

VOLVO FM

Quick Reference



ENGINES – D13 AND D9

SPECIFICATION	D13A480 (SCR)	D13B (EGR)	D9B (SCR)
Horsepower range	480	360, 400, 440	300, 340, 380
Max power at 1400-1800 rpm	353 kW (480 hp)	265 kW (360 hp) 294 kW (400 hp) 324 kW (440 hp)	220/250/280 kW at 1600-1900 rpm
Max torque at 1000-1400 rpm	2400 Nm	1800 Nm / 2000 Nm / 2200 Nm	1500/1600/1700 Nm at 1150-1550 rpm
Displacement	12.8 litres	12.8 litres	9.4 litres
Stroke	158 mm	158 mm	138 mm
No. of cylinders	6	6	6
Bore	131 mm	131 mm	120 mm
Compression ratio	18.1 : 1	15.9 : 1	18.0 : 1
Economy rev range	1050-1600 rpm	1050-1600 rpm	1150-1550 rpm
Exhaust brake effect at 2300 rpm	300 kW	180 kW	140 kW (at 2400 rpm)
Engine brake effect – (VEB/VEB+/VEB7) at 2300 rpm	375 kW VEB+	340 kW VEB7	264 kW (at 2400 rpm) VEB
Oil filters	2 full-flow, 1 bypass	2 full-flow, 1 bypass	2 full-flow, 1 bypass
Oil-change volume, including filter	33 litres	33 litres	33 litres
Cooling system, total volume	38 litres	38 litres	36 litres
Volvo Engine Brake	VEB+	VEB7	VEB

POWER TRANSMISSION

I-SHIFT

Splitter and range-change transmission with automatic gear changing system.

V2412AT 12-speed, top gear is a direct ratio. Dimensioned for engine torque of 2400 Nm and a gross combination mass of 70 tonnes.

V2512AT 12-speed, top gear is a direct ratio. Dimensioned for engine torque of 2500 Nm and a gross combination mass of 70 tonnes. (Up to 130 tonnes in special applications).

I-Shift is available with the following program packages: Distribution & Construction, Long Haul Fuel & Economy and Heavy GCM Control.



■ I-Shift

I-SHIFT PROGRAM PACKAGES

FUNCTION	DEFINITION	DISTRIBUTION & CONSTRUCTION	LONG HAUL FUEL & ECONOMY	HEAVY GCM CONTROL
Smart Cruise Control	Optimises cruising speed and limits auxiliary brake effect when traffic conditions permit, for example on gentle downhill gradients.		o	o
EcoRoll	A freewheel function that saves fuel. EcoRoll is used when neither engine power nor engine braking is needed, for example on flat roads.		o	o
Launch Control	Works together with EBS and automatically activates brake functions that aid starting and close-quarter manoeuvring.	o	o	o
Enhanced Shift Strategy	Works together with ECS and EBS to select the right gear for smooth close-quarter manoeuvring or maximum auxiliary brake effect.	o	o	o
Heavy GCM Control	Optimises gear selection for high gross combination mass (60 plus tonnes).			o
OPTIONS FOR PROGRAM PACKAGE				
Gear selection adjustment in Auto including Kickdown	Makes it possible to select gears in Automatic mode. There is also a Kickdown function for maximum acceleration.	o	o	o
Enhanced PTO Functions*	Additional functions that assist power takeoff operation, for example limiting engine revs.	o	o	o

*Functions are determined and selected in consultation with your local dealer.

POWERTRONIC

Fully automated planetary transmission.

V2006PT 6-speed and dimensioned for engine torque of 2000 Nm.

V2506PT 6-speed and dimensioned for engine torque of 2500 Nm.

MANUAL GEARBOXES

V2214B 14-speed splitter and range-change gearbox. 4 reverse gears. Top gear is a direct ratio. Max. torque is 2200 Nm.

V2514B 14-speed splitter and range-change gearbox. 4 reverse gears. Top gear is a direct ratio. Max. torque is 2500 Nm.

The gearboxes are factory-prepared for installation of a compact retarder, power take-off, emergency power-steering pump, oil cooler and oil temperature monitoring.

CLUTCH

CS43B-O Drag-type single-disc clutch.

CD40B-O Drag-type twin-disc clutch.

The disc linings in the O variants are free from asbestos and lead (O – Organic).

POWER TAKE-OFFS FOR MANUAL GEARBOXES AND I-SHIFT

For powering of ancillary equipment, there is a wide range of clutch-independent and clutch-dependent power take-offs.

CLUTCH-INDEPENDENT POWER TAKE-OFF

PTOENG-R Direct-mounted at the back of the engine for direct drive of a hydraulic pump.

PTPT-D/F Intended for Powertronic and driven directly from engine via the torque converter housing. DIN coupling or connecting flange coupling.

PTO-FLY The PTO is fitted between the engine and gearbox and is driven via the engine's crankshaft end.

CLUTCH-DEPENDENT POWER TAKE-OFF

PTR-FL/FH Linked by a connecting flange, choice of low-speed or high-speed.

PTR-D Low-speed with DIN coupling for direct connection of a hydraulic pump.

PTR-DM Medium-speed with DIN coupling for direct connection of a hydraulic pump.

PTRD-F High-speed with connection flange coupling for direct-mounted propshaft.

PTRD-D High-speed with dual drive. DIN coupling front and rear for direct connection of hydraulic pumps.

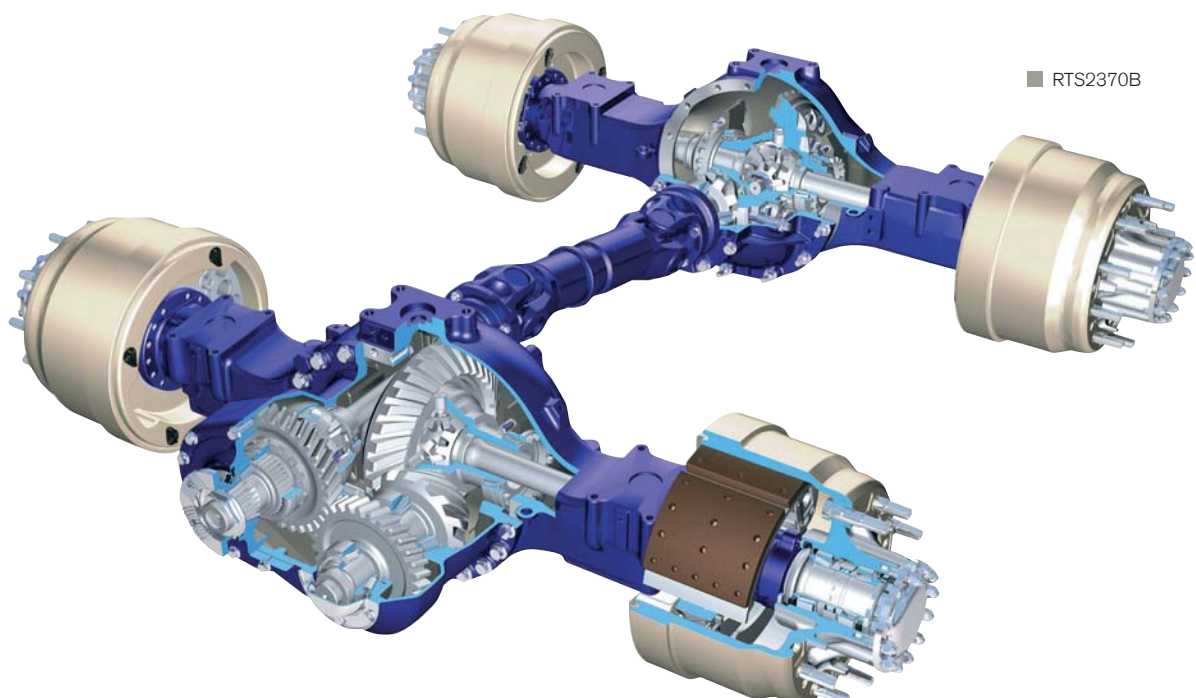
PTRD-D1 High-speed with dual drive. Connecting flange coupling rear and DIN coupling front.

PTRD-D2 High-speed with dual drive rear and single drive front. Two connecting flange couplings rear and one DIN coupling front.

REAR AXLES

All rear axles have maintenance free wheel bearings.

		RATIOS		MAX TORQUE	MAX AXLE/BOGIE PRESSURE	MAX GROSS COMBINATION MASS
RS1356SV	Solo axle with single reduction of hypoid type.	2.50 : 1 3.10 : 1 3.67 : 1	2.79 : 1 3.44 : 1	2400/2800 Nm	13 tonne (axle)	56/44 tonne
RTS2370B	Tandem axle with single reduction gears of hypoid type.	2.43 : 1 2.83 : 1 3.40 : 1 4.13 : 1 5.14 : 1	2.57 : 1 3.09 : 1 3.78 : 1 4.50 : 1	3100 Nm	23 tonne (bogie)	70 tonne
RTH2610B	Tandem axle with gears of hypoid type and hub reductions.	3.34 : 1 3.64 : 1 4.65 : 1	3.48 : 1 4.18 : 1 5.45 : 1	3100 Nm	26 tonne (bogie)	100 tonne



CAB

SPECIFICATIONS	DAY CAB (L1EH1)	SLEEPER (L2H1)	GLOBETROTTER (L2H2)
Bed dimensions, lower	n/a	700 x 2000 x 160 mm	700 x 2000 x 160 mm
Bed dimensions, upper	n/a	600 x 1900 x 100 mm	700 x 1900 x 80 mm
Interior height (floor to roof)	1570 mm	1570 mm	1960 mm
Interior height (on the engine compartment)	1140 mm	1400 mm	1530 mm
Door opening angle	90°	90°	90°
Cab tilt angle	68°	68°	68°
Cab tilt mechanism	Single Ram	Single Ram	Single Ram

Four-point cab suspension: Coil springs with shock absorbers and rear air suspension, or all round air suspension.

Airflow panels: Comprehensive airflow packages for roof and sides. Available in high or low configurations.

Colours: Available in approximately 350 variants.

Driver's seat: The seat's total fore-aft adjustment scope is 190mm and 100mm vertically. The driver's seat is equipped as standard with a head restraint, reclining and adjustable backrest, height and fore aft adjustment, adjustable lumbar support and seat angle adjustment.

Passenger seat: All passenger seats are fitted as standard with a head restraint.

Bench seat: Room for two passengers and is fitted with three-point seat belts. The seat base has an inside storage compartment.

Steering wheel: 450mm diameter. Steering wheel height adjustment is 90mm and angle adjustment is 28 degrees.

Climate system: There is a choice of two climate systems to cover a wide variety of needs: Air conditioning with manual control. (CU-MCC). Air conditioning with automatic temperature control. (CU-ECC).

Audio systems: Sound System Plus: Radio, CD player, controls in the steering wheel and 8 loudspeakers.

Volvo's FM is available in three cab variations – the standard day and sleeper cabs and the optional Globetrotter.

■ Day cab (L1EH1)



■ Sleeper cab (L2H1)



■ Globetrotter cab (L2H2)



AERO KIT

■ Sleeper cab with underrun protection, air intake, airflow package



CHASSIS

FRONT AXLES

FA-LOW: for low front axle and medium chassis heights available in 6x4 and 8x4 configurations up to 13 tonnes.

FA-HIGH: for high front axle and high chassis heights available in 6x4 and 8x4 configurations up to 13 tonnes.

FRONT AXLE LOADS

Tractors & Rigids	6.7 tonnes
Rigids – dual front axles: 8x4	13 tonnes

REAR SUSPENSION

RAD-A4: 4x2 air suspension, single reduction	13 tonnes
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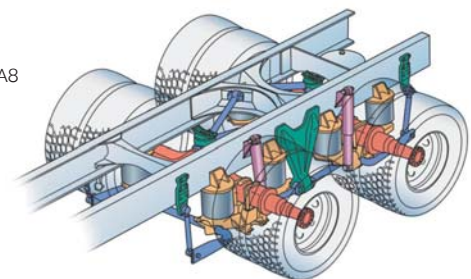
BOGIE	CONFIGURATION	SUSPENSION	BOGIE TYPE	BOGIE PRESSURE
RADD-BR: for single reduction and hub reduction	6x4 8x4	Leaf springs	Parabolic	17/19/21 tonnes
RADD-TR1: for hub reduction	6x4 8x4	Leaf springs	Conventional	23/26 tonnes
RADD-A8: for single reduction and hub reduction	6x4 8x4	Air suspension		17/21 tonnes

CHASSIS HEIGHT

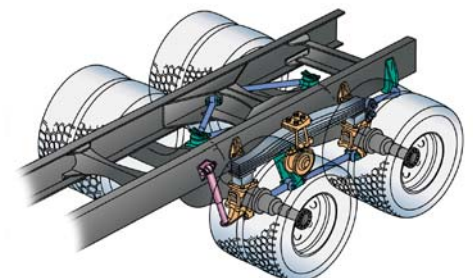
High	Approx 1080mm
Medium	Approx 980mm

Tractor:	4x2 and 6x4
Rigid:	4x2, 6x4, and 8x4

■ RADD-A8



■ RADD-BR



Fuel Tanks

Aluminium tanks, capacity from 415 to 690 litres.

AdBlue Tanks

Volumes: 60 or 140 litres.

Electrical System

2 batteries with battery capacity 225 Ah, alternators available with 80A and 110A capacity with 120A as an option on the 13L engines. ADR-encapsulated wiring.

Electrical Distribution Unit

An electrical distribution unit under the instrument panel houses all the fuses and relays. The electrical distribution unit for the body is located at foot level in front of the passenger seat.

BRAKES

Volvo EBS (Electronically controlled Brake System) disc brakes are available with the Standard and Medium program packages. Semi-trailers also come with a Trailer package.

EBS PROGRAM PACKAGE

FUNCTION	EBS STD	EBS MED	TRAILER
Anti-lock Braking System	o	o	
Brake Blending	o	o	
Brake Temperature Warning	o	o	
Diagnosis via TEA	o	o	
Diff Lock Syncro	o	o	
External Brake Demand	o	o	
Lining Wear Control	o	o	
Lining Wear Sensing	o	o	
Traction Control System	o	o	
Brake Assistant		o	
Diff Lock Control		o	
Drag Torque Control		o	
EBS Status Recorder		o	
Hill Start Aid		o	
Lining Wear Analysis		o	
Poor Brake Performance Warning	o		
Wheel Brake Monitoring		o	
Coupling Force Control			o
Trailer Brake			o

Anti-Lock Braking System (ABS):

Prevents the brakes from locking during application.

Brake Blending: Auxiliary brakes that are activated to support the wheel brakes.

Brake Temperature Warning: Alerts the driver to the temperature of the brakes.

Diagnosis via TEA: Diagnosis via the TEA on-board electronic system.

Diff Lock Syncro: The speed of the driven wheels is synchronised prior to engagement of the differential lock.

External Brake Demand (EBD): External brake control via other systems.

Lining Wear Control (LWC): System to minimise brake wear, evens out wear between the different axles' brake linings.

Lining Wear Sensing (LWS): Indicates when about 20% of the brake lining remains.

Traction Control System (TCS):

Anti-spin and synchronising effect – distributes traction between the driven wheels.

Brake Assistant: Panic braking assistance – increases brake pressure to cut the stopping distance.

Diff Lock Control (DLC): Automatic differential lock engagement at low speeds.

Drag Torque Control: Prevents the driven wheels from locking on a slippery surface when the accelerator pedal is released.

EBS Status Recorder: EBS status monitoring via TEA and VCADS Pro.

Hill Start Aid: The brakes are released only when sufficient engine torque has built up to get the truck off to a safe and secure start.

Poor Brake Performance Warning: Warns if retardation is too low in relation to pedal pressure.

Wheel Brake Monitoring: Continuously checks brake function.

Electronically controlled Brake System (EBS): Electronically controlled disc brakes.

Coupling Force Control (CFC):

Automatic brake force allocation between tractor and trailer.

Trailer Brake: Makes it possible to carry out a safety check when switching trailers.

ELECTRONICS

Volvo TEA (Truck Electronic Architecture) consists of control units integrated into a data-link network. The vehicle control unit, engine control module, instrument control unit and lighting control unit are always included in the electronic system. So too are the information display and diagnostic socket included as standard. The other control units vary depending on the individual truck's specification and market.

VOLVO TEA CONTROL UNITS

CONTROL UNIT	DEFINITION	TRANSLATION
ABS	Anti-lock Braking System	ABS-brakes*
Audio		Sound system
BBM	Body Builder Module	–
Dynafleet		Dynafleet
EBS	Electronically controlled Brake System	EBS-brakes*
ECC	Electronic Climate Control	Air conditioning
ECS	Electronic Controlled Suspension	Air suspension
EECU	Engine Electronic Control Unit	Engine
GSECU	Gear Selector Electronic Control Unit	Gear selector
ICU	Immobilizer Control Unit	Immobilizer / starter inhibitor
Instrument	Instrument Control Unit	
LCM	Light Control Module	Lighting
Phone		Mobile phone
RECU	Retarder Electronic Control Unit	Retarder
SRS	Supplemental Restraint System	Airbag
SWM	Steering Wheel Module	Module controls in steering
Tachograph		–
TECU	Transmission Electronic Control Unit	Transmission
VCADS	Volvo Computer Aided Diagnostic System	Diagnostic tools
VECU	Vehicle Electronic Control Unit	–

*The ABS and EBS control units are not available together. The truck is fitted with either ABS or EBS brakes.

EXPLANATION OF CONTROL UNITS

ABS handles control of anti-lock drum brakes.

AECU for Volvo Anti-Theft System – A comprehensive security package to protect against break-in, theft and attack.

Audio – Sound system. Adjusts for instance the volume in response to noise levels inside the cab, engine revs etc.

BBM controls to do with the bodywork, for instance advanced power take-off operation.

Dynafleet is a system for transport planning that features electronic facilities for communication, monitoring vehicle position and vehicle and driver follow-up.

EBS regulates the electronically controlled disc brakes.

ECC controls the advanced air conditioning system.

ECS regulates the electronically controlled air suspension in trucks with all-round and rear-only air suspension.

EECU monitors engine functions, ensuring optimum fuel injection and engine revs to suit the current operating conditions.

GSECU receives information about the selected gear and driving program for I-Shift and Powertronic transmissions.

Instrument converts incoming signals from control units and sensors into driver information.

LCM monitors the truck's various lamps and includes facilities such as overcurrent protection and bulb failure sensor.

Phone – GSM phone – shows among other things information from the phone in the driver information display.

RECU controls the hydraulic compact retarder on trucks with a manual gearbox.

SRS controls activation of the airbag and seat belt pre-tensioner.

SWM receives information from the buttons in the steering wheel that handle functions such as the phone and radio.

Tachograph checks tachograph functions against the electronic system.

TECU controls gearchanges in I-Shift and Powertronic.

VCADS is a PC-based tool that is used to test, calibrate and program the electronic system.

VECU serves as a coordinator. It also collects data from various in-cab controls and transmits this data to the various control units.

VOLVO TRUCKS. DRIVING PROGRESS

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