater bar, removing
986-006	0.50	Heater bar, installing
986-006	1.75	Heater bar, installing
986-006	1.75	Heater bar, installing
986-006	1.25	Heater bar, installing
986-010	1.75	Generator screed heating, checking
986-010	1.75	Generator screed heating, checking
99		MISCELLANEOUS
993-022	0.20	Automatic lubrication pump, removing
993-023	0.60	Automatic lubrication pump, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	0.30	Maintenance service, daily
173-004	0.80	Maintenance service, every 50 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	11.00	Maintenance service, every 1000 hours
173-014	13.00	Maintenance service, every 2000 hours
173-019	1.25	Maintenance service, every 4500 hours
173-022	0.70	Maintenance service, every 6000 hours
173-035	3.00	Maintenance service, first 50 hours
19		GENERAL
191-021	0.20	Service position 1
191-022	0.20	Service position 2
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU
200-201	0.20	Engine belt, removing
200-202	0.10	Engine belt, installing
21		ENGINE
210-092	0.30	Engine rotation speed sensor (camshaft), replacing
210-093	0.30	Engine rotation speed sensor (crank shaft), replacing
212-071	0.30	Crankcase ventilation separator, replacing
214-012	2.50	Valves, adjusting
218-009	7.00	Engine mounts, replacing
22		LUBRICATING SYSTEM
221-022	0.50	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.40	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-008	0.80	Fuel pump, replacing
237-002	4.00	Injectors, replacing all
237-032	1.75	High pressure fuel pump, replacing
237-033	1.50	Fuel control valve (FCV), replacing

Op.no.	time (h)	Notes
237-034	0.80	Pressure relief valve (PRV), replacing
237-124	0.50	High pressure fuel system, pressure relief
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.60	Exhaust pipe, flexible tube, replacing
254-001	1.25	Diesel particulate filter, check and clean
254-022	1.50	ACM (After treatment control module), replacing, non-programmed
254-023	0.80	ACM (After treatment control module), replacing, pre-programmed
254-031	0.80	Air pump, replacing
254-033	1.75	Burner, replacing
254-043	0.40	Spark plug control unit, replacing
254-044	0.30	Glow plug, replacing
254-048	0.40	Spark plug cable, replacing
254-049	0.50	Throttle, replacing
254-050	0.60	Fuel metering unit A, replacing
254-051	0.80	Fuel metering unit B, replacing
254-052	0.30	Air pump safety valve, replacing
254-053	0.40	Glow plug control unit, replacing
254-055	1.50	DPF bracket, replacing
254-056	0.80	NOx sensor, replacing
254-066	0.40	Exhaust Aftertreatment System, T-junction, replacing
255-009	0.50	Waste gate, testing
255-070	0.80	Turbocharger, removing
255-072	1.50	Turbocharger, installing
256-010	0.30	Air cleaner, removing
256-011	0.20	Air cleaner, installing
26		COOLING SYSTEM
261-018	1.00	Expansion tank, replacing
261-022	3.50	Cooling package, removing
261-023	3.00	Cooling package, installing
262-002	2.50	Coolant pump, replacing
263-023	1.50	Fan pump, removing
263-024	1.50	Fan pump, installing
263-060	7.50	Fan speed sensor, replacing
263-062	2.50	Cooling fan motor, replacing
29		Miscellaneous
293-001	2.50	EGR cooler, replacing
293-004	3.00	EGR cooler, cleaning
293-005	2.50	EGR valve, replacing

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-009	0.20	Battery, disconnecting
311-010	0.10	Battery, connecting
32		ALTERNATOR; CHARGE REGULATOR
321-003	1.00	Alternator, removing
321-004	0.70	Alternator, installing
36		OTHER ELECTRICAL EQUIPMENT
367-020	0.20	ECU, replacing
367-020	0.20	ECU, replacing
367-020	1.25	ECU, replacing
367-020	0.20	ECU, replacing
367-020	1.25	ECU, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-011	1.25	Fuel level sender, replacing
4		POWER TRANSMISSION
41		CLUTCH; TORQUE CONVERTER
413-021	2.50	Pump decoupler, removing
413-021	2.50	Pump decoupler, removing
413-022	2.50	Pump decoupler, installing
413-022	2.00	Pump decoupler, installing
413-023	0.50	Pump decoupler valve, removing
413-024	0.40	Pump decoupler valve, installing
42		TRANSMISSION, HYDRAULIC CONTROL
424-004	1.50	Propulsion control lever, replacing
44		HYDROSTATIC DRIVE
441-040	2.50	Hydraulic motor speed sensor, replacing
441-080	4.00	Propulsion motor, removing
441-081	5.00	Propulsion motor, installing
441-082	4.00	Propulsion planetary, removing
441-083	5.00	Propulsion planetary, installing
441-117	0.30	Positraction valve, removing
441-118	0.20	Positraction valve, installing
442-076	3.50	Propulsion pump, removing, right side
442-077	3.00	Propulsion pump, installing, right side
442-078	2.00	Propulsion pump, removing, left side

Op.no.	time (h)	Notes
442-079	1.75	Propulsion pump, installing, left side
442-087	0.30	Propulsion pump, multi function valve, replacing
442-159	0.30	Propel, calibrating
442-168	0.40	Planetary shift valve, replacing
442-169	0.40	Drive motor shift valve, replacing
5		BRAKE
52		HYDRAULIC BRAKE SYSTEM
525-012	0.60	Brake shift valve, replacing
55		PARKING BRAKE
550-055	0.40	Parking brake release valve, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-009	2.50	Front idler, removing
775-010	3.00	Front idler, installing
775-040	0.60	Rubber track, aligning
775-041	2.00	Rubber track, removing
775-042	3.00	Rubber track, installing
775-042	3.00	Rubber track, installing
775-080	7.00	Track tension cylinder, replacing
775-100	3.50	Track assembly, removing
775-101	5.00	Track assembly, installing
775-102	2.50	Bogie wheel assembly, removing
775-103	3.50	Bogie wheel assembly, installing
775-104	2.00	Track drive wheel, removing
775-105	2.50	Track drive wheel, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.40	Engine hood, removing
821-002	0.50	Engine hood, installing

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
913-076	2.00	General purpose pump, removing
913-077	1.75	General purpose pump, installing
98		FUNCTION FOR ROAD CONSTRUCTION
982-003	0.80	Screed, removing
982-004	1.00	Screed, installing
983-061	0.80	Conveyor motor assembly, removing
983-062	1.25	Conveyor motor assembly, installing
983-098	2.50	Generator pump, removing
983-099	2.00	Generator pump, installing
983-102	1.50	Auger motor, removing
983-103	2.00	Auger motor, installing
983-106	1.75	Auger drive pump, removing
983-107	1.50	Auger drive pump, installing
983-184	2.50	Conveyor pump, removing
983-185	2.50	Conveyor pump, installing
985-021	3.50	Fumes fan motor, replacing
986-001	0.40	Generator motor, removing
986-002	0.40	Generator motor, installing
986-003	0.60	Generator, removing
986-004	0.50	Generator, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	0.30	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-010	4.50	Maintenance service, every 500 hours
173-012	9.00	Maintenance service, every 1000 hours
173-014	11.00	Maintenance service, every 2000 hours
173-019	1.25	Maintenance service, every 4500 hours
173-022	0.70	Maintenance service, every 6000 hours
173-035	3.00	Maintenance service, first 50 hours
19		GENERAL
191-021	0.20	Service position 1
191-022	0.20	Service position 2
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU
200-201	0.20	Engine belt, removing
200-202	0.10	Engine belt, installing
21		ENGINE
210-092	0.30	Engine rotation speed sensor (camshaft), replacing
210-093	0.30	Engine rotation speed sensor (crank shaft), replacing
212-071	0.30	Crankcase ventilation separator, replacing
214-012	2.50	Valves, adjusting
218-009	7.00	Engine mounts, replacing
22		LUBRICATING SYSTEM
221-022	0.50	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.40	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-008	0.80	Fuel pump, replacing
237-002	4.00	Injectors, replacing all
237-032	1.75	High pressure fuel pump, replacing
237-033	1.50	Fuel control valve (FCV), replacing

Op.no.	time (h)	Notes
237-034	0.80	Pressure relief valve (PRV), replacing
237-124	0.50	High pressure fuel system, pressure relief
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.60	Exhaust pipe, flexible tube, replacing
254-001	1.25	Diesel particulate filter, check and clean
254-022	1.50	ACM (After treatment control module), replacing, non-programmed
254-023	0.80	ACM (After treatment control module), replacing, pre-programmed
254-031	0.80	Air pump, replacing
254-033	1.75	Burner, replacing
254-043	0.40	Spark plug control unit, replacing
254-044	0.30	Glow plug, replacing
254-048	0.40	Spark plug cable, replacing
254-049	0.50	Throttle, replacing
254-050	0.60	Fuel metering unit A, replacing
254-051	0.80	Fuel metering unit B, replacing
254-052	0.30	Air pump safety valve, replacing
254-053	0.40	Glow plug control unit, replacing
254-055	1.50	DPF bracket, replacing
254-056	0.80	NOx sensor, replacing
254-066	0.40	Exhaust Aftertreatment System, T-junction, replacing
255-009	0.50	Waste gate, testing
255-070	0.80	Turbocharger, removing
255-072	1.50	Turbocharger, installing
256-010	0.30	Air cleaner, removing
256-011	0.20	Air cleaner, installing
26		COOLING SYSTEM
261-018	1.00	Expansion tank, replacing
261-022	3.50	Cooling package, removing
261-023	3.00	Cooling package, installing
262-002	2.50	Coolant pump, replacing
263-023	1.50	Fan pump, removing
263-024	1.50	Fan pump, installing
263-060	7.50	Fan speed sensor, replacing
263-062	2.50	Cooling fan motor, replacing
29		Miscellaneous
293-001	2.50	EGR cooler, replacing
293-004	3.00	EGR cooler, cleaning
293-005	2.50	EGR valve, replacing

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
32		ALTERNATOR; CHARGE REGULATOR
321-003	1.00	Alternator, removing
321-004	0.70	Alternator, installing
36		OTHER ELECTRICAL EQUIPMENT
367-020	0.20	ECU, replacing
367-020	0.20	ECU, replacing
367-020	1.25	ECU, replacing
367-020	1.25	ECU, replacing
367-020	0.20	ECU, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-011	1.25	Fuel level sender, replacing
4		POWER TRANSMISSION
41		CLUTCH; TORQUE CONVERTER
413-021	2.50	Pump decoupler, removing
413-021	2.50	Pump decoupler, removing
413-022	2.00	Pump decoupler, installing
413-022	2.50	Pump decoupler, installing
413-023	0.50	Pump decoupler valve, removing
413-024	0.40	Pump decoupler valve, installing
42		TRANSMISSION, HYDRAULIC CONTROL
424-004	0.40	Propulsion control lever, replacing
44		HYDROSTATIC DRIVE
441-040	3.50	Hydraulic motor speed sensor, replacing
441-080	3.00	Propulsion motor, removing
441-081	3.50	Propulsion motor, installing
441-082	3.00	Propulsion planetary, removing
441-083	3.50	Propulsion planetary, installing
441-117	0.30	Positraction valve, removing
441-118	0.20	Positraction valve, installing
442-076	3.50	Propulsion pump, removing, right side
442-077	3.00	Propulsion pump, installing, right side
442-078	2.00	Propulsion pump, removing, left side
442-079	1.75	Propulsion pump, installing, left side
442-082	1.75	Propulsion pump, removing
442-083	1.50	Propulsion pump, installing
442-087	0.30	Propulsion pump, multi function valve, replacing

Op.no.	time (h)	Notes
442-159	0.30	Propel, calibrating
442-168	0.40	Planetary shift valve, replacing
442-169	0.40	Drive motor shift valve, replacing
442-170	0.50	Front wheel assist valve, replacing
5		BRAKE
52		HYDRAULIC BRAKE SYSTEM
525-012	0.60	Brake shift valve, replacing
55		PARKING BRAKE
550-055	0.40	Parking brake release valve, replacing
6		STEERING
62		STEERING AXLE
622-090	1.50	Bogie assembly, removing
622-091	1.75	Bogie assembly, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
72		SUSPENSION
725-014	0.50	Bogie lift cylinders, filling
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-004	1.25	Rear wheel, removing
771-005	1.50	Rear wheel, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.40	Engine hood, removing
821-002	0.50	Engine hood, installing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
913-076	2.00	General purpose pump, removing

Op.no.	time (h)	Notes
913-077	1.75	General purpose pump, installing
98		FUNCTION FOR ROAD CONSTRUCTION
982-003	0.80	Screed, removing
982-004	1.00	Screed, installing
983-061	2.00	Conveyor motor assembly, removing
983-062	3.00	Conveyor motor assembly, installing
983-098	2.50	Generator pump, removing
983-099	2.00	Generator pump, installing
983-102	1.50	Auger motor, removing
983-103	2.00	Auger motor, installing
983-106	1.75	Auger drive pump, removing
983-107	1.50	Auger drive pump, installing
983-184	2.50	Conveyor pump, removing
983-185	2.50	Conveyor pump, installing
985-021	3.50	Fumes fan motor, replacing
986-001	0.40	Generator motor, removing
986-002	0.40	Generator motor, installing
986-003	0.70	Generator, removing
986-004	0.60	Generator, installing

Op.no.	time (h)	Notes
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1 STANDARD PARTS, SERVICE

17 SERVICE

173-001	4.00	Maintenance service, as required
173-003	2.00	Maintenance service, every 10 hours
173-010	11.00	Maintenance service, every 500 hours
173-010	10.00	Maintenance service, every 500 hours
173-012	21.00	Maintenance service, every 1000 hours
173-012	21.00	Maintenance service, every 1000 hours
173-014	26.00	Maintenance service, every 2000 hours
173-014	24.00	Maintenance service, every 2000 hours
173-016	22.00	Maintenance service, every 3000 hours
173-018	27.00	Maintenance service, every 4000 hours
173-018	26.00	Maintenance service, every 4000 hours
173-019	2.50	Maintenance service, every 4500 hours
173-036	3.50	Maintenance service, first 100 hours
173-302	0.20	Service position 1

19 GENERAL

191-021	0.20	Service position 1
191-022	2.50	Service position 2
191-025	3.00	Service position 3

2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-068	1.75	E-ECU, MID 128, changing non-programmed ECU
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU
200-070	1.50	E-ECU, MID 128, changing pre-programmed ECU
200-070	1.50	E-ECU, MID 128, changing pre-programmed ECU

21 ENGINE

210-002	3.00	Compression test
210-002	4.50	Compression test
210-070	16.00	Engine, removing
210-070	13.00	Engine, removing
210-072	23.00	Engine, installing
210-072	18.00	Engine, installing
212-071	0.70	Crankcase ventilation separator, replacing
214-012	4.00	Valves, adjusting
214-012	3.00	Valves, adjusting
218-001	7.00	Rubber cushion, replacing

Op.no.	time (h)	Notes
22		LUBRICATING SYSTEM
221-022	0.30	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-004	0.30	Feed pump, checking feed pressure
234-011	1.25	Fuel tank, removing
234-012	1.50	Fuel tank, installing
237-032	2.00	High pressure fuel pump, replacing
237-032	2.50	High pressure fuel pump, replacing
237-033	0.50	Fuel control valve (FCV), replacing
237-124	0.70	High pressure fuel system, pressure relief
239-002	0.60	Fuel cooler, removing
239-003	0.40	Fuel cooler, installing
25		INLET SYSTEM; EXHAUST SYSTEM
251-007	0.60	Air intake hose, replacing
252-021	0.90	Exhaust pipe, flexible tube, replacing
254-001	2.00	Diesel particulate filter, check and clean
254-022	1.75	ACM (After treatment control module), replacing, non-programmed
254-023	1.25	ACM (After treatment control module), replacing, pre-programmed
254-031	1.25	Air pump, replacing
254-033	1.50	Burner, replacing
254-043	0.30	Spark plug control unit, replacing
254-044	0.40	Glow plug, replacing
254-045	1.25	Glow plug, checking
254-046	0.30	Spark plug, replacing
254-046	0.30	Spark plug, replacing
254-047	0.40	Spark plug, checking
254-048	0.10	Spark plug cable, replacing
254-049	0.40	Throttle, replacing
254-050	1.25	Fuel metering unit A, replacing
254-051	2.50	Fuel metering unit B, replacing
254-052	0.70	Air pump safety valve, replacing
254-053	0.80	Glow plug control unit, replacing
254-056	0.90	NOx sensor, replacing
254-068	1.00	Muffler, adjusting
255-009	0.50	Waste gate, testing
255-070	1.25	Turbocharger, removing
255-070	1.25	Turbocharger, removing
255-072	1.25	Turbocharger, installing

Op.no.	time (h)		Notes
255-072	1.25	Turbocharger, installing	
258-023	1.75	Charge air cooler, removing	51 - 999999
258-023	1.75	Charge air cooler, removing	
258-024	1.50	Charge air cooler, installing	51 - 999999
258-024	1.50	Charge air cooler, installing	
26		COOLING SYSTEM	
260-001	0.70	Carbon dioxide in coolant system, checking	
261-011	0.90	Radiator, removing	
261-013	0.70	Radiator, installing	
261-016	1.25	Radiator hoses all, replacing	
261-020	1.25	Expansion tank, removing	51 - 999999
261-020	1.25	Expansion tank, removing	
261-021	0.90	Expansion tank, installing	51 - 999999
261-021	0.90	Expansion tank, installing	
261-022	3.50	Cooling package, removing	51 - 999999
261-022	3.50	Cooling package, removing	
261-023	3.00	Cooling package, installing	51 - 999999
261-023	3.00	Cooling package, installing	
262-098	1.75	Thermostat, replacing	
263-001	3.00	Fan motor, removing	
263-003	2.50	Fan motor, installing	
263-090	0.10	Fan, installing	
263-091	0.40	Fan, removing	
29		Miscellaneous	
293-004	3.00	EGR cooler, cleaning	
293-005	3.00	EGR valve, replacing	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
301-001	0.40	Control panel, software update	
301-004	0.20	Control panel, parameter setting	
301-005	0.70	Pre-programmed ECU, replacing	
301-014	0.40	Trimming (offset adjustment)	
301-015	0.30	Calibrate travel potentiometer and steering potentiometer	
33		STARTING SYSTEM	
331-016	1.75	Starter motor, removing	
331-016	2.00	Starter motor, removing	
331-017	0.90	Starter motor, installing	

Op.no.	time (h)	Notes
331-017	1.50	Starter motor, installing
331-021	0.30	Starter motor, tests
36		OTHER ELECTRICAL EQUIPMENT
360-012	1.25	Generator screed heating regulator, checking
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
387-032	1.50	Main control unit memory battery, replacing
387-043	1.00	Steering potentiometer, installing
387-044	0.80	Steering potentiometer, removing
387-045	1.00	Speed potentiometer, installing
387-046	0.80	Speed potentiometer, removing
387-047	0.50	Drive lever, installing
387-047	1.25	Drive lever, installing
387-048	0.80	Drive lever, removing
387-048	0.30	Drive lever, removing
4		POWER TRANSMISSION
43		GEARBOX,
434-073	5.50	Dropbox, installing
434-074	5.50	Dropbox, removing
44		HYDROSTATIC DRIVE
441-111	2.00	Track motor, replacing
442-082	2.50	Propulsion pump, removing
442-082	2.50	Propulsion pump, removing
442-083	3.00	Propulsion pump, installing
442-083	2.50	Propulsion pump, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-039	1.25	Noise-absorbing mats, replacing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-009	5.00	Front idler, removing
775-010	4.50	Front idler, installing
775-025	1.50	Assembling the guide sprocket
775-034	6.00	Track chain assembly, removing
775-035	9.50	Track chain assembly, installing
775-051	1.25	Top roller, replacing one
775-062	1.00	Bottom roller, removing

Op.no.	time (h)		Notes
775-063	0.90	Bottom roller, installing	
775-074	0.30	Track pad, removing	
775-075	0.20	Track pad, installing	
775-080	1.50	Track tension cylinder, replacing	
775-095	0.70	Track tension, adjusting	
775-108	0.40	Road scraper, removing	
775-109	0.20	Road scraper, installing	
777-003	0.80	Vibration pump, removing	
777-004	0.70	Vibration pump, installing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-051	2.50	Canopy, removal	
810-052	2.00	Canopy, installation	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-001	0.60	Engine hood, removing	
821-002	0.50	Engine hood, installing	
88		INTERIOR EQUIPMENT	
881-001	0.60	Instrument console, removing	
881-002	0.60	Instrument console, installing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-013	4.00	Hydraulic oil cooler, removing	51 - 999999
911-013	4.00	Hydraulic oil cooler, removing	
911-014	4.50	Hydraulic oil cooler, installing	51 - 999999
911-014	4.50	Hydraulic oil cooler, installing	
911-036	5.50	Hydraulic oil tank, removing	
911-037	7.00	Hydraulic oil tank, installing	
912-240	0.70	Valve block, chain tensioner, removing	
912-241	0.70	Valve block, chain tensioner, installing	
912-242	0.70	Valve block, brake valve, removing	
912-243	0.60	Valve block, brake valve, installing	
912-244	0.70	Valve block, tamper, removing	
912-245	0.70	Valve block, tamper, installing	
912-246	1.25	Valve block, auger, removing	
912-247	1.25	Valve block, auger, installing	

Op.no.	time (h)	Notes
912-248	0.50	Valve block, rinsing valves, removing
912-249	0.50	Valve block, rinsing valves, installing
912-250	1.25	Valve block, conveyor/vibration, removing
912-251	1.50	Valve block, conveyor/vibration, installing
912-252	1.75	Valve block, cylinder functions, removing
912-253	1.75	Valve block, cylinder functions, installing
912-254	0.60	Valve block, leveling, removing
912-254	0.90	Valve block, leveling, removing
912-255	1.25	Valve block, leveling, installing
912-255	0.60	Valve block, leveling, installing
912-256	0.60	Valve block, hopper wing lock, removing
912-257	0.50	Valve block, hopper wing lock, installing
912-258	0.90	Valve block, screed assist, removing
912-259	0.90	Valve block, screed assist, installing
912-260	0.50	Valve block, screed anti-climbing lock, removing
912-261	0.50	Valve block, screed anti-climbing lock, installing
912-262	1.00	Valve block, fan, removing
912-263	0.90	Valve block, fan, installing
912-264	0.80	Valve block, screed tensioner, removing
912-265	0.80	Valve block, screed tensioner, installing
912-266	0.90	Valve block, screed extension, height adjustment, removing
912-267	0.90	Valve block, screed extension, height adjustment, installing
912-268	0.90	Valve block, screed load, removing
912-269	0.90	Valve block, screed load, installing
912-270	0.80	Valve block, auger, height adjustment, removing
912-271	0.80	Valve block, auger, height adjustment, installing
98		FUNCTION FOR ROAD CONSTRUCTION
982-001	1.00	Tow arm, removing
982-002	0.80	Tow arm, installing
982-003	2.00	Screed, removing
982-003	2.50	Screed, removing
982-004	3.00	Screed, installing
982-004	4.00	Screed, installing
982-035	0.40	Screed assist, adjusting
982-055	1.25	Screed spacer blocks, removing
982-056	1.25	Screed spacer blocks, installing
983-042	0.50	Conveyor cover, removing
983-042	1.25	Conveyor cover, removing
983-043	0.30	Conveyor cover, installing
983-043	1.00	Conveyor cover, installing
983-052	3.00	Conveyor chain, removing

Op.no.	time (h)	Notes
983-053	2.50	Conveyor chain, installing
983-054	2.00	Conveyor drive shaft, disassembly and assembly
983-055	2.50	Conveyor floor plate, removing
983-056	2.50	Conveyor floor plate, installing
983-057	7.50	Conveyor drive shaft, removing
983-058	6.50	Conveyor drive shaft, installing
983-065	0.80	Auger bearing hanger, removing
983-066	0.70	Auger bearing hanger, installing
983-067	4.50	Auger bearing, removing
983-068	2.50	Auger bearing, installing
983-069	3.50	Auger shaft, removing
983-070	1.00	Auger shaft, installing
983-081	0.60	Push roller, removing
983-082	0.60	Push roller, installing
983-086	1.75	Hopper flap, replacing
983-096	0.60	Auger bearing protector, replacing
983-101	2.50	Auger drive chain, replacing
983-102	1.75	Auger motor, removing
983-103	1.75	Auger motor, installing
983-106	1.25	Auger drive pump, removing
983-107	1.25	Auger drive pump, installing
983-118	0.80	Conveyor drive chain, removing
983-119	0.70	Conveyor drive chain, installing
983-120	1.75	Conveyor idler assembly, removing
983-121	1.50	Conveyor idler assembly, installing
983-122	1.75	Conveyor idler assembly, disassembly and assembly
983-142	0.30	Auger flight, removing
983-143	0.10	Auger flight, installing
983-148	1.25	Tamper pump, removing
983-148	1.50	Tamper pump, removing
983-149	1.50	Tamper pump, installing
983-149	2.00	Tamper pump, installing
983-184	0.90	Conveyor pump, removing
983-185	0.90	Conveyor pump, installing
9833-001	1.25	Conveyor drive pump, removing
9833-002	1.25	Conveyor drive pump, installing
986-003	1.75	Generator, removing
986-004	1.75	Generator, installing
986-005	0.70	Heater bar, removing
986-005	1.25	Heater bar, removing
986-005	1.25	Heater bar, removing
986-005	1.00	Heater bar, removing
986-006	0.50	Heater bar, installing

Op.no.	time (h)	Notes
986-006	1.75	Heater bar, installing
986-006	1.75	Heater bar, installing
986-006	1.25	Heater bar, installing
986-009	0.70	Generator, adjusting
986-010	1.75	Generator screed heating, checking

Op.no.	time (h)	Notes
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1 STANDARD PARTS, SERVICE

17 SERVICE

173-001	4.00	Maintenance service, as required
173-003	2.00	Maintenance service, every 10 hours
173-010	11.00	Maintenance service, every 500 hours
173-010	10.00	Maintenance service, every 500 hours
173-012	21.00	Maintenance service, every 1000 hours
173-012	21.00	Maintenance service, every 1000 hours
173-014	26.00	Maintenance service, every 2000 hours
173-014	25.00	Maintenance service, every 2000 hours
173-016	22.00	Maintenance service, every 3000 hours
173-018	28.00	Maintenance service, every 4000 hours
173-018	26.00	Maintenance service, every 4000 hours
173-019	2.50	Maintenance service, every 4500 hours
173-036	4.00	Maintenance service, first 100 hours
173-302	0.20	Service position 1

19 GENERAL

191-021	0.20	Service position 1
191-022	2.50	Service position 2
191-025	3.00	Service position 3

2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-068	1.75	E-ECU, MID 128, changing non-programmed ECU
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU
200-070	1.50	E-ECU, MID 128, changing pre-programmed ECU
200-070	1.50	E-ECU, MID 128, changing pre-programmed ECU

21 ENGINE

210-002	3.00	Compression test
210-002	4.50	Compression test
210-070	16.00	Engine, removing
210-070	13.00	Engine, removing
210-072	23.00	Engine, installing
210-072	18.00	Engine, installing
212-071	0.70	Crankcase ventilation separator, replacing
214-012	4.00	Valves, adjusting
214-012	3.00	Valves, adjusting
218-001	7.00	Rubber cushion, replacing

Op.no.	time (h)	Notes
22		LUBRICATING SYSTEM
221-022	0.30	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-004	0.30	Feed pump, checking feed pressure
234-011	1.25	Fuel tank, removing
234-012	1.50	Fuel tank, installing
237-032	2.00	High pressure fuel pump, replacing
237-032	2.50	High pressure fuel pump, replacing
237-033	0.50	Fuel control valve (FCV), replacing
237-124	0.70	High pressure fuel system, pressure relief
239-002	0.60	Fuel cooler, removing
239-003	0.40	Fuel cooler, installing
25		INLET SYSTEM; EXHAUST SYSTEM
251-007	0.60	Air intake hose, replacing
252-021	0.90	Exhaust pipe, flexible tube, replacing
254-001	2.00	Diesel particulate filter, check and clean
254-022	1.75	ACM (After treatment control module), replacing, non-programmed
254-023	1.25	ACM (After treatment control module), replacing, pre-programmed
254-031	1.25	Air pump, replacing
254-033	1.50	Burner, replacing
254-043	0.30	Spark plug control unit, replacing
254-044	0.40	Glow plug, replacing
254-045	1.25	Glow plug, checking
254-046	0.30	Spark plug, replacing
254-046	0.30	Spark plug, replacing
254-047	0.40	Spark plug, checking
254-048	0.10	Spark plug cable, replacing
254-049	0.40	Throttle, replacing
254-050	1.25	Fuel metering unit A, replacing
254-051	2.50	Fuel metering unit B, replacing
254-052	0.70	Air pump safety valve, replacing
254-053	0.80	Glow plug control unit, replacing
254-056	0.90	NOx sensor, replacing
254-068	1.00	Muffler, adjusting
255-009	0.50	Waste gate, testing
255-070	1.25	Turbocharger, removing
255-070	1.25	Turbocharger, removing
255-072	1.25	Turbocharger, installing

Op.no.	time (h)		Notes
255-072	1.25	Turbocharger, installing	
258-023	1.75	Charge air cooler, removing	51 - 999999
258-023	1.75	Charge air cooler, removing	
258-024	1.50	Charge air cooler, installing	51 - 999999
258-024	1.50	Charge air cooler, installing	
26		COOLING SYSTEM	
260-001	0.70	Carbon dioxide in coolant system, checking	
261-011	0.90	Radiator, removing	
261-013	0.70	Radiator, installing	
261-016	1.25	Radiator hoses all, replacing	
261-020	1.25	Expansion tank, removing	
261-020	1.25	Expansion tank, removing	51 - 999999
261-021	0.90	Expansion tank, installing	51 - 999999
261-021	0.90	Expansion tank, installing	
261-022	3.50	Cooling package, removing	51 - 999999
261-022	3.50	Cooling package, removing	
261-023	3.00	Cooling package, installing	51 - 999999
261-023	3.00	Cooling package, installing	
262-098	1.75	Thermostat, replacing	
263-001	3.00	Fan motor, removing	
263-003	2.50	Fan motor, installing	
263-090	0.10	Fan, installing	
263-091	0.40	Fan, removing	
29		Miscellaneous	
293-004	3.00	EGR cooler, cleaning	
293-005	3.00	EGR valve, replacing	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
301-001	0.40	Control panel, software update	
301-004	0.20	Control panel, parameter setting	
301-005	0.70	Pre-programmed ECU, replacing	
301-014	0.40	Trimming (offset adjustment)	
301-015	0.30	Calibrate travel potentiometer and steering potentiometer	
33		STARTING SYSTEM	
331-016	1.75	Starter motor, removing	
331-016	2.00	Starter motor, removing	
331-017	0.90	Starter motor, installing	

Op.no.	time (h)	Notes
331-017	1.50	Starter motor, installing
331-021	0.30	Starter motor, tests
36		OTHER ELECTRICAL EQUIPMENT
360-012	1.25	Generator screed heating regulator, checking
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
387-032	1.50	Main control unit memory battery, replacing
387-043	1.00	Steering potentiometer, installing
387-044	0.80	Steering potentiometer, removing
387-045	1.00	Speed potentiometer, installing
387-046	0.80	Speed potentiometer, removing
387-047	0.50	Drive lever, installing
387-047	1.25	Drive lever, installing
387-048	0.80	Drive lever, removing
387-048	0.30	Drive lever, removing
4		POWER TRANSMISSION
43		GEARBOX,
434-073	9.00	Dropbox, installing
434-074	8.50	Dropbox, removing
44		HYDROSTATIC DRIVE
441-111	2.00	Track motor, replacing
442-082	3.50	Propulsion pump, removing
442-082	3.00	Propulsion pump, removing
442-083	4.00	Propulsion pump, installing
442-083	3.50	Propulsion pump, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-039	1.25	Noise-absorbing mats, replacing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-009	5.00	Front idler, removing
775-010	4.50	Front idler, installing
775-025	1.50	Assembling the guide sprocket
775-034	6.00	Track chain assembly, removing
775-035	9.50	Track chain assembly, installing
775-051	1.25	Top roller, replacing one
775-062	1.00	Bottom roller, removing

Op.no.	time (h)		Notes
775-063	0.90	Bottom roller, installing	
775-074	0.30	Track pad, removing	
775-075	0.20	Track pad, installing	
775-080	1.50	Track tension cylinder, replacing	
775-095	0.70	Track tension, adjusting	
775-108	0.40	Road scraper, removing	
775-109	0.20	Road scraper, installing	
777-003	0.80	Vibration pump, removing	
777-004	0.70	Vibration pump, installing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-051	2.50	Canopy, removal	
810-052	2.00	Canopy, installation	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-001	0.60	Engine hood, removing	
821-002	0.50	Engine hood, installing	
88		INTERIOR EQUIPMENT	
881-001	0.60	Instrument console, removing	
881-002	0.60	Instrument console, installing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-013	4.00	Hydraulic oil cooler, removing	51 - 999999
911-013	4.00	Hydraulic oil cooler, removing	
911-014	4.50	Hydraulic oil cooler, installing	51 - 999999
911-014	4.50	Hydraulic oil cooler, installing	
911-036	5.50	Hydraulic oil tank, removing	
911-037	7.00	Hydraulic oil tank, installing	
912-240	0.70	Valve block, chain tensioner, removing	
912-241	0.70	Valve block, chain tensioner, installing	
912-242	0.70	Valve block, brake valve, removing	
912-243	0.60	Valve block, brake valve, installing	
912-246	1.25	Valve block, auger, removing	
912-247	1.25	Valve block, auger, installing	
912-250	1.25	Valve block, conveyor/vibration, removing	
912-251	1.50	Valve block, conveyor/vibration, installing	

Op.no.	time (h)	Notes
912-252	1.75	Valve block, cylinder functions, removing
912-253	1.75	Valve block, cylinder functions, installing
912-254	0.60	Valve block, leveling, removing
912-254	0.90	Valve block, leveling, removing
912-255	1.25	Valve block, leveling, installing
912-255	0.60	Valve block, leveling, installing
912-256	0.60	Valve block, hopper wing lock, removing
912-257	0.50	Valve block, hopper wing lock, installing
912-258	0.90	Valve block, screed assist, removing
912-259	0.90	Valve block, screed assist, installing
912-260	0.50	Valve block, screed anti-climbing lock, removing
912-261	0.50	Valve block, screed anti-climbing lock, installing
912-262	1.00	Valve block, fan, removing
912-263	0.90	Valve block, fan, installing
912-264	0.80	Valve block, screed tensioner, removing
912-265	0.80	Valve block, screed tensioner, installing
912-266	0.90	Valve block, screed extension, height adjustment, removing
912-267	0.90	Valve block, screed extension, height adjustment, installing
912-268	0.90	Valve block, screed load, removing
912-269	0.90	Valve block, screed load, installing
912-270	0.80	Valve block, auger, height adjustment, removing
912-271	0.80	Valve block, auger, height adjustment, installing
98		FUNCTION FOR ROAD CONSTRUCTION
982-001	1.00	Tow arm, removing
982-002	0.80	Tow arm, installing
982-003	2.00	Screed, removing
982-003	2.50	Screed, removing
982-004	3.00	Screed, installing
982-004	4.00	Screed, installing
982-035	0.40	Screed assist, adjusting
982-055	1.25	Screed spacer blocks, removing
982-056	1.25	Screed spacer blocks, installing
983-042	0.50	Conveyor cover, removing
983-042	1.25	Conveyor cover, removing
983-043	0.30	Conveyor cover, installing
983-043	1.00	Conveyor cover, installing
983-052	3.00	Conveyor chain, removing
983-053	2.50	Conveyor chain, installing
983-054	2.00	Conveyor drive shaft, disassembly and assembly
983-055	2.50	Conveyor floor plate, removing
983-056	2.50	Conveyor floor plate, installing

Op.no.	time (h)	Notes
983-057	7.50	Conveyor drive shaft, removing
983-058	6.50	Conveyor drive shaft, installing
983-065	0.80	Auger bearing hanger, removing
983-066	0.70	Auger bearing hanger, installing
983-067	4.50	Auger bearing, removing
983-068	2.50	Auger bearing, installing
983-069	3.50	Auger shaft, removing
983-070	1.00	Auger shaft, installing
983-081	0.60	Push roller, removing
983-082	0.60	Push roller, installing
983-086	1.75	Hopper flap, replacing
983-096	0.60	Auger bearing protector, replacing
983-101	2.50	Auger drive chain, replacing
983-102	1.75	Auger motor, removing
983-103	1.75	Auger motor, installing
983-106	1.25	Auger drive pump, removing
983-106	1.25	Auger drive pump, removing
983-107	1.75	Auger drive pump, installing
983-107	1.75	Auger drive pump, installing
983-118	0.80	Conveyor drive chain, removing
983-119	0.70	Conveyor drive chain, installing
983-120	1.75	Conveyor idler assembly, removing
983-121	1.50	Conveyor idler assembly, installing
983-122	1.75	Conveyor idler assembly, disassembly and assembly
983-142	0.30	Auger flight, removing
983-143	0.10	Auger flight, installing
983-148	2.00	Tamper pump, removing
983-149	2.50	Tamper pump, installing
983-184	0.90	Conveyor pump, removing
983-185	0.90	Conveyor pump, installing
9833-001	1.25	Conveyor drive pump, removing
9833-002	1.25	Conveyor drive pump, installing
986-003	1.75	Generator, removing
986-004	1.75	Generator, installing
986-005	0.70	Heater bar, removing
986-005	1.25	Heater bar, removing
986-005	1.00	Heater bar, removing
986-005	1.25	Heater bar, removing
986-006	0.50	Heater bar, installing
986-006	1.75	Heater bar, installing
986-006	1.75	Heater bar, installing
986-006	1.25	Heater bar, installing
986-009	0.70	Generator, adjusting

Op.no.	time (h)	Notes
986-010	1.75	Generator screed heating, checking

Op.no.	time (h)		Notes
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
210-070	3.00	Engine, removing	200987 - 499999
210-072	3.50	Engine, installing	200987 - 499999
26		COOLING SYSTEM	
261-022	2.00	Cooling package, removing	200987 - 499999
261-023	2.50	Cooling package, installing	200987 - 499999
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
31		BATTERY	
311-009	0.30	Battery, disconnecting	200987 - 499999
311-010	0.20	Battery, connecting	
311-011	0.30	Battery, removing	200987 - 499999
311-012	0.30	Battery, installing	200987 - 499999
36		OTHER ELECTRICAL EQUIPMENT	
364-100	0.30	SW3703, replacing	200987 - 499999
37		CABLE; FUSE; RELAY	
372-053	0.20	RE3706, replacing	200987 - 499999
4		POWER TRANSMISSION	
41		CLUTCH; TORQUE CONVERTER	
413-012	3.00	Clutch assembly, removing	
413-013	4.00	Clutch assembly, installing	
42		TRANSMISSION, HYDRAULIC CONTROL	
424-050	0.30	SW4233, replacing	200987 - 499999
424-051	0.30	SW4234, replacing	200987 - 499999
44		HYDROSTATIC DRIVE	
440-060	0.30	Propulsion system pressure, checking	200987 - 499999
440-065	0.30	High/low valve, replacing	200987 - 499999
440-067	0.40	Propulsion motor case drain flow, checking	200987 - 499999
441-082	1.75	Propulsion planetary, removing	200987 - 499999
441-083	2.00	Propulsion planetary, installing	200987 - 499999
442-070	0.30	Charge pressure relief valve, replacing	200987 - 499999
442-072	0.20	Charge pressure relief valve, adjusting	200987 - 499999
442-076	1.75	Propulsion pump, removing, right side	

Op.no.	time (h)		Notes
442-077	2.00	Propulsion pump, installing, right side	
442-078	0.80	Propulsion pump, removing, left side	200987 - 499999
442-079	0.90	Propulsion pump, installing, left side	200987 - 499999
442-087	0.30	Propulsion pump, multi function valve, replacing	200987 - 499999
442-097	0.30	Servo shunt valve spool, replacing	200987 - 499999
442-099	0.20	Propulsion pump, charge pressure checking	200987 - 499999
442-150	0.20	MA4206, replacing	200987 - 499999
442-151	0.20	MA4412, replacing	200987 - 499999
442-152	0.20	MA4413, replacing	200987 - 499999
45		PROPELLER SHAFT	
451-031	0.30	Drive shaft, removing	
451-032	0.30	Drive shaft, installing	
5		BRAKE	
52		HYDRAULIC BRAKE SYSTEM	
524-002	0.20	RE5501, replacing	200987 - 499999
524-002	0.20	RE5501, replacing	200987 - 499999
525-012	0.30	Brake shift valve, replacing	200987 - 499999
525-013	0.20	Pressure at brake shift valve, checking	200987 - 499999
55		PARKING BRAKE	
550-050	0.20	MA5501, replacing	200987 - 499999
550-052	0.30	SW5501, replacing	200987 - 499999
550-053	0.20	SE5501, replacing	200987 - 499999
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-007	0.90	Wheel, installing	
771-008	0.90	Wheel, removing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-001	0.60	Engine hood, removing	200987 - 499999
821-002	0.90	Engine hood, installing	200987 - 499999

Op.no.	time (h)		Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-053	0.60	Hydraulic oil tank relief valve, removing	200987 - 499999
911-054	0.60	Hydraulic oil tank relief valve, installing	200987 - 499999
911-060	1.00	Hydraulic oil system, priming	
912-206	0.20	General purpose hydraulic system pressure, checking	200987 - 499999
912-207	0.30	General purpose hydraulic system flow, checking	200987 - 499999
912-223	1.25	Main distribution valve, removing	200987 - 499999
912-224	1.25	Main distribution valve, installing	200987 - 499999
913-077	1.25	General purpose pump, installing	200987 - 499999
98		FUNCTION FOR ROAD CONSTRUCTION	
982-003	0.60	Screed, removing	200987 - 499999
982-004	0.60	Screed, installing	200987 - 499999
983-098	0.90	Generator pump, removing	200987 - 499999
983-099	0.80	Generator pump, installing	200987 - 499999
983-160	0.50	Hopper cylinder pressure, checking	200987 - 499999
983-165	0.40	Auger lift cylinder pressure, checking	200987 - 499999
983-166	0.30	Auger/conveyor system pressure, checking	200987 - 499999
983-167	0.20	Auger/conveyor servo activation pressure, checking	200987 - 499999
983-168	0.40	Auger/conveyor pump case drain, checking	200987 - 499999
983-169	0.40	Auger/conveyor motor case drain, checking	200987 - 499999
983-170	0.40	Auger/conveyor hydraulic system flow, checking	200987 - 499999
983-175	1.00	Auger/conveyor pump, removing	200987 - 499999
983-176	1.25	Auger/conveyor pump, installing	200987 - 499999
983-178	0.40	Auger/conveyor pump force motor, adjusting	200987 - 499999
983-179	0.70	Auger/conveyor motor, removing	200987 - 499999
983-181	1.75	Auger/conveyor planetary, removing	200987 - 499999
983-200	0.40	MA9470, replacing	200987 - 499999
983-201	0.40	MA9471, replacing	200987 - 499999
986-007	0.20	Generator hydraulic system pressure, checking	200987 - 499999
986-008	0.20	Generator hydraulic system flow, checking	200987 - 499999

Op.no.	time (h)	Notes	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
210-070	2.50	Engine, removing	
26		COOLING SYSTEM	
261-022	1.75	Cooling package, removing	375009 - 499999
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
31		BATTERY	
311-009	0.20	Battery, disconnecting	
311-010	0.20	Battery, connecting	375009 - 499999
311-011	0.20	Battery, removing	375009 - 499999
37		CABLE; FUSE; RELAY	
372-053	0.20	RE3706, replacing	375009 - 499999
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
424-050	0.30	SW4233, replacing	375009 - 499999
424-051	0.30	SW4234, replacing	375009 - 499999
44		HYDROSTATIC DRIVE	
440-060	0.30	Propulsion system pressure, checking	375009 - 499999
440-065	0.40	High/low valve, replacing	375009 - 499999
440-067	0.20	Propulsion motor case drain flow, checking	375009 - 499999
441-080	1.25	Propulsion motor, removing	375009 - 499999
441-082	1.00	Propulsion planetary, removing	375009 - 499999
441-083	0.90	Propulsion planetary, installing	375009 - 499999
442-070	0.30	Charge pressure relief valve, replacing	375009 - 499999
442-072	0.20	Charge pressure relief valve, adjusting	375009 - 499999
442-078	2.00	Propulsion pump, removing, left side	375009 - 499999
442-079	1.25	Propulsion pump, installing, left side	375009 - 499999
442-087	0.30	Propulsion pump, multi function valve, replacing	375009 - 499999
442-097	0.30	Servo shunt valve spool, replacing	375009 - 499999
442-099	0.20	Propulsion pump, charge pressure checking	375009 - 499999
442-150	0.30	MA4206, replacing	375009 - 499999
442-151	0.20	MA4412, replacing	375009 - 499999
442-152	0.20	MA4413, replacing	375009 - 499999

Op.no.	time (h)		Notes
5		BRAKE	
52		HYDRAULIC BRAKE SYSTEM	
524-002	0.20	RE5501, replacing	375009 - 499999
525-012	0.20	Brake shift valve, replacing	375009 - 499999
525-013	0.20	Pressure at brake shift valve, checking	375009 - 499999
55		PARKING BRAKE	
550-040	0.20	Parking brake, release pressure, checking	375009 - 499999
550-050	0.20	MA5501, replacing	375009 - 499999
550-052	0.30	SW5501, replacing	375009 - 499999
550-053	0.10	SE5501, replacing	375009 - 499999
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-041	1.25	Rubber track, removing	375009 - 499999
775-042	1.75	Rubber track, installing	375009 - 499999
775-089	0.40	Track tension system relief pressure, checking	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-001	0.50	Engine hood, removing	375009 - 499999
821-002	0.40	Engine hood, installing	375009 - 499999
85		CAB INTERIOR/UPHOLSTERY	
852-003	0.20	Operator's seat, removing	375009 - 499999
852-004	0.20	Operator's seat, installing	375009 - 499999
88		INTERIOR EQUIPMENT	
881-001	0.50	Instrument console, removing	375009 - 499999
881-009	0.20	Instrument console lock pin, replacing	375009 - 499999
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-060	1.25	Hydraulic oil system, priming	
912-206	0.20	General purpose hydraulic system pressure, checking	375009 - 499999

Op.no.	time (h)		Notes
912-207	0.20	General purpose hydraulic system flow, checking	375009 - 499999
912-223	0.50	Main distribution valve, removing	375009 - 499999
912-224	0.70	Main distribution valve, installing	375009 - 499999
913-076	0.70	General purpose pump, removing	375009 - 499999
913-077	0.50	General purpose pump, installing	375009 - 499999
98		FUNCTION FOR ROAD CONSTRUCTION	
982-003	0.60	Screed, removing	375009 - 499999
982-004	0.60	Screed, installing	375009 - 499999
983-098	0.70	Generator pump, removing	375009 - 499999
983-099	0.50	Generator pump, installing	375009 - 499999
983-160	0.50	Hopper cylinder pressure, checking	375009 - 499999
983-165	0.40	Auger lift cylinder pressure, checking	375009 - 499999
983-166	0.30	Auger/conveyor system pressure, checking	375009 - 499999
983-167	0.20	Auger/conveyor servo activation pressure, checking	375009 - 499999
983-168	0.10	Auger/conveyor pump case drain, checking	375009 - 499999
983-169	0.20	Auger/conveyor motor case drain, checking	375009 - 499999
983-170	0.30	Auger/conveyor hydraulic system flow, checking	375009 - 499999
983-171	0.90	Auger/conveyor pump, removing, right side	375009 - 499999
983-173	1.00	Auger/conveyor pump, removing, left side	375009 - 499999
983-178	0.40	Auger/conveyor pump force motor, adjusting	375009 - 499999
983-179	0.70	Auger/conveyor motor, removing	375009 - 499999
983-183	0.30	Impulse converter, replacing	375009 - 499999
983-200	0.40	MA9470, replacing	
983-201	0.40	MA9471, replacing	

Op.no.	time (h)	Notes
2		ENGINE WITH MOUNTING AND EQUIPMENT
23		FUEL SYSTEM
234-011	0.40	Fuel tank, removing
234-012	0.40	Fuel tank, installing
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	0.50	Silencer, replacing
256-003	0.20	Air cleaner, primary filter replacing
256-004	0.30	Air cleaner, secondary filter replacing
256-010	0.20	Air cleaner, removing
256-011	0.20	Air cleaner, installing
27		ENGINE CONTROL
271-002	0.30	Throttle control cable, removal
271-003	0.30	Throttle control cable, installation
275-012	0.80	Engine speed control, mechanical basic setting
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.20	Batteries, replacing
311-009	0.20	Battery, disconnecting
311-010	0.10	Battery, connecting
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
424-003	1.50	Propulsion control cable, replacing
424-004	0.60	Propulsion control lever, replacing
44		HYDROSTATIC DRIVE
441-009	0.90	Travel motor, removing
441-010	1.00	Travel motor, installing
441-037	3.00	Drive motor center mount, replacing
442-082	2.50	Propulsion pump, removing
442-083	2.50	Propulsion pump, installing
6		STEERING
62		STEERING AXLE
622-056	0.80	Spindle - Removal and Disassembly

Op.no.	time (h)	Notes
622-065	0.80	Spindle - Assembly and Installation
622-095	2.00	Spindle center mount, replacing
622-096	3.00	Steering bolster center mount, replacing
622-097	3.00	Steering bearing, replacing
64		STEERING
641-026	0.30	Steering column, removing
641-027	0.30	Steering column, installing
645-004	0.60	Steering cylinder, removing
645-005	0.40	Steering cylinder, installing
645-022	0.30	Steering valve, removal
645-023	0.30	Steering valve, installation
645-070	0.80	Hydraulic pump, removing
645-072	0.40	Hydraulic pump, installing.
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
75		AXLE SUSPENSION
753-001	1.75	Suspension, removing
753-002	2.00	Suspension, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
85		CAB INTERIOR/UPHOLSTERY
852-003	0.30	Operator's seat, removing
852-004	0.10	Operator's seat, installing
86		PROTECTIVE EQUIPMENT, not specified in a special group
867-002	0.50	ROPS (Roll Over Protection), removing
867-002	0.50	ROPS (Roll Over Protection), removing
867-003	0.70	ROPS (Roll Over Protection), installing
867-003	0.40	ROPS (Roll Over Protection), installing
88		INTERIOR EQUIPMENT
884-001	0.50	Seat safety belt, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-036	1.50	Hydraulic oil tank, removing

Op.no.	time (h)	Notes
911-037	1.00	Hydraulic oil tank, installing
98		FUNCTION FOR ROAD CONSTRUCTION
985-003	0.50	Water tank, removing
985-004	0.40	Water tank, installing
985-007	0.60	Water pump, removing
985-008	0.50	Water pump, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-001	0.70	Maintenance service, as required
173-002	0.80	Maintenance service, daily
173-004	2.00	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	5.00	Maintenance service, every 500 hours
173-012	7.50	Maintenance service, every 1000 hours
173-014	9.00	Maintenance service, every 2000 hours
173-022	0.70	Maintenance service, every 6000 hours
173-451	2.00	Hydraulic oil, changing
176-004	0.60	Towing a disabled machine
19		GENERAL
191-021	0.40	Service position 1
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	6.00	Engine, removing
210-072	4.00	Engine, installing
214-012	1.50	Valves, adjusting
218-009	15.00	Engine mounts, replacing
23		FUEL SYSTEM
233-001	0.50	Fuel system, bleeding
234-011	1.00	Fuel tank, removing
234-012	1.00	Fuel tank, installing
234-017	0.50	Fuel tank lid,cover plate gasket, replacing
234-018	0.30	Fuel tank breather cap, replacing
234-019	0.50	Fuel tank sight gauge, replacing
235-005	0.50	Fuel lines, replacing
235-005	1.25	Fuel lines, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.50	Silencer, replacing
252-024	0.80	Flexible pipe, replacing
252-024	0.70	Flexible pipe, replacing
256-010	0.30	Air cleaner, removing
256-011	0.30	Air cleaner, installing
256-013	0.60	Air duct rubber ring, replacing
256-014	0.70	Air duct, replacing
256-015	0.40	Air hose, air duct, elbow, replacing

Op.no.	time (h)	Notes
256-017	0.40	Air filter clog sensor, replacing
256-020	0.30	Pre-cleaner, replacing
258-020	0.70	Charge air cooler, inlet pipe, replacing
258-021	0.40	Charge air cooler, outlet pipe, replacing
258-023	2.00	Charge air cooler, removing
258-024	2.00	Charge air cooler, installing
26		COOLING SYSTEM
261-008	4.00	Radiator, replacing
261-012	1.25	Radiator hose upper, replacing
261-014	1.25	Radiator hoses lower, replacing
261-018	1.25	Expansion tank, replacing
261-022	1.75	Cooling package, removing
261-023	2.00	Cooling package, installing
263-012	1.75	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-041	4.50	Cooling fan, replacing
263-086	1.50	Fan guard, replacing
27		ENGINE CONTROL
272-019	0.70	Throttle control lever, replacing
272-022	1.00	Throttle control cable, replacing
272-023	0.80	Throttle control assembly, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-009	0.30	Battery, disconnecting
311-010	0.20	Battery, connecting
311-011	0.40	Battery, removing
311-012	0.40	Battery, installing
32		ALTERNATOR; CHARGE REGULATOR
321-003	0.40	Alternator, removing
321-004	0.40	Alternator, installing
321-075	0.40	Alternator, test
33		STARTING SYSTEM
331-018	0.70	Starter motor, replacing
331-021	0.40	Starter motor, tests
35		LIGHTING
352-009	0.40	Head lamp, replacing

Op.no.	time (h)	Notes
353-050	0.40	Licence plate lamp, replacing
353-051	0.50	Tail lamp, replacing
356-050	0.70	Work lamp, replacing
356-050	0.90	Work lamp, replacing
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-052	0.50	Dual function alarm, replacing
362-053	0.50	Back up alarm, replacing
364-004	0.50	Switch, replacing
364-005	0.40	Control box limit switch, replacing
364-011	0.50	Reverse alarm switch, replacing
364-012	0.50	Control box limit switch, checking
364-013	0.60	Emergency stop switch, replacing
364-014	0.60	Ignition switch, replacing
364-015	0.50	Indicator lamp High beam , replacing
364-050	0.40	Relay (general), replacing
366-094	0.50	Diode, replacing
366-094	0.60	Diode, replacing
37		CABLE; FUSE; RELAY
371-021	3.00	Instrument wire harness, replacing
371-032	2.00	Rear wire harness, replacing
371-037	1.50	Front wire harness, replacing
371-040	0.80	Battery cable negative, replacing
371-041	0.50	Battery cable +, replacing
371-041	0.70	Battery cable +, replacing
371-041	0.50	Battery cable +, replacing
371-043	0.50	Battery disconnecter, replacing
371-090	0.90	Engine wire harness, replacing
371-091	1.50	Platform wire harness, replacing
372-002	0.80	Electrical distribution box, circuit board replacing
372-011	0.40	Fuse box, changing
372-020	0.40	Fuse (general), replacing
372-025	0.60	Power relay, replacing
372-026	0.40	Flasher relay, replacing
372-027	0.40	Resistor, replacing
372-052	0.60	Light relay, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
380-002	0.70	Water flow control, replacing
386-007	0.30	Engine oil pressure sensor, replacing
386-016	0.40	Temperature sensor cooling system, replacing
387-021	0.50	Instrument panel (display unit), replacing

Op.no.	time (h)	Notes
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
424-003	0.80	Propulsion control cable, replacing
424-004	1.25	Propulsion control lever, replacing
424-004	0.50	Propulsion control lever, replacing
424-005	0.50	Neutral safety switch, replacing
424-005	0.50	Neutral safety switch, replacing
424-017	1.25	Propulsion rod, pipe, removing
424-018	0.90	Propulsion rod, pipe, installing
424-019	0.80	Propulsion control lever clamp attachment, replacing
424-019	0.60	Propulsion control lever clamp attachment, replacing
44		HYDROSTATIC DRIVE
441-044	2.50	Hydraulic motor, removing
441-045	2.50	Hydraulic motor, installing
442-082	2.50	Propulsion pump, removing
442-083	3.00	Propulsion pump, installing
442-100	2.00	Propulsion pump manifold, replacing
442-163	2.50	Propulsion pump coupling, removing
442-164	3.00	Propulsion pump coupling, installing
5		BRAKE
55		PARKING BRAKE
551-012	0.60	Parking brake pressure switch, replacing
6		STEERING
64		STEERING
641-001	0.30	Steering wheel, replacing
641-010	0.40	Control console wheel, replacing
641-011	2.50	Control panel, replacing
641-012	2.00	Flexible hose, replacing
641-013	1.25	Control panel rail, guide, replacing
641-014	0.40	Control panel stop plate, replacing
641-015	0.90	Control panel lock pin, replacing
641-016	0.40	Control panel lock pin spring, replacing
641-017	0.30	Control panel lock plate, replacing
641-026	0.60	Steering column, removing
641-027	0.70	Steering column, installing

Op.no.	time (h)	Notes
643-015	1.50	Steering arm, removing
643-016	2.00	Steering arm, installing
643-020	2.00	Pivot, removing
643-021	2.50	Pivot, installing
643-022	4.00	Pivot bushing, replacing
643-023	0.70	Track rods, removing
643-024	0.90	Track rods, installing
645-004	1.25	Steering cylinder, removing
645-005	1.50	Steering cylinder, installing
645-016	1.25	Steering pump, removing
645-017	1.25	Steering pump, installing
645-022	0.70	Steering valve, removal
645-023	0.80	Steering valve, installation
645-054	3.00	Steering cylinder, replacing bearings

7 FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT

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FRAME

711-003	0.50	Cap support, replacing
711-040	0.80	Hydraulic oil level gauge, replacing
711-041	0.60	Hydraulic tank lid, cover plate gasket, replacing
711-042	0.50	Hydraulic tank breather cap, replacing
711-043	1.75	Cover plates gasket, replacing

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SUSPENSION

725-001	2.50	Suspension cylinder, removal
725-002	3.50	Suspension cylinder, installation
725-011	2.50	Suspension cylinder connecting tube, replacing

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AXLE SUSPENSION

751-011	1.75	Drive shaft, removing
751-012	2.50	Drive shaft, installing

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WHEELS; TRACKS; TYRE; HUB; DRUM

771-002	1.00	Front wheel, removal
771-003	1.25	Front wheel, installation
771-004	0.50	Rear wheel, removing
771-005	0.50	Rear wheel, installing

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.40	Engine hood, removing
821-002	0.40	Engine hood, installing
821-003	0.50	Engine hood latch, replacing
821-029	0.70	Engine hood hinge, replacing
821-031	0.40	Engine hood, changing gas spring
821-034	0.40	Engine hood sealing, replacing
827-003	0.30	Hand rail, removing
827-004	0.40	Hand rail, installing
83		DOORS; HATCH; COVER PLATE, (all)
837-007	1.50	Deck plates, replacing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.20	Operator's seat, removing
852-004	0.30	Operator's seat, installing
86		PROTECTIVE EQUIPMENT, not specified in a special group
867-002	1.25	ROPS (Roll Over Protection), removing
867-003	1.25	ROPS (Roll Over Protection), installing
89		MISCELLANEOUS
891-001	0.60	Unloading valve, replacing
891-002	0.40	Tyre inflation components, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-011	4.00	Oil cooler, replacing
912-070	0.80	Check valve, replacing
912-070	0.50	Check valve, replacing
912-180	0.40	Valve block, removing
912-181	0.50	Valve block, installing
912-213	3.50	Hydraulic manifold block LH, replacing
912-214	3.00	Hydraulic manifold block RH, replacing
912-283	1.75	Combination valve, replacing
912-284	0.50	Solenoid coil, replacing
912-285	0.50	Solenoid valve, replacing
98		FUNCTION FOR ROAD CONSTRUCTION
985-003	4.50	Water tank, removing

Op.no.	time (h)	Notes
985-004	1.25	Water tank, installing
985-007	0.30	Water pump, removing
985-008	0.50	Water pump, installing
985-015	0.30	Cocoa mats, replacing
985-016	0.50	Water spray system components, replacing
985-016	0.40	Water spray system components, replacing
985-017	0.50	Water strainer, replacing
985-018	0.50	Ball valve, replacing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	0.40	Maintenance service, daily
173-074	1.00	Hydraulic oil tank, changing oil and filter
173-078	0.50	Engine, air cleaner maintenance
173-401	0.80	Engine oil and filter, changing
173-465	0.80	Rear axle oil, changing
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	4.00	Engine, removing
210-072	5.00	Engine, installing
218-007	1.00	Engine mounting rear, changing
23		FUEL SYSTEM
233-001	0.20	Fuel system, bleeding
233-014	0.40	Fuel filters, replacing
234-010	5.50	Fuel tank, replacing
235-002	0.20	Fuel line, water separator, check and drain
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
252-022	2.50	Exhaust pipe, changing pipe between silencer and turbocharger
256-011	1.25	Air cleaner, installing
258-022	0.50	Charge air cooler connection (hose, tube), replacing
258-023	0.40	Charge air cooler, removing
258-024	0.40	Charge air cooler, installing
26		COOLING SYSTEM
263-012	0.80	Fan belt and/or alternator belt, replacing
263-013	0.40	Fan belt and/or alternator belt, checking and adjusting tension
263-041	4.00	Cooling fan, replacing
263-042	4.00	Fan shroud, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	1.25	Batteries, replacing

Op.no.	time (h)	Notes
32		ALTERNATOR; CHARGE REGULATOR
321-002	2.50	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	0.50	Starter motor, replacing
334-011	0.70	Starter switch (engine start switch), replacing
36		OTHER ELECTRICAL EQUIPMENT
362-003	0.40	Reverse alarm, replacing
363-001	0.60	Windscreen wiper rear, replacing motor
363-002	0.60	Windscreen wiper front, replacing motor
364-004	0.30	Switch, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-007	0.30	Engine oil pressure sensor, replacing
386-011	1.75	Fuel level sender, replacing
386-017	0.60	Hydraulic oil temperature sensor, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-088	4.00	Two speed valve solenoid and cartridge, replacing
421-089	1.25	Pump de-stroke valve solenoid and cartridge, replacing
424-004	2.50	Propulsion control lever, replacing
44		HYDROSTATIC DRIVE
440-021	1.25	Hydrostatic controller, removing
440-022	1.50	Hydrostatic controller, installing
441-011	4.00	Travel motor, replacing one
441-035	5.00	Drive motor, removing
441-036	5.00	Drive motor, installing
441-061	1.75	Thermal bypass valve, replacing
442-021	3.50	Hydrostatic pump, removing
442-022	4.50	Hydrostatic pump, installing
442-045	4.00	Pump coupling, removing
442-046	5.00	Pump coupling, installing
442-068	0.50	Loop flushing valve, replacing
442-069	1.00	Loop flushing valve cartridge, replacing
442-080	0.40	Drum drive motor speed sensor, replacing
442-081	0.40	Rear axle motor speed sensor, replacing
442-090	0.40	Vibration speed sensor, replacing
442-091	1.50	Traction valve, solenoid and cartridge, replacing

Op.no.	time (h)	Notes
46		FRONT AXLE; REAR AXLE
463-002	5.00	Axle, removing
463-003	5.00	Axle, installing
5		BRAKE
55		PARKING BRAKE
551-012	0.50	Parking brake pressure switch, replacing
6		STEERING
64		STEERING
641-021	4.50	Adjustable steering column, replacing
645-004	1.50	Steering cylinder, removing
645-005	1.75	Steering cylinder, installing
645-031	2.00	Steering control unit, removing
645-035	2.50	Steering control unit, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-022	5.00	Frame joint, Replacing the front pivot bearing with machine separated
741-023	6.00	Frame joint, replacing the rear pivot bearing with machine separated
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.80	Wheel, removing and fitting one
777-001	13.00	Drum, removing
777-002	13.00	Drum, installing
777-003	3.00	Vibration pump, removing
777-004	3.50	Vibration pump, installing
777-005	0.90	Vibration motor, removing
777-006	1.00	Vibration motor, installing
777-007	12.00	Eccentric weight, removing
777-008	13.00	Eccentric weight, installing
777-009	2.00	Drum shock mount, replacing
777-010	25.00	Eccentric shaft coupling, replacing
777-011	3.50	Torque hub, removing
777-012	3.50	Torque hub, installing
777-013	25.00	Eccentric weight bearings, replacing

Op.no.	time (h)	Notes
777-014	6.00	Carrier bearings, replacing
777-015	9.00	Eccentric weight, overhaul
777-020	5.00	Drum bolt-on shell option, installing
777-021	1.25	Smooth drum scrapers, replacing
777-022	1.25	Padfoot drum scrapers, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
818-023	2.50	Viscous cab suspension, changing all units
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	2.50	Engine hood, removing
821-002	2.50	Engine hood, installing
821-030	2.50	Engine hood, changing spring
85		CAB INTERIOR/UPHOLSTERY
852-003	0.90	Operator's seat, removing
852-004	1.00	Operator's seat, installing
87		AIR CONDITIONING UNIT
870-003	1.75	Cooler and Heater assembly, removal
870-004	5.00	Cooler and Heater assembly, installation
872-001	0.60	Cab filter, replacing
873-004	10.00	Heater core, replacing
873-006	6.50	Fan motor, replacing
873-008	2.50	Heat control valve, replacing
873-013	2.50	Heater unit relays, replacing
874-006	3.00	Compressor, replacing incl draining and filling
874-010	3.00	Condenser, replacing incl draining and filling
874-011	3.00	Receiver, replacing incl draining and filling
874-012	7.50	Evaporator, replacing incl draining and filling
874-014	7.50	Thermostat, replacing
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-092	0.30	HVAC control switch, replacing
88		INTERIOR EQUIPMENT
884-001	0.40	Seat safety belt, replacing

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-013	0.90	Hydraulic oil cooler, removing
911-014	0.90	Hydraulic oil cooler, installing
911-036	2.50	Hydraulic oil tank, removing
911-037	2.50	Hydraulic oil tank, installing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-001	1.00	Maintenance service, as required	52332 - 99999 58001 - 99999 550001 - 999999
173-002	0.50	Maintenance service, daily	51936 - 52331
173-002	0.50	Maintenance service, daily	52332 - 99999 58001 - 99999 550001 - 999999
173-004	2.00	Maintenance service, every 50 hours	51936 - 52331
173-004	2.00	Maintenance service, every 50 hours	52332 - 99999 58001 - 99999 550001 - 999999
173-006	2.00	Maintenance service, every 100 hours	52332 - 99999 58001 - 99999 550001 - 999999
173-006	3.50	Maintenance service, every 100 hours	51936 - 52331
173-007	3.00	Maintenance service, every 250 hours	52332 - 99999 58001 - 99999 550001 - 999999
173-007	5.50	Maintenance service, every 250 hours	51936 - 52331
173-010	6.50	Maintenance service, every 500 hours	52332 - 99999 58001 - 99999 550001 - 999999
173-010	11.00	Maintenance service, every 500 hours	51936 - 52331
173-011	4.00	Maintenance service, every 750 hours	52332 - 99999 58001 - 99999 550001 - 999999
173-012	13.00	Maintenance service, every 1000 hours	52332 - 99999 58001 - 99999 550001 - 999999
173-012	13.00	Maintenance service, every 1000 hours	51936 - 52331
173-014	14.00	Maintenance service, every 2000 hours	52332 - 99999 58001 - 99999 550001 - 999999
173-022	0.80	Maintenance service, every 6000 hours	52332 - 99999 58001 - 99999 550001 - 999999
173-036	1.75	Maintenance service, first 100 hours	52332 - 99999 58001 - 99999 550001 - 999999
173-089	0.80	Drum carrier, changing oil	51936 - 99999 58001 - 99999 550001 - 999999
173-382	0.40	Transmission oil level, checking	51936 - 99999 58001 - 99999 550001 - 999999

Op.no.	time (h)		Notes
173-401	1.25	Engine oil and filter, changing	51936 - 52331
173-451	2.00	Hydraulic oil, changing	51936 - 99999 58001 - 99999 550001 - 999999
173-459	0.80	Transmission oil, changing	51936 - 99999 58001 - 99999 550001 - 999999
173-465	1.25	Rear axle oil, changing	51936 - 99999 58001 - 99999 550001 - 999999
176-004	0.30	Towing a disabled machine	51936 - 99999 58001 - 99999 550001 - 999999
19		GENERAL	
191-021	0.30	Service position 1	52332 - 99999 58001 - 99999 550001 - 999999
191-021	0.30	Service position 1	51936 - 52331
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
210-070	4.50	Engine, removing	51936 - 52331
210-070	6.00	Engine, removing	52332 - 99999 58001 - 99999 550001 - 999999
210-072	8.50	Engine, installing	52332 - 99999 58001 - 99999 550001 - 999999
210-072	5.00	Engine, installing	51936 - 52331
214-012	1.00	Valves, adjusting	52332 - 99999 58001 - 99999 550001 - 999999
218-009	15.00	Engine mounts, replacing	52332 - 99999 58001 - 99999 550001 - 999999
23		FUEL SYSTEM	
233-001	0.60	Fuel system, bleeding	52332 - 99999 58001 - 99999 550001 - 999999
233-001	0.60	Fuel system, bleeding	51936 - 52331
233-008	2.50	Fuel pump, replacing	52332 - 99999 58001 - 99999 550001 - 999999
233-014	0.90	Fuel filters, replacing	51936 - 52331
234-017	0.40	Fuel tank lid,cover plate gasket, replacing	58001 - 99999

Op.no.	time (h)		Notes
			52332 - 99999
			550001 - 999999
234-018	0.40	Fuel tank breather cap, replacing	58359 - 99999
234-018	0.40	Fuel tank breather cap, replacing	51936 - 52331
235-005	0.50	Fuel lines, replacing	52592 - 99999
			58091 - 99999
			550534 - 999999
235-005	0.50	Fuel lines, replacing	51936 - 52331
235-005	0.50	Fuel lines, replacing	52332 - 52591
			58001 - 58090
			550001 - 550533
235-005	0.50	Fuel lines, replacing	51936 - 52331
235-005	0.40	Fuel lines, replacing	51936 - 52331
235-005	0.50	Fuel lines, replacing	51936 - 52331
236-076	1.50	Injection pump, one changing	52332 - 99999
			58001 - 99999
			550001 - 999999
25		INLET SYSTEM; EXHAUST SYSTEM	
251-008	2.00	Inlet manifold, replacing	52332 - 99999
			58001 - 99999
			550001 - 999999
251-009	1.75	Exhaust manifold, replacing	52332 - 99999
			58001 - 99999
			550001 - 999999
252-017	0.60	Silencer, removing	51936 - 52331
252-018	0.50	Silencer, installing	51936 - 52331
252-020	0.50	Silencer, replacing	52332 - 99999
			58001 - 99999
			550001 - 999999
252-023	1.50	Exhaust pipe, replacing	58001 - 58243
			550001 - 550721
			52332 - 52944
252-023	1.50	Exhaust pipe, replacing	58244 - 99999
			550722 - 999999
			52945 - 99999
252-024	0.90	Flexible pipe, replacing	52332 - 52944
			58001 - 58243
			550001 - 550721
252-024	0.90	Flexible pipe, replacing	51936 - 52331
255-071	1.25	Turbocharger, replacing	52332 - 99999
			58001 - 99999
			550001 - 999999
256-003	0.60	Air cleaner, primary filter replacing	51936 - 52331
256-004	0.60	Air cleaner, secondary filter replacing	51936 - 52331
256-010	0.40	Air cleaner, removing	52332 - 99999
			58001 - 99999
			550001 - 999999

Op.no.	time (h)		Notes
256-010	0.30	Air cleaner, removing	51936 - 52331
256-011	0.40	Air cleaner, installing	52332 - 99999 58001 - 99999 550001 - 999999
256-011	0.30	Air cleaner, installing	51936 - 52331
256-020	0.30	Pre-cleaner, replacing	51936 - 99999 58001 - 99999 550001 - 999999
256-023	0.50	Air cleaner, inlet hose, replacing	51936 - 52331
256-023	0.40	Air cleaner, inlet hose, replacing	58001 - 99999 550001 - 999999 52332 - 99999
256-024	0.40	Air cleaner, outlet hose, replacing	52332 - 99999 58001 - 99999 550001 - 999999
258-020	1.50	Charge air cooler, inlet pipe, replacing	52332 - 99999 58001 - 99999 550001 - 999999
258-021	0.40	Charge air cooler, outlet pipe, replacing	52332 - 99999 58001 - 99999 550001 - 999999
258-023	2.50	Charge air cooler, removing	52332 - 99999 58001 - 99999 550001 - 999999
258-024	1.25	Charge air cooler, installing	58001 - 99999 52332 - 99999 550001 - 999999
26		COOLING SYSTEM	
261-008	5.00	Radiator, replacing	58001 - 99999 52332 - 99999 550001 - 999999
261-018	1.25	Expansion tank, replacing	52332 - 99999 58001 - 99999 550001 - 999999
261-022	2.50	Cooling package, removing	52332 - 99999 58001 - 99999 550001 - 999999
261-023	2.50	Cooling package, installing	52332 - 99999 58001 - 99999 550001 - 999999
262-002	1.50	Coolant pump, replacing	52332 - 99999 58001 - 99999 550001 - 999999
262-098	1.25	Thermostat, replacing	52332 - 99999 58001 - 99999 550001 - 999999
263-012	2.00	Fan belt and/or alternator belt, replacing	52332 - 99999 58001 - 99999 550001 - 999999

Op.no.	time (h)		Notes
263-013	0.40	Fan belt and/or alternator belt, checking and adjusting tension	52332 - 99999 58001 - 99999 550001 - 999999
263-013	0.40	Fan belt and/or alternator belt, checking and adjusting tension	51936 - 52331
263-041	4.50	Cooling fan, replacing	58001 - 99999 52332 - 99999 550001 - 999999
263-042	4.50	Fan shroud, replacing	51936 - 99999 58001 - 99999 550001 - 999999
27		ENGINE CONTROL	
272-019	0.60	Throttle control lever, replacing	52332 - 99999 58001 - 99999 550001 - 999999
272-019	0.70	Throttle control lever, replacing	51936 - 52331
272-022	0.90	Throttle control cable, replacing	51936 - 52331
272-022	0.90	Throttle control cable, replacing	52332 - 99999 58001 - 99999 550001 - 999999
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
31		BATTERY	
311-011	0.40	Battery, removing	52332 - 99999 58001 - 99999 550001 - 999999
311-011	0.30	Battery, removing	51936 - 52331
311-012	0.40	Battery, installing	52332 - 99999 58001 - 99999 550001 - 999999
311-012	0.30	Battery, installing	51936 - 52331
32		ALTERNATOR; CHARGE REGULATOR	
321-003	0.50	Alternator, removing	52332 - 99999 58001 - 99999 550001 - 999999
321-004	0.60	Alternator, installing	52332 - 99999 58001 - 99999 550001 - 999999
321-075	0.40	Alternator, test	51936 - 52331
321-075	0.40	Alternator, test	52332 - 99999 58001 - 99999 550001 - 999999

Op.no.	time (h)		Notes
33		STARTING SYSTEM	
331-018	1.00	Starter motor, replacing	52332 - 99999 58001 - 99999 550001 - 999999
331-021	0.70	Starter motor, tests	51936 - 52331
35		LIGHTING	
352-009	0.40	Head lamp, replacing	51936 - 99999 58001 - 99999
353-050	0.40	Licence plate lamp, replacing	51936 - 52331
353-050	0.40	Licence plate lamp, replacing	52332 - 99999 58001 - 99999
353-051	0.50	Tail lamp, replacing	52332 - 99999 58001 - 99999
353-051	0.40	Tail lamp, replacing	51936 - 52331
356-050	0.40	Work lamp, replacing	
36		OTHER ELECTRICAL EQUIPMENT	
361-002	0.40	Flasher unit, replacing relay	51936 - 99999 58001 - 99999 550001 - 999999
362-002	0.40	Horn, replacing	52332 - 99999 58001 - 99999 550001 - 999999
362-002	0.50	Horn, replacing	51936 - 52331
362-016	0.50	Horn switch, replacing	52332 - 99999 58001 - 99999 550001 - 999999
362-016	0.50	Horn switch, replacing	51936 - 52331
362-053	0.40	Back up alarm, replacing	51936 - 99999 58001 - 99999 550001 - 999999
364-004	0.50	Switch, replacing	51936 - 52331
364-004	0.50	Switch, replacing	52332 - 99999 58001 - 99999 550001 - 999999
364-004	0.40	Switch, replacing	51936 - 52331
364-011	1.25	Reverse alarm switch, replacing	51936 - 52331
364-011	0.70	Reverse alarm switch, replacing	52332 - 99999 58001 - 99999 550001 - 999999
364-013	0.50	Emergency stop switch, replacing	52332 - 99999 58001 - 99999 550001 - 999999
364-013	0.60	Emergency stop switch, replacing	51936 - 52331
364-014	0.40	Ignition switch, replacing	52332 - 99999 58001 - 99999 550001 - 999999

Op.no.	time (h)		Notes
364-014	0.50	Ignition switch, replacing	51936 - 52331
364-050	0.40	Relay (general), replacing	52332 - 99999 58001 - 99999
364-050	0.50	Relay (general), replacing	51936 - 52331
366-100	0.50	Seat switch timer, replacing	51936 - 99999 58001 - 99999 550001 - 999999
37		CABLE; FUSE; RELAY	
371-011	3.50	Main wire harness, replacing	52332 - 99999 58001 - 99999
371-021	0.90	Instrument wire harness, replacing	51936 - 52331
371-021	0.90	Instrument wire harness, replacing	51936 - 52331
371-032	0.90	Rear wire harness, replacing	51936 - 52331
371-040	0.60	Battery cable negative, replacing	52332 - 99999 58001 - 99999 550001 - 999999
371-040	0.50	Battery cable negative, replacing	51936 - 52331
371-041	0.70	Battery cable +, replacing	52332 - 99999 58001 - 99999 550001 - 999999
371-041	0.50	Battery cable +, replacing	51936 - 52331
371-041	0.70	Battery cable +, replacing	52332 - 99999 58001 - 99999
371-043	0.50	Battery disconnecter, replacing	51936 - 52331
371-043	0.60	Battery disconnecter, replacing	52332 - 99999 58001 - 99999 550001 - 999999
371-049	5.50	Console wiring harness, replacing	58001 - 99999 52332 - 99999
371-090	1.25	Engine wire harness, replacing	52332 - 99999 58001 - 99999 550001 - 999999
371-090	1.00	Engine wire harness, replacing	51936 - 52331
372-002	0.50	Electrical distribution box, circuit board replacing	51936 - 99999 58001 - 99999 550001 - 999999
372-020	0.60	Fuse (general), replacing	51936 - 52331
372-020	0.40	Fuse (general), replacing	52332 - 99999 58001 - 99999
372-052	0.60	Light relay, replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
383-001	0.80	Hour meter, replacing	52332 - 99999 58001 - 99999
383-001	0.50	Hour meter, replacing	51936 - 52331
386-007	0.30	Engine oil pressure sensor, replacing	52332 - 99999 58001 - 99999

Op.no.	time (h)		Notes
			550001 - 999999
386-011	0.40	Fuel level sender, replacing	51936 - 99999 58001 - 99999
386-016	0.40	Temperature sensor cooling system, replacing	52332 - 99999 58001 - 99999 550001 - 999999
387-006	0.50	Engine temperature gauge, replacing	51936 - 52331
387-011	0.50	Fuel level gauge, replacing	52332 - 99999 58001 - 99999 550001 - 999999
387-011	0.50	Fuel level gauge, replacing	51936 - 52331
387-020	0.50	Tachometer, replacing	51936 - 52331
387-029	0.50	Instrument panel indicator/s, replacing	52332 - 99999 58001 - 99999 550001 - 999999
387-041	0.50	Engine oil pressure gauge, replacing	51936 - 52331
387-042	1.75	Control box, replacing	52332 - 99999 58001 - 99999 550001 - 999999

4**POWER TRANSMISSION****42****TRANSMISSION, HYDRAULIC CONTROL**

421-096	0.70	Two speed solenoid valve, replacing	51936 - 99999 58001 - 99999 550001 - 999999
424-003	1.50	Propulsion control cable, replacing	51936 - 52331
424-003	1.25	Propulsion control cable, replacing	52332 - 99999 58001 - 99999 550001 - 999999
424-005	1.50	Neutral safety switch, replacing	51936 - 52331
424-005	1.25	Neutral safety switch, replacing	52332 - 99999 58001 - 99999 550001 - 999999
424-020	0.30	Propulsion control cable mounting bracket, replacing	51936 - 52331
424-021	1.50	Control group assembly, replacing	52332 - 99999 58001 - 99999 550001 - 999999
424-021	1.50	Control group assembly, replacing	51936 - 52331

44**HYDROSTATIC DRIVE**

441-047	0.60	Rear axle drive motor, removing	51936 - 99999
441-047	0.70	Rear axle drive motor, removing	58001 - 99999 550001 - 999999
441-048	0.60	Rear axle drive motor, installing	51936 - 99999
441-048	0.80	Rear axle drive motor, installing	58001 - 99999

Op.no.	time (h)		Notes
			550001 - 999999
441-061	1.00	Thermal bypass valve, replacing	51936 - 99999 58001 - 99999 550001 - 999999
442-082	3.00	Propulsion pump, removing	51936 - 52331
442-082	2.50	Propulsion pump, removing	58001 - 99999 52332 - 99999 550001 - 999999
442-083	2.50	Propulsion pump, installing	58001 - 99999 550001 - 999999 52332 - 99999
442-083	1.50	Propulsion pump, installing	51936 - 52331
442-163	2.50	Propulsion pump coupling, removing	52332 - 99999 58001 - 99999 550001 - 999999
442-163	3.00	Propulsion pump coupling, removing	51936 - 52331
442-164	2.50	Propulsion pump coupling, installing	52332 - 99999 58001 - 99999 550001 - 999999
442-164	2.00	Propulsion pump coupling, installing	51936 - 52331
46		FRONT AXLE; REAR AXLE	
463-002	2.50	Axle, removing	51936 - 99999 58001 - 99999 550001 - 999999
463-003	3.00	Axle, installing	51936 - 99999 58001 - 99999 550001 - 999999

5**BRAKE****55****PARKING BRAKE**

550-015	0.50	Parking brake, manually releasing	51936 - 99999 550001 - 999999
550-015	0.40	Parking brake, manually releasing	58001 - 99999 550001 - 999999
550-055	0.80	Parking brake release valve, replacing	51936 - 99999 58001 - 99999 550001 - 999999
551-012	0.70	Parking brake pressure switch, replacing	52332 - 99999 58001 - 99999 550001 - 999999

Op.no.	time (h)		Notes
6		STEERING	
62		STEERING AXLE	
622-097	0.80	Steering bearing, replacing	
64		STEERING	
641-001	0.30	Steering wheel, replacing	52332 - 99999 58001 - 99999 550001 - 999999
641-001	0.30	Steering wheel, replacing	51936 - 52331
641-026	0.50	Steering column, removing	51936 - 52331
641-026	0.40	Steering column, removing	52332 - 99999 58001 - 99999 550001 - 999999
641-027	0.40	Steering column, installing	52332 - 99999 58001 - 99999 550001 - 999999
641-027	0.50	Steering column, installing	51936 - 52331
645-004	0.40	Steering cylinder, removing	
645-005	0.40	Steering cylinder, installing	
645-016	0.60	Steering pump, removing	
645-016	0.50	Steering pump, removing	51936 - 52331
645-017	0.60	Steering pump, installing	51936 - 52331
645-017	0.70	Steering pump, installing	
645-022	0.60	Steering valve, removal	52332 - 99999 58001 - 99999 550001 - 999999
645-022	0.60	Steering valve, removal	51936 - 52331
645-023	0.50	Steering valve, installation	52332 - 99999 58001 - 99999 550001 - 999999
645-023	0.70	Steering valve, installation	51936 - 52331
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
711-041	0.40	Hydraulic tank lid, cover plate gasket, replacing	58001 - 99999 52332 - 99999 550001 - 999999
711-042	0.40	Hydraulic tank breather cap, replacing	52981 - 99999 58359 - 99999
711-042	0.40	Hydraulic tank breather cap, replacing	51936 - 52331
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-001	2.00	Wheel, removing and fitting one	51936 - 99999

Op.no.	time (h)		Notes
			58001 - 99999
			550001 - 999999
777-001	5.50	Drum, removing	51936 - 99999
			58001 - 99999
			550001 - 999999
777-002	5.00	Drum, installing	51936 - 99999
			58001 - 99999
			550001 - 999999
777-003	1.50	Vibration pump, removing	52332 - 99999
			58001 - 99999
			550001 - 999999
777-003	1.50	Vibration pump, removing	51936 - 52331
777-004	1.75	Vibration pump, installing	51936 - 52331
777-004	1.75	Vibration pump, installing	52332 - 99999
			58001 - 99999
			550001 - 999999
777-005	0.40	Vibration motor, removing	51936 - 99999
			58001 - 99999
			550001 - 999999
777-006	0.50	Vibration motor, installing	51936 - 99999
			58001 - 99999
			550001 - 999999
777-007	4.00	Eccentric weight, removing	51936 - 99999
			58001 - 99999
			550001 - 999999
777-008	3.50	Eccentric weight, installing	51936 - 99999
			58001 - 99999
			550001 - 999999
777-009	4.00	Drum shock mount, replacing	51936 - 99999
			58001 - 99999
			550001 - 999999
777-009	4.50	Drum shock mount, replacing	51936 - 99999
			58001 - 99999
			550001 - 999999
777-011	3.00	Torque hub, removing	51936 - 99999
777-012	3.50	Torque hub, installing	51936 - 99999
777-013	11.00	Eccentric weight bearings, replacing	51936 - 99999
			58001 - 99999
			550001 - 999999
777-014	9.50	Carrier bearings, replacing	51936 - 99999
			58001 - 99999
			550001 - 999999
777-015	8.50	Eccentric weight, overhaul	51936 - 99999
			58001 - 99999
			550001 - 999999
777-018	5.50	Drum drive motor, replacing	58001 - 99999
			51936 - 99999
			550001 - 999999
777-029	1.75	Drum assembly, removing	51936 - 99999

Op.no.	time (h)		Notes
			58001 - 99999
			550001 - 999999
777-030	1.50	Drum assembly, installing	51936 - 99999
			58001 - 99999
			550001 - 999999
777-073	9.50	Carrier V-ring seal, replacing	51936 - 99999
			58001 - 99999
			550001 - 999999
777-081	0.50	Drum shock mount (single), replacing	51936 - 99999
			58001 - 99999
			550001 - 999999
777-092	1.25	Vibration control cable, replacing	52332 - 99999
			58001 - 99999
			550001 - 999999
777-092	1.25	Vibration control cable, replacing	51936 - 52331
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-001	0.40	Engine hood, removing	51936 - 52331
821-001	0.70	Engine hood, removing	52332 - 99999
			58001 - 99999
			550001 - 999999
821-002	0.50	Engine hood, installing	51936 - 52331
821-002	0.70	Engine hood, installing	52332 - 99999
			58001 - 99999
			550001 - 999999
821-003	0.40	Engine hood latch, replacing	58001 - 99999
			51936 - 99999
			550001 - 999999
821-028	0.50	Retractor strap assembly, replacing	51936 - 99999
			58001 - 99999
			550001 - 999999
821-029	1.25	Engine hood hinge, replacing	52332 - 99999
821-031	0.40	Engine hood, changing gas spring	51936 - 99999
			58001 - 99999
			550001 - 999999
821-034	0.40	Engine hood sealing, replacing	51936 - 99999
			58001 - 99999
			550001 - 999999
85		CAB INTERIOR/UPHOLSTERY	
852-008	0.60	Seat, replacing	51936 - 99999
			58001 - 99999
			550001 - 999999

Op.no.	time (h)		Notes
86		PROTECTIVE EQUIPMENT, not specified in a special group	
867-002	0.90	ROPS (Roll Over Protection), removing	52332 - 99999 58001 - 99999
867-003	1.25	ROPS (Roll Over Protection), installing	52332 - 99999 58001 - 99999
88		INTERIOR EQUIPMENT	
881-003	0.60	Instrument panel, replacing (left)	52332 - 99999
881-003	1.25	Instrument panel, replacing (left)	51936 - 52331
881-005	1.25	Instrument panel, replacing (right)	51936 - 52331
881-005	0.60	Instrument panel, replacing (right)	52332 - 99999
881-012	0.80	Instrument panel, replacing (Center)	52332 - 99999
884-001	0.30	Seat safety belt, replacing	51936 - 99999 58001 - 99999 550001 - 999999
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-011	5.00	Oil cooler, replacing	52332 - 99999 58001 - 99999 550001 - 999999
911-011	3.00	Oil cooler, replacing	51936 - 52331
911-015	0.90	Oil level gauge, replacing	51936 - 52331
911-015	0.90	Oil level gauge, replacing	52332 - 99999 58001 - 99999 550001 - 999999
911-038	5.00	Hydraulic oil tank, replacing	51936 - 52331
98		FUNCTION FOR ROAD CONSTRUCTION	
988-087	2.00	Drum drive, removing	51936 - 52331 58001 - 99999 550001 - 999999
988-088	1.75	Drum drive, installing	51936 - 52331 58001 - 99999 550001 - 999999

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.70	Maintenance service, daily	
173-004	2.00	Maintenance service, every 50 hours	
173-010	4.50	Maintenance service, every 500 hours	
173-012	6.50	Maintenance service, every 1000 hours	
173-014	11.00	Maintenance service, every 2000 hours	
173-016	11.00	Maintenance service, every 3000 hours	
173-022	12.00	Maintenance service, every 6000 hours	
173-035	3.50	Maintenance service, first 50 hours	235001 - 236999
173-035	3.50	Maintenance service, first 50 hours	551000 - 559999
173-035	3.00	Maintenance service, first 50 hours	245001 - 246999
19		GENERAL	
191-020	0.20	Service position	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	
200-201	0.20	Engine belt, removing	
200-202	0.10	Engine belt, installing	
21		ENGINE	
210-092	0.50	Engine rotation speed sensor (camshaft), replacing	
210-093	0.70	Engine rotation speed sensor (crank shaft), replacing	235001 - 236999
210-093	0.70	Engine rotation speed sensor (crank shaft), replacing	551000 - 559999
210-093	0.40	Engine rotation speed sensor (crank shaft), replacing	245001 - 246999
214-012	2.50	Valves, adjusting	245001 - 246999
214-012	2.50	Valves, adjusting	551000 - 559999
214-012	0.90	Valves, adjusting	235001 - 236999
22		LUBRICATING SYSTEM	
221-022	0.70	Lubrication oil pressure, checking with pressure gauge	
23		FUEL SYSTEM	
230-001	0.40	Carbon dioxide in fuel system, check	
233-001	0.30	Fuel system, bleeding	

Op.no.	time (h)		Notes
233-008	0.60	Fuel pump, replacing	
237-002	4.00	Injectors, replacing all	
237-034	0.90	Pressure relief valve (PRV), replacing	
237-035	0.90	Fuel rail pressure sensor, replacing	
237-124	0.60	High pressure fuel system, pressure relief	
25		INLET SYSTEM; EXHAUST SYSTEM	
252-021	1.25	Exhaust pipe, flexible tube, replacing	245001 - 246999
252-021	1.25	Exhaust pipe, flexible tube, replacing	235001 - 236999
252-021	1.25	Exhaust pipe, flexible tube, replacing	551000 - 559999
254-022	1.25	ACM (After treatment control module), replacing, non-programmed	
254-023	1.25	ACM (After treatment control module), replacing, pre-programmed	
254-031	1.25	Air pump, replacing	235001 - 236999
254-031	1.25	Air pump, replacing	551000 - 559999
254-031	2.50	Air pump, replacing	245001 - 246999
254-033	3.00	Burner, replacing	
254-038	0.30	DPF inlet temperature sensor, replacing	235001 - 236999
254-038	0.30	DPF inlet temperature sensor, replacing	551000 - 559999
254-038	0.30	DPF inlet temperature sensor, replacing	245001 - 246999
254-039	0.60	DPF outlet temperature sensor, replacing	235001 - 236999
254-039	0.60	DPF outlet temperature sensor, replacing	551000 - 559999
254-039	0.60	DPF outlet temperature sensor, replacing	245001 - 246999
254-043	0.50	Spark plug control unit, replacing	245001 - 246999
254-043	0.50	Spark plug control unit, replacing	235001 - 236999
254-043	0.50	Spark plug control unit, replacing	551000 - 559999
254-044	0.30	Glow plug, replacing	
254-046	0.30	Spark plug, replacing	
254-048	0.30	Spark plug cable, replacing	245001 - 246999
254-048	0.30	Spark plug cable, replacing	235001 - 236999
254-048	0.30	Spark plug cable, replacing	551000 - 559999
254-050	1.75	Fuel metering unit A, replacing	245001 - 246999
254-050	1.00	Fuel metering unit A, replacing	235001 - 236999
254-050	1.00	Fuel metering unit A, replacing	551000 - 559999
254-051	2.50	Fuel metering unit B, replacing	235001 - 236999
254-051	2.50	Fuel metering unit B, replacing	551000 - 559999
254-051	3.00	Fuel metering unit B, replacing	245001 - 246999
255-009	0.40	Waste gate, testing	
255-071	3.00	Turbocharger, replacing	
26		COOLING SYSTEM	
262-002	1.00	Coolant pump, replacing	
262-098	0.90	Thermostat, replacing	245001 - 246999
262-098	1.00	Thermostat, replacing	235001 - 236999

Op.no.	time (h)		Notes
262-098	1.00	Thermostat, replacing	551000 - 559999
263-023	1.25	Fan pump, removing	
263-024	1.75	Fan pump, installing	
29		Miscellaneous	
293-001	2.00	EGR cooler, replacing	235001 - 236999
293-001	2.00	EGR cooler, replacing	551000 - 559999
293-001	2.50	EGR cooler, replacing	245001 - 246999
293-004	3.00	EGR cooler, cleaning	245001 - 246999
293-004	2.50	EGR cooler, cleaning	235001 - 236999
293-004	2.50	EGR cooler, cleaning	551000 - 559999
293-005	2.50	EGR valve, replacing	
293-008	3.00	EGR Actuator, replacing	245001 - 246999
293-008	2.50	EGR Actuator, replacing	235001 - 236999
293-008	2.50	EGR Actuator, replacing	551000 - 559999
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.50	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.90	I-ECU, MID 140, changing pre-programmed ECU	
36		OTHER ELECTRICAL EQUIPMENT	
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-011	0.40	Fuel level sender, replacing	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
424-004	0.60	Propulsion control lever, replacing	
44		HYDROSTATIC DRIVE	
441-047	1.00	Rear axle drive motor, removing	
441-048	0.70	Rear axle drive motor, installing	
442-068	0.90	Loop flushing valve, replacing	
442-070	0.40	Charge pressure relief valve, replacing	
442-080	0.80	Drum drive motor speed sensor, replacing	
442-081	0.30	Rear axle motor speed sensor, replacing	
442-082	5.50	Propulsion pump, removing	

Op.no.	time (h)	Notes
442-083	5.50	Propulsion pump, installing
442-087	0.90	Propulsion pump, multi function valve, replacing
442-090	0.30	Vibration speed sensor, replacing
442-113	0.30	Hi/low drum drive motor valve solenoid, replacing
442-114	0.30	Hi/low drum drive motor valve, replacing
442-115	0.90	ASC (Anti-spin control) solenoid, replacing
442-116	0.30	Traction control module, replacing
442-117	0.30	Drive enable valve solenoid, replacing
442-118	0.30	Drive enable valve, replacing
442-153	0.30	Propulsion pump charge pressure, checking
442-154	0.40	Propulsion pump system pressure, checking

5 BRAKE

55 PARKING BRAKE

550-055	0.30	Parking brake release valve, replacing
554-001	0.30	Brake release valve solenoid, replacing

6 STEERING

64 STEERING

645-006	1.75	Steering cylinder, replacing
645-016	0.60	Steering pump, removing
645-017	0.50	Steering pump, installing
645-018	0.30	Steering pressure, checking
645-082	0.80	Steering valve, replacing

7 FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT

71 FRAME

711-030	2.50	Drum frame, removing
711-031	3.00	Drum frame, installing
711-035	3.50	Swivel, removing
711-036	3.50	Swivel, installing

74 FRAME LINK

741-036	7.00	Frame joint, replacing bearings
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77 WHEELS; TRACKS; TYRE; HUB; DRUM

771-007	0.40	Wheel, installing
771-008	0.40	Wheel, removing

Op.no.	time (h)	Notes
777-001	1.50	Drum, removing
777-002	1.50	Drum, installing
777-003	3.00	Vibration pump, removing
777-004	3.50	Vibration pump, installing
777-005	0.40	Vibration motor, removing
777-006	0.30	Vibration motor, installing
777-007	4.00	Eccentric weight, removing
777-008	4.00	Eccentric weight, installing
777-013	9.00	Eccentric weight bearings, replacing
777-014	5.00	Carrier bearings, replacing
777-015	8.50	Eccentric weight, overhaul
777-018	1.75	Drum drive motor, replacing
777-021	0.60	Smooth drum scrapers, replacing
777-025	2.50	Carrier, removing
777-026	2.50	Carrier, installing
777-086	0.30	Vibration pump charge pressure, checking
777-087	0.40	Vibration system pressure, checking
777-088	0.30	Vibration control module, replacing
777-089	1.00	Vibration pump charge pressure relief valve, adjusting
777-090	1.00	Vibration pump charge pressure relief valve, replacing
777-091	1.25	Vibration pump SCR (system check/relief) valve, replacing
777-093	1.75	Drum drive assembly, removing
777-094	2.00	Drum drive assembly, installing

8 MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE

81 CAB, NAKED; CANOPY

810-001	1.75	Cab, removing
810-002	1.75	Cab, installing
810-010	0.50	Operator's platform, raising
810-011	0.40	Operator's platform, lowering

82 ENGINE HOOD; MUDGUARD; FOOT STEP

821-011	0.20	Engine hood, operating
821-012	0.20	Engine hood, manually operating

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	0.40	Maintenance service, daily
173-074	1.00	Hydraulic oil tank, changing oil and filter
173-078	0.50	Engine, air cleaner maintenance
173-401	0.80	Engine oil and filter, changing
173-465	0.80	Rear axle oil, changing
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	4.00	Engine, removing
210-072	5.00	Engine, installing
218-007	1.00	Engine mounting rear, changing
23		FUEL SYSTEM
233-001	0.20	Fuel system, bleeding
233-014	0.40	Fuel filters, replacing
234-010	5.50	Fuel tank, replacing
235-002	0.20	Fuel line, water separator, check and drain
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
252-022	2.50	Exhaust pipe, changing pipe between silencer and turbocharger
256-011	1.25	Air cleaner, installing
258-022	0.50	Charge air cooler connection (hose, tube), replacing
258-023	0.40	Charge air cooler, removing
258-024	0.40	Charge air cooler, installing
26		COOLING SYSTEM
263-012	0.80	Fan belt and/or alternator belt, replacing
263-013	0.40	Fan belt and/or alternator belt, checking and adjusting tension
263-041	4.00	Cooling fan, replacing
263-042	4.00	Fan shroud, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	1.25	Batteries, replacing

Op.no.	time (h)	Notes
32		ALTERNATOR; CHARGE REGULATOR
321-002	2.50	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	0.50	Starter motor, replacing
334-011	0.70	Starter switch (engine start switch), replacing
36		OTHER ELECTRICAL EQUIPMENT
362-003	0.40	Reverse alarm, replacing
363-001	0.60	Windscreen wiper rear, replacing motor
363-002	0.60	Windscreen wiper front, replacing motor
364-004	0.30	Switch, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-007	0.30	Engine oil pressure sensor, replacing
386-011	1.75	Fuel level sender, replacing
386-017	0.60	Hydraulic oil temperature sensor, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-088	4.00	Two speed valve solenoid and cartridge, replacing
421-089	1.25	Pump de-stroke valve solenoid and cartridge, replacing
424-004	2.50	Propulsion control lever, replacing
44		HYDROSTATIC DRIVE
440-021	1.25	Hydrostatic controller, removing
440-022	1.50	Hydrostatic controller, installing
441-011	4.00	Travel motor, replacing one
441-035	5.00	Drive motor, removing
441-036	5.00	Drive motor, installing
441-061	1.75	Thermal bypass valve, replacing
442-021	3.50	Hydrostatic pump, removing
442-022	4.50	Hydrostatic pump, installing
442-045	4.00	Pump coupling, removing
442-046	5.00	Pump coupling, installing
442-068	0.50	Loop flushing valve, replacing
442-069	1.00	Loop flushing valve cartridge, replacing
442-080	0.40	Drum drive motor speed sensor, replacing
442-081	0.40	Rear axle motor speed sensor, replacing
442-090	0.40	Vibration speed sensor, replacing
442-091	1.50	Traction valve, solenoid and cartridge, replacing

Op.no.	time (h)	Notes
46		FRONT AXLE; REAR AXLE
463-002	5.00	Axle, removing
463-003	5.00	Axle, installing
5		BRAKE
55		PARKING BRAKE
551-012	0.50	Parking brake pressure switch, replacing
6		STEERING
64		STEERING
641-021	4.50	Adjustable steering column, replacing
645-004	1.50	Steering cylinder, removing
645-005	1.75	Steering cylinder, installing
645-031	2.00	Steering control unit, removing
645-035	2.50	Steering control unit, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-022	5.00	Frame joint, Replacing the front pivot bearing with machine separated
741-023	6.00	Frame joint, replacing the rear pivot bearing with machine separated
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.80	Wheel, removing and fitting one
777-001	13.00	Drum, removing
777-002	13.00	Drum, installing
777-003	3.00	Vibration pump, removing
777-004	3.50	Vibration pump, installing
777-005	0.90	Vibration motor, removing
777-006	1.00	Vibration motor, installing
777-007	12.00	Eccentric weight, removing
777-008	13.00	Eccentric weight, installing
777-009	2.00	Drum shock mount, replacing
777-010	25.00	Eccentric shaft coupling, replacing
777-011	3.50	Torque hub, removing
777-012	3.50	Torque hub, installing
777-013	25.00	Eccentric weight bearings, replacing

Op.no.	time (h)	Notes
777-014	6.00	Carrier bearings, replacing
777-015	9.00	Eccentric weight, overhaul
777-020	5.00	Drum bolt-on shell option, installing
777-021	1.25	Smooth drum scrapers, replacing
777-022	1.25	Padfoot drum scrapers, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
818-023	2.50	Viscous cab suspension, changing all units
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	2.50	Engine hood, removing
821-002	2.50	Engine hood, installing
821-030	2.50	Engine hood, changing spring
85		CAB INTERIOR/UPHOLSTERY
852-003	0.90	Operator's seat, removing
852-004	1.00	Operator's seat, installing
87		AIR CONDITIONING UNIT
870-003	1.75	Cooler and Heater assembly, removal
870-004	5.00	Cooler and Heater assembly, installation
872-001	0.60	Cab filter, replacing
873-004	10.00	Heater core, replacing
873-006	6.50	Fan motor, replacing
873-008	2.50	Heat control valve, replacing
873-013	2.50	Heater unit relays, replacing
874-006	3.00	Compressor, replacing incl draining and filling
874-010	3.00	Condenser, replacing incl draining and filling
874-011	3.00	Receiver, replacing incl draining and filling
874-012	7.50	Evaporator, replacing incl draining and filling
874-014	7.50	Thermostat, replacing
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-092	0.30	HVAC control switch, replacing
88		INTERIOR EQUIPMENT
884-001	0.40	Seat safety belt, replacing

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-013	0.90	Hydraulic oil cooler, removing
911-014	0.90	Hydraulic oil cooler, installing
911-036	2.50	Hydraulic oil tank, removing
911-037	2.50	Hydraulic oil tank, installing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.70	Maintenance service, daily	
173-004	2.00	Maintenance service, every 50 hours	
173-010	4.50	Maintenance service, every 500 hours	
173-012	6.50	Maintenance service, every 1000 hours	
173-014	11.00	Maintenance service, every 2000 hours	
173-016	11.00	Maintenance service, every 3000 hours	
173-022	12.00	Maintenance service, every 6000 hours	
173-035	3.00	Maintenance service, first 50 hours	552000 - 559999
19		GENERAL	
191-020	0.20	Service position	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	
200-201	0.20	Engine belt, removing	
200-202	0.10	Engine belt, installing	
21		ENGINE	
210-092	0.50	Engine rotation speed sensor (camshaft), replacing	
210-093	0.70	Engine rotation speed sensor (crank shaft), replacing	
214-012	2.50	Valves, adjusting	552000 - 559999
22		LUBRICATING SYSTEM	
221-022	0.70	Lubrication oil pressure, checking with pressure gauge	
23		FUEL SYSTEM	
230-001	0.40	Carbon dioxide in fuel system, check	
233-001	0.30	Fuel system, bleeding	
233-008	0.60	Fuel pump, replacing	
237-002	4.00	Injectors, replacing all	
237-034	0.90	Pressure relief valve (PRV), replacing	
237-035	0.90	Fuel rail pressure sensor, replacing	
237-124	0.60	High pressure fuel system, pressure relief	
25		INLET SYSTEM; EXHAUST SYSTEM	
252-021	1.25	Exhaust pipe, flexible tube, replacing	552000 - 559999

Op.no.	time (h)		Notes
254-022	1.25	ACM (After treatment control module), replacing, non-programmed	
254-023	1.25	ACM (After treatment control module), replacing, pre-programmed	
254-031	1.25	Air pump, replacing	552000 - 559999
254-033	3.00	Burner, replacing	
254-038	0.30	DPF inlet temperature sensor, replacing	552000 - 559999
254-039	0.60	DPF outlet temperature sensor, replacing	552000 - 559999
254-043	0.50	Spark plug control unit, replacing	552000 - 559999
254-044	0.30	Glow plug, replacing	
254-046	0.30	Spark plug, replacing	
254-048	0.30	Spark plug cable, replacing	552000 - 559999
254-050	1.00	Fuel metering unit A, replacing	552000 - 559999
254-051	2.50	Fuel metering unit B, replacing	552000 - 559999
255-009	0.40	Waste gate, testing	
255-071	3.00	Turbocharger, replacing	
26		COOLING SYSTEM	
262-002	1.00	Coolant pump, replacing	
262-098	1.00	Thermostat, replacing	552000 - 559999
263-023	1.25	Fan pump, removing	
263-024	1.75	Fan pump, installing	
29		Miscellaneous	
293-001	2.00	EGR cooler, replacing	552000 - 559999
293-004	2.50	EGR cooler, cleaning	552000 - 559999
293-005	2.50	EGR valve, replacing	
293-008	2.50	EGR Actuator, replacing	552000 - 559999
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.50	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.90	I-ECU, MID 140, changing pre-programmed ECU	
36		OTHER ELECTRICAL EQUIPMENT	
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-011	0.40	Fuel level sender, replacing	

Op.no.	time (h)	Notes
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
424-004	0.60	Propulsion control lever, replacing
44		HYDROSTATIC DRIVE
441-047	1.00	Rear axle drive motor, removing
441-048	0.70	Rear axle drive motor, installing
442-068	0.90	Loop flushing valve, replacing
442-070	0.40	Charge pressure relief valve, replacing
442-080	0.80	Drum drive motor speed sensor, replacing
442-081	0.30	Rear axle motor speed sensor, replacing
442-082	5.50	Propulsion pump, removing
442-083	5.50	Propulsion pump, installing
442-087	0.90	Propulsion pump, multi function valve, replacing
442-090	0.30	Vibration speed sensor, replacing
442-113	0.30	Hi/low drum drive motor valve solenoid, replacing
442-114	0.30	Hi/low drum drive motor valve, replacing
442-115	0.90	ASC (Anti-spin control) solenoid, replacing
442-116	0.30	Traction control module, replacing
442-117	0.30	Drive enable valve solenoid, replacing
442-118	0.30	Drive enable valve, replacing
442-153	0.30	Propulsion pump charge pressure, checking
442-154	0.40	Propulsion pump system pressure, checking
5		BRAKE
55		PARKING BRAKE
550-055	0.30	Parking brake release valve, replacing
554-001	0.30	Brake release valve solenoid, replacing
6		STEERING
64		STEERING
645-006	1.75	Steering cylinder, replacing
645-016	0.60	Steering pump, removing
645-017	0.50	Steering pump, installing
645-018	0.30	Steering pressure, checking
645-082	0.80	Steering valve, replacing

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
711-030	2.50	Drum frame, removing
711-031	3.00	Drum frame, installing
711-035	3.50	Swivel, removing
711-036	3.50	Swivel, installing
74		FRAME LINK
741-036	7.00	Frame joint, replacing bearings
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-007	0.40	Wheel, installing
771-008	0.40	Wheel, removing
777-001	1.50	Drum, removing
777-002	1.50	Drum, installing
777-003	3.00	Vibration pump, removing
777-004	3.50	Vibration pump, installing
777-005	0.40	Vibration motor, removing
777-006	0.30	Vibration motor, installing
777-007	4.00	Eccentric weight, removing
777-008	4.00	Eccentric weight, installing
777-013	9.00	Eccentric weight bearings, replacing
777-014	5.00	Carrier bearings, replacing
777-015	8.50	Eccentric weight, overhaul
777-018	1.75	Drum drive motor, replacing
777-021	0.60	Smooth drum scrapers, replacing
777-025	2.50	Carrier, removing
777-026	2.50	Carrier, installing
777-086	0.30	Vibration pump charge pressure, checking
777-087	0.40	Vibration system pressure, checking
777-088	0.30	Vibration control module, replacing
777-089	1.00	Vibration pump charge pressure relief valve, adjusting
777-090	1.00	Vibration pump charge pressure relief valve, replacing
777-091	1.25	Vibration pump SCR (system check/relief) valve, replacing
777-093	1.75	Drum drive assembly, removing
777-094	2.00	Drum drive assembly, installing

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	1.75	Cab, installing
810-010	0.50	Operator's platform, raising
810-011	0.40	Operator's platform, lowering
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-011	0.20	Engine hood, operating
821-012	0.20	Engine hood, manually operating

Op.no.	time (h)	Notes
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Op.no.	time (h)	Notes
2		ENGINE WITH MOUNTING AND EQUIPMENT
23		FUEL SYSTEM
234-010	5.50	Fuel tank, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
256-011	1.25	Air cleaner, installing
258-022	0.50	Charge air cooler connection (hose, tube), replacing
26		COOLING SYSTEM
263-041	4.00	Cooling fan, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	1.25	Batteries, replacing
33		STARTING SYSTEM
331-018	0.50	Starter motor, replacing
36		OTHER ELECTRICAL EQUIPMENT
362-003	0.40	Reverse alarm, replacing
364-004	0.30	Switch, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-007	0.30	Engine oil pressure sensor, replacing
386-007	0.30	Engine oil pressure sensor, replacing
386-011	1.75	Fuel level sender, replacing
386-017	0.60	Hydraulic oil temperature sensor, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-088	4.00	Two speed valve solenoid and cartridge, replacing
421-089	1.25	Pump de-stroke valve solenoid and cartridge, replacing
44		HYDROSTATIC DRIVE
440-021	1.25	Hydrostatic controller, removing
440-022	1.50	Hydrostatic controller, installing
441-011	4.00	Travel motor, replacing one
441-061	1.75	Thermal bypass valve, replacing
442-045	4.00	Pump coupling, removing

Op.no.	time (h)	Notes
442-046	5.00	Pump coupling, installing
442-068	0.50	Loop flushing valve, replacing
442-069	1.00	Loop flushing valve cartridge, replacing
442-080	0.40	Drum drive motor speed sensor, replacing
442-081	0.40	Rear axle motor speed sensor, replacing
442-091	1.50	Traction valve, solenoid and cartridge, replacing
5		BRAKE
55		PARKING BRAKE
551-012	0.50	Parking brake pressure switch, replacing
6		STEERING
64		STEERING
645-004	1.50	Steering cylinder, removing
645-005	1.75	Steering cylinder, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
777-009	2.00	Drum shock mount, replacing
777-020	5.00	Drum bolt-on shell option, installing
777-021	1.25	Smooth drum scrapers, replacing
777-022	1.25	Padfoot drum scrapers, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
818-023	2.50	Viscous cab suspension, changing all units
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	2.50	Engine hood, removing
821-002	2.50	Engine hood, installing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.90	Operator's seat, removing
852-004	1.00	Operator's seat, installing

Op.no.	time (h)	Notes
87		AIR CONDITIONING UNIT
870-003	1.75	Cooler and Heater assembly, removal
870-004	5.00	Cooler and Heater assembly, installation
872-001	0.60	Cab filter, replacing
873-004	10.00	Heater core, replacing
873-006	6.50	Fan motor, replacing
873-013	2.50	Heater unit relays, replacing
874-006	3.00	Compressor, replacing incl draining and filling
874-010	3.00	Condenser, replacing incl draining and filling
874-011	3.00	Receiver, replacing incl draining and filling
874-012	7.50	Evaporator, replacing incl draining and filling
874-014	7.50	Thermostat, replacing
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-092	0.40	HVAC control switch, replacing
874-092	0.30	HVAC control switch, replacing
88		INTERIOR EQUIPMENT
884-001	0.40	Seat safety belt, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-013	0.90	Hydraulic oil cooler, removing
911-014	0.90	Hydraulic oil cooler, installing
911-036	2.50	Hydraulic oil tank, removing
911-037	2.50	Hydraulic oil tank, installing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-004	1.75	Maintenance service, every 50 hours
173-007	3.50	Maintenance service, every 250 hours
173-010	5.00	Maintenance service, every 500 hours
173-012	7.00	Maintenance service, every 1000 hours
173-035	2.50	Maintenance service, first 50 hours
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	4.00	Engine, removing
218-009	0.40	Engine mounts, replacing
23		FUEL SYSTEM
234-011	2.50	Fuel tank, removing
234-012	0.80	Fuel tank, installing
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	0.90	Silencer, replacing
256-003	0.30	Air cleaner, primary filter replacing
256-004	0.30	Air cleaner, secondary filter replacing
256-010	0.20	Air cleaner, removing
256-011	0.20	Air cleaner, installing
26		COOLING SYSTEM
261-022	1.00	Cooling package, removing
261-023	1.50	Cooling package, installing
263-013	0.30	Fan belt and/or alternator belt, checking and adjusting tension
263-039	0.60	Cooling fan, removing
263-040	0.90	Cooling fan, installing
27		ENGINE CONTROL
272-022	1.50	Throttle control cable, replacing
272-023	0.50	Throttle control assembly, replacing
275-012	1.25	Engine speed control, mechanical basic setting
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.50	Batteries, replacing

Op.no.	time (h)	Notes
311-009	0.20	Battery, disconnecting
311-010	0.20	Battery, connecting
33		STARTING SYSTEM
331-081	0.50	Starter relay, replacing
334-020	0.40	Neutral start diode, replacing
37		CABLE; FUSE; RELAY
372-025	0.50	Power relay, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-011	3.50	Fuel level sender, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
424-003	0.70	Propulsion control cable, replacing
424-004	0.40	Propulsion control lever, replacing
424-005	0.40	Neutral safety switch, replacing
424-006	0.40	Neutral safety switch, adjusting
44		HYDROSTATIC DRIVE
440-005	0.20	Drum drive motor, case drain flow measuring
440-015	0.70	Charge relief pressure, test
440-030	0.80	Propel system relief pressure, check
441-035	0.50	Drive motor, removing
441-036	0.80	Drive motor, installing
441-061	1.25	Thermal bypass valve, replacing
442-030	0.40	Anti cavitation valve, replacing
442-045	1.50	Pump coupling, removing
442-046	1.75	Pump coupling, installing
442-069	0.40	Loop flushing valve cartridge, replacing
442-070	0.20	Charge pressure relief valve, replacing
442-071	0.40	Traction valve flow divider, replacing
442-084	0.60	Propulsion pump function valve, replacing
442-085	0.20	Propulsion pump bypass valve, replacing
442-086	0.70	Propulsion pump, case drain flow measuring
442-092	0.50	Traction relief pressure valve, replacing
442-096	0.20	Servo shunt valve solenoid, replacing
442-097	0.20	Servo shunt valve spool, replacing
4422-001	0.50	Traction valve, removing
4422-002	0.50	Traction valve, installing
46		FRONT AXLE; REAR AXLE
461-003	1.75	Axle, installing

Op.no.	time (h)	Notes
463-002	1.25	Axle, removing
5		BRAKE
52		HYDRAULIC BRAKE SYSTEM
524-001	0.50	Brake latching relay, replacing
55		PARKING BRAKE
550-034	0.60	Brake manifold, brake release pressure check
550-035	0.40	Axle drive motor, brake release pressure check
551-012	0.40	Parking brake pressure switch, replacing
554-001	0.20	Brake release valve solenoid, replacing
554-002	0.30	Brake release valve spool, replacing
6		STEERING
64		STEERING
645-006	0.60	Steering cylinder, replacing
645-016	0.40	Steering pump, removing
645-017	0.40	Steering pump, installing
645-082	0.50	Steering valve, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
711-030	0.90	Drum frame, removing
711-031	0.30	Drum frame, installing
711-035	1.25	Swivel, removing
711-036	0.50	Swivel, installing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.60	Wheel, removing and fitting one
771-006	0.30	Tyres, checking pressure
777-001	0.70	Drum, removing
777-002	1.25	Drum, installing
777-005	0.20	Vibration motor, removing
777-006	0.20	Vibration motor, installing
777-009	0.30	Drum shock mount, replacing
777-010	0.30	Eccentric shaft coupling, replacing
777-011	0.80	Torque hub, removing
777-012	1.50	Torque hub, installing

Op.no.	time (h)	Notes
777-014	3.50	Carrier bearings, replacing
777-016	0.20	Vibration control valve solenoid, replacing
777-017	0.20	Vibration control valve spool, replacing
777-018	2.50	Drum drive motor, replacing
777-021	0.60	Smooth drum scrapers, replacing
777-025	1.25	Carrier, removing
777-026	1.75	Carrier, installing
777-051	0.40	Vibration system pressure, measuring
777-052	0.40	Vibration pump function valve, replacing

8 MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE

81 CAB, NAKED; CANOPY

810-010	0.20	Operator's platform, raising
810-011	0.20	Operator's platform, lowering

85 CAB INTERIOR/UPHOLSTERY

852-008	0.20	Seat, replacing
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86 PROTECTIVE EQUIPMENT, not specified in a special group

867-002	0.50	ROPS (Roll Over Protection), removing
867-003	0.40	ROPS (Roll Over Protection), installing

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-036	1.00	Hydraulic oil tank, removing
911-037	1.00	Hydraulic oil tank, installing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-204	0.40	Brake shunt two speed manifold, removing
912-205	0.40	Brake shunt two speed manifold, installing
913-052	1.25	Hydraulic pump, removing
913-053	1.25	Hydraulic pump, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	0.30	Maintenance service, daily
173-004	0.80	Maintenance service, every 50 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	7.00	Maintenance service, every 1000 hours
173-035	4.50	Maintenance service, first 50 hours
173-078	0.20	Engine, air cleaner maintenance
173-089	0.30	Drum carrier, changing oil
173-401	0.60	Engine oil and filter, changing
173-451	1.25	Hydraulic oil, changing
173-457	0.80	Coolant, changing
173-465	0.80	Rear axle oil, changing
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	3.00	Engine, removing
210-072	5.50	Engine, installing
218-009	1.75	Engine mounts, replacing
23		FUEL SYSTEM
233-014	0.30	Fuel filters, replacing
235-002	0.40	Fuel line, water separator, check and drain
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	0.50	Silencer, replacing
256-003	0.30	Air cleaner, primary filter replacing
256-004	0.40	Air cleaner, secondary filter replacing
256-010	0.20	Air cleaner, removing
256-011	0.30	Air cleaner, installing
26		COOLING SYSTEM
261-022	1.25	Cooling package, removing
261-023	2.50	Cooling package, installing
263-012	0.80	Fan belt and/or alternator belt, replacing
263-041	3.50	Cooling fan, replacing

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.50	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-003	0.30	Alternator, removing
321-004	0.40	Alternator, installing
33		STARTING SYSTEM
331-016	0.50	Starter motor, removing
331-017	0.50	Starter motor, installing
334-011	0.70	Starter switch (engine start switch), replacing
36		OTHER ELECTRICAL EQUIPMENT
362-003	0.30	Reverse alarm, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-011	0.50	Fuel level sender, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-087	0.40	Multi function brake valve solenoid and cartridge, replacing
424-004	0.40	Propulsion control lever, replacing
44		HYDROSTATIC DRIVE
440-021	0.80	Hydrostatic controller, removing
440-022	1.25	Hydrostatic controller, installing
441-002	2.50	Hydraulic motor, replacing
441-035	0.40	Drive motor, removing
441-036	0.60	Drive motor, installing
442-021	2.00	Hydrostatic pump, removing
442-022	3.00	Hydrostatic pump, installing
442-045	4.00	Pump coupling, removing
442-046	5.00	Pump coupling, installing
46		FRONT AXLE; REAR AXLE
463-002	1.25	Axle, removing
463-003	1.75	Axle, installing

Op.no.	time (h)	Notes
5		BRAKE
55		PARKING BRAKE
551-012	0.50	Parking brake pressure switch, replacing
6		STEERING
64		STEERING
645-006	0.60	Steering cylinder, replacing
645-031	2.00	Steering control unit, removing
645-035	2.50	Steering control unit, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.80	Wheel, removing and fitting one
771-001	0.80	Wheel, removing and fitting one
771-001	0.80	Wheel, removing and fitting one
777-001	2.00	Drum, removing
777-002	2.00	Drum, installing
777-003	1.25	Vibration pump, removing
777-004	1.50	Vibration pump, installing
777-005	0.30	Vibration motor, removing
777-006	0.50	Vibration motor, installing
777-007	3.50	Eccentric weight, removing
777-008	4.50	Eccentric weight, installing
777-009	0.30	Drum shock mount, replacing
777-010	13.00	Eccentric shaft coupling, replacing
777-011	3.50	Torque hub, removing
777-012	3.50	Torque hub, installing
777-013	10.00	Eccentric weight bearings, replacing
777-014	6.00	Carrier bearings, replacing
777-015	9.00	Eccentric weight, overhaul
777-021	1.25	Smooth drum scrapers, replacing
777-022	1.25	Padfoot drum scrapers, replacing

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.50	Engine hood, removing
821-002	0.50	Engine hood, installing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.40	Operator's seat, removing
852-004	0.50	Operator's seat, installing
88		INTERIOR EQUIPMENT
884-001	0.30	Seat safety belt, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-003	0.50	Hydraulic oil filter, replacing
911-036	2.50	Hydraulic oil tank, removing
911-037	2.50	Hydraulic oil tank, installing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.40	Breather, replacing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	0.50	Maintenance service, daily
173-004	1.75	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	4.50	Maintenance service, every 500 hours
173-012	9.50	Maintenance service, every 1000 hours
173-013	9.00	Maintenance service, every 1500 hours
173-014	13.00	Maintenance service, every 2000 hours
173-016	16.00	Maintenance service, every 3000 hours
173-022	0.70	Maintenance service, every 6000 hours
173-035	3.50	Maintenance service, first 50 hours
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.25	E-ECU, MID 128, changing non-programmed ECU
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU
200-200	0.40	Engine belts, replacing
21		ENGINE
210-070	3.50	Engine, removing
210-072	3.50	Engine, installing
210-091	0.90	Engine rotation speed sensor, replacing
212-071	0.40	Crankcase ventilation separator, replacing
212-072	0.30	Crankcase ventilation separator, checking
214-012	2.50	Valves, adjusting
216-014	3.50	Crankshaft, replacing front oil seal
216-018	7.50	Crankshaft, replacing rear oil seal
218-009	3.00	Engine mounts, replacing
22		LUBRICATING SYSTEM
221-022	0.30	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
233-001	0.20	Fuel system, bleeding
233-008	0.50	Fuel pump, replacing
234-011	2.50	Fuel tank, removing
234-012	2.50	Fuel tank, installing
237-002	3.50	Injectors, replacing all
237-031	0.90	Fuel rail, replacing
237-040	0.40	Overflow pipe, checking for leakage

Op.no.	time (h)	Notes
237-125	1.75	Fuel pump unit, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
254-001	1.75	Diesel particulate filter, check and clean
254-059	1.00	Inlet throttle, replacing
255-009	0.40	Waste gate, testing
255-070	0.60	Turbocharger, removing
255-072	0.50	Turbocharger, installing
256-006	1.25	Preheating coil, replacing
256-010	0.40	Air cleaner, removing
256-011	0.30	Air cleaner, installing
26		COOLING SYSTEM
261-018	0.90	Expansion tank, replacing
261-022	1.75	Cooling package, removing
261-023	1.50	Cooling package, installing
262-002	1.25	Coolant pump, replacing
262-098	1.00	Thermostat, replacing
263-001	2.00	Fan motor, removing
263-003	1.75	Fan motor, installing
263-023	0.40	Fan pump, removing
263-024	0.30	Fan pump, installing
263-071	0.60	Fan control valve, removing
263-073	0.50	Fan control valve, installing
263-084	3.50	Fan shroud, replacing
29		Miscellaneous
293-001	1.50	EGR cooler, replacing
293-002	2.00	EGR cooler, pressure test
293-005	1.00	EGR valve, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
32		ALTERNATOR; CHARGE REGULATOR
321-003	0.40	Alternator, removing
321-004	0.30	Alternator, installing
36		OTHER ELECTRICAL EQUIPMENT
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-066	0.90	V-ECU, MID 187, changing pre-programmed ECU
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
380-007	0.40	Instrument cluster, replacing

Op.no.	time (h)	Notes
386-011	0.40	Fuel level sender, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
424-004	0.60	Propulsion control lever, replacing
44		HYDROSTATIC DRIVE
441-047	1.50	Rear axle drive motor, removing
441-048	1.25	Rear axle drive motor, installing
442-068	0.90	Loop flushing valve, replacing
442-070	0.30	Charge pressure relief valve, replacing
442-080	0.30	Drum drive motor speed sensor, replacing
442-081	0.30	Rear axle motor speed sensor, replacing
442-082	3.00	Propulsion pump, removing
442-083	2.50	Propulsion pump, installing
442-087	0.80	Propulsion pump, multi function valve, replacing
442-090	0.30	Vibration speed sensor, replacing
442-112	1.25	Traction control valve, replacing
442-113	0.30	Hi/low drum drive motor valve solenoid, replacing
442-114	0.30	Hi/low drum drive motor valve, replacing
442-115	1.25	ASC (Anti-spin control) solenoid, replacing
442-116	0.30	Traction control module, replacing
442-117	0.30	Drive enable valve solenoid, replacing
442-118	0.30	Drive enable valve, replacing
442-119	0.30	Hi/low axle motor valve solenoid, replacing
442-120	0.40	Hi/low axle motor valve, replacing
442-153	0.20	Propulsion pump charge pressure, checking
442-154	0.40	Propulsion pump system pressure, checking
5		BRAKE
55		PARKING BRAKE
550-055	0.30	Parking brake release valve, replacing
554-001	0.30	Brake release valve solenoid, replacing
6		STEERING
64		STEERING
645-006	1.50	Steering cylinder, replacing
645-016	0.60	Steering pump, removing
645-017	0.70	Steering pump, installing

Op.no.	time (h)	Notes
645-018	0.30	Steering pressure, checking
645-082	0.80	Steering valve, replacing

7 FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT

71 FRAME

711-030	1.50	Drum frame, removing
711-031	2.50	Drum frame, installing
711-035	1.75	Swivel, removing
711-036	3.00	Swivel, installing

74 FRAME LINK

741-036	5.00	Frame joint, replacing bearings
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77 WHEELS; TRACKS; TYRE; HUB; DRUM

771-007	0.40	Wheel, installing
771-008	0.40	Wheel, removing
777-001	1.00	Drum, removing
777-002	1.50	Drum, installing
777-003	1.50	Vibration pump, removing
777-004	1.50	Vibration pump, installing
777-005	0.30	Vibration motor, removing
777-006	0.20	Vibration motor, installing
777-007	3.50	Eccentric weight, removing
777-008	4.00	Eccentric weight, installing
777-009	0.40	Drum shock mount, replacing
777-013	8.50	Eccentric weight bearings, replacing
777-014	4.50	Carrier bearings, replacing
777-015	7.50	Eccentric weight, overhaul
777-018	4.50	Drum drive motor, replacing
777-021	0.70	Smooth drum scrapers, replacing
777-025	1.75	Carrier, removing
777-026	2.50	Carrier, installing
777-086	0.30	Vibration pump charge pressure, checking
777-087	0.40	Vibration system pressure, checking
777-088	0.30	Vibration control module, replacing
777-089	0.90	Vibration pump charge pressure relief valve, adjusting
777-090	0.90	Vibration pump charge pressure relief valve, replacing
777-091	1.00	Vibration pump SCR (system check/relief) valve, replacing
777-093	1.50	Drum drive assembly, removing

Op.no.	time (h)	Notes
777-094	2.00	Drum drive assembly, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	1.50	Cab, installing
810-010	0.40	Operator's platform, raising
810-011	0.40	Operator's platform, lowering
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.50	Engine hood, removing
821-002	0.40	Engine hood, installing
821-011	0.20	Engine hood, operating
821-012	0.20	Engine hood, manually operating

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-303	0.60	Lubrication, every 50 hours
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-007	0.60	Deck platform, removing
827-008	0.70	Deck platform, installing
83		DOORS; HATCH; COVER PLATE, (all)
837-003	0.40	Left side vibration cover, removing
837-004	0.40	Left side vibration cover, installing
837-005	0.50	Right side vibration cover, removing
837-006	0.60	Right side vibration cover, installing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
98		FUNCTION FOR ROAD CONSTRUCTION
982-003	0.70	Screed, removing
982-003	0.80	Screed, removing
982-004	1.00	Screed, installing
982-004	0.90	Screed, installing
982-015	2.50	Extension cylinder, removing
982-015	2.50	Extension cylinder, removing
982-016	3.00	Extension cylinder, installing
982-016	2.50	Extension cylinder, installing
982-019	0.90	Slope cylinder, removing
982-020	1.00	Slope cylinder, installing
982-027	4.50	Horizontal guide tube, removing
982-028	4.50	Horizontal guide tube, installing
982-051	5.50	Secondary guide tube bearings, replacing
982-052	5.00	Vertical guide tube bushings, replacing
982-053	9.00	Horizontal guide tube bushings, replacing
983-130	0.90	Vibration shaft, removing
983-130	0.80	Vibration shaft, removing
983-130	0.40	Vibration shaft, removing
983-131	0.80	Vibration shaft, installing
983-131	0.50	Vibration shaft, installing
983-131	1.25	Vibration shaft, installing

Op.no.	time (h)	Notes
983-132	1.25	Vibration bearing, removing
983-132	0.50	Vibration bearing, removing
983-133	1.50	Vibration bearing, installing
983-133	0.70	Vibration bearing, installing
983-134	0.70	Vibration motor, removing
983-134	1.00	Vibration motor, removing
983-135	1.25	Vibration motor, installing
983-135	0.90	Vibration motor, installing
983-136	0.90	Vibration drive belt, replacing
986-005	1.00	Heater bar, removing
986-005	1.75	Heater bar, removing
986-005	1.50	Heater bar, removing
986-006	2.50	Heater bar, installing
986-006	1.50	Heater bar, installing
986-006	2.00	Heater bar, installing
987-003	0.50	Power crown torque converter, removing
987-004	0.60	Power crown torque converter, installing
987-005	0.60	Power crown chain, replacing
987-010	1.00	Power crown, removing
987-011	1.75	Power crown, installing
987-012	3.50	Power crown, disassembly and assembly
987-013	2.00	Main screed strike off, removing
987-014	3.50	Main screed strike off, installing
987-015	2.00	Screed extension, removing
987-015	2.50	Screed extension, removing
987-016	2.50	Screed extension, installing
987-016	3.00	Screed extension, installing
987-017	0.40	Edger guide, removing
987-018	0.40	Edger guide, installing
987-021	0.90	Depth crank, disassembly and assembly
987-022	0.70	Side arm, removing
987-023	0.70	Side arm, installing
987-024	8.00	Screed plate, replacing
987-024	3.00	Screed plate, replacing
987-029	5.00	Height assembly, disassembling/assembling
987-029	5.50	Height assembly, disassembling/assembling
987-030	0.40	Extension height gear motor, removing
987-031	0.40	Extension height gear motor, installing
987-032	2.50	Outer height assembly, removing
987-033	2.50	Outer height assembly, installing
987-035	2.50	Inner height assembly, removing
987-036	2.50	Inner height assembly, installing
987-040	0.50	Edger guide bracket, removing
987-041	0.30	Edger guide bracket, installing

Op.no.	time (h)	Notes
987-042	0.30	Edger guide jack, removing
987-043	0.10	Edger guide jack, installing
987-046	0.40	Edger shoe, removing
987-047	0.20	Edger shoe, installing
987-048	2.00	Screed plate, removing
987-048	1.25	Screed plate, removing
987-049	3.00	Screed plate, installing
987-049	1.50	Screed plate, installing
987-052	0.60	Extension strike off plate, removing
987-053	0.60	Extension strike off plate, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.70	Maintenance service, every 10 hours
173-004	0.50	Maintenance service, every 50 hours
173-010	0.30	Maintenance service, every 500 hours
173-012	0.40	Maintenance service, every 1000 hours
173-014	4.00	Maintenance service, every 2000 hours
173-050	0.30	Greasing, daily
173-303	0.20	Lubrication, every 50 hours
19		GENERAL
191-021	0.20	Service position 1
191-022	0.30	Service position 2
191-022	2.50	Service position 2
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
777-005	0.80	Vibration motor, removing
777-006	0.60	Vibration motor, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-005	0.50	Walkway, removing
827-006	0.40	Walkway, installing
827-007	0.60	Deck platform, removing
827-008	0.50	Deck platform, installing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
98		FUNCTION FOR ROAD CONSTRUCTION
982-003	2.50	Screed, removing
982-004	4.00	Screed, installing
982-015	2.00	Extension cylinder, removing
982-015	0.90	Extension cylinder, removing
982-016	3.00	Extension cylinder, installing
982-016	0.80	Extension cylinder, installing

Op.no.	time (h)	Notes
982-026	0.40	End plate, replacing
982-026	0.30	End plate, replacing
982-030	1.75	Sliding bearing, replacing
982-030	3.00	Sliding bearing, replacing
982-040	2.50	Brake cylinder, replacing
982-050	1.00	Crown control cylinder, replacing
982-050	2.50	Crown control cylinder, replacing
983-130	0.90	Vibration shaft, removing
983-131	0.80	Vibration shaft, installing
983-132	1.50	Vibration bearing, removing
983-133	1.25	Vibration bearing, installing
983-150	1.50	Tamper, adjusting
983-151	0.70	Tamper bar, removing
983-151	0.70	Tamper bar, removing
983-152	0.90	Tamper bar, installing
983-152	1.50	Tamper bar, installing
983-153	1.50	Tamper shaft, removing
983-153	1.75	Tamper shaft, removing
983-154	1.75	Tamper shaft, installing
983-154	2.00	Tamper shaft, installing
983-155	3.00	Tamper bearing, removing
983-156	2.00	Tamper bearing, installing
983-157	0.70	Tamper motor, removing
983-158	0.50	Tamper motor, installing
986-005	0.70	Heater bar, removing
986-005	1.25	Heater bar, removing
986-005	1.00	Heater bar, removing
986-005	1.25	Heater bar, removing
986-006	1.75	Heater bar, installing
986-006	1.25	Heater bar, installing
986-006	1.75	Heater bar, installing
986-006	0.50	Heater bar, installing
987-024	15.00	Screed plate, replacing
987-050	0.50	Deflector, removing
987-050	0.90	Deflector, removing
987-051	0.60	Deflector, installing
987-051	0.60	Deflector, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.70	Maintenance service, every 10 hours
173-004	0.50	Maintenance service, every 50 hours
173-010	0.30	Maintenance service, every 500 hours
173-012	0.40	Maintenance service, every 1000 hours
173-014	4.00	Maintenance service, every 2000 hours
173-050	0.30	Greasing, daily
173-303	0.20	Lubrication, every 50 hours
19		GENERAL
191-021	0.20	Service position 1
191-022	0.30	Service position 2
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
777-005	0.80	Vibration motor, removing
777-006	0.60	Vibration motor, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-005	0.50	Walkway, removing
827-006	0.40	Walkway, installing
827-007	0.60	Deck platform, removing
827-008	0.50	Deck platform, installing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
98		FUNCTION FOR ROAD CONSTRUCTION
982-003	2.50	Screed, removing
982-004	4.00	Screed, installing
982-015	2.00	Extension cylinder, removing
982-015	0.90	Extension cylinder, removing
982-016	3.00	Extension cylinder, installing
982-016	0.80	Extension cylinder, installing
982-026	0.30	End plate, replacing

Op.no.	time (h)	Notes
982-026	0.40	End plate, replacing
982-030	1.75	Sliding bearing, replacing
982-030	3.00	Sliding bearing, replacing
982-040	2.50	Brake cylinder, replacing
982-050	1.00	Crown control cylinder, replacing
982-050	2.50	Crown control cylinder, replacing
983-130	0.90	Vibration shaft, removing
983-131	0.80	Vibration shaft, installing
983-132	1.50	Vibration bearing, removing
983-133	1.25	Vibration bearing, installing
983-150	1.50	Tamper, adjusting
983-151	0.70	Tamper bar, removing
983-151	0.70	Tamper bar, removing
983-152	0.90	Tamper bar, installing
983-152	1.50	Tamper bar, installing
983-153	1.50	Tamper shaft, removing
983-153	1.75	Tamper shaft, removing
983-154	1.75	Tamper shaft, installing
983-154	2.00	Tamper shaft, installing
983-155	3.00	Tamper bearing, removing
983-156	2.00	Tamper bearing, installing
983-157	0.70	Tamper motor, removing
983-158	0.50	Tamper motor, installing
987-024	15.00	Screed plate, replacing
987-050	0.50	Deflector, removing
987-050	0.90	Deflector, removing
987-051	0.60	Deflector, installing
987-051	0.60	Deflector, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.70	Maintenance service, every 10 hours
173-004	0.50	Maintenance service, every 50 hours
173-010	0.30	Maintenance service, every 500 hours
173-012	0.40	Maintenance service, every 1000 hours
173-014	4.00	Maintenance service, every 2000 hours
173-050	0.30	Greasing, daily
173-303	0.20	Lubrication, every 50 hours
19		GENERAL
191-021	0.20	Service position 1
191-022	0.30	Service position 2
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
777-005	0.80	Vibration motor, removing
777-006	0.60	Vibration motor, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-005	0.50	Walkway, removing
827-006	0.40	Walkway, installing
827-007	0.60	Deck platform, removing
827-008	0.50	Deck platform, installing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
98		FUNCTION FOR ROAD CONSTRUCTION
982-003	2.00	Screed, removing
982-003	2.50	Screed, removing
982-004	4.00	Screed, installing
982-004	3.00	Screed, installing
982-015	2.00	Extension cylinder, removing
982-015	0.90	Extension cylinder, removing
982-016	3.00	Extension cylinder, installing

Op.no.	time (h)	Notes
982-016	0.80	Extension cylinder, installing
982-026	0.30	End plate, replacing
982-026	0.40	End plate, replacing
982-030	1.75	Sliding bearing, replacing
982-030	3.00	Sliding bearing, replacing
982-040	2.50	Brake cylinder, replacing
982-050	1.00	Crown control cylinder, replacing
982-050	2.50	Crown control cylinder, replacing
983-130	0.90	Vibration shaft, removing
983-131	0.80	Vibration shaft, installing
983-132	1.50	Vibration bearing, removing
983-133	1.25	Vibration bearing, installing
983-150	1.50	Tamper, adjusting
983-151	0.70	Tamper bar, removing
983-151	0.70	Tamper bar, removing
983-152	0.90	Tamper bar, installing
983-152	1.50	Tamper bar, installing
983-153	1.50	Tamper shaft, removing
983-153	1.75	Tamper shaft, removing
983-154	1.75	Tamper shaft, installing
983-154	2.00	Tamper shaft, installing
983-155	3.00	Tamper bearing, removing
983-156	2.00	Tamper bearing, installing
983-157	0.70	Tamper motor, removing
983-158	0.50	Tamper motor, installing
986-005	0.70	Heater bar, removing
986-005	1.25	Heater bar, removing
986-005	1.00	Heater bar, removing
986-005	1.25	Heater bar, removing
986-006	1.75	Heater bar, installing
986-006	1.25	Heater bar, installing
986-006	1.75	Heater bar, installing
986-006	0.50	Heater bar, installing
987-024	15.00	Screed plate, replacing
987-050	0.50	Deflector, removing
987-050	0.90	Deflector, removing
987-051	0.60	Deflector, installing
987-051	0.60	Deflector, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.70	Maintenance service, every 10 hours
173-004	0.50	Maintenance service, every 50 hours
173-010	0.30	Maintenance service, every 500 hours
173-012	0.40	Maintenance service, every 1000 hours
173-014	4.00	Maintenance service, every 2000 hours
173-050	0.30	Greasing, daily
173-303	0.20	Lubrication, every 50 hours
19		GENERAL
191-021	0.20	Service position 1
191-022	0.30	Service position 2
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
777-005	0.80	Vibration motor, removing
777-006	0.60	Vibration motor, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-005	0.50	Walkway, removing
827-006	0.40	Walkway, installing
827-007	0.60	Deck platform, removing
827-008	0.50	Deck platform, installing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
98		FUNCTION FOR ROAD CONSTRUCTION
982-003	2.00	Screed, removing
982-003	2.50	Screed, removing
982-004	4.00	Screed, installing
982-004	3.00	Screed, installing
982-015	2.00	Extension cylinder, removing
982-015	0.90	Extension cylinder, removing
982-016	3.00	Extension cylinder, installing

Op.no.	time (h)	Notes
982-016	0.80	Extension cylinder, installing
982-026	0.40	End plate, replacing
982-026	0.30	End plate, replacing
982-030	1.75	Sliding bearing, replacing
982-030	3.00	Sliding bearing, replacing
982-040	2.50	Brake cylinder, replacing
982-050	1.00	Crown control cylinder, replacing
982-050	2.50	Crown control cylinder, replacing
983-130	0.90	Vibration shaft, removing
983-131	0.80	Vibration shaft, installing
983-132	1.50	Vibration bearing, removing
983-133	1.25	Vibration bearing, installing
983-150	1.50	Tamper, adjusting
983-151	0.70	Tamper bar, removing
983-151	0.70	Tamper bar, removing
983-152	0.90	Tamper bar, installing
983-152	1.50	Tamper bar, installing
983-153	1.50	Tamper shaft, removing
983-153	1.75	Tamper shaft, removing
983-154	1.75	Tamper shaft, installing
983-154	2.00	Tamper shaft, installing
983-155	3.00	Tamper bearing, removing
983-156	2.00	Tamper bearing, installing
983-157	0.70	Tamper motor, removing
983-158	0.50	Tamper motor, installing
987-024	15.00	Screed plate, replacing
987-050	0.50	Deflector, removing
987-050	0.90	Deflector, removing
987-051	0.60	Deflector, installing
987-051	0.60	Deflector, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.70	Maintenance service, every 10 hours
173-004	0.50	Maintenance service, every 50 hours
173-010	0.30	Maintenance service, every 500 hours
173-012	0.40	Maintenance service, every 1000 hours
173-014	4.00	Maintenance service, every 2000 hours
173-050	0.30	Greasing, daily
173-303	0.20	Lubrication, every 50 hours
19		GENERAL
191-021	0.20	Service position 1
191-022	0.30	Service position 2
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
777-005	0.80	Vibration motor, removing
777-006	0.60	Vibration motor, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-005	0.50	Walkway, removing
827-006	0.40	Walkway, installing
827-007	0.60	Deck platform, removing
827-008	0.50	Deck platform, installing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
98		FUNCTION FOR ROAD CONSTRUCTION
982-003	2.50	Screed, removing
982-004	4.00	Screed, installing
982-015	2.00	Extension cylinder, removing
982-015	0.90	Extension cylinder, removing
982-016	3.00	Extension cylinder, installing
982-016	0.80	Extension cylinder, installing
982-026	0.30	End plate, replacing

Op.no.	time (h)	Notes
982-026	0.40	End plate, replacing
982-030	1.75	Sliding bearing, replacing
982-030	3.00	Sliding bearing, replacing
982-040	2.50	Brake cylinder, replacing
982-050	1.00	Crown control cylinder, replacing
982-050	2.50	Crown control cylinder, replacing
983-130	0.90	Vibration shaft, removing
983-131	0.80	Vibration shaft, installing
983-132	1.50	Vibration bearing, removing
983-133	1.25	Vibration bearing, installing
983-150	1.50	Tamper, adjusting
983-150	1.00	Tamper, adjusting
983-151	0.70	Tamper bar, removing
983-151	0.70	Tamper bar, removing
983-152	0.90	Tamper bar, installing
983-152	1.50	Tamper bar, installing
983-153	1.50	Tamper shaft, removing
983-153	1.75	Tamper shaft, removing
983-154	1.75	Tamper shaft, installing
983-154	2.00	Tamper shaft, installing
983-156	2.50	Tamper bearing, installing
983-157	0.70	Tamper motor, removing
983-158	0.50	Tamper motor, installing
986-005	0.70	Heater bar, removing
986-005	1.25	Heater bar, removing
986-005	1.00	Heater bar, removing
986-005	1.25	Heater bar, removing
986-006	1.75	Heater bar, installing
986-006	1.25	Heater bar, installing
986-006	1.75	Heater bar, installing
986-006	0.50	Heater bar, installing
987-024	15.00	Screed plate, replacing
987-050	0.50	Deflector, removing
987-050	0.90	Deflector, removing
987-051	0.60	Deflector, installing
987-051	0.60	Deflector, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.70	Maintenance service, every 10 hours
173-004	0.50	Maintenance service, every 50 hours
173-010	0.30	Maintenance service, every 500 hours
173-012	0.40	Maintenance service, every 1000 hours
173-014	4.00	Maintenance service, every 2000 hours
173-050	0.30	Greasing, daily
173-303	0.20	Lubrication, every 50 hours
19		GENERAL
191-021	0.20	Service position 1
191-022	0.30	Service position 2
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
777-005	0.80	Vibration motor, removing
777-006	0.60	Vibration motor, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-005	0.50	Walkway, removing
827-006	0.40	Walkway, installing
827-007	0.60	Deck platform, removing
827-008	0.50	Deck platform, installing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
98		FUNCTION FOR ROAD CONSTRUCTION
982-003	2.50	Screed, removing
982-004	4.00	Screed, installing
982-015	2.00	Extension cylinder, removing
982-015	0.90	Extension cylinder, removing
982-016	3.00	Extension cylinder, installing
982-016	0.80	Extension cylinder, installing
982-026	0.30	End plate, replacing

Op.no.	time (h)	Notes
982-026	0.40	End plate, replacing
982-030	1.75	Sliding bearing, replacing
982-030	3.00	Sliding bearing, replacing
982-040	2.50	Brake cylinder, replacing
982-050	2.50	Crown control cylinder, replacing
982-050	1.00	Crown control cylinder, replacing
983-130	0.90	Vibration shaft, removing
983-131	0.80	Vibration shaft, installing
983-132	1.50	Vibration bearing, removing
983-133	1.25	Vibration bearing, installing
983-150	1.50	Tamper, adjusting
983-150	1.00	Tamper, adjusting
983-151	0.70	Tamper bar, removing
983-151	0.70	Tamper bar, removing
983-152	0.90	Tamper bar, installing
983-152	1.50	Tamper bar, installing
983-153	1.50	Tamper shaft, removing
983-153	1.75	Tamper shaft, removing
983-154	1.75	Tamper shaft, installing
983-154	2.00	Tamper shaft, installing
983-156	2.50	Tamper bearing, installing
983-157	0.70	Tamper motor, removing
983-158	0.50	Tamper motor, installing
987-024	15.00	Screed plate, replacing
987-050	0.50	Deflector, removing
987-050	0.90	Deflector, removing
987-051	0.60	Deflector, installing
987-051	0.60	Deflector, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.70	Maintenance service, every 10 hours
173-004	0.50	Maintenance service, every 50 hours
173-010	0.30	Maintenance service, every 500 hours
173-012	0.40	Maintenance service, every 1000 hours
173-014	4.00	Maintenance service, every 2000 hours
173-050	0.30	Greasing, daily
173-303	0.20	Lubrication, every 50 hours
19		GENERAL
191-021	0.20	Service position 1
191-022	0.30	Service position 2
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
777-005	0.80	Vibration motor, removing
777-006	0.60	Vibration motor, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-005	0.50	Walkway, removing
827-006	0.40	Walkway, installing
827-007	0.60	Deck platform, removing
827-008	0.50	Deck platform, installing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
98		FUNCTION FOR ROAD CONSTRUCTION
982-003	2.00	Screed, removing
982-003	2.50	Screed, removing
982-004	4.00	Screed, installing
982-004	3.00	Screed, installing
982-015	2.00	Extension cylinder, removing
982-015	0.90	Extension cylinder, removing
982-016	3.00	Extension cylinder, installing

Op.no.	time (h)	Notes
982-016	0.80	Extension cylinder, installing
982-026	0.30	End plate, replacing
982-026	0.40	End plate, replacing
982-030	1.75	Sliding bearing, replacing
982-030	3.00	Sliding bearing, replacing
982-040	2.50	Brake cylinder, replacing
982-050	1.00	Crown control cylinder, replacing
982-050	2.50	Crown control cylinder, replacing
983-130	0.90	Vibration shaft, removing
983-131	0.80	Vibration shaft, installing
983-132	1.50	Vibration bearing, removing
983-133	1.25	Vibration bearing, installing
983-150	1.50	Tamper, adjusting
983-150	1.00	Tamper, adjusting
983-151	0.70	Tamper bar, removing
983-151	0.70	Tamper bar, removing
983-152	0.90	Tamper bar, installing
983-152	1.50	Tamper bar, installing
983-153	1.50	Tamper shaft, removing
983-153	1.75	Tamper shaft, removing
983-154	1.75	Tamper shaft, installing
983-154	2.00	Tamper shaft, installing
983-156	2.50	Tamper bearing, installing
983-157	0.70	Tamper motor, removing
983-158	0.50	Tamper motor, installing
986-005	0.70	Heater bar, removing
986-005	1.25	Heater bar, removing
986-005	1.00	Heater bar, removing
986-005	1.25	Heater bar, removing
986-006	1.75	Heater bar, installing
986-006	1.25	Heater bar, installing
986-006	1.75	Heater bar, installing
986-006	0.50	Heater bar, installing
987-024	15.00	Screed plate, replacing
987-050	0.50	Deflector, removing
987-050	0.90	Deflector, removing
987-051	0.60	Deflector, installing
987-051	0.60	Deflector, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.70	Maintenance service, every 10 hours
173-004	0.50	Maintenance service, every 50 hours
173-010	0.30	Maintenance service, every 500 hours
173-012	0.40	Maintenance service, every 1000 hours
173-014	4.00	Maintenance service, every 2000 hours
173-050	0.30	Greasing, daily
173-303	0.20	Lubrication, every 50 hours
19		GENERAL
191-021	0.20	Service position 1
191-022	0.30	Service position 2
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
777-005	0.80	Vibration motor, removing
777-006	0.60	Vibration motor, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-005	0.50	Walkway, removing
827-006	0.40	Walkway, installing
827-007	0.60	Deck platform, removing
827-008	0.50	Deck platform, installing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
98		FUNCTION FOR ROAD CONSTRUCTION
982-003	2.00	Screed, removing
982-003	2.50	Screed, removing
982-004	4.00	Screed, installing
982-004	3.00	Screed, installing
982-015	2.00	Extension cylinder, removing
982-015	0.90	Extension cylinder, removing
982-016	3.00	Extension cylinder, installing

Op.no.	time (h)	Notes
982-016	0.80	Extension cylinder, installing
982-026	0.30	End plate, replacing
982-026	0.40	End plate, replacing
982-030	1.75	Sliding bearing, replacing
982-030	3.00	Sliding bearing, replacing
982-040	2.50	Brake cylinder, replacing
982-050	2.50	Crown control cylinder, replacing
982-050	1.00	Crown control cylinder, replacing
983-130	0.90	Vibration shaft, removing
983-131	0.80	Vibration shaft, installing
983-132	1.50	Vibration bearing, removing
983-133	1.25	Vibration bearing, installing
983-150	1.50	Tamper, adjusting
983-150	1.00	Tamper, adjusting
983-151	0.70	Tamper bar, removing
983-151	0.70	Tamper bar, removing
983-152	0.90	Tamper bar, installing
983-152	1.50	Tamper bar, installing
983-153	1.50	Tamper shaft, removing
983-153	1.75	Tamper shaft, removing
983-154	1.75	Tamper shaft, installing
983-154	2.00	Tamper shaft, installing
983-156	2.50	Tamper bearing, installing
983-157	0.70	Tamper motor, removing
983-158	0.50	Tamper motor, installing
987-024	15.00	Screed plate, replacing
987-050	0.50	Deflector, removing
987-050	0.90	Deflector, removing
987-051	0.60	Deflector, installing
987-051	0.60	Deflector, installing

The following applies to the use of Volvo Construction Equipment guideline times

Listed times indicate **guideline times** for maintenance and repairs of machines manufactured by Volvo CE (Volvo Construction Equipment AB).

Guideline time is the time that the mechanic normally needs to perform an operation according to the instructions normally found in each machine's service manual or component manual, and that is performed according to the conditions listed below.

Feedback address for Time Guide: servicemanuals@volvo.com

Applicability

The time for performing an operation varies with a number of parameters, e.g., environment (where the work is done), training and equipment. Guideline times are developed with the following conditions:

- Workshop in an indoor environment with a solid and level concrete floor.
- Workshop equipped with lifting device that has lifting capacity and lifting height adapted to a majority of operations (except lifting complete machine units/machine frames) performed on machines handled by the workshop.
- Use of approved support and lifting equipment, in addition to the equipment indicated in each machine's service manual.
- Workshop equipped with compressed air, electricity and lighting.
- Use of indicated Volvo CE special tools.
- Tools stored in easily accessed location, in the immediate vicinity of the workplace.
- Where applicable, oils/fluids are handled in an environmentally correct manner.

For guideline times to apply it is required, in addition to the above conditions, that the mechanic has the training and experience required for the machine and the work that is being done (e.g., Basic Course Electricity and hydraulics as well as machine course step 1 Volvo CE Service school).

Guideline times apply when one person performs the operation. However, in the operations actions may be performed that require help from another person. In these cases, the time for that step which requires two persons has been doubled. The guideline times do not apply if more than one mechanic performs the entire operation.

Actions not included in guideline times are:

- Transport of machine to and from workshop site.
- Troubleshooting not described as a separate operation.
- Retrieval of spare parts, consumables and tools that are not stored in easily accessed location.
- Washing of the whole or parts of the machine before repair/maintenance.
- Actions that due to deformation, corrosion or external damage increase the repair time.
- Additional work that due to retrofitted equipment reduces access, unless these work steps are mentioned in the method description in each service manual.

Other

For every operation there is an operation number, heading and guideline time. The description for how the work is done is normally found in the service manual for each machine under the corresponding operation number.

Foreword

New format of operation number

In the time guide, each operation number has a heading with a three-digit function group number (see **function group** below) as well as a three-digit running number.

Example: Op no. 210-070 Engine removing

210-	070
Function group	Running number (Sequential number)

Example of discontinued op. no. is 21070 alt. 21070-1 (Engine removing).

Function group:

According to Volvo Construction Equipment function group index, where the first digit indicates section and is divided in the following functions, which follows the same design as other service information:

1. Standard parts, service
2. Engine with mounting and equipment
3. Elec.system; Warning system; Information system; Instruments
4. Power transmission
5. Brakes
6. Steering
7. Frame; Springs; Damping; Axle suspension; Wheel/track unit
8. Machinery house; Cab; Exterior trim parts anywhere
9. Hydraulic system; Digging/handling/grading equipment; Misc. Equip. hydraulics

The second and third digit (10) indicate sub-group, which in turn divides the functions within the group, also this follows the same design as other service information.

Running number:

Running number or sequential number 001 to 899 (in the example 070) is a number to identify each operation.

Other

Equipment:

Running number 901 to 999 are reserved for installation times for equipment (installation instructions).

Earlier (discontinued) format of operation numbers:

From 2005-03-08, only the new format for operation numbers shall be used, with the exception of operations for VCADS Pro. Already published service information makes use of the earlier format for operation numbers.

VCADS Pro:

For the time being, VCADS Pro operations will adhere to the same design as before, XXXXX-X, and will have a code digit (-3) for test procedures.

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Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
170-001	0.75	Washing, external cleaning
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	1.00	Delivery Inspection, according to Inspection Programme
172-002	7.00	Warranty inspection 100 hours
172-004	9.50	Warranty inspection 1000 hours
173-002	0.25	Maintenance service, daily
173-004	0.75	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	3.00	Maintenance service, every 500 hours
173-012	8.00	Maintenance service, every 1000 hours
173-014	16.00	Maintenance service, every 2000 hours
173-059	1.00	Engine, changing oil and filter
173-061	1.50	Transmission, changing oil and filter
173-066	0.50	Drop box, changing oil/cleaning suction strainer
173-074	1.00	Hydraulic oil tank, changing oil and filter
173-075	1.50	Hydraulic oil tank, changing oil and filter incl.cleaning tank
173-085	3.00	Brake system, changing oil/fluid and filter
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-002	2.00	Compression test
210-070	5.50	Engine, removing
210-071	40.00	Engine removed, general overhaul
210-072	7.00	Engine, installing
210-073	5.50	Engine and transmission, removing
210-074	7.00	Engine and transmission, mounting
214-012	1.00	Valves, adjusting
214-096	1.50	Valve cap, changing
22		LUBRICATING SYSTEM
221-021	0.75	Lubrication oil pressure, checking
23		FUEL SYSTEM
233-001	0.50	Fuel system, bleeding
233-004	0.50	Feed pump, checking feed pressure
236-001	0.50	Idling speed, checking and adjusting
236-002	0.50	Stall speed, checking

Op.no.	time (h)	Notes
236-003	0.25	Idling speed, checking
236-004	0.25	low idling speed, checking and adjusting
236-030	1.75	Injection timing, checking
236-031	1.00	Injection timing adjuster, checking
236-044	1.00	Injection timing, checking
236-073	3.50	Injection pump, replacing incl setting injection timing
237-001	3.50	Injectors cylinder head removed, replacing copper sleeve
237-002	1.75	Injectors, replacing all
25		INLET SYSTEM; EXHAUST SYSTEM
255-070	0.50	Turbocharger, removing
255-071	1.50	Turbocharger, replacing
255-072	1.00	Turbocharger, installing
256-001	0.50	Air cleaner, cleaning filter element
256-002	0.25	Air cleaner, checking prssure drop indicator
256-003	0.50	Air cleaner, primary filter replacing
256-004	0.50	Air cleaner, secondary filter replacing
258-002	1.00	Intercooler, replacing
26		COOLING SYSTEM
261-002	0.25	Coolant, checking anti-freeze resistance
261-004	1.00	Coolant, changing
261-008	1.50	Radiator, replacing
261-010	1.00	Radiator, adjusting
263-001	1.00	Fan motor, removing
263-002	1.00	Fan motor, changing piston rings
263-003	1.00	Fan motor, installing
263-004	1.00	Fan motor, checking working pressure
263-005	0.25	Fan motor, adjusting working pressure
263-006	1.00	Fan hydraulically driven, removing pump
263-007	1.00	Fan hydraulically driven, fitting pump
263-009	0.75	Fan hydraulically driven, replacing oil return filter
263-010	0.50	Pump 3 (P3) standby pressure, checking
263-012	0.50	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	0.50	Fan belt and/or alternator-, compressor belt, replacing all belts
27		ENGINE CONTROL
272-001	1.00	Accelerator control, anti-gas cylinder, adjusting

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.50	Battery charging capacity, checking
311-002	1.50	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
321-074	1.50	Charging test in machine (with measuring instrument)
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
35		LIGHTING
352-002	0.50	Headlights, adjusting
352-008	0.50	Headlamp reflector and/or glass, replacing one incl adjusting
352-024	0.50	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.50	Rear lamp, replacing one
353-018	0.50	Rear lamp, replacing glass or bulb
356-056	0.50	Work lighting, replacing one head lamp assy
356-057	0.50	Work lighting, replacing one insert
36		OTHER ELECTRICAL EQUIPMENT
361-002	0.50	Flasher unit, replacing relay
361-010	0.50	Flasher switch, replacing
361-017	0.50	Flasher lamp, replacing glass or bulb
362-002	0.50	Horn, replacing
362-003	0.50	Reverse alarm, replacing
362-016	0.50	Horn switch, replacing
363-002	1.50	Windscreen wiper front, replacing motor
363-003	0.50	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
364-004	0.50	Switch, replacing
364-008	1.50	Brake light switch, replacing
367-020	1.00	ECU, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-001	0.25	Load sensor, adjusting
386-002	0.50	Load sensor, control measurement

Op.no.	time (h)	Notes
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	1.00	Transmission oil pressure, checking
421-051	1.00	Transmission, resistance measuring of solenoides
421-054	4.00	Seal for rear output shaft, replacing
421-059	0.50	Transmission retarder valve, adjusting air pressure
421-060	0.50	Transmission, resistans measuring control system
421-061	0.50	Induction sensor for output shaft, changing
421-062	2.00	Induction sensor for turbine speed, changing
421-065	3.00	Control system, replacing
421-070	7.00	Transmission, removing
421-072	7.00	Transmission, installing
421-073	5.50	Transmission, removing (together with engine)
421-074	7.00	Transmission, installing (together with engine)
421-078	2.00	Transmission, remove and fitting from a non mounted engine
421-079	0.25	Transmission, replacing breather filter
43		GEARBOX,
434-002	1.75	Dropbox, replacing seal for front otput shaft
434-004	2.00	Dropbox, replacing seal for rear output shaft
434-015	7.00	Dropbox, replacing seal for input shaft
434-016	1.00	Dropbox, oil pump, replacing
434-061	1.00	Differential lock longitudinal, adjusting engagement
434-073	3.00	Dropbox, installing
434-074	2.00	Dropbox, removing
45		PROPELLER SHAFT
451-004	1.00	Propeller shaft, rear, replacing
451-005	1.00	Propeller shaft for rear boggie axel, replacing
451-006	3.50	Intermediate shaft and/or bearing, replacing (in frame joint)
451-007	0.50	Propeller shaft, in frame joint, replacing
451-010	0.75	Propeller shaft, front, replacing
451-013	1.50	Propeller shaft, removed reconditioning
451-014	3.50	Propeller shaft between transmission and dropbox, replacing
46		FRONT AXLE; REAR AXLE
461-043	4.00	Hub, replacing seal
468-005	0.50	Differential lock rear, adjusting engagement

Op.no.	time (h)	Notes
48		POWER TAKE OFF
482-000	20.00	Flywheel housing and complete power take off, changing
482-001	3.00	Power take off engine crankshaft for hydraulic pump removed
49		MISCELLANEOUS
491-006	2.00	Oil cooler, replacing
5		BRAKE
51		WHEEL BRAKE
510-001	1.00	Brake linings, checking wear
510-002	0.25	Brake disc for service brake, checking
511-001	0.50	Brake pads for service brake, checking
511-002	4.00	Brake disc, replacing one
511-004	3.00	Brake pads, replacing on both sides of axel
511-005	1.50	Brake pads, replacing (one wheel, front axle)
511-045	2.00	Brake calliper, replacing one
511-081	1.00	Brake calliper removed, reconditioning
512-001	0.50	Brake linings, checking wear rear axle
512-002	4.00	Brake disc, replacing one
512-004	3.00	Brake pads, replacing on both sides of axle
512-005	1.50	Brake pads, replacing (one wheel, first boggie axle)
512-045	2.50	Brake caliper, replacing one
512-081	1.00	Brake caliper, removed, reconditioning
52		HYDRAULIC BRAKE SYSTEM
520-037	1.00	Brake system, bleeding
55		PARKING BRAKE
550-002	0.50	Parking brake, adjusting
550-005	2.00	Parking brake, replacing brake disc
550-009	0.50	Spring brake cylinder, replacing
550-010	1.00	Spring brake cylinder removed, reconditioning
550-012	2.00	Parking brake , replacing brake caliper
550-013	0.75	Parking brake caliper (air), removed reconditioning
550-014	1.50	Parking brake, replacing brake pads
551-003	1.00	Parking brake, (removed) reconditioning of brake caliper
56		COMPRESSED-AIR BRAKE
561-004	1.00	Compressor, replacing

Op.no.	time (h)	Notes
561-022	0.25	Pressure regulator, adjusting
563-010	1.00	Relay valve (load unit), reconditioning incl. removing and fitting
563-073	1.00	Foot brake valve (pneumatic) removed, reconditioning
6		STEERING
64		STEERING
642-026	3.00	Steering gear, replacing
642-058	1.00	Steering gear, check.and adj.
643-010	3.50	Steering linkage, checking and adjusting
645-001	0.50	Steering cylinder bearing, checking clearanse
645-006	5.00	Steering cylinder, replacing
645-028	0.50	Steering system, checking and adjusting working pressure
645-054	1.00	Steering cylinder, replacing bearings
645-060	3.00	Steering cylinder, repacking in machine
645-080	2.00	Steering valve neutral position and valve spool end float, checking
645-081	3.00	Steering valve removed, reconditioning
645-082	3.00	Steering valve, replacing
645-084	1.00	Damping cylinder, checking spring force
645-085	1.50	Damping cylinder, changing seal
647-093	2.00	Auxiliary steering, replacing hydraulic pump
647-095	0.50	Auxiliary steering, adjusting working- and stand-by pressure
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
711-020	3.00	Load unit frame, checking measurements
72		SUSPENSION
727-001	5.00	Spring element front, replacing all
74		FRAME LINK
741-005	0.50	Frame joint, checking clearance
741-006	4.00	Frame joint, measuring and adjusting clearence
741-036	2.00	Frame joint, replacing bearings
742-007	10.00	Frame joint, replacing hitch
742-038	1.50	Articulated joint, checking clearence
742-040	9.00	Steering joint, replacing bearings

Op.no.	time (h)	Notes
75		AXLE SUSPENSION
754-020	3.50	Load unit triangular stay, replacing link bearing (rubber bearing)
754-021	1.00	Front bogie axle cross stay, adjusting
754-031	1.00	Rear bogie axle cross stay, adjusting
756-010	3.00	Bogie member, replacing rubber element
756-012	1.00	Cross stay rubber bushing (bearing), replacing (front)
756-014	1.00	Cross stay rubber bushing (bearing), replacing, (rear)
756-015	3.00	Cross stay, checking and adjusting
756-024	1.00	Bogie beam, changing rubber spring, one side (front)
756-026	3.00	Bogie, replacing all rubber elements both sides
756-027	2.00	A-frame bushing, front on load unit, changing
76		SHOCK ABSORBER; AXLE LOCKING; ANTI ROLL BAR; LEVEL / SIDE CONTROL
761-001	1.50	Shock absorber front, replacing all
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.50	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.00	Windscreen, replacing
843-012	1.50	Rear window, replacing
843-013	1.00	Side window, replacing
843-048	1.00	Door window, replacing
87		AIR CONDITIONING UNIT
873-004	2.00	Heater core, replacing
873-006	2.00	Fan motor, replacing
873-008	1.50	Heat control valve, replacing
874-002	1.50	Refrigerant, draining
874-003	0.50	Cooling unit, performance test
874-005	2.00	Refrigerant, filling excl vacuum pumping
874-006	4.00	Compressor, replacing incl draining and filling

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-081	0.50	Tipping control, adjusting
912-087	0.50	Tipping limitation, adjusting
913-003	0.50	Hydraulic pump, checking and adjusting standby pressure
913-008	2.00	Hydraulic pump, ground dependent, changing
94		UNIT, LOAD HANDLING
945-010	1.50	Tilt cylinder removed, repacking
95		LOAD CARRIER
951-001	0.50	Tipping control, adjusting
951-002	2.00	Tipping valve, changing wire
951-003	0.50	Dump body position indicator, adjusting
951-004	4.00	Hoist cylinder, changing
951-006	2.50	Hoist cylinder removed, reconditioning
951-009	1.00	Dump limitation, adjusting
951-010	2.00	Tipping valve, replacing
951-040	3.00	Dump body joint, changing tipping bearing
951-041	1.50	Dump body, adjusting against frame
99		MISCELLANEOUS
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
170-001	0.75	Washing, external cleaning
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	1.00	Delivery Inspection, according to Inspection Programme
172-002	7.00	Warranty inspection 100 hours
172-004	10.00	Warranty inspection 1000 hours
173-002	0.25	Maintenance service, daily
173-004	0.75	Maintenance service, every 50 hours
173-007	3.00	Maintenance service, every 250 hours
173-010	3.00	Maintenance service, every 500 hours
173-012	8.00	Maintenance service, every 1000 hours
173-014	16.00	Maintenance service, every 2000 hours
173-059	1.00	Engine, changing oil and filter
173-061	1.50	Transmission, changing oil and filter
173-066	0.50	Drop box, changing oil/cleaning suction strainer
173-074	1.00	Hydraulic oil tank, changing oil and filter
173-075	1.50	Hydraulic oil tank, changing oil and filter incl.cleaning tank
173-085	3.00	Brake system, changing oil/fluid and filter
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-002	2.00	Compression test
210-070	5.50	Engine, removing
210-072	7.00	Engine, installing
210-073	5.50	Engine and transmission, removing
210-074	7.00	Engine and transmission, mounting
214-012	0.75	Valves, adjusting
214-096	1.50	Valve cap, changing
22		LUBRICATING SYSTEM
221-021	0.75	Lubrication oil pressure, checking
23		FUEL SYSTEM
233-001	0.50	Fuel system, bleeding
233-004	0.50	Feed pump, checking feed pressure
236-001	0.50	Idling speed, checking and adjusting
236-002	0.50	Stall speed, checking
236-003	0.50	Idling speed, checking

Op.no.	time (h)	Notes
236-004	0.50	low idling speed, checking and adjusting
236-030	0.50	Injection timing, checking
236-031	1.00	Injection timing adjuster, checking
236-044	0.50	Injection timing, checking
236-073	3.50	Injection pump, replacing incl setting injection timing
237-002	1.75	Injectors, replacing all
25		INLET SYSTEM; EXHAUST SYSTEM
255-070	0.50	Turbocharger, removing
255-071	1.50	Turbocharger, replacing
255-072	1.00	Turbocharger, installing
256-001	0.50	Air cleaner, cleaning filter element
256-002	0.25	Air cleaner, checking prssure drop indicator
256-003	0.50	Air cleaner, primary filter replacing
256-004	0.50	Air cleaner, secondary filter replacing
258-002	1.00	Intercooler, replacing
26		COOLING SYSTEM
261-002	0.25	Coolant, checking anti-freeze resistance
261-004	1.00	Coolant, changing
261-008	1.50	Radiator, replacing
261-010	1.00	Radiator, adjusting
261-072	0.50	Coolant filter, changing
263-001	0.75	Fan motor, removing
263-002	1.00	Fan motor, changing piston rings
263-003	1.00	Fan motor, installing
263-004	1.00	Fan motor, checking working pressure
263-005	0.25	Fan motor, adjusting working pressure
263-006	1.00	Fan hydraulically driven, removing pump
263-007	1.00	Fan hydraulically driven, fitting pump
263-009	0.75	Fan hydraulically driven, replacing oil return filter
263-010	0.50	Pump 3 (P3) standby pressure, checking
263-012	0.50	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	0.50	Fan belt and/or alternator-, compressor belt, replacing all belts
27		ENGINE CONTROL
272-001	1.00	Accelerator control, anti-gas cylinder, adjusting

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.50	Battery charging capacity, checking
311-002	1.50	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
321-074	1.50	Charging test in machine (with measuring instrument)
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
35		LIGHTING
352-002	0.50	Headlights, adjusting
352-008	0.50	Headlamp reflector and/or glass, replacing one incl adjusting
352-024	0.50	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.50	Rear lamp, replacing one
353-018	0.50	Rear lamp, replacing glass or bulb
356-056	0.50	Work lighting, replacing one head lamp assy
356-057	0.50	Work lighting, replacing one insert
36		OTHER ELECTRICAL EQUIPMENT
361-002	0.50	Flasher unit, replacing relay
361-010	0.50	Flasher switch, replacing
361-017	0.50	Flasher lamp, replacing glass or bulb
362-002	0.50	Horn, replacing
362-003	0.50	Reverse alarm, replacing
362-016	0.50	Horn switch, replacing
362-900	1.00	Rotating beacon, installing new
363-002	1.50	Windscreen wiper front, replacing motor
363-003	0.50	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
364-004	0.50	Switch, replacing
364-008	1.50	Brake light switch, replacing
367-020	0.50	ECU, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-001	0.25	Load sensor, adjusting
386-002	0.50	Load sensor, control measurement

Op.no.	time (h)	Notes
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	1.00	Transmission oil pressure, checking
421-051	1.00	Transmission, resistance measuring of solenoides
421-054	4.00	Seal for rear output shaft, replacing
421-059	0.50	Transmission retarder valve, adjusting air pressure
421-060	0.50	Transmission, resistans measuring control system
421-061	0.50	Induction sensor for output shaft, changing
421-062	2.00	Induction sensor for turbine speed, changing
421-065	3.00	Control system, replacing
421-070	7.00	Transmission, removing
421-072	7.00	Transmission, installing
421-073	5.50	Transmission, removing (together with engine)
421-074	7.00	Transmission, installing (together with engine)
421-078	2.00	Transmission, remove and fitting from a non mounted engine
421-079	0.25	Transmission, replacing breather filter
43		GEARBOX,
434-002	1.75	Dropbox, replacing seal for front otput shaft
434-004	2.00	Dropbox, replacing seal for rear output shaft
434-015	7.00	Dropbox, replacing seal for input shaft
434-016	1.00	Dropbox, oil pump, replacing
434-059	0.75	Dropbox, replacing pneumatic air cylinder for high and low gear
434-060	0.50	Dropbox, adjusting control for high and low gear
434-061	1.00	Differential lock longitudinal, adjusting engagement
434-073	3.00	Dropbox, installing
434-074	2.00	Dropbox, removing
45		PROPELLER SHAFT
451-004	1.00	Propeller shaft, rear, replacing
451-005	1.00	Propeller shaft for rear boggie axel, replacing
451-006	3.50	Intermediate shaft and/or bearing, replacing (in frame joint)
451-007	0.50	Propeller shaft, in frame joint, replacing
451-010	0.75	Propeller shaft, front, replacing
451-013	1.50	Propeller shaft, removed reconditioning
451-014	3.50	Propeller shaft between transmission and dropbox, replacing
46		FRONT AXLE; REAR AXLE
461-043	4.00	Hub, replacing seal

Op.no.	time (h)	Notes
468-005	0.50	Differential lock rear, adjusting engagement
48		POWER TAKE OFF
482-000	20.00	Flywheel housing and complete power take off, changing
482-001	3.00	Power take off engine crankshaft for hydraulic pump removed
49		MISCELLANEOUS
491-006	3.50	Oil cooler, replacing
5		BRAKE
51		WHEEL BRAKE
510-001	1.00	Brake linings, checking wear
510-002	0.25	Brake disc for service brake, checking
511-001	0.50	Brake pads for service brake, checking
511-002	4.00	Brake disc, replacing one
511-004	3.00	Brake pads, replacing on both sides of axel
511-005	1.50	Brake pads, replacing (one wheel, front axle)
511-045	2.00	Brake calliper, replacing one
511-081	1.00	Brake calliper removed, reconditioning
512-001	0.50	Brake linings, checking wear rear axle
512-002	4.00	Brake disc, replacing one
512-004	3.00	Brake pads, replacing on both sides of axle
512-005	1.50	Brake pads, replacing (one wheel, first boggie axle)
512-045	2.00	Brake caliper, replacing one
512-081	1.00	Brake caliper, removed, reconditioning
52		HYDRAULIC BRAKE SYSTEM
520-037	1.00	Brake system, bleeding
55		PARKING BRAKE
550-002	0.50	Parking brake, adjusting
550-005	2.00	Parking brake, replacing brake disc
550-009	0.50	Spring brake cylinder, replacing
550-010	1.00	Spring brake cylinder removed, reconditioning
550-012	2.00	Parking brake , replacing brake caliper
550-013	0.75	Parking brake caliper (air), removed reconditioning
550-014	1.50	Parking brake, replacing brake pads
551-003	0.50	Parking brake, (removed) reconditioning of brake caliper

Op.no.	time (h)	Notes
56		COMPRESSED-AIR BRAKE
561-004	1.00	Compressor, replacing
561-022	0.25	Pressure regulator, adjusting
563-010	1.00	Relay valve (load unit), reconditioning incl. removing and fitting
563-073	1.00	Foot brake valve (pneumatic) removed, reconditioning
6		STEERING
64		STEERING
642-026	3.00	Steering gear, replacing
643-010	3.50	Steering linkage, checking and adjusting
645-001	0.50	Steering cylinder bearing, checking clearanse
645-006	5.00	Steering cylinder, replacing
645-028	0.50	Steering system, checking and adjusting working pressure
645-054	1.00	Steering cylinder, replacing bearings
645-060	3.00	Steering cylinder, repacking in machine
645-080	2.00	Steering valve neutral position and valve spool end float, checking
645-081	3.00	Steering valve removed, reconditioning
645-082	3.00	Steering valve, replacing
645-084	1.00	Damping cylinder, checking spring force
645-085	1.50	Damping cylinder, changing seal
647-093	2.00	Auxiliary steering, replacing hydraulic pump
647-095	0.50	Auxiliary steering, adjusting working- and stand-by pressure
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
711-020	3.00	Load unit frame, checking measurements
72		SUSPENSION
727-001	5.00	Spring element front, replacing all
74		FRAME LINK
741-005	0.50	Frame joint, checking clearance
741-006	4.00	Frame joint, measuring and adjusting clearence
741-036	2.00	Frame joint, replacing bearings
742-007	10.00	Frame joint, replacing hitch

Op.no.	time (h)	Notes
742-038	1.50	Articulated joint, checking clearance
742-040	9.00	Steering joint, replacing bearings
742-044	1.00	Articulated joint, replacing bushing
742-046	1.50	Frame joint, changing metallic bearing (machine separated)
75		AXLE SUSPENSION
754-010	3.00	Replacing link bearing (rubber bearing), front axle
754-020	2.00	Load unit triangular stay, replacing link bearing (rubber bearing)
754-021	1.00	Front bogie axle cross stay, adjusting
754-022	1.00	Triangular stay link bearing attachments, adjusting
754-031	1.00	Rear bogie axle cross stay, adjusting
756-010	3.00	Bogie member, replacing rubber element
756-011	6.00	Bogie member, replacing rubber bearing (one side)
756-012	1.00	Cross stay rubber bushing (bearing), replacing (front)
756-014	1.00	Cross stay rubber bushing (bearing), replacing, (rear)
756-015	3.00	Cross stay, checking and adjusting
756-024	1.00	Bogie beam, changing rubber spring, one side (front)
756-026	3.00	Bogie, replacing all rubber elements both sides
756-027	1.50	A-frame bushing, front on load unit, changing
76		SHOCK ABSORBER; AXLE LOCKING; ANTI ROLL BAR; LEVEL / SIDE CONTROL
761-001	1.50	Shock absorber front, replacing all
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.50	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.00	Windscreen, replacing
843-012	1.50	Rear window, replacing
843-013	1.00	Side window, replacing
843-048	1.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-002	1.00	Air suspension for operator's seat, changing

Op.no.	time (h)	Notes
87		AIR CONDITIONING UNIT
873-004	2.00	Heater core, replacing
873-006	2.00	Fan motor, replacing
873-008	1.50	Heat control valve, replacing
874-002	1.50	Refrigerant, draining
874-003	0.50	Cooling unit, performance test
874-005	2.00	Refrigerant, filling excl vacuum pumping
874-006	4.00	Compressor, replacing incl draining and filling
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
913-003	0.50	Hydraulic pump, checking and adjusting standby pressure
913-008	2.00	Hydraulic pump, ground dependent, changing
94		UNIT, LOAD HANDLING
945-010	1.50	Tilt cylinder removed, repacking
95		LOAD CARRIER
951-001	0.50	Tipping control, adjusting
951-002	2.00	Tipping valve, changing wire
951-003	0.50	Dump body position indicator, adjusting
951-004	5.00	Hoist cylinder, changing
951-006	3.50	Hoist cylinder removed, reconditioning
951-010	2.00	Tipping valve, replacing
951-040	3.00	Dump body joint, changing tipping bearing
951-041	3.00	Dump body, adjusting against frame
99		MISCELLANEOUS
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
170-001	0.75	Washing, external cleaning
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	1.00	Delivery Inspection, according to Inspection Programme
172-002	7.00	Warranty inspection 100 hours
172-004	10.00	Warranty inspection 1000 hours
173-002	0.25	Maintenance service, daily
173-004	0.75	Maintenance service, every 50 hours
173-007	3.00	Maintenance service, every 250 hours
173-010	3.00	Maintenance service, every 500 hours
173-012	8.00	Maintenance service, every 1000 hours
173-014	16.00	Maintenance service, every 2000 hours
173-059	1.00	Engine, changing oil and filter
173-061	1.50	Transmission, changing oil and filter
173-066	0.50	Drop box, changing oil/cleaning suction strainer
173-074	1.00	Hydraulic oil tank, changing oil and filter
173-075	1.50	Hydraulic oil tank, changing oil and filter incl.cleaning tank
173-085	3.00	Brake system, changing oil/fluid and filter
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-002	2.00	Compression test
210-070	5.50	Engine, removing
210-072	7.00	Engine, installing
210-073	5.50	Engine and transmission, removing
210-074	7.00	Engine and transmission, mounting
214-012	0.75	Valves, adjusting
214-096	1.50	Valve cap, changing
22		LUBRICATING SYSTEM
221-021	0.75	Lubrication oil pressure, checking
23		FUEL SYSTEM
233-001	0.50	Fuel system, bleeding
233-004	0.50	Feed pump, checking feed pressure
236-001	0.50	Idling speed, checking and adjusting
236-002	0.50	Stall speed, checking
236-003	0.50	Idling speed, checking

Op.no.	time (h)	Notes
236-004	0.50	low idling speed, checking and adjusting
236-030	0.50	Injection timing, checking
236-031	1.00	Injection timing adjuster, checking
236-044	0.50	Injection timing, checking
236-073	3.50	Injection pump, replacing incl setting injection timing
237-002	1.75	Injectors, replacing all
25		INLET SYSTEM; EXHAUST SYSTEM
255-070	0.50	Turbocharger, removing
255-071	1.50	Turbocharger, replacing
255-072	1.00	Turbocharger, installing
256-001	0.50	Air cleaner, cleaning filter element
256-002	0.25	Air cleaner, checking prssure drop indicator
256-003	0.50	Air cleaner, primary filter replacing
256-004	0.50	Air cleaner, secondary filter replacing
258-002	1.00	Intercooler, replacing
26		COOLING SYSTEM
261-002	0.25	Coolant, checking anti-freeze resistance
261-004	1.00	Coolant, changing
261-008	1.50	Radiator, replacing
261-010	1.00	Radiator, adjusting
261-072	0.50	Coolant filter, changing
263-001	0.75	Fan motor, removing
263-002	1.00	Fan motor, changing piston rings
263-003	1.00	Fan motor, installing
263-004	1.00	Fan motor, checking working pressure
263-005	0.25	Fan motor, adjusting working pressure
263-006	1.00	Fan hydraulically driven, removing pump
263-007	1.00	Fan hydraulically driven, fitting pump
263-009	0.75	Fan hydraulically driven, replacing oil return filter
263-010	0.50	Pump 3 (P3) standby pressure, checking
263-012	0.50	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	0.50	Fan belt and/or alternator-, compressor belt, replacing all belts
27		ENGINE CONTROL
272-001	1.00	Accelerator control, anti-gas cylinder, adjusting

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.50	Battery charging capacity, checking
311-002	1.50	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
321-074	1.50	Charging test in machine (with measuring instrument)
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
35		LIGHTING
352-002	0.50	Headlights, adjusting
352-008	0.50	Headlamp reflector and/or glass, replacing one incl adjusting
352-024	0.50	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.50	Rear lamp, replacing one
353-018	0.50	Rear lamp, replacing glass or bulb
356-056	0.50	Work lighting, replacing one head lamp assy
356-057	0.50	Work lighting, replacing one insert
36		OTHER ELECTRICAL EQUIPMENT
361-002	0.50	Flasher unit, replacing relay
361-010	0.50	Flasher switch, replacing
361-017	0.50	Flasher lamp, replacing glass or bulb
362-002	0.50	Horn, replacing
362-003	0.50	Reverse alarm, replacing
362-016	0.50	Horn switch, replacing
362-900	1.00	Rotating beacon, installing new
363-002	1.50	Windscreen wiper front, replacing motor
363-003	0.50	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
364-004	0.50	Switch, replacing
364-008	1.50	Brake light switch, replacing
367-020	0.50	ECU, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-001	0.25	Load sensor, adjusting
386-002	0.50	Load sensor, control measurement

Op.no.	time (h)	Notes
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	1.00	Transmission oil pressure, checking
421-051	1.00	Transmission, resistance measuring of solenoides
421-054	4.00	Seal for rear output shaft, replacing
421-059	0.50	Transmission retarder valve, adjusting air pressure
421-060	0.50	Transmission, resistans measuring control system
421-061	0.50	Induction sensor for output shaft, changing
421-062	2.00	Induction sensor for turbine speed, changing
421-065	3.00	Control system, replacing
421-070	7.00	Transmission, removing
421-072	7.00	Transmission, installing
421-073	5.50	Transmission, removing (together with engine)
421-074	7.00	Transmission, installing (together with engine)
421-078	2.00	Transmission, remove and fitting from a non mounted engine
421-079	0.25	Transmission, replacing breather filter
43		GEARBOX,
434-002	1.75	Dropbox, replacing seal for front otput shaft
434-004	2.00	Dropbox, replacing seal for rear output shaft
434-015	7.00	Dropbox, replacing seal for input shaft
434-016	1.00	Dropbox, oil pump, replacing
434-059	0.75	Dropbox, replacing pneumatic air cylinder for high and low gear
434-060	0.50	Dropbox, adjusting control for high and low gear
434-061	1.00	Differential lock longitudinal, adjusting engagement
434-073	3.00	Dropbox, installing
434-074	2.00	Dropbox, removing
45		PROPELLER SHAFT
451-004	1.00	Propeller shaft, rear, replacing
451-005	1.00	Propeller shaft for rear boggie axel, replacing
451-006	3.50	Intermediate shaft and/or bearing, replacing (in frame joint)
451-007	0.50	Propeller shaft, in frame joint, replacing
451-010	0.75	Propeller shaft, front, replacing
451-013	1.50	Propeller shaft, removed reconditioning
451-014	3.50	Propeller shaft between transmission and dropbox, replacing
46		FRONT AXLE; REAR AXLE
461-043	4.00	Hub, replacing seal

Op.no.	time (h)	Notes
468-005	0.50	Differential lock rear, adjusting engagement
48		POWER TAKE OFF
482-000	20.00	Flywheel housing and complete power take off, changing
482-001	3.00	Power take off engine crankshaft for hydraulic pump removed
49		MISCELLANEOUS
491-006	3.50	Oil cooler, replacing
5		BRAKE
51		WHEEL BRAKE
510-001	1.00	Brake linings, checking wear
510-002	0.25	Brake disc for service brake, checking
511-001	0.50	Brake pads for service brake, checking
511-002	4.00	Brake disc, replacing one
511-004	3.00	Brake pads, replacing on both sides of axel
511-005	1.50	Brake pads, replacing (one wheel, front axle)
511-045	2.00	Brake calliper, replacing one
511-081	1.00	Brake calliper removed, reconditioning
512-001	0.50	Brake linings, checking wear rear axle
512-002	4.00	Brake disc, replacing one
512-004	3.00	Brake pads, replacing on both sides of axle
512-005	1.50	Brake pads, replacing (one wheel, first boggie axle)
512-045	2.00	Brake caliper, replacing one
512-081	1.00	Brake caliper, removed, reconditioning
52		HYDRAULIC BRAKE SYSTEM
520-037	1.00	Brake system, bleeding
55		PARKING BRAKE
550-002	0.50	Parking brake, adjusting
550-005	2.00	Parking brake, replacing brake disc
550-009	0.50	Spring brake cylinder, replacing
550-010	1.00	Spring brake cylinder removed, reconditioning
550-012	2.00	Parking brake , replacing brake caliper
550-013	0.75	Parking brake caliper (air), removed reconditioning
550-014	1.50	Parking brake, replacing brake pads
551-003	0.50	Parking brake, (removed) reconditioning of brake caliper

Op.no.	time (h)	Notes
56		COMPRESSED-AIR BRAKE
561-004	1.00	Compressor, replacing
561-022	0.25	Pressure regulator, adjusting
563-010	1.00	Relay valve (load unit), reconditioning incl. removing and fitting
563-073	1.00	Foot brake valve (pneumatic) removed, reconditioning
6		STEERING
64		STEERING
642-026	3.00	Steering gear, replacing
643-010	3.50	Steering linkage, checking and adjusting
645-001	0.50	Steering cylinder bearing, checking clearanse
645-006	5.00	Steering cylinder, replacing
645-028	0.50	Steering system, checking and adjusting working pressure
645-054	1.00	Steering cylinder, replacing bearings
645-060	3.00	Steering cylinder, repacking in machine
645-080	2.00	Steering valve neutral position and valve spool end float, checking
645-081	3.00	Steering valve removed, reconditioning
645-082	3.00	Steering valve, replacing
645-084	1.00	Damping cylinder, checking spring force
645-085	1.50	Damping cylinder, changing seal
647-093	2.00	Auxiliary steering, replacing hydraulic pump
647-095	0.50	Auxiliary steering, adjusting working- and stand-by pressure
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
711-020	3.00	Load unit frame, checking measurements
72		SUSPENSION
727-001	5.00	Spring element front, replacing all
74		FRAME LINK
741-005	0.50	Frame joint, checking clearance
741-006	4.00	Frame joint, measuring and adjusting clearence
741-036	2.00	Frame joint, replacing bearings
742-007	10.00	Frame joint, replacing hitch

Op.no.	time (h)	Notes
742-038	1.50	Articulated joint, checking clearance
742-040	9.00	Steering joint, replacing bearings
742-044	1.00	Articulated joint, replacing bushing
742-046	1.50	Frame joint, changing metallic bearing (machine separated)
75		AXLE SUSPENSION
754-010	3.00	Replacing link bearing (rubber bearing), front axle
754-020	2.00	Load unit triangular stay, replacing link bearing (rubber bearing)
754-021	1.00	Front bogie axle cross stay, adjusting
754-022	1.00	Triangular stay link bearing attachments, adjusting
754-031	1.00	Rear bogie axle cross stay, adjusting
756-010	3.00	Bogie member, replacing rubber element
756-011	6.00	Bogie member, replacing rubber bearing (one side)
756-012	1.00	Cross stay rubber bushing (bearing), replacing (front)
756-014	1.00	Cross stay rubber bushing (bearing), replacing, (rear)
756-015	3.00	Cross stay, checking and adjusting
756-024	1.00	Bogie beam, changing rubber spring, one side (front)
756-026	3.00	Bogie, replacing all rubber elements both sides
756-027	1.50	A-frame bushing, front on load unit, changing
76		SHOCK ABSORBER; AXLE LOCKING; ANTI ROLL BAR; LEVEL / SIDE CONTROL
761-001	1.50	Shock absorber front, replacing all
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.50	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.00	Windscreen, replacing
843-012	1.50	Rear window, replacing
843-013	1.00	Side window, replacing
843-048	1.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-002	1.00	Air suspension for operator's seat, changing

Op.no.	time (h)	Notes
87		AIR CONDITIONING UNIT
873-004	2.00	Heater core, replacing
873-006	2.00	Fan motor, replacing
873-008	1.50	Heat control valve, replacing
874-002	1.50	Refrigerant, draining
874-003	0.50	Cooling unit, performance test
874-005	2.00	Refrigerant, filling excl vacuum pumping
874-006	4.00	Compressor, replacing incl draining and filling
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
913-003	0.50	Hydraulic pump, checking and adjusting standby pressure
913-008	2.00	Hydraulic pump, ground dependent, changing
94		UNIT, LOAD HANDLING
945-010	1.50	Tilt cylinder removed, repacking
95		LOAD CARRIER
951-001	0.50	Tipping control, adjusting
951-002	2.00	Tipping valve, changing wire
951-003	0.50	Dump body position indicator, adjusting
951-004	5.00	Hoist cylinder, changing
951-006	3.50	Hoist cylinder removed, reconditioning
951-010	2.00	Tipping valve, replacing
951-040	3.00	Dump body joint, changing tipping bearing
951-041	3.00	Dump body, adjusting against frame
99		MISCELLANEOUS
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes	
0		GENERAL	
09		MISCELLANEOUS	
090-001	0.70	Engine, basic check	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-001	0.75	Washing, external cleaning	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
171-001	1.00	Arrival Inspection, according to Inspection Programme	
171-002	1.00	Delivery Inspection, according to Inspection Programme	
172-002	3.50	Warranty inspection 100 hours	
172-004	7.50	Warranty inspection 1000 hours	11000 - 19999
172-004	13.00	Warranty inspection 1000 hours	11000 - 19999
173-002	0.30	Maintenance service, daily	
173-004	0.50	Maintenance service, every 50 hours	
173-007	1.00	Maintenance service, every 250 hours	
173-010	3.50	Maintenance service, every 500 hours	
173-012	6.00	Maintenance service, every 1000 hours	
173-014	11.00	Maintenance service, every 2000 hours	
19		GENERAL	
191-021	0.20	Service position 1	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	0.90	E-ECU, MID 128, changing non-programmed ECU	11001 - 12077 61001 - 61118
200-068	1.00	E-ECU, MID 128, changing non-programmed ECU	13001 - 15330
200-068	1.25	E-ECU, MID 128, changing non-programmed ECU	15001 - 19999 72101 - 79999
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	15001 - 19999 72101 - 79999
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	13001 - 19999 72001 - 79999
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU	11001 - 12077 61001 - 61118

Op.no.	time (h)		Notes
21		ENGINE	
210-002	5.50	Compression test	15000 - 19999 72100 - 79999
210-002	2.50	Compression test	11000 - 12999 61000 - 61118
210-070	10.00	Engine, removing	
210-072	11.00	Engine, installing	
210-073	8.50	Engine and transmission, removing	
210-074	8.50	Engine and transmission, mounting	
210-092	0.80	Engine rotation speed sensor (camshaft), replacing	15001 - 19999 72101 - 79999
212-051	1.00	Flywheel housing with power take-off (PTO), removing from engine (out of machine)	
212-052	1.50	Flywheel housing with power take-off (PTO), mounting on engine (out of machine)	
214-012	5.50	Valves, adjusting	15000 - 19999 72100 - 79999
214-012	5.50	Valves, adjusting	15000 - 19999 72100 - 79999
215-042	6.50	Camshaft, replacing	
215-043	3.00	Camshaft setting, checking	13001 - 19999 72100 - 79999
216-014	3.00	Crankshaft, replacing front oil seal	
216-014	1.75	Crankshaft, replacing front oil seal	
216-018	24.00	Crankshaft, replacing rear oil seal	13000 - 19999 72000 - 79999
217-004	4.00	Oil sump gasket, changing	
217-005	4.50	Oil level sensor, changing	
218-001	1.50	Rubber cushion, replacing	
218-007	4.00	Engine mounting rear, changing	
22		LUBRICATING SYSTEM	
221-022	0.60	Lubrication oil pressure, checking with pressure gauge	71000 - 79999 11000 - 19999
223-006	5.00	Oil cooler, replacing	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
233-001	0.70	Fuel system, bleeding	15000 - 19999 72100 - 79999
233-004	0.70	Feed pump, checking feed pressure	15001 - 19999 72101 - 79999
233-004	0.70	Feed pump, checking feed pressure	13001 - 15330 72001 - 72047
233-004	0.70	Feed pump, checking feed pressure	11001 - 12077 61001 - 61118

Op.no.	time (h)		Notes
233-010	2.00	Fuel pump, inspection	11001 - 12077 61001 - 61118
236-002	0.90	Stall speed, checking	
237-002	2.00	Injectors, replacing all	
237-012	5.50	Unit injector, replacing	15000 - 19999 72100 - 79999
237-016	11.00	Injectors, replacing copper sleeve in machine	15000 - 19999 72100 - 79999
237-123	0.70	Injector shut off, manual	
25		INLET SYSTEM; EXHAUST SYSTEM	
255-002	1.25	Turbocharger, inspection	
255-071	2.50	Turbocharger, replacing	
256-006	0.70	Preheating coil, replacing	
258-002	3.00	Intercooler, replacing	
258-016	0.70	Cooling fan motor, intercooler, checking/adjusting low rpm	
258-017	0.80	Cooling fan motor, intercooler, checking/adjusting high rpm	
26		COOLING SYSTEM	
260-002	5.50	Cooling system, flushing	
261-004	0.90	Coolant, changing	13001 - 19999 72001 - 79999
261-004	0.90	Coolant, changing	11000 - 12999 61000 - 61118
261-004	0.90	Coolant, changing	11000 - 12999 61000 - 61118
261-004	0.90	Coolant, changing	13001 - 19999 72001 - 79999
261-011	1.50	Radiator, removing	
261-013	2.00	Radiator, installing	
262-002	2.00	Coolant pump, replacing	
262-002	2.50	Coolant pump, replacing	11000 - 12999 61000 - 61118
262-071	0.90	Coolant pump removed, reconditioning	
262-098	1.25	Thermostat, replacing	13001 - 19999 72001 - 79999
263-063	0.70	Cooling fan motor, radiator, checking/adjusting low rpm	
263-064	0.80	Cooling fan motor, radiator, checking/adjusting high rpm	

Op.no.	time (h)		Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	0.60	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.40	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-002	0.90	Batteries, replacing	
32		ALTERNATOR; CHARGE REGULATOR	
321-002	0.40	Alternator, replacing incl function check	11001 - 12077 61001 - 61118
321-002	0.90	Alternator, replacing incl function check	13001 - 19999 72001 - 79999
33		STARTING SYSTEM	
331-018	0.90	Starter motor, replacing	13001 - 19999 72001 - 79999
331-018	1.75	Starter motor, replacing	11001 - 12077 61001 - 61118
35		LIGHTING	
352-002	0.50	Headlights, adjusting	
352-024	0.75	Headlight, complete, changing (high beam 1 pc.) incl. setting	
352-060	0.75	Headlight, complete, changing (low beam 1 pc.) incl. setting/adjustment	
353-016	0.50	Rear lamp, replacing one	
356-056	0.50	Work lighting, replacing one head lamp assy	
356-057	0.50	Work lighting, replacing one insert	
36		OTHER ELECTRICAL EQUIPMENT	
360-001	0.75	Combination control (by steering wheel), changing	
361-002	1.00	Flasher unit, replacing relay	
361-017	0.50	Flasher lamp, replacing glass or bulb	
362-002	0.50	Horn, replacing	
362-003	0.50	Reverse alarm, replacing	
362-900	1.00	Rotating beacon, installing new	
363-002	1.25	Windscreen wiper front, replacing motor	
363-004	0.50	Windscreen flusher pump, replacing	
364-004	0.25	Switch, replacing	
366-060	0.70	C-ECU, MID178, changing non-programmed ECU	11001 - 13574 61001 - 61118
366-062	0.70	C-ECU, MID178, changing pre-programmed ECU	11001 - 13574 61001 - 61118

Op.no.	time (h)		Notes
366-064	1.00	V-ECU, MID 187, changing non-programmed ECU	13575 - 19999 72101 - 79999
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	11001 - 13574 61001 - 61118
366-066	0.90	V-ECU, MID 187, changing pre-programmed ECU	13575 - 19999 72101 - 79999
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	11001 - 13574 61001 - 61118
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-008	0.60	Engine rotation speed sensor, replacing	13001 - 19999 72001 - 79999
39		MISCELLANEOUS	
390-902	2.00	CareTrack, installing new	
398-001	0.50	CareTrack antenna, replacing	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-001	1.75	Checking of main, torque converter and lubricating oil pressure	
421-002	1.75	Transmission oil pressure, checking	
421-047	0.50	Gear selector, replacing	
421-054	2.00	Seal for rear output shaft, replacing	13001 - 19999 72001 - 79999
421-057	3.00	Retarder valve, replacing of seal	
421-062	1.50	Induction sensor for turbine speed, changing	
421-070	10.00	Transmission, removing	13001 - 19999 72001 - 79999
421-072	11.00	Transmission, installing	13001 - 19999 72001 - 79999
421-083	1.25	Transmission, remove from a non mounted engine	
421-084	1.00	Transmission, fitting on a non mounted engine	
43		GEARBOX,	
432-076	0.70	T-ECU, MID 130, changing non-programmed ECU	
432-078	0.60	T-ECU, MID 130, changing pre-programmed ECU	
434-064	0.50	Differential lock longitudinal, adjustment of sender unit	
434-073	4.00	Dropbox, installing	
434-074	3.00	Dropbox, removing	
45		PROPELLER SHAFT	
451-006	6.50	Intermediate shaft and/or bearing, replacing (in frame joint)	15534 - 19999 72219 - 79999

Op.no.	time (h)	Notes	
46		FRONT AXLE; REAR AXLE	
461-011	8.00	Centre gear , removing and fitting	
461-037	4.00	Hub reduction, removing	
461-038	2.50	Hub reduction, installing	
463-006	9.00	Spindle, replacing one side	
463-011	8.00	Centre gear, removing and fitting	
463-016	0.50	Dog clutch 6x6, checking and adjusting	
463-079	2.00	Output shaft 6-wheel drive, sealing and bearing, replacing	
464-011	8.00	Centre gear, removing and fitting	
464-084	9.50	Spindle, replacing one side	
468-005	0.50	Differential lock rear, adjusting engagement	
468-062	0.50	Transverse differential lock/axle, checking and adjusting	
48		POWER TAKE OFF	
482-004	8.00	Power take-off, between engine and gearbox, reconditioning	72001 - 79999 15001 - 19999
49		MISCELLANEOUS	
491-006	1.25	Oil cooler, replacing	
5		BRAKE	
51		WHEEL BRAKE	
511-002	6.50	Brake disc, replacing one	
511-005	1.75	Brake pads, replacing (one wheel, front axle)	
511-045	4.00	Brake calliper, replacing one	
511-081	1.00	Brake calliper removed, reconditioning	
512-002	4.00	Brake disc, replacing one	
512-005	1.75	Brake pads, replacing (one wheel, first boggie axle)	
512-045	4.00	Brake caliper, replacing one	
512-045	4.00	Brake caliper, replacing one	
513-005	1.75	Brake pads, replacing (one wheel, 2:d boggie axle)	
52		HYDRAULIC BRAKE SYSTEM	
520-037	1.00	Brake system, bleeding	
55		PARKING BRAKE	
550-005	3.00	Parking brake, replacing brake disc	
550-009	1.00	Spring brake cylinder, replacing	
550-012	2.00	Parking brake , replacing brake caliper	
550-014	1.50	Parking brake, replacing brake pads	
550-014	1.75	Parking brake, replacing brake pads	

Op.no.	time (h)		Notes
550-015	0.50	Parking brake, manually releasing	
550-016	0.50	Parking brake lever, changing	
553-000	0.40	Load and dump brake, working pressure, checking and adjusting	
56		COMPRESSED-AIR BRAKE	
560-002	1.25	Compressed air brake, function check	
560-003	0.10	Brake system, relieve pressure	
561-004	2.50	Compressor, replacing	13001 - 19999
561-023	0.30	Relief/Cut-in pressure, check	
561-024	0.30	Relief/Cut-in pressure, adjusting	13001 - 19999
563-004	1.75	Foot brake valve (pneum), replacing	11731 - 19999
6		STEERING	
64		STEERING	
642-026	3.00	Steering gear, replacing	
642-058	1.00	Steering gear, check and adj.	
643-010	1.50	Steering linkage, checking and adjusting	72210 - 79999 15514 - 19999
643-010	2.00	Steering linkage, checking and adjusting	71000 - 72209 11000 - 15513
643-012	0.40	Steering angle, checking and adjusting	72210 - 79999 15514 - 19999
643-013	0.80	Steering times, checking and adjusting	72210 - 79999 15514 - 19999
643-014	1.00	Steering valve, neutral position, checking and adjusting	72210 - 79999 15514 - 19999
643-017	2.50	Lever bracket, steering bearing, replacing	72210 - 79999 15514 - 19999
645-004	1.00	Steering cylinder, removing	
645-005	1.25	Steering cylinder, installing	
645-054	0.60	Steering cylinder, replacing bearings	15207 - 19999 72148 - 79999
645-054	2.50	Steering cylinder, replacing bearings	
645-054	0.50	Steering cylinder, replacing bearings	11000 - 15206 71000 - 72148
645-060	2.00	Steering cylinder, repacking in machine	
645-077	1.00	Steering cylinder removed, reconditioning incl replacing bearings	
645-084	1.00	Damping cylinder, checking spring force	
645-085	1.25	Damping cylinder, changing seal	
647-095	1.00	Auxiliary steering, adjusting working- and stand-by pressure	
647-096	1.00	Auxiliary steering, hydraulic pump, removing	

Op.no.	time (h)		Notes
647-097	2.00	Auxiliary steering, hydraulic pump, installation	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
715-015	0.90	Protecting plate, removal	
715-016	1.50	Protecting plate, installation	
74		FRAME LINK	
741-001	7.50	Frame joint, separating machine	15534 - 19999 72219 - 79999
741-036	2.00	Frame joint, replacing bearings	
741-041	1.50	Frame joint, changing bearing, machine separated (on load unit frame)	15534 - 19999 72219 - 79999
742-040	8.00	Steering joint, replacing bearings	
75		AXLE SUSPENSION	
754-010	1.50	Replacing link bearing (rubber bearing), front axle	
756-011	5.50	Bogie member, replacing rubber bearing (one side)	
756-024	2.00	Bogie beam, changing rubber spring, one side (front)	
756-027	2.00	A-frame bushing, front on load unit, changing	
756-028	2.50	A-frame bushing, rear on load unit, changing	
756-029	0.90	Bogie beam, changing rubber bushing on removed beam	
756-030	7.00	Bogie beam, changing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-001	0.60	Wheel, removing and fitting one	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	4.00	Cab, removing	
810-002	4.50	Cab, installing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-002	0.60	Engine hood, installing	
821-060	0.50	Electric hood pump, changing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	1.00	Door, replacing	11000 - 19999

Op.no.	time (h)		Notes
			71000 - 79999 61000 - 61118
831-006	0.60	Door lock, replacing	
831-052	0.60	Cab door, removing door catch	11000 - 19999 71000 - 79999 61000 - 61118
831-053	0.30	Cab door, installing door catch	11000 - 19999 71000 - 79999 61000 - 61118
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-002	3.00	Windscreen, replacing	
843-012	3.00	Rear window, replacing	
843-013	2.50	Side window, replacing	
843-048	2.00	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-002	1.00	Air suspension for operator's seat, changing	
852-003	0.80	Operator's seat, removing	
852-004	0.40	Operator's seat, installing	
87		AIR CONDITIONING UNIT	
873-004	3.00	Heater core, replacing	
873-006	1.00	Fan motor, replacing	
873-008	0.90	Heat control valve, replacing	
873-009	0.90	Heat control, replacing	
874-002	1.50	Refrigerant, draining	
874-003	0.80	Cooling unit, performance test	
874-008	2.50	Refrigerant, filling incl vacuum pumping	
874-010	4.00	Condenser, replacing incl draining and filling	
874-011	4.00	Receiver, replacing incl draining and filling	
874-012	5.00	Evaporator, replacing incl draining and filling	
874-014	1.75	Thermostat, replacing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-002	0.40	Hydraulic system, bleeding	11731 - 19999 71001 - 79999
900-003	0.10	Hydraulic system, relieve pressure	
900-005	0.30	Vacuum pump, connection	
900-006	0.20	Vacuum pump, disconnection	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
912-078	0.60	Dump lever, changing	

Op.no.	time (h)		Notes
912-079	10.00	Steering and tipping valve, replacing	
912-080	3.00	Steering and dumping valve (removed), reconditioning	
912-115	5.00	Steering and tipping valve, removal	
912-116	5.00	Steering and tipping valve, installation	
913-003	0.90	Hydraulic pump, checking and adjusting standby pressure	11731 - 19999 72001 - 79999
913-004	0.80	Hydraulic pump, checking and adjusting max working pressure	11731 - 19999 72001 - 79999
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	2.50	Hydraulic pump, replacing	11731 - 19999 71001 - 79999
913-010	2.50	Hydraulic pump, replacing	11000 - 11731 61000 - 61118
913-043	0.70	Torque limiting valve, checking and adjusting	
913-068	1.50	Pump regulator, checking	
914-095	0.90	Dumping lever, checking pressure	
95		LOAD CARRIER	
951-003	0.30	Dump body position indicator, adjusting	
951-004	2.00	Hoist cylinder, changing	
951-005	1.00	Hoist cylinder bearing, changing	
951-005	0.90	Hoist cylinder bearing, changing	
951-006	3.00	Hoist cylinder removed, reconditioning	
951-007	1.00	Hoist cylinder, removal	
951-008	1.00	Hoist cylinder, installation	
951-011	0.30	Cylinder, rear flap, gas pressure, checking and adjusting	
951-030	0.40	Dump body alternative, lowering	
951-040	2.50	Dump body joint, changing tipping bearing	
951-041	2.50	Dump body, adjusting against frame	
99		MISCELLANEOUS	
993-030	0.80	Shift valve, checking	

Op.no.	time (h)	Notes	
0		GENERAL	
09		MISCELLANEOUS	
090-001	0.70	Engine, basic check	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-001	0.75	Washing, external cleaning	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
171-001	1.00	Arrival Inspection, according to Inspection Programme	
171-002	1.00	Delivery Inspection, according to Inspection Programme	
172-002	3.50	Warranty inspection 100 hours	
172-004	7.50	Warranty inspection 1000 hours	11000 - 19999
172-004	13.00	Warranty inspection 1000 hours	11000 - 19999
173-002	0.30	Maintenance service, daily	
173-004	0.50	Maintenance service, every 50 hours	
173-007	1.00	Maintenance service, every 250 hours	
173-010	3.50	Maintenance service, every 500 hours	
173-012	6.00	Maintenance service, every 1000 hours	
173-014	11.00	Maintenance service, every 2000 hours	
19		GENERAL	
191-021	0.20	Service position 1	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	0.90	E-ECU, MID 128, changing non-programmed ECU	11001 - 12077 61001 - 61118
200-068	1.00	E-ECU, MID 128, changing non-programmed ECU	13001 - 15330
200-068	1.25	E-ECU, MID 128, changing non-programmed ECU	15001 - 19999 72101 - 79999
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	15001 - 19999 72101 - 79999
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	13001 - 19999 72001 - 79999
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU	11001 - 12077 61001 - 61118

Op.no.	time (h)		Notes
21		ENGINE	
210-002	5.50	Compression test	15000 - 19999
210-002	2.50	Compression test	
210-070	10.00	Engine, removing	
210-072	11.00	Engine, installing	
210-073	8.50	Engine and transmission, removing	
210-074	8.50	Engine and transmission, mounting	
210-092	0.80	Engine rotation speed sensor (camshaft), replacing	15001 - 19999
212-051	1.00	Flywheel housing with power take-off (PTO), removing from engine (out of machine)	
212-052	1.50	Flywheel housing with power take-off (PTO), mounting on engine (out of machine)	
214-012	5.50	Valves, adjusting	15000 - 19999
214-012	5.50	Valves, adjusting	15000 - 19999
215-042	6.50	Camshaft, replacing	
215-043	3.00	Camshaft setting, checking	13001 - 19999
216-014	3.00	Crankshaft, replacing front oil seal	
216-014	1.75	Crankshaft, replacing front oil seal	
216-018	24.00	Crankshaft, replacing rear oil seal	
217-004	4.00	Oil sump gasket, changing	
217-005	4.50	Oil level sensor, changing	
218-001	1.50	Rubber cushion, replacing	
218-007	4.00	Engine mounting rear, changing	
22		LUBRICATING SYSTEM	
221-022	0.60	Lubrication oil pressure, checking with pressure gauge	11000 - 19999 71000 - 79999
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
233-001	0.70	Fuel system, bleeding	15000 - 19999 72100 - 79999
233-004	0.70	Feed pump, checking feed pressure	15001 - 19999 72101 - 79999
233-004	0.70	Feed pump, checking feed pressure	13001 - 15330 72001 - 72047
233-004	0.70	Feed pump, checking feed pressure	61001 - 61118 11001 - 12077
233-010	2.00	Fuel pump, inspection	61001 - 61118 11001 - 12077
236-002	0.90	Stall speed, checking	
237-002	2.00	Injectors, replacing all	
237-012	5.50	Unit injector, replacing	15000 - 19999
237-016	11.00	Injectors, replacing copper sleeve in machine	15000 - 19999
237-123	0.70	Injector shut off, manual	

Op.no.	time (h)		Notes
25		INLET SYSTEM; EXHAUST SYSTEM	
255-002	1.25	Turbocharger, inspection	
255-071	2.50	Turbocharger, replacing	
256-006	0.70	Preheating coil, replacing	
258-002	3.00	Intercooler, replacing	
258-016	0.70	Cooling fan motor, intercooler, checking/adjusting low rpm	
258-017	0.80	Cooling fan motor, intercooler, checking/adjusting high rpm	
26		COOLING SYSTEM	
260-002	5.50	Cooling system, flushing	
261-004	0.90	Coolant, changing	13001 - 19999 72001 - 79999
261-004	0.90	Coolant, changing	
261-004	0.90	Coolant, changing	
261-004	0.90	Coolant, changing	13001 - 19999 72001 - 79999
261-011	1.50	Radiator, removing	
261-013	2.00	Radiator, installing	
262-002	2.00	Coolant pump, replacing	
262-002	2.50	Coolant pump, replacing	
262-071	0.90	Coolant pump removed, reconditioning	
262-098	1.25	Thermostat, replacing	13001 - 19999 72001 - 79999
263-063	0.70	Cooling fan motor, radiator, checking/adjusting low rpm	
263-064	0.80	Cooling fan motor, radiator, checking/adjusting high rpm	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	0.60	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.40	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-002	0.90	Batteries, replacing	
32		ALTERNATOR; CHARGE REGULATOR	
321-002	0.40	Alternator, replacing incl function check	11001 - 12077 61001 - 61118
321-002	0.90	Alternator, replacing incl function check	13001 - 19999 72001 - 79999

Op.no.	time (h)		Notes
33		STARTING SYSTEM	
331-018	0.90	Starter motor, replacing	13001 - 19999 72001 - 79999
331-018	1.75	Starter motor, replacing	11001 - 12077 61001 - 61118
35		LIGHTING	
352-002	0.50	Headlights, adjusting	
352-024	0.75	Headlight, complete, changing (high beam 1 pc.) incl. setting	
352-060	0.75	Headlight, complete, changing (low beam 1 pc.) incl. setting/adjustment	
353-016	0.50	Rear lamp, replacing one	
356-056	0.50	Work lighting, replacing one head lamp assy	
356-057	0.50	Work lighting, replacing one insert	
36		OTHER ELECTRICAL EQUIPMENT	
360-001	0.75	Combination control (by steering wheel), changing	
361-002	1.00	Flasher unit, replacing relay	
361-017	0.50	Flasher lamp, replacing glass or bulb	
362-002	0.50	Horn, replacing	
362-003	0.50	Reverse alarm, replacing	
362-900	1.00	Rotating beacon, installing new	
363-002	1.25	Windscreen wiper front, replacing motor	
363-004	0.50	Windscreen flusher pump, replacing	
364-004	0.25	Switch, replacing	
366-060	0.70	C-ECU, MID178, changing non-programmed ECU	11001 - 13574 61001 - 61118
366-062	0.70	C-ECU, MID178, changing pre-programmed ECU	11001 - 13574 61001 - 61118
366-064	1.00	V-ECU, MID 187, changing non-programmed ECU	13575 - 19999 72101 - 79999
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	11001 - 13574 61001 - 61118
366-066	0.90	V-ECU, MID 187, changing pre-programmed ECU	13575 - 19999 72101 - 79999
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	11001 - 13574 61001 - 61118
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-008	0.60	Engine rotation speed sensor, replacing	13001 - 19999 72001 - 79999
39		MISCELLANEOUS	
390-902	2.00	CareTrack, installing new	
398-001	0.50	CareTrack antenna, replacing	

Op.no.	time (h)		Notes
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-001	1.75	Checking of main, torque converter and lubricating oil pressure	
421-002	1.75	Transmission oil pressure, checking	
421-047	0.50	Gear selector, replacing	
421-054	2.00	Seal for rear output shaft, replacing	13001 - 19999 72001 - 79999
421-057	3.00	Retarder valve, replacing of seal	
421-062	1.50	Induction sensor for turbine speed, changing	
421-070	10.00	Transmission, removing	13001 - 19999 72001 - 79999
421-072	11.00	Transmission, installing	13001 - 19999 72001 - 79999
421-083	1.25	Transmission, remove from a non mounted engine	
421-084	1.00	Transmission, fitting on a non mounted engine	
43		GEARBOX,	
432-076	0.70	T-ECU, MID 130, changing non-programmed ECU	
432-078	0.60	T-ECU, MID 130, changing pre-programmed ECU	
434-064	0.50	Differential lock longitudinal, adjustment of sender unit	
434-073	4.00	Dropbox, installing	
434-074	3.00	Dropbox, removing	
45		PROPELLER SHAFT	
451-006	6.50	Intermediate shaft and/or bearing, replacing (in frame joint)	15534 - 19999 72219 - 79999
46		FRONT AXLE; REAR AXLE	
461-011	8.00	Centre gear , removing and fitting	
461-037	4.00	Hub reduction, removing	
461-038	2.50	Hub reduction, installing	
463-016	0.50	Dog clutch 6x6, checking and adjusting	
464-011	8.00	Centre gear, removing and fitting	
464-084	9.50	Spindle, replacing one side	
468-005	0.50	Differential lock rear, adjusting engagement	
468-062	0.50	Transverse differential lock/axle, checking and adjusting	
48		POWER TAKE OFF	
482-004	8.00	Power take-off, between engine and gearbox, reconditioning	15001 - 19999 72001 - 79999

Op.no.	time (h)	Notes	
49		MISCELLANEOUS	
491-006	1.25	Oil cooler, replacing	
5		BRAKE	
51		WHEEL BRAKE	
511-002	6.50	Brake disc, replacing one	
511-005	1.75	Brake pads, replacing (one wheel, front axle)	
511-045	4.00	Brake calliper, replacing one	
511-081	1.00	Brake calliper removed, reconditioning	
512-002	4.00	Brake disc, replacing one	
512-045	4.00	Brake caliper, replacing one	
512-045	4.00	Brake caliper, replacing one	
52		HYDRAULIC BRAKE SYSTEM	
520-037	1.00	Brake system, bleeding	
55		PARKING BRAKE	
550-005	3.00	Parking brake, replacing brake disc	
550-009	1.00	Spring brake cylinder, replacing	
550-012	2.00	Parking brake , replacing brake caliper	
550-014	1.50	Parking brake, replacing brake pads	
550-014	1.75	Parking brake, replacing brake pads	
550-015	0.50	Parking brake, manually releasing	
550-016	0.50	Parking brake lever, changing	
553-000	0.40	Load and dump brake, working pressure, checking and adjusting	
56		COMPRESSED-AIR BRAKE	
560-002	1.25	Compressed air brake, function check	
560-003	0.10	Brake system, relieve pressure	
561-004	2.50	Compressor, replacing	13001 - 19999
561-023	0.30	Relief/Cut-in pressure, check	
561-024	0.30	Relief/Cut-in pressure, adjusting	13001 - 19999
6		STEERING	
64		STEERING	
642-026	3.00	Steering gear, replacing	
642-058	1.00	Steering gear, check.and adj.	
643-010	1.50	Steering linkage, checking and adjusting	15514 - 19999 72210 - 79999
643-010	2.00	Steering linkage, checking and adjusting	11000 - 15513

Op.no.	time (h)		Notes
			71000 - 72209
643-012	0.40	Steering angle, checking and adjusting	15514 - 19999 72210 - 79999
643-013	0.80	Steering times, checking and adjusting	15514 - 19999 72210 - 79999
643-014	1.00	Steering valve, neutral position, checking and adjusting	15514 - 19999 72210 - 79999
643-017	2.50	Lever bracket, steering bearing, replacing	15514 - 19999 72210 - 79999
645-004	1.00	Steering cylinder, removing	
645-005	1.25	Steering cylinder, installing	
645-054	0.60	Steering cylinder, replacing bearings	15207 - 19999 72148 - 79999
645-054	2.50	Steering cylinder, replacing bearings	
645-054	0.50	Steering cylinder, replacing bearings	11000 - 15206 71000 - 72148
645-060	2.00	Steering cylinder, repacking in machine	
645-077	1.00	Steering cylinder removed, reconditioning incl replacing bearings	
645-084	1.00	Damping cylinder, checking spring force	
645-085	1.25	Damping cylinder, changing seal	
647-095	1.00	Auxiliary steering, adjusting working- and stand-by pressure	
647-096	1.00	Auxiliary steering, hydraulic pump, removing	
647-097	2.00	Auxiliary steering, hydraulic pump, installation	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
715-015	0.90	Protecting plate, removal	
715-016	1.50	Protecting plate, installation	
74		FRAME LINK	
741-001	7.50	Frame joint, separating machine	15534 - 19999 72219 - 79999
741-036	2.00	Frame joint, replacing bearings	
741-041	1.50	Frame joint, changing bearing, machine separated (on load unit frame)	15534 - 19999 72219 - 79999
742-040	8.00	Steering joint, replacing bearings	
75		AXLE SUSPENSION	
754-010	1.50	Replacing link bearing (rubber bearing), front axle	
756-011	5.50	Bogie member, replacing rubber bearing (one side)	
756-027	2.00	A-frame bushing, front on load unit, changing	

Op.no.	time (h)		Notes
756-028	2.50	A-frame bushing, rear on load unit, changing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-001	0.60	Wheel, removing and fitting one	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-002	0.60	Engine hood, installing	
821-060	0.50	Electric hood pump, changing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	1.00	Door, replacing	61000 - 61118 11000 - 19999 71000 - 79999
831-006	0.60	Door lock, replacing	
831-052	0.60	Cab door, removing door catch	61000 - 61118 11000 - 19999 71000 - 79999
831-053	0.30	Cab door, installing door catch	61000 - 61118 11000 - 19999 71000 - 79999
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-002	3.00	Windscreen, replacing	
843-012	3.00	Rear window, replacing	
843-013	2.50	Side window, replacing	
843-048	2.00	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-002	1.00	Air suspension for operator's seat, changing	
852-003	0.80	Operator's seat, removing	
852-004	0.40	Operator's seat, installing	
87		AIR CONDITIONING UNIT	
873-004	3.00	Heater core, replacing	
873-006	1.00	Fan motor, replacing	
873-008	0.90	Heat control valve, replacing	
873-009	0.90	Heat control, replacing	
874-002	1.50	Refrigerant, draining	
874-003	0.80	Cooling unit, performance test	
874-008	2.50	Refrigerant, filling incl vacuum pumping	
874-010	4.00	Condenser, replacing incl draining and filling	
874-011	4.00	Receiver, replacing incl draining and filling	
874-012	5.00	Evaporator, replacing incl draining and filling	

Op.no.	time (h)		Notes
874-014	1.75	Thermostat, replacing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-002	0.40	Hydraulic system, bleeding	11731 - 19999
900-003	0.10	Hydraulic system, relieve pressure	
900-005	0.30	Vacuum pump, connection	
900-006	0.20	Vacuum pump, disconnection	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
912-078	0.60	Dump lever, changing	
912-079	10.00	Steering and tipping valve, replacing	
912-080	3.00	Steering and dumping valve (removed), reconditioning	
912-115	5.00	Steering and tipping valve, removal	
912-116	5.00	Steering and tipping valve, installation	
913-003	0.90	Hydraulic pump, checking and adjusting standby pressure	11000 - 19999
913-004	0.80	Hydraulic pump, checking and adjusting max working pressure	11000 - 19999
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	2.50	Hydraulic pump, replacing	11731 - 19999
913-010	2.50	Hydraulic pump, replacing	11000 - 11730
913-043	0.70	Torque limiting valve, checking and adjusting	
913-068	1.50	Pump regulator, checking	
914-095	0.90	Dumping lever, checking pressure	
95		LOAD CARRIER	
951-003	0.30	Dump body position indicator, adjusting	
951-004	2.00	Hoist cylinder, changing	
951-005	1.00	Hoist cylinder bearing, changing	
951-005	0.90	Hoist cylinder bearing, changing	
951-006	3.00	Hoist cylinder removed, reconditioning	
951-007	1.00	Hoist cylinder, removal	
951-008	1.00	Hoist cylinder, installation	
951-011	0.30	Cylinder, rear flap, gas pressure, checking and adjusting	
951-030	0.40	Dump body alternative, lowering	
951-040	2.50	Dump body joint, changing tipping bearing	
951-041	2.50	Dump body, adjusting against frame	
99		MISCELLANEOUS	
993-030	0.80	Shift valve, checking	

Op.no.	time (h)	Notes	
0		GENERAL	
09		MISCELLANEOUS	
090-001	0.70	Engine, basic check	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
172-002	3.50	Warranty inspection 100 hours	
172-004	13.00	Warranty inspection 1000 hours	
173-002	0.30	Maintenance service, daily	
173-004	0.50	Maintenance service, every 50 hours	
173-007	1.00	Maintenance service, every 250 hours	
173-010	3.00	Maintenance service, every 500 hours	
173-012	6.00	Maintenance service, every 1000 hours	
173-014	11.00	Maintenance service, every 2000 hours	
173-018	19.00	Maintenance service, every 4000 hours	
173-022	13.00	Maintenance service, every 6000 hours	
19		GENERAL	
191-021	0.20	Service position 1	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.25	E-ECU, MID 128, changing non-programmed ECU	
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-002	5.50	Compression test	
210-073	8.50	Engine and transmission, removing	
210-074	8.50	Engine and transmission, mounting	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
210-092	0.80	Engine rotation speed sensor (camshaft), replacing	73001 - 79999 13001 - 69999
214-012	5.50	Valves, adjusting	
214-012	5.50	Valves, adjusting	
215-042	6.50	Camshaft, replacing	
215-043	3.00	Camshaft setting, checking	73001 - 79999 13001 - 69999
216-014	1.75	Crankshaft, replacing front oil seal	
216-018	24.00	Crankshaft, replacing rear oil seal	

Op.no.	time (h)	Notes	
217-004	4.00	Oil sump gasket, changing	
217-005	4.50	Oil level sensor, changing	
218-001	1.50	Rubber cushion, replacing	
218-007	4.00	Engine mounting rear, changing	
22		LUBRICATING SYSTEM	
221-022	0.60	Lubrication oil pressure, checking with pressure gauge	73001 - 79999 13001 - 69999
223-006	5.00	Oil cooler, replacing	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
233-001	0.70	Fuel system, bleeding	
233-004	0.70	Feed pump, checking feed pressure	
233-010	2.00	Fuel pump, inspection	
236-002	0.90	Stall speed, checking	
237-010	0.40	Unit injectors, adjusting pretension	
237-012	5.50	Unit injector, replacing	
237-016	11.00	Injectors, replacing copper sleeve in machine	
25		INLET SYSTEM; EXHAUST SYSTEM	
255-002	1.25	Turbocharger, inspection	
255-071	2.50	Turbocharger, replacing	
256-006	0.70	Preheating coil, replacing	
258-002	3.00	Intercooler, replacing	
258-014	0.90	Fan pump, removing	
258-015	1.50	Fan pump, installation	
258-016	0.70	Cooling fan motor, intercooler, checking/adjusting low rpm	
258-017	0.80	Cooling fan motor, intercooler, checking/adjusting high rpm	
26		COOLING SYSTEM	
260-002	5.50	Cooling system, flushing	
261-004	0.90	Coolant, changing	
261-004	0.90	Coolant, changing	
261-011	1.50	Radiator, removing	
261-013	2.00	Radiator, installing	
262-002	2.00	Coolant pump, replacing	
262-071	0.90	Coolant pump removed, reconditioning	
262-098	1.25	Thermostat, replacing	
263-023	0.90	Fan pump, removing	
263-024	1.50	Fan pump, installing	
263-063	0.70	Cooling fan motor, radiator, checking/adjusting low rpm	

Op.no.	time (h)	Notes
263-064	0.80	Cooling fan motor, radiator, checking/adjusting high rpm
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	0.60	I-ECU, MID 140, changing non-programmed ECU
300-074	0.40	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-002	0.90	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.90	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	0.90	Starter motor, replacing
35		LIGHTING
352-002	0.50	Headlights, adjusting
36		OTHER ELECTRICAL EQUIPMENT
363-002	1.25	Windscreen wiper front, replacing motor
366-064	1.00	V-ECU, MID 187, changing non-programmed ECU
366-066	0.90	V-ECU, MID 187, changing pre-programmed ECU
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-008	0.60	Engine rotation speed sensor, replacing
39		MISCELLANEOUS
390-902	2.00	CareTrack, installing new
398-001	0.50	CareTrack antenna, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-001	1.75	Checking of main, torque converter and lubricating oil pressure
421-001	0.70	Checking of main, torque converter and lubricating oil pressure
421-054	2.00	Seal for rear output shaft, replacing
421-062	1.50	Induction sensor for turbine speed, changing
421-070	10.00	Transmission, removing
421-072	11.00	Transmission, installing

Op.no.	time (h)	Notes
421-083	1.25	Transmission, remove from a non mounted engine
421-084	1.50	Transmission, fitting on a non mounted engine
43		GEARBOX,
432-076	0.70	T-ECU, MID 130, changing non-programmed ECU
432-078	0.60	T-ECU, MID 130, changing pre-programmed ECU
434-002	1.75	Dropbox, replacing seal for front output shaft
434-004	2.00	Dropbox, replacing seal for rear output shaft
434-064	0.60	Differential lock longitudinal, adjustment of sender unit
434-065	0.40	Rotation speed sensor, replacing
434-073	4.00	Dropbox, installing
434-074	3.00	Dropbox, removing
45		PROPELLER SHAFT
451-006	6.50	Intermediate shaft and/or bearing, replacing (in frame joint)
46		FRONT AXLE; REAR AXLE
461-011	8.00	Centre gear , removing and fitting
461-037	4.00	Hub reduction, removing
461-038	2.50	Hub reduction, installing
463-006	9.00	Spindle, replacing one side
463-011	8.00	Centre gear, removing and fitting
463-016	0.50	Dog clutch 6x6, checking and adjusting
463-079	2.00	Output shaft 6-wheel drive, sealing and bearing, replacing
464-011	8.00	Centre gear, removing and fitting
464-084	9.50	Spindle, replacing one side
468-062	0.50	Transverse differential lock/axle, checking and adjusting
48		POWER TAKE OFF
482-004	8.00	Power take-off, between engine and gearbox, reconditioning
49		MISCELLANEOUS
491-006	1.25	Oil cooler, replacing
5		BRAKE
51		WHEEL BRAKE
511-002	6.50	Brake disc, replacing one
511-005	1.75	Brake pads, replacing (one wheel, front axle)
511-045	4.00	Brake calliper, replacing one

Op.no.	time (h)	Notes
511-081	1.00	Brake calliper removed, reconditioning
512-005	1.75	Brake pads, replacing (one wheel, first boggie axle)
512-045	4.00	Brake caliper, replacing one
512-045	4.00	Brake caliper, replacing one
513-005	1.75	Brake pads, replacing (one wheel, 2:d boggie axle)
52		HYDRAULIC BRAKE SYSTEM
520-037	1.00	Brake system, bleeding
55		PARKING BRAKE
550-005	3.00	Parking brake, replacing brake disc
550-009	1.25	Spring brake cylinder, replacing
550-012	2.00	Parking brake , replacing brake caliper
550-014	1.50	Parking brake, replacing brake pads
550-015	0.30	Parking brake, manually releasing
550-023	0.20	Parking brake, function checking
553-000	0.40	Load and dump brake, working pressure, checking and adjusting
553-002	0.30	Load and Dump brake, function check
56		COMPRESSED-AIR BRAKE
560-002	1.25	Compressed air brake, function check
560-003	0.10	Brake system, relieve pressure
561-004	2.50	Compressor, replacing
561-023	0.30	Relief/Cut-in pressure, check
561-024	0.30	Relief/Cut-in pressure, adjusting
563-004	1.75	Foot brake valve (pneum), replacing
59		MISCELLANEOUS
590-001	0.30	Quick coupling compressed air, replacing
6		STEERING
64		STEERING
642-026	3.00	Steering gear, replacing
642-058	1.00	Steering gear, check.and adj.
643-010	1.50	Steering linkage, checking and adjusting
643-012	0.40	Steering angle, checking and adjusting
643-013	0.80	Steering times, checking and adjusting
643-014	1.00	Steering valve, neutral position, checking and adjusting
643-017	2.50	Lever bracket, steering bearing, replacing
645-004	1.00	Steering cylinder, removing
645-005	1.25	Steering cylinder, installing

Op.no.	time (h)	Notes
645-052	1.00	Steering cylinder removed, reconditioning excl replacing bearings
645-054	0.60	Steering cylinder, replacing bearings
645-054	2.50	Steering cylinder, replacing bearings
645-084	1.25	Damping cylinder, checking spring force
645-085	1.25	Damping cylinder, changing seal
647-095	1.00	Auxiliary steering, adjusting working- and stand-by pressure
647-096	1.00	Auxiliary steering, hydraulic pump, removing
647-097	2.00	Auxiliary steering, hydraulic pump, installation

7 FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT

71 FRAME

711-001	3.00	Frame extension, removing
711-002	4.00	Frame extension, installing
715-015	0.90	Protecting plate, removal
715-016	1.50	Protecting plate, installation

74 FRAME LINK

741-001	7.50	Frame joint, separating machine
741-041	1.50	Frame joint, changing bearing, machine separated (on load unit frame) 73001 - 79999 13001 - 69999
741-050	1.25	Frame oscillating brake, brake pads, replacing
742-040	8.00	Steering joint, replacing bearings

75 AXLE SUSPENSION

751-013	1.00	Cross stay, rubber bushing, replacing
751-013	0.80	Cross stay, rubber bushing, replacing
756-013	1.00	Cross stay, rubber bushing, replacing
756-024	2.00	Bogie beam, changing rubber spring, one side (front)
756-027	2.00	A-frame bushing, front on load unit, changing
756-028	2.50	A-frame bushing, rear on load unit, changing
756-029	0.90	Bogie beam, changing rubber bushing on removed beam
756-030	7.00	Bogie beam, changing

77 WHEELS; TRACKS; TYRE; HUB; DRUM

771-008	0.70	Wheel, removing
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Op.no.	time (h)	Notes	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	4.00	Cab, removing	
810-002	4.50	Cab, installing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-002	0.60	Engine hood, installing	
821-060	0.50	Electric hood pump, changing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	1.00	Door, replacing	73001 - 79999 13001 - 69999
831-006	0.60	Door lock, replacing	
831-052	0.60	Cab door, removing door catch	73001 - 79999 13001 - 69999
831-053	0.30	Cab door, installing door catch	73001 - 79999 13001 - 69999
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-002	3.00	Windscreen, replacing	
843-013	2.50	Side window, replacing	
843-048	2.00	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-002	0.50	Air suspension for operator's seat, changing	
852-003	0.80	Operator's seat, removing	
852-004	0.40	Operator's seat, installing	
87		AIR CONDITIONING UNIT	
873-004	3.00	Heater core, replacing	
873-006	1.00	Fan motor, replacing	
873-008	0.90	Heat control valve, replacing	
873-009	0.90	Heat control, replacing	
874-002	0.40	Refrigerant, draining	
874-003	0.80	Cooling unit, performance test	
874-008	2.50	Refrigerant, filling incl vacuum pumping	
874-010	4.00	Condenser, replacing incl draining and filling	
874-011	4.00	Receiver, replacing incl draining and filling	
874-012	5.00	Evaporator, replacing incl draining and filling	
874-014	1.75	Thermostat, replacing	

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-002	0.40	Hydraulic system, bleeding
900-003	0.10	Hydraulic system, relieve pressure
900-005	0.30	Vacuum pump, connection
900-006	0.20	Vacuum pump, disconnection
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-078	0.60	Dump lever, changing
912-115	5.00	Steering and tipping valve, removal
912-116	5.00	Steering and tipping valve, installation
913-003	0.90	Hydraulic pump, checking and adjusting standby pressure
913-004	0.80	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-023	0.90	Pump, removal
913-024	1.50	Pump, installation
913-042	0.50	Working pumps, checking function
913-043	0.70	Torque limiting valve, checking and adjusting
913-068	1.50	Pump regulator, checking
914-095	0.90	Dumping lever, checking pressure
95		LOAD CARRIER
951-003	0.30	Dump body position indicator, adjusting
951-005	1.00	Hoist cylinder bearing, changing
951-005	0.90	Hoist cylinder bearing, changing
951-006	3.00	Hoist cylinder removed, reconditioning
951-007	1.00	Hoist cylinder, removal
951-008	1.00	Hoist cylinder, installation
951-011	0.30	Cylinder, rear flap, gas pressure, checking and adjusting
951-030	0.40	Dump body alternative, lowering
951-040	2.50	Dump body joint, changing tipping bearing
951-041	2.50	Dump body, adjusting against frame
99		MISCELLANEOUS
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes	
0		GENERAL	
09		MISCELLANEOUS	
090-001	0.70	Engine, basic check	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
172-002	3.50	Warranty inspection 100 hours	
172-004	13.00	Warranty inspection 1000 hours	
173-002	0.30	Maintenance service, daily	
173-004	0.50	Maintenance service, every 50 hours	
173-007	1.00	Maintenance service, every 250 hours	
173-010	3.00	Maintenance service, every 500 hours	
173-012	6.00	Maintenance service, every 1000 hours	
173-014	11.00	Maintenance service, every 2000 hours	
173-018	19.00	Maintenance service, every 4000 hours	
173-022	13.00	Maintenance service, every 6000 hours	
19		GENERAL	
191-021	0.20	Service position 1	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.25	E-ECU, MID 128, changing non-programmed ECU	
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-002	5.50	Compression test	
210-073	8.50	Engine and transmission, removing	
210-074	8.50	Engine and transmission, mounting	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
210-092	0.80	Engine rotation speed sensor (camshaft), replacing	13001 - 69999
214-012	5.50	Valves, adjusting	
214-012	5.50	Valves, adjusting	
215-042	6.50	Camshaft, replacing	
215-043	3.00	Camshaft setting, checking	13001 - 69999
216-014	1.75	Crankshaft, replacing front oil seal	
216-018	24.00	Crankshaft, replacing rear oil seal	
217-004	4.00	Oil sump gasket, changing	

Op.no.	time (h)	Notes	
217-005	4.50	Oil level sensor, changing	
218-001	1.50	Rubber cushion, replacing	
218-007	4.00	Engine mounting rear, changing	
22		LUBRICATING SYSTEM	
221-022	0.60	Lubrication oil pressure, checking with pressure gauge	73001 - 79999 13001 - 69999
223-006	5.00	Oil cooler, replacing	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
233-001	0.70	Fuel system, bleeding	
233-004	0.70	Feed pump, checking feed pressure	
233-010	2.00	Fuel pump, inspection	
236-002	0.90	Stall speed, checking	
237-010	0.40	Unit injectors, adjusting pretension	
237-012	5.50	Unit injector, replacing	
237-016	11.00	Injectors, replacing copper sleeve in machine	
25		INLET SYSTEM; EXHAUST SYSTEM	
255-002	1.25	Turbocharger, inspection	
255-071	2.50	Turbocharger, replacing	
256-006	0.70	Preheating coil, replacing	
258-002	3.00	Intercooler, replacing	
258-014	0.90	Fan pump, removing	
258-015	1.50	Fan pump, installation	
258-016	0.70	Cooling fan motor, intercooler, checking/adjusting low rpm	
258-017	0.80	Cooling fan motor, intercooler, checking/adjusting high rpm	
26		COOLING SYSTEM	
260-002	5.50	Cooling system, flushing	
261-004	0.90	Coolant, changing	
261-004	0.90	Coolant, changing	
261-011	1.50	Radiator, removing	
261-013	2.00	Radiator, installing	
262-002	2.00	Coolant pump, replacing	
262-071	0.90	Coolant pump removed, reconditioning	
262-098	1.25	Thermostat, replacing	
263-023	0.90	Fan pump, removing	
263-024	1.50	Fan pump, installing	
263-063	0.70	Cooling fan motor, radiator, checking/adjusting low rpm	
263-064	0.80	Cooling fan motor, radiator, checking/adjusting high rpm	

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	0.60	I-ECU, MID 140, changing non-programmed ECU
300-074	0.40	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-002	0.90	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.90	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	0.90	Starter motor, replacing
35		LIGHTING
352-002	0.50	Headlights, adjusting
36		OTHER ELECTRICAL EQUIPMENT
363-002	1.25	Windscreen wiper front, replacing motor
366-064	1.00	V-ECU, MID 187, changing non-programmed ECU
366-066	0.90	V-ECU, MID 187, changing pre-programmed ECU
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-008	0.60	Engine rotation speed sensor, replacing
39		MISCELLANEOUS
390-902	2.00	CareTrack, installing new
398-001	0.50	CareTrack antenna, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-001	1.75	Checking of main, torque converter and lubricating oil pressure
421-001	0.70	Checking of main, torque converter and lubricating oil pressure
421-054	2.00	Seal for rear output shaft, replacing
421-062	1.50	Induction sensor for turbine speed, changing
421-070	10.00	Transmission, removing
421-072	11.00	Transmission, installing
421-083	1.25	Transmission, remove from a non mounted engine
421-084	1.50	Transmission, fitting on a non mounted engine

Op.no.	time (h)	Notes
43		GEARBOX,
432-076	0.70	T-ECU, MID 130, changing non-programmed ECU
432-078	0.60	T-ECU, MID 130, changing pre-programmed ECU
434-002	1.75	Dropbox, replacing seal for front output shaft
434-004	2.00	Dropbox, replacing seal for rear output shaft
434-064	0.60	Differential lock longitudinal, adjustment of sender unit
434-065	0.40	Rotation speed sensor, replacing
434-073	4.00	Dropbox, installing
434-074	3.00	Dropbox, removing
45		PROPELLER SHAFT
451-006	6.50	Intermediate shaft and/or bearing, replacing (in frame joint)
46		FRONT AXLE; REAR AXLE
461-011	8.00	Centre gear , removing and fitting
461-037	4.00	Hub reduction, removing
461-038	2.50	Hub reduction, installing
464-011	8.00	Centre gear, removing and fitting
464-084	9.50	Spindle, replacing one side
468-062	0.50	Transverse differential lock/axle, checking and adjusting
48		POWER TAKE OFF
482-004	8.00	Power take-off, between engine and gearbox, reconditioning
49		MISCELLANEOUS
491-006	1.25	Oil cooler, replacing
5		BRAKE
51		WHEEL BRAKE
511-002	6.50	Brake disc, replacing one
511-005	1.75	Brake pads, replacing (one wheel, front axle)
511-045	4.00	Brake calliper, replacing one
511-081	1.00	Brake calliper removed, reconditioning
512-045	4.00	Brake caliper, replacing one
512-045	4.00	Brake caliper, replacing one
52		HYDRAULIC BRAKE SYSTEM
520-037	1.00	Brake system, bleeding

Op.no.	time (h)	Notes
55		PARKING BRAKE
550-005	3.00	Parking brake, replacing brake disc
550-009	1.25	Spring brake cylinder, replacing
550-012	2.00	Parking brake , replacing brake caliper
550-014	1.50	Parking brake, replacing brake pads
550-015	0.30	Parking brake, manually releasing
550-023	0.20	Parking brake, function checking
553-000	0.40	Load and dump brake, working pressure, checking and adjusting
553-002	0.30	Load and Dump brake, function check
56		COMPRESSED-AIR BRAKE
560-002	1.25	Compressed air brake, function check
560-003	0.10	Brake system, relieve pressure
561-004	2.50	Compressor, replacing
561-023	0.30	Relief/Cut-in pressure, check
561-024	0.30	Relief/Cut-in pressure, adjusting
6		STEERING
64		STEERING
642-026	3.00	Steering gear, replacing
642-058	1.00	Steering gear, check.and adj.
643-010	1.50	Steering linkage, checking and adjusting
643-012	0.40	Steering angle, checking and adjusting
643-013	0.80	Steering times, checking and adjusting
643-014	1.00	Steering valve, neutral position, checking and adjusting
643-017	2.50	Lever bracket, steering bearing, replacing
645-004	1.00	Steering cylinder, removing
645-005	1.25	Steering cylinder, installing
645-052	1.00	Steering cylinder removed, reconditioning excl replacing bearings
645-054	0.60	Steering cylinder, replacing bearings
645-054	2.50	Steering cylinder, replacing bearings
645-084	1.25	Damping cylinder, checking spring force
645-085	1.25	Damping cylinder, changing seal
647-095	1.00	Auxiliary steering, adjusting working- and stand-by pressure
647-096	1.00	Auxiliary steering, hydraulic pump, removing
647-097	2.00	Auxiliary steering, hydraulic pump, installation

Op.no.	time (h)	Notes	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
715-015	0.90	Protecting plate, removal	
715-016	1.50	Protecting plate, installation	
74		FRAME LINK	
741-001	7.50	Frame joint, separating machine	
741-041	1.50	Frame joint, changing bearing, machine separated (on load unit frame)	
742-040	8.00	Steering joint, replacing bearings	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-008	0.70	Wheel, removing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-002	0.60	Engine hood, installing	
821-060	0.50	Electric hood pump, changing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	1.00	Door, replacing	73001 - 79999 13001 - 69999
831-006	0.60	Door lock, replacing	
831-052	0.60	Cab door, removing door catch	73001 - 79999 13001 - 69999
831-053	0.30	Cab door, installing door catch	73001 - 79999 13001 - 69999
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-002	3.00	Windscreen, replacing	
843-013	2.50	Side window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-002	0.50	Air suspension for operator's seat, changing	
852-003	0.80	Operator's seat, removing	
852-004	0.40	Operator's seat, installing	
87		AIR CONDITIONING UNIT	
873-004	3.00	Heater core, replacing	
873-006	1.00	Fan motor, replacing	
873-008	0.90	Heat control valve, replacing	
873-009	0.90	Heat control, replacing	

Op.no.	time (h)	Notes
874-002	0.40	Refrigerant, draining
874-003	0.80	Cooling unit, performance test
874-008	2.50	Refrigerant, filling incl vacuum pumping
874-010	4.00	Condenser, replacing incl draining and filling
874-011	4.00	Receiver, replacing incl draining and filling
874-012	5.00	Evaporator, replacing incl draining and filling
874-014	1.75	Thermostat, replacing

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

90 GENERAL

900-002	0.40	Hydraulic system, bleeding
900-003	0.10	Hydraulic system, relieve pressure
900-005	0.30	Vacuum pump, connection
900-006	0.20	Vacuum pump, disconnection

91 WORKING HYDRAULICS; SERVO HYDRAULICS

912-078	0.60	Dump lever, changing
912-115	5.00	Steering and tipping valve, removal
912-116	5.00	Steering and tipping valve, installation
913-003	0.90	Hydraulic pump, checking and adjusting standby pressure
913-004	0.80	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-023	0.90	Pump, removal
913-024	1.50	Pump, installation
913-042	0.50	Working pumps, checking function
913-043	0.70	Torque limiting valve, checking and adjusting
913-068	1.50	Pump regulator, checking
914-095	0.90	Dumping lever, checking pressure

95 LOAD CARRIER

951-003	0.30	Dump body position indicator, adjusting
951-005	1.00	Hoist cylinder bearing, changing
951-005	0.90	Hoist cylinder bearing, changing
951-006	3.00	Hoist cylinder removed, reconditioning
951-007	1.00	Hoist cylinder, removal
951-008	1.00	Hoist cylinder, installation
951-011	0.30	Cylinder, rear flap, gas pressure, checking and adjusting
951-030	0.40	Dump body alternative, lowering
951-040	2.50	Dump body joint, changing tipping bearing

Op.no.	time (h)	Notes
951-041	2.50	Dump body, adjusting against frame
99		MISCELLANEOUS
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
170-001	0.75	Washing, external cleaning
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	1.25	Delivery Inspection, according to Inspection Programme
172-002	7.00	Warranty inspection 100 hours
172-004	10.00	Warranty inspection 1000 hours
173-002	0.25	Maintenance service, daily
173-004	0.75	Maintenance service, every 50 hours
173-007	4.00	Maintenance service, every 250 hours
173-010	4.00	Maintenance service, every 500 hours
173-012	7.00	Maintenance service, every 1000 hours
173-014	16.00	Maintenance service, every 2000 hours
173-059	1.00	Engine, changing oil and filter
173-061	1.50	Transmission, changing oil and filter
173-066	1.00	Drop box, changing oil/cleaning suction strainer
173-074	1.00	Hydraulic oil tank, changing oil and filter
173-075	1.50	Hydraulic oil tank, changing oil and filter incl.cleaning tank
173-085	3.00	Brake system, changing oil/fluid and filter
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-002	2.00	Compression test
210-070	8.50	Engine, removing
210-071	45.00	Engine removed, general overhaul
210-072	11.00	Engine, installing
210-073	5.50	Engine and transmission, removing
210-074	7.00	Engine and transmission, mounting
214-012	0.75	Valves, adjusting
214-096	1.50	Valve cap, changing
23		FUEL SYSTEM
233-001	0.50	Fuel system, bleeding
233-004	0.75	Feed pump, checking feed pressure
236-001	0.50	Idling speed, checking and adjusting
236-002	0.50	Stall speed, checking
236-003	0.25	Idling speed, checking
236-004	0.25	low idling speed, checking and adjusting
236-030	1.50	Injection timing, checking

Op.no.	time (h)	Notes
236-031	1.00	Injection timing adjuster, checking
237-002	2.00	Injectors, replacing all
25		INLET SYSTEM; EXHAUST SYSTEM
255-070	0.50	Turbocharger, removing
255-071	1.50	Turbocharger, replacing
255-072	1.00	Turbocharger, installing
256-001	0.50	Air cleaner, cleaning filter element
256-002	0.25	Air cleaner, checking prssure drop indicator
256-003	0.50	Air cleaner, primary filter replacing
256-004	0.50	Air cleaner, secondary filter replacing
258-002	1.50	Intercooler, replacing
26		COOLING SYSTEM
261-002	0.25	Coolant, checking anti-freeze resistance
261-004	1.50	Coolant, changing
261-008	2.50	Radiator, replacing
261-010	1.00	Radiator, adjusting
261-072	0.50	Coolant filter, changing
262-071	2.00	Coolant pump removed, reconditioning
263-001	0.75	Fan motor, removing
263-002	1.00	Fan motor, changing piston rings
263-003	1.00	Fan motor, installing
263-004	1.00	Fan motor, checking working pressure
263-005	0.25	Fan motor, adjusting working pressure
263-006	1.00	Fan hydraulically driven, removing pump
263-007	1.00	Fan hydraulically driven, fitting pump
263-009	0.75	Fan hydraulically driven, replacing oil return filter
263-010	0.50	Pump 3 (P3) standby pressure, checking
263-012	0.50	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	0.50	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.50	Battery charging capacity, checking
311-002	1.50	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.50	Alternator, replacing incl function check

Op.no.	time (h)	Notes
321-074	1.50	Charging test in machine (with measuring instrument)
33		STARTING SYSTEM
331-099	1.25	Starter motor removed, replacing carbon brush kit
35		LIGHTING
352-002	0.50	Headlights, adjusting
352-008	0.50	Headlamp reflector and/or glass, replacing one incl adjusting
352-024	0.50	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.50	Rear lamp, replacing one
353-018	0.50	Rear lamp, replacing glass or bulb
356-056	0.50	Work lighting, replacing one head lamp assy
356-057	0.50	Work lighting, replacing one insert
36		OTHER ELECTRICAL EQUIPMENT
361-002	0.50	Flasher unit, replacing relay
361-010	0.50	Flasher switch, replacing
361-017	0.50	Flasher lamp, replacing glass or bulb
362-002	0.50	Horn, replacing
362-003	0.50	Reverse alarm, replacing
362-016	0.50	Horn switch, replacing
362-900	1.00	Rotating beacon, installing new
363-002	1.50	Windscreen wiper front, replacing motor
363-003	0.50	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
364-004	0.50	Switch, replacing
364-008	0.50	Brake light switch, replacing
367-020	0.50	ECU, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-001	1.75	Checking of main, torque converter and lubricating oil pressure
421-050	0.75	Transmission, resistance measuring of cableharness
421-051	0.50	Transmission, resistance measuring of solenoides
421-054	4.00	Seal for rear output shaft, replacing
421-057	0.50	Retarder valve, replacing of seal
421-059	0.50	Transmission retarder valve, adjusting air pressure
421-060	0.50	Transmission, resistans measuring control system

Op.no.	time (h)	Notes
421-061	1.00	Induction sensor for output shaft, changing
421-062	0.75	Induction sensor for turbine speed, changing
421-065	5.00	Control system, replacing
421-068	5.50	Transmission, removing (upwards)
421-069	5.50	Transmission, installing (from above)
421-070	7.00	Transmission, removing
421-072	8.00	Transmission, installing
421-078	2.00	Transmission, remove and fitting from a non mounted engine
421-079	0.25	Transmission, replacing breather filter
43		GEARBOX,
434-002	2.00	Dropbox, replacing seal for front output shaft
434-004	2.00	Dropbox, replacing seal for rear output shaft
434-015	4.00	Dropbox, replacing seal for input shaft
434-016	1.00	Dropbox, oil pump, replacing
434-061	0.75	Differential lock longitudinal, adjusting engagement
434-073	4.50	Dropbox, installing
434-074	4.00	Dropbox, removing
45		PROPELLER SHAFT
451-004	1.50	Propeller shaft, rear, replacing
451-005	1.00	Propeller shaft for rear boggie axel, replacing
451-007	0.75	Propeller shaft, in frame joint, replacing
451-010	0.75	Propeller shaft, front, replacing
451-013	1.50	Propeller shaft, removed reconditioning
451-014	3.50	Propeller shaft between transmission and dropbox, replacing
46		FRONT AXLE; REAR AXLE
461-043	4.00	Hub, replacing seal
468-005	0.50	Differential lock rear, adjusting engagement
5		BRAKE
51		WHEEL BRAKE
510-001	1.50	Brake linings, checking wear
510-002	0.25	Brake disc for service brake, checking
511-001	0.50	Brake pads for service brake, checking
511-002	4.50	Brake disc, replacing one
511-004	3.00	Brake pads, replacing on both sides of axel
511-005	1.50	Brake pads, replacing (one wheel, front axle)
511-045	2.00	Brake calliper, replacing one
511-081	1.00	Brake calliper removed, reconditioning

Op.no.	time (h)	Notes
512-001	0.50	Brake linings, checking wear rear axle
512-002	4.50	Brake disc, replacing one
512-004	3.00	Brake pads, replacing on both sides of axle
512-005	1.50	Brake pads, replacing (one wheel, first boggie axle)
512-045	2.50	Brake caliper, replacing one
512-081	1.00	Brake caliper, removed, reconditioning
52		HYDRAULIC BRAKE SYSTEM
520-037	1.00	Brake system, bleeding
55		PARKING BRAKE
550-002	0.50	Parking brake, adjusting
550-005	2.50	Parking brake, replacing brake disc
550-009	0.50	Spring brake cylinder, replacing
550-010	1.00	Spring brake cylinder removed, reconditioning
550-012	1.00	Parking brake , replacing brake caliper
550-013	0.75	Parking brake caliper (air), removed reconditioning
550-014	1.00	Parking brake, replacing brake pads
551-003	1.00	Parking brake, (removed) reconditioning of brake caliper
56		COMPRESSED-AIR BRAKE
561-004	1.00	Compressor, replacing
561-022	0.25	Pressure regulator, adjusting
563-010	1.00	Relay valve (load unit), reconditioning incl. removing and fitting
563-073	1.00	Foot brake valve (pneumatic) removed, reconditioning
6		STEERING
64		STEERING
642-026	3.00	Steering gear, replacing
643-010	3.50	Steering linkage, checking and adjusting
645-001	0.50	Steering cylinder bearing, checking clearanse
645-003	0.50	Steering system working pressure, checking
645-006	5.00	Steering cylinder, replacing
645-054	1.00	Steering cylinder, replacing bearings
645-060	3.00	Steering cylinder, repacking in machine
645-080	2.00	Steering valve neutral position and valve spool end float, checking
645-081	3.00	Steering valve removed, reconditioning
645-082	3.00	Steering valve, replacing

Op.no.	time (h)	Notes
645-084	0.50	Damping cylinder, checking spring force
645-085	1.00	Damping cylinder, changing seal
647-093	2.00	Auxiliary steering, replacing hydraulic pump
647-095	0.50	Auxiliary steering, adjusting working- and stand-by pressure
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
711-020	3.00	Load unit frame, checking measurements
72		SUSPENSION
727-001	5.00	Spring element front, replacing all
74		FRAME LINK
741-005	0.50	Frame joint, checking clearance
741-006	4.00	Frame joint, measuring and adjusting clearance
741-036	2.00	Frame joint, replacing bearings
742-007	10.00	Frame joint, replacing hitch
742-038	1.50	Articulated joint, checking clearance
742-040	9.00	Steering joint, replacing bearings
742-044	1.00	Articulated joint, replacing bushing
742-046	1.50	Frame joint, changing metallic bearing (machine separated)
75		AXLE SUSPENSION
754-010	3.00	Replacing link bearing (rubber bearing), front axle
754-021	1.00	Front bogie axle cross stay, adjusting
754-031	1.00	Rear bogie axle cross stay, adjusting
756-011	6.00	Bogie member, replacing rubber bearing (one side)
756-012	1.00	Cross stay rubber bushing (bearing), replacing (front)
756-014	1.00	Cross stay rubber bushing (bearing), replacing, (rear)
756-015	3.00	Cross stay, checking and adjusting
756-024	1.00	Bogie beam, changing rubber spring, one side (front)
756-026	3.00	Bogie, replacing all rubber elements both sides
76		SHOCK ABSORBER; AXLE LOCKING; ANTI ROLL BAR; LEVEL / SIDE CONTROL
761-001	2.00	Shock absorber front, replacing all

Op.no.	time (h)	Notes
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.50	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.00	Windscreen, replacing
843-012	1.50	Rear window, replacing
843-013	1.00	Side window, replacing
843-048	1.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-002	1.00	Air suspension for operator's seat, changing
87		AIR CONDITIONING UNIT
873-004	1.50	Heater core, replacing
873-006	1.50	Fan motor, replacing
873-008	1.00	Heat control valve, replacing
874-002	1.50	Refrigerant, draining
874-003	0.50	Cooling unit, performance test
874-005	2.00	Refrigerant, filling excl vacuum pumping
874-006	4.00	Compressor, replacing incl draining and filling
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
913-003	0.50	Hydraulic pump, checking and adjusting standby pressure
913-004	0.50	Hydraulic pump, checking and adjusting max working pressure
913-008	2.00	Hydraulic pump, ground dependent, changing
95		LOAD CARRIER
951-001	0.50	Tipping control, adjusting
951-002	2.00	Tipping valve, changing wire
951-003	0.50	Dump body position indicator, adjusting
951-004	5.00	Hoist cylinder, changing
951-006	3.50	Hoist cylinder removed, reconditioning
951-010	2.00	Tipping valve, replacing
951-040	3.00	Dump body joint, changing tipping bearing
951-041	1.50	Dump body, adjusting against frame

Op.no.	time (h)	Notes
99		MISCELLANEOUS
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes	
0		GENERAL	
09		MISCELLANEOUS	
090-001	0.70	Engine, basic check	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-001	0.75	Washing, external cleaning	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
171-001	1.00	Arrival Inspection, according to Inspection Programme	
171-002	1.00	Delivery Inspection, according to Inspection Programme	
172-002	3.50	Warranty inspection 100 hours	
172-004	7.50	Warranty inspection 1000 hours	10000 - 19999
172-004	13.00	Warranty inspection 1000 hours	10000 - 19999
173-002	0.30	Maintenance service, daily	
173-004	0.50	Maintenance service, every 50 hours	
173-007	1.00	Maintenance service, every 250 hours	
173-010	3.50	Maintenance service, every 500 hours	
173-012	6.00	Maintenance service, every 1000 hours	
173-014	11.00	Maintenance service, every 2000 hours	
19		GENERAL	
191-021	0.20	Service position 1	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	0.90	E-ECU, MID 128, changing non-programmed ECU	10001 - 10682 60001 - 60093 70001 - 72999
200-068	1.00	E-ECU, MID 128, changing non-programmed ECU	12001 - 14311 73001 - 74088
200-068	1.25	E-ECU, MID 128, changing non-programmed ECU	14001 - 19999 74001 - 79999
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	14001 - 19999 74001 - 79999
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	12001 - 19999 73001 - 79999
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU	10001 - 10682 60001 - 60093 70001 - 72999

Op.no.	time (h)		Notes
21		ENGINE	
210-002	5.50	Compression test	14000 - 19999 74000 - 79999
210-002	2.50	Compression test	60000 - 60093 10000 - 11999 70000 - 72999
210-070	10.00	Engine, removing	
210-072	11.00	Engine, installing	
210-073	8.50	Engine and transmission, removing	
210-074	8.50	Engine and transmission, mounting	
210-092	0.80	Engine rotation speed sensor (camshaft), replacing	14001 - 19999 74001 - 79999
212-051	1.00	Flywheel housing with power take-off (PTO), removing from engine (out of machine)	
212-052	1.50	Flywheel housing with power take-off (PTO), mounting on engine (out of machine)	
214-012	5.50	Valves, adjusting	14000 - 19999 74000 - 79999
214-012	5.50	Valves, adjusting	14000 - 19999 74000 - 79999
215-042	6.50	Camshaft, replacing	
215-043	3.00	Camshaft setting, checking	12001 - 19999 73001 - 79999
216-014	3.00	Crankshaft, replacing front oil seal	
216-014	1.75	Crankshaft, replacing front oil seal	
216-018	24.00	Crankshaft, replacing rear oil seal	12000 - 19999 73000 - 79999
217-004	4.00	Oil sump gasket, changing	
217-005	4.50	Oil level sensor, changing	
218-001	1.50	Rubber cushion, replacing	
218-007	4.00	Engine mounting rear, changing	
22		LUBRICATING SYSTEM	
221-022	0.60	Lubrication oil pressure, checking with pressure gauge	10000 - 19999 70000 - 79999
223-006	5.00	Oil cooler, replacing	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
233-001	0.70	Fuel system, bleeding	14000 - 19999 74000 - 79999
233-004	0.70	Feed pump, checking feed pressure	14001 - 19999 74001 - 79999
233-004	0.70	Feed pump, checking feed pressure	12001 - 14311 73001 - 74088
233-004	0.70	Feed pump, checking feed pressure	10001 - 10682 60001 - 60093

Op.no.	time (h)		Notes
			70001 - 72999
233-010	2.00	Fuel pump, inspection	10001 - 10682 60001 - 60093 70001 - 72999
236-002	0.90	Stall speed, checking	
237-002	2.00	Injectors, replacing all	
237-012	5.50	Unit injector, replacing	14000 - 19999 74000 - 79999
237-016	11.00	Injectors, replacing copper sleeve in machine	14000 - 19999 74000 - 79999
237-123	0.70	Injector shut off, manual	
25		INLET SYSTEM; EXHAUST SYSTEM	
255-002	1.25	Turbocharger, inspection	
255-071	2.50	Turbocharger, replacing	
256-006	0.70	Preheating coil, replacing	
258-002	3.00	Intercooler, replacing	
258-016	0.70	Cooling fan motor, intercooler, checking/adjusting low rpm	
258-017	0.80	Cooling fan motor, intercooler, checking/adjusting high rpm	
26		COOLING SYSTEM	
260-002	5.50	Cooling system, flushing	
261-004	0.90	Coolant, changing	12001 - 19999 73001 - 79999
261-004	0.90	Coolant, changing	10000 - 11999 60000 - 60093 70000 - 72999
261-004	0.90	Coolant, changing	10000 - 11999 60000 - 60093 70000 - 72999
261-004	0.90	Coolant, changing	12001 - 19999 73001 - 79999
261-011	1.50	Radiator, removing	
261-013	2.00	Radiator, installing	
262-002	2.00	Coolant pump, replacing	
262-002	2.50	Coolant pump, replacing	10000 - 11999 60000 - 60093 70000 - 72999
262-071	0.90	Coolant pump removed, reconditioning	
262-098	1.25	Thermostat, replacing	12001 - 19999 73001 - 79999
263-063	0.70	Cooling fan motor, radiator, checking/adjusting low rpm	
263-064	0.80	Cooling fan motor, radiator, checking/adjusting high rpm	

Op.no.	time (h)		Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	0.60	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.40	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-002	0.90	Batteries, replacing	
32		ALTERNATOR; CHARGE REGULATOR	
321-002	0.40	Alternator, replacing incl function check	10001 - 10682 60001 - 60093 70001 - 72999
321-002	0.90	Alternator, replacing incl function check	12001 - 19999 73001 - 79999
33		STARTING SYSTEM	
331-018	0.90	Starter motor, replacing	12001 - 19999 73001 - 79999
331-018	1.75	Starter motor, replacing	10001 - 10682 60001 - 60093 70001 - 72999
35		LIGHTING	
352-002	0.50	Headlights, adjusting	
352-024	0.75	Headlight, complete, changing (high beam 1 pc.) incl. setting	
352-060	0.75	Headlight, complete, changing (low beam 1 pc.) incl. setting/adjustment	
353-016	0.50	Rear lamp, replacing one	
356-056	0.50	Work lighting, replacing one head lamp assy	
356-057	0.50	Work lighting, replacing one insert	
36		OTHER ELECTRICAL EQUIPMENT	
360-001	0.75	Combination control (by steering wheel), changing	
361-002	1.00	Flasher unit, replacing relay	
361-017	0.50	Flasher lamp, replacing glass or bulb	
362-002	0.50	Horn, replacing	
362-003	0.50	Reverse alarm, replacing	
362-900	1.00	Rotating beacon, installing new	
363-002	1.25	Windscreen wiper front, replacing motor	
363-004	0.50	Windscreen flusher pump, replacing	
364-004	0.25	Switch, replacing	
366-060	0.70	C-ECU, MID178, changing non-programmed ECU	10001 - 12473 60001 - 60093 70001 - 73152
366-062	0.70	C-ECU, MID178, changing pre-programmed ECU	10001 - 12473

Op.no.	time (h)		Notes
			60001 - 60093 70001 - 73152
366-064	1.00	V-ECU, MID 187, changing non-programmed ECU	12474 - 19999 73153 - 79999
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	10001 - 12473 60001 - 60093 70001 - 73152
366-066	0.90	V-ECU, MID 187, changing pre-programmed ECU	12474 - 19999 73153 - 79999
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	10001 - 12473 60001 - 60093 70001 - 73152
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-008	0.60	Engine rotation speed sensor, replacing	12001 - 19999 73001 - 79999
39		MISCELLANEOUS	
390-902	2.00	CareTrack, installing new	
398-001	0.50	CareTrack antenna, replacing	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-001	1.75	Checking of main, torque converter and lubricating oil pressure	
421-002	1.75	Transmission oil pressure, checking	
421-047	0.50	Gear selector, replacing	
421-054	2.00	Seal for rear output shaft, replacing	12001 - 19999 73000 - 79999
421-057	3.00	Retarder valve, replacing of seal	
421-062	1.50	Induction sensor for turbine speed, changing	
421-070	10.00	Transmission, removing	12001 - 19999 73001 - 79999
421-072	11.00	Transmission, installing	12001 - 19999 73001 - 79999
421-083	1.25	Transmission, remove from a non mounted engine	
421-084	1.00	Transmission, fitting on a non mounted engine	
43		GEARBOX,	
432-076	0.70	T-ECU, MID 130, changing non-programmed ECU	
432-078	0.60	T-ECU, MID 130, changing pre-programmed ECU	
434-064	0.50	Differential lock longitudinal, adjustment of sender unit	
434-073	4.00	Dropbox, installing	
434-074	3.00	Dropbox, removing	

Op.no.	time (h)		Notes
45		PROPELLER SHAFT	
451-006	6.50	Intermediate shaft and/or bearing, replacing (in frame joint)	14418 - 19999 74213 - 79999
46		FRONT AXLE; REAR AXLE	
461-011	8.00	Centre gear , removing and fitting	
461-011	8.00	Centre gear , removing and fitting	
461-037	4.00	Hub reduction, removing	
461-038	2.50	Hub reduction, installing	
463-006	9.00	Spindle, replacing one side	
463-011	8.00	Centre gear, removing and fitting	
463-016	0.50	Dog clutch 6x6, checking and adjusting	
463-079	2.00	Output shaft 6-wheel drive, sealing and bearing, replacing	
464-011	8.00	Centre gear, removing and fitting	
464-084	9.50	Spindle, replacing one side	
468-005	0.50	Differential lock rear, adjusting engagement	
468-062	0.50	Transverse differential lock/axle, checking and adjusting	
48		POWER TAKE OFF	
482-004	8.00	Power take-off, between engine and gearbox, reconditioning	14001 - 19999 74001 - 79999
49		MISCELLANEOUS	
491-006	1.25	Oil cooler, replacing	
5		BRAKE	
51		WHEEL BRAKE	
511-002	6.50	Brake disc, replacing one	
511-005	1.75	Brake pads, replacing (one wheel, front axle)	
511-045	4.00	Brake calliper, replacing one	
511-081	1.00	Brake calliper removed, reconditioning	
512-002	4.00	Brake disc, replacing one	
512-005	1.75	Brake pads, replacing (one wheel, first boggie axle)	
512-045	4.00	Brake caliper, replacing one	
512-045	4.00	Brake caliper, replacing one	
513-005	1.75	Brake pads, replacing (one wheel, 2:d boggie axle)	
52		HYDRAULIC BRAKE SYSTEM	
520-037	1.00	Brake system, bleeding	

Op.no.	time (h)		Notes
55		PARKING BRAKE	
550-005	3.00	Parking brake, replacing brake disc	
550-009	1.00	Spring brake cylinder, replacing	
550-012	2.00	Parking brake , replacing brake caliper	
550-014	1.50	Parking brake, replacing brake pads	
550-014	1.75	Parking brake, replacing brake pads	
550-015	0.50	Parking brake, manually releasing	
550-016	0.50	Parking brake lever, changing	
553-000	0.40	Load and dump brake, working pressure, checking and adjusting	
56		COMPRESSED-AIR BRAKE	
560-002	1.25	Compressed air brake, function check	
560-003	0.10	Brake system, relieve pressure	
561-004	2.50	Compressor, replacing	12001 - 19999 73001 - 79999
561-023	0.30	Relief/Cut-in pressure, check	
561-024	0.30	Relief/Cut-in pressure, adjusting	12001 - 19999 73001 - 79999
563-004	1.75	Foot brake valve (pneum), replacing	10369 - 19999 70001 - 79999
6		STEERING	
64		STEERING	
642-026	3.00	Steering gear, replacing	
642-058	1.00	Steering gear, check.and adj.	
643-010	1.50	Steering linkage, checking and adjusting	14400 - 19999 74196 - 79999
643-010	2.00	Steering linkage, checking and adjusting	10000 - 14399 70000 - 74165
643-012	0.40	Steering angle, checking and adjusting	14400 - 19999 74196 - 79999
643-013	0.80	Steering times, checking and adjusting	14400 - 19999 74196 - 79999
643-014	1.00	Steering valve, neutral position, checking and adjusting	14400 - 19999 74196 - 79999
643-017	2.50	Lever bracket, steering bearing, replacing	14400 - 19999 74196 - 79999
645-004	1.00	Steering cylinder, removing	
645-005	1.25	Steering cylinder, installing	
645-054	0.60	Steering cylinder, replacing bearings	14213 - 19999 74072 - 79999
645-054	2.50	Steering cylinder, replacing bearings	
645-054	0.50	Steering cylinder, replacing bearings	10000 - 14212

Op.no.	time (h)		Notes
			70000 - 74071
645-060	2.00	Steering cylinder, repacking in machine	
645-077	1.00	Steering cylinder removed, reconditioning incl replacing bearings	
645-084	1.00	Damping cylinder, checking spring force	
645-085	1.25	Damping cylinder, changing seal	
647-095	1.00	Auxiliary steering, adjusting working- and stand-by pressure	
647-096	1.00	Auxiliary steering, hydraulic pump, removing	
647-097	2.00	Auxiliary steering, hydraulic pump, installation	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
715-015	0.90	Protecting plate, removal	
715-016	1.50	Protecting plate, installation	
74		FRAME LINK	
741-001	7.50	Frame joint, separating machine	14418 - 19999 74213 - 79999
741-036	2.00	Frame joint, replacing bearings	
741-041	1.50	Frame joint, changing bearing, machine separated (on load unit frame)	14418 - 19999 74213 - 79999
742-040	8.00	Steering joint, replacing bearings	
75		AXLE SUSPENSION	
754-010	1.50	Replacing link bearing (rubber bearing), front axle	
756-011	5.50	Bogie member, replacing rubber bearing (one side)	
756-024	2.00	Bogie beam, changing rubber spring, one side (front)	
756-027	2.00	A-frame bushing, front on load unit, changing	
756-028	2.50	A-frame bushing, rear on load unit, changing	
756-029	0.90	Bogie beam, changing rubber bushing on removed beam	
756-030	7.00	Bogie beam, changing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-001	0.60	Wheel, removing and fitting one	

Op.no.	time (h)	Notes	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	4.00	Cab, removing	
810-002	4.50	Cab, installing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-002	0.60	Engine hood, installing	
821-060	0.50	Electric hood pump, changing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	1.00	Door, replacing	60000 - 60093 10000 - 19999 70000 - 79999
831-006	0.60	Door lock, replacing	
831-052	0.60	Cab door, removing door catch	60000 - 60093 10000 - 19999 70000 - 79999
831-053	0.30	Cab door, installing door catch	60000 - 60093 10000 - 19999 70000 - 79999
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-002	3.00	Windscreen, replacing	
843-012	3.00	Rear window, replacing	
843-013	2.50	Side window, replacing	
843-048	2.00	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-002	1.00	Air suspension for operator's seat, changing	
852-003	0.80	Operator's seat, removing	
852-004	0.40	Operator's seat, installing	
87		AIR CONDITIONING UNIT	
873-004	3.00	Heater core, replacing	
873-006	1.00	Fan motor, replacing	
873-008	0.90	Heat control valve, replacing	
873-009	0.90	Heat control, replacing	
874-002	1.50	Refrigerant, draining	
874-003	0.80	Cooling unit, performance test	
874-008	2.50	Refrigerant, filling incl vacuum pumping	
874-010	4.00	Condenser, replacing incl draining and filling	
874-011	4.00	Receiver, replacing incl draining and filling	
874-012	5.00	Evaporator, replacing incl draining and filling	
874-014	1.75	Thermostat, replacing	

Op.no.	time (h)		Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-002	0.40	Hydraulic system, bleeding	10369 - 19999 70001 - 79999
900-003	0.10	Hydraulic system, relieve pressure	
900-005	0.30	Vacuum pump, connection	
900-006	0.20	Vacuum pump, disconnection	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
912-078	0.60	Dump lever, changing	
912-079	10.00	Steering and tipping valve, replacing	
912-080	3.00	Steering and dumping valve (removed), reconditioning	
912-115	5.00	Steering and tipping valve, removal	
912-116	5.00	Steering and tipping valve, installation	
913-003	0.90	Hydraulic pump, checking and adjusting standby pressure	70001 - 79999 10369 - 19999
913-004	0.80	Hydraulic pump, checking and adjusting max working pressure	10369 - 19999 70001 - 79999
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	2.50	Hydraulic pump, replacing	10369 - 19999 70001 - 79999
913-010	2.50	Hydraulic pump, replacing	10000 - 10368 60000 - 60093
913-043	0.70	Torque limiting valve, checking and adjusting	
913-068	1.50	Pump regulator, checking	
914-095	0.90	Dumping lever, checking pressure	
95		LOAD CARRIER	
951-003	0.30	Dump body position indicator, adjusting	
951-004	2.00	Hoist cylinder, changing	
951-005	1.00	Hoist cylinder bearing, changing	
951-005	0.90	Hoist cylinder bearing, changing	
951-006	3.00	Hoist cylinder removed, reconditioning	
951-007	1.00	Hoist cylinder, removal	
951-008	1.00	Hoist cylinder, installation	
951-011	0.30	Cylinder, rear flap, gas pressure, checking and adjusting	
951-030	0.40	Dump body alternative, lowering	
951-040	2.50	Dump body joint, changing tipping bearing	
951-041	2.50	Dump body, adjusting against frame	
99		MISCELLANEOUS	
993-030	0.80	Shift valve, checking	

Op.no.	time (h)	Notes	
0		GENERAL	
09		MISCELLANEOUS	
090-001	0.70	Engine, basic check	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
172-002	3.50	Warranty inspection 100 hours	
172-004	13.00	Warranty inspection 1000 hours	
173-002	0.30	Maintenance service, daily	
173-004	0.50	Maintenance service, every 50 hours	
173-007	1.00	Maintenance service, every 250 hours	
173-010	3.00	Maintenance service, every 500 hours	
173-012	6.00	Maintenance service, every 1000 hours	
173-014	11.00	Maintenance service, every 2000 hours	
173-018	19.00	Maintenance service, every 4000 hours	
173-022	13.00	Maintenance service, every 6000 hours	
19		GENERAL	
191-021	0.20	Service position 1	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.25	E-ECU, MID 128, changing non-programmed ECU	
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-002	5.50	Compression test	
210-073	8.50	Engine and transmission, removing	
210-074	8.50	Engine and transmission, mounting	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
210-092	0.80	Engine rotation speed sensor (camshaft), replacing	12001 - 69999 72001 - 79999
214-012	5.50	Valves, adjusting	
214-012	5.50	Valves, adjusting	
215-042	6.50	Camshaft, replacing	
215-043	3.00	Camshaft setting, checking	12001 - 69999 72001 - 79999
216-014	1.75	Crankshaft, replacing front oil seal	
216-018	24.00	Crankshaft, replacing rear oil seal	

Op.no.	time (h)		Notes
217-004	4.00	Oil sump gasket, changing	
217-005	4.50	Oil level sensor, changing	
218-001	1.50	Rubber cushion, replacing	
218-007	4.00	Engine mounting rear, changing	
22		LUBRICATING SYSTEM	
221-022	0.60	Lubrication oil pressure, checking with pressure gauge	12001 - 69999 72001 - 79999
223-006	5.00	Oil cooler, replacing	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
233-001	0.70	Fuel system, bleeding	
233-004	0.70	Feed pump, checking feed pressure	
233-010	2.00	Fuel pump, inspection	
236-002	0.90	Stall speed, checking	
237-010	0.40	Unit injectors, adjusting pretension	12001 - 69999 72001 - 79999
237-012	5.50	Unit injector, replacing	
237-016	11.00	Injectors, replacing copper sleeve in machine	
25		INLET SYSTEM; EXHAUST SYSTEM	
255-002	1.25	Turbocharger, inspection	
255-071	2.50	Turbocharger, replacing	
256-006	0.70	Preheating coil, replacing	
258-002	3.00	Intercooler, replacing	
258-014	0.90	Fan pump, removing	
258-015	1.50	Fan pump, installation	
258-016	0.70	Cooling fan motor, intercooler, checking/adjusting low rpm	
258-017	0.80	Cooling fan motor, intercooler, checking/adjusting high rpm	
26		COOLING SYSTEM	
260-002	5.50	Cooling system, flushing	
261-004	0.90	Coolant, changing	
261-004	0.90	Coolant, changing	
261-011	1.50	Radiator, removing	
261-013	2.00	Radiator, installing	
262-002	2.00	Coolant pump, replacing	
262-071	0.90	Coolant pump removed, reconditioning	
262-098	1.25	Thermostat, replacing	
263-023	0.90	Fan pump, removing	
263-024	1.50	Fan pump, installing	
263-063	0.70	Cooling fan motor, radiator, checking/adjusting low rpm	

Op.no.	time (h)	Notes
263-064	0.80	Cooling fan motor, radiator, checking/adjusting high rpm
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	0.60	I-ECU, MID 140, changing non-programmed ECU
300-074	0.40	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-002	0.90	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.90	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	0.90	Starter motor, replacing
35		LIGHTING
352-002	0.50	Headlights, adjusting
36		OTHER ELECTRICAL EQUIPMENT
363-002	1.25	Windscreen wiper front, replacing motor
366-064	1.00	V-ECU, MID 187, changing non-programmed ECU
366-066	0.90	V-ECU, MID 187, changing pre-programmed ECU
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-008	0.60	Engine rotation speed sensor, replacing
39		MISCELLANEOUS
390-902	2.00	CareTrack, installing new
398-001	0.50	CareTrack antenna, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-001	1.75	Checking of main, torque converter and lubricating oil pressure
421-001	0.70	Checking of main, torque converter and lubricating oil pressure
421-054	2.00	Seal for rear output shaft, replacing
421-062	1.50	Induction sensor for turbine speed, changing
421-070	10.00	Transmission, removing
421-072	11.00	Transmission, installing

Op.no.	time (h)	Notes
421-083	1.25	Transmission, remove from a non mounted engine
421-084	1.50	Transmission, fitting on a non mounted engine
43		GEARBOX,
432-076	0.70	T-ECU, MID 130, changing non-programmed ECU
432-078	0.60	T-ECU, MID 130, changing pre-programmed ECU
434-002	1.75	Dropbox, replacing seal for front output shaft
434-004	2.00	Dropbox, replacing seal for rear output shaft
434-064	0.60	Differential lock longitudinal, adjustment of sender unit
434-065	0.40	Rotation speed sensor, replacing
434-073	4.00	Dropbox, installing
434-074	3.00	Dropbox, removing
45		PROPELLER SHAFT
451-006	6.50	Intermediate shaft and/or bearing, replacing (in frame joint)
46		FRONT AXLE; REAR AXLE
461-011	8.00	Centre gear , removing and fitting
461-037	4.00	Hub reduction, removing
461-038	2.50	Hub reduction, installing
463-006	9.00	Spindle, replacing one side
463-011	8.00	Centre gear, removing and fitting
463-016	0.50	Dog clutch 6x6, checking and adjusting
463-079	2.00	Output shaft 6-wheel drive, sealing and bearing, replacing
464-011	8.00	Centre gear, removing and fitting
464-084	9.50	Spindle, replacing one side
468-062	0.50	Transverse differential lock/axle, checking and adjusting
48		POWER TAKE OFF
482-004	8.00	Power take-off, between engine and gearbox, reconditioning
49		MISCELLANEOUS
491-006	1.25	Oil cooler, replacing
5		BRAKE
51		WHEEL BRAKE
511-002	6.50	Brake disc, replacing one
511-005	1.75	Brake pads, replacing (one wheel, front axle)
511-045	4.00	Brake calliper, replacing one

Op.no.	time (h)	Notes
511-081	1.00	Brake calliper removed, reconditioning
512-005	1.75	Brake pads, replacing (one wheel, first boggie axle)
512-045	4.00	Brake caliper, replacing one
512-045	4.00	Brake caliper, replacing one
513-005	1.75	Brake pads, replacing (one wheel, 2:d boggie axle)
52		HYDRAULIC BRAKE SYSTEM
520-037	1.00	Brake system, bleeding
55		PARKING BRAKE
550-005	3.00	Parking brake, replacing brake disc
550-009	1.25	Spring brake cylinder, replacing
550-012	2.00	Parking brake , replacing brake caliper
550-014	1.50	Parking brake, replacing brake pads
550-015	0.30	Parking brake, manually releasing
550-023	0.20	Parking brake, function checking
553-000	0.40	Load and dump brake, working pressure, checking and adjusting
553-002	0.30	Load and Dump brake, function check
56		COMPRESSED-AIR BRAKE
560-002	1.25	Compressed air brake, function check
560-003	0.10	Brake system, relieve pressure
561-004	2.50	Compressor, replacing
561-023	0.30	Relief/Cut-in pressure, check
561-024	0.30	Relief/Cut-in pressure, adjusting
563-004	1.75	Foot brake valve (pneum), replacing
59		MISCELLANEOUS
590-001	0.30	Quick coupling compressed air, replacing
6		STEERING
64		STEERING
642-026	3.00	Steering gear, replacing
642-058	1.00	Steering gear, check.and adj.
643-010	1.50	Steering linkage, checking and adjusting
643-012	0.40	Steering angle, checking and adjusting
643-013	0.80	Steering times, checking and adjusting
643-014	1.00	Steering valve, neutral position, checking and adjusting
643-017	2.50	Lever bracket, steering bearing, replacing
645-004	1.00	Steering cylinder, removing
645-005	1.25	Steering cylinder, installing

Op.no.	time (h)	Notes
645-052	1.00	Steering cylinder removed, reconditioning excl replacing bearings
645-054	0.60	Steering cylinder, replacing bearings
645-054	2.50	Steering cylinder, replacing bearings
645-084	1.25	Damping cylinder, checking spring force
645-085	1.25	Damping cylinder, changing seal
647-095	1.00	Auxiliary steering, adjusting working- and stand-by pressure
647-096	1.00	Auxiliary steering, hydraulic pump, removing
647-097	2.00	Auxiliary steering, hydraulic pump, installation

7 FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT

71 FRAME

711-001	3.00	Frame extension, removing
711-002	4.00	Frame extension, installing
715-015	0.90	Protecting plate, removal
715-016	1.50	Protecting plate, installation

74 FRAME LINK

741-001	7.50	Frame joint, separating machine
741-041	1.50	Frame joint, changing bearing, machine separated (on load unit frame) 12001 - 69999 72001 - 79999
741-050	1.25	Frame oscillating brake, brake pads, replacing
742-040	8.00	Steering joint, replacing bearings

75 AXLE SUSPENSION

751-013	1.00	Cross stay, rubber bushing, replacing
751-013	0.80	Cross stay, rubber bushing, replacing
756-013	1.00	Cross stay, rubber bushing, replacing
756-024	2.00	Bogie beam, changing rubber spring, one side (front)
756-027	2.00	A-frame bushing, front on load unit, changing
756-028	2.50	A-frame bushing, rear on load unit, changing
756-029	0.90	Bogie beam, changing rubber bushing on removed beam
756-030	7.00	Bogie beam, changing

77 WHEELS; TRACKS; TYRE; HUB; DRUM

771-008	0.70	Wheel, removing
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Op.no.	time (h)	Notes	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	4.00	Cab, removing	
810-002	4.50	Cab, installing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-002	0.60	Engine hood, installing	
821-060	0.50	Electric hood pump, changing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	1.00	Door, replacing	12001 - 69999 72001 - 79999
831-006	0.60	Door lock, replacing	
831-052	0.60	Cab door, removing door catch	12001 - 69999 72001 - 79999
831-053	0.30	Cab door, installing door catch	12001 - 69999 72001 - 79999
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-002	3.00	Windscreen, replacing	
843-013	2.50	Side window, replacing	
843-048	2.00	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-002	0.50	Air suspension for operator's seat, changing	
852-003	0.80	Operator's seat, removing	
852-004	0.40	Operator's seat, installing	
87		AIR CONDITIONING UNIT	
873-004	3.00	Heater core, replacing	
873-006	1.00	Fan motor, replacing	
873-008	0.90	Heat control valve, replacing	
873-009	0.90	Heat control, replacing	
874-002	0.40	Refrigerant, draining	
874-003	0.80	Cooling unit, performance test	
874-008	2.50	Refrigerant, filling incl vacuum pumping	
874-010	4.00	Condenser, replacing incl draining and filling	
874-011	4.00	Receiver, replacing incl draining and filling	
874-012	5.00	Evaporator, replacing incl draining and filling	
874-014	1.75	Thermostat, replacing	

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-002	0.40	Hydraulic system, bleeding
900-003	0.10	Hydraulic system, relieve pressure
900-005	0.30	Vacuum pump, connection
900-006	0.20	Vacuum pump, disconnection
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-078	0.60	Dump lever, changing
912-115	5.00	Steering and tipping valve, removal
912-116	5.00	Steering and tipping valve, installation
913-003	0.90	Hydraulic pump, checking and adjusting standby pressure
913-004	0.80	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-023	0.90	Pump, removal
913-024	1.50	Pump, installation
913-042	0.50	Working pumps, checking function
913-043	0.70	Torque limiting valve, checking and adjusting
913-068	1.50	Pump regulator, checking
914-095	0.90	Dumping lever, checking pressure
95		LOAD CARRIER
951-003	0.30	Dump body position indicator, adjusting
951-005	1.00	Hoist cylinder bearing, changing
951-005	0.90	Hoist cylinder bearing, changing
951-006	3.00	Hoist cylinder removed, reconditioning
951-007	1.00	Hoist cylinder, removal
951-008	1.00	Hoist cylinder, installation
951-011	0.30	Cylinder, rear flap, gas pressure, checking and adjusting
951-030	0.40	Dump body alternative, lowering
951-040	2.50	Dump body joint, changing tipping bearing
951-041	2.50	Dump body, adjusting against frame
99		MISCELLANEOUS
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
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1 STANDARD PARTS, SERVICE

17 SERVICE

170-001	0.75	Washing, external cleaning
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	1.25	Delivery Inspection, according to Inspection Programme
172-002	7.00	Warranty inspection 100 hours
172-004	10.00	Warranty inspection 1000 hours
173-002	0.50	Maintenance service, daily
173-004	1.25	Maintenance service, every 50 hours
173-007	4.00	Maintenance service, every 250 hours
173-010	4.00	Maintenance service, every 500 hours
173-012	7.00	Maintenance service, every 1000 hours
173-014	16.00	Maintenance service, every 2000 hours
173-059	2.00	Engine, changing oil and filter
173-061	1.50	Transmission, changing oil and filter
173-066	1.00	Drop box, changing oil/cleaning suction strainer
173-074	1.00	Hydraulic oil tank, changing oil and filter
173-075	1.50	Hydraulic oil tank, changing oil and filter incl.cleaning tank
173-085	3.00	Brake system, changing oil/fluid and filter

2 ENGINE WITH MOUNTING AND EQUIPMENT

21 ENGINE

210-002	2.00	Compression test
210-070	8.50	Engine, removing
210-071	48.00	Engine removed, general overhaul
210-072	10.00	Engine, installing
210-073	8.00	Engine and transmission, removing
210-074	9.00	Engine and transmission, mounting
214-012	1.50	Valves, adjusting
214-096	1.50	Valve cap, changing

23 FUEL SYSTEM

233-001	0.50	Fuel system, bleeding
233-004	0.75	Feed pump, checking feed pressure
236-001	0.50	Idling speed, checking and adjusting
236-002	0.50	Stall speed, checking
236-003	0.25	Idling speed, checking
236-004	0.25	low idling speed, checking and adjusting
236-030	1.50	Injection timing, checking

Op.no.	time (h)	Notes
236-031	1.00	Injection timing adjuster, checking
237-002	2.00	Injectors, replacing all
25		INLET SYSTEM; EXHAUST SYSTEM
255-070	0.50	Turbocharger, removing
255-071	1.50	Turbocharger, replacing
255-072	1.00	Turbocharger, installing
256-001	0.50	Air cleaner, cleaning filter element
256-002	0.25	Air cleaner, checking prssure drop indicator
256-003	0.50	Air cleaner, primary filter replacing
256-004	0.50	Air cleaner, secondary filter replacing
258-002	1.50	Intercooler, replacing
26		COOLING SYSTEM
261-002	0.25	Coolant, checking anti-freeze resistance
261-004	1.50	Coolant, changing
261-008	2.50	Radiator, replacing
261-010	1.00	Radiator, adjusting
261-072	0.50	Coolant filter, changing
262-071	2.00	Coolant pump removed, reconditioning
263-001	1.00	Fan motor, removing
263-002	1.00	Fan motor, changing piston rings
263-003	1.00	Fan motor, installing
263-004	1.00	Fan motor, checking working pressure
263-005	0.25	Fan motor, adjusting working pressure
263-006	1.00	Fan hydraulically driven, removing pump
263-007	1.00	Fan hydraulically driven, fitting pump
263-009	0.75	Fan hydraulically driven, replacing oil return filter
263-012	0.50	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	0.50	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.50	Battery charging capacity, checking
311-002	1.50	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check

Op.no.	time (h)	Notes
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
35		LIGHTING
352-002	0.50	Headlights, adjusting
352-008	0.50	Headlamp reflector and/or glass, replacing one incl adjusting
352-024	0.50	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.50	Rear lamp, replacing one
353-018	0.50	Rear lamp, replacing glass or bulb
356-056	0.50	Work lighting, replacing one head lamp assy
356-057	0.50	Work lighting, replacing one insert
36		OTHER ELECTRICAL EQUIPMENT
361-002	0.50	Flasher unit, replacing relay
361-010	0.50	Flasher switch, replacing
361-017	0.50	Flasher lamp, replacing glass or bulb
362-002	0.50	Horn, replacing
362-003	0.50	Reverse alarm, replacing
362-016	0.50	Horn switch, replacing
363-002	1.50	Windscreen wiper front, replacing motor
363-003	0.50	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
364-004	0.50	Switch, replacing
364-008	0.50	Brake light switch, replacing
367-020	0.50	ECU, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-001	1.75	Checking of main, torque converter and lubricating oil pressure
421-050	0.75	Transmission, resistance measuring of cableharness
421-051	0.50	Transmission, resistance measuring of solenoides
421-054	4.00	Seal for rear output shaft, replacing
421-057	0.50	Retarder valve, replacing of seal
421-059	0.50	Transmission retarder valve, adjusting air pressure
421-060	0.50	Transmission, resistans measuring control system
421-061	1.00	Induction sensor for output shaft, changing
421-062	0.75	Induction sensor for turbine speed, changing
421-065	5.00	Control system, replacing

Op.no.	time (h)	Notes
421-068	5.50	Transmission, removing (upwards)
421-069	5.50	Transmission, installing (from above)
421-070	7.00	Transmission, removing
421-072	9.00	Transmission, installing
421-078	2.00	Transmission, remove and fitting from a non mounted engine
421-079	0.25	Transmission, replacing breather filter
43		GEARBOX,
434-002	2.00	Dropbox, replacing seal for front output shaft
434-004	2.00	Dropbox, replacing seal for rear output shaft
434-015	4.00	Dropbox, replacing seal for input shaft
434-016	1.00	Dropbox, oil pump, replacing
434-060	1.00	Dropbox, adjusting control for high and low gear
434-061	0.50	Differential lock longitudinal, adjusting engagement
434-063	1.00	Adjustment of sender units SE54 and SE55
434-073	4.50	Dropbox, installing
434-074	4.00	Dropbox, removing
45		PROPELLER SHAFT
451-004	1.50	Propeller shaft, rear, replacing
451-005	1.00	Propeller shaft for rear boggie axel, replacing
451-007	0.75	Propeller shaft, in frame joint, replacing
451-010	0.75	Propeller shaft, front, replacing
451-013	1.50	Propeller shaft, removed reconditioning
451-014	3.50	Propeller shaft between transmission and dropbox, replacing
46		FRONT AXLE; REAR AXLE
461-043	4.00	Hub, replacing seal
468-005	0.50	Differential lock rear, adjusting engagement
5		BRAKE
51		WHEEL BRAKE
510-001	2.00	Brake linings, checking wear
510-002	0.25	Brake disc for service brake, checking
511-001	1.00	Brake pads for service brake, checking
511-002	4.50	Brake disc, replacing one
511-004	3.00	Brake pads, replacing on both sides of axel
511-005	1.50	Brake pads, replacing (one wheel, front axle)
511-045	3.00	Brake calliper, replacing one
511-081	1.00	Brake calliper removed, reconditioning
512-001	1.00	Brake linings, checking wear rear axle

Op.no.	time (h)	Notes
512-002	4.50	Brake disc, replacing one
512-004	3.00	Brake pads, replacing on both sides of axle
512-005	1.50	Brake pads, replacing (one wheel, first boggie axle)
512-045	2.50	Brake caliper, replacing one
512-081	0.75	Brake caliper, removed, reconditioning
52		HYDRAULIC BRAKE SYSTEM
520-001	0.75	Brake system, checking function, hydraulic
520-006	2.50	Brake pads for service brake, checking complete machine
520-037	3.50	Brake system, bleeding
525-002	1.50	Unloading valve, removing and fitting
525-008	3.00	Foot brake valve, replacing
525-009	0.75	Foot brake valve removed, reconditioning
527-001	0.50	Accumulator removed, checking charging pressure
527-004	1.50	Hydraulic pump, replacing
527-005	2.50	Hydraulic pump, reconditioning incl removing and fitting
527-007	1.00	Brake oil pump, piston ring, changing
55		PARKING BRAKE
550-002	0.50	Parking brake, adjusting
550-005	2.50	Parking brake, replacing brake disc
550-009	0.50	Spring brake cylinder, replacing
550-010	1.00	Spring brake cylinder removed, reconditioning
550-012	2.00	Parking brake , replacing brake caliper
550-013	0.75	Parking brake caliper (air), removed reconditioning
550-014	2.00	Parking brake, replacing brake pads
551-003	1.00	Parking brake, (removed) reconditioning of brake caliper
56		COMPRESSED-AIR BRAKE
561-004	1.00	Compressor, replacing
561-022	0.25	Pressure regulator, adjusting
6		STEERING
64		STEERING
642-026	3.00	Steering gear, replacing
643-010	3.50	Steering linkage, checking and adjusting
645-001	0.50	Steering cylinder bearing, checking clearanse
645-003	0.50	Steering system working pressure, checking

Op.no.	time (h)	Notes
645-006	5.00	Steering cylinder, replacing
645-054	1.00	Steering cylinder, replacing bearings
645-060	3.00	Steering cylinder, repacking in machine
645-080	2.00	Steering valve neutral position and valve spool end float, checking
645-081	3.00	Steering valve removed, reconditioning
645-082	3.00	Steering valve, replacing
645-084	0.50	Damping cylinder, checking spring force
645-085	1.00	Damping cylinder, changing seal
647-093	3.00	Auxiliary steering, replacing hydraulic pump
647-095	0.50	Auxiliary steering, adjusting working- and stand-by pressure
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
711-020	3.00	Load unit frame, checking measurements
72		SUSPENSION
727-001	6.00	Spring element front, replacing all
74		FRAME LINK
741-005	0.50	Frame joint, checking clearance
741-006	4.00	Frame joint, measuring and adjusting clearance
741-036	2.00	Frame joint, replacing bearings
742-007	10.50	Frame joint, replacing hitch
742-038	1.50	Articulated joint, checking clearance
742-040	15.00	Steering joint, replacing bearings
742-044	1.00	Articulated joint, replacing bushing
742-046	1.50	Frame joint, changing metallic bearing (machine separated)
75		AXLE SUSPENSION
754-021	1.00	Front bogie axle cross stay, adjusting
754-031	1.00	Rear bogie axle cross stay, adjusting
756-011	7.00	Bogie member, replacing rubber bearing (one side)
756-012	1.00	Cross stay rubber bushing (bearing), replacing (front)
756-014	1.00	Cross stay rubber bushing (bearing), replacing, (rear)
756-015	3.00	Cross stay, checking and adjusting
756-024	1.00	Bogie beam, changing rubber spring, one side (front)

Op.no.	time (h)	Notes
756-026	3.00	Bogie, replacing all rubber elements both sides
76		SHOCK ABSORBER; AXLE LOCKING; ANTI ROLL BAR; LEVEL / SIDE CONTROL
761-001	2.00	Shock absorber front, replacing all
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.50	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.00	Windscreen, replacing
843-012	1.50	Rear window, replacing
843-013	1.00	Side window, replacing
843-048	1.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-002	1.00	Air suspension for operator's seat, changing
87		AIR CONDITIONING UNIT
873-004	1.50	Heater core, replacing
873-006	1.50	Fan motor, replacing
873-008	1.00	Heat control valve, replacing
874-002	1.50	Refrigerant, draining
874-003	0.50	Cooling unit, performance test
874-005	2.00	Refrigerant, filling excl vacuum pumping
874-006	4.00	Compressor, replacing incl draining and filling
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-080	2.00	Steering and dumping valve (removed), reconditioning
913-001	0.50	Hydraulic pump, checking and adjusting standby pressure and working pressure
913-003	0.50	Hydraulic pump, checking and adjusting standby pressure
913-008	3.00	Hydraulic pump, ground dependent, changing
94		UNIT, LOAD HANDLING
945-010	1.50	Tilt cylinder removed, repacking

Op.no.	time (h)	Notes
95		LOAD CARRIER
951-001	0.50	Tipping control, adjusting
951-002	2.00	Tipping valve, changing wire
951-003	0.50	Dump body position indicator, adjusting
951-004	4.00	Hoist cylinder, changing
951-006	4.00	Hoist cylinder removed, reconditioning
951-010	2.00	Tipping valve, replacing
951-040	3.00	Dump body joint, changing tipping bearing
951-041	1.50	Dump body, adjusting against frame
99		MISCELLANEOUS
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes	
0		GENERAL	
09		MISCELLANEOUS	
090-001	0.70	Engine, basic check	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-001	0.75	Washing, external cleaning	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
171-001	1.00	Arrival Inspection, according to Inspection Programme	
171-002	1.25	Delivery Inspection, according to Inspection Programme	
172-002	3.50	Warranty inspection 100 hours	
172-004	14.00	Warranty inspection 1000 hours	11000 - 19999
172-004	8.00	Warranty inspection 1000 hours	11000 - 19999
173-002	0.30	Maintenance service, daily	
173-004	0.30	Maintenance service, every 50 hours	
173-007	1.00	Maintenance service, every 250 hours	
173-010	2.50	Maintenance service, every 500 hours	
173-012	5.50	Maintenance service, every 1000 hours	
173-014	13.00	Maintenance service, every 2000 hours	
173-059	1.00	Engine, changing oil and filter	
173-061	1.25	Transmission, changing oil and filter	
173-066	1.00	Drop box, changing oil/cleaning suction strainer	
173-070	3.00	Axles, changing oil	
173-074	1.00	Hydraulic oil tank, changing oil and filter	
173-075	3.00	Hydraulic oil tank, changing oil and filter incl.cleaning tank	
173-083	0.50	Frame joint, changing oil	
19		GENERAL	
191-021	0.20	Service position 1	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.25	E-ECU, MID 128, changing non-programmed ECU	11001 - 19999 72001 - 79999
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU	11001 - 13521 61001 - 61303 71001 - 72280

Op.no.	time (h)		Notes
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	11001 - 19999 72001 - 79999
21		ENGINE	
210-002	7.00	Compression test	
210-070	8.50	Engine, removing	
210-072	10.00	Engine, installing	
210-073	6.50	Engine and transmission, removing	
210-074	11.00	Engine and transmission, mounting	
214-012	5.50	Valves, adjusting	13000 - 19999 72000 - 79999
214-012	5.50	Valves, adjusting	11000 - 12999 61000 - 61303 71000 - 71999
214-012	5.50	Valves, adjusting	13000 - 13521 72000 - 72280
215-032	7.50	Timing gear case, fitting new gasket in machine	13001 - 19999 72001 - 79999
215-042	7.00	Camshaft, replacing	13001 - 19999 72001 - 79999
215-043	4.00	Camshaft setting, checking	13001 - 19999 72001 - 79999
216-018	3.50	Crankshaft, replacing rear oil seal	
217-004	3.50	Oil sump gasket, changing	
217-005	4.00	Oil level sensor, changing	
218-001	1.50	Rubber cushion, replacing	
218-007	4.00	Engine mounting rear, changing	
22		LUBRICATING SYSTEM	
221-022	0.60	Lubrication oil pressure, checking with pressure gauge	
223-006	4.50	Oil cooler, replacing	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	13001 - 19999 71000 - 79999
233-001	0.70	Fuel system, bleeding	13001 - 19999 72001 - 79999
233-001	0.70	Fuel system, bleeding	61000 - 61303 11000 - 12999 71000 - 71999
233-004	0.70	Feed pump, checking feed pressure	
233-009	0.20	Fuel pump (valves), inspection	
233-010	2.00	Fuel pump, inspection	
236-002	0.80	Stall speed, checking	
236-004	0.25	low idling speed, checking and adjusting	
237-012	5.00	Unit injector, replacing	

Op.no.	time (h)	Notes	
237-016	10.00	Injectors, replacing copper sleeve in machine	
237-123	0.70	Injector shut off, manual	
25		INLET SYSTEM; EXHAUST SYSTEM	
255-002	1.25	Turbocharger, inspection	
255-071	2.00	Turbocharger, replacing	
256-001	0.50	Air cleaner, cleaning filter element	
256-003	0.25	Air cleaner, primary filter replacing	
256-004	0.25	Air cleaner, secondary filter replacing	
256-006	0.70	Preheating coil, replacing	
258-002	3.50	Intercooler, replacing	
258-016	0.80	Cooling fan motor, intercooler, checking/adjusting low rpm	
258-017	0.80	Cooling fan motor, intercooler, checking/adjusting high rpm	
26		COOLING SYSTEM	
260-002	5.50	Cooling system, flushing	
261-002	0.25	Coolant, checking anti-freeze resistance	
261-004	1.50	Coolant, changing	
261-011	1.75	Radiator, removing	
261-013	2.50	Radiator, installing	
261-072	0.50	Coolant filter, changing	
262-071	0.90	Coolant pump removed, reconditioning	
263-001	1.00	Fan motor, removing	
263-003	1.00	Fan motor, installing	
263-004	1.00	Fan motor, checking working pressure	
263-005	0.25	Fan motor, adjusting working pressure	
263-006	1.00	Fan hydraulically driven, removing pump	
263-007	1.50	Fan hydraulically driven, fitting pump	
263-009	0.50	Fan hydraulically driven, replacing oil return filter	
263-012	1.00	Fan belt and/or alternator belt, replacing	
263-013	0.70	Fan belt and/or alternator belt, checking and adjusting tension	11000 - 12999 61000 - 61303 71000 - 71999
263-013	0.70	Fan belt and/or alternator belt, checking and adjusting tension	13000 - 19999 72000 - 79999
263-022	1.00	Fan belt and/or alternator-, compressor belt, replacing all belts	
263-063	0.80	Cooling fan motor, radiator, checking/adjusting low rpm	
263-064	0.80	Cooling fan motor, radiator, checking/adjusting high rpm	

Op.no.	time (h)		Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	0.60	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.40	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-001	0.50	Battery charging capacity, checking	
311-002	1.25	Batteries, replacing	
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.00	Alternator, replacing incl function check	13001 - 19999 72001 - 79999
33		STARTING SYSTEM	
331-018	0.75	Starter motor, replacing	
35		LIGHTING	
352-002	0.50	Headlights, adjusting	
352-024	0.75	Headlight, complete, changing (high beam 1 pc.) incl. setting	
352-060	0.75	Headlight, complete, changing (low beam 1 pc.) incl. setting/adjustment	
353-016	0.50	Rear lamp, replacing one	
356-056	0.50	Work lighting, replacing one head lamp assy	
356-057	0.50	Work lighting, replacing one insert	
36		OTHER ELECTRICAL EQUIPMENT	
360-001	0.75	Combination control (by steering wheel), changing	
361-002	1.00	Flasher unit, replacing relay	
361-017	0.50	Flasher lamp, replacing glass or bulb	
362-002	0.50	Horn, replacing	
362-003	0.50	Reverse alarm, replacing	
362-900	1.00	Rotating beacon, installing new	
363-002	1.25	Windscreen wiper front, replacing motor	
363-004	0.50	Windscreen flusher pump, replacing	
364-004	0.25	Switch, replacing	
366-060	0.70	C-ECU, MID178, changing non-programmed ECU	11001 - 12999 61001 - 61303 71001 - 71999
366-062	0.70	C-ECU, MID178, changing pre-programmed ECU	11001 - 12999 61001 - 61303 71001 - 71999
366-064	1.00	V-ECU, MID 187, changing non-programmed ECU	13001 - 19999 72001 - 79999

Op.no.	time (h)		Notes
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	11001 - 12999 61001 - 61303 71001 - 71999
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	11001 - 12999 61001 - 61303 71001 - 71999
366-066	0.90	V-ECU, MID 187, changing pre-programmed ECU	13001 - 19999 72001 - 79999
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-038	1.00	Engine rotation speed sensor, replacing	
386-088	2.00	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-902	2.00	CareTrack, installing new	
398-001	0.50	CareTrack antenna, replacing	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-001	0.70	Checking of main, torque converter and lubricating oil pressure	
421-002	1.75	Transmission oil pressure, checking	
421-047	0.50	Gear selector, replacing	
421-050	0.75	Transmission, resistance measuring of cableharness	
421-051	0.50	Transmission, resistance measuring of solenoides	
421-054	2.00	Seal for rear output shaft, replacing	11593 - 19999 61276 - 61303 71017 - 79999
421-057	1.50	Retarder valve, replacing of seal	
421-060	0.50	Transmission, resistans measuring control system	
421-062	1.50	Induction sensor for turbine speed, changing	
421-068	5.50	Transmission, removing (upwards)	
421-069	5.50	Transmission, installing (from above)	
421-070	6.00	Transmission, removing	
421-072	7.00	Transmission, installing	
421-079	0.25	Transmission, replacing breather filter	
421-083	1.00	Transmission, remove from a non mounted engine	
421-084	1.50	Transmission, fitting on a non mounted engine	
43		GEARBOX,	
432-076	0.70	T-ECU, MID 130, changing non-programmed ECU	
432-078	0.60	T-ECU, MID 130, changing pre-programmed ECU	

Op.no.	time (h)		Notes
434-002	2.00	Dropbox, replacing seal for front output shaft	
434-004	2.00	Dropbox, replacing seal for rear output shaft	
434-015	4.00	Dropbox, replacing seal for input shaft	
434-016	1.00	Dropbox, oil pump, replacing	
434-061	0.50	Differential lock longitudinal, adjusting engagement	
434-063	1.00	Adjustment of sender units SE54 and SE55	
434-073	4.50	Dropbox, installing	
434-074	4.00	Dropbox, removing	
45		PROPELLER SHAFT	
451-005	1.00	Propeller shaft for rear boggie axel, replacing	
451-006	6.00	Intermediate shaft and/or bearing, replacing (in frame joint)	
451-007	1.50	Propeller shaft, in frame joint, replacing	
451-008	1.50	Propellershaft for front boggie axel, replacing	
451-010	1.00	Propeller shaft, front, replacing	
451-014	3.50	Propeller shaft between transmission and dropbox, replacing	
46		FRONT AXLE; REAR AXLE	
461-006	5.00	Spindle, replacing one side	
461-043	4.00	Hub, replacing seal	
463-016	0.50	Dog clutch 6x6, checking and adjusting	
468-005	0.50	Differential lock rear, adjusting engagement	
468-062	0.50	Transverse differential lock/axle, checking and adjusting	
48		POWER TAKE OFF	
482-004	7.00	Power take-off, between engine and gearbox, reconditioning	13001 - 19999 72001 - 79999
49		MISCELLANEOUS	
491-006	1.25	Oil cooler, replacing	
5		BRAKE	
51		WHEEL BRAKE	
510-001	2.00	Brake linings, checking wear	
510-002	0.50	Brake disc for service brake, checking	
511-001	1.00	Brake pads for service brake, checking	
511-002	4.50	Brake disc, replacing one	
511-004	3.00	Brake pads, replacing on both sides of axel	
511-005	1.50	Brake pads, replacing (one wheel, front axle)	
511-045	3.00	Brake calliper, replacing one	
511-081	1.00	Brake calliper removed, reconditioning	

Op.no.	time (h)		Notes
512-001	1.00	Brake linings, checking wear rear axle	
512-002	4.50	Brake disc, replacing one	
512-004	3.00	Brake pads, replacing on both sides of axle	
512-005	1.50	Brake pads, replacing (one wheel, first boggie axle)	
512-045	3.00	Brake caliper, replacing one	
512-081	1.00	Brake caliper, removed, reconditioning	
52		HYDRAULIC BRAKE SYSTEM	
520-001	0.75	Brake system, checking function, hydraulic	
520-010	0.10	Brake system, relieve pressure	
520-037	2.50	Brake system, bleeding	
525-008	3.50	Foot brake valve, replacing	
527-001	0.50	Accumulator removed, checking charging pressure	
527-004	2.50	Hydraulic pump, replacing	
55		PARKING BRAKE	
550-005	3.00	Parking brake, replacing brake disc	
550-009	1.00	Spring brake cylinder, replacing	
550-012	2.00	Parking brake , replacing brake caliper	
550-014	1.00	Parking brake, replacing brake pads	
550-016	0.50	Parking brake lever, changing	
553-000	0.40	Load and dump brake, working pressure, checking and adjusting	
56		COMPRESSED-AIR BRAKE	
561-004	2.00	Compressor, replacing	11794 - 19999 71153 - 79999
561-022	0.25	Pressure regulator, adjusting	
6		STEERING	
64		STEERING	
642-026	2.50	Steering gear, replacing	
642-058	2.00	Steering gear, check.and adj.	
643-010	1.75	Steering linkage, checking and adjusting	13540 - 19999 72370 - 79999
643-013	0.80	Steering times, checking and adjusting	13540 - 19999 72370 - 79999
643-014	1.00	Steering valve, neutral position, checking and adjusting	13540 - 19999 72370 - 79999
645-001	0.50	Steering cylinder bearing, checking clearanse	
645-006	2.00	Steering cylinder, replacing	
645-054	2.00	Steering cylinder, replacing bearings	

Op.no.	time (h)	Notes
645-060	3.00	Steering cylinder, repacking in machine
645-084	1.00	Damping cylinder, checking spring force
645-085	1.25	Damping cylinder, changing seal
647-093	3.00	Auxiliary steering, replacing hydraulic pump
647-095	1.00	Auxiliary steering, adjusting working- and stand-by pressure
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
72		SUSPENSION
727-001	6.00	Spring element front, replacing all
74		FRAME LINK
741-001	7.00	Frame joint, separating machine
741-005	0.50	Frame joint, checking clearance
741-036	2.00	Frame joint, replacing bearings
741-041	2.00	Frame joint, changing bearing, machine separated (on load unit frame)
742-038	0.80	Articulated joint, checking clearance
742-040	8.00	Steering joint, replacing bearings
75		AXLE SUSPENSION
754-021	1.00	Front bogie axle cross stay, adjusting
754-031	1.00	Rear bogie axle cross stay, adjusting
756-011	7.00	Bogie member, replacing rubber bearing (one side)
756-012	2.00	Cross stay rubber bushing (bearing), replacing (front)
756-024	1.00	Bogie beam, changing rubber spring, one side (front)
76		SHOCK ABSORBER; AXLE LOCKING; ANTI ROLL BAR; LEVEL / SIDE CONTROL
761-001	4.00	Shock absorber front, replacing all
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.60	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	4.00	Cab, removing
810-002	4.50	Cab, installing

Op.no.	time (h)		Notes
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-002	0.60	Engine hood, installing	
821-060	0.50	Electric hood pump, changing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	1.00	Door, replacing	61000 - 61303 11000 - 19999 71000 - 79999
831-006	0.60	Door lock, replacing	
831-052	0.60	Cab door, removing door catch	61000 - 61303 11000 - 19999 71000 - 79999
831-053	0.30	Cab door, installing door catch	61000 - 61303 11000 - 19999 71000 - 79999
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-002	3.00	Windscreen, replacing	
843-012	3.00	Rear window, replacing	
843-013	2.50	Side window, replacing	
843-048	2.00	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-002	1.00	Air suspension for operator's seat, changing	
852-003	0.80	Operator's seat, removing	
852-004	0.40	Operator's seat, installing	
87		AIR CONDITIONING UNIT	
873-004	3.00	Heater core, replacing	
873-006	1.00	Fan motor, replacing	
873-008	0.90	Heat control valve, replacing	
873-009	0.90	Heat control, replacing	
874-002	1.50	Refrigerant, draining	
874-003	0.80	Cooling unit, performance test	
874-006	4.00	Compressor, replacing incl draining and filling	
874-008	2.50	Refrigerant, filling incl vacuum pumping	
874-011	4.00	Receiver, replacing incl draining and filling	
874-012	5.00	Evaporator, replacing incl draining and filling	
874-014	1.75	Thermostat, replacing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-002	1.00	Hydraulic system, bleeding	

Op.no.	time (h)		Notes
900-003	0.10	Hydraulic system, relieve pressure	
900-005	0.30	Vacuum pump, connection	
900-006	0.20	Vacuum pump, disconnection	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
912-078	0.60	Dump lever, changing	
912-079	7.00	Steering and tipping valve, replacing	
912-080	3.00	Steering and dumping valve (removed), reconditioning	
912-115	3.00	Steering and tipping valve, removal	13540 - 19999 72370 - 79999
912-116	3.00	Steering and tipping valve, installation	13540 - 19999 72370 - 79999
913-003	1.50	Hydraulic pump, checking and adjusting standby pressure	
913-004	1.50	Hydraulic pump, checking and adjusting max working pressure	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	2.50	Hydraulic pump, replacing	11000 - 11917 71000 - 71195
913-010	2.50	Hydraulic pump, replacing	11918 - 19999 71196 - 79999
913-042	0.50	Working pumps, checking function	
913-068	1.50	Pump regulator, checking	
914-095	0.90	Dumping lever, checking pressure	
95		LOAD CARRIER	
951-003	0.30	Dump body position indicator, adjusting	
951-004	3.00	Hoist cylinder, changing	
951-005	0.90	Hoist cylinder bearing, changing	
951-005	1.00	Hoist cylinder bearing, changing	
951-006	3.00	Hoist cylinder removed, reconditioning	
951-007	1.25	Hoist cylinder, removal	
951-008	1.25	Hoist cylinder, installation	
951-011	0.30	Cylinder, rear flap, gas pressure, checking and adjusting	
951-030	0.40	Dump body alternative, lowering	
951-040	2.50	Dump body joint, changing tipping bearing	
951-041	2.50	Dump body, adjusting against frame	
99		MISCELLANEOUS	
993-030	0.80	Shift valve, checking	

Op.no.	time (h)	Notes	
0		GENERAL	
09		MISCELLANEOUS	
090-001	0.70	Engine, basic check	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
172-002	3.50	Warranty inspection 100 hours	
172-004	13.00	Warranty inspection 1000 hours	
173-002	0.30	Maintenance service, daily	
173-004	0.30	Maintenance service, every 50 hours	
173-007	1.00	Maintenance service, every 250 hours	
173-010	2.50	Maintenance service, every 500 hours	
173-012	5.50	Maintenance service, every 1000 hours	
173-014	13.00	Maintenance service, every 2000 hours	
173-018	22.00	Maintenance service, every 4000 hours	
173-022	16.00	Maintenance service, every 6000 hours	
19		GENERAL	
191-021	0.20	Service position 1	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.25	E-ECU, MID 128, changing non-programmed ECU	
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-002	7.00	Compression test	
210-073	6.50	Engine and transmission, removing	
210-074	11.00	Engine and transmission, mounting	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
210-092	2.50	Engine rotation speed sensor (camshaft), replacing	
214-012	5.50	Valves, adjusting	
215-032	7.50	Timing gear case, fitting new gasket in machine	10005 - 69999
215-042	7.00	Camshaft, replacing	10005 - 69999
215-043	4.00	Camshaft setting, checking	10005 - 69999
216-018	3.50	Crankshaft, replacing rear oil seal	
217-004	3.50	Oil sump gasket, changing	
217-005	4.00	Oil level sensor, changing	

Op.no.	time (h)		Notes
218-001	1.50	Rubber cushion, replacing	
218-007	4.00	Engine mounting rear, changing	
22		LUBRICATING SYSTEM	
221-022	0.60	Lubrication oil pressure, checking with pressure gauge	
223-006	4.50	Oil cooler, replacing	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	10005 - 69999
233-001	0.70	Fuel system, bleeding	
233-004	0.70	Feed pump, checking feed pressure	
233-009	0.20	Fuel pump (valves), inspection	
233-010	2.00	Fuel pump, inspection	
236-002	0.90	Stall speed, checking	
237-010	0.30	Unit injectors, adjusting pretension	
237-012	5.00	Unit injector, replacing	
237-016	10.00	Injectors, replacing copper sleeve in machine	
237-123	0.70	Injector shut off, manual	
25		INLET SYSTEM; EXHAUST SYSTEM	
255-002	1.25	Turbocharger, inspection	
255-071	2.00	Turbocharger, replacing	
256-006	0.70	Preheating coil, replacing	
258-002	3.50	Intercooler, replacing	
258-014	0.90	Fan pump, removing	
258-015	1.50	Fan pump, installation	
258-016	0.80	Cooling fan motor, intercooler, checking/adjusting low rpm	
258-017	0.80	Cooling fan motor, intercooler, checking/adjusting high rpm	
26		COOLING SYSTEM	
260-002	5.50	Cooling system, flushing	
261-004	1.25	Coolant, changing	
261-004	1.25	Coolant, changing	
261-011	1.75	Radiator, removing	
261-013	2.50	Radiator, installing	
262-008	2.50	Secondary coolant pump, replacing	
262-098	1.75	Thermostat, replacing	
263-013	0.70	Fan belt and/or alternator belt, checking and adjusting tension	
263-023	0.90	Fan pump, removing	
263-024	1.50	Fan pump, installing	
263-063	0.80	Cooling fan motor, radiator, checking/adjusting low rpm	

Op.no.	time (h)	Notes
263-064	0.80	Cooling fan motor, radiator, checking/adjusting high rpm
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	0.60	I-ECU, MID 140, changing non-programmed ECU
300-074	0.40	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-002	1.25	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
35		LIGHTING
352-002	0.50	Headlights, adjusting
36		OTHER ELECTRICAL EQUIPMENT
363-002	1.25	Windscreen wiper front, replacing motor
366-064	1.00	V-ECU, MID 187, changing non-programmed ECU
366-066	0.90	V-ECU, MID 187, changing pre-programmed ECU
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-008	0.60	Engine rotation speed sensor, replacing
39		MISCELLANEOUS
390-902	2.00	CareTrack, installing new
398-001	0.50	CareTrack antenna, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-001	0.70	Checking of main, torque converter and lubricating oil pressure
421-046	3.50	PWM-valve control system, changing
421-054	2.00	Seal for rear output shaft, replacing
421-061	0.50	Induction sensor for output shaft, changing
421-062	1.50	Induction sensor for turbine speed, changing
421-070	6.00	Transmission, removing
421-072	7.00	Transmission, installing

Op.no.	time (h)	Notes
421-083	1.00	Transmission, remove from a non mounted engine
421-084	1.50	Transmission, fitting on a non mounted engine
43		GEARBOX,
432-076	0.70	T-ECU, MID 130, changing non-programmed ECU
432-078	0.60	T-ECU, MID 130, changing pre-programmed ECU
434-002	1.75	Dropbox, replacing seal for front output shaft
434-004	2.00	Dropbox, replacing seal for rear output shaft
434-064	0.60	Differential lock longitudinal, adjustment of sender unit
434-065	0.40	Rotation speed sensor, replacing
434-073	2.50	Dropbox, installing
434-074	2.50	Dropbox, removing
45		PROPELLER SHAFT
451-006	5.50	Intermediate shaft and/or bearing, replacing (in frame joint)
46		FRONT AXLE; REAR AXLE
461-011	12.00	Centre gear , removing and fitting
461-037	2.50	Hub reduction, removing
461-038	3.50	Hub reduction, installing
461-046	1.75	Input shaft, seal, replacing
463-011	12.00	Centre gear, removing and fitting
463-016	13.00	Dog clutch 6x6, checking and adjusting
463-079	3.00	Output shaft 6-wheel drive, sealing and bearing, replacing
463-100	0.30	Rotation speed sensor, replacing
463-101	0.40	Rotation speed sensor, adjusting
463-103	1.75	Input shaft, seal, replacing
464-011	12.00	Centre gear, removing and fitting
464-014	1.75	Input shaft seal, replacing
468-062	0.70	Transverse differential lock/axle, checking and adjusting
48		POWER TAKE OFF
482-004	7.00	Power take-off, between engine and gearbox, reconditioning
49		MISCELLANEOUS
491-006	1.50	Oil cooler, replacing

Op.no.	time (h)	Notes	
5		BRAKE	
51		WHEEL BRAKE	
516-010	5.00	Wheel brake, replacing	
52		HYDRAULIC BRAKE SYSTEM	
520-001	0.60	Brake system, checking function, hydraulic	
520-010	0.10	Brake system, relieve pressure	
520-037	0.80	Brake system, bleeding	
525-008	3.50	Foot brake valve, replacing	
527-001	0.10	Accumulator removed, checking charging pressure	
527-002	0.80	Accumulator, replacing	
527-002	1.00	Accumulator, replacing	
527-004	2.50	Hydraulic pump, replacing	
55		PARKING BRAKE	
550-005	3.00	Parking brake, replacing brake disc	
550-009	1.25	Spring brake cylinder, replacing	
550-012	2.00	Parking brake , replacing brake caliper	
550-014	1.50	Parking brake, replacing brake pads	
550-015	0.30	Parking brake, manually releasing	
550-023	0.20	Parking brake, function checking	
553-000	0.40	Load and dump brake, working pressure, checking and adjusting	
553-001	0.40	Load and Dump brake, servo pressure, checking	
553-002	0.30	Load and Dump brake, function check	10001 - 10891
56		COMPRESSED-AIR BRAKE	
561-004	2.50	Compressor, replacing	
59		MISCELLANEOUS	
590-001	0.30	Quick coupling compressed air, replacing	
6		STEERING	
64		STEERING	
642-026	2.50	Steering gear, replacing	
642-058	2.00	Steering gear, check.and adj.	
643-010	1.75	Steering linkage, checking and adjusting	
643-013	0.80	Steering times, checking and adjusting	
643-014	1.00	Steering valve, neutral position, checking and adjusting	
645-004	0.90	Steering cylinder, removing	
645-005	1.00	Steering cylinder, installing	

Op.no.	time (h)	Notes	
645-052	1.25	Steering cylinder removed, reconditioning excl replacing bearings	
645-054	1.00	Steering cylinder, replacing bearings	
645-054	2.50	Steering cylinder, replacing bearings	
645-084	1.25	Damping cylinder, checking spring force	
645-085	1.25	Damping cylinder, changing seal	
647-095	1.00	Auxiliary steering, adjusting working- and stand-by pressure	
647-096	1.00	Auxiliary steering, hydraulic pump, removing	
647-097	1.50	Auxiliary steering, hydraulic pump, installation	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
715-015	0.90	Protecting plate, removal	
715-016	1.50	Protecting plate, installation	
72		SUSPENSION	
727-002	2.50	Rubber element, replacing	
74		FRAME LINK	
741-001	6.50	Frame joint, separating machine	
741-006	3.50	Frame joint, measuring and adjusting clearance	
741-041	2.50	Frame joint, changing bearing, machine separated (on load unit frame)	
742-038	0.70	Articulated joint, checking clearance	
75		AXLE SUSPENSION	
751-001	3.00	A-frame bushing, tractor unit, replacing	
751-013	0.80	Cross stay, rubber bushing, replacing	11140 - 69999
751-013	1.00	Cross stay, rubber bushing, replacing	11140 - 69999
756-013	1.00	Cross stay, rubber bushing, replacing	11140 - 69999
756-027	4.50	A-frame bushing, front on load unit, changing	
756-028	2.50	A-frame bushing, rear on load unit, changing	
756-030	5.50	Bogie beam, changing	
76		SHOCK ABSORBER; AXLE LOCKING; ANTI ROLL BAR; LEVEL / SIDE CONTROL	
761-001	3.00	Shock absorber front, replacing all	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-007	0.70	Wheel, installing	
771-008	0.70	Wheel, removing	

Op.no.	time (h)	Notes	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	4.00	Cab, removing	
810-002	4.50	Cab, installing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-002	0.60	Engine hood, installing	
821-060	0.50	Electric hood pump, changing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	1.00	Door, replacing	10001 - 69999
831-006	0.60	Door lock, replacing	
831-052	0.60	Cab door, removing door catch	10001 - 69999
831-053	0.30	Cab door, installing door catch	10001 - 69999
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-002	3.00	Windscreen, replacing	
843-013	2.50	Side window, replacing	
843-048	2.00	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-002	0.50	Air suspension for operator's seat, changing	
852-003	0.80	Operator's seat, removing	
852-004	0.40	Operator's seat, installing	
87		AIR CONDITIONING UNIT	
873-004	3.00	Heater core, replacing	
873-006	1.00	Fan motor, replacing	
873-008	0.90	Heat control valve, replacing	
873-009	0.90	Heat control, replacing	
874-002	0.40	Refrigerant, draining	
874-003	0.80	Cooling unit, performance test	
874-006	4.00	Compressor, replacing incl draining and filling	
874-008	2.50	Refrigerant, filling incl vacuum pumping	
874-011	4.00	Receiver, replacing incl draining and filling	
874-012	5.00	Evaporator, replacing incl draining and filling	
874-014	1.75	Thermostat, replacing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-002	0.30	Hydraulic system, bleeding	

Op.no.	time (h)	Notes
900-003	0.10	Hydraulic system, relieve pressure
900-005	0.30	Vacuum pump, connection
900-006	0.20	Vacuum pump, disconnection
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-078	0.60	Dump lever, changing
912-115	3.00	Steering and tipping valve, removal
912-116	3.00	Steering and tipping valve, installation
913-003	0.90	Hydraulic pump, checking and adjusting standby pressure
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-023	0.90	Pump, removal
913-024	1.75	Pump, installation
913-042	0.50	Working pumps, checking function
913-068	1.50	Pump regulator, checking
914-095	0.90	Dumping lever, checking pressure
95		LOAD CARRIER
951-005	1.00	Hoist cylinder bearing, changing
951-005	0.90	Hoist cylinder bearing, changing
951-006	3.00	Hoist cylinder removed, reconditioning
951-007	1.25	Hoist cylinder, removal
951-008	1.25	Hoist cylinder, installation
951-011	0.30	Cylinder, rear flap, gas pressure, checking and adjusting
951-030	0.40	Dump body alternative, lowering
951-040	2.50	Dump body joint, changing tipping bearing
951-041	2.50	Dump body, adjusting against frame
99		MISCELLANEOUS
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes	
0		GENERAL	
09		MISCELLANEOUS	
090-001	0.70	Engine, basic check	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
172-002	3.50	Warranty inspection 100 hours	
172-004	13.00	Warranty inspection 1000 hours	
173-002	0.30	Maintenance service, daily	
173-004	0.30	Maintenance service, every 50 hours	
173-007	1.00	Maintenance service, every 250 hours	
173-010	2.50	Maintenance service, every 500 hours	
173-012	5.50	Maintenance service, every 1000 hours	
173-014	14.00	Maintenance service, every 2000 hours	
173-018	22.00	Maintenance service, every 4000 hours	
173-022	17.00	Maintenance service, every 6000 hours	
19		GENERAL	
191-022	0.50	Service position 2	
191-025	0.50	Service position 3	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.25	E-ECU, MID 128, changing non-programmed ECU	
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-002	7.00	Compression test	
210-073	6.50	Engine and transmission, removing	
210-074	11.00	Engine and transmission, mounting	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
210-092	2.50	Engine rotation speed sensor (camshaft), replacing	
214-012	5.50	Valves, adjusting	
215-032	7.50	Timing gear case, fitting new gasket in machine	11005 - 69999
215-042	7.00	Camshaft, replacing	11005 - 69999
215-043	4.00	Camshaft setting, checking	11005 - 69999
216-018	3.50	Crankshaft, replacing rear oil seal	
217-004	3.50	Oil sump gasket, changing	

Op.no.	time (h)	Notes
217-005	4.00	Oil level sensor, changing
218-001	1.50	Rubber cushion, replacing
218-007	4.00	Engine mounting rear, changing
22		LUBRICATING SYSTEM
221-022	0.60	Lubrication oil pressure, checking with pressure gauge
223-006	4.50	Oil cooler, replacing
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.70	Fuel system, bleeding
233-004	0.70	Feed pump, checking feed pressure
233-009	0.20	Fuel pump (valves), inspection
233-010	2.00	Fuel pump, inspection
236-002	0.90	Stall speed, checking
237-010	0.30	Unit injectors, adjusting pretension
237-012	5.00	Unit injector, replacing
237-016	10.00	Injectors, replacing copper sleeve in machine
237-123	0.70	Injector shut off, manual
25		INLET SYSTEM; EXHAUST SYSTEM
255-002	1.25	Turbocharger, inspection
255-071	2.00	Turbocharger, replacing
256-006	0.70	Preheating coil, replacing
258-002	3.50	Intercooler, replacing
258-014	0.90	Fan pump, removing
258-015	1.50	Fan pump, installation
258-016	0.80	Cooling fan motor, intercooler, checking/adjusting low rpm
258-017	0.80	Cooling fan motor, intercooler, checking/adjusting high rpm
26		COOLING SYSTEM
260-002	5.50	Cooling system, flushing
261-004	1.25	Coolant, changing
261-004	1.25	Coolant, changing
261-011	1.75	Radiator, removing
261-013	2.50	Radiator, installing
262-008	2.50	Secondary coolant pump, replacing
262-098	1.75	Thermostat, replacing
263-013	0.70	Fan belt and/or alternator belt, checking and adjusting tension
263-023	0.90	Fan pump, removing
263-024	1.50	Fan pump, installing

Op.no.	time (h)	Notes
263-063	0.80	Cooling fan motor, radiator, checking/adjusting low rpm
263-064	0.80	Cooling fan motor, radiator, checking/adjusting high rpm
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	0.60	I-ECU, MID 140, changing non-programmed ECU
300-074	0.40	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-002	1.25	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
35		LIGHTING
352-002	0.50	Headlights, adjusting
36		OTHER ELECTRICAL EQUIPMENT
363-002	1.25	Windscreen wiper front, replacing motor
366-064	1.25	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-008	0.60	Engine rotation speed sensor, replacing
39		MISCELLANEOUS
390-902	2.00	CareTrack, installing new
398-001	0.50	CareTrack antenna, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-001	0.70	Checking of main, torque converter and lubricating oil pressure
421-046	3.50	PWM-valve control system, changing
421-054	2.00	Seal for rear output shaft, replacing
421-061	0.50	Induction sensor for output shaft, changing
421-062	1.50	Induction sensor for turbine speed, changing

Op.no.	time (h)	Notes
421-070	6.00	Transmission, removing
421-072	7.00	Transmission, installing
421-083	1.00	Transmission, remove from a non mounted engine
421-084	1.50	Transmission, fitting on a non mounted engine
43		GEARBOX,
432-076	0.70	T-ECU, MID 130, changing non-programmed ECU
432-078	0.60	T-ECU, MID 130, changing pre-programmed ECU
434-002	1.75	Dropbox, replacing seal for front output shaft
434-004	2.00	Dropbox, replacing seal for rear output shaft
434-064	0.60	Differential lock longitudinal, adjustment of sender unit
434-065	0.40	Rotation speed sensor, replacing
434-073	2.50	Dropbox, installing
434-074	2.50	Dropbox, removing
45		PROPELLER SHAFT
451-006	5.50	Intermediate shaft and/or bearing, replacing (in frame joint)
46		FRONT AXLE; REAR AXLE
461-011	12.00	Centre gear , removing and fitting
461-037	2.50	Hub reduction, removing
461-038	3.50	Hub reduction, installing
461-046	1.75	Input shaft, seal, replacing
463-011	12.00	Centre gear, removing and fitting
463-016	13.00	Dog clutch 6x6, checking and adjusting
463-079	3.00	Output shaft 6-wheel drive, sealing and bearing, replacing
463-100	0.30	Rotation speed sensor, replacing
463-101	0.40	Rotation speed sensor, adjusting
463-103	1.75	Input shaft, seal, replacing
464-011	12.00	Centre gear, removing and fitting
464-014	1.75	Input shaft seal, replacing
468-062	0.70	Transverse differential lock/axle, checking and adjusting
48		POWER TAKE OFF
482-004	7.00	Power take-off, between engine and gearbox, reconditioning
49		MISCELLANEOUS
491-006	1.50	Oil cooler, replacing

Op.no.	time (h)	Notes	
5		BRAKE	
51		WHEEL BRAKE	
516-010	5.00	Wheel brake, replacing	
52		HYDRAULIC BRAKE SYSTEM	
520-001	0.60	Brake system, checking function, hydraulic	
520-010	0.10	Brake system, relieve pressure	
520-037	0.80	Brake system, bleeding	
525-008	3.50	Foot brake valve, replacing	
527-001	0.10	Accumulator removed, checking charging pressure	
527-002	0.80	Accumulator, replacing	
527-002	1.00	Accumulator, replacing	
527-004	2.50	Hydraulic pump, replacing	
55		PARKING BRAKE	
550-005	3.00	Parking brake, replacing brake disc	
550-009	1.25	Spring brake cylinder, replacing	
550-012	2.00	Parking brake , replacing brake caliper	
550-014	1.50	Parking brake, replacing brake pads	
550-015	0.30	Parking brake, manually releasing	
550-023	0.20	Parking brake, function checking	
553-000	0.40	Load and dump brake, working pressure, checking and adjusting	
553-001	0.40	Load and Dump brake, servo pressure, checking	
553-002	0.30	Load and Dump brake, function check	10001 - 10891
56		COMPRESSED-AIR BRAKE	
561-004	2.50	Compressor, replacing	
59		MISCELLANEOUS	
590-001	0.30	Quick coupling compressed air, replacing	
6		STEERING	
64		STEERING	
642-026	2.50	Steering gear, replacing	
642-058	2.00	Steering gear, check.and adj.	
643-010	1.75	Steering linkage, checking and adjusting	
643-013	0.80	Steering times, checking and adjusting	
643-014	1.00	Steering valve, neutral position, checking and adjusting	
645-004	0.90	Steering cylinder, removing	
645-005	1.00	Steering cylinder, installing	

Op.no.	time (h)	Notes
645-052	1.25	Steering cylinder removed, reconditioning excl replacing bearings
645-054	1.00	Steering cylinder, replacing bearings
645-054	2.50	Steering cylinder, replacing bearings
645-084	1.25	Damping cylinder, checking spring force
645-085	1.25	Damping cylinder, changing seal
647-095	1.00	Auxiliary steering, adjusting working- and stand-by pressure
647-096	1.00	Auxiliary steering, hydraulic pump, removing
647-097	1.50	Auxiliary steering, hydraulic pump, installation

7 FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT

71 FRAME

715-015	0.90	Protecting plate, removal
715-016	1.50	Protecting plate, installation

72 SUSPENSION

720-000	0.70	V2-ECU, MID 249, replacing non-programmed ECU
720-001	0.70	V2-ECU, MID 249, replacing pre-programmed ECU
720-008	1.25	Position sensor, complete replacement
720-010	0.50	Forced Raising/lowering, Full suspension
720-011	0.30	Relieve pressure
720-012	0.80	Manual lowering
720-012	0.50	Manual lowering
720-013	0.20	Suspension system, bleeding air
720-020	0.70	Hydraulic cylinder bushing, suspension system, replacing
720-020	0.70	Hydraulic cylinder bushing, suspension system, replacing
720-020	0.70	Hydraulic cylinder bushing, suspension system, replacing
720-021	1.75	Hydraulic cylinder, suspension system, overhaul
720-022	1.50	Accumulator, suspension system, overhaul
725-001	1.50	Suspension cylinder, removal
725-002	1.75	Suspension cylinder, installation
725-003	1.00	Accumulator, removal
725-004	1.25	Accumulator, installation
725-008	1.50	Position sensor front, replacing
725-009	0.70	Accumulator, precharge pressure, checking and adjusting
726-001	1.75	Suspension cylinder, removal

Op.no.	time (h)		Notes
726-001	1.75	Suspension cylinder, removal	
726-002	2.00	Suspension cylinder, installation	
726-002	2.00	Suspension cylinder, installation	
726-003	0.30	Accumulator, removal	
726-003	0.20	Accumulator, removal	
726-004	0.60	Accumulator, installation	
726-004	0.80	Accumulator, installation	
726-006	2.50	Accumulator bank, removal	
726-007	1.75	Accumulator bank, installation	
726-008	1.25	Position sensor rear, replacing	
726-009	0.70	Accumulator, precharge pressure, checking and adjusting	
74		FRAME LINK	
741-001	6.50	Frame joint, separating machine	
741-006	3.50	Frame joint, measuring and adjusting clearance	
741-041	2.50	Frame joint, changing bearing, machine separated (on load unit frame)	
742-038	0.70	Articulated joint, checking clearance	
75		AXLE SUSPENSION	
751-001	3.00	A-frame bushing, tractor unit, replacing	
751-013	1.00	Cross stay, rubber bushing, replacing	11140 - 69999
751-013	0.80	Cross stay, rubber bushing, replacing	11140 - 69999
756-013	1.00	Cross stay, rubber bushing, replacing	11140 - 69999
756-027	3.50	A-frame bushing, front on load unit, changing	
756-028	2.50	A-frame bushing, rear on load unit, changing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-007	0.70	Wheel, installing	
771-008	0.70	Wheel, removing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	4.00	Cab, removing	
810-002	4.50	Cab, installing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-002	0.60	Engine hood, installing	
821-060	0.50	Electric hood pump, changing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	1.00	Door, replacing	11005 - 69999

Op.no.	time (h)		Notes
831-006	0.60	Door lock, replacing	
831-052	0.60	Cab door, removing door catch	11005 - 69999
831-053	0.30	Cab door, installing door catch	11005 - 69999
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-048	2.00	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-002	0.50	Air suspension for operator's seat, changing	
852-003	0.80	Operator's seat, removing	
852-004	0.40	Operator's seat, installing	
87		AIR CONDITIONING UNIT	
873-004	3.00	Heater core, replacing	
873-006	1.00	Fan motor, replacing	
873-008	0.90	Heat control valve, replacing	
873-009	0.90	Heat control, replacing	
874-002	0.40	Refrigerant, draining	
874-003	0.80	Cooling unit, performance test	
874-006	4.00	Compressor, replacing incl draining and filling	
874-008	2.50	Refrigerant, filling incl vacuum pumping	
874-011	4.00	Receiver, replacing incl draining and filling	
874-012	5.00	Evaporator, replacing incl draining and filling	
874-014	1.75	Thermostat, replacing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-002	0.30	Hydraulic system, bleeding	
900-003	0.10	Hydraulic system, relieve pressure	
900-005	0.30	Vacuum pump, connection	
900-006	0.20	Vacuum pump, disconnection	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
912-078	0.60	Dump lever, changing	
912-115	3.00	Steering and tipping valve, removal	
912-116	3.00	Steering and tipping valve, installation	
913-003	0.90	Hydraulic pump, checking and adjusting standby pressure	
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-023	0.90	Pump, removal	
913-024	1.75	Pump, installation	

Op.no.	time (h)	Notes
913-042	0.50	Working pumps, checking function
913-068	1.50	Pump regulator, checking
914-095	0.90	Dumping lever, checking pressure
95		LOAD CARRIER
951-005	1.00	Hoist cylinder bearing, changing
951-005	0.90	Hoist cylinder bearing, changing
951-006	3.00	Hoist cylinder removed, reconditioning
951-007	1.25	Hoist cylinder, removal
951-008	1.25	Hoist cylinder, installation
951-011	0.30	Cylinder, rear flap, gas pressure, checking and adjusting
951-030	0.40	Dump body alternative, lowering
951-040	2.50	Dump body joint, changing tipping bearing
951-041	2.50	Dump body, adjusting against frame
99		MISCELLANEOUS
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
170-001	0.75	Washing, external cleaning
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	1.25	Delivery Inspection, according to Inspection Programme
172-002	7.00	Warranty inspection 100 hours
172-004	10.00	Warranty inspection 1000 hours
173-002	0.50	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-007	4.00	Maintenance service, every 250 hours
173-010	4.50	Maintenance service, every 500 hours
173-012	7.00	Maintenance service, every 1000 hours
173-014	16.00	Maintenance service, every 2000 hours
173-059	2.00	Engine, changing oil and filter
173-061	1.50	Transmission, changing oil and filter
173-066	1.00	Drop box, changing oil/cleaning suction strainer
173-074	1.00	Hydraulic oil tank, changing oil and filter
173-075	1.50	Hydraulic oil tank, changing oil and filter incl.cleaning tank
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-002	2.00	Compression test
210-070	8.50	Engine, removing
210-071	48.00	Engine removed, general overhaul
210-072	10.00	Engine, installing
210-073	8.00	Engine and transmission, removing
210-074	9.00	Engine and transmission, mounting
214-012	1.50	Valves, adjusting
214-096	1.50	Valve cap, changing
23		FUEL SYSTEM
233-001	0.50	Fuel system, bleeding
233-004	0.75	Feed pump, checking feed pressure
236-030	1.50	Injection timing, checking
236-031	1.00	Injection timing adjuster, checking
237-002	2.00	Injectors, replacing all
25		INLET SYSTEM; EXHAUST SYSTEM
255-070	0.50	Turbocharger, removing

Op.no.	time (h)	Notes
255-071	1.50	Turbocharger, replacing
255-072	1.00	Turbocharger, installing
256-001	0.50	Air cleaner, cleaning filter element
256-002	0.25	Air cleaner, checking prssure drop indicator
256-003	0.50	Air cleaner, primary filter replacing
256-004	0.50	Air cleaner, secondary filter replacing
258-002	1.50	Intercooler, replacing
26		COOLING SYSTEM
261-002	0.25	Coolant, checking anti-freeze resistance
261-004	1.50	Coolant, changing
261-008	2.50	Radiator, replacing
261-010	1.00	Radiator, adjusting
261-072	0.50	Coolant filter, changing
263-001	1.00	Fan motor, removing
263-002	1.00	Fan motor, changing piston rings
263-003	1.00	Fan motor, installing
263-004	1.00	Fan motor, checking working pressure
263-005	0.25	Fan motor, adjusting working pressure
263-006	1.50	Fan hydraulically driven, removing pump
263-007	1.50	Fan hydraulically driven, fitting pump
263-009	0.75	Fan hydraulically driven, replacing oil return filter
263-012	0.50	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	0.50	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.50	Battery charging capacity, checking
311-002	1.50	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
35		LIGHTING
352-002	0.50	Headlights, adjusting
352-008	0.50	Headlamp reflector and/or glass, replacing one incl adjusting

Op.no.	time (h)	Notes
352-024	0.50	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.50	Rear lamp, replacing one
353-018	0.50	Rear lamp, replacing glass or bulb
356-056	0.50	Work lighting, replacing one head lamp assy
356-057	0.50	Work lighting, replacing one insert
36		OTHER ELECTRICAL EQUIPMENT
361-002	0.50	Flasher unit, replacing relay
361-010	0.50	Flasher switch, replacing
361-017	0.50	Flasher lamp, replacing glass or bulb
362-002	0.50	Horn, replacing
362-003	0.50	Reverse alarm, replacing
362-016	0.50	Horn switch, replacing
362-900	1.00	Rotating beacon, installing new
363-002	1.50	Windscreen wiper front, replacing motor
363-003	0.50	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
364-004	0.50	Switch, replacing
364-008	0.50	Brake light switch, replacing
367-020	0.50	ECU, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-001	1.75	Checking of main, torque converter and lubricating oil pressure
421-050	0.75	Transmission, resistance measuring of cableharness
421-051	0.50	Transmission, resistance measuring of solenoides
421-054	4.00	Seal for rear output shaft, replacing
421-057	0.50	Retarder valve, replacing of seal
421-059	0.50	Transmission retarder valve, adjusting air pressure
421-060	0.50	Transmission, resistans measuring control system
421-061	1.00	Induction sensor for output shaft, changing
421-062	0.75	Induction sensor for turbine speed, changing
421-065	5.00	Control system, replacing
421-068	5.50	Transmission, removing (upwards)
421-069	5.50	Transmission, installing (from above)
421-070	7.00	Transmission, removing
421-072	9.00	Transmission, installing
421-078	2.00	Transmission, remove and fitting from a non mounted engine

Op.no.	time (h)	Notes
421-079	0.25	Transmission, replacing breather filter
43		GEARBOX,
434-002	2.00	Dropbox, replacing seal for front output shaft
434-004	2.00	Dropbox, replacing seal for rear output shaft
434-015	4.00	Dropbox, replacing seal for input shaft
434-060	1.00	Dropbox, adjusting control for high and low gear
434-061	0.75	Differential lock longitudinal, adjusting engagement
434-063	1.00	Adjustment of sender units SE54 and SE55
434-073	4.50	Dropbox, installing
434-074	4.00	Dropbox, removing
45		PROPELLER SHAFT
451-004	1.50	Propeller shaft, rear, replacing
451-005	1.00	Propeller shaft for rear boggie axel, replacing
451-007	0.75	Propeller shaft, in frame joint, replacing
451-010	0.75	Propeller shaft, front, replacing
451-013	1.50	Propeller shaft, removed reconditioning
451-014	3.50	Propeller shaft between transmission and dropbox, replacing
46		FRONT AXLE; REAR AXLE
461-043	4.00	Hub, replacing seal
468-005	0.50	Differential lock rear, adjusting engagement
5		BRAKE
51		WHEEL BRAKE
516-004	7.00	Brake discs, replacing on both sides
516-010	9.00	Wheel brake, replacing
52		HYDRAULIC BRAKE SYSTEM
520-001	0.75	Brake system, checking function, hydraulic
520-037	1.00	Brake system, bleeding
527-001	0.50	Accumulator removed, checking charging pressure
55		PARKING BRAKE
550-002	0.50	Parking brake, adjusting
550-003	0.50	Parking brake, control valve (removed) reconditioning
550-005	2.50	Parking brake, replacing brake disc
550-009	0.50	Spring brake cylinder, replacing
550-010	1.00	Spring brake cylinder removed, reconditioning
550-012	2.00	Parking brake , replacing brake caliper

Op.no.	time (h)	Notes
550-013	0.75	Parking brake caliper (air), removed reconditioning
550-014	2.00	Parking brake, replacing brake pads
551-003	1.00	Parking brake, (removed) reconditioning of brake caliper
56		COMPRESSED-AIR BRAKE
561-004	1.00	Compressor, replacing
561-022	0.25	Pressure regulator, adjusting
6		STEERING
64		STEERING
642-026	3.00	Steering gear, replacing
643-010	3.50	Steering linkage, checking and adjusting
645-001	0.50	Steering cylinder bearing, checking clearanse
645-003	5.00	Steering system working pressure, checking
645-006	5.00	Steering cylinder, replacing
645-054	1.00	Steering cylinder, replacing bearings
645-060	3.00	Steering cylinder, repacking in machine
645-080	2.00	Steering valve neutral position and valve spool end float, checking
645-081	3.00	Steering valve removed, reconditioning
645-082	3.00	Steering valve, replacing
645-084	0.50	Damping cylinder, checking spring force
645-085	1.00	Damping cylinder, changing seal
647-093	3.00	Auxiliary steering, replacing hydraulic pump
647-095	0.50	Auxiliary steering, adjusting working- and stand-by pressure
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
711-020	3.00	Load unit frame, checking measurements
72		SUSPENSION
727-001	6.50	Spring element front, replacing all
74		FRAME LINK
741-005	0.50	Frame joint, checking clearance
741-036	2.00	Frame joint, replacing bearings
742-007	10.50	Frame joint, replacing hitch
742-040	15.00	Steering joint, replacing bearings

Op.no.	time (h)	Notes
742-044	1.00	Articulated joint, replacing bushing
75		AXLE SUSPENSION
754-021	1.00	Front bogie axle cross stay, adjusting
754-031	1.00	Rear bogie axle cross stay, adjusting
756-012	1.00	Cross stay rubber bushing (bearing), replacing (front)
756-014	1.00	Cross stay rubber bushing (bearing), replacing, (rear)
756-015	3.00	Cross stay, checking and adjusting
756-024	1.00	Bogie beam, changing rubber spring, one side (front)
756-026	3.00	Bogie, replacing all rubber elements both sides
76		SHOCK ABSORBER; AXLE LOCKING; ANTI ROLL BAR; LEVEL / SIDE CONTROL
761-001	2.00	Shock absorber front, replacing all
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.50	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.00	Windscreen, replacing
843-012	1.50	Rear window, replacing
843-013	1.00	Side window, replacing
843-048	1.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-002	1.00	Air suspension for operator's seat, changing
87		AIR CONDITIONING UNIT
873-004	1.50	Heater core, replacing
873-006	1.50	Fan motor, replacing
873-008	1.00	Heat control valve, replacing
874-002	1.50	Refrigerant, draining
874-003	0.50	Cooling unit, performance test
874-005	2.00	Refrigerant, filling excl vacuum pumping
874-006	4.00	Compressor, replacing incl draining and filling

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
913-003	0.50	Hydraulic pump, checking and adjusting standby pressure
913-008	3.00	Hydraulic pump, ground dependent, changing
94		UNIT, LOAD HANDLING
945-010	1.50	Tilt cylinder removed, repacking
95		LOAD CARRIER
951-001	0.50	Tipping control, adjusting
951-002	2.00	Tipping valve, changing wire
951-003	0.50	Dump body position indicator, adjusting
951-004	5.00	Hoist cylinder, changing
951-006	4.00	Hoist cylinder removed, reconditioning
951-011	0.30	Cylinder, rear flap, gas pressure, checking and adjusting
951-030	0.50	Dump body alternative, lowering
951-040	3.50	Dump body joint, changing tipping bearing
951-041	1.50	Dump body, adjusting against frame
99		MISCELLANEOUS
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes	
0		GENERAL	
09		MISCELLANEOUS	
090-001	0.70	Engine, basic check	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-001	0.75	Washing, external cleaning	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
171-001	1.00	Arrival Inspection, according to Inspection Programme	
171-002	1.25	Delivery Inspection, according to Inspection Programme	
172-002	3.50	Warranty inspection 100 hours	
172-004	14.00	Warranty inspection 1000 hours	
172-004	8.00	Warranty inspection 1000 hours	
173-002	0.30	Maintenance service, daily	
173-004	0.30	Maintenance service, every 50 hours	
173-007	1.00	Maintenance service, every 250 hours	
173-010	2.50	Maintenance service, every 500 hours	
173-012	5.50	Maintenance service, every 1000 hours	
173-014	13.00	Maintenance service, every 2000 hours	
173-059	1.00	Engine, changing oil and filter	
173-061	1.25	Transmission, changing oil and filter	
173-066	1.00	Drop box, changing oil/cleaning suction strainer	
173-070	3.00	Axles, changing oil	
173-074	1.00	Hydraulic oil tank, changing oil and filter	
173-075	3.00	Hydraulic oil tank, changing oil and filter incl.cleaning tank	
173-083	0.50	Frame joint, changing oil	
19		GENERAL	
191-021	0.20	Service position 1	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.25	E-ECU, MID 128, changing non-programmed ECU	12001 - 19999 70001 - 79999
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU	10001 - 12996 60001 - 60286
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	12001 - 19999

Op.no.	time (h)		Notes
			70001 - 79999
21		ENGINE	
210-002	7.00	Compression test	
210-070	8.50	Engine, removing	
210-072	10.00	Engine, installing	
210-073	6.50	Engine and transmission, removing	
210-074	11.00	Engine and transmission, mounting	
214-012	5.50	Valves, adjusting	12000 - 19999 70000 - 79999
214-012	5.50	Valves, adjusting	10000 - 11999 60000 - 60286
214-012	5.50	Valves, adjusting	12000 - 12996
215-032	7.50	Timing gear case, fitting new gasket in machine	12001 - 19999 70001 - 79999
215-042	7.00	Camshaft, replacing	12001 - 19999 70001 - 79999
215-043	4.00	Camshaft setting, checking	12001 - 19999 70001 - 79999
216-018	3.50	Crankshaft, replacing rear oil seal	
217-004	3.50	Oil sump gasket, changing	
217-005	4.00	Oil level sensor, changing	
218-001	1.50	Rubber cushion, replacing	
218-007	4.00	Engine mounting rear, changing	
22		LUBRICATING SYSTEM	
221-022	0.60	Lubrication oil pressure, checking with pressure gauge	
223-006	4.50	Oil cooler, replacing	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	13001 - 19999 72001 - 79999
233-001	0.70	Fuel system, bleeding	12001 - 19999 70001 - 79999
233-001	0.70	Fuel system, bleeding	10000 - 11999 60000 - 60286
233-004	0.70	Feed pump, checking feed pressure	
233-009	0.20	Fuel pump (valves), inspection	
233-010	2.00	Fuel pump, inspection	
236-002	0.80	Stall speed, checking	
236-004	0.25	low idling speed, checking and adjusting	
237-012	5.00	Unit injector, replacing	
237-016	10.00	Injectors, replacing copper sleeve in machine	
237-123	0.70	Injector shut off, manual	

Op.no.	time (h)	Notes	
25		INLET SYSTEM; EXHAUST SYSTEM	
255-002	1.25	Turbocharger, inspection	
255-071	2.00	Turbocharger, replacing	
256-001	0.50	Air cleaner, cleaning filter element	
256-003	0.25	Air cleaner, primary filter replacing	
256-004	0.25	Air cleaner, secondary filter replacing	
256-006	0.70	Preheating coil, replacing	
258-002	3.50	Intercooler, replacing	
258-016	0.80	Cooling fan motor, intercooler, checking/adjusting low rpm	
258-017	0.80	Cooling fan motor, intercooler, checking/adjusting high rpm	
26		COOLING SYSTEM	
260-002	5.50	Cooling system, flushing	
261-002	0.25	Coolant, checking anti-freeze resistance	
261-004	1.50	Coolant, changing	
261-011	1.75	Radiator, removing	
261-013	2.50	Radiator, installing	
261-072	0.50	Coolant filter, changing	
262-071	0.90	Coolant pump removed, reconditioning	
263-001	1.00	Fan motor, removing	
263-003	1.00	Fan motor, installing	
263-006	1.00	Fan hydraulically driven, removing pump	
263-007	1.50	Fan hydraulically driven, fitting pump	
263-009	0.50	Fan hydraulically driven, replacing oil return filter	
263-012	1.00	Fan belt and/or alternator belt, replacing	
263-013	0.70	Fan belt and/or alternator belt, checking and adjusting tension	10000 - 11999 60000 - 60286
263-013	0.70	Fan belt and/or alternator belt, checking and adjusting tension	12000 - 19999 70000 - 79999
263-022	1.00	Fan belt and/or alternator-, compressor belt, replacing all belts	
263-063	0.80	Cooling fan motor, radiator, checking/adjusting low rpm	
263-064	0.80	Cooling fan motor, radiator, checking/adjusting high rpm	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	0.60	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.40	I-ECU, MID 140, changing pre-programmed ECU	

Op.no.	time (h)		Notes
31		BATTERY	
311-001	0.50	Battery charging capacity, checking	
311-002	1.25	Batteries, replacing	
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.00	Alternator, replacing incl function check	12001 - 19999 70001 - 79999
33		STARTING SYSTEM	
331-018	0.75	Starter motor, replacing	
35		LIGHTING	
352-002	0.50	Headlights, adjusting	
352-024	0.75	Headlight, complete, changing (high beam 1 pc.) incl. setting	
352-060	0.75	Headlight, complete, changing (low beam 1 pc.) incl. setting/adjustment	
353-016	0.50	Rear lamp, replacing one	
356-056	0.50	Work lighting, replacing one head lamp assy	
356-057	0.50	Work lighting, replacing one insert	
36		OTHER ELECTRICAL EQUIPMENT	
360-001	0.75	Combination control (by steering wheel), changing	
361-002	1.00	Flasher unit, replacing relay	
361-017	0.50	Flasher lamp, replacing glass or bulb	
362-002	0.50	Horn, replacing	
362-003	0.50	Reverse alarm, replacing	
362-900	1.00	Rotating beacon, installing new	
363-002	1.25	Windscreen wiper front, replacing motor	
363-004	0.50	Windscreen flusher pump, replacing	
364-004	0.25	Switch, replacing	
366-060	0.70	C-ECU, MID178, changing non-programmed ECU	10001 - 11999 60001 - 60286
366-062	0.70	C-ECU, MID178, changing pre-programmed ECU	10001 - 11999 60001 - 60286
366-064	1.00	V-ECU, MID 187, changing non-programmed ECU	12001 - 19999 70001 - 79999
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	10001 - 11999 60001 - 60286
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	10001 - 11999 60001 - 60286
366-066	0.90	V-ECU, MID 187, changing pre-programmed ECU	12001 - 19999 70001 - 79999
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-038	1.00	Engine rotation speed sensor, replacing	

Op.no.	time (h)	Notes	
386-088	2.00	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-902	2.00	CareTrack, installing new	
398-001	0.50	CareTrack antenna, replacing	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-001	0.70	Checking of main, torque converter and lubricating oil pressure	
421-002	1.75	Transmission oil pressure, checking	
421-047	0.50	Gear selector, replacing	
421-050	0.75	Transmission, resistance measuring of cableharness	
421-051	0.50	Transmission, resistance measuring of solenoides	
421-054	2.00	Seal for rear output shaft, replacing	10509 - 19999 60236 - 60286
421-057	1.50	Retarder valve, replacing of seal	
421-060	0.50	Transmission, resistans measuring control system	
421-062	1.50	Induction sensor for turbine speed, changing	
421-068	5.50	Transmission, removing (upwards)	
421-069	5.50	Transmission, installing (from above)	
421-070	6.00	Transmission, removing	
421-072	7.00	Transmission, installing	
421-079	0.25	Transmission, replacing breather filter	
421-083	1.00	Transmission, remove from a non mounted engine	
421-084	1.50	Transmission, fitting on a non mounted engine	
43		GEARBOX,	
432-076	0.70	T-ECU, MID 130, changing non-programmed ECU	
432-078	0.60	T-ECU, MID 130, changing pre-programmed ECU	
434-002	2.00	Dropbox, replacing seal for front otput shaft	
434-004	2.00	Dropbox, replacing seal for rear output shaft	
434-015	4.00	Dropbox, replacing seal for input shaft	
434-016	1.00	Dropbox, oil pump, replacing	
434-061	0.50	Differential lock longitudinal, adjusting engagement	
434-063	1.00	Adjustment of sender units SE54 and SE55	
434-073	4.50	Dropbox, installing	
434-074	4.00	Dropbox, removing	

Op.no.	time (h)		Notes
45		PROPELLER SHAFT	
451-005	1.00	Propeller shaft for rear boggie axel, replacing	
451-006	6.00	Intermediate shaft and/or bearing, replacing (in frame joint)	
451-007	1.50	Propeller shaft, in frame joint, replacing	
451-008	1.50	Propellershaft for front boggie axel, replacing	
451-010	1.00	Propeller shaft, front, replacing	
451-014	3.50	Propeller shaft between transmission and dropbox, replacing	
46		FRONT AXLE; REAR AXLE	
461-006	5.00	Spindle, replacing one side	
463-016	0.50	Dog clutch 6x6, checking and adjusting	
468-005	0.50	Differential lock rear, adjusting engagement	
468-062	0.50	Transverse differential lock/axle, checking and adjusting	
48		POWER TAKE OFF	
482-004	7.00	Power take-off, between engine and gearbox, reconditioning	13001 - 19999 72001 - 79999
49		MISCELLANEOUS	
491-006	1.25	Oil cooler, replacing	
5		BRAKE	
51		WHEEL BRAKE	
516-004	7.00	Brake discs, replacing on both sides	
516-010	9.00	Wheel brake, replacing	
52		HYDRAULIC BRAKE SYSTEM	
520-001	0.75	Brake system, checking function, hydraulic	
520-010	0.10	Brake system, relieve pressure	
520-037	1.00	Brake system, bleeding	
525-008	3.50	Foot brake valve, replacing	
527-001	0.50	Accumulator removed, checking charging pressure	
527-004	2.50	Hydraulic pump, replacing	
55		PARKING BRAKE	
550-005	3.00	Parking brake, replacing brake disc	
550-009	1.00	Spring brake cylinder, replacing	
550-012	2.00	Parking brake , replacing brake caliper	
550-013	1.00	Parking brake caliper (air), removed reconditioning	
550-014	1.00	Parking brake, replacing brake pads	

Op.no.	time (h)		Notes
550-016	0.50	Parking brake lever, changing	
553-000	0.40	Load and dump brake, working pressure, checking and adjusting	
56		COMPRESSED-AIR BRAKE	
561-004	2.00	Compressor, replacing	10949 - 10955
561-004	2.00	Compressor, replacing	10958 - 19999
561-022	0.25	Pressure regulator, adjusting	
6		STEERING	
64		STEERING	
642-026	2.50	Steering gear, replacing	
642-058	2.00	Steering gear, check.and adj.	
643-010	1.75	Steering linkage, checking and adjusting	13144 - 19999 70158 - 79999
643-013	0.80	Steering times, checking and adjusting	13144 - 19999 70158 - 79999
643-014	1.00	Steering valve, neutral position, checking and adjusting	13144 - 19999 70158 - 79999
645-001	0.50	Steering cylinder bearing, checking clearanse	
645-006	2.00	Steering cylinder, replacing	
645-054	2.00	Steering cylinder, replacing bearings	
645-060	3.00	Steering cylinder, repacking in machine	
645-084	1.00	Damping cylinder, checking spring force	
645-085	1.25	Damping cylinder, changing seal	
647-093	3.00	Auxiliary steering, replacing hydraulic pump	
647-095	1.00	Auxiliary steering, adjusting working- and stand-by pressure	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
72		SUSPENSION	
727-001	6.50	Spring element front, replacing all	
74		FRAME LINK	
741-001	7.00	Frame joint, separating machine	
741-005	0.50	Frame joint, checking clearance	
741-036	2.00	Frame joint, replacing bearings	
741-041	2.00	Frame joint, changing bearing, machine separated (on load unit frame)	
742-038	0.80	Articulated joint, checking clearence	
742-040	8.00	Steering joint, replacing bearings	

Op.no.	time (h)	Notes	
75		AXLE SUSPENSION	
754-021	1.00	Front bogie axle cross stay, adjusting	
754-031	1.00	Rear bogie axle cross stay, adjusting	
756-011	7.00	Bogie member, replacing rubber bearing (one side)	
756-012	2.00	Cross stay rubber bushing (bearing), replacing (front)	
756-024	1.00	Bogie beam, changing rubber spring, one side (front)	
76		SHOCK ABSORBER; AXLE LOCKING; ANTI ROLL BAR; LEVEL / SIDE CONTROL	
761-001	4.00	Shock absorber front, replacing all	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-001	0.60	Wheel, removing and fitting one	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	4.00	Cab, removing	
810-002	4.50	Cab, installing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-002	0.60	Engine hood, installing	
821-060	0.50	Electric hood pump, changing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	1.00	Door, replacing	60000 - 60286 10000 - 19999 70000 - 79999
831-006	0.60	Door lock, replacing	
831-052	0.60	Cab door, removing door catch	60000 - 60286 10000 - 19999 70000 - 79999
831-053	0.30	Cab door, installing door catch	60000 - 60286 10000 - 19999 70000 - 79999
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-002	3.00	Windscreen, replacing	
843-012	3.00	Rear window, replacing	
843-013	2.50	Side window, replacing	
843-048	2.00	Door window, replacing	

Op.no.	time (h)	Notes	
85		CAB INTERIOR/UPHOLSTERY	
852-002	1.00	Air suspension for operator's seat, changing	
852-003	0.80	Operator's seat, removing	
852-004	0.40	Operator's seat, installing	
87		AIR CONDITIONING UNIT	
873-004	3.00	Heater core, replacing	
873-006	1.00	Fan motor, replacing	
873-008	0.90	Heat control valve, replacing	
873-009	0.90	Heat control, replacing	
874-002	1.50	Refrigerant, draining	
874-003	0.80	Cooling unit, performance test	
874-006	4.00	Compressor, replacing incl draining and filling	
874-008	2.50	Refrigerant, filling incl vacuum pumping	
874-011	4.00	Receiver, replacing incl draining and filling	
874-012	5.00	Evaporator, replacing incl draining and filling	
874-014	1.75	Thermostat, replacing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-002	1.00	Hydraulic system, bleeding	
900-003	0.10	Hydraulic system, relieve pressure	
900-005	0.30	Vacuum pump, connection	
900-006	0.20	Vacuum pump, disconnection	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
912-078	0.60	Dump lever, changing	
912-079	7.00	Steering and tipping valve, replacing	
912-080	3.00	Steering and dumping valve (removed), reconditioning	
912-115	3.00	Steering and tipping valve, removal	13144 - 19999 70158 - 79999
912-116	3.00	Steering and tipping valve, installation	13144 - 19999 70158 - 79999
913-003	1.50	Hydraulic pump, checking and adjusting standby pressure	
913-004	1.50	Hydraulic pump, checking and adjusting max working pressure	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	2.50	Hydraulic pump, replacing	10000 - 11101
913-010	2.50	Hydraulic pump, replacing	11102 - 19999
913-042	0.50	Working pumps, checking function	

Op.no.	time (h)	Notes
913-068	1.50	Pump regulator, checking
914-095	0.90	Dumping lever, checking pressure
95		LOAD CARRIER
951-003	0.30	Dump body position indicator, adjusting
951-004	3.00	Hoist cylinder, changing
951-005	0.90	Hoist cylinder bearing, changing
951-005	1.00	Hoist cylinder bearing, changing
951-006	3.00	Hoist cylinder removed, reconditioning
951-007	1.25	Hoist cylinder, removal
951-008	1.25	Hoist cylinder, installation
951-011	0.30	Cylinder, rear flap, gas pressure, checking and adjusting
951-030	0.40	Dump body alternative, lowering
951-040	2.50	Dump body joint, changing tipping bearing
951-041	2.50	Dump body, adjusting against frame
99		MISCELLANEOUS
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
0		GENERAL
09		MISCELLANEOUS
090-001	0.70	Engine, basic check
1		STANDARD PARTS, SERVICE
17		SERVICE
172-002	3.50	Warranty inspection 100 hours
172-004	13.00	Warranty inspection 1000 hours
173-002	0.30	Maintenance service, daily
173-004	0.30	Maintenance service, every 50 hours
173-007	1.00	Maintenance service, every 250 hours
173-010	2.50	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	13.00	Maintenance service, every 2000 hours
173-018	22.00	Maintenance service, every 4000 hours
173-022	16.00	Maintenance service, every 6000 hours
19		GENERAL
191-021	0.20	Service position 1
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.25	E-ECU, MID 128, changing non-programmed ECU
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
210-002	5.50	Compression test
210-073	7.00	Engine and transmission, removing
210-074	10.00	Engine and transmission, mounting
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
210-092	0.40	Engine rotation speed sensor (camshaft), replacing
214-012	5.50	Valves, adjusting
215-042	6.50	Camshaft, replacing
215-043	3.00	Camshaft setting, checking
216-014	1.75	Crankshaft, replacing front oil seal
216-018	26.00	Crankshaft, replacing rear oil seal
217-004	4.00	Oil sump gasket, changing
217-005	4.00	Oil level sensor, changing

Op.no.	time (h)		Notes
218-001	1.50	Rubber cushion, replacing	
218-007	4.00	Engine mounting rear, changing	
22		LUBRICATING SYSTEM	
221-022	0.60	Lubrication oil pressure, checking with pressure gauge	
223-006	2.50	Oil cooler, replacing	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	10005 - 69999
233-001	0.70	Fuel system, bleeding	
233-004	0.70	Feed pump, checking feed pressure	
233-010	2.00	Fuel pump, inspection	
236-002	0.90	Stall speed, checking	
237-010	0.30	Unit injectors, adjusting pretension	
237-012	5.50	Unit injector, replacing	
237-016	12.00	Injectors, replacing copper sleeve in machine	
237-123	0.70	Injector shut off, manual	
25		INLET SYSTEM; EXHAUST SYSTEM	
255-002	1.25	Turbocharger, inspection	
255-071	2.00	Turbocharger, replacing	
256-006	0.70	Preheating coil, replacing	
258-002	3.50	Intercooler, replacing	
258-014	0.90	Fan pump, removing	
258-015	1.50	Fan pump, installation	
258-016	0.80	Cooling fan motor, intercooler, checking/adjusting low rpm	
258-017	0.80	Cooling fan motor, intercooler, checking/adjusting high rpm	
26		COOLING SYSTEM	
260-002	5.50	Cooling system, flushing	
261-004	1.25	Coolant, changing	
261-004	1.25	Coolant, changing	
261-011	1.75	Radiator, removing	
261-013	2.50	Radiator, installing	
262-002	2.00	Coolant pump, replacing	
262-008	2.50	Secondary coolant pump, replacing	
262-098	1.25	Thermostat, replacing	
263-013	0.40	Fan belt and/or alternator belt, checking and adjusting tension	
263-023	0.90	Fan pump, removing	
263-024	1.50	Fan pump, installing	
263-063	0.80	Cooling fan motor, radiator, checking/adjusting low rpm	

Op.no.	time (h)	Notes
263-064	0.80	Cooling fan motor, radiator, checking/adjusting high rpm
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	0.60	I-ECU, MID 140, changing non-programmed ECU
300-074	0.40	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-002	1.25	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.90	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	1.75	Starter motor, replacing
35		LIGHTING
352-002	0.50	Headlights, adjusting
36		OTHER ELECTRICAL EQUIPMENT
363-002	1.25	Windscreen wiper front, replacing motor
366-064	1.00	V-ECU, MID 187, changing non-programmed ECU
366-066	0.90	V-ECU, MID 187, changing pre-programmed ECU
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-008	0.40	Engine rotation speed sensor, replacing
39		MISCELLANEOUS
390-902	2.00	CareTrack, installing new
398-001	0.50	CareTrack antenna, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-001	0.70	Checking of main, torque converter and lubricating oil pressure
421-046	3.50	PWM-valve control system, changing
421-054	2.00	Seal for rear output shaft, replacing
421-061	0.50	Induction sensor for output shaft, changing
421-062	1.50	Induction sensor for turbine speed, changing
421-070	6.00	Transmission, removing
421-072	7.00	Transmission, installing

Op.no.	time (h)	Notes
421-083	1.25	Transmission, remove from a non mounted engine
421-084	1.50	Transmission, fitting on a non mounted engine
43		GEARBOX,
432-076	0.70	T-ECU, MID 130, changing non-programmed ECU
432-078	0.60	T-ECU, MID 130, changing pre-programmed ECU
434-002	1.75	Dropbox, replacing seal for front output shaft
434-004	2.00	Dropbox, replacing seal for rear output shaft
434-064	0.60	Differential lock longitudinal, adjustment of sender unit
434-065	0.40	Rotation speed sensor, replacing
434-073	2.50	Dropbox, installing
434-074	2.50	Dropbox, removing
45		PROPELLER SHAFT
451-006	5.50	Intermediate shaft and/or bearing, replacing (in frame joint)
46		FRONT AXLE; REAR AXLE
461-011	12.00	Centre gear , removing and fitting
461-037	2.50	Hub reduction, removing
461-038	3.50	Hub reduction, installing
461-046	1.75	Input shaft, seal, replacing
463-011	12.00	Centre gear, removing and fitting
463-016	13.00	Dog clutch 6x6, checking and adjusting
463-079	3.00	Output shaft 6-wheel drive, sealing and bearing, replacing
463-100	0.30	Rotation speed sensor, replacing
463-101	0.40	Rotation speed sensor, adjusting
463-103	1.75	Input shaft, seal, replacing
464-011	12.00	Centre gear, removing and fitting
464-014	1.75	Input shaft seal, replacing
468-062	0.70	Transverse differential lock/axle, checking and adjusting
48		POWER TAKE OFF
482-004	11.00	Power take-off, between engine and gearbox, reconditioning
49		MISCELLANEOUS
491-006	1.50	Oil cooler, replacing

Op.no.	time (h)	Notes	
5		BRAKE	
51		WHEEL BRAKE	
516-010	5.00	Wheel brake, replacing	
52		HYDRAULIC BRAKE SYSTEM	
520-001	0.60	Brake system, checking function, hydraulic	
520-010	0.10	Brake system, relieve pressure	
520-037	0.80	Brake system, bleeding	
525-008	3.50	Foot brake valve, replacing	
527-001	0.10	Accumulator removed, checking charging pressure	
527-002	0.80	Accumulator, replacing	
527-002	1.00	Accumulator, replacing	
527-004	2.50	Hydraulic pump, replacing	
55		PARKING BRAKE	
550-005	3.00	Parking brake, replacing brake disc	
550-009	1.25	Spring brake cylinder, replacing	
550-012	2.00	Parking brake , replacing brake caliper	
550-014	1.50	Parking brake, replacing brake pads	
550-015	0.30	Parking brake, manually releasing	
550-023	0.20	Parking brake, function checking	
553-000	0.40	Load and dump brake, working pressure, checking and adjusting	
553-001	0.40	Load and Dump brake, servo pressure, checking	
553-002	0.30	Load and Dump brake, function check	11001 - 12558
56		COMPRESSED-AIR BRAKE	
561-004	1.75	Compressor, replacing	
59		MISCELLANEOUS	
590-001	0.30	Quick coupling compressed air, replacing	
6		STEERING	
64		STEERING	
642-026	2.50	Steering gear, replacing	
642-058	2.00	Steering gear, check.and adj.	
643-010	1.75	Steering linkage, checking and adjusting	
643-013	0.80	Steering times, checking and adjusting	
643-014	1.00	Steering valve, neutral position, checking and adjusting	
645-004	0.90	Steering cylinder, removing	
645-005	1.00	Steering cylinder, installing	

Op.no.	time (h)	Notes	
645-052	1.25	Steering cylinder removed, reconditioning excl replacing bearings	
645-054	1.00	Steering cylinder, replacing bearings	
645-054	2.50	Steering cylinder, replacing bearings	
645-084	1.25	Damping cylinder, checking spring force	
645-085	1.25	Damping cylinder, changing seal	
647-095	1.00	Auxiliary steering, adjusting working- and stand-by pressure	
647-096	1.00	Auxiliary steering, hydraulic pump, removing	
647-097	1.50	Auxiliary steering, hydraulic pump, installation	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
715-015	0.90	Protecting plate, removal	
715-016	1.50	Protecting plate, installation	
72		SUSPENSION	
727-002	2.50	Rubber element, replacing	
74		FRAME LINK	
741-001	6.50	Frame joint, separating machine	
741-006	3.50	Frame joint, measuring and adjusting clearance	
741-041	2.50	Frame joint, changing bearing, machine separated (on load unit frame)	
742-038	0.70	Articulated joint, checking clearance	
75		AXLE SUSPENSION	
751-001	3.00	A-frame bushing, tractor unit, replacing	
751-013	0.80	Cross stay, rubber bushing, replacing	13445 - 69999
751-013	1.00	Cross stay, rubber bushing, replacing	13445 - 69999
756-013	1.00	Cross stay, rubber bushing, replacing	13445 - 69999
756-027	4.50	A-frame bushing, front on load unit, changing	
756-028	2.50	A-frame bushing, rear on load unit, changing	
756-030	5.50	Bogie beam, changing	
76		SHOCK ABSORBER; AXLE LOCKING; ANTI ROLL BAR; LEVEL / SIDE CONTROL	
761-001	3.00	Shock absorber front, replacing all	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-007	0.70	Wheel, installing	
771-008	0.70	Wheel, removing	

Op.no.	time (h)	Notes	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	4.00	Cab, removing	
810-002	4.50	Cab, installing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-002	0.60	Engine hood, installing	
821-060	0.50	Electric hood pump, changing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	1.00	Door, replacing	11001 - 69999
831-006	0.60	Door lock, replacing	
831-052	0.60	Cab door, removing door catch	11001 - 69999
831-053	0.30	Cab door, installing door catch	11001 - 69999
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-002	3.00	Windscreen, replacing	
843-013	2.50	Side window, replacing	
843-048	2.00	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-002	0.50	Air suspension for operator's seat, changing	
852-003	0.80	Operator's seat, removing	
852-004	0.40	Operator's seat, installing	
87		AIR CONDITIONING UNIT	
873-004	3.00	Heater core, replacing	
873-006	1.00	Fan motor, replacing	
873-008	0.90	Heat control valve, replacing	
873-009	0.90	Heat control, replacing	
874-002	0.40	Refrigerant, draining	
874-003	0.80	Cooling unit, performance test	
874-006	4.00	Compressor, replacing incl draining and filling	
874-008	2.50	Refrigerant, filling incl vacuum pumping	
874-011	4.00	Receiver, replacing incl draining and filling	
874-012	5.00	Evaporator, replacing incl draining and filling	
874-014	1.75	Thermostat, replacing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-002	0.30	Hydraulic system, bleeding	

Op.no.	time (h)	Notes
900-003	0.10	Hydraulic system, relieve pressure
900-005	0.30	Vacuum pump, connection
900-006	0.20	Vacuum pump, disconnection
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-078	0.60	Dump lever, changing
912-115	3.00	Steering and tipping valve, removal
912-116	3.00	Steering and tipping valve, installation
913-003	0.90	Hydraulic pump, checking and adjusting standby pressure
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-023	0.90	Pump, removal
913-024	1.75	Pump, installation
913-042	0.50	Working pumps, checking function
913-068	1.50	Pump regulator, checking
914-095	0.90	Dumping lever, checking pressure
95		LOAD CARRIER
951-005	1.00	Hoist cylinder bearing, changing
951-005	0.90	Hoist cylinder bearing, changing
951-006	3.00	Hoist cylinder removed, reconditioning
951-007	1.25	Hoist cylinder, removal
951-008	1.25	Hoist cylinder, installation
951-011	0.30	Cylinder, rear flap, gas pressure, checking and adjusting
951-030	0.40	Dump body alternative, lowering
951-040	2.50	Dump body joint, changing tipping bearing
951-041	2.50	Dump body, adjusting against frame
99		MISCELLANEOUS
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
0		GENERAL
09		MISCELLANEOUS
090-001	0.70	Engine, basic check
1		STANDARD PARTS, SERVICE
17		SERVICE
172-002	3.50	Warranty inspection 100 hours
172-004	13.00	Warranty inspection 1000 hours
173-002	0.30	Maintenance service, daily
173-004	0.30	Maintenance service, every 50 hours
173-007	1.00	Maintenance service, every 250 hours
173-010	2.50	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	14.00	Maintenance service, every 2000 hours
173-018	22.00	Maintenance service, every 4000 hours
173-022	17.00	Maintenance service, every 6000 hours
19		GENERAL
191-022	0.50	Service position 2
191-025	0.50	Service position 3
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.25	E-ECU, MID 128, changing non-programmed ECU
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
210-002	5.50	Compression test
210-073	7.00	Engine and transmission, removing
210-074	10.00	Engine and transmission, mounting
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
210-092	0.40	Engine rotation speed sensor (camshaft), replacing
214-012	5.50	Valves, adjusting
215-042	6.50	Camshaft, replacing
215-043	3.00	Camshaft setting, checking
216-014	1.75	Crankshaft, replacing front oil seal
216-018	26.00	Crankshaft, replacing rear oil seal
217-004	4.00	Oil sump gasket, changing

Op.no.	time (h)	Notes
217-005	4.00	Oil level sensor, changing
218-001	1.50	Rubber cushion, replacing
218-007	4.00	Engine mounting rear, changing
22		LUBRICATING SYSTEM
221-022	0.60	Lubrication oil pressure, checking with pressure gauge
223-006	2.50	Oil cooler, replacing
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.70	Fuel system, bleeding
233-004	0.70	Feed pump, checking feed pressure
233-010	2.00	Fuel pump, inspection
236-002	0.90	Stall speed, checking
237-010	0.30	Unit injectors, adjusting pretension
237-012	5.50	Unit injector, replacing
237-016	12.00	Injectors, replacing copper sleeve in machine
237-123	0.70	Injector shut off, manual
25		INLET SYSTEM; EXHAUST SYSTEM
255-002	1.25	Turbocharger, inspection
255-071	2.00	Turbocharger, replacing
256-006	0.70	Preheating coil, replacing
258-002	3.50	Intercooler, replacing
258-014	0.90	Fan pump, removing
258-015	1.50	Fan pump, installation
258-016	0.80	Cooling fan motor, intercooler, checking/adjusting low rpm
258-017	0.80	Cooling fan motor, intercooler, checking/adjusting high rpm
26		COOLING SYSTEM
260-002	5.50	Cooling system, flushing
261-004	1.25	Coolant, changing
261-004	1.25	Coolant, changing
261-011	1.75	Radiator, removing
261-013	2.50	Radiator, installing
262-002	2.00	Coolant pump, replacing
262-008	2.50	Secondary coolant pump, replacing
262-098	1.25	Thermostat, replacing
263-013	0.40	Fan belt and/or alternator belt, checking and adjusting tension
263-023	0.90	Fan pump, removing
263-024	1.50	Fan pump, installing

Op.no.	time (h)	Notes
263-063	0.80	Cooling fan motor, radiator, checking/adjusting low rpm
263-064	0.80	Cooling fan motor, radiator, checking/adjusting high rpm
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	0.60	I-ECU, MID 140, changing non-programmed ECU
300-074	0.40	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-002	1.25	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.90	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	1.75	Starter motor, replacing
35		LIGHTING
352-002	0.50	Headlights, adjusting
36		OTHER ELECTRICAL EQUIPMENT
363-002	1.25	Windscreen wiper front, replacing motor
366-064	1.25	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-008	0.40	Engine rotation speed sensor, replacing
39		MISCELLANEOUS
390-902	2.00	CareTrack, installing new
398-001	0.50	CareTrack antenna, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-046	3.50	PWM-valve control system, changing
421-054	2.00	Seal for rear output shaft, replacing
421-061	0.50	Induction sensor for output shaft, changing
421-062	1.50	Induction sensor for turbine speed, changing
421-070	6.00	Transmission, removing
421-072	7.00	Transmission, installing

Op.no.	time (h)	Notes
421-083	1.25	Transmission, remove from a non mounted engine
421-084	1.50	Transmission, fitting on a non mounted engine
43		GEARBOX,
432-076	0.70	T-ECU, MID 130, changing non-programmed ECU
432-078	0.60	T-ECU, MID 130, changing pre-programmed ECU
434-002	1.75	Dropbox, replacing seal for front output shaft
434-004	2.00	Dropbox, replacing seal for rear output shaft
434-064	0.60	Differential lock longitudinal, adjustment of sender unit
434-065	0.40	Rotation speed sensor, replacing
434-073	2.50	Dropbox, installing
434-074	2.50	Dropbox, removing
45		PROPELLER SHAFT
451-006	5.50	Intermediate shaft and/or bearing, replacing (in frame joint)
46		FRONT AXLE; REAR AXLE
461-011	12.00	Centre gear , removing and fitting
461-037	2.50	Hub reduction, removing
461-038	3.50	Hub reduction, installing
461-046	1.75	Input shaft, seal, replacing
463-011	12.00	Centre gear, removing and fitting
463-016	13.00	Dog clutch 6x6, checking and adjusting
463-079	3.00	Output shaft 6-wheel drive, sealing and bearing, replacing
463-100	0.30	Rotation speed sensor, replacing
463-101	0.40	Rotation speed sensor, adjusting
463-103	1.75	Input shaft, seal, replacing
464-011	12.00	Centre gear, removing and fitting
464-014	1.75	Input shaft seal, replacing
468-062	0.70	Transverse differential lock/axle, checking and adjusting
48		POWER TAKE OFF
482-004	11.00	Power take-off, between engine and gearbox, reconditioning
49		MISCELLANEOUS
491-006	1.50	Oil cooler, replacing

Op.no.	time (h)	Notes
5		BRAKE
51		WHEEL BRAKE
516-010	5.00	Wheel brake, replacing
52		HYDRAULIC BRAKE SYSTEM
520-001	0.60	Brake system, checking function, hydraulic
520-010	0.10	Brake system, relieve pressure
520-037	0.80	Brake system, bleeding
525-008	3.50	Foot brake valve, replacing
527-001	0.10	Accumulator removed, checking charging pressure
527-002	0.80	Accumulator, replacing
527-002	1.00	Accumulator, replacing
527-004	2.50	Hydraulic pump, replacing
55		PARKING BRAKE
550-005	3.00	Parking brake, replacing brake disc
550-009	1.25	Spring brake cylinder, replacing
550-012	2.00	Parking brake , replacing brake caliper
550-014	1.50	Parking brake, replacing brake pads
550-015	0.30	Parking brake, manually releasing
550-023	0.20	Parking brake, function checking
553-000	0.40	Load and dump brake, working pressure, checking and adjusting
553-001	0.40	Load and Dump brake, servo pressure, checking
553-002	0.30	Load and Dump brake, function check
56		COMPRESSED-AIR BRAKE
561-004	1.75	Compressor, replacing
59		MISCELLANEOUS
590-001	0.30	Quick coupling compressed air, replacing
6		STEERING
64		STEERING
642-026	2.50	Steering gear, replacing
642-058	2.00	Steering gear, check.and adj.
643-010	1.75	Steering linkage, checking and adjusting
643-013	0.80	Steering times, checking and adjusting
643-014	1.00	Steering valve, neutral position, checking and adjusting
645-004	0.90	Steering cylinder, removing
645-005	1.00	Steering cylinder, installing

Op.no.	time (h)	Notes
645-052	1.25	Steering cylinder removed, reconditioning excl replacing bearings
645-054	1.00	Steering cylinder, replacing bearings
645-054	2.50	Steering cylinder, replacing bearings
645-084	1.25	Damping cylinder, checking spring force
645-085	1.25	Damping cylinder, changing seal
647-095	1.00	Auxiliary steering, adjusting working- and stand-by pressure
647-096	1.00	Auxiliary steering, hydraulic pump, removing
647-097	1.50	Auxiliary steering, hydraulic pump, installation

7 FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT

71 FRAME

715-015	0.90	Protecting plate, removal
715-016	1.50	Protecting plate, installation

72 SUSPENSION

720-000	0.70	V2-ECU, MID 249, replacing non-programmed ECU
720-001	0.70	V2-ECU, MID 249, replacing pre-programmed ECU
720-008	1.25	Position sensor, complete replacement
720-010	0.50	Forced Raising/lowering, Full suspension
720-011	0.30	Relieve pressure
720-012	0.80	Manual lowering
720-012	0.50	Manual lowering
720-013	0.20	Suspension system, bleeding air
720-020	0.70	Hydraulic cylinder bushing, suspension system, replacing
720-020	0.70	Hydraulic cylinder bushing, suspension system, replacing
720-020	0.70	Hydraulic cylinder bushing, suspension system, replacing
720-021	1.75	Hydraulic cylinder, suspension system, overhaul
720-022	1.50	Accumulator, suspension system, overhaul
725-001	1.50	Suspension cylinder, removal
725-002	1.75	Suspension cylinder, installation
725-003	1.00	Accumulator, removal
725-004	1.25	Accumulator, installation
725-008	1.50	Position sensor front, replacing
725-009	0.70	Accumulator, precharge pressure, checking and adjusting
726-001	1.75	Suspension cylinder, removal

Op.no.	time (h)		Notes
726-001	1.75	Suspension cylinder, removal	
726-002	2.00	Suspension cylinder, installation	
726-002	2.00	Suspension cylinder, installation	
726-003	0.30	Accumulator, removal	
726-003	0.20	Accumulator, removal	
726-004	0.60	Accumulator, installation	
726-004	0.80	Accumulator, installation	
726-006	2.50	Accumulator bank, removal	
726-007	1.75	Accumulator bank, installation	
726-008	1.25	Position sensor rear, replacing	
726-009	0.70	Accumulator, precharge pressure, checking and adjusting	
74		FRAME LINK	
741-001	6.50	Frame joint, separating machine	
741-006	3.50	Frame joint, measuring and adjusting clearance	
741-041	2.50	Frame joint, changing bearing, machine separated (on load unit frame)	
742-038	0.70	Articulated joint, checking clearance	
75		AXLE SUSPENSION	
751-001	3.00	A-frame bushing, tractor unit, replacing	
751-013	1.00	Cross stay, rubber bushing, replacing	13445 - 69999
751-013	0.80	Cross stay, rubber bushing, replacing	13445 - 69999
756-013	1.00	Cross stay, rubber bushing, replacing	13445 - 69999
756-027	3.50	A-frame bushing, front on load unit, changing	
756-028	2.50	A-frame bushing, rear on load unit, changing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-007	0.70	Wheel, installing	
771-008	0.70	Wheel, removing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	4.00	Cab, removing	
810-002	4.50	Cab, installing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-002	0.60	Engine hood, installing	
821-060	0.50	Electric hood pump, changing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	1.00	Door, replacing	11005 - 69999

Op.no.	time (h)		Notes
831-006	0.60	Door lock, replacing	
831-052	0.60	Cab door, removing door catch	11005 - 69999
831-053	0.30	Cab door, installing door catch	11005 - 69999
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-048	2.00	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-002	0.50	Air suspension for operator's seat, changing	
852-003	0.80	Operator's seat, removing	
852-004	0.40	Operator's seat, installing	
87		AIR CONDITIONING UNIT	
873-004	3.00	Heater core, replacing	
873-006	1.00	Fan motor, replacing	
873-008	0.90	Heat control valve, replacing	
873-009	0.90	Heat control, replacing	
874-002	0.40	Refrigerant, draining	
874-003	0.80	Cooling unit, performance test	
874-006	4.00	Compressor, replacing incl draining and filling	
874-008	2.50	Refrigerant, filling incl vacuum pumping	
874-011	4.00	Receiver, replacing incl draining and filling	
874-012	5.00	Evaporator, replacing incl draining and filling	
874-014	1.75	Thermostat, replacing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-002	0.30	Hydraulic system, bleeding	
900-003	0.10	Hydraulic system, relieve pressure	
900-005	0.30	Vacuum pump, connection	
900-006	0.20	Vacuum pump, disconnection	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
912-078	0.60	Dump lever, changing	
912-115	3.00	Steering and tipping valve, removal	
912-116	3.00	Steering and tipping valve, installation	
913-003	0.90	Hydraulic pump, checking and adjusting standby pressure	
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-023	0.90	Pump, removal	
913-024	1.75	Pump, installation	

Op.no.	time (h)	Notes
913-042	0.50	Working pumps, checking function
913-068	1.50	Pump regulator, checking
914-095	0.90	Dumping lever, checking pressure
95		LOAD CARRIER
951-005	1.00	Hoist cylinder bearing, changing
951-005	0.90	Hoist cylinder bearing, changing
951-006	3.00	Hoist cylinder removed, reconditioning
951-007	1.25	Hoist cylinder, removal
951-008	1.25	Hoist cylinder, installation
951-011	0.30	Cylinder, rear flap, gas pressure, checking and adjusting
951-030	0.40	Dump body alternative, lowering
951-040	2.50	Dump body joint, changing tipping bearing
951-041	2.50	Dump body, adjusting against frame
99		MISCELLANEOUS
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	1.25	Maintenance service, every 10 hours
173-004	1.50	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	3.00	Maintenance service, every 500 hours
173-012	4.50	Maintenance service, every 1000 hours
173-014	6.00	Maintenance service, every 2000 hours
173-035	1.00	Maintenance service, first 50 hours
19		GENERAL
191-021	0.20	Service position 1
191-022	0.30	Service position 2
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	2.00	Engine, removing
210-072	3.50	Engine, installing
218-009	0.80	Engine mounts, replacing
23		FUEL SYSTEM
235-004	0.80	Fuel pipes, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-017	0.50	Silencer, removing
252-018	0.30	Silencer, installing
26		COOLING SYSTEM
261-011	1.00	Radiator, removing
261-013	1.50	Radiator, installing
27		ENGINE CONTROL
272-013	0.60	Accelerator lever throttle cable, adjusting
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-011	0.40	Battery, removing
311-012	0.20	Battery, installing
32		ALTERNATOR; CHARGE REGULATOR
321-003	0.40	Alternator, removing

Op.no.	time (h)	Notes
321-004	0.30	Alternator, installing
35		LIGHTING
352-001	0.50	Lamp bulb, replacing
36		OTHER ELECTRICAL EQUIPMENT
362-003	0.50	Reverse alarm, replacing
37		CABLE; FUSE; RELAY
371-044	0.40	Battery disconnecter, removal
371-045	0.20	Battery disconnecter, installation
4		POWER TRANSMISSION
44		HYDROSTATIC DRIVE
441-035	0.90	Drive motor, removing
441-036	1.50	Drive motor, installing
442-162	0.60	Travel lever throttle cable, adjusting
5		BRAKE
55		PARKING BRAKE
550-026	0.30	Parking brake, activate manually
550-027	0.30	Parking brake, deactivate manually
6		STEERING
64		STEERING
645-004	1.25	Steering cylinder, removing
645-005	1.50	Steering cylinder, installing
645-016	0.70	Steering pump, removing
645-017	0.80	Steering pump, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
740-001	2.50	Articulation hinge, disassembly
740-002	3.00	Articulation hinge, assembly
77		WHEELS; TRACKS; TYRE; HUB; DRUM
777-001	1.00	Drum, removing

Op.no.	time (h)	Notes
777-002	1.25	Drum, installing
777-003	0.70	Vibration pump, removing
777-004	0.80	Vibration pump, installing
777-005	0.60	Vibration motor, removing
777-006	0.80	Vibration motor, installing
777-034	0.50	Scraper strip, replacing
777-035	0.40	Scraper set, removing
777-036	0.30	Scraper set, installing
777-039	0.50	Offset drum, adjusting
777-040	0.70	Drum drive, removing
777-041	0.90	Drum drive, installing
777-042	5.00	Eccentric shaft, removing
777-043	5.50	Eccentric shaft, installing
777-044	1.50	Travel bearings, removing
777-045	1.75	Travel bearings, installing
777-078	1.25	Drum rubber cushions, replacing
777-078	1.50	Drum rubber cushions, replacing
777-079	3.50	Eccentric shaft bearings, removing
777-079	3.50	Eccentric shaft bearings, removing
777-080	2.50	Eccentric shaft bearings, installing
777-080	4.50	Eccentric shaft bearings, installing

8 MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE

82 ENGINE HOOD; MUDGUARD; FOOT STEP

821-001	0.40	Engine hood, removing
821-002	0.30	Engine hood, installing

85 CAB INTERIOR/UPHOLSTERY

852-003	0.40	Operator's seat, removing
852-004	0.30	Operator's seat, installing

86 PROTECTIVE EQUIPMENT, not specified in a special group

867-002	0.20	ROPS (Roll Over Protection), removing
867-003	0.20	ROPS (Roll Over Protection), installing

88 INTERIOR EQUIPMENT

884-001	0.60	Seat safety belt, replacing
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Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-036	0.90	Hydraulic oil tank, removing
911-037	1.00	Hydraulic oil tank, installing
98		FUNCTION FOR ROAD CONSTRUCTION
985-007	0.60	Water pump, removing
985-008	0.60	Water pump, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	1.25	Maintenance service, every 10 hours
173-004	1.50	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	3.00	Maintenance service, every 500 hours
173-012	4.50	Maintenance service, every 1000 hours
173-014	6.00	Maintenance service, every 2000 hours
173-035	1.00	Maintenance service, first 50 hours
19		GENERAL
191-021	0.20	Service position 1
191-022	0.30	Service position 2
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	2.00	Engine, removing
210-072	3.50	Engine, installing
218-009	0.80	Engine mounts, replacing
23		FUEL SYSTEM
235-004	0.80	Fuel pipes, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-017	0.50	Silencer, removing
252-018	0.30	Silencer, installing
26		COOLING SYSTEM
261-011	1.00	Radiator, removing
261-013	1.50	Radiator, installing
27		ENGINE CONTROL
272-013	0.60	Accelerator lever throttle cable, adjusting
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-011	0.40	Battery, removing
311-012	0.20	Battery, installing
32		ALTERNATOR; CHARGE REGULATOR
321-003	0.40	Alternator, removing

Op.no.	time (h)	Notes
321-004	0.30	Alternator, installing
35		LIGHTING
352-001	0.50	Lamp bulb, replacing
36		OTHER ELECTRICAL EQUIPMENT
362-003	0.50	Reverse alarm, replacing
37		CABLE; FUSE; RELAY
371-044	0.40	Battery disconnecter, removal
371-045	0.20	Battery disconnecter, installation
4		POWER TRANSMISSION
44		HYDROSTATIC DRIVE
441-035	0.90	Drive motor, removing
441-036	1.50	Drive motor, installing
442-162	0.60	Travel lever throttle cable, adjusting
5		BRAKE
55		PARKING BRAKE
550-026	0.30	Parking brake, activate manually
550-027	0.30	Parking brake, deactivate manually
6		STEERING
64		STEERING
645-004	1.25	Steering cylinder, removing
645-005	1.50	Steering cylinder, installing
645-016	0.70	Steering pump, removing
645-017	0.80	Steering pump, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
740-001	2.50	Articulation hinge, disassembly
740-002	3.00	Articulation hinge, assembly
77		WHEELS; TRACKS; TYRE; HUB; DRUM
777-001	1.00	Drum, removing

Op.no.	time (h)	Notes
777-002	1.25	Drum, installing
777-003	0.70	Vibration pump, removing
777-004	0.80	Vibration pump, installing
777-005	0.60	Vibration motor, removing
777-006	0.80	Vibration motor, installing
777-034	0.50	Scraper strip, replacing
777-035	0.40	Scraper set, removing
777-036	0.30	Scraper set, installing
777-039	0.50	Offset drum, adjusting
777-040	0.70	Drum drive, removing
777-041	0.90	Drum drive, installing
777-042	5.00	Eccentric shaft, removing
777-043	5.50	Eccentric shaft, installing
777-044	1.50	Travel bearings, removing
777-045	1.75	Travel bearings, installing
777-078	1.25	Drum rubber cushions, replacing
777-078	1.50	Drum rubber cushions, replacing
777-079	3.50	Eccentric shaft bearings, removing
777-079	3.50	Eccentric shaft bearings, removing
777-080	2.50	Eccentric shaft bearings, installing
777-080	4.50	Eccentric shaft bearings, installing

8 MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE

82 ENGINE HOOD; MUDGUARD; FOOT STEP

821-001	0.40	Engine hood, removing
821-002	0.30	Engine hood, installing

85 CAB INTERIOR/UPHOLSTERY

852-003	0.40	Operator's seat, removing
852-004	0.30	Operator's seat, installing

86 PROTECTIVE EQUIPMENT, not specified in a special group

867-002	0.20	ROPS (Roll Over Protection), removing
867-003	0.20	ROPS (Roll Over Protection), installing

88 INTERIOR EQUIPMENT

884-001	0.60	Seat safety belt, replacing
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Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-036	0.90	Hydraulic oil tank, removing
911-037	1.00	Hydraulic oil tank, installing
98		FUNCTION FOR ROAD CONSTRUCTION
985-007	0.60	Water pump, removing
985-008	0.60	Water pump, installing

Op.no.	time (h)	Notes
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1 STANDARD PARTS, SERVICE

17 SERVICE

170-005	0.25	Start of VCADS Pro computer and reading machine data
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	3.00	Delivery Inspection, according to Inspection Programme
173-002	0.75	Maintenance service, daily
173-004	1.00	Maintenance service, every 50 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	5.50	Maintenance service, every 500 hours
173-012	5.00	Maintenance service, every 1000 hours
173-014	8.50	Maintenance service, every 2000 hours
173-059	0.60	Engine, changing oil and filter
173-074	1.25	Hydraulic oil tank, changing oil and filter
173-076	0.25	Hydraulic oil tank, return oil filter change
173-077	0.20	Hydraulic oil tank, changing breather filter
173-079	0.60	Swing motor gearbox, changing oil
173-101	0.40	Track motor gearbox, changing oil

2 ENGINE WITH MOUNTING AND EQUIPMENT

21 ENGINE

210-070	6.00	Engine, removing
210-072	6.50	Engine, installing
211-002	7.00	Cylinder head, replacing gasket
214-012	3.00	Valves, adjusting
214-036	1.00	Valve covers, fitting new gasket
216-014	7.50	Crankshaft, replacing front oil seal
216-018	8.00	Crankshaft, replacing rear oil seal

23 FUEL SYSTEM

233-001	0.30	Fuel system, bleeding
233-002	1.00	Feed pump, replacing
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
234-010	4.00	Fuel tank, replacing
234-041	0.50	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-002	3.00	Injectors, replacing all
237-004	1.50	Injector, replacing one

Op.no.	time (h)	Notes
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
252-021	1.25	Exhaust pipe, flexible tube, replacing
255-070	1.00	Turbocharger, removing
255-071	2.00	Turbocharger, replacing
255-072	1.00	Turbocharger, installing
256-001	0.25	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.40	Preheating coil, replacing
258-002	4.00	Intercooler, replacing
258-022	0.50	Charge air cooler connection (hose, tube), replacing
26		COOLING SYSTEM
261-002	0.25	Coolant, checking anti-freeze resistance
261-004	0.75	Coolant, changing
261-008	7.00	Radiator, replacing
261-012	0.75	Radiator hose upper, replacing
261-014	1.25	Radiator hoses lower, replacing
261-072	0.25	Coolant filter, changing
262-002	1.50	Coolant pump, replacing
262-098	1.00	Thermostat, replacing
263-012	1.50	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	1.50	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.60	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	0.80	Batteries, replacing
311-003	0.50	Main switch, replacing
311-006	0.50	Earth lead to battery, replacing
311-008	2.50	Starter motor lead to battery, replacing

Op.no.	time (h)	Notes
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	1.00	Starter motor, replacing
331-081	0.50	Starter relay, replacing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.50	Horn, replacing
362-041	0.50	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.00	Windscreen wiper front, replacing motor
363-003	0.50	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-004	0.50	Switch, replacing
364-050	0.50	Relay (general), replacing
364-052	0.50	Battery relay, replacing
364-056	0.50	Pre-heating relay, replacing
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU
37		CABLE; FUSE; RELAY
372-020	0.25	Fuse (general), replacing
372-091	0.50	Slow blow fuse, replacing
379-011	0.75	Boom wire harness, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	0.50	Engine temperature sensor, replacing
386-007	0.50	Engine oil pressure sensor, replacing
386-011	0.50	Fuel level sender, replacing
386-038	1.00	Engine rotation speed sensor, replacing
386-043	0.50	Travel speed sensor or alarm sensor, replacing
386-044	0.50	Auto idling sensor, replacing
386-088	0.75	Engine rotation speed sensor (camshaft), replacing
39		MISCELLANEOUS
390-902	3.00	CareTrack, installing new
393-001	0.50	Voltage converter, replacing

Op.no.	time (h)	Notes
393-021	0.75	Radio, replacing
395-021	0.50	Antenna, replacing
395-022	1.00	Antenna cable, replacing
395-031	0.50	Speaker, replacing
4		POWER TRANSMISSION
43		GEARBOX,
431-021	5.00	Swing gearbox, replacing
431-026	1.50	Swing gearbox removed, replacing seal
431-027	2.50	Swing gearbox removed, replacing shaft
431-031	3.00	Pump gearbox coupling assembly, replacing
431-036	4.50	Pump gearbox flange, replacing
431-115	1.75	Track gearbox (removed), replacing floating seal
431-117	1.25	Track gearbox, replacing cover
431-125	3.00	Track unit, removal
431-126	3.00	Track unit, installation
431-127	6.00	Track unit, replacing
44		HYDROSTATIC DRIVE
441-017	1.00	Travel motor pressure, checking and adjusting
441-021	3.00	Swing motor, replacing
441-022	0.75	Swing motor relief valve, replacing
441-023	3.50	Swing motor, replacing cylinder block
441-024	1.50	Swing motor, replacing plate (brake)
441-025	1.25	Swing motor, replacing brake piston seal
441-026	1.50	Swing motor removed, replacing seal
441-028	0.75	Swing motor brake valve, replacing
441-032	0.75	Swing motor pressure, checking and adjusting
441-112	0.70	Track motor relief valve, replacing
441-115	2.00	Track motor removed, replacing seal
443-037	5.00	Center passage, replacing
443-038	6.50	Center passage, replacing seal kit
443-039	1.00	Center passage hose (valve – center passage), replacing
443-040	1.50	Center passage hose (center passage – motor), replacing
49		MISCELLANEOUS
492-031	3.00	Swing ring gear outer seal, replacing
492-091	0.50	Ring gear grease pipe, replacing

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	0.70	Counterweight, removing
716-002	0.80	Counterweight, fitting
716-003	2.00	Counterweight, replacing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	3.00	Front idler, replacing one
775-021	3.50	Sprocket, replacing one
775-032	0.40	Track shoe, replacing one
775-033	7.50	Track shoe, replacing each side
775-034	1.25	Track chain assembly, removing
775-035	1.75	Track chain assembly, installing
775-036	9.50	Track links, replacing
775-051	1.00	Top roller, replacing one
775-061	1.50	Bottom roller, replacing one
775-071	0.90	Track guard, replacing one
775-081	3.00	Track recoil spring (tensioner) assembly, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.50	Cab, removing
810-002	2.00	Cab, installing
810-003	4.50	Operator cab, replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	1.00	Engine hood, replacing
827-091	1.25	Tool box assembly, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	0.75	Door, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.25	Rear-view mirror, changing
843-002	2.00	Windscreen, replacing
843-012	1.00	Rear window, replacing
843-013	1.50	Side window, replacing
843-048	1.00	Door window, replacing

Op.no.	time (h)	Notes
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
872-011	1.00	Duct, replacing
872-021	1.00	Defroster hose, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-011	1.00	Air mix door actuator, replacing
873-020	1.00	Heat control valve actuator, replacing
873-097	1.50	Heater hose, replacing
874-002	0.75	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	2.00	Compressor, replacing incl draining and filling
874-007	0.75	Belt, replacing
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-014	0.50	Thermostat, replacing
874-081	1.75	Liquid hose, replacing incl. draining and filling
874-082	1.75	Discharge hose, replacing incl. draining and filling
874-083	1.75	Suction hose, replacing incl. draining and filling
874-091	1.00	Switch and controller, replacing
874-093	1.00	Power transistor (ceramic resister), replacing
874-094	1.00	Vent actuator, replacing
874-095	1.00	Mode (foot) actuator, replacing
874-096	1.00	Intake actuator, replacing
874-097	1.00	Shutter assembly, replacing
874-098	1.00	Valve (mix) actuator, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-001	0.20	Oil return filter, replacing
911-004	0.50	Suction strainer, replacing
911-005	1.75	Pump suction hose and pipe, replacing
911-011	2.50	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing

Op.no.	time (h)	Notes
911-017	1.75	Suction cover, replacing
911-024	0.70	Pipe and hose (pump - valve), replacing
911-025	0.70	Pipe and hose (valve - cylinder), replacing
911-026	0.70	Pipe and hose (valve - swing motor), replacing
911-031	1.50	Oil cooler line pipe and hose, replacing
911-032	1.50	Oil cooler line pipe coupling, replacing
911-033	2.00	Oil cooler line bypass valve (check valve), replacing
911-038	3.50	Hydraulic oil tank, replacing
911-042	0.25	Oil drain filter, replacing
911-043	0.25	Servo system filter, replacing
911-051	0.20	Breather, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	0.70	Rupture valve, replacing (boom cylinder)
912-073	0.70	Rupture valve, replacing (dipper arm cylinder)
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)
912-075	0.50	Rupture valve hose or pipe, replacing (dipper arm cylinder)
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.50	Hydraulic pump, replacing
913-013	6.00	Hydraulic pump, replacing seal for input shaft
913-029	0.50	Pump regulator, replacing
914-036	1.25	Servo pump block seal, replacing
914-037	1.25	Servo pump shaft seal, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-055	0.75	Servo pressure, checking and adjusting
914-060	1.00	Servo pump, replacing
914-071	0.50	Servo pipe and hose, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.00	Solenoid valve, replacing
916-043	1.00	Boom, replacing pipe (boom cylinder)
916-044	0.75	Boom, replacing hose (boom cylinder)
916-045	1.00	Boom, replacing pipe (dipper arm cylinder)
916-046	0.50	Boom, replacing hose (dipper arm cylinder)
916-047	1.00	Boom, replacing pipe (bucket cylinder)
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)
916-049	0.75	Dipper arm, replacing pipe (bucket cylinder)

Op.no.	time (h)	Notes
916-091	0.75	Hammer and shear pipe, replacing (for boom)
916-092	0.50	Hammer and shear hose, replacing (for boom)
916-093	0.75	Hammer and shear pipe, replacing (for dipper arm)
916-094	0.50	Hammer and shear hose, replacing (for dipper arm)
916-095	0.50	Hammer and shear hose and pipe, replacing (MCV - 3 way valve)
916-096	1.00	Hammer and shear pedal valve (RCV), replacing
916-097	0.75	Hammer and shear 3-way valve, replacing
916-098	0.75	Hammer and shear pipe and hose, replacing (for 2nd pump flow)
916-099	0.50	Hammer and shear ball valve, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.50	Quickfit pump (gear pump), replacing
924-002	1.00	Quickfit valve, replacing
924-003	0.75	Quickfit solenoid valve, replacing
924-004	0.50	Quickfit control switch, replacing
924-021	2.00	Quickfit hydraulic cylinder bracket (body), replacing
924-041	0.50	Quickfit hydraulic hose, replacing (for boom)
924-042	0.50	Quickfit hydraulic pipe, replacing (for boom)
924-043	0.25	Quickfit hydraulic hose, replacing (for dipper arm)
924-044	0.50	Quickfit hydraulic pipe, replacing (for dipper arm)
924-045	0.75	Quickfit hydraulic cylinder hose, replacing (dipper arm cylinder)
925-011	1.25	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.75	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	4.50	Boom, removal
974-014	5.00	Boom, installation
974-017	2.00	Boom, replacing pin
974-018	0.25	Boom grease pipe or hose, replacing
974-021	2.00	Boom cylinder, replacing
974-022	2.00	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	3.50	Boom cylinder, repacking in machine
974-031	1.00	Boom cylinder, removal
974-032	1.00	Boom cylinder, installation
975-011	2.50	Dipper arm, removal
975-012	3.00	Dipper arm, installation
975-014	1.00	Dipper arm cylinder, removal

Op.no.	time (h)	Notes
975-015	1.00	Dipper arm cylinder, installation
975-023	0.25	Dipper arm pipe or hose, replacing
975-024	1.00	Dipper arm connecting rod, replacing
975-025	2.00	Dipper arm cylinder, replacing
975-026	2.50	Dipper arm cylinder removed, repacking
975-028	1.00	Connecting rod yoke, replacing
975-032	0.50	Connecting rod yoke, removal
975-035	0.50	Connecting rod yoke, installation
975-039	5.00	Dipper arm, replacing
975-043	3.50	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.00	Bucket cylinder, replacing
975-062	1.00	Bucket cylinder, removal
975-063	3.50	Bucket cylinder, repacking in machine
975-065	1.00	Bucket cylinder, installation
975-069	2.00	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes
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1 STANDARD PARTS, SERVICE

17 SERVICE

170-005	0.25	Start of VCADS Pro computer and reading machine data
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	3.00	Delivery Inspection, according to Inspection Programme
173-002	0.75	Maintenance service, daily
173-004	1.00	Maintenance service, every 50 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	5.50	Maintenance service, every 500 hours
173-012	5.00	Maintenance service, every 1000 hours
173-014	8.50	Maintenance service, every 2000 hours
173-059	0.60	Engine, changing oil and filter
173-074	1.25	Hydraulic oil tank, changing oil and filter
173-076	0.25	Hydraulic oil tank, return oil filter change
173-079	0.60	Swing motor gearbox, changing oil
173-101	0.40	Track motor gearbox, changing oil

2 ENGINE WITH MOUNTING AND EQUIPMENT

21 ENGINE

210-070	6.00	Engine, removing
210-072	6.50	Engine, installing
211-002	7.00	Cylinder head, replacing gasket
214-012	3.00	Valves, adjusting
214-036	1.00	Valve covers, fitting new gasket
216-014	7.50	Crankshaft, replacing front oil seal
216-018	8.00	Crankshaft, replacing rear oil seal

23 FUEL SYSTEM

233-001	0.30	Fuel system, bleeding
233-002	1.00	Feed pump, replacing
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
234-010	4.00	Fuel tank, replacing
234-041	0.50	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-002	3.00	Injectors, replacing all
237-004	1.50	Injector, replacing one

Op.no.	time (h)	Notes
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
252-021	1.25	Exhaust pipe, flexible tube, replacing
255-070	1.00	Turbocharger, removing
255-071	2.00	Turbocharger, replacing
255-072	1.00	Turbocharger, installing
256-001	0.25	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.40	Preheating coil, replacing
258-002	4.00	Intercooler, replacing
258-022	0.50	Charge air cooler connection (hose, tube), replacing
26		COOLING SYSTEM
261-002	0.25	Coolant, checking anti-freeze resistance
261-004	0.75	Coolant, changing
261-008	7.00	Radiator, replacing
261-012	0.75	Radiator hose upper, replacing
261-014	1.25	Radiator hoses lower, replacing
261-072	0.25	Coolant filter, changing
262-002	1.50	Coolant pump, replacing
262-098	1.00	Thermostat, replacing
263-012	1.50	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	1.50	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.60	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	0.80	Batteries, replacing
311-003	0.50	Main switch, replacing
311-006	0.50	Earth lead to battery, replacing
311-008	2.50	Starter motor lead to battery, replacing
311-008	2.50	Starter motor lead to battery, replacing

Op.no.	time (h)	Notes
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	1.00	Starter motor, replacing
331-081	0.50	Starter relay, replacing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.50	Horn, replacing
362-041	0.50	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.00	Windscreen wiper front, replacing motor
363-003	0.50	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-004	0.50	Switch, replacing
364-050	0.50	Relay (general), replacing
364-052	0.50	Battery relay, replacing
364-056	0.50	Pre-heating relay, replacing
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU
37		CABLE; FUSE; RELAY
372-020	0.25	Fuse (general), replacing
372-091	0.50	Slow blow fuse, replacing
379-011	0.75	Boom wire harness, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	0.50	Engine temperature sensor, replacing
386-007	0.50	Engine oil pressure sensor, replacing
386-011	0.50	Fuel level sender, replacing
386-038	1.00	Engine rotation speed sensor, replacing
386-043	0.50	Travel speed sensor or alarm sensor, replacing
386-044	0.50	Auto idling sensor, replacing
386-088	0.75	Engine rotation speed sensor (camshaft), replacing
39		MISCELLANEOUS
390-902	3.00	CareTrack, installing new
393-001	0.50	Voltage converter, replacing

Op.no.	time (h)		Notes
393-021	0.75	Radio, replacing	
395-021	0.50	Antenna, replacing	
395-022	1.00	Antenna cable, replacing	
395-031	0.50	Speaker, replacing	
398-002	0.70	W-ECU, MID142, changing pre-programmed ECU	16472 - 110000
398-003	0.70	W-ECU, MID142, changing non-programmed ECU	16472 - 110000

4**POWER TRANSMISSION****43****GEARBOX,**

431-021	5.00	Swing gearbox, replacing	
431-026	1.50	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	3.00	Pump gearbox coupling assembly, replacing	
431-036	4.50	Pump gearbox flange, replacing	
431-115	1.75	Track gearbox (removed), replacing floating seal	
431-117	1.25	Track gearbox, replacing cover	
431-125	3.00	Track unit, removal	
431-126	3.00	Track unit, installation	
431-127	6.00	Track unit, replacing	

44**HYDROSTATIC DRIVE**

441-017	1.00	Travel motor pressure, checking and adjusting	
441-021	3.00	Swing motor, replacing	
441-022	0.75	Swing motor relief valve, replacing	
441-023	3.50	Swing motor, replacing cylinder block	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.25	Swing motor, replacing brake piston seal	
441-026	1.50	Swing motor removed, replacing seal	
441-028	0.75	Swing motor brake valve, replacing	
441-032	0.75	Swing motor pressure, checking and adjusting	
441-112	0.70	Track motor relief valve, replacing	15216 - 110000
441-115	2.00	Track motor removed, replacing seal	
443-037	5.00	Center passage, replacing	
443-038	6.50	Center passage, replacing seal kit	
443-039	1.00	Center passage hose (valve – center passage), replacing	
443-040	1.50	Center passage hose (center passage – motor), replacing	

49**MISCELLANEOUS**

492-031	3.00	Swing ring gear outer seal, replacing	16932 - 110000
492-032	9.00	Swing ring gear inner seal, replacing	16932 - 110000

Op.no.	time (h)		Notes
492-091	0.50	Ring gear grease pipe, replacing	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	0.70	Counterweight, removing	
716-002	0.80	Counterweight, fitting	
716-003	2.00	Counterweight, replacing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	15216 - 110000
775-021	3.50	Sprocket, replacing one	15216 - 110000
775-032	0.40	Track shoe, replacing one	15216 - 110000
775-033	7.50	Track shoe, replacing each side	
775-034	1.25	Track chain assembly, removing	15216 - 110000
775-035	1.75	Track chain assembly, installing	15216 - 110000
775-051	1.00	Top roller, replacing one	15216 - 110000
775-061	1.50	Bottom roller, replacing one	15216 - 110000
775-066	3.00	Bottom roller, replacing seal	15216 - 110000
775-071	0.90	Track guard, replacing one	15216 - 110000
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	15216 - 110000
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.50	Cab, removing	
810-002	2.00	Cab, installing	
810-003	4.50	Operator cab, replacing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	1.00	Engine hood, replacing	
827-091	1.25	Tool box assembly, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.25	Rear-view mirror, changing	
843-002	2.00	Windscreen, replacing	
843-012	1.00	Rear window, replacing	
843-013	1.50	Side window, replacing	
843-048	1.00	Door window, replacing	

Op.no.	time (h)	Notes
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
872-011	1.00	Duct, replacing
872-021	1.00	Defroster hose, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-011	1.00	Air mix door actuator, replacing
873-020	1.00	Heat control valve actuator, replacing
873-097	1.50	Heater hose, replacing
874-002	0.75	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	2.00	Compressor, replacing incl draining and filling
874-007	0.75	Belt, replacing
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-014	0.50	Thermostat, replacing
874-081	1.75	Liquid hose, replacing incl. draining and filling
874-082	1.75	Discharge hose, replacing incl. draining and filling
874-083	1.75	Suction hose, replacing incl. draining and filling
874-091	1.00	Switch and controller, replacing
874-093	1.00	Power transistor (ceramic resister), replacing
874-094	1.00	Vent actuator, replacing
874-095	1.00	Mode (foot) actuator, replacing
874-096	1.00	Intake actuator, replacing
874-097	1.00	Shutter assembly, replacing
874-098	1.00	Valve (mix) actuator, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-001	0.20	Oil return filter, replacing
911-004	0.50	Suction strainer, replacing
911-005	1.75	Pump suction hose and pipe, replacing
911-011	2.50	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing

Op.no.	time (h)	Notes
911-017	1.75	Suction cover, replacing
911-024	0.70	Pipe and hose (pump - valve), replacing
911-025	0.70	Pipe and hose (valve - cylinder), replacing
911-026	0.70	Pipe and hose (valve - swing motor), replacing
911-031	1.50	Oil cooler line pipe and hose, replacing
911-032	1.50	Oil cooler line pipe coupling, replacing
911-033	2.00	Oil cooler line bypass valve (check valve), replacing
911-038	3.50	Hydraulic oil tank, replacing
911-042	0.25	Oil drain filter, replacing
911-043	0.25	Servo system filter, replacing
911-051	0.20	Breather, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	0.70	Rupture valve, replacing (boom cylinder)
912-073	0.70	Rupture valve, replacing (dipper arm cylinder)
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)
912-075	0.50	Rupture valve hose or pipe, replacing (dipper arm cylinder)
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.50	Hydraulic pump, replacing
913-013	6.00	Hydraulic pump, replacing seal for input shaft
913-029	0.50	Pump regulator, replacing
914-036	1.25	Servo pump block seal, replacing
914-037	1.25	Servo pump shaft seal, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-055	0.75	Servo pressure, checking and adjusting
914-060	1.00	Servo pump, replacing
914-071	0.50	Servo pipe and hose, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.00	Solenoid valve, replacing
916-043	1.00	Boom, replacing pipe (boom cylinder)
916-044	0.75	Boom, replacing hose (boom cylinder)
916-045	1.00	Boom, replacing pipe (dipper arm cylinder)
916-046	0.50	Boom, replacing hose (dipper arm cylinder)
916-047	1.00	Boom, replacing pipe (bucket cylinder)
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)
916-049	0.75	Dipper arm, replacing pipe (bucket cylinder)

Op.no.	time (h)	Notes
916-091	0.75	Hammer and shear pipe, replacing (for boom)
916-092	0.50	Hammer and shear hose, replacing (for boom)
916-093	0.75	Hammer and shear pipe, replacing (for dipper arm)
916-094	0.50	Hammer and shear hose, replacing (for dipper arm)
916-095	0.50	Hammer and shear hose and pipe, replacing (MCV - 3 way valve)
916-096	1.00	Hammer and shear pedal valve (RCV), replacing
916-097	0.75	Hammer and shear 3-way valve, replacing
916-098	0.75	Hammer and shear pipe and hose, replacing (for 2nd pump flow)
916-099	0.50	Hammer and shear ball valve, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.50	Quickfit pump (gear pump), replacing
924-002	1.00	Quickfit valve, replacing
924-003	0.75	Quickfit solenoid valve, replacing
924-004	0.50	Quickfit control switch, replacing
924-021	2.00	Quickfit hydraulic cylinder bracket (body), replacing
924-041	0.50	Quickfit hydraulic hose, replacing (for boom)
924-042	0.50	Quickfit hydraulic pipe, replacing (for boom)
924-043	0.25	Quickfit hydraulic hose, replacing (for dipper arm)
924-044	0.50	Quickfit hydraulic pipe, replacing (for dipper arm)
924-045	0.75	Quickfit hydraulic cylinder hose, replacing (dipper arm cylinder)
925-011	1.25	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.75	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	4.50	Boom, removal
974-014	5.00	Boom, installation
974-017	2.00	Boom, replacing pin
974-018	0.25	Boom grease pipe or hose, replacing
974-021	2.00	Boom cylinder, replacing
974-022	2.00	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	3.50	Boom cylinder, repacking in machine
974-031	1.00	Boom cylinder, removal
974-032	1.00	Boom cylinder, installation
975-011	2.50	Dipper arm, removal
975-012	3.00	Dipper arm, installation
975-014	1.00	Dipper arm cylinder, removal

Op.no.	time (h)	Notes
975-015	1.00	Dipper arm cylinder, installation
975-023	0.25	Dipper arm pipe or hose, replacing
975-024	1.00	Dipper arm connecting rod, replacing
975-025	2.00	Dipper arm cylinder, replacing
975-026	2.50	Dipper arm cylinder removed, repacking
975-028	1.00	Connecting rod yoke, replacing
975-032	0.50	Connecting rod yoke, removal
975-035	0.50	Connecting rod yoke, installation
975-039	5.00	Dipper arm, replacing
975-043	3.50	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.00	Bucket cylinder, replacing
975-062	1.00	Bucket cylinder, removal
975-063	3.50	Bucket cylinder, repacking in machine
975-065	1.00	Bucket cylinder, installation
975-069	2.00	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes
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1 STANDARD PARTS, SERVICE

17 SERVICE

170-005	0.25	Start of VCADS Pro computer and reading machine data
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	3.00	Delivery Inspection, according to Inspection Programme
173-002	0.75	Maintenance service, daily
173-004	1.00	Maintenance service, every 50 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	5.50	Maintenance service, every 500 hours
173-012	5.00	Maintenance service, every 1000 hours
173-014	8.50	Maintenance service, every 2000 hours
173-059	0.60	Engine, changing oil and filter
173-074	1.25	Hydraulic oil tank, changing oil and filter
173-076	0.25	Hydraulic oil tank, return oil filter change
173-077	0.20	Hydraulic oil tank, changing breather filter
173-079	0.60	Swing motor gearbox, changing oil
173-101	0.40	Track motor gearbox, changing oil

2 ENGINE WITH MOUNTING AND EQUIPMENT

21 ENGINE

210-070	6.00	Engine, removing
210-072	6.50	Engine, installing
211-002	7.00	Cylinder head, replacing gasket
214-012	3.00	Valves, adjusting
214-036	1.00	Valve covers, fitting new gasket
216-014	7.50	Crankshaft, replacing front oil seal
216-018	8.00	Crankshaft, replacing rear oil seal

23 FUEL SYSTEM

233-001	0.30	Fuel system, bleeding
233-002	1.00	Feed pump, replacing
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
234-010	4.00	Fuel tank, replacing
234-041	0.50	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-002	3.00	Injectors, replacing all
237-004	1.50	Injector, replacing one

Op.no.	time (h)	Notes
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
252-021	1.25	Exhaust pipe, flexible tube, replacing
255-070	1.00	Turbocharger, removing
255-071	2.00	Turbocharger, replacing
255-072	1.00	Turbocharger, installing
256-001	0.25	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.40	Preheating coil, replacing
258-002	4.00	Intercooler, replacing
258-022	0.50	Charge air cooler connection (hose, tube), replacing
26		COOLING SYSTEM
261-002	0.25	Coolant, checking anti-freeze resistance
261-004	0.75	Coolant, changing
261-008	7.00	Radiator, replacing
261-012	0.75	Radiator hose upper, replacing
261-014	1.25	Radiator hoses lower, replacing
261-072	0.25	Coolant filter, changing
262-098	1.00	Thermostat, replacing
263-012	1.50	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	1.50	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.60	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	0.80	Batteries, replacing
311-003	0.50	Main switch, replacing
311-006	0.50	Earth lead to battery, replacing
311-008	2.50	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check

Op.no.	time (h)	Notes
33		STARTING SYSTEM
331-018	1.00	Starter motor, replacing
331-081	0.50	Starter relay, replacing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.50	Horn, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.00	Windscreen wiper front, replacing motor
363-003	0.50	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-004	0.50	Switch, replacing
364-050	0.50	Relay (general), replacing
364-052	0.50	Battery relay, replacing
364-056	0.50	Pre-heating relay, replacing
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU
37		CABLE; FUSE; RELAY
372-020	0.25	Fuse (general), replacing
372-091	0.50	Slow blow fuse, replacing
379-011	0.75	Boom wire harness, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	0.50	Engine temperature sensor, replacing
386-007	0.50	Engine oil pressure sensor, replacing
386-011	0.50	Fuel level sender, replacing
386-038	1.00	Engine rotation speed sensor, replacing
386-043	0.50	Travel speed sensor or alarm sensor, replacing
386-044	0.50	Auto idling sensor, replacing
386-088	0.75	Engine rotation speed sensor (camshaft), replacing
39		MISCELLANEOUS
390-902	3.00	CareTrack, installing new
393-001	0.50	Voltage converter, replacing
393-021	0.75	Radio, replacing
395-021	0.50	Antenna, replacing
395-022	1.00	Antenna cable, replacing
395-031	0.50	Speaker, replacing

Op.no.	time (h)	Notes	
398-002	0.70	W-ECU, MID142, changing pre-programmed ECU	16472 - 110000
398-003	0.70	W-ECU, MID142, changing non-programmed ECU	16472 - 110000
4	POWER TRANSMISSION		
43	GEARBOX,		
431-021	5.00	Swing gearbox, replacing	
431-026	1.50	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	3.00	Pump gearbox coupling assembly, replacing	
431-036	4.50	Pump gearbox flange, replacing	
431-115	1.75	Track gearbox (removed), replacing floating seal	
431-117	1.25	Track gearbox, replacing cover	
431-125	3.00	Track unit, removal	
431-126	3.00	Track unit, installation	
431-127	6.00	Track unit, replacing	
44	HYDROSTATIC DRIVE		
441-017	1.00	Travel motor pressure, checking and adjusting	
441-021	3.00	Swing motor, replacing	
441-022	0.75	Swing motor relief valve, replacing	
441-023	3.50	Swing motor, replacing cylinder block	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.25	Swing motor, replacing brake piston seal	
441-026	1.50	Swing motor removed, replacing seal	
441-028	0.75	Swing motor brake valve, replacing	
441-032	0.75	Swing motor pressure, checking and adjusting	
441-112	0.70	Track motor relief valve, replacing	15216 - 110000
441-115	2.00	Track motor removed, replacing seal	
443-037	5.00	Center passage, replacing	
443-038	6.50	Center passage, replacing seal kit	
443-039	1.00	Center passage hose (valve – center passage), replacing	
443-040	1.50	Center passage hose (center passage – motor), replacing	
49	MISCELLANEOUS		
492-031	3.00	Swing ring gear outer seal, replacing	16932 - 110000
492-032	9.00	Swing ring gear inner seal, replacing	16932 - 110000
492-091	0.50	Ring gear grease pipe, replacing	

Op.no.	time (h)	Notes	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	0.70	Counterweight, removing	
716-002	0.80	Counterweight, fitting	
716-003	2.00	Counterweight, replacing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	15216 - 110000
775-021	3.50	Sprocket, replacing one	15216 - 110000
775-032	0.40	Track shoe, replacing one	15216 - 110000
775-033	8.00	Track shoe, replacing each side	
775-034	1.25	Track chain assembly, removing	15216 - 110000
775-035	1.75	Track chain assembly, installing	15216 - 110000
775-051	1.00	Top roller, replacing one	15216 - 110000
775-061	1.50	Bottom roller, replacing one	15216 - 110000
775-066	3.00	Bottom roller, replacing seal	15216 - 110000
775-071	0.90	Track guard, replacing one	15216 - 110000
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	15216 - 110000
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.50	Cab, removing	
810-002	2.00	Cab, installing	
810-003	4.50	Operator cab, replacing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	1.00	Engine hood, replacing	
827-091	1.25	Tool box assembly, replacing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	0.75	Door, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.25	Rear-view mirror, changing	
843-002	2.00	Windscreen, replacing	
843-012	1.00	Rear window, replacing	
843-013	1.50	Side window, replacing	
843-048	1.00	Door window, replacing	

Op.no.	time (h)	Notes
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
872-011	1.00	Duct, replacing
872-021	1.00	Defroster hose, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-011	1.00	Air mix door actuator, replacing
873-020	1.00	Heat control valve actuator, replacing
873-097	1.50	Heater hose, replacing
874-002	0.75	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	2.00	Compressor, replacing incl draining and filling
874-007	0.75	Belt, replacing
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-014	0.50	Thermostat, replacing
874-081	1.75	Liquid hose, replacing incl. draining and filling
874-082	1.75	Discharge hose, replacing incl. draining and filling
874-083	1.75	Suction hose, replacing incl. draining and filling
874-091	1.00	Switch and controller, replacing
874-093	1.00	Power transistor (ceramic resister), replacing
874-094	1.00	Vent actuator, replacing
874-095	1.00	Mode (foot) actuator, replacing
874-096	1.00	Intake actuator, replacing
874-097	1.00	Shutter assembly, replacing
874-098	1.00	Valve (mix) actuator, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-001	0.20	Oil return filter, replacing
911-004	0.50	Suction strainer, replacing
911-005	1.75	Pump suction hose and pipe, replacing
911-011	2.50	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-017	1.75	Suction cover, replacing
911-024	0.70	Pipe and hose (pump - valve), replacing

Op.no.	time (h)	Notes
911-025	0.70	Pipe and hose (valve - cylinder), replacing
911-026	0.70	Pipe and hose (valve - swing motor), replacing
911-031	1.50	Oil cooler line pipe and hose, replacing
911-032	1.50	Oil cooler line pipe coupling, replacing
911-033	2.00	Oil cooler line bypass valve (check valve), replacing
911-038	3.50	Hydraulic oil tank, replacing
911-042	0.25	Oil drain filter, replacing
911-043	0.25	Servo system filter, replacing
911-051	0.20	Breather, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	0.70	Rupture valve, replacing (boom cylinder)
912-073	0.70	Rupture valve, replacing (dipper arm cylinder)
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)
912-075	0.50	Rupture valve hose or pipe, replacing (dipper arm cylinder)
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-010	4.50	Hydraulic pump, replacing
913-013	6.00	Hydraulic pump, replacing seal for input shaft
913-029	0.50	Pump regulator, replacing
914-036	1.25	Servo pump block seal, replacing
914-037	1.25	Servo pump shaft seal, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-055	0.75	Servo pressure, checking and adjusting
914-060	1.00	Servo pump, replacing
914-071	0.50	Servo pipe and hose, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.00	Solenoid valve, replacing
916-043	1.00	Boom, replacing pipe (boom cylinder)
916-044	0.75	Boom, replacing hose (boom cylinder)
916-045	1.00	Boom, replacing pipe (dipper arm cylinder)
916-046	0.50	Boom, replacing hose (dipper arm cylinder)
916-047	1.00	Boom, replacing pipe (bucket cylinder)
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)
916-049	0.75	Dipper arm, replacing pipe (bucket cylinder)
916-091	0.75	Hammer and shear pipe, replacing (for boom)
916-092	0.50	Hammer and shear hose, replacing (for boom)
916-093	0.75	Hammer and shear pipe, replacing (for dipper arm)

Op.no.	time (h)	Notes
916-094	0.50	Hammer and shear hose, replacing (for dipper arm)
916-095	0.50	Hammer and shear hose and pipe, replacing (MCV - 3 way valve)
916-096	1.00	Hammer and shear pedal valve (RCV), replacing
916-097	0.75	Hammer and shear 3-way valve, replacing
916-098	0.75	Hammer and shear pipe and hose, replacing (for 2nd pump flow)
916-099	0.50	Hammer and shear ball valve, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.50	Quickfit pump (gear pump), replacing
924-002	1.00	Quickfit valve, replacing
924-003	0.75	Quickfit solenoid valve, replacing
924-004	0.50	Quickfit control switch, replacing
924-041	0.50	Quickfit hydraulic hose, replacing (for boom)
924-042	0.50	Quickfit hydraulic pipe, replacing (for boom)
924-043	0.25	Quickfit hydraulic hose, replacing (for dipper arm)
924-044	0.50	Quickfit hydraulic pipe, replacing (for dipper arm)
924-045	0.75	Quickfit hydraulic cylinder hose, replacing (dipper arm cylinder)
925-011	1.25	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.75	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	4.50	Boom, removal
974-014	5.00	Boom, installation
974-017	2.00	Boom, replacing pin
974-018	0.25	Boom grease pipe or hose, replacing
974-021	2.00	Boom cylinder, replacing
974-022	2.00	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	3.50	Boom cylinder, repacking in machine
974-031	1.00	Boom cylinder, removal
974-032	1.00	Boom cylinder, installation
975-011	2.50	Dipper arm, removal
975-012	3.00	Dipper arm, installation
975-014	1.00	Dipper arm cylinder, removal
975-015	1.00	Dipper arm cylinder, installation
975-023	0.25	Dipper arm pipe or hose, replacing
975-025	2.00	Dipper arm cylinder, replacing
975-026	2.50	Dipper arm cylinder removed, repacking

Op.no.	time (h)	Notes
975-028	1.00	Connecting rod yoke, replacing
975-032	0.50	Connecting rod yoke, removal
975-035	0.50	Connecting rod yoke, installation
975-039	5.00	Dipper arm, replacing
975-043	3.50	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.00	Bucket cylinder, replacing
975-062	1.00	Bucket cylinder, removal
975-063	3.50	Bucket cylinder, repacking in machine
975-065	1.00	Bucket cylinder, installation
975-069	2.00	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
170-005	0.25	Start of VCADS Pro computer and reading machine data
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	3.00	Delivery Inspection, according to Inspection Programme
173-002	0.75	Maintenance service, daily
173-004	1.00	Maintenance service, every 50 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	5.50	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	8.00	Maintenance service, every 2000 hours
173-059	0.60	Engine, changing oil and filter
173-074	1.25	Hydraulic oil tank, changing oil and filter
173-076	0.25	Hydraulic oil tank, return oil filter change
173-079	0.90	Swing motor gearbox, changing oil
173-101	0.40	Track motor gearbox, changing oil
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
210-070	6.50	Engine, removing
210-072	7.00	Engine, installing
211-002	7.00	Cylinder head, replacing gasket
214-012	2.50	Valves, adjusting
214-036	1.00	Valve covers, fitting new gasket
216-014	7.50	Crankshaft, replacing front oil seal
216-018	8.50	Crankshaft, replacing rear oil seal
23		FUEL SYSTEM
233-001	0.30	Fuel system, bleeding
233-002	0.70	Feed pump, replacing
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
234-010	4.00	Fuel tank, replacing
234-041	0.50	Fuel filling pump, removing

Op.no.	time (h)	Notes
234-042	0.50	Fuel filling pump, installing
237-002	3.00	Injectors, replacing all
237-004	1.50	Injector, replacing one
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
252-021	1.25	Exhaust pipe, flexible tube, replacing
255-070	1.00	Turbocharger, removing
255-071	2.00	Turbocharger, replacing
255-072	1.00	Turbocharger, installing
256-001	0.25	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.40	Preheating coil, replacing
258-002	4.00	Intercooler, replacing
258-022	0.50	Charge air cooler connection (hose, tube), replacing
26		COOLING SYSTEM
261-002	0.25	Coolant, checking anti-freeze resistance
261-004	0.75	Coolant, changing
261-008	7.00	Radiator, replacing
261-012	0.75	Radiator hose upper, replacing
261-014	1.25	Radiator hoses lower, replacing
261-072	0.25	Coolant filter, changing
262-002	1.50	Coolant pump, replacing
262-098	1.00	Thermostat, replacing
263-012	1.50	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	1.50	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.60	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	0.80	Batteries, replacing
311-003	0.50	Main switch, replacing
311-006	0.50	Earth lead to battery, replacing

Op.no.	time (h)	Notes
311-008	2.50	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	1.00	Starter motor, replacing
331-081	0.50	Starter relay, replacing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.50	Horn, replacing
362-041	0.50	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.00	Windscreen wiper front, replacing motor
363-003	0.50	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-004	0.50	Switch, replacing
364-050	0.50	Relay (general), replacing
364-052	0.50	Battery relay, replacing
364-056	0.50	Pre-heating relay, replacing
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU
37		CABLE; FUSE; RELAY
372-020	0.25	Fuse (general), replacing
372-091	0.50	Slow blow fuse, replacing
379-011	0.75	Boom wire harness, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	0.50	Engine temperature sensor, replacing
386-007	0.50	Engine oil pressure sensor, replacing
386-011	0.50	Fuel level sender, replacing
386-038	1.00	Engine rotation speed sensor, replacing
386-043	0.50	Travel speed sensor or alarm sensor, replacing
386-044	0.50	Auto idling sensor, replacing
386-088	0.75	Engine rotation speed sensor (camshaft), replacing
39		MISCELLANEOUS
390-902	3.00	CareTrack, installing new

Op.no.	time (h)	Notes
393-001	0.50	Voltage converter, replacing
393-021	0.75	Radio, replacing
395-021	0.50	Antenna, replacing
395-022	1.00	Antenna cable, replacing
395-031	0.50	Speaker, replacing

4 POWER TRANSMISSION

43 GEARBOX,

431-021	5.50	Swing gearbox, replacing
431-026	1.50	Swing gearbox removed, replacing seal
431-027	2.50	Swing gearbox removed, replacing shaft
431-031	3.00	Pump gearbox coupling assembly, replacing
431-036	4.50	Pump gearbox flange, replacing
431-115	1.75	Track gearbox (removed), replacing floating seal
431-117	1.25	Track gearbox, replacing cover
431-125	3.00	Track unit, removal
431-126	3.00	Track unit, installation
431-127	6.00	Track unit, replacing

44 HYDROSTATIC DRIVE

441-017	1.00	Travel motor pressure, checking and adjusting
441-021	3.00	Swing motor, replacing
441-022	0.75	Swing motor relief valve, replacing
441-023	3.50	Swing motor, replacing cylinder block
441-024	1.50	Swing motor, replacing plate (brake)
441-025	1.25	Swing motor, replacing brake piston seal
441-026	1.50	Swing motor removed, replacing seal
441-028	0.75	Swing motor brake valve, replacing
441-032	0.75	Swing motor pressure, checking and adjusting
441-112	0.70	Track motor relief valve, replacing
441-115	2.00	Track motor removed, replacing seal
443-037	5.00	Center passage, replacing
443-038	6.50	Center passage, replacing seal kit
443-039	1.00	Center passage hose (valve – center passage), replacing
443-040	1.50	Center passage hose (center passage – motor), replacing

49 MISCELLANEOUS

492-031	3.00	Swing ring gear outer seal, replacing
492-091	0.50	Ring gear grease pipe, replacing

Op.no.	time (h)		Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	0.70	Counterweight, removing	10001 - 11577
716-001	0.70	Counterweight, removing	12011 - 120000
716-002	0.80	Counterweight, fitting	12011 - 120000
716-002	0.80	Counterweight, fitting	10001 - 11577
716-003	2.00	Counterweight, replacing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-032	0.40	Track shoe, replacing one	
775-034	1.25	Track chain assembly, removing	
775-035	1.75	Track chain assembly, installing	
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	
775-066	3.00	Bottom roller, replacing seal	
775-071	0.90	Track guard, replacing one	
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.50	Cab, removing	
810-002	2.00	Cab, installing	
810-003	4.50	Operator cab, replacing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	1.00	Engine hood, replacing	
827-091	1.25	Tool box assembly, replacing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	0.75	Door, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.25	Rear-view mirror, changing	
843-002	2.00	Windscreen, replacing	
843-012	1.00	Rear window, replacing	
843-013	1.50	Side window, replacing	
843-048	1.00	Door window, replacing	

Op.no.	time (h)	Notes
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
872-011	1.00	Duct, replacing
872-021	1.00	Defroster hose, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-011	1.00	Air mix door actuator, replacing
873-020	1.00	Heat control valve actuator, replacing
873-097	1.50	Heater hose, replacing
874-002	0.75	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	2.00	Compressor, replacing incl draining and filling
874-007	0.75	Belt, replacing
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-014	0.50	Thermostat, replacing
874-081	1.75	Liquid hose, replacing incl. draining and filling
874-082	1.75	Discharge hose, replacing incl. draining and filling
874-083	1.75	Suction hose, replacing incl. draining and filling
874-091	1.00	Switch and controller, replacing
874-093	1.00	Power transistor (ceramic resister), replacing
874-094	1.00	Vent actuator, replacing
874-095	1.00	Mode (foot) actuator, replacing
874-096	1.00	Intake actuator, replacing
874-097	1.00	Shutter assembly, replacing
874-098	1.00	Valve (mix) actuator, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-001	0.20	Oil return filter, replacing
911-004	0.50	Suction strainer, replacing
911-005	1.75	Pump suction hose and pipe, replacing
911-011	2.50	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing

Op.no.	time (h)	Notes
911-017	1.75	Suction cover, replacing
911-024	0.70	Pipe and hose (pump - valve), replacing
911-025	0.70	Pipe and hose (valve - cylinder), replacing
911-026	0.70	Pipe and hose (valve - swing motor), replacing
911-031	1.50	Oil cooler line pipe and hose, replacing
911-032	1.50	Oil cooler line pipe coupling, replacing
911-033	2.00	Oil cooler line bypass valve (check valve), replacing
911-038	3.50	Hydraulic oil tank, replacing
911-042	0.25	Oil drain filter, replacing
911-043	0.25	Servo system filter, replacing
911-051	0.20	Breather, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	0.70	Rupture valve, replacing (boom cylinder)
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)
912-075	0.50	Rupture valve hose or pipe, replacing (dipper arm cylinder)
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.50	Hydraulic pump, replacing
913-013	6.00	Hydraulic pump, replacing seal for input shaft
913-029	0.50	Pump regulator, replacing
914-036	1.25	Servo pump block seal, replacing
914-037	1.25	Servo pump shaft seal, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-055	0.75	Servo pressure, checking and adjusting
914-060	1.00	Servo pump, replacing
914-071	0.50	Servo pipe and hose, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.00	Solenoid valve, replacing
916-043	1.00	Boom, replacing pipe (boom cylinder)
916-044	0.75	Boom, replacing hose (boom cylinder)
916-045	1.00	Boom, replacing pipe (dipper arm cylinder)
916-046	0.50	Boom, replacing hose (dipper arm cylinder)
916-047	1.00	Boom, replacing pipe (bucket cylinder)
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)
916-049	0.75	Dipper arm, replacing pipe (bucket cylinder)

Op.no.	time (h)	Notes
916-091	0.75	Hammer and shear pipe, replacing (for boom)
916-092	0.50	Hammer and shear hose, replacing (for boom)
916-093	0.75	Hammer and shear pipe, replacing (for dipper arm)
916-094	0.50	Hammer and shear hose, replacing (for dipper arm)
916-095	0.50	Hammer and shear hose and pipe, replacing (MCV - 3 way valve)
916-096	1.00	Hammer and shear pedal valve (RCV), replacing
916-097	0.75	Hammer and shear 3-way valve, replacing
916-098	0.75	Hammer and shear pipe and hose, replacing (for 2nd pump flow)
916-099	0.50	Hammer and shear ball valve, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.50	Quickfit pump (gear pump), replacing
924-002	1.00	Quickfit valve, replacing
924-003	0.75	Quickfit solenoid valve, replacing
924-004	0.50	Quickfit control switch, replacing
924-021	2.00	Quickfit hydraulic cylinder bracket (body), replacing
924-041	0.50	Quickfit hydraulic hose, replacing (for boom)
924-042	0.50	Quickfit hydraulic pipe, replacing (for boom)
924-043	0.25	Quickfit hydraulic hose, replacing (for dipper arm)
924-044	0.50	Quickfit hydraulic pipe, replacing (for dipper arm)
924-045	0.75	Quickfit hydraulic cylinder hose, replacing (dipper arm cylinder)
925-011	1.25	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.75	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-010	12.00	Boom, replacing
974-013	4.50	Boom, removal
974-014	5.50	Boom, installation
974-017	2.00	Boom, replacing pin
974-018	0.25	Boom grease pipe or hose, replacing
974-021	2.50	Boom cylinder, replacing
974-022	2.00	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	3.50	Boom cylinder, repacking in machine
974-031	1.00	Boom cylinder, removal
974-032	1.00	Boom cylinder, installation
975-011	3.00	Dipper arm, removal
975-012	3.00	Dipper arm, installation

Op.no.	time (h)	Notes
975-014	1.00	Dipper arm cylinder, removal
975-015	1.00	Dipper arm cylinder, installation
975-023	0.25	Dipper arm pipe or hose, replacing
975-024	1.25	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-026	2.50	Dipper arm cylinder removed, repacking
975-028	1.00	Connecting rod yoke, replacing
975-032	0.50	Connecting rod yoke, removal
975-035	0.50	Connecting rod yoke, installation
975-039	5.00	Dipper arm, replacing
975-043	3.50	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.00	Bucket cylinder, removal
975-063	3.50	Bucket cylinder, repacking in machine
975-065	1.00	Bucket cylinder, installation
975-069	2.00	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
170-005	0.25	Start of VCADS Pro computer and reading machine data
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	3.00	Delivery Inspection, according to Inspection Programme
173-002	0.75	Maintenance service, daily
173-004	1.00	Maintenance service, every 50 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	5.50	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	8.00	Maintenance service, every 2000 hours
173-059	0.60	Engine, changing oil and filter
173-074	1.25	Hydraulic oil tank, changing oil and filter
173-076	0.25	Hydraulic oil tank, return oil filter change
173-079	0.90	Swing motor gearbox, changing oil

2 ENGINE WITH MOUNTING AND EQUIPMENT

20		GENERAL
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
210-070	6.50	Engine, removing
210-072	7.00	Engine, installing
211-002	7.00	Cylinder head, replacing gasket
214-012	2.50	Valves, adjusting
214-036	1.00	Valve covers, fitting new gasket
216-014	7.50	Crankshaft, replacing front oil seal
216-018	8.50	Crankshaft, replacing rear oil seal
23		FUEL SYSTEM
233-001	0.30	Fuel system, bleeding
233-002	0.70	Feed pump, replacing
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
234-010	4.00	Fuel tank, replacing
234-041	0.50	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing

Op.no.	time (h)	Notes
237-002	3.00	Injectors, replacing all
237-004	1.50	Injector, replacing one
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
252-021	1.25	Exhaust pipe, flexible tube, replacing
255-070	1.00	Turbocharger, removing
255-071	2.00	Turbocharger, replacing
255-072	1.00	Turbocharger, installing
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.40	Preheating coil, replacing
258-002	4.00	Intercooler, replacing
258-022	0.50	Charge air cooler connection (hose, tube), replacing
26		COOLING SYSTEM
261-002	0.25	Coolant, checking anti-freeze resistance
261-004	0.75	Coolant, changing
261-008	7.00	Radiator, replacing
261-012	0.75	Radiator hose upper, replacing
261-014	1.25	Radiator hoses lower, replacing
261-072	0.25	Coolant filter, changing
262-098	1.00	Thermostat, replacing
263-012	1.50	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	1.50	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.60	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	0.80	Batteries, replacing
311-003	0.50	Main switch, replacing
311-006	0.50	Earth lead to battery, replacing
311-008	2.50	Starter motor lead to battery, replacing

Op.no.	time (h)	Notes
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	1.00	Starter motor, replacing
331-081	0.50	Starter relay, replacing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.50	Horn, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.00	Windscreen wiper front, replacing motor
363-003	0.50	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-004	0.50	Switch, replacing
364-050	0.50	Relay (general), replacing
364-052	0.50	Battery relay, replacing
364-056	0.50	Pre-heating relay, replacing
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU
37		CABLE; FUSE; RELAY
372-020	0.25	Fuse (general), replacing
372-091	0.50	Slow blow fuse, replacing
379-011	0.75	Boom wire harness, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	0.50	Engine temperature sensor, replacing
386-007	0.50	Engine oil pressure sensor, replacing
386-011	0.50	Fuel level sender, replacing
386-038	1.00	Engine rotation speed sensor, replacing
386-043	0.50	Travel speed sensor or alarm sensor, replacing
386-044	0.50	Auto idling sensor, replacing
386-088	0.75	Engine rotation speed sensor (camshaft), replacing
39		MISCELLANEOUS
390-902	3.00	CareTrack, installing new
393-001	0.50	Voltage converter, replacing
393-021	0.75	Radio, replacing
395-021	0.50	Antenna, replacing

Op.no.	time (h)		Notes
395-022	1.00	Antenna cable, replacing	
395-031	0.50	Speaker, replacing	

4 POWER TRANSMISSION

43 GEARBOX,

431-021	5.50	Swing gearbox, replacing
431-026	1.50	Swing gearbox removed, replacing seal
431-027	2.50	Swing gearbox removed, replacing shaft
431-031	3.00	Pump gearbox coupling assembly, replacing
431-036	4.50	Pump gearbox flange, replacing

44 HYDROSTATIC DRIVE

441-021	3.00	Swing motor, replacing
441-022	0.75	Swing motor relief valve, replacing
441-023	3.50	Swing motor, replacing cylinder block
441-024	1.50	Swing motor, replacing plate (brake)
441-025	1.25	Swing motor, replacing brake piston seal
441-026	1.50	Swing motor removed, replacing seal
441-028	0.75	Swing motor brake valve, replacing

49 MISCELLANEOUS

492-031	3.00	Swing ring gear outer seal, replacing
492-091	0.50	Ring gear grease pipe, replacing

7 FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT

71 FRAME

716-001	0.70	Counterweight, removing	10001 - 11577
716-001	0.70	Counterweight, removing	12011 - 120000
716-002	0.80	Counterweight, fitting	12011 - 120000
716-002	0.80	Counterweight, fitting	10001 - 11577
716-003	2.00	Counterweight, replacing	

77 WHEELS; TRACKS; TYRE; HUB; DRUM

775-011	3.00	Front idler, replacing one
775-021	3.50	Sprocket, replacing one
775-032	0.40	Track shoe, replacing one
775-033	8.00	Track shoe, replacing each side
775-034	1.25	Track chain assembly, removing
775-035	1.75	Track chain assembly, installing
775-051	1.00	Top roller, replacing one

Op.no.	time (h)	Notes
775-061	1.50	Bottom roller, replacing one
775-066	3.00	Bottom roller, replacing seal
775-071	0.90	Track guard, replacing one
775-081	3.00	Track recoil spring (tensioner) assembly, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.50	Cab, removing
810-002	2.00	Cab, installing
810-003	4.50	Operator cab, replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	1.00	Engine hood, replacing
827-091	1.25	Tool box assembly, replacing
827-091	1.25	Tool box assembly, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	0.75	Door, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.25	Rear-view mirror, changing
843-002	2.00	Windscreen, replacing
843-012	1.00	Rear window, replacing
843-013	1.50	Side window, replacing
843-048	1.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
872-011	1.00	Duct, replacing
872-021	1.00	Defroster hose, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-097	1.50	Heater hose, replacing
874-002	0.75	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	2.00	Compressor, replacing incl draining and filling
874-007	0.75	Belt, replacing

Op.no.	time (h)	Notes
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-081	1.75	Liquid hose, replacing incl. draining and filling
874-082	1.75	Discharge hose, replacing incl. draining and filling
874-083	1.75	Suction hose, replacing incl. draining and filling
874-091	1.00	Switch and controller, replacing
874-093	1.00	Power transistor (ceramic resister), replacing
874-094	1.00	Vent actuator, replacing
874-095	1.00	Mode (foot) actuator, replacing
874-096	1.00	Intake actuator, replacing
874-097	1.00	Shutter assembly, replacing
874-098	1.00	Valve (mix) actuator, replacing

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-001	0.20	Oil return filter, replacing
911-004	0.50	Suction strainer, replacing
911-005	1.75	Pump suction hose and pipe, replacing
911-011	2.50	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-017	1.75	Suction cover, replacing
911-024	0.70	Pipe and hose (pump - valve), replacing
911-025	0.70	Pipe and hose (valve - cylinder), replacing
911-026	0.70	Pipe and hose (valve - swing motor), replacing
911-031	1.50	Oil cooler line pipe and hose, replacing
911-032	1.50	Oil cooler line pipe coupling, replacing
911-033	2.00	Oil cooler line bypass valve (check valve), replacing
911-038	3.50	Hydraulic oil tank, replacing
911-042	0.25	Oil drain filter, replacing
911-043	0.25	Servo system filter, replacing
911-051	0.20	Breather, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	0.70	Rupture valve, replacing (boom cylinder)
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)
912-075	0.50	Rupture valve hose or pipe, replacing (dipper arm cylinder)
913-010	4.50	Hydraulic pump, replacing

Op.no.	time (h)	Notes
913-013	6.00	Hydraulic pump, replacing seal for input shaft
913-029	0.50	Pump regulator, replacing
914-036	1.25	Servo pump block seal, replacing
914-037	1.25	Servo pump shaft seal, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-060	1.00	Servo pump, replacing
914-071	0.50	Servo pipe and hose, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.00	Solenoid valve, replacing
916-043	1.00	Boom, replacing pipe (boom cylinder)
916-044	0.75	Boom, replacing hose (boom cylinder)
916-045	1.00	Boom, replacing pipe (dipper arm cylinder)
916-046	0.50	Boom, replacing hose (dipper arm cylinder)
916-047	1.00	Boom, replacing pipe (bucket cylinder)
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)
916-049	0.75	Dipper arm, replacing pipe (bucket cylinder)
916-091	0.75	Hammer and shear pipe, replacing (for boom)
916-092	0.50	Hammer and shear hose, replacing (for boom)
916-093	0.75	Hammer and shear pipe, replacing (for dipper arm)
916-094	0.50	Hammer and shear hose, replacing (for dipper arm)
916-095	0.50	Hammer and shear hose and pipe, replacing (MCV - 3 way valve)
916-096	1.00	Hammer and shear pedal valve (RCV), replacing
916-097	0.75	Hammer and shear 3-way valve, replacing
916-098	0.75	Hammer and shear pipe and hose, replacing (for 2nd pump flow)
916-099	0.50	Hammer and shear ball valve, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.50	Quickfit pump (gear pump), replacing
924-002	1.00	Quickfit valve, replacing
924-003	0.75	Quickfit solenoid valve, replacing
924-004	0.50	Quickfit control switch, replacing
924-041	0.50	Quickfit hydraulic hose, replacing (for boom)
924-042	0.50	Quickfit hydraulic pipe, replacing (for boom)
924-043	0.25	Quickfit hydraulic hose, replacing (for dipper arm)
924-044	0.50	Quickfit hydraulic pipe, replacing (for dipper arm)
924-045	0.75	Quickfit hydraulic cylinder hose, replacing (dipper arm cylinder)
925-011	1.25	Bucket assembly, replacing

Op.no.	time (h)	Notes
925-012	0.50	Bucket assembly, removal
925-013	0.75	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	4.50	Boom, removal
974-014	5.50	Boom, installation
974-017	2.00	Boom, replacing pin
974-018	0.25	Boom grease pipe or hose, replacing
974-021	2.50	Boom cylinder, replacing
974-022	2.00	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	3.50	Boom cylinder, repacking in machine
974-031	1.00	Boom cylinder, removal
974-032	1.00	Boom cylinder, installation
975-011	3.00	Dipper arm, removal
975-012	3.00	Dipper arm, installation
975-014	1.00	Dipper arm cylinder, removal
975-015	1.00	Dipper arm cylinder, installation
975-023	0.25	Dipper arm pipe or hose, replacing
975-024	1.25	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-026	2.50	Dipper arm cylinder removed, repacking
975-028	1.00	Connecting rod yoke, replacing
975-032	0.50	Connecting rod yoke, removal
975-035	0.50	Connecting rod yoke, installation
975-039	5.00	Dipper arm, replacing
975-043	3.50	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.00	Bucket cylinder, removal
975-063	3.50	Bucket cylinder, repacking in machine
975-065	1.00	Bucket cylinder, installation
975-069	2.00	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
170-005	0.25	Start of VCADS Pro computer and reading machine data
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	3.00	Delivery Inspection, according to Inspection Programme
173-002	0.75	Maintenance service, daily
173-004	1.00	Maintenance service, every 50 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	5.50	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	8.00	Maintenance service, every 2000 hours
173-059	0.60	Engine, changing oil and filter
173-074	1.25	Hydraulic oil tank, changing oil and filter
173-076	0.25	Hydraulic oil tank, return oil filter change
173-079	0.90	Swing motor gearbox, changing oil
173-101	0.40	Track motor gearbox, changing oil
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
210-070	6.50	Engine, removing
210-072	7.00	Engine, installing
211-002	7.00	Cylinder head, replacing gasket
214-012	2.50	Valves, adjusting
214-036	1.00	Valve covers, fitting new gasket
216-014	7.50	Crankshaft, replacing front oil seal
216-018	8.50	Crankshaft, replacing rear oil seal
23		FUEL SYSTEM
233-001	0.30	Fuel system, bleeding
233-002	0.70	Feed pump, replacing
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
234-010	4.00	Fuel tank, replacing
234-041	0.50	Fuel filling pump, removing

Op.no.	time (h)	Notes
234-042	0.50	Fuel filling pump, installing
237-002	3.00	Injectors, replacing all
237-004	1.50	Injector, replacing one
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
252-021	1.25	Exhaust pipe, flexible tube, replacing
255-070	1.00	Turbocharger, removing
255-071	2.00	Turbocharger, replacing
255-072	1.00	Turbocharger, installing
256-001	0.25	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.40	Preheating coil, replacing
258-002	4.00	Intercooler, replacing
258-022	0.50	Charge air cooler connection (hose, tube), replacing
26		COOLING SYSTEM
261-002	0.25	Coolant, checking anti-freeze resistance
261-004	0.75	Coolant, changing
261-008	7.00	Radiator, replacing
261-012	0.75	Radiator hose upper, replacing
261-014	1.25	Radiator hoses lower, replacing
261-072	0.25	Coolant filter, changing
262-002	1.50	Coolant pump, replacing
262-098	1.00	Thermostat, replacing
263-012	1.50	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	1.50	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.60	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	0.80	Batteries, replacing
311-003	0.50	Main switch, replacing
311-006	0.50	Earth lead to battery, replacing

Op.no.	time (h)	Notes
311-008	2.50	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	1.00	Starter motor, replacing
331-081	0.50	Starter relay, replacing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.50	Horn, replacing
362-041	0.50	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.00	Windscreen wiper front, replacing motor
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-004	0.50	Switch, replacing
364-050	0.50	Relay (general), replacing
364-052	0.50	Battery relay, replacing
364-056	0.50	Pre-heating relay, replacing
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU
37		CABLE; FUSE; RELAY
372-020	0.25	Fuse (general), replacing
372-091	0.50	Slow blow fuse, replacing
379-011	0.75	Boom wire harness, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	0.50	Engine temperature sensor, replacing
386-007	0.50	Engine oil pressure sensor, replacing
386-011	0.50	Fuel level sender, replacing
386-038	1.00	Engine rotation speed sensor, replacing
386-043	0.50	Travel speed sensor or alarm sensor, replacing
386-044	0.50	Auto idling sensor, replacing
386-088	0.75	Engine rotation speed sensor (camshaft), replacing
39		MISCELLANEOUS
390-902	3.00	CareTrack, installing new
393-001	0.50	Voltage converter, replacing

Op.no.	time (h)	Notes
393-021	0.75	Radio, replacing
395-021	0.50	Antenna, replacing
395-022	1.00	Antenna cable, replacing
395-031	0.50	Speaker, replacing
4		POWER TRANSMISSION
43		GEARBOX,
431-021	5.50	Swing gearbox, replacing
431-026	1.50	Swing gearbox removed, replacing seal
431-027	2.50	Swing gearbox removed, replacing shaft
431-031	3.00	Pump gearbox coupling assembly, replacing
431-036	4.50	Pump gearbox flange, replacing
431-115	1.75	Track gearbox (removed), replacing floating seal
431-117	1.25	Track gearbox, replacing cover
431-125	3.00	Track unit, removal
431-126	3.00	Track unit, installation
431-127	6.00	Track unit, replacing
44		HYDROSTATIC DRIVE
441-017	1.00	Travel motor pressure, checking and adjusting
441-021	3.00	Swing motor, replacing
441-022	0.75	Swing motor relief valve, replacing
441-023	3.50	Swing motor, replacing cylinder block
441-024	1.50	Swing motor, replacing plate (brake)
441-025	1.25	Swing motor, replacing brake piston seal
441-026	1.50	Swing motor removed, replacing seal
441-028	0.75	Swing motor brake valve, replacing
441-032	0.75	Swing motor pressure, checking and adjusting
441-112	0.70	Track motor relief valve, replacing
441-115	2.00	Track motor removed, replacing seal
443-037	5.00	Center passage, replacing
443-038	6.50	Center passage, replacing seal kit
443-039	1.00	Center passage hose (valve – center passage), replacing
443-040	1.50	Center passage hose (center passage – motor), replacing
49		MISCELLANEOUS
492-031	3.00	Swing ring gear outer seal, replacing
492-091	0.50	Ring gear grease pipe, replacing

Op.no.	time (h)		Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	0.70	Counterweight, removing	11578 - 110000
716-002	0.80	Counterweight, fitting	11578 - 120000
716-002	0.80	Counterweight, fitting	10001 - 11577
716-003	2.00	Counterweight, replacing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-032	0.40	Track shoe, replacing one	
775-033	7.50	Track shoe, replacing each side	
775-034	1.25	Track chain assembly, removing	
775-035	1.75	Track chain assembly, installing	
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	
775-066	3.00	Bottom roller, replacing seal	
775-071	0.90	Track guard, replacing one	
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.50	Cab, removing	
810-002	2.00	Cab, installing	
810-003	4.50	Operator cab, replacing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	1.00	Engine hood, replacing	
827-091	1.25	Tool box assembly, replacing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	0.75	Door, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.25	Rear-view mirror, changing	
843-002	2.00	Windscreen, replacing	
843-012	1.00	Rear window, replacing	
843-013	1.50	Side window, replacing	
843-048	1.00	Door window, replacing	

Op.no.	time (h)	Notes
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
872-011	1.00	Duct, replacing
872-021	1.00	Defroster hose, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-011	1.00	Air mix door actuator, replacing
873-020	1.00	Heat control valve actuator, replacing
873-097	1.50	Heater hose, replacing
874-002	0.75	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	2.00	Compressor, replacing incl draining and filling
874-007	0.75	Belt, replacing
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-014	0.50	Thermostat, replacing
874-081	1.75	Liquid hose, replacing incl. draining and filling
874-082	1.75	Discharge hose, replacing incl. draining and filling
874-083	1.75	Suction hose, replacing incl. draining and filling
874-091	1.00	Switch and controller, replacing
874-093	1.00	Power transistor (ceramic resister), replacing
874-094	1.00	Vent actuator, replacing
874-095	1.00	Mode (foot) actuator, replacing
874-096	1.00	Intake actuator, replacing
874-097	1.00	Shutter assembly, replacing
874-098	1.00	Valve (mix) actuator, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-001	0.20	Oil return filter, replacing
911-004	0.50	Suction strainer, replacing
911-005	1.75	Pump suction hose and pipe, replacing
911-011	2.50	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing

Op.no.	time (h)	Notes
911-017	1.75	Suction cover, replacing
911-024	0.70	Pipe and hose (pump - valve), replacing
911-025	0.70	Pipe and hose (valve - cylinder), replacing
911-026	0.70	Pipe and hose (valve - swing motor), replacing
911-031	1.50	Oil cooler line pipe and hose, replacing
911-032	1.50	Oil cooler line pipe coupling, replacing
911-033	2.00	Oil cooler line bypass valve (check valve), replacing
911-038	3.50	Hydraulic oil tank, replacing
911-042	0.25	Oil drain filter, replacing
911-043	0.25	Servo system filter, replacing
911-051	0.20	Breather, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	0.70	Rupture valve, replacing (boom cylinder)
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)
912-075	0.50	Rupture valve hose or pipe, replacing (dipper arm cylinder)
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.50	Hydraulic pump, replacing
913-013	6.00	Hydraulic pump, replacing seal for input shaft
913-029	0.50	Pump regulator, replacing
914-036	1.25	Servo pump block seal, replacing
914-037	1.25	Servo pump shaft seal, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-055	0.75	Servo pressure, checking and adjusting
914-060	1.00	Servo pump, replacing
914-071	0.50	Servo pipe and hose, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.00	Solenoid valve, replacing
916-043	1.00	Boom, replacing pipe (boom cylinder)
916-044	0.75	Boom, replacing hose (boom cylinder)
916-045	1.00	Boom, replacing pipe (dipper arm cylinder)
916-046	0.50	Boom, replacing hose (dipper arm cylinder)
916-047	1.00	Boom, replacing pipe (bucket cylinder)
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)
916-049	0.75	Dipper arm, replacing pipe (bucket cylinder)

Op.no.	time (h)	Notes
916-091	0.75	Hammer and shear pipe, replacing (for boom)
916-092	0.50	Hammer and shear hose, replacing (for boom)
916-093	0.75	Hammer and shear pipe, replacing (for dipper arm)
916-094	0.50	Hammer and shear hose, replacing (for dipper arm)
916-095	0.50	Hammer and shear hose and pipe, replacing (MCV - 3 way valve)
916-096	1.00	Hammer and shear pedal valve (RCV), replacing
916-097	0.75	Hammer and shear 3-way valve, replacing
916-098	0.75	Hammer and shear pipe and hose, replacing (for 2nd pump flow)
916-099	0.50	Hammer and shear ball valve, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.50	Quickfit pump (gear pump), replacing
924-002	1.00	Quickfit valve, replacing
924-003	0.75	Quickfit solenoid valve, replacing
924-004	0.50	Quickfit control switch, replacing
924-021	2.00	Quickfit hydraulic cylinder bracket (body), replacing
924-041	0.50	Quickfit hydraulic hose, replacing (for boom)
924-042	0.50	Quickfit hydraulic pipe, replacing (for boom)
924-043	0.25	Quickfit hydraulic hose, replacing (for dipper arm)
924-044	0.50	Quickfit hydraulic pipe, replacing (for dipper arm)
924-045	0.75	Quickfit hydraulic cylinder hose, replacing (dipper arm cylinder)
925-011	1.25	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.75	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	4.50	Boom, removal
974-014	5.50	Boom, installation
974-017	2.00	Boom, replacing pin
974-018	0.25	Boom grease pipe or hose, replacing
974-021	2.50	Boom cylinder, replacing
974-022	2.00	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	3.50	Boom cylinder, repacking in machine
974-031	1.00	Boom cylinder, removal
974-032	1.00	Boom cylinder, installation
975-011	3.00	Dipper arm, removal
975-012	3.00	Dipper arm, installation
975-014	1.00	Dipper arm cylinder, removal

Op.no.	time (h)	Notes
975-015	1.00	Dipper arm cylinder, installation
975-023	0.25	Dipper arm pipe or hose, replacing
975-024	1.25	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-026	2.50	Dipper arm cylinder removed, repacking
975-028	1.00	Connecting rod yoke, replacing
975-032	0.50	Connecting rod yoke, removal
975-035	0.50	Connecting rod yoke, installation
975-039	5.00	Dipper arm, replacing
975-043	3.50	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.00	Bucket cylinder, removal
975-063	3.50	Bucket cylinder, repacking in machine
975-065	1.00	Bucket cylinder, installation
975-069	2.00	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
171-001	1.00	Arrival Inspection, according to Inspection Programme	
171-002	3.00	Delivery Inspection, according to Inspection Programme	
172-002	3.00	Warranty inspection 100 hours	
172-004	7.50	Warranty inspection 1000 hours	
173-002	1.25	Maintenance service, daily	
173-004	1.50	Maintenance service, every 50 hours	
173-007	2.50	Maintenance service, every 250 hours	
173-010	4.50	Maintenance service, every 500 hours	
173-012	6.50	Maintenance service, every 1000 hours	
173-014	12.00	Maintenance service, every 2000 hours	
173-018	12.00	Maintenance service, every 4000 hours	
173-022	12.00	Maintenance service, every 6000 hours	
173-074	1.25	Hydraulic oil tank, changing oil and filter	
173-079	0.80	Swing motor gearbox, changing oil	
173-101	0.50	Track motor gearbox, changing oil	
173-401	0.60	Engine oil and filter, changing	
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.25	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	10001 - 20000 20001 - 20837 23001 - 30000 30001 - 35000
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	70001 - 110000 35001 - 70000 90001 - 110000
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	10001 - 20000 20001 - 20837 23001 - 30000 30001 - 35000
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	70001 - 110000 35001 - 70000 90001 - 110000

Op.no.	time (h)		Notes
21		ENGINE	
210-070	6.50	Engine, removing	
210-072	7.00	Engine, installing	
211-002	8.00	Cylinder head, replacing gasket	
214-012	3.00	Valves, adjusting	70001 - 110000 35001 - 70000
214-036	1.00	Valve covers, fitting new gasket	
216-014	7.50	Crankshaft, replacing front oil seal	
216-018	8.50	Crankshaft, replacing rear oil seal	
23		FUEL SYSTEM	
234-010	4.00	Fuel tank, replacing	
234-041	0.40	Fuel filling pump, removing	70001 - 110000 35001 - 70000
234-042	0.50	Fuel filling pump, installing	70001 - 110000 35001 - 70000
237-002	3.00	Injectors, replacing all	
237-004	0.70	Injector, replacing one	70001 - 110000 35001 - 70000
237-033	0.80	Fuel control valve (FCV), replacing	70001 - 110000 35001 - 70000
237-037	0.70	Fuel rail pressure, checking	70001 - 110000 35001 - 70000
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.25	Silencer, replacing	
252-021	1.25	Exhaust pipe, flexible tube, replacing	
255-070	1.00	Turbocharger, removing	
255-071	2.00	Turbocharger, replacing	
255-072	1.00	Turbocharger, installing	
256-001	0.25	Air cleaner, cleaning filter element	
256-003	0.25	Air cleaner, primary filter replacing	
256-004	0.25	Air cleaner, secondary filter replacing	
256-006	0.40	Preheating coil, replacing	70001 - 110000 35001 - 70000
258-002	4.00	Intercooler, replacing	
258-022	0.30	Charge air cooler connection (hose, tube), replacing	70001 - 110000 35001 - 70000
26		COOLING SYSTEM	
261-002	0.10	Coolant, checking anti-freeze resistance	
261-004	0.50	Coolant, changing	70001 - 110000 35001 - 70000
261-008	8.00	Radiator, replacing	
261-012	0.75	Radiator hose upper, replacing	
261-014	1.25	Radiator hoses lower, replacing	

Op.no.	time (h)		Notes
261-072	0.25	Coolant filter, changing	
262-098	1.00	Thermostat, replacing	70001 - 110000 35001 - 70000
263-012	1.00	Fan belt and/or alternator belt, replacing	70001 - 110000 35001 - 70000
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension	
263-022	1.00	Fan belt and/or alternator-, compressor belt, replacing all belts	70001 - 110000 35001 - 70000

3 ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS

30 GENERAL

300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.60	I-ECU, MID 140, changing pre-programmed ECU	

31 BATTERY

311-001	0.80	Battery charging capacity, checking	
311-002	0.80	Batteries, replacing	70001 - 110000 35001 - 70000 90001 - 110000
311-002	0.80	Batteries, replacing	10001 - 20000 20001 - 20837 23001 - 30000 30001 - 35000
311-002	0.80	Batteries, replacing	70001 - 110000 35001 - 70000
311-003	0.50	Main switch, replacing	
311-006	0.50	Earth lead to battery, replacing	
311-008	2.50	Starter motor lead to battery, replacing	

32 ALTERNATOR; CHARGE REGULATOR

321-002	1.00	Alternator, replacing incl function check	70001 - 110000 35001 - 70000
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33 STARTING SYSTEM

331-018	0.70	Starter motor, replacing	70001 - 110000 35001 - 70000
331-081	0.50	Starter relay, replacing	70565 - 110000
331-081	0.50	Starter relay, replacing	70001 - 70564
334-011	0.50	Starter switch (engine start switch), replacing	

35 LIGHTING

356-056	0.50	Work lighting, replacing one head lamp assy	
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Op.no.	time (h)		Notes
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.50	Horn, replacing	
363-002	1.00	Windscreen wiper front, replacing motor	
363-003	0.50	Windscreen wiper, replacing switch	
363-004	0.50	Windscreen flusher pump, replacing	
363-091	0.50	Windscreen wiper, replacing controller	
364-004	0.50	Switch, replacing	
364-050	0.50	Relay (general), replacing	
364-052	0.50	Battery relay, replacing	70001 - 110000 35001 - 70000 90001 - 110000
364-052	0.50	Battery relay, replacing	70001 - 110000 35001 - 70000
364-056	0.50	Pre-heating relay, replacing	70001 - 110000 35001 - 70000
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	10001 - 20000 20001 - 20837 23001 - 30000 30001 - 35000
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	70001 - 110000 35001 - 70000 90001 - 110000
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	10001 - 20000 20001 - 20837 23001 - 30000 30001 - 35000
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	70001 - 110000 35001 - 70000 90001 - 110000
37		CABLE; FUSE; RELAY	
372-020	0.25	Fuse (general), replacing	
372-091	0.50	Slow blow fuse, replacing	
379-011	0.75	Boom wire harness, replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-006	0.50	Engine temperature sensor, replacing	
386-007	0.50	Engine oil pressure sensor, replacing	
386-011	0.50	Fuel level sender, replacing	
386-038	1.00	Engine rotation speed sensor, replacing	
386-043	0.50	Travel speed sensor or alarm sensor, replacing	
386-044	0.50	Auto idling sensor, replacing	
386-088	0.75	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-902	3.00	CareTrack, installing new	

Op.no.	time (h)		Notes
393-001	0.50	Voltage converter, replacing	
393-021	0.75	Radio, replacing	
395-021	0.50	Antenna, replacing	
395-022	1.00	Antenna cable, replacing	
395-031	0.50	Speaker, replacing	
398-001	0.60	CareTrack antenna, replacing	
398-002	0.70	W-ECU, MID142, changing pre-programmed ECU	
398-002	0.70	W-ECU, MID142, changing pre-programmed ECU	76852 - 80000 80131 - 110000
398-003	0.70	W-ECU, MID142, changing non-programmed ECU	
398-003	0.70	W-ECU, MID142, changing non-programmed ECU	76852 - 80000 80131 - 110000

4**POWER TRANSMISSION****43****GEARBOX,**

431-021	5.50	Swing gearbox, replacing	70001 - 110000
431-026	1.50	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	5.50	Pump gearbox coupling assembly, replacing	
431-036	4.50	Pump gearbox flange, replacing	
431-053	6.50	Swing unit, replacing	
431-117	1.25	Track gearbox, replacing cover	70001 - 110000

44**HYDROSTATIC DRIVE**

441-021	2.50	Swing motor, replacing	70001 - 110000
441-022	0.70	Swing motor relief valve, replacing	70001 - 110000
441-023	3.50	Swing motor, replacing cylinder block	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	70001 - 110000
441-026	0.30	Swing motor removed, replacing seal	70001 - 110000
441-028	0.75	Swing motor brake valve, replacing	
441-112	0.70	Track motor relief valve, replacing	70001 - 110000
443-037	5.00	Center passage, replacing	70001 - 110000
443-039	1.00	Center passage hose (valve – center passage), replacing	70001 - 110000
443-040	1.50	Center passage hose (center passage – motor), replacing	70001 - 110000

49**MISCELLANEOUS**

492-031	3.00	Swing ring gear outer seal, replacing	
492-091	0.40	Ring gear grease pipe, replacing	70001 - 110000 80011 - 110000
492-095	0.50	Swing ring gear cover, removal	16199 - 18651

Op.no.	time (h)		Notes
492-095	0.70	Swing ring gear cover, removal	18652 - 19999
492-095	0.60	Swing ring gear cover, removal	16444 - 18201
492-096	0.70	Swing ring gear cover, installation	18652 - 19999
492-096	0.60	Swing ring gear cover, installation	16444 - 18201
492-096	0.60	Swing ring gear cover, installation	16199 - 18651

7 FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT

71 FRAME

715-019	0.60	Boom cylinder protecting guard, removal	
715-019	0.60	Boom cylinder protecting guard, removal	18652 - 19999
715-020	1.25	Boom cylinder protecting guard, installation	
715-020	1.25	Boom cylinder protecting guard, installation	18652 - 19999
715-023	0.90	Bucket cylinder protecting guard, removal	
715-024	1.00	Bucket cylinder protecting guard, installation	
716-002	0.80	Counterweight, fitting	
716-003	2.00	Counterweight, replacing	

77 WHEELS; TRACKS; TYRE; HUB; DRUM

775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-032	0.40	Track shoe, replacing one	
775-034	1.25	Track chain assembly, removing	70001 - 110000
775-035	1.75	Track chain assembly, installing	70001 - 110000
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	

8 MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE

81 CAB, NAKED; CANOPY

810-001	1.50	Cab, removing	70001 - 110000 35001 - 70000
810-002	2.00	Cab, installing	70001 - 110000 35001 - 70000
810-003	4.50	Operator cab, replacing	

82 ENGINE HOOD; MUDGUARD; FOOT STEP

821-005	1.00	Engine hood, replacing	
821-065	0.50	Gull wing power pack, replacing	

Op.no.	time (h)		Notes
821-066	0.50	Gull wing cylinder, replacing	
827-091	1.75	Tool box assembly, replacing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	0.75	Door, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.25	Rear-view mirror, changing	
843-002	2.00	Windscreen, replacing	
843-012	1.00	Rear window, replacing	
843-013	1.50	Side window, replacing	
843-048	1.00	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	
87		AIR CONDITIONING UNIT	
870-001	5.00	Cooler and Heater assembly, replacing	70001 - 110000 35001 - 70000
872-001	0.50	Cab filter, replacing	
872-011	1.00	Duct, replacing	
872-021	1.00	Defroster hose, replacing	
873-004	3.00	Heater core, replacing	
873-006	0.90	Fan motor, replacing	
873-097	1.50	Heater hose, replacing	
874-002	0.75	Refrigerant, draining	
874-003	0.75	Cooling unit, performance test	
874-005	1.00	Refrigerant, filling excl vacuum pumping	
874-006	2.00	Compressor, replacing incl draining and filling	70001 - 110000 35001 - 70000
874-007	0.75	Belt, replacing	
874-010	1.50	Condenser, replacing incl draining and filling	70001 - 110000 35001 - 70000
874-011	1.25	Receiver, replacing incl draining and filling	70001 - 110000 35001 - 70000
874-012	3.00	Evaporator, replacing incl draining and filling	
874-013	3.00	Expansion valve, replacing incl draining and filling	
874-081	1.75	Liquid hose, replacing incl. draining and filling	
874-082	1.75	Discharge hose, replacing incl. draining and filling	
874-083	1.75	Suction hose, replacing incl. draining and filling	
874-091	1.00	Switch and controller, replacing	
874-093	1.00	Power transistor (ceramic resister), replacing	
874-094	1.00	Vent actuator, replacing	
874-095	1.00	Mode (foot) actuator, replacing	
874-096	1.00	Intake actuator, replacing	
874-097	1.00	Shutter assembly, replacing	

Op.no.	time (h)		Notes
874-098	1.00	Valve (mix) actuator, replacing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-001	0.20	Oil return filter, replacing	
911-004	0.50	Suction strainer, replacing	
911-005	1.75	Pump suction hose and pipe, replacing	
911-011	2.50	Oil cooler, replacing	
911-015	0.50	Oil level gauge, replacing	
911-017	1.75	Suction cover, replacing	
911-024	0.70	Pipe and hose (pump - valve), replacing	
911-025	0.70	Pipe and hose (valve - cylinder), replacing	
911-026	0.75	Pipe and hose (valve - swing motor), replacing	
911-031	1.50	Oil cooler line pipe and hose, replacing	
911-032	1.50	Oil cooler line pipe coupling, replacing	
911-033	2.00	Oil cooler line bypass valve (check valve), replacing	
911-038	4.00	Hydraulic oil tank, replacing	
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
911-042	0.25	Oil drain filter, replacing	
911-043	0.25	Servo system filter, replacing	
911-051	0.20	Breather, replacing	
912-067	0.40	Main pressure relief valve, replacing	
912-071	0.70	Rupture valve, replacing (boom cylinder)	
912-073	1.25	Rupture valve, replacing (dipper arm cylinder)	
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)	
912-075	0.50	Rupture valve hose or pipe, replacing (dipper arm cylinder)	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	70001 - 90000
913-010	5.00	Hydraulic pump, replacing	70001 - 110000
913-013	7.00	Hydraulic pump, replacing seal for input shaft	
913-029	0.30	Pump regulator, replacing	70001 - 90000
914-036	1.25	Servo pump block seal, replacing	
914-037	1.25	Servo pump shaft seal, replacing	
914-041	0.60	Proportional solenoid valve (power shift), replacing	70001 - 90000
914-051	0.30	Accumulator, replacing	70001 - 110000
914-055	0.50	Servo pressure, checking and adjusting	
914-060	0.80	Servo pump, replacing	70001 - 110000
914-071	0.50	Servo pipe and hose, replacing	

Op.no.	time (h)		Notes
914-081	1.75	Remote control valve (lever), replacing	10001 - 30000
914-081	1.75	Remote control valve (lever), replacing	70001 - 110000
914-084	1.75	Remote control valve (pedal), replacing	
914-086	1.00	Remote control valve hose, replacing	
914-091	1.00	Solenoid valve, replacing	70001 - 110000
916-043	1.00	Boom, replacing pipe (boom cylinder)	
916-044	0.75	Boom, replacing hose (boom cylinder)	
916-045	1.00	Boom, replacing pipe (dipper arm cylinder)	
916-046	0.50	Boom, replacing hose (dipper arm cylinder)	
916-047	1.00	Boom, replacing pipe (bucket cylinder)	
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)	
916-049	0.75	Dipper arm, replacing pipe (bucket cylinder)	
916-091	0.75	Hammer and shear pipe, replacing (for boom)	
916-092	0.50	Hammer and shear hose, replacing (for boom)	
916-093	0.75	Hammer and shear pipe, replacing (for dipper arm)	
916-094	0.50	Hammer and shear hose, replacing (for dipper arm)	
916-095	0.50	Hammer and shear hose and pipe, replacing (MCV - 3 way valve)	
916-096	1.00	Hammer and shear pedal valve (RCV), replacing	
916-097	0.75	Hammer and shear 3-way valve, replacing	
916-098	0.75	Hammer and shear pipe and hose, replacing (for 2nd pump flow)	
916-099	0.50	Hammer and shear ball valve, replacing	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-001	1.50	Quickfit pump (gear pump), replacing	
924-002	1.00	Quickfit valve, replacing	
924-003	0.75	Quickfit solenoid valve, replacing	
924-004	0.50	Quickfit control switch, replacing	
924-041	0.50	Quickfit hydraulic hose, replacing (for boom)	
924-042	0.50	Quickfit hydraulic pipe, replacing (for boom)	
924-043	0.25	Quickfit hydraulic hose, replacing (for dipper arm)	
924-044	0.50	Quickfit hydraulic pipe, replacing (for dipper arm)	
924-045	0.75	Quickfit hydraulic cylinder hose, replacing (dipper arm cylinder)	
925-012	0.50	Bucket assembly, removal	
925-013	0.75	Bucket assembly, installation	
97		UNIT, DIGGING	
974-010	12.00	Boom, replacing	
974-013	4.50	Boom, removal	
974-014	5.50	Boom, installation	
974-017	2.00	Boom, replacing pin	
974-018	0.25	Boom grease pipe or hose, replacing	

Op.no.	time (h)		Notes
974-022	2.00	Boom cylinder removed, repacking	
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes	
974-025	3.50	Boom cylinder, repacking in machine	
974-031	1.00	Boom cylinder, removal	
974-032	1.00	Boom cylinder, installation	
974-047	0.50	Adapter, removal	
974-048	0.60	Adapter, installation	
975-006	0.70	Dipper arm connecting rod, removal	
975-007	0.70	Dipper arm connecting rod, installation	
975-011	3.50	Dipper arm, removal	
975-012	3.50	Dipper arm, installation	
975-014	1.75	Dipper arm cylinder, removal	10001 - 30000
975-014	1.25	Dipper arm cylinder, removal	70001 - 110000
975-015	1.25	Dipper arm cylinder, installation	70001 - 110000
975-015	1.50	Dipper arm cylinder, installation	10001 - 30000
975-023	0.25	Dipper arm pipe or hose, replacing	
975-024	1.50	Dipper arm connecting rod, replacing	
975-025	2.00	Dipper arm cylinder, replacing	70001 - 110000
975-025	2.50	Dipper arm cylinder, replacing	10001 - 30000
975-026	2.50	Dipper arm cylinder removed, repacking	
975-028	1.00	Connecting rod yoke, replacing	
975-029	3.50	Dipper arm cylinder rod, replacing	70001 - 110000
975-032	0.70	Connecting rod yoke, removal	
975-035	1.00	Connecting rod yoke, installation	
975-039	5.50	Dipper arm, replacing	
975-040	2.50	Dipper arm cylinder bushing on boom, replacing	70001 - 110000
975-042	2.50	Dipper arm cylinder bushing on dipper arm, replacing	70001 - 110000
975-043	4.00	Dipper arm cylinder, repacking in machine	
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes	
975-061	2.50	Bucket cylinder, replacing	
975-062	1.50	Bucket cylinder, removal	
975-063	3.50	Bucket cylinder, repacking in machine	
975-065	1.75	Bucket cylinder, installation	
975-069	2.00	Bucket cylinder removed, repacking	
975-070	0.50	Bucket cylinder removed, replacing bushing	

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
172-002	3.00	Warranty inspection 100 hours	
172-004	7.50	Warranty inspection 1000 hours	
173-002	1.25	Maintenance service, daily	
173-004	1.50	Maintenance service, every 50 hours	
173-007	2.50	Maintenance service, every 250 hours	
173-010	4.50	Maintenance service, every 500 hours	
173-012	6.50	Maintenance service, every 1000 hours	
173-014	12.00	Maintenance service, every 2000 hours	
173-018	12.00	Maintenance service, every 4000 hours	
173-022	12.00	Maintenance service, every 6000 hours	
173-079	0.80	Swing motor gearbox, changing oil	
173-101	0.50	Track motor gearbox, changing oil	
173-401	0.60	Engine oil and filter, changing	
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.25	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	70001 - 110000 35001 - 70000 90001 - 110000
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	10001 - 20000 23001 - 30000 30001 - 35000 20001 - 20837
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	10001 - 20000 23001 - 30000 30001 - 35000 20001 - 20837
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	70001 - 110000 35001 - 70000 90001 - 110000
21		ENGINE	
214-012	3.00	Valves, adjusting	70001 - 110000 35001 - 70000
23		FUEL SYSTEM	
234-041	0.40	Fuel filling pump, removing	70001 - 110000

Op.no.	time (h)		Notes
			35001 - 70000
234-042	0.50	Fuel filling pump, installing	70001 - 110000 35001 - 70000
237-004	0.70	Injector, replacing one	70001 - 110000 35001 - 70000
237-033	0.80	Fuel control valve (FCV), replacing	70001 - 110000 35001 - 70000
237-037	0.70	Fuel rail pressure, checking	70001 - 110000 35001 - 70000
25		INLET SYSTEM; EXHAUST SYSTEM	
256-006	0.40	Preheating coil, replacing	70001 - 110000 35001 - 70000
258-022	0.30	Charge air cooler connection (hose, tube), replacing	70001 - 110000 35001 - 70000
26		COOLING SYSTEM	
261-002	0.10	Coolant, checking anti-freeze resistance	
261-004	0.50	Coolant, changing	70001 - 110000 35001 - 70000
262-098	1.00	Thermostat, replacing	70001 - 110000 35001 - 70000
263-012	1.00	Fan belt and/or alternator belt, replacing	70001 - 110000 35001 - 70000
263-022	1.00	Fan belt and/or alternator-, compressor belt, replacing all belts	70001 - 110000 35001 - 70000
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.60	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-002	0.80	Batteries, replacing	10001 - 20000 23001 - 30000 30001 - 35000 20001 - 20837
311-002	0.80	Batteries, replacing	70001 - 110000 35001 - 70000 90001 - 110000
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.00	Alternator, replacing incl function check	70001 - 110000 35001 - 70000

Op.no.	time (h)		Notes
33		STARTING SYSTEM	
331-018	0.70	Starter motor, replacing	70001 - 110000 35001 - 70000
331-081	0.50	Starter relay, replacing	70001 - 110000 35001 - 70000
36		OTHER ELECTRICAL EQUIPMENT	
364-052	0.50	Battery relay, replacing	70001 - 110000 35001 - 70000 90001 - 110000
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	10001 - 20000 23001 - 30000 30001 - 35000 20001 - 20837
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	70001 - 110000 35001 - 70000 90001 - 110000
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	10001 - 20000 23001 - 30000 30001 - 35000 20001 - 20837
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	70001 - 110000 35001 - 70000 90001 - 110000
39		MISCELLANEOUS	
390-902	3.00	CareTrack, installing new	
398-002	0.70	W-ECU, MID142, changing pre-programmed ECU	76852 - 80000 80131 - 110000
398-003	0.70	W-ECU, MID142, changing non-programmed ECU	76852 - 80000 80131 - 110000
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	5.50	Swing gearbox, replacing	70001 - 110000
431-053	6.50	Swing unit, replacing	
431-117	1.25	Track gearbox, replacing cover	70001 - 110000
44		HYDROSTATIC DRIVE	
441-021	2.50	Swing motor, replacing	70001 - 110000
441-022	0.70	Swing motor relief valve, replacing	70001 - 110000
441-025	1.50	Swing motor, replacing brake piston seal	70001 - 110000
441-026	0.30	Swing motor removed, replacing seal	70001 - 110000
441-112	0.70	Track motor relief valve, replacing	70001 - 110000
443-037	5.00	Center passage, replacing	70001 - 110000

Op.no.	time (h)		Notes
443-039	1.00	Center passage hose (valve – center passage), replacing	70001 - 110000
443-040	1.50	Center passage hose (center passage – motor), replacing	70001 - 110000
49		MISCELLANEOUS	
492-091	0.40	Ring gear grease pipe, replacing	70001 - 110000 80011 - 110000
492-095	0.50	Swing ring gear cover, removal	16199 - 18651
492-095	0.60	Swing ring gear cover, removal	16444 - 18201
492-096	0.60	Swing ring gear cover, installation	16444 - 18201
492-096	0.60	Swing ring gear cover, installation	16199 - 18651
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
715-019	0.60	Boom cylinder protecting guard, removal	
715-020	1.25	Boom cylinder protecting guard, installation	
715-023	0.90	Bucket cylinder protecting guard, removal	
715-024	1.00	Bucket cylinder protecting guard, installation	
716-002	0.80	Counterweight, fitting	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-032	0.40	Track shoe, replacing one	
775-034	1.25	Track chain assembly, removing	70001 - 110000
775-035	1.75	Track chain assembly, installing	70001 - 110000
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.50	Cab, removing	70001 - 110000 35001 - 70000
810-002	2.00	Cab, installing	70001 - 110000 35001 - 70000
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-065	0.50	Gull wing power pack, replacing	
821-066	0.50	Gull wing cylinder, replacing	

Op.no.	time (h)		Notes
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	
87		AIR CONDITIONING UNIT	
870-001	5.00	Cooler and Heater assembly, replacing	70001 - 110000 35001 - 70000
873-006	0.90	Fan motor, replacing	
874-006	2.00	Compressor, replacing incl draining and filling	70001 - 110000 35001 - 70000
874-010	1.50	Condenser, replacing incl draining and filling	70001 - 110000 35001 - 70000
874-011	1.25	Receiver, replacing incl draining and filling	70001 - 110000 35001 - 70000
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-015	0.50	Oil level gauge, replacing	
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
911-051	0.20	Breather, replacing	
912-067	0.40	Main pressure relief valve, replacing	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	70001 - 90000
913-010	5.00	Hydraulic pump, replacing	70001 - 110000
913-029	0.30	Pump regulator, replacing	70001 - 90000
914-041	0.60	Proportional solenoid valve (power shift), replacing	70001 - 90000
914-051	0.30	Accumulator, replacing	70001 - 110000
914-055	0.50	Servo pressure, checking and adjusting	
914-060	0.80	Servo pump, replacing	70001 - 110000
914-081	1.75	Remote control valve (lever), replacing	10001 - 30000
914-081	1.75	Remote control valve (lever), replacing	70001 - 110000
914-084	1.75	Remote control valve (pedal), replacing	
914-091	1.00	Solenoid valve, replacing	70001 - 110000
97		UNIT, DIGGING	
974-047	0.50	Adapter, removal	
974-048	0.60	Adapter, installation	
975-006	0.70	Dipper arm connecting rod, removal	
975-007	0.70	Dipper arm connecting rod, installation	
975-014	1.75	Dipper arm cylinder, removal	10001 - 30000
975-014	1.25	Dipper arm cylinder, removal	70001 - 110000
975-015	1.25	Dipper arm cylinder, installation	70001 - 110000

Op.no.	time (h)		Notes
975-015	1.50	Dipper arm cylinder, installation	10001 - 30000
975-024	1.50	Dipper arm connecting rod, replacing	
975-025	2.00	Dipper arm cylinder, replacing	70001 - 110000
975-025	2.50	Dipper arm cylinder, replacing	10001 - 30000
975-028	1.00	Connecting rod yoke, replacing	
975-029	3.50	Dipper arm cylinder rod, replacing	70001 - 110000
975-032	0.70	Connecting rod yoke, removal	
975-035	1.00	Connecting rod yoke, installation	
975-040	2.50	Dipper arm cylinder bushing on boom, replacing	70001 - 110000
975-042	2.50	Dipper arm cylinder bushing on dipper arm, replacing	70001 - 110000
975-061	2.50	Bucket cylinder, replacing	
975-062	1.50	Bucket cylinder, removal	
975-065	1.75	Bucket cylinder, installation	

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
171-001	1.00	Arrival Inspection, according to Inspection Programme	
171-002	3.00	Delivery Inspection, according to Inspection Programme	
172-002	3.00	Warranty inspection 100 hours	
172-004	7.50	Warranty inspection 1000 hours	
173-002	1.25	Maintenance service, daily	
173-004	1.50	Maintenance service, every 50 hours	
173-007	2.50	Maintenance service, every 250 hours	
173-010	4.50	Maintenance service, every 500 hours	
173-012	6.50	Maintenance service, every 1000 hours	
173-014	12.00	Maintenance service, every 2000 hours	
173-018	12.00	Maintenance service, every 4000 hours	
173-022	12.00	Maintenance service, every 6000 hours	
173-074	1.25	Hydraulic oil tank, changing oil and filter	
173-079	0.80	Swing motor gearbox, changing oil	
173-101	0.50	Track motor gearbox, changing oil	
173-401	0.60	Engine oil and filter, changing	
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.25	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	10001 - 20000 30001 - 35000 20001 - 20837 23001 - 30000
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	70001 - 110000 35001 - 70000 90001 - 110000
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	10001 - 20000 30001 - 35000 20001 - 20837 23001 - 30000
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	70001 - 110000 35001 - 70000 90001 - 110000

Op.no.	time (h)		Notes
21		ENGINE	
210-070	6.50	Engine, removing	
210-072	7.00	Engine, installing	
211-002	8.00	Cylinder head, replacing gasket	
214-012	3.00	Valves, adjusting	70001 - 110000 35001 - 70000
214-036	1.00	Valve covers, fitting new gasket	
216-014	7.50	Crankshaft, replacing front oil seal	
216-018	8.50	Crankshaft, replacing rear oil seal	
22		LUBRICATING SYSTEM	
221-022	0.40	Lubrication oil pressure, checking with pressure gauge	70001 - 110000 35001 - 70000
223-006	1.25	Oil cooler, replacing	70001 - 110000 35001 - 70000
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	70001 - 110000 35001 - 70000
233-002	0.70	Feed pump, replacing	70001 - 110000 35001 - 70000
233-004	0.80	Feed pump, checking feed pressure	70001 - 110000 35001 - 70000
233-010	0.80	Fuel pump, inspection	70001 - 110000 35001 - 70000
233-014	0.40	Fuel filters, replacing	70001 - 110000 35001 - 70000
233-015	0.50	Fuel filter extra, replacing	70001 - 110000 35001 - 70000
233-020	0.10	Fuel filter, checking	70001 - 110000 35001 - 70000
234-010	4.00	Fuel tank, replacing	
234-041	0.40	Fuel filling pump, removing	70001 - 110000 35001 - 70000
234-042	0.50	Fuel filling pump, installing	70001 - 110000 35001 - 70000
237-002	3.00	Injectors, replacing all	
237-004	0.70	Injector, replacing one	70001 - 110000 35001 - 70000
237-033	0.80	Fuel control valve (FCV), replacing	70001 - 110000 35001 - 70000
237-037	0.70	Fuel rail pressure, checking	70001 - 110000 35001 - 70000
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.25	Silencer, replacing	
252-021	1.25	Exhaust pipe, flexible tube, replacing	

Op.no.	time (h)		Notes
255-070	1.00	Turbocharger, removing	
255-071	2.00	Turbocharger, replacing	
255-072	1.00	Turbocharger, installing	
256-001	0.25	Air cleaner, cleaning filter element	
256-003	0.25	Air cleaner, primary filter replacing	
256-004	0.25	Air cleaner, secondary filter replacing	
256-006	0.40	Preheating coil, replacing	70001 - 110000 35001 - 70000
258-002	4.00	Intercooler, replacing	
258-022	0.30	Charge air cooler connection (hose, tube), replacing	70001 - 110000 35001 - 70000
26		COOLING SYSTEM	
261-002	0.10	Coolant, checking anti-freeze resistance	
261-004	0.50	Coolant, changing	70001 - 110000 35001 - 70000
261-008	8.00	Radiator, replacing	
261-012	0.75	Radiator hose upper, replacing	
261-014	1.25	Radiator hoses lower, replacing	
261-072	0.25	Coolant filter, changing	
262-002	1.50	Coolant pump, replacing	
262-098	1.00	Thermostat, replacing	70001 - 110000 35001 - 70000
263-012	1.00	Fan belt and/or alternator belt, replacing	70001 - 110000 35001 - 70000
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension	
263-022	1.00	Fan belt and/or alternator-, compressor belt, replacing all belts	70001 - 110000 35001 - 70000
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.60	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-001	0.80	Battery charging capacity, checking	
311-002	0.80	Batteries, replacing	10001 - 20000 30001 - 35000 20001 - 20837 23001 - 30000
311-002	0.80	Batteries, replacing	70001 - 110000 35001 - 70000 90001 - 110000

Op.no.	time (h)		Notes
311-003	0.50	Main switch, replacing	
311-006	0.50	Earth lead to battery, replacing	
311-008	2.50	Starter motor lead to battery, replacing	
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.00	Alternator, replacing incl function check	70001 - 110000 35001 - 70000
33		STARTING SYSTEM	
331-018	0.70	Starter motor, replacing	70001 - 110000 35001 - 70000
331-081	0.50	Starter relay, replacing	70001 - 110000 35001 - 70000
334-011	0.50	Starter switch (engine start switch), replacing	
35		LIGHTING	
356-056	0.50	Work lighting, replacing one head lamp assy	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.50	Horn, replacing	
362-041	0.50	Rotating beacon, replacing	
362-051	0.50	Travel alarm, replacing	
363-002	1.00	Windscreen wiper front, replacing motor	
363-003	0.50	Windscreen wiper, replacing switch	
363-004	0.50	Windscreen flusher pump, replacing	
363-091	0.50	Windscreen wiper, replacing controller	
364-003	0.60	Control lockout lever switch, replacing	
364-004	0.50	Switch, replacing	
364-050	0.50	Relay (general), replacing	
364-052	0.50	Battery relay, replacing	70001 - 110000 35001 - 70000 90001 - 110000
364-056	0.50	Pre-heating relay, replacing	
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	10001 - 20000 30001 - 35000 20001 - 20837 23001 - 30000
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	70001 - 110000 35001 - 70000 90001 - 110000
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	10001 - 20000 30001 - 35000 20001 - 20837 23001 - 30000
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	70001 - 110000 35001 - 70000 90001 - 110000

Op.no.	time (h)	Notes	
37		CABLE; FUSE; RELAY	
372-020	0.25	Fuse (general), replacing	
372-091	0.50	Slow blow fuse, replacing	
379-011	0.75	Boom wire harness, replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-006	0.50	Engine temperature sensor, replacing	
386-007	0.50	Engine oil pressure sensor, replacing	
386-011	0.50	Fuel level sender, replacing	
386-038	1.00	Engine rotation speed sensor, replacing	
386-043	0.50	Travel speed sensor or alarm sensor, replacing	
386-044	0.50	Auto idling sensor, replacing	
386-088	0.75	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-902	3.00	CareTrack, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.75	Radio, replacing	
395-021	0.50	Antenna, replacing	
395-022	1.00	Antenna cable, replacing	
395-031	0.50	Speaker, replacing	
398-002	0.70	W-ECU, MID142, changing pre-programmed ECU	76852 - 80000 80131 - 110000
398-003	0.70	W-ECU, MID142, changing non-programmed ECU	76852 - 80000 80131 - 110000
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	5.50	Swing gearbox, replacing	35001 - 70000 70001 - 110000
431-026	1.50	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	5.50	Pump gearbox coupling assembly, replacing	
431-036	4.50	Pump gearbox flange, replacing	
431-053	6.50	Swing unit, replacing	
431-115	1.75	Track gearbox (removed), replacing floating seal	
431-117	1.25	Track gearbox, replacing cover	35001 - 70000 70001 - 110000
431-125	3.00	Track unit, removal	
431-126	3.00	Track unit, installation	
431-127	6.00	Track unit, replacing	

Op.no.	time (h)		Notes
44		HYDROSTATIC DRIVE	
441-017	1.00	Travel motor pressure, checking and adjusting	
441-021	2.50	Swing motor, replacing	35001 - 70000 70001 - 110000
441-022	0.70	Swing motor relief valve, replacing	35001 - 70000 70001 - 110000
441-023	3.50	Swing motor, replacing cylinder block	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	35001 - 70000 70001 - 110000
441-026	0.30	Swing motor removed, replacing seal	35001 - 70000 70001 - 110000
441-028	0.75	Swing motor brake valve, replacing	
441-032	0.75	Swing motor pressure, checking and adjusting	
441-112	0.70	Track motor relief valve, replacing	35001 - 70000 70001 - 110000
441-115	2.00	Track motor removed, replacing seal	
443-037	5.00	Center passage, replacing	35001 - 70000 70001 - 110000
443-038	6.50	Center passage, replacing seal kit	
443-039	1.00	Center passage hose (valve – center passage), replacing	35001 - 70000 70001 - 110000
443-040	1.50	Center passage hose (center passage – motor), replacing	35001 - 70000 70001 - 110000
49		MISCELLANEOUS	
492-031	3.00	Swing ring gear outer seal, replacing	19999 - 19999 80181 - 90000 90246 - 110000
492-032	9.00	Swing ring gear inner seal, replacing	19999 - 19999 80181 - 90000 90246 - 110000
492-091	0.40	Ring gear grease pipe, replacing	
492-095	0.70	Swing ring gear cover, removal	18652 - 19999
492-096	0.70	Swing ring gear cover, installation	18652 - 19999
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
715-019	0.60	Boom cylinder protecting guard, removal	
715-019	0.60	Boom cylinder protecting guard, removal	18652 - 19999
715-020	1.25	Boom cylinder protecting guard, installation	
715-020	1.25	Boom cylinder protecting guard, installation	18652 - 19999
715-023	0.90	Bucket cylinder protecting guard, removal	

Op.no.	time (h)		Notes
715-024	1.00	Bucket cylinder protecting guard, installation	
716-001	0.80	Counterweight, removing	
716-002	0.80	Counterweight, fitting	
716-003	2.00	Counterweight, replacing	
716-003	2.00	Counterweight, replacing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-032	0.40	Track shoe, replacing one	
775-033	7.50	Track shoe, replacing each side	
775-034	1.25	Track chain assembly, removing	70001 - 110000 35001 - 70000
775-035	1.75	Track chain assembly, installing	70001 - 110000 35001 - 70000
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	
775-066	3.00	Bottom roller, replacing seal	
775-071	0.90	Track guard, replacing one	
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.50	Cab, removing	70001 - 110000 35001 - 70000
810-002	2.00	Cab, installing	70001 - 110000 35001 - 70000
810-003	4.50	Operator cab, replacing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	1.00	Engine hood, replacing	
827-091	1.75	Tool box assembly, replacing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	0.75	Door, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.25	Rear-view mirror, changing	
843-002	2.00	Windscreen, replacing	
843-012	1.00	Rear window, replacing	
843-013	1.50	Side window, replacing	
843-048	1.00	Door window, replacing	

Op.no.	time (h)		Notes
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	
87		AIR CONDITIONING UNIT	
870-001	5.00	Cooler and Heater assembly, replacing	70001 - 110000 35001 - 70000
872-001	0.50	Cab filter, replacing	
872-011	1.00	Duct, replacing	
872-021	1.00	Defroster hose, replacing	
873-004	3.00	Heater core, replacing	
873-006	0.90	Fan motor, replacing	
873-011	1.00	Air mix door actuator, replacing	
873-020	1.00	Heat control valve actuator, replacing	
873-097	1.50	Heater hose, replacing	
874-002	0.75	Refrigerant, draining	
874-003	0.75	Cooling unit, performance test	
874-005	1.00	Refrigerant, filling excl vacuum pumping	
874-006	2.00	Compressor, replacing incl draining and filling	70001 - 110000 35001 - 70000
874-007	0.75	Belt, replacing	
874-010	1.50	Condenser, replacing incl draining and filling	70001 - 110000 35001 - 70000
874-011	1.25	Receiver, replacing incl draining and filling	70001 - 110000 35001 - 70000
874-012	3.00	Evaporator, replacing incl draining and filling	
874-013	3.00	Expansion valve, replacing incl draining and filling	
874-014	0.50	Thermostat, replacing	
874-081	1.75	Liquid hose, replacing incl. draining and filling	
874-082	1.75	Discharge hose, replacing incl. draining and filling	
874-083	1.75	Suction hose, replacing incl. draining and filling	
874-091	1.00	Switch and controller, replacing	
874-093	1.00	Power transistor (ceramic resister), replacing	
874-094	1.00	Vent actuator, replacing	
874-095	1.00	Mode (foot) actuator, replacing	
874-096	1.00	Intake actuator, replacing	
874-097	1.00	Shutter assembly, replacing	
874-098	1.00	Valve (mix) actuator, replacing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-001	0.20	Oil return filter, replacing	

Op.no.	time (h)		Notes
911-004	0.50	Suction strainer, replacing	
911-005	1.75	Pump suction hose and pipe, replacing	
911-015	0.50	Oil level gauge, replacing	
911-017	1.75	Suction cover, replacing	
911-024	0.70	Pipe and hose (pump - valve), replacing	
911-025	0.70	Pipe and hose (valve - cylinder), replacing	
911-026	0.70	Pipe and hose (valve - swing motor), replacing	
911-031	1.50	Oil cooler line pipe and hose, replacing	
911-032	1.50	Oil cooler line pipe coupling, replacing	
911-033	2.00	Oil cooler line bypass valve (check valve), replacing	
911-038	4.00	Hydraulic oil tank, replacing	
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
911-042	0.25	Oil drain filter, replacing	
911-043	0.25	Servo system filter, replacing	
911-051	0.20	Breather, replacing	
912-001	8.00	Control valve, replacing	
912-067	0.40	Main pressure relief valve, replacing	
912-071	0.70	Rupture valve, replacing (boom cylinder)	
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)	
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)	
912-075	0.50	Rupture valve hose or pipe, replacing (dipper arm cylinder)	
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	35001 - 39999 70001 - 80000 80001 - 90000 90001 - 110000 40001 - 50000 50001 - 70000
913-010	4.00	Hydraulic pump, replacing	35001 - 39999 70001 - 80000 80001 - 90000 90001 - 110000 40001 - 50000 50001 - 70000
913-013	7.00	Hydraulic pump, replacing seal for input shaft	
913-029	0.30	Pump regulator, replacing	35001 - 39999 70001 - 80000 80001 - 90000 90001 - 110000 40001 - 50000 50001 - 70000
914-036	1.25	Servo pump block seal, replacing	

Op.no.	time (h)		Notes
914-037	1.25	Servo pump shaft seal, replacing	
914-041	0.60	Proportional solenoid valve (power shift), replacing	35001 - 39999 70001 - 80000 80001 - 90000 90001 - 110000 40001 - 50000 50001 - 70000
914-051	0.30	Accumulator, replacing	
914-055	0.75	Servo pressure, checking and adjusting	
914-060	0.80	Servo pump, replacing	70001 - 110000 35001 - 70000
914-071	0.50	Servo pipe and hose, replacing	
914-081	1.75	Remote control valve (lever), replacing	
914-084	1.75	Remote control valve (pedal), replacing	
914-086	1.00	Remote control valve hose, replacing	
914-091	1.00	Solenoid valve, replacing	
916-043	1.00	Boom, replacing pipe (boom cylinder)	
916-044	0.75	Boom, replacing hose (boom cylinder)	
916-045	1.00	Boom, replacing pipe (dipper arm cylinder)	
916-046	0.50	Boom, replacing hose (dipper arm cylinder)	
916-047	1.00	Boom, replacing pipe (bucket cylinder)	
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)	
916-049	0.75	Dipper arm, replacing pipe (bucket cylinder)	
916-091	0.75	Hammer and shear pipe, replacing (for boom)	
916-092	0.50	Hammer and shear hose, replacing (for boom)	
916-093	0.75	Hammer and shear pipe, replacing (for dipper arm)	
916-094	0.50	Hammer and shear hose, replacing (for dipper arm)	
916-095	0.50	Hammer and shear hose and pipe, replacing (MCV - 3 way valve)	
916-096	1.00	Hammer and shear pedal valve (RCV), replacing	
916-097	0.75	Hammer and shear 3-way valve, replacing	
916-098	0.75	Hammer and shear pipe and hose, replacing (for 2nd pump flow)	
916-099	0.50	Hammer and shear ball valve, replacing	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-001	1.50	Quickfit pump (gear pump), replacing	
924-002	1.00	Quickfit valve, replacing	
924-003	0.75	Quickfit solenoid valve, replacing	
924-004	0.50	Quickfit control switch, replacing	
924-021	2.00	Quickfit hydraulic cylinder bracket (body), replacing	
924-041	0.50	Quickfit hydraulic hose, replacing (for boom)	
924-042	0.50	Quickfit hydraulic pipe, replacing (for boom)	
924-043	0.25	Quickfit hydraulic hose, replacing (for dipper arm)	

Op.no.	time (h)	Notes
924-044	0.50	Quickfit hydraulic pipe, replacing (for dipper arm)
924-045	0.75	Quickfit hydraulic cylinder hose, replacing (dipper arm cylinder)
925-011	1.25	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.75	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	4.50	Boom, removal
974-014	5.50	Boom, installation
974-017	2.00	Boom, replacing pin
974-018	0.25	Boom grease pipe or hose, replacing
974-021	2.50	Boom cylinder, replacing
974-022	2.00	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	3.50	Boom cylinder, repacking in machine
974-031	1.25	Boom cylinder, removal
974-032	1.25	Boom cylinder, installation
974-047	0.50	Adapter, removal
974-048	0.60	Adapter, installation
975-006	0.70	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-011	3.50	Dipper arm, removal
975-012	3.50	Dipper arm, installation
975-014	1.75	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-023	0.25	Dipper arm pipe or hose, replacing
975-024	1.50	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-026	2.50	Dipper arm cylinder removed, repacking
975-028	1.00	Connecting rod yoke, replacing
975-032	0.70	Connecting rod yoke, removal
975-035	1.00	Connecting rod yoke, installation
975-039	5.50	Dipper arm, replacing
975-043	4.00	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.50	Bucket cylinder, removal
975-063	3.50	Bucket cylinder, repacking in machine
975-065	1.75	Bucket cylinder, installation
975-069	2.00	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes
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Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
171-001	1.00	Arrival Inspection, according to Inspection Programme	
171-002	3.00	Delivery Inspection, according to Inspection Programme	
172-002	3.00	Warranty inspection 100 hours	
172-004	7.50	Warranty inspection 1000 hours	
173-002	1.25	Maintenance service, daily	
173-004	1.50	Maintenance service, every 50 hours	
173-007	2.50	Maintenance service, every 250 hours	
173-010	4.50	Maintenance service, every 500 hours	
173-012	6.50	Maintenance service, every 1000 hours	
173-014	12.00	Maintenance service, every 2000 hours	
173-018	12.00	Maintenance service, every 4000 hours	
173-022	12.00	Maintenance service, every 6000 hours	
173-074	1.25	Hydraulic oil tank, changing oil and filter	
173-079	0.80	Swing motor gearbox, changing oil	
173-101	0.50	Track motor gearbox, changing oil	
173-401	0.60	Engine oil and filter, changing	
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.25	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	10001 - 20000 23001 - 30000 30001 - 35000 20001 - 20837
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	70001 - 110000 35001 - 70000 90001 - 110000
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	10001 - 20000 23001 - 30000 30001 - 35000 20001 - 20837
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	70001 - 110000 35001 - 70000 90001 - 110000

Op.no.	time (h)		Notes
21		ENGINE	
210-070	6.50	Engine, removing	
210-072	7.00	Engine, installing	
211-002	8.00	Cylinder head, replacing gasket	
214-012	3.00	Valves, adjusting	70001 - 110000 35001 - 70000
214-036	1.00	Valve covers, fitting new gasket	
216-014	7.50	Crankshaft, replacing front oil seal	
216-018	8.50	Crankshaft, replacing rear oil seal	
22		LUBRICATING SYSTEM	
221-022	0.40	Lubrication oil pressure, checking with pressure gauge	70001 - 110000 35001 - 70000
223-006	1.25	Oil cooler, replacing	70001 - 110000 35001 - 70000
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	70001 - 110000 35001 - 70000
233-002	0.70	Feed pump, replacing	70001 - 110000 35001 - 70000
233-004	0.80	Feed pump, checking feed pressure	70001 - 110000 35001 - 70000
233-010	0.80	Fuel pump, inspection	70001 - 110000 35001 - 70000
233-014	0.40	Fuel filters, replacing	70001 - 110000 35001 - 70000
233-015	0.50	Fuel filter extra, replacing	70001 - 110000 35001 - 70000
233-020	0.10	Fuel filter, checking	70001 - 110000 35001 - 70000
234-010	4.00	Fuel tank, replacing	
234-041	0.40	Fuel filling pump, removing	70001 - 110000 35001 - 70000
234-042	0.50	Fuel filling pump, installing	70001 - 110000 35001 - 70000
237-002	3.00	Injectors, replacing all	
237-004	0.70	Injector, replacing one	70001 - 110000 35001 - 70000
237-033	0.80	Fuel control valve (FCV), replacing	70001 - 110000 35001 - 70000
237-037	0.70	Fuel rail pressure, checking	70001 - 110000 35001 - 70000
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.25	Silencer, replacing	
252-021	1.25	Exhaust pipe, flexible tube, replacing	

Op.no.	time (h)		Notes
255-070	1.00	Turbocharger, removing	
255-071	2.00	Turbocharger, replacing	
255-072	1.00	Turbocharger, installing	
256-001	0.25	Air cleaner, cleaning filter element	
256-003	0.25	Air cleaner, primary filter replacing	
256-004	0.25	Air cleaner, secondary filter replacing	
256-006	0.40	Preheating coil, replacing	70001 - 110000 35001 - 70000
258-002	4.00	Intercooler, replacing	
258-022	0.30	Charge air cooler connection (hose, tube), replacing	70001 - 110000 35001 - 70000
26		COOLING SYSTEM	
261-002	0.10	Coolant, checking anti-freeze resistance	
261-004	0.50	Coolant, changing	70001 - 110000 35001 - 70000
261-008	8.00	Radiator, replacing	
261-012	0.75	Radiator hose upper, replacing	
261-014	1.25	Radiator hoses lower, replacing	
261-072	0.25	Coolant filter, changing	
262-098	1.00	Thermostat, replacing	70001 - 110000 35001 - 70000
263-012	1.00	Fan belt and/or alternator belt, replacing	70001 - 110000 35001 - 70000
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension	
263-022	1.00	Fan belt and/or alternator-, compressor belt, replacing all belts	70001 - 110000 35001 - 70000
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.60	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-001	0.80	Battery charging capacity, checking	
311-002	0.80	Batteries, replacing	10001 - 20000 23001 - 30000 30001 - 35000 20001 - 20837
311-002	0.80	Batteries, replacing	70001 - 110000 35001 - 70000
311-003	0.50	Main switch, replacing	
311-006	0.50	Earth lead to battery, replacing	

Op.no.	time (h)		Notes
311-008	2.50	Starter motor lead to battery, replacing	
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.00	Alternator, replacing incl function check	70001 - 110000 35001 - 70000
33		STARTING SYSTEM	
331-018	0.70	Starter motor, replacing	70001 - 110000 35001 - 70000
331-081	0.50	Starter relay, replacing	70001 - 110000 35001 - 70000
334-011	0.50	Starter switch (engine start switch), replacing	
35		LIGHTING	
356-056	0.50	Work lighting, replacing one head lamp assy	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.50	Horn, replacing	
363-002	1.00	Windscreen wiper front, replacing motor	
363-003	0.50	Windscreen wiper, replacing switch	
363-004	0.50	Windscreen flusher pump, replacing	
363-091	0.50	Windscreen wiper, replacing controller	
364-004	0.50	Switch, replacing	
364-050	0.50	Relay (general), replacing	
364-052	0.50	Battery relay, replacing	70001 - 110000 35001 - 70000 90001 - 110000
364-056	0.50	Pre-heating relay, replacing	
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	10001 - 20000 23001 - 30000 30001 - 35000 20001 - 20837
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	70001 - 110000 35001 - 70000 90001 - 110000
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	10001 - 20000 23001 - 30000 30001 - 35000 20001 - 20837
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	70001 - 110000 35001 - 70000 90001 - 110000
37		CABLE; FUSE; RELAY	
372-020	0.25	Fuse (general), replacing	
372-091	0.50	Slow blow fuse, replacing	
379-011	0.75	Boom wire harness, replacing	

Op.no.	time (h)	Notes	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-006	0.50	Engine temperature sensor, replacing	
386-007	0.50	Engine oil pressure sensor, replacing	
386-011	0.50	Fuel level sender, replacing	
386-038	1.00	Engine rotation speed sensor, replacing	
386-043	0.50	Travel speed sensor or alarm sensor, replacing	
386-044	0.50	Auto idling sensor, replacing	
386-088	0.75	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-902	3.00	CareTrack, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.75	Radio, replacing	
395-021	0.50	Antenna, replacing	
395-022	1.00	Antenna cable, replacing	
395-031	0.50	Speaker, replacing	
398-002	0.70	W-ECU, MID142, changing pre-programmed ECU	76852 - 80000 80131 - 110000
398-003	0.70	W-ECU, MID142, changing non-programmed ECU	76852 - 80000 80131 - 110000
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	5.50	Swing gearbox, replacing	70001 - 110000 35001 - 70000
431-026	1.50	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	5.50	Pump gearbox coupling assembly, replacing	
431-036	4.50	Pump gearbox flange, replacing	
431-053	6.50	Swing unit, replacing	
431-117	1.25	Track gearbox, replacing cover	70001 - 110000 35001 - 70000
44		HYDROSTATIC DRIVE	
441-021	2.50	Swing motor, replacing	70001 - 110000 35001 - 70000
441-022	0.70	Swing motor relief valve, replacing	70001 - 110000 35001 - 70000
441-023	3.50	Swing motor, replacing cylinder block	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	70001 - 110000 35001 - 70000
441-026	0.30	Swing motor removed, replacing seal	70001 - 110000

Op.no.	time (h)		Notes
			35001 - 70000
441-028	0.75	Swing motor brake valve, replacing	
441-112	0.70	Track motor relief valve, replacing	70001 - 110000 35001 - 70000
443-037	5.00	Center passage, replacing	70001 - 110000 35001 - 70000
443-039	1.00	Center passage hose (valve – center passage), replacing	70001 - 110000 35001 - 70000
443-040	1.50	Center passage hose (center passage – motor), replacing	70001 - 110000 35001 - 70000
49		MISCELLANEOUS	
492-031	3.00	Swing ring gear outer seal, replacing	19999 - 19999 80181 - 90000 90246 - 110000
492-032	9.00	Swing ring gear inner seal, replacing	19999 - 19999 80181 - 90000 90246 - 110000
492-091	0.40	Ring gear grease pipe, replacing	
492-095	0.70	Swing ring gear cover, removal	18652 - 19999
492-096	0.70	Swing ring gear cover, installation	18652 - 19999
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
715-019	0.60	Boom cylinder protecting guard, removal	
715-019	0.60	Boom cylinder protecting guard, removal	18652 - 19999
715-020	1.25	Boom cylinder protecting guard, installation	
715-020	1.25	Boom cylinder protecting guard, installation	18652 - 19999
715-023	0.90	Bucket cylinder protecting guard, removal	
715-024	1.00	Bucket cylinder protecting guard, installation	
716-001	0.80	Counterweight, removing	
716-002	0.80	Counterweight, fitting	
716-003	2.00	Counterweight, replacing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-032	0.40	Track shoe, replacing one	
775-034	1.25	Track chain assembly, removing	70001 - 110000 35001 - 70000
775-035	1.75	Track chain assembly, installing	70001 - 110000 35001 - 70000
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	

Op.no.	time (h)		Notes
775-066	3.00	Bottom roller, replacing seal	
775-071	0.90	Track guard, replacing one	
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.50	Cab, removing	70001 - 110000 35001 - 70000
810-002	2.00	Cab, installing	70001 - 110000 35001 - 70000
810-003	4.50	Operator cab, replacing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	1.00	Engine hood, replacing	
827-091	1.75	Tool box assembly, replacing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	0.75	Door, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.25	Rear-view mirror, changing	
843-002	2.00	Windscreen, replacing	
843-012	1.00	Rear window, replacing	
843-013	1.50	Side window, replacing	
843-048	1.00	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	
87		AIR CONDITIONING UNIT	
870-001	5.00	Cooler and Heater assembly, replacing	70001 - 110000 35001 - 70000
872-001	0.50	Cab filter, replacing	
872-011	1.00	Duct, replacing	
872-021	1.00	Defroster hose, replacing	
873-004	3.00	Heater core, replacing	
873-006	0.90	Fan motor, replacing	
873-097	1.50	Heater hose, replacing	
874-002	0.75	Refrigerant, draining	
874-003	0.75	Cooling unit, performance test	
874-005	1.00	Refrigerant, filling excl vacuum pumping	
874-006	2.00	Compressor, replacing incl draining and filling	70001 - 110000 35001 - 70000

Op.no.	time (h)		Notes
874-007	0.75	Belt, replacing	
874-010	1.50	Condenser, replacing incl draining and filling	70001 - 110000 35001 - 70000
874-011	1.25	Receiver, replacing incl draining and filling	70001 - 110000 35001 - 70000
874-012	3.00	Evaporator, replacing incl draining and filling	
874-013	3.00	Expansion valve, replacing incl draining and filling	
874-081	1.75	Liquid hose, replacing incl. draining and filling	
874-082	1.75	Discharge hose, replacing incl. draining and filling	
874-083	1.75	Suction hose, replacing incl. draining and filling	
874-091	1.00	Switch and controller, replacing	
874-093	1.00	Power transistor (ceramic resister), replacing	
874-094	1.00	Vent actuator, replacing	
874-095	1.00	Mode (foot) actuator, replacing	
874-096	1.00	Intake actuator, replacing	
874-097	1.00	Shutter assembly, replacing	
874-098	1.00	Valve (mix) actuator, replacing	

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-001	0.20	Oil return filter, replacing	
911-004	0.50	Suction strainer, replacing	
911-005	1.75	Pump suction hose and pipe, replacing	
911-015	0.50	Oil level gauge, replacing	
911-017	1.75	Suction cover, replacing	
911-024	0.70	Pipe and hose (pump - valve), replacing	
911-025	0.70	Pipe and hose (valve - cylinder), replacing	
911-026	0.70	Pipe and hose (valve - swing motor), replacing	
911-031	1.50	Oil cooler line pipe and hose, replacing	
911-032	1.50	Oil cooler line pipe coupling, replacing	
911-033	2.00	Oil cooler line bypass valve (check valve), replacing	
911-038	4.00	Hydraulic oil tank, replacing	
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
911-042	0.25	Oil drain filter, replacing	
911-043	0.25	Servo system filter, replacing	
911-051	0.20	Breather, replacing	
912-067	0.40	Main pressure relief valve, replacing	
912-071	0.70	Rupture valve, replacing (boom cylinder)	
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)	

Op.no.	time (h)		Notes
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)	
912-075	0.50	Rupture valve hose or pipe, replacing (dipper arm cylinder)	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	70001 - 80000 35001 - 39999 40001 - 50000 50001 - 70000 80001 - 90000 90001 - 110000
913-010	4.00	Hydraulic pump, replacing	70001 - 80000 35001 - 39999 40001 - 50000 50001 - 70000 80001 - 90000 90001 - 110000
913-013	7.00	Hydraulic pump, replacing seal for input shaft	
913-029	0.30	Pump regulator, replacing	70001 - 80000 35001 - 39999 40001 - 50000 50001 - 70000 80001 - 90000 90001 - 110000
914-036	1.25	Servo pump block seal, replacing	
914-037	1.25	Servo pump shaft seal, replacing	
914-041	0.60	Proportional solenoid valve (power shift), replacing	70001 - 80000 35001 - 39999 40001 - 50000 50001 - 70000 80001 - 90000 90001 - 110000
914-051	0.30	Accumulator, replacing	
914-060	0.80	Servo pump, replacing	70001 - 110000 35001 - 70000
914-071	0.50	Servo pipe and hose, replacing	
914-081	1.75	Remote control valve (lever), replacing	
914-084	1.75	Remote control valve (pedal), replacing	
914-086	1.00	Remote control valve hose, replacing	
914-091	1.00	Solenoid valve, replacing	
916-043	1.00	Boom, replacing pipe (boom cylinder)	
916-044	0.75	Boom, replacing hose (boom cylinder)	
916-045	1.00	Boom, replacing pipe (dipper arm cylinder)	
916-046	0.50	Boom, replacing hose (dipper arm cylinder)	
916-047	1.00	Boom, replacing pipe (bucket cylinder)	
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)	
916-049	0.75	Dipper arm, replacing pipe (bucket cylinder)	
916-091	0.75	Hammer and shear pipe, replacing (for boom)	
916-092	0.50	Hammer and shear hose, replacing (for boom)	

Op.no.	time (h)	Notes
916-093	0.75	Hammer and shear pipe, replacing (for dipper arm)
916-094	0.50	Hammer and shear hose, replacing (for dipper arm)
916-095	0.50	Hammer and shear hose and pipe, replacing (MCV - 3 way valve)
916-096	1.00	Hammer and shear pedal valve (RCV), replacing
916-097	0.75	Hammer and shear 3-way valve, replacing
916-098	0.75	Hammer and shear pipe and hose, replacing (for 2nd pump flow)
916-099	0.50	Hammer and shear ball valve, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.50	Quickfit pump (gear pump), replacing
924-002	1.00	Quickfit valve, replacing
924-003	0.75	Quickfit solenoid valve, replacing
924-004	0.50	Quickfit control switch, replacing
924-041	0.50	Quickfit hydraulic hose, replacing (for boom)
924-042	0.50	Quickfit hydraulic pipe, replacing (for boom)
924-043	0.25	Quickfit hydraulic hose, replacing (for dipper arm)
924-044	0.50	Quickfit hydraulic pipe, replacing (for dipper arm)
924-045	0.75	Quickfit hydraulic cylinder hose, replacing (dipper arm cylinder)
925-012	0.50	Bucket assembly, removal
925-013	0.75	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	4.50	Boom, removal
974-014	5.50	Boom, installation
974-017	2.00	Boom, replacing pin
974-018	0.25	Boom grease pipe or hose, replacing
974-022	2.00	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	3.50	Boom cylinder, repacking in machine
974-031	1.00	Boom cylinder, removal
974-032	1.00	Boom cylinder, installation
974-047	0.50	Adapter, removal
974-048	0.60	Adapter, installation
975-006	0.70	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-011	3.50	Dipper arm, removal
975-012	3.50	Dipper arm, installation
975-014	1.75	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation

Op.no.	time (h)	Notes
975-023	0.25	Dipper arm pipe or hose, replacing
975-024	1.50	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-026	2.50	Dipper arm cylinder removed, repacking
975-028	1.00	Connecting rod yoke, replacing
975-032	0.70	Connecting rod yoke, removal
975-035	1.00	Connecting rod yoke, installation
975-039	5.50	Dipper arm, replacing
975-043	4.00	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.50	Bucket cylinder, removal
975-063	3.50	Bucket cylinder, repacking in machine
975-065	1.75	Bucket cylinder, installation
975-069	2.00	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
171-001	1.00	Arrival Inspection, according to Inspection Programme	
171-002	3.00	Delivery Inspection, according to Inspection Programme	
172-002	3.00	Warranty inspection 100 hours	
172-004	7.50	Warranty inspection 1000 hours	
173-002	1.25	Maintenance service, daily	
173-004	1.50	Maintenance service, every 50 hours	
173-007	2.50	Maintenance service, every 250 hours	
173-010	4.50	Maintenance service, every 500 hours	
173-012	6.50	Maintenance service, every 1000 hours	
173-014	12.00	Maintenance service, every 2000 hours	
173-018	12.00	Maintenance service, every 4000 hours	
173-022	12.00	Maintenance service, every 6000 hours	
173-074	1.25	Hydraulic oil tank, changing oil and filter	
173-079	0.80	Swing motor gearbox, changing oil	
173-101	0.50	Track motor gearbox, changing oil	
173-401	0.60	Engine oil and filter, changing	
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.25	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	10001 - 20000 23001 - 30000 30001 - 35000 20001 - 20837
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	70001 - 110000 35001 - 70000 90001 - 110000
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	10001 - 20000 23001 - 30000 30001 - 35000 20001 - 20837
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	70001 - 110000 35001 - 70000 90001 - 110000

Op.no.	time (h)		Notes
21		ENGINE	
210-070	6.50	Engine, removing	
210-072	7.00	Engine, installing	
211-002	8.00	Cylinder head, replacing gasket	
214-012	3.00	Valves, adjusting	70001 - 110000 35001 - 70000
214-036	1.00	Valve covers, fitting new gasket	
216-014	7.50	Crankshaft, replacing front oil seal	
216-018	8.50	Crankshaft, replacing rear oil seal	
22		LUBRICATING SYSTEM	
221-022	0.40	Lubrication oil pressure, checking with pressure gauge	70001 - 110000 35001 - 70000
223-006	1.25	Oil cooler, replacing	70001 - 110000 35001 - 70000
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	70001 - 110000 35001 - 70000
233-002	0.70	Feed pump, replacing	70001 - 110000 35001 - 70000
233-004	0.80	Feed pump, checking feed pressure	70001 - 110000 35001 - 70000
233-010	0.80	Fuel pump, inspection	70001 - 110000 35001 - 70000
233-014	0.40	Fuel filters, replacing	70001 - 110000 35001 - 70000
233-015	0.50	Fuel filter extra, replacing	70001 - 110000 35001 - 70000
233-020	0.10	Fuel filter, checking	70001 - 110000 35001 - 70000
234-010	4.00	Fuel tank, replacing	
234-041	0.40	Fuel filling pump, removing	70001 - 110000 35001 - 70000
234-042	0.50	Fuel filling pump, installing	70001 - 110000 35001 - 70000
237-002	3.00	Injectors, replacing all	
237-004	0.70	Injector, replacing one	70001 - 110000 35001 - 70000
237-033	0.80	Fuel control valve (FCV), replacing	70001 - 110000 35001 - 70000
237-037	0.70	Fuel rail pressure, checking	70001 - 110000 35001 - 70000
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.25	Silencer, replacing	
252-021	1.25	Exhaust pipe, flexible tube, replacing	

Op.no.	time (h)		Notes
255-070	1.00	Turbocharger, removing	
255-071	2.00	Turbocharger, replacing	
255-072	1.00	Turbocharger, installing	
256-001	0.25	Air cleaner, cleaning filter element	
256-003	0.25	Air cleaner, primary filter replacing	
256-004	0.25	Air cleaner, secondary filter replacing	
256-006	0.40	Preheating coil, replacing	70001 - 110000 35001 - 70000
258-002	4.00	Intercooler, replacing	
258-022	0.30	Charge air cooler connection (hose, tube), replacing	70001 - 110000 35001 - 70000
26		COOLING SYSTEM	
261-002	0.10	Coolant, checking anti-freeze resistance	
261-004	0.50	Coolant, changing	70001 - 110000 35001 - 70000
261-008	8.00	Radiator, replacing	
261-012	0.75	Radiator hose upper, replacing	
261-014	1.25	Radiator hoses lower, replacing	
261-072	0.25	Coolant filter, changing	
262-098	1.00	Thermostat, replacing	70001 - 110000 35001 - 70000
263-012	1.00	Fan belt and/or alternator belt, replacing	70001 - 110000 35001 - 70000
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension	
263-022	1.00	Fan belt and/or alternator-, compressor belt, replacing all belts	70001 - 110000 35001 - 70000
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.60	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-001	0.80	Battery charging capacity, checking	
311-002	0.80	Batteries, replacing	10001 - 20000 23001 - 30000 30001 - 35000 20001 - 20837
311-002	0.80	Batteries, replacing	70001 - 110000 35001 - 70000
311-003	0.50	Main switch, replacing	
311-006	0.50	Earth lead to battery, replacing	

Op.no.	time (h)		Notes
311-008	2.50	Starter motor lead to battery, replacing	
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.00	Alternator, replacing incl function check	70001 - 110000 35001 - 70000
33		STARTING SYSTEM	
331-018	0.70	Starter motor, replacing	70001 - 110000 35001 - 70000
331-081	0.50	Starter relay, replacing	70001 - 110000 35001 - 70000
334-011	0.50	Starter switch (engine start switch), replacing	
35		LIGHTING	
356-056	0.50	Work lighting, replacing one head lamp assy	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.50	Horn, replacing	
363-002	1.00	Windscreen wiper front, replacing motor	
363-003	0.50	Windscreen wiper, replacing switch	
363-004	0.50	Windscreen flusher pump, replacing	
363-091	0.50	Windscreen wiper, replacing controller	
364-004	0.50	Switch, replacing	
364-050	0.50	Relay (general), replacing	
364-052	0.50	Battery relay, replacing	70001 - 110000 35001 - 70000 90001 - 110000
364-056	0.50	Pre-heating relay, replacing	
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	10001 - 20000 23001 - 30000 30001 - 35000 20001 - 20837
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	70001 - 110000 35001 - 70000 90001 - 110000
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	10001 - 20000 23001 - 30000 30001 - 35000 20001 - 20837
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	70001 - 110000 35001 - 70000 90001 - 110000
37		CABLE; FUSE; RELAY	
372-020	0.25	Fuse (general), replacing	
372-091	0.50	Slow blow fuse, replacing	
379-011	0.75	Boom wire harness, replacing	

Op.no.	time (h)		Notes
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-006	0.50	Engine temperature sensor, replacing	
386-007	0.50	Engine oil pressure sensor, replacing	
386-011	0.50	Fuel level sender, replacing	
386-038	1.00	Engine rotation speed sensor, replacing	
386-043	0.50	Travel speed sensor or alarm sensor, replacing	
386-044	0.50	Auto idling sensor, replacing	
386-088	0.75	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-902	3.00	CareTrack, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.75	Radio, replacing	
395-021	0.50	Antenna, replacing	
395-022	1.00	Antenna cable, replacing	
395-031	0.50	Speaker, replacing	
398-002	0.70	W-ECU, MID142, changing pre-programmed ECU	76852 - 80000 80131 - 110000
398-003	0.70	W-ECU, MID142, changing non-programmed ECU	76852 - 80000 80131 - 110000
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	5.50	Swing gearbox, replacing	70001 - 110000 35001 - 70000
431-026	1.50	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	5.50	Pump gearbox coupling assembly, replacing	
431-036	4.50	Pump gearbox flange, replacing	
431-053	6.50	Swing unit, replacing	
431-117	1.25	Track gearbox, replacing cover	70001 - 110000 35001 - 70000
44		HYDROSTATIC DRIVE	
441-021	2.50	Swing motor, replacing	70001 - 110000 35001 - 70000
441-022	0.70	Swing motor relief valve, replacing	70001 - 110000 35001 - 70000
441-023	3.50	Swing motor, replacing cylinder block	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	70001 - 110000 35001 - 70000
441-026	0.30	Swing motor removed, replacing seal	70001 - 110000

Op.no.	time (h)		Notes
			35001 - 70000
441-028	0.75	Swing motor brake valve, replacing	
441-112	0.70	Track motor relief valve, replacing	70001 - 110000 35001 - 70000
443-037	5.00	Center passage, replacing	70001 - 110000 35001 - 70000
443-039	1.00	Center passage hose (valve – center passage), replacing	70001 - 110000 35001 - 70000
443-040	1.50	Center passage hose (center passage – motor), replacing	70001 - 110000 35001 - 70000
49		MISCELLANEOUS	
492-031	3.00	Swing ring gear outer seal, replacing	19999 - 19999 80181 - 90000 90246 - 110000
492-032	9.00	Swing ring gear inner seal, replacing	19999 - 19999 80181 - 90000 90246 - 110000
492-091	0.40	Ring gear grease pipe, replacing	
492-095	0.70	Swing ring gear cover, removal	18652 - 19999
492-096	0.70	Swing ring gear cover, installation	18652 - 19999
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
715-019	0.60	Boom cylinder protecting guard, removal	
715-019	0.60	Boom cylinder protecting guard, removal	18652 - 19999
715-020	1.25	Boom cylinder protecting guard, installation	
715-020	1.25	Boom cylinder protecting guard, installation	18652 - 19999
715-023	0.90	Bucket cylinder protecting guard, removal	
715-024	1.00	Bucket cylinder protecting guard, installation	
716-001	0.80	Counterweight, removing	
716-002	0.80	Counterweight, fitting	
716-003	2.00	Counterweight, replacing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-032	0.40	Track shoe, replacing one	
775-034	1.25	Track chain assembly, removing	70001 - 110000 35001 - 70000
775-035	1.75	Track chain assembly, installing	70001 - 110000 35001 - 70000
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	

Op.no.	time (h)		Notes
775-066	3.00	Bottom roller, replacing seal	
775-071	0.90	Track guard, replacing one	
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.50	Cab, removing	70001 - 110000 35001 - 70000
810-002	2.00	Cab, installing	70001 - 110000 35001 - 70000
810-003	4.50	Operator cab, replacing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	1.00	Engine hood, replacing	
827-091	1.75	Tool box assembly, replacing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	0.75	Door, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.25	Rear-view mirror, changing	
843-002	2.00	Windscreen, replacing	
843-012	1.00	Rear window, replacing	
843-013	1.50	Side window, replacing	
843-048	1.00	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	
87		AIR CONDITIONING UNIT	
870-001	5.00	Cooler and Heater assembly, replacing	70001 - 110000 35001 - 70000
872-001	0.50	Cab filter, replacing	
872-011	1.00	Duct, replacing	
872-021	1.00	Defroster hose, replacing	
873-004	3.00	Heater core, replacing	
873-006	0.90	Fan motor, replacing	
873-097	1.50	Heater hose, replacing	
874-002	0.75	Refrigerant, draining	
874-003	0.75	Cooling unit, performance test	
874-005	1.00	Refrigerant, filling excl vacuum pumping	
874-006	2.00	Compressor, replacing incl draining and filling	70001 - 110000 35001 - 70000

Op.no.	time (h)		Notes
874-007	0.75	Belt, replacing	
874-010	1.50	Condenser, replacing incl draining and filling	70001 - 110000 35001 - 70000
874-011	1.25	Receiver, replacing incl draining and filling	70001 - 110000 35001 - 70000
874-012	3.00	Evaporator, replacing incl draining and filling	
874-013	3.00	Expansion valve, replacing incl draining and filling	
874-081	1.75	Liquid hose, replacing incl. draining and filling	
874-082	1.75	Discharge hose, replacing incl. draining and filling	
874-083	1.75	Suction hose, replacing incl. draining and filling	
874-091	1.00	Switch and controller, replacing	
874-093	1.00	Power transistor (ceramic resister), replacing	
874-094	1.00	Vent actuator, replacing	
874-095	1.00	Mode (foot) actuator, replacing	
874-096	1.00	Intake actuator, replacing	
874-097	1.00	Shutter assembly, replacing	
874-098	1.00	Valve (mix) actuator, replacing	

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-001	0.20	Oil return filter, replacing	
911-004	0.50	Suction strainer, replacing	
911-005	1.75	Pump suction hose and pipe, replacing	
911-011	2.50	Oil cooler, replacing	
911-015	0.50	Oil level gauge, replacing	
911-017	1.75	Suction cover, replacing	
911-024	0.70	Pipe and hose (pump - valve), replacing	
911-025	0.70	Pipe and hose (valve - cylinder), replacing	
911-026	0.70	Pipe and hose (valve - swing motor), replacing	
911-031	1.50	Oil cooler line pipe and hose, replacing	
911-032	1.50	Oil cooler line pipe coupling, replacing	
911-033	2.00	Oil cooler line bypass valve (check valve), replacing	
911-038	4.00	Hydraulic oil tank, replacing	
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
911-042	0.25	Oil drain filter, replacing	
911-043	0.25	Servo system filter, replacing	
911-051	0.20	Breather, replacing	
912-067	0.40	Main pressure relief valve, replacing	
912-071	0.70	Rupture valve, replacing (boom cylinder)	
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)	

Op.no.	time (h)		Notes
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)	
912-075	0.50	Rupture valve hose or pipe, replacing (dipper arm cylinder)	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	70001 - 80000 35001 - 39999 40001 - 50000 50001 - 70000 80001 - 90000 90001 - 110000
913-010	4.00	Hydraulic pump, replacing	70001 - 80000 35001 - 39999 40001 - 50000 50001 - 70000 80001 - 90000 90001 - 110000
913-013	7.00	Hydraulic pump, replacing seal for input shaft	
913-029	0.30	Pump regulator, replacing	70001 - 80000 35001 - 39999 40001 - 50000 50001 - 70000 80001 - 90000 90001 - 110000
914-036	1.25	Servo pump block seal, replacing	
914-037	1.25	Servo pump shaft seal, replacing	
914-041	0.60	Proportional solenoid valve (power shift), replacing	70001 - 80000 35001 - 39999 40001 - 50000 50001 - 70000 80001 - 90000 90001 - 110000
914-051	0.30	Accumulator, replacing	
914-060	0.80	Servo pump, replacing	70001 - 110000 35001 - 70000
914-071	0.50	Servo pipe and hose, replacing	
914-081	1.75	Remote control valve (lever), replacing	
914-084	1.75	Remote control valve (pedal), replacing	
914-086	1.00	Remote control valve hose, replacing	
914-091	1.00	Solenoid valve, replacing	
916-043	1.00	Boom, replacing pipe (boom cylinder)	
916-044	0.75	Boom, replacing hose (boom cylinder)	
916-045	1.00	Boom, replacing pipe (dipper arm cylinder)	
916-046	0.50	Boom, replacing hose (dipper arm cylinder)	
916-047	1.00	Boom, replacing pipe (bucket cylinder)	
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)	
916-049	0.75	Dipper arm, replacing pipe (bucket cylinder)	
916-091	0.75	Hammer and shear pipe, replacing (for boom)	
916-092	0.50	Hammer and shear hose, replacing (for boom)	

Op.no.	time (h)	Notes
916-093	0.75	Hammer and shear pipe, replacing (for dipper arm)
916-094	0.50	Hammer and shear hose, replacing (for dipper arm)
916-095	0.50	Hammer and shear hose and pipe, replacing (MCV - 3 way valve)
916-096	1.00	Hammer and shear pedal valve (RCV), replacing
916-097	0.75	Hammer and shear 3-way valve, replacing
916-098	0.75	Hammer and shear pipe and hose, replacing (for 2nd pump flow)
916-099	0.50	Hammer and shear ball valve, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.50	Quickfit pump (gear pump), replacing
924-002	1.00	Quickfit valve, replacing
924-003	0.75	Quickfit solenoid valve, replacing
924-004	0.50	Quickfit control switch, replacing
924-041	0.50	Quickfit hydraulic hose, replacing (for boom)
924-042	0.50	Quickfit hydraulic pipe, replacing (for boom)
924-043	0.25	Quickfit hydraulic hose, replacing (for dipper arm)
924-044	0.50	Quickfit hydraulic pipe, replacing (for dipper arm)
924-045	0.75	Quickfit hydraulic cylinder hose, replacing (dipper arm cylinder)
925-012	0.50	Bucket assembly, removal
925-013	0.75	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	4.50	Boom, removal
974-014	5.50	Boom, installation
974-017	2.00	Boom, replacing pin
974-018	0.25	Boom grease pipe or hose, replacing
974-022	2.00	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	3.50	Boom cylinder, repacking in machine
974-031	1.00	Boom cylinder, removal
974-032	1.00	Boom cylinder, installation
974-047	0.50	Adapter, removal
974-048	0.60	Adapter, installation
975-006	0.70	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-011	3.50	Dipper arm, removal
975-012	3.50	Dipper arm, installation
975-014	1.75	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation

Op.no.	time (h)	Notes
975-023	0.25	Dipper arm pipe or hose, replacing
975-024	1.50	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-026	2.50	Dipper arm cylinder removed, repacking
975-028	1.00	Connecting rod yoke, replacing
975-032	0.70	Connecting rod yoke, removal
975-035	1.00	Connecting rod yoke, installation
975-039	5.50	Dipper arm, replacing
975-043	4.00	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.50	Bucket cylinder, removal
975-063	3.50	Bucket cylinder, repacking in machine
975-065	1.75	Bucket cylinder, installation
975-069	2.00	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
171-001	1.00	Arrival Inspection, according to Inspection Programme	
171-002	3.00	Delivery Inspection, according to Inspection Programme	
172-002	3.00	Warranty inspection 100 hours	
172-004	7.50	Warranty inspection 1000 hours	
173-002	1.25	Maintenance service, daily	
173-004	1.50	Maintenance service, every 50 hours	
173-007	2.50	Maintenance service, every 250 hours	
173-010	4.50	Maintenance service, every 500 hours	
173-012	6.50	Maintenance service, every 1000 hours	
173-014	12.00	Maintenance service, every 2000 hours	
173-018	12.00	Maintenance service, every 4000 hours	
173-022	12.00	Maintenance service, every 6000 hours	
173-074	1.25	Hydraulic oil tank, changing oil and filter	
173-079	0.80	Swing motor gearbox, changing oil	
173-101	0.50	Track motor gearbox, changing oil	
173-401	0.60	Engine oil and filter, changing	
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.25	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	10001 - 20000 23001 - 30000 30001 - 35000 20001 - 20837
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	70001 - 110000 35001 - 70000 90001 - 110000
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	10001 - 20000 23001 - 30000 30001 - 35000 20001 - 20837
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	70001 - 110000 35001 - 70000 90001 - 110000

Op.no.	time (h)		Notes
21		ENGINE	
210-070	6.50	Engine, removing	
210-072	7.00	Engine, installing	
211-002	8.00	Cylinder head, replacing gasket	
214-012	3.00	Valves, adjusting	70001 - 110000 35001 - 70000
214-036	1.00	Valve covers, fitting new gasket	
216-014	7.50	Crankshaft, replacing front oil seal	
216-018	8.50	Crankshaft, replacing rear oil seal	
22		LUBRICATING SYSTEM	
221-022	0.40	Lubrication oil pressure, checking with pressure gauge	35001 - 70000 70001 - 110000
223-006	1.25	Oil cooler, replacing	35001 - 70000 70001 - 110000
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	35001 - 70000 70001 - 110000
233-002	0.70	Feed pump, replacing	35001 - 70000 70001 - 110000
233-004	0.80	Feed pump, checking feed pressure	35001 - 70000 70001 - 110000
233-010	0.80	Fuel pump, inspection	35001 - 70000 70001 - 110000
233-014	0.40	Fuel filters, replacing	35001 - 70000 70001 - 110000
233-015	0.50	Fuel filter extra, replacing	35001 - 70000 70001 - 110000
233-020	0.10	Fuel filter, checking	35001 - 70000 70001 - 110000
234-010	4.00	Fuel tank, replacing	
234-041	0.40	Fuel filling pump, removing	70001 - 110000 35001 - 70000
234-042	0.50	Fuel filling pump, installing	70001 - 110000 35001 - 70000
237-002	3.00	Injectors, replacing all	
237-004	0.70	Injector, replacing one	70001 - 110000 35001 - 70000
237-033	0.80	Fuel control valve (FCV), replacing	70001 - 110000 35001 - 70000
237-037	0.70	Fuel rail pressure, checking	70001 - 110000 35001 - 70000
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.25	Silencer, replacing	
252-021	1.25	Exhaust pipe, flexible tube, replacing	

Op.no.	time (h)		Notes
255-070	1.00	Turbocharger, removing	
255-071	2.00	Turbocharger, replacing	
255-072	1.00	Turbocharger, installing	
256-001	0.25	Air cleaner, cleaning filter element	
256-003	0.25	Air cleaner, primary filter replacing	
256-004	0.25	Air cleaner, secondary filter replacing	
256-006	0.40	Preheating coil, replacing	70001 - 110000 35001 - 70000
258-002	4.00	Intercooler, replacing	
258-022	0.30	Charge air cooler connection (hose, tube), replacing	70001 - 110000 35001 - 70000
26		COOLING SYSTEM	
261-002	0.10	Coolant, checking anti-freeze resistance	
261-004	0.50	Coolant, changing	70001 - 110000 35001 - 70000
261-008	8.00	Radiator, replacing	
261-012	0.75	Radiator hose upper, replacing	
261-014	1.25	Radiator hoses lower, replacing	
261-072	0.25	Coolant filter, changing	
262-098	1.00	Thermostat, replacing	70001 - 110000 35001 - 70000
263-012	1.00	Fan belt and/or alternator belt, replacing	70001 - 110000 35001 - 70000
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension	
263-022	1.00	Fan belt and/or alternator-, compressor belt, replacing all belts	70001 - 110000 35001 - 70000
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.60	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-001	0.80	Battery charging capacity, checking	
311-002	0.80	Batteries, replacing	10001 - 20000 23001 - 30000 30001 - 35000 20001 - 20837
311-002	0.80	Batteries, replacing	70001 - 110000 35001 - 70000
311-003	0.50	Main switch, replacing	
311-006	0.50	Earth lead to battery, replacing	

Op.no.	time (h)		Notes
311-008	2.50	Starter motor lead to battery, replacing	
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.00	Alternator, replacing incl function check	70001 - 110000 35001 - 70000
33		STARTING SYSTEM	
331-018	0.70	Starter motor, replacing	70001 - 110000 35001 - 70000
331-081	0.50	Starter relay, replacing	70001 - 110000 35001 - 70000
334-011	0.50	Starter switch (engine start switch), replacing	
35		LIGHTING	
356-056	0.50	Work lighting, replacing one head lamp assy	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.50	Horn, replacing	
363-002	1.00	Windscreen wiper front, replacing motor	
363-003	0.50	Windscreen wiper, replacing switch	
363-004	0.50	Windscreen flusher pump, replacing	
363-091	0.50	Windscreen wiper, replacing controller	
364-004	0.50	Switch, replacing	
364-050	0.50	Relay (general), replacing	
364-052	0.50	Battery relay, replacing	70001 - 110000 35001 - 70000 90001 - 110000
364-056	0.50	Pre-heating relay, replacing	
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	10001 - 20000 23001 - 30000 30001 - 35000 20001 - 20837
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	70001 - 110000 35001 - 70000 90001 - 110000
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	10001 - 20000 23001 - 30000 30001 - 35000 20001 - 20837
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	70001 - 110000 35001 - 70000 90001 - 110000
37		CABLE; FUSE; RELAY	
372-020	0.25	Fuse (general), replacing	
372-091	0.50	Slow blow fuse, replacing	
379-011	0.75	Boom wire harness, replacing	

Op.no.	time (h)	Notes	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-006	0.50	Engine temperature sensor, replacing	
386-007	0.50	Engine oil pressure sensor, replacing	
386-011	0.50	Fuel level sender, replacing	
386-038	1.00	Engine rotation speed sensor, replacing	
386-043	0.50	Travel speed sensor or alarm sensor, replacing	
386-044	0.50	Auto idling sensor, replacing	
386-088	0.75	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-902	3.00	CareTrack, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.75	Radio, replacing	
395-021	0.50	Antenna, replacing	
395-022	1.00	Antenna cable, replacing	
395-031	0.50	Speaker, replacing	
398-002	0.70	W-ECU, MID142, changing pre-programmed ECU	76852 - 80000 80131 - 110000
398-003	0.70	W-ECU, MID142, changing non-programmed ECU	76852 - 80000 80131 - 110000
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	5.50	Swing gearbox, replacing	70001 - 110000 35001 - 70000
431-026	1.50	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	5.50	Pump gearbox coupling assembly, replacing	
431-036	4.50	Pump gearbox flange, replacing	
431-053	6.50	Swing unit, replacing	
431-117	1.25	Track gearbox, replacing cover	70001 - 110000 35001 - 70000
44		HYDROSTATIC DRIVE	
441-021	2.50	Swing motor, replacing	70001 - 110000 35001 - 70000
441-022	0.70	Swing motor relief valve, replacing	70001 - 110000 35001 - 70000
441-023	3.50	Swing motor, replacing cylinder block	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	70001 - 110000 35001 - 70000
441-026	0.30	Swing motor removed, replacing seal	70001 - 110000

Op.no.	time (h)		Notes
			35001 - 70000
441-028	0.75	Swing motor brake valve, replacing	
441-112	0.70	Track motor relief valve, replacing	70001 - 110000 35001 - 70000
443-037	5.00	Center passage, replacing	70001 - 110000 35001 - 70000
443-039	1.00	Center passage hose (valve – center passage), replacing	70001 - 110000 35001 - 70000
443-040	1.50	Center passage hose (center passage – motor), replacing	70001 - 110000 35001 - 70000
49		MISCELLANEOUS	
492-031	3.00	Swing ring gear outer seal, replacing	19999 - 19999 80181 - 90000 90246 - 110000
492-032	9.00	Swing ring gear inner seal, replacing	19999 - 19999 80181 - 90000 90246 - 110000
492-091	0.40	Ring gear grease pipe, replacing	
492-095	0.70	Swing ring gear cover, removal	18652 - 19999
492-096	0.70	Swing ring gear cover, installation	18652 - 19999
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
715-019	0.60	Boom cylinder protecting guard, removal	
715-019	0.60	Boom cylinder protecting guard, removal	18652 - 19999
715-020	1.25	Boom cylinder protecting guard, installation	
715-020	1.25	Boom cylinder protecting guard, installation	18652 - 19999
715-023	0.90	Bucket cylinder protecting guard, removal	
715-024	1.00	Bucket cylinder protecting guard, installation	
716-001	0.80	Counterweight, removing	
716-002	0.80	Counterweight, fitting	
716-003	2.00	Counterweight, replacing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-032	0.40	Track shoe, replacing one	
775-034	1.25	Track chain assembly, removing	70001 - 110000 35001 - 70000
775-035	1.75	Track chain assembly, installing	70001 - 110000 35001 - 70000
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	

Op.no.	time (h)		Notes
775-066	3.00	Bottom roller, replacing seal	
775-071	0.90	Track guard, replacing one	
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.50	Cab, removing	70001 - 110000 35001 - 70000
810-002	2.00	Cab, installing	70001 - 110000 35001 - 70000
810-003	4.50	Operator cab, replacing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	1.00	Engine hood, replacing	
827-091	1.75	Tool box assembly, replacing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	0.75	Door, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.25	Rear-view mirror, changing	
843-002	2.00	Windscreen, replacing	
843-012	1.00	Rear window, replacing	
843-013	1.50	Side window, replacing	
843-048	1.00	Door window, replacing	
87		AIR CONDITIONING UNIT	
870-001	5.00	Cooler and Heater assembly, replacing	70001 - 110000 35001 - 70000
872-001	0.50	Cab filter, replacing	
872-011	1.00	Duct, replacing	
872-021	1.00	Defroster hose, replacing	
873-004	3.00	Heater core, replacing	
873-006	0.90	Fan motor, replacing	
873-097	1.50	Heater hose, replacing	
874-002	0.75	Refrigerant, draining	
874-003	0.75	Cooling unit, performance test	
874-005	1.00	Refrigerant, filling excl vacuum pumping	
874-006	2.00	Compressor, replacing incl draining and filling	70001 - 110000 35001 - 70000
874-007	0.75	Belt, replacing	
874-010	1.50	Condenser, replacing incl draining and filling	70001 - 110000 35001 - 70000

Op.no.	time (h)		Notes
874-011	1.25	Receiver, replacing incl draining and filling	70001 - 110000 35001 - 70000
874-012	3.00	Evaporator, replacing incl draining and filling	
874-013	3.00	Expansion valve, replacing incl draining and filling	
874-081	1.75	Liquid hose, replacing incl. draining and filling	
874-082	1.75	Discharge hose, replacing incl. draining and filling	
874-083	1.75	Suction hose, replacing incl. draining and filling	
874-091	1.00	Switch and controller, replacing	
874-093	1.00	Power transistor (ceramic resister), replacing	
874-094	1.00	Vent actuator, replacing	
874-095	1.00	Mode (foot) actuator, replacing	
874-096	1.00	Intake actuator, replacing	
874-097	1.00	Shutter assembly, replacing	
874-098	1.00	Valve (mix) actuator, replacing	

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-001	0.20	Oil return filter, replacing	
911-004	0.50	Suction strainer, replacing	
911-005	1.75	Pump suction hose and pipe, replacing	
911-015	0.50	Oil level gauge, replacing	
911-017	1.75	Suction cover, replacing	
911-024	0.70	Pipe and hose (pump - valve), replacing	
911-025	0.70	Pipe and hose (valve - cylinder), replacing	
911-026	0.70	Pipe and hose (valve - swing motor), replacing	
911-031	1.50	Oil cooler line pipe and hose, replacing	
911-032	1.50	Oil cooler line pipe coupling, replacing	
911-033	2.00	Oil cooler line bypass valve (check valve), replacing	
911-038	4.00	Hydraulic oil tank, replacing	
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
911-042	0.25	Oil drain filter, replacing	
911-043	0.25	Servo system filter, replacing	
911-051	0.20	Breather, replacing	
912-067	0.40	Main pressure relief valve, replacing	
912-071	0.70	Rupture valve, replacing (boom cylinder)	
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)	
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)	
912-075	0.50	Rupture valve hose or pipe, replacing (dipper arm cylinder)	

Op.no.	time (h)		Notes
913-007	0.30	Hydraulic pump (removed), changing shaft seal	70001 - 80000 35001 - 39999 40001 - 50000 50001 - 70000 80001 - 90000 90001 - 110000
913-010	4.00	Hydraulic pump, replacing	70001 - 80000 35001 - 39999 40001 - 50000 50001 - 70000 80001 - 90000 90001 - 110000
913-013	7.00	Hydraulic pump, replacing seal for input shaft	
913-029	0.30	Pump regulator, replacing	70001 - 80000 35001 - 39999 40001 - 50000 50001 - 70000 80001 - 90000 90001 - 110000
914-036	1.25	Servo pump block seal, replacing	
914-037	1.25	Servo pump shaft seal, replacing	
914-041	0.60	Proportional solenoid valve (power shift), replacing	70001 - 80000 35001 - 39999 40001 - 50000 50001 - 70000 80001 - 90000 90001 - 110000
914-051	0.30	Accumulator, replacing	
914-060	0.80	Servo pump, replacing	70001 - 110000 35001 - 70000
914-071	0.50	Servo pipe and hose, replacing	
914-081	1.75	Remote control valve (lever), replacing	
914-084	1.75	Remote control valve (pedal), replacing	
914-086	1.00	Remote control valve hose, replacing	
914-091	1.00	Solenoid valve, replacing	
916-043	1.00	Boom, replacing pipe (boom cylinder)	
916-044	0.75	Boom, replacing hose (boom cylinder)	
916-045	1.00	Boom, replacing pipe (dipper arm cylinder)	
916-046	0.50	Boom, replacing hose (dipper arm cylinder)	
916-047	1.00	Boom, replacing pipe (bucket cylinder)	
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)	
916-049	0.75	Dipper arm, replacing pipe (bucket cylinder)	
916-091	0.75	Hammer and shear pipe, replacing (for boom)	
916-092	0.50	Hammer and shear hose, replacing (for boom)	
916-093	0.75	Hammer and shear pipe, replacing (for dipper arm)	
916-094	0.50	Hammer and shear hose, replacing (for dipper arm)	

Op.no.	time (h)	Notes
916-095	0.50	Hammer and shear hose and pipe, replacing (MCV - 3 way valve)
916-096	1.00	Hammer and shear pedal valve (RCV), replacing
916-097	0.75	Hammer and shear 3-way valve, replacing
916-098	0.75	Hammer and shear pipe and hose, replacing (for 2nd pump flow)
916-099	0.50	Hammer and shear ball valve, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.50	Quickfit pump (gear pump), replacing
924-002	1.00	Quickfit valve, replacing
924-003	0.75	Quickfit solenoid valve, replacing
924-004	0.50	Quickfit control switch, replacing
924-041	0.50	Quickfit hydraulic hose, replacing (for boom)
924-042	0.50	Quickfit hydraulic pipe, replacing (for boom)
924-043	0.25	Quickfit hydraulic hose, replacing (for dipper arm)
924-044	0.50	Quickfit hydraulic pipe, replacing (for dipper arm)
924-045	0.75	Quickfit hydraulic cylinder hose, replacing (dipper arm cylinder)
925-012	0.50	Bucket assembly, removal
925-013	0.75	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	4.50	Boom, removal
974-014	5.50	Boom, installation
974-017	2.00	Boom, replacing pin
974-018	0.25	Boom grease pipe or hose, replacing
974-022	2.00	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	3.50	Boom cylinder, repacking in machine
974-031	1.00	Boom cylinder, removal
974-032	1.00	Boom cylinder, installation
974-047	0.50	Adapter, removal
974-048	0.60	Adapter, installation
975-006	0.70	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-011	3.50	Dipper arm, removal
975-012	3.50	Dipper arm, installation
975-014	1.75	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-023	0.25	Dipper arm pipe or hose, replacing
975-024	1.50	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing

Op.no.	time (h)	Notes
975-026	2.50	Dipper arm cylinder removed, repacking
975-028	1.00	Connecting rod yoke, replacing
975-032	0.70	Connecting rod yoke, removal
975-035	1.00	Connecting rod yoke, installation
975-039	5.50	Dipper arm, replacing
975-043	4.00	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.50	Bucket cylinder, removal
975-063	3.50	Bucket cylinder, repacking in machine
975-065	1.75	Bucket cylinder, installation
975-069	2.00	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
214-012	3.00	Valves, adjusting	80001 - 110000
22		LUBRICATING SYSTEM	
221-022	0.40	Lubrication oil pressure, checking with pressure gauge	80001 - 110000
223-006	1.25	Oil cooler, replacing	80001 - 110000
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	80001 - 110000
233-004	0.80	Feed pump, checking feed pressure	80001 - 110000
233-010	0.80	Fuel pump, inspection	80001 - 110000
233-014	0.40	Fuel filters, replacing	80001 - 110000
233-015	0.50	Fuel filter extra, replacing	80001 - 110000
233-020	0.10	Fuel filter, checking	80001 - 110000
234-010	5.50	Fuel tank, replacing	
237-037	0.70	Fuel rail pressure, checking	17001 - 30000 35001 - 80000 80001 - 110000
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.50	Silencer, replacing	80001 - 110000
252-021	1.50	Exhaust pipe, flexible tube, replacing	80001 - 110000
255-002	0.80	Turbocharger, inspection	80001 - 110000
255-071	2.50	Turbocharger, replacing	80001 - 110000
256-006	0.50	Preheating coil, replacing	80001 - 110000
258-002	5.00	Intercooler, replacing	80001 - 110000
258-022	0.50	Charge air cooler connection (hose, tube), replacing	80001 - 110000
258-030	1.50	Charge air system, inspection	80001 - 110000
26		COOLING SYSTEM	
261-002	0.10	Coolant, checking anti-freeze resistance	

Op.no.	time (h)		Notes
261-004	0.50	Coolant, changing	80001 - 110000
261-008	5.00	Radiator, replacing	80001 - 110000
261-008	8.00	Radiator, replacing	10001 - 15000 30001 - 35000
261-012	0.50	Radiator hose upper, replacing	80001 - 110000
261-014	1.00	Radiator hoses lower, replacing	80001 - 110000
261-018	0.70	Expansion tank, replacing	80001 - 110000
263-012	1.25	Fan belt and/or alternator belt, replacing	

3 ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS

30 GENERAL

300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.60	I-ECU, MID 140, changing pre-programmed ECU	

31 BATTERY

311-002	0.80	Batteries, replacing	
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36 OTHER ELECTRICAL EQUIPMENT

366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	

39 MISCELLANEOUS

390-902	3.00	CareTrack, installing new	
398-002	0.70	W-ECU, MID142, changing pre-programmed ECU	16024 - 80000
398-003	0.70	W-ECU, MID142, changing non-programmed ECU	16024 - 80000

4 POWER TRANSMISSION

49 MISCELLANEOUS

492-095	0.50	Swing ring gear cover, removal	80958 - 110000
492-095	0.60	Swing ring gear cover, removal	80001 - 80957
492-095	0.70	Swing ring gear cover, removal	80958 - 81100
492-096	0.60	Swing ring gear cover, installation	80958 - 110000
492-096	0.70	Swing ring gear cover, installation	80958 - 81100
492-096	0.60	Swing ring gear cover, installation	80001 - 80957

Op.no.	time (h)	Notes	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-065	0.50	Gull wing power pack, replacing	
821-066	0.50	Gull wing cylinder, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	
87		AIR CONDITIONING UNIT	
873-006	0.90	Fan motor, replacing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
914-081	1.75	Remote control valve (lever), replacing	
914-084	1.75	Remote control valve (pedal), replacing	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
925-011	1.50	Bucket assembly, replacing	
97		UNIT, DIGGING	
974-010	12.00	Boom, replacing	15001 - 30000
974-013	4.50	Boom, removal	15001 - 30000
974-014	5.50	Boom, installation	15001 - 30000
974-021	2.50	Boom cylinder, replacing	
975-011	3.50	Dipper arm, removal	15001 - 30000
975-012	3.50	Dipper arm, installation	15001 - 30000
975-024	1.50	Dipper arm connecting rod, replacing	
975-025	2.50	Dipper arm cylinder, replacing	
975-028	1.00	Connecting rod yoke, replacing	
975-039	9.00	Dipper arm, replacing	15001 - 30000
975-061	2.50	Bucket cylinder, replacing	

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
171-001	1.00	Arrival Inspection, according to Inspection Programme	
171-002	3.00	Delivery Inspection, according to Inspection Programme	
173-002	0.75	Maintenance service, daily	
173-004	1.00	Maintenance service, every 50 hours	
173-007	2.00	Maintenance service, every 250 hours	
173-010	6.00	Maintenance service, every 500 hours	
173-012	5.50	Maintenance service, every 1000 hours	
173-014	10.00	Maintenance service, every 2000 hours	
173-059	0.60	Engine, changing oil and filter	
173-074	1.25	Hydraulic oil tank, changing oil and filter	
173-076	0.25	Hydraulic oil tank, return oil filter change	
173-079	0.90	Swing motor gearbox, changing oil	
173-101	0.40	Track motor gearbox, changing oil	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-070	7.00	Engine, removing	
210-072	7.00	Engine, installing	
211-002	8.00	Cylinder head, replacing gasket	
214-012	3.00	Valves, adjusting	15001 - 30000 35001 - 80000 85001 - 110000
214-036	1.00	Valve covers, fitting new gasket	
216-014	4.50	Crankshaft, replacing front oil seal	
216-018	9.00	Crankshaft, replacing rear oil seal	
22		LUBRICATING SYSTEM	
221-022	0.40	Lubrication oil pressure, checking with pressure gauge	15001 - 30000 35001 - 80000 80001 - 110000
223-006	1.25	Oil cooler, replacing	15001 - 30000 35001 - 80000 80001 - 110000

Op.no.	time (h)		Notes
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	15001 - 30000 35001 - 80000 80001 - 110000
233-002	0.70	Feed pump, replacing	
233-004	0.80	Feed pump, checking feed pressure	15001 - 30000 35001 - 80000 80001 - 110000
233-010	0.80	Fuel pump, inspection	15001 - 30000 35001 - 80000 80001 - 110000
233-014	0.40	Fuel filters, replacing	15001 - 30000 35001 - 80000 80001 - 110000
233-015	0.50	Fuel filter extra, replacing	15001 - 30000 35001 - 80000 80001 - 110000
233-020	0.10	Fuel filter, checking	15001 - 30000 35001 - 80000 80001 - 110000
234-010	5.50	Fuel tank, replacing	
234-041	0.50	Fuel filling pump, removing	
234-042	0.50	Fuel filling pump, installing	
237-002	3.00	Injectors, replacing all	
237-004	1.50	Injector, replacing one	
237-037	0.70	Fuel rail pressure, checking	17001 - 30000 35001 - 80000 80001 - 110000
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.50	Silencer, replacing	15001 - 30000 35001 - 80000 80001 - 110000
252-021	1.50	Exhaust pipe, flexible tube, replacing	15001 - 30000 35001 - 80000 80001 - 110000
255-002	0.80	Turbocharger, inspection	15001 - 30000 35001 - 80000 80001 - 110000
255-070	1.50	Turbocharger, removing	
255-071	2.50	Turbocharger, replacing	15001 - 30000 35001 - 80000 80001 - 110000
255-072	1.50	Turbocharger, installing	
256-001	0.25	Air cleaner, cleaning filter element	
256-003	0.25	Air cleaner, primary filter replacing	
256-004	0.25	Air cleaner, secondary filter replacing	
256-006	0.50	Preheating coil, replacing	80001 - 110000

Op.no.	time (h)		Notes
258-002	5.00	Intercooler, replacing	15001 - 30000 35001 - 80000 80001 - 110000
258-022	0.50	Charge air cooler connection (hose, tube), replacing	80001 - 110000
258-030	1.50	Charge air system, inspection	80001 - 110000
26		COOLING SYSTEM	
261-002	0.10	Coolant, checking anti-freeze resistance	
261-004	0.50	Coolant, changing	15001 - 30000 35001 - 80000 80001 - 110000
261-008	8.00	Radiator, replacing	10001 - 15000 30001 - 35000
261-008	5.00	Radiator, replacing	15001 - 30000 35001 - 80000 80001 - 110000
261-012	0.50	Radiator hose upper, replacing	15001 - 30000 35001 - 80000 80001 - 110000
261-014	1.00	Radiator hoses lower, replacing	15001 - 30000 35001 - 80000 80001 - 110000
261-018	0.70	Expansion tank, replacing	15001 - 30000 35001 - 80000 80001 - 110000
261-072	0.25	Coolant filter, changing	
262-002	1.50	Coolant pump, replacing	
262-098	1.00	Thermostat, replacing	
263-012	1.25	Fan belt and/or alternator belt, replacing	
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension	
263-022	2.00	Fan belt and/or alternator-, compressor belt, replacing all belts	
263-022	1.25	Fan belt and/or alternator-, compressor belt, replacing all belts	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.60	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-001	0.80	Battery charging capacity, checking	
311-002	0.80	Batteries, replacing	

Op.no.	time (h)	Notes
311-003	0.50	Main switch, replacing
311-006	0.50	Earth lead to battery, replacing
311-008	2.00	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.25	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	1.50	Starter motor, replacing
331-081	0.50	Starter relay, replacing
331-081	0.30	Starter relay, replacing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.50	Horn, replacing
362-041	0.50	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.00	Windscreen wiper front, replacing motor
363-003	0.50	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-004	0.50	Switch, replacing
364-050	0.50	Relay (general), replacing
364-050	0.25	Relay (general), replacing
364-052	0.50	Battery relay, replacing
364-052	0.25	Battery relay, replacing
364-056	0.50	Pre-heating relay, replacing
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU
37		CABLE; FUSE; RELAY
372-020	0.25	Fuse (general), replacing
372-091	0.50	Slow blow fuse, replacing
379-011	0.75	Boom wire harness, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	0.50	Engine temperature sensor, replacing
386-007	0.50	Engine oil pressure sensor, replacing
386-011	0.50	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing
386-038	1.00	Engine rotation speed sensor, replacing

Op.no.	time (h)	Notes
386-043	0.50	Travel speed sensor or alarm sensor, replacing
386-044	0.50	Auto idling sensor, replacing
386-088	0.75	Engine rotation speed sensor (camshaft), replacing
39		MISCELLANEOUS
390-902	3.00	CareTrack, installing new
393-001	0.50	Voltage converter, replacing
393-021	0.75	Radio, replacing
395-021	0.50	Antenna, replacing
395-022	1.00	Antenna cable, replacing
395-031	0.50	Speaker, replacing
398-002	0.70	W-ECU, MID142, changing pre-programmed ECU16024 - 80000
398-003	0.70	W-ECU, MID142, changing non-programmed 16024 - 80000 ECU
4		POWER TRANSMISSION
43		GEARBOX,
431-021	6.50	Swing gearbox, replacing
431-026	1.00	Swing gearbox removed, replacing seal
431-027	2.50	Swing gearbox removed, replacing shaft
431-031	5.50	Pump gearbox coupling assembly, replacing
431-036	4.50	Pump gearbox flange, replacing
431-115	1.75	Track gearbox (removed), replacing floating seal
431-117	1.25	Track gearbox, replacing cover
431-125	3.00	Track unit, removal
431-127	6.00	Track unit, replacing
44		HYDROSTATIC DRIVE
441-017	1.00	Travel motor pressure, checking and adjusting
441-021	2.50	Swing motor, replacing
441-022	0.75	Swing motor relief valve, replacing
441-023	4.00	Swing motor, replacing cylinder block
441-024	1.50	Swing motor, replacing plate (brake)
441-025	1.25	Swing motor, replacing brake piston seal
441-026	1.00	Swing motor removed, replacing seal
441-028	0.75	Swing motor brake valve, replacing
441-032	0.75	Swing motor pressure, checking and adjusting
441-112	0.70	Track motor relief valve, replacing
441-115	2.00	Track motor removed, replacing seal
443-037	5.00	Center passage, replacing
443-038	6.50	Center passage, replacing seal kit

Op.no.	time (h)		Notes
443-039	1.00	Center passage hose (valve – center passage), replacing	
443-040	1.50	Center passage hose (center passage – motor), replacing	
49		MISCELLANEOUS	
492-031	3.00	Swing ring gear outer seal, replacing	16250 - 30000 36878 - 40000
492-032	9.00	Swing ring gear inner seal, replacing	16250 - 30000 36878 - 40000
492-091	0.50	Ring gear grease pipe, replacing	
492-095	0.70	Swing ring gear cover, removal	80958 - 81100
492-095	0.60	Swing ring gear cover, removal	80001 - 80957
492-096	0.70	Swing ring gear cover, installation	80958 - 81100
492-096	0.60	Swing ring gear cover, installation	80001 - 80957
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
715-023	0.90	Bucket cylinder protecting guard, removal	80001 - 80895
715-023	0.90	Bucket cylinder protecting guard, removal	80896 - 110000
715-024	1.00	Bucket cylinder protecting guard, installation	80896 - 110000
715-024	1.00	Bucket cylinder protecting guard, installation	80001 - 80895
716-001	0.80	Counterweight, removing	
716-002	0.80	Counterweight, fitting	
716-003	2.00	Counterweight, replacing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-032	0.40	Track shoe, replacing one	
775-033	8.00	Track shoe, replacing each side	
775-034	1.25	Track chain assembly, removing	
775-035	1.75	Track chain assembly, installing	
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	
775-066	3.00	Bottom roller, replacing seal	
775-071	0.90	Track guard, replacing one	
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.50	Cab, removing
810-002	2.00	Cab, installing
810-003	4.50	Operator cab, replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	1.00	Engine hood, replacing
827-091	1.75	Tool box assembly, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	0.75	Door, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.25	Rear-view mirror, changing
843-002	2.00	Windscreen, replacing
843-012	1.00	Rear window, replacing
843-013	1.50	Side window, replacing
843-048	1.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
872-011	1.00	Duct, replacing
872-021	1.00	Defroster hose, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-011	1.00	Air mix door actuator, replacing
873-020	1.00	Heat control valve actuator, replacing
873-097	1.50	Heater hose, replacing
874-002	0.75	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	2.50	Compressor, replacing incl draining and filling
874-007	2.00	Belt, replacing
874-007	1.00	Belt, replacing
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-014	0.50	Thermostat, replacing

Op.no.	time (h)	Notes
874-081	1.75	Liquid hose, replacing incl. draining and filling
874-082	1.75	Discharge hose, replacing incl. draining and filling
874-083	1.75	Suction hose, replacing incl. draining and filling
874-091	1.00	Switch and controller, replacing
874-093	1.00	Power transistor (ceramic resister), replacing
874-094	1.00	Vent actuator, replacing
874-095	1.00	Mode (foot) actuator, replacing
874-096	1.00	Intake actuator, replacing
874-097	1.00	Shutter assembly, replacing
874-098	1.00	Valve (mix) actuator, replacing

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-001	0.20	Oil return filter, replacing
911-004	0.50	Suction strainer, replacing
911-005	1.75	Pump suction hose and pipe, replacing
911-011	2.50	Oil cooler, replacing
911-011	2.00	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-017	1.75	Suction cover, replacing
911-024	0.70	Pipe and hose (pump - valve), replacing
911-025	0.70	Pipe and hose (valve - cylinder), replacing
911-026	0.70	Pipe and hose (valve - swing motor), replacing
911-031	2.00	Oil cooler line pipe and hose, replacing
911-032	1.50	Oil cooler line pipe coupling, replacing
911-033	0.90	Oil cooler line bypass valve (check valve), replacing
911-038	4.00	Hydraulic oil tank, replacing
911-042	0.25	Oil drain filter, replacing
911-043	0.25	Servo system filter, replacing
911-051	0.20	Breather, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	0.70	Rupture valve, replacing (boom cylinder)
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)
912-075	0.50	Rupture valve hose or pipe, replacing (dipper arm cylinder)
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.00	Hydraulic pump, replacing

Op.no.	time (h)	Notes
913-013	7.00	Hydraulic pump, replacing seal for input shaft
913-029	0.30	Pump regulator, replacing
914-036	1.25	Servo pump block seal, replacing
914-037	1.25	Servo pump shaft seal, replacing
914-041	0.80	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-055	0.75	Servo pressure, checking and adjusting
914-060	1.25	Servo pump, replacing
914-071	0.50	Servo pipe and hose, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.00	Solenoid valve, replacing
916-043	1.00	Boom, replacing pipe (boom cylinder)
916-044	0.75	Boom, replacing hose (boom cylinder)
916-045	1.00	Boom, replacing pipe (dipper arm cylinder)
916-046	0.50	Boom, replacing hose (dipper arm cylinder)
916-047	1.00	Boom, replacing pipe (bucket cylinder)
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)
916-049	0.75	Dipper arm, replacing pipe (bucket cylinder)
916-091	0.75	Hammer and shear pipe, replacing (for boom)
916-092	0.50	Hammer and shear hose, replacing (for boom)
916-093	0.75	Hammer and shear pipe, replacing (for dipper arm)
916-094	0.50	Hammer and shear hose, replacing (for dipper arm)
916-095	0.50	Hammer and shear hose and pipe, replacing (MCV - 3 way valve)
916-096	1.00	Hammer and shear pedal valve (RCV), replacing
916-097	0.75	Hammer and shear 3-way valve, replacing
916-098	0.75	Hammer and shear pipe and hose, replacing (for 2nd pump flow)
916-099	0.50	Hammer and shear ball valve, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.50	Quickfit pump (gear pump), replacing
924-002	1.00	Quickfit valve, replacing
924-003	0.75	Quickfit solenoid valve, replacing
924-004	0.50	Quickfit control switch, replacing
924-021	2.00	Quickfit hydraulic cylinder bracket (body), replacing
924-041	0.50	Quickfit hydraulic hose, replacing (for boom)
924-042	0.50	Quickfit hydraulic pipe, replacing (for boom)
924-043	0.25	Quickfit hydraulic hose, replacing (for dipper arm)
924-044	0.50	Quickfit hydraulic pipe, replacing (for dipper arm)

Op.no.	time (h)		Notes
924-045	0.75	Quickfit hydraulic cylinder hose, replacing (dipper arm cylinder)	
925-011	1.50	Bucket assembly, replacing	
925-012	0.50	Bucket assembly, removal	
925-013	0.75	Bucket assembly, installation	
97		UNIT, DIGGING	
974-010	12.00	Boom, replacing	15001 - 30000 35001 - 80000 40001 - 80000 110001 - 111046
974-013	4.50	Boom, removal	15001 - 30000 35001 - 80000 40001 - 80000 110001 - 111046
974-014	5.50	Boom, installation	15001 - 30000 35001 - 80000 40001 - 80000 110001 - 111046
974-017	2.00	Boom, replacing pin	
974-018	0.25	Boom grease pipe or hose, replacing	
974-021	2.50	Boom cylinder, replacing	
974-022	2.50	Boom cylinder removed, repacking	
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes	
974-025	4.00	Boom cylinder, repacking in machine	
974-031	1.25	Boom cylinder, removal	
974-032	1.25	Boom cylinder, installation	
975-011	3.50	Dipper arm, removal	15001 - 30000 35001 - 80000 40001 - 80000 110001 - 111046
975-012	3.50	Dipper arm, installation	15001 - 30000 35001 - 80000 40001 - 80000 110001 - 111046
975-014	1.25	Dipper arm cylinder, removal	
975-015	1.25	Dipper arm cylinder, installation	
975-023	0.25	Dipper arm pipe or hose, replacing	
975-024	1.50	Dipper arm connecting rod, replacing	
975-025	2.50	Dipper arm cylinder, replacing	
975-026	3.00	Dipper arm cylinder removed, repacking	
975-028	1.00	Connecting rod yoke, replacing	
975-032	0.50	Connecting rod yoke, removal	
975-035	0.50	Connecting rod yoke, installation	
975-039	9.00	Dipper arm, replacing	15001 - 30000 35001 - 80000 40001 - 80000

Op.no.	time (h)	Notes
		110001 - 111046
975-043	4.00	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-063	4.00	Bucket cylinder, repacking in machine
975-065	1.25	Bucket cylinder, installation
975-069	2.50	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
171-001	1.00	Arrival Inspection, according to Inspection Programme	
171-002	3.00	Delivery Inspection, according to Inspection Programme	
173-002	0.75	Maintenance service, daily	
173-004	1.00	Maintenance service, every 50 hours	
173-007	2.00	Maintenance service, every 250 hours	
173-010	6.00	Maintenance service, every 500 hours	
173-012	5.50	Maintenance service, every 1000 hours	
173-014	10.00	Maintenance service, every 2000 hours	
173-059	0.60	Engine, changing oil and filter	
173-074	1.25	Hydraulic oil tank, changing oil and filter	
173-076	0.25	Hydraulic oil tank, return oil filter change	
173-079	0.90	Swing motor gearbox, changing oil	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-070	6.50	Engine, removing	
210-072	7.00	Engine, installing	
214-012	3.00	Valves, adjusting	15001 - 30000 35001 - 80000 80001 - 110000
214-036	1.00	Valve covers, fitting new gasket	
216-014	4.50	Crankshaft, replacing front oil seal	
216-018	9.00	Crankshaft, replacing rear oil seal	
22		LUBRICATING SYSTEM	
221-022	0.40	Lubrication oil pressure, checking with pressure gauge	15001 - 30000 35001 - 80000 80001 - 110000
223-006	1.25	Oil cooler, replacing	15001 - 30000 35001 - 80000 80001 - 110000

Op.no.	time (h)		Notes
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	15001 - 30000 35001 - 80000 80001 - 110000
233-002	0.70	Feed pump, replacing	
233-004	0.80	Feed pump, checking feed pressure	15001 - 30000 35001 - 80000 80001 - 110000
233-010	0.80	Fuel pump, inspection	15001 - 30000 35001 - 80000 80001 - 110000
233-014	0.40	Fuel filters, replacing	15001 - 30000 35001 - 80000 80001 - 110000
233-015	0.50	Fuel filter extra, replacing	15001 - 30000 35001 - 80000 80001 - 110000
233-020	0.10	Fuel filter, checking	15001 - 30000 35001 - 80000 80001 - 110000
234-010	5.50	Fuel tank, replacing	
234-041	0.50	Fuel filling pump, removing	
234-042	0.50	Fuel filling pump, installing	
237-002	3.00	Injectors, replacing all	
237-004	1.50	Injector, replacing one	
237-037	0.70	Fuel rail pressure, checking	17001 - 30000 35001 - 80000 80001 - 110000
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.50	Silencer, replacing	15001 - 30000 35001 - 80000 80001 - 110000
252-021	1.50	Exhaust pipe, flexible tube, replacing	15001 - 30000 35001 - 80000 80001 - 110000
255-002	0.80	Turbocharger, inspection	15001 - 30000 35001 - 80000 80001 - 110000
255-070	1.50	Turbocharger, removing	
255-071	2.50	Turbocharger, replacing	15001 - 30000 35001 - 80000 80001 - 110000
255-072	1.50	Turbocharger, installing	
256-001	0.25	Air cleaner, cleaning filter element	
256-003	0.25	Air cleaner, primary filter replacing	
256-004	0.25	Air cleaner, secondary filter replacing	
256-006	0.50	Preheating coil, replacing	80001 - 110000

Op.no.	time (h)		Notes
258-002	5.00	Intercooler, replacing	15001 - 30000 35001 - 80000 80001 - 110000
258-022	0.50	Charge air cooler connection (hose, tube), replacing	80001 - 110000
258-030	1.50	Charge air system, inspection	80001 - 110000
26		COOLING SYSTEM	
261-002	0.10	Coolant, checking anti-freeze resistance	
261-004	0.50	Coolant, changing	15001 - 30000 35001 - 80000 80001 - 110000
261-008	5.00	Radiator, replacing	15001 - 30000 35001 - 80000 80001 - 110000
261-008	8.00	Radiator, replacing	10001 - 15000 30001 - 35000
261-012	0.50	Radiator hose upper, replacing	15001 - 30000 35001 - 80000 80001 - 110000
261-014	1.00	Radiator hoses lower, replacing	15001 - 30000 35001 - 80000 80001 - 110000
261-018	0.70	Expansion tank, replacing	15001 - 30000 35001 - 80000 80001 - 110000
261-072	0.25	Coolant filter, changing	
262-098	1.00	Thermostat, replacing	
263-012	1.25	Fan belt and/or alternator belt, replacing	
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension	
263-022	2.00	Fan belt and/or alternator-, compressor belt, replacing all belts	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.60	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-001	0.80	Battery charging capacity, checking	
311-002	0.80	Batteries, replacing	
311-003	0.50	Main switch, replacing	
311-006	0.50	Earth lead to battery, replacing	
311-008	2.00	Starter motor lead to battery, replacing	

Op.no.	time (h)	Notes
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.25	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	1.50	Starter motor, replacing
331-081	0.50	Starter relay, replacing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.50	Horn, replacing
363-002	1.00	Windscreen wiper front, replacing motor
363-003	0.50	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-004	0.50	Switch, replacing
364-050	0.50	Relay (general), replacing
364-052	0.50	Battery relay, replacing
364-056	0.50	Pre-heating relay, replacing
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU
37		CABLE; FUSE; RELAY
372-020	0.25	Fuse (general), replacing
372-091	0.50	Slow blow fuse, replacing
379-011	0.75	Boom wire harness, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	0.50	Engine temperature sensor, replacing
386-007	0.50	Engine oil pressure sensor, replacing
386-011	0.50	Fuel level sender, replacing
386-038	1.00	Engine rotation speed sensor, replacing
386-043	0.50	Travel speed sensor or alarm sensor, replacing
386-044	0.50	Auto idling sensor, replacing
386-088	0.75	Engine rotation speed sensor (camshaft), replacing
39		MISCELLANEOUS
390-902	3.00	CareTrack, installing new
393-001	0.50	Voltage converter, replacing
393-021	0.75	Radio, replacing
395-021	0.50	Antenna, replacing
395-022	1.00	Antenna cable, replacing

Op.no.	time (h)	Notes
395-031	0.50	Speaker, replacing
398-002	0.70	W-ECU, MID142, changing pre-programmed ECU16024 - 80000
398-003	0.70	W-ECU, MID142, changing non-programmed ECU 16024 - 80000

4 POWER TRANSMISSION

43

GEARBOX,

431-021	6.50	Swing gearbox, replacing
431-026	1.00	Swing gearbox removed, replacing seal
431-027	2.50	Swing gearbox removed, replacing shaft
431-031	5.50	Pump gearbox coupling assembly, replacing
431-036	4.50	Pump gearbox flange, replacing
431-126	3.00	Track unit, installation

44

HYDROSTATIC DRIVE

441-021	2.50	Swing motor, replacing
441-022	0.75	Swing motor relief valve, replacing
441-023	4.00	Swing motor, replacing cylinder block
441-024	1.50	Swing motor, replacing plate (brake)
441-025	1.25	Swing motor, replacing brake piston seal
441-026	1.00	Swing motor removed, replacing seal
441-028	0.75	Swing motor brake valve, replacing

49

MISCELLANEOUS

492-031	3.00	Swing ring gear outer seal, replacing	16250 - 30000 36878 - 40000
492-032	9.00	Swing ring gear inner seal, replacing	16250 - 30000 36878 - 40000
492-091	0.50	Ring gear grease pipe, replacing	
492-095	0.70	Swing ring gear cover, removal	80958 - 81100
492-095	0.60	Swing ring gear cover, removal	80001 - 80957
492-096	0.70	Swing ring gear cover, installation	80958 - 81100
492-096	0.60	Swing ring gear cover, installation	80001 - 80957

7 FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT

71

FRAME

716-001	0.80	Counterweight, removing
716-002	0.80	Counterweight, fitting
716-003	2.00	Counterweight, replacing

Op.no.	time (h)	Notes
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	3.00	Front idler, replacing one
775-021	3.50	Sprocket, replacing one
775-032	0.40	Track shoe, replacing one
775-034	1.25	Track chain assembly, removing
775-035	1.75	Track chain assembly, installing
775-051	1.00	Top roller, replacing one
775-061	1.50	Bottom roller, replacing one
775-066	3.00	Bottom roller, replacing seal
775-071	0.90	Track guard, replacing one
775-081	3.00	Track recoil spring (tensioner) assembly, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.50	Cab, removing
810-002	2.00	Cab, installing
810-003	4.50	Operator cab, replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	1.00	Engine hood, replacing
827-091	1.75	Tool box assembly, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	0.75	Door, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.25	Rear-view mirror, changing
843-002	2.00	Windscreen, replacing
843-012	1.00	Rear window, replacing
843-013	1.50	Side window, replacing
843-048	1.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
872-011	1.00	Duct, replacing
872-021	1.00	Defroster hose, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing

Op.no.	time (h)	Notes
873-097	1.50	Heater hose, replacing
874-002	0.75	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	2.50	Compressor, replacing incl draining and filling
874-007	2.00	Belt, replacing
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-081	1.75	Liquid hose, replacing incl. draining and filling
874-082	1.75	Discharge hose, replacing incl. draining and filling
874-083	1.75	Suction hose, replacing incl. draining and filling
874-091	1.00	Switch and controller, replacing
874-093	1.00	Power transistor (ceramic resister), replacing
874-094	1.00	Vent actuator, replacing
874-095	1.00	Mode (foot) actuator, replacing
874-096	1.00	Intake actuator, replacing
874-097	1.00	Shutter assembly, replacing
874-098	1.00	Valve (mix) actuator, replacing

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-001	0.20	Oil return filter, replacing
911-004	0.50	Suction strainer, replacing
911-005	1.75	Pump suction hose and pipe, replacing
911-011	2.50	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-017	1.75	Suction cover, replacing
911-024	0.70	Pipe and hose (pump - valve), replacing
911-025	0.70	Pipe and hose (valve - cylinder), replacing
911-026	0.70	Pipe and hose (valve - swing motor), replacing
911-031	2.00	Oil cooler line pipe and hose, replacing
911-032	1.50	Oil cooler line pipe coupling, replacing
911-033	0.90	Oil cooler line bypass valve (check valve), replacing
911-038	4.00	Hydraulic oil tank, replacing
911-042	0.25	Oil drain filter, replacing
911-043	0.25	Servo system filter, replacing
911-051	0.20	Breather, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	0.70	Rupture valve, replacing (boom cylinder)

Op.no.	time (h)	Notes
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)
912-075	0.50	Rupture valve hose or pipe, replacing (dipper arm cylinder)
913-010	4.00	Hydraulic pump, replacing
913-010	4.00	Hydraulic pump, replacing
913-013	7.00	Hydraulic pump, replacing seal for input shaft
913-029	0.30	Pump regulator, replacing
914-036	1.25	Servo pump block seal, replacing
914-037	1.25	Servo pump shaft seal, replacing
914-041	0.80	Proportional solenoid valve (power shift), replacing
914-060	1.25	Servo pump, replacing
914-071	0.50	Servo pipe and hose, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.00	Solenoid valve, replacing
916-043	1.00	Boom, replacing pipe (boom cylinder)
916-044	0.75	Boom, replacing hose (boom cylinder)
916-045	1.00	Boom, replacing pipe (dipper arm cylinder)
916-046	0.50	Boom, replacing hose (dipper arm cylinder)
916-047	1.00	Boom, replacing pipe (bucket cylinder)
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)
916-049	0.75	Dipper arm, replacing pipe (bucket cylinder)
916-091	0.75	Hammer and shear pipe, replacing (for boom)
916-092	0.50	Hammer and shear hose, replacing (for boom)
916-093	0.75	Hammer and shear pipe, replacing (for dipper arm)
916-094	0.50	Hammer and shear hose, replacing (for dipper arm)
916-095	0.50	Hammer and shear hose and pipe, replacing (MCV - 3 way valve)
916-096	1.00	Hammer and shear pedal valve (RCV), replacing
916-097	0.75	Hammer and shear 3-way valve, replacing
916-098	0.75	Hammer and shear pipe and hose, replacing (for 2nd pump flow)
916-099	0.50	Hammer and shear ball valve, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.50	Quickfit pump (gear pump), replacing
924-002	1.00	Quickfit valve, replacing
924-003	0.75	Quickfit solenoid valve, replacing
924-004	0.50	Quickfit control switch, replacing
924-041	0.50	Quickfit hydraulic hose, replacing (for boom)

Op.no.	time (h)		Notes
924-042	0.50	Quickfit hydraulic pipe, replacing (for boom)	
924-043	0.25	Quickfit hydraulic hose, replacing (for dipper arm)	
924-044	0.50	Quickfit hydraulic pipe, replacing (for dipper arm)	
924-045	0.75	Quickfit hydraulic cylinder hose, replacing (dipper arm cylinder)	
925-011	1.50	Bucket assembly, replacing	
925-012	0.50	Bucket assembly, removal	
925-013	0.50	Bucket assembly, installation	
97		UNIT, DIGGING	
974-010	12.00	Boom, replacing	15001 - 30000 35001 - 80000
974-013	4.50	Boom, removal	15001 - 30000 35001 - 80000 40001 - 80000 110001 - 111046
974-014	5.50	Boom, installation	15001 - 30000 35001 - 80000 40001 - 80000 110001 - 111046
974-017	2.00	Boom, replacing pin	
974-018	0.25	Boom grease pipe or hose, replacing	
974-021	2.50	Boom cylinder, replacing	
974-022	2.50	Boom cylinder removed, repacking	
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes	
974-025	4.00	Boom cylinder, repacking in machine	
974-031	1.25	Boom cylinder, removal	
974-032	1.25	Boom cylinder, installation	
975-011	3.50	Dipper arm, removal	15001 - 30000 35001 - 80000 40001 - 80000 110001 - 111046
975-012	3.50	Dipper arm, installation	15001 - 30000 35001 - 80000 40001 - 80000 110001 - 111046
975-014	1.25	Dipper arm cylinder, removal	
975-015	1.25	Dipper arm cylinder, installation	
975-023	0.25	Dipper arm pipe or hose, replacing	
975-024	1.50	Dipper arm connecting rod, replacing	
975-025	2.50	Dipper arm cylinder, replacing	
975-026	3.00	Dipper arm cylinder removed, repacking	
975-028	1.00	Connecting rod yoke, replacing	
975-032	0.50	Connecting rod yoke, removal	
975-035	0.50	Connecting rod yoke, installation	
975-039	9.00	Dipper arm, replacing	15001 - 30000

Op.no.	time (h)	Notes
		35001 - 80000
		40001 - 80000
		110001 - 111046
975-043	4.00	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-063	4.00	Bucket cylinder, repacking in machine
975-065	1.25	Bucket cylinder, installation
975-069	2.50	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
171-001	1.00	Arrival Inspection, according to Inspection Programme	
171-002	3.00	Delivery Inspection, according to Inspection Programme	
173-002	0.75	Maintenance service, daily	
173-004	1.00	Maintenance service, every 50 hours	
173-007	2.00	Maintenance service, every 250 hours	
173-010	6.00	Maintenance service, every 500 hours	
173-012	5.50	Maintenance service, every 1000 hours	
173-014	10.00	Maintenance service, every 2000 hours	
173-059	0.60	Engine, changing oil and filter	
173-074	1.25	Hydraulic oil tank, changing oil and filter	
173-076	0.25	Hydraulic oil tank, return oil filter change	
173-079	0.90	Swing motor gearbox, changing oil	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-070	6.50	Engine, removing	
210-072	7.00	Engine, installing	
214-012	3.00	Valves, adjusting	15001 - 30000 35001 - 80000 80001 - 110000
214-036	1.00	Valve covers, fitting new gasket	
216-014	4.50	Crankshaft, replacing front oil seal	
216-018	9.00	Crankshaft, replacing rear oil seal	
22		LUBRICATING SYSTEM	
221-022	0.40	Lubrication oil pressure, checking with pressure gauge	15001 - 30000 35001 - 80000 80001 - 110000
223-006	1.25	Oil cooler, replacing	15001 - 30000 35001 - 80000 80001 - 110000

Op.no.	time (h)		Notes
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	15001 - 30000 35001 - 80000 80001 - 110000
233-002	0.70	Feed pump, replacing	
233-004	0.80	Feed pump, checking feed pressure	15001 - 30000 35001 - 80000 80001 - 110000
233-010	0.80	Fuel pump, inspection	15001 - 30000 35001 - 80000 80001 - 110000
233-014	0.40	Fuel filters, replacing	15001 - 30000 35001 - 80000 80001 - 110000
233-015	0.50	Fuel filter extra, replacing	15001 - 30000 35001 - 80000 80001 - 110000
233-020	0.10	Fuel filter, checking	15001 - 30000 35001 - 80000 80001 - 110000
234-010	5.50	Fuel tank, replacing	
234-041	0.50	Fuel filling pump, removing	
234-042	0.50	Fuel filling pump, installing	
237-002	3.00	Injectors, replacing all	
237-004	1.50	Injector, replacing one	
237-037	0.70	Fuel rail pressure, checking	17001 - 30000 35001 - 80000 80001 - 110000
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.50	Silencer, replacing	15001 - 30000 35001 - 80000 80001 - 110000
252-021	1.50	Exhaust pipe, flexible tube, replacing	15001 - 30000 35001 - 80000 80001 - 110000
255-002	0.80	Turbocharger, inspection	15001 - 30000 35001 - 80000 80001 - 110000
255-070	1.50	Turbocharger, removing	
255-071	2.50	Turbocharger, replacing	15001 - 30000 35001 - 80000 80001 - 110000
255-072	1.50	Turbocharger, installing	
256-001	0.25	Air cleaner, cleaning filter element	
256-003	0.25	Air cleaner, primary filter replacing	
256-004	0.25	Air cleaner, secondary filter replacing	
256-006	0.50	Preheating coil, replacing	80001 - 110000

Op.no.	time (h)		Notes
258-002	5.00	Intercooler, replacing	15001 - 30000 35001 - 80000 80001 - 110000
258-022	0.50	Charge air cooler connection (hose, tube), replacing	80001 - 110000
258-030	1.50	Charge air system, inspection	80001 - 110000
26		COOLING SYSTEM	
261-002	0.10	Coolant, checking anti-freeze resistance	
261-004	0.50	Coolant, changing	15001 - 30000 35001 - 80000 80001 - 110000
261-008	5.00	Radiator, replacing	15001 - 30000 35001 - 80000 80001 - 110000
261-008	8.00	Radiator, replacing	10001 - 15000 30001 - 35000
261-012	0.50	Radiator hose upper, replacing	15001 - 30000 35001 - 80000 80001 - 110000
261-014	1.00	Radiator hoses lower, replacing	15001 - 30000 35001 - 80000 80001 - 110000
261-018	0.70	Expansion tank, replacing	15001 - 30000 35001 - 80000 80001 - 110000
261-072	0.25	Coolant filter, changing	
262-098	1.00	Thermostat, replacing	
262-098	1.00	Thermostat, replacing	
263-012	1.25	Fan belt and/or alternator belt, replacing	
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension	
263-022	2.00	Fan belt and/or alternator-, compressor belt, replacing all belts	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.60	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-001	0.80	Battery charging capacity, checking	
311-002	0.80	Batteries, replacing	
311-003	0.50	Main switch, replacing	
311-006	0.50	Earth lead to battery, replacing	

Op.no.	time (h)	Notes
311-008	2.00	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.25	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	1.50	Starter motor, replacing
331-081	0.50	Starter relay, replacing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.50	Horn, replacing
363-002	1.00	Windscreen wiper front, replacing motor
363-003	0.50	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-004	0.50	Switch, replacing
364-050	0.50	Relay (general), replacing
364-052	0.50	Battery relay, replacing
364-056	0.50	Pre-heating relay, replacing
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU
37		CABLE; FUSE; RELAY
372-020	0.25	Fuse (general), replacing
372-091	0.50	Slow blow fuse, replacing
379-011	0.75	Boom wire harness, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	0.50	Engine temperature sensor, replacing
386-007	0.50	Engine oil pressure sensor, replacing
386-011	0.50	Fuel level sender, replacing
386-038	1.00	Engine rotation speed sensor, replacing
386-043	0.50	Travel speed sensor or alarm sensor, replacing
386-044	0.50	Auto idling sensor, replacing
386-088	0.75	Engine rotation speed sensor (camshaft), replacing
39		MISCELLANEOUS
390-902	3.00	CareTrack, installing new
393-001	0.50	Voltage converter, replacing
393-021	0.75	Radio, replacing
395-021	0.50	Antenna, replacing

Op.no.	time (h)		Notes
395-022	1.00	Antenna cable, replacing	
395-031	0.50	Speaker, replacing	
398-002	0.70	W-ECU, MID142, changing pre-programmed ECU16024 - 80000	
398-003	0.70	W-ECU, MID142, changing non-programmed ECU	16024 - 80000
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.50	Swing gearbox, replacing	
431-026	1.00	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	5.50	Pump gearbox coupling assembly, replacing	
431-036	4.50	Pump gearbox flange, replacing	
44		HYDROSTATIC DRIVE	
441-021	2.50	Swing motor, replacing	
441-022	0.75	Swing motor relief valve, replacing	
441-023	4.00	Swing motor, replacing cylinder block	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.25	Swing motor, replacing brake piston seal	
441-026	1.00	Swing motor removed, replacing seal	
441-028	0.75	Swing motor brake valve, replacing	
49		MISCELLANEOUS	
492-031	3.00	Swing ring gear outer seal, replacing	16250 - 30000 36878 - 40000
492-032	9.00	Swing ring gear inner seal, replacing	16250 - 30000 36878 - 40000
492-091	0.50	Ring gear grease pipe, replacing	
492-095	0.70	Swing ring gear cover, removal	80958 - 81100
492-095	0.60	Swing ring gear cover, removal	80001 - 80957
492-096	0.70	Swing ring gear cover, installation	80958 - 81100
492-096	0.60	Swing ring gear cover, installation	80001 - 80957
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	0.80	Counterweight, removing	
716-002	0.80	Counterweight, fitting	
716-003	2.00	Counterweight, replacing	

Op.no.	time (h)	Notes
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	3.00	Front idler, replacing one
775-021	3.50	Sprocket, replacing one
775-032	0.40	Track shoe, replacing one
775-034	1.25	Track chain assembly, removing
775-035	1.75	Track chain assembly, installing
775-051	1.00	Top roller, replacing one
775-061	1.50	Bottom roller, replacing one
775-066	3.00	Bottom roller, replacing seal
775-071	0.90	Track guard, replacing one
775-081	3.00	Track recoil spring (tensioner) assembly, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.50	Cab, removing
810-002	2.00	Cab, installing
810-003	4.50	Operator cab, replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	1.00	Engine hood, replacing
827-091	1.75	Tool box assembly, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	0.75	Door, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.25	Rear-view mirror, changing
843-002	2.00	Windscreen, replacing
843-012	1.00	Rear window, replacing
843-013	1.50	Side window, replacing
843-048	1.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
872-011	1.00	Duct, replacing
872-021	1.00	Defroster hose, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing

Op.no.	time (h)	Notes
873-097	1.50	Heater hose, replacing
874-002	0.75	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	2.50	Compressor, replacing incl draining and filling
874-007	2.00	Belt, replacing
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-081	1.75	Liquid hose, replacing incl. draining and filling
874-082	1.75	Discharge hose, replacing incl. draining and filling
874-083	1.75	Suction hose, replacing incl. draining and filling
874-091	1.00	Switch and controller, replacing
874-093	1.00	Power transistor (ceramic resister), replacing
874-094	1.00	Vent actuator, replacing
874-095	1.00	Mode (foot) actuator, replacing
874-096	1.00	Intake actuator, replacing
874-097	1.00	Shutter assembly, replacing
874-098	1.00	Valve (mix) actuator, replacing

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-001	0.20	Oil return filter, replacing
911-004	0.50	Suction strainer, replacing
911-005	1.75	Pump suction hose and pipe, replacing
911-011	2.50	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-024	0.70	Pipe and hose (pump - valve), replacing
911-025	0.70	Pipe and hose (valve - cylinder), replacing
911-026	0.70	Pipe and hose (valve - swing motor), replacing
911-031	2.00	Oil cooler line pipe and hose, replacing
911-032	1.50	Oil cooler line pipe coupling, replacing
911-033	0.90	Oil cooler line bypass valve (check valve), replacing
911-038	4.00	Hydraulic oil tank, replacing
911-042	0.25	Oil drain filter, replacing
911-043	0.25	Servo system filter, replacing
911-051	0.20	Breather, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	0.70	Rupture valve, replacing (boom cylinder)
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)

Op.no.	time (h)	Notes
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)
912-075	0.50	Rupture valve hose or pipe, replacing (dipper arm cylinder)
913-010	4.00	Hydraulic pump, replacing
913-013	7.00	Hydraulic pump, replacing seal for input shaft
913-029	0.30	Pump regulator, replacing
914-036	1.25	Servo pump block seal, replacing
914-037	1.25	Servo pump shaft seal, replacing
914-041	0.80	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-060	1.25	Servo pump, replacing
914-071	0.50	Servo pipe and hose, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.00	Solenoid valve, replacing
916-043	1.00	Boom, replacing pipe (boom cylinder)
916-044	0.75	Boom, replacing hose (boom cylinder)
916-045	1.00	Boom, replacing pipe (dipper arm cylinder)
916-046	0.50	Boom, replacing hose (dipper arm cylinder)
916-047	1.00	Boom, replacing pipe (bucket cylinder)
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)
916-049	0.75	Dipper arm, replacing pipe (bucket cylinder)
916-091	0.75	Hammer and shear pipe, replacing (for boom)
916-092	0.50	Hammer and shear hose, replacing (for boom)
916-093	0.75	Hammer and shear pipe, replacing (for dipper arm)
916-094	0.50	Hammer and shear hose, replacing (for dipper arm)
916-095	0.50	Hammer and shear hose and pipe, replacing (MCV - 3 way valve)
916-096	1.00	Hammer and shear pedal valve (RCV), replacing
916-097	0.75	Hammer and shear 3-way valve, replacing
916-098	0.75	Hammer and shear pipe and hose, replacing (for 2nd pump flow)
916-099	0.50	Hammer and shear ball valve, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.50	Quickfit pump (gear pump), replacing
924-002	1.00	Quickfit valve, replacing
924-003	0.75	Quickfit solenoid valve, replacing
924-004	0.75	Quickfit control switch, replacing
924-041	0.50	Quickfit hydraulic hose, replacing (for boom)
924-042	0.50	Quickfit hydraulic pipe, replacing (for boom)

Op.no.	time (h)		Notes
924-043	0.25	Quickfit hydraulic hose, replacing (for dipper arm)	
924-044	0.50	Quickfit hydraulic pipe, replacing (for dipper arm)	
924-045	0.75	Quickfit hydraulic cylinder hose, replacing (dipper arm cylinder)	
925-011	1.50	Bucket assembly, replacing	
925-012	0.50	Bucket assembly, removal	
925-013	0.50	Bucket assembly, installation	
97		UNIT, DIGGING	
974-010	12.00	Boom, replacing	15001 - 30000 35001 - 80000 40001 - 80000 110001 - 111046
974-013	4.50	Boom, removal	15001 - 30000 35001 - 80000 110001 - 111046 40001 - 80000
974-014	5.50	Boom, installation	15001 - 30000 35001 - 80000 40001 - 80000 110001 - 111046
974-017	2.00	Boom, replacing pin	
974-018	0.25	Boom grease pipe or hose, replacing	
974-021	2.50	Boom cylinder, replacing	
974-022	2.50	Boom cylinder removed, repacking	
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes	
974-025	4.00	Boom cylinder, repacking in machine	
974-031	1.25	Boom cylinder, removal	
974-032	1.25	Boom cylinder, installation	
975-011	3.50	Dipper arm, removal	15001 - 30000 35001 - 80000 40001 - 80000 110001 - 111046
975-012	3.50	Dipper arm, installation	15001 - 30000 35001 - 80000 40001 - 80000 110001 - 111046
975-014	1.25	Dipper arm cylinder, removal	
975-015	1.25	Dipper arm cylinder, installation	
975-023	0.25	Dipper arm pipe or hose, replacing	
975-024	1.50	Dipper arm connecting rod, replacing	
975-025	2.50	Dipper arm cylinder, replacing	
975-026	3.00	Dipper arm cylinder removed, repacking	
975-028	1.00	Connecting rod yoke, replacing	
975-032	0.50	Connecting rod yoke, removal	
975-035	0.50	Connecting rod yoke, installation	

Op.no.	time (h)		Notes
975-039	9.00	Dipper arm, replacing	15001 - 30000 35001 - 80000 40001 - 80000 110001 - 111046
975-043	4.00	Dipper arm cylinder, repacking in machine	
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes	
975-061	2.50	Bucket cylinder, replacing	
975-062	1.25	Bucket cylinder, removal	
975-063	4.00	Bucket cylinder, repacking in machine	
975-065	1.25	Bucket cylinder, installation	
975-069	2.50	Bucket cylinder removed, repacking	
975-070	0.50	Bucket cylinder removed, replacing bushing	

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
172-002	3.00	Warranty inspection 100 hours	
172-004	8.00	Warranty inspection 1000 hours	
173-002	1.25	Maintenance service, daily	
173-004	1.50	Maintenance service, every 50 hours	
173-007	2.50	Maintenance service, every 250 hours	
173-010	4.50	Maintenance service, every 500 hours	
173-012	6.50	Maintenance service, every 1000 hours	
173-014	12.00	Maintenance service, every 2000 hours	
173-018	12.00	Maintenance service, every 4000 hours	
173-022	13.00	Maintenance service, every 6000 hours	
173-079	0.90	Swing motor gearbox, changing oil	
173-101	0.50	Track motor gearbox, changing oil	
173-401	0.60	Engine oil and filter, changing	
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.25	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	17001 - 30000 35001 - 80000 80001 - 110000
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	10001 - 17000 30001 - 35000
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	10001 - 17000 30001 - 35000
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	17001 - 30000 35001 - 80000 80001 - 110000
21		ENGINE	
214-012	3.00	Valves, adjusting	80001 - 110000
22		LUBRICATING SYSTEM	
221-022	0.40	Lubrication oil pressure, checking with pressure gauge	80001 - 110000
223-006	1.25	Oil cooler, replacing	80001 - 110000
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	80001 - 110000

Op.no.	time (h)		Notes
233-004	0.80	Feed pump, checking feed pressure	80001 - 110000
233-010	0.80	Fuel pump, inspection	80001 - 110000
233-014	0.40	Fuel filters, replacing	80001 - 110000
233-015	0.50	Fuel filter extra, replacing	80001 - 110000
233-020	0.10	Fuel filter, checking	80001 - 110000
234-010	5.50	Fuel tank, replacing	
234-041	0.30	Fuel filling pump, removing	17001 - 30000 35001 - 80000 80001 - 110000
234-042	0.50	Fuel filling pump, installing	17001 - 30000 35001 - 80000 80001 - 110000
237-037	0.70	Fuel rail pressure, checking	17001 - 30000 35001 - 80000 80001 - 110000
26		COOLING SYSTEM	
261-002	0.10	Coolant, checking anti-freeze resistance	
261-008	8.00	Radiator, replacing	10001 - 17000 30001 - 35000
263-012	1.25	Fan belt and/or alternator belt, replacing	17001 - 30000 35001 - 80000 80001 - 110000
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	15717 - 30000 81210 - 110000
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	10001 - 15716 80001 - 81209
300-074	0.70	I-ECU, MID 140, changing pre-programmed ECU	15717 - 30000 81210 - 110000
300-074	0.60	I-ECU, MID 140, changing pre-programmed ECU	10001 - 15716 80001 - 81209
31		BATTERY	
311-002	0.80	Batteries, replacing	10001 - 15716 80001 - 81209
311-002	0.80	Batteries, replacing	15717 - 30000 81210 - 110000
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.00	Alternator, replacing incl function check	17001 - 30000 35001 - 80000

Op.no.	time (h)		Notes
33		STARTING SYSTEM	
331-018	0.70	Starter motor, replacing	17001 - 30000 35001 - 80000
331-081	0.50	Starter relay, replacing	17001 - 30000 35001 - 80000
36		OTHER ELECTRICAL EQUIPMENT	
364-052	0.50	Battery relay, replacing	17001 - 30000 35001 - 80000
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	10001 - 15716 80001 - 81209
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	15717 - 30000 81210 - 110000
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	15717 - 30000 81210 - 110000
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	10001 - 15716 80001 - 81209
39		MISCELLANEOUS	
390-902	3.00	CareTrack, installing new	
398-002	0.70	W-ECU, MID142, changing pre-programmed ECU	10001 - 17000 30001 - 35000 80001 - 81228
398-003	0.70	W-ECU, MID142, changing non-programmed ECU	10001 - 17000 30001 - 35000 80001 - 81228
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.50	Swing gearbox, replacing	17001 - 30000 85001 - 110000
431-053	6.50	Swing unit, replacing	
431-117	1.50	Track gearbox, replacing cover	17001 - 30000 85001 - 110000
431-127	6.00	Track unit, replacing	17001 - 30000 85001 - 110000
44		HYDROSTATIC DRIVE	
441-021	3.00	Swing motor, replacing	17001 - 30000 85001 - 110000
441-022	0.80	Swing motor relief valve, replacing	17001 - 30000 85001 - 110000
441-024	2.00	Swing motor, replacing plate (brake)	17001 - 30000 85001 - 110000
441-025	2.00	Swing motor, replacing brake piston seal	17001 - 30000 85001 - 110000

Op.no.	time (h)		Notes
441-026	0.40	Swing motor removed, replacing seal	17001 - 30000 85001 - 110000
441-026	0.40	Swing motor removed, replacing seal	17001 - 30000 85001 - 110000
441-112	0.70	Track motor relief valve, replacing	17001 - 30000 85001 - 110000
441-112	0.70	Track motor relief valve, replacing	17001 - 30000 85001 - 110000
443-039	1.00	Center passage hose (valve – center passage), replacing	17001 - 30000 85001 - 110000
443-040	1.50	Center passage hose (center passage – motor), replacing	17001 - 30000 85001 - 110000
49		MISCELLANEOUS	
492-031	2.50	Swing ring gear outer seal, replacing	17001 - 30000 85001 - 110000
492-091	0.50	Ring gear grease pipe, replacing	17001 - 30000 85001 - 110000
492-095	0.70	Swing ring gear cover, removal	80003 - 81230
492-095	0.50	Swing ring gear cover, removal	81003 - 110000
492-095	0.60	Swing ring gear cover, removal	80001 - 81002
492-096	0.70	Swing ring gear cover, installation	80003 - 81230
492-096	0.60	Swing ring gear cover, installation	80001 - 81002
492-096	0.60	Swing ring gear cover, installation	81003 - 110000
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	0.80	Counterweight, removing	
716-001	0.80	Counterweight, removing	
716-002	0.80	Counterweight, fitting	
716-002	0.80	Counterweight, fitting	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	10001 - 17000 80001 - 81228
775-021	3.50	Sprocket, replacing one	17001 - 30000 85001 - 110000
775-032	0.40	Track shoe, replacing one	
775-034	1.25	Track chain assembly, removing	17001 - 30000 85001 - 110000
775-035	1.75	Track chain assembly, installing	17001 - 30000 85001 - 110000
775-051	1.00	Top roller, replacing one	

Op.no.	time (h)	Notes	
775-061	1.50	Bottom roller, replacing one	
775-071	0.90	Track guard, replacing one	
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-065	0.50	Gull wing power pack, replacing	
821-066	0.50	Gull wing cylinder, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	
87		AIR CONDITIONING UNIT	
873-006	0.90	Fan motor, replacing	
874-007	1.00	Belt, replacing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-011	2.00	Oil cooler, replacing	
911-015	0.50	Oil level gauge, replacing	
911-024	0.50	Pipe and hose (pump - valve), replacing	
911-033	0.90	Oil cooler line bypass valve (check valve), replacing	
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
911-051	0.20	Breather, replacing	
912-067	0.70	Main pressure relief valve, replacing	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	4.00	Hydraulic pump, replacing	
914-041	0.80	Proportional solenoid valve (power shift), replacing	
914-051	0.30	Accumulator, replacing	50001 - 80000 35001 - 50000 17001 - 30000 85001 - 110000
914-051	0.30	Accumulator, replacing	10001 - 17000 30001 - 35000 80001 - 81228
914-060	1.25	Servo pump, replacing	
914-081	1.75	Remote control valve (lever), replacing	

Op.no.	time (h)	Notes
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.00	Solenoid valve, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
925-011	1.50	Bucket assembly, replacing
97		UNIT, DIGGING
974-021	2.50	Boom cylinder, replacing
975-024	1.50	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-028	1.00	Connecting rod yoke, replacing
975-061	2.50	Bucket cylinder, replacing

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
171-001	1.00	Arrival Inspection, according to Inspection Programme	
171-002	3.00	Delivery Inspection, according to Inspection Programme	
172-002	3.00	Warranty inspection 100 hours	
172-004	8.00	Warranty inspection 1000 hours	
173-002	1.25	Maintenance service, daily	
173-004	1.50	Maintenance service, every 50 hours	
173-007	2.50	Maintenance service, every 250 hours	
173-010	4.50	Maintenance service, every 500 hours	
173-012	6.50	Maintenance service, every 1000 hours	
173-014	12.00	Maintenance service, every 2000 hours	
173-018	12.00	Maintenance service, every 4000 hours	
173-022	13.00	Maintenance service, every 6000 hours	
173-074	1.25	Hydraulic oil tank, changing oil and filter	
173-079	0.90	Swing motor gearbox, changing oil	
173-101	0.50	Track motor gearbox, changing oil	
173-401	0.60	Engine oil and filter, changing	
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.25	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	17001 - 30000 35001 - 80000 80001 - 110000
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	10001 - 17000 30001 - 35000
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	10001 - 17000 30001 - 35000
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	17001 - 30000 35001 - 80000 80001 - 110000
21		ENGINE	
210-070	7.00	Engine, removing	
210-072	7.00	Engine, installing	
211-002	8.00	Cylinder head, replacing gasket	

Op.no.	time (h)		Notes
214-012	3.00	Valves, adjusting	17001 - 30000 35001 - 80000 80001 - 110000
214-036	1.00	Valve covers, fitting new gasket	
216-014	4.50	Crankshaft, replacing front oil seal	
216-018	9.00	Crankshaft, replacing rear oil seal	
22		LUBRICATING SYSTEM	
221-022	0.40	Lubrication oil pressure, checking with pressure gauge	17001 - 30000 35001 - 80000 80001 - 110000
223-006	1.25	Oil cooler, replacing	17001 - 30000 35001 - 80000 80001 - 110000
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	17001 - 30000 35001 - 80000 80001 - 110000
233-002	0.70	Feed pump, replacing	
233-004	0.80	Feed pump, checking feed pressure	17001 - 30000 35001 - 80000 80001 - 110000
233-010	0.80	Fuel pump, inspection	17001 - 30000 35001 - 80000 80001 - 110000
233-014	0.40	Fuel filters, replacing	17001 - 30000 35001 - 80000 80001 - 110000
233-015	0.50	Fuel filter extra, replacing	17001 - 30000 35001 - 80000 80001 - 110000
233-020	0.10	Fuel filter, checking	17001 - 30000 35001 - 80000 80001 - 110000
234-010	5.50	Fuel tank, replacing	
234-041	0.30	Fuel filling pump, removing	17001 - 30000 35001 - 80000 80001 - 110000
234-042	0.50	Fuel filling pump, installing	17001 - 30000 35001 - 80000 80001 - 110000
237-002	3.00	Injectors, replacing all	
237-004	1.50	Injector, replacing one	
237-037	0.70	Fuel rail pressure, checking	17001 - 30000 35001 - 80000 80001 - 110000

Op.no.	time (h)		Notes
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.50	Silencer, replacing	
252-021	1.50	Exhaust pipe, flexible tube, replacing	
255-070	1.50	Turbocharger, removing	
255-071	3.00	Turbocharger, replacing	
255-072	1.50	Turbocharger, installing	
256-001	0.25	Air cleaner, cleaning filter element	
256-003	0.25	Air cleaner, primary filter replacing	
256-004	0.25	Air cleaner, secondary filter replacing	
256-006	0.50	Preheating coil, replacing	
258-002	4.00	Intercooler, replacing	
258-002	8.00	Intercooler, replacing	
258-022	0.50	Charge air cooler connection (hose, tube), replacing	
26		COOLING SYSTEM	
261-002	0.10	Coolant, checking anti-freeze resistance	
261-004	0.75	Coolant, changing	
261-008	8.00	Radiator, replacing	10001 - 17000 30001 - 35000
261-012	0.75	Radiator hose upper, replacing	
261-014	1.50	Radiator hoses lower, replacing	
261-018	1.00	Expansion tank, replacing	
261-072	0.25	Coolant filter, changing	
262-002	1.50	Coolant pump, replacing	
262-098	1.00	Thermostat, replacing	
263-012	1.25	Fan belt and/or alternator belt, replacing	17001 - 30000 35001 - 80000 80001 - 110000
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension	
263-022	2.00	Fan belt and/or alternator-, compressor belt, replacing all belts	
263-022	1.25	Fan belt and/or alternator-, compressor belt, replacing all belts	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	15717 - 30000 81210 - 110000
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	10001 - 15716 80001 - 81209

Op.no.	time (h)		Notes
300-074	0.70	I-ECU, MID 140, changing pre-programmed ECU	15717 - 30000 81210 - 110000
300-074	0.60	I-ECU, MID 140, changing pre-programmed ECU	10001 - 15716 80001 - 81209
31		BATTERY	
311-001	0.80	Battery charging capacity, checking	
311-002	0.80	Batteries, replacing	10001 - 15716 80001 - 81209
311-002	0.80	Batteries, replacing	15717 - 30000 81210 - 110000
311-003	0.50	Main switch, replacing	
311-006	0.50	Earth lead to battery, replacing	
311-008	2.00	Starter motor lead to battery, replacing	
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.00	Alternator, replacing incl function check	17001 - 30000 35001 - 80000
33		STARTING SYSTEM	
331-018	0.70	Starter motor, replacing	17001 - 30000 35001 - 80000
331-081	0.50	Starter relay, replacing	17001 - 30000 35001 - 80000
334-011	0.50	Starter switch (engine start switch), replacing	
35		LIGHTING	
356-056	0.50	Work lighting, replacing one head lamp assy	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.50	Horn, replacing	
362-041	0.50	Rotating beacon, replacing	
362-051	0.50	Travel alarm, replacing	
363-002	1.00	Windscreen wiper front, replacing motor	
363-003	0.50	Windscreen wiper, replacing switch	
363-004	0.50	Windscreen flusher pump, replacing	
363-091	0.50	Windscreen wiper, replacing controller	
364-003	0.60	Control lockout lever switch, replacing	
364-004	0.50	Switch, replacing	
364-050	0.50	Relay (general), replacing	
364-052	0.50	Battery relay, replacing	17001 - 30000 35001 - 80000
364-056	0.50	Pre-heating relay, replacing	
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	10001 - 15716 80001 - 81209
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	15717 - 30000 81210 - 110000
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	15717 - 30000

Op.no.	time (h)		Notes
			81210 - 110000
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	10001 - 15716 80001 - 81209
37		CABLE; FUSE; RELAY	
372-020	0.25	Fuse (general), replacing	
372-091	0.50	Slow blow fuse, replacing	
379-011	0.75	Boom wire harness, replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-006	0.50	Engine temperature sensor, replacing	
386-007	0.50	Engine oil pressure sensor, replacing	
386-011	0.50	Fuel level sender, replacing	
386-017	0.50	Hydraulic oil temperature sensor, replacing	
386-038	1.00	Engine rotation speed sensor, replacing	
386-043	0.50	Travel speed sensor or alarm sensor, replacing	
386-044	0.50	Auto idling sensor, replacing	
386-088	0.75	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-902	3.00	CareTrack, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.75	Radio, replacing	
395-021	0.50	Antenna, replacing	
395-022	1.00	Antenna cable, replacing	
395-031	0.50	Speaker, replacing	
398-002	0.70	W-ECU, MID142, changing pre-programmed ECU	18873 - 85000 85983 - 110000
398-003	0.70	W-ECU, MID142, changing non-programmed ECU	18873 - 85000 85983 - 110000
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.50	Swing gearbox, replacing	17001 - 30000 35001 - 80000 85001 - 110000
431-026	1.00	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	5.50	Pump gearbox coupling assembly, replacing	
431-036	4.50	Pump gearbox flange, replacing	
431-053	6.50	Swing unit, replacing	
431-115	2.50	Track gearbox (removed), replacing floating seal	
431-117	1.50	Track gearbox, replacing cover	17001 - 30000 35001 - 80000

Op.no.	time (h)		Notes
			85001 - 110000
431-125	3.00	Track unit, removal	
431-126	3.00	Track unit, installation	
431-127	6.00	Track unit, replacing	17001 - 30000 35001 - 80000 85001 - 110000
44		HYDROSTATIC DRIVE	
441-017	1.00	Travel motor pressure, checking and adjusting	
441-021	3.00	Swing motor, replacing	17001 - 30000 35001 - 80000 85001 - 110000
441-022	0.80	Swing motor relief valve, replacing	17001 - 30000 35001 - 80000 85001 - 110000
441-023	4.00	Swing motor, replacing cylinder block	
441-024	2.00	Swing motor, replacing plate (brake)	17001 - 30000 35001 - 80000 85001 - 110000
441-025	2.00	Swing motor, replacing brake piston seal	17001 - 30000 35001 - 80000 85001 - 110000
441-026	0.40	Swing motor removed, replacing seal	10001 - 16792 30001 - 31086 80001 - 81230
441-026	0.40	Swing motor removed, replacing seal	85001 - 110000 17001 - 30000 35001 - 50000 50001 - 80000
441-028	0.75	Swing motor brake valve, replacing	
441-032	0.75	Swing motor pressure, checking and adjusting	
441-112	0.70	Track motor relief valve, replacing	85001 - 110000 17001 - 30000 35001 - 50000 50001 - 80000
441-112	0.70	Track motor relief valve, replacing	10001 - 16792 30001 - 31086 80001 - 81230
441-115	2.00	Track motor removed, replacing seal	
443-037	5.00	Center passage, replacing	
443-038	6.50	Center passage, replacing seal kit	
443-039	1.00	Center passage hose (valve – center passage), replacing	17001 - 30000 35001 - 80000 85001 - 110000
443-040	1.50	Center passage hose (center passage – motor), replacing	17001 - 30000 35001 - 80000 85001 - 110000

Op.no.	time (h)		Notes
49		MISCELLANEOUS	
492-031	2.50	Swing ring gear outer seal, replacing	35001 - 35834 17001 - 19281 85001 - 86126
492-031	3.00	Swing ring gear outer seal, replacing	19282 - 30000 86127 - 110000 35835 - 50000
492-032	9.00	Swing ring gear inner seal, replacing	19282 - 30000 86127 - 110000 35835 - 50000
492-091	0.50	Ring gear grease pipe, replacing	17001 - 30000 35001 - 80000 85001 - 110000
492-095	0.70	Swing ring gear cover, removal	80003 - 81230
492-096	0.70	Swing ring gear cover, installation	80003 - 81230
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	0.80	Counterweight, removing	85001 - 110000 17001 - 30000 35001 - 50000 50001 - 80000
716-001	0.80	Counterweight, removing	10001 - 16792 10001 - 81230 30001 - 31086
716-002	0.80	Counterweight, fitting	10001 - 16792 10001 - 81230 30001 - 31086
716-002	0.80	Counterweight, fitting	85001 - 110000 17001 - 30000 35001 - 50000 50001 - 80000
716-003	2.00	Counterweight, replacing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	10001 - 16792 30001 - 31086 80001 - 81230
775-021	3.50	Sprocket, replacing one	85001 - 110000 17001 - 30000 35001 - 50000 50001 - 80000
775-032	0.40	Track shoe, replacing one	
775-033	8.00	Track shoe, replacing each side	

Op.no.	time (h)		Notes
775-034	1.25	Track chain assembly, removing	17001 - 30000 35001 - 80000 85001 - 110000
775-035	1.75	Track chain assembly, installing	17001 - 30000 35001 - 80000 85001 - 110000
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	
775-066	3.00	Bottom roller, replacing seal	
775-071	0.90	Track guard, replacing one	
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.50	Cab, removing	
810-002	2.00	Cab, installing	
810-003	4.50	Operator cab, replacing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	1.00	Engine hood, replacing	
827-091	1.75	Tool box assembly, replacing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	0.75	Door, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.25	Rear-view mirror, changing	
843-002	2.00	Windscreen, replacing	
843-012	1.00	Rear window, replacing	
843-013	1.50	Side window, replacing	
843-048	1.00	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	
87		AIR CONDITIONING UNIT	
870-001	5.00	Cooler and Heater assembly, replacing	
872-001	0.50	Cab filter, replacing	
872-011	1.00	Duct, replacing	
872-021	1.00	Defroster hose, replacing	
873-004	3.00	Heater core, replacing	
873-006	0.90	Fan motor, replacing	
873-011	1.00	Air mix door actuator, replacing	

Op.no.	time (h)	Notes
873-020	1.00	Heat control valve actuator, replacing
873-097	1.50	Heater hose, replacing
874-002	0.75	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	2.50	Compressor, replacing incl draining and filling
874-007	1.00	Belt, replacing
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-014	0.50	Thermostat, replacing
874-081	1.75	Liquid hose, replacing incl. draining and filling
874-082	1.75	Discharge hose, replacing incl. draining and filling
874-083	1.75	Suction hose, replacing incl. draining and filling
874-091	1.00	Switch and controller, replacing
874-093	1.00	Power transistor (ceramic resister), replacing
874-094	1.00	Vent actuator, replacing
874-095	1.00	Mode (foot) actuator, replacing
874-096	1.00	Intake actuator, replacing
874-097	1.00	Shutter assembly, replacing
874-098	1.00	Valve (mix) actuator, replacing

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-001	0.20	Oil return filter, replacing
911-004	0.50	Suction strainer, replacing
911-005	1.75	Pump suction hose and pipe, replacing
911-011	2.00	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-017	2.00	Suction cover, replacing
911-024	0.50	Pipe and hose (pump - valve), replacing
911-025	0.70	Pipe and hose (valve - cylinder), replacing
911-026	0.70	Pipe and hose (valve - swing motor), replacing
911-031	2.00	Oil cooler line pipe and hose, replacing
911-032	1.50	Oil cooler line pipe coupling, replacing
911-033	0.90	Oil cooler line bypass valve (check valve), replacing
911-038	4.00	Hydraulic oil tank, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump

Op.no.	time (h)		Notes
911-042	0.25	Oil drain filter, replacing	
911-043	0.25	Servo system filter, replacing	
911-051	0.20	Breather, replacing	
912-067	0.70	Main pressure relief valve, replacing	
912-071	0.70	Rupture valve, replacing (boom cylinder)	
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)	
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)	
912-075	0.50	Rupture valve hose or pipe, replacing (dipper arm cylinder)	
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	4.00	Hydraulic pump, replacing	
913-013	7.50	Hydraulic pump, replacing seal for input shaft	
913-029	0.30	Pump regulator, replacing	
914-036	1.25	Servo pump block seal, replacing	
914-037	1.25	Servo pump shaft seal, replacing	
914-041	0.80	Proportional solenoid valve (power shift), replacing	
914-051	0.30	Accumulator, replacing	50001 - 80000 35001 - 50000 17001 - 30000 85001 - 110000
914-051	0.30	Accumulator, replacing	10001 - 17000 30001 - 35000 80001 - 81228
914-055	0.75	Servo pressure, checking and adjusting	
914-060	1.25	Servo pump, replacing	
914-071	0.50	Servo pipe and hose, replacing	
914-081	1.75	Remote control valve (lever), replacing	
914-084	1.75	Remote control valve (pedal), replacing	
914-086	1.00	Remote control valve hose, replacing	
914-091	1.00	Solenoid valve, replacing	
916-043	1.00	Boom, replacing pipe (boom cylinder)	
916-044	0.75	Boom, replacing hose (boom cylinder)	
916-045	1.00	Boom, replacing pipe (dipper arm cylinder)	
916-046	0.50	Boom, replacing hose (dipper arm cylinder)	
916-047	1.00	Boom, replacing pipe (bucket cylinder)	
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)	
916-049	0.75	Dipper arm, replacing pipe (bucket cylinder)	
916-091	0.75	Hammer and shear pipe, replacing (for boom)	
916-092	0.50	Hammer and shear hose, replacing (for boom)	
916-093	0.75	Hammer and shear pipe, replacing (for dipper arm)	

Op.no.	time (h)	Notes
916-094	0.50	Hammer and shear hose, replacing (for dipper arm)
916-095	0.50	Hammer and shear hose and pipe, replacing (MCV - 3 way valve)
916-096	1.00	Hammer and shear pedal valve (RCV), replacing
916-097	0.75	Hammer and shear 3-way valve, replacing
916-098	0.75	Hammer and shear pipe and hose, replacing (for 2nd pump flow)
916-099	0.50	Hammer and shear ball valve, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.50	Quickfit pump (gear pump), replacing
924-002	1.00	Quickfit valve, replacing
924-003	0.75	Quickfit solenoid valve, replacing
924-004	0.75	Quickfit control switch, replacing
924-021	2.00	Quickfit hydraulic cylinder bracket (body), replacing
924-041	0.50	Quickfit hydraulic hose, replacing (for boom)
924-042	0.50	Quickfit hydraulic pipe, replacing (for boom)
924-043	0.25	Quickfit hydraulic hose, replacing (for dipper arm)
924-044	0.50	Quickfit hydraulic pipe, replacing (for dipper arm)
924-045	0.75	Quickfit hydraulic cylinder hose, replacing (dipper arm cylinder)
925-011	1.50	Bucket assembly, replacing
925-012	0.75	Bucket assembly, removal
925-013	0.75	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	5.50	Boom, removal
974-014	5.50	Boom, installation
974-017	2.00	Boom, replacing pin
974-018	0.25	Boom grease pipe or hose, replacing
974-021	2.50	Boom cylinder, replacing
974-022	2.50	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	4.00	Boom cylinder, repacking in machine
974-031	1.25	Boom cylinder, removal
974-032	1.25	Boom cylinder, installation
975-011	3.50	Dipper arm, removal
975-012	3.50	Dipper arm, installation
975-014	1.25	Dipper arm cylinder, removal
975-015	1.25	Dipper arm cylinder, installation
975-023	0.25	Dipper arm pipe or hose, replacing
975-024	1.50	Dipper arm connecting rod, replacing

Op.no.	time (h)	Notes
975-025	2.50	Dipper arm cylinder, replacing
975-026	3.00	Dipper arm cylinder removed, repacking
975-028	1.00	Connecting rod yoke, replacing
975-032	0.50	Connecting rod yoke, removal
975-035	0.75	Connecting rod yoke, installation
975-039	6.00	Dipper arm, replacing
975-043	4.50	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-063	4.00	Bucket cylinder, repacking in machine
975-065	1.25	Bucket cylinder, installation
975-069	2.50	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
171-001	1.00	Arrival Inspection, according to Inspection Programme	
171-002	3.00	Delivery Inspection, according to Inspection Programme	
172-002	3.00	Warranty inspection 100 hours	
172-004	8.00	Warranty inspection 1000 hours	
173-002	1.25	Maintenance service, daily	
173-004	1.50	Maintenance service, every 50 hours	
173-007	2.50	Maintenance service, every 250 hours	
173-010	4.50	Maintenance service, every 500 hours	
173-012	6.50	Maintenance service, every 1000 hours	
173-014	12.00	Maintenance service, every 2000 hours	
173-018	12.00	Maintenance service, every 4000 hours	
173-022	13.00	Maintenance service, every 6000 hours	
173-074	1.25	Hydraulic oil tank, changing oil and filter	
173-079	0.90	Swing motor gearbox, changing oil	
173-101	0.50	Track motor gearbox, changing oil	
173-401	0.60	Engine oil and filter, changing	
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.25	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
210-070	7.00	Engine, removing	
210-072	7.00	Engine, installing	
214-012	3.00	Valves, adjusting	17001 - 30000 35001 - 80000 80001 - 110000
214-036	1.00	Valve covers, fitting new gasket	
216-014	4.50	Crankshaft, replacing front oil seal	
216-018	9.00	Crankshaft, replacing rear oil seal	
22		LUBRICATING SYSTEM	
221-022	0.40	Lubrication oil pressure, checking with pressure gauge	17001 - 30000 35001 - 80000 80001 - 110000
223-006	1.25	Oil cooler, replacing	17001 - 30000 35001 - 80000

Op.no.	time (h)		Notes
			80001 - 110000
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	17001 - 30000 35001 - 80000 80001 - 110000
233-002	0.70	Feed pump, replacing	
233-004	0.80	Feed pump, checking feed pressure	17001 - 30000 35001 - 80000 80001 - 110000
233-010	0.80	Fuel pump, inspection	17001 - 30000 35001 - 80000 80001 - 110000
233-014	0.40	Fuel filters, replacing	17001 - 30000 35001 - 80000 80001 - 110000
233-015	0.50	Fuel filter extra, replacing	17001 - 30000 35001 - 80000 80001 - 110000
233-020	0.10	Fuel filter, checking	17001 - 30000 35001 - 80000 80001 - 110000
234-010	5.50	Fuel tank, replacing	
237-002	3.00	Injectors, replacing all	
237-004	1.50	Injector, replacing one	
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.50	Silencer, replacing	
252-021	1.50	Exhaust pipe, flexible tube, replacing	
255-070	1.50	Turbocharger, removing	
255-071	3.00	Turbocharger, replacing	
255-072	1.50	Turbocharger, installing	
256-001	0.25	Air cleaner, cleaning filter element	
256-003	0.25	Air cleaner, primary filter replacing	
256-004	0.25	Air cleaner, secondary filter replacing	
256-006	0.50	Preheating coil, replacing	
258-002	4.00	Intercooler, replacing	
258-022	0.50	Charge air cooler connection (hose, tube), replacing	
26		COOLING SYSTEM	
261-002	0.10	Coolant, checking anti-freeze resistance	
261-004	0.75	Coolant, changing	
261-008	8.00	Radiator, replacing	10001 - 17000 30001 - 35000
261-012	0.75	Radiator hose upper, replacing	
261-014	1.50	Radiator hoses lower, replacing	
261-072	0.25	Coolant filter, changing	

Op.no.	time (h)	Notes
262-098	1.00	Thermostat, replacing
263-012	1.75	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	2.00	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-003	0.50	Main switch, replacing
311-006	0.50	Earth lead to battery, replacing
311-008	2.00	Starter motor lead to battery, replacing
33		STARTING SYSTEM
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.50	Horn, replacing
363-002	1.00	Windscreen wiper front, replacing motor
363-003	0.50	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-004	0.50	Switch, replacing
364-050	0.50	Relay (general), replacing
364-056	0.50	Pre-heating relay, replacing
37		CABLE; FUSE; RELAY
372-020	0.25	Fuse (general), replacing
372-091	0.50	Slow blow fuse, replacing
379-011	0.75	Boom wire harness, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	0.50	Engine temperature sensor, replacing
386-007	0.50	Engine oil pressure sensor, replacing
386-011	0.50	Fuel level sender, replacing
386-038	1.00	Engine rotation speed sensor, replacing
386-043	0.50	Travel speed sensor or alarm sensor, replacing
386-044	0.50	Auto idling sensor, replacing
386-088	0.75	Engine rotation speed sensor (camshaft), replacing

Op.no.	time (h)	Notes	
39		MISCELLANEOUS	
390-902	3.00	CareTrack, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.75	Radio, replacing	
395-021	0.50	Antenna, replacing	
395-022	1.00	Antenna cable, replacing	
395-031	0.50	Speaker, replacing	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-026	1.00	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	5.50	Pump gearbox coupling assembly, replacing	
431-036	4.50	Pump gearbox flange, replacing	
44		HYDROSTATIC DRIVE	
441-023	4.00	Swing motor, replacing cylinder block	
441-028	0.75	Swing motor brake valve, replacing	
49		MISCELLANEOUS	
492-031	3.00	Swing ring gear outer seal, replacing	19282 - 30000 86127 - 110000 35835 - 50000
492-032	9.00	Swing ring gear inner seal, replacing	19282 - 30000 86127 - 110000 35835 - 50000
492-095	0.70	Swing ring gear cover, removal	81003 - 110000
492-095	0.70	Swing ring gear cover, removal	80003 - 81230
492-095	0.70	Swing ring gear cover, removal	81003 - 110000
492-095	0.60	Swing ring gear cover, removal	80001 - 81002
492-096	0.70	Swing ring gear cover, installation	81003 - 110000
492-096	0.70	Swing ring gear cover, installation	80003 - 81230
492-096	0.70	Swing ring gear cover, installation	81003 - 110000
492-096	0.60	Swing ring gear cover, installation	80001 - 81002
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-003	2.00	Counterweight, replacing	

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.50	Cab, removing
810-002	2.00	Cab, installing
810-003	4.50	Operator cab, replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	1.00	Engine hood, replacing
827-091	1.75	Tool box assembly, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	0.75	Door, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.25	Rear-view mirror, changing
843-002	2.00	Windscreen, replacing
843-012	1.00	Rear window, replacing
843-013	1.50	Side window, replacing
843-048	1.00	Door window, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
872-011	1.00	Duct, replacing
872-021	1.00	Defroster hose, replacing
873-004	3.00	Heater core, replacing
873-097	1.50	Heater hose, replacing
874-002	0.75	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	2.50	Compressor, replacing incl draining and filling
874-007	2.00	Belt, replacing
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-081	1.75	Liquid hose, replacing incl. draining and filling
874-082	1.75	Discharge hose, replacing incl. draining and filling
874-083	1.75	Suction hose, replacing incl. draining and filling
874-091	1.00	Switch and controller, replacing
874-093	1.00	Power transistor (ceramic resister), replacing
874-094	1.00	Vent actuator, replacing
874-095	1.00	Mode (foot) actuator, replacing
874-096	1.00	Intake actuator, replacing

Op.no.	time (h)	Notes
874-097	1.00	Shutter assembly, replacing
874-098	1.00	Valve (mix) actuator, replacing

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-001	0.20	Oil return filter, replacing
911-004	0.50	Suction strainer, replacing
911-005	1.75	Pump suction hose and pipe, replacing
911-017	2.00	Suction cover, replacing
911-025	0.70	Pipe and hose (valve - cylinder), replacing
911-026	0.70	Pipe and hose (valve - swing motor), replacing
911-031	2.00	Oil cooler line pipe and hose, replacing
911-032	1.50	Oil cooler line pipe coupling, replacing
911-038	4.00	Hydraulic oil tank, replacing
911-042	0.25	Oil drain filter, replacing
911-043	0.25	Servo system filter, replacing
912-071	0.70	Rupture valve, replacing (boom cylinder)
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)
912-075	0.50	Rupture valve hose or pipe, replacing (dipper arm cylinder)
913-013	7.50	Hydraulic pump, replacing seal for input shaft
913-029	0.30	Pump regulator, replacing
914-036	1.25	Servo pump block seal, replacing
914-037	1.25	Servo pump shaft seal, replacing
914-041	0.80	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-060	1.25	Servo pump, replacing
914-071	0.50	Servo pipe and hose, replacing
914-086	1.00	Remote control valve hose, replacing
916-043	1.00	Boom, replacing pipe (boom cylinder)
916-044	0.75	Boom, replacing hose (boom cylinder)
916-045	1.00	Boom, replacing pipe (dipper arm cylinder)
916-046	0.50	Boom, replacing hose (dipper arm cylinder)
916-047	1.00	Boom, replacing pipe (bucket cylinder)
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)
916-049	0.75	Dipper arm, replacing pipe (bucket cylinder)
916-091	0.75	Hammer and shear pipe, replacing (for boom)
916-092	0.50	Hammer and shear hose, replacing (for boom)

Op.no.	time (h)	Notes
916-093	0.75	Hammer and shear pipe, replacing (for dipper arm)
916-094	0.50	Hammer and shear hose, replacing (for dipper arm)
916-095	0.50	Hammer and shear hose and pipe, replacing (MCV - 3 way valve)
916-096	1.00	Hammer and shear pedal valve (RCV), replacing
916-097	0.75	Hammer and shear 3-way valve, replacing
916-098	0.75	Hammer and shear pipe and hose, replacing (for 2nd pump flow)
916-099	0.50	Hammer and shear ball valve, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.50	Quickfit pump (gear pump), replacing
924-002	1.00	Quickfit valve, replacing
924-003	0.75	Quickfit solenoid valve, replacing
924-004	0.75	Quickfit control switch, replacing
924-041	0.50	Quickfit hydraulic hose, replacing (for boom)
924-042	0.50	Quickfit hydraulic pipe, replacing (for boom)
924-043	0.25	Quickfit hydraulic hose, replacing (for dipper arm)
924-044	0.50	Quickfit hydraulic pipe, replacing (for dipper arm)
924-045	0.75	Quickfit hydraulic cylinder hose, replacing (dipper arm cylinder)
925-012	0.50	Bucket assembly, removal
925-013	0.50	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	5.50	Boom, removal
974-014	5.50	Boom, installation
974-017	2.00	Boom, replacing pin
974-018	0.25	Boom grease pipe or hose, replacing
974-022	2.50	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	4.00	Boom cylinder, repacking in machine
974-031	1.25	Boom cylinder, removal
974-032	1.25	Boom cylinder, installation
975-011	3.50	Dipper arm, removal
975-012	3.50	Dipper arm, installation
975-014	1.25	Dipper arm cylinder, removal
975-015	1.25	Dipper arm cylinder, installation
975-023	0.25	Dipper arm pipe or hose, replacing
975-026	3.00	Dipper arm cylinder removed, repacking
975-032	0.50	Connecting rod yoke, removal
975-035	0.75	Connecting rod yoke, installation

Op.no.	time (h)	Notes
975-039	6.00	Dipper arm, replacing
975-043	4.50	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-062	1.25	Bucket cylinder, removal
975-063	4.00	Bucket cylinder, repacking in machine
975-065	1.25	Bucket cylinder, installation
975-069	2.50	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
171-001	1.00	Arrival Inspection, according to Inspection Programme	
171-002	3.00	Delivery Inspection, according to Inspection Programme	
172-002	3.00	Warranty inspection 100 hours	
172-004	8.00	Warranty inspection 1000 hours	
173-002	1.25	Maintenance service, daily	
173-004	1.50	Maintenance service, every 50 hours	
173-007	2.50	Maintenance service, every 250 hours	
173-010	4.50	Maintenance service, every 500 hours	
173-012	6.50	Maintenance service, every 1000 hours	
173-014	12.00	Maintenance service, every 2000 hours	
173-018	12.00	Maintenance service, every 4000 hours	
173-022	13.00	Maintenance service, every 6000 hours	
173-074	1.25	Hydraulic oil tank, changing oil and filter	
173-079	0.90	Swing motor gearbox, changing oil	
173-101	0.50	Track motor gearbox, changing oil	
173-401	0.60	Engine oil and filter, changing	
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.25	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	17001 - 30000 35001 - 80000 80001 - 110000
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	10001 - 17000 30001 - 35000
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	10001 - 17000 30001 - 35000
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	17001 - 30000 35001 - 80000 80001 - 110000
21		ENGINE	
210-070	7.00	Engine, removing	
210-072	7.00	Engine, installing	
214-012	3.00	Valves, adjusting	17001 - 30000

Op.no.	time (h)		Notes
			35001 - 80000 80001 - 110000
214-036	1.00	Valve covers, fitting new gasket	
216-014	4.50	Crankshaft, replacing front oil seal	
216-018	9.00	Crankshaft, replacing rear oil seal	
22		LUBRICATING SYSTEM	
221-022	0.40	Lubrication oil pressure, checking with pressure gauge	17001 - 30000 35001 - 80000 80001 - 110000
223-006	1.25	Oil cooler, replacing	17001 - 30000 35001 - 80000 80001 - 110000
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	17001 - 30000 35001 - 80000 80001 - 110000
233-002	0.70	Feed pump, replacing	
233-004	0.80	Feed pump, checking feed pressure	17001 - 30000 35001 - 80000 80001 - 110000
233-010	0.80	Fuel pump, inspection	17001 - 30000 35001 - 80000 80001 - 110000
233-014	0.40	Fuel filters, replacing	17001 - 30000 35001 - 80000 80001 - 110000
233-015	0.50	Fuel filter extra, replacing	17001 - 30000 35001 - 80000 80001 - 110000
233-020	0.10	Fuel filter, checking	17001 - 30000 35001 - 80000 80001 - 110000
234-010	5.50	Fuel tank, replacing	
234-041	0.30	Fuel filling pump, removing	17001 - 30000 35001 - 80000 80001 - 110000
234-042	0.50	Fuel filling pump, installing	17001 - 30000 35001 - 80000 80001 - 110000
237-002	3.00	Injectors, replacing all	
237-004	1.50	Injector, replacing one	
237-037	0.70	Fuel rail pressure, checking	17001 - 30000 35001 - 80000 80001 - 110000
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.50	Silencer, replacing	

Op.no.	time (h)		Notes
252-021	1.50	Exhaust pipe, flexible tube, replacing	
255-070	1.50	Turbocharger, removing	
255-071	3.00	Turbocharger, replacing	
255-072	1.50	Turbocharger, installing	
256-001	0.25	Air cleaner, cleaning filter element	
256-003	0.25	Air cleaner, primary filter replacing	
256-004	0.25	Air cleaner, secondary filter replacing	
256-006	0.50	Preheating coil, replacing	
258-002	4.00	Intercooler, replacing	
258-022	0.50	Charge air cooler connection (hose, tube), replacing	
26		COOLING SYSTEM	
261-002	0.10	Coolant, checking anti-freeze resistance	
261-004	0.75	Coolant, changing	
261-008	8.00	Radiator, replacing	30001 - 35000 10001 - 17000
261-012	0.75	Radiator hose upper, replacing	
261-014	1.50	Radiator hoses lower, replacing	
261-072	0.25	Coolant filter, changing	
262-098	1.00	Thermostat, replacing	
263-012	1.25	Fan belt and/or alternator belt, replacing	17001 - 30000 35001 - 80000 80001 - 110000
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension	
263-022	2.00	Fan belt and/or alternator-, compressor belt, replacing all belts	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	15717 - 30000 81210 - 110000
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	10001 - 15716 80001 - 81209
300-074	0.70	I-ECU, MID 140, changing pre-programmed ECU	15717 - 30000 81210 - 110000
300-074	0.60	I-ECU, MID 140, changing pre-programmed ECU	10001 - 15716 80001 - 81209
31		BATTERY	
311-001	0.80	Battery charging capacity, checking	
311-002	0.80	Batteries, replacing	10001 - 15716 80001 - 81209

Op.no.	time (h)		Notes
311-002	0.80	Batteries, replacing	15717 - 30000 81210 - 110000
311-003	0.50	Main switch, replacing	
311-006	0.50	Earth lead to battery, replacing	
311-008	2.00	Starter motor lead to battery, replacing	
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.00	Alternator, replacing incl function check	17001 - 30000 35001 - 80000
33		STARTING SYSTEM	
331-018	0.70	Starter motor, replacing	17001 - 30000 35001 - 80000
331-081	0.50	Starter relay, replacing	17001 - 30000 35001 - 80000
334-011	0.50	Starter switch (engine start switch), replacing	
35		LIGHTING	
356-056	0.50	Work lighting, replacing one head lamp assy	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.50	Horn, replacing	
363-002	1.00	Windscreen wiper front, replacing motor	
363-003	0.50	Windscreen wiper, replacing switch	
363-004	0.50	Windscreen flusher pump, replacing	
363-091	0.50	Windscreen wiper, replacing controller	
364-004	0.50	Switch, replacing	
364-050	0.50	Relay (general), replacing	
364-052	0.50	Battery relay, replacing	17001 - 30000 35001 - 80000
364-056	0.50	Pre-heating relay, replacing	
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	10001 - 15716 80001 - 81209
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	15717 - 30000 81210 - 110000
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	15717 - 30000 81210 - 110000
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	10001 - 15716 80001 - 81209
37		CABLE; FUSE; RELAY	
372-020	0.25	Fuse (general), replacing	
372-091	0.50	Slow blow fuse, replacing	
379-011	0.75	Boom wire harness, replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-006	0.50	Engine temperature sensor, replacing	
386-007	0.50	Engine oil pressure sensor, replacing	

Op.no.	time (h)		Notes
386-011	0.50	Fuel level sender, replacing	
386-038	1.00	Engine rotation speed sensor, replacing	
386-043	0.50	Travel speed sensor or alarm sensor, replacing	
386-044	0.50	Auto idling sensor, replacing	
386-088	0.75	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-902	3.00	CareTrack, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.75	Radio, replacing	
395-021	0.50	Antenna, replacing	
395-022	1.00	Antenna cable, replacing	
395-031	0.50	Speaker, replacing	
398-002	0.70	W-ECU, MID142, changing pre-programmed ECU	18873 - 85000 81228 - 110000
398-003	0.70	W-ECU, MID142, changing non-programmed ECU	18873 - 85000 81228 - 110000
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.50	Swing gearbox, replacing	17001 - 30000 35001 - 80000 85001 - 110000
431-026	1.00	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	5.50	Pump gearbox coupling assembly, replacing	
431-036	4.50	Pump gearbox flange, replacing	
431-053	6.50	Swing unit, replacing	
431-117	1.50	Track gearbox, replacing cover	17001 - 30000 35001 - 80000 85001 - 110000
431-127	6.00	Track unit, replacing	17001 - 30000 35001 - 80000 85001 - 110000
44		HYDROSTATIC DRIVE	
441-021	3.00	Swing motor, replacing	17001 - 30000 35001 - 80000 85001 - 110000
441-022	0.80	Swing motor relief valve, replacing	17001 - 30000 35001 - 80000 85001 - 110000
441-023	4.00	Swing motor, replacing cylinder block	
441-024	2.00	Swing motor, replacing plate (brake)	17001 - 30000

Op.no.	time (h)		Notes
			35001 - 80000 85001 - 110000
441-025	2.00	Swing motor, replacing brake piston seal	17001 - 30000 35001 - 80000 85001 - 110000
441-026	0.40	Swing motor removed, replacing seal	10001 - 16792 30001 - 31086 80001 - 81230
441-026	0.40	Swing motor removed, replacing seal	85001 - 110000 17001 - 30000 35001 - 50000 50001 - 80000
441-028	0.75	Swing motor brake valve, replacing	
441-112	0.70	Track motor relief valve, replacing	85001 - 110000 17001 - 30000 35001 - 50000 50001 - 80000
441-112	0.70	Track motor relief valve, replacing	10001 - 16792 30001 - 31086 80001 - 81230
443-039	1.00	Center passage hose (valve – center passage), replacing	17001 - 30000 35001 - 80000 85001 - 110000
443-040	1.50	Center passage hose (center passage – motor), replacing	17001 - 30000 35001 - 80000 85001 - 110000
49		MISCELLANEOUS	
492-031	2.50	Swing ring gear outer seal, replacing	35001 - 35834 17001 - 19281 85001 - 86126
492-031	3.00	Swing ring gear outer seal, replacing	19282 - 30000 86127 - 110000 35835 - 50000
492-032	9.00	Swing ring gear inner seal, replacing	19282 - 30000 86127 - 110000 35835 - 50000
492-091	0.50	Ring gear grease pipe, replacing	17001 - 30000 35001 - 80000 85001 - 110000
492-095	0.70	Swing ring gear cover, removal	80003 - 81230
492-096	0.70	Swing ring gear cover, installation	80003 - 81230
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	0.80	Counterweight, removing	85001 - 110000

Op.no.	time (h)		Notes
			17001 - 30000
			35001 - 50000
			50001 - 80000
716-001	0.80	Counterweight, removing	10001 - 16792
			10001 - 81230
			30001 - 31086
716-002	0.80	Counterweight, fitting	10001 - 16792
			10001 - 81230
			30001 - 31086
716-002	0.80	Counterweight, fitting	85001 - 110000
			17001 - 30000
			35001 - 50000
			50001 - 80000
716-003	2.00	Counterweight, replacing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	10001 - 16792
			30001 - 31086
			80001 - 81230
775-021	3.50	Sprocket, replacing one	85001 - 110000
			17001 - 30000
			35001 - 50000
			50001 - 80000
775-032	0.40	Track shoe, replacing one	
775-034	1.25	Track chain assembly, removing	17001 - 30000
			35001 - 80000
			85001 - 110000
775-035	1.75	Track chain assembly, installing	17001 - 30000
			35001 - 80000
			85001 - 110000
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	
775-066	3.00	Bottom roller, replacing seal	
775-071	0.90	Track guard, replacing one	
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.50	Cab, removing	
810-002	2.00	Cab, installing	
810-003	4.50	Operator cab, replacing	

Op.no.	time (h)	Notes
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	1.00	Engine hood, replacing
827-091	1.75	Tool box assembly, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	0.75	Door, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.25	Rear-view mirror, changing
843-002	2.00	Windscreen, replacing
843-012	1.00	Rear window, replacing
843-013	1.50	Side window, replacing
843-048	1.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
872-011	1.00	Duct, replacing
872-021	1.00	Defroster hose, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-097	1.50	Heater hose, replacing
874-002	0.75	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	2.50	Compressor, replacing incl draining and filling
874-007	1.00	Belt, replacing
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-081	1.75	Liquid hose, replacing incl. draining and filling
874-082	1.75	Discharge hose, replacing incl. draining and filling
874-083	1.75	Suction hose, replacing incl. draining and filling
874-091	1.00	Switch and controller, replacing
874-093	1.00	Power transistor (ceramic resister), replacing
874-094	1.00	Vent actuator, replacing
874-095	1.00	Mode (foot) actuator, replacing
874-096	1.00	Intake actuator, replacing
874-097	1.00	Shutter assembly, replacing
874-098	1.00	Valve (mix) actuator, replacing

Op.no.	time (h)	Notes	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-001	0.20	Oil return filter, replacing	
911-004	0.50	Suction strainer, replacing	
911-005	1.75	Pump suction hose and pipe, replacing	
911-011	2.00	Oil cooler, replacing	
911-015	0.50	Oil level gauge, replacing	
911-017	2.00	Suction cover, replacing	
911-024	0.50	Pipe and hose (pump - valve), replacing	
911-025	0.70	Pipe and hose (valve - cylinder), replacing	
911-026	0.70	Pipe and hose (valve - swing motor), replacing	
911-031	2.00	Oil cooler line pipe and hose, replacing	
911-032	1.50	Oil cooler line pipe coupling, replacing	
911-033	0.90	Oil cooler line bypass valve (check valve), replacing	
911-038	4.00	Hydraulic oil tank, replacing	
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
911-042	0.25	Oil drain filter, replacing	
911-043	0.25	Servo system filter, replacing	
911-051	0.20	Breather, replacing	
912-067	0.70	Main pressure relief valve, replacing	
912-071	0.70	Rupture valve, replacing (boom cylinder)	
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)	
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)	
912-075	0.50	Rupture valve hose or pipe, replacing (dipper arm cylinder)	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	4.00	Hydraulic pump, replacing	
913-013	7.50	Hydraulic pump, replacing seal for input shaft	
913-029	0.30	Pump regulator, replacing	
914-036	1.25	Servo pump block seal, replacing	
914-037	1.25	Servo pump shaft seal, replacing	
914-041	0.80	Proportional solenoid valve (power shift), replacing	
914-051	0.30	Accumulator, replacing	50001 - 80000 35001 - 50000 17001 - 30000 85001 - 110000
914-051	0.30	Accumulator, replacing	10001 - 17000 30001 - 35000 80001 - 81228

Op.no.	time (h)	Notes
914-060	1.25	Servo pump, replacing
914-071	0.50	Servo pipe and hose, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.00	Solenoid valve, replacing
916-043	1.00	Boom, replacing pipe (boom cylinder)
916-044	0.75	Boom, replacing hose (boom cylinder)
916-045	1.00	Boom, replacing pipe (dipper arm cylinder)
916-046	0.50	Boom, replacing hose (dipper arm cylinder)
916-047	1.00	Boom, replacing pipe (bucket cylinder)
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)
916-049	0.75	Dipper arm, replacing pipe (bucket cylinder)
916-091	0.75	Hammer and shear pipe, replacing (for boom)
916-092	0.50	Hammer and shear hose, replacing (for boom)
916-093	0.75	Hammer and shear pipe, replacing (for dipper arm)
916-094	0.50	Hammer and shear hose, replacing (for dipper arm)
916-095	0.50	Hammer and shear hose and pipe, replacing (MCV - 3 way valve)
916-096	1.00	Hammer and shear pedal valve (RCV), replacing
916-097	0.75	Hammer and shear 3-way valve, replacing
916-098	0.75	Hammer and shear pipe and hose, replacing (for 2nd pump flow)
916-099	0.50	Hammer and shear ball valve, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.50	Quickfit pump (gear pump), replacing
924-002	1.00	Quickfit valve, replacing
924-003	0.75	Quickfit solenoid valve, replacing
924-004	0.50	Quickfit control switch, replacing
924-041	0.50	Quickfit hydraulic hose, replacing (for boom)
924-042	0.50	Quickfit hydraulic pipe, replacing (for boom)
924-043	0.25	Quickfit hydraulic hose, replacing (for dipper arm)
924-044	0.50	Quickfit hydraulic pipe, replacing (for dipper arm)
924-045	0.75	Quickfit hydraulic cylinder hose, replacing (dipper arm cylinder)
925-011	1.50	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.50	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	5.50	Boom, removal
974-014	5.50	Boom, installation

Op.no.	time (h)	Notes
974-017	2.00	Boom, replacing pin
974-018	0.25	Boom grease pipe or hose, replacing
974-021	2.50	Boom cylinder, replacing
974-022	2.50	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	4.00	Boom cylinder, repacking in machine
974-031	1.25	Boom cylinder, removal
974-032	1.25	Boom cylinder, installation
975-011	3.50	Dipper arm, removal
975-012	3.50	Dipper arm, installation
975-014	1.25	Dipper arm cylinder, removal
975-015	1.25	Dipper arm cylinder, installation
975-023	0.25	Dipper arm pipe or hose, replacing
975-024	1.50	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-026	3.00	Dipper arm cylinder removed, repacking
975-028	1.00	Connecting rod yoke, replacing
975-032	0.50	Connecting rod yoke, removal
975-035	0.75	Connecting rod yoke, installation
975-039	6.00	Dipper arm, replacing
975-043	4.50	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-063	4.00	Bucket cylinder, repacking in machine
975-065	1.25	Bucket cylinder, installation
975-069	2.50	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
171-001	1.00	Arrival Inspection, according to Inspection Programme	
171-002	3.00	Delivery Inspection, according to Inspection Programme	
172-002	3.00	Warranty inspection 100 hours	
172-004	8.00	Warranty inspection 1000 hours	
173-002	1.25	Maintenance service, daily	
173-004	1.50	Maintenance service, every 50 hours	
173-007	2.50	Maintenance service, every 250 hours	
173-010	4.50	Maintenance service, every 500 hours	
173-012	6.50	Maintenance service, every 1000 hours	
173-014	12.00	Maintenance service, every 2000 hours	
173-018	12.00	Maintenance service, every 4000 hours	
173-022	13.00	Maintenance service, every 6000 hours	
173-074	1.25	Hydraulic oil tank, changing oil and filter	
173-079	0.90	Swing motor gearbox, changing oil	
173-101	0.50	Track motor gearbox, changing oil	
173-401	0.60	Engine oil and filter, changing	
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.25	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	17001 - 30000 35001 - 80000 80001 - 110000
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	10001 - 17000 30001 - 35000
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	10001 - 17000 30001 - 35000
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	17001 - 30000 35001 - 80000 80001 - 110000
21		ENGINE	
210-070	7.00	Engine, removing	
210-072	7.00	Engine, installing	
214-012	3.00	Valves, adjusting	17001 - 30000

Op.no.	time (h)		Notes
			80001 - 110000 35001 - 80000
214-036	1.00	Valve covers, fitting new gasket	
216-014	4.50	Crankshaft, replacing front oil seal	
216-018	9.00	Crankshaft, replacing rear oil seal	
22		LUBRICATING SYSTEM	
221-022	0.40	Lubrication oil pressure, checking with pressure gauge	17001 - 30000 80001 - 110000 35001 - 80000
223-006	1.25	Oil cooler, replacing	17001 - 30000 80001 - 110000 35001 - 80000
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	17001 - 30000 80001 - 110000 35001 - 80000
233-002	0.70	Feed pump, replacing	
233-004	0.80	Feed pump, checking feed pressure	17001 - 30000 80001 - 110000 35001 - 80000
233-010	0.80	Fuel pump, inspection	17001 - 30000 80001 - 110000 35001 - 80000
233-014	0.40	Fuel filters, replacing	17001 - 30000 80001 - 110000 35001 - 80000
233-015	0.50	Fuel filter extra, replacing	17001 - 30000 80001 - 110000 35001 - 80000
233-020	0.10	Fuel filter, checking	17001 - 30000 80001 - 110000 35001 - 80000
234-010	5.50	Fuel tank, replacing	
234-041	0.30	Fuel filling pump, removing	17001 - 30000 35001 - 80000 80001 - 110000
234-042	0.50	Fuel filling pump, installing	17001 - 30000 35001 - 80000 80001 - 110000
237-002	3.00	Injectors, replacing all	
237-004	1.50	Injector, replacing one	
237-037	0.70	Fuel rail pressure, checking	17001 - 30000 35001 - 80000 80001 - 110000
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.50	Silencer, replacing	

Op.no.	time (h)		Notes
252-021	1.50	Exhaust pipe, flexible tube, replacing	
255-070	1.50	Turbocharger, removing	
255-071	3.00	Turbocharger, replacing	
255-072	1.50	Turbocharger, installing	
256-001	0.25	Air cleaner, cleaning filter element	
256-003	0.25	Air cleaner, primary filter replacing	
256-004	0.25	Air cleaner, secondary filter replacing	
256-006	0.50	Preheating coil, replacing	
258-002	4.00	Intercooler, replacing	
258-022	0.50	Charge air cooler connection (hose, tube), replacing	
26		COOLING SYSTEM	
261-002	0.10	Coolant, checking anti-freeze resistance	
261-004	0.75	Coolant, changing	
261-008	8.00	Radiator, replacing	10001 - 17000 30001 - 35000
261-012	0.75	Radiator hose upper, replacing	
261-014	1.50	Radiator hoses lower, replacing	
261-072	0.25	Coolant filter, changing	
262-098	1.00	Thermostat, replacing	
263-012	1.25	Fan belt and/or alternator belt, replacing	17001 - 30000 35001 - 80000 80001 - 110000
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension	
263-022	2.00	Fan belt and/or alternator-, compressor belt, replacing all belts	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	15717 - 30000 81210 - 110000
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	10001 - 15716 80001 - 81209
300-074	0.70	I-ECU, MID 140, changing pre-programmed ECU	15717 - 30000 81210 - 110000
300-074	0.60	I-ECU, MID 140, changing pre-programmed ECU	10001 - 15716 80001 - 81209
31		BATTERY	
311-001	0.80	Battery charging capacity, checking	
311-002	0.80	Batteries, replacing	10001 - 15716 80001 - 81209

Op.no.	time (h)		Notes
311-002	0.80	Batteries, replacing	15717 - 30000 81210 - 110000
311-003	0.50	Main switch, replacing	
311-006	0.50	Earth lead to battery, replacing	
311-008	2.00	Starter motor lead to battery, replacing	
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.00	Alternator, replacing incl function check	17001 - 30000 35001 - 80000
33		STARTING SYSTEM	
331-018	0.70	Starter motor, replacing	17001 - 30000 35001 - 80000
331-081	0.50	Starter relay, replacing	17001 - 30000 35001 - 80000
334-011	0.50	Starter switch (engine start switch), replacing	
35		LIGHTING	
356-056	0.50	Work lighting, replacing one head lamp assy	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.50	Horn, replacing	
363-002	1.00	Windscreen wiper front, replacing motor	
363-003	0.50	Windscreen wiper, replacing switch	
363-004	0.50	Windscreen flusher pump, replacing	
363-091	0.50	Windscreen wiper, replacing controller	
364-004	0.50	Switch, replacing	
364-052	0.50	Battery relay, replacing	17001 - 30000 35001 - 80000
364-056	0.50	Pre-heating relay, replacing	
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	10001 - 15716 80001 - 81209
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	15717 - 30000 81210 - 110000
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	15717 - 30000 81210 - 110000
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	10001 - 15716 80001 - 81209
37		CABLE; FUSE; RELAY	
372-020	0.25	Fuse (general), replacing	
372-091	0.50	Slow blow fuse, replacing	
379-011	0.75	Boom wire harness, replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-006	0.50	Engine temperature sensor, replacing	
386-007	0.50	Engine oil pressure sensor, replacing	
386-011	0.50	Fuel level sender, replacing	

Op.no.	time (h)		Notes
386-038	1.00	Engine rotation speed sensor, replacing	
386-043	0.50	Travel speed sensor or alarm sensor, replacing	
386-044	0.50	Auto idling sensor, replacing	
386-088	0.75	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-902	3.00	CareTrack, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.75	Radio, replacing	
395-021	0.50	Antenna, replacing	
395-022	1.00	Antenna cable, replacing	
395-031	0.50	Speaker, replacing	
398-002	0.70	W-ECU, MID142, changing pre-programmed ECU	17000 - 85000 85983 - 110000
398-003	0.70	W-ECU, MID142, changing non-programmed ECU	17000 - 85000 85983 - 110000
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.50	Swing gearbox, replacing	17001 - 30000 35001 - 80000 85001 - 110000
431-026	1.00	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	5.50	Pump gearbox coupling assembly, replacing	
431-036	4.50	Pump gearbox flange, replacing	
431-053	6.50	Swing unit, replacing	
431-117	1.50	Track gearbox, replacing cover	17001 - 30000 35001 - 80000 85001 - 110000
431-127	6.00	Track unit, replacing	17001 - 30000 35001 - 80000 85001 - 110000
44		HYDROSTATIC DRIVE	
441-021	3.00	Swing motor, replacing	17001 - 30000 35001 - 80000 85001 - 110000
441-022	0.80	Swing motor relief valve, replacing	17001 - 30000 35001 - 80000 85001 - 110000
441-023	4.00	Swing motor, replacing cylinder block	
441-024	2.00	Swing motor, replacing plate (brake)	17001 - 30000 35001 - 80000

Op.no.	time (h)		Notes
			85001 - 110000
441-025	2.00	Swing motor, replacing brake piston seal	17001 - 30000 35001 - 80000 85001 - 110000
441-026	0.40	Swing motor removed, replacing seal	10001 - 16792 30001 - 31086 80001 - 81230
441-026	0.40	Swing motor removed, replacing seal	85001 - 110000 17001 - 30000 35001 - 50000 50001 - 80000
441-028	0.75	Swing motor brake valve, replacing	
441-112	0.70	Track motor relief valve, replacing	85001 - 110000 17001 - 30000 35001 - 50000 50001 - 80000
441-112	0.70	Track motor relief valve, replacing	10001 - 16792 30001 - 31086 80001 - 81230
443-039	1.00	Center passage hose (valve – center passage), replacing	17001 - 30000 35001 - 80000 85001 - 110000
443-040	1.50	Center passage hose (center passage – motor), replacing	17001 - 30000 35001 - 80000 85001 - 110000
49		MISCELLANEOUS	
492-031	2.50	Swing ring gear outer seal, replacing	35001 - 35834 17001 - 19281 85001 - 86126
492-031	3.00	Swing ring gear outer seal, replacing	19282 - 30000 86127 - 110000 35835 - 50000
492-032	9.00	Swing ring gear inner seal, replacing	19282 - 30000 86127 - 110000 35835 - 50000
492-091	0.50	Ring gear grease pipe, replacing	17001 - 30000 35001 - 80000 85001 - 110000
492-095	0.70	Swing ring gear cover, removal	80003 - 81230
492-096	0.70	Swing ring gear cover, installation	80003 - 81230
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	0.80	Counterweight, removing	17001 - 30000 85001 - 110000

Op.no.	time (h)		Notes
			35001 - 50000
			50001 - 80000
716-001	0.80	Counterweight, removing	10001 - 16792
			10001 - 81230
			30001 - 31086
716-002	0.80	Counterweight, fitting	10001 - 16792
			10001 - 81230
			30001 - 31086
716-002	0.80	Counterweight, fitting	17001 - 30000
			85001 - 110000
			35001 - 50000
			50001 - 80000
716-003	2.00	Counterweight, replacing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	10001 - 16792
			30001 - 31086
			80001 - 81230
775-021	3.50	Sprocket, replacing one	85001 - 110000
			17001 - 30000
			35001 - 50000
			50001 - 80000
775-032	0.40	Track shoe, replacing one	
775-034	1.25	Track chain assembly, removing	17001 - 30000
			35001 - 80000
			85001 - 110000
775-035	1.75	Track chain assembly, installing	17001 - 30000
			35001 - 80000
			85001 - 110000
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	
775-066	3.00	Bottom roller, replacing seal	
775-071	0.90	Track guard, replacing one	
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.50	Cab, removing	
810-002	2.00	Cab, installing	
810-003	4.50	Operator cab, replacing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	1.00	Engine hood, replacing	

Op.no.	time (h)	Notes
827-091	1.75	Tool box assembly, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	0.75	Door, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.25	Rear-view mirror, changing
843-002	2.00	Windscreen, replacing
843-012	1.00	Rear window, replacing
843-013	1.50	Side window, replacing
843-048	1.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
872-011	1.00	Duct, replacing
872-021	1.00	Defroster hose, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-097	1.50	Heater hose, replacing
874-002	0.75	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	2.50	Compressor, replacing incl draining and filling
874-007	1.00	Belt, replacing
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-081	1.75	Liquid hose, replacing incl. draining and filling
874-082	1.75	Discharge hose, replacing incl. draining and filling
874-083	1.75	Suction hose, replacing incl. draining and filling
874-091	1.00	Switch and controller, replacing
874-093	1.00	Power transistor (ceramic resister), replacing
874-094	1.00	Vent actuator, replacing
874-095	1.00	Mode (foot) actuator, replacing
874-096	1.00	Intake actuator, replacing
874-097	1.00	Shutter assembly, replacing
874-098	1.00	Valve (mix) actuator, replacing

Op.no.	time (h)	Notes	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-001	0.20	Oil return filter, replacing	
911-004	0.50	Suction strainer, replacing	
911-005	1.75	Pump suction hose and pipe, replacing	
911-011	2.00	Oil cooler, replacing	
911-015	0.50	Oil level gauge, replacing	
911-017	2.00	Suction cover, replacing	
911-024	0.50	Pipe and hose (pump - valve), replacing	
911-025	0.70	Pipe and hose (valve - cylinder), replacing	
911-026	0.70	Pipe and hose (valve - swing motor), replacing	
911-031	2.00	Oil cooler line pipe and hose, replacing	
911-032	1.50	Oil cooler line pipe coupling, replacing	
911-033	0.90	Oil cooler line bypass valve (check valve), replacing	
911-038	4.00	Hydraulic oil tank, replacing	
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
911-042	0.25	Oil drain filter, replacing	
911-043	0.25	Servo system filter, replacing	
911-051	0.20	Breather, replacing	
912-067	0.70	Main pressure relief valve, replacing	
912-071	0.70	Rupture valve, replacing (boom cylinder)	
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)	
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)	
912-075	0.50	Rupture valve hose or pipe, replacing (dipper arm cylinder)	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	4.00	Hydraulic pump, replacing	
913-013	7.50	Hydraulic pump, replacing seal for input shaft	
913-029	0.30	Pump regulator, replacing	
914-036	1.25	Servo pump block seal, replacing	
914-037	1.25	Servo pump shaft seal, replacing	
914-041	0.80	Proportional solenoid valve (power shift), replacing	
914-051	0.30	Accumulator, replacing	50001 - 80000 35001 - 50000 17001 - 30000 85001 - 110000
914-051	0.30	Accumulator, replacing	10001 - 17000 30001 - 35000 80001 - 81228

Op.no.	time (h)	Notes
914-060	1.25	Servo pump, replacing
914-071	0.50	Servo pipe and hose, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.00	Solenoid valve, replacing
916-043	1.00	Boom, replacing pipe (boom cylinder)
916-044	0.75	Boom, replacing hose (boom cylinder)
916-045	1.00	Boom, replacing pipe (dipper arm cylinder)
916-046	0.50	Boom, replacing hose (dipper arm cylinder)
916-047	1.00	Boom, replacing pipe (bucket cylinder)
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)
916-049	0.75	Dipper arm, replacing pipe (bucket cylinder)
916-091	0.75	Hammer and shear pipe, replacing (for boom)
916-092	0.50	Hammer and shear hose, replacing (for boom)
916-093	0.75	Hammer and shear pipe, replacing (for dipper arm)
916-094	0.50	Hammer and shear hose, replacing (for dipper arm)
916-095	0.50	Hammer and shear hose and pipe, replacing (MCV - 3 way valve)
916-096	1.00	Hammer and shear pedal valve (RCV), replacing
916-097	0.75	Hammer and shear 3-way valve, replacing
916-098	0.75	Hammer and shear pipe and hose, replacing (for 2nd pump flow)
916-099	0.50	Hammer and shear ball valve, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.50	Quickfit pump (gear pump), replacing
924-002	1.00	Quickfit valve, replacing
924-003	0.75	Quickfit solenoid valve, replacing
924-004	0.50	Quickfit control switch, replacing
924-041	0.50	Quickfit hydraulic hose, replacing (for boom)
924-042	0.50	Quickfit hydraulic pipe, replacing (for boom)
924-043	0.25	Quickfit hydraulic hose, replacing (for dipper arm)
924-044	0.50	Quickfit hydraulic pipe, replacing (for dipper arm)
924-045	0.75	Quickfit hydraulic cylinder hose, replacing (dipper arm cylinder)
925-011	1.50	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.50	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	5.50	Boom, removal
974-014	5.50	Boom, installation

Op.no.	time (h)	Notes
974-017	2.00	Boom, replacing pin
974-018	0.25	Boom grease pipe or hose, replacing
974-021	2.50	Boom cylinder, replacing
974-022	2.50	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	4.00	Boom cylinder, repacking in machine
974-031	1.25	Boom cylinder, removal
974-032	1.25	Boom cylinder, installation
975-011	3.50	Dipper arm, removal
975-012	3.50	Dipper arm, installation
975-014	1.25	Dipper arm cylinder, removal
975-015	1.25	Dipper arm cylinder, installation
975-023	0.25	Dipper arm pipe or hose, replacing
975-024	1.50	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-026	3.00	Dipper arm cylinder removed, repacking
975-028	1.00	Connecting rod yoke, replacing
975-032	0.50	Connecting rod yoke, removal
975-035	0.75	Connecting rod yoke, installation
975-039	6.00	Dipper arm, replacing
975-043	4.50	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-063	4.00	Bucket cylinder, repacking in machine
975-065	1.25	Bucket cylinder, installation
975-069	2.50	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes
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1 STANDARD PARTS, SERVICE

17 SERVICE

170-005	0.25	Start of VCADS Pro computer and reading machine data
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	3.00	Delivery Inspection, according to Inspection Programme
173-002	1.00	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	4.50	Maintenance service, every 500 hours
173-012	6.50	Maintenance service, every 1000 hours
173-014	9.50	Maintenance service, every 2000 hours
173-059	0.60	Engine, changing oil and filter
173-074	1.25	Hydraulic oil tank, changing oil and filter
173-076	0.25	Hydraulic oil tank, return oil filter change
173-077	0.20	Hydraulic oil tank, changing breather filter
173-079	1.00	Swing motor gearbox, changing oil
173-101	0.50	Track motor gearbox, changing oil

2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-068	1.75	E-ECU, MID 128, changing non-programmed ECU
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU

21 ENGINE

210-070	8.00	Engine, removing
210-072	8.00	Engine, installing
211-002	12.00	Cylinder head, replacing gasket
214-012	3.50	Valves, adjusting
214-036	1.00	Valve covers, fitting new gasket
216-014	3.50	Crankshaft, replacing front oil seal
216-014	3.50	Crankshaft, replacing front oil seal
216-018	10.00	Crankshaft, replacing rear oil seal
217-005	14.00	Oil level sensor, changing

23 FUEL SYSTEM

233-001	0.30	Fuel system, bleeding
233-002	1.75	Feed pump, replacing
233-004	0.20	Feed pump, checking feed pressure

Op.no.	time (h)	Notes
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
234-010	5.00	Fuel tank, replacing
234-041	0.50	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-012	6.00	Unit injector, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.50	Silencer, replacing
252-021	1.50	Exhaust pipe, flexible tube, replacing
255-002	0.80	Turbocharger, inspection
255-070	2.00	Turbocharger, removing
255-071	4.00	Turbocharger, replacing
255-072	2.00	Turbocharger, installing
256-001	0.25	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.40	Preheating coil, replacing
258-002	5.00	Intercooler, replacing
258-002	7.00	Intercooler, replacing
258-022	0.75	Charge air cooler connection (hose, tube), replacing
26		COOLING SYSTEM
261-002	0.25	Coolant, checking anti-freeze resistance
261-004	1.00	Coolant, changing
261-008	7.50	Radiator, replacing
261-012	0.75	Radiator hose upper, replacing
261-014	1.50	Radiator hoses lower, replacing
261-018	1.00	Expansion tank, replacing
261-072	0.25	Coolant filter, changing
262-002	3.00	Coolant pump, replacing
262-098	1.50	Thermostat, replacing
263-012	0.60	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	1.50	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU

Op.no.	time (h)	Notes
300-074	0.60	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	0.80	Batteries, replacing
311-003	0.50	Main switch, replacing
311-006	0.50	Earth lead to battery, replacing
311-008	2.00	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	1.25	Starter motor, tests
331-081	0.50	Starter relay, replacing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.50	Horn, replacing
362-041	0.50	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.00	Windscreen wiper front, replacing motor
363-003	0.50	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-004	0.50	Switch, replacing
364-050	0.50	Relay (general), replacing
364-052	0.50	Battery relay, replacing
364-056	0.50	Pre-heating relay, replacing
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU
37		CABLE; FUSE; RELAY
372-020	0.25	Fuse (general), replacing
372-091	0.50	Slow blow fuse, replacing
379-011	0.75	Boom wire harness, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	1.50	Engine temperature sensor, replacing
386-007	0.60	Engine oil pressure sensor, replacing
386-011	0.30	Fuel level sender, replacing

Op.no.	time (h)	Notes
386-017	0.50	Hydraulic oil temperature sensor, replacing
386-038	1.75	Engine rotation speed sensor, replacing
386-043	0.50	Travel speed sensor or alarm sensor, replacing
386-044	0.50	Auto idling sensor, replacing
386-088	1.75	Engine rotation speed sensor (camshaft), replacing
39		MISCELLANEOUS
390-902	3.00	CareTrack, installing new
393-001	0.50	Voltage converter, replacing
393-021	0.75	Radio, replacing
395-021	0.50	Antenna, replacing
395-022	1.00	Antenna cable, replacing
395-031	0.50	Speaker, replacing
398-002	0.70	W-ECU, MID142, changing pre-programmed ECU15285 - 80000
398-003	0.70	W-ECU, MID142, changing non-programmed ECU 15285 - 80000
4		POWER TRANSMISSION
43		GEARBOX,
431-021	6.50	Swing gearbox, replacing
431-026	1.75	Swing gearbox removed, replacing seal
431-027	2.50	Swing gearbox removed, replacing shaft
431-031	4.00	Pump gearbox coupling assembly, replacing
431-036	5.50	Pump gearbox flange, replacing
431-115	2.50	Track gearbox (removed), replacing floating seal
431-117	1.25	Track gearbox, replacing cover
431-125	3.00	Track unit, removal
431-126	3.00	Track unit, installation
431-127	6.00	Track unit, replacing
44		HYDROSTATIC DRIVE
441-017	1.00	Travel motor pressure, checking and adjusting
441-021	3.50	Swing motor, replacing
441-022	0.75	Swing motor relief valve, replacing
441-023	4.00	Swing motor, replacing cylinder block
441-024	1.75	Swing motor, replacing plate (brake)
441-025	1.50	Swing motor, replacing brake piston seal
441-026	1.00	Swing motor removed, replacing seal
441-028	0.75	Swing motor brake valve, replacing
441-032	0.75	Swing motor pressure, checking and adjusting
441-112	0.70	Track motor relief valve, replacing
441-115	2.00	Track motor removed, replacing seal

Op.no.	time (h)		Notes
443-037	6.00	Center passage, replacing	
443-038	7.50	Center passage, replacing seal kit	
443-039	1.00	Center passage hose (valve – center passage), replacing	
443-040	1.75	Center passage hose (center passage – motor), replacing	
49		MISCELLANEOUS	
492-021	11.00	Swing ring gear, replacing	
492-031	3.00	Swing ring gear outer seal, replacing	
492-031	3.00	Swing ring gear outer seal, replacing	15393 - 110000
492-032	9.50	Swing ring gear inner seal, replacing	10001 - 15393
492-032	9.00	Swing ring gear inner seal, replacing	15393 - 110000
492-091	0.50	Ring gear grease pipe, replacing	
492-095	0.70	Swing ring gear cover, removal	10747 - 110000
492-095	0.60	Swing ring gear cover, removal	10001 - 10746
492-096	0.70	Swing ring gear cover, installation	
492-096	0.60	Swing ring gear cover, installation	10001 - 10746
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	
716-001	2.00	Counterweight, removing	
716-002	1.75	Counterweight, fitting	
716-002	2.50	Counterweight, fitting	
716-003	2.00	Counterweight, replacing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	5.00	Front idler, replacing one	
775-021	4.00	Sprocket, replacing one	
775-032	0.50	Track shoe, replacing one	
775-033	9.00	Track shoe, replacing each side	
775-034	1.75	Track chain assembly, removing	
775-035	2.00	Track chain assembly, installing	
775-051	1.00	Top roller, replacing one	
775-061	2.00	Bottom roller, replacing one	
775-066	3.00	Bottom roller, replacing seal	
775-071	1.00	Track guard, replacing one	
775-081	4.50	Track recoil spring (tensioner) assembly, replacing	

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.50	Cab, removing
810-002	2.00	Cab, installing
810-003	4.50	Operator cab, replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	1.00	Engine hood, replacing
827-091	1.75	Tool box assembly, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	0.75	Door, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.25	Rear-view mirror, changing
843-002	2.00	Windscreen, replacing
843-012	1.00	Rear window, replacing
843-013	1.50	Side window, replacing
843-048	1.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
872-011	1.00	Duct, replacing
872-021	1.00	Defroster hose, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-011	1.00	Air mix door actuator, replacing
873-020	1.00	Heat control valve actuator, replacing
873-097	1.50	Heater hose, replacing
874-002	0.75	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	3.00	Compressor, replacing incl draining and filling
874-007	1.00	Belt, replacing
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-014	0.50	Thermostat, replacing
874-081	1.75	Liquid hose, replacing incl. draining and filling

Op.no.	time (h)	Notes
874-082	1.75	Discharge hose, replacing incl. draining and filling
874-083	1.75	Suction hose, replacing incl. draining and filling
874-091	1.00	Switch and controller, replacing
874-093	1.00	Power transistor (ceramic resistor), replacing
874-094	1.00	Vent actuator, replacing
874-095	1.00	Mode (foot) actuator, replacing
874-096	1.00	Intake actuator, replacing
874-097	1.00	Shutter assembly, replacing
874-098	1.00	Valve (mix) actuator, replacing

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-001	0.20	Oil return filter, replacing
911-004	0.50	Suction strainer, replacing
911-005	1.75	Pump suction hose and pipe, replacing
911-011	3.00	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-017	2.00	Suction cover, replacing
911-024	1.00	Pipe and hose (pump - valve), replacing
911-025	1.00	Pipe and hose (valve - cylinder), replacing
911-026	0.70	Pipe and hose (valve - swing motor), replacing
911-031	1.50	Oil cooler line pipe and hose, replacing
911-032	1.25	Oil cooler line pipe coupling, replacing
911-033	1.25	Oil cooler line bypass valve (check valve), replacing
911-034	2.00	Oil cooler fan motor, replacing
911-035	1.00	Oil cooler fan pump, replacing
911-038	4.50	Hydraulic oil tank, replacing
911-042	0.25	Oil drain filter, replacing
911-043	0.25	Servo system filter, replacing
911-051	0.20	Breather, replacing
912-001	8.50	Control valve, replacing
912-067	0.70	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)
912-075	0.50	Rupture valve hose or pipe, replacing (dipper arm cylinder)
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal

Op.no.	time (h)	Notes
913-010	4.00	Hydraulic pump, replacing
913-013	7.50	Hydraulic pump, replacing seal for input shaft
913-029	0.30	Pump regulator, replacing
914-036	1.50	Servo pump block seal, replacing
914-037	1.50	Servo pump shaft seal, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-055	0.75	Servo pressure, checking and adjusting
914-060	1.00	Servo pump, replacing
914-071	0.50	Servo pipe and hose, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.50	Solenoid valve, replacing
916-043	1.00	Boom, replacing pipe (boom cylinder)
916-044	0.75	Boom, replacing hose (boom cylinder)
916-045	1.00	Boom, replacing pipe (dipper arm cylinder)
916-046	0.50	Boom, replacing hose (dipper arm cylinder)
916-047	1.00	Boom, replacing pipe (bucket cylinder)
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)
916-049	0.75	Dipper arm, replacing pipe (bucket cylinder)
916-091	0.75	Hammer and shear pipe, replacing (for boom)
916-092	0.50	Hammer and shear hose, replacing (for boom)
916-093	0.75	Hammer and shear pipe, replacing (for dipper arm)
916-094	0.50	Hammer and shear hose, replacing (for dipper arm)
916-095	0.50	Hammer and shear hose and pipe, replacing (MCV - 3 way valve)
916-096	1.00	Hammer and shear pedal valve (RCV), replacing
916-097	0.75	Hammer and shear 3-way valve, replacing
916-098	0.75	Hammer and shear pipe and hose, replacing (for 2nd pump flow)
916-099	0.50	Hammer and shear ball valve, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.50	Quickfit pump (gear pump), replacing
924-002	1.00	Quickfit valve, replacing
924-003	0.75	Quickfit solenoid valve, replacing
924-004	0.50	Quickfit control switch, replacing
924-021	2.00	Quickfit hydraulic cylinder bracket (body), replacing
924-041	0.50	Quickfit hydraulic hose, replacing (for boom)
924-042	0.50	Quickfit hydraulic pipe, replacing (for boom)
924-043	0.25	Quickfit hydraulic hose, replacing (for dipper arm)

Op.no.	time (h)	Notes
924-044	0.50	Quickfit hydraulic pipe, replacing (for dipper arm)
924-045	0.75	Quickfit hydraulic cylinder hose, replacing (dipper arm cylinder)
925-011	1.50	Bucket assembly, replacing
925-012	0.75	Bucket assembly, removal
925-013	0.75	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	6.00	Boom, removal
974-014	6.00	Boom, installation
974-017	2.00	Boom, replacing pin
974-018	0.25	Boom grease pipe or hose, replacing
974-021	3.00	Boom cylinder, replacing
974-022	3.00	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	4.50	Boom cylinder, repacking in machine
974-031	1.50	Boom cylinder, removal
974-032	1.50	Boom cylinder, installation
975-011	4.00	Dipper arm, removal
975-012	4.00	Dipper arm, installation
975-014	1.50	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-023	0.25	Dipper arm pipe or hose, replacing
975-024	1.50	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-026	3.50	Dipper arm cylinder removed, repacking
975-028	1.50	Connecting rod yoke, replacing
975-032	0.75	Connecting rod yoke, removal
975-035	0.75	Connecting rod yoke, installation
975-039	6.50	Dipper arm, replacing
975-043	5.00	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-062	1.25	Bucket cylinder, removal
975-063	4.50	Bucket cylinder, repacking in machine
975-065	1.25	Bucket cylinder, installation
975-069	3.00	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
171-001	1.00	Arrival Inspection, according to Inspection Programme	
171-002	3.00	Delivery Inspection, according to Inspection Programme	
173-002	1.00	Maintenance service, daily	
173-004	1.50	Maintenance service, every 50 hours	
173-007	2.50	Maintenance service, every 250 hours	
173-010	4.50	Maintenance service, every 500 hours	
173-012	6.50	Maintenance service, every 1000 hours	
173-014	9.50	Maintenance service, every 2000 hours	
173-059	0.60	Engine, changing oil and filter	
173-074	1.25	Hydraulic oil tank, changing oil and filter	
173-076	0.25	Hydraulic oil tank, return oil filter change	
173-077	0.20	Hydraulic oil tank, changing breather filter	
173-079	1.00	Swing motor gearbox, changing oil	
173-101	0.50	Track motor gearbox, changing oil	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	10001 - 13095 80001 - 80992
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	10001 - 13095 80001 - 80992
21		ENGINE	
210-070	8.00	Engine, removing	
210-072	8.00	Engine, installing	
211-002	12.00	Cylinder head, replacing gasket	
214-012	3.50	Valves, adjusting	
214-036	1.00	Valve covers, fitting new gasket	
216-014	3.50	Crankshaft, replacing front oil seal	
216-014	3.50	Crankshaft, replacing front oil seal	
216-018	10.00	Crankshaft, replacing rear oil seal	
217-005	14.00	Oil level sensor, changing	
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	
233-002	1.75	Feed pump, replacing	
233-004	0.20	Feed pump, checking feed pressure	

Op.no.	time (h)	Notes
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
234-010	5.00	Fuel tank, replacing
234-041	0.50	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-012	6.00	Unit injector, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.50	Silencer, replacing
252-021	1.50	Exhaust pipe, flexible tube, replacing
255-002	0.80	Turbocharger, inspection
255-070	2.00	Turbocharger, removing
255-071	4.00	Turbocharger, replacing
255-072	2.00	Turbocharger, installing
256-001	0.25	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.40	Preheating coil, replacing
258-002	5.00	Intercooler, replacing
258-002	7.00	Intercooler, replacing
258-022	0.75	Charge air cooler connection (hose, tube), replacing
26		COOLING SYSTEM
261-002	0.25	Coolant, checking anti-freeze resistance
261-004	1.00	Coolant, changing
261-008	7.50	Radiator, replacing
261-012	0.75	Radiator hose upper, replacing
261-014	1.50	Radiator hoses lower, replacing
261-072	0.25	Coolant filter, changing
262-002	3.00	Coolant pump, replacing
262-098	1.50	Thermostat, replacing
263-012	0.60	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	1.50	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.60	I-ECU, MID 140, changing pre-programmed ECU

Op.no.	time (h)		Notes
31		BATTERY	
311-001	0.80	Battery charging capacity, checking	
311-002	0.80	Batteries, replacing	10001 - 13095 80001 - 80992
311-003	0.50	Main switch, replacing	
311-006	0.50	Earth lead to battery, replacing	
311-008	2.00	Starter motor lead to battery, replacing	
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.00	Alternator, replacing incl function check	10001 - 13095 80001 - 80992
33		STARTING SYSTEM	
331-018	1.25	Starter motor, replacing	10001 - 13095 80001 - 80992
331-021	1.25	Starter motor, tests	10001 - 13095 80001 - 80992
331-081	0.50	Starter relay, replacing	
334-011	0.50	Starter switch (engine start switch), replacing	
35		LIGHTING	
356-056	0.50	Work lighting, replacing one head lamp assy	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.50	Horn, replacing	
362-041	0.50	Rotating beacon, replacing	
362-051	0.50	Travel alarm, replacing	
363-002	1.00	Windscreen wiper front, replacing motor	
363-003	0.50	Windscreen wiper, replacing switch	
363-004	0.50	Windscreen flusher pump, replacing	
363-091	0.50	Windscreen wiper, replacing controller	
364-003	0.60	Control lockout lever switch, replacing	
364-004	0.50	Switch, replacing	
364-050	0.50	Relay (general), replacing	
364-052	0.50	Battery relay, replacing	
364-056	0.50	Pre-heating relay, replacing	
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	10001 - 13095 80001 - 80992
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	10001 - 13095 80001 - 80992
37		CABLE; FUSE; RELAY	
372-020	0.25	Fuse (general), replacing	
372-091	0.50	Slow blow fuse, replacing	
379-011	0.75	Boom wire harness, replacing	

Op.no.	time (h)	Notes	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-006	1.50	Engine temperature sensor, replacing	
386-007	0.60	Engine oil pressure sensor, replacing	
386-011	0.30	Fuel level sender, replacing	
386-017	0.50	Hydraulic oil temperature sensor, replacing	
386-038	1.75	Engine rotation speed sensor, replacing	
386-043	0.50	Travel speed sensor or alarm sensor, replacing	
386-044	0.50	Auto idling sensor, replacing	
386-088	1.75	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-902	3.00	CareTrack, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.75	Radio, replacing	
395-021	0.50	Antenna, replacing	
395-022	1.00	Antenna cable, replacing	
395-031	0.50	Speaker, replacing	
398-002	0.70	W-ECU, MID142, changing pre-programmed ECU	17620 - 85000 85182 - 110000
398-003	0.70	W-ECU, MID142, changing non-programmed ECU	17620 - 85000 85182 - 110000
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.50	Swing gearbox, replacing	
431-026	1.75	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	4.00	Pump gearbox coupling assembly, replacing	
431-036	5.50	Pump gearbox flange, replacing	
431-115	2.50	Track gearbox (removed), replacing floating seal	
431-117	1.25	Track gearbox, replacing cover	
431-125	3.00	Track unit, removal	
431-126	3.00	Track unit, installation	
431-127	6.00	Track unit, replacing	
44		HYDROSTATIC DRIVE	
441-017	1.00	Travel motor pressure, checking and adjusting	
441-021	3.50	Swing motor, replacing	
441-022	0.75	Swing motor relief valve, replacing	
441-023	4.00	Swing motor, replacing cylinder block	
441-024	1.75	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	

Op.no.	time (h)		Notes
441-026	1.00	Swing motor removed, replacing seal	
441-028	0.75	Swing motor brake valve, replacing	
441-032	0.75	Swing motor pressure, checking and adjusting	
441-112	0.70	Track motor relief valve, replacing	
441-115	2.00	Track motor removed, replacing seal	
443-037	6.00	Center passage, replacing	
443-038	7.50	Center passage, replacing seal kit	
443-039	1.00	Center passage hose (valve – center passage), replacing	
443-040	1.75	Center passage hose (center passage – motor), replacing	
49		MISCELLANEOUS	
492-021	11.00	Swing ring gear, replacing	
492-031	3.00	Swing ring gear outer seal, replacing	
492-032	9.50	Swing ring gear inner seal, replacing	
492-091	0.50	Ring gear grease pipe, replacing	
492-095	0.50	Swing ring gear cover, removal	80725 - 110000
492-095	0.70	Swing ring gear cover, removal	80725 - 110000
492-095	0.70	Swing ring gear cover, removal	80725 - 110000
492-095	0.60	Swing ring gear cover, removal	80001 - 80724
492-096	0.70	Swing ring gear cover, installation	80725 - 110000
492-096	0.70	Swing ring gear cover, installation	80725 - 110000
492-096	0.60	Swing ring gear cover, installation	80001 - 80724
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	
716-001	2.00	Counterweight, removing	13341 - 110000 81015 - 85000
716-002	1.75	Counterweight, fitting	10001 - 13340 80001 - 81014
716-002	2.50	Counterweight, fitting	13341 - 110000 81015 - 85000
716-003	2.00	Counterweight, replacing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	5.00	Front idler, replacing one	
775-021	4.00	Sprocket, replacing one	
775-032	0.50	Track shoe, replacing one	
775-033	9.00	Track shoe, replacing each side	
775-034	1.75	Track chain assembly, removing	

Op.no.	time (h)		Notes
775-035	2.00	Track chain assembly, installing	
775-051	1.00	Top roller, replacing one	
775-061	2.00	Bottom roller, replacing one	
775-066	3.00	Bottom roller, replacing seal	15871 - 110000 85164 - 110000 36362 - 110000
775-066	3.00	Bottom roller, replacing seal	
775-071	1.00	Track guard, replacing one	
775-081	4.50	Track recoil spring (tensioner) assembly, replacing	
775-094	1.75	Full track guard, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.50	Cab, removing	
810-002	2.00	Cab, installing	
810-003	4.50	Operator cab, replacing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	1.00	Engine hood, replacing	
827-091	1.75	Tool box assembly, replacing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	0.75	Door, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.25	Rear-view mirror, changing	
843-002	2.00	Windscreen, replacing	
843-012	1.00	Rear window, replacing	
843-013	1.50	Side window, replacing	
843-048	1.00	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	
87		AIR CONDITIONING UNIT	
870-001	5.00	Cooler and Heater assembly, replacing	
872-001	0.50	Cab filter, replacing	
872-011	1.00	Duct, replacing	
872-021	1.00	Defroster hose, replacing	
873-004	3.00	Heater core, replacing	
873-006	0.90	Fan motor, replacing	
873-011	1.00	Air mix door actuator, replacing	
873-020	1.00	Heat control valve actuator, replacing	

Op.no.	time (h)	Notes
873-097	1.50	Heater hose, replacing
874-002	0.75	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	3.00	Compressor, replacing incl draining and filling
874-007	1.00	Belt, replacing
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-014	0.50	Thermostat, replacing
874-081	1.75	Liquid hose, replacing incl. draining and filling
874-082	1.75	Discharge hose, replacing incl. draining and filling
874-083	1.75	Suction hose, replacing incl. draining and filling
874-091	1.00	Switch and controller, replacing
874-093	1.00	Power transistor (ceramic resister), replacing
874-094	1.00	Vent actuator, replacing
874-095	1.00	Mode (foot) actuator, replacing
874-096	1.00	Intake actuator, replacing
874-097	1.00	Shutter assembly, replacing
874-098	1.00	Valve (mix) actuator, replacing

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-001	0.20	Oil return filter, replacing
911-004	0.50	Suction strainer, replacing
911-005	1.75	Pump suction hose and pipe, replacing
911-011	3.00	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-017	2.00	Suction cover, replacing
911-024	1.00	Pipe and hose (pump - valve), replacing
911-025	1.00	Pipe and hose (valve - cylinder), replacing
911-026	0.70	Pipe and hose (valve - swing motor), replacing
911-031	1.50	Oil cooler line pipe and hose, replacing
911-032	1.25	Oil cooler line pipe coupling, replacing
911-033	1.25	Oil cooler line bypass valve (check valve), replacing
911-034	2.00	Oil cooler fan motor, replacing
911-035	1.00	Oil cooler fan pump, replacing
911-038	4.50	Hydraulic oil tank, replacing
911-042	0.25	Oil drain filter, replacing

Op.no.	time (h)	Notes
911-043	0.25	Servo system filter, replacing
911-051	0.20	Breather, replacing
912-001	8.50	Control valve, replacing
912-067	0.70	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)
912-075	0.50	Rupture valve hose or pipe, replacing (dipper arm cylinder)
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-010	4.00	Hydraulic pump, replacing
913-013	7.50	Hydraulic pump, replacing seal for input shaft
913-029	0.30	Pump regulator, replacing
914-036	1.50	Servo pump block seal, replacing
914-037	1.50	Servo pump shaft seal, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-055	0.75	Servo pressure, checking and adjusting
914-060	1.00	Servo pump, replacing
914-071	0.50	Servo pipe and hose, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.50	Solenoid valve, replacing
916-043	1.00	Boom, replacing pipe (boom cylinder)
916-044	0.75	Boom, replacing hose (boom cylinder)
916-045	1.00	Boom, replacing pipe (dipper arm cylinder)
916-046	0.50	Boom, replacing hose (dipper arm cylinder)
916-047	1.00	Boom, replacing pipe (bucket cylinder)
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)
916-049	0.75	Dipper arm, replacing pipe (bucket cylinder)
916-091	0.75	Hammer and shear pipe, replacing (for boom)
916-092	0.50	Hammer and shear hose, replacing (for boom)
916-093	0.75	Hammer and shear pipe, replacing (for dipper arm)
916-094	0.50	Hammer and shear hose, replacing (for dipper arm)
916-095	0.50	Hammer and shear hose and pipe, replacing (MCV - 3 way valve)
916-096	1.00	Hammer and shear pedal valve (RCV), replacing
916-097	0.75	Hammer and shear 3-way valve, replacing
916-098	0.75	Hammer and shear pipe and hose, replacing (for 2nd pump flow)

Op.no.	time (h)	Notes
916-099	0.50	Hammer and shear ball valve, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.50	Quickfit pump (gear pump), replacing
924-002	1.00	Quickfit valve, replacing
924-003	0.75	Quickfit solenoid valve, replacing
924-004	0.50	Quickfit control switch, replacing
924-021	2.00	Quickfit hydraulic cylinder bracket (body), replacing
924-041	0.50	Quickfit hydraulic hose, replacing (for boom)
924-042	0.50	Quickfit hydraulic pipe, replacing (for boom)
924-043	0.25	Quickfit hydraulic hose, replacing (for dipper arm)
924-044	0.50	Quickfit hydraulic pipe, replacing (for dipper arm)
924-045	0.75	Quickfit hydraulic cylinder hose, replacing (dipper arm cylinder)
925-011	1.50	Bucket assembly, replacing
925-012	0.75	Bucket assembly, removal
925-013	0.75	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	6.00	Boom, removal
974-014	6.00	Boom, installation
974-017	2.00	Boom, replacing pin
974-018	0.25	Boom grease pipe or hose, replacing
974-021	3.00	Boom cylinder, replacing
974-022	3.00	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	4.50	Boom cylinder, repacking in machine
974-031	1.50	Boom cylinder, removal
974-032	1.50	Boom cylinder, installation
975-011	4.00	Dipper arm, removal
975-012	4.00	Dipper arm, installation
975-014	1.50	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-023	0.25	Dipper arm pipe or hose, replacing
975-024	1.50	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-026	3.50	Dipper arm cylinder removed, repacking
975-028	1.50	Connecting rod yoke, replacing
975-032	0.75	Connecting rod yoke, removal
975-035	0.75	Connecting rod yoke, installation
975-039	6.50	Dipper arm, replacing
975-043	5.00	Dipper arm cylinder, repacking in machine

Op.no.	time (h)	Notes
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-063	4.50	Bucket cylinder, repacking in machine
975-065	1.25	Bucket cylinder, installation
975-069	3.00	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
170-005	0.25	Start of VCADS Pro computer and reading machine data
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	3.00	Delivery Inspection, according to Inspection Programme
173-002	1.00	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	4.50	Maintenance service, every 500 hours
173-012	6.50	Maintenance service, every 1000 hours
173-014	9.50	Maintenance service, every 2000 hours
173-059	0.60	Engine, changing oil and filter
173-074	1.25	Hydraulic oil tank, changing oil and filter
173-076	0.25	Hydraulic oil tank, return oil filter change
173-077	0.20	Hydraulic oil tank, changing breather filter
173-079	1.00	Swing motor gearbox, changing oil
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	8.00	Engine, removing
210-072	8.00	Engine, installing
211-002	12.00	Cylinder head, replacing gasket
214-036	1.00	Valve covers, fitting new gasket
216-014	3.50	Crankshaft, replacing front oil seal
216-018	10.00	Crankshaft, replacing rear oil seal
23		FUEL SYSTEM
234-010	5.00	Fuel tank, replacing
234-041	0.50	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.50	Silencer, replacing
252-021	1.50	Exhaust pipe, flexible tube, replacing
255-070	2.00	Turbocharger, removing
255-071	4.00	Turbocharger, replacing
255-072	2.00	Turbocharger, installing
256-001	0.25	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing

Op.no.	time (h)	Notes
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.40	Preheating coil, replacing
258-002	5.00	Intercooler, replacing
258-022	0.75	Charge air cooler connection (hose, tube), replacing
26		COOLING SYSTEM
261-002	0.25	Coolant, checking anti-freeze resistance
261-004	1.00	Coolant, changing
261-012	0.75	Radiator hose upper, replacing
261-014	1.50	Radiator hoses lower, replacing
261-072	0.25	Coolant filter, changing
263-012	0.60	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	1.50	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-003	0.50	Main switch, replacing
311-006	0.50	Earth lead to battery, replacing
311-008	2.00	Starter motor lead to battery, replacing
33		STARTING SYSTEM
331-081	0.50	Starter relay, replacing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.50	Horn, replacing
363-002	1.00	Windscreen wiper front, replacing motor
363-003	0.50	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-004	0.50	Switch, replacing
364-050	0.50	Relay (general), replacing
364-052	0.50	Battery relay, replacing
364-056	0.50	Pre-heating relay, replacing

Op.no.	time (h)	Notes	
37		CABLE; FUSE; RELAY	
372-020	0.25	Fuse (general), replacing	
372-091	0.50	Slow blow fuse, replacing	
379-011	0.75	Boom wire harness, replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-043	0.50	Travel speed sensor or alarm sensor, replacing	
386-044	0.50	Auto idling sensor, replacing	
39		MISCELLANEOUS	
390-902	3.00	CareTrack, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.75	Radio, replacing	
395-021	0.50	Antenna, replacing	
395-022	1.00	Antenna cable, replacing	
395-031	0.50	Speaker, replacing	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.50	Swing gearbox, replacing	
431-026	1.75	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	4.00	Pump gearbox coupling assembly, replacing	
431-036	5.50	Pump gearbox flange, replacing	
44		HYDROSTATIC DRIVE	
441-021	3.50	Swing motor, replacing	
441-022	0.75	Swing motor relief valve, replacing	
441-023	4.00	Swing motor, replacing cylinder block	
441-024	1.75	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	1.00	Swing motor removed, replacing seal	
441-028	0.75	Swing motor brake valve, replacing	
49		MISCELLANEOUS	
492-031	3.00	Swing ring gear outer seal, replacing	
492-091	0.50	Ring gear grease pipe, replacing	
492-095	0.70	Swing ring gear cover, removal	80725 - 110000
492-095	0.50	Swing ring gear cover, removal	80725 - 110000
492-096	0.70	Swing ring gear cover, installation	80725 - 110000

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-003	2.00	Counterweight, replacing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	5.00	Front idler, replacing one
775-021	4.00	Sprocket, replacing one
775-032	0.50	Track shoe, replacing one
775-034	1.75	Track chain assembly, removing
775-035	2.00	Track chain assembly, installing
775-051	1.00	Top roller, replacing one
775-061	2.00	Bottom roller, replacing one
775-071	1.00	Track guard, replacing one
775-081	4.50	Track recoil spring (tensioner) assembly, replacing
775-094	1.75	Full track guard, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-003	4.50	Operator cab, replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	1.00	Engine hood, replacing
827-091	1.75	Tool box assembly, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	0.75	Door, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.25	Rear-view mirror, changing
843-002	2.00	Windscreen, replacing
843-012	1.00	Rear window, replacing
843-013	1.50	Side window, replacing
843-048	1.00	Door window, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
872-011	1.00	Duct, replacing
872-021	1.00	Defroster hose, replacing
873-004	3.00	Heater core, replacing

Op.no.	time (h)	Notes
873-097	1.50	Heater hose, replacing
874-002	0.75	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	3.00	Compressor, replacing incl draining and filling
874-007	1.00	Belt, replacing
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-081	1.75	Liquid hose, replacing incl. draining and filling
874-082	1.75	Discharge hose, replacing incl. draining and filling
874-083	1.75	Suction hose, replacing incl. draining and filling
874-091	1.00	Switch and controller, replacing
874-093	1.00	Power transistor (ceramic resister), replacing
874-094	1.00	Vent actuator, replacing
874-095	1.00	Mode (foot) actuator, replacing
874-096	1.00	Intake actuator, replacing
874-097	1.00	Shutter assembly, replacing
874-098	1.00	Valve (mix) actuator, replacing

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-001	0.20	Oil return filter, replacing
911-004	0.50	Suction strainer, replacing
911-005	1.75	Pump suction hose and pipe, replacing
911-011	3.00	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-017	2.00	Suction cover, replacing
911-024	1.00	Pipe and hose (pump - valve), replacing
911-025	1.00	Pipe and hose (valve - cylinder), replacing
911-026	0.70	Pipe and hose (valve - swing motor), replacing
911-031	1.50	Oil cooler line pipe and hose, replacing
911-032	1.25	Oil cooler line pipe coupling, replacing
911-033	1.25	Oil cooler line bypass valve (check valve), replacing
911-034	2.00	Oil cooler fan motor, replacing
911-035	1.00	Oil cooler fan pump, replacing
911-038	4.50	Hydraulic oil tank, replacing
911-042	0.25	Oil drain filter, replacing
911-043	0.25	Servo system filter, replacing
911-051	0.20	Breather, replacing

Op.no.	time (h)	Notes
912-001	8.50	Control valve, replacing
912-067	0.70	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)
912-075	0.50	Rupture valve hose or pipe, replacing (dipper arm cylinder)
913-010	4.00	Hydraulic pump, replacing
913-013	7.50	Hydraulic pump, replacing seal for input shaft
913-029	0.30	Pump regulator, replacing
914-036	1.50	Servo pump block seal, replacing
914-037	1.50	Servo pump shaft seal, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-060	1.00	Servo pump, replacing
914-071	0.50	Servo pipe and hose, replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.50	Solenoid valve, replacing
916-043	1.00	Boom, replacing pipe (boom cylinder)
916-044	0.75	Boom, replacing hose (boom cylinder)
916-045	1.00	Boom, replacing pipe (dipper arm cylinder)
916-046	0.50	Boom, replacing hose (dipper arm cylinder)
916-047	1.00	Boom, replacing pipe (bucket cylinder)
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)
916-049	0.75	Dipper arm, replacing pipe (bucket cylinder)
916-091	0.75	Hammer and shear pipe, replacing (for boom)
916-092	0.50	Hammer and shear hose, replacing (for boom)
916-093	0.75	Hammer and shear pipe, replacing (for dipper arm)
916-094	0.50	Hammer and shear hose, replacing (for dipper arm)
916-095	0.50	Hammer and shear hose and pipe, replacing (MCV - 3 way valve)
916-096	1.00	Hammer and shear pedal valve (RCV), replacing
916-097	0.75	Hammer and shear 3-way valve, replacing
916-098	0.75	Hammer and shear pipe and hose, replacing (for 2nd pump flow)
916-099	0.50	Hammer and shear ball valve, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.50	Quickfit pump (gear pump), replacing
924-002	1.00	Quickfit valve, replacing
924-003	0.75	Quickfit solenoid valve, replacing
924-004	0.50	Quickfit control switch, replacing

Op.no.	time (h)	Notes
924-041	0.50	Quickfit hydraulic hose, replacing (for boom)
924-042	0.50	Quickfit hydraulic pipe, replacing (for boom)
924-043	0.25	Quickfit hydraulic hose, replacing (for dipper arm)
924-044	0.50	Quickfit hydraulic pipe, replacing (for dipper arm)
924-045	0.75	Quickfit hydraulic cylinder hose, replacing (dipper arm cylinder)
925-012	0.50	Bucket assembly, removal
925-013	0.50	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	6.00	Boom, removal
974-014	6.00	Boom, installation
974-017	2.00	Boom, replacing pin
974-018	0.25	Boom grease pipe or hose, replacing
974-021	3.00	Boom cylinder, replacing
974-022	3.00	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	4.50	Boom cylinder, repacking in machine
974-031	1.50	Boom cylinder, removal
974-032	1.50	Boom cylinder, installation
975-011	4.00	Dipper arm, removal
975-012	4.00	Dipper arm, installation
975-014	1.50	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-023	0.25	Dipper arm pipe or hose, replacing
975-024	1.50	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-026	3.50	Dipper arm cylinder removed, repacking
975-028	1.50	Connecting rod yoke, replacing
975-032	0.75	Connecting rod yoke, removal
975-035	0.75	Connecting rod yoke, installation
975-039	6.50	Dipper arm, replacing
975-043	5.00	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-063	4.50	Bucket cylinder, repacking in machine
975-065	1.25	Bucket cylinder, installation
975-069	3.00	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
171-001	1.00	Arrival Inspection, according to Inspection Programme	
171-002	3.00	Delivery Inspection, according to Inspection Programme	
173-002	1.00	Maintenance service, daily	
173-004	1.50	Maintenance service, every 50 hours	
173-007	2.50	Maintenance service, every 250 hours	
173-010	4.50	Maintenance service, every 500 hours	
173-012	6.50	Maintenance service, every 1000 hours	
173-014	9.50	Maintenance service, every 2000 hours	
173-059	0.60	Engine, changing oil and filter	
173-074	1.25	Hydraulic oil tank, changing oil and filter	
173-076	0.25	Hydraulic oil tank, return oil filter change	
173-077	0.20	Hydraulic oil tank, changing breather filter	
173-079	1.00	Swing motor gearbox, changing oil	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	10001 - 13095 80001 - 80992
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	10001 - 13095 80001 - 80992
21		ENGINE	
210-070	8.00	Engine, removing	
210-072	8.00	Engine, installing	
211-002	12.00	Cylinder head, replacing gasket	
214-012	3.50	Valves, adjusting	
214-036	1.00	Valve covers, fitting new gasket	
216-014	3.50	Crankshaft, replacing front oil seal	
216-018	10.00	Crankshaft, replacing rear oil seal	
217-005	14.00	Oil level sensor, changing	
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	
233-002	1.75	Feed pump, replacing	
233-004	0.20	Feed pump, checking feed pressure	
233-014	0.40	Fuel filters, replacing	
233-015	0.50	Fuel filter extra, replacing	

Op.no.	time (h)	Notes
234-010	5.00	Fuel tank, replacing
234-041	0.50	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.50	Silencer, replacing
252-021	1.50	Exhaust pipe, flexible tube, replacing
255-002	0.80	Turbocharger, inspection
255-070	2.00	Turbocharger, removing
255-071	4.00	Turbocharger, replacing
255-072	2.00	Turbocharger, installing
256-001	0.25	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.40	Preheating coil, replacing
258-002	5.00	Intercooler, replacing
258-022	0.75	Charge air cooler connection (hose, tube), replacing
26		COOLING SYSTEM
261-002	0.25	Coolant, checking anti-freeze resistance
261-004	1.00	Coolant, changing
261-008	7.50	Radiator, replacing
261-012	0.75	Radiator hose upper, replacing
261-014	1.50	Radiator hoses lower, replacing
261-072	0.25	Coolant filter, changing
262-002	3.00	Coolant pump, replacing
262-098	1.50	Thermostat, replacing
263-012	0.60	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	1.50	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.60	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	0.80	Batteries, replacing
		10001 - 13095 80001 - 80992

Op.no.	time (h)		Notes
311-003	0.50	Main switch, replacing	
311-006	0.50	Earth lead to battery, replacing	
311-008	2.00	Starter motor lead to battery, replacing	
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.00	Alternator, replacing incl function check	10001 - 13095 80001 - 80992
33		STARTING SYSTEM	
331-018	1.25	Starter motor, replacing	10001 - 13095 80001 - 80992
331-021	1.25	Starter motor, tests	10001 - 13095 80001 - 80992
331-081	0.50	Starter relay, replacing	
334-011	0.50	Starter switch (engine start switch), replacing	
35		LIGHTING	
356-056	0.50	Work lighting, replacing one head lamp assy	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.50	Horn, replacing	
363-002	1.00	Windscreen wiper front, replacing motor	
363-003	0.50	Windscreen wiper, replacing switch	
363-004	0.50	Windscreen flusher pump, replacing	
363-091	0.50	Windscreen wiper, replacing controller	
364-004	0.50	Switch, replacing	
364-050	0.50	Relay (general), replacing	
364-052	0.50	Battery relay, replacing	
364-056	0.50	Pre-heating relay, replacing	
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	10001 - 13095 80001 - 80992
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	10001 - 13095 80001 - 80992
37		CABLE; FUSE; RELAY	
372-020	0.25	Fuse (general), replacing	
372-091	0.50	Slow blow fuse, replacing	
379-011	0.75	Boom wire harness, replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-006	1.50	Engine temperature sensor, replacing	
386-007	0.60	Engine oil pressure sensor, replacing	
386-011	0.30	Fuel level sender, replacing	
386-017	0.50	Hydraulic oil temperature sensor, replacing	
386-038	1.75	Engine rotation speed sensor, replacing	
386-043	0.50	Travel speed sensor or alarm sensor, replacing	
386-044	0.50	Auto idling sensor, replacing	

Op.no.	time (h)		Notes
386-088	1.75	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-902	3.00	CareTrack, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.75	Radio, replacing	
395-021	0.50	Antenna, replacing	
395-022	1.00	Antenna cable, replacing	
395-031	0.50	Speaker, replacing	
398-002	0.70	W-ECU, MID142, changing pre-programmed ECU	17620 - 85000 85182 - 110000
398-003	0.70	W-ECU, MID142, changing non-programmed ECU	17620 - 85000 85182 - 110000

4 POWER TRANSMISSION

43 GEARBOX,

431-021	6.50	Swing gearbox, replacing	
431-026	1.75	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	4.00	Pump gearbox coupling assembly, replacing	
431-036	5.50	Pump gearbox flange, replacing	

44 HYDROSTATIC DRIVE

441-021	3.50	Swing motor, replacing	
441-022	0.75	Swing motor relief valve, replacing	
441-023	4.00	Swing motor, replacing cylinder block	
441-024	1.75	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	1.00	Swing motor removed, replacing seal	
441-028	0.75	Swing motor brake valve, replacing	

49 MISCELLANEOUS

492-021	11.00	Swing ring gear, replacing	
492-031	3.00	Swing ring gear outer seal, replacing	
492-032	9.50	Swing ring gear inner seal, replacing	
492-091	0.50	Ring gear grease pipe, replacing	
492-095	0.50	Swing ring gear cover, removal	80725 - 110000
492-095	0.70	Swing ring gear cover, removal	80725 - 110000
492-095	0.70	Swing ring gear cover, removal	80725 - 110000
492-095	0.60	Swing ring gear cover, removal	80001 - 80724
492-096	0.70	Swing ring gear cover, installation	80725 - 110000
492-096	0.70	Swing ring gear cover, installation	80725 - 110000
492-096	0.60	Swing ring gear cover, installation	80001 - 80724

Op.no.	time (h)	Notes	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	
716-001	2.00	Counterweight, removing	13341 - 110000 81015 - 85000
716-002	1.75	Counterweight, fitting	10001 - 13340 80001 - 81014
716-002	2.50	Counterweight, fitting	13341 - 110000 81015 - 85000
716-003	2.00	Counterweight, replacing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	5.00	Front idler, replacing one	
775-021	4.00	Sprocket, replacing one	
775-032	0.50	Track shoe, replacing one	
775-034	1.75	Track chain assembly, removing	
775-035	2.00	Track chain assembly, installing	
775-051	1.00	Top roller, replacing one	
775-061	2.00	Bottom roller, replacing one	
775-066	3.00	Bottom roller, replacing seal	15871 - 110000 85164 - 110000 36362 - 110000
775-066	3.00	Bottom roller, replacing seal	
775-071	1.00	Track guard, replacing one	
775-081	4.50	Track recoil spring (tensioner) assembly, replacing	
775-094	1.75	Full track guard, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.50	Cab, removing	
810-002	2.00	Cab, installing	
810-003	4.50	Operator cab, replacing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	1.00	Engine hood, replacing	
827-091	1.75	Tool box assembly, replacing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	0.75	Door, replacing	

Op.no.	time (h)	Notes
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.25	Rear-view mirror, changing
843-002	2.00	Windscreen, replacing
843-012	1.00	Rear window, replacing
843-013	1.50	Side window, replacing
843-048	1.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
872-011	1.00	Duct, replacing
872-021	1.00	Defroster hose, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-097	1.50	Heater hose, replacing
874-002	0.75	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	3.00	Compressor, replacing incl draining and filling
874-007	1.00	Belt, replacing
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-081	1.75	Liquid hose, replacing incl. draining and filling
874-082	1.75	Discharge hose, replacing incl. draining and filling
874-083	1.75	Suction hose, replacing incl. draining and filling
874-091	1.00	Switch and controller, replacing
874-093	1.00	Power transistor (ceramic resister), replacing
874-094	1.00	Vent actuator, replacing
874-095	1.00	Mode (foot) actuator, replacing
874-096	1.00	Intake actuator, replacing
874-097	1.00	Shutter assembly, replacing
874-098	1.00	Valve (mix) actuator, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-001	0.20	Oil return filter, replacing
911-004	0.50	Suction strainer, replacing

Op.no.	time (h)	Notes
911-005	1.75	Pump suction hose and pipe, replacing
911-011	3.00	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-017	2.00	Suction cover, replacing
911-024	1.00	Pipe and hose (pump - valve), replacing
911-025	1.00	Pipe and hose (valve - cylinder), replacing
911-026	0.70	Pipe and hose (valve - swing motor), replacing
911-031	1.50	Oil cooler line pipe and hose, replacing
911-032	1.25	Oil cooler line pipe coupling, replacing
911-033	1.25	Oil cooler line bypass valve (check valve), replacing
911-034	2.00	Oil cooler fan motor, replacing
911-035	1.00	Oil cooler fan pump, replacing
911-038	4.50	Hydraulic oil tank, replacing
911-042	0.25	Oil drain filter, replacing
911-043	0.25	Servo system filter, replacing
911-051	0.20	Breather, replacing
912-001	8.50	Control valve, replacing
912-067	0.70	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)
912-075	0.50	Rupture valve hose or pipe, replacing (dipper arm cylinder)
913-010	4.00	Hydraulic pump, replacing
913-013	7.50	Hydraulic pump, replacing seal for input shaft
913-029	0.30	Pump regulator, replacing
914-036	1.50	Servo pump block seal, replacing
914-037	1.50	Servo pump shaft seal, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-060	1.00	Servo pump, replacing
914-071	0.50	Servo pipe and hose, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.50	Solenoid valve, replacing
916-043	1.00	Boom, replacing pipe (boom cylinder)
916-044	0.75	Boom, replacing hose (boom cylinder)
916-045	1.00	Boom, replacing pipe (dipper arm cylinder)
916-046	0.50	Boom, replacing hose (dipper arm cylinder)
916-047	1.00	Boom, replacing pipe (bucket cylinder)

Op.no.	time (h)	Notes
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)
916-049	0.75	Dipper arm, replacing pipe (bucket cylinder)
916-091	0.75	Hammer and shear pipe, replacing (for boom)
916-092	0.50	Hammer and shear hose, replacing (for boom)
916-093	0.75	Hammer and shear pipe, replacing (for dipper arm)
916-094	0.50	Hammer and shear hose, replacing (for dipper arm)
916-095	0.50	Hammer and shear hose and pipe, replacing (MCV - 3 way valve)
916-096	1.00	Hammer and shear pedal valve (RCV), replacing
916-097	0.75	Hammer and shear 3-way valve, replacing
916-098	0.75	Hammer and shear pipe and hose, replacing (for 2nd pump flow)
916-099	0.50	Hammer and shear ball valve, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.50	Quickfit pump (gear pump), replacing
924-002	1.00	Quickfit valve, replacing
924-003	0.75	Quickfit solenoid valve, replacing
924-004	0.50	Quickfit control switch, replacing
924-041	0.50	Quickfit hydraulic hose, replacing (for boom)
924-042	0.50	Quickfit hydraulic pipe, replacing (for boom)
924-043	0.25	Quickfit hydraulic hose, replacing (for dipper arm)
924-044	0.50	Quickfit hydraulic pipe, replacing (for dipper arm)
924-045	0.75	Quickfit hydraulic cylinder hose, replacing (dipper arm cylinder)
925-012	0.50	Bucket assembly, removal
925-013	0.75	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	6.00	Boom, removal
974-014	6.00	Boom, installation
974-017	2.00	Boom, replacing pin
974-018	0.25	Boom grease pipe or hose, replacing
974-021	3.00	Boom cylinder, replacing
974-022	3.00	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	4.50	Boom cylinder, repacking in machine
974-031	1.50	Boom cylinder, removal
974-032	1.50	Boom cylinder, installation
975-011	4.00	Dipper arm, removal
975-012	4.00	Dipper arm, installation
975-014	1.50	Dipper arm cylinder, removal

Op.no.	time (h)	Notes
975-015	1.50	Dipper arm cylinder, installation
975-023	0.25	Dipper arm pipe or hose, replacing
975-024	1.50	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-026	3.50	Dipper arm cylinder removed, repacking
975-028	1.50	Connecting rod yoke, replacing
975-032	0.75	Connecting rod yoke, removal
975-035	0.75	Connecting rod yoke, installation
975-039	6.50	Dipper arm, replacing
975-043	5.00	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-063	4.50	Bucket cylinder, repacking in machine
975-065	1.25	Bucket cylinder, installation
975-069	3.00	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
171-001	1.00	Arrival Inspection, according to Inspection Programme	
171-002	3.00	Delivery Inspection, according to Inspection Programme	
173-002	1.00	Maintenance service, daily	
173-004	1.50	Maintenance service, every 50 hours	
173-007	2.50	Maintenance service, every 250 hours	
173-010	4.50	Maintenance service, every 500 hours	
173-012	6.50	Maintenance service, every 1000 hours	
173-014	9.50	Maintenance service, every 2000 hours	
173-059	0.60	Engine, changing oil and filter	
173-074	1.25	Hydraulic oil tank, changing oil and filter	
173-076	0.25	Hydraulic oil tank, return oil filter change	
173-077	0.20	Hydraulic oil tank, changing breather filter	
173-079	1.00	Swing motor gearbox, changing oil	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	10001 - 13095 80001 - 80992
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	10001 - 13095 80001 - 80992
21		ENGINE	
210-070	8.00	Engine, removing	
210-072	8.00	Engine, installing	
211-002	12.00	Cylinder head, replacing gasket	
214-012	3.50	Valves, adjusting	
214-036	1.00	Valve covers, fitting new gasket	
216-014	3.50	Crankshaft, replacing front oil seal	
216-018	10.00	Crankshaft, replacing rear oil seal	
217-005	14.00	Oil level sensor, changing	
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	
233-002	1.75	Feed pump, replacing	
233-004	0.20	Feed pump, checking feed pressure	
233-014	0.40	Fuel filters, replacing	
233-015	0.50	Fuel filter extra, replacing	

Op.no.	time (h)	Notes	
234-010	5.00	Fuel tank, replacing	
234-041	0.50	Fuel filling pump, removing	
234-042	0.50	Fuel filling pump, installing	
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.50	Silencer, replacing	
252-021	1.50	Exhaust pipe, flexible tube, replacing	
255-002	0.80	Turbocharger, inspection	
255-070	2.00	Turbocharger, removing	
255-071	4.00	Turbocharger, replacing	
255-072	2.00	Turbocharger, installing	
256-001	0.25	Air cleaner, cleaning filter element	
256-003	0.25	Air cleaner, primary filter replacing	
256-004	0.25	Air cleaner, secondary filter replacing	
256-006	0.40	Preheating coil, replacing	
258-002	5.00	Intercooler, replacing	
258-022	0.75	Charge air cooler connection (hose, tube), replacing	
26		COOLING SYSTEM	
261-002	0.25	Coolant, checking anti-freeze resistance	
261-004	1.00	Coolant, changing	
261-008	7.50	Radiator, replacing	
261-012	0.75	Radiator hose upper, replacing	
261-014	1.50	Radiator hoses lower, replacing	
261-072	0.25	Coolant filter, changing	
262-002	3.00	Coolant pump, replacing	
262-098	1.50	Thermostat, replacing	
263-012	0.60	Fan belt and/or alternator belt, replacing	
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension	
263-022	1.50	Fan belt and/or alternator-, compressor belt, replacing all belts	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.60	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-001	0.80	Battery charging capacity, checking	
311-002	0.80	Batteries, replacing	10001 - 13095 80001 - 80992

Op.no.	time (h)		Notes
311-003	0.50	Main switch, replacing	
311-006	0.50	Earth lead to battery, replacing	
311-008	2.00	Starter motor lead to battery, replacing	
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.00	Alternator, replacing incl function check	10001 - 13095 80001 - 80992
33		STARTING SYSTEM	
331-018	1.25	Starter motor, replacing	10001 - 13095 80001 - 80992
331-021	1.25	Starter motor, tests	10001 - 13095 80001 - 80992
331-081	0.50	Starter relay, replacing	
334-011	0.50	Starter switch (engine start switch), replacing	
35		LIGHTING	
356-056	0.50	Work lighting, replacing one head lamp assy	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.50	Horn, replacing	
363-002	1.00	Windscreen wiper front, replacing motor	
363-003	0.50	Windscreen wiper, replacing switch	
363-004	0.50	Windscreen flusher pump, replacing	
363-091	0.50	Windscreen wiper, replacing controller	
364-004	0.50	Switch, replacing	
364-050	0.50	Relay (general), replacing	
364-052	0.50	Battery relay, replacing	
364-056	0.50	Pre-heating relay, replacing	
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	10001 - 13095 80001 - 80992
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	10001 - 13095 80001 - 80992
37		CABLE; FUSE; RELAY	
372-020	0.25	Fuse (general), replacing	
372-091	0.50	Slow blow fuse, replacing	
379-011	0.75	Boom wire harness, replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-006	1.50	Engine temperature sensor, replacing	
386-007	0.60	Engine oil pressure sensor, replacing	
386-011	0.30	Fuel level sender, replacing	
386-017	0.50	Hydraulic oil temperature sensor, replacing	
386-038	1.75	Engine rotation speed sensor, replacing	
386-043	0.50	Travel speed sensor or alarm sensor, replacing	
386-044	0.50	Auto idling sensor, replacing	

Op.no.	time (h)		Notes
386-088	1.75	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-902	3.00	CareTrack, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.75	Radio, replacing	
395-021	0.50	Antenna, replacing	
395-022	1.00	Antenna cable, replacing	
395-031	0.50	Speaker, replacing	
398-002	0.70	W-ECU, MID142, changing pre-programmed ECU	17620 - 85000 85182 - 110000
398-003	0.70	W-ECU, MID142, changing non-programmed ECU	17620 - 85000 85182 - 110000

4 POWER TRANSMISSION

43 GEARBOX,

431-021	6.50	Swing gearbox, replacing	
431-026	1.75	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	4.00	Pump gearbox coupling assembly, replacing	
431-036	5.50	Pump gearbox flange, replacing	

44 HYDROSTATIC DRIVE

441-021	3.50	Swing motor, replacing	
441-022	0.75	Swing motor relief valve, replacing	
441-023	4.00	Swing motor, replacing cylinder block	
441-024	1.75	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	1.00	Swing motor removed, replacing seal	
441-028	0.75	Swing motor brake valve, replacing	

49 MISCELLANEOUS

492-021	11.00	Swing ring gear, replacing	
492-031	3.00	Swing ring gear outer seal, replacing	
492-032	9.50	Swing ring gear inner seal, replacing	
492-091	0.50	Ring gear grease pipe, replacing	
492-095	0.50	Swing ring gear cover, removal	80725 - 110000
492-095	0.70	Swing ring gear cover, removal	80725 - 110000
492-095	0.70	Swing ring gear cover, removal	80725 - 110000
492-095	0.60	Swing ring gear cover, removal	80001 - 80724
492-096	0.70	Swing ring gear cover, installation	80725 - 110000
492-096	0.70	Swing ring gear cover, installation	80725 - 110000
492-096	0.60	Swing ring gear cover, installation	80001 - 80724

Op.no.	time (h)	Notes	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	
716-001	2.00	Counterweight, removing	13341 - 110000 81015 - 85000
716-002	1.75	Counterweight, fitting	10001 - 13340 80001 - 81014
716-002	2.50	Counterweight, fitting	13341 - 110000 81015 - 85000
716-003	2.00	Counterweight, replacing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	5.00	Front idler, replacing one	
775-021	4.00	Sprocket, replacing one	
775-032	0.50	Track shoe, replacing one	
775-034	1.75	Track chain assembly, removing	
775-035	2.00	Track chain assembly, installing	
775-051	1.00	Top roller, replacing one	
775-061	2.00	Bottom roller, replacing one	
775-066	3.00	Bottom roller, replacing seal	15871 - 110000 85164 - 110000 36362 - 110000
775-066	3.00	Bottom roller, replacing seal	
775-071	1.00	Track guard, replacing one	
775-081	4.50	Track recoil spring (tensioner) assembly, replacing	
775-094	1.75	Full track guard, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.50	Cab, removing	
810-002	2.00	Cab, installing	
810-003	4.50	Operator cab, replacing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	1.00	Engine hood, replacing	
827-091	1.75	Tool box assembly, replacing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	0.75	Door, replacing	

Op.no.	time (h)	Notes
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.25	Rear-view mirror, changing
843-002	2.00	Windscreen, replacing
843-012	1.00	Rear window, replacing
843-013	1.50	Side window, replacing
843-048	1.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
872-011	1.00	Duct, replacing
872-021	1.00	Defroster hose, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-097	1.50	Heater hose, replacing
874-002	0.75	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	3.00	Compressor, replacing incl draining and filling
874-007	1.00	Belt, replacing
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-081	1.75	Liquid hose, replacing incl. draining and filling
874-082	1.75	Discharge hose, replacing incl. draining and filling
874-083	1.75	Suction hose, replacing incl. draining and filling
874-091	1.00	Switch and controller, replacing
874-093	1.00	Power transistor (ceramic resister), replacing
874-094	1.00	Vent actuator, replacing
874-095	1.00	Mode (foot) actuator, replacing
874-096	1.00	Intake actuator, replacing
874-097	1.00	Shutter assembly, replacing
874-098	1.00	Valve (mix) actuator, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-001	0.20	Oil return filter, replacing
911-004	0.50	Suction strainer, replacing

Op.no.	time (h)	Notes
911-005	1.75	Pump suction hose and pipe, replacing
911-011	3.00	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-017	2.00	Suction cover, replacing
911-024	1.00	Pipe and hose (pump - valve), replacing
911-025	1.00	Pipe and hose (valve - cylinder), replacing
911-026	0.70	Pipe and hose (valve - swing motor), replacing
911-031	1.50	Oil cooler line pipe and hose, replacing
911-032	1.25	Oil cooler line pipe coupling, replacing
911-033	1.25	Oil cooler line bypass valve (check valve), replacing
911-034	2.00	Oil cooler fan motor, replacing
911-035	1.00	Oil cooler fan pump, replacing
911-038	4.50	Hydraulic oil tank, replacing
911-042	0.25	Oil drain filter, replacing
911-043	0.25	Servo system filter, replacing
911-051	0.20	Breather, replacing
912-001	8.50	Control valve, replacing
912-067	0.70	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)
912-075	0.50	Rupture valve hose or pipe, replacing (dipper arm cylinder)
913-010	4.00	Hydraulic pump, replacing
913-013	7.50	Hydraulic pump, replacing seal for input shaft
913-029	0.30	Pump regulator, replacing
914-036	1.50	Servo pump block seal, replacing
914-037	1.50	Servo pump shaft seal, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-060	1.00	Servo pump, replacing
914-071	0.50	Servo pipe and hose, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.50	Solenoid valve, replacing
916-043	1.00	Boom, replacing pipe (boom cylinder)
916-044	0.75	Boom, replacing hose (boom cylinder)
916-045	1.00	Boom, replacing pipe (dipper arm cylinder)
916-046	0.50	Boom, replacing hose (dipper arm cylinder)
916-047	1.00	Boom, replacing pipe (bucket cylinder)

Op.no.	time (h)	Notes
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)
916-049	0.75	Dipper arm, replacing pipe (bucket cylinder)
916-091	0.75	Hammer and shear pipe, replacing (for boom)
916-092	0.50	Hammer and shear hose, replacing (for boom)
916-093	0.75	Hammer and shear pipe, replacing (for dipper arm)
916-094	0.50	Hammer and shear hose, replacing (for dipper arm)
916-095	0.50	Hammer and shear hose and pipe, replacing (MCV - 3 way valve)
916-096	1.00	Hammer and shear pedal valve (RCV), replacing
916-097	0.75	Hammer and shear 3-way valve, replacing
916-098	0.75	Hammer and shear pipe and hose, replacing (for 2nd pump flow)
916-099	0.50	Hammer and shear ball valve, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.50	Quickfit pump (gear pump), replacing
924-002	1.00	Quickfit valve, replacing
924-003	0.75	Quickfit solenoid valve, replacing
924-004	0.50	Quickfit control switch, replacing
924-041	0.50	Quickfit hydraulic hose, replacing (for boom)
924-042	0.50	Quickfit hydraulic pipe, replacing (for boom)
924-043	0.25	Quickfit hydraulic hose, replacing (for dipper arm)
924-044	0.50	Quickfit hydraulic pipe, replacing (for dipper arm)
924-045	0.75	Quickfit hydraulic cylinder hose, replacing (dipper arm cylinder)
925-012	0.50	Bucket assembly, removal
925-013	0.50	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	6.00	Boom, removal
974-014	6.00	Boom, installation
974-017	2.00	Boom, replacing pin
974-018	0.25	Boom grease pipe or hose, replacing
974-021	3.00	Boom cylinder, replacing
974-022	3.00	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	4.50	Boom cylinder, repacking in machine
974-031	1.50	Boom cylinder, removal
974-032	1.50	Boom cylinder, installation
975-011	4.00	Dipper arm, removal
975-012	4.00	Dipper arm, installation
975-014	1.50	Dipper arm cylinder, removal

Op.no.	time (h)	Notes
975-015	1.50	Dipper arm cylinder, installation
975-023	0.25	Dipper arm pipe or hose, replacing
975-024	1.50	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-026	3.50	Dipper arm cylinder removed, repacking
975-028	1.50	Connecting rod yoke, replacing
975-032	0.75	Connecting rod yoke, removal
975-035	0.75	Connecting rod yoke, installation
975-039	6.50	Dipper arm, replacing
975-043	5.00	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-063	4.50	Bucket cylinder, repacking in machine
975-065	1.25	Bucket cylinder, installation
975-069	3.00	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
171-001	1.00	Arrival Inspection, according to Inspection Programme	
171-002	3.00	Delivery Inspection, according to Inspection Programme	
173-002	1.00	Maintenance service, daily	
173-004	1.50	Maintenance service, every 50 hours	
173-007	2.50	Maintenance service, every 250 hours	
173-010	4.50	Maintenance service, every 500 hours	
173-012	6.50	Maintenance service, every 1000 hours	
173-014	10.00	Maintenance service, every 2000 hours	
173-059	0.60	Engine, changing oil and filter	
173-074	1.50	Hydraulic oil tank, changing oil and filter	
173-076	0.25	Hydraulic oil tank, return oil filter change	
173-077	0.20	Hydraulic oil tank, changing breather filter	
173-079	1.50	Swing motor gearbox, changing oil	
173-101	0.50	Track motor gearbox, changing oil	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	10001 - 12542 80001 - 80660
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	10001 - 12542 80001 - 80660
21		ENGINE	
210-070	8.00	Engine, removing	
210-072	8.00	Engine, installing	
211-002	12.00	Cylinder head, replacing gasket	
214-012	3.50	Valves, adjusting	
214-036	1.00	Valve covers, fitting new gasket	
216-014	3.50	Crankshaft, replacing front oil seal	
216-014	3.50	Crankshaft, replacing front oil seal	
216-018	10.00	Crankshaft, replacing rear oil seal	
217-005	15.00	Oil level sensor, changing	
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	
233-002	1.75	Feed pump, replacing	
233-004	0.20	Feed pump, checking feed pressure	

Op.no.	time (h)	Notes
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
234-010	5.00	Fuel tank, replacing
234-041	0.50	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.50	Silencer, replacing
252-021	1.50	Exhaust pipe, flexible tube, replacing
255-002	0.80	Turbocharger, inspection
255-070	2.00	Turbocharger, removing
255-071	4.00	Turbocharger, replacing
255-072	2.00	Turbocharger, installing
256-001	0.25	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.40	Preheating coil, replacing
258-002	5.00	Intercooler, replacing
258-002	7.00	Intercooler, replacing
258-022	0.75	Charge air cooler connection (hose, tube), replacing
26		COOLING SYSTEM
261-002	0.25	Coolant, checking anti-freeze resistance
261-004	1.00	Coolant, changing
261-008	7.50	Radiator, replacing
261-012	0.75	Radiator hose upper, replacing
261-014	1.50	Radiator hoses lower, replacing
261-018	1.00	Expansion tank, replacing
261-072	0.25	Coolant filter, changing
262-002	3.00	Coolant pump, replacing
262-098	1.50	Thermostat, replacing
263-012	0.60	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	1.50	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.60	I-ECU, MID 140, changing pre-programmed ECU

Op.no.	time (h)		Notes
31		BATTERY	
311-001	0.80	Battery charging capacity, checking	
311-002	0.80	Batteries, replacing	10001 - 12542 80001 - 80660
311-003	0.50	Main switch, replacing	
311-006	0.50	Earth lead to battery, replacing	
311-008	2.00	Starter motor lead to battery, replacing	
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.00	Alternator, replacing incl function check	10001 - 12542 80001 - 80660
33		STARTING SYSTEM	
331-018	1.25	Starter motor, replacing	10001 - 12542 80001 - 80660
331-021	1.25	Starter motor, tests	10001 - 12542 80001 - 80660
331-081	0.50	Starter relay, replacing	
334-011	0.50	Starter switch (engine start switch), replacing	
35		LIGHTING	
356-056	0.50	Work lighting, replacing one head lamp assy	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.50	Horn, replacing	
362-041	0.50	Rotating beacon, replacing	
362-051	0.50	Travel alarm, replacing	
363-002	1.00	Windscreen wiper front, replacing motor	
363-003	0.50	Windscreen wiper, replacing switch	
363-004	0.50	Windscreen flusher pump, replacing	
363-091	0.50	Windscreen wiper, replacing controller	
364-003	0.60	Control lockout lever switch, replacing	
364-004	0.50	Switch, replacing	
364-050	0.50	Relay (general), replacing	
364-052	0.50	Battery relay, replacing	
364-056	0.50	Pre-heating relay, replacing	
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	10001 - 12542 80001 - 80660
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	10001 - 12542 80001 - 80660
37		CABLE; FUSE; RELAY	
372-020	0.25	Fuse (general), replacing	
372-091	0.50	Slow blow fuse, replacing	
379-011	0.75	Boom wire harness, replacing	

Op.no.	time (h)	Notes	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-006	1.50	Engine temperature sensor, replacing	
386-007	0.60	Engine oil pressure sensor, replacing	
386-011	0.30	Fuel level sender, replacing	
386-017	0.50	Hydraulic oil temperature sensor, replacing	
386-038	1.75	Engine rotation speed sensor, replacing	
386-043	0.50	Travel speed sensor or alarm sensor, replacing	
386-044	0.50	Auto idling sensor, replacing	
386-088	1.75	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-902	3.00	CareTrack, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.75	Radio, replacing	
395-021	0.50	Antenna, replacing	
395-022	1.00	Antenna cable, replacing	
395-031	0.50	Speaker, replacing	
398-002	0.70	W-ECU, MID142, changing pre-programmed ECU	18401 - 85000 85201 - 110000
398-003	0.70	W-ECU, MID142, changing non-programmed ECU	18401 - 85000 85201 - 110000
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.00	Swing gearbox, replacing	
431-026	0.50	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	4.00	Pump gearbox coupling assembly, replacing	
431-036	5.50	Pump gearbox flange, replacing	
431-111	6.00	Track gearbox, replacing	
431-113	4.00	Track gearbox, removing	
431-114	4.00	Track gearbox, installing	
431-115	3.00	Track gearbox (removed), replacing floating seal	
431-117	1.25	Track gearbox, replacing cover	
44		HYDROSTATIC DRIVE	
441-017	1.00	Travel motor pressure, checking and adjusting	
441-021	3.00	Swing motor, replacing	
441-022	0.75	Swing motor relief valve, replacing	
441-023	3.50	Swing motor, replacing cylinder block	
441-024	1.50	Swing motor, replacing plate (brake)	
441-026	0.30	Swing motor removed, replacing seal	

Op.no.	time (h)	Notes
441-028	0.75	Swing motor brake valve, replacing
441-032	0.75	Swing motor pressure, checking and adjusting
441-111	3.50	Track motor, replacing
441-112	0.70	Track motor relief valve, replacing
441-115	1.00	Track motor removed, replacing seal
443-037	6.00	Center passage, replacing
443-038	7.50	Center passage, replacing seal kit
443-039	1.00	Center passage hose (valve – center passage), replacing
443-040	1.75	Center passage hose (center passage – motor), replacing
49		MISCELLANEOUS
492-031	3.00	Swing ring gear outer seal, replacing
492-091	0.50	Ring gear grease pipe, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	2.00	Counterweight, removing
716-002	2.50	Counterweight, fitting
716-003	2.00	Counterweight, replacing
716-006	1.25	Removable counterweight, removing
716-007	1.50	Removable counterweight, installing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	5.00	Front idler, replacing one
775-021	5.00	Sprocket, replacing one
775-032	0.50	Track shoe, replacing one
775-033	9.00	Track shoe, replacing each side
775-034	1.75	Track chain assembly, removing
775-035	2.00	Track chain assembly, installing
775-051	1.00	Top roller, replacing one
775-061	1.25	Bottom roller, replacing one
775-066	3.00	Bottom roller, replacing seal
775-071	1.25	Track guard, replacing one
775-081	4.50	Track recoil spring (tensioner) assembly, replacing

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.50	Cab, removing
810-002	2.00	Cab, installing
810-003	4.50	Operator cab, replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	1.00	Engine hood, replacing
827-091	1.75	Tool box assembly, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	0.75	Door, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.25	Rear-view mirror, changing
843-002	2.00	Windscreen, replacing
843-012	1.00	Rear window, replacing
843-013	1.50	Side window, replacing
843-048	1.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
872-011	1.00	Duct, replacing
872-021	1.00	Defroster hose, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-011	1.00	Air mix door actuator, replacing
873-020	1.00	Heat control valve actuator, replacing
873-097	1.50	Heater hose, replacing
874-002	0.75	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	3.00	Compressor, replacing incl draining and filling
874-007	1.00	Belt, replacing
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-014	0.50	Thermostat, replacing
874-081	1.75	Liquid hose, replacing incl. draining and filling

Op.no.	time (h)	Notes
874-082	1.75	Discharge hose, replacing incl. draining and filling
874-083	1.75	Suction hose, replacing incl. draining and filling
874-091	1.00	Switch and controller, replacing
874-093	1.00	Power transistor (ceramic resistor), replacing
874-094	1.00	Vent actuator, replacing
874-095	1.00	Mode (foot) actuator, replacing
874-096	1.00	Intake actuator, replacing
874-097	1.00	Shutter assembly, replacing
874-098	1.00	Valve (mix) actuator, replacing

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-001	0.20	Oil return filter, replacing
911-004	0.50	Suction strainer, replacing
911-005	2.00	Pump suction hose and pipe, replacing
911-011	3.00	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-017	2.00	Suction cover, replacing
911-024	1.00	Pipe and hose (pump - valve), replacing
911-025	1.00	Pipe and hose (valve - cylinder), replacing
911-026	0.75	Pipe and hose (valve - swing motor), replacing
911-031	1.50	Oil cooler line pipe and hose, replacing
911-032	1.25	Oil cooler line pipe coupling, replacing
911-033	1.25	Oil cooler line bypass valve (check valve), replacing
911-034	2.50	Oil cooler fan motor, replacing
911-035	1.50	Oil cooler fan pump, replacing
911-038	4.50	Hydraulic oil tank, replacing
911-042	0.25	Oil drain filter, replacing
911-043	0.25	Servo system filter, replacing
911-051	0.20	Breather, replacing
912-001	8.50	Control valve, replacing
912-067	0.60	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	1.00	Rupture valve, replacing (dipper arm cylinder)
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)
912-075	0.50	Rupture valve hose or pipe, replacing (dipper arm cylinder)
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal

Op.no.	time (h)	Notes
913-010	4.50	Hydraulic pump, replacing
913-013	8.00	Hydraulic pump, replacing seal for input shaft
913-029	0.30	Pump regulator, replacing
914-036	1.50	Servo pump block seal, replacing
914-037	1.50	Servo pump shaft seal, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-055	0.75	Servo pressure, checking and adjusting
914-060	1.25	Servo pump, replacing
914-071	0.50	Servo pipe and hose, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.50	Solenoid valve, replacing
916-043	1.00	Boom, replacing pipe (boom cylinder)
916-044	0.75	Boom, replacing hose (boom cylinder)
916-045	1.00	Boom, replacing pipe (dipper arm cylinder)
916-046	0.50	Boom, replacing hose (dipper arm cylinder)
916-047	1.00	Boom, replacing pipe (bucket cylinder)
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)
916-049	0.75	Dipper arm, replacing pipe (bucket cylinder)
916-091	0.75	Hammer and shear pipe, replacing (for boom)
916-092	0.50	Hammer and shear hose, replacing (for boom)
916-093	0.75	Hammer and shear pipe, replacing (for dipper arm)
916-094	0.50	Hammer and shear hose, replacing (for dipper arm)
916-095	0.50	Hammer and shear hose and pipe, replacing (MCV - 3 way valve)
916-096	1.00	Hammer and shear pedal valve (RCV), replacing
916-097	0.75	Hammer and shear 3-way valve, replacing
916-098	0.75	Hammer and shear pipe and hose, replacing (for 2nd pump flow)
916-099	0.50	Hammer and shear ball valve, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.50	Quickfit pump (gear pump), replacing
924-002	1.00	Quickfit valve, replacing
924-003	0.75	Quickfit solenoid valve, replacing
924-004	0.50	Quickfit control switch, replacing
924-021	2.00	Quickfit hydraulic cylinder bracket (body), replacing
924-041	0.50	Quickfit hydraulic hose, replacing (for boom)
924-042	0.50	Quickfit hydraulic pipe, replacing (for boom)
924-043	0.25	Quickfit hydraulic hose, replacing (for dipper arm)

Op.no.	time (h)	Notes
924-044	0.50	Quickfit hydraulic pipe, replacing (for dipper arm)
924-045	0.75	Quickfit hydraulic cylinder hose, replacing (dipper arm cylinder)
925-011	1.50	Bucket assembly, replacing
925-012	0.75	Bucket assembly, removal
925-013	0.75	Bucket assembly, installation
97		UNIT, DIGGING
974-010	13.00	Boom, replacing
974-013	6.50	Boom, removal
974-014	6.50	Boom, installation
974-017	2.00	Boom, replacing pin
974-018	0.25	Boom grease pipe or hose, replacing
974-022	3.00	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	4.50	Boom cylinder, repacking in machine
974-031	1.50	Boom cylinder, removal
974-032	1.50	Boom cylinder, installation
975-011	4.00	Dipper arm, removal
975-012	4.00	Dipper arm, installation
975-014	1.50	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-023	0.25	Dipper arm pipe or hose, replacing
975-024	1.50	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-026	3.50	Dipper arm cylinder removed, repacking
975-028	1.50	Connecting rod yoke, replacing
975-032	0.75	Connecting rod yoke, removal
975-035	0.75	Connecting rod yoke, installation
975-039	7.00	Dipper arm, replacing
975-043	5.50	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-063	4.50	Bucket cylinder, repacking in machine
975-065	1.25	Bucket cylinder, installation
975-069	3.00	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
170-005	0.25	Start of VCADS Pro computer and reading machine data
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	3.00	Delivery Inspection, according to Inspection Programme
173-002	1.00	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	4.50	Maintenance service, every 500 hours
173-012	6.50	Maintenance service, every 1000 hours
173-014	10.00	Maintenance service, every 2000 hours
173-059	0.60	Engine, changing oil and filter
173-074	1.50	Hydraulic oil tank, changing oil and filter
173-076	0.25	Hydraulic oil tank, return oil filter change
173-077	0.20	Hydraulic oil tank, changing breather filter
173-079	1.50	Swing motor gearbox, changing oil
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	8.00	Engine, removing
210-072	8.00	Engine, installing
214-036	1.00	Valve covers, fitting new gasket
216-014	3.50	Crankshaft, replacing front oil seal
216-018	10.00	Crankshaft, replacing rear oil seal
23		FUEL SYSTEM
234-010	5.00	Fuel tank, replacing
234-041	0.50	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.50	Silencer, replacing
252-021	1.50	Exhaust pipe, flexible tube, replacing
255-070	2.00	Turbocharger, removing
255-071	4.00	Turbocharger, replacing
255-072	2.00	Turbocharger, installing
256-001	0.25	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing

Op.no.	time (h)	Notes
256-006	0.40	Preheating coil, replacing
258-002	5.00	Intercooler, replacing
258-022	0.75	Charge air cooler connection (hose, tube), replacing
26		COOLING SYSTEM
261-002	0.25	Coolant, checking anti-freeze resistance
261-004	1.00	Coolant, changing
261-008	7.50	Radiator, replacing
261-012	0.75	Radiator hose upper, replacing
261-014	1.50	Radiator hoses lower, replacing
261-072	0.25	Coolant filter, changing
263-012	0.60	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	1.50	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-003	0.50	Main switch, replacing
311-006	0.50	Earth lead to battery, replacing
311-008	2.00	Starter motor lead to battery, replacing
33		STARTING SYSTEM
331-081	0.50	Starter relay, replacing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.50	Horn, replacing
363-002	1.00	Windscreen wiper front, replacing motor
363-003	0.50	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-004	0.50	Switch, replacing
364-050	0.50	Relay (general), replacing
364-052	0.50	Battery relay, replacing
364-056	0.50	Pre-heating relay, replacing

Op.no.	time (h)	Notes
37		CABLE; FUSE; RELAY
372-020	0.25	Fuse (general), replacing
372-091	0.50	Slow blow fuse, replacing
379-011	0.75	Boom wire harness, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-043	0.50	Travel speed sensor or alarm sensor, replacing
386-044	0.50	Auto idling sensor, replacing
39		MISCELLANEOUS
390-902	3.00	CareTrack, installing new
393-001	0.50	Voltage converter, replacing
393-021	0.75	Radio, replacing
395-021	0.50	Antenna, replacing
395-022	1.00	Antenna cable, replacing
395-031	0.50	Speaker, replacing
4		POWER TRANSMISSION
43		GEARBOX,
431-021	6.00	Swing gearbox, replacing
431-026	0.50	Swing gearbox removed, replacing seal
431-027	2.50	Swing gearbox removed, replacing shaft
431-031	4.00	Pump gearbox coupling assembly, replacing
431-036	5.50	Pump gearbox flange, replacing
44		HYDROSTATIC DRIVE
441-021	3.00	Swing motor, replacing
441-021	3.00	Swing motor, replacing
441-022	0.75	Swing motor relief valve, replacing
441-023	3.50	Swing motor, replacing cylinder block
441-024	1.50	Swing motor, replacing plate (brake)
441-025	1.50	Swing motor, replacing brake piston seal
441-026	0.30	Swing motor removed, replacing seal
441-028	0.75	Swing motor brake valve, replacing
49		MISCELLANEOUS
492-031	3.00	Swing ring gear outer seal, replacing
492-091	0.50	Ring gear grease pipe, replacing

Op.no.	time (h)	Notes	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
715-019	0.60	Boom cylinder protecting guard, removal	80001 - 80636
715-019	0.60	Boom cylinder protecting guard, removal	80637 - 110000
715-020	1.25	Boom cylinder protecting guard, installation	80001 - 80636
715-020	1.25	Boom cylinder protecting guard, installation	80637 - 110000
716-003	2.00	Counterweight, replacing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	5.00	Front idler, replacing one	
775-021	5.00	Sprocket, replacing one	
775-032	0.50	Track shoe, replacing one	
775-034	1.75	Track chain assembly, removing	
775-035	2.00	Track chain assembly, installing	
775-051	1.00	Top roller, replacing one	
775-081	4.50	Track recoil spring (tensioner) assembly, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-003	4.00	Operator cab, replacing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	1.00	Engine hood, replacing	
827-091	1.75	Tool box assembly, replacing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	0.75	Door, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.25	Rear-view mirror, changing	
843-002	2.00	Windscreen, replacing	
843-012	1.00	Rear window, replacing	
843-013	1.50	Side window, replacing	
843-048	1.00	Door window, replacing	
87		AIR CONDITIONING UNIT	
870-001	5.00	Cooler and Heater assembly, replacing	
872-001	0.50	Cab filter, replacing	
872-011	1.00	Duct, replacing	
872-021	1.00	Defroster hose, replacing	

Op.no.	time (h)	Notes
873-004	3.00	Heater core, replacing
873-097	1.50	Heater hose, replacing
874-002	0.75	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	3.00	Compressor, replacing incl draining and filling
874-007	1.00	Belt, replacing
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-081	1.75	Liquid hose, replacing incl. draining and filling
874-082	1.75	Discharge hose, replacing incl. draining and filling
874-083	1.75	Suction hose, replacing incl. draining and filling
874-091	1.00	Switch and controller, replacing
874-093	1.00	Power transistor (ceramic resistor), replacing
874-094	1.00	Vent actuator, replacing
874-095	1.00	Mode (foot) actuator, replacing
874-096	1.00	Intake actuator, replacing
874-097	1.00	Shutter assembly, replacing
874-098	1.00	Valve (mix) actuator, replacing

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HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

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WORKING HYDRAULICS; SERVO HYDRAULICS

911-001	0.20	Oil return filter, replacing
911-004	0.50	Suction strainer, replacing
911-005	2.00	Pump suction hose and pipe, replacing
911-011	3.00	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-017	2.00	Suction cover, replacing
911-024	1.00	Pipe and hose (pump - valve), replacing
911-025	1.00	Pipe and hose (valve - cylinder), replacing
911-026	0.75	Pipe and hose (valve - swing motor), replacing
911-031	1.50	Oil cooler line pipe and hose, replacing
911-032	1.25	Oil cooler line pipe coupling, replacing
911-033	1.25	Oil cooler line bypass valve (check valve), replacing
911-034	2.50	Oil cooler fan motor, replacing
911-035	1.50	Oil cooler fan pump, replacing
911-038	4.50	Hydraulic oil tank, replacing
911-042	0.25	Oil drain filter, replacing
911-043	0.25	Servo system filter, replacing

Op.no.	time (h)	Notes
911-051	0.20	Breather, replacing
912-001	8.50	Control valve, replacing
912-067	0.60	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	1.00	Rupture valve, replacing (dipper arm cylinder)
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)
912-075	0.50	Rupture valve hose or pipe, replacing (dipper arm cylinder)
913-010	4.50	Hydraulic pump, replacing
913-013	8.00	Hydraulic pump, replacing seal for input shaft
913-029	0.30	Pump regulator, replacing
914-036	1.50	Servo pump block seal, replacing
914-037	1.50	Servo pump shaft seal, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-060	1.25	Servo pump, replacing
914-071	0.50	Servo pipe and hose, replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.50	Solenoid valve, replacing
916-043	1.00	Boom, replacing pipe (boom cylinder)
916-044	0.75	Boom, replacing hose (boom cylinder)
916-045	1.00	Boom, replacing pipe (dipper arm cylinder)
916-046	0.50	Boom, replacing hose (dipper arm cylinder)
916-047	1.00	Boom, replacing pipe (bucket cylinder)
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)
916-049	0.75	Dipper arm, replacing pipe (bucket cylinder)
916-091	0.75	Hammer and shear pipe, replacing (for boom)
916-092	0.50	Hammer and shear hose, replacing (for boom)
916-093	0.75	Hammer and shear pipe, replacing (for dipper arm)
916-094	0.50	Hammer and shear hose, replacing (for dipper arm)
916-095	0.50	Hammer and shear hose and pipe, replacing (MCV - 3 way valve)
916-096	1.00	Hammer and shear pedal valve (RCV), replacing
916-097	0.75	Hammer and shear 3-way valve, replacing
916-098	0.75	Hammer and shear pipe and hose, replacing (for 2nd pump flow)
916-099	0.50	Hammer and shear ball valve, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.50	Quickfit pump (gear pump), replacing
924-002	1.00	Quickfit valve, replacing
924-003	0.75	Quickfit solenoid valve, replacing

Op.no.	time (h)	Notes
924-004	0.50	Quickfit control switch, replacing
924-041	0.50	Quickfit hydraulic hose, replacing (for boom)
924-042	0.50	Quickfit hydraulic pipe, replacing (for boom)
924-043	0.25	Quickfit hydraulic hose, replacing (for dipper arm)
924-044	0.50	Quickfit hydraulic pipe, replacing (for dipper arm)
924-045	0.75	Quickfit hydraulic cylinder hose, replacing (dipper arm cylinder)
925-012	0.50	Bucket assembly, removal
925-013	0.50	Bucket assembly, installation
97		UNIT, DIGGING
974-010	13.00	Boom, replacing
974-010	13.00	Boom, replacing
974-013	6.50	Boom, removal
974-014	6.50	Boom, installation
974-017	2.00	Boom, replacing pin
974-018	0.25	Boom grease pipe or hose, replacing
974-021	3.00	Boom cylinder, replacing
974-022	3.00	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	4.50	Boom cylinder, repacking in machine
974-031	1.50	Boom cylinder, removal
974-032	1.50	Boom cylinder, installation
975-011	4.00	Dipper arm, removal
975-012	4.00	Dipper arm, installation
975-014	1.50	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-023	0.25	Dipper arm pipe or hose, replacing
975-024	1.50	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-026	3.50	Dipper arm cylinder removed, repacking
975-028	1.50	Connecting rod yoke, replacing
975-032	0.75	Connecting rod yoke, removal
975-035	0.75	Connecting rod yoke, installation
975-039	7.00	Dipper arm, replacing
975-043	5.50	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-063	4.50	Bucket cylinder, repacking in machine
975-065	1.25	Bucket cylinder, installation
975-069	3.00	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes
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Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
171-001	1.00	Arrival Inspection, according to Inspection Programme	
171-002	3.00	Delivery Inspection, according to Inspection Programme	
173-002	1.00	Maintenance service, daily	
173-004	1.50	Maintenance service, every 50 hours	
173-007	2.50	Maintenance service, every 250 hours	
173-010	4.50	Maintenance service, every 500 hours	
173-012	6.50	Maintenance service, every 1000 hours	
173-014	10.00	Maintenance service, every 2000 hours	
173-059	0.60	Engine, changing oil and filter	
173-074	1.50	Hydraulic oil tank, changing oil and filter	
173-076	0.25	Hydraulic oil tank, return oil filter change	
173-077	0.20	Hydraulic oil tank, changing breather filter	
173-079	1.50	Swing motor gearbox, changing oil	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	80001 - 80660 10001 - 12542
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	80001 - 80660 10001 - 12542
21		ENGINE	
210-070	8.00	Engine, removing	
210-072	8.00	Engine, installing	
214-012	3.50	Valves, adjusting	
214-036	1.00	Valve covers, fitting new gasket	
216-014	3.50	Crankshaft, replacing front oil seal	
216-018	10.00	Crankshaft, replacing rear oil seal	
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	
233-002	1.75	Feed pump, replacing	
233-004	0.20	Feed pump, checking feed pressure	
233-014	0.40	Fuel filters, replacing	
233-015	0.50	Fuel filter extra, replacing	
234-010	5.00	Fuel tank, replacing	
234-041	0.50	Fuel filling pump, removing	

Op.no.	time (h)	Notes	
234-042	0.50	Fuel filling pump, installing	
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.50	Silencer, replacing	
252-021	1.50	Exhaust pipe, flexible tube, replacing	
255-002	0.80	Turbocharger, inspection	
255-070	2.00	Turbocharger, removing	
255-071	4.00	Turbocharger, replacing	
255-072	2.00	Turbocharger, installing	
256-001	0.25	Air cleaner, cleaning filter element	
256-003	0.25	Air cleaner, primary filter replacing	
256-004	0.25	Air cleaner, secondary filter replacing	
256-006	0.40	Preheating coil, replacing	
258-002	5.00	Intercooler, replacing	
258-022	0.75	Charge air cooler connection (hose, tube), replacing	
26		COOLING SYSTEM	
261-002	0.25	Coolant, checking anti-freeze resistance	
261-004	1.00	Coolant, changing	
261-008	7.50	Radiator, replacing	
261-012	0.75	Radiator hose upper, replacing	
261-014	1.50	Radiator hoses lower, replacing	
261-072	0.25	Coolant filter, changing	
262-002	3.00	Coolant pump, replacing	
262-098	1.50	Thermostat, replacing	
263-012	0.60	Fan belt and/or alternator belt, replacing	
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension	
263-022	1.50	Fan belt and/or alternator-, compressor belt, replacing all belts	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.60	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-001	0.80	Battery charging capacity, checking	
311-002	0.80	Batteries, replacing	80001 - 80660 10001 - 12542
311-003	0.50	Main switch, replacing	
311-006	0.50	Earth lead to battery, replacing	

Op.no.	time (h)		Notes
311-008	2.00	Starter motor lead to battery, replacing	
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.00	Alternator, replacing incl function check	80001 - 80660 10001 - 12542
33		STARTING SYSTEM	
331-018	1.25	Starter motor, replacing	80001 - 80660 10001 - 12542
331-021	1.25	Starter motor, tests	80001 - 80660 10001 - 12542
331-081	0.50	Starter relay, replacing	
334-011	0.50	Starter switch (engine start switch), replacing	
35		LIGHTING	
356-056	0.50	Work lighting, replacing one head lamp assy	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.50	Horn, replacing	
363-002	1.00	Windscreen wiper front, replacing motor	
363-003	0.50	Windscreen wiper, replacing switch	
363-004	0.50	Windscreen flusher pump, replacing	
363-091	0.50	Windscreen wiper, replacing controller	
364-004	0.50	Switch, replacing	
364-050	0.50	Relay (general), replacing	
364-052	0.50	Battery relay, replacing	
364-056	0.50	Pre-heating relay, replacing	
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	80001 - 80660 10001 - 12542
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	80001 - 80660 10001 - 12542
37		CABLE; FUSE; RELAY	
372-020	0.25	Fuse (general), replacing	
372-091	0.50	Slow blow fuse, replacing	
379-011	0.75	Boom wire harness, replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-006	1.50	Engine temperature sensor, replacing	
386-007	0.60	Engine oil pressure sensor, replacing	
386-011	0.30	Fuel level sender, replacing	
386-017	0.50	Hydraulic oil temperature sensor, replacing	
386-038	1.75	Engine rotation speed sensor, replacing	
386-043	0.50	Travel speed sensor or alarm sensor, replacing	
386-044	0.50	Auto idling sensor, replacing	
386-088	1.75	Engine rotation speed sensor (camshaft), replacing	

Op.no.	time (h)	Notes	
39		MISCELLANEOUS	
390-902	3.00	CareTrack, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.75	Radio, replacing	
395-021	0.50	Antenna, replacing	
395-022	1.00	Antenna cable, replacing	
395-031	0.50	Speaker, replacing	
398-002	0.70	W-ECU, MID142, changing pre-programmed ECU	18401 - 85000 85201 - 110000
398-003	0.70	W-ECU, MID142, changing non-programmed ECU	18401 - 85000 85201 - 110000
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.00	Swing gearbox, replacing	
431-026	0.50	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	4.00	Pump gearbox coupling assembly, replacing	
431-036	5.50	Pump gearbox flange, replacing	
44		HYDROSTATIC DRIVE	
441-021	2.50	Swing motor, replacing	
441-021	3.00	Swing motor, replacing	
441-022	0.75	Swing motor relief valve, replacing	
441-023	3.50	Swing motor, replacing cylinder block	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	0.30	Swing motor removed, replacing seal	
441-028	0.75	Swing motor brake valve, replacing	
49		MISCELLANEOUS	
492-031	3.00	Swing ring gear outer seal, replacing	
492-091	0.50	Ring gear grease pipe, replacing	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	2.00	Counterweight, removing	
716-002	2.50	Counterweight, fitting	
716-003	2.00	Counterweight, replacing	
716-006	1.25	Removable counterweight, removing	

Op.no.	time (h)	Notes
716-007	1.50	Removable counterweight, installing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	5.00	Front idler, replacing one
775-021	5.00	Sprocket, replacing one
775-032	0.50	Track shoe, replacing one
775-034	1.75	Track chain assembly, removing
775-035	2.00	Track chain assembly, installing
775-051	1.00	Top roller, replacing one
775-061	1.25	Bottom roller, replacing one
775-066	3.00	Bottom roller, replacing seal
775-071	1.25	Track guard, replacing one
775-081	4.50	Track recoil spring (tensioner) assembly, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.50	Cab, removing
810-002	2.00	Cab, installing
810-003	4.50	Operator cab, replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	1.00	Engine hood, replacing
827-091	1.75	Tool box assembly, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	0.75	Door, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.25	Rear-view mirror, changing
843-002	2.00	Windscreen, replacing
843-012	1.00	Rear window, replacing
843-013	1.50	Side window, replacing
843-048	1.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
872-011	1.00	Duct, replacing
872-021	1.00	Defroster hose, replacing
873-004	3.00	Heater core, replacing

Op.no.	time (h)	Notes
873-006	0.90	Fan motor, replacing
873-097	1.50	Heater hose, replacing
874-002	0.75	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	3.00	Compressor, replacing incl draining and filling
874-007	1.00	Belt, replacing
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-081	1.75	Liquid hose, replacing incl. draining and filling
874-082	1.75	Discharge hose, replacing incl. draining and filling
874-083	1.75	Suction hose, replacing incl. draining and filling
874-091	1.00	Switch and controller, replacing
874-093	1.00	Power transistor (ceramic resister), replacing
874-094	1.00	Vent actuator, replacing
874-095	1.00	Mode (foot) actuator, replacing
874-096	1.00	Intake actuator, replacing
874-097	1.00	Shutter assembly, replacing
874-098	1.00	Valve (mix) actuator, replacing

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-001	0.20	Oil return filter, replacing
911-004	0.50	Suction strainer, replacing
911-005	2.00	Pump suction hose and pipe, replacing
911-011	3.00	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-017	2.00	Suction cover, replacing
911-024	1.00	Pipe and hose (pump - valve), replacing
911-025	1.00	Pipe and hose (valve - cylinder), replacing
911-026	0.75	Pipe and hose (valve - swing motor), replacing
911-031	1.50	Oil cooler line pipe and hose, replacing
911-032	1.25	Oil cooler line pipe coupling, replacing
911-033	1.25	Oil cooler line bypass valve (check valve), replacing
911-034	2.50	Oil cooler fan motor, replacing
911-035	1.50	Oil cooler fan pump, replacing
911-038	4.50	Hydraulic oil tank, replacing
911-042	0.25	Oil drain filter, replacing
911-043	0.25	Servo system filter, replacing

Op.no.	time (h)	Notes
911-051	0.20	Breather, replacing
912-001	8.50	Control valve, replacing
912-067	0.60	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	1.00	Rupture valve, replacing (dipper arm cylinder)
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)
912-075	0.50	Rupture valve hose or pipe, replacing (dipper arm cylinder)
913-010	4.50	Hydraulic pump, replacing
913-013	8.00	Hydraulic pump, replacing seal for input shaft
913-029	0.30	Pump regulator, replacing
914-036	1.50	Servo pump block seal, replacing
914-037	1.50	Servo pump shaft seal, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-060	1.25	Servo pump, replacing
914-071	0.50	Servo pipe and hose, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.50	Solenoid valve, replacing
916-043	1.00	Boom, replacing pipe (boom cylinder)
916-044	0.75	Boom, replacing hose (boom cylinder)
916-045	1.00	Boom, replacing pipe (dipper arm cylinder)
916-046	0.50	Boom, replacing hose (dipper arm cylinder)
916-047	1.00	Boom, replacing pipe (bucket cylinder)
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)
916-049	0.75	Dipper arm, replacing pipe (bucket cylinder)
916-091	0.75	Hammer and shear pipe, replacing (for boom)
916-092	0.50	Hammer and shear hose, replacing (for boom)
916-093	0.75	Hammer and shear pipe, replacing (for dipper arm)
916-094	0.50	Hammer and shear hose, replacing (for dipper arm)
916-095	0.50	Hammer and shear hose and pipe, replacing (MCV - 3 way valve)
916-096	1.00	Hammer and shear pedal valve (RCV), replacing
916-097	0.75	Hammer and shear 3-way valve, replacing
916-098	0.75	Hammer and shear pipe and hose, replacing (for 2nd pump flow)
916-099	0.50	Hammer and shear ball valve, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.50	Quickfit pump (gear pump), replacing

Op.no.	time (h)	Notes
924-002	1.00	Quickfit valve, replacing
924-003	0.75	Quickfit solenoid valve, replacing
924-004	0.50	Quickfit control switch, replacing
924-041	0.50	Quickfit hydraulic hose, replacing (for boom)
924-042	0.50	Quickfit hydraulic pipe, replacing (for boom)
924-043	0.25	Quickfit hydraulic hose, replacing (for dipper arm)
924-044	0.50	Quickfit hydraulic pipe, replacing (for dipper arm)
924-045	0.75	Quickfit hydraulic cylinder hose, replacing (dipper arm cylinder)
925-012	0.50	Bucket assembly, removal
925-013	0.50	Bucket assembly, installation
97		UNIT, DIGGING
974-010	13.00	Boom, replacing
974-013	6.50	Boom, removal
974-014	6.50	Boom, installation
974-017	2.00	Boom, replacing pin
974-018	0.25	Boom grease pipe or hose, replacing
974-021	3.00	Boom cylinder, replacing
974-022	3.00	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	4.50	Boom cylinder, repacking in machine
974-031	1.50	Boom cylinder, removal
974-032	1.50	Boom cylinder, installation
975-011	4.00	Dipper arm, removal
975-012	4.00	Dipper arm, installation
975-014	1.50	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-023	0.25	Dipper arm pipe or hose, replacing
975-024	1.50	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-026	3.50	Dipper arm cylinder removed, repacking
975-028	1.50	Connecting rod yoke, replacing
975-032	0.75	Connecting rod yoke, removal
975-035	0.75	Connecting rod yoke, installation
975-039	7.00	Dipper arm, replacing
975-043	5.50	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-063	4.50	Bucket cylinder, repacking in machine
975-065	1.25	Bucket cylinder, installation
975-069	3.00	Bucket cylinder removed, repacking

Op.no.	time (h)	Notes
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
210-070	7.00	Engine, removing
210-072	8.00	Engine, installing
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
214-012	3.00	Valves, adjusting
22		LUBRICATING SYSTEM
221-022	0.40	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-002	1.75	Feed pump, replacing
233-004	0.40	Feed pump, checking feed pressure
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
233-020	0.20	Fuel filter, checking
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-012	5.50	Unit injector, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.75	Silencer, replacing
252-021	1.50	Exhaust pipe, flexible tube, replacing
256-001	0.20	Air cleaner, cleaning filter element
256-003	0.20	Air cleaner, primary filter replacing
256-004	0.20	Air cleaner, secondary filter replacing
256-006	0.70	Preheating coil, replacing
258-002	5.00	Intercooler, replacing
258-022	0.70	Charge air cooler connection (hose, tube), replacing
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.70	Coolant, changing
261-008	5.50	Radiator, replacing
261-012	0.90	Radiator hose upper, replacing
261-014	1.50	Radiator hoses lower, replacing

Op.no.	time (h)	Notes
261-018	0.90	Expansion tank, replacing
262-098	1.25	Thermostat, replacing
263-012	0.60	Fan belt and/or alternator belt, replacing
263-022	0.90	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.60	I-ECU, MID 140, changing pre-programmed ECU
36		OTHER ELECTRICAL EQUIPMENT
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
387-031	0.40	Total moment indicator (TMI), replacing
39		MISCELLANEOUS
390-902	3.00	CareTrack, installing new
398-002	0.70	W-ECU, MID142, changing pre-programmed ECU90013 - 110000
398-003	0.70	W-ECU, MID142, changing non-programmed ECU 90013 - 110000
4		POWER TRANSMISSION
43		GEARBOX,
431-113	4.00	Track gearbox, removing
431-114	3.50	Track gearbox, installing
431-117	1.75	Track gearbox, replacing cover
44		HYDROSTATIC DRIVE
441-022	0.60	Swing motor relief valve, replacing
441-111	6.00	Track motor, replacing
441-112	0.80	Track motor relief valve, replacing
49		MISCELLANEOUS
492-027	0.40	Swing limitation sensor, adjusting
492-091	0.50	Ring gear grease pipe, replacing

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	2.00	Counterweight, removing
716-002	2.50	Counterweight, fitting
718-001	3.00	Extensible undercarriage cylinder, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	2.00	Cab, removing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
86		PROTECTIVE EQUIPMENT, not specified in a special group
867-000	0.80	Falling object guard, removal
867-001	0.80	Falling object guard, installation
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-034	2.50	Oil cooler fan motor, replacing
912-036	0.50	Hose rupture valve, removal
912-037	0.50	Hose rupture valve, installation
912-070	1.00	Check valve, replacing
912-177	1.75	Demolition control valve, replacing
914-060	1.50	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.00	Solenoid valve, replacing
94		UNIT, LOAD HANDLING
942-003	1.75	Extension boom, removal
942-004	1.75	Extension boom, installation
944-004	1.75	Base boom modular joint cylinder, replacing
944-005	2.50	Middle dipper arm cylinder, replacing
944-006	0.80	Base boom modular joint cylinder pin, replacing
944-007	1.25	Extension boom modular joint cylinder, replacing
944-008	0.80	Extension boom modular joint cylinder pin, replacing

Op.no.	time (h)	Notes
945-057	1.75	Cab tilting cylinder, replacing
97		UNIT, DIGGING
975-085	3.00	Demolition dipper arm cylinder, replacing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
170-005	0.25	Start of VCADS Pro computer and reading machine data
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	3.00	Delivery Inspection, according to Inspection Programme
172-002	3.00	Warranty inspection 100 hours
172-004	12.00	Warranty inspection 1000 hours
173-002	0.75	Maintenance service, daily
173-004	1.25	Maintenance service, every 50 hours
173-007	2.00	Maintenance service, every 250 hours
173-010	6.00	Maintenance service, every 500 hours
173-012	9.50	Maintenance service, every 1000 hours
173-014	8.50	Maintenance service, every 2000 hours
173-059	0.80	Engine, changing oil and filter
173-074	1.75	Hydraulic oil tank, changing oil and filter
173-076	0.50	Hydraulic oil tank, return oil filter change
173-079	1.50	Swing motor gearbox, changing oil
173-101	0.60	Track motor gearbox, changing oil
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
210-070	7.00	Engine, removing
210-072	8.00	Engine, installing
210-076	17.00	Engine, replacing
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
214-012	3.00	Valves, adjusting
214-036	1.50	Valve covers, fitting new gasket
216-014	4.00	Crankshaft, replacing front oil seal
216-018	12.00	Crankshaft, replacing rear oil seal
217-005	16.00	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.40	Lubrication oil pressure, checking with pressure gauge

Op.no.	time (h)	Notes
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-002	1.75	Feed pump, replacing
233-004	0.40	Feed pump, checking feed pressure
233-010	1.50	Fuel pump, inspection
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
233-020	0.20	Fuel filter, checking
234-010	5.00	Fuel tank, replacing
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-012	5.50	Unit injector, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.75	Silencer, replacing
252-021	1.50	Exhaust pipe, flexible tube, replacing
255-002	1.50	Turbocharger, inspection
255-070	2.50	Turbocharger, removing
255-071	4.50	Turbocharger, replacing
255-072	2.00	Turbocharger, installing
256-001	0.20	Air cleaner, cleaning filter element
256-003	0.20	Air cleaner, primary filter replacing
256-004	0.20	Air cleaner, secondary filter replacing
256-006	0.70	Preheating coil, replacing
258-002	5.00	Intercooler, replacing
258-022	0.70	Charge air cooler connection (hose, tube), replacing
258-030	2.00	Charge air system, inspection
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.70	Coolant, changing
261-008	5.50	Radiator, replacing
261-012	0.90	Radiator hose upper, replacing
261-014	1.50	Radiator hoses lower, replacing
261-018	0.90	Expansion tank, replacing
262-098	1.25	Thermostat, replacing
263-012	0.60	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	0.90	Fan belt and/or alternator-, compressor belt, replacing all belts

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.60	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	1.00	Batteries, replacing
311-003	0.75	Main switch, replacing
311-006	0.50	Earth lead to battery, replacing
311-008	2.50	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.50	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	1.75	Starter motor, replacing
331-081	0.50	Starter relay, replacing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.50	Horn, replacing
362-041	0.50	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.00	Windscreen wiper front, replacing motor
363-003	0.50	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-004	0.50	Switch, replacing
364-050	0.50	Relay (general), replacing
364-052	0.50	Battery relay, replacing
364-056	0.50	Pre-heating relay, replacing
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU
37		CABLE; FUSE; RELAY
372-020	0.25	Fuse (general), replacing
379-011	0.75	Boom wire harness, replacing

Op.no.	time (h)	Notes
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	0.50	Engine temperature sensor, replacing
386-007	0.60	Engine oil pressure sensor, replacing
386-011	0.50	Fuel level sender, replacing
386-038	1.75	Engine rotation speed sensor, replacing
386-043	0.50	Travel speed sensor or alarm sensor, replacing
386-044	0.50	Auto idling sensor, replacing
386-088	1.75	Engine rotation speed sensor (camshaft), replacing
39		MISCELLANEOUS
390-902	3.00	CareTrack, installing new
393-001	0.50	Voltage converter, replacing
393-021	0.75	Radio, replacing
395-021	0.50	Antenna, replacing
395-022	1.00	Antenna cable, replacing
395-031	0.50	Speaker, replacing
398-002	0.70	W-ECU, MID142, changing pre-programmed ECU10941 - 110000
398-003	0.70	W-ECU, MID142, changing non-programmed 10941 - 110000 ECU
4		POWER TRANSMISSION
43		GEARBOX,
431-021	6.50	Swing gearbox, replacing
431-026	1.75	Swing gearbox removed, replacing seal
431-027	2.50	Swing gearbox removed, replacing shaft
431-031	7.00	Pump gearbox coupling assembly, replacing
431-036	7.00	Pump gearbox flange, replacing
431-113	4.00	Track gearbox, removing
431-114	3.50	Track gearbox, installing
431-115	3.00	Track gearbox (removed), replacing floating seal
431-117	1.75	Track gearbox, replacing cover
431-125	3.50	Track unit, removal
431-126	3.50	Track unit, installation
431-127	7.00	Track unit, replacing
44		HYDROSTATIC DRIVE
441-017	1.25	Travel motor pressure, checking and adjusting
441-021	3.50	Swing motor, replacing
441-022	0.60	Swing motor relief valve, replacing
441-023	4.50	Swing motor, replacing cylinder block
441-024	1.50	Swing motor, replacing plate (brake)
441-025	1.50	Swing motor, replacing brake piston seal

Op.no.	time (h)	Notes
441-026	1.00	Swing motor removed, replacing seal
441-028	0.75	Swing motor brake valve, replacing
441-032	1.00	Swing motor pressure, checking and adjusting
441-111	6.00	Track motor, replacing
441-112	0.80	Track motor relief valve, replacing
441-115	2.00	Track motor removed, replacing seal
443-037	6.00	Center passage, replacing
443-038	7.50	Center passage, replacing seal kit
443-039	1.50	Center passage hose (valve – center passage), replacing
443-040	2.00	Center passage hose (center passage – motor), replacing
49		MISCELLANEOUS
492-031	3.00	Swing ring gear outer seal, replacing
492-091	0.50	Ring gear grease pipe, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	2.00	Counterweight, removing
716-003	4.00	Counterweight, replacing
716-006	1.25	Removable counterweight, removing
716-007	1.50	Removable counterweight, installing
718-002	2.50	Retractable track, removing
718-003	3.00	Retractable track, installing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	4.50	Front idler, replacing one
775-021	5.00	Sprocket, replacing one
775-032	0.60	Track shoe, replacing one
775-033	9.00	Track shoe, replacing each side
775-034	1.50	Track chain assembly, removing
775-035	2.50	Track chain assembly, installing
775-051	1.00	Top roller, replacing one
775-061	1.25	Bottom roller, replacing one
775-071	1.25	Track guard, replacing one
775-080	4.00	Track tension cylinder, replacing
775-081	4.50	Track recoil spring (tensioner) assembly, replacing

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.50	Cab, removing
810-002	2.00	Cab, installing
810-003	4.50	Operator cab, replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	1.00	Engine hood, replacing
827-091	1.75	Tool box assembly, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	0.75	Door, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.30	Rear-view mirror, changing
843-002	2.00	Windscreen, replacing
843-012	1.00	Rear window, replacing
843-013	1.50	Side window, replacing
843-048	1.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
86		PROTECTIVE EQUIPMENT, not specified in a special group
867-000	0.80	Falling object guard, removal
867-001	0.80	Falling object guard, installation
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
872-011	1.00	Duct, replacing
872-021	1.00	Defroster hose, replacing
873-004	3.00	Heater core, replacing
873-006	1.50	Fan motor, replacing
873-011	1.00	Air mix door actuator, replacing
873-020	1.00	Heat control valve actuator, replacing
873-097	1.50	Heater hose, replacing
874-002	0.75	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	3.00	Compressor, replacing incl draining and filling
874-007	1.25	Belt, replacing
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling

Op.no.	time (h)	Notes
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-014	0.50	Thermostat, replacing
874-081	1.75	Liquid hose, replacing incl. draining and filling
874-082	1.75	Discharge hose, replacing incl. draining and filling
874-083	1.75	Suction hose, replacing incl. draining and filling
874-091	1.00	Switch and controller, replacing
874-093	1.00	Power transistor (ceramic resister), replacing
874-094	1.00	Vent actuator, replacing
874-095	1.00	Mode (foot) actuator, replacing
874-096	1.00	Intake actuator, replacing
874-097	1.00	Shutter assembly, replacing
874-098	1.00	Valve (mix) actuator, replacing

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-001	0.40	Oil return filter, replacing
911-004	0.50	Suction strainer, replacing
911-005	3.00	Pump suction hose and pipe, replacing
911-011	5.00	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-017	2.00	Suction cover, replacing
911-024	1.25	Pipe and hose (pump - valve), replacing
911-025	1.00	Pipe and hose (valve - cylinder), replacing
911-026	0.75	Pipe and hose (valve - swing motor), replacing
911-031	1.50	Oil cooler line pipe and hose, replacing
911-032	1.25	Oil cooler line pipe coupling, replacing
911-033	2.00	Oil cooler line bypass valve (check valve), replacing
911-034	2.50	Oil cooler fan motor, replacing
911-038	5.00	Hydraulic oil tank, replacing
911-042	0.25	Oil drain filter, replacing
911-043	0.25	Servo system filter, replacing
911-051	0.20	Breather, replacing
912-001	10.00	Control valve, replacing
912-067	0.75	Main pressure relief valve, replacing
912-070	1.00	Check valve, replacing
912-071	1.00	Rupture valve, replacing (boom cylinder)
912-073	1.50	Rupture valve, replacing (dipper arm cylinder)
912-075	0.50	Rupture valve hose or pipe, replacing (dipper arm cylinder)

Op.no.	time (h)	Notes
913-004	1.25	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	6.00	Hydraulic pump, replacing
913-013	8.50	Hydraulic pump, replacing seal for input shaft
913-029	0.30	Pump regulator, replacing
914-036	1.50	Servo pump block seal, replacing
914-037	1.50	Servo pump shaft seal, replacing
914-041	0.80	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-055	0.75	Servo pressure, checking and adjusting
914-060	1.50	Servo pump, replacing
914-071	0.50	Servo pipe and hose, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.00	Solenoid valve, replacing
916-043	1.00	Boom, replacing pipe (boom cylinder)
916-044	0.75	Boom, replacing hose (boom cylinder)
916-045	1.00	Boom, replacing pipe (dipper arm cylinder)
916-046	0.50	Boom, replacing hose (dipper arm cylinder)
916-047	1.00	Boom, replacing pipe (bucket cylinder)
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)
916-049	0.75	Dipper arm, replacing pipe (bucket cylinder)
916-091	0.75	Hammer and shear pipe, replacing (for boom)
916-092	0.50	Hammer and shear hose, replacing (for boom)
916-093	0.75	Hammer and shear pipe, replacing (for dipper arm)
916-094	0.50	Hammer and shear hose, replacing (for dipper arm)
916-095	0.50	Hammer and shear hose and pipe, replacing (MCV - 3 way valve)
916-096	1.00	Hammer and shear pedal valve (RCV), replacing
916-097	0.75	Hammer and shear 3-way valve, replacing
916-098	0.75	Hammer and shear pipe and hose, replacing (for 2nd pump flow)
916-099	0.50	Hammer and shear ball valve, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-002	1.00	Quickfit valve, replacing
924-004	0.50	Quickfit control switch, replacing
924-021	2.50	Quickfit hydraulic cylinder bracket (body), replacing
924-041	0.50	Quickfit hydraulic hose, replacing (for boom)
924-042	0.50	Quickfit hydraulic pipe, replacing (for boom)

Op.no.	time (h)	Notes
924-043	0.30	Quickfit hydraulic hose, replacing (for dipper arm)
924-044	0.50	Quickfit hydraulic pipe, replacing (for dipper arm)
924-045	0.70	Quickfit hydraulic cylinder hose, replacing (dipper arm cylinder)
925-011	1.50	Bucket assembly, replacing
925-012	0.70	Bucket assembly, removal
925-013	1.00	Bucket assembly, installation
97		UNIT, DIGGING
974-010	14.00	Boom, replacing
974-013	7.00	Boom, removal
974-014	7.00	Boom, installation
974-017	2.00	Boom, replacing pin
974-018	0.30	Boom grease pipe or hose, replacing
974-021	3.00	Boom cylinder, replacing
974-022	3.00	Boom cylinder removed, repacking
974-024	0.70	Boom cylinder removed, replacing bearings and/or bushes
974-025	6.00	Boom cylinder, repacking in machine
974-031	1.50	Boom cylinder, removal
974-032	1.50	Boom cylinder, installation
975-006	0.80	Dipper arm connecting rod, removal
975-007	0.80	Dipper arm connecting rod, installation
975-011	4.50	Dipper arm, removal
975-012	4.50	Dipper arm, installation
975-014	1.50	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-023	0.30	Dipper arm pipe or hose, replacing
975-024	1.50	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-026	3.50	Dipper arm cylinder removed, repacking
975-028	1.50	Connecting rod yoke, replacing
975-032	0.90	Connecting rod yoke, removal
975-035	0.80	Connecting rod yoke, installation
975-039	8.00	Dipper arm, replacing
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-065	1.25	Bucket cylinder, installation

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
171-001	0.50	Arrival Inspection, according to Inspection Programme
171-002	1.50	Delivery Inspection, according to Inspection Programme
172-002	5.00	Warranty inspection 100 hours
172-004	8.00	Warranty inspection 1000 hours
173-007	2.00	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	7.00	Maintenance service, every 1000 hours
173-014	10.00	Maintenance service, every 2000 hours
173-061	2.00	Transmission, changing oil and filter
173-070	2.00	Axles, changing oil
173-074	1.50	Hydraulic oil tank, changing oil and filter
173-075	2.00	Hydraulic oil tank, changing oil and filter incl.cleaning tank

2 ENGINE WITH MOUNTING AND EQUIPMENT

21		ENGINE
210-002	1.50	Compression test
210-070	3.00	Engine, removing
210-071	32.00	Engine removed, general overhaul
210-072	5.00	Engine, installing
211-002	7.00	Cylinder head, replacing gasket
211-008	1.50	Cylinder heads all, retightening incl. adjusting valves
211-068	3.00	Cylinder heads all removed, decarbonizing and grinding in valves
211-080	2.00	Cylinder heads all, removing
211-082	5.00	Cylinder heads all, fitting
212-007	3.00	Cylinder block, liners removed, milling of all liner locations
213-010	14.00	Cylinder liner and piston, replacing one
213-018	18.00	Cylinder liners and pistons, replacing all
214-012	1.50	Valves, adjusting
214-021	0.50	Valve cover, fitting new gasket each
215-002	6.50	Timing gear cover, fitting new gasket in machine
215-032	12.00	Timing gear case, fitting new gasket in machine
216-014	2.00	Crankshaft, replacing front oil seal
216-018	9.00	Crankshaft, replacing rear oil seal
216-040	12.00	Flywheel housing and sump gasket, replacing

Op.no.	time (h)	Notes
216-048	6.00	Balance unit, removing and fitting
217-002	6.00	Sump gasket, replacing incl cleaning oil strainer
22		LUBRICATING SYSTEM
221-006	0.75	Oil pressure relief valve, replacing
223-006	0.75	Oil cooler, replacing
23		FUEL SYSTEM
233-001	0.25	Fuel system, bleeding
233-002	0.50	Feed pump, replacing
233-004	0.50	Feed pump, checking feed pressure
233-007	0.50	Feed pump, cleaning glass bowl and strainer
233-014	0.75	Fuel filters, replacing
233-097	0.75	Feed pump removed, reconditioning
236-001	1.50	Idling speed, checking and adjusting
236-002	0.50	Stall speed, checking
236-030	2.00	Injection timing, checking
236-044	1.50	Injection timing, checking
236-070	2.00	Injection pump, removing
236-072	3.00	Injection pump, fitting incl setting injection timing
237-001	2.00	Injectors cylinder head removed, replacing copper sleeve
237-002	1.50	Injectors, replacing all
237-004	1.00	Injector, replacing one
237-007	0.25	Overflow valve, replacing
237-016	2.00	Injectors, replacing copper sleeve in machine
237-018	0.50	Delivery pipe, replacing one
237-020	0.50	Pressure equalizer, replacing
237-074	4.00	Injectors all, testing and adjusting incl removing and fitting
237-080	2.00	Injectors removed, reconditioning all
25		INLET SYSTEM; EXHAUST SYSTEM
251-002	1.00	Induction manifold, replacing gasket
251-004	1.00	Exhaust manifold, replacing gasket
252-020	0.50	Silencer, replacing
255-070	0.75	Turbocharger, removing
255-072	0.75	Turbocharger, installing
255-073	2.00	Turbocharger removed, reconditioning
256-001	0.50	Air cleaner, cleaning filter element
256-002	0.25	Air cleaner, checking prssure drop indicator
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.50	Preheating coil, replacing
256-007	1.00	Preheating coil, replacing inlet manifold

Op.no.	time (h)	Notes
258-002	1.25	Intercooler, replacing
26		COOLING SYSTEM
261-001	0.50	Radiator, pressure testing
261-004	0.75	Coolant, changing
261-008	2.00	Radiator, replacing
262-002	2.00	Coolant pump, replacing
262-071	1.50	Coolant pump removed, reconditioning
262-098	0.75	Thermostat, replacing
263-012	0.75	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	0.75	Fan belt and/or alternator-, compressor belt, replacing all belts
27		ENGINE CONTROL
273-022	0.75	Stop cable control, replacing
275-001	0.50	Automatic speed control, check and adjusting
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.25	Battery charging capacity, checking
311-002	0.75	Batteries, replacing
311-014	1.50	Batteries, checking charging incl cleaning and painting battery boxes
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
321-025	0.75	Alternator, replacing carbon brush kit in machine
321-074	1.50	Charging test in machine (with measuring instrument)
322-005	0.50	Charging regulator, replacing
33		STARTING SYSTEM
331-018	0.75	Starter motor, replacing
331-099	0.50	Starter motor removed, replacing carbon brush kit
35		LIGHTING
352-024	0.50	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.50	Rear lamp, replacing one
353-018	0.25	Rear lamp, replacing glass or bulb
356-056	0.50	Work lighting, replacing one head lamp assy
356-057	0.50	Work lighting, replacing one insert

Op.no.	time (h)	Notes
36		OTHER ELECTRICAL EQUIPMENT
361-002	0.25	Flasher unit, replacing relay
361-010	0.75	Flasher switch, replacing
361-017	0.25	Flasher lamp, replacing glass or bulb
362-002	0.25	Horn, replacing
362-016	0.75	Horn switch, replacing
363-001	0.50	Windscreen wiper rear, replacing motor
363-002	0.50	Windscreen wiper front, replacing motor
363-003	0.75	Windscreen wiper, replacing switch
363-004	0.25	Windscreen flusher pump, replacing
364-004	0.25	Switch, replacing
364-008	0.25	Brake light switch, replacing
364-024	0.75	Main switch, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-005	0.50	Transmission, revolution sensor, replacing
386-011	0.75	Fuel level sender, replacing
387-020	0.50	Tachometer, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	1.50	Transmission oil pressure, checking
421-004	2.00	Oil pump, replacing
421-005	1.00	Oil pump removed, reconditioning
421-008	2.00	Gear selector valve, replacing
421-009	1.50	Gear selector valve removed, reconditioning
421-011	1.00	Converter removed, reconditioning
421-018	12.00	Converter, replacing
421-023	2.00	Lubrication and converter pressure valve, replacing
421-047	0.75	Gear selector, replacing
421-048	0.50	Gear selector valve, replacing one solenoid
421-052	1.50	Seal for front output shaft, replacing
421-054	1.50	Seal for rear output shaft, replacing
421-071	30.00	Transmission removed, reconditioning
421-073	6.00	Transmission, removing (together with engine)
421-074	8.00	Transmission, installing (together with engine)
421-075	2.00	Clutch shaft removed, reconditioning
421-077	0.75	Oil filter, replacing
421-079	0.25	Transmission, replacing breather filter

Op.no.	time (h)	Notes
45		PROPELLER SHAFT
451-010	1.00	Propeller shaft, front, replacing
451-013	1.00	Propeller shaft, removed reconditioning
46		FRONT AXLE; REAR AXLE
461-002	1.50	Axle, removing
461-003	2.00	Axle, installing
461-011	4.00	Centre gear , removing and fitting
461-012	5.00	Centre gear removed, reconditioning
461-014	1.50	Pinion front, fitting new gasket
461-041	3.00	Hub reduction gear, removed, reconditioning
461-043	3.00	Hub, replacing seal
461-051	9.00	Differential lock, replacing selector fork and clutch sleeves and adjusting
461-052	0.25	Differential lock front, repacking excl adjusting
461-053	0.50	Differential lock, adjusting engagement
463-002	3.00	Axle, removing
463-003	3.00	Axle, installing
463-005	1.00	Drive shaft, replacing one side
463-012	5.00	Centre gear removed, reconditioning
463-014	1.50	Pinion rear, fitting new gasket
463-041	3.00	Hub reduction gear removed, reconditioning
463-043	3.00	Hub, replacing seal
49		MISCELLANEOUS
491-006	1.50	Oil cooler, replacing
5		BRAKE
51		WHEEL BRAKE
511-002	3.00	Brake disc, replacing one
511-045	1.50	Brake calliper, replacing one
511-081	1.00	Brake calliper removed, reconditioning
512-002	3.00	Brake disc, replacing one
512-045	1.50	Brake caliper, replacing one
512-081	1.00	Brake caliper, removed, reconditioning
516-004	0.75	Brake discs, replacing on both sides
517-004	0.75	Brake disc, replacing both sides
52		HYDRAULIC BRAKE SYSTEM
520-001	0.50	Brake system, checking function, hydraulic
520-004	0.75	Brake system, adjusting unloading pressure
520-032	0.25	Brake system, replacing breathing filter
520-037	1.00	Brake system, bleeding

Op.no.	time (h)	Notes
525-002	2.00	Unloading valve, removing and fitting
525-008	3.00	Foot brake valve, replacing
525-009	0.75	Foot brake valve removed, reconditioning
527-001	0.50	Accumulator removed, checking charging pressure
527-002	0.50	Accumulator, replacing
527-003	1.25	Accumulators, checking in machine
527-004	1.50	Hydraulic pump, replacing
527-005	3.00	Hydraulic pump, reconditioning incl removing and fitting
527-006	2.00	Hydraulic pump, replacing seal for pump shaft
55		PARKING BRAKE
550-001	1.00	Parking brake, replacing control cable
550-002	0.75	Parking brake, adjusting
550-004	1.50	Parking brake mechanical, replacing brake caliper
550-005	1.00	Parking brake, replacing brake disc
550-009	1.00	Spring brake cylinder, replacing
550-010	1.00	Spring brake cylinder removed, reconditioning
550-011	1.50	Parking brake (hydraulic), replacing brake caliper
550-014	1.00	Parking brake, replacing brake pads
6		STEERING
64		STEERING
645-003	0.50	Steering system working pressure, checking
645-006	2.00	Steering cylinder, replacing
645-007	0.50	Steering cylinder shock valve (proportional), adjusting
645-015	0.50	Steering system, checking and adjusting standby pressure
645-020	1.00	Steering system, checking and adjusting shock and anti-cavitation-valve
645-021	1.00	Valve block, replacing
645-028	1.00	Steering system, checking and adjusting working pressure
645-054	2.00	Steering cylinder, replacing bearings
645-060	1.75	Steering cylinder, repacking in machine
645-077	1.50	Steering cylinder removed, reconditioning incl replacing bearings
645-081	1.50	Steering valve removed, reconditioning
645-082	2.00	Steering valve, replacing
647-091	0.50	Secondary steering pump, checking and adjusting working pressure

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-005	0.75	Frame joint, checking clearance
741-036	14.00	Frame joint, replacing bearings
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.25	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.50	Door, replacing
831-006	0.50	Door lock, replacing
831-014	0.50	Door, replacing sealing strip
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	3.00	Windscreen, replacing
843-011	0.75	Gas suspension rear window, replacing
843-012	1.00	Rear window, replacing
843-013	0.75	Side window, replacing
843-048	0.75	Door window, replacing
87		AIR CONDITIONING UNIT
872-001	0.25	Cab filter, replacing
873-004	2.00	Heater core, replacing
873-006	1.50	Fan motor, replacing
873-008	0.75	Heat control valve, replacing
873-009	0.75	Heat control, replacing
874-002	1.00	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.50	Refrigerant, filling excl vacuum pumping
874-006	4.00	Compressor, replacing incl draining and filling
874-007	1.50	Belt, replacing
874-010	3.50	Condenser, replacing incl draining and filling
874-011	3.00	Receiver, replacing incl draining and filling
874-012	3.50	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-014	1.00	Thermostat, replacing
874-015	0.75	Compressor, replacing shaft seal (compressor removed)

Op.no.	time (h)	Notes
874-016	0.75	Compressor, replacing magnetic clutch (compressor removed)
874-017	1.50	Compressor, replacing magnetic clutch in machine
874-019	0.50	Compressor, replacing valve plate (compressor removed)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-005	3.00	Vacuum pump, connection
900-006	1.00	Vacuum pump, disconnection
91		WORKING HYDRAULICS; SERVO HYDRAULICS
910-002	4.00	Hydraulic system, bleeding air
910-004	4.00	Hydraulic pressure, adjusting
911-001	0.50	Oil return filter, replacing
911-002	0.25	Ventilation filter, replacing
911-038	2.00	Hydraulic oil tank, replacing
911-039	4.00	Hydraulic oil tank, replacin incl rebuilding attachment
911-040	4.00	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-003	1.50	Control valve, repacking all slides
912-009	1.00	Shock valve, tilt function, checking and adjusting
912-012	0.75	Shock and anti-cavitation valve, checking and adjusting
912-016	0.50	Shock- and anti-cavitation valve (dvl 1), checking
912-017	2.50	Control valve (dvl 2), proportionally controlled, replacing
912-042	1.50	Main valve block, installation
912-043	0.75	Control valve block assembly (intermediate), replacing
912-045	2.00	Main valve block, loader, installation
912-060	4.00	Dipper arm valve, reconditioning
912-061	1.00	Control valve, repacking slide in machine
912-062	5.00	Control valve, servo assisted system, replacing
912-064	0.75	Control valve, shock and anti-cavitation valve, checking
912-065	1.50	Control valve, shock- and anti-cavitation valve, replacing
912-072	1.75	Implement attachment, shock valve, check and adjusting

Op.no.	time (h)	Notes
913-001	1.50	Hydraulic pump, checking and adjusting standby pressure and working pressure
913-003	0.75	Hydraulic pump, checking and adjusting standby pressure
913-004	0.50	Hydraulic pump, checking and adjusting max working pressure
913-010	3.00	Hydraulic pump, replacing
913-011	1.50	Hydraulic pump removed, reconditioning
913-015	0.75	Hydraulic pump, airing LS system
913-017	0.75	Oil return pressure, checking and adjusting
913-022	1.00	Pump, fixed, installation
914-051	1.00	Accumulator, replacing
914-052	3.00	Accumulator, checking (pressure back-up for servo circuit)
914-053	1.25	Servo valve, electrically controlled, reconditioning
914-056	0.50	Servo pressure (dvl 2), check
914-057	0.50	Servo pressure, check
916-972	0.75	Boom suspension system, installing new
94		UNIT, LOAD HANDLING
945-002	2.50	Lift frame, replacing bearing in lower bucket- or implement attachment
945-003	0.25	Implement attachment, measuring clearance of lower bearing
945-004	4.00	Lift cylinder, replacing
945-005	3.00	Lift cylinder, repacking in machine
945-007	0.50	Tilt cylinder removed, replacing bearings "E-F"
945-008	2.00	Tilt cylinder, replacing
945-009	2.00	Tilt cylinder, repacking in machine
945-011	1.00	Implemental attachment, replacing hydraulic cylinder
945-012	0.50	Lift cylinder removed, replacing bearings "C-P"
945-016	4.00	Lift frame, replacing bearing in upper mounting "O"
945-045	1.00	Implemental attachment/bucket attachment, replacing bushes "A"
945-054	2.00	Implement attachment, replacing
945-056	0.75	Implement attachment, repacking removed hydraulic cylinder
945-066	0.75	Tilt link, replacing "GH"
945-069	2.00	Tilt arm, replacing "GDF"
97		UNIT, DIGGING
970-001	3.00	Excavating unit, measuring axial and radial clearance in joints
971-090	14.00	Slewing post, replacing

Op.no.	time (h)	Notes
971-091	12.00	Slewing post-slewing post shaft, replacing bearings
971-094	5.00	Slewing cylinder, replacing
971-095	3.00	Slewing cylinder, repacking in machine
971-097	4.00	Slewing cylinder, replacing bearings and/or bushes
972-071	1.50	Support leg, replacing
972-072	1.00	Support leg, replacing bushes in machine
972-081	1.50	Support leg cylinder, replacing
972-083	2.00	Support leg cylinder, repacking in machine
972-084	0.50	Support leg cylinder removed, replacing bearings and/or bushes
974-010	10.00	Boom, replacing
974-011	2.00	Boom-slewing post, replacing bearings
974-012	7.00	Intermediate link, boom-dipper arm, replacing bushes
974-021	2.00	Boom cylinder, replacing
974-022	1.50	Boom cylinder removed, repacking
974-024	1.00	Boom cylinder removed, replacing bearings and/or bushes
974-025	3.00	Boom cylinder, repacking in machine
975-030	0.50	Lateral angulation cyl. shock valve proport. controlled, adjusting
975-031	1.50	Side-angling cylinder, replacing
975-033	2.00	Side-angling cylinder, repacking in machine
975-034	0.50	Side-angling cylinder removed, replacing bearings and/or bushes
975-036	4.00	Dipper arm-intermediate link, replacing bushes
975-037	2.00	Universal joint link for dipper arm cylinder, replacing
975-038	3.00	Universal joint link for dipper arm cylinder, replacing bushes
975-039	7.00	Dipper arm, replacing
975-041	2.00	Dipper arm cylinder, replacing
975-043	3.00	Dipper arm cylinder, repacking in machine
975-044	1.00	Dipper arm cylinder removed, replacing bearings and/or bushes
975-046	2.00	Dipper arm-toggle arm, replacing bushes
975-047	5.00	Dipper arm telescopic, replacing bearing plates
975-050	2.00	Implement attachment, replacing
975-051	3.00	Implement attachment incl links, replacing bushes
975-053	1.75	Implement attachment, replacing locking cylinder
975-055	1.50	Implement attachment, repacking removed locking cylinder
975-060	4.00	Bucket link, replacing bearing
975-061	3.00	Bucket cylinder, replacing

Op.no.	time (h)	Notes
975-063	3.00	Bucket cylinder, repacking in machine
975-064	4.00	Bucket cylinder, replacing link bearings
975-079	4.00	Telescopic dipper arm cylinder, replacing
975-080	4.00	Telescopic dipper arm cylinder, repacking in machine
99		MISCELLANEOUS
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
171-001	0.50	Arrival Inspection, according to Inspection Programme
171-002	1.50	Delivery Inspection, according to Inspection Programme
172-002	5.00	Warranty inspection 100 hours
172-004	8.00	Warranty inspection 1000 hours
173-007	2.00	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	7.00	Maintenance service, every 1000 hours
173-014	10.00	Maintenance service, every 2000 hours
173-061	2.00	Transmission, changing oil and filter
173-070	2.00	Axles, changing oil
173-074	1.50	Hydraulic oil tank, changing oil and filter
173-075	2.00	Hydraulic oil tank, changing oil and filter incl.cleaning tank
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	3.00	Engine, removing
210-072	5.00	Engine, installing
216-014	2.00	Crankshaft, replacing front oil seal
217-002	6.00	Sump gasket, replacing incl cleaning oil strainer
23		FUEL SYSTEM
233-002	0.50	Feed pump, replacing
236-001	1.50	Idling speed, checking and adjusting
236-002	0.50	Stall speed, checking
236-011	1.50	Fuel pump element, replacing
237-004	1.00	Injector, replacing one
238-041	3.00	Regulator, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
256-006	1.00	Preheating coil, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.25	Battery charging capacity, checking
311-002	0.75	Batteries, replacing

Op.no.	time (h)	Notes
311-014	1.50	Batteries, checking charging incl cleaning and painting battery boxes
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
321-025	0.75	Alternator, replacing carbon brush kit in machine
321-074	1.50	Charging test in machine (with measuring instrument)
322-005	0.50	Charging regulator, replacing
33		STARTING SYSTEM
331-018	0.75	Starter motor, replacing
331-099	0.50	Starter motor removed, replacing carbon brush kit
35		LIGHTING
352-024	0.50	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.50	Rear lamp, replacing one
353-018	0.25	Rear lamp, replacing glass or bulb
356-056	0.50	Work lighting, replacing one head lamp assy
356-057	0.50	Work lighting, replacing one insert
36		OTHER ELECTRICAL EQUIPMENT
361-002	0.25	Flasher unit, replacing relay
361-010	0.75	Flasher switch, replacing
361-017	0.25	Flasher lamp, replacing glass or bulb
362-002	0.25	Horn, replacing
362-016	0.75	Horn switch, replacing
363-001	0.50	Windscreen wiper rear, replacing motor
363-002	0.50	Windscreen wiper front, replacing motor
363-003	0.75	Windscreen wiper, replacing switch
363-004	0.25	Windscreen flusher pump, replacing
364-004	0.25	Switch, replacing
364-008	0.25	Brake light switch, replacing
364-024	0.75	Main switch, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-005	0.50	Transmission, revolution sensor, replacing
386-011	0.75	Fuel level sender, replacing
387-020	0.50	Tachometer, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	1.50	Transmission oil pressure, checking
421-004	2.00	Oil pump, replacing

Op.no.	time (h)	Notes
421-005	1.00	Oil pump removed, reconditioning
421-008	2.00	Gear selector valve, replacing
421-009	1.50	Gear selector valve removed, reconditioning
421-011	1.00	Converter removed, reconditioning
421-018	12.00	Converter, replacing
421-023	2.00	Lubrication and converter pressure valve, replacing
421-047	0.75	Gear selector, replacing
421-048	0.50	Gear selector valve, replacing one solenoid
421-052	1.50	Seal for front output shaft, replacing
421-054	1.50	Seal for rear output shaft, replacing
421-071	30.00	Transmission removed, reconditioning
421-073	6.00	Transmission, removing (together with engine)
421-074	8.00	Transmission, installing (together with engine)
421-075	2.00	Clutch shaft removed, reconditioning
421-077	0.75	Oil filter, replacing
421-079	0.25	Transmission, replacing breather filter
45		PROPELLER SHAFT
451-010	1.00	Propeller shaft, front, replacing
451-013	1.00	Propeller shaft, removed reconditioning
46		FRONT AXLE; REAR AXLE
461-002	1.50	Axle, removing
461-003	2.00	Axle, installing
461-011	4.00	Centre gear , removing and fitting
461-012	5.00	Centre gear removed, reconditioning
461-014	1.50	Pinion front, fitting new gasket
461-041	3.00	Hub reduction gear, removed, reconditioning
461-043	3.00	Hub, replacing seal
461-051	9.00	Differential lock, replacing selector fork and clutch sleeves and adjusting
461-052	0.25	Differential lock front, repacking excl adjusting
461-053	0.50	Differential lock, adjusting engagement
463-002	3.00	Axle, removing
463-003	3.00	Axle, installing
463-005	1.00	Drive shaft, replacing one side
463-012	5.00	Centre gear removed, reconditioning
463-014	1.50	Pinion rear, fitting new gasket
463-041	3.00	Hub reduction gear removed, reconditioning
463-043	3.00	Hub, replacing seal
49		MISCELLANEOUS
491-006	1.50	Oil cooler, replacing

Op.no.	time (h)	Notes
5		BRAKE
51		WHEEL BRAKE
511-002	3.00	Brake disc, replacing one
511-045	1.50	Brake calliper, replacing one
511-081	1.00	Brake calliper removed, reconditioning
512-002	3.00	Brake disc, replacing one
512-045	1.50	Brake caliper, replacing one
512-081	1.00	Brake caliper, removed, reconditioning
516-004	0.75	Brake discs, replacing on both sides
517-004	0.75	Brake disc, replacing both sides
52		HYDRAULIC BRAKE SYSTEM
520-001	0.50	Brake system, checking function, hydraulic
520-004	0.75	Brake system, adjusting unloading pressure
520-032	0.25	Brake system, replacing breathing filter
520-037	1.00	Brake system, bleeding
525-002	2.00	Unloading valve, removing and fitting
525-008	3.00	Foot brake valve, replacing
525-009	0.75	Foot brake valve removed, reconditioning
527-001	0.50	Accumulator removed, checking charging pressure
527-002	0.50	Accumulator, replacing
527-003	1.25	Accumulators, checking in machine
527-004	1.50	Hydraulic pump, replacing
527-005	3.00	Hydraulic pump, reconditioning incl removing and fitting
527-006	2.00	Hydraulic pump, replacing seal for pump shaft
55		PARKING BRAKE
550-001	1.00	Parking brake, replacing control cable
550-002	0.75	Parking brake, adjusting
550-004	1.50	Parking brake mechanical, replacing brake caliper
550-005	1.00	Parking brake, replacing brake disc
550-009	1.00	Spring brake cylinder, replacing
550-010	1.00	Spring brake cylinder removed, reconditioning
550-011	1.50	Parking brake (hydraulic), replacing brake caliper
550-014	1.00	Parking brake, replacing brake pads
6		STEERING
64		STEERING
645-003	0.50	Steering system working pressure, checking
645-006	2.00	Steering cylinder, replacing

Op.no.	time (h)	Notes
645-007	0.50	Steering cylinder shock valve (proportional), adjusting
645-015	0.50	Steering system, checking and adjusting standby pressure
645-020	1.00	Steering system, checking and adjusting shock and anti-cavitation-valve
645-021	1.00	Valve block, replacing
645-028	1.00	Steering system, checking and adjusting working pressure
645-054	2.00	Steering cylinder, replacing bearings
645-060	1.75	Steering cylinder, repacking in machine
645-077	1.50	Steering cylinder removed, reconditioning incl replacing bearings
645-081	1.50	Steering valve removed, reconditioning
645-082	2.00	Steering valve, replacing
647-091	0.50	Secondary steering pump, checking and adjusting working pressure
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-005	0.75	Frame joint, checking clearance
741-036	14.00	Frame joint, replacing bearings
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.25	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.50	Door, replacing
831-006	0.50	Door lock, replacing
831-014	0.50	Door, replacing sealing strip
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	3.00	Windscreen, replacing
843-011	0.75	Gas suspension rear window, replacing
843-012	1.00	Rear window, replacing
843-013	0.75	Side window, replacing
843-048	0.75	Door window, replacing

Op.no.	time (h)	Notes
87		AIR CONDITIONING UNIT
872-001	0.25	Cab filter, replacing
873-004	2.00	Heater core, replacing
873-006	1.50	Fan motor, replacing
873-008	0.75	Heat control valve, replacing
873-009	0.75	Heat control, replacing
874-002	1.00	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.50	Refrigerant, filling excl vacuum pumping
874-006	4.00	Compressor, replacing incl draining and filling
874-007	1.50	Belt, replacing
874-010	3.50	Condenser, replacing incl draining and filling
874-011	3.00	Receiver, replacing incl draining and filling
874-012	3.50	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-014	1.00	Thermostat, replacing
874-015	0.75	Compressor, replacing shaft seal (compressor removed)
874-016	0.75	Compressor, replacing magnetic clutch (compressor removed)
874-017	1.50	Compressor, replacing magnetic clutch in machine
874-019	0.50	Compressor, replacing valve plate (compressor removed)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-005	3.00	Vacuum pump, connection
900-006	1.00	Vacuum pump, disconnection
91		WORKING HYDRAULICS; SERVO HYDRAULICS
910-002	4.00	Hydraulic system, bleeding air
910-004	4.00	Hydraulic pressure, adjusting
911-001	0.50	Oil return filter, replacing
911-002	0.25	Ventilation filter, replacing
911-038	2.00	Hydraulic oil tank, replacing
911-039	4.00	Hydraulic oil tank, replacin incl rebuilding attachment
911-040	4.00	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-003	1.50	Control valve, repacking all slides
912-009	1.00	Shock valve, tilt function, checking and adjusting

Op.no.	time (h)	Notes
912-012	0.75	Shock and anti-cavitation valve, checking and adjusting
912-016	0.50	Shock- and anti-cavitation valve (dvl 1), checking
912-017	2.50	Control valve (dvl 2), proportionally controlled, replacing
912-042	1.50	Main valve block, installation
912-043	0.75	Control valve block assembly (intermediate), replacing
912-045	2.00	Main valve block, loader, installation
912-060	4.00	Dipper arm valve, reconditioning
912-061	1.00	Control valve, repacking slide in machine
912-062	5.00	Control valve, servo assisted system, replacing
912-064	0.75	Control valve, shock and anti-cavitation valve, checking
912-065	1.50	Control valve, shock- and anti-cavitation valve, replacing
912-072	1.75	Implement attachment, shock valve, check and adjusting
913-001	1.50	Hydraulic pump, checking and adjusting standby pressure and working pressure
913-003	0.75	Hydraulic pump, checking and adjusting standby pressure
913-004	0.50	Hydraulic pump, checking and adjusting max working pressure
913-010	3.00	Hydraulic pump, replacing
913-011	1.50	Hydraulic pump removed, reconditioning
913-015	0.75	Hydraulic pump, airing LS system
913-017	0.75	Oil return pressure, checking and adjusting
913-022	1.00	Pump, fixed, installation
914-051	1.00	Accumulator, replacing
914-052	3.00	Accumulator, checking (pressure back-up for servo circuit)
914-053	1.25	Servo valve, electrically controlled, reconditioning
914-056	0.50	Servo pressure (dvl 2), check
914-057	0.50	Servo pressure, check
916-972	0.75	Boom suspension system, installing new
94		UNIT, LOAD HANDLING
945-002	2.50	Lift frame, replacing bearing in lower bucket- or implement attachment
945-003	0.25	Implement attachment, measuring clearance of lower bearing
945-004	4.00	Lift cylinder, replacing
945-005	3.00	Lift cylinder, repacking in machine
945-007	0.50	Tilt cylinder removed, replacing bearings "E-F"
945-008	2.00	Tilt cylinder, replacing

Op.no.	time (h)	Notes
945-009	2.00	Tilt cylinder, repacking in machine
945-011	1.00	Implemental attachment, replacing hydraulic cylinder
945-012	0.50	Lift cylinder removed, replacing bearings "C-P"
945-016	4.00	Lift frame, replacing bearing in upper mounting "O"
945-045	1.00	Implemental attachment/bucket attachment, replacing bushes "A"
945-054	2.00	Implement attachment, replacing
945-056	0.75	Implement attachment, repacking removed hydraulic cylinder
945-066	0.75	Tilt link, replacing "GH"
945-069	2.00	Tilt arm, replacing "GDF"
97		UNIT, DIGGING
970-001	3.00	Excavating unit, measuring axial and radial clearance in joints
971-090	14.00	Slewing post, replacing
971-091	12.00	Slewing post-slewing post shaft, replacing bearings
971-094	5.00	Slewing cylinder, replacing
971-095	3.00	Slewing cylinder, repacking in machine
971-097	4.00	Slewing cylinder, replacing bearings and/or bushes
972-071	1.50	Support leg, replacing
972-072	1.00	Support leg, replacing bushes in machine
972-081	1.50	Support leg cylinder, replacing
972-083	2.00	Support leg cylinder, repacking in machine
972-084	0.50	Support leg cylinder removed, replacing bearings and/or bushes
974-010	10.00	Boom, replacing
974-011	2.00	Boom-slewing post, replacing bearings
974-012	7.00	Intermediate link, boom-dipper arm, replacing bushes
974-021	2.00	Boom cylinder, replacing
974-022	1.50	Boom cylinder removed, repacking
974-024	1.00	Boom cylinder removed, replacing bearings and/or bushes
974-025	3.00	Boom cylinder, repacking in machine
975-030	0.50	Lateral angulation cyl. shock valve proport. controlled, adjusting
975-031	1.50	Side-angling cylinder, replacing
975-033	2.00	Side-angling cylinder, repacking in machine
975-034	0.50	Side-angling cylinder removed, replacing bearings and/or bushes
975-036	4.00	Dipper arm-intermediate link, replacing bushes

Op.no.	time (h)	Notes
975-037	2.00	Universal joint link for dipper arm cylinder, replacing
975-038	3.00	Universal joint link for dipper arm cylinder, replacing bushes
975-039	7.00	Dipper arm, replacing
975-041	2.00	Dipper arm cylinder, replacing
975-043	3.00	Dipper arm cylinder, repacking in machine
975-044	1.00	Dipper arm cylinder removed, replacing bearings and/or bushes
975-046	2.00	Dipper arm-toggle arm, replacing bushes
975-047	5.00	Dipper arm telescopic, replacing bearing plates
975-050	2.00	Implement attachment, replacing
975-051	3.00	Implement attachment incl links, replacing bushes
975-053	1.75	Implement attachment, replacing locking cylinder
975-055	1.50	Implement attachment, repacking removed locking cylinder
975-060	4.00	Bucket link, replacing bearing
975-061	3.00	Bucket cylinder, replacing
975-063	3.00	Bucket cylinder, repacking in machine
975-064	4.00	Bucket cylinder, replacing link bearings
975-079	4.00	Telescopic dipper arm cylinder, replacing
975-080	4.00	Telescopic dipper arm cylinder, repacking in machine
99		MISCELLANEOUS
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
170-005	0.25	Start of VCADS Pro computer and reading machine data
172-002	3.50	Warranty inspection 100 hours
172-004	8.00	Warranty inspection 1000 hours
173-002	1.00	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	5.00	Maintenance service, every 500 hours
173-012	6.00	Maintenance service, every 1000 hours
173-014	8.00	Maintenance service, every 2000 hours
173-018	10.00	Maintenance service, every 4000 hours
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
216-014	3.00	Crankshaft, replacing front oil seal
216-018	9.00	Crankshaft, replacing rear oil seal
217-003	4.00	Oil sump, replacing
23		FUEL SYSTEM
233-002	0.70	Feed pump, replacing
236-076	1.25	Injection pump, one changing
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	0.80	Silencer, replacing
26		COOLING SYSTEM
262-002	1.25	Coolant pump, replacing
262-098	0.80	Thermostat, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	0.60	I-ECU, MID 140, changing non-programmed ECU
300-074	0.30	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-002	0.40	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.60	Alternator, replacing incl function check

Op.no.	time (h)	Notes
36		OTHER ELECTRICAL EQUIPMENT
366-064	0.70	V-ECU, MID 187, changing non-programmed ECU
366-066	0.50	V-ECU, MID 187, changing pre-programmed ECU
4		POWER TRANSMISSION
43		GEARBOX,
432-076	0.40	T-ECU, MID 130, changing non-programmed ECU
432-078	0.30	T-ECU, MID 130, changing pre-programmed ECU
44		HYDROSTATIC DRIVE
441-021	3.50	Swing motor, replacing
443-033	1.25	Center passage, disassembly and assembly
6		STEERING
64		STEERING
640-001	0.50	Steering system, adjustment
645-060	3.00	Steering cylinder, repacking in machine
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
774-001	0.60	Stone protection ring, removing
774-002	0.70	Stone protection ring, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
87		AIR CONDITIONING UNIT
874-006	2.50	Compressor, replacing incl draining and filling
874-010	2.00	Condenser, replacing incl draining and filling
874-012	3.50	Evaporator, replacing incl draining and filling

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-019	0.40	Shock valve removed, checking
912-091	1.25	Main control valve, removal
912-092	3.00	Main control valve, installation

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
170-005	0.25	Start of VCADS Pro computer and reading machine data
172-004	8.00	Warranty inspection 1000 hours
173-002	1.00	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	5.00	Maintenance service, every 500 hours
173-012	6.00	Maintenance service, every 1000 hours
173-014	8.00	Maintenance service, every 2000 hours
173-018	10.00	Maintenance service, every 4000 hours
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	0.70	E-ECU, MID 128, changing non-programmed ECU
200-070	0.50	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
216-014	3.00	Crankshaft, replacing front oil seal
216-018	9.00	Crankshaft, replacing rear oil seal
217-003	4.00	Oil sump, replacing
22		LUBRICATING SYSTEM
221-006	1.25	Oil pressure relief valve, replacing
23		FUEL SYSTEM
233-002	0.70	Feed pump, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	0.80	Silencer, replacing
26		COOLING SYSTEM
262-002	1.25	Coolant pump, replacing
262-098	0.80	Thermostat, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	0.60	I-ECU, MID 140, changing non-programmed ECU
300-074	0.30	I-ECU, MID 140, changing pre-programmed ECU

Op.no.	time (h)	Notes
31		BATTERY
311-002	0.40	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.60	Alternator, replacing incl function check
36		OTHER ELECTRICAL EQUIPMENT
366-064	0.70	V-ECU, MID 187, changing non-programmed ECU
366-066	0.50	V-ECU, MID 187, changing pre-programmed ECU
4		POWER TRANSMISSION
43		GEARBOX,
431-012	3.50	Travel gearbox, removal
431-013	4.00	Travel gearbox, installation
432-076	0.40	T-ECU, MID 130, changing non-programmed ECU
432-078	0.30	T-ECU, MID 130, changing pre-programmed ECU
44		HYDROSTATIC DRIVE
441-024	0.90	Swing motor, replacing plate (brake)
443-033	1.25	Center passage, disassembly and assembly
6		STEERING
64		STEERING
640-001	0.50	Steering system, adjustment
645-060	3.00	Steering cylinder, repacking in machine
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
774-001	0.60	Stone protection ring, removing
774-002	0.70	Stone protection ring, installing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-019	0.40	Shock valve removed, checking

Op.no.	time (h)	Notes
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-034	0.90	Attachment bracket cylinder, reconditioning

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
170-005	0.25	Start of VCADS Pro computer and reading machine data
172-004	8.00	Warranty inspection 1000 hours
173-002	1.00	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	5.00	Maintenance service, every 500 hours
173-012	6.00	Maintenance service, every 1000 hours
173-014	8.00	Maintenance service, every 2000 hours
173-018	10.00	Maintenance service, every 4000 hours
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	0.70	E-ECU, MID 128, changing non-programmed ECU
200-070	0.50	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
216-014	3.00	Crankshaft, replacing front oil seal
216-018	9.00	Crankshaft, replacing rear oil seal
217-003	4.00	Oil sump, replacing
22		LUBRICATING SYSTEM
221-006	1.25	Oil pressure relief valve, replacing
23		FUEL SYSTEM
233-002	0.70	Feed pump, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	0.80	Silencer, replacing
26		COOLING SYSTEM
262-002	1.25	Coolant pump, replacing
262-098	0.80	Thermostat, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	0.60	I-ECU, MID 140, changing non-programmed ECU
300-074	0.30	I-ECU, MID 140, changing pre-programmed ECU

Op.no.	time (h)	Notes
31		BATTERY
311-002	0.40	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.60	Alternator, replacing incl function check
36		OTHER ELECTRICAL EQUIPMENT
366-064	0.70	V-ECU, MID 187, changing non-programmed ECU
366-066	0.50	V-ECU, MID 187, changing pre-programmed ECU
4		POWER TRANSMISSION
43		GEARBOX,
432-076	0.40	T-ECU, MID 130, changing non-programmed ECU
432-078	0.30	T-ECU, MID 130, changing pre-programmed ECU
44		HYDROSTATIC DRIVE
441-024	0.90	Swing motor, replacing plate (brake)
443-033	1.25	Center passage, disassembly and assembly
6		STEERING
64		STEERING
640-001	0.50	Steering system, adjustment
645-060	3.00	Steering cylinder, repacking in machine
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
774-001	0.60	Stone protection ring, removing
774-002	0.70	Stone protection ring, installing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-019	0.40	Shock valve removed, checking
912-091	1.75	Main control valve, removal
912-092	3.50	Main control valve, installation

Op.no.	time (h)	Notes
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-034	0.90	Attachment bracket cylinder, reconditioning

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
170-005	0.25	Start of VCADS Pro computer and reading machine data
172-004	8.00	Warranty inspection 1000 hours
173-002	1.00	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	5.00	Maintenance service, every 500 hours
173-012	6.00	Maintenance service, every 1000 hours
173-014	8.00	Maintenance service, every 2000 hours
173-018	10.00	Maintenance service, every 4000 hours
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	0.70	E-ECU, MID 128, changing non-programmed ECU
200-070	0.50	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
216-014	3.00	Crankshaft, replacing front oil seal
216-018	9.00	Crankshaft, replacing rear oil seal
217-003	4.00	Oil sump, replacing
22		LUBRICATING SYSTEM
221-006	1.25	Oil pressure relief valve, replacing
23		FUEL SYSTEM
233-002	0.70	Feed pump, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	0.80	Silencer, replacing
26		COOLING SYSTEM
262-002	1.25	Coolant pump, replacing
262-098	0.80	Thermostat, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	0.60	I-ECU, MID 140, changing non-programmed ECU
300-074	0.30	I-ECU, MID 140, changing pre-programmed ECU

Op.no.	time (h)	Notes
31		BATTERY
311-002	0.40	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.60	Alternator, replacing incl function check
36		OTHER ELECTRICAL EQUIPMENT
366-064	0.70	V-ECU, MID 187, changing non-programmed ECU
366-066	0.50	V-ECU, MID 187, changing pre-programmed ECU
4		POWER TRANSMISSION
43		GEARBOX,
432-076	0.40	T-ECU, MID 130, changing non-programmed ECU
432-078	0.30	T-ECU, MID 130, changing pre-programmed ECU
44		HYDROSTATIC DRIVE
441-021	3.50	Swing motor, replacing
441-024	0.90	Swing motor, replacing plate (brake)
443-033	1.25	Center passage, disassembly and assembly
6		STEERING
64		STEERING
640-001	0.50	Steering system, adjustment
645-060	3.00	Steering cylinder, repacking in machine
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
774-001	0.60	Stone protection ring, removing
774-002	0.70	Stone protection ring, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
87		AIR CONDITIONING UNIT
874-006	2.50	Compressor, replacing incl draining and filling
874-010	2.00	Condenser, replacing incl draining and filling

Op.no.	time (h)	Notes
874-012	3.50	Evaporator, replacing incl draining and filling
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-091	1.75	Main control valve, removal
912-092	3.50	Main control valve, installation
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-034	0.90	Attachment bracket cylinder, reconditioning

Op.no.	time (h)	Notes
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-002	1.75	Compression test
210-070	8.00	Engine, removing
210-071	40.00	Engine removed, general overhaul
210-072	8.00	Engine, installing
211-002	10.00	Cylinder head, replacing gasket
213-010	2.00	Cylinder liner and piston, replacing one
214-005	0.50	Valve seat insert cylinder head removed, replacing each
214-030	1.50	Valves, decarbonizing and grinding
214-036	1.00	Valve covers, fitting new gasket
215-002	1.50	Timing gear cover, fitting new gasket in machine
216-014	4.00	Crankshaft, replacing front oil seal
216-018	4.00	Crankshaft, replacing rear oil seal
216-034	0.50	Big- end bearing shells, replacing in machine
216-041	5.00	Flywheel housing with power take-off, removing
216-042	5.50	Flywheel housing with power take-off, installing
216-046	2.50	Vibration damper, removal
217-003	4.00	Oil sump, replacing
217-004	2.00	Oil sump gasket, changing
218-001	1.00	Rubber cushion, replacing
218-003	2.00	Engine mount, right rear, changing
218-004	1.50	Engine mount, left rear, changing
218-005	2.00	Engine mount, right front, changing
218-006	1.50	Engine mount, left front, changing
22		LUBRICATING SYSTEM
222-011	0.50	Oil filter, replacing
223-006	6.00	Oil cooler, replacing
23		FUEL SYSTEM
233-002	2.00	Feed pump, replacing
233-011	1.00	Fuel pump, removing
233-012	1.50	Fuel pump, installing
233-014	0.75	Fuel filters, replacing
233-041	1.50	Fuel strainer, changing
234-010	6.00	Fuel tank, replacing
234-091	1.00	Fuel shut-off valve, changing
236-030	0.50	Injection timing, checking
236-076	2.50	Injection pump, one changing
237-018	1.00	Delivery pipe, replacing one

Op.no.	time (h)	Notes
25		INLET SYSTEM; EXHAUST SYSTEM
251-002	1.00	Induction manifold, replacing gasket
251-004	0.75	Exhaust manifold, replacing gasket
252-020	4.00	Silencer, replacing
252-022	1.50	Exhaust pipe, changing pipe between silencer and turbocharger
255-071	4.00	Turbocharger, replacing
255-072	2.00	Turbocharger, installing
6		STEERING
62		STEERING AXLE
622-011	2.00	Steering spindle, changing
622-031	2.00	Steering spindle, changing king pin bearing
622-041	2.00	Steering spindle, changing king pin bearing seal
622-051	1.00	Preparation and Wheel Removal
622-052	2.00	Wheel Hub - Removal
622-053	2.00	Steering Cylinder - Removal
622-054	1.00	Drag link, removing
622-055	1.50	Pivot block, removing and disassembling
622-056	3.00	Spindle - Removal and Disassembly
622-057	2.00	Wheel Lean Cylinder - Removal
622-058	2.50	Tie bar, removing
622-059	2.00	Knuckle, removing
622-060	2.00	Front axle frame, removing
622-061	2.00	Front axle frame, installing
622-062	2.00	Knuckle, installing
622-063	1.50	Tie bar, installing
622-064	1.00	Wheel Lean Cylinder - Installation
622-065	1.00	Spindle - Assembly and Installation
622-066	1.50	Pivot Block - Assembly and Installation
622-067	1.50	Drag link, installing
622-068	1.00	Steering Cylinder - Installation
622-069	1.00	Wheel Hub - Installation
622-070	0.50	Wheel - Installation
622-071	0.50	Toe - in, adjustment
622-072	1.50	Front Axle Pivot Pin Bearings - Disassembly
622-073	1.50	Front Axle Pivot Pin Bearings - Assembly
622-074	1.50	King Pin Bearings and Spindle Thrust Bearing - Disassembly
622-075	1.50	King Pin Bearings and Spindle Thrust Bearing - Assembly
622-078	0.50	Pivot Block Adjustments

Op.no.	time (h)	Notes
622-081	10.00	Front axle, overhaul
64		STEERING
645-004	1.00	Steering cylinder, removing
645-005	1.00	Steering cylinder, installing
645-021	1.50	Valve block, replacing
645-031	1.00	Steering control unit, removing
645-032	1.00	Steering Control Unit - Disassembly
645-033	0.50	Steering Control Unit - Cleaning and Inspection
645-034	1.50	Steering Control Unit - Assembly
645-052	1.50	Steering cylinder removed, reconditioning excl replacing bearings
645-077	2.50	Steering cylinder removed, reconditioning incl replacing bearings
645-081	1.50	Steering valve removed, reconditioning
647-089	0.50	Secondary steering relief valve, adjusting
647-992	2.00	Secondary steering system, installing new
648-001	1.00	Wheel lean cylinder, removing
648-002	1.00	Wheel lean cylinder, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-036	4.00	Frame joint, replacing bearings
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	1.00	Wheel, removing and fitting one
771-002	0.50	Front wheel, removal
771-003	0.50	Front wheel, installation
771-004	0.50	Rear wheel, removing
771-005	0.50	Rear wheel, installing
771-006	0.50	Tyres, checking pressure
771-007	1.00	Wheel, installing

Op.no.	time (h)	Notes
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-002	1.75	Compression test
210-070	8.00	Engine, removing
210-071	40.00	Engine removed, general overhaul
210-072	8.00	Engine, installing
211-002	10.00	Cylinder head, replacing gasket
213-010	2.00	Cylinder liner and piston, replacing one
214-005	0.50	Valve seat insert cylinder head removed, replacing each
214-030	1.50	Valves, decarbonizing and grinding
214-036	1.00	Valve covers, fitting new gasket
215-002	1.50	Timing gear cover, fitting new gasket in machine
216-014	4.00	Crankshaft, replacing front oil seal
216-018	4.00	Crankshaft, replacing rear oil seal
216-034	0.50	Big- end bearing shells, replacing in machine
216-041	5.00	Flywheel housing with power take-off, removing
216-042	5.50	Flywheel housing with power take-off, installing
216-046	2.50	Vibration damper, removal
217-003	4.00	Oil sump, replacing
217-004	2.00	Oil sump gasket, changing
218-001	1.00	Rubber cushion, replacing
218-003	2.00	Engine mount, right rear, changing
218-004	1.50	Engine mount, left rear, changing
218-005	2.00	Engine mount, right front, changing
218-006	1.50	Engine mount, left front, changing
22		LUBRICATING SYSTEM
222-011	0.50	Oil filter, replacing
223-006	6.00	Oil cooler, replacing
23		FUEL SYSTEM
233-002	2.00	Feed pump, replacing
233-011	1.00	Fuel pump, removing
233-012	1.50	Fuel pump, installing
233-014	0.75	Fuel filters, replacing
233-041	1.50	Fuel strainer, changing
234-010	6.00	Fuel tank, replacing
234-091	1.00	Fuel shut-off valve, changing
236-030	0.50	Injection timing, checking
236-076	2.50	Injection pump, one changing
237-018	1.00	Delivery pipe, replacing one

Op.no.	time (h)	Notes
25		INLET SYSTEM; EXHAUST SYSTEM
251-002	1.00	Induction manifold, replacing gasket
251-004	0.75	Exhaust manifold, replacing gasket
252-020	4.00	Silencer, replacing
252-022	1.50	Exhaust pipe, changing pipe between silencer and turbocharger
255-071	4.00	Turbocharger, replacing
255-072	2.00	Turbocharger, installing
6		STEERING
62		STEERING AXLE
622-011	2.00	Steering spindle, changing
622-031	2.00	Steering spindle, changing king pin bearing
622-041	2.00	Steering spindle, changing king pin bearing seal
622-051	1.00	Preparation and Wheel Removal
622-052	2.00	Wheel Hub - Removal
622-053	2.00	Steering Cylinder - Removal
622-054	1.00	Drag link, removing
622-055	1.50	Pivot block, removing and disassembling
622-056	3.00	Spindle - Removal and Disassembly
622-057	2.00	Wheel Lean Cylinder - Removal
622-058	2.50	Tie bar, removing
622-059	2.00	Knuckle, removing
622-060	2.00	Front axle frame, removing
622-061	2.00	Front axle frame, installing
622-062	2.00	Knuckle, installing
622-063	1.50	Tie bar, installing
622-064	1.00	Wheel Lean Cylinder - Installation
622-065	1.00	Spindle - Assembly and Installation
622-066	1.50	Pivot Block - Assembly and Installation
622-067	1.50	Drag link, installing
622-068	1.00	Steering Cylinder - Installation
622-069	1.00	Wheel Hub - Installation
622-070	0.50	Wheel - Installation
622-071	0.50	Toe - in, adjustment
622-072	1.50	Front Axle Pivot Pin Bearings - Disassembly
622-073	1.50	Front Axle Pivot Pin Bearings - Assembly
622-074	1.50	King Pin Bearings and Spindle Thrust Bearing - Disassembly
622-075	1.50	King Pin Bearings and Spindle Thrust Bearing - Assembly
622-078	0.50	Pivot Block Adjustments

Op.no.	time (h)	Notes
622-081	10.00	Front axle, overhaul
64		STEERING
645-004	1.00	Steering cylinder, removing
645-005	1.00	Steering cylinder, installing
645-021	1.50	Valve block, replacing
645-031	1.00	Steering control unit, removing
645-032	1.00	Steering Control Unit - Disassembly
645-033	0.50	Steering Control Unit - Cleaning and Inspection
645-034	1.50	Steering Control Unit - Assembly
645-052	1.50	Steering cylinder removed, reconditioning excl replacing bearings
645-077	2.50	Steering cylinder removed, reconditioning incl replacing bearings
645-081	1.50	Steering valve removed, reconditioning
647-089	0.50	Secondary steering relief valve, adjusting
647-992	2.00	Secondary steering system, installing new
648-001	1.00	Wheel lean cylinder, removing
648-002	1.00	Wheel lean cylinder, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-036	4.00	Frame joint, replacing bearings
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	1.00	Wheel, removing and fitting one
771-002	0.50	Front wheel, removal
771-003	0.50	Front wheel, installation
771-004	0.50	Rear wheel, removing
771-005	0.50	Rear wheel, installing
771-006	0.50	Tyres, checking pressure
771-007	1.00	Wheel, installing

Op.no.	time (h)	Notes
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-002	1.75	Compression test
210-070	8.00	Engine, removing
210-071	40.00	Engine removed, general overhaul
210-072	8.00	Engine, installing
211-002	10.00	Cylinder head, replacing gasket
213-010	2.00	Cylinder liner and piston, replacing one
214-005	0.50	Valve seat insert cylinder head removed, replacing each
214-030	1.50	Valves, decarbonizing and grinding
214-036	1.00	Valve covers, fitting new gasket
215-002	1.50	Timing gear cover, fitting new gasket in machine
216-014	4.00	Crankshaft, replacing front oil seal
216-018	4.00	Crankshaft, replacing rear oil seal
216-034	0.50	Big- end bearing shells, replacing in machine
216-041	5.00	Flywheel housing with power take-off, removing
216-042	5.50	Flywheel housing with power take-off, installing
216-046	2.50	Vibration damper, removal
217-003	4.00	Oil sump, replacing
217-004	2.00	Oil sump gasket, changing
218-001	1.00	Rubber cushion, replacing
218-003	2.00	Engine mount, right rear, changing
218-004	1.50	Engine mount, left rear, changing
218-005	2.00	Engine mount, right front, changing
218-006	1.50	Engine mount, left front, changing
22		LUBRICATING SYSTEM
222-011	0.50	Oil filter, replacing
223-006	6.00	Oil cooler, replacing
23		FUEL SYSTEM
233-002	2.00	Feed pump, replacing
233-011	1.00	Fuel pump, removing
233-012	1.50	Fuel pump, installing
233-014	0.75	Fuel filters, replacing
233-041	1.50	Fuel strainer, changing
234-010	6.00	Fuel tank, replacing
234-091	1.00	Fuel shut-off valve, changing
236-030	0.50	Injection timing, checking
236-076	2.50	Injection pump, one changing
237-018	1.00	Delivery pipe, replacing one

Op.no.	time (h)	Notes
25		INLET SYSTEM; EXHAUST SYSTEM
251-002	1.00	Induction manifold, replacing gasket
251-004	0.75	Exhaust manifold, replacing gasket
252-020	4.00	Silencer, replacing
252-022	1.50	Exhaust pipe, changing pipe between silencer and turbocharger
255-071	4.00	Turbocharger, replacing
255-072	2.00	Turbocharger, installing
6		STEERING
62		STEERING AXLE
622-011	2.00	Steering spindle, changing
622-031	2.00	Steering spindle, changing king pin bearing
622-041	2.00	Steering spindle, changing king pin bearing seal
622-051	1.00	Preparation and Wheel Removal
622-052	2.00	Wheel Hub - Removal
622-053	2.00	Steering Cylinder - Removal
622-054	1.00	Drag link, removing
622-055	1.50	Pivot block, removing and disassembling
622-056	3.00	Spindle - Removal and Disassembly
622-057	2.00	Wheel Lean Cylinder - Removal
622-058	2.50	Tie bar, removing
622-059	2.00	Knuckle, removing
622-060	2.00	Front axle frame, removing
622-061	2.00	Front axle frame, installing
622-062	2.00	Knuckle, installing
622-063	1.50	Tie bar, installing
622-064	1.00	Wheel Lean Cylinder - Installation
622-065	1.00	Spindle - Assembly and Installation
622-066	1.50	Pivot Block - Assembly and Installation
622-067	1.50	Drag link, installing
622-068	1.00	Steering Cylinder - Installation
622-069	1.00	Wheel Hub - Installation
622-070	0.50	Wheel - Installation
622-071	0.50	Toe - in, adjustment
622-072	1.50	Front Axle Pivot Pin Bearings - Disassembly
622-073	1.50	Front Axle Pivot Pin Bearings - Assembly
622-074	1.50	King Pin Bearings and Spindle Thrust Bearing - Disassembly
622-075	1.50	King Pin Bearings and Spindle Thrust Bearing - Assembly
622-078	0.50	Pivot Block Adjustments

Op.no.	time (h)	Notes
622-081	10.00	Front axle, overhaul
64		STEERING
645-004	1.00	Steering cylinder, removing
645-005	1.00	Steering cylinder, installing
645-021	1.50	Valve block, replacing
645-031	1.00	Steering control unit, removing
645-032	1.00	Steering Control Unit - Disassembly
645-033	0.50	Steering Control Unit - Cleaning and Inspection
645-034	1.50	Steering Control Unit - Assembly
645-052	1.50	Steering cylinder removed, reconditioning excl replacing bearings
645-077	2.50	Steering cylinder removed, reconditioning incl replacing bearings
645-081	1.50	Steering valve removed, reconditioning
647-089	0.50	Secondary steering relief valve, adjusting
647-992	2.00	Secondary steering system, installing new
648-001	1.00	Wheel lean cylinder, removing
648-002	1.00	Wheel lean cylinder, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-036	4.00	Frame joint, replacing bearings
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	1.00	Wheel, removing and fitting one
771-002	0.50	Front wheel, removal
771-003	0.50	Front wheel, installation
771-004	0.50	Rear wheel, removing
771-005	0.50	Rear wheel, installing
771-006	0.50	Tyres, checking pressure
771-007	1.00	Wheel, installing

Op.no.	time (h)	Notes
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-002	1.75	Compression test
210-070	8.00	Engine, removing
210-071	40.00	Engine removed, general overhaul
210-072	8.00	Engine, installing
211-002	10.00	Cylinder head, replacing gasket
213-010	2.00	Cylinder liner and piston, replacing one
214-005	0.50	Valve seat insert cylinder head removed, replacing each
214-030	1.50	Valves, decarbonizing and grinding
214-036	1.00	Valve covers, fitting new gasket
215-002	1.50	Timing gear cover, fitting new gasket in machine
216-014	4.00	Crankshaft, replacing front oil seal
216-018	4.00	Crankshaft, replacing rear oil seal
216-034	0.50	Big- end bearing shells, replacing in machine
216-041	5.00	Flywheel housing with power take-off, removing
216-042	5.50	Flywheel housing with power take-off, installing
216-046	2.50	Vibration damper, removal
217-003	4.00	Oil sump, replacing
217-004	2.00	Oil sump gasket, changing
218-001	1.00	Rubber cushion, replacing
218-003	2.00	Engine mount, right rear, changing
218-004	1.50	Engine mount, left rear, changing
218-005	2.00	Engine mount, right front, changing
218-006	1.50	Engine mount, left front, changing
22		LUBRICATING SYSTEM
222-011	0.50	Oil filter, replacing
223-006	6.00	Oil cooler, replacing
23		FUEL SYSTEM
233-002	2.00	Feed pump, replacing
233-011	1.00	Fuel pump, removing
233-012	1.50	Fuel pump, installing
233-014	0.75	Fuel filters, replacing
233-041	1.50	Fuel strainer, changing
234-010	6.00	Fuel tank, replacing
234-091	1.00	Fuel shut-off valve, changing
236-030	0.50	Injection timing, checking
236-076	2.50	Injection pump, one changing
237-018	1.00	Delivery pipe, replacing one

Op.no.	time (h)	Notes
25		INLET SYSTEM; EXHAUST SYSTEM
251-002	1.00	Induction manifold, replacing gasket
251-004	0.75	Exhaust manifold, replacing gasket
252-020	4.00	Silencer, replacing
252-022	1.50	Exhaust pipe, changing pipe between silencer and turbocharger
255-071	4.00	Turbocharger, replacing
255-072	2.00	Turbocharger, installing
6		STEERING
62		STEERING AXLE
622-011	2.00	Steering spindle, changing
622-031	2.00	Steering spindle, changing king pin bearing
622-041	2.00	Steering spindle, changing king pin bearing seal
622-051	1.00	Preparation and Wheel Removal
622-052	2.00	Wheel Hub - Removal
622-053	2.00	Steering Cylinder - Removal
622-054	1.00	Drag link, removing
622-055	1.50	Pivot block, removing and disassembling
622-056	3.00	Spindle - Removal and Disassembly
622-057	2.00	Wheel Lean Cylinder - Removal
622-058	2.50	Tie bar, removing
622-059	2.00	Knuckle, removing
622-060	2.00	Front axle frame, removing
622-061	2.00	Front axle frame, installing
622-062	2.00	Knuckle, installing
622-063	1.50	Tie bar, installing
622-064	1.00	Wheel Lean Cylinder - Installation
622-065	1.00	Spindle - Assembly and Installation
622-066	1.50	Pivot Block - Assembly and Installation
622-067	1.50	Drag link, installing
622-068	1.00	Steering Cylinder - Installation
622-069	1.00	Wheel Hub - Installation
622-070	0.50	Wheel - Installation
622-071	0.50	Toe - in, adjustment
622-072	1.50	Front Axle Pivot Pin Bearings - Disassembly
622-073	1.50	Front Axle Pivot Pin Bearings - Assembly
622-074	1.50	King Pin Bearings and Spindle Thrust Bearing - Disassembly
622-075	1.50	King Pin Bearings and Spindle Thrust Bearing - Assembly
622-078	0.50	Pivot Block Adjustments

Op.no.	time (h)	Notes
622-081	10.00	Front axle, overhaul
64		STEERING
645-004	1.00	Steering cylinder, removing
645-005	1.00	Steering cylinder, installing
645-021	1.50	Valve block, replacing
645-031	1.00	Steering control unit, removing
645-032	1.00	Steering Control Unit - Disassembly
645-033	0.50	Steering Control Unit - Cleaning and Inspection
645-034	1.50	Steering Control Unit - Assembly
645-052	1.50	Steering cylinder removed, reconditioning excl replacing bearings
645-077	2.50	Steering cylinder removed, reconditioning incl replacing bearings
645-081	1.50	Steering valve removed, reconditioning
647-089	0.50	Secondary steering relief valve, adjusting
647-992	2.00	Secondary steering system, installing new
648-001	1.00	Wheel lean cylinder, removing
648-002	1.00	Wheel lean cylinder, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-036	4.00	Frame joint, replacing bearings
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	1.00	Wheel, removing and fitting one
771-002	0.50	Front wheel, removal
771-003	0.50	Front wheel, installation
771-004	0.50	Rear wheel, removing
771-005	0.50	Rear wheel, installing
771-006	0.50	Tyres, checking pressure
771-007	1.00	Wheel, installing

Op.no.	time (h)	Notes
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-002	1.75	Compression test
210-070	8.00	Engine, removing
210-071	40.00	Engine removed, general overhaul
210-072	8.00	Engine, installing
211-002	10.00	Cylinder head, replacing gasket
213-010	2.50	Cylinder liner and piston, replacing one
214-005	0.75	Valve seat insert cylinder head removed, replacing each
214-021	0.50	Valve cover, fitting new gasket each
214-030	1.50	Valves, decarbonizing and grinding
215-002	2.00	Timing gear cover, fitting new gasket in machine
216-014	3.50	Crankshaft, replacing front oil seal
216-018	3.50	Crankshaft, replacing rear oil seal
216-034	0.50	Big- end bearing shells, replacing in machine
216-041	5.00	Flywheel housing with power take-off, removing
216-042	5.50	Flywheel housing with power take-off, installing
216-046	2.50	Vibration damper, removal
217-003	4.00	Oil sump, replacing
217-004	2.00	Oil sump gasket, changing
218-001	1.00	Rubber cushion, replacing
218-003	2.50	Engine mount, right rear, changing
218-004	2.00	Engine mount, left rear, changing
218-005	2.50	Engine mount, right front, changing
218-006	2.00	Engine mount, left front, changing
22		LUBRICATING SYSTEM
222-011	0.50	Oil filter, replacing
223-006	6.00	Oil cooler, replacing
23		FUEL SYSTEM
233-002	2.00	Feed pump, replacing
233-011	1.00	Fuel pump, removing
233-012	1.50	Fuel pump, installing
233-014	0.75	Fuel filters, replacing
233-015	0.75	Fuel filter extra, replacing
234-010	6.00	Fuel tank, replacing
234-091	1.00	Fuel shut-off valve, changing
236-044	1.00	Injection timing, checking
236-076	4.00	Injection pump, one changing
237-004	2.50	Injector, replacing one
237-018	1.00	Delivery pipe, replacing one

Op.no.	time (h)	Notes
25		INLET SYSTEM; EXHAUST SYSTEM
251-002	1.00	Induction manifold, replacing gasket
251-004	0.75	Exhaust manifold, replacing gasket
252-020	4.00	Silencer, replacing
252-022	2.00	Exhaust pipe, changing pipe between silencer and turbocharger
255-071	4.00	Turbocharger, replacing
255-072	3.00	Turbocharger, installing
6		STEERING
62		STEERING AXLE
622-011	2.00	Steering spindle, changing
622-031	2.00	Steering spindle, changing king pin bearing
622-041	2.00	Steering spindle, changing king pin bearing seal
622-051	1.00	Preparation and Wheel Removal
622-052	2.00	Wheel Hub - Removal
622-053	2.00	Steering Cylinder - Removal
622-054	1.00	Drag link, removing
622-055	1.50	Pivot block, removing and disassembling
622-056	3.00	Spindle - Removal and Disassembly
622-057	2.00	Wheel Lean Cylinder - Removal
622-058	2.50	Tie bar, removing
622-059	2.00	Knuckle, removing
622-060	2.00	Front axle frame, removing
622-061	2.00	Front axle frame, installing
622-062	2.00	Knuckle, installing
622-063	1.50	Tie bar, installing
622-064	1.00	Wheel Lean Cylinder - Installation
622-065	1.00	Spindle - Assembly and Installation
622-066	1.50	Pivot Block - Assembly and Installation
622-067	1.50	Drag link, installing
622-068	1.00	Steering Cylinder - Installation
622-069	1.00	Wheel Hub - Installation
622-070	0.50	Wheel - Installation
622-071	0.50	Toe - in, adjustment
622-072	1.50	Front Axle Pivot Pin Bearings - Disassembly
622-073	1.50	Front Axle Pivot Pin Bearings - Assembly
622-074	1.50	King Pin Bearings and Spindle Thrust Bearing - Disassembly
622-075	1.50	King Pin Bearings and Spindle Thrust Bearing - Assembly
622-078	0.50	Pivot Block Adjustments

Op.no.	time (h)	Notes
622-081	10.00	Front axle, overhaul
64		STEERING
645-004	1.00	Steering cylinder, removing
645-005	1.00	Steering cylinder, installing
645-021	1.50	Valve block, replacing
645-031	1.00	Steering control unit, removing
645-032	1.00	Steering Control Unit - Disassembly
645-033	0.50	Steering Control Unit - Cleaning and Inspection
645-034	1.50	Steering Control Unit - Assembly
645-052	1.50	Steering cylinder removed, reconditioning excl replacing bearings
645-077	2.50	Steering cylinder removed, reconditioning incl replacing bearings
645-081	1.50	Steering valve removed, reconditioning
647-089	0.50	Secondary steering relief valve, adjusting
647-992	2.00	Secondary steering system, installing new
648-001	1.00	Wheel lean cylinder, removing
648-002	1.00	Wheel lean cylinder, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-036	4.00	Frame joint, replacing bearings
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	1.00	Wheel, removing and fitting one
771-002	0.50	Front wheel, removal
771-003	0.50	Front wheel, installation
771-004	0.50	Rear wheel, removing
771-005	0.50	Rear wheel, installing
771-006	0.50	Tyres, checking pressure
771-007	1.00	Wheel, installing

Op.no.	time (h)	Notes
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-002	1.75	Compression test
210-070	8.00	Engine, removing
210-071	40.00	Engine removed, general overhaul
210-072	8.00	Engine, installing
211-002	10.00	Cylinder head, replacing gasket
213-010	2.50	Cylinder liner and piston, replacing one
214-005	0.75	Valve seat insert cylinder head removed, replacing each
214-021	0.50	Valve cover, fitting new gasket each
214-030	1.50	Valves, decarbonizing and grinding
215-002	2.00	Timing gear cover, fitting new gasket in machine
216-014	3.50	Crankshaft, replacing front oil seal
216-018	3.50	Crankshaft, replacing rear oil seal
216-034	0.50	Big- end bearing shells, replacing in machine
216-041	5.00	Flywheel housing with power take-off, removing
216-042	5.50	Flywheel housing with power take-off, installing
216-046	2.50	Vibration damper, removal
217-003	4.00	Oil sump, replacing
217-004	2.00	Oil sump gasket, changing
218-001	1.00	Rubber cushion, replacing
218-003	2.50	Engine mount, right rear, changing
218-004	2.00	Engine mount, left rear, changing
218-005	2.50	Engine mount, right front, changing
218-006	2.00	Engine mount, left front, changing
22		LUBRICATING SYSTEM
222-011	0.50	Oil filter, replacing
223-006	6.00	Oil cooler, replacing
23		FUEL SYSTEM
233-002	2.00	Feed pump, replacing
233-011	1.00	Fuel pump, removing
233-012	1.50	Fuel pump, installing
233-014	0.75	Fuel filters, replacing
233-015	0.75	Fuel filter extra, replacing
234-010	6.00	Fuel tank, replacing
234-091	1.00	Fuel shut-off valve, changing
236-044	1.00	Injection timing, checking
236-076	4.00	Injection pump, one changing
237-004	2.50	Injector, replacing one
237-018	1.00	Delivery pipe, replacing one

Op.no.	time (h)	Notes
25		INLET SYSTEM; EXHAUST SYSTEM
251-002	1.00	Induction manifold, replacing gasket
251-004	0.75	Exhaust manifold, replacing gasket
252-020	4.00	Silencer, replacing
252-022	2.00	Exhaust pipe, changing pipe between silencer and turbocharger
255-071	4.00	Turbocharger, replacing
255-072	3.00	Turbocharger, installing
6		STEERING
62		STEERING AXLE
622-011	2.00	Steering spindle, changing
622-031	2.00	Steering spindle, changing king pin bearing
622-041	2.00	Steering spindle, changing king pin bearing seal
622-051	1.00	Preparation and Wheel Removal
622-052	2.00	Wheel Hub - Removal
622-053	2.00	Steering Cylinder - Removal
622-054	1.00	Drag link, removing
622-055	1.50	Pivot block, removing and disassembling
622-056	3.00	Spindle - Removal and Disassembly
622-057	2.00	Wheel Lean Cylinder - Removal
622-058	2.50	Tie bar, removing
622-059	2.00	Knuckle, removing
622-060	2.00	Front axle frame, removing
622-061	2.00	Front axle frame, installing
622-062	2.00	Knuckle, installing
622-063	1.50	Tie bar, installing
622-064	1.00	Wheel Lean Cylinder - Installation
622-065	1.00	Spindle - Assembly and Installation
622-066	1.50	Pivot Block - Assembly and Installation
622-067	1.50	Drag link, installing
622-068	1.00	Steering Cylinder - Installation
622-069	1.00	Wheel Hub - Installation
622-070	0.50	Wheel - Installation
622-071	0.50	Toe - in, adjustment
622-072	1.50	Front Axle Pivot Pin Bearings - Disassembly
622-073	1.50	Front Axle Pivot Pin Bearings - Assembly
622-074	1.50	King Pin Bearings and Spindle Thrust Bearing - Disassembly
622-075	1.50	King Pin Bearings and Spindle Thrust Bearing - Assembly
622-078	0.50	Pivot Block Adjustments

Op.no.	time (h)	Notes
622-081	10.00	Front axle, overhaul
64		STEERING
645-004	1.00	Steering cylinder, removing
645-005	1.00	Steering cylinder, installing
645-021	1.50	Valve block, replacing
645-031	1.00	Steering control unit, removing
645-032	1.00	Steering Control Unit - Disassembly
645-033	0.50	Steering Control Unit - Cleaning and Inspection
645-034	1.50	Steering Control Unit - Assembly
645-052	1.50	Steering cylinder removed, reconditioning excl replacing bearings
645-077	2.50	Steering cylinder removed, reconditioning incl replacing bearings
645-081	1.50	Steering valve removed, reconditioning
647-089	0.50	Secondary steering relief valve, adjusting
647-992	2.00	Secondary steering system, installing new
648-001	1.00	Wheel lean cylinder, removing
648-002	1.00	Wheel lean cylinder, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-036	4.00	Frame joint, replacing bearings
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	1.00	Wheel, removing and fitting one
771-002	0.50	Front wheel, removal
771-003	0.50	Front wheel, installation
771-004	0.50	Rear wheel, removing
771-005	0.50	Rear wheel, installing
771-006	0.50	Tyres, checking pressure
771-007	1.00	Wheel, installing

Op.no.	time (h)	Notes
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-002	1.75	Compression test
210-070	8.00	Engine, removing
210-071	40.00	Engine removed, general overhaul
210-072	8.00	Engine, installing
211-002	10.00	Cylinder head, replacing gasket
213-010	2.50	Cylinder liner and piston, replacing one
214-005	0.75	Valve seat insert cylinder head removed, replacing each
214-021	0.50	Valve cover, fitting new gasket each
214-030	1.50	Valves, decarbonizing and grinding
215-002	2.00	Timing gear cover, fitting new gasket in machine
216-014	3.50	Crankshaft, replacing front oil seal
216-018	3.50	Crankshaft, replacing rear oil seal
216-034	0.50	Big- end bearing shells, replacing in machine
216-041	5.00	Flywheel housing with power take-off, removing
216-042	5.50	Flywheel housing with power take-off, installing
216-046	2.50	Vibration damper, removal
217-003	4.00	Oil sump, replacing
217-004	2.00	Oil sump gasket, changing
218-001	1.00	Rubber cushion, replacing
218-003	2.50	Engine mount, right rear, changing
218-004	2.00	Engine mount, left rear, changing
218-005	2.50	Engine mount, right front, changing
218-006	2.00	Engine mount, left front, changing
22		LUBRICATING SYSTEM
222-011	0.50	Oil filter, replacing
223-006	6.00	Oil cooler, replacing
23		FUEL SYSTEM
233-002	2.00	Feed pump, replacing
233-011	1.00	Fuel pump, removing
233-012	1.50	Fuel pump, installing
233-014	0.75	Fuel filters, replacing
233-015	0.75	Fuel filter extra, replacing
234-010	6.00	Fuel tank, replacing
234-091	1.00	Fuel shut-off valve, changing
236-044	1.00	Injection timing, checking
236-076	4.00	Injection pump, one changing
237-004	2.50	Injector, replacing one
237-018	1.00	Delivery pipe, replacing one

Op.no.	time (h)	Notes
25		INLET SYSTEM; EXHAUST SYSTEM
251-002	1.00	Induction manifold, replacing gasket
251-004	0.75	Exhaust manifold, replacing gasket
252-020	4.00	Silencer, replacing
252-022	2.00	Exhaust pipe, changing pipe between silencer and turbocharger
255-071	4.00	Turbocharger, replacing
255-072	3.00	Turbocharger, installing
6		STEERING
62		STEERING AXLE
622-011	2.00	Steering spindle, changing
622-031	2.00	Steering spindle, changing king pin bearing
622-041	2.00	Steering spindle, changing king pin bearing seal
622-051	1.00	Preparation and Wheel Removal
622-052	2.00	Wheel Hub - Removal
622-053	2.00	Steering Cylinder - Removal
622-054	1.00	Drag link, removing
622-055	1.50	Pivot block, removing and disassembling
622-056	3.00	Spindle - Removal and Disassembly
622-057	2.00	Wheel Lean Cylinder - Removal
622-058	2.50	Tie bar, removing
622-059	2.00	Knuckle, removing
622-060	2.00	Front axle frame, removing
622-061	2.00	Front axle frame, installing
622-062	2.00	Knuckle, installing
622-063	1.50	Tie bar, installing
622-064	1.00	Wheel Lean Cylinder - Installation
622-065	1.00	Spindle - Assembly and Installation
622-066	1.50	Pivot Block - Assembly and Installation
622-067	1.50	Drag link, installing
622-068	1.00	Steering Cylinder - Installation
622-069	1.00	Wheel Hub - Installation
622-070	0.50	Wheel - Installation
622-071	0.50	Toe - in, adjustment
622-072	1.50	Front Axle Pivot Pin Bearings - Disassembly
622-073	1.50	Front Axle Pivot Pin Bearings - Assembly
622-074	1.50	King Pin Bearings and Spindle Thrust Bearing - Disassembly
622-075	1.50	King Pin Bearings and Spindle Thrust Bearing - Assembly
622-078	0.50	Pivot Block Adjustments

Op.no.	time (h)	Notes
622-081	10.00	Front axle, overhaul
64		STEERING
645-004	1.00	Steering cylinder, removing
645-005	1.00	Steering cylinder, installing
645-021	1.50	Valve block, replacing
645-031	1.00	Steering control unit, removing
645-032	1.00	Steering Control Unit - Disassembly
645-033	0.50	Steering Control Unit - Cleaning and Inspection
645-034	1.50	Steering Control Unit - Assembly
645-052	1.50	Steering cylinder removed, reconditioning excl replacing bearings
645-077	2.50	Steering cylinder removed, reconditioning incl replacing bearings
645-081	1.50	Steering valve removed, reconditioning
647-089	0.50	Secondary steering relief valve, adjusting
647-992	2.00	Secondary steering system, installing new
648-001	1.00	Wheel lean cylinder, removing
648-002	1.00	Wheel lean cylinder, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-036	4.00	Frame joint, replacing bearings
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	1.00	Wheel, removing and fitting one
771-002	0.50	Front wheel, removal
771-003	0.50	Front wheel, installation
771-004	0.50	Rear wheel, removing
771-005	0.50	Rear wheel, installing
771-006	0.50	Tyres, checking pressure
771-007	1.00	Wheel, installing

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
172-002	3.50	Warranty inspection 100 hours	
172-004	9.00	Warranty inspection 1000 hours	
173-002	0.40	Maintenance service, daily	
173-004	1.00	Maintenance service, every 50 hours	
173-007	1.50	Maintenance service, every 250 hours	
173-010	4.50	Maintenance service, every 500 hours	
173-012	9.50	Maintenance service, every 1000 hours	1001 - 3499 60001 - 69999 70201 - 79999
173-014	11.00	Maintenance service, every 2000 hours	1001 - 2165 60001 - 69999 70201 - 79999
173-016	10.00	Maintenance service, every 3000 hours	1001 - 3499 60001 - 69999 70201 - 79999
173-018	11.00	Maintenance service, every 4000 hours	1001 - 2165 60001 - 69999 70201 - 79999
173-022	0.50	Maintenance service, every 6000 hours	
173-059	1.00	Engine, changing oil and filter	
173-061	1.50	Transmission, changing oil and filter	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
210-002	3.00	Compression test	2201 - 3499 61001 - 69999 70401 - 79999
210-070	6.00	Engine, removing	2201 - 3499 61001 - 69999 70401 - 79999
210-072	8.00	Engine, installing	
214-012	4.50	Valves, adjusting	2202 - 3499 61001 - 69999 70401 - 79999
216-014	2.00	Crankshaft, replacing front oil seal	2202 - 3499 61001 - 69999 70401 - 79999
216-014	2.00	Crankshaft, replacing front oil seal	1001 - 2165 60001 - 60999 70201 - 70201

Op.no.	time (h)		Notes
217-002	4.00	Sump gasket, replacing incl cleaning oil strainer	
218-001	3.00	Rubber cushion, replacing	
22		LUBRICATING SYSTEM	
221-021	1.00	Lubrication oil pressure, checking	
23		FUEL SYSTEM	
233-001	0.40	Fuel system, bleeding	1001 - 2165 60001 - 60999 70201 - 70399
233-001	0.70	Fuel system, bleeding	2202 - 3499 61001 - 69999 70401 - 79999
233-004	0.80	Feed pump, checking feed pressure	2202 - 3499 60001 - 69999 70201 - 79999
233-020	0.10	Fuel filter, checking	
236-002	0.50	Stall speed, checking	
236-076	1.25	Injection pump, one changing	
236-077	1.00	Injection pump, one removing and refitting	
236-078	0.25	Injection pump, each additional removing and refitting	
237-004	2.00	Injector, replacing one	
237-030	1.00	High pressure fuel pump, checking	2201 - 3499 61001 - 69999 70401 - 79999
237-032	2.00	High pressure fuel pump, replacing	2201 - 3499 61001 - 69999 70401 - 79999
237-033	1.25	Fuel control valve (FCV), replacing	
237-034	0.30	Pressure relief valve (PRV), replacing	2201 - 3499 61001 - 69999 70401 - 79999
237-035	0.30	Fuel rail pressure sensor, replacing	2201 - 3499 61001 - 69999 70401 - 79999
237-036	0.70	Pressure relief valve (PRV), checking	2201 - 3499 61001 - 69999 70401 - 79999
237-038	0.70	Fuel control valve (FCV), checking	2201 - 3499 61001 - 69999 70401 - 79999
25		INLET SYSTEM; EXHAUST SYSTEM	
252-021	0.50	Exhaust pipe, flexible tube, replacing	
255-002	0.80	Turbocharger, inspection	
26		COOLING SYSTEM	
261-011	2.50	Radiator, removing	2002 - 3499

Op.no.	time (h)		Notes
			61001 - 69999 70401 - 79999
261-013	4.00	Radiator, installing	2202 - 3499 61001 - 69999 70401 - 79999
263-010	0.40	Pump 3 (P3) standby pressure, checking	
263-016	0.50	Maximum fan speed, checking	
263-051	1.50	Cooling fan hydraulics, funktion check	
263-062	2.50	Cooling fan motor, replacing	2201 - 3499 61001 - 69999 70401 - 79999

3 ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS

36 OTHER ELECTRICAL EQUIPMENT

367-052 1.00 V-ECU, replacing

39 MISCELLANEOUS

390-901 1.00 CareTrack Early Basic, installation

390-902 2.00 CareTrack, installing new

4 POWER TRANSMISSION

41 CLUTCH; TORQUE CONVERTER

414-003 2.00 Converter, replacing (engine removed)

42 TRANSMISSION, HYDRAULIC CONTROL

421-002 0.70 Transmission oil pressure, checking 70225 - 79999
60270 - 69999
1511 - 3499

421-002 0.70 Transmission oil pressure, checking 70201 - 70224
60001 - 60269
1001 - 1510

421-008 3.00 Gear selector valve, replacing
421-009 1.00 Gear selector valve removed, reconditioning
421-051 0.25 Transmission, resistance measuring of solenoides
421-068 12.00 Transmission, removing (upwards)
421-069 14.00 Transmission, installing (from above)
421-071 32.00 Transmission removed, reconditioning

46 FRONT AXLE; REAR AXLE

461-002 1.75 Axle, removing
461-003 2.00 Axle, installing
461-005 3.50 Drive shaft, replacing one side

Op.no.	time (h)	Notes
463-002	4.50	Axle, removing
463-003	4.50	Axle, installing
463-043	4.00	Hub, replacing seal
5		BRAKE
51		WHEEL BRAKE
517-001	0.50	Brake linings, checking wear
517-004	4.50	Brake disc, replacing both sides
52		HYDRAULIC BRAKE SYSTEM
520-001	0.75	Brake system, checking function, hydraulic
520-002	0.50	Brake system, checking function, retardation
520-005	0.50	Brake system, check and adjusting pressure in circuit
520-037	1.00	Brake system, bleeding
525-009	0.50	Foot brake valve removed, reconditioning
527-001	0.50	Accumulator removed, checking charging pressure
6		STEERING
64		STEERING
645-006	3.00	Steering cylinder, replacing
645-028	0.50	Steering system, checking and adjusting working pressure
645-081	1.50	Steering valve removed, reconditioning
645-082	1.50	Steering valve, replacing
66		LEVER STEERING
660-003	0.50	Lever steering (CDC) adjusting steering speed
660-005	1.25	CDC, checking lever signals
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	1.75	Counterweight, removing
716-002	1.75	Counterweight, fitting
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.75	Wheel, removing and fitting one

Op.no.	time (h)	Notes	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	3.00	Cab, removing	
810-002	3.50	Cab, installing	
818-020	1.75	Viscous cab suspension, changing one unit	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-001	0.90	Engine hood, removing	2202 - 3499 66001 - 69999 71401 - 79999
821-002	2.00	Engine hood, installing	2202 - 3499 61001 - 69999 70401 - 79999
87		AIR CONDITIONING UNIT	
873-004	2.00	Heater core, replacing	
873-006	1.25	Fan motor, replacing	
873-008	1.00	Heat control valve, replacing	
874-003	0.75	Cooling unit, performance test	
874-059	1.25	Evaporator, cleaning	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-002	3.00	Hydraulic system, bleeding	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-040	0.25	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
912-019	0.50	Shock valve removed, checking	
912-021	0.30	Shock valve, tilt function, checking	
912-023	0.70	Shock valve lift function, checking	
913-003	1.25	Hydraulic pump, checking and adjusting standby pressure	
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure	
913-005	0.50	Hydraulic pump, flow control	
913-006	0.75	LS (load sense) pressure, checking	
914-055	0.50	Servo pressure, checking and adjusting	
914-058	3.50	Servo valve, replacing	
916-003	1.00	Boom suspension accumulator, reconditioning	
916-006	0.50	Boom suspension system, pressure reduction, safety valve, checking and adjusting	

Op.no.	time (h)	Notes
916-019	0.25	3rd/4th hydraulic function, pressure check
916-070	0.10	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing
916-071	2.50	Boom suspension system, changing accumulator
916-074	0.30	Boom suspension system, test drive with load
94		UNIT, LOAD HANDLING
945-002	3.50	Lift frame, replacing bearing in lower bucket- or implement attachment
945-003	0.25	Implement attachment, measuring clearance of lower bearing
945-004	4.00	Lift cylinder, replacing
945-005	4.00	Lift cylinder, repacking in machine
945-006	3.00	Lift cylinder removed, repacking
945-008	3.00	Tilt cylinder, replacing
945-009	5.00	Tilt cylinder, repacking in machine
945-010	3.50	Tilt cylinder removed, repacking
945-011	2.00	Implemental attachment, replacing hydraulic cylinder
945-016	5.00	Lift frame, replacing bearing in upper mounting "O"
945-054	1.75	Implement attachment, replacing
945-056	1.00	Implement attachment, repacking removed hydraulic cylinder
945-062	2.00	T-link upper, replacing "HIJ"
945-063	0.75	T-link upper removed, replacing bearings "HIJ"
945-064	2.00	T-link, lower, replacing "IB"
945-066	2.00	Tilt link, replacing "GH"
945-067	0.75	Tilt link removed, replacing bearings "GH"
945-068	3.00	Tilt arm, replacing bearing "GDF"
945-069	3.00	Tilt arm, replacing "GDF"
99		MISCELLANEOUS
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-006	0.30	VCADS Pro, central systems updating, replace component	
172-002	3.50	Warranty inspection 100 hours	
172-004	7.50	Warranty inspection 1000 hours	
173-002	0.40	Maintenance service, daily	
173-004	0.70	Maintenance service, every 50 hours	
173-007	1.00	Maintenance service, every 250 hours	
173-010	2.50	Maintenance service, every 500 hours	
173-012	4.00	Maintenance service, every 1000 hours	
173-014	9.50	Maintenance service, every 2000 hours	
173-018	10.00	Maintenance service, every 4000 hours	
173-022	10.00	Maintenance service, every 6000 hours	
176-001	0.60	Mechanical release of parking brake	
19		GENERAL	
191-021	0.20	Service position 1	
191-022	0.20	Service position 2	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-009	0.30	VCADS Pro, MID 128, programming E-ECU	
200-068	0.70	E-ECU, MID 128, changing non-programmed ECU	
200-070	0.30	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-002	3.00	Compression test	3501 - 9999
210-002	3.00	Compression test	3501 - 9999
210-070	6.00	Engine, removing	
210-070	6.00	Engine, removing	
210-072	9.00	Engine, installing	
210-072	9.50	Engine, installing	
214-012	4.50	Valves, adjusting	
216-014	2.00	Crankshaft, replacing front oil seal	
22		LUBRICATING SYSTEM	
221-022	0.40	Lubrication oil pressure, checking with pressure gauge	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	

Op.no.	time (h)	Notes
233-001	0.70	Fuel system, bleeding
233-004	0.80	Feed pump, checking feed pressure
233-020	0.10	Fuel filter, checking
234-011	0.90	Fuel tank, removing
234-012	1.50	Fuel tank, installing
236-002	0.50	Stall speed, checking
237-002	1.75	Injectors, replacing all
237-002	1.75	Injectors, replacing all
237-030	1.00	High pressure fuel pump, checking
237-032	2.00	High pressure fuel pump, replacing
237-033	1.25	Fuel control valve (FCV), replacing
237-034	0.80	Pressure relief valve (PRV), replacing
237-035	0.30	Fuel rail pressure sensor, replacing
237-036	0.70	Pressure relief valve (PRV), checking
237-038	0.70	Fuel control valve (FCV), checking
25		INLET SYSTEM; EXHAUST SYSTEM
255-002	0.80	Turbocharger, inspection
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-011	2.50	Radiator, removing
261-013	4.00	Radiator, installing
263-011	0.70	Pump 3 (P3) standby pressure, checking and adjusting (LS-line removed)
263-021	0.20	Pump 3 (P3), max pressure and fan speed, checking and adjusting
263-051	1.25	Cooling fan hydraulics, funktion check
263-062	2.50	Cooling fan motor, replacing
263-071	0.50	Fan control valve, removing
263-072	0.20	Fan control valve, seal replacement
263-073	0.20	Fan control valve, installing
263-081	0.60	Hydraulic pump P3, removal
263-082	1.25	Hydraulic pump P3, installation
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	0.80	I-ECU, MID 140, changing non-programmed ECU
300-074	0.30	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-002	0.30	Batteries, replacing

Op.no.	time (h)	Notes	
311-005	0.40	Battery condition, check	
36		OTHER ELECTRICAL EQUIPMENT	
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	
366-066	0.70	V-ECU, MID 187, changing pre-programmed ECU	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-016	1.00	Temperature sensor cooling system, replacing	4255 - 9999 61800 - 69999 70653 - 79999
386-038	0.60	Engine rotation speed sensor, replacing	
39		MISCELLANEOUS	
390-902	2.00	CareTrack, installing new	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-002	0.80	Transmission oil pressure, checking	4398 - 9999 70656 - 79999
421-002	0.50	Transmission oil pressure, checking	3501 - 4397 70601 - 70655
421-025	2.50	Transmission solenoid, replacing	
421-026	0.60	Transmission pressure sensor, replacing	
421-049	0.10	Transmission, functional check	
421-054	1.75	Seal for rear output shaft, replacing	
421-070	5.50	Transmission, removing	
421-072	9.50	Transmission, installing	
421-099	0.70	Transmission, calibration	4492 - 4999 70675 - 79999 61915 - 69999
46		FRONT AXLE; REAR AXLE	
461-037	0.70	Hub reduction, removing	
461-038	1.25	Hub reduction, installing	
461-043	5.00	Hub, replacing seal	
463-002	2.50	Axle, removing	
463-003	2.50	Axle, installing	
463-043	5.00	Hub, replacing seal	
463-045	0.70	Hub reduction, removing	
463-046	1.25	Hub reduction, installing	
468-006	0.20	Differential lock, function check	
468-051	1.25	Differential lock, adjusting	

Op.no.	time (h)		Notes
5		BRAKE	
51		WHEEL BRAKE	
510-003	0.50	Brake discs, measuring wear	
516-005	2.50	Brake disc, replacing	3501 - 4445 61501 - 61914 70601 - 70674
516-005	3.00	Brake disc, replacing	4445 - 9999 61915 - 69999 70675 - 79999
516-050	2.50	Brake piston, replacing seals	4445 - 9999 61915 - 69999 70675 - 79999
517-005	3.00	Brake disc, replacing	4445 - 9999 61915 - 69999 70675 - 79999
517-005	2.50	Brake disc, replacing	3501 - 4445 61501 - 61914 70601 - 70674
517-050	2.50	Brake piston, replacing seals	4445 - 9999 61915 - 69999 70675 - 79999
52		HYDRAULIC BRAKE SYSTEM	
520-001	0.80	Brake system, checking function, hydraulic	
520-002	0.20	Brake system, checking function, retardation	
520-005	0.20	Brake system, check and adjusting pressure in circuit	
520-037	0.30	Brake system, bleeding	
525-005	0.50	Foot brake valve, removal	
525-006	0.70	Foot brake valve, installation	
525-009	0.50	Foot brake valve removed, reconditioning	
527-001	0.10	Accumulator removed, checking charging pressure	
527-009	0.60	Accumulator, check	
55		PARKING BRAKE	
550-006	2.50	Parking brake, replacing discs and seals	
550-023	0.10	Parking brake, function checking	3501 - 4391 61501 - 61878
550-023	0.10	Parking brake, function checking	4391 - 9999 61879 - 69999
6		STEERING	
60		GENERAL	
600-001	0.10	Steering system, function check	

Op.no.	time (h)	Notes
64		STEERING
645-004	0.80	Steering cylinder, removing
645-005	1.50	Steering cylinder, installing
645-028	0.30	Steering system, checking and adjusting working pressure
645-052	0.60	Steering cylinder removed, reconditioning excl replacing bearings
645-063	0.60	Steering cylinder, repacking
645-082	1.25	Steering valve, replacing
645-091	1.00	Shift valve, removing
645-092	1.50	Shift valve, installing
647-091	0.40	Secondary steering pump, checking and adjusting working pressure
66		LEVER STEERING
660-006	0.90	Comfort drive control (CDC), angle sensor, changing
660-007	1.25	Comfort drive control (CDC), solenoid valve, changing
660-011	0.20	Lever steering (CDC), functional check
660-012	0.40	Comfort Drive Control, servo pressure, checking
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
75		AXLE SUSPENSION
755-003	5.50	Axle suspension, replacing bushes and seals
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-002	0.50	Front wheel, removal
771-003	0.30	Front wheel, installation
771-004	0.50	Rear wheel, removing
771-005	0.30	Rear wheel, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	2.50	Cab, removing
810-001	2.50	Cab, removing
810-001	2.00	Cab, removing
810-002	2.50	Cab, installing
810-002	3.50	Cab, installing

Op.no.	time (h)	Notes	
810-002	3.00	Cab, installing	
818-020	1.75	Viscous cab suspension, changing one unit	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-001	0.90	Engine hood, removing	
821-002	2.00	Engine hood, installing	
821-012	0.20	Engine hood, manually operating	
83		DOORS; HATCH; COVER PLATE, (all)	
834-011	0.20	Door lock, changing	
834-013	0.30	Door lock cylinder, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-002	2.50	Windscreen, replacing	
843-013	1.25	Side window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-010	0.40	Operator's seat, securing	
87		AIR CONDITIONING UNIT	
870-010	0.50	ECC, MID 146, changing pre-programmed ECU	
870-011	0.70	ECC, MID 146, changing non-programmed ECU	
870-012	0.90	Climate unit, removing	4255 - 9999 61800 - 69999 70653 - 79999
870-013	1.25	Climate unit, installing	4255 - 9999 61800 - 69999 70653 - 79999
873-004	2.50	Heater core, replacing	4255 - 9999 61800 - 69999 70653 - 79999
873-004	1.50	Heater core, replacing	
873-006	2.50	Fan motor, replacing	4255 - 9999 61800 - 69999 70653 - 79999
873-008	0.70	Heat control valve, replacing	
873-011	0.80	Air mix door actuator, replacing	4255 - 9999 61800 - 69999 70653 - 79999
873-019	0.50	ECC control unit, replacing	
873-019	0.90	ECC control unit, replacing	4255 - 9999 61800 - 69999 70653 - 79999
874-006	2.50	Compressor, replacing incl draining and filling	
874-010	2.00	Condenser, replacing incl draining and filling	
874-011	1.75	Receiver, replacing incl draining and filling	
874-011	1.75	Receiver, replacing incl draining and filling	
874-012	2.50	Evaporator, replacing incl draining and filling	

Op.no.	time (h)		Notes
874-012	3.00	Evaporator, replacing incl draining and filling	4255 - 9999 61800 - 69999 70653 - 79999
874-013	2.00	Expansion valve, replacing incl draining and filling	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-002	3.00	Hydraulic system, bleeding	
900-031	0.80	V2-ECU, MID 249, changing non-programmed ECU	
900-032	0.50	V2-ECU, MID 249, changing pre-programmed ECU	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
912-018	0.20	Back-up valve, checking and adjusting	
912-021	0.70	Shock valve, tilt function, checking	
912-023	0.70	Shock valve lift function, checking	
912-023	1.00	Shock valve lift function, checking	
912-120	0.20	Lift, functional check	
912-121	0.80	Lift, solenoid valve, changing	
912-122	0.70	Lower, solenoid valve, changing	
912-123	0.90	Tilt in, solenoid valve, changing	
912-124	0.90	Tilt out, solenoid valve, changing	
912-125	0.60	Lift/lower, angle sensor, changing	
912-125	0.60	Lift/lower, angle sensor, changing	3503 - 9999 61501 - 69999 70601 - 79999
912-126	0.10	Tilt in/out, angle sensor, changing	3501 - 9999 61501 - 69999 70601 - 79999
912-127	0.20	Tilt, functional check	
912-151	0.60	Back-up valve, replacing	
912-152	1.25	Central valve, removal	
912-153	3.00	Central valve, installation	
912-154	2.50	Control valve, removal	
912-155	3.00	Control valve, installation	
913-001	0.60	Hydraulic pump, checking and adjusting standby pressure and working pressure	70889 - 99999
913-003	1.25	Hydraulic pump, checking and adjusting standby pressure	70601 - 70655 61501 - 61863 3501 - 4397

Op.no.	time (h)	Notes
913-004	0.90	Hydraulic pump, checking and adjusting max working pressure
913-034	0.20	Lifting time, checking
913-034	0.20	Lifting time, checking
913-044	1.25	Hydraulic pump P1 and P2, checking function
913-050	2.50	Hydraulic pump P2, removal
913-051	5.00	Hydraulic pump P2, installation
913-060	2.50	Hydraulic pump P1, removal
913-061	5.00	Hydraulic pump P1, installation
913-064	0.50	Hydraulic pump, power control checking
913-069	1.00	Hydraulic power control valve, replacing
914-047	0.20	Servo accumulator, removal
914-048	0.20	Servo accumulator, installation
914-049	0.10	Accumulator removed, checking
914-052	0.40	Accumulator, checking (pressure back-up for servo circuit)
914-055	0.50	Servo pressure, checking and adjusting
914-063	0.60	Servo pressure, checking at the spool in control valve
914-063	0.40	Servo pressure, checking at the spool in control valve
914-064	0.80	Servo valve, removal
914-065	1.25	Servo valve, installation
916-002	1.25	Boom suspension accumulator, check and adjusting
916-003	0.60	Boom suspension accumulator, reconditioning
916-006	0.60	Boom suspension system, pressure reduction, safety valve, checking and adjusting
916-017	0.50	3rd/4th hydraulic function, shock valve, checking
916-018	0.60	3rd/4th hydraulic function, solenoid valve, changing
916-020	0.20	3rd/4th hydraulic function, checking and adjusting pressure
916-070	0.20	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing
916-072	0.20	Accumulator, boom suspension system, discarding
916-074	0.30	Boom suspension system, test drive with load
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-036	0.10	Attachment locking, functional check
94		UNIT, LOAD HANDLING
945-005	1.75	Lift cylinder, repacking in machine
945-009	1.75	Tilt cylinder, repacking in machine

Op.no.	time (h)	Notes	
99		MISCELLANEOUS	
992-002	4.00	Fire suppression system, actions after activation	
992-003	4.00	Fire suppression system, actions after manual activation	
993-025	2.50	Automatic lubrication pump unit, reconditioning	5305 - 9999
993-030	0.80	Shift valve, checking	

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
171-001	0.50	Arrival Inspection, according to Inspection Programme
171-002	1.50	Delivery Inspection, according to Inspection Programme
172-002	4.50	Warranty inspection 100 hours
172-004	12.00	Warranty inspection 1000 hours
173-007	1.25	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	7.50	Maintenance service, every 1000 hours
173-014	12.00	Maintenance service, every 2000 hours
173-059	1.00	Engine, changing oil and filter
173-061	1.50	Transmission, changing oil and filter
173-070	1.50	Axles, changing oil
173-074	1.75	Hydraulic oil tank, changing oil and filter
173-075	3.00	Hydraulic oil tank, changing oil and filter incl.cleaning tank

2 ENGINE WITH MOUNTING AND EQUIPMENT

21		ENGINE
210-002	1.75	Compression test
210-070	7.50	Engine, removing
210-071	40.00	Engine removed, general overhaul
210-072	8.50	Engine, installing
211-002	8.00	Cylinder head, replacing gasket
211-018	10.00	Cylinder heads all, replacing gaskets
211-068	4.00	Cylinder heads all removed, decarbonizing and grinding in valves
211-071	0.50	Cylinder head removed, pressure testing each
211-080	4.50	Cylinder heads all, removing
211-082	7.00	Cylinder heads all, fitting
212-007	4.00	Cylinder block, liners removed, milling of all liner locations
212-011	0.50	Cylinder, cylinder heads removed, measuring wear in all cylinders
213-010	14.00	Cylinder liner and piston, replacing one
213-018	24.00	Cylinder liners and pistons, replacing all
214-012	1.50	Valves, adjusting
214-027	0.50	Inspection cover, fitting new gasket
214-093	0.50	Rocker arm mechanism removed, reconditioning
215-002	6.00	Timing gear cover, fitting new gasket in machine

Op.no.	time (h)	Notes
215-030	8.00	Timing gear, replacing in machine
215-032	9.00	Timing gear case, fitting new gasket in machine
215-040	2.00	Injection pump, drive shaft, replacing seal
216-014	3.00	Crankshaft, replacing front oil seal
216-018	13.00	Crankshaft, replacing rear oil seal
217-002	5.00	Sump gasket, replacing incl cleaning oil strainer
22		LUBRICATING SYSTEM
221-006	0.25	Oil pressure relief valve, replacing
221-014	6.00	Oil pump, replacing
223-006	3.00	Oil cooler, replacing
23		FUEL SYSTEM
233-001	0.25	Fuel system, bleeding
233-002	0.75	Feed pump, replacing
233-004	0.50	Feed pump, checking feed pressure
233-014	0.50	Fuel filters, replacing
233-015	0.25	Fuel filter extra, replacing
234-010	4.00	Fuel tank, replacing
236-001	0.50	Idling speed, checking and adjusting
236-002	0.25	Stall speed, checking
236-030	1.50	Injection timing, checking
236-044	1.00	Injection timing, checking
236-073	2.00	Injection pump, replacing incl setting injection timing
237-002	1.50	Injectors, replacing all
237-004	0.75	Injector, replacing one
237-007	0.25	Overflow valve, replacing
237-016	1.50	Injectors, replacing copper sleeve in machine
237-018	0.50	Delivery pipe, replacing one
237-020	0.50	Pressure equalizer, replacing
237-080	2.00	Injectors removed, reconditioning all
25		INLET SYSTEM; EXHAUST SYSTEM
251-002	1.00	Induction manifold, replacing gasket
251-004	2.00	Exhaust manifold, replacing gasket
252-019	1.25	Silencer, rubber cushion replacing
252-020	1.50	Silencer, replacing
252-021	0.50	Exhaust pipe, flexible tube, replacing
255-071	1.00	Turbocharger, replacing
256-002	0.25	Air cleaner, checking prssure drop indicator
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	2.00	Preheating coil, replacing

Op.no.	time (h)	Notes
26		COOLING SYSTEM
261-004	1.00	Coolant, changing
261-008	3.00	Radiator, replacing
261-012	1.00	Radiator hose upper, replacing
261-014	1.00	Radiator hoses lower, replacing
261-018	1.00	Expansion tank, replacing
262-002	1.50	Coolant pump, replacing
262-071	1.50	Coolant pump removed, reconditioning
262-098	1.00	Thermostat, replacing
263-012	0.75	Fan belt and/or alternator belt, replacing
263-022	1.00	Fan belt and/or alternator-, compressor belt, replacing all belts
27		ENGINE CONTROL
273-021	0.75	Stop magnet, replacing
273-023	0.50	Electrical engine shut down, check and adjusting
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	1.00	Battery charging capacity, checking
311-003	0.50	Main switch, replacing
311-006	0.50	Earth lead to battery, replacing
311-008	1.00	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
322-005	0.50	Charging regulator, replacing
33		STARTING SYSTEM
331-018	0.75	Starter motor, replacing
35		LIGHTING
352-024	0.50	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.50	Rear lamp, replacing one
353-018	0.25	Rear lamp, replacing glass or bulb
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
361-002	0.25	Flasher unit, replacing relay
361-010	0.75	Flasher switch, replacing
361-017	0.25	Flasher lamp, replacing glass or bulb
362-002	0.25	Horn, replacing

Op.no.	time (h)	Notes
362-003	0.50	Reverse alarm, replacing
363-001	0.50	Windscreen wiper rear, replacing motor
363-002	0.75	Windscreen wiper front, replacing motor
363-004	0.25	Windscreen flusher pump, replacing
364-004	0.50	Switch, replacing
364-008	0.25	Brake light switch, replacing
367-052	1.25	V-ECU, replacing
37		CABLE; FUSE; RELAY
372-031	1.00	Relay CU201, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-003	0.50	Transmission oil pressure sensor, replacing
386-004	0.50	Transmission temperature sensor, replacing
386-005	0.50	Transmission, revolution sensor, replacing
386-006	0.50	Engine temperature sensor, replacing
386-007	0.50	Engine oil pressure sensor, replacing
386-011	1.00	Fuel level sender, replacing
386-035	0.75	Induction sensor (lifting cylinder) replacing
386-036	1.00	Induction sensor (tilt cylinder) replacing
387-004	0.50	Transmission temperature gauge, replacing
387-005	0.50	Information display, replacing
39		MISCELLANEOUS
390-901	1.00	CareTrack Early Basic, installation
393-001	0.50	Voltage converter, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
420-012	2.00	Oil draining pipe, replacing
421-002	0.75	Transmission oil pressure, checking
421-008	3.00	Gear selector valve, replacing
421-009	1.75	Gear selector valve removed, reconditioning
421-018	17.00	Converter, replacing
421-023	1.00	Lubrication and converter pressure valve, replacing
421-047	0.75	Gear selector, replacing
421-048	0.75	Gear selector valve, replacing one solenoid
421-068	9.00	Transmission, removing (upwards)
421-069	10.00	Transmission, installing (from above)
421-071	32.00	Transmission removed, reconditioning

Op.no.	time (h)	Notes
45		PROPELLER SHAFT
451-001	0.25	Propeller shaft and intermediate bearing, checking radial clearance
451-002	2.00	Support or intermediate bearing, replacing
451-004	1.50	Propeller shaft, rear, replacing
451-007	1.50	Propeller shaft, in frame joint, replacing
451-010	2.00	Propeller shaft, front, replacing
451-013	1.50	Propeller shaft, removed reconditioning
46		FRONT AXLE; REAR AXLE
460-001	0.75	Axle suspension, measuring axial and radial clearance
460-002	1.00	Axle suspension, adjusting axial clearance
461-001	4.00	Axle, replacing
461-011	5.00	Centre gear , removing and fitting
461-012	6.00	Centre gear removed, reconditioning
461-014	2.00	Pinion front, fitting new gasket
461-042	6.00	Hub reduction gear, reconditioning one side
461-043	4.00	Hub, replacing seal
461-052	0.25	Differential lock front, repacking excl adjusting
461-053	1.00	Differential lock, adjusting engagement
463-001	5.00	Axle, replacing
463-005	2.00	Drive shaft, replacing one side
463-012	6.00	Centre gear removed, reconditioning
463-014	2.00	Pinion rear, fitting new gasket
463-042	6.00	Hub reduction gear, reconditioning one side
463-043	4.00	Hub, replacing seal
49		MISCELLANEOUS
491-006	1.50	Oil cooler, replacing
5		BRAKE
51		WHEEL BRAKE
516-001	0.50	Brake linings, checking wear
517-001	0.50	Brake linings, checking wear
517-004	4.00	Brake disc, replacing both sides
517-050	3.00	Brake piston, replacing seals
52		HYDRAULIC BRAKE SYSTEM
520-001	0.50	Brake system, checking function, hydraulic
520-002	0.50	Brake system, checking function, retardation
520-004	0.50	Brake system, adjusting unloading pressure

Op.no.	time (h)	Notes
520-005	0.50	Brake system, check and adjusting pressure in circuit
520-037	1.00	Brake system, bleeding
525-008	1.75	Foot brake valve, replacing
525-009	1.25	Foot brake valve removed, reconditioning
527-001	0.50	Accumulator removed, checking charging pressure
527-002	0.50	Accumulator, replacing
527-004	2.00	Hydraulic pump, replacing
55		PARKING BRAKE
550-006	4.50	Parking brake, replacing discs and seals
550-008	1.00	Parking brake, replacing control valve
6		STEERING
64		STEERING
641-021	1.50	Adjustable steering column, replacing
645-003	0.25	Steering system working pressure, checking
645-006	1.75	Steering cylinder, replacing
645-010	2.00	Hydraulic pump, replacing
645-015	0.50	Steering system, checking and adjusting standby pressure
645-020	1.75	Steering system, checking and adjusting shock and anti-cavitation-valve
645-021	1.50	Valve block, replacing
645-028	0.75	Steering system, checking and adjusting working pressure
645-054	2.00	Steering cylinder, replacing bearings
645-060	3.00	Steering cylinder, repacking in machine
645-073	2.00	Hydraulic pump removed, reconditioning
645-077	1.75	Steering cylinder removed, reconditioning incl replacing bearings
645-081	1.50	Steering valve removed, reconditioning
645-082	2.00	Steering valve, replacing
647-093	1.00	Auxiliary steering, replacing hydraulic pump
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-005	0.50	Frame joint, checking clearance
741-036	12.00	Frame joint, replacing bearings

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
818-015	1.75	Cab suspension, rubber element replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
823-001	0.25	Gas spring (radiator casing), replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	4.50	Door, replacing
831-006	0.75	Door lock, replacing
831-014	0.50	Door, replacing sealing strip
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	5.00	Windscreen, replacing
843-012	5.00	Rear window, replacing
843-013	5.00	Side window, replacing
843-048	5.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-006	1.25	Operators seat, air suspensioned, control, replacing
852-007	1.25	Operators seat (air suspensioned), backrest replacing
87		AIR CONDITIONING UNIT
872-001	0.25	Cab filter, replacing
873-004	1.00	Heater core, replacing
873-006	1.00	Fan motor, replacing
873-008	0.75	Heat control valve, replacing
873-009	0.75	Heat control, replacing
874-002	1.00	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	4.00	Compressor, replacing incl draining and filling
874-007	0.50	Belt, replacing
874-010	4.00	Condenser, replacing incl draining and filling
874-011	3.00	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	3.50	Expansion valve, replacing incl draining and filling
874-014	0.75	Thermostat, replacing
874-015	0.75	Compressor, replacing shaft seal (compressor removed)

Op.no.	time (h)	Notes
874-016	0.75	Compressor, replacing magnetic clutch (compressor removed)
874-017	1.75	Compressor, replacing magnetic clutch in machine
874-019	0.50	Compressor, replacing valve plate (compressor removed)

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-005	2.00	Pump suction hose and pipe, replacing
911-011	2.00	Oil cooler, replacing
911-038	5.00	Hydraulic oil tank, replacing
912-001	2.00	Control valve, replacing
912-002	4.00	Control valve removed, reconditioning
912-004	0.75	Control valve, low pressure valve, replacing
912-009	0.50	Shock valve, tilt function, checking and adjusting
913-002	1.00	Hydraulic pump, checking and adjusting unloading pressure
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-010	5.00	Hydraulic pump, replacing
913-011	1.75	Hydraulic pump removed, reconditioning
914-054	1.75	Servo valve, adjusting control
914-055	0.50	Servo pressure, checking and adjusting
914-057	0.50	Servo pressure, check
914-058	3.00	Servo valve, replacing
914-060	2.00	Servo pump, replacing
914-062	0.50	Pressure limiting valve, replacing
914-063	0.50	Servo pressure, checking at the spool in control valve
914-075	2.00	Servo valve removed, reconditioning
915-001	1.00	Servo valve, solenoid replacing
916-001	0.50	Boom suspension system, functional check
916-002	0.75	Boom suspension accumulator, check and adjusting
916-003	1.00	Boom suspension accumulator, reconditioning
916-004	1.50	Boom suspension system, checking closing pressure
916-005	1.00	Boom suspension system, checking opening pressure
916-071	2.50	Boom suspension system, changing accumulator
916-073	2.50	Boom suspension system, changing valve

Op.no.	time (h)	Notes
94		UNIT, LOAD HANDLING
945-002	3.50	Lift frame, replacing bearing in lower bucket- or implement attachment
945-003	0.25	Implement attachment, measuring clearance of lower bearing
945-004	4.00	Lift cylinder, replacing
945-005	4.00	Lift cylinder, repacking in machine
945-006	3.00	Lift cylinder removed, repacking
945-008	3.00	Tilt cylinder, replacing
945-009	5.00	Tilt cylinder, repacking in machine
945-010	3.50	Tilt cylinder removed, repacking
945-011	2.00	Implemental attachment, replacing hydraulic cylinder
945-016	5.00	Lift frame, replacing bearing in upper mounting "O"
945-054	1.75	Implement attachment, replacing
945-056	1.00	Implement attachment, repacking removed hydraulic cylinder
945-062	2.00	T-link upper, replacing "HIJ"
945-063	0.75	T-link upper removed, replacing bearings "HIJ"
945-064	2.00	T-link, lower, replacing "IB"
945-066	2.00	Tilt link, replacing "GH"
945-067	0.75	Tilt link removed, replacing bearings "GH"
945-068	3.00	Tilt arm, replacing bearing "GDF"
945-069	3.00	Tilt arm, replacing "GDF"
99		MISCELLANEOUS
993-030	0.80	Shift valve, checking

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
172-002	3.50	Warranty inspection 100 hours	
172-004	9.00	Warranty inspection 1000 hours	
173-002	0.40	Maintenance service, daily	
173-004	1.00	Maintenance service, every 50 hours	
173-007	1.50	Maintenance service, every 250 hours	
173-010	4.50	Maintenance service, every 500 hours	
173-012	9.50	Maintenance service, every 1000 hours	16001 - 19668 64001 - 65999 70701 - 71399
173-014	11.00	Maintenance service, every 2000 hours	16001 - 19668 64001 - 64001 70701 - 71399
173-016	10.00	Maintenance service, every 3000 hours	
173-018	11.00	Maintenance service, every 4000 hours	16001 - 19668 70701 - 79999 64001 - 69999
173-022	0.50	Maintenance service, every 6000 hours	
173-059	1.00	Engine, changing oil and filter	
173-061	1.50	Transmission, changing oil and filter	
173-070	1.50	Axles, changing oil	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
210-002	3.00	Compression test	19801 - 22999 71401 - 79999 66001 - 69999
210-070	6.00	Engine, removing	19801 - 22999 71401 - 79999 66001 - 69999
210-072	8.00	Engine, installing	
214-012	4.50	Valves, adjusting	19804 - 22999 71401 - 79999 66001 - 69999
214-036	1.50	Valve covers, fitting new gasket	
216-014	2.00	Crankshaft, replacing front oil seal	19804 - 22999 71401 - 79999 66001 - 69999
216-014	2.00	Crankshaft, replacing front oil seal	16001 - 19668 70701 - 71399 64001 - 65999

Op.no.	time (h)		Notes
216-018	16.00	Crankshaft, replacing rear oil seal	
217-002	4.00	Sump gasket, replacing incl cleaning oil strainer	
218-001	3.00	Rubber cushion, replacing	
22		LUBRICATING SYSTEM	
221-021	1.00	Lubrication oil pressure, checking	
23		FUEL SYSTEM	
233-001	0.40	Fuel system, bleeding	16001 - 19668 70701 - 71399 64001 - 65999
233-001	0.70	Fuel system, bleeding	19804 - 22999 71401 - 79999 66001 - 69999
233-002	0.50	Feed pump, replacing	
233-004	0.80	Feed pump, checking feed pressure	19804 - 22999 71401 - 79999 66001 - 69999
233-014	0.50	Fuel filters, replacing	
233-020	0.10	Fuel filter, checking	
236-002	0.50	Stall speed, checking	
237-004	2.00	Injector, replacing one	
237-018	1.25	Delivery pipe, replacing one	
237-030	1.00	High pressure fuel pump, checking	19801 - 22999 71401 - 79999 66001 - 69999
237-032	2.00	High pressure fuel pump, replacing	19801 - 22999 71401 - 79999 66001 - 69999
237-033	1.25	Fuel control valve (FCV), replacing	
237-034	0.30	Pressure relief valve (PRV), replacing	19804 - 22999 71401 - 79999 66001 - 69999
237-035	0.30	Fuel rail pressure sensor, replacing	19801 - 22999 71401 - 79999 66001 - 69999
237-036	0.70	Pressure relief valve (PRV), checking	19801 - 22999 71401 - 79999 66001 - 69999
237-038	0.70	Fuel control valve (FCV), checking	19801 - 22999 71401 - 79999 66001 - 69999
25		INLET SYSTEM; EXHAUST SYSTEM	
252-021	0.50	Exhaust pipe, flexible tube, replacing	
255-002	0.80	Turbocharger, inspection	
258-002	3.00	Intercooler, replacing	

Op.no.	time (h)		Notes
26		COOLING SYSTEM	
261-004	1.00	Coolant, changing	
261-011	2.50	Radiator, removing	19804 - 22999 70701 - 79999 64002 - 69999
261-013	4.00	Radiator, installing	19804 - 22999 71401 - 79999 66001 - 69999
262-002	2.00	Coolant pump, replacing	
262-098	1.00	Thermostat, replacing	
263-010	0.40	Pump 3 (P3) standby pressure, checking	
263-012	0.50	Fan belt and/or alternator belt, replacing	
263-016	0.50	Maximum fan speed, checking	
263-022	1.00	Fan belt and/or alternator-, compressor belt, replacing all belts	
263-051	1.50	Cooling fan hydraulics, funktion check	
263-062	2.50	Cooling fan motor, replacing	19804 - 22999 71401 - 79999 66001 - 69999
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
33		STARTING SYSTEM	
331-018	0.75	Starter motor, replacing	
36		OTHER ELECTRICAL EQUIPMENT	
367-052	1.00	V-ECU, replacing	
39		MISCELLANEOUS	
390-901	1.00	CareTrack Early Basic, installation	
390-902	2.00	CareTrack, installing new	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-002	0.70	Transmission oil pressure, checking	64544 - 69999 70856 - 79999 18192 - 22999
421-002	0.70	Transmission oil pressure, checking	64001 - 64543 70701 - 70855 16001 - 18191
421-008	3.00	Gear selector valve, replacing	
421-009	1.00	Gear selector valve removed, reconditioning	

Op.no.	time (h)	Notes
421-051	0.25	Transmission, resistance measuring of solenoides
421-068	12.00	Transmission, removing (upwards)
421-069	14.00	Transmission, installing (from above)
421-071	32.00	Transmission removed, reconditioning
45		PROPELLER SHAFT
451-004	1.00	Propeller shaft, rear, replacing
451-010	1.00	Propeller shaft, front, replacing
46		FRONT AXLE; REAR AXLE
460-001	1.00	Axle suspension, measuring axial and radial clearanse
461-002	1.75	Axle, removing
461-003	2.00	Axle, installing
461-005	3.50	Drive shaft, replacing one side
463-002	4.50	Axle, removing
463-003	4.50	Axle, installing
463-043	4.00	Hub, replacing seal
5		BRAKE
51		WHEEL BRAKE
517-001	0.50	Brake linings, checking wear
517-004	4.50	Brake disc, replacing both sides
52		HYDRAULIC BRAKE SYSTEM
520-001	0.75	Brake system, checking function, hydraulic
520-002	0.50	Brake system, checking function, retardation
520-005	0.50	Brake system, check and adjusting pressure in circuit
520-037	1.00	Brake system, bleeding
525-009	0.50	Foot brake valve removed, reconditioning
527-001	0.50	Accumulator removed, checking charging pressure
6		STEERING
64		STEERING
645-006	3.00	Steering cylinder, replacing
645-028	0.50	Steering system, checking and adjusting working pressure
645-081	1.50	Steering valve removed, reconditioning
645-082	1.50	Steering valve, replacing

Op.no.	time (h)	Notes	
66		LEVER STEERING	
660-003	0.50	Lever steering (CDC) adjusting steering speed	
660-005	1.25	CDC, checking lever signals	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	1.75	Counterweight, removing	
716-002	1.75	Counterweight, fitting	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-001	0.75	Wheel, removing and fitting one	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	3.00	Cab, removing	
810-002	3.50	Cab, installing	
818-020	1.75	Viscous cab suspension, changing one unit	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-001	0.90	Engine hood, removing	19804 - 22999 66001 - 69999 71401 - 79999
821-002	2.00	Engine hood, installing	19804 - 22999 66001 - 69999 71401 - 79999
87		AIR CONDITIONING UNIT	
873-004	2.00	Heater core, replacing	
873-006	1.25	Fan motor, replacing	
873-008	1.00	Heat control valve, replacing	
874-007	0.25	Belt, replacing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-002	3.00	Hydraulic system, bleeding	

Op.no.	time (h)	Notes
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-040	0.25	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-019	0.50	Shock valve removed, checking
912-021	0.30	Shock valve, tilt function, checking
912-023	0.70	Shock valve lift function, checking
913-003	1.25	Hydraulic pump, checking and adjusting standby pressure
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-005	0.50	Hydraulic pump, flow control
913-006	0.75	LS (load sense) pressure, checking
914-055	0.50	Servo pressure, checking and adjusting
914-058	3.50	Servo valve, replacing
916-003	1.00	Boom suspension accumulator, reconditioning
916-006	0.50	Boom suspension system, pressure reduction, safety valve, checking and adjusting
916-019	0.25	3rd/4th hydraulic function, pressure check
916-070	0.10	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing
916-071	2.50	Boom suspension system, changing accumulator
916-074	0.30	Boom suspension system, test drive with load
94		UNIT, LOAD HANDLING
945-002	3.50	Lift frame, replacing bearing in lower bucket- or implement attachment
945-003	0.25	Implement attachment, measuring clearance of lower bearing
945-004	4.00	Lift cylinder, replacing
945-005	4.00	Lift cylinder, repacking in machine
945-006	3.00	Lift cylinder removed, repacking
945-008	3.00	Tilt cylinder, replacing
945-009	5.00	Tilt cylinder, repacking in machine
945-010	3.50	Tilt cylinder removed, repacking
945-011	2.00	Implemental attachment, replacing hydraulic cylinder
945-016	5.00	Lift frame, replacing bearing in upper mounting "O"
945-054	1.75	Implement attachment, replacing
945-056	1.00	Implement attachment, repacking removed hydraulic cylinder
945-062	2.00	T-link upper, replacing "HIJ"
945-063	0.75	T-link upper removed, replacing bearings "HIJ"
945-064	2.00	T-link, lower, replacing "IB"
945-066	2.00	Tilt link, replacing "GH"
945-067	0.75	Tilt link removed, replacing bearings "GH"

Op.no.	time (h)	Notes
945-068	3.00	Tilt arm, replacing bearing "GDF"
945-069	3.00	Tilt arm, replacing "GDF"
99		MISCELLANEOUS
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-006	0.30	VCADS Pro, central systems updating, replace component	
172-002	3.50	Warranty inspection 100 hours	
172-004	7.50	Warranty inspection 1000 hours	
173-002	0.40	Maintenance service, daily	
173-004	0.70	Maintenance service, every 50 hours	
173-007	1.00	Maintenance service, every 250 hours	
173-010	2.50	Maintenance service, every 500 hours	
173-012	4.00	Maintenance service, every 1000 hours	
173-014	9.50	Maintenance service, every 2000 hours	
173-018	10.00	Maintenance service, every 4000 hours	
173-022	10.00	Maintenance service, every 6000 hours	
176-001	0.60	Mechanical release of parking brake	
19		GENERAL	
191-021	0.20	Service position 1	
191-022	0.20	Service position 2	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-009	0.30	VCADS Pro, MID 128, programming E-ECU	
200-068	0.70	E-ECU, MID 128, changing non-programmed ECU	
200-070	0.30	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-002	3.00	Compression test	23001 - 29999
210-002	3.00	Compression test	23001 - 29999
210-070	6.00	Engine, removing	
210-070	6.00	Engine, removing	
210-072	9.00	Engine, installing	
210-072	9.50	Engine, installing	
214-012	4.50	Valves, adjusting	
216-014	2.00	Crankshaft, replacing front oil seal	
22		LUBRICATING SYSTEM	
221-022	0.40	Lubrication oil pressure, checking with pressure gauge	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	

Op.no.	time (h)	Notes
233-001	0.70	Fuel system, bleeding
233-004	0.80	Feed pump, checking feed pressure
233-020	0.10	Fuel filter, checking
234-011	0.90	Fuel tank, removing
234-012	1.50	Fuel tank, installing
236-002	0.50	Stall speed, checking
237-002	1.75	Injectors, replacing all
237-002	1.75	Injectors, replacing all
237-030	1.00	High pressure fuel pump, checking
237-032	2.00	High pressure fuel pump, replacing
237-033	1.25	Fuel control valve (FCV), replacing
237-034	0.80	Pressure relief valve (PRV), replacing
237-035	0.30	Fuel rail pressure sensor, replacing
237-036	0.70	Pressure relief valve (PRV), checking
237-038	0.70	Fuel control valve (FCV), checking
25		INLET SYSTEM; EXHAUST SYSTEM
255-002	0.80	Turbocharger, inspection
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-011	2.50	Radiator, removing
261-013	4.00	Radiator, installing
263-011	0.70	Pump 3 (P3) standby pressure, checking and adjusting (LS-line removed)
263-021	0.20	Pump 3 (P3), max pressure and fan speed, checking and adjusting
263-051	1.25	Cooling fan hydraulics, funktion check
263-062	2.50	Cooling fan motor, replacing
263-071	0.50	Fan control valve, removing
263-072	0.20	Fan control valve, seal replacement
263-073	0.20	Fan control valve, installing
263-081	0.60	Hydraulic pump P3, removal
263-082	1.25	Hydraulic pump P3, installation
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	0.80	I-ECU, MID 140, changing non-programmed ECU
300-074	0.30	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-002	0.30	Batteries, replacing

Op.no.	time (h)	Notes	
311-005	0.40	Battery condition, check	
36		OTHER ELECTRICAL EQUIPMENT	
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	
366-066	0.70	V-ECU, MID 187, changing pre-programmed ECU	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-016	1.00	Temperature sensor cooling system, replacing	24627 - 29999 71879 - 79999 66648 - 69999
386-038	0.60	Engine rotation speed sensor, replacing	
39		MISCELLANEOUS	
390-902	2.00	CareTrack, installing new	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-002	0.80	Transmission oil pressure, checking	54781 - 59999 24926 - 29999 71894 - 79999
421-002	0.50	Transmission oil pressure, checking	50000 - 54780 23001 - 24925 71701 - 71893
421-025	2.50	Transmission solenoid, replacing	
421-026	0.60	Transmission pressure sensor, replacing	
421-049	0.10	Transmission, functional check	
421-054	1.75	Seal for rear output shaft, replacing	
421-070	5.50	Transmission, removing	
421-072	9.50	Transmission, installing	
421-099	0.70	Transmission, calibration	54791 - 59999 29999 - 29999 66754 - 69999 71957 - 79999
46		FRONT AXLE; REAR AXLE	
461-037	0.70	Hub reduction, removing	
461-038	1.25	Hub reduction, installing	
461-043	5.00	Hub, replacing seal	
463-002	2.50	Axle, removing	
463-003	2.50	Axle, installing	
463-043	5.00	Hub, replacing seal	
463-045	0.70	Hub reduction, removing	
463-046	1.25	Hub reduction, installing	
468-006	0.20	Differential lock, function check	

Op.no.	time (h)		Notes
468-051	1.25	Differential lock, adjusting	
5		BRAKE	
51		WHEEL BRAKE	
510-003	0.50	Brake discs, measuring wear	
516-005	2.50	Brake disc, replacing	66401 - 66753 71701 - 71956 23001 - 24981 50000 - 54780
516-005	3.00	Brake disc, replacing	66754 - 69999 71957 - 79999 24981 - 29999 54781 - 59999
516-050	2.50	Brake piston, replacing seals	66754 - 69999 71957 - 79999 24981 - 29999 54781 - 59999
517-005	2.50	Brake disc, replacing	66401 - 66753 71701 - 71956 23001 - 24981 50000 - 54780
517-005	3.00	Brake disc, replacing	66754 - 69999 71957 - 79999 24981 - 29999 54781 - 59999
517-050	2.50	Brake piston, replacing seals	66754 - 69999 71957 - 79999 24981 - 29999 54781 - 59999
52		HYDRAULIC BRAKE SYSTEM	
520-001	0.80	Brake system, checking function, hydraulic	
520-002	0.20	Brake system, checking function, retardation	
520-005	0.20	Brake system, check and adjusting pressure in circuit	
520-037	0.30	Brake system, bleeding	
525-005	0.50	Foot brake valve, removal	
525-006	0.70	Foot brake valve, installation	
525-009	0.50	Foot brake valve removed, reconditioning	
527-001	0.10	Accumulator removed, checking charging pressure	
527-009	0.60	Accumulator, check	
55		PARKING BRAKE	
550-006	2.50	Parking brake, replacing discs and seals	
550-023	0.10	Parking brake, function checking	23001 - 24924 66401 - 66728

Op.no.	time (h)		Notes
550-023	0.10	Parking brake, function checking	24925 - 29999 66729 - 69999
6		STEERING	
60		GENERAL	
600-001	0.10	Steering system, function check	
64		STEERING	
645-004	0.80	Steering cylinder, removing	
645-005	1.50	Steering cylinder, installing	
645-028	0.30	Steering system, checking and adjusting working pressure	
645-052	0.60	Steering cylinder removed, reconditioning excl replacing bearings	
645-063	0.60	Steering cylinder, repacking	
645-082	1.25	Steering valve, replacing	
645-091	1.00	Shift valve, removing	
645-092	1.50	Shift valve, installing	
647-091	0.40	Secondary steering pump, checking and adjusting working pressure	
66		LEVER STEERING	
660-006	0.90	Comfort drive control (CDC), angle sensor, changing	
660-007	1.25	Comfort drive control (CDC), solenoid valve, changing	
660-011	0.20	Lever steering (CDC), functional check	
660-012	0.40	Comfort Drive Control, servo pressure, checking	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
75		AXLE SUSPENSION	
755-003	5.50	Axle suspension, replacing bushes and seals	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-002	0.50	Front wheel, removal	
771-003	0.30	Front wheel, installation	
771-004	0.50	Rear wheel, removing	
771-005	0.30	Rear wheel, installing	

Op.no.	time (h)	Notes	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	2.50	Cab, removing	
810-001	2.50	Cab, removing	
810-001	2.00	Cab, removing	
810-002	2.50	Cab, installing	
810-002	3.50	Cab, installing	
810-002	3.00	Cab, installing	
818-020	1.75	Viscous cab suspension, changing one unit	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-001	0.90	Engine hood, removing	
821-002	2.00	Engine hood, installing	
83		DOORS; HATCH; COVER PLATE, (all)	
834-011	0.20	Door lock, changing	
834-013	0.30	Door lock cylinder, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-002	2.50	Windscreen, replacing	
843-013	1.25	Side window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-010	0.40	Operator's seat, securing	
87		AIR CONDITIONING UNIT	
870-010	0.50	ECC, MID 146, changing pre-programmed ECU	
870-011	0.70	ECC, MID 146, changing non-programmed ECU	
870-012	0.90	Climate unit, removing	24627 - 29999 71879 - 79999 66648 - 69999
870-013	1.25	Climate unit, installing	24627 - 29999 71879 - 79999 66648 - 69999
873-004	2.50	Heater core, replacing	24627 - 29999 71879 - 79999 66648 - 69999
873-004	1.50	Heater core, replacing	
873-006	2.50	Fan motor, replacing	24627 - 29999 71879 - 79999 66648 - 69999
873-008	0.70	Heat control valve, replacing	
873-011	0.80	Air mix door actuator, replacing	24627 - 29999 71879 - 79999 66648 - 69999
873-019	0.50	ECC control unit, replacing	

Op.no.	time (h)		Notes
873-019	0.90	ECC control unit, replacing	24627 - 29999 71879 - 79999 66648 - 69999
874-006	2.50	Compressor, replacing incl draining and filling	
874-010	2.00	Condenser, replacing incl draining and filling	
874-011	1.75	Receiver, replacing incl draining and filling	
874-011	1.75	Receiver, replacing incl draining and filling	
874-012	2.50	Evaporator, replacing incl draining and filling	
874-012	3.00	Evaporator, replacing incl draining and filling	24627 - 29999 71879 - 79999 66648 - 69999
874-013	2.00	Expansion valve, replacing incl draining and filling	

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

90 GENERAL

900-002	3.00	Hydraulic system, bleeding	
900-031	0.80	V2-ECU, MID 249, changing non-programmed ECU	
900-032	0.50	V2-ECU, MID 249, changing pre-programmed ECU	

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
912-018	0.20	Back-up valve, checking and adjusting	
912-021	0.70	Shock valve, tilt function, checking	
912-023	0.70	Shock valve lift function, checking	
912-023	1.00	Shock valve lift function, checking	
912-120	0.20	Lift, functional check	
912-121	0.80	Lift, solenoid valve, changing	
912-122	0.70	Lower, solenoid valve, changing	
912-123	0.90	Tilt in, solenoid valve, changing	
912-124	0.90	Tilt out, solenoid valve, changing	
912-125	0.60	Lift/lower, angle sensor, changing	
912-125	0.60	Lift/lower, angle sensor, changing	23004 - 29999 66401 - 69999 71701 - 79999
912-126	0.10	Tilt in/out, angle sensor, changing	23004 - 29999 66401 - 69999 71701 - 79999
912-127	0.20	Tilt, functional check	
912-151	0.60	Back-up valve, replacing	
912-152	1.25	Central valve, removal	

Op.no.	time (h)	Notes
912-153	3.00	Central valve, installation
912-154	2.50	Control valve, removal
912-155	3.00	Control valve, installation
913-001	0.60	Hydraulic pump, checking and adjusting standby pressure and working pressure 72497 - 99999
913-003	1.25	Hydraulic pump, checking and adjusting standby pressure 66401 - 66713 71701 - 71894 23001 - 24925
913-004	0.90	Hydraulic pump, checking and adjusting max working pressure
913-034	0.20	Lifting time, checking
913-034	0.20	Lifting time, checking
913-044	1.25	Hydraulic pump P1 and P2, checking function
913-050	2.50	Hydraulic pump P2, removal
913-051	5.00	Hydraulic pump P2, installation
913-060	2.50	Hydraulic pump P1, removal
913-061	5.00	Hydraulic pump P1, installation
913-064	0.50	Hydraulic pump, power control checking
913-069	1.00	Hydraulic power control valve, replacing
914-047	0.20	Servo accumulator, removal
914-048	0.20	Servo accumulator, installation
914-049	0.10	Accumulator removed, checking
914-052	0.40	Accumulator, checking (pressure back-up for servo circuit)
914-055	0.50	Servo pressure, checking and adjusting
914-063	0.60	Servo pressure, checking at the spool in control valve
914-063	0.40	Servo pressure, checking at the spool in control valve
914-064	0.80	Servo valve, removal
914-065	1.25	Servo valve, installation
916-002	1.25	Boom suspension accumulator, check and adjusting
916-003	0.60	Boom suspension accumulator, reconditioning
916-006	0.60	Boom suspension system, pressure reduction, safety valve, checking and adjusting
916-017	0.50	3rd/4th hydraulic function, shock valve, checking
916-018	0.60	3rd/4th hydraulic function, solenoid valve, changing
916-020	0.20	3rd/4th hydraulic function, checking and adjusting pressure
916-070	0.20	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing
916-072	0.20	Accumulator, boom suspension system, discarding
916-074	0.30	Boom suspension system, test drive with load

Op.no.	time (h)	Notes	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-036	0.10	Attachment locking, functional check	
94		UNIT, LOAD HANDLING	
945-005	1.75	Lift cylinder, repacking in machine	
945-009	1.75	Tilt cylinder, repacking in machine	
99		MISCELLANEOUS	
992-002	4.00	Fire suppression system, actions after activation	
992-003	4.00	Fire suppression system, actions after manual activation	
993-025	2.50	Automatic lubrication pump unit, reconditioning	26548 - 29999
993-030	0.80	Shift valve, checking	

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
171-001	0.50	Arrival Inspection, according to Inspection Programme
171-002	1.50	Delivery Inspection, according to Inspection Programme
172-002	5.00	Warranty inspection 100 hours
172-004	12.00	Warranty inspection 1000 hours
173-007	1.75	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	7.00	Maintenance service, every 1000 hours
173-014	12.00	Maintenance service, every 2000 hours
173-059	1.00	Engine, changing oil and filter
173-061	1.50	Transmission, changing oil and filter
173-070	2.00	Axles, changing oil
173-074	1.75	Hydraulic oil tank, changing oil and filter
173-075	2.50	Hydraulic oil tank, changing oil and filter incl.cleaning tank

2 ENGINE WITH MOUNTING AND EQUIPMENT

21		ENGINE
210-002	1.75	Compression test
210-070	9.50	Engine, removing
210-071	40.00	Engine removed, general overhaul
210-072	11.00	Engine, installing
211-002	7.00	Cylinder head, replacing gasket
211-018	12.00	Cylinder heads all, replacing gaskets
211-068	4.00	Cylinder heads all removed, decarbonizing and grinding in valves
211-071	0.50	Cylinder head removed, pressure testing each
212-007	4.00	Cylinder block, liners removed, milling of all liner locations
212-011	0.50	Cylinder, cylinder heads removed, measuring wear in all cylinders
213-010	16.00	Cylinder liner and piston, replacing one
213-018	24.00	Cylinder liners and pistons, replacing all
214-012	1.50	Valves, adjusting
214-027	0.50	Inspection cover, fitting new gasket
214-030	16.00	Valves, decarbonizing and grinding
214-036	1.00	Valve covers, fitting new gasket
215-002	6.00	Timing gear cover, fitting new gasket in machine
215-030	7.00	Timing gear, replacing in machine

Op.no.	time (h)	Notes
215-032	8.00	Timing gear case, fitting new gasket in machine
216-014	3.00	Crankshaft, replacing front oil seal
216-018	20.00	Crankshaft, replacing rear oil seal
217-002	6.50	Sump gasket, replacing incl cleaning oil strainer
22		LUBRICATING SYSTEM
221-006	1.00	Oil pressure relief valve, replacing
221-014	7.00	Oil pump, replacing
223-006	2.00	Oil cooler, replacing
23		FUEL SYSTEM
233-001	0.50	Fuel system, bleeding
233-002	0.75	Feed pump, replacing
233-004	0.50	Feed pump, checking feed pressure
233-014	0.50	Fuel filters, replacing
233-097	0.25	Feed pump removed, reconditioning
234-010	5.00	Fuel tank, replacing
236-001	0.50	Idling speed, checking and adjusting
236-002	0.25	Stall speed, checking
236-030	1.50	Injection timing, checking
236-044	1.00	Injection timing, checking
236-073	3.00	Injection pump, replacing incl setting injection timing
237-002	2.00	Injectors, replacing all
237-004	0.75	Injector, replacing one
237-007	0.25	Overflow valve, replacing
237-016	1.50	Injectors, replacing copper sleeve in machine
237-018	0.75	Delivery pipe, replacing one
237-019	1.00	Fuel line, leak-off pipe, replacing
237-080	2.00	Injectors removed, reconditioning all
25		INLET SYSTEM; EXHAUST SYSTEM
251-002	1.00	Induction manifold, replacing gasket
251-004	2.00	Exhaust manifold, replacing gasket
252-019	1.25	Silencer, rubber cushion replacing
252-020	1.50	Silencer, replacing
252-021	0.75	Exhaust pipe, flexible tube, replacing
255-071	1.50	Turbocharger, replacing
255-073	2.00	Turbocharger removed, reconditioning
256-001	0.50	Air cleaner, cleaning filter element
256-002	0.25	Air cleaner, checking prssure drop indicator
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.75	Preheating coil, replacing

Op.no.	time (h)	Notes
26		COOLING SYSTEM
261-004	1.00	Coolant, changing
261-008	3.00	Radiator, replacing
261-012	1.50	Radiator hose upper, replacing
261-014	2.50	Radiator hoses lower, replacing
261-018	1.00	Expansion tank, replacing
262-002	1.50	Coolant pump, replacing
262-071	1.50	Coolant pump removed, reconditioning
262-098	1.00	Thermostat, replacing
263-012	0.50	Fan belt and/or alternator belt, replacing
263-022	1.00	Fan belt and/or alternator-, compressor belt, replacing all belts
27		ENGINE CONTROL
273-021	0.75	Stop magnet, replacing
273-023	0.50	Electrical engine shut down, check and adjusting
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.50	Battery charging capacity, checking
311-002	1.00	Batteries, replacing
311-003	0.50	Main switch, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
321-025	0.50	Alternator, replacing carbon brush kit in machine
322-005	0.50	Charging regulator, replacing
33		STARTING SYSTEM
331-018	1.00	Starter motor, replacing
334-001	0.50	Starter lock, replacing
35		LIGHTING
352-002	0.50	Headlights, adjusting
352-024	0.50	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.50	Rear lamp, replacing one
353-018	0.25	Rear lamp, replacing glass or bulb
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
361-002	0.25	Flasher unit, replacing relay
361-010	0.75	Flasher switch, replacing

Op.no.	time (h)	Notes
361-017	0.25	Flasher lamp, replacing glass or bulb
362-002	0.25	Horn, replacing
362-003	0.50	Reverse alarm, replacing
362-016	0.75	Horn switch, replacing
363-001	0.50	Windscreen wiper rear, replacing motor
363-002	0.75	Windscreen wiper front, replacing motor
363-004	0.25	Windscreen flusher pump, replacing
364-004	0.25	Switch, replacing
364-008	0.25	Brake light switch, replacing
367-052	1.25	V-ECU, replacing
37		CABLE; FUSE; RELAY
372-031	1.00	Relay CU201, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-003	1.50	Transmission oil pressure sensor, replacing
386-004	0.50	Transmission temperature sensor, replacing
386-005	0.50	Transmission, revolution sensor, replacing
386-006	0.50	Engine temperature sensor, replacing
386-007	0.50	Engine oil pressure sensor, replacing
386-011	1.00	Fuel level sender, replacing
386-032	0.75	Sensor unit (differential lock), replacing
386-035	0.75	Induction sensor (lifting cylinder) replacing
386-036	1.00	Induction sensor (tilt cylinder) replacing
387-005	0.50	Information display, replacing
39		MISCELLANEOUS
390-901	1.00	CareTrack Early Basic, installation
393-001	0.50	Voltage converter, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.75	Transmission oil pressure, checking
421-008	2.00	Gear selector valve, replacing
421-009	1.75	Gear selector valve removed, reconditioning
421-018	18.00	Converter, replacing
421-024	2.00	Lubrication oil valve, replacing
421-047	0.75	Gear selector, replacing
421-048	0.75	Gear selector valve, replacing one solenoid
421-052	3.00	Seal for front output shaft, replacing
421-054	3.00	Seal for rear output shaft, replacing
421-070	11.00	Transmission, removing
421-071	32.00	Transmission removed, reconditioning

Op.no.	time (h)	Notes
421-072	12.00	Transmission, installing
45		PROPELLER SHAFT
451-001	0.25	Propeller shaft and intermediate bearing, checking radial clearance
451-002	2.00	Support or intermediate bearing, replacing
451-004	1.50	Propeller shaft, rear, replacing
451-007	1.50	Propeller shaft, in frame joint, replacing
451-010	2.00	Propeller shaft, front, replacing
451-013	1.50	Propeller shaft, removed reconditioning
46		FRONT AXLE; REAR AXLE
460-001	0.75	Axle suspension, measuring axial and radial clearanse
460-002	1.50	Axle suspension, adjusting axial clearance
460-003	13.00	Axle suspension, replacing bushes/bearings and seals
461-001	7.00	Axle, replacing
461-011	10.00	Centre gear , removing and fitting
461-012	10.00	Centre gear removed, reconditioning
461-013	13.00	Centre gear, axle removed, reconditioning
461-014	1.50	Pinion front, fitting new gasket
461-018	1.50	Oil cooler, replacing
461-019	2.00	Oil pump, replacing
461-040	3.00	Hub reduction gear, replacing
461-041	6.50	Hub reduction gear, removed, reconditioning
461-043	4.50	Hub, replacing seal
461-052	0.25	Differential lock front, repacking excl adjusting
461-053	0.75	Differential lock, adjusting engagement
463-001	9.00	Axle, replacing
463-002	4.50	Axle, removing
463-003	4.50	Axle, installing
463-011	11.00	Centre gear, removing and fitting
463-012	10.00	Centre gear removed, reconditioning
463-013	13.00	Centre gear, axle removed, reconditioning
463-014	1.50	Pinion rear, fitting new gasket
463-018	1.50	Oil cooler, replacing
463-019	2.00	Oil pump, replacing
463-040	3.00	Hub reduction gear, replacing
463-041	6.50	Hub reduction gear removed, reconditioning
463-043	4.50	Hub, replacing seal
49		MISCELLANEOUS
491-006	3.50	Oil cooler, replacing

Op.no.	time (h)	Notes
5		BRAKE
51		WHEEL BRAKE
516-001	0.50	Brake linings, checking wear
516-004	4.50	Brake discs, replacing on both sides
516-050	3.50	Brake piston, replacing seals
517-001	0.50	Brake linings, checking wear
517-004	5.00	Brake disc, replacing both sides
517-050	4.00	Brake piston, replacing seals
52		HYDRAULIC BRAKE SYSTEM
520-001	0.50	Brake system, checking function, hydraulic
520-002	0.50	Brake system, checking function, retardation
520-004	0.50	Brake system, adjusting unloading pressure
520-005	0.50	Brake system, check and adjusting pressure in circuit
520-037	1.00	Brake system, bleeding
525-008	2.00	Foot brake valve, replacing
525-009	2.50	Foot brake valve removed, reconditioning
527-001	0.50	Accumulator removed, checking charging pressure
527-002	0.50	Accumulator, replacing
527-004	3.00	Hydraulic pump, replacing
55		PARKING BRAKE
550-006	5.00	Parking brake, replacing discs and seals
550-008	1.00	Parking brake, replacing control valve
6		STEERING
64		STEERING
641-021	1.50	Adjustable steering column, replacing
645-006	1.75	Steering cylinder, replacing
645-010	6.00	Hydraulic pump, replacing
645-015	0.50	Steering system, checking and adjusting standby pressure
645-020	2.50	Steering system, checking and adjusting shock and anti-cavitation-valve
645-021	1.50	Valve block, replacing
645-028	0.75	Steering system, checking and adjusting working pressure
645-054	2.00	Steering cylinder, replacing bearings
645-060	2.50	Steering cylinder, repacking in machine
645-073	2.50	Hydraulic pump removed, reconditioning

Op.no.	time (h)	Notes
645-077	1.75	Steering cylinder removed, reconditioning incl replacing bearings
645-079	2.50	Shift valve, replacing
645-081	1.50	Steering valve removed, reconditioning
645-082	2.00	Steering valve, replacing
647-093	1.00	Auxiliary steering, replacing hydraulic pump
66		LEVER STEERING
660-902	7.00	Lever steering (CDC), hydraulic, installing new
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-005	0.50	Frame joint, checking clearance
741-036	17.00	Frame joint, replacing bearings
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.75	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
818-015	1.75	Cab suspension, rubber element replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.75	Door, replacing
831-006	0.75	Door lock, replacing
831-014	0.50	Door, replacing sealing strip
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	5.00	Windscreen, replacing
843-012	5.00	Rear window, replacing
843-013	5.00	Side window, replacing
843-048	5.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-006	1.25	Operators seat, air suspensioned, control, replacing
852-007	1.25	Operators seat (air suspensioned), backrest replacing
86		PROTECTIVE EQUIPMENT, not specified in a special group
865-001	1.00	Engine compartment fan, replacing

Op.no.	time (h)	Notes
87		AIR CONDITIONING UNIT
872-001	0.25	Cab filter, replacing
873-004	1.00	Heater core, replacing
873-006	1.00	Fan motor, replacing
873-008	0.75	Heat control valve, replacing
873-009	0.75	Heat control, replacing
874-002	1.00	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	4.00	Compressor, replacing incl draining and filling
874-007	0.50	Belt, replacing
874-010	4.00	Condenser, replacing incl draining and filling
874-011	3.00	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	3.50	Expansion valve, replacing incl draining and filling
874-014	0.75	Thermostat, replacing
874-015	1.50	Compressor, replacing shaft seal (compressor removed)
874-016	0.75	Compressor, replacing magnetic clutch (compressor removed)
874-017	0.75	Compressor, replacing magnetic clutch in machine
874-019	0.50	Compressor, replacing valve plate (compressor removed)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-001	0.50	Oil return filter, replacing
911-005	2.00	Pump suction hose and pipe, replacing
911-011	1.00	Oil cooler, replacing
911-038	5.00	Hydraulic oil tank, replacing
912-001	5.00	Control valve, replacing
912-002	4.00	Control valve removed, reconditioning
912-004	0.75	Control valve, low pressure valve, replacing
912-009	0.50	Shock valve, tilt function, checking and adjusting
912-010	1.00	Shock valve, lowering function, checking and adjusting
912-011	0.75	Shock valve lift function, adjusting
912-030	2.50	Central valve, replacing
913-002	1.00	Hydraulic pump, checking and adjusting unloading pressure

Op.no.	time (h)	Notes
913-004	0.50	Hydraulic pump, checking and adjusting max working pressure
913-010	3.50	Hydraulic pump, replacing
913-011	1.75	Hydraulic pump removed, reconditioning
913-013	4.00	Hydraulic pump, replacing seal for input shaft
913-016	1.00	Hydraulic pump, (pump 2) checking and adjusting working pressure.
913-019	4.50	Hydraulic pump, compensator replacing
914-054	1.75	Servo valve, adjusting control
914-055	1.00	Servo pressure, checking and adjusting
914-057	0.50	Servo pressure, check
914-058	3.00	Servo valve, replacing
914-060	2.50	Servo pump, replacing
914-062	0.50	Pressure limiting valve, replacing
914-063	1.75	Servo pressure, checking at the spool in control valve
914-075	2.00	Servo valve removed, reconditioning
915-001	1.00	Servo valve, solenoid replacing
916-001	0.50	Boom suspension system, functional check
916-002	1.75	Boom suspension accumulator, check and adjusting
916-003	1.00	Boom suspension accumulator, reconditioning
916-004	1.50	Boom suspension system, checking closing pressure
916-005	1.00	Boom suspension system, checking opening pressure
916-071	2.50	Boom suspension system, changing accumulator
916-073	3.00	Boom suspension system, changing valve
916-908	2.00	Return pipe for optional hydraulic function, new installation
94		UNIT, LOAD HANDLING
945-002	4.50	Lift frame, replacing bearing in lower bucket- or implement attachment
945-003	0.50	Implement attachment, measuring clearance of lower bearing
945-004	4.00	Lift cylinder, replacing
945-005	5.50	Lift cylinder, repacking in machine
945-006	3.00	Lift cylinder removed, repacking
945-007	0.75	Tilt cylinder removed, replacing bearings "E-F"
945-008	5.00	Tilt cylinder, replacing
945-009	8.00	Tilt cylinder, repacking in machine
945-010	4.00	Tilt cylinder removed, repacking
945-012	1.00	Lift cylinder removed, replacing bearings "C-P"
945-013	3.00	Lift cylinder, rear bearing replacing
945-014	4.00	Lift cylinder, front bearing replacing

Op.no.	time (h)	Notes
945-016	6.00	Lift frame, replacing bearing in upper mounting "O"
945-024	4.00	Tilting cylinder, changing bearing 'E-F' in machine
945-054	3.00	Implement attachment, replacing
945-062	2.00	T-link upper, replacing "HIJ"
945-063	0.75	T-link upper removed, replacing bearings "HIJ"
945-064	3.00	T-link, lower, replacing "IB"
945-065	2.00	T-link lower removed, replacing bearing "IB"
945-066	2.00	Tilt link, replacing "GH"
945-067	0.75	Tilt link removed, replacing bearings "GH"
945-068	3.50	Tilt arm, replacing bearing "GDF"
945-069	4.00	Tilt arm, replacing "GDF"
945-070	1.75	Tilt arm removed, replacing bearing "GDF"
99		MISCELLANEOUS
993-021	2.50	Automatic lubrication pump, replacing
993-030	0.80	Shift valve, checking

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
171-001	0.50	Arrival Inspection, according to Inspection Programme	
171-002	1.50	Delivery Inspection, according to Inspection Programme	
172-002	5.00	Warranty inspection 100 hours	63001 - 65200 6101 - 7549
172-002	5.00	Warranty inspection 100 hours	8004 - 9455
172-004	10.00	Warranty inspection 1000 hours	63001 - 69999 6101 - 7549
172-004	11.00	Warranty inspection 1000 hours	8001 - 9455
173-002	0.40	Maintenance service, daily	
173-004	0.80	Maintenance service, every 50 hours	
173-007	1.50	Maintenance service, every 250 hours	
173-010	5.50	Maintenance service, every 500 hours	8001 - 9455
173-010	5.00	Maintenance service, every 500 hours	6101 - 7549 63001 - 69999
173-012	7.50	Maintenance service, every 1000 hours	6101 - 7549 63001 - 69999
173-012	8.00	Maintenance service, every 1000 hours	8001 - 9455
173-014	9.00	Maintenance service, every 2000 hours	8001 - 9455
173-014	11.00	Maintenance service, every 2000 hours	6101 - 7549 63001 - 69999
173-018	12.00	Maintenance service, every 4000 hours	6101 - 7549 63001 - 69999
173-059	1.00	Engine, changing oil and filter	
173-061	1.50	Transmission, changing oil and filter	
173-063	1.50	Transmission, oil filter, changing	
173-070	2.00	Axles, changing oil	
173-074	1.75	Hydraulic oil tank, changing oil and filter	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
210-002	7.00	Compression test	10001 - 12999
210-070	7.50	Engine, removing	8001 - 9455
210-070	4.50	Engine, removing	10001 - 12999
210-072	6.00	Engine, installing	10001 - 12999
210-072	8.00	Engine, installing	8001 - 9455
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	

Op.no.	time (h)		Notes
210-092	0.70	Engine rotation speed sensor (camshaft), replacing	10002 - 12999
211-002	7.00	Cylinder head, replacing gasket	
214-012	4.00	Valves, adjusting	8001 - 9455
214-012	4.00	Valves, adjusting	10001 - 12999
214-036	1.50	Valve covers, fitting new gasket	
216-014	2.00	Crankshaft, replacing front oil seal	8001 - 9455
216-018	19.00	Crankshaft, replacing rear oil seal	
217-002	7.50	Sump gasket, replacing incl cleaning oil strainer	
218-001	4.00	Rubber cushion, replacing	8004 - 9463
218-001	4.00	Rubber cushion, replacing	6105 - 7549 63001 - 69999
22		LUBRICATING SYSTEM	
221-014	8.50	Oil pump, replacing	
221-021	0.40	Lubrication oil pressure, checking	6101 - 7549 63001 - 69999
221-022	0.60	Lubrication oil pressure, checking with pressure gauge	8001 - 9455
221-022	0.20	Lubrication oil pressure, checking with pressure gauge	10001 - 12999
223-006	1.50	Oil cooler, replacing	6101 - 7549 63001 - 69999
223-006	7.50	Oil cooler, replacing	8001 - 9463
223-006	3.00	Oil cooler, replacing	10001 - 12999
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	10001 - 12999
233-001	0.40	Fuel system, bleeding	8001 - 9463
233-002	1.25	Feed pump, replacing	6101 - 7549 63001 - 69999
233-002	1.25	Feed pump, replacing	8001 - 9463
233-004	0.40	Feed pump, checking feed pressure	8001 - 9455
233-009	0.20	Fuel pump (valves), inspection	10001 - 12999
233-010	0.90	Fuel pump, inspection	10001 - 12999
233-014	0.75	Fuel filters, replacing	
233-020	0.10	Fuel filter, checking	10001 - 12999
233-097	0.25	Feed pump removed, reconditioning	
234-010	4.00	Fuel tank, replacing	
237-012	5.50	Unit injector, replacing	10001 - 12999
237-012	5.50	Unit injector, replacing	8001 - 9999
25		INLET SYSTEM; EXHAUST SYSTEM	
250-901	2.00	Insulation for exhaust system, installation	
251-002	1.00	Induction manifold, replacing gasket	
251-004	2.00	Exhaust manifold, replacing gasket	

Op.no.	time (h)		Notes
252-020	1.00	Silencer, replacing	
252-021	0.75	Exhaust pipe, flexible tube, replacing	
255-002	0.80	Turbocharger, inspection	
255-071	1.75	Turbocharger, replacing	6101 - 7549 63001 - 69999
255-071	1.75	Turbocharger, replacing	8001 - 9463
256-001	0.50	Air cleaner, cleaning filter element	
256-002	0.25	Air cleaner, checking prssure drop indicator	
256-003	0.25	Air cleaner, primary filter replacing	
256-004	0.25	Air cleaner, secondary filter replacing	
256-006	0.75	Preheating coil, replacing	
258-002	4.00	Intercooler, replacing	6001 - 9455 63001 - 69999
258-030	0.80	Charge air system, inspection	10001 - 12999
26		COOLING SYSTEM	
261-004	1.00	Coolant, changing	
261-008	5.50	Radiator, replacing	8002 - 9999
261-008	6.00	Radiator, replacing	10001 - 12999
261-012	1.00	Radiator hose upper, replacing	
261-014	3.00	Radiator hoses lower, replacing	
262-002	1.75	Coolant pump, replacing	8001 - 9455
262-071	1.50	Coolant pump removed, reconditioning	
262-098	1.00	Thermostat, replacing	
263-004	0.75	Fan motor, checking working pressure	
263-010	0.50	Pump 3 (P3) standby pressure, checking	
263-011	0.40	Pump 3 (P3) standby pressure, checking and adjusting (LS-line removed)	
263-011	0.10	Pump 3 (P3) standby pressure, checking and adjusting (LS-line removed)	
263-051	1.50	Cooling fan hydraulics, funktion check	
263-062	2.50	Cooling fan motor, replacing	8001 - 9455
263-062	4.50	Cooling fan motor, replacing	10001 - 12999
263-065	3.00	Cooling fan motor, changing non-return valve	

3 ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS

31 BATTERY

311-001	0.50	Battery charging capacity, checking
311-002	1.00	Batteries, replacing
311-003	0.50	Main switch, replacing

Op.no.	time (h)		Notes
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.00	Alternator, replacing incl function check	
321-025	0.50	Alternator, replacing carbon brush kit in machine	
322-005	0.50	Charging regulator, replacing	
33		STARTING SYSTEM	
331-018	1.00	Starter motor, replacing	
334-001	0.25	Starter lock, replacing	
35		LIGHTING	
352-002	0.50	Headlights, adjusting	
352-024	0.50	Headlight, complete, changing (high beam 1 pc.) incl. setting	
353-016	0.25	Rear lamp, replacing one	
353-018	0.25	Rear lamp, replacing glass or bulb	
356-056	0.50	Work lighting, replacing one head lamp assy	
36		OTHER ELECTRICAL EQUIPMENT	
361-002	0.25	Flasher unit, replacing relay	
361-010	0.75	Flasher switch, replacing	
361-017	0.25	Flasher lamp, replacing glass or bulb	
362-002	0.25	Horn, replacing	
362-003	0.50	Reverse alarm, replacing	
363-001	0.50	Windscreen wiper rear, replacing motor	
363-002	0.75	Windscreen wiper front, replacing motor	
363-004	0.25	Windscreen flusher pump, replacing	
364-004	0.25	Switch, replacing	
364-008	0.25	Brake light switch, replacing	
367-052	1.25	V-ECU, replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-003	1.00	Transmission oil pressure sensor, replacing	
386-004	0.50	Transmission temperature sensor, replacing	
386-005	0.50	Transmission, revolution sensor, replacing	
386-006	0.50	Engine temperature sensor, replacing	
386-007	0.50	Engine oil pressure sensor, replacing	
386-008	0.60	Engine rotation speed sensor, replacing	10002 - 12999
386-008	0.60	Engine rotation speed sensor, replacing	
386-011	1.00	Fuel level sender, replacing	
39		MISCELLANEOUS	
390-901	1.00	CareTrack Early Basic, installation	
390-902	2.00	CareTrack, installing new	
393-001	0.50	Voltage converter, replacing	

Op.no.	time (h)	Notes	
4		POWER TRANSMISSION	
41		CLUTCH; TORQUE CONVERTER	
414-003	2.00	Converter, replacing (engine removed)	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-002	0.70	Transmission oil pressure, checking	6001 - 8157
421-002	0.70	Transmission oil pressure, checking	8158 - 12999
421-008	3.00	Gear selector valve, replacing	
421-009	1.00	Gear selector valve removed, reconditioning	
421-018	19.00	Converter, replacing	
421-024	1.50	Lubrication oil valve, replacing	
421-047	0.75	Gear selector, replacing	
421-048	1.50	Gear selector valve, replacing one solenoid	
421-052	3.00	Seal for front output shaft, replacing	
421-054	2.50	Seal for rear output shaft, replacing	
421-068	10.00	Transmission, removing (upwards)	
421-069	15.00	Transmission, installing (from above)	
421-071	32.00	Transmission removed, reconditioning	
45		PROPELLER SHAFT	
451-001	0.25	Propeller shaft and intermediate bearing, checking radial clearance	
451-002	2.00	Support or intermediate bearing, replacing	
451-004	1.50	Propeller shaft, rear, replacing	
451-007	1.50	Propeller shaft, in frame joint, replacing	
451-010	2.00	Propeller shaft, front, replacing	
46		FRONT AXLE; REAR AXLE	
460-001	0.75	Axle suspension, measuring axial and radial clearance	
460-002	1.50	Axle suspension, adjusting axial clearance	
460-003	13.00	Axle suspension, replacing bushes/bearings and seals	
461-001	7.00	Axle, replacing	
461-011	10.00	Centre gear , removing and fitting	
461-012	10.00	Centre gear removed, reconditioning	
461-013	11.00	Centre gear, axle removed, reconditioning	
461-040	3.00	Hub reduction gear, replacing	
461-041	6.50	Hub reduction gear, removed, reconditioning	
461-043	4.50	Hub, replacing seal	
463-001	9.00	Axle, replacing	
463-002	4.50	Axle, removing	
463-003	4.50	Axle, installing	
463-011	11.00	Centre gear, removing and fitting	

Op.no.	time (h)	Notes
463-012	10.00	Centre gear removed, reconditioning
463-013	13.00	Centre gear, axle removed, reconditioning
463-040	3.00	Hub reduction gear, replacing
463-041	6.50	Hub reduction gear removed, reconditioning
463-043	4.50	Hub, replacing seal
49		MISCELLANEOUS
491-006	4.00	Oil cooler, replacing

5**BRAKE****51****WHEEL BRAKE**

516-001	0.50	Brake linings, checking wear
516-004	4.50	Brake discs, replacing on both sides
516-050	3.50	Brake piston, replacing seals
517-001	0.50	Brake linings, checking wear
517-004	5.00	Brake disc, replacing both sides
517-050	4.00	Brake piston, replacing seals

52**HYDRAULIC BRAKE SYSTEM**

520-001	0.90	Brake system, checking function, hydraulic
520-002	0.50	Brake system, checking function, retardation
520-005	0.60	Brake system, check and adjusting pressure in circuit
520-037	1.00	Brake system, bleeding
525-009	0.50	Foot brake valve removed, reconditioning
527-002	0.50	Accumulator, replacing

6**STEERING****64****STEERING**

645-006	1.75	Steering cylinder, replacing
645-021	1.50	Valve block, replacing
645-028	0.10	Steering system, checking and adjusting working pressure
645-054	2.00	Steering cylinder, replacing bearings
645-060	2.50	Steering cylinder, repacking in machine
645-077	1.75	Steering cylinder removed, reconditioning incl replacing bearings
645-078	1.50	Shift valve removed, reconditioning
645-079	2.50	Shift valve, replacing
645-081	1.50	Steering valve removed, reconditioning
645-082	1.50	Steering valve, replacing
647-093	1.00	Auxiliary steering, replacing hydraulic pump

Op.no.	time (h)	Notes	
66		LEVER STEERING	
660-003	0.50	Lever steering (CDC) adjusting steering speed	
660-005	1.25	CDC, checking lever signals	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
74		FRAME LINK	
741-005	0.30	Frame joint, checking clearance	
741-036	19.00	Frame joint, replacing bearings	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-001	1.00	Wheel, removing and fitting one	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	3.00	Cab, removing	
810-002	3.50	Cab, installing	
818-015	1.75	Cab suspension, rubber element replacing	
818-020	1.75	Viscous cab suspension, changing one unit	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-001	0.70	Engine hood, removing	6001 - 9455 63001 - 69999
821-001	0.70	Engine hood, removing	10001 - 12999
821-001	0.70	Engine hood, removing	10002 - 12999
821-002	0.70	Engine hood, installing	6001 - 9455 63001 - 69999
821-002	0.80	Engine hood, installing	10001 - 12999
821-002	1.00	Engine hood, installing	10002 - 12999
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	1.75	Door, replacing	
831-006	0.75	Door lock, replacing	
831-014	0.50	Door, replacing sealing strip	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-002	5.00	Windscreen, replacing	
843-012	5.00	Rear window, replacing	
843-013	5.00	Side window, replacing	
843-048	5.00	Door window, replacing	

Op.no.	time (h)	Notes
87		AIR CONDITIONING UNIT
872-001	0.25	Cab filter, replacing
873-004	2.00	Heater core, replacing
873-006	1.25	Fan motor, replacing
873-008	1.00	Heat control valve, replacing
873-009	0.75	Heat control, replacing
874-002	1.00	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	4.00	Compressor, replacing incl draining and filling
874-007	0.50	Belt, replacing
874-010	3.00	Condenser, replacing incl draining and filling
874-011	3.00	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	3.50	Expansion valve, replacing incl draining and filling
874-014	0.75	Thermostat, replacing
874-015	1.50	Compressor, replacing shaft seal (compressor removed)
874-016	0.75	Compressor, replacing magnetic clutch (compressor removed)
874-017	0.75	Compressor, replacing magnetic clutch in machine
874-019	0.50	Compressor, replacing valve plate (compressor removed)
874-059	1.25	Evaporator, cleaning
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-002	3.00	Hydraulic system, bleeding
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-001	0.75	Oil return filter, replacing
911-005	2.00	Pump suction hose and pipe, replacing
911-011	4.00	Oil cooler, replacing
911-036	3.00	Hydraulic oil tank, removing
911-037	4.50	Hydraulic oil tank, installing
911-038	8.00	Hydraulic oil tank, replacing
912-001	6.50	Control valve, replacing
912-002	4.00	Control valve removed, reconditioning
912-018	0.20	Back-up valve, checking and adjusting
912-019	0.50	Shock valve removed, checking

Op.no.	time (h)	Notes
912-021	0.30	Shock valve, tilt function, checking
912-023	0.70	Shock valve lift function, checking
912-030	7.50	Central valve, replacing
913-003	0.20	Hydraulic pump, checking and adjusting standby pressure
913-004	0.20	Hydraulic pump, checking and adjusting max working pressure
913-034	0.40	Lifting time, checking
913-037	6.00	Hydraulic pump P1, replacing
913-037	6.00	Hydraulic pump P1, replacing
913-039	5.00	Hydraulic pump P3, replacing
913-040	6.50	Hydraulic pumps P2 and P3, replacing
914-054	1.75	Servo valve, adjusting control
914-055	0.25	Servo pressure, checking and adjusting
914-058	3.50	Servo valve, replacing
914-075	2.00	Servo valve removed, reconditioning
916-001	0.50	Boom suspension system, functional check
916-002	1.75	Boom suspension accumulator, check and adjusting
916-003	1.00	Boom suspension accumulator, reconditioning
916-006	0.50	Boom suspension system, pressure reduction, safety valve, checking and adjusting
916-019	0.50	3rd/4th hydraulic function, pressure check
916-070	0.10	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing
916-071	2.50	Boom suspension system, changing accumulator
916-074	0.30	Boom suspension system, test drive with load
916-075	0.70	Boom Suspension System, valve block V1, removing
916-076	1.25	Boom Suspension System, valve block V1, installing
916-077	0.40	Boom Suspension System, valve block V2, removing
916-078	1.25	Boom Suspension System, valve block V2, installing
94		UNIT, LOAD HANDLING
945-002	4.50	Lift frame, replacing bearing in lower bucket- or implement attachment
945-003	0.25	Implement attachment, measuring clearance of lower bearing
945-004	4.00	Lift cylinder, replacing
945-005	4.50	Lift cylinder, repacking in machine
945-006	3.00	Lift cylinder removed, repacking
945-007	0.50	Tilt cylinder removed, replacing bearings "E-F"
945-008	4.00	Tilt cylinder, replacing

Op.no.	time (h)	Notes
945-009	5.00	Tilt cylinder, repacking in machine
945-010	4.00	Tilt cylinder removed, repacking
945-012	0.70	Lift cylinder removed, replacing bearings "C-P"
945-013	3.00	Lift cylinder, rear bearing replacing
945-014	4.00	Lift cylinder, front bearing replacing
945-016	6.00	Lift frame, replacing bearing in upper mounting "O"
945-023	1.25	Tilting cylinder, replacing bearing 'E' in machine
945-024	4.00	Tilting cylinder, changing bearing 'E-F' in machine
945-054	3.00	Implement attachment, replacing
945-062	2.00	T-link upper, replacing "HIJ"
945-063	0.75	T-link upper removed, replacing bearings "HIJ"
945-064	3.00	T-link, lower, replacing "IB"
945-065	2.00	T-link lower removed, replacing bearing "IB"
945-066	2.00	Tilt link, replacing "GH"
945-067	0.75	Tilt link removed, replacing bearings "GH"
945-068	3.50	Tilt arm, replacing bearing "GDF"
945-069	4.00	Tilt arm, replacing "GDF"
945-070	1.75	Tilt arm removed, replacing bearing "GDF"
99		MISCELLANEOUS
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
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1 STANDARD PARTS, SERVICE

17 SERVICE

170-006	0.30	VCADS Pro, central systems updating, replace component
172-002	4.50	Warranty inspection 100 hours
172-004	11.00	Warranty inspection 1000 hours
173-002	0.40	Maintenance service, daily
173-004	0.70	Maintenance service, every 50 hours
173-007	1.00	Maintenance service, every 250 hours
173-010	2.50	Maintenance service, every 500 hours
173-012	4.00	Maintenance service, every 1000 hours
173-014	5.50	Maintenance service, every 2000 hours
173-018	9.50	Maintenance service, every 4000 hours
173-022	6.00	Maintenance service, every 6000 hours
173-150	1.75	Maintenance service, fire suppression system
176-001	0.60	Mechanical release of parking brake

19 GENERAL

191-021	0.20	Service position 1
191-022	0.20	Service position 2

2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-009	0.30	VCADS Pro, MID 128, programming E-ECU
200-068	0.80	E-ECU, MID 128, changing non-programmed ECU
200-070	0.40	E-ECU, MID 128, changing pre-programmed ECU

21 ENGINE

210-002	7.00	Compression test
210-002	7.00	Compression test
210-070	4.50	Engine, removing
210-070	4.50	Engine, removing
210-072	6.50	Engine, installing
210-072	6.00	Engine, installing
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
210-092	0.70	Engine rotation speed sensor (camshaft), replacing
214-012	4.00	Valves, adjusting
214-012	4.00	Valves, adjusting

Op.no.	time (h)	Notes
22		LUBRICATING SYSTEM
221-022	0.20	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-009	0.20	Fuel pump (valves), inspection
233-010	0.90	Fuel pump, inspection
236-002	0.50	Stall speed, checking
237-012	5.50	Unit injector, replacing
237-012	5.50	Unit injector, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
258-030	0.80	Charge air system, inspection
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-008	6.00	Radiator, replacing
263-011	0.70	Pump 3 (P3) standby pressure, checking and adjusting (LS-line removed)
263-021	0.70	Pump 3 (P3), max pressure and fan speed, checking and adjusting
263-051	1.25	Cooling fan hydraulics, funktion check
263-062	3.50	Cooling fan motor, replacing
263-071	0.50	Fan control valve, removing
263-072	0.20	Fan control valve, seal replacement
263-073	0.70	Fan control valve, installing
263-081	2.50	Hydraulic pump P3, removal
263-082	4.50	Hydraulic pump P3, installation
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	0.80	I-ECU, MID 140, changing non-programmed ECU
300-074	0.30	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-002	0.30	Batteries, replacing
311-005	0.40	Battery condition, check
311-005	0.50	Battery condition, check

Op.no.	time (h)	Notes	
36		OTHER ELECTRICAL EQUIPMENT	
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	
366-066	0.70	V-ECU, MID 187, changing pre-programmed ECU	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-008	0.60	Engine rotation speed sensor, replacing	
386-016	1.00	Temperature sensor cooling system, replacing	14458 - 19999
39		MISCELLANEOUS	
390-902	2.00	CareTrack, installing new	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-002	0.50	Transmission oil pressure, checking	13001 - 14655
421-002	0.70	Transmission oil pressure, checking	
421-002	0.50	Transmission oil pressure, checking	14656 - 19999
421-025	2.50	Transmission solenoid, replacing	
421-026	0.60	Transmission pressure sensor, replacing	
421-049	0.10	Transmission, functional check	
421-052	2.00	Seal for front output shaft, replacing	
421-054	1.75	Seal for rear output shaft, replacing	
421-070	6.00	Transmission, removing	
421-072	9.00	Transmission, installing	
421-091	1.50	Lock up valve, replacing	
421-092	0.40	Lock up, function check	
421-094	0.70	Main pressure valve, replacing	
421-095	1.25	Lock up, solenoid valve, replacing	
421-099	0.70	Transmission, calibration	
46		FRONT AXLE; REAR AXLE	
461-037	0.90	Hub reduction, removing	
461-038	1.25	Hub reduction, installing	14865 - 19999
461-038	1.50	Hub reduction, installing	13001 - 14864
461-043	4.50	Hub, replacing seal	
463-002	2.50	Axle, removing	
463-003	3.50	Axle, installing	
463-043	4.50	Hub, replacing seal	
463-045	0.90	Hub reduction, removing	
463-046	1.50	Hub reduction, installing	14865 - 19999
463-046	1.50	Hub reduction, installing	13001 - 14864
468-006	0.20	Differential lock, function check	
468-051	1.25	Differential lock, adjusting	

Op.no.	time (h)		Notes
5		BRAKE	
51		WHEEL BRAKE	
510-003	0.50	Brake discs, measuring wear	
516-005	2.50	Brake disc, replacing	13001 - 14864
516-005	3.00	Brake disc, replacing	14865 - 19999
516-050	2.50	Brake piston, replacing seals	14865 - 19999
517-005	2.50	Brake disc, replacing	13001 - 14864
517-005	3.00	Brake disc, replacing	14865 - 19999
517-050	3.00	Brake piston, replacing seals	14865 - 19999
52		HYDRAULIC BRAKE SYSTEM	
520-001	0.80	Brake system, checking function, hydraulic	
520-002	0.20	Brake system, checking function, retardation	
520-005	0.20	Brake system, check and adjusting pressure in circuit	
520-037	0.30	Brake system, bleeding	
520-111	0.20	Automatic brake, function check	
525-005	0.60	Foot brake valve, removal	
525-006	0.60	Foot brake valve, installation	
525-009	0.50	Foot brake valve removed, reconditioning	
527-001	0.10	Accumulator removed, checking charging pressure	
527-009	1.00	Accumulator, check	
55		PARKING BRAKE	
550-006	2.50	Parking brake, replacing discs and seals	
550-023	0.10	Parking brake, function checking	13001 - 14651
550-023	0.10	Parking brake, function checking	14652 - 19999
6		STEERING	
60		GENERAL	
600-001	0.10	Steering system, function check	
64		STEERING	
645-028	0.20	Steering system, checking and adjusting working pressure	
645-082	1.25	Steering valve, replacing	
645-091	0.80	Shift valve, removing	
645-092	1.25	Shift valve, installing	
647-091	0.40	Secondary steering pump, checking and adjusting working pressure	13001 - 14884 14885 - 17724

Op.no.	time (h)	Notes
66		LEVER STEERING
660-006	0.90	Comfort drive control (CDC), angle sensor, changing
660-007	0.90	Comfort drive control (CDC), solenoid valve, changing
660-009	1.25	Comfort Drive Control (CDC), control valve, removal
660-010	1.50	Comfort drive control (CDC), control valve, installation
660-011	0.20	Lever steering (CDC), functional check
660-012	0.40	Comfort Drive Control, servo pressure, checking
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-005	0.30	Frame joint, checking clearance
75		AXLE SUSPENSION
755-003	5.50	Axle suspension, replacing bushes and seals
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-002	0.50	Front wheel, removal
771-003	0.50	Front wheel, installation
771-004	0.50	Rear wheel, removing
771-005	0.50	Rear wheel, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-001	2.50	Cab, removing
810-001	2.50	Cab, removing
810-002	2.00	Cab, installing
810-002	2.50	Cab, installing
810-002	3.00	Cab, installing
818-020	1.75	Viscous cab suspension, changing one unit
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.70	Engine hood, removing
821-002	0.80	Engine hood, installing

Op.no.	time (h)		Notes
83		DOORS; HATCH; COVER PLATE, (all)	
834-011	0.20	Door lock, changing	
834-013	0.30	Door lock cylinder, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-002	2.50	Windscreen, replacing	
843-013	1.25	Side window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-010	0.40	Operator's seat, securing	
87		AIR CONDITIONING UNIT	
870-010	0.50	ECC, MID 146, changing pre-programmed ECU	
870-011	0.70	ECC, MID 146, changing non-programmed ECU	
870-012	0.90	Climate unit, removing	14458 - 19999
870-013	1.25	Climate unit, installing	14458 - 19999
873-004	2.50	Heater core, replacing	14458 - 19999
873-004	1.50	Heater core, replacing	
873-006	2.50	Fan motor, replacing	14458 - 19999
873-008	0.70	Heat control valve, replacing	
873-011	0.80	Air mix door actuator, replacing	14458 - 19999
873-019	0.50	ECC control unit, replacing	
873-019	0.90	ECC control unit, replacing	14458 - 19999
874-006	2.00	Compressor, replacing incl draining and filling	
874-010	0.50	Condenser, replacing incl draining and filling	
874-011	1.75	Receiver, replacing incl draining and filling	
874-011	1.75	Receiver, replacing incl draining and filling	
874-012	2.50	Evaporator, replacing incl draining and filling	
874-012	3.00	Evaporator, replacing incl draining and filling	14458 - 19999
874-013	2.00	Expansion valve, replacing incl draining and filling	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-002	3.00	Hydraulic system, bleeding	
900-031	0.80	V2-ECU, MID 249, changing non-programmed ECU	
900-032	0.50	V2-ECU, MID 249, changing pre-programmed ECU	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
912-018	0.20	Back-up valve, checking and adjusting	

Op.no.	time (h)		Notes
912-023	0.70	Shock valve lift function, checking	
912-023	1.00	Shock valve lift function, checking	
912-120	0.20	Lift, functional check	13001 - 19999
912-121	0.80	Lift, solenoid valve, changing	
912-122	0.70	Lower, solenoid valve, changing	
912-123	0.90	Tilt in, solenoid valve, changing	
912-124	0.90	Tilt out, solenoid valve, changing	
912-125	0.60	Lift/lower, angle sensor, changing	
912-125	0.60	Lift/lower, angle sensor, changing	13003 - 14884 14885 - 17724
912-126	0.10	Tilt in/out, angle sensor, changing	13003 - 14884 14885 - 17724
912-127	0.20	Tilt, functional check	
912-152	1.50	Central valve, removal	
912-153	2.50	Central valve, installation	
913-003	1.25	Hydraulic pump, checking and adjusting standby pressure	13001 - 14655
913-004	0.90	Hydraulic pump, checking and adjusting max working pressure	
913-033	1.25	Hydraulic pump, checking and adjusting stand-by pressure (LS-line removed)	13001 - 14656
913-034	0.20	Lifting time, checking	
913-034	0.20	Lifting time, checking	
913-050	3.00	Hydraulic pump P2, removal	
913-051	4.50	Hydraulic pump P2, installation	
913-060	2.50	Hydraulic pump P1, removal	
913-061	4.50	Hydraulic pump P1, installation	
914-047	0.20	Servo accumulator, removal	
914-048	0.10	Servo accumulator, installation	
914-049	0.10	Accumulator removed, checking	
914-052	0.40	Accumulator, checking (pressure back-up for servo circuit)	
914-055	0.20	Servo pressure, checking and adjusting	
914-063	0.40	Servo pressure, checking at the spool in control valve	
914-063	0.60	Servo pressure, checking at the spool in control valve	
914-064	0.80	Servo valve, removal	
914-065	1.25	Servo valve, installation	
916-002	1.25	Boom suspension accumulator, check and adjusting	
916-003	0.60	Boom suspension accumulator, reconditioning	
916-006	0.60	Boom suspension system, pressure reduction, safety valve, checking and adjusting	
916-008	0.70	Boom suspension system, right accumulator, removal	

Op.no.	time (h)	Notes
916-009	0.90	Boom suspension system, right accumulator, installation
916-010	0.70	Boom suspension system, left accumulator, removal
916-011	0.90	Boom suspension system, left accumulator, installation
916-017	0.50	3rd/4th hydraulic function, shock valve, checking
916-018	0.60	3rd/4th hydraulic function, solenoid valve, changing
916-020	0.20	3rd/4th hydraulic function, checking and adjusting pressure
916-070	0.20	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing
916-072	0.20	Accumulator, boom suspension system, discarding
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-036	0.10	Attachment locking, functional check
99		MISCELLANEOUS
992-002	4.00	Fire suppression system, actions after activation
992-003	4.00	Fire suppression system, actions after manual activation
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
171-001	0.50	Arrival Inspection, according to Inspection Programme
171-002	1.50	Delivery Inspection, according to Inspection Programme
172-002	5.00	Warranty inspection 100 hours
172-004	12.00	Warranty inspection 1000 hours
173-007	1.25	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	8.00	Maintenance service, every 1000 hours
173-014	12.00	Maintenance service, every 2000 hours
173-059	1.00	Engine, changing oil and filter
173-061	1.50	Transmission, changing oil and filter
173-070	2.00	Axles, changing oil
173-074	1.75	Hydraulic oil tank, changing oil and filter
173-075	2.50	Hydraulic oil tank, changing oil and filter incl.cleaning tank

2 ENGINE WITH MOUNTING AND EQUIPMENT

21		ENGINE
210-002	1.75	Compression test
210-070	10.00	Engine, removing
210-071	48.00	Engine removed, general overhaul
210-072	11.00	Engine, installing
211-002	7.00	Cylinder head, replacing gasket
211-018	13.00	Cylinder heads all, replacing gaskets
211-068	4.00	Cylinder heads all removed, decarbonizing and grinding in valves
211-071	0.50	Cylinder head removed, pressure testing each
212-007	4.00	Cylinder block, liners removed, milling of all liner locations
212-011	0.50	Cylinder, cylinder heads removed, measuring wear in all cylinders
213-010	16.00	Cylinder liner and piston, replacing one
213-018	26.00	Cylinder liners and pistons, replacing all
214-012	1.50	Valves, adjusting
214-027	0.50	Inspection cover, fitting new gasket
214-030	16.00	Valves, decarbonizing and grinding
214-036	1.00	Valve covers, fitting new gasket
215-002	6.00	Timing gear cover, fitting new gasket in machine
215-030	7.00	Timing gear, replacing in machine

Op.no.	time (h)	Notes
215-032	8.00	Timing gear case, fitting new gasket in machine
216-014	3.50	Crankshaft, replacing front oil seal
216-018	20.00	Crankshaft, replacing rear oil seal
217-002	8.50	Sump gasket, replacing incl cleaning oil strainer
22		LUBRICATING SYSTEM
221-006	1.00	Oil pressure relief valve, replacing
221-014	10.00	Oil pump, replacing
223-006	2.00	Oil cooler, replacing
23		FUEL SYSTEM
233-001	0.50	Fuel system, bleeding
233-002	0.75	Feed pump, replacing
233-004	0.50	Feed pump, checking feed pressure
233-014	0.50	Fuel filters, replacing
233-097	0.25	Feed pump removed, reconditioning
234-010	5.00	Fuel tank, replacing
236-001	0.50	Idling speed, checking and adjusting
236-002	0.25	Stall speed, checking
236-030	2.00	Injection timing, checking
236-044	1.00	Injection timing, checking
236-073	3.50	Injection pump, replacing incl setting injection timing
237-002	2.00	Injectors, replacing all
237-004	0.75	Injector, replacing one
237-007	0.25	Overflow valve, replacing
237-016	2.00	Injectors, replacing copper sleeve in machine
237-018	0.75	Delivery pipe, replacing one
237-019	1.00	Fuel line, leak-off pipe, replacing
237-080	2.00	Injectors removed, reconditioning all
25		INLET SYSTEM; EXHAUST SYSTEM
251-002	1.00	Induction manifold, replacing gasket
251-004	2.00	Exhaust manifold, replacing gasket
252-019	1.25	Silencer, rubber cushion replacing
252-020	1.50	Silencer, replacing
252-021	0.75	Exhaust pipe, flexible tube, replacing
255-071	1.50	Turbocharger, replacing
255-073	2.00	Turbocharger removed, reconditioning
256-001	0.50	Air cleaner, cleaning filter element
256-002	0.25	Air cleaner, checking prssure drop indicator
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.75	Preheating coil, replacing

Op.no.	time (h)	Notes
26		COOLING SYSTEM
261-004	1.00	Coolant, changing
261-008	3.50	Radiator, replacing
261-012	1.50	Radiator hose upper, replacing
261-014	2.50	Radiator hoses lower, replacing
261-018	1.00	Expansion tank, replacing
262-002	1.50	Coolant pump, replacing
262-071	1.50	Coolant pump removed, reconditioning
262-098	1.50	Thermostat, replacing
263-006	1.25	Fan hydraulically driven, removing pump
263-007	1.25	Fan hydraulically driven, fitting pump
263-012	0.50	Fan belt and/or alternator belt, replacing
263-022	1.00	Fan belt and/or alternator-, compressor belt, replacing all belts
263-080	2.50	Fan hydraulically driven, replacing pump
27		ENGINE CONTROL
273-021	0.75	Stop magnet, replacing
273-023	0.50	Electrical engine shut down, check and adjusting
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.50	Battery charging capacity, checking
311-002	1.00	Batteries, replacing
311-003	0.50	Main switch, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
321-025	0.50	Alternator, replacing carbon brush kit in machine
322-005	0.50	Charging regulator, replacing
33		STARTING SYSTEM
331-018	1.00	Starter motor, replacing
334-001	0.50	Starter lock, replacing
35		LIGHTING
352-002	0.50	Headlights, adjusting
352-024	0.50	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.50	Rear lamp, replacing one
353-018	0.25	Rear lamp, replacing glass or bulb
356-056	0.50	Work lighting, replacing one head lamp assy

Op.no.	time (h)	Notes
36		OTHER ELECTRICAL EQUIPMENT
361-002	0.25	Flasher unit, replacing relay
361-010	0.75	Flasher switch, replacing
361-017	0.25	Flasher lamp, replacing glass or bulb
362-002	0.25	Horn, replacing
362-003	0.50	Reverse alarm, replacing
362-016	0.75	Horn switch, replacing
363-001	0.50	Windscreen wiper rear, replacing motor
363-002	0.75	Windscreen wiper front, replacing motor
363-004	0.25	Windscreen flusher pump, replacing
364-004	0.25	Switch, replacing
364-008	0.25	Brake light switch, replacing
367-052	1.25	V-ECU, replacing
37		CABLE; FUSE; RELAY
372-031	1.00	Relay CU201, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-003	0.50	Transmission oil pressure sensor, replacing
386-004	0.50	Transmission temperature sensor, replacing
386-005	0.50	Transmission, revolution sensor, replacing
386-006	0.50	Engine temperature sensor, replacing
386-007	0.50	Engine oil pressure sensor, replacing
386-011	1.00	Fuel level sender, replacing
386-032	0.75	Sensor unit (differential lock), replacing
386-035	0.75	Induction sensor (lifting cylinder) replacing
386-036	1.00	Induction sensor (tilt cylinder) replacing
387-005	0.50	Information display, replacing
39		MISCELLANEOUS
390-901	1.00	CareTrack Early Basic, installation
393-001	0.50	Voltage converter, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	1.00	Transmission oil pressure, checking
421-008	2.00	Gear selector valve, replacing
421-009	1.75	Gear selector valve removed, reconditioning
421-018	18.00	Converter, replacing
421-024	2.00	Lubrication oil valve, replacing
421-047	0.75	Gear selector, replacing
421-048	0.75	Gear selector valve, replacing one solenoid
421-052	3.00	Seal for front output shaft, replacing

Op.no.	time (h)	Notes
421-054	3.00	Seal for rear output shaft, replacing
421-070	11.00	Transmission, removing
421-071	32.00	Transmission removed, reconditioning
421-072	12.00	Transmission, installing
45		PROPELLER SHAFT
451-001	0.25	Propeller shaft and intermediate bearing, checking radial clearance
451-002	2.00	Support or intermediate bearing, replacing
451-004	1.50	Propeller shaft, rear, replacing
451-007	1.50	Propeller shaft, in frame joint, replacing
451-010	2.00	Propeller shaft, front, replacing
451-013	1.50	Propeller shaft, removed reconditioning
46		FRONT AXLE; REAR AXLE
460-001	0.75	Axle suspension, measuring axial and radial clearanse
460-002	1.50	Axle suspension, adjusting axial clearance
460-003	13.00	Axle suspension, replacing bushes/bearings and seals
461-001	7.00	Axle, replacing
461-011	10.00	Centre gear , removing and fitting
461-012	10.00	Centre gear removed, reconditioning
461-013	13.00	Centre gear, axle removed, reconditioning
461-014	1.50	Pinion front, fitting new gasket
461-018	1.50	Oil cooler, replacing
461-019	2.00	Oil pump, replacing
461-040	3.00	Hub reduction gear, replacing
461-041	6.50	Hub reduction gear, removed, reconditioning
461-043	4.50	Hub, replacing seal
461-052	0.25	Differential lock front, repacking excl adjusting
461-053	0.75	Differential lock, adjusting engagement
463-001	9.00	Axle, replacing
463-002	4.50	Axle, removing
463-003	4.50	Axle, installing
463-011	11.00	Centre gear, removing and fitting
463-012	10.00	Centre gear removed, reconditioning
463-013	13.00	Centre gear, axle removed, reconditioning
463-014	1.50	Pinion rear, fitting new gasket
463-018	1.50	Oil cooler, replacing
463-019	2.00	Oil pump, replacing
463-040	3.00	Hub reduction gear, replacing
463-041	6.50	Hub reduction gear removed, reconditioning
463-043	4.50	Hub, replacing seal

Op.no.	time (h)	Notes
49		MISCELLANEOUS
491-006	3.50	Oil cooler, replacing
5		BRAKE
51		WHEEL BRAKE
516-001	0.50	Brake linings, checking wear
516-004	4.50	Brake discs, replacing on both sides
516-050	3.50	Brake piston, replacing seals
517-001	0.50	Brake linings, checking wear
517-004	5.00	Brake disc, replacing both sides
517-050	4.00	Brake piston, replacing seals
52		HYDRAULIC BRAKE SYSTEM
520-001	0.50	Brake system, checking function, hydraulic
520-002	0.50	Brake system, checking function, retardation
520-004	0.50	Brake system, adjusting unloading pressure
520-005	0.50	Brake system, check and adjusting pressure in circuit
520-037	1.00	Brake system, bleeding
525-008	2.00	Foot brake valve, replacing
525-009	2.50	Foot brake valve removed, reconditioning
527-001	0.50	Accumulator removed, checking charging pressure
527-002	0.50	Accumulator, replacing
527-004	3.00	Hydraulic pump, replacing
55		PARKING BRAKE
550-006	5.00	Parking brake, replacing discs and seals
550-008	1.00	Parking brake, replacing control valve
6		STEERING
64		STEERING
641-021	1.50	Adjustable steering column, replacing
645-006	1.75	Steering cylinder, replacing
645-010	6.00	Hydraulic pump, replacing
645-015	0.50	Steering system, checking and adjusting standby pressure
645-020	2.50	Steering system, checking and adjusting shock and anti-cavitation-valve
645-021	1.50	Valve block, replacing

Op.no.	time (h)	Notes
645-028	0.50	Steering system, checking and adjusting working pressure
645-054	2.00	Steering cylinder, replacing bearings
645-060	2.50	Steering cylinder, repacking in machine
645-073	3.00	Hydraulic pump removed, reconditioning
645-077	1.75	Steering cylinder removed, reconditioning incl replacing bearings
645-079	2.50	Shift valve, replacing
645-081	1.50	Steering valve removed, reconditioning
645-082	2.00	Steering valve, replacing
647-093	1.00	Auxiliary steering, replacing hydraulic pump
66		LEVER STEERING
660-003	0.50	Lever steering (CDC) adjusting steering speed
660-005	1.25	CDC, checking lever signals
660-902	7.00	Lever steering (CDC), hydraulic, installing new
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-005	0.50	Frame joint, checking clearance
741-036	17.00	Frame joint, replacing bearings
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	1.00	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
818-015	1.75	Cab suspension, rubber element replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.75	Door, replacing
831-006	0.75	Door lock, replacing
831-014	0.50	Door, replacing sealing strip
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	5.00	Windscreen, replacing
843-012	5.00	Rear window, replacing
843-013	5.00	Side window, replacing
843-048	5.00	Door window, replacing

Op.no.	time (h)	Notes
85		CAB INTERIOR/UPHOLSTERY
852-006	1.25	Operators seat, air suspensioned, control, replacing
852-007	1.25	Operators seat (air suspensioned), backrest replacing
86		PROTECTIVE EQUIPMENT, not specified in a special group
865-001	1.00	Engine compartment fan, replacing
87		AIR CONDITIONING UNIT
872-001	0.25	Cab filter, replacing
873-004	1.00	Heater core, replacing
873-006	1.00	Fan motor, replacing
873-008	0.75	Heat control valve, replacing
873-009	0.75	Heat control, replacing
874-002	1.00	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	4.00	Compressor, replacing incl draining and filling
874-007	0.50	Belt, replacing
874-010	4.00	Condenser, replacing incl draining and filling
874-011	3.00	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	3.50	Expansion valve, replacing incl draining and filling
874-014	0.75	Thermostat, replacing
874-015	1.50	Compressor, replacing shaft seal (compressor removed)
874-016	0.75	Compressor, replacing magnetic clutch (compressor removed)
874-017	0.75	Compressor, replacing magnetic clutch in machine
874-019	0.50	Compressor, replacing valve plate (compressor removed)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-001	0.50	Oil return filter, replacing
911-005	2.00	Pump suction hose and pipe, replacing
911-011	1.00	Oil cooler, replacing
911-038	5.00	Hydraulic oil tank, replacing
912-001	5.00	Control valve, replacing
912-002	4.00	Control valve removed, reconditioning

Op.no.	time (h)	Notes
912-004	0.75	Control valve, low pressure valve, replacing
912-009	0.50	Shock valve, tilt function, checking and adjusting
912-010	1.00	Shock valve, lowering function, checking and adjusting
912-011	0.75	Shock valve lift function, adjusting
912-030	2.50	Central valve, replacing
913-002	1.00	Hydraulic pump, checking and adjusting unloading pressure
913-004	0.50	Hydraulic pump, checking and adjusting max working pressure
913-010	3.50	Hydraulic pump, replacing
913-011	2.00	Hydraulic pump removed, reconditioning
913-016	1.00	Hydraulic pump, (pump 2) checking and adjusting working pressure.
913-019	4.50	Hydraulic pump, compensator replacing
913-027	3.00	Relief valve, replacing
914-054	1.75	Servo valve, adjusting control
914-055	1.00	Servo pressure, checking and adjusting
914-057	0.50	Servo pressure, check
914-058	3.00	Servo valve, replacing
914-060	3.00	Servo pump, replacing
914-063	1.75	Servo pressure, checking at the spool in control valve
914-075	2.00	Servo valve removed, reconditioning
915-001	1.00	Servo valve, solenoid replacing
916-001	0.50	Boom suspension system, functional check
916-002	1.75	Boom suspension accumulator, check and adjusting
916-003	1.00	Boom suspension accumulator, reconditioning
916-004	1.50	Boom suspension system, checking closing pressure
916-005	1.00	Boom suspension system, checking opening pressure
916-071	2.50	Boom suspension system, changing accumulator
916-073	3.00	Boom suspension system, changing valve
916-908	2.00	Return pipe for optional hydraulic function, new installation
94		UNIT, LOAD HANDLING
945-002	4.50	Lift frame, replacing bearing in lower bucket- or implement attachment
945-003	0.50	Implement attachment, measuring clearance of lower bearing
945-004	4.00	Lift cylinder, replacing
945-005	5.50	Lift cylinder, repacking in machine
945-006	3.00	Lift cylinder removed, repacking

Op.no.	time (h)	Notes
945-007	0.75	Tilt cylinder removed, replacing bearings "E-F"
945-008	4.00	Tilt cylinder, replacing
945-009	8.00	Tilt cylinder, repacking in machine
945-010	4.00	Tilt cylinder removed, repacking
945-012	1.00	Lift cylinder removed, replacing bearings "C-P"
945-013	3.00	Lift cylinder, rear bearing replacing
945-014	4.00	Lift cylinder, front bearing replacing
945-016	6.00	Lift frame, replacing bearing in upper mounting "O"
945-024	4.00	Tilting cylinder, changing bearing 'E-F' in machine
945-054	3.00	Implement attachment, replacing
945-062	2.00	T-link upper, replacing "HIJ"
945-063	0.75	T-link upper removed, replacing bearings "HIJ"
945-064	3.00	T-link, lower, replacing "IB"
945-065	2.00	T-link lower removed, replacing bearing "IB"
945-066	2.00	Tilt link, replacing "GH"
945-067	0.75	Tilt link removed, replacing bearings "GH"
945-068	3.50	Tilt arm, replacing bearing "GDF"
945-069	4.00	Tilt arm, replacing "GDF"
945-070	1.75	Tilt arm removed, replacing bearing "GDF"
99		MISCELLANEOUS
993-021	2.50	Automatic lubrication pump, replacing
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
171-001	0.50	Arrival Inspection, according to Inspection Programme
171-002	1.50	Delivery Inspection, according to Inspection Programme
172-002	5.00	Warranty inspection 100 hours
172-004	12.00	Warranty inspection 1000 hours
173-007	1.25	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	8.00	Maintenance service, every 1000 hours
173-014	12.00	Maintenance service, every 2000 hours
173-059	1.00	Engine, changing oil and filter
173-061	1.50	Transmission, changing oil and filter
173-070	2.00	Axles, changing oil
173-074	1.75	Hydraulic oil tank, changing oil and filter
173-075	2.50	Hydraulic oil tank, changing oil and filter incl.cleaning tank
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-002	1.75	Compression test
210-070	10.00	Engine, removing
210-071	48.00	Engine removed, general overhaul
210-072	11.00	Engine, installing
211-002	7.00	Cylinder head, replacing gasket
211-018	13.00	Cylinder heads all, replacing gaskets
211-068	4.00	Cylinder heads all removed, decarbonizing and grinding in valves
211-071	0.50	Cylinder head removed, pressure testing each
212-007	4.00	Cylinder block, liners removed, milling of all liner locations
212-011	0.50	Cylinder, cylinder heads removed, measuring wear in all cylinders
213-010	16.00	Cylinder liner and piston, replacing one
213-018	26.00	Cylinder liners and pistons, replacing all
214-012	1.50	Valves, adjusting
214-027	0.50	Inspection cover, fitting new gasket
214-030	16.00	Valves, decarbonizing and grinding
214-036	1.00	Valve covers, fitting new gasket
215-002	6.00	Timing gear cover, fitting new gasket in machine
215-030	7.00	Timing gear, replacing in machine

Op.no.	time (h)	Notes
215-032	8.00	Timing gear case, fitting new gasket in machine
216-014	3.50	Crankshaft, replacing front oil seal
216-018	20.00	Crankshaft, replacing rear oil seal
217-002	8.50	Sump gasket, replacing incl cleaning oil strainer
22		LUBRICATING SYSTEM
221-006	1.00	Oil pressure relief valve, replacing
221-014	10.00	Oil pump, replacing
223-006	2.00	Oil cooler, replacing
23		FUEL SYSTEM
233-001	0.50	Fuel system, bleeding
233-002	0.75	Feed pump, replacing
233-004	0.50	Feed pump, checking feed pressure
233-014	0.50	Fuel filters, replacing
233-097	0.25	Feed pump removed, reconditioning
234-010	5.00	Fuel tank, replacing
236-001	0.50	Idling speed, checking and adjusting
236-002	0.25	Stall speed, checking
236-030	2.00	Injection timing, checking
236-044	1.00	Injection timing, checking
236-073	3.50	Injection pump, replacing incl setting injection timing
237-002	2.00	Injectors, replacing all
237-004	0.75	Injector, replacing one
237-007	0.25	Overflow valve, replacing
237-016	2.00	Injectors, replacing copper sleeve in machine
237-018	0.75	Delivery pipe, replacing one
237-019	1.00	Fuel line, leak-off pipe, replacing
237-080	2.00	Injectors removed, reconditioning all
25		INLET SYSTEM; EXHAUST SYSTEM
251-002	1.00	Induction manifold, replacing gasket
251-004	2.00	Exhaust manifold, replacing gasket
252-019	1.25	Silencer, rubber cushion replacing
252-020	1.50	Silencer, replacing
252-021	0.75	Exhaust pipe, flexible tube, replacing
255-071	1.50	Turbocharger, replacing
255-073	2.00	Turbocharger removed, reconditioning
256-001	0.50	Air cleaner, cleaning filter element
256-002	0.25	Air cleaner, checking prssure drop indicator
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.75	Preheating coil, replacing

Op.no.	time (h)	Notes
26		COOLING SYSTEM
261-004	1.00	Coolant, changing
261-008	3.50	Radiator, replacing
261-012	1.50	Radiator hose upper, replacing
261-014	2.50	Radiator hoses lower, replacing
261-018	1.00	Expansion tank, replacing
262-002	1.50	Coolant pump, replacing
262-071	1.50	Coolant pump removed, reconditioning
262-098	1.50	Thermostat, replacing
263-006	1.25	Fan hydraulically driven, removing pump
263-007	1.25	Fan hydraulically driven, fitting pump
263-012	0.50	Fan belt and/or alternator belt, replacing
263-022	1.00	Fan belt and/or alternator-, compressor belt, replacing all belts
263-080	2.50	Fan hydraulically driven, replacing pump
27		ENGINE CONTROL
273-021	0.75	Stop magnet, replacing
273-023	0.50	Electrical engine shut down, check and adjusting
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.50	Battery charging capacity, checking
311-002	1.00	Batteries, replacing
311-003	0.50	Main switch, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
321-025	0.50	Alternator, replacing carbon brush kit in machine
322-005	0.50	Charging regulator, replacing
33		STARTING SYSTEM
331-018	1.00	Starter motor, replacing
334-001	0.50	Starter lock, replacing
35		LIGHTING
352-002	0.50	Headlights, adjusting
352-024	0.50	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.50	Rear lamp, replacing one
353-018	0.25	Rear lamp, replacing glass or bulb
356-056	0.50	Work lighting, replacing one head lamp assy

Op.no.	time (h)	Notes
36		OTHER ELECTRICAL EQUIPMENT
361-002	0.25	Flasher unit, replacing relay
361-010	0.75	Flasher switch, replacing
361-017	0.25	Flasher lamp, replacing glass or bulb
362-002	0.25	Horn, replacing
362-003	0.50	Reverse alarm, replacing
362-016	0.75	Horn switch, replacing
363-001	0.50	Windscreen wiper rear, replacing motor
363-002	0.75	Windscreen wiper front, replacing motor
363-004	0.25	Windscreen flusher pump, replacing
364-004	0.25	Switch, replacing
364-008	0.25	Brake light switch, replacing
367-052	1.25	V-ECU, replacing
37		CABLE; FUSE; RELAY
372-031	1.00	Relay CU201, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-003	0.50	Transmission oil pressure sensor, replacing
386-004	0.50	Transmission temperature sensor, replacing
386-005	0.50	Transmission, revolution sensor, replacing
386-006	0.50	Engine temperature sensor, replacing
386-007	0.50	Engine oil pressure sensor, replacing
386-011	1.00	Fuel level sender, replacing
386-032	0.75	Sensor unit (differential lock), replacing
386-035	0.75	Induction sensor (lifting cylinder) replacing
386-036	1.00	Induction sensor (tilt cylinder) replacing
387-005	0.50	Information display, replacing
39		MISCELLANEOUS
393-001	0.50	Voltage converter, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	1.00	Transmission oil pressure, checking
421-008	2.00	Gear selector valve, replacing
421-009	1.75	Gear selector valve removed, reconditioning
421-018	18.00	Converter, replacing
421-024	2.00	Lubrication oil valve, replacing
421-047	0.75	Gear selector, replacing
421-048	0.75	Gear selector valve, replacing one solenoid
421-052	3.00	Seal for front output shaft, replacing
421-054	3.00	Seal for rear output shaft, replacing

Op.no.	time (h)	Notes
421-070	11.00	Transmission, removing
421-071	32.00	Transmission removed, reconditioning
421-072	12.00	Transmission, installing
45		PROPELLER SHAFT
451-001	0.25	Propeller shaft and intermediate bearing, checking radial clearance
451-002	2.00	Support or intermediate bearing, replacing
451-004	1.50	Propeller shaft, rear, replacing
451-007	1.50	Propeller shaft, in frame joint, replacing
451-010	2.00	Propeller shaft, front, replacing
451-013	1.50	Propeller shaft, removed reconditioning
46		FRONT AXLE; REAR AXLE
460-001	0.75	Axle suspension, measuring axial and radial clearance
460-002	1.50	Axle suspension, adjusting axial clearance
460-003	13.00	Axle suspension, replacing bushes/bearings and seals
461-001	7.00	Axle, replacing
461-011	10.00	Centre gear , removing and fitting
461-012	10.00	Centre gear removed, reconditioning
461-013	13.00	Centre gear, axle removed, reconditioning
461-014	1.50	Pinion front, fitting new gasket
461-018	1.50	Oil cooler, replacing
461-019	2.00	Oil pump, replacing
461-040	3.00	Hub reduction gear, replacing
461-041	6.50	Hub reduction gear, removed, reconditioning
461-043	4.50	Hub, replacing seal
461-052	0.25	Differential lock front, repacking excl adjusting
461-053	0.75	Differential lock, adjusting engagement
463-001	9.00	Axle, replacing
463-002	4.50	Axle, removing
463-003	4.50	Axle, installing
463-011	11.00	Centre gear, removing and fitting
463-012	10.00	Centre gear removed, reconditioning
463-013	13.00	Centre gear, axle removed, reconditioning
463-014	1.50	Pinion rear, fitting new gasket
463-018	1.50	Oil cooler, replacing
463-019	2.00	Oil pump, replacing
463-040	3.00	Hub reduction gear, replacing
463-041	6.50	Hub reduction gear removed, reconditioning
463-043	4.50	Hub, replacing seal

Op.no.	time (h)	Notes
49		MISCELLANEOUS
491-006	3.50	Oil cooler, replacing
5		BRAKE
51		WHEEL BRAKE
516-001	0.50	Brake linings, checking wear
516-004	4.50	Brake discs, replacing on both sides
516-050	3.50	Brake piston, replacing seals
517-001	0.50	Brake linings, checking wear
517-004	5.00	Brake disc, replacing both sides
517-050	4.00	Brake piston, replacing seals
52		HYDRAULIC BRAKE SYSTEM
520-001	0.50	Brake system, checking function, hydraulic
520-002	0.50	Brake system, checking function, retardation
520-004	0.50	Brake system, adjusting unloading pressure
520-005	0.50	Brake system, check and adjusting pressure in circuit
520-037	1.00	Brake system, bleeding
525-008	2.00	Foot brake valve, replacing
525-009	2.50	Foot brake valve removed, reconditioning
527-001	0.50	Accumulator removed, checking charging pressure
527-002	0.50	Accumulator, replacing
527-004	3.00	Hydraulic pump, replacing
55		PARKING BRAKE
550-006	5.00	Parking brake, replacing discs and seals
550-008	1.00	Parking brake, replacing control valve
6		STEERING
64		STEERING
641-021	1.50	Adjustable steering column, replacing
645-006	1.75	Steering cylinder, replacing
645-010	6.00	Hydraulic pump, replacing
645-015	0.50	Steering system, checking and adjusting standby pressure
645-020	2.50	Steering system, checking and adjusting shock and anti-cavitation-valve
645-021	1.50	Valve block, replacing

Op.no.	time (h)	Notes
645-028	0.50	Steering system, checking and adjusting working pressure
645-054	2.00	Steering cylinder, replacing bearings
645-060	2.50	Steering cylinder, repacking in machine
645-073	3.00	Hydraulic pump removed, reconditioning
645-077	1.75	Steering cylinder removed, reconditioning incl replacing bearings
645-079	2.50	Shift valve, replacing
645-081	1.50	Steering valve removed, reconditioning
645-082	2.00	Steering valve, replacing
647-093	1.00	Auxiliary steering, replacing hydraulic pump
66		LEVER STEERING
660-003	0.50	Lever steering (CDC) adjusting steering speed
660-005	1.25	CDC, checking lever signals
660-902	7.00	Lever steering (CDC), hydraulic, installing new
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-005	0.50	Frame joint, checking clearance
741-036	17.00	Frame joint, replacing bearings
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	1.00	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
818-015	1.75	Cab suspension, rubber element replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.75	Door, replacing
831-006	0.75	Door lock, replacing
831-014	0.50	Door, replacing sealing strip
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	5.00	Windscreen, replacing
843-012	5.00	Rear window, replacing
843-013	5.00	Side window, replacing
843-048	5.00	Door window, replacing

Op.no.	time (h)	Notes
85		CAB INTERIOR/UPHOLSTERY
852-006	1.25	Operators seat, air suspensioned, control, replacing
852-007	1.25	Operators seat (air suspensioned), backrest replacing
86		PROTECTIVE EQUIPMENT, not specified in a special group
865-001	1.00	Engine compartment fan, replacing
87		AIR CONDITIONING UNIT
872-001	0.25	Cab filter, replacing
873-004	1.00	Heater core, replacing
873-006	1.00	Fan motor, replacing
873-008	0.75	Heat control valve, replacing
873-009	0.75	Heat control, replacing
874-002	1.00	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	4.00	Compressor, replacing incl draining and filling
874-007	0.50	Belt, replacing
874-010	4.00	Condenser, replacing incl draining and filling
874-011	3.00	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	3.50	Expansion valve, replacing incl draining and filling
874-014	0.75	Thermostat, replacing
874-015	1.50	Compressor, replacing shaft seal (compressor removed)
874-016	0.75	Compressor, replacing magnetic clutch (compressor removed)
874-017	0.75	Compressor, replacing magnetic clutch in machine
874-019	0.50	Compressor, replacing valve plate (compressor removed)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-001	0.50	Oil return filter, replacing
911-005	2.00	Pump suction hose and pipe, replacing
911-011	1.00	Oil cooler, replacing
911-038	5.00	Hydraulic oil tank, replacing
912-001	5.00	Control valve, replacing
912-002	4.00	Control valve removed, reconditioning

Op.no.	time (h)	Notes
912-004	0.75	Control valve, low pressure valve, replacing
912-009	0.50	Shock valve, tilt function, checking and adjusting
912-010	1.00	Shock valve, lowering function, checking and adjusting
912-011	0.75	Shock valve lift function, adjusting
912-030	2.50	Central valve, replacing
913-002	1.00	Hydraulic pump, checking and adjusting unloading pressure
913-004	0.50	Hydraulic pump, checking and adjusting max working pressure
913-010	3.50	Hydraulic pump, replacing
913-011	2.00	Hydraulic pump removed, reconditioning
913-016	1.00	Hydraulic pump, (pump 2) checking and adjusting working pressure.
913-019	4.50	Hydraulic pump, compensator replacing
913-027	3.00	Relief valve, replacing
914-054	1.75	Servo valve, adjusting control
914-055	1.00	Servo pressure, checking and adjusting
914-057	0.50	Servo pressure, check
914-058	3.00	Servo valve, replacing
914-060	3.00	Servo pump, replacing
914-063	1.75	Servo pressure, checking at the spool in control valve
914-075	2.00	Servo valve removed, reconditioning
915-001	1.00	Servo valve, solenoid replacing
916-001	0.50	Boom suspension system, functional check
916-002	1.75	Boom suspension accumulator, check and adjusting
916-003	1.00	Boom suspension accumulator, reconditioning
916-004	1.50	Boom suspension system, checking closing pressure
916-005	1.00	Boom suspension system, checking opening pressure
916-071	2.50	Boom suspension system, changing accumulator
916-073	3.00	Boom suspension system, changing valve
916-908	2.00	Return pipe for optional hydraulic function, new installation
94		UNIT, LOAD HANDLING
945-002	4.50	Lift frame, replacing bearing in lower bucket- or implement attachment
945-003	0.50	Implement attachment, measuring clearance of lower bearing
945-004	4.00	Lift cylinder, replacing
945-005	5.50	Lift cylinder, repacking in machine
945-006	3.00	Lift cylinder removed, repacking

Op.no.	time (h)	Notes
945-007	0.75	Tilt cylinder removed, replacing bearings "E-F"
945-008	5.00	Tilt cylinder, replacing
945-009	8.00	Tilt cylinder, repacking in machine
945-010	4.00	Tilt cylinder removed, repacking
945-012	1.00	Lift cylinder removed, replacing bearings "C-P"
945-013	3.00	Lift cylinder, rear bearing replacing
945-014	4.00	Lift cylinder, front bearing replacing
945-016	6.00	Lift frame, replacing bearing in upper mounting "O"
945-024	4.00	Tilting cylinder, changing bearing 'E-F' in machine
945-054	3.00	Implement attachment, replacing
945-062	2.00	T-link upper, replacing "HIJ"
945-063	0.75	T-link upper removed, replacing bearings "HIJ"
945-064	3.00	T-link, lower, replacing "IB"
945-065	2.00	T-link lower removed, replacing bearing "IB"
945-066	2.00	Tilt link, replacing "GH"
945-067	0.75	Tilt link removed, replacing bearings "GH"
945-068	3.50	Tilt arm, replacing bearing "GDF"
945-069	4.00	Tilt arm, replacing "GDF"
945-070	1.75	Tilt arm removed, replacing bearing "GDF"
99		MISCELLANEOUS
993-021	2.50	Automatic lubrication pump, replacing
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
171-001	0.50	Arrival Inspection, according to Inspection Programme	
171-002	1.50	Delivery Inspection, according to Inspection Programme	
172-002	5.00	Warranty inspection 100 hours	
172-004	11.00	Warranty inspection 1000 hours	
173-002	0.40	Maintenance service, daily	
173-004	0.70	Maintenance service, every 50 hours	
173-007	1.50	Maintenance service, every 250 hours	
173-010	5.50	Maintenance service, every 500 hours	
173-012	8.00	Maintenance service, every 1000 hours	
173-014	9.00	Maintenance service, every 2000 hours	
173-018	14.00	Maintenance service, every 4000 hours	
173-059	1.00	Engine, changing oil and filter	
173-061	1.50	Transmission, changing oil and filter	
173-070	2.00	Axles, changing oil	
173-074	1.75	Hydraulic oil tank, changing oil and filter	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
210-002	7.50	Compression test	5001 - 7398 62501 - 69999
210-002	7.00	Compression test	8001 - 10999
210-070	4.50	Engine, removing	8001 - 10999
210-072	6.00	Engine, installing	8001 - 10999
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
210-092	0.70	Engine rotation speed sensor (camshaft), replacing	8001 - 10999
211-002	16.00	Cylinder head, replacing gasket	
214-012	4.00	Valves, adjusting	5001 - 7398 62501 - 69999
214-012	4.00	Valves, adjusting	8002 - 10999
214-036	2.50	Valve covers, fitting new gasket	
215-032	13.00	Timing gear case, fitting new gasket in machine	5001 - 7398 62501 - 69999
216-018	19.00	Crankshaft, replacing rear oil seal	
217-002	7.50	Sump gasket, replacing incl cleaning oil strainer	

Op.no.	time (h)		Notes
218-001	2.50	Rubber cushion, replacing	
22		LUBRICATING SYSTEM	
221-014	8.50	Oil pump, replacing	
221-022	0.20	Lubrication oil pressure, checking with pressure gauge	8001 - 10999
223-006	3.00	Oil cooler, replacing	
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	8002 - 10999
233-001	0.30	Fuel system, bleeding	
233-002	1.50	Feed pump, replacing	
233-004	0.40	Feed pump, checking feed pressure	5001 - 7398 62501 - 69999
233-009	0.20	Fuel pump (valves), inspection	
233-010	0.90	Fuel pump, inspection	
233-014	0.75	Fuel filters, replacing	
233-020	0.10	Fuel filter, checking	
233-097	0.75	Feed pump removed, reconditioning	
234-010	4.00	Fuel tank, replacing	
236-002	0.50	Stall speed, checking	5001 - 7398 62501 - 69999
237-012	5.50	Unit injector, replacing	8002 - 10999
25		INLET SYSTEM; EXHAUST SYSTEM	
250-901	2.00	Insulation for exhaust system, installation	
251-002	1.00	Induction manifold, replacing gasket	
251-004	2.00	Exhaust manifold, replacing gasket	
252-020	1.00	Silencer, replacing	
252-021	0.75	Exhaust pipe, flexible tube, replacing	
255-002	0.80	Turbocharger, inspection	
255-071	1.50	Turbocharger, replacing	
256-001	0.50	Air cleaner, cleaning filter element	
256-002	0.25	Air cleaner, checking prssure drop indicator	
256-003	0.25	Air cleaner, primary filter replacing	
256-004	0.25	Air cleaner, secondary filter replacing	
256-006	0.75	Preheating coil, replacing	
258-002	4.00	Intercooler, replacing	62501 - 69999 5001 - 7398
258-030	0.80	Charge air system, inspection	
26		COOLING SYSTEM	
261-004	1.00	Coolant, changing	
261-008	6.00	Radiator, replacing	8002 - 10999
261-012	1.00	Radiator hose upper, replacing	
261-014	3.00	Radiator hoses lower, replacing	

Op.no.	time (h)		Notes
262-002	2.00	Coolant pump, replacing	
262-071	1.50	Coolant pump removed, reconditioning	
262-098	1.75	Thermostat, replacing	
263-004	0.75	Fan motor, checking working pressure	
263-010	0.50	Pump 3 (P3) standby pressure, checking	
263-011	0.40	Pump 3 (P3) standby pressure, checking and adjusting (LS-line removed)	
263-011	0.10	Pump 3 (P3) standby pressure, checking and adjusting (LS-line removed)	
263-051	1.50	Cooling fan hydraulics, funktion check	
263-062	4.50	Cooling fan motor, replacing	8001 - 10999

3 ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS

31 BATTERY

311-001	0.50	Battery charging capacity, checking
311-002	1.00	Batteries, replacing
311-003	0.50	Main switch, replacing

32 ALTERNATOR; CHARGE REGULATOR

321-002	1.00	Alternator, replacing incl function check
321-025	0.50	Alternator, replacing carbon brush kit in machine
322-005	0.50	Charging regulator, replacing

33 STARTING SYSTEM

331-018	1.00	Starter motor, replacing
334-001	0.25	Starter lock, replacing

35 LIGHTING

352-002	0.50	Headlights, adjusting
352-024	0.50	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.25	Rear lamp, replacing one
353-018	0.25	Rear lamp, replacing glass or bulb
356-056	0.50	Work lighting, replacing one head lamp assy

36 OTHER ELECTRICAL EQUIPMENT

361-002	0.25	Flasher unit, replacing relay
361-010	0.75	Flasher switch, replacing
361-017	0.25	Flasher lamp, replacing glass or bulb
362-002	0.25	Horn, replacing
362-003	0.50	Reverse alarm, replacing
363-001	0.50	Windscreen wiper rear, replacing motor
363-002	0.75	Windscreen wiper front, replacing motor

Op.no.	time (h)		Notes
363-004	0.25	Windscreen flusher pump, replacing	
364-004	0.25	Switch, replacing	
364-008	0.25	Brake light switch, replacing	
367-052	1.25	V-ECU, replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-003	1.00	Transmission oil pressure sensor, replacing	
386-004	0.50	Transmission temperature sensor, replacing	
386-005	0.50	Transmission, revolution sensor, replacing	
386-006	0.50	Engine temperature sensor, replacing	
386-007	0.50	Engine oil pressure sensor, replacing	
386-008	0.60	Engine rotation speed sensor, replacing	8001 - 10999
386-011	1.00	Fuel level sender, replacing	
39		MISCELLANEOUS	
390-901	1.00	CareTrack Early Basic, installation	
390-902	2.00	CareTrack, installing new	
393-001	0.50	Voltage converter, replacing	
4		POWER TRANSMISSION	
41		CLUTCH; TORQUE CONVERTER	
414-003	2.00	Converter, replacing (engine removed)	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-002	0.70	Transmission oil pressure, checking	5001 - 6301
421-002	0.70	Transmission oil pressure, checking	6302 - 10999
421-008	3.00	Gear selector valve, replacing	
421-009	1.00	Gear selector valve removed, reconditioning	
421-018	20.00	Converter, replacing	
421-024	1.50	Lubrication oil valve, replacing	
421-047	0.75	Gear selector, replacing	
421-048	1.50	Gear selector valve, replacing one solenoid	
421-052	3.00	Seal for front output shaft, replacing	
421-054	2.50	Seal for rear output shaft, replacing	
421-068	10.00	Transmission, removing (upwards)	
421-069	15.00	Transmission, installing (from above)	
421-071	32.00	Transmission removed, reconditioning	
45		PROPELLER SHAFT	
451-001	0.25	Propeller shaft and intermediate bearing, checking radial clearance	
451-002	2.00	Support or intermediate bearing, replacing	
451-004	1.50	Propeller shaft, rear, replacing	
451-007	1.50	Propeller shaft, in frame joint, replacing	

Op.no.	time (h)	Notes
451-010	2.00	Propeller shaft, front, replacing
46		FRONT AXLE; REAR AXLE
460-001	0.75	Axle suspension, measuring axial and radial clearanse
460-002	1.50	Axle suspension, adjusting axial clearance
460-003	13.00	Axle suspension, replacing bushes/bearings and seals
461-001	7.00	Axle, replacing
461-011	10.00	Centre gear , removing and fitting
461-012	10.00	Centre gear removed, reconditioning
461-013	11.00	Centre gear, axle removed, reconditioning
461-040	3.00	Hub reduction gear, replacing
461-041	11.00	Hub reduction gear, removed, reconditioning
461-043	4.50	Hub, replacing seal
463-001	9.00	Axle, replacing
463-002	4.50	Axle, removing
463-003	4.50	Axle, installing
463-011	11.00	Centre gear, removing and fitting
463-012	10.00	Centre gear removed, reconditioning
463-013	13.00	Centre gear, axle removed, reconditioning
463-040	3.00	Hub reduction gear, replacing
463-041	6.50	Hub reduction gear removed, reconditioning
463-043	4.50	Hub, replacing seal
49		MISCELLANEOUS
491-006	4.00	Oil cooler, replacing
5		BRAKE
51		WHEEL BRAKE
516-001	0.50	Brake linings, checking wear
516-004	5.50	Brake discs, replacing on both sides
516-050	3.50	Brake piston, replacing seals
517-001	0.50	Brake linings, checking wear
517-004	5.50	Brake disc, replacing both sides
517-050	3.50	Brake piston, replacing seals
52		HYDRAULIC BRAKE SYSTEM
520-001	0.90	Brake system, checking function, hydraulic
520-002	0.50	Brake system, checking function, retardation
520-005	0.60	Brake system, check and adjusting pressure in circuit
520-037	1.00	Brake system, bleeding
525-009	0.50	Foot brake valve removed, reconditioning

Op.no.	time (h)	Notes
527-002	0.50	Accumulator, replacing
6		STEERING
64		STEERING
645-006	1.75	Steering cylinder, replacing
645-021	1.50	Valve block, replacing
645-028	0.10	Steering system, checking and adjusting working pressure
645-054	2.00	Steering cylinder, replacing bearings
645-060	2.50	Steering cylinder, repacking in machine
645-077	1.75	Steering cylinder removed, reconditioning incl replacing bearings
645-078	1.50	Shift valve removed, reconditioning
645-079	2.50	Shift valve, replacing
645-081	1.50	Steering valve removed, reconditioning
645-082	1.50	Steering valve, replacing
647-093	1.00	Auxiliary steering, replacing hydraulic pump
66		LEVER STEERING
660-003	0.50	Lever steering (CDC) adjusting steering speed
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-005	0.30	Frame joint, checking clearance
741-036	19.00	Frame joint, replacing bearings
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	1.00	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
818-015	1.75	Cab suspension, rubber element replacing
818-020	1.75	Viscous cab suspension, changing one unit
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.70	Engine hood, removing

62501 - 69999

Op.no.	time (h)		Notes
			5001 - 7398
821-001	0.70	Engine hood, removing	8001 - 10999
821-001	0.70	Engine hood, removing	8002 - 10999
821-002	0.70	Engine hood, installing	5001 - 7398
			62501 - 69999
821-002	0.80	Engine hood, installing	8001 - 10999
821-002	1.00	Engine hood, installing	8002 - 10999
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	1.75	Door, replacing	
831-006	0.75	Door lock, replacing	
831-014	0.50	Door, replacing sealing strip	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-002	5.00	Windscreen, replacing	
843-012	5.00	Rear window, replacing	
843-013	5.00	Side window, replacing	
843-048	5.00	Door window, replacing	
87		AIR CONDITIONING UNIT	
872-001	0.25	Cab filter, replacing	
873-004	2.00	Heater core, replacing	
873-006	1.25	Fan motor, replacing	
873-008	1.00	Heat control valve, replacing	
873-009	0.75	Heat control, replacing	
874-002	1.00	Refrigerant, draining	
874-003	0.75	Cooling unit, performance test	
874-005	1.00	Refrigerant, filling excl vacuum pumping	
874-006	4.00	Compressor, replacing incl draining and filling	
874-007	0.50	Belt, replacing	
874-010	3.00	Condenser, replacing incl draining and filling	
874-011	3.00	Receiver, replacing incl draining and filling	
874-012	4.00	Evaporator, replacing incl draining and filling	
874-013	3.50	Expansion valve, replacing incl draining and filling	
874-014	0.75	Thermostat, replacing	
874-015	1.50	Compressor, replacing shaft seal (compressor removed)	
874-016	0.75	Compressor, replacing magnetic clutch (compressor removed)	
874-017	0.75	Compressor, replacing magnetic clutch in machine	
874-019	0.50	Compressor, replacing valve plate (compressor removed)	
874-059	1.25	Evaporator, cleaning	

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-002	3.00	Hydraulic system, bleeding
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-001	0.75	Oil return filter, replacing
911-005	2.00	Pump suction hose and pipe, replacing
911-011	4.00	Oil cooler, replacing
911-036	3.00	Hydraulic oil tank, removing
911-037	4.50	Hydraulic oil tank, installing
911-038	8.00	Hydraulic oil tank, replacing
912-001	6.50	Control valve, replacing
912-002	4.00	Control valve removed, reconditioning
912-018	0.20	Back-up valve, checking and adjusting
912-021	0.30	Shock valve, tilt function, checking
912-023	0.70	Shock valve lift function, checking
912-030	7.50	Central valve, replacing
913-003	0.20	Hydraulic pump, checking and adjusting standby pressure
913-004	0.20	Hydraulic pump, checking and adjusting max working pressure
913-034	0.40	Lifting time, checking
913-037	6.00	Hydraulic pump P1, replacing
913-037	6.00	Hydraulic pump P1, replacing
913-039	5.00	Hydraulic pump P3, replacing
913-040	6.50	Hydraulic pumps P2 and P3, replacing
914-054	1.75	Servo valve, adjusting control
914-055	0.25	Servo pressure, checking and adjusting
914-058	3.50	Servo valve, replacing
914-075	2.00	Servo valve removed, reconditioning
916-001	0.50	Boom suspension system, functional check
916-002	1.75	Boom suspension accumulator, check and adjusting
916-003	1.00	Boom suspension accumulator, reconditioning
916-006	0.50	Boom suspension system, pressure reduction, safety valve, checking and adjusting
916-019	0.50	3rd/4th hydraulic function, pressure check
916-070	0.10	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing
916-074	0.30	Boom suspension system, test drive with load
916-075	0.70	Boom Suspension System, valve block V1, removing

Op.no.	time (h)	Notes
916-076	1.25	Boom Suspension System, valve block V1, installing
916-077	0.40	Boom Suspension System, valve block V2, removing
916-078	1.25	Boom Suspension System, valve block V2, installing
94		UNIT, LOAD HANDLING
945-002	4.50	Lift frame, replacing bearing in lower bucket- or implement attachment
945-003	0.25	Implement attachment, measuring clearance of lower bearing
945-004	4.00	Lift cylinder, replacing
945-005	4.50	Lift cylinder, repacking in machine
945-006	3.00	Lift cylinder removed, repacking
945-007	0.50	Tilt cylinder removed, replacing bearings "E-F"
945-008	4.00	Tilt cylinder, replacing
945-009	5.00	Tilt cylinder, repacking in machine
945-010	4.00	Tilt cylinder removed, repacking
945-012	0.70	Lift cylinder removed, replacing bearings "C-P"
945-013	3.00	Lift cylinder, rear bearing replacing
945-014	4.00	Lift cylinder, front bearing replacing
945-016	6.00	Lift frame, replacing bearing in upper mounting "O"
945-023	1.25	Tilting cylinder, replacing bearing 'E' in machine
945-024	4.00	Tilting cylinder, changing bearing 'E-F' in machine
945-054	3.00	Implement attachment, replacing
945-062	2.00	T-link upper, replacing "HIJ"
945-063	0.75	T-link upper removed, replacing bearings "HIJ"
945-064	3.00	T-link, lower, replacing "IB"
945-065	2.00	T-link lower removed, replacing bearing "IB"
945-066	2.00	Tilt link, replacing "GH"
945-067	0.75	Tilt link removed, replacing bearings "GH"
945-068	3.50	Tilt arm, replacing bearing "GDF"
945-069	4.00	Tilt arm, replacing "GDF"
945-070	1.75	Tilt arm removed, replacing bearing "GDF"
99		MISCELLANEOUS
993-030	0.80	Shift valve, checking

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
171-001	0.50	Arrival Inspection, according to Inspection Programme	
171-002	1.50	Delivery Inspection, according to Inspection Programme	
172-002	5.00	Warranty inspection 100 hours	
172-004	12.00	Warranty inspection 1000 hours	
173-010	2.50	Maintenance service, every 500 hours	
173-012	7.00	Maintenance service, every 1000 hours	
173-014	10.00	Maintenance service, every 2000 hours	
173-018	13.00	Maintenance service, every 4000 hours	
173-059	1.00	Engine, changing oil and filter	
173-061	1.50	Transmission, changing oil and filter	
173-070	2.00	Axles, changing oil	
173-074	1.75	Hydraulic oil tank, changing oil and filter	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
210-070	4.50	Engine, removing	8001 - 10999
210-072	9.00	Engine, installing	
211-002	16.00	Cylinder head, replacing gasket	
214-036	2.50	Valve covers, fitting new gasket	
216-018	19.00	Crankshaft, replacing rear oil seal	
217-002	7.50	Sump gasket, replacing incl cleaning oil strainer	
218-001	2.50	Rubber cushion, replacing	
22		LUBRICATING SYSTEM	
221-014	8.50	Oil pump, replacing	
23		FUEL SYSTEM	
233-001	0.50	Fuel system, bleeding	
233-002	1.50	Feed pump, replacing	
233-014	0.75	Fuel filters, replacing	
233-097	0.75	Feed pump removed, reconditioning	
234-010	4.00	Fuel tank, replacing	
25		INLET SYSTEM; EXHAUST SYSTEM	
250-901	2.00	Insulation for exhaust system, installation	
251-002	1.00	Induction manifold, replacing gasket	
251-004	2.00	Exhaust manifold, replacing gasket	
252-020	1.00	Silencer, replacing	
252-021	0.75	Exhaust pipe, flexible tube, replacing	

Op.no.	time (h)	Notes
255-071	1.50	Turbocharger, replacing
256-001	0.50	Air cleaner, cleaning filter element
256-002	0.25	Air cleaner, checking prssure drop indicator
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.75	Preheating coil, replacing
26		COOLING SYSTEM
261-004	1.00	Coolant, changing
261-008	5.00	Radiator, replacing
261-012	1.00	Radiator hose upper, replacing
261-014	3.00	Radiator hoses lower, replacing
262-071	1.50	Coolant pump removed, reconditioning
263-004	0.75	Fan motor, checking working pressure
263-010	0.50	Pump 3 (P3) standby pressure, checking
263-011	1.25	Pump 3 (P3) standby pressure, checking and adjusting (LS-line removed)
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.50	Battery charging capacity, checking
311-002	1.00	Batteries, replacing
311-003	0.50	Main switch, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
321-025	0.50	Alternator, replacing carbon brush kit in machine
322-005	0.50	Charging regulator, replacing
33		STARTING SYSTEM
331-018	1.00	Starter motor, replacing
334-001	0.25	Starter lock, replacing
35		LIGHTING
352-002	0.50	Headlights, adjusting
352-024	0.50	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.25	Rear lamp, replacing one
353-018	0.25	Rear lamp, replacing glass or bulb
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
361-002	0.25	Flasher unit, replacing relay

Op.no.	time (h)	Notes
361-010	0.75	Flasher switch, replacing
361-017	0.25	Flasher lamp, replacing glass or bulb
362-002	0.25	Horn, replacing
362-003	0.50	Reverse alarm, replacing
363-001	0.50	Windscreen wiper rear, replacing motor
363-002	0.75	Windscreen wiper front, replacing motor
363-004	0.25	Windscreen flusher pump, replacing
364-004	0.25	Switch, replacing
364-008	0.25	Brake light switch, replacing
367-052	1.25	V-ECU, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-003	1.00	Transmission oil pressure sensor, replacing
386-004	0.50	Transmission temperature sensor, replacing
386-005	0.50	Transmission, revolution sensor, replacing
386-006	0.50	Engine temperature sensor, replacing
386-007	0.50	Engine oil pressure sensor, replacing
386-011	1.00	Fuel level sender, replacing
39		MISCELLANEOUS
393-001	0.50	Voltage converter, replacing
4		POWER TRANSMISSION
41		CLUTCH; TORQUE CONVERTER
414-003	2.00	Converter, replacing (engine removed)
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	1.00	Transmission oil pressure, checking
421-008	3.00	Gear selector valve, replacing
421-009	1.00	Gear selector valve removed, reconditioning
421-018	20.00	Converter, replacing
421-024	1.50	Lubrication oil valve, replacing
421-047	0.75	Gear selector, replacing
421-048	1.50	Gear selector valve, replacing one solenoid
421-052	3.00	Seal for front output shaft, replacing
421-054	3.00	Seal for rear output shaft, replacing
421-068	13.00	Transmission, removing (upwards)
421-069	14.00	Transmission, installing (from above)
421-071	32.00	Transmission removed, reconditioning
45		PROPELLER SHAFT
451-001	0.25	Propeller shaft and intermediate bearing, checking radial clearance
451-002	2.00	Support or intermediate bearing, replacing

Op.no.	time (h)	Notes
451-004	1.50	Propeller shaft, rear, replacing
451-007	1.50	Propeller shaft, in frame joint, replacing
451-010	2.00	Propeller shaft, front, replacing
46		FRONT AXLE; REAR AXLE
460-001	0.75	Axle suspension, measuring axial and radial clearanse
460-002	1.50	Axle suspension, adjusting axial clearance
460-003	13.00	Axle suspension, replacing bushes/bearings and seals
461-001	7.00	Axle, replacing
461-011	10.00	Centre gear , removing and fitting
461-012	10.00	Centre gear removed, reconditioning
461-013	11.00	Centre gear, axle removed, reconditioning
461-040	3.00	Hub reduction gear, replacing
461-041	11.00	Hub reduction gear, removed, reconditioning
461-043	4.50	Hub, replacing seal
463-001	9.00	Axle, replacing
463-002	4.50	Axle, removing
463-003	4.50	Axle, installing
463-011	11.00	Centre gear, removing and fitting
463-012	10.00	Centre gear removed, reconditioning
463-013	13.00	Centre gear, axle removed, reconditioning
463-040	3.00	Hub reduction gear, replacing
463-041	6.50	Hub reduction gear removed, reconditioning
463-043	4.50	Hub, replacing seal
49		MISCELLANEOUS
491-006	4.00	Oil cooler, replacing
5		BRAKE
51		WHEEL BRAKE
516-001	0.50	Brake linings, checking wear
516-004	5.50	Brake discs, replacing on both sides
516-050	3.50	Brake piston, replacing seals
517-001	0.50	Brake linings, checking wear
517-004	5.50	Brake disc, replacing both sides
517-050	3.50	Brake piston, replacing seals
52		HYDRAULIC BRAKE SYSTEM
520-001	0.75	Brake system, checking function, hydraulic
520-002	0.50	Brake system, checking function, retardation
520-005	0.50	Brake system, check and adjusting pressure in circuit

Op.no.	time (h)	Notes
520-037	1.00	Brake system, bleeding
527-002	0.50	Accumulator, replacing
6		STEERING
64		STEERING
645-006	1.75	Steering cylinder, replacing
645-021	1.50	Valve block, replacing
645-054	2.00	Steering cylinder, replacing bearings
645-060	2.50	Steering cylinder, repacking in machine
645-077	1.75	Steering cylinder removed, reconditioning incl replacing bearings
645-078	1.50	Shift valve removed, reconditioning
645-079	2.50	Shift valve, replacing
645-081	1.50	Steering valve removed, reconditioning
647-093	1.00	Auxiliary steering, replacing hydraulic pump
66		LEVER STEERING
660-003	0.50	Lever steering (CDC) adjusting steering speed
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-036	19.00	Frame joint, replacing bearings
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	1.00	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
818-015	1.75	Cab suspension, rubber element replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.75	Door, replacing
831-006	0.75	Door lock, replacing
831-014	0.50	Door, replacing sealing strip

Op.no.	time (h)	Notes
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	5.00	Windscreen, replacing
843-012	5.00	Rear window, replacing
843-013	5.00	Side window, replacing
843-048	5.00	Door window, replacing
87		AIR CONDITIONING UNIT
872-001	0.25	Cab filter, replacing
873-004	2.00	Heater core, replacing
873-006	1.25	Fan motor, replacing
873-008	1.00	Heat control valve, replacing
873-009	0.75	Heat control, replacing
874-002	1.00	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	4.00	Compressor, replacing incl draining and filling
874-007	0.50	Belt, replacing
874-010	3.00	Condenser, replacing incl draining and filling
874-011	3.00	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	3.50	Expansion valve, replacing incl draining and filling
874-014	0.75	Thermostat, replacing
874-015	1.50	Compressor, replacing shaft seal (compressor removed)
874-016	0.75	Compressor, replacing magnetic clutch (compressor removed)
874-017	0.75	Compressor, replacing magnetic clutch in machine
874-019	0.50	Compressor, replacing valve plate (compressor removed)
874-059	1.25	Evaporator, cleaning
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-002	3.00	Hydraulic system, bleeding
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-001	0.75	Oil return filter, replacing
911-005	2.00	Pump suction hose and pipe, replacing
911-011	4.00	Oil cooler, replacing
911-038	8.00	Hydraulic oil tank, replacing
912-002	4.00	Control valve removed, reconditioning

Op.no.	time (h)	Notes
912-023	0.70	Shock valve lift function, checking
914-054	1.75	Servo valve, adjusting control
914-055	0.25	Servo pressure, checking and adjusting
914-075	2.00	Servo valve removed, reconditioning
916-001	0.50	Boom suspension system, functional check
916-002	1.75	Boom suspension accumulator, check and adjusting
916-003	1.00	Boom suspension accumulator, reconditioning
916-006	0.50	Boom suspension system, pressure reduction, safety valve, checking and adjusting
916-019	0.50	3rd/4th hydraulic function, pressure check
94		UNIT, LOAD HANDLING
945-002	4.50	Lift frame, replacing bearing in lower bucket- or implement attachment
945-003	0.25	Implement attachment, measuring clearance of lower bearing
945-006	3.00	Lift cylinder removed, repacking
945-010	4.00	Tilt cylinder removed, repacking
945-013	3.00	Lift cylinder, rear bearing replacing
945-014	4.00	Lift cylinder, front bearing replacing
945-016	6.00	Lift frame, replacing bearing in upper mounting "O"
945-024	4.00	Tilting cylinder, changing bearing 'E-F' in machine
945-054	3.00	Implement attachment, replacing
945-062	2.00	T-link upper, replacing "HIJ"
945-063	0.75	T-link upper removed, replacing bearings "HIJ"
945-064	3.00	T-link, lower, replacing "IB"
945-065	2.00	T-link lower removed, replacing bearing "IB"
945-066	2.00	Tilt link, replacing "GH"
945-067	0.75	Tilt link removed, replacing bearings "GH"
945-068	3.50	Tilt arm, replacing bearing "GDF"
945-069	4.00	Tilt arm, replacing "GDF"
945-070	1.75	Tilt arm removed, replacing bearing "GDF"
99		MISCELLANEOUS
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
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1 STANDARD PARTS, SERVICE

17 SERVICE

170-006	0.30	VCADS Pro, central systems updating, replace component
172-002	4.50	Warranty inspection 100 hours
172-004	11.00	Warranty inspection 1000 hours
173-002	0.40	Maintenance service, daily
173-004	0.70	Maintenance service, every 50 hours
173-007	1.00	Maintenance service, every 250 hours
173-010	2.50	Maintenance service, every 500 hours
173-012	4.00	Maintenance service, every 1000 hours
173-014	5.50	Maintenance service, every 2000 hours
173-018	9.50	Maintenance service, every 4000 hours
173-022	6.00	Maintenance service, every 6000 hours
173-150	1.75	Maintenance service, fire suppression system
176-001	0.60	Mechanical release of parking brake

19 GENERAL

191-021	0.20	Service position 1
191-022	0.20	Service position 2

2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-009	0.30	VCADS Pro, MID 128, programming E-ECU
200-068	0.80	E-ECU, MID 128, changing non-programmed ECU
200-070	0.40	E-ECU, MID 128, changing pre-programmed ECU

21 ENGINE

210-002	7.00	Compression test
210-002	7.00	Compression test
210-070	4.50	Engine, removing
210-070	4.50	Engine, removing
210-072	6.50	Engine, installing
210-072	6.00	Engine, installing
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
210-092	0.70	Engine rotation speed sensor (camshaft), replacing
214-012	4.00	Valves, adjusting
214-012	4.00	Valves, adjusting

Op.no.	time (h)	Notes
22		LUBRICATING SYSTEM
221-022	0.20	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-009	0.20	Fuel pump (valves), inspection
233-010	0.90	Fuel pump, inspection
236-002	0.50	Stall speed, checking
237-012	5.50	Unit injector, replacing
237-012	5.50	Unit injector, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
258-030	0.80	Charge air system, inspection
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-008	6.00	Radiator, replacing
263-011	0.70	Pump 3 (P3) standby pressure, checking and adjusting (LS-line removed)
263-021	0.70	Pump 3 (P3), max pressure and fan speed, checking and adjusting
263-051	1.25	Cooling fan hydraulics, funktion check
263-062	3.50	Cooling fan motor, replacing
263-071	0.50	Fan control valve, removing
263-072	0.20	Fan control valve, seal replacement
263-073	0.70	Fan control valve, installing
263-081	2.50	Hydraulic pump P3, removal
263-082	4.50	Hydraulic pump P3, installation
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	0.80	I-ECU, MID 140, changing non-programmed ECU
300-074	0.30	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-002	0.30	Batteries, replacing
311-005	0.40	Battery condition, check
311-005	0.50	Battery condition, check

Op.no.	time (h)	Notes	
36		OTHER ELECTRICAL EQUIPMENT	
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	
366-066	0.70	V-ECU, MID 187, changing pre-programmed ECU	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-008	0.60	Engine rotation speed sensor, replacing	
386-016	1.00	Temperature sensor cooling system, replacing	12241 - 19999
39		MISCELLANEOUS	
390-902	2.00	CareTrack, installing new	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-002	0.50	Transmission oil pressure, checking	11001 - 12390
421-002	0.70	Transmission oil pressure, checking	
421-002	0.50	Transmission oil pressure, checking	12391 - 19999
421-025	2.50	Transmission solenoid, replacing	
421-026	0.60	Transmission pressure sensor, replacing	
421-049	0.10	Transmission, functional check	
421-052	2.00	Seal for front output shaft, replacing	
421-054	1.75	Seal for rear output shaft, replacing	
421-070	6.00	Transmission, removing	
421-072	9.00	Transmission, installing	
421-091	1.50	Lock up valve, replacing	
421-092	0.40	Lock up, function check	
421-094	0.70	Main pressure valve, replacing	
421-095	1.25	Lock up, solenoid valve, replacing	
421-099	0.70	Transmission, calibration	
46		FRONT AXLE; REAR AXLE	
461-037	0.90	Hub reduction, removing	
461-038	1.25	Hub reduction, installing	12569 - 19999
461-038	1.50	Hub reduction, installing	11001 - 12568
461-043	4.50	Hub, replacing seal	
463-002	2.50	Axle, removing	
463-003	3.50	Axle, installing	
463-043	4.50	Hub, replacing seal	
463-045	0.90	Hub reduction, removing	
463-046	1.50	Hub reduction, installing	12569 - 19999
463-046	1.50	Hub reduction, installing	11001 - 12568
468-006	0.20	Differential lock, function check	
468-051	1.25	Differential lock, adjusting	

Op.no.	time (h)		Notes
5		BRAKE	
51		WHEEL BRAKE	
510-003	0.50	Brake discs, measuring wear	
516-005	2.50	Brake disc, replacing	11001 - 12568
516-005	3.00	Brake disc, replacing	12569 - 19999
516-050	2.50	Brake piston, replacing seals	12569 - 19999
517-005	2.50	Brake disc, replacing	11001 - 12568
517-005	3.00	Brake disc, replacing	12569 - 19999
517-050	3.00	Brake piston, replacing seals	12569 - 19999
52		HYDRAULIC BRAKE SYSTEM	
520-001	0.80	Brake system, checking function, hydraulic	
520-002	0.20	Brake system, checking function, retardation	
520-005	0.20	Brake system, check and adjusting pressure in circuit	
520-037	0.30	Brake system, bleeding	
520-111	0.20	Automatic brake, function check	
525-005	0.60	Foot brake valve, removal	
525-006	0.60	Foot brake valve, installation	
525-009	0.50	Foot brake valve removed, reconditioning	
527-001	0.10	Accumulator removed, checking charging pressure	
527-009	1.00	Accumulator, check	
55		PARKING BRAKE	
550-006	2.50	Parking brake, replacing discs and seals	
550-023	0.10	Parking brake, function checking	11001 - 12383
550-023	0.10	Parking brake, function checking	12384 - 19999
6		STEERING	
60		GENERAL	
600-001	0.10	Steering system, function check	
64		STEERING	
645-028	0.20	Steering system, checking and adjusting working pressure	
645-082	1.25	Steering valve, replacing	
645-091	0.80	Shift valve, removing	
645-092	1.25	Shift valve, installing	
647-091	0.40	Secondary steering pump, checking and adjusting working pressure	12582 - 15577 11001 - 12581

Op.no.	time (h)	Notes
66		LEVER STEERING
660-006	0.90	Comfort drive control (CDC), angle sensor, changing
660-007	0.90	Comfort drive control (CDC), solenoid valve, changing
660-009	1.25	Comfort Drive Control (CDC), control valve, removal
660-010	1.50	Comfort drive control (CDC), control valve, installation
660-011	0.20	Lever steering (CDC), functional check
660-012	0.40	Comfort Drive Control, servo pressure, checking
 7		 FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-005	0.30	Frame joint, checking clearance
75		AXLE SUSPENSION
755-003	5.50	Axle suspension, replacing bushes and seals
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-002	0.50	Front wheel, removal
771-003	0.50	Front wheel, installation
771-004	0.50	Rear wheel, removing
771-005	0.50	Rear wheel, installing
 8		 MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-001	2.50	Cab, removing
810-001	2.50	Cab, removing
810-002	2.00	Cab, installing
810-002	2.50	Cab, installing
810-002	3.00	Cab, installing
818-020	1.75	Viscous cab suspension, changing one unit
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.70	Engine hood, removing
821-002	0.80	Engine hood, installing

Op.no.	time (h)		Notes
83		DOORS; HATCH; COVER PLATE, (all)	
834-011	0.20	Door lock, changing	
834-013	0.30	Door lock cylinder, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-002	2.50	Windscreen, replacing	
843-013	1.25	Side window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-010	0.40	Operator's seat, securing	
87		AIR CONDITIONING UNIT	
870-010	0.50	ECC, MID 146, changing pre-programmed ECU	
870-011	0.70	ECC, MID 146, changing non-programmed ECU	
870-012	0.90	Climate unit, removing	12241 - 19999
870-013	1.25	Climate unit, installing	12241 - 19999
873-004	2.50	Heater core, replacing	12241 - 19999
873-004	1.50	Heater core, replacing	
873-006	2.50	Fan motor, replacing	12241 - 19999
873-008	0.70	Heat control valve, replacing	
873-011	0.80	Air mix door actuator, replacing	12241 - 19999
873-019	0.50	ECC control unit, replacing	
873-019	0.90	ECC control unit, replacing	12241 - 19999
874-006	2.00	Compressor, replacing incl draining and filling	
874-010	0.50	Condenser, replacing incl draining and filling	
874-011	1.75	Receiver, replacing incl draining and filling	
874-011	1.75	Receiver, replacing incl draining and filling	
874-012	2.50	Evaporator, replacing incl draining and filling	
874-012	3.00	Evaporator, replacing incl draining and filling	12241 - 19999
874-013	2.00	Expansion valve, replacing incl draining and filling	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-002	3.00	Hydraulic system, bleeding	
900-031	0.80	V2-ECU, MID 249, changing non-programmed ECU	
900-032	0.50	V2-ECU, MID 249, changing pre-programmed ECU	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
912-018	0.20	Back-up valve, checking and adjusting	

Op.no.	time (h)		Notes
912-023	0.70	Shock valve lift function, checking	
912-023	1.00	Shock valve lift function, checking	
912-120	0.20	Lift, functional check	
912-121	0.80	Lift, solenoid valve, changing	
912-122	0.70	Lower, solenoid valve, changing	
912-123	0.90	Tilt in, solenoid valve, changing	
912-124	0.90	Tilt out, solenoid valve, changing	
912-125	0.60	Lift/lower, angle sensor, changing	
912-125	0.60	Lift/lower, angle sensor, changing	
912-126	0.10	Tilt in/out, angle sensor, changing	11004 - 12581 12582 - 15577
912-127	0.20	Tilt, functional check	
912-152	1.50	Central valve, removal	
912-153	2.50	Central valve, installation	
913-003	1.25	Hydraulic pump, checking and adjusting standby pressure	11001 - 12390
913-004	0.90	Hydraulic pump, checking and adjusting max working pressure	
913-033	1.25	Hydraulic pump, checking and adjusting stand-by pressure (LS-line removed)	11001 - 12390
913-034	0.20	Lifting time, checking	
913-034	0.20	Lifting time, checking	
913-050	3.00	Hydraulic pump P2, removal	
913-051	4.50	Hydraulic pump P2, installation	
913-060	2.50	Hydraulic pump P1, removal	
913-061	4.50	Hydraulic pump P1, installation	
914-047	0.20	Servo accumulator, removal	
914-048	0.10	Servo accumulator, installation	
914-049	0.10	Accumulator removed, checking	
914-052	0.40	Accumulator, checking (pressure back-up for servo circuit)	
914-055	0.20	Servo pressure, checking and adjusting	
914-063	0.40	Servo pressure, checking at the spool in control valve	
914-063	0.60	Servo pressure, checking at the spool in control valve	
914-064	0.80	Servo valve, removal	
914-065	1.25	Servo valve, installation	
916-002	1.25	Boom suspension accumulator, check and adjusting	
916-003	0.60	Boom suspension accumulator, reconditioning	
916-006	0.60	Boom suspension system, pressure reduction, safety valve, checking and adjusting	
916-017	0.50	3rd/4th hydraulic function, shock valve, checking	

Op.no.	time (h)	Notes
916-018	0.60	3rd/4th hydraulic function, solenoid valve, changing
916-020	0.20	3rd/4th hydraulic function, checking and adjusting pressure
916-070	0.20	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing
916-072	0.20	Accumulator, boom suspension system, discarding
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-036	0.10	Attachment locking, functional check
99		MISCELLANEOUS
992-002	4.00	Fire suppression system, actions after activation
992-003	4.00	Fire suppression system, actions after manual activation
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
170-006	0.30	VCADS Pro, central systems updating, replace component
172-002	4.00	Warranty inspection 100 hours
172-004	11.00	Warranty inspection 1000 hours
173-002	0.40	Maintenance service, daily
173-004	0.80	Maintenance service, every 50 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	2.50	Maintenance service, every 500 hours
173-012	3.50	Maintenance service, every 1000 hours
173-014	5.50	Maintenance service, every 2000 hours
173-018	10.00	Maintenance service, every 4000 hours
173-022	6.00	Maintenance service, every 6000 hours
173-150	1.75	Maintenance service, fire suppression system
176-001	0.60	Mechanical release of parking brake
19		GENERAL
191-021	0.20	Service position 1
191-021	0.20	Service position 1
191-022	0.20	Service position 2
191-022	0.20	Service position 2
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-009	0.30	VCADS Pro, MID 128, programming E-ECU
200-068	0.80	E-ECU, MID 128, changing non-programmed ECU
200-070	0.40	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
210-002	7.00	Compression test
210-002	7.00	Compression test
210-070	4.50	Engine, removing
210-070	4.50	Engine, removing
210-072	6.50	Engine, installing
210-072	6.00	Engine, installing
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
210-092	0.70	Engine rotation speed sensor (camshaft), replacing
214-012	4.00	Valves, adjusting

Op.no.	time (h)	Notes
214-012	4.00	Valves, adjusting
22		LUBRICATING SYSTEM
221-022	0.20	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-009	0.20	Fuel pump (valves), inspection
233-010	0.90	Fuel pump, inspection
236-002	0.50	Stall speed, checking
237-012	5.50	Unit injector, replacing
237-012	5.50	Unit injector, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
258-030	0.80	Charge air system, inspection
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-008	6.00	Radiator, replacing
263-011	0.70	Pump 3 (P3) standby pressure, checking and adjusting (LS-line removed)
263-021	0.70	Pump 3 (P3), max pressure and fan speed, checking and adjusting
263-051	1.25	Cooling fan hydraulics, funktion check
263-062	3.50	Cooling fan motor, replacing
263-071	0.50	Fan control valve, removing
263-072	0.20	Fan control valve, seal replacement
263-073	0.70	Fan control valve, installing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	0.80	I-ECU, MID 140, changing non-programmed ECU
300-074	0.30	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-002	0.30	Batteries, replacing
311-005	0.40	Battery condition, check
311-005	0.50	Battery condition, check
36		OTHER ELECTRICAL EQUIPMENT
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU

Op.no.	time (h)	Notes	
366-066	0.70	V-ECU, MID 187, changing pre-programmed ECU	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-008	0.60	Engine rotation speed sensor, replacing	
386-016	1.00	Temperature sensor cooling system, replacing	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-002	0.50	Transmission oil pressure, checking	11001 - 12390
421-002	0.50	Transmission oil pressure, checking	12391 - 19999
421-002	0.70	Transmission oil pressure, checking	
421-025	2.50	Transmission solenoid, replacing	
421-026	0.60	Transmission pressure sensor, replacing	
421-049	0.10	Transmission, functional check	
421-052	2.00	Seal for front output shaft, replacing	
421-054	1.75	Seal for rear output shaft, replacing	
421-091	1.50	Lock up valve, replacing	
421-092	0.40	Lock up, function check	
421-094	0.70	Main pressure valve, replacing	
421-095	1.25	Lock up, solenoid valve, replacing	
421-099	0.70	Transmission, calibration	
46		FRONT AXLE; REAR AXLE	
461-037	0.90	Hub reduction, removing	
461-038	1.50	Hub reduction, installing	11001 - 12568
461-038	1.25	Hub reduction, installing	12569 - 19999
461-043	4.50	Hub, replacing seal	
463-002	2.50	Axle, removing	
463-003	3.50	Axle, installing	
463-043	4.50	Hub, replacing seal	
463-045	0.90	Hub reduction, removing	
463-046	1.50	Hub reduction, installing	11001 - 12568
463-046	1.50	Hub reduction, installing	12569 - 19999
468-006	0.20	Differential lock, function check	
468-051	1.25	Differential lock, adjusting	
5		BRAKE	
51		WHEEL BRAKE	
510-003	0.50	Brake discs, measuring wear	
516-005	2.50	Brake disc, replacing	11001 - 12568
516-005	3.00	Brake disc, replacing	12569 - 19999

Op.no.	time (h)		Notes
516-050	2.50	Brake piston, replacing seals	12569 - 19999
517-005	3.00	Brake disc, replacing	12569 - 19999
517-005	2.50	Brake disc, replacing	11001 - 12568
517-050	3.00	Brake piston, replacing seals	12569 - 19999
52		HYDRAULIC BRAKE SYSTEM	
520-001	0.80	Brake system, checking function, hydraulic	
520-002	0.20	Brake system, checking function, retardation	
520-005	0.20	Brake system, check and adjusting pressure in circuit	
520-037	0.30	Brake system, bleeding	
520-111	0.20	Automatic brake, function check	
525-005	0.60	Foot brake valve, removal	
525-006	0.60	Foot brake valve, installation	
525-009	0.50	Foot brake valve removed, reconditioning	
527-001	0.10	Accumulator removed, checking charging pressure	
527-009	1.00	Accumulator, check	
55		PARKING BRAKE	
550-006	2.50	Parking brake, replacing discs and seals	
6		STEERING	
60		GENERAL	
600-001	0.10	Steering system, function check	
64		STEERING	
645-028	0.20	Steering system, checking and adjusting working pressure	
645-082	1.25	Steering valve, replacing	
645-091	0.80	Shift valve, removing	
645-092	1.25	Shift valve, installing	
647-091	0.40	Secondary steering pump, checking and adjusting working pressure	11001 - 15577
66		LEVER STEERING	
660-006	0.90	Comfort drive control (CDC), angle sensor, changing	
660-007	0.90	Comfort drive control (CDC), solenoid valve, changing	
660-009	1.25	Comfort Drive Control (CDC), control valve, removal	
660-010	1.50	Comfort drive control (CDC), control valve, installation	
660-011	0.20	Lever steering (CDC), functional check	

Op.no.	time (h)	Notes
660-012	0.40	Comfort Drive Control, servo pressure, checking
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
75		AXLE SUSPENSION
755-003	5.50	Axle suspension, replacing bushes and seals
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-004	0.50	Rear wheel, removing
771-005	0.50	Rear wheel, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-001	2.50	Cab, removing
810-002	2.00	Cab, installing
810-002	3.00	Cab, installing
818-020	1.75	Viscous cab suspension, changing one unit
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.70	Engine hood, removing
821-002	0.80	Engine hood, installing
83		DOORS; HATCH; COVER PLATE, (all)
834-013	0.30	Door lock cylinder, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	2.50	Windscreen, replacing
843-013	1.25	Side window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-010	0.40	Operator's seat, securing
87		AIR CONDITIONING UNIT
870-010	0.50	ECC, MID 146, changing pre-programmed ECU
870-011	0.70	ECC, MID 146, changing non-programmed ECU
870-012	0.90	Climate unit, removing
870-013	1.25	Climate unit, installing
873-004	2.50	Heater core, replacing
873-004	1.50	Heater core, replacing
873-006	2.50	Fan motor, replacing
873-008	0.70	Heat control valve, replacing

Op.no.	time (h)	Notes
873-011	0.80	Air mix door actuator, replacing
873-019	0.50	ECC control unit, replacing
873-019	0.90	ECC control unit, replacing
874-006	2.00	Compressor, replacing incl draining and filling
874-010	0.50	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	2.50	Evaporator, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	2.00	Expansion valve, replacing incl draining and filling

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

90 GENERAL

900-002	3.00	Hydraulic system, bleeding
900-031	0.80	V2-ECU, MID 249, changing non-programmed ECU
900-032	0.50	V2-ECU, MID 249, changing pre-programmed ECU

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-021	0.70	Shock valve, tilt function, checking
912-023	1.00	Shock valve lift function, checking
912-127	0.20	Tilt, functional check
912-147	4.50	Control valve 2, replacing valve section
912-148	1.25	Control valve 2, removal
912-149	3.00	Control valve 2, installation
912-152	1.50	Central valve, removal
912-153	2.50	Central valve, installation
912-154	3.50	Control valve, removal
912-155	6.00	Control valve, installation
912-159	0.70	Shock valve removed (Control valve 2), checking
912-164	0.10	Shock valves grapple tilt (Control valve 2), checking
912-166	0.20	Shock valve rotator (Control valve 2), checking and adjusting
913-003	1.25	Hydraulic pump, checking and adjusting standby 11001 - 12401 pressure
913-004	0.90	Hydraulic pump, checking and adjusting max working pressure
913-033	1.25	Hydraulic pump, checking and adjusting stand-by 11001 - 12401 pressure (LS-line removed)

Op.no.	time (h)	Notes
913-034	0.30	Lifting time, checking
913-044	1.25	Hydraulic pump P1 and P2, checking function
914-047	0.20	Servo accumulator, removal
914-048	0.10	Servo accumulator, installation
914-049	0.10	Accumulator removed, checking
914-052	0.40	Accumulator, checking (pressure back-up for servo circuit)
914-055	0.20	Servo pressure, checking and adjusting
914-063	0.50	Servo pressure, checking at the spool in control valve
914-066	0.50	Servo pressure, checking at the spool in control valve 2
916-002	1.25	Boom suspension accumulator, check and adjusting
916-003	0.60	Boom suspension accumulator, reconditioning
916-006	0.30	Boom suspension system, pressure reduction, safety valve, checking and adjusting
916-070	0.20	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing
92		MECHANICAL EQUIPMENT/ATTACHMENT
926-035	0.80	Grapple complete, removal at cross member
926-036	1.25	Grapple complete, installing at cross member
926-037	2.50	Lifting arm, removal at tilting arm
926-038	4.00	Lifting arm, installing at tilting arm
99		MISCELLANEOUS
992-002	4.00	Fire suppression system, actions after activation
992-003	4.00	Fire suppression system, actions after manual activation
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
171-001	0.50	Arrival Inspection, according to Inspection Programme
171-002	1.50	Delivery Inspection, according to Inspection Programme
172-002	5.00	Warranty inspection 100 hours
172-004	12.00	Warranty inspection 1000 hours
173-007	1.75	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	9.00	Maintenance service, every 1000 hours
173-014	12.00	Maintenance service, every 2000 hours
173-059	1.00	Engine, changing oil and filter
173-061	1.50	Transmission, changing oil and filter
173-070	2.00	Axles, changing oil
173-074	1.75	Hydraulic oil tank, changing oil and filter
173-075	2.50	Hydraulic oil tank, changing oil and filter incl.cleaning tank

2 ENGINE WITH MOUNTING AND EQUIPMENT

21		ENGINE
210-002	1.75	Compression test
210-070	10.00	Engine, removing
210-071	48.00	Engine removed, general overhaul
210-072	10.00	Engine, installing
211-002	7.00	Cylinder head, replacing gasket
211-018	13.00	Cylinder heads all, replacing gaskets
211-068	4.00	Cylinder heads all removed, decarbonizing and grinding in valves
211-071	0.50	Cylinder head removed, pressure testing each
212-007	4.00	Cylinder block, liners removed, milling of all liner locations
212-011	0.50	Cylinder, cylinder heads removed, measuring wear in all cylinders
213-010	16.00	Cylinder liner and piston, replacing one
213-018	26.00	Cylinder liners and pistons, replacing all
214-012	1.50	Valves, adjusting
214-027	0.50	Inspection cover, fitting new gasket
214-030	16.00	Valves, decarbonizing and grinding
214-036	1.00	Valve covers, fitting new gasket
215-002	6.00	Timing gear cover, fitting new gasket in machine
215-030	7.00	Timing gear, replacing in machine

Op.no.	time (h)	Notes
215-032	8.00	Timing gear case, fitting new gasket in machine
216-003	3.00	Main bearing shells, replacing, removed sump
216-014	3.50	Crankshaft, replacing front oil seal
216-015	7.50	Crankshaft engine removed, replacing
216-018	21.00	Crankshaft, replacing rear oil seal
217-002	9.00	Sump gasket, replacing incl cleaning oil strainer
22		LUBRICATING SYSTEM
221-006	1.00	Oil pressure relief valve, replacing
221-014	10.00	Oil pump, replacing
223-006	2.00	Oil cooler, replacing
23		FUEL SYSTEM
233-001	0.50	Fuel system, bleeding
233-002	0.75	Feed pump, replacing
233-004	0.50	Feed pump, checking feed pressure
233-014	0.50	Fuel filters, replacing
233-097	0.25	Feed pump removed, reconditioning
234-010	5.00	Fuel tank, replacing
236-001	0.50	Idling speed, checking and adjusting
236-002	0.25	Stall speed, checking
236-030	2.00	Injection timing, checking
236-044	1.00	Injection timing, checking
236-073	3.50	Injection pump, replacing incl setting injection timing
237-002	2.00	Injectors, replacing all
237-004	0.75	Injector, replacing one
237-007	0.25	Overflow valve, replacing
237-016	2.00	Injectors, replacing copper sleeve in machine
237-018	0.75	Delivery pipe, replacing one
237-019	1.00	Fuel line, leak-off pipe, replacing
237-080	2.00	Injectors removed, reconditioning all
25		INLET SYSTEM; EXHAUST SYSTEM
251-002	1.00	Induction manifold, replacing gasket
251-004	2.00	Exhaust manifold, replacing gasket
252-019	1.25	Silencer, rubber cushion replacing
252-020	1.50	Silencer, replacing
252-021	0.75	Exhaust pipe, flexible tube, replacing
255-071	1.50	Turbocharger, replacing
255-073	2.00	Turbocharger removed, reconditioning
256-001	0.50	Air cleaner, cleaning filter element
256-002	0.25	Air cleaner, checking prssure drop indicator
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing

Op.no.	time (h)	Notes
256-006	0.75	Preheating coil, replacing
258-002	5.00	Intercooler, replacing
26		COOLING SYSTEM
261-004	1.00	Coolant, changing
261-008	3.50	Radiator, replacing
261-012	1.50	Radiator hose upper, replacing
261-014	2.50	Radiator hoses lower, replacing
261-018	1.00	Expansion tank, replacing
262-002	1.50	Coolant pump, replacing
262-071	1.50	Coolant pump removed, reconditioning
262-098	1.50	Thermostat, replacing
263-004	0.75	Fan motor, checking working pressure
263-006	1.50	Fan hydraulically driven, removing pump
263-007	1.50	Fan hydraulically driven, fitting pump
263-010	0.50	Pump 3 (P3) standby pressure, checking
263-011	1.25	Pump 3 (P3) standby pressure, checking and adjusting (LS-line removed)
263-012	0.50	Fan belt and/or alternator belt, replacing
263-022	1.00	Fan belt and/or alternator-, compressor belt, replacing all belts
27		ENGINE CONTROL
273-021	0.75	Stop magnet, replacing
273-023	0.50	Electrical engine shut down, check and adjusting
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.50	Battery charging capacity, checking
311-002	1.00	Batteries, replacing
311-003	0.50	Main switch, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
321-025	0.50	Alternator, replacing carbon brush kit in machine
322-005	0.50	Charging regulator, replacing
33		STARTING SYSTEM
331-018	1.00	Starter motor, replacing
334-001	0.25	Starter lock, replacing
35		LIGHTING
352-002	0.50	Headlights, adjusting

Op.no.	time (h)	Notes
352-024	0.50	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.25	Rear lamp, replacing one
353-018	0.25	Rear lamp, replacing glass or bulb
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
361-002	0.25	Flasher unit, replacing relay
361-010	0.75	Flasher switch, replacing
361-017	0.25	Flasher lamp, replacing glass or bulb
362-002	0.25	Horn, replacing
362-003	0.50	Reverse alarm, replacing
363-001	0.50	Windscreen wiper rear, replacing motor
363-002	0.75	Windscreen wiper front, replacing motor
363-004	0.25	Windscreen flusher pump, replacing
364-004	0.25	Switch, replacing
364-008	0.25	Brake light switch, replacing
367-052	1.25	V-ECU, replacing
37		CABLE; FUSE; RELAY
372-031	1.00	Relay CU201, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-003	0.50	Transmission oil pressure sensor, replacing
386-004	0.50	Transmission temperature sensor, replacing
386-005	0.50	Transmission, revolution sensor, replacing
386-006	0.50	Engine temperature sensor, replacing
386-007	0.50	Engine oil pressure sensor, replacing
386-011	1.00	Fuel level sender, replacing
386-032	0.75	Sensor unit (differential lock), replacing
386-035	0.75	Induction sensor (lifting cylinder) replacing
386-036	1.00	Induction sensor (tilt cylinder) replacing
387-005	0.50	Information display, replacing
39		MISCELLANEOUS
390-901	1.00	CareTrack Early Basic, installation
393-001	0.50	Voltage converter, replacing
4		POWER TRANSMISSION
41		CLUTCH; TORQUE CONVERTER
414-003	2.00	Converter, replacing (engine removed)
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	1.00	Transmission oil pressure, checking

Op.no.	time (h)	Notes
421-008	3.00	Gear selector valve, replacing
421-009	1.00	Gear selector valve removed, reconditioning
421-018	22.00	Converter, replacing
421-024	1.50	Lubrication oil valve, replacing
421-047	0.75	Gear selector, replacing
421-048	1.50	Gear selector valve, replacing one solenoid
421-052	3.00	Seal for front output shaft, replacing
421-054	3.00	Seal for rear output shaft, replacing
421-068	13.00	Transmission, removing (upwards)
421-069	14.00	Transmission, installing (from above)
421-071	32.00	Transmission removed, reconditioning
45		PROPELLER SHAFT
451-001	0.25	Propeller shaft and intermediate bearing, checking radial clearance
451-002	2.00	Support or intermediate bearing, replacing
451-004	1.50	Propeller shaft, rear, replacing
451-007	1.50	Propeller shaft, in frame joint, replacing
451-010	2.00	Propeller shaft, front, replacing
451-013	1.50	Propeller shaft, removed reconditioning
46		FRONT AXLE; REAR AXLE
460-001	0.75	Axle suspension, measuring axial and radial clearance
460-003	11.00	Axle suspension, replacing bushes/bearings and seals
461-001	7.00	Axle, replacing
461-011	10.00	Centre gear , removing and fitting
461-012	10.00	Centre gear removed, reconditioning
461-013	11.00	Centre gear, axle removed, reconditioning
461-014	1.50	Pinion front, fitting new gasket
461-040	3.00	Hub reduction gear, replacing
461-041	11.00	Hub reduction gear, removed, reconditioning
461-043	4.50	Hub, replacing seal
461-052	0.25	Differential lock front, repacking excl adjusting
461-053	0.75	Differential lock, adjusting engagement
463-001	8.00	Axle, replacing
463-002	4.50	Axle, removing
463-003	4.50	Axle, installing
463-011	11.00	Centre gear, removing and fitting
463-012	10.00	Centre gear removed, reconditioning
463-013	13.00	Centre gear, axle removed, reconditioning
463-014	1.50	Pinion rear, fitting new gasket
463-040	3.00	Hub reduction gear, replacing
463-041	6.50	Hub reduction gear removed, reconditioning

Op.no.	time (h)	Notes
463-043	4.50	Hub, replacing seal
49		MISCELLANEOUS
491-006	3.00	Oil cooler, replacing
5		BRAKE
51		WHEEL BRAKE
516-001	0.50	Brake linings, checking wear
516-004	4.50	Brake discs, replacing on both sides
516-050	3.50	Brake piston, replacing seals
517-001	0.50	Brake linings, checking wear
517-004	4.50	Brake disc, replacing both sides
517-050	3.50	Brake piston, replacing seals
52		HYDRAULIC BRAKE SYSTEM
520-001	0.50	Brake system, checking function, hydraulic
520-002	0.50	Brake system, checking function, retardation
520-005	0.50	Brake system, check and adjusting pressure in circuit
520-037	1.00	Brake system, bleeding
523-041	2.50	Axle oil cooler (front) replacing
525-008	2.00	Foot brake valve, replacing
525-009	2.50	Foot brake valve removed, reconditioning
527-001	0.50	Accumulator removed, checking charging pressure
527-002	0.50	Accumulator, replacing
527-004	2.50	Hydraulic pump, replacing
55		PARKING BRAKE
550-006	3.50	Parking brake, replacing discs and seals
550-008	1.00	Parking brake, replacing control valve
6		STEERING
64		STEERING
641-021	1.50	Adjustable steering column, replacing
645-006	1.75	Steering cylinder, replacing
645-010	6.00	Hydraulic pump, replacing
645-021	1.50	Valve block, replacing
645-028	0.50	Steering system, checking and adjusting working pressure
645-054	2.00	Steering cylinder, replacing bearings
645-060	2.50	Steering cylinder, repacking in machine

Op.no.	time (h)	Notes
645-077	1.75	Steering cylinder removed, reconditioning incl replacing bearings
645-079	2.50	Shift valve, replacing
645-081	1.50	Steering valve removed, reconditioning
645-082	2.00	Steering valve, replacing
647-093	1.00	Auxiliary steering, replacing hydraulic pump
66		LEVER STEERING
660-003	0.50	Lever steering (CDC) adjusting steering speed
660-005	1.25	CDC, checking lever signals
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-005	0.50	Frame joint, checking clearance
741-036	19.00	Frame joint, replacing bearings
75		AXLE SUSPENSION
755-003	7.00	Axle suspension, replacing bushes and seals
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	1.00	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
818-015	1.75	Cab suspension, rubber element replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.75	Door, replacing
831-006	0.75	Door lock, replacing
831-014	0.50	Door, replacing sealing strip
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	5.00	Windscreen, replacing
843-012	5.00	Rear window, replacing
843-013	5.00	Side window, replacing
843-048	5.00	Door window, replacing

Op.no.	time (h)	Notes
85		CAB INTERIOR/UPHOLSTERY
852-006	1.25	Operators seat, air suspensioned, control, replacing
852-007	1.25	Operators seat (air suspensioned), backrest replacing
87		AIR CONDITIONING UNIT
872-001	0.25	Cab filter, replacing
873-004	1.00	Heater core, replacing
873-006	1.00	Fan motor, replacing
873-008	0.75	Heat control valve, replacing
873-009	0.75	Heat control, replacing
874-002	1.00	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	4.00	Compressor, replacing incl draining and filling
874-010	4.00	Condenser, replacing incl draining and filling
874-011	3.00	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	3.50	Expansion valve, replacing incl draining and filling
874-014	0.75	Thermostat, replacing
874-015	1.50	Compressor, replacing shaft seal (compressor removed)
874-016	0.75	Compressor, replacing magnetic clutch (compressor removed)
874-019	0.50	Compressor, replacing valve plate (compressor removed)
874-059	1.25	Evaporator, cleaning
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-001	0.75	Oil return filter, replacing
911-005	2.00	Pump suction hose and pipe, replacing
911-011	3.50	Oil cooler, replacing
911-021	3.00	Feedline from pumps to valve body, pipe replacing
911-038	5.00	Hydraulic oil tank, replacing
912-001	6.00	Control valve, replacing
912-002	4.00	Control valve removed, reconditioning
912-004	0.75	Control valve, low pressure valve, replacing
912-009	0.50	Shock valve, tilt function, checking and adjusting
912-030	2.50	Central valve, replacing

Op.no.	time (h)	Notes
913-003	0.75	Hydraulic pump, checking and adjusting standby pressure
913-004	0.50	Hydraulic pump, checking and adjusting max working pressure
913-010	4.50	Hydraulic pump, replacing
913-011	2.00	Hydraulic pump removed, reconditioning
913-019	4.50	Hydraulic pump, compensator replacing
914-054	1.75	Servo valve, adjusting control
914-055	0.75	Servo pressure, checking and adjusting
914-057	0.50	Servo pressure, check
914-058	3.00	Servo valve, replacing
914-075	2.00	Servo valve removed, reconditioning
915-001	1.00	Servo valve, solenoid replacing
916-001	0.50	Boom suspension system, functional check
916-002	1.75	Boom suspension accumulator, check and adjusting
916-003	1.00	Boom suspension accumulator, reconditioning
916-006	0.50	Boom suspension system, pressure reduction, safety valve, checking and adjusting
916-019	0.50	3rd/4th hydraulic function, pressure check
916-071	2.50	Boom suspension system, changing accumulator
916-073	3.00	Boom suspension system, changing valve
94		UNIT, LOAD HANDLING
945-002	4.50	Lift frame, replacing bearing in lower bucket- or implement attachment
945-003	0.25	Implement attachment, measuring clearance of lower bearing
945-004	4.00	Lift cylinder, replacing
945-005	5.50	Lift cylinder, repacking in machine
945-006	3.00	Lift cylinder removed, repacking
945-007	0.75	Tilt cylinder removed, replacing bearings "E-F"
945-008	5.00	Tilt cylinder, replacing
945-009	8.00	Tilt cylinder, repacking in machine
945-010	4.00	Tilt cylinder removed, repacking
945-012	1.00	Lift cylinder removed, replacing bearings "C-P"
945-013	3.00	Lift cylinder, rear bearing replacing
945-014	4.00	Lift cylinder, front bearing replacing
945-016	6.00	Lift frame, replacing bearing in upper mounting "O"
945-024	4.00	Tilting cylinder, changing bearing 'E-F' in machine
945-054	3.00	Implement attachment, replacing
945-062	2.00	T-link upper, replacing "HIJ"
945-063	0.75	T-link upper removed, replacing bearings "HIJ"
945-064	3.00	T-link, lower, replacing "IB"
945-065	2.00	T-link lower removed, replacing bearing "IB"

Op.no.	time (h)	Notes
945-066	2.00	Tilt link, replacing "GH"
945-067	0.75	Tilt link removed, replacing bearings "GH"
945-068	3.50	Tilt arm, replacing bearing "GDF"
945-069	4.00	Tilt arm, replacing "GDF"
945-070	1.75	Tilt arm removed, replacing bearing "GDF"
99		MISCELLANEOUS
993-021	2.50	Automatic lubrication pump, replacing
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
171-001	0.50	Arrival Inspection, according to Inspection Programme	
171-002	1.50	Delivery Inspection, according to Inspection Programme	
172-002	5.50	Warranty inspection 100 hours	
172-004	11.00	Warranty inspection 1000 hours	
173-002	0.40	Maintenance service, daily	
173-004	0.80	Maintenance service, every 50 hours	
173-007	1.50	Maintenance service, every 250 hours	
173-010	6.00	Maintenance service, every 500 hours	
173-012	8.50	Maintenance service, every 1000 hours	
173-014	9.50	Maintenance service, every 2000 hours	
173-018	13.00	Maintenance service, every 4000 hours	
173-059	1.00	Engine, changing oil and filter	
173-061	1.50	Transmission, changing oil and filter	
173-070	2.00	Axles, changing oil	
173-074	1.75	Hydraulic oil tank, changing oil and filter	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
210-002	7.50	Compression test	2001 - 3566
210-002	7.00	Compression test	4001 - 5999
210-070	4.50	Engine, removing	4001 - 5999
210-072	6.00	Engine, installing	4001 - 5999
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
210-092	0.70	Engine rotation speed sensor (camshaft), replacing	4001 - 5999
211-002	16.00	Cylinder head, replacing gasket	
214-012	4.00	Valves, adjusting	2005 - 3566
214-012	4.00	Valves, adjusting	4008 - 5999
214-036	2.50	Valve covers, fitting new gasket	
215-032	13.00	Timing gear case, fitting new gasket in machine	2001 - 3566
216-018	19.00	Crankshaft, replacing rear oil seal	
217-002	7.50	Sump gasket, replacing incl cleaning oil strainer	
218-001	2.50	Rubber cushion, replacing	

Op.no.	time (h)		Notes
22		LUBRICATING SYSTEM	
221-014	8.50	Oil pump, replacing	
221-022	0.20	Lubrication oil pressure, checking with pressure gauge	4001 - 5999
223-006	3.00	Oil cooler, replacing	
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	4003 - 5999
233-001	0.30	Fuel system, bleeding	
233-002	1.50	Feed pump, replacing	
233-009	0.20	Fuel pump (valves), inspection	
233-010	0.90	Fuel pump, inspection	
233-014	0.75	Fuel filters, replacing	
233-020	0.10	Fuel filter, checking	
233-097	0.75	Feed pump removed, reconditioning	
234-010	4.00	Fuel tank, replacing	
237-012	5.50	Unit injector, replacing	4003 - 5999
25		INLET SYSTEM; EXHAUST SYSTEM	
250-901	2.00	Insulation for exhaust system, installation	
251-002	1.00	Induction manifold, replacing gasket	
251-004	2.00	Exhaust manifold, replacing gasket	
252-020	1.00	Silencer, replacing	
252-021	0.75	Exhaust pipe, flexible tube, replacing	
255-002	0.80	Turbocharger, inspection	
255-071	1.50	Turbocharger, replacing	
256-001	0.50	Air cleaner, cleaning filter element	
256-002	0.25	Air cleaner, checking prssure drop indicator	
256-003	0.25	Air cleaner, primary filter replacing	
256-004	0.25	Air cleaner, secondary filter replacing	
256-006	0.75	Preheating coil, replacing	
258-002	4.00	Intercooler, replacing	2001 - 3566
258-030	0.80	Charge air system, inspection	
26		COOLING SYSTEM	
261-004	1.00	Coolant, changing	
261-008	6.00	Radiator, replacing	4003 - 5999
261-012	1.00	Radiator hose upper, replacing	
261-014	3.00	Radiator hoses lower, replacing	
262-002	2.00	Coolant pump, replacing	
262-071	1.50	Coolant pump removed, reconditioning	
262-098	1.75	Thermostat, replacing	
263-004	0.75	Fan motor, checking working pressure	
263-010	0.50	Pump 3 (P3) standby pressure, checking	

Op.no.	time (h)		Notes
263-011	0.40	Pump 3 (P3) standby pressure, checking and adjusting (LS-line removed)	
263-011	0.10	Pump 3 (P3) standby pressure, checking and adjusting (LS-line removed)	
263-051	1.50	Cooling fan hydraulics, funktion check	
263-062	4.50	Cooling fan motor, replacing	4003 - 5999
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
31		BATTERY	
311-001	0.50	Battery charging capacity, checking	
311-002	1.00	Batteries, replacing	
311-003	0.50	Main switch, replacing	
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.00	Alternator, replacing incl function check	
321-025	0.50	Alternator, replacing carbon brush kit in machine	
322-005	0.50	Charging regulator, replacing	
33		STARTING SYSTEM	
331-018	1.00	Starter motor, replacing	
334-001	0.25	Starter lock, replacing	
35		LIGHTING	
352-002	0.50	Headlights, adjusting	
352-024	0.50	Headlight, complete, changing (high beam 1 pc.) incl. setting	
353-016	0.25	Rear lamp, replacing one	
353-018	0.25	Rear lamp, replacing glass or bulb	
356-056	0.50	Work lighting, replacing one head lamp assy	
36		OTHER ELECTRICAL EQUIPMENT	
361-002	0.25	Flasher unit, replacing relay	
361-010	0.75	Flasher switch, replacing	
361-017	0.25	Flasher lamp, replacing glass or bulb	
362-002	0.25	Horn, replacing	
362-003	0.50	Reverse alarm, replacing	
363-001	0.50	Windscreen wiper rear, replacing motor	
363-002	0.75	Windscreen wiper front, replacing motor	
363-004	0.25	Windscreen flusher pump, replacing	
364-004	0.25	Switch, replacing	
364-008	0.25	Brake light switch, replacing	
367-052	1.25	V-ECU, replacing	

Op.no.	time (h)		Notes
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-003	1.00	Transmission oil pressure sensor, replacing	
386-004	0.50	Transmission temperature sensor, replacing	
386-005	0.50	Transmission, revolution sensor, replacing	
386-006	0.50	Engine temperature sensor, replacing	
386-007	0.50	Engine oil pressure sensor, replacing	
386-008	0.60	Engine rotation speed sensor, replacing	4001 - 5999
386-011	1.00	Fuel level sender, replacing	
39		MISCELLANEOUS	
390-901	1.00	CareTrack Early Basic, installation	
390-902	2.00	CareTrack, installing new	
393-001	0.50	Voltage converter, replacing	
4		POWER TRANSMISSION	
41		CLUTCH; TORQUE CONVERTER	
414-003	2.00	Converter, replacing (engine removed)	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-002	0.70	Transmission oil pressure, checking	2001 - 3017
421-002	0.70	Transmission oil pressure, checking	3018 - 5999
421-008	3.00	Gear selector valve, replacing	
421-009	1.00	Gear selector valve removed, reconditioning	
421-018	19.00	Converter, replacing	
421-024	1.50	Lubrication oil valve, replacing	
421-047	0.75	Gear selector, replacing	
421-048	1.50	Gear selector valve, replacing one solenoid	
421-052	3.00	Seal for front output shaft, replacing	
421-054	3.00	Seal for rear output shaft, replacing	
421-068	10.00	Transmission, removing (upwards)	
421-069	15.00	Transmission, installing (from above)	
421-071	32.00	Transmission removed, reconditioning	
45		PROPELLER SHAFT	
451-001	0.25	Propeller shaft and intermediate bearing, checking radial clearance	
451-002	2.00	Support or intermediate bearing, replacing	
451-004	1.50	Propeller shaft, rear, replacing	
451-007	1.50	Propeller shaft, in frame joint, replacing	
451-010	2.00	Propeller shaft, front, replacing	

Op.no.	time (h)	Notes
46		FRONT AXLE; REAR AXLE
460-001	0.75	Axle suspension, measuring axial and radial clearanse
460-003	11.00	Axle suspension, replacing bushes/bearings and seals
461-001	7.00	Axle, replacing
461-011	10.00	Centre gear , removing and fitting
461-012	10.00	Centre gear removed, reconditioning
461-013	11.00	Centre gear, axle removed, reconditioning
461-040	3.00	Hub reduction gear, replacing
461-041	11.00	Hub reduction gear, removed, reconditioning
461-043	4.50	Hub, replacing seal
463-001	9.00	Axle, replacing
463-002	4.50	Axle, removing
463-003	4.50	Axle, installing
463-011	11.00	Centre gear, removing and fitting
463-012	10.00	Centre gear removed, reconditioning
463-013	13.00	Centre gear, axle removed, reconditioning
463-040	3.00	Hub reduction gear, replacing
463-041	6.50	Hub reduction gear removed, reconditioning
463-043	4.50	Hub, replacing seal
49		MISCELLANEOUS
491-006	4.00	Oil cooler, replacing
5		BRAKE
51		WHEEL BRAKE
516-001	0.50	Brake linings, checking wear
517-001	0.50	Brake linings, checking wear
517-004	5.50	Brake disc, replacing both sides
517-050	3.50	Brake piston, replacing seals
52		HYDRAULIC BRAKE SYSTEM
520-001	0.90	Brake system, checking function, hydraulic
520-002	0.50	Brake system, checking function, retardation
520-005	0.60	Brake system, check and adjusting pressure in circuit
520-037	1.00	Brake system, bleeding
525-009	0.50	Foot brake valve removed, reconditioning
527-002	0.50	Accumulator, replacing

Op.no.	time (h)	Notes
6		STEERING
64		STEERING
645-006	1.75	Steering cylinder, replacing
645-021	1.50	Valve block, replacing
645-028	0.10	Steering system, checking and adjusting working pressure
645-054	2.00	Steering cylinder, replacing bearings
645-060	2.50	Steering cylinder, repacking in machine
645-077	1.75	Steering cylinder removed, reconditioning incl replacing bearings
645-078	1.50	Shift valve removed, reconditioning
645-079	2.50	Shift valve, replacing
645-081	1.50	Steering valve removed, reconditioning
645-082	1.50	Steering valve, replacing
647-093	1.00	Auxiliary steering, replacing hydraulic pump
66		LEVER STEERING
660-003	0.50	Lever steering (CDC) adjusting steering speed
660-005	1.25	CDC, checking lever signals
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-005	0.30	Frame joint, checking clearance
741-036	19.00	Frame joint, replacing bearings
75		AXLE SUSPENSION
755-003	7.00	Axle suspension, replacing bushes and seals
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	1.00	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
818-015	1.75	Cab suspension, rubber element replacing
818-020	1.75	Viscous cab suspension, changing one unit

Op.no.	time (h)		Notes
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-001	0.70	Engine hood, removing	2001 - 3566
821-001	0.70	Engine hood, removing	4001 - 5999
821-001	0.70	Engine hood, removing	4001 - 5999
821-002	0.70	Engine hood, installing	2001 - 3566
821-002	0.80	Engine hood, installing	4001 - 5999
821-002	1.00	Engine hood, installing	4001 - 5999
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	1.75	Door, replacing	
831-006	0.75	Door lock, replacing	
831-014	0.50	Door, replacing sealing strip	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-002	5.00	Windscreen, replacing	
843-012	5.00	Rear window, replacing	
843-013	5.00	Side window, replacing	
843-048	5.00	Door window, replacing	
87		AIR CONDITIONING UNIT	
872-001	0.25	Cab filter, replacing	
873-004	2.00	Heater core, replacing	
873-006	1.25	Fan motor, replacing	
873-008	1.00	Heat control valve, replacing	
873-009	0.75	Heat control, replacing	
874-002	1.00	Refrigerant, draining	
874-003	0.75	Cooling unit, performance test	
874-005	1.00	Refrigerant, filling excl vacuum pumping	
874-006	4.00	Compressor, replacing incl draining and filling	
874-007	0.50	Belt, replacing	
874-010	3.00	Condenser, replacing incl draining and filling	
874-011	3.00	Receiver, replacing incl draining and filling	
874-012	4.00	Evaporator, replacing incl draining and filling	
874-013	3.50	Expansion valve, replacing incl draining and filling	
874-014	0.75	Thermostat, replacing	
874-015	1.50	Compressor, replacing shaft seal (compressor removed)	
874-016	0.75	Compressor, replacing magnetic clutch (compressor removed)	
874-017	0.75	Compressor, replacing magnetic clutch in machine	
874-019	0.50	Compressor, replacing valve plate (compressor removed)	
874-059	1.25	Evaporator, cleaning	

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-002	3.00	Hydraulic system, bleeding
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-001	0.75	Oil return filter, replacing
911-005	2.00	Pump suction hose and pipe, replacing
911-011	4.00	Oil cooler, replacing
911-036	3.00	Hydraulic oil tank, removing
911-037	4.50	Hydraulic oil tank, installing
911-038	8.00	Hydraulic oil tank, replacing
912-001	6.50	Control valve, replacing
912-002	4.00	Control valve removed, reconditioning
912-018	0.20	Back-up valve, checking and adjusting
912-019	0.50	Shock valve removed, checking
912-021	0.30	Shock valve, tilt function, checking
912-023	0.70	Shock valve lift function, checking
912-030	7.50	Central valve, replacing
913-003	0.20	Hydraulic pump, checking and adjusting standby pressure
913-004	0.20	Hydraulic pump, checking and adjusting max working pressure
913-034	0.40	Lifting time, checking
913-037	6.00	Hydraulic pump P1, replacing
913-039	5.00	Hydraulic pump P3, replacing
913-040	6.50	Hydraulic pumps P2 and P3, replacing
914-054	1.75	Servo valve, adjusting control
914-055	0.25	Servo pressure, checking and adjusting
914-058	3.50	Servo valve, replacing
914-075	2.00	Servo valve removed, reconditioning
916-001	0.50	Boom suspension system, functional check
916-002	1.75	Boom suspension accumulator, check and adjusting
916-003	1.00	Boom suspension accumulator, reconditioning
916-006	0.50	Boom suspension system, pressure reduction, safety valve, checking and adjusting
916-019	0.50	3rd/4th hydraulic function, pressure check
916-070	0.10	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing
916-074	0.30	Boom suspension system, test drive with load
916-075	0.70	Boom Suspension System, valve block V1, removing

Op.no.	time (h)	Notes
916-076	1.25	Boom Suspension System, valve block V1, installing
916-077	0.40	Boom Suspension System, valve block V2, removing
916-078	1.25	Boom Suspension System, valve block V2, installing
94		UNIT, LOAD HANDLING
945-002	4.50	Lift frame, replacing bearing in lower bucket- or implement attachment
945-003	0.25	Implement attachment, measuring clearance of lower bearing
945-004	4.00	Lift cylinder, replacing
945-005	4.50	Lift cylinder, repacking in machine
945-006	3.00	Lift cylinder removed, repacking
945-007	0.50	Tilt cylinder removed, replacing bearings "E-F"
945-008	4.00	Tilt cylinder, replacing
945-009	5.00	Tilt cylinder, repacking in machine
945-010	4.00	Tilt cylinder removed, repacking
945-012	0.70	Lift cylinder removed, replacing bearings "C-P"
945-013	3.00	Lift cylinder, rear bearing replacing
945-014	4.00	Lift cylinder, front bearing replacing
945-016	6.00	Lift frame, replacing bearing in upper mounting "O"
945-023	1.25	Tilting cylinder, replacing bearing 'E' in machine
945-024	4.00	Tilting cylinder, changing bearing 'E-F' in machine
945-054	3.00	Implement attachment, replacing
945-062	2.00	T-link upper, replacing "HIJ"
945-063	0.75	T-link upper removed, replacing bearings "HIJ"
945-064	3.00	T-link, lower, replacing "IB"
945-065	2.00	T-link lower removed, replacing bearing "IB"
945-066	2.00	Tilt link, replacing "GH"
945-067	0.75	Tilt link removed, replacing bearings "GH"
945-068	3.50	Tilt arm, replacing bearing "GDF"
945-069	4.00	Tilt arm, replacing "GDF"
945-070	1.75	Tilt arm removed, replacing bearing "GDF"
99		MISCELLANEOUS
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
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1 STANDARD PARTS, SERVICE

17 SERVICE

170-006	0.30	VCADS Pro, central systems updating, replace component
172-002	4.50	Warranty inspection 100 hours
172-004	11.00	Warranty inspection 1000 hours
173-002	0.40	Maintenance service, daily
173-004	0.70	Maintenance service, every 50 hours
173-007	1.00	Maintenance service, every 250 hours
173-010	2.50	Maintenance service, every 500 hours
173-012	4.00	Maintenance service, every 1000 hours
173-014	5.50	Maintenance service, every 2000 hours
173-018	9.50	Maintenance service, every 4000 hours
173-022	6.00	Maintenance service, every 6000 hours
173-150	1.75	Maintenance service, fire suppression system
176-001	0.60	Mechanical release of parking brake

19 GENERAL

191-021	0.20	Service position 1
191-022	0.20	Service position 2

2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-009	0.30	VCADS Pro, MID 128, programming E-ECU
200-068	0.80	E-ECU, MID 128, changing non-programmed ECU
200-070	0.40	E-ECU, MID 128, changing pre-programmed ECU

21 ENGINE

210-002	7.00	Compression test
210-002	7.00	Compression test
210-070	4.50	Engine, removing
210-070	4.50	Engine, removing
210-072	6.50	Engine, installing
210-072	6.00	Engine, installing
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
210-092	0.70	Engine rotation speed sensor (camshaft), replacing
214-012	4.00	Valves, adjusting
214-012	4.00	Valves, adjusting

Op.no.	time (h)	Notes
22		LUBRICATING SYSTEM
221-022	0.20	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-009	0.20	Fuel pump (valves), inspection
233-010	0.90	Fuel pump, inspection
236-002	0.50	Stall speed, checking
237-012	5.50	Unit injector, replacing
237-012	5.50	Unit injector, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
258-030	0.80	Charge air system, inspection
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-008	6.00	Radiator, replacing
263-011	0.70	Pump 3 (P3) standby pressure, checking and adjusting (LS-line removed)
263-021	0.70	Pump 3 (P3), max pressure and fan speed, checking and adjusting
263-051	1.25	Cooling fan hydraulics, funktion check
263-062	3.50	Cooling fan motor, replacing
263-071	0.50	Fan control valve, removing
263-072	0.20	Fan control valve, seal replacement
263-073	0.70	Fan control valve, installing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	0.80	I-ECU, MID 140, changing non-programmed ECU
300-074	0.30	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-002	0.30	Batteries, replacing
311-005	0.40	Battery condition, check
311-005	0.50	Battery condition, check
36		OTHER ELECTRICAL EQUIPMENT
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-066	0.70	V-ECU, MID 187, changing pre-programmed ECU

Op.no.	time (h)	Notes	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-008	0.60	Engine rotation speed sensor, replacing	
386-016	1.00	Temperature sensor cooling system, replacing	6809 - 9999
39		MISCELLANEOUS	
390-902	2.00	CareTrack, installing new	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-002	0.70	Transmission oil pressure, checking	
421-002	0.50	Transmission oil pressure, checking	10000 - 12401
421-002	0.50	Transmission oil pressure, checking	12402 - 99999
421-025	2.50	Transmission solenoid, replacing	
421-026	0.60	Transmission pressure sensor, replacing	
421-049	0.10	Transmission, functional check	
421-070	6.00	Transmission, removing	
421-072	9.00	Transmission, installing	
421-091	1.50	Lock up valve, replacing	
421-092	0.40	Lock up, function check	
421-094	0.70	Main pressure valve, replacing	
421-095	1.25	Lock up, solenoid valve, replacing	
421-099	0.70	Transmission, calibration	
46		FRONT AXLE; REAR AXLE	
461-037	1.25	Hub reduction, removing	
461-038	1.25	Hub reduction, installing	
461-043	5.50	Hub, replacing seal	
463-002	2.00	Axle, removing	
463-003	3.00	Axle, installing	
463-043	4.50	Hub, replacing seal	
463-045	0.90	Hub reduction, removing	
463-046	1.50	Hub reduction, installing	6001 - 7043
463-046	1.50	Hub reduction, installing	7044 - 9999
468-006	0.20	Differential lock, function check	
468-051	1.25	Differential lock, adjusting	
5		BRAKE	
51		WHEEL BRAKE	
510-003	0.50	Brake discs, measuring wear	
516-005	4.00	Brake disc, replacing	7044 - 9999

Op.no.	time (h)		Notes
516-005	3.00	Brake disc, replacing	6001 - 7043
516-050	3.00	Brake piston, replacing seals	7044 - 9999
516-050	3.50	Brake piston, replacing seals	6001 - 7043
517-005	4.00	Brake disc, replacing	7044 - 9999
517-005	3.00	Brake disc, replacing	6001 - 7043
517-050	3.50	Brake piston, replacing seals	6001 - 7043
517-050	3.00	Brake piston, replacing seals	7044 - 9999
52		HYDRAULIC BRAKE SYSTEM	
520-001	0.80	Brake system, checking function, hydraulic	
520-002	0.20	Brake system, checking function, retardation	
520-005	0.20	Brake system, check and adjusting pressure in circuit	
520-037	0.30	Brake system, bleeding	
520-111	0.20	Automatic brake, function check	
525-005	0.60	Foot brake valve, removal	
525-006	0.60	Foot brake valve, installation	
525-009	0.50	Foot brake valve removed, reconditioning	
527-001	0.10	Accumulator removed, checking charging pressure	
527-009	1.00	Accumulator, check	
55		PARKING BRAKE	
550-006	2.50	Parking brake, replacing discs and seals	
550-023	0.10	Parking brake, function checking	6001 - 6929
550-023	0.10	Parking brake, function checking	6930 - 9999
6		STEERING	
60		GENERAL	
600-001	0.10	Steering system, function check	
64		STEERING	
645-028	0.20	Steering system, checking and adjusting working pressure	
645-082	1.25	Steering valve, replacing	
645-091	0.80	Shift valve, removing	
645-092	1.25	Shift valve, installing	
647-091	0.40	Secondary steering pump, checking and adjusting working pressure	6001 - 7050 7051 - 8025 8026 - 8485
66		LEVER STEERING	
660-006	0.90	Comfort drive control (CDC), angle sensor, changing	

Op.no.	time (h)	Notes
660-007	0.90	Comfort drive control (CDC), solenoid valve, changing
660-009	1.25	Comfort Drive Control (CDC), control valve, removal
660-010	1.50	Comfort drive control (CDC), control valve, installation
660-011	0.20	Lever steering (CDC), functional check
660-012	0.40	Comfort Drive Control, servo pressure, checking
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-005	0.30	Frame joint, checking clearance
75		AXLE SUSPENSION
755-003	7.00	Axle suspension, replacing bushes and seals
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-002	0.70	Front wheel, removal
771-003	0.60	Front wheel, installation
771-004	0.70	Rear wheel, removing
771-005	0.60	Rear wheel, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	2.50	Cab, removing
810-001	1.75	Cab, removing
810-001	2.50	Cab, removing
810-002	2.00	Cab, installing
810-002	3.00	Cab, installing
810-002	2.50	Cab, installing
818-020	1.75	Viscous cab suspension, changing one unit
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.70	Engine hood, removing
821-002	0.80	Engine hood, installing
83		DOORS; HATCH; COVER PLATE, (all)
834-011	0.20	Door lock, changing
834-013	0.30	Door lock cylinder, replacing

Op.no.	time (h)		Notes
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-002	2.50	Windscreen, replacing	
843-013	1.25	Side window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-010	0.40	Operator's seat, securing	
87		AIR CONDITIONING UNIT	
870-010	0.50	ECC, MID 146, changing pre-programmed ECU	
870-011	0.70	ECC, MID 146, changing non-programmed ECU	
870-012	0.90	Climate unit, removing	6809 - 9999
870-013	1.25	Climate unit, installing	6809 - 9999
873-004	2.50	Heater core, replacing	6809 - 9999
873-004	1.50	Heater core, replacing	
873-006	2.50	Fan motor, replacing	6809 - 9999
873-008	0.70	Heat control valve, replacing	
873-011	0.80	Air mix door actuator, replacing	6809 - 9999
873-019	0.50	ECC control unit, replacing	
873-019	0.90	ECC control unit, replacing	6809 - 9999
874-006	2.00	Compressor, replacing incl draining and filling	
874-010	0.50	Condenser, replacing incl draining and filling	
874-011	1.75	Receiver, replacing incl draining and filling	
874-011	1.75	Receiver, replacing incl draining and filling	
874-012	2.50	Evaporator, replacing incl draining and filling	
874-012	3.00	Evaporator, replacing incl draining and filling	6809 - 9999
874-013	2.00	Expansion valve, replacing incl draining and filling	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-002	3.00	Hydraulic system, bleeding	
900-031	0.80	V2-ECU, MID 249, changing non-programmed ECU	
900-032	0.50	V2-ECU, MID 249, changing pre-programmed ECU	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
912-018	0.20	Back-up valve, checking and adjusting	
912-023	0.70	Shock valve lift function, checking	
912-023	1.00	Shock valve lift function, checking	
912-120	0.20	Lift, functional check	

Op.no.	time (h)		Notes
912-121	0.80	Lift, solenoid valve, changing	
912-122	0.70	Lower, solenoid valve, changing	
912-123	0.90	Tilt in, solenoid valve, changing	
912-124	0.90	Tilt out, solenoid valve, changing	
912-125	0.60	Lift/lower, angle sensor, changing	
912-125	0.60	Lift/lower, angle sensor, changing	6005 - 7050 8026 - 8485 7051 - 8025
912-126	0.10	Tilt in/out, angle sensor, changing	6005 - 7050 8026 - 8485
912-127	0.20	Tilt, functional check	
912-152	1.50	Central valve, removal	
912-153	2.50	Central valve, installation	
913-003	1.25	Hydraulic pump, checking and adjusting standby pressure	6001 - 6929
913-004	0.90	Hydraulic pump, checking and adjusting max working pressure	
913-033	1.25	Hydraulic pump, checking and adjusting stand-by pressure (LS-line removed)	6001 - 6389
913-034	0.20	Lifting time, checking	
913-034	0.20	Lifting time, checking	
913-064	0.60	Hydraulic pump, power control checking	
913-069	0.60	Hydraulic power control valve, replacing	
914-047	0.20	Servo accumulator, removal	
914-048	0.10	Servo accumulator, installation	
914-049	0.10	Accumulator removed, checking	
914-052	0.40	Accumulator, checking (pressure back-up for servo circuit)	
914-055	0.20	Servo pressure, checking and adjusting	
914-063	0.40	Servo pressure, checking at the spool in control valve	
914-063	0.60	Servo pressure, checking at the spool in control valve	
914-064	0.80	Servo valve, removal	
914-065	1.25	Servo valve, installation	
916-002	1.25	Boom suspension accumulator, check and adjusting	
916-003	0.60	Boom suspension accumulator, reconditioning	
916-006	0.60	Boom suspension system, pressure reduction, safety valve, checking and adjusting	
916-017	0.50	3rd/4th hydraulic function, shock valve, checking	
916-018	0.60	3rd/4th hydraulic function, solenoid valve, changing	
916-020	0.20	3rd/4th hydraulic function, checking and adjusting pressure	

Op.no.	time (h)	Notes
916-070	0.20	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing
916-072	0.20	Accumulator, boom suspension system, discarding
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-036	0.10	Attachment locking, functional check
99		MISCELLANEOUS
992-002	4.00	Fire suppression system, actions after activation
992-003	4.00	Fire suppression system, actions after manual activation
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
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1 STANDARD PARTS, SERVICE

17 SERVICE

171-002	4.00	Delivery Inspection, according to Inspection Programme
172-002	4.00	Warranty inspection 100 hours
172-004	7.00	Warranty inspection 1000 hours
173-002	0.25	Maintenance service, daily
173-004	2.00	Maintenance service, every 50 hours
173-006	2.00	Maintenance service, every 100 hours
173-007	2.00	Maintenance service, every 250 hours
173-010	3.00	Maintenance service, every 500 hours
173-012	2.00	Maintenance service, every 1000 hours
173-014	4.00	Maintenance service, every 2000 hours
173-016	2.00	Maintenance service, every 3000 hours
173-018	3.00	Maintenance service, every 4000 hours
173-059	0.75	Engine, changing oil and filter
173-061	1.00	Transmission, changing oil and filter
173-070	1.50	Axles, changing oil
173-074	1.50	Hydraulic oil tank, changing oil and filter
173-075	2.00	Hydraulic oil tank, changing oil and filter incl.cleaning tank
173-085	0.75	Brake system, changing oil/fluid and filter

2 ENGINE WITH MOUNTING AND EQUIPMENT

21 ENGINE

210-070	3.50	Engine, removing
210-071	28.00	Engine removed, general overhaul
210-072	4.50	Engine, installing
211-002	6.00	Cylinder head, replacing gasket
211-008	1.00	Cylinder heads all, retightening incl. adjusting valves
211-068	3.00	Cylinder heads all removed, decarbonizing and grinding in valves
211-080	2.00	Cylinder heads all, removing
211-082	5.00	Cylinder heads all, fitting
212-011	0.50	Cylinder, cylinder heads removed, measuring wear in all cylinders
213-010	14.00	Cylinder liner and piston, replacing one
213-018	22.00	Cylinder liners and pistons, replacing all
214-012	1.00	Valves, adjusting
214-021	0.50	Valve cover, fitting new gasket each
214-030	9.00	Valves, decarbonizing and grinding

Op.no.	time (h)	Notes
214-093	2.00	Rocker arm mechanism removed, reconditioning
215-002	3.00	Timing gear cover, fitting new gasket in machine
215-030	4.00	Timing gear, replacing in machine
215-032	5.00	Timing gear case, fitting new gasket in machine
216-014	3.00	Crankshaft, replacing front oil seal
216-015	6.00	Crankshaft engine removed, replacing
216-018	9.00	Crankshaft, replacing rear oil seal
216-034	6.00	Big- end bearing shells, replacing in machine
216-040	8.50	Flywheel housing and sump gasket, replacing
217-002	4.00	Sump gasket, replacing incl cleaning oil strainer
22		LUBRICATING SYSTEM
221-006	4.00	Oil pressure relief valve, replacing
221-014	5.50	Oil pump, replacing
222-011	0.50	Oil filter, replacing
223-006	0.75	Oil cooler, replacing
23		FUEL SYSTEM
233-001	0.50	Fuel system, bleeding
233-002	0.50	Feed pump, replacing
233-004	0.50	Feed pump, checking feed pressure
233-014	0.50	Fuel filters, replacing
233-097	0.75	Feed pump removed, reconditioning
234-010	1.50	Fuel tank, replacing
236-001	0.75	Idling speed, checking and adjusting
236-030	2.00	Injection timing, checking
236-044	1.50	Injection timing, checking
236-070	1.00	Injection pump, removing
236-072	2.00	Injection pump, fitting incl setting injection timing
237-002	1.50	Injectors, replacing all
237-004	0.50	Injector, replacing one
237-018	0.50	Delivery pipe, replacing one
25		INLET SYSTEM; EXHAUST SYSTEM
251-002	0.75	Induction manifold, replacing gasket
251-004	1.00	Exhaust manifold, replacing gasket
252-020	1.00	Silencer, replacing
26		COOLING SYSTEM
261-001	0.50	Radiator, pressure testing
261-002	0.25	Coolant, checking anti-freeze resistance
261-004	0.75	Coolant, changing
261-008	3.00	Radiator, replacing
262-098	0.75	Thermostat, replacing
263-013	0.25	Fan belt and/or alternator belt, checking and adjusting tension

Op.no.	time (h)	Notes
27		ENGINE CONTROL
273-022	0.75	Stop cable control, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.25	Battery charging capacity, checking
311-002	0.75	Batteries, replacing
311-006	0.50	Earth lead to battery, replacing
311-008	1.00	Starter motor lead to battery, replacing
311-014	1.50	Batteries, checking charging incl cleaning and painting battery boxes
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.75	Alternator, replacing incl function check
321-074	1.00	Charging test in machine (with measuring instrument)
33		STARTING SYSTEM
331-018	0.75	Starter motor, replacing
35		LIGHTING
352-002	0.50	Headlights, adjusting
352-008	0.50	Headlamp reflector and/or glass, replacing one incl adjusting
352-024	0.50	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.50	Rear lamp, replacing one
353-018	0.25	Rear lamp, replacing glass or bulb
356-056	0.50	Work lighting, replacing one head lamp assy
356-057	0.50	Work lighting, replacing one insert
36		OTHER ELECTRICAL EQUIPMENT
361-002	0.25	Flasher unit, replacing relay
361-010	0.75	Flasher switch, replacing
361-017	0.25	Flasher lamp, replacing glass or bulb
362-002	0.25	Horn, replacing
362-016	0.75	Horn switch, replacing
363-002	0.75	Windscreen wiper front, replacing motor
363-003	0.75	Windscreen wiper, replacing switch
364-004	0.50	Switch, replacing
364-008	0.50	Brake light switch, replacing
364-024	0.75	Main switch, replacing

Op.no.	time (h)	Notes
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.75	Transmission oil pressure, checking
421-004	1.25	Oil pump, replacing
421-008	2.00	Gear selector valve, replacing
421-009	2.00	Gear selector valve removed, reconditioning
421-018	10.00	Converter, replacing
421-052	2.00	Seal for front output shaft, replacing
421-054	2.00	Seal for rear output shaft, replacing
421-070	6.00	Transmission, removing
421-071	16.00	Transmission removed, reconditioning
421-072	7.00	Transmission, installing
43		GEARBOX,
434-002	0.00	Dropbox, replacing seal for front output shaft
45		PROPELLER SHAFT
451-001	0.25	Propeller shaft and intermediate bearing, checking radial clearance
451-002	2.00	Support or intermediate bearing, replacing
451-004	1.00	Propeller shaft, rear, replacing
451-007	1.00	Propeller shaft, in frame joint, replacing
451-010	1.00	Propeller shaft, front, replacing
451-013	1.00	Propeller shaft, removed reconditioning
46		FRONT AXLE; REAR AXLE
460-002	1.50	Axle suspension, adjusting axial clearance
460-003	2.00	Axle suspension, replacing bushes/bearings and seals
461-014	1.75	Pinion front, fitting new gasket
461-042	4.00	Hub reduction gear, reconditioning one side
463-005	0.75	Drive shaft, replacing one side
463-014	2.00	Pinion rear, fitting new gasket
463-043	3.50	Hub, replacing seal
464-012	6.00	Centre gear removed, reconditioning
5		BRAKE
51		WHEEL BRAKE
511-002	3.00	Brake disc, replacing one
511-004	1.25	Brake pads, replacing on both sides of axle
511-045	1.25	Brake calliper, replacing one
511-081	1.50	Brake calliper removed, reconditioning
512-002	3.00	Brake disc, replacing one

Op.no.	time (h)	Notes
512-004	1.50	Brake pads, replacing on both sides of axle
512-045	1.50	Brake caliper, replacing one
512-081	1.00	Brake caliper, removed, reconditioning
52		HYDRAULIC BRAKE SYSTEM
520-001	0.50	Brake system, checking function, hydraulic
520-030	0.25	Brake system, replacing return oil filter
520-031	0.50	Brake system, replacing oil filter element
520-037	0.75	Brake system, bleeding
525-002	2.00	Unloading valve, removing and fitting
525-008	1.00	Foot brake valve, replacing
525-009	0.75	Foot brake valve removed, reconditioning
527-001	0.50	Accumulator removed, checking charging pressure
527-002	0.50	Accumulator, replacing
527-003	2.00	Accumulators, checking in machine
527-004	1.50	Hydraulic pump, replacing
527-005	2.00	Hydraulic pump, reconditioning incl removing and fitting
527-006	2.00	Hydraulic pump, replacing seal for pump shaft
55		PARKING BRAKE
550-002	0.25	Parking brake, adjusting
6		STEERING
64		STEERING
645-003	0.25	Steering system working pressure, checking
645-006	1.00	Steering cylinder, replacing
645-010	2.50	Hydraulic pump, replacing
645-020	1.50	Steering system, checking and adjusting shock and anti-cavitation-valve
645-021	2.00	Valve block, replacing
645-028	0.50	Steering system, checking and adjusting working pressure
645-073	1.00	Hydraulic pump removed, reconditioning
645-077	1.25	Steering cylinder removed, reconditioning incl replacing bearings
645-081	1.50	Steering valve removed, reconditioning
645-082	2.00	Steering valve, replacing

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-036	12.00	Frame joint, replacing bearings
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.50	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
818-015	1.00	Cab suspension, rubber element replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.50	Door, replacing
831-014	0.50	Door, replacing sealing strip
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	3.00	Windscreen, replacing
843-012	1.00	Rear window, replacing
843-013	0.75	Side window, replacing
843-048	0.75	Door window, replacing
87		AIR CONDITIONING UNIT
872-001	0.25	Cab filter, replacing
873-004	1.00	Heater core, replacing
873-006	1.50	Fan motor, replacing
873-008	0.50	Heat control valve, replacing
873-010	2.00	Fanmotor, replacing resistor
874-003	0.75	Cooling unit, performance test
874-005	1.50	Refrigerant, filling excl vacuum pumping
874-006	4.00	Compressor, replacing incl draining and filling
874-007	0.75	Belt, replacing
874-011	3.00	Receiver, replacing incl draining and filling
874-014	1.00	Thermostat, replacing
874-015	0.75	Compressor, replacing shaft seal (compressor removed)
874-016	0.75	Compressor, replacing magnetic clutch (compressor removed)
874-017	1.50	Compressor, replacing magnetic clutch in machine
874-019	0.50	Compressor, replacing valve plate (compressor removed)

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-001	0.75	Oil return filter, replacing
911-002	0.25	Ventilation filter, replacing
911-038	4.00	Hydraulic oil tank, replacing
912-001	3.00	Control valve, replacing
912-002	1.25	Control valve removed, reconditioning
912-003	3.50	Control valve, repacking all slides
912-009	1.00	Shock valve, tilt function, checking and adjusting
912-019	1.25	Shock valve removed, checking
913-010	3.50	Hydraulic pump, replacing
913-011	1.50	Hydraulic pump removed, reconditioning
913-012	0.00	Hydraulic pump, replacing cartridge
913-024	1.50	Pump, installation
94		UNIT, LOAD HANDLING
945-002	2.50	Lift frame, replacing bearing in lower bucket- or implement attachment
945-003	0.25	Implement attachment, measuring clearance of lower bearing
945-004	1.50	Lift cylinder, replacing
945-005	2.50	Lift cylinder, repacking in machine
945-011	1.00	Implement attachment, replacing hydraulic cylinder
945-056	0.75	Implement attachment, repacking removed hydraulic cylinder

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
172-002	5.50	Warranty inspection 100 hours
172-004	13.00	Warranty inspection 1000 hours
173-007	1.75	Maintenance service, every 250 hours
173-010	4.00	Maintenance service, every 500 hours
173-012	8.00	Maintenance service, every 1000 hours
173-014	13.00	Maintenance service, every 2000 hours
173-059	1.25	Engine, changing oil and filter
173-061	2.00	Transmission, changing oil and filter
173-070	3.00	Axles, changing oil
173-074	2.00	Hydraulic oil tank, changing oil and filter
173-075	3.00	Hydraulic oil tank, changing oil and filter incl.cleaning tank
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	10.00	Engine, removing
210-071	55.00	Engine removed, general overhaul
210-072	10.00	Engine, installing
217-002	8.00	Sump gasket, replacing incl cleaning oil strainer
23		FUEL SYSTEM
233-001	0.50	Fuel system, bleeding
234-010	5.00	Fuel tank, replacing
236-001	0.25	Idling speed, checking and adjusting
236-002	0.25	Stall speed, checking
236-011	2.50	Fuel pump element, replacing
236-030	2.00	Injection timing, checking
236-031	1.25	Injection timing adjuster, checking
236-044	1.00	Injection timing, checking
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	2.00	Silencer, replacing
252-021	1.00	Exhaust pipe, flexible tube, replacing
26		COOLING SYSTEM
261-008	8.00	Radiator, replacing
262-002	3.50	Coolant pump, replacing
262-003	2.00	Coolant pump (intercooler), replacing
263-001	1.50	Fan motor, removing
263-003	1.50	Fan motor, installing

Op.no.	time (h)	Notes
263-004	0.50	Fan motor, checking working pressure
263-005	1.00	Fan motor, adjusting working pressure
263-006	2.00	Fan hydraulically driven, removing pump
263-007	2.00	Fan hydraulically driven, fitting pump
263-010	0.75	Pump 3 (P3) standby pressure, checking
263-011	1.00	Pump 3 (P3) standby pressure, checking and adjusting (LS-line removed)
263-016	0.75	Maximum fan speed, checking
27		ENGINE CONTROL
273-021	0.75	Stop magnet, replacing
273-023	0.25	Electrical engine shut down, check and adjusting
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.50	Battery charging capacity, checking
311-002	1.00	Batteries, replacing
311-003	0.50	Main switch, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
321-025	0.50	Alternator, replacing carbon brush kit in machine
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
334-001	0.25	Starter lock, replacing
35		LIGHTING
352-002	0.50	Headlights, adjusting
352-024	0.75	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.50	Rear lamp, replacing one
353-018	0.25	Rear lamp, replacing glass or bulb
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
361-002	0.25	Flasher unit, replacing relay
361-010	0.75	Flasher switch, replacing
361-017	0.25	Flasher lamp, replacing glass or bulb
362-002	0.25	Horn, replacing
363-001	0.50	Windscreen wiper rear, replacing motor
363-002	1.00	Windscreen wiper front, replacing motor
363-004	0.25	Windscreen flusher pump, replacing

Op.no.	time (h)	Notes
364-004	0.25	Switch, replacing
364-008	0.25	Brake light switch, replacing
367-052	1.25	V-ECU, replacing
37		CABLE; FUSE; RELAY
372-031	1.00	Relay CU201, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-011	1.00	Fuel level sender, replacing
387-005	0.50	Information display, replacing
39		MISCELLANEOUS
390-901	1.00	CareTrack Early Basic, installation
393-001	0.50	Voltage converter, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.70	Transmission oil pressure, checking
421-018	24.00	Converter, replacing
421-047	0.75	Gear selector, replacing
421-068	20.00	Transmission, removing (upwards)
421-069	22.00	Transmission, installing (from above)
421-070	18.00	Transmission, removing
421-071	36.00	Transmission removed, reconditioning
421-072	18.00	Transmission, installing
421-076	5.50	Clutch disk, replacing in machine, 1:st and 2:nd
421-080	3.00	Clutch discs, forward - reverse or 3rd - 4th, changing in machine
421-081	8.00	Clutch drum bearings, 1st or 2nd, changing in machine
421-082	6.00	Clutch drum bearings, forward, reverse, 3rd or 4th, changing in machine
45		PROPELLER SHAFT
451-001	0.25	Propeller shaft and intermediate bearing, checking radial clearance
451-002	2.00	Support or intermediate bearing, replacing
451-003	4.00	Midmont bearing removed, reconditioning
451-004	0.75	Propeller shaft, rear, replacing
451-007	0.75	Propeller shaft, in frame joint, replacing
451-010	0.75	Propeller shaft, front, replacing
46		FRONT AXLE; REAR AXLE
461-005	4.00	Drive shaft, replacing one side
461-006	15.00	Spindle, replacing one side

Op.no.	time (h)	Notes
461-007	9.00	Hub bearing, replacing
461-011	16.00	Centre gear , removing and fitting
461-012	10.00	Centre gear removed, reconditioning
461-041	11.00	Hub reduction gear, removed, reconditioning
461-043	9.00	Hub, replacing seal
463-001	13.00	Axle, replacing
463-002	6.00	Axle, removing
463-003	7.00	Axle, installing
463-005	4.00	Drive shaft, replacing one side
463-006	15.00	Spindle, replacing one side
463-007	9.00	Hub bearing, replacing
463-011	18.00	Centre gear, removing and fitting
463-013	11.00	Centre gear, axle removed, reconditioning
463-041	11.00	Hub reduction gear removed, reconditioning
463-043	9.00	Hub, replacing seal
49		MISCELLANEOUS
491-006	3.00	Oil cooler, replacing

5**BRAKE****51****WHEEL BRAKE**

516-001	0.50	Brake linings, checking wear
516-004	12.00	Brake discs, replacing on both sides
516-005	8.00	Brake disc, replacing
517-001	0.50	Brake linings, checking wear
517-004	12.00	Brake disc, replacing both sides
517-005	8.00	Brake disc, replacing

52**HYDRAULIC BRAKE SYSTEM**

520-001	0.50	Brake system, checking function, hydraulic
520-002	0.50	Brake system, checking function, retardation
520-005	0.50	Brake system, check and adjusting pressure in circuit
523-001	2.50	Oil pump, replacing
527-002	2.50	Accumulator, replacing
527-004	4.00	Hydraulic pump, replacing
527-009	1.00	Accumulator, check
527-010	1.50	Accumulator, check and adjusting
527-011	1.00	Accumulator, reconditioning

55**PARKING BRAKE**

550-002	0.75	Parking brake, adjusting
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Op.no.	time (h)	Notes
6		STEERING
64		STEERING
641-021	2.00	Adjustable steering column, replacing
645-006	5.00	Steering cylinder, replacing
645-010	12.00	Hydraulic pump, replacing
645-028	1.00	Steering system, checking and adjusting working pressure
645-054	4.00	Steering cylinder, replacing bearings
645-077	4.00	Steering cylinder removed, reconditioning incl replacing bearings
645-081	1.50	Steering valve removed, reconditioning
645-082	2.00	Steering valve, replacing
645-089	4.00	Flow amplifier, replacing
645-090	3.00	Flow amplifier removed, reconditioning
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-005	0.75	Frame joint, checking clearance
741-036	27.00	Frame joint, replacing bearings
75		AXLE SUSPENSION
755-001	1.00	Axle suspension, measuring axial and radial clearanse
755-002	2.50	Axle suspension, adjusting axial clearance
755-003	25.00	Axle suspension, replacing bushes and seals
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	2.50	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	5.00	Cab, removing
810-002	6.00	Cab, installing
818-015	2.00	Cab suspension, rubber element replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.75	Door, replacing
831-006	0.75	Door lock, replacing
831-014	0.50	Door, replacing sealing strip

Op.no.	time (h)	Notes
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	5.00	Windscreen, replacing
843-012	5.00	Rear window, replacing
843-013	5.00	Side window, replacing
843-048	5.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-007	1.25	Operators seat (air suspensioned), backrest replacing
86		PROTECTIVE EQUIPMENT, not specified in a special group
860-001	3.00	Roll-over bar ROPS, fitting
860-002	2.50	Roll-over bar ROPS, removing
87		AIR CONDITIONING UNIT
872-001	0.25	Cab filter, replacing
873-004	1.00	Heater core, replacing
873-006	1.00	Fan motor, replacing
873-008	0.75	Heat control valve, replacing
873-009	0.75	Heat control, replacing
874-002	1.00	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	4.00	Compressor, replacing incl draining and filling
874-010	4.00	Condenser, replacing incl draining and filling
874-011	3.00	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	3.50	Expansion valve, replacing incl draining and filling
874-014	0.75	Thermostat, replacing
874-015	1.50	Compressor, replacing shaft seal (compressor removed)
874-016	0.75	Compressor, replacing magnetic clutch (compressor removed)
874-017	0.75	Compressor, replacing magnetic clutch in machine
874-019	0.50	Compressor, replacing valve plate (compressor removed)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-001	1.00	Oil return filter, replacing
911-005	4.00	Pump suction hose and pipe, replacing

Op.no.	time (h)	Notes
911-038	8.00	Hydraulic oil tank, replacing
912-001	5.00	Control valve, replacing
912-009	1.00	Shock valve, tilt function, checking and adjusting
912-019	0.50	Shock valve removed, checking
913-003	1.50	Hydraulic pump, checking and adjusting standby pressure
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-010	11.00	Hydraulic pump, replacing
914-054	1.75	Servo valve, adjusting control
914-055	0.60	Servo pressure, checking and adjusting
914-057	0.25	Servo pressure, check
916-001	0.75	Boom suspension system, functional check
916-002	1.75	Boom suspension accumulator, check and adjusting
916-003	1.00	Boom suspension accumulator, reconditioning
94		UNIT, LOAD HANDLING
945-002	7.00	Lift frame, replacing bearing in lower bucket- or implement attachment
945-004	5.50	Lift cylinder, replacing
945-005	6.50	Lift cylinder, repacking in machine
945-008	4.00	Tilt cylinder, replacing
945-009	6.00	Tilt cylinder, repacking in machine
945-013	7.00	Lift cylinder, rear bearing replacing
945-014	3.00	Lift cylinder, front bearing replacing
945-024	5.50	Tilting cylinder, changing bearing 'E-F' in machine
945-066	2.50	Tilt link, replacing "GH"
945-067	1.75	Tilt link removed, replacing bearings "GH"
945-068	5.00	Tilt arm, replacing bearing "GDF"
99		MISCELLANEOUS
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
170-005	0.25	Start of VCADS Pro computer and reading machine data
172-002	6.50	Warranty inspection 100 hours
172-004	16.00	Warranty inspection 1000 hours
173-002	0.40	Maintenance service, daily
173-004	0.90	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	6.00	Maintenance service, every 500 hours
173-012	10.00	Maintenance service, every 1000 hours
173-014	14.00	Maintenance service, every 2000 hours
173-059	1.25	Engine, changing oil and filter
173-061	2.00	Transmission, changing oil and filter
173-070	3.00	Axles, changing oil
173-074	2.00	Hydraulic oil tank, changing oil and filter
173-075	3.00	Hydraulic oil tank, changing oil and filter incl.cleaning tank
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	8.00	Engine, removing
210-072	9.00	Engine, installing
214-012	6.00	Valves, adjusting
217-002	7.00	Sump gasket, replacing incl cleaning oil strainer
218-001	2.00	Rubber cushion, replacing
22		LUBRICATING SYSTEM
221-021	0.50	Lubrication oil pressure, checking
223-006	3.00	Oil cooler, replacing
23		FUEL SYSTEM
233-001	0.50	Fuel system, bleeding
233-004	0.50	Feed pump, checking feed pressure
234-010	4.00	Fuel tank, replacing
236-002	0.25	Stall speed, checking
236-030	2.00	Injection timing, checking
236-031	0.40	Injection timing adjuster, checking
236-044	1.00	Injection timing, checking
236-073	5.00	Injection pump, replacing incl setting injection timing

Op.no.	time (h)	Notes
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	2.00	Silencer, replacing
255-002	0.80	Turbocharger, inspection
258-002	11.00	Intercooler, replacing
26		COOLING SYSTEM
261-008	12.00	Radiator, replacing
262-002	3.50	Coolant pump, replacing
262-004	2.00	Coolant pump, supplementary, replacing
263-004	0.50	Fan motor, checking working pressure
263-005	1.00	Fan motor, adjusting working pressure
263-006	2.00	Fan hydraulically driven, removing pump
263-007	2.00	Fan hydraulically driven, fitting pump
263-010	0.40	Pump 3 (P3) standby pressure, checking
263-011	1.00	Pump 3 (P3) standby pressure, checking and adjusting (LS-line removed)
263-014	1.00	Fan hydraulically driven, checking standby pressure and maxpressure
263-015	1.25	Fan hydraulically driven, adjusting standby pressure and maxpressure
263-016	0.30	Maximum fan speed, checking
263-020	0.30	Pump 3 (P3) max pressure, checking
263-051	1.50	Cooling fan hydraulics, funktion check
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.50	Battery charging capacity, checking
311-002	1.00	Batteries, replacing
311-003	0.50	Main switch, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
321-025	0.50	Alternator, replacing carbon brush kit in machine
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
334-001	0.25	Starter lock, replacing
35		LIGHTING
352-002	0.50	Headlights, adjusting
352-024	0.75	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.50	Rear lamp, replacing one

Op.no.	time (h)	Notes
353-018	0.25	Rear lamp, replacing glass or bulb
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
361-002	0.25	Flasher unit, replacing relay
361-010	0.75	Flasher switch, replacing
361-017	0.25	Flasher lamp, replacing glass or bulb
362-002	0.50	Horn, replacing
363-001	0.50	Windscreen wiper rear, replacing motor
363-002	1.00	Windscreen wiper front, replacing motor
363-004	0.25	Windscreen flusher pump, replacing
364-004	0.25	Switch, replacing
364-008	0.25	Brake light switch, replacing
367-052	1.25	V-ECU, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-011	0.75	Fuel level sender, replacing
387-005	0.50	Information display, replacing
39		MISCELLANEOUS
390-901	1.00	CareTrack Early Basic, installation
390-902	2.00	CareTrack, installing new
393-001	0.50	Voltage converter, replacing
4		POWER TRANSMISSION
41		CLUTCH; TORQUE CONVERTER
414-030	3.50	Transmission pump, changing
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.70	Transmission oil pressure, checking
421-008	4.00	Gear selector valve, replacing
421-018	24.00	Converter, replacing
421-047	0.75	Gear selector, replacing
421-068	20.00	Transmission, removing (upwards)
421-069	22.00	Transmission, installing (from above)
421-070	15.00	Transmission, removing
421-071	36.00	Transmission removed, reconditioning
421-072	16.00	Transmission, installing
421-076	5.50	Clutch disk, replacing in machine, 1:st and 2:nd
421-080	3.00	Clutch discs, forward - reverse or 3rd - 4th, changing in machine
421-081	8.00	Clutch drum bearings, 1st or 2nd, changing in machine

Op.no.	time (h)	Notes
421-082	6.00	Clutch drum bearings, forward, reverse, 3rd or 4th, changing in machine
45		PROPELLER SHAFT
451-001	0.25	Propeller shaft and intermediate bearing, checking radial clearance
451-002	2.00	Support or intermediate bearing, replacing
451-003	4.00	Midmont bearing removed, reconditioning
451-004	0.75	Propeller shaft, rear, replacing
451-007	0.75	Propeller shaft, in frame joint, replacing
451-010	0.75	Propeller shaft, front, replacing
46		FRONT AXLE; REAR AXLE
461-006	15.00	Spindle, replacing one side
461-007	9.00	Hub bearing, replacing
461-011	16.00	Centre gear , removing and fitting
461-012	10.00	Centre gear removed, reconditioning
461-041	11.00	Hub reduction gear, removed, reconditioning
461-043	9.00	Hub, replacing seal
463-001	13.00	Axle, replacing
463-002	6.00	Axle, removing
463-003	7.00	Axle, installing
463-006	15.00	Spindle, replacing one side
463-007	9.00	Hub bearing, replacing
463-011	18.00	Centre gear, removing and fitting
463-012	10.00	Centre gear removed, reconditioning
463-041	11.00	Hub reduction gear removed, reconditioning
463-043	9.00	Hub, replacing seal
49		MISCELLANEOUS
491-006	2.50	Oil cooler, replacing
5		BRAKE
51		WHEEL BRAKE
516-001	0.50	Brake linings, checking wear
516-004	12.00	Brake discs, replacing on both sides
516-005	8.00	Brake disc, replacing
516-050	10.00	Brake piston, replacing seals
517-001	0.50	Brake linings, checking wear
517-004	12.00	Brake disc, replacing both sides
517-005	8.00	Brake disc, replacing
517-050	10.00	Brake piston, replacing seals

Op.no.	time (h)	Notes
52		HYDRAULIC BRAKE SYSTEM
520-001	0.60	Brake system, checking function, hydraulic
520-002	0.50	Brake system, checking function, retardation
520-005	0.20	Brake system, check and adjusting pressure in circuit
520-037	1.25	Brake system, bleeding
523-001	2.50	Oil pump, replacing
525-009	0.50	Foot brake valve removed, reconditioning
527-002	1.50	Accumulator, replacing
527-009	1.00	Accumulator, check
527-010	1.50	Accumulator, check and adjusting
527-011	1.00	Accumulator, reconditioning
55		PARKING BRAKE
550-002	0.75	Parking brake, adjusting
6		STEERING
64		STEERING
641-021	2.00	Adjustable steering column, replacing
645-006	5.00	Steering cylinder, replacing
645-028	1.00	Steering system, checking and adjusting working pressure
645-054	4.00	Steering cylinder, replacing bearings
645-077	4.00	Steering cylinder removed, reconditioning incl replacing bearings
645-081	1.50	Steering valve removed, reconditioning
645-082	2.00	Steering valve, replacing
645-089	4.00	Flow amplifier, replacing
645-090	3.00	Flow amplifier removed, reconditioning
66		LEVER STEERING
660-003	0.50	Lever steering (CDC) adjusting steering speed
660-004	0.50	CDC, checking and adjusting control valve
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-005	0.75	Frame joint, checking clearance
741-036	27.00	Frame joint, replacing bearings

Op.no.	time (h)	Notes
75		AXLE SUSPENSION
755-001	1.00	Axle suspension, measuring axial and radial clearanse
755-002	2.50	Axle suspension, adjusting axial clearance
755-003	25.00	Axle suspension, replacing bushes and seals
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	2.50	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	5.00	Cab, removing
810-002	6.00	Cab, installing
818-015	2.00	Cab suspension, rubber element replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	2.00	Engine hood, removing
821-002	2.50	Engine hood, installing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.75	Door, replacing
831-006	0.75	Door lock, replacing
831-014	0.50	Door, replacing sealing strip
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	5.00	Windscreen, replacing
843-012	5.00	Rear window, replacing
843-013	5.00	Side window, replacing
843-048	5.00	Door window, replacing
86		PROTECTIVE EQUIPMENT, not specified in a special group
860-001	3.00	Roll-over bar ROPS, fitting
860-002	2.50	Roll-over bar ROPS, removing
87		AIR CONDITIONING UNIT
872-001	0.25	Cab filter, replacing
873-004	2.00	Heater core, replacing
873-006	1.25	Fan motor, replacing
873-008	1.00	Heat control valve, replacing
873-009	0.75	Heat control, replacing
874-002	1.00	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping

Op.no.	time (h)	Notes
874-006	4.00	Compressor, replacing incl draining and filling
874-011	3.00	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	3.50	Expansion valve, replacing incl draining and filling
874-014	0.75	Thermostat, replacing
874-015	1.50	Compressor, replacing shaft seal (compressor removed)
874-016	0.75	Compressor, replacing magnetic clutch (compressor removed)
874-019	0.50	Compressor, replacing valve plate (compressor removed)

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

90 GENERAL

900-002	3.00	Hydraulic system, bleeding
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91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-001	1.00	Oil return filter, replacing
911-011	3.50	Oil cooler, replacing
911-036	3.00	Hydraulic oil tank, removing
911-038	8.00	Hydraulic oil tank, replacing
912-001	6.00	Control valve, replacing
912-007	0.40	Anti-cavitation valve, lowering function, checking
912-018	0.20	Back-up valve, checking and adjusting
912-019	0.50	Shock valve removed, checking
912-021	0.40	Shock valve, tilt function, checking
912-023	1.75	Shock valve lift function, checking
913-003	0.70	Hydraulic pump, checking and adjusting standby pressure
913-004	0.70	Hydraulic pump, checking and adjusting max working pressure
913-033	0.80	Hydraulic pump, checking and adjusting stand-by pressure (LS-line removed)
913-034	0.40	Lifting time, checking
913-037	12.00	Hydraulic pump P1, replacing
913-040	12.00	Hydraulic pumps P2 and P3, replacing
914-054	1.75	Servo valve, adjusting control
914-055	0.60	Servo pressure, checking and adjusting
914-057	0.25	Servo pressure, check
914-058	3.50	Servo valve, replacing
916-001	0.75	Boom suspension system, functional check
916-002	1.75	Boom suspension accumulator, check and adjusting

Op.no.	time (h)	Notes
916-003	1.00	Boom suspension accumulator, reconditioning
916-006	0.50	Boom suspension system, pressure reduction, safety valve, checking and adjusting
916-016	0.25	3rd hydraulic function, max pressure, checking and adjusting
916-070	0.20	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing
916-074	0.30	Boom suspension system, test drive with load
94		UNIT, LOAD HANDLING
945-002	7.00	Lift frame, replacing bearing in lower bucket- or implement attachment
945-004	5.50	Lift cylinder, replacing
945-005	6.50	Lift cylinder, repacking in machine
945-008	4.00	Tilt cylinder, replacing
945-009	6.00	Tilt cylinder, repacking in machine
945-013	7.00	Lift cylinder, rear bearing replacing
945-014	3.00	Lift cylinder, front bearing replacing
945-024	5.50	Tilting cylinder, changing bearing 'E-F' in machine
945-066	2.50	Tilt link, replacing "GH"
945-067	1.75	Tilt link removed, replacing bearings "GH"
945-068	5.00	Tilt arm, replacing bearing "GDF"
99		MISCELLANEOUS
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
171-001	0.50	Arrival Inspection, according to Inspection Programme	
171-002	1.50	Delivery Inspection, according to Inspection Programme	
172-002	6.00	Warranty inspection 100 hours	
172-004	8.00	Warranty inspection 1000 hours	
173-010	3.00	Maintenance service, every 500 hours	
173-012	8.00	Maintenance service, every 1000 hours	
173-059	1.00	Engine, changing oil and filter	
173-061	1.00	Transmission, changing oil and filter	
173-068	1.00	Rear axle, changing oil	
173-069	1.00	Front axle, changing oil	
173-070	2.00	Axles, changing oil	
173-074	1.50	Hydraulic oil tank, changing oil and filter	
173-075	2.50	Hydraulic oil tank, changing oil and filter incl.cleaning tank	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
210-002	2.00	Compression test	
210-070	5.50	Engine, removing	
210-071	34.00	Engine removed, general overhaul	
210-072	6.00	Engine, installing	
211-002	4.00	Cylinder head, replacing gasket	
211-068	1.50	Cylinder heads all removed, decarbonizing and grinding in valves	
211-071	1.00	Cylinder head removed, pressure testing each	
212-011	0.75	Cylinder, cylinder heads removed, measuring wear in all cylinders	
214-012	0.10	Valves, adjusting	1941001 - 1943000
214-012	0.10	Valves, adjusting	1951001 - 1953000
214-012	1.00	Valves, adjusting	1943001 - 1949999
214-012	1.00	Valves, adjusting	1953001 - 1959999
215-002	0.75	Timing gear cover, fitting new gasket in machine	
216-014	2.00	Crankshaft, replacing front oil seal	
216-018	4.00	Crankshaft, replacing rear oil seal	
217-002	1.00	Sump gasket, replacing incl cleaning oil strainer	
22		LUBRICATING SYSTEM	
221-006	1.00	Oil pressure relief valve, replacing	

Op.no.	time (h)	Notes
223-006	1.75	Oil cooler, replacing
23		FUEL SYSTEM
233-001	0.50	Fuel system, bleeding
233-002	0.50	Feed pump, replacing
233-004	0.25	Feed pump, checking feed pressure
233-014	0.25	Fuel filters, replacing
234-010	6.00	Fuel tank, replacing
236-001	0.50	Idling speed, checking and adjusting
236-070	1.00	Injection pump, removing
237-002	1.50	Injectors, replacing all
237-004	1.00	Injector, replacing one
237-080	1.00	Injectors removed, reconditioning all
25		INLET SYSTEM; EXHAUST SYSTEM
251-002	1.00	Induction manifold, replacing gasket
251-004	2.00	Exhaust manifold, replacing gasket
252-020	1.00	Silencer, replacing
252-021	0.50	Exhaust pipe, flexible tube, replacing
255-071	2.00	Turbocharger, replacing
255-073	2.00	Turbocharger removed, reconditioning
256-002	0.50	Air cleaner, checking prssure drop indicator
256-006	1.50	Preheating coil, replacing
26		COOLING SYSTEM
261-004	1.00	Coolant, changing
261-008	4.00	Radiator, replacing
261-012	0.50	Radiator hose upper, replacing
261-014	1.00	Radiator hoses lower, replacing
262-002	1.25	Coolant pump, replacing
262-098	0.80	Thermostat, replacing
263-012	0.50	Fan belt and/or alternator belt, replacing
263-013	0.25	Fan belt and/or alternator belt, checking and adjusting tension
263-022	0.50	Fan belt and/or alternator-, compressor belt, replacing all belts
27		ENGINE CONTROL
273-021	0.50	Stop magnet, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.50	Batteries, replacing

Op.no.	time (h)	Notes
311-003	0.25	Main switch, replacing
311-006	0.25	Earth lead to battery, replacing
311-008	0.50	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.50	Alternator, replacing incl function check
321-025	1.00	Alternator, replacing carbon brush kit in machine
322-005	0.50	Charging regulator, replacing
33		STARTING SYSTEM
331-018	1.00	Starter motor, replacing
334-001	0.80	Starter lock, replacing
35		LIGHTING
352-024	0.50	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.50	Rear lamp, replacing one
353-018	0.25	Rear lamp, replacing glass or bulb
356-056	0.50	Work lighting, replacing one head lamp assy
356-057	0.50	Work lighting, replacing one insert
36		OTHER ELECTRICAL EQUIPMENT
360-001	0.80	Combination control (by steering wheel), changing
361-010	0.50	Flasher switch, replacing
361-017	0.25	Flasher lamp, replacing glass or bulb
362-002	0.25	Horn, replacing
362-003	0.25	Reverse alarm, replacing
362-016	0.50	Horn switch, replacing
363-001	1.00	Windscreen wiper rear, replacing motor
363-002	1.00	Windscreen wiper front, replacing motor
363-003	0.75	Windscreen wiper, replacing switch
363-004	0.25	Windscreen flusher pump, replacing
364-004	0.75	Switch, replacing
364-008	0.25	Brake light switch, replacing
367-020	1.50	ECU, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	0.25	Engine temperature sensor, replacing
386-007	0.25	Engine oil pressure sensor, replacing
386-011	1.00	Fuel level sender, replacing
386-013	0.50	Hydrostatic system temperature sensor, replacing
386-014	0.50	Hydrostatic system oil pressure sensor, replacing
387-003	0.80	Key pad, replacing
387-005	1.00	Information display, replacing
387-021	0.90	Instrument panel (display unit), replacing

Op.no.	time (h)	Notes
39		MISCELLANEOUS
390-902	1.75	CareTrack, installing new
393-001	1.00	Voltage converter, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-047	0.75	Gear selector, replacing
43		GEARBOX,
434-002	1.50	Dropbox, replacing seal for front output shaft
434-016	4.00	Dropbox, oil pump, replacing
434-029	2.00	Dropbox removed, reconditioning
434-073	2.00	Dropbox, installing
434-074	3.00	Dropbox, removing
44		HYDROSTATIC DRIVE
441-001	1.00	Hydrostatic system, checking oil pressure
441-002	1.50	Hydraulic motor, replacing
442-001	6.00	Hydraulic pump, replacing
45		PROPELLER SHAFT
451-010	1.00	Propeller shaft, front, replacing
46		FRONT AXLE; REAR AXLE
461-001	3.00	Axle, replacing
461-005	1.50	Drive shaft, replacing one side
461-013	2.00	Centre gear, axle removed, reconditioning
461-014	1.00	Pinion front, fitting new gasket
461-040	2.00	Hub reduction gear, replacing
461-041	3.00	Hub reduction gear, removed, reconditioning
461-043	1.50	Hub, replacing seal
463-001	6.00	Axle, replacing
463-002	2.50	Axle, removing
463-003	3.50	Axle, installing
463-005	1.50	Drive shaft, replacing one side
463-013	4.00	Centre gear, axle removed, reconditioning
463-040	2.00	Hub reduction gear, replacing
463-041	3.00	Hub reduction gear removed, reconditioning
463-043	1.50	Hub, replacing seal

Op.no.	time (h)		Notes
5		BRAKE	
51		WHEEL BRAKE	
511-002	1.25	Brake disc, replacing one	1951001 - 1959999
511-002	0.80	Brake disc, replacing one	1941001 - 1949999
511-081	0.90	Brake calliper removed, reconditioning	1951001 - 1959999
511-081	0.90	Brake calliper removed, reconditioning	
516-001	0.25	Brake linings, checking wear	
516-004	1.00	Brake discs, replacing on both sides	
516-050	1.50	Brake piston, replacing seals	
517-001	0.50	Brake linings, checking wear	
517-004	4.00	Brake disc, replacing both sides	
517-050	2.50	Brake piston, replacing seals	
52		HYDRAULIC BRAKE SYSTEM	
520-001	0.70	Brake system, checking function, hydraulic	
520-002	0.50	Brake system, checking function, retardation	
520-004	0.50	Brake system, adjusting unloading pressure	
520-005	0.50	Brake system, check and adjusting pressure in circuit	
520-038	0.50	Brake system, front, bleeding	
525-008	1.00	Foot brake valve, replacing	
527-003	0.40	Accumulators, checking in machine	
55		PARKING BRAKE	
550-002	0.50	Parking brake, adjusting	
6		STEERING	
64		STEERING	
641-021	1.50	Adjustable steering column, replacing	
645-006	1.50	Steering cylinder, replacing	
645-028	0.70	Steering system, checking and adjusting working pressure	
645-054	2.00	Steering cylinder, replacing bearings	
645-060	2.50	Steering cylinder, repacking in machine	
645-077	1.00	Steering cylinder removed, reconditioning incl replacing bearings	
645-082	1.50	Steering valve, replacing	
647-093	1.50	Auxiliary steering, replacing hydraulic pump	

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-005	0.50	Frame joint, checking clearance
741-036	15.00	Frame joint, replacing bearings
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.50	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
818-015	2.50	Cab suspension, rubber element replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	1.50	Engine hood, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.00	Door, replacing
831-006	0.50	Door lock, replacing
831-014	0.50	Door, replacing sealing strip
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	3.00	Windscreen, replacing
843-012	3.00	Rear window, replacing
843-013	3.00	Side window, replacing
843-048	2.50	Door window, replacing
87		AIR CONDITIONING UNIT
873-004	2.00	Heater core, replacing
873-006	2.50	Fan motor, replacing
873-008	0.75	Heat control valve, replacing
873-009	1.00	Heat control, replacing
874-002	1.00	Refrigerant, draining
874-003	1.00	Cooling unit, performance test
874-005	1.75	Refrigerant, filling excl vacuum pumping
874-006	3.00	Compressor, replacing incl draining and filling
874-007	0.75	Belt, replacing
874-010	2.00	Condenser, replacing incl draining and filling
874-011	2.50	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	2.50	Expansion valve, replacing incl draining and filling
874-014	1.00	Thermostat, replacing

Op.no.	time (h)	Notes
874-015	1.00	Compressor, replacing shaft seal (compressor removed)
874-016	1.00	Compressor, replacing magnetic clutch (compressor removed)
874-017	1.00	Compressor, replacing magnetic clutch in machine
874-019	0.50	Compressor, replacing valve plate (compressor removed)

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-005	1.00	Pump suction hose and pipe, replacing
911-011	4.00	Oil cooler, replacing
911-038	6.50	Hydraulic oil tank, replacing
912-001	2.00	Control valve, replacing
912-002	4.00	Control valve removed, reconditioning
912-009	1.00	Shock valve, tilt function, checking and adjusting
912-011	1.00	Shock valve lift function, adjusting
913-003	0.50	Hydraulic pump, checking and adjusting standby pressure
913-004	0.50	Hydraulic pump, checking and adjusting max working pressure
913-010	2.00	Hydraulic pump, replacing
914-054	0.50	Servo valve, adjusting control
914-055	0.50	Servo pressure, checking and adjusting
914-058	1.50	Servo valve, replacing
916-001	0.50	Boom suspension system, functional check
916-002	0.75	Boom suspension accumulator, check and adjusting
916-004	1.50	Boom suspension system, checking closing pressure
916-005	1.00	Boom suspension system, checking opening pressure

94 UNIT, LOAD HANDLING

945-002	3.00	Lift frame, replacing bearing in lower bucket- or implement attachment
945-004	1.00	Lift cylinder, replacing
945-006	1.50	Lift cylinder removed, repacking
945-008	1.00	Tilt cylinder, replacing
945-009	1.50	Tilt cylinder, repacking in machine
945-011	1.50	Implemental attachment, replacing hydraulic cylinder

Op.no.	time (h)	Notes
945-012	1.00	Lift cylinder removed, replacing bearings "C-P"
945-016	6.00	Lift frame, replacing bearing in upper mounting "O"
945-024	1.00	Tilting cylinder, changing bearing 'E-F' in machine
945-054	3.00	Implement attachment, replacing
945-056	1.50	Implement attachment, repacking removed hydraulic cylinder
945-063	1.50	T-link upper removed, replacing bearings "HIJ"
945-064	1.00	T-link, lower, replacing "IB"
945-066	1.00	Tilt link, replacing "GH"
945-067	1.00	Tilt link removed, replacing bearings "GH"
945-069	1.00	Tilt arm, replacing "GDF"
945-070	1.00	Tilt arm removed, replacing bearing "GDF"

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
171-001	0.50	Arrival Inspection, according to Inspection Programme
171-002	1.50	Delivery Inspection, according to Inspection Programme
172-002	4.50	Warranty inspection 100 hours
172-004	11.00	Warranty inspection 1000 hours
173-007	1.75	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	7.50	Maintenance service, every 1000 hours
173-014	12.00	Maintenance service, every 2000 hours
173-059	1.00	Engine, changing oil and filter
173-061	1.00	Transmission, changing oil and filter
173-070	2.00	Axles, changing oil
173-074	1.75	Hydraulic oil tank, changing oil and filter
173-075	2.50	Hydraulic oil tank, changing oil and filter incl.cleaning tank

2 ENGINE WITH MOUNTING AND EQUIPMENT

21		ENGINE
210-002	1.75	Compression test
210-070	8.00	Engine, removing
210-071	30.00	Engine removed, general overhaul
210-072	9.00	Engine, installing
211-002	7.00	Cylinder head, replacing gasket
211-068	3.00	Cylinder heads all removed, decarbonizing and grinding in valves
211-071	1.00	Cylinder head removed, pressure testing each
212-011	0.50	Cylinder, cylinder heads removed, measuring wear in all cylinders
213-010	14.00	Cylinder liner and piston, replacing one
213-018	18.00	Cylinder liners and pistons, replacing all
214-012	1.50	Valves, adjusting
215-002	3.00	Timing gear cover, fitting new gasket in machine
215-030	4.00	Timing gear, replacing in machine
215-032	5.00	Timing gear case, fitting new gasket in machine
216-014	2.00	Crankshaft, replacing front oil seal
216-018	8.00	Crankshaft, replacing rear oil seal
217-002	3.50	Sump gasket, replacing incl cleaning oil strainer

Op.no.	time (h)	Notes
22		LUBRICATING SYSTEM
221-006	4.00	Oil pressure relief valve, replacing
223-006	1.00	Oil cooler, replacing
23		FUEL SYSTEM
233-001	0.50	Fuel system, bleeding
233-002	0.50	Feed pump, replacing
233-004	0.50	Feed pump, checking feed pressure
233-014	0.50	Fuel filters, replacing
233-097	0.50	Feed pump removed, reconditioning
234-010	3.00	Fuel tank, replacing
236-001	0.75	Idling speed, checking and adjusting
236-030	1.50	Injection timing, checking
236-070	3.00	Injection pump, removing
236-072	4.50	Injection pump, fitting incl setting injection timing
236-073	3.00	Injection pump, replacing incl setting injection timing
236-075	6.50	Injection pump, replacing incl setting injection timing (low emission)
237-002	2.00	Injectors, replacing all
237-004	0.50	Injector, replacing one
237-018	0.50	Delivery pipe, replacing one
237-080	1.50	Injectors removed, reconditioning all
25		INLET SYSTEM; EXHAUST SYSTEM
251-002	1.25	Induction manifold, replacing gasket
251-004	1.50	Exhaust manifold, replacing gasket
252-020	1.25	Silencer, replacing
252-021	0.50	Exhaust pipe, flexible tube, replacing
255-071	1.25	Turbocharger, replacing
255-073	2.00	Turbocharger removed, reconditioning
256-002	0.50	Air cleaner, checking prssure drop indicator
256-006	0.50	Preheating coil, replacing
26		COOLING SYSTEM
261-004	1.00	Coolant, changing
261-008	1.50	Radiator, replacing
261-012	1.00	Radiator hose upper, replacing
261-014	1.00	Radiator hoses lower, replacing
262-002	2.00	Coolant pump, replacing
262-071	1.00	Coolant pump removed, reconditioning
262-098	1.25	Thermostat, replacing
263-001	1.75	Fan motor, removing
263-003	2.00	Fan motor, installing
263-012	0.50	Fan belt and/or alternator belt, replacing

Op.no.	time (h)	Notes
263-013	0.25	Fan belt and/or alternator belt, checking and adjusting tension
263-022	1.00	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	1.00	Batteries, replacing
311-003	0.50	Main switch, replacing
311-006	0.50	Earth lead to battery, replacing
311-008	1.00	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
321-025	0.50	Alternator, replacing carbon brush kit in machine
322-005	0.50	Charging regulator, replacing
33		STARTING SYSTEM
331-018	0.75	Starter motor, replacing
334-001	0.50	Starter lock, replacing
35		LIGHTING
352-024	0.50	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.50	Rear lamp, replacing one
353-018	0.25	Rear lamp, replacing glass or bulb
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
361-002	0.50	Flasher unit, replacing relay
361-010	0.75	Flasher switch, replacing
361-017	0.50	Flasher lamp, replacing glass or bulb
362-002	0.25	Horn, replacing
362-003	0.50	Reverse alarm, replacing
363-001	0.50	Windscreen wiper rear, replacing motor
363-002	0.75	Windscreen wiper front, replacing motor
363-004	0.25	Windscreen flusher pump, replacing
364-004	0.25	Switch, replacing
364-008	0.25	Brake light switch, replacing
367-052	1.25	V-ECU, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-003	0.50	Transmission oil pressure sensor, replacing
386-006	0.50	Engine temperature sensor, replacing

Op.no.	time (h)	Notes
386-007	0.50	Engine oil pressure sensor, replacing
386-011	1.25	Fuel level sender, replacing
386-013	0.50	Hydrostatic system temperature sensor, replacing
386-014	0.50	Hydrostatic system oil pressure sensor, replacing
386-016	1.00	Temperature sensor cooling system, replacing
387-005	0.50	Information display, replacing
39		MISCELLANEOUS
390-901	1.00	CareTrack Early Basic, installation
393-001	0.50	Voltage converter, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.75	Transmission oil pressure, checking
421-004	1.00	Oil pump, replacing
421-025	2.00	Transmission solenoid, replacing
421-047	0.75	Gear selector, replacing
421-052	1.00	Seal for front output shaft, replacing
421-054	1.00	Seal for rear output shaft, replacing
421-070	7.00	Transmission, removing
421-071	12.00	Transmission removed, reconditioning
421-072	7.50	Transmission, installing
44		HYDROSTATIC DRIVE
441-001	1.00	Hydrostatic system, checking oil pressure
441-002	6.00	Hydraulic motor, replacing
441-004	1.50	Hydraulic engine solenoid valve, replacing
442-001	7.00	Hydraulic pump, replacing
442-003	1.50	Hydraulic pump solenoid replacing
45		PROPELLER SHAFT
451-002	1.50	Support or intermediate bearing, replacing
451-004	1.00	Propeller shaft, rear, replacing
451-007	1.00	Propeller shaft, in frame joint, replacing
451-010	1.00	Propeller shaft, front, replacing
451-013	1.00	Propeller shaft, removed reconditioning
46		FRONT AXLE; REAR AXLE
461-001	4.00	Axle, replacing
461-002	1.75	Axle, removing
461-003	2.00	Axle, installing
461-005	1.50	Drive shaft, replacing one side
461-013	15.00	Centre gear, axle removed, reconditioning
461-014	1.75	Pinion front, fitting new gasket

Op.no.	time (h)	Notes
461-040	1.00	Hub reduction gear, replacing
461-041	4.50	Hub reduction gear, removed, reconditioning
461-042	3.50	Hub reduction gear, reconditioning one side
461-043	2.50	Hub, replacing seal
463-001	8.00	Axle, replacing
463-002	3.50	Axle, removing
463-003	4.50	Axle, installing
463-005	3.50	Drive shaft, replacing one side
463-013	15.00	Centre gear, axle removed, reconditioning
463-014	1.50	Pinion rear, fitting new gasket
463-040	1.00	Hub reduction gear, replacing
463-041	4.50	Hub reduction gear removed, reconditioning
463-042	3.50	Hub reduction gear, reconditioning one side
463-043	2.50	Hub, replacing seal
49		MISCELLANEOUS
491-006	2.50	Oil cooler, replacing

5**BRAKE****51****WHEEL BRAKE**

516-001	0.50	Brake linings, checking wear
516-004	3.00	Brake discs, replacing on both sides
516-050	1.50	Brake piston, replacing seals
517-001	0.50	Brake linings, checking wear
517-004	3.00	Brake disc, replacing both sides
517-050	1.50	Brake piston, replacing seals

52**HYDRAULIC BRAKE SYSTEM**

520-001	0.75	Brake system, checking function, hydraulic
520-002	0.50	Brake system, checking function, retardation
520-004	0.50	Brake system, adjusting unloading pressure
520-005	0.50	Brake system, check and adjusting pressure in circuit
520-037	1.00	Brake system, bleeding
525-008	1.75	Foot brake valve, replacing
525-009	1.25	Foot brake valve removed, reconditioning
527-003	1.25	Accumulators, checking in machine

55**PARKING BRAKE**

550-002	0.50	Parking brake, adjusting
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Op.no.	time (h)	Notes
6		STEERING
64		STEERING
641-021	1.50	Adjustable steering column, replacing
645-006	3.00	Steering cylinder, replacing
645-015	0.50	Steering system, checking and adjusting standby pressure
645-028	0.75	Steering system, checking and adjusting working pressure
645-054	3.50	Steering cylinder, replacing bearings
645-060	2.00	Steering cylinder, repacking in machine
645-073	3.00	Hydraulic pump removed, reconditioning
645-077	1.50	Steering cylinder removed, reconditioning incl replacing bearings
645-081	1.75	Steering valve removed, reconditioning
645-082	2.00	Steering valve, replacing
647-093	1.00	Auxiliary steering, replacing hydraulic pump
66		LEVER STEERING
660-902	8.00	Lever steering (CDC), hydraulic, installing new
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-005	0.50	Frame joint, checking clearance
741-036	12.00	Frame joint, replacing bearings
75		AXLE SUSPENSION
755-001	1.00	Axle suspension, measuring axial and radial clearanse
755-002	1.00	Axle suspension, adjusting axial clearance
755-003	9.50	Axle suspension, replacing bushes and seals
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.50	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
818-015	1.00	Cab suspension, rubber element replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.75	Door, replacing

Op.no.	time (h)	Notes
831-006	0.50	Door lock, replacing
831-014	0.50	Door, replacing sealing strip
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	5.00	Windscreen, replacing
843-012	5.00	Rear window, replacing
843-013	5.00	Side window, replacing
843-048	5.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-007	1.25	Operators seat (air suspensioned), backrest replacing
87		AIR CONDITIONING UNIT
873-004	1.00	Heater core, replacing
873-006	1.00	Fan motor, replacing
873-008	0.75	Heat control valve, replacing
873-009	0.75	Heat control, replacing
874-002	1.00	Refrigerant, draining
874-003	1.00	Cooling unit, performance test
874-005	1.75	Refrigerant, filling excl vacuum pumping
874-006	4.00	Compressor, replacing incl draining and filling
874-007	1.00	Belt, replacing
874-010	3.50	Condenser, replacing incl draining and filling
874-011	3.00	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	3.50	Expansion valve, replacing incl draining and filling
874-014	1.00	Thermostat, replacing
874-015	1.00	Compressor, replacing shaft seal (compressor removed)
874-016	1.00	Compressor, replacing magnetic clutch (compressor removed)
874-017	1.75	Compressor, replacing magnetic clutch in machine
874-019	0.50	Compressor, replacing valve plate (compressor removed)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	3.00	Pump suction hose and pipe, replacing
911-011	1.25	Oil cooler, replacing
911-038	5.00	Hydraulic oil tank, replacing
912-001	3.00	Control valve, replacing

Op.no.	time (h)	Notes
912-002	2.00	Control valve removed, reconditioning
912-009	1.00	Shock valve, tilt function, checking and adjusting
912-011	1.00	Shock valve lift function, adjusting
912-030	3.00	Central valve, replacing
913-003	0.25	Hydraulic pump, checking and adjusting standby pressure
913-004	0.25	Hydraulic pump, checking and adjusting max working pressure
913-010	4.00	Hydraulic pump, replacing
913-011	3.00	Hydraulic pump removed, reconditioning
914-054	0.50	Servo valve, adjusting control
914-055	0.50	Servo pressure, checking and adjusting
914-058	1.00	Servo valve, replacing
914-063	0.50	Servo pressure, checking at the spool in control valve
915-001	1.00	Servo valve, solenoid replacing
916-001	0.50	Boom suspension system, functional check
916-002	0.75	Boom suspension accumulator, check and adjusting
916-003	1.00	Boom suspension accumulator, reconditioning
916-004	1.50	Boom suspension system, checking closing pressure
916-005	1.00	Boom suspension system, checking opening pressure
94		UNIT, LOAD HANDLING
945-002	1.00	Lift frame, replacing bearing in lower bucket- or implement attachment
945-003	0.50	Implement attachment, measuring clearance of lower bearing
945-004	2.00	Lift cylinder, replacing
945-005	3.00	Lift cylinder, repacking in machine
945-006	2.00	Lift cylinder removed, repacking
945-007	0.75	Tilt cylinder removed, replacing bearings "E-F"
945-008	2.00	Tilt cylinder, replacing
945-009	2.00	Tilt cylinder, repacking in machine
945-010	1.00	Tilt cylinder removed, repacking
945-011	1.75	Implemental attachment, replacing hydraulic cylinder
945-012	1.00	Lift cylinder removed, replacing bearings "C-P"
945-016	4.00	Lift frame, replacing bearing in upper mounting "O"
945-024	1.50	Tilting cylinder, changing bearing 'E-F' in machine
945-045	1.00	Implemental attachment/bucket attachment, replacing bushes "A"
945-054	0.75	Implement attachment, replacing

Op.no.	time (h)	Notes
945-056	1.00	Implement attachment, repacking removed hydraulic cylinder
945-062	1.00	T-link upper, replacing "HIJ"
945-064	1.50	T-link, lower, replacing "IB"
945-065	1.00	T-link lower removed, replacing bearing "IB"
945-066	1.00	Tilt link, replacing "GH"
945-067	0.75	Tilt link removed, replacing bearings "GH"
945-068	3.00	Tilt arm, replacing bearing "GDF"
945-069	2.00	Tilt arm, replacing "GDF"
945-070	0.75	Tilt arm removed, replacing bearing "GDF"
99		MISCELLANEOUS
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
172-010	0.00	Out of warranty inspection	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
210-070	6.00	Engine, removing	
210-072	7.50	Engine, installing	
214-012	2.00	Valves, adjusting	
214-012	2.00	Valves, adjusting	
216-014	2.50	Crankshaft, replacing front oil seal	
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	
233-004	0.50	Feed pump, checking feed pressure	
234-010	3.00	Fuel tank, replacing	
236-001	0.50	Idling speed, checking and adjusting	
236-076	1.25	Injection pump, one changing	
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.25	Silencer, replacing	
252-021	0.50	Exhaust pipe, flexible tube, replacing	
26		COOLING SYSTEM	
262-098	0.90	Thermostat, replacing	
263-001	1.50	Fan motor, removing	
263-003	0.90	Fan motor, installing	
27		ENGINE CONTROL	
272-010	1.25	Accelerator control cable, changing	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
36		OTHER ELECTRICAL EQUIPMENT	
364-008	0.25	Brake light switch, replacing	
39		MISCELLANEOUS	
390-901	1.00	CareTrack Early Basic, installation	
390-902	2.00	CareTrack, installing new	

Op.no.	time (h)	Notes
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.75	Transmission oil pressure, checking
43		GEARBOX,
434-029	12.00	Dropbox removed, reconditioning
434-073	7.50	Dropbox, installing
434-074	7.00	Dropbox, removing
44		HYDROSTATIC DRIVE
441-001	1.00	Hydrostatic system, checking oil pressure
441-002	6.00	Hydraulic motor, replacing
441-004	1.50	Hydraulic engine solenoid valve, replacing
442-001	7.00	Hydraulic pump, replacing
442-003	1.50	Hydraulic pump solenoid replacing
45		PROPELLER SHAFT
451-002	1.50	Support or intermediate bearing, replacing
451-004	1.00	Propeller shaft, rear, replacing
451-007	1.00	Propeller shaft, in frame joint, replacing
451-010	1.00	Propeller shaft, front, replacing
451-013	1.00	Propeller shaft, removed reconditioning
46		FRONT AXLE; REAR AXLE
461-002	1.75	Axle, removing
461-003	2.00	Axle, installing
461-043	2.50	Hub, replacing seal
461-053	1.00	Differential lock, adjusting engagement
463-002	3.50	Axle, removing
463-003	4.50	Axle, installing
463-043	2.50	Hub, replacing seal
468-005	1.00	Differential lock rear, adjusting engagement
5		BRAKE
51		WHEEL BRAKE
516-001	0.50	Brake linings, checking wear
516-004	3.00	Brake discs, replacing on both sides
517-001	0.50	Brake linings, checking wear
517-004	3.00	Brake disc, replacing both sides
52		HYDRAULIC BRAKE SYSTEM
520-001	0.75	Brake system, checking function, hydraulic
520-002	0.50	Brake system, checking function, retardation

Op.no.	time (h)	Notes
520-005	0.50	Brake system, check and adjusting pressure in circuit
520-037	1.00	Brake system, bleeding
525-009	0.50	Foot brake valve removed, reconditioning
527-001	0.50	Accumulator removed, checking charging pressure
55		PARKING BRAKE
550-002	0.50	Parking brake, adjusting
6		STEERING
64		STEERING
645-006	3.00	Steering cylinder, replacing
645-028	0.75	Steering system, checking and adjusting working pressure
645-077	1.50	Steering cylinder removed, reconditioning incl replacing bearings
645-081	1.75	Steering valve removed, reconditioning
66		LEVER STEERING
660-003	0.50	Lever steering (CDC) adjusting steering speed
660-004	0.50	CDC, checking and adjusting control valve
660-005	1.25	CDC, checking lever signals
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-036	12.00	Frame joint, replacing bearings
75		AXLE SUSPENSION
755-001	1.00	Axle suspension, measuring axial and radial clearanse
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
87		AIR CONDITIONING UNIT
873-004	2.00	Heater core, replacing

Op.no.	time (h)	Notes
873-006	1.25	Fan motor, replacing
873-008	1.00	Heat control valve, replacing
874-003	1.00	Cooling unit, performance test
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-011	1.00	Shock valve lift function, adjusting
913-003	0.25	Hydraulic pump, checking and adjusting standby pressure
913-004	0.25	Hydraulic pump, checking and adjusting max working pressure
913-010	4.00	Hydraulic pump, replacing
914-054	0.50	Servo valve, adjusting control
914-055	0.50	Servo pressure, checking and adjusting
915-001	1.00	Servo valve, solenoid replacing
916-001	0.50	Boom suspension system, functional check
916-002	0.75	Boom suspension accumulator, check and adjusting
916-003	1.00	Boom suspension accumulator, reconditioning
916-006	0.50	Boom suspension system, pressure reduction, safety valve, checking and adjusting
916-007	0.25	Boom suspension system, hydraulic pressure in accumulator(s), releasing
94		UNIT, LOAD HANDLING
945-002	1.00	Lift frame, replacing bearing in lower bucket- or implement attachment
945-004	2.00	Lift cylinder, replacing
945-008	2.00	Tilt cylinder, replacing
945-063	0.75	T-link upper removed, replacing bearings "HIJ"
945-066	1.00	Tilt link, replacing "GH"
945-067	0.75	Tilt link removed, replacing bearings "GH"
945-068	3.00	Tilt arm, replacing bearing "GDF"
99		MISCELLANEOUS
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
172-002	3.00	Warranty inspection 100 hours	
172-004	8.00	Warranty inspection 1000 hours	
173-002	0.40	Maintenance service, daily	
173-004	1.00	Maintenance service, every 50 hours	
173-007	1.50	Maintenance service, every 250 hours	
173-010	4.00	Maintenance service, every 500 hours	
173-012	8.50	Maintenance service, every 1000 hours	
173-014	9.50	Maintenance service, every 2000 hours	
173-016	8.50	Maintenance service, every 3000 hours	
173-018	9.50	Maintenance service, every 4000 hours	
173-022	0.50	Maintenance service, every 6000 hours	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
210-070	6.50	Engine, removing	
210-072	8.50	Engine, installing	
214-012	4.50	Valves, adjusting	2928 - 3999 61006 - 69999 70434 - 79999
214-093	4.00	Rocker arm mechanism removed, reconditioning	
216-014	2.50	Crankshaft, replacing front oil seal	
218-001	3.00	Rubber cushion, replacing	
22		LUBRICATING SYSTEM	
221-021	0.50	Lubrication oil pressure, checking	
23		FUEL SYSTEM	
233-001	0.40	Fuel system, bleeding	
233-004	0.50	Feed pump, checking feed pressure	
233-014	0.50	Fuel filters, replacing	
234-010	4.00	Fuel tank, replacing	
236-001	0.50	Idling speed, checking and adjusting	
236-002	0.50	Stall speed, checking	
237-002	2.50	Injectors, replacing all	
237-007	0.25	Overflow valve, replacing	
25		INLET SYSTEM; EXHAUST SYSTEM	
252-021	0.50	Exhaust pipe, flexible tube, replacing	
255-002	0.80	Turbocharger, inspection	

Op.no.	time (h)	Notes
256-002	0.50	Air cleaner, checking prssure drop indicator
26		COOLING SYSTEM
261-004	0.50	Coolant, changing
261-012	1.00	Radiator hose upper, replacing
261-014	1.00	Radiator hoses lower, replacing
261-016	2.00	Radiator hoses all, replacing
261-018	0.75	Expansion tank, replacing
262-098	1.00	Thermostat, replacing
263-001	1.25	Fan motor, removing
263-003	1.25	Fan motor, installing
263-010	0.40	Pump 3 (P3) standby pressure, checking
263-018	0.25	Hydraulic cooling fan, revolution sensor replacing
263-022	1.00	Fan belt and/or alternator-, compressor belt, replacing all belts
263-051	1.50	Cooling fan hydraulics, funktion check
263-080	2.50	Fan hydraulically driven, replacing pump
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	1.00	Batteries, replacing
311-003	0.50	Main switch, replacing
311-006	1.00	Earth lead to battery, replacing
311-008	1.50	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.50	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	1.00	Starter motor, replacing
35		LIGHTING
353-016	0.50	Rear lamp, replacing one
353-018	0.25	Rear lamp, replacing glass or bulb
36		OTHER ELECTRICAL EQUIPMENT
367-052	1.25	V-ECU, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-007	0.50	Engine oil pressure sensor, replacing
386-011	3.00	Fuel level sender, replacing
39		MISCELLANEOUS
390-901	1.00	CareTrack Early Basic, installation

Op.no.	time (h)	Notes	
390-902	2.00	CareTrack, installing new	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-002	1.25	Transmission oil pressure, checking	
421-047	1.00	Gear selector, replacing	
421-048	0.75	Gear selector valve, replacing one solenoid	
421-051	0.75	Transmission, resistance measuring of solenoides	
421-068	12.00	Transmission, removing (upwards)	
421-069	14.00	Transmission, installing (from above)	
421-071	32.00	Transmission removed, reconditioning	
45		PROPELLER SHAFT	
451-002	1.50	Support or intermediate bearing, replacing	
451-004	1.00	Propeller shaft, rear, replacing	
451-007	1.00	Propeller shaft, in frame joint, replacing	
451-010	1.50	Propeller shaft, front, replacing	
46		FRONT AXLE; REAR AXLE	
461-002	2.50	Axle, removing	
461-003	3.50	Axle, installing	
461-005	2.00	Drive shaft, replacing one side	
461-014	2.50	Pinion front, fitting new gasket	
461-037	0.80	Hub reduction, removing	
			1001 - 3999 60001 - 69999 70001 - 79999
461-038	1.75	Hub reduction, installing	
			1001 - 3999 60001 - 69999 70001 - 79999
461-040	2.00	Hub reduction gear, replacing	
461-041	4.50	Hub reduction gear, removed, reconditioning	
461-043	2.50	Hub, replacing seal	
461-053	1.00	Differential lock, adjusting engagement	
463-002	1.00	Axle, removing	
463-003	1.50	Axle, installing	
463-005	2.00	Drive shaft, replacing one side	
463-014	2.00	Pinion rear, fitting new gasket	
463-040	2.00	Hub reduction gear, replacing	
463-041	4.50	Hub reduction gear removed, reconditioning	
463-043	3.00	Hub, replacing seal	
49		MISCELLANEOUS	
491-006	2.00	Oil cooler, replacing	

Op.no.	time (h)		Notes
5		BRAKE	
51		WHEEL BRAKE	
516-001	0.50	Brake linings, checking wear	
516-005	3.00	Brake disc, replacing	70001 - 79999 60001 - 69999 1001 - 3999
516-050	3.50	Brake piston, replacing seals	1001 - 3999 60001 - 69999 70001 - 79999
517-001	0.50	Brake linings, checking wear	
52		HYDRAULIC BRAKE SYSTEM	
520-001	0.50	Brake system, checking function, hydraulic	
520-005	0.50	Brake system, check and adjusting pressure in circuit	
520-037	1.00	Brake system, bleeding	
525-008	1.75	Foot brake valve, replacing	
525-009	0.50	Foot brake valve removed, reconditioning	
527-001	0.50	Accumulator removed, checking charging pressure	
55		PARKING BRAKE	
550-014	1.25	Parking brake, replacing brake pads	
6		STEERING	
64		STEERING	
645-006	6.00	Steering cylinder, replacing	
645-015	0.50	Steering system, checking and adjusting standby pressure	
645-028	0.75	Steering system, checking and adjusting working pressure	
645-077	1.50	Steering cylinder removed, reconditioning incl replacing bearings	
645-081	1.50	Steering valve removed, reconditioning	
645-082	1.50	Steering valve, replacing	
647-093	1.00	Auxiliary steering, replacing hydraulic pump	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	2.50	Counterweight, removing	
716-002	2.00	Counterweight, fitting	

Op.no.	time (h)	Notes
74		FRAME LINK
741-005	0.50	Frame joint, checking clearance
741-036	12.00	Frame joint, replacing bearings
75		AXLE SUSPENSION
755-001	1.00	Axle suspension, measuring axial and radial clearance
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.75	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
818-015	1.00	Cab suspension, rubber element replacing
87		AIR CONDITIONING UNIT
873-004	2.00	Heater core, replacing
873-006	1.25	Fan motor, replacing
873-008	1.00	Heat control valve, replacing
873-009	0.75	Heat control, replacing
874-002	1.00	Refrigerant, draining
874-003	1.00	Cooling unit, performance test
874-005	1.75	Refrigerant, filling excl vacuum pumping
874-006	4.00	Compressor, replacing incl draining and filling
874-007	1.00	Belt, replacing
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	3.50	Expansion valve, replacing incl draining and filling
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	3.00	Pump suction hose and pipe, replacing
911-011	1.00	Oil cooler, replacing
911-038	5.00	Hydraulic oil tank, replacing
912-001	8.00	Control valve, replacing
912-018	0.20	Back-up valve, checking and adjusting
912-021	0.30	Shock valve, tilt function, checking
912-023	0.60	Shock valve lift function, checking
912-030	4.50	Central valve, replacing

Op.no.	time (h)	Notes
913-003	1.00	Hydraulic pump, checking and adjusting standby pressure
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
914-054	0.50	Servo valve, adjusting control
914-055	0.10	Servo pressure, checking and adjusting
914-058	3.50	Servo valve, replacing
914-063	1.00	Servo pressure, checking at the spool in control valve
915-001	1.00	Servo valve, solenoid replacing
916-001	0.50	Boom suspension system, functional check
916-002	0.75	Boom suspension accumulator, check and adjusting
916-003	1.00	Boom suspension accumulator, reconditioning
916-070	0.10	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing
916-071	2.00	Boom suspension system, changing accumulator
916-074	0.30	Boom suspension system, test drive with load
99		MISCELLANEOUS
993-030	0.80	Shift valve, checking

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-006	0.30	VCADS Pro, central systems updating, replace component	
172-002	2.50	Warranty inspection 100 hours	4001 - 9999
172-004	6.00	Warranty inspection 1000 hours	4001 - 9999
173-002	0.40	Maintenance service, daily	
173-004	0.70	Maintenance service, every 50 hours	
173-007	1.00	Maintenance service, every 250 hours	
173-010	2.50	Maintenance service, every 500 hours	
173-012	4.00	Maintenance service, every 1000 hours	
173-014	9.50	Maintenance service, every 2000 hours	
173-018	10.00	Maintenance service, every 4000 hours	
173-022	11.00	Maintenance service, every 6000 hours	
176-001	0.50	Mechanical release of parking brake	61759 - 69999 70892 - 79999 5033 - 9999
19		GENERAL	
191-021	0.20	Service position 1	4001 - 9999 61401 - 69999 70601 - 79999
191-022	0.20	Service position 2	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-009	0.30	VCADS Pro, MID 128, programming E-ECU	
200-068	0.70	E-ECU, MID 128, changing non-programmed ECU	
200-070	0.30	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-002	3.00	Compression test	
210-002	3.00	Compression test	
210-070	6.00	Engine, removing	
210-070	6.00	Engine, removing	
210-072	9.00	Engine, installing	
210-072	8.50	Engine, installing	
214-012	4.50	Valves, adjusting	
214-012	4.50	Valves, adjusting	
216-014	2.00	Crankshaft, replacing front oil seal	4001 - 9999

Op.no.	time (h)	Notes
22		LUBRICATING SYSTEM
221-022	0.40	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.70	Fuel system, bleeding
233-004	0.80	Feed pump, checking feed pressure
233-020	0.10	Fuel filter, checking
234-011	0.90	Fuel tank, removing
234-012	1.50	Fuel tank, installing
236-002	0.50	Stall speed, checking
237-002	1.75	Injectors, replacing all
237-002	1.75	Injectors, replacing all
237-030	1.00	High pressure fuel pump, checking
237-032	2.00	High pressure fuel pump, replacing
237-033	1.25	Fuel control valve (FCV), replacing
237-034	0.80	Pressure relief valve (PRV), replacing
237-035	0.30	Fuel rail pressure sensor, replacing
237-036	0.70	Pressure relief valve (PRV), checking
237-038	0.70	Fuel control valve (FCV), checking
25		INLET SYSTEM; EXHAUST SYSTEM
255-002	0.80	Turbocharger, inspection
255-071	1.25	Turbocharger, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-011	2.50	Radiator, removing
261-013	4.00	Radiator, installing
263-011	0.70	Pump 3 (P3) standby pressure, checking and adjusting (LS-line removed)
263-021	0.20	Pump 3 (P3), max pressure and fan speed, checking and adjusting
263-051	1.25	Cooling fan hydraulics, funktion check
263-062	2.50	Cooling fan motor, replacing
263-071	0.40	Fan control valve, removing
263-072	0.20	Fan control valve, seal replacement
263-073	0.30	Fan control valve, installing
263-081	0.60	Hydraulic pump P3, removal
263-082	1.25	Hydraulic pump P3, installation

Op.no.	time (h)	Notes	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	0.80	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.30	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-002	0.30	Batteries, replacing	
311-005	0.50	Battery condition, check	
311-005	0.40	Battery condition, check	
36		OTHER ELECTRICAL EQUIPMENT	
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	
366-066	0.70	V-ECU, MID 187, changing pre-programmed ECU	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-016	1.00	Temperature sensor cooling system, replacing	5220 - 9999 70960 - 79999 61826 - 69999
386-016	0.50	Temperature sensor cooling system, replacing	
386-038	0.60	Engine rotation speed sensor, replacing	
39		MISCELLANEOUS	
390-902	2.00	CareTrack, installing new	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-002	0.70	Transmission oil pressure, checking	
421-008	1.50	Gear selector valve, replacing	
421-049	0.10	Transmission, functional check	
421-068	7.00	Transmission, removing (upwards)	
421-072	9.50	Transmission, installing	
421-099	0.70	Transmission, calibration	5562 - 9999 61969 - 69999 71156 - 79999
46		FRONT AXLE; REAR AXLE	
461-002	2.50	Axle, removing	
461-003	3.50	Axle, installing	
461-037	0.80	Hub reduction, removing	
461-038	1.75	Hub reduction, installing	
461-042	5.50	Hub reduction gear, reconditioning one side	
461-043	4.50	Hub, replacing seal	

Op.no.	time (h)		Notes
463-002	1.50	Axle, removing	
463-003	1.75	Axle, installing	
463-045	0.80	Hub reduction, removing	61996 - 69999 71063 - 79999 5497 - 9999
463-045	0.80	Hub reduction, removing	61401 - 61995 70601 - 71062 4001 - 5496
463-046	1.50	Hub reduction, installing	61996 - 69999 71063 - 79999 5497 - 9999
463-046	1.75	Hub reduction, installing	61401 - 61995 70601 - 71062 4001 - 5496
468-006	0.20	Differential lock, function check	
468-051	0.70	Differential lock, adjusting	

5**BRAKE****51****WHEEL BRAKE**

510-003	0.50	Brake discs, measuring wear	
516-005	3.00	Brake disc, replacing	61401 - 61995 70601 - 71062 4001 - 5496
516-005	3.00	Brake disc, replacing	61996 - 69999 71063 - 79999 5497 - 9999
516-050	3.00	Brake piston, replacing seals	61996 - 69999 71063 - 79999 5497 - 9999
516-050	3.50	Brake piston, replacing seals	61401 - 61995 70601 - 71062 4001 - 5496
517-005	3.00	Brake disc, replacing	61996 - 69999 71063 - 79999 5497 - 9999
517-005	3.00	Brake disc, replacing	61401 - 61995 70601 - 71062 4001 - 5496
517-050	3.50	Brake piston, replacing seals	61401 - 61995 70601 - 71062 4001 - 5496

52**HYDRAULIC BRAKE SYSTEM**

520-001	0.80	Brake system, checking function, hydraulic	
520-005	0.20	Brake system, check and adjusting pressure in circuit	
520-037	0.30	Brake system, bleeding	

Op.no.	time (h)		Notes
525-005	0.50	Foot brake valve, removal	
525-006	0.70	Foot brake valve, installation	
525-009	0.50	Foot brake valve removed, reconditioning	
527-001	0.10	Accumulator removed, checking charging pressure	
527-009	0.60	Accumulator, check	
55		PARKING BRAKE	
550-002	0.30	Parking brake, adjusting	61759 - 69999 70892 - 79999 5033 - 9999
550-002	0.10	Parking brake, adjusting	4001 - 5032 61401 - 61758 70601 - 70891
550-014	0.40	Parking brake, replacing brake pads	4001 - 5032 61401 - 61758 70601 - 70891
550-023	0.10	Parking brake, function checking	4001 - 5448 61401 - 61928
550-023	0.10	Parking brake, function checking	5449 - 9999 61929 - 69999

6**STEERING****64****STEERING**

645-011	0.80	Left steering cylinder, removal	
645-011	0.90	Left steering cylinder, removal	
645-012	1.25	Left steering cylinder, installation	
645-012	1.00	Left steering cylinder, installation	
645-013	0.70	Right steering cylinder, removal	
645-014	1.25	Right steering cylinder, installation	
645-028	0.30	Steering system, checking and adjusting working pressure	
645-052	0.50	Steering cylinder removed, reconditioning excl replacing bearings	
645-082	1.25	Steering valve, replacing	
647-091	0.40	Secondary steering pump, checking and adjusting working pressure	

66**LEVER STEERING**

660-006	0.90	Comfort drive control (CDC), angle sensor, changing	
660-007	1.25	Comfort drive control (CDC), solenoid valve, changing	
660-009	0.90	Comfort Drive Control (CDC), control valve, removal	

Op.no.	time (h)	Notes
660-010	1.25	Comfort drive control (CDC), control valve, installation
660-011	0.20	Lever steering (CDC), functional check
660-012	0.40	Comfort Drive Control, servo pressure, checking
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-036	6.00	Frame joint, replacing bearings
75		AXLE SUSPENSION
755-003	3.00	Axle suspension, replacing bushes and seals
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-002	0.40	Front wheel, removal
771-002	0.40	Front wheel, removal
771-003	0.40	Front wheel, installation
771-004	0.50	Rear wheel, removing
771-005	0.30	Rear wheel, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
810-002	4.00	Cab, installing
818-020	1.75	Viscous cab suspension, changing one unit
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.90	Engine hood, removing
821-002	1.25	Engine hood, installing
83		DOORS; HATCH; COVER PLATE, (all)
834-011	0.20	Door lock, changing
834-013	0.30	Door lock cylinder, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	2.50	Windscreen, replacing
843-013	1.25	Side window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-010	0.40	Operator's seat, securing

Op.no.	time (h)		Notes
87		AIR CONDITIONING UNIT	
870-010	0.50	ECC, MID 146, changing pre-programmed ECU	
870-011	0.70	ECC, MID 146, changing non-programmed ECU	
870-012	0.90	Climate unit, removing	5220 - 9999 70960 - 79999 61826 - 69999
870-013	1.25	Climate unit, installing	5220 - 9999 70960 - 79999 61826 - 69999
873-004	2.50	Heater core, replacing	5220 - 9999 70960 - 79999 61826 - 69999
873-004	1.50	Heater core, replacing	
873-006	2.50	Fan motor, replacing	5220 - 9999 70960 - 79999 61826 - 69999
873-008	0.70	Heat control valve, replacing	
873-011	0.80	Air mix door actuator, replacing	5220 - 9999 70960 - 79999 61826 - 69999
873-019	0.50	ECC control unit, replacing	
873-019	0.90	ECC control unit, replacing	5220 - 9999 70960 - 79999 61826 - 69999
874-006	2.50	Compressor, replacing incl draining and filling	
874-010	2.00	Condenser, replacing incl draining and filling	
874-011	1.75	Receiver, replacing incl draining and filling	
874-011	1.75	Receiver, replacing incl draining and filling	
874-012	2.50	Evaporator, replacing incl draining and filling	
874-012	3.00	Evaporator, replacing incl draining and filling	5220 - 9999 70960 - 79999 61826 - 69999
874-013	2.00	Expansion valve, replacing incl draining and filling	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-002	3.00	Hydraulic system, bleeding	
900-031	0.80	V2-ECU, MID 249, changing non-programmed ECU	
900-032	0.50	V2-ECU, MID 249, changing pre-programmed ECU	

Op.no.	time (h)	Notes
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-018	0.20	Back-up valve, checking and adjusting
912-021	0.80	Shock valve, tilt function, checking
912-023	0.60	Shock valve lift function, checking
912-127	0.20	Tilt, functional check
912-151	0.50	Back-up valve, replacing
912-152	1.25	Central valve, removal
912-153	6.00	Central valve, installation
912-154	1.50	Control valve, removal
912-155	3.50	Control valve, installation
913-003	0.90	Hydraulic pump, checking and adjusting standby pressure
913-004	0.60	Hydraulic pump, checking and adjusting max working pressure
913-033	1.25	Hydraulic pump, checking and adjusting stand-by pressure (LS-line removed)
913-050	3.00	Hydraulic pump P2, removal
913-051	5.00	Hydraulic pump P2, installation
914-047	0.20	Servo accumulator, removal
914-048	0.20	Servo accumulator, installation
914-049	0.10	Accumulator removed, checking
914-052	0.40	Accumulator, checking (pressure back-up for servo circuit)
914-055	0.50	Servo pressure, checking and adjusting
914-063	0.30	Servo pressure, checking at the spool in control valve
914-064	0.80	Servo valve, removal
914-065	1.25	Servo valve, installation
916-002	0.70	Boom suspension accumulator, check and adjusting
916-003	0.60	Boom suspension accumulator, reconditioning
916-006	0.60	Boom suspension system, pressure reduction, safety valve, checking and adjusting
916-010	0.50	Boom suspension system, left accumulator, removal
916-011	0.70	Boom suspension system, left accumulator, installation
916-020	0.20	3rd/4th hydraulic function, checking and adjusting pressure
916-024	0.30	3rd/4th hydraulic function, Control valve, replacing valve section
916-027	0.70	3rd/4th hydraulic function, Control valve, removal

Op.no.	time (h)	Notes	
916-028	0.80	3rd/4th hydraulic function, Control valve, installation	
916-070	0.20	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing	
916-072	0.20	Accumulator, boom suspension system, discarding	
916-074	0.30	Boom suspension system, test drive with load	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-035	0.60	Attachment locking hydraulic cylinder (vision-optimised bracket), replacing	
924-036	0.10	Attachment locking, functional check	
94		UNIT, LOAD HANDLING	
945-005	1.75	Lift cylinder, repacking in machine	
945-009	1.75	Tilt cylinder, repacking in machine	
99		MISCELLANEOUS	
992-002	4.00	Fire suppression system, actions after activation	
992-003	4.00	Fire suppression system, actions after manual activation	
993-025	2.50	Automatic lubrication pump unit, reconditioning	6718 - 9999
993-030	0.80	Shift valve, checking	

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
171-001	0.50	Arrival Inspection, according to Inspection Programme
171-002	1.50	Delivery Inspection, according to Inspection Programme
172-002	4.50	Warranty inspection 100 hours
172-004	12.00	Warranty inspection 1000 hours
173-007	1.75	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	7.50	Maintenance service, every 1000 hours
173-014	12.00	Maintenance service, every 2000 hours
173-059	1.00	Engine, changing oil and filter
173-061	1.50	Transmission, changing oil and filter
173-070	2.00	Axles, changing oil
173-074	1.75	Hydraulic oil tank, changing oil and filter
173-075	2.50	Hydraulic oil tank, changing oil and filter incl.cleaning tank
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-002	1.75	Compression test
210-070	7.00	Engine, removing
210-071	40.00	Engine removed, general overhaul
210-072	7.50	Engine, installing
211-002	8.00	Cylinder head, replacing gasket
211-068	3.00	Cylinder heads all removed, decarbonizing and grinding in valves
211-071	0.75	Cylinder head removed, pressure testing each
212-011	0.50	Cylinder, cylinder heads removed, measuring wear in all cylinders
213-010	15.00	Cylinder liner and piston, replacing one
213-018	25.00	Cylinder liners and pistons, replacing all
214-012	3.00	Valves, adjusting
214-036	2.00	Valve covers, fitting new gasket
215-002	6.00	Timing gear cover, fitting new gasket in machine
215-030	7.00	Timing gear, replacing in machine
215-032	8.00	Timing gear case, fitting new gasket in machine
216-014	2.50	Crankshaft, replacing front oil seal
22		LUBRICATING SYSTEM
221-006	0.25	Oil pressure relief valve, replacing

Op.no.	time (h)	Notes
223-006	1.50	Oil cooler, replacing
23		FUEL SYSTEM
233-001	0.50	Fuel system, bleeding
233-014	0.50	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
234-010	3.00	Fuel tank, replacing
236-001	0.50	Idling speed, checking and adjusting
236-002	0.50	Stall speed, checking
236-030	1.50	Injection timing, checking
236-044	1.50	Injection timing, checking
236-073	3.00	Injection pump, replacing incl setting injection timing
237-002	2.50	Injectors, replacing all
237-007	0.25	Overflow valve, replacing
237-016	2.00	Injectors, replacing copper sleeve in machine
237-018	0.50	Delivery pipe, replacing one
237-020	0.50	Pressure equalizer, replacing
237-080	2.00	Injectors removed, reconditioning all
25		INLET SYSTEM; EXHAUST SYSTEM
251-002	1.50	Induction manifold, replacing gasket
251-004	1.50	Exhaust manifold, replacing gasket
252-020	1.00	Silencer, replacing
252-021	0.50	Exhaust pipe, flexible tube, replacing
255-071	1.25	Turbocharger, replacing
255-073	2.00	Turbocharger removed, reconditioning
256-002	0.50	Air cleaner, checking prssure drop indicator
256-006	0.75	Preheating coil, replacing
26		COOLING SYSTEM
261-004	1.00	Coolant, changing
261-008	2.50	Radiator, replacing
261-012	1.00	Radiator hose upper, replacing
261-014	1.00	Radiator hoses lower, replacing
261-016	2.00	Radiator hoses all, replacing
261-018	1.00	Expansion tank, replacing
262-002	2.00	Coolant pump, replacing
262-071	2.00	Coolant pump removed, reconditioning
262-098	0.75	Thermostat, replacing
263-001	1.25	Fan motor, removing
263-003	1.25	Fan motor, installing
263-022	1.00	Fan belt and/or alternator-, compressor belt, replacing all belts
263-080	1.75	Fan hydraulically driven, replacing pump

Op.no.	time (h)	Notes
27		ENGINE CONTROL
273-021	1.00	Stop magnet, replacing
273-022	0.75	Stop cable control, replacing
273-023	0.50	Electrical engine shut down, check and adjusting
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	1.00	Batteries, replacing
311-003	0.50	Main switch, replacing
311-006	0.50	Earth lead to battery, replacing
311-008	1.00	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
321-025	0.50	Alternator, replacing carbon brush kit in machine
322-005	0.50	Charging regulator, replacing
33		STARTING SYSTEM
331-018	0.75	Starter motor, replacing
334-001	0.50	Starter lock, replacing
35		LIGHTING
352-024	0.50	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.50	Rear lamp, replacing one
353-018	0.25	Rear lamp, replacing glass or bulb
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
361-002	0.50	Flasher unit, replacing relay
361-010	0.75	Flasher switch, replacing
361-017	0.50	Flasher lamp, replacing glass or bulb
362-002	0.25	Horn, replacing
362-003	0.50	Reverse alarm, replacing
363-001	0.50	Windscreen wiper rear, replacing motor
363-002	0.75	Windscreen wiper front, replacing motor
363-004	0.25	Windscreen flusher pump, replacing
364-004	0.25	Switch, replacing
364-008	0.25	Brake light switch, replacing
367-052	1.25	V-ECU, replacing
37		CABLE; FUSE; RELAY
372-031	0.75	Relay CU201, replacing

Op.no.	time (h)	Notes
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-003	0.50	Transmission oil pressure sensor, replacing
386-004	0.50	Transmission temperature sensor, replacing
386-005	0.50	Transmission, revolution sensor, replacing
386-006	0.50	Engine temperature sensor, replacing
386-007	0.50	Engine oil pressure sensor, replacing
386-011	1.25	Fuel level sender, replacing
387-004	0.50	Transmission temperature gauge, replacing
387-005	0.50	Information display, replacing
39		MISCELLANEOUS
390-901	1.00	CareTrack Early Basic, installation
393-001	0.50	Voltage converter, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.75	Transmission oil pressure, checking
421-047	1.00	Gear selector, replacing
421-048	1.00	Gear selector valve, replacing one solenoid
421-052	1.00	Seal for front output shaft, replacing
421-054	1.00	Seal for rear output shaft, replacing
421-070	6.00	Transmission, removing
421-071	40.00	Transmission removed, reconditioning
421-072	8.00	Transmission, installing
45		PROPELLER SHAFT
451-002	1.50	Support or intermediate bearing, replacing
451-004	1.00	Propeller shaft, rear, replacing
451-007	1.00	Propeller shaft, in frame joint, replacing
451-013	1.00	Propeller shaft, removed reconditioning
46		FRONT AXLE; REAR AXLE
461-001	5.00	Axle, replacing
461-003	2.50	Axle, installing
461-005	1.50	Drive shaft, replacing one side
461-013	15.00	Centre gear, axle removed, reconditioning
461-014	1.75	Pinion front, fitting new gasket
461-040	1.00	Hub reduction gear, replacing
461-041	4.50	Hub reduction gear, removed, reconditioning
461-042	3.50	Hub reduction gear, reconditioning one side
461-043	2.50	Hub, replacing seal
461-052	0.25	Differential lock front, repacking excl adjusting
461-053	0.75	Differential lock, adjusting engagement

Op.no.	time (h)	Notes
463-001	5.00	Axle, replacing
463-005	1.50	Drive shaft, replacing one side
463-013	15.00	Centre gear, axle removed, reconditioning
463-014	1.50	Pinion rear, fitting new gasket
463-040	1.00	Hub reduction gear, replacing
463-041	4.50	Hub reduction gear removed, reconditioning
463-043	2.50	Hub, replacing seal
49		MISCELLANEOUS
491-006	2.00	Oil cooler, replacing

5 BRAKE

51 WHEEL BRAKE

516-001	0.50	Brake linings, checking wear
516-004	3.00	Brake discs, replacing on both sides
516-050	1.50	Brake piston, replacing seals
517-001	0.50	Brake linings, checking wear
517-004	3.00	Brake disc, replacing both sides
517-050	1.50	Brake piston, replacing seals

52 HYDRAULIC BRAKE SYSTEM

520-001	0.50	Brake system, checking function, hydraulic
520-002	0.50	Brake system, checking function, retardation
520-004	0.50	Brake system, adjusting unloading pressure
520-005	0.50	Brake system, check and adjusting pressure in circuit
520-037	1.00	Brake system, bleeding
525-008	1.75	Foot brake valve, replacing
525-009	1.25	Foot brake valve removed, reconditioning

55 PARKING BRAKE

550-002	0.50	Parking brake, adjusting
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6 STEERING

64 STEERING

641-021	1.50	Adjustable steering column, replacing
645-015	0.50	Steering system, checking and adjusting standby pressure
645-028	0.50	Steering system, checking and adjusting working pressure
645-060	2.00	Steering cylinder, repacking in machine

Op.no.	time (h)	Notes
645-077	1.50	Steering cylinder removed, reconditioning incl replacing bearings
645-081	1.75	Steering valve removed, reconditioning
645-082	2.00	Steering valve, replacing
647-093	1.00	Auxiliary steering, replacing hydraulic pump
66		LEVER STEERING
660-902	8.00	Lever steering (CDC), hydraulic, installing new
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-005	0.50	Frame joint, checking clearance
741-036	12.00	Frame joint, replacing bearings
75		AXLE SUSPENSION
755-001	1.00	Axle suspension, measuring axial and radial clearanse
755-002	1.00	Axle suspension, adjusting axial clearance
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.50	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
818-015	1.00	Cab suspension, rubber element replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.75	Door, replacing
831-006	0.50	Door lock, replacing
831-014	0.50	Door, replacing sealing strip
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	5.00	Windscreen, replacing
843-012	5.00	Rear window, replacing
843-013	5.00	Side window, replacing
843-048	5.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-007	1.25	Operators seat (air suspensioned), backrest replacing

Op.no.	time (h)	Notes
87		AIR CONDITIONING UNIT
873-004	1.00	Heater core, replacing
873-006	1.00	Fan motor, replacing
873-008	0.75	Heat control valve, replacing
873-009	0.75	Heat control, replacing
874-002	1.00	Refrigerant, draining
874-003	1.00	Cooling unit, performance test
874-005	1.75	Refrigerant, filling excl vacuum pumping
874-006	4.00	Compressor, replacing incl draining and filling
874-007	1.00	Belt, replacing
874-010	3.50	Condenser, replacing incl draining and filling
874-011	3.00	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	3.50	Expansion valve, replacing incl draining and filling
874-014	1.00	Thermostat, replacing
874-015	1.00	Compressor, replacing shaft seal (compressor removed)
874-016	1.00	Compressor, replacing magnetic clutch (compressor removed)
874-017	1.75	Compressor, replacing magnetic clutch in machine
874-019	0.50	Compressor, replacing valve plate (compressor removed)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	3.00	Pump suction hose and pipe, replacing
911-011	1.00	Oil cooler, replacing
911-038	5.00	Hydraulic oil tank, replacing
912-001	3.00	Control valve, replacing
912-009	1.00	Shock valve, tilt function, checking and adjusting
912-011	1.00	Shock valve lift function, adjusting
912-030	2.00	Central valve, replacing
912-061	2.00	Control valve, repacking slide in machine
913-003	0.25	Hydraulic pump, checking and adjusting standby pressure
913-004	0.50	Hydraulic pump, checking and adjusting max working pressure
913-010	3.00	Hydraulic pump, replacing
913-011	3.00	Hydraulic pump removed, reconditioning
914-054	0.50	Servo valve, adjusting control

Op.no.	time (h)	Notes
914-055	0.50	Servo pressure, checking and adjusting
914-058	3.00	Servo valve, replacing
914-063	0.50	Servo pressure, checking at the spool in control valve
915-001	1.00	Servo valve, solenoid replacing
916-001	0.50	Boom suspension system, functional check
916-002	0.75	Boom suspension accumulator, check and adjusting
916-004	1.50	Boom suspension system, checking closing pressure
916-005	1.00	Boom suspension system, checking opening pressure
916-071	2.00	Boom suspension system, changing accumulator
916-073	2.50	Boom suspension system, changing valve
916-950	10.00	Attachment locking, installing new
916-972	16.00	Boom suspension system, installing new
94		UNIT, LOAD HANDLING
945-002	1.00	Lift frame, replacing bearing in lower bucket- or implement attachment
945-003	0.50	Implement attachment, measuring clearance of lower bearing
945-004	2.00	Lift cylinder, replacing
945-005	3.00	Lift cylinder, repacking in machine
945-006	2.00	Lift cylinder removed, repacking
945-007	0.75	Tilt cylinder removed, replacing bearings "E-F"
945-008	2.00	Tilt cylinder, replacing
945-009	2.00	Tilt cylinder, repacking in machine
945-010	1.50	Tilt cylinder removed, repacking
945-011	2.00	Implemental attachment, replacing hydraulic cylinder
945-012	1.00	Lift cylinder removed, replacing bearings "C-P"
945-016	4.00	Lift frame, replacing bearing in upper mounting "O"
945-045	1.00	Implemental attachment/bucket attachment, replacing bushes "A"
945-054	0.75	Implement attachment, replacing
945-056	1.00	Implement attachment, repacking removed hydraulic cylinder
945-062	1.00	T-link upper, replacing "HIJ"
945-063	0.75	T-link upper removed, replacing bearings "HIJ"
945-064	1.50	T-link, lower, replacing "IB"
945-065	1.00	T-link lower removed, replacing bearing "IB"
945-066	1.00	Tilt link, replacing "GH"
945-067	0.75	Tilt link removed, replacing bearings "GH"
945-068	3.00	Tilt arm, replacing bearing "GDF"
945-069	2.00	Tilt arm, replacing "GDF"

Op.no.	time (h)	Notes
945-070	0.75	Tilt arm removed, replacing bearing "GDF"
99		MISCELLANEOUS
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
172-002	3.50	Warranty inspection 100 hours	
172-004	8.50	Warranty inspection 1000 hours	60001 - 69999 21001 - 23999
173-002	0.40	Maintenance service, daily	
173-004	1.00	Maintenance service, every 50 hours	
173-007	1.50	Maintenance service, every 250 hours	
173-010	4.50	Maintenance service, every 500 hours	
173-012	8.50	Maintenance service, every 1000 hours	
173-014	10.00	Maintenance service, every 2000 hours	
173-016	9.00	Maintenance service, every 3000 hours	
173-018	10.00	Maintenance service, every 4000 hours	
173-022	0.50	Maintenance service, every 6000 hours	
173-061	0.75	Transmission, changing oil and filter	
173-070	1.25	Axles, changing oil	
173-074	1.75	Hydraulic oil tank, changing oil and filter	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
210-070	6.50	Engine, removing	
210-072	8.50	Engine, installing	
214-012	4.50	Valves, adjusting	22527 - 23999 61247 - 69999
214-093	4.00	Rocker arm mechanism removed, reconditioning	
216-014	2.50	Crankshaft, replacing front oil seal	
217-002	5.00	Sump gasket, replacing incl cleaning oil strainer	
218-001	3.50	Rubber cushion, replacing	
22		LUBRICATING SYSTEM	
223-006	1.00	Oil cooler, replacing	
23		FUEL SYSTEM	
233-001	0.40	Fuel system, bleeding	
233-014	0.50	Fuel filters, replacing	
234-010	4.00	Fuel tank, replacing	
236-001	0.50	Idling speed, checking and adjusting	
236-002	0.50	Stall speed, checking	
237-002	2.50	Injectors, replacing all	
237-007	0.25	Overflow valve, replacing	

Op.no.	time (h)	Notes
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.50	Exhaust pipe, flexible tube, replacing
255-002	0.80	Turbocharger, inspection
256-002	0.50	Air cleaner, checking prssure drop indicator
26		COOLING SYSTEM
261-004	0.50	Coolant, changing
261-012	1.00	Radiator hose upper, replacing
261-014	1.00	Radiator hoses lower, replacing
261-016	2.00	Radiator hoses all, replacing
261-018	0.75	Expansion tank, replacing
262-098	1.00	Thermostat, replacing
263-001	1.25	Fan motor, removing
263-003	1.25	Fan motor, installing
263-010	0.40	Pump 3 (P3) standby pressure, checking
263-022	1.00	Fan belt and/or alternator-, compressor belt, replacing all belts
263-051	1.50	Cooling fan hydraulics, funktion check
263-080	2.50	Fan hydraulically driven, replacing pump
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	1.00	Batteries, replacing
311-003	0.50	Main switch, replacing
311-006	1.00	Earth lead to battery, replacing
311-008	1.50	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.50	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	1.00	Starter motor, replacing
35		LIGHTING
353-016	0.50	Rear lamp, replacing one
353-018	0.25	Rear lamp, replacing glass or bulb
36		OTHER ELECTRICAL EQUIPMENT
367-052	1.25	V-ECU, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-007	0.50	Engine oil pressure sensor, replacing
386-011	3.00	Fuel level sender, replacing

Op.no.	time (h)	Notes	
386-031	0.75	Sensor unit (differential lock) adjusting	
39		MISCELLANEOUS	
390-901	1.00	CareTrack Early Basic, installation	
390-902	2.00	CareTrack, installing new	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-002	1.25	Transmission oil pressure, checking	
421-008	3.00	Gear selector valve, replacing	
421-047	1.00	Gear selector, replacing	
421-048	0.75	Gear selector valve, replacing one solenoid	
421-051	0.75	Transmission, resistance measuring of solenoides	
421-068	12.00	Transmission, removing (upwards)	
421-069	14.00	Transmission, installing (from above)	
421-071	32.00	Transmission removed, reconditioning	
45		PROPELLER SHAFT	
451-002	1.50	Support or intermediate bearing, replacing	
451-004	1.00	Propeller shaft, rear, replacing	
451-007	1.00	Propeller shaft, in frame joint, replacing	
451-010	1.50	Propeller shaft, front, replacing	
46		FRONT AXLE; REAR AXLE	
461-002	2.50	Axle, removing	
461-003	3.50	Axle, installing	
461-005	2.00	Drive shaft, replacing one side	
461-014	2.50	Pinion front, fitting new gasket	
461-037	0.80	Hub reduction, removing	60001 - 69999 21001 - 23999
461-038	1.75	Hub reduction, installing	21001 - 23999 60001 - 69999
461-040	2.00	Hub reduction gear, replacing	
461-041	4.50	Hub reduction gear, removed, reconditioning	
461-043	2.50	Hub, replacing seal	
463-002	1.00	Axle, removing	
463-003	1.50	Axle, installing	
463-005	2.00	Drive shaft, replacing one side	
463-014	2.00	Pinion rear, fitting new gasket	
463-040	2.00	Hub reduction gear, replacing	
463-041	4.50	Hub reduction gear removed, reconditioning	
463-043	3.00	Hub, replacing seal	

Op.no.	time (h)		Notes
49		MISCELLANEOUS	
491-006	2.00	Oil cooler, replacing	
5		BRAKE	
51		WHEEL BRAKE	
516-001	0.50	Brake linings, checking wear	
516-005	3.00	Brake disc, replacing	60001 - 69999 21001 - 23999
516-050	3.50	Brake piston, replacing seals	21001 - 23999 60001 - 69999
517-001	0.50	Brake linings, checking wear	
52		HYDRAULIC BRAKE SYSTEM	
520-001	0.50	Brake system, checking function, hydraulic	
520-005	0.50	Brake system, check and adjusting pressure in circuit	
520-037	1.00	Brake system, bleeding	
525-008	1.75	Foot brake valve, replacing	
525-009	0.50	Foot brake valve removed, reconditioning	
527-001	0.50	Accumulator removed, checking charging pressure	
55		PARKING BRAKE	
550-014	1.25	Parking brake, replacing brake pads	
6		STEERING	
64		STEERING	
645-006	6.00	Steering cylinder, replacing	
645-015	0.50	Steering system, checking and adjusting standby pressure	
645-028	0.75	Steering system, checking and adjusting working pressure	
645-077	1.50	Steering cylinder removed, reconditioning incl replacing bearings	
645-081	1.50	Steering valve removed, reconditioning	
645-082	1.50	Steering valve, replacing	
647-093	1.00	Auxiliary steering, replacing hydraulic pump	

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	1.75	Counterweight, removing
716-002	1.75	Counterweight, fitting
74		FRAME LINK
741-005	0.50	Frame joint, checking clearance
741-036	12.00	Frame joint, replacing bearings
75		AXLE SUSPENSION
755-001	1.00	Axle suspension, measuring axial and radial clearance
755-002	1.00	Axle suspension, adjusting axial clearance
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.75	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
818-015	1.00	Cab suspension, rubber element replacing
87		AIR CONDITIONING UNIT
873-004	2.00	Heater core, replacing
873-006	1.25	Fan motor, replacing
873-008	1.00	Heat control valve, replacing
873-009	0.75	Heat control, replacing
874-002	1.00	Refrigerant, draining
874-003	1.00	Cooling unit, performance test
874-005	1.75	Refrigerant, filling excl vacuum pumping
874-006	4.00	Compressor, replacing incl draining and filling
874-007	1.00	Belt, replacing
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	3.50	Expansion valve, replacing incl draining and filling

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	3.00	Pump suction hose and pipe, replacing
911-011	1.00	Oil cooler, replacing
911-038	5.00	Hydraulic oil tank, replacing
911-040	0.25	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-001	8.00	Control valve, replacing
912-018	0.20	Back-up valve, checking and adjusting
912-021	0.30	Shock valve, tilt function, checking
912-023	0.60	Shock valve lift function, checking
912-030	4.50	Central valve, replacing
913-003	1.00	Hydraulic pump, checking and adjusting standby pressure
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
914-054	0.50	Servo valve, adjusting control
914-055	0.10	Servo pressure, checking and adjusting
914-058	3.50	Servo valve, replacing
914-063	1.00	Servo pressure, checking at the spool in control valve
915-001	1.00	Servo valve, solenoid replacing
916-001	0.50	Boom suspension system, functional check
916-002	0.75	Boom suspension accumulator, check and adjusting
916-003	1.00	Boom suspension accumulator, reconditioning
916-070	0.10	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing
916-071	2.00	Boom suspension system, changing accumulator
916-074	0.30	Boom suspension system, test drive with load
99		MISCELLANEOUS
993-030	0.80	Shift valve, checking

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-006	0.30	VCADS Pro, central systems updating, replace component	
172-002	2.50	Warranty inspection 100 hours	
172-004	6.00	Warranty inspection 1000 hours	
173-002	0.40	Maintenance service, daily	
173-004	0.70	Maintenance service, every 50 hours	
173-007	1.00	Maintenance service, every 250 hours	
173-010	2.50	Maintenance service, every 500 hours	
173-012	4.00	Maintenance service, every 1000 hours	
173-014	9.50	Maintenance service, every 2000 hours	
173-018	10.00	Maintenance service, every 4000 hours	
173-022	11.00	Maintenance service, every 6000 hours	
176-001	0.50	Mechanical release of parking brake	62372 - 69999 71601 - 79999 24971 - 29999
19		GENERAL	
191-021	0.20	Service position 1	
191-022	0.20	Service position 2	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-009	0.30	VCADS Pro, MID 128, programming E-ECU	
200-068	0.70	E-ECU, MID 128, changing non-programmed ECU	
200-070	0.30	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-002	3.00	Compression test	
210-002	3.00	Compression test	
210-070	6.00	Engine, removing	
210-070	6.00	Engine, removing	
210-072	9.00	Engine, installing	
210-072	8.50	Engine, installing	
214-012	4.50	Valves, adjusting	
214-012	4.50	Valves, adjusting	
216-014	2.00	Crankshaft, replacing front oil seal	24001 - 29999
22		LUBRICATING SYSTEM	
221-022	0.40	Lubrication oil pressure, checking with pressure gauge	

Op.no.	time (h)	Notes
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.70	Fuel system, bleeding
233-004	0.80	Feed pump, checking feed pressure
233-020	0.10	Fuel filter, checking
234-011	0.90	Fuel tank, removing
234-012	1.50	Fuel tank, installing
236-002	0.50	Stall speed, checking
237-002	1.75	Injectors, replacing all
237-002	1.75	Injectors, replacing all
237-030	1.00	High pressure fuel pump, checking
237-032	2.00	High pressure fuel pump, replacing
237-033	1.25	Fuel control valve (FCV), replacing
237-034	0.80	Pressure relief valve (PRV), replacing
237-035	0.30	Fuel rail pressure sensor, replacing
237-036	0.70	Pressure relief valve (PRV), checking
237-038	0.70	Fuel control valve (FCV), checking
25		INLET SYSTEM; EXHAUST SYSTEM
255-002	0.80	Turbocharger, inspection
255-071	1.25	Turbocharger, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-011	2.50	Radiator, removing
261-013	4.00	Radiator, installing
263-011	0.70	Pump 3 (P3) standby pressure, checking and adjusting (LS-line removed)
263-021	0.20	Pump 3 (P3), max pressure and fan speed, checking and adjusting
263-051	1.25	Cooling fan hydraulics, funktion check
263-062	2.50	Cooling fan motor, replacing
263-071	0.40	Fan control valve, removing
263-072	0.20	Fan control valve, seal replacement
263-073	0.30	Fan control valve, installing
263-081	0.60	Hydraulic pump P3, removal
263-082	1.25	Hydraulic pump P3, installation
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	0.80	I-ECU, MID 140, changing non-programmed ECU

Op.no.	time (h)	Notes	
300-074	0.30	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-002	0.30	Batteries, replacing	
311-005	0.50	Battery condition, check	
311-005	0.40	Battery condition, check	
36		OTHER ELECTRICAL EQUIPMENT	
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	
366-066	0.70	V-ECU, MID 187, changing pre-programmed ECU	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-016	1.00	Temperature sensor cooling system, replacing	25135 - 29999 71653 - 79999 62445 - 69999
386-016	0.50	Temperature sensor cooling system, replacing	
386-038	0.60	Engine rotation speed sensor, replacing	
39		MISCELLANEOUS	
390-902	2.00	CareTrack, installing new	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-002	0.70	Transmission oil pressure, checking	
421-008	1.50	Gear selector valve, replacing	
421-049	0.10	Transmission, functional check	
421-068	7.00	Transmission, removing (upwards)	
421-072	9.50	Transmission, installing	
421-099	0.70	Transmission, calibration	25424 - 29999 62610 - 69999 71728 - 79999
46		FRONT AXLE; REAR AXLE	
461-002	2.50	Axle, removing	
461-003	3.50	Axle, installing	
461-037	0.80	Hub reduction, removing	
461-038	1.75	Hub reduction, installing	
461-042	5.50	Hub reduction gear, reconditioning one side	
461-043	4.50	Hub, replacing seal	
463-002	1.50	Axle, removing	
463-003	1.75	Axle, installing	
463-045	0.80	Hub reduction, removing	25392 - 29999 71694 - 79999 61801 - 69999

Op.no.	time (h)		Notes
463-045	0.80	Hub reduction, removing	24001 - 25392 71401 - 71694 61801 - 69999
463-046	1.50	Hub reduction, installing	25392 - 29999 71694 - 79999 61801 - 69999
463-046	1.75	Hub reduction, installing	24001 - 25392 71401 - 71694 61801 - 69999
468-006	0.20	Differential lock, function check	
468-051	0.70	Differential lock, adjusting	

5**BRAKE****51****WHEEL BRAKE**

510-003	0.50	Brake discs, measuring wear	
516-005	3.00	Brake disc, replacing	24001 - 25392 71401 - 71694 61801 - 69999
516-005	3.00	Brake disc, replacing	25392 - 29999 71694 - 79999 61801 - 69999
516-050	3.00	Brake piston, replacing seals	25392 - 29999 71694 - 79999 61801 - 69999
516-050	3.50	Brake piston, replacing seals	24001 - 25392 71401 - 71694 61801 - 69999
517-005	3.00	Brake disc, replacing	25392 - 29999 71694 - 79999 61801 - 69999
517-005	3.00	Brake disc, replacing	24001 - 25392 71401 - 71694 61801 - 69999
517-050	3.00	Brake piston, replacing seals	25392 - 29999 71694 - 79999 61801 - 69999
517-050	3.50	Brake piston, replacing seals	24001 - 25392 71401 - 71694 61801 - 69999

52**HYDRAULIC BRAKE SYSTEM**

520-001	0.80	Brake system, checking function, hydraulic	
520-005	0.20	Brake system, check and adjusting pressure in circuit	
520-037	0.30	Brake system, bleeding	
525-005	0.50	Foot brake valve, removal	
525-006	0.70	Foot brake valve, installation	

Op.no.	time (h)		Notes
525-009	0.50	Foot brake valve removed, reconditioning	
527-001	0.10	Accumulator removed, checking charging pressure	
527-009	0.60	Accumulator, check	
55		PARKING BRAKE	
550-002	0.30	Parking brake, adjusting	62372 - 69999 71601 - 79999 24971 - 29999
550-002	0.10	Parking brake, adjusting	24001 - 24970 61801 - 62371 71401 - 71600
550-014	0.40	Parking brake, replacing brake pads	24001 - 24970 61801 - 62371 71401 - 71600
550-023	0.10	Parking brake, function checking	24001 - 25342 61801 - 62570
550-023	0.10	Parking brake, function checking	25343 - 29999 62571 - 69999

6**STEERING****64****STEERING**

645-011	0.80	Left steering cylinder, removal	
645-011	0.90	Left steering cylinder, removal	
645-012	1.25	Left steering cylinder, installation	
645-012	1.00	Left steering cylinder, installation	
645-013	0.70	Right steering cylinder, removal	
645-014	1.25	Right steering cylinder, installation	
645-028	0.30	Steering system, checking and adjusting working pressure	
645-052	0.50	Steering cylinder removed, reconditioning excl replacing bearings	
645-082	1.25	Steering valve, replacing	
647-091	0.40	Secondary steering pump, checking and adjusting working pressure	

66**LEVER STEERING**

660-006	0.90	Comfort drive control (CDC), angle sensor, changing	
660-007	1.25	Comfort drive control (CDC), solenoid valve, changing	
660-009	0.90	Comfort Drive Control (CDC), control valve, removal	
660-010	1.25	Comfort drive control (CDC), control valve, installation	
660-011	0.20	Lever steering (CDC), functional check	

Op.no.	time (h)	Notes	
660-012	0.40	Comfort Drive Control, servo pressure, checking	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
74		FRAME LINK	
741-036	6.00	Frame joint, replacing bearings	
75		AXLE SUSPENSION	
755-003	3.00	Axle suspension, replacing bushes and seals	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-002	0.40	Front wheel, removal	
771-002	0.40	Front wheel, removal	
771-003	0.40	Front wheel, installation	
771-004	0.50	Rear wheel, removing	
771-005	0.30	Rear wheel, installing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	3.00	Cab, removing	
810-001	3.00	Cab, removing	
810-002	3.50	Cab, installing	
810-002	4.00	Cab, installing	
818-020	1.75	Viscous cab suspension, changing one unit	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-001	0.90	Engine hood, removing	24001 - 29999
821-002	1.25	Engine hood, installing	24001 - 29999
83		DOORS; HATCH; COVER PLATE, (all)	
834-011	0.20	Door lock, changing	
834-013	0.30	Door lock cylinder, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-002	2.50	Windscreen, replacing	
843-013	1.25	Side window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-010	0.40	Operator's seat, securing	
87		AIR CONDITIONING UNIT	
870-010	0.50	ECC, MID 146, changing pre-programmed ECU	

Op.no.	time (h)		Notes
870-011	0.70	ECC, MID 146, changing non-programmed ECU	
870-012	0.90	Climate unit, removing	25135 - 29999 71653 - 79999 62445 - 69999
870-013	1.25	Climate unit, installing	25135 - 29999 71653 - 79999 62445 - 69999
873-004	2.50	Heater core, replacing	25135 - 29999 71653 - 79999 62445 - 69999
873-004	1.50	Heater core, replacing	
873-006	2.50	Fan motor, replacing	25135 - 29999 71653 - 79999 62445 - 69999
873-008	0.70	Heat control valve, replacing	
873-011	0.80	Air mix door actuator, replacing	25135 - 29999 71653 - 79999 62445 - 69999
873-019	0.50	ECC control unit, replacing	
873-019	0.90	ECC control unit, replacing	25135 - 29999 71653 - 79999 62445 - 69999
874-006	2.50	Compressor, replacing incl draining and filling	
874-010	2.00	Condenser, replacing incl draining and filling	
874-011	1.75	Receiver, replacing incl draining and filling	
874-011	1.75	Receiver, replacing incl draining and filling	
874-012	2.50	Evaporator, replacing incl draining and filling	
874-012	3.00	Evaporator, replacing incl draining and filling	25135 - 29999 71653 - 79999 62445 - 69999
874-013	2.00	Expansion valve, replacing incl draining and filling	

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

90 GENERAL

900-002	3.00	Hydraulic system, bleeding	
900-031	0.80	V2-ECU, MID 249, changing non-programmed ECU	
900-032	0.50	V2-ECU, MID 249, changing pre-programmed ECU	

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
912-018	0.20	Back-up valve, checking and adjusting	

Op.no.	time (h)	Notes
912-021	0.80	Shock valve, tilt function, checking
912-023	0.60	Shock valve lift function, checking
912-127	0.20	Tilt, functional check
912-151	0.50	Back-up valve, replacing
912-152	1.25	Central valve, removal
912-153	6.00	Central valve, installation
912-154	1.50	Control valve, removal
912-155	3.50	Control valve, installation
913-003	0.90	Hydraulic pump, checking and adjusting standby pressure
913-004	0.60	Hydraulic pump, checking and adjusting max working pressure
913-033	1.25	Hydraulic pump, checking and adjusting stand-by pressure (LS-line removed)
913-034	0.20	Lifting time, checking
913-050	3.00	Hydraulic pump P2, removal
913-051	5.00	Hydraulic pump P2, installation
914-047	0.20	Servo accumulator, removal
914-048	0.20	Servo accumulator, installation
914-049	0.10	Accumulator removed, checking
914-052	0.40	Accumulator, checking (pressure back-up for servo circuit)
914-055	0.50	Servo pressure, checking and adjusting
914-063	0.30	Servo pressure, checking at the spool in control valve
914-064	0.80	Servo valve, removal
914-065	1.25	Servo valve, installation
916-002	0.70	Boom suspension accumulator, check and adjusting
916-003	0.60	Boom suspension accumulator, reconditioning
916-006	0.60	Boom suspension system, pressure reduction, safety valve, checking and adjusting
916-010	0.50	Boom suspension system, left accumulator, removal
916-011	0.90	Boom suspension system, left accumulator, installation
916-020	0.20	3rd/4th hydraulic function, checking and adjusting pressure
916-024	0.30	3rd/4th hydraulic function, Control valve, replacing valve section
916-027	0.70	3rd/4th hydraulic function, Control valve, removal
916-028	0.80	3rd/4th hydraulic function, Control valve, installation
916-070	0.20	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing

Op.no.	time (h)	Notes	
916-072	0.20	Accumulator, boom suspension system, discarding	
916-074	0.30	Boom suspension system, test drive with load	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-035	0.60	Attachment locking hydraulic cylinder (vision-optimised bracket), replacing	
924-036	0.10	Attachment locking, functional check	
94		UNIT, LOAD HANDLING	
945-005	1.75	Lift cylinder, repacking in machine	
99		MISCELLANEOUS	
992-002	4.00	Fire suppression system, actions after activation	
992-003	4.00	Fire suppression system, actions after manual activation	
993-025	2.50	Automatic lubrication pump unit, reconditioning	26473 - 29999
993-030	0.80	Shift valve, checking	

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
171-001	0.50	Arrival Inspection, according to Inspection Programme
171-002	1.50	Delivery Inspection, according to Inspection Programme
172-002	4.50	Warranty inspection 100 hours
172-004	12.00	Warranty inspection 1000 hours
173-007	1.75	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	7.50	Maintenance service, every 1000 hours
173-014	12.00	Maintenance service, every 2000 hours
173-059	1.00	Engine, changing oil and filter
173-061	1.50	Transmission, changing oil and filter
173-070	1.50	Axles, changing oil
173-074	1.75	Hydraulic oil tank, changing oil and filter
173-075	2.50	Hydraulic oil tank, changing oil and filter incl.cleaning tank
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-002	1.75	Compression test
210-070	5.50	Engine, removing
210-071	40.00	Engine removed, general overhaul
210-072	7.00	Engine, installing
211-002	8.00	Cylinder head, replacing gasket
211-018	10.00	Cylinder heads all, replacing gaskets
211-068	4.00	Cylinder heads all removed, decarbonizing and grinding in valves
211-071	0.75	Cylinder head removed, pressure testing each
211-080	4.50	Cylinder heads all, removing
211-082	7.00	Cylinder heads all, fitting
212-007	4.00	Cylinder block, liners removed, milling of all liner locations
212-011	0.50	Cylinder, cylinder heads removed, measuring wear in all cylinders
213-010	14.00	Cylinder liner and piston, replacing one
213-018	24.00	Cylinder liners and pistons, replacing all
214-012	2.00	Valves, adjusting
214-021	0.25	Valve cover, fitting new gasket each
214-027	0.75	Inspection cover, fitting new gasket
214-030	14.00	Valves, decarbonizing and grinding

Op.no.	time (h)	Notes
214-036	1.50	Valve covers, fitting new gasket
214-093	4.00	Rocker arm mechanism removed, reconditioning
215-002	6.00	Timing gear cover, fitting new gasket in machine
215-030	7.00	Timing gear, replacing in machine
215-032	8.00	Timing gear case, fitting new gasket in machine
216-014	2.50	Crankshaft, replacing front oil seal
216-018	12.00	Crankshaft, replacing rear oil seal
216-040	14.00	Flywheel housing and sump gasket, replacing
217-002	5.00	Sump gasket, replacing incl cleaning oil strainer
218-001	3.00	Rubber cushion, replacing
22		LUBRICATING SYSTEM
221-006	0.25	Oil pressure relief valve, replacing
221-014	6.00	Oil pump, replacing
223-006	1.50	Oil cooler, replacing
23		FUEL SYSTEM
233-001	0.50	Fuel system, bleeding
233-002	0.75	Feed pump, replacing
233-004	0.50	Feed pump, checking feed pressure
233-007	0.25	Feed pump, cleaning glass bowl and strainer
233-014	0.50	Fuel filters, replacing
233-015	0.25	Fuel filter extra, replacing
233-097	0.25	Feed pump removed, reconditioning
234-010	3.00	Fuel tank, replacing
236-001	0.50	Idling speed, checking and adjusting
236-002	0.50	Stall speed, checking
236-030	1.50	Injection timing, checking
236-044	1.50	Injection timing, checking
236-073	3.00	Injection pump, replacing incl setting injection timing
237-002	2.00	Injectors, replacing all
237-004	0.75	Injector, replacing one
237-007	0.25	Overflow valve, replacing
237-016	1.50	Injectors, replacing copper sleeve in machine
237-018	0.50	Delivery pipe, replacing one
237-020	0.50	Pressure equalizer, replacing
237-080	2.00	Injectors removed, reconditioning all
25		INLET SYSTEM; EXHAUST SYSTEM
251-002	1.00	Induction manifold, replacing gasket
251-004	2.00	Exhaust manifold, replacing gasket
252-020	1.50	Silencer, replacing
252-021	0.50	Exhaust pipe, flexible tube, replacing
255-071	1.00	Turbocharger, replacing

Op.no.	time (h)	Notes
255-073	2.00	Turbocharger removed, reconditioning
256-001	0.50	Air cleaner, cleaning filter element
256-002	0.25	Air cleaner, checking prssure drop indicator
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.75	Preheating coil, replacing
26		COOLING SYSTEM
261-004	1.00	Coolant, changing
261-008	3.00	Radiator, replacing
261-012	1.00	Radiator hose upper, replacing
261-014	1.00	Radiator hoses lower, replacing
261-018	1.00	Expansion tank, replacing
262-002	2.00	Coolant pump, replacing
262-071	2.00	Coolant pump removed, reconditioning
262-098	1.00	Thermostat, replacing
263-012	0.75	Fan belt and/or alternator belt, replacing
263-022	1.00	Fan belt and/or alternator-, compressor belt, replacing all belts
27		ENGINE CONTROL
273-021	0.75	Stop magnet, replacing
273-023	0.50	Electrical engine shut down, check and adjusting
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	1.00	Batteries, replacing
311-003	0.50	Main switch, replacing
311-006	0.50	Earth lead to battery, replacing
311-008	1.00	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
321-025	0.50	Alternator, replacing carbon brush kit in machine
322-005	0.50	Charging regulator, replacing
33		STARTING SYSTEM
331-018	0.75	Starter motor, replacing
333-001	0.75	Electric air pre-heater, replacing relay
334-001	0.50	Starter lock, replacing

Op.no.	time (h)	Notes
35		LIGHTING
352-024	0.50	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.50	Rear lamp, replacing one
353-018	0.25	Rear lamp, replacing glass or bulb
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
361-002	0.25	Flasher unit, replacing relay
361-010	0.75	Flasher switch, replacing
361-017	0.25	Flasher lamp, replacing glass or bulb
362-002	0.25	Horn, replacing
362-003	0.50	Reverse alarm, replacing
362-041	0.50	Rotating beacon, replacing
363-001	0.50	Windscreen wiper rear, replacing motor
363-002	0.75	Windscreen wiper front, replacing motor
363-004	0.25	Windscreen flusher pump, replacing
364-004	0.25	Switch, replacing
364-008	0.25	Brake light switch, replacing
367-052	1.25	V-ECU, replacing
37		CABLE; FUSE; RELAY
372-031	0.75	Relay CU201, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-003	0.50	Transmission oil pressure sensor, replacing
386-004	0.50	Transmission temperature sensor, replacing
386-005	0.50	Transmission, revolution sensor, replacing
386-006	0.50	Engine temperature sensor, replacing
386-007	0.75	Engine oil pressure sensor, replacing
386-011	1.25	Fuel level sender, replacing
387-004	0.50	Transmission temperature gauge, replacing
387-005	0.50	Information display, replacing
39		MISCELLANEOUS
390-901	1.00	CareTrack Early Basic, installation
393-001	0.50	Voltage converter, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.75	Transmission oil pressure, checking
421-004	2.00	Oil pump, replacing
421-008	3.00	Gear selector valve, replacing

Op.no.	time (h)	Notes
421-009	1.00	Gear selector valve removed, reconditioning
421-018	16.00	Converter, replacing
421-023	1.00	Lubrication and converter pressure valve, replacing
421-041	1.00	Oil distributor and seals, replacing f and r or 1:st and f or 3:rd and f
421-042	2.00	Oil distributor and seals, replacing 1st and 2nd or 2nd and reverse
421-043	3.00	Oil distributor and seals, replacing 3rd and 4th or 4th and reverse
421-047	0.75	Gear selector, replacing
421-048	0.75	Gear selector valve, replacing one solenoid
421-054	1.00	Seal for rear output shaft, replacing
421-071	40.00	Transmission removed, reconditioning
421-073	9.00	Transmission, removing (together with engine)
421-074	10.00	Transmission, installing (together with engine)
43		GEARBOX,
434-002	2.00	Dropbox, replacing seal for front output shaft
434-004	1.00	Dropbox, replacing seal for rear output shaft
434-029	4.00	Dropbox removed, reconditioning
434-073	4.00	Dropbox, installing
434-074	4.00	Dropbox, removing
45		PROPELLER SHAFT
451-001	0.25	Propeller shaft and intermediate bearing, checking radial clearance
451-002	2.00	Support or intermediate bearing, replacing
451-004	1.50	Propeller shaft, rear, replacing
451-007	1.50	Propeller shaft, in frame joint, replacing
451-010	2.00	Propeller shaft, front, replacing
46		FRONT AXLE; REAR AXLE
461-001	4.00	Axle, replacing
461-011	5.00	Centre gear , removing and fitting
461-012	6.00	Centre gear removed, reconditioning
461-014	2.00	Pinion front, fitting new gasket
461-042	6.00	Hub reduction gear, reconditioning one side
461-043	4.00	Hub, replacing seal
461-051	6.00	Differential lock, replacing selector fork and clutch sleeves and adjusting
461-052	0.25	Differential lock front, repacking excl adjusting
461-053	1.00	Differential lock, adjusting engagement
463-001	8.00	Axle, replacing
463-011	8.00	Centre gear, removing and fitting
463-012	6.00	Centre gear removed, reconditioning

Op.no.	time (h)	Notes
463-014	2.00	Pinion rear, fitting new gasket
463-042	6.00	Hub reduction gear, reconditioning one side
463-043	4.50	Hub, replacing seal
49		MISCELLANEOUS
491-006	1.50	Oil cooler, replacing
5		BRAKE
51		WHEEL BRAKE
516-001	0.50	Brake linings, checking wear
516-004	4.00	Brake discs, replacing on both sides
516-050	3.00	Brake piston, replacing seals
517-001	0.50	Brake linings, checking wear
517-004	4.00	Brake disc, replacing both sides
517-050	3.00	Brake piston, replacing seals
52		HYDRAULIC BRAKE SYSTEM
520-001	0.50	Brake system, checking function, hydraulic
520-002	0.50	Brake system, checking function, retardation
520-004	0.50	Brake system, adjusting unloading pressure
520-005	0.50	Brake system, check and adjusting pressure in circuit
520-037	1.00	Brake system, bleeding
525-008	2.00	Foot brake valve, replacing
525-009	1.25	Foot brake valve removed, reconditioning
527-001	0.50	Accumulator removed, checking charging pressure
527-002	0.50	Accumulator, replacing
527-004	2.00	Hydraulic pump, replacing
55		PARKING BRAKE
550-002	0.50	Parking brake, adjusting
550-004	1.50	Parking brake mechanical, replacing brake caliper
550-005	3.00	Parking brake, replacing brake disc
550-014	1.50	Parking brake, replacing brake pads
6		STEERING
64		STEERING
641-021	1.50	Adjustable steering column, replacing
645-003	0.25	Steering system working pressure, checking
645-006	1.75	Steering cylinder, replacing
645-010	2.00	Hydraulic pump, replacing

Op.no.	time (h)	Notes
645-015	0.50	Steering system, checking and adjusting standby pressure
645-020	3.00	Steering system, checking and adjusting shock and anti-cavitation-valve
645-021	1.50	Valve block, replacing
645-028	0.75	Steering system, checking and adjusting working pressure
645-054	2.00	Steering cylinder, replacing bearings
645-060	3.00	Steering cylinder, repacking in machine
645-073	2.00	Hydraulic pump removed, reconditioning
645-077	1.75	Steering cylinder removed, reconditioning incl replacing bearings
645-081	1.50	Steering valve removed, reconditioning
645-082	2.00	Steering valve, replacing
647-093	1.00	Auxiliary steering, replacing hydraulic pump
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-005	0.50	Frame joint, checking clearance
741-036	12.00	Frame joint, replacing bearings
75		AXLE SUSPENSION
755-001	0.75	Axle suspension, measuring axial and radial clearanse
755-002	1.00	Axle suspension, adjusting axial clearance
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.75	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
818-015	1.75	Cab suspension, rubber element replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.50	Door, replacing
831-006	0.75	Door lock, replacing
831-014	0.50	Door, replacing sealing strip

Op.no.	time (h)	Notes
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	5.00	Windscreen, replacing
843-012	5.00	Rear window, replacing
843-013	5.00	Side window, replacing
843-048	5.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-006	1.25	Operators seat, air suspensioned, control, replacing
852-007	1.25	Operators seat (air suspensioned), backrest replacing
87		AIR CONDITIONING UNIT
872-001	0.25	Cab filter, replacing
873-004	1.00	Heater core, replacing
873-006	1.00	Fan motor, replacing
873-008	0.75	Heat control valve, replacing
873-009	0.75	Heat control, replacing
874-002	1.00	Refrigerant, draining
874-003	1.00	Cooling unit, performance test
874-005	1.75	Refrigerant, filling excl vacuum pumping
874-006	4.00	Compressor, replacing incl draining and filling
874-007	1.00	Belt, replacing
874-011	3.00	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	3.50	Expansion valve, replacing incl draining and filling
874-014	1.00	Thermostat, replacing
874-015	1.00	Compressor, replacing shaft seal (compressor removed)
874-016	1.00	Compressor, replacing magnetic clutch (compressor removed)
874-017	1.75	Compressor, replacing magnetic clutch in machine
874-019	0.50	Compressor, replacing valve plate (compressor removed)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	2.00	Pump suction hose and pipe, replacing
911-011	2.00	Oil cooler, replacing
911-038	5.00	Hydraulic oil tank, replacing
912-001	5.00	Control valve, replacing

Op.no.	time (h)	Notes
912-002	4.00	Control valve removed, reconditioning
912-004	0.75	Control valve, low pressure valve, replacing
912-009	0.50	Shock valve, tilt function, checking and adjusting
912-011	0.75	Shock valve lift function, adjusting
913-002	1.00	Hydraulic pump, checking and adjusting unloading pressure
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-010	3.00	Hydraulic pump, replacing
913-011	2.00	Hydraulic pump removed, reconditioning
914-054	0.50	Servo valve, adjusting control
914-055	0.50	Servo pressure, checking and adjusting
914-057	0.50	Servo pressure, check
914-058	3.00	Servo valve, replacing
914-060	2.00	Servo pump, replacing
914-062	0.50	Pressure limiting valve, replacing
914-063	0.75	Servo pressure, checking at the spool in control valve
914-075	2.00	Servo valve removed, reconditioning
915-001	1.00	Servo valve, solenoid replacing
916-001	0.50	Boom suspension system, functional check
916-002	0.75	Boom suspension accumulator, check and adjusting
916-003	1.00	Boom suspension accumulator, reconditioning
916-004	1.50	Boom suspension system, checking closing pressure
916-005	1.00	Boom suspension system, checking opening pressure
916-073	2.50	Boom suspension system, changing valve
94		UNIT, LOAD HANDLING
945-002	2.00	Lift frame, replacing bearing in lower bucket- or implement attachment
945-003	0.25	Implement attachment, measuring clearance of lower bearing
945-004	4.00	Lift cylinder, replacing
945-005	4.00	Lift cylinder, repacking in machine
945-006	3.00	Lift cylinder removed, repacking
945-008	2.00	Tilt cylinder, replacing
945-009	4.00	Tilt cylinder, repacking in machine
945-010	3.00	Tilt cylinder removed, repacking
945-011	2.00	Implemental attachment, replacing hydraulic cylinder
945-016	4.00	Lift frame, replacing bearing in upper mounting "O"
945-024	3.00	Tilting cylinder, changing bearing 'E-F' in machine

Op.no.	time (h)	Notes
945-045	2.50	Implemental attachment/bucket attachment, replacing bushes "A"
945-054	1.00	Implement attachment, replacing
945-062	2.00	T-link upper, replacing "HIJ"
945-063	0.75	T-link upper removed, replacing bearings "HIJ"
945-064	1.00	T-link, lower, replacing "IB"
945-066	2.50	Tilt link, replacing "GH"
945-067	0.75	Tilt link removed, replacing bearings "GH"
945-068	3.00	Tilt arm, replacing bearing "GDF"
945-069	2.00	Tilt arm, replacing "GDF"
99		MISCELLANEOUS
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
172-002	3.50	Warranty inspection 100 hours	
172-004	8.50	Warranty inspection 1000 hours	
173-002	0.40	Maintenance service, daily	
173-004	1.00	Maintenance service, every 50 hours	
173-007	1.50	Maintenance service, every 250 hours	
173-010	4.50	Maintenance service, every 500 hours	
173-012	8.50	Maintenance service, every 1000 hours	
173-014	10.00	Maintenance service, every 2000 hours	
173-016	9.00	Maintenance service, every 3000 hours	
173-018	10.00	Maintenance service, every 4000 hours	
173-022	0.50	Maintenance service, every 6000 hours	
173-061	1.50	Transmission, changing oil and filter	
173-070	1.25	Axles, changing oil	
173-074	1.75	Hydraulic oil tank, changing oil and filter	
173-075	2.50	Hydraulic oil tank, changing oil and filter incl.cleaning tank	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
210-070	6.00	Engine, removing	
210-072	8.50	Engine, installing	
214-012	4.50	Valves, adjusting	22241 - 24999 67491 - 69999 71139 - 79999
214-093	4.00	Rocker arm mechanism removed, reconditioning	
216-014	2.50	Crankshaft, replacing front oil seal	
218-001	3.00	Rubber cushion, replacing	
22		LUBRICATING SYSTEM	
221-021	1.00	Lubrication oil pressure, checking	
223-006	1.00	Oil cooler, replacing	
23		FUEL SYSTEM	
233-001	0.40	Fuel system, bleeding	
233-002	0.50	Feed pump, replacing	
233-004	0.50	Feed pump, checking feed pressure	
233-014	0.50	Fuel filters, replacing	
234-010	4.00	Fuel tank, replacing	

Op.no.	time (h)	Notes
236-001	0.50	Idling speed, checking and adjusting
236-002	0.50	Stall speed, checking
237-007	0.25	Overflow valve, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.50	Exhaust pipe, flexible tube, replacing
255-002	0.80	Turbocharger, inspection
256-002	0.50	Air cleaner, checking prssure drop indicator
26		COOLING SYSTEM
261-004	0.50	Coolant, changing
261-012	1.00	Radiator hose upper, replacing
261-014	1.00	Radiator hoses lower, replacing
261-018	0.75	Expansion tank, replacing
262-098	1.00	Thermostat, replacing
263-001	1.25	Fan motor, removing
263-003	1.25	Fan motor, installing
263-004	0.75	Fan motor, checking working pressure
263-010	0.40	Pump 3 (P3) standby pressure, checking
263-011	1.25	Pump 3 (P3) standby pressure, checking and adjusting (LS-line removed)
263-012	0.75	Fan belt and/or alternator belt, replacing
263-015	1.50	Fan hydraulically driven, adjusting standby pressure and maxpressure
263-018	0.25	Hydraulic cooling fan, revolution sensor replacing
263-022	1.00	Fan belt and/or alternator-, compressor belt, replacing all belts
263-051	1.50	Cooling fan hydraulics, funktion check
263-080	2.50	Fan hydraulically driven, replacing pump
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	1.00	Batteries, replacing
311-003	0.50	Main switch, replacing
311-006	1.00	Earth lead to battery, replacing
311-008	1.50	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.50	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	1.00	Starter motor, replacing

Op.no.	time (h)	Notes	
35		LIGHTING	
353-016	0.50	Rear lamp, replacing one	
353-018	0.25	Rear lamp, replacing glass or bulb	
36		OTHER ELECTRICAL EQUIPMENT	
367-052	0.50	V-ECU, replacing	
37		CABLE; FUSE; RELAY	
372-031	0.75	Relay CU201, replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-007	0.75	Engine oil pressure sensor, replacing	
386-011	3.00	Fuel level sender, replacing	
386-031	0.75	Sensor unit (differential lock) adjusting	
39		MISCELLANEOUS	
390-901	1.00	CareTrack Early Basic, installation	
390-902	2.00	CareTrack, installing new	
4		POWER TRANSMISSION	
41		CLUTCH; TORQUE CONVERTER	
414-003	2.00	Converter, replacing (engine removed)	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-002	0.70	Transmission oil pressure, checking	21097 - 24999 66636 - 69999 70928 - 79999
421-002	0.70	Transmission oil pressure, checking	20001 - 21096 66001 - 66635 70801 - 70927
421-004	2.00	Oil pump, replacing	
421-008	3.00	Gear selector valve, replacing	
421-047	1.00	Gear selector, replacing	
421-048	0.75	Gear selector valve, replacing one solenoid	
421-051	0.75	Transmission, resistance measuring of solenoides	
421-068	12.00	Transmission, removing (upwards)	
421-069	14.00	Transmission, installing (from above)	
45		PROPELLER SHAFT	
451-002	1.50	Support or intermediate bearing, replacing	
451-004	1.00	Propeller shaft, rear, replacing	
451-007	1.00	Propeller shaft, in frame joint, replacing	
451-010	2.00	Propeller shaft, front, replacing	

Op.no.	time (h)		Notes
46		FRONT AXLE; REAR AXLE	
461-002	2.50	Axle, removing	
461-003	3.50	Axle, installing	
461-005	2.00	Drive shaft, replacing one side	
461-014	2.50	Pinion front, fitting new gasket	
461-037	0.80	Hub reduction, removing	20001 - 24999 66001 - 69999 70801 - 79999
461-038	1.75	Hub reduction, installing	20001 - 24999 66001 - 69999 70801 - 79999
461-053	1.00	Differential lock, adjusting engagement	
463-002	1.00	Axle, removing	
463-003	1.50	Axle, installing	
463-014	1.50	Pinion rear, fitting new gasket	
49		MISCELLANEOUS	
491-006	1.50	Oil cooler, replacing	
5		BRAKE	
51		WHEEL BRAKE	
516-001	0.50	Brake linings, checking wear	
516-005	3.00	Brake disc, replacing	70801 - 79999 66001 - 69999 20001 - 24999
516-050	3.50	Brake piston, replacing seals	20001 - 24999 66001 - 69999 70801 - 79999
517-001	0.50	Brake linings, checking wear	
52		HYDRAULIC BRAKE SYSTEM	
520-001	0.50	Brake system, checking function, hydraulic	
520-005	0.50	Brake system, check and adjusting pressure in circuit	
520-037	1.00	Brake system, bleeding	
525-008	1.75	Foot brake valve, replacing	
525-009	0.50	Foot brake valve removed, reconditioning	
527-001	0.50	Accumulator removed, checking charging pressure	

Op.no.	time (h)	Notes
6		STEERING
64		STEERING
645-006	1.75	Steering cylinder, replacing
645-028	0.75	Steering system, checking and adjusting working pressure
645-081	1.50	Steering valve removed, reconditioning
645-082	1.50	Steering valve, replacing
66		LEVER STEERING
660-003	0.50	Lever steering (CDC) adjusting steering speed
660-005	1.25	CDC, checking lever signals
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	1.75	Counterweight, removing
716-002	1.75	Counterweight, fitting
74		FRAME LINK
741-005	0.50	Frame joint, checking clearance
741-036	12.00	Frame joint, replacing bearings
75		AXLE SUSPENSION
755-001	0.75	Axle suspension, measuring axial and radial clearanse
755-002	1.00	Axle suspension, adjusting axial clearance
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.75	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	2.00	Engine hood, removing
821-002	2.50	Engine hood, installing
87		AIR CONDITIONING UNIT
873-004	2.00	Heater core, replacing

Op.no.	time (h)	Notes
873-006	1.25	Fan motor, replacing
873-008	1.00	Heat control valve, replacing
874-007	1.00	Belt, replacing
874-059	1.25	Evaporator, cleaning
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-002	3.00	Hydraulic system, bleeding
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-038	5.00	Hydraulic oil tank, replacing
912-001	8.00	Control valve, replacing
912-018	0.20	Back-up valve, checking and adjusting
912-021	0.30	Shock valve, tilt function, checking
912-023	0.60	Shock valve lift function, checking
912-030	4.50	Central valve, replacing
913-003	0.40	Hydraulic pump, checking and adjusting standby pressure
913-004	0.40	Hydraulic pump, checking and adjusting max working pressure
914-052	1.25	Accumulator, checking (pressure back-up for servo circuit)
914-054	0.50	Servo valve, adjusting control
914-055	0.10	Servo pressure, checking and adjusting
914-058	3.50	Servo valve, replacing
916-002	0.75	Boom suspension accumulator, check and adjusting
916-003	1.00	Boom suspension accumulator, reconditioning
916-006	0.50	Boom suspension system, pressure reduction, safety valve, checking and adjusting
916-019	1.00	3rd/4th hydraulic function, pressure check
916-070	0.10	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing
916-071	2.00	Boom suspension system, changing accumulator
916-074	0.30	Boom suspension system, test drive with load
94		UNIT, LOAD HANDLING
945-002	3.50	Lift frame, replacing bearing in lower bucket- or implement attachment
945-003	0.25	Implement attachment, measuring clearance of lower bearing
945-004	4.00	Lift cylinder, replacing
945-005	4.00	Lift cylinder, repacking in machine

Op.no.	time (h)	Notes
945-006	3.00	Lift cylinder removed, repacking
945-008	3.00	Tilt cylinder, replacing
945-009	5.00	Tilt cylinder, repacking in machine
945-010	3.00	Tilt cylinder removed, repacking
945-011	2.00	Implemental attachment, replacing hydraulic cylinder
945-016	5.00	Lift frame, replacing bearing in upper mounting "O"
945-054	1.75	Implement attachment, replacing
945-056	1.00	Implement attachment, repacking removed hydraulic cylinder
945-062	2.00	T-link upper, replacing "HIJ"
945-063	0.75	T-link upper removed, replacing bearings "HIJ"
945-064	2.00	T-link, lower, replacing "IB"
945-066	2.00	Tilt link, replacing "GH"
945-067	0.75	Tilt link removed, replacing bearings "GH"
945-068	3.00	Tilt arm, replacing bearing "GDF"
945-069	3.00	Tilt arm, replacing "GDF"
99		MISCELLANEOUS
993-030	0.80	Shift valve, checking

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-006	0.30	VCADS Pro, central systems updating, replace component	
172-002	2.50	Warranty inspection 100 hours	
172-004	6.00	Warranty inspection 1000 hours	
173-002	0.40	Maintenance service, daily	
173-004	0.70	Maintenance service, every 50 hours	
173-007	1.00	Maintenance service, every 250 hours	
173-010	2.50	Maintenance service, every 500 hours	
173-012	4.00	Maintenance service, every 1000 hours	
173-014	9.50	Maintenance service, every 2000 hours	
173-018	10.00	Maintenance service, every 4000 hours	
173-022	11.00	Maintenance service, every 6000 hours	
176-001	0.50	Mechanical release of parking brake	26404 - 49999 68653 - 69999 71644 - 79999
19		GENERAL	
191-021	0.20	Service position 1	
191-022	0.20	Service position 2	25001 - 49999 68101 - 69999 71501 - 79999 40000 - 49999
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-009	0.30	VCADS Pro, MID 128, programming E-ECU	
200-068	0.70	E-ECU, MID 128, changing non-programmed ECU	
200-070	0.30	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-002	3.00	Compression test	
210-002	3.00	Compression test	
210-070	6.00	Engine, removing	
210-070	6.00	Engine, removing	
210-072	9.00	Engine, installing	
210-072	8.50	Engine, installing	
214-012	4.50	Valves, adjusting	
214-012	4.50	Valves, adjusting	
216-014	2.00	Crankshaft, replacing front oil seal	25001 - 49999

Op.no.	time (h)	Notes
22		LUBRICATING SYSTEM
221-022	0.40	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.70	Fuel system, bleeding
233-004	0.80	Feed pump, checking feed pressure
233-020	0.10	Fuel filter, checking
234-011	0.90	Fuel tank, removing
234-012	1.50	Fuel tank, installing
236-002	0.50	Stall speed, checking
237-002	1.75	Injectors, replacing all
237-002	1.75	Injectors, replacing all
237-030	1.00	High pressure fuel pump, checking
237-032	2.00	High pressure fuel pump, replacing
237-033	1.25	Fuel control valve (FCV), replacing
237-034	0.80	Pressure relief valve (PRV), replacing
237-035	0.30	Fuel rail pressure sensor, replacing
237-036	0.70	Pressure relief valve (PRV), checking
237-038	0.70	Fuel control valve (FCV), checking
25		INLET SYSTEM; EXHAUST SYSTEM
255-002	0.80	Turbocharger, inspection
255-071	1.25	Turbocharger, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
261-011	2.50	Radiator, removing
261-013	4.00	Radiator, installing
263-011	0.70	Pump 3 (P3) standby pressure, checking and adjusting (LS-line removed)
263-021	0.20	Pump 3 (P3), max pressure and fan speed, checking and adjusting
263-051	1.25	Cooling fan hydraulics, funktion check
263-062	2.50	Cooling fan motor, replacing
263-071	0.40	Fan control valve, removing
263-072	0.20	Fan control valve, seal replacement
263-073	0.30	Fan control valve, installing
263-081	0.60	Hydraulic pump P3, removal
263-082	1.25	Hydraulic pump P3, installation

Op.no.	time (h)	Notes	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	0.80	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.30	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-002	0.30	Batteries, replacing	
311-005	0.50	Battery condition, check	
311-005	0.40	Battery condition, check	
36		OTHER ELECTRICAL EQUIPMENT	
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	
366-066	0.70	V-ECU, MID 187, changing pre-programmed ECU	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-016	1.00	Temperature sensor cooling system, replacing	26641 - 49999 68770 - 69999 71667 - 79999
386-016	0.50	Temperature sensor cooling system, replacing	
386-038	0.60	Engine rotation speed sensor, replacing	
39		MISCELLANEOUS	
390-902	2.00	CareTrack, installing new	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-002	0.70	Transmission oil pressure, checking	
421-008	1.50	Gear selector valve, replacing	
421-049	0.10	Transmission, functional check	
421-068	7.00	Transmission, removing (upwards)	
421-072	9.50	Transmission, installing	
421-099	0.70	Transmission, calibration	43421 - 49999 43421 - 49999 68966 - 69999 71740 - 79999
46		FRONT AXLE; REAR AXLE	
461-002	2.50	Axle, removing	
461-003	3.50	Axle, installing	
461-037	0.80	Hub reduction, removing	
461-038	1.75	Hub reduction, installing	
461-042	5.50	Hub reduction gear, reconditioning one side	

Op.no.	time (h)		Notes
461-043	4.50	Hub, replacing seal	
463-002	1.50	Axle, removing	
463-003	1.75	Axle, installing	
463-045	0.80	Hub reduction, removing	71705 - 79999 69016 - 69999 27022 - 49999 43411 - 49999
463-045	0.80	Hub reduction, removing	71501 - 71705 68101 - 69015 25001 - 27021 40000 - 43410
463-046	1.50	Hub reduction, installing	71705 - 79999 69016 - 69999 27022 - 49999 43411 - 49999
463-046	1.75	Hub reduction, installing	71501 - 71705 68101 - 69015 25001 - 27021 40000 - 43410
468-006	0.20	Differential lock, function check	
468-051	0.70	Differential lock, adjusting	

5

BRAKE

51

WHEEL BRAKE

510-003	0.50	Brake discs, measuring wear	
516-005	3.00	Brake disc, replacing	71501 - 71705 68101 - 69015 25001 - 27021 40000 - 43410
516-005	3.00	Brake disc, replacing	71705 - 79999 69016 - 69999 27022 - 49999 43411 - 49999
516-050	3.00	Brake piston, replacing seals	71705 - 79999 69016 - 69999 27022 - 49999 43411 - 49999
516-050	3.50	Brake piston, replacing seals	71501 - 71705 68101 - 69015 25001 - 27021 40000 - 43410
517-005	3.00	Brake disc, replacing	71705 - 79999 69016 - 69999 27022 - 49999 43411 - 49999
517-005	3.00	Brake disc, replacing	71501 - 71705 68101 - 69015

Op.no.	time (h)		Notes
			25001 - 27021 40000 - 43410
517-050	3.50	Brake piston, replacing seals	71501 - 71705 68101 - 69015 25001 - 27021 40000 - 43410
517-050	3.00	Brake piston, replacing seals	71705 - 79999 69016 - 69999 27022 - 49999 43411 - 49999
52		HYDRAULIC BRAKE SYSTEM	
520-001	0.80	Brake system, checking function, hydraulic	
520-005	0.20	Brake system, check and adjusting pressure in circuit	
520-037	0.30	Brake system, bleeding	
525-005	0.50	Foot brake valve, removal	
525-006	0.70	Foot brake valve, installation	
525-009	0.50	Foot brake valve removed, reconditioning	
527-001	0.10	Accumulator removed, checking charging pressure	
527-009	0.60	Accumulator, check	
55		PARKING BRAKE	
550-002	0.30	Parking brake, adjusting	26404 - 49999 68653 - 69999 71644 - 79999
550-002	0.10	Parking brake, adjusting	25001 - 26403 68101 - 68652 71501 - 71643
550-014	0.40	Parking brake, replacing brake pads	25001 - 26403 68101 - 68652 71501 - 71643
550-023	0.10	Parking brake, function checking	25001 - 26953 68101 - 68916
550-023	0.10	Parking brake, function checking	26954 - 29999 68917 - 69999
6		STEERING	
64		STEERING	
645-028	0.30	Steering system, checking and adjusting working pressure	
645-052	0.50	Steering cylinder removed, reconditioning excl replacing bearings	
645-082	1.25	Steering valve, replacing	
647-091	0.40	Secondary steering pump, checking and adjusting working pressure	

Op.no.	time (h)	Notes
66		LEVER STEERING
660-006	0.90	Comfort drive control (CDC), angle sensor, changing
660-007	1.25	Comfort drive control (CDC), solenoid valve, changing
660-009	0.90	Comfort Drive Control (CDC), control valve, removal
660-010	1.25	Comfort drive control (CDC), control valve, installation
660-011	0.20	Lever steering (CDC), functional check
660-012	0.40	Comfort Drive Control, servo pressure, checking
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-036	6.00	Frame joint, replacing bearings
75		AXLE SUSPENSION
755-003	3.00	Axle suspension, replacing bushes and seals
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-002	0.40	Front wheel, removal
771-002	0.40	Front wheel, removal
771-003	0.40	Front wheel, installation
771-004	0.50	Rear wheel, removing
771-005	0.30	Rear wheel, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
810-002	4.00	Cab, installing
818-020	1.75	Viscous cab suspension, changing one unit
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.90	Engine hood, removing
821-002	1.25	Engine hood, installing
83		DOORS; HATCH; COVER PLATE, (all)
834-011	0.20	Door lock, changing

Op.no.	time (h)		Notes
834-013	0.30	Door lock cylinder, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-002	2.50	Windscreen, replacing	
843-013	1.25	Side window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-010	0.40	Operator's seat, securing	
87		AIR CONDITIONING UNIT	
870-010	0.50	ECC, MID 146, changing pre-programmed ECU	
870-011	0.70	ECC, MID 146, changing non-programmed ECU	
870-012	0.90	Climate unit, removing	26641 - 49999 68770 - 69999 71667 - 79999
870-013	1.25	Climate unit, installing	26641 - 49999 71667 - 79999 68770 - 69999
873-004	2.50	Heater core, replacing	26641 - 49999 71667 - 79999 68770 - 69999
873-004	1.50	Heater core, replacing	
873-006	2.50	Fan motor, replacing	26641 - 49999 71667 - 79999 68770 - 69999
873-008	0.70	Heat control valve, replacing	
873-011	0.80	Air mix door actuator, replacing	26641 - 49999 68770 - 69999 71667 - 79999
873-019	0.50	ECC control unit, replacing	
873-019	0.90	ECC control unit, replacing	26641 - 49999 68770 - 69999 71667 - 79999
874-006	2.50	Compressor, replacing incl draining and filling	
874-010	2.00	Condenser, replacing incl draining and filling	
874-011	1.75	Receiver, replacing incl draining and filling	
874-011	1.75	Receiver, replacing incl draining and filling	
874-012	2.50	Evaporator, replacing incl draining and filling	
874-012	3.00	Evaporator, replacing incl draining and filling	26641 - 49999 71667 - 79999 68770 - 69999
874-013	2.00	Expansion valve, replacing incl draining and filling	

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-002	3.00	Hydraulic system, bleeding
900-031	0.80	V2-ECU, MID 249, changing non-programmed ECU
900-032	0.50	V2-ECU, MID 249, changing pre-programmed ECU
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-018	0.20	Back-up valve, checking and adjusting
912-021	0.80	Shock valve, tilt function, checking
912-023	0.60	Shock valve lift function, checking
912-127	0.20	Tilt, functional check
912-151	0.50	Back-up valve, replacing
912-152	1.25	Central valve, removal
912-153	6.00	Central valve, installation
912-154	1.50	Control valve, removal
912-155	3.50	Control valve, installation
913-003	0.30	Hydraulic pump, checking and adjusting standby pressure
913-004	0.30	Hydraulic pump, checking and adjusting max working pressure
913-033	0.60	Hydraulic pump, checking and adjusting stand-by pressure (LS-line removed)
913-033	0.50	Hydraulic pump, checking and adjusting stand-by pressure (LS-line removed)
913-034	0.20	Lifting time, checking
913-050	3.00	Hydraulic pump P2, removal
913-051	5.00	Hydraulic pump P2, installation
913-069	1.00	Hydraulic power control valve, replacing
914-047	0.20	Servo accumulator, removal
914-048	0.20	Servo accumulator, installation
914-049	0.10	Accumulator removed, checking
914-052	0.40	Accumulator, checking (pressure back-up for servo circuit)
914-055	0.50	Servo pressure, checking and adjusting
914-063	0.30	Servo pressure, checking at the spool in control valve
914-064	0.80	Servo valve, removal
914-065	1.25	Servo valve, installation
916-002	0.70	Boom suspension accumulator, check and adjusting

Op.no.	time (h)	Notes	
916-003	0.60	Boom suspension accumulator, reconditioning	
916-006	0.60	Boom suspension system, pressure reduction, safety valve, checking and adjusting	
916-010	0.50	Boom suspension system, left accumulator, removal	
916-011	0.90	Boom suspension system, left accumulator, installation	
916-017	0.90	3rd/4th hydraulic function, shock valve, checking	
916-020	0.20	3rd/4th hydraulic function, checking and adjusting pressure	
916-070	0.20	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing	
916-072	0.20	Accumulator, boom suspension system, discarding	
916-074	0.30	Boom suspension system, test drive with load	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-035	0.60	Attachment locking hydraulic cylinder (vision-optimised bracket), replacing	
924-036	0.10	Attachment locking, functional check	
99		MISCELLANEOUS	
992-002	4.00	Fire suppression system, actions after activation	
992-003	4.00	Fire suppression system, actions after manual activation	
993-025	2.50	Automatic lubrication pump unit, reconditioning	28546 - 49999
993-030	0.80	Shift valve, checking	

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-092	1.25	Drive chain case, oil change
19		GENERAL
191-021	0.20	Service position 1
191-022	0.10	Service position 2
191-023	0.20	Raising and blocking
191-024	0.30	Manual lifting of loader arm
2		ENGINE WITH MOUNTING AND EQUIPMENT
26		COOLING SYSTEM
262-098	1.00	Thermostat, replacing
263-012	2.00	Fan belt and/or alternator belt, replacing
263-013	0.40	Fan belt and/or alternator belt, checking and adjusting tension
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.60	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-020	0.60	Starter system, tests
331-021	1.75	Starter motor, tests
4		POWER TRANSMISSION
44		HYDROSTATIC DRIVE
440-002	1.75	Transmission pump, flow displacement test
440-003	1.25	Transmission pump, drive relief test
441-009	2.00	Travel motor, removing

Op.no.	time (h)	Notes
6		STEERING
64		STEERING
643-080	2.50	Control lever crossmember removal/installation
643-081	2.50	Control lever removal and installation
643-082	0.90	Linkage rod/spring centring link removal/ installation
643-084	0.40	Neutral centring test
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.30	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
85		CAB INTERIOR/UPHOLSTERY
852-003	0.40	Operator's seat, removing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-068	0.50	Main control valve system relief test
912-077	0.80	Charge/Implement pump flow displacement test
912-084	0.50	High flow valve relief test
912-091	0.70	Main control valve, removal
912-092	1.25	Main control valve, installation
916-031	1.25	High flow valve, removal
916-032	1.75	High flow valve, installation
916-033	0.70	High flow valve, maintenance
916-037	0.40	Self level valve, adjustment
94		UNIT, LOAD HANDLING
945-006	0.90	Lift cylinder removed, repacking
945-010	0.90	Tilt cylinder removed, repacking
945-018	0.70	Lift cylinder, removing
945-019	0.70	Lift cylinder, installing
945-021	0.50	Tilt cylinder, removing
945-022	0.50	Tilt cylinder, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-092	1.25	Drive chain case, oil change
19		GENERAL
191-021	0.20	Service position 1
191-022	0.10	Service position 2
191-024	0.30	Manual lifting of loader arm
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	2.50	Engine, removing
210-072	3.00	Engine, installing
23		FUEL SYSTEM
233-001	0.70	Fuel system, bleeding
26		COOLING SYSTEM
262-098	1.00	Thermostat, replacing
263-012	0.80	Fan belt and/or alternator belt, replacing
263-013	0.40	Fan belt and/or alternator belt, checking and adjusting tension
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.80	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-020	0.60	Starter system, tests
331-021	1.75	Starter motor, tests
4		POWER TRANSMISSION
44		HYDROSTATIC DRIVE
440-002	1.75	Transmission pump, flow displacement test
440-003	2.00	Transmission pump, drive relief test
441-009	2.00	Travel motor, removing

Op.no.	time (h)	Notes
6		STEERING
64		STEERING
643-080	2.50	Control lever crossmember removal/installation
643-081	2.50	Control lever removal and installation
643-082	0.90	Linkage rod/spring centring link removal/ installation
643-084	0.80	Neutral centring test
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.30	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
85		CAB INTERIOR/UPHOLSTERY
852-003	0.40	Operator's seat, removing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-010	0.80	Charge pump flow displacement test
900-011	0.90	Charge pump charge relief test
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-068	0.50	Main control valve system relief test
912-076	0.50	Charge/Implement pump charge relief test
912-077	0.80	Charge/Implement pump flow displacement test
912-084	0.50	High flow valve relief test
912-085	1.25	Implement/High flow pump flow displacement test
912-091	0.70	Main control valve, removal
912-092	1.25	Main control valve, installation
913-032	2.00	Charge/Implement pump, removal and installation
916-031	1.25	High flow valve, removal
916-032	1.75	High flow valve, installation
916-033	0.70	High flow valve, maintenance
916-037	0.40	Self level valve, adjustment

Op.no.	time (h)	Notes
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-028	0.40	Attachment bracket, removal
924-029	0.40	Attachment bracket, installation
94		UNIT, LOAD HANDLING
945-006	0.90	Lift cylinder removed, repacking
945-010	0.90	Tilt cylinder removed, repacking
945-018	0.70	Lift cylinder, removing
945-019	0.70	Lift cylinder, installing
945-021	0.50	Tilt cylinder, removing
945-022	0.70	Tilt cylinder, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-092	1.25	Drive chain case, oil change
19		GENERAL
191-021	0.20	Service position 1
191-022	0.10	Service position 2
191-024	0.30	Manual lifting of loader arm
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	2.50	Engine, removing
210-072	3.00	Engine, installing
23		FUEL SYSTEM
233-001	0.70	Fuel system, bleeding
26		COOLING SYSTEM
262-098	1.00	Thermostat, replacing
263-012	0.80	Fan belt and/or alternator belt, replacing
263-013	0.40	Fan belt and/or alternator belt, checking and adjusting tension
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.80	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-020	0.60	Starter system, tests
331-021	1.75	Starter motor, tests
4		POWER TRANSMISSION
44		HYDROSTATIC DRIVE
440-002	1.75	Transmission pump, flow displacement test
440-003	2.00	Transmission pump, drive relief test
441-009	2.00	Travel motor, removing

Op.no.	time (h)	Notes
6		STEERING
64		STEERING
643-080	2.50	Control lever crossmember removal/installation
643-081	2.50	Control lever removal and installation
643-082	0.90	Linkage rod/spring centring link removal/ installation
643-084	0.80	Neutral centring test
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.30	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
85		CAB INTERIOR/UPHOLSTERY
852-003	0.40	Operator's seat, removing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-010	0.80	Charge pump flow displacement test
900-011	0.90	Charge pump charge relief test
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-068	0.50	Main control valve system relief test
912-076	0.50	Charge/Implement pump charge relief test
912-077	0.80	Charge/Implement pump flow displacement test
912-084	0.50	High flow valve relief test
912-085	1.25	Implement/High flow pump flow displacement test
912-091	0.70	Main control valve, removal
912-092	1.25	Main control valve, installation
913-032	2.00	Charge/Implement pump, removal and installation
916-031	1.25	High flow valve, removal
916-032	1.75	High flow valve, installation
916-033	0.70	High flow valve, maintenance
916-037	0.40	Self level valve, adjustment

Op.no.	time (h)	Notes
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-028	0.40	Attachment bracket, removal
924-029	0.40	Attachment bracket, installation
94		UNIT, LOAD HANDLING
945-006	0.90	Lift cylinder removed, repacking
945-010	0.90	Tilt cylinder removed, repacking
945-018	0.70	Lift cylinder, removing
945-019	0.70	Lift cylinder, installing
945-021	0.50	Tilt cylinder, removing
945-022	0.70	Tilt cylinder, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-092	1.25	Drive chain case, oil change
19		GENERAL
191-021	0.20	Service position 1
191-022	0.10	Service position 2
191-023	0.20	Raising and blocking
191-024	0.30	Manual lifting of loader arm
2		ENGINE WITH MOUNTING AND EQUIPMENT
26		COOLING SYSTEM
262-098	1.00	Thermostat, replacing
263-012	2.00	Fan belt and/or alternator belt, replacing
263-013	0.40	Fan belt and/or alternator belt, checking and adjusting tension
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.60	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-020	0.60	Starter system, tests
331-021	1.75	Starter motor, tests
4		POWER TRANSMISSION
44		HYDROSTATIC DRIVE
440-002	1.75	Transmission pump, flow displacement test
440-003	1.25	Transmission pump, drive relief test
441-009	2.00	Travel motor, removing

Op.no.	time (h)	Notes
6		STEERING
64		STEERING
643-080	2.50	Control lever crossmember removal/installation
643-081	2.50	Control lever removal and installation
643-082	0.90	Linkage rod/spring centring link removal/ installation
643-084	0.40	Neutral centring test
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.30	Wheel, removing and fitting one
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-068	0.50	Main control valve system relief test
912-077	0.80	Charge/Implement pump flow displacement test
912-084	0.50	High flow valve relief test
912-091	0.70	Main control valve, removal
912-092	1.25	Main control valve, installation
916-031	1.25	High flow valve, removal
916-032	1.75	High flow valve, installation
916-033	0.70	High flow valve, maintenance
916-037	0.40	Self level valve, adjustment
94		UNIT, LOAD HANDLING
945-006	0.90	Lift cylinder removed, repacking
945-010	0.90	Tilt cylinder removed, repacking
945-018	0.70	Lift cylinder, removing
945-019	0.70	Lift cylinder, installing
945-021	0.50	Tilt cylinder, removing
945-022	0.50	Tilt cylinder, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-092	1.25	Drive chain case, oil change
19		GENERAL
191-021	0.20	Service position 1
191-022	0.10	Service position 2
191-023	0.20	Raising and blocking
191-024	0.30	Manual lifting of loader arm
2		ENGINE WITH MOUNTING AND EQUIPMENT
26		COOLING SYSTEM
262-098	1.00	Thermostat, replacing
263-012	2.00	Fan belt and/or alternator belt, replacing
263-013	0.40	Fan belt and/or alternator belt, checking and adjusting tension
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.60	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-020	0.60	Starter system, tests
331-021	1.75	Starter motor, tests
4		POWER TRANSMISSION
44		HYDROSTATIC DRIVE
440-002	1.75	Transmission pump, flow displacement test
440-003	1.25	Transmission pump, drive relief test
441-009	2.00	Travel motor, removing

Op.no.	time (h)	Notes
6		STEERING
64		STEERING
643-080	2.50	Control lever crossmember removal/installation
643-081	2.50	Control lever removal and installation
643-082	0.90	Linkage rod/spring centring link removal/ installation
643-084	0.40	Neutral centring test
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.30	Wheel, removing and fitting one
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-068	0.50	Main control valve system relief test
912-077	0.80	Charge/Implement pump flow displacement test
912-084	0.50	High flow valve relief test
912-091	0.70	Main control valve, removal
912-092	1.25	Main control valve, installation
916-031	1.25	High flow valve, removal
916-032	1.75	High flow valve, installation
916-033	0.70	High flow valve, maintenance
916-037	0.40	Self level valve, adjustment
94		UNIT, LOAD HANDLING
945-006	0.90	Lift cylinder removed, repacking
945-010	0.90	Tilt cylinder removed, repacking
945-018	0.70	Lift cylinder, removing
945-019	0.70	Lift cylinder, installing
945-021	0.50	Tilt cylinder, removing
945-022	0.50	Tilt cylinder, installing

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
172-002	3.50	Warranty inspection 100 hours	
172-004	14.00	Warranty inspection 1000 hours	
173-002	0.30	Maintenance service, daily	
173-004	0.30	Maintenance service, every 50 hours	
173-007	0.90	Maintenance service, every 250 hours	
173-010	3.00	Maintenance service, every 500 hours	
173-012	5.50	Maintenance service, every 1000 hours	
173-014	13.00	Maintenance service, every 2000 hours	
173-018	14.00	Maintenance service, every 4000 hours	
173-022	12.00	Maintenance service, every 6000 hours	
176-003	0.80	Emergency operation	
19		GENERAL	
191-028	0.20	Service position 6	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.25	E-ECU, MID 128, changing non-programmed ECU	
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-002	7.00	Compression test	
210-073	6.50	Engine and transmission, removing	
210-074	11.00	Engine and transmission, mounting	
214-012	5.50	Valves, adjusting	17001 - 19999
215-032	7.50	Timing gear case, fitting new gasket in machine	17001 - 19999
215-042	7.00	Camshaft, replacing	17001 - 19999
215-043	4.00	Camshaft setting, checking	17001 - 19999
216-018	3.50	Crankshaft, replacing rear oil seal	
217-004	3.50	Oil sump gasket, changing	
217-005	4.00	Oil level sensor, changing	
218-001	1.50	Rubber cushion, replacing	
218-007	4.00	Engine mounting rear, changing	
22		LUBRICATING SYSTEM	
223-006	4.50	Oil cooler, replacing	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	17001 - 19999
233-001	0.70	Fuel system, bleeding	17001 - 19999

Op.no.	time (h)		Notes
233-004	0.70	Feed pump, checking feed pressure	
233-009	0.20	Fuel pump (valves), inspection	
233-010	2.00	Fuel pump, inspection	
236-002	0.80	Stall speed, checking	
237-012	5.00	Unit injector, replacing	17001 - 19999
237-016	10.00	Injectors, replacing copper sleeve in machine	17001 - 19999
237-123	0.70	Injector shut off, manual	
25		INLET SYSTEM; EXHAUST SYSTEM	
258-002	2.00	Intercooler, replacing	
258-016	0.80	Cooling fan motor, intercooler, checking/adjusting low rpm	
258-017	0.80	Cooling fan motor, intercooler, checking/adjusting high rpm	
26		COOLING SYSTEM	
260-002	5.50	Cooling system, flushing	
261-004	1.50	Coolant, changing	
261-011	1.75	Radiator, removing	
261-013	2.50	Radiator, installing	
262-071	0.90	Coolant pump removed, reconditioning	
263-013	0.70	Fan belt and/or alternator belt, checking and adjusting tension	17001 - 19999
263-063	0.80	Cooling fan motor, radiator, checking/adjusting low rpm	
263-064	0.80	Cooling fan motor, radiator, checking/adjusting high rpm	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	0.60	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.40	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-002	1.25	Batteries, replacing	
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.00	Alternator, replacing incl function check	
36		OTHER ELECTRICAL EQUIPMENT	
363-002	1.25	Windscreen wiper front, replacing motor	
366-064	1.00	V-ECU, MID 187, changing non-programmed ECU	
366-066	0.90	V-ECU, MID 187, changing pre-programmed ECU	

Op.no.	time (h)	Notes
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-001	0.70	Checking of main, torque converter and lubricating oil pressure
421-054	2.00	Seal for rear output shaft, replacing
421-062	1.50	Induction sensor for turbine speed, changing
421-083	1.00	Transmission, remove from a non mounted engine
421-084	1.50	Transmission, fitting on a non mounted engine
43		GEARBOX,
432-076	0.70	T-ECU, MID 130, changing non-programmed ECU
432-078	0.60	T-ECU, MID 130, changing pre-programmed ECU
46		FRONT AXLE; REAR AXLE
468-062	0.50	Transverse differential lock/axle, checking and adjusting
5		BRAKE
51		WHEEL BRAKE
516-004	7.00	Brake discs, replacing on both sides
52		HYDRAULIC BRAKE SYSTEM
520-001	1.25	Brake system, checking function, hydraulic
520-010	0.10	Brake system, relieve pressure
520-037	1.00	Brake system, bleeding
525-008	3.50	Foot brake valve, replacing
527-004	2.50	Hydraulic pump, replacing
56		COMPRESSED-AIR BRAKE
561-004	2.00	Compressor, replacing
6		STEERING
64		STEERING
642-026	2.50	Steering gear, replacing
642-058	2.00	Steering gear, check.and adj.
643-010	1.75	Steering linkage, checking and adjusting
643-013	0.80	Steering times, checking and adjusting
643-014	1.00	Steering valve, neutral position, checking and adjusting
645-006	2.00	Steering cylinder, replacing
645-054	2.00	Steering cylinder, replacing bearings

Op.no.	time (h)		Notes
645-084	1.00	Damping cylinder, checking spring force	
645-085	1.25	Damping cylinder, changing seal	
647-093	3.00	Auxiliary steering, replacing hydraulic pump	
647-095	1.00	Auxiliary steering, adjusting working- and stand-by pressure	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
715-015	0.60	Protecting plate, removal	
715-016	0.50	Protecting plate, installation	
75		AXLE SUSPENSION	
756-016	0.80	Rubber element, replacing	
76		SHOCK ABSORBER; AXLE LOCKING; ANTI ROLL BAR; LEVEL / SIDE CONTROL	
761-001	4.00	Shock absorber front, replacing all	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-001	0.60	Wheel, removing and fitting one	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-002	0.60	Engine hood, installing	
821-060	0.50	Electric hood pump, changing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-006	0.60	Door lock, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-002	3.00	Windscreen, replacing	17001 - 19999
843-013	2.50	Side window, replacing	17001 - 19999
843-048	2.00	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-003	0.30	Operator's seat, removing	
852-004	0.50	Operator's seat, installing	17001 - 19999
852-091	0.80	Seat support, replacing	
87		AIR CONDITIONING UNIT	
873-004	3.00	Heater core, replacing	17001 - 19999
873-006	1.00	Fan motor, replacing	17001 - 19999

Op.no.	time (h)		Notes
873-008	0.90	Heat control valve, replacing	17001 - 19999
873-009	0.90	Heat control, replacing	17001 - 19999
874-012	5.00	Evaporator, replacing incl draining and filling	17001 - 19999
874-014	1.75	Thermostat, replacing	17001 - 19999

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

90 GENERAL

900-002	1.00	Hydraulic system, bleeding
900-005	0.30	Vacuum pump, connection
900-006	0.20	Vacuum pump, disconnection

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-013	0.50	Hydraulic oil cooler, removing
911-014	0.70	Hydraulic oil cooler, installing
911-040	0.50	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-079	7.00	Steering and tipping valve, replacing
912-080	3.00	Steering and dumping valve (removed), reconditioning
912-115	3.00	Steering and tipping valve, removal
912-116	3.00	Steering and tipping valve, installation
912-150	1.25	Working pressure, checking and adjusting
912-156	0.60	Pressure limiting/anti-cavitation valve, checking
913-003	1.50	Hydraulic pump, checking and adjusting standby pressure
913-004	1.50	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	2.50	Hydraulic pump, replacing
913-068	1.50	Pump regulator, checking
914-055	0.90	Servo pressure, checking and adjusting

99 MISCELLANEOUS

993-030	0.80	Shift valve, checking
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Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.70	Maintenance service, every 10 hours
173-004	0.50	Maintenance service, every 50 hours
173-010	0.30	Maintenance service, every 500 hours
173-012	0.40	Maintenance service, every 1000 hours
173-014	4.00	Maintenance service, every 2000 hours
173-050	0.30	Greasing, daily
173-303	0.20	Lubrication, every 50 hours
19		GENERAL
191-021	0.20	Service position 1
191-022	0.30	Service position 2
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
777-005	0.80	Vibration motor, removing
777-006	0.60	Vibration motor, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-005	0.50	Walkway, removing
827-006	0.40	Walkway, installing
827-007	0.60	Deck platform, removing
827-008	0.50	Deck platform, installing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
98		FUNCTION FOR ROAD CONSTRUCTION
982-003	2.50	Screed, removing
982-004	4.00	Screed, installing
982-015	2.00	Extension cylinder, removing
982-015	0.90	Extension cylinder, removing
982-016	3.00	Extension cylinder, installing
982-016	0.80	Extension cylinder, installing
982-026	0.30	End plate, replacing

Op.no.	time (h)	Notes
982-026	0.40	End plate, replacing
982-030	1.75	Sliding bearing, replacing
982-030	3.00	Sliding bearing, replacing
982-040	2.50	Brake cylinder, replacing
982-050	1.00	Crown control cylinder, replacing
982-050	2.50	Crown control cylinder, replacing
983-130	0.90	Vibration shaft, removing
983-131	0.80	Vibration shaft, installing
983-132	1.50	Vibration bearing, removing
983-133	1.25	Vibration bearing, installing
983-150	1.50	Tamper, adjusting
983-151	0.70	Tamper bar, removing
983-151	0.70	Tamper bar, removing
983-152	0.90	Tamper bar, installing
983-152	1.50	Tamper bar, installing
983-153	1.50	Tamper shaft, removing
983-153	1.75	Tamper shaft, removing
983-154	1.75	Tamper shaft, installing
983-154	2.00	Tamper shaft, installing
983-155	3.00	Tamper bearing, removing
983-156	2.00	Tamper bearing, installing
983-157	0.70	Tamper motor, removing
983-158	0.50	Tamper motor, installing
986-005	0.70	Heater bar, removing
986-005	1.25	Heater bar, removing
986-005	1.00	Heater bar, removing
986-005	1.25	Heater bar, removing
986-006	1.75	Heater bar, installing
986-006	1.25	Heater bar, installing
986-006	1.75	Heater bar, installing
986-006	0.50	Heater bar, installing
987-024	15.00	Screed plate, replacing
987-050	0.50	Deflector, removing
987-050	0.90	Deflector, removing
987-051	0.60	Deflector, installing
987-051	0.60	Deflector, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	0.70	Maintenance service, every 10 hours
173-004	0.50	Maintenance service, every 50 hours
173-010	0.30	Maintenance service, every 500 hours
173-012	0.40	Maintenance service, every 1000 hours
173-014	4.00	Maintenance service, every 2000 hours
173-050	0.30	Greasing, daily
173-303	0.20	Lubrication, every 50 hours
19		GENERAL
191-021	0.20	Service position 1
191-022	0.30	Service position 2
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
777-005	0.80	Vibration motor, removing
777-006	0.60	Vibration motor, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-005	0.50	Walkway, removing
827-006	0.40	Walkway, installing
827-007	0.60	Deck platform, removing
827-008	0.50	Deck platform, installing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
98		FUNCTION FOR ROAD CONSTRUCTION
982-003	2.50	Screed, removing
982-004	4.00	Screed, installing
982-015	2.00	Extension cylinder, removing
982-015	0.90	Extension cylinder, removing
982-016	3.00	Extension cylinder, installing
982-016	0.80	Extension cylinder, installing
982-026	0.30	End plate, replacing

Op.no.	time (h)	Notes
982-026	0.40	End plate, replacing
982-030	1.75	Sliding bearing, replacing
982-030	3.00	Sliding bearing, replacing
982-040	2.50	Brake cylinder, replacing
982-050	1.00	Crown control cylinder, replacing
982-050	2.50	Crown control cylinder, replacing
983-130	0.90	Vibration shaft, removing
983-131	0.80	Vibration shaft, installing
983-132	1.50	Vibration bearing, removing
983-133	1.25	Vibration bearing, installing
983-150	1.50	Tamper, adjusting
983-151	0.70	Tamper bar, removing
983-151	0.70	Tamper bar, removing
983-152	0.90	Tamper bar, installing
983-152	1.50	Tamper bar, installing
983-153	1.50	Tamper shaft, removing
983-153	1.75	Tamper shaft, removing
983-154	1.75	Tamper shaft, installing
983-154	2.00	Tamper shaft, installing
983-155	3.00	Tamper bearing, removing
983-156	2.00	Tamper bearing, installing
983-157	0.70	Tamper motor, removing
983-158	0.50	Tamper motor, installing
987-024	15.00	Screed plate, replacing
987-050	0.50	Deflector, removing
987-050	0.90	Deflector, removing
987-051	0.60	Deflector, installing
987-051	0.60	Deflector, installing

The following applies to the use of Volvo Construction Equipment guideline times

Listed times indicate **guideline times** for maintenance and repairs of machines manufactured by Volvo CE (Volvo Construction Equipment AB).

Guideline time is the time that the mechanic normally needs to perform an operation according to the instructions normally found in each machine's service manual or component manual, and that is performed according to the conditions listed below.

Feedback address for Time Guide: servicemanuals@volvo.com

Applicability

The time for performing an operation varies with a number of parameters, e.g., environment (where the work is done), training and equipment. Guideline times are developed with the following conditions:

- Workshop in an indoor environment with a solid and level concrete floor.
- Workshop equipped with lifting device that has lifting capacity and lifting height adapted to a majority of operations (except lifting complete machine units/machine frames) performed on machines handled by the workshop.
- Use of approved support and lifting equipment, in addition to the equipment indicated in each machine's service manual.
- Workshop equipped with compressed air, electricity and lighting.
- Use of indicated Volvo CE special tools.
- Tools stored in easily accessed location, in the immediate vicinity of the workplace.
- Where applicable, oils/fluids are handled in an environmentally correct manner.

For guideline times to apply it is required, in addition to the above conditions, that the mechanic has the training and experience required for the machine and the work that is being done (e.g., Basic Course Electricity and hydraulics as well as machine course step 1 Volvo CE Service school).

Guideline times apply when one person performs the operation. However, in the operations actions may be performed that require help from another person. In these cases, the time for that step which requires two persons has been doubled. The guideline times do not apply if more than one mechanic performs the entire operation.

Actions not included in guideline times are:

- Transport of machine to and from workshop site.
- Troubleshooting not described as a separate operation.
- Retrieval of spare parts, consumables and tools that are not stored in easily accessed location.
- Washing of the whole or parts of the machine before repair/maintenance.
- Actions that due to deformation, corrosion or external damage increase the repair time.
- Additional work that due to retrofitted equipment reduces access, unless these work steps are mentioned in the method description in each service manual.

Other

For every operation there is an operation number, heading and guideline time. The description for how the work is done is normally found in the service manual for each machine under the corresponding operation number.

Foreword

New format of operation number

In the time guide, each operation number has a heading with a three-digit function group number (see **function group** below) as well as a three-digit running number.

Example: Op no. 210-070 Engine removing

210-	070
Function group	Running number (Sequential number)

Example of discontinued op. no. is 21070 alt. 21070-1 (Engine removing).

Function group:

According to Volvo Construction Equipment function group index, where the first digit indicates section and is divided in the following functions, which follows the same design as other service information:

1. Standard parts, service
2. Engine with mounting and equipment
3. Elec.system; Warning system; Information system; Instruments
4. Power transmission
5. Brakes
6. Steering
7. Frame; Springs; Damping; Axle suspension; Wheel/track unit
8. Machinery house; Cab; Exterior trim parts anywhere
9. Hydraulic system; Digging/handling/grading equipment; Misc. Equip. hydraulics

The second and third digit (10) indicate sub-group, which in turn divides the functions within the group, also this follows the same design as other service information.

Running number:

Running number or sequential number 001 to 899 (in the example 070) is a number to identify each operation.

Other

Equipment:

Running number 901 to 999 are reserved for installation times for equipment (installation instructions).

Earlier (discontinued) format of operation numbers:

From 2005-03-08, only the new format for operation numbers shall be used, with the exception of operations for VCADS Pro. Already published service information makes use of the earlier format for operation numbers.

VCADS Pro:

For the time being, VCADS Pro operations will adhere to the same design as before, XXXXX-X, and will have a code digit (-3) for test procedures.

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A30F (SN –99999)	17
A35F (SN –99999)	27
A35F FS (SN –99999)	37
A40F (SN –99999)	47
A40F FS (SN –99999)	57
ABG5770	67
ABG5870	69
ABG6820	71
ABG6870	75
BL60	77
BL61	83
BL61 PLUS	89
BL70	93
BL71	99
BL71 PLUS	105
DD112HF	111
DD118HF	115
DD118HFA	119
DD132HF	123
DD138HF	127
DD138HFA	131
DD25	135
DD25W	139
EC13 XR	141
EC13 XTV	143
EC140C	145
EC140C L	155
EC140C LM	163
EC15B XR	171
EC15B XT	173
EC15B XTV	175
EC160C L	177
EC160C NL	185
EC180C L	193
EC20B XT	201
EC20B XTV	203
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ECR235C L	383
ECR28	393
ECR305C L	399
ECR48C	407
ECR58	413
ECR88	421
EW140C	429
EW145B	439
EW160C	449
EW180C	459
EW210C	469
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FC2121C	487
FC2421C	495
FC2924C	503
FC3329C	511
G930B	519
G940B	529
G946B	539
G960B	549
L110G	559
L120G	567
L150G	575
L180G	585
L180G HL	595
L20B	603
L220G	611
L250G	621
L25B	631
L30B	639
L35B	647
L45F	655
L50F	659
L60G	663
L70G	671
L90G	679
MC110B	687
MC60B	693
MC70B	699
MC80B	705
MC90B	711
PF6110	717
PF6160	723
PF6170	729
SD100D	735
SD100F	741

SD116DX	747
SD116F	753
SD160DX	759
SD160F	761
SD200DX	763
SD200F	767
SD45D	771
SD45F	775
SD70D	779
SD70F	783
SD77F	787

Op.no.	time (h)	Notes	
0		GENERAL	
09		MISCELLANEOUS	
090-001	0.70	Engine, basic check	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-007	0.60	Maintenance service, every 250 hours	
173-010	3.00	Maintenance service, every 500 hours	
173-012	6.00	Maintenance service, every 1000 hours	
173-014	9.00	Maintenance service, every 2000 hours	
173-018	16.00	Maintenance service, every 4000 hours	
173-019	2.50	Maintenance service, every 4500 hours	
173-022	2.00	Maintenance service, every 6000 hours	
173-024	0.40	Maintenance service, every 8000 hours	
173-028	0.40	Maintenance service, every 12000 hours	
173-042	3.00	Maintenance service, first 1000 hours	
176-002	0.70	Propeller shafts, removing	
19		GENERAL	
191-021	0.20	Service position 1	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	2.00	E-ECU, MID 128, changing non-programmed ECU	
200-070	1.50	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-002	9.00	Compression test	
210-002	8.50	Compression test	
210-073	9.00	Engine and transmission, removing	
210-074	11.00	Engine and transmission, mounting	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
210-092	0.50	Engine rotation speed sensor (camshaft), replacing	
212-071	0.90	Crankcase ventilation separator, replacing	13001 - 26999
214-012	2.50	Valves, adjusting	
215-042	8.00	Camshaft, replacing	
215-043	2.00	Camshaft setting, checking	
216-014	1.75	Crankshaft, replacing front oil seal	

Op.no.	time (h)		Notes
216-018	18.00	Crankshaft, replacing rear oil seal	
216-049	1.75	Crankshaft, axial clearance, checking	
218-001	1.50	Rubber cushion, replacing	
218-007	4.00	Engine mounting rear, changing	
22		LUBRICATING SYSTEM	
221-020	0.80	Lubrication pressure rocker arm shaft, check	
221-022	0.60	Lubrication oil pressure, checking with pressure gauge	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
233-001	0.70	Fuel system, bleeding	
233-004	0.70	Feed pump, checking feed pressure	13001 - 16999
233-010	2.00	Fuel pump, inspection	
236-002	0.90	Stall speed, checking	
237-007	1.25	Overflow valve, replacing	
237-012	7.50	Unit injector, replacing	
237-016	12.00	Injectors, replacing copper sleeve in machine	
237-017	11.00	Injector sleeves, replacing	
237-123	0.70	Injector shut off, manual	
25		INLET SYSTEM; EXHAUST SYSTEM	
252-021	0.80	Exhaust pipe, flexible tube, replacing	
254-001	2.50	Diesel particulate filter, check and clean	
254-010	0.70	DPF flame sensor, replacing	
254-021	3.00	Atomization unit, replacing	
254-022	2.50	ACM (After treatment control module), replacing, non-programmed	
254-023	2.50	ACM (After treatment control module), replacing, pre-programmed	
254-033	2.50	Burner, replacing	
254-046	0.80	Spark plug, replacing	13001 - 26999
254-047	1.00	Spark plug, checking	13001 - 26999
254-061	2.50	Exhaust aftertreatment system, fuel pump, replacing	
254-063	2.50	Aftertreatment support unit (ASU), replacing	
254-064	0.60	High pressure air system, pressure, checking	
254-065	0.90	Air pump flow, checking	
254-069	0.70	Exhaust aftertreatment system fuel flow, checking	
254-125	1.75	Exhaust aftertreatment fuel injector, replacing	
255-003	1.50	Actuator, variable turbocharger, replacing	
255-071	2.50	Turbocharger, replacing	
258-014	0.90	Fan pump, removing	
258-015	1.50	Fan pump, installation	

Op.no.	time (h)	Notes	
258-016	0.80	Cooling fan motor, intercooler, checking/adjusting low rpm	
258-017	0.80	Cooling fan motor, intercooler, checking/adjusting high rpm	
26		COOLING SYSTEM	
262-008	2.50	Secondary coolant pump, replacing	
262-098	1.25	Thermostat, replacing	
263-013	0.40	Fan belt and/or alternator belt, checking and adjusting tension	
263-063	0.80	Cooling fan motor, radiator, checking/adjusting low rpm	
263-064	0.80	Cooling fan motor, radiator, checking/adjusting high rpm	
29		Miscellaneous	
293-001	4.50	EGR cooler, replacing	13001 - 26999
293-002	3.00	EGR cooler, pressure test	
293-004	6.50	EGR cooler, cleaning	13001 - 26999
293-005	1.00	EGR valve, replacing	13001 - 26999
293-013	4.00	EGR venturi tube, cleaning	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-075	1.00	HMIM, MID 140, changing pre-programmed ECU	
300-076	1.25	HMIM, MID 140, changing non-programmed ECU	
31		BATTERY	
311-002	1.00	Batteries, replacing	
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.25	Alternator, replacing incl function check	
33		STARTING SYSTEM	
331-018	1.75	Starter motor, replacing	
35		LIGHTING	
352-002	0.50	Headlights, adjusting	
36		OTHER ELECTRICAL EQUIPMENT	
363-002	2.00	Windscreen wiper front, replacing motor	
363-002	1.25	Windscreen wiper front, replacing motor	
366-064	1.25	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	

Op.no.	time (h)	Notes
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-008	0.60	Engine rotation speed sensor, replacing
39		MISCELLANEOUS
398-001	0.50	CareTrack antenna, replacing
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU
398-003	1.00	W-ECU, MID142, changing non-programmed ECU
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-001	0.70	Checking of main, torque converter and lubricating oil pressure
421-046	2.50	PWM-valve control system, changing
421-054	1.75	Seal for rear output shaft, replacing
421-058	2.00	Retarder valve, replacing
421-061	0.50	Induction sensor for output shaft, changing
421-062	1.50	Induction sensor for turbine speed, changing
421-070	7.50	Transmission, removing
421-072	9.50	Transmission, installing
421-083	1.25	Transmission, remove from a non mounted engine
421-084	1.50	Transmission, fitting on a non mounted engine
43		GEARBOX,
434-002	1.75	Dropbox, replacing seal for front output shaft
434-004	2.00	Dropbox, replacing seal for rear output shaft
434-064	0.60	Differential lock longitudinal, adjustment of sender unit
434-065	0.40	Rotation speed sensor, replacing
434-073	4.00	Dropbox, installing
434-074	3.00	Dropbox, removing
45		PROPELLER SHAFT
451-006	6.50	Intermediate shaft and/or bearing, replacing (in frame joint)
46		FRONT AXLE; REAR AXLE
461-006	8.50	Spindle, replacing one side
461-011	8.00	Centre gear , removing and fitting
461-037	4.00	Hub reduction, removing
461-038	2.50	Hub reduction, installing
463-006	8.50	Spindle, replacing one side
463-011	8.00	Centre gear, removing and fitting
463-016	0.50	Dog clutch 6x6, checking and adjusting

Op.no.	time (h)	Notes
463-079	2.00	Output shaft 6-wheel drive, sealing and bearing, replacing
464-084	8.50	Spindle, replacing one side
48		POWER TAKE OFF
482-004	8.50	Power take-off, between engine and gearbox, reconditioning
5		BRAKE
51		WHEEL BRAKE
511-002	6.50	Brake disc, replacing one
511-005	1.75	Brake pads, replacing (one wheel, front axle)
511-045	4.00	Brake calliper, replacing one
511-081	0.90	Brake calliper removed, reconditioning
512-005	1.75	Brake pads, replacing (one wheel, first boggie axle)
512-045	4.00	Brake caliper, replacing one
512-045	4.00	Brake caliper, replacing one
513-005	1.75	Brake pads, replacing (one wheel, 2:d boggie axle)
52		HYDRAULIC BRAKE SYSTEM
520-001	0.70	Brake system, checking function, hydraulic
520-010	0.10	Brake system, relieve pressure
520-037	0.90	Brake system, bleeding
520-037	0.90	Brake system, bleeding
525-008	3.50	Foot brake valve, replacing
527-001	0.10	Accumulator removed, checking charging pressure
527-002	0.80	Accumulator, replacing
55		PARKING BRAKE
550-002	0.60	Parking brake, adjusting
550-005	3.00	Parking brake, replacing brake disc
550-009	1.50	Spring brake cylinder, replacing
550-012	3.00	Parking brake , replacing brake caliper
550-014	1.50	Parking brake, replacing brake pads
550-015	0.30	Parking brake, manually releasing
550-023	0.20	Parking brake, function checking
553-000	0.40	Load and dump brake, working pressure, checking and adjusting
553-001	0.40	Load and Dump brake, servo pressure, checking
553-002	0.30	Load and Dump brake, function check
553-003	0.40	Load and dump brake, servo accumulator, checking

Op.no.	time (h)	Notes
56		COMPRESSED-AIR BRAKE
561-004	2.50	Compressor, replacing
561-023	0.30	Relief/Cut-in pressure, check
561-024	0.30	Relief/Cut-in pressure, adjusting
59		MISCELLANEOUS
590-001	0.30	Quick coupling compressed air, replacing
6		STEERING
64		STEERING
642-026	3.00	Steering gear, replacing
642-058	1.25	Steering gear, check.and adj.
643-010	1.75	Steering linkage, checking and adjusting
643-012	0.40	Steering angle, checking and adjusting
643-013	0.90	Steering times, checking and adjusting
643-014	1.00	Steering valve, neutral position, checking and adjusting
643-017	2.50	Lever bracket, steering bearing, replacing
645-004	1.00	Steering cylinder, removing
645-005	1.75	Steering cylinder, installing
645-019	2.00	Steering system, bleeding
645-052	1.00	Steering cylinder removed, reconditioning excl replacing bearings
645-054	2.50	Steering cylinder, replacing bearings
645-054	0.60	Steering cylinder, replacing bearings
645-084	1.25	Damping cylinder, checking spring force
645-085	1.25	Damping cylinder, changing seal
647-095	1.00	Auxiliary steering, adjusting working- and stand-by pressure
647-096	1.00	Auxiliary steering, hydraulic pump, removing
647-097	2.00	Auxiliary steering, hydraulic pump, installation
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-015	0.90	Protecting plate, removal
715-016	1.50	Protecting plate, installation
72		SUSPENSION
720-020	0.70	Hydraulic cylinder bushing, suspension system, replacing

Op.no.	time (h)	Notes
720-021	1.75	Hydraulic cylinder, suspension system, overhaul
725-001	1.00	Suspension cylinder, removal
725-002	0.90	Suspension cylinder, installation
725-010	1.50	Suspension cylinder (GHS), oil changing
725-012	0.20	Suspension cylinder (GHS), discarding
725-013	0.40	Suspension cylinder (GHS), function check
74		FRAME LINK
741-001	6.00	Frame joint, separating machine
741-040	1.50	Frame joint bearing, replacing (machine separated)
741-044	4.50	Hitch, removing
741-045	6.00	Hitch, installing
741-046	2.00	Steering joint bearing, replacing (Hitch removed)
742-040	5.00	Steering joint, replacing bearings
75		AXLE SUSPENSION
751-001	1.75	A-frame bushing, tractor unit, replacing
751-013	1.00	Cross stay, rubber bushing, replacing
751-014	0.40	Cross stay, removing
751-015	0.40	Cross stay, installing
756-013	1.00	Cross stay, rubber bushing, replacing
756-017	0.40	Cross stay, removing
756-018	0.40	Cross stay, installing
756-024	2.00	Bogie beam, changing rubber spring, one side (front)
756-027	2.00	A-frame bushing, front on load unit, changing
756-028	2.50	A-frame bushing, rear on load unit, changing
756-029	0.90	Bogie beam, changing rubber bushing on removed beam
756-030	7.00	Bogie beam, changing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.60	Wheel, removing and fitting one
771-007	0.70	Wheel, installing
771-008	0.70	Wheel, removing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing

Op.no.	time (h)	Notes
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	1.00	Engine hood, removing
821-002	1.25	Engine hood, installing
821-035	0.60	Hood pump, oil, changing
821-060	0.80	Electric hood pump, changing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.25	Door, replacing
831-006	0.60	Door lock, replacing
831-007	0.50	Door, gas spring, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	3.00	Windscreen, replacing
843-012	3.00	Rear window, replacing
843-013	3.00	Side window, replacing
843-014	3.00	Side window, rear, replacing
843-048	2.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.70	Operator's seat, removing
852-004	0.70	Operator's seat, installing
852-092	0.50	Operator's seat, shock absorber, replacing
852-096	1.75	Operator's seat, air bellows, replacing
87		AIR CONDITIONING UNIT
870-010	0.80	ECC, MID 146, changing pre-programmed ECU
870-011	0.80	ECC, MID 146, changing non-programmed ECU
870-015	1.25	Cab heating/cab ventilation timer, pump, replacing
873-004	4.00	Heater core, replacing
873-006	4.00	Fan motor, replacing
873-008	3.00	Heat control valve, replacing
873-009	0.50	Heat control, replacing
874-003	0.30	Cooling unit, performance test
874-006	4.00	Compressor, replacing incl draining and filling
874-010	4.00	Condenser, replacing incl draining and filling
874-011	3.50	Receiver, replacing incl draining and filling
874-012	5.00	Evaporator, replacing incl draining and filling
874-059	5.50	Evaporator, cleaning
875-013	2.50	Auxiliary heater, replacing

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-002	0.40	Hydraulic system, bleeding
900-003	0.10	Hydraulic system, relieve pressure
900-005	0.30	Vacuum pump, connection
900-006	0.20	Vacuum pump, disconnection
900-031	1.00	V2-ECU, MID 249, changing non-programmed ECU
900-032	0.90	V2-ECU, MID 249, changing pre-programmed ECU
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-078	0.60	Dump lever, changing
912-115	4.50	Steering and tipping valve, removal
912-116	4.50	Steering and tipping valve, installation
913-003	0.90	Hydraulic pump, checking and adjusting standby pressure
913-004	0.80	Hydraulic pump, checking and adjusting max working pressure
913-004	0.80	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-023	0.90	Pump, removal
913-024	1.50	Pump, installation
913-042	0.50	Working pumps, checking function
913-068	1.50	Pump regulator, checking
914-094	0.70	Dump function, checking pressure
95		LOAD CARRIER
951-005	1.00	Hoist cylinder bearing, changing
951-005	0.90	Hoist cylinder bearing, changing
951-006	3.00	Hoist cylinder removed, reconditioning
951-006	3.00	Hoist cylinder removed, reconditioning
951-007	1.00	Hoist cylinder, removal
951-008	1.00	Hoist cylinder, installation
951-011	0.30	Cylinder, rear flap, gas pressure, checking and adjusting
951-030	0.40	Dump body alternative, lowering
951-030	0.40	Dump body alternative, lowering
951-040	2.00	Dump body joint, changing tipping bearing
951-041	2.50	Dump body, adjusting against frame
951-042	0.20	Dump body angle sensor, calibration

Op.no.	time (h)	Notes
99		MISCELLANEOUS
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes	
0		GENERAL	
09		MISCELLANEOUS	
090-001	0.70	Engine, basic check	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-007	0.60	Maintenance service, every 250 hours	
173-010	3.00	Maintenance service, every 500 hours	
173-012	6.00	Maintenance service, every 1000 hours	
173-014	9.00	Maintenance service, every 2000 hours	
173-018	16.00	Maintenance service, every 4000 hours	
173-019	2.50	Maintenance service, every 4500 hours	
173-022	2.00	Maintenance service, every 6000 hours	
173-024	0.40	Maintenance service, every 8000 hours	
173-028	0.40	Maintenance service, every 12000 hours	
173-042	3.00	Maintenance service, first 1000 hours	
176-002	0.70	Propeller shafts, removing	
19		GENERAL	
191-021	0.20	Service position 1	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	2.00	E-ECU, MID 128, changing non-programmed ECU	
200-070	1.50	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-002	9.00	Compression test	
210-002	8.50	Compression test	
210-073	9.00	Engine and transmission, removing	
210-074	11.00	Engine and transmission, mounting	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
210-092	0.50	Engine rotation speed sensor (camshaft), replacing	
212-071	0.90	Crankcase ventilation separator, replacing	12001 - 26999
214-012	2.50	Valves, adjusting	
215-042	8.00	Camshaft, replacing	
215-043	2.00	Camshaft setting, checking	
216-014	1.75	Crankshaft, replacing front oil seal	

Op.no.	time (h)		Notes
216-018	18.00	Crankshaft, replacing rear oil seal	
216-049	1.75	Crankshaft, axial clearance, checking	
218-001	1.50	Rubber cushion, replacing	
218-007	4.00	Engine mounting rear, changing	
22		LUBRICATING SYSTEM	
221-020	0.80	Lubrication pressure rocker arm shaft, check	
221-022	0.60	Lubrication oil pressure, checking with pressure gauge	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
233-001	0.70	Fuel system, bleeding	
233-004	0.70	Feed pump, checking feed pressure	
233-010	2.00	Fuel pump, inspection	
236-002	0.90	Stall speed, checking	
237-007	1.25	Overflow valve, replacing	
237-012	7.50	Unit injector, replacing	
237-016	12.00	Injectors, replacing copper sleeve in machine	
237-017	11.00	Injector sleeves, replacing	
237-123	0.70	Injector shut off, manual	
25		INLET SYSTEM; EXHAUST SYSTEM	
252-021	0.80	Exhaust pipe, flexible tube, replacing	
254-001	2.50	Diesel particulate filter, check and clean	
254-010	0.70	DPF flame sensor, replacing	
254-021	3.00	Atomization unit, replacing	
254-022	2.50	ACM (After treatment control module), replacing, non-programmed	
254-023	2.50	ACM (After treatment control module), replacing, pre-programmed	
254-033	2.50	Burner, replacing	
254-046	0.80	Spark plug, replacing	12001 - 26999
254-047	1.00	Spark plug, checking	12001 - 26999
254-061	2.50	Exhaust aftertreatment system, fuel pump, replacing	
254-063	2.50	Aftertreatment support unit (ASU), replacing	
254-064	0.60	High pressure air system, pressure, checking	
254-065	0.90	Air pump flow, checking	
254-069	0.70	Exhaust aftertreatment system fuel flow, checking	
254-125	1.75	Exhaust aftertreatment fuel injector, replacing	
255-003	1.50	Actuator, variable turbocharger, replacing	
255-071	2.50	Turbocharger, replacing	
258-014	0.90	Fan pump, removing	
258-015	1.50	Fan pump, installation	

Op.no.	time (h)	Notes	
258-016	0.80	Cooling fan motor, intercooler, checking/adjusting low rpm	
258-017	0.80	Cooling fan motor, intercooler, checking/adjusting high rpm	
26		COOLING SYSTEM	
262-008	2.50	Secondary coolant pump, replacing	
262-098	1.25	Thermostat, replacing	
263-013	0.40	Fan belt and/or alternator belt, checking and adjusting tension	
263-063	0.80	Cooling fan motor, radiator, checking/adjusting low rpm	
263-064	0.80	Cooling fan motor, radiator, checking/adjusting high rpm	
29		Miscellaneous	
293-001	4.50	EGR cooler, replacing	12001 - 26999
293-002	3.00	EGR cooler, pressure test	
293-004	6.50	EGR cooler, cleaning	12001 - 26999
293-005	1.00	EGR valve, replacing	12001 - 26999
293-013	4.00	EGR venturi tube, cleaning	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-075	1.00	HMIM, MID 140, changing pre-programmed ECU	
300-076	1.25	HMIM, MID 140, changing non-programmed ECU	
31		BATTERY	
311-002	1.00	Batteries, replacing	
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.25	Alternator, replacing incl function check	
33		STARTING SYSTEM	
331-018	1.75	Starter motor, replacing	
35		LIGHTING	
352-002	0.50	Headlights, adjusting	
36		OTHER ELECTRICAL EQUIPMENT	
363-002	2.00	Windscreen wiper front, replacing motor	
363-002	1.25	Windscreen wiper front, replacing motor	
366-064	1.25	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	

Op.no.	time (h)	Notes
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-008	0.60	Engine rotation speed sensor, replacing
39		MISCELLANEOUS
398-001	0.50	CareTrack antenna, replacing
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU
398-003	1.00	W-ECU, MID142, changing non-programmed ECU
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-001	0.70	Checking of main, torque converter and lubricating oil pressure
421-046	2.50	PWM-valve control system, changing
421-054	1.75	Seal for rear output shaft, replacing
421-058	2.00	Retarder valve, replacing
421-061	0.50	Induction sensor for output shaft, changing
421-062	1.50	Induction sensor for turbine speed, changing
421-070	7.50	Transmission, removing
421-072	9.50	Transmission, installing
421-083	1.25	Transmission, remove from a non mounted engine
421-084	1.50	Transmission, fitting on a non mounted engine
43		GEARBOX,
434-002	1.75	Dropbox, replacing seal for front output shaft
434-004	2.00	Dropbox, replacing seal for rear output shaft
434-064	0.60	Differential lock longitudinal, adjustment of sender unit
434-065	0.40	Rotation speed sensor, replacing
434-073	4.00	Dropbox, installing
434-074	3.00	Dropbox, removing
45		PROPELLER SHAFT
451-006	6.50	Intermediate shaft and/or bearing, replacing (in frame joint)
46		FRONT AXLE; REAR AXLE
461-006	8.50	Spindle, replacing one side
461-011	8.00	Centre gear , removing and fitting
461-037	4.00	Hub reduction, removing
461-038	2.50	Hub reduction, installing
463-006	8.50	Spindle, replacing one side
463-011	8.00	Centre gear, removing and fitting
463-016	0.50	Dog clutch 6x6, checking and adjusting

Op.no.	time (h)	Notes
463-079	2.00	Output shaft 6-wheel drive, sealing and bearing, replacing
464-084	8.50	Spindle, replacing one side
48		POWER TAKE OFF
482-004	8.50	Power take-off, between engine and gearbox, reconditioning
5		BRAKE
51		WHEEL BRAKE
511-002	6.50	Brake disc, replacing one
511-005	1.75	Brake pads, replacing (one wheel, front axle)
511-045	4.00	Brake calliper, replacing one
511-081	0.90	Brake calliper removed, reconditioning
512-005	1.75	Brake pads, replacing (one wheel, first boggie axle)
512-045	4.00	Brake caliper, replacing one
512-045	4.00	Brake caliper, replacing one
513-005	1.75	Brake pads, replacing (one wheel, 2:d boggie axle)
52		HYDRAULIC BRAKE SYSTEM
520-001	0.70	Brake system, checking function, hydraulic
520-010	0.10	Brake system, relieve pressure
520-037	0.90	Brake system, bleeding
525-008	3.50	Foot brake valve, replacing
527-001	0.10	Accumulator removed, checking charging pressure
527-002	0.80	Accumulator, replacing
55		PARKING BRAKE
550-002	0.60	Parking brake, adjusting
550-005	3.00	Parking brake, replacing brake disc
550-009	1.50	Spring brake cylinder, replacing
550-012	3.00	Parking brake , replacing brake caliper
550-014	1.50	Parking brake, replacing brake pads
550-015	0.30	Parking brake, manually releasing
550-023	0.20	Parking brake, function checking
553-000	0.40	Load and dump brake, working pressure, checking and adjusting
553-001	0.40	Load and Dump brake, servo pressure, checking
553-002	0.30	Load and Dump brake, function check
553-003	0.40	Load and dump brake, servo accumulator, checking

Op.no.	time (h)	Notes
56		COMPRESSED-AIR BRAKE
561-004	2.50	Compressor, replacing
561-023	0.30	Relief/Cut-in pressure, check
561-024	0.30	Relief/Cut-in pressure, adjusting
59		MISCELLANEOUS
590-001	0.30	Quick coupling compressed air, replacing
6		STEERING
64		STEERING
642-026	3.00	Steering gear, replacing
642-058	1.25	Steering gear, check.and adj.
643-010	1.75	Steering linkage, checking and adjusting
643-012	0.40	Steering angle, checking and adjusting
643-013	0.90	Steering times, checking and adjusting
643-014	1.00	Steering valve, neutral position, checking and adjusting
643-017	2.50	Lever bracket, steering bearing, replacing
645-004	1.00	Steering cylinder, removing
645-005	1.75	Steering cylinder, installing
645-052	1.00	Steering cylinder removed, reconditioning excl replacing bearings
645-054	2.50	Steering cylinder, replacing bearings
645-054	0.60	Steering cylinder, replacing bearings
645-084	1.25	Damping cylinder, checking spring force
645-085	1.25	Damping cylinder, changing seal
647-095	1.00	Auxiliary steering, adjusting working- and stand-by pressure
647-096	1.00	Auxiliary steering, hydraulic pump, removing
647-097	2.00	Auxiliary steering, hydraulic pump, installation
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-015	0.90	Protecting plate, removal
715-016	1.50	Protecting plate, installation
72		SUSPENSION
720-020	0.70	Hydraulic cylinder bushing, suspension system, replacing
720-021	1.75	Hydraulic cylinder, suspension system, overhaul

Op.no.	time (h)	Notes
725-001	1.00	Suspension cylinder, removal
725-002	0.90	Suspension cylinder, installation
725-010	1.50	Suspension cylinder (GHS), oil changing
725-012	0.20	Suspension cylinder (GHS), discarding
725-013	0.40	Suspension cylinder (GHS), function check
74		FRAME LINK
741-001	6.00	Frame joint, separating machine
741-040	1.50	Frame joint bearing, replacing (machine separated)
741-044	4.50	Hitch, removing
741-045	6.00	Hitch, installing
741-046	2.00	Steering joint bearing, replacing (Hitch removed)
742-040	5.00	Steering joint, replacing bearings
75		AXLE SUSPENSION
751-001	1.75	A-frame bushing, tractor unit, replacing
751-013	1.00	Cross stay, rubber bushing, replacing
751-014	0.40	Cross stay, removing
751-015	0.40	Cross stay, installing
756-013	1.00	Cross stay, rubber bushing, replacing
756-017	0.40	Cross stay, removing
756-018	0.40	Cross stay, installing
756-024	2.00	Bogie beam, changing rubber spring, one side (front)
756-027	2.00	A-frame bushing, front on load unit, changing
756-028	2.50	A-frame bushing, rear on load unit, changing
756-029	0.90	Bogie beam, changing rubber bushing on removed beam
756-030	7.00	Bogie beam, changing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.60	Wheel, removing and fitting one
771-007	0.70	Wheel, installing
771-008	0.70	Wheel, removing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	1.00	Engine hood, removing

Op.no.	time (h)	Notes
821-002	1.25	Engine hood, installing
821-035	0.60	Hood pump, oil, changing
821-060	0.80	Electric hood pump, changing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.25	Door, replacing
831-006	0.60	Door lock, replacing
831-007	0.50	Door, gas spring, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	3.00	Windscreen, replacing
843-012	3.00	Rear window, replacing
843-013	3.00	Side window, replacing
843-014	3.00	Side window, rear, replacing
843-048	2.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.70	Operator's seat, removing
852-004	0.70	Operator's seat, installing
852-092	0.50	Operator's seat, shock absorber, replacing
852-096	1.75	Operator's seat, air bellows, replacing
87		AIR CONDITIONING UNIT
870-010	0.80	ECC, MID 146, changing pre-programmed ECU
870-011	0.80	ECC, MID 146, changing non-programmed ECU
870-015	1.25	Cab heating/cab ventilation timer, pump, replacing
873-004	4.00	Heater core, replacing
873-006	4.00	Fan motor, replacing
873-008	3.00	Heat control valve, replacing
873-009	0.50	Heat control, replacing
874-003	0.30	Cooling unit, performance test
874-006	4.00	Compressor, replacing incl draining and filling
874-010	4.00	Condenser, replacing incl draining and filling
874-011	3.50	Receiver, replacing incl draining and filling
874-012	5.00	Evaporator, replacing incl draining and filling
874-059	5.50	Evaporator, cleaning
875-013	2.50	Auxiliary heater, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-002	0.40	Hydraulic system, bleeding
900-003	0.10	Hydraulic system, relieve pressure
900-005	0.30	Vacuum pump, connection

Op.no.	time (h)	Notes
900-006	0.20	Vacuum pump, disconnection
900-031	1.00	V2-ECU, MID 249, changing non-programmed ECU
900-032	0.90	V2-ECU, MID 249, changing pre-programmed ECU
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-078	0.60	Dump lever, changing
912-115	4.50	Steering and tipping valve, removal
912-116	4.50	Steering and tipping valve, installation
913-003	0.90	Hydraulic pump, checking and adjusting standby pressure
913-004	0.80	Hydraulic pump, checking and adjusting max working pressure
913-004	0.80	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-023	0.90	Pump, removal
913-024	1.50	Pump, installation
913-042	0.50	Working pumps, checking function
913-068	1.50	Pump regulator, checking
914-094	0.70	Dump function, checking pressure
95		LOAD CARRIER
951-005	1.00	Hoist cylinder bearing, changing
951-005	0.90	Hoist cylinder bearing, changing
951-006	3.00	Hoist cylinder removed, reconditioning
951-006	3.00	Hoist cylinder removed, reconditioning
951-007	1.00	Hoist cylinder, removal
951-008	1.00	Hoist cylinder, installation
951-011	0.30	Cylinder, rear flap, gas pressure, checking and adjusting
951-030	0.40	Dump body alternative, lowering
951-030	0.40	Dump body alternative, lowering
951-040	2.00	Dump body joint, changing tipping bearing
951-041	2.50	Dump body, adjusting against frame
951-042	0.20	Dump body angle sensor, calibration
99		MISCELLANEOUS
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes	
0		GENERAL	
09		MISCELLANEOUS	
090-001	0.70	Engine, basic check	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-007	0.60	Maintenance service, every 250 hours	
173-010	2.50	Maintenance service, every 500 hours	
173-012	5.50	Maintenance service, every 1000 hours	
173-014	9.00	Maintenance service, every 2000 hours	
173-018	18.00	Maintenance service, every 4000 hours	
173-019	2.50	Maintenance service, every 4500 hours	
173-022	1.75	Maintenance service, every 6000 hours	
173-024	0.40	Maintenance service, every 8000 hours	
173-028	0.40	Maintenance service, every 12000 hours	
173-042	3.00	Maintenance service, first 1000 hours	
176-002	0.70	Propeller shafts, removing	
19		GENERAL	
191-021	0.20	Service position 1	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-002	9.00	Compression test	
210-002	9.00	Compression test	
210-073	9.00	Engine and transmission, removing	
210-074	13.00	Engine and transmission, mounting	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
210-092	0.50	Engine rotation speed sensor (camshaft), replacing	
212-071	0.90	Crankcase ventilation separator, replacing	10001 - 26999
214-012	3.00	Valves, adjusting	
215-042	6.50	Camshaft, replacing	
215-043	1.75	Camshaft setting, checking	
216-014	1.75	Crankshaft, replacing front oil seal	

Op.no.	time (h)		Notes
216-018	17.00	Crankshaft, replacing rear oil seal	
216-049	1.75	Crankshaft, axial clearance, checking	
218-001	1.50	Rubber cushion, replacing	
218-007	4.00	Engine mounting rear, changing	
22		LUBRICATING SYSTEM	
221-020	0.80	Lubrication pressure rocker arm shaft, check	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
233-001	0.70	Fuel system, bleeding	
233-004	0.70	Feed pump, checking feed pressure	10001 - 16999
233-010	2.00	Fuel pump, inspection	
236-002	0.90	Stall speed, checking	
237-007	1.25	Overflow valve, replacing	
237-012	7.50	Unit injector, replacing	
237-016	12.00	Injectors, replacing copper sleeve in machine	
237-017	11.00	Injector sleeves, replacing	
237-123	0.70	Injector shut off, manual	
25		INLET SYSTEM; EXHAUST SYSTEM	
252-021	0.80	Exhaust pipe, flexible tube, replacing	
254-001	2.50	Diesel particulate filter, check and clean	
254-010	0.70	DPF flame sensor, replacing	
254-021	3.00	Atomization unit, replacing	
254-022	2.50	ACM (After treatment control module), replacing, non-programmed	
254-023	2.50	ACM (After treatment control module), replacing, pre-programmed	
254-033	2.50	Burner, replacing	
254-046	0.80	Spark plug, replacing	10001 - 26999
254-047	1.00	Spark plug, checking	10001 - 26999
254-061	2.50	Exhaust aftertreatment system, fuel pump, replacing	
254-063	2.50	Aftertreatment support unit (ASU), replacing	
254-064	0.60	High pressure air system, pressure, checking	
254-065	0.90	Air pump flow, checking	
254-069	0.70	Exhaust aftertreatment system fuel flow, checking	
254-125	1.75	Exhaust aftertreatment fuel injector, replacing	
255-003	1.50	Actuator, variable turbocharger, replacing	
255-009	0.90	Waste gate, testing	
255-010	1.50	Waste gate actuator, replacing	
255-071	2.50	Turbocharger, replacing	
258-014	0.90	Fan pump, removing	
258-015	1.50	Fan pump, installation	

Op.no.	time (h)	Notes	
258-016	0.80	Cooling fan motor, intercooler, checking/adjusting low rpm	
258-017	0.80	Cooling fan motor, intercooler, checking/adjusting high rpm	
26		COOLING SYSTEM	
262-008	3.00	Secondary coolant pump, replacing	
262-098	1.75	Thermostat, replacing	
263-013	0.40	Fan belt and/or alternator belt, checking and adjusting tension	
263-063	0.80	Cooling fan motor, radiator, checking/adjusting low rpm	
263-064	0.80	Cooling fan motor, radiator, checking/adjusting high rpm	
29		Miscellaneous	
293-001	4.50	EGR cooler, replacing	10001 - 26999
293-002	3.00	EGR cooler, pressure test	
293-004	6.50	EGR cooler, cleaning	10001 - 26999
293-005	1.00	EGR valve, replacing	10001 - 26999
293-013	4.00	EGR venturi tube, cleaning	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-075	1.00	HMIM, MID 140, changing pre-programmed ECU	
300-076	1.25	HMIM, MID 140, changing non-programmed ECU	
31		BATTERY	
311-002	1.00	Batteries, replacing	
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.25	Alternator, replacing incl function check	
33		STARTING SYSTEM	
331-018	2.50	Starter motor, replacing	
35		LIGHTING	
352-002	0.50	Headlights, adjusting	
36		OTHER ELECTRICAL EQUIPMENT	
363-002	2.00	Windscreen wiper front, replacing motor	
363-002	1.25	Windscreen wiper front, replacing motor	
366-064	1.25	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	

Op.no.	time (h)	Notes
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-008	1.50	Engine rotation speed sensor, replacing
39		MISCELLANEOUS
398-001	0.50	CareTrack antenna, replacing
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU
398-003	1.00	W-ECU, MID142, changing non-programmed ECU
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-001	0.70	Checking of main, torque converter and lubricating oil pressure
421-046	2.50	PWM-valve control system, changing
421-054	1.75	Seal for rear output shaft, replacing
421-061	0.50	Induction sensor for output shaft, changing
421-062	1.50	Induction sensor for turbine speed, changing
421-070	6.50	Transmission, removing
421-072	7.00	Transmission, installing
421-083	1.50	Transmission, remove from a non mounted engine
421-084	1.50	Transmission, fitting on a non mounted engine
43		GEARBOX,
434-002	1.75	Dropbox, replacing seal for front output shaft
434-004	2.00	Dropbox, replacing seal for rear output shaft
434-064	0.60	Differential lock longitudinal, adjustment of sender unit
434-065	0.40	Rotation speed sensor, replacing
434-073	2.50	Dropbox, installing
434-074	2.50	Dropbox, removing
46		FRONT AXLE; REAR AXLE
461-011	12.00	Centre gear , removing and fitting
461-037	2.50	Hub reduction, removing
461-038	3.50	Hub reduction, installing
461-046	1.75	Input shaft, seal, replacing
463-011	12.00	Centre gear, removing and fitting
463-016	13.00	Dog clutch 6x6, checking and adjusting
463-079	3.00	Output shaft 6-wheel drive, sealing and bearing, replacing
463-100	0.30	Rotation speed sensor, replacing
463-100	0.40	Rotation speed sensor, replacing
463-101	0.40	Rotation speed sensor, adjusting

Op.no.	time (h)	Notes
463-103	1.75	Input shaft, seal, replacing
464-011	12.00	Centre gear, removing and fitting
464-014	1.75	Input shaft seal, replacing
48		POWER TAKE OFF
482-004	11.00	Power take-off, between engine and gearbox, reconditioning
5		BRAKE
51		WHEEL BRAKE
516-010	5.00	Wheel brake, replacing
52		HYDRAULIC BRAKE SYSTEM
520-001	0.70	Brake system, checking function, hydraulic
520-010	0.10	Brake system, relieve pressure
520-037	0.70	Brake system, bleeding
525-008	3.50	Foot brake valve, replacing
527-001	0.10	Accumulator removed, checking charging pressure
527-002	0.80	Accumulator, replacing
55		PARKING BRAKE
550-002	0.60	Parking brake, adjusting
550-005	3.00	Parking brake, replacing brake disc
550-009	1.50	Spring brake cylinder, replacing
550-012	3.00	Parking brake , replacing brake caliper
550-014	1.50	Parking brake, replacing brake pads
550-015	0.30	Parking brake, manually releasing
550-023	0.20	Parking brake, function checking
553-000	0.40	Load and dump brake, working pressure, checking and adjusting
553-001	0.40	Load and Dump brake, servo pressure, checking
553-002	0.30	Load and Dump brake, function check
553-003	0.40	Load and dump brake, servo accumulator, checking
56		COMPRESSED-AIR BRAKE
561-004	1.75	Compressor, replacing
561-023	0.30	Relief/Cut-in pressure, check
561-024	0.30	Relief/Cut-in pressure, adjusting
59		MISCELLANEOUS
590-001	0.30	Quick coupling compressed air, replacing

Op.no.	time (h)	Notes
6		STEERING
64		STEERING
642-026	2.50	Steering gear, replacing
642-058	2.00	Steering gear, check.and adj.
643-010	1.75	Steering linkage, checking and adjusting
643-012	0.40	Steering angle, checking and adjusting
643-013	0.80	Steering times, checking and adjusting
643-014	1.00	Steering valve, neutral position, checking and adjusting
645-004	0.90	Steering cylinder, removing
645-005	1.00	Steering cylinder, installing
645-052	1.25	Steering cylinder removed, reconditioning excl replacing bearings
645-054	1.00	Steering cylinder, replacing bearings
645-054	2.50	Steering cylinder, replacing bearings
645-084	1.25	Damping cylinder, checking spring force
645-085	1.25	Damping cylinder, changing seal
647-095	1.00	Auxiliary steering, adjusting working- and stand-by10001 - 16999 pressure
647-096	1.00	Auxiliary steering, hydraulic pump, removing
647-097	1.50	Auxiliary steering, hydraulic pump, installation
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
711-001	3.00	Frame extension, removing
711-002	4.00	Frame extension, installing
715-015	0.90	Protecting plate, removal
715-016	1.50	Protecting plate, installation
72		SUSPENSION
727-002	2.50	Rubber element, replacing
74		FRAME LINK
741-001	6.00	Frame joint, separating machine
741-040	1.50	Frame joint bearing, replacing (machine separated)
741-044	5.00	Hitch, removing
741-045	6.50	Hitch, installing
741-046	2.50	Steering joint bearing, replacing (Hitch removed)
742-040	6.00	Steering joint, replacing bearings

Op.no.	time (h)	Notes
75		AXLE SUSPENSION
751-001	3.00	A-frame bushing, tractor unit, replacing
751-013	1.00	Cross stay, rubber bushing, replacing
751-014	0.40	Cross stay, removing
751-015	0.40	Cross stay, installing
756-013	1.00	Cross stay, rubber bushing, replacing
756-017	0.40	Cross stay, removing
756-018	0.40	Cross stay, installing
756-027	4.50	A-frame bushing, front on load unit, changing
756-028	2.50	A-frame bushing, rear on load unit, changing
756-029	0.90	Bogie beam, changing rubber bushing on removed beam
756-030	5.50	Bogie beam, changing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.60	Wheel, removing and fitting one
771-007	0.70	Wheel, installing
771-008	0.70	Wheel, removing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	1.00	Engine hood, removing
821-002	1.25	Engine hood, installing
821-035	0.60	Hood pump, oil, changing
821-060	0.80	Electric hood pump, changing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.25	Door, replacing
831-006	0.60	Door lock, replacing
831-007	0.50	Door, gas spring, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	3.00	Windscreen, replacing
843-012	3.00	Rear window, replacing
843-013	3.00	Side window, replacing
843-014	3.00	Side window, rear, replacing
843-048	2.00	Door window, replacing

Op.no.	time (h)	Notes
85		CAB INTERIOR/UPHOLSTERY
852-003	0.70	Operator's seat, removing
852-004	0.70	Operator's seat, installing
852-092	0.50	Operator's seat, shock absorber, replacing
852-096	1.75	Operator's seat, air bellows, replacing
87		AIR CONDITIONING UNIT
870-010	0.80	ECC, MID 146, changing pre-programmed ECU
870-011	0.80	ECC, MID 146, changing non-programmed ECU
870-015	1.25	Cab heating/cab ventilation timer, pump, replacing
873-004	4.00	Heater core, replacing
873-006	4.00	Fan motor, replacing
873-008	3.00	Heat control valve, replacing
873-009	0.50	Heat control, replacing
874-003	0.30	Cooling unit, performance test
874-006	4.00	Compressor, replacing incl draining and filling
874-010	4.00	Condenser, replacing incl draining and filling
874-011	3.50	Receiver, replacing incl draining and filling
874-012	5.00	Evaporator, replacing incl draining and filling
874-059	5.50	Evaporator, cleaning
875-013	2.50	Auxiliary heater, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-002	0.40	Hydraulic system, bleeding
900-003	0.10	Hydraulic system, relieve pressure
900-005	0.30	Vacuum pump, connection
900-031	1.00	V2-ECU, MID 249, changing non-programmed ECU
900-032	0.90	V2-ECU, MID 249, changing pre-programmed ECU
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-078	0.60	Dump lever, changing
912-115	3.00	Steering and tipping valve, removal
912-116	3.50	Steering and tipping valve, installation
913-003	0.90	Hydraulic pump, checking and adjusting standby pressure
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-004	0.80	Hydraulic pump, checking and adjusting max working pressure

Op.no.	time (h)	Notes
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-042	0.50	Working pumps, checking function
913-052	1.00	Hydraulic pump, removing
913-053	1.75	Hydraulic pump, installing
913-068	1.50	Pump regulator, checking
914-094	0.70	Dump function, checking pressure
94		UNIT, LOAD HANDLING
948-002	2.50	Load cell, replacing
95		LOAD CARRIER
951-005	1.00	Hoist cylinder bearing, changing
951-005	0.90	Hoist cylinder bearing, changing
951-006	3.00	Hoist cylinder removed, reconditioning
951-007	1.25	Hoist cylinder, removal
951-008	1.25	Hoist cylinder, installation
951-011	0.30	Cylinder, rear flap, gas pressure, checking and adjusting
951-030	0.40	Dump body alternative, lowering
951-030	0.40	Dump body alternative, lowering
951-040	2.00	Dump body joint, changing tipping bearing
951-041	2.50	Dump body, adjusting against frame
951-042	0.20	Dump body angle sensor, calibration
99		MISCELLANEOUS
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes	
0		GENERAL	
09		MISCELLANEOUS	
090-001	0.70	Engine, basic check	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-007	0.60	Maintenance service, every 250 hours	
173-010	2.50	Maintenance service, every 500 hours	
173-012	5.50	Maintenance service, every 1000 hours	
173-014	11.00	Maintenance service, every 2000 hours	
173-018	19.00	Maintenance service, every 4000 hours	
173-019	2.50	Maintenance service, every 4500 hours	
173-022	1.75	Maintenance service, every 6000 hours	
173-024	0.40	Maintenance service, every 8000 hours	
173-028	0.40	Maintenance service, every 12000 hours	
173-042	3.00	Maintenance service, first 1000 hours	
176-002	0.70	Propeller shafts, removing	
19		GENERAL	
191-022	0.50	Service position 2	
191-025	0.50	Service position 3	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-002	9.00	Compression test	
210-002	9.00	Compression test	
210-073	9.00	Engine and transmission, removing	
210-074	13.00	Engine and transmission, mounting	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
210-092	0.50	Engine rotation speed sensor (camshaft), replacing	
212-071	0.90	Crankcase ventilation separator, replacing	10001 - 26999
214-012	3.00	Valves, adjusting	
215-042	6.50	Camshaft, replacing	
215-043	1.75	Camshaft setting, checking	

Op.no.	time (h)		Notes
216-014	1.75	Crankshaft, replacing front oil seal	
216-018	17.00	Crankshaft, replacing rear oil seal	
216-049	1.75	Crankshaft, axial clearance, checking	
218-001	1.50	Rubber cushion, replacing	
218-007	4.00	Engine mounting rear, changing	
22		LUBRICATING SYSTEM	
221-020	0.80	Lubrication pressure rocker arm shaft, check	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
233-001	0.70	Fuel system, bleeding	
233-004	0.70	Feed pump, checking feed pressure	10001 - 16999
233-010	2.00	Fuel pump, inspection	
236-002	0.90	Stall speed, checking	
237-007	1.25	Overflow valve, replacing	
237-012	7.50	Unit injector, replacing	
237-016	12.00	Injectors, replacing copper sleeve in machine	
237-017	11.00	Injector sleeves, replacing	
237-123	0.70	Injector shut off, manual	
25		INLET SYSTEM; EXHAUST SYSTEM	
252-021	0.80	Exhaust pipe, flexible tube, replacing	
254-001	2.50	Diesel particulate filter, check and clean	
254-010	0.70	DPF flame sensor, replacing	
254-021	3.00	Atomization unit, replacing	
254-022	2.50	ACM (After treatment control module), replacing, non-programmed	
254-023	2.50	ACM (After treatment control module), replacing, pre-programmed	
254-033	2.50	Burner, replacing	
254-046	0.80	Spark plug, replacing	10001 - 26999
254-047	1.00	Spark plug, checking	10001 - 26999
254-061	2.50	Exhaust aftertreatment system, fuel pump, replacing	
254-063	2.50	Aftertreatment support unit (ASU), replacing	
254-064	0.60	High pressure air system, pressure, checking	
254-065	0.90	Air pump flow, checking	
254-069	0.70	Exhaust aftertreatment system fuel flow, checking	
254-125	1.75	Exhaust aftertreatment fuel injector, replacing	
255-003	1.50	Actuator, variable turbocharger, replacing	
255-009	0.90	Waste gate, testing	
255-010	1.50	Waste gate actuator, replacing	
255-071	2.50	Turbocharger, replacing	
258-014	0.90	Fan pump, removing	

Op.no.	time (h)		Notes
258-015	1.50	Fan pump, installation	
258-016	0.80	Cooling fan motor, intercooler, checking/adjusting low rpm	
258-017	0.80	Cooling fan motor, intercooler, checking/adjusting high rpm	
26		COOLING SYSTEM	
262-008	3.00	Secondary coolant pump, replacing	
262-098	1.75	Thermostat, replacing	
263-013	0.40	Fan belt and/or alternator belt, checking and adjusting tension	
263-063	0.80	Cooling fan motor, radiator, checking/adjusting low rpm	
263-064	0.80	Cooling fan motor, radiator, checking/adjusting high rpm	
29		Miscellaneous	
293-001	4.50	EGR cooler, replacing	10001 - 26999
293-002	3.00	EGR cooler, pressure test	
293-004	6.50	EGR cooler, cleaning	10001 - 26999
293-005	1.00	EGR valve, replacing	10001 - 26999
293-013	4.00	EGR venturi tube, cleaning	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-075	1.00	HMIM, MID 140, changing pre-programmed ECU	
300-076	1.25	HMIM, MID 140, changing non-programmed ECU	
31		BATTERY	
311-002	1.00	Batteries, replacing	
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.25	Alternator, replacing incl function check	
33		STARTING SYSTEM	
331-018	2.50	Starter motor, replacing	
35		LIGHTING	
352-002	0.50	Headlights, adjusting	
36		OTHER ELECTRICAL EQUIPMENT	
363-002	2.00	Windscreen wiper front, replacing motor	
363-002	1.25	Windscreen wiper front, replacing motor	
366-064	1.25	V-ECU, MID 187, changing non-programmed ECU	

Op.no.	time (h)	Notes
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-008	1.50	Engine rotation speed sensor, replacing
39		MISCELLANEOUS
398-001	0.50	CareTrack antenna, replacing
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU
398-003	1.00	W-ECU, MID142, changing non-programmed ECU
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-001	0.70	Checking of main, torque converter and lubricating oil pressure
421-046	2.50	PWM-valve control system, changing
421-054	1.75	Seal for rear output shaft, replacing
421-061	0.50	Induction sensor for output shaft, changing
421-062	1.50	Induction sensor for turbine speed, changing
421-070	6.50	Transmission, removing
421-072	7.00	Transmission, installing
421-083	1.50	Transmission, remove from a non mounted engine
421-084	1.50	Transmission, fitting on a non mounted engine
43		GEARBOX,
434-002	1.75	Dropbox, replacing seal for front output shaft
434-004	2.00	Dropbox, replacing seal for rear output shaft
434-064	0.60	Differential lock longitudinal, adjustment of sender unit
434-065	0.40	Rotation speed sensor, replacing
434-073	2.50	Dropbox, installing
434-074	2.50	Dropbox, removing
46		FRONT AXLE; REAR AXLE
461-011	12.00	Centre gear , removing and fitting
461-037	2.50	Hub reduction, removing
461-038	3.50	Hub reduction, installing
461-046	1.75	Input shaft, seal, replacing
463-011	12.00	Centre gear, removing and fitting
463-016	13.00	Dog clutch 6x6, checking and adjusting
463-079	3.00	Output shaft 6-wheel drive, sealing and bearing, replacing
463-100	0.30	Rotation speed sensor, replacing
463-100	0.40	Rotation speed sensor, replacing

Op.no.	time (h)	Notes
463-101	0.40	Rotation speed sensor, adjusting
463-103	1.75	Input shaft, seal, replacing
464-011	12.00	Centre gear, removing and fitting
464-014	1.75	Input shaft seal, replacing
48		POWER TAKE OFF
482-004	11.00	Power take-off, between engine and gearbox, reconditioning
5		BRAKE
51		WHEEL BRAKE
516-010	5.00	Wheel brake, replacing
52		HYDRAULIC BRAKE SYSTEM
520-001	0.70	Brake system, checking function, hydraulic
520-010	0.10	Brake system, relieve pressure
520-037	0.70	Brake system, bleeding
525-008	3.50	Foot brake valve, replacing
527-001	0.10	Accumulator removed, checking charging pressure
527-002	0.80	Accumulator, replacing
55		PARKING BRAKE
550-002	0.60	Parking brake, adjusting
550-005	3.00	Parking brake, replacing brake disc
550-009	1.50	Spring brake cylinder, replacing
550-012	3.00	Parking brake , replacing brake caliper
550-014	1.50	Parking brake, replacing brake pads
550-015	0.30	Parking brake, manually releasing
550-023	0.20	Parking brake, function checking
553-000	0.40	Load and dump brake, working pressure, checking and adjusting
553-001	0.40	Load and Dump brake, servo pressure, checking
553-002	0.30	Load and Dump brake, function check
553-003	0.40	Load and dump brake, servo accumulator, checking
56		COMPRESSED-AIR BRAKE
561-004	1.75	Compressor, replacing
561-023	0.30	Relief/Cut-in pressure, check
561-024	0.30	Relief/Cut-in pressure, adjusting
59		MISCELLANEOUS
590-001	0.30	Quick coupling compressed air, replacing

Op.no.	time (h)	Notes
6		STEERING
64		STEERING
642-026	2.50	Steering gear, replacing
642-058	2.00	Steering gear, check.and adj.
643-010	1.75	Steering linkage, checking and adjusting
643-012	0.40	Steering angle, checking and adjusting
643-013	0.80	Steering times, checking and adjusting
643-014	1.00	Steering valve, neutral position, checking and adjusting
645-004	0.90	Steering cylinder, removing
645-005	1.00	Steering cylinder, installing
645-052	1.25	Steering cylinder removed, reconditioning excl replacing bearings
645-054	1.00	Steering cylinder, replacing bearings
645-054	2.50	Steering cylinder, replacing bearings
645-084	1.25	Damping cylinder, checking spring force
645-085	1.25	Damping cylinder, changing seal
647-095	1.00	Auxiliary steering, adjusting working- and stand-by10001 - 16999 pressure
647-096	1.00	Auxiliary steering, hydraulic pump, removing
647-097	1.50	Auxiliary steering, hydraulic pump, installation
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-015	0.90	Protecting plate, removal
715-016	1.50	Protecting plate, installation
72		SUSPENSION
720-008	1.25	Position sensor, complete replacement
720-010	0.50	Forced Raising/lowering, Full suspension
720-011	0.30	Relieve pressure
720-012	0.50	Manual lowering
720-012	0.80	Manual lowering
720-013	0.20	Suspension system, bleeding air
720-020	0.70	Hydraulic cylinder bushing, suspension system, replacing
720-020	0.70	Hydraulic cylinder bushing, suspension system, replacing
720-021	1.75	Hydraulic cylinder, suspension system, overhaul
720-022	1.50	Accumulator, suspension system, overhaul

Op.no.	time (h)	Notes
720-023	0.60	Hydraulic pump, max pressure, checking and adjusting
725-001	1.50	Suspension cylinder, removal
725-002	1.75	Suspension cylinder, installation
725-003	0.60	Accumulator, removal
725-004	1.25	Accumulator, installation
725-008	1.50	Position sensor front, replacing
725-009	0.70	Accumulator, precharge pressure, checking and adjusting
726-001	1.75	Suspension cylinder, removal
726-001	1.75	Suspension cylinder, removal
726-002	2.00	Suspension cylinder, installation
726-002	2.00	Suspension cylinder, installation
726-003	0.30	Accumulator, removal
726-003	0.20	Accumulator, removal
726-004	0.60	Accumulator, installation
726-004	0.80	Accumulator, installation
726-006	2.00	Accumulator bank, removal
726-007	1.75	Accumulator bank, installation
726-008	1.25	Position sensor rear, replacing
726-009	0.70	Accumulator, precharge pressure, checking and adjusting
74		FRAME LINK
741-001	6.00	Frame joint, separating machine
741-044	5.00	Hitch, removing
741-045	6.50	Hitch, installing
741-046	2.50	Steering joint bearing, replacing (Hitch removed)
742-040	6.00	Steering joint, replacing bearings
75		AXLE SUSPENSION
751-001	3.00	A-frame bushing, tractor unit, replacing
751-013	1.00	Cross stay, rubber bushing, replacing
751-014	0.40	Cross stay, removing
751-015	0.40	Cross stay, installing
756-013	1.00	Cross stay, rubber bushing, replacing
756-017	0.40	Cross stay, removing
756-018	0.40	Cross stay, installing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-007	0.70	Wheel, installing
771-008	0.70	Wheel, removing

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	1.00	Engine hood, removing
821-002	1.25	Engine hood, installing
821-035	0.60	Hood pump, oil, changing
821-060	0.80	Electric hood pump, changing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.25	Door, replacing
831-006	0.60	Door lock, replacing
831-007	0.50	Door, gas spring, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	3.00	Windscreen, replacing
843-012	3.00	Rear window, replacing
843-013	3.00	Side window, replacing
843-014	3.00	Side window, rear, replacing
843-048	2.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.70	Operator's seat, removing
852-004	0.70	Operator's seat, installing
852-092	0.50	Operator's seat, shock absorber, replacing
852-096	1.75	Operator's seat, air bellows, replacing
87		AIR CONDITIONING UNIT
870-010	0.80	ECC, MID 146, changing pre-programmed ECU
870-011	0.80	ECC, MID 146, changing non-programmed ECU
870-015	1.25	Cab heating/cab ventilation timer, pump, replacing
873-004	4.00	Heater core, replacing
873-006	4.00	Fan motor, replacing
873-008	3.00	Heat control valve, replacing
873-009	0.50	Heat control, replacing
874-003	0.30	Cooling unit, performance test
874-006	4.00	Compressor, replacing incl draining and filling
874-010	4.00	Condenser, replacing incl draining and filling
874-011	3.50	Receiver, replacing incl draining and filling
874-012	5.00	Evaporator, replacing incl draining and filling
874-059	5.50	Evaporator, cleaning
875-013	2.50	Auxiliary heater, replacing

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-002	0.40	Hydraulic system, bleeding
900-003	0.10	Hydraulic system, relieve pressure
900-005	0.30	Vacuum pump, connection
900-031	1.00	V2-ECU, MID 249, changing non-programmed ECU
900-032	0.90	V2-ECU, MID 249, changing pre-programmed ECU
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-078	0.60	Dump lever, changing
912-115	3.00	Steering and tipping valve, removal
912-116	3.50	Steering and tipping valve, installation
913-003	0.90	Hydraulic pump, checking and adjusting standby pressure
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-004	0.80	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-042	0.50	Working pumps, checking function
913-052	1.00	Hydraulic pump, removing
913-053	1.75	Hydraulic pump, installing
913-068	1.50	Pump regulator, checking
914-094	0.70	Dump function, checking pressure
95		LOAD CARRIER
951-005	1.00	Hoist cylinder bearing, changing
951-005	0.90	Hoist cylinder bearing, changing
951-006	3.00	Hoist cylinder removed, reconditioning
951-007	1.25	Hoist cylinder, removal
951-008	1.25	Hoist cylinder, installation
951-011	0.30	Cylinder, rear flap, gas pressure, checking and adjusting
951-030	0.40	Dump body alternative, lowering
951-030	0.40	Dump body alternative, lowering
951-040	2.00	Dump body joint, changing tipping bearing
951-041	2.50	Dump body, adjusting against frame
951-042	0.20	Dump body angle sensor, calibration
99		MISCELLANEOUS
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes	
0		GENERAL	
09		MISCELLANEOUS	
090-001	0.70	Engine, basic check	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-007	0.60	Maintenance service, every 250 hours	
173-010	2.50	Maintenance service, every 500 hours	
173-012	5.50	Maintenance service, every 1000 hours	
173-014	9.00	Maintenance service, every 2000 hours	
173-018	18.00	Maintenance service, every 4000 hours	
173-019	2.50	Maintenance service, every 4500 hours	
173-022	1.75	Maintenance service, every 6000 hours	
173-024	0.40	Maintenance service, every 8000 hours	
173-028	0.40	Maintenance service, every 12000 hours	
173-042	3.00	Maintenance service, first 1000 hours	
176-002	0.70	Propeller shafts, removing	
19		GENERAL	
191-021	0.20	Service position 1	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-002	9.00	Compression test	
210-002	9.00	Compression test	
210-073	9.00	Engine and transmission, removing	
210-074	13.00	Engine and transmission, mounting	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
210-092	0.50	Engine rotation speed sensor (camshaft), replacing	
212-071	0.90	Crankcase ventilation separator, replacing	11001 - 26999
214-012	2.50	Valves, adjusting	
215-042	6.50	Camshaft, replacing	
215-043	1.75	Camshaft setting, checking	
216-014	1.75	Crankshaft, replacing front oil seal	

Op.no.	time (h)		Notes
216-018	17.00	Crankshaft, replacing rear oil seal	
216-049	1.75	Crankshaft, axial clearance, checking	
218-001	1.50	Rubber cushion, replacing	
218-007	4.00	Engine mounting rear, changing	
22		LUBRICATING SYSTEM	
221-020	0.80	Lubrication pressure rocker arm shaft, check	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
233-001	0.70	Fuel system, bleeding	
233-004	0.70	Feed pump, checking feed pressure	
233-010	2.00	Fuel pump, inspection	
236-002	0.90	Stall speed, checking	
237-007	1.25	Overflow valve, replacing	
237-012	7.50	Unit injector, replacing	
237-016	12.00	Injectors, replacing copper sleeve in machine	
237-017	11.00	Injector sleeves, replacing	
237-123	0.70	Injector shut off, manual	
25		INLET SYSTEM; EXHAUST SYSTEM	
252-021	0.80	Exhaust pipe, flexible tube, replacing	
254-001	2.50	Diesel particulate filter, check and clean	
254-010	0.70	DPF flame sensor, replacing	
254-021	3.00	Atomization unit, replacing	
254-022	2.50	ACM (After treatment control module), replacing, non-programmed	
254-023	2.50	ACM (After treatment control module), replacing, pre-programmed	
254-033	2.50	Burner, replacing	
254-046	0.80	Spark plug, replacing	11001 - 26999
254-047	1.00	Spark plug, checking	11001 - 26999
254-061	2.50	Exhaust aftertreatment system, fuel pump, replacing	
254-063	2.50	Aftertreatment support unit (ASU), replacing	
254-064	0.60	High pressure air system, pressure, checking	
254-065	0.90	Air pump flow, checking	
254-069	0.70	Exhaust aftertreatment system fuel flow, checking	
254-125	1.75	Exhaust aftertreatment fuel injector, replacing	
255-003	1.50	Actuator, variable turbocharger, replacing	
255-009	0.90	Waste gate, testing	
255-010	1.50	Waste gate actuator, replacing	
255-071	2.50	Turbocharger, replacing	
258-014	0.90	Fan pump, removing	
258-015	1.50	Fan pump, installation	

Op.no.	time (h)	Notes	
258-016	0.80	Cooling fan motor, intercooler, checking/adjusting low rpm	
258-017	0.80	Cooling fan motor, intercooler, checking/adjusting high rpm	
26		COOLING SYSTEM	
262-008	3.00	Secondary coolant pump, replacing	
262-098	1.75	Thermostat, replacing	
263-013	0.40	Fan belt and/or alternator belt, checking and adjusting tension	
263-063	0.80	Cooling fan motor, radiator, checking/adjusting low rpm	
263-064	0.80	Cooling fan motor, radiator, checking/adjusting high rpm	
29		Miscellaneous	
293-001	4.50	EGR cooler, replacing	11001 - 26999
293-002	3.00	EGR cooler, pressure test	
293-004	6.50	EGR cooler, cleaning	11001 - 26999
293-005	1.00	EGR valve, replacing	11001 - 26999
293-013	4.00	EGR venturi tube, cleaning	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-075	1.00	HMIM, MID 140, changing pre-programmed ECU	
300-076	1.25	HMIM, MID 140, changing non-programmed ECU	
31		BATTERY	
311-002	1.00	Batteries, replacing	
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.25	Alternator, replacing incl function check	
33		STARTING SYSTEM	
331-018	2.50	Starter motor, replacing	
35		LIGHTING	
352-002	0.50	Headlights, adjusting	
36		OTHER ELECTRICAL EQUIPMENT	
363-002	2.00	Windscreen wiper front, replacing motor	
363-002	1.25	Windscreen wiper front, replacing motor	
366-064	1.25	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	

Op.no.	time (h)	Notes
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-008	1.50	Engine rotation speed sensor, replacing
39		MISCELLANEOUS
398-001	0.50	CareTrack antenna, replacing
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU
398-003	1.00	W-ECU, MID142, changing non-programmed ECU
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-001	0.70	Checking of main, torque converter and lubricating oil pressure
421-046	2.50	PWM-valve control system, changing
421-054	1.75	Seal for rear output shaft, replacing
421-061	0.50	Induction sensor for output shaft, changing
421-062	1.50	Induction sensor for turbine speed, changing
421-070	6.50	Transmission, removing
421-072	7.00	Transmission, installing
421-083	1.50	Transmission, remove from a non mounted engine
421-084	1.50	Transmission, fitting on a non mounted engine
43		GEARBOX,
434-002	1.75	Dropbox, replacing seal for front output shaft
434-004	2.00	Dropbox, replacing seal for rear output shaft
434-064	0.60	Differential lock longitudinal, adjustment of sender unit
434-065	0.40	Rotation speed sensor, replacing
434-073	2.50	Dropbox, installing
434-074	2.50	Dropbox, removing
46		FRONT AXLE; REAR AXLE
461-011	12.00	Centre gear , removing and fitting
461-037	2.50	Hub reduction, removing
461-038	3.50	Hub reduction, installing
461-046	1.75	Input shaft, seal, replacing
463-011	12.00	Centre gear, removing and fitting
463-016	13.00	Dog clutch 6x6, checking and adjusting
463-079	3.00	Output shaft 6-wheel drive, sealing and bearing, replacing
463-100	0.30	Rotation speed sensor, replacing
463-100	0.40	Rotation speed sensor, replacing
463-101	0.40	Rotation speed sensor, adjusting

Op.no.	time (h)	Notes
463-103	1.75	Input shaft, seal, replacing
464-011	12.00	Centre gear, removing and fitting
464-014	1.75	Input shaft seal, replacing
48		POWER TAKE OFF
482-004	11.00	Power take-off, between engine and gearbox, reconditioning
5		BRAKE
51		WHEEL BRAKE
516-010	5.00	Wheel brake, replacing
52		HYDRAULIC BRAKE SYSTEM
520-001	0.70	Brake system, checking function, hydraulic
520-010	0.10	Brake system, relieve pressure
520-037	0.70	Brake system, bleeding
525-008	3.50	Foot brake valve, replacing
527-001	0.10	Accumulator removed, checking charging pressure
527-002	0.80	Accumulator, replacing
55		PARKING BRAKE
550-002	0.60	Parking brake, adjusting
550-005	3.00	Parking brake, replacing brake disc
550-009	1.50	Spring brake cylinder, replacing
550-012	3.00	Parking brake , replacing brake caliper
550-014	1.50	Parking brake, replacing brake pads
550-015	0.30	Parking brake, manually releasing
550-023	0.20	Parking brake, function checking
553-000	0.40	Load and dump brake, working pressure, checking and adjusting
553-001	0.40	Load and Dump brake, servo pressure, checking
553-002	0.30	Load and Dump brake, function check
553-003	0.40	Load and dump brake, servo accumulator, checking
56		COMPRESSED-AIR BRAKE
561-004	1.75	Compressor, replacing
561-023	0.30	Relief/Cut-in pressure, check
561-024	0.30	Relief/Cut-in pressure, adjusting
59		MISCELLANEOUS
590-001	0.30	Quick coupling compressed air, replacing

Op.no.	time (h)	Notes
6		STEERING
64		STEERING
642-026	2.50	Steering gear, replacing
642-058	2.00	Steering gear, check.and adj.
643-010	1.75	Steering linkage, checking and adjusting
643-012	0.40	Steering angle, checking and adjusting
643-013	0.80	Steering times, checking and adjusting
643-014	1.00	Steering valve, neutral position, checking and adjusting
645-004	0.90	Steering cylinder, removing
645-005	1.00	Steering cylinder, installing
645-052	1.25	Steering cylinder removed, reconditioning excl replacing bearings
645-054	1.00	Steering cylinder, replacing bearings
645-054	2.50	Steering cylinder, replacing bearings
645-084	1.25	Damping cylinder, checking spring force
645-085	1.25	Damping cylinder, changing seal
647-095	1.00	Auxiliary steering, adjusting working- and stand-by11001 - 16999 pressure
647-096	1.00	Auxiliary steering, hydraulic pump, removing
647-097	1.50	Auxiliary steering, hydraulic pump, installation
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
711-001	3.00	Frame extension, removing
711-002	4.00	Frame extension, installing
715-015	0.90	Protecting plate, removal
715-016	1.50	Protecting plate, installation
72		SUSPENSION
727-002	2.50	Rubber element, replacing
74		FRAME LINK
741-001	6.00	Frame joint, separating machine
741-040	1.50	Frame joint bearing, replacing (machine separated)
741-044	5.00	Hitch, removing
741-045	6.50	Hitch, installing
741-046	2.50	Steering joint bearing, replacing (Hitch removed)
742-040	6.00	Steering joint, replacing bearings

Op.no.	time (h)	Notes
75		AXLE SUSPENSION
751-001	3.00	A-frame bushing, tractor unit, replacing
751-013	1.00	Cross stay, rubber bushing, replacing
751-014	0.40	Cross stay, removing
751-015	0.40	Cross stay, installing
756-013	1.00	Cross stay, rubber bushing, replacing
756-017	0.40	Cross stay, removing
756-018	0.40	Cross stay, installing
756-027	4.50	A-frame bushing, front on load unit, changing
756-028	2.50	A-frame bushing, rear on load unit, changing
756-029	0.90	Bogie beam, changing rubber bushing on removed beam
756-030	5.50	Bogie beam, changing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.60	Wheel, removing and fitting one
771-007	0.70	Wheel, installing
771-008	0.70	Wheel, removing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	1.00	Engine hood, removing
821-002	1.25	Engine hood, installing
821-035	0.60	Hood pump, oil, changing
821-060	0.80	Electric hood pump, changing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.25	Door, replacing
831-006	0.60	Door lock, replacing
831-007	0.50	Door, gas spring, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	3.00	Windscreen, replacing
843-012	3.00	Rear window, replacing
843-013	3.00	Side window, replacing
843-014	3.00	Side window, rear, replacing
843-048	2.00	Door window, replacing

Op.no.	time (h)	Notes
85		CAB INTERIOR/UPHOLSTERY
852-003	0.70	Operator's seat, removing
852-004	0.70	Operator's seat, installing
852-092	0.50	Operator's seat, shock absorber, replacing
852-096	1.75	Operator's seat, air bellows, replacing
87		AIR CONDITIONING UNIT
870-010	0.80	ECC, MID 146, changing pre-programmed ECU
870-011	0.80	ECC, MID 146, changing non-programmed ECU
870-015	1.25	Cab heating/cab ventilation timer, pump, replacing
873-004	4.00	Heater core, replacing
873-006	4.00	Fan motor, replacing
873-008	3.00	Heat control valve, replacing
873-009	0.50	Heat control, replacing
874-003	0.30	Cooling unit, performance test
874-006	4.00	Compressor, replacing incl draining and filling
874-010	4.00	Condenser, replacing incl draining and filling
874-011	3.50	Receiver, replacing incl draining and filling
874-012	5.00	Evaporator, replacing incl draining and filling
874-059	5.50	Evaporator, cleaning
875-013	2.50	Auxiliary heater, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-002	0.40	Hydraulic system, bleeding
900-003	0.10	Hydraulic system, relieve pressure
900-005	0.30	Vacuum pump, connection
900-031	1.00	V2-ECU, MID 249, changing non-programmed ECU
900-032	0.90	V2-ECU, MID 249, changing pre-programmed ECU
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-078	0.60	Dump lever, changing
912-115	3.00	Steering and tipping valve, removal
912-116	3.50	Steering and tipping valve, installation
913-003	0.90	Hydraulic pump, checking and adjusting standby pressure
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-004	0.80	Hydraulic pump, checking and adjusting max working pressure

Op.no.	time (h)	Notes
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-042	0.50	Working pumps, checking function
913-052	1.00	Hydraulic pump, removing
913-053	1.75	Hydraulic pump, installing
913-068	1.50	Pump regulator, checking
914-094	0.70	Dump function, checking pressure
94		UNIT, LOAD HANDLING
948-002	2.50	Load cell, replacing
95		LOAD CARRIER
951-005	1.00	Hoist cylinder bearing, changing
951-005	0.90	Hoist cylinder bearing, changing
951-006	3.00	Hoist cylinder removed, reconditioning
951-007	1.25	Hoist cylinder, removal
951-008	1.25	Hoist cylinder, installation
951-011	0.30	Cylinder, rear flap, gas pressure, checking and adjusting
951-030	0.40	Dump body alternative, lowering
951-030	0.40	Dump body alternative, lowering
951-040	2.00	Dump body joint, changing tipping bearing
951-041	2.50	Dump body, adjusting against frame
951-042	0.20	Dump body angle sensor, calibration
99		MISCELLANEOUS
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes	
0		GENERAL	
09		MISCELLANEOUS	
090-001	0.70	Engine, basic check	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-007	0.60	Maintenance service, every 250 hours	
173-010	2.50	Maintenance service, every 500 hours	
173-012	5.50	Maintenance service, every 1000 hours	
173-014	11.00	Maintenance service, every 2000 hours	
173-018	19.00	Maintenance service, every 4000 hours	
173-019	2.50	Maintenance service, every 4500 hours	
173-022	1.75	Maintenance service, every 6000 hours	
173-024	0.40	Maintenance service, every 8000 hours	
173-028	0.40	Maintenance service, every 12000 hours	
173-042	3.00	Maintenance service, first 1000 hours	
176-002	0.70	Propeller shafts, removing	
19		GENERAL	
191-022	0.50	Service position 2	
191-025	0.50	Service position 3	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-002	9.00	Compression test	
210-002	9.00	Compression test	
210-073	9.00	Engine and transmission, removing	
210-074	13.00	Engine and transmission, mounting	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
210-092	0.50	Engine rotation speed sensor (camshaft), replacing	
212-071	0.90	Crankcase ventilation separator, replacing	11001 - 26999
214-012	2.50	Valves, adjusting	
215-042	6.50	Camshaft, replacing	
215-043	1.75	Camshaft setting, checking	

Op.no.	time (h)		Notes
216-014	1.75	Crankshaft, replacing front oil seal	
216-018	17.00	Crankshaft, replacing rear oil seal	
216-049	1.75	Crankshaft, axial clearance, checking	
218-001	1.50	Rubber cushion, replacing	
218-007	4.00	Engine mounting rear, changing	
22		LUBRICATING SYSTEM	
221-020	0.80	Lubrication pressure rocker arm shaft, check	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
233-001	0.70	Fuel system, bleeding	
233-004	0.70	Feed pump, checking feed pressure	
233-010	2.00	Fuel pump, inspection	
236-002	0.90	Stall speed, checking	
237-007	1.25	Overflow valve, replacing	
237-012	7.50	Unit injector, replacing	
237-016	12.00	Injectors, replacing copper sleeve in machine	
237-017	11.00	Injector sleeves, replacing	
237-123	0.70	Injector shut off, manual	
25		INLET SYSTEM; EXHAUST SYSTEM	
252-021	0.80	Exhaust pipe, flexible tube, replacing	
254-001	2.50	Diesel particulate filter, check and clean	
254-010	0.70	DPF flame sensor, replacing	
254-021	3.00	Atomization unit, replacing	
254-022	2.50	ACM (After treatment control module), replacing, non-programmed	
254-023	2.50	ACM (After treatment control module), replacing, pre-programmed	
254-033	2.50	Burner, replacing	
254-046	0.80	Spark plug, replacing	11001 - 26999
254-047	1.00	Spark plug, checking	11001 - 26999
254-061	2.50	Exhaust aftertreatment system, fuel pump, replacing	
254-063	2.50	Aftertreatment support unit (ASU), replacing	
254-064	0.60	High pressure air system, pressure, checking	
254-065	0.90	Air pump flow, checking	
254-069	0.70	Exhaust aftertreatment system fuel flow, checking	
254-125	1.75	Exhaust aftertreatment fuel injector, replacing	
255-003	1.50	Actuator, variable turbocharger, replacing	
255-009	0.90	Waste gate, testing	
255-010	1.50	Waste gate actuator, replacing	
255-071	2.50	Turbocharger, replacing	
258-014	0.90	Fan pump, removing	

Op.no.	time (h)		Notes
258-015	1.50	Fan pump, installation	
258-016	0.80	Cooling fan motor, intercooler, checking/adjusting low rpm	
258-017	0.80	Cooling fan motor, intercooler, checking/adjusting high rpm	
26		COOLING SYSTEM	
262-008	3.00	Secondary coolant pump, replacing	
262-098	1.75	Thermostat, replacing	
263-013	0.40	Fan belt and/or alternator belt, checking and adjusting tension	
263-063	0.80	Cooling fan motor, radiator, checking/adjusting low rpm	
263-064	0.80	Cooling fan motor, radiator, checking/adjusting high rpm	
29		Miscellaneous	
293-001	4.50	EGR cooler, replacing	11001 - 26999
293-002	3.00	EGR cooler, pressure test	
293-004	6.50	EGR cooler, cleaning	11001 - 26999
293-005	1.00	EGR valve, replacing	11001 - 26999
293-013	4.00	EGR venturi tube, cleaning	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-075	1.00	HMIM, MID 140, changing pre-programmed ECU	
300-076	1.25	HMIM, MID 140, changing non-programmed ECU	
31		BATTERY	
311-002	1.00	Batteries, replacing	
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.25	Alternator, replacing incl function check	
33		STARTING SYSTEM	
331-018	2.50	Starter motor, replacing	
35		LIGHTING	
352-002	0.50	Headlights, adjusting	
36		OTHER ELECTRICAL EQUIPMENT	
363-002	1.25	Windscreen wiper front, replacing motor	
366-064	1.25	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.00	V-ECU, MID 187, changing pre-programmed ECU	

Op.no.	time (h)	Notes
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-008	1.50	Engine rotation speed sensor, replacing
39		MISCELLANEOUS
398-001	0.50	CareTrack antenna, replacing
398-002	1.00	W-ECU, MID142, changing pre-programmed ECU
398-003	1.00	W-ECU, MID142, changing non-programmed ECU
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-001	0.70	Checking of main, torque converter and lubricating oil pressure
421-046	2.50	PWM-valve control system, changing
421-054	1.75	Seal for rear output shaft, replacing
421-061	0.50	Induction sensor for output shaft, changing
421-062	1.50	Induction sensor for turbine speed, changing
421-070	6.50	Transmission, removing
421-072	7.00	Transmission, installing
421-083	1.50	Transmission, remove from a non mounted engine
421-084	1.50	Transmission, fitting on a non mounted engine
43		GEARBOX,
434-002	1.75	Dropbox, replacing seal for front output shaft
434-004	2.00	Dropbox, replacing seal for rear output shaft
434-064	0.60	Differential lock longitudinal, adjustment of sender unit
434-065	0.40	Rotation speed sensor, replacing
434-073	2.50	Dropbox, installing
434-074	2.50	Dropbox, removing
46		FRONT AXLE; REAR AXLE
461-011	12.00	Centre gear , removing and fitting
461-037	2.50	Hub reduction, removing
461-038	3.50	Hub reduction, installing
461-046	1.75	Input shaft, seal, replacing
463-011	12.00	Centre gear, removing and fitting
463-016	13.00	Dog clutch 6x6, checking and adjusting
463-079	3.00	Output shaft 6-wheel drive, sealing and bearing, replacing
463-100	0.30	Rotation speed sensor, replacing
463-100	0.40	Rotation speed sensor, replacing
463-101	0.40	Rotation speed sensor, adjusting

Op.no.	time (h)	Notes
463-103	1.75	Input shaft, seal, replacing
464-011	12.00	Centre gear, removing and fitting
464-014	1.75	Input shaft seal, replacing
48		POWER TAKE OFF
482-004	11.00	Power take-off, between engine and gearbox, reconditioning
5		BRAKE
51		WHEEL BRAKE
516-010	5.00	Wheel brake, replacing
52		HYDRAULIC BRAKE SYSTEM
520-001	0.70	Brake system, checking function, hydraulic
520-010	0.10	Brake system, relieve pressure
520-037	0.70	Brake system, bleeding
525-008	3.50	Foot brake valve, replacing
527-001	0.10	Accumulator removed, checking charging pressure
527-002	0.80	Accumulator, replacing
55		PARKING BRAKE
550-002	0.60	Parking brake, adjusting
550-005	3.00	Parking brake, replacing brake disc
550-009	1.50	Spring brake cylinder, replacing
550-012	3.00	Parking brake , replacing brake caliper
550-014	1.50	Parking brake, replacing brake pads
550-015	0.30	Parking brake, manually releasing
550-023	0.20	Parking brake, function checking
553-000	0.40	Load and dump brake, working pressure, checking and adjusting
553-001	0.40	Load and Dump brake, servo pressure, checking
553-002	0.30	Load and Dump brake, function check
553-003	0.40	Load and dump brake, servo accumulator, checking
56		COMPRESSED-AIR BRAKE
561-004	1.75	Compressor, replacing
561-023	0.30	Relief/Cut-in pressure, check
561-024	0.30	Relief/Cut-in pressure, adjusting
59		MISCELLANEOUS
590-001	0.30	Quick coupling compressed air, replacing

Op.no.	time (h)	Notes
6		STEERING
64		STEERING
642-026	2.50	Steering gear, replacing
642-058	2.00	Steering gear, check.and adj.
643-010	1.75	Steering linkage, checking and adjusting
643-012	0.40	Steering angle, checking and adjusting
643-013	0.80	Steering times, checking and adjusting
643-014	1.00	Steering valve, neutral position, checking and adjusting
645-004	0.90	Steering cylinder, removing
645-005	1.00	Steering cylinder, installing
645-052	1.25	Steering cylinder removed, reconditioning excl replacing bearings
645-054	1.00	Steering cylinder, replacing bearings
645-054	2.50	Steering cylinder, replacing bearings
645-084	1.25	Damping cylinder, checking spring force
645-085	1.25	Damping cylinder, changing seal
647-095	1.00	Auxiliary steering, adjusting working- and stand-by11001 - 16999 pressure
647-096	1.00	Auxiliary steering, hydraulic pump, removing
647-097	1.50	Auxiliary steering, hydraulic pump, installation
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-015	0.90	Protecting plate, removal
715-016	1.50	Protecting plate, installation
72		SUSPENSION
720-008	1.25	Position sensor, complete replacement
720-010	0.50	Forced Raising/lowering, Full suspension
720-011	0.30	Relieve pressure
720-012	0.50	Manual lowering
720-012	0.80	Manual lowering
720-013	0.20	Suspension system, bleeding air
720-020	0.70	Hydraulic cylinder bushing, suspension system, replacing
720-020	0.70	Hydraulic cylinder bushing, suspension system, replacing
720-021	1.75	Hydraulic cylinder, suspension system, overhaul
720-022	1.50	Accumulator, suspension system, overhaul

Op.no.	time (h)	Notes
720-023	0.60	Hydraulic pump, max pressure, checking and adjusting
725-001	1.50	Suspension cylinder, removal
725-002	1.75	Suspension cylinder, installation
725-003	0.60	Accumulator, removal
725-004	1.25	Accumulator, installation
725-008	1.50	Position sensor front, replacing
725-009	0.70	Accumulator, precharge pressure, checking and adjusting
726-001	1.75	Suspension cylinder, removal
726-001	1.75	Suspension cylinder, removal
726-002	2.00	Suspension cylinder, installation
726-002	2.00	Suspension cylinder, installation
726-003	0.30	Accumulator, removal
726-003	0.20	Accumulator, removal
726-004	0.60	Accumulator, installation
726-004	0.80	Accumulator, installation
726-006	2.00	Accumulator bank, removal
726-007	1.75	Accumulator bank, installation
726-008	1.25	Position sensor rear, replacing
726-009	0.70	Accumulator, precharge pressure, checking and adjusting
74		FRAME LINK
741-001	6.00	Frame joint, separating machine
741-040	1.50	Frame joint bearing, replacing (machine separated)
741-044	5.00	Hitch, removing
741-045	6.50	Hitch, installing
741-046	2.50	Steering joint bearing, replacing (Hitch removed)
742-040	6.00	Steering joint, replacing bearings
75		AXLE SUSPENSION
751-001	3.00	A-frame bushing, tractor unit, replacing
751-013	1.00	Cross stay, rubber bushing, replacing
751-014	0.40	Cross stay, removing
751-015	0.40	Cross stay, installing
756-013	1.00	Cross stay, rubber bushing, replacing
756-017	0.40	Cross stay, removing
756-018	0.40	Cross stay, installing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-007	0.70	Wheel, installing
771-008	0.70	Wheel, removing

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	1.00	Engine hood, removing
821-002	1.25	Engine hood, installing
821-035	0.60	Hood pump, oil, changing
821-060	0.80	Electric hood pump, changing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.25	Door, replacing
831-006	0.60	Door lock, replacing
831-007	0.50	Door, gas spring, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	3.00	Windscreen, replacing
843-012	3.00	Rear window, replacing
843-013	3.00	Side window, replacing
843-014	3.00	Side window, rear, replacing
843-048	2.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.70	Operator's seat, removing
852-004	0.70	Operator's seat, installing
852-092	0.50	Operator's seat, shock absorber, replacing
852-096	1.75	Operator's seat, air bellows, replacing
87		AIR CONDITIONING UNIT
870-010	0.80	ECC, MID 146, changing pre-programmed ECU
870-011	0.80	ECC, MID 146, changing non-programmed ECU
870-015	1.25	Cab heating/cab ventilation timer, pump, replacing
873-004	4.00	Heater core, replacing
873-006	4.00	Fan motor, replacing
873-008	3.00	Heat control valve, replacing
873-009	0.50	Heat control, replacing
874-003	0.30	Cooling unit, performance test
874-006	4.00	Compressor, replacing incl draining and filling
874-010	4.00	Condenser, replacing incl draining and filling
874-011	3.50	Receiver, replacing incl draining and filling
874-012	5.00	Evaporator, replacing incl draining and filling
874-059	5.50	Evaporator, cleaning
875-013	2.50	Auxiliary heater, replacing

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-002	0.40	Hydraulic system, bleeding
900-003	0.10	Hydraulic system, relieve pressure
900-005	0.30	Vacuum pump, connection
900-031	1.00	V2-ECU, MID 249, changing non-programmed ECU
900-032	0.90	V2-ECU, MID 249, changing pre-programmed ECU
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-078	0.60	Dump lever, changing
912-115	3.00	Steering and tipping valve, removal
912-116	3.50	Steering and tipping valve, installation
913-003	0.90	Hydraulic pump, checking and adjusting standby pressure
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-004	0.80	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-042	0.50	Working pumps, checking function
913-052	1.00	Hydraulic pump, removing
913-053	1.75	Hydraulic pump, installing
913-068	1.50	Pump regulator, checking
914-094	0.70	Dump function, checking pressure
95		LOAD CARRIER
951-005	1.00	Hoist cylinder bearing, changing
951-005	0.90	Hoist cylinder bearing, changing
951-006	3.00	Hoist cylinder removed, reconditioning
951-007	1.25	Hoist cylinder, removal
951-008	1.25	Hoist cylinder, installation
951-011	0.30	Cylinder, rear flap, gas pressure, checking and adjusting
951-030	0.40	Dump body alternative, lowering
951-030	0.40	Dump body alternative, lowering
951-040	2.00	Dump body joint, changing tipping bearing
951-041	2.50	Dump body, adjusting against frame
951-042	0.20	Dump body angle sensor, calibration
99		MISCELLANEOUS
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-001	3.00	Maintenance service, as required	22092 - 999999
173-003	3.00	Maintenance service, every 10 hours	22092 - 999999
173-006	6.00	Maintenance service, every 100 hours	22092 - 999999
173-010	8.50	Maintenance service, every 500 hours	22092 - 999999
173-012	16.00	Maintenance service, every 1000 hours	22092 - 999999
173-013	10.00	Maintenance service, every 1500 hours	22092 - 999999
173-014	19.00	Maintenance service, every 2000 hours	770128 - 999999
173-014	20.00	Maintenance service, every 2000 hours	22092 - 770127
173-016	20.00	Maintenance service, every 3000 hours	22092 - 999999
173-018	20.00	Maintenance service, every 4000 hours	770128 - 999999
173-036	3.50	Maintenance service, first 100 hours	22092 - 999999
19		GENERAL	
191-022	2.50	Service position 2	
191-025	3.00	Service position 3	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
301-001	0.40	Control panel, software update	
301-004	0.20	Control panel, parameter setting	
301-005	0.70	Pre-programmed ECU, replacing	
301-014	0.60	Trimming (offset adjustment)	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-012	5.00	Travel gearbox, removal	
431-013	5.50	Travel gearbox, installation	
44		HYDROSTATIC DRIVE	
440-024	3.00	Travel drive, calibrating	
441-035	4.50	Drive motor, removing	
441-036	5.00	Drive motor, installing	

Op.no.	time (h)	Notes	
6		STEERING	
64		STEERING	
643-025	0.30	Steering angle sensor, adjusting	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-002	0.70	Front wheel, removal	
771-003	0.60	Front wheel, installation	
771-004	3.00	Rear wheel, removing	
771-005	3.00	Rear wheel, installing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
98		FUNCTION FOR ROAD CONSTRUCTION	
982-001	1.00	Tow arm, removing	
982-002	1.00	Tow arm, installing	
982-003	2.50	Screed, removing	
982-003	2.00	Screed, removing	
982-004	3.00	Screed, installing	
982-004	4.00	Screed, installing	
982-029	0.30	Levelling scales, adjusting	
982-055	1.25	Screed spacer blocks, removing	
982-056	1.25	Screed spacer blocks, installing	
983-042	1.50	Conveyor cover, removing	22092 - 999999
983-043	1.75	Conveyor cover, installing	22092 - 999999
983-057	6.50	Conveyor drive shaft, removing	
983-058	6.50	Conveyor drive shaft, installing	
983-118	0.90	Conveyor drive chain, removing	22092 - 999999
983-119	0.70	Conveyor drive chain, installing	22092 - 999999
983-122	1.75	Conveyor idler assembly, disassembly and assembly	
983-140	0.90	Front apron plate, removing	
983-141	1.25	Front apron plate, installing	
983-142	0.30	Auger flight, removing	
983-143	0.10	Auger flight, installing	22092 - 999999

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-001	3.00	Maintenance service, as required	22092 - 999999
173-003	3.00	Maintenance service, every 10 hours	22092 - 999999
173-006	6.00	Maintenance service, every 100 hours	22092 - 999999
173-010	8.50	Maintenance service, every 500 hours	22092 - 999999
173-012	17.00	Maintenance service, every 1000 hours	22092 - 999999
173-013	10.00	Maintenance service, every 1500 hours	22092 - 999999
173-014	19.00	Maintenance service, every 2000 hours	770128 - 999999
173-014	20.00	Maintenance service, every 2000 hours	22092 - 770127
173-016	20.00	Maintenance service, every 3000 hours	22092 - 999999
173-018	20.00	Maintenance service, every 4000 hours	770128 - 999999
173-036	3.50	Maintenance service, first 100 hours	22092 - 999999
19		GENERAL	
191-022	2.50	Service position 2	
191-025	3.00	Service position 3	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
301-001	0.40	Control panel, software update	
301-004	0.20	Control panel, parameter setting	
301-005	0.70	Pre-programmed ECU, replacing	
301-014	0.60	Trimming (offset adjustment)	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-012	5.00	Travel gearbox, removal	
431-013	5.50	Travel gearbox, installation	
44		HYDROSTATIC DRIVE	
440-024	3.00	Travel drive, calibrating	
441-035	4.50	Drive motor, removing	
441-036	5.00	Drive motor, installing	

Op.no.	time (h)	Notes	
6		STEERING	
64		STEERING	
643-025	0.30	Steering angle sensor, adjusting	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-002	0.70	Front wheel, removal	
771-003	0.60	Front wheel, installation	
771-004	3.00	Rear wheel, removing	
771-005	3.00	Rear wheel, installing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
98		FUNCTION FOR ROAD CONSTRUCTION	
982-001	1.00	Tow arm, removing	
982-002	1.00	Tow arm, installing	
982-003	2.50	Screed, removing	
982-003	2.00	Screed, removing	
982-004	3.00	Screed, installing	
982-004	4.00	Screed, installing	
982-029	0.30	Levelling scales, adjusting	
982-055	1.25	Screed spacer blocks, removing	
982-056	1.25	Screed spacer blocks, installing	
983-042	1.50	Conveyor cover, removing	22092 - 999999
983-043	1.75	Conveyor cover, installing	22092 - 999999
983-057	6.50	Conveyor drive shaft, removing	
983-058	6.50	Conveyor drive shaft, installing	
983-118	0.90	Conveyor drive chain, removing	22092 - 999999
983-119	0.70	Conveyor drive chain, installing	22092 - 999999
983-122	1.75	Conveyor idler assembly, disassembly and assembly	
983-140	0.90	Front apron plate, removing	
983-141	1.25	Front apron plate, installing	
983-142	0.30	Auger flight, removing	
983-143	0.10	Auger flight, installing	22092 - 999999

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
172-002	3.00	Warranty inspection 100 hours	700835 - 999999
173-001	1.50	Maintenance service, as required	19144 - 700834
173-001	2.00	Maintenance service, as required	700835 - 999999
173-003	1.00	Maintenance service, every 10 hours	700835 - 999999
173-010	5.00	Maintenance service, every 500 hours	700835 - 999999
173-012	12.00	Maintenance service, every 1000 hours	700835 - 999999
173-014	14.00	Maintenance service, every 2000 hours	700835 - 701910
173-014	12.00	Maintenance service, every 2000 hours	701911 - 999999
173-016	14.00	Maintenance service, every 3000 hours	700835 - 999999
173-018	14.00	Maintenance service, every 4000 hours	701911 - 999999
173-302	0.20	Service position 1	
19		GENERAL	
191-021	0.20	Service position 1	
191-022	2.50	Service position 2	700835 - 999999
191-022	2.50	Service position 2	700835 - 999999
191-025	3.00	Service position 3	700835 - 999999
191-025	3.00	Service position 3	700835 - 999999
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
301-001	0.40	Control panel, software update	
301-003	0.40	Machine, Calibration	
301-003	0.30	Machine, Calibration	
301-004	0.20	Control panel, parameter setting	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
387-032	1.50	Main control unit memory battery, replacing	17958 - 999999
4		POWER TRANSMISSION	
44		HYDROSTATIC DRIVE	
441-111	4.00	Track motor, replacing	

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-009	5.00	Front idler, removing
775-010	4.50	Front idler, installing
775-025	1.50	Assembling the guide sprocket
775-034	6.00	Track chain assembly, removing
775-035	9.50	Track chain assembly, installing
775-051	1.25	Top roller, replacing one
775-062	1.00	Bottom roller, removing
775-063	0.90	Bottom roller, installing
775-074	0.30	Track pad, removing
775-075	0.20	Track pad, installing
775-080	1.50	Track tension cylinder, replacing
775-095	0.70	Track tension, adjusting
775-108	0.40	Road scraper, removing
775-109	0.20	Road scraper, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-051	3.00	Canopy, removal
810-052	4.50	Canopy, installation
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
98		FUNCTION FOR ROAD CONSTRUCTION
982-001	1.00	Tow arm, removing
982-002	0.80	Tow arm, installing
982-003	2.50	Screed, removing
982-003	2.00	Screed, removing
982-004	3.00	Screed, installing
982-004	4.00	Screed, installing
983-042	1.50	Conveyor cover, removing
983-043	1.75	Conveyor cover, installing
983-052	3.00	Conveyor chain, removing
983-053	2.50	Conveyor chain, installing
983-055	5.00	Conveyor floor plate, removing
983-056	2.50	Conveyor floor plate, installing

Op.no.	time (h)	Notes
983-057	7.50	Conveyor drive shaft, removing
983-058	6.50	Conveyor drive shaft, installing
983-065	1.50	Auger bearing hanger, removing
983-066	0.90	Auger bearing hanger, installing
983-067	4.50	Auger bearing, removing
983-068	2.50	Auger bearing, installing
983-069	3.50	Auger shaft, removing
983-070	1.00	Auger shaft, installing
983-101	2.50	Auger drive chain, replacing
983-102	1.75	Auger motor, removing
983-103	1.50	Auger motor, installing
983-118	0.60	Conveyor drive chain, removing
983-119	0.60	Conveyor drive chain, installing
983-120	1.75	Conveyor idler assembly, removing
983-121	1.50	Conveyor idler assembly, installing
983-122	1.75	Conveyor idler assembly, disassembly and assembly
983-142	0.30	Auger flight, removing
983-143	0.10	Auger flight, installing

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-001	3.00	Maintenance service, as required	22092 - 999999
173-003	3.00	Maintenance service, every 10 hours	22092 - 999999
173-006	6.00	Maintenance service, every 100 hours	22092 - 999999
173-010	8.50	Maintenance service, every 500 hours	22092 - 999999
173-012	16.00	Maintenance service, every 1000 hours	22092 - 999999
173-013	10.00	Maintenance service, every 1500 hours	22092 - 999999
173-014	19.00	Maintenance service, every 2000 hours	770128 - 999999
173-014	20.00	Maintenance service, every 2000 hours	22092 - 770127
173-016	20.00	Maintenance service, every 3000 hours	22092 - 999999
173-018	20.00	Maintenance service, every 4000 hours	770128 - 999999
173-036	3.50	Maintenance service, first 100 hours	22092 - 999999
19		GENERAL	
191-022	2.50	Service position 2	
191-025	3.00	Service position 3	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
301-001	0.40	Control panel, software update	
301-004	0.20	Control panel, parameter setting	
301-005	0.70	Pre-programmed ECU, replacing	
301-014	0.60	Trimming (offset adjustment)	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-012	5.00	Travel gearbox, removal	
431-013	5.50	Travel gearbox, installation	
44		HYDROSTATIC DRIVE	
440-024	3.00	Travel drive, calibrating	
441-035	4.50	Drive motor, removing	
441-036	5.00	Drive motor, installing	

Op.no.	time (h)		Notes
6		STEERING	
64		STEERING	
643-025	0.30	Steering angle sensor, adjusting	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-002	0.70	Front wheel, removal	
771-003	0.60	Front wheel, installation	
771-004	3.00	Rear wheel, removing	
771-005	3.00	Rear wheel, installing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
98		FUNCTION FOR ROAD CONSTRUCTION	
982-001	1.00	Tow arm, removing	
982-002	1.00	Tow arm, installing	
982-003	2.50	Screed, removing	
982-003	2.00	Screed, removing	
982-004	3.00	Screed, installing	
982-004	4.00	Screed, installing	
982-029	0.30	Levelling scales, adjusting	
982-055	1.25	Screed spacer blocks, removing	
982-056	1.25	Screed spacer blocks, installing	
983-042	1.50	Conveyor cover, removing	22092 - 999999
983-043	1.75	Conveyor cover, installing	22092 - 999999
983-057	6.50	Conveyor drive shaft, removing	
983-058	6.50	Conveyor drive shaft, installing	
983-118	0.90	Conveyor drive chain, removing	22092 - 999999
983-119	0.70	Conveyor drive chain, installing	22092 - 999999
983-122	1.75	Conveyor idler assembly, disassembly and assembly	
983-140	0.90	Front apron plate, removing	
983-141	1.25	Front apron plate, installing	
983-142	0.30	Auger flight, removing	
983-143	0.10	Auger flight, installing	22092 - 999999

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
172-002	9.00	Warranty inspection 100 hours	
172-004	13.00	Warranty inspection 1000 hours	
173-002	0.40	Maintenance service, daily	
173-004	1.75	Maintenance service, every 50 hours	
173-007	3.00	Maintenance service, every 250 hours	
173-010	6.50	Maintenance service, every 500 hours	
173-012	14.00	Maintenance service, every 1000 hours	
173-013	1.50	Maintenance service, every 1500 hours	
173-014	14.00	Maintenance service, every 2000 hours	
173-016	0.30	Maintenance service, every 3000 hours	
173-022	0.30	Maintenance service, every 6000 hours	
173-059	0.50	Engine, changing oil and filter	10939 - 11314
173-063	0.50	Transmission, oil filter, changing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
210-070	6.00	Engine, removing	11315 - 99999
210-072	6.00	Engine, installing	11315 - 99999
214-012	1.50	Valves, adjusting	10001 - 11314
214-012	1.50	Valves, adjusting	11315 - 99999
23		FUEL SYSTEM	
233-001	0.10	Fuel system, bleeding	11315 - 99999
233-001	0.10	Fuel system, bleeding	10001 - 11314
233-002	1.50	Feed pump, replacing	
233-004	0.40	Feed pump, checking feed pressure	
233-011	0.70	Fuel pump, removing	11315 - 99999
233-011	0.70	Fuel pump, removing	10001 - 11314
233-012	1.25	Fuel pump, installing	10001 - 11314
233-012	1.25	Fuel pump, installing	11315 - 99999
234-011	1.25	Fuel tank, removing	10001 - 11314
234-012	1.25	Fuel tank, installing	10001 - 11314
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.25	Silencer, replacing	10001 - 11314
252-020	1.50	Silencer, replacing	11315 - 99999
26		COOLING SYSTEM	
261-012	0.30	Radiator hose upper, replacing	11315 - 99999
261-014	1.00	Radiator hoses lower, replacing	

Op.no.	time (h)		Notes
261-018	1.25	Expansion tank, replacing	10001 - 11314
261-018	0.60	Expansion tank, replacing	11315 - 99999
263-012	0.30	Fan belt and/or alternator belt, replacing	11315 - 99999
263-084	1.25	Fan shroud, replacing	11315 - 99999
263-085	1.25	Fan shroud, additional sheet, installing	11315 - 99999
27		ENGINE CONTROL	
272-010	4.00	Accelerator control cable, changing	11315 - 99999
272-010	2.00	Accelerator control cable, changing	11315 - 99999
272-010	2.00	Accelerator control cable, changing	10001 - 11314
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
302-130	0.50	Loader lever, electrical measuring	11315 - 99999
302-130	0.50	Loader lever, electrical measuring	10001 - 11314
31		BATTERY	
311-002	0.30	Batteries, replacing	10001 - 10938
311-002	0.30	Batteries, replacing	10939 - 99999
32		ALTERNATOR; CHARGE REGULATOR	
321-002	0.75	Alternator, replacing incl function check	
322-005	0.50	Charging regulator, replacing	
39		MISCELLANEOUS	
390-902	2.00	CareTrack, installing new	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-002	0.80	Transmission oil pressure, checking	10939 - 99999
421-025	0.50	Transmission solenoid, replacing	10939 - 99999
46		FRONT AXLE; REAR AXLE	
460-002	0.30	Axle suspension, adjusting axial clearance	
463-002	1.50	Axle, removing	
463-003	1.50	Axle, installing	
5		BRAKE	
52		HYDRAULIC BRAKE SYSTEM	
520-003	0.60	Service brake pressure, checking	

Op.no.	time (h)		Notes
520-037	0.20	Brake system, bleeding	10939 - 99999
55		PARKING BRAKE	
550-002	0.30	Parking brake, adjusting	10939 - 19999
6		STEERING	
62		STEERING AXLE	
622-080	1.75	Toe - in, checking and adjusting	
64		STEERING	
640-001	0.50	Steering system, adjustment	
643-011	0.40	Steering angle, adjustment	
643-012	0.40	Steering angle, checking and adjusting	
645-006	2.50	Steering cylinder, replacing	
645-022	1.00	Steering valve, removal	
645-023	1.00	Steering valve, installation	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	0.60	Counterweight, removing	11315 - 99999
716-001	0.50	Counterweight, removing	10001 - 11314
716-002	0.50	Counterweight, fitting	11315 - 99999
716-002	0.50	Counterweight, fitting	10001 - 11314
716-004	0.30	Additional counterweight, removing	11315 - 99999
716-004	0.50	Additional counterweight, removing	10001 - 11314
716-005	0.50	Additional counterweight, installing	10001 - 11314
716-005	0.30	Additional counterweight, installing	11315 - 99999
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-002	0.40	Front wheel, removal	
771-002	0.50	Front wheel, removal	
771-003	0.40	Front wheel, installation	
771-003	0.40	Front wheel, installation	
771-004	0.40	Rear wheel, removing	
771-004	0.50	Rear wheel, removing	
771-005	0.40	Rear wheel, installing	
771-005	0.40	Rear wheel, installing	

Op.no.	time (h)		Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-001	0.30	Engine hood, removing	10001 - 11314
821-001	0.40	Engine hood, removing	11315 - 99999
821-002	0.40	Engine hood, installing	11315 - 99999
821-002	0.20	Engine hood, installing	10001 - 11314
821-031	0.25	Engine hood, changing gas spring	
85		CAB INTERIOR/UPHOLSTERY	
851-008	0.70	Headliner, installing	10939 - 99999
851-009	0.80	Headliner, removing	10939 - 99999
852-003	0.50	Operator's seat, removing	
852-004	0.50	Operator's seat, installing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-005	0.20	Vacuum pump, connection	10001 - 10938
900-005	0.20	Vacuum pump, connection	10939 - 11314
900-005	0.20	Vacuum pump, connection	11315 - 99999
900-006	0.10	Vacuum pump, disconnection	10939 - 11314
900-006	0.10	Vacuum pump, disconnection	10001 - 10938
900-006	0.10	Vacuum pump, disconnection	11315 - 99999
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
910-002	4.00	Hydraulic system, bleeding air	
910-004	1.50	Hydraulic pressure, adjusting	
911-036	1.00	Hydraulic oil tank, removing	10001 - 11314
911-037	1.75	Hydraulic oil tank, installing	10001 - 11314
912-041	3.00	Main valve block, removal	
912-042	3.00	Main valve block, installation	
912-047	2.00	Main valve block, backhoe, removal	11315 - 99999
912-048	2.00	Main valve block, backhoe, installation	11315 - 99999
912-054	1.00	Pressure regulating valve, replacing	
912-129	0.20	Hydraulic cylinders, cleaning	
913-023	1.00	Pump, removal	
913-024	1.50	Pump, installation	
914-060	1.00	Servo pump, replacing	
916-002	0.30	Boom suspension accumulator, check and adjusting	

Op.no.	time (h)	Notes
94		UNIT, LOAD HANDLING
945-017	1.00	Lift cylinder, reconditioning
945-020	1.00	Tilt cylinder, reconditioning
97		UNIT, DIGGING
971-096	1.25	Swing cylinder, renovation
974-031	1.00	Boom cylinder, removal
974-032	1.00	Boom cylinder, installation
974-033	1.00	Boom cylinder, renovation
974-083	1.00	Boom lock cylinder, reconditioning
975-014	0.50	Dipper arm cylinder, removal
975-015	0.50	Dipper arm cylinder, installation
975-016	1.00	Dipper arm cylinder, renovation
975-052	0.75	Extendible dipper arm cylinder, removal
975-054	0.75	Extendible dipper arm cylinder, installation
975-062	0.50	Bucket cylinder, removal
975-065	0.50	Bucket cylinder, installation
975-066	1.25	Bucket cylinder, renovation

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
172-002	9.00	Warranty inspection 100 hours	
172-004	13.00	Warranty inspection 1000 hours	
173-002	0.40	Maintenance service, daily	
173-004	1.75	Maintenance service, every 50 hours	
173-007	3.00	Maintenance service, every 250 hours	
173-010	6.50	Maintenance service, every 500 hours	
173-012	14.00	Maintenance service, every 1000 hours	
173-013	1.50	Maintenance service, every 1500 hours	
173-014	14.00	Maintenance service, every 2000 hours	
173-016	0.30	Maintenance service, every 3000 hours	
173-022	0.30	Maintenance service, every 6000 hours	
173-059	0.50	Engine, changing oil and filter	10627 - 11458
173-063	0.50	Transmission, oil filter, changing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
210-070	6.00	Engine, removing	11459 - 99999
210-072	6.00	Engine, installing	11459 - 99999
214-012	1.50	Valves, adjusting	11459 - 99999
23		FUEL SYSTEM	
233-001	0.10	Fuel system, bleeding	10001 - 11458
233-001	0.10	Fuel system, bleeding	11459 - 99999
233-002	1.50	Feed pump, replacing	
233-004	0.40	Feed pump, checking feed pressure	
233-011	0.70	Fuel pump, removing	11459 - 99999
233-011	0.70	Fuel pump, removing	10001 - 11458
233-012	1.25	Fuel pump, installing	10001 - 11458
233-012	1.25	Fuel pump, installing	11459 - 99999
234-011	1.25	Fuel tank, removing	10001 - 11458
234-012	1.25	Fuel tank, installing	10001 - 11458
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.25	Silencer, replacing	10001 - 11458
252-020	1.50	Silencer, replacing	11459 - 99999
26		COOLING SYSTEM	
261-012	0.30	Radiator hose upper, replacing	11459 - 99999
261-014	1.00	Radiator hoses lower, replacing	
261-018	0.60	Expansion tank, replacing	11459 - 99999

Op.no.	time (h)		Notes
261-018	1.25	Expansion tank, replacing	10001 - 11458
263-012	0.30	Fan belt and/or alternator belt, replacing	11459 - 99999
263-084	1.25	Fan shroud, replacing	11459 - 99999
263-085	1.25	Fan shroud, additional sheet, installing	11459 - 99999
27		ENGINE CONTROL	
272-010	4.00	Accelerator control cable, changing	11459 - 99999
272-010	2.00	Accelerator control cable, changing	11459 - 99999
272-010	2.00	Accelerator control cable, changing	10001 - 11458
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
302-130	0.50	Loader lever, electrical measuring	11459 - 99999
302-130	0.50	Loader lever, electrical measuring	10001 - 11458
31		BATTERY	
311-002	0.30	Batteries, replacing	10001 - 10626
311-002	0.30	Batteries, replacing	10627 - 99999
32		ALTERNATOR; CHARGE REGULATOR	
321-002	0.75	Alternator, replacing incl function check	
322-005	0.50	Charging regulator, replacing	
39		MISCELLANEOUS	
390-902	2.00	CareTrack, installing new	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-002	0.80	Transmission oil pressure, checking	10627 - 99999
421-025	0.50	Transmission solenoid, replacing	10627 - 99999
46		FRONT AXLE; REAR AXLE	
460-002	0.30	Axle suspension, adjusting axial clearance	
463-002	1.50	Axle, removing	
463-003	1.50	Axle, installing	
5		BRAKE	
52		HYDRAULIC BRAKE SYSTEM	
520-003	0.60	Service brake pressure, checking	
520-037	0.20	Brake system, bleeding	10627 - 99999

Op.no.	time (h)		Notes
55		PARKING BRAKE	
550-002	0.30	Parking brake, adjusting	10627 - 99999
6		STEERING	
62		STEERING AXLE	
622-080	1.75	Toe - in, checking and adjusting	
64		STEERING	
640-001	0.50	Steering system, adjustment	
643-011	0.40	Steering angle, adjustment	
643-012	0.40	Steering angle, checking and adjusting	
645-006	2.50	Steering cylinder, replacing	
645-022	1.00	Steering valve, removal	
645-023	1.00	Steering valve, installation	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	0.60	Counterweight, removing	11459 - 99999
716-001	0.50	Counterweight, removing	10001 - 11458
716-002	0.50	Counterweight, fitting	11459 - 99999
716-002	0.50	Counterweight, fitting	10001 - 11458
716-004	0.30	Additional counterweight, removing	11459 - 99999
716-004	0.50	Additional counterweight, removing	10001 - 11458
716-005	0.50	Additional counterweight, installing	10001 - 11458
716-005	0.30	Additional counterweight, installing	11459 - 99999
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-002	0.40	Front wheel, removal	
771-002	0.50	Front wheel, removal	
771-003	0.40	Front wheel, installation	
771-003	0.40	Front wheel, installation	
771-004	0.40	Rear wheel, removing	
771-004	0.50	Rear wheel, removing	
771-005	0.40	Rear wheel, installing	
771-005	0.40	Rear wheel, installing	

Op.no.	time (h)		Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-001	0.30	Engine hood, removing	10001 - 11458
821-001	0.40	Engine hood, removing	11459 - 99999
821-002	0.40	Engine hood, installing	11459 - 99999
821-002	0.20	Engine hood, installing	10001 - 11458
821-031	0.25	Engine hood, changing gas spring	
85		CAB INTERIOR/UPHOLSTERY	
851-008	0.70	Headliner, installing	10627 - 99999
851-009	0.80	Headliner, removing	10627 - 99999
852-003	0.50	Operator's seat, removing	
852-004	0.50	Operator's seat, installing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-005	0.20	Vacuum pump, connection	10001 - 10626
900-005	0.20	Vacuum pump, connection	10627 - 11458
900-005	0.20	Vacuum pump, connection	11459 - 99999
900-006	0.10	Vacuum pump, disconnection	10627 - 11458
900-006	0.10	Vacuum pump, disconnection	10001 - 10626
900-006	0.10	Vacuum pump, disconnection	11459 - 99999
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
910-002	4.00	Hydraulic system, bleeding air	
910-004	1.50	Hydraulic pressure, adjusting	
911-036	1.00	Hydraulic oil tank, removing	10001 - 11458
911-037	1.75	Hydraulic oil tank, installing	10001 - 11458
912-038	0.50	Hose rupture valve, checking	
912-041	3.00	Main valve block, removal	
912-042	3.00	Main valve block, installation	
912-047	2.00	Main valve block, backhoe, removal	11459 - 99999
912-048	2.00	Main valve block, backhoe, installation	11459 - 99999
912-054	1.00	Pressure regulating valve, replacing	
912-129	0.20	Hydraulic cylinders, cleaning	
913-023	1.00	Pump, removal	
913-024	1.50	Pump, installation	
914-060	1.00	Servo pump, replacing	
916-002	0.30	Boom suspension accumulator, check and adjusting	

Op.no.	time (h)	Notes
94		UNIT, LOAD HANDLING
945-017	1.00	Lift cylinder, reconditioning
945-020	1.00	Tilt cylinder, reconditioning
97		UNIT, DIGGING
971-096	1.25	Swing cylinder, renovation
972-005	0.70	Stabilizer cylinder, removal
972-006	0.60	Stabilizer cylinder, installation
972-013	0.30	Stabilisers, adjusting wearpads
972-022	1.00	Stabilisers, reconditioning hydraulic cylinder
972-090	0.50	Stabiliser wear pads, replacing
974-031	1.00	Boom cylinder, removal
974-032	1.00	Boom cylinder, installation
974-033	1.00	Boom cylinder, renovation
974-083	1.00	Boom lock cylinder, reconditioning
975-014	0.50	Dipper arm cylinder, removal
975-015	0.50	Dipper arm cylinder, installation
975-016	1.00	Dipper arm cylinder, renovation
975-052	0.75	Extendible dipper arm cylinder, removal
975-054	0.75	Extendible dipper arm cylinder, installation
975-057	1.00	Extendible dipper arm cylinder, renovation
975-062	0.50	Bucket cylinder, removal
975-065	0.50	Bucket cylinder, installation
975-066	1.25	Bucket cylinder, renovation

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
172-002	9.00	Warranty inspection 100 hours	
172-004	13.00	Warranty inspection 1000 hours	
173-002	0.40	Maintenance service, daily	
173-004	1.75	Maintenance service, every 50 hours	
173-007	3.00	Maintenance service, every 250 hours	
173-010	6.50	Maintenance service, every 500 hours	
173-012	14.00	Maintenance service, every 1000 hours	
173-013	1.50	Maintenance service, every 1500 hours	
173-014	14.00	Maintenance service, every 2000 hours	
173-016	0.30	Maintenance service, every 3000 hours	
173-022	0.30	Maintenance service, every 6000 hours	
173-059	0.50	Engine, changing oil and filter	10001 - 10286
173-063	0.50	Transmission, oil filter, changing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
210-070	6.00	Engine, removing	10287 - 99999
210-072	6.00	Engine, installing	10287 - 99999
214-012	1.50	Valves, adjusting	10287 - 99999
23		FUEL SYSTEM	
233-001	0.10	Fuel system, bleeding	10287 - 99999
233-001	0.10	Fuel system, bleeding	10001 - 10286
233-004	0.40	Feed pump, checking feed pressure	
233-011	0.70	Fuel pump, removing	10287 - 99999
233-011	0.70	Fuel pump, removing	10001 - 10286
233-012	1.25	Fuel pump, installing	10001 - 10286
233-012	1.25	Fuel pump, installing	10287 - 99999
234-011	1.25	Fuel tank, removing	10001 - 10286
234-012	1.25	Fuel tank, installing	10001 - 10286
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.25	Silencer, replacing	10001 - 10286
252-020	1.50	Silencer, replacing	10287 - 99999
26		COOLING SYSTEM	
261-012	0.30	Radiator hose upper, replacing	10287 - 99999
261-018	1.25	Expansion tank, replacing	10001 - 10286
261-018	0.60	Expansion tank, replacing	10287 - 99999
263-012	0.30	Fan belt and/or alternator belt, replacing	10287 - 99999

Op.no.	time (h)		Notes
263-084	1.25	Fan shroud, replacing	10287 - 99999
263-085	1.25	Fan shroud, additional sheet, installing	10287 - 99999
27		ENGINE CONTROL	
272-010	4.00	Accelerator control cable, changing	10287 - 99999
272-010	2.00	Accelerator control cable, changing	10287 - 99999
272-010	2.00	Accelerator control cable, changing	10001 - 10286
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
302-130	0.50	Loader lever, electrical measuring	10287 - 99999
302-130	0.50	Loader lever, electrical measuring	10001 - 10286
31		BATTERY	
311-002	0.30	Batteries, replacing	
39		MISCELLANEOUS	
390-902	2.00	CareTrack, installing new	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-002	0.80	Transmission oil pressure, checking	
421-025	0.50	Transmission solenoid, replacing	
46		FRONT AXLE; REAR AXLE	
460-002	0.30	Axle suspension, adjusting axial clearance	
463-002	1.50	Axle, removing	
463-003	1.50	Axle, installing	
5		BRAKE	
52		HYDRAULIC BRAKE SYSTEM	
520-003	0.60	Service brake pressure, checking	
520-037	0.20	Brake system, bleeding	
55		PARKING BRAKE	
550-002	0.30	Parking brake, adjusting	

Op.no.	time (h)	Notes	
6		STEERING	
62		STEERING AXLE	
622-080	1.75	Toe - in, checking and adjusting	
64		STEERING	
643-011	0.40	Steering angle, adjustment	
643-012	0.40	Steering angle, checking and adjusting	
645-022	1.00	Steering valve, removal	
645-023	1.00	Steering valve, installation	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	0.60	Counterweight, removing	10287 - 99999
716-001	0.50	Counterweight, removing	10001 - 10286
716-002	0.50	Counterweight, fitting	10287 - 99999
716-002	0.50	Counterweight, fitting	10001 - 10286
716-004	0.30	Additional counterweight, removing	10287 - 99999
716-004	0.50	Additional counterweight, removing	10001 - 10286
716-005	0.50	Additional counterweight, installing	10001 - 10286
716-005	0.30	Additional counterweight, installing	10287 - 99999
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-002	0.40	Front wheel, removal	
771-002	0.50	Front wheel, removal	
771-003	0.40	Front wheel, installation	
771-003	0.40	Front wheel, installation	
771-004	0.40	Rear wheel, removing	
771-004	0.50	Rear wheel, removing	
771-005	0.40	Rear wheel, installing	
771-005	0.40	Rear wheel, installing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-001	0.30	Engine hood, removing	10001 - 10286
821-001	0.40	Engine hood, removing	10287 - 99999
821-002	0.40	Engine hood, installing	10287 - 99999
821-002	0.20	Engine hood, installing	10001 - 10286

Op.no.	time (h)		Notes
85		CAB INTERIOR/UPHOLSTERY	
851-008	0.70	Headliner, installing	10001 - 99999
851-009	0.80	Headliner, removing	10001 - 99999
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-005	0.20	Vacuum pump, connection	10001 - 10286
900-005	0.20	Vacuum pump, connection	10287 - 99999
900-006	0.10	Vacuum pump, disconnection	10001 - 10286
900-006	0.10	Vacuum pump, disconnection	10287 - 99999
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
910-002	4.00	Hydraulic system, bleeding air	
911-036	1.00	Hydraulic oil tank, removing	10001 - 10286
911-037	1.75	Hydraulic oil tank, installing	10001 - 10286
912-038	0.50	Hose rupture valve, checking	
912-047	2.00	Main valve block, backhoe, removal	10287 - 99999
912-048	2.00	Main valve block, backhoe, installation	10287 - 99999
912-129	0.20	Hydraulic cylinders, cleaning	
916-002	0.30	Boom suspension accumulator, check and adjusting	
94		UNIT, LOAD HANDLING	
945-017	1.00	Lift cylinder, reconditioning	
945-020	1.00	Tilt cylinder, reconditioning	
97		UNIT, DIGGING	
971-096	1.25	Swing cylinder, renovation	
972-005	0.70	Stabilizer cylinder, removal	
972-006	0.60	Stabilizer cylinder, installation	
972-013	0.30	Stabilisers, adjusting wearpads	
972-022	1.00	Stabilisers, reconditioning hydraulic cylinder	
972-090	0.50	Stabiliser wear pads, replacing	
974-031	1.00	Boom cylinder, removal	
974-032	1.00	Boom cylinder, installation	
974-033	1.00	Boom cylinder, renovation	
974-083	1.00	Boom lock cylinder, reconditioning	
975-016	1.00	Dipper arm cylinder, renovation	
975-057	1.00	Extendible dipper arm cylinder, renovation	
975-066	1.25	Bucket cylinder, renovation	

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
172-002	9.00	Warranty inspection 100 hours	
172-004	13.00	Warranty inspection 1000 hours	
173-002	0.40	Maintenance service, daily	
173-004	1.75	Maintenance service, every 50 hours	
173-007	3.00	Maintenance service, every 250 hours	
173-010	6.50	Maintenance service, every 500 hours	
173-012	14.00	Maintenance service, every 1000 hours	
173-013	1.50	Maintenance service, every 1500 hours	
173-014	14.00	Maintenance service, every 2000 hours	
173-016	0.30	Maintenance service, every 3000 hours	
173-022	0.30	Maintenance service, every 6000 hours	
173-059	0.50	Engine, changing oil and filter	11145 - 11488
173-062	0.40	Transmission, changing oil	10001 - 11144
173-063	0.50	Transmission, oil filter, changing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
210-070	6.00	Engine, removing	11489 - 99999
210-072	6.00	Engine, installing	11489 - 99999
214-012	1.50	Valves, adjusting	10001 - 11488
214-012	1.50	Valves, adjusting	11489 - 99999
23		FUEL SYSTEM	
233-001	0.10	Fuel system, bleeding	11489 - 99999
233-001	0.10	Fuel system, bleeding	10001 - 11488
233-002	1.50	Feed pump, replacing	
233-004	0.40	Feed pump, checking feed pressure	
233-011	0.70	Fuel pump, removing	11489 - 99999
233-011	0.70	Fuel pump, removing	10001 - 11488
233-012	1.25	Fuel pump, installing	10001 - 11488
233-012	1.25	Fuel pump, installing	11489 - 99999
234-011	1.25	Fuel tank, removing	10001 - 11488
234-012	1.25	Fuel tank, installing	10001 - 11488
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.25	Silencer, replacing	10001 - 11488
252-020	1.50	Silencer, replacing	11489 - 99999
26		COOLING SYSTEM	
261-012	0.30	Radiator hose upper, replacing	11489 - 99999

Op.no.	time (h)		Notes
261-014	1.00	Radiator hoses lower, replacing	
261-018	1.25	Expansion tank, replacing	10001 - 11488
261-018	0.60	Expansion tank, replacing	11489 - 99999
263-012	0.30	Fan belt and/or alternator belt, replacing	11489 - 99999
263-084	1.25	Fan shroud, replacing	11489 - 99999
263-085	1.25	Fan shroud, additional sheet, installing	11489 - 99999
27		ENGINE CONTROL	
272-010	4.00	Accelerator control cable, changing	11489 - 99999
272-010	2.00	Accelerator control cable, changing	11489 - 99999
272-010	2.00	Accelerator control cable, changing	10001 - 11488
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
302-130	0.50	Loader lever, electrical measuring	11489 - 99999
302-130	0.50	Loader lever, electrical measuring	10001 - 11488
31		BATTERY	
311-002	0.30	Batteries, replacing	10001 - 11144
311-002	0.30	Batteries, replacing	11145 - 99999
32		ALTERNATOR; CHARGE REGULATOR	
321-002	0.75	Alternator, replacing incl function check	
322-005	0.50	Charging regulator, replacing	
39		MISCELLANEOUS	
390-902	2.00	CareTrack, installing new	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-002	0.80	Transmission oil pressure, checking	11145 - 99999
421-025	0.50	Transmission solenoid, replacing	11145 - 99999
46		FRONT AXLE; REAR AXLE	
460-002	0.30	Axle suspension, adjusting axial clearance	
463-002	1.50	Axle, removing	
463-003	1.50	Axle, installing	

Op.no.	time (h)		Notes
5		BRAKE	
52		HYDRAULIC BRAKE SYSTEM	
520-003	0.60	Service brake pressure, checking	
520-037	0.20	Brake system, bleeding	11145 - 99999
55		PARKING BRAKE	
550-002	0.30	Parking brake, adjusting	11145 - 99999
6		STEERING	
62		STEERING AXLE	
622-080	1.75	Toe - in, checking and adjusting	
64		STEERING	
640-001	0.50	Steering system, adjustment	
643-011	0.40	Steering angle, adjustment	
643-012	0.40	Steering angle, checking and adjusting	
645-006	2.50	Steering cylinder, replacing	
645-022	1.00	Steering valve, removal	
645-023	1.00	Steering valve, installation	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	0.60	Counterweight, removing	11489 - 99999
716-001	0.50	Counterweight, removing	10001 - 11488
716-002	0.50	Counterweight, fitting	11489 - 99999
716-002	0.50	Counterweight, fitting	10001 - 11488
716-004	0.30	Additional counterweight, removing	11489 - 99999
716-004	0.50	Additional counterweight, removing	10001 - 11488
716-005	0.50	Additional counterweight, installing	10001 - 11488
716-005	0.30	Additional counterweight, installing	11489 - 99999
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-002	0.40	Front wheel, removal	
771-002	0.50	Front wheel, removal	
771-003	0.40	Front wheel, installation	
771-003	0.40	Front wheel, installation	
771-004	0.40	Rear wheel, removing	
771-004	0.50	Rear wheel, removing	
771-005	0.40	Rear wheel, installing	

Op.no.	time (h)		Notes
771-005	0.40	Rear wheel, installing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-001	0.30	Engine hood, removing	10001 - 11488
821-001	0.40	Engine hood, removing	11489 - 99999
821-002	0.40	Engine hood, installing	11489 - 99999
821-002	0.20	Engine hood, installing	10001 - 11488
821-031	0.25	Engine hood, changing gas spring	
85		CAB INTERIOR/UPHOLSTERY	
851-008	0.70	Headliner, installing	11145 - 99999
851-009	0.80	Headliner, removing	11145 - 99999
852-003	0.50	Operator's seat, removing	
852-004	0.50	Operator's seat, installing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-005	0.20	Vacuum pump, connection	10001 - 11144
900-005	0.20	Vacuum pump, connection	11145 - 11488
900-005	0.20	Vacuum pump, connection	11489 - 99999
900-006	0.10	Vacuum pump, disconnection	11145 - 11488
900-006	0.10	Vacuum pump, disconnection	10001 - 11144
900-006	0.10	Vacuum pump, disconnection	11489 - 99999
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
910-002	4.00	Hydraulic system, bleeding air	
910-004	2.00	Hydraulic pressure, adjusting	10658 - 99999
911-036	1.00	Hydraulic oil tank, removing	10001 - 11488
911-037	1.75	Hydraulic oil tank, installing	10001 - 11488
912-041	2.50	Main valve block, removal	11489 - 99999
912-041	3.00	Main valve block, removal	11489 - 99999
912-042	3.00	Main valve block, installation	11489 - 99999
912-042	2.50	Main valve block, installation	11489 - 99999
912-054	1.00	Pressure regulating valve, replacing	
912-129	0.20	Hydraulic cylinders, cleaning	
913-010	3.00	Hydraulic pump, replacing	11489 - 99999
913-023	1.00	Pump, removal	
913-024	1.50	Pump, installation	

Op.no.	time (h)	Notes
914-054	0.60	Servo valve, adjusting control
914-058	2.50	Servo valve, replacing
914-060	1.00	Servo pump, replacing
914-091	1.50	Solenoid valve, replacing
916-002	0.30	Boom suspension accumulator, check and adjusting
94		UNIT, LOAD HANDLING
945-017	1.00	Lift cylinder, reconditioning
945-020	1.00	Tilt cylinder, reconditioning
97		UNIT, DIGGING
971-096	1.25	Swing cylinder, renovation
974-031	1.00	Boom cylinder, removal
974-032	1.00	Boom cylinder, installation
974-033	1.00	Boom cylinder, renovation
974-083	1.00	Boom lock cylinder, reconditioning
975-014	0.50	Dipper arm cylinder, removal
975-015	0.50	Dipper arm cylinder, installation
975-016	1.00	Dipper arm cylinder, renovation
975-052	0.75	Extendible dipper arm cylinder, removal
975-054	0.75	Extendible dipper arm cylinder, installation
975-057	1.00	Extendible dipper arm cylinder, renovation
975-062	0.50	Bucket cylinder, removal
975-065	0.50	Bucket cylinder, installation
975-066	1.25	Bucket cylinder, renovation

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
172-002	9.00	Warranty inspection 100 hours	
172-004	13.00	Warranty inspection 1000 hours	
173-002	0.40	Maintenance service, daily	
173-004	1.75	Maintenance service, every 50 hours	
173-007	3.00	Maintenance service, every 250 hours	
173-010	6.50	Maintenance service, every 500 hours	
173-012	14.00	Maintenance service, every 1000 hours	
173-013	1.50	Maintenance service, every 1500 hours	
173-014	14.00	Maintenance service, every 2000 hours	
173-016	0.30	Maintenance service, every 3000 hours	
173-022	0.30	Maintenance service, every 6000 hours	
173-059	0.50	Engine, changing oil and filter	14670 - 16826
173-062	0.40	Transmission, changing oil	10001 - 14669
173-063	0.50	Transmission, oil filter, changing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
210-070	6.00	Engine, removing	16827 - 99999
210-071	22.00	Engine removed, general overhaul	
210-072	6.00	Engine, installing	16827 - 99999
211-002	2.25	Cylinder head, replacing gasket	
211-080	0.50	Cylinder heads all, removing	
211-082	1.50	Cylinder heads all, fitting	
214-012	1.50	Valves, adjusting	10001 - 16826
214-012	1.50	Valves, adjusting	16827 - 99999
216-014	3.00	Crankshaft, replacing front oil seal	
216-018	2.50	Crankshaft, replacing rear oil seal	
217-002	2.00	Sump gasket, replacing incl cleaning oil strainer	
218-002	2.50	Engine mount front, changing	
218-003	2.00	Engine mount, right rear, changing	
23		FUEL SYSTEM	
233-001	0.10	Fuel system, bleeding	10001 - 16826
233-001	0.10	Fuel system, bleeding	16827 - 99999
233-002	1.50	Feed pump, replacing	
233-004	0.40	Feed pump, checking feed pressure	
233-011	0.70	Fuel pump, removing	16827 - 99999
233-011	0.70	Fuel pump, removing	10001 - 16826
233-012	1.25	Fuel pump, installing	10001 - 16826

Op.no.	time (h)		Notes
233-012	1.25	Fuel pump, installing	16827 - 99999
234-011	1.25	Fuel tank, removing	10001 - 16826
234-012	1.25	Fuel tank, installing	10001 - 16826
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.25	Silencer, replacing	10001 - 16826
252-020	1.50	Silencer, replacing	16827 - 99999
252-021	0.30	Exhaust pipe, flexible tube, replacing	
26		COOLING SYSTEM	
261-012	0.30	Radiator hose upper, replacing	16827 - 99999
261-014	1.00	Radiator hoses lower, replacing	
261-018	0.60	Expansion tank, replacing	16827 - 99999
261-018	1.25	Expansion tank, replacing	10001 - 16826
263-012	0.30	Fan belt and/or alternator belt, replacing	16827 - 99999
263-084	1.25	Fan shroud, replacing	16827 - 99999
263-085	1.25	Fan shroud, additional sheet, installing	16827 - 99999
27		ENGINE CONTROL	
272-010	4.00	Accelerator control cable, changing	16827 - 99999
272-010	2.00	Accelerator control cable, changing	16827 - 99999
272-010	2.00	Accelerator control cable, changing	10001 - 16826
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
302-130	0.50	Loader lever, electrical measuring	16827 - 99999
302-130	0.50	Loader lever, electrical measuring	10001 - 16826
31		BATTERY	
311-002	0.30	Batteries, replacing	10001 - 14669
311-002	0.30	Batteries, replacing	14670 - 99999
32		ALTERNATOR; CHARGE REGULATOR	
321-002	0.75	Alternator, replacing incl function check	
322-005	0.50	Charging regulator, replacing	
39		MISCELLANEOUS	
390-902	2.00	CareTrack, installing new	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-002	0.80	Transmission oil pressure, checking	14670 - 99999

Op.no.	time (h)		Notes
421-025	0.50	Transmission solenoid, replacing	14670 - 99999
421-070	6.00	Transmission, removing	
421-072	8.50	Transmission, installing	
46		FRONT AXLE; REAR AXLE	
460-002	0.30	Axle suspension, adjusting axial clearance	
463-002	1.50	Axle, removing	
463-003	1.50	Axle, installing	
5		BRAKE	
52		HYDRAULIC BRAKE SYSTEM	
520-003	0.60	Service brake pressure, checking	
520-037	0.20	Brake system, bleeding	14670 - 99999
55		PARKING BRAKE	
550-002	0.30	Parking brake, adjusting	14670 - 99999
6		STEERING	
62		STEERING AXLE	
622-080	1.75	Toe - in, checking and adjusting	
64		STEERING	
640-001	0.50	Steering system, adjustment	
643-011	0.40	Steering angle, adjustment	
643-012	0.40	Steering angle, checking and adjusting	
645-006	2.50	Steering cylinder, replacing	
645-022	1.00	Steering valve, removal	
645-023	1.00	Steering valve, installation	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	0.60	Counterweight, removing	16827 - 99999
716-001	0.50	Counterweight, removing	10001 - 16826
716-002	0.50	Counterweight, fitting	16827 - 99999
716-002	0.50	Counterweight, fitting	10001 - 16826
716-004	0.30	Additional counterweight, removing	16827 - 99999
716-004	0.50	Additional counterweight, removing	10001 - 16826
716-005	0.50	Additional counterweight, installing	10001 - 16826
716-005	0.30	Additional counterweight, installing	16827 - 99999

Op.no.	time (h)		Notes
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-002	0.40	Front wheel, removal	
771-002	0.50	Front wheel, removal	
771-003	0.40	Front wheel, installation	
771-003	0.40	Front wheel, installation	
771-004	0.40	Rear wheel, removing	
771-004	0.50	Rear wheel, removing	
771-005	0.40	Rear wheel, installing	
771-005	0.40	Rear wheel, installing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-001	0.30	Engine hood, removing	10001 - 16826
821-001	0.40	Engine hood, removing	16827 - 99999
821-002	0.40	Engine hood, installing	16827 - 99999
821-002	0.20	Engine hood, installing	10001 - 16826
821-031	0.25	Engine hood, changing gas spring	
85		CAB INTERIOR/UPHOLSTERY	
851-008	0.70	Headliner, installing	14670 - 99999
851-009	0.80	Headliner, removing	14670 - 99999
852-003	0.50	Operator's seat, removing	
852-004	0.50	Operator's seat, installing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-005	0.20	Vacuum pump, connection	10001 - 14669
900-005	0.20	Vacuum pump, connection	14670 - 16826
900-005	0.20	Vacuum pump, connection	16827 - 99999
900-006	0.10	Vacuum pump, disconnection	14670 - 16826
900-006	0.10	Vacuum pump, disconnection	10001 - 14669
900-006	0.10	Vacuum pump, disconnection	16827 - 99999
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
910-002	4.00	Hydraulic system, bleeding air	
910-004	2.00	Hydraulic pressure, adjusting	11702 - 99999
911-036	1.00	Hydraulic oil tank, removing	10001 - 16826
911-037	1.75	Hydraulic oil tank, installing	10001 - 16826

Op.no.	time (h)		Notes
912-038	0.50	Hose rupture valve, checking	
912-041	2.50	Main valve block, removal	16827 - 99999
912-041	3.00	Main valve block, removal	16827 - 99999
912-042	3.00	Main valve block, installation	16827 - 99999
912-042	2.50	Main valve block, installation	16827 - 99999
912-054	1.00	Pressure regulating valve, replacing	
912-129	0.20	Hydraulic cylinders, cleaning	
913-010	3.00	Hydraulic pump, replacing	16827 - 99999
913-023	1.00	Pump, removal	
913-024	1.50	Pump, installation	
914-054	0.60	Servo valve, adjusting control	
914-058	2.50	Servo valve, replacing	
914-060	1.00	Servo pump, replacing	
914-091	1.50	Solenoid valve, replacing	
916-002	0.30	Boom suspension accumulator, check and adjusting	
94		UNIT, LOAD HANDLING	
945-017	1.00	Lift cylinder, reconditioning	
945-020	1.00	Tilt cylinder, reconditioning	
97		UNIT, DIGGING	
971-096	1.25	Swing cylinder, renovation	
972-005	0.70	Stabilizer cylinder, removal	
972-006	0.60	Stabilizer cylinder, installation	
972-013	0.30	Stabilisers, adjusting wearpads	10001 - 16826
972-013	0.30	Stabilisers, adjusting wearpads	16827 - 99999
972-022	1.00	Stabilisers, reconditioning hydraulic cylinder	
972-090	0.50	Stabiliser wear pads, replacing	10001 - 16826
972-090	0.50	Stabiliser wear pads, replacing	16827 - 99999
974-031	1.00	Boom cylinder, removal	
974-032	1.00	Boom cylinder, installation	
974-033	1.00	Boom cylinder, renovation	
974-083	1.00	Boom lock cylinder, reconditioning	
975-014	0.50	Dipper arm cylinder, removal	
975-015	0.50	Dipper arm cylinder, installation	
975-016	1.00	Dipper arm cylinder, renovation	
975-052	0.75	Extendible dipper arm cylinder, removal	
975-054	0.75	Extendible dipper arm cylinder, installation	
975-057	1.00	Extendible dipper arm cylinder, renovation	
975-062	0.50	Bucket cylinder, removal	
975-065	0.50	Bucket cylinder, installation	
975-066	1.25	Bucket cylinder, renovation	

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
172-002	9.00	Warranty inspection 100 hours	
172-004	13.00	Warranty inspection 1000 hours	
173-002	0.40	Maintenance service, daily	
173-004	1.75	Maintenance service, every 50 hours	
173-007	3.00	Maintenance service, every 250 hours	
173-010	6.50	Maintenance service, every 500 hours	
173-012	14.00	Maintenance service, every 1000 hours	
173-013	1.50	Maintenance service, every 1500 hours	
173-014	14.00	Maintenance service, every 2000 hours	
173-016	0.30	Maintenance service, every 3000 hours	
173-022	0.30	Maintenance service, every 6000 hours	
173-059	0.50	Engine, changing oil and filter	10001 - 10494
173-063	0.50	Transmission, oil filter, changing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
210-070	6.00	Engine, removing	10495 - 99999
210-072	6.00	Engine, installing	10495 - 99999
214-012	1.50	Valves, adjusting	10001 - 10494
214-012	1.50	Valves, adjusting	10495 - 99999
23		FUEL SYSTEM	
233-001	0.10	Fuel system, bleeding	10001 - 10494
233-001	0.10	Fuel system, bleeding	10495 - 99999
233-004	0.40	Feed pump, checking feed pressure	
233-011	0.70	Fuel pump, removing	10495 - 99999
233-011	0.70	Fuel pump, removing	10001 - 10494
233-012	1.25	Fuel pump, installing	10001 - 10494
233-012	1.25	Fuel pump, installing	10495 - 99999
234-011	1.25	Fuel tank, removing	10001 - 10494
234-012	1.25	Fuel tank, installing	10001 - 10494
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.25	Silencer, replacing	10001 - 10494
252-020	1.50	Silencer, replacing	10495 - 99999
26		COOLING SYSTEM	
261-012	0.30	Radiator hose upper, replacing	10495 - 99999
261-018	1.25	Expansion tank, replacing	10001 - 10494
261-018	0.60	Expansion tank, replacing	10495 - 99999

Op.no.	time (h)		Notes
263-012	0.30	Fan belt and/or alternator belt, replacing	10495 - 99999
263-084	1.25	Fan shroud, replacing	10495 - 99999
263-085	1.25	Fan shroud, additional sheet, installing	10495 - 99999
27		ENGINE CONTROL	
272-010	4.00	Accelerator control cable, changing	10495 - 99999
272-010	2.00	Accelerator control cable, changing	10495 - 99999
272-010	2.00	Accelerator control cable, changing	10001 - 10494
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
302-130	0.50	Loader lever, electrical measuring	10495 - 99999
302-130	0.50	Loader lever, electrical measuring	10001 - 10494
31		BATTERY	
311-002	0.30	Batteries, replacing	
39		MISCELLANEOUS	
390-902	2.00	CareTrack, installing new	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-002	0.80	Transmission oil pressure, checking	
421-025	0.50	Transmission solenoid, replacing	
46		FRONT AXLE; REAR AXLE	
460-002	0.30	Axle suspension, adjusting axial clearance	
463-002	1.50	Axle, removing	
463-003	1.50	Axle, installing	
5		BRAKE	
52		HYDRAULIC BRAKE SYSTEM	
520-003	0.60	Service brake pressure, checking	
520-037	0.20	Brake system, bleeding	
55		PARKING BRAKE	
550-002	0.30	Parking brake, adjusting	

Op.no.	time (h)	Notes	
6		STEERING	
62		STEERING AXLE	
622-080	1.75	Toe - in, checking and adjusting	
64		STEERING	
643-011	0.40	Steering angle, adjustment	
643-012	0.40	Steering angle, checking and adjusting	
645-022	1.00	Steering valve, removal	
645-023	1.00	Steering valve, installation	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	0.60	Counterweight, removing	10495 - 99999
716-001	0.50	Counterweight, removing	10001 - 10494
716-002	0.50	Counterweight, fitting	10495 - 99999
716-002	0.50	Counterweight, fitting	10001 - 10494
716-004	0.30	Additional counterweight, removing	10495 - 99999
716-004	0.50	Additional counterweight, removing	10001 - 10494
716-005	0.50	Additional counterweight, installing	10001 - 10494
716-005	0.30	Additional counterweight, installing	10495 - 99999
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-002	0.40	Front wheel, removal	
771-002	0.50	Front wheel, removal	
771-003	0.40	Front wheel, installation	
771-003	0.40	Front wheel, installation	
771-004	0.40	Rear wheel, removing	
771-004	0.50	Rear wheel, removing	
771-005	0.40	Rear wheel, installing	
771-005	0.40	Rear wheel, installing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-001	0.30	Engine hood, removing	10001 - 10494
821-001	0.40	Engine hood, removing	10495 - 99999
821-002	0.40	Engine hood, installing	10495 - 99999
821-002	0.20	Engine hood, installing	10001 - 10494

Op.no.	time (h)		Notes
85		CAB INTERIOR/UPHOLSTERY	
851-008	0.70	Headliner, installing	10001 - 99999
851-009	0.80	Headliner, removing	10001 - 99999
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-005	0.20	Vacuum pump, connection	10001 - 10494
900-005	0.20	Vacuum pump, connection	10495 - 99999
900-006	0.10	Vacuum pump, disconnection	10001 - 10494
900-006	0.10	Vacuum pump, disconnection	10495 - 99999
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
910-002	4.00	Hydraulic system, bleeding air	
910-004	2.00	Hydraulic pressure, adjusting	
911-036	1.00	Hydraulic oil tank, removing	10001 - 10494
911-037	1.75	Hydraulic oil tank, installing	10001 - 10494
912-038	0.50	Hose rupture valve, checking	
912-041	2.50	Main valve block, removal	10495 - 99999
912-041	3.00	Main valve block, removal	10495 - 99999
912-042	3.00	Main valve block, installation	10495 - 99999
912-042	2.50	Main valve block, installation	10495 - 99999
912-129	0.20	Hydraulic cylinders, cleaning	
913-010	3.00	Hydraulic pump, replacing	10495 - 99999
916-002	0.30	Boom suspension accumulator, check and adjusting	
94		UNIT, LOAD HANDLING	
945-017	1.00	Lift cylinder, reconditioning	
945-020	1.00	Tilt cylinder, reconditioning	
97		UNIT, DIGGING	
971-096	1.25	Swing cylinder, renovation	
972-005	0.70	Stabilizer cylinder, removal	
972-006	0.60	Stabilizer cylinder, installation	
972-013	0.30	Stabilisers, adjusting wearpads	
972-022	1.00	Stabilisers, reconditioning hydraulic cylinder	
972-090	0.50	Stabiliser wear pads, replacing	
974-031	1.00	Boom cylinder, removal	
974-032	1.00	Boom cylinder, installation	
974-033	1.00	Boom cylinder, renovation	
974-083	1.00	Boom lock cylinder, reconditioning	
975-016	1.00	Dipper arm cylinder, renovation	

Op.no.	time (h)	Notes
975-057	1.00	Extendible dipper arm cylinder, renovation
975-066	1.25	Bucket cylinder, renovation

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	1.50	Maintenance service, daily
173-004	0.50	Maintenance service, every 50 hours
173-004	0.50	Maintenance service, every 50 hours
173-010	1.50	Maintenance service, every 500 hours
173-012	3.50	Maintenance service, every 1000 hours
173-078	0.20	Engine, air cleaner maintenance
173-089	0.70	Drum carrier, changing oil
173-451	1.25	Hydraulic oil, changing
173-457	0.70	Coolant, changing
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	3.00	Engine, removing
210-072	4.00	Engine, installing
218-009	1.25	Engine mounts, replacing
23		FUEL SYSTEM
233-001	0.30	Fuel system, bleeding
233-014	0.30	Fuel filters, replacing
235-002	1.25	Fuel line, water separator, check and drain
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
256-003	0.40	Air cleaner, primary filter replacing
256-004	0.40	Air cleaner, secondary filter replacing
256-010	0.60	Air cleaner, removing
256-011	0.70	Air cleaner, installing
258-023	0.30	Charge air cooler, removing
258-024	0.40	Charge air cooler, installing
258-025	0.20	Charge air cooler pipe, removing
258-026	0.20	Charge air cooler pipe, installing
26		COOLING SYSTEM
261-008	5.00	Radiator, replacing
263-012	0.70	Fan belt and/or alternator belt, replacing
263-041	3.50	Cooling fan, replacing

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	1.25	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-003	1.50	Alternator, removing
321-004	1.75	Alternator, installing
33		STARTING SYSTEM
331-018	2.50	Starter motor, replacing
334-011	1.25	Starter switch (engine start switch), replacing
36		OTHER ELECTRICAL EQUIPMENT
362-003	0.30	Reverse alarm, replacing
366-071	0.60	Electric and hydraulic control unit, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-011	1.75	Fuel level sender, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-088	4.00	Two speed valve solenoid and cartridge, replacing
44		HYDROSTATIC DRIVE
440-021	1.25	Hydrostatic controller, removing
440-022	1.25	Hydrostatic controller, installing
441-035	4.50	Drive motor, removing
442-021	3.50	Hydrostatic pump, removing
442-022	3.00	Hydrostatic pump, installing
442-045	3.00	Pump coupling, removing
442-046	2.50	Pump coupling, installing
442-068	0.50	Loop flushing valve, replacing
442-080	0.30	Drum drive motor speed sensor, replacing
442-090	2.50	Vibration speed sensor, replacing
5		BRAKE
55		PARKING BRAKE
551-012	1.25	Parking brake pressure switch, replacing

Op.no.	time (h)	Notes
6		STEERING
64		STEERING
641-021	4.50	Adjustable steering column, replacing
645-006	2.00	Steering cylinder, replacing
645-010	4.00	Hydraulic pump, replacing
645-031	3.00	Steering control unit, removing
645-035	3.50	Steering control unit, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
777-001	4.00	Drum, removing
777-002	4.50	Drum, installing
777-003	1.50	Vibration pump, removing
777-004	1.50	Vibration pump, installing
777-007	4.50	Eccentric weight, removing
777-008	8.00	Eccentric weight, installing
777-009	2.00	Drum shock mount, replacing
777-010	13.00	Eccentric shaft coupling, replacing
777-011	3.50	Torque hub, removing
777-012	6.50	Torque hub, installing
777-013	10.00	Eccentric weight bearings, replacing
777-014	13.00	Carrier bearings, replacing
777-015	13.00	Eccentric weight, overhaul
777-021	1.25	Smooth drum scrapers, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
818-010	3.00	Operator's platform mounts, replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	2.50	Engine hood, removing
821-002	2.50	Engine hood, installing
821-031	0.50	Engine hood, changing gas spring
827-003	1.50	Hand rail, removing
827-004	1.25	Hand rail, installing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.90	Operator's seat, removing

Op.no.	time (h)	Notes
852-004	1.00	Operator's seat, installing
86		PROTECTIVE EQUIPMENT, not specified in a special group
867-002	1.25	ROPS (Roll Over Protection), removing
867-003	1.50	ROPS (Roll Over Protection), installing
88		INTERIOR EQUIPMENT
884-001	0.40	Seat safety belt, replacing
 9		 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-003	0.70	Hydraulic oil filter, replacing
911-013	0.60	Hydraulic oil cooler, removing
911-014	0.70	Hydraulic oil cooler, installing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
98		FUNCTION FOR ROAD CONSTRUCTION
985-003	2.50	Water tank, removing
985-004	2.50	Water tank, installing
985-007	1.25	Water pump, removing
985-008	1.25	Water pump, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	1.50	Maintenance service, daily
173-004	0.50	Maintenance service, every 50 hours
173-004	0.50	Maintenance service, every 50 hours
173-010	1.50	Maintenance service, every 500 hours
173-012	3.50	Maintenance service, every 1000 hours
173-078	0.20	Engine, air cleaner maintenance
173-089	0.70	Drum carrier, changing oil
173-451	1.25	Hydraulic oil, changing
173-457	0.70	Coolant, changing
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	3.00	Engine, removing
210-072	4.00	Engine, installing
218-009	1.25	Engine mounts, replacing
23		FUEL SYSTEM
233-001	0.30	Fuel system, bleeding
233-014	0.30	Fuel filters, replacing
235-002	1.25	Fuel line, water separator, check and drain
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
256-003	0.40	Air cleaner, primary filter replacing
256-004	0.40	Air cleaner, secondary filter replacing
256-010	0.60	Air cleaner, removing
256-011	0.70	Air cleaner, installing
258-023	0.30	Charge air cooler, removing
258-024	0.40	Charge air cooler, installing
258-025	0.20	Charge air cooler pipe, removing
258-026	0.20	Charge air cooler pipe, installing
26		COOLING SYSTEM
261-008	5.00	Radiator, replacing
263-012	0.70	Fan belt and/or alternator belt, replacing
263-041	3.50	Cooling fan, replacing

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	1.25	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-003	1.50	Alternator, removing
321-004	1.75	Alternator, installing
33		STARTING SYSTEM
331-018	2.50	Starter motor, replacing
334-011	1.25	Starter switch (engine start switch), replacing
36		OTHER ELECTRICAL EQUIPMENT
362-003	0.30	Reverse alarm, replacing
366-071	0.60	Electric and hydraulic control unit, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-011	1.75	Fuel level sender, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-088	4.00	Two speed valve solenoid and cartridge, replacing
44		HYDROSTATIC DRIVE
440-021	1.25	Hydrostatic controller, removing
440-022	1.25	Hydrostatic controller, installing
441-035	4.50	Drive motor, removing
442-021	3.50	Hydrostatic pump, removing
442-022	3.00	Hydrostatic pump, installing
442-045	3.00	Pump coupling, removing
442-046	2.50	Pump coupling, installing
442-068	0.50	Loop flushing valve, replacing
442-080	0.30	Drum drive motor speed sensor, replacing
442-090	2.50	Vibration speed sensor, replacing
5		BRAKE
55		PARKING BRAKE
551-012	1.25	Parking brake pressure switch, replacing

Op.no.	time (h)	Notes
6		STEERING
64		STEERING
641-021	4.50	Adjustable steering column, replacing
645-006	2.00	Steering cylinder, replacing
645-010	4.00	Hydraulic pump, replacing
645-031	3.00	Steering control unit, removing
645-035	3.50	Steering control unit, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
777-001	4.00	Drum, removing
777-002	4.50	Drum, installing
777-003	1.50	Vibration pump, removing
777-004	1.50	Vibration pump, installing
777-007	4.50	Eccentric weight, removing
777-008	8.00	Eccentric weight, installing
777-009	2.00	Drum shock mount, replacing
777-010	13.00	Eccentric shaft coupling, replacing
777-011	3.50	Torque hub, removing
777-012	6.50	Torque hub, installing
777-013	10.00	Eccentric weight bearings, replacing
777-014	13.00	Carrier bearings, replacing
777-015	13.00	Eccentric weight, overhaul
777-021	1.25	Smooth drum scrapers, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
818-010	3.00	Operator's platform mounts, replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	2.50	Engine hood, removing
821-002	2.50	Engine hood, installing
821-031	0.50	Engine hood, changing gas spring
827-003	1.50	Hand rail, removing
827-004	1.25	Hand rail, installing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.90	Operator's seat, removing

Op.no.	time (h)	Notes
852-004	1.00	Operator's seat, installing
86		PROTECTIVE EQUIPMENT, not specified in a special group
867-002	1.25	ROPS (Roll Over Protection), removing
867-003	1.50	ROPS (Roll Over Protection), installing
88		INTERIOR EQUIPMENT
884-001	0.40	Seat safety belt, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-003	0.70	Hydraulic oil filter, replacing
911-013	0.60	Hydraulic oil cooler, removing
911-014	0.70	Hydraulic oil cooler, installing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
98		FUNCTION FOR ROAD CONSTRUCTION
985-003	2.50	Water tank, removing
985-004	2.50	Water tank, installing
985-007	1.25	Water pump, removing
985-008	1.25	Water pump, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	1.50	Maintenance service, daily
173-004	0.50	Maintenance service, every 50 hours
173-004	0.50	Maintenance service, every 50 hours
173-010	1.50	Maintenance service, every 500 hours
173-012	3.50	Maintenance service, every 1000 hours
173-078	0.20	Engine, air cleaner maintenance
173-089	0.70	Drum carrier, changing oil
173-451	1.25	Hydraulic oil, changing
173-457	0.70	Coolant, changing
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	3.00	Engine, removing
210-072	4.00	Engine, installing
218-009	1.25	Engine mounts, replacing
23		FUEL SYSTEM
233-001	0.30	Fuel system, bleeding
233-014	0.30	Fuel filters, replacing
235-002	1.25	Fuel line, water separator, check and drain
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
256-003	0.40	Air cleaner, primary filter replacing
256-004	0.40	Air cleaner, secondary filter replacing
256-010	0.60	Air cleaner, removing
256-011	0.70	Air cleaner, installing
258-023	0.30	Charge air cooler, removing
258-024	0.40	Charge air cooler, installing
258-025	0.20	Charge air cooler pipe, removing
258-026	0.20	Charge air cooler pipe, installing
26		COOLING SYSTEM
261-008	5.00	Radiator, replacing
263-012	0.70	Fan belt and/or alternator belt, replacing
263-041	3.50	Cooling fan, replacing

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	1.25	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-003	1.50	Alternator, removing
321-004	1.75	Alternator, installing
33		STARTING SYSTEM
331-018	2.50	Starter motor, replacing
334-011	1.25	Starter switch (engine start switch), replacing
36		OTHER ELECTRICAL EQUIPMENT
362-003	0.30	Reverse alarm, replacing
366-071	0.60	Electric and hydraulic control unit, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-011	1.75	Fuel level sender, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-088	4.00	Two speed valve solenoid and cartridge, replacing
44		HYDROSTATIC DRIVE
440-021	1.25	Hydrostatic controller, removing
440-022	1.25	Hydrostatic controller, installing
441-035	4.50	Drive motor, removing
442-021	3.50	Hydrostatic pump, removing
442-022	3.00	Hydrostatic pump, installing
442-045	3.00	Pump coupling, removing
442-046	2.50	Pump coupling, installing
442-068	0.50	Loop flushing valve, replacing
442-080	0.30	Drum drive motor speed sensor, replacing
442-090	2.50	Vibration speed sensor, replacing
5		BRAKE
55		PARKING BRAKE
551-012	1.25	Parking brake pressure switch, replacing

Op.no.	time (h)	Notes
6		STEERING
64		STEERING
641-021	4.50	Adjustable steering column, replacing
645-006	2.00	Steering cylinder, replacing
645-010	4.00	Hydraulic pump, replacing
645-031	3.00	Steering control unit, removing
645-035	3.50	Steering control unit, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
777-001	4.00	Drum, removing
777-002	4.50	Drum, installing
777-003	1.50	Vibration pump, removing
777-004	1.50	Vibration pump, installing
777-007	4.50	Eccentric weight, removing
777-008	8.00	Eccentric weight, installing
777-009	2.00	Drum shock mount, replacing
777-010	13.00	Eccentric shaft coupling, replacing
777-011	3.50	Torque hub, removing
777-012	6.50	Torque hub, installing
777-013	10.00	Eccentric weight bearings, replacing
777-014	13.00	Carrier bearings, replacing
777-015	13.00	Eccentric weight, overhaul
777-021	1.25	Smooth drum scrapers, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
818-010	3.00	Operator's platform mounts, replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	2.50	Engine hood, removing
821-002	2.50	Engine hood, installing
821-031	0.50	Engine hood, changing gas spring
827-003	1.50	Hand rail, removing
827-004	1.25	Hand rail, installing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.90	Operator's seat, removing

Op.no.	time (h)	Notes
852-004	1.00	Operator's seat, installing
86		PROTECTIVE EQUIPMENT, not specified in a special group
867-002	1.25	ROPS (Roll Over Protection), removing
867-003	1.50	ROPS (Roll Over Protection), installing
88		INTERIOR EQUIPMENT
884-001	0.40	Seat safety belt, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-003	0.70	Hydraulic oil filter, replacing
911-013	0.60	Hydraulic oil cooler, removing
911-014	0.70	Hydraulic oil cooler, installing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
98		FUNCTION FOR ROAD CONSTRUCTION
985-003	2.50	Water tank, removing
985-004	2.50	Water tank, installing
985-007	1.25	Water pump, removing
985-008	1.25	Water pump, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	1.50	Maintenance service, daily
173-004	0.50	Maintenance service, every 50 hours
173-004	0.50	Maintenance service, every 50 hours
173-010	1.50	Maintenance service, every 500 hours
173-012	3.50	Maintenance service, every 1000 hours
173-078	0.20	Engine, air cleaner maintenance
173-089	0.70	Drum carrier, changing oil
173-451	1.25	Hydraulic oil, changing
173-457	0.70	Coolant, changing
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	3.00	Engine, removing
210-072	4.00	Engine, installing
218-009	1.25	Engine mounts, replacing
23		FUEL SYSTEM
233-001	0.30	Fuel system, bleeding
233-014	0.30	Fuel filters, replacing
235-002	1.25	Fuel line, water separator, check and drain
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
256-003	0.40	Air cleaner, primary filter replacing
256-004	0.40	Air cleaner, secondary filter replacing
256-010	0.60	Air cleaner, removing
256-011	0.70	Air cleaner, installing
258-023	0.30	Charge air cooler, removing
258-024	0.40	Charge air cooler, installing
258-025	0.20	Charge air cooler pipe, removing
258-026	0.20	Charge air cooler pipe, installing
26		COOLING SYSTEM
261-008	5.00	Radiator, replacing
263-012	0.70	Fan belt and/or alternator belt, replacing
263-041	3.50	Cooling fan, replacing

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	1.25	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-003	1.50	Alternator, removing
321-004	1.75	Alternator, installing
33		STARTING SYSTEM
331-018	2.50	Starter motor, replacing
334-011	1.25	Starter switch (engine start switch), replacing
36		OTHER ELECTRICAL EQUIPMENT
362-003	0.30	Reverse alarm, replacing
366-071	0.60	Electric and hydraulic control unit, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-011	1.75	Fuel level sender, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-088	4.00	Two speed valve solenoid and cartridge, replacing
44		HYDROSTATIC DRIVE
440-021	1.25	Hydrostatic controller, removing
440-022	1.25	Hydrostatic controller, installing
441-035	4.50	Drive motor, removing
442-021	3.50	Hydrostatic pump, removing
442-022	3.00	Hydrostatic pump, installing
442-045	3.00	Pump coupling, removing
442-046	2.50	Pump coupling, installing
442-068	0.50	Loop flushing valve, replacing
442-080	0.30	Drum drive motor speed sensor, replacing
442-090	2.50	Vibration speed sensor, replacing
5		BRAKE
55		PARKING BRAKE
551-012	1.25	Parking brake pressure switch, replacing

Op.no.	time (h)	Notes
6		STEERING
64		STEERING
641-021	4.50	Adjustable steering column, replacing
645-006	2.00	Steering cylinder, replacing
645-010	4.00	Hydraulic pump, replacing
645-031	3.00	Steering control unit, removing
645-035	3.50	Steering control unit, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
777-001	4.00	Drum, removing
777-002	4.50	Drum, installing
777-003	1.50	Vibration pump, removing
777-004	1.50	Vibration pump, installing
777-007	4.50	Eccentric weight, removing
777-008	8.00	Eccentric weight, installing
777-009	2.00	Drum shock mount, replacing
777-010	13.00	Eccentric shaft coupling, replacing
777-011	3.50	Torque hub, removing
777-012	6.50	Torque hub, installing
777-013	10.00	Eccentric weight bearings, replacing
777-014	13.00	Carrier bearings, replacing
777-015	13.00	Eccentric weight, overhaul
777-021	1.25	Smooth drum scrapers, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
818-010	3.00	Operator's platform mounts, replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	2.50	Engine hood, removing
821-002	2.50	Engine hood, installing
821-031	0.50	Engine hood, changing gas spring
827-003	1.50	Hand rail, removing
827-004	1.25	Hand rail, installing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.90	Operator's seat, removing

Op.no.	time (h)	Notes
852-004	1.00	Operator's seat, installing
86		PROTECTIVE EQUIPMENT, not specified in a special group
867-002	1.25	ROPS (Roll Over Protection), removing
867-003	1.50	ROPS (Roll Over Protection), installing
88		INTERIOR EQUIPMENT
884-001	0.40	Seat safety belt, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-003	0.70	Hydraulic oil filter, replacing
911-013	0.60	Hydraulic oil cooler, removing
911-014	0.70	Hydraulic oil cooler, installing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
98		FUNCTION FOR ROAD CONSTRUCTION
985-003	2.50	Water tank, removing
985-004	2.50	Water tank, installing
985-007	1.25	Water pump, removing
985-008	1.25	Water pump, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	1.50	Maintenance service, daily
173-004	0.50	Maintenance service, every 50 hours
173-004	0.50	Maintenance service, every 50 hours
173-010	1.50	Maintenance service, every 500 hours
173-012	3.50	Maintenance service, every 1000 hours
173-078	0.20	Engine, air cleaner maintenance
173-089	0.70	Drum carrier, changing oil
173-451	1.25	Hydraulic oil, changing
173-457	0.70	Coolant, changing
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	3.00	Engine, removing
210-072	4.00	Engine, installing
218-009	1.25	Engine mounts, replacing
23		FUEL SYSTEM
233-001	0.30	Fuel system, bleeding
233-014	0.30	Fuel filters, replacing
235-002	1.25	Fuel line, water separator, check and drain
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
256-003	0.40	Air cleaner, primary filter replacing
256-004	0.40	Air cleaner, secondary filter replacing
256-010	0.60	Air cleaner, removing
256-011	0.70	Air cleaner, installing
258-023	0.30	Charge air cooler, removing
258-024	0.40	Charge air cooler, installing
258-025	0.20	Charge air cooler pipe, removing
258-026	0.20	Charge air cooler pipe, installing
26		COOLING SYSTEM
261-008	5.00	Radiator, replacing
263-012	0.70	Fan belt and/or alternator belt, replacing
263-041	3.50	Cooling fan, replacing

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	1.25	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-003	1.50	Alternator, removing
321-004	1.75	Alternator, installing
33		STARTING SYSTEM
331-018	2.50	Starter motor, replacing
334-011	1.25	Starter switch (engine start switch), replacing
36		OTHER ELECTRICAL EQUIPMENT
362-003	0.30	Reverse alarm, replacing
366-071	0.60	Electric and hydraulic control unit, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-011	1.75	Fuel level sender, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-088	4.00	Two speed valve solenoid and cartridge, replacing
44		HYDROSTATIC DRIVE
440-021	1.25	Hydrostatic controller, removing
440-022	1.25	Hydrostatic controller, installing
441-035	4.50	Drive motor, removing
442-021	3.50	Hydrostatic pump, removing
442-022	3.00	Hydrostatic pump, installing
442-045	3.00	Pump coupling, removing
442-046	2.50	Pump coupling, installing
442-068	0.50	Loop flushing valve, replacing
442-080	0.30	Drum drive motor speed sensor, replacing
442-090	2.50	Vibration speed sensor, replacing
5		BRAKE
55		PARKING BRAKE
551-012	1.25	Parking brake pressure switch, replacing

Op.no.	time (h)	Notes
6		STEERING
64		STEERING
641-021	4.50	Adjustable steering column, replacing
645-006	2.00	Steering cylinder, replacing
645-010	4.00	Hydraulic pump, replacing
645-031	3.00	Steering control unit, removing
645-035	3.50	Steering control unit, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
777-001	4.00	Drum, removing
777-002	4.50	Drum, installing
777-003	1.50	Vibration pump, removing
777-004	1.50	Vibration pump, installing
777-007	4.50	Eccentric weight, removing
777-008	8.00	Eccentric weight, installing
777-009	2.00	Drum shock mount, replacing
777-010	13.00	Eccentric shaft coupling, replacing
777-011	3.50	Torque hub, removing
777-012	6.50	Torque hub, installing
777-013	10.00	Eccentric weight bearings, replacing
777-014	13.00	Carrier bearings, replacing
777-015	13.00	Eccentric weight, overhaul
777-021	1.25	Smooth drum scrapers, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
818-010	3.00	Operator's platform mounts, replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	2.50	Engine hood, removing
821-002	2.50	Engine hood, installing
821-031	0.50	Engine hood, changing gas spring
827-003	1.50	Hand rail, removing
827-004	1.25	Hand rail, installing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.90	Operator's seat, removing

Op.no.	time (h)	Notes
852-004	1.00	Operator's seat, installing
86		PROTECTIVE EQUIPMENT, not specified in a special group
867-002	1.25	ROPS (Roll Over Protection), removing
867-003	1.50	ROPS (Roll Over Protection), installing
88		INTERIOR EQUIPMENT
884-001	0.40	Seat safety belt, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-003	0.70	Hydraulic oil filter, replacing
911-013	0.60	Hydraulic oil cooler, removing
911-014	0.70	Hydraulic oil cooler, installing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
98		FUNCTION FOR ROAD CONSTRUCTION
985-003	2.50	Water tank, removing
985-004	2.50	Water tank, installing
985-007	1.25	Water pump, removing
985-008	1.25	Water pump, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	1.50	Maintenance service, daily
173-004	0.50	Maintenance service, every 50 hours
173-004	0.50	Maintenance service, every 50 hours
173-010	1.50	Maintenance service, every 500 hours
173-012	3.50	Maintenance service, every 1000 hours
173-078	0.20	Engine, air cleaner maintenance
173-089	0.70	Drum carrier, changing oil
173-451	1.25	Hydraulic oil, changing
173-457	0.70	Coolant, changing
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	3.00	Engine, removing
210-072	4.00	Engine, installing
218-009	1.25	Engine mounts, replacing
23		FUEL SYSTEM
233-001	0.30	Fuel system, bleeding
233-014	0.30	Fuel filters, replacing
235-002	1.25	Fuel line, water separator, check and drain
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
256-003	0.40	Air cleaner, primary filter replacing
256-004	0.40	Air cleaner, secondary filter replacing
256-010	0.60	Air cleaner, removing
256-011	0.70	Air cleaner, installing
258-023	0.30	Charge air cooler, removing
258-024	0.40	Charge air cooler, installing
258-025	0.20	Charge air cooler pipe, removing
258-026	0.20	Charge air cooler pipe, installing
26		COOLING SYSTEM
261-008	5.00	Radiator, replacing
263-012	0.70	Fan belt and/or alternator belt, replacing
263-041	3.50	Cooling fan, replacing

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	1.25	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-003	1.50	Alternator, removing
321-004	1.75	Alternator, installing
33		STARTING SYSTEM
331-018	2.50	Starter motor, replacing
334-011	1.25	Starter switch (engine start switch), replacing
36		OTHER ELECTRICAL EQUIPMENT
362-003	0.30	Reverse alarm, replacing
366-071	0.60	Electric and hydraulic control unit, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-011	1.75	Fuel level sender, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-088	4.00	Two speed valve solenoid and cartridge, replacing
44		HYDROSTATIC DRIVE
440-021	1.25	Hydrostatic controller, removing
440-022	1.25	Hydrostatic controller, installing
441-035	4.50	Drive motor, removing
442-021	3.50	Hydrostatic pump, removing
442-022	3.00	Hydrostatic pump, installing
442-045	3.00	Pump coupling, removing
442-046	2.50	Pump coupling, installing
442-068	0.50	Loop flushing valve, replacing
442-080	0.30	Drum drive motor speed sensor, replacing
442-090	2.50	Vibration speed sensor, replacing
5		BRAKE
55		PARKING BRAKE
551-012	1.25	Parking brake pressure switch, replacing

Op.no.	time (h)	Notes
6		STEERING
64		STEERING
641-021	4.50	Adjustable steering column, replacing
645-006	2.00	Steering cylinder, replacing
645-010	4.00	Hydraulic pump, replacing
645-031	3.00	Steering control unit, removing
645-035	3.50	Steering control unit, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
777-001	4.00	Drum, removing
777-002	4.50	Drum, installing
777-003	1.50	Vibration pump, removing
777-004	1.50	Vibration pump, installing
777-007	4.50	Eccentric weight, removing
777-008	8.00	Eccentric weight, installing
777-009	2.00	Drum shock mount, replacing
777-010	13.00	Eccentric shaft coupling, replacing
777-011	3.50	Torque hub, removing
777-012	6.50	Torque hub, installing
777-013	10.00	Eccentric weight bearings, replacing
777-014	13.00	Carrier bearings, replacing
777-015	13.00	Eccentric weight, overhaul
777-021	1.25	Smooth drum scrapers, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
818-010	3.00	Operator's platform mounts, replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	2.50	Engine hood, removing
821-002	2.50	Engine hood, installing
821-031	0.50	Engine hood, changing gas spring
827-003	1.50	Hand rail, removing
827-004	1.25	Hand rail, installing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.90	Operator's seat, removing

Op.no.	time (h)	Notes
852-004	1.00	Operator's seat, installing
86		PROTECTIVE EQUIPMENT, not specified in a special group
867-002	1.25	ROPS (Roll Over Protection), removing
867-003	1.50	ROPS (Roll Over Protection), installing
88		INTERIOR EQUIPMENT
884-001	0.40	Seat safety belt, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-003	0.70	Hydraulic oil filter, replacing
911-013	0.60	Hydraulic oil cooler, removing
911-014	0.70	Hydraulic oil cooler, installing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
98		FUNCTION FOR ROAD CONSTRUCTION
985-003	2.50	Water tank, removing
985-004	2.50	Water tank, installing
985-007	1.25	Water pump, removing
985-008	1.25	Water pump, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-003	1.25	Maintenance service, every 10 hours
173-004	1.75	Maintenance service, every 50 hours
173-007	2.00	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	6.00	Maintenance service, every 2000 hours
173-035	1.00	Maintenance service, first 50 hours
19		GENERAL
191-021	0.20	Service position 1
191-022	0.30	Service position 2
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	2.00	Engine, removing
210-072	3.00	Engine, installing
218-009	1.00	Engine mounts, replacing
23		FUEL SYSTEM
233-011	0.40	Fuel pump, removing
233-012	0.20	Fuel pump, installing
235-004	3.00	Fuel pipes, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-017	0.50	Silencer, removing
252-018	0.40	Silencer, installing
26		COOLING SYSTEM
261-011	1.25	Radiator, removing
261-013	1.50	Radiator, installing
27		ENGINE CONTROL
272-011	1.25	Accelerator lever throttle cable, removing
272-012	1.25	Accelerator lever throttle cable, installing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-011	0.30	Battery, removing

Op.no.	time (h)	Notes
311-012	0.20	Battery, installing
32		ALTERNATOR; CHARGE REGULATOR
321-003	0.60	Alternator, removing
321-004	0.30	Alternator, installing
33		STARTING SYSTEM
331-016	0.40	Starter motor, removing
331-017	0.50	Starter motor, installing
35		LIGHTING
352-001	0.50	Lamp bulb, replacing
36		OTHER ELECTRICAL EQUIPMENT
362-003	0.50	Reverse alarm, replacing
37		CABLE; FUSE; RELAY
371-044	0.40	Battery disconnecter, removal
371-045	0.20	Battery disconnecter, installation
4		POWER TRANSMISSION
44		HYDROSTATIC DRIVE
441-035	0.90	Drive motor, removing
441-036	1.50	Drive motor, installing
442-160	1.00	Travel lever throttle cable, removing
442-161	1.25	Travel lever throttle cable, installing
442-162	0.60	Travel lever throttle cable, adjusting
5		BRAKE
55		PARKING BRAKE
550-026	0.30	Parking brake, activate manually
550-027	0.40	Parking brake, deactivate manually
6		STEERING
64		STEERING
645-004	1.00	Steering cylinder, removing
645-005	1.25	Steering cylinder, installing
645-016	0.60	Steering pump, removing
645-017	0.80	Steering pump, installing

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
740-001	2.00	Articulation hinge, disassembly
740-002	2.50	Articulation hinge, assembly
77		WHEELS; TRACKS; TYRE; HUB; DRUM
777-001	1.00	Drum, removing
777-002	1.25	Drum, installing
777-003	0.60	Vibration pump, removing
777-004	0.80	Vibration pump, installing
777-005	0.60	Vibration motor, removing
777-006	0.80	Vibration motor, installing
777-034	0.50	Scraper strip, replacing
777-035	0.40	Scraper set, removing
777-036	0.30	Scraper set, installing
777-039	0.50	Offset drum, adjusting
777-040	0.70	Drum drive, removing
777-041	0.90	Drum drive, installing
777-042	5.00	Eccentric shaft, removing
777-043	5.50	Eccentric shaft, installing
777-044	1.50	Travel bearings, removing
777-045	1.75	Travel bearings, installing
777-078	1.25	Drum rubber cushions, replacing
777-078	1.50	Drum rubber cushions, replacing
777-079	3.50	Eccentric shaft bearings, removing
777-079	3.50	Eccentric shaft bearings, removing
777-080	2.50	Eccentric shaft bearings, installing
777-080	4.50	Eccentric shaft bearings, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.40	Engine hood, removing
821-002	0.30	Engine hood, installing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.40	Operator's seat, removing
852-004	0.30	Operator's seat, installing
86		PROTECTIVE EQUIPMENT, not specified in a special group
867-002	0.20	ROPS (Roll Over Protection), removing

Op.no.	time (h)	Notes
867-003	0.20	ROPS (Roll Over Protection), installing
88		INTERIOR EQUIPMENT
884-001	0.60	Seat safety belt, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-036	0.90	Hydraulic oil tank, removing
911-037	1.00	Hydraulic oil tank, installing
98		FUNCTION FOR ROAD CONSTRUCTION
985-007	0.60	Water pump, removing
985-008	0.60	Water pump, installing

Op.no.	time (h)	Notes
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Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	2.00	Delivery Inspection, according to Inspection Programme
172-001	3.00	Warranty inspection 50 hours
172-002	3.00	Warranty inspection 100 hours
173-059	0.50	Engine, changing oil and filter
173-074	0.75	Hydraulic oil tank, changing oil and filter
173-081	1.00	Travel motor gearbox, changing oil
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-071	11.00	Engine removed, general overhaul
210-076	8.00	Engine, replacing
211-002	3.00	Cylinder head, replacing gasket
214-012	0.50	Valves, adjusting
214-036	0.50	Valve covers, fitting new gasket
216-003	3.00	Main bearing shells, replacing, removed sump
216-015	4.00	Crankshaft engine removed, replacing
217-003	0.75	Oil sump, replacing
22		LUBRICATING SYSTEM
221-014	5.00	Oil pump, replacing
222-011	0.25	Oil filter, replacing
23		FUEL SYSTEM
233-014	0.25	Fuel filters, replacing
233-041	0.25	Fuel strainer, changing
234-010	1.00	Fuel tank, replacing
236-073	1.50	Injection pump, replacing incl setting injection timing
237-004	0.75	Injector, replacing one
25		INLET SYSTEM; EXHAUST SYSTEM
251-002	0.75	Induction manifold, replacing gasket
251-004	1.50	Exhaust manifold, replacing gasket
252-020	2.00	Silencer, replacing
252-021	0.50	Exhaust pipe, flexible tube, replacing
256-001	0.50	Air cleaner, cleaning filter element

Op.no.	time (h)	Notes
26		COOLING SYSTEM
261-008	3.00	Radiator, replacing
261-012	0.50	Radiator hose upper, replacing
261-014	1.00	Radiator hoses lower, replacing
261-018	0.25	Expansion tank, replacing
262-002	3.00	Coolant pump, replacing
262-098	0.50	Thermostat, replacing
263-022	0.50	Fan belt and/or alternator-, compressor belt, replacing all belts
27		ENGINE CONTROL
273-021	0.25	Stop magnet, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.50	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.50	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	1.50	Starter motor, replacing
35		LIGHTING
352-024	0.25	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.25	Rear lamp, replacing one
356-056	0.25	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.50	Horn, replacing
362-041	1.00	Rotating beacon, replacing
362-092	0.50	Melody horn (buzzer), replacing
363-002	0.50	Windscreen wiper front, replacing motor

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	2.00	Delivery Inspection, according to Inspection Programme
172-001	3.00	Warranty inspection 50 hours
172-002	3.00	Warranty inspection 100 hours
173-059	0.50	Engine, changing oil and filter
173-074	0.75	Hydraulic oil tank, changing oil and filter
173-081	1.00	Travel motor gearbox, changing oil
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-071	11.00	Engine removed, general overhaul
210-076	8.00	Engine, replacing
211-002	3.00	Cylinder head, replacing gasket
214-012	0.50	Valves, adjusting
214-036	0.50	Valve covers, fitting new gasket
216-003	3.00	Main bearing shells, replacing, removed sump
216-015	4.00	Crankshaft engine removed, replacing
217-003	0.75	Oil sump, replacing
22		LUBRICATING SYSTEM
221-014	5.00	Oil pump, replacing
222-011	0.25	Oil filter, replacing
23		FUEL SYSTEM
233-014	0.25	Fuel filters, replacing
233-041	0.25	Fuel strainer, changing
234-010	1.00	Fuel tank, replacing
236-073	1.50	Injection pump, replacing incl setting injection timing
237-002	1.75	Injectors, replacing all
237-004	0.75	Injector, replacing one
25		INLET SYSTEM; EXHAUST SYSTEM
251-002	0.75	Induction manifold, replacing gasket
251-004	1.50	Exhaust manifold, replacing gasket
252-020	2.00	Silencer, replacing
252-021	0.50	Exhaust pipe, flexible tube, replacing
256-001	0.50	Air cleaner, cleaning filter element

Op.no.	time (h)	Notes
26		COOLING SYSTEM
261-008	3.00	Radiator, replacing
261-012	0.50	Radiator hose upper, replacing
261-014	1.00	Radiator hoses lower, replacing
261-018	0.25	Expansion tank, replacing
262-002	3.00	Coolant pump, replacing
262-098	0.50	Thermostat, replacing
263-022	0.50	Fan belt and/or alternator-, compressor belt, replacing all belts
27		ENGINE CONTROL
273-021	0.25	Stop magnet, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.50	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.50	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	1.50	Starter motor, replacing
35		LIGHTING
352-024	0.25	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.25	Rear lamp, replacing one
356-056	0.25	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.50	Horn, replacing
362-041	1.00	Rotating beacon, replacing
362-092	0.50	Melody horn (buzzer), replacing
363-002	0.50	Windscreen wiper front, replacing motor

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
170-005	0.25	Start of VCADS Pro computer and reading machine data
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	3.00	Delivery Inspection, according to Inspection Programme
172-002	3.00	Warranty inspection 100 hours
172-004	7.50	Warranty inspection 1000 hours
173-002	0.90	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	4.50	Maintenance service, every 500 hours
173-012	6.50	Maintenance service, every 1000 hours
173-014	12.00	Maintenance service, every 2000 hours
173-018	12.00	Maintenance service, every 4000 hours
173-022	13.00	Maintenance service, every 6000 hours
173-079	0.60	Swing motor gearbox, changing oil
173-101	0.40	Track motor gearbox, changing oil
173-401	0.50	Engine oil and filter, changing
173-412	0.20	Hydraulic oil tank breather filter, replacing
173-451	1.00	Hydraulic oil, changing
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
214-012	2.50	Valves, adjusting
214-036	1.00	Valve covers, fitting new gasket
216-014	7.50	Crankshaft, replacing front oil seal
217-005	1.50	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.50	Lubrication oil pressure, checking with pressure gauge
223-006	2.00	Oil cooler, replacing

Op.no.	time (h)	Notes
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-002	1.00	Feed pump, replacing
233-004	0.50	Feed pump, checking feed pressure
233-010	0.80	Fuel pump, inspection
233-014	0.30	Fuel filters, replacing
233-015	0.40	Fuel filter extra, replacing
233-016	0.70	Fuel filter housing, replacing
233-017	0.70	Water separator housing, replacing
233-020	0.10	Fuel filter, checking
234-010	4.00	Fuel tank, replacing
234-041	0.50	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-002	3.00	Injectors, replacing all
237-004	0.70	Injector, replacing one
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.50	Silencer, replacing
252-021	1.50	Exhaust pipe, flexible tube, replacing
255-071	2.00	Turbocharger, replacing
256-001	0.25	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.40	Preheating coil, replacing
258-002	2.50	Intercooler, replacing
258-022	0.30	Charge air cooler connection (hose, tube), replacing
258-030	1.50	Charge air system, inspection
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.80	Coolant, changing
261-008	3.50	Radiator, replacing
261-012	0.75	Radiator hose upper, replacing
261-014	0.90	Radiator hoses lower, replacing
261-018	0.70	Expansion tank, replacing
262-002	1.00	Coolant pump, replacing
262-098	1.00	Thermostat, replacing
263-012	0.90	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	0.90	Fan belt and/or alternator-, compressor belt, replacing all belts

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.50	Battery charging capacity, checking
311-002	0.80	Batteries, replacing
311-003	0.60	Main switch, replacing
311-006	0.40	Earth lead to battery, replacing
311-008	2.00	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	2.50	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
334-002	0.70	Starter switch, testing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
367-075	0.90	Engine speed control switch, replacing
37		CABLE; FUSE; RELAY
371-090	3.00	Engine wire harness, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	0.50	Engine temperature sensor, replacing

Op.no.	time (h)		Notes
386-007	0.50	Engine oil pressure sensor, replacing	
386-011	0.50	Fuel level sender, replacing	
386-017	0.50	Hydraulic oil temperature sensor, replacing	
386-038	0.80	Engine rotation speed sensor, replacing	
386-043	0.50	Travel speed sensor or alarm sensor, replacing	
386-088	0.60	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-903	3.00	CareTrack standard cab, installing new	
390-904	3.00	CareTrack optional cab, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.60	Radio, replacing	
393-021	0.60	Radio, replacing	110013 - 310000
393-021	0.60	Radio, replacing	110001 - 110012
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	4.50	Swing gearbox, replacing	
431-026	2.50	Swing gearbox removed, replacing seal	
431-027	4.00	Swing gearbox removed, replacing shaft	
431-031	3.00	Pump gearbox coupling assembly, replacing	
431-036	4.50	Pump gearbox flange, replacing	
431-053	6.50	Swing unit, replacing	
431-115	1.75	Track gearbox (removed), replacing floating seal	
431-117	1.25	Track gearbox, replacing cover	
431-127	5.00	Track unit, replacing	
44		HYDROSTATIC DRIVE	
441-017	1.00	Travel motor pressure, checking and adjusting	
441-021	3.00	Swing motor, replacing	
441-022	0.90	Swing motor relief valve, replacing	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	0.40	Swing motor removed, replacing seal	
441-032	0.75	Swing motor pressure, checking and adjusting	
441-112	0.70	Track motor relief valve, replacing	
441-115	2.00	Track motor removed, replacing seal	
443-037	5.50	Center passage, replacing	
443-038	7.00	Center passage, replacing seal kit	

Op.no.	time (h)		Notes
443-039	1.00	Center passage hose (valve – center passage), replacing	
443-040	1.50	Center passage hose (center passage – motor), replacing	
49		MISCELLANEOUS	
492-031	3.00	Swing ring gear outer seal, replacing	111109 - 210000
492-032	9.00	Swing ring gear inner seal, replacing	111109 - 210000
492-091	0.50	Ring gear grease pipe, replacing	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-002	4.50	Superstructure, installing	
716-001	0.70	Counterweight, removing	110482 - 310000
716-001	0.70	Counterweight, removing	110011 - 110628
716-002	0.80	Counterweight, fitting	110482 - 310000
716-002	0.80	Counterweight, fitting	110011 - 110628
716-003	2.00	Counterweight, replacing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-032	0.40	Track shoe, replacing one	
775-033	7.50	Track shoe, replacing each side	
775-034	1.25	Track chain assembly, removing	
775-035	1.75	Track chain assembly, installing	
775-036	9.50	Track links, replacing	
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	
775-066	3.00	Bottom roller, replacing seal	
775-071	0.90	Track guard, replacing one	
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.75	Cab, removing	
810-002	2.50	Cab, installing	

Op.no.	time (h)	Notes	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	0.50	Engine hood, replacing	
827-091	1.25	Tool box assembly, replacing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	0.75	Door, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.30	Rear-view mirror, changing	
843-002	1.50	Windscreen, replacing	
843-012	4.00	Rear window, replacing	
843-013	4.50	Side window, replacing	
843-048	0.70	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	
852-091	2.50	Seat support, replacing	
87		AIR CONDITIONING UNIT	
870-001	5.00	Cooler and Heater assembly, replacing	
872-001	0.50	Cab filter, replacing	
873-004	3.00	Heater core, replacing	
873-006	0.90	Fan motor, replacing	
873-011	0.70	Air mix door actuator, replacing	
873-019	0.90	ECC control unit, replacing	
874-006	1.75	Compressor, replacing incl draining and filling	
874-010	1.25	Condenser, replacing incl draining and filling	110001 - 110703
874-010	1.25	Condenser, replacing incl draining and filling	110704 - 120000
874-011	1.25	Receiver, replacing incl draining and filling	
874-012	3.00	Evaporator, replacing incl draining and filling	
874-013	3.00	Expansion valve, replacing incl draining and filling	
874-094	0.60	Vent actuator, replacing	
874-095	0.60	Mode (foot) actuator, replacing	
874-096	0.60	Intake actuator, replacing	
88		INTERIOR EQUIPMENT	
881-003	1.00	Instrument panel, replacing (left)	
881-005	1.25	Instrument panel, replacing (right)	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-005	1.75	Pump suction hose and pipe, replacing	

Op.no.	time (h)	Notes
911-011	4.00	Oil cooler, replacing
911-015	0.40	Oil level gauge, replacing
911-017	1.50	Suction cover, replacing
911-024	0.40	Pipe and hose (pump - valve), replacing
911-025	0.70	Pipe and hose (valve - cylinder), replacing
911-026	0.70	Pipe and hose (valve - swing motor), replacing
911-031	1.50	Oil cooler line pipe and hose, replacing
911-033	2.00	Oil cooler line bypass valve (check valve), replacing
911-038	3.00	Hydraulic oil tank, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-067	0.90	Main pressure relief valve, replacing
912-071	0.70	Rupture valve, replacing (boom cylinder)
912-073	0.70	Rupture valve, replacing (dipper arm cylinder)
912-160	0.90	Port relief valve pressure, checking and adjusting
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.50	Hydraulic pump, replacing
913-029	0.50	Pump regulator, replacing
914-036	1.00	Servo pump block seal, replacing
914-037	1.00	Servo pump shaft seal, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-055	0.75	Servo pressure, checking and adjusting
914-060	0.80	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.50	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.00	Quickfit pump (gear pump), replacing
924-005	0.80	Quickfit, removal
924-006	1.00	Quickfit, installation
924-021	2.00	Quickfit hydraulic cylinder bracket (body), replacing
925-011	1.25	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.90	Bucket assembly, installation

Op.no.	time (h)	Notes
97		UNIT, DIGGING
970-008	0.50	Bushing general, replacing
974-010	12.00	Boom, replacing
974-013	4.50	Boom, removal
974-014	5.50	Boom, installation
974-017	2.00	Boom, replacing pin
974-021	2.00	Boom cylinder, replacing
974-022	2.00	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	4.50	Boom cylinder, repacking in machine
974-026	3.00	Boom cylinder rod, replacing
974-031	1.00	Boom cylinder, removal
974-032	1.00	Boom cylinder, installation
974-038	3.00	Lower boom cylinder bushing, replacing
974-039	3.00	Upper boom cylinder bushing, replacing
975-006	0.70	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-011	3.50	Dipper arm, removal
975-012	3.50	Dipper arm, installation
975-014	1.50	Dipper arm cylinder, removal
975-015	1.25	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-026	2.50	Dipper arm cylinder removed, repacking
975-028	1.50	Connecting rod yoke, replacing
975-029	3.50	Dipper arm cylinder rod, replacing
975-032	0.70	Connecting rod yoke, removal
975-035	1.00	Connecting rod yoke, installation
975-039	9.00	Dipper arm, replacing
975-040	2.50	Dipper arm cylinder bushing on boom, replacing
975-042	2.50	Dipper arm cylinder bushing on dipper arm, replacing
975-043	4.50	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.00	Bucket cylinder, replacing
975-062	0.80	Bucket cylinder, removal
975-063	5.00	Bucket cylinder, repacking in machine
975-065	1.25	Bucket cylinder, installation
975-069	2.00	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing
975-072	3.00	Bucket cylinder bushing on dipper arm, changing
975-073	3.00	Bucket cylinder bushing lever-link, replacing

Op.no.	time (h)	Notes
975-076	3.00	Bucket cylinder rod, replacing

Op.no.	time (h)	Notes
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1 STANDARD PARTS, SERVICE

17 SERVICE

172-002	3.00	Warranty inspection 100 hours
172-004	7.50	Warranty inspection 1000 hours
173-002	0.90	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	4.50	Maintenance service, every 500 hours
173-012	6.50	Maintenance service, every 1000 hours
173-014	12.00	Maintenance service, every 2000 hours
173-018	12.00	Maintenance service, every 4000 hours
173-022	13.00	Maintenance service, every 6000 hours
173-079	0.60	Swing motor gearbox, changing oil
173-101	0.40	Track motor gearbox, changing oil
173-401	0.50	Engine oil and filter, changing
173-412	0.20	Hydraulic oil tank breather filter, replacing
173-451	1.00	Hydraulic oil, changing

2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU

21 ENGINE

210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
214-012	2.50	Valves, adjusting

22 LUBRICATING SYSTEM

223-006	2.00	Oil cooler, replacing
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23 FUEL SYSTEM

230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-014	0.30	Fuel filters, replacing
233-015	0.40	Fuel filter extra, replacing
233-016	0.70	Fuel filter housing, replacing
233-017	0.70	Water separator housing, replacing
237-004	0.70	Injector, replacing one

25 INLET SYSTEM; EXHAUST SYSTEM

258-002	2.50	Intercooler, replacing
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Op.no.	time (h)	Notes
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.80	Coolant, changing
261-008	3.50	Radiator, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.50	Battery charging capacity, checking
311-002	0.80	Batteries, replacing
311-003	0.60	Main switch, replacing
311-006	0.40	Earth lead to battery, replacing
311-008	2.00	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	2.50	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
334-002	0.70	Starter switch, testing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-003	0.40	Windscreen wiper, replacing switch
364-003	0.60	Control lockout lever switch, replacing
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
367-075	0.90	Engine speed control switch, replacing

Op.no.	time (h)		Notes
37		CABLE; FUSE; RELAY	
371-090	3.00	Engine wire harness, replacing	
39		MISCELLANEOUS	
390-903	3.00	CareTrack standard cab, installing new	
390-904	3.00	CareTrack optional cab, installing new	
393-021	0.60	Radio, replacing	
393-021	0.60	Radio, replacing	110013 - 310000
393-021	0.60	Radio, replacing	110001 - 110012
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	4.50	Swing gearbox, replacing	
431-026	2.50	Swing gearbox removed, replacing seal	
431-027	4.00	Swing gearbox removed, replacing shaft	
431-031	3.00	Pump gearbox coupling assembly, replacing	
431-053	6.50	Swing unit, replacing	
431-127	5.00	Track unit, replacing	
44		HYDROSTATIC DRIVE	
441-021	3.00	Swing motor, replacing	
441-022	0.90	Swing motor relief valve, replacing	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	0.40	Swing motor removed, replacing seal	
441-112	0.70	Track motor relief valve, replacing	
443-037	5.50	Center passage, replacing	
443-038	7.00	Center passage, replacing seal kit	
443-039	1.00	Center passage hose (valve – center passage), replacing	
443-040	1.50	Center passage hose (center passage – motor), replacing	
49		MISCELLANEOUS	
492-031	3.00	Swing ring gear outer seal, replacing	111109 - 210000
492-032	9.00	Swing ring gear inner seal, replacing	111109 - 210000

Op.no.	time (h)	Notes	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-002	4.50	Superstructure, installing	
716-001	0.70	Counterweight, removing	110482 - 310000
716-001	0.70	Counterweight, removing	110011 - 110628
716-002	0.80	Counterweight, fitting	110482 - 310000
716-002	0.80	Counterweight, fitting	110011 - 110628
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-032	0.40	Track shoe, replacing one	
775-034	1.25	Track chain assembly, removing	
775-035	1.75	Track chain assembly, installing	
775-036	9.50	Track links, replacing	
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	
775-066	3.00	Bottom roller, replacing seal	
775-071	0.90	Track guard, replacing one	
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.75	Cab, removing	
810-002	2.50	Cab, installing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	0.50	Engine hood, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.30	Rear-view mirror, changing	
843-002	1.50	Windscreen, replacing	
843-012	4.00	Rear window, replacing	
843-013	4.50	Side window, replacing	
843-048	0.70	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	
852-091	2.50	Seat support, replacing	

Op.no.	time (h)	Notes	
87		AIR CONDITIONING UNIT	
870-001	5.00	Cooler and Heater assembly, replacing	
872-001	0.50	Cab filter, replacing	
873-004	3.00	Heater core, replacing	
873-006	0.90	Fan motor, replacing	
873-011	0.70	Air mix door actuator, replacing	
873-019	0.90	ECC control unit, replacing	
874-006	1.75	Compressor, replacing incl draining and filling	
874-010	1.25	Condenser, replacing incl draining and filling	110001 - 110703
874-010	1.25	Condenser, replacing incl draining and filling	110704 - 120000
874-011	1.25	Receiver, replacing incl draining and filling	
874-012	3.00	Evaporator, replacing incl draining and filling	
874-013	3.00	Expansion valve, replacing incl draining and filling	
874-094	0.60	Vent actuator, replacing	
874-095	0.60	Mode (foot) actuator, replacing	
874-096	0.60	Intake actuator, replacing	
88		INTERIOR EQUIPMENT	
881-003	1.00	Instrument panel, replacing (left)	
881-005	1.25	Instrument panel, replacing (right)	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-005	1.75	Pump suction hose and pipe, replacing	
911-011	4.00	Oil cooler, replacing	
911-015	0.40	Oil level gauge, replacing	
911-024	0.40	Pipe and hose (pump - valve), replacing	
911-038	3.00	Hydraulic oil tank, replacing	
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
911-051	0.20	Breather, replacing	
912-067	0.90	Main pressure relief valve, replacing	
912-071	0.70	Rupture valve, replacing (boom cylinder)	
912-073	0.70	Rupture valve, replacing (dipper arm cylinder)	
912-160	0.90	Port relief valve pressure, checking and adjusting	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	4.50	Hydraulic pump, replacing	
913-029	0.50	Pump regulator, replacing	
914-041	0.60	Proportional solenoid valve (power shift), replacing	
914-051	0.40	Accumulator, replacing	

Op.no.	time (h)	Notes
914-060	0.80	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.50	Solenoid valve, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-005	0.80	Quickfit, removal
924-006	1.00	Quickfit, installation
925-011	1.25	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.90	Bucket assembly, installation
97		UNIT, DIGGING
970-008	0.50	Bushing general, replacing
974-010	12.00	Boom, replacing
974-013	4.50	Boom, removal
974-014	5.50	Boom, installation
974-025	4.50	Boom cylinder, repacking in machine
974-026	3.00	Boom cylinder rod, replacing
974-038	3.00	Lower boom cylinder bushing, replacing
974-039	3.00	Upper boom cylinder bushing, replacing
975-006	0.70	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-011	3.50	Dipper arm, removal
975-012	3.50	Dipper arm, installation
975-014	1.50	Dipper arm cylinder, removal
975-015	1.25	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-028	1.50	Connecting rod yoke, replacing
975-029	3.50	Dipper arm cylinder rod, replacing
975-032	0.70	Connecting rod yoke, removal
975-035	1.00	Connecting rod yoke, installation
975-039	9.00	Dipper arm, replacing
975-040	2.50	Dipper arm cylinder bushing on boom, replacing
975-042	2.50	Dipper arm cylinder bushing on dipper arm, replacing
975-043	4.50	Dipper arm cylinder, repacking in machine
975-061	2.00	Bucket cylinder, replacing
975-062	0.80	Bucket cylinder, removal
975-063	5.00	Bucket cylinder, repacking in machine
975-065	1.25	Bucket cylinder, installation
975-072	3.00	Bucket cylinder bushing on dipper arm, changing
975-073	3.00	Bucket cylinder bushing lever-link, replacing
975-076	3.00	Bucket cylinder rod, replacing

Op.no.	time (h)	Notes
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Op.no.	time (h)	Notes
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1 STANDARD PARTS, SERVICE

17 SERVICE

172-002	3.00	Warranty inspection 100 hours
172-004	7.50	Warranty inspection 1000 hours
173-002	0.90	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	4.50	Maintenance service, every 500 hours
173-012	6.50	Maintenance service, every 1000 hours
173-014	12.00	Maintenance service, every 2000 hours
173-018	12.00	Maintenance service, every 4000 hours
173-022	13.00	Maintenance service, every 6000 hours
173-079	0.60	Swing motor gearbox, changing oil
173-101	0.40	Track motor gearbox, changing oil
173-401	0.50	Engine oil and filter, changing
173-412	0.20	Hydraulic oil tank breather filter, replacing
173-451	1.00	Hydraulic oil, changing

2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU

21 ENGINE

210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
214-012	2.50	Valves, adjusting

22 LUBRICATING SYSTEM

223-006	2.00	Oil cooler, replacing
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23 FUEL SYSTEM

230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-014	0.30	Fuel filters, replacing
233-015	0.40	Fuel filter extra, replacing
233-016	0.70	Fuel filter housing, replacing
233-017	0.70	Water separator housing, replacing
237-004	0.70	Injector, replacing one

25 INLET SYSTEM; EXHAUST SYSTEM

258-002	2.50	Intercooler, replacing
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Op.no.	time (h)	Notes
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.80	Coolant, changing
261-008	3.50	Radiator, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.50	Battery charging capacity, checking
311-002	0.80	Batteries, replacing
311-003	0.60	Main switch, replacing
311-006	0.40	Earth lead to battery, replacing
311-008	2.00	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	2.50	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
334-002	0.70	Starter switch, testing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-003	0.40	Windscreen wiper, replacing switch
364-003	0.60	Control lockout lever switch, replacing
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
367-075	0.90	Engine speed control switch, replacing

Op.no.	time (h)		Notes
37		CABLE; FUSE; RELAY	
371-090	3.00	Engine wire harness, replacing	
39		MISCELLANEOUS	
390-903	3.00	CareTrack standard cab, installing new	
390-904	3.00	CareTrack optional cab, installing new	
393-021	0.60	Radio, replacing	
393-021	0.60	Radio, replacing	110013 - 310000
393-021	0.60	Radio, replacing	110001 - 110012
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	4.50	Swing gearbox, replacing	
431-026	2.50	Swing gearbox removed, replacing seal	
431-027	4.00	Swing gearbox removed, replacing shaft	
431-031	3.00	Pump gearbox coupling assembly, replacing	
431-053	6.50	Swing unit, replacing	
431-127	5.00	Track unit, replacing	
44		HYDROSTATIC DRIVE	
441-021	3.00	Swing motor, replacing	
441-022	0.90	Swing motor relief valve, replacing	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	0.40	Swing motor removed, replacing seal	
441-112	0.70	Track motor relief valve, replacing	
443-037	5.50	Center passage, replacing	
443-038	7.00	Center passage, replacing seal kit	
443-039	1.00	Center passage hose (valve – center passage), replacing	
443-040	1.50	Center passage hose (center passage – motor), replacing	
49		MISCELLANEOUS	
492-031	3.00	Swing ring gear outer seal, replacing	111109 - 210000
492-032	9.00	Swing ring gear inner seal, replacing	111109 - 210000

Op.no.	time (h)	Notes	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-002	4.50	Superstructure, installing	
716-001	0.70	Counterweight, removing	110482 - 310000
716-001	0.70	Counterweight, removing	110011 - 110628
716-002	0.80	Counterweight, fitting	110482 - 310000
716-002	0.80	Counterweight, fitting	110011 - 110628
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-032	0.40	Track shoe, replacing one	
775-034	1.25	Track chain assembly, removing	
775-035	1.75	Track chain assembly, installing	
775-036	9.50	Track links, replacing	
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	
775-066	3.00	Bottom roller, replacing seal	
775-071	0.90	Track guard, replacing one	
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.75	Cab, removing	
810-002	2.50	Cab, installing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	0.50	Engine hood, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.30	Rear-view mirror, changing	
843-002	1.50	Windscreen, replacing	
843-012	4.00	Rear window, replacing	
843-013	4.50	Side window, replacing	
843-048	0.70	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	
852-091	2.50	Seat support, replacing	

Op.no.	time (h)	Notes	
87		AIR CONDITIONING UNIT	
870-001	5.00	Cooler and Heater assembly, replacing	
872-001	0.50	Cab filter, replacing	
873-004	3.00	Heater core, replacing	
873-006	0.90	Fan motor, replacing	
873-011	0.70	Air mix door actuator, replacing	
873-019	0.90	ECC control unit, replacing	
874-006	1.75	Compressor, replacing incl draining and filling	
874-010	1.25	Condenser, replacing incl draining and filling	110001 - 110703
874-010	1.25	Condenser, replacing incl draining and filling	110704 - 120000
874-011	1.25	Receiver, replacing incl draining and filling	
874-012	3.00	Evaporator, replacing incl draining and filling	
874-013	3.00	Expansion valve, replacing incl draining and filling	
874-094	0.60	Vent actuator, replacing	
874-095	0.60	Mode (foot) actuator, replacing	
874-096	0.60	Intake actuator, replacing	
88		INTERIOR EQUIPMENT	
881-003	1.00	Instrument panel, replacing (left)	
881-005	1.25	Instrument panel, replacing (right)	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-005	1.75	Pump suction hose and pipe, replacing	
911-011	4.00	Oil cooler, replacing	
911-015	0.40	Oil level gauge, replacing	
911-024	0.40	Pipe and hose (pump - valve), replacing	
911-038	3.00	Hydraulic oil tank, replacing	
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
911-051	0.20	Breather, replacing	
912-067	0.90	Main pressure relief valve, replacing	
912-071	0.70	Rupture valve, replacing (boom cylinder)	
912-073	0.70	Rupture valve, replacing (dipper arm cylinder)	
912-160	0.90	Port relief valve pressure, checking and adjusting	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	4.50	Hydraulic pump, replacing	
913-029	0.50	Pump regulator, replacing	
914-041	0.60	Proportional solenoid valve (power shift), replacing	
914-051	0.40	Accumulator, replacing	

Op.no.	time (h)	Notes
914-060	0.80	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.50	Solenoid valve, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-005	0.80	Quickfit, removal
924-006	1.00	Quickfit, installation
925-011	1.25	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.90	Bucket assembly, installation
97		UNIT, DIGGING
970-008	0.50	Bushing general, replacing
974-010	12.00	Boom, replacing
974-013	4.50	Boom, removal
974-014	5.50	Boom, installation
974-025	4.50	Boom cylinder, repacking in machine
974-026	3.00	Boom cylinder rod, replacing
974-038	3.00	Lower boom cylinder bushing, replacing
974-039	3.00	Upper boom cylinder bushing, replacing
975-006	0.70	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-011	3.50	Dipper arm, removal
975-012	3.50	Dipper arm, installation
975-014	1.50	Dipper arm cylinder, removal
975-015	1.25	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-028	1.50	Connecting rod yoke, replacing
975-029	3.50	Dipper arm cylinder rod, replacing
975-032	0.70	Connecting rod yoke, removal
975-035	1.00	Connecting rod yoke, installation
975-039	9.00	Dipper arm, replacing
975-040	2.50	Dipper arm cylinder bushing on boom, replacing
975-042	2.50	Dipper arm cylinder bushing on dipper arm, replacing
975-043	4.50	Dipper arm cylinder, repacking in machine
975-061	2.00	Bucket cylinder, replacing
975-062	0.80	Bucket cylinder, removal
975-063	5.00	Bucket cylinder, repacking in machine
975-065	1.25	Bucket cylinder, installation
975-072	3.00	Bucket cylinder bushing on dipper arm, changing
975-073	3.00	Bucket cylinder bushing lever-link, replacing
975-076	3.00	Bucket cylinder rod, replacing

Op.no.

time (h)

Notes

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
171-001	1.00	Arrival Inspection, according to Inspection Programme
172-001	3.00	Warranty inspection 50 hours
172-002	3.00	Warranty inspection 100 hours
173-022	3.00	Maintenance service, every 6000 hours
173-022	3.00	Maintenance service, every 6000 hours
173-059	0.50	Engine, changing oil and filter
173-074	0.75	Hydraulic oil tank, changing oil and filter
173-081	1.00	Travel motor gearbox, changing oil
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-071	11.00	Engine removed, general overhaul
210-076	6.00	Engine, replacing
211-002	3.00	Cylinder head, replacing gasket
214-012	0.50	Valves, adjusting
214-036	0.50	Valve covers, fitting new gasket
216-003	3.00	Main bearing shells, replacing, removed sump
216-015	4.00	Crankshaft engine removed, replacing
217-003	0.75	Oil sump, replacing
22		LUBRICATING SYSTEM
221-014	5.00	Oil pump, replacing
222-011	0.25	Oil filter, replacing
23		FUEL SYSTEM
233-014	0.25	Fuel filters, replacing
233-041	0.25	Fuel strainer, changing
234-010	1.00	Fuel tank, replacing
236-073	1.50	Injection pump, replacing incl setting injection timing
237-002	1.75	Injectors, replacing all
237-004	0.75	Injector, replacing one
25		INLET SYSTEM; EXHAUST SYSTEM
251-002	0.75	Induction manifold, replacing gasket
251-004	1.50	Exhaust manifold, replacing gasket
252-020	2.00	Silencer, replacing
252-021	0.50	Exhaust pipe, flexible tube, replacing
256-001	0.50	Air cleaner, cleaning filter element

Op.no.	time (h)	Notes
26		COOLING SYSTEM
261-008	3.00	Radiator, replacing
261-012	0.50	Radiator hose upper, replacing
261-014	3.50	Radiator hoses lower, replacing
261-018	0.25	Expansion tank, replacing
262-002	3.00	Coolant pump, replacing
262-098	0.50	Thermostat, replacing
263-022	2.50	Fan belt and/or alternator-, compressor belt, replacing all belts
27		ENGINE CONTROL
273-021	0.25	Stop magnet, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.50	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	2.00	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	2.00	Starter motor, replacing
35		LIGHTING
352-024	0.25	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.25	Rear lamp, replacing one
356-056	0.25	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.50	Horn, replacing
362-041	1.00	Rotating beacon, replacing
363-002	0.50	Windscreen wiper front, replacing motor

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
171-001	1.00	Arrival Inspection, according to Inspection Programme
172-001	3.00	Warranty inspection 50 hours
172-002	3.00	Warranty inspection 100 hours
173-059	0.50	Engine, changing oil and filter
173-074	0.75	Hydraulic oil tank, changing oil and filter
173-081	1.00	Travel motor gearbox, changing oil
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-071	11.00	Engine removed, general overhaul
210-076	6.00	Engine, replacing
211-002	3.00	Cylinder head, replacing gasket
214-012	0.50	Valves, adjusting
214-036	0.50	Valve covers, fitting new gasket
216-003	3.00	Main bearing shells, replacing, removed sump
216-015	4.00	Crankshaft engine removed, replacing
217-003	0.75	Oil sump, replacing
22		LUBRICATING SYSTEM
221-014	5.00	Oil pump, replacing
222-011	0.25	Oil filter, replacing
23		FUEL SYSTEM
233-014	0.25	Fuel filters, replacing
233-041	0.25	Fuel strainer, changing
234-010	1.00	Fuel tank, replacing
236-073	1.50	Injection pump, replacing incl setting injection timing
237-002	1.75	Injectors, replacing all
237-004	0.75	Injector, replacing one
25		INLET SYSTEM; EXHAUST SYSTEM
251-002	0.75	Induction manifold, replacing gasket
251-004	1.50	Exhaust manifold, replacing gasket
252-020	2.00	Silencer, replacing
252-021	0.50	Exhaust pipe, flexible tube, replacing
256-001	0.50	Air cleaner, cleaning filter element
26		COOLING SYSTEM
261-008	3.00	Radiator, replacing

Op.no.	time (h)	Notes
261-012	0.50	Radiator hose upper, replacing
261-014	3.50	Radiator hoses lower, replacing
261-018	0.25	Expansion tank, replacing
262-002	3.00	Coolant pump, replacing
262-098	0.50	Thermostat, replacing
263-022	2.50	Fan belt and/or alternator-, compressor belt, replacing all belts
27		ENGINE CONTROL
273-021	0.25	Stop magnet, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.50	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	2.00	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	2.00	Starter motor, replacing
35		LIGHTING
352-024	0.25	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.25	Rear lamp, replacing one
356-056	0.25	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.50	Horn, replacing
362-041	1.00	Rotating beacon, replacing
363-002	0.50	Windscreen wiper front, replacing motor

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
171-001	1.00	Arrival Inspection, according to Inspection Programme
172-001	3.00	Warranty inspection 50 hours
172-002	3.00	Warranty inspection 100 hours
173-059	0.50	Engine, changing oil and filter
173-074	0.75	Hydraulic oil tank, changing oil and filter
173-081	1.00	Travel motor gearbox, changing oil
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-071	11.00	Engine removed, general overhaul
210-076	6.00	Engine, replacing
211-002	3.00	Cylinder head, replacing gasket
214-012	0.50	Valves, adjusting
214-036	0.50	Valve covers, fitting new gasket
216-003	3.00	Main bearing shells, replacing, removed sump
216-015	4.00	Crankshaft engine removed, replacing
217-003	0.75	Oil sump, replacing
22		LUBRICATING SYSTEM
221-014	5.00	Oil pump, replacing
222-011	0.25	Oil filter, replacing
23		FUEL SYSTEM
233-014	0.25	Fuel filters, replacing
233-041	0.25	Fuel strainer, changing
234-010	1.00	Fuel tank, replacing
236-073	1.50	Injection pump, replacing incl setting injection timing
237-002	1.75	Injectors, replacing all
237-004	0.75	Injector, replacing one
25		INLET SYSTEM; EXHAUST SYSTEM
251-002	0.75	Induction manifold, replacing gasket
251-004	1.50	Exhaust manifold, replacing gasket
252-020	2.00	Silencer, replacing
252-021	0.50	Exhaust pipe, flexible tube, replacing
256-001	0.50	Air cleaner, cleaning filter element
26		COOLING SYSTEM
261-008	3.00	Radiator, replacing

Op.no.	time (h)	Notes
261-012	0.50	Radiator hose upper, replacing
261-014	3.50	Radiator hoses lower, replacing
261-018	0.25	Expansion tank, replacing
262-002	3.00	Coolant pump, replacing
262-098	0.50	Thermostat, replacing
263-022	2.50	Fan belt and/or alternator-, compressor belt, replacing all belts
27		ENGINE CONTROL
273-021	0.25	Stop magnet, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.50	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	2.00	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	2.00	Starter motor, replacing
35		LIGHTING
352-024	0.25	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.25	Rear lamp, replacing one
356-056	0.25	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.50	Horn, replacing
362-041	1.00	Rotating beacon, replacing
363-002	0.50	Windscreen wiper front, replacing motor

Op.no.	time (h)	Notes
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1 STANDARD PARTS, SERVICE

17 SERVICE

170-005	0.25	Start of VCADS Pro computer and reading machine data
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	3.00	Delivery Inspection, according to Inspection Programme
172-002	3.00	Warranty inspection 100 hours
172-004	7.50	Warranty inspection 1000 hours
173-002	0.60	Maintenance service, daily
173-004	1.00	Maintenance service, every 50 hours
173-006	1.50	Maintenance service, every 100 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	5.50	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	8.00	Maintenance service, every 2000 hours
173-018	8.00	Maintenance service, every 4000 hours
173-022	8.50	Maintenance service, every 6000 hours
173-030	0.30	Maintenance service, according to display message
173-079	0.90	Swing motor gearbox, changing oil
173-101	0.40	Track motor gearbox, changing oil
173-401	0.60	Engine oil and filter, changing
173-412	0.20	Hydraulic oil tank breather filter, replacing
173-451	1.25	Hydraulic oil, changing
173-649	0.20	Hydraulic oil return filter, replacing

2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU

21 ENGINE

210-070	6.50	Engine, removing
210-072	7.00	Engine, installing
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
211-002	7.00	Cylinder head, replacing gasket
214-012	2.50	Valves, adjusting
214-036	1.00	Valve covers, fitting new gasket

Op.no.	time (h)	Notes
216-014	7.50	Crankshaft, replacing front oil seal
216-018	8.50	Crankshaft, replacing rear oil seal
217-005	1.50	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.50	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-002	0.70	Feed pump, replacing
233-004	0.50	Feed pump, checking feed pressure
233-010	0.80	Fuel pump, inspection
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
233-020	0.10	Fuel filter, checking
234-010	4.00	Fuel tank, replacing
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-002	3.00	Injectors, replacing all
237-004	0.70	Injector, replacing one
237-033	0.80	Fuel control valve (FCV), replacing
237-037	0.70	Fuel rail pressure, checking
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
252-021	1.25	Exhaust pipe, flexible tube, replacing
255-002	0.80	Turbocharger, inspection
255-071	1.75	Turbocharger, replacing
256-001	0.25	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.40	Preheating coil, replacing
258-002	4.50	Intercooler, replacing
258-022	0.30	Charge air cooler connection (hose, tube), replacing
258-030	1.50	Charge air system, inspection
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.70	Coolant, changing
261-008	5.00	Radiator, replacing
261-012	0.50	Radiator hose upper, replacing
261-014	0.90	Radiator hoses lower, replacing
261-018	0.70	Expansion tank, replacing

Op.no.	time (h)	Notes
262-002	1.00	Coolant pump, replacing
262-098	1.00	Thermostat, replacing
263-012	0.90	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	0.90	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-003	0.80	Main switch, replacing
311-006	0.60	Earth lead to battery, replacing
311-008	2.50	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.90	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	0.70	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
334-002	0.70	Starter switch, testing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-056	0.50	Pre-heating relay, replacing
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU

Op.no.	time (h)		Notes
367-075	0.90	Engine speed control switch, replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-006	0.50	Engine temperature sensor, replacing	
386-007	0.50	Engine oil pressure sensor, replacing	
386-011	0.50	Fuel level sender, replacing	
386-017	0.50	Hydraulic oil temperature sensor, replacing	
386-043	0.50	Travel speed sensor or alarm sensor, replacing	
386-088	0.50	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-903	3.00	CareTrack standard cab, installing new	
390-904	3.00	CareTrack optional cab, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.60	Radio, replacing	120001 - 120512 140001 - 140010
393-021	0.60	Radio, replacing	120513 - 320000 140011 - 340000
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	5.50	Swing gearbox, replacing	
431-026	1.50	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	3.00	Pump gearbox coupling assembly, replacing	
431-036	4.50	Pump gearbox flange, replacing	
431-115	1.75	Track gearbox (removed), replacing floating seal	
431-117	1.25	Track gearbox, replacing cover	
431-127	6.00	Track unit, replacing	
44		HYDROSTATIC DRIVE	
441-017	1.00	Travel motor pressure, checking and adjusting	
441-021	3.00	Swing motor, replacing	
441-022	0.70	Swing motor relief valve, replacing	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.25	Swing motor, replacing brake piston seal	
441-026	0.30	Swing motor removed, replacing seal	
441-032	0.75	Swing motor pressure, checking and adjusting	
441-112	0.70	Track motor relief valve, replacing	
441-115	2.00	Track motor removed, replacing seal	
443-037	5.50	Center passage, replacing	

Op.no.	time (h)		Notes
443-038	7.00	Center passage, replacing seal kit	
443-039	1.00	Center passage hose (valve – center passage), replacing	
443-040	1.50	Center passage hose (center passage – motor), replacing	
49		MISCELLANEOUS	
492-031	2.50	Swing ring gear outer seal, replacing	
492-091	0.50	Ring gear grease pipe, replacing	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	
716-001	0.70	Counterweight, removing	120001 - 120674
716-001	0.70	Counterweight, removing	120675 - 220000
716-002	0.80	Counterweight, fitting	120001 - 120674
716-003	2.00	Counterweight, replacing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-033	7.50	Track shoe, replacing each side	
775-034	1.25	Track chain assembly, removing	
775-035	1.75	Track chain assembly, installing	
775-036	9.50	Track links, replacing	
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	
775-071	0.90	Track guard, replacing one	
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.75	Cab, removing	
810-002	2.50	Cab, installing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	0.90	Engine hood, replacing	
827-091	1.25	Tool box assembly, replacing	

Op.no.	time (h)	Notes
83		DOORS; HATCH; COVER PLATE, (all)
831-004	0.75	Door, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.30	Rear-view mirror, changing
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	1.75	Pump suction hose and pipe, replacing
911-011	5.00	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-017	1.50	Suction cover, replacing
911-024	0.30	Pipe and hose (pump - valve), replacing
911-025	0.70	Pipe and hose (valve - cylinder), replacing
911-026	0.70	Pipe and hose (valve - swing motor), replacing

Op.no.	time (h)	Notes
911-031	1.50	Oil cooler line pipe and hose, replacing
911-032	1.50	Oil cooler line pipe coupling, replacing
911-033	2.00	Oil cooler line bypass valve (check valve), replacing
911-034	5.00	Oil cooler fan motor, replacing
911-035	1.50	Oil cooler fan pump, replacing
911-038	2.50	Hydraulic oil tank, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	0.70	Rupture valve, replacing (boom cylinder)
912-073	1.00	Rupture valve, replacing (dipper arm cylinder)
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.50	Hydraulic pump, replacing
913-029	0.40	Pump regulator, replacing
914-036	1.00	Servo pump block seal, replacing
914-037	1.00	Servo pump shaft seal, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-055	0.75	Servo pressure, checking and adjusting
914-060	0.80	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	0.90	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-005	0.80	Quickfit, removal
924-006	1.00	Quickfit, installation
924-021	2.00	Quickfit hydraulic cylinder bracket (body), replacing
925-011	1.25	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.90	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	4.50	Boom, removal
974-014	5.50	Boom, installation
974-017	2.00	Boom, replacing pin

Op.no.	time (h)	Notes
974-021	2.50	Boom cylinder, replacing
974-022	2.00	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	4.50	Boom cylinder, repacking in machine
974-031	1.75	Boom cylinder, removal
974-032	1.00	Boom cylinder, installation
975-006	0.70	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-011	3.00	Dipper arm, removal
975-012	3.00	Dipper arm, installation
975-014	1.50	Dipper arm cylinder, removal
975-015	1.25	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-026	2.50	Dipper arm cylinder removed, repacking
975-028	1.50	Connecting rod yoke, replacing
975-032	0.70	Connecting rod yoke, removal
975-035	1.00	Connecting rod yoke, installation
975-039	7.50	Dipper arm, replacing
975-043	4.50	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-063	5.00	Bucket cylinder, repacking in machine
975-065	1.50	Bucket cylinder, installation
975-069	2.00	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes
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1 STANDARD PARTS, SERVICE

17 SERVICE

172-002	3.00	Warranty inspection 100 hours
172-004	7.50	Warranty inspection 1000 hours
173-002	0.60	Maintenance service, daily
173-004	1.00	Maintenance service, every 50 hours
173-006	1.50	Maintenance service, every 100 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	5.50	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	8.00	Maintenance service, every 2000 hours
173-018	8.00	Maintenance service, every 4000 hours
173-022	8.50	Maintenance service, every 6000 hours
173-030	0.30	Maintenance service, according to display message
173-079	0.90	Swing motor gearbox, changing oil
173-101	0.40	Track motor gearbox, changing oil
173-401	0.60	Engine oil and filter, changing
173-412	0.20	Hydraulic oil tank breather filter, replacing
173-451	1.25	Hydraulic oil, changing
173-649	0.20	Hydraulic oil return filter, replacing

2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU

21 ENGINE

210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
214-012	2.50	Valves, adjusting

23 FUEL SYSTEM

230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-002	0.70	Feed pump, replacing
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-004	0.70	Injector, replacing one

Op.no.	time (h)	Notes
237-033	0.80	Fuel control valve (FCV), replacing
237-037	0.70	Fuel rail pressure, checking
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
252-021	1.25	Exhaust pipe, flexible tube, replacing
255-002	0.80	Turbocharger, inspection
255-071	1.75	Turbocharger, replacing
256-006	0.40	Preheating coil, replacing
258-002	4.50	Intercooler, replacing
258-022	0.30	Charge air cooler connection (hose, tube), replacing
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.70	Coolant, changing
261-008	5.00	Radiator, replacing
261-012	0.50	Radiator hose upper, replacing
261-014	0.90	Radiator hoses lower, replacing
261-018	0.70	Expansion tank, replacing
263-012	0.90	Fan belt and/or alternator belt, replacing
263-022	0.90	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-003	0.80	Main switch, replacing
311-006	0.60	Earth lead to battery, replacing
311-008	2.50	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.90	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	0.70	Starter motor, replacing
331-021	0.30	Starter motor, tests

Op.no.	time (h)		Notes
331-081	0.30	Starter relay, replacing	
334-002	0.70	Starter switch, testing	
334-002	0.70	Starter switch, testing	
334-011	0.50	Starter switch (engine start switch), replacing	
35		LIGHTING	
356-056	0.50	Work lighting, replacing one head lamp assy	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.30	Horn, replacing	
362-041	0.30	Rotating beacon, replacing	
362-051	0.50	Travel alarm, replacing	
363-003	0.40	Windscreen wiper, replacing switch	
363-004	0.50	Windscreen flusher pump, replacing	
363-091	0.50	Windscreen wiper, replacing controller	
364-003	0.60	Control lockout lever switch, replacing	
364-056	0.50	Pre-heating relay, replacing	
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	
367-075	0.90	Engine speed control switch, replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-088	0.50	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-903	3.00	CareTrack standard cab, installing new	
390-904	3.00	CareTrack optional cab, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.60	Radio, replacing	120513 - 320000 140011 - 340000
393-021	0.60	Radio, replacing	120001 - 120512 140001 - 140010
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-031	3.00	Pump gearbox coupling assembly, replacing	
431-117	1.25	Track gearbox, replacing cover	
431-127	6.00	Track unit, replacing	
44		HYDROSTATIC DRIVE	
441-021	3.00	Swing motor, replacing	

Op.no.	time (h)		Notes
441-022	0.70	Swing motor relief valve, replacing	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.25	Swing motor, replacing brake piston seal	
441-112	0.70	Track motor relief valve, replacing	
443-037	5.50	Center passage, replacing	
443-038	7.00	Center passage, replacing seal kit	
443-039	1.00	Center passage hose (valve – center passage), replacing	
443-040	1.50	Center passage hose (center passage – motor), replacing	
49		MISCELLANEOUS	
492-031	2.50	Swing ring gear outer seal, replacing	
492-091	0.50	Ring gear grease pipe, replacing	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	
716-001	0.70	Counterweight, removing	120001 - 120674
716-001	0.70	Counterweight, removing	120675 - 320000
716-002	0.80	Counterweight, fitting	120001 - 120674
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-034	1.25	Track chain assembly, removing	
775-035	1.75	Track chain assembly, installing	
775-036	9.50	Track links, replacing	
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	
775-071	0.90	Track guard, replacing one	
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.75	Cab, removing	
810-002	2.50	Cab, installing	

Op.no.	time (h)	Notes
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.90	Engine hood, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.30	Rear-view mirror, changing
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
873-019	0.90	ECC control unit, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	1.75	Pump suction hose and pipe, replacing
911-011	5.00	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-024	0.30	Pipe and hose (pump - valve), replacing
911-034	5.00	Oil cooler fan motor, replacing
911-035	1.50	Oil cooler fan pump, replacing

Op.no.	time (h)	Notes
911-038	2.50	Hydraulic oil tank, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	0.70	Rupture valve, replacing (boom cylinder)
912-073	1.00	Rupture valve, replacing (dipper arm cylinder)
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.50	Hydraulic pump, replacing
913-029	0.40	Pump regulator, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-060	0.80	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	0.90	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-005	0.80	Quickfit, removal
924-006	1.00	Quickfit, installation
925-011	1.25	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.90	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	4.50	Boom, removal
974-014	5.50	Boom, installation
974-021	2.50	Boom cylinder, replacing
974-025	4.50	Boom cylinder, repacking in machine
974-031	1.75	Boom cylinder, removal
974-032	1.00	Boom cylinder, installation
975-006	0.70	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-011	3.00	Dipper arm, removal
975-012	3.00	Dipper arm, installation
975-014	1.50	Dipper arm cylinder, removal
975-015	1.25	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-028	1.50	Connecting rod yoke, replacing
975-032	0.70	Connecting rod yoke, removal
975-035	1.00	Connecting rod yoke, installation

Op.no.	time (h)	Notes
975-039	7.50	Dipper arm, replacing
975-043	4.50	Dipper arm cylinder, repacking in machine
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-063	5.00	Bucket cylinder, repacking in machine
975-065	1.50	Bucket cylinder, installation

Op.no.	time (h)	Notes
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1 STANDARD PARTS, SERVICE

17 SERVICE

170-005	0.25	Start of VCADS Pro computer and reading machine data
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	3.00	Delivery Inspection, according to Inspection Programme
172-002	3.00	Warranty inspection 100 hours
172-004	7.50	Warranty inspection 1000 hours
173-002	0.60	Maintenance service, daily
173-004	1.00	Maintenance service, every 50 hours
173-006	1.50	Maintenance service, every 100 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	5.50	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	8.00	Maintenance service, every 2000 hours
173-018	8.00	Maintenance service, every 4000 hours
173-022	8.50	Maintenance service, every 6000 hours
173-030	0.30	Maintenance service, according to display message
173-079	0.90	Swing motor gearbox, changing oil
173-101	0.40	Track motor gearbox, changing oil
173-401	0.60	Engine oil and filter, changing
173-412	0.20	Hydraulic oil tank breather filter, replacing
173-451	1.25	Hydraulic oil, changing
173-649	0.20	Hydraulic oil return filter, replacing

2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU

21 ENGINE

210-070	6.50	Engine, removing
210-072	7.00	Engine, installing
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
211-002	7.00	Cylinder head, replacing gasket
214-012	2.50	Valves, adjusting
214-036	1.00	Valve covers, fitting new gasket

Op.no.	time (h)	Notes
216-014	7.50	Crankshaft, replacing front oil seal
216-018	8.50	Crankshaft, replacing rear oil seal
217-005	1.50	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.50	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-002	0.70	Feed pump, replacing
233-004	0.50	Feed pump, checking feed pressure
233-010	0.80	Fuel pump, inspection
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
233-020	0.10	Fuel filter, checking
234-010	4.00	Fuel tank, replacing
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-002	3.00	Injectors, replacing all
237-004	0.70	Injector, replacing one
237-033	0.80	Fuel control valve (FCV), replacing
237-037	0.70	Fuel rail pressure, checking
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
252-021	1.25	Exhaust pipe, flexible tube, replacing
255-002	0.80	Turbocharger, inspection
255-071	1.75	Turbocharger, replacing
256-001	0.25	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.40	Preheating coil, replacing
258-002	4.50	Intercooler, replacing
258-022	0.30	Charge air cooler connection (hose, tube), replacing
258-030	1.50	Charge air system, inspection
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.70	Coolant, changing
261-008	5.00	Radiator, replacing
261-012	0.50	Radiator hose upper, replacing
261-014	0.90	Radiator hoses lower, replacing
261-018	0.70	Expansion tank, replacing

Op.no.	time (h)	Notes
262-002	1.00	Coolant pump, replacing
262-098	1.00	Thermostat, replacing
263-012	0.90	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	0.90	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-003	0.80	Main switch, replacing
311-006	0.60	Earth lead to battery, replacing
311-008	2.50	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.90	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	0.70	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
334-002	0.70	Starter switch, testing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing

Op.no.	time (h)		Notes
364-056	0.50	Pre-heating relay, replacing	
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	
367-075	0.90	Engine speed control switch, replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-006	0.50	Engine temperature sensor, replacing	
386-007	0.50	Engine oil pressure sensor, replacing	
386-011	0.50	Fuel level sender, replacing	
386-017	0.50	Hydraulic oil temperature sensor, replacing	
386-043	0.50	Travel speed sensor or alarm sensor, replacing	
386-088	0.50	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-903	3.00	CareTrack standard cab, installing new	
390-904	3.00	CareTrack optional cab, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.60	Radio, replacing	120144 - 320000
393-021	0.60	Radio, replacing	120001 - 120143
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	5.50	Swing gearbox, replacing	
431-026	1.50	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	3.00	Pump gearbox coupling assembly, replacing	
431-036	4.50	Pump gearbox flange, replacing	
431-115	1.75	Track gearbox (removed), replacing floating seal	
431-117	1.25	Track gearbox, replacing cover	
431-127	6.00	Track unit, replacing	
44		HYDROSTATIC DRIVE	
441-017	1.00	Travel motor pressure, checking and adjusting	
441-021	3.00	Swing motor, replacing	
441-022	0.70	Swing motor relief valve, replacing	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.25	Swing motor, replacing brake piston seal	
441-026	0.30	Swing motor removed, replacing seal	
441-032	0.75	Swing motor pressure, checking and adjusting	
441-112	0.70	Track motor relief valve, replacing	

Op.no.	time (h)		Notes
441-115	2.00	Track motor removed, replacing seal	
443-037	5.50	Center passage, replacing	
443-038	7.00	Center passage, replacing seal kit	
443-039	1.00	Center passage hose (valve – center passage), replacing	
443-040	1.50	Center passage hose (center passage – motor), replacing	
49		MISCELLANEOUS	
492-031	2.50	Swing ring gear outer seal, replacing	
492-091	0.50	Ring gear grease pipe, replacing	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	
716-001	0.70	Counterweight, removing	120001 - 120674
716-001	0.70	Counterweight, removing	120675 - 220000
716-002	0.80	Counterweight, fitting	120001 - 120674
716-003	2.00	Counterweight, replacing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-033	7.50	Track shoe, replacing each side	
775-034	1.25	Track chain assembly, removing	
775-035	1.75	Track chain assembly, installing	
775-036	9.50	Track links, replacing	
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	
775-071	0.90	Track guard, replacing one	
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.75	Cab, removing	
810-002	2.50	Cab, installing	

Op.no.	time (h)	Notes
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.90	Engine hood, replacing
827-091	1.25	Tool box assembly, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	0.75	Door, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.30	Rear-view mirror, changing
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
873-019	0.90	ECC control unit, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	1.75	Pump suction hose and pipe, replacing
911-011	5.00	Oil cooler, replacing

Op.no.	time (h)	Notes
911-015	0.50	Oil level gauge, replacing
911-017	1.50	Suction cover, replacing
911-024	0.30	Pipe and hose (pump - valve), replacing
911-025	0.70	Pipe and hose (valve - cylinder), replacing
911-026	0.70	Pipe and hose (valve - swing motor), replacing
911-031	1.50	Oil cooler line pipe and hose, replacing
911-032	1.50	Oil cooler line pipe coupling, replacing
911-033	2.00	Oil cooler line bypass valve (check valve), replacing
911-034	5.00	Oil cooler fan motor, replacing
911-035	1.50	Oil cooler fan pump, replacing
911-038	2.50	Hydraulic oil tank, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	0.70	Rupture valve, replacing (boom cylinder)
912-073	1.00	Rupture valve, replacing (dipper arm cylinder)
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.50	Hydraulic pump, replacing
913-029	0.40	Pump regulator, replacing
914-036	1.00	Servo pump block seal, replacing
914-037	1.00	Servo pump shaft seal, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-055	0.75	Servo pressure, checking and adjusting
914-060	0.80	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	0.90	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-005	0.80	Quickfit, removal
924-006	1.00	Quickfit, installation
924-021	2.00	Quickfit hydraulic cylinder bracket (body), replacing
925-011	1.25	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.90	Bucket assembly, installation

Op.no.	time (h)	Notes
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	4.50	Boom, removal
974-014	5.50	Boom, installation
974-017	2.00	Boom, replacing pin
974-021	2.50	Boom cylinder, replacing
974-022	2.00	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	4.50	Boom cylinder, repacking in machine
974-031	1.75	Boom cylinder, removal
974-032	1.00	Boom cylinder, installation
975-006	0.70	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-011	3.00	Dipper arm, removal
975-012	3.00	Dipper arm, installation
975-014	1.50	Dipper arm cylinder, removal
975-015	1.25	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-026	2.50	Dipper arm cylinder removed, repacking
975-028	1.50	Connecting rod yoke, replacing
975-032	0.70	Connecting rod yoke, removal
975-035	1.00	Connecting rod yoke, installation
975-039	7.50	Dipper arm, replacing
975-043	4.50	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-063	5.00	Bucket cylinder, repacking in machine
975-065	1.50	Bucket cylinder, installation
975-069	2.00	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
171-001	1.00	Arrival Inspection, according to Inspection Programme
172-001	3.00	Warranty inspection 50 hours
172-002	3.00	Warranty inspection 100 hours
173-059	0.50	Engine, changing oil and filter
173-074	0.75	Hydraulic oil tank, changing oil and filter
173-081	1.00	Travel motor gearbox, changing oil
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-071	11.00	Engine removed, general overhaul
210-076	6.00	Engine, replacing
211-002	3.00	Cylinder head, replacing gasket
214-012	0.50	Valves, adjusting
214-036	0.50	Valve covers, fitting new gasket
216-003	3.00	Main bearing shells, replacing, removed sump
216-015	4.00	Crankshaft engine removed, replacing
217-003	0.75	Oil sump, replacing
22		LUBRICATING SYSTEM
221-014	5.00	Oil pump, replacing
222-011	0.25	Oil filter, replacing
23		FUEL SYSTEM
233-014	0.25	Fuel filters, replacing
233-041	0.25	Fuel strainer, changing
234-010	1.00	Fuel tank, replacing
236-073	1.50	Injection pump, replacing incl setting injection timing
237-002	1.75	Injectors, replacing all
237-004	0.75	Injector, replacing one
25		INLET SYSTEM; EXHAUST SYSTEM
251-002	0.75	Induction manifold, replacing gasket
251-004	1.50	Exhaust manifold, replacing gasket
252-020	2.00	Silencer, replacing
252-021	0.50	Exhaust pipe, flexible tube, replacing
256-001	0.50	Air cleaner, cleaning filter element
26		COOLING SYSTEM
261-008	3.00	Radiator, replacing

Op.no.	time (h)	Notes
261-012	0.50	Radiator hose upper, replacing
261-014	3.50	Radiator hoses lower, replacing
261-018	0.25	Expansion tank, replacing
262-002	3.00	Coolant pump, replacing
262-098	0.50	Thermostat, replacing
263-022	2.50	Fan belt and/or alternator-, compressor belt, replacing all belts
27		ENGINE CONTROL
273-021	0.25	Stop magnet, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.50	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	2.00	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	2.00	Starter motor, replacing
35		LIGHTING
352-024	0.25	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.25	Rear lamp, replacing one
356-056	0.25	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.50	Horn, replacing
362-041	1.00	Rotating beacon, replacing
363-002	0.50	Windscreen wiper front, replacing motor

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
171-001	1.00	Arrival Inspection, according to Inspection Programme
172-001	3.00	Warranty inspection 50 hours
172-002	3.00	Warranty inspection 100 hours
173-059	0.50	Engine, changing oil and filter
173-074	0.75	Hydraulic oil tank, changing oil and filter
173-081	1.00	Travel motor gearbox, changing oil
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-071	11.00	Engine removed, general overhaul
210-076	6.00	Engine, replacing
211-002	3.00	Cylinder head, replacing gasket
214-012	0.50	Valves, adjusting
214-036	0.50	Valve covers, fitting new gasket
216-003	3.00	Main bearing shells, replacing, removed sump
216-015	4.00	Crankshaft engine removed, replacing
217-003	0.75	Oil sump, replacing
22		LUBRICATING SYSTEM
221-014	5.00	Oil pump, replacing
222-011	0.25	Oil filter, replacing
23		FUEL SYSTEM
233-014	0.25	Fuel filters, replacing
233-041	0.25	Fuel strainer, changing
234-010	1.00	Fuel tank, replacing
236-073	1.50	Injection pump, replacing incl setting injection timing
237-002	1.75	Injectors, replacing all
237-004	0.75	Injector, replacing one
25		INLET SYSTEM; EXHAUST SYSTEM
251-002	0.75	Induction manifold, replacing gasket
251-004	1.50	Exhaust manifold, replacing gasket
252-020	2.00	Silencer, replacing
252-021	0.50	Exhaust pipe, flexible tube, replacing
256-001	0.50	Air cleaner, cleaning filter element
26		COOLING SYSTEM
261-008	3.00	Radiator, replacing

Op.no.	time (h)	Notes
261-012	0.50	Radiator hose upper, replacing
261-014	3.50	Radiator hoses lower, replacing
261-018	0.25	Expansion tank, replacing
262-002	3.00	Coolant pump, replacing
262-098	0.50	Thermostat, replacing
263-022	2.50	Fan belt and/or alternator-, compressor belt, replacing all belts
27		ENGINE CONTROL
273-021	0.25	Stop magnet, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.50	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	2.00	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	2.00	Starter motor, replacing
35		LIGHTING
352-024	0.25	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.25	Rear lamp, replacing one
356-056	0.25	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.50	Horn, replacing
362-041	1.00	Rotating beacon, replacing
363-002	0.50	Windscreen wiper front, replacing motor

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
170-005	0.25	Start of VCADS Pro computer and reading machine data
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	3.00	Delivery Inspection, according to Inspection Programme
172-002	3.00	Warranty inspection 100 hours
172-004	7.50	Warranty inspection 1000 hours
173-002	0.70	Maintenance service, daily
173-004	1.00	Maintenance service, every 50 hours
173-006	1.50	Maintenance service, every 100 hours
173-007	2.00	Maintenance service, every 250 hours
173-010	5.50	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	10.00	Maintenance service, every 2000 hours
173-018	10.00	Maintenance service, every 4000 hours
173-022	11.00	Maintenance service, every 6000 hours
173-030	0.30	Maintenance service, according to display message
173-079	0.90	Swing motor gearbox, changing oil
173-101	0.40	Track motor gearbox, changing oil
173-401	0.60	Engine oil and filter, changing
173-412	0.20	Hydraulic oil tank breather filter, replacing
173-451	1.25	Hydraulic oil, changing
173-649	0.20	Hydraulic oil return filter, replacing
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
210-070	6.50	Engine, removing
210-072	7.00	Engine, installing
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
211-002	8.00	Cylinder head, replacing gasket

Op.no.	time (h)	Notes
214-012	3.00	Valves, adjusting
214-036	1.00	Valve covers, fitting new gasket
216-014	7.50	Crankshaft, replacing front oil seal
216-018	8.50	Crankshaft, replacing rear oil seal
217-005	1.50	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.50	Lubrication oil pressure, checking with pressure gauge
223-006	1.25	Oil cooler, replacing
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-002	0.70	Feed pump, replacing
233-004	0.80	Feed pump, checking feed pressure
233-010	0.80	Fuel pump, inspection
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
233-016	0.70	Fuel filter housing, replacing
233-017	0.70	Water separator housing, replacing
233-020	0.10	Fuel filter, checking
234-010	4.00	Fuel tank, replacing
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-002	3.00	Injectors, replacing all
237-004	0.70	Injector, replacing one
237-033	0.80	Fuel control valve (FCV), replacing
237-037	0.70	Fuel rail pressure, checking
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.50	Silencer, replacing
252-021	1.25	Exhaust pipe, flexible tube, replacing
255-002	0.80	Turbocharger, inspection
255-071	1.25	Turbocharger, replacing
256-001	0.25	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.40	Preheating coil, replacing
258-002	4.50	Intercooler, replacing
258-022	0.30	Charge air cooler connection (hose, tube), replacing
258-030	1.50	Charge air system, inspection
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance

Op.no.	time (h)	Notes
261-004	0.60	Coolant, changing
261-008	4.50	Radiator, replacing
261-012	0.50	Radiator hose upper, replacing
261-014	0.90	Radiator hoses lower, replacing
261-018	0.70	Expansion tank, replacing
262-002	1.50	Coolant pump, replacing
262-098	1.00	Thermostat, replacing
263-012	0.90	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	0.90	Fan belt and/or alternator-, compressor belt, replacing all belts

3 ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS

30 GENERAL

300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU

31 BATTERY

311-001	0.80	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-003	0.80	Main switch, replacing
311-006	0.60	Earth lead to battery, replacing
311-008	2.50	Starter motor lead to battery, replacing

32 ALTERNATOR; CHARGE REGULATOR

321-002	0.90	Alternator, replacing incl function check
321-075	0.50	Alternator, test

33 STARTING SYSTEM

331-018	0.70	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
334-002	0.70	Starter switch, testing
334-011	0.50	Starter switch (engine start switch), replacing

35 LIGHTING

356-056	0.50	Work lighting, replacing one head lamp assy
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36 OTHER ELECTRICAL EQUIPMENT

362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing

Op.no.	time (h)	Notes	
362-051	0.50	Travel alarm, replacing	
363-003	0.40	Windscreen wiper, replacing switch	
363-004	0.50	Windscreen flusher pump, replacing	
363-091	0.50	Windscreen wiper, replacing controller	
364-003	0.60	Control lockout lever switch, replacing	
364-056	0.50	Pre-heating relay, replacing	
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU	
366-066	0.90	V-ECU, MID 187, changing pre-programmed ECU	
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	
367-075	0.90	Engine speed control switch, replacing	
37		CABLE; FUSE; RELAY	
371-090	3.00	Engine wire harness, replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-006	0.50	Engine temperature sensor, replacing	
386-007	0.50	Engine oil pressure sensor, replacing	
386-011	0.50	Fuel level sender, replacing	
386-017	0.50	Hydraulic oil temperature sensor, replacing	
386-043	0.50	Travel speed sensor or alarm sensor, replacing	
386-088	0.50	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-903	3.00	CareTrack standard cab, installing new	
390-904	3.00	CareTrack optional cab, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.60	Radio, replacing	111025 - 310000 140018 - 340000 120533 - 310000
393-021	0.60	Radio, replacing	110001 - 111024 140001 - 140017 120001 - 120532
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	5.50	Swing gearbox, replacing	
431-026	0.50	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	

Op.no.	time (h)		Notes
431-031	4.00	Pump gearbox coupling assembly, replacing	
431-036	4.50	Pump gearbox flange, replacing	
431-053	6.50	Swing unit, replacing	
431-115	1.75	Track gearbox (removed), replacing floating seal	
431-117	1.25	Track gearbox, replacing cover	
431-127	6.00	Track unit, replacing	
44		HYDROSTATIC DRIVE	
441-017	1.00	Travel motor pressure, checking and adjusting	
441-021	2.50	Swing motor, replacing	
441-022	0.80	Swing motor relief valve, replacing	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	0.30	Swing motor removed, replacing seal	
441-032	0.75	Swing motor pressure, checking and adjusting	
441-111	6.50	Track motor, replacing	
441-112	0.70	Track motor relief valve, replacing	
441-115	2.00	Track motor removed, replacing seal	
442-045	2.50	Pump coupling, removing	
442-046	2.00	Pump coupling, installing	
443-037	5.50	Center passage, replacing	
443-038	7.00	Center passage, replacing seal kit	
443-039	1.00	Center passage hose (valve – center passage), replacing	
443-040	1.50	Center passage hose (center passage – motor), replacing	
49		MISCELLANEOUS	
492-031	3.00	Swing ring gear outer seal, replacing	111927 - 210000
492-031	2.50	Swing ring gear outer seal, replacing	110001 - 111926
492-032	9.00	Swing ring gear inner seal, replacing	111927 - 210000
492-091	0.50	Ring gear grease pipe, replacing	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	
716-001	0.80	Counterweight, removing	110001 - 111357
716-001	0.80	Counterweight, removing	111358 - 310000
716-002	0.80	Counterweight, fitting	111358 - 310000
716-002	0.80	Counterweight, fitting	110001 - 111357
716-003	2.00	Counterweight, replacing	

Op.no.	time (h)		Notes
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-032	0.40	Track shoe, replacing one	
775-033	7.50	Track shoe, replacing each side	
775-034	1.25	Track chain assembly, removing	
775-035	1.75	Track chain assembly, installing	
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	
775-066	3.00	Bottom roller, replacing seal	
775-071	0.90	Track guard, replacing one	110001 - 111894
775-071	0.90	Track guard, replacing one	111895 - 210000
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.75	Cab, removing	
810-002	2.50	Cab, installing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	0.90	Engine hood, replacing	
827-091	1.75	Tool box assembly, replacing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	0.75	Door, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.30	Rear-view mirror, changing	
843-002	1.50	Windscreen, replacing	
843-012	4.00	Rear window, replacing	
843-013	4.50	Side window, replacing	
843-048	0.70	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	
852-091	2.50	Seat support, replacing	
87		AIR CONDITIONING UNIT	
870-001	5.00	Cooler and Heater assembly, replacing	
872-001	0.50	Cab filter, replacing	
873-004	3.00	Heater core, replacing	
873-006	0.90	Fan motor, replacing	

Op.no.	time (h)	Notes
873-011	0.70	Air mix door actuator, replacing
873-019	0.90	ECC control unit, replacing
873-019	0.90	ECC control unit, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	1.75	Pump suction hose and pipe, replacing
911-011	4.00	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-017	1.75	Suction cover, replacing
911-024	0.70	Pipe and hose (pump - valve), replacing
911-025	0.70	Pipe and hose (valve - cylinder), replacing
911-026	0.70	Pipe and hose (valve - swing motor), replacing
911-031	1.50	Oil cooler line pipe and hose, replacing
911-032	1.50	Oil cooler line pipe coupling, replacing
911-033	1.50	Oil cooler line bypass valve (check valve), replacing
911-034	2.00	Oil cooler fan motor, replacing
911-035	1.50	Oil cooler fan pump, replacing
911-038	3.50	Hydraulic oil tank, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	1.00	Rupture valve, replacing (boom cylinder)
912-073	1.00	Rupture valve, replacing (dipper arm cylinder)
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.50	Hydraulic pump, replacing

Op.no.	time (h)	Notes
913-029	0.40	Pump regulator, replacing
914-036	1.00	Servo pump block seal, replacing
914-037	1.00	Servo pump shaft seal, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-055	0.75	Servo pressure, checking and adjusting
914-060	0.80	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.00	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.00	Quickfit pump (gear pump), replacing
924-005	0.80	Quickfit, removal
924-006	1.00	Quickfit, installation
924-021	2.00	Quickfit hydraulic cylinder bracket (body), replacing
925-011	1.25	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.90	Bucket assembly, installation
97		UNIT, DIGGING
970-008	0.50	Bushing general, replacing
974-010	12.00	Boom, replacing
974-013	4.50	Boom, removal
974-014	5.50	Boom, installation
974-017	2.00	Boom, replacing pin
974-021	3.00	Boom cylinder, replacing
974-022	2.00	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	4.50	Boom cylinder, repacking in machine
974-026	3.00	Boom cylinder rod, replacing
974-031	2.00	Boom cylinder, removal
974-032	1.00	Boom cylinder, installation
974-038	3.00	Lower boom cylinder bushing, replacing
974-039	3.00	Upper boom cylinder bushing, replacing
975-006	0.70	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-011	3.50	Dipper arm, removal
975-012	3.50	Dipper arm, installation
975-014	1.50	Dipper arm cylinder, removal

Op.no.	time (h)	Notes
975-015	1.25	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-026	2.50	Dipper arm cylinder removed, repacking
975-028	1.50	Connecting rod yoke, replacing
975-029	3.50	Dipper arm cylinder rod, replacing
975-032	0.70	Connecting rod yoke, removal
975-035	1.00	Connecting rod yoke, installation
975-039	9.00	Dipper arm, replacing
975-040	2.50	Dipper arm cylinder bushing on boom, replacing
975-042	2.50	Dipper arm cylinder bushing on dipper arm, replacing
975-043	4.50	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-063	5.00	Bucket cylinder, repacking in machine
975-065	1.50	Bucket cylinder, installation
975-069	2.00	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing
975-072	3.00	Bucket cylinder bushing on dipper arm, changing
975-073	3.00	Bucket cylinder bushing lever-link, replacing
975-076	3.00	Bucket cylinder rod, replacing
99		MISCELLANEOUS
996-001	1.50	Cab elevating cylinder, replacing

Op.no.	time (h)	Notes
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1 STANDARD PARTS, SERVICE

17 SERVICE

172-002	3.00	Warranty inspection 100 hours
172-004	7.50	Warranty inspection 1000 hours
173-002	0.70	Maintenance service, daily
173-004	1.00	Maintenance service, every 50 hours
173-006	1.50	Maintenance service, every 100 hours
173-007	2.00	Maintenance service, every 250 hours
173-010	5.50	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	10.00	Maintenance service, every 2000 hours
173-018	10.00	Maintenance service, every 4000 hours
173-022	11.00	Maintenance service, every 6000 hours
173-030	0.30	Maintenance service, according to display message
173-079	0.90	Swing motor gearbox, changing oil
173-101	0.40	Track motor gearbox, changing oil
173-401	0.60	Engine oil and filter, changing
173-412	0.20	Hydraulic oil tank breather filter, replacing
173-451	1.25	Hydraulic oil, changing
173-649	0.20	Hydraulic oil return filter, replacing

2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU

21 ENGINE

210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
214-012	3.00	Valves, adjusting

22 LUBRICATING SYSTEM

223-006	1.25	Oil cooler, replacing
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23 FUEL SYSTEM

230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-002	0.70	Feed pump, replacing

Op.no.	time (h)	Notes
233-004	0.80	Feed pump, checking feed pressure
233-010	0.80	Fuel pump, inspection
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
233-016	0.70	Fuel filter housing, replacing
233-017	0.70	Water separator housing, replacing
233-020	0.10	Fuel filter, checking
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-004	0.70	Injector, replacing one
237-033	0.80	Fuel control valve (FCV), replacing
237-037	0.70	Fuel rail pressure, checking
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.50	Silencer, replacing
252-021	1.25	Exhaust pipe, flexible tube, replacing
255-002	0.80	Turbocharger, inspection
255-071	1.25	Turbocharger, replacing
256-006	0.40	Preheating coil, replacing
258-002	4.50	Intercooler, replacing
258-022	0.30	Charge air cooler connection (hose, tube), replacing
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.60	Coolant, changing
261-008	4.50	Radiator, replacing
261-012	0.50	Radiator hose upper, replacing
261-014	0.90	Radiator hoses lower, replacing
261-018	0.70	Expansion tank, replacing
263-012	0.90	Fan belt and/or alternator belt, replacing
263-022	0.90	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	0.90	Batteries, replacing

Op.no.	time (h)	Notes
311-003	0.80	Main switch, replacing
311-006	0.60	Earth lead to battery, replacing
311-008	2.50	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.90	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	0.70	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
334-002	0.70	Starter switch, testing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-056	0.50	Pre-heating relay, replacing
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	0.90	V-ECU, MID 187, changing pre-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
367-075	0.90	Engine speed control switch, replacing
37		CABLE; FUSE; RELAY
371-090	3.00	Engine wire harness, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-088	0.50	Engine rotation speed sensor (camshaft), replacing
39		MISCELLANEOUS
390-903	3.00	CareTrack standard cab, installing new
390-904	3.00	CareTrack optional cab, installing new
393-001	0.50	Voltage converter, replacing

Op.no.	time (h)		Notes
393-021	0.60	Radio, replacing	111025 - 140000 140018 - 340000 120533 - 310000
393-021	0.60	Radio, replacing	110001 - 111024 140001 - 140017 120001 - 120532
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	

4**POWER TRANSMISSION****43****GEARBOX,**

431-021	5.50	Swing gearbox, replacing	
431-026	0.50	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	4.00	Pump gearbox coupling assembly, replacing	
431-053	6.50	Swing unit, replacing	
431-115	1.75	Track gearbox (removed), replacing floating seal	
431-117	1.25	Track gearbox, replacing cover	
431-127	6.00	Track unit, replacing	

44**HYDROSTATIC DRIVE**

441-021	2.50	Swing motor, replacing	
441-022	0.80	Swing motor relief valve, replacing	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	0.30	Swing motor removed, replacing seal	
441-111	6.50	Track motor, replacing	
441-112	0.70	Track motor relief valve, replacing	
442-045	2.50	Pump coupling, removing	
442-046	2.00	Pump coupling, installing	
443-037	5.50	Center passage, replacing	
443-038	7.00	Center passage, replacing seal kit	
443-039	1.00	Center passage hose (valve – center passage), replacing	
443-040	1.50	Center passage hose (center passage – motor), replacing	

49**MISCELLANEOUS**

492-031	3.00	Swing ring gear outer seal, replacing	111927 - 210000
492-031	2.50	Swing ring gear outer seal, replacing	110001 - 111926
492-032	9.00	Swing ring gear inner seal, replacing	111927 - 210000
492-091	0.50	Ring gear grease pipe, replacing	

Op.no.	time (h)	Notes	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	
716-001	0.80	Counterweight, removing	110001 - 111361
716-001	0.80	Counterweight, removing	111362 - 310000
716-002	0.80	Counterweight, fitting	111362 - 310000
716-002	0.80	Counterweight, fitting	110001 - 111361
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-032	0.40	Track shoe, replacing one	
775-034	1.25	Track chain assembly, removing	
775-035	1.75	Track chain assembly, installing	
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	
775-066	3.00	Bottom roller, replacing seal	
775-071	0.90	Track guard, replacing one	110001 - 111894
775-071	0.90	Track guard, replacing one	111895 - 210000
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.75	Cab, removing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	0.90	Engine hood, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.30	Rear-view mirror, changing	
843-002	1.50	Windscreen, replacing	
843-012	4.00	Rear window, replacing	
843-013	4.50	Side window, replacing	
843-048	0.70	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	
852-091	2.50	Seat support, replacing	

Op.no.	time (h)	Notes
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
873-019	0.90	ECC control unit, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-015	0.50	Oil level gauge, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	1.00	Rupture valve, replacing (boom cylinder)
912-073	1.00	Rupture valve, replacing (dipper arm cylinder)
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-029	0.40	Pump regulator, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-060	0.80	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-005	0.80	Quickfit, removal

Op.no.	time (h)	Notes
924-006	1.00	Quickfit, installation
925-011	1.25	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.90	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	4.50	Boom, removal
974-014	5.50	Boom, installation
974-021	3.00	Boom cylinder, replacing
974-025	4.50	Boom cylinder, repacking in machine
974-031	2.00	Boom cylinder, removal
974-032	1.00	Boom cylinder, installation
975-006	0.70	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-011	3.50	Dipper arm, removal
975-012	3.50	Dipper arm, installation
975-014	1.50	Dipper arm cylinder, removal
975-015	1.25	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-028	1.50	Connecting rod yoke, replacing
975-032	0.70	Connecting rod yoke, removal
975-035	1.00	Connecting rod yoke, installation
975-039	9.00	Dipper arm, replacing
975-043	4.50	Dipper arm cylinder, repacking in machine
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-063	5.00	Bucket cylinder, repacking in machine
975-065	1.50	Bucket cylinder, installation
99		MISCELLANEOUS
996-001	1.50	Cab elevating cylinder, replacing

Op.no.	time (h)	Notes
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1 STANDARD PARTS, SERVICE

17 SERVICE

172-002	3.00	Warranty inspection 100 hours
172-004	7.50	Warranty inspection 1000 hours
173-002	0.70	Maintenance service, daily
173-004	1.00	Maintenance service, every 50 hours
173-006	1.50	Maintenance service, every 100 hours
173-007	2.00	Maintenance service, every 250 hours
173-010	5.50	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	10.00	Maintenance service, every 2000 hours
173-018	10.00	Maintenance service, every 4000 hours
173-022	11.00	Maintenance service, every 6000 hours
173-030	0.30	Maintenance service, according to display message
173-079	0.90	Swing motor gearbox, changing oil
173-101	0.40	Track motor gearbox, changing oil
173-401	0.60	Engine oil and filter, changing
173-412	0.20	Hydraulic oil tank breather filter, replacing
173-451	1.25	Hydraulic oil, changing
173-649	0.20	Hydraulic oil return filter, replacing

2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU

21 ENGINE

210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
214-012	3.00	Valves, adjusting

22 LUBRICATING SYSTEM

223-006	1.25	Oil cooler, replacing
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23 FUEL SYSTEM

230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-002	0.70	Feed pump, replacing

Op.no.	time (h)	Notes
233-004	0.80	Feed pump, checking feed pressure
233-010	0.80	Fuel pump, inspection
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
233-016	0.70	Fuel filter housing, replacing
233-017	0.70	Water separator housing, replacing
233-020	0.10	Fuel filter, checking
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-004	0.70	Injector, replacing one
237-033	0.80	Fuel control valve (FCV), replacing
237-037	0.70	Fuel rail pressure, checking
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.50	Silencer, replacing
252-021	1.25	Exhaust pipe, flexible tube, replacing
255-002	0.80	Turbocharger, inspection
255-071	1.25	Turbocharger, replacing
256-006	0.40	Preheating coil, replacing
258-002	4.50	Intercooler, replacing
258-022	0.30	Charge air cooler connection (hose, tube), replacing
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.60	Coolant, changing
261-008	4.50	Radiator, replacing
261-012	0.50	Radiator hose upper, replacing
261-014	0.90	Radiator hoses lower, replacing
261-018	0.70	Expansion tank, replacing
263-012	0.90	Fan belt and/or alternator belt, replacing
263-022	0.90	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	0.90	Batteries, replacing

Op.no.	time (h)	Notes
311-003	0.80	Main switch, replacing
311-006	0.60	Earth lead to battery, replacing
311-008	2.50	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.90	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	0.70	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
334-002	0.70	Starter switch, testing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-056	0.50	Pre-heating relay, replacing
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	0.90	V-ECU, MID 187, changing pre-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
367-075	0.90	Engine speed control switch, replacing
37		CABLE; FUSE; RELAY
371-090	3.00	Engine wire harness, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-088	0.50	Engine rotation speed sensor (camshaft), replacing
39		MISCELLANEOUS
390-903	3.00	CareTrack standard cab, installing new
390-904	3.00	CareTrack optional cab, installing new
393-001	0.50	Voltage converter, replacing

Op.no.	time (h)		Notes
393-021	0.60	Radio, replacing	111025 - 140000 140018 - 340000 120533 - 310000
393-021	0.60	Radio, replacing	110001 - 111024 140001 - 140017 120001 - 120532
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	

4**POWER TRANSMISSION****43****GEARBOX,**

431-021	5.50	Swing gearbox, replacing	
431-026	0.50	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	4.00	Pump gearbox coupling assembly, replacing	
431-053	6.50	Swing unit, replacing	
431-115	1.75	Track gearbox (removed), replacing floating seal	
431-117	1.25	Track gearbox, replacing cover	
431-127	6.00	Track unit, replacing	

44**HYDROSTATIC DRIVE**

441-021	2.50	Swing motor, replacing	
441-022	0.80	Swing motor relief valve, replacing	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	0.30	Swing motor removed, replacing seal	
441-111	6.50	Track motor, replacing	
441-112	0.70	Track motor relief valve, replacing	
442-045	2.50	Pump coupling, removing	
442-046	2.00	Pump coupling, installing	
443-037	5.50	Center passage, replacing	
443-038	7.00	Center passage, replacing seal kit	
443-039	1.00	Center passage hose (valve – center passage), replacing	
443-040	1.50	Center passage hose (center passage – motor), replacing	

49**MISCELLANEOUS**

492-031	3.00	Swing ring gear outer seal, replacing	111927 - 210000
492-031	2.50	Swing ring gear outer seal, replacing	110001 - 111926
492-032	9.00	Swing ring gear inner seal, replacing	111927 - 210000
492-091	0.50	Ring gear grease pipe, replacing	

Op.no.	time (h)	Notes	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	
716-001	0.80	Counterweight, removing	110001 - 111357
716-001	0.80	Counterweight, removing	111358 - 310000
716-002	0.80	Counterweight, fitting	111358 - 310000
716-002	0.80	Counterweight, fitting	110001 - 111357
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-032	0.40	Track shoe, replacing one	
775-034	1.25	Track chain assembly, removing	
775-035	1.75	Track chain assembly, installing	
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	
775-066	3.00	Bottom roller, replacing seal	
775-071	0.90	Track guard, replacing one	110001 - 111894
775-071	0.90	Track guard, replacing one	111895 - 210000
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.75	Cab, removing	
810-002	2.50	Cab, installing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	0.90	Engine hood, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.30	Rear-view mirror, changing	
843-002	1.50	Windscreen, replacing	
843-012	4.00	Rear window, replacing	
843-013	4.50	Side window, replacing	
843-048	0.70	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	
852-091	2.50	Seat support, replacing	

Op.no.	time (h)	Notes
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
873-019	0.90	ECC control unit, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-015	0.50	Oil level gauge, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	1.00	Rupture valve, replacing (boom cylinder)
912-073	1.00	Rupture valve, replacing (dipper arm cylinder)
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-029	0.40	Pump regulator, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-060	0.80	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-005	0.80	Quickfit, removal

Op.no.	time (h)	Notes
924-006	1.00	Quickfit, installation
925-011	1.25	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.90	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	4.50	Boom, removal
974-014	5.50	Boom, installation
974-021	3.00	Boom cylinder, replacing
974-025	4.50	Boom cylinder, repacking in machine
974-031	2.00	Boom cylinder, removal
974-032	1.00	Boom cylinder, installation
975-006	0.70	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-011	3.50	Dipper arm, removal
975-012	3.50	Dipper arm, installation
975-014	1.50	Dipper arm cylinder, removal
975-015	1.25	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-028	1.50	Connecting rod yoke, replacing
975-032	0.70	Connecting rod yoke, removal
975-035	1.00	Connecting rod yoke, installation
975-039	9.00	Dipper arm, replacing
975-043	4.50	Dipper arm cylinder, repacking in machine
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-063	5.00	Bucket cylinder, repacking in machine
975-065	1.50	Bucket cylinder, installation
99		MISCELLANEOUS
996-001	1.50	Cab elevating cylinder, replacing

Op.no.	time (h)	Notes
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1 STANDARD PARTS, SERVICE

17 SERVICE

172-002	3.00	Warranty inspection 100 hours
172-004	7.50	Warranty inspection 1000 hours
173-002	0.70	Maintenance service, daily
173-004	1.00	Maintenance service, every 50 hours
173-006	1.50	Maintenance service, every 100 hours
173-007	2.00	Maintenance service, every 250 hours
173-010	5.50	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	10.00	Maintenance service, every 2000 hours
173-018	10.00	Maintenance service, every 4000 hours
173-022	11.00	Maintenance service, every 6000 hours
173-030	0.30	Maintenance service, according to display message
173-079	0.90	Swing motor gearbox, changing oil
173-101	0.40	Track motor gearbox, changing oil
173-401	0.60	Engine oil and filter, changing
173-412	0.20	Hydraulic oil tank breather filter, replacing
173-451	1.25	Hydraulic oil, changing
173-649	0.20	Hydraulic oil return filter, replacing

2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU

21 ENGINE

210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
214-012	3.00	Valves, adjusting

22 LUBRICATING SYSTEM

223-006	1.25	Oil cooler, replacing
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23 FUEL SYSTEM

230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-002	0.70	Feed pump, replacing

Op.no.	time (h)	Notes
233-004	0.80	Feed pump, checking feed pressure
233-010	0.80	Fuel pump, inspection
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
233-016	0.70	Fuel filter housing, replacing
233-017	0.70	Water separator housing, replacing
233-020	0.10	Fuel filter, checking
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-004	0.70	Injector, replacing one
237-033	0.80	Fuel control valve (FCV), replacing
237-037	0.70	Fuel rail pressure, checking
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.50	Silencer, replacing
252-021	1.25	Exhaust pipe, flexible tube, replacing
255-002	0.80	Turbocharger, inspection
255-071	1.25	Turbocharger, replacing
256-006	0.40	Preheating coil, replacing
258-002	4.50	Intercooler, replacing
258-022	0.30	Charge air cooler connection (hose, tube), replacing
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.60	Coolant, changing
261-008	4.50	Radiator, replacing
261-012	0.50	Radiator hose upper, replacing
261-014	0.90	Radiator hoses lower, replacing
261-018	0.70	Expansion tank, replacing
263-012	0.90	Fan belt and/or alternator belt, replacing
263-022	0.90	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	0.90	Batteries, replacing

Op.no.	time (h)	Notes
311-003	0.80	Main switch, replacing
311-006	0.60	Earth lead to battery, replacing
311-008	2.50	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.90	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	0.70	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
334-002	0.70	Starter switch, testing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-056	0.50	Pre-heating relay, replacing
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	0.90	V-ECU, MID 187, changing pre-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
367-075	0.90	Engine speed control switch, replacing
37		CABLE; FUSE; RELAY
371-090	3.00	Engine wire harness, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-088	0.50	Engine rotation speed sensor (camshaft), replacing
39		MISCELLANEOUS
390-903	3.00	CareTrack standard cab, installing new
390-904	3.00	CareTrack optional cab, installing new
393-001	0.50	Voltage converter, replacing

Op.no.	time (h)		Notes
393-021	0.60	Radio, replacing	111025 - 140000 140018 - 340000 120533 - 310000
393-021	0.60	Radio, replacing	110001 - 111024 140001 - 140017 120001 - 120532
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	

4 POWER TRANSMISSION

43 GEARBOX,

431-021	5.50	Swing gearbox, replacing	
431-026	0.50	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	4.00	Pump gearbox coupling assembly, replacing	
431-053	6.50	Swing unit, replacing	
431-115	1.75	Track gearbox (removed), replacing floating seal	
431-117	1.25	Track gearbox, replacing cover	
431-127	6.00	Track unit, replacing	

44 HYDROSTATIC DRIVE

441-021	2.50	Swing motor, replacing	
441-022	0.80	Swing motor relief valve, replacing	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	0.30	Swing motor removed, replacing seal	
441-111	6.50	Track motor, replacing	
441-112	0.70	Track motor relief valve, replacing	
442-045	2.50	Pump coupling, removing	
442-046	2.00	Pump coupling, installing	
443-037	5.50	Center passage, replacing	
443-038	7.00	Center passage, replacing seal kit	
443-039	1.00	Center passage hose (valve – center passage), replacing	
443-040	1.50	Center passage hose (center passage – motor), replacing	

49 MISCELLANEOUS

492-031	3.00	Swing ring gear outer seal, replacing	111927 - 210000
492-031	2.50	Swing ring gear outer seal, replacing	110001 - 111926
492-032	9.00	Swing ring gear inner seal, replacing	111927 - 210000
492-091	0.50	Ring gear grease pipe, replacing	

Op.no.	time (h)		Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	
716-001	0.80	Counterweight, removing	110001 - 111357
716-001	0.80	Counterweight, removing	111358 - 310000
716-002	0.80	Counterweight, fitting	111358 - 310000
716-002	0.80	Counterweight, fitting	110001 - 111357
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-032	0.40	Track shoe, replacing one	
775-034	1.25	Track chain assembly, removing	
775-035	1.75	Track chain assembly, installing	
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	
775-066	3.00	Bottom roller, replacing seal	
775-071	0.90	Track guard, replacing one	110001 - 111894
775-071	0.90	Track guard, replacing one	111895 - 210000
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.75	Cab, removing	
810-002	2.50	Cab, installing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	0.90	Engine hood, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.30	Rear-view mirror, changing	
843-002	1.50	Windscreen, replacing	
843-012	4.00	Rear window, replacing	
843-013	4.50	Side window, replacing	
843-048	0.70	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	
852-091	2.50	Seat support, replacing	

Op.no.	time (h)	Notes
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
873-019	0.90	ECC control unit, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-015	0.50	Oil level gauge, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	1.00	Rupture valve, replacing (boom cylinder)
912-073	1.00	Rupture valve, replacing (dipper arm cylinder)
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-029	0.40	Pump regulator, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-060	0.80	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-005	0.80	Quickfit, removal

Op.no.	time (h)	Notes
924-006	1.00	Quickfit, installation
925-011	1.25	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.90	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	4.50	Boom, removal
974-014	5.50	Boom, installation
974-021	3.00	Boom cylinder, replacing
974-025	4.50	Boom cylinder, repacking in machine
974-031	2.00	Boom cylinder, removal
974-032	1.00	Boom cylinder, installation
975-006	0.70	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-011	3.50	Dipper arm, removal
975-012	3.50	Dipper arm, installation
975-014	1.50	Dipper arm cylinder, removal
975-015	1.25	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-028	1.50	Connecting rod yoke, replacing
975-032	0.70	Connecting rod yoke, removal
975-035	1.00	Connecting rod yoke, installation
975-039	9.00	Dipper arm, replacing
975-043	4.50	Dipper arm cylinder, repacking in machine
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-063	5.00	Bucket cylinder, repacking in machine
975-065	1.50	Bucket cylinder, installation
99		MISCELLANEOUS
996-001	1.50	Cab elevating cylinder, replacing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
170-005	0.25	Start of VCADS Pro computer and reading machine data
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	3.00	Delivery Inspection, according to Inspection Programme
172-002	3.00	Warranty inspection 100 hours
172-004	7.50	Warranty inspection 1000 hours
173-001	0.30	Maintenance service, as required
173-002	0.70	Maintenance service, daily
173-004	1.00	Maintenance service, every 50 hours
173-006	1.50	Maintenance service, every 100 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	5.50	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	9.50	Maintenance service, every 2000 hours
173-018	9.50	Maintenance service, every 4000 hours
173-022	10.00	Maintenance service, every 6000 hours
173-030	0.30	Maintenance service, according to display message
173-079	0.90	Swing motor gearbox, changing oil
173-101	0.40	Track motor gearbox, changing oil
173-401	0.60	Engine oil and filter, changing
173-412	0.20	Hydraulic oil tank breather filter, replacing
173-451	1.25	Hydraulic oil, changing
173-649	0.20	Hydraulic oil return filter, replacing

2 ENGINE WITH MOUNTING AND EQUIPMENT

20		GENERAL
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
210-070	7.00	Engine, removing
210-072	7.00	Engine, installing
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
214-012	2.50	Valves, adjusting
216-014	7.50	Crankshaft, replacing front oil seal

Op.no.	time (h)	Notes
217-005	1.50	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.50	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-002	0.70	Feed pump, replacing
233-004	0.80	Feed pump, checking feed pressure
233-010	0.80	Fuel pump, inspection
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
233-016	0.70	Fuel filter housing, replacing
233-017	0.70	Water separator housing, replacing
233-020	0.10	Fuel filter, checking
234-010	4.00	Fuel tank, replacing
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-002	3.00	Injectors, replacing all
237-037	0.70	Fuel rail pressure, checking
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.50	Silencer, replacing
252-021	1.25	Exhaust pipe, flexible tube, replacing
255-002	0.80	Turbocharger, inspection
255-071	1.25	Turbocharger, replacing
256-001	0.25	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
258-002	4.50	Intercooler, replacing
258-022	0.30	Charge air cooler connection (hose, tube), replacing
258-030	1.50	Charge air system, inspection
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.60	Coolant, changing
261-008	4.50	Radiator, replacing
261-018	0.70	Expansion tank, replacing
262-002	1.00	Coolant pump, replacing
262-098	1.00	Thermostat, replacing
263-012	0.90	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension

Op.no.	time (h)	Notes
263-022	0.90	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-003	0.80	Main switch, replacing
311-006	0.60	Earth lead to battery, replacing
311-008	2.50	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.90	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	0.70	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
334-002	0.70	Starter switch, testing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-056	0.50	Pre-heating relay, replacing
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
367-075	0.90	Engine speed control switch, replacing

Op.no.	time (h)	Notes
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	0.50	Engine temperature sensor, replacing
386-007	0.50	Engine oil pressure sensor, replacing
386-011	0.50	Fuel level sender, replacing
386-038	0.60	Engine rotation speed sensor, replacing
386-043	0.50	Travel speed sensor or alarm sensor, replacing
386-088	0.50	Engine rotation speed sensor (camshaft), replacing
39		MISCELLANEOUS
390-903	3.00	CareTrack standard cab, installing new
390-904	3.00	CareTrack optional cab, installing new
393-001	0.50	Voltage converter, replacing
393-021	0.60	Radio, replacing
393-021	0.60	Radio, replacing
395-021	0.70	Antenna, replacing
395-031	0.40	Speaker, replacing
4		POWER TRANSMISSION
43		GEARBOX,
431-021	5.50	Swing gearbox, replacing
431-026	0.50	Swing gearbox removed, replacing seal
431-027	2.50	Swing gearbox removed, replacing shaft
431-031	5.50	Pump gearbox coupling assembly, replacing
431-036	4.50	Pump gearbox flange, replacing
431-053	6.50	Swing unit, replacing
431-115	1.75	Track gearbox (removed), replacing floating seal
431-117	1.25	Track gearbox, replacing cover
431-127	6.00	Track unit, replacing
44		HYDROSTATIC DRIVE
441-017	1.00	Travel motor pressure, checking and adjusting
441-021	2.50	Swing motor, replacing
441-022	0.80	Swing motor relief valve, replacing
441-024	1.50	Swing motor, replacing plate (brake)
441-025	1.50	Swing motor, replacing brake piston seal
441-026	0.30	Swing motor removed, replacing seal
441-032	0.75	Swing motor pressure, checking and adjusting
441-112	0.70	Track motor relief valve, replacing
441-115	2.00	Track motor removed, replacing seal
443-037	5.50	Center passage, replacing
443-038	7.00	Center passage, replacing seal kit

Op.no.	time (h)	Notes
443-039	1.00	Center passage hose (valve – center passage), replacing
443-040	1.50	Center passage hose (center passage – motor), replacing
49		MISCELLANEOUS
492-031	2.50	Swing ring gear outer seal, replacing
492-091	0.50	Ring gear grease pipe, replacing
492-095	0.70	Swing ring gear cover, removal
492-096	0.70	Swing ring gear cover, installation
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
710-001	3.50	Superstructure, removing
710-002	4.50	Superstructure, installing
716-001	0.80	Counterweight, removing
716-002	0.80	Counterweight, fitting
716-003	2.00	Counterweight, replacing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	3.00	Front idler, replacing one
775-021	3.50	Sprocket, replacing one
775-032	0.40	Track shoe, replacing one
775-033	7.50	Track shoe, replacing each side
775-034	1.25	Track chain assembly, removing
775-035	1.75	Track chain assembly, installing
775-036	9.50	Track links, replacing
775-051	1.00	Top roller, replacing one
775-061	1.50	Bottom roller, replacing one
775-066	3.00	Bottom roller, replacing seal
775-071	0.90	Track guard, replacing one
775-081	3.00	Track recoil spring (tensioner) assembly, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing

Op.no.	time (h)	Notes
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.90	Engine hood, replacing
827-091	1.75	Tool box assembly, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	0.75	Door, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.30	Rear-view mirror, changing
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
873-019	0.90	ECC control unit, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	1.75	Pump suction hose and pipe, replacing
911-011	4.50	Oil cooler, replacing

Op.no.	time (h)	Notes
911-015	0.50	Oil level gauge, replacing
911-017	1.75	Suction cover, replacing
911-024	0.70	Pipe and hose (pump - valve), replacing
911-025	0.70	Pipe and hose (valve - cylinder), replacing
911-026	0.70	Pipe and hose (valve - swing motor), replacing
911-031	1.50	Oil cooler line pipe and hose, replacing
911-032	1.50	Oil cooler line pipe coupling, replacing
911-033	1.50	Oil cooler line bypass valve (check valve), replacing
911-034	4.50	Oil cooler fan motor, replacing
911-035	1.50	Oil cooler fan pump, replacing
911-038	3.50	Hydraulic oil tank, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	1.00	Rupture valve, replacing (boom cylinder)
912-073	1.00	Rupture valve, replacing (dipper arm cylinder)
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.00	Hydraulic pump, replacing
913-029	0.40	Pump regulator, replacing
914-036	1.00	Servo pump block seal, replacing
914-037	1.00	Servo pump shaft seal, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-055	0.75	Servo pressure, checking and adjusting
914-060	0.80	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.00	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.00	Quickfit pump (gear pump), replacing
924-005	0.80	Quickfit, removal
924-006	1.00	Quickfit, installation
924-021	2.00	Quickfit hydraulic cylinder bracket (body), replacing
925-011	1.25	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.90	Bucket assembly, installation

Op.no.	time (h)	Notes
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	4.50	Boom, removal
974-014	5.50	Boom, installation
974-017	2.00	Boom, replacing pin
974-021	3.00	Boom cylinder, replacing
974-022	2.00	Boom cylinder removed, repacking
974-025	4.50	Boom cylinder, repacking in machine
974-031	2.00	Boom cylinder, removal
974-032	1.00	Boom cylinder, installation
975-006	0.70	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-011	3.50	Dipper arm, removal
975-012	3.50	Dipper arm, installation
975-014	1.50	Dipper arm cylinder, removal
975-015	1.25	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-026	2.50	Dipper arm cylinder removed, repacking
975-028	1.50	Connecting rod yoke, replacing
975-032	0.70	Connecting rod yoke, removal
975-035	1.00	Connecting rod yoke, installation
975-039	9.00	Dipper arm, replacing
975-043	4.50	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-063	5.00	Bucket cylinder, repacking in machine
975-065	1.50	Bucket cylinder, installation
975-069	2.00	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes
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1 STANDARD PARTS, SERVICE

17 SERVICE

170-005	0.25	Start of VCADS Pro computer and reading machine data
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	3.00	Delivery Inspection, according to Inspection Programme
172-002	3.00	Warranty inspection 100 hours
172-004	7.50	Warranty inspection 1000 hours
173-002	1.00	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	4.50	Maintenance service, every 500 hours
173-012	6.50	Maintenance service, every 1000 hours
173-014	12.00	Maintenance service, every 2000 hours
173-018	12.00	Maintenance service, every 4000 hours
173-022	13.00	Maintenance service, every 6000 hours
173-079	0.90	Swing motor gearbox, changing oil
173-101	0.40	Track motor gearbox, changing oil
173-401	0.60	Engine oil and filter, changing
173-412	0.20	Hydraulic oil tank breather filter, replacing
173-451	1.25	Hydraulic oil, changing
173-649	0.20	Hydraulic oil return filter, replacing

2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU

21 ENGINE

210-070	7.00	Engine, removing
210-072	7.00	Engine, installing
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
211-002	8.00	Cylinder head, replacing gasket
214-012	3.00	Valves, adjusting
214-036	1.00	Valve covers, fitting new gasket
216-014	4.50	Crankshaft, replacing front oil seal
216-018	9.00	Crankshaft, replacing rear oil seal
217-005	1.50	Oil level sensor, changing

Op.no.	time (h)	Notes
22		LUBRICATING SYSTEM
221-022	0.40	Lubrication oil pressure, checking with pressure gauge
223-006	1.25	Oil cooler, replacing
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-002	0.60	Feed pump, replacing
233-004	0.80	Feed pump, checking feed pressure
233-010	0.80	Fuel pump, inspection
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
233-020	0.10	Fuel filter, checking
234-010	5.50	Fuel tank, replacing
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-004	0.70	Injector, replacing one
237-033	0.80	Fuel control valve (FCV), replacing
237-035	0.50	Fuel rail pressure sensor, replacing
237-036	0.30	Pressure relief valve (PRV), checking
237-037	0.70	Fuel rail pressure, checking
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.50	Silencer, replacing
252-021	1.50	Exhaust pipe, flexible tube, replacing
255-002	1.50	Turbocharger, inspection
255-071	2.50	Turbocharger, replacing
256-001	0.25	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.50	Preheating coil, replacing
258-002	5.00	Intercooler, replacing
258-022	0.50	Charge air cooler connection (hose, tube), replacing
258-030	1.50	Charge air system, inspection
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.50	Coolant, changing
261-008	5.00	Radiator, replacing
261-012	0.50	Radiator hose upper, replacing
261-014	1.00	Radiator hoses lower, replacing
261-018	0.70	Expansion tank, replacing
262-002	0.90	Coolant pump, replacing

Op.no.	time (h)	Notes
262-098	0.90	Thermostat, replacing
263-012	0.80	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	0.80	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-003	0.80	Main switch, replacing
311-006	0.60	Earth lead to battery, replacing
311-008	2.00	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.90	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	0.70	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
334-002	0.70	Starter switch, testing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-056	0.50	Pre-heating relay, replacing

Op.no.	time (h)		Notes
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	
367-075	0.90	Engine speed control switch, replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-006	0.50	Engine temperature sensor, replacing	
386-007	0.50	Engine oil pressure sensor, replacing	
386-011	0.50	Fuel level sender, replacing	
386-017	0.50	Hydraulic oil temperature sensor, replacing	
386-038	0.60	Engine rotation speed sensor, replacing	
386-043	0.50	Travel speed sensor or alarm sensor, replacing	
386-044	0.50	Auto idling sensor, replacing	
386-088	0.50	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-903	3.00	CareTrack standard cab, installing new	
390-904	3.00	CareTrack optional cab, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.60	Radio, replacing	110359 - 310000 120001 - 320000
393-021	0.60	Radio, replacing	110001 - 110358 120001 - 120001
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.50	Swing gearbox, replacing	115001 - 120000 145001 - 310000 125001 - 140000
431-026	1.50	Swing gearbox removed, replacing seal	
431-031	3.50	Pump gearbox coupling assembly, replacing	115001 - 120000 145001 - 310000 125001 - 140000
431-036	4.50	Pump gearbox flange, replacing	
431-115	1.75	Track gearbox (removed), replacing floating seal	
431-117	1.25	Track gearbox, replacing cover	115001 - 120000 145001 - 310000 125001 - 140000
431-127	6.00	Track unit, replacing	
44		HYDROSTATIC DRIVE	
441-017	1.00	Travel motor pressure, checking and adjusting	

Op.no.	time (h)		Notes
441-021	3.00	Swing motor, replacing	115001 - 120000 145001 - 310000 125001 - 140000
441-022	0.80	Swing motor relief valve, replacing	
441-022	0.80	Swing motor relief valve, replacing	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	2.00	Swing motor, replacing brake piston seal	115001 - 120000 145001 - 310000 125001 - 140000
441-026	0.30	Swing motor removed, replacing seal	
441-032	0.75	Swing motor pressure, checking and adjusting	
441-112	0.70	Track motor relief valve, replacing	115001 - 120000 145001 - 310000 125001 - 140000
441-115	2.00	Track motor removed, replacing seal	
443-037	5.50	Center passage, replacing	
443-038	7.00	Center passage, replacing seal kit	
443-039	1.00	Center passage hose (valve – center passage), replacing	115001 - 120000 145001 - 310000 125001 - 140000
443-040	1.50	Center passage hose (center passage – motor), replacing	115001 - 120000 145001 - 310000 125001 - 140000
49		MISCELLANEOUS	
492-031	3.00	Swing ring gear outer seal, replacing	111037 - 210000
492-031	2.50	Swing ring gear outer seal, replacing	110001 - 111036
492-032	9.00	Swing ring gear inner seal, replacing	111037 - 210000
492-091	0.50	Ring gear grease pipe, replacing	115001 - 120000 145001 - 310000 125001 - 140000
492-091	0.50	Ring gear grease pipe, replacing	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	
716-001	0.80	Counterweight, removing	110001 - 110761
716-001	0.80	Counterweight, removing	110762 - 210000
716-002	0.80	Counterweight, fitting	110762 - 210000
716-002	0.80	Counterweight, fitting	110001 - 110761
716-003	2.00	Counterweight, replacing	

Op.no.	time (h)	Notes
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	3.00	Front idler, replacing one
775-021	3.50	Sprocket, replacing one
775-032	0.40	Track shoe, replacing one
775-033	8.00	Track shoe, replacing each side
775-034	1.25	Track chain assembly, removing
775-035	1.75	Track chain assembly, installing
775-051	1.00	Top roller, replacing one
775-061	1.50	Bottom roller, replacing one
775-066	3.00	Bottom roller, replacing seal
775-071	0.90	Track guard, replacing one
775-081	3.00	Track recoil spring (tensioner) assembly, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.90	Engine hood, replacing
827-091	1.75	Tool box assembly, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	0.75	Door, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.30	Rear-view mirror, changing
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing

Op.no.	time (h)		Notes
873-019	0.90	ECC control unit, replacing	
874-006	1.75	Compressor, replacing incl draining and filling	
874-010	1.75	Condenser, replacing incl draining and filling	
874-011	1.75	Receiver, replacing incl draining and filling	
874-012	3.00	Evaporator, replacing incl draining and filling	
874-013	3.00	Expansion valve, replacing incl draining and filling	
874-094	0.60	Vent actuator, replacing	
874-095	0.60	Mode (foot) actuator, replacing	
874-096	0.60	Intake actuator, replacing	
88		INTERIOR EQUIPMENT	
881-003	1.00	Instrument panel, replacing (left)	
881-005	1.25	Instrument panel, replacing (right)	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-005	1.75	Pump suction hose and pipe, replacing	
911-011	2.00	Oil cooler, replacing	
911-015	0.50	Oil level gauge, replacing	110001 - 120000 140001 - 210000 120001 - 140000
911-017	1.75	Suction cover, replacing	
911-024	0.70	Pipe and hose (pump - valve), replacing	
911-025	0.70	Pipe and hose (valve - cylinder), replacing	
911-026	0.70	Pipe and hose (valve - swing motor), replacing	
911-031	2.00	Oil cooler line pipe and hose, replacing	
911-032	1.50	Oil cooler line pipe coupling, replacing	
911-033	0.90	Oil cooler line bypass valve (check valve), replacing	
911-034	2.00	Oil cooler fan motor, replacing	
911-035	1.50	Oil cooler fan pump, replacing	
911-038	4.00	Hydraulic oil tank, replacing	
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
911-051	0.20	Breather, replacing	
912-067	0.50	Main pressure relief valve, replacing	
912-071	1.00	Rupture valve, replacing (boom cylinder)	
912-073	1.00	Rupture valve, replacing (dipper arm cylinder)	
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	4.00	Hydraulic pump, replacing	

Op.no.	time (h)	Notes
913-029	0.30	Pump regulator, replacing
914-036	1.00	Servo pump block seal, replacing
914-037	1.00	Servo pump shaft seal, replacing
914-041	0.80	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-055	0.75	Servo pressure, checking and adjusting
914-060	0.70	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.00	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.00	Quickfit pump (gear pump), replacing
924-005	0.80	Quickfit, removal
924-006	1.00	Quickfit, installation
924-021	2.00	Quickfit hydraulic cylinder bracket (body), replacing
925-011	1.25	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.90	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	4.50	Boom, removal
974-014	5.50	Boom, installation
974-017	2.00	Boom, replacing pin
974-021	3.00	Boom cylinder, replacing
974-022	2.50	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	4.50	Boom cylinder, repacking in machine
974-031	2.00	Boom cylinder, removal
974-032	1.00	Boom cylinder, installation
974-047	0.50	Adapter, removal
974-048	0.60	Adapter, installation
975-006	0.70	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-011	3.50	Dipper arm, removal
975-012	3.50	Dipper arm, installation
975-014	1.75	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing

Op.no.	time (h)	Notes
975-025	3.00	Dipper arm cylinder, replacing
975-026	3.00	Dipper arm cylinder removed, repacking
975-028	1.50	Connecting rod yoke, replacing
975-032	0.70	Connecting rod yoke, removal
975-035	1.00	Connecting rod yoke, installation
975-039	9.00	Dipper arm, replacing
975-043	4.50	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.50	Bucket cylinder, removal
975-063	5.00	Bucket cylinder, repacking in machine
975-065	1.75	Bucket cylinder, installation
975-069	2.50	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing
99		MISCELLANEOUS
993-022	0.40	Automatic lubrication pump, removing
993-023	0.50	Automatic lubrication pump, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
172-002	3.00	Warranty inspection 100 hours
172-004	7.50	Warranty inspection 1000 hours
173-002	1.00	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	4.50	Maintenance service, every 500 hours
173-012	6.50	Maintenance service, every 1000 hours
173-014	12.00	Maintenance service, every 2000 hours
173-018	12.00	Maintenance service, every 4000 hours
173-022	13.00	Maintenance service, every 6000 hours
173-079	0.90	Swing motor gearbox, changing oil
173-101	0.40	Track motor gearbox, changing oil
173-401	0.60	Engine oil and filter, changing
173-412	0.20	Hydraulic oil tank breather filter, replacing
173-451	1.25	Hydraulic oil, changing
173-649	0.20	Hydraulic oil return filter, replacing
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
214-012	3.00	Valves, adjusting
217-005	1.50	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.40	Lubrication oil pressure, checking with pressure gauge
223-006	1.25	Oil cooler, replacing
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-002	0.60	Feed pump, replacing
233-004	0.80	Feed pump, checking feed pressure
233-010	0.80	Fuel pump, inspection
233-014	0.40	Fuel filters, replacing

Op.no.	time (h)	Notes
233-015	0.50	Fuel filter extra, replacing
233-020	0.10	Fuel filter, checking
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-004	0.70	Injector, replacing one
237-033	0.80	Fuel control valve (FCV), replacing
237-035	0.50	Fuel rail pressure sensor, replacing
237-036	0.30	Pressure relief valve (PRV), checking
237-037	0.70	Fuel rail pressure, checking
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.50	Silencer, replacing
252-021	1.50	Exhaust pipe, flexible tube, replacing
255-002	1.50	Turbocharger, inspection
255-071	2.50	Turbocharger, replacing
256-006	0.50	Preheating coil, replacing
258-002	5.00	Intercooler, replacing
258-022	0.50	Charge air cooler connection (hose, tube), replacing
258-030	1.50	Charge air system, inspection
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.50	Coolant, changing
261-008	5.00	Radiator, replacing
261-012	0.50	Radiator hose upper, replacing
261-014	1.00	Radiator hoses lower, replacing
261-018	0.70	Expansion tank, replacing
262-002	0.90	Coolant pump, replacing
262-098	0.90	Thermostat, replacing
263-012	0.80	Fan belt and/or alternator belt, replacing
263-022	0.80	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	0.90	Batteries, replacing

Op.no.	time (h)	Notes	
311-003	0.80	Main switch, replacing	
311-006	0.60	Earth lead to battery, replacing	
311-008	2.00	Starter motor lead to battery, replacing	
32		ALTERNATOR; CHARGE REGULATOR	
321-002	0.90	Alternator, replacing incl function check	
321-075	0.50	Alternator, test	
33		STARTING SYSTEM	
331-018	0.70	Starter motor, replacing	
331-021	0.30	Starter motor, tests	
331-081	0.30	Starter relay, replacing	
334-002	0.70	Starter switch, testing	
334-002	0.70	Starter switch, testing	
334-011	0.50	Starter switch (engine start switch), replacing	
35		LIGHTING	
356-056	0.50	Work lighting, replacing one head lamp assy	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.30	Horn, replacing	
362-041	0.30	Rotating beacon, replacing	
362-051	0.50	Travel alarm, replacing	
363-003	0.40	Windscreen wiper, replacing switch	
363-004	0.50	Windscreen flusher pump, replacing	
363-091	0.50	Windscreen wiper, replacing controller	
364-003	0.60	Control lockout lever switch, replacing	
364-056	0.50	Pre-heating relay, replacing	
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	
367-075	0.90	Engine speed control switch, replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-038	0.60	Engine rotation speed sensor, replacing	
386-088	0.50	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-903	3.00	CareTrack standard cab, installing new	
390-904	3.00	CareTrack optional cab, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.60	Radio, replacing	110359 - 310000 120001 - 320000
393-021	0.60	Radio, replacing	110001 - 110358 120001 - 120001
395-021	0.70	Antenna, replacing	

Op.no.	time (h)		Notes
395-031	0.40	Speaker, replacing	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.50	Swing gearbox, replacing	115001 - 120000 145001 - 310000 125001 - 140000
431-031	3.50	Pump gearbox coupling assembly, replacing	115001 - 120000 145001 - 310000 125001 - 140000
431-117	1.25	Track gearbox, replacing cover	115001 - 120000 145001 - 310000 125001 - 140000
431-127	6.00	Track unit, replacing	
44		HYDROSTATIC DRIVE	
441-021	3.00	Swing motor, replacing	115001 - 120000 145001 - 310000 125001 - 140000
441-022	0.80	Swing motor relief valve, replacing	
441-022	0.80	Swing motor relief valve, replacing	
441-025	2.00	Swing motor, replacing brake piston seal	115001 - 120000 145001 - 310000 125001 - 140000
441-112	0.70	Track motor relief valve, replacing	115001 - 120000 145001 - 310000 125001 - 140000
443-037	5.50	Center passage, replacing	
443-038	7.00	Center passage, replacing seal kit	
443-039	1.00	Center passage hose (valve – center passage), replacing	115001 - 120000 145001 - 310000 125001 - 140000
443-040	1.50	Center passage hose (center passage – motor), replacing	115001 - 120000 145001 - 310000 125001 - 140000
49		MISCELLANEOUS	
492-031	3.00	Swing ring gear outer seal, replacing	111037 - 210000
492-031	2.50	Swing ring gear outer seal, replacing	110001 - 111306
492-032	9.00	Swing ring gear inner seal, replacing	111037 - 210000
492-091	0.50	Ring gear grease pipe, replacing	115001 - 120000 145001 - 310000 125001 - 140000
492-091	0.50	Ring gear grease pipe, replacing	

Op.no.	time (h)	Notes	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	
716-001	0.80	Counterweight, removing	110001 - 110761
716-001	0.80	Counterweight, removing	110762 - 210000
716-002	0.80	Counterweight, fitting	110762 - 210000
716-002	0.80	Counterweight, fitting	110001 - 110761
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-032	0.40	Track shoe, replacing one	
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	
775-066	3.00	Bottom roller, replacing seal	
775-071	0.90	Track guard, replacing one	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.75	Cab, removing	
810-002	2.50	Cab, installing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
827-091	1.75	Tool box assembly, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.30	Rear-view mirror, changing	
843-002	1.50	Windscreen, replacing	
843-012	4.00	Rear window, replacing	
843-013	4.50	Side window, replacing	
843-048	0.70	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	
852-091	2.50	Seat support, replacing	
87		AIR CONDITIONING UNIT	
870-001	5.00	Cooler and Heater assembly, replacing	
872-001	0.50	Cab filter, replacing	
873-004	3.00	Heater core, replacing	
873-006	0.90	Fan motor, replacing	
873-011	0.70	Air mix door actuator, replacing	

Op.no.	time (h)	Notes	
873-019	0.90	ECC control unit, replacing	
874-012	3.00	Evaporator, replacing incl draining and filling	
874-013	3.00	Expansion valve, replacing incl draining and filling	
874-094	0.60	Vent actuator, replacing	
874-095	0.60	Mode (foot) actuator, replacing	
874-096	0.60	Intake actuator, replacing	
88		INTERIOR EQUIPMENT	
881-003	1.00	Instrument panel, replacing (left)	
881-005	1.25	Instrument panel, replacing (right)	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-011	2.00	Oil cooler, replacing	
911-015	0.50	Oil level gauge, replacing	110001 - 120000 140001 - 210000 120001 - 140000
911-024	0.70	Pipe and hose (pump - valve), replacing	
911-033	0.90	Oil cooler line bypass valve (check valve), replacing	
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
911-051	0.20	Breather, replacing	
912-067	0.50	Main pressure relief valve, replacing	
912-071	1.00	Rupture valve, replacing (boom cylinder)	
912-073	1.00	Rupture valve, replacing (dipper arm cylinder)	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	4.00	Hydraulic pump, replacing	
913-029	0.30	Pump regulator, replacing	
914-041	0.80	Proportional solenoid valve (power shift), replacing	
914-051	0.30	Accumulator, replacing	
914-060	0.70	Servo pump, replacing	
914-081	1.75	Remote control valve (lever), replacing	
914-084	1.75	Remote control valve (pedal), replacing	
914-091	1.00	Solenoid valve, replacing	
916-096	0.80	Hammer and shear pedal valve (RCV), replacing	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-005	0.80	Quickfit, removal	
924-006	1.00	Quickfit, installation	
925-011	1.25	Bucket assembly, replacing	
925-012	0.50	Bucket assembly, removal	

Op.no.	time (h)	Notes
925-013	0.90	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	4.50	Boom, removal
974-014	5.50	Boom, installation
974-021	3.00	Boom cylinder, replacing
974-031	2.00	Boom cylinder, removal
974-032	1.00	Boom cylinder, installation
974-047	0.50	Adapter, removal
974-048	0.60	Adapter, installation
975-006	0.70	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-011	3.50	Dipper arm, removal
975-012	3.50	Dipper arm, installation
975-014	1.75	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-028	1.50	Connecting rod yoke, replacing
975-032	0.70	Connecting rod yoke, removal
975-035	1.00	Connecting rod yoke, installation
975-039	9.00	Dipper arm, replacing
975-061	2.50	Bucket cylinder, replacing
975-062	1.50	Bucket cylinder, removal
975-065	1.75	Bucket cylinder, installation
99		MISCELLANEOUS
993-022	0.40	Automatic lubrication pump, removing
993-023	0.50	Automatic lubrication pump, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
172-002	3.00	Warranty inspection 100 hours
172-004	7.50	Warranty inspection 1000 hours
173-002	1.00	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	4.50	Maintenance service, every 500 hours
173-012	6.50	Maintenance service, every 1000 hours
173-014	12.00	Maintenance service, every 2000 hours
173-018	12.00	Maintenance service, every 4000 hours
173-022	13.00	Maintenance service, every 6000 hours
173-079	0.90	Swing motor gearbox, changing oil
173-101	0.40	Track motor gearbox, changing oil
173-401	0.60	Engine oil and filter, changing
173-412	0.20	Hydraulic oil tank breather filter, replacing
173-451	1.25	Hydraulic oil, changing
173-649	0.20	Hydraulic oil return filter, replacing
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
214-012	3.00	Valves, adjusting
217-005	1.50	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.40	Lubrication oil pressure, checking with pressure gauge
223-006	1.25	Oil cooler, replacing
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-002	0.60	Feed pump, replacing
233-004	0.80	Feed pump, checking feed pressure
233-010	0.80	Fuel pump, inspection
233-014	0.40	Fuel filters, replacing

Op.no.	time (h)	Notes
233-015	0.50	Fuel filter extra, replacing
233-020	0.10	Fuel filter, checking
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-004	0.70	Injector, replacing one
237-033	0.80	Fuel control valve (FCV), replacing
237-035	0.50	Fuel rail pressure sensor, replacing
237-036	0.30	Pressure relief valve (PRV), checking
237-037	0.70	Fuel rail pressure, checking
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.50	Silencer, replacing
252-021	1.50	Exhaust pipe, flexible tube, replacing
255-002	1.50	Turbocharger, inspection
255-071	2.50	Turbocharger, replacing
256-006	0.50	Preheating coil, replacing
258-002	5.00	Intercooler, replacing
258-022	0.50	Charge air cooler connection (hose, tube), replacing
258-030	1.50	Charge air system, inspection
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.50	Coolant, changing
261-008	5.00	Radiator, replacing
261-012	0.50	Radiator hose upper, replacing
261-014	1.00	Radiator hoses lower, replacing
261-018	0.70	Expansion tank, replacing
262-002	0.90	Coolant pump, replacing
262-098	0.90	Thermostat, replacing
263-012	0.80	Fan belt and/or alternator belt, replacing
263-022	0.80	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	0.90	Batteries, replacing

Op.no.	time (h)		Notes
311-003	0.80	Main switch, replacing	
311-006	0.60	Earth lead to battery, replacing	
311-008	2.00	Starter motor lead to battery, replacing	
32		ALTERNATOR; CHARGE REGULATOR	
321-002	0.90	Alternator, replacing incl function check	
321-075	0.50	Alternator, test	
33		STARTING SYSTEM	
331-018	0.70	Starter motor, replacing	
331-021	0.30	Starter motor, tests	
331-081	0.30	Starter relay, replacing	
334-002	0.70	Starter switch, testing	
334-002	0.70	Starter switch, testing	
334-011	0.50	Starter switch (engine start switch), replacing	
35		LIGHTING	
356-056	0.50	Work lighting, replacing one head lamp assy	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.30	Horn, replacing	
362-041	0.30	Rotating beacon, replacing	
362-051	0.50	Travel alarm, replacing	
363-003	0.40	Windscreen wiper, replacing switch	
363-004	0.50	Windscreen flusher pump, replacing	
363-091	0.50	Windscreen wiper, replacing controller	
364-003	0.60	Control lockout lever switch, replacing	
364-056	0.50	Pre-heating relay, replacing	
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	
367-075	0.90	Engine speed control switch, replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-038	0.60	Engine rotation speed sensor, replacing	
386-088	0.50	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-903	3.00	CareTrack standard cab, installing new	
390-904	3.00	CareTrack optional cab, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.60	Radio, replacing	110359 - 310000 120001 - 320000
393-021	0.60	Radio, replacing	110001 - 110358 120001 - 120001
395-021	0.70	Antenna, replacing	

Op.no.	time (h)		Notes
395-031	0.40	Speaker, replacing	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.50	Swing gearbox, replacing	115001 - 120000 145001 - 310000 125001 - 140000
431-031	3.50	Pump gearbox coupling assembly, replacing	115001 - 120000 145001 - 310000 125001 - 140000
431-117	1.25	Track gearbox, replacing cover	115001 - 120000 145001 - 310000 125001 - 140000
431-127	6.00	Track unit, replacing	
44		HYDROSTATIC DRIVE	
441-021	3.00	Swing motor, replacing	115001 - 120000 145001 - 310000 125001 - 140000
441-022	0.80	Swing motor relief valve, replacing	
441-022	0.80	Swing motor relief valve, replacing	
441-025	2.00	Swing motor, replacing brake piston seal	115001 - 120000 145001 - 310000 125001 - 140000
441-112	0.70	Track motor relief valve, replacing	115001 - 120000 145001 - 310000 125001 - 140000
443-037	5.50	Center passage, replacing	
443-038	7.00	Center passage, replacing seal kit	
443-039	1.00	Center passage hose (valve – center passage), replacing	115001 - 120000 145001 - 310000 125001 - 140000
443-040	1.50	Center passage hose (center passage – motor), replacing	115001 - 120000 145001 - 310000 125001 - 140000
49		MISCELLANEOUS	
492-031	3.00	Swing ring gear outer seal, replacing	111037 - 210000
492-031	2.50	Swing ring gear outer seal, replacing	110001 - 111306
492-032	9.00	Swing ring gear inner seal, replacing	111037 - 210000
492-091	0.50	Ring gear grease pipe, replacing	115001 - 120000 145001 - 310000 125001 - 140000
492-091	0.50	Ring gear grease pipe, replacing	

Op.no.	time (h)	Notes	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	
716-001	0.80	Counterweight, removing	110001 - 110761
716-001	0.80	Counterweight, removing	110762 - 210000
716-002	0.80	Counterweight, fitting	110762 - 210000
716-002	0.80	Counterweight, fitting	110001 - 110761
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-032	0.40	Track shoe, replacing one	
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	
775-066	3.00	Bottom roller, replacing seal	
775-071	0.90	Track guard, replacing one	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.75	Cab, removing	
810-002	2.50	Cab, installing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
827-091	1.75	Tool box assembly, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.30	Rear-view mirror, changing	
843-002	1.50	Windscreen, replacing	
843-012	4.00	Rear window, replacing	
843-013	4.50	Side window, replacing	
843-048	0.70	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	
852-091	2.50	Seat support, replacing	
87		AIR CONDITIONING UNIT	
870-001	5.00	Cooler and Heater assembly, replacing	
872-001	0.50	Cab filter, replacing	
873-004	3.00	Heater core, replacing	
873-006	0.90	Fan motor, replacing	
873-011	0.70	Air mix door actuator, replacing	

Op.no.	time (h)	Notes	
873-019	0.90	ECC control unit, replacing	
874-012	3.00	Evaporator, replacing incl draining and filling	
874-013	3.00	Expansion valve, replacing incl draining and filling	
874-094	0.60	Vent actuator, replacing	
874-095	0.60	Mode (foot) actuator, replacing	
874-096	0.60	Intake actuator, replacing	
88		INTERIOR EQUIPMENT	
881-003	1.00	Instrument panel, replacing (left)	
881-005	1.25	Instrument panel, replacing (right)	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-011	2.00	Oil cooler, replacing	
911-015	0.50	Oil level gauge, replacing	110001 - 120000 140001 - 210000 120001 - 140000
911-024	0.70	Pipe and hose (pump - valve), replacing	
911-033	0.90	Oil cooler line bypass valve (check valve), replacing	
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
911-051	0.20	Breather, replacing	
912-067	0.50	Main pressure relief valve, replacing	
912-071	1.00	Rupture valve, replacing (boom cylinder)	
912-073	1.00	Rupture valve, replacing (dipper arm cylinder)	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	4.00	Hydraulic pump, replacing	
913-029	0.30	Pump regulator, replacing	
914-041	0.80	Proportional solenoid valve (power shift), replacing	
914-051	0.30	Accumulator, replacing	
914-060	0.70	Servo pump, replacing	
914-081	1.75	Remote control valve (lever), replacing	
914-084	1.75	Remote control valve (pedal), replacing	
914-091	1.00	Solenoid valve, replacing	
916-096	0.80	Hammer and shear pedal valve (RCV), replacing	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-005	0.80	Quickfit, removal	
924-006	1.00	Quickfit, installation	
925-011	1.25	Bucket assembly, replacing	
925-012	0.50	Bucket assembly, removal	

Op.no.	time (h)	Notes
925-013	0.90	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	4.50	Boom, removal
974-014	5.50	Boom, installation
974-021	3.00	Boom cylinder, replacing
974-031	2.00	Boom cylinder, removal
974-032	1.00	Boom cylinder, installation
974-047	0.50	Adapter, removal
974-048	0.60	Adapter, installation
975-006	0.70	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-011	3.50	Dipper arm, removal
975-012	3.50	Dipper arm, installation
975-014	1.75	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-028	1.50	Connecting rod yoke, replacing
975-032	0.70	Connecting rod yoke, removal
975-035	1.00	Connecting rod yoke, installation
975-039	9.00	Dipper arm, replacing
975-061	2.50	Bucket cylinder, replacing
975-062	1.50	Bucket cylinder, removal
975-065	1.75	Bucket cylinder, installation
99		MISCELLANEOUS
993-022	0.40	Automatic lubrication pump, removing
993-023	0.50	Automatic lubrication pump, installing

Op.no.	time (h)	Notes
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Op.no.	time (h)	Notes
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1 STANDARD PARTS, SERVICE

17 SERVICE

170-005	0.25	Start of VCADS Pro computer and reading machine data
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	3.00	Delivery Inspection, according to Inspection Programme
172-002	3.00	Warranty inspection 100 hours
172-004	7.50	Warranty inspection 1000 hours
173-002	1.00	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	4.50	Maintenance service, every 500 hours
173-012	6.50	Maintenance service, every 1000 hours
173-014	12.00	Maintenance service, every 2000 hours
173-018	12.00	Maintenance service, every 4000 hours
173-022	13.00	Maintenance service, every 6000 hours
173-079	0.90	Swing motor gearbox, changing oil
173-101	0.40	Track motor gearbox, changing oil
173-401	0.60	Engine oil and filter, changing
173-412	0.20	Hydraulic oil tank breather filter, replacing
173-451	1.25	Hydraulic oil, changing
173-649	0.20	Hydraulic oil return filter, replacing

2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU

21 ENGINE

210-070	7.00	Engine, removing
210-072	7.00	Engine, installing
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
211-002	8.00	Cylinder head, replacing gasket
214-012	3.00	Valves, adjusting
214-036	1.00	Valve covers, fitting new gasket
216-014	4.50	Crankshaft, replacing front oil seal
216-018	9.00	Crankshaft, replacing rear oil seal
217-005	1.50	Oil level sensor, changing

Op.no.	time (h)	Notes
22		LUBRICATING SYSTEM
221-022	0.40	Lubrication oil pressure, checking with pressure gauge
223-006	1.25	Oil cooler, replacing
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-002	0.60	Feed pump, replacing
233-004	0.80	Feed pump, checking feed pressure
233-010	0.80	Fuel pump, inspection
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
233-020	0.10	Fuel filter, checking
234-010	5.50	Fuel tank, replacing
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-004	0.70	Injector, replacing one
237-033	0.80	Fuel control valve (FCV), replacing
237-035	0.50	Fuel rail pressure sensor, replacing
237-036	0.30	Pressure relief valve (PRV), checking
237-037	0.70	Fuel rail pressure, checking
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.50	Silencer, replacing
252-021	1.50	Exhaust pipe, flexible tube, replacing
255-002	1.50	Turbocharger, inspection
255-071	2.50	Turbocharger, replacing
256-001	0.25	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.50	Preheating coil, replacing
258-002	5.00	Intercooler, replacing
258-022	0.50	Charge air cooler connection (hose, tube), replacing
258-030	1.50	Charge air system, inspection
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.50	Coolant, changing
261-008	5.00	Radiator, replacing
261-012	0.50	Radiator hose upper, replacing
261-014	1.00	Radiator hoses lower, replacing
261-018	0.70	Expansion tank, replacing
262-002	0.90	Coolant pump, replacing

Op.no.	time (h)	Notes
262-098	0.90	Thermostat, replacing
263-012	0.80	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	0.80	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-003	0.80	Main switch, replacing
311-006	0.60	Earth lead to battery, replacing
311-008	2.00	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.90	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	0.70	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
334-002	0.70	Starter switch, testing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-056	0.50	Pre-heating relay, replacing

Op.no.	time (h)		Notes
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	
367-075	0.90	Engine speed control switch, replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-006	0.50	Engine temperature sensor, replacing	
386-007	0.50	Engine oil pressure sensor, replacing	
386-011	0.50	Fuel level sender, replacing	
386-038	0.60	Engine rotation speed sensor, replacing	
386-043	0.50	Travel speed sensor or alarm sensor, replacing	
386-044	0.50	Auto idling sensor, replacing	
386-088	0.50	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-903	3.00	CareTrack standard cab, installing new	
390-904	3.00	CareTrack optional cab, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.60	Radio, replacing	110339 - 310000
393-021	0.60	Radio, replacing	110001 - 110338
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.50	Swing gearbox, replacing	110001 - 115000
431-021	6.50	Swing gearbox, replacing	115001 - 310000
431-031	3.50	Pump gearbox coupling assembly, replacing	
431-036	4.50	Pump gearbox flange, replacing	
431-053	6.50	Swing unit, replacing	
431-115	2.50	Track gearbox (removed), replacing floating seal	
431-117	1.50	Track gearbox, replacing cover	111062 - 310000
431-127	6.00	Track unit, replacing	115001 - 310000
44		HYDROSTATIC DRIVE	
441-017	1.00	Travel motor pressure, checking and adjusting	
441-021	2.50	Swing motor, replacing	110001 - 115000
441-022	0.80	Swing motor relief valve, replacing	110001 - 115000
441-024	1.50	Swing motor, replacing plate (brake)	110001 - 115000
441-025	1.50	Swing motor, replacing brake piston seal	110001 - 115000
441-026	0.40	Swing motor removed, replacing seal	110001 - 115000
441-032	0.75	Swing motor pressure, checking and adjusting	
441-112	0.70	Track motor relief valve, replacing	110001 - 115000

Op.no.	time (h)		Notes
441-115	2.00	Track motor removed, replacing seal	
443-037	5.50	Center passage, replacing	
443-038	7.00	Center passage, replacing seal kit	
443-039	1.00	Center passage hose (valve – center passage), replacing	110001 - 115000
443-040	1.50	Center passage hose (center passage – motor), replacing	
49		MISCELLANEOUS	
492-031	3.00	Swing ring gear outer seal, replacing	111834 - 210000
492-031	2.50	Swing ring gear outer seal, replacing	110001 - 111832
492-032	9.00	Swing ring gear inner seal, replacing	111834 - 210000
492-091	0.50	Ring gear grease pipe, replacing	110001 - 115000

7 FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT

71		FRAME	
710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	
716-001	0.80	Counterweight, removing	110001 - 210000
716-001	0.80	Counterweight, removing	110001 - 210000
716-002	0.80	Counterweight, fitting	110001 - 210000
716-002	0.80	Counterweight, fitting	110001 - 110001
716-003	2.00	Counterweight, replacing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-032	0.40	Track shoe, replacing one	
775-033	8.00	Track shoe, replacing each side	
775-034	1.25	Track chain assembly, removing	
775-035	1.75	Track chain assembly, installing	
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	115001 - 210000
775-061	1.50	Bottom roller, replacing one	110001 - 115000
775-066	3.00	Bottom roller, replacing seal	
775-071	0.90	Track guard, replacing one	110001 - 115000
775-071	0.90	Track guard, replacing one	115001 - 310000
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.90	Engine hood, replacing
827-091	1.75	Tool box assembly, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	0.75	Door, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.30	Rear-view mirror, changing
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
873-019	0.90	ECC control unit, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)

Op.no.	time (h)		Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-005	1.75	Pump suction hose and pipe, replacing	
911-011	2.00	Oil cooler, replacing	
911-015	0.50	Oil level gauge, replacing	
911-015	0.50	Oil level gauge, replacing	115001 - 310000
911-017	2.00	Suction cover, replacing	
911-024	0.70	Pipe and hose (pump - valve), replacing	
911-025	0.70	Pipe and hose (valve - cylinder), replacing	
911-026	0.70	Pipe and hose (valve - swing motor), replacing	
911-031	2.00	Oil cooler line pipe and hose, replacing	
911-032	1.50	Oil cooler line pipe coupling, replacing	
911-033	0.90	Oil cooler line bypass valve (check valve), replacing	
911-034	2.00	Oil cooler fan motor, replacing	
911-035	1.50	Oil cooler fan pump, replacing	
911-038	4.00	Hydraulic oil tank, replacing	
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
911-051	0.20	Breather, replacing	
912-067	0.50	Main pressure relief valve, replacing	
912-071	1.00	Rupture valve, replacing (boom cylinder)	
912-073	1.00	Rupture valve, replacing (dipper arm cylinder)	
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	4.00	Hydraulic pump, replacing	
913-029	0.40	Pump regulator, replacing	115001 - 310000
913-029	0.30	Pump regulator, replacing	
914-036	1.00	Servo pump block seal, replacing	
914-037	1.00	Servo pump shaft seal, replacing	
914-041	0.80	Proportional solenoid valve (power shift), replacing	
914-051	0.30	Accumulator, replacing	
914-055	0.75	Servo pressure, checking and adjusting	
914-060	0.70	Servo pump, replacing	
914-081	1.75	Remote control valve (lever), replacing	
914-084	1.75	Remote control valve (pedal), replacing	
914-086	1.00	Remote control valve hose, replacing	
914-091	1.00	Solenoid valve, replacing	
916-096	0.80	Hammer and shear pedal valve (RCV), replacing	

Op.no.	time (h)	Notes
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.00	Quickfit pump (gear pump), replacing
924-021	2.00	Quickfit hydraulic cylinder bracket (body), replacing
925-011	1.25	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.90	Bucket assembly, installation
97		UNIT, DIGGING
974-010	13.00	Boom, replacing
974-013	5.00	Boom, removal
974-014	6.50	Boom, installation
974-017	2.00	Boom, replacing pin
974-021	3.00	Boom cylinder, replacing
974-022	2.50	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	4.50	Boom cylinder, repacking in machine
974-031	2.00	Boom cylinder, removal
974-032	1.00	Boom cylinder, installation
974-047	0.50	Adapter, removal
974-048	0.60	Adapter, installation
975-006	0.70	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-011	3.50	Dipper arm, removal
975-012	3.50	Dipper arm, installation
975-014	1.75	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-026	3.00	Dipper arm cylinder removed, repacking
975-028	1.50	Connecting rod yoke, replacing
975-032	0.70	Connecting rod yoke, removal
975-035	1.00	Connecting rod yoke, installation
975-039	9.00	Dipper arm, replacing
975-043	4.50	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.50	Bucket cylinder, removal
975-063	5.00	Bucket cylinder, repacking in machine
975-065	1.75	Bucket cylinder, installation
975-069	2.50	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes
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1 STANDARD PARTS, SERVICE

17 SERVICE

172-002	3.00	Warranty inspection 100 hours
172-004	7.50	Warranty inspection 1000 hours
173-002	1.00	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	4.50	Maintenance service, every 500 hours
173-012	6.50	Maintenance service, every 1000 hours
173-014	12.00	Maintenance service, every 2000 hours
173-018	12.00	Maintenance service, every 4000 hours
173-022	13.00	Maintenance service, every 6000 hours
173-079	0.90	Swing motor gearbox, changing oil
173-101	0.40	Track motor gearbox, changing oil
173-401	0.60	Engine oil and filter, changing
173-412	0.20	Hydraulic oil tank breather filter, replacing
173-451	1.25	Hydraulic oil, changing
173-649	0.20	Hydraulic oil return filter, replacing

2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU

21 ENGINE

210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
214-012	3.00	Valves, adjusting
217-005	1.50	Oil level sensor, changing

22 LUBRICATING SYSTEM

221-022	0.40	Lubrication oil pressure, checking with pressure gauge
223-006	1.25	Oil cooler, replacing

23 FUEL SYSTEM

230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-002	0.60	Feed pump, replacing
233-004	0.80	Feed pump, checking feed pressure
233-010	0.80	Fuel pump, inspection
233-014	0.40	Fuel filters, replacing

Op.no.	time (h)	Notes
233-015	0.50	Fuel filter extra, replacing
233-020	0.10	Fuel filter, checking
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-004	0.70	Injector, replacing one
237-033	0.80	Fuel control valve (FCV), replacing
237-035	0.50	Fuel rail pressure sensor, replacing
237-036	0.30	Pressure relief valve (PRV), checking
237-037	0.70	Fuel rail pressure, checking
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.50	Silencer, replacing
252-021	1.50	Exhaust pipe, flexible tube, replacing
255-002	1.50	Turbocharger, inspection
255-071	2.50	Turbocharger, replacing
256-006	0.50	Preheating coil, replacing
258-002	5.00	Intercooler, replacing
258-022	0.50	Charge air cooler connection (hose, tube), replacing
258-030	1.50	Charge air system, inspection
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.50	Coolant, changing
261-008	5.00	Radiator, replacing
261-012	0.50	Radiator hose upper, replacing
261-014	1.00	Radiator hoses lower, replacing
261-018	0.70	Expansion tank, replacing
262-002	0.90	Coolant pump, replacing
262-098	0.90	Thermostat, replacing
263-012	0.80	Fan belt and/or alternator belt, replacing
263-022	0.80	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	0.90	Batteries, replacing

Op.no.	time (h)		Notes
311-003	0.80	Main switch, replacing	
311-006	0.60	Earth lead to battery, replacing	
311-008	2.00	Starter motor lead to battery, replacing	
32		ALTERNATOR; CHARGE REGULATOR	
321-002	0.90	Alternator, replacing incl function check	
321-075	0.50	Alternator, test	
33		STARTING SYSTEM	
331-018	0.70	Starter motor, replacing	
331-021	0.30	Starter motor, tests	
331-081	0.30	Starter relay, replacing	
334-002	0.70	Starter switch, testing	
334-002	0.70	Starter switch, testing	
334-011	0.50	Starter switch (engine start switch), replacing	
35		LIGHTING	
356-056	0.50	Work lighting, replacing one head lamp assy	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.30	Horn, replacing	
362-041	0.30	Rotating beacon, replacing	
362-051	0.50	Travel alarm, replacing	
363-003	0.40	Windscreen wiper, replacing switch	
363-004	0.50	Windscreen flusher pump, replacing	
363-091	0.50	Windscreen wiper, replacing controller	
364-003	0.60	Control lockout lever switch, replacing	
364-056	0.50	Pre-heating relay, replacing	
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	
367-075	0.90	Engine speed control switch, replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-038	0.60	Engine rotation speed sensor, replacing	
386-088	0.50	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-903	3.00	CareTrack standard cab, installing new	
390-904	3.00	CareTrack optional cab, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.60	Radio, replacing	110339 - 310000
393-021	0.60	Radio, replacing	110001 - 110338
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	

Op.no.	time (h)		Notes
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.50	Swing gearbox, replacing	110001 - 115000
431-021	6.50	Swing gearbox, replacing	115001 - 310000
431-031	3.50	Pump gearbox coupling assembly, replacing	
431-053	6.50	Swing unit, replacing	
431-117	1.50	Track gearbox, replacing cover	111062 - 310000
431-127	6.00	Track unit, replacing	115001 - 310000
44		HYDROSTATIC DRIVE	
441-021	2.50	Swing motor, replacing	110001 - 115000
441-022	0.80	Swing motor relief valve, replacing	110001 - 115000
441-024	1.50	Swing motor, replacing plate (brake)	110001 - 115000
441-025	1.50	Swing motor, replacing brake piston seal	110001 - 115000
441-026	0.40	Swing motor removed, replacing seal	110001 - 115000
441-112	0.70	Track motor relief valve, replacing	110001 - 115000
443-037	5.50	Center passage, replacing	
443-038	7.00	Center passage, replacing seal kit	
443-039	1.00	Center passage hose (valve – center passage), replacing	110001 - 115000
443-040	1.50	Center passage hose (center passage – motor), replacing	
49		MISCELLANEOUS	
492-031	3.00	Swing ring gear outer seal, replacing	111834 - 210000
492-031	2.50	Swing ring gear outer seal, replacing	110001 - 111832
492-032	9.00	Swing ring gear inner seal, replacing	111834 - 210000
492-091	0.50	Ring gear grease pipe, replacing	110001 - 115000
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	
716-001	0.80	Counterweight, removing	110001 - 210000
716-001	0.80	Counterweight, removing	110001 - 210000
716-002	0.80	Counterweight, fitting	110001 - 210000
716-002	0.80	Counterweight, fitting	110001 - 110001
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-032	0.40	Track shoe, replacing one	

Op.no.	time (h)		Notes
775-034	1.25	Track chain assembly, removing	
775-035	1.75	Track chain assembly, installing	
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	115001 - 210000
775-061	1.50	Bottom roller, replacing one	110001 - 115000
775-066	3.00	Bottom roller, replacing seal	
775-071	0.90	Track guard, replacing one	110001 - 115000
775-071	0.90	Track guard, replacing one	115001 - 310000
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	

8 MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE

81 CAB, NAKED; CANOPY

810-001	1.75	Cab, removing
810-002	2.50	Cab, installing

82 ENGINE HOOD; MUDGUARD; FOOT STEP

827-091	1.75	Tool box assembly, replacing
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84 TRIM PART, OUTSIDE; GLASS; SEALING MOULDING

841-061	0.30	Rear-view mirror, changing
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing

85 CAB INTERIOR/UPHOLSTERY

852-008	1.25	Seat, replacing
852-091	2.50	Seat support, replacing

87 AIR CONDITIONING UNIT

870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
873-019	0.90	ECC control unit, replacing
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing

Op.no.	time (h)	Notes	
88		INTERIOR EQUIPMENT	
881-003	1.00	Instrument panel, replacing (left)	
881-005	1.25	Instrument panel, replacing (right)	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-011	2.00	Oil cooler, replacing	
911-015	0.50	Oil level gauge, replacing	
911-015	0.50	Oil level gauge, replacing	115001 - 310000
911-024	0.70	Pipe and hose (pump - valve), replacing	
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
911-051	0.20	Breather, replacing	
912-067	0.50	Main pressure relief valve, replacing	
912-071	1.00	Rupture valve, replacing (boom cylinder)	
912-073	1.00	Rupture valve, replacing (dipper arm cylinder)	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	4.00	Hydraulic pump, replacing	
913-029	0.40	Pump regulator, replacing	115001 - 310000
913-029	0.30	Pump regulator, replacing	
914-041	0.80	Proportional solenoid valve (power shift), replacing	
914-051	0.30	Accumulator, replacing	
914-060	0.70	Servo pump, replacing	
914-081	1.75	Remote control valve (lever), replacing	
914-084	1.75	Remote control valve (pedal), replacing	
914-091	1.00	Solenoid valve, replacing	
916-096	0.80	Hammer and shear pedal valve (RCV), replacing	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
925-011	1.25	Bucket assembly, replacing	
925-012	0.50	Bucket assembly, removal	
925-013	0.90	Bucket assembly, installation	
97		UNIT, DIGGING	
974-010	13.00	Boom, replacing	
974-013	5.00	Boom, removal	
974-014	6.50	Boom, installation	
974-021	3.00	Boom cylinder, replacing	
974-031	2.00	Boom cylinder, removal	
974-032	1.00	Boom cylinder, installation	

Op.no.	time (h)	Notes
974-047	0.50	Adapter, removal
974-048	0.60	Adapter, installation
975-006	0.70	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-011	3.50	Dipper arm, removal
975-012	3.50	Dipper arm, installation
975-014	1.75	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-028	1.50	Connecting rod yoke, replacing
975-032	0.70	Connecting rod yoke, removal
975-035	1.00	Connecting rod yoke, installation
975-039	9.00	Dipper arm, replacing
975-061	2.50	Bucket cylinder, replacing
975-062	1.50	Bucket cylinder, removal
975-065	1.75	Bucket cylinder, installation

Op.no.	time (h)	Notes
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1 STANDARD PARTS, SERVICE

17 SERVICE

172-002	3.00	Warranty inspection 100 hours
172-004	7.50	Warranty inspection 1000 hours
173-002	1.00	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	4.50	Maintenance service, every 500 hours
173-012	6.50	Maintenance service, every 1000 hours
173-014	12.00	Maintenance service, every 2000 hours
173-018	12.00	Maintenance service, every 4000 hours
173-022	13.00	Maintenance service, every 6000 hours
173-079	0.90	Swing motor gearbox, changing oil
173-101	0.40	Track motor gearbox, changing oil
173-401	0.60	Engine oil and filter, changing
173-412	0.20	Hydraulic oil tank breather filter, replacing
173-451	1.25	Hydraulic oil, changing
173-649	0.20	Hydraulic oil return filter, replacing

2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU

21 ENGINE

210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
214-012	3.00	Valves, adjusting
217-005	1.50	Oil level sensor, changing

22 LUBRICATING SYSTEM

221-022	0.40	Lubrication oil pressure, checking with pressure gauge
223-006	1.25	Oil cooler, replacing

23 FUEL SYSTEM

230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-002	0.60	Feed pump, replacing
233-004	0.80	Feed pump, checking feed pressure
233-010	0.80	Fuel pump, inspection
233-014	0.40	Fuel filters, replacing

Op.no.	time (h)	Notes
233-015	0.50	Fuel filter extra, replacing
233-020	0.10	Fuel filter, checking
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-004	0.70	Injector, replacing one
237-033	0.80	Fuel control valve (FCV), replacing
237-035	0.50	Fuel rail pressure sensor, replacing
237-036	0.30	Pressure relief valve (PRV), checking
237-037	0.70	Fuel rail pressure, checking
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.50	Silencer, replacing
252-021	1.50	Exhaust pipe, flexible tube, replacing
255-002	1.50	Turbocharger, inspection
255-071	2.50	Turbocharger, replacing
256-006	0.50	Preheating coil, replacing
258-002	5.00	Intercooler, replacing
258-022	0.50	Charge air cooler connection (hose, tube), replacing
258-030	1.50	Charge air system, inspection
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.50	Coolant, changing
261-008	5.00	Radiator, replacing
261-012	0.50	Radiator hose upper, replacing
261-014	1.00	Radiator hoses lower, replacing
261-018	0.70	Expansion tank, replacing
262-002	0.90	Coolant pump, replacing
262-098	0.90	Thermostat, replacing
263-012	0.80	Fan belt and/or alternator belt, replacing
263-022	0.80	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	0.90	Batteries, replacing

Op.no.	time (h)		Notes
311-003	0.80	Main switch, replacing	
311-006	0.60	Earth lead to battery, replacing	
311-008	2.00	Starter motor lead to battery, replacing	
32		ALTERNATOR; CHARGE REGULATOR	
321-002	0.90	Alternator, replacing incl function check	
321-075	0.50	Alternator, test	
33		STARTING SYSTEM	
331-018	0.70	Starter motor, replacing	
331-021	0.30	Starter motor, tests	
331-081	0.30	Starter relay, replacing	
334-002	0.70	Starter switch, testing	
334-002	0.70	Starter switch, testing	
334-011	0.50	Starter switch (engine start switch), replacing	
35		LIGHTING	
356-056	0.50	Work lighting, replacing one head lamp assy	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.30	Horn, replacing	
362-041	0.30	Rotating beacon, replacing	
362-051	0.50	Travel alarm, replacing	
363-003	0.40	Windscreen wiper, replacing switch	
363-004	0.50	Windscreen flusher pump, replacing	
363-091	0.50	Windscreen wiper, replacing controller	
364-003	0.60	Control lockout lever switch, replacing	
364-056	0.50	Pre-heating relay, replacing	
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	
367-075	0.90	Engine speed control switch, replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-038	0.60	Engine rotation speed sensor, replacing	
386-088	0.50	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-903	3.00	CareTrack standard cab, installing new	
390-904	3.00	CareTrack optional cab, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.60	Radio, replacing	110339 - 310000
393-021	0.60	Radio, replacing	110001 - 110338
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	

Op.no.	time (h)		Notes
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.50	Swing gearbox, replacing	110001 - 115000
431-021	6.50	Swing gearbox, replacing	115001 - 310000
431-031	3.50	Pump gearbox coupling assembly, replacing	
431-053	6.50	Swing unit, replacing	
431-117	1.50	Track gearbox, replacing cover	111062 - 310000
431-127	6.00	Track unit, replacing	115001 - 310000
44		HYDROSTATIC DRIVE	
441-021	2.50	Swing motor, replacing	110001 - 115000
441-022	0.80	Swing motor relief valve, replacing	110001 - 115000
441-024	1.50	Swing motor, replacing plate (brake)	110001 - 115000
441-025	1.50	Swing motor, replacing brake piston seal	110001 - 115000
441-026	0.40	Swing motor removed, replacing seal	110001 - 115000
441-112	0.70	Track motor relief valve, replacing	110001 - 115000
443-037	5.50	Center passage, replacing	
443-038	7.00	Center passage, replacing seal kit	
443-039	1.00	Center passage hose (valve – center passage), replacing	110001 - 115000
443-040	1.50	Center passage hose (center passage – motor), replacing	
49		MISCELLANEOUS	
492-031	3.00	Swing ring gear outer seal, replacing	111834 - 210000
492-031	2.50	Swing ring gear outer seal, replacing	110001 - 111832
492-032	9.00	Swing ring gear inner seal, replacing	111834 - 210000
492-091	0.50	Ring gear grease pipe, replacing	110001 - 115000
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	
716-001	0.80	Counterweight, removing	110001 - 210000
716-001	0.80	Counterweight, removing	110001 - 210000
716-002	0.80	Counterweight, fitting	110001 - 210000
716-002	0.80	Counterweight, fitting	110001 - 110001
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-032	0.40	Track shoe, replacing one	

Op.no.	time (h)		Notes
775-034	1.25	Track chain assembly, removing	
775-035	1.75	Track chain assembly, installing	
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	115001 - 210000
775-061	1.50	Bottom roller, replacing one	110001 - 115000
775-066	3.00	Bottom roller, replacing seal	
775-071	0.90	Track guard, replacing one	110001 - 115000
775-071	0.90	Track guard, replacing one	115001 - 310000
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	

8 MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE

81 CAB, NAKED; CANOPY

810-001	1.75	Cab, removing
810-002	2.50	Cab, installing

82 ENGINE HOOD; MUDGUARD; FOOT STEP

827-091	1.75	Tool box assembly, replacing
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84 TRIM PART, OUTSIDE; GLASS; SEALING MOULDING

841-061	0.30	Rear-view mirror, changing
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing

85 CAB INTERIOR/UPHOLSTERY

852-008	1.25	Seat, replacing
852-091	2.50	Seat support, replacing

87 AIR CONDITIONING UNIT

870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
873-019	0.90	ECC control unit, replacing
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing

Op.no.	time (h)	Notes	
88		INTERIOR EQUIPMENT	
881-003	1.00	Instrument panel, replacing (left)	
881-005	1.25	Instrument panel, replacing (right)	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-011	2.00	Oil cooler, replacing	
911-015	0.50	Oil level gauge, replacing	
911-015	0.50	Oil level gauge, replacing	115001 - 310000
911-024	0.70	Pipe and hose (pump - valve), replacing	
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
911-051	0.20	Breather, replacing	
912-067	0.50	Main pressure relief valve, replacing	
912-071	1.00	Rupture valve, replacing (boom cylinder)	
912-073	1.00	Rupture valve, replacing (dipper arm cylinder)	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	4.00	Hydraulic pump, replacing	
913-029	0.40	Pump regulator, replacing	115001 - 310000
913-029	0.30	Pump regulator, replacing	
914-041	0.80	Proportional solenoid valve (power shift), replacing	
914-051	0.30	Accumulator, replacing	
914-060	0.70	Servo pump, replacing	
914-081	1.75	Remote control valve (lever), replacing	
914-084	1.75	Remote control valve (pedal), replacing	
914-091	1.00	Solenoid valve, replacing	
916-096	0.80	Hammer and shear pedal valve (RCV), replacing	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
925-011	1.25	Bucket assembly, replacing	
925-012	0.50	Bucket assembly, removal	
925-013	0.90	Bucket assembly, installation	
97		UNIT, DIGGING	
974-010	13.00	Boom, replacing	
974-013	5.00	Boom, removal	
974-014	6.50	Boom, installation	
974-021	3.00	Boom cylinder, replacing	
974-031	2.00	Boom cylinder, removal	
974-032	1.00	Boom cylinder, installation	

Op.no.	time (h)	Notes
974-047	0.50	Adapter, removal
974-048	0.60	Adapter, installation
975-006	0.70	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-011	3.50	Dipper arm, removal
975-012	3.50	Dipper arm, installation
975-014	1.75	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-028	1.50	Connecting rod yoke, replacing
975-032	0.70	Connecting rod yoke, removal
975-035	1.00	Connecting rod yoke, installation
975-039	9.00	Dipper arm, replacing
975-061	2.50	Bucket cylinder, replacing
975-062	1.50	Bucket cylinder, removal
975-065	1.75	Bucket cylinder, installation

Op.no.	time (h)	Notes
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Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
171-001	1.00	Arrival Inspection, according to Inspection Programme	
171-002	3.00	Delivery Inspection, according to Inspection Programme	
172-002	3.00	Warranty inspection 100 hours	
172-004	11.00	Warranty inspection 1000 hours	
173-002	1.00	Maintenance service, daily	
173-004	1.50	Maintenance service, every 50 hours	
173-007	2.50	Maintenance service, every 250 hours	
173-010	4.50	Maintenance service, every 500 hours	
173-012	6.50	Maintenance service, every 1000 hours	
173-014	9.50	Maintenance service, every 2000 hours	
173-018	13.00	Maintenance service, every 4000 hours	
173-022	10.00	Maintenance service, every 6000 hours	
173-079	1.00	Swing motor gearbox, changing oil	110001 - 210000 140001 - 140051
173-101	0.50	Track motor gearbox, changing oil	110001 - 210000 140001 - 140051
173-401	0.60	Engine oil and filter, changing	
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.25	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-070	6.00	Engine, removing	
210-072	6.50	Engine, installing	
210-076	13.00	Engine, replacing	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
211-002	12.00	Cylinder head, replacing gasket	
214-012	3.50	Valves, adjusting	
214-036	1.00	Valve covers, fitting new gasket	
216-014	1.50	Crankshaft, replacing front oil seal	

Op.no.	time (h)	Notes
216-018	4.50	Crankshaft, replacing rear oil seal
217-005	14.00	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.60	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-002	1.75	Feed pump, replacing
233-004	0.20	Feed pump, checking feed pressure
233-010	2.00	Fuel pump, inspection
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
233-020	0.10	Fuel filter, checking
234-010	5.00	Fuel tank, replacing
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-012	6.00	Unit injector, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
252-021	1.25	Exhaust pipe, flexible tube, replacing
255-002	0.80	Turbocharger, inspection
255-071	4.00	Turbocharger, replacing
256-001	0.25	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.40	Preheating coil, replacing
258-002	7.00	Intercooler, replacing
258-022	0.40	Charge air cooler connection (hose, tube), replacing
258-030	1.75	Charge air system, inspection
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.70	Coolant, changing
261-008	7.50	Radiator, replacing
261-012	1.00	Radiator hose upper, replacing
261-014	1.25	Radiator hoses lower, replacing
261-018	0.80	Expansion tank, replacing
262-002	3.00	Coolant pump, replacing
262-098	1.50	Thermostat, replacing
263-012	0.60	Fan belt and/or alternator belt, replacing

Op.no.	time (h)	Notes
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	1.25	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-003	0.80	Main switch, replacing
311-006	0.60	Earth lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
334-002	0.70	Starter switch, testing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-056	0.50	Pre-heating relay, replacing
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
367-075	0.90	Engine speed control switch, replacing

Op.no.	time (h)	Notes	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-006	1.50	Engine temperature sensor, replacing	
386-007	0.60	Engine oil pressure sensor, replacing	
386-011	0.30	Fuel level sender, replacing	
386-017	0.50	Hydraulic oil temperature sensor, replacing	
386-038	1.75	Engine rotation speed sensor, replacing	
386-043	0.40	Travel speed sensor or alarm sensor, replacing	
386-044	0.40	Auto idling sensor, replacing	
386-088	1.75	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-903	3.00	CareTrack standard cab, installing new	
390-904	3.00	CareTrack optional cab, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.60	Radio, replacing	110001 - 310000
393-021	0.60	Radio, replacing	110001 - 140000 140001 - 310000
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.50	Swing gearbox, replacing	
431-026	1.75	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	4.00	Pump gearbox coupling assembly, replacing	
431-036	5.50	Pump gearbox flange, replacing	
431-053	6.50	Swing unit, replacing	
431-115	2.50	Track gearbox (removed), replacing floating seal	
431-117	1.50	Track gearbox, replacing cover	115001 - 140000 145001 - 210000
431-127	6.00	Track unit, replacing	
44		HYDROSTATIC DRIVE	
441-017	1.00	Travel motor pressure, checking and adjusting	
441-021	3.50	Swing motor, replacing	
441-022	0.70	Swing motor relief valve, replacing	
441-024	1.75	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	0.80	Swing motor removed, replacing seal	
441-032	0.75	Swing motor pressure, checking and adjusting	
441-112	0.70	Track motor relief valve, replacing	110001 - 115000

Op.no.	time (h)		Notes
			140001 - 145000
441-115	2.00	Track motor removed, replacing seal	
443-037	6.00	Center passage, replacing	110001 - 115000 140001 - 145000
443-038	7.50	Center passage, replacing seal kit	110001 - 115000 140001 - 145000
443-039	1.00	Center passage hose (valve – center passage), replacing	110001 - 115000 140001 - 145000
443-040	1.75	Center passage hose (center passage – motor), replacing	110001 - 115000 140001 - 145000
49		MISCELLANEOUS	
492-021	11.00	Swing ring gear, replacing	
492-031	2.50	Swing ring gear outer seal, replacing	
492-031	3.00	Swing ring gear outer seal, replacing	
492-032	9.50	Swing ring gear inner seal, replacing	
492-091	0.50	Ring gear grease pipe, replacing	110001 - 115000 140001 - 145000
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	3.50	Superstructure, removing	
710-001	3.50	Superstructure, removing	
710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	
710-002	4.50	Superstructure, installing	
716-001	2.00	Counterweight, removing	110062 - 210000
716-001	1.50	Counterweight, removing	110001 - 110061
716-002	1.75	Counterweight, fitting	110061 - 210000
716-002	2.50	Counterweight, fitting	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	5.00	Front idler, replacing one	
775-021	4.00	Sprocket, replacing one	
775-033	9.00	Track shoe, replacing each side	
775-034	1.75	Track chain assembly, removing	
775-035	2.00	Track chain assembly, installing	
775-036	11.00	Track links, replacing	
775-066	3.00	Bottom roller, replacing seal	
775-071	1.00	Track guard, replacing one	
775-081	4.50	Track recoil spring (tensioner) assembly, replacing	

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.90	Engine hood, replacing
827-091	1.75	Tool box assembly, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	0.75	Door, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.30	Rear-view mirror, changing
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
873-019	0.90	ECC control unit, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	1.75	Pump suction hose and pipe, replacing
911-011	3.00	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-017	2.00	Suction cover, replacing
911-024	1.00	Pipe and hose (pump - valve), replacing
911-025	1.00	Pipe and hose (valve - cylinder), replacing
911-026	0.70	Pipe and hose (valve - swing motor), replacing
911-031	1.50	Oil cooler line pipe and hose, replacing
911-032	1.25	Oil cooler line pipe coupling, replacing
911-033	1.25	Oil cooler line bypass valve (check valve), replacing
911-034	1.75	Oil cooler fan motor, replacing
911-035	1.00	Oil cooler fan pump, replacing
911-038	4.00	Hydraulic oil tank, replacing
911-040	0.60	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	8.50	Control valve, replacing
912-067	0.70	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-029	0.30	Pump regulator, replacing
914-036	1.25	Servo pump block seal, replacing
914-037	1.25	Servo pump shaft seal, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-055	0.75	Servo pressure, checking and adjusting
914-060	0.80	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.50	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.00	Quickfit pump (gear pump), replacing

Op.no.	time (h)	Notes
924-021	2.00	Quickfit hydraulic cylinder bracket (body), replacing
925-011	1.25	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.90	Bucket assembly, installation
97		UNIT, DIGGING
974-010	13.00	Boom, replacing
974-013	5.00	Boom, removal
974-014	6.50	Boom, installation
974-017	2.00	Boom, replacing pin
974-021	3.00	Boom cylinder, replacing
974-022	3.00	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	4.50	Boom cylinder, repacking in machine
974-031	2.00	Boom cylinder, removal
974-032	1.25	Boom cylinder, installation
974-047	0.50	Adapter, removal
974-048	0.60	Adapter, installation
975-006	0.70	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-011	4.00	Dipper arm, removal
975-012	4.50	Dipper arm, installation
975-014	1.75	Dipper arm cylinder, removal
975-015	2.00	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-026	3.50	Dipper arm cylinder removed, repacking
975-028	1.50	Connecting rod yoke, replacing
975-032	0.70	Connecting rod yoke, removal
975-035	1.00	Connecting rod yoke, installation
975-039	11.00	Dipper arm, replacing
975-043	5.00	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.50	Bucket cylinder, removal
975-063	5.00	Bucket cylinder, repacking in machine
975-065	1.75	Bucket cylinder, installation
975-069	3.00	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing
99		MISCELLANEOUS
993-022	0.40	Automatic lubrication pump, removing

Op.no.	time (h)	Notes
993-023	0.50	Automatic lubrication pump, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	2.00	Delivery Inspection, according to Inspection Programme
172-002	3.00	Warranty inspection 100 hours
173-007	3.00	Maintenance service, every 250 hours
173-010	3.00	Maintenance service, every 500 hours
173-014	4.00	Maintenance service, every 2000 hours
173-016	4.00	Maintenance service, every 3000 hours
173-059	0.50	Engine, changing oil and filter
173-075	0.75	Hydraulic oil tank, changing oil and filter incl.cleaning tank
173-081	0.50	Travel motor gearbox, changing oil
173-087	0.50	Coolant, changing
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	2.50	Engine, removing
210-072	3.50	Engine, installing
210-073	3.50	Engine and transmission, removing
214-012	0.50	Valves, adjusting
218-001	3.00	Rubber cushion, replacing
22		LUBRICATING SYSTEM
222-011	0.25	Oil filter, replacing
23		FUEL SYSTEM
233-002	0.50	Feed pump, replacing
233-014	0.25	Fuel filters, replacing
233-041	0.25	Fuel strainer, changing
234-010	4.00	Fuel tank, replacing
236-073	2.00	Injection pump, replacing incl setting injection timing
237-002	0.50	Injectors, replacing all
237-019	0.50	Fuel line, leak-off pipe, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.50	Exhaust pipe, flexible tube, replacing
26		COOLING SYSTEM
261-008	2.50	Radiator, replacing

Op.no.	time (h)	Notes
261-012	0.50	Radiator hose upper, replacing
261-014	0.75	Radiator hoses lower, replacing
261-020	0.25	Expansion tank, removing
262-098	0.50	Thermostat, replacing
263-012	0.75	Fan belt and/or alternator belt, replacing
263-013	0.25	Fan belt and/or alternator belt, checking and adjusting tension
27		ENGINE CONTROL
272-010	1.50	Accelerator control cable, changing
273-021	0.25	Stop magnet, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.75	Alternator, replacing incl function check
33		STARTING SYSTEM
334-001	1.00	Starter lock, replacing
35		LIGHTING
356-056	0.25	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.50	Horn, replacing
362-041	1.00	Rotating beacon, replacing
363-002	0.75	Windscreen wiper front, replacing motor
367-020	1.00	ECU, replacing
37		CABLE; FUSE; RELAY
371-041	0.75	Battery cable +, replacing
371-042	0.75	Cables, changing battery ground lead
371-044	0.50	Battery disconnect, removal
372-011	0.75	Fuse box, changing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-007	0.25	Engine oil pressure sensor, replacing
386-011	0.75	Fuel level sender, replacing
4		POWER TRANSMISSION
43		GEARBOX,
431-021	8.00	Swing gearbox, replacing
431-026	1.50	Swing gearbox removed, replacing seal

Op.no.	time (h)	Notes
44		HYDROSTATIC DRIVE
441-011	2.00	Travel motor, replacing one
441-012	0.50	Travel motor relief valve, replacing
441-024	1.50	Swing motor, replacing plate (brake)
441-026	4.00	Swing motor removed, replacing seal
443-013	5.00	Turning joint, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-003	1.00	Counterweight, replacing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	2.00	Front idler, replacing one
775-022	1.50	Sprocket, removal
775-052	2.00	Top roller, removal
775-062	0.50	Bottom roller, removing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	2.00	Cab, removing
818-015	2.50	Cab suspension, rubber element replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	1.00	Engine hood, replacing
821-006	0.25	Engine hood, removing (on site)
83		DOORS; HATCH; COVER PLATE, (all)
831-004	0.50	Door, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	2.00	Windscreen, replacing
844-052	2.00	Sliding window, changing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.25	Operator's seat, removing
87		AIR CONDITIONING UNIT
873-006	2.00	Fan motor, replacing
873-009	0.75	Heat control, replacing
873-097	1.50	Heater hose, replacing

Op.no.	time (h)	Notes
88		INTERIOR EQUIPMENT
881-003	1.50	Instrument panel, replacing (left)
881-005	1.50	Instrument panel, replacing (right)
884-001	0.50	Seat safety belt, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-001	0.50	Oil return filter, replacing
911-005	1.00	Pump suction hose and pipe, replacing
911-011	1.00	Oil cooler, replacing
911-024	1.00	Pipe and hose (pump - valve), replacing
911-026	1.00	Pipe and hose (valve - swing motor), replacing
911-038	7.00	Hydraulic oil tank, replacing
911-051	0.25	Breather, replacing
912-001	5.00	Control valve, replacing
912-074	2.00	Rupture valve hose or pipe, replacing (boom cylinder)
912-075	2.00	Rupture valve hose or pipe, replacing (dipper arm cylinder)
913-007	4.50	Hydraulic pump (removed), changing shaft seal
913-010	3.50	Hydraulic pump, replacing
914-051	0.50	Accumulator, replacing
914-058	2.50	Servo valve, replacing
914-071	2.50	Servo pipe and hose, replacing
915-001	0.50	Servo valve, solenoid replacing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
172-002	3.00	Warranty inspection 100 hours
172-004	11.00	Warranty inspection 1000 hours
173-002	1.00	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	4.50	Maintenance service, every 500 hours
173-012	6.50	Maintenance service, every 1000 hours
173-014	9.50	Maintenance service, every 2000 hours
173-018	13.00	Maintenance service, every 4000 hours
173-022	10.00	Maintenance service, every 6000 hours
173-079	1.00	Swing motor gearbox, changing oil
173-101	0.50	Track motor gearbox, changing oil
173-401	0.60	Engine oil and filter, changing
173-412	0.20	Hydraulic oil tank breather filter, replacing
173-451	1.25	Hydraulic oil, changing
173-649	0.20	Hydraulic oil return filter, replacing
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
210-070	6.00	Engine, removing
210-072	6.50	Engine, installing
210-076	13.00	Engine, replacing
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
214-012	3.50	Valves, adjusting
216-014	1.50	Crankshaft, replacing front oil seal
216-018	4.50	Crankshaft, replacing rear oil seal
217-005	14.00	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.60	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding

Op.no.	time (h)	Notes
233-002	1.75	Feed pump, replacing
233-004	0.20	Feed pump, checking feed pressure
233-010	2.00	Fuel pump, inspection
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
233-020	0.10	Fuel filter, checking
234-010	5.00	Fuel tank, replacing
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-012	6.00	Unit injector, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
252-021	1.25	Exhaust pipe, flexible tube, replacing
255-002	0.80	Turbocharger, inspection
255-071	4.00	Turbocharger, replacing
256-006	0.40	Preheating coil, replacing
258-002	7.00	Intercooler, replacing
258-022	0.40	Charge air cooler connection (hose, tube), replacing
258-030	1.75	Charge air system, inspection
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.70	Coolant, changing
261-008	7.50	Radiator, replacing
261-012	1.00	Radiator hose upper, replacing
261-014	1.25	Radiator hoses lower, replacing
261-018	0.80	Expansion tank, replacing
262-002	3.00	Coolant pump, replacing
262-098	1.50	Thermostat, replacing
263-012	0.60	Fan belt and/or alternator belt, replacing
263-022	1.25	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
32		ALTERNATOR; CHARGE REGULATOR
321-075	0.50	Alternator, test

Op.no.	time (h)	Notes
33		STARTING SYSTEM
331-021	0.30	Starter motor, tests
334-002	0.70	Starter switch, testing
334-002	0.70	Starter switch, testing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-056	0.50	Pre-heating relay, replacing
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
367-075	0.90	Engine speed control switch, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	1.50	Engine temperature sensor, replacing
386-007	0.60	Engine oil pressure sensor, replacing
386-011	0.30	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing
386-038	1.75	Engine rotation speed sensor, replacing
386-044	0.40	Auto idling sensor, replacing
386-088	1.75	Engine rotation speed sensor (camshaft), replacing
387-031	0.40	Total moment indicator (TMI), replacing
39		MISCELLANEOUS
393-001	0.50	Voltage converter, replacing
393-021	0.60	Radio, replacing
395-021	0.70	Antenna, replacing
395-031	0.40	Speaker, replacing
4		POWER TRANSMISSION
43		GEARBOX,
431-031	4.00	Pump gearbox coupling assembly, replacing
44		HYDROSTATIC DRIVE
441-022	0.70	Swing motor relief valve, replacing

Op.no.	time (h)	Notes
49		MISCELLANEOUS
492-021	11.00	Swing ring gear, replacing
492-027	0.40	Swing limitation sensor, adjusting
492-031	2.50	Swing ring gear outer seal, replacing
492-031	3.00	Swing ring gear outer seal, replacing
492-032	9.50	Swing ring gear inner seal, replacing
492-091	0.50	Ring gear grease pipe, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
710-001	3.50	Superstructure, removing
710-002	4.50	Superstructure, installing
716-001	2.00	Counterweight, removing
716-002	2.50	Counterweight, fitting
716-006	1.75	Removable counterweight, removing
716-007	2.00	Removable counterweight, installing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-036	11.00	Track links, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.30	Rear-view mirror, changing
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-091	2.50	Seat support, replacing
86		PROTECTIVE EQUIPMENT, not specified in a special group
867-000	0.90	Falling object guard, removal
867-001	1.25	Falling object guard, installation

Op.no.	time (h)	Notes
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	1.75	Pump suction hose and pipe, replacing
911-011	3.00	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-024	1.00	Pipe and hose (pump - valve), replacing
911-033	1.25	Oil cooler line bypass valve (check valve), replacing
911-034	1.75	Oil cooler fan motor, replacing
911-035	1.00	Oil cooler fan pump, replacing
911-038	4.00	Hydraulic oil tank, replacing
911-040	0.60	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-036	0.50	Hose rupture valve, removal
912-037	0.50	Hose rupture valve, installation
912-067	0.70	Main pressure relief valve, replacing
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	3.50	Hydraulic pump, replacing
913-029	0.30	Pump regulator, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing

Op.no.	time (h)	Notes
914-091	1.50	Solenoid valve, replacing
94		UNIT, LOAD HANDLING
944-005	2.50	Middle dipper arm cylinder, replacing
945-057	1.75	Cab tilting cylinder, replacing
97		UNIT, DIGGING
975-085	3.00	Demolition dipper arm cylinder, replacing

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
171-001	1.00	Arrival Inspection, according to Inspection Programme	
171-002	3.00	Delivery Inspection, according to Inspection Programme	
172-002	3.00	Warranty inspection 100 hours	
172-004	11.00	Warranty inspection 1000 hours	
173-002	1.00	Maintenance service, daily	
173-004	1.50	Maintenance service, every 50 hours	
173-007	2.50	Maintenance service, every 250 hours	
173-010	4.50	Maintenance service, every 500 hours	
173-012	6.50	Maintenance service, every 1000 hours	
173-014	9.50	Maintenance service, every 2000 hours	
173-018	13.00	Maintenance service, every 4000 hours	
173-022	10.00	Maintenance service, every 6000 hours	
173-079	1.00	Swing motor gearbox, changing oil	110001 - 115000 140001 - 140082
173-079	1.00	Swing motor gearbox, changing oil	115001 - 210000
173-101	0.50	Track motor gearbox, changing oil	115001 - 140000 145001 - 340000
173-101	0.50	Track motor gearbox, changing oil	110001 - 115000 140001 - 140082
173-401	0.60	Engine oil and filter, changing	
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.25	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-070	6.00	Engine, removing	
210-072	6.50	Engine, installing	
210-076	13.00	Engine, replacing	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
211-002	12.00	Cylinder head, replacing gasket	

Op.no.	time (h)	Notes
214-012	3.50	Valves, adjusting
214-036	1.00	Valve covers, fitting new gasket
216-014	1.50	Crankshaft, replacing front oil seal
216-018	4.50	Crankshaft, replacing rear oil seal
217-005	14.00	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.60	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-002	1.75	Feed pump, replacing
233-004	0.20	Feed pump, checking feed pressure
233-010	2.00	Fuel pump, inspection
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
233-020	0.10	Fuel filter, checking
234-010	5.00	Fuel tank, replacing
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-012	6.00	Unit injector, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
252-021	1.25	Exhaust pipe, flexible tube, replacing
255-002	0.80	Turbocharger, inspection
255-071	4.00	Turbocharger, replacing
256-001	0.25	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.40	Preheating coil, replacing
258-002	7.00	Intercooler, replacing
258-022	0.40	Charge air cooler connection (hose, tube), replacing
258-030	1.75	Charge air system, inspection
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.70	Coolant, changing
261-008	7.50	Radiator, replacing
261-012	1.00	Radiator hose upper, replacing
261-014	1.25	Radiator hoses lower, replacing
261-018	0.80	Expansion tank, replacing
262-002	3.00	Coolant pump, replacing

Op.no.	time (h)	Notes
262-098	1.50	Thermostat, replacing
263-012	0.60	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	1.25	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-003	0.80	Main switch, replacing
311-006	0.60	Earth lead to battery, replacing
311-008	2.00	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
334-002	0.70	Starter switch, testing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-056	0.50	Pre-heating relay, replacing

Op.no.	time (h)		Notes
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	
367-075	0.90	Engine speed control switch, replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-006	1.50	Engine temperature sensor, replacing	
386-007	0.60	Engine oil pressure sensor, replacing	
386-011	0.30	Fuel level sender, replacing	
386-017	0.50	Hydraulic oil temperature sensor, replacing	
386-038	1.75	Engine rotation speed sensor, replacing	
386-043	0.40	Travel speed sensor or alarm sensor, replacing	
386-044	0.40	Auto idling sensor, replacing	
386-088	1.75	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-903	3.00	CareTrack standard cab, installing new	
390-904	3.00	CareTrack optional cab, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.60	Radio, replacing	110001 - 110187
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.50	Swing gearbox, replacing	
431-026	1.75	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	4.00	Pump gearbox coupling assembly, replacing	
431-036	5.50	Pump gearbox flange, replacing	
431-053	6.50	Swing unit, replacing	
431-115	2.50	Track gearbox (removed), replacing floating seal	
431-117	1.50	Track gearbox, replacing cover	115001 - 140000 145001 - 210000
431-127	6.00	Track unit, replacing	115001 - 140000 145001 - 210000
44		HYDROSTATIC DRIVE	
441-017	1.00	Travel motor pressure, checking and adjusting	
441-021	3.50	Swing motor, replacing	
441-022	0.70	Swing motor relief valve, replacing	
441-024	1.75	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	

Op.no.	time (h)		Notes
441-026	0.80	Swing motor removed, replacing seal	
441-032	0.75	Swing motor pressure, checking and adjusting	
441-112	0.70	Track motor relief valve, replacing	115001 - 140000 145001 - 210000
441-112	0.70	Track motor relief valve, replacing	110001 - 115000 140001 - 145000
441-115	2.00	Track motor removed, replacing seal	
443-037	6.00	Center passage, replacing	110001 - 115000 140001 - 145000
443-038	7.50	Center passage, replacing seal kit	110001 - 115000 140001 - 145000
443-039	1.00	Center passage hose (valve – center passage), replacing	110001 - 115000 140001 - 145000
443-040	1.75	Center passage hose (center passage – motor), replacing	110001 - 115000 140001 - 145000

49**MISCELLANEOUS**

492-021	11.00	Swing ring gear, replacing	
492-031	2.50	Swing ring gear outer seal, replacing	
492-031	3.00	Swing ring gear outer seal, replacing	
492-032	9.50	Swing ring gear inner seal, replacing	
492-091	0.50	Ring gear grease pipe, replacing	115001 - 310000 145001 - 340000
492-091	0.50	Ring gear grease pipe, replacing	110001 - 115000 140001 - 145000
492-095	0.70	Swing ring gear cover, removal	
492-095	0.60	Swing ring gear cover, removal	
492-096	0.70	Swing ring gear cover, installation	
492-096	0.60	Swing ring gear cover, installation	

7**FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT****71****FRAME**

710-001	3.50	Superstructure, removing	
710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	
710-002	4.50	Superstructure, installing	
716-001	2.00	Counterweight, removing	110472 - 210000
716-001	1.50	Counterweight, removing	110001 - 110471
716-002	1.75	Counterweight, fitting	
716-002	2.50	Counterweight, fitting	
716-003	2.00	Counterweight, replacing	

Op.no.	time (h)		Notes
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	5.00	Front idler, replacing one	
775-021	4.00	Sprocket, replacing one	
775-032	0.50	Track shoe, replacing one	
775-033	9.00	Track shoe, replacing each side	
775-034	1.75	Track chain assembly, removing	
775-035	2.00	Track chain assembly, installing	
775-036	11.00	Track links, replacing	
775-051	1.00	Top roller, replacing one	
775-061	2.00	Bottom roller, replacing one	
775-066	3.00	Bottom roller, replacing seal	115339 - 210000
775-066	3.00	Bottom roller, replacing seal	
775-071	1.00	Track guard, replacing one	
775-081	4.50	Track recoil spring (tensioner) assembly, replacing	
775-094	1.75	Full track guard, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.75	Cab, removing	
810-002	2.50	Cab, installing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	0.90	Engine hood, replacing	
827-091	1.75	Tool box assembly, replacing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	0.75	Door, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.30	Rear-view mirror, changing	
843-002	1.50	Windscreen, replacing	
843-012	4.00	Rear window, replacing	
843-013	4.50	Side window, replacing	
843-048	0.70	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	
852-091	2.50	Seat support, replacing	
87		AIR CONDITIONING UNIT	
870-001	5.00	Cooler and Heater assembly, replacing	
872-001	0.50	Cab filter, replacing	

Op.no.	time (h)	Notes
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
873-019	0.90	ECC control unit, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-005	1.75	Pump suction hose and pipe, replacing
911-011	3.00	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-017	2.00	Suction cover, replacing
911-024	1.00	Pipe and hose (pump - valve), replacing
911-025	1.00	Pipe and hose (valve - cylinder), replacing
911-026	0.70	Pipe and hose (valve - swing motor), replacing
911-031	1.50	Oil cooler line pipe and hose, replacing
911-032	1.25	Oil cooler line pipe coupling, replacing
911-033	1.25	Oil cooler line bypass valve (check valve), replacing
911-034	1.75	Oil cooler fan motor, replacing
911-035	1.00	Oil cooler fan pump, replacing
911-038	4.00	Hydraulic oil tank, replacing
911-040	0.60	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	8.50	Control valve, replacing
912-067	0.70	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure

Op.no.	time (h)	Notes
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	3.50	Hydraulic pump, replacing
913-029	0.30	Pump regulator, replacing
914-036	1.25	Servo pump block seal, replacing
914-037	1.25	Servo pump shaft seal, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-055	0.75	Servo pressure, checking and adjusting
914-060	0.80	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.50	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.00	Quickfit pump (gear pump), replacing
924-021	2.00	Quickfit hydraulic cylinder bracket (body), replacing
925-011	1.25	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.90	Bucket assembly, installation
97		UNIT, DIGGING
974-010	13.00	Boom, replacing
974-013	5.00	Boom, removal
974-014	6.50	Boom, installation
974-017	2.00	Boom, replacing pin
974-021	3.00	Boom cylinder, replacing
974-022	3.00	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	4.50	Boom cylinder, repacking in machine
974-031	2.00	Boom cylinder, removal
974-032	1.25	Boom cylinder, installation
974-047	0.50	Adapter, removal
974-048	0.60	Adapter, installation
975-006	0.70	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-011	4.00	Dipper arm, removal
975-012	4.50	Dipper arm, installation
975-014	1.75	Dipper arm cylinder, removal
975-015	2.00	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing

Op.no.	time (h)	Notes
975-025	2.50	Dipper arm cylinder, replacing
975-026	3.50	Dipper arm cylinder removed, repacking
975-028	1.50	Connecting rod yoke, replacing
975-032	0.70	Connecting rod yoke, removal
975-035	1.00	Connecting rod yoke, installation
975-039	11.00	Dipper arm, replacing
975-043	5.00	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.50	Bucket cylinder, removal
975-063	5.00	Bucket cylinder, repacking in machine
975-065	1.75	Bucket cylinder, installation
975-069	3.00	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing
99		MISCELLANEOUS
993-022	0.40	Automatic lubrication pump, removing
993-023	0.50	Automatic lubrication pump, installing

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
172-002	3.00	Warranty inspection 100 hours	
172-004	11.00	Warranty inspection 1000 hours	
173-002	1.00	Maintenance service, daily	
173-004	1.50	Maintenance service, every 50 hours	
173-007	2.50	Maintenance service, every 250 hours	
173-010	4.50	Maintenance service, every 500 hours	
173-012	6.50	Maintenance service, every 1000 hours	
173-014	9.50	Maintenance service, every 2000 hours	
173-018	13.00	Maintenance service, every 4000 hours	
173-022	10.00	Maintenance service, every 6000 hours	
173-079	1.00	Swing motor gearbox, changing oil	110001 - 115000 140001 - 140082
173-079	1.00	Swing motor gearbox, changing oil	115001 - 210000
173-101	0.50	Track motor gearbox, changing oil	115001 - 140000 145001 - 340000
173-101	0.50	Track motor gearbox, changing oil	110001 - 115000 140001 - 140082
173-401	0.60	Engine oil and filter, changing	
173-412	0.20	Hydraulic oil tank breather filter, replacing	
173-451	1.25	Hydraulic oil, changing	
173-649	0.20	Hydraulic oil return filter, replacing	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-070	6.00	Engine, removing	
210-072	6.50	Engine, installing	
210-076	13.00	Engine, replacing	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
214-012	3.50	Valves, adjusting	
216-014	1.50	Crankshaft, replacing front oil seal	
216-018	4.50	Crankshaft, replacing rear oil seal	
217-005	14.00	Oil level sensor, changing	

Op.no.	time (h)	Notes
22		LUBRICATING SYSTEM
221-022	0.60	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-002	1.75	Feed pump, replacing
233-004	0.20	Feed pump, checking feed pressure
233-010	2.00	Fuel pump, inspection
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
233-020	0.10	Fuel filter, checking
234-010	5.00	Fuel tank, replacing
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-012	6.00	Unit injector, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
252-021	1.25	Exhaust pipe, flexible tube, replacing
255-002	0.80	Turbocharger, inspection
255-071	4.00	Turbocharger, replacing
256-006	0.40	Preheating coil, replacing
258-002	7.00	Intercooler, replacing
258-022	0.40	Charge air cooler connection (hose, tube), replacing
258-030	1.75	Charge air system, inspection
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.70	Coolant, changing
261-008	7.50	Radiator, replacing
261-012	1.00	Radiator hose upper, replacing
261-014	1.25	Radiator hoses lower, replacing
261-018	0.80	Expansion tank, replacing
262-002	3.00	Coolant pump, replacing
262-098	1.50	Thermostat, replacing
263-012	0.60	Fan belt and/or alternator belt, replacing
263-022	1.25	Fan belt and/or alternator-, compressor belt, replacing all belts

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-003	0.80	Main switch, replacing
311-006	0.60	Earth lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
334-002	0.70	Starter switch, testing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-056	0.50	Pre-heating relay, replacing
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
367-075	0.90	Engine speed control switch, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	1.50	Engine temperature sensor, replacing
386-007	0.60	Engine oil pressure sensor, replacing
386-011	0.30	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing

Op.no.	time (h)		Notes
386-038	1.75	Engine rotation speed sensor, replacing	
386-043	0.40	Travel speed sensor or alarm sensor, replacing	
386-044	0.40	Auto idling sensor, replacing	
386-088	1.75	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-903	3.00	CareTrack standard cab, installing new	
390-904	3.00	CareTrack optional cab, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.60	Radio, replacing	110001 - 110187
393-021	0.60	Radio, replacing	110188 - 140000 140001 - 310000
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.50	Swing gearbox, replacing	
431-026	1.75	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	4.00	Pump gearbox coupling assembly, replacing	
431-053	6.50	Swing unit, replacing	
431-117	1.50	Track gearbox, replacing cover	115001 - 140000 145001 - 210000
431-127	6.00	Track unit, replacing	115001 - 140000 145001 - 210000
44		HYDROSTATIC DRIVE	
441-021	3.50	Swing motor, replacing	
441-022	0.70	Swing motor relief valve, replacing	
441-024	1.75	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	0.80	Swing motor removed, replacing seal	
441-112	0.70	Track motor relief valve, replacing	115001 - 140000 145001 - 210000
441-112	0.70	Track motor relief valve, replacing	110001 - 115000 140001 - 145000
443-037	6.00	Center passage, replacing	110001 - 115000 140001 - 145000
443-038	7.50	Center passage, replacing seal kit	110001 - 115000 140001 - 145000
443-039	1.00	Center passage hose (valve – center passage), replacing	110001 - 115000 140001 - 145000

Op.no.	time (h)		Notes
443-040	1.75	Center passage hose (center passage – motor), replacing	110001 - 115000 140001 - 145000
49		MISCELLANEOUS	
492-021	11.00	Swing ring gear, replacing	
492-031	2.50	Swing ring gear outer seal, replacing	
492-031	3.00	Swing ring gear outer seal, replacing	
492-032	9.50	Swing ring gear inner seal, replacing	
492-091	0.50	Ring gear grease pipe, replacing	115001 - 310000 145001 - 340000
492-091	0.50	Ring gear grease pipe, replacing	110001 - 115000 140001 - 145000
492-095	0.70	Swing ring gear cover, removal	
492-095	0.60	Swing ring gear cover, removal	
492-096	0.70	Swing ring gear cover, installation	
492-096	0.60	Swing ring gear cover, installation	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	3.50	Superstructure, removing	
710-001	3.50	Superstructure, removing	
710-002	4.50	Superstructure, installing	
710-002	4.50	Superstructure, installing	
716-001	2.00	Counterweight, removing	110472 - 210000
716-001	1.50	Counterweight, removing	110001 - 110471
716-002	1.75	Counterweight, fitting	110001 - 110471
716-002	2.50	Counterweight, fitting	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-036	11.00	Track links, replacing	
775-066	3.00	Bottom roller, replacing seal	115339 - 210000
775-066	3.00	Bottom roller, replacing seal	
775-094	1.75	Full track guard, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.75	Cab, removing	
810-002	2.50	Cab, installing	

Op.no.	time (h)	Notes
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-091	1.75	Tool box assembly, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.30	Rear-view mirror, changing
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
873-019	0.90	ECC control unit, replacing
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	1.75	Pump suction hose and pipe, replacing
911-011	3.00	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-024	1.00	Pipe and hose (pump - valve), replacing
911-033	1.25	Oil cooler line bypass valve (check valve), replacing
911-034	1.75	Oil cooler fan motor, replacing
911-035	1.00	Oil cooler fan pump, replacing
911-038	4.00	Hydraulic oil tank, replacing

Op.no.	time (h)	Notes
911-040	0.60	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-067	0.70	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	0.90	Rupture valve, replacing (dipper arm cylinder)
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	3.50	Hydraulic pump, replacing
913-029	0.30	Pump regulator, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-060	0.80	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.50	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
925-011	1.25	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.90	Bucket assembly, installation
97		UNIT, DIGGING
974-010	13.00	Boom, replacing
974-013	5.00	Boom, removal
974-014	6.50	Boom, installation
974-021	3.00	Boom cylinder, replacing
974-031	2.00	Boom cylinder, removal
974-032	1.25	Boom cylinder, installation
974-047	0.50	Adapter, removal
974-048	0.60	Adapter, installation
975-006	0.70	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-011	4.00	Dipper arm, removal
975-012	4.50	Dipper arm, installation
975-014	1.75	Dipper arm cylinder, removal
975-015	2.00	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-028	1.50	Connecting rod yoke, replacing
975-032	0.70	Connecting rod yoke, removal
975-035	1.00	Connecting rod yoke, installation
975-039	11.00	Dipper arm, replacing
975-061	2.50	Bucket cylinder, replacing

Op.no.	time (h)	Notes
975-062	1.50	Bucket cylinder, removal
975-065	1.75	Bucket cylinder, installation
99		MISCELLANEOUS
993-022	0.40	Automatic lubrication pump, removing
993-023	0.50	Automatic lubrication pump, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	2.00	Delivery Inspection, according to Inspection Programme
172-002	3.00	Warranty inspection 100 hours
173-007	3.00	Maintenance service, every 250 hours
173-010	3.00	Maintenance service, every 500 hours
173-014	4.00	Maintenance service, every 2000 hours
173-016	4.00	Maintenance service, every 3000 hours
173-059	0.50	Engine, changing oil and filter
173-075	0.75	Hydraulic oil tank, changing oil and filter incl.cleaning tank
173-081	0.50	Travel motor gearbox, changing oil
173-087	0.50	Coolant, changing
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	2.50	Engine, removing
210-072	3.50	Engine, installing
210-073	3.50	Engine and transmission, removing
214-012	0.50	Valves, adjusting
218-001	3.00	Rubber cushion, replacing
22		LUBRICATING SYSTEM
222-011	0.25	Oil filter, replacing
23		FUEL SYSTEM
233-002	0.50	Feed pump, replacing
233-014	0.25	Fuel filters, replacing
233-041	0.25	Fuel strainer, changing
234-010	4.00	Fuel tank, replacing
236-073	2.00	Injection pump, replacing incl setting injection timing
237-002	0.50	Injectors, replacing all
237-019	0.50	Fuel line, leak-off pipe, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.00	Silencer, replacing
252-021	0.50	Exhaust pipe, flexible tube, replacing

Op.no.	time (h)	Notes
26		COOLING SYSTEM
261-008	2.50	Radiator, replacing
261-012	0.50	Radiator hose upper, replacing
261-014	0.75	Radiator hoses lower, replacing
261-020	0.25	Expansion tank, removing
262-098	0.50	Thermostat, replacing
263-012	0.75	Fan belt and/or alternator belt, replacing
263-013	0.25	Fan belt and/or alternator belt, checking and adjusting tension
27		ENGINE CONTROL
272-010	1.50	Accelerator control cable, changing
273-021	0.25	Stop magnet, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.50	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.75	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	1.50	Starter motor, replacing
334-001	1.00	Starter lock, replacing
35		LIGHTING
352-008	0.25	Headlamp reflector and/or glass, replacing one incl adjusting
356-056	0.25	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.50	Horn, replacing
362-041	1.00	Rotating beacon, replacing
363-002	0.75	Windscreen wiper front, replacing motor
367-020	1.00	ECU, replacing
37		CABLE; FUSE; RELAY
371-041	0.75	Battery cable +, replacing
371-042	0.75	Cables, changing battery ground lead
371-044	0.50	Battery disconnecter, removal
372-011	0.75	Fuse box, changing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-007	0.25	Engine oil pressure sensor, replacing

Op.no.	time (h)	Notes
386-011	0.75	Fuel level sender, replacing
4		POWER TRANSMISSION
43		GEARBOX,
431-021	8.00	Swing gearbox, replacing
44		HYDROSTATIC DRIVE
441-011	2.00	Travel motor, replacing one
441-012	0.50	Travel motor relief valve, replacing
441-021	2.50	Swing motor, replacing
441-024	1.50	Swing motor, replacing plate (brake)
441-026	4.00	Swing motor removed, replacing seal
443-013	5.00	Turning joint, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-003	1.00	Counterweight, replacing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	2.00	Front idler, replacing one
775-022	1.50	Sprocket, removal
775-031	2.50	Track chain assembly, replacing (incl. shoe fitting)
775-052	2.00	Top roller, removal
775-062	0.50	Bottom roller, removing
775-071	0.75	Track guard, replacing one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	2.00	Cab, removing
818-015	2.50	Cab suspension, rubber element replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	1.00	Engine hood, replacing
821-006	0.25	Engine hood, removing (on site)
83		DOORS; HATCH; COVER PLATE, (all)
831-004	0.50	Door, replacing

Op.no.	time (h)	Notes
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	2.00	Windscreen, replacing
844-052	2.00	Sliding window, changing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.25	Operator's seat, removing
87		AIR CONDITIONING UNIT
873-006	2.00	Fan motor, replacing
873-009	0.75	Heat control, replacing
873-097	1.50	Heater hose, replacing
88		INTERIOR EQUIPMENT
881-003	1.50	Instrument panel, replacing (left)
881-005	1.50	Instrument panel, replacing (right)
884-001	0.50	Seat safety belt, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-001	0.50	Oil return filter, replacing
911-005	1.00	Pump suction hose and pipe, replacing
911-011	1.00	Oil cooler, replacing
911-024	1.00	Pipe and hose (pump - valve), replacing
911-026	1.00	Pipe and hose (valve - swing motor), replacing
911-038	7.00	Hydraulic oil tank, replacing
911-051	0.25	Breather, replacing
912-001	5.00	Control valve, replacing
912-074	2.00	Rupture valve hose or pipe, replacing (boom cylinder)
912-075	2.00	Rupture valve hose or pipe, replacing (dipper arm cylinder)
913-007	4.50	Hydraulic pump (removed), changing shaft seal
913-010	3.50	Hydraulic pump, replacing
914-051	0.50	Accumulator, replacing
914-058	2.50	Servo valve, replacing
914-071	2.50	Servo pipe and hose, replacing
915-001	0.50	Servo valve, solenoid replacing

Op.no.	time (h)	Notes
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1 STANDARD PARTS, SERVICE

17 SERVICE

172-002	3.00	Warranty inspection 100 hours
172-004	11.00	Warranty inspection 1000 hours
173-002	1.00	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	4.50	Maintenance service, every 500 hours
173-012	7.00	Maintenance service, every 1000 hours
173-014	10.00	Maintenance service, every 2000 hours
173-018	13.00	Maintenance service, every 4000 hours
173-022	11.00	Maintenance service, every 6000 hours
173-079	1.50	Swing motor gearbox, changing oil
173-101	0.50	Track motor gearbox, changing oil
173-401	0.60	Engine oil and filter, changing
173-412	0.20	Hydraulic oil tank breather filter, replacing
173-451	1.25	Hydraulic oil, changing
173-649	0.20	Hydraulic oil return filter, replacing

2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-068	1.75	E-ECU, MID 128, changing non-programmed ECU
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU

21 ENGINE

210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
214-012	3.50	Valves, adjusting
216-014	1.50	Crankshaft, replacing front oil seal
216-018	4.50	Crankshaft, replacing rear oil seal

23 FUEL SYSTEM

230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-002	1.75	Feed pump, replacing
233-004	0.20	Feed pump, checking feed pressure
233-010	2.00	Fuel pump, inspection
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
233-020	0.10	Fuel filter, checking
234-041	0.40	Fuel filling pump, removing

Op.no.	time (h)	Notes
234-042	0.50	Fuel filling pump, installing
237-012	6.00	Unit injector, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
252-021	1.25	Exhaust pipe, flexible tube, replacing
255-002	0.80	Turbocharger, inspection
255-071	4.00	Turbocharger, replacing
256-006	0.40	Preheating coil, replacing
258-002	7.00	Intercooler, replacing
258-022	0.40	Charge air cooler connection (hose, tube), replacing
258-030	1.75	Charge air system, inspection
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.70	Coolant, changing
261-008	7.50	Radiator, replacing
261-012	1.00	Radiator hose upper, replacing
261-014	1.25	Radiator hoses lower, replacing
261-018	0.80	Expansion tank, replacing
262-002	3.00	Coolant pump, replacing
262-098	1.50	Thermostat, replacing
263-012	0.60	Fan belt and/or alternator belt, replacing
263-022	1.25	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
32		ALTERNATOR; CHARGE REGULATOR
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-021	0.30	Starter motor, tests
334-002	0.70	Starter switch, testing
334-002	0.70	Starter switch, testing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy

Op.no.	time (h)	Notes
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-056	0.50	Pre-heating relay, replacing
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
367-075	0.90	Engine speed control switch, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	1.50	Engine temperature sensor, replacing
386-007	0.60	Engine oil pressure sensor, replacing
386-011	0.30	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing
386-038	1.75	Engine rotation speed sensor, replacing
386-044	0.40	Auto idling sensor, replacing
386-088	1.75	Engine rotation speed sensor (camshaft), replacing
387-031	0.40	Total moment indicator (TMI), replacing
39		MISCELLANEOUS
393-001	0.50	Voltage converter, replacing
393-021	0.60	Radio, replacing
395-021	0.70	Antenna, replacing
395-031	0.40	Speaker, replacing
4		POWER TRANSMISSION
44		HYDROSTATIC DRIVE
441-111	3.50	Track motor, replacing
441-112	0.70	Track motor relief valve, replacing
443-037	6.00	Center passage, replacing
443-038	7.50	Center passage, replacing seal kit
443-039	1.00	Center passage hose (valve – center passage), replacing
443-040	1.75	Center passage hose (center passage – motor), replacing
49		MISCELLANEOUS
492-027	0.40	Swing limitation sensor, adjusting
492-031	2.50	Swing ring gear outer seal, replacing
492-091	0.50	Ring gear grease pipe, replacing

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-036	11.00	Track links, replacing
775-061	1.25	Bottom roller, replacing one
775-071	1.25	Track guard, replacing one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
827-091	1.75	Tool box assembly, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.30	Rear-view mirror, changing
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-091	2.50	Seat support, replacing
86		PROTECTIVE EQUIPMENT, not specified in a special group
867-000	0.90	Falling object guard, removal
867-001	1.25	Falling object guard, installation
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
873-019	0.90	ECC control unit, replacing
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing

Op.no.	time (h)	Notes
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	1.75	Pump suction hose and pipe, replacing
911-015	0.50	Oil level gauge, replacing
911-024	0.60	Pipe and hose (pump - valve), replacing
911-033	0.90	Oil cooler line bypass valve (check valve), replacing
911-038	4.50	Hydraulic oil tank, replacing
911-040	0.60	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-067	0.60	Main pressure relief valve, replacing
912-177	1.75	Demolition control valve, replacing
913-029	0.30	Pump regulator, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-091	1.50	Solenoid valve, replacing
94		UNIT, LOAD HANDLING
940-006	2.00	Demolition equipment, removal
940-007	2.50	Demolition equipment, installation
944-004	2.00	Base boom modular joint cylinder, replacing
944-006	1.25	Base boom modular joint cylinder pin, replacing
945-057	1.75	Cab tilting cylinder, replacing
97		UNIT, DIGGING
970-006	1.75	Digging equipment, removal
970-007	2.50	Digging equipment, installation
975-006	0.70	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-028	1.50	Connecting rod yoke, replacing
975-032	0.70	Connecting rod yoke, removal
975-035	1.00	Connecting rod yoke, installation

Op.no.	time (h)	Notes
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1 STANDARD PARTS, SERVICE

17 SERVICE

170-005	0.25	Start of VCADS Pro computer and reading machine data
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	3.00	Delivery Inspection, according to Inspection Programme
172-002	3.00	Warranty inspection 100 hours
172-004	11.00	Warranty inspection 1000 hours
173-002	1.00	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	4.50	Maintenance service, every 500 hours
173-012	7.00	Maintenance service, every 1000 hours
173-014	10.00	Maintenance service, every 2000 hours
173-018	13.00	Maintenance service, every 4000 hours
173-022	11.00	Maintenance service, every 6000 hours
173-079	1.50	Swing motor gearbox, changing oil
173-101	0.50	Track motor gearbox, changing oil
173-401	0.60	Engine oil and filter, changing
173-412	0.20	Hydraulic oil tank breather filter, replacing
173-451	1.25	Hydraulic oil, changing
173-649	0.20	Hydraulic oil return filter, replacing

2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-068	1.75	E-ECU, MID 128, changing non-programmed ECU
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU

21 ENGINE

210-070	7.00	Engine, removing
210-072	8.00	Engine, installing
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
211-002	12.00	Cylinder head, replacing gasket
214-012	3.50	Valves, adjusting
214-036	1.00	Valve covers, fitting new gasket
216-014	1.50	Crankshaft, replacing front oil seal
216-018	4.50	Crankshaft, replacing rear oil seal
217-005	15.00	Oil level sensor, changing

Op.no.	time (h)	Notes
22		LUBRICATING SYSTEM
221-022	0.60	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-002	1.75	Feed pump, replacing
233-004	0.20	Feed pump, checking feed pressure
233-010	2.00	Fuel pump, inspection
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
233-020	0.10	Fuel filter, checking
234-010	5.00	Fuel tank, replacing
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-012	6.00	Unit injector, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
252-021	1.25	Exhaust pipe, flexible tube, replacing
255-002	0.80	Turbocharger, inspection
255-071	4.00	Turbocharger, replacing
256-001	0.25	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.40	Preheating coil, replacing
258-002	7.00	Intercooler, replacing
258-022	0.40	Charge air cooler connection (hose, tube), replacing
258-030	1.75	Charge air system, inspection
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.70	Coolant, changing
261-008	7.50	Radiator, replacing
261-012	1.00	Radiator hose upper, replacing
261-014	1.25	Radiator hoses lower, replacing
261-018	0.80	Expansion tank, replacing
262-002	3.00	Coolant pump, replacing
262-098	1.50	Thermostat, replacing
263-012	0.60	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension

Op.no.	time (h)	Notes
263-022	1.25	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-003	0.80	Main switch, replacing
311-006	0.60	Earth lead to battery, replacing
311-008	2.00	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	1.25	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
334-002	0.70	Starter switch, testing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-056	0.50	Pre-heating relay, replacing
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
367-075	0.90	Engine speed control switch, replacing

Op.no.	time (h)		Notes
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-006	1.50	Engine temperature sensor, replacing	
386-007	0.60	Engine oil pressure sensor, replacing	
386-011	0.30	Fuel level sender, replacing	
386-017	0.50	Hydraulic oil temperature sensor, replacing	
386-038	1.75	Engine rotation speed sensor, replacing	
386-043	0.50	Travel speed sensor or alarm sensor, replacing	
386-044	0.40	Auto idling sensor, replacing	
386-088	1.75	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-903	3.00	CareTrack standard cab, installing new	
390-904	3.00	CareTrack optional cab, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.60	Radio, replacing	110001 - 110128
393-021	0.60	Radio, replacing	110129 - 310000
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.00	Swing gearbox, replacing	
431-026	0.50	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	4.00	Pump gearbox coupling assembly, replacing	
431-036	5.50	Pump gearbox flange, replacing	
431-115	3.00	Track gearbox (removed), replacing floating seal	
431-117	1.50	Track gearbox, replacing cover	
431-127	6.00	Track unit, replacing	
44		HYDROSTATIC DRIVE	
441-017	1.00	Travel motor pressure, checking and adjusting	
441-021	3.00	Swing motor, replacing	
441-022	0.80	Swing motor relief valve, replacing	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	0.30	Swing motor removed, replacing seal	
441-032	0.75	Swing motor pressure, checking and adjusting	
441-111	3.50	Track motor, replacing	115395 - 210000
441-112	0.70	Track motor relief valve, replacing	115395 - 210000
441-115	2.00	Track motor removed, replacing seal	

Op.no.	time (h)		Notes
443-037	6.00	Center passage, replacing	110001 - 115000
443-038	7.50	Center passage, replacing seal kit	110001 - 115000
443-039	1.00	Center passage hose (valve – center passage), replacing	110001 - 115000
443-040	1.75	Center passage hose (center passage – motor), replacing	110001 - 115000
49		MISCELLANEOUS	
492-031	2.50	Swing ring gear outer seal, replacing	
492-091	0.50	Ring gear grease pipe, replacing	115001 - 310000
492-091	0.50	Ring gear grease pipe, replacing	110001 - 115000

7 FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT

71		FRAME	
710-001	4.00	Superstructure, removing	
710-002	5.00	Superstructure, installing	
716-001	2.00	Counterweight, removing	
716-002	2.50	Counterweight, fitting	110349 - 210000
716-003	2.00	Counterweight, replacing	
716-006	1.25	Removable counterweight, removing	
716-007	1.50	Removable counterweight, installing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	5.00	Front idler, replacing one	
775-021	5.00	Sprocket, replacing one	
775-032	0.50	Track shoe, replacing one	
775-033	9.00	Track shoe, replacing each side	
775-034	1.75	Track chain assembly, removing	
775-035	2.00	Track chain assembly, installing	
775-036	11.00	Track links, replacing	
775-051	1.00	Top roller, replacing one	
775-061	1.25	Bottom roller, replacing one	
775-066	3.00	Bottom roller, replacing seal	
775-071	1.25	Track guard, replacing one	
775-081	4.50	Track recoil spring (tensioner) assembly, replacing	

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.90	Engine hood, replacing
827-091	1.75	Tool box assembly, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	0.75	Door, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.30	Rear-view mirror, changing
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
873-019	0.90	ECC control unit, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	1.75	Pump suction hose and pipe, replacing
911-011	3.00	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-017	2.00	Suction cover, replacing
911-024	0.60	Pipe and hose (pump - valve), replacing
911-025	1.00	Pipe and hose (valve - cylinder), replacing
911-026	0.70	Pipe and hose (valve - swing motor), replacing
911-031	1.50	Oil cooler line pipe and hose, replacing
911-032	1.25	Oil cooler line pipe coupling, replacing
911-033	0.90	Oil cooler line bypass valve (check valve), replacing
911-034	2.50	Oil cooler fan motor, replacing
911-035	1.50	Oil cooler fan pump, replacing
911-038	4.50	Hydraulic oil tank, replacing
911-040	0.60	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	8.50	Control valve, replacing
912-067	0.60	Main pressure relief valve, replacing
912-071	0.80	Rupture valve, replacing (boom cylinder)
912-073	1.00	Rupture valve, replacing (dipper arm cylinder)
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.50	Hydraulic pump, replacing
913-029	0.30	Pump regulator, replacing
914-036	1.25	Servo pump block seal, replacing
914-037	1.25	Servo pump shaft seal, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-055	0.75	Servo pressure, checking and adjusting
914-060	1.25	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.50	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.00	Quickfit pump (gear pump), replacing

Op.no.	time (h)	Notes
924-021	2.00	Quickfit hydraulic cylinder bracket (body), replacing
925-011	1.25	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.90	Bucket assembly, installation
97		UNIT, DIGGING
974-010	17.00	Boom, replacing
974-013	6.00	Boom, removal
974-014	6.50	Boom, installation
974-017	2.00	Boom, replacing pin
974-021	3.00	Boom cylinder, replacing
974-022	3.00	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	4.50	Boom cylinder, repacking in machine
974-031	2.00	Boom cylinder, removal
974-032	1.25	Boom cylinder, installation
974-047	0.50	Adapter, removal
974-048	0.60	Adapter, installation
975-006	0.70	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-011	4.00	Dipper arm, removal
975-012	4.50	Dipper arm, installation
975-014	1.75	Dipper arm cylinder, removal
975-015	2.00	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-026	3.50	Dipper arm cylinder removed, repacking
975-028	1.50	Connecting rod yoke, replacing
975-032	0.70	Connecting rod yoke, removal
975-035	1.00	Connecting rod yoke, installation
975-039	11.00	Dipper arm, replacing
975-043	5.50	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.50	Bucket cylinder, removal
975-063	5.00	Bucket cylinder, repacking in machine
975-065	1.75	Bucket cylinder, installation
975-069	3.00	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing
99		MISCELLANEOUS
993-022	0.40	Automatic lubrication pump, removing

Op.no.	time (h)	Notes
993-023	0.50	Automatic lubrication pump, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	2.00	Delivery Inspection, according to Inspection Programme
173-002	1.25	Maintenance service, daily
173-007	2.50	Maintenance service, every 250 hours
173-010	5.50	Maintenance service, every 500 hours
173-012	7.50	Maintenance service, every 1000 hours
173-014	9.50	Maintenance service, every 2000 hours
173-059	0.70	Engine, changing oil and filter
173-074	1.00	Hydraulic oil tank, changing oil and filter
173-076	0.30	Hydraulic oil tank, return oil filter change
173-077	0.20	Hydraulic oil tank, changing breather filter
173-079	0.60	Swing motor gearbox, changing oil
173-101	0.40	Track motor gearbox, changing oil

2 ENGINE WITH MOUNTING AND EQUIPMENT

21		ENGINE
210-070	4.50	Engine, removing
210-072	5.00	Engine, installing
211-002	5.00	Cylinder head, replacing gasket
214-012	1.25	Valves, adjusting
214-036	1.00	Valve covers, fitting new gasket
216-014	3.00	Crankshaft, replacing front oil seal
216-018	6.00	Crankshaft, replacing rear oil seal
23		FUEL SYSTEM
233-001	0.20	Fuel system, bleeding
233-002	0.40	Feed pump, replacing
233-014	0.40	Fuel filters, replacing
234-010	2.50	Fuel tank, replacing
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
236-001	0.50	Idling speed, checking and adjusting
236-030	1.50	Injection timing, checking
236-073	2.75	Injection pump, replacing incl setting injection timing
237-002	2.50	Injectors, replacing all
237-004	1.75	Injector, replacing one

Op.no.	time (h)	Notes
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
256-001	0.25	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.75	Preheating coil, replacing
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.75	Coolant, changing
261-008	3.00	Radiator, replacing
261-012	0.50	Radiator hose upper, replacing
261-014	1.00	Radiator hoses lower, replacing
261-018	0.50	Expansion tank, replacing
262-002	1.50	Coolant pump, replacing
262-098	1.75	Thermostat, replacing
263-012	0.75	Fan belt and/or alternator belt, replacing
263-013	0.20	Fan belt and/or alternator belt, checking and adjusting tension
263-022	1.00	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	0.75	Batteries, replacing
311-003	0.50	Main switch, replacing
311-006	0.50	Earth lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	1.75	Starter motor, replacing
331-081	0.50	Starter relay, replacing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.50	Horn, replacing
362-041	0.50	Rotating beacon, replacing

Op.no.	time (h)	Notes
362-051	0.50	Travel alarm, replacing
363-002	1.00	Windscreen wiper front, replacing motor
363-003	0.50	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-004	0.50	Switch, replacing
364-050	0.50	Relay (general), replacing
364-052	0.50	Battery relay, replacing
364-056	0.50	Pre-heating relay, replacing
37		CABLE; FUSE; RELAY
372-020	0.25	Fuse (general), replacing
372-091	0.50	Slow blow fuse, replacing
379-011	0.75	Boom wire harness, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	0.50	Engine temperature sensor, replacing
386-007	0.50	Engine oil pressure sensor, replacing
386-011	0.50	Fuel level sender, replacing
387-005	1.00	Information display, replacing
39		MISCELLANEOUS
393-021	1.00	Radio, replacing
395-021	0.50	Antenna, replacing
395-022	1.00	Antenna cable, replacing
395-031	0.50	Speaker, replacing
4		POWER TRANSMISSION
43		GEARBOX,
431-021	6.50	Swing gearbox, replacing
431-026	1.00	Swing gearbox removed, replacing seal
431-027	2.00	Swing gearbox removed, replacing shaft
431-031	4.00	Pump gearbox coupling assembly, replacing
431-036	4.00	Pump gearbox flange, replacing
431-115	2.00	Track gearbox (removed), replacing floating seal
431-117	1.00	Track gearbox, replacing cover
431-125	1.75	Track unit, removal
431-126	1.75	Track unit, installation
431-127	3.50	Track unit, replacing
44		HYDROSTATIC DRIVE
441-021	3.50	Swing motor, replacing
441-022	0.75	Swing motor relief valve, replacing

Op.no.	time (h)	Notes
441-023	3.50	Swing motor, replacing cylinder block
441-024	1.75	Swing motor, replacing plate (brake)
441-025	1.75	Swing motor, replacing brake piston seal
441-026	1.50	Swing motor removed, replacing seal
441-028	0.75	Swing motor brake valve, replacing
441-112	0.70	Track motor relief valve, replacing
441-115	1.50	Track motor removed, replacing seal
443-037	5.00	Center passage, replacing
443-038	7.50	Center passage, replacing seal kit
443-039	0.90	Center passage hose (valve – center passage), replacing
443-040	1.50	Center passage hose (center passage – motor), replacing
49		MISCELLANEOUS
492-031	2.00	Swing ring gear outer seal, replacing
492-091	0.50	Ring gear grease pipe, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	0.75	Counterweight, removing
716-002	0.75	Counterweight, fitting
716-003	1.50	Counterweight, replacing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	2.50	Front idler, replacing one
775-021	2.50	Sprocket, replacing one
775-032	0.30	Track shoe, replacing one
775-034	0.90	Track chain assembly, removing
775-035	1.25	Track chain assembly, installing
775-036	4.50	Track links, replacing
775-041	0.80	Rubber track, removing
775-042	0.80	Rubber track, installing
775-051	0.80	Top roller, replacing one
775-061	0.90	Bottom roller, replacing one
775-071	0.30	Track guard, replacing one
775-080	2.50	Track tension cylinder, replacing
775-081	2.50	Track recoil spring (tensioner) assembly, replacing

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.25	Cab, removing
810-002	1.50	Cab, installing
810-003	3.50	Operator cab, replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.75	Engine hood, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.25	Rear-view mirror, changing
843-002	2.00	Windscreen, replacing
843-012	1.00	Rear window, replacing
843-013	1.50	Side window, replacing
843-048	1.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	0.75	Seat, replacing
87		AIR CONDITIONING UNIT
872-011	1.00	Duct, replacing
872-021	1.00	Defroster hose, replacing
873-004	4.00	Heater core, replacing
873-006	4.00	Fan motor, replacing
873-097	1.00	Heater hose, replacing
874-002	0.50	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	1.50	Compressor, replacing incl draining and filling
874-007	0.75	Belt, replacing
874-010	1.50	Condenser, replacing incl draining and filling
874-011	1.50	Receiver, replacing incl draining and filling
874-081	1.50	Liquid hose, replacing incl. draining and filling
874-082	1.25	Discharge hose, replacing incl. draining and filling
874-083	1.25	Suction hose, replacing incl. draining and filling
874-091	1.00	Switch and controller, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-001	0.20	Oil return filter, replacing
911-004	0.50	Suction strainer, replacing

Op.no.	time (h)	Notes
911-005	1.75	Pump suction hose and pipe, replacing
911-011	1.50	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-024	1.75	Pipe and hose (pump - valve), replacing
911-025	1.00	Pipe and hose (valve - cylinder), replacing
911-026	1.00	Pipe and hose (valve - swing motor), replacing
911-031	1.00	Oil cooler line pipe and hose, replacing
911-033	1.50	Oil cooler line bypass valve (check valve), replacing
911-038	2.00	Hydraulic oil tank, replacing
911-043	0.25	Servo system filter, replacing
911-051	0.20	Breather, replacing
912-001	9.00	Control valve, replacing
912-067	1.50	Main pressure relief valve, replacing
912-071	0.70	Rupture valve, replacing (boom cylinder)
912-073	0.70	Rupture valve, replacing (dipper arm cylinder)
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)
912-075	0.50	Rupture valve hose or pipe, replacing (dipper arm cylinder)
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.00	Hydraulic pump, replacing
913-013	5.00	Hydraulic pump, replacing seal for input shaft
914-036	1.25	Servo pump block seal, replacing
914-051	0.30	Accumulator, replacing
914-060	1.00	Servo pump, replacing
914-071	0.50	Servo pipe and hose, replacing
914-081	1.00	Remote control valve (lever), replacing
914-084	2.00	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.00	Solenoid valve, replacing
916-044	0.50	Boom, replacing hose (boom cylinder)
916-045	0.75	Boom, replacing pipe (dipper arm cylinder)
916-046	0.50	Boom, replacing hose (dipper arm cylinder)
916-047	0.75	Boom, replacing pipe (bucket cylinder)
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)
916-049	0.50	Dipper arm, replacing pipe (bucket cylinder)
916-091	0.50	Hammer and shear pipe, replacing (for boom)
916-092	0.50	Hammer and shear hose, replacing (for boom)
916-093	0.50	Hammer and shear pipe, replacing (for dipper arm)
916-094	0.50	Hammer and shear hose, replacing (for dipper arm)
916-095	0.50	Hammer and shear hose and pipe, replacing (MCV - 3 way valve)

Op.no.	time (h)	Notes
916-096	1.00	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-002	1.00	Quickfit valve, replacing
924-003	0.75	Quickfit solenoid valve, replacing
924-004	0.50	Quickfit control switch, replacing
924-041	0.50	Quickfit hydraulic hose, replacing (for boom)
924-042	0.50	Quickfit hydraulic pipe, replacing (for boom)
924-043	0.25	Quickfit hydraulic hose, replacing (for dipper arm)
924-044	0.50	Quickfit hydraulic pipe, replacing (for dipper arm)
924-045	0.50	Quickfit hydraulic cylinder hose, replacing (dipper arm cylinder)
925-011	0.75	Bucket assembly, replacing
925-012	0.20	Bucket assembly, removal
925-013	0.50	Bucket assembly, installation
97		UNIT, DIGGING
974-010	5.50	Boom, replacing
974-013	1.75	Boom, removal
974-014	4.00	Boom, installation
974-017	1.00	Boom, replacing pin
974-018	0.30	Boom grease pipe or hose, replacing
974-021	1.50	Boom cylinder, replacing
974-022	1.50	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	1.50	Boom cylinder, repacking in machine
974-031	0.50	Boom cylinder, removal
974-032	0.90	Boom cylinder, installation
975-011	1.25	Dipper arm, removal
975-012	2.50	Dipper arm, installation
975-014	0.60	Dipper arm cylinder, removal
975-015	0.90	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	1.50	Dipper arm cylinder, replacing
975-026	1.50	Dipper arm cylinder removed, repacking
975-028	0.90	Connecting rod yoke, replacing
975-032	0.40	Connecting rod yoke, removal
975-035	0.60	Connecting rod yoke, installation
975-039	4.00	Dipper arm, replacing
975-043	1.50	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	1.50	Bucket cylinder, replacing
975-062	0.60	Bucket cylinder, removal

Op.no.	time (h)	Notes
975-063	1.50	Bucket cylinder, repacking in machine
975-065	0.80	Bucket cylinder, installation
975-069	1.50	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes
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1 STANDARD PARTS, SERVICE

17 SERVICE

170-005	0.25	Start of VCADS Pro computer and reading machine data
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	3.00	Delivery Inspection, according to Inspection Programme
172-002	3.00	Warranty inspection 100 hours
172-004	11.00	Warranty inspection 1000 hours
173-002	1.00	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	4.50	Maintenance service, every 500 hours
173-012	7.00	Maintenance service, every 1000 hours
173-014	10.00	Maintenance service, every 2000 hours
173-018	13.00	Maintenance service, every 4000 hours
173-022	11.00	Maintenance service, every 6000 hours
173-079	1.25	Swing motor gearbox, changing oil
173-101	0.60	Track motor gearbox, changing oil
173-401	0.80	Engine oil and filter, changing
173-412	0.20	Hydraulic oil tank breather filter, replacing
173-451	1.50	Hydraulic oil, changing

2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-068	1.75	E-ECU, MID 128, changing non-programmed ECU
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU

21 ENGINE

210-070	7.50	Engine, removing
210-072	8.50	Engine, installing
210-076	17.00	Engine, replacing
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
214-012	3.00	Valves, adjusting
214-036	1.50	Valve covers, fitting new gasket
216-014	4.00	Crankshaft, replacing front oil seal
216-018	12.00	Crankshaft, replacing rear oil seal
217-005	16.00	Oil level sensor, changing

Op.no.	time (h)	Notes
22		LUBRICATING SYSTEM
221-022	0.40	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-002	1.75	Feed pump, replacing
233-004	0.40	Feed pump, checking feed pressure
233-010	1.50	Fuel pump, inspection
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
233-020	0.20	Fuel filter, checking
234-010	5.00	Fuel tank, replacing
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-012	5.50	Unit injector, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.75	Silencer, replacing
252-021	1.50	Exhaust pipe, flexible tube, replacing
255-002	1.50	Turbocharger, inspection
255-071	4.50	Turbocharger, replacing
256-001	0.20	Air cleaner, cleaning filter element
256-003	0.20	Air cleaner, primary filter replacing
256-004	0.20	Air cleaner, secondary filter replacing
256-006	0.70	Preheating coil, replacing
258-002	5.00	Intercooler, replacing
258-022	0.70	Charge air cooler connection (hose, tube), replacing
258-030	2.00	Charge air system, inspection
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.70	Coolant, changing
261-008	5.50	Radiator, replacing
261-012	0.90	Radiator hose upper, replacing
261-014	1.50	Radiator hoses lower, replacing
261-018	0.90	Expansion tank, replacing
262-098	1.25	Thermostat, replacing
263-012	0.60	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	0.90	Fan belt and/or alternator-, compressor belt, replacing all belts

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.60	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-003	0.70	Main switch, replacing
311-006	0.50	Earth lead to battery, replacing
311-008	2.50	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	1.50	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.40	Starter relay, replacing
334-002	0.70	Starter switch, testing
334-002	0.70	Starter switch, testing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.40	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-052	0.60	Battery relay, replacing
364-056	0.60	Pre-heating relay, replacing
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
367-075	0.90	Engine speed control switch, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	0.50	Engine temperature sensor, replacing

Op.no.	time (h)		Notes
386-007	0.60	Engine oil pressure sensor, replacing	
386-011	0.30	Fuel level sender, replacing	
386-017	0.40	Hydraulic oil temperature sensor, replacing	
386-038	1.75	Engine rotation speed sensor, replacing	
386-043	0.50	Travel speed sensor or alarm sensor, replacing	
386-044	0.50	Auto idling sensor, replacing	
386-088	1.75	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-903	3.00	CareTrack standard cab, installing new	
390-904	3.00	CareTrack optional cab, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.60	Radio, replacing	110001 - 110011
393-021	0.60	Radio, replacing	110012 - 310000
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.50	Swing gearbox, replacing	
431-026	1.75	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	7.00	Pump gearbox coupling assembly, replacing	
431-036	7.00	Pump gearbox flange, replacing	
431-113	4.00	Track gearbox, removing	
431-114	3.50	Track gearbox, installing	
431-115	3.00	Track gearbox (removed), replacing floating seal	
431-117	1.75	Track gearbox, replacing cover	
431-127	7.00	Track unit, replacing	
44		HYDROSTATIC DRIVE	
441-017	1.25	Travel motor pressure, checking and adjusting	
441-021	3.50	Swing motor, replacing	
441-022	0.60	Swing motor relief valve, replacing	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	1.00	Swing motor removed, replacing seal	
441-032	1.00	Swing motor pressure, checking and adjusting	
441-111	6.00	Track motor, replacing	
441-112	0.80	Track motor relief valve, replacing	
441-115	2.00	Track motor removed, replacing seal	
443-037	6.00	Center passage, replacing	

Op.no.	time (h)		Notes
443-038	7.50	Center passage, replacing seal kit	
443-039	1.50	Center passage hose (valve – center passage), replacing	
443-040	2.00	Center passage hose (center passage – motor), replacing	
49		MISCELLANEOUS	
492-031	3.00	Swing ring gear outer seal, replacing	
492-091	0.50	Ring gear grease pipe, replacing	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	4.00	Superstructure, removing	
710-002	5.00	Superstructure, installing	
716-001	2.00	Counterweight, removing	110001 - 110110
716-003	4.00	Counterweight, replacing	
716-006	1.25	Removable counterweight, removing	
716-007	1.50	Removable counterweight, installing	
718-002	2.50	Retractable track, removing	
718-003	3.00	Retractable track, installing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	4.50	Front idler, replacing one	
775-021	5.00	Sprocket, replacing one	
775-032	0.60	Track shoe, replacing one	
775-033	9.00	Track shoe, replacing each side	
775-034	1.50	Track chain assembly, removing	
775-035	2.50	Track chain assembly, installing	
775-036	11.00	Track links, replacing	
775-051	1.00	Top roller, replacing one	
775-061	1.25	Bottom roller, replacing one	
775-071	1.25	Track guard, replacing one	
775-080	4.00	Track tension cylinder, replacing	
775-081	4.50	Track recoil spring (tensioner) assembly, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.75	Cab, removing	

Op.no.	time (h)	Notes
810-002	2.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	1.00	Engine hood, replacing
827-091	1.25	Tool box assembly, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	0.75	Door, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.30	Rear-view mirror, changing
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
873-019	0.90	ECC control unit, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.50	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	3.00	Pump suction hose and pipe, replacing

Op.no.	time (h)	Notes
911-011	5.00	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-017	2.00	Suction cover, replacing
911-024	1.25	Pipe and hose (pump - valve), replacing
911-025	1.00	Pipe and hose (valve - cylinder), replacing
911-026	0.75	Pipe and hose (valve - swing motor), replacing
911-031	1.50	Oil cooler line pipe and hose, replacing
911-032	1.25	Oil cooler line pipe coupling, replacing
911-033	2.00	Oil cooler line bypass valve (check valve), replacing
911-034	2.50	Oil cooler fan motor, replacing
911-038	5.00	Hydraulic oil tank, replacing
911-051	0.20	Breather, replacing
912-001	10.00	Control valve, replacing
912-067	0.75	Main pressure relief valve, replacing
912-070	1.00	Check valve, replacing
912-071	1.00	Rupture valve, replacing (boom cylinder)
912-073	1.50	Rupture valve, replacing (dipper arm cylinder)
913-004	1.25	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	6.00	Hydraulic pump, replacing
913-029	0.30	Pump regulator, replacing
914-036	1.50	Servo pump block seal, replacing
914-037	1.50	Servo pump shaft seal, replacing
914-041	0.80	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-055	0.70	Servo pressure, checking and adjusting
914-060	1.50	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.00	Solenoid valve, replacing
916-096	1.00	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.50	Quickfit pump (gear pump), replacing
924-021	2.50	Quickfit hydraulic cylinder bracket (body), replacing
925-011	1.50	Bucket assembly, replacing
925-012	0.70	Bucket assembly, removal
925-013	1.00	Bucket assembly, installation

Op.no.	time (h)	Notes
97		UNIT, DIGGING
974-010	14.00	Boom, replacing
974-013	7.00	Boom, removal
974-014	7.00	Boom, installation
974-017	2.00	Boom, replacing pin
974-021	3.00	Boom cylinder, replacing
974-022	3.00	Boom cylinder removed, repacking
974-024	0.70	Boom cylinder removed, replacing bearings and/or bushes
974-025	6.00	Boom cylinder, repacking in machine
974-031	1.50	Boom cylinder, removal
974-032	1.50	Boom cylinder, installation
975-006	0.80	Dipper arm connecting rod, removal
975-007	0.80	Dipper arm connecting rod, installation
975-011	4.50	Dipper arm, removal
975-012	4.50	Dipper arm, installation
975-014	1.50	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-024	1.50	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-026	3.50	Dipper arm cylinder removed, repacking
975-028	1.50	Connecting rod yoke, replacing
975-032	0.90	Connecting rod yoke, removal
975-035	0.80	Connecting rod yoke, installation
975-039	8.00	Dipper arm, replacing
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-065	1.25	Bucket cylinder, installation

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
170-005	0.25	Start of VCADS Pro computer and reading machine data
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	3.00	Delivery Inspection, according to Inspection Programme
172-002	3.00	Warranty inspection 100 hours
172-004	8.00	Warranty inspection 1000 hours
173-001	0.10	Maintenance service, as required
173-002	0.60	Maintenance service, daily
173-004	1.00	Maintenance service, every 50 hours
173-006	1.50	Maintenance service, every 100 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	5.50	Maintenance service, every 500 hours
173-012	5.00	Maintenance service, every 1000 hours
173-014	9.50	Maintenance service, every 2000 hours
173-018	9.50	Maintenance service, every 4000 hours
173-022	10.00	Maintenance service, every 6000 hours
173-030	0.30	Maintenance service, according to display message
173-079	0.70	Swing motor gearbox, changing oil
173-101	0.40	Track motor gearbox, changing oil
173-401	0.70	Engine oil and filter, changing
173-412	0.40	Hydraulic oil tank breather filter, replacing
173-451	1.25	Hydraulic oil, changing
173-649	0.30	Hydraulic oil return filter, replacing

2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-068	1.75	E-ECU, MID 128, changing non-programmed ECU
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU

21 ENGINE

210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
214-012	2.50	Valves, adjusting
217-005	2.50	Oil level sensor, changing

Op.no.	time (h)	Notes
22		LUBRICATING SYSTEM
221-022	0.60	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-002	0.80	Feed pump, replacing
233-004	0.50	Feed pump, checking feed pressure
233-010	1.00	Fuel pump, inspection
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
233-020	0.10	Fuel filter, checking
234-010	4.00	Fuel tank, replacing
234-041	0.40	Fuel filling pump, removing
234-042	0.40	Fuel filling pump, installing
235-003	0.40	Fuel return pressure, checking
237-002	2.00	Injectors, replacing all
237-004	0.70	Injector, replacing one
237-030	1.25	High pressure fuel pump, checking
237-032	1.50	High pressure fuel pump, replacing
237-035	0.50	Fuel rail pressure sensor, replacing
237-037	0.70	Fuel rail pressure, checking
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	2.00	Silencer, replacing
252-021	2.00	Exhaust pipe, flexible tube, replacing
255-002	2.50	Turbocharger, inspection
255-071	4.00	Turbocharger, replacing
256-001	0.25	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.60	Preheating coil, replacing
258-002	6.00	Intercooler, replacing
258-022	0.40	Charge air cooler connection (hose, tube), replacing
258-030	1.00	Charge air system, inspection
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.70	Coolant, changing
261-008	6.00	Radiator, replacing
261-012	0.60	Radiator hose upper, replacing
261-014	1.25	Radiator hoses lower, replacing
261-018	1.25	Expansion tank, replacing

Op.no.	time (h)	Notes
262-002	1.00	Coolant pump, replacing
262-098	0.90	Thermostat, replacing
263-012	0.60	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	0.60	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.50	I-ECU, MID 140, changing non-programmed ECU
300-074	0.90	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.30	Battery charging capacity, checking
311-002	1.00	Batteries, replacing
311-003	0.90	Main switch, replacing
311-006	0.60	Earth lead to battery, replacing
311-008	2.50	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.50	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	2.50	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
334-002	0.70	Starter switch, testing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.00	Windscreen wiper front, replacing motor
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller

Op.no.	time (h)	Notes
364-003	0.60	Control lockout lever switch, replacing
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-066	0.90	V-ECU, MID 187, changing pre-programmed ECU
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	0.50	Engine temperature sensor, replacing
386-007	0.60	Engine oil pressure sensor, replacing
386-011	0.50	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing
386-043	0.50	Travel speed sensor or alarm sensor, replacing
386-088	0.60	Engine rotation speed sensor (camshaft), replacing
39		MISCELLANEOUS
390-903	3.00	CareTrack standard cab, installing new
390-904	3.00	CareTrack optional cab, installing new
393-001	0.50	Voltage converter, replacing
393-021	0.60	Radio, replacing
395-021	0.40	Antenna, replacing
395-031	0.40	Speaker, replacing
4		POWER TRANSMISSION
43		GEARBOX,
431-021	5.50	Swing gearbox, replacing
431-026	1.50	Swing gearbox removed, replacing seal
431-027	2.50	Swing gearbox removed, replacing shaft
431-031	5.50	Pump gearbox coupling assembly, replacing
431-036	5.50	Pump gearbox flange, replacing
431-115	1.75	Track gearbox (removed), replacing floating seal
431-117	1.25	Track gearbox, replacing cover
431-127	6.00	Track unit, replacing
44		HYDROSTATIC DRIVE
441-017	1.00	Travel motor pressure, checking and adjusting
441-021	4.50	Swing motor, replacing
441-022	1.25	Swing motor relief valve, replacing
441-024	1.50	Swing motor, replacing plate (brake)
441-025	1.50	Swing motor, replacing brake piston seal
441-026	0.40	Swing motor removed, replacing seal
441-032	0.75	Swing motor pressure, checking and adjusting
441-112	0.70	Track motor relief valve, replacing
441-115	2.00	Track motor removed, replacing seal
443-037	10.00	Center passage, replacing

Op.no.	time (h)		Notes
443-038	12.00	Center passage, replacing seal kit	
443-039	1.25	Center passage hose (valve – center passage), replacing	
443-040	1.75	Center passage hose (center passage – motor), replacing	
49		MISCELLANEOUS	
492-021	17.00	Swing ring gear, replacing	
492-031	3.00	Swing ring gear outer seal, replacing	110665 - 210000
492-031	3.00	Swing ring gear outer seal, replacing	110001 - 110664
492-032	9.00	Swing ring gear inner seal, replacing	110665 - 210000
492-032	15.00	Swing ring gear inner seal, replacing	110001 - 110664
492-091	0.50	Ring gear grease pipe, replacing	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	6.50	Superstructure, removing	
710-002	8.50	Superstructure, installing	
716-001	1.00	Counterweight, removing	
716-002	1.00	Counterweight, fitting	
716-003	2.00	Counterweight, replacing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-032	0.40	Track shoe, replacing one	
775-033	7.50	Track shoe, replacing each side	
775-034	1.25	Track chain assembly, removing	
775-035	1.75	Track chain assembly, installing	
775-036	9.50	Track links, replacing	
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	
775-071	0.90	Track guard, replacing one	
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	
775-094	1.75	Full track guard, replacing	

Op.no.	time (h)	Notes	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.50	Cab, removing	
810-002	2.00	Cab, installing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	0.90	Engine hood, replacing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	0.75	Door, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.30	Rear-view mirror, changing	
843-002	2.00	Windscreen, replacing	
843-012	4.00	Rear window, replacing	
843-013	4.50	Side window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	
87		AIR CONDITIONING UNIT	
870-003	1.75	Cooler and Heater assembly, removal	
870-004	1.75	Cooler and Heater assembly, installation	
872-001	0.50	Cab filter, replacing	
873-004	3.50	Heater core, replacing	
873-006	4.00	Fan motor, replacing	
873-014	0.90	Water valve, replacing	
873-019	0.40	ECC control unit, replacing	
874-006	1.75	Compressor, replacing incl draining and filling	
874-010	1.25	Condenser, replacing incl draining and filling	
874-011	1.25	Receiver, replacing incl draining and filling	
874-012	3.50	Evaporator, replacing incl draining and filling	
874-013	3.50	Expansion valve, replacing incl draining and filling110001 - 110013	
874-013	1.75	Expansion valve, replacing incl draining and filling110014 - 210000	
874-021	0.60	Defroster actuator, replacing	
874-094	0.40	Vent actuator, replacing	110021 - 310000
874-094	0.60	Vent actuator, replacing	110001 - 110020
874-095	0.60	Mode (foot) actuator, replacing	
874-096	0.40	Intake actuator, replacing	
88		INTERIOR EQUIPMENT	
881-003	1.00	Instrument panel, replacing (left)	
881-005	1.25	Instrument panel, replacing (right)	

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	2.00	Pump suction hose and pipe, replacing
911-011	6.50	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-017	2.00	Suction cover, replacing
911-024	1.50	Pipe and hose (pump - valve), replacing
911-025	0.70	Pipe and hose (valve - cylinder), replacing
911-026	1.50	Pipe and hose (valve - swing motor), replacing
911-031	2.00	Oil cooler line pipe and hose, replacing
911-032	2.00	Oil cooler line pipe coupling, replacing
911-033	1.50	Oil cooler line bypass valve (check valve), replacing
911-034	6.50	Oil cooler fan motor, replacing
911-035	1.25	Oil cooler fan pump, replacing
911-038	3.50	Hydraulic oil tank, replacing
911-040	0.50	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.40	Breather, replacing
912-067	0.70	Main pressure relief valve, replacing
912-071	0.70	Rupture valve, replacing (boom cylinder)
912-073	0.70	Rupture valve, replacing (dipper arm cylinder)
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	5.00	Hydraulic pump, replacing
913-029	0.40	Pump regulator, replacing
914-036	1.00	Servo pump block seal, replacing
914-037	1.00	Servo pump shaft seal, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.40	Accumulator, replacing
914-055	0.75	Servo pressure, checking and adjusting
914-060	0.80	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.25	Remote control valve hose, replacing
914-091	1.50	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.25	Quickfit pump (gear pump), replacing
924-005	0.80	Quickfit, removal

Op.no.	time (h)	Notes
924-006	1.00	Quickfit, installation
924-021	2.00	Quickfit hydraulic cylinder bracket (body), replacing
925-011	1.25	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.90	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	4.50	Boom, removal
974-014	7.50	Boom, installation
974-017	2.00	Boom, replacing pin
974-022	2.50	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	4.00	Boom cylinder, repacking in machine
974-031	1.25	Boom cylinder, removal
974-032	1.25	Boom cylinder, installation
975-011	3.50	Dipper arm, removal
975-012	3.50	Dipper arm, installation
975-014	1.50	Dipper arm cylinder, removal
975-015	1.25	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-026	3.00	Dipper arm cylinder removed, repacking
975-028	1.50	Connecting rod yoke, replacing
975-032	0.50	Connecting rod yoke, removal
975-035	0.50	Connecting rod yoke, installation
975-039	5.00	Dipper arm, replacing
975-043	4.50	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.00	Bucket cylinder, replacing
975-062	0.80	Bucket cylinder, removal
975-063	5.00	Bucket cylinder, repacking in machine
975-065	1.25	Bucket cylinder, installation
975-069	2.00	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing
98		FUNCTION FOR ROAD CONSTRUCTION
981-081	0.60	Blade lift cylinder, removing
981-086	0.80	Blade lift cylinder, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
170-005	0.25	Start of VCADS Pro computer and reading machine data
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	3.00	Delivery Inspection, according to Inspection Programme
172-002	3.00	Warranty inspection 100 hours
172-004	8.00	Warranty inspection 1000 hours
173-001	0.10	Maintenance service, as required
173-002	0.60	Maintenance service, daily
173-004	1.00	Maintenance service, every 50 hours
173-006	1.50	Maintenance service, every 100 hours
173-007	1.75	Maintenance service, every 250 hours
173-010	5.50	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	9.50	Maintenance service, every 2000 hours
173-018	9.50	Maintenance service, every 4000 hours
173-022	11.00	Maintenance service, every 6000 hours
173-030	0.30	Maintenance service, according to display message
173-079	0.70	Swing motor gearbox, changing oil
173-101	0.40	Track motor gearbox, changing oil
173-401	0.70	Engine oil and filter, changing
173-412	0.40	Hydraulic oil tank breather filter, replacing
173-451	1.25	Hydraulic oil, changing
173-649	0.30	Hydraulic oil return filter, replacing

2 ENGINE WITH MOUNTING AND EQUIPMENT

20		GENERAL
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	1.00	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
214-012	2.50	Valves, adjusting
214-036	1.00	Valve covers, fitting new gasket
217-005	2.50	Oil level sensor, changing

Op.no.	time (h)	Notes
22		LUBRICATING SYSTEM
221-022	0.60	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-002	0.90	Feed pump, replacing
233-004	0.50	Feed pump, checking feed pressure
233-010	1.25	Fuel pump, inspection
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
233-020	0.20	Fuel filter, checking
234-010	4.00	Fuel tank, replacing
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
235-003	0.40	Fuel return pressure, checking
237-002	3.00	Injectors, replacing all
237-004	0.70	Injector, replacing one
237-030	1.50	High pressure fuel pump, checking
237-033	0.80	Fuel control valve (FCV), replacing
237-037	0.70	Fuel rail pressure, checking
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	2.00	Silencer, replacing
252-021	2.00	Exhaust pipe, flexible tube, replacing
255-002	3.00	Turbocharger, inspection
255-071	2.00	Turbocharger, replacing
256-001	0.25	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	1.25	Preheating coil, replacing
258-022	1.00	Charge air cooler connection (hose, tube), replacing
258-030	1.75	Charge air system, inspection
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.70	Coolant, changing
261-012	1.25	Radiator hose upper, replacing
261-014	2.00	Radiator hoses lower, replacing
261-018	1.25	Expansion tank, replacing
262-002	1.00	Coolant pump, replacing
262-098	1.50	Thermostat, replacing
263-012	0.60	Fan belt and/or alternator belt, replacing

Op.no.	time (h)	Notes
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.50	I-ECU, MID 140, changing non-programmed ECU
300-074	0.90	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.30	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-003	0.90	Main switch, replacing
311-006	0.60	Earth lead to battery, replacing
311-008	2.50	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.50	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	2.50	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
334-002	0.70	Starter switch, testing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.00	Windscreen wiper front, replacing motor
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-066	0.90	V-ECU, MID 187, changing pre-programmed ECU

Op.no.	time (h)	Notes	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-006	0.50	Engine temperature sensor, replacing	
386-007	0.60	Engine oil pressure sensor, replacing	
386-011	0.50	Fuel level sender, replacing	
386-017	0.50	Hydraulic oil temperature sensor, replacing	
386-038	2.50	Engine rotation speed sensor, replacing	
386-043	0.50	Travel speed sensor or alarm sensor, replacing	
386-088	0.60	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-903	3.00	CareTrack standard cab, installing new	
390-904	3.00	CareTrack optional cab, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.60	Radio, replacing	
395-021	0.40	Antenna, replacing	
395-031	0.40	Speaker, replacing	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	5.50	Swing gearbox, replacing	
431-026	0.50	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	5.50	Pump gearbox coupling assembly, replacing	
431-036	5.50	Pump gearbox flange, replacing	
431-053	6.50	Swing unit, replacing	
431-115	1.75	Track gearbox (removed), replacing floating seal	110011 - 110261
431-117	1.25	Track gearbox, replacing cover	110262 - 310000
431-117	1.25	Track gearbox, replacing cover	110011 - 110261
431-127	6.00	Track unit, replacing	110011 - 110261
431-127	6.50	Track unit, replacing	110262 - 310000
44		HYDROSTATIC DRIVE	
441-017	1.00	Travel motor pressure, checking and adjusting	
441-021	2.50	Swing motor, replacing	
441-022	1.25	Swing motor relief valve, replacing	
441-024	1.75	Swing motor, replacing plate (brake)	
441-025	1.75	Swing motor, replacing brake piston seal	
441-026	0.30	Swing motor removed, replacing seal	
441-032	0.75	Swing motor pressure, checking and adjusting	
441-112	0.70	Track motor relief valve, replacing	
441-115	2.00	Track motor removed, replacing seal	

Op.no.	time (h)		Notes
443-037	10.00	Center passage, replacing	
443-038	12.00	Center passage, replacing seal kit	
443-039	1.25	Center passage hose (valve – center passage), replacing	
443-040	1.50	Center passage hose (center passage – motor), replacing	
49		MISCELLANEOUS	
492-021	13.00	Swing ring gear, replacing	
492-031	3.00	Swing ring gear outer seal, replacing	110001 - 110599
492-031	3.00	Swing ring gear outer seal, replacing	110600 - 210000
492-032	9.00	Swing ring gear inner seal, replacing	110600 - 210000
492-032	12.00	Swing ring gear inner seal, replacing	110001 - 110599
492-091	0.50	Ring gear grease pipe, replacing	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	6.50	Superstructure, removing	
710-002	8.50	Superstructure, installing	
716-001	1.25	Counterweight, removing	
716-002	1.25	Counterweight, fitting	
716-003	2.50	Counterweight, replacing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-032	0.40	Track shoe, replacing one	
775-033	7.50	Track shoe, replacing each side	
775-034	1.25	Track chain assembly, removing	
775-035	1.75	Track chain assembly, installing	
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	
775-066	3.00	Bottom roller, replacing seal	
775-071	0.90	Track guard, replacing one	
775-071	0.90	Track guard, replacing one	
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	
775-094	1.75	Full track guard, replacing	

Op.no.	time (h)	Notes	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.50	Cab, removing	
810-002	2.00	Cab, installing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-005	0.90	Engine hood, replacing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-004	0.75	Door, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
841-061	0.30	Rear-view mirror, changing	
843-002	2.00	Windscreen, replacing	
843-012	4.00	Rear window, replacing	
843-013	4.50	Side window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	
87		AIR CONDITIONING UNIT	
870-003	1.75	Cooler and Heater assembly, removal	
870-004	1.75	Cooler and Heater assembly, installation	
872-001	0.50	Cab filter, replacing	
873-004	3.50	Heater core, replacing	
873-006	4.00	Fan motor, replacing	
873-014	0.90	Water valve, replacing	
873-019	0.40	ECC control unit, replacing	
874-006	1.75	Compressor, replacing incl draining and filling	
874-010	1.25	Condenser, replacing incl draining and filling	
874-011	1.25	Receiver, replacing incl draining and filling	
874-012	3.50	Evaporator, replacing incl draining and filling	
874-013	3.50	Expansion valve, replacing incl draining and filling	
874-013	1.75	Expansion valve, replacing incl draining and filling	
874-021	0.60	Defroster actuator, replacing	
874-094	0.40	Vent actuator, replacing	110017 - 310000
874-094	0.60	Vent actuator, replacing	110001 - 110016
874-095	0.60	Mode (foot) actuator, replacing	
874-096	0.40	Intake actuator, replacing	
88		INTERIOR EQUIPMENT	
881-003	1.00	Instrument panel, replacing (left)	
881-005	1.25	Instrument panel, replacing (right)	

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	2.00	Pump suction hose and pipe, replacing
911-011	7.00	Oil cooler, replacing
911-015	0.60	Oil level gauge, replacing
911-017	2.00	Suction cover, replacing
911-024	1.25	Pipe and hose (pump - valve), replacing
911-025	0.70	Pipe and hose (valve - cylinder), replacing
911-026	1.50	Pipe and hose (valve - swing motor), replacing
911-031	2.00	Oil cooler line pipe and hose, replacing
911-032	2.00	Oil cooler line pipe coupling, replacing
911-033	0.90	Oil cooler line bypass valve (check valve), replacing
911-034	7.00	Oil cooler fan motor, replacing
911-035	2.00	Oil cooler fan pump, replacing
911-038	4.00	Hydraulic oil tank, replacing
911-040	0.50	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-067	0.70	Main pressure relief valve, replacing
912-071	1.00	Rupture valve, replacing (boom cylinder)
912-073	0.80	Rupture valve, replacing (dipper arm cylinder)
912-160	0.80	Port relief valve pressure, checking and adjusting
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-005	2.00	Hydraulic pump, flow control
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	5.00	Hydraulic pump, replacing
913-029	0.50	Pump regulator, replacing
914-036	1.00	Servo pump block seal, replacing
914-037	1.00	Servo pump shaft seal, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-055	0.75	Servo pressure, checking and adjusting
914-060	0.80	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.25	Remote control valve hose, replacing
914-091	1.50	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing

Op.no.	time (h)	Notes
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.25	Quickfit pump (gear pump), replacing
924-005	0.80	Quickfit, removal
924-006	1.00	Quickfit, installation
924-021	2.00	Quickfit hydraulic cylinder bracket (body), replacing
925-011	1.25	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.90	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	5.00	Boom, removal
974-014	7.00	Boom, installation
974-017	2.00	Boom, replacing pin
974-022	2.50	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	4.00	Boom cylinder, repacking in machine
974-031	1.25	Boom cylinder, removal
974-032	1.25	Boom cylinder, installation
975-006	0.70	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-011	3.50	Dipper arm, removal
975-012	3.50	Dipper arm, installation
975-014	1.50	Dipper arm cylinder, removal
975-015	1.25	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-026	3.00	Dipper arm cylinder removed, repacking
975-028	1.50	Connecting rod yoke, replacing
975-032	0.70	Connecting rod yoke, removal
975-035	1.00	Connecting rod yoke, installation
975-039	5.00	Dipper arm, replacing
975-043	4.50	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.00	Bucket cylinder, replacing
975-062	0.80	Bucket cylinder, removal
975-063	5.00	Bucket cylinder, repacking in machine
975-065	1.25	Bucket cylinder, installation
975-069	2.00	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes
98		FUNCTION FOR ROAD CONSTRUCTION
981-081	0.60	Blade lift cylinder, removing
981-086	0.70	Blade lift cylinder, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	3.00	Delivery Inspection, according to Inspection Programme
173-002	0.50	Maintenance service, daily
173-004	1.25	Maintenance service, every 50 hours
173-007	2.00	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	6.50	Maintenance service, every 1000 hours
173-014	7.00	Maintenance service, every 2000 hours
173-016	10.00	Maintenance service, every 3000 hours
173-059	0.60	Engine, changing oil and filter
173-073	0.90	Hydraulic oil tank, changing oil
173-074	1.00	Hydraulic oil tank, changing oil and filter
173-076	0.50	Hydraulic oil tank, return oil filter change
173-078	0.20	Engine, air cleaner maintenance
173-087	0.60	Coolant, changing
173-088	0.20	Fuel filter, replacing
173-093	0.30	Track tension, checking
19		GENERAL
191-022	0.10	Service position 2
191-025	0.10	Service position 3
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	1.50	Engine, removing
210-072	1.75	Engine, installing
214-012	1.75	Valves, adjusting
214-036	1.00	Valve covers, fitting new gasket
216-014	3.00	Crankshaft, replacing front oil seal
216-018	4.25	Crankshaft, replacing rear oil seal
218-008	0.70	Engine mounts, removing
218-009	0.80	Engine mounts, replacing
23		FUEL SYSTEM
233-001	0.50	Fuel system, bleeding
233-002	0.75	Feed pump, replacing
233-014	0.50	Fuel filters, replacing
234-010	3.25	Fuel tank, replacing

Op.no.	time (h)	Notes
234-011	1.50	Fuel tank, removing
234-012	1.75	Fuel tank, installing
235-002	0.20	Fuel line, water separator, check and drain
236-001	0.30	Idling speed, checking and adjusting
236-073	2.75	Injection pump, replacing incl setting injection timing
237-002	2.25	Injectors, replacing all
237-004	1.50	Injector, replacing one
237-018	0.25	Delivery pipe, replacing one
25		INLET SYSTEM; EXHAUST SYSTEM
252-017	0.50	Silencer, removing
252-018	0.50	Silencer, installing
252-020	1.75	Silencer, replacing
256-001	0.50	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing
256-010	0.40	Air cleaner, removing
256-011	0.50	Air cleaner, installing
26		COOLING SYSTEM
260-002	2.50	Cooling system, flushing
261-004	0.75	Coolant, changing
261-008	1.75	Radiator, replacing
261-011	0.80	Radiator, removing
261-012	0.75	Radiator hose upper, replacing
261-013	0.90	Radiator, installing
261-014	0.75	Radiator hoses lower, replacing
261-018	0.25	Expansion tank, replacing
262-002	1.75	Coolant pump, replacing
262-005	0.90	Coolant pump, removing
262-006	1.25	Coolant pump, installing
262-098	1.25	Thermostat, replacing
263-012	0.60	Fan belt and/or alternator belt, replacing
263-013	0.20	Fan belt and/or alternator belt, checking and adjusting tension
27		ENGINE CONTROL
275-014	0.30	Automatic idling device, removing
275-015	0.30	Automatic idling device, installing

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.70	Batteries, replacing
311-003	0.50	Main switch, replacing
311-005	0.70	Battery condition, check
311-006	0.25	Earth lead to battery, replacing
311-008	2.25	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	2.25	Alternator, replacing incl function check
321-003	0.50	Alternator, removing
321-004	0.50	Alternator, installing
33		STARTING SYSTEM
331-016	0.60	Starter motor, removing
331-017	0.40	Starter motor, installing
331-018	3.00	Starter motor, replacing
331-081	0.50	Starter relay, replacing
334-011	0.75	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.25	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.50	Horn, replacing
363-002	0.75	Windscreen wiper front, replacing motor
363-003	0.50	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-004	0.50	Switch, replacing
364-050	0.50	Relay (general), replacing
364-052	0.50	Battery relay, replacing
367-052	0.90	V-ECU, replacing
37		CABLE; FUSE; RELAY
372-020	0.25	Fuse (general), replacing
379-011	0.75	Boom wire harness, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	0.25	Engine temperature sensor, replacing
386-007	0.25	Engine oil pressure sensor, replacing
386-011	0.75	Fuel level sender, replacing

Op.no.	time (h)	Notes
4		POWER TRANSMISSION
44		HYDROSTATIC DRIVE
441-011	3.00	Travel motor, replacing one
441-030	1.25	Swing motor, removing
441-031	1.50	Swing motor, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	0.50	Counterweight, removing
716-002	0.60	Counterweight, fitting
716-003	1.25	Counterweight, replacing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-009	1.50	Front idler, removing
775-010	1.50	Front idler, installing
775-021	3.00	Sprocket, replacing one
775-022	1.25	Sprocket, removal
775-023	1.75	Sprocket, installation
775-024	0.30	Removing the guide sprocket
775-025	0.30	Assembling the guide sprocket
775-034	1.00	Track chain assembly, removing
775-035	1.00	Track chain assembly, installing
775-051	1.00	Top roller, replacing one
775-052	0.50	Top roller, removal
775-053	0.50	Top roller, installation
775-061	1.25	Bottom roller, replacing one
775-062	0.75	Bottom roller, removing
775-063	0.50	Bottom roller, installing
775-071	0.50	Track guard, replacing one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	0.60	Cab, removing
810-002	0.60	Cab, installing
810-003	3.25	Operator cab, replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.20	Engine hood, removing

Op.no.	time (h)	Notes
821-002	0.30	Engine hood, installing
821-005	0.75	Engine hood, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	0.50	Door, replacing
831-051	0.50	Cab door, changing door catch
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.25	Rear-view mirror, changing
843-002	1.75	Windscreen, replacing
843-012	1.00	Rear window, replacing
843-013	1.75	Side window, replacing
843-048	1.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.40	Operator's seat, removing
852-004	0.30	Operator's seat, installing
852-008	0.75	Seat, replacing
87		AIR CONDITIONING UNIT
873-004	0.80	Heater core, replacing
88		INTERIOR EQUIPMENT
881-001	0.20	Instrument console, removing
881-002	0.20	Instrument console, installing
884-001	0.50	Seat safety belt, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-001	0.50	Oil return filter, replacing
911-003	0.70	Hydraulic oil filter, replacing
911-005	1.00	Pump suction hose and pipe, replacing
911-011	1.75	Oil cooler, replacing
911-013	0.50	Hydraulic oil cooler, removing
911-014	0.50	Hydraulic oil cooler, installing
911-036	1.25	Hydraulic oil tank, removing
911-037	1.25	Hydraulic oil tank, installing
911-038	3.50	Hydraulic oil tank, replacing
912-001	8.75	Control valve, replacing
912-071	1.00	Rupture valve, replacing (boom cylinder)
912-073	1.50	Rupture valve, replacing (dipper arm cylinder)
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)

Op.no.	time (h)	Notes
912-091	1.50	Main control valve, removal
912-092	1.50	Main control valve, installation
912-100	1.25	Hydraulic swivel joint, removing
912-101	1.50	Hydraulic swivel joint, installing
913-010	2.00	Hydraulic pump, replacing
913-013	3.75	Hydraulic pump, replacing seal for input shaft
916-044	0.50	Boom, replacing hose (boom cylinder)
916-045	0.50	Boom, replacing pipe (dipper arm cylinder)
916-046	0.50	Boom, replacing hose (dipper arm cylinder)
916-047	0.75	Boom, replacing pipe (bucket cylinder)
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)
916-049	0.50	Dipper arm, replacing pipe (bucket cylinder)
92		MECHANICAL EQUIPMENT/ATTACHMENT
925-012	0.25	Bucket assembly, removal
925-013	0.25	Bucket assembly, installation
97		UNIT, DIGGING
974-010	4.75	Boom, replacing
974-013	2.00	Boom, removal
974-014	2.75	Boom, installation
974-017	1.00	Boom, replacing pin
974-021	1.00	Boom cylinder, replacing
974-022	1.50	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-031	0.50	Boom cylinder, removal
974-032	0.50	Boom cylinder, installation
975-011	1.25	Dipper arm, removal
975-012	1.25	Dipper arm, installation
975-014	0.50	Dipper arm cylinder, removal
975-015	0.50	Dipper arm cylinder, installation
975-025	1.00	Dipper arm cylinder, replacing
975-039	2.50	Dipper arm, replacing
975-061	1.00	Bucket cylinder, replacing
975-062	0.50	Bucket cylinder, removal
975-065	0.50	Bucket cylinder, installation

Op.no.	time (h)	Notes
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1 STANDARD PARTS, SERVICE

17 SERVICE

170-005	0.25	Start of VCADS Pro computer and reading machine data
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	3.00	Delivery Inspection, according to Inspection Programme
172-002	3.00	Warranty inspection 100 hours
172-004	8.00	Warranty inspection 1000 hours
173-002	0.90	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	4.50	Maintenance service, every 500 hours
173-012	7.00	Maintenance service, every 1000 hours
173-014	13.00	Maintenance service, every 2000 hours
173-018	13.00	Maintenance service, every 4000 hours
173-022	13.00	Maintenance service, every 6000 hours
173-079	1.50	Swing motor gearbox, changing oil
173-101	0.50	Track motor gearbox, changing oil
173-401	0.60	Engine oil and filter, changing
173-412	0.20	Hydraulic oil tank breather filter, replacing
173-451	1.25	Hydraulic oil, changing

2 ENGINE WITH MOUNTING AND EQUIPMENT

20 GENERAL

200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	1.00	E-ECU, MID 128, changing pre-programmed ECU

21 ENGINE

210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope
214-012	3.00	Valves, adjusting

23 FUEL SYSTEM

230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-002	0.90	Feed pump, replacing
233-004	0.50	Feed pump, checking feed pressure
233-010	1.25	Fuel pump, inspection
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing

Op.no.	time (h)	Notes
233-020	0.20	Fuel filter, checking
234-041	0.40	Fuel filling pump, removing
234-042	0.40	Fuel filling pump, installing
235-003	0.40	Fuel return pressure, checking
237-004	0.70	Injector, replacing one
237-030	1.50	High pressure fuel pump, checking
237-033	0.80	Fuel control valve (FCV), replacing
237-035	0.50	Fuel rail pressure sensor, replacing
237-036	0.30	Pressure relief valve (PRV), checking
237-037	0.70	Fuel rail pressure, checking
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.70	Coolant, changing
261-018	1.25	Expansion tank, replacing
263-022	0.60	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.50	I-ECU, MID 140, changing non-programmed ECU
300-074	0.90	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.30	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-003	0.90	Main switch, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.50	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	1.75	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
334-002	0.70	Starter switch, testing
334-011	0.50	Starter switch (engine start switch), replacing
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-002	0.30	Horn, replacing

Op.no.	time (h)	Notes
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.00	Windscreen wiper front, replacing motor
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-066	0.90	V-ECU, MID 187, changing pre-programmed ECU
39		MISCELLANEOUS
390-903	3.00	CareTrack standard cab, installing new
390-904	3.00	CareTrack optional cab, installing new
393-001	0.50	Voltage converter, replacing
393-021	0.60	Radio, replacing
4		POWER TRANSMISSION
43		GEARBOX,
431-021	7.50	Swing gearbox, replacing
431-026	1.50	Swing gearbox removed, replacing seal
431-027	2.50	Swing gearbox removed, replacing shaft
431-031	4.50	Pump gearbox coupling assembly, replacing
431-036	5.50	Pump gearbox flange, replacing
431-053	6.50	Swing unit, replacing
431-115	2.50	Track gearbox (removed), replacing floating seal
431-117	1.50	Track gearbox, replacing cover
431-127	6.00	Track unit, replacing
44		HYDROSTATIC DRIVE
441-021	4.50	Swing motor, replacing
441-022	1.25	Swing motor relief valve, replacing
441-024	1.75	Swing motor, replacing plate (brake)
441-025	1.75	Swing motor, replacing brake piston seal
441-026	0.40	Swing motor removed, replacing seal
441-032	0.75	Swing motor pressure, checking and adjusting
441-112	0.70	Track motor relief valve, replacing
441-115	2.00	Track motor removed, replacing seal
443-037	7.00	Center passage, replacing
443-038	8.50	Center passage, replacing seal kit
443-039	1.50	Center passage hose (valve – center passage), replacing
443-040	1.50	Center passage hose (center passage – motor), replacing

Op.no.	time (h)		Notes
49		MISCELLANEOUS	
492-021	13.00	Swing ring gear, replacing	
492-031	3.00	Swing ring gear outer seal, replacing	110001 - 110312
492-031	3.00	Swing ring gear outer seal, replacing	110313 - 310000
492-032	9.00	Swing ring gear inner seal, replacing	110313 - 310000
492-032	12.00	Swing ring gear inner seal, replacing	110001 - 110312
492-091	0.40	Ring gear grease pipe, replacing	
492-091	0.50	Ring gear grease pipe, replacing	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-001	6.50	Superstructure, removing	
710-002	8.50	Superstructure, installing	
716-001	1.50	Counterweight, removing	
716-002	1.50	Counterweight, fitting	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	3.00	Front idler, replacing one	
775-021	3.50	Sprocket, replacing one	
775-032	0.40	Track shoe, replacing one	
775-033	8.00	Track shoe, replacing each side	
775-034	1.25	Track chain assembly, removing	
775-035	1.75	Track chain assembly, installing	
775-036	11.00	Track links, replacing	
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	
775-066	3.00	Bottom roller, replacing seal	
775-071	0.90	Track guard, replacing one	
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.50	Cab, removing	
810-002	2.00	Cab, installing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-002	2.00	Windscreen, replacing	

Op.no.	time (h)	Notes
87		AIR CONDITIONING UNIT
870-003	1.75	Cooler and Heater assembly, removal
870-004	1.75	Cooler and Heater assembly, installation
872-001	0.50	Cab filter, replacing
873-004	4.00	Heater core, replacing
873-006	4.00	Fan motor, replacing
873-014	0.90	Water valve, replacing
873-019	0.40	ECC control unit, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.25	Condenser, replacing incl draining and filling
874-011	1.25	Receiver, replacing incl draining and filling
874-012	4.00	Evaporator, replacing incl draining and filling
874-013	1.75	Expansion valve, replacing incl draining and filling
874-021	0.60	Defroster actuator, replacing
874-094	0.40	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.40	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	2.00	Pump suction hose and pipe, replacing
911-011	5.00	Oil cooler, replacing
911-015	0.70	Oil level gauge, replacing
911-017	2.00	Suction cover, replacing
911-024	1.50	Pipe and hose (pump - valve), replacing
911-026	1.50	Pipe and hose (valve - swing motor), replacing
911-033	1.00	Oil cooler line bypass valve (check valve), replacing
911-034	5.00	Oil cooler fan motor, replacing
911-035	2.00	Oil cooler fan pump, replacing
911-038	4.00	Hydraulic oil tank, replacing
911-040	0.50	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	9.00	Control valve, replacing
912-067	0.70	Main pressure relief valve, replacing
912-070	0.90	Check valve, replacing

Op.no.	time (h)	Notes
912-071	1.00	Rupture valve, replacing (boom cylinder)
912-073	0.80	Rupture valve, replacing (dipper arm cylinder)
912-160	0.80	Port relief valve pressure, checking and adjusting
913-004	1.00	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	5.00	Hydraulic pump, replacing
913-029	0.70	Pump regulator, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-060	0.80	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.25	Remote control valve hose, replacing
914-091	1.50	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
925-011	1.25	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.90	Bucket assembly, installation
97		UNIT, DIGGING
974-013	4.00	Boom, removal
974-014	4.50	Boom, installation
974-021	3.00	Boom cylinder, replacing
974-031	2.00	Boom cylinder, removal
974-032	1.00	Boom cylinder, installation
974-047	0.50	Adapter, removal
974-048	0.60	Adapter, installation
975-006	0.70	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-011	3.50	Dipper arm, removal
975-012	3.50	Dipper arm, installation
975-014	1.50	Dipper arm cylinder, removal
975-015	1.25	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-028	1.50	Connecting rod yoke, replacing
975-032	0.70	Connecting rod yoke, removal
975-035	1.00	Connecting rod yoke, installation
975-039	9.00	Dipper arm, replacing
975-061	2.50	Bucket cylinder, replacing
975-062	1.50	Bucket cylinder, removal

Op.no.	time (h)	Notes
975-065	1.75	Bucket cylinder, installation
98		FUNCTION FOR ROAD CONSTRUCTION
981-081	0.70	Blade lift cylinder, removing
981-086	0.80	Blade lift cylinder, installing

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
172-002	3.00	Warranty inspection 100 hours	
172-004	6.50	Warranty inspection 1000 hours	
173-002	1.00	Maintenance service, daily	
173-004	1.25	Maintenance service, every 50 hours	
173-007	2.00	Maintenance service, every 250 hours	
173-010	3.50	Maintenance service, every 500 hours	
173-012	6.50	Maintenance service, every 1000 hours	
173-013	5.00	Maintenance service, every 1500 hours	
173-014	7.00	Maintenance service, every 2000 hours	
173-016	10.00	Maintenance service, every 3000 hours	
173-059	0.60	Engine, changing oil and filter	
173-073	0.80	Hydraulic oil tank, changing oil	
173-081	0.70	Travel motor gearbox, changing oil	
173-087	0.70	Coolant, changing	
173-093	0.30	Track tension, checking	
173-093	0.30	Track tension, checking	
19		GENERAL	
191-022	0.10	Service position 2	
191-025	0.10	Service position 3	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
210-002	2.50	Compression test	
210-070	1.75	Engine, removing	
210-072	2.50	Engine, installing	
214-012	1.75	Valves, adjusting	
214-036	0.60	Valve covers, fitting new gasket	
214-036	0.60	Valve covers, fitting new gasket	
216-014	3.00	Crankshaft, replacing front oil seal	
22		LUBRICATING SYSTEM	
221-014	3.50	Oil pump, replacing	4838 - 5175
221-014	3.50	Oil pump, replacing	5176 - 9999
23		FUEL SYSTEM	
233-011	0.20	Fuel pump, removing	
233-012	0.20	Fuel pump, installing	
234-011	1.00	Fuel tank, removing	
234-012	0.70	Fuel tank, installing	

Op.no.	time (h)		Notes
236-001	0.30	Idling speed, checking and adjusting	
236-030	1.00	Injection timing, checking	
236-070	3.00	Injection pump, removing	
25		INLET SYSTEM; EXHAUST SYSTEM	
252-017	0.40	Silencer, removing	
252-018	0.40	Silencer, installing	
256-006	0.40	Preheating coil, replacing	4838 - 5175
256-010	0.30	Air cleaner, removing	
256-011	0.20	Air cleaner, installing	
26		COOLING SYSTEM	
261-011	0.90	Radiator, removing	
261-013	0.80	Radiator, installing	
262-005	0.70	Coolant pump, removing	
262-006	0.90	Coolant pump, installing	
262-098	0.70	Thermostat, replacing	
263-012	0.40	Fan belt and/or alternator belt, replacing	
263-013	0.20	Fan belt and/or alternator belt, checking and adjusting tension	
27		ENGINE CONTROL	
275-014	0.20	Automatic idling device, removing	
275-015	0.30	Automatic idling device, installing	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
31		BATTERY	
311-002	0.40	Batteries, replacing	
311-005	0.60	Battery condition, check	
32		ALTERNATOR; CHARGE REGULATOR	
321-003	0.20	Alternator, removing	
321-004	0.30	Alternator, installing	
33		STARTING SYSTEM	
331-016	0.40	Starter motor, removing	
331-017	0.30	Starter motor, installing	
333-002	0.60	Glow plug, removal	5176 - 9999
333-003	0.60	Glow plug, installation	5176 - 9999
35		LIGHTING	
352-001	0.20	Lamp bulb, replacing	

Op.no.	time (h)		Notes
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.30	Horn, replacing	
367-052	0.40	V-ECU, replacing	
37		CABLE; FUSE; RELAY	
372-002	1.00	Electrical distribution box, circuit board replacing	
39		MISCELLANEOUS	
390-902	2.50	CareTrack, installing new	
 4		 POWER TRANSMISSION	
44		HYDROSTATIC DRIVE	
441-030	3.50	Swing motor, removing	5500 - 9999
441-030	3.50	Swing motor, removing	4838 - 5499
441-031	5.00	Swing motor, installing	
441-033	0.80	Swing motor, replacing counterbalance valve	4838 - 5499
441-033	0.80	Swing motor, replacing counterbalance valve	5500 - 9999
441-034	5.00	Swing motor removed, overhaul	
441-113	1.25	Track motor, removing	
441-114	1.50	Track motor, installing	
 7		 FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	0.60	Counterweight, removing	
716-002	0.60	Counterweight, fitting	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-009	0.30	Front idler, removing	
775-010	0.50	Front idler, installing	
775-022	0.40	Sprocket, removal	
775-023	0.70	Sprocket, installation	
775-041	0.30	Rubber track, removing	
775-042	0.40	Rubber track, installing	
775-052	0.30	Top roller, removal	
775-053	0.30	Top roller, installation	
775-062	0.20	Bottom roller, removing	
775-063	0.30	Bottom roller, installing	

Op.no.	time (h)		Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	0.60	Cab, removing	
810-002	0.90	Cab, installing	
810-004	3.00	Cab platform, removal	4838 - 5499
810-004	3.00	Cab platform, removal	5500 - 9999
810-005	3.50	Cab platform, installation	
810-013	0.40	Cab, roof panel, removing	
810-014	0.40	Cab, roof panel, installing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-031	0.20	Engine hood, changing gas spring	
85		CAB INTERIOR/UPHOLSTERY	
852-003	0.40	Operator's seat, removing	
852-004	0.30	Operator's seat, installing	
852-011	0.40	Seat retention cable, replacement	
88		INTERIOR EQUIPMENT	
881-001	0.10	Instrument console, removing	
881-002	0.20	Instrument console, installing	
884-001	0.30	Seat safety belt, replacing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-034	0.40	H-ECU (hydraulic), replacing pre-programmed ECU	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-013	0.50	Hydraulic oil cooler, removing	
911-014	0.60	Hydraulic oil cooler, installing	
911-036	3.00	Hydraulic oil tank, removing	
911-037	3.00	Hydraulic oil tank, installing	
912-088	2.00	Main Control Valve - Disassembly	5500 - 9999
912-088	2.00	Main Control Valve - Disassembly	4838 - 5499
912-089	2.50	Main Control Valve - Assembly	
912-091	2.00	Main control valve, removal	4838 - 5499
912-091	2.00	Main control valve, removal	5500 - 9999
912-092	2.00	Main control valve, installation	
912-117	0.70	LS-pressure relief valve, replacing	5500 - 9999
912-117	0.70	LS-pressure relief valve, replacing	4838 - 5499

Op.no.	time (h)		Notes
912-141	5.00	Directional valve, drive, disassembling spool and replacing seals	4838 - 5499
912-141	5.00	Directional valve, drive, disassembling spool and replacing seals	5500 - 9999
912-142	4.50	Directional valve, dozer blade, disassembling spool and replacing seals	4838 - 5499
912-142	4.50	Directional valve, dozer blade, disassembling spool and replacing seals	5500 - 9999
912-143	0.50	Load check valve, replacing	5500 - 9999
912-143	0.50	Load check valve, replacing	4838 - 5499
912-150	0.50	Working pressure, checking and adjusting	
912-160	0.70	Port relief valve pressure, checking and adjusting	5500 - 9999
912-160	0.70	Port relief valve pressure, checking and adjusting	4838 - 5499
912-167	4.50	Directional valve, hydraulically operated, disassembling spool and replacing seals	4838 - 5499
912-167	4.50	Directional valve, hydraulically operated, disassembling spool and replacing seals	5500 - 9999
912-168	0.50	Compensator valve, replacing	5500 - 9999
912-168	0.50	Compensator valve, replacing	4838 - 5499
912-175	0.60	Secondary pressure limiting valve, replacing	5500 - 9999
912-175	0.60	Secondary pressure limiting valve, replacing	4838 - 5499
913-003	0.30	Hydraulic pump, checking and adjusting standby pressure	
913-006	0.30	LS (load sense) pressure, checking	
913-023	1.00	Pump, removal	
913-024	1.25	Pump, installation	
913-031	0.50	Flow regulation valve, changing	5500 - 9999
913-031	0.50	Flow regulation valve, changing	4838 - 5499
913-064	1.25	Hydraulic pump, power control checking	
913-065	0.40	Hydraulic pump, power control adjusting	
913-066	0.40	FR pressure control valve, checking and adjusting	
913-067	0.50	LR pressure relief valve, checking and adjusting	
914-047	0.30	Servo accumulator, removal	4838 - 5499
914-047	0.30	Servo accumulator, removal	5500 - 9999
914-048	0.50	Servo accumulator, installation	5500 - 9999
914-048	0.50	Servo accumulator, installation	4838 - 5499
914-055	0.50	Servo pressure, checking and adjusting	
914-064	0.60	Servo valve, removal	5500 - 9999
914-064	0.60	Servo valve, removal	4838 - 5499
914-065	0.90	Servo valve, installation	
915-004	0.90	Control lever, removal	4838 - 5499
915-004	0.90	Control lever, removal	5500 - 9999
915-005	1.00	Control lever, installation	

Op.no.	time (h)		Notes
97		UNIT, DIGGING	
974-013	1.50	Boom, removal	4838 - 5499
974-013	1.50	Boom, removal	5500 - 9999
974-014	2.00	Boom, installation	
974-031	0.50	Boom cylinder, removal	5500 - 9999
974-031	0.50	Boom cylinder, removal	4838 - 5499
974-032	0.60	Boom cylinder, installation	
975-011	0.60	Dipper arm, removal	5500 - 9999
975-011	0.60	Dipper arm, removal	4838 - 5499
975-012	0.80	Dipper arm, installation	
975-014	0.50	Dipper arm cylinder, removal	5500 - 9999
975-014	0.50	Dipper arm cylinder, removal	4838 - 5499
975-015	0.50	Dipper arm cylinder, installation	
975-062	0.40	Bucket cylinder, removal	4838 - 5499
975-062	0.40	Bucket cylinder, removal	5500 - 9999
975-065	0.50	Bucket cylinder, installation	

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	2.00	Delivery Inspection, according to Inspection Programme
173-002	1.25	Maintenance service, daily
173-007	2.50	Maintenance service, every 250 hours
173-010	5.50	Maintenance service, every 500 hours
173-012	7.50	Maintenance service, every 1000 hours
173-014	9.50	Maintenance service, every 2000 hours
173-059	0.70	Engine, changing oil and filter
173-074	1.00	Hydraulic oil tank, changing oil and filter
173-076	0.30	Hydraulic oil tank, return oil filter change
173-077	0.20	Hydraulic oil tank, changing breather filter
173-101	0.40	Track motor gearbox, changing oil
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	4.50	Engine, removing
210-072	5.00	Engine, installing
211-002	5.00	Cylinder head, replacing gasket
214-012	1.25	Valves, adjusting
214-036	1.00	Valve covers, fitting new gasket
216-014	3.00	Crankshaft, replacing front oil seal
216-018	6.00	Crankshaft, replacing rear oil seal
23		FUEL SYSTEM
233-001	0.20	Fuel system, bleeding
233-002	0.40	Feed pump, replacing
233-014	0.40	Fuel filters, replacing
234-010	3.00	Fuel tank, replacing
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
236-001	0.50	Idling speed, checking and adjusting
236-030	1.50	Injection timing, checking
236-073	2.75	Injection pump, replacing incl setting injection timing
237-002	2.50	Injectors, replacing all
237-004	1.75	Injector, replacing one

Op.no.	time (h)	Notes
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	3.00	Silencer, replacing
256-001	0.25	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.75	Preheating coil, replacing
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.75	Coolant, changing
261-008	3.00	Radiator, replacing
261-012	0.50	Radiator hose upper, replacing
261-014	1.25	Radiator hoses lower, replacing
261-018	0.50	Expansion tank, replacing
262-002	1.50	Coolant pump, replacing
262-098	1.75	Thermostat, replacing
263-012	0.75	Fan belt and/or alternator belt, replacing
263-013	0.20	Fan belt and/or alternator belt, checking and adjusting tension
263-022	1.00	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	1.00	Batteries, replacing
311-003	0.50	Main switch, replacing
311-006	0.50	Earth lead to battery, replacing
311-008	3.00	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	3.00	Starter motor, replacing
331-081	0.50	Starter relay, replacing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.50	Horn, replacing

Op.no.	time (h)	Notes
362-041	0.50	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.00	Windscreen wiper front, replacing motor
363-003	0.50	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-004	0.50	Switch, replacing
364-050	0.50	Relay (general), replacing
364-052	0.50	Battery relay, replacing
364-056	0.50	Pre-heating relay, replacing
37		CABLE; FUSE; RELAY
372-020	0.25	Fuse (general), replacing
372-091	0.50	Slow blow fuse, replacing
379-011	0.75	Boom wire harness, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	0.50	Engine temperature sensor, replacing
386-007	0.50	Engine oil pressure sensor, replacing
386-011	0.50	Fuel level sender, replacing
387-005	1.00	Information display, replacing
39		MISCELLANEOUS
393-021	1.00	Radio, replacing
395-021	0.50	Antenna, replacing
395-022	1.00	Antenna cable, replacing
395-031	0.50	Speaker, replacing
4		POWER TRANSMISSION
43		GEARBOX,
431-031	4.00	Pump gearbox coupling assembly, replacing
431-036	4.00	Pump gearbox flange, replacing
431-053	8.00	Swing unit, replacing
431-115	2.00	Track gearbox (removed), replacing floating seal
431-117	1.25	Track gearbox, replacing cover
431-125	1.75	Track unit, removal
431-126	1.75	Track unit, installation
431-127	4.50	Track unit, replacing
44		HYDROSTATIC DRIVE
441-021	8.00	Swing motor, replacing
441-026	1.50	Swing motor removed, replacing seal
441-112	0.80	Track motor relief valve, replacing

Op.no.	time (h)	Notes
441-115	1.50	Track motor removed, replacing seal
443-039	1.00	Center passage hose (valve – center passage), replacing
49		MISCELLANEOUS
492-031	2.00	Swing ring gear outer seal, replacing
492-091	0.50	Ring gear grease pipe, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	0.75	Counterweight, removing
716-002	0.75	Counterweight, fitting
716-003	2.00	Counterweight, replacing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	2.50	Front idler, replacing one
775-021	2.50	Sprocket, replacing one
775-032	0.30	Track shoe, replacing one
775-033	3.50	Track shoe, replacing each side
775-034	0.90	Track chain assembly, removing
775-035	1.25	Track chain assembly, installing
775-036	4.50	Track links, replacing
775-041	0.80	Rubber track, removing
775-042	0.80	Rubber track, installing
775-051	0.80	Top roller, replacing one
775-061	0.90	Bottom roller, replacing one
775-071	0.30	Track guard, replacing one
775-080	2.50	Track tension cylinder, replacing
775-081	2.50	Track recoil spring (tensioner) assembly, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.25	Cab, removing
810-002	1.50	Cab, installing
810-003	3.50	Operator cab, replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.75	Engine hood, replacing

Op.no.	time (h)	Notes
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.25	Rear-view mirror, changing
843-002	2.00	Windscreen, replacing
843-012	1.00	Rear window, replacing
843-013	1.50	Side window, replacing
843-048	1.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	0.75	Seat, replacing
87		AIR CONDITIONING UNIT
872-001	0.50	Cab filter, replacing
872-011	1.00	Duct, replacing
872-021	1.00	Defroster hose, replacing
873-097	1.50	Heater hose, replacing
874-002	0.50	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	1.50	Compressor, replacing incl draining and filling
874-007	0.75	Belt, replacing
874-010	1.50	Condenser, replacing incl draining and filling
874-011	1.50	Receiver, replacing incl draining and filling
874-081	1.50	Liquid hose, replacing incl. draining and filling
874-082	1.25	Discharge hose, replacing incl. draining and filling
874-083	1.25	Suction hose, replacing incl. draining and filling
874-091	1.00	Switch and controller, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-001	0.20	Oil return filter, replacing
911-004	0.50	Suction strainer, replacing
911-005	1.75	Pump suction hose and pipe, replacing
911-011	2.00	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-024	2.00	Pipe and hose (pump - valve), replacing
911-025	1.00	Pipe and hose (valve - cylinder), replacing
911-033	2.00	Oil cooler line bypass valve (check valve), replacing
911-038	2.50	Hydraulic oil tank, replacing
911-043	0.25	Servo system filter, replacing
912-001	10.00	Control valve, replacing

Op.no.	time (h)	Notes
912-067	1.00	Main pressure relief valve, replacing
912-071	0.70	Rupture valve, replacing (boom cylinder)
912-073	0.70	Rupture valve, replacing (dipper arm cylinder)
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)
912-075	0.50	Rupture valve hose or pipe, replacing (dipper arm cylinder)
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.00	Hydraulic pump, replacing
913-013	5.50	Hydraulic pump, replacing seal for input shaft
914-036	1.25	Servo pump block seal, replacing
914-051	0.30	Accumulator, replacing
914-060	0.80	Servo pump, replacing
914-071	0.50	Servo pipe and hose, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	2.00	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.00	Solenoid valve, replacing
914-099	2.50	Remote control valve (pedal), disassembly
914-100	2.00	Remote control valve (pedal), assembly
916-044	0.50	Boom, replacing hose (boom cylinder)
916-045	0.75	Boom, replacing pipe (dipper arm cylinder)
916-046	0.50	Boom, replacing hose (dipper arm cylinder)
916-047	0.75	Boom, replacing pipe (bucket cylinder)
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)
916-049	0.50	Dipper arm, replacing pipe (bucket cylinder)
916-091	0.50	Hammer and shear pipe, replacing (for boom)
916-092	0.50	Hammer and shear hose, replacing (for boom)
916-093	0.50	Hammer and shear pipe, replacing (for dipper arm)
916-094	0.50	Hammer and shear hose, replacing (for dipper arm)
916-095	0.50	Hammer and shear hose and pipe, replacing (MCV - 3 way valve)
916-096	1.00	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-002	1.00	Quickfit valve, replacing
924-003	0.75	Quickfit solenoid valve, replacing
924-004	0.50	Quickfit control switch, replacing
924-041	0.50	Quickfit hydraulic hose, replacing (for boom)
924-042	0.50	Quickfit hydraulic pipe, replacing (for boom)
924-043	0.25	Quickfit hydraulic hose, replacing (for dipper arm)
924-044	0.50	Quickfit hydraulic pipe, replacing (for dipper arm)
924-045	0.50	Quickfit hydraulic cylinder hose, replacing (dipper arm cylinder)

Op.no.	time (h)	Notes
925-011	0.75	Bucket assembly, replacing
925-012	0.25	Bucket assembly, removal
925-013	0.50	Bucket assembly, installation
97		UNIT, DIGGING
970-008	0.50	Bushing general, replacing
974-010	5.00	Boom, replacing
974-013	2.50	Boom, removal
974-014	2.50	Boom, installation
974-017	1.00	Boom, replacing pin
974-018	0.25	Boom grease pipe or hose, replacing
974-021	1.25	Boom cylinder, replacing
974-022	1.50	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	1.50	Boom cylinder, repacking in machine
974-031	0.50	Boom cylinder, removal
974-032	0.75	Boom cylinder, installation
975-011	1.50	Dipper arm, removal
975-012	1.50	Dipper arm, installation
975-014	0.50	Dipper arm cylinder, removal
975-015	0.50	Dipper arm cylinder, installation
975-024	0.50	Dipper arm connecting rod, replacing
975-025	1.00	Dipper arm cylinder, replacing
975-026	1.50	Dipper arm cylinder removed, repacking
975-028	1.00	Connecting rod yoke, replacing
975-032	0.50	Connecting rod yoke, removal
975-035	0.50	Connecting rod yoke, installation
975-039	3.00	Dipper arm, replacing
975-043	1.50	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	1.00	Bucket cylinder, replacing
975-062	0.50	Bucket cylinder, removal
975-063	1.50	Bucket cylinder, repacking in machine
975-065	0.50	Bucket cylinder, installation
975-069	1.50	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes
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1 STANDARD PARTS, SERVICE

17 SERVICE

171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	2.00	Delivery Inspection, according to Inspection Programme
172-002	3.00	Warranty inspection 100 hours
172-004	8.00	Warranty inspection 1000 hours
173-002	1.25	Maintenance service, daily
173-004	1.75	Maintenance service, every 50 hours
173-007	2.50	Maintenance service, every 250 hours
173-010	5.00	Maintenance service, every 500 hours
173-012	7.00	Maintenance service, every 1000 hours
173-014	9.50	Maintenance service, every 2000 hours
173-018	9.50	Maintenance service, every 4000 hours
173-022	9.00	Maintenance service, every 6000 hours
173-074	1.00	Hydraulic oil tank, changing oil and filter
173-077	0.20	Hydraulic oil tank, changing breather filter
173-101	0.40	Track motor gearbox, changing oil
173-401	0.70	Engine oil and filter, changing
173-451	0.90	Hydraulic oil, changing
173-649	0.30	Hydraulic oil return filter, replacing

2 ENGINE WITH MOUNTING AND EQUIPMENT

21 ENGINE

210-070	4.50	Engine, removing
210-072	5.00	Engine, installing
211-002	5.00	Cylinder head, replacing gasket
214-012	1.25	Valves, adjusting
214-036	1.00	Valve covers, fitting new gasket
216-014	3.00	Crankshaft, replacing front oil seal
216-018	6.00	Crankshaft, replacing rear oil seal

23 FUEL SYSTEM

233-001	0.20	Fuel system, bleeding
233-002	0.40	Feed pump, replacing
233-014	0.40	Fuel filters, replacing
234-010	3.00	Fuel tank, replacing
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
236-001	0.50	Idling speed, checking and adjusting
236-030	1.50	Injection timing, checking

Op.no.	time (h)	Notes
236-073	2.75	Injection pump, replacing incl setting injection timing
237-002	2.50	Injectors, replacing all
237-004	1.75	Injector, replacing one
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	3.00	Silencer, replacing
256-001	0.25	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.75	Preheating coil, replacing
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.50	Coolant, changing
261-008	3.00	Radiator, replacing
261-012	0.50	Radiator hose upper, replacing
261-014	1.25	Radiator hoses lower, replacing
261-018	0.50	Expansion tank, replacing
262-002	1.50	Coolant pump, replacing
262-098	1.75	Thermostat, replacing
263-012	0.75	Fan belt and/or alternator belt, replacing
263-013	0.20	Fan belt and/or alternator belt, checking and adjusting tension
263-022	1.00	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	1.00	Batteries, replacing
311-003	0.50	Main switch, replacing
311-006	0.50	Earth lead to battery, replacing
311-008	3.00	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	3.00	Starter motor, replacing
331-081	0.50	Starter relay, replacing
334-011	0.50	Starter switch (engine start switch), replacing

Op.no.	time (h)	Notes
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.50	Horn, replacing
362-041	0.50	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.00	Windscreen wiper front, replacing motor
363-003	0.50	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-004	0.50	Switch, replacing
364-050	0.50	Relay (general), replacing
364-052	0.50	Battery relay, replacing
364-056	0.50	Pre-heating relay, replacing
37		CABLE; FUSE; RELAY
372-020	0.25	Fuse (general), replacing
372-091	0.50	Slow blow fuse, replacing
379-011	0.75	Boom wire harness, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	0.50	Engine temperature sensor, replacing
386-007	0.50	Engine oil pressure sensor, replacing
386-011	0.50	Fuel level sender, replacing
387-005	1.00	Information display, replacing
39		MISCELLANEOUS
393-021	1.00	Radio, replacing
395-021	0.50	Antenna, replacing
395-022	1.00	Antenna cable, replacing
395-031	0.50	Speaker, replacing
398-002	0.70	W-ECU, MID142, changing pre-programmed ECU15563 - 210000
398-003	0.70	W-ECU, MID142, changing non-programmed 15563 - 210000 ECU
4		POWER TRANSMISSION
43		GEARBOX,
431-031	4.00	Pump gearbox coupling assembly, replacing
431-036	4.00	Pump gearbox flange, replacing
431-053	8.00	Swing unit, replacing
431-115	2.00	Track gearbox (removed), replacing floating seal

Op.no.	time (h)	Notes
431-117	1.25	Track gearbox, replacing cover
431-125	1.75	Track unit, removal
431-126	1.75	Track unit, installation
431-127	4.50	Track unit, replacing
44		HYDROSTATIC DRIVE
441-021	8.00	Swing motor, replacing
441-022	3.00	Swing motor relief valve, replacing
441-026	1.50	Swing motor removed, replacing seal
441-112	0.80	Track motor relief valve, replacing
441-115	1.50	Track motor removed, replacing seal
443-039	1.00	Center passage hose (valve – center passage), replacing
49		MISCELLANEOUS
492-031	2.00	Swing ring gear outer seal, replacing
492-091	0.50	Ring gear grease pipe, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	0.80	Counterweight, removing
716-002	1.00	Counterweight, fitting
716-003	2.00	Counterweight, replacing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	2.50	Front idler, replacing one
775-021	2.50	Sprocket, replacing one
775-032	0.30	Track shoe, replacing one
775-033	3.50	Track shoe, replacing each side
775-034	0.90	Track chain assembly, removing
775-035	1.25	Track chain assembly, installing
775-036	4.50	Track links, replacing
775-041	0.80	Rubber track, removing
775-042	0.80	Rubber track, installing
775-051	0.80	Top roller, replacing one
775-061	0.90	Bottom roller, replacing one
775-071	0.30	Track guard, replacing one
775-080	2.50	Track tension cylinder, replacing
775-081	2.50	Track recoil spring (tensioner) assembly, replacing

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.25	Cab, removing
810-002	1.50	Cab, installing
810-003	3.50	Operator cab, replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.75	Engine hood, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.25	Rear-view mirror, changing
843-002	2.00	Windscreen, replacing
843-012	1.00	Rear window, replacing
843-013	1.50	Side window, replacing
843-048	1.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	0.75	Seat, replacing
87		AIR CONDITIONING UNIT
872-001	0.50	Cab filter, replacing
872-011	1.00	Duct, replacing
872-021	1.00	Defroster hose, replacing
873-097	1.50	Heater hose, replacing
874-002	0.50	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	1.50	Compressor, replacing incl draining and filling
874-007	0.75	Belt, replacing
874-010	1.50	Condenser, replacing incl draining and filling
874-011	1.50	Receiver, replacing incl draining and filling
874-081	1.50	Liquid hose, replacing incl. draining and filling
874-082	1.25	Discharge hose, replacing incl. draining and filling
874-083	1.25	Suction hose, replacing incl. draining and filling
874-091	1.00	Switch and controller, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-001	0.20	Oil return filter, replacing
911-004	0.50	Suction strainer, replacing
911-005	1.75	Pump suction hose and pipe, replacing

Op.no.	time (h)	Notes
911-011	2.00	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-024	2.00	Pipe and hose (pump - valve), replacing
911-025	1.00	Pipe and hose (valve - cylinder), replacing
911-033	1.75	Oil cooler line bypass valve (check valve), replacing
911-038	2.50	Hydraulic oil tank, replacing
911-043	0.25	Servo system filter, replacing
912-001	10.00	Control valve, replacing
912-067	1.00	Main pressure relief valve, replacing
912-070	0.90	Check valve, replacing
912-071	0.70	Rupture valve, replacing (boom cylinder)
912-073	0.70	Rupture valve, replacing (dipper arm cylinder)
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)
912-075	0.50	Rupture valve hose or pipe, replacing (dipper arm cylinder)
913-005	1.75	Hydraulic pump, flow control
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.00	Hydraulic pump, replacing
913-013	5.50	Hydraulic pump, replacing seal for input shaft
914-036	1.25	Servo pump block seal, replacing
914-051	0.20	Accumulator, replacing
914-060	0.50	Servo pump, replacing
914-071	0.50	Servo pipe and hose, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	2.00	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	0.90	Solenoid valve, replacing
914-099	2.50	Remote control valve (pedal), disassembly
914-100	2.00	Remote control valve (pedal), assembly
916-044	0.50	Boom, replacing hose (boom cylinder)
916-045	0.75	Boom, replacing pipe (dipper arm cylinder)
916-046	0.50	Boom, replacing hose (dipper arm cylinder)
916-047	0.75	Boom, replacing pipe (bucket cylinder)
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)
916-049	0.50	Dipper arm, replacing pipe (bucket cylinder)
916-091	0.50	Hammer and shear pipe, replacing (for boom)
916-092	0.50	Hammer and shear hose, replacing (for boom)
916-093	0.50	Hammer and shear pipe, replacing (for dipper arm)
916-094	0.50	Hammer and shear hose, replacing (for dipper arm)
916-095	0.50	Hammer and shear hose and pipe, replacing (MCV - 3 way valve)

Op.no.	time (h)	Notes
916-096	1.00	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-002	1.00	Quickfit valve, replacing
924-003	0.75	Quickfit solenoid valve, replacing
924-004	0.50	Quickfit control switch, replacing
924-005	0.80	Quickfit, removal
924-006	1.00	Quickfit, installation
924-041	0.50	Quickfit hydraulic hose, replacing (for boom)
924-042	0.50	Quickfit hydraulic pipe, replacing (for boom)
924-043	0.25	Quickfit hydraulic hose, replacing (for dipper arm)
924-044	0.50	Quickfit hydraulic pipe, replacing (for dipper arm)
924-045	0.50	Quickfit hydraulic cylinder hose, replacing (dipper arm cylinder)
925-011	0.75	Bucket assembly, replacing
925-012	0.25	Bucket assembly, removal
925-013	0.50	Bucket assembly, installation
97		UNIT, DIGGING
970-008	0.50	Bushing general, replacing
974-010	5.00	Boom, replacing
974-013	2.50	Boom, removal
974-014	2.50	Boom, installation
974-017	1.00	Boom, replacing pin
974-018	0.25	Boom grease pipe or hose, replacing
974-021	1.50	Boom cylinder, replacing
974-022	1.50	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	1.50	Boom cylinder, repacking in machine
974-031	0.80	Boom cylinder, removal
974-032	0.90	Boom cylinder, installation
975-011	1.50	Dipper arm, removal
975-012	1.50	Dipper arm, installation
975-014	0.50	Dipper arm cylinder, removal
975-015	0.50	Dipper arm cylinder, installation
975-024	0.50	Dipper arm connecting rod, replacing
975-025	1.00	Dipper arm cylinder, replacing
975-026	1.50	Dipper arm cylinder removed, repacking
975-028	1.00	Connecting rod yoke, replacing
975-032	0.50	Connecting rod yoke, removal
975-035	0.50	Connecting rod yoke, installation
975-039	3.00	Dipper arm, replacing
975-043	1.50	Dipper arm cylinder, repacking in machine

Op.no.	time (h)	Notes
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	1.00	Bucket cylinder, replacing
975-062	0.50	Bucket cylinder, removal
975-063	1.50	Bucket cylinder, repacking in machine
975-065	0.50	Bucket cylinder, installation
975-069	1.50	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing
98		FUNCTION FOR ROAD CONSTRUCTION
981-081	0.60	Blade lift cylinder, removing
981-086	0.90	Blade lift cylinder, installing

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
172-002	1.50	Warranty inspection 100 hours	
172-004	6.00	Warranty inspection 1000 hours	
173-002	0.60	Maintenance service, daily	
173-004	1.00	Maintenance service, every 50 hours	
173-007	1.75	Maintenance service, every 250 hours	
173-010	3.50	Maintenance service, every 500 hours	
173-012	4.50	Maintenance service, every 1000 hours	
173-014	7.50	Maintenance service, every 2000 hours	
173-018	8.50	Maintenance service, every 4000 hours	
173-022	9.00	Maintenance service, every 6000 hours	
173-040	4.00	Maintenance service, first 500 hours	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-070	9.50	Engine, removing	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
214-012	2.00	Valves, adjusting	
215-032	9.00	Timing gear case, fitting new gasket in machine	
216-014	4.00	Crankshaft, replacing front oil seal	
216-018	5.50	Crankshaft, replacing rear oil seal	
217-003	2.50	Oil sump, replacing	
217-005	1.00	Oil level sensor, changing	
218-002	3.00	Engine mount front, changing	
218-007	1.25	Engine mounting rear, changing	
22		LUBRICATING SYSTEM	
221-014	6.50	Oil pump, replacing	
221-022	0.70	Lubrication oil pressure, checking with pressure gauge	
223-006	2.50	Oil cooler, replacing	
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	121136 - 999999
233-001	0.30	Fuel system, bleeding	120010 - 121135
233-002	0.70	Feed pump, replacing	

Op.no.	time (h)		Notes
233-004	0.90	Feed pump, checking feed pressure	
233-014	0.40	Fuel filters, replacing	
233-015	0.50	Fuel filter extra, replacing	121136 - 999999
233-015	0.50	Fuel filter extra, replacing	120010 - 121135
233-020	0.10	Fuel filter, checking	
234-010	3.50	Fuel tank, replacing	
234-041	0.60	Fuel filling pump, removing	
234-042	0.60	Fuel filling pump, installing	
235-003	0.30	Fuel return pressure, checking	
237-030	1.00	High pressure fuel pump, checking	
237-031	1.75	Fuel rail, replacing	
237-032	1.50	High pressure fuel pump, replacing	
237-033	0.70	Fuel control valve (FCV), replacing	
237-035	0.30	Fuel rail pressure sensor, replacing	
237-036	1.75	Pressure relief valve (PRV), checking	
237-037	1.50	Fuel rail pressure, checking	
237-038	1.25	Fuel control valve (FCV), checking	
25		INLET SYSTEM; EXHAUST SYSTEM	
251-002	0.90	Induction manifold, replacing gasket	
251-004	1.50	Exhaust manifold, replacing gasket	
252-020	0.80	Silencer, replacing	
252-021	0.60	Exhaust pipe, flexible tube, replacing	
255-002	1.25	Turbocharger, inspection	
255-071	2.50	Turbocharger, replacing	
256-006	0.40	Preheating coil, replacing	
258-002	5.00	Intercooler, replacing	
26		COOLING SYSTEM	
261-002	0.20	Coolant, checking anti-freeze resistance	
261-008	5.50	Radiator, replacing	
261-012	1.25	Radiator hose upper, replacing	
261-014	1.25	Radiator hoses lower, replacing	
261-018	0.90	Expansion tank, replacing	
262-002	1.75	Coolant pump, replacing	
262-098	0.80	Thermostat, replacing	
263-012	0.90	Fan belt and/or alternator belt, replacing	
263-022	0.90	Fan belt and/or alternator-, compressor belt, replacing all belts	

Op.no.	time (h)	Notes	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-002	0.90	Batteries, replacing	
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.25	Alternator, replacing incl function check	
321-075	0.50	Alternator, test	
33		STARTING SYSTEM	
331-018	2.00	Starter motor, replacing	
331-021	1.25	Starter motor, tests	
331-081	0.30	Starter relay, replacing	
334-011	0.50	Starter switch (engine start switch), replacing	
35		LIGHTING	
352-002	0.50	Headlights, adjusting	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.30	Horn, replacing	
362-041	0.30	Rotating beacon, replacing	
362-041	0.30	Rotating beacon, replacing	
362-051	0.50	Travel alarm, replacing	
363-002	1.25	Windscreen wiper front, replacing motor	
363-003	0.40	Windscreen wiper, replacing switch	
363-004	0.50	Windscreen flusher pump, replacing	
363-091	0.50	Windscreen wiper, replacing controller	
364-001	0.80	Electric center passage, replacing	120760 - 999999
364-004	0.30	Switch, replacing	
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	
367-058	0.70	W-ECU, MID 142, replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-007	0.50	Engine oil pressure sensor, replacing	
386-038	0.60	Engine rotation speed sensor, replacing	
386-088	0.50	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
395-021	0.70	Antenna, replacing	

Op.no.	time (h)		Notes
395-031	0.40	Speaker, replacing	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
424-002	0.20	Transmission mode, function check	
43		GEARBOX,	
431-012	2.00	Travel gearbox, removal	
431-013	2.50	Travel gearbox, installation	
431-020	0.40	Travel gearbox, bleeding	
44		HYDROSTATIC DRIVE	
441-009	1.75	Travel motor, removing	
441-010	2.00	Travel motor, installing	
441-016	0.20	Travel motor removed, replacing seal	
441-017	0.50	Travel motor pressure, checking and adjusting	
441-019	0.90	Travel motor speed, checking and adjusting	
441-027	2.00	Swing motor brake discs, replacing (motor removed)	
441-029	2.50	Swing motor, brake kit, upgrade	120861 - 999999
441-032	0.40	Swing motor pressure, checking and adjusting	
442-045	2.50	Pump coupling, removing	
442-046	2.00	Pump coupling, installing	
443-033	0.90	Center passage, disassembly and assembly	
443-034	2.50	Centre passage, removing	
443-035	3.00	Centre passage, installing	
45		PROPELLER SHAFT	
451-004	1.00	Propeller shaft, rear, replacing	
451-010	1.00	Propeller shaft, front, replacing	
46		FRONT AXLE; REAR AXLE	
461-002	4.00	Axle, removing	
461-003	4.00	Axle, installing	
461-045	2.50	Drive shaft seal, replacing	
461-070	8.50	King pin and bushing, replacing	
463-002	2.50	Axle, removing	
463-003	2.50	Axle, installing	
49		MISCELLANEOUS	
492-025	0.40	Swing ring, measuring axial clearance	
492-031	2.50	Swing ring gear outer seal, replacing	

Op.no.	time (h)	Notes	
5		BRAKE	
51		WHEEL BRAKE	
510-005	0.20	Service brakes, function check	
52		HYDRAULIC BRAKE SYSTEM	
520-005	0.70	Brake system, check and adjusting pressure in circuit	
525-008	1.75	Foot brake valve, replacing	
527-014	0.50	Brake accumulator charging pressure, adjusting	
55		PARKING BRAKE	
550-015	0.30	Parking brake, manually releasing	
550-023	0.30	Parking brake, function checking	
6		STEERING	
60		GENERAL	
600-001	0.30	Steering system, function check	
64		STEERING	
645-003	0.30	Steering system working pressure, checking	
645-022	0.70	Steering valve, removal	
645-023	0.70	Steering valve, installation	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	0.90	Counterweight, removing	120818 - 999999
716-002	1.25	Counterweight, fitting	120818 - 999999
76		SHOCK ABSORBER; AXLE LOCKING; ANTI ROLL BAR; LEVEL / SIDE CONTROL	
763-001	0.60	Pivot axle lock cylinder, removing	
763-002	0.50	Pivot axle lock cylinder, installing	
763-003	0.70	Pivot axle lock cylinder, changing seals	
763-004	0.20	Pivot axle lock cylinder, releasing for towing	
763-006	0.30	Pivot axle lock, function check	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-007	0.50	Wheel, installing	
771-008	0.40	Wheel, removing	

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.25	Cab, removing
810-002	1.50	Cab, installing
83		DOORS; HATCH; COVER PLATE, (all)
831-052	0.60	Cab door, removing door catch
831-053	0.90	Cab door, installing door catch
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	0.80	Seat, replacing
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-088	0.30	Seat belt, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.70	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
873-019	0.90	ECC control unit, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.50	Condenser, replacing incl draining and filling
874-011	1.50	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	0.80	Instrument panel, replacing (left)
881-005	0.90	Instrument panel, replacing (right)

Op.no.	time (h)	Notes	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-001	0.30	Hydraulic system, warming up	
900-001	0.30	Hydraulic system, warming up	
900-005	0.60	Vacuum pump, connection	
900-006	0.30	Vacuum pump, disconnection	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-010	0.40	Cooling fan speed, checking and adjusting	
911-010	0.40	Cooling fan speed, checking and adjusting	
911-013	2.50	Hydraulic oil cooler, removing	
911-014	2.00	Hydraulic oil cooler, installing	
911-036	1.25	Hydraulic oil tank, removing	
911-037	2.50	Hydraulic oil tank, installing	
911-044	0.90	Oil cooler fan motor, removal	
911-045	1.25	Oil cooler fan motor, installation	
911-046	0.80	Cooling fan pump, removal	
911-047	1.50	Cooling fan pump, installation	
912-019	0.40	Shock valve removed, checking	
912-071	1.00	Rupture valve, replacing (boom cylinder)	
912-073	0.70	Rupture valve, replacing (dipper arm cylinder)	
912-117	2.00	LS-pressure relief valve, replacing	
912-118	1.00	Safety relief valve, replacing	
912-150	1.75	Working pressure, checking and adjusting	
912-162	1.00	Line rupture valve pressure, checking and adjusting	
912-210	0.70	Rupture valve, replacing (2pcs boom tilt cylinder)	
913-003	0.30	Hydraulic pump, checking and adjusting standby pressure	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-023	2.00	Pump, removal	
913-024	3.50	Pump, installation	
914-031	0.60	Servo pump, removal	
914-032	0.50	Servo pump, installation	
914-055	0.30	Servo pressure, checking and adjusting	
914-064	0.60	Servo valve, removal	121006 - 999999
914-064	0.60	Servo valve, removal	120010 - 121005
914-065	0.70	Servo valve, installation	121006 - 999999
914-065	0.70	Servo valve, installation	
914-103	0.20	Control lockout lever, function check	
915-004	3.50	Control lever, removal	
915-005	3.50	Control lever, installation	

Op.no.	time (h)	Notes
916-059	0.70	Calibration of cruise control
916-060	1.00	Calibration of X1 hydraulic with flow control
916-061	0.50	Calibration of X1 hydraulic with pressure control
916-062	1.25	X1 pressure relief valve, adjusting
916-112	0.20	X1, function check
916-113	0.20	X3, function check
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-005	0.40	Quickfit, removal
924-006	0.40	Quickfit, installation
924-009	0.70	Cylinder for hydraulic quickfit S6, removal
924-010	0.50	Cylinder for hydraulic quickfit S6, installation
924-017	0.40	Cylinder for hydraulic quickfit Universal, removal
924-018	0.40	Cylinder for hydraulic quickfit Universal, installation
924-046	0.10	Quickfit, function check
97		UNIT, DIGGING
972-012	0.90	Stabilisers, installation
972-021	0.70	Stabilisers, removal hydraulic cylinder
974-006	7.50	2-piece boom, removal
974-007	6.50	2-piece boom, installation
974-008	1.25	Tilt cylinder 2-piece boom, removal
974-009	1.25	Tilt cylinder 2-piece boom, installation
974-013	4.00	Boom, removal
974-014	4.50	Boom, installation
974-031	2.50	Boom cylinder, removal
974-032	1.75	Boom cylinder, installation
974-038	0.40	Lower boom cylinder bushing, replacing
974-039	0.40	Upper boom cylinder bushing, replacing
974-040	0.40	Tilt cylinder 2-piece boom, rear bushing, replacing
974-041	0.40	Tilt cylinder 2-piece boom, front bushing, replacing
974-042	1.25	Boom foot bushing, replacing
975-011	0.70	Dipper arm, removal
975-012	2.50	Dipper arm, installation
975-014	0.70	Dipper arm cylinder, removal
975-015	0.90	Dipper arm cylinder, installation
975-040	0.40	Dipper arm cylinder bushing on boom, replacing
975-042	0.40	Dipper arm cylinder bushing on dipper arm, replacing
975-045	0.70	Dipper arm bushing-boom, replacing
975-048	0.70	Dipper arm bushing-bucket, replacing
975-049	0.60	Dipper arm bushing-lever, replacing
975-062	0.70	Bucket cylinder, removal
975-065	0.70	Bucket cylinder, installation

Op.no.	time (h)	Notes
975-072	0.40	Bucket cylinder bushing on dipper arm, changing
975-073	0.40	Bucket cylinder bushing lever-link, replacing
975-074	0.50	Lever bushing-bucket, replacing
975-075	0.40	Lever link bushing-bucket cylinder, replacing

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
170-005	0.25	Start of VCADS Pro computer and reading machine data	
171-001	1.00	Arrival Inspection, according to Inspection Programme	
171-002	3.00	Delivery Inspection, according to Inspection Programme	
173-002	0.75	Maintenance service, daily	
173-004	1.00	Maintenance service, every 50 hours	
173-007	2.00	Maintenance service, every 250 hours	
173-010	5.00	Maintenance service, every 500 hours	
173-012	7.00	Maintenance service, every 1000 hours	
173-014	9.50	Maintenance service, every 2000 hours	
173-068	1.00	Rear axle, changing oil	
173-069	1.00	Front axle, changing oil	
173-070	2.00	Axles, changing oil	
173-074	1.25	Hydraulic oil tank, changing oil and filter	
173-079	1.00	Swing motor gearbox, changing oil	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	15001 - 210000
200-068	1.75	E-ECU, MID 128, changing non-programmed ECU	10001 - 15000
200-070	1.25	E-ECU, MID 128, changing pre-programmed ECU	10001 - 15000
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	15001 - 210000
21		ENGINE	
210-070	7.00	Engine, removing	
210-072	7.00	Engine, installing	
211-002	13.00	Cylinder head, replacing gasket	
214-012	3.00	Valves, adjusting	15001 - 210000
214-036	1.00	Valve covers, fitting new gasket	
216-014	3.50	Crankshaft, replacing front oil seal	
216-018	8.50	Crankshaft, replacing rear oil seal	
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	
233-002	0.80	Feed pump, replacing	
233-014	0.40	Fuel filters, replacing	
233-015	0.50	Fuel filter extra, replacing	

Op.no.	time (h)		Notes
234-010	3.50	Fuel tank, replacing	
234-041	0.50	Fuel filling pump, removing	
234-042	0.50	Fuel filling pump, installing	
237-002	3.00	Injectors, replacing all	
237-004	1.75	Injector, replacing one	
237-037	0.70	Fuel rail pressure, checking	15001 - 210000
25		INLET SYSTEM; EXHAUST SYSTEM	
252-020	1.25	Silencer, replacing	
252-021	1.25	Exhaust pipe, flexible tube, replacing	
255-070	1.50	Turbocharger, removing	
255-071	3.00	Turbocharger, replacing	
255-072	1.50	Turbocharger, installing	
256-001	0.25	Air cleaner, cleaning filter element	
256-003	0.25	Air cleaner, primary filter replacing	
256-004	0.25	Air cleaner, secondary filter replacing	
256-006	0.75	Preheating coil, replacing	
258-002	4.00	Intercooler, replacing	
258-022	0.50	Charge air cooler connection (hose, tube), replacing	
26		COOLING SYSTEM	
261-002	0.25	Coolant, checking anti-freeze resistance	
261-004	0.75	Coolant, changing	
261-008	7.00	Radiator, replacing	
261-012	0.75	Radiator hose upper, replacing	
261-014	1.50	Radiator hoses lower, replacing	
261-072	0.25	Coolant filter, changing	
262-098	1.00	Thermostat, replacing	
263-012	1.50	Fan belt and/or alternator belt, replacing	
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension	
263-022	1.50	Fan belt and/or alternator-, compressor belt, replacing all belts	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.50	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-001	0.50	Battery charging capacity, checking	15001 - 210000
311-002	0.80	Batteries, replacing	10001 - 15000

Op.no.	time (h)		Notes
311-002	0.90	Batteries, replacing	15001 - 210000
311-003	0.70	Main switch, replacing	15001 - 210000
311-006	0.50	Earth lead to battery, replacing	15001 - 210000
311-008	2.50	Starter motor lead to battery, replacing	15001 - 210000
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.00	Alternator, replacing incl function check	15001 - 210000
33		STARTING SYSTEM	
331-018	1.50	Starter motor, replacing	
331-081	0.30	Starter relay, replacing	15001 - 210000
334-011	0.50	Starter switch (engine start switch), replacing	
35		LIGHTING	
352-002	0.50	Headlights, adjusting	
352-024	0.50	Headlight, complete, changing (high beam 1 pc.) incl. setting	
353-016	0.50	Rear lamp, replacing one	
356-056	0.50	Work lighting, replacing one head lamp assy	
36		OTHER ELECTRICAL EQUIPMENT	
361-002	0.50	Flasher unit, replacing relay	
361-010	0.50	Flasher switch, replacing	
361-017	0.50	Flasher lamp, replacing glass or bulb	
362-002	0.50	Horn, replacing	
362-041	0.50	Rotating beacon, replacing	
362-051	0.50	Travel alarm, replacing	
363-002	1.00	Windscreen wiper front, replacing motor	
363-003	0.50	Windscreen wiper, replacing switch	
363-004	0.50	Windscreen flusher pump, replacing	
363-091	0.50	Windscreen wiper, replacing controller	
364-003	0.60	Control lockout lever switch, replacing	
364-004	0.50	Switch, replacing	
364-008	0.50	Brake light switch, replacing	
364-050	0.50	Relay (general), replacing	
364-052	0.50	Battery relay, replacing	
364-056	0.50	Pre-heating relay, replacing	
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	
37		CABLE; FUSE; RELAY	
372-020	0.25	Fuse (general), replacing	
372-091	0.50	Slow blow fuse, replacing	
379-011	0.75	Boom wire harness, replacing	

Op.no.	time (h)	Notes	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-006	0.50	Engine temperature sensor, replacing	
386-007	0.50	Engine oil pressure sensor, replacing	
386-011	0.50	Fuel level sender, replacing	
386-038	1.00	Engine rotation speed sensor, replacing	
386-043	0.50	Travel speed sensor or alarm sensor, replacing	
386-044	0.50	Auto idling sensor, replacing	
386-088	0.75	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
393-001	0.50	Voltage converter, replacing	
393-021	0.75	Radio, replacing	
395-021	0.50	Antenna, replacing	
395-022	1.00	Antenna cable, replacing	
395-031	0.50	Speaker, replacing	
398-002	0.70	W-ECU, MID142, changing pre-programmed ECU17157 - 120000	
398-003	0.70	W-ECU, MID142, changing non-programmed ECU	17157 - 120000
4		POWER TRANSMISSION	
43		GEARBOX,	
431-011	7.00	Travel gearbox, replacing	
431-012	3.50	Travel gearbox, removal	
431-013	3.50	Travel gearbox, installation	
431-021	5.50	Swing gearbox, replacing	
431-026	1.50	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	4.50	Pump gearbox coupling assembly, replacing	15001 - 210000
431-036	5.50	Pump gearbox flange, replacing	
44		HYDROSTATIC DRIVE	
441-011	3.50	Travel motor, replacing one	
441-012	0.75	Travel motor relief valve, replacing	
441-016	2.00	Travel motor removed, replacing seal	
441-021	3.00	Swing motor, replacing	
441-022	0.80	Swing motor relief valve, replacing	15001 - 210000
441-023	3.50	Swing motor, replacing cylinder block	
441-024	1.25	Swing motor, replacing plate (brake)	
441-025	1.25	Swing motor, replacing brake piston seal	
441-026	1.50	Swing motor removed, replacing seal	
441-028	0.75	Swing motor brake valve, replacing	
441-112	0.50	Track motor relief valve, replacing	15001 - 210000

Op.no.	time (h)		Notes
443-037	6.00	Center passage, replacing	
443-038	7.50	Center passage, replacing seal kit	
443-039	1.00	Center passage hose (valve – center passage), replacing	15001 - 210000
443-040	0.90	Center passage hose (center passage – motor), replacing	15001 - 210000
45		PROPELLER SHAFT	
451-004	1.50	Propeller shaft, rear, replacing	
451-010	1.50	Propeller shaft, front, replacing	
46		FRONT AXLE; REAR AXLE	
461-001	7.50	Axle, replacing	
461-002	3.50	Axle, removing	
461-003	4.00	Axle, installing	
461-005	4.00	Drive shaft, replacing one side	
461-015	6.50	Diff wheel axle, replacing	
461-040	1.75	Hub reduction gear, replacing	15001 - 210000
461-043	3.00	Hub, replacing seal	15001 - 210000
463-001	6.00	Axle, replacing	
463-002	3.00	Axle, removing	
463-003	3.00	Axle, installing	
463-005	2.00	Drive shaft, replacing one side	
463-015	4.00	Diff wheel axle, replacing	
463-043	2.50	Hub, replacing seal	
49		MISCELLANEOUS	
492-031	3.00	Swing ring gear outer seal, replacing	17787 - 210000
492-032	9.00	Swing ring gear inner seal, replacing	17787 - 210000
492-091	0.50	Ring gear grease pipe, replacing	
5		BRAKE	
51		WHEEL BRAKE	
516-004	2.00	Brake discs, replacing on both sides	
516-050	2.00	Brake piston, replacing seals	
517-004	2.00	Brake disc, replacing both sides	
517-005	2.50	Brake disc, replacing	15001 - 210000
517-050	3.00	Brake piston, replacing seals	15001 - 210000
52		HYDRAULIC BRAKE SYSTEM	
520-005	0.50	Brake system, check and adjusting pressure in circuit	
520-037	0.75	Brake system, bleeding	
525-008	1.50	Foot brake valve, replacing	

Op.no.	time (h)	Notes
527-002	0.50	Accumulator, replacing
6		STEERING
64		STEERING
641-021	1.50	Adjustable steering column, replacing
645-006	4.00	Steering cylinder, replacing
645-028	1.00	Steering system, checking and adjusting working pressure
645-060	3.00	Steering cylinder, repacking in machine
645-070	1.00	Hydraulic pump, removing
645-072	1.00	Hydraulic pump, installing.
645-082	1.50	Steering valve, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	1.00	Counterweight, removing
716-002	1.50	Counterweight, fitting
716-003	2.50	Counterweight, replacing
76		SHOCK ABSORBER; AXLE LOCKING; ANTI ROLL BAR; LEVEL / SIDE CONTROL
761-001	2.00	Shock absorber front, replacing all
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.50	Cab, removing
810-002	2.00	Cab, installing
810-003	4.50	Operator cab, replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	1.00	Engine hood, replacing
827-091	1.75	Tool box assembly, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	0.75	Door, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.25	Rear-view mirror, changing

Op.no.	time (h)		Notes
843-002	2.00	Windscreen, replacing	
843-012	1.00	Rear window, replacing	
843-013	1.50	Side window, replacing	
843-048	1.00	Door window, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-008	1.25	Seat, replacing	
87		AIR CONDITIONING UNIT	
870-001	5.00	Cooler and Heater assembly, replacing	15001 - 210000
872-001	0.50	Cab filter, replacing	
872-011	1.00	Duct, replacing	
872-021	1.00	Defroster hose, replacing	
873-004	3.00	Heater core, replacing	
873-006	1.50	Fan motor, replacing	
873-011	1.00	Air mix door actuator, replacing	
873-020	1.00	Heat control valve actuator, replacing	
873-097	1.50	Heater hose, replacing	
874-002	0.75	Refrigerant, draining	
874-003	0.75	Cooling unit, performance test	
874-005	1.00	Refrigerant, filling excl vacuum pumping	
874-006	2.00	Compressor, replacing incl draining and filling	15001 - 210000
874-007	0.75	Belt, replacing	
874-010	1.50	Condenser, replacing incl draining and filling	15001 - 210000
874-011	1.25	Receiver, replacing incl draining and filling	15001 - 210000
874-012	3.00	Evaporator, replacing incl draining and filling	
874-013	3.00	Expansion valve, replacing incl draining and filling	
874-081	1.75	Liquid hose, replacing incl. draining and filling	
874-082	1.75	Discharge hose, replacing incl. draining and filling	
874-083	1.75	Suction hose, replacing incl. draining and filling	
874-091	1.00	Switch and controller, replacing	
874-093	1.00	Power transistor (ceramic resister), replacing	
874-094	1.00	Vent actuator, replacing	
874-095	1.00	Mode (foot) actuator, replacing	
874-096	1.00	Intake actuator, replacing	
874-097	1.00	Shutter assembly, replacing	
874-098	1.00	Valve (mix) actuator, replacing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-001	0.20	Oil return filter, replacing	
911-004	0.50	Suction strainer, replacing	

Op.no.	time (h)		Notes
911-005	1.75	Pump suction hose and pipe, replacing	
911-011	2.50	Oil cooler, replacing	
911-015	0.50	Oil level gauge, replacing	
911-017	1.75	Suction cover, replacing	
911-024	0.80	Pipe and hose (pump - valve), replacing	
911-025	0.70	Pipe and hose (valve - cylinder), replacing	
911-026	0.75	Pipe and hose (valve - swing motor), replacing	
911-031	2.00	Oil cooler line pipe and hose, replacing	
911-032	1.50	Oil cooler line pipe coupling, replacing	
911-033	1.25	Oil cooler line bypass valve (check valve), replacing	
911-038	4.50	Hydraulic oil tank, replacing	
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
911-042	0.25	Oil drain filter, replacing	
911-043	0.25	Servo system filter, replacing	
911-051	0.20	Breather, replacing	
912-001	10.00	Control valve, replacing	
912-067	0.70	Main pressure relief valve, replacing	
912-070	1.50	Check valve, replacing	
912-071	0.70	Rupture valve, replacing (boom cylinder)	
912-073	0.70	Rupture valve, replacing (dipper arm cylinder)	
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)	
912-075	0.50	Rupture valve hose or pipe, replacing (dipper arm cylinder)	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-010	5.00	Hydraulic pump, replacing	
913-013	7.00	Hydraulic pump, replacing seal for input shaft	
913-029	0.50	Pump regulator, replacing	
914-036	1.25	Servo pump block seal, replacing	
914-037	1.25	Servo pump shaft seal, replacing	
914-041	0.60	Proportional solenoid valve (power shift), replacing	
914-051	0.30	Accumulator, replacing	
914-060	0.80	Servo pump, replacing	
914-071	0.50	Servo pipe and hose, replacing	
914-081	2.00	Remote control valve (lever), replacing	
914-084	1.50	Remote control valve (pedal), replacing	
914-086	1.00	Remote control valve hose, replacing	
914-091	1.75	Solenoid valve, replacing	15001 - 210000
915-007	1.50	Control lever (dozer blade), replacing	
916-043	1.00	Boom, replacing pipe (boom cylinder)	
916-044	0.75	Boom, replacing hose (boom cylinder)	

Op.no.	time (h)	Notes
916-045	1.00	Boom, replacing pipe (dipper arm cylinder)
916-046	0.50	Boom, replacing hose (dipper arm cylinder)
916-047	1.00	Boom, replacing pipe (bucket cylinder)
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)
916-049	0.75	Dipper arm, replacing pipe (bucket cylinder)
916-091	0.75	Hammer and shear pipe, replacing (for boom)
916-092	0.50	Hammer and shear hose, replacing (for boom)
916-093	0.75	Hammer and shear pipe, replacing (for dipper arm)
916-094	0.50	Hammer and shear hose, replacing (for dipper arm)
916-095	0.50	Hammer and shear hose and pipe, replacing (MCV - 3 way valve)
916-096	1.00	Hammer and shear pedal valve (RCV), replacing
916-097	0.75	Hammer and shear 3-way valve, replacing
916-098	0.75	Hammer and shear pipe and hose, replacing (for 2nd pump flow)
916-099	0.50	Hammer and shear ball valve, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.50	Quickfit pump (gear pump), replacing
924-002	1.00	Quickfit valve, replacing
924-003	0.75	Quickfit solenoid valve, replacing
924-004	0.50	Quickfit control switch, replacing
924-005	0.70	Quickfit, removal
924-006	0.70	Quickfit, installation
924-011	1.25	Hydraulic quickfit cylinder, removal
924-012	1.25	Hydraulic quickfit cylinder, installation
924-021	2.00	Quickfit hydraulic cylinder bracket (body), replacing
924-041	0.50	Quickfit hydraulic hose, replacing (for boom)
924-042	0.50	Quickfit hydraulic pipe, replacing (for boom)
924-043	0.25	Quickfit hydraulic hose, replacing (for dipper arm)
924-044	0.50	Quickfit hydraulic pipe, replacing (for dipper arm)
924-045	0.75	Quickfit hydraulic cylinder hose, replacing (dipper arm cylinder)
925-011	1.25	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.75	Bucket assembly, installation
927-001	1.75	Dozer blade, replacing
		15001 - 210000
97		UNIT, DIGGING
974-010	10.00	Boom, replacing
974-013	5.00	Boom, removal
974-014	5.00	Boom, installation
974-017	2.00	Boom, replacing pin

Op.no.	time (h)		Notes
974-018	0.25	Boom grease pipe or hose, replacing	
974-021	2.00	Boom cylinder, replacing	
974-022	2.00	Boom cylinder removed, repacking	
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes	
974-025	3.50	Boom cylinder, repacking in machine	
974-031	1.00	Boom cylinder, removal	
974-032	1.00	Boom cylinder, installation	
975-011	3.00	Dipper arm, removal	
975-012	3.00	Dipper arm, installation	
975-014	1.00	Dipper arm cylinder, removal	
975-015	1.00	Dipper arm cylinder, installation	
975-023	0.25	Dipper arm pipe or hose, replacing	
975-024	1.00	Dipper arm connecting rod, replacing	
975-025	2.00	Dipper arm cylinder, replacing	
975-026	2.50	Dipper arm cylinder removed, repacking	
975-028	1.00	Connecting rod yoke, replacing	
975-032	0.50	Connecting rod yoke, removal	
975-035	0.50	Connecting rod yoke, installation	
975-039	5.50	Dipper arm, replacing	
975-043	3.50	Dipper arm cylinder, repacking in machine	
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes	
975-061	2.00	Bucket cylinder, replacing	
975-062	1.00	Bucket cylinder, removal	
975-063	3.50	Bucket cylinder, repacking in machine	
975-065	1.00	Bucket cylinder, installation	
975-069	2.00	Bucket cylinder removed, repacking	
975-070	0.50	Bucket cylinder removed, replacing bushing	
98		FUNCTION FOR ROAD CONSTRUCTION	
981-081	0.80	Blade lift cylinder, removing	15001 - 210000
981-086	1.25	Blade lift cylinder, installing	15001 - 210000

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
172-002	1.50	Warranty inspection 100 hours	
172-004	6.00	Warranty inspection 1000 hours	
173-002	0.60	Maintenance service, daily	
173-004	1.00	Maintenance service, every 50 hours	
173-007	1.75	Maintenance service, every 250 hours	
173-010	3.50	Maintenance service, every 500 hours	
173-012	4.50	Maintenance service, every 1000 hours	
173-014	7.50	Maintenance service, every 2000 hours	
173-018	8.50	Maintenance service, every 4000 hours	
173-022	9.00	Maintenance service, every 6000 hours	
173-040	4.00	Maintenance service, first 500 hours	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-070	9.50	Engine, removing	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
214-012	2.00	Valves, adjusting	
215-032	9.00	Timing gear case, fitting new gasket in machine	
216-014	4.00	Crankshaft, replacing front oil seal	
216-018	5.50	Crankshaft, replacing rear oil seal	
217-003	4.00	Oil sump, replacing	
217-005	1.00	Oil level sensor, changing	
218-002	3.00	Engine mount front, changing	
218-007	1.25	Engine mounting rear, changing	
22		LUBRICATING SYSTEM	
221-014	6.50	Oil pump, replacing	
221-022	0.70	Lubrication oil pressure, checking with pressure gauge	
223-006	1.50	Oil cooler, replacing	
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	121855 - 999999
233-001	0.30	Fuel system, bleeding	120010 - 121854
233-002	0.70	Feed pump, replacing	

Op.no.	time (h)		Notes
233-004	0.90	Feed pump, checking feed pressure	
233-014	0.40	Fuel filters, replacing	
233-015	0.50	Fuel filter extra, replacing	121855 - 999999
233-015	0.50	Fuel filter extra, replacing	120010 - 121854
233-020	0.10	Fuel filter, checking	
234-010	3.50	Fuel tank, replacing	
234-041	0.60	Fuel filling pump, removing	
234-042	0.60	Fuel filling pump, installing	
235-003	0.30	Fuel return pressure, checking	
237-030	1.00	High pressure fuel pump, checking	
237-031	1.75	Fuel rail, replacing	
237-032	1.50	High pressure fuel pump, replacing	
237-033	0.70	Fuel control valve (FCV), replacing	
237-034	1.25	Pressure relief valve (PRV), replacing	
237-035	0.30	Fuel rail pressure sensor, replacing	
237-036	1.75	Pressure relief valve (PRV), checking	
237-037	1.50	Fuel rail pressure, checking	
237-038	1.25	Fuel control valve (FCV), checking	
25		INLET SYSTEM; EXHAUST SYSTEM	
251-004	1.50	Exhaust manifold, replacing gasket	
252-020	1.25	Silencer, replacing	
252-021	0.60	Exhaust pipe, flexible tube, replacing	
255-002	1.25	Turbocharger, inspection	
255-071	1.75	Turbocharger, replacing	
256-006	0.40	Preheating coil, replacing	
258-002	5.00	Intercooler, replacing	
26		COOLING SYSTEM	
261-002	0.20	Coolant, checking anti-freeze resistance	
261-008	5.50	Radiator, replacing	
261-012	1.25	Radiator hose upper, replacing	
261-014	1.25	Radiator hoses lower, replacing	
261-018	0.90	Expansion tank, replacing	
262-002	1.75	Coolant pump, replacing	
262-097	0.40	Thermostat, checking	
262-098	0.80	Thermostat, replacing	
263-012	0.90	Fan belt and/or alternator belt, replacing	
263-022	0.90	Fan belt and/or alternator-, compressor belt, replacing all belts	

Op.no.	time (h)	Notes	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-002	0.90	Batteries, replacing	
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.25	Alternator, replacing incl function check	
321-075	0.50	Alternator, test	
33		STARTING SYSTEM	
331-018	0.70	Starter motor, replacing	
331-021	1.25	Starter motor, tests	
331-081	0.30	Starter relay, replacing	
334-011	0.50	Starter switch (engine start switch), replacing	
35		LIGHTING	
352-002	0.50	Headlights, adjusting	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.30	Horn, replacing	
362-041	0.30	Rotating beacon, replacing	
362-041	0.30	Rotating beacon, replacing	
362-051	0.50	Travel alarm, replacing	
363-002	1.25	Windscreen wiper front, replacing motor	
363-003	0.40	Windscreen wiper, replacing switch	
363-004	0.50	Windscreen flusher pump, replacing	
363-091	0.50	Windscreen wiper, replacing controller	
364-001	0.80	Electric center passage, replacing	121300 - 999999
364-004	0.30	Switch, replacing	
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	
367-058	0.70	W-ECU, MID 142, replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-007	0.50	Engine oil pressure sensor, replacing	
386-008	0.40	Engine rotation speed sensor, replacing	
386-018	0.30	Boost pressure / charge-air temperature sensor, replacing	
386-038	0.60	Engine rotation speed sensor, replacing	
386-088	0.70	Engine rotation speed sensor (camshaft), replacing	

Op.no.	time (h)		Notes
386-088	0.50	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
424-002	0.20	Transmission mode, function check	
43		GEARBOX,	
431-012	2.00	Travel gearbox, removal	
431-013	2.50	Travel gearbox, installation	
431-020	0.40	Travel gearbox, bleeding	
44		HYDROSTATIC DRIVE	
441-009	1.75	Travel motor, removing	
441-010	2.00	Travel motor, installing	
441-016	0.20	Travel motor removed, replacing seal	
441-017	0.50	Travel motor pressure, checking and adjusting	
441-019	0.90	Travel motor speed, checking and adjusting	
441-027	2.00	Swing motor brake discs, replacing (motor removed)	
441-029	2.50	Swing motor, brake kit, upgrade	121464 - 999999
441-032	0.40	Swing motor pressure, checking and adjusting	
442-045	2.50	Pump coupling, removing	
442-046	2.00	Pump coupling, installing	
443-033	0.90	Center passage, disassembly and assembly	
443-034	2.50	Centre passage, removing	
443-035	3.00	Centre passage, installing	
45		PROPELLER SHAFT	
451-004	1.00	Propeller shaft, rear, replacing	
451-010	1.00	Propeller shaft, front, replacing	
46		FRONT AXLE; REAR AXLE	
461-002	4.00	Axle, removing	
461-003	4.00	Axle, installing	
461-045	2.50	Drive shaft seal, replacing	
461-070	8.50	King pin and bushing, replacing	
463-002	2.50	Axle, removing	
463-003	2.50	Axle, installing	

Op.no.	time (h)	Notes	
49		MISCELLANEOUS	
492-025	0.40	Swing ring, measuring axial clearance	
492-031	2.50	Swing ring gear outer seal, replacing	
5		BRAKE	
51		WHEEL BRAKE	
510-005	0.20	Service brakes, function check	
52		HYDRAULIC BRAKE SYSTEM	
520-005	0.70	Brake system, check and adjusting pressure in circuit	
525-008	1.75	Foot brake valve, replacing	
527-014	0.50	Brake accumulator charging pressure, adjusting	
55		PARKING BRAKE	
550-015	0.30	Parking brake, manually releasing	
550-023	0.30	Parking brake, function checking	
6		STEERING	
60		GENERAL	
600-001	0.30	Steering system, function check	
64		STEERING	
645-003	0.30	Steering system working pressure, checking	
645-022	0.70	Steering valve, removal	
645-023	0.70	Steering valve, installation	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	0.90	Counterweight, removing	121372 - 999999
716-002	1.25	Counterweight, fitting	121372 - 999999
76		SHOCK ABSORBER; AXLE LOCKING; ANTI ROLL BAR; LEVEL / SIDE CONTROL	
763-001	0.40	Pivot axle lock cylinder, removing	
763-002	0.50	Pivot axle lock cylinder, installing	
763-003	0.70	Pivot axle lock cylinder, changing seals	
763-004	0.20	Pivot axle lock cylinder, releasing for towing	
763-006	0.30	Pivot axle lock, function check	

Op.no.	time (h)	Notes
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-007	0.50	Wheel, installing
771-008	0.40	Wheel, removing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.25	Cab, removing
810-002	1.50	Cab, installing
83		DOORS; HATCH; COVER PLATE, (all)
831-052	0.60	Cab door, removing door catch
831-053	0.90	Cab door, installing door catch
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	0.80	Seat, replacing
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-088	0.30	Seat belt, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.70	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
873-019	0.90	ECC control unit, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.50	Condenser, replacing incl draining and filling
874-011	1.50	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-094	0.60	Vent actuator, replacing

Op.no.	time (h)	Notes
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	0.80	Instrument panel, replacing (left)
881-005	0.90	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-001	0.30	Hydraulic system, warming up
900-005	0.60	Vacuum pump, connection
900-006	0.30	Vacuum pump, disconnection
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-010	0.40	Cooling fan speed, checking and adjusting
911-010	0.40	Cooling fan speed, checking and adjusting
911-013	2.00	Hydraulic oil cooler, removing
911-014	2.00	Hydraulic oil cooler, installing
911-036	1.25	Hydraulic oil tank, removing
911-037	2.50	Hydraulic oil tank, installing
911-044	0.90	Oil cooler fan motor, removal
911-045	1.25	Oil cooler fan motor, installation
911-046	0.80	Cooling fan pump, removal
911-047	1.50	Cooling fan pump, installation
912-018	1.25	Back-up valve, checking and adjusting
912-019	0.40	Shock valve removed, checking
912-071	1.00	Rupture valve, replacing (boom cylinder)
912-073	0.70	Rupture valve, replacing (dipper arm cylinder)
912-117	1.50	LS-pressure relief valve, replacing
912-118	1.00	Safety relief valve, replacing
912-150	1.50	Working pressure, checking and adjusting
912-162	1.00	Line rupture valve pressure, checking and adjusting
912-210	0.70	Rupture valve, replacing (2pcs boom tilt cylinder)
913-003	0.30	Hydraulic pump, checking and adjusting standby pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-023	2.00	Pump, removal
913-024	3.50	Pump, installation
914-031	0.60	Servo pump, removal
914-032	0.50	Servo pump, installation
914-055	0.30	Servo pressure, checking and adjusting

Op.no.	time (h)		Notes
914-064	0.60	Servo valve, removal	121671 - 999999
914-064	0.60	Servo valve, removal	120010 - 121670
914-065	0.70	Servo valve, installation	121671 - 999999
914-065	0.70	Servo valve, installation	
914-103	0.20	Control lockout lever, function check	
915-004	3.50	Control lever, removal	
915-005	3.50	Control lever, installation	
916-059	0.70	Calibration of cruise control	
916-060	1.00	Calibration of X1 hydraulic with flow control	
916-061	0.50	Calibration of X1 hydraulic with pressure control	
916-062	0.90	X1 pressure relief valve, adjusting	
916-062	1.25	X1 pressure relief valve, adjusting	
916-110	0.90	X3 pressure and flow, adjusting	
916-112	0.20	X1, function check	
916-113	0.20	X3, function check	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-005	0.40	Quickfit, removal	
924-006	0.40	Quickfit, installation	
924-007	0.50	Cylinder for hydraulic quickfit S1, removal	
924-008	0.50	Cylinder for hydraulic quickfit S1, installation	
924-009	0.70	Cylinder for hydraulic quickfit S6, removal	
924-010	0.50	Cylinder for hydraulic quickfit S6, installation	
924-017	0.40	Cylinder for hydraulic quickfit Universal, removal	
924-018	0.40	Cylinder for hydraulic quickfit Universal, installation	
924-046	0.10	Quickfit, function check	
97		UNIT, DIGGING	
972-012	0.90	Stabilisers, installation	
972-021	0.70	Stabilisers, removal hydraulic cylinder	
974-006	7.50	2-piece boom, removal	
974-007	6.50	2-piece boom, installation	
974-008	1.25	Tilt cylinder 2-piece boom, removal	
974-009	1.25	Tilt cylinder 2-piece boom, installation	
974-013	4.00	Boom, removal	
974-014	4.50	Boom, installation	
974-031	2.50	Boom cylinder, removal	
974-032	1.75	Boom cylinder, installation	
974-038	0.40	Lower boom cylinder bushing, replacing	
974-039	0.40	Upper boom cylinder bushing, replacing	
974-040	0.40	Tilt cylinder 2-piece boom, rear bushing, replacing	
974-041	0.40	Tilt cylinder 2-piece boom, front bushing, replacing	
974-042	1.25	Boom foot bushing, replacing	
975-011	0.70	Dipper arm, removal	

Op.no.	time (h)	Notes
975-012	2.50	Dipper arm, installation
975-014	0.70	Dipper arm cylinder, removal
975-015	0.90	Dipper arm cylinder, installation
975-040	0.40	Dipper arm cylinder bushing on boom, replacing
975-042	0.40	Dipper arm cylinder bushing on dipper arm, replacing
975-045	0.70	Dipper arm bushing-boom, replacing
975-048	0.70	Dipper arm bushing-bucket, replacing
975-049	0.60	Dipper arm bushing-lever, replacing
975-062	0.70	Bucket cylinder, removal
975-065	0.70	Bucket cylinder, installation
975-072	0.40	Bucket cylinder bushing on dipper arm, changing
975-073	0.40	Bucket cylinder bushing lever-link, replacing
975-074	0.50	Lever bushing-bucket, replacing
975-075	0.40	Lever link bushing-bucket cylinder, replacing
99		MISCELLANEOUS
996-001	1.50	Cab elevating cylinder, replacing

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
172-002	1.50	Warranty inspection 100 hours	120010 - 122499
172-004	6.00	Warranty inspection 1000 hours	120010 - 122499
173-002	0.50	Maintenance service, daily	122501 - 999999
173-002	0.60	Maintenance service, daily	120010 - 122499
173-004	1.00	Maintenance service, every 50 hours	120010 - 122499
173-004	1.00	Maintenance service, every 50 hours	122501 - 999999
173-007	1.75	Maintenance service, every 250 hours	120010 - 122499
173-007	1.75	Maintenance service, every 250 hours	122501 - 999999
173-010	3.50	Maintenance service, every 500 hours	120010 - 122499
173-010	3.00	Maintenance service, every 500 hours	122501 - 999999
173-012	4.50	Maintenance service, every 1000 hours	120010 - 122499
173-012	5.00	Maintenance service, every 1000 hours	122501 - 999999
173-014	8.50	Maintenance service, every 2000 hours	122501 - 999999
173-014	6.00	Maintenance service, every 2000 hours	120010 - 122499
173-018	8.50	Maintenance service, every 4000 hours	120010 - 122499
173-018	9.50	Maintenance service, every 4000 hours	122501 - 999999
173-022	9.00	Maintenance service, every 6000 hours	120010 - 122499
173-022	0.70	Maintenance service, every 6000 hours	122501 - 999999
173-036	0.60	Maintenance service, first 100 hours	122501 - 999999
173-040	4.00	Maintenance service, first 500 hours	120010 - 122499
173-040	1.25	Maintenance service, first 500 hours	122501 - 999999
173-042	0.40	Maintenance service, first 1000 hours	122501 - 999999

2 ENGINE WITH MOUNTING AND EQUIPMENT

20		GENERAL	
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	122001 - 999999
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU	120777 - 999999
21		ENGINE	
210-070	9.50	Engine, removing	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
214-012	2.00	Valves, adjusting	
215-032	9.00	Timing gear case, fitting new gasket in machine	
216-014	4.00	Crankshaft, replacing front oil seal	
216-018	5.50	Crankshaft, replacing rear oil seal	
217-003	4.00	Oil sump, replacing	
217-005	1.00	Oil level sensor, changing	
218-002	3.00	Engine mount front, changing	

Op.no.	time (h)		Notes
218-007	1.25	Engine mounting rear, changing	
22		LUBRICATING SYSTEM	
221-014	6.50	Oil pump, replacing	
221-022	0.70	Lubrication oil pressure, checking with pressure gauge	
223-006	1.50	Oil cooler, replacing	
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	122173 - 999999
233-001	0.30	Fuel system, bleeding	120010 - 122172
233-002	0.70	Feed pump, replacing	
233-004	0.90	Feed pump, checking feed pressure	
233-014	0.40	Fuel filters, replacing	
233-015	0.50	Fuel filter extra, replacing	122173 - 999999
233-015	0.50	Fuel filter extra, replacing	120010 - 122172
233-020	0.10	Fuel filter, checking	
234-010	2.00	Fuel tank, replacing	122001 - 999999
234-010	3.50	Fuel tank, replacing	120010 - 120777
234-041	0.40	Fuel filling pump, removing	122001 - 999999
234-041	0.60	Fuel filling pump, removing	120010 - 120777
234-042	0.60	Fuel filling pump, installing	
235-003	0.30	Fuel return pressure, checking	
237-030	1.00	High pressure fuel pump, checking	
237-031	1.75	Fuel rail, replacing	
237-032	1.50	High pressure fuel pump, replacing	
237-033	0.70	Fuel control valve (FCV), replacing	
237-034	1.25	Pressure relief valve (PRV), replacing	
237-035	0.30	Fuel rail pressure sensor, replacing	
237-036	1.75	Pressure relief valve (PRV), checking	
237-037	1.50	Fuel rail pressure, checking	
237-038	1.25	Fuel control valve (FCV), checking	
25		INLET SYSTEM; EXHAUST SYSTEM	
251-004	1.50	Exhaust manifold, replacing gasket	
252-020	1.25	Silencer, replacing	
252-021	0.60	Exhaust pipe, flexible tube, replacing	
255-002	1.25	Turbocharger, inspection	
255-071	1.75	Turbocharger, replacing	
256-006	0.40	Preheating coil, replacing	
258-002	5.00	Intercooler, replacing	
26		COOLING SYSTEM	
261-002	0.20	Coolant, checking anti-freeze resistance	
261-008	5.50	Radiator, replacing	
261-012	1.25	Radiator hose upper, replacing	

Op.no.	time (h)		Notes
261-014	1.25	Radiator hoses lower, replacing	
261-018	0.90	Expansion tank, replacing	
262-002	1.75	Coolant pump, replacing	
262-097	0.40	Thermostat, checking	
262-098	0.80	Thermostat, replacing	
263-012	0.90	Fan belt and/or alternator belt, replacing	
263-022	0.90	Fan belt and/or alternator-, compressor belt, replacing all belts	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-002	0.90	Batteries, replacing	120010 - 120777
311-002	0.90	Batteries, replacing	122001 - 999999
32		ALTERNATOR; CHARGE REGULATOR	
321-002	1.25	Alternator, replacing incl function check	
321-075	0.50	Alternator, test	
33		STARTING SYSTEM	
331-018	0.70	Starter motor, replacing	
331-021	1.25	Starter motor, tests	
331-081	0.30	Starter relay, replacing	120010 - 120777
334-011	0.50	Starter switch (engine start switch), replacing	
35		LIGHTING	
352-002	0.50	Headlights, adjusting	
36		OTHER ELECTRICAL EQUIPMENT	
362-002	0.50	Horn, replacing	122001 - 999999
362-002	0.30	Horn, replacing	120010 - 120777
362-041	0.30	Rotating beacon, replacing	
362-041	0.30	Rotating beacon, replacing	
362-051	0.50	Travel alarm, replacing	
363-002	1.25	Windscreen wiper front, replacing motor	
363-003	0.40	Windscreen wiper, replacing switch	
363-004	0.50	Windscreen flusher pump, replacing	120010 - 120777
363-004	0.50	Windscreen flusher pump, replacing	122001 - 999999
363-091	0.50	Windscreen wiper, replacing controller	122001 - 999999
363-091	0.50	Windscreen wiper, replacing controller	120010 - 120777

Op.no.	time (h)		Notes
364-001	0.80	Electric center passage, replacing	120740 - 999999
364-004	0.30	Switch, replacing	
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU	
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU	
367-058	0.70	W-ECU, MID 142, replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-007	0.50	Engine oil pressure sensor, replacing	
386-008	0.40	Engine rotation speed sensor, replacing	
386-018	0.30	Boost pressure / charge-air temperature sensor, replacing	
386-038	0.60	Engine rotation speed sensor, replacing	
386-088	0.70	Engine rotation speed sensor (camshaft), replacing	
386-088	0.50	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
424-002	0.20	Transmission mode, function check	
43		GEARBOX,	
431-012	2.00	Travel gearbox, removal	
431-013	2.50	Travel gearbox, installation	
431-020	0.40	Travel gearbox, bleeding	
44		HYDROSTATIC DRIVE	
441-009	1.75	Travel motor, removing	122501 - 999999
441-009	1.75	Travel motor, removing	
441-010	2.00	Travel motor, installing	122501 - 999999
441-010	2.00	Travel motor, installing	
441-016	0.20	Travel motor removed, replacing seal	
441-017	0.50	Travel motor pressure, checking and adjusting	
441-019	0.90	Travel motor speed, checking and adjusting	122139 - 122499
441-019	0.90	Travel motor speed, checking and adjusting	122501 - 999999
441-030	3.00	Swing motor, removing	122501 - 999999
441-030	3.00	Swing motor, removing	
441-031	4.00	Swing motor, installing	122501 - 999999
441-031	4.00	Swing motor, installing	

Op.no.	time (h)		Notes
441-032	0.40	Swing motor pressure, checking and adjusting	122501 - 999999
441-032	0.40	Swing motor pressure, checking and adjusting	120010 - 122499
442-045	2.50	Pump coupling, removing	
442-046	2.00	Pump coupling, installing	
443-033	0.90	Center passage, disassembly and assembly	
443-034	2.50	Centre passage, removing	
443-035	3.00	Centre passage, installing	
45		PROPELLER SHAFT	
451-004	1.00	Propeller shaft, rear, replacing	
451-010	1.00	Propeller shaft, front, replacing	
46		FRONT AXLE; REAR AXLE	
461-002	2.50	Axle, removing	122501 - 999999
461-002	4.00	Axle, removing	120010 - 122499
461-003	4.00	Axle, installing	120010 - 122499
461-003	3.00	Axle, installing	122501 - 999999
461-045	2.50	Drive shaft seal, replacing	
461-070	8.50	King pin and bushing, replacing	
463-002	2.50	Axle, removing	120010 - 122499
463-002	1.50	Axle, removing	122501 - 999999
463-003	2.50	Axle, installing	122501 - 999999
463-003	2.50	Axle, installing	120010 - 122499
49		MISCELLANEOUS	
492-025	0.40	Swing ring, measuring axial clearance	122501 - 999999
492-025	0.40	Swing ring, measuring axial clearance	
492-031	2.50	Swing ring gear outer seal, replacing	122517 - 999999
492-031	2.50	Swing ring gear outer seal, replacing	120010 - 122516
5		BRAKE	
51		WHEEL BRAKE	
510-005	0.20	Service brakes, function check	
52		HYDRAULIC BRAKE SYSTEM	
520-005	0.70	Brake system, check and adjusting pressure in circuit	
525-008	1.75	Foot brake valve, replacing	
527-014	0.50	Brake accumulator charging pressure, adjusting	
55		PARKING BRAKE	
550-015	0.30	Parking brake, manually releasing	
550-023	0.30	Parking brake, function checking	

Op.no.	time (h)	Notes	
6		STEERING	
60		GENERAL	
600-001	0.30	Steering system, function check	
64		STEERING	
645-003	0.30	Steering system working pressure, checking	120010 - 122499
645-003	0.30	Steering system working pressure, checking	122501 - 999999
645-022	0.70	Steering valve, removal	
645-023	0.70	Steering valve, installation	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	0.90	Counterweight, removing	122001 - 999999
716-002	1.25	Counterweight, fitting	122001 - 999999
76		SHOCK ABSORBER; AXLE LOCKING; ANTI ROLL BAR; LEVEL / SIDE CONTROL	
763-001	0.40	Pivot axle lock cylinder, removing	122501 - 999999
763-001	0.40	Pivot axle lock cylinder, removing	120010 - 122499
763-002	0.50	Pivot axle lock cylinder, installing	120010 - 122499
763-002	0.50	Pivot axle lock cylinder, installing	122501 - 999999
763-003	0.70	Pivot axle lock cylinder, changing seals	
763-004	0.20	Pivot axle lock cylinder, releasing for towing	122501 - 999999
763-004	0.20	Pivot axle lock cylinder, releasing for towing	120010 - 122499
763-006	0.30	Pivot axle lock, function check	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-007	0.50	Wheel, installing	
771-008	0.40	Wheel, removing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.25	Cab, removing	
810-002	1.50	Cab, installing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-052	0.60	Cab door, removing door catch	
831-053	0.90	Cab door, installing door catch	

Op.no.	time (h)	Notes
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	0.80	Seat, replacing
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-088	0.30	Seat belt, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.70	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
873-019	0.90	ECC control unit, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.50	Condenser, replacing incl draining and filling
874-011	1.50	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	0.80	Instrument panel, replacing (left)
881-005	0.90	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-001	0.30	Hydraulic system, warming up
900-005	0.60	Vacuum pump, connection
900-006	0.30	Vacuum pump, disconnection

Op.no.	time (h)		Notes
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-010	0.40	Cooling fan speed, checking and adjusting	
911-010	0.40	Cooling fan speed, checking and adjusting	
911-013	2.00	Hydraulic oil cooler, removing	
911-013	1.50	Hydraulic oil cooler, removing	122001 - 999999
911-014	2.00	Hydraulic oil cooler, installing	
911-014	1.75	Hydraulic oil cooler, installing	122001 - 999999
911-036	1.25	Hydraulic oil tank, removing	
911-037	2.50	Hydraulic oil tank, installing	
911-044	0.90	Oil cooler fan motor, removal	
911-045	1.25	Oil cooler fan motor, installation	
911-046	0.80	Cooling fan pump, removal	
911-047	1.50	Cooling fan pump, installation	
912-018	1.25	Back-up valve, checking and adjusting	122501 - 999999
912-018	1.25	Back-up valve, checking and adjusting	120010 - 122499
912-019	0.40	Shock valve removed, checking	
912-071	1.00	Rupture valve, replacing (boom cylinder)	122139 - 999999
912-073	0.70	Rupture valve, replacing (dipper arm cylinder)	
912-091	3.00	Main control valve, removal	
912-092	4.00	Main control valve, installation	
912-117	1.50	LS-pressure relief valve, replacing	120010 - 120777
912-117	1.50	LS-pressure relief valve, replacing	122001 - 999999
912-117	0.80	LS-pressure relief valve, replacing	122501 - 999999
912-118	1.00	Safety relief valve, replacing	
912-118	1.00	Safety relief valve, replacing	122001 - 999999
912-150	1.25	Working pressure, checking and adjusting	
912-162	1.00	Line rupture valve pressure, checking and adjusting	
912-169	0.60	Unload valve, checking and adjusting	122139 - 999999
912-169	0.60	Unload valve, checking and adjusting	122139 - 999999
912-170	1.00	Unload valve, replacing	122139 - 999999
912-170	1.00	Unload valve, replacing	122139 - 999999
912-210	0.70	Rupture valve, replacing (2pcs boom tilt cylinder)	
913-003	0.30	Hydraulic pump, checking and adjusting standby pressure	120010 - 122138
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-023	2.00	Pump, removal	
913-024	3.50	Pump, installation	
914-031	0.60	Servo pump, removal	
914-032	0.50	Servo pump, installation	
914-055	0.30	Servo pressure, checking and adjusting	
914-064	0.60	Servo valve, removal	122094 - 999999
914-064	0.60	Servo valve, removal	120010 - 122093

Op.no.	time (h)		Notes
914-065	0.70	Servo valve, installation	122094 - 999999
914-065	0.70	Servo valve, installation	
914-103	0.20	Control lockout lever, function check	
915-004	3.50	Control lever, removal	
915-005	3.50	Control lever, installation	
916-059	0.70	Calibration of cruise control	
916-060	1.00	Calibration of X1 hydraulic with flow control	
916-061	0.50	Calibration of X1 hydraulic with pressure control	
916-062	0.90	X1 pressure relief valve, adjusting	
916-062	1.25	X1 pressure relief valve, adjusting	
916-110	0.90	X3 pressure and flow, adjusting	
916-111	0.90	X3 shock and refilling valves, adjusting	
916-112	0.20	X1, function check	
916-113	0.20	X3, function check	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-005	0.40	Quickfit, removal	
924-006	0.40	Quickfit, installation	
924-007	0.50	Cylinder for hydraulic quickfit S1, removal	
924-008	0.50	Cylinder for hydraulic quickfit S1, installation	
924-009	0.70	Cylinder for hydraulic quickfit S6, removal	
924-010	0.50	Cylinder for hydraulic quickfit S6, installation	
924-017	0.40	Cylinder for hydraulic quickfit Universal, removal	
924-018	0.40	Cylinder for hydraulic quickfit Universal, installation	
924-046	0.10	Quickfit, function check	
97		UNIT, DIGGING	
972-012	0.90	Stabilisers, installation	
972-021	0.70	Stabilisers, removal hydraulic cylinder	
974-006	7.50	2-piece boom, removal	
974-007	6.50	2-piece boom, installation	
974-008	1.25	Tilt cylinder 2-piece boom, removal	
974-009	1.25	Tilt cylinder 2-piece boom, installation	
974-013	4.00	Boom, removal	120010 - 120777
974-013	4.00	Boom, removal	122001 - 999999
974-014	4.50	Boom, installation	122001 - 999999
974-014	4.50	Boom, installation	120010 - 120777
974-031	2.50	Boom cylinder, removal	120010 - 120777
974-032	2.50	Boom cylinder, installation	120010 - 120777
974-038	0.40	Lower boom cylinder bushing, replacing	
974-039	0.40	Upper boom cylinder bushing, replacing	
974-040	0.40	Tilt cylinder 2-piece boom, rear bushing, replacing	
974-041	0.40	Tilt cylinder 2-piece boom, front bushing, replacing	
974-042	1.25	Boom foot bushing, replacing	

Op.no.	time (h)	Notes
975-011	0.70	Dipper arm, removal
975-012	2.50	Dipper arm, installation
975-014	0.70	Dipper arm cylinder, removal
975-015	0.90	Dipper arm cylinder, installation
975-040	0.40	Dipper arm cylinder bushing on boom, replacing
975-042	0.40	Dipper arm cylinder bushing on dipper arm, replacing
975-045	0.70	Dipper arm bushing-boom, replacing
975-048	0.70	Dipper arm bushing-bucket, replacing
975-049	0.60	Dipper arm bushing-lever, replacing
975-062	0.70	Bucket cylinder, removal
975-065	0.70	Bucket cylinder, installation
975-072	0.40	Bucket cylinder bushing on dipper arm, changing
975-073	0.40	Bucket cylinder bushing lever-link, replacing
975-074	0.50	Lever bushing-bucket, replacing
975-075	0.40	Lever link bushing-bucket cylinder, replacing

Op.no.	time (h)	Notes	
1		STANDARD PARTS, SERVICE	
17		SERVICE	
172-002	1.50	Warranty inspection 100 hours	
172-004	6.00	Warranty inspection 1000 hours	
173-002	0.60	Maintenance service, daily	
173-004	1.00	Maintenance service, every 50 hours	
173-007	1.75	Maintenance service, every 250 hours	
173-010	3.50	Maintenance service, every 500 hours	
173-012	4.50	Maintenance service, every 1000 hours	
173-014	6.00	Maintenance service, every 2000 hours	
173-018	8.50	Maintenance service, every 4000 hours	
173-022	9.00	Maintenance service, every 6000 hours	
173-040	4.00	Maintenance service, first 500 hours	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.00	E-ECU, MID 128, changing non-programmed ECU	
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-070	9.50	Engine, removing	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
214-012	2.00	Valves, adjusting	
215-032	9.00	Timing gear case, fitting new gasket in machine	
216-014	4.00	Crankshaft, replacing front oil seal	
216-018	5.50	Crankshaft, replacing rear oil seal	
217-003	4.00	Oil sump, replacing	
217-005	1.00	Oil level sensor, changing	
218-002	3.00	Engine mount front, changing	
218-007	1.25	Engine mounting rear, changing	
22		LUBRICATING SYSTEM	
221-014	6.50	Oil pump, replacing	
221-022	0.70	Lubrication oil pressure, checking with pressure gauge	
223-006	1.50	Oil cooler, replacing	
23		FUEL SYSTEM	
233-001	0.30	Fuel system, bleeding	120100 - 999999
233-001	0.30	Fuel system, bleeding	120010 - 120099
233-002	0.70	Feed pump, replacing	

Op.no.	time (h)		Notes
233-004	0.90	Feed pump, checking feed pressure	
233-014	0.40	Fuel filters, replacing	
233-015	0.50	Fuel filter extra, replacing	120100 - 999999
233-015	0.50	Fuel filter extra, replacing	120010 - 120099
233-020	0.10	Fuel filter, checking	
234-010	2.00	Fuel tank, replacing	
234-041	0.40	Fuel filling pump, removing	
234-042	0.60	Fuel filling pump, installing	
235-003	0.30	Fuel return pressure, checking	
237-030	1.00	High pressure fuel pump, checking	
237-031	1.75	Fuel rail, replacing	
237-032	1.50	High pressure fuel pump, replacing	
237-033	0.70	Fuel control valve (FCV), replacing	
237-034	1.25	Pressure relief valve (PRV), replacing	
237-035	0.30	Fuel rail pressure sensor, replacing	
237-036	1.75	Pressure relief valve (PRV), checking	
237-037	1.50	Fuel rail pressure, checking	
237-038	1.25	Fuel control valve (FCV), checking	
25		INLET SYSTEM; EXHAUST SYSTEM	
251-004	1.50	Exhaust manifold, replacing gasket	
252-020	1.25	Silencer, replacing	
252-021	0.60	Exhaust pipe, flexible tube, replacing	
255-002	1.25	Turbocharger, inspection	
255-071	1.75	Turbocharger, replacing	
256-006	0.40	Preheating coil, replacing	
258-002	5.00	Intercooler, replacing	
26		COOLING SYSTEM	
261-002	0.20	Coolant, checking anti-freeze resistance	
261-008	5.50	Radiator, replacing	
261-012	1.25	Radiator hose upper, replacing	
261-014	1.25	Radiator hoses lower, replacing	
261-018	0.90	Expansion tank, replacing	
262-002	1.75	Coolant pump, replacing	
262-097	0.40	Thermostat, checking	
262-098	0.80	Thermostat, replacing	
263-012	0.90	Fan belt and/or alternator belt, replacing	
263-022	0.90	Fan belt and/or alternator-, compressor belt, replacing all belts	

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-002	0.40	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.25	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	0.70	Starter motor, replacing
331-021	1.25	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
352-002	0.50	Headlights, adjusting
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.25	Windscreen wiper front, replacing motor
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-001	0.80	Electric center passage, replacing
364-004	0.30	Switch, replacing
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
367-058	0.70	W-ECU, MID 142, replacing
37		CABLE; FUSE; RELAY
372-002	0.50	Electrical distribution box, circuit board replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-007	0.50	Engine oil pressure sensor, replacing
386-008	0.40	Engine rotation speed sensor, replacing
386-016	0.60	Temperature sensor cooling system, replacing
386-017	0.70	Hydraulic oil temperature sensor, replacing

Op.no.	time (h)	Notes	
386-018	0.30	Boost pressure / charge-air temperature sensor, replacing	
386-038	0.60	Engine rotation speed sensor, replacing	
386-088	0.70	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
424-002	0.20	Transmission mode, function check	
43		GEARBOX,	
431-012	2.00	Travel gearbox, removal	
431-013	2.50	Travel gearbox, installation	
431-020	0.40	Travel gearbox, bleeding	
44		HYDROSTATIC DRIVE	
441-009	1.75	Travel motor, removing	
441-010	2.00	Travel motor, installing	
441-016	0.20	Travel motor removed, replacing seal	
441-017	0.50	Travel motor pressure, checking and adjusting	
441-018	0.90	Retardation valve, replacing	
441-019	0.90	Travel motor speed, checking and adjusting	120102 - 999999
441-030	3.00	Swing motor, removing	
441-031	4.00	Swing motor, installing	
441-032	0.40	Swing motor pressure, checking and adjusting	
442-045	2.50	Pump coupling, removing	
442-046	2.00	Pump coupling, installing	
443-033	0.90	Center passage, disassembly and assembly	
443-034	2.50	Centre passage, removing	
443-035	3.00	Centre passage, installing	
45		PROPELLER SHAFT	
451-004	1.00	Propeller shaft, rear, replacing	
451-010	1.00	Propeller shaft, front, replacing	
46		FRONT AXLE; REAR AXLE	
461-002	4.00	Axle, removing	
461-003	4.00	Axle, installing	
461-045	2.50	Drive shaft seal, replacing	
461-070	8.50	King pin and bushing, replacing	

Op.no.	time (h)	Notes
463-002	2.50	Axle, removing
463-003	2.50	Axle, installing
49		MISCELLANEOUS
492-025	0.40	Swing ring, measuring axial clearance
492-031	2.50	Swing ring gear outer seal, replacing
5		BRAKE
51		WHEEL BRAKE
510-005	0.20	Service brakes, function check
52		HYDRAULIC BRAKE SYSTEM
520-005	0.70	Brake system, check and adjusting pressure in circuit
525-008	1.75	Foot brake valve, replacing
527-012	0.50	Accumulator, removal
527-013	0.80	Accumulator, installation
527-014	0.50	Brake accumulator charging pressure, adjusting
55		PARKING BRAKE
550-015	0.30	Parking brake, manually releasing
550-023	0.30	Parking brake, function checking
6		STEERING
60		GENERAL
600-001	0.30	Steering system, function check
64		STEERING
645-003	0.30	Steering system working pressure, checking
645-022	0.70	Steering valve, removal
645-023	0.70	Steering valve, installation
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	1.00	Counterweight, removing
716-002	1.25	Counterweight, fitting
76		SHOCK ABSORBER; AXLE LOCKING; ANTI ROLL BAR; LEVEL / SIDE CONTROL
763-001	0.40	Pivot axle lock cylinder, removing

Op.no.	time (h)	Notes
763-002	0.50	Pivot axle lock cylinder, installing
763-003	0.70	Pivot axle lock cylinder, changing seals
763-004	0.20	Pivot axle lock cylinder, releasing for towing
763-006	0.30	Pivot axle lock, function check
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-007	0.50	Wheel, installing
771-008	0.40	Wheel, removing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.25	Cab, removing
810-002	1.50	Cab, installing
83		DOORS; HATCH; COVER PLATE, (all)
831-052	0.60	Cab door, removing door catch
831-053	0.90	Cab door, installing door catch
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	0.80	Seat, replacing
852-008	1.25	Seat, replacing
852-012	1.75	Longitudinal adjustment cable, replacing
852-013	0.60	Longitudinal suspension cable, replacing
852-088	0.30	Seat belt, replacing
852-089	0.30	Seat cushion, replacing
852-090	0.60	Backrest, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.70	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
873-019	0.90	ECC control unit, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.50	Condenser, replacing incl draining and filling

Op.no.	time (h)		Notes
874-011	1.50	Receiver, replacing incl draining and filling	
874-012	3.00	Evaporator, replacing incl draining and filling	
874-013	3.00	Expansion valve, replacing incl draining and filling	
874-094	0.60	Vent actuator, replacing	
874-095	0.60	Mode (foot) actuator, replacing	
874-096	0.60	Intake actuator, replacing	
88		INTERIOR EQUIPMENT	
881-003	0.80	Instrument panel, replacing (left)	
881-005	0.90	Instrument panel, replacing (right)	

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

90 GENERAL

900-001	0.30	Hydraulic system, warming up	
900-005	0.60	Vacuum pump, connection	
900-006	0.30	Vacuum pump, disconnection	

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-010	0.40	Cooling fan speed, checking and adjusting	
911-010	0.40	Cooling fan speed, checking and adjusting	
911-013	1.50	Hydraulic oil cooler, removing	
911-014	1.75	Hydraulic oil cooler, installing	
911-036	1.25	Hydraulic oil tank, removing	
911-037	2.50	Hydraulic oil tank, installing	
911-044	0.90	Oil cooler fan motor, removal	
911-045	1.25	Oil cooler fan motor, installation	
911-046	0.80	Cooling fan pump, removal	
911-047	1.50	Cooling fan pump, installation	
912-018	1.25	Back-up valve, checking and adjusting	
912-019	0.40	Shock valve removed, checking	
912-071	1.00	Rupture valve, replacing (boom cylinder)	120102 - 999999
912-073	0.70	Rupture valve, replacing (dipper arm cylinder)	
912-091	3.00	Main control valve, removal	
912-092	4.00	Main control valve, installation	
912-117	1.50	LS-pressure relief valve, replacing	
912-118	1.00	Safety relief valve, replacing	
912-150	1.25	Working pressure, checking and adjusting	
912-162	1.00	Line rupture valve pressure, checking and adjusting	
912-169	0.60	Unload valve, checking and adjusting	120102 - 999999
912-169	0.60	Unload valve, checking and adjusting	120102 - 999999
912-170	1.00	Unload valve, replacing	120102 - 999999

Op.no.	time (h)	Notes	
912-210	0.70	Rupture valve, replacing (2pcs boom tilt cylinder)	
913-003	0.30	Hydraulic pump, checking and adjusting standby pressure 120010 - 120101	
913-007	0.30	Hydraulic pump (removed), changing shaft seal	
913-023	2.00	Pump, removal	
913-024	3.50	Pump, installation	
914-031	0.60	Servo pump, removal	
914-032	0.50	Servo pump, installation	
914-055	0.30	Servo pressure, checking and adjusting	
914-064	0.60	Servo valve, removal	120089 - 999999
914-064	0.60	Servo valve, removal	120010 - 120088
914-065	0.70	Servo valve, installation	120089 - 999999
914-065	0.70	Servo valve, installation	
914-103	0.20	Control lockout lever, function check	
915-004	3.50	Control lever, removal	
915-005	3.50	Control lever, installation	
916-059	0.70	Calibration of cruise control	
916-060	1.00	Calibration of X1 hydraulic with flow control	
916-061	0.50	Calibration of X1 hydraulic with pressure control	
916-062	1.25	X1 pressure relief valve, adjusting	
916-062	0.90	X1 pressure relief valve, adjusting	
916-110	0.90	X3 pressure and flow, adjusting	
916-111	0.90	X3 shock and refilling valves, adjusting	
916-112	0.20	X1, function check	
916-113	0.20	X3, function check	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-005	0.40	Quickfit, removal	
924-006	0.40	Quickfit, installation	
924-007	0.50	Cylinder for hydraulic quickfit S1, removal	
924-008	0.50	Cylinder for hydraulic quickfit S1, installation	
924-009	0.70	Cylinder for hydraulic quickfit S6, removal	
924-010	0.50	Cylinder for hydraulic quickfit S6, installation	
924-017	0.40	Cylinder for hydraulic quickfit Universal, removal	
924-018	0.40	Cylinder for hydraulic quickfit Universal, installation	
924-046	0.10	Quickfit, function check	
97		UNIT, DIGGING	
972-012	0.90	Stabilisers, installation	
972-021	0.70	Stabilisers, removal hydraulic cylinder	
974-031	2.50	Boom cylinder, removal	
974-032	2.50	Boom cylinder, installation	
975-011	0.70	Dipper arm, removal	
975-012	2.50	Dipper arm, installation	

Op.no.	time (h)	Notes
975-014	0.70	Dipper arm cylinder, removal
975-015	0.90	Dipper arm cylinder, installation
975-062	0.70	Bucket cylinder, removal
975-065	0.70	Bucket cylinder, installation

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
171-001	1.00	Arrival Inspection, according to Inspection Programme
171-002	2.00	Delivery Inspection, according to Inspection Programme
173-002	1.25	Maintenance service, daily
173-007	2.50	Maintenance service, every 250 hours
173-010	5.50	Maintenance service, every 500 hours
173-012	6.50	Maintenance service, every 1000 hours
173-014	8.00	Maintenance service, every 2000 hours
173-059	0.70	Engine, changing oil and filter
173-068	1.00	Rear axle, changing oil
173-069	1.00	Front axle, changing oil
173-070	2.00	Axles, changing oil
173-074	1.00	Hydraulic oil tank, changing oil and filter
173-076	0.25	Hydraulic oil tank, return oil filter change
173-079	0.60	Swing motor gearbox, changing oil
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	5.00	Engine, removing
210-072	5.50	Engine, installing
211-002	5.00	Cylinder head, replacing gasket
214-012	1.25	Valves, adjusting
214-036	1.00	Valve covers, fitting new gasket
216-014	3.00	Crankshaft, replacing front oil seal
216-018	6.00	Crankshaft, replacing rear oil seal
23		FUEL SYSTEM
233-001	0.20	Fuel system, bleeding
233-002	0.40	Feed pump, replacing
233-014	0.40	Fuel filters, replacing
234-010	3.00	Fuel tank, replacing
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
236-001	0.50	Idling speed, checking and adjusting
236-030	1.50	Injection timing, checking
236-073	2.75	Injection pump, replacing incl setting injection timing
237-002	2.50	Injectors, replacing all
237-004	1.75	Injector, replacing one

Op.no.	time (h)	Notes
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
256-001	0.50	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.75	Preheating coil, replacing
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.75	Coolant, changing
261-008	3.00	Radiator, replacing
261-012	0.50	Radiator hose upper, replacing
261-014	1.00	Radiator hoses lower, replacing
261-018	0.50	Expansion tank, replacing
262-002	1.50	Coolant pump, replacing
262-098	1.75	Thermostat, replacing
263-012	0.75	Fan belt and/or alternator belt, replacing
263-013	0.20	Fan belt and/or alternator belt, checking and adjusting tension
263-022	1.00	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-001	0.80	Battery charging capacity, checking
311-002	0.75	Batteries, replacing
311-003	0.50	Main switch, replacing
311-006	0.50	Earth lead to battery, replacing
311-008	2.50	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.00	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	1.75	Starter motor, replacing
331-081	0.50	Starter relay, replacing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
352-024	0.50	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.50	Rear lamp, replacing one
356-056	0.50	Work lighting, replacing one head lamp assy

Op.no.	time (h)	Notes
36		OTHER ELECTRICAL EQUIPMENT
361-002	0.50	Flasher unit, replacing relay
361-010	0.50	Flasher switch, replacing
361-017	0.50	Flasher lamp, replacing glass or bulb
362-002	0.50	Horn, replacing
362-041	0.50	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-002	1.00	Windscreen wiper front, replacing motor
363-003	0.50	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-004	0.50	Switch, replacing
364-008	0.50	Brake light switch, replacing
364-050	0.50	Relay (general), replacing
364-052	0.50	Battery relay, replacing
364-056	0.50	Pre-heating relay, replacing
37		CABLE; FUSE; RELAY
372-020	0.25	Fuse (general), replacing
372-091	0.50	Slow blow fuse, replacing
379-011	0.75	Boom wire harness, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	0.50	Engine temperature sensor, replacing
386-007	0.50	Engine oil pressure sensor, replacing
386-011	0.50	Fuel level sender, replacing
387-005	1.00	Information display, replacing
39		MISCELLANEOUS
393-021	1.00	Radio, replacing
395-021	0.50	Antenna, replacing
395-022	1.00	Antenna cable, replacing
395-031	0.50	Speaker, replacing
4		POWER TRANSMISSION
43		GEARBOX,
431-011	6.00	Travel gearbox, replacing
431-012	3.00	Travel gearbox, removal
431-013	3.00	Travel gearbox, installation
431-021	6.50	Swing gearbox, replacing
431-026	1.00	Swing gearbox removed, replacing seal
431-027	2.00	Swing gearbox removed, replacing shaft

Op.no.	time (h)	Notes
431-031	4.00	Pump gearbox coupling assembly, replacing
431-036	4.00	Pump gearbox flange, replacing
44		HYDROSTATIC DRIVE
441-011	3.00	Travel motor, replacing one
441-012	0.75	Travel motor relief valve, replacing
441-016	1.50	Travel motor removed, replacing seal
441-021	3.50	Swing motor, replacing
441-022	0.75	Swing motor relief valve, replacing
441-023	4.00	Swing motor, replacing cylinder block
441-024	1.75	Swing motor, replacing plate (brake)
441-025	1.75	Swing motor, replacing brake piston seal
441-026	1.50	Swing motor removed, replacing seal
441-028	0.75	Swing motor brake valve, replacing
443-037	6.00	Center passage, replacing
443-038	7.50	Center passage, replacing seal kit
443-039	1.00	Center passage hose (valve – center passage), replacing
443-040	1.75	Center passage hose (center passage – motor), replacing
45		PROPELLER SHAFT
451-004	1.00	Propeller shaft, rear, replacing
451-010	1.00	Propeller shaft, front, replacing
46		FRONT AXLE; REAR AXLE
461-001	6.00	Axle, replacing
461-002	3.00	Axle, removing
461-003	3.00	Axle, installing
461-005	3.00	Drive shaft, replacing one side
461-015	5.50	Diff wheel axle, replacing
461-043	2.50	Hub, replacing seal
463-001	4.00	Axle, replacing
463-002	2.00	Axle, removing
463-003	2.00	Axle, installing
463-005	1.50	Drive shaft, replacing one side
463-015	3.00	Diff wheel axle, replacing
463-043	2.00	Hub, replacing seal
49		MISCELLANEOUS
492-031	2.00	Swing ring gear outer seal, replacing
492-091	0.50	Ring gear grease pipe, replacing

Op.no.	time (h)	Notes
5		BRAKE
51		WHEEL BRAKE
516-004	2.00	Brake discs, replacing on both sides
516-050	2.00	Brake piston, replacing seals
517-004	2.00	Brake disc, replacing both sides
517-050	2.00	Brake piston, replacing seals
52		HYDRAULIC BRAKE SYSTEM
520-005	0.50	Brake system, check and adjusting pressure in circuit
520-037	0.75	Brake system, bleeding
525-008	1.50	Foot brake valve, replacing
527-002	0.50	Accumulator, replacing
6		STEERING
64		STEERING
641-021	1.50	Adjustable steering column, replacing
645-006	4.00	Steering cylinder, replacing
645-028	1.00	Steering system, checking and adjusting working pressure
645-060	3.00	Steering cylinder, repacking in machine
645-082	1.50	Steering valve, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	0.75	Counterweight, removing
716-002	0.75	Counterweight, fitting
716-003	2.00	Counterweight, replacing
76		SHOCK ABSORBER; AXLE LOCKING; ANTI ROLL BAR; LEVEL / SIDE CONTROL
761-001	2.00	Shock absorber front, replacing all
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.25	Cab, removing
810-002	1.50	Cab, installing

Op.no.	time (h)	Notes
810-003	3.50	Operator cab, replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.75	Engine hood, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.25	Rear-view mirror, changing
843-002	2.00	Windscreen, replacing
843-012	1.00	Rear window, replacing
843-013	1.50	Side window, replacing
843-048	1.00	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	0.75	Seat, replacing
87		AIR CONDITIONING UNIT
872-011	1.00	Duct, replacing
872-021	1.00	Defroster hose, replacing
873-004	4.00	Heater core, replacing
873-006	4.00	Fan motor, replacing
873-097	1.00	Heater hose, replacing
874-002	0.50	Refrigerant, draining
874-003	0.75	Cooling unit, performance test
874-005	1.00	Refrigerant, filling excl vacuum pumping
874-006	1.50	Compressor, replacing incl draining and filling
874-007	0.75	Belt, replacing
874-010	1.50	Condenser, replacing incl draining and filling
874-011	1.50	Receiver, replacing incl draining and filling
874-081	1.50	Liquid hose, replacing incl. draining and filling
874-082	1.25	Discharge hose, replacing incl. draining and filling
874-083	1.25	Suction hose, replacing incl. draining and filling
874-091	1.00	Switch and controller, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-001	0.20	Oil return filter, replacing
911-004	0.50	Suction strainer, replacing
911-005	1.75	Pump suction hose and pipe, replacing
911-011	1.50	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-024	1.75	Pipe and hose (pump - valve), replacing
911-025	1.00	Pipe and hose (valve - cylinder), replacing
911-026	1.00	Pipe and hose (valve - swing motor), replacing

Op.no.	time (h)	Notes
911-031	1.00	Oil cooler line pipe and hose, replacing
911-033	1.50	Oil cooler line bypass valve (check valve), replacing
911-038	3.00	Hydraulic oil tank, replacing
911-043	0.25	Servo system filter, replacing
911-051	0.20	Breather, replacing
912-001	10.00	Control valve, replacing
912-067	0.75	Main pressure relief valve, replacing
912-071	0.70	Rupture valve, replacing (boom cylinder)
912-073	0.70	Rupture valve, replacing (dipper arm cylinder)
912-074	0.50	Rupture valve hose or pipe, replacing (boom cylinder)
912-075	0.50	Rupture valve hose or pipe, replacing (dipper arm cylinder)
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.00	Hydraulic pump, replacing
913-013	5.50	Hydraulic pump, replacing seal for input shaft
914-036	1.25	Servo pump block seal, replacing
914-051	0.30	Accumulator, replacing
914-060	1.00	Servo pump, replacing
914-071	0.50	Servo pipe and hose, replacing
914-081	1.25	Remote control valve (lever), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.00	Solenoid valve, replacing
916-044	0.50	Boom, replacing hose (boom cylinder)
916-045	0.75	Boom, replacing pipe (dipper arm cylinder)
916-046	0.50	Boom, replacing hose (dipper arm cylinder)
916-047	0.75	Boom, replacing pipe (bucket cylinder)
916-048	0.50	Dipper arm, replacing hose (bucket cylinder)
916-049	0.50	Dipper arm, replacing pipe (bucket cylinder)
916-091	0.50	Hammer and shear pipe, replacing (for boom)
916-092	0.50	Hammer and shear hose, replacing (for boom)
916-093	0.50	Hammer and shear pipe, replacing (for dipper arm)
916-094	0.50	Hammer and shear hose, replacing (for dipper arm)
916-095	0.50	Hammer and shear hose and pipe, replacing (MCV - 3 way valve)
916-096	1.00	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-002	1.00	Quickfit valve, replacing
924-003	0.75	Quickfit solenoid valve, replacing
924-004	0.50	Quickfit control switch, replacing
924-041	0.50	Quickfit hydraulic hose, replacing (for boom)
924-042	0.50	Quickfit hydraulic pipe, replacing (for boom)

Op.no.	time (h)	Notes
924-043	0.25	Quickfit hydraulic hose, replacing (for dipper arm)
924-044	0.50	Quickfit hydraulic pipe, replacing (for dipper arm)
924-045	0.50	Quickfit hydraulic cylinder hose, replacing (dipper arm cylinder)
925-011	0.75	Bucket assembly, replacing
925-012	0.25	Bucket assembly, removal
925-013	0.50	Bucket assembly, installation
97		UNIT, DIGGING
974-010	5.00	Boom, replacing
974-013	2.50	Boom, removal
974-014	2.50	Boom, installation
974-017	1.00	Boom, replacing pin
974-018	0.25	Boom grease pipe or hose, replacing
974-021	1.25	Boom cylinder, replacing
974-022	1.50	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	1.50	Boom cylinder, repacking in machine
974-031	0.50	Boom cylinder, removal
974-032	0.75	Boom cylinder, installation
975-011	1.50	Dipper arm, removal
975-012	1.50	Dipper arm, installation
975-014	0.50	Dipper arm cylinder, removal
975-015	0.50	Dipper arm cylinder, installation
975-024	0.50	Dipper arm connecting rod, replacing
975-025	1.00	Dipper arm cylinder, replacing
975-026	1.50	Dipper arm cylinder removed, repacking
975-028	1.00	Connecting rod yoke, replacing
975-032	0.50	Connecting rod yoke, removal
975-035	0.50	Connecting rod yoke, installation
975-039	3.00	Dipper arm, replacing
975-043	1.50	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	1.00	Bucket cylinder, replacing
975-062	0.50	Bucket cylinder, removal
975-063	1.50	Bucket cylinder, repacking in machine
975-065	0.50	Bucket cylinder, installation
975-069	1.50	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
170-005	0.25	Start of VCADS Pro computer and reading machine data
171-001	1.25	Arrival Inspection, according to Inspection Programme
171-002	3.00	Delivery Inspection, according to Inspection Programme
172-002	3.00	Warranty inspection 100 hours
172-004	8.00	Warranty inspection 1000 hours
173-002	0.70	Maintenance service, daily
173-004	1.00	Maintenance service, every 50 hours
173-006	1.50	Maintenance service, every 100 hours
173-007	2.00	Maintenance service, every 250 hours
173-010	5.50	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	10.00	Maintenance service, every 2000 hours
173-018	10.00	Maintenance service, every 4000 hours
173-022	11.00	Maintenance service, every 6000 hours
173-030	0.30	Maintenance service, according to display message
173-079	0.90	Swing motor gearbox, changing oil
173-101	0.40	Track motor gearbox, changing oil
173-401	0.60	Engine oil and filter, changing
173-401	0.60	Engine oil and filter, changing
173-412	0.20	Hydraulic oil tank breather filter, replacing
173-451	1.25	Hydraulic oil, changing
173-649	0.20	Hydraulic oil return filter, replacing
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
214-012	3.00	Valves, adjusting
214-036	1.00	Valve covers, fitting new gasket
217-005	1.50	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.50	Lubrication oil pressure, checking with pressure gauge

Op.no.	time (h)	Notes
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-002	0.70	Feed pump, replacing
233-004	0.80	Feed pump, checking feed pressure
233-010	0.80	Fuel pump, inspection
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
233-016	0.70	Fuel filter housing, replacing
233-017	0.70	Water separator housing, replacing
233-020	0.10	Fuel filter, checking
234-010	4.00	Fuel tank, replacing
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-002	3.00	Injectors, replacing all
237-004	0.70	Injector, replacing one
237-033	0.80	Fuel control valve (FCV), replacing
237-037	0.70	Fuel rail pressure, checking
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.50	Silencer, replacing
252-021	1.25	Exhaust pipe, flexible tube, replacing
255-002	0.80	Turbocharger, inspection
255-071	1.25	Turbocharger, replacing
256-001	0.25	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.40	Preheating coil, replacing
258-002	4.50	Intercooler, replacing
258-022	0.30	Charge air cooler connection (hose, tube), replacing
258-030	1.50	Charge air system, inspection
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.60	Coolant, changing
261-008	4.50	Radiator, replacing
261-012	0.50	Radiator hose upper, replacing
261-014	0.90	Radiator hoses lower, replacing
261-018	0.70	Expansion tank, replacing
262-002	1.00	Coolant pump, replacing
262-098	1.00	Thermostat, replacing
263-012	0.90	Fan belt and/or alternator belt, replacing

Op.no.	time (h)	Notes
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	0.90	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.70	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-003	0.70	Main switch, replacing
311-006	0.60	Earth lead to battery, replacing
311-008	2.50	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.90	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	0.70	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
334-002	0.70	Starter switch, testing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-056	0.50	Pre-heating relay, replacing
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU

Op.no.	time (h)		Notes
367-075	0.90	Engine speed control switch, replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-006	0.50	Engine temperature sensor, replacing	
386-007	0.50	Engine oil pressure sensor, replacing	
386-011	0.50	Fuel level sender, replacing	
386-017	0.50	Hydraulic oil temperature sensor, replacing	
386-038	0.60	Engine rotation speed sensor, replacing	
386-043	0.50	Travel speed sensor or alarm sensor, replacing	
386-088	0.60	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-903	3.00	CareTrack standard cab, installing new	
390-904	3.00	CareTrack optional cab, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.60	Radio, replacing	110004 - 999999
393-021	0.60	Radio, replacing	110001 - 110003
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	5.50	Swing gearbox, replacing	
431-026	0.50	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	5.50	Pump gearbox coupling assembly, replacing	
431-036	4.50	Pump gearbox flange, replacing	
431-053	6.50	Swing unit, replacing	
431-115	1.75	Track gearbox (removed), replacing floating seal	
431-117	1.25	Track gearbox, replacing cover	
431-127	6.00	Track unit, replacing	
44		HYDROSTATIC DRIVE	
441-017	1.00	Travel motor pressure, checking and adjusting	
441-021	2.50	Swing motor, replacing	
441-022	0.80	Swing motor relief valve, replacing	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	0.30	Swing motor removed, replacing seal	
441-032	0.75	Swing motor pressure, checking and adjusting	
441-111	6.50	Track motor, replacing	
441-112	0.70	Track motor relief valve, replacing	

Op.no.	time (h)	Notes
441-115	2.00	Track motor removed, replacing seal
443-037	5.50	Center passage, replacing
443-038	7.00	Center passage, replacing seal kit
443-039	1.00	Center passage hose (valve – center passage), replacing
443-040	1.50	Center passage hose (center passage – motor), replacing
49		MISCELLANEOUS
492-031	2.50	Swing ring gear outer seal, replacing
492-091	0.50	Ring gear grease pipe, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	0.80	Counterweight, removing
716-001	0.80	Counterweight, removing
716-002	0.80	Counterweight, fitting
716-002	0.80	Counterweight, fitting
716-003	2.00	Counterweight, replacing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	3.00	Front idler, replacing one
775-021	3.50	Sprocket, replacing one
775-032	0.40	Track shoe, replacing one
775-033	7.50	Track shoe, replacing each side
775-034	1.25	Track chain assembly, removing
775-035	1.75	Track chain assembly, installing
775-036	9.50	Track links, replacing
775-051	1.00	Top roller, replacing one
775-061	1.50	Bottom roller, replacing one
775-071	0.90	Track guard, replacing one
775-081	3.00	Track recoil spring (tensioner) assembly, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	1.75	Cab, removing
810-002	2.50	Cab, installing

Op.no.	time (h)	Notes
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.90	Engine hood, replacing
827-091	1.75	Tool box assembly, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	0.75	Door, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.30	Rear-view mirror, changing
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
873-019	0.90	ECC control unit, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	1.75	Pump suction hose and pipe, replacing
911-011	4.50	Oil cooler, replacing

Op.no.	time (h)	Notes
911-015	0.50	Oil level gauge, replacing
911-017	1.75	Suction cover, replacing
911-024	0.70	Pipe and hose (pump - valve), replacing
911-025	0.70	Pipe and hose (valve - cylinder), replacing
911-026	0.70	Pipe and hose (valve - swing motor), replacing
911-033	2.00	Oil cooler line bypass valve (check valve), replacing
911-034	4.50	Oil cooler fan motor, replacing
911-035	1.50	Oil cooler fan pump, replacing
911-038	4.00	Hydraulic oil tank, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	9.00	Control valve, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	1.00	Rupture valve, replacing (boom cylinder)
912-073	1.00	Rupture valve, replacing (dipper arm cylinder)
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.00	Hydraulic pump, replacing
913-029	0.40	Pump regulator, replacing
914-036	1.00	Servo pump block seal, replacing
914-037	1.00	Servo pump shaft seal, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-055	0.75	Servo pressure, checking and adjusting
914-060	0.80	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.00	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.00	Quickfit pump (gear pump), replacing
924-005	0.80	Quickfit, removal
924-006	1.00	Quickfit, installation
924-021	2.00	Quickfit hydraulic cylinder bracket (body), replacing
925-011	1.25	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.90	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing

Op.no.	time (h)	Notes
974-013	4.50	Boom, removal
974-014	5.50	Boom, installation
974-017	2.00	Boom, replacing pin
974-022	2.00	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	4.50	Boom cylinder, repacking in machine
974-031	1.25	Boom cylinder, removal
974-032	1.25	Boom cylinder, installation
975-006	0.70	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-011	3.50	Dipper arm, removal
975-012	3.50	Dipper arm, installation
975-014	1.50	Dipper arm cylinder, removal
975-015	1.25	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-026	3.00	Dipper arm cylinder removed, repacking
975-028	1.50	Connecting rod yoke, replacing
975-032	0.70	Connecting rod yoke, removal
975-035	1.00	Connecting rod yoke, installation
975-039	9.00	Dipper arm, replacing
975-043	4.50	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-063	5.00	Bucket cylinder, repacking in machine
975-065	1.50	Bucket cylinder, installation
975-069	2.00	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
170-005	0.25	Start of VCADS Pro computer and reading machine data
171-001	1.25	Arrival Inspection, according to Inspection Programme
171-002	3.00	Delivery Inspection, according to Inspection Programme
172-002	3.00	Warranty inspection 100 hours
172-004	8.00	Warranty inspection 1000 hours
173-002	0.70	Maintenance service, daily
173-004	1.00	Maintenance service, every 50 hours
173-006	1.50	Maintenance service, every 100 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	5.50	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	10.00	Maintenance service, every 2000 hours
173-018	10.00	Maintenance service, every 4000 hours
173-022	11.00	Maintenance service, every 6000 hours
173-030	0.30	Maintenance service, according to display message
173-079	0.90	Swing motor gearbox, changing oil
173-101	0.40	Track motor gearbox, changing oil
173-401	0.60	Engine oil and filter, changing
173-401	0.60	Engine oil and filter, changing
173-412	0.20	Hydraulic oil tank breather filter, replacing
173-451	1.25	Hydraulic oil, changing
173-649	0.20	Hydraulic oil return filter, replacing
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
214-012	3.00	Valves, adjusting
214-036	1.00	Valve covers, fitting new gasket
217-005	1.50	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.50	Lubrication oil pressure, checking with pressure gauge

Op.no.	time (h)	Notes
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-002	0.70	Feed pump, replacing
233-004	0.80	Feed pump, checking feed pressure
233-010	0.80	Fuel pump, inspection
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
233-016	0.70	Fuel filter housing, replacing
233-017	0.70	Water separator housing, replacing
233-020	0.10	Fuel filter, checking
234-010	4.00	Fuel tank, replacing
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-002	3.00	Injectors, replacing all
237-004	0.70	Injector, replacing one
237-033	0.80	Fuel control valve (FCV), replacing
237-037	0.70	Fuel rail pressure, checking
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.50	Silencer, replacing
252-021	1.25	Exhaust pipe, flexible tube, replacing
255-002	0.80	Turbocharger, inspection
255-071	1.25	Turbocharger, replacing
256-001	0.25	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.40	Preheating coil, replacing
258-002	4.50	Intercooler, replacing
258-022	0.30	Charge air cooler connection (hose, tube), replacing
258-030	1.50	Charge air system, inspection
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.60	Coolant, changing
261-008	4.50	Radiator, replacing
261-012	0.50	Radiator hose upper, replacing
261-014	0.90	Radiator hoses lower, replacing
261-018	0.70	Expansion tank, replacing
262-002	1.00	Coolant pump, replacing
262-098	1.00	Thermostat, replacing
263-012	0.90	Fan belt and/or alternator belt, replacing

Op.no.	time (h)	Notes
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	0.90	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.70	Battery charging capacity, checking
311-002	0.90	Batteries, replacing
311-003	0.70	Main switch, replacing
311-006	0.60	Earth lead to battery, replacing
311-008	2.50	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.90	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	0.70	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
334-002	0.70	Starter switch, testing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-056	0.50	Pre-heating relay, replacing
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU

Op.no.	time (h)		Notes
367-075	0.90	Engine speed control switch, replacing	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-006	0.50	Engine temperature sensor, replacing	
386-007	0.50	Engine oil pressure sensor, replacing	
386-011	0.50	Fuel level sender, replacing	
386-017	0.50	Hydraulic oil temperature sensor, replacing	
386-038	0.60	Engine rotation speed sensor, replacing	
386-043	0.50	Travel speed sensor or alarm sensor, replacing	
386-044	0.50	Auto idling sensor, replacing	
386-088	0.60	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-903	3.00	CareTrack standard cab, installing new	
390-904	3.00	CareTrack optional cab, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.60	Radio, replacing	110006 - 999999
393-021	0.60	Radio, replacing	110001 - 110005
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	5.50	Swing gearbox, replacing	
431-026	0.50	Swing gearbox removed, replacing seal	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	5.50	Pump gearbox coupling assembly, replacing	
431-036	4.50	Pump gearbox flange, replacing	
431-053	6.50	Swing unit, replacing	
431-115	1.75	Track gearbox (removed), replacing floating seal	
431-117	1.25	Track gearbox, replacing cover	
431-127	6.00	Track unit, replacing	
44		HYDROSTATIC DRIVE	
441-017	1.00	Travel motor pressure, checking and adjusting	
441-021	2.50	Swing motor, replacing	
441-022	0.80	Swing motor relief valve, replacing	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	0.30	Swing motor removed, replacing seal	
441-032	0.75	Swing motor pressure, checking and adjusting	
441-112	0.70	Track motor relief valve, replacing	

Op.no.	time (h)		Notes
441-115	2.00	Track motor removed, replacing seal	
443-037	5.50	Center passage, replacing	
443-038	7.00	Center passage, replacing seal kit	
443-039	1.00	Center passage hose (valve – center passage), replacing	
443-040	1.50	Center passage hose (center passage – motor), replacing	
49		MISCELLANEOUS	
492-031	2.50	Swing ring gear outer seal, replacing	
492-091	0.50	Ring gear grease pipe, replacing	
492-095	0.50	Swing ring gear cover, removal	110001 - 999999
492-096	0.60	Swing ring gear cover, installation	110001 - 999999
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	0.80	Counterweight, removing	
716-001	0.80	Counterweight, removing	
716-002	0.80	Counterweight, fitting	
716-002	0.80	Counterweight, fitting	
716-003	2.00	Counterweight, replacing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	4.00	Front idler, replacing one	
775-021	4.00	Sprocket, replacing one	
775-032	0.40	Track shoe, replacing one	
775-033	8.00	Track shoe, replacing each side	
775-034	1.25	Track chain assembly, removing	
775-035	1.75	Track chain assembly, installing	
775-036	10.00	Track links, replacing	
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	
775-071	0.90	Track guard, replacing one	110001 - 999999
775-081	3.00	Track recoil spring (tensioner) assembly, replacing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	1.75	Cab, removing	

Op.no.	time (h)	Notes
810-002	2.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.90	Engine hood, replacing
821-065	0.50	Gull wing power pack, replacing
821-066	0.50	Gull wing cylinder, replacing
827-091	1.75	Tool box assembly, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	0.75	Door, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.30	Rear-view mirror, changing
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
873-019	0.90	ECC control unit, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	2.00	Pump suction hose and pipe, replacing
911-011	4.50	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-017	1.75	Suction cover, replacing
911-024	0.70	Pipe and hose (pump - valve), replacing
911-025	0.70	Pipe and hose (valve - cylinder), replacing
911-026	1.00	Pipe and hose (valve - swing motor), replacing
911-033	2.00	Oil cooler line bypass valve (check valve), replacing
911-034	4.50	Oil cooler fan motor, replacing
911-035	1.50	Oil cooler fan pump, replacing
911-038	4.00	Hydraulic oil tank, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	9.00	Control valve, replacing
912-067	0.50	Main pressure relief valve, replacing
912-071	1.00	Rupture valve, replacing (boom cylinder)
912-073	1.00	Rupture valve, replacing (dipper arm cylinder)
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.00	Hydraulic pump, replacing
913-029	0.40	Pump regulator, replacing
914-036	1.00	Servo pump block seal, replacing
914-037	1.00	Servo pump shaft seal, replacing
914-041	0.60	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-055	0.75	Servo pressure, checking and adjusting
914-060	0.80	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.00	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.00	Quickfit pump (gear pump), replacing
924-005	0.80	Quickfit, removal
924-006	1.00	Quickfit, installation
924-021	2.00	Quickfit hydraulic cylinder bracket (body), replacing

Op.no.	time (h)	Notes
925-011	1.25	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.90	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	4.50	Boom, removal
974-014	5.50	Boom, installation
974-017	2.00	Boom, replacing pin
974-022	2.00	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	4.50	Boom cylinder, repacking in machine
974-031	1.25	Boom cylinder, removal
974-032	1.25	Boom cylinder, installation
975-006	0.70	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-011	3.50	Dipper arm, removal
975-012	3.50	Dipper arm, installation
975-014	1.50	Dipper arm cylinder, removal
975-015	1.25	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	2.50	Dipper arm cylinder, replacing
975-026	3.00	Dipper arm cylinder removed, repacking
975-028	1.50	Connecting rod yoke, replacing
975-032	0.70	Connecting rod yoke, removal
975-035	1.00	Connecting rod yoke, installation
975-039	9.00	Dipper arm, replacing
975-043	4.50	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.25	Bucket cylinder, removal
975-063	5.00	Bucket cylinder, repacking in machine
975-065	1.50	Bucket cylinder, installation
975-069	2.00	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
170-005	0.25	Start of VCADS Pro computer and reading machine data
171-001	1.25	Arrival Inspection, according to Inspection Programme
171-001	1.25	Arrival Inspection, according to Inspection Programme
171-002	3.00	Delivery Inspection, according to Inspection Programme
172-002	3.00	Warranty inspection 100 hours
172-004	8.00	Warranty inspection 1000 hours
173-002	0.60	Maintenance service, daily
173-004	1.00	Maintenance service, every 50 hours
173-006	1.50	Maintenance service, every 100 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	6.00	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	10.00	Maintenance service, every 2000 hours
173-018	10.00	Maintenance service, every 4000 hours
173-022	11.00	Maintenance service, every 6000 hours
173-030	0.30	Maintenance service, according to display message
173-079	0.90	Swing motor gearbox, changing oil
173-101	0.40	Track motor gearbox, changing oil
173-401	0.60	Engine oil and filter, changing
173-412	0.20	Hydraulic oil tank breather filter, replacing
173-451	1.25	Hydraulic oil, changing
173-649	0.20	Hydraulic oil return filter, replacing
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
214-036	1.00	Valve covers, fitting new gasket
217-005	1.50	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.40	Lubrication oil pressure, checking with pressure gauge

Op.no.	time (h)	Notes
223-006	1.25	Oil cooler, replacing
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding
233-002	0.60	Feed pump, replacing
233-004	0.80	Feed pump, checking feed pressure
233-010	0.80	Fuel pump, inspection
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
233-020	0.10	Fuel filter, checking
234-010	4.00	Fuel tank, replacing
234-014	2.00	Additional fuel tank, removal
234-015	1.75	Additional fuel tank, installation
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-002	3.00	Injectors, replacing all
237-004	0.70	Injector, replacing one
237-033	0.80	Fuel control valve (FCV), replacing
237-035	0.50	Fuel rail pressure sensor, replacing
237-036	0.30	Pressure relief valve (PRV), checking
237-037	0.70	Fuel rail pressure, checking
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.50	Silencer, replacing
252-021	1.50	Exhaust pipe, flexible tube, replacing
255-002	1.50	Turbocharger, inspection
255-071	2.50	Turbocharger, replacing
256-001	0.25	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.50	Preheating coil, replacing
258-002	5.00	Intercooler, replacing
258-022	0.50	Charge air cooler connection (hose, tube), replacing
258-030	1.50	Charge air system, inspection
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.50	Coolant, changing
261-008	5.00	Radiator, replacing
261-012	0.50	Radiator hose upper, replacing
261-014	1.00	Radiator hoses lower, replacing
261-018	0.70	Expansion tank, replacing
262-002	0.90	Coolant pump, replacing

Op.no.	time (h)	Notes
262-098	0.90	Thermostat, replacing
263-012	0.80	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension
263-022	0.80	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-003	0.80	Main switch, replacing
311-006	0.60	Earth lead to battery, replacing
311-008	2.00	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.90	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	0.70	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
334-002	0.70	Starter switch, testing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-056	0.50	Pre-heating relay, replacing
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU

Op.no.	time (h)	Notes
367-075	0.90	Engine speed control switch, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	0.50	Engine temperature sensor, replacing
386-007	0.50	Engine oil pressure sensor, replacing
386-011	0.50	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing
386-038	0.60	Engine rotation speed sensor, replacing
386-043	0.50	Travel speed sensor or alarm sensor, replacing
386-044	0.50	Auto idling sensor, replacing
386-088	0.50	Engine rotation speed sensor (camshaft), replacing
39		MISCELLANEOUS
390-903	3.00	CareTrack standard cab, installing new
390-904	3.00	CareTrack optional cab, installing new
393-001	0.50	Voltage converter, replacing
393-021	0.60	Radio, replacing
393-021	0.60	Radio, replacing
395-021	0.70	Antenna, replacing
395-031	0.40	Speaker, replacing
4		POWER TRANSMISSION
43		GEARBOX,
431-021	6.00	Swing gearbox, replacing
431-026	1.50	Swing gearbox removed, replacing seal
431-027	2.50	Swing gearbox removed, replacing shaft
431-031	5.50	Pump gearbox coupling assembly, replacing
431-036	4.50	Pump gearbox flange, replacing
431-115	1.75	Track gearbox (removed), replacing floating seal
431-117	1.50	Track gearbox, replacing cover
431-127	6.00	Track unit, replacing
44		HYDROSTATIC DRIVE
441-017	1.00	Travel motor pressure, checking and adjusting
441-021	2.50	Swing motor, replacing
441-022	0.80	Swing motor relief valve, replacing
441-024	1.50	Swing motor, replacing plate (brake)
441-025	1.50	Swing motor, replacing brake piston seal
441-026	0.30	Swing motor removed, replacing seal
441-032	0.75	Swing motor pressure, checking and adjusting
441-112	0.70	Track motor relief valve, replacing
441-115	2.00	Track motor removed, replacing seal

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Op.no.	time (h)		Notes
443-037	5.50	Center passage, replacing	
443-038	7.00	Center passage, replacing seal kit	
443-039	1.00	Center passage hose (valve – center passage), replacing	
443-040	1.50	Center passage hose (center passage – motor), replacing	
49		MISCELLANEOUS	
492-031	2.50	Swing ring gear outer seal, replacing	
492-091	0.50	Ring gear grease pipe, replacing	
492-095	0.70	Swing ring gear cover, removal	
492-096	0.70	Swing ring gear cover, installation	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
710-003	14.00	Leveler structure, removing	
710-004	15.00	Leveler structure, installing	
710-005	6.00	Leveler structure, disassembling	
710-006	12.00	Leveler structure, assembling	
715-019	0.60	Boom cylinder protecting guard, removal	
715-020	1.25	Boom cylinder protecting guard, installation	
716-001	0.80	Counterweight, removing	
716-001	0.80	Counterweight, removing	
716-002	0.80	Counterweight, fitting	
716-002	0.80	Counterweight, fitting	
716-003	2.00	Counterweight, replacing	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-011	4.00	Front idler, replacing one	
775-021	4.00	Sprocket, replacing one	
775-032	0.40	Track shoe, replacing one	
775-033	8.00	Track shoe, replacing each side	
775-034	1.25	Track chain assembly, removing	
775-035	1.75	Track chain assembly, installing	
775-036	10.00	Track links, replacing	
775-051	1.00	Top roller, replacing one	
775-061	1.50	Bottom roller, replacing one	
775-071	0.90	Track guard, replacing one	110001 - 115000
775-071	0.90	Track guard, replacing one	115001 - 210000
775-081	4.00	Track recoil spring (tensioner) assembly, replacing	

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.90	Engine hood, replacing
827-091	1.75	Tool box assembly, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	0.75	Door, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.30	Rear-view mirror, changing
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
873-019	0.90	ECC control unit, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	2.00	Pump suction hose and pipe, replacing
911-011	2.00	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-017	1.75	Suction cover, replacing
911-024	0.70	Pipe and hose (pump - valve), replacing
911-025	1.00	Pipe and hose (valve - cylinder), replacing
911-026	1.00	Pipe and hose (valve - swing motor), replacing
911-031	2.00	Oil cooler line pipe and hose, replacing
911-032	1.50	Oil cooler line pipe coupling, replacing
911-033	1.50	Oil cooler line bypass valve (check valve), replacing
911-034	2.00	Oil cooler fan motor, replacing
911-035	1.50	Oil cooler fan pump, replacing
911-038	4.00	Hydraulic oil tank, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	9.00	Control valve, replacing
912-067	0.70	Main pressure relief valve, replacing
912-071	1.00	Rupture valve, replacing (boom cylinder)
912-073	1.00	Rupture valve, replacing (dipper arm cylinder)
913-004	1.25	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.00	Hydraulic pump, replacing
913-029	0.30	Pump regulator, replacing
914-036	1.00	Servo pump block seal, replacing
914-037	1.00	Servo pump shaft seal, replacing
914-041	0.80	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-055	0.75	Servo pressure, checking and adjusting
914-060	0.80	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.00	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.00	Quickfit pump (gear pump), replacing

Op.no.	time (h)	Notes
924-005	0.80	Quickfit, removal
924-006	1.00	Quickfit, installation
924-021	2.00	Quickfit hydraulic cylinder bracket (body), replacing
925-011	1.25	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.90	Bucket assembly, installation
97		UNIT, DIGGING
974-010	12.00	Boom, replacing
974-013	4.50	Boom, removal
974-014	5.50	Boom, installation
974-017	2.00	Boom, replacing pin
974-021	4.50	Boom cylinder, replacing
974-022	2.50	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	4.50	Boom cylinder, repacking in machine
974-031	2.50	Boom cylinder, removal
974-032	2.50	Boom cylinder, installation
974-047	0.50	Adapter, removal
974-048	0.60	Adapter, installation
975-006	0.70	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-011	3.50	Dipper arm, removal
975-012	3.50	Dipper arm, installation
975-014	1.75	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-026	3.00	Dipper arm cylinder removed, repacking
975-028	1.50	Connecting rod yoke, replacing
975-032	0.70	Connecting rod yoke, removal
975-035	1.00	Connecting rod yoke, installation
975-039	9.00	Dipper arm, replacing
975-043	4.50	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.50	Bucket cylinder, removal
975-063	5.00	Bucket cylinder, repacking in machine
975-065	1.75	Bucket cylinder, installation
975-069	2.50	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
170-005	0.25	Start of VCADS Pro computer and reading machine data
171-002	3.00	Delivery Inspection, according to Inspection Programme
172-002	3.00	Warranty inspection 100 hours
172-004	8.00	Warranty inspection 1000 hours
173-002	0.60	Maintenance service, daily
173-004	1.00	Maintenance service, every 50 hours
173-006	1.50	Maintenance service, every 100 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	6.00	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-014	10.00	Maintenance service, every 2000 hours
173-018	10.00	Maintenance service, every 4000 hours
173-022	11.00	Maintenance service, every 6000 hours
173-030	0.30	Maintenance service, according to display message
173-079	0.90	Swing motor gearbox, changing oil
173-101	0.50	Track motor gearbox, changing oil
173-401	0.60	Engine oil and filter, changing
173-412	0.20	Hydraulic oil tank breather filter, replacing
173-451	1.25	Hydraulic oil, changing
173-649	0.20	Hydraulic oil return filter, replacing
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	0.80	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
214-036	1.00	Valve covers, fitting new gasket
217-005	1.50	Oil level sensor, changing
22		LUBRICATING SYSTEM
221-022	0.40	Lubrication oil pressure, checking with pressure gauge
223-006	1.25	Oil cooler, replacing
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check

Op.no.	time (h)	Notes
233-001	0.30	Fuel system, bleeding
233-002	0.60	Feed pump, replacing
233-004	0.80	Feed pump, checking feed pressure
233-010	0.80	Fuel pump, inspection
233-014	0.40	Fuel filters, replacing
233-015	0.50	Fuel filter extra, replacing
233-020	0.10	Fuel filter, checking
234-010	4.00	Fuel tank, replacing
234-014	2.00	Additional fuel tank, removal
234-015	1.75	Additional fuel tank, installation
234-041	0.40	Fuel filling pump, removing
234-042	0.50	Fuel filling pump, installing
237-002	3.00	Injectors, replacing all
237-004	0.70	Injector, replacing one
237-033	0.80	Fuel control valve (FCV), replacing
237-035	0.50	Fuel rail pressure sensor, replacing
237-036	0.30	Pressure relief valve (PRV), checking
237-037	0.70	Fuel rail pressure, checking
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.50	Silencer, replacing
252-021	1.50	Exhaust pipe, flexible tube, replacing
255-002	1.50	Turbocharger, inspection
255-071	2.50	Turbocharger, replacing
256-001	0.25	Air cleaner, cleaning filter element
256-003	0.25	Air cleaner, primary filter replacing
256-004	0.25	Air cleaner, secondary filter replacing
256-006	0.50	Preheating coil, replacing
258-002	5.00	Intercooler, replacing
258-022	0.50	Charge air cooler connection (hose, tube), replacing
258-030	1.50	Charge air system, inspection
26		COOLING SYSTEM
261-002	0.10	Coolant, checking anti-freeze resistance
261-004	0.50	Coolant, changing
261-008	5.00	Radiator, replacing
261-012	0.50	Radiator hose upper, replacing
261-014	1.00	Radiator hoses lower, replacing
261-018	0.70	Expansion tank, replacing
262-002	0.90	Coolant pump, replacing
262-098	0.90	Thermostat, replacing
263-012	0.80	Fan belt and/or alternator belt, replacing
263-013	0.50	Fan belt and/or alternator belt, checking and adjusting tension

Op.no.	time (h)	Notes
263-022	0.80	Fan belt and/or alternator-, compressor belt, replacing all belts
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
32		ALTERNATOR; CHARGE REGULATOR
321-002	0.90	Alternator, replacing incl function check
321-075	0.50	Alternator, test
33		STARTING SYSTEM
331-018	0.70	Starter motor, replacing
331-021	0.30	Starter motor, tests
331-081	0.30	Starter relay, replacing
334-002	0.70	Starter switch, testing
334-002	0.70	Starter switch, testing
334-011	0.50	Starter switch (engine start switch), replacing
35		LIGHTING
356-056	0.50	Work lighting, replacing one head lamp assy
36		OTHER ELECTRICAL EQUIPMENT
362-002	0.30	Horn, replacing
362-041	0.30	Rotating beacon, replacing
362-051	0.50	Travel alarm, replacing
363-003	0.40	Windscreen wiper, replacing switch
363-004	0.50	Windscreen flusher pump, replacing
363-091	0.50	Windscreen wiper, replacing controller
364-003	0.60	Control lockout lever switch, replacing
364-056	0.50	Pre-heating relay, replacing
366-064	1.75	V-ECU, MID 187, changing non-programmed ECU
366-066	1.25	V-ECU, MID 187, changing pre-programmed ECU
367-075	0.90	Engine speed control switch, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	0.50	Engine temperature sensor, replacing
386-007	0.60	Engine oil pressure sensor, replacing
386-011	0.50	Fuel level sender, replacing
386-017	0.50	Hydraulic oil temperature sensor, replacing
386-038	0.60	Engine rotation speed sensor, replacing

Op.no.	time (h)		Notes
386-043	0.50	Travel speed sensor or alarm sensor, replacing	
386-044	0.50	Auto idling sensor, replacing	
386-088	0.50	Engine rotation speed sensor (camshaft), replacing	
39		MISCELLANEOUS	
390-903	3.00	CareTrack standard cab, installing new	
390-904	3.00	CareTrack optional cab, installing new	
393-001	0.50	Voltage converter, replacing	
393-021	0.60	Radio, replacing	110003 - 999999
393-021	0.60	Radio, replacing	110001 - 110002
395-021	0.70	Antenna, replacing	
395-031	0.40	Speaker, replacing	
4		POWER TRANSMISSION	
43		GEARBOX,	
431-021	6.50	Swing gearbox, replacing	
431-027	2.50	Swing gearbox removed, replacing shaft	
431-031	5.50	Pump gearbox coupling assembly, replacing	
431-036	4.50	Pump gearbox flange, replacing	
431-053	6.50	Swing unit, replacing	
431-115	1.75	Track gearbox (removed), replacing floating seal	
431-117	1.50	Track gearbox, replacing cover	
431-127	6.00	Track unit, replacing	
44		HYDROSTATIC DRIVE	
441-017	1.00	Travel motor pressure, checking and adjusting	
441-021	2.50	Swing motor, replacing	
441-022	0.80	Swing motor relief valve, replacing	
441-024	1.50	Swing motor, replacing plate (brake)	
441-025	1.50	Swing motor, replacing brake piston seal	
441-026	0.40	Swing motor removed, replacing seal	
441-032	0.75	Swing motor pressure, checking and adjusting	
441-112	0.70	Track motor relief valve, replacing	
441-115	2.00	Track motor removed, replacing seal	
443-037	5.50	Center passage, replacing	
443-038	7.00	Center passage, replacing seal kit	
443-039	1.00	Center passage hose (valve – center passage), replacing	
443-040	1.50	Center passage hose (center passage – motor), replacing	
49		MISCELLANEOUS	
492-031	2.50	Swing ring gear outer seal, replacing	

Op.no.	time (h)	Notes
492-091	0.50	Ring gear grease pipe, replacing
492-095	0.70	Swing ring gear cover, removal
492-095	0.70	Swing ring gear cover, removal
492-095	0.70	Swing ring gear cover, removal
492-096	0.70	Swing ring gear cover, installation
492-096	0.70	Swing ring gear cover, installation
492-096	0.70	Swing ring gear cover, installation
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
710-003	14.00	Leveler structure, removing
710-004	15.00	Leveler structure, installing
710-005	6.00	Leveler structure, disassembling
710-006	12.00	Leveler structure, assembling
715-019	0.60	Boom cylinder protecting guard, removal
715-020	1.25	Boom cylinder protecting guard, installation
716-001	0.80	Counterweight, removing
716-001	0.80	Counterweight, removing
716-002	0.80	Counterweight, fitting
716-002	0.80	Counterweight, fitting
716-003	2.00	Counterweight, replacing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
775-011	4.00	Front idler, replacing one
775-021	4.00	Sprocket, replacing one
775-032	0.40	Track shoe, replacing one
775-033	9.00	Track shoe, replacing each side
775-034	1.25	Track chain assembly, removing
775-035	1.75	Track chain assembly, installing
775-036	11.00	Track links, replacing
775-051	1.00	Top roller, replacing one
775-061	1.50	Bottom roller, replacing one
775-071	0.90	Track guard, replacing one
775-081	4.00	Track recoil spring (tensioner) assembly, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	0.90	Engine hood, replacing

Op.no.	time (h)	Notes
827-091	1.75	Tool box assembly, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	0.75	Door, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
841-061	0.30	Rear-view mirror, changing
843-002	1.50	Windscreen, replacing
843-012	4.00	Rear window, replacing
843-013	4.50	Side window, replacing
843-048	0.70	Door window, replacing
85		CAB INTERIOR/UPHOLSTERY
852-008	1.25	Seat, replacing
852-091	2.50	Seat support, replacing
87		AIR CONDITIONING UNIT
870-001	5.00	Cooler and Heater assembly, replacing
872-001	0.50	Cab filter, replacing
873-004	3.00	Heater core, replacing
873-006	0.90	Fan motor, replacing
873-011	0.70	Air mix door actuator, replacing
873-019	0.90	ECC control unit, replacing
874-006	1.75	Compressor, replacing incl draining and filling
874-010	1.75	Condenser, replacing incl draining and filling
874-011	1.75	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	3.00	Expansion valve, replacing incl draining and filling
874-094	0.60	Vent actuator, replacing
874-095	0.60	Mode (foot) actuator, replacing
874-096	0.60	Intake actuator, replacing
88		INTERIOR EQUIPMENT
881-003	1.00	Instrument panel, replacing (left)
881-005	1.25	Instrument panel, replacing (right)
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	2.00	Pump suction hose and pipe, replacing
911-011	2.00	Oil cooler, replacing
911-015	0.50	Oil level gauge, replacing
911-017	2.00	Suction cover, replacing
911-024	0.70	Pipe and hose (pump - valve), replacing

Op.no.	time (h)	Notes
911-025	1.00	Pipe and hose (valve - cylinder), replacing
911-026	1.00	Pipe and hose (valve - swing motor), replacing
911-031	2.00	Oil cooler line pipe and hose, replacing
911-032	1.50	Oil cooler line pipe coupling, replacing
911-033	1.50	Oil cooler line bypass valve (check valve), replacing
911-034	2.00	Oil cooler fan motor, replacing
911-035	1.50	Oil cooler fan pump, replacing
911-038	4.00	Hydraulic oil tank, replacing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.20	Breather, replacing
912-001	9.00	Control valve, replacing
912-067	0.70	Main pressure relief valve, replacing
912-071	1.00	Rupture valve, replacing (boom cylinder)
912-073	1.00	Rupture valve, replacing (dipper arm cylinder)
913-004	1.25	Hydraulic pump, checking and adjusting max working pressure
913-007	0.30	Hydraulic pump (removed), changing shaft seal
913-010	4.00	Hydraulic pump, replacing
913-029	0.30	Pump regulator, replacing
914-036	1.00	Servo pump block seal, replacing
914-037	1.00	Servo pump shaft seal, replacing
914-041	0.80	Proportional solenoid valve (power shift), replacing
914-051	0.30	Accumulator, replacing
914-055	0.75	Servo pressure, checking and adjusting
914-060	0.70	Servo pump, replacing
914-081	1.75	Remote control valve (lever), replacing
914-084	1.75	Remote control valve (pedal), replacing
914-086	1.00	Remote control valve hose, replacing
914-091	1.00	Solenoid valve, replacing
916-096	0.80	Hammer and shear pedal valve (RCV), replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-001	1.00	Quickfit pump (gear pump), replacing
924-021	2.00	Quickfit hydraulic cylinder bracket (body), replacing
925-011	1.25	Bucket assembly, replacing
925-012	0.50	Bucket assembly, removal
925-013	0.90	Bucket assembly, installation
97		UNIT, DIGGING
974-010	13.00	Boom, replacing
974-013	5.00	Boom, removal

Op.no.	time (h)	Notes
974-014	6.50	Boom, installation
974-017	2.00	Boom, replacing pin
974-021	4.50	Boom cylinder, replacing
974-022	2.50	Boom cylinder removed, repacking
974-024	0.50	Boom cylinder removed, replacing bearings and/or bushes
974-025	4.50	Boom cylinder, repacking in machine
974-031	2.50	Boom cylinder, removal
974-032	2.50	Boom cylinder, installation
974-047	0.50	Adapter, removal
974-048	0.60	Adapter, installation
975-006	0.70	Dipper arm connecting rod, removal
975-007	0.70	Dipper arm connecting rod, installation
975-011	3.50	Dipper arm, removal
975-012	3.50	Dipper arm, installation
975-014	1.75	Dipper arm cylinder, removal
975-015	1.50	Dipper arm cylinder, installation
975-024	1.25	Dipper arm connecting rod, replacing
975-025	3.00	Dipper arm cylinder, replacing
975-026	3.00	Dipper arm cylinder removed, repacking
975-028	1.50	Connecting rod yoke, replacing
975-032	0.70	Connecting rod yoke, removal
975-035	1.00	Connecting rod yoke, installation
975-039	9.00	Dipper arm, replacing
975-043	4.50	Dipper arm cylinder, repacking in machine
975-044	0.50	Dipper arm cylinder removed, replacing bearings and/or bushes
975-061	2.50	Bucket cylinder, replacing
975-062	1.50	Bucket cylinder, removal
975-063	5.00	Bucket cylinder, repacking in machine
975-065	1.75	Bucket cylinder, installation
975-069	2.50	Bucket cylinder removed, repacking
975-070	0.50	Bucket cylinder removed, replacing bushing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	0.20	Maintenance service, daily
173-004	0.50	Maintenance service, every 50 hours
173-007	0.80	Maintenance service, every 250 hours
173-010	3.00	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-013	4.50	Maintenance service, every 1500 hours
173-014	14.00	Maintenance service, every 2000 hours
173-019	0.30	Maintenance service, every 4500 hours
173-022	4.00	Maintenance service, every 6000 hours
173-080	1.50	Master cylinder, changing oil 575001 - 576048
19		GENERAL
191-020	0.20	Service position
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	1.00	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
210-070	5.00	Engine, removing
210-072	6.00	Engine, installing
210-092	0.40	Engine rotation speed sensor (camshaft), replacing
210-093	0.40	Engine rotation speed sensor (crank shaft), replacing
212-071	0.30	Crankcase ventilation separator, replacing
214-012	4.00	Valves, adjusting
218-009	3.00	Engine mounts, replacing
22		LUBRICATING SYSTEM
221-022	0.50	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.40	Carbon dioxide in fuel system, check
233-008	0.90	Fuel pump, replacing
234-011	1.50	Fuel tank, removing
234-012	0.90	Fuel tank, installing
237-002	6.00	Injectors, replacing all

Op.no.	time (h)	Notes
237-032	1.75	High pressure fuel pump, replacing
237-033	1.50	Fuel control valve (FCV), replacing
237-034	0.90	Pressure relief valve (PRV), replacing
237-124	0.50	High pressure fuel system, pressure relief
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.60	Exhaust pipe, flexible tube, replacing
254-001	3.00	Diesel particulate filter, check and clean
254-022	1.25	ACM (After treatment control module), replacing, non-programmed
254-023	1.25	ACM (After treatment control module), replacing, pre-programmed
254-031	0.80	Air pump, replacing
254-033	1.75	Burner, replacing
254-043	0.40	Spark plug control unit, replacing
254-044	0.30	Glow plug, replacing
254-048	0.40	Spark plug cable, replacing
254-049	0.50	Throttle, replacing
254-050	0.90	Fuel metering unit A, replacing
254-051	1.00	Fuel metering unit B, replacing
254-052	0.30	Air pump safety valve, replacing
254-053	0.50	Glow plug control unit, replacing
254-056	0.90	NOx sensor, replacing
254-066	0.40	Exhaust Aftertreatment System, T-junction, replacing
255-009	0.40	Waste gate, testing
255-071	2.50	Turbocharger, replacing
256-010	0.30	Air cleaner, removing
256-011	0.30	Air cleaner, installing
258-023	0.40	Charge air cooler, removing
258-024	0.40	Charge air cooler, installing
26		COOLING SYSTEM
261-008	1.75	Radiator, replacing
261-018	1.25	Expansion tank, replacing
262-002	2.50	Coolant pump, replacing
263-016	0.40	Maximum fan speed, checking
263-016	0.50	Maximum fan speed, checking
263-019	0.40	Low fan speed, checking
263-019	0.80	Low fan speed, checking
263-023	1.25	Fan pump, removing
263-024	1.00	Fan pump, installing
263-042	1.50	Fan shroud, replacing
263-052	0.40	Fan pump flow, checking
263-052	0.40	Fan pump flow, checking

Op.no.	time (h)	Notes
263-062	1.50	Cooling fan motor, replacing
263-071	0.40	Fan control valve, removing
263-072	1.00	Fan control valve, seal replacement
263-073	0.40	Fan control valve, installing
29		Miscellaneous
293-001	3.00	EGR cooler, replacing
293-004	3.00	EGR cooler, cleaning
293-005	3.00	EGR valve, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.70	Battery charging capacity, checking
311-002	0.40	Batteries, replacing
313-001	0.30	Battery box, removing
313-002	0.30	Battery box, installing
35		LIGHTING
352-002	0.60	Headlights, adjusting
36		OTHER ELECTRICAL EQUIPMENT
361-018	0.40	Direction indicator switch, replacing
362-003	0.40	Reverse alarm, replacing
363-005	0.60	Lower window wiper, replacing
364-014	0.40	Ignition switch, replacing
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-066	0.90	V-ECU, MID 187, changing pre-programmed ECU
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-004	0.80	Transmission temperature sensor, replacing
386-005	0.70	Transmission, revolution sensor, replacing
386-011	0.90	Fuel level sender, replacing
386-032	0.80	Sensor unit (differential lock), replacing
386-061	0.30	Revolution sensor (hydraulic cooling fan), replacing
387-008	0.30	Display unit, replacing
39		MISCELLANEOUS
393-022	0.30	Radio, removal

Op.no.	time (h)	Notes
393-023	0.10	Radio, installation
4		POWER TRANSMISSION
41		CLUTCH; TORQUE CONVERTER
413-018	0.40	Inching pedal, replacing
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	1.25	Transmission oil pressure, checking
421-025	0.90	Transmission solenoid, replacing
421-026	1.00	Transmission pressure sensor, replacing
421-027	0.60	Transmission oil filter restriction sensor, replacing
421-047	0.70	Gear selector, replacing
421-070	4.50	Transmission, removing
421-072	5.00	Transmission, installing
44		HYDROSTATIC DRIVE
442-011	1.50	Transmission pump, removing
442-012	1.75	Transmission pump, installing
442-041	4.00	Pump drive, removing
442-042	4.00	Pump drive, installing
442-047	1.75	Charge pump, replacing
45		PROPELLER SHAFT
451-009	1.50	Intermediate bearing, replacing
451-031	0.70	Drive shaft, removing
451-031	1.25	Drive shaft, removing
451-032	0.70	Drive shaft, installing
451-032	0.80	Drive shaft, installing
451-033	1.25	Universal joint, replacing
46		FRONT AXLE; REAR AXLE
463-002	4.00	Axle, removing
463-003	7.00	Axle, installing
463-056	2.00	Tandem, removing
463-058	1.25	Tandem drive chain, removing
463-058	1.25	Tandem drive chain, removing
463-059	1.75	Tandem drive chain, installing
463-059	2.50	Tandem drive chain, installing
463-060	1.75	Tandem drive sprocket, removing
463-061	1.75	Tandem drive sprocket, installing
463-062	3.50	Tandem, installing
463-063	5.50	Four point bearing, replacing

Op.no.	time (h)		Notes
49		MISCELLANEOUS	
491-007	0.30	Transmission oil cooler, removing	
491-008	0.20	Transmission oil cooler, installing	
 5		 BRAKE	
51		WHEEL BRAKE	
510-005	0.20	Service brakes, function check	
510-006	0.20	Service brakes warning system, checking	575001 - 576048
517-071	1.00	Oil disc brake assembly, removing	
517-072	0.80	Oil disc brakes, disassembling	
517-074	0.50	Brake Housing Pre - Assembly	
517-076	0.70	Oil disc brakes , assembling	
517-078	1.25	Oil disc brake, installing	
 52		 HYDRAULIC BRAKE SYSTEM	
520-001	0.70	Brake system, checking function, hydraulic	576049 - 576999
520-007	0.40	Brake pedal switch, replacing	575001 - 576048
520-037	0.70	Brake system, bleeding	576049 - 576999
520-037	0.90	Brake system, bleeding	575001 - 576048
520-112	0.40	Brake pedal stop, adjusting	576049 - 576999
521-008	0.50	Brake master cylinder, removing	575001 - 576048
521-009	1.50	Brake master cylinder, installing	575001 - 576048
521-012	0.20	Power booster, disassembling	575001 - 576048
521-013	0.20	Power booster, assembling	575001 - 576048
521-014	0.50	Brake master cylinder, disassembling	575001 - 576048
521-015	0.50	Brake master cylinder, assembling	575001 - 576048
525-005	0.70	Foot brake valve, removal	576049 - 576999
525-006	1.50	Foot brake valve, installation	576049 - 576999
525-017	0.20	Brake pedal angle, adjusting	576049 - 576999
527-001	0.10	Accumulator removed, checking charging pressure	576049 - 576999
527-012	0.40	Accumulator, removal	576049 - 576999
527-013	0.80	Accumulator, installation	576049 - 576999
 55		 PARKING BRAKE	
550-015	0.40	Parking brake, manually releasing	
550-018	1.25	Parking brake assembly, removing	
550-023	0.20	Parking brake, function checking	
550-056	1.75	Parking brake assembly, installing	

Op.no.	time (h)	Notes
6		STEERING
60		GENERAL
600-001	0.30	Steering system, function check
62		STEERING AXLE
622-054	0.40	Drag link, removing
622-058	0.50	Tie bar, removing
622-060	0.90	Front axle frame, removing
622-061	1.75	Front axle frame, installing
622-063	0.30	Tie bar, installing
622-067	1.00	Drag link, installing
64		STEERING
641-025	0.80	Pedestal gas shock, replacing
641-026	0.60	Steering column, removing
641-027	0.70	Steering column, installing
645-028	0.70	Steering system, checking and adjusting working pressure
645-031	0.50	Steering control unit, removing
645-035	0.80	Steering control unit, installing
647-089	0.50	Secondary steering relief valve, adjusting
647-099	0.10	Secondary steering function, checking
648-001	0.50	Wheel lean cylinder, removing
648-002	0.30	Wheel lean cylinder, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-011	0.30	Transmission guard, removing
715-012	0.30	Transmission guard, installing
715-031	0.50	Neck and nose cover, removing
715-032	0.40	Neck and nose cover, installing
74		FRAME LINK
741-001	6.00	Frame joint, separating machine
742-055	0.60	Articulation indicator cable, removing
742-056	0.80	Articulation indicator cable, installing
742-081	0.70	Articulation cylinder, removing
742-082	0.80	Articulation cylinder, installing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.70	Wheel, removing and fitting one

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.00	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	1.25	Engine hood, removing
821-002	1.50	Engine hood, installing
827-001	0.50	Cab ladder, replacing
85		CAB INTERIOR/UPHOLSTERY
851-001	0.60	Rear headliner, removing
851-002	0.60	Rear headliner, installing
851-003	0.50	Front headliner, removing
851-004	0.50	Front headliner, installing
851-005	1.75	Cab interior covers, replacing
851-006	0.80	Side console covers, replacing
852-003	0.40	Operator's seat, removing
852-004	0.50	Operator's seat, installing
87		AIR CONDITIONING UNIT
870-003	0.70	Cooler and Heater assembly, removal
870-004	1.25	Cooler and Heater assembly, installation
872-022	1.25	Defroster fan, replacing
873-004	3.00	Heater core, replacing
873-006	3.00	Fan motor, replacing
873-008	1.00	Heat control valve, replacing
873-011	3.00	Air mix door actuator, replacing
873-012	3.00	Stepless motor drive, replacing
873-013	2.50	Heater unit relays, replacing
874-011	2.00	Receiver, replacing incl draining and filling
874-012	5.00	Evaporator, replacing incl draining and filling
874-014	3.00	Thermostat, replacing
874-092	0.50	HVAC control switch, replacing
88		INTERIOR EQUIPMENT
884-001	0.30	Seat safety belt, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-051	1.75	Joystick control, replacing

Op.no.	time (h)	Notes
900-052	0.20	Rear option controller, replacing
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-013	0.40	Hydraulic oil cooler, removing
911-014	0.30	Hydraulic oil cooler, installing
911-036	3.00	Hydraulic oil tank, removing
911-037	3.00	Hydraulic oil tank, installing
911-040	0.30	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-100	0.60	Hydraulic swivel joint, removing
912-101	1.25	Hydraulic swivel joint, installing
912-105	0.40	Circle turn valve, removing
912-108	0.40	Circle turn valve, installing
912-110	0.90	Accumulator precharge pressure, checking
912-110	0.90	Accumulator precharge pressure, checking
912-111	0.60	Accumulator -Charging
912-130	2.50	Directional control valve, removing
912-131	2.50	Directional control valve, installing
912-137	0.80	Priority flow valve, removing
912-138	0.90	Priority flow valve, installing
912-139	0.30	Priority flow valve, disassembly and inspection
912-229	0.80	Directional control valve solenoid, replacing
913-045	0.60	Steering and implement pump controller, removing
913-046	0.50	Steering and implement pump controller, installing
913-081	3.00	Steering and implement pump, removing
913-082	3.50	Steering and implement pump, installing
914-096	1.75	Control levers, replacing
915-003	0.60	Control lever, adjusting
916-116	0.90	Power supply unit, replacing
916-117	0.90	Relay, replacing
916-118	0.90	Counter balance steering valve, replacing
916-119	0.90	Steering valve solenoid, replacing
916-120	0.30	Articulation sensor, replacing
916-121	0.10	Articulation sensor, calibrating
916-122	0.90	J-ECU controller, replacing
916-123	0.20	Rear auxiliary valve solenoid, replacing
916-124	0.90	Steering pressure sensor, replacing
916-127	0.30	Left side controller, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
926-088	0.40	Support arch, removal
926-089	1.25	Support arch, installation

Op.no.	time (h)	Notes
98		FUNCTION FOR ROAD CONSTRUCTION
981-011	0.70	Mouldboard lower slide tube bearing, replacing
981-012	0.40	Mouldboard upper slide wear plate, replacing
981-013	1.25	Mouldboard cutting edge, replacing
981-033	1.00	Accumulator, replacing
981-041	0.90	Blade slide cylinder, replacing
981-051	0.70	Circle crank arm, removing
981-052	0.50	Circle crank arm, installing
981-053	1.25	Circle, checking
981-061	0.80	Blade lift system lock cylinder, removing
981-064	0.60	Blade lift system lock cylinder, installing
981-081	0.60	Blade lift cylinder, removing
981-082	1.25	Blade lift stirrup, removing
981-083	0.40	Blade lift arm, removing
981-084	0.40	Blade lift arm, installing
981-085	0.90	Blade lift stirrup, installing
981-086	0.50	Blade lift cylinder, installing
981-087	2.00	Circle and drawbar, removing
981-088	3.00	Circle and drawbar, installing

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-002	0.20	Maintenance service, daily	
173-004	0.50	Maintenance service, every 50 hours	
173-007	0.80	Maintenance service, every 250 hours	
173-010	3.00	Maintenance service, every 500 hours	
173-012	5.50	Maintenance service, every 1000 hours	
173-013	4.50	Maintenance service, every 1500 hours	
173-014	14.00	Maintenance service, every 2000 hours	
173-019	0.30	Maintenance service, every 4500 hours	
173-022	4.00	Maintenance service, every 6000 hours	
173-080	1.50	Master cylinder, changing oil	575001 - 577033
173-080	1.50	Master cylinder, changing oil	577036 - 577036
19		GENERAL	
191-020	0.20	Service position	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU	
200-070	1.00	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-070	5.00	Engine, removing	
210-072	6.00	Engine, installing	
210-092	0.40	Engine rotation speed sensor (camshaft), replacing	
210-093	0.40	Engine rotation speed sensor (crank shaft), replacing	
212-071	0.30	Crankcase ventilation separator, replacing	
214-012	4.00	Valves, adjusting	
218-009	3.00	Engine mounts, replacing	
22		LUBRICATING SYSTEM	
221-022	0.50	Lubrication oil pressure, checking with pressure gauge	
23		FUEL SYSTEM	
230-001	0.40	Carbon dioxide in fuel system, check	
233-008	0.90	Fuel pump, replacing	
234-011	1.50	Fuel tank, removing	
234-012	0.90	Fuel tank, installing	

Op.no.	time (h)	Notes
237-002	6.00	Injectors, replacing all
237-032	1.75	High pressure fuel pump, replacing
237-033	1.50	Fuel control valve (FCV), replacing
237-034	0.90	Pressure relief valve (PRV), replacing
237-124	0.50	High pressure fuel system, pressure relief
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.60	Exhaust pipe, flexible tube, replacing
254-001	3.00	Diesel particulate filter, check and clean
254-022	1.25	ACM (After treatment control module), replacing, non-programmed
254-023	1.25	ACM (After treatment control module), replacing, pre-programmed
254-031	0.80	Air pump, replacing
254-033	1.75	Burner, replacing
254-043	0.40	Spark plug control unit, replacing
254-044	0.30	Glow plug, replacing
254-048	0.40	Spark plug cable, replacing
254-049	0.50	Throttle, replacing
254-050	0.90	Fuel metering unit A, replacing
254-051	1.00	Fuel metering unit B, replacing
254-052	0.30	Air pump safety valve, replacing
254-053	0.50	Glow plug control unit, replacing
254-056	0.90	NOx sensor, replacing
254-066	0.40	Exhaust Aftertreatment System, T-junction, replacing
255-009	0.40	Waste gate, testing
255-071	2.50	Turbocharger, replacing
256-010	0.30	Air cleaner, removing
256-011	0.30	Air cleaner, installing
258-023	0.40	Charge air cooler, removing
258-024	0.40	Charge air cooler, installing
26		COOLING SYSTEM
261-008	1.75	Radiator, replacing
261-018	1.25	Expansion tank, replacing
262-002	2.50	Coolant pump, replacing
263-016	0.40	Maximum fan speed, checking
263-016	0.50	Maximum fan speed, checking
263-019	0.40	Low fan speed, checking
263-019	0.80	Low fan speed, checking
263-023	1.25	Fan pump, removing
263-024	1.00	Fan pump, installing
263-042	1.50	Fan shroud, replacing
263-052	0.40	Fan pump flow, checking

Op.no.	time (h)	Notes
263-052	0.40	Fan pump flow, checking
263-062	1.50	Cooling fan motor, replacing
263-071	0.40	Fan control valve, removing
263-072	1.00	Fan control valve, seal replacement
263-073	0.40	Fan control valve, installing
29		Miscellaneous
293-001	3.00	EGR cooler, replacing
293-004	3.00	EGR cooler, cleaning
293-005	3.00	EGR valve, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.70	Battery charging capacity, checking
311-002	0.40	Batteries, replacing
313-001	0.30	Battery box, removing
313-002	0.30	Battery box, installing
35		LIGHTING
352-002	0.60	Headlights, adjusting
36		OTHER ELECTRICAL EQUIPMENT
361-018	0.40	Direction indicator switch, replacing
362-003	0.40	Reverse alarm, replacing
363-005	0.60	Lower window wiper, replacing
364-014	0.40	Ignition switch, replacing
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-066	0.90	V-ECU, MID 187, changing pre-programmed ECU
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-004	0.80	Transmission temperature sensor, replacing
386-005	0.70	Transmission, revolution sensor, replacing
386-011	0.90	Fuel level sender, replacing
386-032	0.80	Sensor unit (differential lock), replacing
386-061	0.30	Revolution sensor (hydraulic cooling fan), replacing
387-008	0.30	Display unit, replacing

Op.no.	time (h)	Notes
39		MISCELLANEOUS
393-022	0.30	Radio, removal
393-023	0.10	Radio, installation
4		POWER TRANSMISSION
41		CLUTCH; TORQUE CONVERTER
413-018	0.40	Inching pedal, replacing
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	1.25	Transmission oil pressure, checking
421-025	0.90	Transmission solenoid, replacing
421-026	1.00	Transmission pressure sensor, replacing
421-027	0.60	Transmission oil filter restriction sensor, replacing
421-047	0.70	Gear selector, replacing
421-070	4.50	Transmission, removing
421-072	5.00	Transmission, installing
44		HYDROSTATIC DRIVE
442-011	1.50	Transmission pump, removing
442-012	1.75	Transmission pump, installing
442-041	4.00	Pump drive, removing
442-042	4.00	Pump drive, installing
442-047	1.75	Charge pump, replacing
45		PROPELLER SHAFT
451-009	1.50	Intermediate bearing, replacing
451-031	0.70	Drive shaft, removing
451-031	1.25	Drive shaft, removing
451-032	0.70	Drive shaft, installing
451-032	0.80	Drive shaft, installing
451-033	1.25	Universal joint, replacing
46		FRONT AXLE; REAR AXLE
463-002	4.00	Axle, removing
463-003	7.00	Axle, installing
463-056	2.00	Tandem, removing
463-058	1.25	Tandem drive chain, removing
463-058	1.25	Tandem drive chain, removing
463-059	1.75	Tandem drive chain, installing
463-059	2.50	Tandem drive chain, installing
463-060	1.75	Tandem drive sprocket, removing
463-061	1.75	Tandem drive sprocket, installing
463-062	3.50	Tandem, installing

Op.no.	time (h)		Notes
463-063	5.50	Four point bearing, replacing	
49		MISCELLANEOUS	
491-007	0.30	Transmission oil cooler, removing	
491-008	0.20	Transmission oil cooler, installing	
5		BRAKE	
51		WHEEL BRAKE	
510-005	0.20	Service brakes, function check	
510-006	0.20	Service brakes warning system, checking	575001 - 577033
510-006	0.20	Service brakes warning system, checking	577036 - 577036
517-071	1.00	Oil disc brake assembly, removing	
517-072	0.80	Oil disc brakes, disassembling	
517-074	0.50	Brake Housing Pre - Assembly	
517-076	0.70	Oil disc brakes , assembling	
517-078	1.25	Oil disc brake, installing	
52		HYDRAULIC BRAKE SYSTEM	
520-001	0.70	Brake system, checking function, hydraulic	577037 - 577999
520-001	0.70	Brake system, checking function, hydraulic	577034 - 577035
520-007	0.40	Brake pedal switch, replacing	577036 - 577036
520-007	0.40	Brake pedal switch, replacing	575001 - 577033
520-037	0.70	Brake system, bleeding	577037 - 577999
520-037	0.70	Brake system, bleeding	577034 - 577035
520-037	0.90	Brake system, bleeding	575001 - 577033
520-037	0.90	Brake system, bleeding	577036 - 577036
520-112	0.40	Brake pedal stop, adjusting	577034 - 577035
520-112	0.40	Brake pedal stop, adjusting	577037 - 577999
521-008	0.50	Brake master cylinder, removing	575001 - 577033
521-008	0.50	Brake master cylinder, removing	577036 - 577036
521-009	1.50	Brake master cylinder, installing	575001 - 577033
521-009	1.50	Brake master cylinder, installing	577036 - 577036
521-012	0.20	Power booster, disassembling	575001 - 577033
521-012	0.20	Power booster, disassembling	577036 - 577036
521-013	0.20	Power booster, assembling	575001 - 577033
521-013	0.20	Power booster, assembling	577036 - 577036
521-014	0.50	Brake master cylinder, disassembling	575001 - 577033
521-014	0.50	Brake master cylinder, disassembling	577036 - 577036
521-015	0.50	Brake master cylinder, assembling	575001 - 577033
521-015	0.50	Brake master cylinder, assembling	577036 - 577036
525-005	0.70	Foot brake valve, removal	577037 - 577999
525-005	0.70	Foot brake valve, removal	577034 - 577035
525-006	1.50	Foot brake valve, installation	577034 - 577035

Op.no.	time (h)		Notes
525-006	1.50	Foot brake valve, installation	577037 - 577999
525-017	0.20	Brake pedal angle, adjusting	577034 - 577035
525-017	0.20	Brake pedal angle, adjusting	577037 - 577999
527-001	0.10	Accumulator removed, checking charging pressure	577034 - 577035
527-001	0.10	Accumulator removed, checking charging pressure	577037 - 577999
527-012	0.40	Accumulator, removal	577034 - 577035
527-012	0.40	Accumulator, removal	577037 - 577999
527-013	0.80	Accumulator, installation	577034 - 577035
527-013	0.80	Accumulator, installation	577037 - 577999
55		PARKING BRAKE	
550-015	0.40	Parking brake, manually releasing	
550-018	1.25	Parking brake assembly, removing	
550-023	0.20	Parking brake, function checking	
550-056	1.75	Parking brake assembly, installing	
6		STEERING	
60		GENERAL	
600-001	0.30	Steering system, function check	
62		STEERING AXLE	
622-054	0.40	Drag link, removing	
622-058	0.50	Tie bar, removing	
622-060	0.90	Front axle frame, removing	
622-061	1.75	Front axle frame, installing	
622-063	0.30	Tie bar, installing	
622-067	1.00	Drag link, installing	
64		STEERING	
641-025	0.80	Pedestal gas shock, replacing	
641-026	0.60	Steering column, removing	
641-027	0.70	Steering column, installing	
645-028	0.70	Steering system, checking and adjusting working pressure	
645-031	0.50	Steering control unit, removing	
645-035	0.80	Steering control unit, installing	
647-089	0.50	Secondary steering relief valve, adjusting	
647-099	0.10	Secondary steering function, checking	
648-001	0.50	Wheel lean cylinder, removing	
648-002	0.30	Wheel lean cylinder, installing	

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-011	0.30	Transmission guard, removing
715-012	0.30	Transmission guard, installing
715-031	0.50	Neck and nose cover, removing
715-032	0.40	Neck and nose cover, installing
74		FRAME LINK
741-001	6.00	Frame joint, separating machine
742-055	0.60	Articulation indicator cable, removing
742-056	0.80	Articulation indicator cable, installing
742-081	0.70	Articulation cylinder, removing
742-082	0.80	Articulation cylinder, installing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.70	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.00	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	1.25	Engine hood, removing
821-002	1.50	Engine hood, installing
827-001	0.50	Cab ladder, replacing
85		CAB INTERIOR/UPHOLSTERY
851-001	0.60	Rear headliner, removing
851-002	0.60	Rear headliner, installing
851-003	0.50	Front headliner, removing
851-004	0.50	Front headliner, installing
851-005	1.75	Cab interior covers, replacing
851-006	0.80	Side console covers, replacing
852-003	0.40	Operator's seat, removing
852-004	0.50	Operator's seat, installing
87		AIR CONDITIONING UNIT
870-003	0.70	Cooler and Heater assembly, removal
870-004	1.25	Cooler and Heater assembly, installation
872-022	1.25	Defroster fan, replacing

Op.no.	time (h)	Notes
873-004	3.00	Heater core, replacing
873-006	3.00	Fan motor, replacing
873-008	1.00	Heat control valve, replacing
873-011	3.00	Air mix door actuator, replacing
873-012	3.00	Stepless motor drive, replacing
873-013	2.50	Heater unit relays, replacing
874-011	2.00	Receiver, replacing incl draining and filling
874-012	5.00	Evaporator, replacing incl draining and filling
874-014	3.00	Thermostat, replacing
874-092	0.50	HVAC control switch, replacing
88		INTERIOR EQUIPMENT
884-001	0.30	Seat safety belt, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-051	1.75	Joystick control, replacing
900-052	0.20	Rear option controller, replacing
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-013	0.40	Hydraulic oil cooler, removing
911-014	0.30	Hydraulic oil cooler, installing
911-036	3.00	Hydraulic oil tank, removing
911-037	3.00	Hydraulic oil tank, installing
911-040	0.30	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-100	0.60	Hydraulic swivel joint, removing
912-101	1.25	Hydraulic swivel joint, installing
912-105	0.40	Circle turn valve, removing
912-108	0.40	Circle turn valve, installing
912-110	0.90	Accumulator precharge pressure, checking
912-110	0.90	Accumulator precharge pressure, checking
912-111	0.60	Accumulator -Charging
912-130	2.50	Directional control valve, removing
912-131	2.50	Directional control valve, installing
912-137	0.80	Priority flow valve, removing
912-138	0.90	Priority flow valve, installing
912-139	0.30	Priority flow valve, disassembly and inspection
912-229	0.80	Directional control valve solenoid, replacing
913-045	0.60	Steering and implement pump controller, removing
913-046	0.50	Steering and implement pump controller, installing

Op.no.	time (h)	Notes
913-081	3.00	Steering and implement pump, removing
913-082	3.50	Steering and implement pump, installing
914-096	1.75	Control levers, replacing
915-003	0.60	Control lever, adjusting
916-116	0.90	Power supply unit, replacing
916-117	0.90	Relay, replacing
916-118	0.90	Counter balance steering valve, replacing
916-119	0.90	Steering valve solenoid, replacing
916-120	0.30	Articulation sensor, replacing
916-121	0.10	Articulation sensor, calibrating
916-122	0.90	J-ECU controller, replacing
916-123	0.20	Rear auxiliary valve solenoid, replacing
916-124	0.90	Steering pressure sensor, replacing
916-127	0.30	Left side controller, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
926-088	0.40	Support arch, removal
926-089	1.25	Support arch, installation
98		FUNCTION FOR ROAD CONSTRUCTION
981-011	0.70	Mouldboard lower slide tube bearing, replacing
981-012	0.40	Mouldboard upper slide wear plate, replacing
981-013	1.25	Mouldboard cutting edge, replacing
981-033	1.00	Accumulator, replacing
981-041	0.90	Blade slide cylinder, replacing
981-051	0.70	Circle crank arm, removing
981-052	0.50	Circle crank arm, installing
981-053	1.25	Circle, checking
981-061	0.80	Blade lift system lock cylinder, removing
981-064	0.60	Blade lift system lock cylinder, installing
981-081	0.60	Blade lift cylinder, removing
981-082	1.25	Blade lift stirrup, removing
981-083	0.40	Blade lift arm, removing
981-084	0.40	Blade lift arm, installing
981-085	0.90	Blade lift stirrup, installing
981-086	0.50	Blade lift cylinder, installing
981-087	2.00	Circle and drawbar, removing
981-088	3.00	Circle and drawbar, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	0.20	Maintenance service, daily
173-004	0.50	Maintenance service, every 50 hours
173-007	0.80	Maintenance service, every 250 hours
173-010	3.00	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-013	4.50	Maintenance service, every 1500 hours
173-014	14.00	Maintenance service, every 2000 hours
173-019	0.30	Maintenance service, every 4500 hours
173-022	4.00	Maintenance service, every 6000 hours
173-080	1.50	Master cylinder, changing oil 575001 - 578042
19		GENERAL
191-020	0.20	Service position
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	1.00	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
210-070	5.00	Engine, removing
210-072	6.00	Engine, installing
210-092	0.40	Engine rotation speed sensor (camshaft), replacing
210-093	0.40	Engine rotation speed sensor (crank shaft), replacing
212-071	0.30	Crankcase ventilation separator, replacing
214-012	4.00	Valves, adjusting
218-009	3.00	Engine mounts, replacing
22		LUBRICATING SYSTEM
221-022	0.50	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.40	Carbon dioxide in fuel system, check
233-008	0.90	Fuel pump, replacing
234-011	1.50	Fuel tank, removing
234-012	0.90	Fuel tank, installing
237-002	6.00	Injectors, replacing all

Op.no.	time (h)	Notes
237-032	1.75	High pressure fuel pump, replacing
237-033	1.50	Fuel control valve (FCV), replacing
237-034	0.90	Pressure relief valve (PRV), replacing
237-124	0.50	High pressure fuel system, pressure relief
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.60	Exhaust pipe, flexible tube, replacing
254-001	3.00	Diesel particulate filter, check and clean
254-022	1.25	ACM (After treatment control module), replacing, non-programmed
254-023	1.25	ACM (After treatment control module), replacing, pre-programmed
254-031	0.80	Air pump, replacing
254-033	1.75	Burner, replacing
254-043	0.40	Spark plug control unit, replacing
254-044	0.30	Glow plug, replacing
254-048	0.40	Spark plug cable, replacing
254-049	0.50	Throttle, replacing
254-050	0.90	Fuel metering unit A, replacing
254-051	1.00	Fuel metering unit B, replacing
254-052	0.30	Air pump safety valve, replacing
254-053	0.50	Glow plug control unit, replacing
254-056	0.90	NOx sensor, replacing
254-066	0.40	Exhaust Aftertreatment System, T-junction, replacing
255-009	0.40	Waste gate, testing
255-071	2.50	Turbocharger, replacing
256-010	0.30	Air cleaner, removing
256-011	0.30	Air cleaner, installing
258-023	0.40	Charge air cooler, removing
258-024	0.40	Charge air cooler, installing
26		COOLING SYSTEM
261-008	1.75	Radiator, replacing
261-018	1.25	Expansion tank, replacing
262-002	2.50	Coolant pump, replacing
263-016	0.40	Maximum fan speed, checking
263-016	0.50	Maximum fan speed, checking
263-019	0.40	Low fan speed, checking
263-019	0.80	Low fan speed, checking
263-023	1.25	Fan pump, removing
263-024	1.00	Fan pump, installing
263-042	1.50	Fan shroud, replacing
263-052	0.40	Fan pump flow, checking
263-052	0.40	Fan pump flow, checking

Op.no.	time (h)	Notes
263-062	1.50	Cooling fan motor, replacing
263-071	0.40	Fan control valve, removing
263-072	1.00	Fan control valve, seal replacement
263-073	0.40	Fan control valve, installing
29		Miscellaneous
293-001	3.00	EGR cooler, replacing
293-004	3.00	EGR cooler, cleaning
293-005	3.00	EGR valve, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.70	Battery charging capacity, checking
311-002	0.40	Batteries, replacing
313-001	0.30	Battery box, removing
313-002	0.30	Battery box, installing
35		LIGHTING
352-002	0.60	Headlights, adjusting
36		OTHER ELECTRICAL EQUIPMENT
361-018	0.40	Direction indicator switch, replacing
362-003	0.40	Reverse alarm, replacing
363-005	0.60	Lower window wiper, replacing
364-014	0.40	Ignition switch, replacing
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-066	0.90	V-ECU, MID 187, changing pre-programmed ECU
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-004	0.80	Transmission temperature sensor, replacing
386-005	0.70	Transmission, revolution sensor, replacing
386-011	0.90	Fuel level sender, replacing
386-032	0.80	Sensor unit (differential lock), replacing
386-061	0.30	Revolution sensor (hydraulic cooling fan), replacing
387-008	0.30	Display unit, replacing
39		MISCELLANEOUS
393-022	0.30	Radio, removal

Op.no.	time (h)	Notes
393-023	0.10	Radio, installation
4		POWER TRANSMISSION
41		CLUTCH; TORQUE CONVERTER
413-018	0.40	Inching pedal, replacing
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	1.25	Transmission oil pressure, checking
421-025	0.90	Transmission solenoid, replacing
421-026	1.00	Transmission pressure sensor, replacing
421-027	0.60	Transmission oil filter restriction sensor, replacing
421-047	0.70	Gear selector, replacing
421-070	4.50	Transmission, removing
421-072	5.00	Transmission, installing
44		HYDROSTATIC DRIVE
441-051	2.00	All wheel drive motor, replacing
442-011	1.50	Transmission pump, removing
442-012	1.75	Transmission pump, installing
442-041	4.00	Pump drive, removing
442-042	4.00	Pump drive, installing
442-047	1.75	Charge pump, replacing
45		PROPELLER SHAFT
451-009	1.50	Intermediate bearing, replacing
451-031	0.70	Drive shaft, removing
451-031	1.25	Drive shaft, removing
451-032	0.70	Drive shaft, installing
451-032	0.80	Drive shaft, installing
451-033	1.25	Universal joint, replacing
46		FRONT AXLE; REAR AXLE
463-002	4.00	Axle, removing
463-003	7.00	Axle, installing
463-056	2.00	Tandem, removing
463-058	1.25	Tandem drive chain, removing
463-058	1.25	Tandem drive chain, removing
463-059	1.75	Tandem drive chain, installing
463-059	2.50	Tandem drive chain, installing
463-060	1.75	Tandem drive sprocket, removing
463-061	1.75	Tandem drive sprocket, installing
463-062	3.50	Tandem, installing
463-063	5.50	Four point bearing, replacing

Op.no.	time (h)		Notes
49		MISCELLANEOUS	
491-007	0.30	Transmission oil cooler, removing	
491-008	0.20	Transmission oil cooler, installing	
 5		 BRAKE	
51		WHEEL BRAKE	
510-005	0.20	Service brakes, function check	
510-006	0.20	Service brakes warning system, checking	575001 - 578042
517-071	1.00	Oil disc brake assembly, removing	
517-072	0.80	Oil disc brakes, disassembling	
517-074	0.50	Brake Housing Pre - Assembly	
517-076	0.70	Oil disc brakes , assembling	
517-078	1.25	Oil disc brake, installing	
 52		 HYDRAULIC BRAKE SYSTEM	
520-001	0.70	Brake system, checking function, hydraulic	578043 - 578999
520-007	0.40	Brake pedal switch, replacing	575001 - 578042
520-037	0.70	Brake system, bleeding	578043 - 578999
520-037	0.90	Brake system, bleeding	575001 - 578042
520-112	0.40	Brake pedal stop, adjusting	578043 - 578999
521-008	0.50	Brake master cylinder, removing	575001 - 578042
521-009	1.50	Brake master cylinder, installing	575001 - 578042
521-012	0.20	Power booster, disassembling	575001 - 578042
521-013	0.20	Power booster, assembling	575001 - 578042
521-014	0.50	Brake master cylinder, disassembling	575001 - 578042
521-015	0.50	Brake master cylinder, assembling	575001 - 578042
525-005	0.70	Foot brake valve, removal	578043 - 578999
525-006	1.50	Foot brake valve, installation	578043 - 578999
525-017	0.20	Brake pedal angle, adjusting	578043 - 578999
527-001	0.10	Accumulator removed, checking charging pressure	578043 - 578999
527-012	0.40	Accumulator, removal	578043 - 578999
527-013	0.80	Accumulator, installation	578043 - 578999
 55		 PARKING BRAKE	
550-015	0.40	Parking brake, manually releasing	
550-018	1.25	Parking brake assembly, removing	
550-023	0.20	Parking brake, function checking	

Op.no.	time (h)	Notes
6		STEERING
60		GENERAL
600-001	0.30	Steering system, function check
62		STEERING AXLE
622-054	0.40	Drag link, removing
622-058	0.50	Tie bar, removing
622-060	0.90	Front axle frame, removing
622-061	1.75	Front axle frame, installing
622-063	0.30	Tie bar, installing
622-067	1.00	Drag link, installing
64		STEERING
641-025	0.80	Pedestal gas shock, replacing
641-026	0.60	Steering column, removing
641-027	0.70	Steering column, installing
645-028	0.70	Steering system, checking and adjusting working pressure
645-031	0.50	Steering control unit, removing
645-035	0.80	Steering control unit, installing
647-089	0.50	Secondary steering relief valve, adjusting
647-099	0.10	Secondary steering function, checking
648-001	0.50	Wheel lean cylinder, removing
648-002	0.30	Wheel lean cylinder, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-011	0.30	Transmission guard, removing
715-012	0.30	Transmission guard, installing
715-031	0.50	Neck and nose cover, removing
715-032	0.40	Neck and nose cover, installing
74		FRAME LINK
741-001	6.00	Frame joint, separating machine
741-002	7.00	Frame joint, assembly of separated machine
742-055	0.60	Articulation indicator cable, removing
742-056	0.80	Articulation indicator cable, installing
742-081	0.70	Articulation cylinder, removing
742-082	0.80	Articulation cylinder, installing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.70	Wheel, removing and fitting one

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.00	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	1.25	Engine hood, removing
821-002	1.50	Engine hood, installing
827-001	0.50	Cab ladder, replacing
85		CAB INTERIOR/UPHOLSTERY
851-001	0.60	Rear headliner, removing
851-002	0.60	Rear headliner, installing
851-003	0.50	Front headliner, removing
851-004	0.50	Front headliner, installing
851-005	1.75	Cab interior covers, replacing
851-006	0.80	Side console covers, replacing
852-003	0.40	Operator's seat, removing
852-004	0.50	Operator's seat, installing
87		AIR CONDITIONING UNIT
870-003	0.70	Cooler and Heater assembly, removal
870-004	1.25	Cooler and Heater assembly, installation
872-022	1.25	Defroster fan, replacing
873-004	3.00	Heater core, replacing
873-006	3.00	Fan motor, replacing
873-008	1.00	Heat control valve, replacing
873-011	3.00	Air mix door actuator, replacing
873-012	3.00	Stepless motor drive, replacing
873-013	2.50	Heater unit relays, replacing
874-011	2.00	Receiver, replacing incl draining and filling
874-012	5.00	Evaporator, replacing incl draining and filling
874-014	3.00	Thermostat, replacing
874-092	0.50	HVAC control switch, replacing
88		INTERIOR EQUIPMENT
884-001	0.30	Seat safety belt, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-051	1.75	Joystick control, replacing

Op.no.	time (h)	Notes
900-052	0.20	Rear option controller, replacing
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-013	0.40	Hydraulic oil cooler, removing
911-014	0.30	Hydraulic oil cooler, installing
911-036	3.00	Hydraulic oil tank, removing
911-037	3.00	Hydraulic oil tank, installing
911-040	0.30	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-100	0.60	Hydraulic swivel joint, removing
912-101	1.25	Hydraulic swivel joint, installing
912-105	0.40	Circle turn valve, removing
912-108	0.40	Circle turn valve, installing
912-110	0.90	Accumulator precharge pressure, checking
912-110	0.90	Accumulator precharge pressure, checking
912-111	0.60	Accumulator -Charging
912-130	2.50	Directional control valve, removing
912-131	2.50	Directional control valve, installing
912-137	0.80	Priority flow valve, removing
912-138	0.90	Priority flow valve, installing
912-139	0.30	Priority flow valve, disassembly and inspection
912-229	0.80	Directional control valve solenoid, replacing
913-045	0.60	Steering and implement pump controller, removing
913-046	0.50	Steering and implement pump controller, installing
914-096	1.75	Control levers, replacing
915-003	0.60	Control lever, adjusting
916-116	0.90	Power supply unit, replacing
916-117	0.90	Relay, replacing
916-118	0.90	Counter balance steering valve, replacing
916-119	0.90	Steering valve solenoid, replacing
916-120	0.30	Articulation sensor, replacing
916-121	0.10	Articulation sensor, calibrating
916-122	0.90	J-ECU controller, replacing
916-123	0.20	Rear auxiliary valve solenoid, replacing
916-124	0.90	Steering pressure sensor, replacing
916-127	0.30	Left side controller, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
926-088	0.40	Support arch, removal
926-089	1.25	Support arch, installation
98		FUNCTION FOR ROAD CONSTRUCTION
981-011	0.70	Mouldboard lower slide tube bearing, replacing
981-012	0.40	Mouldboard upper slide wear plate, replacing

Op.no.	time (h)	Notes
981-013	1.25	Mouldboard cutting edge, replacing
981-033	1.00	Accumulator, replacing
981-041	0.90	Blade slide cylinder, replacing
981-051	0.70	Circle crank arm, removing
981-052	0.50	Circle crank arm, installing
981-053	1.25	Circle, checking
981-061	0.80	Blade lift system lock cylinder, removing
981-064	0.60	Blade lift system lock cylinder, installing
981-081	0.60	Blade lift cylinder, removing
981-082	1.25	Blade lift stirrup, removing
981-083	0.40	Blade lift arm, removing
981-084	0.40	Blade lift arm, installing
981-085	0.90	Blade lift stirrup, installing
981-086	0.50	Blade lift cylinder, installing
981-087	2.00	Circle and drawbar, removing
981-088	3.00	Circle and drawbar, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	0.20	Maintenance service, daily
173-004	0.50	Maintenance service, every 50 hours
173-007	0.80	Maintenance service, every 250 hours
173-010	3.00	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-013	4.50	Maintenance service, every 1500 hours
173-014	14.00	Maintenance service, every 2000 hours
173-019	0.30	Maintenance service, every 4500 hours
173-022	4.00	Maintenance service, every 6000 hours
173-080	1.50	Master cylinder, changing oil 575001 - 579020
19		GENERAL
191-020	0.20	Service position
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.50	E-ECU, MID 128, changing non-programmed ECU
200-070	1.00	E-ECU, MID 128, changing pre-programmed ECU
21		ENGINE
210-070	5.00	Engine, removing
210-072	6.00	Engine, installing
210-092	0.40	Engine rotation speed sensor (camshaft), replacing
210-093	0.40	Engine rotation speed sensor (crank shaft), replacing
212-071	0.30	Crankcase ventilation separator, replacing
214-012	4.00	Valves, adjusting
218-009	3.00	Engine mounts, replacing
22		LUBRICATING SYSTEM
221-022	0.50	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.40	Carbon dioxide in fuel system, check
233-008	0.90	Fuel pump, replacing
234-011	1.50	Fuel tank, removing
234-012	0.90	Fuel tank, installing
237-002	6.00	Injectors, replacing all

Op.no.	time (h)	Notes
237-032	1.75	High pressure fuel pump, replacing
237-033	1.50	Fuel control valve (FCV), replacing
237-034	0.90	Pressure relief valve (PRV), replacing
237-124	0.50	High pressure fuel system, pressure relief
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	0.60	Exhaust pipe, flexible tube, replacing
254-001	3.00	Diesel particulate filter, check and clean
254-022	1.25	ACM (After treatment control module), replacing, non-programmed
254-023	1.25	ACM (After treatment control module), replacing, pre-programmed
254-031	0.80	Air pump, replacing
254-033	1.75	Burner, replacing
254-043	0.40	Spark plug control unit, replacing
254-044	0.30	Glow plug, replacing
254-048	0.40	Spark plug cable, replacing
254-049	0.50	Throttle, replacing
254-050	0.90	Fuel metering unit A, replacing
254-051	1.00	Fuel metering unit B, replacing
254-052	0.30	Air pump safety valve, replacing
254-053	0.50	Glow plug control unit, replacing
254-056	0.90	NOx sensor, replacing
254-066	0.40	Exhaust Aftertreatment System, T-junction, replacing
255-009	0.40	Waste gate, testing
255-071	2.50	Turbocharger, replacing
256-010	0.30	Air cleaner, removing
256-011	0.30	Air cleaner, installing
258-023	0.40	Charge air cooler, removing
258-024	0.40	Charge air cooler, installing
26		COOLING SYSTEM
261-008	1.75	Radiator, replacing
261-018	1.25	Expansion tank, replacing
262-002	2.50	Coolant pump, replacing
263-016	0.40	Maximum fan speed, checking
263-016	0.50	Maximum fan speed, checking
263-019	0.40	Low fan speed, checking
263-019	0.80	Low fan speed, checking
263-023	1.25	Fan pump, removing
263-024	1.00	Fan pump, installing
263-042	1.50	Fan shroud, replacing
263-052	0.40	Fan pump flow, checking
263-052	0.40	Fan pump flow, checking

Op.no.	time (h)	Notes
263-062	1.50	Cooling fan motor, replacing
263-071	0.40	Fan control valve, removing
263-072	1.00	Fan control valve, seal replacement
263-073	0.40	Fan control valve, installing
29		Miscellaneous
293-001	3.00	EGR cooler, replacing
293-004	3.00	EGR cooler, cleaning
293-005	3.00	EGR valve, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	1.25	I-ECU, MID 140, changing non-programmed ECU
300-074	0.80	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-001	0.70	Battery charging capacity, checking
311-002	0.40	Batteries, replacing
313-001	0.30	Battery box, removing
313-002	0.30	Battery box, installing
35		LIGHTING
352-002	0.60	Headlights, adjusting
36		OTHER ELECTRICAL EQUIPMENT
361-018	0.40	Direction indicator switch, replacing
362-003	0.40	Reverse alarm, replacing
363-005	0.60	Lower window wiper, replacing
364-014	0.40	Ignition switch, replacing
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-066	0.90	V-ECU, MID 187, changing pre-programmed ECU
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-004	0.80	Transmission temperature sensor, replacing
386-005	0.70	Transmission, revolution sensor, replacing
386-011	0.90	Fuel level sender, replacing
386-032	0.80	Sensor unit (differential lock), replacing
386-061	0.30	Revolution sensor (hydraulic cooling fan), replacing
387-008	0.30	Display unit, replacing
39		MISCELLANEOUS
393-022	0.30	Radio, removal

Op.no.	time (h)	Notes
393-023	0.10	Radio, installation
4		POWER TRANSMISSION
41		CLUTCH; TORQUE CONVERTER
413-018	0.40	Inching pedal, replacing
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	1.25	Transmission oil pressure, checking
421-025	0.90	Transmission solenoid, replacing
421-026	1.00	Transmission pressure sensor, replacing
421-027	0.60	Transmission oil filter restriction sensor, replacing
421-047	0.70	Gear selector, replacing
421-070	4.50	Transmission, removing
421-072	5.00	Transmission, installing
44		HYDROSTATIC DRIVE
442-011	1.50	Transmission pump, removing
442-012	1.75	Transmission pump, installing
442-041	4.00	Pump drive, removing
442-042	4.00	Pump drive, installing
442-047	1.75	Charge pump, replacing
45		PROPELLER SHAFT
451-009	1.50	Intermediate bearing, replacing
451-031	0.70	Drive shaft, removing
451-031	1.25	Drive shaft, removing
451-032	0.70	Drive shaft, installing
451-032	0.80	Drive shaft, installing
451-033	1.25	Universal joint, replacing
46		FRONT AXLE; REAR AXLE
463-002	4.00	Axle, removing
463-003	7.00	Axle, installing
463-056	2.00	Tandem, removing
463-058	1.25	Tandem drive chain, removing
463-058	1.25	Tandem drive chain, removing
463-059	1.75	Tandem drive chain, installing
463-059	2.50	Tandem drive chain, installing
463-060	1.75	Tandem drive sprocket, removing
463-061	1.75	Tandem drive sprocket, installing
463-062	3.50	Tandem, installing
463-063	5.50	Four point bearing, replacing

Op.no.	time (h)		Notes
49		MISCELLANEOUS	
491-007	0.30	Transmission oil cooler, removing	
491-008	0.20	Transmission oil cooler, installing	
5		BRAKE	
51		WHEEL BRAKE	
510-005	0.20	Service brakes, function check	
510-006	0.20	Service brakes warning system, checking	575001 - 579020
517-071	1.00	Oil disc brake assembly, removing	
517-072	0.80	Oil disc brakes, disassembling	
517-074	0.50	Brake Housing Pre - Assembly	
517-076	0.70	Oil disc brakes , assembling	
517-078	1.25	Oil disc brake, installing	
52		HYDRAULIC BRAKE SYSTEM	
520-001	0.70	Brake system, checking function, hydraulic	579021 - 579999
520-007	0.40	Brake pedal switch, replacing	575001 - 579020
520-037	0.70	Brake system, bleeding	579021 - 579999
520-037	0.90	Brake system, bleeding	575001 - 579020
520-112	0.40	Brake pedal stop, adjusting	579021 - 579999
521-008	0.50	Brake master cylinder, removing	575001 - 579020
521-009	1.50	Brake master cylinder, installing	575001 - 579020
521-012	0.20	Power booster, disassembling	575001 - 579020
521-013	0.20	Power booster, assembling	575001 - 579020
521-014	0.50	Brake master cylinder, disassembling	575001 - 579020
521-015	0.50	Brake master cylinder, assembling	575001 - 579020
525-005	0.70	Foot brake valve, removal	579021 - 579999
525-006	1.50	Foot brake valve, installation	579021 - 579999
525-017	0.20	Brake pedal angle, adjusting	579021 - 579999
527-001	0.10	Accumulator removed, checking charging pressure	579021 - 579999
527-012	0.40	Accumulator, removal	579021 - 579999
527-013	0.80	Accumulator, installation	579021 - 579999
55		PARKING BRAKE	
550-015	0.40	Parking brake, manually releasing	
550-018	1.25	Parking brake assembly, removing	
550-023	0.20	Parking brake, function checking	
550-056	1.75	Parking brake assembly, installing	

Op.no.	time (h)	Notes
6		STEERING
60		GENERAL
600-001	0.30	Steering system, function check
62		STEERING AXLE
622-054	0.40	Drag link, removing
622-058	0.50	Tie bar, removing
622-060	0.90	Front axle frame, removing
622-061	1.75	Front axle frame, installing
622-063	0.30	Tie bar, installing
622-067	1.00	Drag link, installing
64		STEERING
641-025	0.80	Pedestal gas shock, replacing
641-026	0.60	Steering column, removing
641-027	0.70	Steering column, installing
645-028	0.70	Steering system, checking and adjusting working pressure
645-031	0.50	Steering control unit, removing
645-035	0.80	Steering control unit, installing
647-089	0.50	Secondary steering relief valve, adjusting
647-099	0.10	Secondary steering function, checking
648-001	0.50	Wheel lean cylinder, removing
648-002	0.30	Wheel lean cylinder, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
715-011	0.30	Transmission guard, removing
715-012	0.30	Transmission guard, installing
715-031	0.50	Neck and nose cover, removing
715-032	0.40	Neck and nose cover, installing
74		FRAME LINK
741-001	6.00	Frame joint, separating machine
742-055	0.60	Articulation indicator cable, removing
742-056	0.80	Articulation indicator cable, installing
742-081	0.70	Articulation cylinder, removing
742-082	0.80	Articulation cylinder, installing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.70	Wheel, removing and fitting one

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.00	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	1.25	Engine hood, removing
821-002	1.50	Engine hood, installing
827-001	0.50	Cab ladder, replacing
85		CAB INTERIOR/UPHOLSTERY
851-001	0.60	Rear headliner, removing
851-002	0.60	Rear headliner, installing
851-003	0.50	Front headliner, removing
851-004	0.50	Front headliner, installing
851-005	1.75	Cab interior covers, replacing
851-006	0.80	Side console covers, replacing
852-003	0.40	Operator's seat, removing
852-004	0.50	Operator's seat, installing
87		AIR CONDITIONING UNIT
870-003	0.70	Cooler and Heater assembly, removal
870-004	1.25	Cooler and Heater assembly, installation
872-022	1.25	Defroster fan, replacing
873-004	3.00	Heater core, replacing
873-006	3.00	Fan motor, replacing
873-008	1.00	Heat control valve, replacing
873-011	3.00	Air mix door actuator, replacing
873-012	3.00	Stepless motor drive, replacing
873-013	2.50	Heater unit relays, replacing
874-011	2.00	Receiver, replacing incl draining and filling
874-012	5.00	Evaporator, replacing incl draining and filling
874-014	3.00	Thermostat, replacing
874-092	0.50	HVAC control switch, replacing
88		INTERIOR EQUIPMENT
884-001	0.30	Seat safety belt, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-051	1.75	Joystick control, replacing

Op.no.	time (h)	Notes
900-052	0.20	Rear option controller, replacing
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-013	0.40	Hydraulic oil cooler, removing
911-014	0.30	Hydraulic oil cooler, installing
911-036	3.00	Hydraulic oil tank, removing
911-037	3.00	Hydraulic oil tank, installing
911-040	0.30	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-100	0.60	Hydraulic swivel joint, removing
912-101	1.25	Hydraulic swivel joint, installing
912-105	0.40	Circle turn valve, removing
912-108	0.40	Circle turn valve, installing
912-110	0.90	Accumulator precharge pressure, checking
912-110	0.90	Accumulator precharge pressure, checking
912-111	0.60	Accumulator -Charging
912-130	2.50	Directional control valve, removing
912-131	2.50	Directional control valve, installing
912-137	0.80	Priority flow valve, removing
912-138	0.90	Priority flow valve, installing
912-139	0.30	Priority flow valve, disassembly and inspection
912-229	0.80	Directional control valve solenoid, replacing
913-045	0.60	Steering and implement pump controller, removing
913-046	0.50	Steering and implement pump controller, installing
913-081	3.00	Steering and implement pump, removing
913-082	3.50	Steering and implement pump, installing
914-096	1.75	Control levers, replacing
915-003	0.60	Control lever, adjusting
916-116	0.90	Power supply unit, replacing
916-117	0.90	Relay, replacing
916-118	0.90	Counter balance steering valve, replacing
916-119	0.90	Steering valve solenoid, replacing
916-120	0.30	Articulation sensor, replacing
916-121	0.10	Articulation sensor, calibrating
916-122	0.90	J-ECU controller, replacing
916-123	0.20	Rear auxiliary valve solenoid, replacing
916-124	0.90	Steering pressure sensor, replacing
916-127	0.30	Left side controller, replacing
92		MECHANICAL EQUIPMENT/ATTACHMENT
926-088	0.40	Support arch, removal
926-089	1.25	Support arch, installation

Op.no.	time (h)	Notes
98		FUNCTION FOR ROAD CONSTRUCTION
981-011	0.70	Mouldboard lower slide tube bearing, replacing
981-012	0.40	Mouldboard upper slide wear plate, replacing
981-013	1.25	Mouldboard cutting edge, replacing
981-033	1.00	Accumulator, replacing
981-041	0.90	Blade slide cylinder, replacing
981-051	0.70	Circle crank arm, removing
981-052	0.50	Circle crank arm, installing
981-053	1.25	Circle, checking
981-061	0.80	Blade lift system lock cylinder, removing
981-064	0.60	Blade lift system lock cylinder, installing
981-081	0.60	Blade lift cylinder, removing
981-082	1.25	Blade lift stirrup, removing
981-083	0.40	Blade lift arm, removing
981-084	0.40	Blade lift arm, installing
981-085	0.90	Blade lift stirrup, installing
981-086	0.50	Blade lift cylinder, installing
981-087	2.00	Circle and drawbar, removing
981-088	3.00	Circle and drawbar, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-004	0.50	Maintenance service, every 50 hours
173-007	1.00	Maintenance service, every 250 hours
173-010	2.50	Maintenance service, every 500 hours
173-012	3.00	Maintenance service, every 1000 hours
173-014	6.50	Maintenance service, every 2000 hours
173-018	7.50	Maintenance service, every 4000 hours
173-019	0.80	Maintenance service, every 4500 hours
173-022	2.50	Maintenance service, every 6000 hours
173-042	1.75	Maintenance service, first 1000 hours
173-150	1.75	Maintenance service, fire suppression system
176-001	0.80	Mechanical release of parking brake
19		GENERAL
191-021	0.20	Service position 1
191-022	0.20	Service position 2
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.00	E-ECU, MID 128, changing non-programmed ECU
200-200	0.30	Engine belts, replacing
21		ENGINE
210-002	4.50	Compression test
210-070	5.00	Engine, removing
210-072	6.50	Engine, installing
210-092	0.40	Engine rotation speed sensor (camshaft), replacing
210-093	0.60	Engine rotation speed sensor (crank shaft), replacing
212-071	0.70	Crankcase ventilation separator, replacing
214-012	2.00	Valves, adjusting
218-007	2.00	Engine mounting rear, changing
22		LUBRICATING SYSTEM
221-022	0.30	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding

Op.no.	time (h)	Notes
233-004	0.30	Feed pump, checking feed pressure
233-008	1.00	Fuel pump, replacing
236-002	0.50	Stall speed, checking
237-002	3.50	Injectors, replacing all
237-017	11.00	Injector sleeves, replacing
237-032	2.00	High pressure fuel pump, replacing
237-033	1.50	Fuel control valve (FCV), replacing
237-034	3.00	Pressure relief valve (PRV), replacing
237-035	0.30	Fuel rail pressure sensor, replacing
237-124	0.70	High pressure fuel system, pressure relief
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	1.25	Exhaust pipe, flexible tube, replacing
254-001	2.00	Diesel particulate filter, check and clean
254-022	1.50	ACM (After treatment control module), replacing, non-programmed
254-023	1.25	ACM (After treatment control module), replacing, pre-programmed
254-031	0.90	Air pump, replacing
254-033	1.50	Burner, replacing
254-043	0.30	Spark plug control unit, replacing
254-044	0.20	Glow plug, replacing
254-046	0.20	Spark plug, replacing
254-047	0.20	Spark plug, checking
254-048	0.20	Spark plug cable, replacing
254-049	0.40	Throttle, replacing
254-050	1.25	Fuel metering unit A, replacing
254-051	2.50	Fuel metering unit B, replacing
254-052	0.50	Air pump safety valve, replacing
254-053	0.80	Glow plug control unit, replacing
254-055	1.25	DPF bracket, replacing
254-056	0.40	NOx sensor, replacing
254-060	2.00	Diesel oxidation catalyst, replacing
254-066	0.40	Exhaust Aftertreatment System, T-junction, replacing
255-009	0.50	Waste gate, testing
255-070	0.70	Turbocharger, removing
255-072	1.75	Turbocharger, installing
256-006	1.25	Preheating coil, replacing
258-002	4.00	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
260-003	0.60	Cooling system, pressure control
261-011	1.25	Radiator, removing

Op.no.	time (h)	Notes
261-013	1.75	Radiator, installing
262-002	0.90	Coolant pump, replacing
262-098	1.00	Thermostat, replacing
263-072	0.20	Fan control valve, seal replacement
263-081	0.60	Hydraulic pump P3, removal
263-082	1.25	Hydraulic pump P3, installation
29		Miscellaneous
293-001	3.00	EGR cooler, replacing
293-004	3.00	EGR cooler, cleaning
293-005	3.00	EGR valve, replacing
293-006	0.20	EGR temperature sensor, replacing
293-007	0.20	EGR pressure sensor, replacing
293-008	1.25	EGR Actuator, replacing
293-010	0.40	EGR Venturi tube, replacing
293-011	0.40	EGR reed valve, checking
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	0.80	I-ECU, MID 140, changing non-programmed ECU
300-074	0.30	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-002	0.30	Batteries, replacing
311-005	0.40	Battery condition, check
32		ALTERNATOR; CHARGE REGULATOR
321-003	0.40	Alternator, removing
321-004	0.40	Alternator, installing
36		OTHER ELECTRICAL EQUIPMENT
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-066	0.70	V-ECU, MID 187, changing pre-programmed ECU
39		MISCELLANEOUS
398-004	0.70	CareTrack battery, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.80	Transmission oil pressure, checking

Op.no.	time (h)	Notes
421-002	0.90	Transmission oil pressure, checking
421-048	1.25	Gear selector valve, replacing one solenoid
421-052	2.00	Seal for front output shaft, replacing
421-054	1.75	Seal for rear output shaft, replacing
421-070	7.00	Transmission, removing
421-072	11.00	Transmission, installing
421-091	1.50	Lock up valve, replacing
421-099	0.70	Transmission, calibration
421-100	0.20	Transmission, function check
421-100	0.30	Transmission, function check
46		FRONT AXLE; REAR AXLE
461-037	1.00	Hub reduction, removing
461-038	1.25	Hub reduction, installing
461-043	4.50	Hub, replacing seal
463-002	3.00	Axle, removing
463-003	2.50	Axle, installing
463-037	5.50	Axle suspension, replacing bushes and seals
463-043	4.50	Hub, replacing seal
463-045	1.00	Hub reduction, removing
463-046	1.25	Hub reduction, installing
468-006	0.20	Differential lock, function check
468-051	1.25	Differential lock, adjusting
5		BRAKE
51		WHEEL BRAKE
510-003	0.40	Brake discs, measuring wear
510-004	0.10	Wheel brakes, functional check
516-005	3.00	Brake disc, replacing
516-050	2.50	Brake piston, replacing seals
517-005	3.00	Brake disc, replacing
517-050	2.50	Brake piston, replacing seals
52		HYDRAULIC BRAKE SYSTEM
520-002	0.20	Brake system, checking function, retardation
520-005	0.30	Brake system, check and adjusting pressure in circuit
520-036	0.80	Brake system charging, checking
520-037	0.30	Brake system, bleeding
520-037	0.30	Brake system, bleeding
520-111	0.20	Automatic brake, function check
527-001	0.10	Accumulator removed, checking charging pressure

Op.no.	time (h)	Notes
527-003	0.50	Accumulators, checking in machine
527-012	0.40	Accumulator, removal
527-013	0.40	Accumulator, installation
55		PARKING BRAKE
550-006	4.00	Parking brake, replacing discs and seals
550-023	0.10	Parking brake, function checking
6		STEERING
60		GENERAL
600-001	0.50	Steering system, function check
64		STEERING
645-011	2.50	Left steering cylinder, removal
645-012	2.50	Left steering cylinder, installation
645-013	2.50	Right steering cylinder, removal
645-014	1.75	Right steering cylinder, installation
645-028	0.40	Steering system, checking and adjusting working pressure
645-055	2.00	Left steering cylinder, replacing bearings
645-056	1.25	Right steering cylinder, replacing bearings
645-063	0.60	Steering cylinder, repacking
645-077	0.90	Steering cylinder removed, reconditioning incl replacing bearings
647-091	0.70	Secondary steering pump, checking and adjusting working pressure
66		LEVER STEERING
660-006	0.90	Comfort drive control (CDC), angle sensor, changing
660-007	1.25	Comfort drive control (CDC), solenoid valve, changing
660-011	0.20	Lever steering (CDC), functional check
660-012	0.40	Comfort Drive Control, servo pressure, checking
660-013	0.90	Comfort Drive Control (CDC), joystick, changing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	1.50	Counterweight, removing
716-002	1.25	Counterweight, fitting

Op.no.	time (h)	Notes
74		FRAME LINK
741-036	19.00	Frame joint, replacing bearings
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-002	0.50	Front wheel, removal
771-003	0.30	Front wheel, installation
771-004	0.50	Rear wheel, removing
771-005	0.30	Rear wheel, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.50	Cab, removing
810-002	4.00	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.60	Engine hood, removing
821-002	1.00	Engine hood, installing
821-010	0.60	Actuator, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-054	0.30	Electric door opener, control unit, replacing
831-055	0.30	Electric door opener, locking motor, replacing
831-056	0.20	Electric door opener, rotor switch, replacing
831-057	0.30	Electric door opener, opening support motor, replacing
834-013	0.30	Door lock cylinder, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	2.50	Windscreen, replacing
85		CAB INTERIOR/UPHOLSTERY
852-010	0.40	Operator's seat, securing
87		AIR CONDITIONING UNIT
870-010	0.50	ECC, MID 146, changing pre-programmed ECU
870-011	0.80	ECC, MID 146, changing non-programmed ECU
870-012	0.90	Climate unit, removing
870-013	1.25	Climate unit, installing
870-014	0.90	Pause heater, replacing
873-006	2.50	Fan motor, replacing
873-008	1.25	Heat control valve, replacing
873-011	0.80	Air mix door actuator, replacing
874-001	1.75	Refrigerant, filling incl vacuum pumping

Op.no.	time (h)	Notes
874-002	0.80	Refrigerant, draining
874-012	3.00	Evaporator, replacing incl draining and filling
874-024	3.00	Evaporator, replacing
874-025	4.00	Expansion valve, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-001	0.50	Hydraulic system, warming up
900-002	3.00	Hydraulic system, bleeding
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-018	0.20	Back-up valve, checking and adjusting
912-021	0.60	Shock valve, tilt function, checking
912-023	0.60	Shock valve lift function, checking
912-121	0.90	Lift, solenoid valve, changing
912-122	0.70	Lower, solenoid valve, changing
912-123	1.00	Tilt in, solenoid valve, changing
912-124	0.90	Tilt out, solenoid valve, changing
912-125	0.70	Lift/lower, angle sensor, changing
912-126	2.00	Tilt in/out, angle sensor, changing
912-127	0.20	Tilt, functional check
912-151	0.30	Back-up valve, replacing
912-226	0.20	Lift/lower function, checking
913-001	0.60	Hydraulic pump, checking and adjusting standby pressure and working pressure
913-034	0.20	Lifting time, checking
913-050	1.25	Hydraulic pump P2, removal
913-051	2.50	Hydraulic pump P2, installation
913-059	0.70	Hydraulic pump P3, checking function
913-060	1.00	Hydraulic pump P1, removal
913-061	2.00	Hydraulic pump P1, installation
914-047	0.20	Servo accumulator, removal
914-047	0.20	Servo accumulator, removal
914-048	0.10	Servo accumulator, installation
914-048	0.10	Servo accumulator, installation
914-049	0.40	Accumulator removed, checking
914-055	0.20	Servo pressure, checking and adjusting
914-063	0.60	Servo pressure, checking at the spool in control valve
914-905	0.90	Single lever control electric servo, replacing

Op.no.	time (h)		Notes
916-001	0.30	Boom suspension system, functional check	
916-003	0.60	Boom suspension accumulator, reconditioning	
916-006	0.60	Boom suspension system, pressure reduction, safety valve, checking and adjusting	
916-008	0.70	Boom suspension system, right accumulator, removal	1000 - 8373
916-008	1.00	Boom suspension system, right accumulator, removal	8374 - 99999
916-009	1.25	Boom suspension system, right accumulator, installation	1000 - 8373
916-009	1.50	Boom suspension system, right accumulator, installation	8374 - 99999
916-010	1.00	Boom suspension system, left accumulator, removal	8374 - 99999
916-010	0.60	Boom suspension system, left accumulator, removal	1000 - 8373
916-011	1.50	Boom suspension system, left accumulator, installation	8374 - 99999
916-011	1.25	Boom suspension system, left accumulator, installation	1000 - 8373
916-017	0.50	3rd/4th hydraulic function, shock valve, checking	
916-018	0.60	3rd/4th hydraulic function, solenoid valve, changing	
916-020	0.20	3rd/4th hydraulic function, checking and adjusting pressure	
916-070	0.30	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing	
916-072	0.20	Accumulator, boom suspension system, discarding	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-036	0.10	Attachment locking, functional check	
94		UNIT, LOAD HANDLING	
945-005	1.75	Lift cylinder, repacking in machine	
945-009	2.00	Tilt cylinder, repacking in machine	
99		MISCELLANEOUS	
992-002	4.00	Fire suppression system, actions after activation	
992-003	4.00	Fire suppression system, actions after manual activation	
993-025	2.50	Automatic lubrication pump unit, reconditioning	
993-030	0.80	Shift valve, checking	

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-004	0.50	Maintenance service, every 50 hours
173-007	1.00	Maintenance service, every 250 hours
173-010	2.50	Maintenance service, every 500 hours
173-012	3.00	Maintenance service, every 1000 hours
173-014	6.50	Maintenance service, every 2000 hours
173-018	7.50	Maintenance service, every 4000 hours
173-019	0.80	Maintenance service, every 4500 hours
173-022	2.50	Maintenance service, every 6000 hours
173-042	1.75	Maintenance service, first 1000 hours
173-150	1.75	Maintenance service, fire suppression system
176-001	0.80	Mechanical release of parking brake
19		GENERAL
191-021	0.20	Service position 1
191-022	0.20	Service position 2
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.00	E-ECU, MID 128, changing non-programmed ECU
200-200	0.30	Engine belts, replacing
21		ENGINE
210-002	4.50	Compression test
210-070	5.00	Engine, removing
210-072	6.50	Engine, installing
210-092	0.40	Engine rotation speed sensor (camshaft), replacing
210-093	0.60	Engine rotation speed sensor (crank shaft), replacing
212-071	0.70	Crankcase ventilation separator, replacing
214-012	2.00	Valves, adjusting
218-007	2.00	Engine mounting rear, changing
22		LUBRICATING SYSTEM
221-022	0.30	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding

Op.no.	time (h)	Notes
233-004	0.30	Feed pump, checking feed pressure
233-008	1.00	Fuel pump, replacing
236-002	0.50	Stall speed, checking
237-002	3.50	Injectors, replacing all
237-017	11.00	Injector sleeves, replacing
237-032	2.00	High pressure fuel pump, replacing
237-033	1.50	Fuel control valve (FCV), replacing
237-034	3.00	Pressure relief valve (PRV), replacing
237-035	0.30	Fuel rail pressure sensor, replacing
237-124	0.70	High pressure fuel system, pressure relief
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	1.25	Exhaust pipe, flexible tube, replacing
254-001	2.00	Diesel particulate filter, check and clean
254-022	1.50	ACM (After treatment control module), replacing, non-programmed
254-023	1.25	ACM (After treatment control module), replacing, pre-programmed
254-031	0.90	Air pump, replacing
254-033	1.50	Burner, replacing
254-043	0.30	Spark plug control unit, replacing
254-044	0.20	Glow plug, replacing
254-046	0.20	Spark plug, replacing
254-047	0.20	Spark plug, checking
254-048	0.20	Spark plug cable, replacing
254-049	0.40	Throttle, replacing
254-050	1.25	Fuel metering unit A, replacing
254-051	2.50	Fuel metering unit B, replacing
254-052	0.50	Air pump safety valve, replacing
254-053	0.80	Glow plug control unit, replacing
254-055	1.25	DPF bracket, replacing
254-056	0.40	NOx sensor, replacing
254-060	2.00	Diesel oxidation catalyst, replacing
254-066	0.40	Exhaust Aftertreatment System, T-junction, replacing
255-009	0.50	Waste gate, testing
255-070	0.70	Turbocharger, removing
255-072	1.75	Turbocharger, installing
256-006	1.25	Preheating coil, replacing
258-002	4.00	Intercooler, replacing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
260-003	0.60	Cooling system, pressure control
261-011	1.25	Radiator, removing

Op.no.	time (h)	Notes
261-013	1.75	Radiator, installing
262-002	0.90	Coolant pump, replacing
262-098	1.00	Thermostat, replacing
263-072	0.20	Fan control valve, seal replacement
263-081	0.60	Hydraulic pump P3, removal
263-082	1.25	Hydraulic pump P3, installation
29		Miscellaneous
293-001	3.00	EGR cooler, replacing
293-004	3.00	EGR cooler, cleaning
293-005	3.00	EGR valve, replacing
293-006	0.20	EGR temperature sensor, replacing
293-007	0.20	EGR pressure sensor, replacing
293-008	1.25	EGR Actuator, replacing
293-010	0.40	EGR Venturi tube, replacing
293-011	0.40	EGR reed valve, checking
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	0.80	I-ECU, MID 140, changing non-programmed ECU
300-074	0.30	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-002	0.30	Batteries, replacing
311-005	0.40	Battery condition, check
32		ALTERNATOR; CHARGE REGULATOR
321-003	0.40	Alternator, removing
321-004	0.40	Alternator, installing
36		OTHER ELECTRICAL EQUIPMENT
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-066	0.70	V-ECU, MID 187, changing pre-programmed ECU
39		MISCELLANEOUS
398-004	0.70	CareTrack battery, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.80	Transmission oil pressure, checking

Op.no.	time (h)	Notes
421-002	0.90	Transmission oil pressure, checking
421-048	1.25	Gear selector valve, replacing one solenoid
421-052	2.00	Seal for front output shaft, replacing
421-054	1.75	Seal for rear output shaft, replacing
421-070	7.00	Transmission, removing
421-072	11.00	Transmission, installing
421-091	1.50	Lock up valve, replacing
421-099	0.70	Transmission, calibration
421-100	0.20	Transmission, function check
421-100	0.30	Transmission, function check
46		FRONT AXLE; REAR AXLE
461-037	1.00	Hub reduction, removing
461-038	1.25	Hub reduction, installing
461-043	4.50	Hub, replacing seal
463-002	3.00	Axle, removing
463-003	2.50	Axle, installing
463-037	5.50	Axle suspension, replacing bushes and seals
463-043	4.50	Hub, replacing seal
463-045	1.00	Hub reduction, removing
463-046	1.25	Hub reduction, installing
468-006	0.20	Differential lock, function check
468-051	1.25	Differential lock, adjusting
5		BRAKE
51		WHEEL BRAKE
510-003	0.40	Brake discs, measuring wear
510-004	0.10	Wheel brakes, functional check
516-005	3.00	Brake disc, replacing
516-050	2.50	Brake piston, replacing seals
517-005	3.00	Brake disc, replacing
517-050	2.50	Brake piston, replacing seals
52		HYDRAULIC BRAKE SYSTEM
520-002	0.20	Brake system, checking function, retardation
520-005	0.30	Brake system, check and adjusting pressure in circuit
520-036	0.80	Brake system charging, checking
520-037	0.30	Brake system, bleeding
520-037	0.30	Brake system, bleeding
520-111	0.20	Automatic brake, function check
527-001	0.10	Accumulator removed, checking charging pressure

Op.no.	time (h)	Notes
527-003	0.50	Accumulators, checking in machine
527-012	0.40	Accumulator, removal
527-013	0.40	Accumulator, installation
55		PARKING BRAKE
550-006	4.00	Parking brake, replacing discs and seals
550-023	0.10	Parking brake, function checking
6		STEERING
60		GENERAL
600-001	0.50	Steering system, function check
64		STEERING
645-011	2.50	Left steering cylinder, removal
645-012	2.50	Left steering cylinder, installation
645-013	2.50	Right steering cylinder, removal
645-014	1.75	Right steering cylinder, installation
645-028	0.40	Steering system, checking and adjusting working pressure
645-055	2.00	Left steering cylinder, replacing bearings
645-056	1.25	Right steering cylinder, replacing bearings
645-063	0.60	Steering cylinder, repacking
645-077	0.90	Steering cylinder removed, reconditioning incl replacing bearings
647-091	0.70	Secondary steering pump, checking and adjusting working pressure
66		LEVER STEERING
660-006	0.90	Comfort drive control (CDC), angle sensor, changing
660-007	1.25	Comfort drive control (CDC), solenoid valve, changing
660-011	0.20	Lever steering (CDC), functional check
660-012	0.40	Comfort Drive Control, servo pressure, checking
660-013	0.90	Comfort Drive Control (CDC), joystick, changing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	1.50	Counterweight, removing
716-002	1.25	Counterweight, fitting

Op.no.	time (h)	Notes
74		FRAME LINK
741-036	19.00	Frame joint, replacing bearings
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-002	0.50	Front wheel, removal
771-003	0.30	Front wheel, installation
771-004	0.50	Rear wheel, removing
771-005	0.30	Rear wheel, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.50	Cab, removing
810-002	4.00	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.60	Engine hood, removing
821-002	1.00	Engine hood, installing
821-010	0.60	Actuator, replacing
821-012	0.20	Engine hood, manually operating
83		DOORS; HATCH; COVER PLATE, (all)
831-054	0.30	Electric door opener, control unit, replacing
831-055	0.30	Electric door opener, locking motor, replacing
831-056	0.20	Electric door opener, rotor switch, replacing
831-057	0.30	Electric door opener, opening support motor, replacing
834-013	0.30	Door lock cylinder, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	2.50	Windscreen, replacing
85		CAB INTERIOR/UPHOLSTERY
852-010	0.40	Operator's seat, securing
87		AIR CONDITIONING UNIT
870-010	0.50	ECC, MID 146, changing pre-programmed ECU
870-011	0.80	ECC, MID 146, changing non-programmed ECU
870-012	0.90	Climate unit, removing
870-013	1.25	Climate unit, installing
870-014	0.90	Pause heater, replacing
873-004	2.50	Heater core, replacing
873-006	2.50	Fan motor, replacing
873-008	1.25	Heat control valve, replacing

Op.no.	time (h)	Notes
873-011	0.80	Air mix door actuator, replacing
874-001	1.75	Refrigerant, filling incl vacuum pumping
874-002	0.80	Refrigerant, draining
874-012	3.00	Evaporator, replacing incl draining and filling
874-024	3.00	Evaporator, replacing
874-025	4.00	Expansion valve, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-001	0.50	Hydraulic system, warming up
900-002	3.00	Hydraulic system, bleeding
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-018	0.20	Back-up valve, checking and adjusting
912-021	0.60	Shock valve, tilt function, checking
912-023	0.60	Shock valve lift function, checking
912-121	0.90	Lift, solenoid valve, changing
912-122	0.70	Lower, solenoid valve, changing
912-123	1.00	Tilt in, solenoid valve, changing
912-124	0.90	Tilt out, solenoid valve, changing
912-125	0.70	Lift/lower, angle sensor, changing
912-126	2.00	Tilt in/out, angle sensor, changing
912-127	0.20	Tilt, functional check
912-151	0.30	Back-up valve, replacing
912-226	0.20	Lift/lower function, checking
913-001	0.60	Hydraulic pump, checking and adjusting standby pressure and working pressure
913-034	0.20	Lifting time, checking
913-050	1.25	Hydraulic pump P2, removal
913-051	2.50	Hydraulic pump P2, installation
913-059	0.70	Hydraulic pump P3, checking function
913-060	1.00	Hydraulic pump P1, removal
913-061	2.00	Hydraulic pump P1, installation
914-047	0.20	Servo accumulator, removal
914-047	0.20	Servo accumulator, removal
914-048	0.10	Servo accumulator, installation
914-048	0.10	Servo accumulator, installation
914-049	0.40	Accumulator removed, checking
914-055	0.20	Servo pressure, checking and adjusting

Op.no.	time (h)		Notes
914-063	0.60	Servo pressure, checking at the spool in control valve	
914-905	0.90	Single lever control electric servo, replacing	
916-001	0.30	Boom suspension system, functional check	
916-003	0.60	Boom suspension accumulator, reconditioning	
916-006	0.60	Boom suspension system, pressure reduction, safety valve, checking and adjusting	
916-008	0.70	Boom suspension system, right accumulator, removal	1000 - 30461
916-008	1.00	Boom suspension system, right accumulator, removal	30462 - 99999
916-009	1.25	Boom suspension system, right accumulator, installation	1000 - 30461
916-009	1.50	Boom suspension system, right accumulator, installation	30462 - 99999
916-010	1.00	Boom suspension system, left accumulator, removal	30462 - 99999
916-010	0.60	Boom suspension system, left accumulator, removal	1000 - 30461
916-011	1.50	Boom suspension system, left accumulator, installation	30462 - 99999
916-011	1.25	Boom suspension system, left accumulator, installation	1000 - 30461
916-017	0.50	3rd/4th hydraulic function, shock valve, checking	
916-018	0.60	3rd/4th hydraulic function, solenoid valve, changing	
916-020	0.20	3rd/4th hydraulic function, checking and adjusting pressure	
916-070	0.30	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing	
916-072	0.20	Accumulator, boom suspension system, discarding	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-036	0.10	Attachment locking, functional check	
94		UNIT, LOAD HANDLING	
945-005	1.75	Lift cylinder, repacking in machine	
945-009	2.00	Tilt cylinder, repacking in machine	
99		MISCELLANEOUS	
992-002	4.00	Fire suppression system, actions after activation	
992-003	4.00	Fire suppression system, actions after manual activation	
993-025	2.50	Automatic lubrication pump unit, reconditioning	
993-030	0.80	Shift valve, checking	

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-004	0.50	Maintenance service, every 50 hours	
173-007	0.80	Maintenance service, every 250 hours	
173-010	2.50	Maintenance service, every 500 hours	
173-012	3.00	Maintenance service, every 1000 hours	
173-014	4.50	Maintenance service, every 2000 hours	18501 - 18927 18928 - 22000
173-014	5.50	Maintenance service, every 2000 hours	22001 - 23294 23295 - 99999
173-018	9.50	Maintenance service, every 4000 hours	22001 - 23294 23295 - 99999
173-018	8.50	Maintenance service, every 4000 hours	18501 - 18927 18928 - 22000
173-019	3.00	Maintenance service, every 4500 hours	22001 - 99999
173-022	0.40	Maintenance service, every 6000 hours	
173-024	0.20	Maintenance service, every 8000 hours	22001 - 23294 23295 - 99999
173-028	0.40	Maintenance service, every 12000 hours	22001 - 99999
173-042	1.75	Maintenance service, first 1000 hours	
173-150	1.75	Maintenance service, fire suppression system	
176-001	0.80	Mechanical release of parking brake	
19		GENERAL	
191-021	0.20	Service position 1	
191-022	0.20	Service position 2	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-009	0.30	VCADS Pro, MID 128, programming E-ECU	18501 - 18927 18928 - 22000
200-009	1.75	VCADS Pro, MID 128, programming E-ECU	22001 - 23294 23295 - 99999
200-068	3.00	E-ECU, MID 128, changing non-programmed ECU	
200-070	3.00	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-002	8.00	Compression test	
210-070	6.00	Engine, removing	
210-072	11.00	Engine, installing	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	

Op.no.	time (h)		Notes
210-092	0.50	Engine rotation speed sensor (camshaft), replacing	
212-071	0.70	Crankcase ventilation separator, replacing	22001 - 23294 23295 - 99999
214-012	3.00	Valves, adjusting	18501 - 18927 18928 - 22000
214-012	3.00	Valves, adjusting	22001 - 23294 23295 - 99999
214-092	9.50	Rocker arms, replacing	
215-042	8.50	Camshaft, replacing	
215-043	29.00	Camshaft setting, checking	
22		LUBRICATING SYSTEM	
221-022	0.30	Lubrication oil pressure, checking with pressure gauge	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
230-002	1.00	Air in fuel system, checking	
233-001	0.30	Fuel system, bleeding	18501 - 18927 18928 - 22000
233-001	0.30	Fuel system, bleeding	22001 - 23294 23295 - 99999
233-002	0.60	Feed pump, replacing	
233-004	0.10	Feed pump, checking feed pressure	
236-002	0.50	Stall speed, checking	
237-007	1.50	Overflow valve, replacing	
237-012	6.00	Unit injector, replacing	
237-017	11.00	Injector sleeves, replacing	
25		INLET SYSTEM; EXHAUST SYSTEM	
252-021	0.50	Exhaust pipe, flexible tube, replacing	
254-001	1.25	Diesel particulate filter, check and clean	22001 - 23294 23295 - 99999
254-021	3.00	Atomization unit, replacing	22001 - 23294 23295 - 99999
254-022	0.80	ACM (After treatment control module), replacing, non-programmed	22001 - 23294 23295 - 99999
254-023	0.50	ACM (After treatment control module), replacing, pre-programmed	22001 - 23294 23295 - 99999
254-031	1.25	Air pump, replacing	22001 - 23294 23295 - 99999
254-033	2.50	Burner, replacing	22001 - 23294 23295 - 99999
254-034	1.75	Compressor, replacing	22001 - 23294 23295 - 99999
254-042	0.60	Air purge tank, replacing	22001 - 23294 23295 - 99999

Op.no.	time (h)		Notes
254-046	2.00	Spark plug, replacing	22001 - 23294 23295 - 99999
254-047	2.00	Spark plug, checking	22001 - 23294 23295 - 99999
254-048	0.20	Spark plug cable, replacing	22001 - 23294 23295 - 99999
254-061	3.00	Exhaust aftertreatment system, fuel pump, replacing	22001 - 23294 23295 - 99999
254-063	2.50	Aftertreatment support unit (ASU), replacing	22001 - 23294 23295 - 99999
254-064	0.50	High pressure air system, pressure, checking	22001 - 23294 23295 - 99999
254-065	0.60	Air pump flow, checking	22001 - 23294 23295 - 99999
254-069	1.25	Exhaust aftertreatment system fuel flow, checking	22001 - 23294 23295 - 99999
254-125	1.75	Exhaust aftertreatment fuel injector, replacing	22001 - 23294 23295 - 99999
255-002	0.90	Turbocharger, inspection	18501 - 18927 18928 - 22000
255-003	0.70	Actuator, variable turbocharger, replacing	22001 - 23294 23295 - 99999
255-071	1.75	Turbocharger, replacing	22001 - 23294 23295 - 99999
26		COOLING SYSTEM	
260-001	0.70	Carbon dioxide in coolant system, checking	
260-003	0.60	Cooling system, pressure control	
263-072	0.20	Fan control valve, seal replacement	
29		Miscellaneous	
293-001	4.00	EGR cooler, replacing	22001 - 23294 23295 - 99999
293-002	0.70	EGR cooler, pressure test	22001 - 23294 23295 - 99999
293-002	2.00	EGR cooler, pressure test	22001 - 23294 23295 - 99999
293-003	4.00	EGR Venturi tube, checking	22001 - 23294 23295 - 99999
293-004	6.50	EGR cooler, cleaning	22001 - 23294 23295 - 99999
293-005	1.00	EGR valve, replacing	22001 - 23294 23295 - 99999
293-006	0.20	EGR temperature sensor, replacing	22001 - 23294 23295 - 99999
293-007	0.20	EGR pressure sensor, replacing	22001 - 23294 23295 - 99999

Op.no.	time (h)	Notes	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	0.80	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.30	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-002	0.30	Batteries, replacing	
311-005	0.50	Battery condition, check	
33		STARTING SYSTEM	
331-018	0.80	Starter motor, replacing	
36		OTHER ELECTRICAL EQUIPMENT	
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	
366-066	0.70	V-ECU, MID 187, changing pre-programmed ECU	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-008	0.20	Engine rotation speed sensor, replacing	
39		MISCELLANEOUS	
398-004	0.70	CareTrack battery, replacing	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-002	0.80	Transmission oil pressure, checking	
421-052	2.00	Seal for front output shaft, replacing	
421-054	1.75	Seal for rear output shaft, replacing	
421-070	7.50	Transmission, removing	22001 - 23294
421-070	6.50	Transmission, removing	23295 - 99999
421-072	12.00	Transmission, installing	22001 - 23294
421-072	9.50	Transmission, installing	23295 - 99999
421-091	0.60	Lock up valve, replacing	
421-099	0.70	Transmission, calibration	
421-100	0.30	Transmission, function check	
46		FRONT AXLE; REAR AXLE	
461-037	1.00	Hub reduction, removing	
461-038	1.50	Hub reduction, installing	
461-043	5.50	Hub, replacing seal	
463-002	2.50	Axle, removing	
463-003	4.00	Axle, installing	
463-037	6.00	Axle suspension, replacing bushes and seals	

Op.no.	time (h)	Notes
463-043	6.00	Hub, replacing seal
463-045	1.25	Hub reduction, removing
463-046	1.50	Hub reduction, installing
468-006	0.20	Differential lock, function check
468-051	1.25	Differential lock, adjusting

5**BRAKE****51****WHEEL BRAKE**

510-003	0.40	Brake discs, measuring wear
510-004	0.10	Wheel brakes, functional check
516-005	3.00	Brake disc, replacing
516-050	2.50	Brake piston, replacing seals
517-005	3.00	Brake disc, replacing
517-050	3.00	Brake piston, replacing seals

52**HYDRAULIC BRAKE SYSTEM**

520-002	0.20	Brake system, checking function, retardation
520-005	0.30	Brake system, check and adjusting pressure in circuit
520-036	0.20	Brake system charging, checking
520-036	0.80	Brake system charging, checking
520-037	0.30	Brake system, bleeding
520-111	0.20	Automatic brake, function check
527-001	0.10	Accumulator removed, checking charging pressure
527-003	0.50	Accumulators, checking in machine
527-012	0.30	Accumulator, removal
527-013	0.30	Accumulator, installation

55**PARKING BRAKE**

550-006	4.00	Parking brake, replacing discs and seals
550-023	0.10	Parking brake, function checking

6**STEERING****60****GENERAL**

600-001	0.50	Steering system, function check
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64**STEERING**

645-011	0.80	Left steering cylinder, removal
645-012	1.50	Left steering cylinder, installation
645-013	0.70	Right steering cylinder, removal
645-014	1.25	Right steering cylinder, installation

Op.no.	time (h)	Notes	
645-028	0.40	Steering system, checking and adjusting working pressure	
645-060	3.50	Steering cylinder, repacking in machine	
647-091	0.70	Secondary steering pump, checking and adjusting working pressure	
66		LEVER STEERING	
660-006	0.90	Comfort drive control (CDC), angle sensor, changing	
660-007	0.90	Comfort drive control (CDC), solenoid valve, changing	
660-011	0.20	Lever steering (CDC), functional check	
660-012	0.40	Comfort Drive Control, servo pressure, checking	
660-013	0.90	Comfort Drive Control (CDC), joystick, changing	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	1.25	Counterweight, removing	
716-002	1.25	Counterweight, fitting	
74		FRAME LINK	
741-036	19.00	Frame joint, replacing bearings	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-002	0.70	Front wheel, removal	
771-003	0.60	Front wheel, installation	
771-004	0.70	Rear wheel, removing	
771-005	0.60	Rear wheel, installing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	3.00	Cab, removing	22001 - 23294
810-002	4.50	Cab, installing	22001 - 23294
810-065	1.00	Cab, position 1	23295 - 99999
810-066	1.75	Cab, position 2	23295 - 99999
810-067	0.80	Cab, position 1, restoring	23295 - 99999
810-068	2.50	Cab, position 2, restoring	23295 - 99999
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-001	0.60	Engine hood, removing	
821-002	1.00	Engine hood, installing	

Op.no.	time (h)	Notes	
821-010	0.60	Actuator, replacing	
821-012	0.20	Engine hood, manually operating	
83		DOORS; HATCH; COVER PLATE, (all)	
831-054	0.30	Electric door opener, control unit, replacing	
831-055	0.30	Electric door opener, locking motor, replacing	
831-056	0.20	Electric door opener, rotor switch, replacing	
831-057	0.30	Electric door opener, opening support motor, replacing	
834-013	0.30	Door lock cylinder, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-002	2.50	Windscreen, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-010	0.40	Operator's seat, securing	
87		AIR CONDITIONING UNIT	
870-010	0.50	ECC, MID 146, changing pre-programmed ECU	
870-011	0.80	ECC, MID 146, changing non-programmed ECU	
870-012	0.90	Climate unit, removing	
870-013	1.25	Climate unit, installing	
870-014	0.90	Pause heater, replacing	
873-004	2.50	Heater core, replacing	
873-006	2.50	Fan motor, replacing	
873-008	1.25	Heat control valve, replacing	
873-011	0.80	Air mix door actuator, replacing	
874-001	1.75	Refrigerant, filling incl vacuum pumping	
874-002	0.80	Refrigerant, draining	
874-012	3.00	Evaporator, replacing incl draining and filling	
874-018	4.00	Compressor, replacing	
874-022	3.00	Drying filter, replacing	
874-022	0.30	Drying filter, replacing	
			22001 - 23294 23295 - 99999
874-023	3.50	Condenser, replacing	
874-024	3.00	Evaporator, replacing	
874-025	4.00	Expansion valve, replacing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-001	0.50	Hydraulic system, warming up	
900-002	3.00	Hydraulic system, bleeding	

Op.no.	time (h)	Notes
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-018	0.20	Back-up valve, checking and adjusting
912-021	0.60	Shock valve, tilt function, checking
912-023	0.60	Shock valve lift function, checking
912-121	0.90	Lift, solenoid valve, changing
912-122	0.70	Lower, solenoid valve, changing
912-123	1.00	Tilt in, solenoid valve, changing
912-124	0.90	Tilt out, solenoid valve, changing
912-125	0.70	Lift/lower, angle sensor, changing
912-126	2.00	Tilt in/out, angle sensor, changing
912-127	0.20	Tilt, functional check
912-151	0.30	Back-up valve, replacing
912-226	0.20	Lift/lower function, checking
913-001	1.00	Hydraulic pump, checking and adjusting standby pressure and working pressure
913-034	0.20	Lifting time, checking
913-050	1.50	Hydraulic pump P2, removal
913-051	4.00	Hydraulic pump P2, installation
913-059	0.70	Hydraulic pump P3, checking function
913-060	1.25	Hydraulic pump P1, removal
913-061	2.00	Hydraulic pump P1, installation
913-062	0.90	Hydraulic pump P3, removal
913-063	3.00	Hydraulic pump P3, installation
914-047	0.20	Servo accumulator, removal
914-048	0.10	Servo accumulator, installation
914-049	0.40	Accumulator removed, checking
914-055	0.20	Servo pressure, checking and adjusting
914-063	0.60	Servo pressure, checking at the spool in control valve
914-905	0.90	Single lever control electric servo, replacing
916-001	0.30	Boom suspension system, functional check
916-003	0.60	Boom suspension accumulator, reconditioning
916-006	0.60	Boom suspension system, pressure reduction, safety valve, checking and adjusting
916-008	1.00	Boom suspension system, right accumulator, removal
916-009	1.50	Boom suspension system, right accumulator, installation
916-010	1.00	Boom suspension system, left accumulator, removal
916-011	1.50	Boom suspension system, left accumulator, installation

Op.no.	time (h)	Notes
916-017	0.50	3rd/4th hydraulic function, shock valve, checking
916-018	0.60	3rd/4th hydraulic function, solenoid valve, changing
916-020	0.20	3rd/4th hydraulic function, checking and adjusting pressure
916-070	0.30	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing
916-072	0.20	Accumulator, boom suspension system, discarding
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-036	0.10	Attachment locking, functional check
99		MISCELLANEOUS
992-002	4.00	Fire suppression system, actions after activation
992-003	4.00	Fire suppression system, actions after manual activation
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-004	0.50	Maintenance service, every 50 hours	
173-007	0.80	Maintenance service, every 250 hours	
173-010	2.50	Maintenance service, every 500 hours	
173-012	3.00	Maintenance service, every 1000 hours	
173-014	4.50	Maintenance service, every 2000 hours	16001 - 16301 16302 - 19000
173-014	5.50	Maintenance service, every 2000 hours	22035 - 99999 19001 - 22034
173-018	9.50	Maintenance service, every 4000 hours	22035 - 99999 19001 - 22034
173-018	8.50	Maintenance service, every 4000 hours	16001 - 16301 16302 - 19000
173-019	3.00	Maintenance service, every 4500 hours	19001 - 19999
173-022	0.40	Maintenance service, every 6000 hours	
173-024	0.20	Maintenance service, every 8000 hours	22035 - 99999 19001 - 22034
173-028	0.40	Maintenance service, every 12000 hours	19001 - 19999
173-042	1.75	Maintenance service, first 1000 hours	
173-150	1.75	Maintenance service, fire suppression system	
176-001	0.80	Mechanical release of parking brake	
19		GENERAL	
191-021	0.20	Service position 1	
191-022	0.20	Service position 2	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-009	0.30	VCADS Pro, MID 128, programming E-ECU	16001 - 16301 16302 - 19000
200-009	1.75	VCADS Pro, MID 128, programming E-ECU	19001 - 22034 22035 - 99999
200-068	3.00	E-ECU, MID 128, changing non-programmed ECU	
200-070	3.00	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-002	8.00	Compression test	
210-070	6.00	Engine, removing	
210-072	11.00	Engine, installing	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	

Op.no.	time (h)		Notes
210-092	0.50	Engine rotation speed sensor (camshaft), replacing	
212-071	0.70	Crankcase ventilation separator, replacing	19001 - 22034 22035 - 99999
214-012	3.00	Valves, adjusting	16001 - 16301 16302 - 19000
214-012	3.00	Valves, adjusting	22035 - 99999 19001 - 22034
214-092	9.50	Rocker arms, replacing	
215-042	8.50	Camshaft, replacing	
215-043	29.00	Camshaft setting, checking	
22		LUBRICATING SYSTEM	
221-022	0.30	Lubrication oil pressure, checking with pressure gauge	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
230-002	1.00	Air in fuel system, checking	
233-001	0.30	Fuel system, bleeding	16001 - 16301 16302 - 19000
233-001	0.30	Fuel system, bleeding	19001 - 22034 22035 - 99999
233-002	0.60	Feed pump, replacing	
233-004	0.10	Feed pump, checking feed pressure	
236-002	0.50	Stall speed, checking	
237-007	1.50	Overflow valve, replacing	
237-012	6.00	Unit injector, replacing	
237-017	11.00	Injector sleeves, replacing	
25		INLET SYSTEM; EXHAUST SYSTEM	
252-021	0.50	Exhaust pipe, flexible tube, replacing	
254-001	1.25	Diesel particulate filter, check and clean	22035 - 99999 19001 - 22034
254-021	3.00	Atomization unit, replacing	19001 - 22034 22035 - 99999
254-022	0.80	ACM (After treatment control module), replacing, non-programmed	19001 - 22034 22035 - 99999
254-023	0.50	ACM (After treatment control module), replacing, pre-programmed	19001 - 22034 22035 - 99999
254-031	1.25	Air pump, replacing	19001 - 22034 22035 - 99999
254-033	2.50	Burner, replacing	19001 - 22034 22035 - 99999
254-034	1.75	Compressor, replacing	19001 - 22034 22035 - 99999
254-042	0.60	Air purge tank, replacing	19001 - 22034 22035 - 99999

Op.no.	time (h)		Notes
254-046	2.00	Spark plug, replacing	19001 - 22034 22035 - 99999
254-047	2.00	Spark plug, checking	19001 - 22034 22035 - 99999
254-048	0.20	Spark plug cable, replacing	22035 - 99999 19001 - 22034
254-061	3.00	Exhaust aftertreatment system, fuel pump, replacing	19001 - 22034 22035 - 99999
254-063	2.50	Aftertreatment support unit (ASU), replacing	19001 - 22034 22035 - 99999
254-064	0.50	High pressure air system, pressure, checking	19001 - 22034 22035 - 99999
254-065	0.60	Air pump flow, checking	19001 - 22034 22035 - 99999
254-069	1.25	Exhaust aftertreatment system fuel flow, checking	19001 - 22034 22035 - 99999
254-125	1.75	Exhaust aftertreatment fuel injector, replacing	19001 - 22034 22035 - 99999
255-002	0.90	Turbocharger, inspection	16001 - 16301 16302 - 19000
255-003	0.70	Actuator, variable turbocharger, replacing	19001 - 22034 22035 - 99999
255-071	1.75	Turbocharger, replacing	19001 - 19999
26		COOLING SYSTEM	
260-001	0.70	Carbon dioxide in coolant system, checking	
260-003	0.60	Cooling system, pressure control	
263-072	0.20	Fan control valve, seal replacement	
29		Miscellaneous	
293-001	4.00	EGR cooler, replacing	19001 - 22034 22035 - 99999
293-002	0.70	EGR cooler, pressure test	19001 - 22034 22035 - 99999
293-002	2.00	EGR cooler, pressure test	19001 - 22034 22035 - 99999
293-003	4.00	EGR Venturi tube, checking	22035 - 99999 19001 - 22034
293-004	6.50	EGR cooler, cleaning	19001 - 22034 22035 - 99999
293-005	1.00	EGR valve, replacing	19001 - 22034 22035 - 99999
293-006	0.20	EGR temperature sensor, replacing	19001 - 22034 22035 - 99999
293-007	0.20	EGR pressure sensor, replacing	19001 - 22034 22035 - 99999

Op.no.	time (h)	Notes	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	0.80	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.30	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-002	0.30	Batteries, replacing	
311-005	0.50	Battery condition, check	
33		STARTING SYSTEM	
331-018	0.80	Starter motor, replacing	
36		OTHER ELECTRICAL EQUIPMENT	
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	
366-066	0.70	V-ECU, MID 187, changing pre-programmed ECU	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-008	0.20	Engine rotation speed sensor, replacing	
39		MISCELLANEOUS	
398-004	0.70	CareTrack battery, replacing	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-002	0.80	Transmission oil pressure, checking	
421-052	2.00	Seal for front output shaft, replacing	
421-054	1.75	Seal for rear output shaft, replacing	
421-070	7.50	Transmission, removing	19001 - 19999
421-070	6.50	Transmission, removing	22035 - 99999
421-072	12.00	Transmission, installing	19001 - 19999
421-072	9.50	Transmission, installing	22035 - 99999
421-091	0.60	Lock up valve, replacing	
421-099	0.70	Transmission, calibration	
421-100	0.30	Transmission, function check	
46		FRONT AXLE; REAR AXLE	
461-037	1.00	Hub reduction, removing	
461-038	1.50	Hub reduction, installing	
461-043	5.50	Hub, replacing seal	
463-002	2.50	Axle, removing	
463-003	4.00	Axle, installing	
463-037	6.00	Axle suspension, replacing bushes and seals	

Op.no.	time (h)	Notes
463-043	6.00	Hub, replacing seal
463-045	1.25	Hub reduction, removing
463-046	1.50	Hub reduction, installing
468-006	0.20	Differential lock, function check
468-051	1.25	Differential lock, adjusting

5**BRAKE****51****WHEEL BRAKE**

510-003	0.40	Brake discs, measuring wear
510-004	0.10	Wheel brakes, functional check
516-005	3.00	Brake disc, replacing
516-050	2.50	Brake piston, replacing seals
517-005	3.00	Brake disc, replacing
517-050	3.00	Brake piston, replacing seals

52**HYDRAULIC BRAKE SYSTEM**

520-002	0.20	Brake system, checking function, retardation
520-005	0.30	Brake system, check and adjusting pressure in circuit
520-036	0.80	Brake system charging, checking
520-037	0.30	Brake system, bleeding
520-111	0.20	Automatic brake, function check
527-001	0.10	Accumulator removed, checking charging pressure
527-003	0.60	Accumulators, checking in machine
527-012	0.40	Accumulator, removal
527-013	0.40	Accumulator, installation

55**PARKING BRAKE**

550-006	4.00	Parking brake, replacing discs and seals
550-023	0.10	Parking brake, function checking

6**STEERING****60****GENERAL**

600-001	0.50	Steering system, function check
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64**STEERING**

645-011	0.80	Left steering cylinder, removal
645-012	1.50	Left steering cylinder, installation
645-013	0.70	Right steering cylinder, removal
645-014	1.25	Right steering cylinder, installation

Op.no.	time (h)	Notes	
645-028	0.40	Steering system, checking and adjusting working pressure	
645-060	3.50	Steering cylinder, repacking in machine	
647-091	0.70	Secondary steering pump, checking and adjusting working pressure	
66		LEVER STEERING	
660-006	0.90	Comfort drive control (CDC), angle sensor, changing	
660-007	0.90	Comfort drive control (CDC), solenoid valve, changing	
660-011	0.20	Lever steering (CDC), functional check	
660-012	0.40	Comfort Drive Control, servo pressure, checking	
660-013	0.90	Comfort Drive Control (CDC), joystick, changing	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	1.25	Counterweight, removing	
716-002	1.25	Counterweight, fitting	
74		FRAME LINK	
741-036	19.00	Frame joint, replacing bearings	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-002	0.70	Front wheel, removal	
771-003	0.60	Front wheel, installation	
771-004	0.70	Rear wheel, removing	
771-005	0.60	Rear wheel, installing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-001	3.00	Cab, removing	19001 - 22034
810-002	4.50	Cab, installing	19001 - 22034
810-065	1.00	Cab, position 1	22035 - 99999
810-066	1.75	Cab, position 2	22035 - 99999
810-067	0.80	Cab, position 1, restoring	22035 - 99999
810-068	2.50	Cab, position 2, restoring	22035 - 99999
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-001	0.60	Engine hood, removing	
821-002	1.00	Engine hood, installing	

Op.no.	time (h)	Notes	
821-010	0.60	Actuator, replacing	
821-012	0.20	Engine hood, manually operating	
83		DOORS; HATCH; COVER PLATE, (all)	
831-054	0.30	Electric door opener, control unit, replacing	
831-055	0.30	Electric door opener, locking motor, replacing	
831-056	0.20	Electric door opener, rotor switch, replacing	
831-057	0.30	Electric door opener, opening support motor, replacing	
834-013	0.30	Door lock cylinder, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-002	2.50	Windscreen, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-010	0.40	Operator's seat, securing	
87		AIR CONDITIONING UNIT	
870-010	0.50	ECC, MID 146, changing pre-programmed ECU	
870-011	0.80	ECC, MID 146, changing non-programmed ECU	
870-012	0.90	Climate unit, removing	
870-013	1.25	Climate unit, installing	
870-014	0.90	Pause heater, replacing	
873-004	2.50	Heater core, replacing	
873-006	2.50	Fan motor, replacing	
873-008	1.25	Heat control valve, replacing	
873-011	0.80	Air mix door actuator, replacing	
874-001	1.75	Refrigerant, filling incl vacuum pumping	
874-002	0.80	Refrigerant, draining	
874-012	3.00	Evaporator, replacing incl draining and filling	
874-018	4.00	Compressor, replacing	
874-022	3.00	Drying filter, replacing	
874-022	0.30	Drying filter, replacing	
			19001 - 22034 22035 - 99999
874-023	3.50	Condenser, replacing	
874-025	4.00	Expansion valve, replacing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-001	0.50	Hydraulic system, warming up	
900-002	3.00	Hydraulic system, bleeding	

Op.no.	time (h)	Notes
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-018	0.20	Back-up valve, checking and adjusting
912-021	0.60	Shock valve, tilt function, checking
912-023	0.60	Shock valve lift function, checking
912-121	0.90	Lift, solenoid valve, changing
912-122	0.70	Lower, solenoid valve, changing
912-123	1.00	Tilt in, solenoid valve, changing
912-124	0.90	Tilt out, solenoid valve, changing
912-125	0.70	Lift/lower, angle sensor, changing
912-126	2.00	Tilt in/out, angle sensor, changing
912-127	0.20	Tilt, functional check
912-151	0.30	Back-up valve, replacing
912-226	0.20	Lift/lower function, checking
913-001	1.00	Hydraulic pump, checking and adjusting standby pressure and working pressure
913-034	0.20	Lifting time, checking
913-050	1.50	Hydraulic pump P2, removal
913-051	4.00	Hydraulic pump P2, installation
913-059	0.70	Hydraulic pump P3, checking function
913-060	1.25	Hydraulic pump P1, removal
913-061	2.00	Hydraulic pump P1, installation
913-062	0.90	Hydraulic pump P3, removal
913-063	3.00	Hydraulic pump P3, installation
914-047	0.20	Servo accumulator, removal
914-048	0.10	Servo accumulator, installation
914-049	0.40	Accumulator removed, checking
914-055	0.20	Servo pressure, checking and adjusting
914-063	0.60	Servo pressure, checking at the spool in control valve
914-905	0.90	Single lever control electric servo, replacing
916-001	0.30	Boom suspension system, functional check
916-003	0.60	Boom suspension accumulator, reconditioning
916-006	0.60	Boom suspension system, pressure reduction, safety valve, checking and adjusting
916-008	1.00	Boom suspension system, right accumulator, removal
916-009	1.50	Boom suspension system, right accumulator, installation
916-010	1.00	Boom suspension system, left accumulator, removal
916-011	1.50	Boom suspension system, left accumulator, installation

Op.no.	time (h)	Notes
916-017	0.50	3rd/4th hydraulic function, shock valve, checking
916-018	0.60	3rd/4th hydraulic function, solenoid valve, changing
916-020	0.20	3rd/4th hydraulic function, checking and adjusting pressure
916-070	0.30	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing
916-072	0.20	Accumulator, boom suspension system, discarding
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-036	0.10	Attachment locking, functional check
99		MISCELLANEOUS
992-002	4.00	Fire suppression system, actions after activation
992-003	4.00	Fire suppression system, actions after manual activation
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-004	0.70	Maintenance service, every 50 hours	
173-007	0.90	Maintenance service, every 250 hours	
173-010	2.50	Maintenance service, every 500 hours	
173-012	3.00	Maintenance service, every 1000 hours	
173-014	4.00	Maintenance service, every 2000 hours	21001 - 21010 21011 - 99999
173-014	5.00	Maintenance service, every 2000 hours	20060 - 21000 20002 - 20059
173-018	9.50	Maintenance service, every 4000 hours	20060 - 21000 20002 - 20059
173-018	8.50	Maintenance service, every 4000 hours	21001 - 21010 21011 - 99999
173-019	3.00	Maintenance service, every 4500 hours	19001 - 19999
173-022	0.40	Maintenance service, every 6000 hours	
173-024	4.00	Maintenance service, every 8000 hours	20060 - 21000 20002 - 20059
173-024	4.00	Maintenance service, every 8000 hours	21001 - 21010 21011 - 99999
173-028	0.40	Maintenance service, every 12000 hours	19001 - 19999
173-042	1.75	Maintenance service, first 1000 hours	
173-150	1.75	Maintenance service, fire suppression system	
19		GENERAL	
191-021	0.20	Service position 1	
191-022	0.20	Service position 2	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-009	0.30	VCADS Pro, MID 128, programming E-ECU	21001 - 21010 21011 - 99999
200-009	1.75	VCADS Pro, MID 128, programming E-ECU	20002 - 20059 20060 - 21000
200-068	3.00	E-ECU, MID 128, changing non-programmed ECU	
200-070	3.00	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-002	8.00	Compression test	
210-070	6.00	Engine, removing	
210-072	11.00	Engine, installing	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	

Op.no.	time (h)		Notes
210-092	0.50	Engine rotation speed sensor (camshaft), replacing	
212-071	0.70	Crankcase ventilation separator, replacing	20002 - 20059 20060 - 21000
214-012	3.00	Valves, adjusting	21001 - 21010 21011 - 99999
214-012	3.00	Valves, adjusting	20060 - 21000 20002 - 20059
214-092	9.50	Rocker arms, replacing	
215-042	8.50	Camshaft, replacing	
215-043	29.00	Camshaft setting, checking	
22		LUBRICATING SYSTEM	
221-022	0.30	Lubrication oil pressure, checking with pressure gauge	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
230-002	1.00	Air in fuel system, checking	
233-001	0.30	Fuel system, bleeding	21001 - 21010 21011 - 99999
233-001	0.30	Fuel system, bleeding	20002 - 20059 20060 - 21000
233-002	0.60	Feed pump, replacing	
233-004	0.10	Feed pump, checking feed pressure	
236-002	0.50	Stall speed, checking	
237-007	1.50	Overflow valve, replacing	
237-012	6.00	Unit injector, replacing	
237-017	11.00	Injector sleeves, replacing	
25		INLET SYSTEM; EXHAUST SYSTEM	
252-021	0.50	Exhaust pipe, flexible tube, replacing	
254-001	1.25	Diesel particulate filter, check and clean	20060 - 21000 20002 - 20059
254-021	3.00	Atomization unit, replacing	20002 - 20059 20060 - 21000
254-022	0.80	ACM (After treatment control module), replacing, non-programmed	20002 - 20059 20060 - 21000
254-023	0.50	ACM (After treatment control module), replacing, pre-programmed	20002 - 20059 20060 - 21000
254-031	1.25	Air pump, replacing	20002 - 20059 20060 - 21000
254-033	2.50	Burner, replacing	20002 - 20059 20060 - 21000
254-034	1.75	Compressor, replacing	20002 - 20059 20060 - 21000
254-042	0.60	Air purge tank, replacing	20002 - 20059 20060 - 21000

Op.no.	time (h)		Notes
254-046	2.00	Spark plug, replacing	20002 - 20059 20060 - 21000
254-047	2.00	Spark plug, checking	20002 - 20059 20060 - 21000
254-048	0.20	Spark plug cable, replacing	20060 - 21000 20002 - 20059
254-061	3.00	Exhaust aftertreatment system, fuel pump, replacing	20002 - 20059 20060 - 21000
254-063	2.50	Aftertreatment support unit (ASU), replacing	20002 - 20059 20060 - 21000
254-064	0.50	High pressure air system, pressure, checking	20002 - 20059 20060 - 21000
254-065	0.60	Air pump flow, checking	20002 - 20059 20060 - 21000
254-069	1.25	Exhaust aftertreatment system fuel flow, checking	20002 - 20059 20060 - 21000
254-125	1.75	Exhaust aftertreatment fuel injector, replacing	20002 - 20059 20060 - 21000
255-002	0.90	Turbocharger, inspection	21001 - 21010 21011 - 99999
255-003	0.70	Actuator, variable turbocharger, replacing	20002 - 20059 20060 - 21000
255-071	1.75	Turbocharger, replacing	
26		COOLING SYSTEM	
260-001	0.70	Carbon dioxide in coolant system, checking	
260-003	0.60	Cooling system, pressure control	
263-072	0.20	Fan control valve, seal replacement	
29		Miscellaneous	
293-001	4.00	EGR cooler, replacing	20002 - 20059 20060 - 21000
293-002	0.70	EGR cooler, pressure test	20002 - 20059 20060 - 21000
293-002	2.00	EGR cooler, pressure test	20002 - 20059 20060 - 21000
293-003	4.00	EGR Venturi tube, checking	20060 - 21000 20002 - 20059
293-004	6.50	EGR cooler, cleaning	20002 - 20059 20060 - 21000
293-005	1.00	EGR valve, replacing	20002 - 20059 20060 - 21000
293-006	0.20	EGR temperature sensor, replacing	20002 - 20059 20060 - 21000
293-007	0.20	EGR pressure sensor, replacing	20002 - 20059 20060 - 21000

Op.no.	time (h)	Notes	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	0.80	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.30	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-002	0.30	Batteries, replacing	
311-005	0.50	Battery condition, check	
33		STARTING SYSTEM	
331-018	0.80	Starter motor, replacing	
36		OTHER ELECTRICAL EQUIPMENT	
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	
366-066	0.70	V-ECU, MID 187, changing pre-programmed ECU	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-008	0.20	Engine rotation speed sensor, replacing	
39		MISCELLANEOUS	
398-004	0.70	CareTrack battery, replacing	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-002	0.80	Transmission oil pressure, checking	
421-052	2.00	Seal for front output shaft, replacing	
421-054	1.75	Seal for rear output shaft, replacing	
421-070	6.50	Transmission, removing	20060 - 99999
421-070	7.50	Transmission, removing	19001 - 19999
421-072	9.50	Transmission, installing	20060 - 99999
421-072	12.00	Transmission, installing	19001 - 19999
421-091	0.60	Lock up valve, replacing	
421-099	0.70	Transmission, calibration	
421-100	0.30	Transmission, function check	
46		FRONT AXLE; REAR AXLE	
461-037	1.00	Hub reduction, removing	
461-038	1.50	Hub reduction, installing	
461-043	5.50	Hub, replacing seal	
463-002	2.50	Axle, removing	
463-003	4.00	Axle, installing	
463-037	6.00	Axle suspension, replacing bushes and seals	

Op.no.	time (h)	Notes
463-043	6.00	Hub, replacing seal
463-045	1.25	Hub reduction, removing
463-046	1.50	Hub reduction, installing
468-006	0.20	Differential lock, function check
468-051	1.25	Differential lock, adjusting

5**BRAKE****51****WHEEL BRAKE**

510-003	0.40	Brake discs, measuring wear
510-004	0.10	Wheel brakes, functional check
516-005	3.00	Brake disc, replacing
516-050	2.50	Brake piston, replacing seals
517-005	3.00	Brake disc, replacing
517-050	3.00	Brake piston, replacing seals

52**HYDRAULIC BRAKE SYSTEM**

520-002	0.20	Brake system, checking function, retardation
520-005	0.30	Brake system, check and adjusting pressure in circuit
520-036	0.80	Brake system charging, checking
520-037	0.30	Brake system, bleeding
520-111	0.20	Automatic brake, function check
527-001	0.10	Accumulator removed, checking charging pressure
527-003	0.60	Accumulators, checking in machine
527-012	0.40	Accumulator, removal
527-013	0.40	Accumulator, installation

55**PARKING BRAKE**

550-006	4.00	Parking brake, replacing discs and seals
550-023	0.10	Parking brake, function checking

6**STEERING****60****GENERAL**

600-001	0.50	Steering system, function check
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64**STEERING**

645-011	0.80	Left steering cylinder, removal
645-012	1.50	Left steering cylinder, installation
645-013	0.70	Right steering cylinder, removal
645-014	1.25	Right steering cylinder, installation

Op.no.	time (h)	Notes	
645-028	0.40	Steering system, checking and adjusting working pressure	
645-060	3.50	Steering cylinder, repacking in machine	
647-091	0.70	Secondary steering pump, checking and adjusting working pressure	
66		LEVER STEERING	
660-006	0.90	Comfort drive control (CDC), angle sensor, changing	
660-007	0.90	Comfort drive control (CDC), solenoid valve, changing	
660-011	0.20	Lever steering (CDC), functional check	
660-012	0.40	Comfort Drive Control, servo pressure, checking	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	1.25	Counterweight, removing	
716-002	1.25	Counterweight, fitting	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-002	0.70	Front wheel, removal	
771-003	0.60	Front wheel, installation	
771-004	0.70	Rear wheel, removing	
771-005	0.60	Rear wheel, installing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-065	1.00	Cab, position 1	20060 - 99999
810-066	1.75	Cab, position 2	20060 - 99999
810-067	0.80	Cab, position 1, restoring	20060 - 99999
810-068	2.50	Cab, position 2, restoring	20060 - 99999
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-010	0.60	Actuator, replacing	
821-012	0.20	Engine hood, manually operating	
83		DOORS; HATCH; COVER PLATE, (all)	
831-054	0.30	Electric door opener, control unit, replacing	
831-055	0.30	Electric door opener, locking motor, replacing	
831-056	0.20	Electric door opener, rotor switch, replacing	

Op.no.	time (h)		Notes
831-057	0.30	Electric door opener, opening support motor, replacing	
834-013	0.30	Door lock cylinder, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-002	2.50	Windscreen, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-010	0.40	Operator's seat, securing	
87		AIR CONDITIONING UNIT	
870-010	0.50	ECC, MID 146, changing pre-programmed ECU	
870-011	0.80	ECC, MID 146, changing non-programmed ECU	
870-012	0.90	Climate unit, removing	
870-013	1.25	Climate unit, installing	
870-014	0.90	Pause heater, replacing	
873-004	2.50	Heater core, replacing	
873-006	2.50	Fan motor, replacing	
873-008	1.25	Heat control valve, replacing	
874-001	1.75	Refrigerant, filling incl vacuum pumping	
874-002	0.80	Refrigerant, draining	
874-012	3.00	Evaporator, replacing incl draining and filling	
874-018	4.00	Compressor, replacing	
874-022	3.00	Drying filter, replacing	
874-022	0.30	Drying filter, replacing	20002 - 20059 20060 - 21000
874-023	3.50	Condenser, replacing	
874-024	3.00	Evaporator, replacing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-001	0.70	Hydraulic system, warming up	
900-002	3.00	Hydraulic system, bleeding	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
912-021	0.60	Shock valve, tilt function, checking	
912-023	0.60	Shock valve lift function, checking	
912-127	0.30	Tilt, functional check	
912-151	0.30	Back-up valve, replacing	
912-159	0.70	Shock valve removed (Control valve 2), checking	

Op.no.	time (h)	Notes
912-164	0.20	Shock valves grapple tilt (Control valve 2), checking
912-226	0.20	Lift/lower function, checking
912-278	0.20	Log mover, function checking
912-279	0.30	Grapple, function checking
912-280	0.20	Rotator, function checking
912-281	0.20	Rotator, checking and adjusting
912-282	0.70	Rotator pin, replacing
913-001	1.00	Hydraulic pump, checking and adjusting standby pressure and working pressure
913-001	1.00	Hydraulic pump, checking and adjusting standby pressure and working pressure
913-050	1.50	Hydraulic pump P2, removal
913-051	4.00	Hydraulic pump P2, installation
913-059	0.70	Hydraulic pump P3, checking function
913-060	1.25	Hydraulic pump P1, removal
913-061	2.00	Hydraulic pump P1, installation
913-062	0.90	Hydraulic pump P3, removal
913-063	3.00	Hydraulic pump P3, installation
914-047	0.20	Servo accumulator, removal
914-048	0.10	Servo accumulator, installation
914-049	0.40	Accumulator removed, checking
914-055	0.20	Servo pressure, checking and adjusting
914-063	0.60	Servo pressure, checking at the spool in control valve
914-066	0.50	Servo pressure, checking at the spool in control valve 2
916-001	0.30	Boom suspension system, functional check
916-002	1.25	Boom suspension accumulator, check and adjusting
916-003	0.60	Boom suspension accumulator, reconditioning
916-070	0.20	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing
916-072	0.20	Accumulator, boom suspension system, discarding
92		MECHANICAL EQUIPMENT/ATTACHMENT
926-035	1.25	Grapple complete, removal at cross member
926-036	2.00	Grapple complete, installing at cross member
99		MISCELLANEOUS
992-002	4.00	Fire suppression system, actions after activation
992-003	4.00	Fire suppression system, actions after manual activation
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
171-001	0.50	Arrival Inspection, according to Inspection Programme
171-002	1.50	Delivery Inspection, according to Inspection Programme
172-002	3.00	Warranty inspection 100 hours
172-004	6.00	Warranty inspection 1000 hours
173-002	0.70	Maintenance service, daily
173-006	1.50	Maintenance service, every 100 hours
173-010	1.50	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-013	3.50	Maintenance service, every 1500 hours
173-014	6.00	Maintenance service, every 2000 hours
173-018	6.00	Maintenance service, every 4000 hours
173-022	7.00	Maintenance service, every 6000 hours
173-059	1.00	Engine, changing oil and filter
173-061	0.50	Transmission, changing oil and filter
173-068	1.00	Rear axle, changing oil
173-069	1.00	Front axle, changing oil
173-070	2.00	Axles, changing oil
173-074	1.50	Hydraulic oil tank, changing oil and filter
173-075	2.50	Hydraulic oil tank, changing oil and filter incl.cleaning tank
176-004	0.30	Towing a disabled machine
19		GENERAL
191-021	0.20	Service position 1
191-022	0.20	Service position 2

2 ENGINE WITH MOUNTING AND EQUIPMENT

21		ENGINE
210-002	1.25	Compression test
210-070	2.00	Engine, removing
210-072	2.50	Engine, installing
211-002	5.00	Cylinder head, replacing gasket
211-068	2.00	Cylinder heads all removed, decarbonizing and grinding in valves
211-071	1.00	Cylinder head removed, pressure testing each
212-011	1.00	Cylinder, cylinder heads removed, measuring wear in all cylinders
214-012	1.00	Valves, adjusting

Op.no.	time (h)	Notes
215-010	2.50	Belt, changing
216-014	1.00	Crankshaft, replacing front oil seal
216-018	1.50	Crankshaft, replacing rear oil seal
217-002	1.50	Sump gasket, replacing incl cleaning oil strainer
22		LUBRICATING SYSTEM
221-006	0.25	Oil pressure relief valve, replacing
223-006	1.00	Oil cooler, replacing
23		FUEL SYSTEM
233-001	0.25	Fuel system, bleeding
233-002	0.50	Feed pump, replacing
233-004	0.25	Feed pump, checking feed pressure
233-011	0.20	Fuel pump, removing
233-012	0.30	Fuel pump, installing
233-014	0.20	Fuel filters, replacing
234-010	7.00	Fuel tank, replacing
236-001	0.70	Idling speed, checking and adjusting
236-070	0.75	Injection pump, removing
237-002	1.00	Injectors, replacing all
237-004	0.50	Injector, replacing one
237-018	0.25	Delivery pipe, replacing one
237-080	1.50	Injectors removed, reconditioning all
25		INLET SYSTEM; EXHAUST SYSTEM
251-002	1.00	Induction manifold, replacing gasket
251-004	0.50	Exhaust manifold, replacing gasket
251-006	0.80	EGR (exhaust gas recirculation) sensor, replacing
252-020	0.50	Silencer, replacing
252-021	0.50	Exhaust pipe, flexible tube, replacing
255-073	1.50	Turbocharger removed, reconditioning
256-002	0.25	Air cleaner, checking prssure drop indicator
256-006	0.25	Preheating coil, replacing
26		COOLING SYSTEM
261-008	1.00	Radiator, replacing
261-011	0.30	Radiator, removing
261-013	0.30	Radiator, installing
262-098	0.60	Thermostat, replacing
263-012	0.40	Fan belt and/or alternator belt, replacing
263-013	0.25	Fan belt and/or alternator belt, checking and adjusting tension
263-022	0.50	Fan belt and/or alternator-, compressor belt, replacing all belts

Op.no.	time (h)	Notes
27		ENGINE CONTROL
273-021	0.50	Stop magnet, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.75	Batteries, replacing
311-003	0.25	Main switch, replacing
311-006	0.25	Earth lead to battery, replacing
311-008	0.25	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.50	Alternator, replacing incl function check
321-003	0.80	Alternator, removing
321-004	0.80	Alternator, installing
321-025	1.00	Alternator, replacing carbon brush kit in machine
322-005	0.50	Charging regulator, replacing
33		STARTING SYSTEM
331-018	0.60	Starter motor, replacing
334-001	0.50	Starter lock, replacing
35		LIGHTING
352-024	0.50	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.50	Rear lamp, replacing one
353-018	0.25	Rear lamp, replacing glass or bulb
356-056	0.50	Work lighting, replacing one head lamp assy
356-057	0.50	Work lighting, replacing one insert
36		OTHER ELECTRICAL EQUIPMENT
361-010	0.50	Flasher switch, replacing
361-017	0.25	Flasher lamp, replacing glass or bulb
362-002	0.25	Horn, replacing
362-003	0.25	Reverse alarm, replacing
362-016	0.50	Horn switch, replacing
363-001	1.00	Windscreen wiper rear, replacing motor
363-002	1.00	Windscreen wiper front, replacing motor
363-003	0.75	Windscreen wiper, replacing switch
363-004	0.25	Windscreen flusher pump, replacing
364-004	0.75	Switch, replacing
364-008	0.25	Brake light switch, replacing
367-020	1.00	ECU, replacing

Op.no.	time (h)	Notes
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	0.50	Engine temperature sensor, replacing
386-007	0.25	Engine oil pressure sensor, replacing
386-011	1.50	Fuel level sender, replacing
386-013	0.50	Hydrostatic system temperature sensor, replacing
387-005	1.00	Information display, replacing
39		MISCELLANEOUS
390-902	1.75	CareTrack, installing new
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-047	0.75	Gear selector, replacing
421-061	0.30	Induction sensor for output shaft, changing
43		GEARBOX,
434-002	2.00	Dropbox, replacing seal for front output shaft
434-029	2.00	Dropbox removed, reconditioning
434-073	2.00	Dropbox, installing
434-074	2.00	Dropbox, removing
44		HYDROSTATIC DRIVE
441-001	1.00	Hydrostatic system, checking oil pressure
441-002	2.50	Hydraulic motor, replacing
442-001	3.50	Hydraulic pump, replacing
442-016	0.10	Hydrostatic pump charge pressure, check and adjust
442-017	0.70	Start hydraulic pump control, check and adjust
442-018	0.40	Hydrostatic pump cut off valve, check and adjust
442-020	0.30	Hydrostatic pump mechanical zero position, check and adjust
45		PROPELLER SHAFT
451-010	1.00	Propeller shaft, front, replacing
46		FRONT AXLE; REAR AXLE
461-001	3.00	Axle, replacing
461-013	2.00	Centre gear, axle removed, reconditioning
461-014	1.50	Pinion front, fitting new gasket
461-042	2.00	Hub reduction gear, reconditioning one side
461-043	2.00	Hub, replacing seal
463-001	3.00	Axle, replacing
463-002	1.50	Axle, removing
463-003	2.00	Axle, installing

Op.no.	time (h)	Notes
463-013	2.00	Centre gear, axle removed, reconditioning
463-014	1.00	Pinion rear, fitting new gasket
463-042	2.00	Hub reduction gear, reconditioning one side
463-043	2.00	Hub, replacing seal
5		BRAKE
51		WHEEL BRAKE
511-006	1.25	Brake pads, replacing
511-007	1.50	Brake cylinder, replacing
516-001	0.50	Brake linings, checking wear
52		HYDRAULIC BRAKE SYSTEM
520-001	0.50	Brake system, checking function, hydraulic
520-002	0.50	Brake system, checking function, retardation
520-037	0.30	Brake system, bleeding
520-040	0.40	Inching and brake pedal, adjusting
525-008	1.00	Foot brake valve, replacing
55		PARKING BRAKE
550-002	0.50	Parking brake, adjusting
6		STEERING
64		STEERING
641-021	1.50	Adjustable steering column, replacing
645-006	1.50	Steering cylinder, replacing
645-022	0.70	Steering valve, removal
645-023	1.25	Steering valve, installation
645-028	0.40	Steering system, checking and adjusting working pressure
645-054	2.00	Steering cylinder, replacing bearings
645-060	2.50	Steering cylinder, repacking in machine
645-077	1.00	Steering cylinder removed, reconditioning incl replacing bearings
645-082	1.50	Steering valve, replacing
647-093	1.50	Auxiliary steering, replacing hydraulic pump
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-005	0.50	Frame joint, checking clearance

Op.no.	time (h)	Notes
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.25	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
818-015	2.50	Cab suspension, rubber element replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	1.50	Engine hood, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.00	Door, replacing
831-006	0.50	Door lock, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.75	Windscreen, replacing
843-012	2.00	Rear window, replacing
843-013	1.00	Side window, replacing
87		AIR CONDITIONING UNIT
873-004	2.50	Heater core, replacing
873-006	1.50	Fan motor, replacing
873-008	0.50	Heat control valve, replacing
873-009	0.50	Heat control, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-005	0.30	Vacuum pump, connection
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	1.00	Pump suction hose and pipe, replacing
911-011	2.00	Oil cooler, replacing
911-038	7.00	Hydraulic oil tank, replacing
912-001	2.00	Control valve, replacing
912-002	2.50	Control valve removed, reconditioning
912-009	1.00	Shock valve, tilt function, checking and adjusting
912-011	1.00	Shock valve lift function, adjusting
912-172	0.40	Secondary pressure limiting valve, checking and adjusting

Op.no.	time (h)	Notes
912-173	0.40	Primary pressure limiting valve, checking and adjusting
913-004	0.50	Hydraulic pump, checking and adjusting max working pressure
913-010	1.50	Hydraulic pump, replacing
913-011	2.00	Hydraulic pump removed, reconditioning
914-054	0.50	Servo valve, adjusting control
94		UNIT, LOAD HANDLING
945-004	1.00	Lift cylinder, replacing
945-006	1.50	Lift cylinder removed, repacking
945-008	0.90	Tilt cylinder, replacing
945-009	1.50	Tilt cylinder, repacking in machine
945-011	2.00	Implemental attachment, replacing hydraulic cylinder
945-012	1.00	Lift cylinder removed, replacing bearings "C-P"
945-016	6.00	Lift frame, replacing bearing in upper mounting "O"
945-054	3.00	Implement attachment, replacing
945-056	1.50	Implement attachment, repacking removed hydraulic cylinder
945-066	1.00	Tilt link, replacing "GH"
945-067	0.50	Tilt link removed, replacing bearings "GH"
945-069	1.00	Tilt arm, replacing "GDF"
945-070	0.50	Tilt arm removed, replacing bearing "GDF"

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-004	0.50	Maintenance service, every 50 hours	
173-007	0.80	Maintenance service, every 250 hours	
173-010	2.50	Maintenance service, every 500 hours	
173-012	3.00	Maintenance service, every 1000 hours	
173-014	5.50	Maintenance service, every 2000 hours	12853 - 99999 12001 - 12852
173-014	4.50	Maintenance service, every 2000 hours	9001 - 9374 9375 - 12000
173-018	9.50	Maintenance service, every 4000 hours	12853 - 99999 12001 - 12852
173-018	8.50	Maintenance service, every 4000 hours	9001 - 9374 9375 - 12000
173-019	3.00	Maintenance service, every 4500 hours	12001 - 12999
173-022	0.40	Maintenance service, every 6000 hours	
173-024	0.20	Maintenance service, every 8000 hours	12853 - 99999 12001 - 12852
173-028	0.40	Maintenance service, every 12000 hours	12001 - 12999
173-036	1.75	Maintenance service, first 100 hours	
173-042	1.75	Maintenance service, first 1000 hours	
173-150	1.75	Maintenance service, fire suppression system	
176-001	0.80	Mechanical release of parking brake	
19		GENERAL	
191-021	0.20	Service position 1	
191-022	0.20	Service position 2	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-009	0.30	VCADS Pro, MID 128, programming E-ECU	9001 - 9374 9375 - 12000
200-009	1.75	VCADS Pro, MID 128, programming E-ECU	12001 - 12852 12853 - 99999
200-068	3.00	E-ECU, MID 128, changing non-programmed ECU	
200-070	3.00	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-002	8.00	Compression test	
210-070	6.00	Engine, removing	
210-072	11.00	Engine, installing	

Op.no.	time (h)		Notes
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
210-092	0.50	Engine rotation speed sensor (camshaft), replacing	
212-071	0.70	Crankcase ventilation separator, replacing	12001 - 12852 12853 - 99999
214-012	3.00	Valves, adjusting	9001 - 9374 9375 - 12000
214-012	3.00	Valves, adjusting	12853 - 99999 12001 - 12852
214-092	9.50	Rocker arms, replacing	
215-042	8.50	Camshaft, replacing	
215-043	29.00	Camshaft setting, checking	
22		LUBRICATING SYSTEM	
221-022	0.30	Lubrication oil pressure, checking with pressure gauge	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
230-002	1.00	Air in fuel system, checking	
233-001	0.30	Fuel system, bleeding	9001 - 9374 9375 - 12000
233-001	0.30	Fuel system, bleeding	12001 - 12852 12853 - 99999
233-002	0.60	Feed pump, replacing	
233-004	0.10	Feed pump, checking feed pressure	
236-002	0.50	Stall speed, checking	
237-007	1.50	Overflow valve, replacing	
237-012	6.00	Unit injector, replacing	
237-017	11.00	Injector sleeves, replacing	
25		INLET SYSTEM; EXHAUST SYSTEM	
252-021	0.50	Exhaust pipe, flexible tube, replacing	
254-001	1.25	Diesel particulate filter, check and clean	12853 - 99999 12001 - 12852
254-021	3.00	Atomization unit, replacing	12001 - 12852 12853 - 99999
254-022	0.80	ACM (After treatment control module), replacing, non-programmed	12001 - 12852 12853 - 99999
254-023	0.50	ACM (After treatment control module), replacing, pre-programmed	12001 - 12852 12853 - 99999
254-031	1.25	Air pump, replacing	12001 - 12852 12853 - 99999
254-033	2.50	Burner, replacing	12001 - 12852 12853 - 99999
254-034	1.75	Compressor, replacing	12001 - 12852 12853 - 99999

Op.no.	time (h)		Notes
254-042	0.60	Air purge tank, replacing	12001 - 12852 12853 - 99999
254-046	2.00	Spark plug, replacing	12001 - 12852 12853 - 99999
254-047	2.00	Spark plug, checking	12001 - 12852 12853 - 99999
254-048	0.20	Spark plug cable, replacing	12853 - 99999 12001 - 12852
254-061	3.00	Exhaust aftertreatment system, fuel pump, replacing	12001 - 12852 12853 - 99999
254-063	2.50	Aftertreatment support unit (ASU), replacing	12001 - 12852 12853 - 99999
254-064	0.50	High pressure air system, pressure, checking	12001 - 12852 12853 - 99999
254-065	0.60	Air pump flow, checking	12001 - 12852 12853 - 99999
254-069	1.25	Exhaust aftertreatment system fuel flow, checking	12001 - 12852 12853 - 99999
254-125	1.75	Exhaust aftertreatment fuel injector, replacing	12001 - 12852 12853 - 99999
255-002	0.90	Turbocharger, inspection	9001 - 9374 9375 - 12000
255-003	0.70	Actuator, variable turbocharger, replacing	12001 - 12852 12853 - 99999
255-071	1.75	Turbocharger, replacing	12001 - 12999
26		COOLING SYSTEM	
260-001	0.70	Carbon dioxide in coolant system, checking	
260-003	0.60	Cooling system, pressure control	
263-072	0.20	Fan control valve, seal replacement	
29		Miscellaneous	
293-001	4.00	EGR cooler, replacing	12001 - 12852 12853 - 99999
293-002	0.70	EGR cooler, pressure test	12001 - 12852 12853 - 99999
293-002	2.00	EGR cooler, pressure test	12001 - 12852 12853 - 99999
293-003	4.00	EGR Venturi tube, checking	12853 - 99999 12001 - 12852
293-004	6.50	EGR cooler, cleaning	12001 - 12852 12853 - 99999
293-005	1.00	EGR valve, replacing	12001 - 12852 12853 - 99999
293-006	0.20	EGR temperature sensor, replacing	12001 - 12852 12853 - 99999
293-007	0.20	EGR pressure sensor, replacing	12001 - 12852 12853 - 99999

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	0.80	I-ECU, MID 140, changing non-programmed ECU
300-074	0.30	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-002	0.30	Batteries, replacing
311-005	0.50	Battery condition, check
33		STARTING SYSTEM
331-018	0.80	Starter motor, replacing
36		OTHER ELECTRICAL EQUIPMENT
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-066	0.70	V-ECU, MID 187, changing pre-programmed ECU
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-008	0.20	Engine rotation speed sensor, replacing
39		MISCELLANEOUS
398-004	0.70	CareTrack battery, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.80	Transmission oil pressure, checking
421-091	0.60	Lock up valve, replacing
421-099	0.70	Transmission, calibration
421-100	0.30	Transmission, function check
46		FRONT AXLE; REAR AXLE
461-037	1.25	Hub reduction, removing
461-038	1.25	Hub reduction, installing
461-043	5.50	Hub, replacing seal
463-002	2.00	Axle, removing
463-003	3.00	Axle, installing
463-037	7.00	Axle suspension, replacing bushes and seals
463-043	6.00	Hub, replacing seal
463-045	1.25	Hub reduction, removing
463-046	1.50	Hub reduction, installing
468-006	0.20	Differential lock, function check
468-051	1.00	Differential lock, adjusting

Op.no.	time (h)	Notes
5		BRAKE
51		WHEEL BRAKE
510-003	0.40	Brake discs, measuring wear
510-004	0.10	Wheel brakes, functional check
516-005	4.00	Brake disc, replacing
516-050	3.00	Brake piston, replacing seals
517-005	4.00	Brake disc, replacing
517-050	3.00	Brake piston, replacing seals
52		HYDRAULIC BRAKE SYSTEM
520-002	0.20	Brake system, checking function, retardation
520-005	0.30	Brake system, check and adjusting pressure in circuit
520-036	0.80	Brake system charging, checking
520-037	0.30	Brake system, bleeding
520-111	0.20	Automatic brake, function check
527-001	0.10	Accumulator removed, checking charging pressure
527-003	0.60	Accumulators, checking in machine
527-012	0.40	Accumulator, removal
527-013	0.40	Accumulator, installation
55		PARKING BRAKE
550-006	3.00	Parking brake, replacing discs and seals
550-023	0.10	Parking brake, function checking
6		STEERING
60		GENERAL
600-001	0.50	Steering system, function check
64		STEERING
645-011	0.80	Left steering cylinder, removal
645-012	1.50	Left steering cylinder, installation
645-013	0.70	Right steering cylinder, removal
645-014	1.25	Right steering cylinder, installation
645-028	0.40	Steering system, checking and adjusting working pressure
645-060	3.50	Steering cylinder, repacking in machine
647-091	0.70	Secondary steering pump, checking and adjusting working pressure
66		LEVER STEERING
660-006	0.90	Comfort drive control (CDC), angle sensor, changing

Op.no.	time (h)		Notes
660-007	0.90	Comfort drive control (CDC), solenoid valve, changing	
660-011	0.20	Lever steering (CDC), functional check	
660-012	0.40	Comfort Drive Control, servo pressure, checking	
660-013	0.90	Comfort Drive Control (CDC), joystick, changing	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	1.25	Counterweight, removing	
716-002	1.25	Counterweight, fitting	
74		FRAME LINK	
741-036	19.00	Frame joint, replacing bearings	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-002	0.80	Front wheel, removal	
771-003	0.70	Front wheel, installation	
771-004	0.70	Rear wheel, removing	
771-005	0.70	Rear wheel, installing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-065	1.00	Cab, position 1	12853 - 12999
810-066	1.75	Cab, position 2	12853 - 12999
810-067	0.80	Cab, position 1, restoring	12853 - 12999
810-068	2.50	Cab, position 2, restoring	12853 - 12999
810-069	1.75	Cab, tilt cylinder, replacing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-001	0.60	Engine hood, removing	
821-002	1.00	Engine hood, installing	
821-010	0.60	Actuator, replacing	
83		DOORS; HATCH; COVER PLATE, (all)	
831-054	0.30	Electric door opener, control unit, replacing	
831-055	0.30	Electric door opener, locking motor, replacing	
831-056	0.20	Electric door opener, rotor switch, replacing	
831-057	0.30	Electric door opener, opening support motor, replacing	
834-013	0.30	Door lock cylinder, replacing	

Op.no.	time (h)	Notes	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-002	2.50	Windscreen, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-010	0.40	Operator's seat, securing	
87		AIR CONDITIONING UNIT	
870-010	0.50	ECC, MID 146, changing pre-programmed ECU	
870-011	0.80	ECC, MID 146, changing non-programmed ECU	
870-012	0.90	Climate unit, removing	
870-013	1.25	Climate unit, installing	
870-014	0.90	Pause heater, replacing	
873-004	2.50	Heater core, replacing	
873-006	2.50	Fan motor, replacing	
873-008	1.25	Heat control valve, replacing	
873-011	0.80	Air mix door actuator, replacing	
874-001	1.75	Refrigerant, filling incl vacuum pumping	
874-002	0.80	Refrigerant, draining	
874-012	3.00	Evaporator, replacing incl draining and filling	
874-018	4.00	Compressor, replacing	
874-022	3.00	Drying filter, replacing	
874-022	0.30	Drying filter, replacing	
			12001 - 12852 12853 - 99999
874-023	3.50	Condenser, replacing	
874-024	3.00	Evaporator, replacing	
874-025	4.00	Expansion valve, replacing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-001	0.50	Hydraulic system, warming up	
900-002	3.00	Hydraulic system, bleeding	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
912-018	0.20	Back-up valve, checking and adjusting	
912-021	0.60	Shock valve, tilt function, checking	
912-023	0.60	Shock valve lift function, checking	
912-121	0.90	Lift, solenoid valve, changing	
912-122	0.70	Lower, solenoid valve, changing	
912-123	1.00	Tilt in, solenoid valve, changing	
912-124	0.90	Tilt out, solenoid valve, changing	

Op.no.	time (h)	Notes
912-125	0.70	Lift/lower, angle sensor, changing
912-126	2.00	Tilt in/out, angle sensor, changing
912-127	0.20	Tilt, functional check
912-151	0.30	Back-up valve, replacing
912-226	0.20	Lift/lower function, checking
913-001	1.00	Hydraulic pump, checking and adjusting standby pressure and working pressure
913-034	0.20	Lifting time, checking
913-050	1.50	Hydraulic pump P2, removal
913-051	4.00	Hydraulic pump P2, installation
913-059	0.70	Hydraulic pump P3, checking function
913-060	1.25	Hydraulic pump P1, removal
913-061	2.00	Hydraulic pump P1, installation
913-062	0.90	Hydraulic pump P3, removal
913-063	3.00	Hydraulic pump P3, installation
914-047	0.20	Servo accumulator, removal
914-048	0.10	Servo accumulator, installation
914-049	0.40	Accumulator removed, checking
914-055	0.20	Servo pressure, checking and adjusting
914-063	0.60	Servo pressure, checking at the spool in control valve
914-905	0.90	Single lever control electric servo, replacing
916-001	0.30	Boom suspension system, functional check
916-003	0.60	Boom suspension accumulator, reconditioning
916-006	0.60	Boom suspension system, pressure reduction, safety valve, checking and adjusting
916-008	1.50	Boom suspension system, right accumulator, removal
916-009	2.00	Boom suspension system, right accumulator, installation
916-010	0.90	Boom suspension system, left accumulator, removal
916-011	1.50	Boom suspension system, left accumulator, installation
916-017	0.50	3rd/4th hydraulic function, shock valve, checking
916-018	0.60	3rd/4th hydraulic function, solenoid valve, changing
916-020	0.20	3rd/4th hydraulic function, checking and adjusting pressure
916-070	0.30	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing
916-072	0.20	Accumulator, boom suspension system, discarding
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-036	0.10	Attachment locking, functional check

Op.no.	time (h)	Notes
99		MISCELLANEOUS
992-002	4.00	Fire suppression system, actions after activation
992-003	4.00	Fire suppression system, actions after manual activation
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
173-004	0.50	Maintenance service, every 50 hours	
173-007	0.80	Maintenance service, every 250 hours	
173-010	2.50	Maintenance service, every 500 hours	
173-012	3.00	Maintenance service, every 1000 hours	
173-014	5.50	Maintenance service, every 2000 hours	3001 - 3227 3228 - 9999
173-014	4.50	Maintenance service, every 2000 hours	1001 - 1056 1057 - 3000
173-018	9.50	Maintenance service, every 4000 hours	3001 - 3227 3228 - 9999
173-018	8.50	Maintenance service, every 4000 hours	1001 - 1056 1057 - 3000
173-019	3.00	Maintenance service, every 4500 hours	3001 - 3999
173-022	0.40	Maintenance service, every 6000 hours	
173-024	0.20	Maintenance service, every 8000 hours	3001 - 3227 3228 - 9999
173-028	0.40	Maintenance service, every 12000 hours	3001 - 3999
173-036	1.75	Maintenance service, first 100 hours	
173-042	1.75	Maintenance service, first 1000 hours	
173-150	1.75	Maintenance service, fire suppression system	
176-001	0.80	Mechanical release of parking brake	
19		GENERAL	
191-021	0.20	Service position 1	
191-021	0.20	Service position 1	
191-022	0.20	Service position 2	
191-022	0.20	Service position 2	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-009	0.30	VCADS Pro, MID 128, programming E-ECU	1001 - 1056 1057 - 3000
200-009	1.75	VCADS Pro, MID 128, programming E-ECU	3001 - 3251 3252 - 9999
200-068	3.00	E-ECU, MID 128, changing non-programmed ECU	
200-070	3.00	E-ECU, MID 128, changing pre-programmed ECU	
21		ENGINE	
210-002	8.00	Compression test	
210-070	6.00	Engine, removing	

Op.no.	time (h)		Notes
210-072	11.00	Engine, installing	
210-090	0.30	Camshaft and flywheel signals, checking with VCADS Pro and oscilloscope	
210-092	0.50	Engine rotation speed sensor (camshaft), replacing	
212-071	0.70	Crankcase ventilation separator, replacing	3001 - 3251 3252 - 9999
214-012	3.00	Valves, adjusting	1001 - 1056 1057 - 3000
214-012	3.00	Valves, adjusting	3001 - 3227 3228 - 9999
214-092	9.50	Rocker arms, replacing	
215-042	8.50	Camshaft, replacing	
215-043	29.00	Camshaft setting, checking	
216-018	17.00	Crankshaft, replacing rear oil seal	
22		LUBRICATING SYSTEM	
221-022	0.30	Lubrication oil pressure, checking with pressure gauge	
23		FUEL SYSTEM	
230-001	0.50	Carbon dioxide in fuel system, check	
230-002	1.00	Air in fuel system, checking	
233-001	0.30	Fuel system, bleeding	1001 - 1056 1057 - 3000
233-001	0.30	Fuel system, bleeding	3001 - 3251 3252 - 9999
233-002	0.60	Feed pump, replacing	
233-004	0.10	Feed pump, checking feed pressure	
237-007	1.50	Overflow valve, replacing	
237-012	6.00	Unit injector, replacing	
237-017	11.00	Injector sleeves, replacing	
25		INLET SYSTEM; EXHAUST SYSTEM	
252-021	0.50	Exhaust pipe, flexible tube, replacing	
254-001	1.25	Diesel particulate filter, check and clean	3001 - 3227 3228 - 9999
254-021	3.00	Atomization unit, replacing	3001 - 3251 3252 - 9999
254-022	0.80	ACM (After treatment control module), replacing, non-programmed	3001 - 3251 3252 - 9999
254-023	0.50	ACM (After treatment control module), replacing, pre-programmed	3001 - 3251 3252 - 9999
254-031	1.25	Air pump, replacing	3001 - 3251 3252 - 9999
254-033	2.50	Burner, replacing	3001 - 3251 3252 - 9999

Op.no.	time (h)		Notes
254-034	1.75	Compressor, replacing	3001 - 3251 3252 - 9999
254-042	0.60	Air purge tank, replacing	3001 - 3251 3252 - 9999
254-046	2.00	Spark plug, replacing	3001 - 3251 3252 - 9999
254-047	2.00	Spark plug, checking	3001 - 3251 3252 - 9999
254-048	0.20	Spark plug cable, replacing	3001 - 3227 3228 - 9999
254-061	3.00	Exhaust aftertreatment system, fuel pump, replacing	3001 - 3251 3252 - 9999
254-063	2.50	Aftertreatment support unit (ASU), replacing	3001 - 3251 3252 - 9999
254-064	0.50	High pressure air system, pressure, checking	3001 - 3251 3252 - 9999
254-065	0.60	Air pump flow, checking	3001 - 3251 3252 - 9999
254-069	1.25	Exhaust aftertreatment system fuel flow, checking	3001 - 3251 3252 - 9999
254-125	1.75	Exhaust aftertreatment fuel injector, replacing	3001 - 3251 3252 - 9999
255-002	0.90	Turbocharger, inspection	1001 - 1056 1057 - 3000
255-003	0.70	Actuator, variable turbocharger, replacing	3001 - 3251 3252 - 9999
255-071	1.75	Turbocharger, replacing	
26		COOLING SYSTEM	
260-001	0.70	Carbon dioxide in coolant system, checking	
260-003	0.60	Cooling system, pressure control	
263-072	0.20	Fan control valve, seal replacement	
29		Miscellaneous	
293-001	4.00	EGR cooler, replacing	3001 - 3251 3252 - 9999
293-002	0.70	EGR cooler, pressure test	3001 - 3251 3252 - 9999
293-002	2.00	EGR cooler, pressure test	3001 - 3251 3252 - 9999
293-003	4.00	EGR Venturi tube, checking	3001 - 3227 3228 - 9999
293-004	6.50	EGR cooler, cleaning	3001 - 3251 3252 - 9999
293-005	1.00	EGR valve, replacing	3001 - 3251 3252 - 9999
293-006	0.20	EGR temperature sensor, replacing	3001 - 3251 3252 - 9999

Op.no.	time (h)		Notes
293-007	0.20	EGR pressure sensor, replacing	3001 - 3251 3252 - 9999
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	0.80	I-ECU, MID 140, changing non-programmed ECU	
300-074	0.30	I-ECU, MID 140, changing pre-programmed ECU	
31		BATTERY	
311-002	0.30	Batteries, replacing	
311-005	0.50	Battery condition, check	
33		STARTING SYSTEM	
331-018	0.80	Starter motor, replacing	
36		OTHER ELECTRICAL EQUIPMENT	
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU	
366-066	0.70	V-ECU, MID 187, changing pre-programmed ECU	
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM	
386-008	0.20	Engine rotation speed sensor, replacing	
39		MISCELLANEOUS	
398-004	0.70	CareTrack battery, replacing	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-002	0.80	Transmission oil pressure, checking	
421-091	0.60	Lock up valve, replacing	
421-099	0.70	Transmission, calibration	
421-100	0.30	Transmission, function check	
46		FRONT AXLE; REAR AXLE	
461-037	1.25	Hub reduction, removing	
461-038	1.25	Hub reduction, installing	
461-043	5.50	Hub, replacing seal	
463-002	2.00	Axle, removing	
463-003	3.00	Axle, installing	
463-037	7.00	Axle suspension, replacing bushes and seals	
463-043	6.00	Hub, replacing seal	
463-045	1.25	Hub reduction, removing	

Op.no.	time (h)	Notes
463-046	1.50	Hub reduction, installing
468-006	0.20	Differential lock, function check
468-051	1.00	Differential lock, adjusting

5**BRAKE****51****WHEEL BRAKE**

510-003	0.40	Brake discs, measuring wear
510-004	0.10	Wheel brakes, functional check
516-005	4.00	Brake disc, replacing
516-050	3.00	Brake piston, replacing seals
517-005	4.00	Brake disc, replacing
517-050	3.00	Brake piston, replacing seals

52**HYDRAULIC BRAKE SYSTEM**

520-002	0.20	Brake system, checking function, retardation
520-005	0.30	Brake system, check and adjusting pressure in circuit
520-036	0.80	Brake system charging, checking
520-037	0.30	Brake system, bleeding
520-111	0.20	Automatic brake, function check
527-001	0.10	Accumulator removed, checking charging pressure
527-003	0.60	Accumulators, checking in machine
527-012	0.40	Accumulator, removal
527-013	0.40	Accumulator, installation

55**PARKING BRAKE**

550-006	3.00	Parking brake, replacing discs and seals
550-023	0.10	Parking brake, function checking

6**STEERING****60****GENERAL**

600-001	0.50	Steering system, function check
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64**STEERING**

645-011	0.80	Left steering cylinder, removal
645-012	1.50	Left steering cylinder, installation
645-013	0.70	Right steering cylinder, removal
645-014	1.25	Right steering cylinder, installation
645-028	0.40	Steering system, checking and adjusting working pressure
645-060	3.50	Steering cylinder, repacking in machine

Op.no.	time (h)	Notes	
647-091	0.70	Secondary steering pump, checking and adjusting working pressure	
66		LEVER STEERING	
660-006	0.90	Comfort drive control (CDC), angle sensor, changing	
660-007	0.90	Comfort drive control (CDC), solenoid valve, changing	
660-011	0.20	Lever steering (CDC), functional check	
660-012	0.40	Comfort Drive Control, servo pressure, checking	
660-013	0.90	Comfort Drive Control (CDC), joystick, changing	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
716-001	1.25	Counterweight, removing	
716-002	1.25	Counterweight, fitting	
74		FRAME LINK	
741-036	19.00	Frame joint, replacing bearings	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-002	0.80	Front wheel, removal	
771-003	0.70	Front wheel, installation	
771-004	0.70	Rear wheel, removing	
771-005	0.70	Rear wheel, installing	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
81		CAB, NAKED; CANOPY	
810-065	1.00	Cab, position 1	1057 - 1999
810-066	1.75	Cab, position 2	1057 - 1999
810-067	0.80	Cab, position 1, restoring	1057 - 1999
810-068	2.50	Cab, position 2, restoring	1057 - 1999
810-069	1.75	Cab, tilt cylinder, replacing	
82		ENGINE HOOD; MUDGUARD; FOOT STEP	
821-010	0.60	Actuator, replacing	
821-012	0.20	Engine hood, manually operating	
83		DOORS; HATCH; COVER PLATE, (all)	
831-054	0.30	Electric door opener, control unit, replacing	
831-055	0.30	Electric door opener, locking motor, replacing	

Op.no.	time (h)	Notes	
831-056	0.20	Electric door opener, rotor switch, replacing	
831-057	0.30	Electric door opener, opening support motor, replacing	
834-013	0.30	Door lock cylinder, replacing	
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING	
843-002	2.50	Windscreen, replacing	
85		CAB INTERIOR/UPHOLSTERY	
852-010	0.40	Operator's seat, securing	
87		AIR CONDITIONING UNIT	
870-010	0.50	ECC, MID 146, changing pre-programmed ECU	
870-011	0.80	ECC, MID 146, changing non-programmed ECU	
870-012	0.90	Climate unit, removing	
870-013	1.25	Climate unit, installing	
870-014	0.90	Pause heater, replacing	
873-004	2.50	Heater core, replacing	
873-006	2.50	Fan motor, replacing	
873-008	1.25	Heat control valve, replacing	
873-011	0.80	Air mix door actuator, replacing	
874-001	1.75	Refrigerant, filling incl vacuum pumping	
874-002	0.80	Refrigerant, draining	
874-012	3.00	Evaporator, replacing incl draining and filling	
874-018	4.00	Compressor, replacing	
874-022	3.00	Drying filter, replacing	
874-022	0.30	Drying filter, replacing	
		3001 - 3251 3252 - 9999	
874-023	3.50	Condenser, replacing	
874-024	3.00	Evaporator, replacing	
874-025	4.00	Expansion valve, replacing	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-001	0.50	Hydraulic system, warming up	
900-002	3.00	Hydraulic system, bleeding	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
912-018	0.20	Back-up valve, checking and adjusting	
912-021	0.60	Shock valve, tilt function, checking	
912-023	0.60	Shock valve lift function, checking	

Op.no.	time (h)	Notes
912-121	0.90	Lift, solenoid valve, changing
912-122	0.70	Lower, solenoid valve, changing
912-123	1.00	Tilt in, solenoid valve, changing
912-124	0.90	Tilt out, solenoid valve, changing
912-125	0.70	Lift/lower, angle sensor, changing
912-126	0.80	Tilt in/out, angle sensor, changing
912-127	0.20	Tilt, functional check
912-151	0.30	Back-up valve, replacing
912-226	0.20	Lift/lower function, checking
913-001	1.00	Hydraulic pump, checking and adjusting standby pressure and working pressure
913-050	1.50	Hydraulic pump P2, removal
913-051	4.00	Hydraulic pump P2, installation
913-059	0.70	Hydraulic pump P3, checking function
913-060	1.25	Hydraulic pump P1, removal
913-061	2.00	Hydraulic pump P1, installation
913-062	0.90	Hydraulic pump P3, removal
913-063	3.00	Hydraulic pump P3, installation
914-047	0.20	Servo accumulator, removal
914-048	0.10	Servo accumulator, installation
914-049	0.40	Accumulator removed, checking
914-055	0.20	Servo pressure, checking and adjusting
914-063	0.60	Servo pressure, checking at the spool in control valve
914-905	0.90	Single lever control electric servo, replacing
916-001	0.30	Boom suspension system, functional check
916-003	0.60	Boom suspension accumulator, reconditioning
916-006	0.60	Boom suspension system, pressure reduction, safety valve, checking and adjusting
916-008	0.80	Boom suspension system, right accumulator, removal
916-009	1.50	Boom suspension system, right accumulator, installation
916-010	0.80	Boom suspension system, left accumulator, removal
916-011	1.50	Boom suspension system, left accumulator, installation
916-017	0.50	3rd/4th hydraulic function, shock valve, checking
916-018	0.60	3rd/4th hydraulic function, solenoid valve, changing
916-020	0.20	3rd/4th hydraulic function, checking and adjusting pressure
916-070	0.30	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing
916-072	0.20	Accumulator, boom suspension system, discarding

Op.no.	time (h)	Notes
94		UNIT, LOAD HANDLING
945-005	4.50	Lift cylinder, repacking in machine
945-009	5.50	Tilt cylinder, repacking in machine
99		MISCELLANEOUS
992-002	4.00	Fire suppression system, actions after activation
992-003	4.00	Fire suppression system, actions after manual activation
993-025	2.50	Automatic lubrication pump unit, reconditioning
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
171-001	0.50	Arrival Inspection, according to Inspection Programme
171-002	1.50	Delivery Inspection, according to Inspection Programme
172-002	3.00	Warranty inspection 100 hours
172-004	6.00	Warranty inspection 1000 hours
173-002	0.70	Maintenance service, daily
173-006	1.50	Maintenance service, every 100 hours
173-010	1.50	Maintenance service, every 500 hours
173-012	5.50	Maintenance service, every 1000 hours
173-013	3.50	Maintenance service, every 1500 hours
173-014	6.00	Maintenance service, every 2000 hours
173-018	6.00	Maintenance service, every 4000 hours
173-022	7.00	Maintenance service, every 6000 hours
173-059	1.00	Engine, changing oil and filter
173-061	0.50	Transmission, changing oil and filter
173-068	1.00	Rear axle, changing oil
173-069	1.00	Front axle, changing oil
173-070	2.00	Axles, changing oil
173-074	1.50	Hydraulic oil tank, changing oil and filter
173-075	2.50	Hydraulic oil tank, changing oil and filter incl.cleaning tank
176-004	0.30	Towing a disabled machine
19		GENERAL
191-021	0.20	Service position 1
191-022	0.20	Service position 2

2 ENGINE WITH MOUNTING AND EQUIPMENT

21		ENGINE
210-002	1.25	Compression test
210-070	2.00	Engine, removing
210-072	2.50	Engine, installing
211-002	5.00	Cylinder head, replacing gasket
211-068	2.00	Cylinder heads all removed, decarbonizing and grinding in valves
211-071	1.00	Cylinder head removed, pressure testing each
212-011	1.00	Cylinder, cylinder heads removed, measuring wear in all cylinders
214-012	1.00	Valves, adjusting

Op.no.	time (h)	Notes
215-010	2.50	Belt, changing
216-014	1.00	Crankshaft, replacing front oil seal
216-018	1.50	Crankshaft, replacing rear oil seal
217-002	1.50	Sump gasket, replacing incl cleaning oil strainer
22		LUBRICATING SYSTEM
221-006	0.25	Oil pressure relief valve, replacing
223-006	1.00	Oil cooler, replacing
23		FUEL SYSTEM
233-001	0.25	Fuel system, bleeding
233-002	0.50	Feed pump, replacing
233-004	0.25	Feed pump, checking feed pressure
233-011	0.20	Fuel pump, removing
233-012	0.30	Fuel pump, installing
233-014	0.20	Fuel filters, replacing
234-010	7.00	Fuel tank, replacing
236-001	0.70	Idling speed, checking and adjusting
236-070	0.75	Injection pump, removing
237-002	1.00	Injectors, replacing all
237-004	0.50	Injector, replacing one
237-018	0.25	Delivery pipe, replacing one
237-080	1.50	Injectors removed, reconditioning all
25		INLET SYSTEM; EXHAUST SYSTEM
251-002	1.00	Induction manifold, replacing gasket
251-004	0.50	Exhaust manifold, replacing gasket
251-006	0.80	EGR (exhaust gas recirculation) sensor, replacing
252-020	0.50	Silencer, replacing
252-021	0.50	Exhaust pipe, flexible tube, replacing
255-073	1.50	Turbocharger removed, reconditioning
256-002	0.25	Air cleaner, checking prssure drop indicator
256-006	0.25	Preheating coil, replacing
26		COOLING SYSTEM
261-008	1.00	Radiator, replacing
261-011	0.30	Radiator, removing
261-013	0.30	Radiator, installing
262-098	0.60	Thermostat, replacing
263-012	0.40	Fan belt and/or alternator belt, replacing
263-013	0.25	Fan belt and/or alternator belt, checking and adjusting tension
263-022	0.50	Fan belt and/or alternator-, compressor belt, replacing all belts

Op.no.	time (h)	Notes
27		ENGINE CONTROL
273-021	0.50	Stop magnet, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.75	Batteries, replacing
311-003	0.25	Main switch, replacing
311-006	0.25	Earth lead to battery, replacing
311-008	0.25	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.50	Alternator, replacing incl function check
321-003	0.80	Alternator, removing
321-004	0.80	Alternator, installing
321-025	1.00	Alternator, replacing carbon brush kit in machine
322-005	0.50	Charging regulator, replacing
33		STARTING SYSTEM
331-018	0.60	Starter motor, replacing
334-001	0.50	Starter lock, replacing
35		LIGHTING
352-024	0.50	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.50	Rear lamp, replacing one
353-018	0.25	Rear lamp, replacing glass or bulb
356-056	0.50	Work lighting, replacing one head lamp assy
356-057	0.50	Work lighting, replacing one insert
36		OTHER ELECTRICAL EQUIPMENT
361-010	0.50	Flasher switch, replacing
361-017	0.25	Flasher lamp, replacing glass or bulb
362-002	0.25	Horn, replacing
362-003	0.25	Reverse alarm, replacing
362-016	0.50	Horn switch, replacing
363-001	1.00	Windscreen wiper rear, replacing motor
363-002	1.00	Windscreen wiper front, replacing motor
363-003	0.75	Windscreen wiper, replacing switch
363-004	0.25	Windscreen flusher pump, replacing
364-004	0.75	Switch, replacing
364-008	0.25	Brake light switch, replacing
367-020	1.00	ECU, replacing

Op.no.	time (h)	Notes
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	0.50	Engine temperature sensor, replacing
386-007	0.25	Engine oil pressure sensor, replacing
386-011	1.50	Fuel level sender, replacing
386-013	0.50	Hydrostatic system temperature sensor, replacing
387-005	1.00	Information display, replacing
39		MISCELLANEOUS
390-902	1.75	CareTrack, installing new
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-047	0.75	Gear selector, replacing
421-061	0.30	Induction sensor for output shaft, changing
43		GEARBOX,
434-002	2.00	Dropbox, replacing seal for front output shaft
434-029	2.00	Dropbox removed, reconditioning
434-073	2.00	Dropbox, installing
434-074	2.00	Dropbox, removing
44		HYDROSTATIC DRIVE
441-001	1.00	Hydrostatic system, checking oil pressure
441-002	2.50	Hydraulic motor, replacing
442-001	3.50	Hydraulic pump, replacing
442-016	0.10	Hydrostatic pump charge pressure, check and adjust
442-017	0.70	Start hydraulic pump control, check and adjust
442-018	0.40	Hydrostatic pump cut off valve, check and adjust
442-020	0.30	Hydrostatic pump mechanical zero position, check and adjust
45		PROPELLER SHAFT
451-010	1.00	Propeller shaft, front, replacing
46		FRONT AXLE; REAR AXLE
461-001	3.00	Axle, replacing
461-013	2.00	Centre gear, axle removed, reconditioning
461-014	1.50	Pinion front, fitting new gasket
461-042	2.00	Hub reduction gear, reconditioning one side
461-043	2.00	Hub, replacing seal
463-001	3.00	Axle, replacing
463-002	1.50	Axle, removing
463-003	2.00	Axle, installing

Op.no.	time (h)	Notes
463-013	2.00	Centre gear, axle removed, reconditioning
463-014	1.00	Pinion rear, fitting new gasket
463-042	2.00	Hub reduction gear, reconditioning one side
463-043	2.00	Hub, replacing seal
5		BRAKE
51		WHEEL BRAKE
511-006	1.25	Brake pads, replacing
511-007	1.50	Brake cylinder, replacing
516-001	0.50	Brake linings, checking wear
52		HYDRAULIC BRAKE SYSTEM
520-001	0.50	Brake system, checking function, hydraulic
520-002	0.50	Brake system, checking function, retardation
520-037	0.30	Brake system, bleeding
520-040	0.40	Inching and brake pedal, adjusting
525-008	1.00	Foot brake valve, replacing
55		PARKING BRAKE
550-002	0.50	Parking brake, adjusting
6		STEERING
64		STEERING
641-021	1.50	Adjustable steering column, replacing
645-006	1.50	Steering cylinder, replacing
645-022	0.70	Steering valve, removal
645-023	1.25	Steering valve, installation
645-028	0.40	Steering system, checking and adjusting working pressure
645-054	2.00	Steering cylinder, replacing bearings
645-060	2.50	Steering cylinder, repacking in machine
645-077	1.00	Steering cylinder removed, reconditioning incl replacing bearings
645-082	1.50	Steering valve, replacing
647-093	1.50	Auxiliary steering, replacing hydraulic pump
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-005	0.50	Frame joint, checking clearance

Op.no.	time (h)	Notes
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.25	Wheel, removing and fitting one
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
818-015	2.50	Cab suspension, rubber element replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	1.50	Engine hood, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.00	Door, replacing
831-006	0.50	Door lock, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	1.75	Windscreen, replacing
843-012	2.00	Rear window, replacing
843-013	1.00	Side window, replacing
87		AIR CONDITIONING UNIT
873-004	2.50	Heater core, replacing
873-006	1.50	Fan motor, replacing
873-008	0.50	Heat control valve, replacing
873-009	0.50	Heat control, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-005	0.30	Vacuum pump, connection
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	1.00	Pump suction hose and pipe, replacing
911-011	2.00	Oil cooler, replacing
911-038	7.00	Hydraulic oil tank, replacing
912-001	2.00	Control valve, replacing
912-002	2.50	Control valve removed, reconditioning
912-009	1.00	Shock valve, tilt function, checking and adjusting
912-011	1.00	Shock valve lift function, adjusting
912-172	0.40	Secondary pressure limiting valve, checking and adjusting

Op.no.	time (h)	Notes
912-172	0.40	Secondary pressure limiting valve, checking and adjusting
912-173	0.40	Primary pressure limiting valve, checking and adjusting
913-004	0.50	Hydraulic pump, checking and adjusting max working pressure
913-010	1.50	Hydraulic pump, replacing
913-011	2.00	Hydraulic pump removed, reconditioning
914-054	0.50	Servo valve, adjusting control
94		UNIT, LOAD HANDLING
945-004	1.00	Lift cylinder, replacing
945-006	1.50	Lift cylinder removed, repacking
945-008	0.90	Tilt cylinder, replacing
945-009	1.50	Tilt cylinder, repacking in machine
945-011	2.00	Implemental attachment, replacing hydraulic cylinder
945-012	1.00	Lift cylinder removed, replacing bearings "C-P"
945-016	6.00	Lift frame, replacing bearing in upper mounting "O"
945-054	3.00	Implement attachment, replacing
945-056	1.50	Implement attachment, repacking removed hydraulic cylinder
945-066	1.00	Tilt link, replacing "GH"
945-067	0.50	Tilt link removed, replacing bearings "GH"
945-069	1.00	Tilt arm, replacing "GDF"
945-070	0.50	Tilt arm removed, replacing bearing "GDF"

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
171-001	0.50	Arrival Inspection, according to Inspection Programme
171-002	1.50	Delivery Inspection, according to Inspection Programme
172-002	3.00	Warranty inspection 100 hours
172-004	5.00	Warranty inspection 1000 hours
173-010	3.00	Maintenance service, every 500 hours
173-012	5.00	Maintenance service, every 1000 hours
173-014	5.50	Maintenance service, every 2000 hours
173-059	1.00	Engine, changing oil and filter
173-061	0.50	Transmission, changing oil and filter
173-068	1.00	Rear axle, changing oil
173-069	1.00	Front axle, changing oil
173-070	2.00	Axles, changing oil
173-074	1.50	Hydraulic oil tank, changing oil and filter
173-075	2.50	Hydraulic oil tank, changing oil and filter incl.cleaning tank
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-002	1.25	Compression test
210-070	2.00	Engine, removing
210-072	2.50	Engine, installing
211-002	5.00	Cylinder head, replacing gasket
211-068	2.00	Cylinder heads all removed, decarbonizing and grinding in valves
211-071	1.00	Cylinder head removed, pressure testing each
212-011	1.00	Cylinder, cylinder heads removed, measuring wear in all cylinders
214-012	1.25	Valves, adjusting
215-010	2.50	Belt, changing
216-014	1.00	Crankshaft, replacing front oil seal
216-018	1.50	Crankshaft, replacing rear oil seal
217-002	1.50	Sump gasket, replacing incl cleaning oil strainer
22		LUBRICATING SYSTEM
221-006	0.25	Oil pressure relief valve, replacing
221-014	3.00	Oil pump, replacing
223-006	1.00	Oil cooler, replacing

Op.no.	time (h)	Notes
23		FUEL SYSTEM
233-001	0.25	Fuel system, bleeding
233-002	0.50	Feed pump, replacing
233-004	0.25	Feed pump, checking feed pressure
233-011	0.20	Fuel pump, removing
233-012	0.30	Fuel pump, installing
233-014	0.20	Fuel filters, replacing
234-010	6.00	Fuel tank, replacing
236-001	0.50	Idling speed, checking and adjusting
236-070	3.50	Injection pump, removing
237-002	1.00	Injectors, replacing all
237-004	0.50	Injector, replacing one
237-018	0.25	Delivery pipe, replacing one
237-080	1.50	Injectors removed, reconditioning all
25		INLET SYSTEM; EXHAUST SYSTEM
251-002	1.00	Induction manifold, replacing gasket
251-004	1.50	Exhaust manifold, replacing gasket
252-020	0.50	Silencer, replacing
252-021	0.50	Exhaust pipe, flexible tube, replacing
255-070	0.50	Turbocharger, removing
255-071	2.00	Turbocharger, replacing
255-072	0.60	Turbocharger, installing
255-073	1.50	Turbocharger removed, reconditioning
256-002	0.25	Air cleaner, checking prssure drop indicator
256-006	0.25	Preheating coil, replacing
26		COOLING SYSTEM
261-008	1.00	Radiator, replacing
261-011	0.30	Radiator, removing
261-013	0.30	Radiator, installing
262-098	0.60	Thermostat, replacing
263-012	0.50	Fan belt and/or alternator belt, replacing
263-013	0.25	Fan belt and/or alternator belt, checking and adjusting tension
263-022	0.50	Fan belt and/or alternator-, compressor belt, replacing all belts
27		ENGINE CONTROL
273-021	0.50	Stop magnet, replacing

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.50	Batteries, replacing
311-003	0.25	Main switch, replacing
311-006	0.25	Earth lead to battery, replacing
311-008	0.25	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.50	Alternator, replacing incl function check
321-003	0.80	Alternator, removing
321-004	0.80	Alternator, installing
321-025	1.00	Alternator, replacing carbon brush kit in machine
322-005	0.50	Charging regulator, replacing
33		STARTING SYSTEM
331-018	0.60	Starter motor, replacing
334-001	0.80	Starter lock, replacing
35		LIGHTING
352-024	0.50	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.50	Rear lamp, replacing one
353-018	0.25	Rear lamp, replacing glass or bulb
356-056	0.50	Work lighting, replacing one head lamp assy
356-057	0.50	Work lighting, replacing one insert
36		OTHER ELECTRICAL EQUIPMENT
360-001	0.80	Combination control (by steering wheel), changing
361-010	0.50	Flasher switch, replacing
361-017	0.25	Flasher lamp, replacing glass or bulb
362-002	0.25	Horn, replacing
362-003	0.25	Reverse alarm, replacing
362-016	0.50	Horn switch, replacing
363-001	1.00	Windscreen wiper rear, replacing motor
363-002	1.00	Windscreen wiper front, replacing motor
363-003	0.75	Windscreen wiper, replacing switch
363-004	0.25	Windscreen flusher pump, replacing
364-004	0.75	Switch, replacing
364-008	0.25	Brake light switch, replacing
367-020	1.50	ECU, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	0.50	Engine temperature sensor, replacing
386-007	0.25	Engine oil pressure sensor, replacing

Op.no.	time (h)	Notes
386-011	1.00	Fuel level sender, replacing
386-013	0.50	Hydrostatic system temperature sensor, replacing
386-014	0.50	Hydrostatic system oil pressure sensor, replacing
387-003	0.80	Key pad, replacing
387-005	1.00	Information display, replacing
387-021	0.90	Instrument panel (display unit), replacing
39		MISCELLANEOUS
390-902	1.75	CareTrack, installing new
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-047	0.75	Gear selector, replacing
421-047	0.75	Gear selector, replacing
421-061	0.30	Induction sensor for output shaft, changing
43		GEARBOX,
434-002	1.50	Dropbox, replacing seal for front output shaft
434-029	3.00	Dropbox removed, reconditioning
434-073	3.00	Dropbox, installing
434-074	3.00	Dropbox, removing
44		HYDROSTATIC DRIVE
441-001	1.00	Hydrostatic system, checking oil pressure
441-002	2.50	Hydraulic motor, replacing
442-001	6.00	Hydraulic pump, replacing
45		PROPELLER SHAFT
451-010	1.00	Propeller shaft, front, replacing
46		FRONT AXLE; REAR AXLE
461-001	3.00	Axle, replacing
461-013	2.00	Centre gear, axle removed, reconditioning
461-014	1.00	Pinion front, fitting new gasket
461-042	2.00	Hub reduction gear, reconditioning one side
461-043	2.00	Hub, replacing seal
463-001	6.00	Axle, replacing
463-002	2.50	Axle, removing
463-003	3.50	Axle, installing
463-013	2.00	Centre gear, axle removed, reconditioning
463-014	1.00	Pinion rear, fitting new gasket
463-042	2.00	Hub reduction gear, reconditioning one side
463-043	2.00	Hub, replacing seal

Op.no.	time (h)	Notes
5		BRAKE
51		WHEEL BRAKE
516-001	0.50	Brake linings, checking wear
516-050	2.00	Brake piston, replacing seals
52		HYDRAULIC BRAKE SYSTEM
520-001	0.50	Brake system, checking function, hydraulic
520-002	0.50	Brake system, checking function, retardation
520-037	1.00	Brake system, bleeding
525-008	1.00	Foot brake valve, replacing
55		PARKING BRAKE
550-002	0.50	Parking brake, adjusting
6		STEERING
64		STEERING
641-021	1.50	Adjustable steering column, replacing
645-006	1.50	Steering cylinder, replacing
645-028	1.00	Steering system, checking and adjusting working pressure
645-054	2.00	Steering cylinder, replacing bearings
645-060	2.50	Steering cylinder, repacking in machine
645-077	1.00	Steering cylinder removed, reconditioning incl replacing bearings
645-082	1.50	Steering valve, replacing
647-093	1.50	Auxiliary steering, replacing hydraulic pump
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-001	3.00	Frame joint, separating machine
741-002	3.00	Frame joint, assembly of separated machine
741-005	0.50	Frame joint, checking clearance
741-036	1.50	Frame joint, replacing bearings
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.25	Wheel, removing and fitting one

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
818-015	2.50	Cab suspension, rubber element replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	1.50	Engine hood, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.00	Door, replacing
831-006	0.50	Door lock, replacing
831-014	0.50	Door, replacing sealing strip
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	3.00	Windscreen, replacing
843-012	3.00	Rear window, replacing
843-013	3.00	Side window, replacing
843-048	2.50	Door window, replacing
87		AIR CONDITIONING UNIT
873-004	2.00	Heater core, replacing
873-006	2.50	Fan motor, replacing
873-008	0.75	Heat control valve, replacing
873-009	1.00	Heat control, replacing
874-002	1.00	Refrigerant, draining
874-003	1.00	Cooling unit, performance test
874-005	1.75	Refrigerant, filling excl vacuum pumping
874-006	3.00	Compressor, replacing incl draining and filling
874-007	0.75	Belt, replacing
874-010	2.00	Condenser, replacing incl draining and filling
874-011	2.50	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	2.50	Expansion valve, replacing incl draining and filling
874-014	1.00	Thermostat, replacing
874-015	1.00	Compressor, replacing shaft seal (compressor removed)
874-016	1.00	Compressor, replacing magnetic clutch (compressor removed)
874-019	0.50	Compressor, replacing valve plate (compressor removed)

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-005	0.30	Vacuum pump, connection
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	1.00	Pump suction hose and pipe, replacing
911-011	2.00	Oil cooler, replacing
911-038	6.50	Hydraulic oil tank, replacing
912-001	2.00	Control valve, replacing
912-002	2.50	Control valve removed, reconditioning
912-009	1.00	Shock valve, tilt function, checking and adjusting
912-011	1.00	Shock valve lift function, adjusting
913-004	0.50	Hydraulic pump, checking and adjusting max working pressure
913-010	1.50	Hydraulic pump, replacing
913-011	2.00	Hydraulic pump removed, reconditioning
914-054	0.50	Servo valve, adjusting control
914-055	0.50	Servo pressure, checking and adjusting
914-058	1.50	Servo valve, replacing
916-001	0.50	Boom suspension system, functional check
916-002	0.75	Boom suspension accumulator, check and adjusting
916-004	1.50	Boom suspension system, checking closing pressure
916-005	1.00	Boom suspension system, checking opening pressure
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-031	1.50	Implemental attachment hydraulic cylinder, replacing
94		UNIT, LOAD HANDLING
945-004	1.00	Lift cylinder, replacing
945-006	1.50	Lift cylinder removed, repacking
945-008	0.90	Tilt cylinder, replacing
945-009	1.50	Tilt cylinder, repacking in machine
945-011	2.00	Implemental attachment, replacing hydraulic cylinder
945-012	1.00	Lift cylinder removed, replacing bearings "C-P"
945-016	6.00	Lift frame, replacing bearing in upper mounting "O"
945-054	3.00	Implement attachment, replacing
945-056	3.50	Implement attachment, repacking removed hydraulic cylinder
945-066	1.00	Tilt link, replacing "GH"

Op.no.	time (h)	Notes
945-067	0.50	Tilt link removed, replacing bearings "GH"
945-069	1.00	Tilt arm, replacing "GDF"
945-070	0.50	Tilt arm removed, replacing bearing "GDF"

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
171-001	0.50	Arrival Inspection, according to Inspection Programme
171-002	1.50	Delivery Inspection, according to Inspection Programme
172-002	3.00	Warranty inspection 100 hours
172-004	5.00	Warranty inspection 1000 hours
173-010	3.00	Maintenance service, every 500 hours
173-012	5.00	Maintenance service, every 1000 hours
173-014	5.50	Maintenance service, every 2000 hours
173-059	1.00	Engine, changing oil and filter
173-061	0.50	Transmission, changing oil and filter
173-068	1.00	Rear axle, changing oil
173-069	1.00	Front axle, changing oil
173-070	2.00	Axles, changing oil
173-074	1.50	Hydraulic oil tank, changing oil and filter
173-075	2.50	Hydraulic oil tank, changing oil and filter incl.cleaning tank
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-002	1.25	Compression test
210-070	2.50	Engine, removing
210-072	2.50	Engine, installing
211-002	5.00	Cylinder head, replacing gasket
211-068	2.00	Cylinder heads all removed, decarbonizing and grinding in valves
211-071	1.00	Cylinder head removed, pressure testing each
212-011	1.00	Cylinder, cylinder heads removed, measuring wear in all cylinders
214-012	1.25	Valves, adjusting
215-010	2.50	Belt, changing
216-014	1.00	Crankshaft, replacing front oil seal
216-018	1.50	Crankshaft, replacing rear oil seal
217-002	1.50	Sump gasket, replacing incl cleaning oil strainer
22		LUBRICATING SYSTEM
221-006	0.25	Oil pressure relief valve, replacing
221-014	3.00	Oil pump, replacing
223-006	1.00	Oil cooler, replacing

Op.no.	time (h)	Notes
23		FUEL SYSTEM
233-001	0.25	Fuel system, bleeding
233-002	0.50	Feed pump, replacing
233-004	0.25	Feed pump, checking feed pressure
233-011	0.20	Fuel pump, removing
233-012	0.30	Fuel pump, installing
233-014	0.20	Fuel filters, replacing
234-010	6.00	Fuel tank, replacing
236-001	0.50	Idling speed, checking and adjusting
236-070	3.50	Injection pump, removing
237-002	1.00	Injectors, replacing all
237-004	0.50	Injector, replacing one
237-018	0.25	Delivery pipe, replacing one
237-080	1.50	Injectors removed, reconditioning all
25		INLET SYSTEM; EXHAUST SYSTEM
251-002	1.00	Induction manifold, replacing gasket
251-004	1.50	Exhaust manifold, replacing gasket
252-020	0.50	Silencer, replacing
252-021	0.50	Exhaust pipe, flexible tube, replacing
255-070	0.50	Turbocharger, removing
255-071	2.00	Turbocharger, replacing
255-072	0.60	Turbocharger, installing
255-073	1.50	Turbocharger removed, reconditioning
256-002	0.25	Air cleaner, checking prssure drop indicator
256-006	0.25	Preheating coil, replacing
26		COOLING SYSTEM
261-008	1.00	Radiator, replacing
261-011	0.30	Radiator, removing
261-013	0.30	Radiator, installing
262-098	0.60	Thermostat, replacing
263-012	0.50	Fan belt and/or alternator belt, replacing
263-013	0.25	Fan belt and/or alternator belt, checking and adjusting tension
263-022	0.50	Fan belt and/or alternator-, compressor belt, replacing all belts
27		ENGINE CONTROL
273-021	0.50	Stop magnet, replacing

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.50	Batteries, replacing
311-003	0.25	Main switch, replacing
311-006	0.25	Earth lead to battery, replacing
311-008	0.25	Starter motor lead to battery, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	1.50	Alternator, replacing incl function check
321-003	0.80	Alternator, removing
321-004	0.80	Alternator, installing
321-025	1.00	Alternator, replacing carbon brush kit in machine
322-005	0.50	Charging regulator, replacing
33		STARTING SYSTEM
331-018	0.60	Starter motor, replacing
334-001	0.80	Starter lock, replacing
35		LIGHTING
352-024	0.50	Headlight, complete, changing (high beam 1 pc.) incl. setting
353-016	0.50	Rear lamp, replacing one
353-018	0.25	Rear lamp, replacing glass or bulb
356-056	0.50	Work lighting, replacing one head lamp assy
356-057	0.50	Work lighting, replacing one insert
36		OTHER ELECTRICAL EQUIPMENT
360-001	0.80	Combination control (by steering wheel), changing
361-010	0.50	Flasher switch, replacing
361-017	0.25	Flasher lamp, replacing glass or bulb
362-002	0.25	Horn, replacing
362-003	0.25	Reverse alarm, replacing
362-016	0.50	Horn switch, replacing
363-001	1.00	Windscreen wiper rear, replacing motor
363-002	1.00	Windscreen wiper front, replacing motor
363-003	0.75	Windscreen wiper, replacing switch
363-004	0.25	Windscreen flusher pump, replacing
364-004	0.75	Switch, replacing
364-008	0.25	Brake light switch, replacing
367-020	1.50	ECU, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-006	0.50	Engine temperature sensor, replacing
386-007	0.25	Engine oil pressure sensor, replacing

Op.no.	time (h)	Notes
386-011	1.00	Fuel level sender, replacing
386-013	0.50	Hydrostatic system temperature sensor, replacing
386-014	0.50	Hydrostatic system oil pressure sensor, replacing
387-003	0.80	Key pad, replacing
387-005	1.00	Information display, replacing
387-021	0.90	Instrument panel (display unit), replacing
39		MISCELLANEOUS
390-902	1.75	CareTrack, installing new
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-047	0.75	Gear selector, replacing
421-061	0.30	Induction sensor for output shaft, changing
43		GEARBOX,
434-002	1.50	Dropbox, replacing seal for front output shaft
434-029	3.00	Dropbox removed, reconditioning
434-073	3.00	Dropbox, installing
434-074	3.00	Dropbox, removing
44		HYDROSTATIC DRIVE
441-001	1.00	Hydrostatic system, checking oil pressure
441-002	2.50	Hydraulic motor, replacing
442-001	6.00	Hydraulic pump, replacing
45		PROPELLER SHAFT
451-010	1.00	Propeller shaft, front, replacing
46		FRONT AXLE; REAR AXLE
461-001	3.00	Axle, replacing
461-013	2.00	Centre gear, axle removed, reconditioning
461-014	1.00	Pinion front, fitting new gasket
461-042	2.00	Hub reduction gear, reconditioning one side
461-043	2.00	Hub, replacing seal
463-001	6.00	Axle, replacing
463-002	2.50	Axle, removing
463-003	3.50	Axle, installing
463-013	2.00	Centre gear, axle removed, reconditioning
463-014	1.00	Pinion rear, fitting new gasket
463-042	2.00	Hub reduction gear, reconditioning one side
463-043	2.00	Hub, replacing seal

Op.no.	time (h)	Notes
5		BRAKE
51		WHEEL BRAKE
516-001	0.50	Brake linings, checking wear
516-050	2.00	Brake piston, replacing seals
52		HYDRAULIC BRAKE SYSTEM
520-001	0.50	Brake system, checking function, hydraulic
520-002	0.50	Brake system, checking function, retardation
520-037	1.00	Brake system, bleeding
525-008	1.00	Foot brake valve, replacing
55		PARKING BRAKE
550-002	0.50	Parking brake, adjusting
6		STEERING
64		STEERING
641-021	1.50	Adjustable steering column, replacing
645-006	1.50	Steering cylinder, replacing
645-028	1.00	Steering system, checking and adjusting working pressure
645-054	2.00	Steering cylinder, replacing bearings
645-060	2.50	Steering cylinder, repacking in machine
645-077	1.00	Steering cylinder removed, reconditioning incl replacing bearings
645-082	1.50	Steering valve, replacing
647-093	1.50	Auxiliary steering, replacing hydraulic pump
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-001	3.00	Frame joint, separating machine
741-002	3.00	Frame joint, assembly of separated machine
741-005	0.50	Frame joint, checking clearance
741-036	1.50	Frame joint, replacing bearings
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.25	Wheel, removing and fitting one

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
818-015	2.50	Cab suspension, rubber element replacing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-005	1.50	Engine hood, replacing
83		DOORS; HATCH; COVER PLATE, (all)
831-004	1.00	Door, replacing
831-006	0.50	Door lock, replacing
831-014	0.50	Door, replacing sealing strip
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	3.00	Windscreen, replacing
843-012	3.00	Rear window, replacing
843-013	3.00	Side window, replacing
843-048	2.50	Door window, replacing
87		AIR CONDITIONING UNIT
873-004	2.00	Heater core, replacing
873-006	2.50	Fan motor, replacing
873-008	0.75	Heat control valve, replacing
873-009	1.00	Heat control, replacing
874-002	1.00	Refrigerant, draining
874-003	1.00	Cooling unit, performance test
874-005	1.75	Refrigerant, filling excl vacuum pumping
874-006	3.00	Compressor, replacing incl draining and filling
874-007	0.75	Belt, replacing
874-010	2.00	Condenser, replacing incl draining and filling
874-011	2.50	Receiver, replacing incl draining and filling
874-012	3.00	Evaporator, replacing incl draining and filling
874-013	2.50	Expansion valve, replacing incl draining and filling
874-014	1.00	Thermostat, replacing
874-015	1.00	Compressor, replacing shaft seal (compressor removed)
874-016	1.00	Compressor, replacing magnetic clutch (compressor removed)
874-019	0.50	Compressor, replacing valve plate (compressor removed)

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-005	0.30	Vacuum pump, connection
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-005	1.00	Pump suction hose and pipe, replacing
911-011	2.00	Oil cooler, replacing
911-038	6.50	Hydraulic oil tank, replacing
912-001	2.00	Control valve, replacing
912-002	2.50	Control valve removed, reconditioning
912-009	1.00	Shock valve, tilt function, checking and adjusting
912-011	1.00	Shock valve lift function, adjusting
913-004	0.50	Hydraulic pump, checking and adjusting max working pressure
913-010	1.50	Hydraulic pump, replacing
913-011	2.00	Hydraulic pump removed, reconditioning
914-054	0.50	Servo valve, adjusting control
914-055	0.50	Servo pressure, checking and adjusting
914-058	1.50	Servo valve, replacing
916-001	0.50	Boom suspension system, functional check
916-002	0.75	Boom suspension accumulator, check and adjusting
916-004	1.50	Boom suspension system, checking closing pressure
916-005	1.00	Boom suspension system, checking opening pressure
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-031	1.50	Implemental attachment hydraulic cylinder, replacing
94		UNIT, LOAD HANDLING
945-004	1.00	Lift cylinder, replacing
945-006	1.50	Lift cylinder removed, repacking
945-008	0.90	Tilt cylinder, replacing
945-009	1.50	Tilt cylinder, repacking in machine
945-011	2.00	Implemental attachment, replacing hydraulic cylinder
945-012	1.00	Lift cylinder removed, replacing bearings "C-P"
945-016	6.00	Lift frame, replacing bearing in upper mounting "O"
945-054	3.00	Implement attachment, replacing
945-056	3.50	Implement attachment, repacking removed hydraulic cylinder
945-066	1.00	Tilt link, replacing "GH"

Op.no.	time (h)	Notes
945-067	0.50	Tilt link removed, replacing bearings "GH"
945-069	1.00	Tilt arm, replacing "GDF"
945-070	0.50	Tilt arm removed, replacing bearing "GDF"

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
172-002	3.50	Warranty inspection 100 hours
172-004	8.50	Warranty inspection 1000 hours
173-002	0.50	Maintenance service, daily
173-004	1.00	Maintenance service, every 50 hours
173-007	1.25	Maintenance service, every 250 hours
173-010	3.00	Maintenance service, every 500 hours
173-012	8.00	Maintenance service, every 1000 hours
173-013	3.50	Maintenance service, every 1500 hours
173-014	9.50	Maintenance service, every 2000 hours
173-018	9.50	Maintenance service, every 4000 hours
173-022	11.00	Maintenance service, every 6000 hours
19		GENERAL
191-021	0.20	Service position 1
191-022	0.20	Service position 2
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-002	2.00	Compression test
210-070	3.50	Engine, removing
210-072	3.50	Engine, installing
214-012	1.00	Valves, adjusting
22		LUBRICATING SYSTEM
223-006	1.75	Oil cooler, replacing
23		FUEL SYSTEM
233-002	0.50	Feed pump, replacing
234-011	2.00	Fuel tank, removing
234-012	2.00	Fuel tank, installing
236-001	0.30	Idling speed, checking and adjusting
26		COOLING SYSTEM
261-011	3.00	Radiator, removing
261-013	3.50	Radiator, installing
262-002	1.25	Coolant pump, replacing
262-098	0.80	Thermostat, replacing

Op.no.	time (h)	Notes	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	0.80	I-ECU, MID 140, changing non-programmed ECU120001 - 129999	
300-072	0.80	I-ECU, MID 140, changing non-programmed ECU220001 - 229999	
300-074	0.30	I-ECU, MID 140, changing pre-programmed ECU120001 - 129999	
300-074	0.30	I-ECU, MID 140, changing pre-programmed ECU220001 - 229999	
301-003	0.40	Machine, Calibration	
301-013	0.40	Parameter, setting	
39		MISCELLANEOUS	
390-902	1.75	CareTrack, installing new	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-025	0.20	Transmission solenoid, replacing	
421-028	0.40	Transmission sensor, replacing	
421-061	0.30	Induction sensor for output shaft, changing	
421-070	1.75	Transmission, removing	
421-072	2.00	Transmission, installing	
421-100	2.50	Transmission, function check	1960001 - 1969999
421-100	2.50	Transmission, function check	220001 - 229999
44		HYDROSTATIC DRIVE	
441-002	1.75	Hydraulic motor, replacing	
441-060	0.40	Start hydraulic motor control, check and adjust	
442-016	0.30	Hydrostatic pump charge pressure, check and adjust	
442-017	0.30	Start hydraulic pump control, check and adjust	
442-018	0.30	Hydrostatic pump cut off valve, check and adjust	
442-019	0.30	Hydrostatic pump high pressure valve, check and adjust	
442-020	0.30	Hydrostatic pump mechanical zero position, check and adjust	
46		FRONT AXLE; REAR AXLE	
463-002	1.75	Axle, removing	
463-003	1.75	Axle, installing	

Op.no.	time (h)	Notes
5		BRAKE
51		WHEEL BRAKE
511-002	0.80	Brake disc, replacing one
511-081	0.90	Brake calliper removed, reconditioning
52		HYDRAULIC BRAKE SYSTEM
520-001	1.00	Brake system, checking function, hydraulic
520-003	0.20	Service brake pressure, checking
520-004	0.40	Brake system, adjusting unloading pressure
520-037	0.20	Brake system, bleeding
527-001	0.20	Accumulator removed, checking charging pressure
527-009	0.40	Accumulator, check
6		STEERING
64		STEERING
645-028	0.70	Steering system, checking and adjusting working 120001 - 129999 pressure
645-028	0.70	Steering system, checking and adjusting working 220001 - 229999 pressure
645-028	0.70	Steering system, checking and adjusting working pressure
66		LEVER STEERING
660-006	2.50	Comfort drive control (CDC), angle sensor, changing
660-007	1.25	Comfort drive control (CDC), solenoid valve, changing
660-009	0.90	Comfort Drive Control (CDC), control valve, removal
660-010	1.25	Comfort drive control (CDC), control valve, installation
660-011	0.20	Lever steering (CDC), functional check
660-012	0.50	Comfort Drive Control, servo pressure, checking
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	0.50	Counterweight, removing
716-002	0.40	Counterweight, fitting

Op.no.	time (h)	Notes
74		FRAME LINK
741-001	3.50	Frame joint, separating machine
741-002	4.50	Frame joint, assembly of separated machine
741-036	0.60	Frame joint, replacing bearings
75		AXLE SUSPENSION
755-003	4.00	Axle suspension, replacing bushes and seals
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	2.50	Cab, removing
810-002	2.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.40	Engine hood, removing
821-002	0.40	Engine hood, installing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	2.50	Windscreen, replacing
843-013	1.25	Side window, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-005	0.30	Vacuum pump, connection
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-091	1.25	Main control valve, removal
912-092	1.25	Main control valve, installation
912-160	0.70	Port relief valve pressure, checking and adjusting
913-003	0.40	Hydraulic pump, checking and adjusting standby pressure
913-004	0.40	Hydraulic pump, checking and adjusting max working pressure
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-035	0.60	Attachment locking hydraulic cylinder (vision-optimised bracket), replacing
94		UNIT, LOAD HANDLING
945-056	1.50	Implement attachment, repacking removed hydraulic cylinder

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
172-002	3.50	Warranty inspection 100 hours
172-004	8.50	Warranty inspection 1000 hours
173-002	0.50	Maintenance service, daily
173-004	1.00	Maintenance service, every 50 hours
173-007	1.25	Maintenance service, every 250 hours
173-010	3.00	Maintenance service, every 500 hours
173-012	8.00	Maintenance service, every 1000 hours
173-013	3.50	Maintenance service, every 1500 hours
173-014	9.50	Maintenance service, every 2000 hours
173-018	9.50	Maintenance service, every 4000 hours
173-022	11.00	Maintenance service, every 6000 hours
19		GENERAL
191-021	0.20	Service position 1
191-022	0.20	Service position 2
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-002	2.00	Compression test
210-070	3.50	Engine, removing
210-072	3.50	Engine, installing
214-012	1.00	Valves, adjusting
22		LUBRICATING SYSTEM
223-006	1.75	Oil cooler, replacing
23		FUEL SYSTEM
233-002	0.50	Feed pump, replacing
234-011	2.00	Fuel tank, removing
234-012	2.00	Fuel tank, installing
236-001	0.30	Idling speed, checking and adjusting
26		COOLING SYSTEM
261-011	3.00	Radiator, removing
261-013	3.50	Radiator, installing
262-002	1.25	Coolant pump, replacing
262-098	0.80	Thermostat, replacing

Op.no.	time (h)	Notes	
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
30		GENERAL	
300-072	0.80	I-ECU, MID 140, changing non-programmed ECU320001 - 329999	
300-072	0.80	I-ECU, MID 140, changing non-programmed ECU420001 - 429999	
300-074	0.30	I-ECU, MID 140, changing pre-programmed ECU320001 - 329999	
300-074	0.30	I-ECU, MID 140, changing pre-programmed ECU420001 - 429999	
301-003	0.40	Machine, Calibration	
301-013	0.40	Parameter, setting	
39		MISCELLANEOUS	
390-902	1.75	CareTrack, installing new	
4		POWER TRANSMISSION	
42		TRANSMISSION, HYDRAULIC CONTROL	
421-025	0.20	Transmission solenoid, replacing	
421-028	0.40	Transmission sensor, replacing	
421-061	0.30	Induction sensor for output shaft, changing	
421-070	1.75	Transmission, removing	
421-072	2.00	Transmission, installing	
421-100	2.50	Transmission, function check	1970001 - 1979999
421-100	2.50	Transmission, function check	420001 - 429999
44		HYDROSTATIC DRIVE	
441-002	1.75	Hydraulic motor, replacing	
441-060	0.40	Start hydraulic motor control, check and adjust	
442-016	0.30	Hydrostatic pump charge pressure, check and adjust	
442-017	0.30	Start hydraulic pump control, check and adjust	
442-018	0.30	Hydrostatic pump cut off valve, check and adjust	
442-019	0.30	Hydrostatic pump high pressure valve, check and adjust	
442-020	0.30	Hydrostatic pump mechanical zero position, check and adjust	
46		FRONT AXLE; REAR AXLE	
463-002	1.75	Axle, removing	
463-003	1.75	Axle, installing	

Op.no.	time (h)	Notes
5		BRAKE
51		WHEEL BRAKE
511-002	0.80	Brake disc, replacing one
511-081	0.90	Brake calliper removed, reconditioning
52		HYDRAULIC BRAKE SYSTEM
520-001	1.00	Brake system, checking function, hydraulic
520-003	0.20	Service brake pressure, checking
520-004	0.40	Brake system, adjusting unloading pressure
520-037	0.20	Brake system, bleeding
527-001	0.20	Accumulator removed, checking charging pressure
527-009	0.40	Accumulator, check
6		STEERING
64		STEERING
645-028	0.70	Steering system, checking and adjusting working 320001 - 329999 pressure
645-028	0.70	Steering system, checking and adjusting working 420001 - 429999 pressure
645-028	0.70	Steering system, checking and adjusting working pressure
66		LEVER STEERING
660-006	2.50	Comfort drive control (CDC), angle sensor, changing
660-007	1.25	Comfort drive control (CDC), solenoid valve, changing
660-009	0.90	Comfort Drive Control (CDC), control valve, removal
660-010	1.25	Comfort drive control (CDC), control valve, installation
660-011	0.20	Lever steering (CDC), functional check
660-012	0.50	Comfort Drive Control, servo pressure, checking
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	0.50	Counterweight, removing
716-002	0.40	Counterweight, fitting

Op.no.	time (h)	Notes
74		FRAME LINK
741-001	3.50	Frame joint, separating machine
741-002	4.50	Frame joint, assembly of separated machine
741-036	0.60	Frame joint, replacing bearings
75		AXLE SUSPENSION
755-003	4.00	Axle suspension, replacing bushes and seals
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	2.50	Cab, removing
810-002	2.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.40	Engine hood, removing
821-002	0.40	Engine hood, installing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	2.50	Windscreen, replacing
843-013	1.25	Side window, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-005	0.30	Vacuum pump, connection
91		WORKING HYDRAULICS; SERVO HYDRAULICS
912-091	1.25	Main control valve, removal
912-092	1.25	Main control valve, installation
912-160	0.70	Port relief valve pressure, checking and adjusting
913-003	0.40	Hydraulic pump, checking and adjusting standby pressure
913-004	0.40	Hydraulic pump, checking and adjusting max working pressure
92		MECHANICAL EQUIPMENT/ATTACHMENT
924-035	0.60	Attachment locking hydraulic cylinder (vision-optimised bracket), replacing
94		UNIT, LOAD HANDLING
945-056	1.50	Implement attachment, repacking removed hydraulic cylinder

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-004	0.50	Maintenance service, every 50 hours
173-007	1.00	Maintenance service, every 250 hours
173-010	2.50	Maintenance service, every 500 hours
173-012	3.00	Maintenance service, every 1000 hours
173-014	7.00	Maintenance service, every 2000 hours
173-018	7.50	Maintenance service, every 4000 hours
173-019	0.80	Maintenance service, every 4500 hours
173-022	2.50	Maintenance service, every 6000 hours
173-042	1.75	Maintenance service, first 1000 hours
173-150	1.75	Maintenance service, fire suppression system
176-001	0.50	Mechanical release of parking brake
19		GENERAL
191-021	0.20	Service position 1
191-022	0.20	Service position 2
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.00	E-ECU, MID 128, changing non-programmed ECU
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU
200-200	0.30	Engine belts, replacing
21		ENGINE
210-002	3.00	Compression test
210-070	5.00	Engine, removing
210-072	8.50	Engine, installing
210-092	0.60	Engine rotation speed sensor (camshaft), replacing
210-093	0.60	Engine rotation speed sensor (crank shaft), replacing
214-012	2.50	Valves, adjusting
216-014	4.00	Crankshaft, replacing front oil seal
22		LUBRICATING SYSTEM
221-022	0.30	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding

Op.no.	time (h)	Notes
233-004	0.30	Feed pump, checking feed pressure
233-008	1.00	Fuel pump, replacing
236-002	0.50	Stall speed, checking
237-002	3.00	Injectors, replacing all
237-017	11.00	Injector sleeves, replacing
237-032	2.00	High pressure fuel pump, replacing
237-033	1.50	Fuel control valve (FCV), replacing
237-034	1.50	Pressure relief valve (PRV), replacing
237-035	0.30	Fuel rail pressure sensor, replacing
237-124	0.70	High pressure fuel system, pressure relief
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	1.25	Exhaust pipe, flexible tube, replacing
254-001	1.00	Diesel particulate filter, check and clean
254-022	1.50	ACM (After treatment control module), replacing, non-programmed
254-023	1.25	ACM (After treatment control module), replacing, pre-programmed
254-031	1.00	Air pump, replacing
254-033	1.25	Burner, replacing
254-043	0.40	Spark plug control unit, replacing
254-044	0.20	Glow plug, replacing
254-046	0.20	Spark plug, replacing
254-047	0.20	Spark plug, checking
254-048	0.20	Spark plug cable, replacing
254-050	1.25	Fuel metering unit A, replacing
254-051	2.50	Fuel metering unit B, replacing
254-053	1.25	Glow plug control unit, replacing
254-056	0.40	NOx sensor, replacing
254-067	1.50	Oxidation catalyst, replacing
255-009	0.50	Waste gate, testing
255-070	0.90	Turbocharger, removing
255-072	0.80	Turbocharger, installing
258-023	1.25	Charge air cooler, removing
258-024	2.00	Charge air cooler, installing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
260-003	0.60	Cooling system, pressure control
261-011	1.25	Radiator, removing
261-013	1.75	Radiator, installing
262-002	1.00	Coolant pump, replacing
263-081	0.50	Hydraulic pump P3, removal
263-082	1.75	Hydraulic pump P3, installation

Op.no.	time (h)	Notes
29		Miscellaneous
293-001	3.00	EGR cooler, replacing
293-004	3.00	EGR cooler, cleaning
293-005	3.00	EGR valve, replacing
293-006	0.20	EGR temperature sensor, replacing
293-007	0.20	EGR pressure sensor, replacing
293-008	3.00	EGR Actuator, replacing
293-009	3.00	EGR reed valve, replacing
293-010	0.40	EGR Venturi tube, replacing
293-011	0.40	EGR reed valve, checking
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	0.80	I-ECU, MID 140, changing non-programmed ECU
300-074	0.30	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-002	0.30	Batteries, replacing
311-005	0.50	Battery condition, check
36		OTHER ELECTRICAL EQUIPMENT
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-066	0.70	V-ECU, MID 187, changing pre-programmed ECU
39		MISCELLANEOUS
398-004	0.70	CareTrack battery, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.70	Transmission oil pressure, checking
421-048	2.00	Gear selector valve, replacing one solenoid
421-052	2.50	Seal for front output shaft, replacing
421-054	0.90	Seal for rear output shaft, replacing
421-070	5.00	Transmission, removing
421-072	7.00	Transmission, installing
421-099	0.70	Transmission, calibration
421-100	0.20	Transmission, function check

Op.no.	time (h)	Notes
46		FRONT AXLE; REAR AXLE
461-037	0.80	Hub reduction, removing
461-038	1.50	Hub reduction, installing
461-043	4.50	Hub, replacing seal
463-002	1.25	Axle, removing
463-003	2.00	Axle, installing
463-037	3.00	Axle suspension, replacing bushes and seals
463-043	4.50	Hub, replacing seal
463-045	0.80	Hub reduction, removing
463-046	1.50	Hub reduction, installing
468-006	0.20	Differential lock, function check
468-051	0.70	Differential lock, adjusting
5		BRAKE
51		WHEEL BRAKE
510-003	0.40	Brake discs, measuring wear
510-004	0.10	Wheel brakes, functional check
516-005	3.00	Brake disc, replacing
516-050	3.00	Brake piston, replacing seals
517-005	3.00	Brake disc, replacing
52		HYDRAULIC BRAKE SYSTEM
520-002	0.20	Brake system, checking function, retardation
520-005	0.30	Brake system, check and adjusting pressure in circuit
520-036	0.20	Brake system charging, checking
520-037	0.30	Brake system, bleeding
527-001	0.10	Accumulator removed, checking charging pressure
527-003	0.50	Accumulators, checking in machine
527-012	0.40	Accumulator, removal
527-013	0.40	Accumulator, installation
55		PARKING BRAKE
550-002	0.30	Parking brake, adjusting
550-014	0.70	Parking brake, replacing brake pads
550-018	0.40	Parking brake assembly, removing
550-019	0.50	Parking Brake - Disassembly
550-021	0.30	Parking Brake - Assembly
550-022	0.90	Parking Brake - Installation
550-023	0.10	Parking brake, function checking

Op.no.	time (h)	Notes
6		STEERING
60		GENERAL
600-001	0.50	Steering system, function check
64		STEERING
645-028	0.40	Steering system, checking and adjusting working pressure
647-091	0.70	Secondary steering pump, checking and adjusting working pressure
66		LEVER STEERING
660-006	0.90	Comfort drive control (CDC), angle sensor, changing
660-007	1.25	Comfort drive control (CDC), solenoid valve, changing
660-011	0.20	Lever steering (CDC), functional check
660-012	0.40	Comfort Drive Control, servo pressure, checking
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	1.50	Counterweight, removing
716-002	1.25	Counterweight, fitting
74		FRAME LINK
741-036	11.00	Frame joint, replacing bearings
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-002	0.40	Front wheel, removal
771-003	0.40	Front wheel, installation
771-004	0.50	Rear wheel, removing
771-005	0.30	Rear wheel, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.40	Engine hood, removing
821-002	0.80	Engine hood, installing

Op.no.	time (h)	Notes
821-010	0.50	Actuator, replacing
821-012	0.40	Engine hood, manually operating
83		DOORS; HATCH; COVER PLATE, (all)
831-054	0.30	Electric door opener, control unit, replacing
831-055	0.30	Electric door opener, locking motor, replacing
831-056	0.20	Electric door opener, rotor switch, replacing
831-057	0.30	Electric door opener, opening support motor, replacing
834-013	0.30	Door lock cylinder, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	2.50	Windscreen, replacing
85		CAB INTERIOR/UPHOLSTERY
852-010	0.40	Operator's seat, securing
87		AIR CONDITIONING UNIT
870-010	0.50	ECC, MID 146, changing pre-programmed ECU
870-011	0.80	ECC, MID 146, changing non-programmed ECU
870-012	0.90	Climate unit, removing
870-013	1.25	Climate unit, installing
870-014	0.90	Pause heater, replacing
873-004	2.50	Heater core, replacing
873-006	2.50	Fan motor, replacing
873-008	1.25	Heat control valve, replacing
873-011	0.80	Air mix door actuator, replacing
874-001	1.75	Refrigerant, filling incl vacuum pumping
874-002	0.80	Refrigerant, draining
874-012	3.00	Evaporator, replacing incl draining and filling
874-024	3.00	Evaporator, replacing
874-025	4.00	Expansion valve, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-001	0.50	Hydraulic system, warming up
900-002	3.00	Hydraulic system, bleeding
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-018	0.20	Back-up valve, checking and adjusting
912-021	0.80	Shock valve, tilt function, checking

Op.no.	time (h)		Notes
912-023	0.60	Shock valve lift function, checking	
912-127	0.20	Tilt, functional check	
912-151	0.50	Back-up valve, replacing	
912-226	0.20	Lift/lower function, checking	
913-001	0.60	Hydraulic pump, checking and adjusting standby pressure and working pressure	
913-034	0.20	Lifting time, checking	
913-050	0.70	Hydraulic pump P2, removal	
913-051	1.50	Hydraulic pump P2, installation	
913-059	0.70	Hydraulic pump P3, checking function	
914-047	0.20	Servo accumulator, removal	
914-047	0.20	Servo accumulator, removal	2254 - 9999
914-048	0.10	Servo accumulator, installation	
914-048	0.10	Servo accumulator, installation	2254 - 9999
914-049	0.40	Accumulator removed, checking	
914-055	0.20	Servo pressure, checking and adjusting	2254 - 9999
914-055	0.20	Servo pressure, checking and adjusting	
914-063	0.30	Servo pressure, checking at the spool in control valve	
916-001	0.30	Boom suspension system, functional check	
916-003	0.60	Boom suspension accumulator, reconditioning	
916-006	0.60	Boom suspension system, pressure reduction, safety valve, checking and adjusting	
916-010	0.60	Boom suspension system, left accumulator, removal	
916-011	1.25	Boom suspension system, left accumulator, installation	
916-017	1.75	3rd/4th hydraulic function, shock valve, checking	
916-020	0.20	3rd/4th hydraulic function, checking and adjusting pressure	
916-070	0.30	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing	
916-072	0.20	Accumulator, boom suspension system, discarding	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-036	0.10	Attachment locking, functional check	
94		UNIT, LOAD HANDLING	
945-005	1.75	Lift cylinder, repacking in machine	
945-009	2.00	Tilt cylinder, repacking in machine	
99		MISCELLANEOUS	
992-002	4.00	Fire suppression system, actions after activation	
992-003	4.00	Fire suppression system, actions after manual activation	
993-025	2.50	Automatic lubrication pump unit, reconditioning	

Op.no.	time (h)	Notes
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-004	0.50	Maintenance service, every 50 hours
173-007	1.00	Maintenance service, every 250 hours
173-010	2.50	Maintenance service, every 500 hours
173-012	3.00	Maintenance service, every 1000 hours
173-014	7.00	Maintenance service, every 2000 hours
173-018	7.50	Maintenance service, every 4000 hours
173-019	0.80	Maintenance service, every 4500 hours
173-022	2.50	Maintenance service, every 6000 hours
173-042	1.75	Maintenance service, first 1000 hours
173-150	1.75	Maintenance service, fire suppression system
176-001	0.50	Mechanical release of parking brake
19		GENERAL
191-021	0.20	Service position 1
191-022	0.20	Service position 2
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.00	E-ECU, MID 128, changing non-programmed ECU
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU
200-200	0.30	Engine belts, replacing
21		ENGINE
210-002	3.00	Compression test
210-070	5.00	Engine, removing
210-072	8.50	Engine, installing
210-092	0.60	Engine rotation speed sensor (camshaft), replacing
210-093	0.60	Engine rotation speed sensor (crank shaft), replacing
214-012	2.50	Valves, adjusting
216-014	4.00	Crankshaft, replacing front oil seal
22		LUBRICATING SYSTEM
221-022	0.30	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding

Op.no.	time (h)	Notes
233-004	0.30	Feed pump, checking feed pressure
233-008	1.00	Fuel pump, replacing
236-002	0.50	Stall speed, checking
237-002	3.00	Injectors, replacing all
237-017	11.00	Injector sleeves, replacing
237-032	2.00	High pressure fuel pump, replacing
237-033	1.50	Fuel control valve (FCV), replacing
237-034	1.50	Pressure relief valve (PRV), replacing
237-035	0.30	Fuel rail pressure sensor, replacing
237-124	0.70	High pressure fuel system, pressure relief
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	1.25	Exhaust pipe, flexible tube, replacing
254-001	1.00	Diesel particulate filter, check and clean
254-022	1.50	ACM (After treatment control module), replacing, non-programmed
254-023	1.25	ACM (After treatment control module), replacing, pre-programmed
254-031	1.00	Air pump, replacing
254-033	1.25	Burner, replacing
254-043	0.40	Spark plug control unit, replacing
254-044	0.20	Glow plug, replacing
254-046	0.20	Spark plug, replacing
254-047	0.20	Spark plug, checking
254-048	0.20	Spark plug cable, replacing
254-050	1.25	Fuel metering unit A, replacing
254-051	2.50	Fuel metering unit B, replacing
254-053	1.25	Glow plug control unit, replacing
254-056	0.40	NOx sensor, replacing
254-067	1.50	Oxidation catalyst, replacing
255-009	0.50	Waste gate, testing
255-070	0.90	Turbocharger, removing
255-072	0.80	Turbocharger, installing
258-023	1.25	Charge air cooler, removing
258-024	2.00	Charge air cooler, installing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
260-003	0.60	Cooling system, pressure control
261-011	1.25	Radiator, removing
261-013	1.75	Radiator, installing
262-002	1.00	Coolant pump, replacing
263-081	0.50	Hydraulic pump P3, removal
263-082	1.75	Hydraulic pump P3, installation

Op.no.	time (h)	Notes
29		Miscellaneous
293-001	3.00	EGR cooler, replacing
293-004	3.00	EGR cooler, cleaning
293-005	3.00	EGR valve, replacing
293-006	0.20	EGR temperature sensor, replacing
293-007	0.20	EGR pressure sensor, replacing
293-008	3.00	EGR Actuator, replacing
293-009	3.00	EGR reed valve, replacing
293-010	0.40	EGR Venturi tube, replacing
293-011	0.40	EGR reed valve, checking
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	0.80	I-ECU, MID 140, changing non-programmed ECU
300-074	0.30	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-002	0.30	Batteries, replacing
311-005	0.50	Battery condition, check
36		OTHER ELECTRICAL EQUIPMENT
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-066	0.70	V-ECU, MID 187, changing pre-programmed ECU
39		MISCELLANEOUS
398-004	0.70	CareTrack battery, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.70	Transmission oil pressure, checking
421-048	2.00	Gear selector valve, replacing one solenoid
421-052	2.50	Seal for front output shaft, replacing
421-054	0.90	Seal for rear output shaft, replacing
421-070	5.00	Transmission, removing
421-072	7.00	Transmission, installing
421-099	0.70	Transmission, calibration
421-100	0.20	Transmission, function check

Op.no.	time (h)	Notes
46		FRONT AXLE; REAR AXLE
461-037	0.80	Hub reduction, removing
461-038	1.50	Hub reduction, installing
461-043	4.50	Hub, replacing seal
463-002	1.25	Axle, removing
463-003	2.00	Axle, installing
463-037	3.00	Axle suspension, replacing bushes and seals
463-043	4.50	Hub, replacing seal
463-045	0.80	Hub reduction, removing
463-046	1.50	Hub reduction, installing
468-006	0.20	Differential lock, function check
468-051	0.70	Differential lock, adjusting
5		BRAKE
51		WHEEL BRAKE
510-003	0.40	Brake discs, measuring wear
510-004	0.10	Wheel brakes, functional check
516-005	3.00	Brake disc, replacing
516-050	3.00	Brake piston, replacing seals
517-005	3.00	Brake disc, replacing
517-050	3.00	Brake piston, replacing seals
52		HYDRAULIC BRAKE SYSTEM
520-002	0.20	Brake system, checking function, retardation
520-005	0.30	Brake system, check and adjusting pressure in circuit
520-036	0.20	Brake system charging, checking
520-037	0.30	Brake system, bleeding
527-001	0.10	Accumulator removed, checking charging pressure
527-003	0.50	Accumulators, checking in machine
527-012	0.40	Accumulator, removal
527-013	0.40	Accumulator, installation
55		PARKING BRAKE
550-002	0.30	Parking brake, adjusting
550-014	0.70	Parking brake, replacing brake pads
550-018	0.40	Parking brake assembly, removing
550-019	0.50	Parking Brake - Disassembly
550-021	0.30	Parking Brake - Assembly
550-022	0.90	Parking Brake - Installation
550-023	0.10	Parking brake, function checking

Op.no.	time (h)	Notes
6		STEERING
60		GENERAL
600-001	0.50	Steering system, function check
64		STEERING
645-028	0.40	Steering system, checking and adjusting working pressure
647-091	0.70	Secondary steering pump, checking and adjusting working pressure
66		LEVER STEERING
660-006	0.90	Comfort drive control (CDC), angle sensor, changing
660-007	1.25	Comfort drive control (CDC), solenoid valve, changing
660-011	0.20	Lever steering (CDC), functional check
660-012	0.40	Comfort Drive Control, servo pressure, checking
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	1.50	Counterweight, removing
716-002	1.25	Counterweight, fitting
74		FRAME LINK
741-036	11.00	Frame joint, replacing bearings
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-002	0.40	Front wheel, removal
771-003	0.40	Front wheel, installation
771-004	0.50	Rear wheel, removing
771-005	0.30	Rear wheel, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.40	Engine hood, removing
821-002	0.80	Engine hood, installing

Op.no.	time (h)	Notes
821-010	0.50	Actuator, replacing
821-012	0.40	Engine hood, manually operating
83		DOORS; HATCH; COVER PLATE, (all)
831-054	0.30	Electric door opener, control unit, replacing
831-055	0.30	Electric door opener, locking motor, replacing
831-056	0.20	Electric door opener, rotor switch, replacing
831-057	0.30	Electric door opener, opening support motor, replacing
834-013	0.30	Door lock cylinder, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	2.50	Windscreen, replacing
85		CAB INTERIOR/UPHOLSTERY
852-010	0.40	Operator's seat, securing
87		AIR CONDITIONING UNIT
870-010	0.50	ECC, MID 146, changing pre-programmed ECU
870-011	0.80	ECC, MID 146, changing non-programmed ECU
870-012	0.90	Climate unit, removing
870-013	1.25	Climate unit, installing
870-014	0.90	Pause heater, replacing
873-004	2.50	Heater core, replacing
873-006	2.50	Fan motor, replacing
873-008	1.25	Heat control valve, replacing
873-011	0.80	Air mix door actuator, replacing
874-001	1.75	Refrigerant, filling incl vacuum pumping
874-002	0.80	Refrigerant, draining
874-012	3.00	Evaporator, replacing incl draining and filling
874-024	3.00	Evaporator, replacing
874-025	4.00	Expansion valve, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-001	0.50	Hydraulic system, warming up
900-002	3.00	Hydraulic system, bleeding
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-018	0.20	Back-up valve, checking and adjusting
912-021	0.80	Shock valve, tilt function, checking

Op.no.	time (h)		Notes
912-023	0.60	Shock valve lift function, checking	
912-127	0.20	Tilt, functional check	
912-151	0.50	Back-up valve, replacing	
912-226	0.20	Lift/lower function, checking	
913-001	0.60	Hydraulic pump, checking and adjusting standby pressure and working pressure	
913-034	0.20	Lifting time, checking	
913-050	0.70	Hydraulic pump P2, removal	
913-051	1.50	Hydraulic pump P2, installation	
913-059	0.70	Hydraulic pump P3, checking function	
914-047	0.20	Servo accumulator, removal	
914-047	0.20	Servo accumulator, removal	3205 - 9999
914-048	0.10	Servo accumulator, installation	
914-048	0.10	Servo accumulator, installation	3205 - 9999
914-049	0.40	Accumulator removed, checking	
914-055	0.20	Servo pressure, checking and adjusting	3205 - 9999
914-055	0.20	Servo pressure, checking and adjusting	
914-063	0.30	Servo pressure, checking at the spool in control valve	
916-001	0.30	Boom suspension system, functional check	
916-003	0.60	Boom suspension accumulator, reconditioning	
916-006	0.60	Boom suspension system, pressure reduction, safety valve, checking and adjusting	
916-010	0.60	Boom suspension system, left accumulator, removal	
916-011	1.25	Boom suspension system, left accumulator, installation	
916-017	1.75	3rd/4th hydraulic function, shock valve, checking	
916-020	0.20	3rd/4th hydraulic function, checking and adjusting pressure	
916-070	0.30	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing	
916-072	0.20	Accumulator, boom suspension system, discarding	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-036	0.10	Attachment locking, functional check	
94		UNIT, LOAD HANDLING	
945-005	1.75	Lift cylinder, repacking in machine	
945-009	2.00	Tilt cylinder, repacking in machine	
99		MISCELLANEOUS	
992-002	4.00	Fire suppression system, actions after activation	
992-003	4.00	Fire suppression system, actions after manual activation	
993-025	2.50	Automatic lubrication pump unit, reconditioning	

Op.no.	time (h)	Notes
993-030	0.80	Shift valve, checking

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-004	0.50	Maintenance service, every 50 hours
173-007	1.00	Maintenance service, every 250 hours
173-010	2.50	Maintenance service, every 500 hours
173-012	3.00	Maintenance service, every 1000 hours
173-014	7.00	Maintenance service, every 2000 hours
173-018	7.50	Maintenance service, every 4000 hours
173-019	0.80	Maintenance service, every 4500 hours
173-022	2.50	Maintenance service, every 6000 hours
173-042	1.75	Maintenance service, first 1000 hours
173-150	1.75	Maintenance service, fire suppression system
176-001	0.50	Mechanical release of parking brake
19		GENERAL
191-021	0.20	Service position 1
191-022	0.20	Service position 2
2		ENGINE WITH MOUNTING AND EQUIPMENT
20		GENERAL
200-068	1.00	E-ECU, MID 128, changing non-programmed ECU
200-070	0.90	E-ECU, MID 128, changing pre-programmed ECU
200-200	0.30	Engine belts, replacing
21		ENGINE
210-002	3.00	Compression test
210-070	5.00	Engine, removing
210-072	8.50	Engine, installing
210-092	0.60	Engine rotation speed sensor (camshaft), replacing
210-093	0.60	Engine rotation speed sensor (crank shaft), replacing
214-012	2.50	Valves, adjusting
216-014	4.00	Crankshaft, replacing front oil seal
22		LUBRICATING SYSTEM
221-022	0.30	Lubrication oil pressure, checking with pressure gauge
23		FUEL SYSTEM
230-001	0.50	Carbon dioxide in fuel system, check
233-001	0.30	Fuel system, bleeding

Op.no.	time (h)	Notes
233-004	0.30	Feed pump, checking feed pressure
233-008	1.00	Fuel pump, replacing
236-002	0.50	Stall speed, checking
237-002	3.00	Injectors, replacing all
237-017	11.00	Injector sleeves, replacing
237-032	2.00	High pressure fuel pump, replacing
237-033	1.50	Fuel control valve (FCV), replacing
237-034	1.50	Pressure relief valve (PRV), replacing
237-035	0.30	Fuel rail pressure sensor, replacing
237-124	0.70	High pressure fuel system, pressure relief
25		INLET SYSTEM; EXHAUST SYSTEM
252-021	1.25	Exhaust pipe, flexible tube, replacing
254-001	1.00	Diesel particulate filter, check and clean
254-022	1.50	ACM (After treatment control module), replacing, non-programmed
254-023	1.25	ACM (After treatment control module), replacing, pre-programmed
254-031	1.00	Air pump, replacing
254-033	1.25	Burner, replacing
254-043	0.40	Spark plug control unit, replacing
254-044	0.20	Glow plug, replacing
254-046	0.20	Spark plug, replacing
254-047	0.20	Spark plug, checking
254-048	0.20	Spark plug cable, replacing
254-050	1.25	Fuel metering unit A, replacing
254-051	2.50	Fuel metering unit B, replacing
254-053	1.25	Glow plug control unit, replacing
254-056	0.40	NOx sensor, replacing
254-067	1.50	Oxidation catalyst, replacing
255-009	0.50	Waste gate, testing
255-070	0.90	Turbocharger, removing
255-072	0.80	Turbocharger, installing
258-023	1.25	Charge air cooler, removing
258-024	2.00	Charge air cooler, installing
26		COOLING SYSTEM
260-001	0.70	Carbon dioxide in coolant system, checking
260-003	0.60	Cooling system, pressure control
261-011	1.25	Radiator, removing
261-013	1.75	Radiator, installing
262-002	1.00	Coolant pump, replacing
263-081	0.50	Hydraulic pump P3, removal
263-082	1.75	Hydraulic pump P3, installation

Op.no.	time (h)	Notes
29		Miscellaneous
293-001	3.00	EGR cooler, replacing
293-004	3.00	EGR cooler, cleaning
293-005	3.00	EGR valve, replacing
293-006	0.20	EGR temperature sensor, replacing
293-007	0.20	EGR pressure sensor, replacing
293-008	3.00	EGR Actuator, replacing
293-009	3.00	EGR reed valve, replacing
293-010	0.40	EGR Venturi tube, replacing
293-011	0.40	EGR reed valve, checking
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
30		GENERAL
300-072	0.80	I-ECU, MID 140, changing non-programmed ECU
300-074	0.30	I-ECU, MID 140, changing pre-programmed ECU
31		BATTERY
311-002	0.30	Batteries, replacing
311-005	0.50	Battery condition, check
36		OTHER ELECTRICAL EQUIPMENT
366-064	1.50	V-ECU, MID 187, changing non-programmed ECU
366-066	0.70	V-ECU, MID 187, changing pre-programmed ECU
39		MISCELLANEOUS
398-004	0.70	CareTrack battery, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-002	0.70	Transmission oil pressure, checking
421-048	2.00	Gear selector valve, replacing one solenoid
421-052	2.50	Seal for front output shaft, replacing
421-054	0.90	Seal for rear output shaft, replacing
421-070	5.00	Transmission, removing
421-072	7.00	Transmission, installing
421-099	0.70	Transmission, calibration
421-100	0.20	Transmission, function check

Op.no.	time (h)	Notes
46		FRONT AXLE; REAR AXLE
461-037	0.80	Hub reduction, removing
461-038	1.50	Hub reduction, installing
461-043	4.50	Hub, replacing seal
463-002	1.25	Axle, removing
463-003	2.00	Axle, installing
463-037	3.00	Axle suspension, replacing bushes and seals
463-043	4.50	Hub, replacing seal
463-045	0.80	Hub reduction, removing
463-046	1.50	Hub reduction, installing
468-006	0.20	Differential lock, function check
468-051	0.70	Differential lock, adjusting
5		BRAKE
51		WHEEL BRAKE
510-003	0.40	Brake discs, measuring wear
510-004	0.10	Wheel brakes, functional check
516-005	3.00	Brake disc, replacing
516-050	3.00	Brake piston, replacing seals
517-005	3.00	Brake disc, replacing
517-050	3.00	Brake piston, replacing seals
52		HYDRAULIC BRAKE SYSTEM
520-002	0.20	Brake system, checking function, retardation
520-005	0.30	Brake system, check and adjusting pressure in circuit
520-036	0.20	Brake system charging, checking
520-037	0.30	Brake system, bleeding
527-001	0.10	Accumulator removed, checking charging pressure
527-003	0.50	Accumulators, checking in machine
527-012	0.40	Accumulator, removal
527-013	0.40	Accumulator, installation
55		PARKING BRAKE
550-002	0.30	Parking brake, adjusting
550-014	0.70	Parking brake, replacing brake pads
550-018	0.40	Parking brake assembly, removing
550-019	0.50	Parking Brake - Disassembly
550-021	0.30	Parking Brake - Assembly
550-022	0.90	Parking Brake - Installation
550-023	0.10	Parking brake, function checking

Op.no.	time (h)	Notes
6		STEERING
60		GENERAL
600-001	0.50	Steering system, function check
64		STEERING
645-028	0.40	Steering system, checking and adjusting working pressure
647-091	0.70	Secondary steering pump, checking and adjusting working pressure
66		LEVER STEERING
660-006	0.90	Comfort drive control (CDC), angle sensor, changing
660-007	1.25	Comfort drive control (CDC), solenoid valve, changing
660-011	0.20	Lever steering (CDC), functional check
660-012	0.40	Comfort Drive Control, servo pressure, checking
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
716-001	1.50	Counterweight, removing
716-002	1.25	Counterweight, fitting
74		FRAME LINK
741-036	11.00	Frame joint, replacing bearings
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-002	0.40	Front wheel, removal
771-003	0.40	Front wheel, installation
771-004	0.50	Rear wheel, removing
771-005	0.30	Rear wheel, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
810-001	3.00	Cab, removing
810-002	3.50	Cab, installing
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.40	Engine hood, removing
821-002	0.80	Engine hood, installing

Op.no.	time (h)	Notes
821-010	0.50	Actuator, replacing
821-012	0.40	Engine hood, manually operating
83		DOORS; HATCH; COVER PLATE, (all)
831-054	0.30	Electric door opener, control unit, replacing
831-055	0.30	Electric door opener, locking motor, replacing
831-056	0.20	Electric door opener, rotor switch, replacing
831-057	0.30	Electric door opener, opening support motor, replacing
834-013	0.30	Door lock cylinder, replacing
84		TRIM PART, OUTSIDE; GLASS; SEALING MOULDING
843-002	2.50	Windscreen, replacing
85		CAB INTERIOR/UPHOLSTERY
852-010	0.40	Operator's seat, securing
87		AIR CONDITIONING UNIT
870-010	0.50	ECC, MID 146, changing pre-programmed ECU
870-011	0.80	ECC, MID 146, changing non-programmed ECU
870-012	0.90	Climate unit, removing
870-013	1.25	Climate unit, installing
870-014	0.90	Pause heater, replacing
873-004	2.50	Heater core, replacing
873-006	2.50	Fan motor, replacing
873-008	1.25	Heat control valve, replacing
873-011	0.80	Air mix door actuator, replacing
874-001	1.75	Refrigerant, filling incl vacuum pumping
874-002	0.80	Refrigerant, draining
874-012	3.00	Evaporator, replacing incl draining and filling
874-024	3.00	Evaporator, replacing
874-025	4.00	Expansion valve, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
90		GENERAL
900-001	0.50	Hydraulic system, warming up
900-002	3.00	Hydraulic system, bleeding
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-018	0.20	Back-up valve, checking and adjusting
912-021	0.80	Shock valve, tilt function, checking

Op.no.	time (h)		Notes
912-023	0.60	Shock valve lift function, checking	
912-127	0.20	Tilt, functional check	
912-151	0.50	Back-up valve, replacing	
912-226	0.20	Lift/lower function, checking	
913-001	0.60	Hydraulic pump, checking and adjusting standby pressure and working pressure	
913-034	0.20	Lifting time, checking	
913-050	0.70	Hydraulic pump P2, removal	
913-051	1.50	Hydraulic pump P2, installation	
913-059	0.70	Hydraulic pump P3, checking function	
914-047	0.20	Servo accumulator, removal	
914-047	0.20	Servo accumulator, removal	4491 - 9999
914-048	0.10	Servo accumulator, installation	
914-048	0.10	Servo accumulator, installation	4491 - 9999
914-049	0.40	Accumulator removed, checking	
914-055	0.20	Servo pressure, checking and adjusting	4491 - 9999
914-055	0.20	Servo pressure, checking and adjusting	
914-063	0.30	Servo pressure, checking at the spool in control valve	
916-001	0.30	Boom suspension system, functional check	
916-003	0.60	Boom suspension accumulator, reconditioning	
916-006	0.60	Boom suspension system, pressure reduction, safety valve, checking and adjusting	
916-010	0.60	Boom suspension system, left accumulator, removal	
916-011	1.25	Boom suspension system, left accumulator, installation	
916-017	1.75	3rd/4th hydraulic function, shock valve, checking	
916-020	0.20	3rd/4th hydraulic function, checking and adjusting pressure	
916-070	0.30	Boom suspension system, hydraulic oil pressure in accumulators, depressurizing	
916-072	0.20	Accumulator, boom suspension system, discarding	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-036	0.10	Attachment locking, functional check	
94		UNIT, LOAD HANDLING	
945-005	1.75	Lift cylinder, repacking in machine	
945-009	2.00	Tilt cylinder, repacking in machine	
99		MISCELLANEOUS	
992-002	4.00	Fire suppression system, actions after activation	
992-003	4.00	Fire suppression system, actions after manual activation	
993-025	2.50	Automatic lubrication pump unit, reconditioning	

Op.no.	time (h)	Notes
993-030	0.80	Shift valve, checking

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
172-002	1.25	Warranty inspection 100 hours	71000 - 79999
172-002	1.25	Warranty inspection 100 hours	61000 - 61162 70000 - 70999
172-004	5.50	Warranty inspection 1000 hours	71000 - 79999
172-004	5.50	Warranty inspection 1000 hours	61000 - 61162 70000 - 70999
173-002	0.30	Maintenance service, daily	61000 - 61162 70000 - 70999
173-004	0.70	Maintenance service, every 50 hours	61000 - 61162 70000 - 70999
173-004	0.70	Maintenance service, every 50 hours	71000 - 79999
173-007	1.25	Maintenance service, every 250 hours	61000 - 61162 70000 - 70999
173-007	1.25	Maintenance service, every 250 hours	71000 - 79999
173-010	1.50	Maintenance service, every 500 hours	61000 - 61162 70000 - 70999
173-010	1.50	Maintenance service, every 500 hours	71000 - 79999
173-012	5.00	Maintenance service, every 1000 hours	61000 - 61162 70000 - 70999
173-012	5.50	Maintenance service, every 1000 hours	71000 - 79999
173-014	5.50	Maintenance service, every 2000 hours	61000 - 61162 70000 - 70999
173-014	6.00	Maintenance service, every 2000 hours	71000 - 79999
173-091	0.50	Drive chain, oil level and tension check	
173-092	1.25	Drive chain case, oil change	
19		GENERAL	
191-021	0.20	Service position 1	
191-022	0.10	Service position 2	
191-023	0.20	Raising and blocking	
191-024	0.50	Manual lifting of loader arm	
191-024	0.30	Manual lifting of loader arm	
191-024	0.30	Manual lifting of loader arm	
191-025	0.10	Service position 3	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	0.70	E-ECU, MID 128, changing non-programmed ECU	71000 - 79999
200-070	0.30	E-ECU, MID 128, changing pre-programmed ECU	71000 - 79999

Op.no.	time (h)		Notes
21		ENGINE	
210-070	3.00	Engine, removing	61000 - 61162 70000 - 70999
210-070	3.00	Engine, removing	71000 - 79999
210-072	2.50	Engine, installing	61000 - 61162 70000 - 70999
210-072	2.00	Engine, installing	71000 - 79999
214-012	2.50	Valves, adjusting	71000 - 79999
214-012	1.75	Valves, adjusting	61000 - 61162 70000 - 70999
22		LUBRICATING SYSTEM	
223-003	0.50	Oil cooler, removal	61000 - 61162 70000 - 70999
223-005	0.40	Oil cooler, installation	61000 - 61162 70000 - 70999
23		FUEL SYSTEM	
233-001	0.10	Fuel system, bleeding	71000 - 79999
236-030	1.50	Injection timing, checking	61000 - 61162 70000 - 70999
25		INLET SYSTEM; EXHAUST SYSTEM	
251-004	1.50	Exhaust manifold, replacing gasket	61000 - 61162 70000 - 70999
26		COOLING SYSTEM	
261-011	0.90	Radiator, removing	61000 - 61162 70000 - 70999
261-013	0.80	Radiator, installing	61000 - 61162 70000 - 70999
262-005	1.75	Coolant pump, removing	
262-006	1.75	Coolant pump, installing	
262-098	0.60	Thermostat, replacing	
263-012	0.80	Fan belt and/or alternator belt, replacing	61000 - 61162 70000 - 70999
263-013	0.40	Fan belt and/or alternator belt, checking and adjusting tension	61000 - 61162 70000 - 70999
27		ENGINE CONTROL	
271-002	0.50	Throttle control cable, removal	61000 - 61162 70000 - 70999
271-003	0.30	Throttle control cable, installation	61000 - 61162 70000 - 70999

Op.no.	time (h)		Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
31		BATTERY	
311-002	0.60	Batteries, replacing	61000 - 61162 70000 - 70999
32		ALTERNATOR; CHARGE REGULATOR	
321-002	0.70	Alternator, replacing incl function check	61000 - 61162 70000 - 70999
321-075	0.50	Alternator, test	61000 - 61162 70000 - 70999
33		STARTING SYSTEM	
331-018	1.25	Starter motor, replacing	61000 - 61162 70000 - 70999
36		OTHER ELECTRICAL EQUIPMENT	
366-064	0.50	V-ECU, MID 187, changing non-programmed ECU	71000 - 79999
366-066	0.30	V-ECU, MID 187, changing pre-programmed ECU	71000 - 79999
4		POWER TRANSMISSION	
44		HYDROSTATIC DRIVE	
440-003	1.25	Transmission pump, drive relief test	61000 - 61162 70000 - 70999
440-003	1.25	Transmission pump, drive relief test	71000 - 79999
440-003	1.25	Transmission pump, drive relief test	71000 - 79999
440-003	1.25	Transmission pump, drive relief test	61000 - 61162 70000 - 70999
441-035	1.50	Drive motor, removing	71000 - 79999
441-035	1.25	Drive motor, removing	61000 - 61162 70000 - 70999
441-036	1.75	Drive motor, installing	61000 - 61162 70000 - 70999
441-036	2.50	Drive motor, installing	71000 - 79999
442-011	1.50	Transmission pump, removing	61000 - 61162 70000 - 70999
442-011	1.25	Transmission pump, removing	71000 - 79999
442-011	1.75	Transmission pump, removing	71000 - 79999
442-012	1.75	Transmission pump, installing	71000 - 79999
442-012	1.00	Transmission pump, installing	71000 - 79999
442-012	1.50	Transmission pump, installing	61000 - 61162 70000 - 70999

Op.no.	time (h)	Notes	
46		FRONT AXLE; REAR AXLE	
460-023	1.25	Drive chain tension, adjustment	
460-024	1.50	Drive chain, drive- and axle-sprocket, removal	
460-025	1.50	Drive chain, drive- and axle-sprocket, installation	
460-031	1.25	Axle assembly, removing	
460-032	1.25	Axle assembly, installing	
5		BRAKE	
52		HYDRAULIC BRAKE SYSTEM	
527-009	0.50	Accumulator, check	
55		PARKING BRAKE	
550-019	1.00	Parking Brake - Disassembly	
6		STEERING	
64		STEERING	
643-083	1.25	Neutral centring and control lever adjustment	71000 - 79999
643-083	1.75	Neutral centring and control lever adjustment	61000 - 61162 70000 - 70999
643-084	0.40	Neutral centring test	
66		LEVER STEERING	
660-020	1.50	Transmission pump neutral centering, checking and adjusting	61000 - 61162 70000 - 70999
660-020	1.75	Transmission pump neutral centering, checking and adjusting	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
715-015	0.40	Protecting plate, removal	61000 - 61162 70000 - 70999
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-001	0.30	Wheel, removing and fitting one	

Op.no.	time (h)		Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
85		CAB INTERIOR/UPHOLSTERY	
852-003	0.40	Operator's seat, removing	61000 - 61162 70000 - 70999
852-004	0.30	Operator's seat, installing	
852-095	0.40	Seat bar, adjustment	61000 - 61162 70000 - 70999
87		AIR CONDITIONING UNIT	
874-003	0.40	Cooling unit, performance test	61000 - 61162 70000 - 70999
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-003	0.20	Hydraulic system, relieve pressure	
900-003	0.20	Hydraulic system, relieve pressure	
900-013	0.90	Charge system pressure relief valve test	71000 - 79999
900-013	0.90	Charge system pressure relief valve test	61000 - 61162 70000 - 70999
900-050	0.10	Accumulator, discarding	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
912-067	0.60	Main pressure relief valve, replacing	
912-068	0.50	Main control valve system relief test	61000 - 61162 70000 - 70999
912-068	0.50	Main control valve system relief test	71000 - 79999
912-084	0.50	High flow valve relief test	
912-091	1.00	Main control valve, removal	61000 - 61162 70000 - 70999
912-091	1.25	Main control valve, removal	71000 - 79999
912-091	0.80	Main control valve, removal	61000 - 61162 70000 - 70999
912-092	1.50	Main control valve, installation	71000 - 79999
912-092	1.25	Main control valve, installation	61000 - 61162 70000 - 70999
912-092	1.00	Main control valve, installation	61000 - 61162 70000 - 70999
912-094	1.25	Main control valve, maintenance	61000 - 61162 70000 - 70999
912-136	0.70	Main relief valve, adjusting	

Op.no.	time (h)		Notes
914-057	0.50	Servo pressure, check	
914-057	0.70	Servo pressure, check	
914-071	0.70	Servo pipe and hose, replacing	
915-002	0.90	Control lever, changing	
915-003	0.80	Control lever, adjusting	
916-036	0.60	Self level valve, removal and installation	
916-037	0.40	Self level valve, adjustment	
916-038	0.50	Self level valve, bypass	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-028	0.50	Attachment bracket, removal	
924-029	0.50	Attachment bracket, installation	
94		UNIT, LOAD HANDLING	
945-006	0.80	Lift cylinder removed, repacking	71000 - 79999
945-018	0.70	Lift cylinder, removing	61000 - 61162 70000 - 70999
945-018	1.00	Lift cylinder, removing	71000 - 79999
945-019	0.70	Lift cylinder, installing	61000 - 61162 70000 - 70999
945-019	0.70	Lift cylinder, installing	71000 - 79999
945-021	0.50	Tilt cylinder, removing	61000 - 61162 70000 - 70999
945-021	0.50	Tilt cylinder, removing	71000 - 79999
945-022	0.50	Tilt cylinder, installing	71000 - 79999
945-022	0.50	Tilt cylinder, installing	61000 - 61162 70000 - 70999
945-040	0.90	Loader arm bearing, replacing	71000 - 79999
945-040	1.25	Loader arm bearing, replacing	71000 - 79999
95		LOAD CARRIER	
950-001	1.00	Foot pedal cable, removal	61000 - 61162 70000 - 70999
950-001	0.80	Foot pedal cable, removal	71000 - 79999
950-002	0.80	Foot pedal cable, installation	71000 - 79999
950-002	1.25	Foot pedal cable, installation	61000 - 61162 70000 - 70999

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
172-002	1.25	Warranty inspection 100 hours	61000 - 61063 70000 - 70999
172-002	1.25	Warranty inspection 100 hours	71000 - 79999
172-004	5.50	Warranty inspection 1000 hours	61000 - 61063 70000 - 70999
172-004	5.50	Warranty inspection 1000 hours	71000 - 79999
173-002	0.30	Maintenance service, daily	61000 - 61063 70000 - 70999
173-004	0.70	Maintenance service, every 50 hours	61000 - 61063 70000 - 70999
173-004	0.70	Maintenance service, every 50 hours	71000 - 79999
173-007	1.25	Maintenance service, every 250 hours	61000 - 61063 70000 - 70999
173-007	1.25	Maintenance service, every 250 hours	71000 - 79999
173-010	1.50	Maintenance service, every 500 hours	71000 - 79999
173-010	1.50	Maintenance service, every 500 hours	61000 - 61063 70000 - 70999
173-012	5.00	Maintenance service, every 1000 hours	61000 - 61063 70000 - 70999
173-012	5.50	Maintenance service, every 1000 hours	71000 - 79999
173-014	6.00	Maintenance service, every 2000 hours	71000 - 79999
173-014	5.50	Maintenance service, every 2000 hours	61000 - 61063 70000 - 70999
173-091	0.50	Drive chain, oil level and tension check	
173-092	1.25	Drive chain case, oil change	
19		GENERAL	
191-021	0.20	Service position 1	
191-022	0.10	Service position 2	
191-023	0.20	Raising and blocking	
191-024	0.50	Manual lifting of loader arm	
191-024	0.30	Manual lifting of loader arm	
191-024	0.30	Manual lifting of loader arm	
191-025	0.10	Service position 3	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
21		ENGINE	
210-070	3.00	Engine, removing	61000 - 61063 70000 - 70999
210-070	3.00	Engine, removing	71000 - 79999
210-072	4.00	Engine, installing	61000 - 61063

Op.no.	time (h)		Notes
			70000 - 70999
210-072	4.00	Engine, installing	71000 - 79999
214-012	2.00	Valves, adjusting	71000 - 79999
214-012	1.75	Valves, adjusting	61000 - 61063
			70000 - 70999
22		LUBRICATING SYSTEM	
223-003	0.50	Oil cooler, removal	61000 - 61063
			70000 - 70999
223-005	0.40	Oil cooler, installation	61000 - 61063
			70000 - 70999
23		FUEL SYSTEM	
233-001	0.10	Fuel system, bleeding	71000 - 79999
236-030	1.50	Injection timing, checking	61000 - 61063
			70000 - 70999
26		COOLING SYSTEM	
261-011	0.90	Radiator, removing	61000 - 61063
			70000 - 70999
261-013	0.80	Radiator, installing	61000 - 61063
			70000 - 70999
262-098	1.00	Thermostat, replacing	
263-012	0.80	Fan belt and/or alternator belt, replacing	61000 - 61063
			70000 - 70999
263-013	0.40	Fan belt and/or alternator belt, checking and adjusting tension	61000 - 61063
			70000 - 70999
27		ENGINE CONTROL	
271-002	0.50	Throttle control cable, removal	61000 - 61063
			70000 - 70999
271-003	0.30	Throttle control cable, installation	61000 - 61063
			70000 - 70999
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
31		BATTERY	
311-002	0.60	Batteries, replacing	61000 - 61063
			70000 - 70999
32		ALTERNATOR; CHARGE REGULATOR	
321-002	0.70	Alternator, replacing incl function check	61000 - 61063
			70000 - 70999
321-075	0.50	Alternator, test	61000 - 61063
			70000 - 70999

Op.no.	time (h)		Notes
33		STARTING SYSTEM	
331-018	1.25	Starter motor, replacing	61000 - 61063 70000 - 70999
36		OTHER ELECTRICAL EQUIPMENT	
366-064	0.50	V-ECU, MID 187, changing non-programmed ECU	71000 - 79999
366-066	0.30	V-ECU, MID 187, changing pre-programmed ECU	71000 - 79999
4		POWER TRANSMISSION	
44		HYDROSTATIC DRIVE	
440-003	1.25	Transmission pump, drive relief test	61000 - 61063 70000 - 70999
440-003	1.25	Transmission pump, drive relief test	71000 - 79999
440-003	1.25	Transmission pump, drive relief test	71000 - 79999
440-003	1.25	Transmission pump, drive relief test	61000 - 61063 70000 - 70999
441-035	1.50	Drive motor, removing	61000 - 61063 70000 - 70999
441-035	1.50	Drive motor, removing	71000 - 79999
441-035	2.00	Drive motor, removing	71000 - 79999
441-036	1.50	Drive motor, installing	71000 - 79999
441-036	2.00	Drive motor, installing	61000 - 61063 70000 - 70999
441-036	3.00	Drive motor, installing	71000 - 79999
442-011	1.25	Transmission pump, removing	61000 - 61063 70000 - 70999
442-011	1.25	Transmission pump, removing	71000 - 79999
442-011	1.75	Transmission pump, removing	71000 - 79999
442-012	1.00	Transmission pump, installing	71000 - 79999
442-012	1.75	Transmission pump, installing	71000 - 79999
442-012	1.00	Transmission pump, installing	61000 - 61063 70000 - 70999
46		FRONT AXLE; REAR AXLE	
460-023	1.25	Drive chain tension, adjustment	
460-024	1.50	Drive chain, drive- and axle-sprocket, removal	
460-025	1.50	Drive chain, drive- and axle-sprocket, installation	
460-031	1.25	Axle assembly, removing	
460-032	1.25	Axle assembly, installing	

Op.no.	time (h)		Notes
5		BRAKE	
55		PARKING BRAKE	
550-031	1.75	Park lock, removal	
550-032	1.00	Park lock, installation	
550-033	1.50	Park lock pin, adjustment	
6		STEERING	
64		STEERING	
643-083	1.25	Neutral centring and control lever adjustment	71000 - 79999
643-083	1.00	Neutral centring and control lever adjustment	61000 - 61063 70000 - 70999
643-084	0.40	Neutral centring test	
66		LEVER STEERING	
660-020	1.75	Transmission pump neutral centering, checking and adjusting	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
715-015	0.40	Protecting plate, removal	61000 - 61063 70000 - 70999
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-001	0.30	Wheel, removing and fitting one	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
85		CAB INTERIOR/UPHOLSTERY	
852-003	0.40	Operator's seat, removing	61000 - 61063 70000 - 70999
852-004	0.30	Operator's seat, installing	
852-095	0.40	Seat bar, adjustment	61000 - 61063 70000 - 70999
87		AIR CONDITIONING UNIT	
874-003	0.40	Cooling unit, performance test	61000 - 61063 70000 - 70999

Op.no.	time (h)	Notes	
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-003	0.20	Hydraulic system, relieve pressure	
900-003	0.20	Hydraulic system, relieve pressure	
900-013	0.90	Charge system pressure relief valve test	71000 - 79999
900-050	0.10	Accumulator, discarding	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
912-067	0.60	Main pressure relief valve, replacing	
912-068	0.50	Main control valve system relief test	61000 - 61063 70000 - 70999
912-068	0.50	Main control valve system relief test	71000 - 79999
912-076	0.50	Charge/Implement pump charge relief test	61000 - 61063 70000 - 70999
912-091	1.25	Main control valve, removal	71000 - 79999
912-091	1.00	Main control valve, removal	61000 - 61063 70000 - 70999
912-091	0.80	Main control valve, removal	61000 - 61063 70000 - 70999
912-092	1.50	Main control valve, installation	71000 - 79999
912-092	1.25	Main control valve, installation	61000 - 61063 70000 - 70999
912-092	1.00	Main control valve, installation	61000 - 61063 70000 - 70999
912-094	1.25	Main control valve, maintenance	61000 - 61063 70000 - 70999
912-136	0.70	Main relief valve, adjusting	
913-032	1.25	Charge/Implement pump, removal and installation	61000 - 61063 70000 - 70999
913-032	0.80	Charge/Implement pump, removal and installation	
914-057	0.70	Servo pressure, check	
914-057	0.50	Servo pressure, check	
914-071	0.70	Servo pipe and hose, replacing	
915-002	0.90	Control lever, changing	
915-003	0.80	Control lever, adjusting	
916-036	0.60	Self level valve, removal and installation	
916-037	0.40	Self level valve, adjustment	
916-038	0.50	Self level valve, bypass	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-028	0.50	Attachment bracket, removal	
924-029	0.50	Attachment bracket, installation	

Op.no.	time (h)		Notes
94		UNIT, LOAD HANDLING	
945-018	0.70	Lift cylinder, removing	61000 - 61063 70000 - 70999
945-019	0.70	Lift cylinder, installing	61000 - 61063 70000 - 70999
945-021	0.50	Tilt cylinder, removing	61000 - 61063 70000 - 70999
945-022	0.70	Tilt cylinder, installing	61000 - 61063 70000 - 70999
95		LOAD CARRIER	
950-001	1.00	Foot pedal cable, removal	61000 - 61063 70000 - 70999
950-001	0.80	Foot pedal cable, removal	71000 - 79999
950-002	0.80	Foot pedal cable, installation	71000 - 79999
950-002	1.25	Foot pedal cable, installation	61000 - 61063 70000 - 70999

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
172-002	1.25	Warranty inspection 100 hours	61000 - 61190 70000 - 70999
172-002	1.25	Warranty inspection 100 hours	71000 - 79999
172-004	5.50	Warranty inspection 1000 hours	61000 - 61190 70000 - 70999
172-004	5.50	Warranty inspection 1000 hours	71000 - 79999
173-002	0.30	Maintenance service, daily	61000 - 61190 70000 - 70999
173-004	0.70	Maintenance service, every 50 hours	70000 - 70999 61000 - 61190
173-004	0.70	Maintenance service, every 50 hours	71000 - 79999
173-007	1.25	Maintenance service, every 250 hours	61000 - 61190 70000 - 70999
173-007	1.25	Maintenance service, every 250 hours	71000 - 79999
173-010	1.50	Maintenance service, every 500 hours	61000 - 61190 70000 - 70999
173-010	1.50	Maintenance service, every 500 hours	71000 - 79999
173-012	5.50	Maintenance service, every 1000 hours	71000 - 79999
173-012	5.00	Maintenance service, every 1000 hours	61000 - 61190 70000 - 70999
173-014	6.00	Maintenance service, every 2000 hours	71000 - 79999
173-014	5.50	Maintenance service, every 2000 hours	61000 - 61190 70000 - 70999
173-091	0.50	Drive chain, oil level and tension check	
173-092	1.25	Drive chain case, oil change	
19		GENERAL	
191-021	0.20	Service position 1	
191-022	0.10	Service position 2	
191-023	0.20	Raising and blocking	
191-024	0.50	Manual lifting of loader arm	
191-024	0.30	Manual lifting of loader arm	
191-024	0.30	Manual lifting of loader arm	
191-025	0.10	Service position 3	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	0.70	E-ECU, MID 128, changing non-programmed ECU	71000 - 79999
200-070	0.30	E-ECU, MID 128, changing pre-programmed ECU	71000 - 79999

Op.no.	time (h)		Notes
21		ENGINE	
210-070	3.00	Engine, removing	61000 - 61190 70000 - 70999
210-070	3.00	Engine, removing	71000 - 79999
210-072	4.00	Engine, installing	61000 - 61190 70000 - 70999
210-072	3.00	Engine, installing	71000 - 79999
214-012	2.50	Valves, adjusting	71000 - 79999
214-012	1.75	Valves, adjusting	61000 - 61190 70000 - 70999
22		LUBRICATING SYSTEM	
223-003	0.50	Oil cooler, removal	61000 - 61190 70000 - 70999
223-005	0.40	Oil cooler, installation	61000 - 61190 70000 - 70999
23		FUEL SYSTEM	
233-001	0.10	Fuel system, bleeding	71000 - 79999
236-030	1.50	Injection timing, checking	61000 - 61190 70000 - 70999
26		COOLING SYSTEM	
261-011	0.90	Radiator, removing	61000 - 61190 70000 - 70999
261-013	0.80	Radiator, installing	61000 - 61190 70000 - 70999
262-098	1.00	Thermostat, replacing	
263-012	0.80	Fan belt and/or alternator belt, replacing	61000 - 61190 70000 - 70999
263-013	0.40	Fan belt and/or alternator belt, checking and adjusting tension	61000 - 61190 70000 - 70999
27		ENGINE CONTROL	
271-002	0.50	Throttle control cable, removal	61000 - 61190 70000 - 70999
271-003	0.30	Throttle control cable, installation	61000 - 61190 70000 - 70999
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
31		BATTERY	
311-002	0.60	Batteries, replacing	61000 - 61190 70000 - 70999

Op.no.	time (h)		Notes
32		ALTERNATOR; CHARGE REGULATOR	
321-002	0.70	Alternator, replacing incl function check	61000 - 61190 70000 - 70999
321-075	0.50	Alternator, test	61000 - 61190 70000 - 70999
33		STARTING SYSTEM	
331-018	1.25	Starter motor, replacing	61000 - 61190 70000 - 70999
36		OTHER ELECTRICAL EQUIPMENT	
366-064	0.50	V-ECU, MID 187, changing non-programmed ECU	71000 - 79999
366-066	0.30	V-ECU, MID 187, changing pre-programmed ECU	71000 - 79999
4		POWER TRANSMISSION	
44		HYDROSTATIC DRIVE	
440-003	1.25	Transmission pump, drive relief test	61000 - 61190 70000 - 70999
440-003	1.25	Transmission pump, drive relief test	71000 - 79999
440-003	1.25	Transmission pump, drive relief test	71000 - 79999
440-003	1.25	Transmission pump, drive relief test	61000 - 61190 70000 - 70999
441-035	1.50	Drive motor, removing	61000 - 61190 70000 - 70999
441-035	1.50	Drive motor, removing	71000 - 79999
441-035	2.00	Drive motor, removing	71000 - 79999
441-036	1.50	Drive motor, installing	71000 - 79999
441-036	2.00	Drive motor, installing	61000 - 61190 70000 - 70999
441-036	3.00	Drive motor, installing	71000 - 79999
442-011	1.25	Transmission pump, removing	61000 - 61190 70000 - 70999
442-011	1.25	Transmission pump, removing	71000 - 79999
442-011	1.75	Transmission pump, removing	71000 - 79999
442-012	1.00	Transmission pump, installing	71000 - 79999
442-012	1.75	Transmission pump, installing	71000 - 79999
442-012	1.00	Transmission pump, installing	61000 - 61190 70000 - 70999
46		FRONT AXLE; REAR AXLE	
460-023	1.25	Drive chain tension, adjustment	
460-024	1.50	Drive chain, drive- and axle-sprocket, removal	
460-025	1.50	Drive chain, drive- and axle-sprocket, installation	

Op.no.	time (h)		Notes
460-031	1.25	Axle assembly, removing	
460-032	1.25	Axle assembly, installing	
5		BRAKE	
55		PARKING BRAKE	
550-031	1.75	Park lock, removal	
550-032	1.00	Park lock, installation	
550-033	1.50	Park lock pin, adjustment	
6		STEERING	
64		STEERING	
643-083	1.25	Neutral centring and control lever adjustment	71000 - 79999
643-083	1.00	Neutral centring and control lever adjustment	61000 - 61190 70000 - 70999
643-084	0.40	Neutral centring test	
66		LEVER STEERING	
660-020	1.75	Transmission pump neutral centering, checking and adjusting	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
715-015	0.40	Protecting plate, removal	61000 - 61190 70000 - 70999
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-001	0.30	Wheel, removing and fitting one	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
85		CAB INTERIOR/UPHOLSTERY	
852-003	0.40	Operator's seat, removing	61000 - 61190 70000 - 70999
852-004	0.30	Operator's seat, installing	
852-095	0.40	Seat bar, adjustment	61000 - 61190 70000 - 70999

Op.no.	time (h)		Notes
87		AIR CONDITIONING UNIT	
874-003	0.40	Cooling unit, performance test	61000 - 61190 70000 - 70999
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-003	0.20	Hydraulic system, relieve pressure	
900-003	0.20	Hydraulic system, relieve pressure	
900-011	0.90	Charge pump charge relief test	61000 - 61190 70000 - 70999
900-013	0.90	Charge system pressure relief valve test	71000 - 79999
900-050	0.10	Accumulator, discarding	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
912-067	0.60	Main pressure relief valve, replacing	
912-068	0.50	Main control valve system relief test	61000 - 61190 70000 - 70999
912-068	0.50	Main control valve system relief test	71000 - 79999
912-076	0.50	Charge/Implement pump charge relief test	61000 - 61190 70000 - 70999
912-084	0.50	High flow valve relief test	
912-091	1.00	Main control valve, removal	61000 - 61190 70000 - 70999
912-091	1.25	Main control valve, removal	71000 - 79999
912-091	0.80	Main control valve, removal	61000 - 61190 70000 - 70999
912-092	1.50	Main control valve, installation	71000 - 79999
912-092	1.25	Main control valve, installation	61000 - 61190 70000 - 70999
912-092	1.00	Main control valve, installation	61000 - 61190 70000 - 70999
912-094	1.25	Main control valve, maintenance	61000 - 61190 70000 - 70999
912-136	0.70	Main relief valve, adjusting	
913-032	1.25	Charge/Implement pump, removal and installation	61000 - 61190 70000 - 70999
913-032	0.80	Charge/Implement pump, removal and installation	
914-057	0.50	Servo pressure, check	
914-057	0.70	Servo pressure, check	
914-071	0.70	Servo pipe and hose, replacing	
915-002	0.90	Control lever, changing	

Op.no.	time (h)		Notes
915-003	0.80	Control lever, adjusting	
916-036	0.60	Self level valve, removal and installation	
916-037	0.40	Self level valve, adjustment	
916-038	0.50	Self level valve, bypass	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-028	0.50	Attachment bracket, removal	
924-029	0.50	Attachment bracket, installation	
94		UNIT, LOAD HANDLING	
945-018	0.70	Lift cylinder, removing	61000 - 61190 70000 - 70999
945-019	0.70	Lift cylinder, installing	61000 - 61190 70000 - 70999
945-021	0.50	Tilt cylinder, removing	61000 - 61190 70000 - 70999
945-022	0.70	Tilt cylinder, installing	61000 - 61190 70000 - 70999
95		LOAD CARRIER	
950-001	1.00	Foot pedal cable, removal	61000 - 61190 70000 - 70999
950-001	0.80	Foot pedal cable, removal	71000 - 79999
950-002	0.80	Foot pedal cable, installation	71000 - 79999
950-002	1.25	Foot pedal cable, installation	61000 - 61190 70000 - 70999

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
172-002	1.25	Warranty inspection 100 hours	71000 - 79999
172-002	1.25	Warranty inspection 100 hours	61000 - 61161 70000 - 70999
172-004	5.50	Warranty inspection 1000 hours	71000 - 79999
172-004	5.50	Warranty inspection 1000 hours	61000 - 61161 70000 - 70999
173-002	0.30	Maintenance service, daily	61000 - 61161 70000 - 70999
173-004	0.70	Maintenance service, every 50 hours	61000 - 61161 70000 - 70999
173-004	0.70	Maintenance service, every 50 hours	71000 - 79999
173-007	1.25	Maintenance service, every 250 hours	61000 - 61161 70000 - 70999
173-007	1.25	Maintenance service, every 250 hours	71000 - 79999
173-010	1.50	Maintenance service, every 500 hours	71000 - 79999
173-010	1.50	Maintenance service, every 500 hours	61000 - 61161 70000 - 70999
173-012	5.00	Maintenance service, every 1000 hours	61000 - 61161 70000 - 70999
173-012	5.50	Maintenance service, every 1000 hours	71000 - 79999
173-014	6.00	Maintenance service, every 2000 hours	71000 - 79999
173-014	5.50	Maintenance service, every 2000 hours	61000 - 61161 70000 - 70999
173-091	0.50	Drive chain, oil level and tension check	
173-092	1.25	Drive chain case, oil change	
19		GENERAL	
191-021	0.20	Service position 1	
191-022	0.10	Service position 2	
191-023	0.20	Raising and blocking	
191-024	0.50	Manual lifting of loader arm	
191-024	0.30	Manual lifting of loader arm	
191-024	0.30	Manual lifting of loader arm	
191-025	0.10	Service position 3	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	0.70	E-ECU, MID 128, changing non-programmed ECU	71000 - 79999
200-070	0.30	E-ECU, MID 128, changing pre-programmed ECU	71000 - 79999

Op.no.	time (h)		Notes
21		ENGINE	
210-070	3.00	Engine, removing	61000 - 61161 70000 - 70999
210-072	2.50	Engine, installing	61000 - 61161 70000 - 70999
214-012	2.50	Valves, adjusting	71000 - 79999
214-012	1.75	Valves, adjusting	61000 - 61161 70000 - 70999
22		LUBRICATING SYSTEM	
223-003	0.50	Oil cooler, removal	61000 - 61161 70000 - 70999
223-005	0.40	Oil cooler, installation	61000 - 61161 70000 - 70999
23		FUEL SYSTEM	
233-001	0.10	Fuel system, bleeding	71000 - 79999
236-030	1.50	Injection timing, checking	61000 - 61161 70000 - 70999
25		INLET SYSTEM; EXHAUST SYSTEM	
251-004	1.50	Exhaust manifold, replacing gasket	61000 - 61161 70000 - 70999
26		COOLING SYSTEM	
261-011	0.90	Radiator, removing	61000 - 61161 70000 - 70999
261-013	0.80	Radiator, installing	61000 - 61161 70000 - 70999
262-005	1.75	Coolant pump, removing	
262-006	1.75	Coolant pump, installing	
262-098	0.60	Thermostat, replacing	
263-012	0.80	Fan belt and/or alternator belt, replacing	61000 - 61161 70000 - 70999
263-013	0.40	Fan belt and/or alternator belt, checking and adjusting tension	61000 - 61161 70000 - 70999
27		ENGINE CONTROL	
271-002	0.50	Throttle control cable, removal	61000 - 61161 70000 - 70999
271-003	0.30	Throttle control cable, installation	61000 - 61161 70000 - 70999

Op.no.	time (h)		Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
31		BATTERY	
311-002	0.60	Batteries, replacing	61000 - 61161 70000 - 70999
32		ALTERNATOR; CHARGE REGULATOR	
321-002	0.70	Alternator, replacing incl function check	61000 - 61161 70000 - 70999
321-075	0.50	Alternator, test	61000 - 61161 70000 - 70999
33		STARTING SYSTEM	
331-018	1.25	Starter motor, replacing	61000 - 61161 70000 - 70999
36		OTHER ELECTRICAL EQUIPMENT	
366-064	0.50	V-ECU, MID 187, changing non-programmed ECU	71000 - 79999
366-066	0.30	V-ECU, MID 187, changing pre-programmed ECU	71000 - 79999
4		POWER TRANSMISSION	
44		HYDROSTATIC DRIVE	
440-003	1.25	Transmission pump, drive relief test	61000 - 61161 70000 - 70999
440-003	1.25	Transmission pump, drive relief test	71000 - 79999
440-003	1.25	Transmission pump, drive relief test	71000 - 79999
440-003	1.25	Transmission pump, drive relief test	61000 - 61161 70000 - 70999
441-035	1.50	Drive motor, removing	61000 - 61161 70000 - 70999
441-035	1.50	Drive motor, removing	71000 - 79999
441-035	2.00	Drive motor, removing	71000 - 79999
441-036	1.50	Drive motor, installing	71000 - 79999
441-036	2.00	Drive motor, installing	61000 - 61161 70000 - 70999
441-036	3.00	Drive motor, installing	71000 - 79999
442-011	1.50	Transmission pump, removing	61000 - 61161 70000 - 70999
442-011	1.25	Transmission pump, removing	71000 - 79999
442-011	1.75	Transmission pump, removing	71000 - 79999
442-012	1.00	Transmission pump, installing	71000 - 79999
442-012	1.75	Transmission pump, installing	71000 - 79999
442-012	1.50	Transmission pump, installing	61000 - 61161

Op.no.	time (h)		Notes
			70000 - 70999
46		FRONT AXLE; REAR AXLE	
460-023	1.25	Drive chain tension, adjustment	
460-024	1.50	Drive chain, drive- and axle-sprocket, removal	
460-025	1.50	Drive chain, drive- and axle-sprocket, installation	
460-031	1.25	Axle assembly, removing	
460-032	1.25	Axle assembly, installing	
5		BRAKE	
55		PARKING BRAKE	
550-031	1.75	Park lock, removal	
550-032	1.00	Park lock, installation	
550-033	1.50	Park lock pin, adjustment	
6		STEERING	
64		STEERING	
643-083	1.25	Neutral centring and control lever adjustment	71000 - 79999
643-083	1.25	Neutral centring and control lever adjustment	61000 - 61161 70000 - 70999
643-084	0.40	Neutral centring test	
66		LEVER STEERING	
660-020	1.75	Transmission pump neutral centering, checking and adjusting	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
715-015	0.40	Protecting plate, removal	61000 - 61161 70000 - 70999
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-001	0.30	Wheel, removing and fitting one	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
85		CAB INTERIOR/UPHOLSTERY	
852-003	0.40	Operator's seat, removing	61000 - 61161

Op.no.	time (h)		Notes
			70000 - 70999
852-004	0.30	Operator's seat, installing	
852-095	0.40	Seat bar, adjustment	61000 - 61161 70000 - 70999
87		AIR CONDITIONING UNIT	
874-003	0.40	Cooling unit, performance test	61000 - 61161 70000 - 70999
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-003	0.20	Hydraulic system, relieve pressure	
900-003	0.20	Hydraulic system, relieve pressure	
900-012	1.25	Charge system pressure priority valve relief test	61000 - 61161 70000 - 70999
900-013	0.90	Charge system pressure relief valve test	71000 - 79999
900-050	0.10	Accumulator, discarding	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
912-067	0.60	Main pressure relief valve, replacing	
912-068	0.50	Main control valve system relief test	61000 - 61161 70000 - 70999
912-068	0.50	Main control valve system relief test	71000 - 79999
912-091	1.00	Main control valve, removal	61000 - 61161 70000 - 70999
912-091	1.25	Main control valve, removal	71000 - 79999
912-091	0.80	Main control valve, removal	61000 - 61161 70000 - 70999
912-092	1.50	Main control valve, installation	71000 - 79999
912-092	1.25	Main control valve, installation	61000 - 61161 70000 - 70999
912-092	1.00	Main control valve, installation	61000 - 61161 70000 - 70999
912-094	1.25	Main control valve, maintenance	61000 - 61161 70000 - 70999
912-136	0.70	Main relief valve, adjusting	
914-057	0.50	Servo pressure, check	
914-057	0.70	Servo pressure, check	
914-071	0.70	Servo pipe and hose, replacing	
915-002	0.90	Control lever, changing	
915-003	0.80	Control lever, adjusting	
916-036	0.60	Self level valve, removal and installation	

Op.no.	time (h)		Notes
916-037	0.40	Self level valve, adjustment	
916-038	0.50	Self level valve, bypass	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-028	0.50	Attachment bracket, removal	
924-029	0.50	Attachment bracket, installation	
94		UNIT, LOAD HANDLING	
945-006	0.80	Lift cylinder removed, repacking	71000 - 79999
945-018	0.70	Lift cylinder, removing	61000 - 61161 70000 - 70999
945-018	1.00	Lift cylinder, removing	71000 - 79999
945-019	0.70	Lift cylinder, installing	61000 - 61161 70000 - 70999
945-019	0.70	Lift cylinder, installing	71000 - 79999
945-021	0.50	Tilt cylinder, removing	61000 - 61161 70000 - 70999
945-021	0.50	Tilt cylinder, removing	71000 - 79999
945-022	0.50	Tilt cylinder, installing	61000 - 61161 70000 - 70999
945-022	0.50	Tilt cylinder, installing	71000 - 79999
945-040	0.90	Loader arm bearing, replacing	71000 - 79999
945-040	1.25	Loader arm bearing, replacing	71000 - 79999
95		LOAD CARRIER	
950-001	1.00	Foot pedal cable, removal	61000 - 61161 70000 - 70999
950-001	0.80	Foot pedal cable, removal	71000 - 79999
950-002	0.80	Foot pedal cable, installation	71000 - 79999
950-002	1.25	Foot pedal cable, installation	61000 - 61161 70000 - 70999

Op.no.	time (h)		Notes
1		STANDARD PARTS, SERVICE	
17		SERVICE	
172-002	1.25	Warranty inspection 100 hours	71000 - 79999
172-002	1.25	Warranty inspection 100 hours	61000 - 61219 70000 - 70999
172-004	5.50	Warranty inspection 1000 hours	61000 - 61219 70000 - 70999
172-004	5.50	Warranty inspection 1000 hours	71000 - 79999
173-002	0.30	Maintenance service, daily	61000 - 61219 70000 - 70999
173-004	0.70	Maintenance service, every 50 hours	61000 - 61219 70000 - 70999
173-004	0.70	Maintenance service, every 50 hours	71000 - 79999
173-007	1.25	Maintenance service, every 250 hours	61000 - 61219 70000 - 70999
173-007	1.25	Maintenance service, every 250 hours	71000 - 79999
173-010	1.50	Maintenance service, every 500 hours	71000 - 79999
173-010	1.50	Maintenance service, every 500 hours	61000 - 61219 70000 - 70999
173-012	5.00	Maintenance service, every 1000 hours	61000 - 61219 70000 - 70999
173-012	5.50	Maintenance service, every 1000 hours	71000 - 79999
173-014	6.00	Maintenance service, every 2000 hours	71000 - 79999
173-014	5.50	Maintenance service, every 2000 hours	61000 - 61219 70000 - 70999
173-091	0.50	Drive chain, oil level and tension check	
173-092	1.25	Drive chain case, oil change	
19		GENERAL	
191-021	0.20	Service position 1	
191-022	0.10	Service position 2	
191-023	0.20	Raising and blocking	
191-024	0.50	Manual lifting of loader arm	
191-024	0.30	Manual lifting of loader arm	
191-024	0.30	Manual lifting of loader arm	
191-025	0.10	Service position 3	
2		ENGINE WITH MOUNTING AND EQUIPMENT	
20		GENERAL	
200-068	0.70	E-ECU, MID 128, changing non-programmed ECU	71000 - 79999
200-070	0.30	E-ECU, MID 128, changing pre-programmed ECU	71000 - 79999

Op.no.	time (h)		Notes
21		ENGINE	
210-070	3.00	Engine, removing	61000 - 61219 70000 - 70999
210-070	3.00	Engine, removing	71000 - 79999
210-072	2.50	Engine, installing	61000 - 61219 70000 - 70999
210-072	2.00	Engine, installing	71000 - 79999
214-012	2.50	Valves, adjusting	71000 - 79999
214-012	1.75	Valves, adjusting	61000 - 61219 70000 - 70999
22		LUBRICATING SYSTEM	
223-003	0.50	Oil cooler, removal	61000 - 61219 70000 - 70999
223-005	0.40	Oil cooler, installation	61000 - 61219 70000 - 70999
23		FUEL SYSTEM	
233-001	0.10	Fuel system, bleeding	71000 - 79999
236-030	1.50	Injection timing, checking	61000 - 61219 70000 - 70999
25		INLET SYSTEM; EXHAUST SYSTEM	
251-004	1.50	Exhaust manifold, replacing gasket	61000 - 61219 70000 - 70999
26		COOLING SYSTEM	
261-011	0.90	Radiator, removing	61000 - 61219 70000 - 70999
261-013	0.80	Radiator, installing	61000 - 61219 70000 - 70999
262-005	1.75	Coolant pump, removing	
262-006	1.75	Coolant pump, installing	
262-098	0.60	Thermostat, replacing	
263-012	0.80	Fan belt and/or alternator belt, replacing	61000 - 61219 70000 - 70999
263-013	0.40	Fan belt and/or alternator belt, checking and adjusting tension	61000 - 61219 70000 - 70999
27		ENGINE CONTROL	
271-002	0.50	Throttle control cable, removal	61000 - 61219 70000 - 70999
271-003	0.30	Throttle control cable, installation	61000 - 61219 70000 - 70999

Op.no.	time (h)		Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS	
31		BATTERY	
311-002	0.60	Batteries, replacing	61000 - 61219 70000 - 70999
32		ALTERNATOR; CHARGE REGULATOR	
321-002	0.70	Alternator, replacing incl function check	61000 - 61219 70000 - 70999
321-075	0.50	Alternator, test	61000 - 61219 70000 - 70999
33		STARTING SYSTEM	
331-018	1.25	Starter motor, replacing	61000 - 61219 70000 - 70999
36		OTHER ELECTRICAL EQUIPMENT	
366-064	0.50	V-ECU, MID 187, changing non-programmed ECU	71000 - 79999
366-066	0.30	V-ECU, MID 187, changing pre-programmed ECU	71000 - 79999
4		POWER TRANSMISSION	
44		HYDROSTATIC DRIVE	
440-003	1.25	Transmission pump, drive relief test	61000 - 61219 70000 - 70999
440-003	1.25	Transmission pump, drive relief test	71000 - 79999
440-003	1.25	Transmission pump, drive relief test	71000 - 79999
440-003	1.25	Transmission pump, drive relief test	61000 - 61219 70000 - 70999
441-035	1.50	Drive motor, removing	61000 - 61219 70000 - 70999
441-035	1.50	Drive motor, removing	71000 - 79999
441-035	2.00	Drive motor, removing	71000 - 79999
441-036	1.50	Drive motor, installing	71000 - 79999
441-036	2.00	Drive motor, installing	61000 - 61219 70000 - 70999
441-036	3.00	Drive motor, installing	71000 - 79999
442-011	1.50	Transmission pump, removing	61000 - 61219 70000 - 70999
442-011	1.25	Transmission pump, removing	71000 - 79999
442-011	1.75	Transmission pump, removing	71000 - 79999
442-012	1.00	Transmission pump, installing	71000 - 79999
442-012	1.75	Transmission pump, installing	71000 - 79999
442-012	1.50	Transmission pump, installing	61000 - 61219

Op.no.	time (h)		Notes
			70000 - 70999
46		FRONT AXLE; REAR AXLE	
460-023	1.25	Drive chain tension, adjustment	
460-024	1.50	Drive chain, drive- and axle-sprocket, removal	
460-025	1.50	Drive chain, drive- and axle-sprocket, installation	
460-031	1.25	Axle assembly, removing	
460-032	1.25	Axle assembly, installing	
5		BRAKE	
55		PARKING BRAKE	
550-031	1.75	Park lock, removal	
550-032	1.00	Park lock, installation	
550-033	1.50	Park lock pin, adjustment	
6		STEERING	
64		STEERING	
643-083	1.25	Neutral centring and control lever adjustment	71000 - 79999
643-083	1.75	Neutral centring and control lever adjustment	61000 - 61219 70000 - 70999
643-084	0.40	Neutral centring test	
66		LEVER STEERING	
660-020	1.50	Transmission pump neutral centering, checking and adjusting	61000 - 61219 70000 - 70999
660-020	1.75	Transmission pump neutral centering, checking and adjusting	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
71		FRAME	
715-015	0.40	Protecting plate, removal	61000 - 61219 70000 - 70999
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
771-001	0.30	Wheel, removing and fitting one	

Op.no.	time (h)	Notes	
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE	
85		CAB INTERIOR/UPHOLSTERY	
852-003	0.40	Operator's seat, removing	61000 - 61219 70000 - 70999
852-004	0.30	Operator's seat, installing	
852-095	0.40	Seat bar, adjustment	61000 - 61219 70000 - 70999
87		AIR CONDITIONING UNIT	
874-003	0.40	Cooling unit, performance test	61000 - 61219 70000 - 70999
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.	
90		GENERAL	
900-003	0.20	Hydraulic system, relieve pressure	
900-003	0.20	Hydraulic system, relieve pressure	
900-013	0.90	Charge system pressure relief valve test	71000 - 79999
900-013	0.90	Charge system pressure relief valve test	61000 - 61219 70000 - 70999
900-050	0.10	Accumulator, discarding	
91		WORKING HYDRAULICS; SERVO HYDRAULICS	
911-040	0.20	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump	
912-067	0.60	Main pressure relief valve, replacing	
912-068	0.50	Main control valve system relief test	61000 - 61219 70000 - 70999
912-068	0.50	Main control valve system relief test	71000 - 79999
912-084	0.50	High flow valve relief test	
912-091	1.00	Main control valve, removal	61000 - 61219 70000 - 70999
912-091	1.25	Main control valve, removal	71000 - 79999
912-091	0.80	Main control valve, removal	61000 - 61219 70000 - 70999
912-092	1.50	Main control valve, installation	71000 - 79999
912-092	1.25	Main control valve, installation	61000 - 61219 70000 - 70999
912-092	1.00	Main control valve, installation	61000 - 61219 70000 - 70999
912-094	1.25	Main control valve, maintenance	61000 - 61219 70000 - 70999
912-136	0.70	Main relief valve, adjusting	

Op.no.	time (h)		Notes
914-057	0.50	Servo pressure, check	
914-057	0.70	Servo pressure, check	
914-071	0.70	Servo pipe and hose, replacing	
915-002	0.90	Control lever, changing	
915-003	0.80	Control lever, adjusting	
916-036	0.60	Self level valve, removal and installation	
916-037	0.40	Self level valve, adjustment	
916-038	0.50	Self level valve, bypass	
92		MECHANICAL EQUIPMENT/ATTACHMENT	
924-028	0.50	Attachment bracket, removal	
924-029	0.50	Attachment bracket, installation	
94		UNIT, LOAD HANDLING	
945-006	0.80	Lift cylinder removed, repacking	71000 - 79999
945-018	0.70	Lift cylinder, removing	61000 - 61219 70000 - 70999
945-018	1.00	Lift cylinder, removing	71000 - 79999
945-019	0.70	Lift cylinder, installing	61000 - 61219 70000 - 70999
945-019	0.70	Lift cylinder, installing	71000 - 79999
945-021	0.50	Tilt cylinder, removing	61000 - 61219 70000 - 70999
945-021	0.50	Tilt cylinder, removing	71000 - 79999
945-022	0.50	Tilt cylinder, installing	61000 - 61219 70000 - 70999
945-022	0.50	Tilt cylinder, installing	71000 - 79999
945-040	0.90	Loader arm bearing, replacing	71000 - 79999
945-040	1.25	Loader arm bearing, replacing	71000 - 79999
95		LOAD CARRIER	
950-001	1.00	Foot pedal cable, removal	61000 - 61219 70000 - 70999
950-001	0.80	Foot pedal cable, removal	71000 - 79999
950-002	0.80	Foot pedal cable, installation	71000 - 79999
950-002	1.25	Foot pedal cable, installation	61000 - 61219 70000 - 70999

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	1.00	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-010	6.00	Maintenance service, every 500 hours
173-012	36.00	Maintenance service, every 1000 hours
2		ENGINE WITH MOUNTING AND EQUIPMENT
23		FUEL SYSTEM
239-001	0.30	Fuel cooler, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-017	0.70	Silencer, removing
252-018	0.50	Silencer, installing
256-003	0.20	Air cleaner, primary filter replacing
256-004	0.30	Air cleaner, secondary filter replacing
256-010	0.20	Air cleaner, removing
256-011	0.30	Air cleaner, installing
26		COOLING SYSTEM
263-001	0.80	Fan motor, removing
263-003	0.80	Fan motor, installing
263-004	0.10	Fan motor, checking working pressure
263-013	0.20	Fan belt and/or alternator belt, checking and adjusting tension
263-023	0.30	Fan pump, removing
263-024	0.40	Fan pump, installing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.70	Batteries, replacing
311-009	0.20	Battery, disconnecting
311-010	0.20	Battery, connecting
4		POWER TRANSMISSION
41		CLUTCH; TORQUE CONVERTER
413-012	5.50	Clutch assembly, removing

Op.no.	time (h)	Notes	
413-013	6.00	Clutch assembly, installing	
43		GEARBOX,	
431-012	4.50	Travel gearbox, removal	
431-013	4.50	Travel gearbox, installation	
431-038	11.00	Gearbox, removing	
431-039	7.00	Gearbox, installing	
431-040	12.00	Gearbox, disassembly	
431-041	8.50	Gearbox, assembly	
44		HYDROSTATIC DRIVE	
441-009	4.00	Travel motor, removing	
441-010	4.50	Travel motor, installing	
441-040	2.50	Hydraulic motor speed sensor, replacing	
442-016	0.20	Hydrostatic pump charge pressure, check and adjust	
442-082	3.00	Propulsion pump, removing	
442-082	2.50	Propulsion pump, removing	
442-083	1.25	Propulsion pump, installing	
442-083	3.00	Propulsion pump, installing	
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT	
77		WHEELS; TRACKS; TYRE; HUB; DRUM	
775-009	2.00	Front idler, removing	
775-010	3.00	Front idler, installing	
775-040	0.60	Rubber track, aligning	199150 - 375047 375048 - 499999
775-041	1.75	Rubber track, removing	
775-042	2.50	Rubber track, installing	
775-043	6.00	Tandem bogie pin and bushing, replacing	
775-080	5.50	Track tension cylinder, replacing	
775-089	0.10	Track tension system relief pressure, checking	
775-100	4.50	Track assembly, removing	
775-102	2.00	Bogie wheel assembly, removing	
775-103	3.00	Bogie wheel assembly, installing	
775-104	2.50	Track drive wheel, removing	
775-105	3.00	Track drive wheel, installing	
775-106	5.00	Take up slider, removing	
775-107	3.50	Take up slider, installing	
777-003	0.30	Vibration pump, removing	
777-004	0.40	Vibration pump, installing	

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.40	Engine hood, removing
821-002	0.70	Engine hood, installing
827-003	0.20	Hand rail, removing
827-004	0.20	Hand rail, installing
83		DOORS; HATCH; COVER PLATE, (all)
837-001	0.40	Deck plate, removing
837-002	0.50	Deck plate, installing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.20	Operator's seat, removing
852-004	0.30	Operator's seat, installing
852-022	1.25	Seat channel guide, replacing
852-091	1.50	Seat support, replacing
88		INTERIOR EQUIPMENT
881-001	0.40	Instrument console, removing
881-002	0.50	Instrument console, installing
881-006	0.50	Instrument console base, removing
881-007	0.20	Instrument console base, installing
881-008	1.75	Instrument console bearing, replacing
881-009	1.25	Instrument console lock pin, replacing
881-009	1.25	Instrument console lock pin, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-036	5.00	Hydraulic oil tank, removing
911-037	3.50	Hydraulic oil tank, installing
912-200	1.00	General purpose distribution valve, removing
912-201	0.80	General purpose distribution valve, installing
913-052	2.00	Hydraulic pump, removing
913-053	1.25	Hydraulic pump, installing
913-075	0.20	Hydraulic pump relief pressure, checking and adjusting
98		FUNCTION FOR ROAD CONSTRUCTION
982-001	0.40	Tow arm, removing
982-002	0.40	Tow arm, installing
982-003	0.80	Screed, removing

Op.no.	time (h)	Notes
982-003	0.70	Screed, removing
982-004	1.00	Screed, installing
982-004	0.90	Screed, installing
982-054	0.80	Tow point speed, adjusting
983-024	0.40	Hopper, removing
983-025	0.40	Hopper, installing
983-052	2.50	Conveyor chain, removing
983-053	1.50	Conveyor chain, installing
983-055	2.50	Conveyor floor plate, removing
983-056	1.50	Conveyor floor plate, installing
983-057	4.00	Conveyor drive shaft, removing
983-058	0.40	Conveyor drive shaft, installing
983-065	0.50	Auger bearing hanger, removing
983-066	0.50	Auger bearing hanger, installing
983-067	0.60	Auger bearing, removing
983-068	0.60	Auger bearing, installing
983-069	1.75	Auger shaft, removing
983-070	1.75	Auger shaft, installing
983-081	0.90	Push roller, removing
983-082	0.50	Push roller, installing
983-083	0.20	Push roller, disassembly and assembly
983-097	0.30	Auger system relief pressure, checking and adjusting
983-098	2.50	Generator pump, removing
983-099	1.25	Generator pump, installing
983-100	0.20	Auger drive sprocket, replacing
983-101	0.70	Auger drive chain, replacing
983-102	0.50	Auger motor, removing
983-103	0.70	Auger motor, installing
983-109	1.50	Auger assembly, installing
983-110	1.00	Power tunnel, removing
983-111	0.60	Power tunnel, installing
983-112	1.25	Power tunnel cylinder, removing
983-113	1.00	Power tunnel cylinder, installing
983-116	0.30	Apron, removing
983-117	0.30	Apron, installing
983-118	0.70	Conveyor drive chain, removing
983-119	0.10	Conveyor drive chain, installing
983-120	3.00	Conveyor idler assembly, removing
983-121	1.75	Conveyor idler assembly, installing
983-122	5.00	Conveyor idler assembly, disassembly and assembly
983-123	0.70	Conveyor tension cylinder, removing
983-124	0.60	Conveyor tension cylinder, installing

Op.no.	time (h)	Notes
983-137	0.20	Conveyor system relief pressure, checking and adjusting
983-138	0.20	Conveyor chain tension system relief pressure, checking
983-142	0.10	Auger flight, removing
983-143	0.20	Auger flight, installing
9833-001	1.25	Conveyor drive pump, removing
9833-002	0.80	Conveyor drive pump, installing
985-009	0.30	Washdown system, removing
985-010	0.30	Washdown system, installing
985-011	1.75	Fumes Extraction System, removing
985-012	1.25	Fumes Extraction System, installing
986-001	0.30	Generator motor, removing
986-002	0.40	Generator motor, installing
986-003	1.50	Generator, removing
986-004	1.25	Generator, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	1.00	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-010	6.00	Maintenance service, every 500 hours
173-012	9.50	Maintenance service, every 1000 hours
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-076	11.00	Engine, replacing
23		FUEL SYSTEM
239-001	0.30	Fuel cooler, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-017	0.70	Silencer, removing
252-018	0.50	Silencer, installing
256-003	0.20	Air cleaner, primary filter replacing
256-004	0.30	Air cleaner, secondary filter replacing
256-010	0.20	Air cleaner, removing
256-011	0.30	Air cleaner, installing
26		COOLING SYSTEM
263-001	0.80	Fan motor, removing
263-003	0.80	Fan motor, installing
263-004	0.10	Fan motor, checking working pressure
263-013	0.20	Fan belt and/or alternator belt, checking and adjusting tension
263-023	0.30	Fan pump, removing
263-024	0.40	Fan pump, installing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.70	Batteries, replacing
311-009	0.20	Battery, disconnecting
311-010	0.20	Battery, connecting
36		OTHER ELECTRICAL EQUIPMENT
366-096	0.60	Junction box, removing

Op.no.	time (h)	Notes
4		POWER TRANSMISSION
41		CLUTCH; TORQUE CONVERTER
413-012	5.50	Clutch assembly, removing
413-013	6.00	Clutch assembly, installing
43		GEARBOX,
431-038	11.00	Gearbox, removing
431-038	2.50	Gearbox, removing
431-039	1.75	Gearbox, installing
431-039	7.00	Gearbox, installing
431-040	12.00	Gearbox, disassembly
431-041	8.50	Gearbox, assembly
44		HYDROSTATIC DRIVE
441-009	4.00	Travel motor, removing
441-010	1.75	Travel motor, installing
442-016	0.20	Hydrostatic pump charge pressure, check and adjust
442-082	3.00	Propulsion pump, removing
442-082	2.50	Propulsion pump, removing
442-083	1.25	Propulsion pump, installing
442-083	3.00	Propulsion pump, installing
6		STEERING
62		STEERING AXLE
622-058	0.20	Tie bar, removing
622-063	0.30	Tie bar, installing
622-090	1.00	Bogie assembly, removing
622-091	1.25	Bogie assembly, installing
64		STEERING
641-026	0.60	Steering column, removing
641-027	0.60	Steering column, installing
643-015	3.00	Steering arm, removing
643-016	2.50	Steering arm, installing
645-004	0.30	Steering cylinder, removing
645-005	0.30	Steering cylinder, installing
645-022	0.70	Steering valve, removal
645-023	0.30	Steering valve, installation

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
72		SUSPENSION
725-014	0.50	Bogie lift cylinders, filling
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-004	0.40	Rear wheel, removing
771-005	0.50	Rear wheel, installing
777-003	0.30	Vibration pump, removing
777-004	0.40	Vibration pump, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.40	Engine hood, removing
821-002	0.70	Engine hood, installing
827-003	0.20	Hand rail, removing
827-004	0.20	Hand rail, installing
83		DOORS; HATCH; COVER PLATE, (all)
837-001	0.40	Deck plate, removing
837-002	0.50	Deck plate, installing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.20	Operator's seat, removing
852-004	0.30	Operator's seat, installing
852-022	1.25	Seat channel guide, replacing
852-091	1.50	Seat support, replacing
88		INTERIOR EQUIPMENT
881-001	0.40	Instrument console, removing
881-002	0.50	Instrument console, installing
881-006	0.50	Instrument console base, removing
881-007	0.20	Instrument console base, installing
881-008	1.75	Instrument console bearing, replacing
881-009	1.25	Instrument console lock pin, replacing
881-009	1.25	Instrument console lock pin, replacing

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-036	5.00	Hydraulic oil tank, removing
911-037	3.50	Hydraulic oil tank, installing
912-200	1.00	General purpose distribution valve, removing
912-201	0.80	General purpose distribution valve, installing
913-052	2.00	Hydraulic pump, removing
913-053	1.25	Hydraulic pump, installing
913-075	0.20	Hydraulic pump relief pressure, checking and adjusting
98		FUNCTION FOR ROAD CONSTRUCTION
982-001	0.40	Tow arm, removing
982-002	0.40	Tow arm, installing
982-003	0.80	Screed, removing
982-003	0.70	Screed, removing
982-004	1.00	Screed, installing
982-004	0.90	Screed, installing
982-054	0.80	Tow point speed, adjusting
983-024	0.40	Hopper, removing
983-025	0.40	Hopper, installing
983-052	2.50	Conveyor chain, removing
983-053	1.50	Conveyor chain, installing
983-055	2.50	Conveyor floor plate, removing
983-056	1.50	Conveyor floor plate, installing
983-057	4.00	Conveyor drive shaft, removing
983-058	0.40	Conveyor drive shaft, installing
983-061	1.75	Conveyor motor assembly, removing
983-062	1.75	Conveyor motor assembly, installing
983-065	0.50	Auger bearing hanger, removing
983-066	0.50	Auger bearing hanger, installing
983-067	0.60	Auger bearing, removing
983-068	0.60	Auger bearing, installing
983-069	1.75	Auger shaft, removing
983-070	1.75	Auger shaft, installing
983-081	0.90	Push roller, removing
983-082	0.50	Push roller, installing
983-083	0.20	Push roller, disassembly and assembly
983-097	0.30	Auger system relief pressure, checking and adjusting
983-098	2.50	Generator pump, removing
983-099	1.25	Generator pump, installing

Op.no.	time (h)	Notes
983-100	0.20	Auger drive sprocket, replacing
983-101	0.70	Auger drive chain, replacing
983-102	0.50	Auger motor, removing
983-103	0.70	Auger motor, installing
983-108	0.90	Auger assembly, removing
983-109	1.50	Auger assembly, installing
983-110	1.00	Power tunnel, removing
983-111	0.60	Power tunnel, installing
983-112	1.25	Power tunnel cylinder, removing
983-113	1.00	Power tunnel cylinder, installing
983-116	0.30	Apron, removing
983-117	0.30	Apron, installing
983-118	0.70	Conveyor drive chain, removing
983-119	0.10	Conveyor drive chain, installing
983-120	3.00	Conveyor idler assembly, removing
983-121	1.75	Conveyor idler assembly, installing
983-122	5.00	Conveyor idler assembly, disassembly and assembly
983-123	0.70	Conveyor tension cylinder, removing
983-124	0.60	Conveyor tension cylinder, installing
983-137	0.20	Conveyor system relief pressure, checking and adjusting
983-138	0.20	Conveyor chain tension system relief pressure, checking
983-142	0.10	Auger flight, removing
983-143	0.20	Auger flight, installing
9833-001	1.25	Conveyor drive pump, removing
9833-002	0.80	Conveyor drive pump, installing
985-009	0.30	Washdown system, removing
985-010	0.30	Washdown system, installing
985-011	1.75	Fumes Extraction System, removing
985-012	1.25	Fumes Extraction System, installing
986-001	0.30	Generator motor, removing
986-002	0.40	Generator motor, installing
986-003	0.60	Generator, removing
986-004	0.60	Generator, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	1.00	Maintenance service, daily
173-004	1.50	Maintenance service, every 50 hours
173-010	6.00	Maintenance service, every 500 hours
173-012	7.50	Maintenance service, every 1000 hours
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-076	11.00	Engine, replacing
23		FUEL SYSTEM
239-001	0.30	Fuel cooler, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
252-017	0.70	Silencer, removing
252-018	0.50	Silencer, installing
256-003	0.20	Air cleaner, primary filter replacing
256-004	0.30	Air cleaner, secondary filter replacing
256-010	0.20	Air cleaner, removing
256-011	0.30	Air cleaner, installing
26		COOLING SYSTEM
263-001	0.80	Fan motor, removing
263-003	0.80	Fan motor, installing
263-004	0.10	Fan motor, checking working pressure
263-013	0.20	Fan belt and/or alternator belt, checking and adjusting tension
263-023	0.30	Fan pump, removing
263-024	0.40	Fan pump, installing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.70	Batteries, replacing
311-009	0.20	Battery, disconnecting
311-010	0.20	Battery, connecting
36		OTHER ELECTRICAL EQUIPMENT
366-096	0.60	Junction box, removing

Op.no.	time (h)	Notes
4		POWER TRANSMISSION
41		CLUTCH; TORQUE CONVERTER
413-012	5.50	Clutch assembly, removing
413-013	6.00	Clutch assembly, installing
43		GEARBOX,
431-038	2.50	Gearbox, removing
431-038	12.00	Gearbox, removing
431-039	8.00	Gearbox, installing
431-039	1.75	Gearbox, installing
431-040	12.00	Gearbox, disassembly
431-041	8.50	Gearbox, assembly
44		HYDROSTATIC DRIVE
441-009	4.00	Travel motor, removing
441-010	1.75	Travel motor, installing
442-016	0.20	Hydrostatic pump charge pressure, check and adjust
442-082	3.00	Propulsion pump, removing
442-082	1.50	Propulsion pump, removing
442-082	2.50	Propulsion pump, removing
442-083	3.00	Propulsion pump, installing
442-083	0.50	Propulsion pump, installing
442-083	1.25	Propulsion pump, installing
6		STEERING
62		STEERING AXLE
622-058	0.20	Tie bar, removing
622-063	0.30	Tie bar, installing
622-090	1.25	Bogie assembly, removing
622-091	1.50	Bogie assembly, installing
64		STEERING
641-026	0.60	Steering column, removing
641-027	0.60	Steering column, installing
643-015	3.00	Steering arm, removing
643-016	2.50	Steering arm, installing
645-004	0.30	Steering cylinder, removing
645-005	0.30	Steering cylinder, installing
645-022	0.70	Steering valve, removal
645-023	0.30	Steering valve, installation

Op.no.	time (h)	Notes
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
72		SUSPENSION
725-014	0.50	Bogie lift cylinders, filling
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-004	0.40	Rear wheel, removing
771-005	0.50	Rear wheel, installing
777-003	0.30	Vibration pump, removing
777-004	0.40	Vibration pump, installing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.40	Engine hood, removing
821-002	0.70	Engine hood, installing
827-003	0.20	Hand rail, removing
827-004	0.20	Hand rail, installing
83		DOORS; HATCH; COVER PLATE, (all)
837-001	0.40	Deck plate, removing
837-002	0.50	Deck plate, installing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.20	Operator's seat, removing
852-004	0.30	Operator's seat, installing
852-022	1.25	Seat channel guide, replacing
852-091	1.50	Seat support, replacing
88		INTERIOR EQUIPMENT
881-001	0.40	Instrument console, removing
881-002	0.50	Instrument console, installing
881-006	0.50	Instrument console base, removing
881-007	0.20	Instrument console base, installing
881-008	1.75	Instrument console bearing, replacing
881-009	1.25	Instrument console lock pin, replacing
881-009	1.25	Instrument console lock pin, replacing

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-036	5.00	Hydraulic oil tank, removing
911-037	3.50	Hydraulic oil tank, installing
912-200	1.00	General purpose distribution valve, removing
912-201	0.80	General purpose distribution valve, installing
913-052	2.00	Hydraulic pump, removing
913-053	1.25	Hydraulic pump, installing
913-075	0.20	Hydraulic pump relief pressure, checking and adjusting
98		FUNCTION FOR ROAD CONSTRUCTION
982-001	0.40	Tow arm, removing
982-002	0.40	Tow arm, installing
982-003	0.80	Screed, removing
982-003	0.70	Screed, removing
982-004	0.90	Screed, installing
982-004	1.00	Screed, installing
982-054	0.80	Tow point speed, adjusting
983-024	0.40	Hopper, removing
983-025	0.40	Hopper, installing
983-052	2.50	Conveyor chain, removing
983-053	1.50	Conveyor chain, installing
983-055	2.50	Conveyor floor plate, removing
983-056	1.50	Conveyor floor plate, installing
983-057	4.00	Conveyor drive shaft, removing
983-058	0.40	Conveyor drive shaft, installing
983-061	1.75	Conveyor motor assembly, removing
983-062	1.75	Conveyor motor assembly, installing
983-065	0.50	Auger bearing hanger, removing
983-066	0.50	Auger bearing hanger, installing
983-067	0.60	Auger bearing, removing
983-068	0.60	Auger bearing, installing
983-069	1.75	Auger shaft, removing
983-070	1.75	Auger shaft, installing
983-081	0.90	Push roller, removing
983-082	0.50	Push roller, installing
983-083	0.20	Push roller, disassembly and assembly
983-097	0.30	Auger system relief pressure, checking and adjusting
983-098	3.00	Generator pump, removing
983-099	1.75	Generator pump, installing

Op.no.	time (h)	Notes
983-100	0.20	Auger drive sprocket, replacing
983-101	0.70	Auger drive chain, replacing
983-102	0.50	Auger motor, removing
983-103	0.70	Auger motor, installing
983-108	0.90	Auger assembly, removing
983-109	1.50	Auger assembly, installing
983-110	1.00	Power tunnel, removing
983-111	0.60	Power tunnel, installing
983-112	1.25	Power tunnel cylinder, removing
983-113	1.00	Power tunnel cylinder, installing
983-116	0.30	Apron, removing
983-117	0.30	Apron, installing
983-118	0.70	Conveyor drive chain, removing
983-119	0.10	Conveyor drive chain, installing
983-120	3.00	Conveyor idler assembly, removing
983-121	1.75	Conveyor idler assembly, installing
983-122	5.00	Conveyor idler assembly, disassembly and assembly
983-123	0.70	Conveyor tension cylinder, removing
983-124	0.60	Conveyor tension cylinder, installing
983-137	0.20	Conveyor system relief pressure, checking and adjusting
983-138	0.20	Conveyor chain tension system relief pressure, checking
983-142	0.10	Auger flight, removing
983-143	0.20	Auger flight, installing
9833-001	1.25	Conveyor drive pump, removing
9833-002	0.80	Conveyor drive pump, installing
985-009	0.30	Washdown system, removing
985-010	0.30	Washdown system, installing
985-011	1.75	Fumes Extraction System, removing
985-012	1.25	Fumes Extraction System, installing
986-001	0.30	Generator motor, removing
986-002	0.40	Generator motor, installing
986-003	0.60	Generator, removing
986-004	0.60	Generator, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	0.40	Maintenance service, daily
173-074	1.00	Hydraulic oil tank, changing oil and filter
173-078	0.50	Engine, air cleaner maintenance
173-401	0.80	Engine oil and filter, changing
173-465	0.80	Rear axle oil, changing
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	4.00	Engine, removing
210-072	5.00	Engine, installing
218-007	1.00	Engine mounting rear, changing
23		FUEL SYSTEM
233-001	0.20	Fuel system, bleeding
233-014	0.40	Fuel filters, replacing
234-010	5.50	Fuel tank, replacing
235-002	0.20	Fuel line, water separator, check and drain
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
252-022	2.50	Exhaust pipe, changing pipe between silencer and turbocharger
256-011	1.25	Air cleaner, installing
258-022	0.50	Charge air cooler connection (hose, tube), replacing
258-023	0.40	Charge air cooler, removing
258-024	0.40	Charge air cooler, installing
26		COOLING SYSTEM
263-012	0.80	Fan belt and/or alternator belt, replacing
263-013	0.40	Fan belt and/or alternator belt, checking and adjusting tension
263-041	4.00	Cooling fan, replacing
263-042	4.00	Fan shroud, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	1.25	Batteries, replacing

Op.no.	time (h)	Notes
32		ALTERNATOR; CHARGE REGULATOR
321-002	2.50	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	0.50	Starter motor, replacing
334-011	0.70	Starter switch (engine start switch), replacing
36		OTHER ELECTRICAL EQUIPMENT
362-003	0.40	Reverse alarm, replacing
363-001	0.60	Windscreen wiper rear, replacing motor
363-002	0.60	Windscreen wiper front, replacing motor
364-004	0.30	Switch, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-007	0.30	Engine oil pressure sensor, replacing
386-011	1.75	Fuel level sender, replacing
386-017	0.60	Hydraulic oil temperature sensor, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-088	4.00	Two speed valve solenoid and cartridge, replacing
421-089	1.25	Pump de-stroke valve solenoid and cartridge, replacing
424-004	2.50	Propulsion control lever, replacing
44		HYDROSTATIC DRIVE
440-021	1.25	Hydrostatic controller, removing
440-022	1.50	Hydrostatic controller, installing
441-011	4.00	Travel motor, replacing one
441-035	5.00	Drive motor, removing
441-036	5.00	Drive motor, installing
441-061	1.75	Thermal bypass valve, replacing
442-021	3.50	Hydrostatic pump, removing
442-022	4.50	Hydrostatic pump, installing
442-045	4.00	Pump coupling, removing
442-046	5.00	Pump coupling, installing
442-068	0.50	Loop flushing valve, replacing
442-069	1.00	Loop flushing valve cartridge, replacing
442-080	0.40	Drum drive motor speed sensor, replacing
442-081	0.40	Rear axle motor speed sensor, replacing
442-090	0.40	Vibration speed sensor, replacing
442-091	1.50	Traction valve, solenoid and cartridge, replacing

Op.no.	time (h)	Notes
46		FRONT AXLE; REAR AXLE
463-002	5.00	Axle, removing
463-003	5.00	Axle, installing
5		BRAKE
55		PARKING BRAKE
551-012	0.50	Parking brake pressure switch, replacing
6		STEERING
64		STEERING
641-021	4.50	Adjustable steering column, replacing
645-004	1.50	Steering cylinder, removing
645-005	1.75	Steering cylinder, installing
645-031	2.00	Steering control unit, removing
645-035	2.50	Steering control unit, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-022	5.00	Frame joint, Replacing the front pivot bearing with machine separated
741-023	6.00	Frame joint, replacing the rear pivot bearing with machine separated
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.80	Wheel, removing and fitting one
777-001	13.00	Drum, removing
777-002	13.00	Drum, installing
777-003	3.00	Vibration pump, removing
777-004	3.50	Vibration pump, installing
777-005	0.90	Vibration motor, removing
777-006	1.00	Vibration motor, installing
777-007	12.00	Eccentric weight, removing
777-008	13.00	Eccentric weight, installing
777-009	2.00	Drum shock mount, replacing
777-010	25.00	Eccentric shaft coupling, replacing
777-011	3.50	Torque hub, removing
777-012	3.50	Torque hub, installing
777-013	25.00	Eccentric weight bearings, replacing

Op.no.	time (h)	Notes
777-014	6.00	Carrier bearings, replacing
777-015	9.00	Eccentric weight, overhaul
777-020	5.00	Drum bolt-on shell option, installing
777-021	1.25	Smooth drum scrapers, replacing
777-022	1.25	Padfoot drum scrapers, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
818-023	2.50	Viscous cab suspension, changing all units
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	2.50	Engine hood, removing
821-002	2.50	Engine hood, installing
821-030	2.50	Engine hood, changing spring
85		CAB INTERIOR/UPHOLSTERY
852-003	0.90	Operator's seat, removing
852-004	1.00	Operator's seat, installing
87		AIR CONDITIONING UNIT
870-003	1.75	Cooler and Heater assembly, removal
870-004	5.00	Cooler and Heater assembly, installation
872-001	0.60	Cab filter, replacing
873-004	10.00	Heater core, replacing
873-006	6.50	Fan motor, replacing
873-008	2.50	Heat control valve, replacing
873-013	2.50	Heater unit relays, replacing
874-006	3.00	Compressor, replacing incl draining and filling
874-010	3.00	Condenser, replacing incl draining and filling
874-011	3.00	Receiver, replacing incl draining and filling
874-012	7.50	Evaporator, replacing incl draining and filling
874-014	7.50	Thermostat, replacing
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-092	0.30	HVAC control switch, replacing
88		INTERIOR EQUIPMENT
884-001	0.40	Seat safety belt, replacing

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-013	0.90	Hydraulic oil cooler, removing
911-014	0.90	Hydraulic oil cooler, installing
911-036	2.50	Hydraulic oil tank, removing
911-037	2.50	Hydraulic oil tank, installing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	0.40	Maintenance service, daily
173-074	1.00	Hydraulic oil tank, changing oil and filter
173-078	0.50	Engine, air cleaner maintenance
173-401	0.80	Engine oil and filter, changing
173-465	0.80	Rear axle oil, changing
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	4.00	Engine, removing
210-072	5.00	Engine, installing
218-007	1.00	Engine mounting rear, changing
23		FUEL SYSTEM
233-001	0.20	Fuel system, bleeding
233-014	0.40	Fuel filters, replacing
234-010	5.50	Fuel tank, replacing
235-002	0.20	Fuel line, water separator, check and drain
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
252-022	2.50	Exhaust pipe, changing pipe between silencer and turbocharger
256-011	1.25	Air cleaner, installing
258-022	0.50	Charge air cooler connection (hose, tube), replacing
258-023	0.40	Charge air cooler, removing
258-024	0.40	Charge air cooler, installing
26		COOLING SYSTEM
263-012	0.80	Fan belt and/or alternator belt, replacing
263-013	0.40	Fan belt and/or alternator belt, checking and adjusting tension
263-041	4.00	Cooling fan, replacing
263-042	4.00	Fan shroud, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	1.25	Batteries, replacing

Op.no.	time (h)	Notes
32		ALTERNATOR; CHARGE REGULATOR
321-002	2.50	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	0.50	Starter motor, replacing
334-011	0.70	Starter switch (engine start switch), replacing
36		OTHER ELECTRICAL EQUIPMENT
362-003	0.40	Reverse alarm, replacing
363-001	0.60	Windscreen wiper rear, replacing motor
363-002	0.60	Windscreen wiper front, replacing motor
364-004	0.30	Switch, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-007	0.30	Engine oil pressure sensor, replacing
386-011	1.75	Fuel level sender, replacing
386-017	0.60	Hydraulic oil temperature sensor, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-088	4.00	Two speed valve solenoid and cartridge, replacing
421-089	1.25	Pump de-stroke valve solenoid and cartridge, replacing
424-004	2.50	Propulsion control lever, replacing
44		HYDROSTATIC DRIVE
440-021	1.25	Hydrostatic controller, removing
440-022	1.50	Hydrostatic controller, installing
441-011	4.00	Travel motor, replacing one
441-035	5.00	Drive motor, removing
441-036	5.00	Drive motor, installing
441-061	1.75	Thermal bypass valve, replacing
442-021	3.50	Hydrostatic pump, removing
442-022	4.50	Hydrostatic pump, installing
442-045	4.00	Pump coupling, removing
442-046	5.00	Pump coupling, installing
442-068	0.50	Loop flushing valve, replacing
442-069	1.00	Loop flushing valve cartridge, replacing
442-080	0.40	Drum drive motor speed sensor, replacing
442-081	0.40	Rear axle motor speed sensor, replacing
442-090	0.40	Vibration speed sensor, replacing
442-091	1.50	Traction valve, solenoid and cartridge, replacing

Op.no.	time (h)	Notes
46		FRONT AXLE; REAR AXLE
463-002	5.00	Axle, removing
463-003	5.00	Axle, installing
5		BRAKE
55		PARKING BRAKE
551-012	0.50	Parking brake pressure switch, replacing
6		STEERING
64		STEERING
641-021	4.50	Adjustable steering column, replacing
645-004	1.50	Steering cylinder, removing
645-005	1.75	Steering cylinder, installing
645-031	2.00	Steering control unit, removing
645-035	2.50	Steering control unit, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-022	5.00	Frame joint, Replacing the front pivot bearing with machine separated
741-023	6.00	Frame joint, replacing the rear pivot bearing with machine separated
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.80	Wheel, removing and fitting one
777-001	13.00	Drum, removing
777-002	13.00	Drum, installing
777-003	3.00	Vibration pump, removing
777-004	3.50	Vibration pump, installing
777-005	0.90	Vibration motor, removing
777-006	1.00	Vibration motor, installing
777-007	12.00	Eccentric weight, removing
777-008	13.00	Eccentric weight, installing
777-009	2.00	Drum shock mount, replacing
777-010	25.00	Eccentric shaft coupling, replacing
777-011	3.50	Torque hub, removing
777-012	3.50	Torque hub, installing
777-013	25.00	Eccentric weight bearings, replacing

Op.no.	time (h)	Notes
777-014	6.00	Carrier bearings, replacing
777-015	9.00	Eccentric weight, overhaul
777-020	5.00	Drum bolt-on shell option, installing
777-021	1.25	Smooth drum scrapers, replacing
777-022	1.25	Padfoot drum scrapers, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
818-023	2.50	Viscous cab suspension, changing all units
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	2.50	Engine hood, removing
821-002	2.50	Engine hood, installing
821-030	2.50	Engine hood, changing spring
85		CAB INTERIOR/UPHOLSTERY
852-003	0.90	Operator's seat, removing
852-004	1.00	Operator's seat, installing
87		AIR CONDITIONING UNIT
870-003	1.75	Cooler and Heater assembly, removal
870-004	5.00	Cooler and Heater assembly, installation
872-001	0.60	Cab filter, replacing
873-004	10.00	Heater core, replacing
873-006	6.50	Fan motor, replacing
873-008	2.50	Heat control valve, replacing
873-013	2.50	Heater unit relays, replacing
874-006	3.00	Compressor, replacing incl draining and filling
874-010	3.00	Condenser, replacing incl draining and filling
874-011	3.00	Receiver, replacing incl draining and filling
874-012	7.50	Evaporator, replacing incl draining and filling
874-014	7.50	Thermostat, replacing
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-092	0.30	HVAC control switch, replacing
88		INTERIOR EQUIPMENT
884-001	0.40	Seat safety belt, replacing

Op.no.	time (h)	Notes
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-013	0.90	Hydraulic oil cooler, removing
911-014	0.90	Hydraulic oil cooler, installing
911-036	2.50	Hydraulic oil tank, removing
911-037	2.50	Hydraulic oil tank, installing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
172-002	3.50	Warranty inspection 100 hours
172-004	16.00	Warranty inspection 1000 hours
173-002	0.40	Maintenance service, daily
173-074	1.00	Hydraulic oil tank, changing oil and filter
173-078	0.50	Engine, air cleaner maintenance
173-401	0.80	Engine oil and filter, changing
173-465	0.80	Rear axle oil, changing
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	4.00	Engine, removing
210-072	5.00	Engine, installing
218-007	1.00	Engine mounting rear, changing
23		FUEL SYSTEM
233-001	0.20	Fuel system, bleeding
233-014	0.40	Fuel filters, replacing
234-010	5.50	Fuel tank, replacing
234-010	4.50	Fuel tank, replacing
235-002	0.20	Fuel line, water separator, check and drain
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
252-022	2.50	Exhaust pipe, changing pipe between silencer and turbocharger
256-011	1.25	Air cleaner, installing
258-022	0.50	Charge air cooler connection (hose, tube), replacing
258-023	0.40	Charge air cooler, removing
258-024	0.40	Charge air cooler, installing
26		COOLING SYSTEM
263-012	0.80	Fan belt and/or alternator belt, replacing
263-013	0.40	Fan belt and/or alternator belt, checking and adjusting tension
263-041	4.00	Cooling fan, replacing
263-042	4.00	Fan shroud, replacing

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	1.25	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	2.50	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	0.50	Starter motor, replacing
334-011	0.70	Starter switch (engine start switch), replacing
36		OTHER ELECTRICAL EQUIPMENT
362-003	0.40	Reverse alarm, replacing
363-001	0.60	Windscreen wiper rear, replacing motor
363-002	0.60	Windscreen wiper front, replacing motor
364-004	0.30	Switch, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-007	0.30	Engine oil pressure sensor, replacing
386-007	0.30	Engine oil pressure sensor, replacing
386-011	1.75	Fuel level sender, replacing
386-017	0.60	Hydraulic oil temperature sensor, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-088	4.00	Two speed valve solenoid and cartridge, replacing
421-089	1.25	Pump de-stroke valve solenoid and cartridge, replacing
44		HYDROSTATIC DRIVE
440-021	1.25	Hydrostatic controller, removing
440-022	1.50	Hydrostatic controller, installing
441-011	4.00	Travel motor, replacing one
441-035	5.00	Drive motor, removing
441-036	5.00	Drive motor, installing
441-061	1.75	Thermal bypass valve, replacing
442-021	3.50	Hydrostatic pump, removing
442-021	3.50	Hydrostatic pump, removing
442-022	4.50	Hydrostatic pump, installing
442-045	4.00	Pump coupling, removing
442-046	5.00	Pump coupling, installing
442-068	0.50	Loop flushing valve, replacing

Op.no.	time (h)	Notes
442-069	1.00	Loop flushing valve cartridge, replacing
442-080	0.40	Drum drive motor speed sensor, replacing
442-081	0.40	Rear axle motor speed sensor, replacing
442-090	0.40	Vibration speed sensor, replacing
442-091	1.50	Traction valve, solenoid and cartridge, replacing
46		FRONT AXLE; REAR AXLE
463-002	5.00	Axle, removing
463-003	5.00	Axle, installing
5		BRAKE
55		PARKING BRAKE
551-012	0.50	Parking brake pressure switch, replacing
6		STEERING
64		STEERING
641-021	4.50	Adjustable steering column, replacing
645-004	1.50	Steering cylinder, removing
645-005	1.75	Steering cylinder, installing
645-031	2.00	Steering control unit, removing
645-035	2.50	Steering control unit, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-022	5.00	Frame joint, Replacing the front pivot bearing with machine separated
741-023	6.00	Frame joint, replacing the rear pivot bearing with machine separated
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.80	Wheel, removing and fitting one
777-001	13.00	Drum, removing
777-002	13.00	Drum, installing
777-002	13.00	Drum, installing
777-003	3.00	Vibration pump, removing
777-004	3.50	Vibration pump, installing
777-005	0.90	Vibration motor, removing
777-006	1.00	Vibration motor, installing
777-007	12.00	Eccentric weight, removing

Op.no.	time (h)	Notes
777-008	13.00	Eccentric weight, installing
777-009	2.00	Drum shock mount, replacing
777-010	25.00	Eccentric shaft coupling, replacing
777-011	3.50	Torque hub, removing
777-012	3.50	Torque hub, installing
777-013	25.00	Eccentric weight bearings, replacing
777-014	6.00	Carrier bearings, replacing
777-014	6.00	Carrier bearings, replacing
777-015	9.00	Eccentric weight, overhaul
777-020	5.00	Drum bolt-on shell option, installing
777-021	1.25	Smooth drum scrapers, replacing
777-022	1.25	Padfoot drum scrapers, replacing

8 MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE

81 CAB, NAKED; CANOPY

818-023	2.50	Viscous cab suspension, changing all units
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82 ENGINE HOOD; MUDGUARD; FOOT STEP

821-001	2.50	Engine hood, removing
821-002	2.50	Engine hood, installing
821-030	2.50	Engine hood, changing spring

85 CAB INTERIOR/UPHOLSTERY

852-003	0.90	Operator's seat, removing
852-004	1.00	Operator's seat, installing

87 AIR CONDITIONING UNIT

870-003	1.75	Cooler and Heater assembly, removal
870-004	5.00	Cooler and Heater assembly, installation
872-001	0.60	Cab filter, replacing
873-004	10.00	Heater core, replacing
873-006	6.50	Fan motor, replacing
873-008	2.50	Heat control valve, replacing
873-013	2.50	Heater unit relays, replacing
874-006	3.00	Compressor, replacing incl draining and filling
874-010	3.00	Condenser, replacing incl draining and filling
874-011	3.00	Receiver, replacing incl draining and filling
874-012	7.50	Evaporator, replacing incl draining and filling
874-014	7.50	Thermostat, replacing
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-092	0.40	HVAC control switch, replacing

Op.no.	time (h)	Notes
874-092	0.30	HVAC control switch, replacing
88		INTERIOR EQUIPMENT
884-001	0.40	Seat safety belt, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-013	0.90	Hydraulic oil cooler, removing
911-014	0.90	Hydraulic oil cooler, installing
911-036	2.50	Hydraulic oil tank, removing
911-037	2.50	Hydraulic oil tank, installing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	0.40	Maintenance service, daily
173-074	1.00	Hydraulic oil tank, changing oil and filter
173-078	0.50	Engine, air cleaner maintenance
173-401	0.80	Engine oil and filter, changing
173-465	0.80	Rear axle oil, changing
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	4.00	Engine, removing
210-072	5.00	Engine, installing
218-007	1.00	Engine mounting rear, changing
23		FUEL SYSTEM
233-001	0.20	Fuel system, bleeding
233-014	0.40	Fuel filters, replacing
234-010	5.50	Fuel tank, replacing
234-010	4.50	Fuel tank, replacing
235-002	0.20	Fuel line, water separator, check and drain
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	1.25	Silencer, replacing
252-022	2.50	Exhaust pipe, changing pipe between silencer and turbocharger
256-011	1.25	Air cleaner, installing
258-022	0.50	Charge air cooler connection (hose, tube), replacing
258-023	0.40	Charge air cooler, removing
258-024	0.40	Charge air cooler, installing
26		COOLING SYSTEM
263-012	0.80	Fan belt and/or alternator belt, replacing
263-013	0.40	Fan belt and/or alternator belt, checking and adjusting tension
263-041	4.00	Cooling fan, replacing
263-042	4.00	Fan shroud, replacing

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	1.25	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-002	2.50	Alternator, replacing incl function check
33		STARTING SYSTEM
331-018	0.50	Starter motor, replacing
334-011	0.70	Starter switch (engine start switch), replacing
36		OTHER ELECTRICAL EQUIPMENT
362-003	0.40	Reverse alarm, replacing
363-001	0.60	Windscreen wiper rear, replacing motor
363-002	0.60	Windscreen wiper front, replacing motor
364-004	0.30	Switch, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-007	0.30	Engine oil pressure sensor, replacing
386-007	0.30	Engine oil pressure sensor, replacing
386-011	1.75	Fuel level sender, replacing
386-017	0.60	Hydraulic oil temperature sensor, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-088	4.00	Two speed valve solenoid and cartridge, replacing
421-089	1.25	Pump de-stroke valve solenoid and cartridge, replacing
44		HYDROSTATIC DRIVE
440-021	1.25	Hydrostatic controller, removing
440-022	1.50	Hydrostatic controller, installing
441-011	4.00	Travel motor, replacing one
441-035	5.00	Drive motor, removing
441-036	5.00	Drive motor, installing
441-061	1.75	Thermal bypass valve, replacing
442-021	3.50	Hydrostatic pump, removing
442-021	3.50	Hydrostatic pump, removing
442-022	4.50	Hydrostatic pump, installing
442-045	4.00	Pump coupling, removing
442-046	5.00	Pump coupling, installing
442-068	0.50	Loop flushing valve, replacing

Op.no.	time (h)	Notes
442-069	1.00	Loop flushing valve cartridge, replacing
442-080	0.40	Drum drive motor speed sensor, replacing
442-081	0.40	Rear axle motor speed sensor, replacing
442-090	0.40	Vibration speed sensor, replacing
442-091	1.50	Traction valve, solenoid and cartridge, replacing
46		FRONT AXLE; REAR AXLE
463-002	5.00	Axle, removing
463-003	5.00	Axle, installing
5		BRAKE
55		PARKING BRAKE
551-012	0.50	Parking brake pressure switch, replacing
6		STEERING
64		STEERING
641-021	4.50	Adjustable steering column, replacing
645-004	1.50	Steering cylinder, removing
645-005	1.75	Steering cylinder, installing
645-031	2.00	Steering control unit, removing
645-035	2.50	Steering control unit, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
74		FRAME LINK
741-022	5.00	Frame joint, Replacing the front pivot bearing with machine separated
741-023	6.00	Frame joint, replacing the rear pivot bearing with machine separated
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.80	Wheel, removing and fitting one
777-001	13.00	Drum, removing
777-002	13.00	Drum, installing
777-002	13.00	Drum, installing
777-003	3.00	Vibration pump, removing
777-004	3.50	Vibration pump, installing
777-005	0.90	Vibration motor, removing
777-006	1.00	Vibration motor, installing
777-007	12.00	Eccentric weight, removing

Op.no.	time (h)	Notes
777-008	13.00	Eccentric weight, installing
777-009	2.00	Drum shock mount, replacing
777-010	25.00	Eccentric shaft coupling, replacing
777-011	3.50	Torque hub, removing
777-012	3.50	Torque hub, installing
777-013	25.00	Eccentric weight bearings, replacing
777-014	6.00	Carrier bearings, replacing
777-015	9.00	Eccentric weight, overhaul
777-020	5.00	Drum bolt-on shell option, installing
777-021	1.25	Smooth drum scrapers, replacing
777-022	1.25	Padfoot drum scrapers, replacing

8 MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE

81 CAB, NAKED; CANOPY

818-023	2.50	Viscous cab suspension, changing all units
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82 ENGINE HOOD; MUDGUARD; FOOT STEP

821-001	2.50	Engine hood, removing
821-002	2.50	Engine hood, installing
821-030	2.50	Engine hood, changing spring

85 CAB INTERIOR/UPHOLSTERY

852-003	0.90	Operator's seat, removing
852-004	1.00	Operator's seat, installing

87 AIR CONDITIONING UNIT

870-003	1.75	Cooler and Heater assembly, removal
870-004	5.00	Cooler and Heater assembly, installation
872-001	0.60	Cab filter, replacing
873-004	10.00	Heater core, replacing
873-006	6.50	Fan motor, replacing
873-008	2.50	Heat control valve, replacing
873-013	2.50	Heater unit relays, replacing
874-006	3.00	Compressor, replacing incl draining and filling
874-010	3.00	Condenser, replacing incl draining and filling
874-011	3.00	Receiver, replacing incl draining and filling
874-012	7.50	Evaporator, replacing incl draining and filling
874-014	7.50	Thermostat, replacing
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-092	0.40	HVAC control switch, replacing
874-092	0.30	HVAC control switch, replacing

Op.no.	time (h)	Notes
88		INTERIOR EQUIPMENT
884-001	0.40	Seat safety belt, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-013	0.90	Hydraulic oil cooler, removing
911-014	0.90	Hydraulic oil cooler, installing
911-036	2.50	Hydraulic oil tank, removing
911-037	2.50	Hydraulic oil tank, installing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump

Op.no.	time (h)	Notes
2		ENGINE WITH MOUNTING AND EQUIPMENT
23		FUEL SYSTEM
233-001	0.20	Fuel system, bleeding
233-014	0.40	Fuel filters, replacing

Op.no.	time (h)	Notes
2		ENGINE WITH MOUNTING AND EQUIPMENT
23		FUEL SYSTEM
233-001	0.20	Fuel system, bleeding
233-014	0.40	Fuel filters, replacing

Op.no.	time (h)	Notes
2		ENGINE WITH MOUNTING AND EQUIPMENT
23		FUEL SYSTEM
233-001	0.20	Fuel system, bleeding
233-014	0.40	Fuel filters, replacing
234-010	5.50	Fuel tank, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
256-011	1.25	Air cleaner, installing
258-022	0.50	Charge air cooler connection (hose, tube), replacing
26		COOLING SYSTEM
263-041	4.00	Cooling fan, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	1.25	Batteries, replacing
33		STARTING SYSTEM
331-018	0.50	Starter motor, replacing
36		OTHER ELECTRICAL EQUIPMENT
362-003	0.40	Reverse alarm, replacing
364-004	0.30	Switch, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-007	0.30	Engine oil pressure sensor, replacing
386-007	0.30	Engine oil pressure sensor, replacing
386-011	1.75	Fuel level sender, replacing
386-017	0.60	Hydraulic oil temperature sensor, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-088	4.00	Two speed valve solenoid and cartridge, replacing
421-089	1.25	Pump de-stroke valve solenoid and cartridge, replacing
44		HYDROSTATIC DRIVE
440-021	1.25	Hydrostatic controller, removing
440-022	1.50	Hydrostatic controller, installing
441-011	4.00	Travel motor, replacing one

Op.no.	time (h)	Notes
441-061	1.75	Thermal bypass valve, replacing
442-045	4.00	Pump coupling, removing
442-046	5.00	Pump coupling, installing
442-068	0.50	Loop flushing valve, replacing
442-069	1.00	Loop flushing valve cartridge, replacing
442-080	0.40	Drum drive motor speed sensor, replacing
442-081	0.40	Rear axle motor speed sensor, replacing
442-091	1.50	Traction valve, solenoid and cartridge, replacing
5		BRAKE
55		PARKING BRAKE
551-012	0.50	Parking brake pressure switch, replacing
6		STEERING
64		STEERING
645-004	1.50	Steering cylinder, removing
645-005	1.75	Steering cylinder, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
777-009	2.00	Drum shock mount, replacing
777-020	5.00	Drum bolt-on shell option, installing
777-021	1.25	Smooth drum scrapers, replacing
777-022	1.25	Padfoot drum scrapers, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
818-023	2.50	Viscous cab suspension, changing all units
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	2.50	Engine hood, removing
821-002	2.50	Engine hood, installing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.90	Operator's seat, removing
852-004	1.00	Operator's seat, installing

Op.no.	time (h)	Notes
87		AIR CONDITIONING UNIT
870-003	1.75	Cooler and Heater assembly, removal
870-004	5.00	Cooler and Heater assembly, installation
872-001	0.60	Cab filter, replacing
873-004	10.00	Heater core, replacing
873-006	6.50	Fan motor, replacing
873-013	2.50	Heater unit relays, replacing
874-006	3.00	Compressor, replacing incl draining and filling
874-010	3.00	Condenser, replacing incl draining and filling
874-011	3.00	Receiver, replacing incl draining and filling
874-012	7.50	Evaporator, replacing incl draining and filling
874-014	7.50	Thermostat, replacing
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-092	0.40	HVAC control switch, replacing
874-092	0.30	HVAC control switch, replacing
88		INTERIOR EQUIPMENT
884-001	0.40	Seat safety belt, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-013	0.90	Hydraulic oil cooler, removing
911-014	0.90	Hydraulic oil cooler, installing
911-036	2.50	Hydraulic oil tank, removing
911-037	2.50	Hydraulic oil tank, installing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump

Op.no.	time (h)	Notes
2		ENGINE WITH MOUNTING AND EQUIPMENT
23		FUEL SYSTEM
233-001	0.20	Fuel system, bleeding
233-014	0.40	Fuel filters, replacing
234-010	5.50	Fuel tank, replacing
25		INLET SYSTEM; EXHAUST SYSTEM
256-011	1.25	Air cleaner, installing
258-022	0.50	Charge air cooler connection (hose, tube), replacing
26		COOLING SYSTEM
263-041	4.00	Cooling fan, replacing
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	1.25	Batteries, replacing
33		STARTING SYSTEM
331-018	0.50	Starter motor, replacing
36		OTHER ELECTRICAL EQUIPMENT
362-003	0.40	Reverse alarm, replacing
364-004	0.30	Switch, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-007	0.30	Engine oil pressure sensor, replacing
386-007	0.30	Engine oil pressure sensor, replacing
386-011	1.75	Fuel level sender, replacing
386-017	0.60	Hydraulic oil temperature sensor, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-088	4.00	Two speed valve solenoid and cartridge, replacing
421-089	1.25	Pump de-stroke valve solenoid and cartridge, replacing
44		HYDROSTATIC DRIVE
440-021	1.25	Hydrostatic controller, removing
440-022	1.50	Hydrostatic controller, installing
441-011	4.00	Travel motor, replacing one

Op.no.	time (h)	Notes
441-061	1.75	Thermal bypass valve, replacing
442-045	4.00	Pump coupling, removing
442-046	5.00	Pump coupling, installing
442-068	0.50	Loop flushing valve, replacing
442-069	1.00	Loop flushing valve cartridge, replacing
442-080	0.40	Drum drive motor speed sensor, replacing
442-081	0.40	Rear axle motor speed sensor, replacing
442-091	1.50	Traction valve, solenoid and cartridge, replacing
5		BRAKE
55		PARKING BRAKE
551-012	0.50	Parking brake pressure switch, replacing
6		STEERING
64		STEERING
645-004	1.50	Steering cylinder, removing
645-005	1.75	Steering cylinder, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
777-009	2.00	Drum shock mount, replacing
777-020	5.00	Drum bolt-on shell option, installing
777-021	1.25	Smooth drum scrapers, replacing
777-022	1.25	Padfoot drum scrapers, replacing
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
81		CAB, NAKED; CANOPY
818-023	2.50	Viscous cab suspension, changing all units
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	2.50	Engine hood, removing
821-002	2.50	Engine hood, installing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.90	Operator's seat, removing
852-004	1.00	Operator's seat, installing

Op.no.	time (h)	Notes
87		AIR CONDITIONING UNIT
870-003	1.75	Cooler and Heater assembly, removal
870-004	5.00	Cooler and Heater assembly, installation
872-001	0.60	Cab filter, replacing
873-004	10.00	Heater core, replacing
873-006	6.50	Fan motor, replacing
873-013	2.50	Heater unit relays, replacing
874-006	3.00	Compressor, replacing incl draining and filling
874-010	3.00	Condenser, replacing incl draining and filling
874-011	3.00	Receiver, replacing incl draining and filling
874-012	7.50	Evaporator, replacing incl draining and filling
874-014	7.50	Thermostat, replacing
874-016	0.30	Compressor, replacing magnetic clutch (compressor removed)
874-092	0.40	HVAC control switch, replacing
874-092	0.30	HVAC control switch, replacing
88		INTERIOR EQUIPMENT
884-001	0.40	Seat safety belt, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-013	0.90	Hydraulic oil cooler, removing
911-014	0.90	Hydraulic oil cooler, installing
911-036	2.50	Hydraulic oil tank, removing
911-037	2.50	Hydraulic oil tank, installing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-004	1.75	Maintenance service, every 50 hours
173-007	3.50	Maintenance service, every 250 hours
173-010	5.00	Maintenance service, every 500 hours
173-012	7.00	Maintenance service, every 1000 hours
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	4.00	Engine, removing
218-009	0.40	Engine mounts, replacing
23		FUEL SYSTEM
234-011	2.50	Fuel tank, removing
234-012	0.80	Fuel tank, installing
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	0.90	Silencer, replacing
256-003	0.30	Air cleaner, primary filter replacing
256-004	0.30	Air cleaner, secondary filter replacing
256-010	0.20	Air cleaner, removing
256-011	0.20	Air cleaner, installing
26		COOLING SYSTEM
261-022	1.00	Cooling package, removing
261-023	1.50	Cooling package, installing
263-013	0.30	Fan belt and/or alternator belt, checking and adjusting tension
263-039	0.60	Cooling fan, removing
263-040	0.90	Cooling fan, installing
27		ENGINE CONTROL
272-022	1.50	Throttle control cable, replacing
272-023	0.50	Throttle control assembly, replacing
275-012	1.25	Engine speed control, mechanical basic setting
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.50	Batteries, replacing
311-009	0.20	Battery, disconnecting

Op.no.	time (h)	Notes
311-010	0.20	Battery, connecting
33		STARTING SYSTEM
331-081	0.50	Starter relay, replacing
334-020	0.40	Neutral start diode, replacing
37		CABLE; FUSE; RELAY
372-025	0.50	Power relay, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-011	3.50	Fuel level sender, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
424-003	0.70	Propulsion control cable, replacing
424-004	0.40	Propulsion control lever, replacing
424-005	0.40	Neutral safety switch, replacing
424-006	0.40	Neutral safety switch, adjusting
44		HYDROSTATIC DRIVE
440-005	0.20	Drum drive motor, case drain flow measuring
440-015	0.70	Charge relief pressure, test
440-030	0.80	Propel system relief pressure, check
441-035	0.50	Drive motor, removing
441-036	0.80	Drive motor, installing
441-061	1.25	Thermal bypass valve, replacing
442-030	0.40	Anti cavitation valve, replacing
442-045	1.50	Pump coupling, removing
442-046	1.75	Pump coupling, installing
442-069	0.40	Loop flushing valve cartridge, replacing
442-070	0.20	Charge pressure relief valve, replacing
442-071	0.40	Traction valve flow divider, replacing
442-084	0.60	Propulsion pump function valve, replacing
442-085	0.20	Propulsion pump bypass valve, replacing
442-086	0.70	Propulsion pump, case drain flow measuring
442-092	0.50	Traction relief pressure valve, replacing
442-096	0.20	Servo shunt valve solenoid, replacing
442-097	0.20	Servo shunt valve spool, replacing
4422-001	0.50	Traction valve, removing
4422-002	0.50	Traction valve, installing
46		FRONT AXLE; REAR AXLE
461-003	1.75	Axle, installing
463-002	1.25	Axle, removing

Op.no.	time (h)	Notes
5		BRAKE
52		HYDRAULIC BRAKE SYSTEM
524-001	0.50	Brake latching relay, replacing
55		PARKING BRAKE
550-034	0.60	Brake manifold, brake release pressure check
550-035	0.40	Axle drive motor, brake release pressure check
551-012	0.40	Parking brake pressure switch, replacing
554-001	0.20	Brake release valve solenoid, replacing
554-002	0.30	Brake release valve spool, replacing
6		STEERING
64		STEERING
645-006	0.60	Steering cylinder, replacing
645-016	0.40	Steering pump, removing
645-017	0.40	Steering pump, installing
645-082	0.50	Steering valve, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
711-030	0.90	Drum frame, removing
711-031	0.30	Drum frame, installing
711-035	1.25	Swivel, removing
711-036	0.50	Swivel, installing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.60	Wheel, removing and fitting one
771-006	0.30	Tyres, checking pressure
777-001	0.70	Drum, removing
777-002	1.25	Drum, installing
777-005	0.20	Vibration motor, removing
777-006	0.20	Vibration motor, installing
777-009	0.30	Drum shock mount, replacing
777-010	0.30	Eccentric shaft coupling, replacing
777-011	0.80	Torque hub, removing
777-012	1.50	Torque hub, installing
777-014	3.50	Carrier bearings, replacing
777-016	0.20	Vibration control valve solenoid, replacing
777-017	0.20	Vibration control valve spool, replacing

Op.no.	time (h)	Notes
777-018	2.50	Drum drive motor, replacing
777-021	0.60	Smooth drum scrapers, replacing
777-025	1.25	Carrier, removing
777-026	1.75	Carrier, installing
777-051	0.40	Vibration system pressure, measuring
777-052	0.40	Vibration pump function valve, replacing

8 MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE

81 CAB, NAKED; CANOPY

810-010	0.20	Operator's platform, raising
810-011	0.20	Operator's platform, lowering
810-011	0.20	Operator's platform, lowering

82 ENGINE HOOD; MUDGUARD; FOOT STEP

821-001	0.20	Engine hood, removing
821-002	0.30	Engine hood, installing

85 CAB INTERIOR/UPHOLSTERY

852-008	0.20	Seat, replacing
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86 PROTECTIVE EQUIPMENT, not specified in a special group

867-002	0.50	ROPS (Roll Over Protection), removing
867-003	0.40	ROPS (Roll Over Protection), installing

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

91 WORKING HYDRAULICS; SERVO HYDRAULICS

911-036	1.00	Hydraulic oil tank, removing
911-037	1.00	Hydraulic oil tank, installing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-204	0.40	Brake shunt two speed manifold, removing
912-205	0.40	Brake shunt two speed manifold, installing
913-052	1.25	Hydraulic pump, removing
913-053	1.25	Hydraulic pump, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-004	1.75	Maintenance service, every 50 hours
173-007	3.50	Maintenance service, every 250 hours
173-010	5.00	Maintenance service, every 500 hours
173-012	7.00	Maintenance service, every 1000 hours
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	4.00	Engine, removing
218-009	0.40	Engine mounts, replacing
23		FUEL SYSTEM
234-011	2.50	Fuel tank, removing
234-012	0.80	Fuel tank, installing
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	0.90	Silencer, replacing
256-003	0.30	Air cleaner, primary filter replacing
256-004	0.30	Air cleaner, secondary filter replacing
256-010	0.20	Air cleaner, removing
256-011	0.20	Air cleaner, installing
26		COOLING SYSTEM
261-022	1.00	Cooling package, removing
261-023	1.50	Cooling package, installing
263-013	0.30	Fan belt and/or alternator belt, checking and adjusting tension
263-039	0.60	Cooling fan, removing
263-040	0.90	Cooling fan, installing
27		ENGINE CONTROL
272-022	1.50	Throttle control cable, replacing
272-023	0.50	Throttle control assembly, replacing
275-012	1.25	Engine speed control, mechanical basic setting
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.50	Batteries, replacing
311-009	0.20	Battery, disconnecting

Op.no.	time (h)	Notes
311-010	0.20	Battery, connecting
33		STARTING SYSTEM
331-081	0.50	Starter relay, replacing
334-020	0.40	Neutral start diode, replacing
37		CABLE; FUSE; RELAY
372-025	0.50	Power relay, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-011	3.50	Fuel level sender, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
424-003	0.70	Propulsion control cable, replacing
424-004	0.40	Propulsion control lever, replacing
424-005	0.40	Neutral safety switch, replacing
424-006	0.40	Neutral safety switch, adjusting
44		HYDROSTATIC DRIVE
440-005	0.20	Drum drive motor, case drain flow measuring
440-015	0.70	Charge relief pressure, test
440-030	0.80	Propel system relief pressure, check
441-035	0.50	Drive motor, removing
441-036	0.80	Drive motor, installing
441-061	1.25	Thermal bypass valve, replacing
442-030	0.40	Anti cavitation valve, replacing
442-045	1.50	Pump coupling, removing
442-046	1.75	Pump coupling, installing
442-069	0.40	Loop flushing valve cartridge, replacing
442-070	0.20	Charge pressure relief valve, replacing
442-071	0.40	Traction valve flow divider, replacing
442-084	0.60	Propulsion pump function valve, replacing
442-085	0.20	Propulsion pump bypass valve, replacing
442-086	0.70	Propulsion pump, case drain flow measuring
442-092	0.50	Traction relief pressure valve, replacing
442-096	0.20	Servo shunt valve solenoid, replacing
442-097	0.20	Servo shunt valve spool, replacing
4422-001	0.50	Traction valve, removing
4422-002	0.50	Traction valve, installing
46		FRONT AXLE; REAR AXLE
461-003	1.75	Axle, installing
463-002	1.25	Axle, removing

Op.no.	time (h)	Notes
5		BRAKE
52		HYDRAULIC BRAKE SYSTEM
524-001	0.50	Brake latching relay, replacing
55		PARKING BRAKE
550-034	0.60	Brake manifold, brake release pressure check
550-035	0.40	Axle drive motor, brake release pressure check
551-012	0.40	Parking brake pressure switch, replacing
554-001	0.20	Brake release valve solenoid, replacing
554-002	0.30	Brake release valve spool, replacing
6		STEERING
64		STEERING
645-006	0.60	Steering cylinder, replacing
645-016	0.40	Steering pump, removing
645-017	0.40	Steering pump, installing
645-082	0.50	Steering valve, replacing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
71		FRAME
711-030	0.90	Drum frame, removing
711-031	0.30	Drum frame, installing
711-035	1.25	Swivel, removing
711-036	0.50	Swivel, installing
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.60	Wheel, removing and fitting one
771-006	0.30	Tyres, checking pressure
777-001	0.70	Drum, removing
777-002	1.25	Drum, installing
777-005	0.20	Vibration motor, removing
777-006	0.20	Vibration motor, installing
777-009	0.30	Drum shock mount, replacing
777-010	0.30	Eccentric shaft coupling, replacing
777-011	0.80	Torque hub, removing
777-012	1.50	Torque hub, installing
777-014	3.50	Carrier bearings, replacing
777-016	0.20	Vibration control valve solenoid, replacing
777-017	0.20	Vibration control valve spool, replacing

Op.no.	time (h)	Notes
777-018	2.50	Drum drive motor, replacing
777-025	1.25	Carrier, removing
777-026	1.75	Carrier, installing
777-051	0.40	Vibration system pressure, measuring
777-052	0.40	Vibration pump function valve, replacing

8 MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE

81		CAB, NAKED; CANOPY
810-010	0.20	Operator's platform, raising
810-011	0.20	Operator's platform, lowering
810-011	0.20	Operator's platform, lowering
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.20	Engine hood, removing
821-002	0.30	Engine hood, installing
85		CAB INTERIOR/UPHOLSTERY
852-008	0.20	Seat, replacing
86		PROTECTIVE EQUIPMENT, not specified in a special group
867-002	0.50	ROPS (Roll Over Protection), removing
867-003	0.40	ROPS (Roll Over Protection), installing

9 HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.

91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-036	1.00	Hydraulic oil tank, removing
911-037	1.00	Hydraulic oil tank, installing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
912-204	0.40	Brake shunt two speed manifold, removing
912-205	0.40	Brake shunt two speed manifold, installing
913-052	1.25	Hydraulic pump, removing
913-053	1.25	Hydraulic pump, installing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	0.30	Maintenance service, daily
173-004	0.80	Maintenance service, every 50 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	7.00	Maintenance service, every 1000 hours
173-035	4.50	Maintenance service, first 50 hours
173-078	0.20	Engine, air cleaner maintenance
173-089	0.30	Drum carrier, changing oil
173-401	0.60	Engine oil and filter, changing
173-451	1.25	Hydraulic oil, changing
173-457	0.80	Coolant, changing
173-465	0.80	Rear axle oil, changing
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	3.00	Engine, removing
210-072	5.50	Engine, installing
218-009	1.75	Engine mounts, replacing
23		FUEL SYSTEM
233-014	0.30	Fuel filters, replacing
235-002	0.40	Fuel line, water separator, check and drain
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	0.50	Silencer, replacing
256-003	0.30	Air cleaner, primary filter replacing
256-004	0.40	Air cleaner, secondary filter replacing
256-010	0.20	Air cleaner, removing
256-011	0.30	Air cleaner, installing
26		COOLING SYSTEM
261-022	1.25	Cooling package, removing
261-023	2.50	Cooling package, installing
263-012	0.80	Fan belt and/or alternator belt, replacing
263-041	3.50	Cooling fan, replacing

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.50	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-003	0.30	Alternator, removing
321-004	0.40	Alternator, installing
33		STARTING SYSTEM
331-016	0.50	Starter motor, removing
331-017	0.50	Starter motor, installing
334-011	0.70	Starter switch (engine start switch), replacing
36		OTHER ELECTRICAL EQUIPMENT
362-003	0.30	Reverse alarm, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-011	0.50	Fuel level sender, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-087	0.40	Multi function brake valve solenoid and cartridge, replacing
424-004	0.40	Propulsion control lever, replacing
44		HYDROSTATIC DRIVE
440-021	0.80	Hydrostatic controller, removing
440-022	1.25	Hydrostatic controller, installing
441-002	2.50	Hydraulic motor, replacing
441-035	0.40	Drive motor, removing
441-036	0.60	Drive motor, installing
442-021	2.00	Hydrostatic pump, removing
442-022	3.00	Hydrostatic pump, installing
442-045	4.00	Pump coupling, removing
442-046	5.00	Pump coupling, installing
46		FRONT AXLE; REAR AXLE
463-002	1.25	Axle, removing
463-003	1.75	Axle, installing

Op.no.	time (h)	Notes
5		BRAKE
55		PARKING BRAKE
551-012	0.50	Parking brake pressure switch, replacing
6		STEERING
64		STEERING
645-006	0.60	Steering cylinder, replacing
645-031	2.00	Steering control unit, removing
645-035	2.50	Steering control unit, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.80	Wheel, removing and fitting one
771-001	0.80	Wheel, removing and fitting one
771-001	0.80	Wheel, removing and fitting one
777-001	2.00	Drum, removing
777-002	2.00	Drum, installing
777-003	1.25	Vibration pump, removing
777-004	1.50	Vibration pump, installing
777-005	0.30	Vibration motor, removing
777-006	0.50	Vibration motor, installing
777-007	3.50	Eccentric weight, removing
777-008	4.50	Eccentric weight, installing
777-009	0.30	Drum shock mount, replacing
777-010	13.00	Eccentric shaft coupling, replacing
777-011	3.50	Torque hub, removing
777-012	3.50	Torque hub, installing
777-013	10.00	Eccentric weight bearings, replacing
777-014	6.00	Carrier bearings, replacing
777-015	9.00	Eccentric weight, overhaul
777-021	1.25	Smooth drum scrapers, replacing
777-022	1.25	Padfoot drum scrapers, replacing

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.50	Engine hood, removing
821-002	0.50	Engine hood, installing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.40	Operator's seat, removing
852-004	0.50	Operator's seat, installing
88		INTERIOR EQUIPMENT
884-001	0.30	Seat safety belt, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-003	0.50	Hydraulic oil filter, replacing
911-036	2.50	Hydraulic oil tank, removing
911-037	2.50	Hydraulic oil tank, installing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.40	Breather, replacing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	0.30	Maintenance service, daily
173-004	0.80	Maintenance service, every 50 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	7.00	Maintenance service, every 1000 hours
173-035	4.50	Maintenance service, first 50 hours
173-078	0.20	Engine, air cleaner maintenance
173-089	0.30	Drum carrier, changing oil
173-401	0.60	Engine oil and filter, changing
173-451	1.25	Hydraulic oil, changing
173-457	0.80	Coolant, changing
173-465	0.80	Rear axle oil, changing
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	3.00	Engine, removing
210-072	5.50	Engine, installing
218-009	1.75	Engine mounts, replacing
23		FUEL SYSTEM
233-014	0.30	Fuel filters, replacing
235-002	0.40	Fuel line, water separator, check and drain
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	0.50	Silencer, replacing
256-003	0.30	Air cleaner, primary filter replacing
256-004	0.40	Air cleaner, secondary filter replacing
256-010	0.20	Air cleaner, removing
256-011	0.30	Air cleaner, installing
26		COOLING SYSTEM
261-022	1.25	Cooling package, removing
261-023	2.50	Cooling package, installing
263-012	0.80	Fan belt and/or alternator belt, replacing
263-041	3.50	Cooling fan, replacing

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.50	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-003	0.30	Alternator, removing
321-004	0.40	Alternator, installing
33		STARTING SYSTEM
331-016	0.50	Starter motor, removing
331-017	0.50	Starter motor, installing
334-011	0.70	Starter switch (engine start switch), replacing
36		OTHER ELECTRICAL EQUIPMENT
362-003	0.30	Reverse alarm, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-011	0.50	Fuel level sender, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-087	0.40	Multi function brake valve solenoid and cartridge, replacing
424-004	0.40	Propulsion control lever, replacing
44		HYDROSTATIC DRIVE
440-021	0.80	Hydrostatic controller, removing
440-022	1.25	Hydrostatic controller, installing
441-002	2.50	Hydraulic motor, replacing
441-035	0.40	Drive motor, removing
441-036	0.60	Drive motor, installing
442-021	2.00	Hydrostatic pump, removing
442-022	3.00	Hydrostatic pump, installing
442-045	4.00	Pump coupling, removing
442-046	5.00	Pump coupling, installing
46		FRONT AXLE; REAR AXLE
463-002	1.25	Axle, removing
463-003	1.75	Axle, installing

Op.no.	time (h)	Notes
5		BRAKE
55		PARKING BRAKE
551-012	0.50	Parking brake pressure switch, replacing
6		STEERING
64		STEERING
645-006	0.60	Steering cylinder, replacing
645-031	2.00	Steering control unit, removing
645-035	2.50	Steering control unit, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.80	Wheel, removing and fitting one
771-001	0.80	Wheel, removing and fitting one
771-001	0.80	Wheel, removing and fitting one
777-001	2.00	Drum, removing
777-002	2.00	Drum, installing
777-003	1.25	Vibration pump, removing
777-004	1.50	Vibration pump, installing
777-005	0.30	Vibration motor, removing
777-006	0.50	Vibration motor, installing
777-007	3.50	Eccentric weight, removing
777-008	4.50	Eccentric weight, installing
777-009	0.30	Drum shock mount, replacing
777-010	13.00	Eccentric shaft coupling, replacing
777-011	3.50	Torque hub, removing
777-012	3.50	Torque hub, installing
777-013	10.00	Eccentric weight bearings, replacing
777-014	6.00	Carrier bearings, replacing
777-015	9.00	Eccentric weight, overhaul
777-021	1.25	Smooth drum scrapers, replacing
777-022	1.25	Padfoot drum scrapers, replacing

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.50	Engine hood, removing
821-002	0.50	Engine hood, installing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.40	Operator's seat, removing
852-004	0.50	Operator's seat, installing
88		INTERIOR EQUIPMENT
884-001	0.30	Seat safety belt, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-003	0.50	Hydraulic oil filter, replacing
911-036	2.50	Hydraulic oil tank, removing
911-037	2.50	Hydraulic oil tank, installing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.40	Breather, replacing

Op.no.	time (h)	Notes
1		STANDARD PARTS, SERVICE
17		SERVICE
173-002	0.30	Maintenance service, daily
173-004	0.80	Maintenance service, every 50 hours
173-007	1.50	Maintenance service, every 250 hours
173-010	3.50	Maintenance service, every 500 hours
173-012	7.00	Maintenance service, every 1000 hours
173-035	4.50	Maintenance service, first 50 hours
173-078	0.20	Engine, air cleaner maintenance
173-089	0.30	Drum carrier, changing oil
173-401	0.60	Engine oil and filter, changing
173-451	1.25	Hydraulic oil, changing
173-457	0.80	Coolant, changing
173-465	0.80	Rear axle oil, changing
2		ENGINE WITH MOUNTING AND EQUIPMENT
21		ENGINE
210-070	3.00	Engine, removing
210-072	5.50	Engine, installing
218-009	1.75	Engine mounts, replacing
23		FUEL SYSTEM
233-014	0.30	Fuel filters, replacing
235-002	0.40	Fuel line, water separator, check and drain
25		INLET SYSTEM; EXHAUST SYSTEM
252-020	0.50	Silencer, replacing
256-003	0.30	Air cleaner, primary filter replacing
256-004	0.40	Air cleaner, secondary filter replacing
256-010	0.20	Air cleaner, removing
256-011	0.30	Air cleaner, installing
26		COOLING SYSTEM
261-022	1.25	Cooling package, removing
261-023	2.50	Cooling package, installing
263-012	0.80	Fan belt and/or alternator belt, replacing
263-041	3.50	Cooling fan, replacing

Op.no.	time (h)	Notes
3		ELEC. SYSTEM; WARNING SYSTEM; INFORMATION SYSTEM; INSTRUMENTS
31		BATTERY
311-002	0.50	Batteries, replacing
32		ALTERNATOR; CHARGE REGULATOR
321-003	0.30	Alternator, removing
321-004	0.40	Alternator, installing
33		STARTING SYSTEM
331-016	0.50	Starter motor, removing
331-017	0.50	Starter motor, installing
334-011	0.70	Starter switch (engine start switch), replacing
36		OTHER ELECTRICAL EQUIPMENT
362-003	0.30	Reverse alarm, replacing
38		INSTRUMENT; SENSOR; WARNING AND INFORMATION SYSTEM
386-011	0.50	Fuel level sender, replacing
4		POWER TRANSMISSION
42		TRANSMISSION, HYDRAULIC CONTROL
421-087	0.40	Multi function brake valve solenoid and cartridge, replacing
424-004	0.40	Propulsion control lever, replacing
44		HYDROSTATIC DRIVE
440-021	0.80	Hydrostatic controller, removing
440-022	1.25	Hydrostatic controller, installing
441-002	2.50	Hydraulic motor, replacing
441-035	0.40	Drive motor, removing
441-036	0.60	Drive motor, installing
442-021	2.00	Hydrostatic pump, removing
442-022	3.00	Hydrostatic pump, installing
442-045	4.00	Pump coupling, removing
442-046	5.00	Pump coupling, installing
46		FRONT AXLE; REAR AXLE
463-002	1.25	Axle, removing
463-003	1.75	Axle, installing

Op.no.	time (h)	Notes
5		BRAKE
55		PARKING BRAKE
551-012	0.50	Parking brake pressure switch, replacing
6		STEERING
64		STEERING
645-006	0.60	Steering cylinder, replacing
645-031	2.00	Steering control unit, removing
645-035	2.50	Steering control unit, installing
7		FRAME; SPRINGS; DAMPING; AXLE SUSPENSION; WHEEL/TRACK UNIT
77		WHEELS; TRACKS; TYRE; HUB; DRUM
771-001	0.80	Wheel, removing and fitting one
771-001	0.80	Wheel, removing and fitting one
771-001	0.80	Wheel, removing and fitting one
777-001	2.00	Drum, removing
777-002	2.00	Drum, installing
777-003	1.25	Vibration pump, removing
777-004	1.50	Vibration pump, installing
777-005	0.30	Vibration motor, removing
777-006	0.50	Vibration motor, installing
777-007	3.50	Eccentric weight, removing
777-008	4.50	Eccentric weight, installing
777-009	0.30	Drum shock mount, replacing
777-010	13.00	Eccentric shaft coupling, replacing
777-011	3.50	Torque hub, removing
777-012	3.50	Torque hub, installing
777-013	10.00	Eccentric weight bearings, replacing
777-014	6.00	Carrier bearings, replacing
777-015	9.00	Eccentric weight, overhaul
777-021	1.25	Smooth drum scrapers, replacing
777-022	1.25	Padfoot drum scrapers, replacing

Op.no.	time (h)	Notes
8		MACHINERY HOUSE; CAB; EXTERIOR TRIM PARTS ANYWHERE
82		ENGINE HOOD; MUDGUARD; FOOT STEP
821-001	0.50	Engine hood, removing
821-002	0.50	Engine hood, installing
85		CAB INTERIOR/UPHOLSTERY
852-003	0.40	Operator's seat, removing
852-004	0.50	Operator's seat, installing
88		INTERIOR EQUIPMENT
884-001	0.30	Seat safety belt, replacing
9		HYDRAULIC SYSTEM; DIGGING/ HANDLING/ GRADING EQUIPM.; MISC. EQUIP.
91		WORKING HYDRAULICS; SERVO HYDRAULICS
911-003	0.50	Hydraulic oil filter, replacing
911-036	2.50	Hydraulic oil tank, removing
911-037	2.50	Hydraulic oil tank, installing
911-040	0.40	Hydraulic oil tank, vacuum-pumping, connecting and disconnecting pump
911-051	0.40	Breather, replacing

Time Guide

<https://truckmanualshub.com/>

Regarding: L120D

16 Lubricants, fuels and other liquids

Op.no.	Time (h)	Operation
16234	1,75	Hydraulic oil tank, changing oil and filter excl. cleaning tank
16236	3	Hydraulic oil tank, changing oil and filter incl. cleaning tank
16238	1,5	Transmission, changing oil and filter
16259	1,5	Axles, changing oil

17 General

17101	0,5	Arrival inspection, according to programme
17102	1,5	Delivery inspection, according to programme
17202	4,5	Warranty inspection 100 hours, according to service programme
17204	12	Warranty inspection 1000 hours, according to service programme
17307	1,25	Maintenance service, every 250 hours
17310	3,5	Maintenance service, every 500 hours
17312	7,5	Maintenance service, every 1000 hours
17314	12	Maintenance service, every 2000 hours

21 Engine, general

21002	1,75	Compression test, engine at operating temperature
21070	7,5	Engine, removing
21071	40	Engine removed, general overhaul
21072	8,5	Engine, fitting
21102	8	Cylinder head, replacing gasket
21118	10	Cylinder heads all, replacing gaskets
21168	4	Cylinder heads all removed, decarbonizing and grinding in valves
21171	0,5	Cylinder head removed, pressure testing each
21180	4,5	Cylinder heads all, removing
21182	7	Cylinder heads all, fitting
21207	4	Cylinder block, liners removed, milling of all liner locations
21211	0,5	Cylinder, cylinder heads removed, measuring wear in all cylinders
21310	14	Cylinder liner and piston, replacing one
21318	24	Cylinder liners and pistons, replacing all
21412	1,5	Valves, adjusting
21427	0,5	Inspection cover, fitting new gasket
21493	0,5	Rocker arm mechanism removed, reconditioning
21502	6	Timing gear cover, fitting new gasket in machine
21530	8	Timing gear, replacing in machine
21532	9	Timing gear case, fitting new gasket in machine

21540	2	https://truckmanualshub.com/	Injection pump, drive shaft, replacing seal
21614	3		Crankshaft, replacing front oil seal
21618	13		Crankshaft, replacing rear oil seal
21702	5		Sump gasket, replacing incl cleaning oil strainer

22 Lubrication and oil system

22106	0,25		Oil pressure relief valve, replacing
22114	6		Oil pump, replacing
22306	3		Oil cooler, replacing

23 Fuel system, general

23301	0,25		Fuel system, bleeding
23302	0,75		Feed pump, replacing
23304	0,5		Feed pump, checking feed pressure
23314	0,5		Fuel filters all, replacing
23315	0,25		Fuel filter extra, replacing
23410	4		Fuel tank, replacing
23601	0,5		Idling speed, checking and adjusting
23602	0,25		Stall speed, checking
23630	1,5		Injection timing, checking and adjusting
23644	1		Injection timing, checking
23673	2		Injection pump, replacing incl setting injection timing
23702	1,5		Injectors, replacing all
23704	0,75		Injector, replacing one
23707	0,25		Overflow valve, replacing
23716	1,5		Injectors, replacing copper sleeve in machine
23718	0,5		Delivery pipe, replacing one
23720	0,5		Pressure equalizer, replacing
23780	2		Injectors removed, reconditioning all

25 Inlet and exhaust systems

25102	1		Induction manifold, replacing gasket
25104	2		Exhaust manifold, replacing gasket
25220	1,5		Silencer, replacing
25221	0,5		Exhaust pipe, flexible tube, replacing
25571	1		Turbo charger, replacing
25602	0,25		Air cleaner, checking prssure drop indicator
25603	0,25		Air cleaner, primary filter replacing
25604	0,25		Air cleaner, secondary filter replacing
25606	2		Pre-heating coil, replacing

26 Cooling system

26104	1		Coolant, changing
26108	3		Radiator, replacing
26112	1		Radiator hose upper, replacing
26114	1		Radiator hoses lower, replacing
26202	1,5		Coolant pump, replacing

26271	1,5 https://truckmanualshub.com/	Coolant pump removed, reconditioning
26298	1	Thermostat, replacing
26312	0,75	Fan belt and/or alternator belt, replacing
26322	1	Fan belt and/or alternator-, compressor belt, replacing all belts

27 Engine control

27321	0,75	Stop magnet, replacing
27323	0,5	Electrical engine shut down, check and adjusting

31 Battery and mounting parts

31101	1	Batteries, checking charging capacity
31103	0,5	Main switch, replacing
31106	0,5	Earth lead to battery, replacing
31108	1	Starter motor lead to battery, replacing

32 Alternator and charge regulator

32102	1	Alternator, replacing incl function check
32205	0,5	Charging regulator, replacing

33 Starting system, general

33118	0,75	Starter motor, replacing
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35 Lighting

35144	0,5	Control lamp on instrument board, replacing
35224	0,5	Head lamp assy, replacing one incl adjusting
35316	0,5	Rear lamp, replacing one
35318	0,25	Rear lamp, replacing glass or bulb
35656	0,5	Work lighting, replacing one head lamp assy

36 Other electrical equipment, general

36102	0,25	Flasher unit, replacing relay
36110	0,75	Flasher switch, replacing
36117	0,25	Flasher lamp, replacing glass or bulb
36202	0,25	Horn, replacing
36203	0,5	Reverse alarm, replacing
36301	0,5	Windscreen wiper rear, replacing motor
36302	0,75	Windscreen wiper front, replacing motor
36304	0,25	Windscreen flusher pump, replacing
36404	0,25	Switch, replacing
36408	0,25	Brake light switch, replacing
36652	1	V-ECU, replacing
36721	0,5	CU 8, replacing

38 Instruments, sender units, warning systems

38603	0,5	Transmission oil pressure sensor, replacing
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38604	0,5 https://truckmanualshub.com/	Transmission temperature sensor, replacing
38605	0,5	Transmission, revolution sensor, replacing
38606	0,5	Engine temperature sensor, replacing
38607	0,5	Engine oil pressure sensor, replacing
38611	0,75	Fuel level sender, replacing
38704	0,5	Transmission temperature gauge, replacing
38705	0,5	Information display, replacing

42 Transmission, general

42102	0,75	Hydraulic transmission, check oil pressure
42106	1,5	Oil cooler, replacing
42108	3	Gear selector valve, replacing
42109	1,75	Gear selector valve removed, reconditioning
42118	17	Converter, replacing
42123	1	Lubrication and converter pressure valve, replacing
42147	0,75	Gear selector, replacing
42148	0,75	Gear selector valve, replacing one solenoid
42168	9	Transmission, removing (upwards)
42169	10	Transmission, fitting (from above)
42171	32	Transmission removed, reconditioning

45 Propeller shaft incl. bearings and mounting

45101	0,25	Propeller shaft and intermediate bearing, checking radial clearance
45102	2	Support or intermediate bearing, replacing
45104	1,5	Propeller shaft, rear, replacing
45107	1,5	Propeller shaft, in frame joint, replacing
45110	2	Propeller shaft, front, replacing
45113	1,5	Propeller shaft, removed reconditioning

46 Drive axles, general

46001	0,75	Axle suspension, measuring axial and radial clearance
46002	1	Axle suspension, adjusting axial clearance
461	Null	Front axle
46101	4	Axle, replacing
46111	5	Centre gear , removing and fitting
46112	6	Centre gear removed, reconditioning
46114	2	Pinion front, fitting new gasket
46142	6	Hub retainer, reconditioning one side
46143	4	Hub, replacing seal
46152	0,25	Differential lock front, repacking excl adjusting
46153	1	Differential lock, adjusting engagement
463	Null	Rear axle
46301	5	Axle, replacing
46305	2	Drive shaft, replacing one side
46312	6	Centre gear removed, reconditioning

46314	2	https://truckmanualshub.com/	Pinion rear, fitting new gasket
46342	6		Hub retainer, reconditioning one side
46343	4		Hub, replacing seal

51 Wheel brake, all

516	Null	Front axle
51601	0,5	Brake linings, checking wear
517	Null	Rear axle
51701	0,5	Brake linings, checking wear
51704	4	Brake disc, replacing both sides
51750	3	Brake piston, replacing seals

52 Hydraulic brake system

52001	0,5	Brake system, checking function, hydraulic
52002	0,5	Brake system, checking function, retardation
52004	0,5	Brake system, adjusting unloading pressure
52005	0,5	Brake system, check and adjusting pressure in circuit
52037	1	Brake system, bleeding
52508	1,75	Foot brake valve, replacing
52509	1,25	Foot brake valve removed, reconditioning
52701	0,5	Accumulator removed, checking charging pressure
52702	0,5	Accumulator, replacing
52704	2	Hydraulic pump, replacing

55 Parking brake incl.control system

55006	4,5	Parking brake, replacing discs and seals
55008	1	Parking brake, replacing control valve

64 Steering

64121	1,5	Adjustable steering column, replacing
64503	0,25	Steering system, checking working pressure
64506	1,75	Steering cylinder, replacing
64510	2	Hydraulic pump, replacing
64515	0,5	Steering system, checking and adjusting standby pressure
64520	1,75	Steering system, checking and adjusting shock and anti-cavitation-valve
64521	1,5	Valve block, replacing
64528	0,75	Steering system, checking and adjusting working pressure
64554	2	Steering cylinder, replacing link bearings
64560	3	Steering cylinder, repacking in machine
64571	3,5	Hydraulic pump, replacing
64573	2	Hydraulic pump removed ,reconditioning
64577	1,75	Steering cylinder removed, reconditioning incl replacing bearings
64581	1,5	Steering valve removed, reconditioning

64582	2	https://truckmanualshub.com/	Steering valve, replacing
64793	1		Auxiliary steering, replacing hydraulic pump

74 Frame joint, general

74105	0,5		Frame joint, checking clearance
74136	12		Frame joint, replacing bearings

81 Cab, general

81001	3		Cab, removing
81002	3,5		Cab, fitting
81815	1,75		Cab suspension, rubber element replacing

83 Doors and Covers

83104	4,5		Door, replacing
83106	0,75		Door lock, replacing
83114	0,5		Door, replacing sealing strip

84 Outside trim parts, Glass, Sealing, Mouldings

84302	5		Windscreen, replacing
84312	5		Rear window, replacing
84313	5		Side window, replacing
84348	5		Door window, replacing

87 Air Conditioning unit

87201	0,25		Cab filter, replacing
87304	1		Radiator, replacing
87306	1		Fan motor, replacing
87308	0,75		Heat control valve, replacing
87309	0,75		Heat control, replacing
87402	1		Refrigerant, draining
87403	0,75		Cooling unit, performance test
87405	1		Refrigerant, filling excl vacuum pumping
87406	4		Compressor, replacing incl draining and filling
87407	0,5		V-belt, replacing
87410	4		Condenser, replacing incl draining and filling
87411	3		Receiver, replacing incl draining and filling
87412	4		Evaporator, replacing incl draining and filling
87413	3,5		Expansion valve, replacing incl draining and filling
87414	0,75		Thermostat, replacing
87415	0,75		Compressor, replacing shaft seal (compressor removed)
87416	0,75		Compressor, replacing magnetic clutch (compressor removed)
87417	1,75		Compressor, replacing magnetic clutch in machine
87419	0,5		Compressor, replacing valve plate (compressor removed)

91 Working hydraulic and servo system<https://truckmanualshub.com/>

91105	2	Hydraulic tank, replacing inlet hose for pump
91111	2	Oil cooler, replacing
91138	5	Hydraulic oil tank, replacing
91201	2	Control valve, replacing
91202	4	Control valve removed, reconditioning
91204	0,75	Control valve, low pressure valve, replacing
91209	0,5	Shock valve, tilt function, checking and adjusting
91302	1	Hydraulic pump, checking and adjusting unloading pressure
91304	1	Hydraulic pump, checking and adjusting working pressure
91311	1,75	Hydraulic pump removed, reconditioning
91454	1,75	Servo valve, adjusting control
91455	0,5	Servo pressure, checking and adjusting
91457	0,5	Servo pressure, check
91458	3	Servo valve, replacing
91460	2	Servo pump, replacing
91462	0,5	Pressure limiting valve, replacing
91463	0,5	Servo pressure, checking by spool valve in control valve
91475	2	Servo valve removed, reconditioning
91601	0,5	Boom suspension system, checking function
91602	0,75	Accumulator, check and adjusting
91603	1	Accumulator, reconditioning
91604	1,5	Boom suspension system, checking closing pressure
91605	1	Boom suspension system, checking opening pressure

94 Unit for load handling

94502	3,5	Lift frame, replacing bearing in lower bucket- or implement attachment
94503	0,25	Implement attachment, measuring clearance of lower bearing
94504	4	Lift cylinder, replacing
94505	4	Lift cylinder, repacking in machine
94506	3	Lift cylinder removed, repacking
94508	3	Tilt cylinder, replacing
94509	5	Tilt cylinder, repacking in machine
94510	3,5	Tilt cylinder removed, repacking
94511	2	Implemental attachment, replacing hydraulic cylinder
94516	5	Lift frame, replacing bearing in upper mounting "O"
94554	1,75	Implement attachment, replacing
94556	1	Implement attachment, repacking removed hydraulic cylinder
94562	2	T-link upper, replacing "HIJ"
94563	0,75	T-link upper removed, replacing bearings

	https://truckmanualshub.com/	"HIJ"
94564	2	T-link, lower, replacing "IB"
94566	2	Tilt link, replacing "GH"
94567	0,75	Tilt link removed, replacing bearings "GH"
94568	3	Tilt arm, replacing bearing "GDF"
94569	3	Tilt arm, replacing "GDF"

WARNING

Before any action is taken when preparing for towing or recovering, the parking brake must be applied and the wheels must be blocked to prevent the machine from rolling. Work with extreme care when towing/recovering in order to avoid personal injuries and, at worst, fatalities.

Measures for towing/recovering

If possible, the engine should be started for towing/recovering in order for the brake and steering functions to operate in a satisfactory manner.

WARNING

If the engine cannot be started:

Since brake and steering functions will be limited when the engine is not running, the machine may only be towed in an emergency and only the shortest possible distance under the supervision of trained personnel. If possible, transport the machine on a trailer. In order to release the parking brake, see manual release of parking brake for respective machine types.

Recovering

Use a towbar for towing the machine to a suitable location or passable road. The towbar must be connected directly to the towing device at the rear of the machine.

NOTE!

The lifting eyes must not be used for recovering.

Towing

If the machine has to be towed to a workshop after recovery, use a towbar connected to the towing device according to the above, or use a cable attached to the eyes inside the front axle mounting to the frame.

NOTE!

If there is no brake function (engine cannot be started), use a towbar.

The towing vehicle must always be at least as heavy as the machine being towed, and must have sufficient engine power and brake capacity to pull and brake the machines on eventual uphill and downhill grades.

Always tow the shortest possible distance, otherwise the transmission may be damaged.

When towing for a longer distance than 10 km (6.2 miles) or at a higher speed than 10 km/h (6.2 mph), the front and rear propeller shafts must be removed, see Removing propeller shafts. As an alternative, the machine can be transported on a trailer.

After towing/recovering

The following safety measures must be taken before the towbar or cable is removed after towing/recovering;

1. Place the machine on level ground.
2. Apply the parking brake.
3. Block the wheels to prevent the machine from rolling.

Transmission disengagement <https://truckmanualshub.com/>

The function controls transmission disengagement during simultaneous braking and informs the operator if there is a system malfunction.

Input signals	Output function conditions	Output functions
○ Output brake pressure, SE501 ○ Transmission disengagement, SW411	○ Transmission disengagement in position On ○ Output brake pressure > 1.8 MPa (261 psi)	○ Transmission disengagement
	○ Transmission disengagement in position On ○ Output brake pressure < 1.6 MPa (232 psi)	○ No transmission disengagement

Transmission oil filter

<https://truckmanualshub.com/>

The function monitors the condition of the transmission oil filter and informs the operator that the filter should be changed or if there is a system malfunction.

The transmission oil filter must be changed to avoid opening of the by-pass valve, resulting in reduced transmission performance or lack of function.

Input signals	Output function conditions	Output functions
Differential pressure, SE401 Transmission oil temperature, SE406	Differential pressure > 2.76 bar (40.0 psi) Transmission oil temperature > 50 °C (122 °F)	Amber central warning lamp ----- INFO ----- Clogged Transmission Oil Filter
Monitoring, SE406	System malfunction, signal outside limits	Amber central warning lamp ----- ERROR ----- Monitoring Transmission Oil Filter

Transmission oil pressure

<https://truckmanualshub.com/>

The function monitors the main oil pressure in the HT-transmission and informs the operator if transmission oil pressure is low or if there is a system malfunction.

Input signals	Output function conditions	Output functions
○ Engine speed, SE201 ○ Transmission oil pressure, SE405 ○ Directional gear	○ Low transmission oil pressure > 1 second Upon starting, no alarm is given for 5 seconds after the engine has started Alarm limits for transmission oil pressure: 1. < 0.65 MPa (94.3 psi) at 600 rpm 2. < 1.2 MPa (174.0 psi) at 1000 rpm 3. < 1.3 MPa (188.5 psi) at 2400 rpm Monitoring during gearshifting: • When engine speed is below alarm limit 2, transmission pressure is not monitored for 3 seconds • When engine speed is above alarm limit 2, transmission pressure is not monitored for 2 seconds	○ Warning lamp ○ Red central warning lamp ----- WARNING ----- Low Transmission Oil Pressure
	According to above, also: ○ Directional gear in Forward or Reverse	○ Buzzer
○ Monitoring, SE405	○ System malfunction, signal outside limits	○ Amber central warning lamp ----- ERROR ----- Monitoring Transmission Oil Pressure

Transmission oil temperature <https://truckmanualshub.com/>

The function monitors the transmission oil temperature and warns the operator if the temperature is too high or if there is a system malfunction.

If the transmission oil temperature rises further, the Engine Shut Down function is engaged and engine speed is limited to 900 rpm, see [Invalid linktarget].

The transmission oil temperature is also used as an input signal for:

- ☐ [Invalid linktarget]
- ☐ [Invalid linktarget]

Input signals	Output function conditions	Output functions
☐ Transmission oil temperature, SE406 ☐ Directional gear	☐ Transmission oil temperature above 110 °C (230 °F) > 2 seconds	☐ Warning lamp, gauge ☐ Red central warning lamp ----- WARNING ----- High Transmission Oil Temp. LE7355AG
	According to above, also: ☐ Directional gear in Forward or Reverse	☐ Buzzer
	☐ Transmission oil temperature above 120 °C (248 °F) > 2 seconds Engine Shut Down is active until the temperature drops > 2 °C (36 °F) below the temperature condition < 2 seconds	☐ Engine Shutdown
☐ Monitoring, SE406	☐ System malfunction, signal outside limits	☐ Amber central warning lamp ----- ERROR ----- Monitoring Transmission Oil Temp. LE7401AG

Op nbr 42172

[E 985 Hose](#)

Ratchet block, 1500 kg (3308 lbs), 1 block.

Sling, 1000 kg (2205 lbs)

Lifting eyes, M16

1. Attach the lifting device as per [Invalid linktarget].
Transmission weight, L90D: **approx. 730kg (1610 lbs)**
Transmission weight, L120D: **approx. 850kg (1874 lbs)**

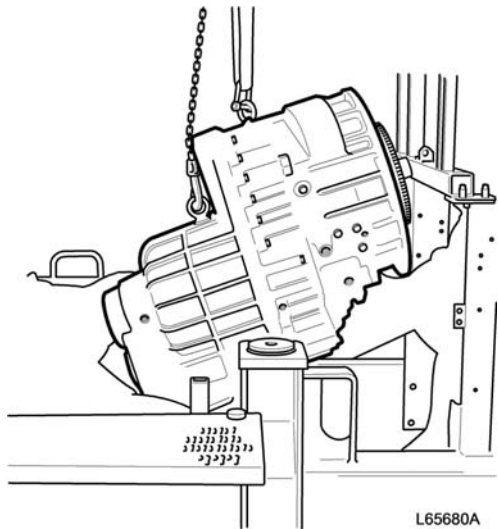


Figure 1

2. Lift the transmission into place in the machine.
Fit the attaching bolts against the flywheel housing.
Tightening torque: **54 Nm (40 lbf ft)**
3. Remove the supports under the engine and fit the transmission mounts.
Tightening torque, mount - transmission: **430 Nm (317 lbf ft)**
Tightening torque, mount - frame: **220 Nm (163 lbf ft)**
4. Remove the lifting device from the transmission.
5. Fit the front and rear propeller shafts.
6. Fit the pumps on the transmission.
7. Connect all hoses, cabling, sensors and pipes.
8. Fit the hydraulic tank, hood and cab.
9. Fill hydraulic oil and check the oil level in the transmission and the hydraulic tank.
Start and check the hydraulic pressures (see [Invalid linktarget]).
Check to make sure that there are no leaks.

Op nbr 42170

[E 985 Hose](#)

Ratchet block, 1500 kg (3308 lbs), 1 block.

Sling, 1000 kg (2205 lbs)

Lifting eyes, M16

NOTE!

Plug all pipes, hoses and connections when removing.

1. Release any pressure in the brake and hydraulic system by depressing the brake pedal 30–40 times and by moving the control levers in the gear lever carrier repeatedly to their end positions.
2. Drain the transmission and hydraulic oils.
Use E 985 when draining the hydraulic oil tank.
3. Remove the cab, see section 8.
4. Remove the hood plates on top of and from both sides of the hydraulic oil tank.
5. Loosen the following:
 - Exhaust pipe from the silencer.
 - Hoses from the expansion tank, 3 pcs.
 - Hose from hydraulic oil tank breather filter.
 - Suction hose from the turbocharger.
 - Hose from the dust indicator.
6. Lift away the cover plate from over the engine and the cover plates on both sides as a unit, together with the silencer, air cleaner and expansion tank.
7. Open the side panels on both sides of the hydraulic oil tank and remove the lower cover plates.
8. Lift out the hydraulic oil tank together with the frame around the tank.

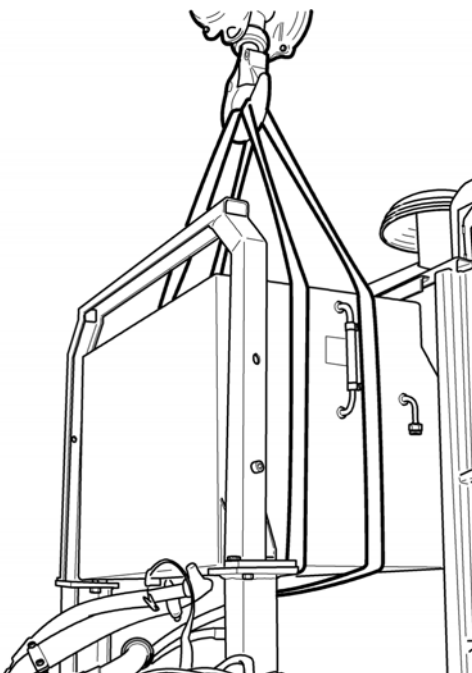


Figure 1
Removing hydraulic tank

9. Remove the front propeller shaft from the transmission drive flange.
Remove the rear propeller shaft.
Propeller shaft weight: **approx. 38 kg**(68 lbs)

10. Remove the pumps from the transmission.
11. Disconnect all lines, pipes, cabling, etc. from the transmission.
12. Fit two M16 lifting eyes on the top side of the transmission.
13. Connect a lifting device as per [Invalid linktarget].
Transmission weight, L90D: **approx. 730kg** (1610 lbs)
Transmission weight, L120D: **approx. 850kg** (1874 lbs)

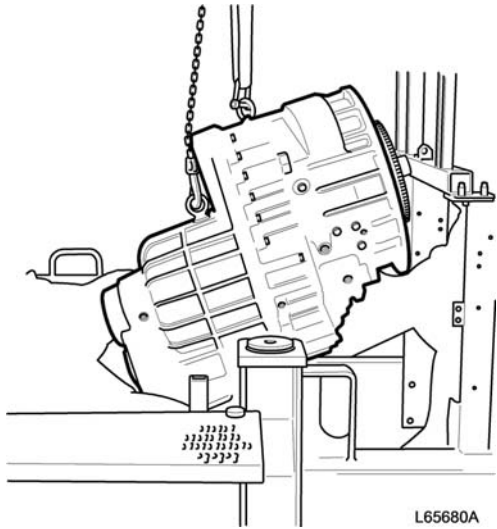


Figure 2

14. Relieve of weight bearing by slightly lifting the transmission. Remove the transmission mounts.
15. Block up the engine against the rear axle attachment and disconnect the transmission from the flywheel housing.
16. Pull the transmission forward and lift it out of the machine.

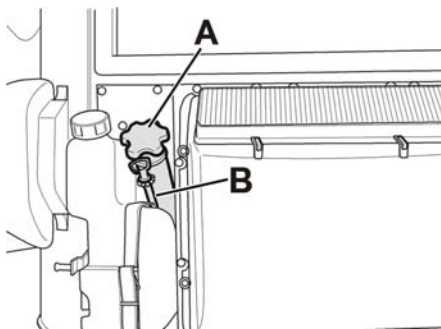


Figure 1

- A. filler pipe
- B. dipstick

Transmission oil level, checking

Check the oil level while the machine is still hot every 250 hours on the L90D and every 500 hours on the L120D.

- ☐ Park the machine on a level surface with the engine running at a slow idle.
- ☐ Move the gear selector to neutral.
- ☐ Apply the parking brake.
- ☐ Wait about two minutes to stabilise the level before taking a reading.

NOTE!

When the engine is switched off the level indicating pipe is filled with transmission oil. When the engine is started the torque converter fills with oil and the level in the pipe goes down. When the machine is cold the level may drop below the minimum mark. The level should be checked while the transmission is still hot.

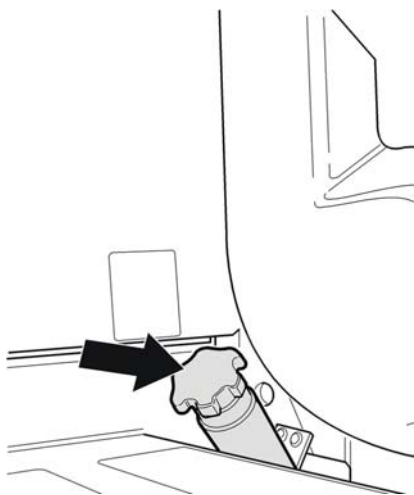


Figure 2
Dropbox, L90D, filler pipe
Transmission, oil change



Hot oil can cause burns.

Change the oil every 2000 hours.

Drain the oil via the drain plug, see [Invalid linktarget].

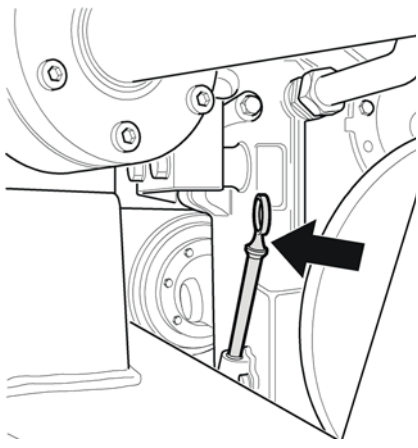


Figure 3
Dropbox, L90D, dipstick
Oil is replenished via the filler pipe.

Oil capacity when changing:

L90D approx. 25 litres (6.6 US gal) and dropbox 4.7 litres (1.2 US gal)

L120D approx. 38 litres (10.0 US gal)

Oil grade, see [Invalid linktarget].

Dispose of waste oil and fluids in an environmentally safe and sound manner.

Suction strainer

Clean the strainer every 2000 hours.

The suction strainer is located in the bottom of the transmission housing.

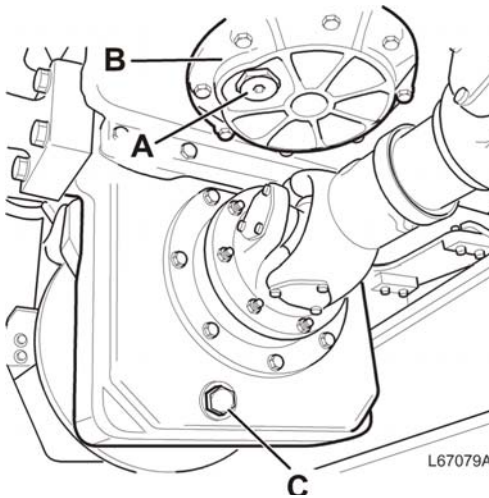


Figure 4
Oil change, transmission, L90D

- A. drain plug
- B. cover, suction strainer
- C. draining, dropbox

1. Remove the cover and clean.
2. Fit a new gasket between cover and transmission housing.
3. Also change the O-ring on the suction strainer's connection pipe.
4. Fill up with oil.
5. Check that no leakage occurs.

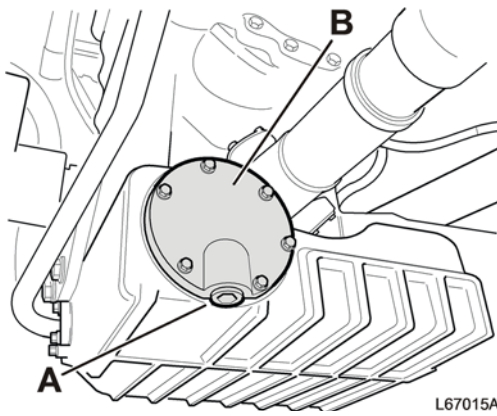


Figure 5
Oil change, transmission, L120D

- A. drain plug
- B. cover, suction strainer
- C. draining, dropbox

Transmission, oil filter change

Change the filter every 2000 hours or, if the yellow information lamp comes on, at the same time as a warning text is shown on the display panel

The oil filter is of "spin on" type. It is accessible from underneath the machine on the left-hand side.

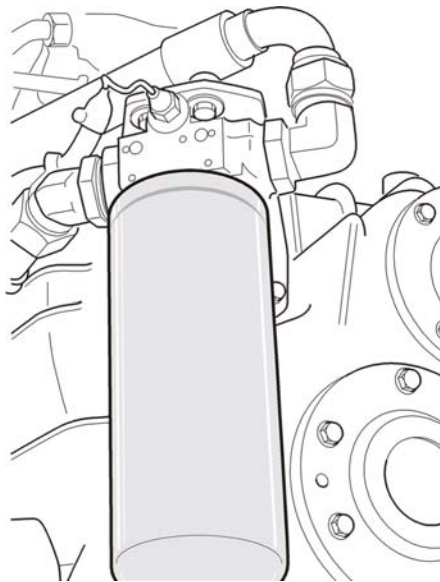


Figure 6
Oil filter, transmission, L120D

The filter cannot be cleaned but must be changed.

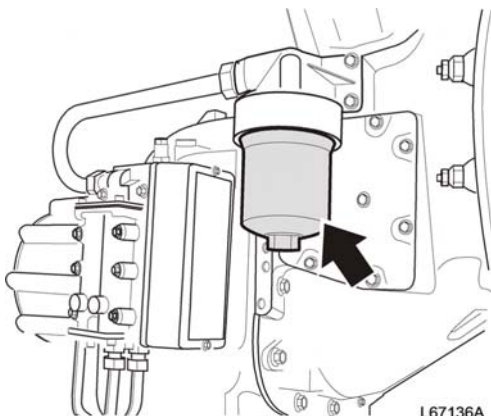


Figure 7
Oil filter, transmission, L90D

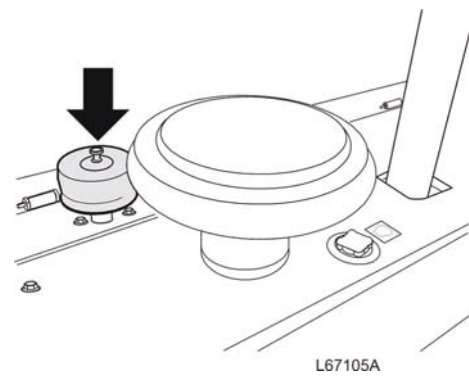


Figure 8
Breather filter

Breather filter, transmission/hydraulic oil tank

Change the filter every 2000 hours.

The filter is common to the transmission and the hydraulic oil tank.

The filter cannot be cleaned but must be changed.

Language Code GB	Product WLO	Group 000	https://truckmanualshub.com/	No. 118	Version 1	Date 03/15/2000
Applies to 4200 Volvo BM, 4200B Volvo BM, 4300 Volvo BM, 4300B Volvo BM, 4400 Volvo BM, 4500 Volvo BM, 4600 Volvo BM, 4600B Volvo BM, 6300 Volvo BM, EL70 Volvo BM, EL70C Volvo BM, L50 Volvo BM, L50B Volvo BM, L50C OR Volvo, L50C Volvo, L50C Volvo BM, L50D Volvo, L70 Volvo BM, L70B Volvo BM, L70C Volvo, L70C Volvo BM, L70D Volvo, L90 Volvo BM, L90B Volvo BM, L90C OR Volvo, L90C Volvo, L90C Volvo BM, L90D OR Volvo, L90D Volvo, L120 Volvo BM, L120B Volvo BM, L120C Volvo, L120C Volvo BM, L120D Volvo, L150 Volvo BM, L150C Volvo, L150C Volvo BM, L150D Volvo, L160 Volvo BM, L180 CO Volvo BM, L180 HL Volvo BM, L180 Volvo BM, L180C CO Volvo, L180C HL Volvo, L180C Volvo, L180C Volvo BM, L180D HL Volvo, L180D Volvo, L220D Volvo, L330C LL Volvo, L330C Volvo, L330C Volvo BM, L330D Volvo						

Transporting a wheel loader on another vehicle



WARNING

Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

Turbo rotation without lubrication will damage the turbocharger bearing.

The following procedure must be taken prior to transporting the wheel loader on another vehicle or via rail transport:

Cover the exhaust pipe opening with a suitable cap or protection to shield against ancoming air flow. This particularly applies if the opening faces the travelling direction, see [Invalid linktarget].

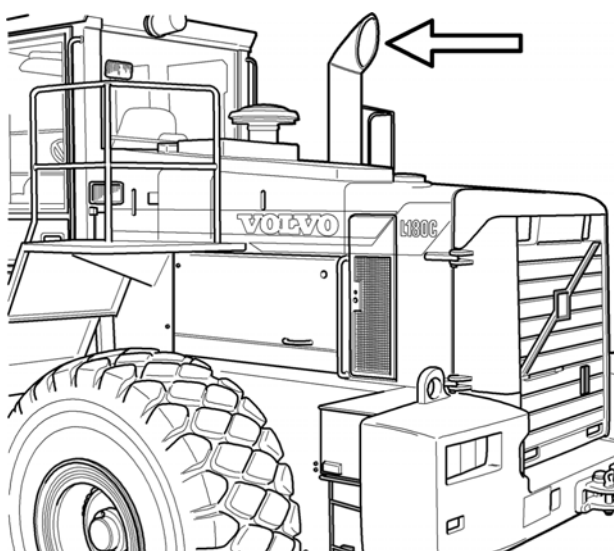


Figure 1

Transport the wheel loader with the bucket facing the travelling direction

Transporting the machine

<https://truckmanualshub.com/>

On the platform of another vehicle

If the machine is lifted onto the platform of another vehicle the frame joint must be locked.

- Make sure the machine is completely straight and stop the engine.

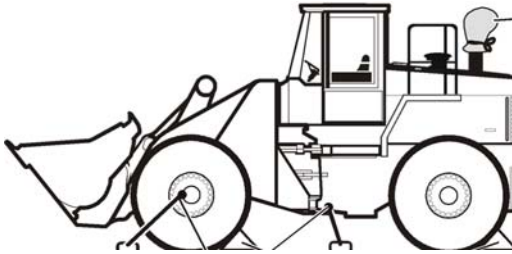


Figure 1
Transport safety

- A. The front frame attaching eyes (ahead of the front axle retaining bolt) and in the towing device.
- B. Chock the wheels.
- C. Exhaust pipe guards.

Transport the machine with the bucket facing in the direction of travel.

- Take out the pin and move the frame joint lock over to its designated place, insert the pin and lock it.

If the machine is driven up onto another vehicle the frame joint should not be locked.

Lash the machine to the platform of the transport vehicle so that it cannot overturn or start rolling. The following attachment points as in [Invalid linktarget] should be used.

NOTE!

To avoid air being pressed down into the exhaust pipe during transport, which could damage the turbocharger, the exhaust pipe must be covered with a suitable form of protection (not plastic).

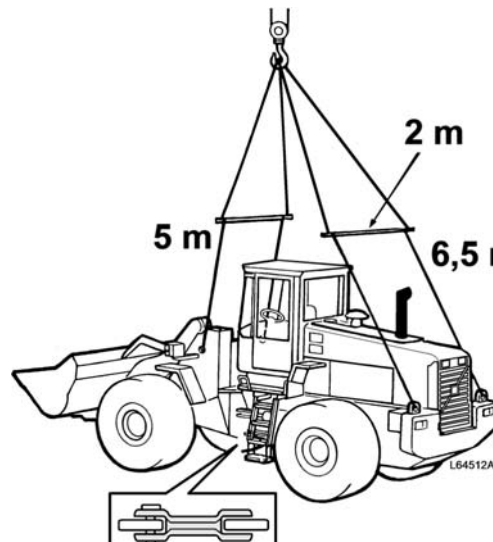


Figure 2
Lifting eyes
Lifting

Use the lifting eyes and lock the frame joint. Lifting eyes are located as in [Invalid linktarget].

Over gangway

Check that the gangway is of sufficient width and strength to ensure that it cannot move out of position.

In a lift or other confined space

- Reverse the machine in.
- Apply the parking brake and stop the engine before the lift is started.



<https://truckmanualshub.com/>

If the machine is to be driven from a loading dock to the platform of a truck or wagon, make sure that this vehicle is securely braked (wheels chocked) and that there is no danger of it overturning or heeling over in a dangerous manner when the machine is driven onto it.

In other respects follow the national rules and regulations.

Transporting wheel loader on another vehicle

<https://www.forkliftclub.com/>

In case the wheel loader is transported on another vehicle or by railroad, it is important to cover the exhaust pipe outlet with a cap or other suitable protection. This applies especially when the exhaust pipe outlet faces the travel direction. This is to avoid damaging the turbocharger bearing, which may be damaged if the turbo rotates without any lubrication.

Travel speed

<https://truckmanualshub.com/>

The function calculates and notifies the operator of the travel speed or if there is a system malfunction.

Travel speed is used as an input signal by several functions.

Setting of units km/h or mph is performed with the display panel keypad.

Input signals	Output function conditions	Output functions
Propeller shaft speed, SE403 Tyre radius[T1]	Propeller shaft speed Tyre radius	Travel speed in km/h or mph 1230 rpm F2 09:3420° 22 km/h
Monitoring, SE403	System malfunction, signal outside limits	Amber central warning lamp -----ERROR----- Monitoring Travelling Speed Er km/h 1230 rpm F2 09:3420° Er km/h

[T1]Setup via service panel.

Troubleshooting tips

<https://truckmanualshub.com/>

The machine has poor pulling power

The problem may be in the engine or in the hydraulic transmission.

Check the following:

- Engine stall speed, see Section 2.
If the stall speed is too low, the malfunction is likely in the engine.
- If the engine stall speed is within specifications or higher, the malfunction is likely in the hydraulic transmission.
- Check that 1st gear engages by measuring the hydraulic pressure of the 1st gear clutch. If poor pulling power is combined with an abnormally warm transmission, the problem may lie in the torque converter.
- As a first measure, check the torque converter pressure.
- Check the main pressure and clutch pressure for the clutch in question. Correct main pressure combined with low clutch pressure could be caused by a leak between the oil distributor and the clutch shaft or a malfunction in the gear selector valve.

It is not possible to shift gears

If gears do not engage, the following may be the possible causes:

- Electric malfunction.
- Malfunction of the gear selector valve.
- Hydraulic malfunction or other problem in clutch shaft.

Check the main pressure and the clutch pressure for the clutch in question.

If correct main pressure is obtained, but the clutch pressure is low, this may be due to a leak between the oil distributor and clutch shaft or a malfunction in the gear selector valve.

If correct main pressure is obtained but there is no clutch pressure, there may be an electric malfunction or a malfunction in the gear selector valve.

A temporary operation interruption (pressure loss) may be due to the following:

- Electric malfunction (poor contact) etc.
- Binding valve spool in gear selector valve.
- Leak between oil distributor and clutch shaft (works when oil is cold, operation interruption when oil is warm).

Tyre radius

<https://truckmanualshub.com/>

This function provides input data for travel speed calculation.
Tyre size is set with the service display unit.

L90D

Tyres	Tyre radius	Axle ratio
20.5"	745 mm (29.3 in)	18.37:1

L120D

Tyres	Tyre radius	Axle ratio
17.5"	675 mm (26.6 in)	23.11:1
23.5"	815 mm (32.1 in)	23.11:1

Language Code GB	Product WLO	Group 770	https://truckmanualshub.com/	No. 3	Version 1	Date 04/30/2012
Applies to Wheel Loaders						

Tyres, various types



WARNING

Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.

This information is to be used as a guideline for the correct use and replacement matching of tyres on all wheel loaders.

There is no difference between a new and a worn tyre as regards the rolling circumference of one and the same tyre.

The rolling circumference can vary considerably between tyre manufacturers and the application type of tyre used on the the equipment, (loader tyres, transport tyres, and tyres intended for specific applications).

If tyres from different manufacturers or types are used on the same machine the drivetrain components may be damaged by changed ratios by tyre differences.

In most cases, tyres can be mixed from different manufacturers providing that the same tyre classification type is the same, for example 26.5 R25 L3.

The designation represents the following:

26.5 =	Tyre width
R =	Radial tyre
25 =	Rim diameter
L =	Loader and Dozer (Wheel Loader)
3 =	Industrial code (application)

Problem can arise when a different types of tyres are mixed on a machine. An example of this is installing a 26.5 R25 L3 tyre from one manufacturer, with a 26.5 R25 L4 from another manufacturer or with a 26.5 R25 L5 tyre.

NOTE!

L5 tyres should not be mixed with other tyre codes on the machine.

The tyre code designation represents the following:

L2 =	Traction
L3 =	Rock (non aggressive material)
L4 =	Rock deep tread
L5 =	Rock extra deep tread (aggressive material)

The rolling circumference between the example tyres shown will be greater than what is allowed. Using tyres intended for other applications can result in premature tyre wear and drivetrain issues.

Similar problems can occur when re threaded tyres are used. When installing re threaded tyres, make certain the same type of tyre size and type is replaced.

It is not recommended to use tyres with a difference in rolling circumference that exceeds 1.5% ratio side to side and 2% ratio front to rear.

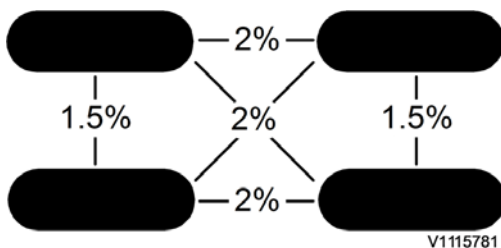


Figure 1

Max. permissible differences in rolling circumference

The tyre rolling circumference cannot be measure in a practical manner. Specification data from the tyre manufacturer must be obtained, then a calculation made, using the allowable variation percentages given.

Example:

Tyres on front axle: 23.5R25 RT-3B L3(rolling circumference = 4855 mm) <https://truckmanualshub.com/>

Tyres on rear axle: 23.5R25 GP-4D L4 (rolling circumference = 4880 mm)

Calculation: $4880 / 4855 = 1.005 \approx 0.5\%$

Conclusion: The difference of the rolling circumference between front and rear axle is 0.5%. It is acceptable to mix these tyres since the difference is within max. permissible difference.

NOTE!

Remember that e.g. chains affects the rolling circumference.

Op nbr 21412

[999 3590 Gear](#)

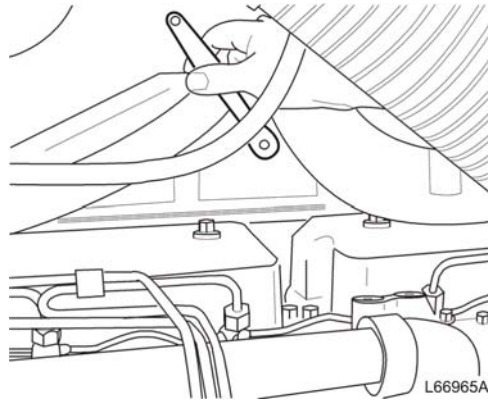


Figure 1

NOTE!

Clean thoroughly around the valve covers before starting any adjustments.

1. Remove the hose clamp from the hose to the intercooler and the pipe between the intercooler and the turbo.
2. Remove the valve covers.

NOTE!

Lift the silencer away or detach it and raise it at least 10 mm so that the front valve cover can be removed.

Remove the covers over the flywheel marking and the flywheel ring gear.

Rotate the crankshaft with gear 999 3590.

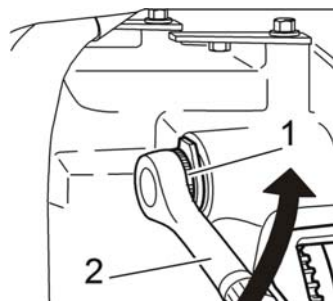
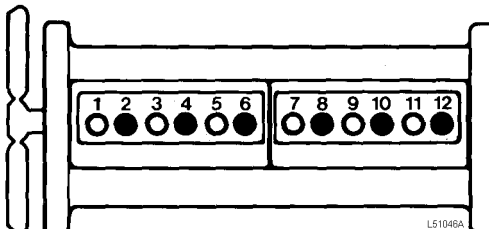


Figure 2

- | | |
|---|------------------|
| 1 | 999 3590 |
| 2 | Ratchet handle |
| 3 | Flywheel marking |

3. Rotate the flywheel in the engine's direction of rotation by rotating the tool in the direction of the arrow as shown in [Invalid linktarget] until the no. 1 cylinder piston is at TDC (0 ° on the flywheel and the no. 6 cylinder valves "rock"). Adjust valves 1, 2, 3, 6, 7 and 10, see [Invalid linktarget] and [Invalid linktarget].



<https://truckmanualshub.com/>

Figure 3
Valve clearance (cold/warm engine)

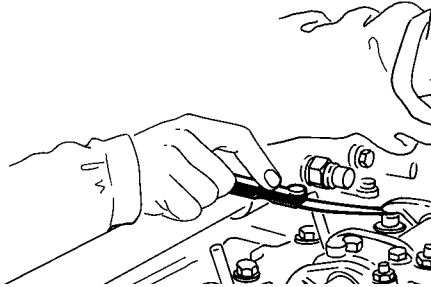


Figure 4
Adjusting valves

4. Rotate the flywheel one more turn in the rotational direction of the engine (0° on the flywheel and the no. 1 cylinder valves "rock").
Adjust valves 4, 5, 8, 9, 11 and 12, see [Invalid linktarget] and [Invalid linktarget].
5. Refit the valve covers with new seals.

Vehicle control unit V-ECU, functional description

The vehicle control unit is the controlling unit in the system and maintains overall machine-related functionality as well as making overall strategic decisions.

The vehicle control unit is located by the electrical distribution box behind the operator's seat.

The vehicle control unit is connected to the other control units by way of data link for coordination with other control units.

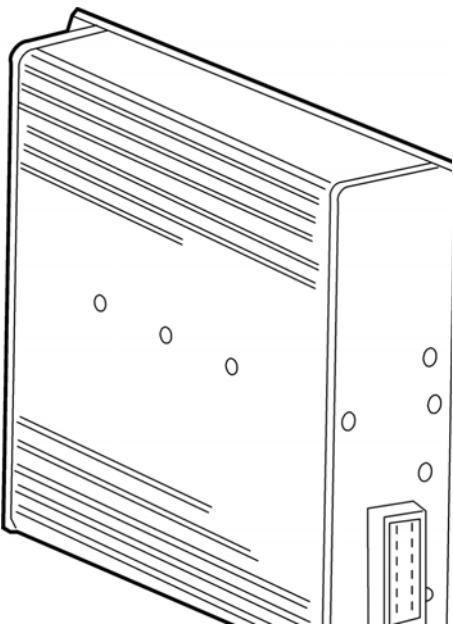
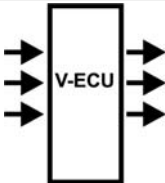


Figure 1
Vehicle control unit V-ECU
Functions

- Coolant temperature: Adjustment, control and monitoring of radiator fan
- Calculation of vehicle travel speed
- Parking brake: monitoring and control
- Gearshifting strategy
- Request for limitation of engine rpm and/or torque
- System voltage monitoring
- Monitoring of hydraulic oil temperature
- Monitoring of transmission oil: Pressure, temperature and filter
- Engagement of preheating

Inputs and outputs

Digital input	Control unit	Digital output
System voltage		Back-up alarm
Brake pressure charging		SA803
Brake pressure accumulator		CU802
Differential lock re-engagement		MA407
Kickdown lever console and		Interval wiper, front
Kickdown lever steering		RE6
Boom Suspension System, SW907		Interval wiper, rear
activation		RE5
Engine brake (downshifting)		Boom Suspension System
Key On (current feed)		RE7
Parking brake		Parking brake
Secondary steering, steering SE602		MA501
pressure		Secondary steering
Secondary steering, differential SE601		RE601
pressure		Activation of lever steering
		RE602
		Preheating
		RE201
		Control unit for engine stop
		CU201
		Gearshifting solenoids
		S1-S5

Digital input			Control unit		https://truckmanualshub.com/	
Secondary steering, pressure	steering,	steering	SE602			
Secondary steering, pressure	steering,	differential	SE601			
Lever steering, armrest lowered			SW407			
Lever steering, activation			SW408			
Lever steering, Forward			SW409			
Lever steering, Reverse			SW409			
Lever console single lever, Neutral			SW150			
Lever console, Reverse			SW404			
Lever console, activation F/R			SW403			
Lever console, Forward			SW404			
Transmission oil filter clogged			SE401			
Analogue input					Analogue output	
Rear axle temperature			SE411		Cooling fan motor	MA202 ⁽¹⁾
Brake pressure (output pressure)			SE501			
Fuel volume			SE207			
Front axle temperature			SE410			
Hydraulic oil tank, temperature			SE908[T1] ⓘ			
Coolant temperature, outlet radiator			SE210 ⁽¹⁾			
Transmission oil pressure			SE405			
Transmission oil temperature			SE406			
Engine oil pressure			SE202			
Coolant temperature, engine			SE205			
Frequency input						
Radiator fan speed			SE211 ⁽¹⁾			
Engine speed			SE201			
Travel speed			SE403			

[T1]Equipment, hydraulically driven cooling fan for L120D

Language Code GB	Product WLO	Group 882	https://truckmanualshub.com/	No. 1	Version 1	Date 02/08/2002
Applies to 4200 Volvo BM, 4200B Volvo BM, 4300 Volvo BM, 4300B Volvo BM, 4400 Volvo BM, 4500 Volvo BM, 4600 Volvo BM, 4600B Volvo BM, 6300 Volvo BM, EL70 Volvo BM, EL70C Volvo BM, L50 Volvo BM, L50B Volvo BM, L50C OR Volvo, L50C Volvo, L50C Volvo BM, L50D Volvo, L70 Volvo BM, L70B Volvo BM, L70C Volvo, L70C Volvo BM, L70D Volvo, L90 Volvo BM, L90B Volvo BM, L90C OR Volvo, L90C Volvo, L90C Volvo BM, L90D OR Volvo, L90D Volvo, L120 Volvo BM, L120B Volvo BM, L120C Volvo, L120C Volvo BM, L120D Volvo, L150 Volvo BM, L150C LB Volvo, L150C Volvo, L150C Volvo BM, L150D Volvo, L160 Volvo BM, L180 CO Volvo BM, L180 HL Volvo BM, L180 Volvo BM, L180C CO Volvo, L180C HL Volvo, L180C Volvo, L180C Volvo BM, L180D HL Volvo, L180D Volvo, L180E Volvo, L220D Volvo, L220E Volvo, L330C LL Volvo, L330C Volvo, L330C Volvo BM, L330D Volvo						

Ventilation servo casing



WARNING

Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This SB is to be considered as a technical information and comprises normal warranties within the rules for the same.

During certain operations the servo valve and the servo hoses become warm and may cause a rise in temperature in the cab. This can be remedied by removing the warm air from the servo casing through ventilation.

Working instructions

1 a. On machines with lifting and tilting function, but without third/fourth hydraulic function:

Route a hose through the retainer for servo hoses, see item 1 in Fig. 1. Use one of the vacant holes.

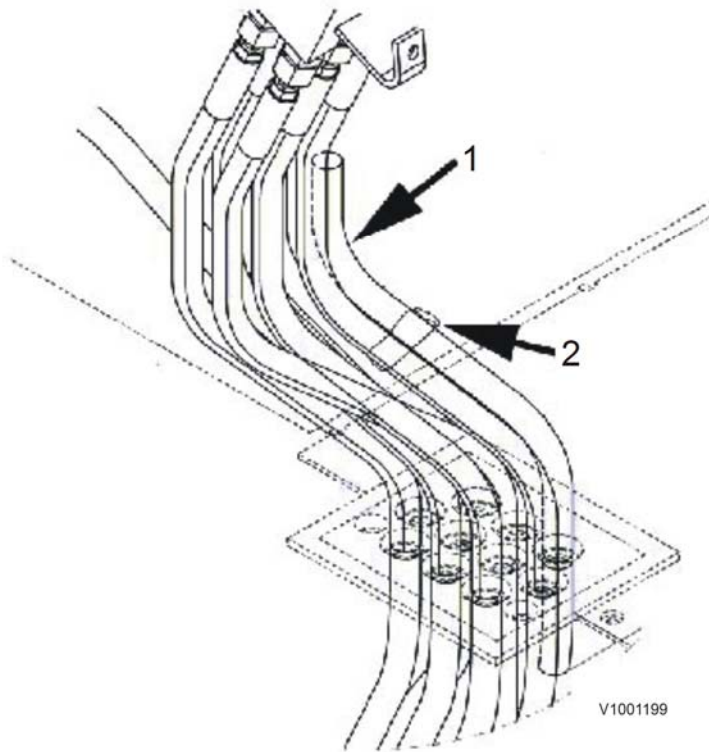


Figure 1

1. Hose
2. Strip clamp

1 b. On machines with third/fourth hydraulic function:

As there are no vacant holes, one has to be drilled, see Fig. 2, item A.

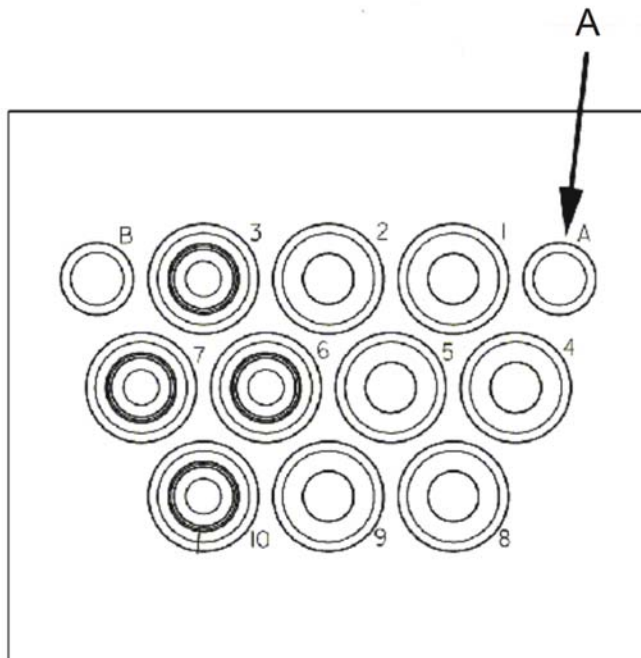


Figure 2

2. The hose should be routed from the servo valve and open out under the cab. To obtain the intended ventilation effect, the fan should be run at least at position 2 and fresh air drawn from outside the cab – not set to recirculation.

Item in Fig. 1	Designation	Part No.
1	Hose	4803752
2	Strip clamp	4881439

Language Code GB	Product ART/BHL/CEX/ COA/COS/CWL/ EXC/GRD/MET/ MEW/PAT/PAW/ PIP/SSL/WLO	Group 000	https://truckmanualshub.com/	No. 241	Version 2	Date 04/19/2013
Applies to Pipelayers, Wheeled Pavers, Tracked Pavers, Wheeled Milling Equipment, Wheel Loaders, Skid Steer Loaders, Excavators, Motor Graders, Articulated Haulers, Compact Wheel Loaders, Soil Compactors, Compact Excavators, Tracked Milling Equipment, Asphalt Compactors, Backhoe Loaders						

Volvo Product incident/accident report & Interview Form

NOTE!

Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

This Service Bulletin is to be considered as technical information only and is not subject to any reimbursement programs outside normal warranty.

Cause and action

In our efforts to build safe products and due to different governing authorities' requirements Volvo needs you to report every incident/accident or when there has been any risk of an incident/accident that becomes known to you where any Volvo machines have been involved.

NOTE!

Make sure to pay attention to laws and regulations in the country where the machine concerned operates.

For legal information and advice contact your Regional office.

Scope

Volvo CE defines a reportable incident/accident as:

"An unexpected and/or undesired event resulting in (or which reasonably could have resulted in) personal injury, death and/or property damage (to the machine itself or otherwise)."

Priority

It is of utmost importance that reports are sent in quickly and that they contain as many facts as possible about the incident/accident. This helps us rapidly evaluate the event and determine what actions are appropriate. We consider it a mutual obligation that incidents/accidents are reported and followed up.

NOTE!

Important! Swift reporting is very important, especially in connection with fires when clues and any evidence may be destroyed quickly by the elements (rain, snow, wind, etc.)

Depending upon the nature of the event, it may be necessary to contact Volvo CE immediately to gain direction on how to proceed further. If Volvo CE employees are not available to conduct an immediate inspection we may need to ask the Dealer personnel to conduct a product inspection to assist with the investigation and/or preserve the evidence.

Reporting

- Within 24 hours after the incident/accident occurred or after first receipt of information regarding such an event, the regional manager at Volvo CE's technical support department shall have been informed about the incident/accident.
- The completed report shall be submitted within three working days after the occurrence of the accident/incident.
- In order for Volvo to consider performing an incident inspection/fire inspection the machine must be undisturbed. No repair may be started, nor may parts or components have been removed from the machine until clearance is given from Volvo CE. Decision of clearance/inspection will be notified by Volvo CE within five working days.
- The report will be used by Volvo CE in our continuous work to improve the safety and quality of Volvo CE products. It may also be used as important information for decisions regarding economical compensation or in a legal process.
- **NOTE!**
 - Any reimbursement request may be rejected if parts, components or remains connected to the incident have been removed or destroyed due to work in or on the machine.
 - Any reimbursement request may be rejected due to delayed reporting to Volvo CE's technical support department.
 - Any reimbursement request will be rejected due to lack of reporting.

Copy and fill in the form below.

NOTE!

The report is also available as an editable pdf-form in Techline (SB 000 WLO 241 K_GB). It can be downloaded, filled in, and e-mailed (do not send it through Techline)

IMPORTANT!

Send the form to the relevant regional office. The regional office is responsible for forwarding all information to the relevant area manager for technical matters at Volvo Construction Equipment.

NOTE!
For Region North America, the report must be sent to e-mail: incidentreport@volvo.com.

Description of the incident/accident

Be objective in describing the event. Avoid personal opinions and/or speculations! It is extremely important to record the facts simply and completely.

Include observations about other conditions and circumstances that may be helpful in understanding the event.
To make it possible for Volvo CE to make an initial evaluation of the incident/accident, attach photographs as well.
Take as many photos as possible, close-ups and from a distance. Describe, in detail, what is shown in each of the photos.
These photos may be of invaluable help in the initial phase of an investigation.

To save the completed form digitally, it must be printed out as a file and saved digitally!

NOTE!
Only reports written in English are accepted.

Machine type	
Machine serial number	
Operating hours	
Delivery date	
Dealer	
Address, dealer	
Contact information (Name, phone number, e-mail)	
Machine owner	
Machine owner's address	
Contact information (Name, phone number, e-mail)	
Machine operator's name	
Witness/witnesses Name (s) & address(es)	
Insurance company:	
Insurance case number:	

No bodily injury		Bodily injury		Fatality	
Material (machine) damage		Subsequent damage, loss of property (other)			

Machine, condition (New, Average, Poor)	
Machine's present location?	
Involved component or part.	
Component's serial number & part number	
Date & time of incident/accident	
Accident location	

Volvo standard tightening torques<https://truckmanualshub.com/>

The tightening torques in the following tables apply to the bolts and nuts with tensile strengths as noted below. The tables should be regarded as a general instruction for tightening torques of bolts and nuts which have no specified values indicated.

NOTE!
Torque values should be increased by 10% for flange bolt type U6FS. Bolts and nuts must be cleaned and lubricated with oil.

TENSILE STRENGTH 8.8 Metric coarse and fine threads

Threads	Nm	kgf m	lbf ft
M6	10 ±2	1.0 ±0.2	7.4 ±3.5
M8	24 ±5	2.4 ±0.5	18 ±3.5
M10	48 ±10	4.8 ±1.0	35 ±7.4
M12	85 ±18	8.5 ±1.8	63 ±13.0
M14	140 ±25	14.0 ±2.5	103 ±18.0
M16	220 ±45	22.0 ±4.5	160 ±33.0
M20	430 ±85	43.0 ±8.5	320 ±63.0
M24	740 ±150	74.0 ±15.0	550 ±110.0

TENSILE STRENGTH 10.9 Metric coarse and fine threads

Threads	Nm	kgf m	lbf ft
M6	12 ±2	1.2 ±0.2	9 ±1.5
M8	30 ±5	3.0 ±0.5	22 ±3.5
M10	60 ±10	6.0 ±1.0	44 ±7.5
M12	105 ±20	10.5 ±2.0	78 ±14.5
M14	175 ±30	17.5 ±3.0	130 ±22
M16	275 ±45	27.5 ±4.5	204 ±33
M20	540 ±90	54.0 ±9.0	400 ±66
M24	805 ±160	80.5 ±16.0	594 ±118

UNC threads. coarse pitch

Threads	Nm	kgf m	lbf ft
1/4"	9 ±2	0.9 ±0.2	6.6 ±1.5
5/16"	18 ±4	1.8 ±0.4	13 ±3.0
3/8"	33 ±8	3.3 ±0.8	24 ±5.9
7/16"	54 ±14	5.4 ±1.4	40 ±10
1/2"	80 ±20	8.0 ±2.0	59 ±15
9/16"	120 ±30	12.0 ±3.0	89 ±22
5/8"	170 ±40	17.0 ±4.0	130 ±30
3/4"	300 ±70	30.0 ±7.0	220 ±52
7/8"	485 ±115	48.5 ±11.5	360 ±85
1"	725 ±175	72.5 ±17.5	530 ±130

en/rear window

The washer fluid reservoir is located behind the side cover (cab filter access cover) on the right-hand side of the machine.

- Be sure to have sufficient antifreeze in the washer fluid when the outside temperature drops below freezing point.
- Top up as necessary.
- Check that the reservoir filler cap is screwed on firmly and that the reservoir is clean externally. Odours may otherwise spread to the cab.

Language Code GB	Product WLO	Group 233	https://truckmanualshub.com/	No. 8	Version 1	Date 11/08/2004
Applies to 616B Volvo BM, 646 Volvo BM, 4200 Volvo BM, 4200B Volvo BM, 4300 Volvo BM, 4300B Volvo BM, 4400 Volvo BM, 4500 Volvo BM, 4600 Volvo BM, 4600B Volvo BM, 6300 Volvo BM, EL70 Volvo BM, EL70C Volvo BM, L50 Volvo BM, L50B Volvo BM, L50C OR Volvo, L50C Volvo, L50C Volvo BM, L50D Volvo, L50E Volvo, L60E Volvo, L70 Volvo BM, L70B Volvo BM, L70C Volvo, L70C Volvo BM, L70D Volvo, L70E Volvo, L90 CO Volvo BM, L90 Volvo BM, L90B Volvo BM, L90C OR Volvo, L90C Volvo, L90C Volvo BM, L90D OR Volvo, L90D Volvo, L90E Volvo, L110E Volvo, L120 Volvo BM, L120B Volvo BM, L120C Volvo, L120C Volvo BM, L120D Volvo, L120E Volvo, L150 Volvo BM, L150C LB Volvo, L150C Volvo, L150C Volvo BM, L150D Volvo, L150E Volvo, L160 CO Volvo BM, L160 Volvo BM, L180 CO Volvo BM, L180 HL Volvo BM, L180 Volvo BM, L180C CO Volvo, L180C HL Volvo, L180C Volvo, L180C Volvo BM, L180D HL Volvo, L180D Volvo, L180E HL Volvo, L180E Volvo, L220D Volvo, L220E Volvo, L330C LL Volvo, L330C Volvo, L330C Volvo BM, L330D Volvo, L330E Volvo						

Water separator improvement



WARNING

Please pay attention to the safety instructions in the Operator's and Service Manuals concerned.

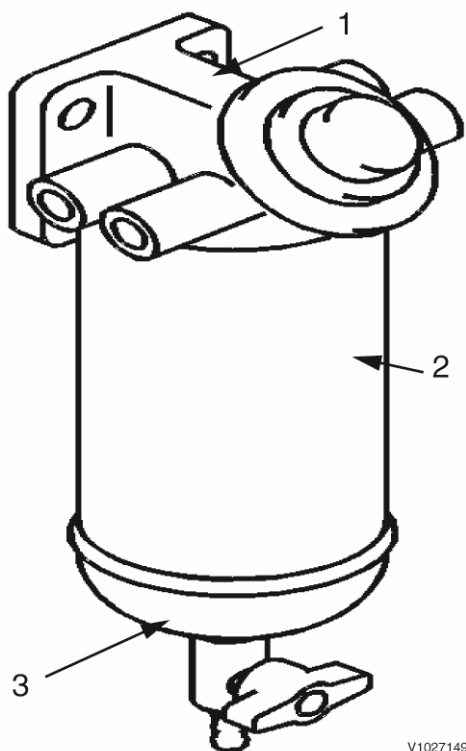
This SB is to be considered as technical information and comprises normal warranties within the rules for the same.

Cause

Less fuel supply to engine.

Action

Check water separator as the following instruction.



V1027149

Figure 1
Water separator

1. Filter head
2. Filter element
3. Plastic bowl

Descriptions

1. Problems of Racor water separator are related to the gasket between the filter element and the filter head, incorrect location of flapper, dust or dirt on flapper valve seat and incorrect location of flapper lock pin.
2. When mounting and tightening filter head and filter element together, the filter element gasket can expand inwards and make contact with flapper valve.
3. The flapper valve in the filter head should open during pump stroke and close when releasing the pump. The flapper valve is

supposed to close the bypass hole. If the gasket interferes with the flapper valve, fuel can not be supplied to engine during pump stroke.

4. The flapper valve can not be pressurized in case there is dust or dirt on flapper valve seat, then pump supplies less fuel to engine.
5. It is possible that the flapper valve is not in place which results in less fuel supply to engine.

Parts comparison

The filter element gasket was changed from circle type to square one to prevent it from interference with flapper valve and part numbers were changed as shown on table 1.

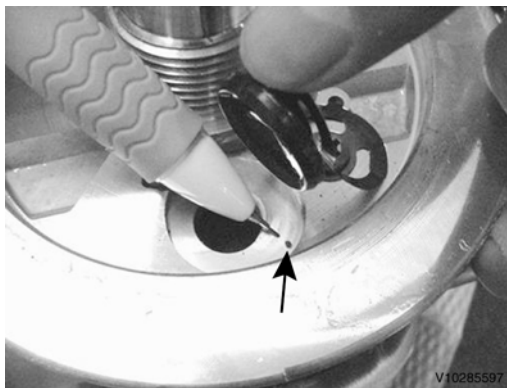


Figure 2
Dust on flapper valve seat
Part comparison

Part name	Old part number	New part number	Remarks
Water separator complete assembly	11110471	11110670	Gasket is included in filter element.
Filter element	11110474	11110668	
Filter head	11713138	11713138	
Plastic bowl	3836024	3943382	

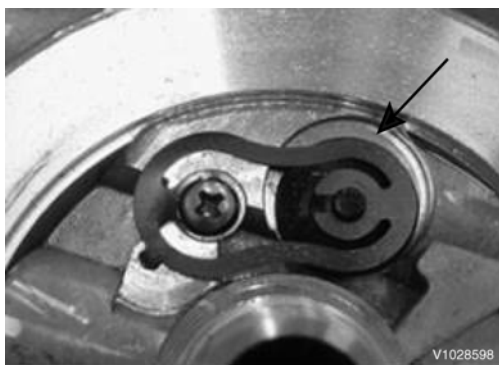


Figure 3
Flapper valve incorrect location
Instruction

1. Check the flapper valve seat for dust or dirt as shown in Fig.2. Clean the surface with a soft cloth to remove the dirt, if necessary.
2. Check that the flapper valve is in its correct position as shown in Fig.3. Reposition the flapper valve, if necessary.
3. Check that the flapper valve lock pin is in position as shown in Fig.4. Reposition, if necessary.
4. Check that the filter element gasket does not have contact with the flapper valve as shown in Fig.5 Change the filter element, if necessary.

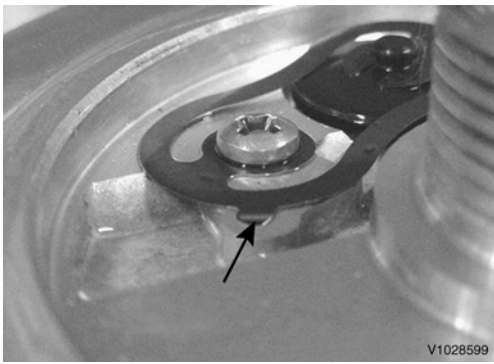


Figure 4
Flapper valve lock pin

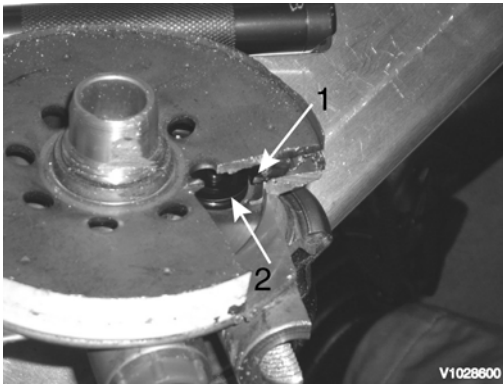


Figure 5
Flapper valve filter element gasket

1. Filter element gasket
2. Flapper valve

Wear indicator, description

<https://truckmanualshub.com/>

The wear indicator consists of a pin which has been pressed into a spring pin, to an individually adapted length for each hub reduction.

The wear indicator is permanently mounted in the axle housing and should be used for checking wear of each individual brake disc.

Weight

<https://truckmanualshub.com/>

Engine, standard	660 kg (1455 lbs)
Hydraulic transmission, incl. pumps	730 kg (1610 lbs)
Dropbox	165 kg (364 lbs)
Front mounting, rear axle	90 kg (198 lbs)
Rear mounting, rear axle	165 kg (364 lbs)
Front axle	1008 kg (2223 lbs)
Rear axle	1250 kg (2756 lbs)
Front frame	1200 kg (2646 lbs)
Rear frame	950 kg (2095 lbs)
Underbody skid plate	54 kg (119 lbs)
Counterweight	1700 kg (3749 lbs)
Wheel without fluid	340 kg (750 lbs)
Wheel with fluid CaCl ₂	750 kg (1654 lbs)
Protective plates	
Steering cylinder covers (left and right sides)	20 kg (44 lbs)
Control valve	50 kg (110 lbs)
Hydraulic oil pump, working hydraulics (double-mounted with pump for servo system and brakes)	48 kg (106 lbs)
Boom, incl. links, pins and cylinders	1800 kg (3969 lbs)
Lift cylinder	125 kg (276 lbs)
Tilt cylinder	170 kg (375 lbs)

Weight

Engine, standard	750 kg (1654 lbs)
Hydraulic transmission, incl. pumps	840 kg (1852 lbs)
Front mounting, rear axle	90 kg (199 lbs)
Rear mounting, rear axle	190 kg (419 lbs)
Front axle	1081 kg (2384 lbs)
Rear axle	1299 kg (2864 lbs)
Front frame	1450 kg (3197 lbs)
Rear frame	1200 kg (2646 lbs)
Underbody skid plate	54 kg (119 lbs)
Counterweight	2490 kg (5490 lbs)
Wheel without fluid	535 kg (1180 lbs)
Wheel with fluid CaCl ₂	1120 kg (2470 lbs)
Protective plates	
Steering cylinder covers (left and right sides)	25 kg (55 lbs)
Hydraulic oil pump, working hydraulics (double-mounted with pump for servo system and brakes)	55 kg (122 lbs)
Control valve	50 kg (110 lbs)
Boom, incl. links, pins and cylinders	2190 kg (4829 lbs)
Lift cylinder	135 kg (298 lbs)
Tilt cylinder	269 kg (593 lbs)

Weights

<https://truckmanualshub.com/>

Cab	800 kg (1765 lbs) (approx.)
Operator's seat	45 kg (100 lbs) (approx.)

Weights

Air conditioning	
Amount of refrigerant R134a	1.3 kg (2.9 lbs)

Wiping during and after washing <https://truckmanualshub.com/>

The function controls the front and rear wipers during washing.
Control of the wipers starts when the relevant washer control is held in position On and stops when the control is released, with an additional 5 seconds of wiping after washing stops.

Input signals	Output function conditions	Output functions
○ Control front washer, SW801B	○ Control held in On position After the control has been released, an additional 5 seconds of wiping is obtained	○ Control of front wiper M0801 via relay RE6
○ Control rear washer, SW804	○ Control held in On position After the control has been released, an additional 5 seconds of wiping is obtained	○ Control of rear wiper M0803 via relay RE5

Wiring diagram 1.

<https://truckmanualshub.com/>

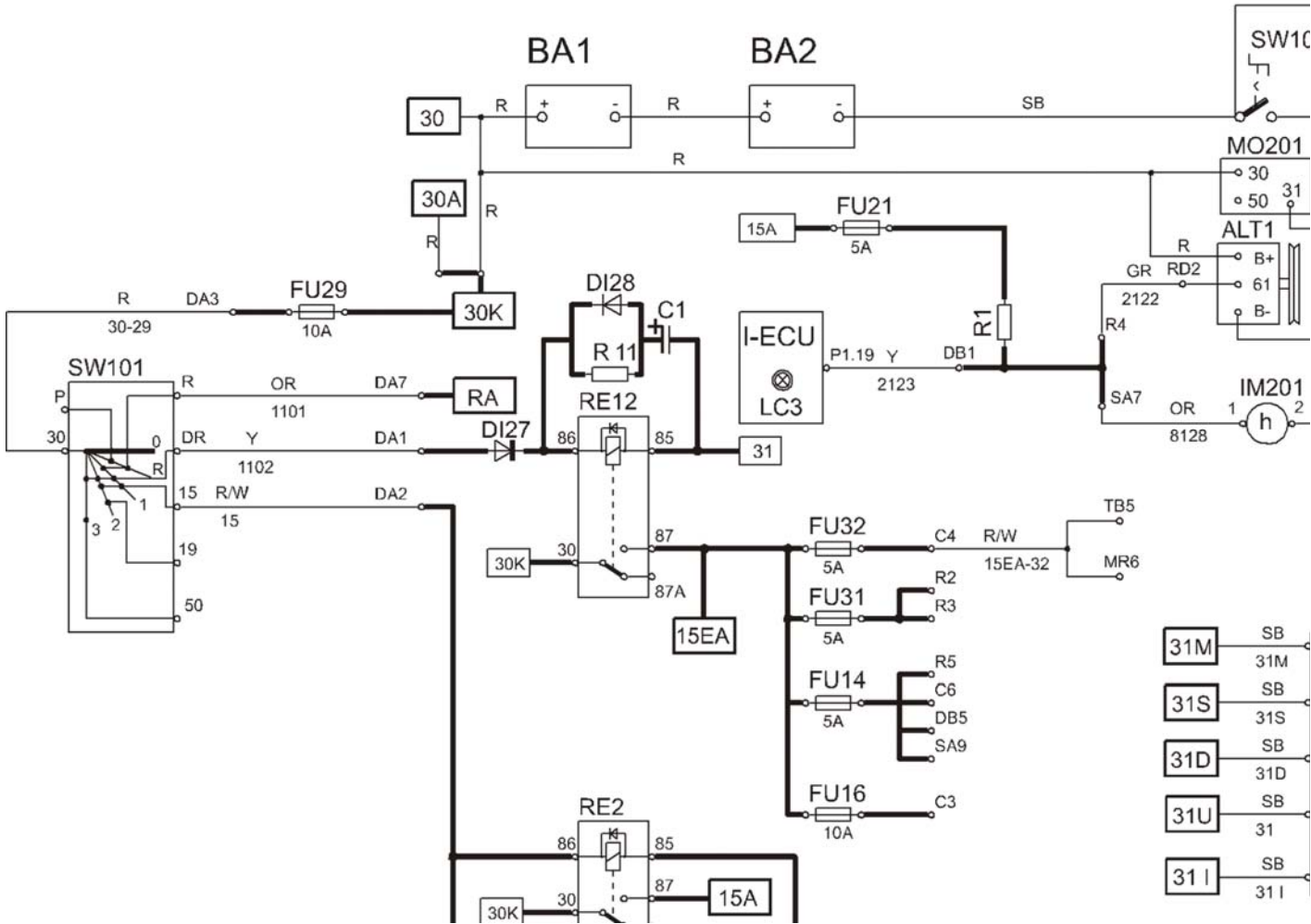


Figure 1

Wiring diagram 2.

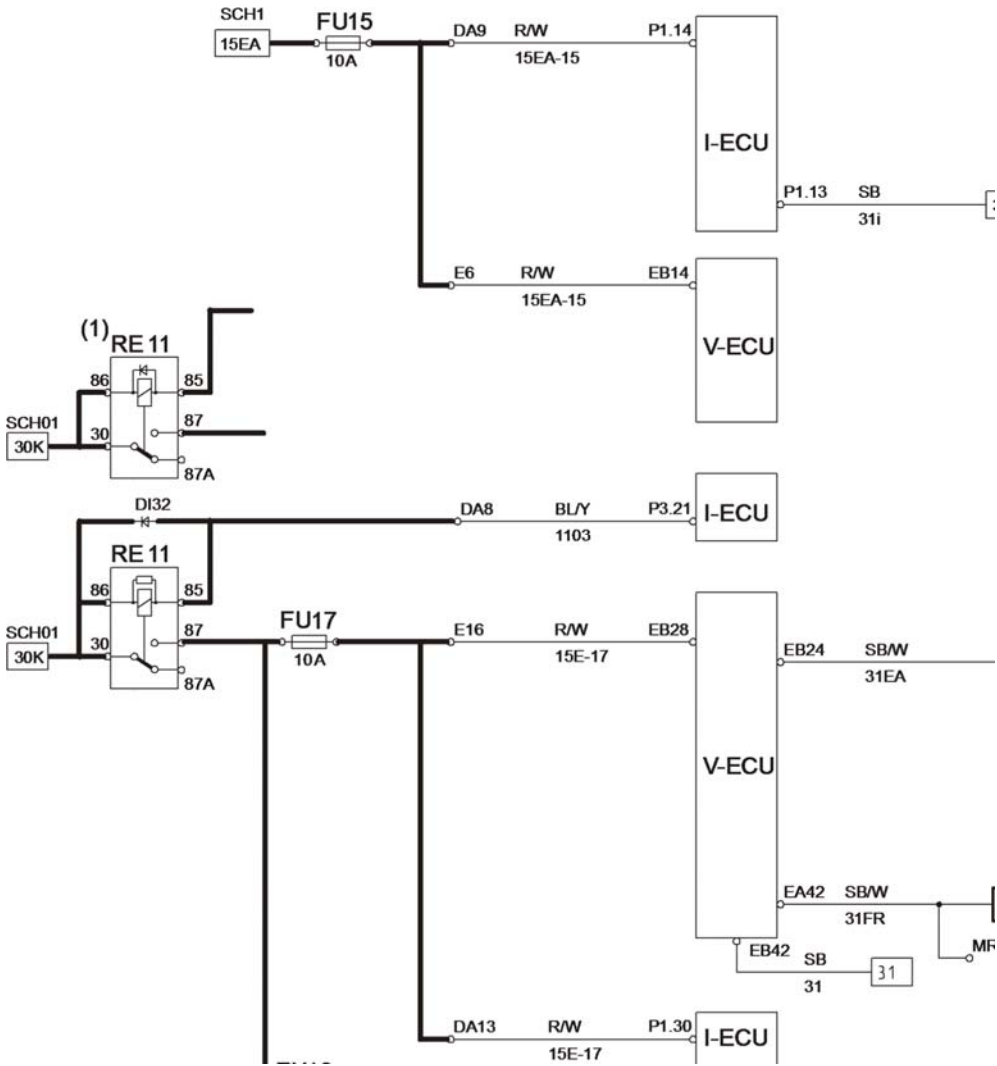


Figure 1

RE11 with diode (earlier circuit board version)

Wiring diagram 3.

<https://truckmanualshub.com/>

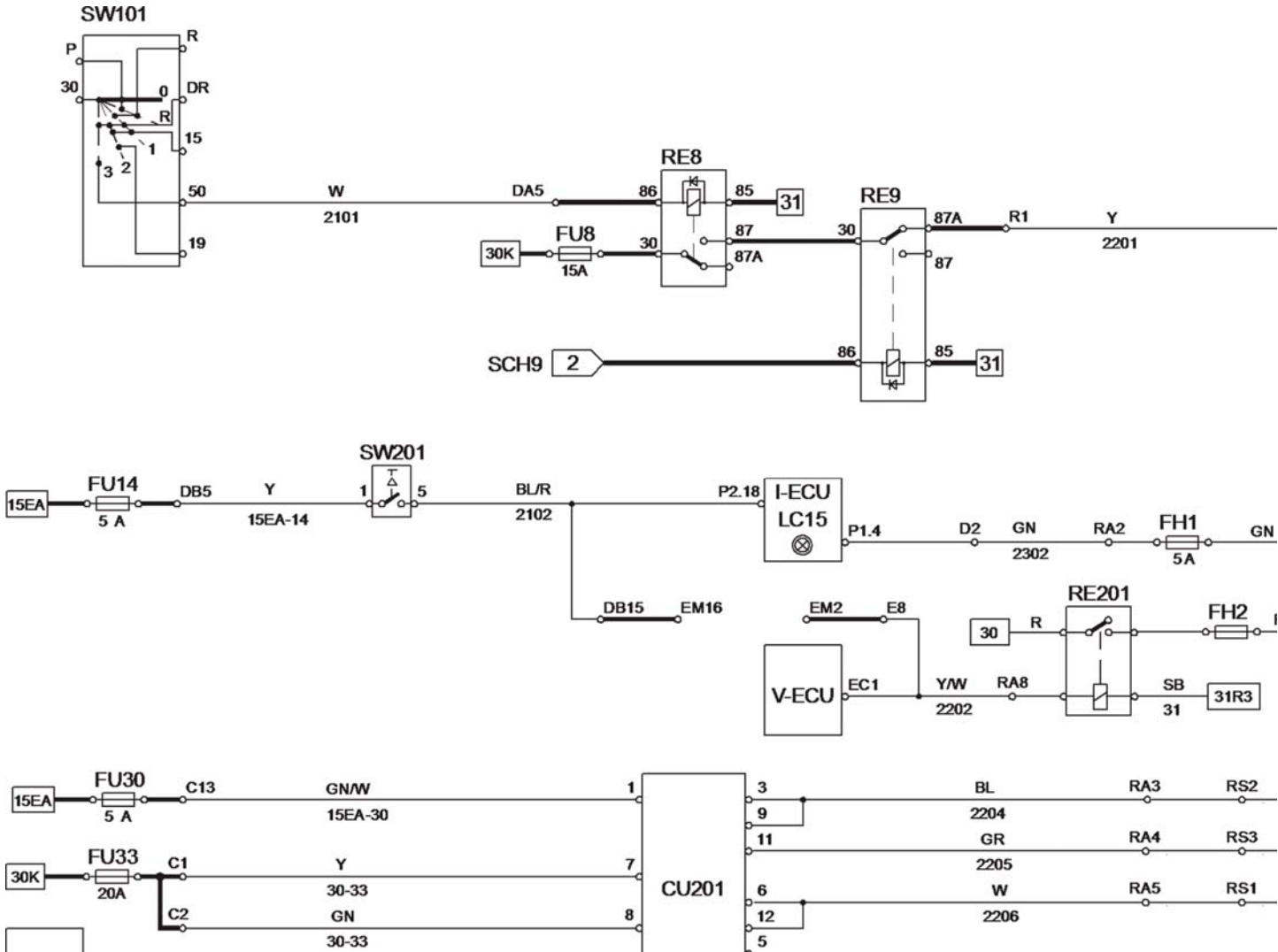


Figure 1

Wiring diagram 4.

S

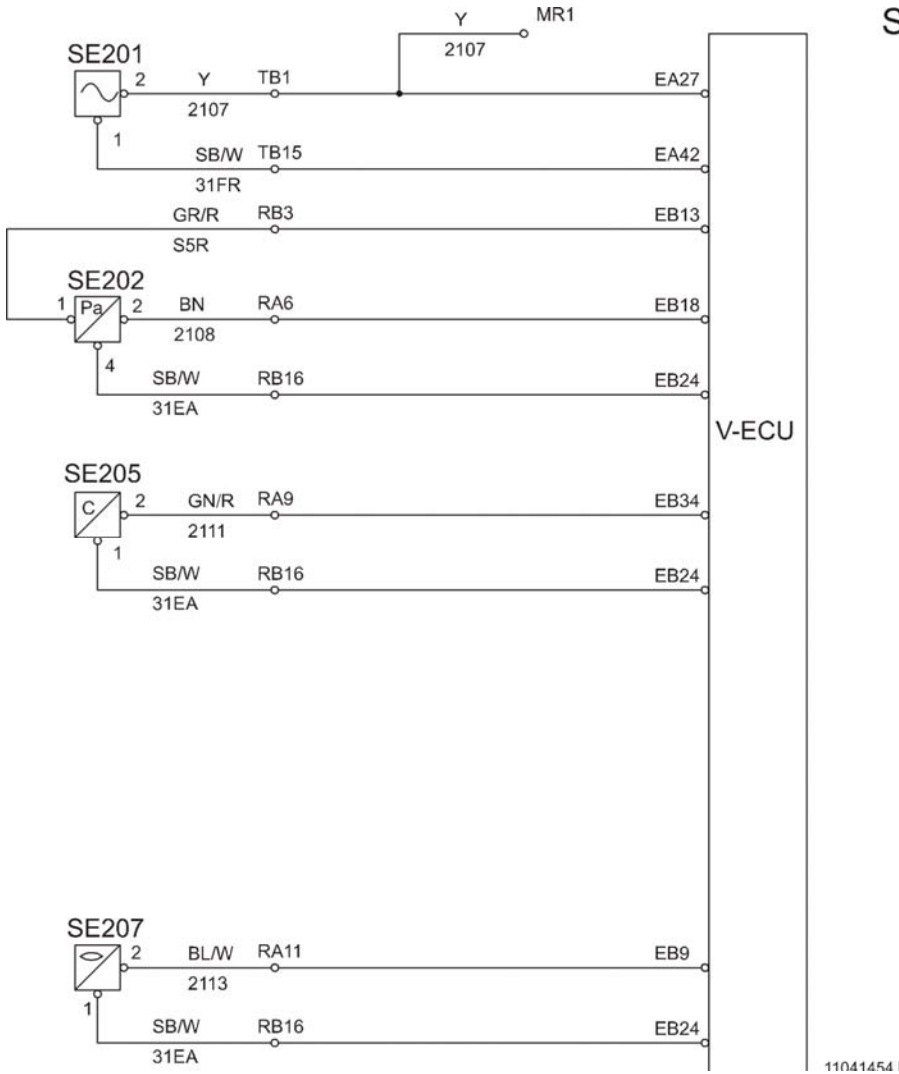


Figure 1

Wiring diagram 5.

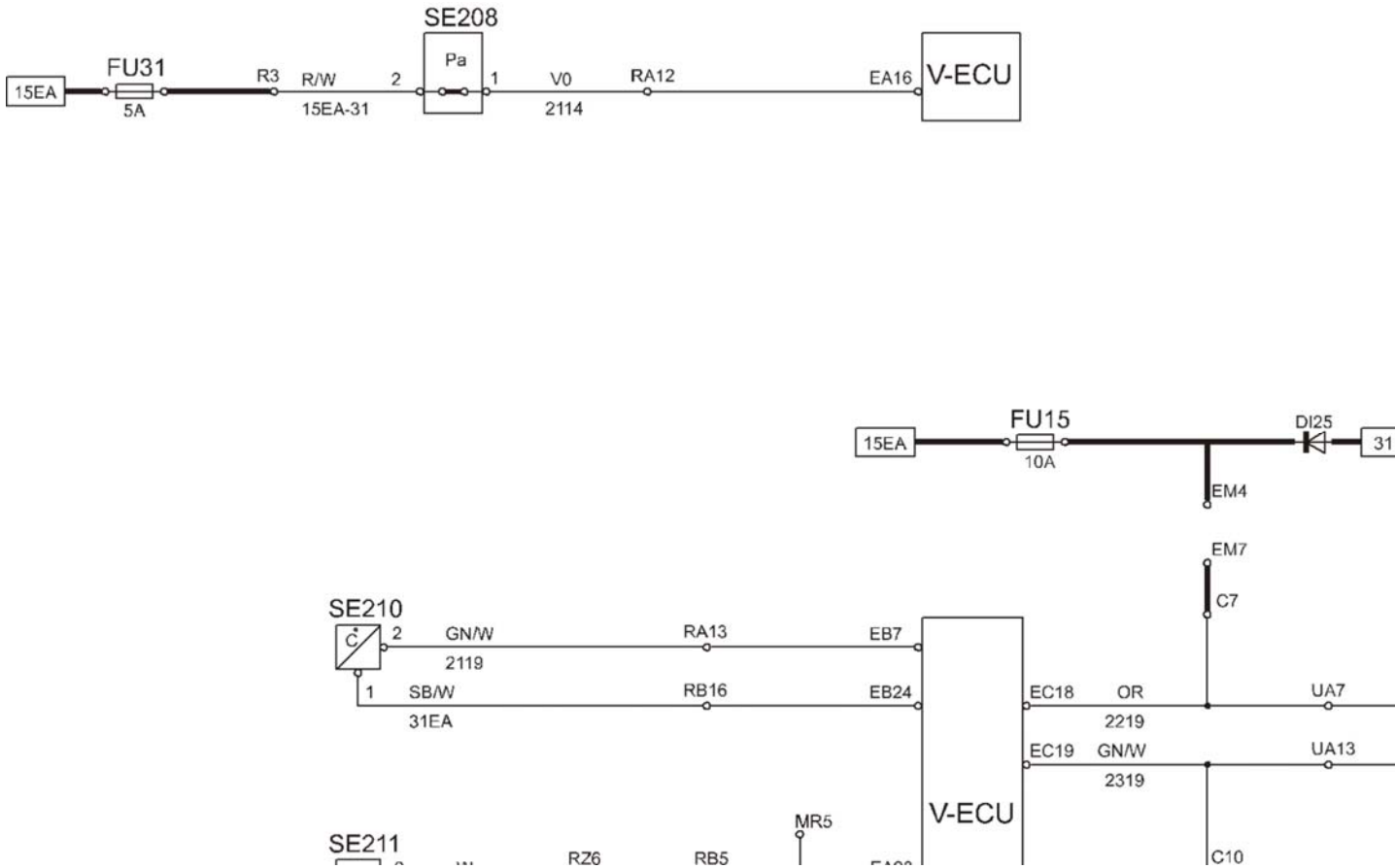


Figure 1

<https://truckmanualshub.com/>

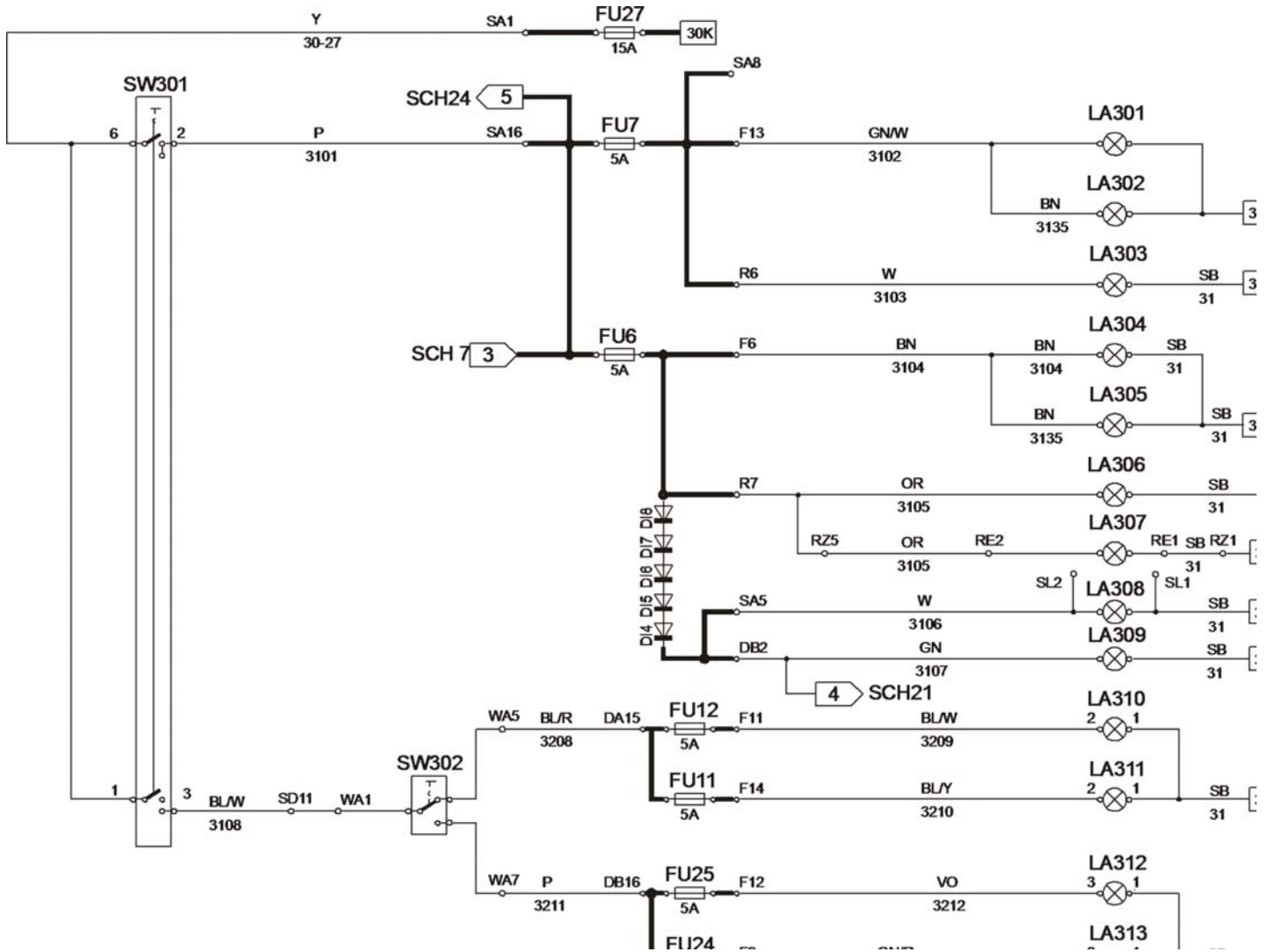


Figure 1

Wiring diagram 7.

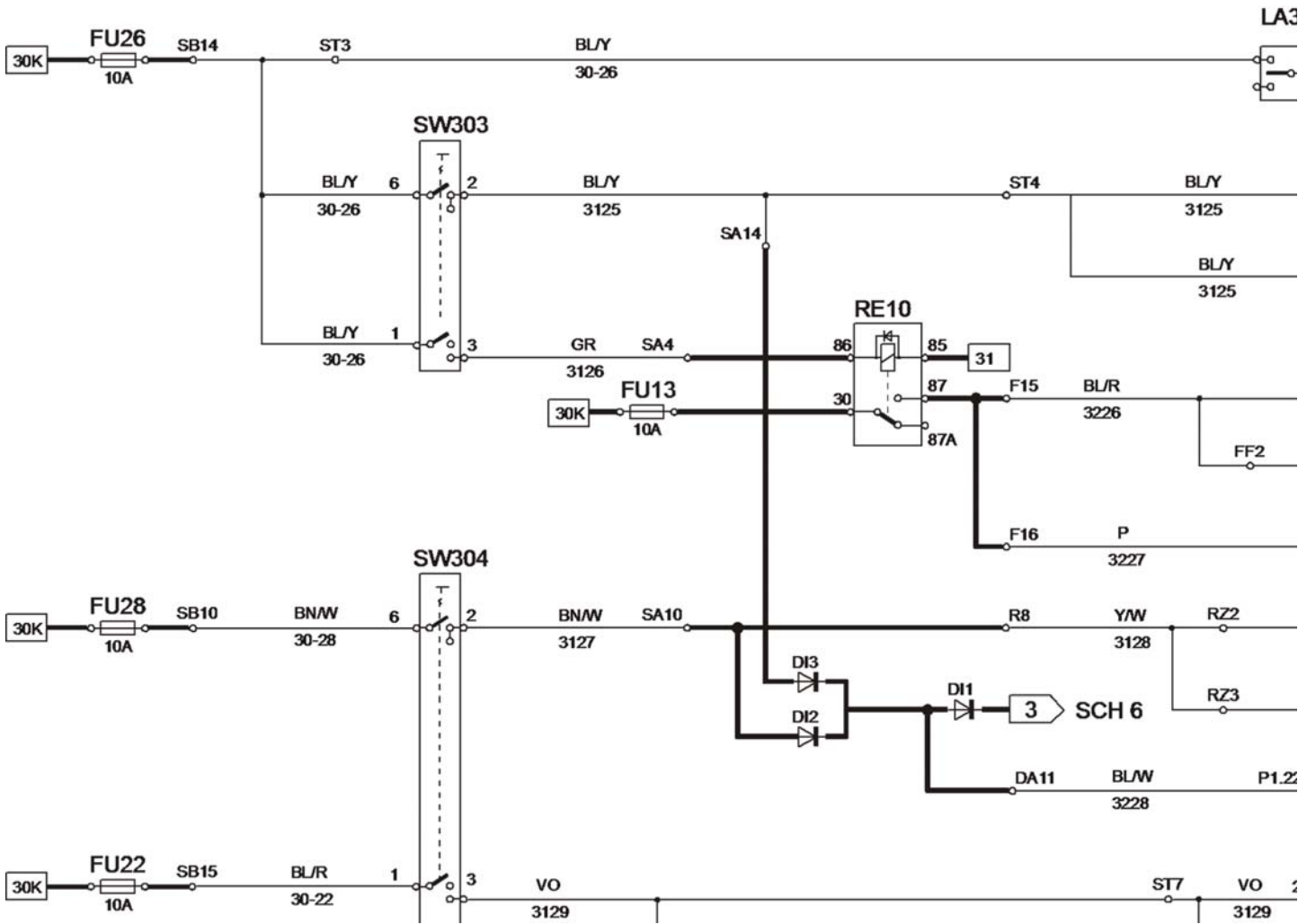


Figure 1

Wiring diagram 8.

<https://truckmanualshub.com/>

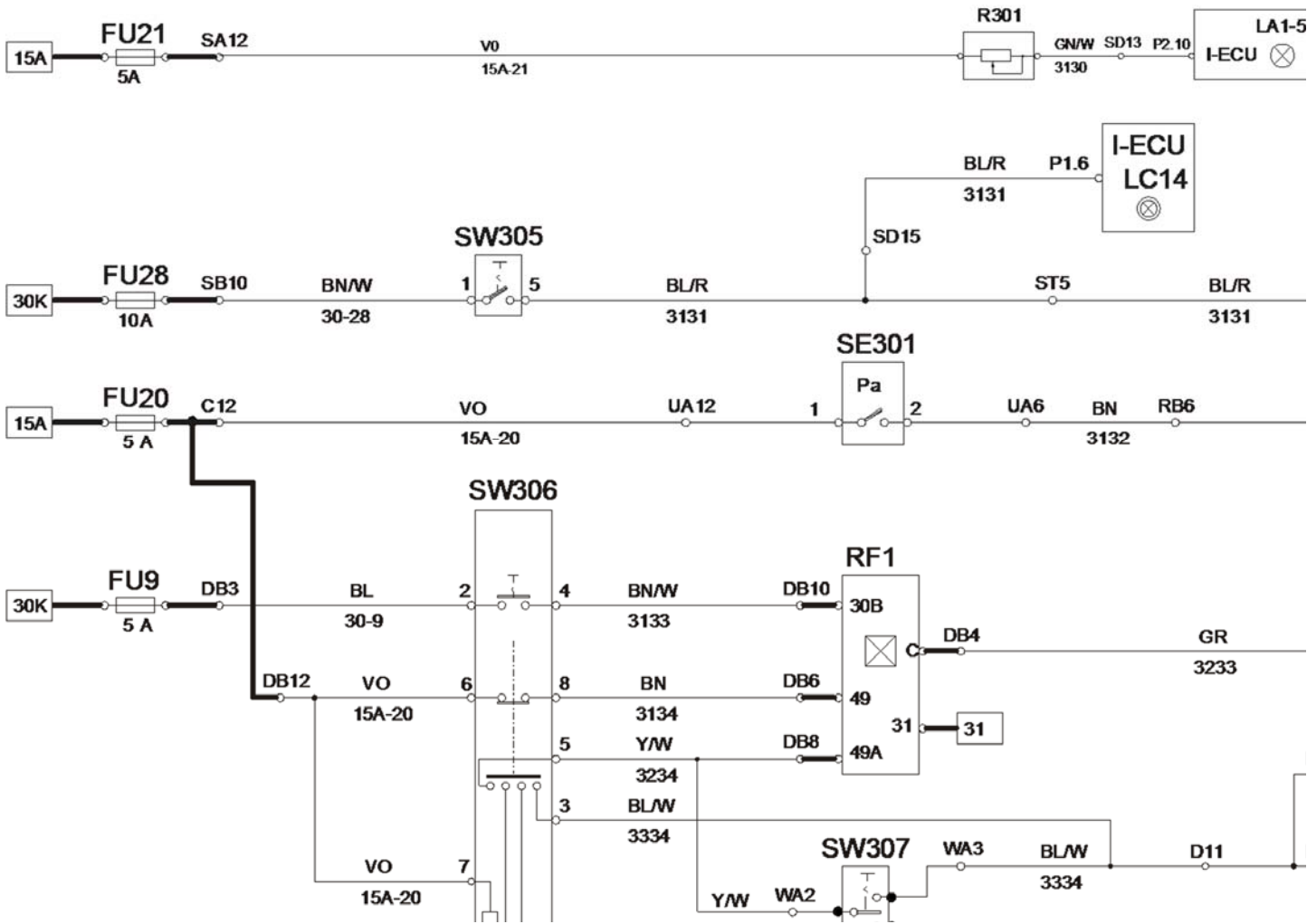


Figure 1

Wiring diagram 9.

<https://truckmanualshub.com/>

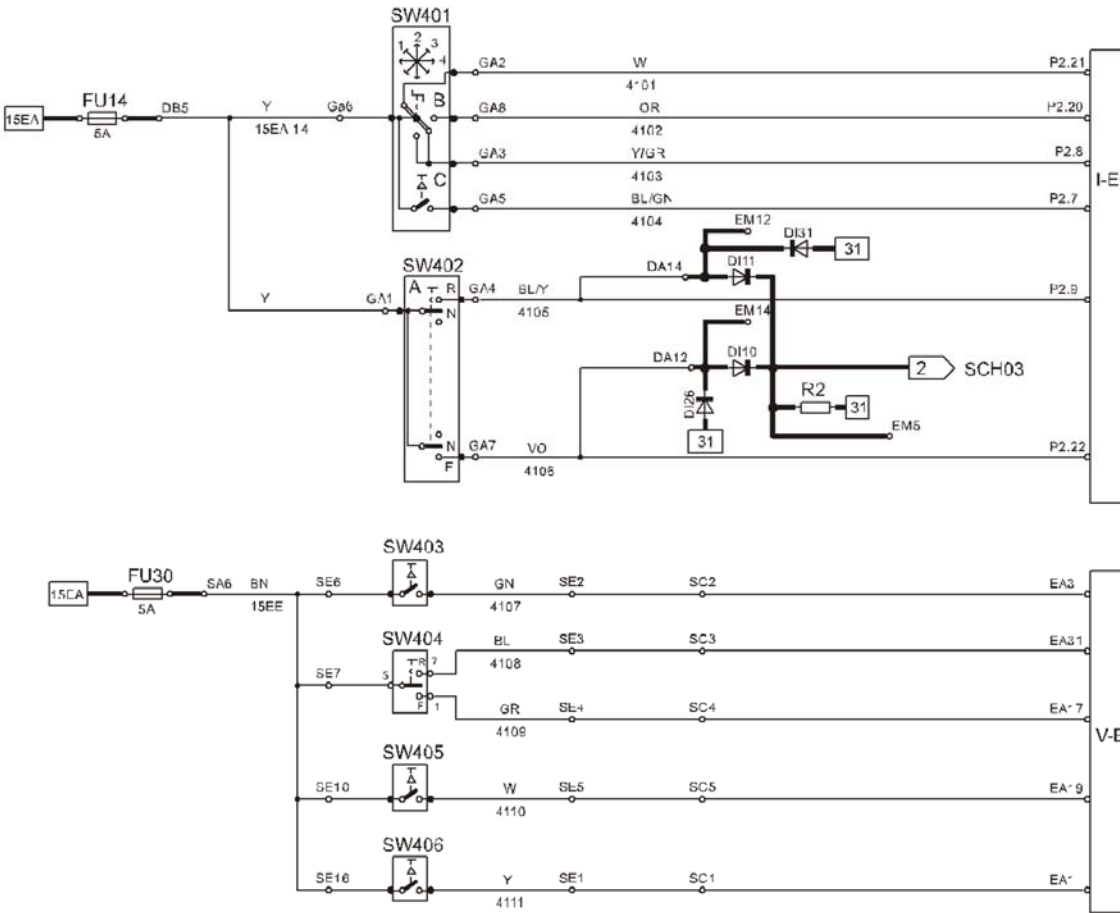


Figure 1

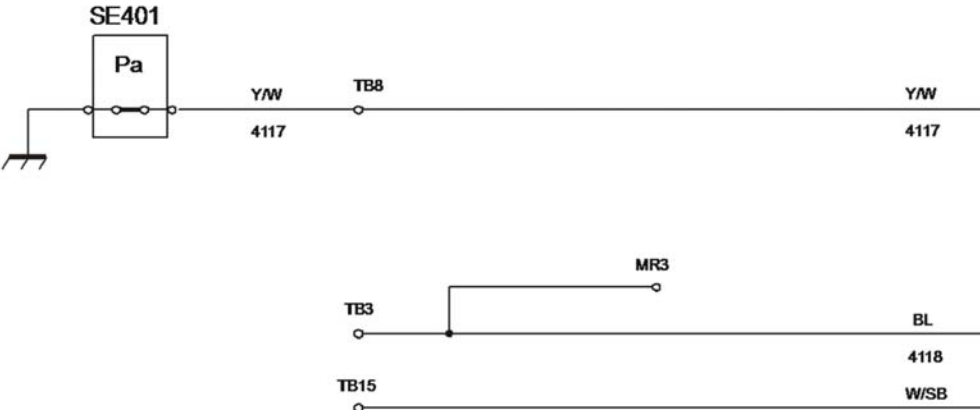


Figure 1

Wiring diagram 11.

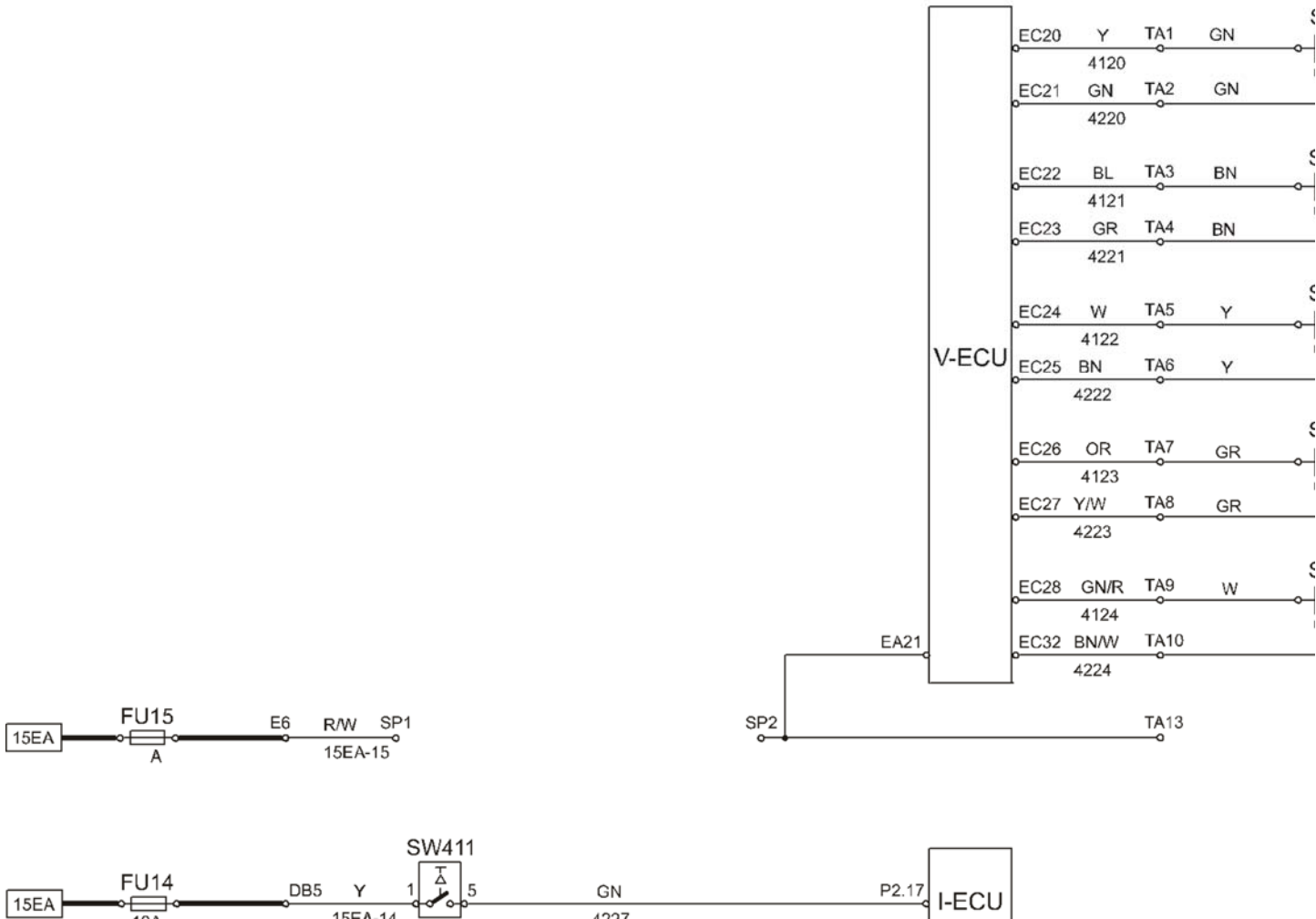


Figure 1

Wiring diagram 12.

<https://truckmanualshub.com/>

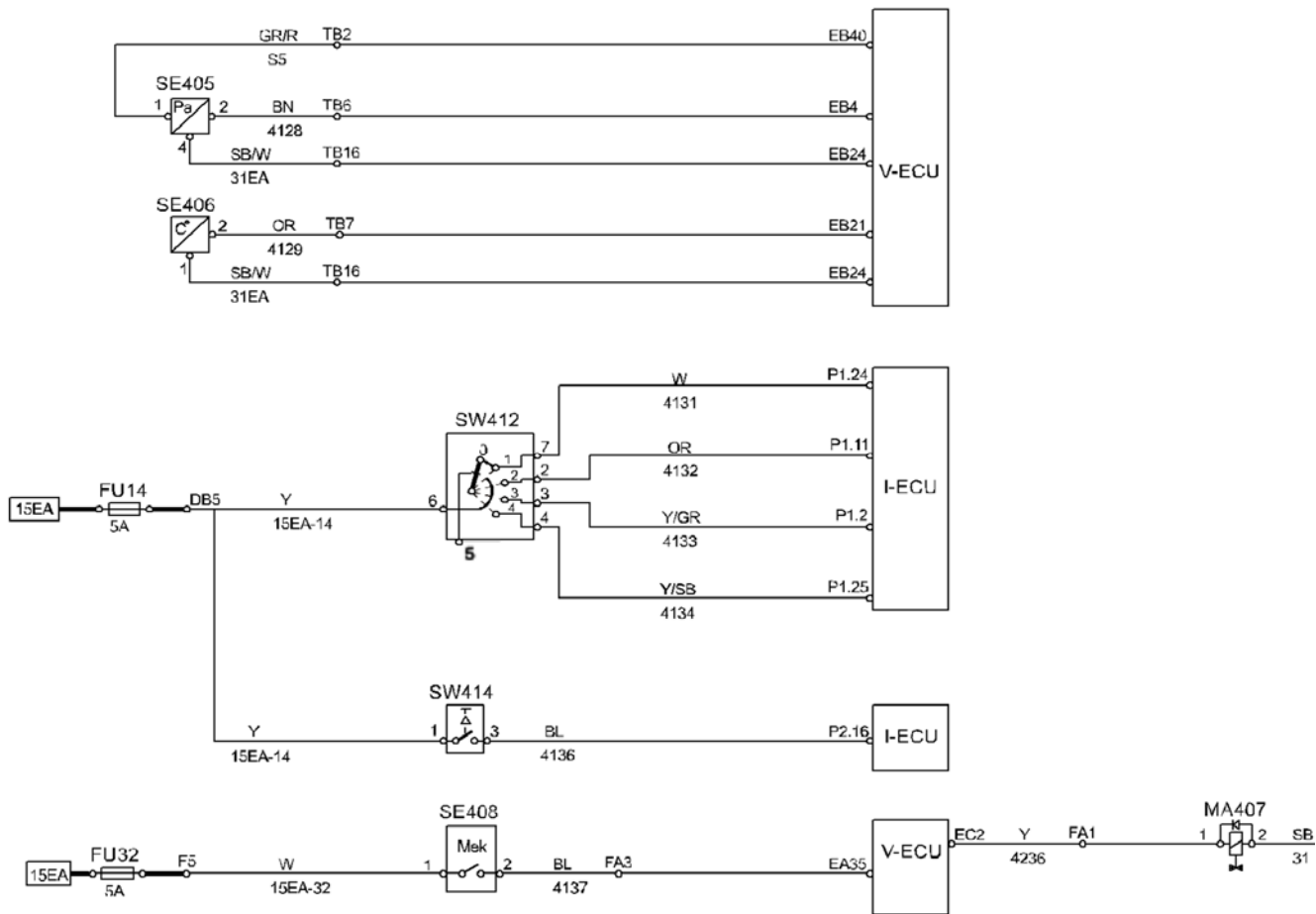


Figure 1

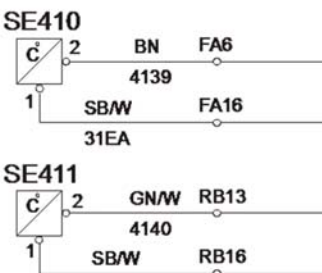


Figure 1

Wiring diagram 14.

<https://truckmanualshub.com/>

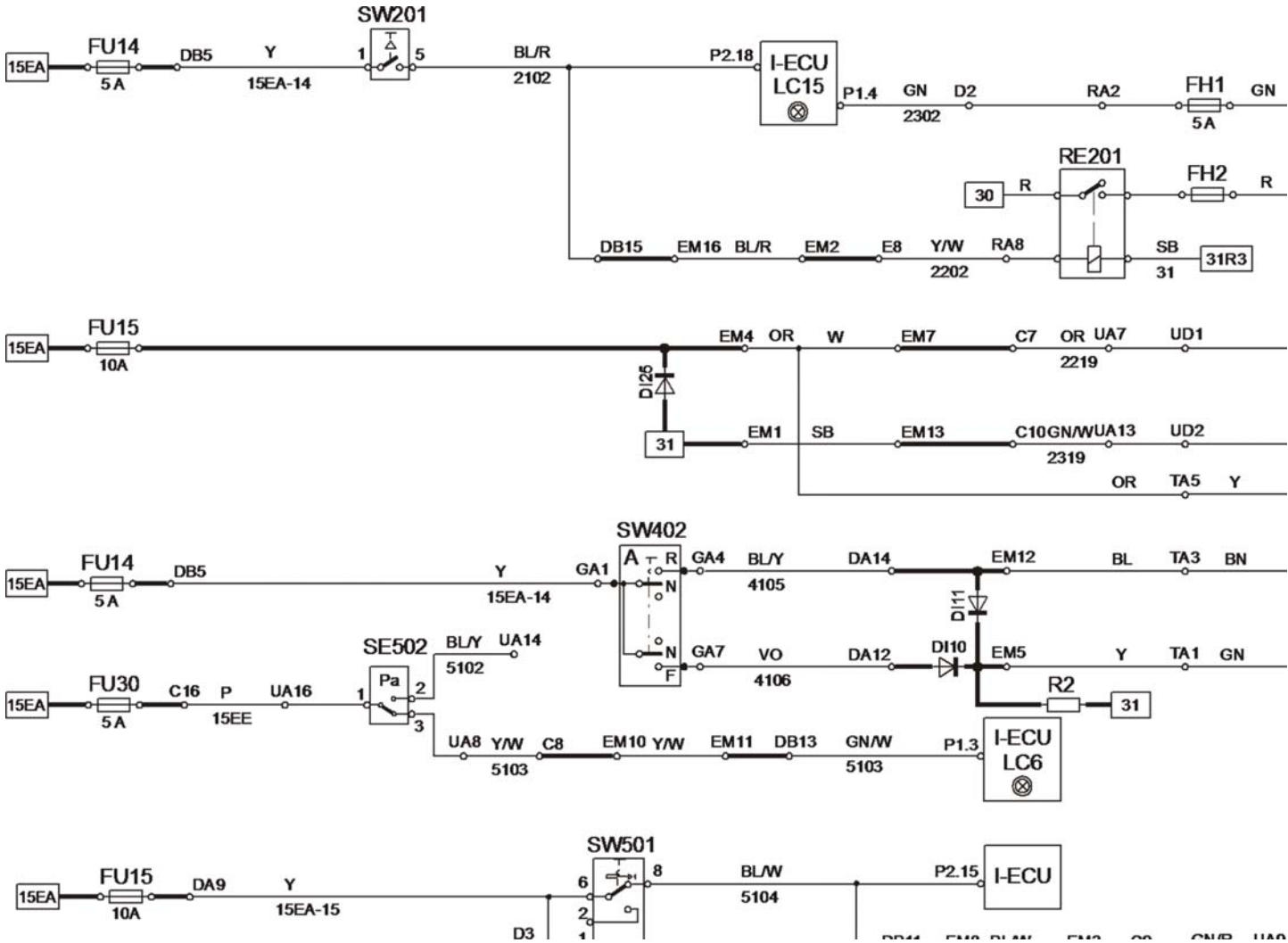


Figure 1

Wiring diagram 15.

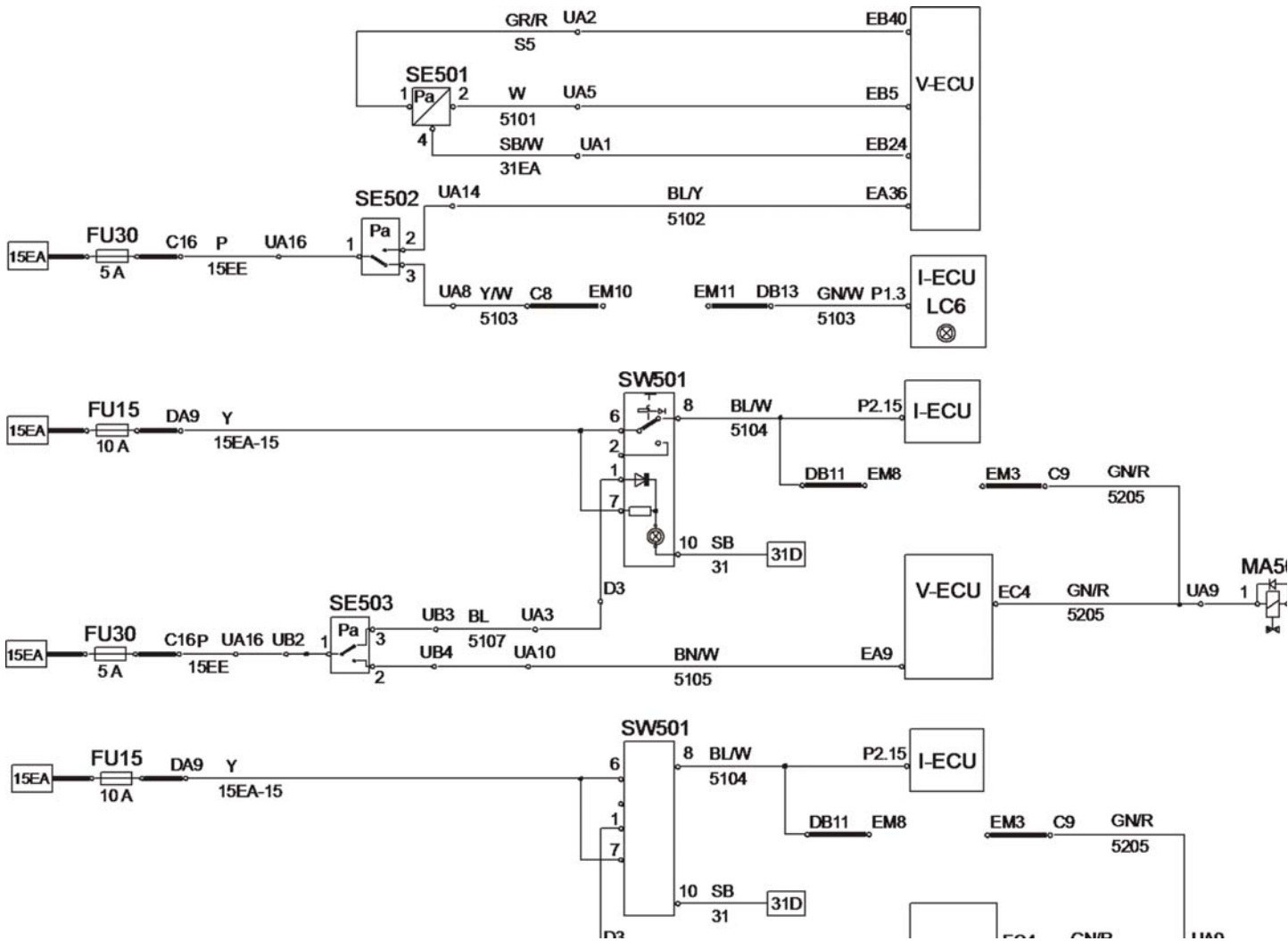


Figure 1

Wiring diagram 16.

<https://truckmanualshub.com/>

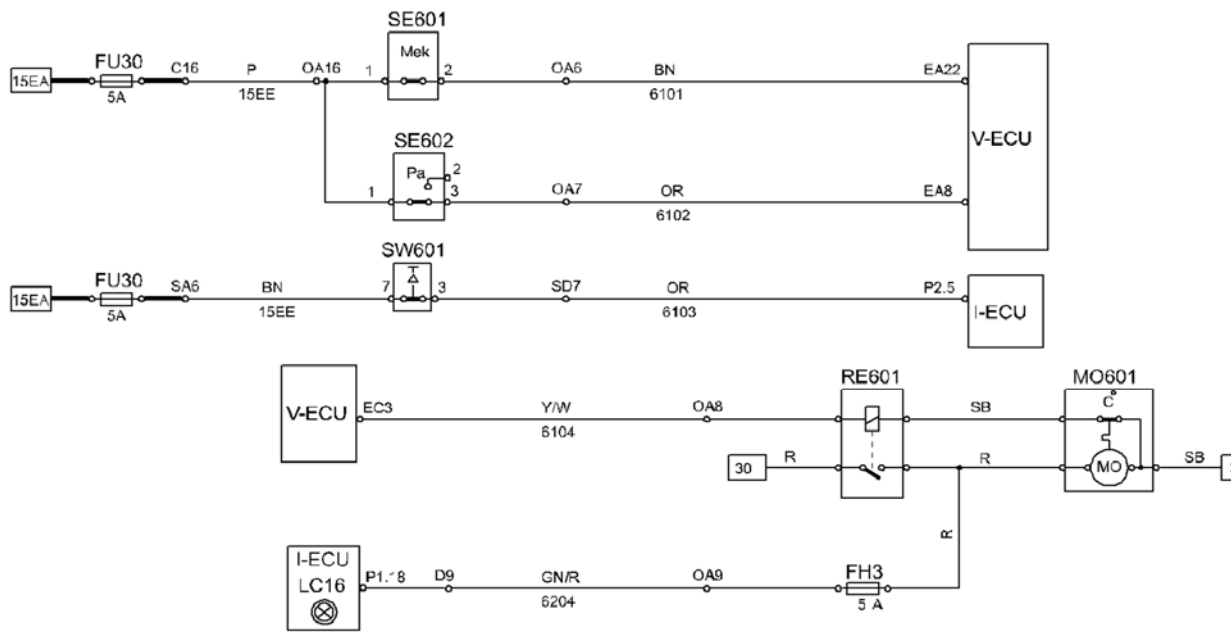


Figure 1

<https://truckmanualshub.com/>

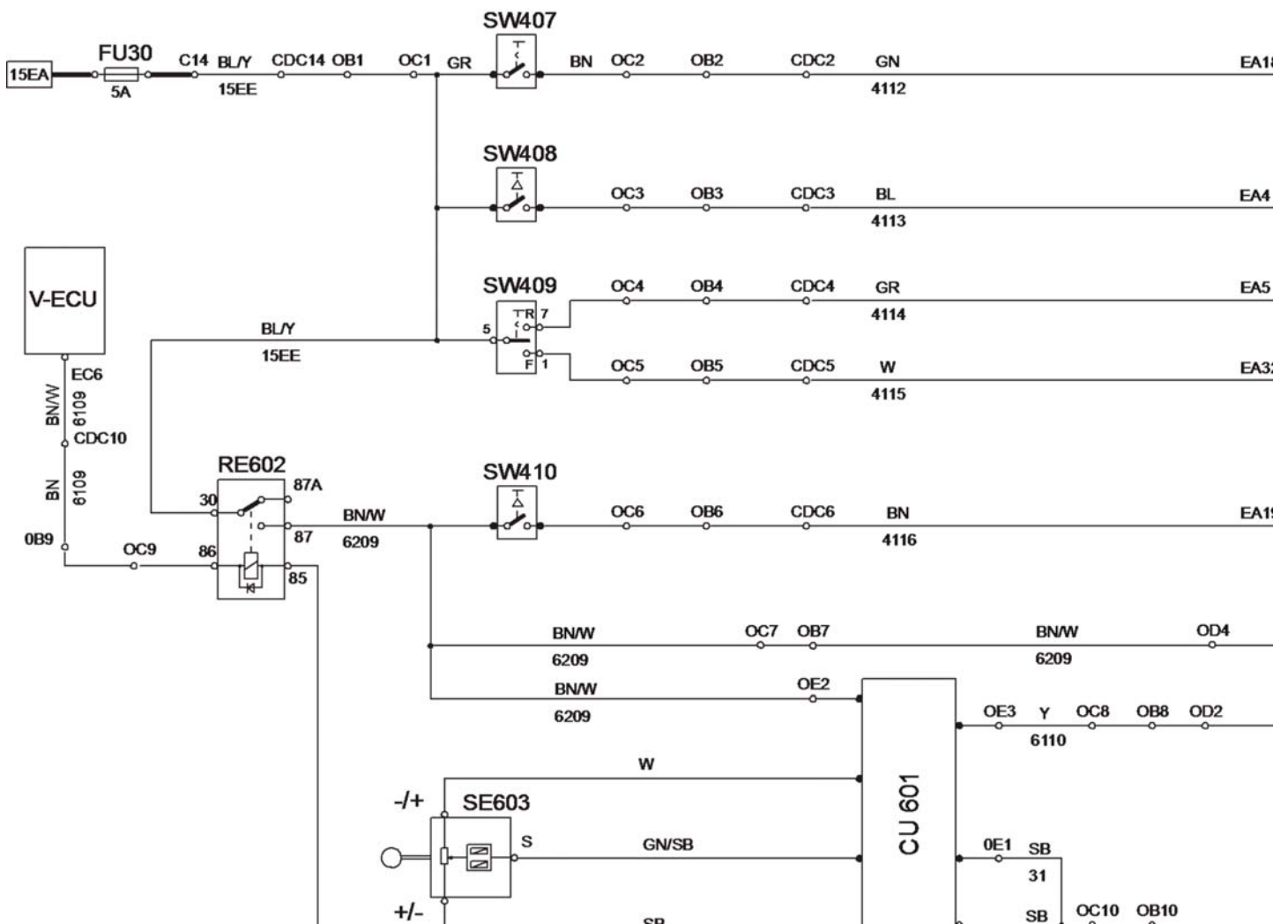


Figure 1

<https://truckmanualshub.com/>

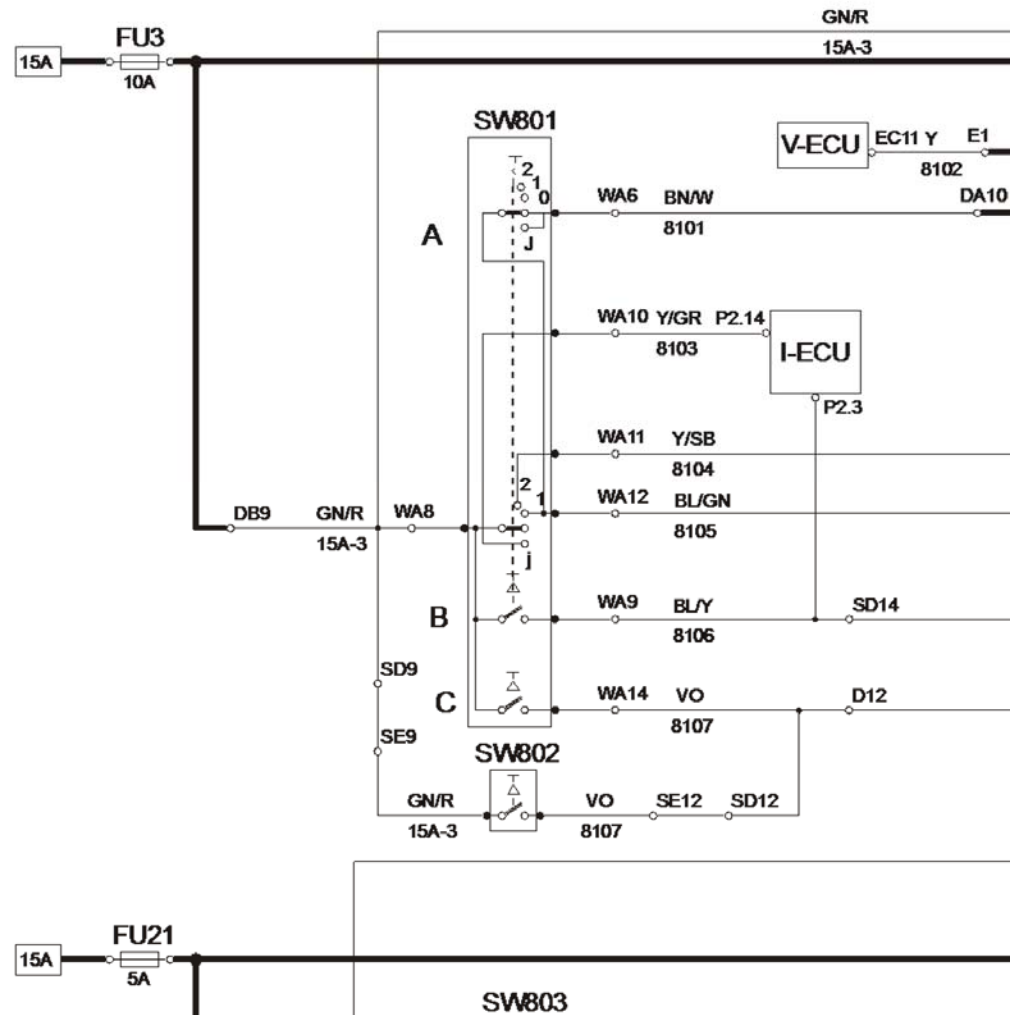


Figure 1

Wiring diagram 19.

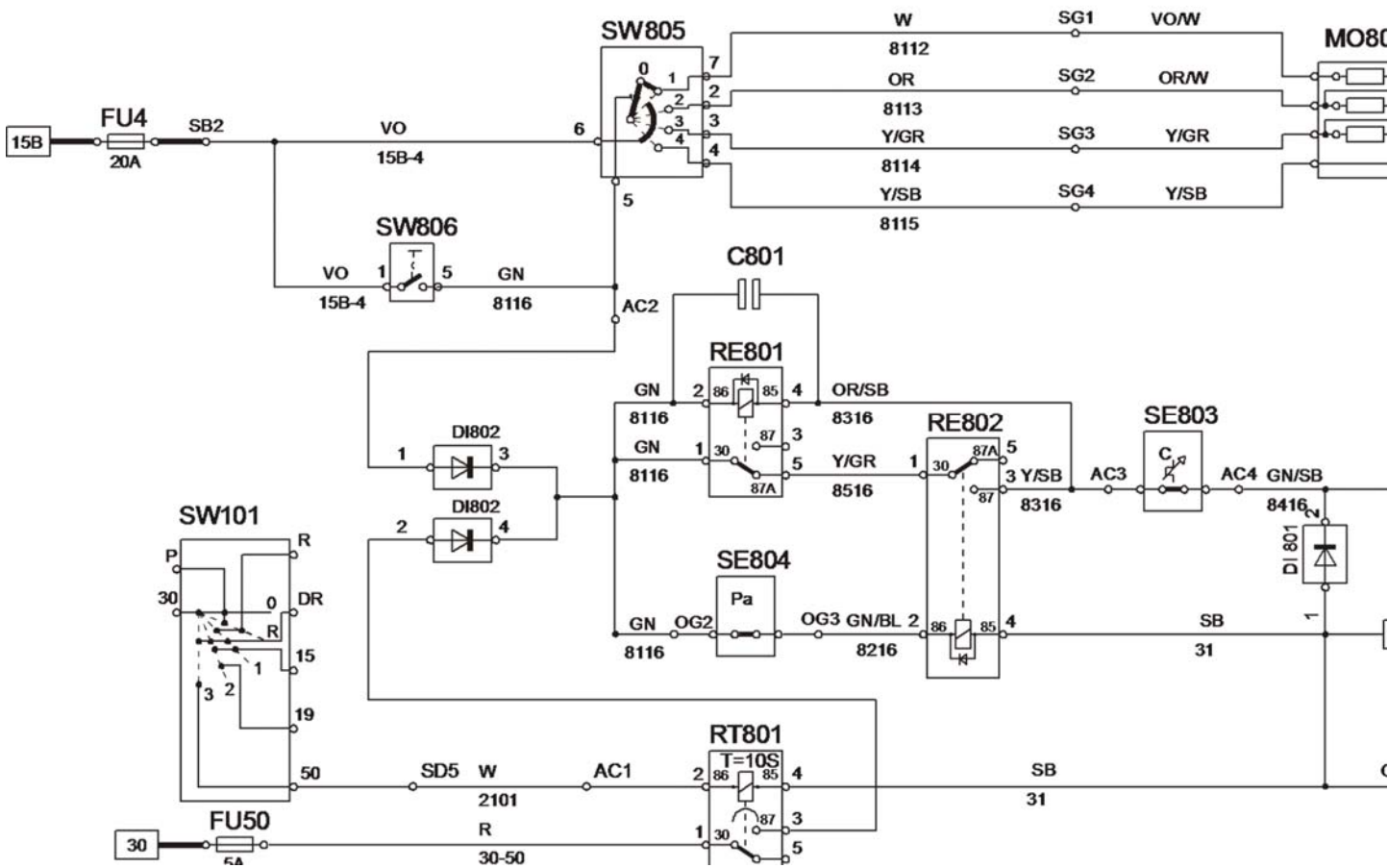


Figure 1

Wiring diagram 20.

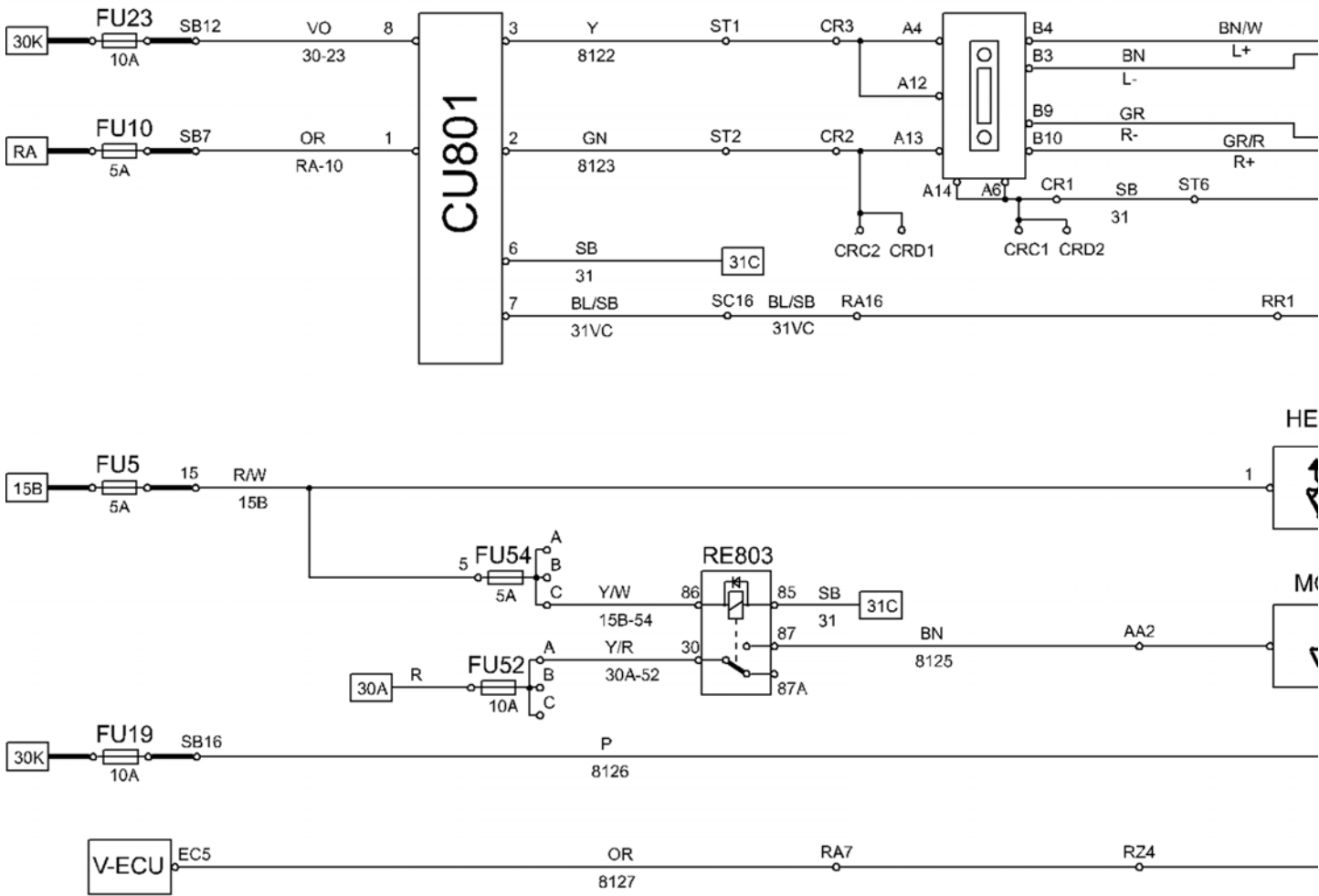


Figure 1

Wiring diagram 21.

<https://truckmanualshub.com/>

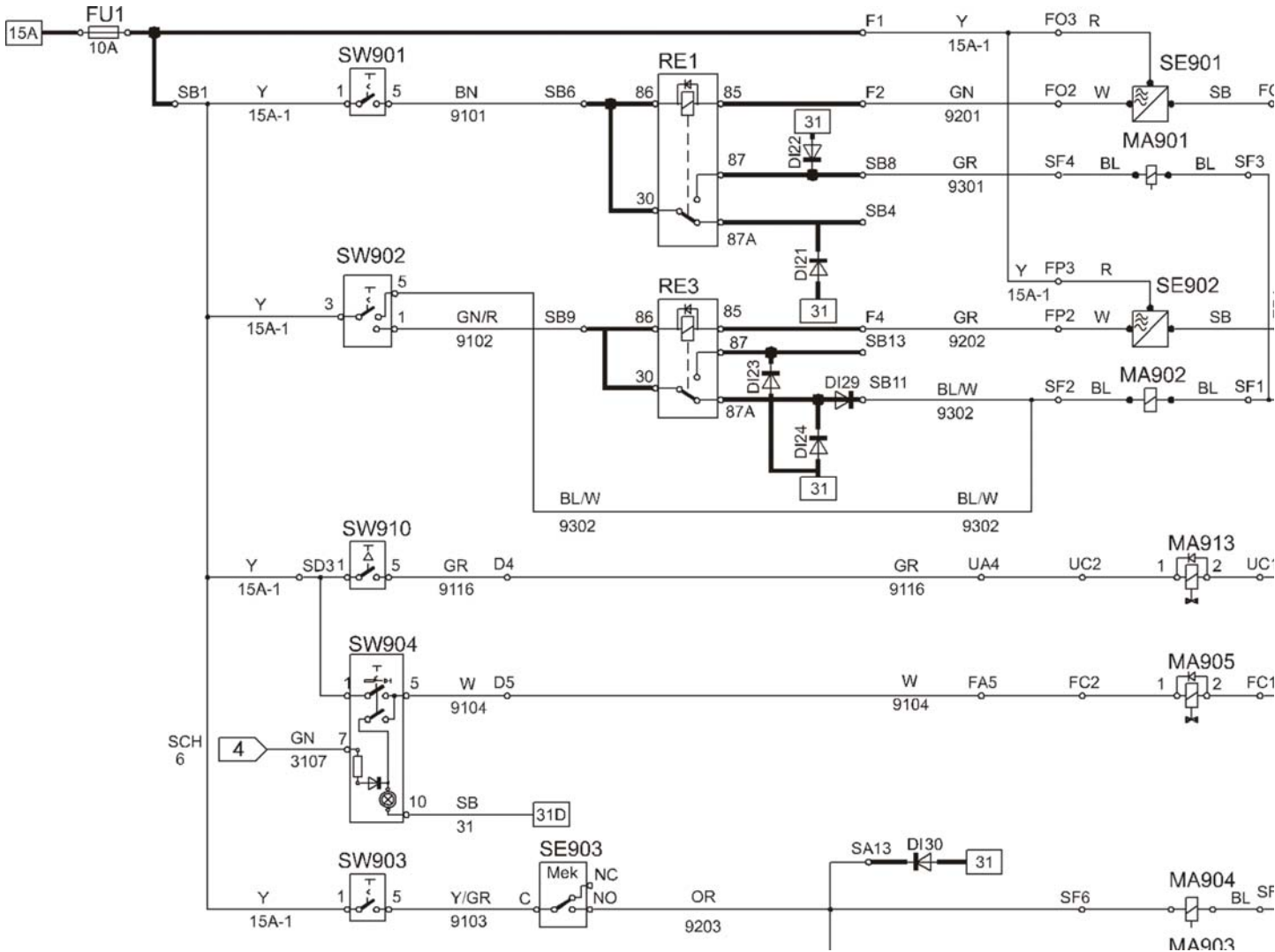


Figure 1

Wiring diagram 21C.

<https://truckmanualshub.com/>

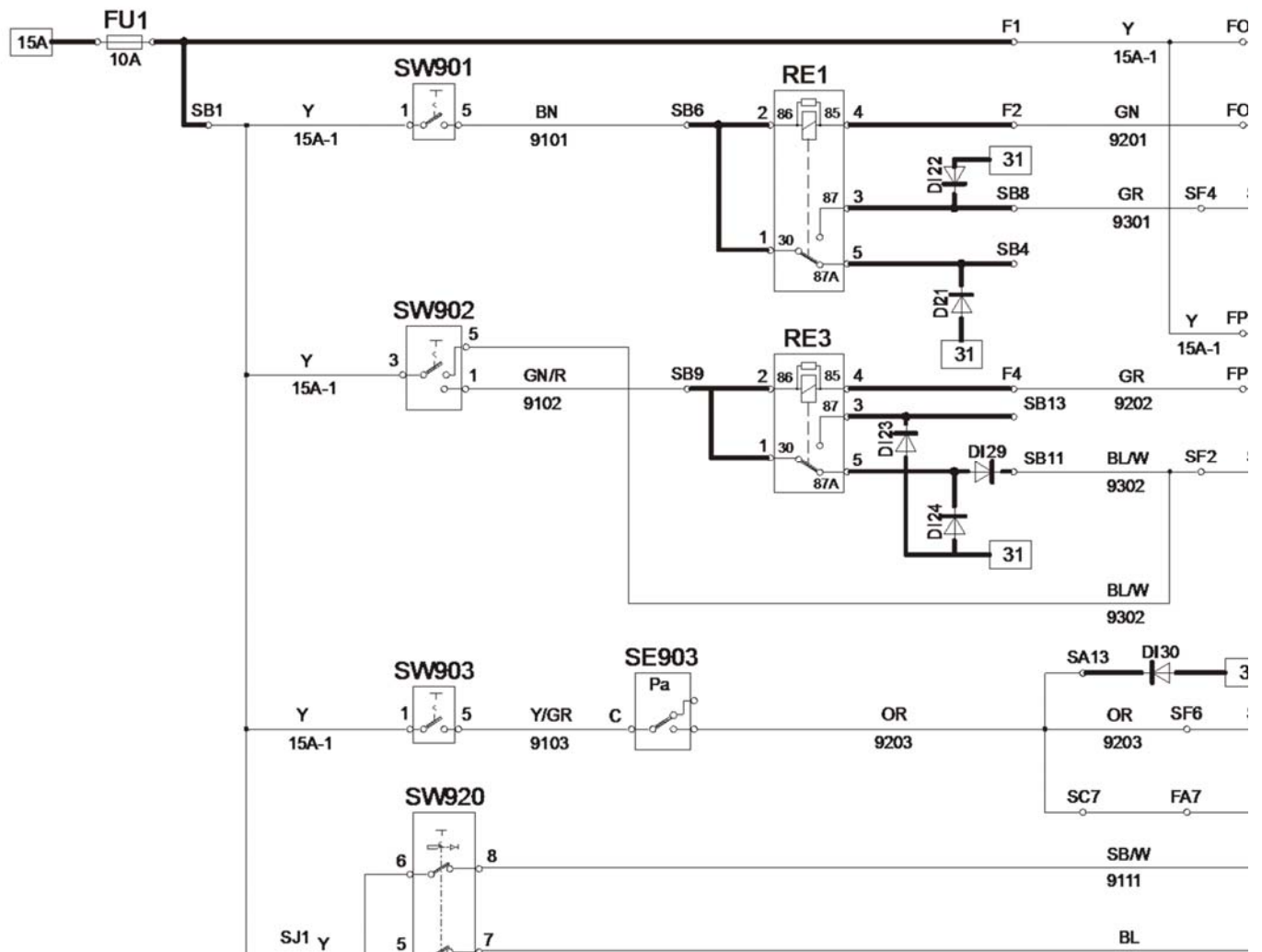


Figure 1

Wiring diagram 22.

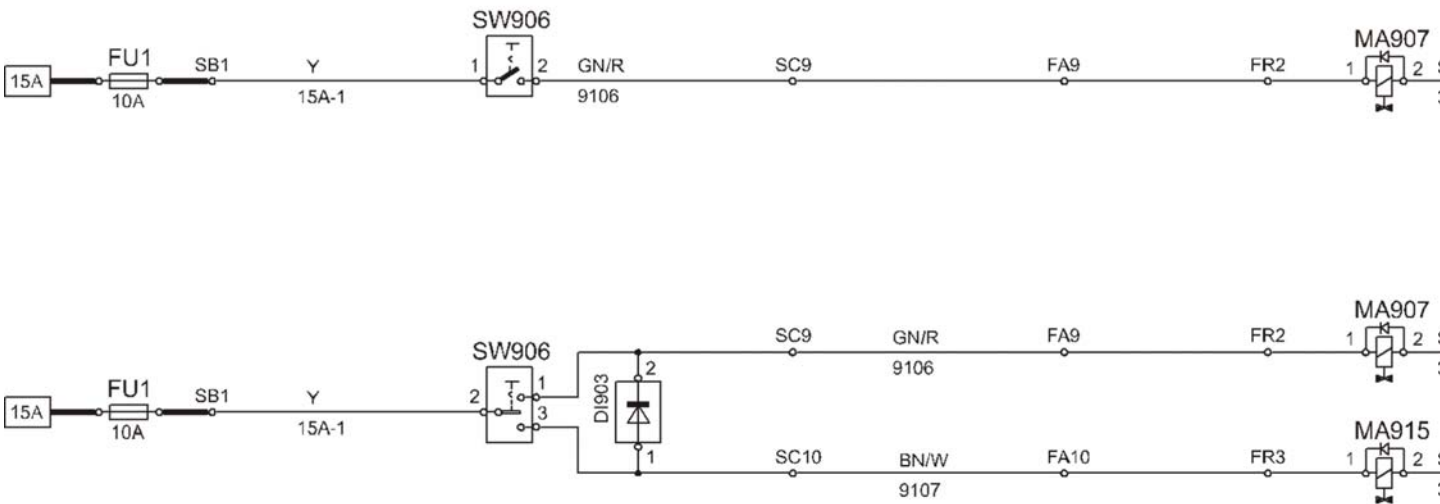


Figure 1

Wiring diagram 23.

<https://truckmanualshub.com/>

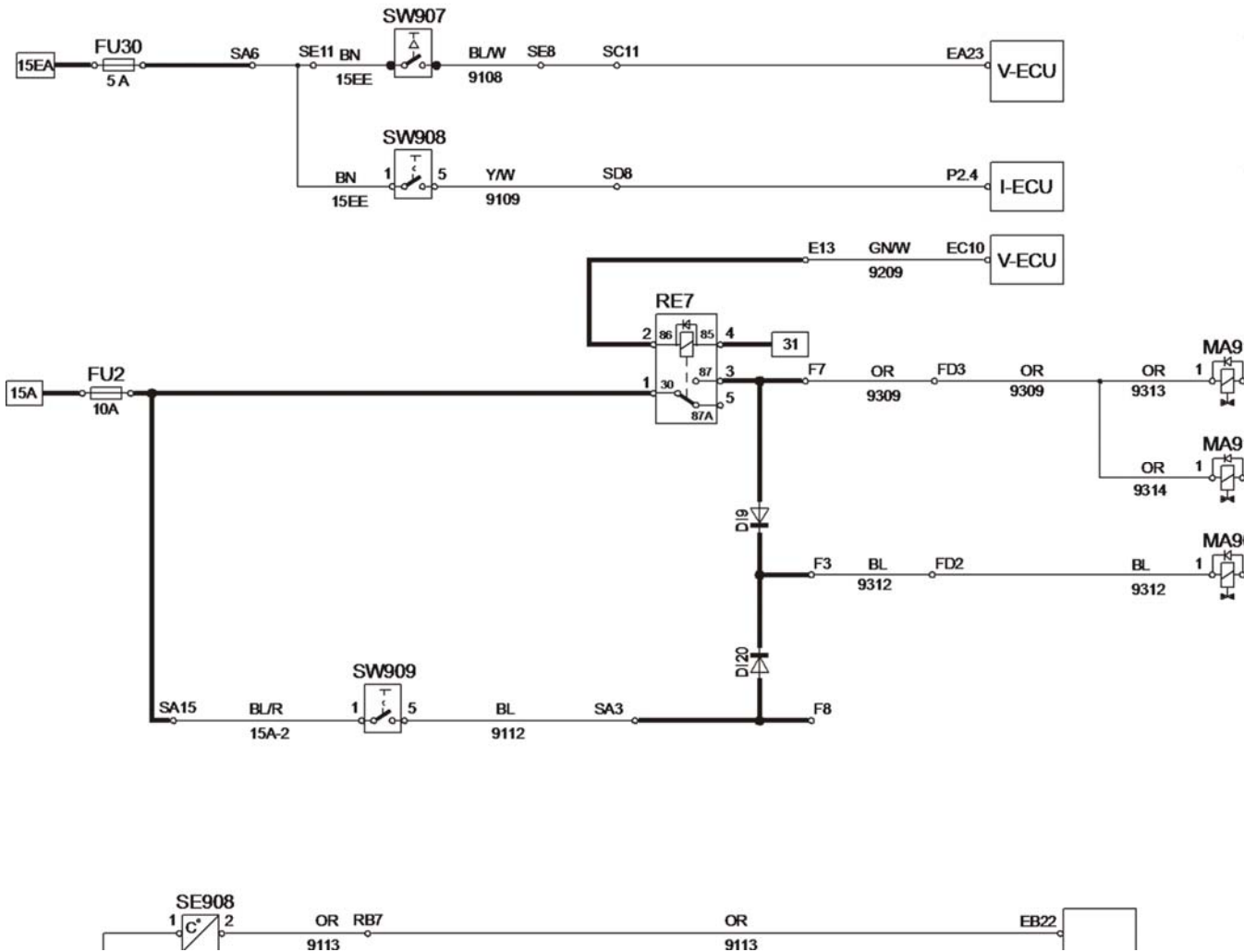


Figure 1

Wiring diagram 24.

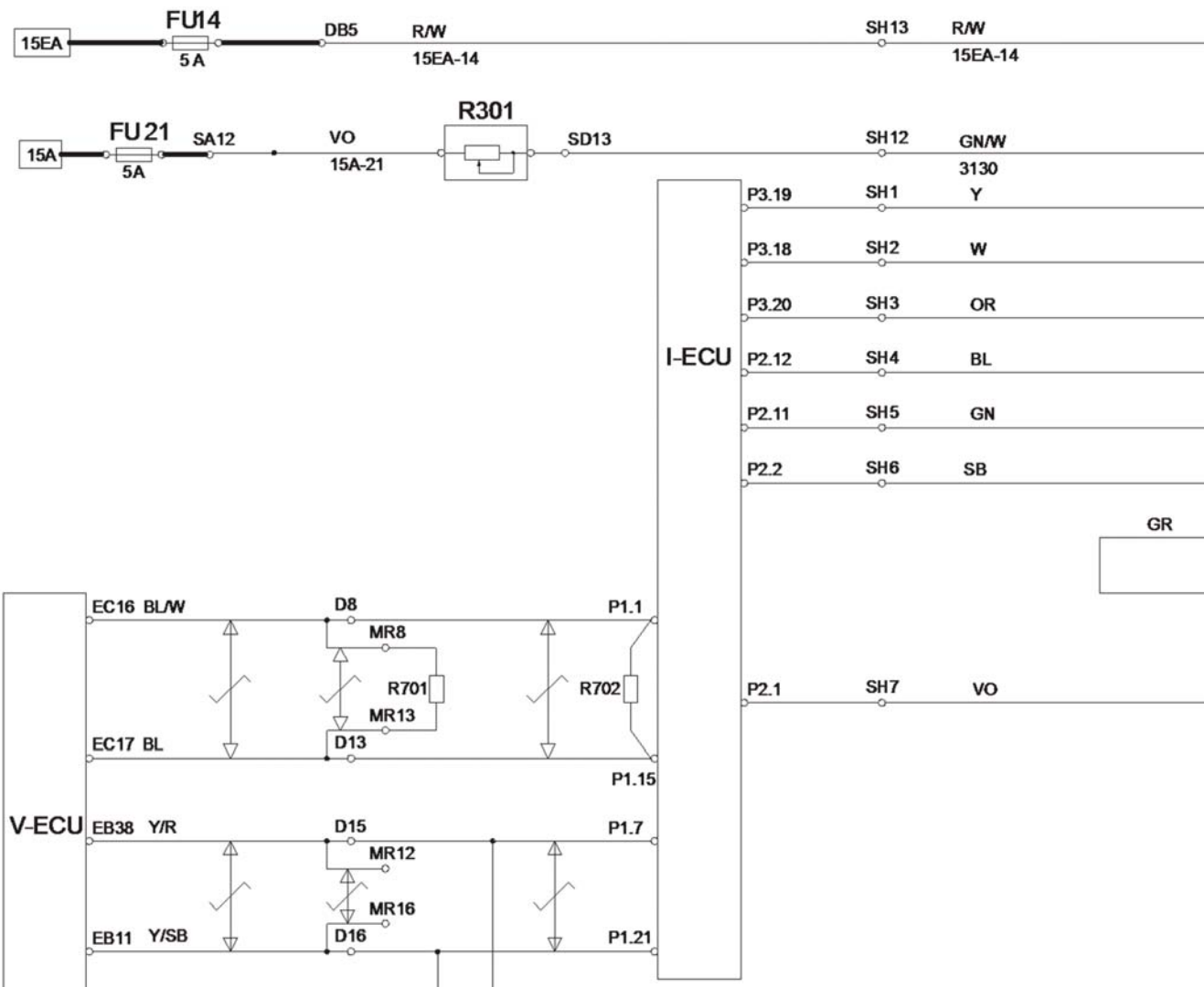


Figure 1

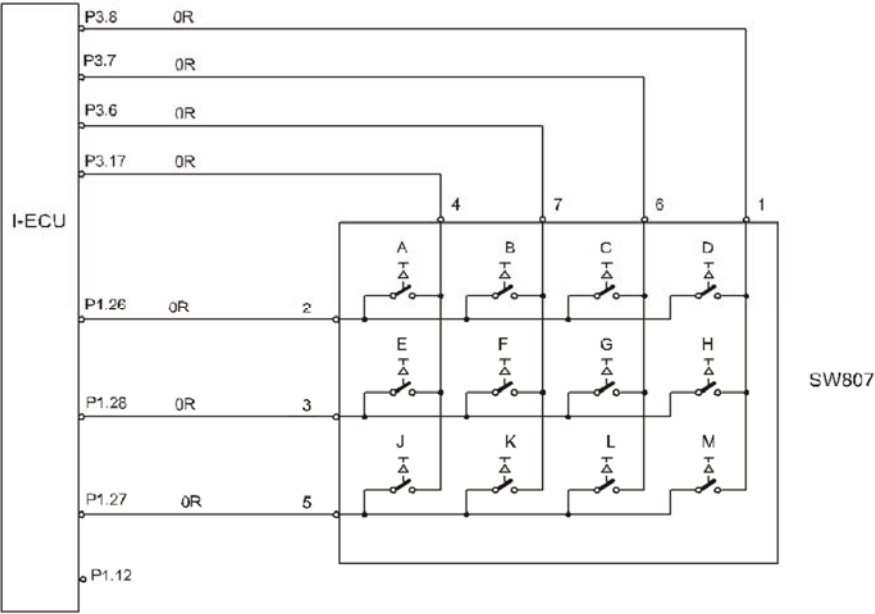


Figure 1

Wiring diagram 26.

<https://truckmanualshub.com/>

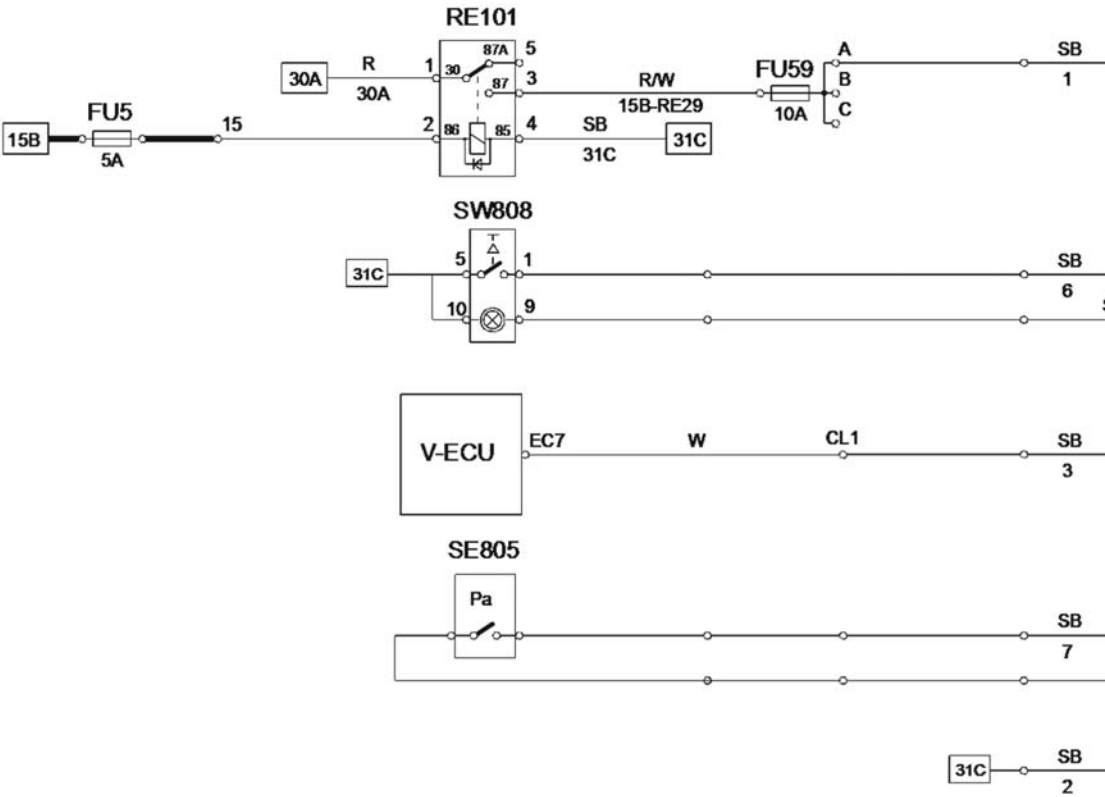


Figure 1

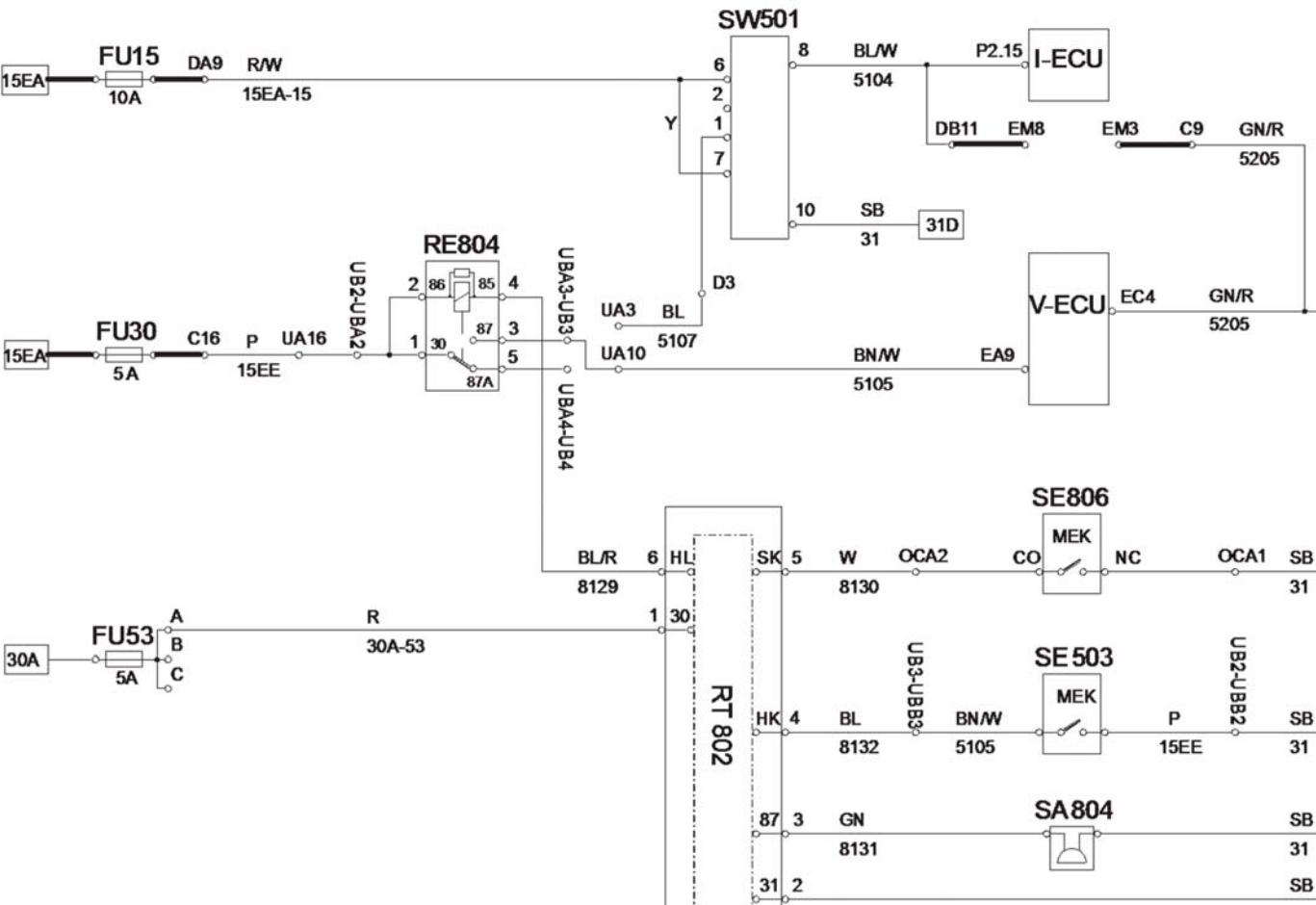


Figure 1

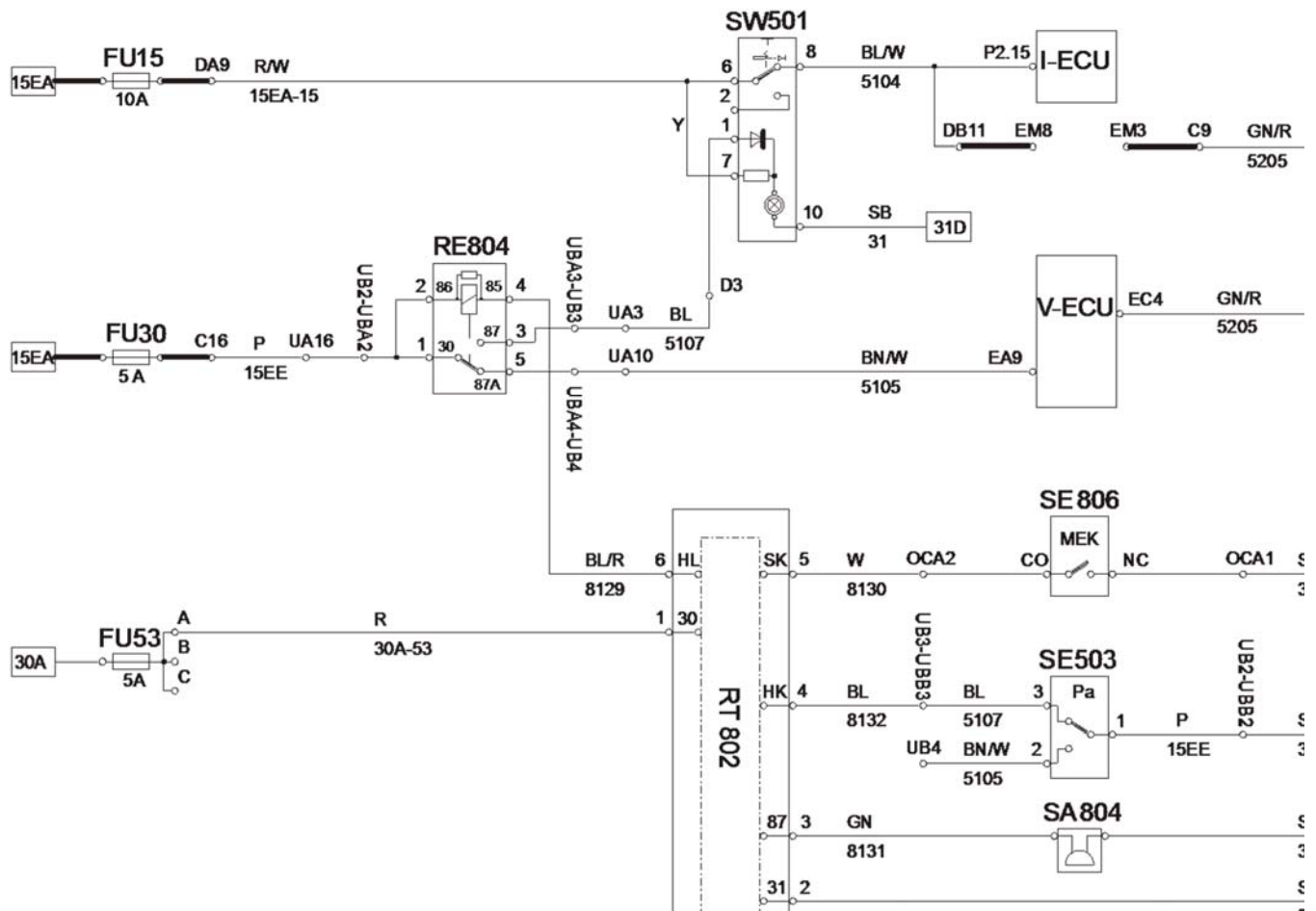


Figure 1

Wiring diagram 140.

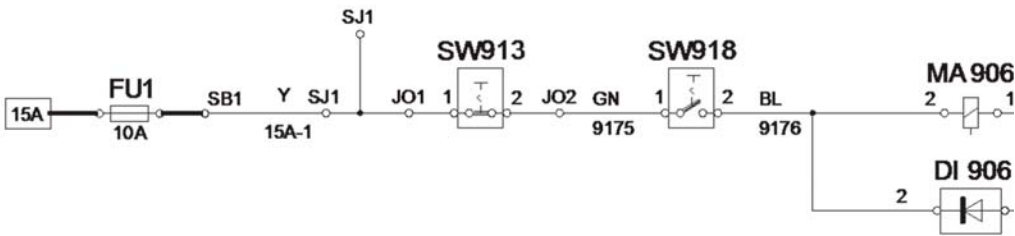


Figure 1

Wiring diagram 190.

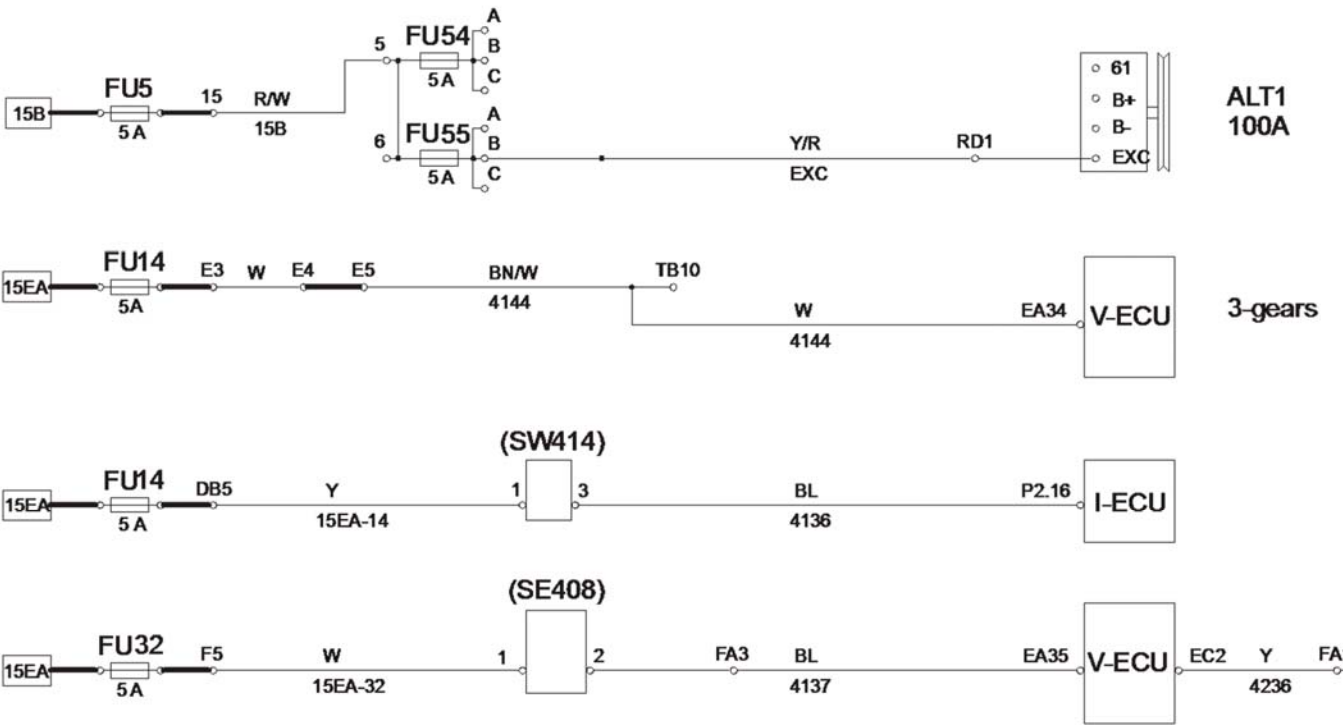


Figure 1

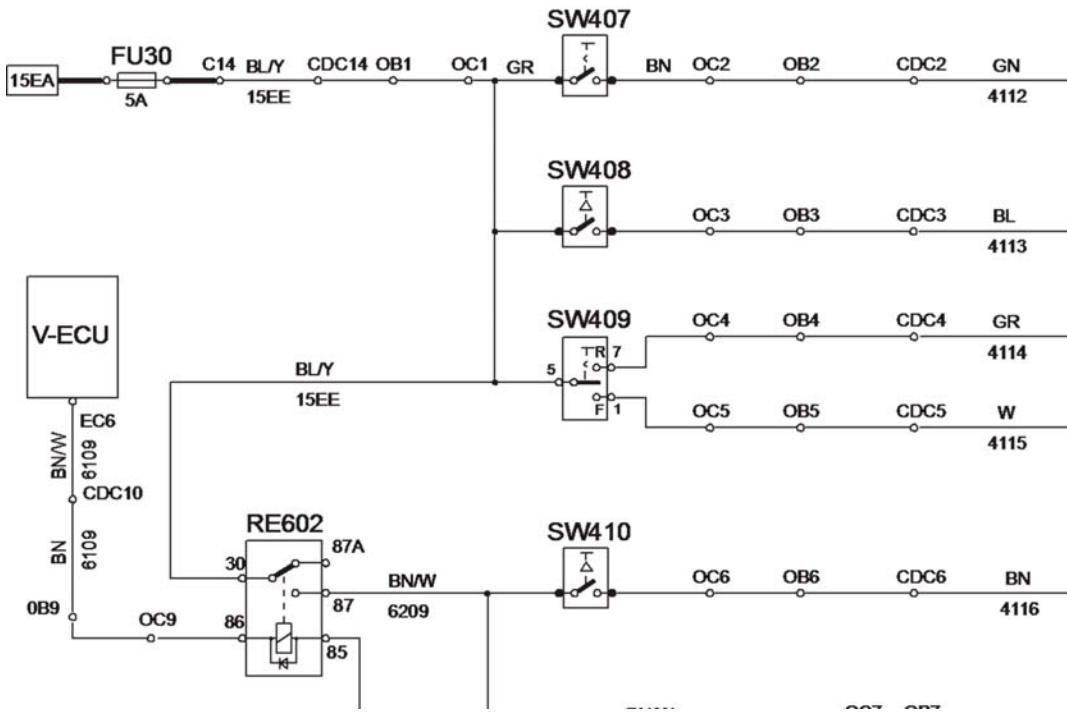


Figure 1
Wiring diagram 17, CDC lever steering

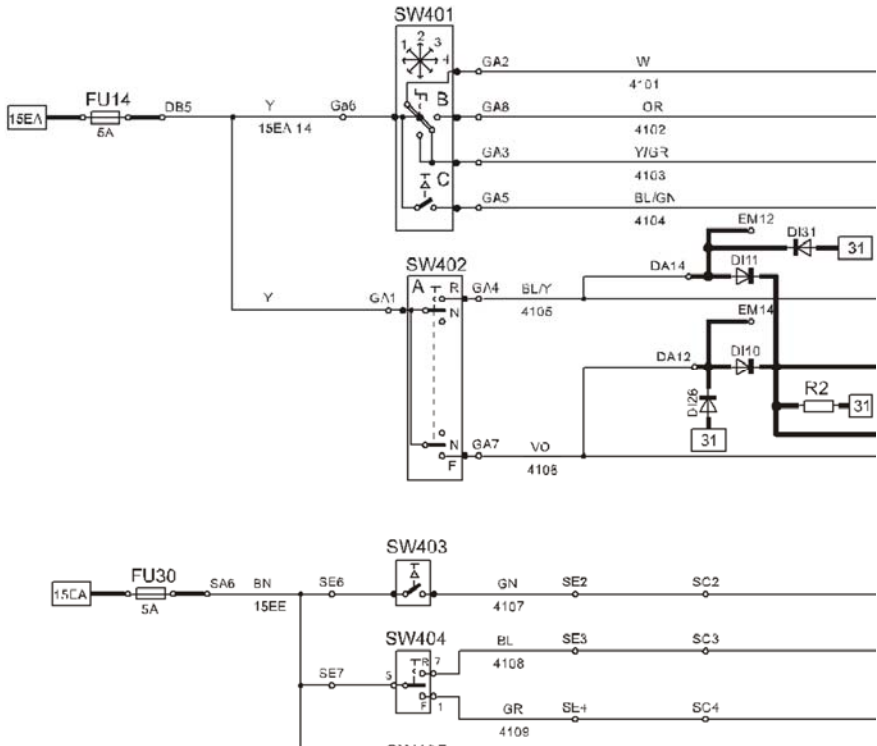


Figure 2
Wiring diagram 9, power transmission

REF NR REF NO	SATS NR KIT NO	DATUM/DATE ENHET/DEPT	PRODUKT/PRODUCT	PAGE
21 3 779 3622	11705491 (93792)	200211 CEE-43	L50D, L70D, L90D, L120D, L150D, L180D, L180D/HL, L220D, L220E	1/2

Working light, rear



WARNING!

Read all signs and instructions on the machine and the safety instructions in the operators manual, before you start working on the machine.

The installation instructions are based on the use of special tools, the E-tool and standard tools generally available on the market, and also on our operators manuals and service manuals.

The equipment should be installed by qualified personnel of an authorised workshop.

Volvo Construction Equipment Group disclaims all responsibility if tools and work methods other than those described in the instructions are used.

We consider that no special installation instructions are required for fitting this equipment.

To facilitate the fitting we enclose:

- Kit list
- Installation drawing

Kit list

Qty.	Part No.	Description
6	946671	Flange screw (M8 x 30)
2	971071	Nut (M10)
1	11039283	Work lamp
1	11039846	Work lamp
1	11104569	Attachment
1	11104576	Attachment
2	13960143	Washer
1	13967545	Fuse (10A)

REF NR REF NO	SATS NR KIT NO	DATUM/DATE ENHET/DEPT	PRODUKT/PRODUCT	PAGE
21 3 779 3622	11705491 (93792)	200211 CEE-43	L50D, L70D, L90D, L120D, L150D, L180D, L180D/HL, L220D, L220E	2/2

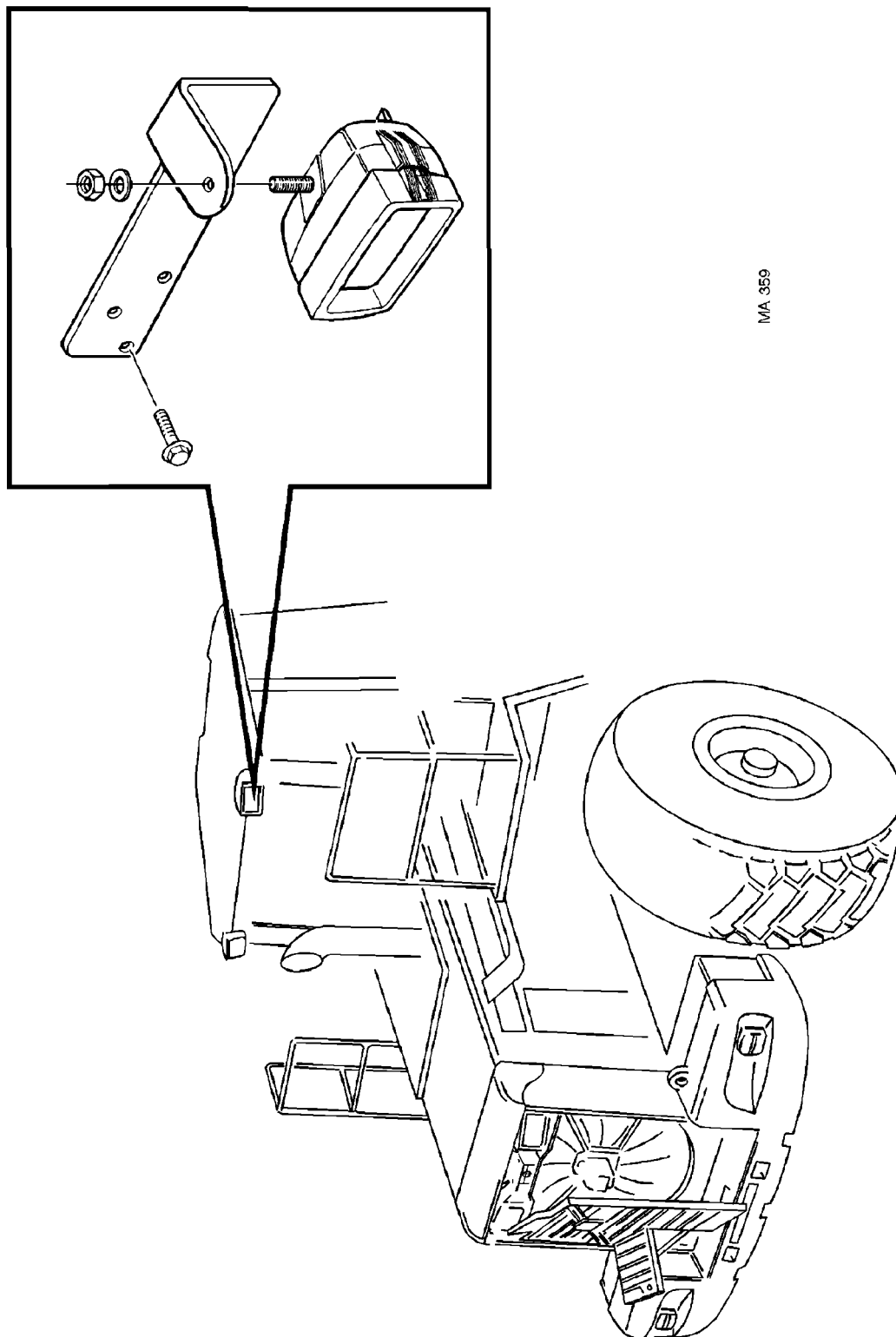


Fig. 1

REF NR REF NO	SATS NR KIT NO	DATUM/DATE ENHET/DEPT	PRODUKT/PRODUCT	PAGE
65 3 779 3635	11990486 (91847, 92453)	200402 CML-32	*	1/3

*) L50B, L50C, L50D, L70B, L70C, L70D, L90B, L90C, L90D, L120B, L120C
L120D, L150, L150C, L150D, L180, L180C, L180D/HL, L220D, L220E

Arbetsbelysning, främre



VARNING!

Läs alla skyltar och anvisningar som finns på maskinen och säkerhetsinstruktionerna i instruktionsboken innan Du börjar arbetet på maskinen.

Monteringsanvisningen är baserad på användning av specialverktyg, E-verktyg och i allmänna handeln tillgängliga standardverktyg samt instruktions- och verkstadshandböcker.

Utrustningen ska monteras av behörig person på auktoriserad verkstad.

Volvo Constuction Equipment Group fransäger sig allt ansvar om andra verktyg eller arbetsmetoder än de i anvisningen beskrivna kommer till användning.

För montering av denna utrustning anser vi, att någon speciell monteringsanvisning inte erfordras.

För underlättande av montering bifogar vi:

- Satslista
- Monteringsbild

Satslista

Antal	Art.nr.	Benämning	Anmärkning
2	941269	Plugg	
2	976945	Bricka (10,5 x 22 x 2)	
2	1095059	Skarvnippel	
2	1624477	Hylsisolator	
1	4786690	Relä	RE13 för L50B, RE5 för övriga maskiner
1	4803521	Strömställare	SW22
1	4803694	Lins	
1	11025735	Dekal	
2	11039486	Arbetslampa	
2	11170655	Ledningsmatta	
4	13960145	Bricka (13,5 x 34 x 3)	
1	13967545	Säkring (10A)	
2	13971098	Flänsmutter	

REF NR REF NO	SATS NR KIT NO	DATUM/DATE ENHET/DEPT	PRODUKT/PRODUCT	PAGE
65 3 779 3635	11990486 (91847, 92453)	200402 CML-32	*	2/3

*) L50B, L50C, L50D, L70B, L70C, L70D, L90B, L90C, L90D, L120B, L120C
L120D, L150, L150C, L150D, L180, L180C, L180D/HL, L220D, L220E

Working light, front



WARNING!

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The installation instructions are based on the use of special tools, the E-tool and standard tools generally available on the market, and also on our operators manuals and service manuals.

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- Installation drawing

Kit list

Qty.	Part No.	Description	Remark
2	941269	Plug	
2	976945	Washer (10,5 x 22 x 2)	
2	1095059	Joint nipple	
2	1624477	Connector socket	
1	4786690	Relay	RE13 for L50B, RE5 for other machines
1	4803521	Switch	SW22
1	4803694	Lens	
1	11025735	Decal	
2	11039846	Work lamp	
2	11170655	Harness	
4	13960145	Washer (13,5 x 34 x 3)	
1	13967545	Fuse (10A)	
2	13971098	Flange nut	

REF NR REF NO	SATS NR KIT NO	DATUM/DATE ENHET/DEPT	PRODUKT/PRODUCT	PAGE
65 3 779 3635	11990486 (91847, 92453)	200402 CML-32	*	2/2

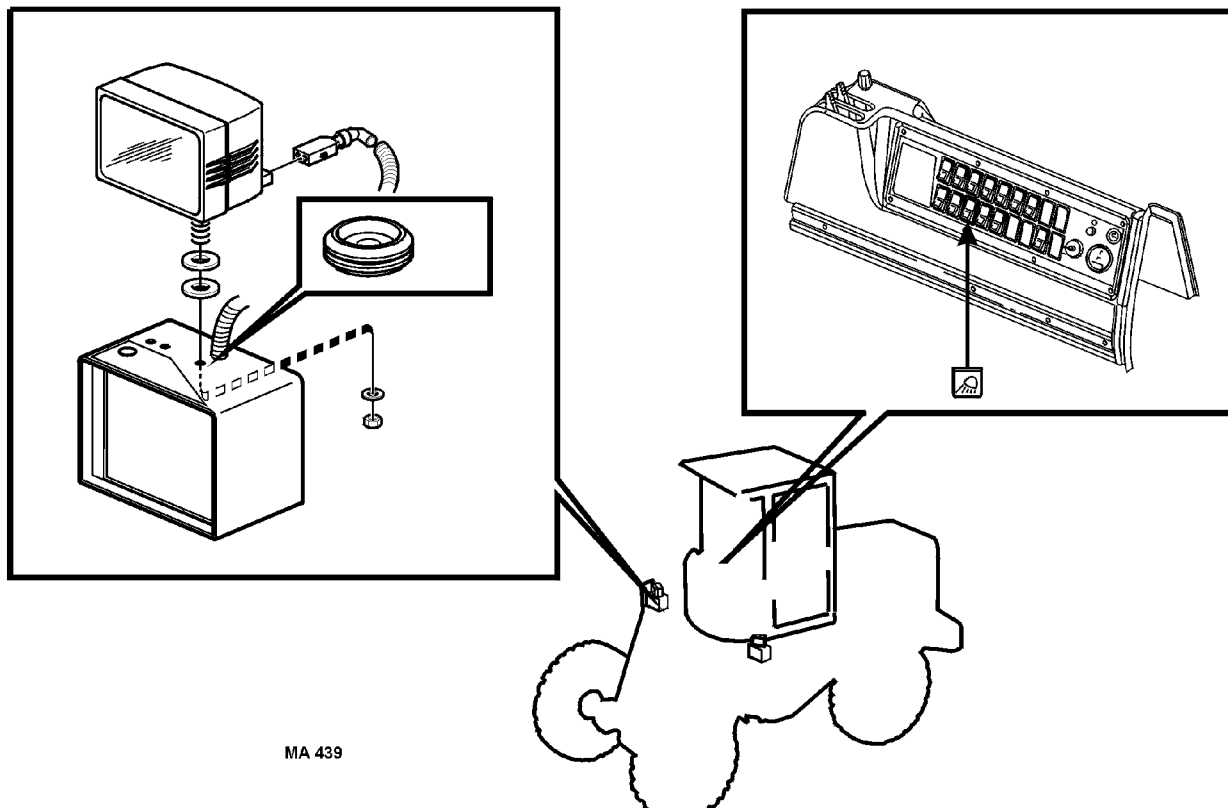


Fig. 1

OBS! Ta bort huvudstrålkastaren för att komma åt befintligt elkablage till arbetsstrålkastaren.

NOTE! The main headlamp has to be removed to get to the spotlight wiring.

Working hydraulic system, description <http://www.truckmanualshub.com/>

The working hydraulics hydraulic system mainly consists of an oil tank, hydraulic oil pumps, servo-controlled control valve, servo valve, solenoid valve(s), hydraulic oil cooler and control cylinders.

The pressure limiting valve limits the maximum pressure in the hydraulic system.

The oil tank, which is common to the brake system, steering system and the working hydraulics, is equipped with a return oil filter. The tank is ventilated through a separate breather filter.

The servo pump is a vane pump that is common to the servo system and the brake system. The pump is included in the hydraulic system double-pump and is mounted on the hydraulic transmission left power take-off. The servo system has a separate pressure limiting valve that restricts the pressure in the servo circuit.

The servo valve, which receives oil from the servo pump, has a closed centre. This means that the oil flows via a pressure limiting valve, without passing the servo valve, directly to the tank in neutral position. The servo valve consists of three sections, one for each hydraulic function. The servo valve is equipped with detent solenoids (electromagnets) for float, tilt and boom kickout positions as well as a microswitch for engaging the float position on the lift/lower function.

A pressure proportional to the lever stroke is sent out with the servo valve to the spool for each function. The pressure works against the return spring of the spool. The spool movement (i.e. opening to each cylinder/function and the movement speed of the function) thus becomes proportional to the lever stroke.

The pump for the working hydraulics is a vane pump that is included in the hydraulic system double-pump and is driven by the hydraulic transmission left power take-off.

The control valve, which receives oil directly from the working hydraulics pump, has an open centre. This means that the hydraulic oil passes through the control valve and directly to tank when the control valve spools are in neutral position. The control valve consists of three sections, 3rd hydraulic function, tilt function, and lift/lower function with float position.

Float position means that the plus and minus sides of the lift cylinders are connected through the return line. The minus side is directly connected and the plus side has a connection to the return line via the back-up valve. The spool in each section is controlled by the servo valve. Each section is equipped with a load-holding valve which ensures the position of the cylinders when a movement has been completed, and counteracts undesired movements when starting. Shock valves limit the pressure in the tilt and lift functions during shock loads.

The tilt and lower functions have anti-cavitation valves which ensure adequate oil in the cylinders.

The back-up valve pressurizes the return-oil during lowering and forward tilt, and contributes to improved oil filling.

The solenoid valves for control of different functions receive their oil from the hydraulic system servo circuit. The solenoid valves control engagement of the float position and differential lock. In addition, there are solenoids for optional functions.

The hydraulic oil cooler, located together with the engine's coolant radiator, is connected between the servo system pressure limiting valve and the return oil filter for the hydraulic oil tank.

Control cylinders consist of a tilt cylinder, two lift cylinders, and any cylinders for other equipment (optional equipment).

There may be a cylinder for hydraulic locking of the attachment bracket (optional equipment).

The boom is built of two arms attached to the upper part of the front frame. The arms are joined to form a single rigid construction, which also carries a linkage system for transferring tilt movement. The lift cylinders are well protected with high attachment points in the front frame. The placement of the tilt cylinder and the design of the linkage system allow for parallel movement and high breakout torque throughout the entire lifting range. These characteristics have given the loader linkage its name - TP-linkage.

T stands for torque and P stands for parallel. The bucket can be attached to a special attachment bracket or mounted directly to the boom.

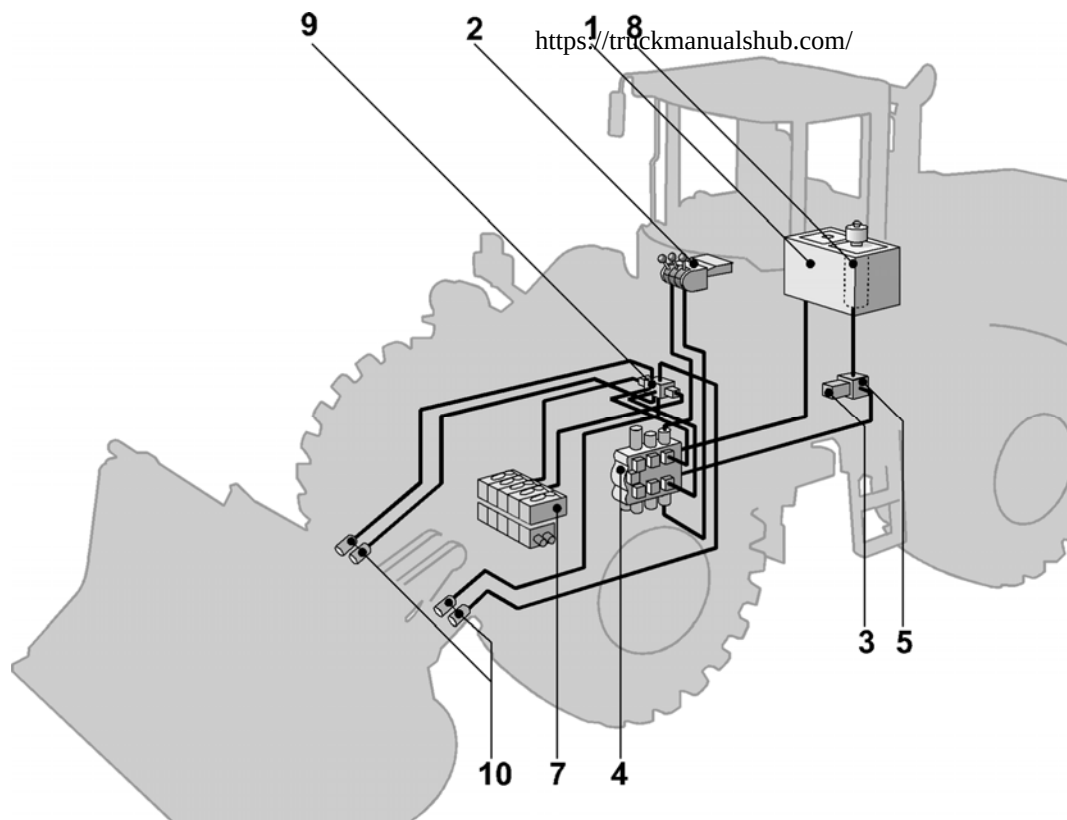
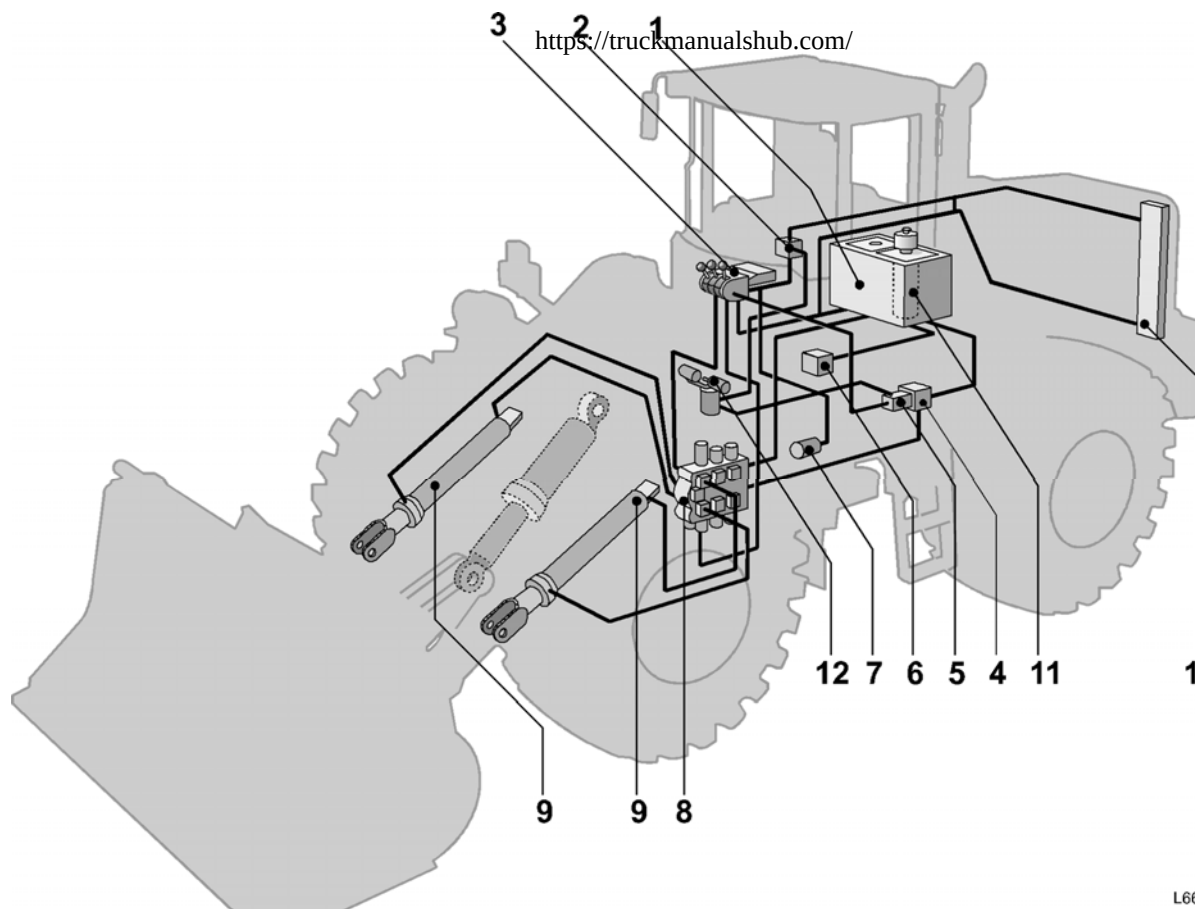


Figure 1
Hydraulic system, working hydraulics 3rd/4th function

1. Hydraulic oil tank
2. Servo valve
3. Hydraulic oil pump, brake and servo systems
4. Control valve
5. Hydraulic oil pump, working hydraulics
6. Oil cooler
7. Solenoid valves
8. Return oil filter
9. Shuttle valve 3rd/4th function
10. Pressure outlet 3rd/4th function



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Figure 2
Hydraulic system, lift

1. Hydraulic oil tank
2. Pressure limiting valve, servo pressure
3. Servo valve
4. Hydraulic oil pump, working hydraulics
5. Hydraulic oil pump, brake and servo systems
6. Steering pump
7. Pressure back-up, servo circuit
8. Control valve
9. Lift cylinder
10. Oil cooler
11. Return oil filter
12. Foot brake valve

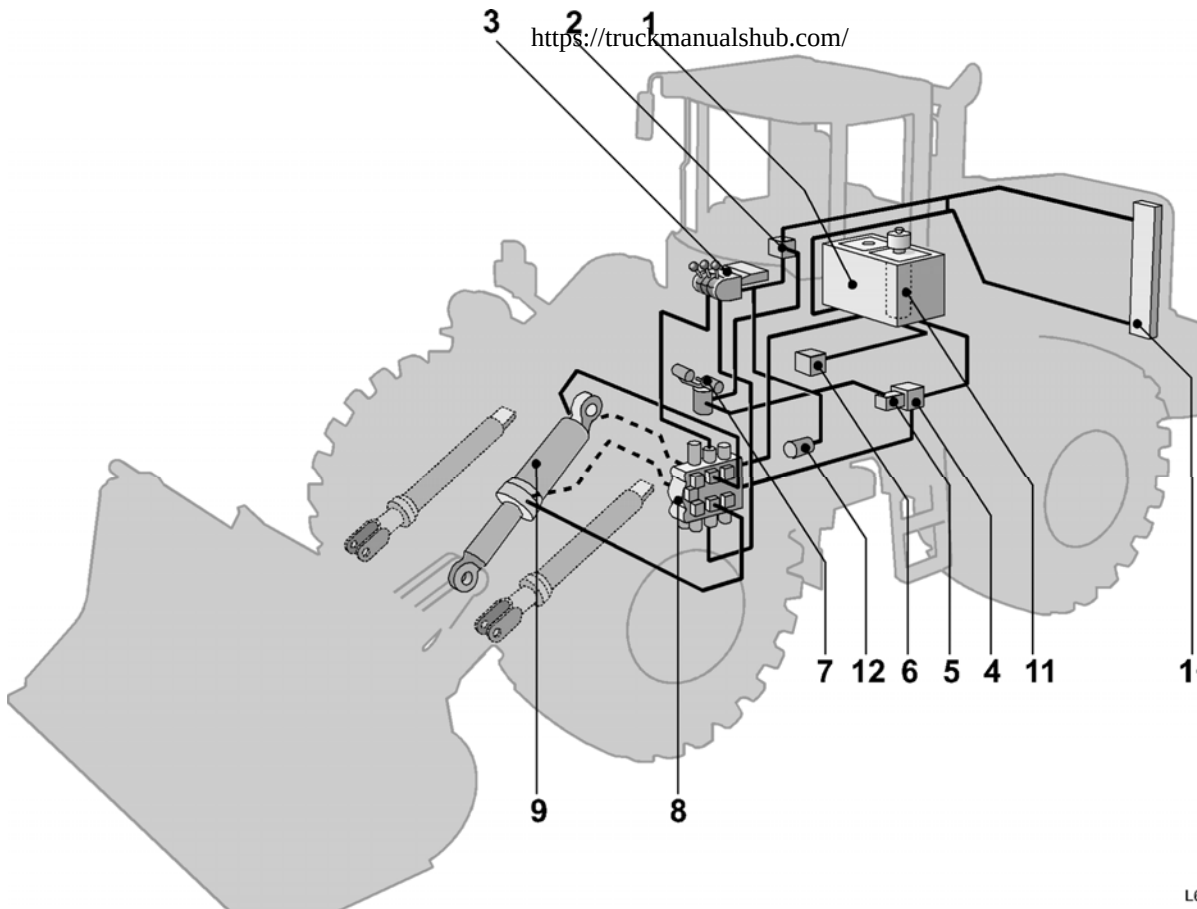


Figure 3
Hydraulic system, tilt

1. Hydraulic oil tank
2. Pressure limiting valve, servo pressure
3. Servo valve
4. Hydraulic oil pump, working hydraulics
5. Hydraulic oil pump, brake and servo systems
6. Steering pump
7. Foot brake valve
8. Control valve
9. Tilt cylinder
10. Oil cooler
11. Return oil filter
12. Pressure back-up, servo circuit

Working pressure, checking and adjusting appliedmanualshub.com/

Op nbr 91324

[999 3831 Support](#)

[11 666 020 Pressure gauge 0–25 MPa \(0–3625 psi\)](#)

[11 666 037 Hose](#)

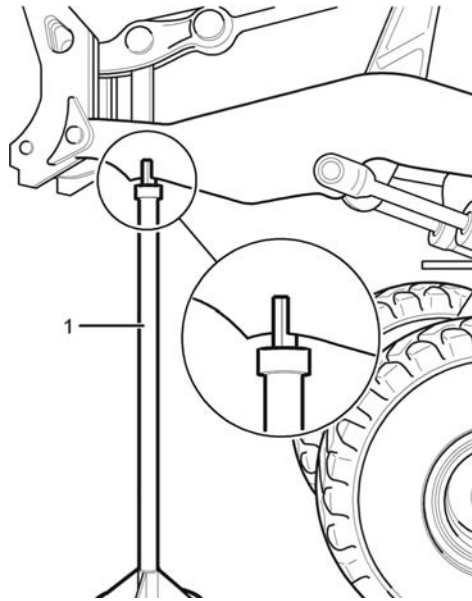


Figure 1
Securing boom

1. 999 3831

The following applies when checking:

Temperature: **Normal operating temperature**

Engine speed: **High idle speed**

NOTE!

Always use the support to secure the boom when working under a raised boom.

1. Remove the cover plate in the front frame.
2. Connect the pressure gauge to the pressure outlet.

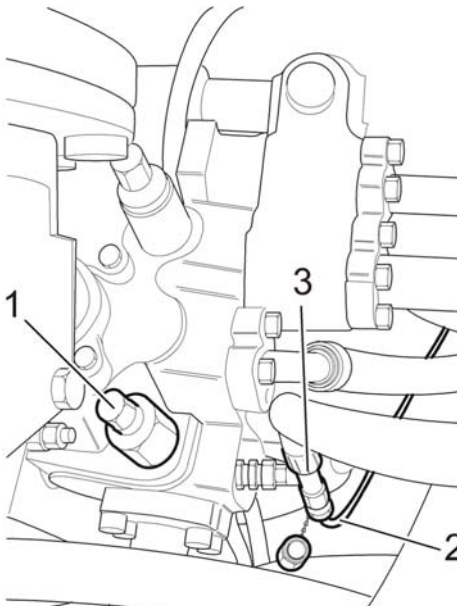


Figure 2

Control valve seen from underside of machine

<https://truckmanualshub.com/>

1. Pressure limiting valve, working pressure
2. 11 666 037 and 11 666 020
3. Pressure outlet for working pressure

Checking working pressure

3. Machines equipped with 3rd or 3rd/4th hydraulic function:

Disconnect the hydraulic hoses for any attachments that are connected to the 3rd or 3rd/4th hydraulic function, then slowly move the control lever to the end position and read off the pressure.

Machines not equipped with 3rd or 3rd/4th hydraulic function:

Check to make sure that the float position is not engaged and slowly move the control lever towards the lower position, then read off the pressure when the cylinders reach their end position.

Working pressure: **22.5 MPa (3263 psi)**

Adjusting working pressure

4. Adjustment is performed on the pressure limiting valve on the control valve, pos 1 [Invalid linktarget]. The pressure increases when the screw is screwed in. One full turn changes the pressure approx. 10 MPa (1450 psi).
5. Restore the machine to operating condition.