

Workshop Manual

FENDT 300 Vario COM III

FENDT 309 Vario COM III	from Chassis-No: 336 .. 1001-
FENDT 310 Vario COM III	from Chassis-No: 337 .. 1001-
FENDT 311 Vario COM III	from Chassis-No: 338 .. 1001-
FENDT 312 Vario COM III	from Chassis-No: 339 .. 1001-



X990.005.056.010 - Englisch



Edition
10/2007

All relevant accident prevention regulations and all generally accepted safety, health and road traffic regulations must be strictly observed. The manufacturer does not accept liability for damage resulting from unauthorised modifications.

Changes and additions reserved!

PSD 3292 G - en

AGCO GmbH

Johann-Georg-Fendt-Str. 4 D-87616 Marktoberdorf

All types	Tractor / General system Assembly overview	A
------------------	---	----------

0000	Tractor / General system
-------------	---------------------------------

1000	Transmission
1005	Transmission control unit
1010	Differential
1015	Axle drive
1030	Handbrake
1050	Housing
1070	Brake system
1080	Vario transmission unit
1090	Emergency control
1100	Clutch actuation system
1150	Cardan brake
1170	ML range control
1200	Front PTO
1220	Live PTO
1320	Front-wheel drive
1430	Hydrodamp
1432	Hydraulic pump
1470	Transmission lubrication system
1490	Pump drive
1530	ML adjustment
1600	Enhanced control system valves
1620	Enhanced control system pipes

2000	Engine
2010	Cylinder head
2020	Speed adjustment
2050	Cooling system
2060	Fuel system
2170	Engine brake
2180	Cold-start system
2190	Intercooler
2210	Crankcase
2250	Engine preheater
2312	Lubrication
2710	Injection pump
2712	Injectors
2714	Governor

Date	Version	Page	Assembly overview	Capitel	Index	Docu-No.
04/2000	b	1/4		0000	A	000009

All types	Tractor / General system Assembly overview	A
------------------	---	----------

3000	Front axle
3010	Front axle support
3020	Axle housing
3050	Suspension
3060	Suspension valve fitting
3070	Suspension pipe
3100	Track rod
3120	Steering cylinder
3170	Frame
3180	Cardan shaft
3190	Diff. lock actuation system

4000	Steering
4070	Steering wheel
4090	Hydraulic steering assembly

5000	Vehicle body
5010	Design
5030	Driver seat
5050	Trailer hitch
5161	Trailer hitch coupling
5200	Cab mount, suspension

5500	Air conditioning system
5520	Compressor drive
5530	Coolant lines
5550	Evaporator
5560	Condenser
5570	Electrical cables

8100	Cab
8113	Heater
8114	Ventilation
8117	Windscreen wipers
8121	Cable loom

8600	Power lift
8610	Electrohydraulic EPC control
8618	External control
8631	Control lifting gear

8700	Three-point hitch
8730	Lift arms
8740	Support

Date	Version	Page	Assembly overview	Capitel	Index	Docu-No.
04/2000	b	2/4		0000	A	000009

All types	Tractor / General system Assembly overview	A
------------------	---	----------

8800	Compressed air system
8810	Compressor
8820	Brake fittings
8830	Lines
8850	Electrical actuation system
8890	Air tank

8900	Front loader
8910	Mounting frame
8915	Hydraulic implement actuation system
8955	3. hydraulic circuit
8958	Multi-coupling
8970	Pipes
8990	Lift cylinder

9000	Electrics
9010	Alternator
9015	Starter lockout
9040	Fuses
9050	Battery system
9060	Starter motor system

9200	Front power lift
9210	Lift gear
9211	External control
9220	Cylinder
9230	Pipes
9260	Enhanced control power lift
9280	Frame

9400	Hydraulic pump assembly
9410	LS pump
9420	Transmission pump
9430	Steering pump

9500	Hydraulic pipes
9510	Base circle
9516	Power lift
9525	with oil cooler
9530	Hydraulic trailer brake
9531	Steering
9534	Reversing system

Date	Version	Page	Assembly overview	Capitel	Index	Docu-No.
04/2000	b	3/4		0000	A	000009

All types	Tractor / General system Assembly overview	A
------------------	---	----------

9600	Hydraulic equipment
9605	Hydraulic connections
9610	Central control block (ZSB)
9620	Valve assembly
9666	External pressure supply
9690	Valve supplement

9700	Electronics
9710	Instrument panel
9715	Terminal
9717	LBS - agricultural bus system
9720	Transducer
9730	Radar sensor
9740	E-box
9750	Transmission actuator unit
9760	Drive switch
9770	Control panel
9780	Engine EDC
9790	ECU, lift gear

9900	Service
9920	Special tools
9970	FENDIAS

Date	Version	Page	Assembly overview	Capitel	Index	Docu-No.
04/2000	b	4/4		0000	A	000009

All types	Documentation structure	A
------------------	--------------------------------	----------

The basic principle of this documentation is that the different tractor types are divided into main assemblies, which correspond to the FENDOS structure with a few exceptions for technical reasons.

These main assemblies are, for example, "0000 - Tractor/General system" ; "1000 - Transmission"; "2000 - Engine", etc.

The main assemblies are sub-divided into subassemblies, e.g. "1005 - Transmission control unit"; "1220 - Live PTO", etc.

Please see document 0000 A 000009 for an overview of the assemblies.

Each assembly is subdivided into various registers which are labelled with an index letter.

These are as follows.

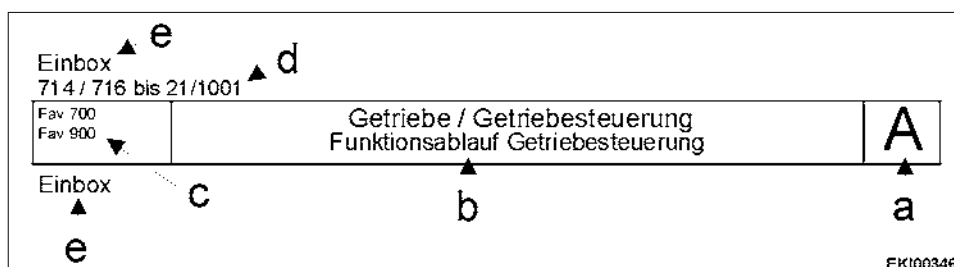
A - General	E - Measuring and testing
B - Faults	F - Settings and calibration
C - Documents and plans	G - Repairs
D - Position of components	H - Service - Information

This documentation is made up of a large number of self-contained individual documents (=worksheets). These documents can be used for various applications and are available in different languages.

Each document is given a unique **document code** (8), which is made up of the **chapter no.** (1) (=assembly / subassembly), the **index letter** (2), and the **document no.** (3), printed on the right of the footer.

A document can, therefore, be clearly assigned to a main assembly/subassembly and the index.

Explanation of the header and footer:



a	Index letter	d	Validity: chassis no.
b	Chapter / section	e	Other notes on validity
c	Type validity		

Date	Version	Page	Capitel	Index	Docu-No.
12.4.2000	b	1/2	0000	A	000011

All types	Documentation structure	A
------------------	--------------------------------	----------

Datum	Stand	Seite	Funktionsablauf Getriebe steuerung	Kapitelzahl	Reg	Docu-No
10/1999	a	1/3		1010	A	000001
7	6	5	4	1	2	3
				8		

EKI00347

- | | | | |
|---|-----------------------------|---|--------------------------|
| 1 | Main assembly / subassembly | 5 | No. of pages in document |
| 2 | Index | 6 | Revision status |
| 3 | Document no. | 7 | Date created |
| 4 | Section | 8 | Document code |

Page numbering for all assemblies is continuous, starting from page 1.

The document codes are not necessarily sequential, i.e. gaps may occur.

"Document no." is not the number of pages in the documentation. The page count is shown on the right in the list of contents.

Date	Version	Page	Documentation structure	Capitel	Index	Docu-No.
12.4.2000	b	2/2		0000	A	000011

All types	Tractor / General system Tightening torques for bolts in Nm	A
------------------	--	----------

Coefficient of friction: μ total 0.14 for nuts and bolts without aftertreatment and for phosphated nuts.
Tighten by hand.

Tightening torques, unless otherwise specified, can be taken from the following table.

Metrisches Gewinde								
	6,9		8,8		10,9		12,9	
Abmessung	Nm	(kpm)	Nm	(kpm)	Nm	(kpm)	Nm	(kpm)
M 6	8,4	(0,85)	9,8	(1,0)	13,7	(1,4)	16,7	(1,7)
M 8	20,6	(2,1)	24,5	(2,5)	34,3	(3,5)	40,2	(4,1)
M 10	40,2	(4,1)	48,1	(4,9)	67,7	(6,9)	81,4	(8,3)
M 12	70,6	(7,2)	84,4	(8,6)	117,7	(12,0)	142,2	(14,5)
M 14	112,8	(11,5)	132,4	(13,5)	186,4	(19,0)	225,6	(23,0)
M 16	176,6	(18,0)	206,0	(21,0)	289,4	(29,5)	348,2	(35,5)
M 18	240,3	(24,5)	284,5	(29,0)	392,4	(40,0)	475,8	(48,5)
M 20	338,4	(34,5)	402,2	(41,0)	569,0	(58,0)	676,9	(69,0)
M 22	456,2	(46,5)	539,5	(55,0)	765,2	(78,0)	912,3	(93,0)
M 24	588,6	(60,0)	696,5	(71,0)	981,0	(100,0)	1177,2	(120,0)
M 27	873,1	(89,0)	1030,0	(105,0)	1471,5	(150,0)	1765,8	(180,0)
M 30	1177,2	(120,0)	1422,4	(145,0)	1962,0	(200,0)	2354,4	(240,0)

Metrisches Feingewinde								
	6,9		8,8		10,9		12,9	
Abmessung	Nm	(kpm)	Nm	(kpm)	Nm	(kpm)	Nm	(kpm)
M 8 x 1	22,6	(2,3)	26,5	(2,7)	37,3	(3,8)	44,1	(4,5)
M 10 x 1,25	42,2	(4,4)	51,0	(5,2)	71,6	(7,3)	86,3	(8,8)
M 12 x 1,25	78,5	(8,0)	93,2	(9,5)	132,4	(13,5)	157,0	(16,0)
M 12 x 1,5	74,5	(7,6)	88,3	(9,0)	122,6	(12,5)	147,1	(15,0)
M 14 x 1,5	122,6	(12,5)	147,1	(15,0)	206,0	(21,0)	245,2	(25,0)
M 16 x 1,5	186,4	(19,0)	220,7	(22,5)	309,0	(31,5)	372,8	(38,0)
M 18 x 1,5	296,8	(27,5)	318,8	(32,5)	451,3	(46,0)	539,5	(55,0)
M 20 x 1,5	377,7	(38,5)	451,3	(46,0)	627,8	(64,0)	755,4	(77,0)
M 22 x 1,5	510,1	(52,0)	598,4	(61,0)	843,7	(86,0)	1030,0	(105,0)
M 24 x 2	637,6	(65,0)	765,2	(78,0)	1079,1	(110,0)	1275,3	(130,0)
M 27 x 2	951,6	(97,0)	1128,1	(115,0)	1569,6	(160,0)	1912,9	(195,0)
M 30 x 2	1324,4	(135,0)	1569,6	(160,0)	2207,2	(225,0)	2648,7	(270,0)

A00519

Date	Version	Page	Tightening torques for bolts in Nm	Capitel	Index	Docu-No.
03/2000	a	1/1		0000	A	000007

Fendt 300 Vario	Tractor / General system History of the FENDT 300 Vario agricultural tractor range	A
------------------------	---	----------

Fendt 300 Vario



EKI06481

Date	Version	Page	Capitel	Index	Docu-No.
07.12.05	a	1/9	History of the FENDT 300 Vario agricultural tractor range 0000	A	000079

Fendt 300 Vario	Tractor / General system	A
History of the FENDT 300 Vario agricultural tractor range		

Note:**Selected technical data.****for further data see 'Technical Data Sheets'****Selected technical data: engine**

Tractor model	309 Vario Rear wheel/4WD	310 Vario Rear wheel/4WD	311 Vario 4WD	312 Vario 4WD
Chassis no.	336 /.. /	337 /.. /	338 /.. /	339 /.. /
Engine type (DEUTZ)	TCD 2012 L4 4V	TCD 2012 L4 4V	TCD 2012 L4 / 4V	TCD 2012 L4 / 4V
Engine oil	SHPD engine oil SAE 10W40 (see list of fluids and lubricants in the operating manual)	SHPD engine oil SAE 10W40 (see list of fluids and lubricants in the operating manual)	SHPD engine oil SAE 10W40 (see list of fluids and lubricants in the operating manual)	SHPD engine oil SAE 10W40 (see list of fluids and lubricants in the operating manual)
Rotational direction	Facing flywheel, to the left	Facing flywheel, to the left	Facing flywheel, to the left	Facing flywheel, to the left
Cylinder	4	4	4	4
Number of valves Inlet / outlet	2 / 2	2 / 2	2 / 2	2 / 2
Injection system	Deutz common rail (DCR)	Deutz common rail (DCR)	Deutz common rail (DCR)	Deutz common rail (DCR)
Pressure in common rail (bar)	700 ... approx. 1400 (load dependent)	700 ... approx. 1400 (load dependent)	700 ... approx. 1400 (load dependent)	700 ... approx. 1400 (load dependent)
Engine control module (controller)	EDC 7 (Bosch)	EDC 7 (Bosch)	EDC 7 (Bosch)	EDC 7 (Bosch)
Firing order	1 - 3 - 4 - 2 (1 cylinder on flywheel)	1 - 3 - 4 - 2 (1 cylinder on flywheel)	1 - 3 - 4 - 2 (1 cylinder on flywheel)	1 - 3 - 4 - 2 (1 cylinder on flywheel)
Charging	Wastegate turbocharger / intercooler	Wastegate turbocharger / intercooler	Wastegate turbocharger / intercooler	Wastegate turbocharger / intercooler
Exhaust gas recirculation with exhaust cooler	external exhaust gas recirculation (AGR ex)	external exhaust gas recirculation (AGR ex)	external exhaust gas recirculation (AGR ex)	external exhaust gas recirculation (AGR ex)
Rated power ECE - R24 KW/HP	59 / 80	66 / 90	74 / 100	81 / 110
Max. power ECE - R24 KW/HP	70 / 95	77 / 105	84 / 115	92 / 125
Bore / stroke (mm)	101 / 126	101 / 126	101 / 126	101 / 126
Cubic capacity (l)	4.04	4.04	4.04	4.04
Idle speed (rpm)	780 +/- 30	780 +/- 30	780 +/- 30	780 +/- 30
Rated speed (rpm)	2100	2100	2100	2100
No-load speed (rpm)	2200 - 2250	2200 - 2250	2200 - 2250	2200 - 2250
Start of delivery	(set by the EDC, load-dependent)	(set by the EDC, load-dependent)	(set by the EDC, load-dependent)	(set by the EDC, load-dependent)
Valve clearance (cold engine max. 50°C)				
Inlet / outlet (mm)	0.4 / 0.5	0.4 / 0.5	0.4 / 0.5	0.4 / 0.5
Compression ratio	18 : 1	18 : 1	18 : 1	18 : 1

Date	Version	Page		Capitel	Index	Docu-No.
07.12.05	a	2/9	History of the FENDT 300 Vario agricultural tractor range	0000	A	000079

Fendt 300 Vario	Tractor / General system History of the FENDT 300 Vario agricultural tractor range	A
------------------------	---	----------

Selected technical data: engine

Tractor model	309 Vario Rear wheel/4WD	310 Vario Rear wheel/4WD	311 Vario 4WD	312 Vario 4WD
Chassis no.	336 /../	337 /../	338 /../	339 /../
Compression pressure (bar)	20 ... 30 (Note: max. perm. de- viation between cylinders is 15%)	20 ... 30 (Note: max. perm. de- viation between cylinders is 15%)	20 ... 30 (Note: max. perm. de- viation between cylinders is 15%)	20 ... 30 (Note: max. perm. de- viation between cylinders is 15%)
Min. oil pressure in warm state (114 °C) and low idle	approx. 0.8 bar	approx. 0.8 bar	approx. 0.8 bar	approx. 0.8 bar
Cold-start system	Heating flange Auxiliary electr. engine preheater (optional)	Heating flange Auxiliary electr. engine preheater (optional)	Heating flange Auxiliary electr. engine preheater (optional)	Heating flange Auxiliary electr. engine preheater (optional)
Fuel tank (l)	210	210	210	210
Water separator in the fuel system	Standard	Standard	Standard	Standard

Date	Version	Page	Capitel	Index	Docu-No.
07.12.05	a	3/9	History of the FENDT 300 Vario agricultural tractor range 0000	A	000079

Fendt 300 Vario	Tractor / General system	A
History of the FENDT 300 Vario agricultural tractor range		

Selected technical data: transmission				
Tractor model	309 Vario Rear wheel/4WD	310 Vario Rear wheel/4WD	311 Vario 4WD	312 Vario 4WD
Chassis no.	336 /..	337 /..	338 /..	339 /..
Transmission model (FENDT)	ML 75	ML 75	ML 75	ML 75
Common oil supply: transmission/rear axle/ axle points	STOU 10W40 (oil quantity and oil quality: also see List of Fuels and Lubricants in the Operating Manual)	STOU 10W40 (oil quantity and oil quality: also see List of Fuels and Lubricants in the Operating Manual)	STOU 10W40 (oil quantity and oil quality: also see List of Fuels and Lubricants in the Operating Manual)	STOU 10W40 (oil quantity and oil quality: also see List of Fuels and Lubricants in the Operating Manual)
Housing	Block design	Block design	Block design	Block design
Hydrostats: pump / motor	67ccm / 233 ccm	67ccm / 233 ccm	67ccm / 233 ccm	67ccm / 233 ccm
Speeds forward / reverse	Stepless / one range	Stepless / one range	Stepless / one range	Stepless / one range
min. speed	approx. 30 (m/h)	approx. 30 (m/h)	approx. 30 (m/h)	approx. 30 (m/h)
max. speed forward / reverse	40 / 20 (km/h)	40 / 20 (km/h)	40 / 20 (km/h)	40 / 20 (km/h)
Speed selection	Electr. speed control lever (single-gate)	Electr. speed control lever (single-gate)	Electr. speed control lever (single-gate)	Electr. speed control lever (single-gate)
Acceleration ramp I (can be set in instrument cluster)	0.03 ... 0.5 / 1.0 / 1.5 km/h	0.03 ... 0.5 / 1.0 / 1.5 km/h	0.03 ... 0.5 / 1.0 / 1.5 km/h	0.03 ... 0.5 / 1.0 / 1.5 km/h
Acceleration ramp II (km/h) (fixed)	2 km/h	2 km/h	2 km/h	2 km/h
Emergency control	Mechanical control of the transmission actuator unit	Mechanical control of the transmission actuator unit	Mechanical control of the transmission actuator unit	Mechanical control of the transmission actuator unit
Mechanical idle position of transmission "towing mode"	Synchroniser sleeve on pinion shaft (disconnects rear axle)	Synchroniser sleeve on pinion shaft (disconnects rear axle)	Synchroniser sleeve on pinion shaft (disconnects rear axle)	Synchroniser sleeve on pinion shaft (disconnects rear axle)
Turboclutch (Y004 - solenoid valve)	electro/hydraulic	electro/hydraulic	electro/hydraulic	electro/hydraulic
Drive clutch (Y004 - solenoid valve)	electro/hydraulic	electro/hydraulic	electro/hydraulic	electro/hydraulic
Transmission oil cooler: transmission oil / air	Standard	Standard	Standard	Standard
Heat exchanger: transmission oil / hydraulic oil	Standard	Standard	Standard	Standard

Date	Version	Page	Capitel	Index	Docu-No.
07.12.05	a	4/9	History of the FENDT 300 Vario agricultural tractor range	0000	A
					000079

Fendt 300 Vario	Tractor / General system	A
History of the FENDT 300 Vario agricultural tractor range		

Selected technical data: rear axle				
Tractor model	309 Vario Rear wheel/4WD	310 Vario Rear wheel/4WD	311 Vario 4WD	312 Vario 4WD
Chassis no.	336 /./	337 /./	338 /./	339 /./
Rear axle model (FENDT)	HA 75	HA 75	HA 75	HA 75
Common oil supply: transmission/rear axle/ axle points	STOU 10W40 (oil quantity and oil quality: also see List of Fuels and Lubricants in the Operating Manual)	STOU 10W40 (oil quantity and oil quality: also see List of Fuels and Lubricants in the Operating Manual)	STOU 10W40 (oil quantity and oil quality: also see List of Fuels and Lubricants in the Operating Manual)	STOU 10W40 (oil quantity and oil quality: also see List of Fuels and Lubricants in the Operating Manual)
Differential (rear axle)	100% multi-disc lock electro-hydrau- lic, can be shifted under load	100% multi-disc lock electro-hydrau- lic, can be shifted under load	100% multi-disc lock electro-hydrau- lic, can be shifted under load	100% multi-disc lock electro-hydrau- lic, can be shifted under load
4WD	100% multi-disc clutch electro-hydrau- lic, can be shifted under load	100% multi-disc clutch electro-hydrau- lic, can be shifted under load	100% multi-disc clutch electro-hydrau- lic, can be shifted under load	100% multi-disc clutch electro-hydrau- lic, can be shifted under load
Service brake "foot brake"	Wet ring piston brakes with brake booster + 4WD engagement	Wet ring piston brakes with brake booster + 4WD engagement	Wet ring piston brakes with brake booster + 4WD engagement	Wet ring piston brakes with brake booster + 4WD engagement
When actuating the individual wheel brake (steering brake)	No 4WD engagement	No 4WD engagement	No 4WD engagement	No 4WD engagement
Parking brake "hand brake"	Mechanically actuated dry drum brake	Mechanically actuated dry drum brake	Mechanically actuated dry drum brake	Mechanically actuated dry drum brake
Axle points	Planetary final drives	Planetary final drives	Planetary final drives	Planetary final drives

Date	Version	Page	Capitel	Index	Docu-No.
07.12.05	a	5/9	History of the FENDT 300 Vario agricultural tractor range	0000	A
					000079

Fendt 300 Vario	Tractor / General system	A
History of the FENDT 300 Vario agricultural tractor range		

Selected technical data: rear PTO and front PTO

Tractor model	309 Vario Rear wheel/4WD	310 Vario Rear wheel/4WD	311 Vario 4WD	312 Vario 4WD
Chassis no.	336 /..	337 /..	338 /..	339 /..
Rear PTO				
Fuels and lubricants	(Oil quantity and oil quality: also see List of Fuels and Lubricants in the Operating Manual)	(Oil quantity and oil quality: also see List of Fuels and Lubricants in the Operating Manual)	(Oil quantity and oil quality: also see List of Fuels and Lubricants in the Operating Manual)	(Oil quantity and oil quality: also see List of Fuels and Lubricants in the Operating Manual)
Rear PTO clutch	Wet multi-disc clutch	Wet multi-disc clutch	Wet multi-disc clutch	Wet multi-disc clutch
PTO speeds (rpm)	540 / 750 / 1000 (standard)	540 / 750 / 1000 (standard)	540 / 750 / 1000 (standard)	540 / 750 / 1000 (standard)
	540 / 1000 / ground PTO (optional)	540 / 1000 / ground PTO (optional)	540 / 1000 / ground PTO (optional)	540 / 1000 / ground PTO (optional)
Range selector actuation	electro / hydraulic	electro / hydraulic	electro / hydraulic	electro / hydraulic
Rear PTO clutch actuation	electro / hydraulic	electro / hydraulic	electro / hydraulic	electro / hydraulic
Speed-controlled start-up	Calibrate rear PTO clutch	Calibrate rear PTO clutch	Calibrate rear PTO clutch	Calibrate rear PTO clutch
Front PTO (optional extra)				
Fuels and lubricants	(Oil quantity and oil quality: also see List of Fuels and Lubricants in the Operating Manual)	(Oil quantity and oil quality: also see List of Fuels and Lubricants in the Operating Manual)	(Oil quantity and oil quality: also see List of Fuels and Lubricants in the Operating Manual)	(Oil quantity and oil quality: also see List of Fuels and Lubricants in the Operating Manual)
Front PTO clutch	dry multi-disc clutch	dry multi-disc clutch	dry multi-disc clutch	dry multi-disc clutch
Front PTO clutch actuation	electro / hydraulic	electro / hydraulic	electro / hydraulic	electro / hydraulic
Speed (rpm)	1000 540 (optional)	1000 540 (optional)	1000 540 (optional)	1000 540 (optional)
Rotational direction	In direction of travel (clockwise)	In direction of travel (clockwise)	In direction of travel (clockwise)	In direction of travel (clockwise)
Speed-controlled start-up	Calibrating front PTO clutch	Calibrating front PTO clutch	Calibrating front PTO clutch	Calibrating front PTO clutch
Seasonal disconnect	Synchroniser sleeve	Synchroniser sleeve	Synchroniser sleeve	Synchroniser sleeve

Fendt 300 Vario	Tractor / General system	A
History of the FENDT 300 Vario agricultural tractor range		

Selected technical data: front axle

Tractor model	309 Vario Rear wheel/4WD	310 Vario Rear wheel/4WD	311 Vario 4WD	312 Vario 4WD
Chassis no.	336 /./	337 /./	338 /./	339 /./
4WD front axle (Carraro) (standard)	Model	Model	Model	Model
Fuels and lubricants	(Oil quantity and oil quality: also see List of Fuels and Lubricants in the Operating Manual)	(Oil quantity and oil quality: also see List of Fuels and Lubricants in the Operating Manual)	(Oil quantity and oil quality: also see List of Fuels and Lubricants in the Operating Manual)	(Oil quantity and oil quality: also see List of Fuels and Lubricants in the Operating Manual)
Drive	Central 4WD	Central 4WD	Central 4WD	Central 4WD
4WD engagement	Electro-hydraulic (100%) Engages with service brake	Electro-hydraulic (100%) Engages with service brake	Electro-hydraulic (100%) Engages with service brake	Electro-hydraulic (100%) Engages with service brake
Diff. lock (front)	Locomatic (self-locking differential)	Locomatic (self-locking differential)	Locomatic (self-locking differential)	Locomatic (self-locking differential)
Front axle suspension (optional)	Hydropneumatic suspension with level control	Hydropneumatic suspension with level control	Hydropneumatic suspension with level control	Hydropneumatic suspension with level control
Swing arm	Lateral arm	Lateral arm	Lateral arm	Lateral arm
Suspension travel	+/- 45 mm	+/- 45 mm	+/- 45 mm	+/- 45 mm
Angle of float	+/- 10 degrees	+/- 10 degrees	+/- 10 degrees	+/- 10 degrees
Undriven front axle (FENDT) (optional)	Drum brakes on the front axle	Drum brakes on the front axle	-	-

Date	Version	Page		Capitel	Index	Docu-No.
07.12.05	a	7/9	History of the FENDT 300 Vario agricultural tractor range	0000	A	000079

Fendt 300 Vario	Tractor / General system	A
History of the FENDT 300 Vario agricultural tractor range		

Selected technical data: working and steering hydraulics				
Tractor model	309 Vario Rear wheel/4WD	310 Vario Rear wheel/4WD	311 Vario 4WD	312 Vario 4WD
Chassis no.	336 ../	337 ../	338 ../	339 ../
Fuels and lubricants	(Oil quantity and oil quality: also see List of Fuels and Lubricants in the Operating Manual)	(Oil quantity and oil quality: also see List of Fuels and Lubricants in the Operating Manual)	(Oil quantity and oil quality: also see List of Fuels and Lubricants in the Operating Manual)	(Oil quantity and oil quality: also see List of Fuels and Lubricants in the Operating Manual)
Working and steering hydraulics	Load-sensing hydraulics with fixed displacement pump	Load-sensing hydraulics with fixed displacement pump	Load-sensing hydraulics with fixed displacement pump	Load-sensing hydraulics with fixed displacement pump
Pump PK (working hydraulics)				
Transmission ratio (diesel engine : pump)	0.978	0.978	0.978	0.978
Max. pressure	200 bar	200 bar	200 bar	200 bar
Volumetric capacity / pump rpm	22.5 ccm	22.5 ccm	22.5 ccm	22.5 ccm
Delivery capacity at rated engine speed	48 l/min	48 l/min	48 l/min	48 l/min
Pump PL (steering pump)				
Transmission ratio (diesel engine : pump)	0.978	0.978	0.978	0.978
Max. pressure	200 bar	200 bar	200 bar	200 bar
Volumetric capacity / pump rpm	14 ccm	14 ccm	14 ccm	14 ccm
Delivery capacity at rated engine speed	30 l/min	30 l/min	30 l/min	30 l/min
Oil flow collector	Standard	Standard	Standard	Standard
Maximum delivery capacity (PK + PL) at rated engine speed (2100 rpm)	Approx. 76 l/min	Approx. 76 l/min	Approx. 76 l/min	Approx. 76 l/min
Maximum available oil quantity	about 45 l	about 45 l	about 45 l	about 45 l
Heat exchanger: transmission oil / hydraulic oil	Standard	Standard	Standard	Standard
auxiliary control valves	SB 23 LS (mechanically actuated)	SB 23 LS (mechanically actuated)	SB 23 LS (mechanically actuated)	SB 23 LS (mechanically actuated)
Auxiliary control valves 'crossgate lever' (standard)	1.1 'yellow' and 1.2 'blue'	1.1 'yellow' and 1.2 'blue'	1.1 'yellow' and 1.2 'blue'	1.1 'yellow' and 1.2 'blue'
Auxiliary control valves (optional)	1.3 'red' and 1.4 'green'	1.3 'red' and 1.4 'green'	1.3 'red' and 1.4 'green'	1.3 'red' and 1.4 'green'
Auxiliary control valves with flow control	1.1 'yellow' and 1.3 'red'	1.1 'yellow' and 1.3 'red'	1.1 'yellow' and 1.3 'red'	1.1 'yellow' and 1.3 'red'
Rear power lift (position - draft - mixed control) with vibration damping	EPC - B (Bosch)	EPC - B (Bosch)	EPC - B (Bosch)	EPC - B (Bosch)
Category rear power lift	Cat II / III	Cat II / III	Cat II / III	Cat II / III

Date	Version	Page	Capitel	Index	Docu-No.
07.12.05	a	8/9	History of the FENDT 300 Vario agricultural tractor range	0000	A
					000079

Fendt 300 Vario	Tractor / General system History of the FENDT 300 Vario agricultural tractor range	A
------------------------	---	----------

Selected technical data: working and steering hydraulics

Tractor model	309 Vario Rear wheel/4WD	310 Vario Rear wheel/4WD	311 Vario 4WD	312 Vario 4WD
Chassis no.	336 /.. /	337 /.. /	338 /.. /	339 /.. /
Continuous lifting power at rear power lift	46.4 KN (4.6 tons)	46.4 KN (4.6 tons)	46.4 KN (4.6 tons)	46.4 KN (4.6 tons)
Front power lift (hydr. connection centre)	single-acting sa / double-acting da (switchable)	single-acting sa / double-acting da (switchable)	single-acting sa / double-acting da (switchable)	single-acting sa / double-acting da (switchable)
Front power lift category	Cat II	Cat II	Cat II	Cat II
Continuous lifting power at front power lift	28.4 KN (2.8 tons)	28.4 KN (2.8 tons)	28.4 KN (2.8 tons)	28.4 KN (2.8 tons)
Hydr. trailer brake valve				
Italian version (load relief via solenoid valve)	Optional	Optional	Optional	Optional
French version (purely hydraulic)	Optional	Optional	Optional	Optional

Selected technical data: cab

Tractor model	309 Vario Rear wheel/4WD	310 Vario Rear wheel/4WD	311 Vario 4WD	312 Vario 4WD
Chassis no.	336 /.. /	337 /.. /	338 /.. /	339 /.. /
Cab suspension	Rubber - metal bearing (silent blocks) (standard)	Rubber - metal bearing (silent blocks) (standard)	Rubber - metal bearing (silent blocks) (standard)	Rubber - metal bearing (silent blocks) (standard)
	Mechanical cab suspension (optional); suspension travel +/- 40mm	Mechanical cab suspension (optional); suspension travel +/- 40mm	Mechanical cab suspension (optional); suspension travel +/- 40mm	Mechanical cab suspension (optional); suspension travel +/- 40mm

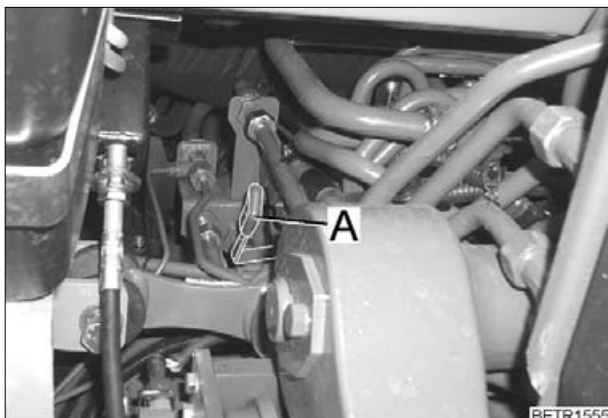
Selected technical data: electrics

Tractor model	309 Vario Rear wheel/4WD	310 Vario Rear wheel/4WD	311 Vario 4WD	312 Vario 4WD
Chassis no.	336 /.. /	337 /.. /	338 /.. /	339 /.. /
Battery (V / Ah)	12 / 90	12 / 90	12 / 90	12 / 90
Generator (V / A)	14 / 150	14 / 150	14 / 150	14 / 150
Starter (KW)	3	3	3	3

Fendt 300 Vario

Tractor / General system

Towing instructions

A

- **Range selector (A) back** - transmission in idle
- **Range selector (A) forward** - transmission is driving position



Mechanical idle position is displayed in the multiple display

The tractor can now be towed:

Maximum towing speed 10 km/h.

Maximum towing distance 8 km.



Danger:

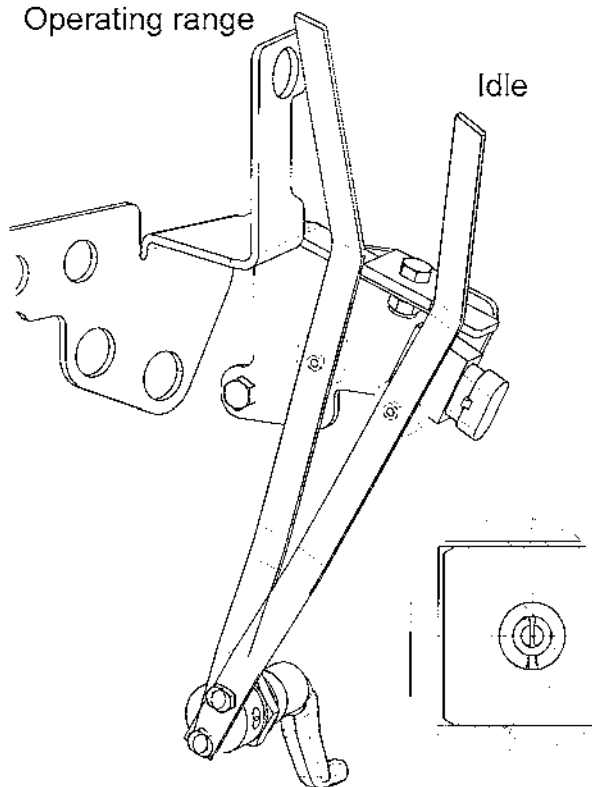
When the diesel engine is not running:

Reduced braking effect

(brake booster does not function)

Higher steering forces (hydraulic pump does not function)

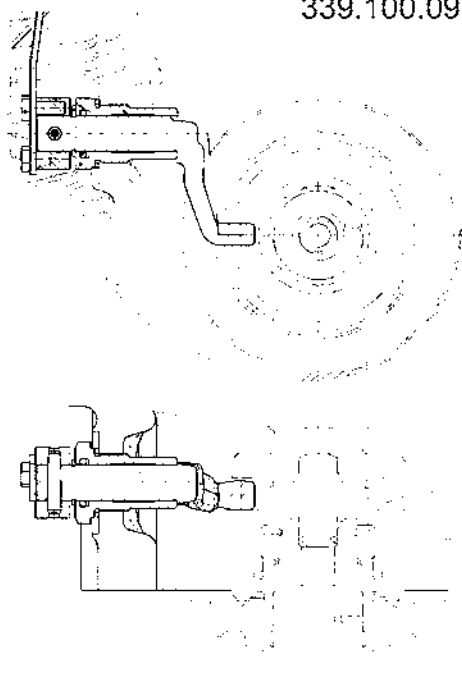
Operating range



Idle

Idle switch (FENDT 300 Vario)

339.100.090.000



E07808en

After finishing towing, push the lever forward to engage the driving mode

Date	Version	Page	Towing instructions	Capitel	Index	Docu-No.
20.12.05	a	1/1		0000	A	000080

12.06.2006	b	1/21	Vario Tractors - Fault Codes			0000	B	0000022
Date	Version	Page				Capitel	Index	Docu.No.

Fault code	Id code	Brief description	Description	Consequences	Link	FENDIAS / Note
00.0.01	A002	ECU, enhanced control	Bus error EDC/EMR, speed setpoint to EDC missing	Engine malfunction	EI circuit diagram "Electronics voltage supply"	
00.0.04	A002	ECU, enhanced control	Bus error transmission, setpoint to actuator missing	No functions available, no display	EI circuit diagram 'Electronics voltage supply'	
00.0.05	A002	ECU, enhanced control	Bus error 4WD/diff.	No functions available, no display	EI circuit diagram 'Electronics voltage supply'	
00.0.06	A002	ECU, enhanced control	Bus error rear PTO	No functions available, no display	EI circuit diagram 'Electronics voltage supply'	
00.0.07	A002	ECU, enhanced control	Bus error front PTO	Does not function, no display	EI circuit diagram 'Electronics voltage supply'	
00.0.08	A024	ECU, EPC B	Bus error rear EPC	Does not function, no display	EI circuit diagram "Electronic lifting gear control"	
00.0.15	A002	ECU, enhanced control	Bus error FA suspension	Does not function, no display	EI circuit diagram 'Electronics voltage supply'	
00.0.16	A024	ECU, EPC B	Bus fault rear EPC automatic mode.	Does not function, no display	EI circuit diagram 'Electronic lifting gear control'	
00.0.1E	A007	Instrument panel	Bus error output from EDC on instrument cluster	Does not function, no display	EI circuit diagram 'Electronics voltage supply'	
00.1.4D	A007	Instrument cluster	Checksum menu icons (24x24), memory in instrument cluster faulty	Display error in instrument cluster		EOL programming
00.1.4E	A007	Instrument cluster	Checksum warning icons (64x64), memory in instrument cluster faulty	Display error in instrument cluster		EOL programming

Fendt 300 Vario	Tractor / General system Vario Tractors - Fault Codes		B
-----------------	--	--	---

12.06.2006	Version	Page	Vario Tractors - Fault Codes			
b	2/21					
			Capitel	Index	Docu.No.	
			0000	B	000022	

Fault code	Id code	Brief description	Description	Consequences	Link	FENDIAS / Note
00.1.4F	A007	Instrument cluster	Checksum GD table, memory in instrument cluster faulty	Display error in instrument cluster		EOL programming
00.1.50	A007	Instrument cluster	VDO instrument cluster EEPROM not programmed	Malfunctions in instrument cluster		EOL programming
00.1.54	B019	Compressed air tank pressure sensor	Sensor fault, wiring fault	Compressed air indicator does not function	'Instrument cluster' circuit diagram	
			12 V supply fault			
00.1.59	B007	Fuel level sensor	Sensor fault, wiring fault	No display	'Instrument cluster' circuit diagram	
00.1.71	A036	Control panel, Enter key	Enter key	Key does not function.	'Instrument cluster' circuit diagram	Control console
00.1.72	A036	Control panel, Esc key	Esc key	Key does not function.	'Instrument cluster' circuit diagram	Control console
00.1.73	A036	Control panel, Up key	Up key	Key does not function.	'Instrument cluster' circuit diagram	Control console
00.1.74	A036	Control panel, Down key	Down key	Key does not function.	'Instrument cluster' circuit diagram	Control console
00.1.75	A036	Control panel, Enter key	Enter key pressed >30s	Key does not function or release key.	'Instrument cluster' circuit diagram	Control console
00.1.76	A036	Control panel, Esc key	Esc key pressed >30s	Key does not function or release key.	'Instrument cluster' circuit diagram	Control console
00.1.77	A036	Control panel, Up key	Up key pressed >30s	Key does not function or release key.	'Instrument cluster' circuit diagram	Control console
00.1.78	A036	Control panel, Down key	Down key pressed >30s	Key does not function or release key.	'Instrument cluster' circuit diagram	Control console
01.1.01	B055	Rotary position sensor, combi-sensor - foot throttle pedal	Signal too high, signal too low, signal missing for longer than 2000 ms	Chapter 2000 Reg. B	'EDC control' circuit diagram	TRANSMISSION, LOAD LIMIT CONTROL
01.1.03	B055	Rotary position sensor, combi-sensor - foot throttle pedal	No congruence B055 - combi-sensor (PIN 3 to PIN 6)	limited driving operation, Chapter 2000 Reg.B	'EDC control' circuit diagram	TRANSMISSION, LOAD LIMIT CONTROL, calibration code '4005'

Fendt 300 Vario	Tractor / General system Vario Tractors - Fault Codes	B

12.06.2006	Date	b	Version	3/21	Page
Vario Tractors - Fault Codes					
0000	Capitel	B	Index	000022	Docu.No.

Fault code	Id code	Brief description	Description	Consequences	Link	FENDIAS / Note
01.1.04	A002	ECU, enhanced control	Checksum error TMS	TMS driving not possible		EOL programming
01.1.06	A002	ECU, enhanced control	Memory could not be reserved in EST.			EOL programming
01.1.07	A051	ECU, engine control unit	Checksum engine parameter incorrect			EOL programming
01.1.7D	B055	Rotary position sensor, combi-sensor - foot throttle pedal	Idle switch faulty		'EDC control' circuit diagram	
01.1.7F	A036	Control console	Hand throttle memory keys faulty (electric fault). No communication with control console.	Last speed setting is retained. Engine speed can be changed using hand throttle or foot throttle.		Control console
01.1.A0	A051	EDC control module	Wrong engine control unit (A051), wrong EOL programming, engine model does not match tractor model	Torque is limited according to fault grading. Chapter 2000 Reg. B	'EDC control' circuit diagram	SERDIA
01.1.A1	A002, A051	ECU (enhanced control), engine control unit EDC	CAN connection enhanced control module (A002) - engine control unit (A051) faulty	Chapter 2000 Reg. B	'Transmission bus', 'EDC engine control' circuit diagram	SERDIA
01.1.B0	A002	ECU, enhanced control	CAN-bus communication restricted	Engine function is limited	'EDC control' circuit diagram	EOL programming
04.1.01	A036	Acceleration ramp switch faulty.	Signal fault	Continuation in emergency mode possible		Control console
			8.5 V supply fault		A013 fuse 4	
04.1.04	B017	Clutch pedal rotary position sensor	Signal fault	Loss of enhanced control / functions in the final speed control; cruise control does not function, TMS is switched off	'Transmission control' circuit diagram	TRANSMISSION CRUISE CONTROL
			8.5 V supply fault		A013 fuse 3	

Fendt 300 Vario	Tractor / General system
Vario Tractors - Fault Codes	
B	

Date	Version	Page
12.06.2006	b	4/21
Vario Tractors - Fault Codes		
Capitel	Index	Docu.No.
0000	B	000022

Fault code	Id code	Brief description	Description	Consequences	Link	FENDIAS / Note
04.1.05	B039	High pressure sensor II (push detection)	Signal fault	TMS is switched off		TRANSMISSION, TURBOCLUTCH
			8.5 V supply fault		A013 fuse 15	
04.1.07	B008	High pressure sensor, transmission drive pressure	Signal fault	Transmission peak loads are no longer monitored	'Transmission control' circuit diagram	TRANSMISSION, TURBOCLUTCH
			8.5 V supply fault		A013 fuse 10	
04.1.23	A036	Joystick 'cruise control ON'	Signal fault	Continuation in emergency mode possible	'Transmission control' circuit diagram	TRANSMISSION CRUISE CONTROL
04.1.24	S015	Hand brake solenoid switch	Signal fault	Hand brake automatic mode not available	'Transmission control' circuit diagram	TRANSMISSION functional overview
04.1.26	A036	Pedal mode key	Signal fault	Pedal mode does not function		Control console
04.1.28	A009	Transmission control unit, F/R incremental encoder	Signal fault	Continuation in emergency mode possible	'Transmission control' circuit diagram	TRANSMISSION, TRANSMISSION CONTROL
04.1.29	A036	Joystick 'Rest position'	Signal fault	Continuation in emergency mode possible	'Transmission control' circuit diagram	TRANSMISSION manual control
04.1.2 A	B015	Bevel pinion direction (=direction of travel) Hall sensor	Signal fault	Continuation in emergency mode possible	'Transmission control' circuit diagram	TRANSMISSION CRUISE CONTROL
			8.5 V supply fault		A013 fuse 2	
04.1.2C	A036	Button to toggle between 'Neutral / Active stationary mode'	Signal fault	Continuation in emergency mode possible	'Transmission control' circuit diagram	TRANSMISSION, OPERATING RANGE
04.1.2D	S061	'Rapid reversing' control on control stalk	Signal fault	Rapid reversing still possible via joystick	'Transmission control' circuit diagram	TRANSMISSION manual control
04.1.2E	A036	'v+ transmission control' (joystick forwards)	Signal fault	Continuation in emergency mode possible	'Transmission control' circuit diagram	TRANSMISSION manual control

Fendt 300 Vario	Tractor / General system
Vario Tractors - Fault Codes	
B	

12.06.2006	Date	b	Version	5/21	Page
Vario Tractors - Fault Codes					
0000	Capitel	B	Index	000022	Docu.No.

Fault code	Id code	Brief description	Description	Consequences	Link	FENDIAS / Note
04.1.2F	A036	'v- transmission control' (joystick to rear)	Signal fault	Continuation in emergency mode possible	'Transmission control' circuit diagram	TRANSMISSION manual control
04.1.31	B014	Hall sensor for accumulator shaft direction (partially also defined by 'Hydrostat')	Signal fault	Continuation in emergency mode possible	'Transmission control' circuit diagram	TRANSMISSION CRUISE CONTROL
			8.5 V supply fault		A013 fuse 1	
04.1.32	A002, A036	'Activating key' within joystick	Signal fault	Continuation in emergency mode possible	'Transmission control' circuit diagram	TRANSMISSION manual control
04.1.3 A	S070	Range/idle switch	Transmission neutral sleeve. Switch faulty, transmission calibration no longer possible	Transmission calibration no longer possible	'Transmission control' circuit diagram	
04.1.42	B014	Hall sensor for accumulator shaft speed (partially also defined by 'Hydrostat')	Signal fault	Continuation in emergency mode possible	'Transmission control' circuit diagram	TRANSMISSION CRUISE CONTROL
			8.5 V supply fault		A013 fuse 1	
04.1.44	B010	Engine speed Hall sensor 1	Signal fault	Continuation in emergency mode possible	'Transmission control' circuit diagram	TRANSMISSION CRUISE CONTROL
			12 V supply fault		A013 fuse 11	
04.1.45	B015	Bevel pinion speed (=travel speed) Hall sensor	Signal fault	Continuation in emergency mode possible	'Transmission control' circuit diagram	TRANSMISSION CRUISE CONTROL
			8.5 V supply fault		A013 fuse 2	
04.1.50	S017	'Transmission oil filter clogged' switch	Filter clogged	No further indication of clogging	'Transmission control' circuit diagram	TRANSMISSION, TRANSMISSION OIL/FILTER switch function not active under 50° oil temperature
04.1.53	B009	Thermo switch	'Transmission oil temperature more than 110°C'	Continuing to drive damages the transmission !	'Transmission control' circuit diagram	TRANSMISSION, TRANSMISSION OIL/FILTER

Fendt 300 Vario	Tractor / General system
Vario Tractors - Fault Codes	
B	

12.06.2006	b	6/21	Vario Tractors - Fault Codes			0000	B	000022
Date	Version	Page				Capitel	Index	Docu.No.

Fault code	Id code	Brief description	Description	Consequences	Link	FENDIAS / Note
04.1.58	A002, A009, B014	Transmission slip monitor	Transmission output speed deviates from the setpoint by more than 30%, clutch on actuator may be faulty	Under extremely low temperatures, single occurrences are possible; repeated occurrences under normal conditions cause oil overheating and other damage to the transmission, TMS is switched off	Fault not active if - turboclutch function is on - clutch is depressed	TRANSMISSION, TRANSMISSION CONTROL ('ideal ratio / actual ratio' comparison)
04.1.64	Y004	Turboclutch solenoid valve	PWM actuation fault		'Transmission control' circuit diagram	TRANSMISSION, TURBOCLUTCH
04.1.72	S017	'Transmission oil filter clogged' switch	Signal fault	No further display or monitoring, possibly transmission damage	'Transmission control' circuit diagram	TRANSMISSION, TRANSMISSION OIL/FILTER
04.1.73	B009	'Discharge oil temperature' sensor	Signal fault	No further display or monitoring, possibly transmission damage	'Transmission control' circuit diagram	TRANSMISSION, TRANSMISSION OIL/FILTER
04.1.78	S053	Seat switch	Signal fault from seat switch	Travel direction selection is deactivated in pedal mode if vehicle is stationary (must be reactivated)	El circuit diagram "Seat compressor sockets"	TRANSMISSION, FUNCTION OVERVIEW
04.1.79	H007	Buzzer reverse travel	Output for reverse travel alerter is not in order (current > 2500 mA or short circuit)		'Transmission control' circuit diagram	
04.1.82	B014, B015	Accumulator shaft rpm Hall sensor / bevel pinion sensor	Plausibility error (=speeds do not match)	Continuation in emergency mode possible	'Transmission control' circuit diagram	TRANSMISSION CRUISE CONTROL
04.1.83	B014, B015	Accumulator shaft/bevel pinion speed Hall sensor	Plausibility error (=speeds do not match)	Continuation in emergency mode possible	'Transmission control' circuit diagram	TRANSMISSION CRUISE CONTROL
04.1.84	A002, A036	Joystick switch (V, R, VR, cruise control, default position)	Plausibility error (=signals do not match logically)	Continuation in emergency mode possible	'Transmission control' circuit diagram	TRANSMISSION manual control

Fendt 300 Vario	Tractor / General system Vario Tractors - Fault Codes	B
------------------------	---	----------

12.06.2006	b	7/21	Vario Tractors - Fault Codes			0000	B	000022
Date	Version	Page				Capitel	Index	Docu.No.

Fault code	Id code	Brief description	Description	Consequences	Link	FENDIAS / Note
04.1.85	B010	Engine speed Hall sensor 1	Engine speed sensor does not supply plausible speed curves. Output speed increase or decrease is outside limits.	Continuation in emergency mode possible	'Transmission control' circuit diagram	TRANSMISSION, LOAD LIMIT CONTROL
04.1.87	S061	Switch, rapid reverse on the steering wheel adjustment	Plausibility error at the F / R switch, rapid reverse	F / R switch not functioning, rapid reverse on the steering wheel adjustment lever, S061-switch,	Check rapid reverse Chapter 9000 Reg. E	TRANSMISSION manual control
04.1.89	A007, B009	Switch, oil temperature	Plausibility error transmission temperature	Temperature sensor or wiring faulty		TRANSMISSION TRANSMISSION OIL
04.1.8 A	B017, S074	Sensor, clutch pedal	Plausibility error electrical clutch pedal (TC line does not open when clutch pedal is actuated)		'Transmission control' circuit diagram	TRANSMISSION TURBOCLUTCH FUNCTION
04.1.A1	A009	Transmission control unit	Turn angle is not reached within 2 seconds.	Continuation in emergency mode possible	Check transmission control unit Chapter 9000 Reg. E	TRANSMISSION, TRANSMISSION CONTROL
04.1.A2	A009, A002	Transmission control unit	CAN-bus actuation fault	Continuation in emergency mode possible	Chapter 9000 Reg. E - Testing CAN BUS	TRANSMISSION, TRANSMISSION CONTROL
04.1.A3	A009	Transmission control unit	Fault or logical error in incremental sensor signal (actual position signal)	Continuation in emergency mode possible	'Transmission control' circuit diagram	TRANSMISSION, TRANSMISSION CONTROL
04.1.A4	A009	Transmission control unit	Fault or logical error in ECU signal.	Continuation in emergency mode possible	'Transmission control' circuit diagram	TRANSMISSION, TRANSMISSION CONTROL
04.1.A5	A009	Transmission control unit	Initial reference (=zero position) could not be reached during ignition 'ON'	Continuation in emergency mode possible	'Transmission control' circuit diagram	TRANSMISSION, TRANSMISSION CONTROL
04.1.A6	A009	Transmission control unit	Reference point signal fault during operation	Continuation in emergency mode possible		TRANSMISSION, TRANSMISSION CONTROL

Fendt 300 Vario	Tractor / General system Vario Tractors - Fault Codes	B
------------------------	--	----------

12.06.2006	Date	b	Version	8/21	Page
Vario Tractors - Fault Codes					
0000	Capitel	B	Index	000022	Docu.No.

Fault code	Id code	Brief description	Description	Consequences	Link	FENDIAS / Note
04.1.B0	A002	all Bus users	Initialisation error	Only limited CAN bus function possible		EOL programming
04.1.B2	A002	ECU, enhanced control	EPROM programming faulty			EOL programming
04.1.B3	A002	ECU, enhanced control	Fault in EPROM programming (rapid reversing ramp parameters)	Rapid reversing possible with standard values.		EOL programming
04.1.B4	A002	ECU, enhanced control	Input parameter values for plausibility monitoring are incorrect.	Standard parameters are stored, plausibility monitoring system remains functional.		EOL programming
04.1.B5	A002	ECU, enhanced control	Checksum error ramp parameter, rapid reverse for Tractor Management System (TMS)			EOL programming
04.1.E0	A002	Turboclutch characteristic	Wrong characteristic stored	Continuation in emergency mode possible		EOL programming
04.1.E1	A002	ECU, enhanced control	Pressure regulator control parameters in tractive power control (ML - transmission adjustment) not plausible or read incorrectly			EOL programming
04.1.E2	A002	ECU, enhanced control	Pressure regulator control parameters in tractive power control not plausible (B008 / B039) or read incorrectly.			EOL programming
04.1.E3	A002	ECU, enhanced control	Checksum error parameter for pedal mode	TMS is switched off		EOL programming
04.1.E6	A002	ECU, enhanced control	Checksum parameter load limit control incorrect			EOL programming

Fendt 300 Vario	Tractor / General system
Vario Tractors - Fault Codes	
B	

12.06.2006	Date	b	Version	9/21	Page
Vario Tractors - Fault Codes					
0000	Capitel	B	Index	000022	Docu.No.

Fault code	Id code	Brief description	Description	Consequences	Link	FENDIAS / Note
04.1.EA	A002	ECU, enhanced control	Internal fault (RAM / EEPROM)	Continuation in emergency mode possible		EOL programming
04.1.EC	B055	Engine speed setpoint ('foot throttle') rotary position sensor; combi-sensor	No calibration or drifted values	Continuation in emergency mode possible		TRANSMISSION, LOAD LIMIT CONTROL, calibration code '4005'
04.1.ED	B017	Clutch pedal rotary position sensor	No calibration or drifted values	Continuation in emergency mode possible		TRANSMISSION TURBOCLUTCH FUNCTION calibration code "4001"
04.1.EE	A002	Transmission characteristic	No calibration or drifted values	Continuation in emergency mode possible		TRANSMISSION, TRANSMISSION CONTROL, calibration code '4007'
04.1.EF	A002	Turboclutch characteristic	No calibration or drifted values	Continuation in emergency mode possible		TRANSMISSION, TURBOCLUTCH FUNCTION, calibration code '4009'
04.1.FF	A002	ECU, enhanced control	Internal fault (RAM / EEPROM)	Continuation in emergency mode possible		EOL programming
05.1.00	A002	ECU, enhanced control	EEPROM checksum error			EOL programming
05.1.33	Y009	4WD clutch solenoid valve	Actuation fault	4WD engages	'4WD / Diff. Lock' circuit diagram	4WD ENHANCED CONTROL
05.1.51	A036	Diff. lock 100% key	Signal from key is faulty	Other functions remain active	'4WD / Diff. Lock' circuit diagram	DIFFERENTIAL LOCK ENHANCED CONTROL
05.1.53	Y010	Diff. lock solenoid valve	Actuation fault	Diff. lock disengages	'4WD / Diff. Lock' circuit diagram	DIFFERENTIAL LOCK ENHANCED CONTROL

Fendt 300 Vario	Tractor / General system	B
Vario Tractors - Fault Codes		

12.06.2006	b	10/21	Vario Tractors - Fault Codes			
Date	Version	Page				
0000	B	000022	Capitel	Index	Docu.No.	

Fault code	Id code	Brief description	Description	Consequences	Link	FENDIAS / Note
05.1.61	B003	Suspension position sensor	Signal fault	No further functions available, suspension remains in last position. Continuation without suspension possible	'Suspension' circuit diagram	ENHANCED CONTROL SUSPENSION
			8.5 V supply fault		A013 fuse 5	
05.1.62	Y014	'Raise' suspension solenoid valve	12V control fault	No further functions available, suspension remains in last position. Continuation without suspension possible	'Suspension' circuit diagram	ENHANCED CONTROL SUSPENSION
05.1.63	Y013	'Lower' suspension solenoid valve	12V control fault	No further functions available, suspension remains in last position. Continuation without suspension possible	'Suspension' circuit diagram	ENHANCED CONTROL SUSPENSION
05.1.64	A036	'Suspension ON' key	Signal from key is faulty	Suspension not operational. Continuation without suspension possible		ENHANCED CONTROL SUSPENSION
05.1.66	Y012	Valve, charge suspension	Actuation fault	Suspension moves to 'Lock' status.		
05.1.6E	B003	Suspension position sensor	Incorrect calibration	Suspension not operational		ENHANCED CONTROL SUSPENSION calibration code '7666'
05.1.9D	A051, B091	Sensor, water separator	Water in fuel	Drain water from tank	Circuit diagram 'Deutz engine control'	
05.1.B0	A002	ECU, enhanced control	CAN-bus communication restricted			EOL programming
05.1.FF	A002	ECU, enhanced control	Internal fault (RAM / EEPROM)			EOL programming
06.1.01	A036	Rear PTO ON / OFF key in cab	Key signal fault	PTO disengages	'PTO's' circuit diagram	REAR PTO ENHANCED CONTROL

Fendt 300 Vario	Tractor / General system Vario Tractors - Fault Codes	B

12.06.2006	Date	b	Version	11/21	Page
Vario Tractors - Fault Codes					
0000	Capitel	B	Index	000022	Docu.No.

Fault code	Id code	Brief description	Description	Consequences	Link	FENDIAS / Note
06.1.02	S020	Right external 'Rear PTO ON / OFF' pushbutton	Signal fault	PTO can be engaged by pressing emergency key in cab for 5 seconds.	'PTO's' circuit diagram	REAR PTO ENHANCED CONTROL
06.1.03	S019	Left external 'Rear PTO ON / OFF' pushbutton	Signal fault	PTO can be engaged by pressing emergency key in cab for 5 seconds.	'PTO's' circuit diagram	REAR PTO ENHANCED CONTROL
06.1.04	Y008	Rear PTO clutch solenoid valve	Actuation fault	PTO disengages	'PTO's' circuit diagram	REAR PTO ENHANCED CONTROL
06.1.10	B020	Hall sensor on rear PTO stub shaft	Signal fault	PTO can be engaged by pressing emergency key in cab for 5 seconds.		REAR PTO ENHANCED CONTROL
			12 V supply fault		A013 fuse 13	
06.1.11	A036	Rear PTO automatic mode key	Signal fault	PTO disengages, automatic mode OFF	'PTO's' circuit diagram	REAR PTO ENHANCED CONTROL
06.1.15	A036	NEUTRAL speed selector key	Key signal fault	PTO speed cannot be modified or selected	'PTO's' circuit diagram	REAR PTO ENHANCED CONTROL
06.1.1 A	Y026	Rear PTO speed 540 solenoid valve	Actuation fault	PTO cannot be engaged	'PTO's' circuit diagram	REAR PTO ENHANCED CONTROL
06.1.1B	Y027	Rear PTO speed 750 solenoid valve	Actuation fault	PTO cannot be engaged	'PTO's' circuit diagram	REAR PTO ENHANCED CONTROL
06.1.1C	Y028	Rear PTO speed 1000 solenoid valve	Actuation fault	PTO cannot be engaged	'PTO's' circuit diagram	REAR PTO ENHANCED CONTROL
06.1.41	A036	Rear PTO ON / OFF key (in cab)	has been pressed for more than 30 seconds, mechanical or electrical fault in key.	Speed selection moves to neutral, no preselection possible	'PTO's' circuit diagram	REAR PTO ENHANCED CONTROL
06.1.42	S020	Right external 'Rear PTO ON / OFF' pushbutton	has been pressed for more than 30 seconds, mechanical or electrical fault in key.	No speed selection, PTO cannot be engaged	'PTO shafts' circuit diagram	REAR PTO ENHANCED CONTROL
06.1.43	S019	Left external 'Rear PTO ON / OFF' pushbutton	has been pressed for more than 30 seconds, mechanical or electrical fault in key.	No speed selection, PTO cannot be engaged	'PTO shafts' circuit diagram	REAR PTO ENHANCED CONTROL

Fendt 300 Vario	Tractor / General system
Vario Tractors - Fault Codes	
B	

Date	Version	Page	Vario Tractors - Fault Codes			Capital	Index	Docu.No.
12.06.2006	b	12/21				0000	B	000022

Fault code	Id code	Brief description	Description	Consequences	Link	FENDIAS / Note
06.1.50	B020	Hall sensor, rear PTO stub shaft	Speed at PTO stub greater than 1300 rpm, signal fault on Hall sensor B020	Activating speeds remains possible, press PTO clutch ON/OFF key for more than 5 seconds (emergency operating mode).	'PTO shafts' circuit diagram	REAR PTO ENHANCED CONTROL
			Selected speed is active, speed at stub is lower than clutch speed, power supply fault to Hall sensor B020, speed selection solenoid valve (Y026, Y027, Y028) stuck in 'OFF' position.	Electric speed selection remains possible, press 'PTO clutch ON/OFF' key for more than 5 seconds (emergency operating mode). In case of a faulty solenoid valve, corresponding speed cannot be engaged.	'PTO shafts' circuit diagram	REAR PTO ENHANCED CONTROL
06.1.60	B020, B010	Hall sensor, PTO stub speed B020, Hall sensor, engine speed B010	Actual speed of stub shaft differs by more than plus / minus 12% from engine speed setpoint. Solenoid valve (Y026, Y027, Y028) wrongly wired or seized. Mechanical fault in speed selector. Signal fault at Hall sensor (B020, B010)	Electric speed selection remains possible, press 'PTO clutch ON/OFF' key for more than 5 seconds (emergency operating mode). In case of a faulty solenoid valve, corresponding speed cannot be engaged.	'PTO shafts' circuit diagram	REAR PTO ENHANCED CONTROL
06.1.E0	A002	ECU, enhanced control	Checksum error parameter current control for speed selector			EOL programming
06.1.E1	A002	ECU, enhanced control	Checksum error PTO parametrisation			EOL programming
07.1.01	A036	Front PTO ON / OFF key	Key signal fault		'PTO shafts' circuit diagram	FRONT PTO ENHANCED CONTROL
07.1.04	Y011	'PTO clutch' front PTO solenoid valve	Actuation fault			FRONT PTO ENHANCED CONTROL

Fendt 300 Vario	Tractor / General system Vario Tractors - Fault Codes	B

12.06.2006	b	13/21	Vario Tractors - Fault Codes			0000	B	000022
Date	Version	Page				Capitel	Index	Docu.No.

Fault code	Id code	Brief description	Description	Consequences	Link	FENDIAS / Note
07.1.05	B002	Front PTO Hall sensor	Signal fault		'PTO shafts' circuit diagram	FRONT PTO ENHANCED CONTROL
			12 V supply fault		A013 fuse 14	
07.1.41	A036	Front PTO 'ON' key	Plausibility error, key has been pressed for more than 30 seconds	Front PTO does not function		FRONT PTO ENHANCED CONTROL
08.1.11	Y021	Rear power lift, 'raise' function	Solenoid valve 'raise' faulty	Control locked	Circuit diagram 'Electrohydraulic lifting gear control'	Rear EPC
08.1.12	Y022	Rear power lift, 'lower' function	Solenoid valve 'lower' faulty	Control locked	Circuit diagram 'Electrohydraulic lifting gear control'	Rear EPC
08.1.13	Y021, Y022	Power lift	Solenoid valve short circuit pin 2 to 6 or pin 14 to 6	Control locked	Circuit diagram 'Electrohydraulic lifting gear control'	Rear EPC
08.1.14	S027, S029	Raise button, rear power lift,	Raise button	Control locked	Circuit diagram 'Electrohydraulic lifting gear control'	Rear EPC
08.1.15	S028, S030	Lower button, rear power lift,	Lower button	Control locked	Circuit diagram 'Electrohydraulic lifting gear control'	Rear EPC
08.1.16	A024	ECU, EPC B	Ub_Stab / sensor supply	Control locked	Circuit diagram 'Electrohydraulic lifting gear control'	
08.1.17	A024, G002	ECU, EPC B; generator	Ub+ > 18 Volt	Control locked	Circuit diagram 'Electrohydraulic lifting gear control'	
08.1.18	S072	Quick lift switch, ECU, EPC B	Quick lift switch faulty	Control locked	Circuit diagram 'Electrohydraulic lifting gear control'	Rear EPC
08.1.22	A024, B030	Rotary position sensor, rear power lift "position sensor"	Position sensor_signal	Control locked	Circuit diagram 'Electrohydraulic lifting gear control'	Rear EPC

Fendt 300 Vario	Tractor / General system Vario Tractors - Fault Codes	B

12.06.2006	b	14/21	Vario Tractors - Fault Codes				0000	B	000022
Date	Version	Page					Capitel	Index	Docu.No.

Fault code	Id code	Brief description	Description	Consequences	Link	FENDIAS / Note
08.1.23	A024, A035	Setpoint potentiometer, rear power lift	Setpoint potentiometer_signal	Control locked	Circuit diagram 'Electrohydraulic lifting gear control'	Rear EPC
08.1.24	A024, A035	Limit position potentiometer, rear power lift	Upper limit position potentiometer	Control locked	Circuit diagram 'Electrohydraulic lifting gear control'	Rear EPC
08.1.25	S071	Switch, rapid lowering	Rapid lowering short circuit Ub+	Control locked	Circuit diagram 'Electrohydraulic lifting gear control'	Rear EPC
08.1.26	S048	Switch, EPC lock	Rigid drawbar, short circuit ground	Control locked	Circuit diagram 'Electrohydraulic lifting gear control'	Wiring / check switch
08.1.31	B031	Right draft sensing pin, rear power lift	Draft sensing pin_right	Reduced control performance	Circuit diagram 'Electrohydraulic lifting gear control'	Rear EPC
08.1.32	B032	Left draft sensing pin, rear power lift	Draft sensing pin_left	Reduced control performance	Circuit diagram 'Electrohydraulic lifting gear control'	Rear EPC
08.1.34	A035	Rotary switch, rear power lift, "lowering speed"	Lower potentiometer	Changes cannot be made	Circuit diagram 'Electrohydraulic lifting gear control'	Rear EPC
8.1.36	A035	Rotary switch, rear power lift, 'mixed control'	Mix potentiometer	Changes cannot be made	Circuit diagram 'Electrohydraulic lifting gear control'	Rear EPC
08.1.37	S027, S029	External button raise left and right, rear power lift	Button raise line interruption	Reduced control performance	Circuit diagram 'Electrohydraulic lifting gear control'	Rear EPC
08.1.38	S028, S030	External button lower left and right, rear power lift	Button lower line interruption	Reduced control performance	Circuit diagram 'Electrohydraulic lifting gear control'	Rear EPC
08.1.50	B031	Right draft sensing pin, rear power lift	Draft sensing pin right overload	Reduce load on draft sensing pin	Circuit diagram 'Electrohydraulic lifting gear control'	Rear EPC

Fendt 300 Vario	Tractor / General system Vario Tractors - Fault Codes	B

12.06.2006	b	15/21	Vario Tractors - Fault Codes			0000	B	000022
Date	Version	Page				Capitel	Index	Docu.No.

Fault code	Id code	Brief description	Description	Consequences	Link	FENDIAS / Note
08.1.51	B032	Left draft sensing pin, rear power lift	Draft sensing pin left overload	Reduce load on draft sensing pin	Circuit diagram 'Electrohydraulic lifting gear control'	Rear EPC
08.1.A0	A024	ECU, EPC B	Checksum incorrect			EOL programming
08.1.A1	A024	ECU, EPC B	Checksum incorrect			EOL programming
08.1.B0	B030	Position sensor, rear power lift	Position sensor not calibrated	Position setting no longer possible	Circuit diagram 'Electrohydraulic lifting gear control'	Rear EPC calibration code " 8002"
08.1.B2	A035	Rotary switch, setpoint setting	Setpoint potentiometer not calibrated	Setpoint can no longer be set	Circuit diagram 'Electrohydraulic lifting gear control'	Rear EPC calibration code ' 8001'
01.1.E0	A002, B035	A002 - ECU (enhanced control) ; EDC / EMR hand throttle sensor	EEPROM checksum is wrong	limited driving operation, Chapter 2000 Reg.B	'EDC control' circuit diagram	End-of-line programming required or load new data record
1E.1.00	A051	EDC engine control unit	Undefined error	Read error out with SERDIA		SERDIA
1E.1.01	G001	Battery	Battery input, battery voltage outside target range.	Starting not possible		SERDIA (clear fault)
1E.1.02	B092	Boost pressure sensor	Boost pressure sensor, cable break or short circuit. Boost pressure outside target range	Reduced performance	Circuit diagram 'Deutz engine control'	SERDIA (clear fault) FC:0020, 0021
1E.1.03	B092	Boost pressure sensor	Charge air temperature sensor, cable break or short circuit. Charge air temperature above target range	Reduced performance	Circuit diagram 'Deutz engine control'	SERDIA (clear fault) FC:0095, 0096
1E.1.04	B089	Coolant - temperature sensor	Coolant temperature sensor, cable break or short circuit. Coolant temperature outside target range		Circuit diagram 'Deutz engine control'	SERDIA (clear fault) FC:0037, 0038

Fendt 300 Vario	Tractor / General system Vario Tractors - Fault Codes	B

12.06.2006	b	16/21	Vario Tractors - Fault Codes			0000	B	000022
Date	Version	Page				Capitel	Index	Docu.No.

Fault code	Id code	Brief description	Description	Consequences	Link	FENDIAS / Note
1E.1.06	B085, B088	Camshaft speed sensor, crankshaft speed sensor	Camshaft speed signal, shaft faulty or signal missing; crankshaft speed signal faulty or missing; camshaft/crankshaft speed signals out of phase	Irregular running	Circuit diagram 'Deutz engine control'	SERDIA (clear fault) FC:004B, 004C, 004D, 004E, 004F, 0050
1E.1.07	B091	Water separator sensor	Fuel filter sensor/water separator, cable break or short circuit, water level higher than target range	Drain water from fuel filter	Circuit diagram 'Deutz engine control'	SERDIA (clear fault) FC:0057, 0059
1E.1.08	B087	Fuel low pressure sensor	Cable break or short circuit. Fuel low pressure below target range	Check fuel system, may be air in system or filter clogged	Circuit diagram 'Deutz engine control'	SERDIA (clear fault) FC:005A, 005B, 005E
1E.1.0A	B035	Hand throttle sensor	Cable break or short circuit. Signal from hand throttle implausible		Circuit diagram 'EDC control'	SERDIA (clear fault) FC:008A
1E.1.0E	B090, B093	Sensor, engine oil pressure	Cable break or short circuit. Oil pressure outside target range		Circuit diagram 'Deutz engine control'	SERDIA (clear fault) FC:00C4, 00C5, 00C6, 00C7
1E.1.12	S002	Ignition switch	Pin 50, engine start switch hangs		Circuit diagram 'EDC control'	SERDIA (clear fault) FC:00E3, 00E4
1E.1.13	A051	ECU, engine control unit (EDC7)	Driving speed above target range, signal faulty		Circuit diagram 'EDC control'	SERDIA (clear fault) FC:00E8
1E.1.14	B055	Foot throttle sensor	Cable break or short circuit. Signal not plausible with signal from foot throttle sensor	Speed is maintained, can be taken over with hand throttle by briefly increasing speed	Circuit diagram 'EDC control'	SERDIA (clear fault) FC:000C, 000E, 000F
1E.1.21	K063	Heater relay	Cable break or short circuit	Preheating system does not function	Circuit diagram 'Deutz engine control'	SERDIA (clear fault) FC:0011
1E.1.22	K063	Heater relay	Cable break or incorrectly connected	Preheating system does not function	Circuit diagram 'Deutz engine control'	SERDIA (clear fault) FC:0013, 0014
1E.1.23	S047	Engine brake	Cable break or short circuit		Circuit diagram 'EDC control'	SERDIA (clear fault) FC:0034

Fendt 300 Vario	Tractor / General system Vario Tractors - Fault Codes	B

Date	Version	Page	Fault code	Id code	Brief description	Description	Consequences	Link	FENDIAS / Note
12.06.2006	b	17/21	1E.1.24	Y006	Engine brake flap valve	Valve faulty		Circuit diagram 'Deutz engine control'	SERDIA (clear fault) FC:004A
			1E.1.25	Y006	Engine brake flap valve	Cable break or short circuit		Circuit diagram 'Deutz engine control'	SERDIA (clear fault) FC:0052
			1E.1.26	Y024	Air-conditioning compressor magnetic clutch	Cable break or short circuit		Circuit diagram 'Deutz engine control'	SERDIA (clear fault) FC:0053
			1E.1.27	G001	Battery	Short circuit to battery or short to ground	Starting not possible		SERDIA (clear fault) FC:00B6, 00B7, 00BA, 00BC
			1E.1.2C	K065	Start relay	Cable break or short circuit	Starting not possible		SERDIA (clear fault) FC:00DF, 00E0
			1E.1.30	B004	Air filter	Pressure loss above target range	Clean/change air filter	Circuit diagram'EDC control'	SERDIA (clear fault) FC:000B, 00F2
			1E.1.34	S034	Switch, coolant level	Coolant outside of specified range	Check coolant level	Circuit diagram'EDC control'	SERDIA (clear fault) FC:0025
			1E.1.37	A051	ECU, engine control unit (EDC7)	Fan speed outside of specified range	Clean/change air filter	Circuit diagram'EDC control'	SERDIA (clear fault)
			1E.1.3A	A051	ECU, engine control unit (EDC7)	Misfire			SERDIA (clear fault) FC:002F
			1E.1.50	A091	Metering unit	Metering unit valve not connected, short circuit to battery or short to ground	Error message appears stating that the engine will stop in approx. 5 minutes	Circuit diagram'EDC control'	SERDIA (clear fault) FC:00B0, 00B1, 00B2, 00B3
			1E.1.51	B086	Rail pressure sensor, rail pressure limiting valve	Rail pressure limiting valve opening failure.	an error message is displayed stating that the engine will stop in approx. 5 minutes		SERDIA (clear fault) FC:00D0, 00EC
			1E.1.52	B086	Rail pressure sensor	Cable break or short circuit	an error message is displayed stating that the engine will stop in approx. 5 minutes	Circuit diagram 'Deutz engine control'	SERDIA (clear fault) FC:00D1, 00D2
			1E.1.53	B086	Rail pressure sensor	Rail pressure outside target range	Error message appears stating that the engine will stop in 4 minutes	Circuit diagram 'Deutz engine control'	SERDIA (clear fault) FC:00D3, 00D4, 00D5, 00D6, 00D7, 00D8

12.06.2006	b	17/21	Vario Tractors - Fault Codes				0000	B	000022
------------	---	-------	------------------------------	--	--	--	------	---	--------

Fendt 300 Vario	Tractor / General system Vario Tractors - Fault Codes	B
------------------------	--	----------

12.06.2006	Version	Page	Vario Tractors - Fault Codes			Capitel	Index	Docu.No.
b	18/21					0000	B	000022

Fault code	Id code	Brief description	Description	Consequences	Link	FENDIAS / Note
1E.1.54	B086	Rail pressure sensor	Compression test active	Rail pressure monitoring is deactivated	Circuit diagram 'Deutz engine control'	SERDIA (clear fault) FC:00AF
1E.1.60	A051	ECU, engine control unit (EDC7)	Misfire detected in multiple cylinders			SERDIA (clear fault) FC:002E
1E.1.61	A051	ECU, engine control unit (EDC7)	Misfire detected in cylinder 1.			SERDIA (clear fault) FC:0026
1E.1.62	A051	ECU, engine control unit (EDC7)	Misfire detected in cylinder 2.			SERDIA (clear fault) FC:0027
1E.1.63	A051	ECU, engine control unit (EDC7)	Misfire detected in cylinder 3.			SERDIA (clear fault) FC:0028
1E.1.64	A051	ECU, engine control unit (EDC7)	Misfire detected in cylinder 4.			SERDIA (clear fault) FC:0029
1E.1.70	A051	ECU, engine control unit (EDC7)	Begin of injection period in cylinder 1 outside target range or missing			SERDIA (clear fault) FC:0018
1E.1.71	A051	ECU, engine control unit (EDC7)	Begin of injection period in cylinder 2 outside target range or missing			SERDIA (clear fault) FC:0019
1E.1.72	A051	ECU, engine control unit (EDC7)	Begin of injection period in cylinder 3 outside target range or missing			SERDIA (clear fault) FC:001A
1E.1.73	A051	ECU, engine control unit (EDC7)	Begin of injection period in cylinder 4 outside target range or missing			SERDIA (clear fault) FC:001B
1E.1.78	A051	ECU, engine control unit (EDC7)	Injectors of cylinder bank 1 short circuit	Cylinder shut-off		SERDIA (clear fault) FC:0099
1E.1.79	A051	ECU, engine control unit (EDC7)	Injectors of cylinder bank 1 cable break	Cylinder shut-off		SERDIA (clear fault) FC:009A
1E.1.7C	A051	ECU, engine control unit (EDC7)	Short circuit or cable break to injector 1	Injection failure		SERDIA (clear fault) FC:009F, 00A0
1E.1.7D	A051	Injector 2	Short circuit or cable break to injector 2	Injection failure		SERDIA (clear fault) FC:00A1, 00A2

Fendt 300 Vario	Tractor / General system Vario Tractors - Fault Codes	
	B	

Date	Version	Page	Vario Tractors - Fault Codes					Capitel	Index	Docu.No.
12.06.2006	b	19/21						0000	B	000022
Fault code	Id code	Brief description	Description	Consequences	Link	FENDIAS / Note				
1E.1.7E	A051	Injector 3	Short circuit or cable break to injector 3	Injection failure		SERDIA (clear fault) FC:00A3, 00A4				
1E.1.7F	A051	ECU, engine control unit (EDC7)	Short circuit or cable break to injector 4	Injection failure		SERDIA (clear fault) FC:00A5, 00A6				
1E.1.90	Y094	Exhaust gas recirculation actuator	Short circuit to battery, short to ground, cable break or short circuit	Reduced performance	Circuit diagram 'Deutz engine control'	SERDIA (clear fault) FC:0045, 0046, 0047, 0048				
1E.1.B0	A051	ECU, engine control unit (EDC7)	CAN message speed control lever missing or above target range.		Circuit diagram'EDC control'	SERDIA (clear fault) FC:005E				
1E.1.B1	A051	ECU, engine control unit (EDC7)	CAN message function mode control missing		Circuit diagram'EDC control'	SERDIA (clear fault) FC:005F				
1E.1.B2	A051	ECU, engine control unit (EDC7)	CAN message engine protection missing		Circuit diagram'EDC control'	SERDIA (clear fault) FC:006A				
1E.1.B3	A051	ECU, engine control unit (EDC7)	CAN message preheat and engine command missing		Circuit diagram'EDC control'	SERDIA (clear fault) FC:006E				
1E.1.B4	A051	ECU, engine control unit (EDC7)	CAN message missing		Circuit diagram'EDC control'	SERDIA (clear fault) FC:0070				
1E.1.B5	A051	ECU, engine control unit (EDC7)	CAN message missing		Circuit diagram'EDC control'	SERDIA (clear fault) FC:0071				
1E.1.B6	A051	ECU, engine control unit (EDC7)	CAN message missing		Circuit diagram'EDC control'	SERDIA (clear fault) FC:0075				
1E.1.B7	A051	ECU, engine control unit (EDC7)	CAN message missing		Circuit diagram'EDC control'	SERDIA (clear fault) FC:0076				
1E.1.B8	A051	ECU, engine control unit (EDC7)	CAN message missing		Circuit diagram'EDC control'	SERDIA (clear fault) FC:0078				
1E.1.B9	A051	ECU, engine control unit (EDC7)	CAN message missing		Circuit diagram'EDC control'	SERDIA (clear fault) FC:0079				
1E.1.BA	A051	ECU, engine control unit (EDC7)	CAN message missing		Circuit diagram'EDC control'	SERDIA (clear fault) FC:007A				
1E.1.BB	A051	ECU, engine control unit (EDC7)	CAN message missing		Circuit diagram'EDC control'	SERDIA (clear fault) FC:007B				

Fendt 300 Vario	
Tractor / General system Vario Tractors - Fault Codes	
B	

12.06.2006	b	20/21	Vario Tractors - Fault Codes			0000	B	000022
Date	Version	Page				Capitel	Index	Docu.No.

Fault code	Id code	Brief description	Description	Consequences	Link	FENDIAS / Note
1E.1.BC	A051	ECU, engine control unit (EDC7)	CAN message missing		Circuit diagram'EDC control'	SERDIA (clear fault) FC:007C
1E.1.BD	A051	ECU, engine control unit (EDC7)	CAN message missing		Circuit diagram'EDC control'	SERDIA (clear fault) FC:007D
1E.1.BE	A051	ECU, engine control unit (EDC7)	CAN message missing		Circuit diagram'EDC control'	SERDIA (clear fault) FC:007E
1E.1.BF	A051	ECU, engine control unit (EDC7)	CAN message missing		Circuit diagram'EDC control'	SERDIA (clear fault) FC:007F
1E.1.C0	A051	ECU, engine control unit (EDC7)	CAN message missing		Circuit diagram'EDC control'	SERDIA (clear fault) FC:0080
1E.1.C1	A051	ECU, engine control unit (EDC7)	CAN bus timeout in at least one of the sent messages		Circuit diagram'EDC control'	SERDIA (clear fault) FC:0083
1E.1.C2	A051	ECU, engine control unit (EDC7)	CAN bus A, cable break or short circuit	Driving with foot throttle is possible	Circuit diagram'EDC control'	SERDIA (clear fault) FC:00C0
1E.1.C3	A051	ECU, engine control unit (EDC7)	CAN bus B, cable break or short circuit	Driving with foot throttle is possible	Circuit diagram'EDC control'	SERDIA (clear fault) FC:00C1
1E.1.C4	A051	ECU, engine control unit (EDC7)	CAN bus C, cable break or short circuit	Driving with foot throttle is possible	Circuit diagram'EDC control'	SERDIA (clear fault) FC:00C2
1E.1.D0	A051	ECU, engine control unit (EDC7)	Ambient pressure sensor faulty			SERDIA (clear fault) FC:0010
1E.1.D1	A051	ECU, engine control unit (EDC7)	Engine control unit faulty			SERDIA (clear fault) FC:008D
1E.1.D2	A051	ECU, engine control unit (EDC7)	EEPROM memory access			SERDIA (clear fault) FC:008E
1E.1.D3	A051	ECU, engine control unit (EDC7)	Injector (chip) faulty			SERDIA (clear fault) FC:009D
1E.1.D4	A051	ECU, engine control unit (EDC7)	Injector (chip) faulty			SERDIA (clear fault) FC:009E
1E.1.D5	A051	ECU, engine control unit (EDC7)	Engine control faulty			SERDIA (clear fault) FC:00B8

Fendt 300 Vario	Tractor / General system Vario Tractors - Fault Codes	B

Fendt 300 Vario	Tractor / General system Vario Tractors - Fault Codes	B
------------------------	---	----------

Fault code	Id code	Brief description	Description	Consequences	Link	FENDIAS / Note
1E.1.D6	A051	ECU, engine control unit (EDC7)	Watchdog counter exceeds maximum		Circuit diagram'EDC control'	SERDIA (clear fault) FC:00DA
1E.1.D7	A051	ECU, engine control unit (EDC7)	Wrong voltage of internal 5V reference source 1		Circuit diagram 'Deutz engine control'	SERDIA (clear fault) FC:00DB
1E.1.D8	A051	ECU, engine control unit (EDC7)	Wrong voltage of internal 5V reference source 2		Circuit diagram 'Deutz engine control'	SERDIA (clear fault) FC:00DD
1E.1.D9	A051	ECU, engine control unit (EDC7)	Wrong voltage of internal 5V reference source 3		Circuit diagram 'Deutz engine control'	SERDIA (clear fault) FC:00DE
1E.1.DB	A051	ECU, engine control unit (EDC7)	Serial communication interface faulty		Circuit diagram'EDC control'	SERDIA (clear fault) FC:00EB

12.06.2006	b	21/21	Vario Tractors - Fault Codes				0000	B	000022
Date	Version	Page					Capitel	Index	Docu-No.

Fendt 300 Vario

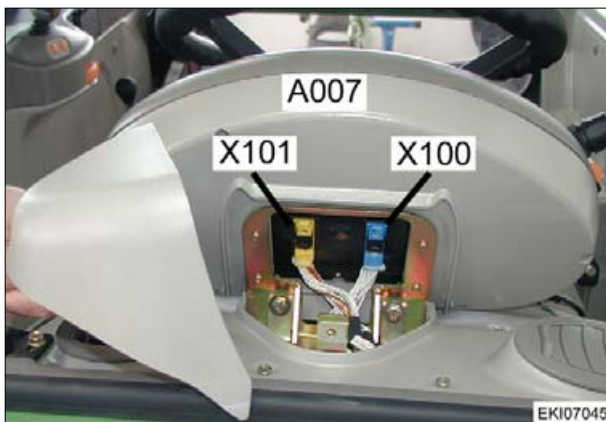
Tractor / General system
Electrical / electronic components - A

D**A002** = ECU, enhanced control

X031 = Separation point on the
 ECU, enhanced control
 In cab on right mudguard



Remove panel

**A007** = Instrument cluster**X100** = Separation point "blue"

X101 = Separation point "yellow"
 on steering column unit



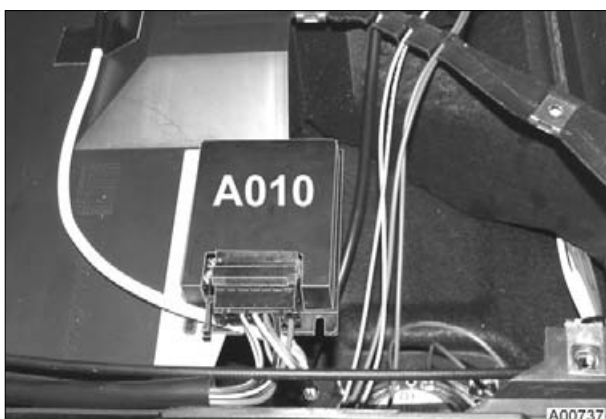
Remove rear panel

**A009** = Actuator unit

X037 = Separation point on the actuator
 On the right side of the transmission



Remove right rear wheel
 Remove metal panel

**A010** = Thermostat (air-conditioning)

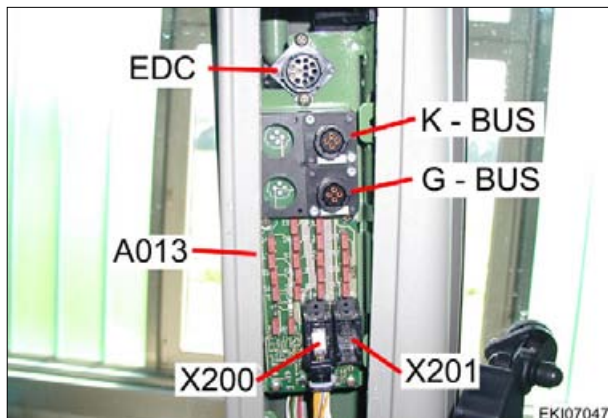
In front of right B-pillar



Remove cab roof.

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - A

D

- A013** = Board with 500 mA microfuses
X200 = Separation point on the circuit board
X201 = Separation point on the circuit board
G-bus = Transmission bus
K-bus = Enhanced controls bus
 On right B-pillar



Remove panel



- A024** = ECU, EPC B
X850 = Separation point on ECU, EPC B
 on right mudguard



Remove panel and control console



- A035** = Control panel EPC (setpoint potentiometer)
X1353 = Separation point on EPC control panel
 On right B-pillar



Remove control panel



- A036** = Control panel, enhanced control
X1357 = Separation point on control panel
X1358 = Separation point on control panel
 on right mudguard



Remove control console

Fendt 300 Vario

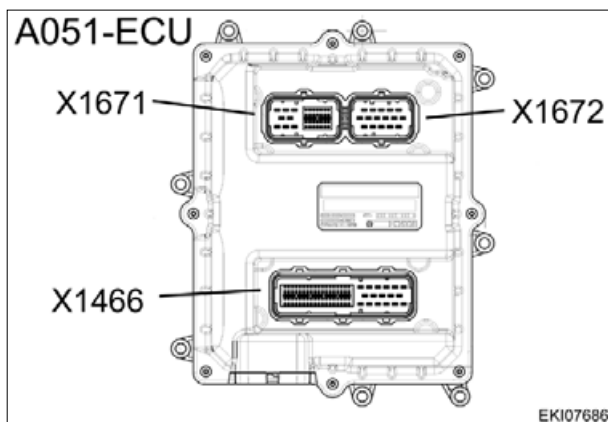
Tractor / General system
Electrical / electronic components - A

D

A051 = Engine control unit "engine controller"
 At right entrance step



Remove battery case.



X1466 = Separation point on A051 - ECU, EDC
 "engine control unit"

X1671 = Separation point on A051 - ECU, EDC
 'engine control unit'

X1672 = Separation point on A051 - ECU, EDC
 'engine control unit'



A055 = Modasys

In cab on right mudguard



Remove panel



A056 = Radio

At top right rear in cab



Date	Version	Page	Electrical / electronic components - A	Capitel	Index	Docu-No.
13.02.06	a	3/3		0000	D	000112

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - B

D**B002** = Sensor, front PTO stub shaft speed**X151** = Separation point on B002

At front of front PTO transmission



Remove protective funnel from front PTO

**B003** = Sensor, front axle suspension position**X152** = Separation point on B003

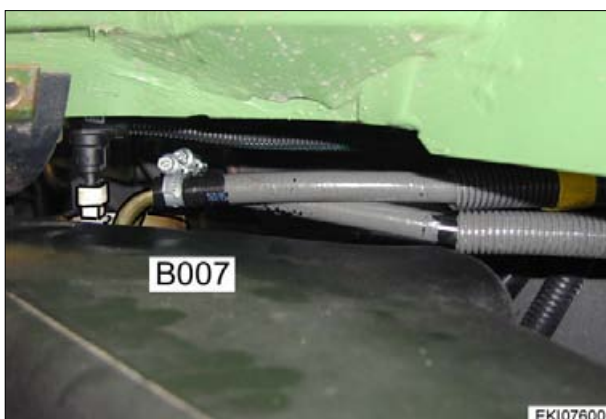
Left side of tractor, on the lateral arm



Remove guard

**B004** = Sensor, underpressure**X153** = Separation point on B004

On air filter

**B007** = Level sensor, fuel**X156** = Separation point on B007

On left side of tractor, on fuel tank

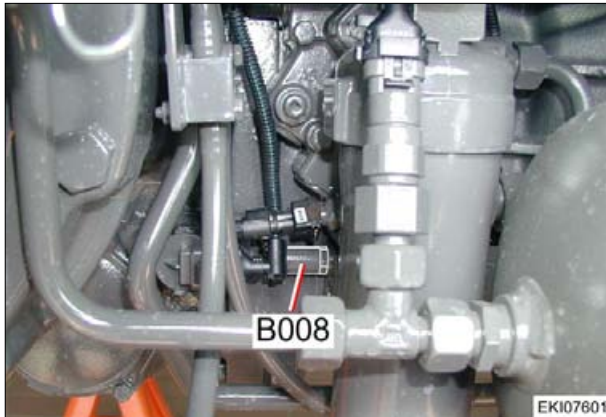


Remove left rear wheel

Date	Version	Page	Electrical / electronic components - B	Capitel	Index	Docu-No.
25.07.2006	a	1/8		0000	D	000114

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - B

D**B008** = High pressure sensor**X157** = Separation point on B008**Note:**

The B008 high pressure sensor is not fitted as standard.

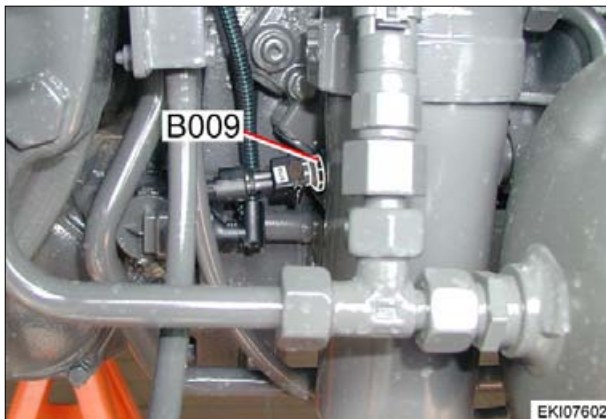
The B008 high pressure sensor must be installed to calibrate the transmission.



On the right side of the transmission, on valve block



Remove right rear wheel and metal panels

**B009** = Sensor, discharge temperature**X158** = Separation point on B009

On the right side of the transmission, on valve block (infeed and discharge)



Remove right rear wheel, remove metal panel



B010 = Sensor, engine speed (is used to control the ML - transmission 'load limit control')

X159 = Separation point on B010

On left side of tractor, on flywheel housing



Open bonnet

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - B

D**B014** = Sensor, hydrostat

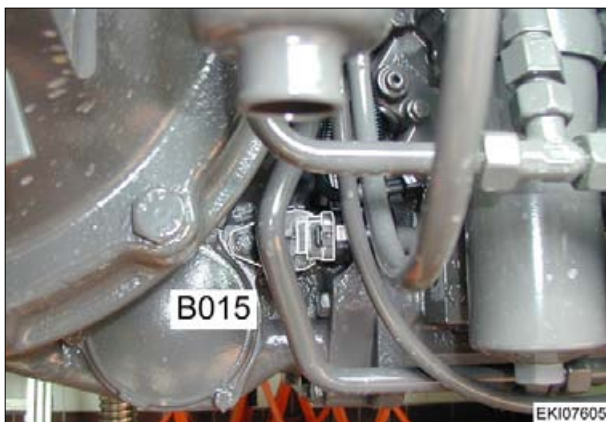
X163 = Separation point on B014
 On top of transmission housing



Remove right rear wheel, remove metal panel

Note:

Alternative: remove driver seat, lay floor mat to the side and remove floor panel

**B015** = Sensor, bevel pinion

X164 = Separation point on B015
 on right side of transmission



Remove right rear wheel, remove metal panel

**B017** = Sensor, clutch pedal

X166 = Separation point on B017
 Left side in steering column unit



Remove side panel

**B019** = Sensor, compressed air volume

X168 = Separation point on B019
 On right side of tractor



Remove right rear wheel, remove metal panel

Date	Version	Page	Electrical / electronic components - B	Capitel	Index	Docu-No.
25.07.2006	a	3/8		0000	D	000114

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - B

D**B020** = Sensor, rear PTO stub shaft speed

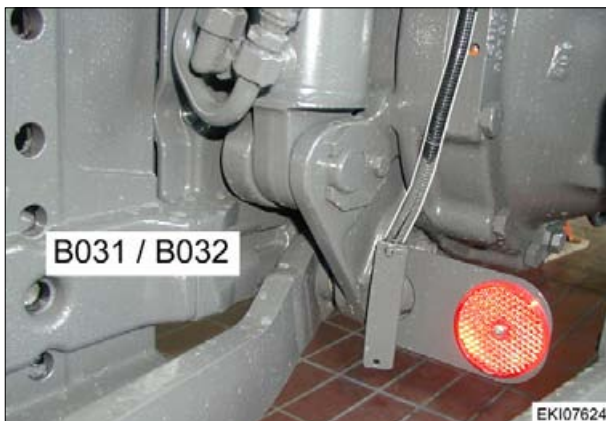
X169 = Separation point on B020
 On the rear PTO - stub shaft

**B030** = Sensor, rear power lift position

X178 = Separation point on B030
 On left lift arm



Remove guard

**B031** = Sensor, draft sensing pin, right**X179** = Separation point on B031 (right)**B032** = Sensor, draft sensing pin, left**X180** = Separation point on B032 (left)

On bottom link mounts

**B035** = Sensor, hand throttle

X183 = Separation point on B035
 on right mudguard



Remove control console

Date	Version	Page	Electrical / electronic components - B	Capitel	Index	Docu-No.
25.07.2006	a	4/8		0000	D	000114

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - B

D**B039** = High pressure sensor 2**X177** = Separation point on B039**Note:**

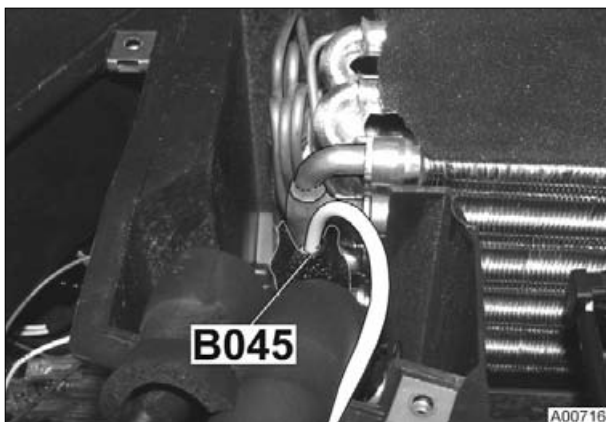
The B039 high pressure sensor 2 is not installed.



On the right side of the transmission, on valve block



Remove right rear wheel and metal panels

**B045** = Sensor, air-conditioning (NTC2).

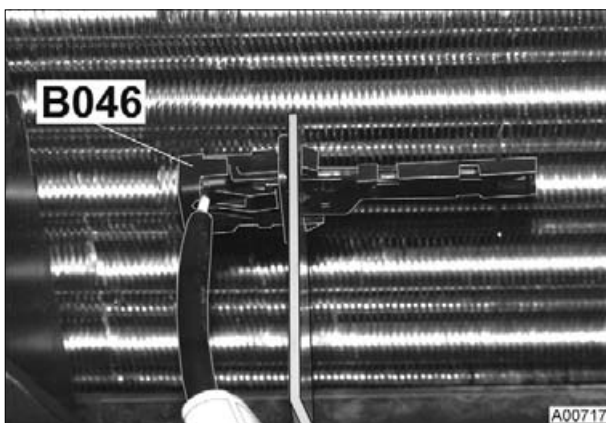
Prevents expansion valve from icing up when air-conditioning is on.

Temperature + 1°C to 4°C

in cab roof



Remove roof cover from cab, then unscrew plastic cover.

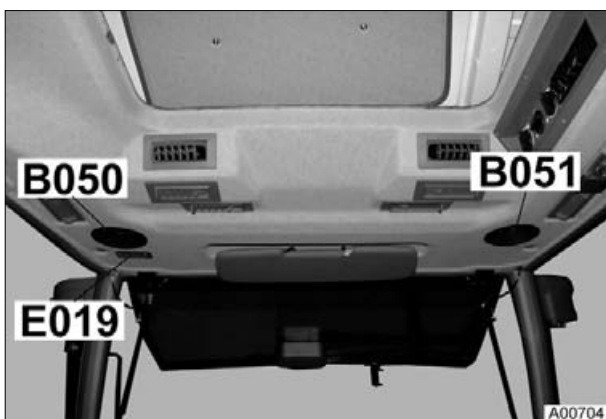
**B046** = Sensor, air-conditioning 2 (NTC 1).

Regulates cooling air when air-conditioning is on.

in cab roof



Remove roof cover from cab, then unscrew plastic cover.

**B050** = Loudspeaker left**B051** = Loudspeaker right

At top in cab (roof liner)



Date	Version	Page	Electrical / electronic components - B	Capitel	Index	Docu-No.
25.07.2006	a	5/8		0000	D	000114

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - B

D

B055 = Sensor, foot throttle
on steering column unit



Remove panel



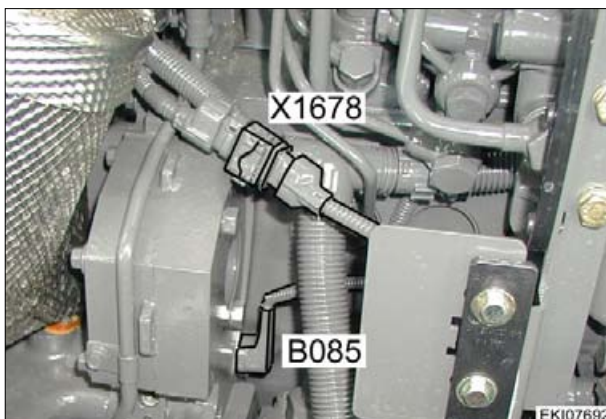
B058 = Depth control EPC - B
X1356 = Separation point on B058
On right mudguard



Remove control console



B080 = Sensor, hydraulic oil temperature
X185 = Separation point on B080
In the intake of hydraulic pump



B085 = Sensor, EDC camshaft
X1678 = Separation point on B085 sensor
On right side of engine, on flywheel
housing



Date	Version	Page	Electrical / electronic components - B	Capitel	Index	Docu-No.
25.07.2006	a	6/8		0000	D	000114

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - B

D**B086** = Rail pressure sensor**X1655** = Separation point on B086 sensor

Right side of engine, on front end of the rail

**B087** = Fuel low pressure**X1656** = Separation point on B087 sensor

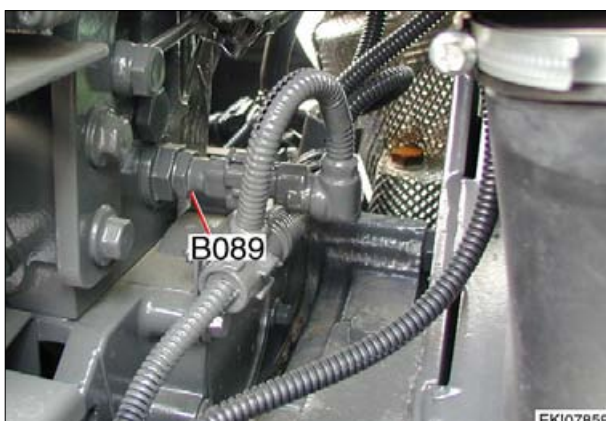
On bottom of fuel filter



Remove metal panel

**B088** = Sensor, EDC (crankshaft)**X1657** = Separation point on B088 sensor

Front of engine, on crankshaft

**B089** = Coolant temperature**X1658** = Separation point on B089 sensor

On back of cylinder head



Fendt 300 Vario

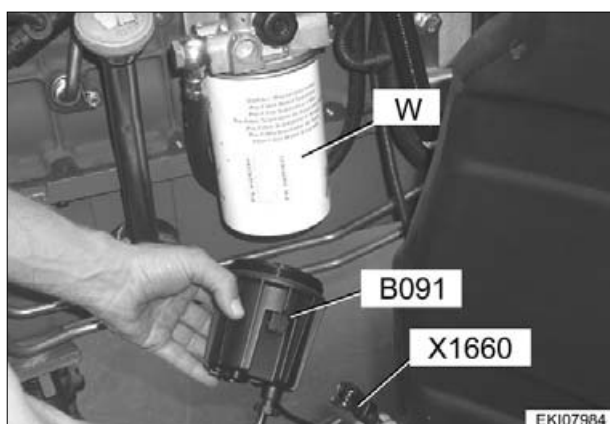
Tractor / General system
Electrical / electronic components - B

D**B090** = Sensor, oil pressure

X1659 = Separation point on B090 sensor
 On bottom left of oil filter



Remove metal panel

**B091** = Sensor, water in fuel

X1660 = Separation point on B091 sensor
 Oil pan left

**B092** = Sensor, boost pressure / temperature

X1661 = Separation point on B092 sensor
 On front of engine



Fendt 300 Vario

Tractor / General system
Electrical / electronic components - E

D

- E001** = H4 headlamp right
- X350** = Separation point on E001
- E002** = H4 headlamp left
- X351** = Separation point on E002
- E003** = H4 additional headlamp right
- X352** = Separation point on E003
- E004** = Left H4 additional headlamp
- X353** = Separation point on E004
- E005** = Turn signal indicator / position lamp front right
- X372** = Separation point on E005
- X378** = Separation point on E005
- E006** = Turn signal indicator / position lamp front left
- X373** = Separation point on E006
- X379** = Separation point on E006



- E007** = Right rear taillamp
- X106** = Separation point on E007
- X113** = Separation point on E007
- E008** = Left rear taillamp
- X116** = Separation point on E008
- X117** = Separation point on E008
- E009** = License plate lighting right
- X374** = Separation point on E009
- X375** = Separation point on E009
- E010** = License plate lighting left
- X376** = Separation point on E010
- X377** = Separation point on E010



- E011** = Work light in roof rear right
- X385** = Separation point on E011
- X386** = Separation point on E011
- E012** = Work light in roof rear left
- X388** = Separation point on E012
- X389** = Separation point on E012

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - E

D

- E013** = Work light in roof front right
X291 = Separation point on E013
E014 = Work light in roof front left
X294 = Separation point on E014
E015 = Work light front on right direction indicator
X292 = Separation point on E015
X293 = Separation point on E015
E016 = Work light front on left direction indicator
X295 = Separation point on E016
X296 = Separation point on E016



- E017** = Work light on taillamp bracket right
X366 = Separation point on E017
E018 = Work light on taillamp bracket left
X367 = Separation point on E018



- E019** = Lighting, cab
 Front top left in cab roof



Fendt 300 Vario

Tractor / General system
Electrical / electronic components - E

D**E020** = EPC light**X282** = Separation point on E020**X283** = Separation point on E020

Top right in cab roof

**E021** = Rotating beacon right**X346** = Separation point on E021

On right of tractor roof

**E022** = Rotating beacon left**X345** = Separation point on E022

On left of tractor roof

**E023** = Rear window heater

Glued on the inside of the rear window



Fendt 300 Vario

Tractor / General system
Electrical / electronic components - E

D**E054** = Right wide vehicle marker light**X896** = Separation point on E054**E055** = Left wide vehicle marker light**X897** = Separation point on E055**E112** = Licence plate light (low roof)**X1706** = Separation point on E112**E115** = Work light on left taillamp (low roof)**X367** = Separation point on E115

On left rear mudguard



Fendt 300 Vario	Tractor / General system Electrical / electronic components - G	D
------------------------	--	----------



G001 = Battery (12 VDC / 90 Ah)
At right entrance step



Remove cover



G002 = Generator (14 VDC / 150 ampere)
on right side of engine

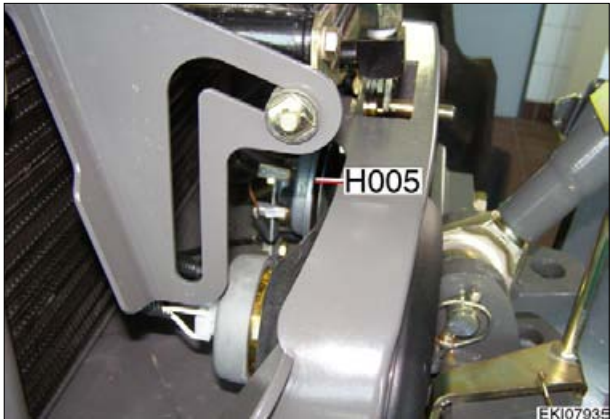


Note:

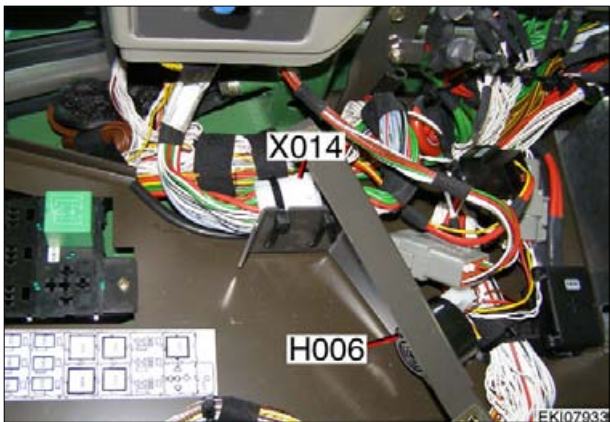
To prevent damage to the rectifier and controller, The G002 generator must only be operated when connected to the battery or another consumer (e.g. vehicle lighting).

Date	Version	Page	Electrical / electronic components - G	Capitel	Index	Docu-No.
25.07.2006	a	1/1		0000	D	000115

Fendt 300 Vario	Tractor / General system Electrical / electronic components - H	D
------------------------	--	----------



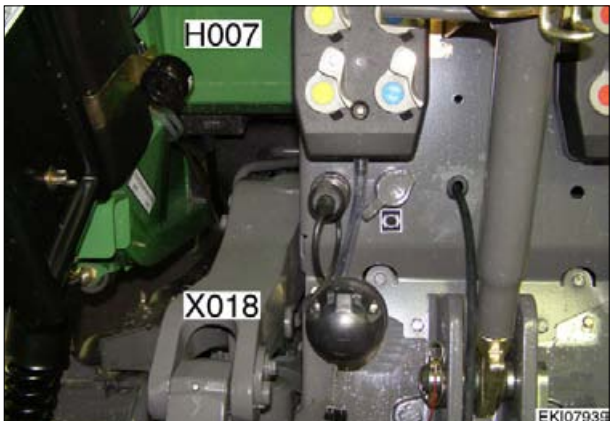
H005 = Horn
Between the headlamps



H006 = Buzzer
In cab on right mudguard



Remove control console



H007 = Buzzer reverse travel
On back wall of cab on left



Fendt 300 Vario

Tractor / General system
Electrical / electronic components - K

D**K001** = Relay, +UB 15 (switched positive)**K002** = Relay, +UB 58 (lighting)**K004** = Relay, 56a (main beam)**K005** = Relay, 56 b (dipped beam)**K007** = Relay, brake**K009** = Relay, windscreen wiper**K010** = Relay, direction indicator controller**K013** = Relay, 3rd hydraulic circuit (optional extra)**K047** = Relay, hydraulic trailer brake (Italy)**K060** = Relay, clutch / turboclutch**K062** = Relay, EDC

In cab on right mudguard



Remove control console

**K063** = Relay, heating flange

Left side of engine on intake pipe

**K064** = Battery disconnect relay

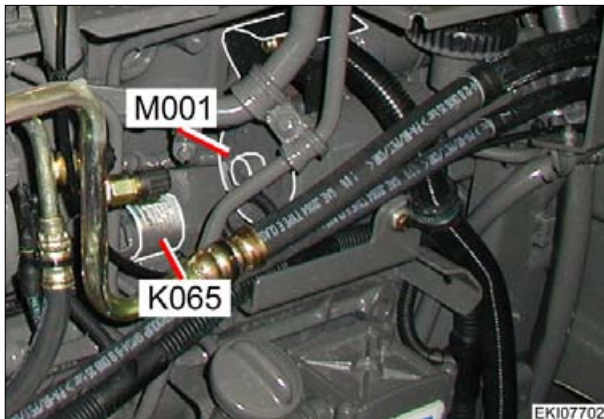
Right entrance step



Remove panel

Note:

Battery disconnect relay is screwed directly on the battery, not shown in picture

Fendt 300 Vario**Tractor / General system
Electrical / electronic components - K****D****K065** = Relay, starter

Left side of engine in front of the starter

**K066** = Relay, compressed air pilot control

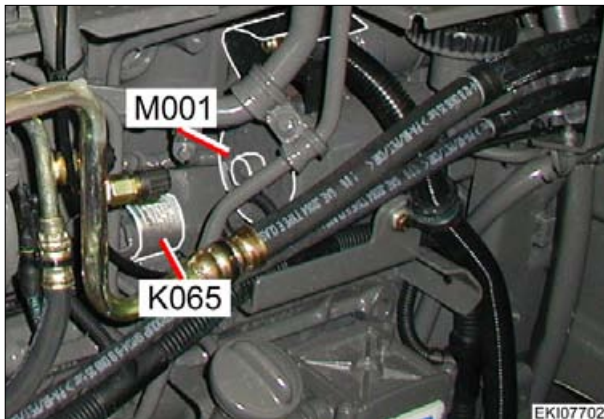
In cab on right mudguard



Remove control console

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - M

D**M001** = Starter (12 VDC / 3 KW)

On left side of engine



In windscreen:

M002 = Front wiper motor

In rear window:

M004 = Rear wiper motor**Note:**

Test rear wiper motor in same manner as front wiper motor M002.

**M003** = Wiper pump, front

M005 = Wiper pump, rear
 on left rear mudguard



Remove windscreen washer tank

Date	Version	Page	Electrical / electronic components - M	Capitel	Index	Docu-No.
25.07.2006	a	1/2		0000	D	000116

Fendt 300 Vario

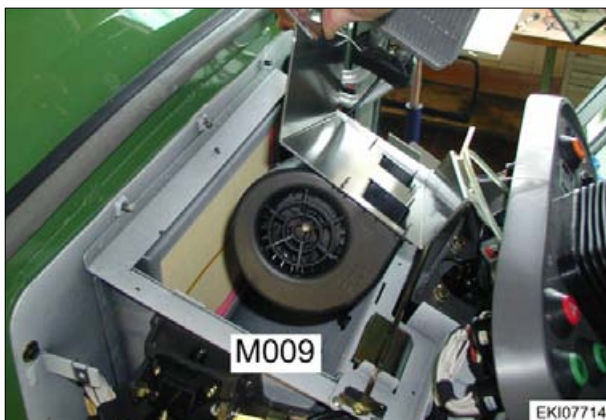
Tractor / General system
Electrical / electronic components - M

D**M007** = seat adjustment motor (compressor)

On driver seat spring unit:



remove rubber bellows.

**M009** = Heater blower

At top of steering column



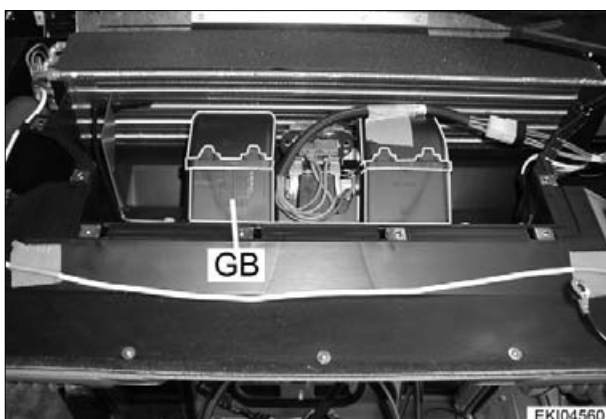
Remove A007 instrument cluster, panel and air duct. Place heat exchanger to the side

**M014** = Roof blower (infinitely adjustable) (optional)

On top under the cab roof



Remove roof cover from cab, then unscrew plastic cover

**M018** = **Roof blower** levels 1, 2 and 3 for air-conditioning .

On top under the cab roof



Remove roof cover from cab, then unscrew plastic cover

Date	Version	Page	Electrical / electronic components - M	Capitel	Index	Docu-No.
25.07.2006	a	2/2		0000	D	000116

Fendt 300 Vario	Tractor / General system Electrical / electronic components - R	D
------------------------	--	----------



R002 = Heating flange
Left side of engine on intake pipe



Date	Version	Page	Electrical / electronic components - R	Capitel	Index	Docu-No.
27.07.2006	a	1/1		0000	D	000121

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - S

D

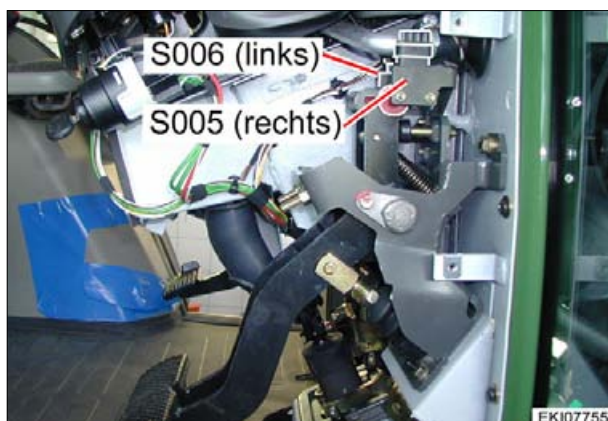
- S001** = Steering column switch
X215 = Separation point on S001
X245 = Separation point on S001
 On left of steering wheel



- S002** = Switch, ignition
X072 = Separation point on S002
 On right of steering column



- S003** = Switch, headlights
X080 = Separation point on S003
S004 = Switch, hazard warning light
X216 = Separation point on S004
 On left of dashboard



- S005** = Switch, right brake
X217 = Separation point on S005
S006 = Switch, left brake
X218 = Separation point on S006
 under dashboard



Remove dashboard

Date	Version	Page	Electrical / electronic components - S	Capitel	Index	Docu-No.
26.07.2006	a	1/8		0000	D	000117

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - S

D**S007** = Switch, additional headlamps**X219** = Separation point on S007

On left of dashboard

**S008** = Switch, front working lights**X275** = Separation point on S008**S009** = Switch, rear work lights**X274** = Separation point on S009

At top right in cab

**S010** = Switch, rear wiper motor**X273** = Separation point on S010**S011** = Switch, rotating beacon**X270** = Separation point on S011**X271** = Separation point on S011**X272** = Separation point on S011

At top right in cab

**S015** = Switch, hand brake**X226** = Separation point on S015

On left in cab, on hand brake lever



Remove cover panels

Date	Version	Page	Electrical / electronic components - S	Capitel	Index	Docu-No.
26.07.2006	a	2/8		0000	D	000117

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - S

D**S017** = Switch, filter clogging (transmission oil)**X228** = Separation point on S017

Right side of transmission, on high pressure filter housing



Remove right rear wheel, remove metal guard

**S019** = Switch, PTO on rear left**X229** = Separation point on S019**S020** = Switch, PTO on rear right**X230** = Separation point on S020

On taillamp

**S027** = Right external switch 'Raise'**X237** = Separation point on S027**S028** = 'Lower' external button right**X228** = Separation point on S028**S029** = Left external switch 'Raise'**X239** = Separation point on S029**S030** = Left external switch 'Lower'**X240** = Separation point on S030

Date	Version	Page	Electrical / electronic components - S	Capitel	Index	Docu-No.
26.07.2006	a	3/8		0000	D	000117

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - S

D

- S031** = Switch, right door contact
X279 = Separation point on S031
S032 = Switch, left door contact
X299 = Separation point on S032
 Behind the upper door hinge



Remove side panel



- S033** = Switch, heater blower
X247 = Separation point on S033
 On right in dashboard



- S035** = Switch, high/low pressure
X341 = Separation point on S035
 In front of radiators on fluid tank (drier)



- S037** = Switch, roof blower (3-speed)
X280 = Separation point on S037
 At top right in cab



Fendt 300 Vario

Tractor / General system
Electrical / electronic components - S

D**S038** = Rear window heater switch**X267** = Separation point on S038**X268** = Separation point on S038**X269** = Separation point on S038

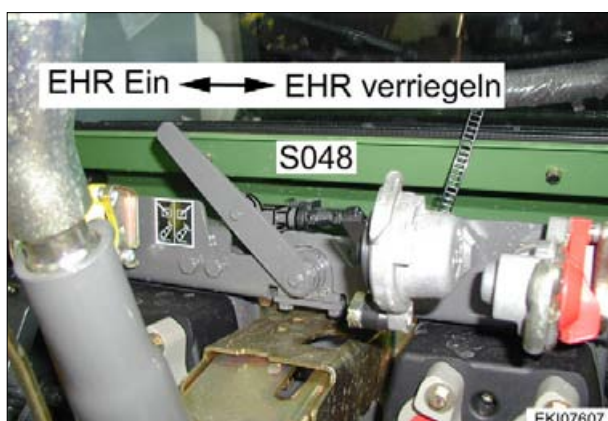
At top right in cab

**S044** = Switch, air-conditioning system. **Air current temperature is preselected (setpoint)****X220** = Separation point on S044

At top right in cab

**S047** = Switch, engine brake**X140** = Separation point on S047

Cab floor

**S048** = Switch, EPC lock "block drawbar"**X148** = Separation point on S048

At rear of tractor



Date	Version	Page	Electrical / electronic components - S	Capitel	Index	Docu-No.
26.07.2006	a	5/8		0000	D	000117

Fendt 300 Vario

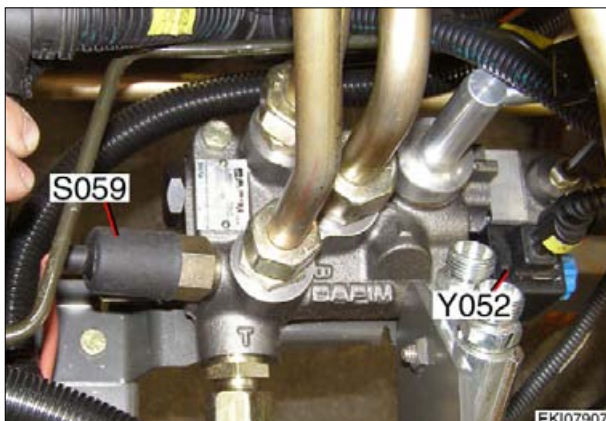
Tractor / General system
Electrical / electronic components - S

D**S049** = Switch, 3rd hydraulic circuit**X431** = Separation point on S049

In crossgate lever

**S056** = Switch, oil flow collector**X1019** = Separation point on S056

On right mudguard

**S059** = Switch, hydraulic trailer brake (Italy)**X1056** = Separation point on S059

Between clutch housing and right entry

**S061** = Switch, rapid reversing**X1040** = Separation point on S061

On the steering wheel stalk



Date	Version	Page	Electrical / electronic components - S	Capitel	Index	Docu-No.
26.07.2006	a	6/8		0000	D	000117

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - S

D**S069** = Switch, roof blower (infinitely adjustable)**X468** = Separation point on S069

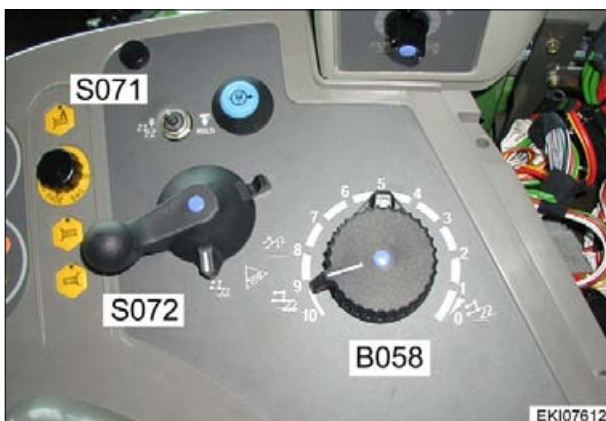
Top right in cab roof

**S070** = Switch, transmission setting**X1340** = Separation point on S070

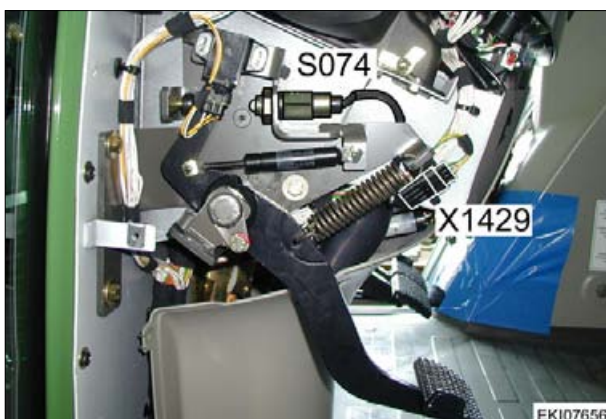
On left side of transmission



Remove left rear wheel



Control unit on right on mudguard

B058 = Depth control**S071** = Switch, hitch**S072** = Quick lift switch**S074** = Switch, transmission neutral / starter lockout**X1429** = Separation point on S074

On left of steering column



Remove panel

Date	Version	Page	Electrical / electronic components - S	Capitel	Index	Docu-No.
26.07.2006	a	7/8		0000	D	000117

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - S

D**S083** = Switch for K064 battery disconnect relay**X1645** = Separation point on S083

top right in cab

**S084** = Switch ON/OFF hydr. trailer brake (France)**X1646** = Separation point on S084

On the dashboard

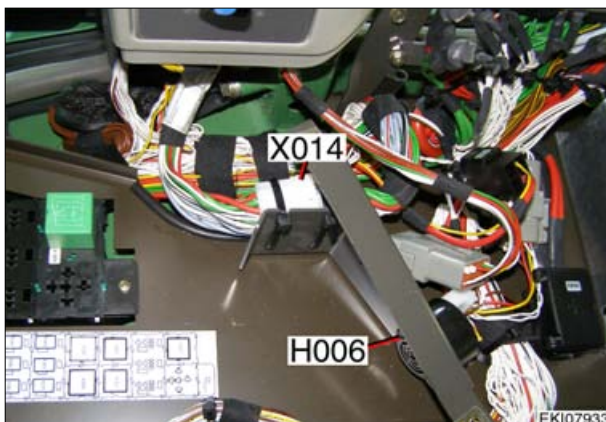


Fendt 300 Vario

Tractor / General system
Electrical / electronic components - X

D

X007 = Implement socket
 At top right rear in cab



X014 = Cable coupler for cab / cab base
 In cab on right mudguard



Remove control console



X016 = Cable coupler for licence plate light / work light
 Right rear



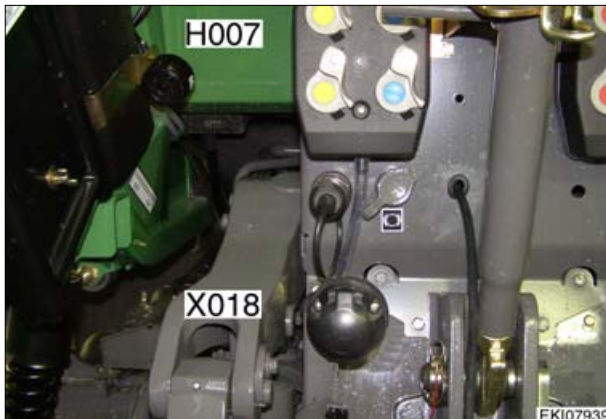
Remove cab roof.



X017 = Front socket, only with front power lift

Date	Version	Page	Electrical / electronic components - X	Capitel	Index	Docu-No.
27.07.2006	a	1/23		0000	D	000120

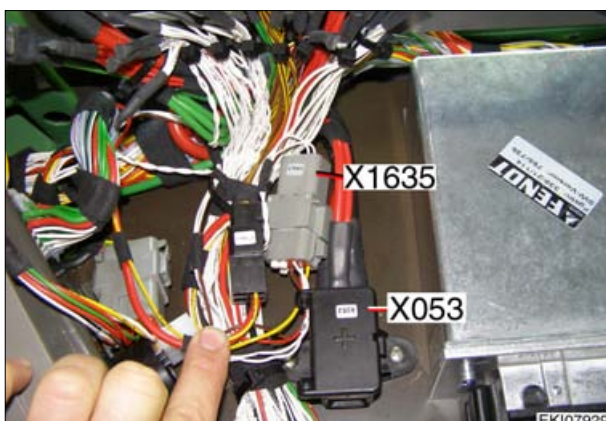
Fendt 300 Vario	Tractor / General system Electrical / electronic components - X	D
------------------------	--	----------

**X018** = Trailer socket**X023** = Socket, 3rd hydraulic circuit
On multi-coupler on right**X050** = Fuse holder 1 compl**X051** = Fuse holder 2 compl

At right rear in cab



Remove cover.

**X053** = Positive bolt

In cab on right mudguard



Remove control console

Date	Version	Page	Electrical / electronic components - X	Capitel	Index	Docu-No.
27.07.2006	a	2/23		0000	D	000120

Fendt 300 Vario

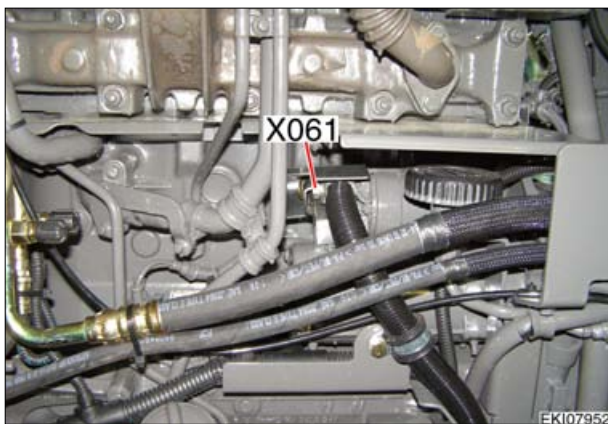
Tractor / General system
Electrical / electronic components - X

D**X058** = Battery terminal (+Vbatt 30)**X060** = G001 battery negative (terminal 31)

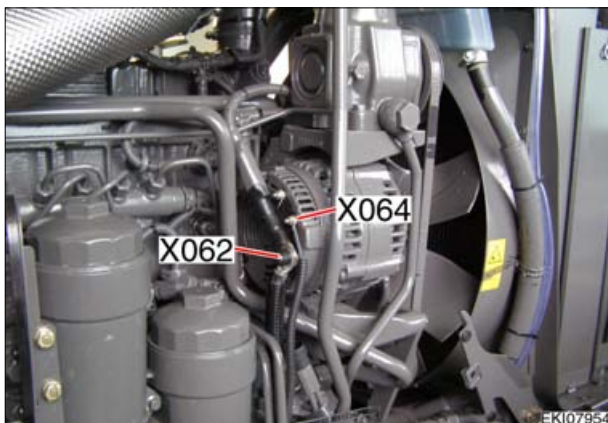
At right entrance step



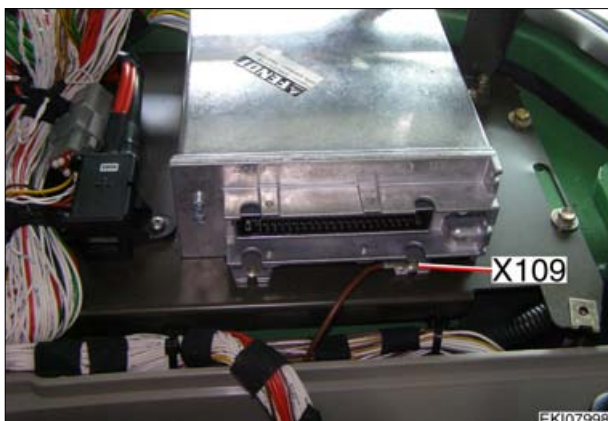
Remove battery case.

**X061** = M001 - starter terminal 30

On left side of engine

**X062** = G002 - generator terminal B+**X064** = G002 - generator terminal D+

Right front on engine

**X109** = Tractor body ground on A002 - ECU,
enhanced control

At right rear in cab

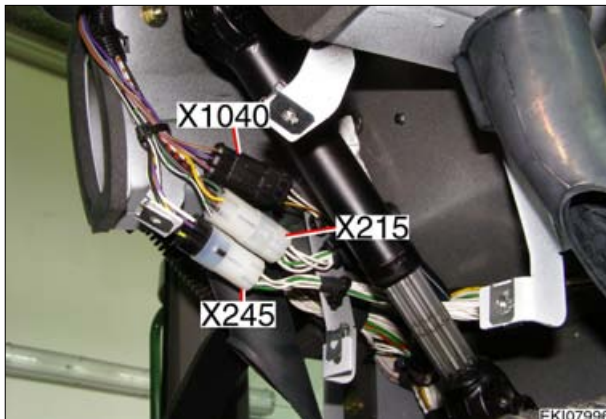


Remove panel

Date	Version	Page	Electrical / electronic components - X	Capitel	Index	Docu-No.
27.07.2006	a	3/23		0000	D	000120

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - X

D

X215 = Separation point on S001 - steering column switch

X245 = Separation point on S001 - steering column switch on steering column unit



Remove panel



X254 = Socket 10 ampere

X255 = Socket 25 ampere (+supply)

X256 = Socket 25 ampere (ground)

At top right rear in cab



X259 = Separation point on E023 - rear window heater (ground)

X260 = Separation point on E023 - rear window heater (supply)

Next to the rear wiper motor

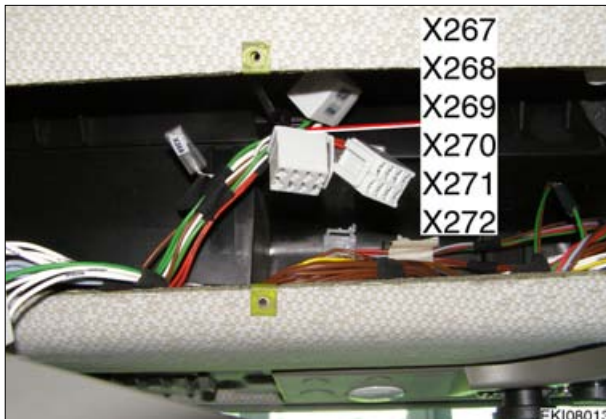


Remove panel

Date	Version	Page	Electrical / electronic components - X	Capitel	Index	Docu-No.
27.07.2006	a	4/23		0000	D	000120

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - X

D

X267 = Separation point on S038 - switch, rear window heater

X268 = Separation point on S038 - switch, rear window heater

X269 = Separation point on S038 - switch, rear window heater

X270 = Separation point on S011 - switch, rotating beacon

X271 = Separation point on S011 - switch, rotating beacon

X272 = Separation point on S011 - switch, rotating beacon

At top right rear in cab



Remove radio installation cover



X276 = Cable coupler, E021 - right rotating beacon

B - pillar right



Remove blind plug



X281 = Cable coupler, air-conditioning
 In cab top right



Remove radio installation cover

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - X

D

X284 = Cable coupler M002 - front wiper motor
 A - pillar right



Pull cable with blind plug out of the cab roof



X297 = Cable coupler M002 - front wiper motor
 A - pillar left



Pull cable with blind plug out of the cab roof



X298 = Cable coupler, E022 - left rotating beacon
 B - pillar left



Remove blind plug



X431 = Cable coupler on S049 - switch, 3rd hydraulic circuit
 Bottom of right rear mudguard



Remove side panels

Date	Version	Page	Electrical / electronic components - X	Capitel	Index	Docu-No.
27.07.2006	a	6/23		0000	D	000120

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - X

D

X443 = Cable coupler, cab roof
 In roof of cab



Remove roof cover from cab, then
 unscrew plastic cover



X460 = Separation point, steplessly adjustable
 fan
 In roof of cab



Remove roof cover from cab, then
 unscrew plastic cover.



X500 = Ground pin, oil pan right
X503 = Ground pin, oil pan right
 On right of oil pan



X505 = G001 battery (terminal 31) "ground"
 At right entrance step

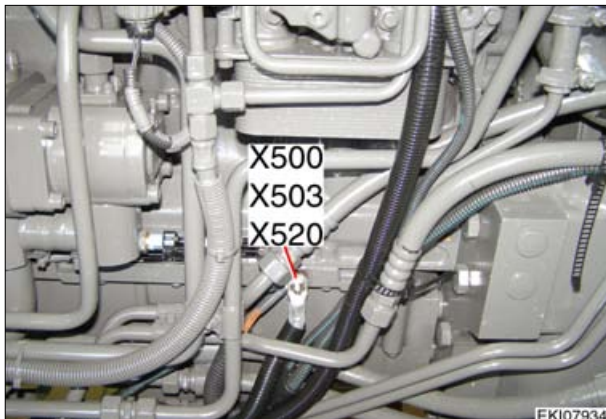


Remove battery case.

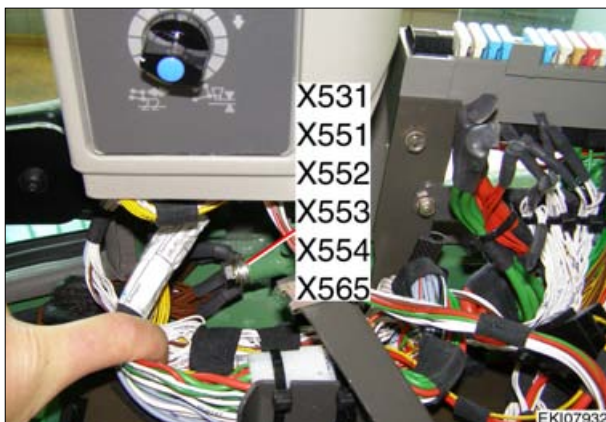
Date	Version	Page	Electrical / electronic components - X	Capitel	Index	Docu-No.
27.07.2006	a	7/23		0000	D	000120

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - X

D

X520 = Ground pin, oil pan right
 On right of oil pan



X531 = Ground pin, right B-pillar
 In cab on right mudguard



Remove control console



X532 = Ground pin, body/cab

X533 = Ground pin, body/cab

X534 = Ground pin, body/cab

X536 = Ground pin, body/cab
 In cab top right



Remove radio installation cover



X550 = Ground pin, right mudguard
 On front on the right mudguard



Unscrew cover panel



Date	Version	Page	Electrical / electronic components - X	Capitel	Index	Docu-No.
27.07.2006	a	8/23		0000	D	000120

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - X

D**X551** = Ground pin, right cab base**X552** = Ground pin, cab base**X553** = Ground pin, cab base**X554** = Ground pin, cab base

Below the right B - pillar



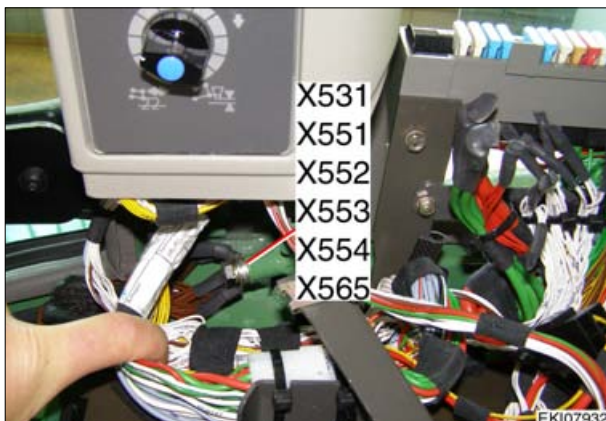
Remove control console

**X560** = Ground pin, cab junction

At right entrance step



Remove metal panel.

**X565** = Ground pin, cab base

Below the right B - pillar



Remove control console

**X570** = Ground pin, transmission**X571** = Ground pin, transmission

Left of transmission in front of the rear axle



Swing out fuel tank, remove insulating mat

Date	Version	Page	Electrical / electronic components - X	Capitel	Index	Docu-No.
27.07.2006	a	9/23		0000	D	000120

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - X

D

X574 = Ground pin, cab junction
 At right entrance step



Remove metal panel.



X581 = Ground pin, engine



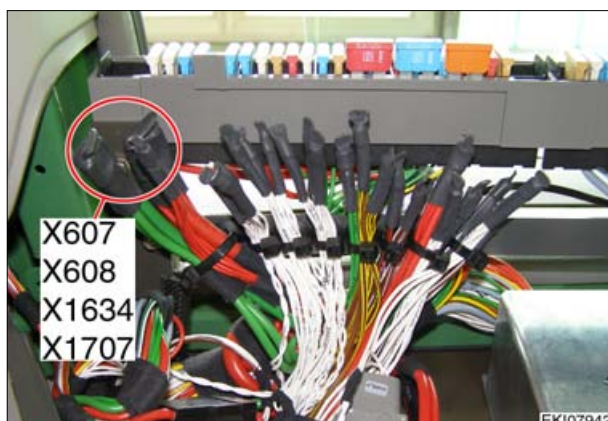
X600 = Connector, CAN high

X601 = Connector, CAN low

On right mudguard



Remove panel



X607 = Connector, +Vbatt 30

X608 = Connector, +Vbatt 15

On right mudguard



Remove panel

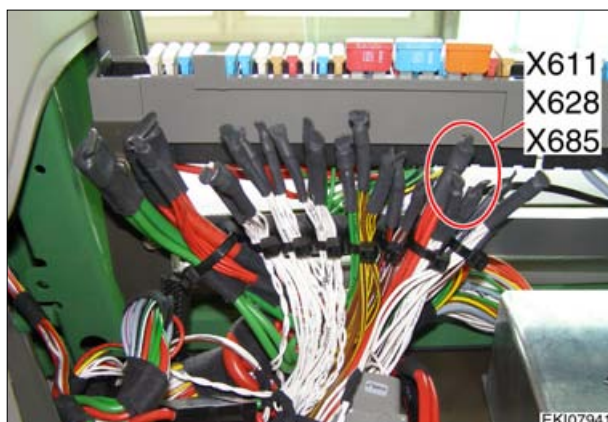
Date	Version	Page	Electrical / electronic components - X	Capitel	Index	Docu-No.
27.07.2006	a	10/23		0000	D	000120

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - X

D**X609** = Connector, +Vbatt 58 lighting**X610** = Connector, right turn signal indicator
On right mudguard

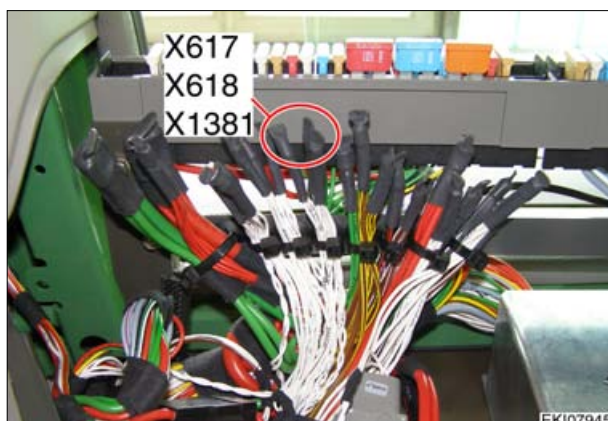
Remove panel

**X611** = Connector, left turn signal indicator
On right mudguard

Remove panel

**X612** = Connector, +Vbatt 15 wipers and rotating beacon**X613** = Connector, sensor system ground
On right mudguard

Remove panel

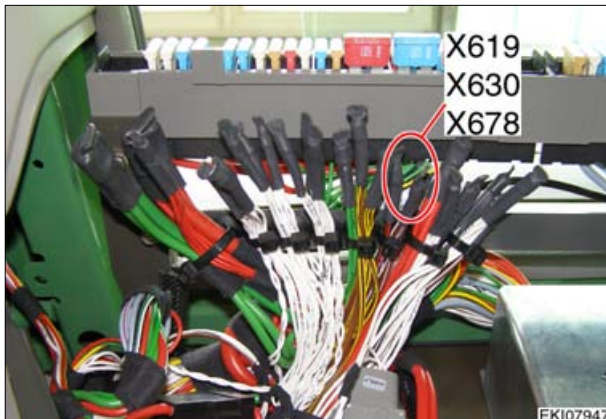
**X617** = Connector, CAN low**X618** = Connector, CAN high
On right mudguard

Remove panel

Date	Version	Page	Electrical / electronic components - X	Capitel	Index	Docu-No.
27.07.2006	a	11/23		0000	D	000120

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - X

D

X619 = Connector, electronics ground
 On right mudguard



Remove panel



X620 = Connector, electronics ground
 On right mudguard



Remove panel



X624 = Connector, CAN high
X625 = Connector, CAN low
 On right mudguard



Remove panel



X627 = Connector, sensor system ground
 On right mudguard



Remove panel

Date	Version	Page	Electrical / electronic components - X	Capitel	Index	Docu-No.
27.07.2006	a	12/23		0000	D	000120

Fendt 300 Vario

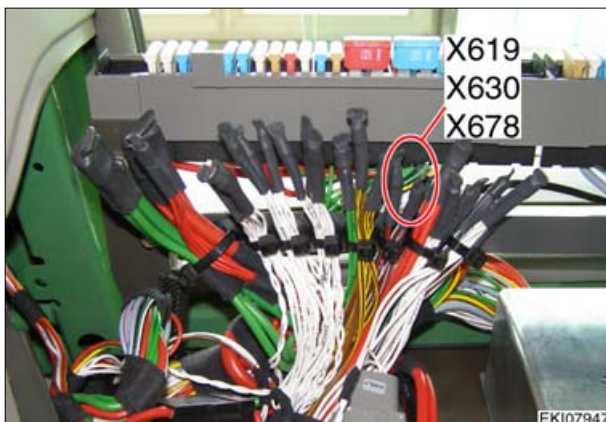
Tractor / General system
Electrical / electronic components - X

D

X628 = Connector, +Vbatt 30
 On right mudguard



Remove panel



X630 = Connector, brake lamp (terminal 54)
 On right mudguard



Remove panel



X631 = Connector, LED rear PTO ON
 On right mudguard



Remove panel



X638 = Connector, sensor system ground
 At right entrance step



Open plug housing, connector inside

Date	Version	Page	Electrical / electronic components - X	Capitel	Index	Docu-No.
27.07.2006	a	13/23		0000	D	000120

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - X

D

- X650** = Connector, headlamp 56 a (main beam)
X651 = Connector, headlamp 56 b (dipped beam)
 In front between the headlamps



Remove corrugated tube



- X671** = Connector, sensor system ground
 At right entrance step



Open plug housing, connector inside



- X676** = Connector, left and right draft sensing pins ground

- X677** = Connector, +Vbatt left and right draft sensing pins

At right entrance step



Open plug housing, connector inside



- X678** = Connector, analogue ground
 On right mudguard



Remove panel

Date	Version	Page	Electrical / electronic components - X	Capitel	Index	Docu-No.
27.07.2006	a	14/23		0000	D	000120

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - X

D

X685 = Connector, Vbatt 30 engine control unit
 On right mudguard



Remove panel



X700 = Connector, rear work light ground
 Rear right in cab roof



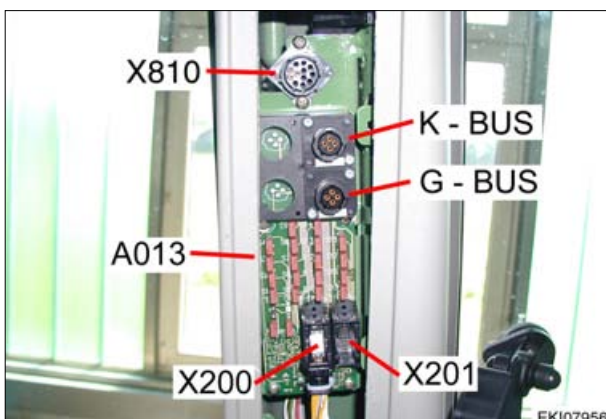
Remove cab roof cover



X792 = Connector (for continuously variable transmission)
 In cab top right



Remove radio installation cover



X810 = EDC diagnostics socket (engine control unit)
 On right in B-pillar



Unscrew cover panel

Date	Version	Page	Electrical / electronic components - X	Capitel	Index	Docu-No.
27.07.2006	a	15/23		0000	D	000120

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - X

D

X830 = Cable coupler (M007 - seat compressor and S053 - seat switch)

On right behind the driver seat



Pull cable out from behind panel



X896 = Separation point on E054 - left wide vehicle marker light

X897 = Separation point on E055 - right wide vehicle marker light

Note:

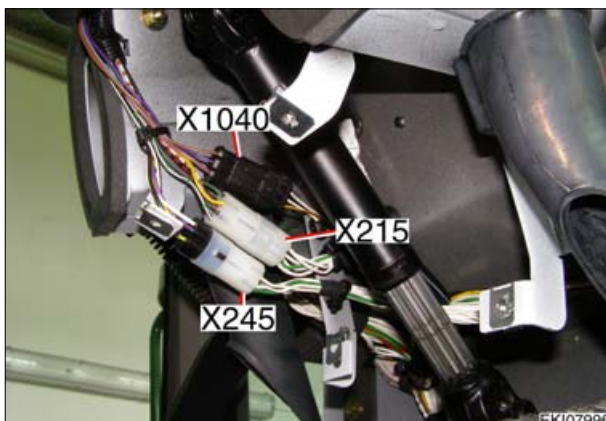
Photo shows right separation point.

Left separation point X896 is analogous

On the B - pillar



Unscrew EPC control panel in the B - pillar



X1040 = Separation point on S061 - switch, rapid reverse

on steering column unit

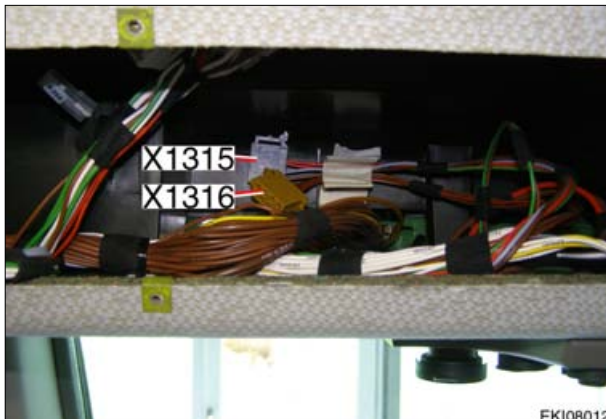


Remove panel



Fendt 300 Vario

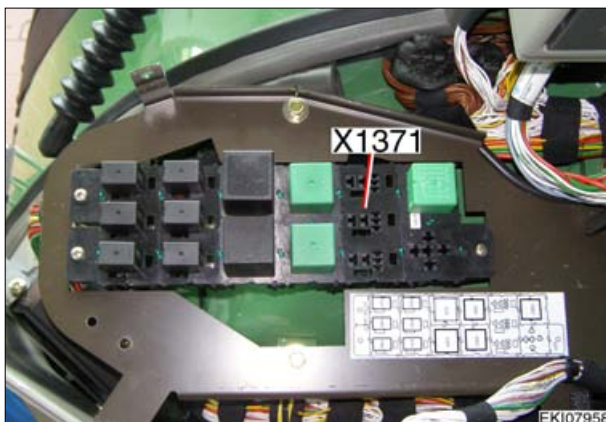
Tractor / General system
Electrical / electronic components - X

D**X1315** = Separation point on B056 - radio**X1316** = Separation point on B056 - radio

In cab top right



Remove radio installation cover

**X1371** = Relay base

In cab on right mudguard



Remove control console

**X1375** = Cable coupler cab base / chassis

At right entrance step



Remove metal panel.

**X1378** = Connector, +Vbatt stab (10 VDC) (EPC B)

On right mudguard



Remove panel

Date	Version	Page	Electrical / electronic components - X	Capitel	Index	Docu-No.
27.07.2006	a	17/23		0000	D	000120

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - X

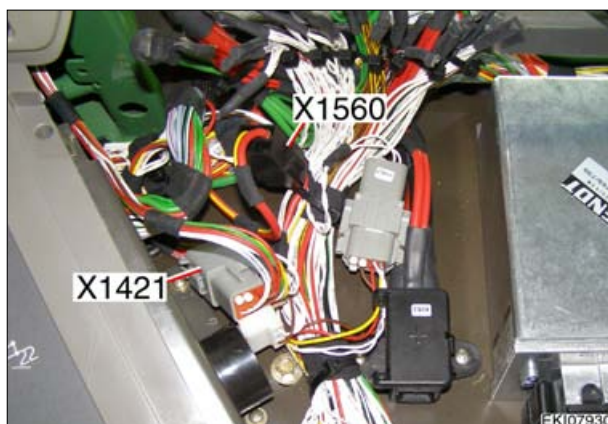
D

X1381 = Connector, +Vbatt stab (10 VDC) (EPC B)

On right mudguard



Remove panel



X1421 = Cable coupler, cab base

On right mudguard



Remove panel



X1430 = Cable coupler cab base / chassis

At right entrance step



Remove metal panel.



X1463 = Connector, CAN high

X1464 = Connector, CAN high

At right entrance step

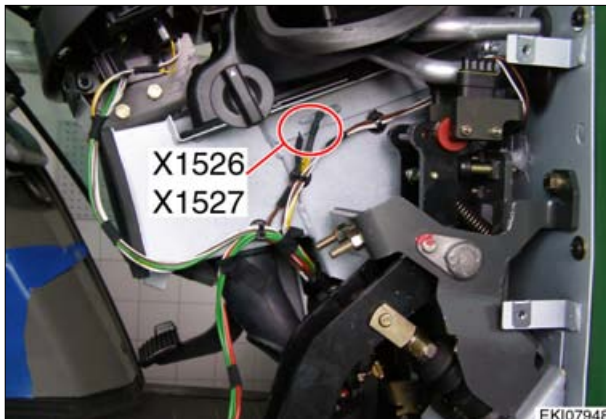


Remove battery case.

Date	Version	Page	Electrical / electronic components - X	Capitel	Index	Docu-No.
27.07.2006	a	18/23		0000	D	000120

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - X

D

X1526 = Connector, ground (B055 - foot throttle sensor)

X1527 = Connector, +Vbatt foot throttle (5.0 VDC)
 On right of steering column



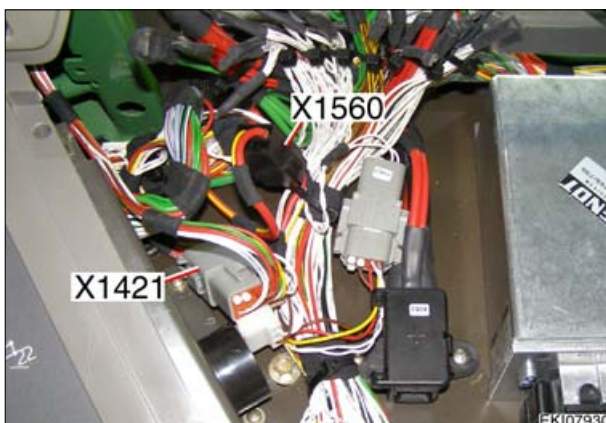
Unscrew cover panel



X1528 = Connector, sensor system supply
 At right entrance step



Remove battery case.



X1560 = EDC diagnostics
 On right mudguard



Remove panel



X1625 = Spare wires

Note:

These cables go to separation point X1626
 In front of the instrument cluster



Unscrew cover panel

Date	Version	Page	Electrical / electronic components - X	Capitel	Index	Docu-No.
27.07.2006	a	19/23		0000	D	000120

Fendt 300 Vario

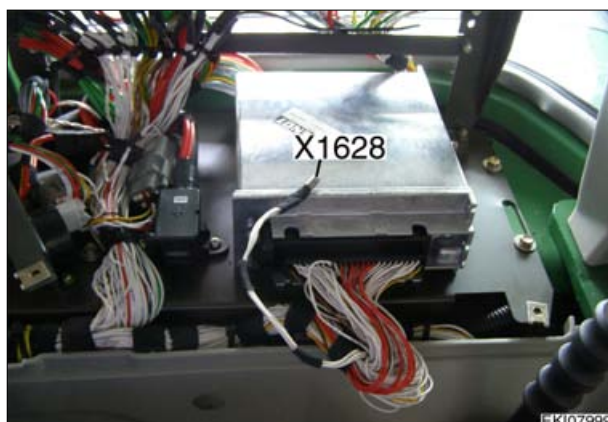
Tractor / General system
Electrical / electronic components - X

D**X1626** = Spare wires**X1627** = Spare wires

At right entrance



Lift foot mat and expose cable

**X1628** = Spare wires**Note:****These cables go to separation point X1627**

On right mudguard



Remove panel

**X1631** = Battery negative (terminal 31)

At right entrance step



Remove battery case.

**X1632** = Battery positive (terminal 30)

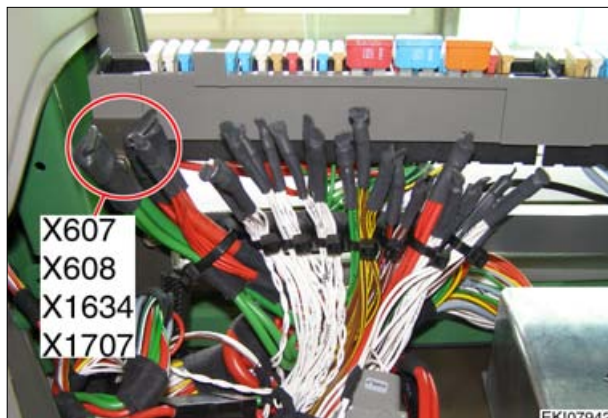
At right entrance step



Remove battery case.

Fendt 300 Vario

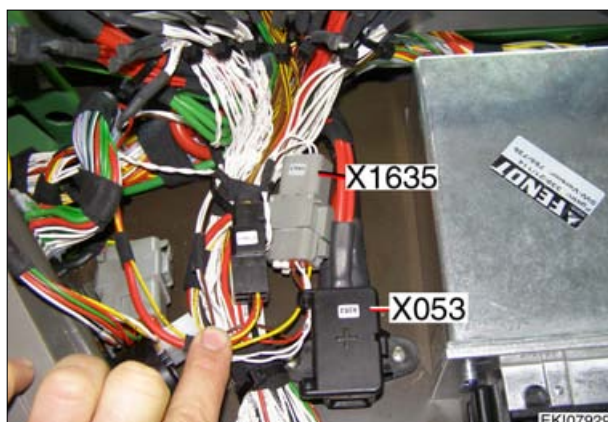
Tractor / General system
Electrical / electronic components - X

D**X1634** = Connector (+ Vbatt 30)

On right mudguard



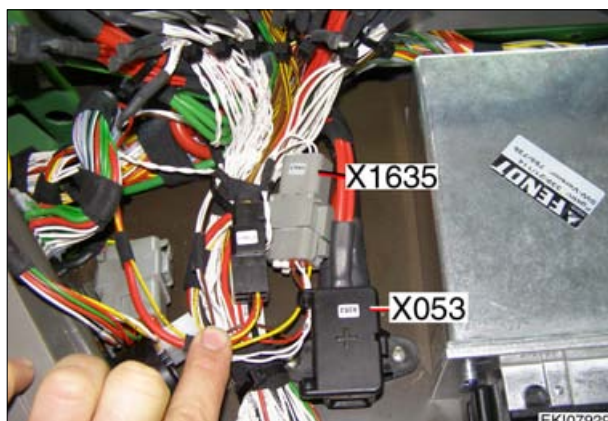
Remove panel

**X1635** = Cable coupler, cab base

On right mudguard



Remove panel

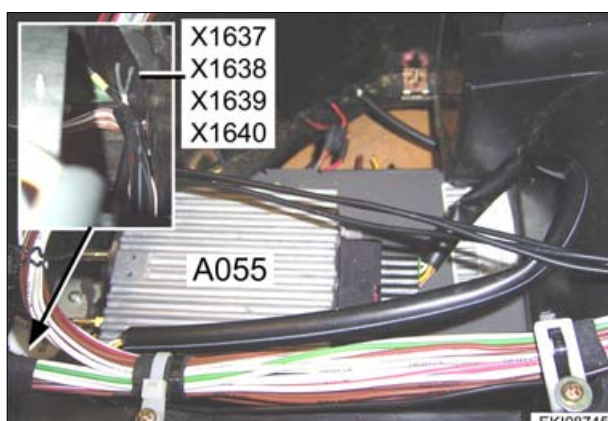
**X1636** = Cable coupler (Modasys)**Note:**

Not shown in picture. An intermediate cable X1636 (Modasys) is installed at separation point X1635

On right mudguard



Remove panel

**X1639** = Connector (enhanced control BUS) (CAN high)**X1640** = Connector (enhanced control BUS) (CAN low)

at top in the cab roof



Access through B051- loudspeaker right
 or remove roof cover

Date	Version	Page	Electrical / electronic components - X	Capitel	Index	Docu-No.
27.07.2006	a	21/23		0000	D	000120

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - X

D

X1673 = Cable coupler EDC
 Top right on rocker arm housing



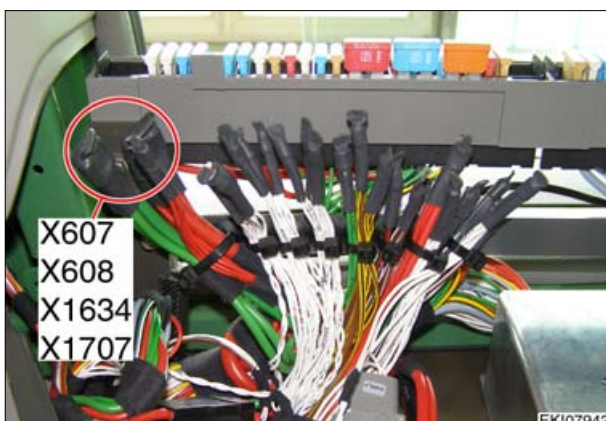
X1675 = Connector, ground
X1676 = Connector, +Vbatt 12 VDC
 X1675 is located approx. 57 cm behind separation point X1671
 X1676 is located approx. 74 cm behind separation point X1671



X1696 = Connector (+ Vbatt 30)
X1697 = Connector (+ Vbatt 30)
X1698 = Connector (+ Vbatt 30)
 At right entrance step



Remove battery case.



X1707 = Connector (+ Vbatt 30)
 Remove panel



On right mudguard

Date	Version	Page	Electrical / electronic components - X	Capitel	Index	Docu-No.
27.07.2006	a	22/23		0000	D	000120

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - X

D**X1769** = Cable coupler M018 3-speed blower**X1770** = Cable coupler M018 3-speed blower

In cab top right



Remove radio installation cover

**X1769** = Cable coupler M014 infinitely adjustable blower**X1771** = Cable coupler M014 infinitely adjustable blower

In cab top right



Remove radio installation cover

**X1772** = Ground pin, cab body (for infinitely adjustable blower)**X1773** = Ground pin, cab body (for 3-speed blower)

In cab top right



Remove radio installation cover

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - Y

D**Y004** = Solenoid valve, clutch / turboclutch**X317** = Separation point on Y004

On the right side of the transmission



Remove right rear wheel

**Y006** = Solenoid valve, engine brake**X1679** = Separation point on Y006

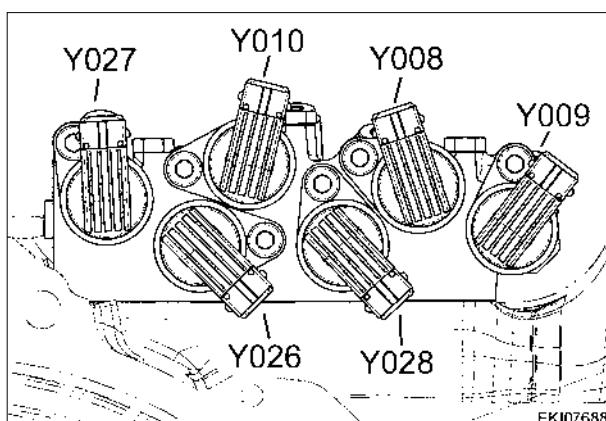
On right side of tractor on engine bulkhead



On right side of tractor on valve block for the enhanced control hydraulics



Remove right rear wheel, remove metal guard

**Y008** = Solenoid valve, rear PTO clutch**X319** = Separation point on Y008**Y009** = Solenoid valve, 4WD**X320** = Separation point on Y009**Y010** = Solenoid valve, differential lock (rear)**X321** = Separation point on Y010

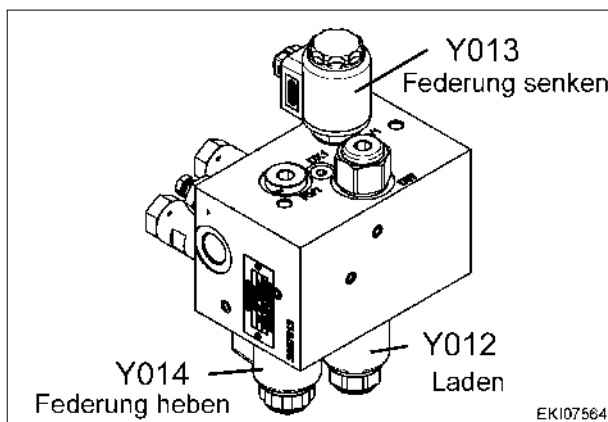
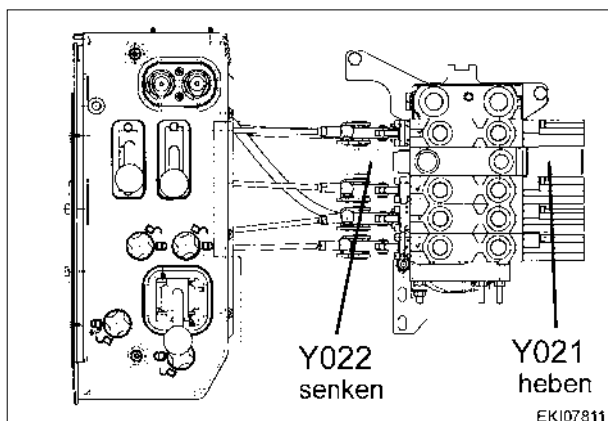
Date	Version	Page	Capitel	Index	Docu-No.
27.07.2006	a	1/5	Electrical / electronic components - Y	0000	D 000118

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - Y

D**Y011** = Solenoid valve, front PTO clutch
X322 = Separation point on Y011
 On front PTO transmission


Remove front plate

**Y012** = Solenoid valve, 'load'**X323** = Separation point on Y012**Y013** = Solenoid valve, lower suspension**X324** = Separation point on Y013**Y014** = Solenoid valve, raise suspension**X325** = Separation point on Y014**Y021** = Solenoid valve, rear power lift 'raise'**X332** = Separation point on Y021**Y022** = Solenoid valve, rear power lift 'lower'**X333** = Separation point on Y022**Note:**
**The Y021/Y022 - solenoid valves, raise/lower
 can also be actuated mechanically!**
**Y023** = Solenoid valve, compressed air pilot control system
X334 = Separation point on Y023
 on left axle point


Remove guard

Date	Version	Page	Electrical / electronic components - Y	Capitel	Index	Docu-No.
27.07.2006	a	2/5		0000	D	000118

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - Y

D

Y024 = Magnetic clutch, air-conditioning compressor

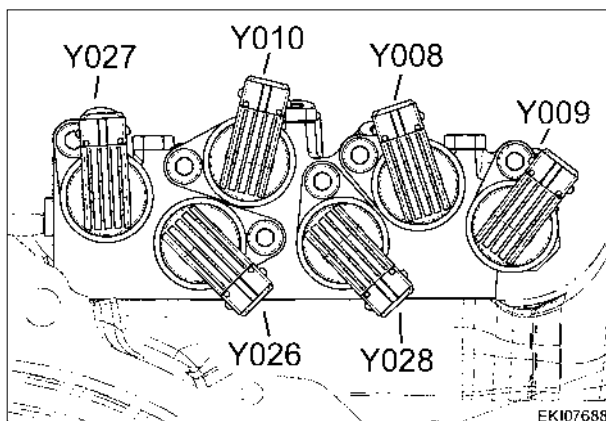
X342 = Separation point on Y024
On left side of engine



On right side of tractor on valve block for the enhanced control hydraulics



Remove right rear wheel, remove metal guard



Y026 = Solenoid valve, rear PTO '540' (540 rpm)

X360 = Separation point on Y026

Y027 = Solenoid valve, rear PTO '540E' (750 rpm)

Y027 = or solenoid valve, ground PTO "WZ"

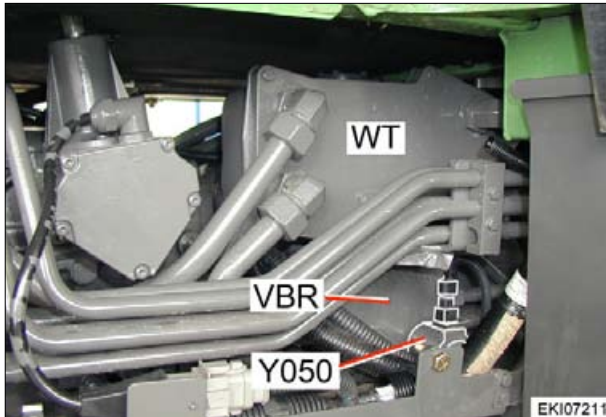
X361 = Separation point on Y027

Y028 = Solenoid valve, rear PTO '1000' (1000 rpm)

X368 = Separation point on Y028

Fendt 300 Vario

Tractor / General system
Electrical / electronic components - Y

D

VBR = Valve block return flow

WT = Heat exchanger transmission / hydraulic oil

Y050 = Solenoid valve, oil flow collector

X1020 = Separation point on Y050

On the right side of the transmission



Remove right rear wheel and metal panels



Y052 = Solenoid valve, hydraulic trailer brake (Italy)

X1022 = Separation point on Y052

In front of right entrance step



Y089 = Solenoid valve ON/OFF hydr. trailer brake (France)

X1647 = Separation point on Y089

In front of right entrance step



Y091 = Metering unit (fuel)

X1662 = Separation point on Y091

Right side of engine behind the fuel filter



Date	Version	Page	Capitel	Index	Docu-No.
27.07.2006	a	4/5	Electrical / electronic components - Y	0000	D
					000118

Fendt 300 Vario	Tractor / General system Electrical / electronic components - Y	D
------------------------	--	----------



Y094 = EGR actuator (exhaust gas recirculation)
On left side of engine

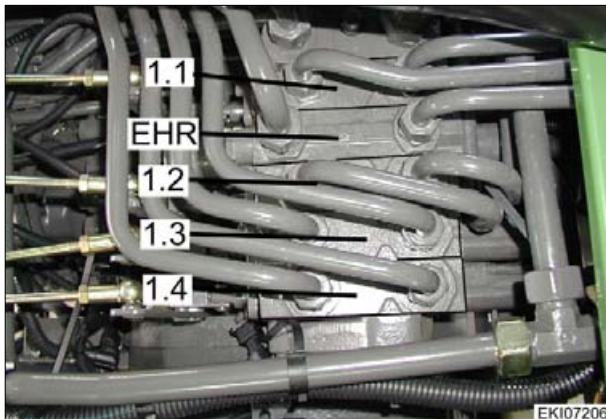


Y095 = Injector 1
Y096 = Injector 2
Y097 = Injector 3
Y098 = Injector 4
X1662 = Separation point on Y095, Y096,
Y097, Y098
In cylinder head



Unscrew valve cover

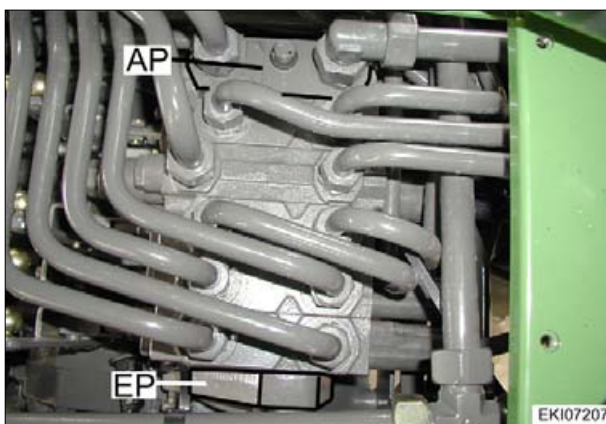
Date	Version	Page	Electrical / electronic components - Y	Capitel	Index	Docu-No.
27.07.2006	a	5/5		0000	D	000118

Fendt 300 Vario**Tractor / General system
Hydraulic components****D****1.1** = auxiliary control valve "yellow"**1.2** = auxiliary control valve "blue"**1.3** = auxiliary control valve "red"**1.4** = auxiliary control valve "green"**EPC** = EPC valve

On top of rear axle housing



Remove driver seat and floor panel

**AP** = Terminal plate

On top of rear axle housing



Remove driver seat and floor panel

**ASP** = Accumulator (front axle suspension)

At right entrance step



Unscrew metal panels

**AV8** = Double stopcock (front power lift)

At front right on tractor

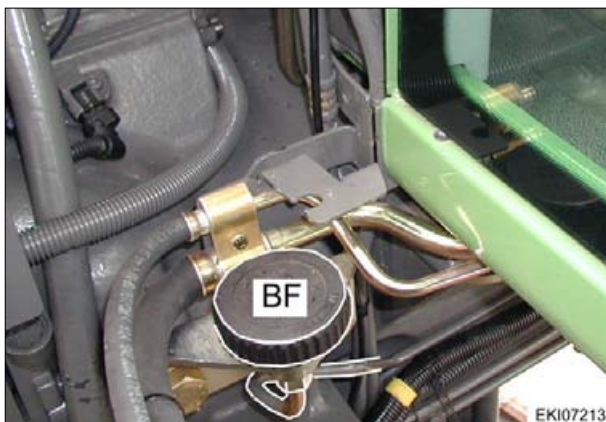


Fendt 300 Vario

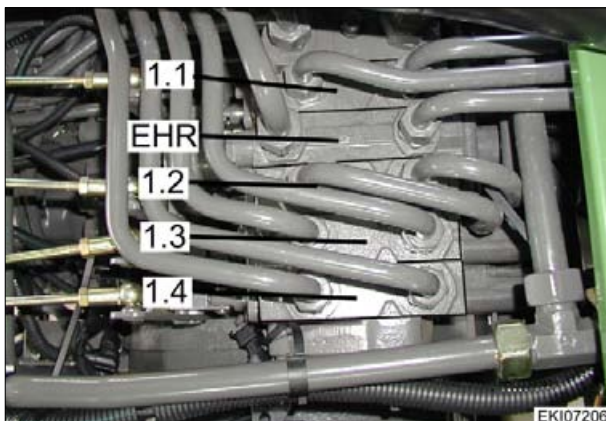
Tractor / General system
Hydraulic components

D

AV9 = Stopcock EPC lock "rigid drawbar"
 At rear of tractor



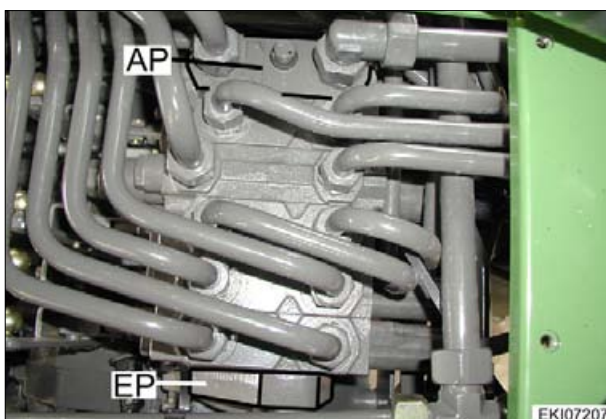
BF = Vent filter
 At right entrance step



EPC = EPC valve
 On top of rear axle housing



Remove driver seat and floor panel



EP = End plate
 On top of rear axle housing

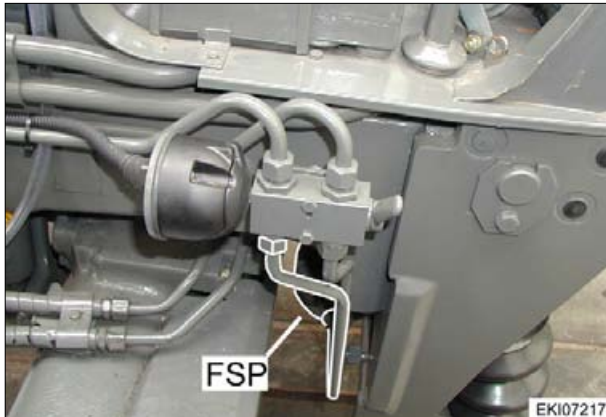


Remove driver seat and floor panel

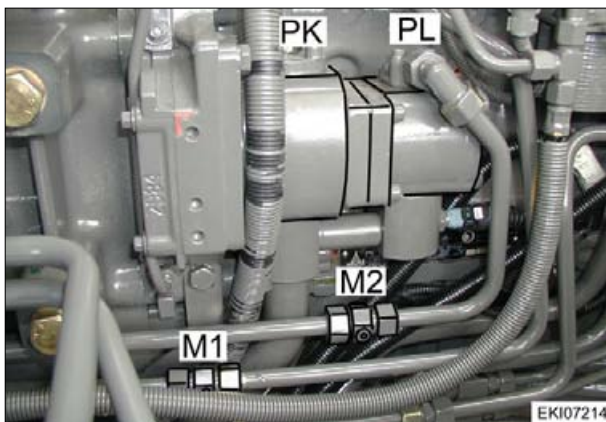
Date	Version	Page	Hydraulic components	Capitel	Index	Docu-No.
17.02.06	a	2/6		0000	D	000113

Fendt 300 Vario

Tractor / General system
Hydraulic components

D

FSP = Front power lift accumulator
 At front on front axle support



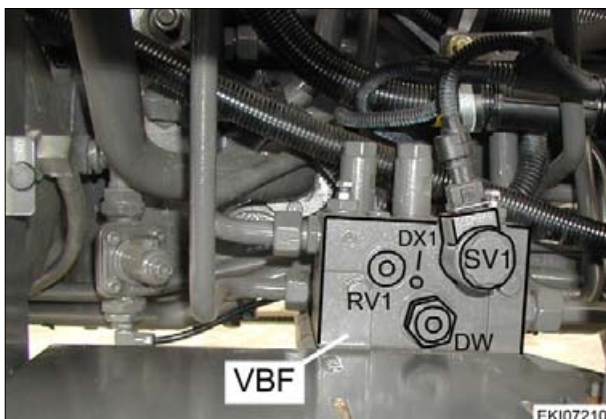
PK (M1) = Constant delivery pump (200 bar)
PL (M2) = Steering pump (4WD tractor 180 +5 bar ; rear wheel tractor 140 +5 bar)
 On right side of tractor



RF = Return filter
 On bottom of clutch housing (oil tank)



Unscrew filter cover

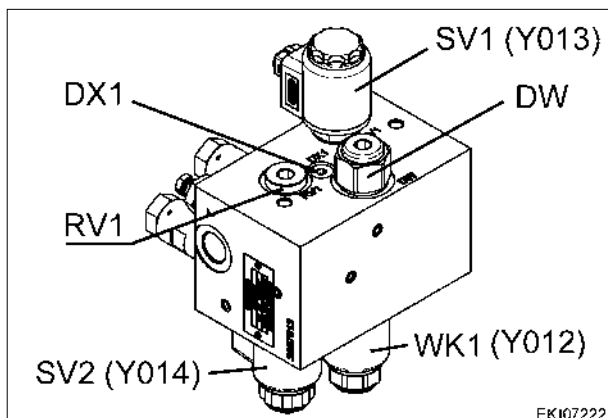
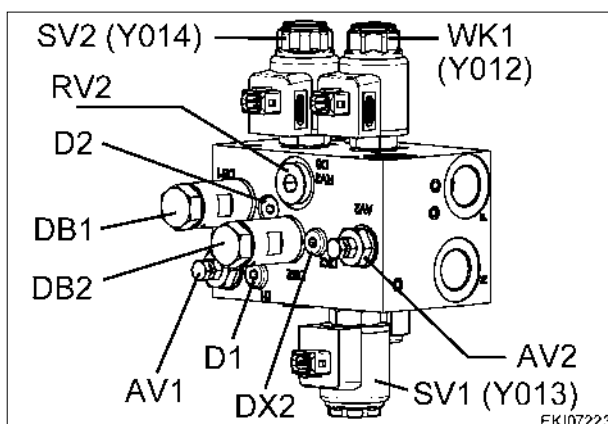
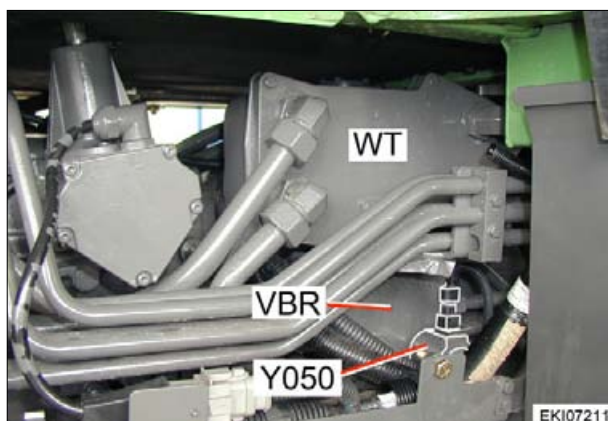


VBF = Front axle suspension valve block
 On the right side of the transmission



Remove tool box

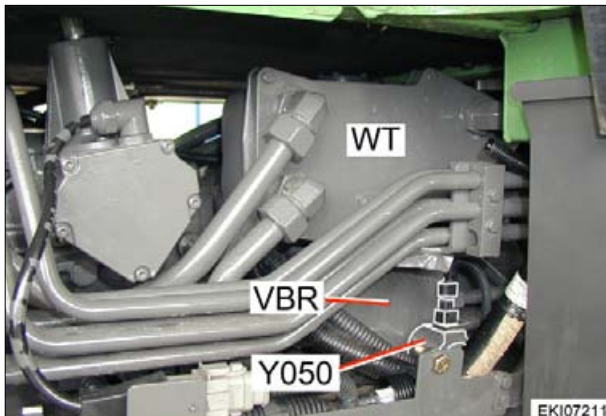
Date	Version	Page	Hydraulic components	Capitel	Index	Docu-No.
17.02.06	a	3/6		0000	D	000113

Fendt 300 Vario**Tractor / General system
Hydraulic components****D****DW** = Pressure compensator**DX1** = Aperture**RV1** = Suspension shutoff valve**SV1 (Y013)** = Front axle suspension solenoid valve lower "lock"**SV2 (Y014)** = Front axle suspension solenoid valve raise**WK1 (Y012)** = Front axle suspension solenoid valve load**AV1** = Front axle suspension pressure relief (piston side)**AV2** = Front axle suspension pressure relief (piston rod side)**D1** = Aperture**D2** = Aperture**DB1** = Suspension pressure relief valve (250 bar)**DB2** = Suspension pressure relief valve (180 bar)**DX2** = Aperture**RV2** = Suspension shutoff valve**SV1 (Y013)** = Front axle suspension solenoid valve lower 'lock'**SV2 (Y014)** = Front axle suspension solenoid valve raise**WK1 (Y012)** = Front axle suspension solenoid valve load**VBR** = Return flow valve block

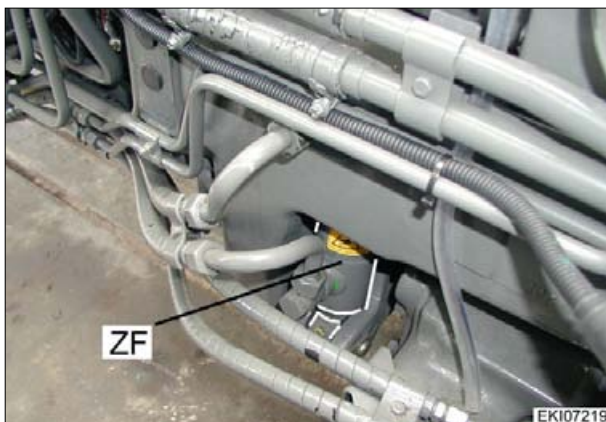
On the right side of the transmission



Remove right rear wheel and metal panels

Fendt 300 Vario
Tractor / General system
Hydraulic components
D
WT = Heat exchanger (hydraulic oil /
transmission oil)

On the right side of the transmission

Remove right rear wheel and metal
panels
ZF = Front axle suspension cylinder

At front right on front axle support


Z FKH = Front power lift cylinder

On front power lift

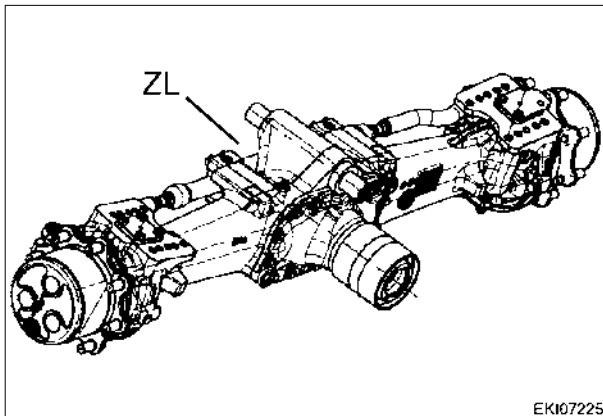

Z HKH = Rear power lift cylinder

On rear power lift



Date	Version	Page	Hydraulic components	Capitel	Index	Docu-No.
17.02.06	a	5/6		0000	D	000113

Fendt 300 Vario	Tractor / General system Hydraulic components	D
------------------------	--	----------



ZL = Steering cylinder
At front on front axle



ZSP = Auxiliary reservoir front axle suspension
Under the clutch housing



Date	Version	Page	Hydraulic components	Capitel	Index	Docu-No.
17.02.06	a	6/6		0000	D	000113

Fendt 300 Vario	Tractor / General system General points on calibration	F
------------------------	---	----------

In order to equalise the mechanical and electrical tolerances of the sensors, it is necessary to calibrate the relevant sensor. If a sensor is replaced, the replacement must be calibrated.

After replacing

- A002 - ECU, enhanced control
 - A024 - ECU, EPC B (rear power lift)
- all the connected sensors must be calibrated

The following sensors and functions have to be calibrated.

1. **Calibration - EPC rear**, (Code 8001) and (Code 8002)
2. **Calibration - front axle suspension**, (Code 7666)
3. **Calibration - engagement point of rear PTO**, (Code 6034)
4. **Calibration - engagement point of front PTO**, (Code 7034)
5. **Calibration - driving clutch pedal**, (Code 4001)
6. **Calibration - hand throttle**, (Code 4002)
7. **Calibration - foot throttle pedal**, (Code 4005)
8. **Calibration - transmission ratio characteristic**, (Code 4007)
9. **Calibration - turboclutch function**, (Code 4009)

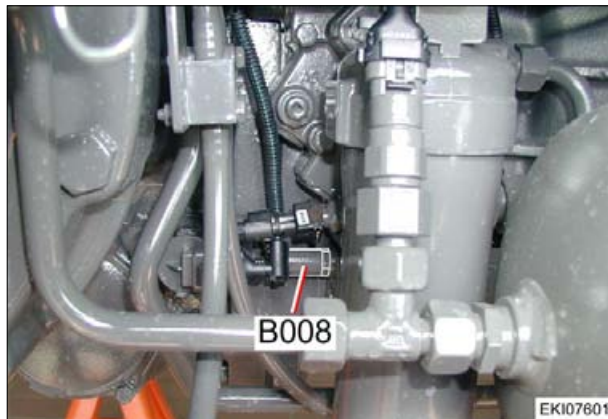
Note:

Keep to the calibration sequence.

Calibrations 1 - 4 can be performed in any order.

Calibrations 5 - 9 must be performed in increasing order and in one block.
(transmission calibration).

The emergency control must not be engaged during calibration.



B008 = High pressure sensor

X157 = Separation point on B008

Note:

The B008 - high pressure sensor is not installed as standard in tractors without TMS. In order to calibrate the transmission 9., the B008 - high pressure sensor must be installed



On the right side of the transmission, on valve block



Remove right rear wheel and metal panels

If incorrect values are found or conditions are not met, **ERROR** message is displayed.

If calibration proceeds without errors, **OK** is displayed, and new sensor settings are stored.

Data are only accepted when ignition key is turned to position "0".

Date	Version	Page	Capitel	Index	Docu-No.
19.07.2006	a	1/1	General points on calibration	0000	F 000030

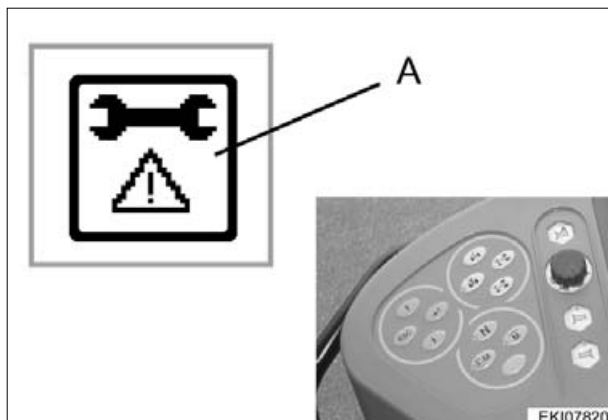
Fendt 300 Vario	Tractor / General system Calibration code 8001, 8002	F
------------------------	---	----------

1. Calibration EPC - rear

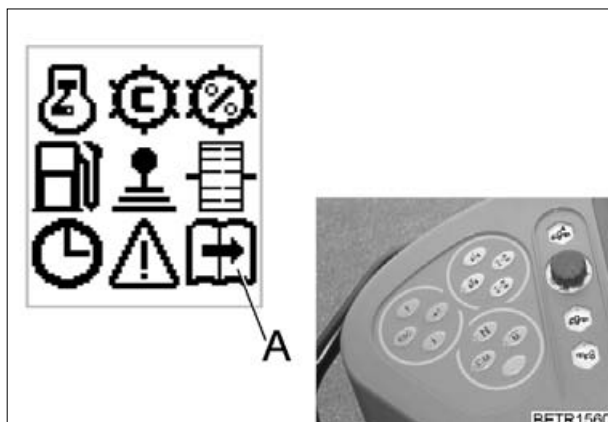
Calibration depth control (Code 8001)

Attention: the following preparatory steps must be carried out.

- Hand brake on
- Start engine
- If error messages are displayed, faults must be accepted individually



Accept warning and fault messages that are displayed on A007 - instrument cluster with the "ESC" key



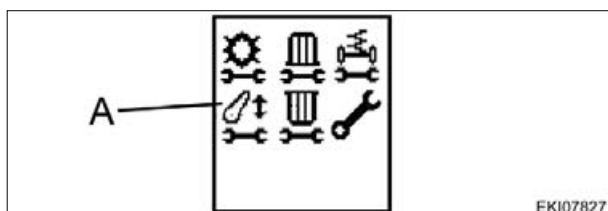
Press key, the first main menu appears on the multiple display



Press either of the keys repeatedly until symbol (A) flashes



Press key, the second main menu level appears on the multiple display



The second main menu level appears on the multiple display



Press either of the keys repeatedly until symbol (A) flashes

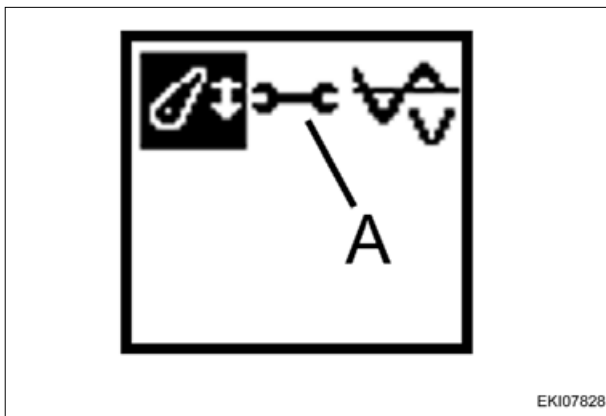


Press the "Return" key

Date	Version	Page	Calibration code 8001, 8002	Capitel	Index	Docu-No.
19.07.2006	a	1/5		0000	F	000031

Fendt 300 Vario

Tractor / General system
Calibration code 8001, 8002

F

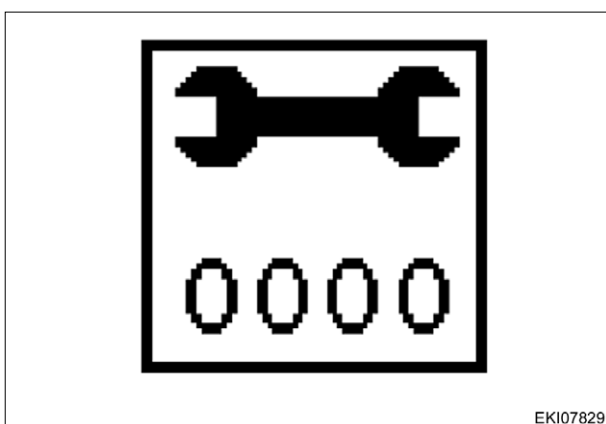
The rear power lift menu level appears on the multiple display



Press either of the keys repeatedly until symbol (A) flashes



Accept with the 'Return' key



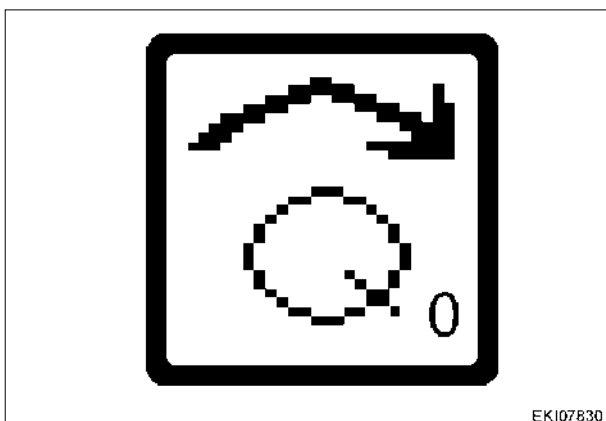
Input code **8001**



Press one of keys until desired number is displayed

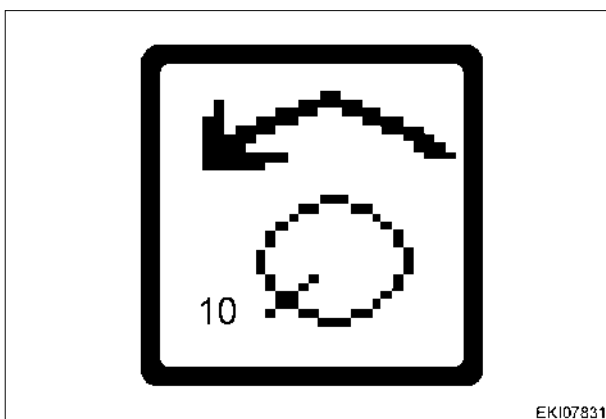


Accept with the 'Return' key



Turn depth control to position 0

Accept with the 'Return' key



Turn depth control to position 10

Accept with the 'Return' key



Date	Version	Page	Calibration code 8001, 8002	Capitel	Index	Docu-No.
19.07.2006	a	2/5		0000	F	000031

Fendt 300 Vario	Tractor / General system Calibration code 8001, 8002	F
------------------------	--	----------

If incorrect values are found or conditions are not met, **ERROR** is displayed

If calibration proceeds without errors, **O.K.** is displayed and the new sensor settings are saved.

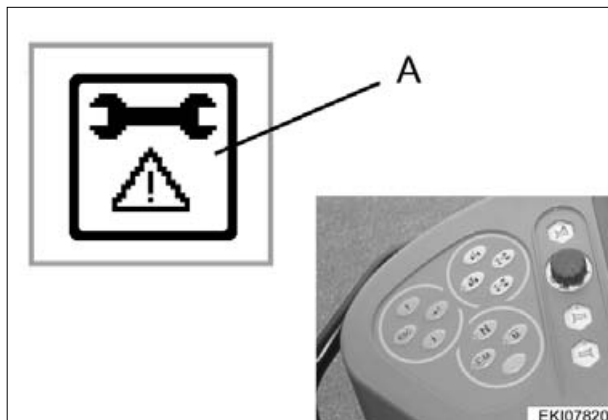
Note:

The settings are only then accepted when the ignition key has been turned to position '0'.

Calibration rear power lift position (Code 8002)

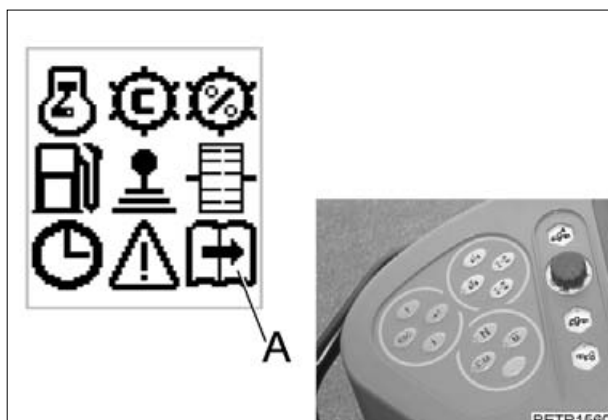
Attention: the following preparatory steps must be carried out.

- Hand brake on
- Start engine
- If error messages are displayed, faults must be accepted individually



ESC

Accept warning and fault messages that are displayed on A007 - instrument cluster with the 'ESC' key



←

Press key, the first main menu appears on the multiple display

↑

Press either of the keys repeatedly until symbol (A) flashes

↓

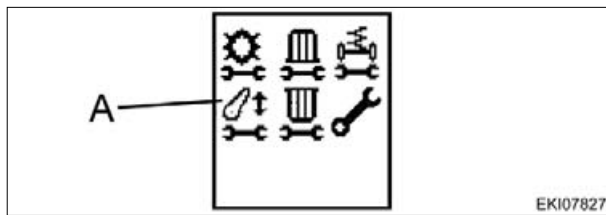
←

Press key, the second main menu level appears on the multiple display

Date	Version	Page	Calibration code 8001, 8002	Capitel	Index	Docu-No.
19.07.2006	a	3/5		0000	F	000031

Fendt 300 Vario

Tractor / General system
Calibration code 8001, 8002

F

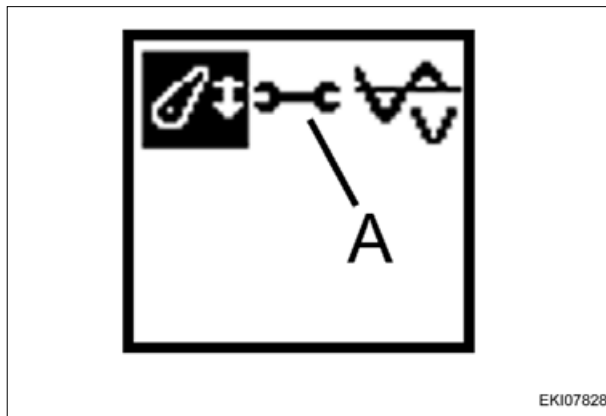
The second main menu level appears on the multiple display



Press either of the keys repeatedly until symbol (A) flashes



Press the 'Return' key



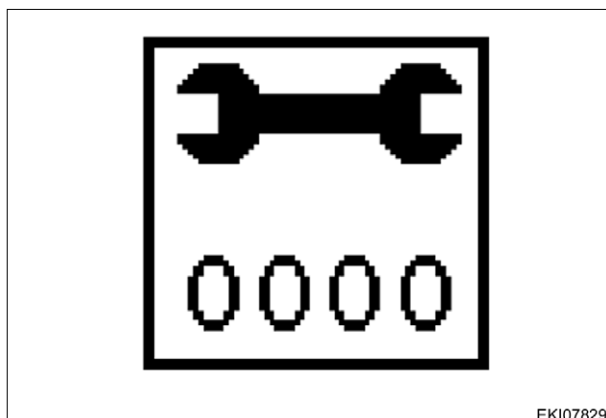
The rear power lift menu level appears on the multiple display



Press either of the keys repeatedly until symbol (A) flashes



Accept with the 'Return' key



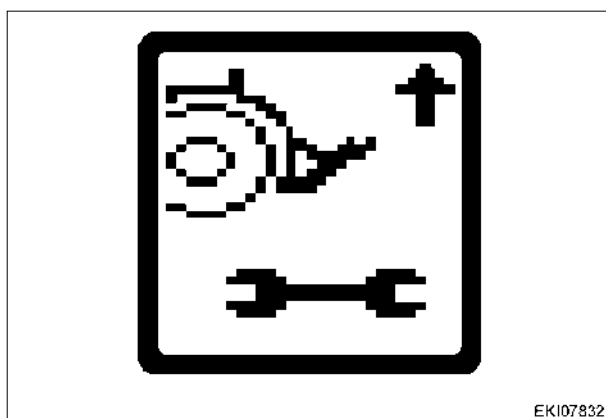
Input code **8002**



Press one of keys until desired number is displayed



Accept with the 'Return' key

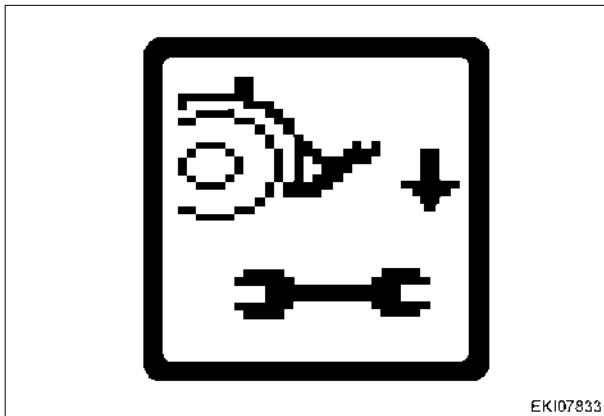


Switch quick lift switch to "raise". The lifting gear raises and stops at top



Accept with the 'Return' key

Fendt 300 Vario	Tractor / General system Calibration code 8001, 8002	F
------------------------	---	----------



Switch quick lift switch to 'lower'. The lifting gear lowers and stops at the bottom

Accept with the 'Return' key



If incorrect values are found or conditions are not met, **ERROR** is displayed

If calibration proceeds without errors, **O.K.** is displayed and the new sensor settings are saved.

Note:

The settings are only then accepted when the ignition key has been turned to position '0'.

Date	Version	Page	Calibration code 8001, 8002	Capitel	Index	Docu-No.
19.07.2006	a	5/5		0000	F	000031

Fendt 300 Vario

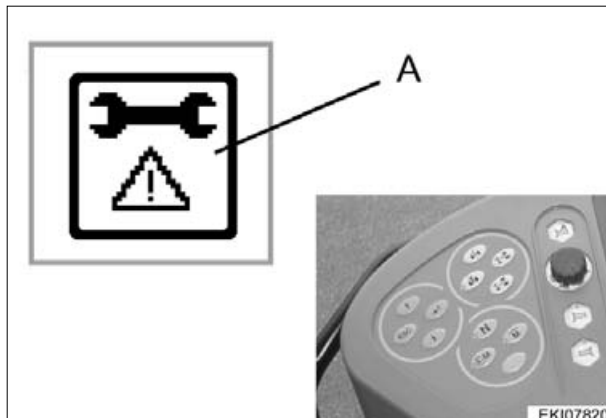
Tractor / General system
Calibration code 7666

F

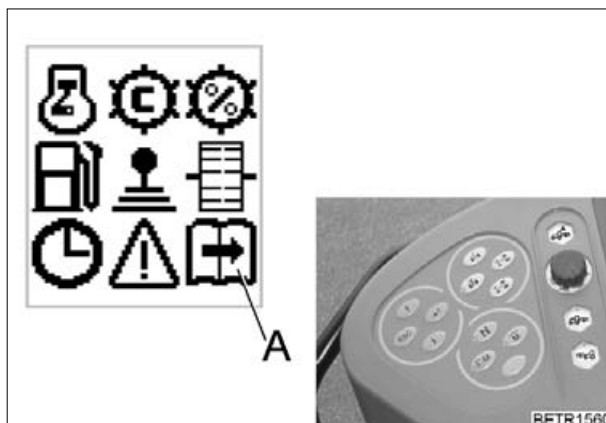
2. Calibration - front axle suspension

Attention: the following preparatory steps must be carried out.

- Hand brake on
- Start engine
- If error messages are displayed, faults must be accepted individually



Accept warning and fault messages that are displayed on A007 - instrument cluster with the 'ESC' key



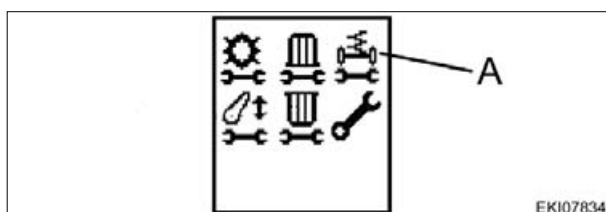
Press key, the first main menu appears on the multiple display



Press either of the keys repeatedly until symbol (A) flashes



Press key, the second main menu level appears on the multiple display



Press either of the keys repeatedly until symbol (A) flashes

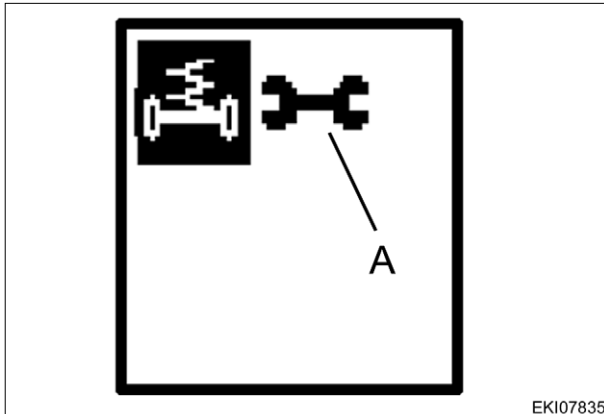


Press the 'Return' key

Date	Version	Page	Calibration code 7666	Capitel	Index	Docu-No.
19.07.2006	a	1/3		0000	F	000032

Fendt 300 Vario

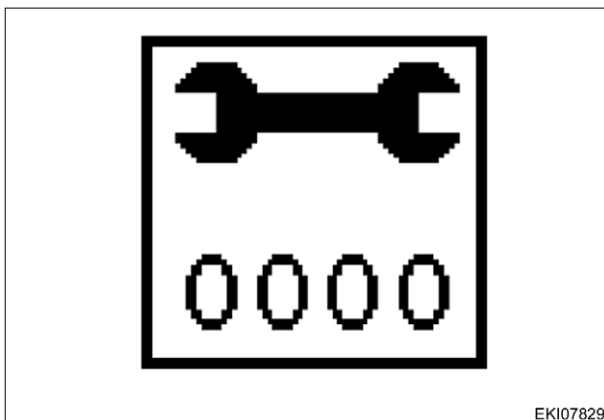
Tractor / General system
Calibration code 7666

F

Press either of the keys repeatedly until
 symbol (A) flashes



Accept with the 'Return' key



Danger:
 After accepting the input code, the
 tractor is automatically raised or
 lowered!

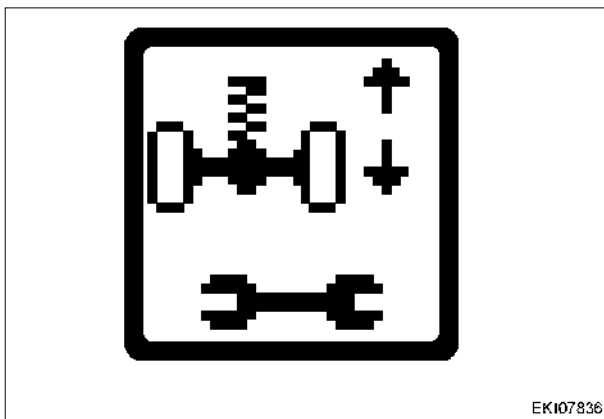
Input code **7666**



Press one of keys until desired number is
 displayed



Accept with the 'Return' key

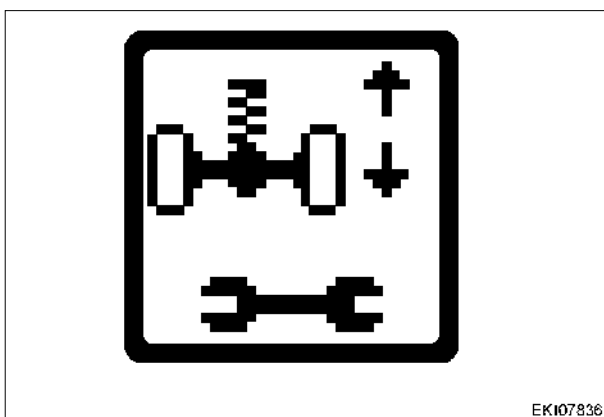


The flashing arrow shows which end position is
 selected.

The tractor is raised to the upper limit position



Accept the upper limit position with the
 "Return" key



The flashing arrow shows which end position is
 selected.

The tractor is lowered to the lower limit position



Accept the lower limit position with the
 'Return' key

Date	Version	Page	Calibration code 7666	Capitel	Index	Docu-No.
19.07.2006	a	2/3		0000	F	000032

Fendt 300 Vario	Tractor / General system Calibration code 7666	F
------------------------	--	----------

If incorrect values are found or conditions are not met, **ERROR** is displayed

If calibration proceeds without errors, **O.K.** is displayed and the new sensor settings are saved.

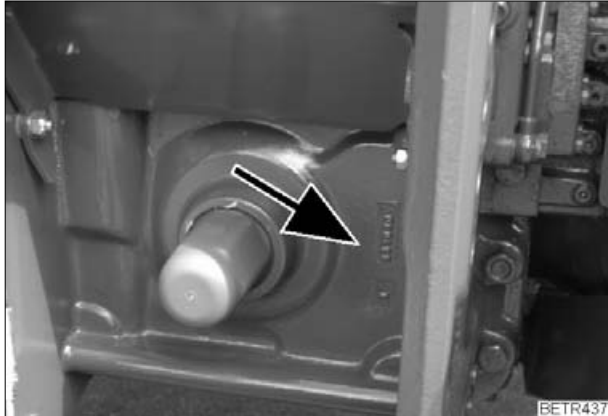
Note:

The settings are only then accepted when the ignition key has been turned to position '0'.

Date	Version	Page	Capitel	Index	Docu-No.
19.07.2006	a	3/3	0000	F	000032

Fendt 300 Vario	Tractor / General system Calibration code 6034	F
------------------------	---	----------

3. Calibration rear PTO clutch



Danger:

During the calibration process the rear PTO starts to rotate briefly.

Through calibration of the rear PTO, the coupling procedure is adapted to the particular implement:

implements that require high power at start-up = fast coupling procedure

implements that do not require high power at start-up = slow coupling procedure

These values are then used for future coupling procedures

Only calibrate with mounted implement



If different implements are mounted:

After approx. 5 to 10 coupling procedures, the A002 - ECU, enhanced control automatically adapts the coupling procedure to the implement

Date	Version	Page	Calibration code 6034	Capitel	Index	Docu-No.
20.07.2006	a	1/3		0000	F	000033

Fendt 300 Vario

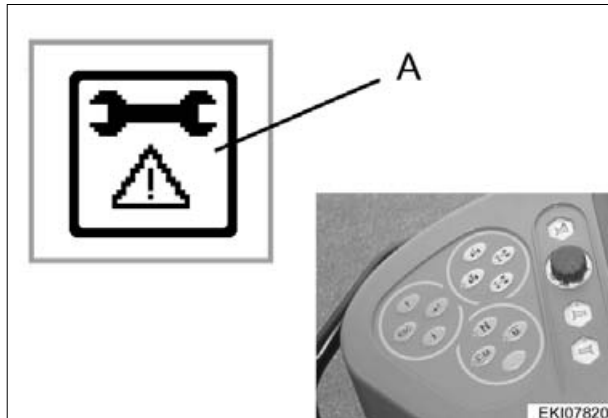
Tractor / General system
Calibration code 6034

F

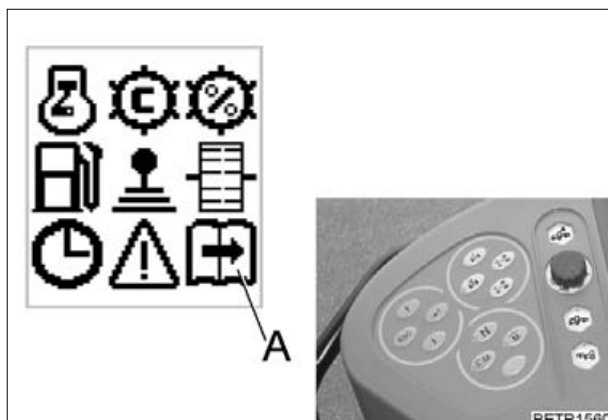
Calibration rear PTO clutch

Attention: the following preparatory steps must be carried out.

- Start engine
- Preselect any PTO speed (540 , 540 E , 1000)
- If error messages are displayed, faults must be accepted individually



Accept warning and fault messages that are displayed on A007 - instrument cluster with the 'ESC' key



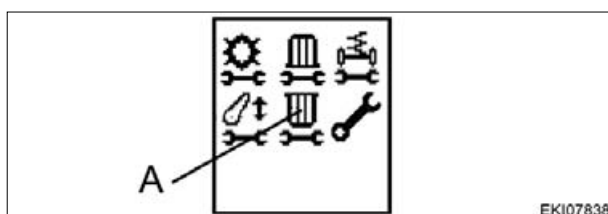
Press key, the first main menu appears on the multiple display



Press either of the keys repeatedly until symbol (A) flashes



Press key, the second main menu level appears on the multiple display



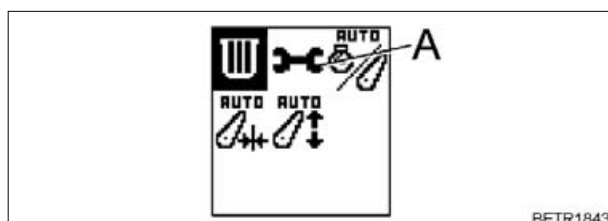
The second main menu level appears on the multiple display



Press either of the keys repeatedly until symbol (A) flashes



Press the 'Return' key



The rear PTO menu level appears on the multiple display



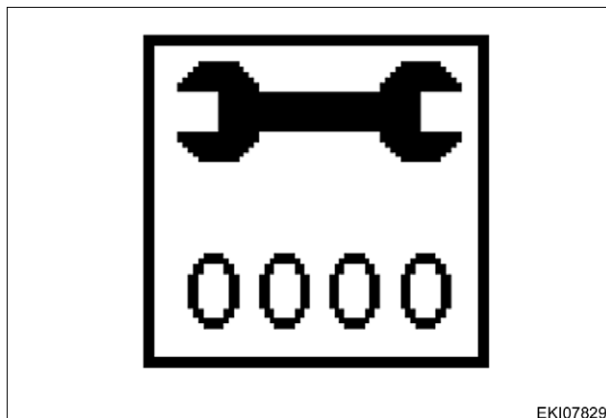
Press either of the keys repeatedly until symbol (A) flashes



Accept with the 'Return' key

Date	Version	Page	Calibration code 6034	Capitel	Index	Docu-No.
20.07.2006	a	2/3		0000	F	000033

Fendt 300 Vario	Tractor / General system Calibration code 6034	F
------------------------	---	----------



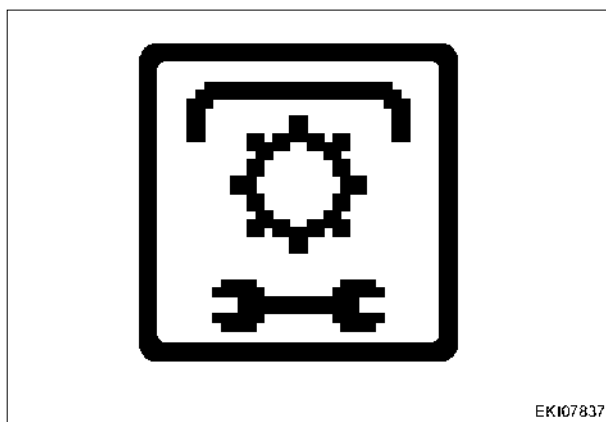
Input code **6034**



Press one of keys until desired number is displayed



Accept with the 'Return' key



Preselect any PTO speed (540 , 540 E , 1000)

Engage rear PTO



Accept with the 'Return' key

If incorrect values are found or conditions are not met, **ERROR** is displayed

If calibration proceeds without errors, **O.K.** is displayed and the new sensor settings are saved.

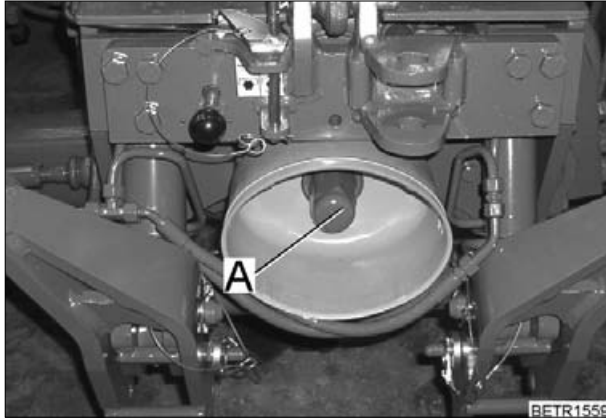
Note:

The settings are only then accepted when the ignition key has been turned to position '0'.

Date	Version	Page	Calibration code 6034	Capitel	Index	Docu-No.
20.07.2006	a	3/3		0000	F	000033

Fendt 300 Vario	Tractor / General system Calibration code 7034	F
------------------------	---	----------

4. Calibration front PTO clutch



Danger:

During the calibration process the front PTO starts to rotate briefly.

Through calibration of the front PTO (A), the coupling procedure is adapted to the particular implement:

implements that require high power at start-up = fast coupling procedure

implements that do not require high power at start-up = slow coupling procedure

These values are then used for future coupling procedures

Only calibrate with mounted implement



If different implements are mounted:

After approx. 5 to 10 coupling procedures, the A002 - ECU, enhanced control automatically adapts the coupling procedure to the implement

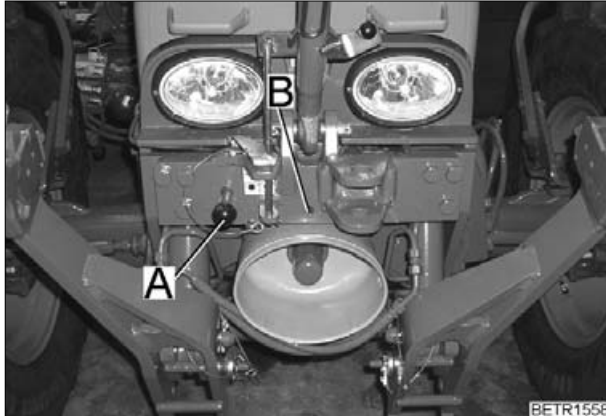
Date	Version	Page	Calibration code 7034	Capitel	Index	Docu-No.
20.07.2006	a	1/3		0000	F	000034

Fendt 300 Vario

Tractor / General system
Calibration code 7034

F

Calibration front PTO clutch



Engage seasonal disconnect:

Turn off engine

Pull lever (A) forwards

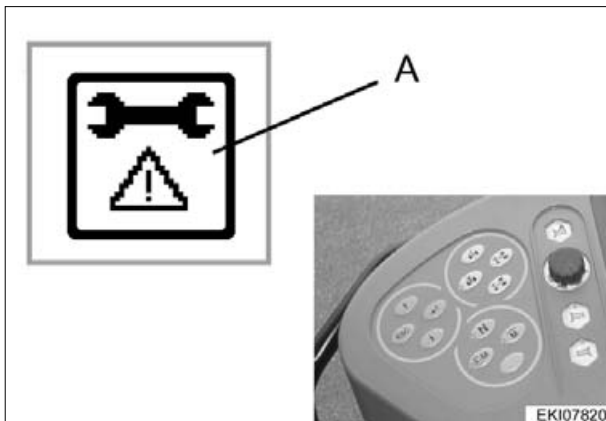
Direction of rotation of front PTO = clockwise in direction of travel

Note:

If the seasonal disconnect can not be engaged (tooth on tooth), turn gearwheels using a screwdriver through opening (B).

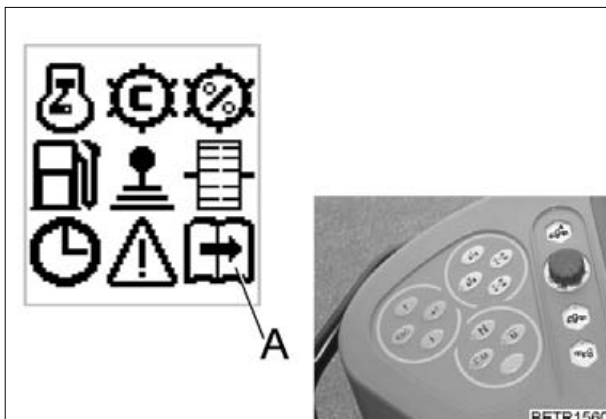
Attention: the following preparatory steps must be carried out.

- Start engine
- If error messages are displayed, faults must be accepted individually



ESC

Accept warning and fault messages that are displayed on A007 - instrument cluster with the 'ESC' key



Press key, the first main menu appears on the multiple display



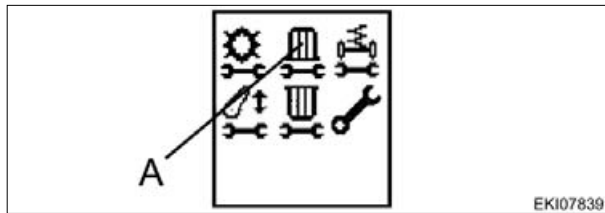
Press either of the keys repeatedly until symbol (A) flashes



Press key, the second main menu level appears on the multiple display

Date	Version	Page	Calibration code 7034	Capitel	Index	Docu-No.
20.07.2006	a	2/3		0000	F	000034

Fendt 300 Vario	Tractor / General system Calibration code 7034	F
------------------------	---	----------



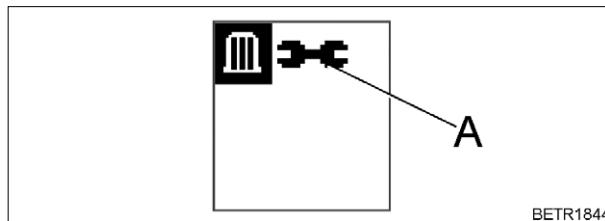
The second main menu level appears on the multiple display



Press either of the keys repeatedly until symbol (A) flashes



Press the 'Return' key



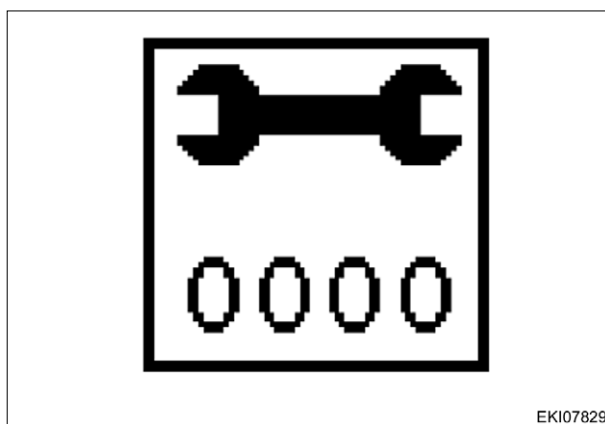
The front PTO menu level appears on the multiple display



Press either of the keys repeatedly until symbol (A) flashes



Accept with the 'Return' key



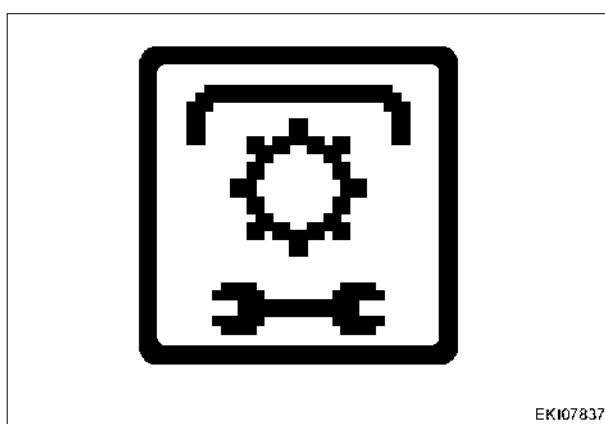
Input code **7034**



Press one of keys until desired number is displayed



Accept with the 'Return' key



Engage front PTO



Accept with the 'Return' key

If incorrect values are found or conditions are not met, **ERROR** is displayed

If calibration proceeds without errors, **O.K.** is displayed and the new sensor settings are saved.

Note:

The settings are only then accepted when the ignition key has been turned to position '0'.

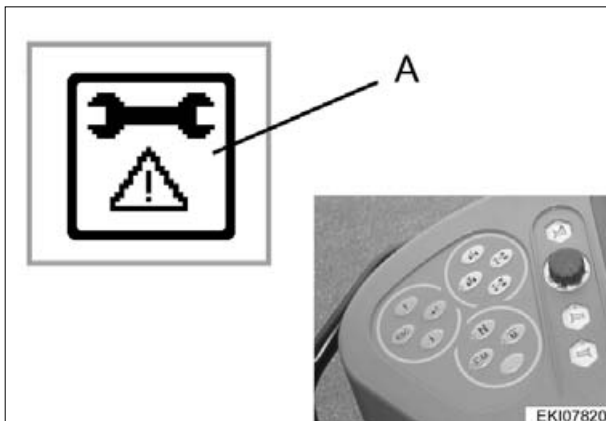
Date	Version	Page	Calibration code 7034	Capitel	Index	Docu-No.
20.07.2006	a	3/3		0000	F	000034

Fendt 300 Vario	Tractor / General system Calibration code 4001	F
------------------------	---	----------

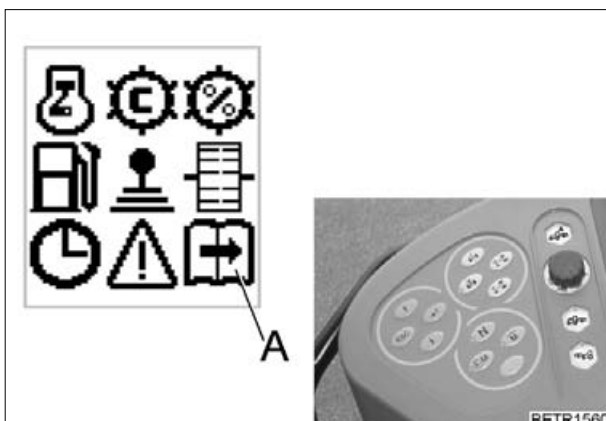
5. Calibration - drive clutch pedal

Attention: the following preparatory steps must be carried out.

- Hand brake on
- If error messages are displayed, faults must be accepted individually



Accept warning and fault messages that are displayed on A007 - instrument cluster with the 'ESC' key



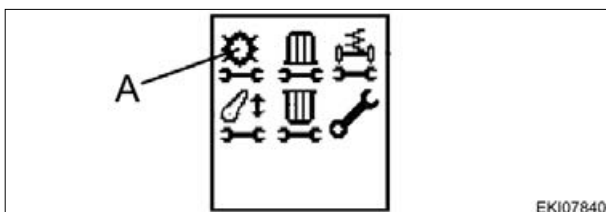
Press key, the first main menu appears on the multiple display



Press either of the keys repeatedly until symbol (A) flashes



Press key, the second main menu level appears on the multiple display



Press either of the keys repeatedly until symbol (A) flashes

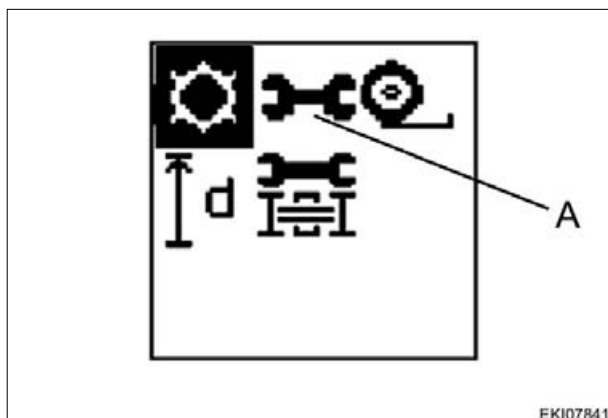


Press the 'Return' key

Date	Version	Page	Calibration code 4001	Capitel	Index	Docu-No.
20.07.2006	a	1/3		0000	F	000035

Fendt 300 Vario

Tractor / General system
Calibration code 4001

F

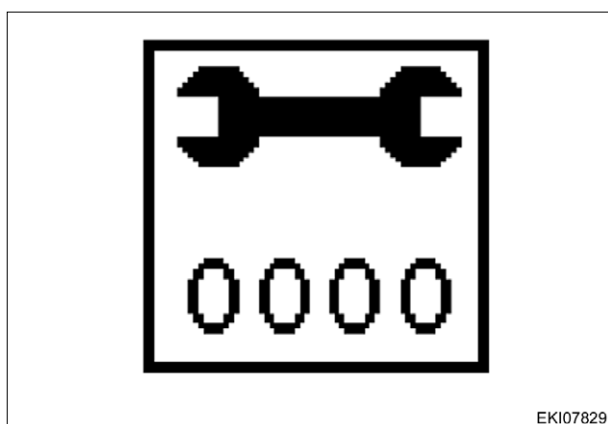
The transmission menu level appears on the multiple display.



Press either of the keys repeatedly until symbol (A) flashes



Accept with the 'Return' key



Input code **4001**



Press one of keys until desired number is displayed



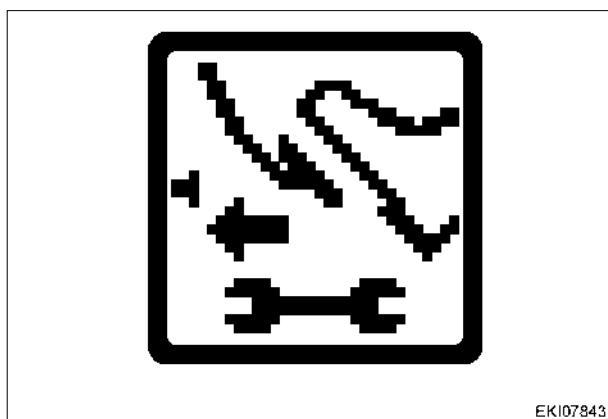
Accept with the 'Return' key



Clutch pedal **not** actuated



Accept with the 'Return' key



Clutch pedal actuated



Accept with the 'Return' key

Date	Version	Page	Calibration code 4001	Capitel	Index	Docu-No.
20.07.2006	a	2/3		0000	F	000035

Fendt 300 Vario	Tractor / General system Calibration code 4001	F
------------------------	--	----------

If incorrect values are found or conditions are not met, **ERROR** is displayed

If calibration proceeds without errors, **O.K.** is displayed and the new sensor settings are saved.

Note:

The settings are only then accepted when the ignition key has been turned to position '0'.

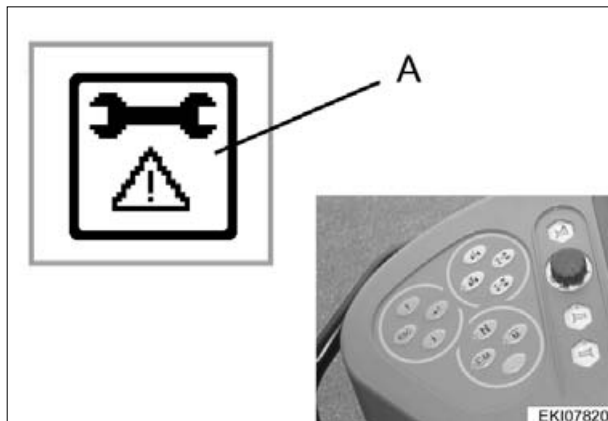
Date	Version	Page	Capitel	Index	Docu-No.
20.07.2006	a	3/3	0000	F	000035

Fendt 300 Vario	Tractor / General system Calibration code 4002	F
------------------------	---	----------

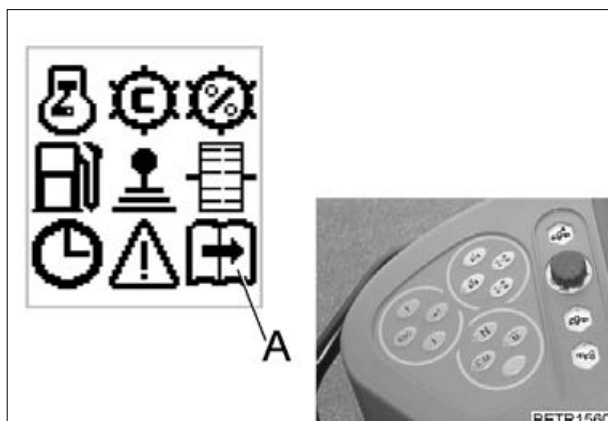
6. Calibration - hand throttle

Attention: the following preparatory steps must be carried out.

- Hand brake on
- If error messages are displayed, faults must be accepted individually



Accept warning and fault messages that are displayed on A007 - instrument cluster with the 'ESC' key



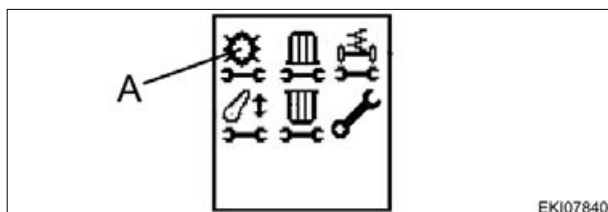
Press key, the first main menu appears on the multiple display



Press either of the keys repeatedly until symbol (A) flashes



Press key, the second main menu level appears on the multiple display



Press either of the keys repeatedly until symbol (A) flashes

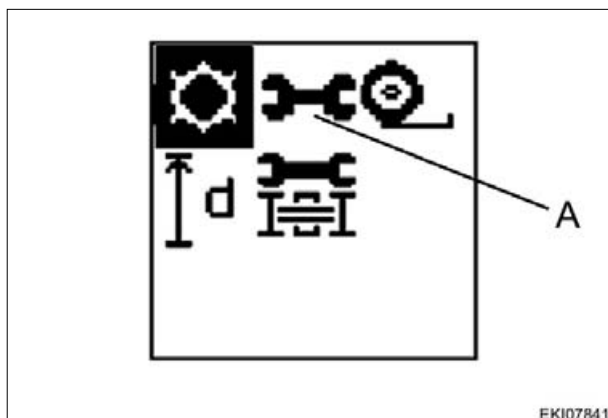


Press the 'Return' key

Date	Version	Page	Calibration code 4002	Capitel	Index	Docu-No.
20.07.2006	a	1/3		0000	F	000037

Fendt 300 Vario

Tractor / General system
Calibration code 4002

F

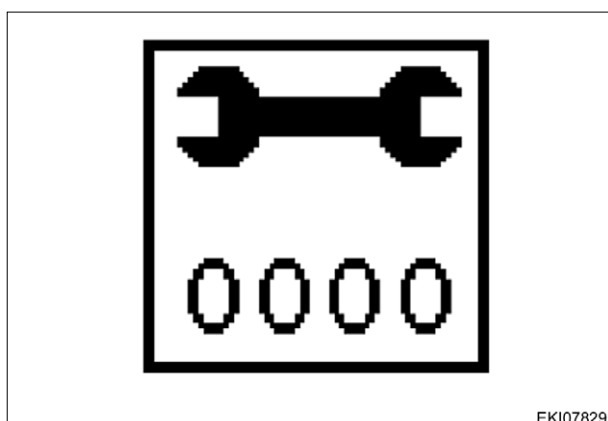
The transmission menu level appears on the multiple display.



Press either of the keys repeatedly until symbol (A) flashes



Accept with the 'Return' key



Input code **4002**



Press one of keys until desired number is displayed



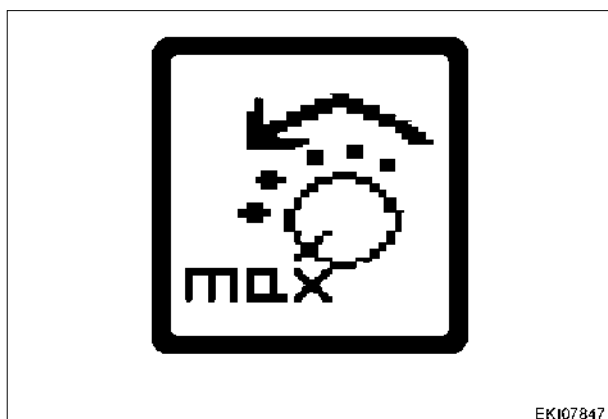
Accept with the 'Return' key



Turn hand throttle to position **Minimum**



Accept with the 'Return' key



Turn hand throttle to position **Maximum**



Accept with the 'Return' key

Date	Version	Page	Calibration code 4002	Capitel	Index	Docu-No.
20.07.2006	a	2/3		0000	F	000037

Fendt 300 Vario	Tractor / General system Calibration code 4002	F
------------------------	--	----------

If incorrect values are found or conditions are not met, **ERROR** is displayed

If calibration proceeds without errors, **O.K.** is displayed and the new sensor settings are saved.

Note:

The settings are only then accepted when the ignition key has been turned to position '0'.

Date	Version	Page	Capitel	Index	Docu-No.
20.07.2006	a	3/3	0000	F	000037

Fendt 300 Vario

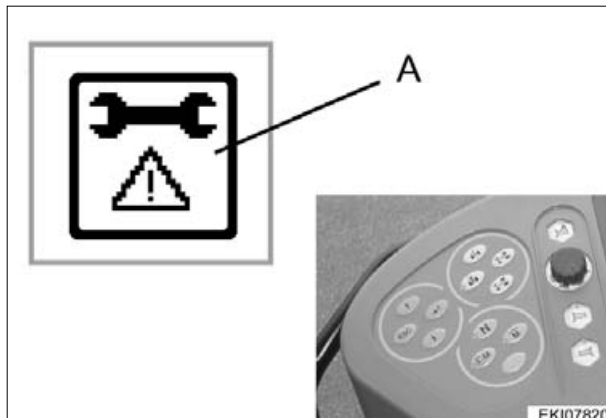
Tractor / General system
Calibration code 4005

F

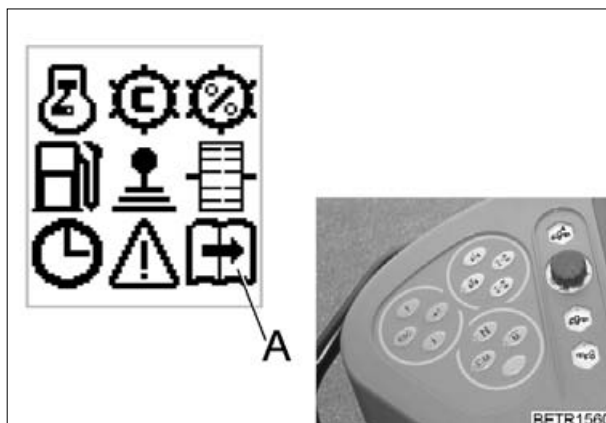
7. Calibration - foot throttle pedal

Attention: the following preparatory steps must be carried out.

- Hand brake on
- Start engine
- If error messages are displayed, faults must be accepted individually



Accept warning and fault messages that are displayed on A007 - instrument cluster with the 'ESC' key



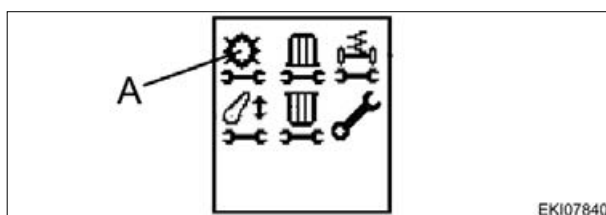
Press key, the first main menu appears on the multiple display



Press either of the keys repeatedly until symbol (A) flashes



Press key, the second main menu level appears on the multiple display



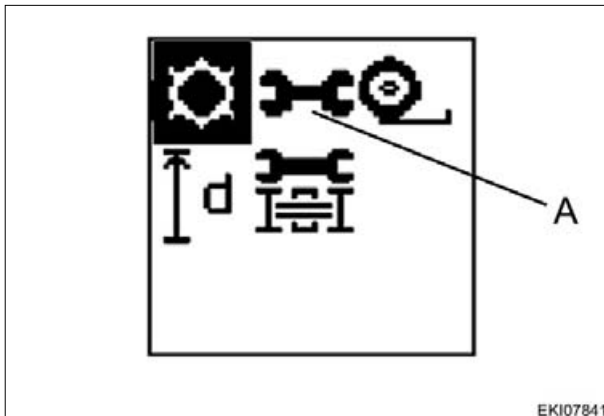
Press either of the keys repeatedly until symbol (A) flashes



Press the 'Return' key

Fendt 300 Vario

Tractor / General system
Calibration code 4005

F

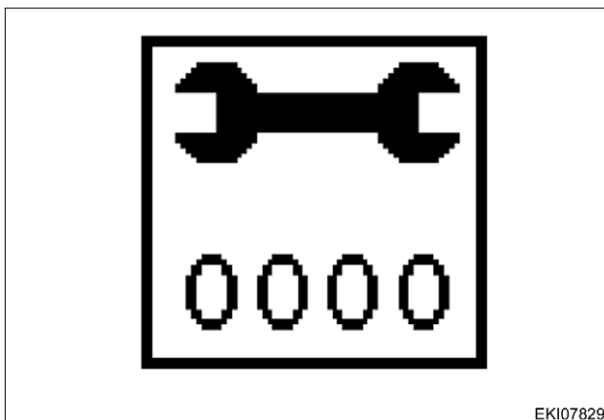
The transmission menu level appears on the multiple display.



Press either of the keys repeatedly until symbol (A) flashes



Accept with the 'Return' key



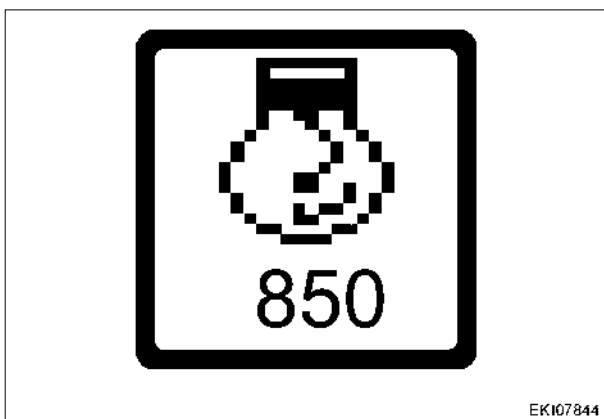
Input code **4005**



Press one of keys until desired number is displayed



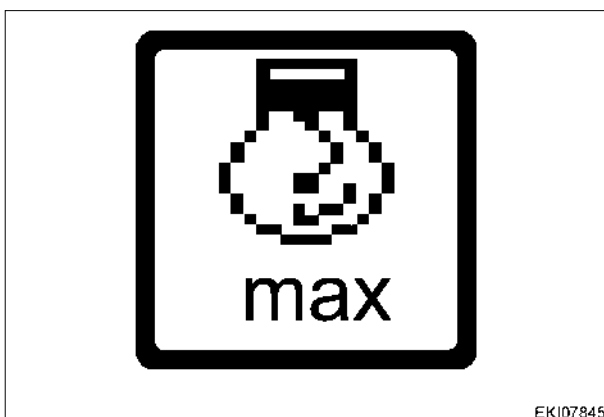
Accept with the 'Return' key



Set engine speed to 850 rpm using foot throttle



Accept with the 'Return' key



Set maximum speed with the foot throttle pedal



Accept with the 'Return' key

Date	Version	Page	Calibration code 4005			Capitel	Index	Docu-No.
20.07.2006	a	2/3				0000	F	000036

Fendt 300 Vario	Tractor / General system Calibration code 4005	F
------------------------	--	----------

If incorrect values are found or conditions are not met, **ERROR** is displayed

If calibration proceeds without errors, **O.K.** is displayed and the new sensor settings are saved.

Note:

The settings are only then accepted when the ignition key has been turned to position '0'.

Date	Version	Page	Capitel	Index	Docu-No.
20.07.2006	a	3/3	0000	F	000036

Fendt 300 Vario

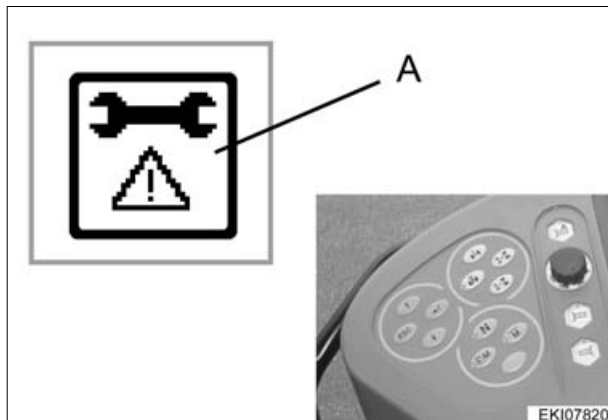
Tractor / General system
Calibration code 4005

F

7. Calibration - foot throttle pedal software version 7.58 and higher

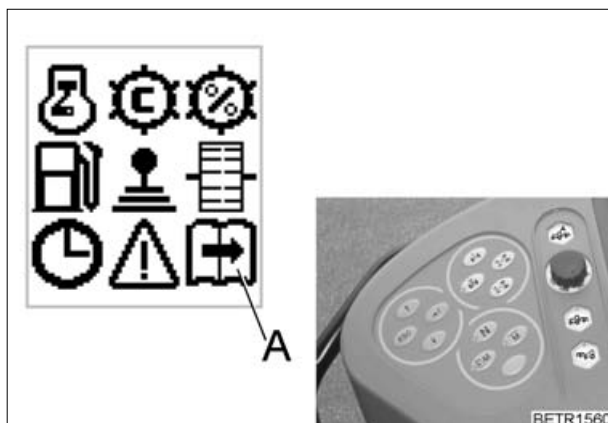
Attention: the following preparatory steps must be carried out.

- Hand brake on
- Ignition ON
- If error messages are displayed, faults must be accepted individually



ESC

Accept warning and fault messages that are displayed on A007 - instrument cluster with the 'ESC' key



←

Press key, the first main menu appears on the multiple display

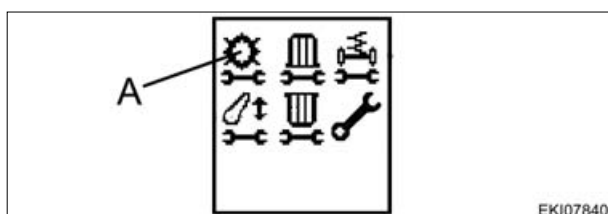
↑

Press either of the keys repeatedly until symbol (A) flashes

↓

←

Press key, the second main menu level appears on the multiple display



↑

The second main menu level appears on the multiple display

↓

Press either of the keys repeatedly until symbol (A) flashes

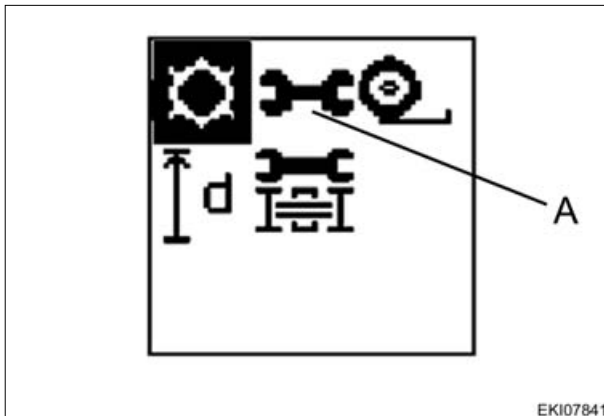
←

Press the 'Return' key

Date	Version	Page	Calibration code 4005	Capitel	Index	Docu-No.
24.07.2007	a	1/3		0000	F	000045

Fendt 300 Vario

Tractor / General system
Calibration code 4005

F

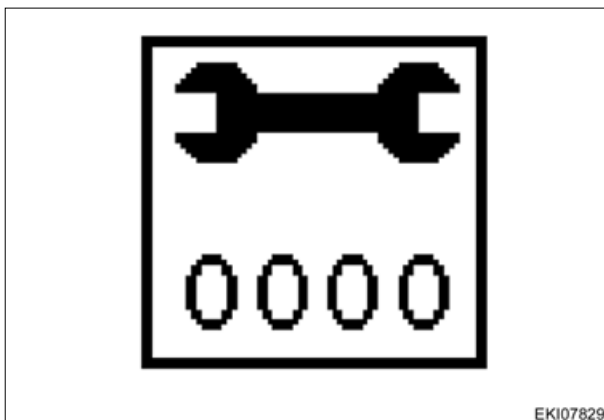
The transmission menu level appears on the multiple display.



Press either of the keys repeatedly until symbol (A) flashes



Accept with the 'Return' key



Input code **4005**



Press one of keys until desired number is displayed



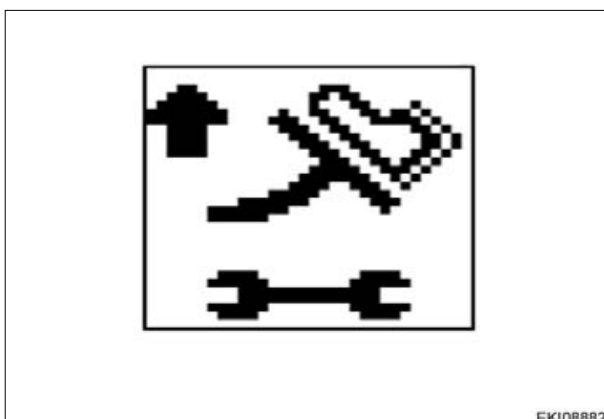
Accept with the 'Return' key



Push accelerator pedal all the way down to full throttle



Accept with the 'Return' key



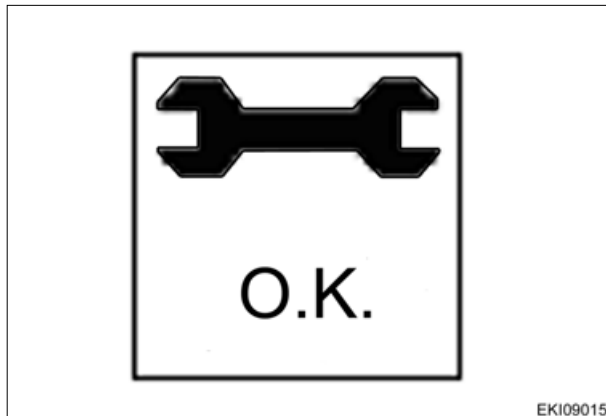
Next pictogram is displayed

Set foot throttle pedal to idle position



Accept with the 'Return' key

Fendt 300 Vario	Tractor / General system Calibration code 4005	F
------------------------	---	----------



If calibration proceeds without errors, **O.K.** is displayed and the new sensor settings are saved.

Note:

The settings are only then accepted when the ignition key has been turned to position '0'

(wait at least 15 seconds before switching on the ignition again!)



If incorrect values are found or conditions are not met, **ERROR** is displayed

4005 = Calibration code

FXX = Fault code (refer table)

Error message that may occur when calibrating the foot throttle

Error message	Cause / remedy
F 21	Transmission not in neutral
F24	Signal voltage to EST A051 faulty
F 26	Signal voltage range to EST A051 less than 70% or calibrated the wrong way around
F 27	Time for a step exceeded
F 28	Error in saving to EEPROM
F 29	Idle switch implausible

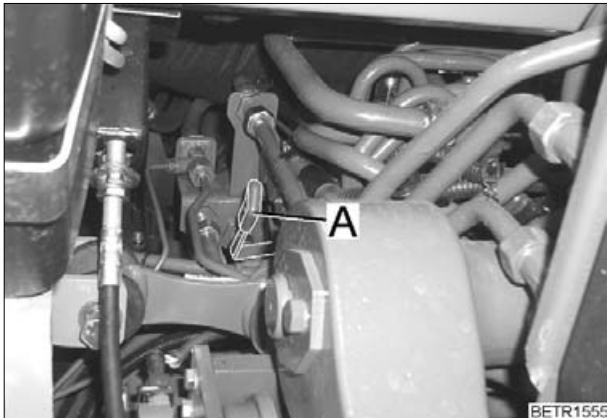
Date	Version	Page	Calibration code 4005	Capitel	Index	Docu-No.
24.07.2007	a	3/3		0000	F	000045

Fendt 300 Vario	Tractor / General system Calibration code 4007	F
------------------------	---	----------

8. Calibration - transmission ratio characteristic



Apply hand brake



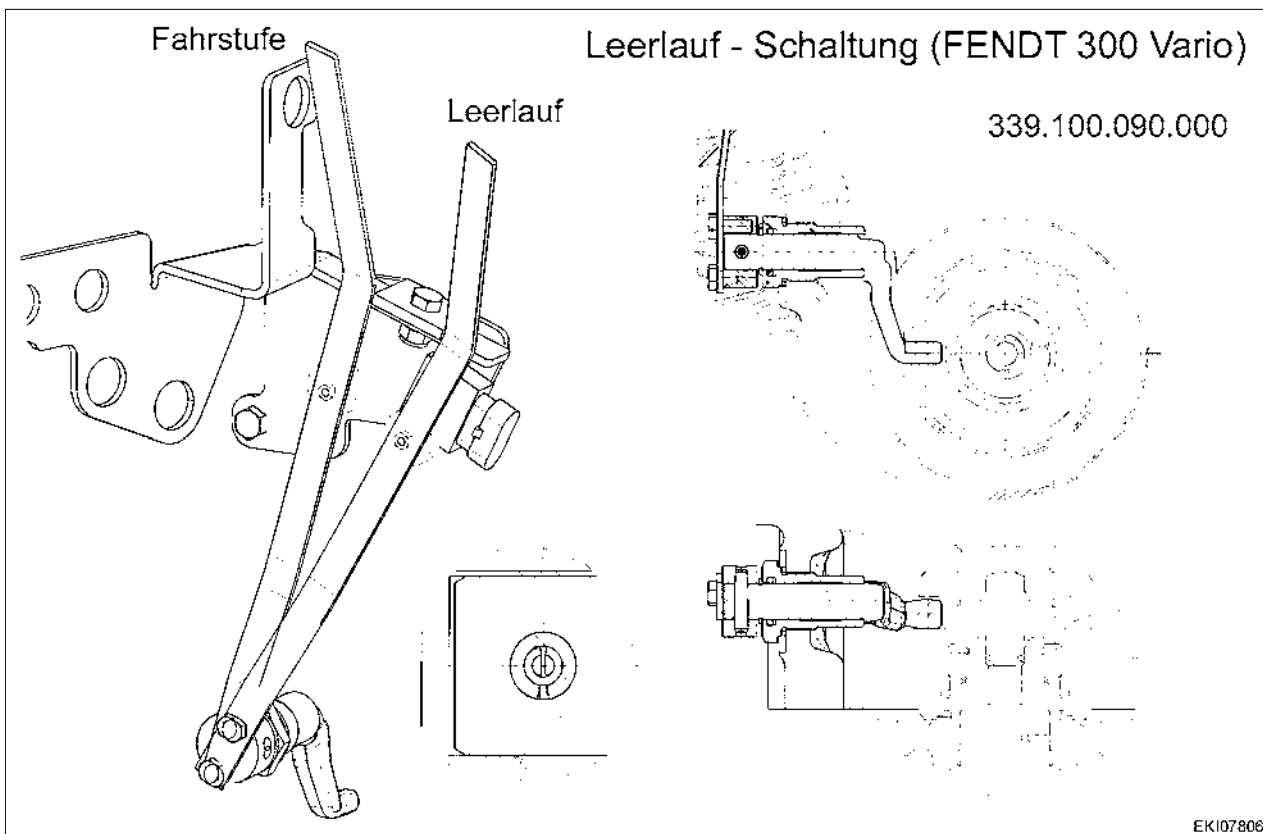
Shift transmission into idle

- Pull range selector (A) back - transmission is in idle
- Pull range selector (A) forward - transmission is in driving position

Date	Version	Page	Calibration code 4007	Capitel	Index	Docu-No.
21.07.2006	a	1/8		0000	F	000039

Fendt 300 Vario

Tractor / General system
Calibration code 4007

F

- Start engine
- Tractor is stationary (less than 0.1 km/h)
- Engine speed 1600 rpm +/-30 (engine speed must not drop below 1400 rpm during calibration)
- No error messages from speed sensors (B010 , B014 , B015)
- Clutch pedal **not** actuated



Neutral key "N" **not** on neutral
 Transmission is positively engaged

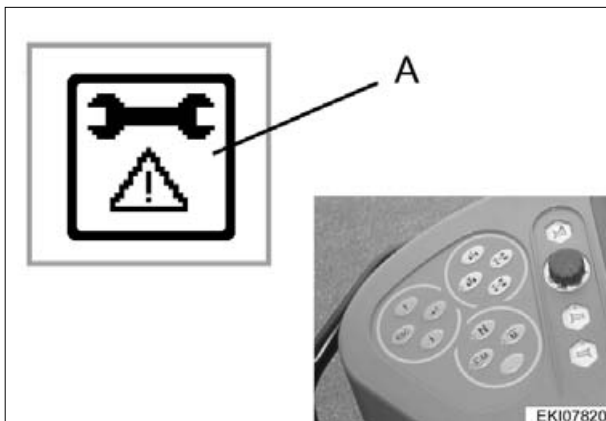
Date	Version	Page	Calibration code 4007	Capitel	Index	Docu-No.
21.07.2006	a	2/8		0000	F	000039

Fendt 300 Vario

Tractor / General system
Calibration code 4007

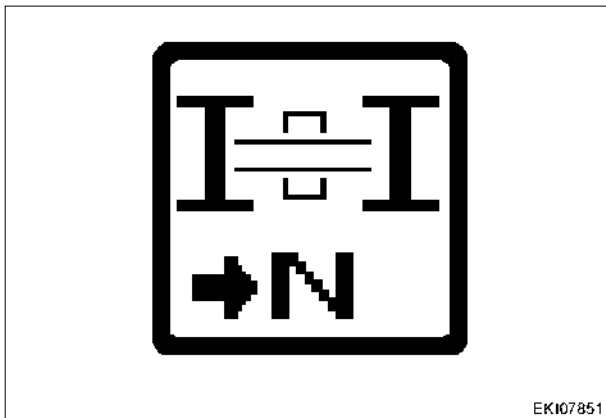
F

- If error messages are displayed, faults must be accepted individually



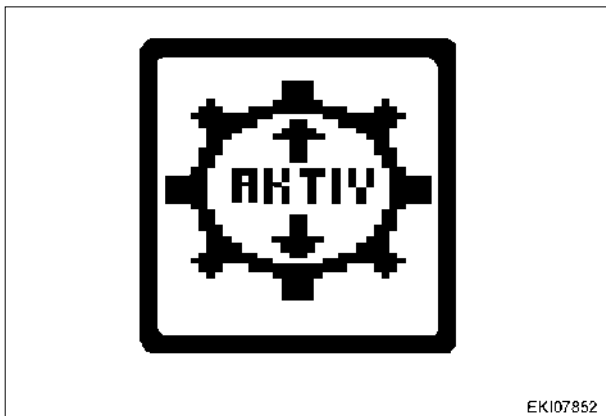
ESC

Accept warning and fault messages that are displayed on A007 - instrument cluster with the 'ESC' key



ESC

Accept "Transmission in idle" with the "ESC" key

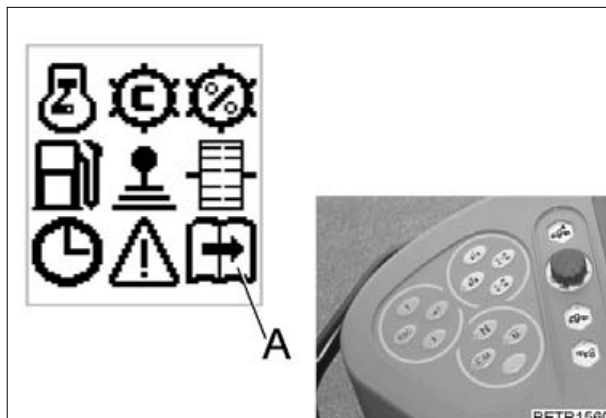


ESC

Accept 'Transmission in ACTIVE STATIONARY mode' with the 'ESC' key

Fendt 300 Vario

Tractor / General system
Calibration code 4007

F

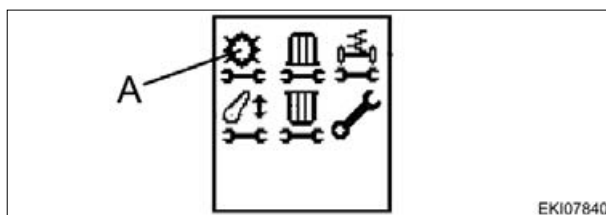
Press key, the first main menu appears on the multiple display



Press either of the keys repeatedly until symbol (A) flashes



Press key, the second main menu level appears on the multiple display



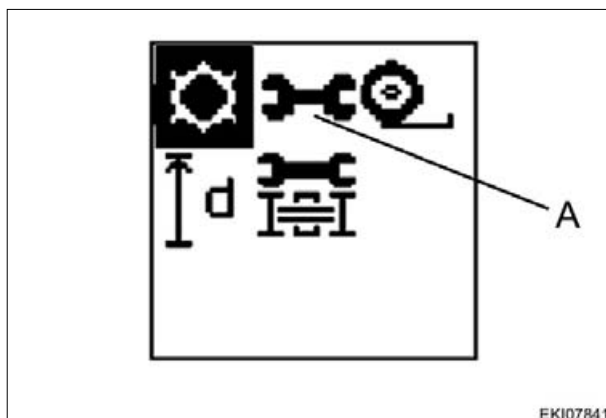
The second main menu level appears on the multiple display



Press either of the keys repeatedly until symbol (A) flashes



Press the 'Return' key



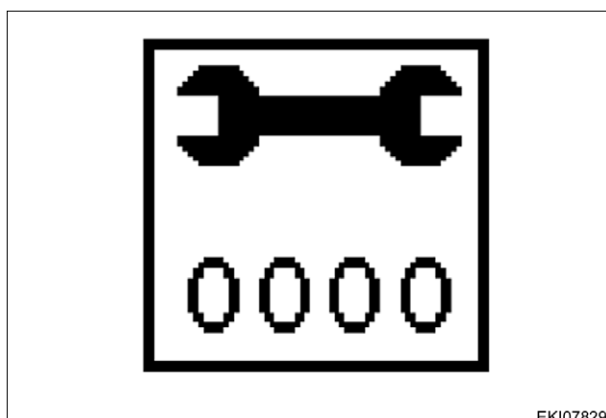
The transmission menu level appears on the multiple display.



Press either of the keys repeatedly until symbol (A) flashes



Accept with the 'Return' key



Input code **4007**



Press one of keys until desired number is displayed

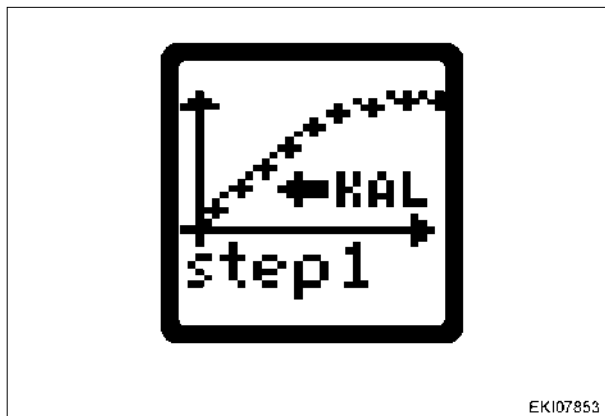


Accept with the 'Return' key

Date	Version	Page	Calibration code 4007	Capitel	Index	Docu-No.
21.07.2006	a	4/8		0000	F	000039

Fendt 300 Vario

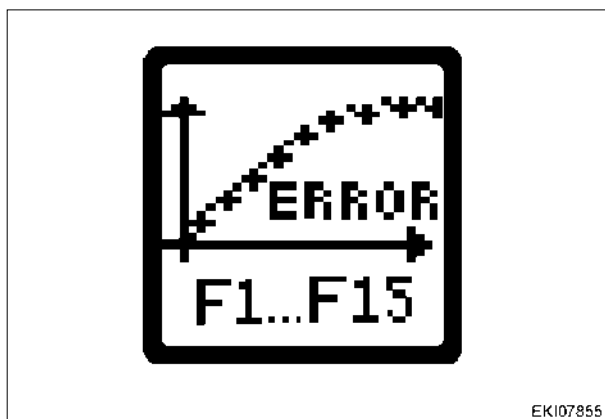
Tractor / General system
Calibration code 4007

F

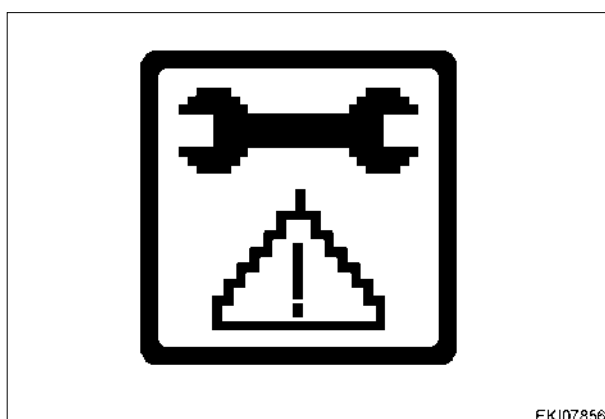
Step 1 to



Step 7 are run through automatically



If incorrect values are found or conditions are not met, an error message is displayed.



If calibration proceeds without errors, this symbol is displayed, and new sensor settings are stored.



Accept with the 'ESC' key

Date	Version	Page	Calibration code 4007	Capitel	Index	Docu-No.
21.07.2006	a	5/8		0000	F	000039

Fendt 300 Vario	Tractor / General system Calibration code 4007	F
------------------------	--	----------

If incorrect values are found or conditions are not met, **ERROR** is displayed

If calibration proceeds without errors, **O.K.** is displayed and the new sensor settings are saved.

Note:

The settings are only then accepted when the ignition key has been turned to position '0'.

Date	Version	Page	Capitel	Index	Docu-No.
21.07.2006	a	6/8	0000	F	000039

Fendt 300 Vario	Tractor / General system Calibration code 4007	F
------------------------	---	----------

Possible error messages when calibrating the transmission ratio, code 4007

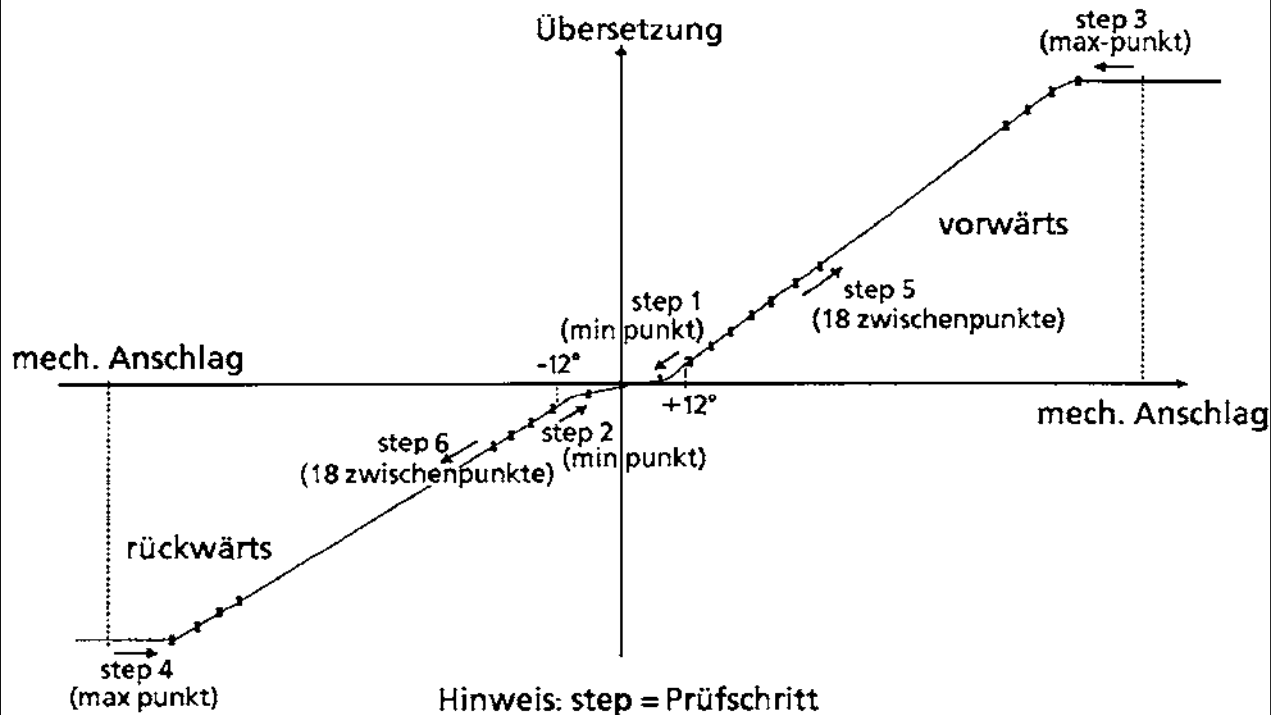
Error message	Cause / remedy
F 1	Preconditions not met
F 2	1. When ignition is switched off, the relay in the A002 - ECU, enhanced control is not released. Upon switching off the ignition, release of relay in A002 - ECU, enhanced control must be audible. 2. Check connections to A009 - actuator unit.
F 3	A009 - actuator unit does not approach setpoint exactly. Test ease of movement of transmission control, e.g. engage emergency control and test.
F 4	Transmission ratio has not been adjusted within 8 sec. Test ease of movement of transmission control, e.g. engage emergency control and test.
F 5	Step 1 = A009 - actuator unit does not find zero point from 0 in forward direction. Step 2 = A009 - actuator unit does not find zero point from 0 in reverse direction. Test connection between A009 - actuator unit and actuator shaft.
F 6	See error message F 5
F 7	Step 2: The zero points of transmission control unit for forward and reverse travel are too far apart, greater than 8°. Test connection between A009 - actuator unit and actuator shaft. Actuator unit.
F 8	Step 3: Maximum point of transmission ratio forwards not found. Target value min. 157°, max. 186°. Step 4: Maximum point of transmission ratio reverse not found. Target value min. 137°, max. 163°. Test connection between A009 - actuator unit and actuator shaft.
F 9	Step 3: Actuator shaft is displaced forwards by more than 157°. However, transmission displacement reacts by less than 157°. Step 4: Actuator shaft is displaced in reverse by more than 137°. However, transmission displacement reacts by less than 137°. Test connection between A009 - actuator unit and actuator shaft. Actuator unit.
F 10	Transmission ratio characteristic curve not logical. For example, forward set, reverse detected. Repeat calibration. Also see error message F 2. Test signal for direction of rotation of B014 - hydrostat sensor (drive accumulator shaft)
F 11 / F 12	Step 7 = Check the values in Step 1 to Step 6. ML-transmission ratio not in order. Repeat calibration. Also see error message F 2. Then check hydrostatic power branch if necessary, e.g. via emergency operating mode.
F 13	1. Faulty EOL programming (before Step 1) 2. Value stored in A002 - ECU, enhanced control is not logical Remedy: 1. Repeat EOL programming 2. See 1., if necessary, replace A002 - ECU, enhanced control.
F 14	See F 11 / F 12
F 15	Maximum forward and/or reverse transmission ratio is not reached Remedy: Repeat calibration (see also F 2). Then, if necessary, test hydraulic power branch, e.g. by means of Emergency mode.

Fendt 300 Vario

Tractor / General system
Calibration code 4007

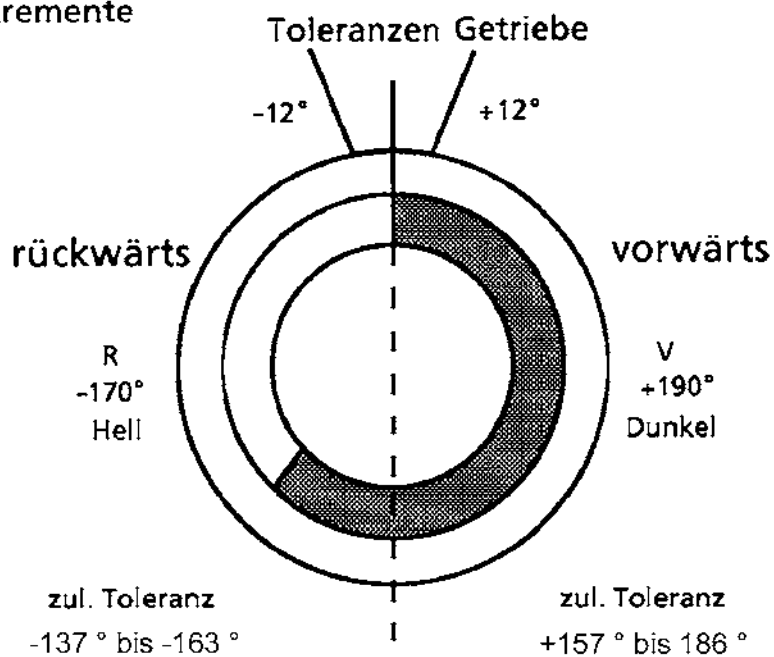
F

Graphic representation of transmission ratio calibration procedure



Der Inkrementalgeber in der Stelleinheit ist ein Drehwinkelgeber mit digitale Auflösung, der pro Umdrehung 8000 Impulse abgibt.

1° = 22,2 Inkremente



EK107857

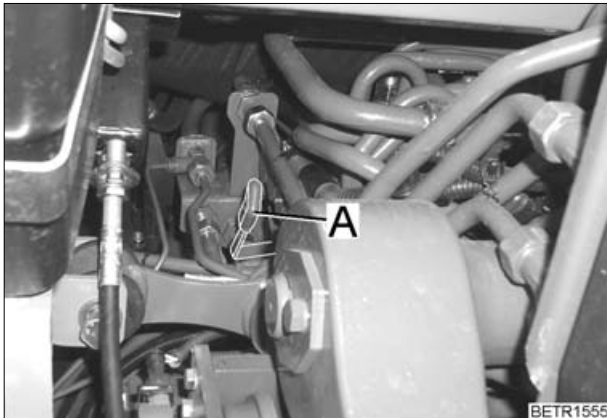
Date	Version	Page	Calibration code 4007	Capitel	Index	Docu-No.
21.07.2006	a	8/8		0000	F	000039

Fendt 300 Vario	Tractor / General system Calibration code 4007	F
------------------------	---	----------

8. Calibration - transmission ratio characteristic



Apply hand brake



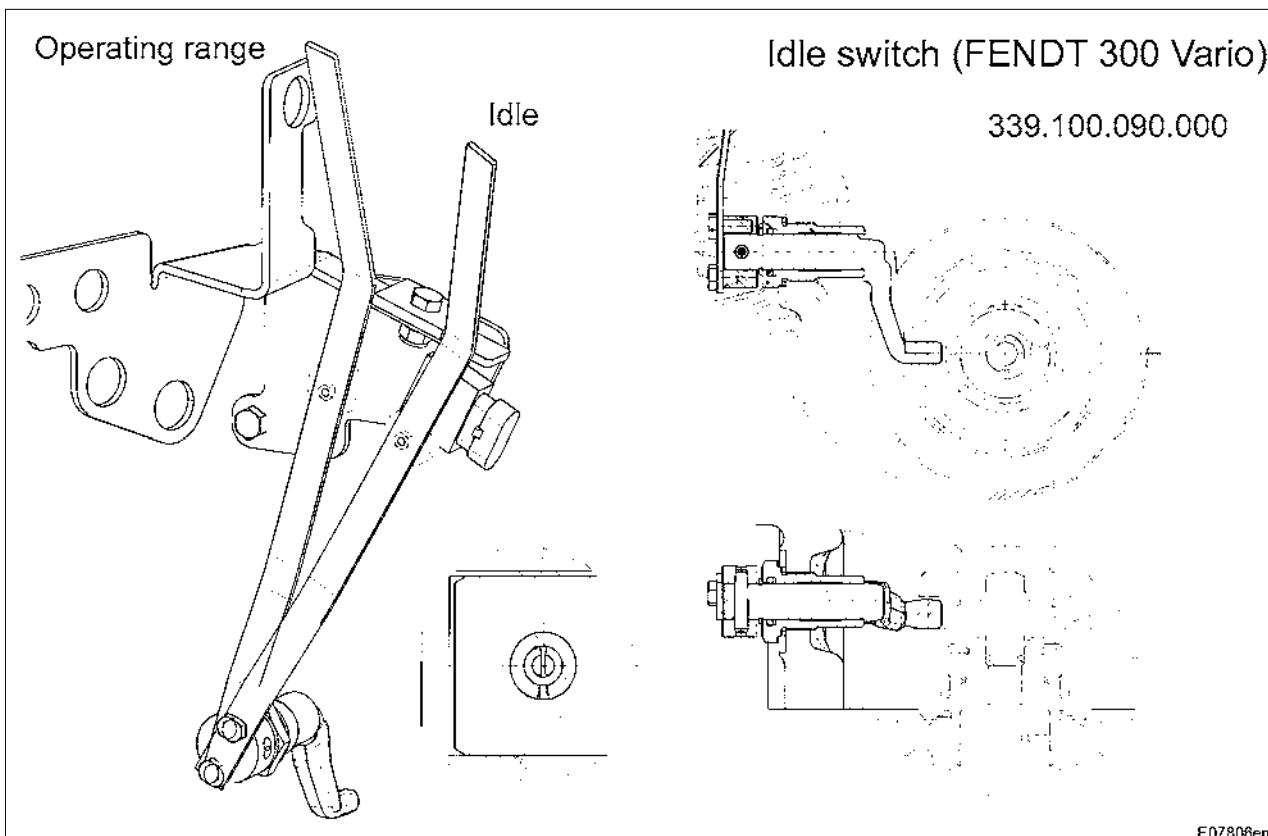
Shift transmission into idle

- Pull range selector (A) back - transmission is in idle
- Pull range selector (A) forward - transmission is in driving position

Date	Version	Page	Calibration code 4007	Capitel	Index	Docu-No.
21.07.2006	a	1/10		0000	F	000039

Fendt 300 Vario

Tractor / General system
Calibration code 4007

F

- Start engine
- Tractor is stationary (less than 0.1 km/h)
- Engine speed 1600 rpm +/-30 (engine speed must not drop below 1400 rpm during calibration)
- No error messages from speed sensors (B010 , B014 , B015)
- Clutch pedal **not** actuated



Neutral key 'N' **not** on neutral
 Transmission is positively engaged

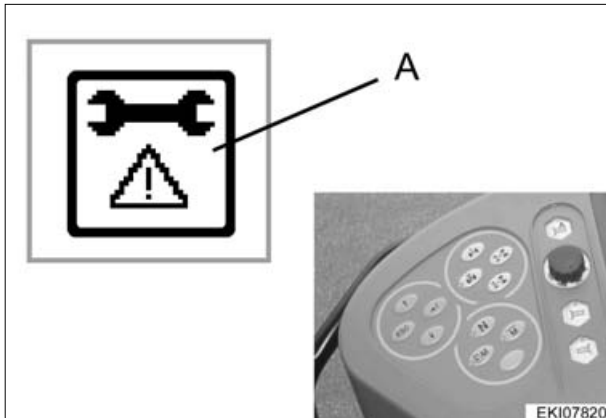
Date	Version	Page	Calibration code 4007	Capitel	Index	Docu-No.
21.07.2006	a	2/10		0000	F	000039

Fendt 300 Vario

Tractor / General system
Calibration code 4007

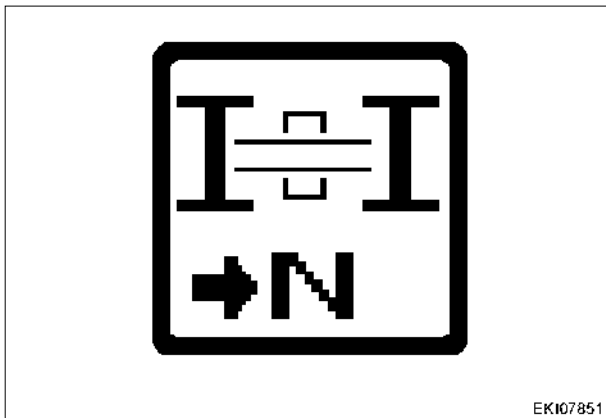
F

- If error messages are displayed, faults must be accepted individually



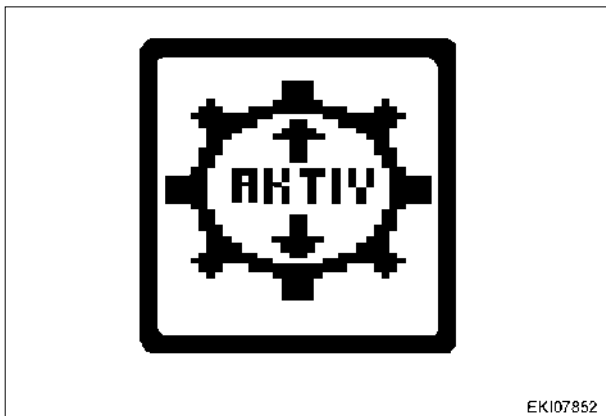
ESC

Accept warning and fault messages that are displayed on A007 - instrument cluster with the 'ESC' key



ESC

Accept "Transmission in idle" with the "ESC" key

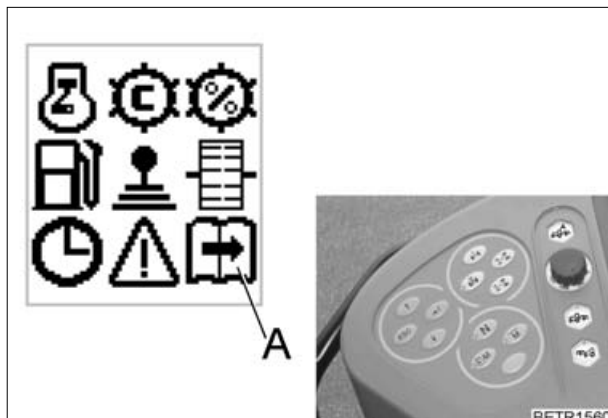


ESC

Accept 'Transmission in ACTIVE STATIONARY mode' with the 'ESC' key

Fendt 300 Vario

Tractor / General system
Calibration code 4007

F

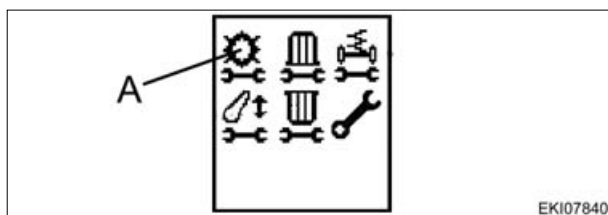
Press key, the first main menu appears on the multiple display



Press either of the keys repeatedly until symbol (A) flashes



Press key, the second main menu level appears on the multiple display



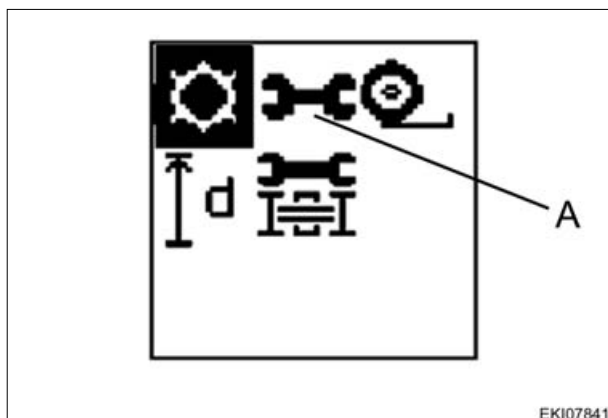
The second main menu level appears on the multiple display



Press either of the keys repeatedly until symbol (A) flashes



Press the 'Return' key



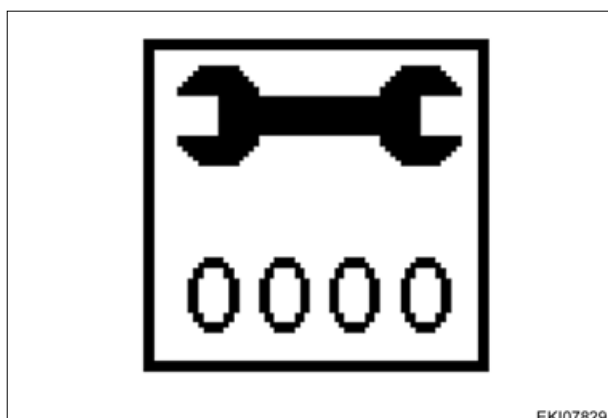
The transmission menu level appears on the multiple display.



Press either of the keys repeatedly until symbol (A) flashes



Accept with the 'Return' key



Input code **4007**



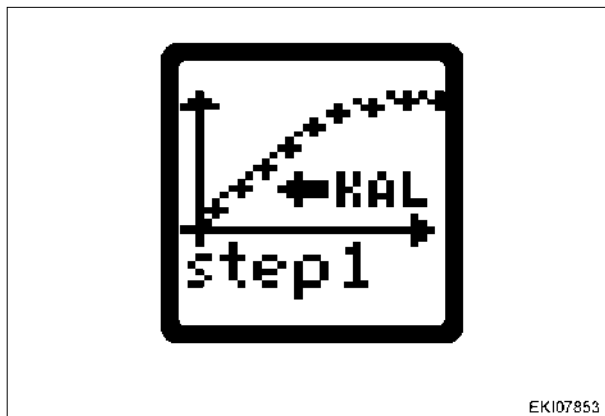
Press one of keys until desired number is displayed



Accept with the 'Return' key

Fendt 300 Vario

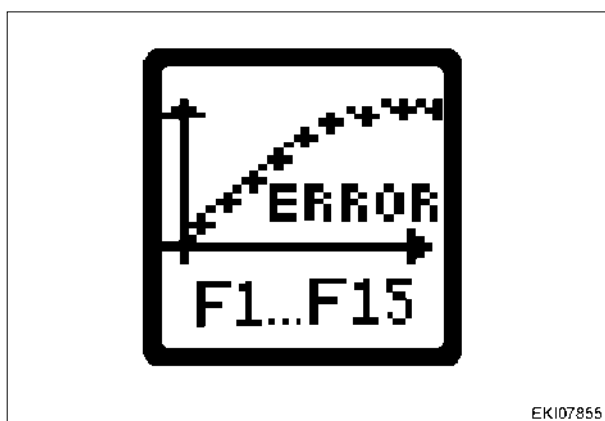
Tractor / General system
Calibration code 4007

F

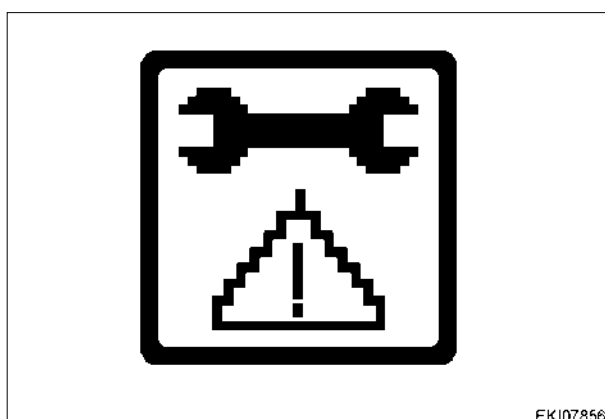
Step 1 to



Step 7 are run through automatically



If incorrect values are found or conditions are not met, an error message is displayed.



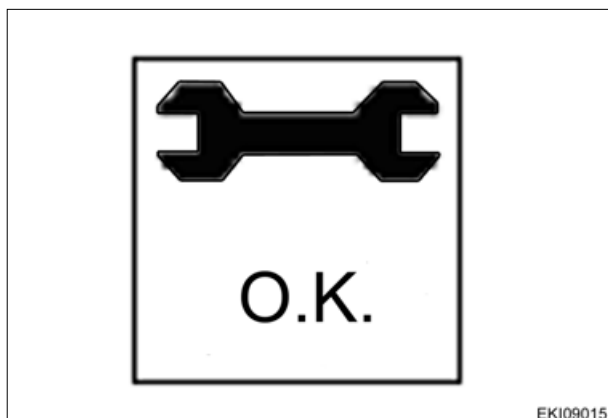
If calibration proceeds without errors, this symbol is displayed, and new sensor settings are stored.



Accept with the 'ESC' key

Date	Version	Page	Calibration code 4007	Capitel	Index	Docu-No.
21.07.2006	a	5/10		0000	F	000039

Fendt 300 Vario	Tractor / General system Calibration code 4007	F
------------------------	---	----------

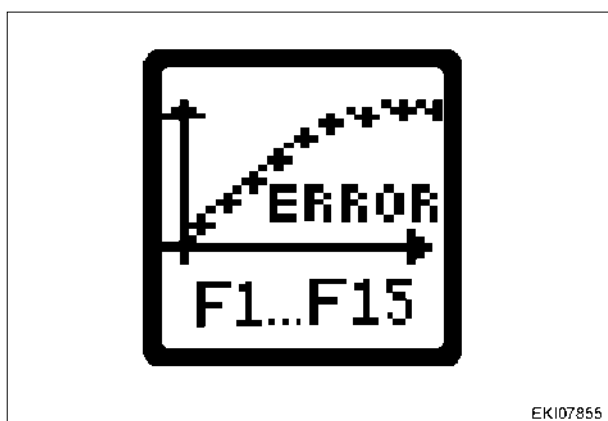


If calibration proceeds without errors, **O.K.** is displayed and the new sensor settings are saved.

Note:

The settings are only then accepted when the ignition key has been turned to position '0'

(wait at least 15 seconds before switching on the ignition again!)



If incorrect values are found or conditions are not met, **ERROR** is displayed

If erroneous values are detected or conditions are not met, fault code F1 ... F15 appears

Fendt 300 Vario	Tractor / General system Calibration code 4007	F
------------------------	---	----------

Possible error messages when calibrating the transmission ratio, code 4007

Error message	Cause / remedy
F 1	Preconditions not met
F 2	1. When ignition is switched off, the relay in the A002 - ECU, enhanced control is not released. Upon switching off the ignition, release of relay in A002 - ECU, enhanced control must be audible. 2. Check connections to A009 - actuator unit.
F 3	A009 - actuator unit does not approach setpoint exactly. Test ease of movement of transmission control, e.g. engage emergency control and test.
F 4	Transmission ratio has not been adjusted within 8 sec. Test ease of movement of transmission control, e.g. engage emergency control and test.
F 5	Step 1 = A009 - actuator unit does not find zero point from 0 in forward direction. Step 2 = A009 - actuator unit does not find zero point from 0 in reverse direction. Test connection between A009 - actuator unit and actuator shaft.
F 6	See error message F 5
F 7	Step 2: The zero points of transmission control unit for forward and reverse travel are too far apart, greater than 8°. Test connection between A009 - actuator unit and actuator shaft. Actuator unit.
F 8	Step 3: Maximum point of transmission ratio forwards not found. Target value min. 157°, max. 186°. Step 4: Maximum point of transmission ratio reverse not found. Target value min. 137°, max. 163°. Test connection between A009 - actuator unit and actuator shaft.
F 9	Step 3: Actuator shaft is displaced forwards by more than 157°. However, transmission displacement reacts by less than 157°. Step 4: Actuator shaft is displaced in reverse by more than 137°. However, transmission displacement reacts by less than 137°. Test connection between A009 - actuator unit and actuator shaft. Actuator unit.
F 10	Transmission ratio characteristic curve not logical. For example, forward set, reverse detected. Repeat calibration. Also see error message F 2. Test signal for direction of rotation of B014 - hydrostat sensor (drive accumulator shaft)
F 11 / F 12	Step 7 = Check the values in Step 1 to Step 6. ML-transmission ratio not in order. Repeat calibration. Also see error message F 2. Then check hydrostatic power branch if necessary, e.g. via emergency operating mode.
F 13	1. Faulty EOL programming (before Step 1) 2. Value stored in A002 - ECU, enhanced control is not logical Remedy: 1. Repeat EOL programming 2. See 1., if necessary, replace A002 - ECU, enhanced control.
F 14	See F 11 / F 12
F 15	Maximum forward and/or reverse transmission ratio is not reached Remedy: Repeat calibration (see also F 2). Then, if necessary, test hydraulic power branch, e.g. by means of Emergency mode.

Fendt 300 Vario	Tractor / General system Calibration code 4007	F
------------------------	---	----------

Fault codes are output starting with end-of-line program (EOL) 7.60 (fall 2007)



If incorrect values are found or conditions are not met, **ERROR** is displayed

4007 = Calibration code

FXX = Fault code

Possible error messages when calibrating the transmission ratio, code 4007

Error message	Cause / remedy
F02	A009 - actuator reports an error. Common source of error: A "key reset (ignition OFF/ON)" was not performed after calibration was aborted due to error
F03	A009 - actuator does not go to the target value exactly. Check that the transmission control moves easily, e.g. engage emergency control and test.
F04	Transmission ratio does not change within 8 sec. Check that the transmission control moves easily. e.g. engage emergency control and test.
F05	Step 1 = A009 - actuator unit does not find zero point from 0 in forward direction. Step 2 = A009 - actuator unit does not find zero point from 0 in reverse direction. Test connection between A009 - actuator unit and actuator shaft.
F06	If error message appears, see F05
F07	Step 2: The zero points of transmission control unit for forward and reverse travel are too far apart, greater than 8°. Test connection between A009 - actuator unit and actuator shaft. Actuator unit.
F08	Step 3: Maximum point of transmission ratio forwards not found. Target value min. 155°, max. 187°. Step 4: Maximum point of transmission ratio reverse not found. Target value min. 136°, max. 165°. Test connection between A009 - actuator unit and actuator shaft.
F09	Step 3: Actuator shaft is displaced forwards by more than 155°. However, transmission displacement reacts by less than 155°. Step 4: Actuator shaft is displaced in reverse by more than 135°. However, transmission displacement reacts by less than 135°. Test connection between A009 - actuator unit and actuator shaft. Actuator unit.
F10	Transmission ratio characteristic curve not logical. For example, forward set, reverse detected. Repeat calibration. See also error message F02. Test signal for direction of rotation from B014 - sensor hydrostat (accumulator shaft)
F11/12	Step 7 = Check the values in Step 1 to Step 6. ML-transmission ratio not in order. Repeat calibration. See also error message F02. Then, if necessary, test hydrostatic power branch, e.g. by means of Emergency mode.
F 13	1. Faulty EOL programming (before Step 1) 2. Value stored in A002 - ECU, enhanced control is not logical Remedy: 1. Repeat EOL programming 2. See 1., if necessary, replace A002 - ECU, enhanced control.

Date	Version	Page	Calibration code 4007	Capitel	Index	Docu-No.
21.07.2006	a	8/10		0000	F	000039

Fendt 300 Vario	Tractor / General system Calibration code 4007	F
------------------------	---	----------

Possible error messages when calibrating the transmission ratio, code 4007 (Forts.)

Error message	Cause / remedy
F14	See F 11 / F 12
F15	Maximum forward and/or reverse transmission ratio is not reached Remedy: Repeat calibration (see also F02). Then, if necessary, test hydraulic power branch, e.g. by means of Emergency mode.
F50	User cancelled with ESC
F51	Speed greater than 0.1 km/h
F52	Engine speed less than 1400 rpm
F53	Hand brake not applied
F54	Speed signal from B015 - sensor, bevel pinion faulty
F55	Speed signal B014 - sensor, hydrostat accumulator shaft faulty
F56	Speed signal from B010 - sensor, engine speed faulty
F57	Clutch is depressed
F63	Range control I/II is not in idle - Range control in idle (is normal after calibrating range selector (Code 4003)) - If necessary, shift the transmission into idle with the emergency control

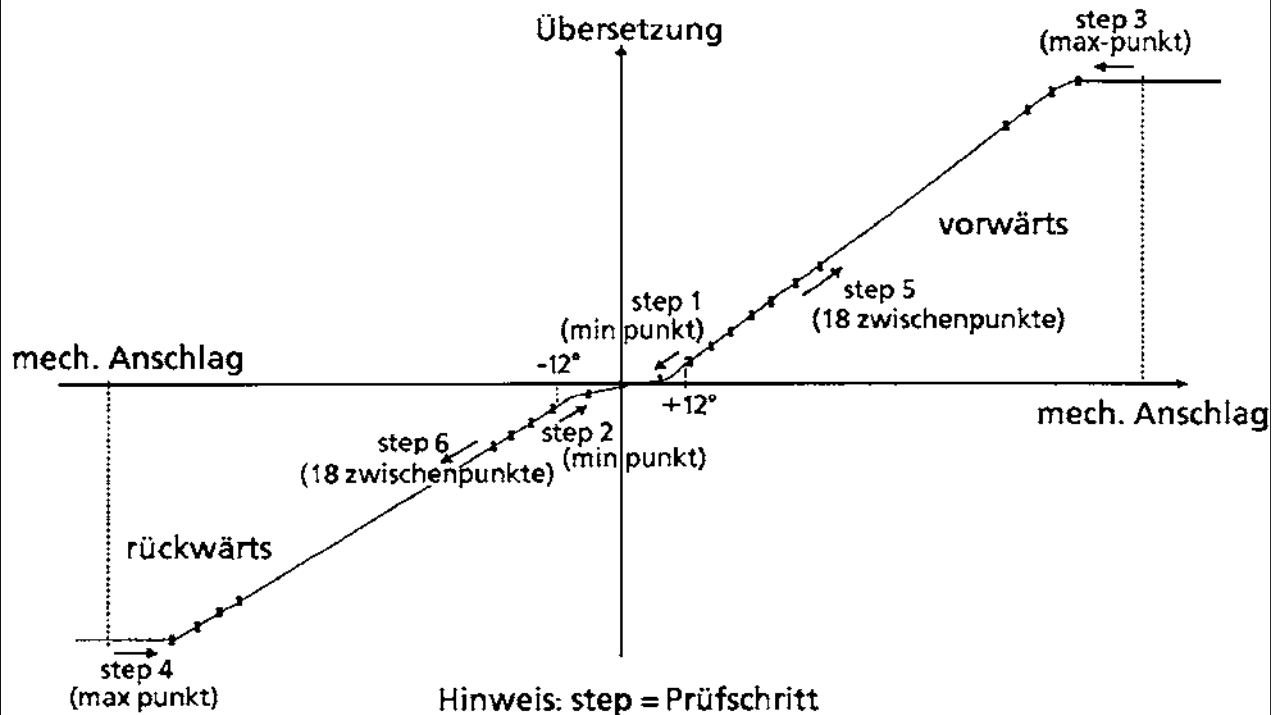
Date	Version	Page	Calibration code 4007	Capitel	Index	Docu-No.
21.07.2006	a	9/10		0000	F	000039

Fendt 300 Vario

Tractor / General system
Calibration code 4007

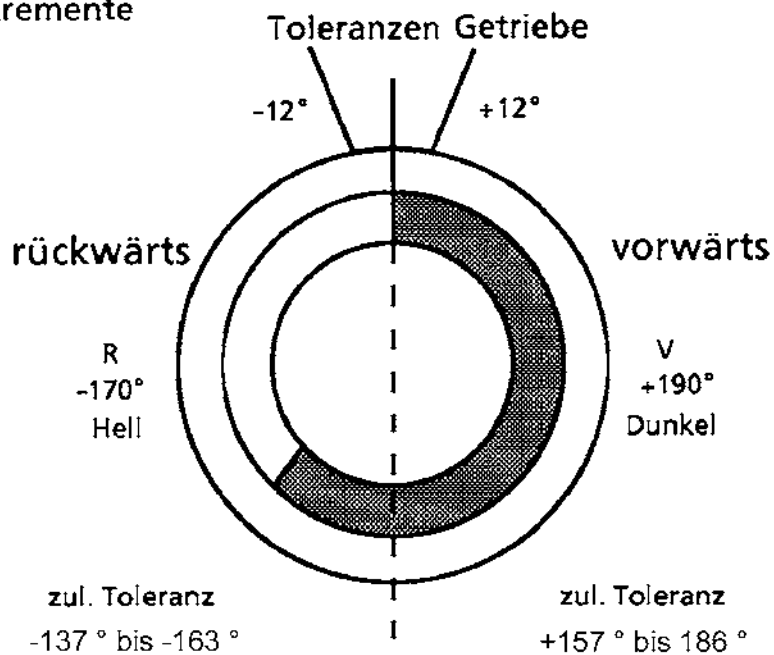
F

Graphic representation of transmission ratio calibration procedure



Der Inkrementalgeber in der Stelleinheit ist ein Drehwinkelgeber mit digitale Auflösung, der pro Umdrehung 8000 Impulse abgibt.

$1^\circ = 22,2$ Inkremente



EK107857

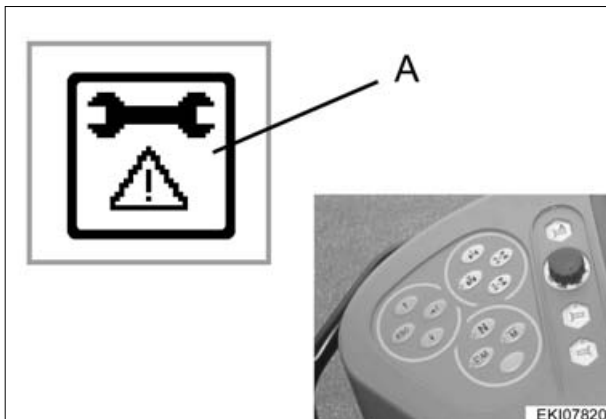
Date	Version	Page	Calibration code 4007	Capitel	Index	Docu-No.
21.07.2006	a	10/10		0000	F	000039

Fendt 300 Vario	Tractor / General system Calibration code 4009	F
------------------------	---	----------

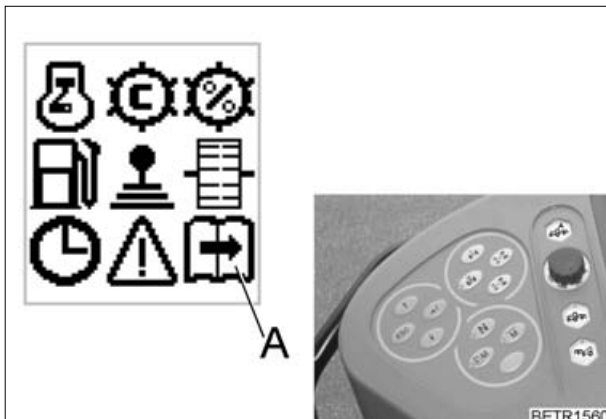
9. Calibration - turboclutch function

Attention: the following preparatory steps must be carried out.

- Pull hand brake tight. Careful, the tractor may start moving during calibration
- Start engine
- Tractor is stationary (less than 0.1 km/h)
- Engine speed 1100 +/- 40 rpm (engine speed may drop during calibration)
- Transmission operating range selected
- Transmission oil temperature approx. 40°C
- If error messages are displayed, faults must be accepted individually



Accept warning and fault messages that are displayed on A007 - instrument cluster with the 'ESC' key



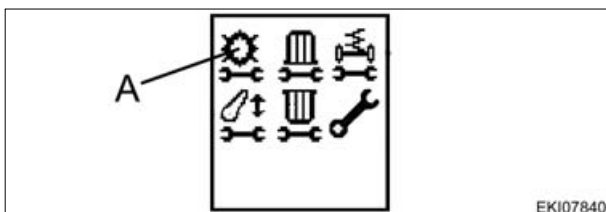
Press key, the first main menu appears on the multiple display



Press either of the keys repeatedly until symbol (A) flashes



Press key, the second main menu level appears on the multiple display



Press either of the keys repeatedly until symbol (A) flashes

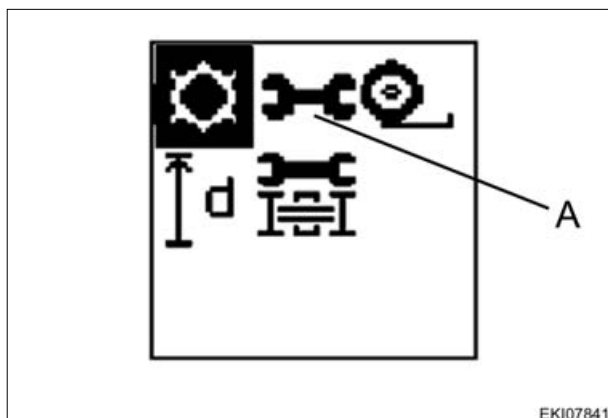


Press the 'Return' key

Date	Version	Page	Calibration code 4009	Capitel	Index	Docu-No.
21.07.2006	a	1/4		0000	F	000038

Fendt 300 Vario

Tractor / General system
Calibration code 4009

F

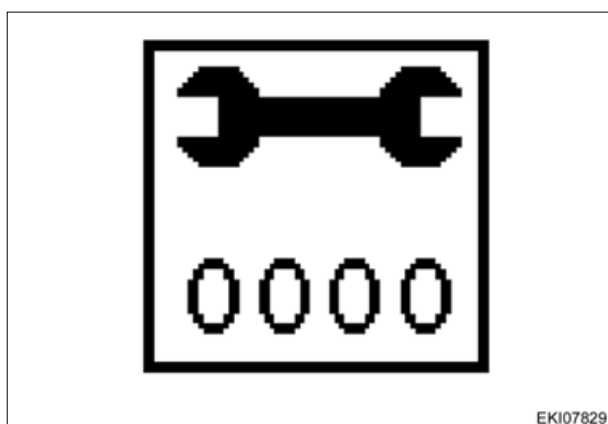
The transmission menu level appears on the multiple display.



Press either of the keys repeatedly until symbol (A) flashes



Accept with the 'Return' key



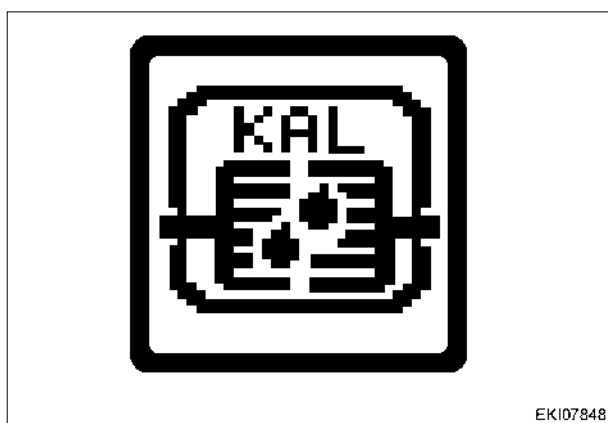
Input code **4009**



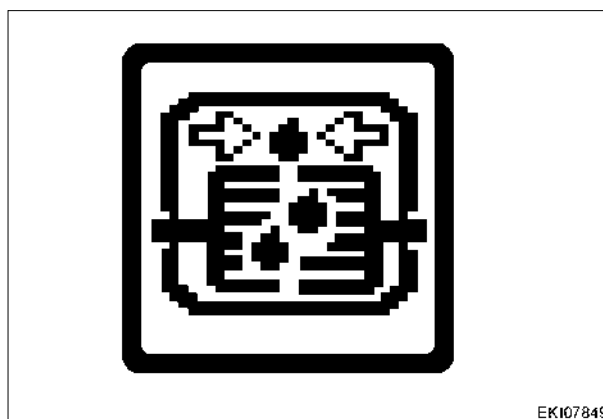
Press one of keys until desired number is displayed



Accept with the 'Return' key



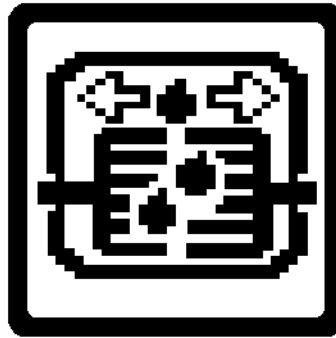
From this point on, the calibration process runs automatically



Date	Version	Page	Calibration code 4009		
21.07.2006	a	2/4	Capitel	Index	Docu-No.
			0000	F	000038

Fendt 300 Vario

Tractor / General system
Calibration code 4009

F

EKI07850



EKI07849



EKI07850



EKI09015

If calibration proceeds without errors, **O.K.** is displayed and the new sensor settings are saved.

Note:

The settings are only then accepted when the ignition key has been turned to position '0'

(wait at least 15 seconds before switching on the ignition again!)

Date	Version	Page	Calibration code 4009	Capitel	Index	Docu-No.
21.07.2006	a	3/4		0000	F	000038

Fendt 300 Vario	Tractor / General system Calibration code 4009	F
------------------------	---	----------



If incorrect values are found or conditions are not met, **ERROR** is displayed

4009 = Calibration code

FXX = Fault code (refer table)

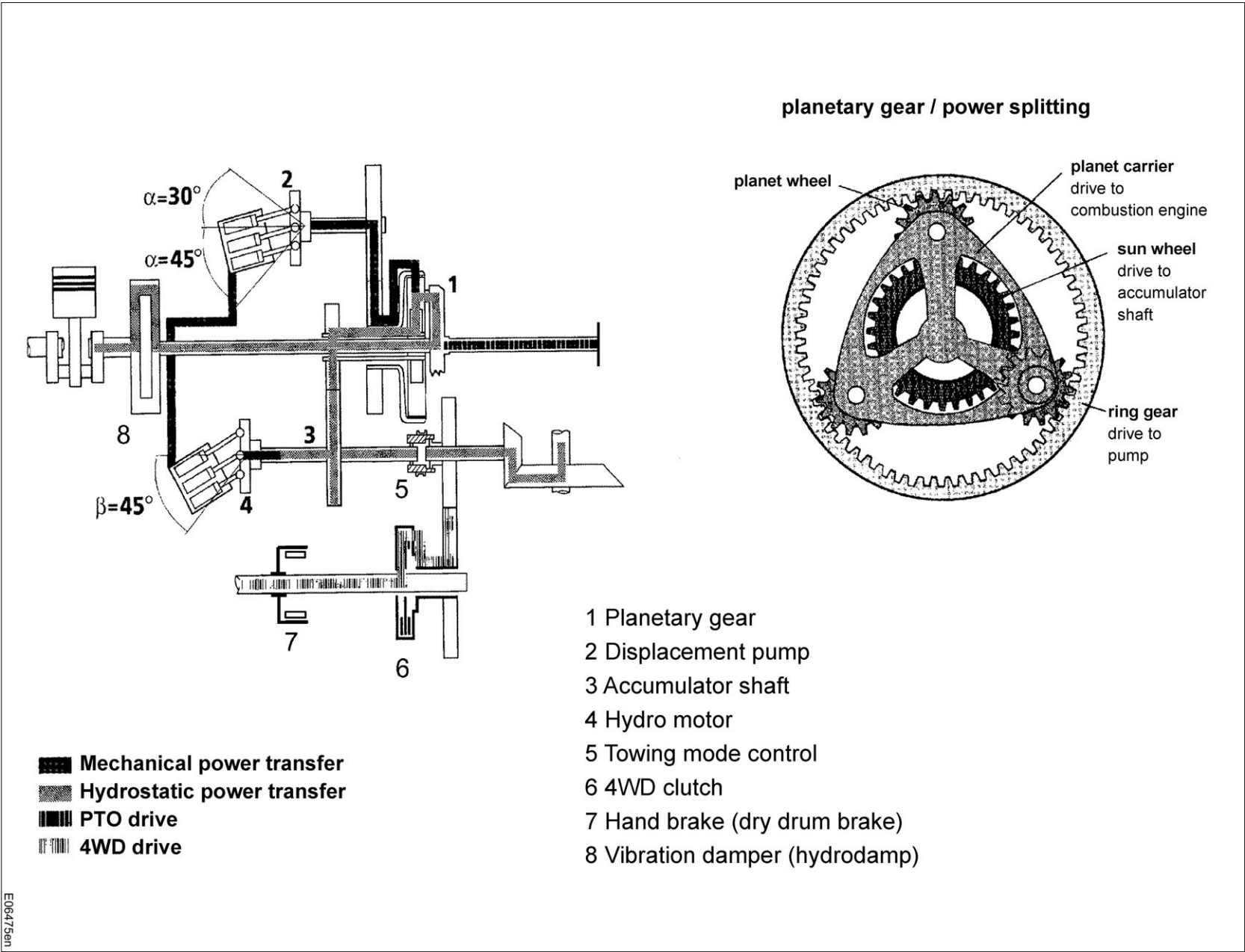
Note:

The fault code is displayed starting with end-of-line program (EOL) 7.60 (Fall 2007)

Fault code	Cause
F01	User cancelled calibration with ESC
F02	Calibration in emergency mode not possible
F03	Error when saving the calibrated value
F04	Speed greater than 0.1 km/h
F05	Engine speed too low when starting calibration, target engine speed = 1100 +/- 40 rpm
F06	Engine speed too low during calibration, target engine speed = 1100 +/- 400 rpm
F07	B010 - sensor, engine speed faulty
F08	Operating range II is not selected
F09	B015 - Sensor, range detection faulty
F10	Transmission is not in neutral
F11	Neutral button faulty (A036 - control panel)
F12	Clutch depressed
F13	B017 - sensor, clutch pedal faulty
F14	Transmission pressure too high (above 100 bar) when starting calibration
F15	Transmission pressure too high (above 200 bar) during calibration
F16	B008 - sensor, high pressure 1 faulty
F17	S080 - switch, hand brake faulty
F18	Hand brake not applied
F19	Fault in A009 - actuator
F20	Fault in Y004 - solenoid valve, turboclutch / transmission neutral
F21	Plausibility error: power consumption on Y004 - solenoid valve, turboclutch / transmission neutral to transmission high pressure
F22	Fault in transmission ratio
F23	Plausibility error: power consumption on Y004 - solenoid valve, turboclutch/transmission neutral e.g. short circuit am Y004 - solenoid valve

Date	Version	Page	Calibration code 4009	Capitel	Index	Docu-No.
21.07.2006	a	4/4		0000	F	000038

Date	Version	Page	Functional schematic of transmission ML 75			Capitel	Index	Docu-No.
07.12.05	a	1/6				1005	A	000008

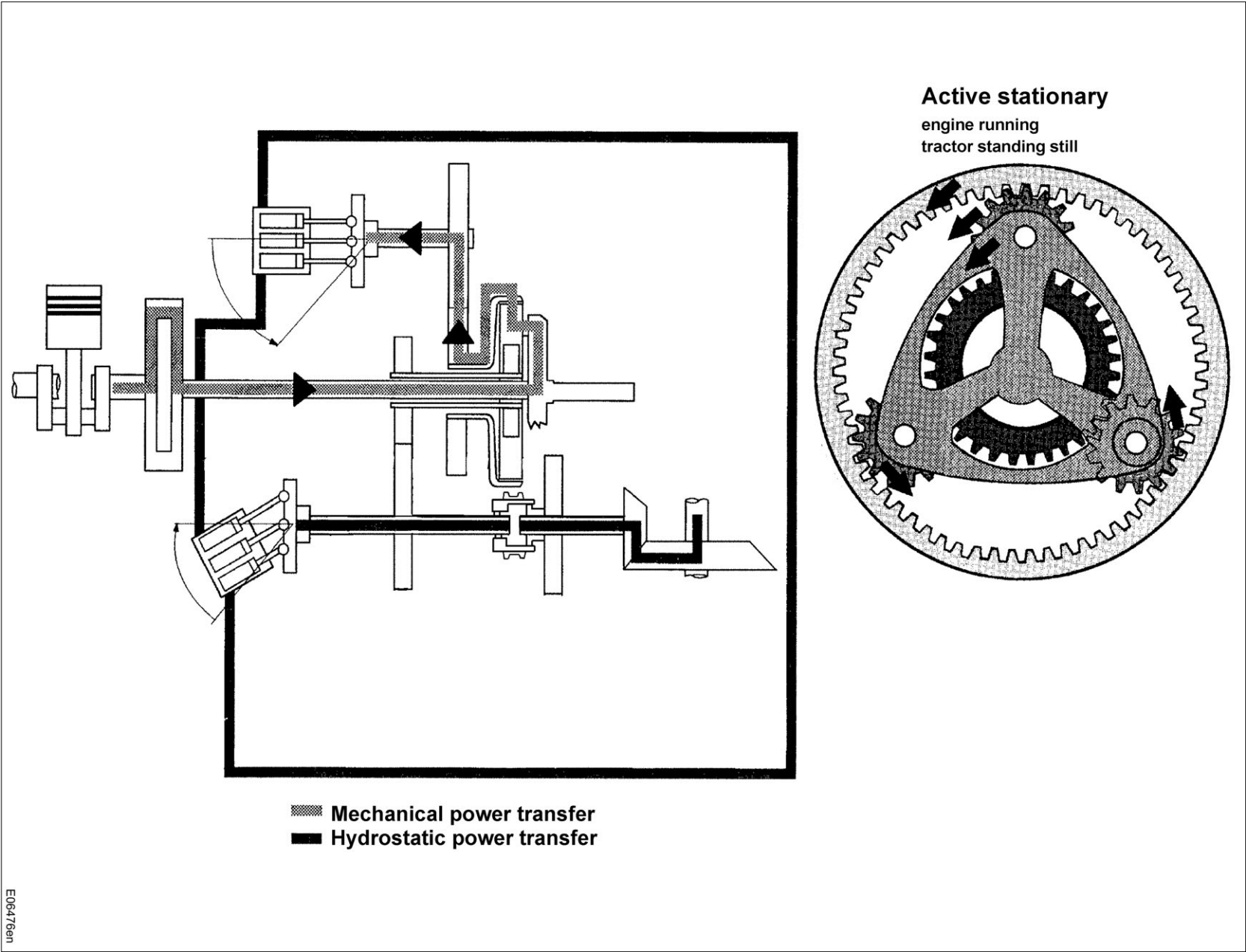


Fendt 300 Vario	Transmission / transmission control unit	Functional schematic of transmission ML 75	A
-----------------	--	--	---

Fendt 300 Vario

Transmission / transmission control unit
Functional schematic of transmission ML 75

A

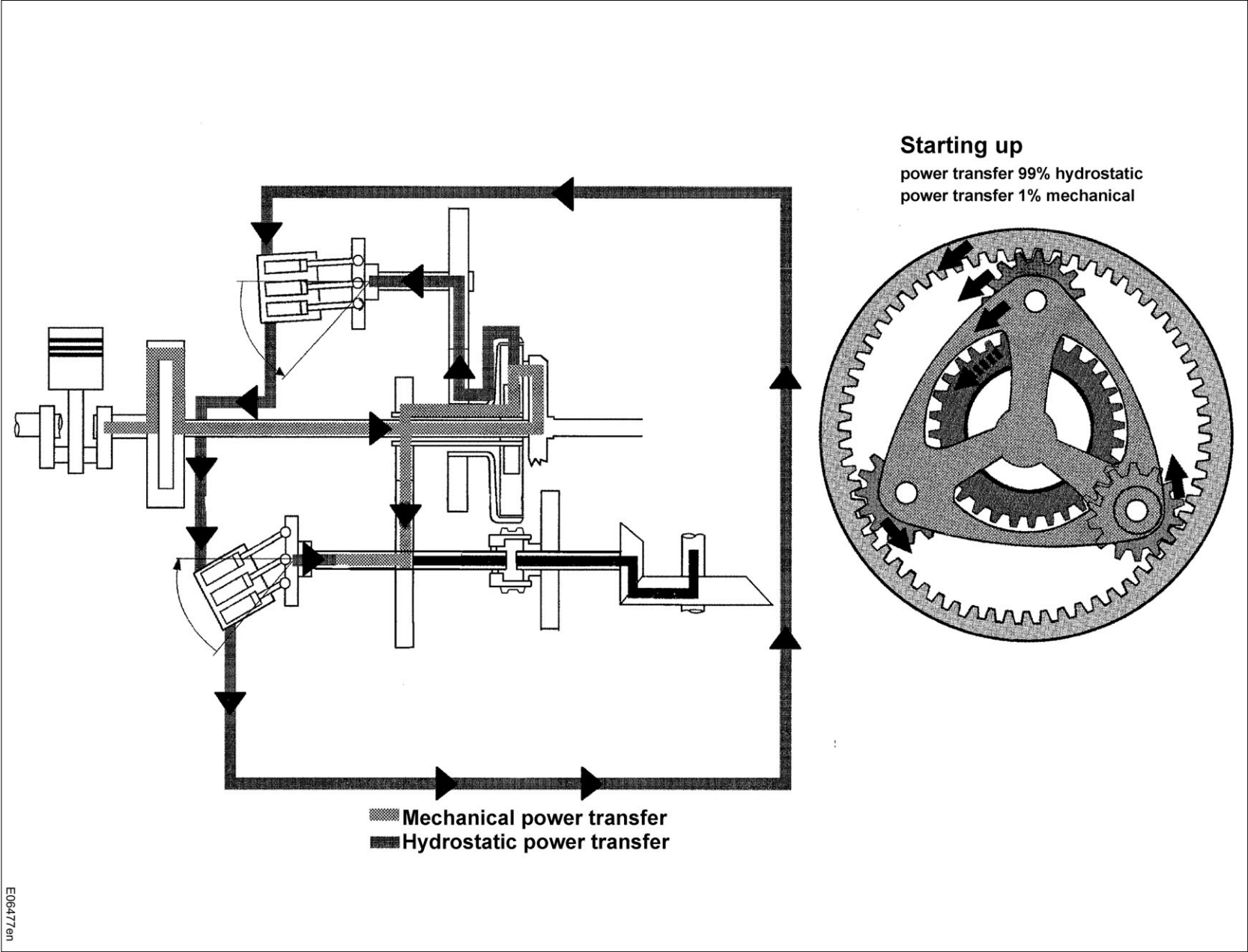


Date	Version	Page	Functional schematic of transmission ML 75			Capitel	Index	Docu-No.
07.12.05	a	2/6				1005	A	000008

Fendt 300 Vario

Transmission / transmission control unit
Functional schematic of transmission ML 75

A

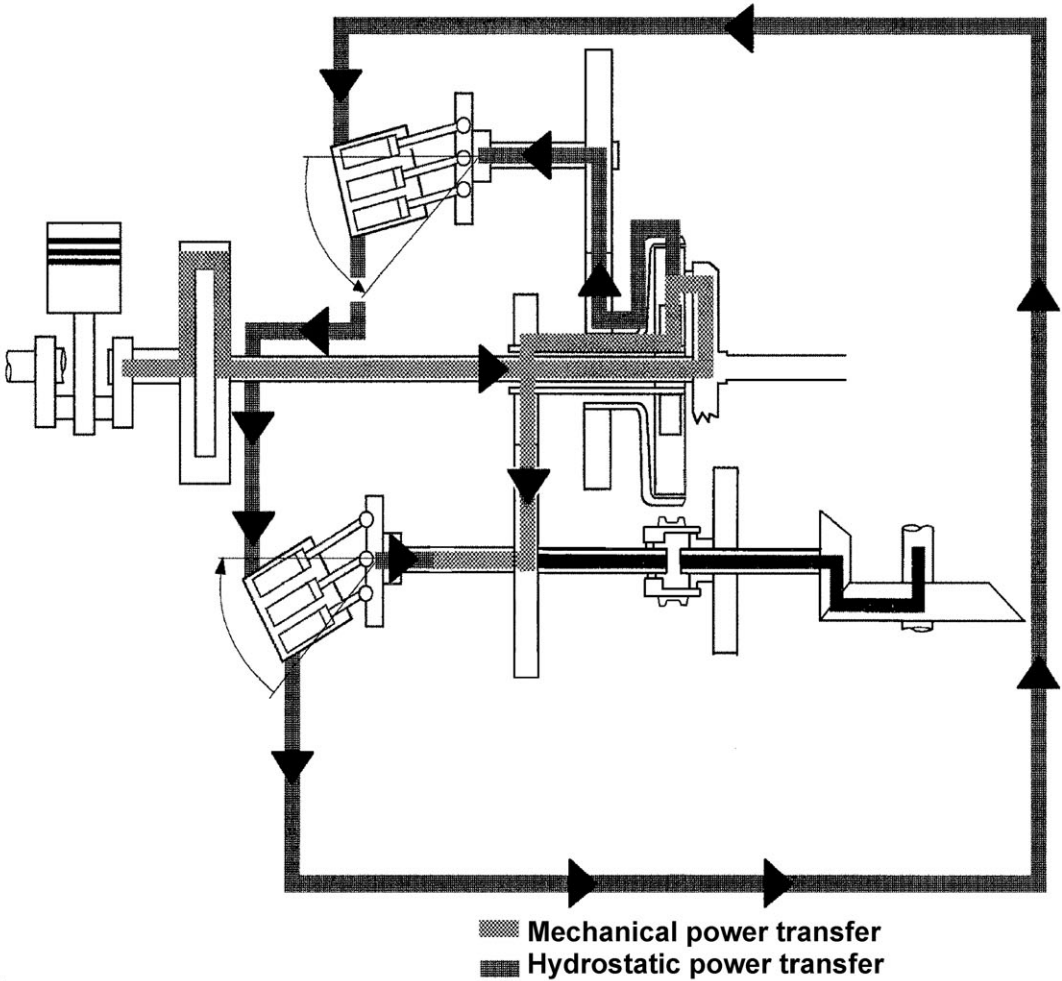
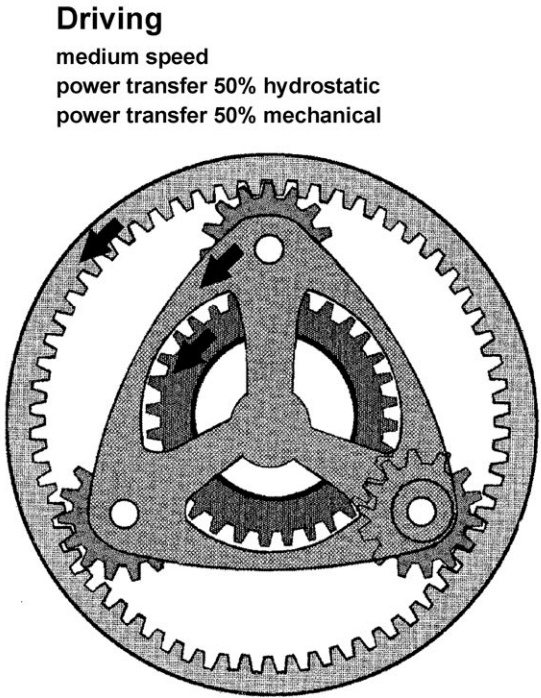


Date	Version	Page	Functional schematic of transmission ML 75			Capitel	Index	Docu-No.
07.12.05	a	3/6				1005	A	000008

Fendt 300 Vario

Transmission / transmission control unit
Functional schematic of transmission ML 75

A



E06478en

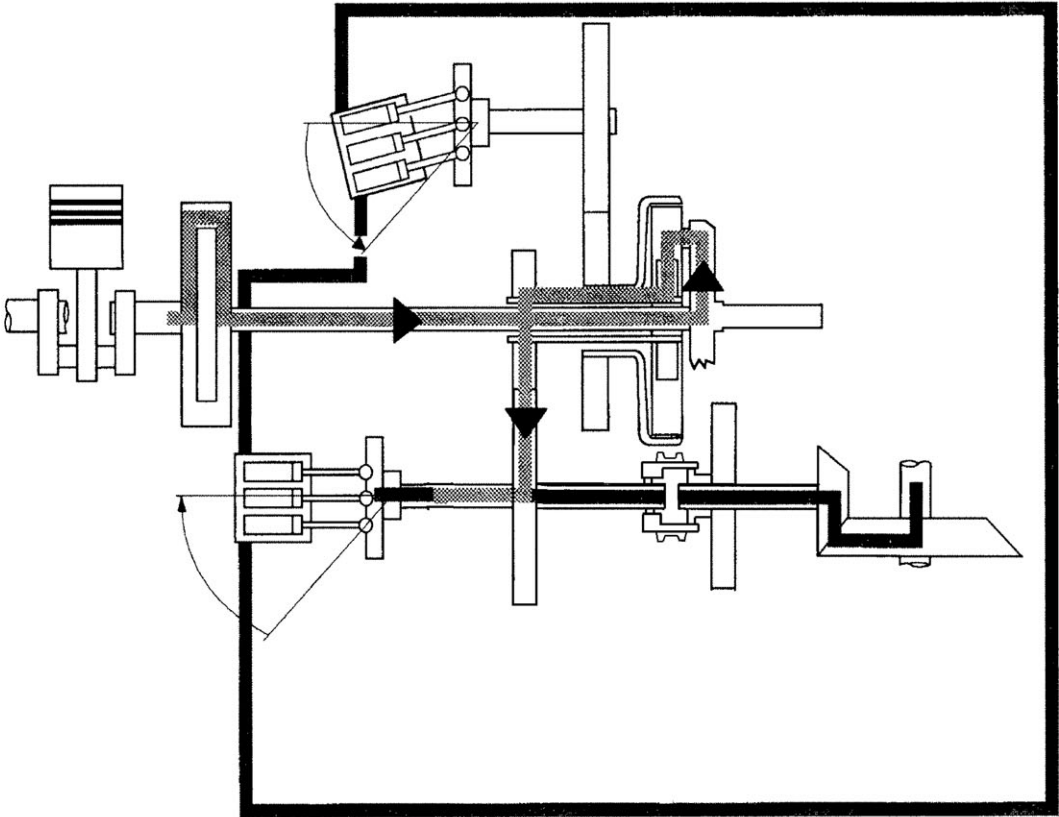
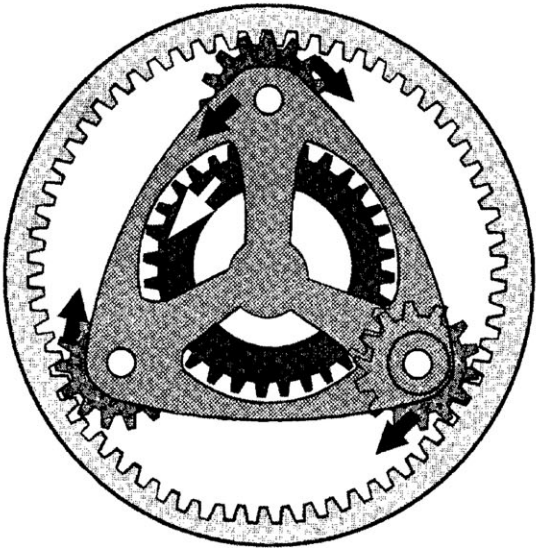
Date	Version	Page	Functional schematic of transmission ML 75			Capitel	Index	Docu-No.
07.12.05	a	4/6				1005	A	000008

Fendt 300 Vario

Transmission / transmission control unit
Functional schematic of transmission ML 75

A

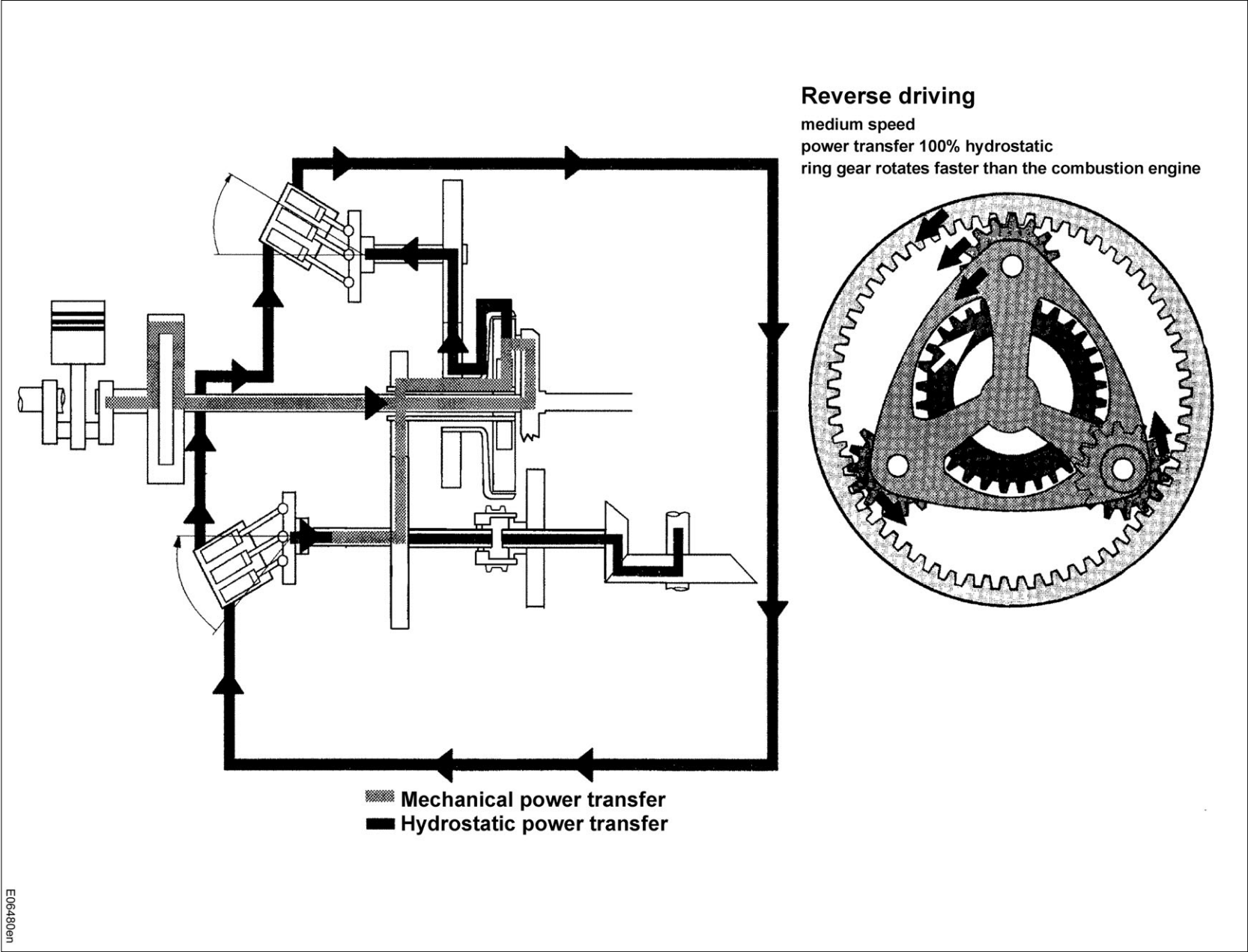
Transport 40 km/h
reduced engine speed
power transfer 100% mechanical



■ Mechanical power transfer
■ Hydrostatic power transfer

E06479en

Date	Version	Page	Functional schematic of transmission ML 75			
07.12.05	a	5/6	Capitel	Index	Docu-No.	
			1005	A	000008	



Date	Version	Page	Functional schematic of transmission ML 75			Capitel	Index	Docu-No.
07.12.05	a	6/6				1005	A	0000008

Fendt 300 Vario	Transmission / transmission control unit Transmission - Emergency operating mode	A
------------------------	--	----------

If the transmission ratio setting monitored by the electronic system can no longer be executed due to actual or indicated faults, an auxiliary lever allows mechanical control of transmission ratio.

Note:

Transmission - emergency operating mode can only be started if:

Clutch pedal is pressed down fully

B017 - sensor, clutch pedal fault-free

S074 - switch, transmission neutral / starter lockout fault-free

B010 - sensor, engine speed fault-free

Y004 - solenoid valve, clutch / turboclutch fault-free

If the emergency operating mode can not be activated:

Observe towing instructions!

Note:

If there are no faults, the transmission - emergency operation mode can not be activated

Maximum travel speed

Forward = 44 km/h

Reverse = 20 km/h

In transmission - emergency operating mode, engine speed is limited

B015 - sensor, bevel pinion is fault-free (A002 - ECU, enhanced control detects a speed)

Speed less than approx. 44 km/h = No engine speed limitation

Speed greater than approx. 44 km/h = Engine speed limited to approx. 1600 rpm



A warning appears on the A007 - instrument cluster if engine speed has been limited for driving.

B015 - sensor, bevel pinion faulty (A002 - ECU, enhanced control does not detect a speed)

The engine speed is limited to approx. 1600 rpm when transmission - emergency operating mode is activated

Date	Version	Page	Transmission - Emergency operating mode	Capitel	Index	Docu-No.
15.12.05	a	1/4		1005	A	000009

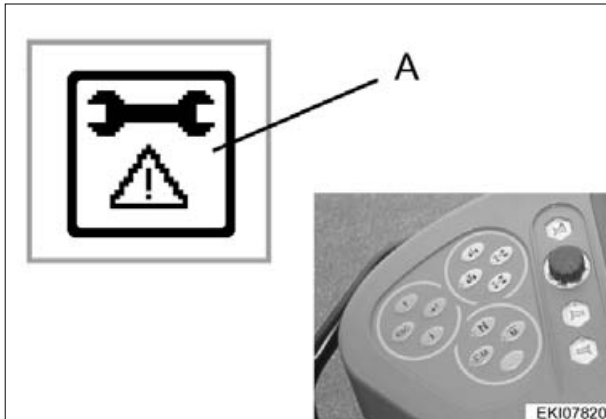
Fendt 300 Vario

Transmission / transmission control unit

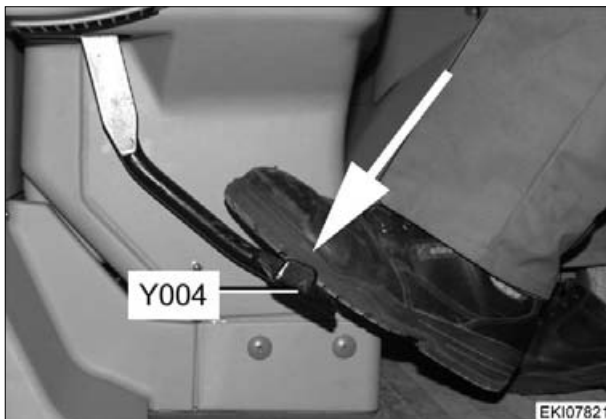
Transmission - Emergency operating mode

A

Activating transmission emergency operating mode



Accept warning and fault messages that are displayed on A007 - instrument cluster with the "ESC" key

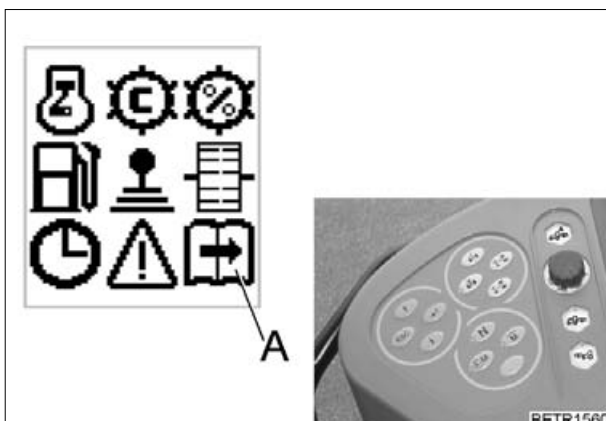


Press clutch pedal down fully.



Caution:

The clutch pedal must be engaged carefully, since a ratio or a travel direction may be preselected



Activating emergency mode



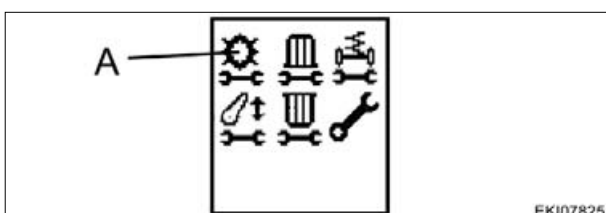
Press key, the first main menu appears on the multiple display



Press either of the keys repeatedly until symbol (A) flashes



Press key, the second main menu level appears on the multiple display



The second main menu level appears on the multiple display



Press either of the keys repeatedly until symbol (A) flashes



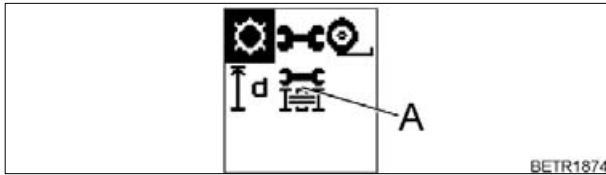
Press the "Return" key

Date	Version	Page	Capitel	Index	Docu-No.
15.12.05	a	2/4	Transmission - Emergency operating mode	1005	A
					000009

Fendt 300 Vario

Transmission / transmission control unit

Transmission - Emergency operating mode

A

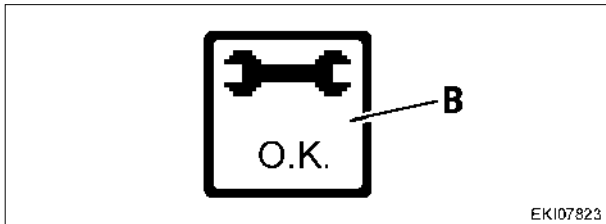
The transmission menu level appears on the multiple display.



Press either of the keys repeatedly until symbol (A) flashes



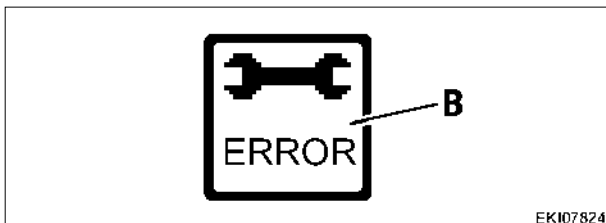
Press the "Return" key



Symbol (B) is now shown on the multiple display

The tractor is now in emergency operation mode

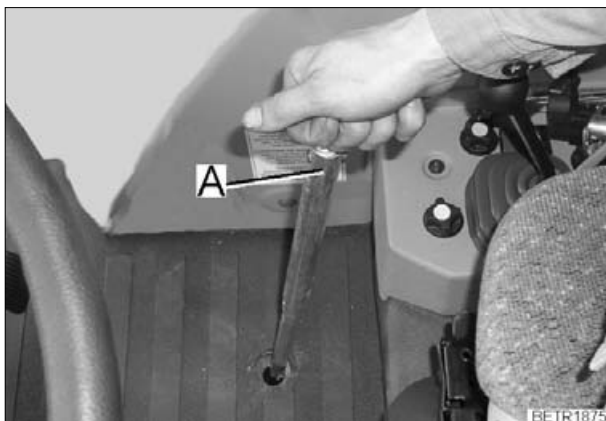
When using emergency operation mode, travel direction indicators are no longer active.



If emergency operation is not possible, symbol (B) appears

Note:

Observe towing instructions!



Remove the cover in the cab floor

Connect auxiliary lever (A) to transmission control

Note:

Auxiliary lever is included as standard equipment

Setting transmission ratio mechanically



Warning:

When setting the ratio, only the auxiliary lever supplied may be used because otherwise the coupling in the adjustment unit may twist (max. perm. torque = 10 Nm)

Carefully engage clutch pedal.

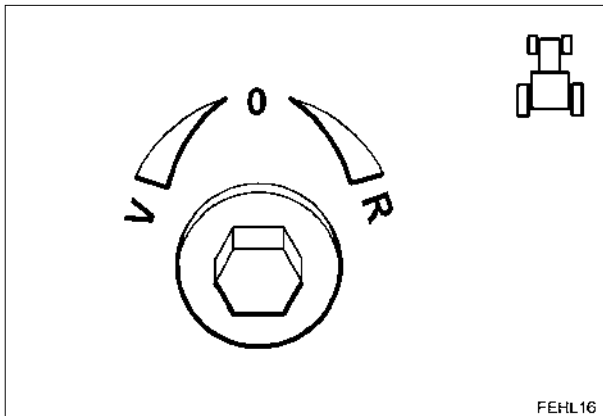
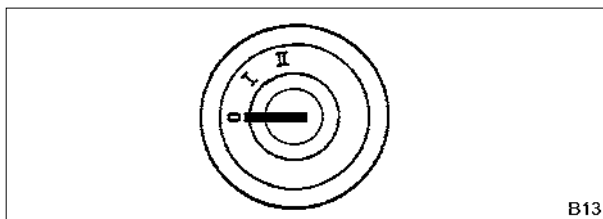
The tractor starts moving into the last selected direction of travel and accelerates up to the selected transmission ratio.

Date	Version	Page	Transmission - Emergency operating mode	Capitel	Index	Docu-No.
15.12.05	a	3/4		1005	A	000009

Fendt 300 Vario

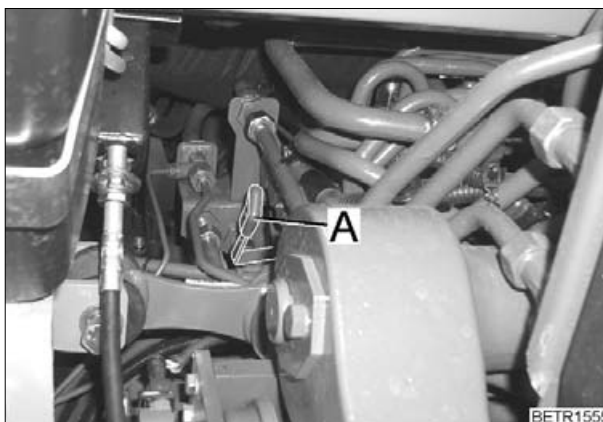
Transmission / transmission control unit

Transmission - Emergency operating mode

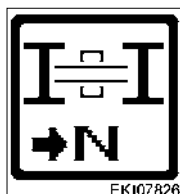
A**For forward travel****to the left** = the tractor accelerates**to the right** = the tractor slows down**For reverse travel****to the left** = the tractor slows down**to the right** = the tractor accelerates**Terminating emergency mode**

Stop the tractor

Terminate emergency operating mode by turning ignition OFF/ON (key reset)

Towing instructions

- **Range selector (A) back** - transmission in idle
- **Range selector (A) forward** - transmission is driving position



Mechanical idle position is displayed in the multiple display

The tractor can now be towed:

Maximum towing speed 10 km/h.**Maximum towing distance 8 km.****Danger:****When the engine is not running:****Reduced braking effect**
(brake booster does not function)**Higher steering forces** (hydraulic pump does not function)

After finishing towing, push the lever forward to engage the driving mode

Date	Version	Page	Transmission - Emergency operating mode	Capitel	Index	Docu-No.
15.12.05	a	4/4		1005	A	000009

Fendt 300 Vario	Transmission / transmission control unit Transmission control unit functional sequence	A
------------------------	--	----------

Transmission type ML 75

- M** = Marschall, designer of this development
L = Output branching ('Leistungsverzweigung'), mechanical and hydrostatic power transmission
75 = Vario transmission - installation size

ML 75 transmission

The ML 75 transmission is a continuously variable transmission for forward and reverse travel.

Power transmission can be hydrostatic or mechanical, or hydrostatic and mechanical. Basically this means:

Slow forward travel = hydrostatic power transmission high / mechanical low

Fast forward travel = hydrostatic power transmission low / mechanical high

For a detailed explanation, see transmission function plan

Hydrostatic power branch

The ML transmission unit is flexibly mounted in the transmission housing. The transmission housing is also the oil tank for the hydrostatic drive.

Oil fill: STOU oil, viscosity SAE 10W-40 or 15W-40

Initial fill: approx. 35 l

Refill: approx. 30 l, e.g. at an oil change

Functional sequence, see transmission hydraulic circuit diagram

The servo pump draws in oil through the intake filter.

The temperature sensor (B009) monitors the temperature of the transmission oil

Flow through the oil cooler is temperature-dependent.

This means that if the transmission oil is cold, little oil flows through the oil cooler, while most flows via the bypass valve. The bypass valve opens when the pressure differential exceeds approx. 3.5 bar. The transmission oil temperature is monitored by the temperature sensor.

The servo pump generates the system pressure for the ML control valves and enhanced control valves. The system pressure of approx. 18 bar is restricted by the pressure relief valve and restrictor orifice.

The system uses two different pressures.

1. System pressure for the ML transmission control unit and the enhanced control pressure for the rear PTO clutch, rear PTO shaft control and differential locks. Enhanced control pressure approx. 18 bar (see Chapter 1005 Reg. E - Measuring enhanced control pressure)
2. High pressure in ML-transmission approx. 550 + 15 bar. (see Chapter 1005 Reg. E - A009 - Measuring transmission pressure)

Contamination of the pressure filter is monitored by a pressure switch (S017) as a function of the transmission oil temperature. If the transmission oil temperature is below 50°C, filter contamination is not monitored.

Two check valves (2V1 and 2V2) alternately feed cooled transmission oil into the high pressure circuit. Hot transmission oil is discharged from the high pressure circuit via the purge valve (2V5).

In the high pressure circuit are: a variable-displacement pump (2P1) and a variable-displacement motor (2A1), two check valves (2V1 and 2V2), two servo-assisted high pressure relief valves (2V3 and 2V4), a purge valve (2V5), a clutch/turboclutch pressure relief valve (4V4), a high pressure safety valve (4V7) and a test connection (PH)

The variable-displacement cylinders (3A1 and 3A2) on the variable-displacement pump and motor are actuated by two 4/3-directional control valves (3V1 and 3V2).

Date	Version	Page	Transmission control unit functional sequence	Capitel	Index	Docu-No.
26.07.2006	a	1/4		1005	A	000010

Fendt 300 Vario	Transmission / transmission control unit Transmission control unit functional sequence	A
------------------------	---	----------

The 4/3-directional control valves (3V1 and 3V2) are mechanically actuated by the actuator shaft (3Z1). The actuator shaft (3Z1) is rotated as required by the actuator unit (A009), thereby setting the correct quantity of oil to be supplied or consumed.

The variable-displacement pump (2P1) and variable-displacement motor (2A1) swing accordingly.

In the emergency mode switch position, the actuator shaft (3Z1) is actuated manually from the cab.

Further details on actuator unit (A009) (see Chapter 9000 Reg. E - A009 - actuator unit)

In Emergency mode the transmission is automatically locked at approx. 30 km/h after the engine has been started.

If the clutch pedal, hand brake or neutral switch is operated, the high pressure circuit is depressurised by means of two high pressure relief valves (2V3 and 2V4).

The clutch **and** turboclutch functions are controlled by the pressure relief valve (4V4), (see Chapter 9000 Reg. E - Y004 - solenoid valve clutch/turboclutch)

Important note on filling the ML 75 transmission with oil:

During normal maintenance work, e.g. for a transmission oil change, the transmission oil should be added as in a normal change-gear transmission

If there is no oil in the high pressure circuit, the transmission must be filled from an external pressurised filling unit.

During filling, the gear oil is additionally filtered through connection PU (measuring point M5).

If the oil pressure filling is not performed, the variable-displacement pump (2P1) and variable-displacement motor (2A1) may become damaged as a result of dry running.

Electrical / electronic control

The **CAN bus** is a data line and connects various components (also called users) with each other. If a large amount of data is transmitted, the voltage in the CAN-bus (+ and - wires) rises.

In the Vario 300, data is transferred via two CAN buses

K-bus = enhanced control bus

G-bus = Transmission bus

The voltage can be checked at the CAN-bus sockets:

K and G bus, see Chapter 9000 Reg. E - CAN BUS)

The actuator unit (A009) controls the actuator shaft, thereby changing the transmission ratio in the ML transmission. Actuator unit, see picture 2/73a.

The actuator unit (A009) comprises:

1. Drive for Emergency mode (required in case of failure of the electronic control system)
2. Clutch for the drive
3. Incremental encoder which is a position sensor with digital resolution emitting 8000 pulses per revolution
4. Planetary gear $i = 192 : 1$ (electric motor to actuator shaft)
5. 12 V DC electric motor, 0.4 to 7 amps, actuator unit (A009) no-load speed of 4500 rpm
6. Slip clutch 2.5 to 3.5 Nm, less than 5 Nm at key-operated actuator of emergency control

Once the ignition is on, the actuator unit (A009) locates the reference point (approximate neutral point between forward and reverse travel).

When the engine has started, the actuator unit (A009) locates the reference point (exact neutral point between forward and reverse travel).

(see Chapter 9000 Reg. E - A009 - actuator unit)

Load limit control (restricting the reduction in engine speed or adaptation to the engine output)

Example: the engine speed is reduced when a load is applied. The electronics change the transmission ratio towards slow so that the engine speed is not reduced too far.

Date	Version	Page	Transmission control unit functional sequence	Capitel	Index	Docu-No.
26.07.2006	a	2/4		1005	A	000010

Fendt 300 Vario	Transmission / transmission control unit Transmission control unit functional sequence	A
------------------------	--	----------

Load limit control is always engaged once the engine is started. However, the reduction in engine speed can be adjusted from 0 to 30% (see Operating Manual).

The standard setting for the load limit control is 14%.

Load limit control functions:

The electronics detect the setpoint engine speed from the position of the accelerator pedal by means of the analogue position sensor (potentiometer) on the accelerator.

Control - setpoint transmission ratio has been reached.

The tractor is put under load, and the engine speed drops.

The load limit control only changes the transmission ratio towards slow.

The load limit control is engaged at:

reduction in engine speed of over 180 rpm + set value.

Example:	
Engine speed according to accelerator pedal position	2000 rpm
Maximum output control setting 10% =	200 rpm
Calculation:	
2000 rpm - 180 rpm - 200 rpm =	1620 rpm

This means that the load limit control changes the transmission ratio towards "Slow" from 1620 rpm. Theoretically the load limit control changes the transmission ratio when under load until the travel speed reaches 0.

Note:

Since the load limit control only changes the transmission ratio towards slow, it is beneficial to switch on cruise control.

If the engine speed rises again with cruise control switched on, the transmission ratio is changed towards fast again, up to the stored speed at a maximum.

Load limit control + cruise control can be slowed down or accelerated using the acceleration key on the speed control lever.

Sensors

Hall sensor engine (B010) measures engine speed. If the Hall sensor fails, it is only possible to continue in emergency operating mode.

Hall sensors drive accumulator shaft (B014) and bevel pinion (B015) measure rotational speed and detect the direction of rotation.

The engine speed rotary position sensor (B018) informs the electronic system about the position of the accelerator pedal and compares it with the engine speed (B010). This rotary position sensor is required for load limit control

The foot throttle position sensor (B055) monitors clutch pedal travel electronically. Before the clutch is engaged, the transmission ratio is reduced.

The discharge temperature sensor (B009) monitors the temperature of the transmission oil. Temperatures above 110°C are stored under fault code 4.1.53.

a) The tractor is stationary.

1. The engine is running.
2. The neutral switch has been operated, LED N in the armrest **is illuminated** or the clutch pedal has been actuated (which opens the high pressure valves).
3. The tractor can drive at a maximum speed of 2.5 km/h.

Date	Version	Page	Transmission control unit functional sequence	Capitel	Index	Docu-No.
26.07.2006	a	3/4		1005	A	000010

Fendt 300 Vario	Transmission / transmission control unit Transmission control unit functional sequence	A
------------------------	--	----------

b) Tractor moving

1. Speed above 5 km/h
2. The neutral switch has been operated, LED N in the armrest is off (which closes the high pressure valves). It is also possible to switch modes with the clutch pedal depressed.

The clutch / turboclutch valve solenoid (Y004) controls turboclutch operation. The high pressure valves (2V3 and 2V4) open as a function of the engine speed.

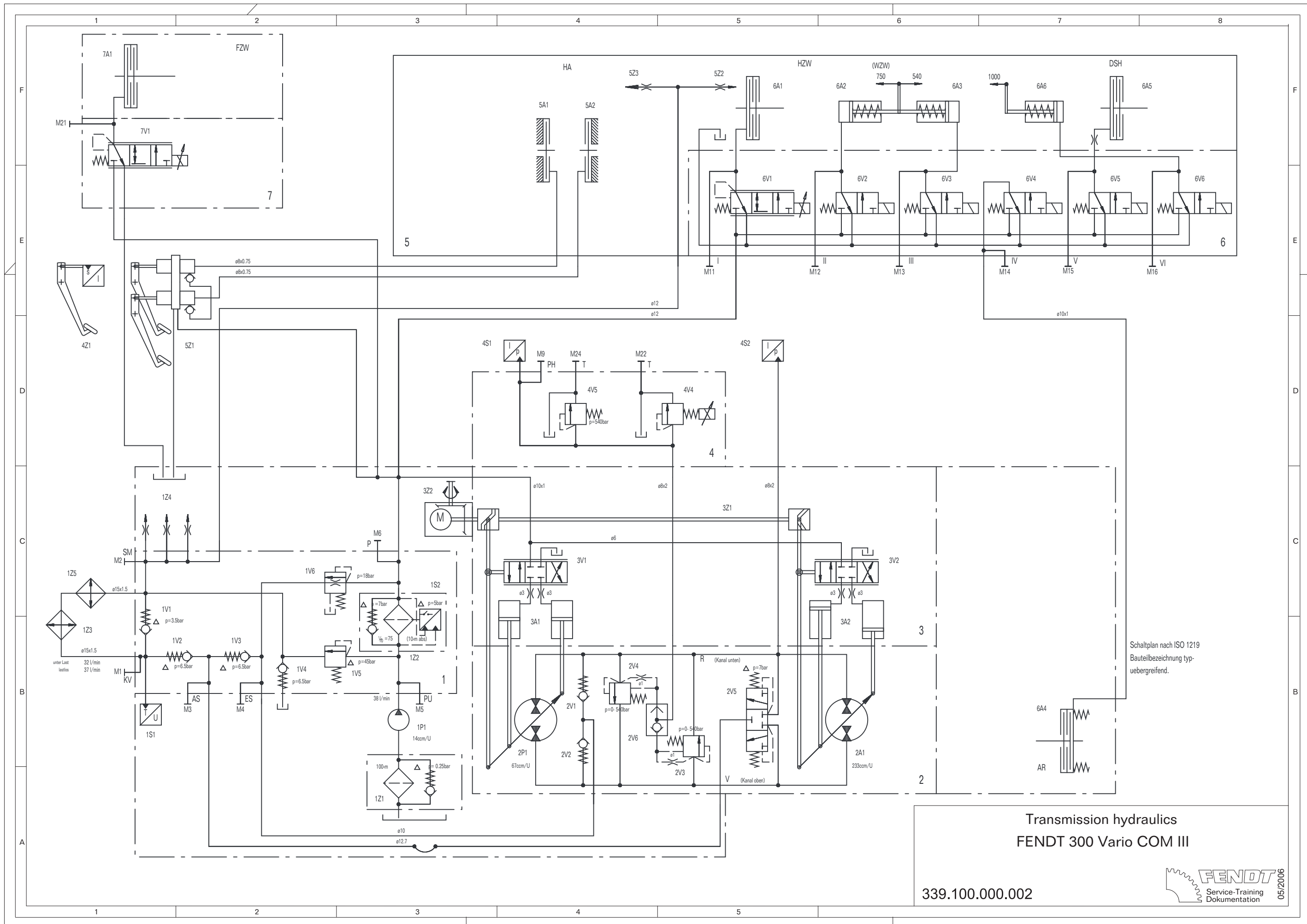
The pressure switch (S017) monitors clogging of the pressure filter on the ML transmission.

Hand brake switch (S015) , when the hand brake is on, the two high pressure valves are opened - both F/R lamps (A007) flash. The transmission is switched to neutral.

Date	Version	Page	Capitel	Index	Docu-No.
26.07.2006	a	4/4	1005	A	000010

Fendt 300 Vario	Transmission / transmission control unit Transmission hydraulic system - Legend	C
------------------------	---	----------

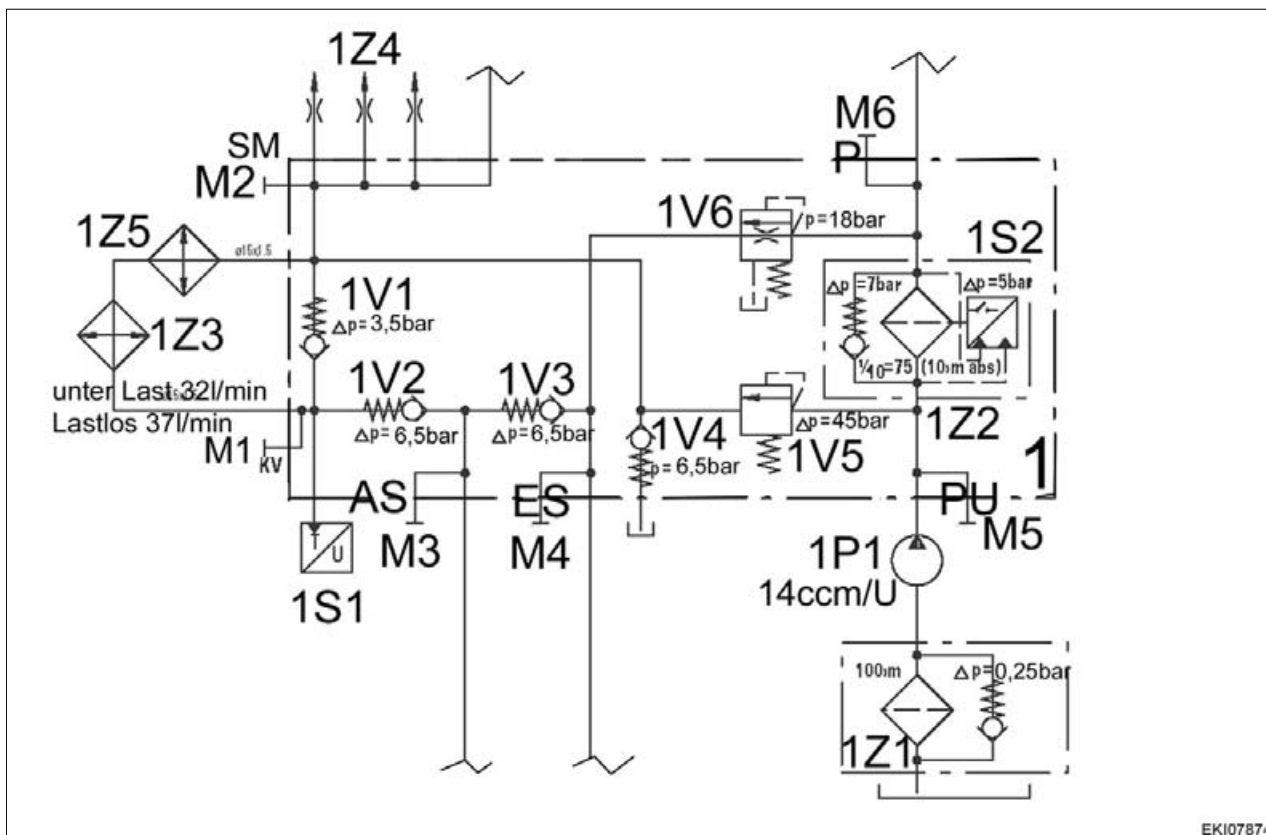
Date	Version	Page	Transmission hydraulic system - Legend	Capitel	Index	Docu-No.
28.07.2006	a	1/6		1005	C	000011



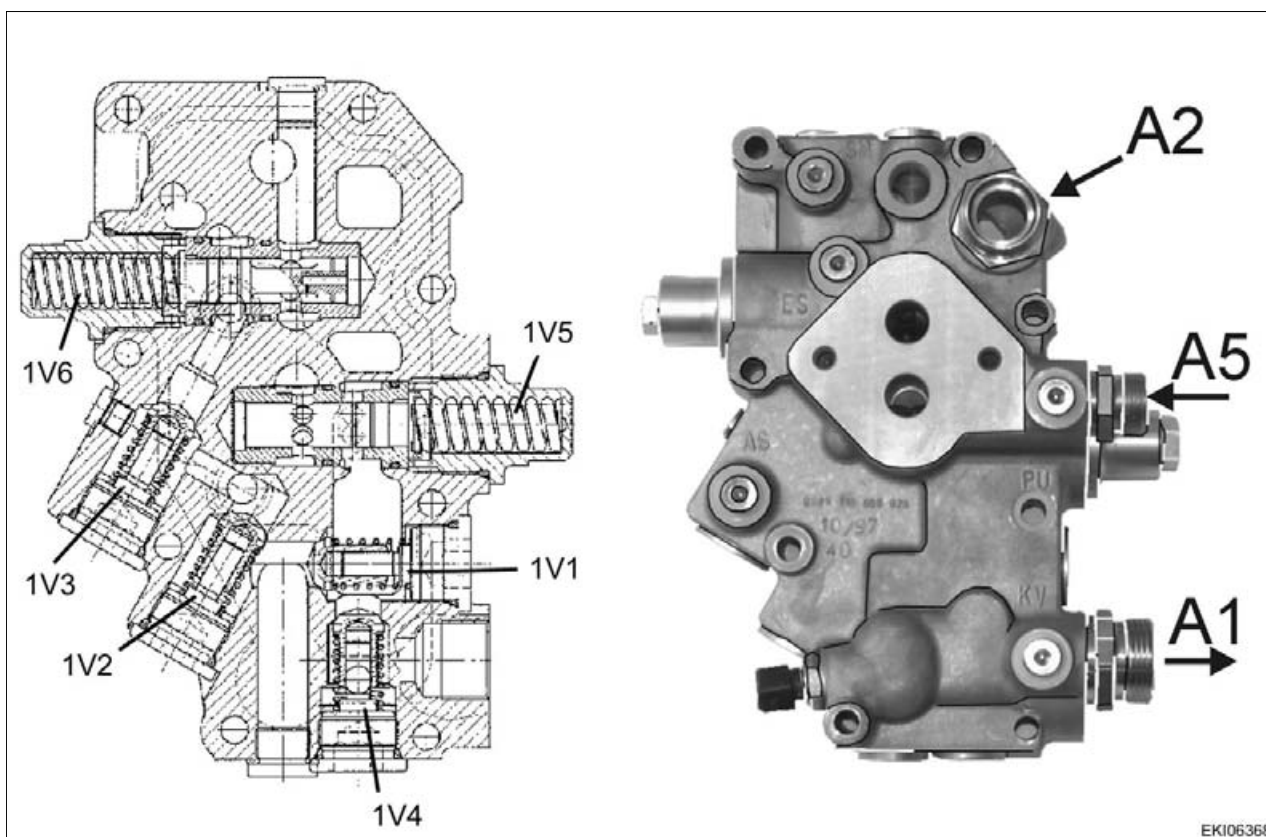
Fendt 300 Vario	Transmission / transmission control unit Transmission hydraulic system - Legend	C
------------------------	--	----------

Shift circuits:			Valves:		
1		Valve block, feed/lubrication	1V1		Radiator bypass valve
2		Main circuit	1V2		Pressure relief valve, discharge
3		Displacement	1V3		Pressure relief valve, feed
4		Valve block clutch function	1V4		Pressure relief valve, lubrication
5		Brake and rear axle	1V5		Pressure relief valve, servo pump
6		Valve unit, rear axle	1V6		Pressure relief valve, servocircuit
7		Front PTO	2V1		Feed valve, forward
Pumps:			2V2		Feed valve reverse
1P1		Servo pump	2V3		High pressure relief valve forwards
2P1		Displacement pump	2V4		High pressure relief valve reverse
Drives:			2V5		Purge valve
2A1		Hydro motor	2V6		Shuttle valve
3A1		Variable-displacement cylinder, displacement pump	3V1		Displacement pump governor
3A2		Variable-displacement cylinder, hydro motor	3V2		Hydro motor governor
5A1		Brake cylinder, right	4V4	Y004	Pressure relief valve clutch/turbo-clutch
5A2		Brake cylinder, left	4V7		High pressure safety valve
6A1		Clutch, rear PTO	6V1	Y008	Pressure-relief valve, PTO
6A2		Selector cylinder, PTO 540	6V2	Y026	PTO 540 solenoid valve
6A3		Selector cylinder, PTO 750 "540 E"	6V3	Y027	PTO 750 "540 E" solenoid valve
6A4		4WD clutch	6V4	Y009	4WD clutch solenoid valve
6A5		Differential lock, rear axle	6V5	Y010	Diff. lock solenoid valve
6A6		Selector cylinder, PTO 1000	6V6	Y028	PTO 1000 solenoid valve
7A1		Clutch, front PTO	7V1	Y011	Pressure-relief valve, front PTO
Buzzers:			Measuring points:		
1S1	B009	Temperature sensor, transmission oil	M1		Radiator feed (KV)
1S2	S017	Pressure switch, filter contamination	M2		Lubrication pressure (SM)
4S1	B008	High pressure sensor	M3		Discharge (AS)
4S2		High pressure sensor (push detection)	M4		Feed pressure (ES)
Other components			M5		Servo pump (PU) pressure
1Z1		Intake filter with bypass	M6		Transmission system pressure (P)
1Z2		Pressure filter with bypass	M9		High pressure (PH)
1Z3		Transmission oil cooler	M11		Pressure, PTO clutch
1Z4		Transmission lubrication	M12		Shifting pressure, PTO 540
1Z5		Heat exchanger hydraulic oil	M13		Shifting pressure PTO 750 "540 E" and ground PTO
3Z1		Actuator shaft	M14		Pressure, 4WD clutch
3Z2	A009	Actuator unit	M15		Pressure, differential lock
4Z1		Clutch pedal with electr. master cylinder	M16		Shifting pressure, PTO 1000
5Z1		Brake pedals with master brake cylinder	M21		Pressure, front PTO clutch
5Z2		Lubrication, rear PTO shaft	M22		Clutch valve/turboclutch valve leakage
5Z3		Lubrication, diff. and axle drive	M24		Oil leakage high pressure safety valve

Date	Version	Page	Transmission hydraulic system - Legend	Capitel	Index	Docu-No.
28.07.2006	a	3/6		1005	C	000011

Fendt 300 Vario
Transmission / transmission control unit
Transmission hydraulic system - Legend
C**Valve block, feed/lubrication**

EKI07874

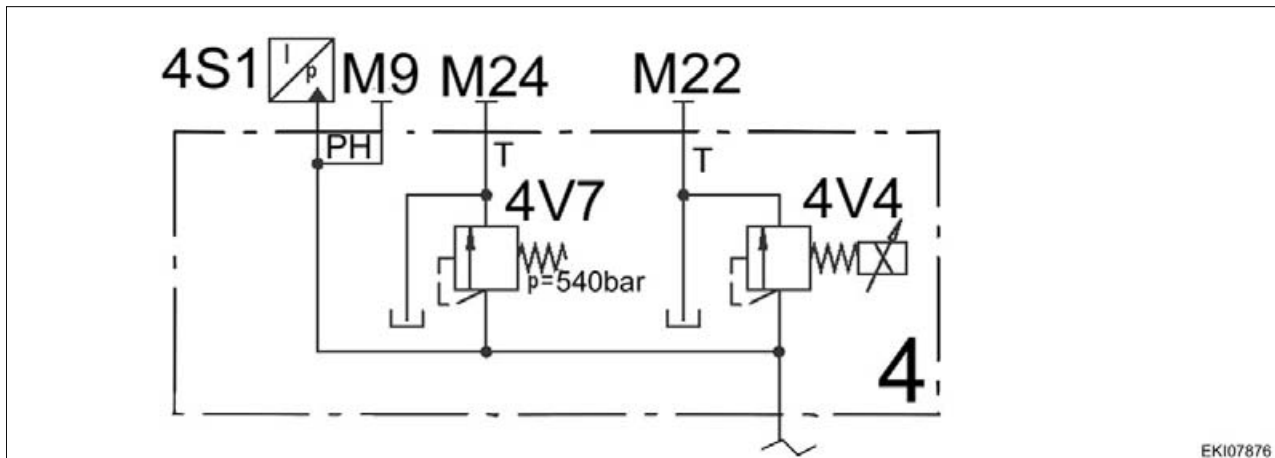


EKI06368

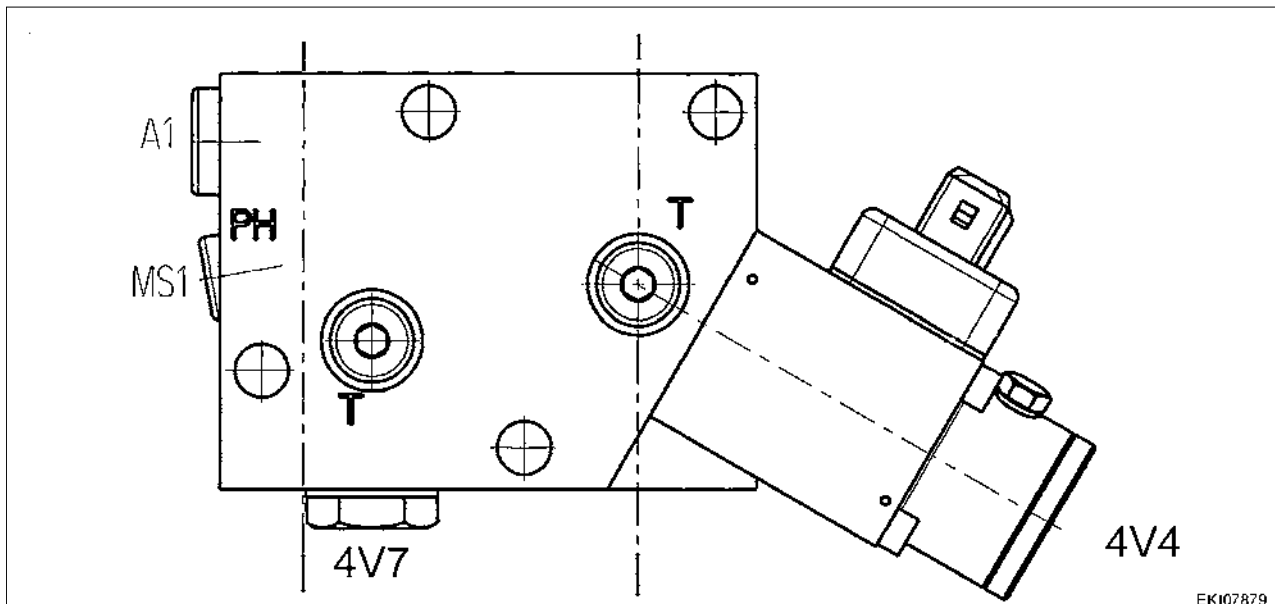
Date	Version	Page	Capitel	Index	Docu-No.
28.07.2006	a	4/6	1005	C	000011

Fendt 300 Vario

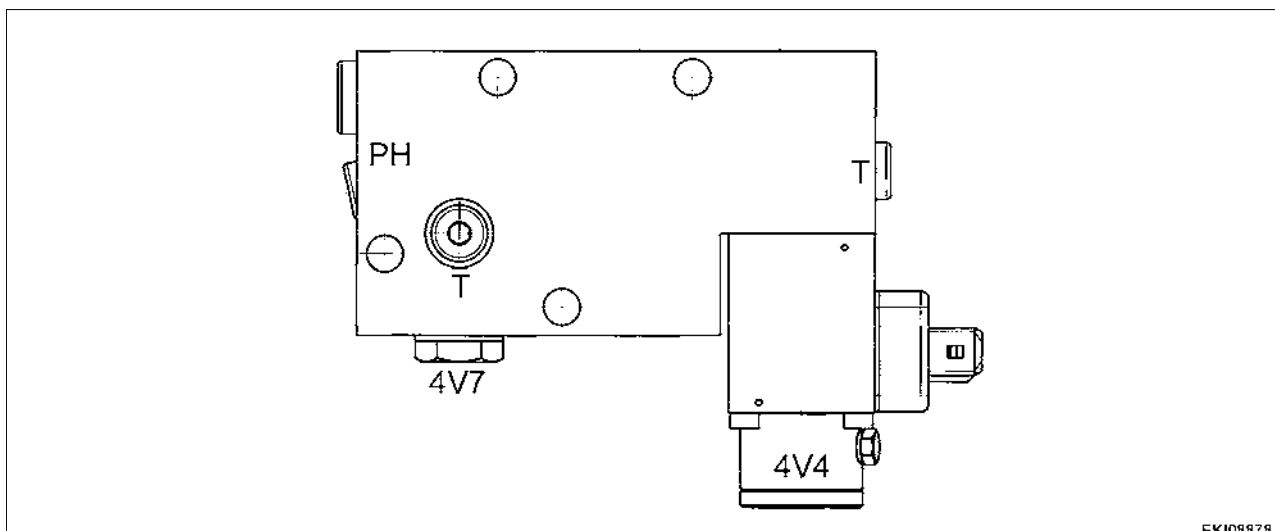
Transmission / transmission control unit
Transmission hydraulic system - Legend

C**Valve block clutch/turboclutch**

EKI07876

Version "A"

EKI07879

Version "B"

EKI08878

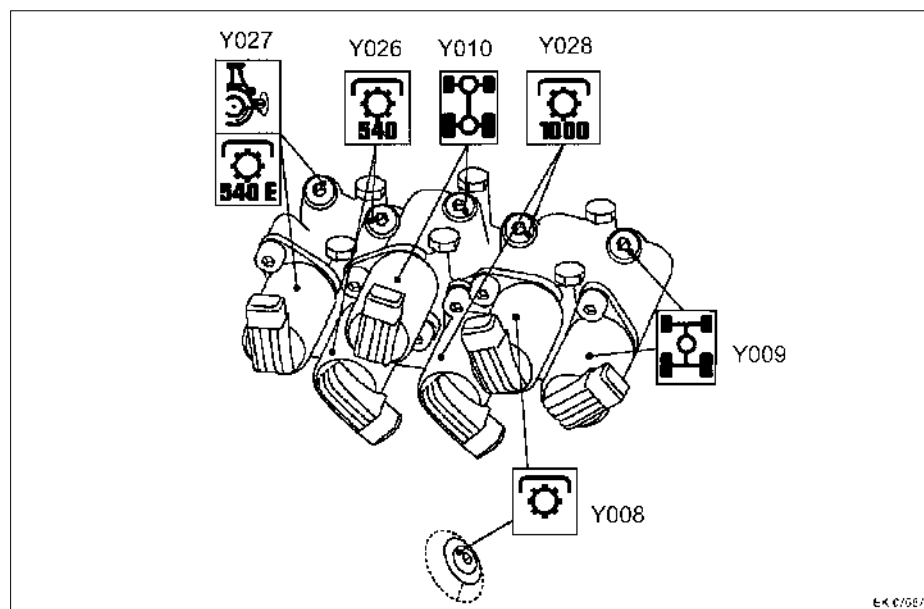
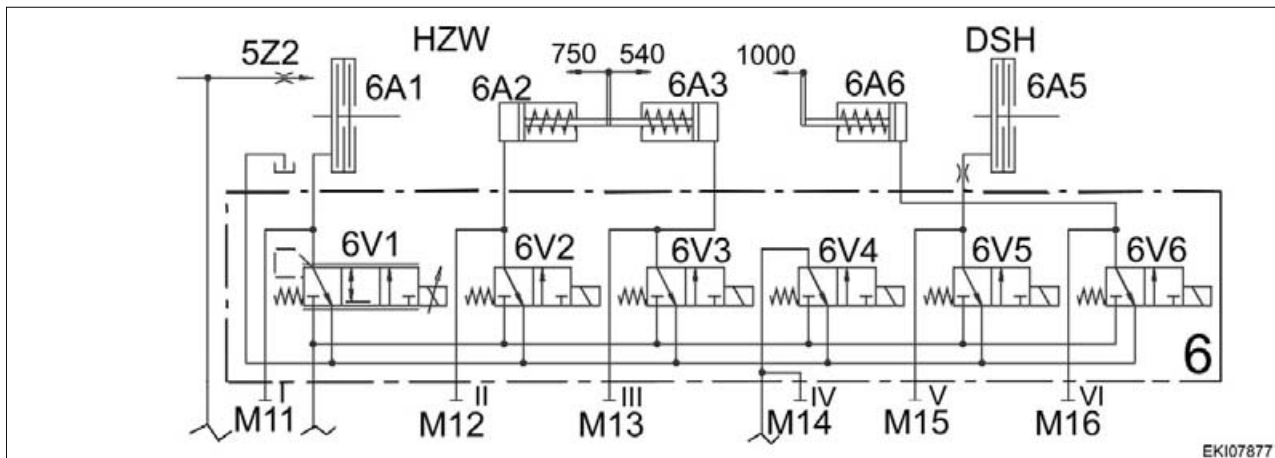
From 336/ /1247, 337/ /1325, 338/ / 1208, 339/ /1784

Date	Version	Page	Capitel	Index	Docu-No.
28.07.2006	a	5/6	1005	C	000011

Transmission hydraulic system - Legend

Fendt 300 Vario

Transmission / transmission control unit
Transmission hydraulic system - Legend

C**Valve block, enhanced control hydraulics (rear axle)**

Date	Version	Page	Capitel	Index	Docu-No.
28.07.2006	a	6/6	1005	C	000011

Fendt 300 Vario	Transmission / transmission control unit Transmission pressure measurement	E
------------------------	---	----------

For complaints on Vario tractors that indicate faults in the transmission or are claimed under the general complaint "power", proceed as follows.

It must be discerned if the power deficiency is from the engine or the transmission.

1. Engine power deficiency

For engine power deficiency, a power measurement at the PTO must be performed by dropping engine speed from rated speed to 1600 rpm in 50 rpm steps.

We recommend engine brakes that allow PC-supported evaluations. They allow exact determination of power and torque curves.

2. Traction drive power deficiency (transmission)

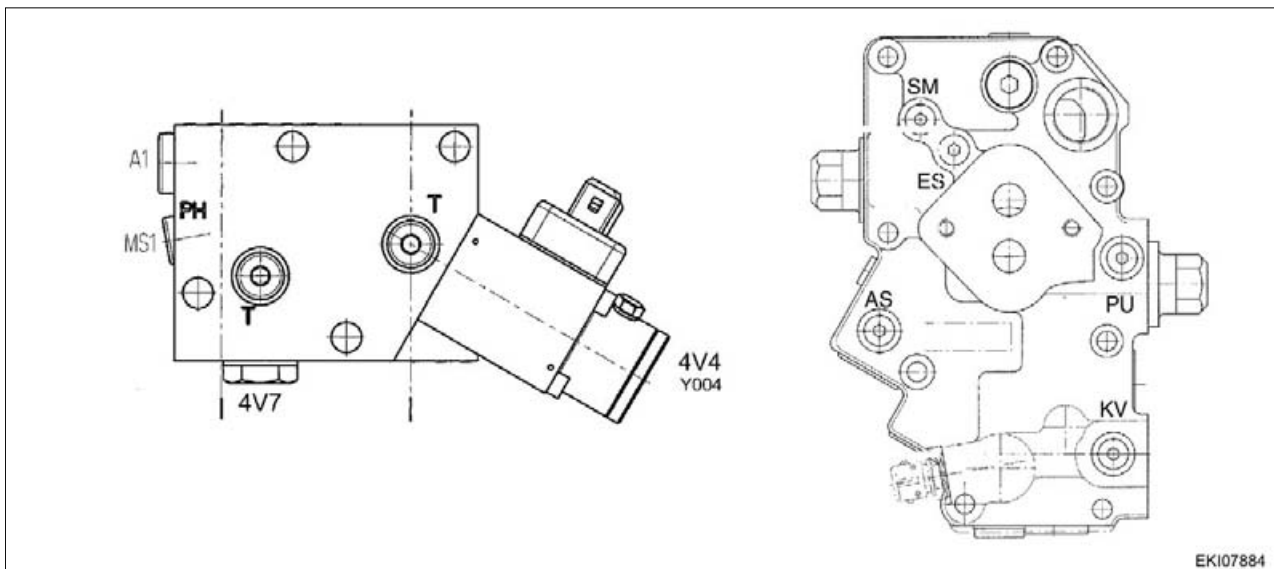
For all complaints that indicate possible causes in the transmission, hydraulic measurement of the transmission must be performed before starting repairs. Record the results in the measurement report "Transmission Pressure Measurement (fax form)". The same measurement report is repeated after the repair for monitoring purposes.

High pressure monitoring also possible with A007 - instrument cluster.
See Chapter 0000 Reg. A

Important:

Observe for all transmission pressure measurements:

- jack up all 4 wheels of the tractor!
- engage 4WD
- transmission oil temperature 35-45°C



Date	Version	Page	Transmission pressure measurement	Capitel	Index	Docu-No.
21.07.2006	a	1/2		1005	E	000008

Fendt 300 Vario	Transmission / transmission control unit Transmission pressure measurement (fax form)	E
------------------------	---	----------

I. Pressure supply measurement

Workshop	Chassis no.	Operating hours

Measuring point	Engine speed rpm	Target value / bar	Actual value / bar	Remarks
PU	800	18 + 2 -0.5		
	1200	18.5 + 3		
	1600	21 + 4		
	2000	23 + 5		

P	800	18 + 2 -0.5		
	1200	18 + 3		
	1600	20 + 4		
	2000	22 + 5		

ES	800	16.5 ± 2		
	1200	19 ± 2		
	1600	21 ± 2		
	2000	24 ± 2.5		

AS	800	9.5 ± 2		
	1200	11.5 ± 2		
	1600	13.5 ± 2		
	2000	16 ± 2.5		

SM	800	1.5 ± 0.3		
	1200	2.5 ± 0.4		
	1600	3.5 ± 0.5		
	2000	5.1 ± 0.7		

II. High pressure measurement

Measure pressure in both directions of travel, **forward** and **reverse** , with hand brake pulled tight and foot brake actuated **Measuring duration max. 5 sec.**

Measuring point	Engine speed rpm	Target value / bar	Actual value / bar	Remarks
PH f/r	1600	PV 540 ± 20		*
P		18 + 3		
ES		16 ± 2		
AS		12.5 ± 2		
SM		2.5 ± 0.5		

* Pressures are not attained, **AS** and **ES** pressures are in order: check clutch/turboclutch valve and high pressure safety valve - see Chapter 1005 Reg. E

Date	Version	Page	Capitel	Index	Docu-No.
21.07.2006	a	2/2	Transmission pressure measurement (fax form) 1005	E	000008

Fendt 300 Vario

Transmission / transmission control unit
Testing clutch/turboclutch valve and valve block

E

If the max. high pressure is not reached during a high pressure measurement, the cause may lie in the Vario transmission unit or outside this in the valve block. To aid your decision as to whether the Vario transmission unit has to be removed, the valve block (transmission control unit) should first be checked for tightness against leaks.

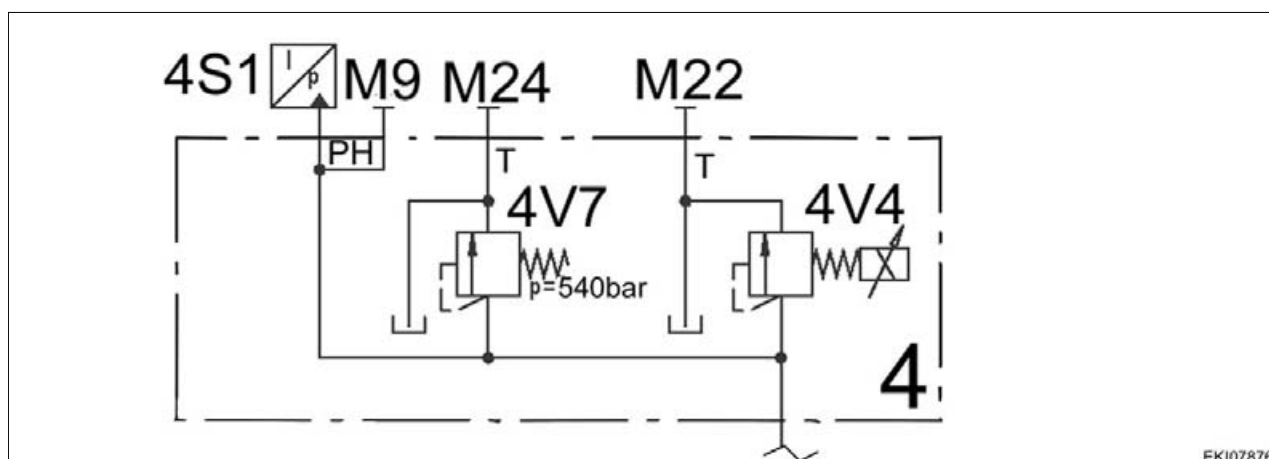
The high pressure build-up in the valve block depends on the tightness against leaks of the pressure relief valve

- Clutch/turboclutch (4V4 / Y004)
- High pressure safety valve (4V7)

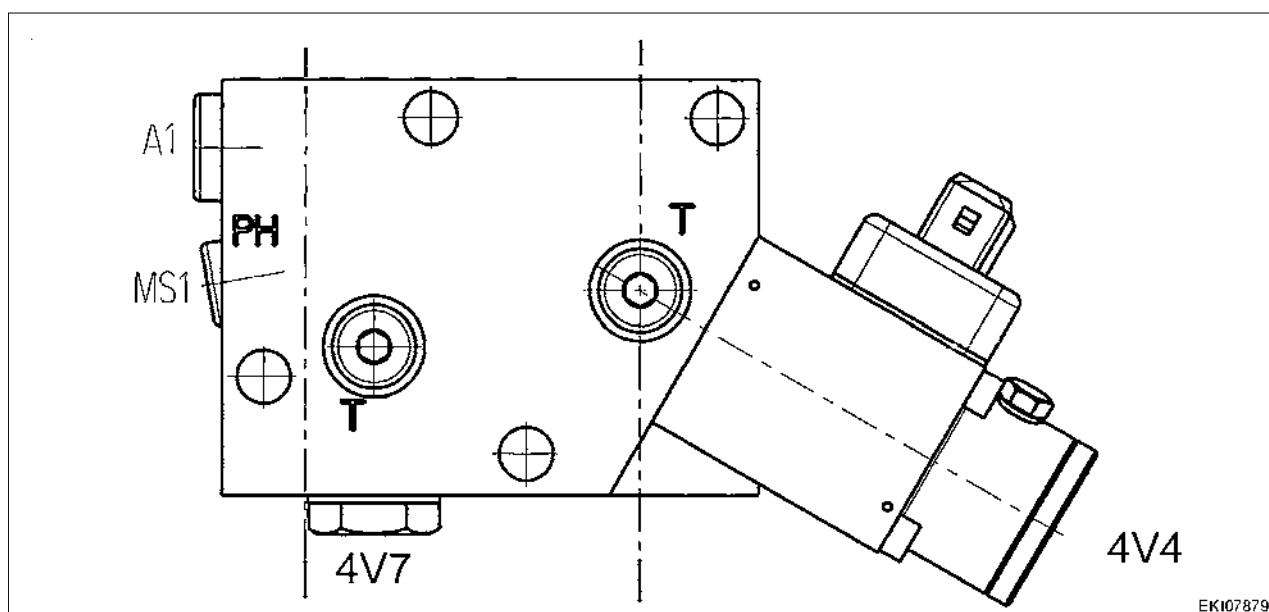
pressure-relief valves.

The clutch/turboclutch valve is closed, therefore high pressure build-up is possible under the following conditions:

- Engine speed above 1400 rpm (PWM signal supplied)
- High pressure build-up is only possible if the clutch pedal **is not actuated** .

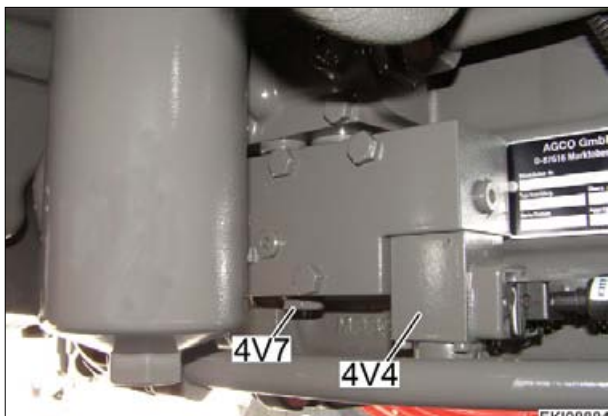


The tightness of the pressure relief valve **4V4** and the high pressure safety valve **4V7** against leaks can be tested through connections **T: M22 and M24** .



Date	Version	Page	Capitel	Index	Docu-No.
26.07.2006	a	1/7	1005	E	000010

Fendt 300 Vario	Transmission / transmission control unit Testing clutch/turboclutch valve and valve block	E
------------------------	---	----------



Right on transmission housing

Checking high pressure circuit in valve block

Following preliminary work must be carried out:



Danger:

Prop tractor with 4 trestles, taking appropriate safety precautions (high pressure measurement).

- Remove right rear wheel and metal panels.
- Remove screw plug at **T connection** .
- Connect pressure gauge greater than 550 bar to measuring connection **PH** .

Test sequence:

1. Start engine.
2. Pull hand brake tight and press foot brake
3. Attach auxiliary lever (A) and run transmission against high pressure.
4. Engine speed above 1400 rpm (PWM signal energised)

Important:

The clutch pedal must be calibrated before testing the clutch/turboclutch valve (4V4)!
See Chapter 0000 Reg. F

Date	Version	Page	Testing clutch/turboclutch valve and valve block	Capitel	Index	Docu-No.
26.07.2006	a	2/7		1005	E	000010

Fendt 300 Vario	Transmission / transmission control unit Testing clutch/turboclutch valve and valve block	E
------------------------	--	----------

Testing clutch/turboclutch valve (4V4):

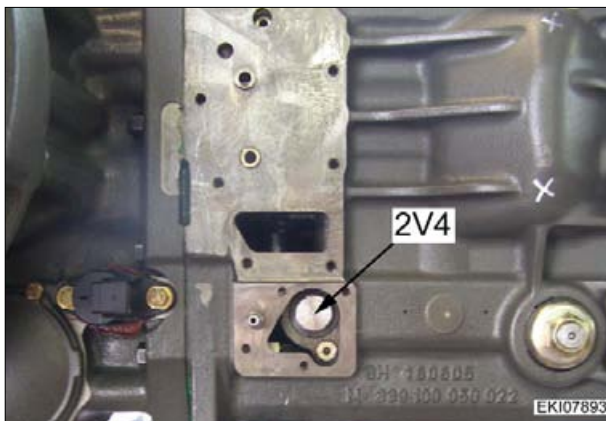
PH	Connection T	Possible cause of fault
250 bar	Oil flows out of connection T M22	Leak in clutch/turboclutch valve (4V4) (replace)
250 bar	No oil flows out of connection T M22	Test high pressure safety valve, see below

Testing high pressure safety valve (4V7)

PH	Connection T	Possible cause of fault
250 bar	Oil flows out of connection T M24	High pressure safety valve (4V7) leaks. (replace)
250 bar	No oil flows out of connection T M24	Fault in transmission unit, check high pressure valves and purge valve (shuttle valve, screw connections in the pressure line) remove transmission unit.

Removing high pressure valves and purge valve

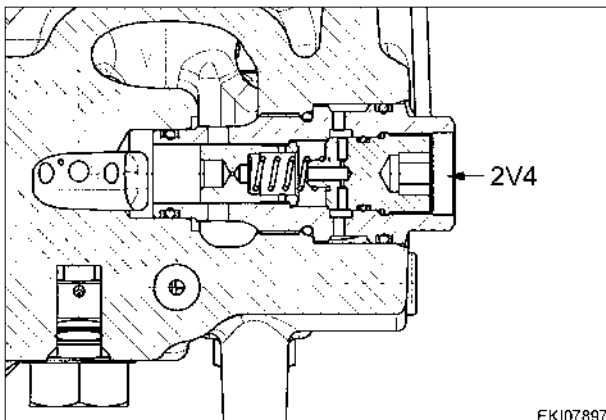
If high pressure is not reached and no oil flows out of the connections T, the high pressure valves (2V3 and 2V4) and the purge valve (2V5) must be checked.



2V4 = High pressure relief valve reverse
Right on transmission



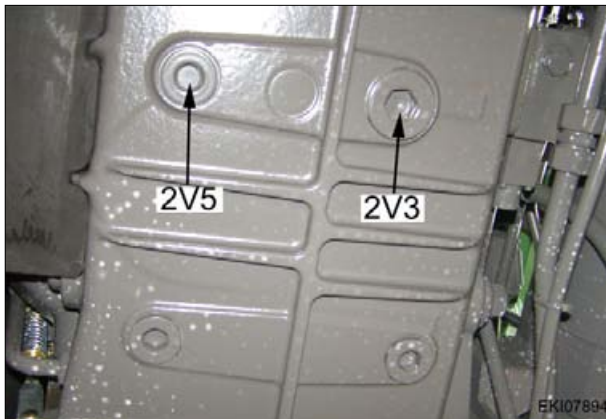
Remove valve block "clutch function"



Tightening torque = 250 +20 Nm

Date	Version	Page	Capitel	Index	Docu-No.
26.07.2006	a	3/7	1005	E	000010

Fendt 300 Vario	Transmission / transmission control unit Testing clutch/turboclutch valve and valve block	E
------------------------	--	----------



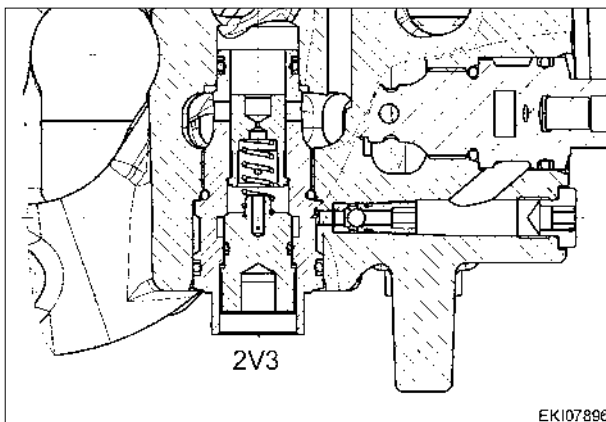
2V3 = High pressure relief valve forward

2V5 = Purge valve

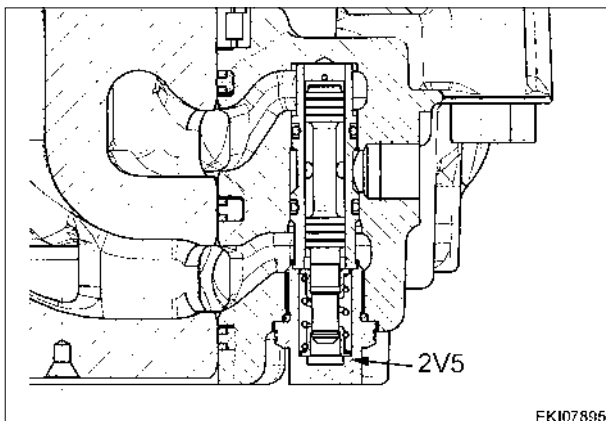
Under the transmission



Remove screw plugs



Tightening torque = 250 +20 Nm



Tightening torque = 250 +20 Nm

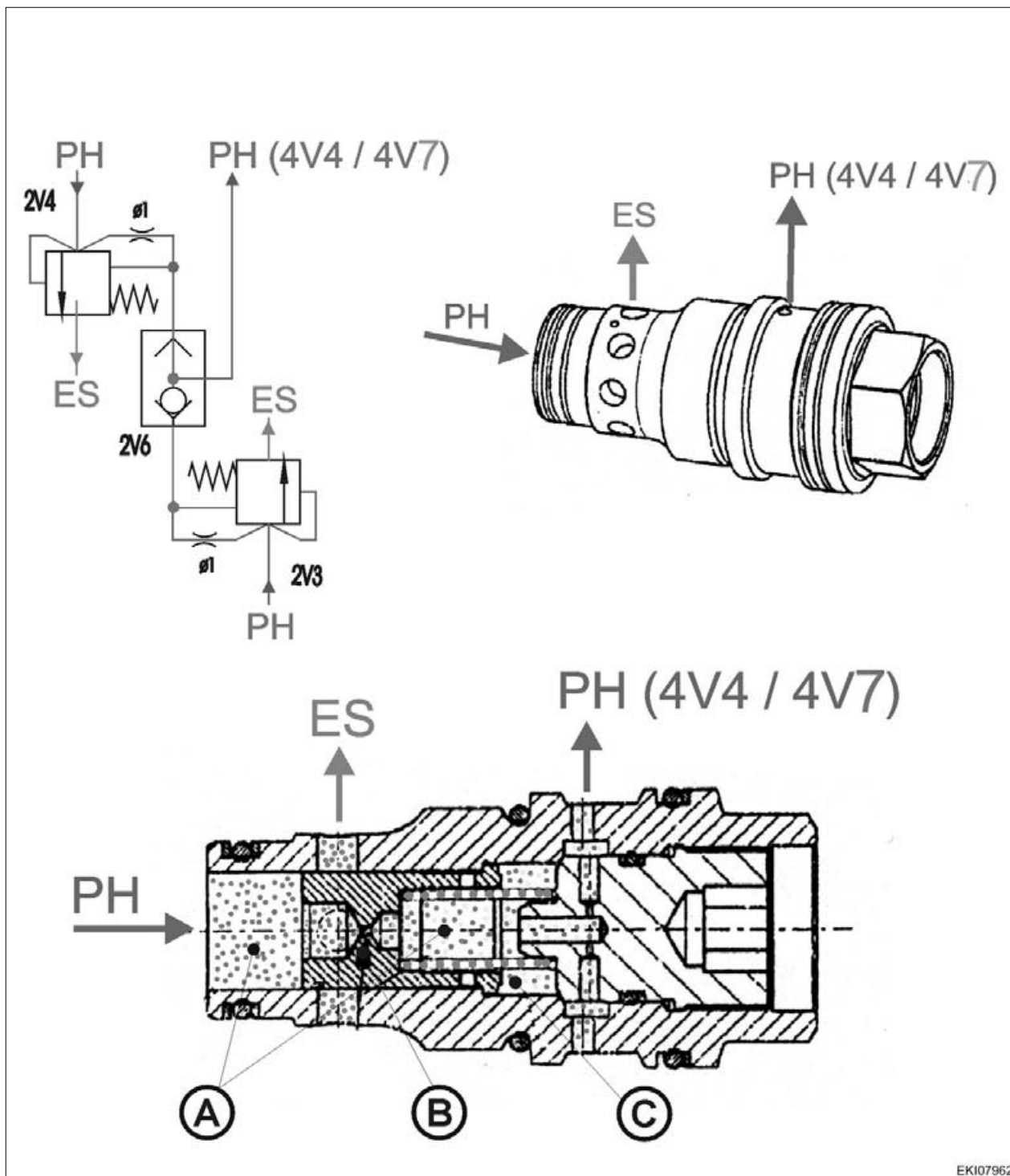
Date	Version	Page	Capitel	Index	Docu-No.
26.07.2006	a	4/7	1005	E	000010

Fendt 300 Vario

Transmission / transmission control unit
Testing clutch/turboclutch valve and valve block

E

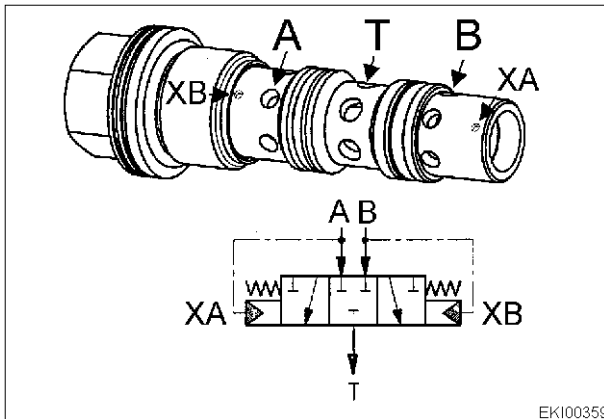
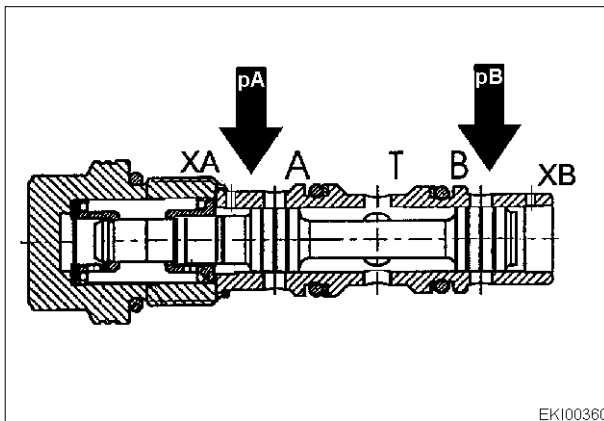
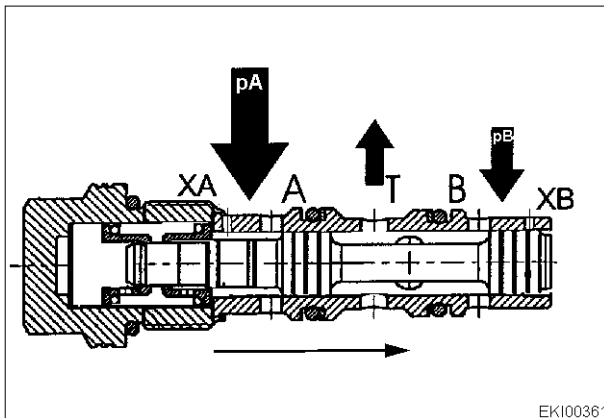
Function of the high pressure relief valves 2V3 and 2V4



EKI07962

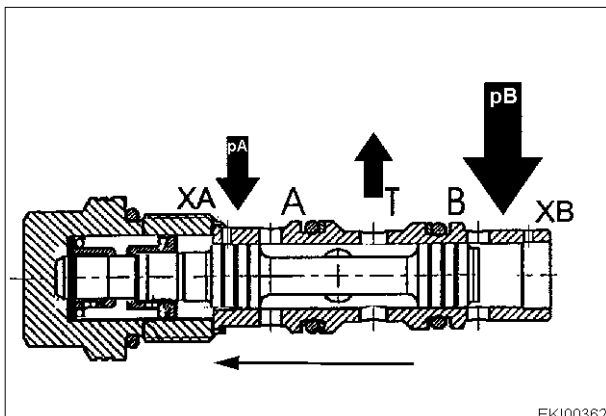
- A = The pressure is equal in both chambers if the clutch/turboclutch valve is closed. The spring holds the piston closed.
- B = If the clutch/turboclutch valve is open, the pressure drop via the diaphragm (x piston surface area) is greater than the spring force. The piston moves to the right and connects PH with ES.
- C = Pressure is limited by the high pressure-safety valve.

Date	Version	Page	Testing clutch/turboclutch valve and valve block	Capitel	Index	Docu-No.
26.07.2006	a	5/7		1005	E	000010

Fendt 300 Vario
Transmission / transmission control unit
Testing clutch/turboclutch valve and valve block
E**Function of purge valve 2V5**Pressure at **A, B** max. 550 barPressure at **T** max. 50 barOpening pressure: $\Delta p = 7$ bar between **A** and **B****Transmission in 'neutral '** $p_A = p_B$, $\Delta p < 7$ barPiston is held in mid-position by spring force. Both channels (**A, B**) are closed.**' Tractive mode '** $p_A > p_B$, $\Delta p > 7$ barPiston is pushed upwards via control bore **XA** .Channel **B** is linked to **T** . Hot oil can flow from low-pressure side **B** via **T** to discharge connection and to oil cooler.

Fendt 300 Vario

Transmission / transmission control unit
Testing clutch/turboclutch valve and valve block

E**' Pushing mode '** $p_A < p_B$, $\Delta p > 7 \text{ bar}$ Piston is pushed downwards via control bore **XB**.Channel **A** is linked to **T**. Hot oil can flow from low-pressure side **A** via **T** to discharge connection and to oil cooler.**Important:**

If a high pressure relief valve (2V3 or 2V4) or the purge valve (2V5) is removed, the transmission must subsequently be filled using an external oil filling station! See Chapter 1080 Reg. G

Date	Version	Page	Capitel	Index	Docu-No.
26.07.2006	a	7/7	1005	E	000010

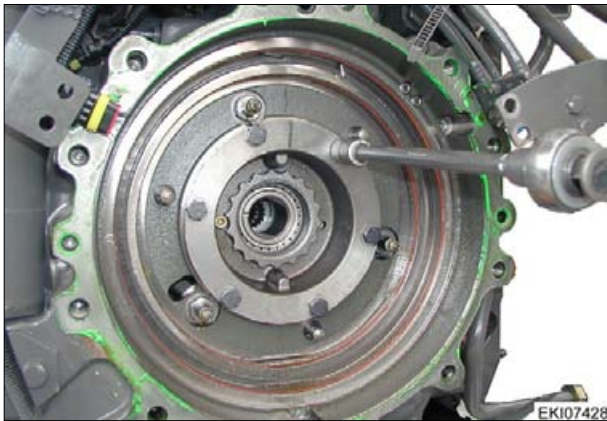
Testing clutch/turboclutch valve and valve block

Fendt 300 Vario
Transmission / Differential
Pinion shaft, diff. gears and ring gear - removing and installing
G**Preliminary work:**

- Remove cab - see Chapter 8100 Reg.G
- Disconnecting tractor, transmission and rear axle housing - see Chapter 1050 Reg.G
- Removing live PTO speed preselection, see Chapter 1220 Reg. G
- Unflanging both axle drives and rear wheel brakes, see Chapter 1070 Reg. G
- Removing 4WD clutch, see Chapter 1320 Reg. G
- Removing PTO clutch, see Chapter 1220 Reg. G



Remove oil tray.



Unscrew all screws from left and right bearing flange.



Secure differential gears with piece of wood, press both bearing retainers outwards with a tyre lever and remove. Remove differential gears.

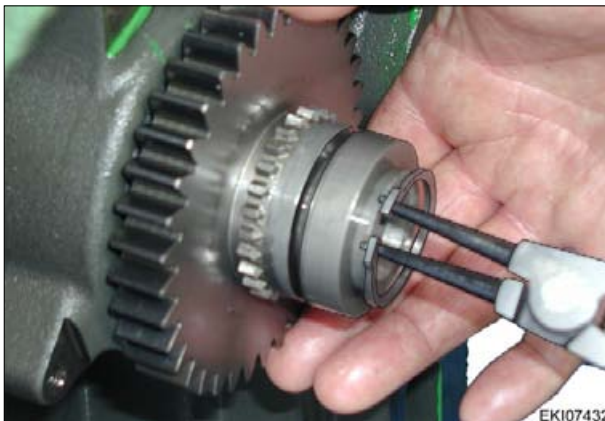
Note:

On the right bearing flange, look out for rectangular-section rings.

Date	Version	Page		Capitel	Index	Docu-No.
27.04.2006	a	1/17	Pinion shaft, diff. gears and ring gear - removing and installing	1010	G	000011

Fendt 300 Vario**Transmission / Differential**
Pinion shaft, diff. gears and ring gear - removing and installing**G**

Remove lubrication oil bushing

Preload pinion shaft with bushing
X 899.980.197.000 and screw
X 899.980.138.000.Unclip circlip, remove spacer bushing and shim
along with gearwheel.

Remove lubrication oil line.

Date	Version	Page		Capitel	Index	Docu-No.
27.04.2006	a	2/17	Pinion shaft, diff. gears and ring gear - removing and installing	1010	G	000011

Fendt 300 Vario	Transmission / Differential Pinion shaft, diff. gears and ring gear - removing and installing	G
------------------------	--	----------

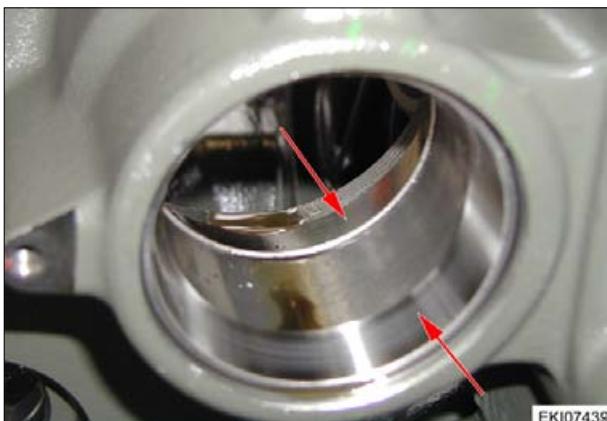


Drive pinion shaft out with slide hammer puller.

Note:
Thread pinion head M16



Pull off taper roller bearing.

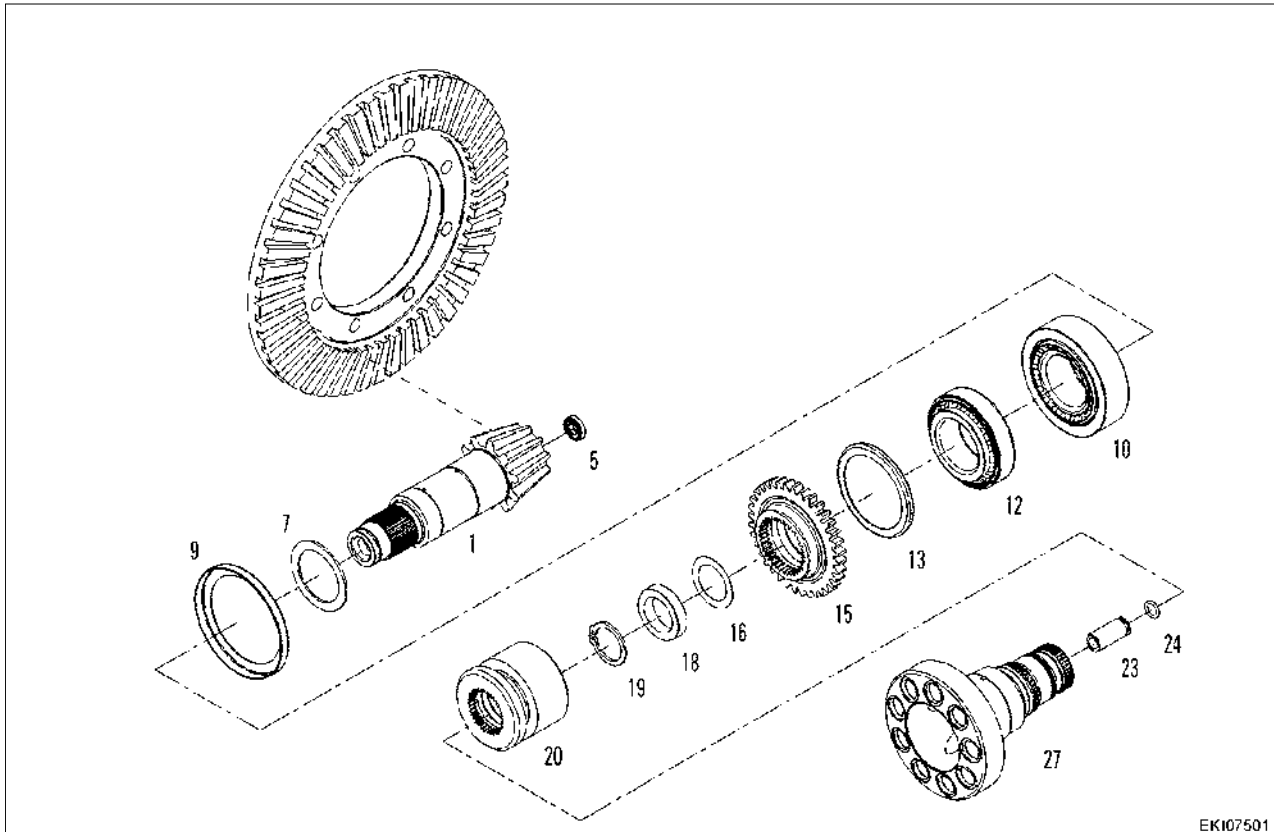


Remove both bearing shells.

Date	Version	Page		Capitel	Index	Docu-No.
27.04.2006	a	3/17	Pinion shaft, diff. gears and ring gear - removing and installing	1010	G	000011

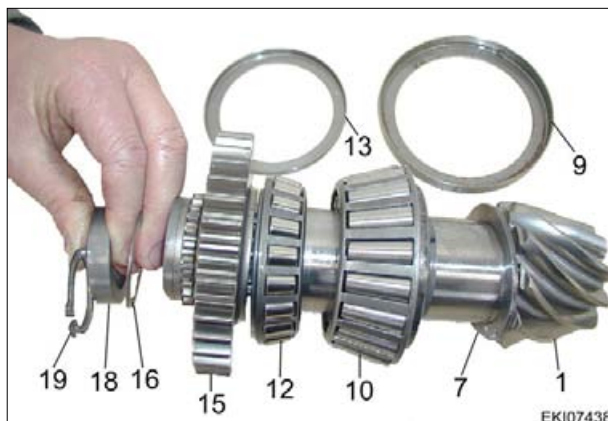
Fendt 300 Vario

Transmission / Differential
Pinion shaft, diff. gears and ring gear - removing and installing

G**Pinion shaft assembly**

EKI07501

Item	Designation	Item	Designation
1	Pinion shaft / ring gear	16	Shim pack
5	Bearing	18	Ring
7	Shim pack	19	Circlip
9	Oil-collecting ring	20	Selector sleeve
10	Taper roller bearing	23	Sleeve
12	Taper roller bearing	24	O-ring
13	Oil tray	27	Accumulator shaft
15	Front wheel drive constant		



EKI07438

Pinion shaft components

- Pinion shaft (1)
- Shim pack (7)
- Oil-collecting ring (9)
- Taper roller bearing (10)
- Taper roller bearing (12)
- Oil-collecting ring (13)
- Front wheel drive constant (15)
- Shim pack (16)
- Ring (18)
- Circlip (19)

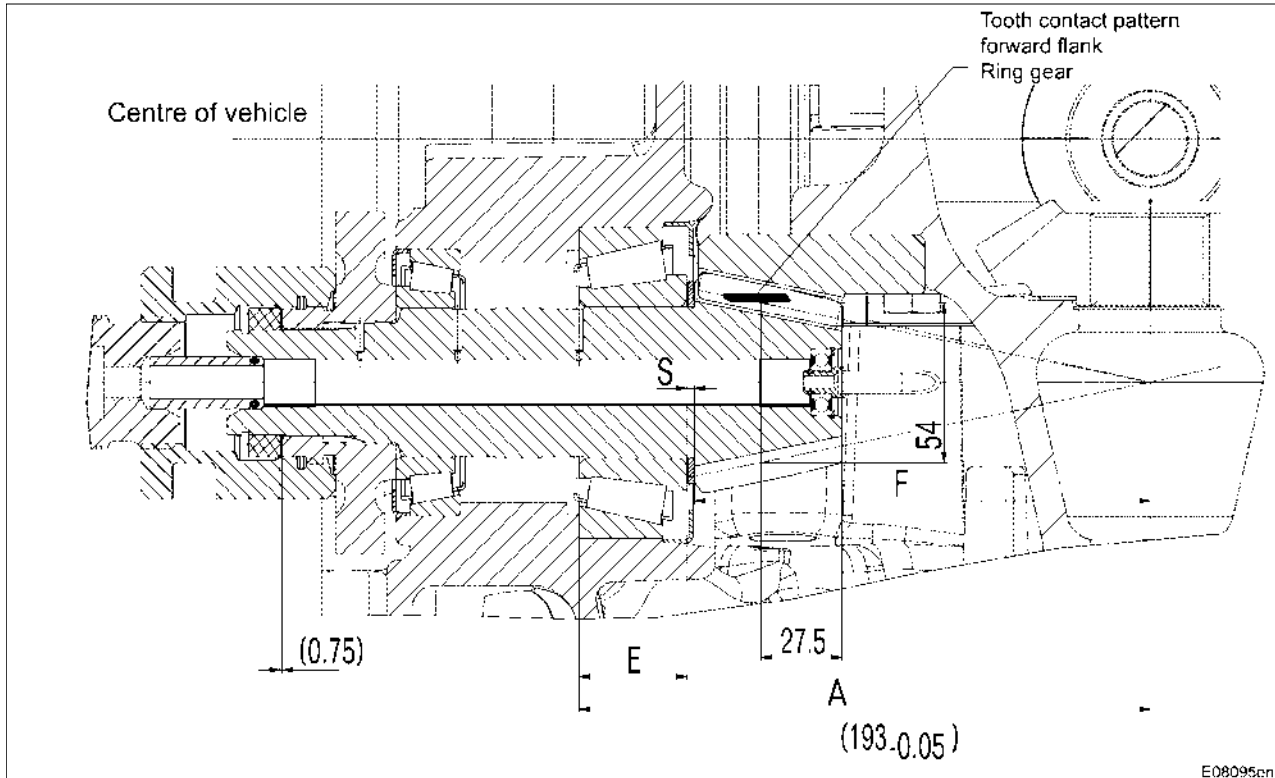
Date	Version	Page		Capitel	Index	Docu-No.
27.04.2006	a	4/17	Pinion shaft, diff. gears and ring gear - removing and installing	1010	G	000011

Fendt 300 Vario

Transmission / Differential
Pinion shaft, diff. gears and ring gear - removing and installing

G

Setting the pinion shaft



Determining shim thickness 'S'

Calculated shim thickness $S = A - E - F$

A = Nominal dimension centre rear axle - contact surface head bearing

Nominal dimension A = 193



Determining dimension E:

Carefully roll in tapered roller bearing (12) before measuring.

Nominal dimension = 36.512 mm $+0.203$ mm

Date	Version	Page	Capitel	Index	Docu-No.
27.04.2006	a	5/17	Pinion shaft, diff. gears and ring gear - removing and installing	1010	G
					000011

Fendt 300 Vario

Transmission / Differential
Pinion shaft, diff. gears and ring gear - removing and installing

G

EKI07443

Determining dimension F:

Installation dimension is indicated on the pinion shaft

Nominal dimension = 154 mm ± 0.2 mm



EKI07450

Shim thickness S = A - E - F

Dimension A =	193.00 mm
- dimension E =	36.51 mm
- dimension F =	153.95 mm
Calculated shim thickness S	2.54 mm
Tolerance 0 - -0.04 mm	
Selected shim thickness 2.5 mm	
Shim thickness in 0.05 mm steps	
Fit selected shims (7).	



EKI07451



1-000-58



Caution:
Danger of burns

Oil bearing seat on the pinion shaft. Heat taper roller bearing (10) to approx. 90°C and fit on shaft (1).

Date	Version	Page		Capitel	Index	Docu-No.
27.04.2006	a	6/17	Pinion shaft, diff. gears and ring gear - removing and installing	1010	G	000011

Fendt 300 Vario

Transmission / Differential
Pinion shaft, diff. gears and ring gear - removing and installing

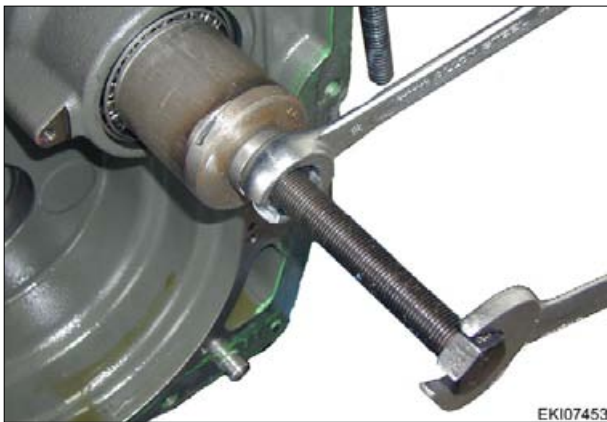
G

E-UCV-M8

Install rear bearing shell (10) and front bearing shell (12)

Note:

Oil bearing shells before installing.



E-UCV-M8

Insert pinion shaft (1) and both oiled taper roller bearings (10/12), preload with device X 899.980.197.000 and X 899.980.138.000.



E-UCV-M8

Mount oil-collecting ring (13).



E-UCV-M8

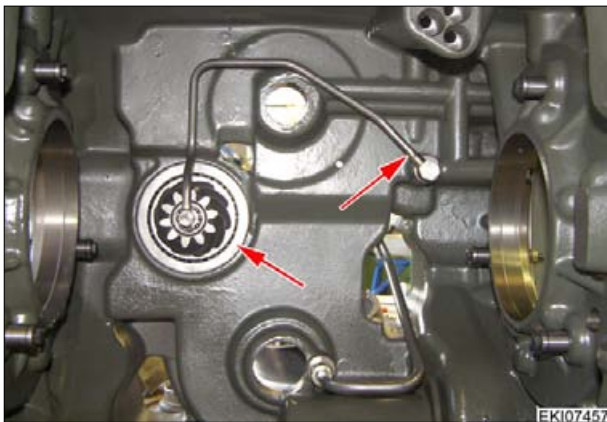
Slide on 4WD constant (15), locating ring (18) and existing shims (16) along with circlip (19). Then preload and clip circlip (19) in place.

Date	Version	Page	Capitel	Index	Docu-No.
27.04.2006	a	7/17	Pinion shaft, diff. gears and ring gear - removing and installing	1010	G
					000011

Fendt 300 Vario**Transmission / Differential****Pinion shaft, diff. gears and ring gear - removing and installing****G**

E-UCS-38

Knock pinion shaft (1) and oil taper roller bearing (10/12). Screw M16 screw into the pinion shaft and tighten it. Test roll resistance 1 - 2.4 Nm with torque gauge X 899.980.151.000 and correct with shim (16) if necessary.



E-UCS-38

Install oil-collecting ring (9) and lubrication oil line (arrowed).



E-UCS-38

Unscrew 8 screws from ring gear, lift off ring gear.



E-UCS-38

Unscrew 10 screws from externally toothed disc carrier.

Date	Version	Page	Capitel	Index	Docu-No.
27.04.2006	a	8/17	Pinion shaft, diff. gears and ring gear - removing and installing	1010	G
					000011

Fendt 300 Vario

Transmission / Differential
Pinion shaft, diff. gears and ring gear - removing and installing

G

Remove externally toothed disc carrier, remove both taper roller bearings.



Remove disc pack.



Remove internally toothed disc carrier and fastening bolt.

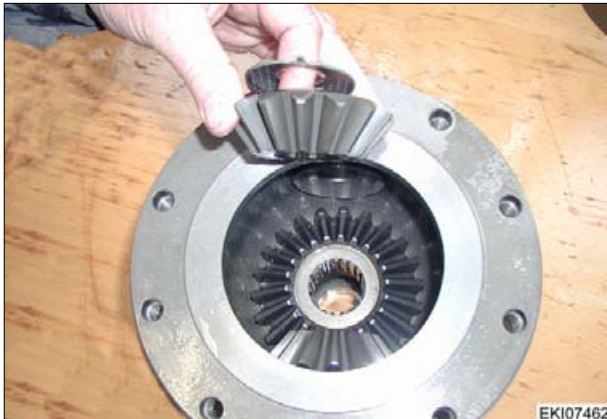


Pull out pinion gear axle.

Note:

The needles fall out of the bearing when disassembling.

Date	Version	Page		Capitel	Index	Docu-No.
27.04.2006	a	9/17	Pinion shaft, diff. gears and ring gear - removing and installing	1010	G	000011

Fendt 300 Vario**Transmission / Differential**
Pinion shaft, diff. gears and ring gear - removing and installing**G**

Remove both pinion gears along with thrust rings and axle bevel gear.



Perform this procedure on the right bearing flange (33) and left bearing flange (39).

Mark notched nut (31) and bearing flange.

Unscrew notched nut (31) from the bearing flange and remove old bearing shell.

Note:

When removing the notched nut (31), measure and note down the screw penetration, in order to achieve a base setting when assembling.



Screw adjusting nut in to the dimension noted and secure with the socket head screw.

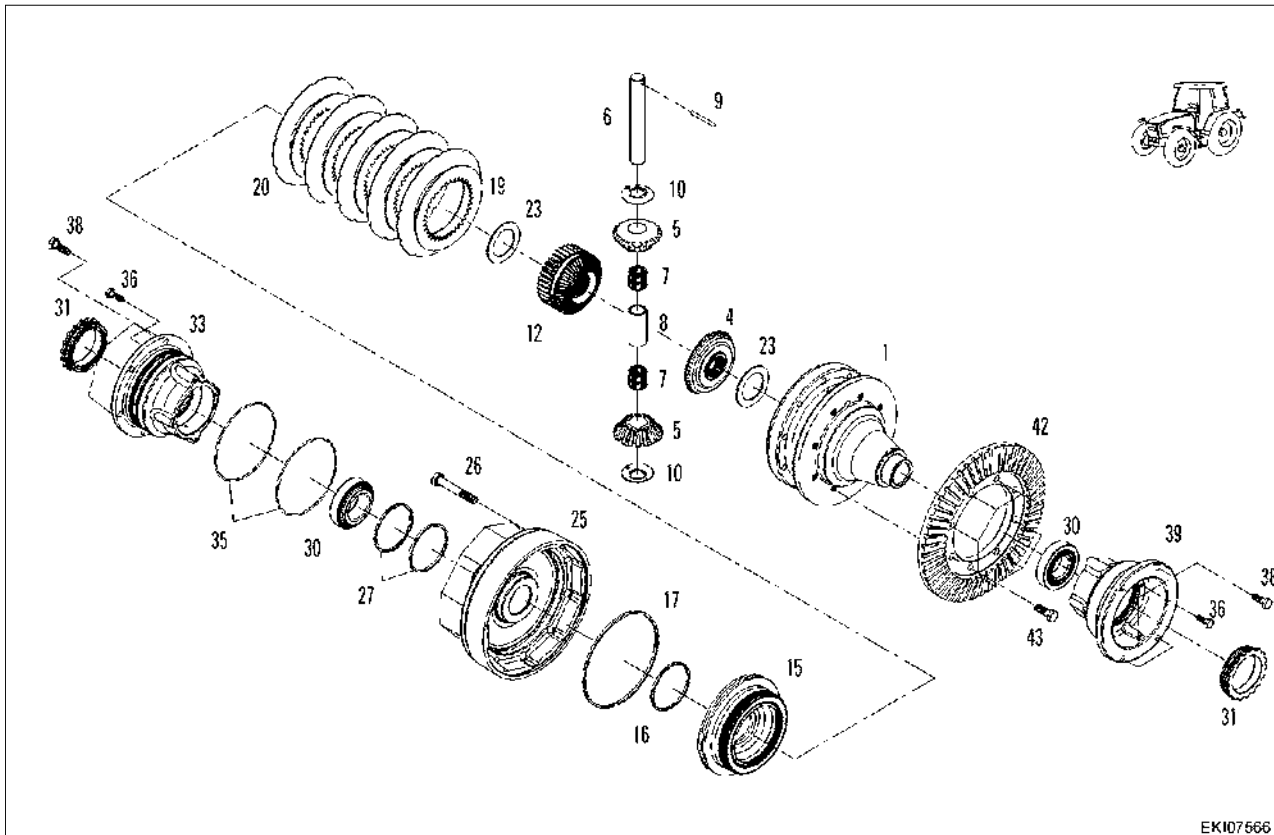
Date	Version	Page	Capitel	Index	Docu-No.
27.04.2006	a	10/17	Pinion shaft, diff. gears and ring gear - removing and installing	1010	G
					000011

Fendt 300 Vario

Transmission / Differential
Pinion shaft, diff. gears and ring gear - removing and installing

G

Assembling differential gears and differential lock



EK107566

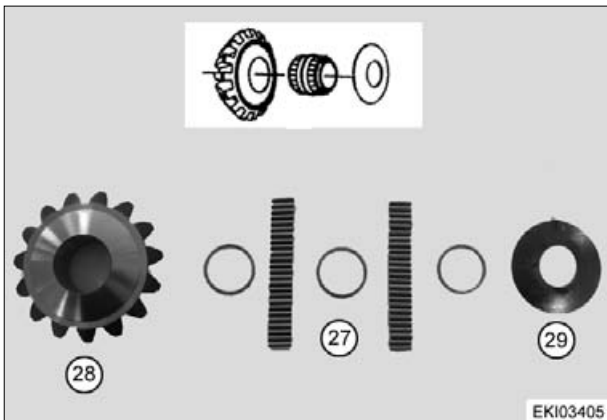
Item	Designation	Item	Designation
1	Housing	23	Washer
4	Axle bevel gear	25	Housing flange
5	Pinion gears	26	screw
6	Axle	27	Rectangular-section ring
7	Cylinder roller bearing	30	Taper roller bearing
8	Bush	31	Notched nut
9	Parallel pin	33	Bearing flange
10	Thrust ring	35	O-ring
12	Axle bevel gear	36	screw
15	Piston	38	screw
16	Lip seal	39	Bearing flange
17	Lip seal	42	Ring gear
19	Internally toothed disc	43	screw
20	Externally toothed disc		

Date	Version	Page	Capitel	Index	Docu-No.
27.04.2006	a	11/17	Pinion shaft, diff. gears and ring gear - removing and installing	1010	G 000011

Fendt 300 Vario
Transmission / Differential
Pinion shaft, diff. gears and ring gear - removing and installing
G

E-UCV-38

Insert axle bevel gear and thrust ring.



E-UCV-38

Preassemble pinion gear (5) with needle bearing (7) and thrust ring (10).

Note:

Insert 50 cylinder roller bearings with grease.
 Insert nib of thrust ring into the guide Notched in the housing.



E-UCV-38

Insert two pinion gears (5) in the housing (1). Fit axle (6) and spacer (8).

Note:

Insert axle (6) the right way around so that the
 parallel pin (9) can be fitted later on.



E-UCV-38

Mount axle bevel gear (12).

Date	Version	Page		Capitel	Index	Docu-No.
27.04.2006	a	12/17	Pinion shaft, diff. gears and ring gear - removing and installing	1010	G	000011

Fendt 300 Vario**Transmission / Differential**
Pinion shaft, diff. gears and ring gear - removing and installing**G**

E-UCV-M

Mount thrust ring (23).



E-UCV-M

Fit disc pack. Start with an internally toothed disc (19) and end with an externally toothed disc (20).



E-UCV-M

Align externally toothed discs (20).



E-UCV-M

Fit externally toothed disc carrier (25). Tighten 10 oiled screws (26) to 120 Nm.

Date	Version	Page	Capitel	Index	Docu-No.
27.04.2006	a	13/17	Pinion shaft, diff. gears and ring gear - removing and installing	1010	G
					000011

Fendt 300 Vario

Transmission / Differential
Pinion shaft, diff. gears and ring gear - removing and installing

G

E-UCV-98

Insert parallel pin (9) for axle (6).



E-UCV-98

Mount ring gear (42), tighten 8 screws (43) to 120 Nm.



Insert both rectangular-section rings (27) into the grooves in the housing flange (25) offset to each other, lock and grease.



Caution:
Danger of burns

Heat both taper roller bearings (30) to about 90° C and mount on the housing (1) and housing flange (25).



E-UCV-98

Fit bearing shells (30) in both bearing flanges (33/39).

Date	Version	Page		Capitel	Index	Docu-No.
27.04.2006	a	14/17	Pinion shaft, diff. gears and ring gear - removing and installing	1010	G	000011

Fendt 300 Vario

Transmission / Differential
Pinion shaft, diff. gears and ring gear - removing and installing

G

E-UCV-M8

On the right bearing flange (33) replace, grease and fit both O-rings (35).



E-UCV-M8

Insert complete differential gear assembly into the rear axle housing.

Note:

Use a piece of wood as an aid.



E-UCV-M8

Mount both bearing flanges (33/39) and tighten oiled screws (36) crosswise to 70 Nm.

Note:

Take care not to damage the rectangular-section rings (27) when mounting the right bearing flange (33).



E-UCV-M8

Setting bearing: on the left side, tighten the notched nut to 100 Nm with the aid of the turning device X 899.980.283.000.

Note:

Pinion shaft and ring gear must not jam.

Date	Version	Page	Capitel	Index	Docu-No.
27.04.2006	a	15/17	Pinion shaft, diff. gears and ring gear - removing and installing	1010	G
					000011

Fendt 300 Vario
Transmission / Differential
Pinion shaft, diff. gears and ring gear - removing and installing
G

E-UCV-38

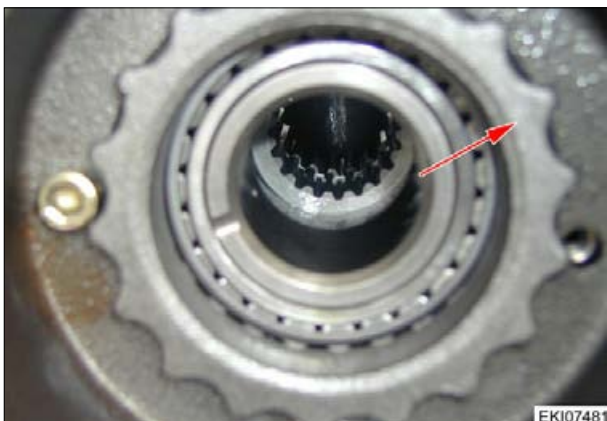
Loosen notched nut with turning device X 899.980.283.000 and tighten to 45 Nm + 10 Nm.

Rotate differential gears about 10 times to allow the bearing to settle in place.



E-UCV-38

Measure backlash in at least 4 places:
Specified value 0.2 - 0.3 mm.



E-UCV-38

Backlash can be corrected with the notched nut (31) (arrowed). Half a notch **0.04 mm**, whole notch **0.08 mm**.

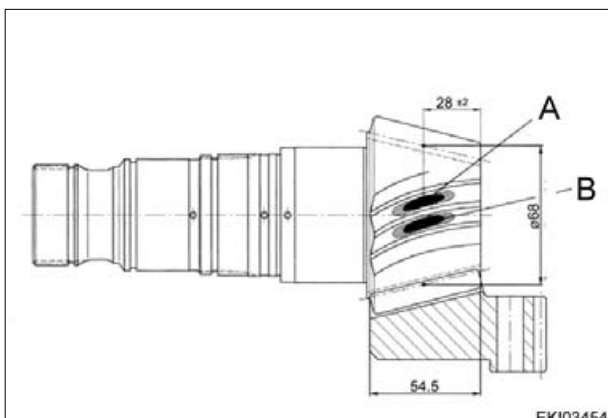
Example: Measured backlash 0.35 mm; loosen left notched nut by one notch, tighten right nut by one notch. Measured backlash 0.27 mm; secure both socket head screws (36) with synthetic bonding agent X 903.050.084.000 and tighten to 25 Nm.



E-UCV-38

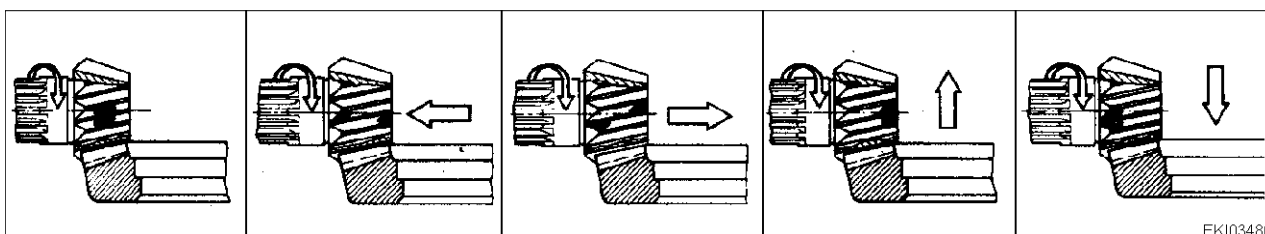
Check tooth contact pattern: coat six to eight teeth on the ring gear with gear marking compound.

Date	Version	Page		Capitel	Index	Docu-No.
27.04.2006	a	16/17	Pinion shaft, diff. gears and ring gear - removing and installing	1010	G	000011

Fendt 300 Vario
Transmission / Differential
Pinion shaft, diff. gears and ring gear - removing and installing
G**Correct tooth contact pattern for Klingelnberg gearing:**

A = drive side (forward); B = coast side (reverse)

If the tooth contact pattern is faulty, correct pinion depth accordingly.

Klingelnberg gearing: check tooth contact pattern on the drive bevel gear.

Perfect contact pattern	Drive side toe contact and coast side heel contact	Drive side toe contact and coast side toe contact	Toe contact on drive and coast sides	Heel contact on drive and coast sides
	Drive pinion must be moved further away from the ring gear	Drive pinion must be moved closer to the ring gear	Ring gear must be moved closer to drive pinion	Ring gear must be moved further away from the drive pinion

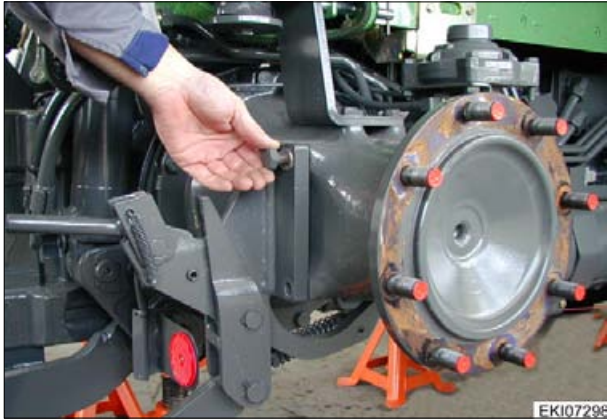


Install oil tray.

Concluding work:

- Installing PTO clutch, see Chapter 1220 Reg. G
- Installing PTO shaft control, see Chapter 1220 Reg. G
- Installing 4WD clutch, see Chapter 1320 Reg. G
- Installing rear wheel brakes and flanging on both axle drives, see Chapter 1070 Reg. G
- Assembling tractor, transmission and rear axle housing - see Chapter 1050 Reg. G
- Installing cab, see Chapter 8100 Reg. G
- Fill with transmission oil
- Bleed brake

Date	Version	Page		Capitel	Index	Docu-No.
27.04.2006	a	17/17	Pinion shaft, diff. gears and ring gear - removing and installing	1010	G	000011

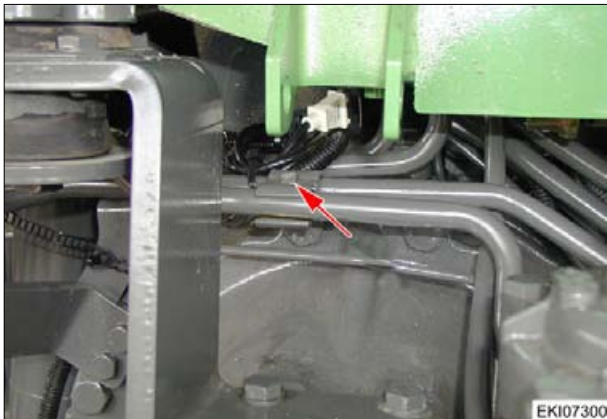
Fendt 300 Vario**Transmission / Axle drives
Installing and removing axle drives****G****Installation shown for right side, left side is analogous.****Preliminary work:**

Jack up tractor safely, remove rear wheel.

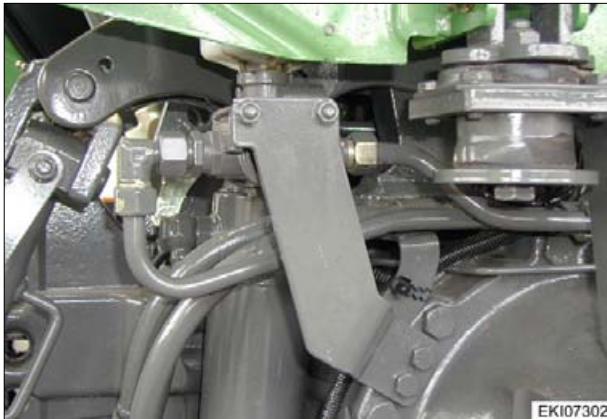
Remove lateral stabilisers.



Remove 4 connections from pressure regulator and trailer control valve.



Remove clip.

Fendt 300 Vario**Transmission / Axle drives
Installing and removing axle drives****G**

Remove both lines completely.
Remove antifreeze pump and bracket.



Remove connection.



Remove trailer control valve and pressure
regulator together with bracket.



Remove clip and holder.

Fendt 300 Vario**Transmission / Axle drives
Installing and removing axle drives****G**

Remove bracket for cable channel.



Attach lifting device (DIY lifting device see Chapter 9920) and lift cab slightly.

Note:
Ensure cab is held safely!

Remove cab bearing and bracket completely.



Drain transmission oil, remove left plug in direction of travel.

Oil volume about 30 litres

Date	Version	Page	Installing and removing axle drives	Capitel	Index	Docu-No.
30.08.2006	a	3/6		1015	G	000005

Fendt 300 Vario

Transmission / Axle drives

Installing and removing axle drives

G

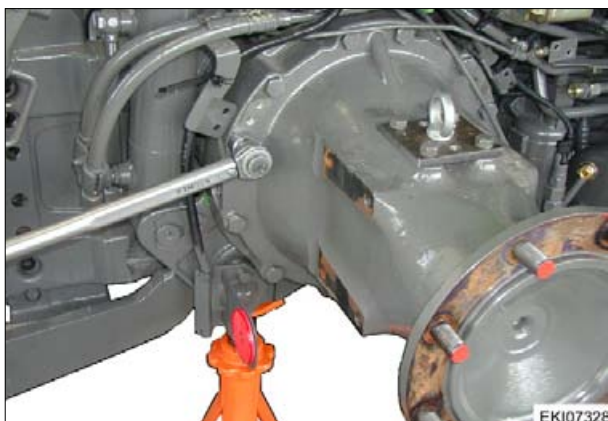
Attach lifting tool (DIY see Chapter 9920).
Remove screws and press of axle drive.
Ensure clearance for all components.

**Installing axle drive**

Clean flange surface on axle drive.
Coat flange surface of rear axle housing with sealant X 903 050 074 000.



Flange on axle drive



Tighten screws on axle drive to 295 Nm.
Remove lifting tool.

Date	Version	Page	Installing and removing axle drives	Capitel	Index	Docu-No.
30.08.2006	a	4/6		1015	G	000005

Fendt 300 Vario

Transmission / Axle drives

Installing and removing axle drives

G

E-UCV-58

Mount antifreeze pump with bracket and 2 pipe lines.



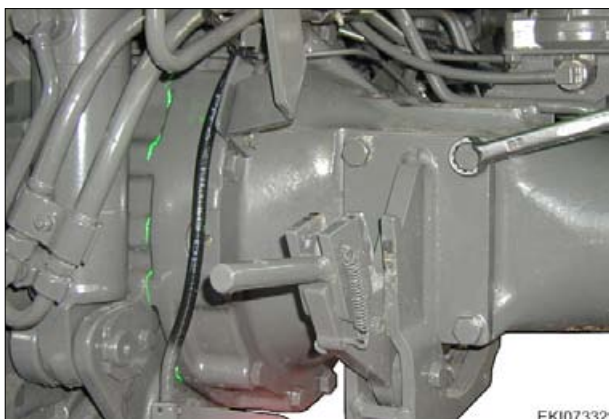
E-UCV-58

Mount bracket with trailer control valve and pressure regulator and connect lines.
Mount bracket for cable channel.



E-UCV-58

Fit clip



E-UCV-58

Mount lateral stabilisers and hook into lower links.

Date	Version	Page	Installing and removing axle drives	Capitel	Index	Docu-No.
30.08.2006	a	5/6		1015	G	000005

Fendt 300 Vario	Transmission / Axle drives Installing and removing axle drives	G
------------------------	---	----------



E-UCS18

Mount cab bearing

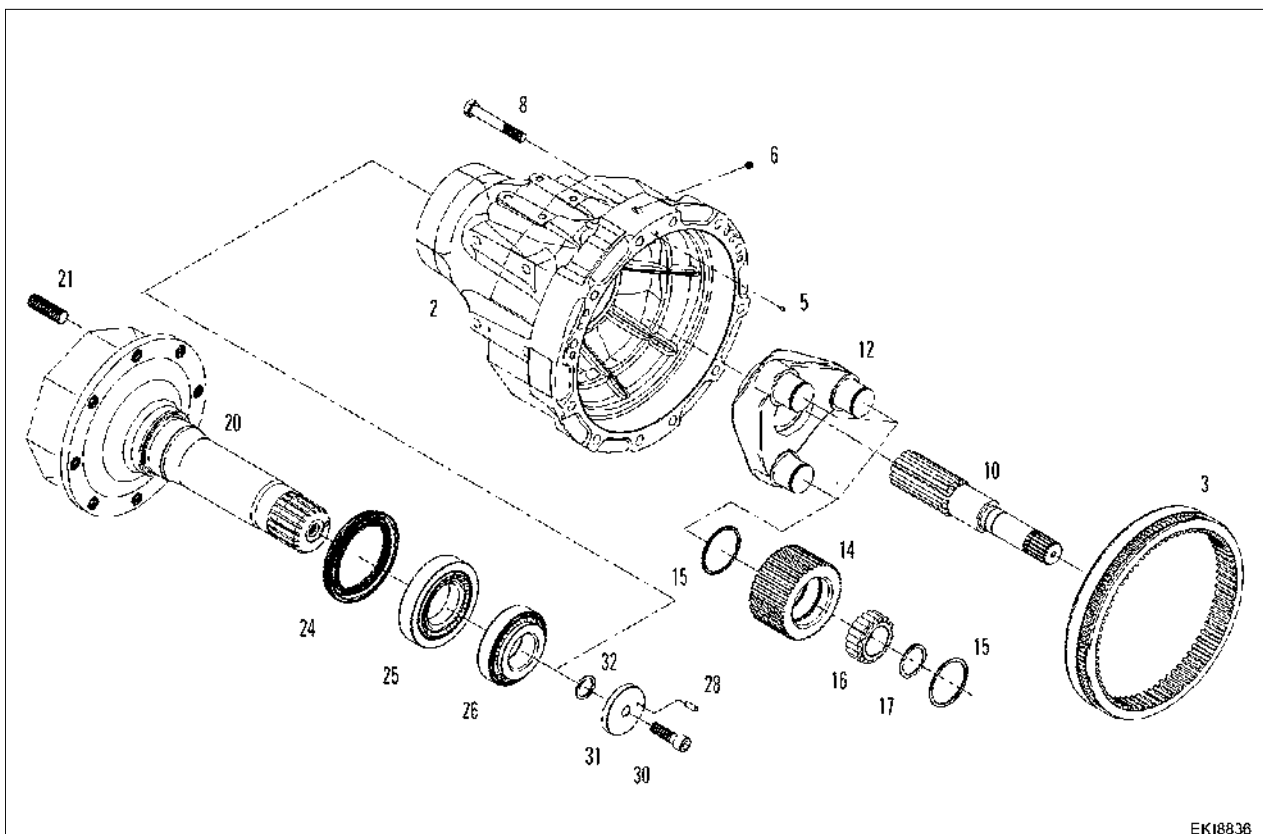
Note:

Fill up transmission oil and bleed brakes see Chapter 1070 Reg. G

Date	Version	Page	Installing and removing axle drives	Capitel	Index	Docu-No.
30.08.2006	a	6/6		1015	G	000005

Fendt 300 Vario

Transmission / axle drives
Disassembly and reassembly of axle drives

G

EKI8836

Item	Designation	Item	Designation
2	Axle housing	17	Circlip
3	Annulus	20	Rear-axle shaft
5	Nozzle	21	Stud bolt
6	Drain plug	24	Cassette ring
8	Hexagon screw	25	Taper roller bearing
10	Shaft	26	Taper roller bearing
12	Planet carrier	28	Dowel pin
14	Planet wheel	30	Socket head cap screw
15	Snap ring	31	Washer
16	Cylindrical roller bearing	32	Shim pack

Fendt 300 Vario**Transmission / axle drives
Disassembly and reassembly of axle drives****G**

Loosen socket head cap screw on planet carrier



Lift planet carrier out of axle housing



Remove retaining rings on the 3 planet wheels



Pull planet wheels off together with the bearing

Date	Version	Page	Disassembly and reassembly of axle drives	Capitel	Index	Docu-No.
20.06.2007	a	2/6		1015	G	000006

Fendt 300 Vario

Transmission / axle drives

Disassembly and reassembly of axle drives

G

Remove shaft from the housing and pull bearing off of shaft



Installing axle drive

Assemble vertically

Fit outer races of the taper roller bearings (25, 26) in the axle housing (2), insert rear axle shaft (20) with preassembled taper roller bearing (25) in the axle housing (2), fit taper roller bearing (26) on rear axle shaft (20)



Fit planet carrier (12) on rear axle shaft (20)



Screw setting tool on to rear axle shaft (20)

Date	Version	Page	Disassembly and reassembly of axle drives	Capitel	Index	Docu-No.
20.06.2007	a	3/6		1015	G	000006

Fendt 300 Vario

Transmission / axle drives
Disassembly and reassembly of axle drives

G



E-UCV-M8

Tighten screw on setting tool, tightening torque:
160 Nm



E-UCV-M8

Tighten groove nut on setting tool with the special
adapter key, tightening torque: 295 Nm



E-UCV-M8

Rotate the rear axle shaft approx. 10 times with
the aid of the setting tool



E-UCV-M8

Turn the groove nut on the setting tool back 3
graduation marks.

Date	Version	Page	Disassembly and reassembly of axle drives	Capitel	Index	Docu-No.
20.06.2007	a	4/6		1015	G	000006

Fendt 300 Vario

Transmission / axle drives

Disassembly and reassembly of axle drives

G

Drive rear axle shaft (20) back with a mandrel

E-UCV-M8

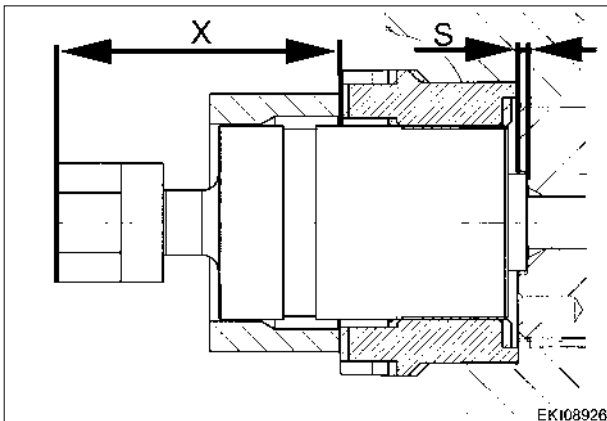
EKI8824



Determine dimension "s"

E-UCV-M8

EKI8825



Measure dimension "x": from the flat surface of the adjusting screw to the upper edge of nut

(measure at several points)

Xbase = 90mm (is specified)

Example: Xmeasured = 85.88mm

Dimension "s" = X0 - Xmeasured

Dimension "s" = 90mm - 85.88mm

Dimension "s" = 4.12mm

E-UCV-M8

EKI08926



Determine dimension "a": attach gauge on flat surface of adjusting screw, push rear axle shaft (20) upwards and measure actual clearance

E-UCV-M8

EKI8826

Date	Version	Page	Disassembly and reassembly of axle drives	Capitel	Index	Docu-No.
20.06.2007	a	5/6		1015	G	000006

Fendt 300 Vario

Transmission / axle drives

Disassembly and reassembly of axle drives

G

Add shims shim thickness = $s - a$ -
preload dimension (0.01 - 0.06)
Example: dimension "s" = 4.12
Dimension "a" = 0.05
Shim thickness = $4.12 - 0.05 - 0.06 =$
4.01mm

Note:

First place the 3 mm washer on the axle shaft (20) and then the shims (32)



Fit washer (31), tighten socket head cap screw (30) with screw locking compound, tighten to 160 Nm



Insert cylindrical roller bearing (16) in planet wheel (14) and fit snap ring (15) on both sides



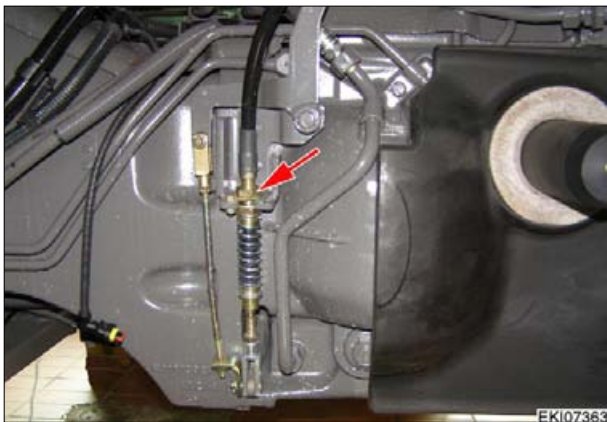
Fit planet wheels (14) on planet carrier (12) and secure with retaining ring (17)

Date	Version	Page	Disassembly and reassembly of axle drives	Capitel	Index	Docu-No.
20.06.2007	a	6/6		1015	G	000006

Fendt 300 Vario
Transmission / Hand brake
Setting hand brake
F**Check travel:**

At approx. 400 N hand power, the catch must lock on the 6th to 7th tooth.

If this is not the case, the setting must be rechecked.

**Note:****Remove fuel tank.**

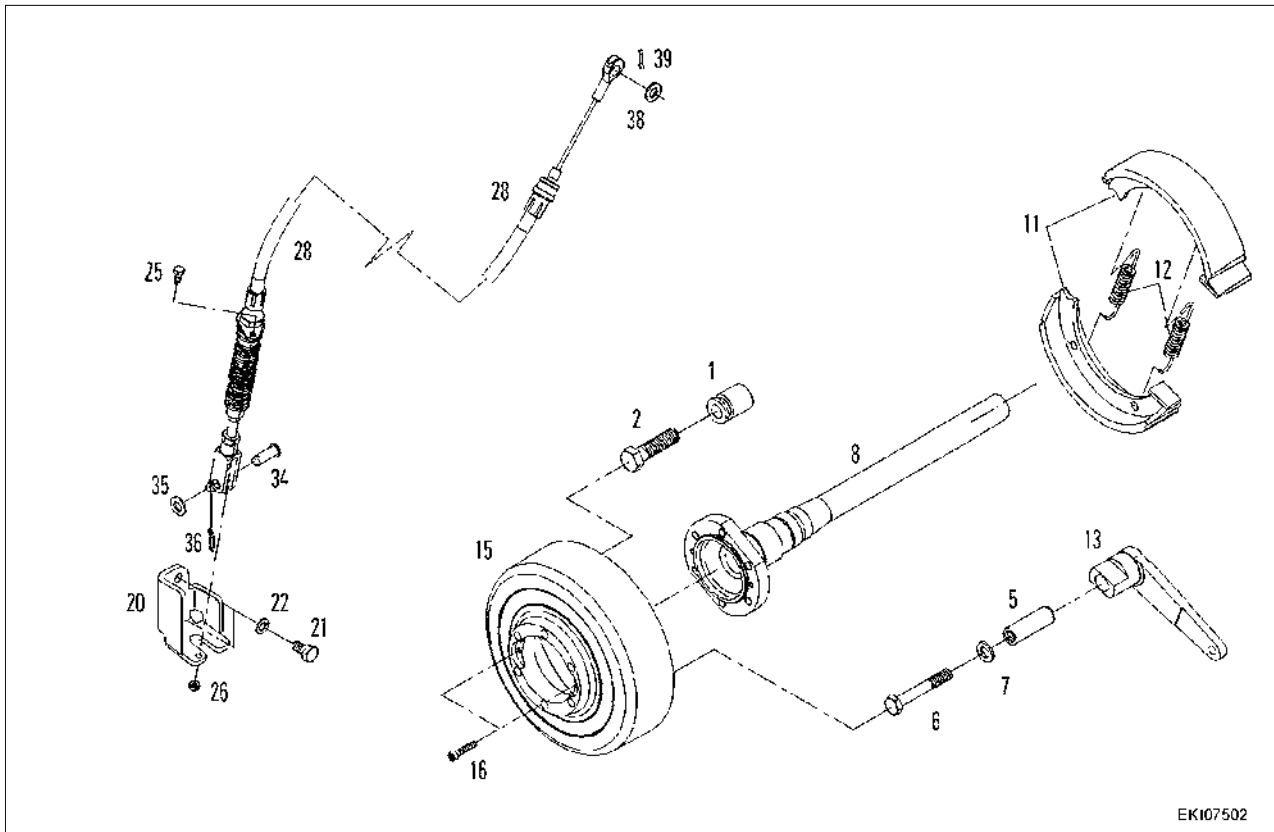
By turning the bulkhead screw connection (arrowed) correct Bowden cable so that the proper setting is attained.

**Checking setting in tractors with compressed air systems:**

Set such that there is no pressure at yellow coupling head with hand brake released.

With 50% hand brake handle travel, pressure should rise to 7.0 - 7.8 bar.

If the setting cannot be reached, turn ball head (arrowed) accordingly.

Fendt 300 Vario**Transmission / Hand brake
Removing and installing hand brake****G**

EKI07502

Item	Designation	Item	Designation
1	Anchor bolt	20	Counterholder
2	Hexagon screw	21	Hexagon screw
5	Bush	22	Spring washer
6	Hexagon screw	25	Hexagon screw
7	Washer	28	Bowden cable
11	Brake shoe	34	Pin
12	Extension spring	35	Washer
13	Brake cam	36	Split pin
15	Brake drum	38	Washer
16	Socket head cap screw	39	Split pin



Danger:
Secure tractor against rolling.

Loosen and pull back both protective funnels on the drive shaft.

Unscrew flange screws from the cardan shaft on the front axle and remove cardan shaft completely.

Date	Version	Page	Capitel	Index	Docu-No.
31.08.2006	a	1/3	1030	G	000001

Fendt 300 Vario

Transmission / Hand brake

Removing and installing hand brake

G

If necessary, unhook hand brake Bowden cable.
Unscrew 2 screws and remove brake drum.



Unhook springs and remove brake pads.



Installing hand brake

Install upper brake pad and springs.
Tip lower brake pad and hook in springs.
Leverage both brake pads into their original position.



Mount brake drum and tighten both socket head screws.
Hook in hand brake Bowden cable.

Date	Version	Page	Removing and installing hand brake	Capitel	Index	Docu-No.
31.08.2006	a	2/3		1030	G	000001

Fendt 300 Vario	Transmission / Hand brake Removing and installing hand brake	G
------------------------	---	----------



E-005198

Mount cardan shaft and tighten flange screws to 87 Nm.

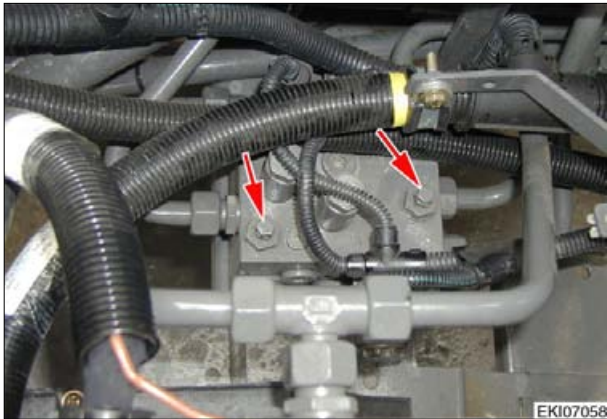
Checking the hand brake setting see Chapter 1030 Reg. F

Date	Version	Page	Removing and installing hand brake	Capitel	Index	Docu-No.
31.08.2006	a	3/3		1030	G	000001

Fendt 300 Vario

Transmission / Housing

Disconnecting tractor, transmission and rear-axle housings

G**Preliminary work:**

- Removing cab, see Chapter 8100 Reg. G
- If front axle suspension is installed, lower it.
Loosen AV1 and AV2 (arrowed) by half a turn so that pressure is released.

**Danger:****Tractor is lowered!**

Valve is located between the right entry and the clutch housing.



Drain hydraulic oil, max. 60 l.



Drain transmission oil, left in direction of travel.
Remove plug.
Oil volume about 30 litres

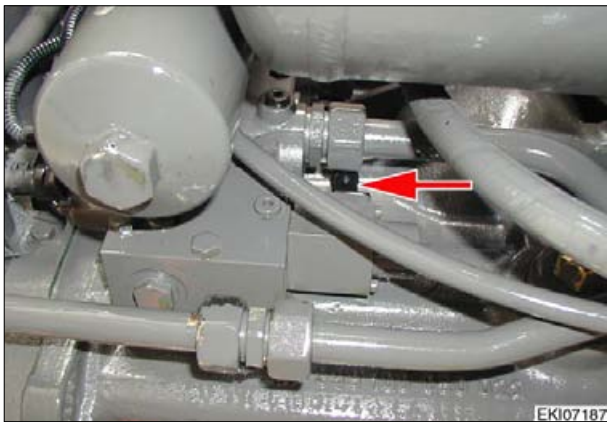


Remove fastening clip.
Disconnect cable coupler X037.
Open 4 clips.

Date	Version	Page		Capitel	Index	Docu-No.
24.01.06	a	1/6	Disconnecting tractor, transmission and rear-axle housings	1050	G	000008

Fendt 300 Vario**Transmission / Housing**
Disconnecting tractor, transmission and rear-axle housings**G**

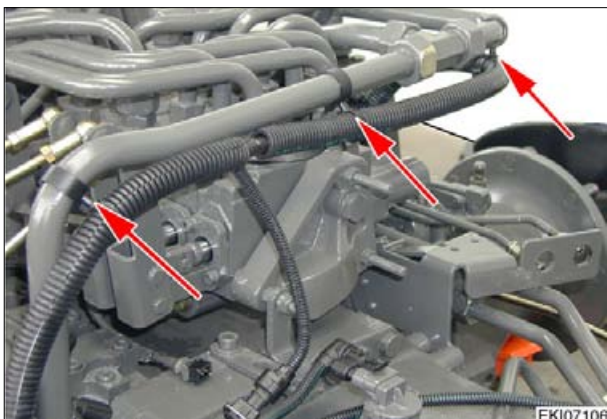
Disconnect filter contamination sensor S017.



Disconnect turboclutch valve X317 (arrowed) and remove clips (shown from below).

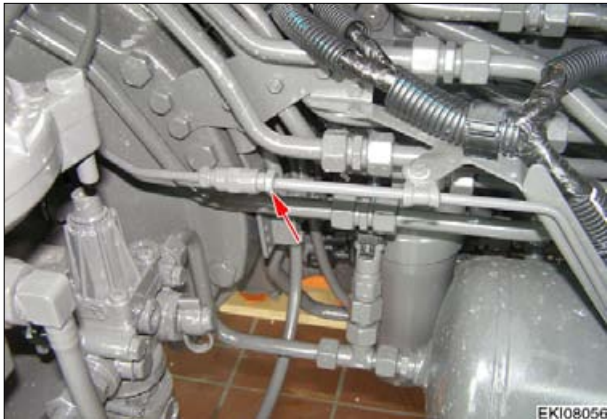


Disconnect cable coupler X333 EPC.



Detach three clips (arrowed) and run cable harness towards back.

Date	Version	Page		Capitel	Index	Docu-No.
24.01.06	a	2/6	Disconnecting tractor, transmission and rear-axle housings	1050	G	000008

Fendt 300 Vario
Transmission / Housing
Disconnecting tractor, transmission and rear-axle housings
G

If hydraulic trailer brake is fitted, disconnect brake line.



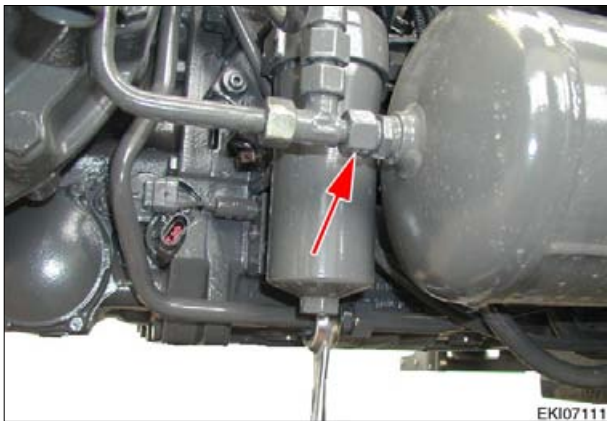
Disconnect four cable couplers.

X157 = High pressure sensor

X158 = Discharge temperature

X164 = Bevel/pinion

X168 = Compressed air supply



Disconnect compressed air line, disconnect EPC return flow.



Disconnect hydraulic screw connections, collect any oil that leaks out.

Remove screws for cable channel.

Date	Version	Page		Capitel	Index	Docu-No.
24.01.06	a	3/6	Disconnecting tractor, transmission and rear-axle housings	1050	G	000008

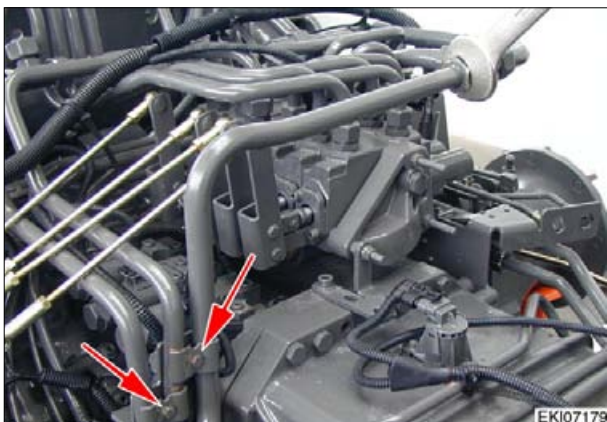
Fendt 300 Vario

Transmission / Housing

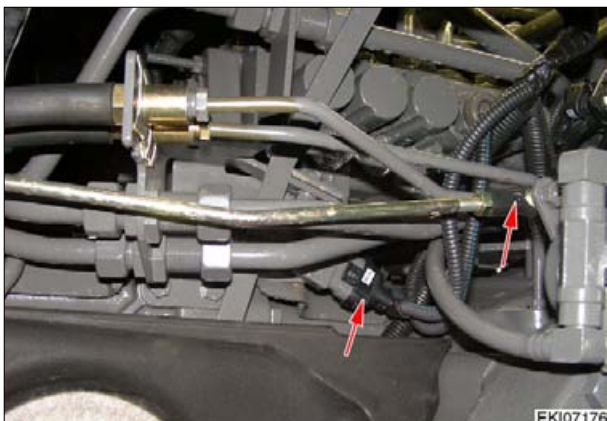
Disconnecting tractor, transmission and rear-axle housings

G

Unscrew air distributor.



Disconnect hydraulic screw connections, remove pipe clamps.



Unhook linkage (arrowed) for trailer pilot valve.
Unplug cable coupler (arrowed).



Disconnect hydraulic screw connections (arrowed).

Date	Version	Page		Capitel	Index	Docu-No.
24.01.06	a	4/6	Disconnecting tractor, transmission and rear-axle housings	1050	G	000008

Fendt 300 Vario

Transmission / Housing

Disconnecting tractor, transmission and rear-axle housings

G

Fit sealing plug **WITHOUT** sealing ring, on left in direction of travel .

Important:

The sealing plug for the purge valve serves as an assembly aid (supports ML transmission) when separating the rear axle housing and Vario transmission.



Set up disconnecting device under the transmission housing and place an additional trestle under the trailer hitch securely.



Secure front axle on both sides with piece of wood.



Remove tank bracket and insulating mat.

Date	Version	Page		Capitel	Index	Docu-No.
24.01.06	a	5/6	Disconnecting tractor, transmission and rear-axle housings	1050	G	000008

Fendt 300 Vario

Transmission / Housing

Disconnecting tractor, transmission and rear-axle housings

G

Unscrew and remove 16 screws and 3 nuts.



Pry apart on both sides with assembly lever.
Ensure clearance for all components.

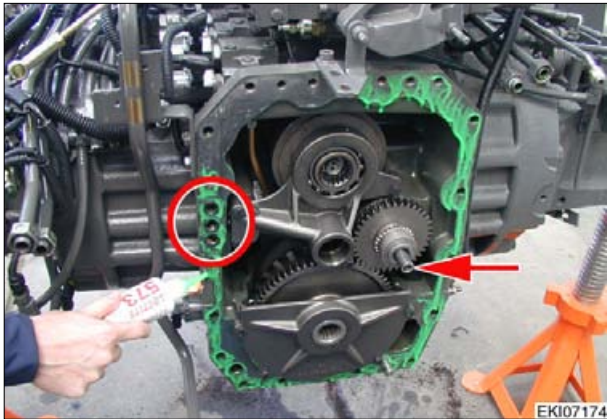


Disconnected machine, right side.



Disconnected machine, left side.

Date	Version	Page		Capitel	Index	Docu-No.
24.01.06	a	6/6	Disconnecting tractor, transmission and rear-axle housings	1050	G	000008

Fendt 300 Vario
Transmission / Housing
Connecting tractor, transmission and rear axle housings
G

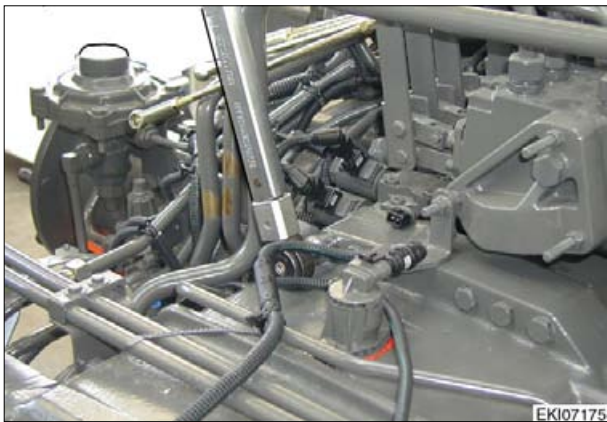
E-UCV-M8

Clean both flange surfaces and coat with sealant X 903.050.074.000.

Grease and insert 3 O-rings.

Note:

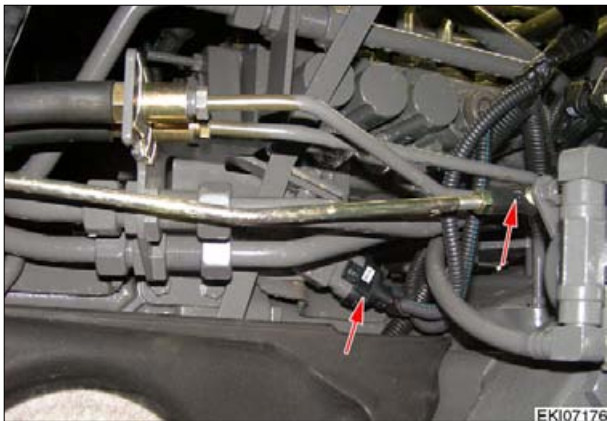
Make sure that the lube tube (arrowed) for the pinion shaft is fitted.



E-UCV-M8

Join tractor, ensuring that all parts have adequate clearance.

Tighten M12 screws to 120 Nm.



E-UCV-M8

Connect cable coupler X1340 to switch S070.

Hook in linkage from trailer valve.



E-UCV-M8

Connect both hydraulic screw connections.

Date	Version	Page	Capitel	Index	Docu-No.
13.02.2006	a	1/4	Connecting tractor, transmission and rear axle housings	1050	G 000011

Fendt 300 Vario
Transmission / Housing
Connecting tractor, transmission and rear axle housings
G

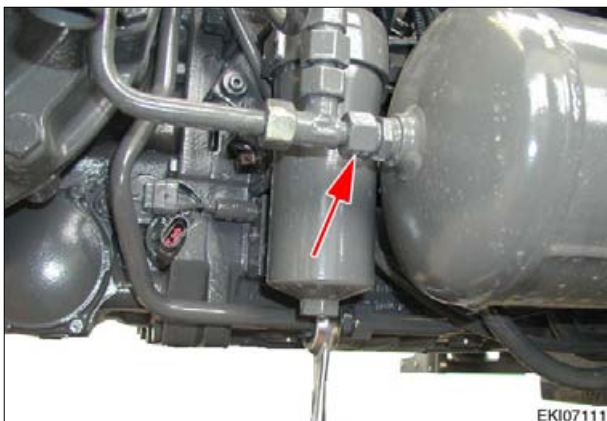
E-UCS-M

Connect hydraulic screw connections.
 Connect screw connection for compressed air.
 Screw in 2 screws for cable channel.



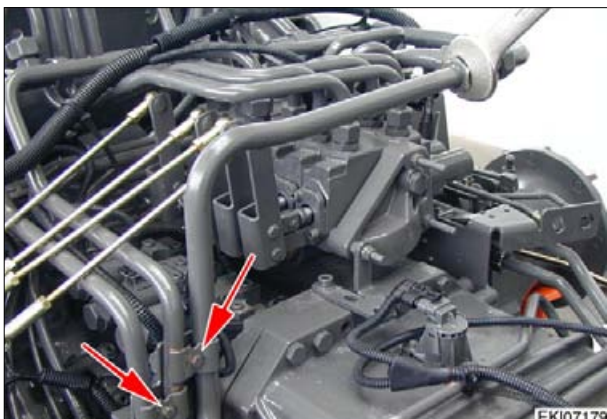
E-UCS-M

Connect and mount air distributor.



E-UCS-M

Connect hydraulic screw connection
 (return flow EPC) behind air tank.



E-UCS-M

Connect hydraulic line.
 Attach pipe clamps.

Date	Version	Page		Capitel	Index	Docu-No.
13.02.2006	a	2/4	Connecting tractor, transmission and rear axle housings	1050	G	000011

Fendt 300 Vario

Transmission / Housing

Connecting tractor, transmission and rear axle housings

G

E-UCS-M

Clip cable harness on to hydraulic line.

Plug in cable coupler X333 for Y022 solenoid valve, lower.

Plug in cable coupler X163 for B014 sensor, hydrostat accumulator shaft.



E-UCS-M

Run cable harness in the cable channel and mount pipe clamps.



E-UCS-M

Run plug A009 actuator unit in bracket and plug in cable coupler X037.



E-UCS-M

Plug in four cable couplers.

X157 = High pressure sensor

X158 = Discharge temperature

X164 = Bevel/pinion

X168 = Compressed air supply

Note:

Fix cable harness with cable ties.

Date	Version	Page		Capitel	Index	Docu-No.
13.02.2006	a	3/4	Connecting tractor, transmission and rear axle housings	1050	G	000011

Fendt 300 Vario

Transmission / Housing

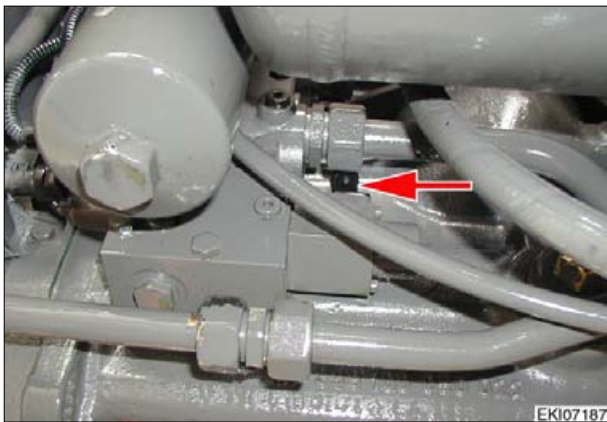
Connecting tractor, transmission and rear axle housings

G

E-UCV-38

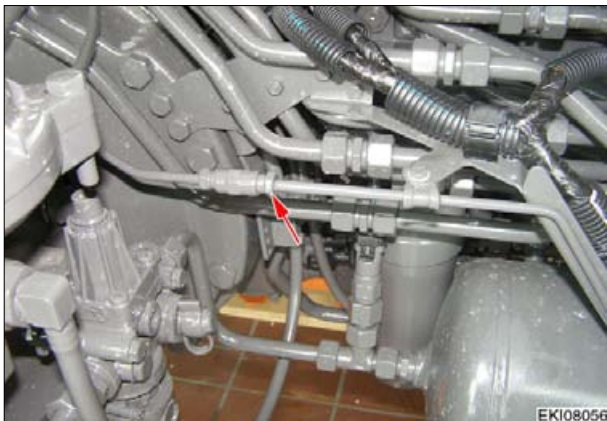
Plug cable coupler X228 into filter contamination switch S017.

Fasten cable harness with cable ties.



E-UCV-38

Connect turboclutch valve Y004 and cable coupler X317 (arrowed).



E-UCV-38

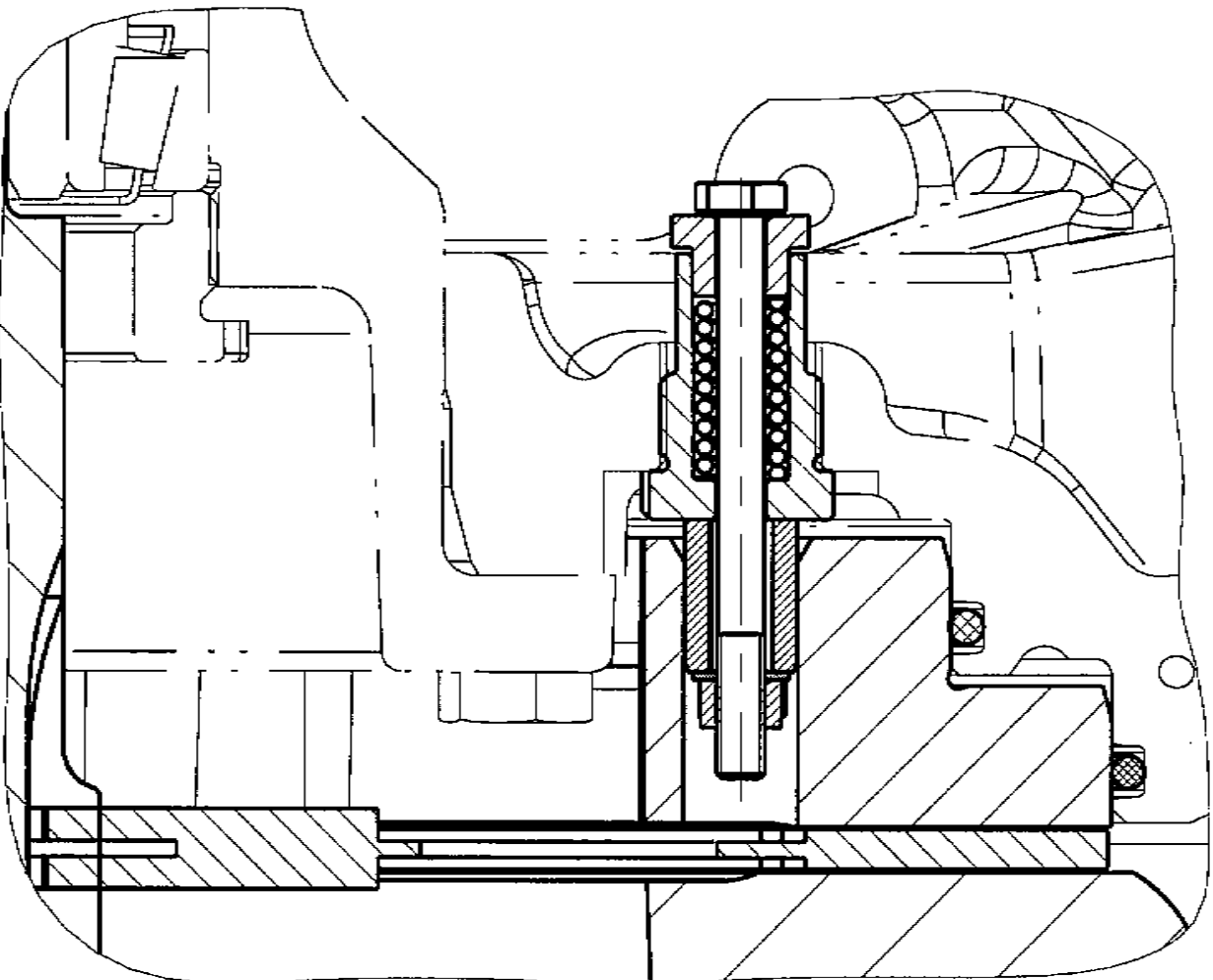
If fitted: connect brake line for hydraulic trailer brake.



E-UCV-38

Fit copper seal on sealing plug and mount.
Fill with transmission oil.

Date	Version	Page		Capitel	Index	Docu-No.
13.02.2006	a	4/4	Connecting tractor, transmission and rear axle housings	1050	G	000011

Fendt 300 VarioTransmission / Brake system
Brake adjuster**C**

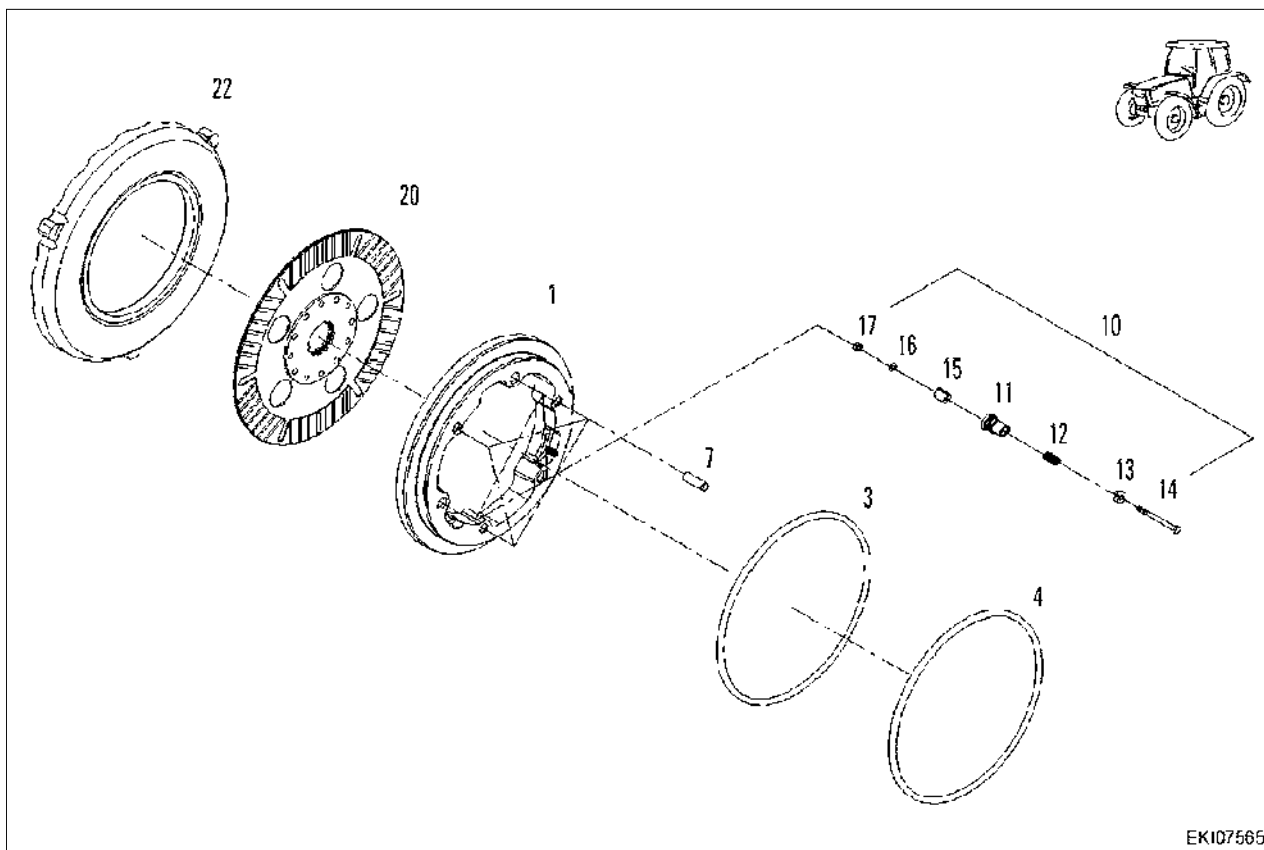
E/K 08262

Date	Version	Page	Brake adjuster		Capitel	Index	Docu.No.
24.07.2007	a	1/1			1070	C	000009

Fendt 300 Vario

Transmission / brake system

Removing and installing rear wheel brake

G

Item	Designation	Item	Designation
1	Brake piston	13	Washer
3	O-ring	14	screw
4	O-ring	15	Retaining bush
7	Parallel pin	16	Washer
10	Brake piston adjuster	17	Nut
11	Threaded bush	20	Brake pad
12	Compression spring	22	Brake plate

**Preliminary work:**

- Removing axle drive, see Chapter 1015 Reg. G.

Date	Version	Page	Capitel	Index	Docu-No.
07.02.2006	a	1/5	1070	G	000012

Fendt 300 Vario**Transmission / brake system**
Removing and installing rear wheel brake**G**

Remove brake plate.



Remove brake pad disc and sun gear shaft.



Pry brake piston out using an assembly tool in the provided pockets.



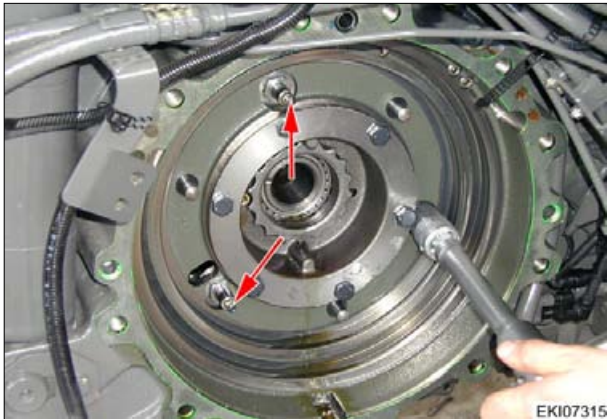
Remove both O-rings.

Date	Version	Page	Removing and installing rear wheel brake	Capitel	Index	Docu-No.
07.02.2006	a	2/5		1070	G	000012

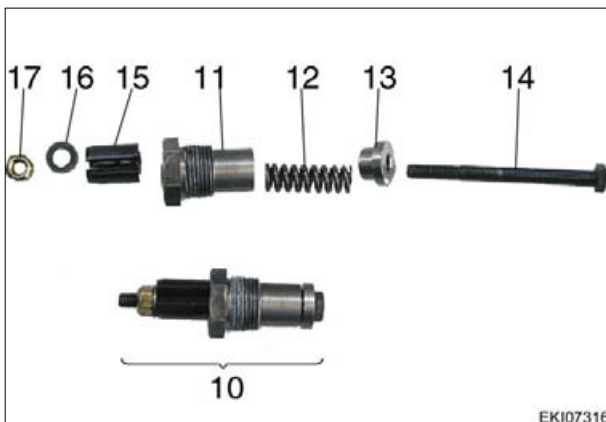
Fendt 300 Vario

Transmission / brake system

Removing and installing rear wheel brake

G

Remove the 3 brake adjusters (arrowed).



Installing rear brake

Brake adjuster disassembled/assembled.

Note:

Visually check parts, replace faulty components, always exchange lock nut (17).



Assemble brake adjuster (10), adjust clearance to 0.7 mm + 0.05 mm.



Clean threaded bores, apply screw locking compound X 903 050 084 000 and mount the 3 brake adjusters (10) and tighten to 90 Nm.

Date	Version	Page	Removing and installing rear wheel brake	Capitel	Index	Docu-No.
07.02.2006	a	3/5		1070	G	000012

Fendt 300 Vario

Transmission / brake system

Removing and installing rear wheel brake

G

E-UCV-M

Clean flange surface and replace O-ring (arrowed) and insert with grease.



E-UCV-M

Stretch O-ring (3) and O-ring (4) so that they fit well into the groove .

Insert O-ring (3) and O-ring (4) into the groove with grease X 902.002.472.000.

Note:

Also grease the brake adjuster (10) (retaining bush (15)) lightly and ensure that 3 locating pins (7) are mounted.



E-UCV-M

Place brake piston (1) in place and drive in uniformly in a circle with a plastic hammer.

Make absolutely sure that the brake piston has been driven all the way in to stop.

Note:

Otherwise the clearance will be less than 0.7 mm, which results in damage to the brake pad.



E-UCV-M

Final brake pad assembly

Note:

If the brake discs are replaced, the new brake discs must be soaked in oil (STOU 10W-40) for 10 hours at 20°C or alternatively 0.5 hours at an oil temperature of 70°C .

Date	Version	Page	Capitel	Index	Docu-No.
07.02.2006	a	4/5	1070	G	000012

Fendt 300 Vario

Transmission / brake system

Removing and installing rear wheel brake

G

E-UCS-18

Mount sun gear shaft, brake pad (20) and brake plate (22).

Note:

The holes on the brake plate (arrowed) face upwards.



E-UCS-18

Clean flange surfaces of axle drive.

Coat flange surface of rear axle housing with sealing compound X 903.050.074.000.

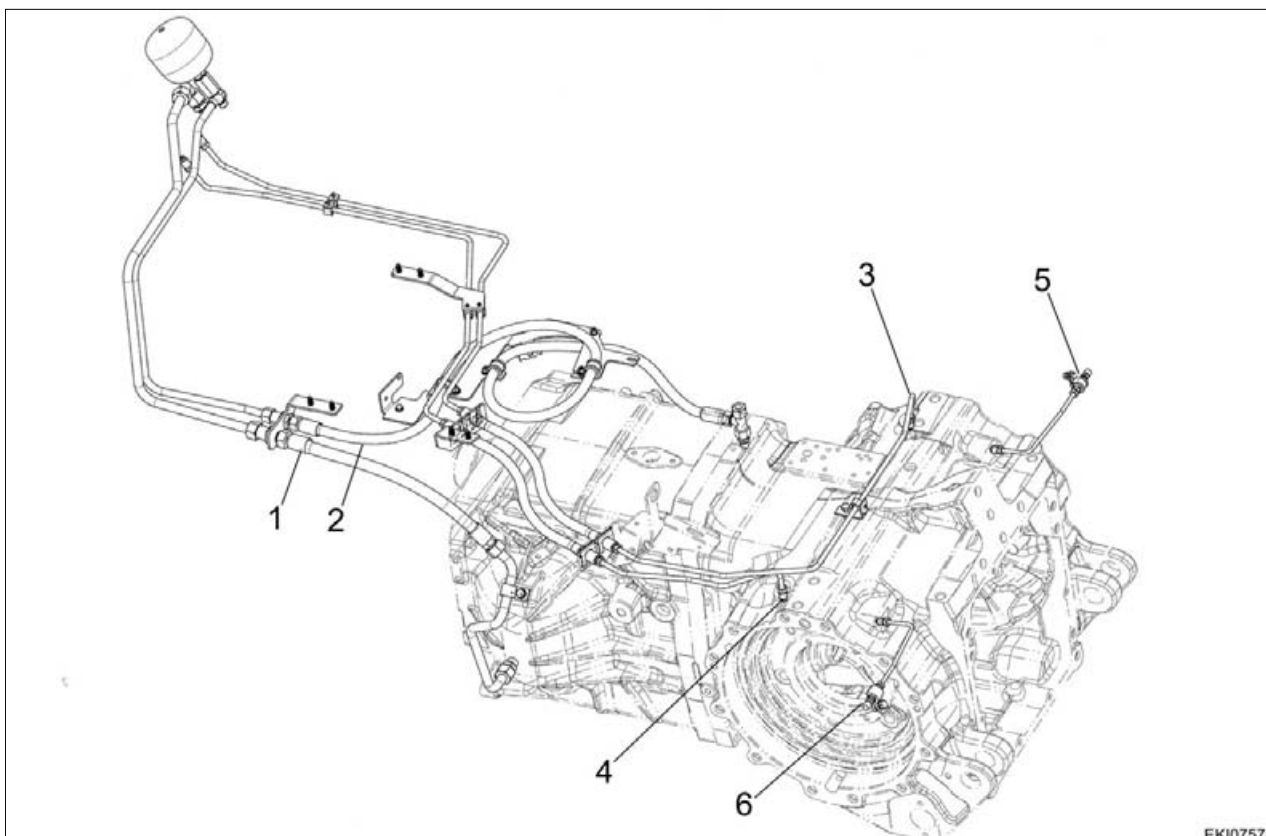
**Concluding work:**

- Installing axle drive, see Chapter 1015 Reg. G.
- Fill with transmission oil.

Date	Version	Page	Removing and installing rear wheel brake	Capitel	Index	Docu-No.
07.02.2006	a	5/5		1070	G	000012

Fendt 300 Vario

Transmission / brake system
Bleeding the hydraulic brake system

G

- 1 = Return flow
- 2 = Servo pressure
- 3 = Right brake line
- 4 = Left brake line
- 5 = Bleeder right
- 6 = Bleeder left

**Bleeding brake:**

Start engine, servo pressure builds up.

Lock brake pedals.

Connect bleed bottle to bleed nipple with hose.

Open bleed nipple.

Press brake pedal down until transmission oil flows out without bubbles.

Then close bleeder.

Date	Version	Page	Capitel	Index	Docu-No.
07.02.2006	a	1/3	1070	G	000013

Fendt 300 Vario

Transmission / brake system
Bleeding the hydraulic brake system

G

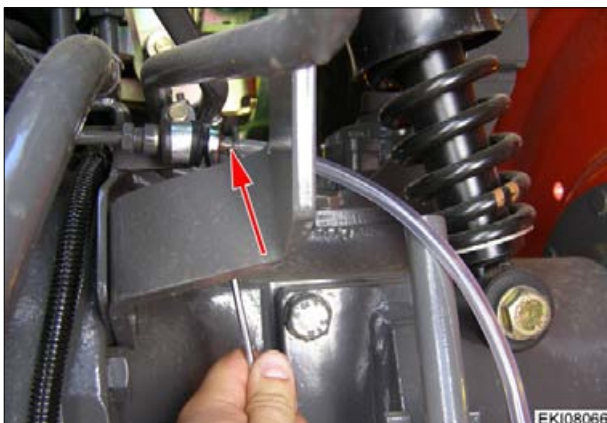
Bleed nipple on left side.



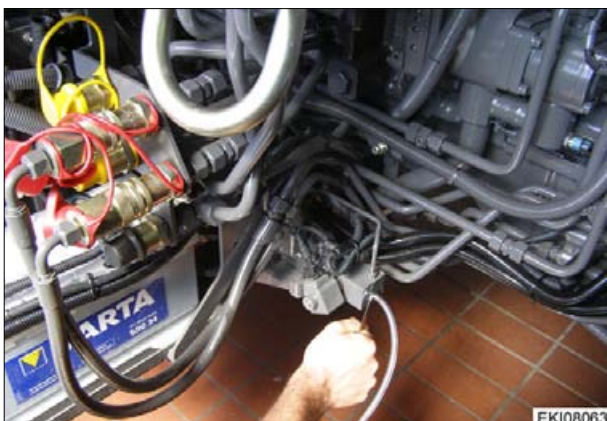
Bleed nipple on left side with compressed air system.



Disassemble left rear wheel.



Bleed nipple on right side.



Bleed nipple on right side with hydraulic trailer brake.

Date	Version	Page	Bleeding the hydraulic brake system	Capitel	Index	Docu-No.
07.02.2006	a	2/3		1070	G	000013

Fendt 300 Vario	Transmission / brake system Bleeding the hydraulic brake system	G
------------------------	--	----------



Bleed nipple (arrowed) on right side of front axle on rear wheel drive tractor.

Bleed nipple on left side of front axle analogous.

Date	Version	Page	Bleeding the hydraulic brake system	Capitel	Index	Docu-No.
07.02.2006	a	3/3		1070	G	000013

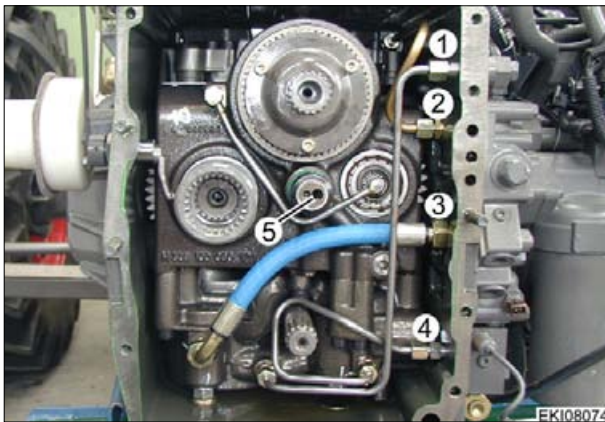
Fendt 300 Vario

Transmission / Transmission unit

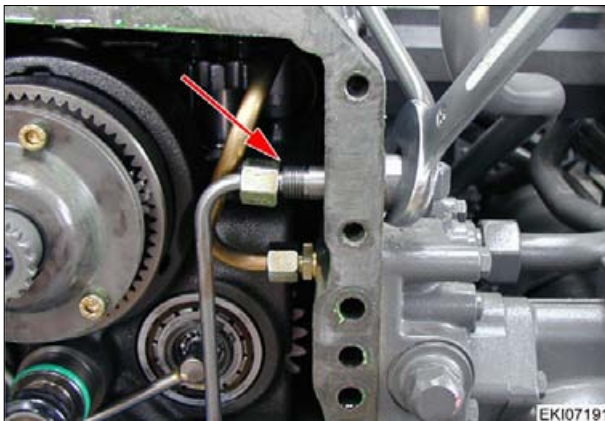
Removing Vario transmission unit

G**Preliminary work:**

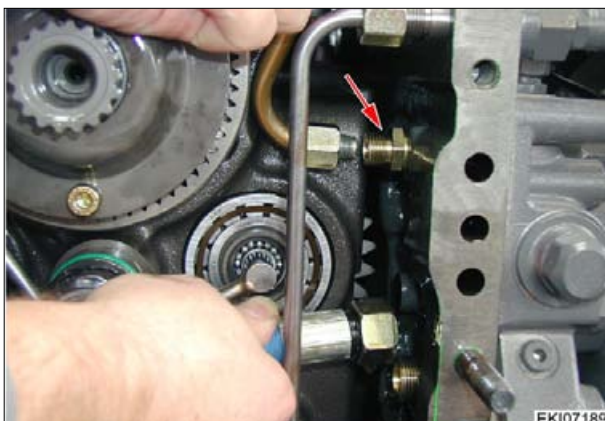
- Removing cab see Chapter 8100 Reg. G
- Disconnecting tractor, transmission and rear axle see Chapter 1050 Reg. G



- 1 = High pressure 2
- 2 = Servo pressure
- 3 = Discharge
- 4 = High pressure 1
- 5 = Feed

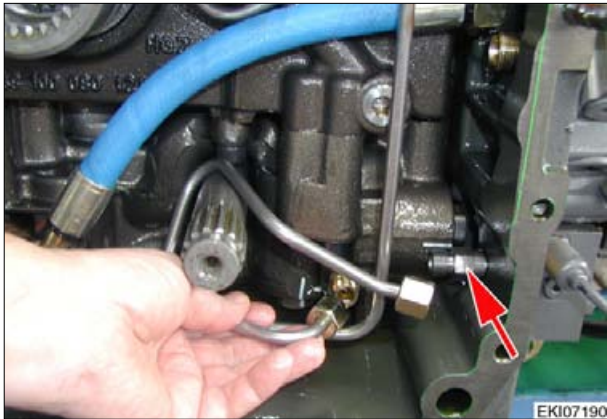


Unscrew line (1) and remove screw socket (arrowed).



Unscrew servo pressure line (2) along with screw socket (arrowed).
Unscrew discharge hose (3).

Date	Version	Page	Removing Vario transmission unit	Capitel	Index	Docu-No.
24.01.06	a	1/5		1080	G	000033

Fendt 300 Vario**Transmission / Transmission unit
Removing Vario transmission unit****G**

Remove high pressure line (4) and screw socket.

Remove shift finger along with threaded bush.
Pull off selector sleeve.

Remove Hall sensor accumulator shaft B014.



Remove actuator unit A009.

Date	Version	Page	Removing Vario transmission unit	Capitel	Index	Docu-No.
24.01.06	a	2/5		1080	G	000033

Fendt 300 Vario

Transmission / Transmission unit

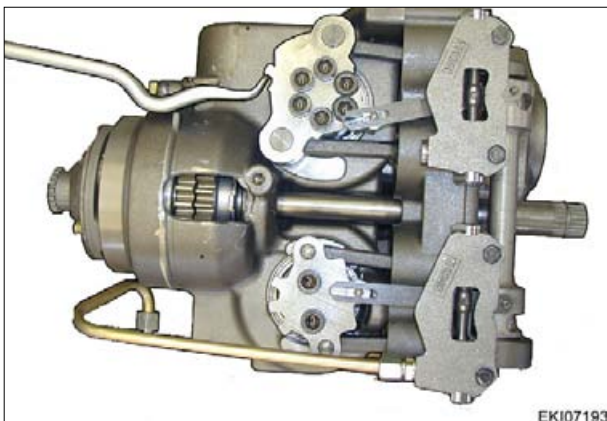
Removing Vario transmission unit

G

Turn shaft anti-clockwise until stop and remove screw.



Screw screw into thread and pull out actuator shaft.

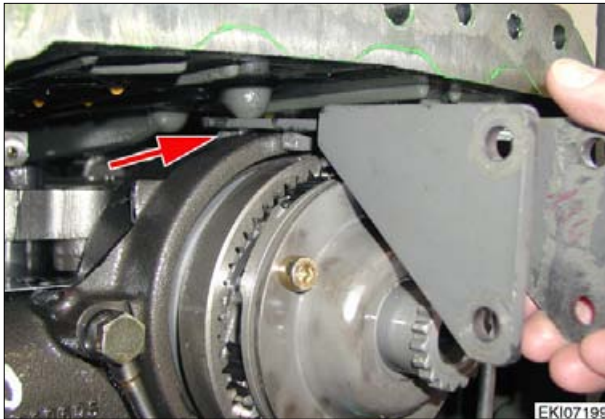


Swing back hydro motor and, if necessary, displacement pump, with assembly lever (shown with transmission unit removed for greater clarity).



Tool X 899.980.300 for removing and installing the Vario transmission unit.

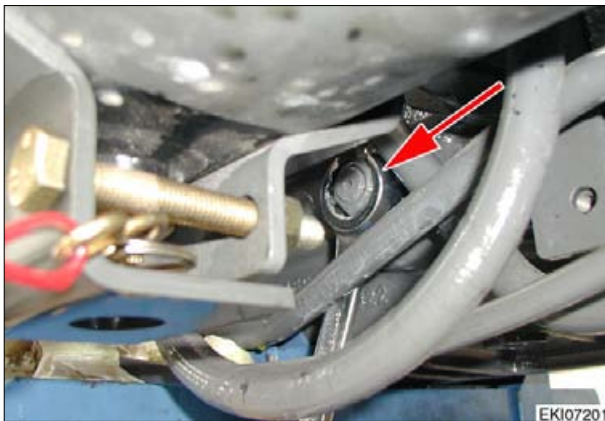
Date	Version	Page	Removing Vario transmission unit	Capitel	Index	Docu-No.
24.01.06	a	3/5		1080	G	000033

Fendt 300 Vario**Transmission / Transmission unit
Removing Vario transmission unit****G**

Insert bracket and ensure proper installation position (arrowed).



Slide on tool and screw on to bracket.

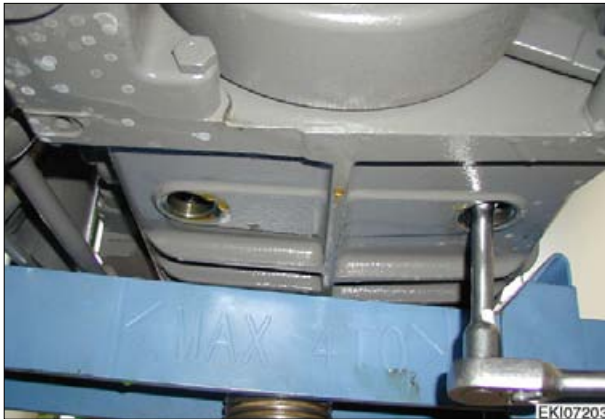


Unscrew nuts for bearing on both sides.

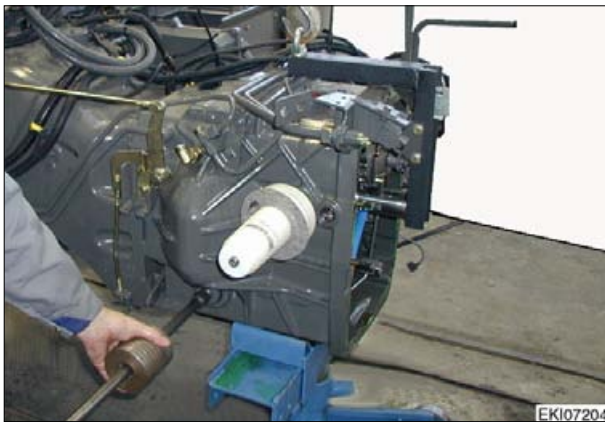


Screw out both front sealing plugs.

Date	Version	Page	Removing Vario transmission unit	Capitel	Index	Docu-No.
24.01.06	a	4/5		1080	G	000033

Fendt 300 Vario**Transmission / Transmission unit
Removing Vario transmission unit****G**

Loosen clamping screws SW 19 on both sides.



Mount slide hammer puller and pull out transmission unit bearing.

Note:

Apply light tension on transmission unit with hoist.



Pull out transmission unit, while ensuring that all components have adequate clearance.

Date	Version	Page	Removing Vario transmission unit	Capitel	Index	Docu-No.
24.01.06	a	5/5		1080	G	000033

Fendt 300 Vario**Transmission / Transmission unit
Installing transmission unit****G**

E-UCV-M8

Attach transmission unit (ML-transmission) to hoist, taking appropriate safety precautions, and insert into the transmission housing.
Ensure clearance for all components.



E-UCV-M8

Insert shaft in to the bore on the transmission housing and transmission unit (ML transmission).

Note:

Remove flexible bushes to facilitate inserting the shaft.



E-UCV-M8

Check bushes (flexible) for wear.

Use new bushes, if necessary.

Insert flexible bushes in to the bores until stop.

Note:

Lightly oil bushes on inside and outside.



E-UCV-M8

Locate ring with groove facing towards bush (flexible).

Then screw on M 20 nut.

Date	Version	Page	Installing transmission unit	Capitel	Index	Docu-No.
13.02.2006	a	1/5		1080	G	000034

Fendt 300 Vario**Transmission / Transmission unit
Installing transmission unit****G**

E-UCY-M

Tighten both M 20 nuts to 250 Nm.

Note:**When tightening the nuts, counterhold on the other side.**

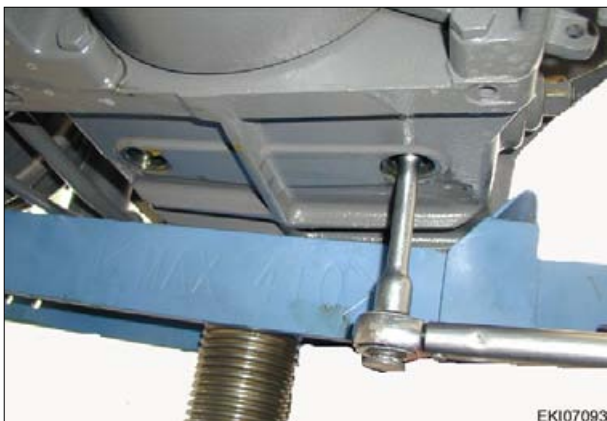
Remove hoist.



E-UCY-M

Bring transmission in to contact.

Fixed dimension 22 mm +/- 0.1 mm, see arrow.

Important:**The sealing plugs for the purge valve must be fitted without sealing rings when installing the transmission unit, in this way the height of the transmission unit is fixed.**

E-UCY-M

Tighten both clamping screws to 86 Nm.

Screw screw plugs with new sealing rings into bottom of transmission housing and tighten.



E-UCY-M

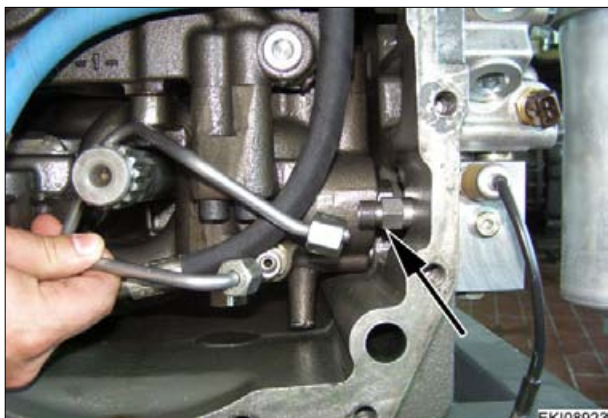
Note:**Replace O-ring (1) and supporting ring (2) on screw socket (3).**

Date	Version	Page	Installing transmission unit	Capitel	Index	Docu-No.
13.02.2006	a	2/5		1080	G	000034

Fendt 300 Vario

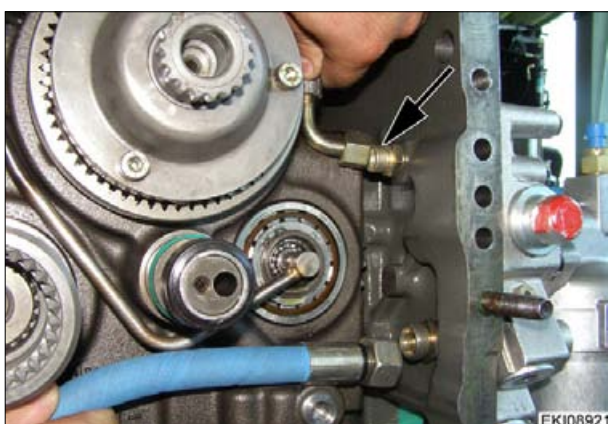
Transmission / Transmission unit

Installing transmission unit

G

E-KC-18

Screw preassembled screw socket (arrowed) into the housing and tighten.
Connect line (4) (high pressure 1).



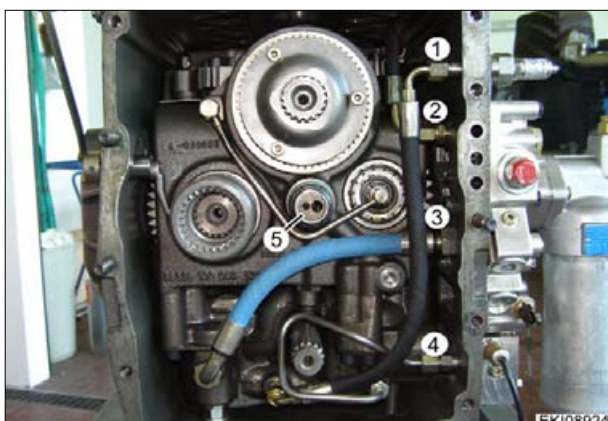
E-KC-18

Screw screw socket (arrowed) in and connect servo pressure line (2).
Screw on discharge hose.



E-KC-18

Install preassembled screw socket (arrowed).
Screw on line (1).



- 1 = High pressure 2
- 2 = Servo pressure
- 3 = Discharge
- 4 = High pressure 1
- 5 = Feed

Date	Version	Page	Capitel	Index	Docu-No.
13.02.2006	a	3/5	1080	G	000034

Fendt 300 Vario**Transmission / Transmission unit
Installing transmission unit****G**

E-UCV-98

Preassembly shift finger for towing sleeve.

Insert new O-ring into the groove in the bush and grease; then insert the shift finger into the bush.

Place a new copper ring on to the bush.



E-UCV-98

Install selector sleeve with preassembled shift finger.



Coat sealing surface of the Hall sensor with sealant X 903.050.553.000 (non-hardening).

Insert Hall sensor B014 into the bore on the transmission housing.

Tighten mounting bolts to 25 Nm.

Note:

If previously installed Hall sensors are reused, stick two cardboard strips, each 0.9 mm thick, into slot in Hall sensor on left and right (for centring when fitting).



E-UCV-98

If necessary, replace shaft seal.

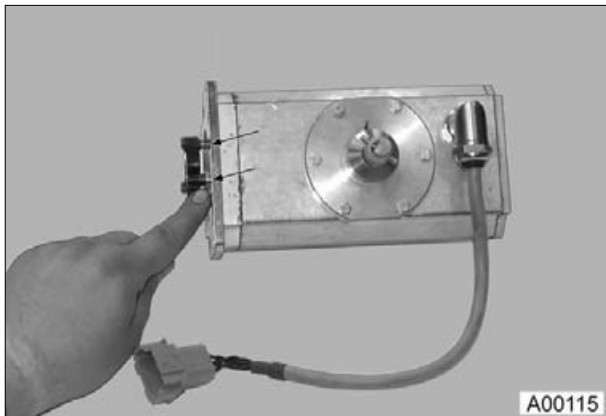
Insert actuator shaft by turning and ensure that the groove (arrow) locks into the bolt.

Mount shaft and tighten M8 screw to 25 Nm.

Note:

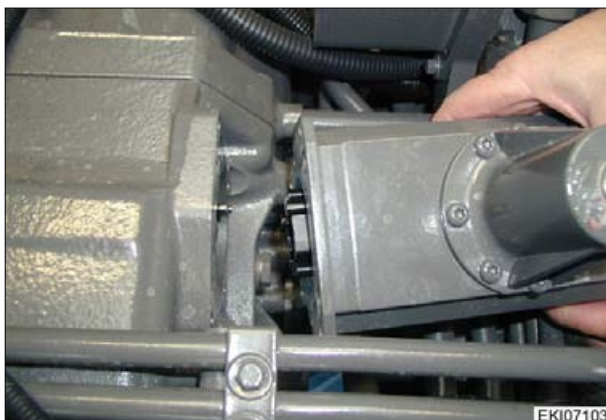
Replace Usit ring.

Date	Version	Page	Installing transmission unit	Capitel	Index	Docu-No.
13.02.2006	a	4/5		1080	G	000034

Fendt 300 Vario**Transmission / Transmission unit
Installing transmission unit****G**

E-UCV-M8

Preassembly actuator unit.

Note:**Ensure proper installation position of coupling (arrowed).**

E-UCV-M8

Mount actuator unit.



E-UCV-M8

Assembling tractor, transmission and rear axle housing, see Chapter 1050 Reg.G

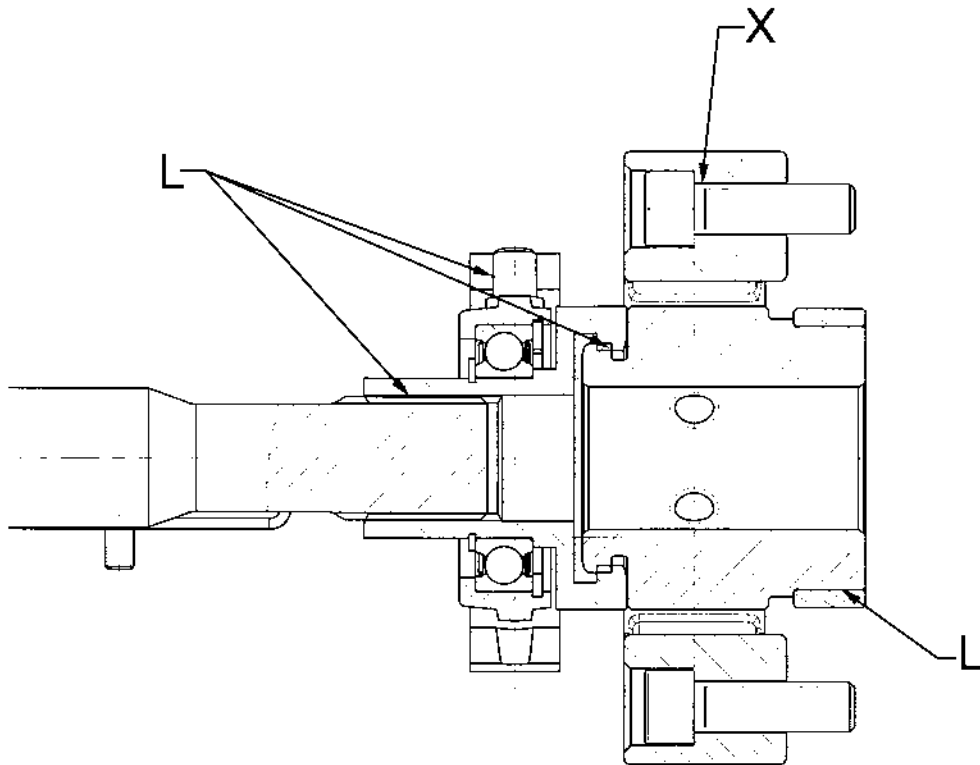


E-UCV-M8

Concluding work:

- Filling ML-transmission with filling unit, see Chapter 1080 Reg. G.
- Fitting cab, see Chapter 8100 Reg.G
- Bleeding brakes, see Chapter 1070 Reg.G
- Calibrating transmission see Chapter 0000 Reg. F.

Date	Version	Page	Capitel	Index	Docu-No.
13.02.2006	a	5/5	Installing transmission unit	1080	G
					000034

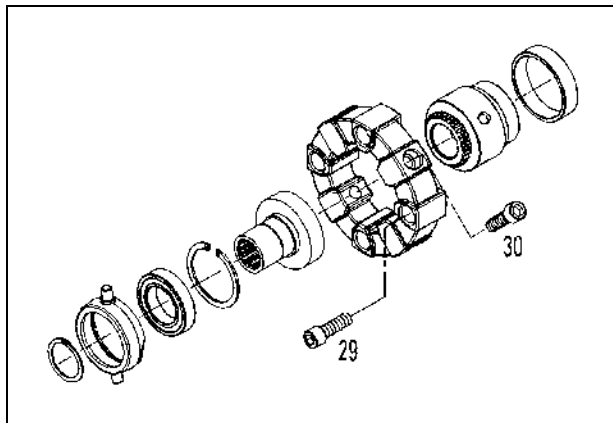


1001214

IMPORTANT:

Lubricate screw head seats (item X) of axial and radial screws to prevent the Centaflex clutch becoming deformed during tightening.

Avoid twisting (tilting) the rubber part when tightening.



1001215

Mounting sequence for axial and radial screws:

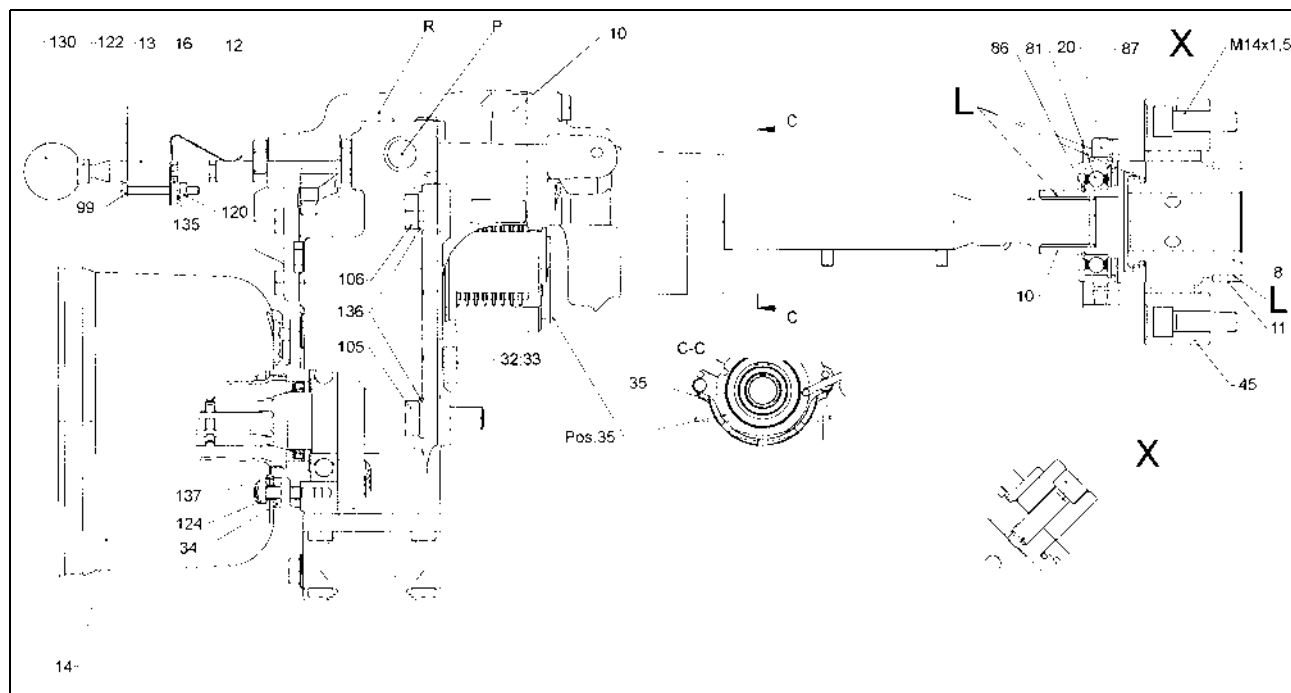
1. Tighten axial screws M14x50 (item 29) to 140 Nm.
 2. Tighten radial screws M14x45 (item 30) to 140 Nm.
- Apply a thin coat of long-life grease to the teeth (item L).



FRONT PTO Front PTO transmission and piping

G

Front PTO transmission



1001264

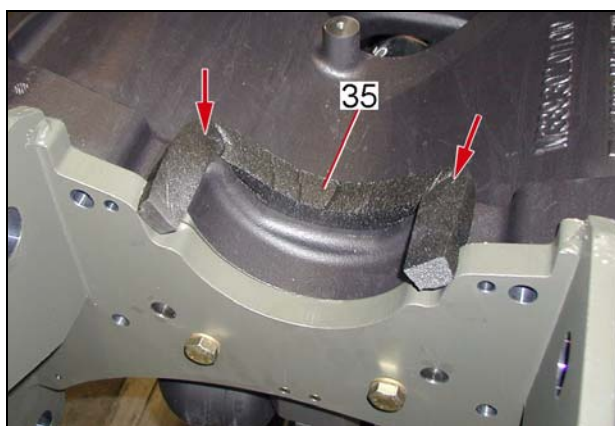
Item	Designation	Item	Designation
8	HUB	81	DEEP-GROOVE BALL BEARING
10	SELECTOR SLEEVE	86	CIRCLIP 45X1.75
11	BUSH	87	CIRCLIP 75X2.5
12	SPRING	99	HEX SCREW M6X50-8.8A3L
13	SHIFT ROD	105	HEX SCREW M16X45-8.8A3L
14	PROTECTIVE CAP	106	HEX SCREW M16X75 GWA-10.9
16	PLATE	120	HEX NUT M6-8A3L
20	DISENGAGING RING	122	HEX NUT M10-8A3L
32	STRAP	124	HEX NUT M8-8-A3L
33	STRAP	130	BALL END
34	WASHER	135	SPRING WASHER B6-MECH.GALV
35	SEALING STRAP	136	SPRING WASHER_FWN 65208-16-A3L
40	TRANSMISSION_CPL.HYDR.VERSION	137	WASHER 8.4-140HV-A3L
45	COUPLING_CENTAFLEX		

Mounting the front PTO transmission:

- Glue on strap (item 32, 33), (half item 33 when mounting).
- Flat side of washer (item 137) should be against item 14.
- Apply a thin coat of Longtime 3EP to the areas marked with (L).
- Apply a thin coat of grease to the screw seats (X).

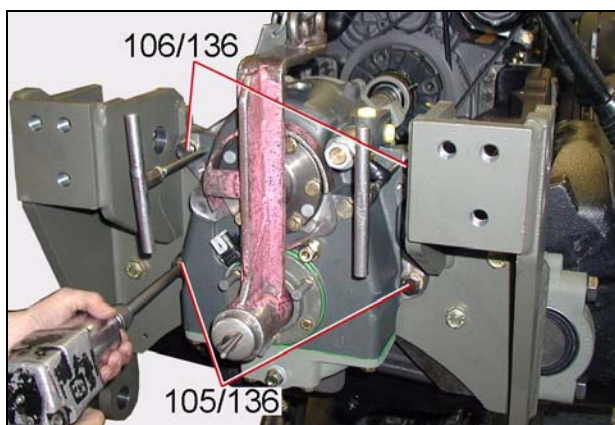


FRONT PTO Front PTO transmission and piping

G


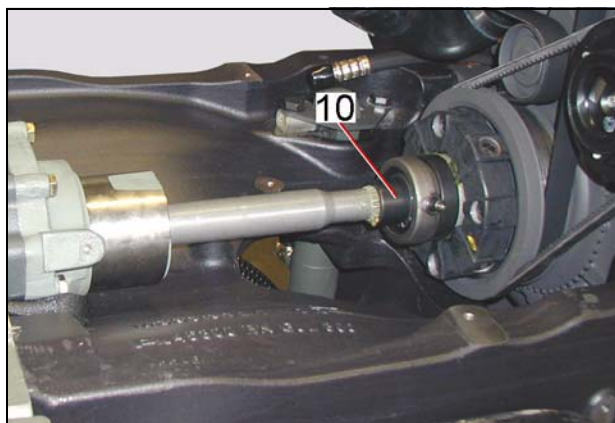
I001265

- Glue sealing strip (item 35) to front axle chock, cut off excess.



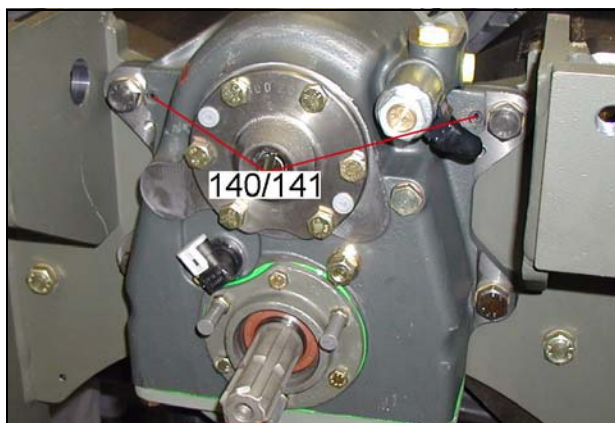
I001266

- Clean mounting flange using ductor.
- Screw on front PTO transmission (item 105/106/136).
- Check selector sleeve runs smoothly.



I001447

- Check selector sleeve (item 10) runs smoothly.

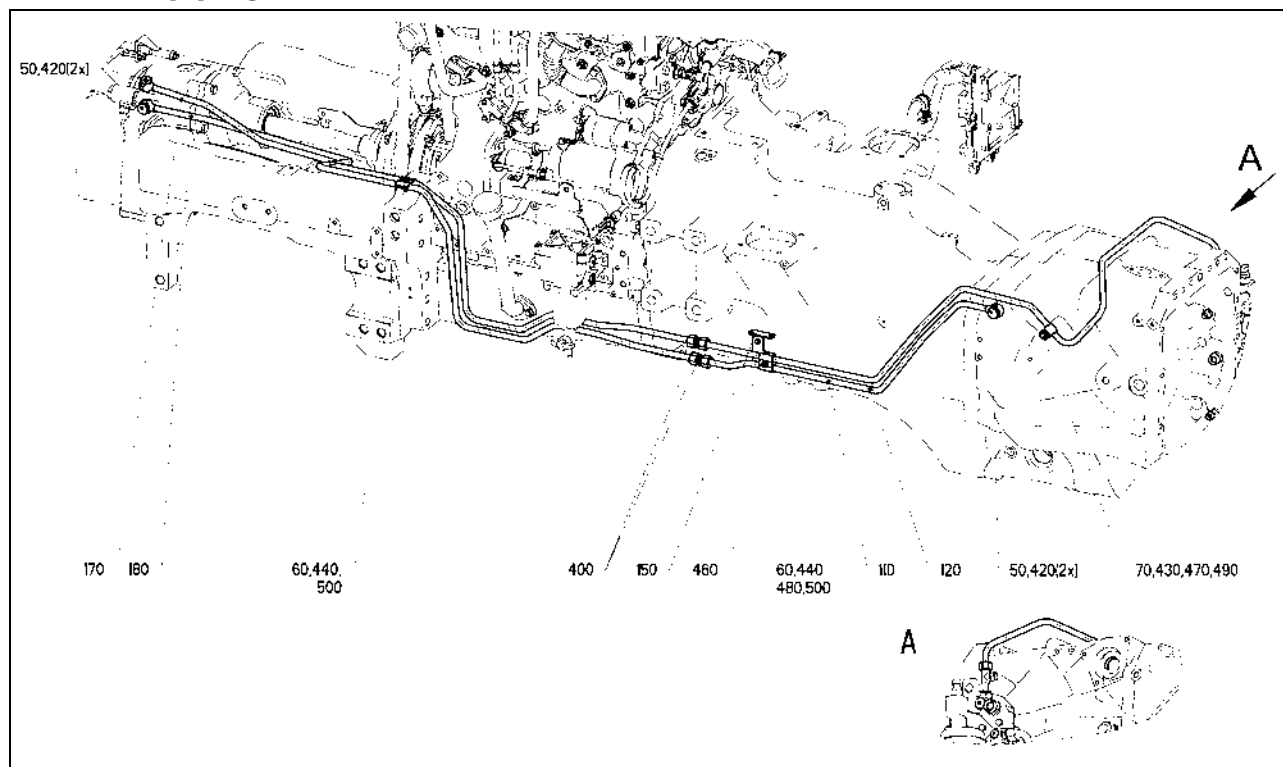


I001267

- Tap in two dowel pins (item 140/141) offset by 180°.



FRONT PTO Front PTO transmission and piping

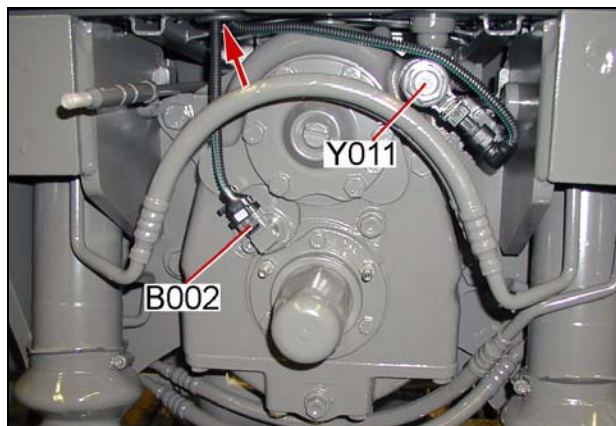
G**Front PTO piping**

1001216

Item	Designation	Item	Designation
50	BANJO BOLT_12-3	420	USIT-RING U 16-22.7-1.5
60	CLAMP	430	HEX SCREW M8X16-8.8A3L
70	PIPE CLAMP	440	HEX SCREW M6X25-8.8A3L
110	RETURN PIPE	460	HEX SCREW M6X12-8.8A3L
120	PRESSURE PIPE	470	WASHER 8.4-ST.A3L
150	BRACKET	480	WASHER 6.4-ST.A3L
170	RETURN PIPE	490	SPRING WASHER_FWN 65208-8-A3L
180	PRESSURE PIPE	500	SPRING WASHER_FWN 65208-6-A3L
400	PIPE COUPLINGS		

Mounting the piping:

- Mount the front PTO piping using the drawing and parts list as reference.



1001319

Connect speed sensors and solenoid valve

- Insert grommet (arrow), route existing separation points (X151 and X322) through the grommet toward the PTO transmission.
- Attach separation point (X151) to speed sensor (B002).
- Attach separation point (X322) to solenoid valve (Y011).

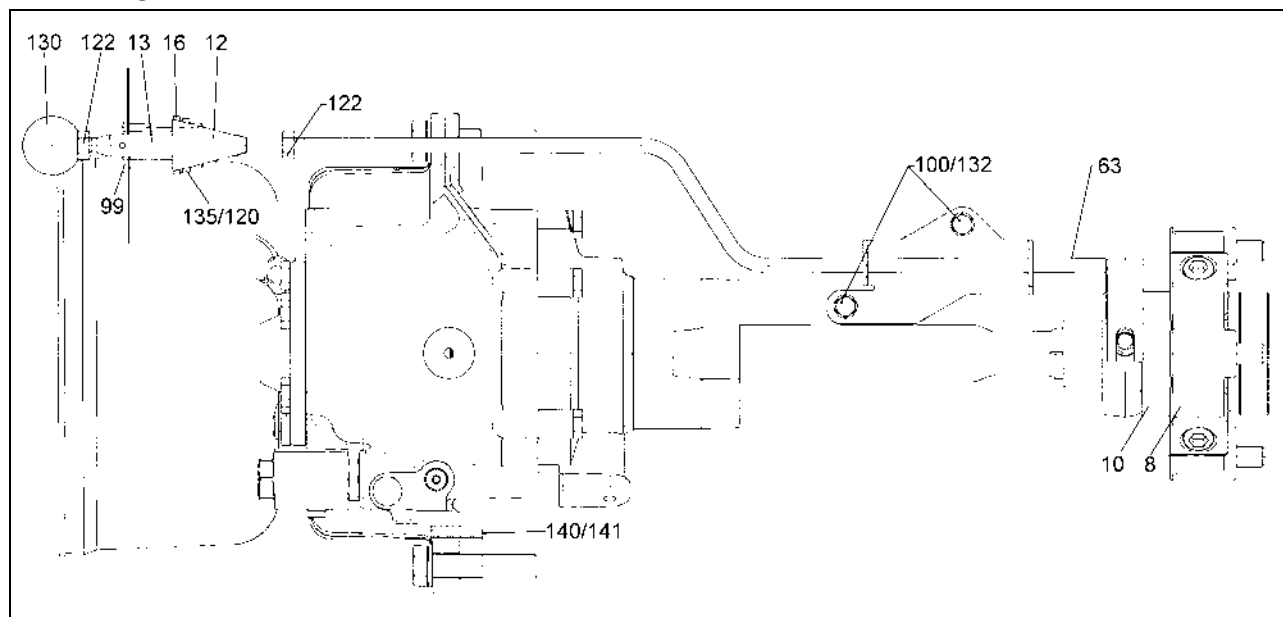


FRONT PTO

Mounting and adjusting the seasonal disconnect mechanism

G

Mounting the seasonal disconnect mechanism

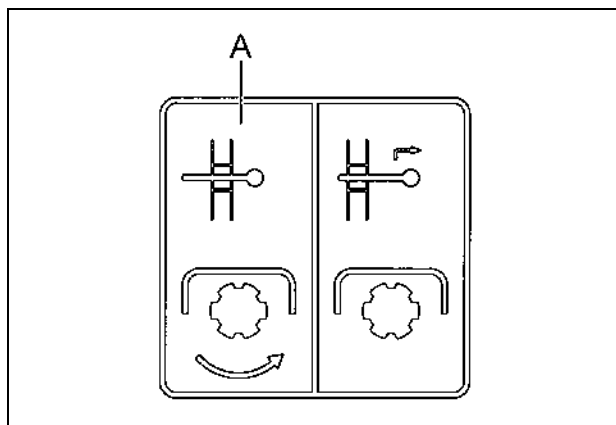


1001278

Item	Designation	Item	Designation
8	HUB	120	HEX NUT M6-8A3L
10	SELECTOR SLEEVE	122	HEX NUT M10-8A3L
12	SPRING	130	BALL END
13	SHIFT ROD	132	WASHER 8.4-ST.A3L
16	PLATE	135	SPRING WASHER B6-MECH.GALV
63	CONTROL FORK_CPL	140	SP-PIN 10X36
99	HEX SCREW M6X50-8.8A3L	141	SP-PIN 6X36
100	HEX SCREW M8X16-8.8A3L		

- Mount seasonal disconnect mechanism using the drawing and parts list as reference.

Adjusting seasonal disconnect mechanism



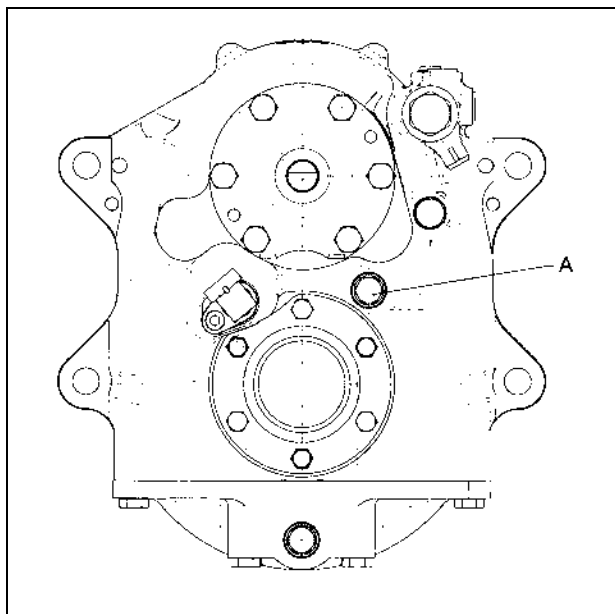
1001283

- Engage shift rod into position ON (item A).
- Pull selector sleeve (item 10) to stop by rotating shift rod (item 13) on wheel shaft (item 8).
- Now turn back half a revolution and tighten.



FRONT PTO Finishing

G



I001284

Filling with oil

- Top up oil to overflow on sealing screw (A).

Oil volume: approx. 1 l

Oil grades:

Fendt Super Trans 80W, 85W-90 or Hypoid transmission oil to API-GL5. SAE 85W-90, SAE 80W-90. **Do not** use STOU or any alternative multi-purpose oil.



I001285

Attach plate and protective cap

- Screw on front power lift cross-beam.
- Glue plate (item 15) onto cross-beam.
- Screw on protective cap (item 14).

Assembly Instructions

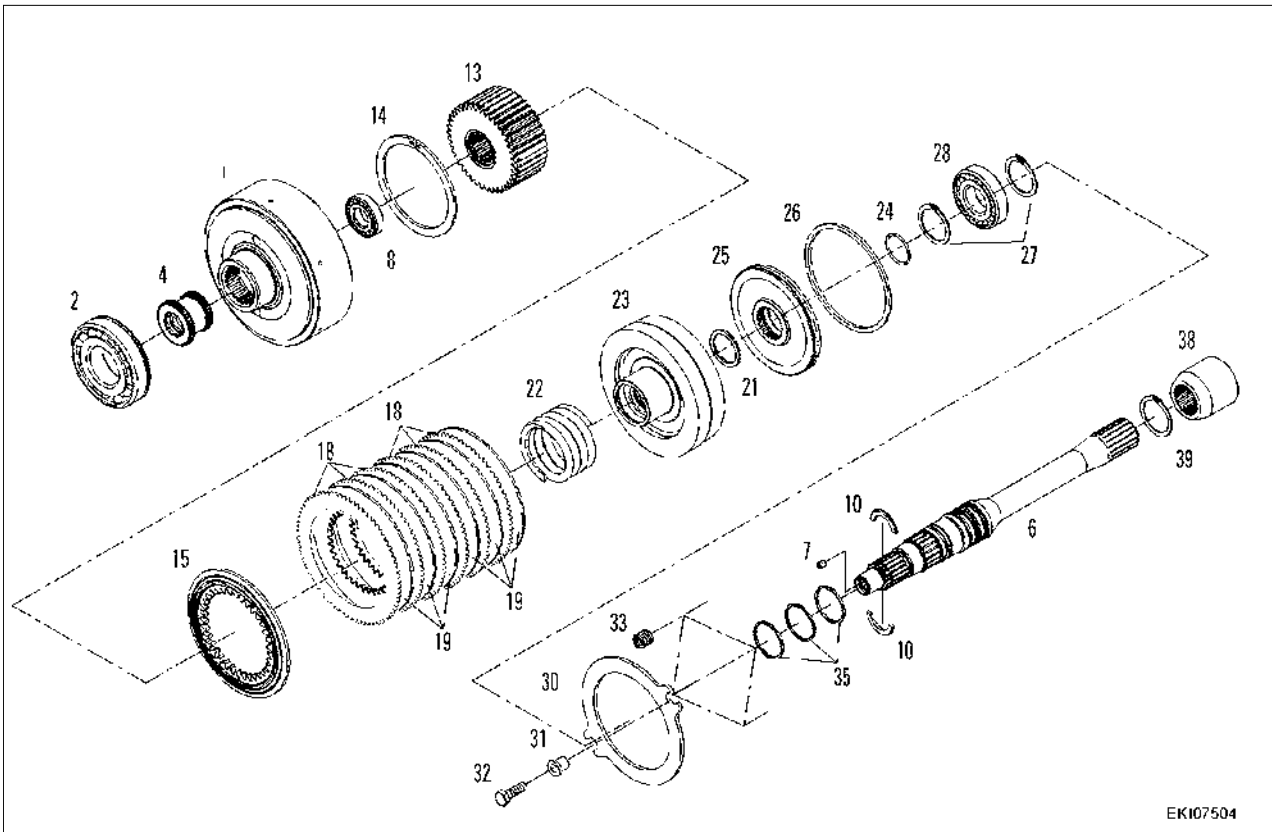
Program EOL

- The front PTO is not activated until EOL programming is complete.

Fendt 300 Vario

Transmission / Live PTO

Removing and installing live PTO clutch

G

Item	Designation	Item	Designation
1	Bell housing	23	Piston
2	Deep-groove ball bearing	24	O-ring
6	Shaft	25	Piston disc
7	Setscrew	26	Lip seal
8	Deep-groove ball bearing	27	Circlip
10	Half-ring	28	Deep-groove ball bearing
13	Internally toothed disc carrier	30	Disc
14	Circlip	31	Bush
15	Supporting plate	32	Hexagon screw
18	Externally toothed disc	33	Compression spring
19	Internally toothed disc	35	Rectangular-section ring
21	Lip seal	38	Clutch bushing
22	Compression spring	39	Circlip

Fendt 300 Vario	Transmission / Live PTO Removing and installing live PTO clutch	G
-----------------	--	---



Preliminary work:

- Removing cab, see Chapter 8100 Reg. G.
- Disconnecting tractor, transmission and rear axle, see Chapter 1050 Reg. G.



Screw off bearing retainer.



Pry off bearing retainer.

Note:
This also removes the complete PTO clutch.



Remove complete PTO clutch.

Date	Version	Page	Removing and installing live PTO clutch	Capitel	Index	Docu-No.
24.01.06	a	2/12		1220	G	000013

Fendt 300 Vario

Transmission / Live PTO

Removing and installing live PTO clutch

G

Remove PTO brake.



Remove brake pad along with spacer sleeves and screws.

Remove four compression springs from the housing.



Pry off bearing flange with assembly lever.



Pull off clutch bell housing.

Note:

Use a 14X20 mm bolt (assembly tool) to support the threaded spindle of the puller.

Date	Version	Page	Removing and installing live PTO clutch	Capitel	Index	Docu-No.
24.01.06	a	3/12		1220	G	000013

Fendt 300 Vario**Transmission / Live PTO
Removing and installing live PTO clutch****G****Note:**

When locating the puller, ensure that the arms are not set too far behind the clutch bell housing (damage to externally toothed disc).



Remove clutch bell housing.



Unclip circlip and remove disc pack.



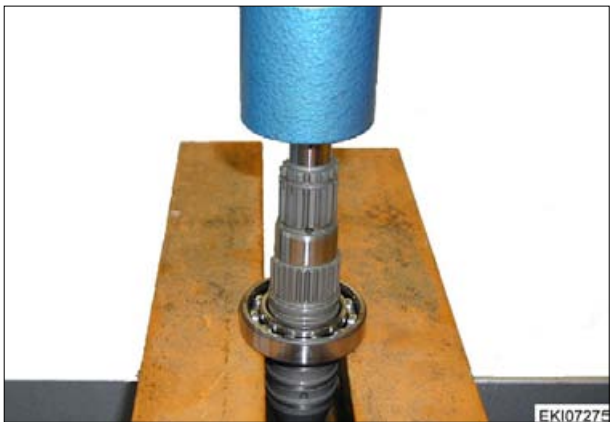
Preload compression spring and remove both half-rings.

Date	Version	Page	Removing and installing live PTO clutch	Capitel	Index	Docu-No.
24.01.06	a	4/12		1220	G	000013

Fendt 300 Vario	Transmission / Live PTO Removing and installing live PTO clutch	G
------------------------	--	----------



Remove internally toothed disc carrier and compression spring.



Unclip circlip and press out bearing.

Date	Version	Page	Removing and installing live PTO clutch	Capitel	Index	Docu-No.
24.01.06	a	5/12		1220	G	000013

Fendt 300 Vario

Transmission / Live PTO

Removing and installing live PTO clutch

G**Assembly:**

Shaft components:

- shaft (6)
- O-ring (24)
- circlip (27)
- deep-groove ball bearing (28)
- rectangular-section rings (3 pieces) (35)

Note:

When replacing the shaft (6), the setscrew (7) must be screwed in with screw locking compound X 903.050.084.000 and allowed to harden 8 hours. Tightening torque 5 Nm.



E-005-98

Preassemble shaft:

Clip circlip (27) in place and press bearing (28) in all the way.

Then clip the second circlip (27) in place.



E-005-98

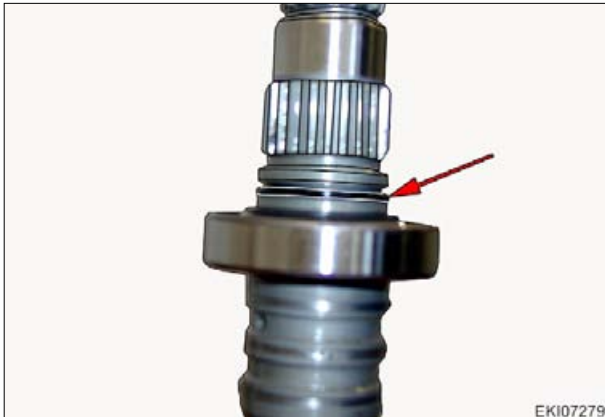
Assemble the 3 rectangular-section rings (35), close and grease.

Date	Version	Page	Removing and installing live PTO clutch	Capitel	Index	Docu-No.
24.01.06	a	6/12		1220	G	000013

Fendt 300 Vario

Transmission / Live PTO

Removing and installing live PTO clutch

G

E-UCV-18

Fit and grease O-rings.



E-UCV-18

Assemble piston:

Note:

Fit lip seal with the groove facing towards the oil chamber and oil.



E-UCV-18

Fit lip seal with the groove facing towards the oil chamber (towards the inside) and oil.



E-UCV-18

Assemble piston and shaft.

Date	Version	Page	Removing and installing live PTO clutch	Capitel	Index	Docu-No.
24.01.06	a	7/12		1220	G	000013

Fendt 300 Vario

Transmission / Live PTO

Removing and installing live PTO clutch

G

E-UCY-M

Fit compression spring.



E-UCY-M

Place O-ring in the internally toothed disc carrier and oil.



E-UCY-M

Slide on internally toothed disc carrier and preload to allow half-rings to be assembled.



Place disc pack on top.

Mark internally toothed disc carrier at any point (circle).

Oil internally and externally toothed discs.

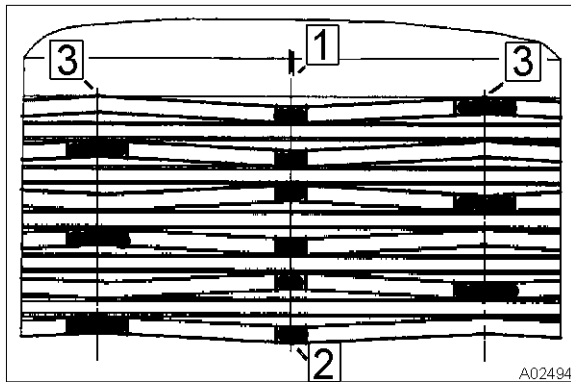
Note:**When fitting the disc pack, start with an internally toothed disc.****The narrow groove (arrowed) on the internally toothed disc should line up with the mark (circle) on the internally toothed disc carrier.**

Date	Version	Page	Removing and installing live PTO clutch	Capitel	Index	Docu-No.
24.01.06	a	8/12		1220	G	000013

Fendt 300 Vario

Transmission / Live PTO

Removing and installing live PTO clutch

G

E-UCV-98

Then mount an externally toothed disc and proceed alternately. The narrow groove (2) in **each** internally toothed disc and the broad groove (3) in **every second** internally toothed disc must be aligned.



E-UCV-98

Add supporting plate and clip circlip in place.



E-UCV-98

Clutch bell housing with bearing.

Note:

If necessary, replace bearing.



E-UCV-98

Press bearing all the way in to stop.

Date	Version	Page	Capitel	Index	Docu-No.
24.01.06	a	9/12	1220	G	000013

Fendt 300 Vario

Transmission / Live PTO

Removing and installing live PTO clutch

G

Caution:
Danger of burns

Heat ball bearing to about 90°C and place on top with the groove facing towards the clutch bell housing.



FUCHS

Align discs and mount clutch bell housing.



FUCHS

Insert 4 compression springs.



FUCHS

Mount brake disc.

Date	Version	Page	Removing and installing live PTO clutch	Capitel	Index	Docu-No.
24.01.06	a	10/12		1220	G	000013

Fendt 300 Vario**Transmission / Live PTO
Removing and installing live PTO clutch****G**

E-UCV-38

Screw in screws and tighten to 25 Nm.



E-UCV-38

Insert complete clutch assembly.

Note:
Grease piston rings.

E-UCV-38

Mount bearing flange.

Note:
Replace O-rings (arrowed), ensure proper installation position of the locating pins.

E-UCV-38

Mount bearing flange and tighten to 25 Nm.

Date	Version	Page	Capitel	Index	Docu-No.
24.01.06	a	11/12	1220	G	000013

Fendt 300 Vario	Transmission / Live PTO Removing and installing live PTO clutch	G
------------------------	--	----------



Concluding work:

- Assembling tractor, transmission and rear axle, see Chapter 1050 Reg. G.
- Fill with transmission oil
- Fitting cab, see Chapter 8100 Reg.G.
- Bleeding brakes, see Chapter 1070 Reg.G

Date	Version	Page	Removing and installing live PTO clutch	Capitel	Index	Docu-No.
24.01.06	a	12/12		1220	G	000013

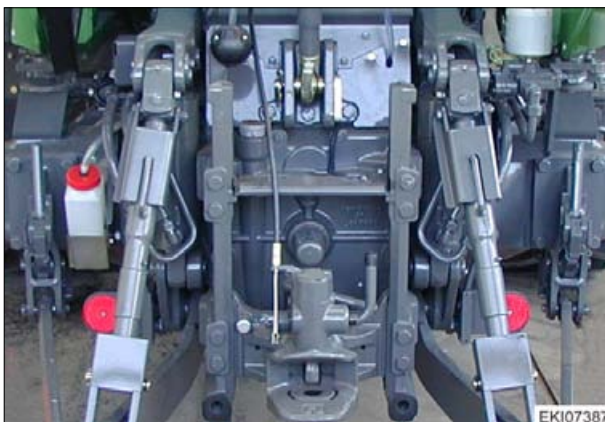
Fendt 300 Vario

Transmission / Live PTO

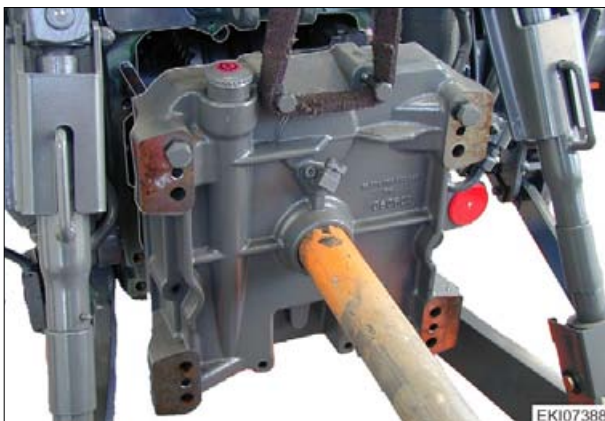
Removing and installing live PTO speed preselection

G

Drain transmission oil, left in direction of travel.
Oil volume about 30 litres



Remove Bowden cable for unlocking clevis,
remove hitch, remove socket and bracket, remove
drawbar supports.
Disconnect connectors on sensor.



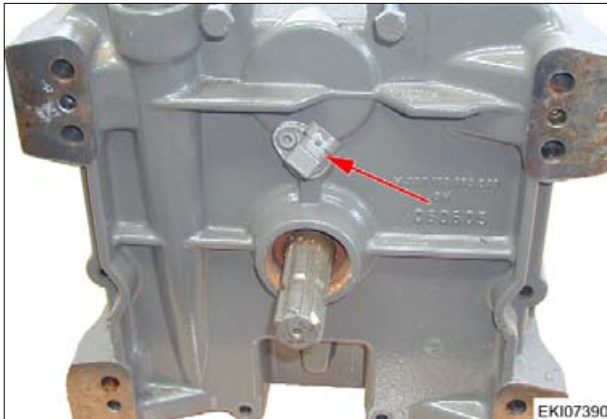
Unflange PTO shaft control completely.

Note:
Existing screws from the drawbar supports
can be used as guides for unflanging.



PTO shaft control unflanged from rear axle
housing.

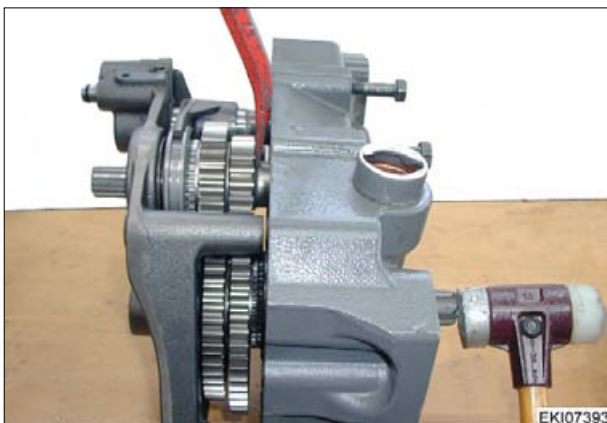
Date	Version	Page	Capitel	Index	Docu-No.
27.04.2006	a	1/15	1220	G	000015

Fendt 300 Vario**Transmission / Live PTO
Removing and installing live PTO speed preselection****G**

Remove Hall sensor (arrowed)..



Unscrew 4 screws.



Drive out both shafts of the PTO speed selector evenly.



Remove drive shaft completely along with shift fork and shift piston.

Date	Version	Page	Removing and installing live PTO speed preselection	Capitel	Index	Docu-No.
27.04.2006	a	2/15		1220	G	000015

Fendt 300 Vario	Transmission / Live PTO Removing and installing live PTO speed preselection	G
------------------------	--	----------



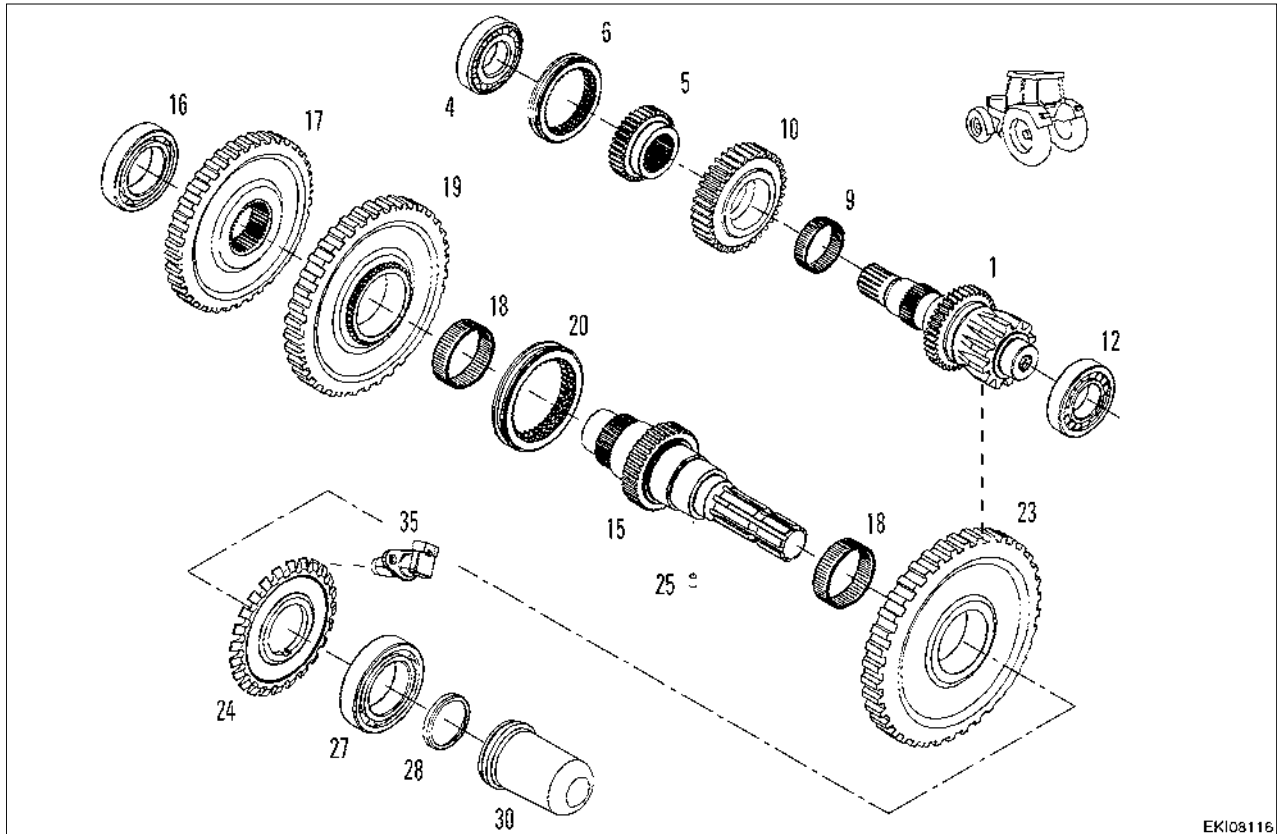
Remove shaft completely along with shift fork and shift piston.

Date	Version	Page		Capitel	Index	Docu-No.
27.04.2006	a	3/15	Removing and installing live PTO speed preselection	1220	G	000015

Fendt 300 Vario

Transmission / Live PTO

Removing and installing live PTO speed preselection

G**Live PTO assembly**

EK108116

Item	Designation	Item	Designation
1	Shaft	18	Needle bearing
4	Deep-groove ball bearing	19	Spur gear
5	Guide sleeve	20	Selector sleeve
6	Selector sleeve	23	Spur gear
9	Needle bearing	24	Trigger wheel
10	Spur gear	25	Parallel pin
12	Cylindrical roller bearing	27	Deep-groove ball bearing
15	Drive shaft	28	Shaft seal
16	Deep-groove ball bearing	30	PTO shaft guard
17	Spur gear	35	Hall sensor

Fendt 300 Vario

Transmission / Live PTO

Removing and installing live PTO speed preselection

G

E-UCV-18

Shaft (1) components



E-UCV-18

Slide on oiled needle bearing (9).



E-UCV-18

Fit spur gear (10).



E-UCV-18

Fit guide sleeve (5) with collar facing towards the spur gear (10).

Date	Version	Page	Capitel	Index	Docu-No.
27.04.2006	a	5/15	1220	G	000015

Removing and installing live PTO speed preselection

Fendt 300 Vario

Transmission / Live PTO

Removing and installing live PTO speed preselection

G

Fit selector sleeve (6) with lip (arrowed) facing towards spur gear (10).



Caution:
Danger of burns

Heat deep-groove ball bearing (4) to about 90°C and press on all the way to stop.



Caution:
Danger of burns

Heat inner race of the cylindrical roller bearing (12) to about 90°C and press on to the other side of the shaft (1) all the way to stop.



Drive shaft (15) components.

Date	Version	Page	Capitel	Index	Docu-No.
27.04.2006	a	6/15	1220	G	000015

Fendt 300 Vario

Transmission / Live PTO

Removing and installing live PTO speed preselection

G

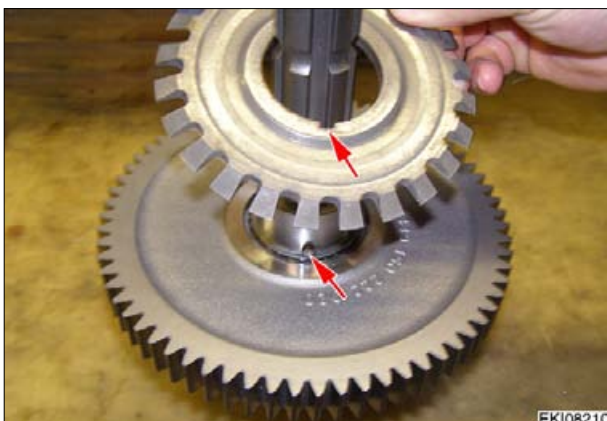
Fit parallel pin (25) in the drive shaft (15).



Slide on oiled needle bearing (18).



Fit spur gear (23).



Caution:
Danger of burns

Heat trigger wheel (24) to approx. 100°C and fit with the groove (arrowed) facing the parallel pin (25).

Date	Version	Page	Capitel	Index	Docu-No.
27.04.2006	a	7/15	1220	G	000015

Removing and installing live PTO speed preselection

Fendt 300 Vario	Transmission / Live PTO Removing and installing live PTO speed preselection	G
------------------------	--	----------



Caution:
Danger of burns

Heat deep-groove ball bearing (27) to about 90°C and press on all the way to stop.

Note:

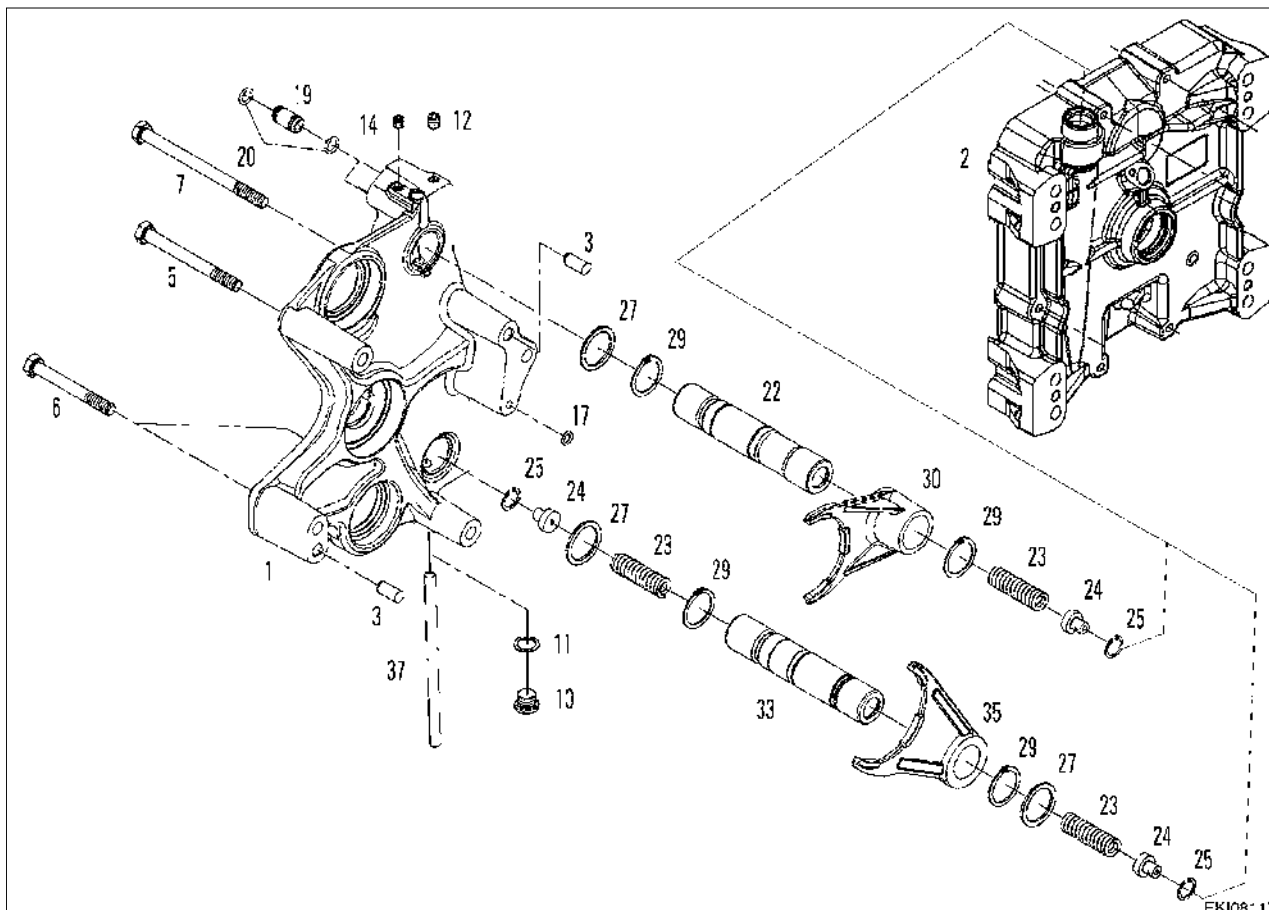
The spur gear (23) must have an axial play of 0.3 - 0.6 mm on the drive shaft (15).

Date	Version	Page		Capitel	Index	Docu-No.
27.04.2006	a	8/15	Removing and installing live PTO speed preselection	1220	G	000015

Fendt 300 Vario

Transmission / Live PTO

Removing and installing live PTO speed preselection

G**PTO shaft control assembly**

Item	Designation	Item	Designation
1	Bracket	20	O-ring
2	Rear axle cover	22	Shifting shaft
3	Parallel pin	23	Compression spring
5	Screw	24	Thrust piece
6	Screw	25	Circlip
7	Screw	27	Lip seal
10	Drain plug	29	Circlip
11	Sealing ring	30	Shift fork
12	Setscrew	33	Shifting shaft
14	Setscrew	35	Shift fork
17	O-ring	37	Locking bolt
19	Socket		

Fendt 300 Vario

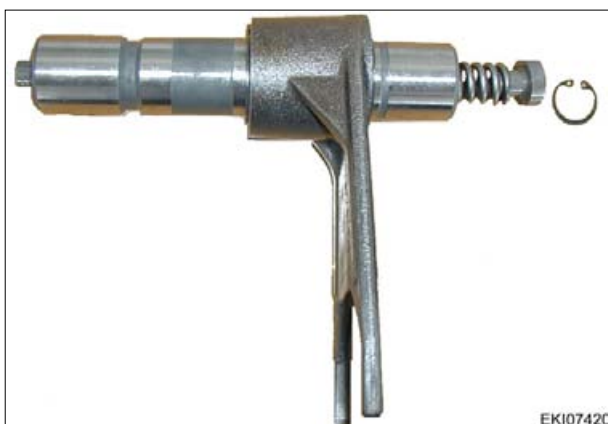
Transmission / Live PTO

Removing and installing live PTO speed preselection

G

Disassemble shifting shaft: preload thrust piece (24) and unclip circlip (25) .

Note:
Only required when replacing the thrust piece (24).



Shifting shaft components shown on one side.



Fit thrust piece (24).



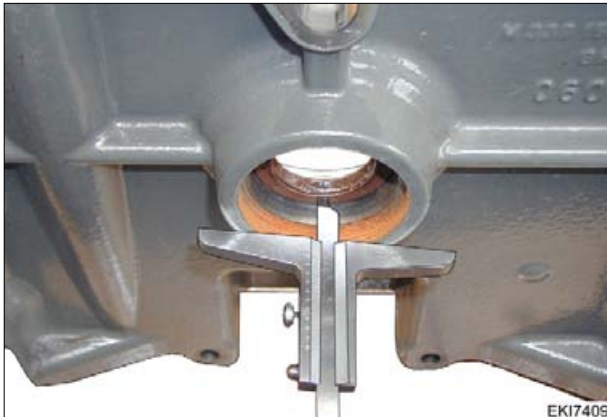
Insert both lip seal (27) (arrowed) in to bracket (1) with the groove facing the oil chamber. Insert locking bolt (37).

Date	Version	Page		Capitel	Index	Docu-No.
27.04.2006	a	10/15	Removing and installing live PTO speed preselection	1220	G	000015

Fendt 300 Vario

Transmission / Live PTO

Removing and installing live PTO speed preselection

G

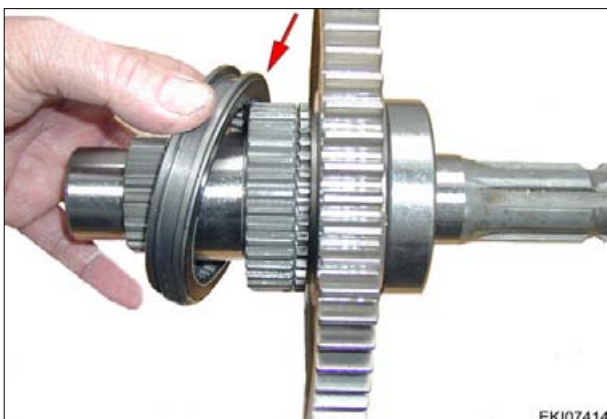
Grease shaft seal and insert into the rear axle cover (2) 21.5 mm from collar.



Fit cylindrical roller bearing (12) in rear axle cover.
Insert O-ring (17) (arrowed) into the groove in the rear axle cover (2) with grease.
Fit parallel pins (3) (arrowed).



Insert preassembled drive shaft (15) and place oiled needle bearing (18) on top.
Insert lip seal (27) (arrowed) into rear axle cover (2) with groove facing the oil chamber.

**Note:****Ensure proper installation position**

Fit selector sleeve (20) with lip (arrowed) facing towards spur gear (23).

Date	Version	Page	Capitel	Index	Docu-No.
27.04.2006	a	11/15	Removing and installing live PTO speed preselection	1220	G 000015

Fendt 300 Vario

Transmission / Live PTO

Removing and installing live PTO speed preselection

G

Insert selector sleeve (20) with lip facing spur gear (23) together with preassembled shifting shaft (33).



Locate spur gear (19).



Locate spur gear (17) with collar facing upward.



Caution:
Danger of burns

Heat deep-groove ball bearing (16) to about 90°C and press on all the way to stop.

Date	Version	Page	Capitel	Index	Docu-No.
27.04.2006	a	12/15	1220	G	000015

Fendt 300 Vario

Transmission / Live PTO

Removing and installing live PTO speed preselection

G

E-UCV-M

Install preassembled shaft (1).



E-UCV-M

Insert shift fork (30) without shifting shaft (22)

Note:

Shifting shaft (22) has only one thrust piece (24).



E-UCV-M

Mount shifting shaft (22) in bracket (1), ensuring that lower retaining ring (29) (arrowed) is fitted.

Note:

Insert assembly tool into side, this ensures that the shifting shaft (22) is in neutral. This releases the locking bolt (37) and the bracket can be assembled.



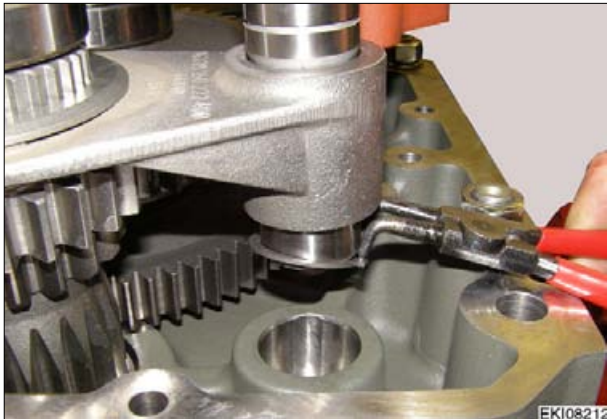
Assembly tool DIY

Date	Version	Page	Capitel	Index	Docu-No.
27.04.2006	a	13/15	Removing and installing live PTO speed preselection	1220	G
					000015

Fendt 300 Vario

Transmission / Live PTO

Removing and installing live PTO speed preselection

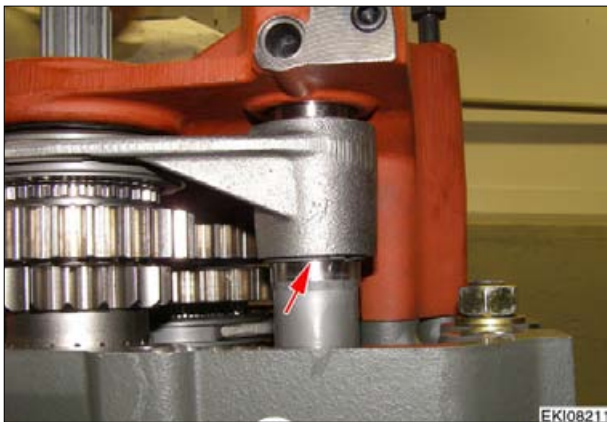
G

E-UCV-M

Fit housing and ensure locking bolts move freely. Drive on bracket (1).

Note:

During assembly, ensure that the locking bolts move freely. If a locking bolt jams, assembly is not possible.



E-UCV-M

Clip circlip (29) in place. Tighten bracket (1) to 85 Nm.



E-UCV-M

Fit all 3 sockets (19) (circled) with O-rings (20), grease and fit. Mount synchroniser sleeve (arrowed) with the chamfer in direction of travel.



E-UCV-M

The PTO shaft control can be checked with compressed air.

Date	Version	Page		Capitel	Index	Docu-No.
27.04.2006	a	14/15	Removing and installing live PTO speed preselection	1220	G	000015

Fendt 300 Vario

Transmission / Live PTO

Removing and installing live PTO speed preselection

G

E-UCY-M

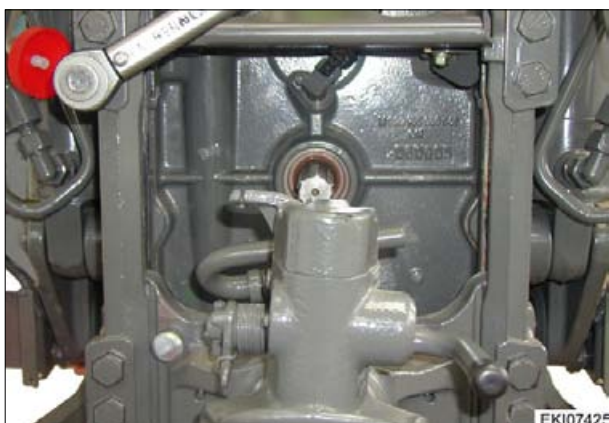
Clean and degrease sealing surface. Coat with sealant X 903.050.074.000.



E-UCY-M

Mount PTO shaft control and tighten 6 screws M10 to 50 Nm.

Mount Hall sensor and connect cable coupler X169.



E-UCY-M

Mount drawbar supports and tighten 6 screws M16 10.9 to 300 Nm.

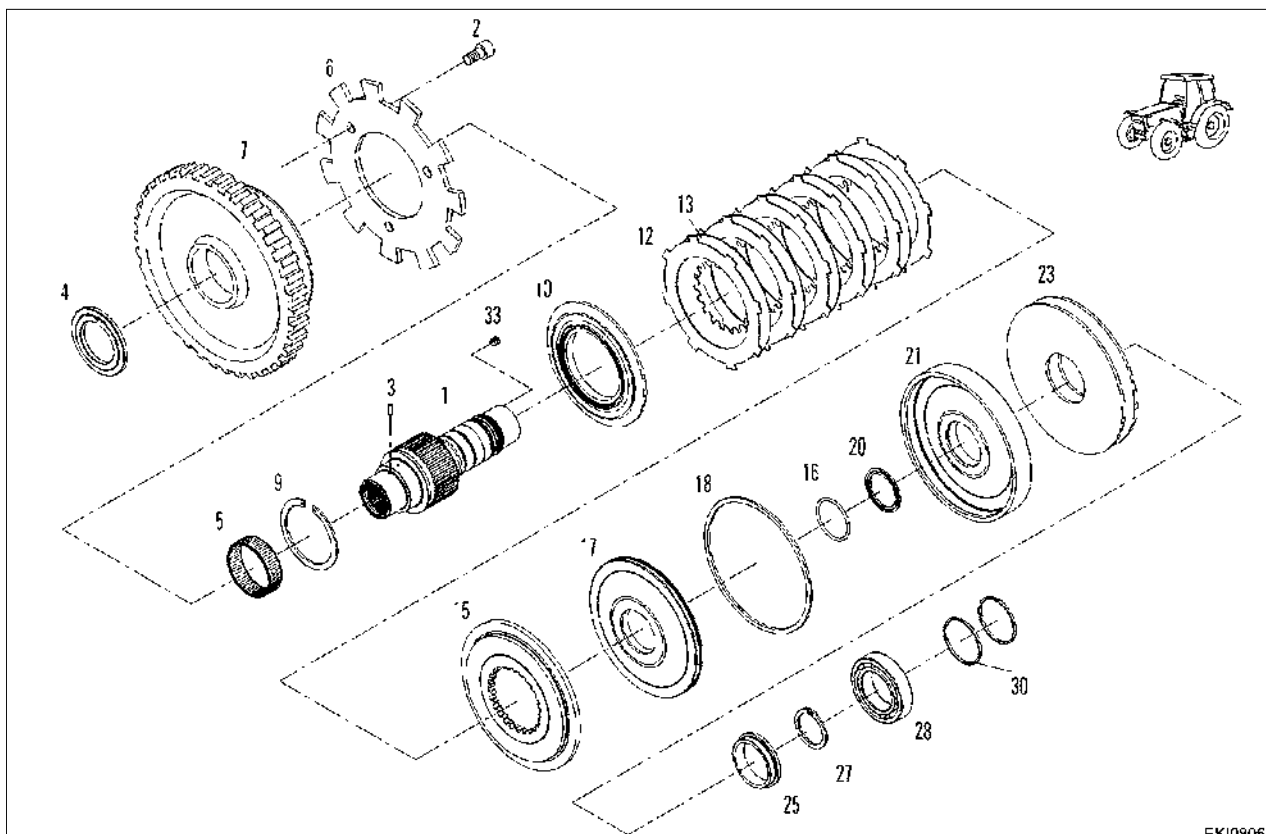
Fill with transmission oil.

Fit trailer hitch and mount trailer socket.

Date	Version	Page		Capitel	Index	Docu-No.
27.04.2006	a	15/15	Removing and installing live PTO speed preselection	1220	G	000015

Fendt 300 Vario

Transmission / Front wheel drive
Removing and installing front wheel drive clutch

G

Item	Designation	Item	Designation
1	Shaft	16	O-ring
2	screw	17	Piston disc
3	Pin	18	Lip seal
4	Washer	20	Lip seal
5	Needle bearing	21	Piston
6	Trigger wheel	23	Disc spring pack
7	Spur gear (4WD constant)	25	Shim pack
9	Circlip	27	Circlip
10	Supporting plate	28	Deep-groove ball bearing
12	Externally toothed disc	30	Rectangular-section ring
13	Internally toothed disc	33	Setscrew
15	Pressure plate		

**Preliminary work:**

- Removing cab, see Chapter 8100 Reg. G.
- Disconnecting tractor, transmission and rear axle, see Chapter 1050 Reg. G.

Date	Version	Page	Capitel	Index	Docu-No.
24.01.06	a	1/10	1320	G	000006

Fendt 300 Vario

Transmission / Front wheel drive
Removing and installing front wheel drive clutch

G

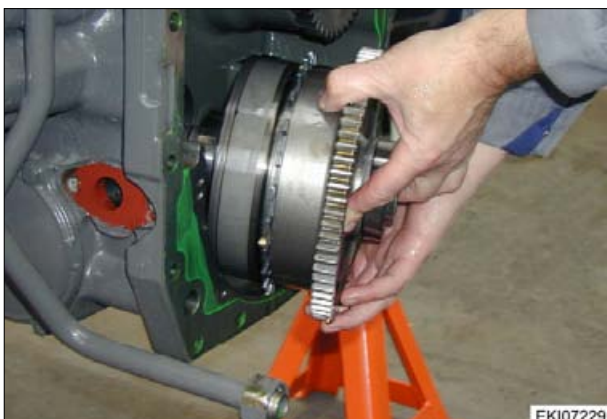
Remove Hall sensor B015 ground speed.



Remove screw from flange



Pry off flange with assembly lever

Note:**Make sure that the 4WD clutch can slide out towards the front.**

Remove 4WD clutch

Date	Version	Page	Removing and installing front wheel drive clutch	Capitel	Index	Docu-No.
24.01.06	a	2/10		1320	G	000006

Fendt 300 Vario**Transmission / Front wheel drive
Removing and installing front wheel drive clutch****G**

Remove rectangular-section rings (30)



Pull off and remove deep-groove ball bearing (28)



Preload disc spring pack (23) and remove circlip (27).



Remove disc spring pack (23) and shim (25)

Date	Version	Page	Capitel	Index	Docu-No.
24.01.06	a	3/10	1320	G	000006

Fendt 300 Vario**Transmission / Front wheel drive
Removing and installing front wheel drive clutch****G**

Remove piston (21) completely



Remove disc pack



Remove circlip (9).



Pull off gearwheel along with deep-groove ball bearing

Date	Version	Page	Removing and installing front wheel drive clutch	Capitel	Index	Docu-No.
24.01.06	a	4/10		1320	G	000006

Fendt 300 Vario

Transmission / Front wheel drive

Removing and installing front wheel drive clutch

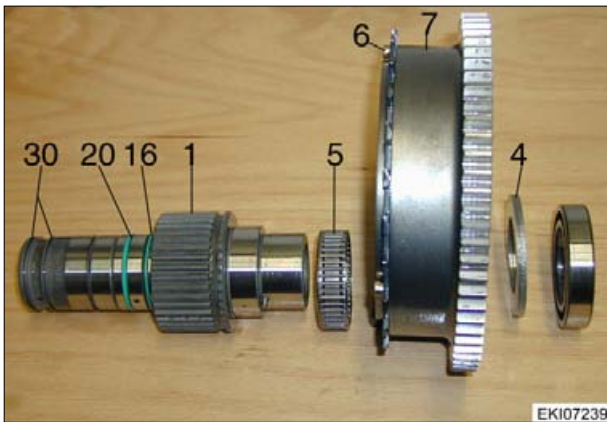
G

EKI07239

Assembly:

When replacing the trigger wheel (6), insert hexagon socket head screws (2) with screw locking compound X 903.050.084.000 and tighten.

Tightening torque 10 Nm .



EKI07239

4WD clutch components

- rectangular-section rings (30)
- lip seal (20)
- O-ring (16)
- shaft (1)
- needle bearing (5)
- trigger wheel (6)
- spur gear (7)
- shim (4)



EKI07240



Slide needle bearing (5) on to shaft (1) and oil, locate spur gear (7).



EKI07241



Fit thrust ring (4) with collar facing towards bearing.

Note:

Ensure proper installation position of groove and pin (3) (arrow)

Date	Version	Page	Removing and installing front wheel drive clutch	Capitel	Index	Docu-No.
24.01.06	a	5/10		1320	G	000006

Fendt 300 Vario

Transmission / Front wheel drive

Removing and installing front wheel drive clutch

G

Caution:
Danger of burns

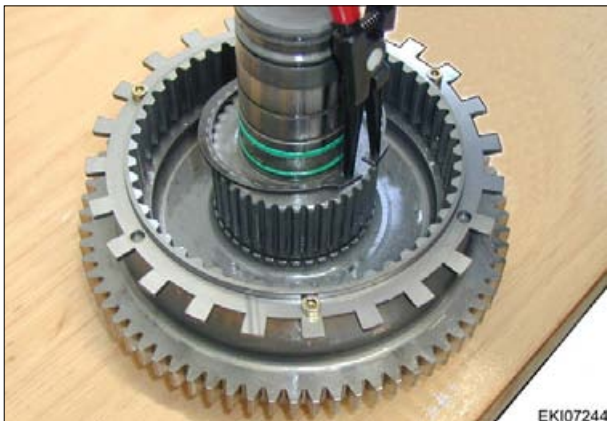
Heat ball bearing to about 90°C and push on all the way to stop.



Grease and fit new O-ring (16) and lip seal (20).

Note:
Groove of lip seal faces toward gearwheel.

When replacing the shaft, setscrew (33) (arrowed) must be inserted with screw locking compound X 903 050 084 000.



Clip circlip (9) in place.



Fit supporting plate (10).

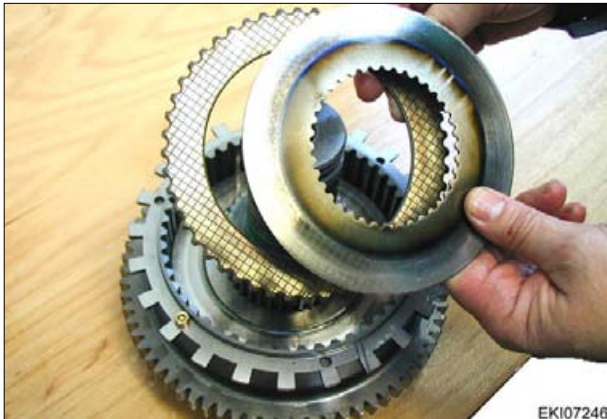
Note:
the worked surface faces towards the disc pack.

Date	Version	Page	Removing and installing front wheel drive clutch	Capitel	Index	Docu-No.
24.01.06	a	6/10		1320	G	000006

Fendt 300 Vario

Transmission / Front wheel drive

Removing and installing front wheel drive clutch

G

E-UCV-18

Locate disc package.

Note:

Place alternately, starting with an externally toothed disc (12) and ending with an internally toothed disc (13).

Disc pack comprises

6 externally toothed discs

5 internally toothed discs



E-UCV-18

Place pressure plate (15) on top



E-UCV-18

Grease lip seal (18) and fit with the groove facing towards the oil chamber.



E-UCV-18

Fit piston disc (17)

Date	Version	Page	Capitel	Index	Docu-No.
24.01.06	a	7/10	1320	G	000006

Fendt 300 Vario

Transmission / Front wheel drive
Removing and installing front wheel drive clutch

G

E-UCV-M

Mount preassembled piston (21) on disc carrier



E-UCV-M

Determining 4WD clutch play:

Install shim (25) with circlip (27) without disc spring pack (23).

Play 1.5mm + 0.5mm

Determine play with thickness gauge and, if necessary, adjust with shim pack (25).

Shim thickness available in 0.5 mm steps

E-UCV-M

Mount disc spring pack (23) as shown



E-UCV-M

Fit shim (25)

Date	Version	Page	Removing and installing front wheel drive clutch	Capitel	Index	Docu-No.
24.01.06	a	8/10		1320	G	000006

Fendt 300 Vario

Transmission / Front wheel drive

Removing and installing front wheel drive clutch

G

E-UCV-M8

Preload disc spring pack (23) and clip circlip (27) in place.



E-UCV-M8



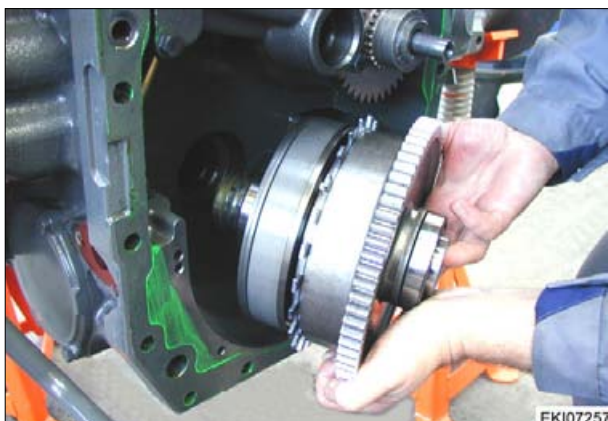
Caution:
Danger of burns

Heat ball deep-groove ball bearing to about 90°C and push on all the way to stop.



E-UCV-M8

Mount and grease rectangular-section rings (30).



E-UCV-M8

Install 4WD clutch

Note:
Make sure rectangular-section rings (30) are not damaged while installing.

Date	Version	Page	Capitel	Index	Docu-No.
24.01.06	a	9/10	1320	G	000006

Fendt 300 Vario

Transmission / Front wheel drive

Removing and installing front wheel drive clutch

G

E-UCV-18

Mount bearing flange and look out for locating pins.



E-UCV-18

Tighten screws to 25 Nm



Coat sealing surface of Hall sensor with sealant X 903.050.553.000 (non-curing) and insert into bore of transmission housing. Tighten mounting bolts to 25 Nm.

Note:

If already installed Hall sensors are reused, stick two cardboard strips, each 0.9 mm thick, into slot in Hall sensor on left and right (for centring when fitting).

**Concluding work:**

- Assembling tractor, transmission and rear axle, see Chapter 1050 Reg. G.
- Fill with transmission oil.
- Fitting cab, see Chapter 8100 Reg.G.
- Bleeding brakes, see Chapter 1070 Reg.G

Date	Version	Page	Capitel	Index	Docu-No.
24.01.06	a	10/10	1320	G	000006

Fendt 300 Vario FENDT 400 COM III FENDT 7/800 COM III	Engine / General system General description of the common rail system	A
--	--	----------

Accumulator injection system:

All previous systems generate injection pressure by delivering fuel separately for every single injection. Injection pressure grows with increasing fuel quantity and engine speed. Between the injections, only low pressure is present in the system.

Contrary to these conventional systems, pressure generation and injection are decoupled in common rail systems. Pressure is generated independent of engine speed and injection volume and the amount of pressure in the high pressure accumulator (rail) can be selected freely, within limits. The accumulator comprises a distribution pipe and the lines to the injectors. Fuel for the individual cylinders is taken from this accumulator.

Injector for every engine cylinder

The core of the system is a solenoid valve controlled injector for each individual engine cylinder. An impulse from the control unit to the solenoid valve in the injector initiates the injection process. The cross section on the outlet of the injector, the opening time of the solenoid valve and the pressure accumulated in the common rail system determine fuel quantity.

Variable pressure in accumulator

In the Deutz common rail system, pressure is generated by two high pressure pumps. They are controlled by the camshaft. The camshaft on the 4-cylinder engines has 2 cams per pump, 6-cylinder engines have 3 cams per pump. Therefore, every time the injectors open, the pumps deliver diesel to the rail. The metering unit releases exactly the amount of fuel that is injected by the injector. In this way, rail pressure remains constant.

In the common rail system, pressure in the accumulator is controlled by a pressure sensor. Rail pressure ranging from 700 bar to 1400 bar can be freely selected via an engine operating map (programming) and can be adapted to the engine's operating conditions. The control units, sensors and system functions of common rail systems require more input signals than conventional individual pump systems.

Also see the comparison between EMR 2 (COM II) and EMR 3 (COM III).

Freely selectable injection pressure in engine operating map

The separation of pressure generation and injection permits new freedom in defining the combustion process. Injection pressure can be freely selected in the map and remains largely constant during injection. Maximum rail pressure lies at approx. 1400 bar.

Further reduction in exhaust gas and noise emissions

Exhaust gas emissions and noise radiation are further reduced through multiple injection. Multiple injection comprises a pilot injection, main injection and an after-injection, which are dependent on operating conditions. These are triggered by repeated activation of fast solenoid valves. Furthermore, the injection process can be modified by controlling nozzle needle movement.

Hydraulic assist when closing the nozzle needle ensures rapid termination of the injection procedure. The many options for defining the injection process open new ways to further decrease emissions and optimise the fuel consumption of diesel engines.

No significant design modifications required on engine

Common rail systems can replace conventional injection systems without requiring significant modifications to the engine. Two high pressure pumps replace the injection pump cylinders 1 and 2. Injectors are integrated in the cylinder head like nozzle holder combinations.

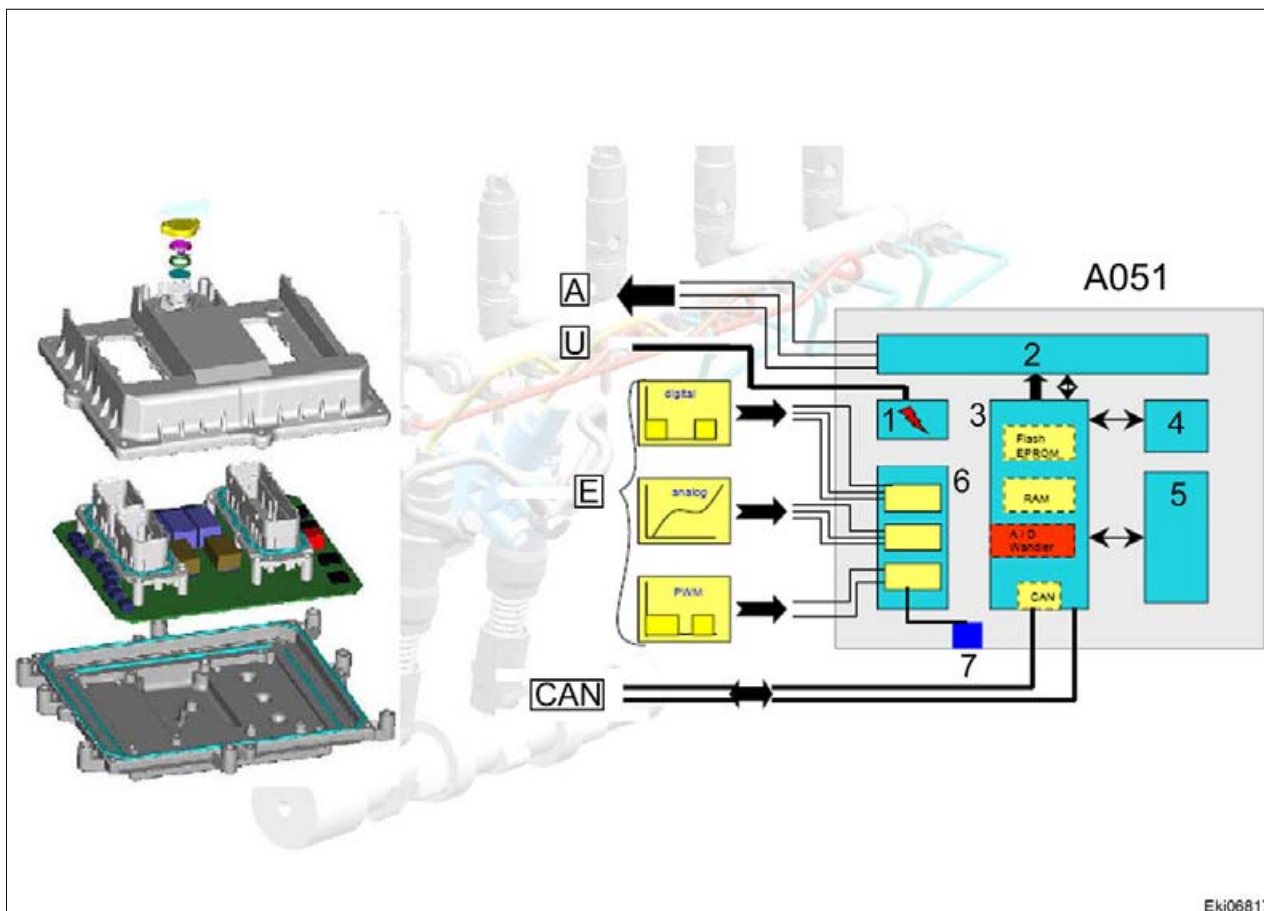
Date	Version	Page	Capitel	Index	Docu-No.
14.08.2007	a	1/4	2000	A	000031

**Fendt 300 Vario
FENDT 400 COM III
FENDT 7/800 COM III**

Engine / General system General description of the common rail system

A

System overview



Item	Designation	Item	Designation
1	Voltage	A	Output signals (actuators)
2	Output stage	A051	ECU, engine control unit
3	Micro controller	CAN	CAN connection to tractor or diagnostics interface
4	EEPROM	E	Input signals (sensors)
5	Monitoring module	U	Voltage
6	Signal processing		
7	High pressure sensor		

The electronically controlled diesel injection (EDC) is divided into 3 central system blocks.

The **sensors** and **switches** (information providers, input) record the operating conditions on the engine and convert the various physical quantities into electronic signals.

In the **control unit** (processing), the information and output signals are processed according to the maps and characteristics that are stored. The control unit contains microprocessors and memory units. Integrated in the control unit are self-monitoring, emergency mode programs and on-board diagnostics.

The **actuators** (output) convert the electronic output signals into mechanical quantities.

Also required:

A good power supply is required for fault-free operation of the control unit.

This includes:

- Continuous current supply terminal 30
- Switched voltage terminal 15
- Ground supply terminal 31

Date	Version	Page	Capitel	Index	Docu-No.
14.08.2007	a	2/4	General description of the common rail system	2000	A
					000031

Fendt 300 Vario FENDT 400 COM III FENDT 7/800 COM III	Engine / General system General description of the common rail system	A
--	--	----------

The control unit is also connected to the tractor's CAN bus system.

- Sensor signals can be used more than once e.g. engine temperature
- Transmission control (TMS) integrated
- Diagnostics
- Programming

Comparison between EMR 2 (COM II) and EMR 3 (COM III)

Sensors and switches for EMR 2 (COM II)

Component	Task
B041 - sensor, EMR (camshaft)	reports engine speed (actual value)
B042 - sensor, EMR (crankshaft)	reports engine speed (actual value);
B048 - sensor, water temperature	reports engine temperature. This signal value is used for: engine control, the temperature indicator and for activating the heating flange
B053 - sensor, boost pressure air temperature/boost pressure	reports charge air temperature (NTC) and boost pressure "LDA function"
B055 - combi-sensor, foot throttle	one signal value is reported to A002 - ECU, enhanced control (normal operation), the second signal value is processed in the A051 - ECU, engine control unit (emergency operating mode, loss of enhanced control)
Position sensor in Y035 - EMR actuator	reports position of the control rod
Note:	The two speed sensors B041 and B042 are fitted to provide diagnostic capability and emergency running features

Sensors and switches for EMR 3 (COM III)

Component	Task
B004 - vacuum switch (air filter)	the signal is reported to the engine control unit, where it is sent to the instrument cluster via the CAN bus system (warning)
B055 - sensor, foot throttle	one signal value is reported to A002 - ECU, enhanced control (normal operation), the second signal value is processed in the A051 - ECU, engine control unit (emergency operating mode, loss in enhanced control)
B085 - camshaft speed	reports camshaft speed (actual value) and the position of camshaft combustion cylinder 1
B086 - rail pressure sensor	reports the current pressure in the rail
B087 - fuel low pressure	reports fuel primary pressure
B088 - crankshaft speed	reports engine speed (actual value) and position of the crankshaft TDC cylinder 1 and 4 or TDC cylinder 1 and 6.
B089 - Deutz temperature sensor	reports the engine temperature. This signal value is used for: engine control, the temperature indicator and for activating the heating flange
B090 - sensor, oil pressure	reports oil pressure
B091 - sensor, water in fuel	the signal is reported to the engine control unit, where it is sent to the instrument cluster via the CAN bus system (warning)
B092 - sensor, boost pressure/temperature	reports boost pressure 'LDA function' and charge air temperature (NTC)
Note:	Two speed sensors are fitted to provide synchronisation of injection, diagnostic capability and emergency running features

Date	Version	Page	General description of the common rail system	Capitel	Index	Docu-No.
14.08.2007	a	3/4		2000	A	000031

Fendt 300 Vario FENDT 400 COM III FENDT 7/800 COM III	Engine / General system General description of the common rail system	A
--	--	----------

EMR 2 actuators (COM II)

Component	Task
K034 - relay (for R002 - heating flange)	the relay is energised at 5°C and below. In addition, the indicator lamp in the instrument cluster is energised
Y035 - EMR actuator	the actuator is energised (PWM) to a certain control rod stroke (load request)

EMR 3 actuators (COM III)

Component	Task
K008 - relay, starter lockout	the starting procedure is controlled by the engine control unit. If all input signals are present, the relay is closed. If the rpm signals (camshaft) (crankshaft) are missing, the starting procedure is cancelled after 5 sec.
K063 - relay, heating flange	the relay is energised at 5°C and below. In addition, the indicator lamp in the instrument cluster is energised
Y006 - solenoid valve, exhaust brake	the exhaust brake is activated by the engine control unit at engine speeds above 900 rpm
Y091 - metering unit	the metering unit, together with the rail pressure sensor, controls rail pressure
Y094 - EGR actuator	the actuator allows exhaust gas to return to the engine
Y095...Y101 - injector 1...6	the injector injects diesel up to 3 times per cycle

Note:

see also Chapter 2000 Reg. A

see also Chapter 9000 Reg. E

Date	Version	Page	Capitel	Index	Docu-No.
14.08.2007	a	4/4	2000	A	000031

**Fendt 300 Vario
FENDT 400 COM III
FENDT 7/8/900 COM III**

**Engine / General system
Emergency operating mode**

A



Danger:

After switching off the engine wait at least 30 seconds before performing work on the fuel system!

If the A051 - ECU, engine control unit (EDC 7) detects a fault in the fuel system, the emergency mode is activated.



BETR1974

Warning high pressure relief valve open

A fault code is saved FC 1.2.51; FC 1E1.51(300 Vario, 900 COM III)

Emergency mode activated means:

The Y091 - metering unit is no longer energised. The fuel pressure in the rail increases, which opens the high pressure relief valve (at approx. 1800 bar).

The fuel pressure in the rail drops to approx. 700 bar when the high pressure valve is opened. The fuel heats up strongly when the high pressure relief valve is opened. That is why the engine continues to run max. 4 minutes (emergency running) and is then automatically shut down by the A051 - ECU, engine control unit (EDC 7).

The high pressure relief valve cannot be closed while the engine is running, the engine must always be switched off either by the A051 - ECU, engine control unit (EDC 7) or the driver

When the engine is switched off, the pressure relief valve closes after approx. 30 seconds-

Note:

After the high pressure relief valve has been activated approx. 30 times, the high pressure relief valve should be replaced.

If the high pressure relief valve leaks, the fuel is heated.

Date	Version	Page	Emergency operating mode	Capitel	Index	Docu-No.
21.08.2007	a	1/1		2000	A	000033

Fendt 300 Vario	Engine / General system FENDT 300 Vario engine specifications	A
------------------------	---	----------

Note:

for engine repairs also refer to:

Workshop Manual Deutz engine TCD 2012 (X990.005.053)

Model		309 Vario	310 Vario	311 Vario	312 Vario
Designation (DEUTZ)		TCD 2012 L04 4V			
Rated power ECE R24 at 2100 rpm	KW/HP	59 / 80	66 / 90	74 / 100	81 / 110
Max power (KW/hp) at 1900 rpm	KW/HP	70 / 95	77 / 105	84 / 115	92 / 125
Firing order		1 - 3 - 4 - 2			
No. of cylinders / cooling		4 / water			
Bore / stroke	mm	101 / 126			
Cubic capacity	l	4.04			
Charging		Wastegate turbocharger / intercooler			
Injection system		Common rail			
Rail pressure		approx. 400 - 1400 bar (load dependent)			
EDC control module		EDC 7 (Bosch)			
Exhaust gas recirculation with exhaust cooler		external exhaust gas recirculation (AGR ex)			
Cold-start device		Heating flange			
Idle speed	rpm	780 +/-30			
Rated speed	rpm	2100			
No-load engine speed	rpm	2200 - 2250			
Start of delivery		set by the EDC, load-dependent			
Valve clearance (cold engine)					
Inlet valve (in)	mm	0.4			
Outlet valve (ex)	mm	0.5			
Compression pressure (new)	bar	28 ... 32			
Fuel	L	210			
Water separator in the fuel system		Standard			

No-load engine speed = max. engine speed when engine is not under load**Rated speed** = max. engine speed when engine is under load**Note:****Protective agent for cooling system on Fendt tractors****Service Information No. 11 / 02 (Chapter 2000 Reg. H)**

Fill diesel engines (Deutz , MWM , MAN) only with coolants that have been approved by Fendt. Only these agents guarantee effective protection against: corrosion, cavitation (pitting) and overheating

Date	Version	Page	FENDT 300 Vario engine specifications	Capitel	Index	Docu-No.
17.09.2007	a	1/2		2000	A	000036

Fendt 300 Vario	Engine / General system FENDT 300 Vario engine specifications	A
------------------------	---	----------

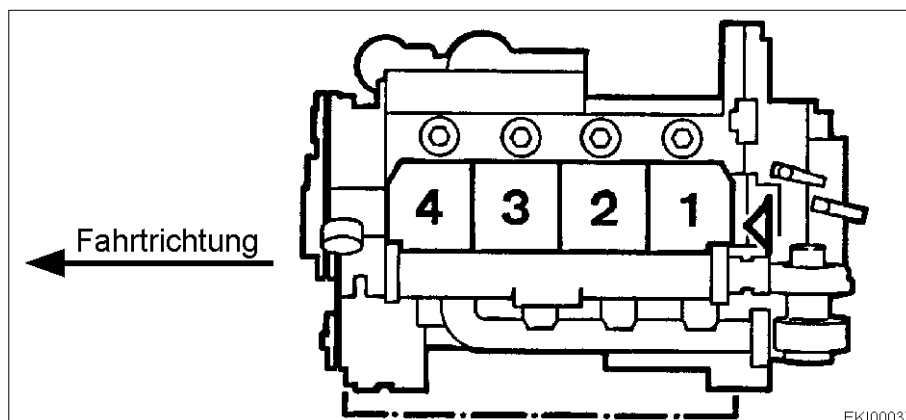
Cylinder numbering

The cylinders are counted from the flywheel.

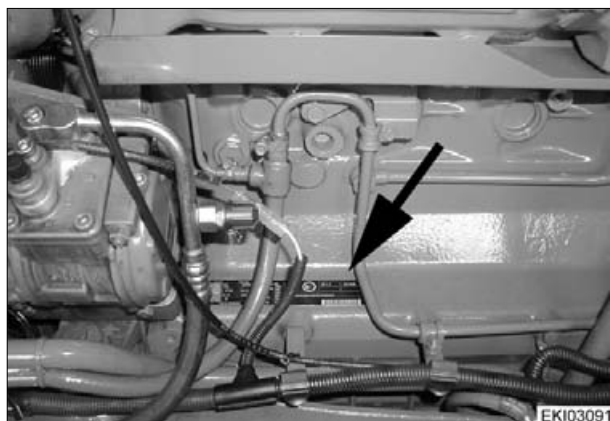
The engine rotates anti-clockwise, with reference to the flywheel.

Firing order TCD 2012 L04 4V:

1 - 3 - 4 - 2



Position of company plate ("rating plate")



The company rating plate is located on the left side of the engine on the crankcase.

The engine number is stamped into the rating plate.

Note:

Setting valve clearance (Chapter 2010 Reg. F - Setting valve clearance)

Engine oil pressure (Chapter 2312 Reg. E - Lubrication pressure test)

Test boost pressure (Chapter 9000 Reg. E - B053 - Sensor, charge air temperature / boost pressure)

Date	Version	Page	FENDT 300 Vario engine specifications	Capitel	Index	Docu-No.
17.09.2007	a	2/2		2000	A	000036

FENDT - Tractor	Engine / General system	A
	Determining engine power - comparison of standards and directives	

DIN 70020

Determining engine power at the crankshaft on a test bench. All standard equipment is mounted (water pump, unloaded alternator, fuel delivery pump, fixed fan).

Net power: power at the crankshaft with driven fixed fan.

Gross power: power at the crankshaft without mounted and driven fixed fan.

ECE - R - 24

Determining engine power at the crankshaft on a test bench. All standard equipment is mounted (water pump, unloaded alternator, fuel delivery pump).

If a controlled fan is used, or one that can be turned off, the test must be performed with fan turned off or at max. slip.

97 / 68 / EG or 80 / 1269 / EWG

Determining engine power at the crankshaft on a test bench. All standard equipment is mounted (water pump, unloaded alternator, fuel delivery pump).

The fan must not be mounted for determining the net power of the engine.

ISO 14396 or ISO 15550

Determining engine power at the crankshaft on a test bench. All standard equipment is mounted (water pump, unloaded alternator, fuel delivery pump).

Net power: If a controlled fan is used, or one that can be turned off, the test must be performed with fan turned off or at max. slip.

Gross power: the fan must not be mounted on the engine.

Application at FENDT

Originally engine power was quoted according to DIN 70020. Power specifications always referred to the engine power output at rated engine speed.

With the introduction of viscous fans, power was quoted according to ECE - R - 24. Here, power specifications also always referred to the engine power output at rated engine speed.

Starting with the introduction of engines with extra power (in 1998), the maximum attainable power had to be entered into the vehicle documents in Germany.

For new tractor models on the road after 01.07.2002, directive 97 / 68 / EG was used. Here, the engine power at rated engine speed is specified without the fan. This information is also entered in the vehicle documents (Germany).

The following models have been approved according to these directives:

930 Vario, X 200 - V / P / S, 300 Ci

Date	Version	Page	Capitel	Index	Docu-No.
19.08.2005	a	1/2	Determining engine power - comparison of standards and directives	2000	A
					000017

FENDT - Tractor	Engine / General system	A
	Determining engine power - comparison of standards and directives	

Transmission ratio KW / water pump

900 = 1.47

if max. engagement at 2250 n/engine = 3115 n/fan

400 / 700 / 800 = 1.66

if max. engagement at 2100 n/engine = 3311 n/fan

Fan slip at max. engagement 5 - 7%

Drag speed at least approx. 1600 rpm.

Drag losses

- up to 130 HP (712) approx. 4.5 kW
- from 140 HP and up (714) approx. 6 kW

Date	Version	Page		Capitel	Index	Docu-No.
19.08.2005	a	2/2	Determining engine power - comparison of standards and directives	2000	A	000017

FENDT - Tractor	Engine / General system Measuring PTO power	A
------------------------	--	----------

Guidelines for performing PTO power measurements acc. to ISO 1585

1. Net PTO power

Corresponds to the power measured on a dynamometer via the tractor's PTO with standard equipment.

2. Corrected PTO power

Corrected PTO power = measured PTO power x correction factor

3. Correction factor according to ISO 1585

The correction factor reduces the measured power value based on standard atmospheric reference values:

- Air pressure = 99 KPa
- Ambient temperature = 25°C

4. Standard tractor equipment

Included in the standard equipment of the tractor according to ISO 1585 is all of the manufacturer's standard equipment that is required for the normal operation of the engine in the tractor, such as:

- Intake system with air filter, raw air inlet and rain cap.
- Exhaust system with silencer, exhaust brake and end pipe.
- Injection equipment compl. with fuel delivery pump and prefilter.
- Cooling system with water pump, thermostat and fan (rigid / controlled) (for controlled fans, the power consumption of the fan at maximum slip is accounted for)
- Electrical equipment with no load on alternator.
- Compressed air system (if it cannot be switched off)
- Turbocharger with intercooler

5. Measuring accuracy of the testing station

- Torque +/- 1%
- Engine speed +/- 0.5%
- Fuel consumption +/- 1%
- Fuel temperature +/- 2K
- Ambient temperature +/- 2K
- Air pressure +/- 100Pa
- Exhaust back pressure +/- 200Pa
- Intake vacuum +/- 50Pa
- Boost pressure in intake pipe +/- 2%

The tolerances correspond to the maximum measuring range of the testing station.

6. Preparing the tractor for power measurement

Before undergoing power measurement, normal maintenance work must be carried out on the tractor:

- Oil level --> engine, transmission, hydraulics
- Coolant --> engine cooling
- Cleaning --> air filter and radiator, replace fuel filter if necessary
- Leak tightness --> fuel system
- Checking engine speed adjustment (stop)
- Checking the engine cutoff speed or setting a setpoint

Date	Version	Page		Capitel	Index	Docu-No.
17.08.2005	a	1/2	Measuring PTO power	2000	A	000016

FENDT - Tractor	Engine / General system Measuring PTO power	A
------------------------	--	----------

7. Performing PTO power measurement

The tractor must be operated at full load for at least 15 min. at an ambient temperature of 20°C to 25°C. In this time period, the engine, transmission and hydraulics will have attained temperatures that guarantee an adequately accurate final value for PTO power.

At ambient temperatures below 10°C, the warm-up time must be increased to at least 30 min.

The measured values must remain constant for at least one minute before recording, or the engine speed must not exceed +/- 1% of the set value.

During measuring, the following consumers:

- Compressor
 - Generator
 - Hydraulic pumps
 - AC compressor
- must be operated without load.

8. Evaluating the results of the measurements

If the measured PTO power lies within -5% of the max. perm. PTO power, it can be corrected to the maximum permissible value by adjusting the injection volume and does not require further testing.

If the measured values lie clearly below -5%, the following additional tests must be performed on the tractor:

- Measuring the injection volume or removing and setting the injection pump controller on the dynamometer.
- Measuring the boost pressure in the intake pipe
- Replacing the fuel filter
- Neutral circulating pressure from the steering pump and standby pressure from the hydraulic system control pump.

Power correction factor based on ambient temperature and air pressure according to ISO 1585

Only for aspirated engines

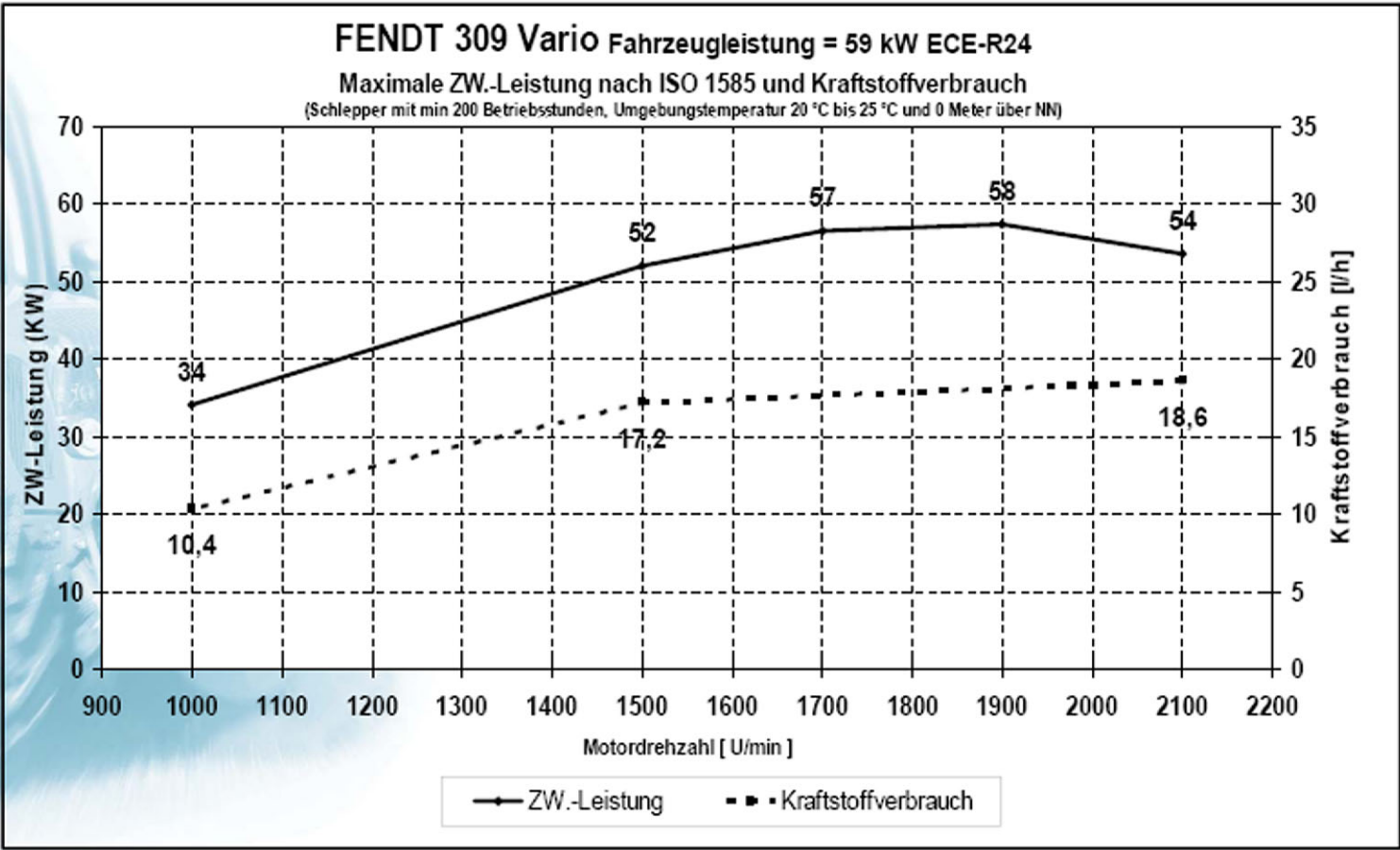
Parameter	Correction factor according to ISO 1585					
Air pressure (kPa)	99	97	95	93	91	89
Altitude above sea level (m)	0	200	400	600	800	1000
Ambient temperature (°C)						
0	0.979	0.982	0.985	0.988	0.991	0.994
10	0.988	0.991	0.993	0.996	0.999	1.003
20	0.996	0.999	1.002	1.005	1.008	1.011
25	1	1.003	1.006	1.009	1.012	1.015
30	1.004	1.007	1.01	1.013	1.016	1.019
35	1.008	1.011	1.014	1.017	1.02	1.023
40	1.012	1.015	1.018	1.021	1.024	1.027

Date	Version	Page	Measuring PTO power	Capitel	Index	Docu-No.
17.08.2005	a	2/2		2000	A	000016

Datum	Stand	Seite	Zapfwellenleistung und Kraftstoffverbrauch			Kapitelzahl	Reg.	Docu-No.
18.09.2007	a	1/4				2000	A	000045

FENDT

FENDT 309 Vario 336 .. 0101-



FENDT 300 Vario

Motor / Gesamtsystem
Zapfwellenleistung und Kraftstoffverbrauch

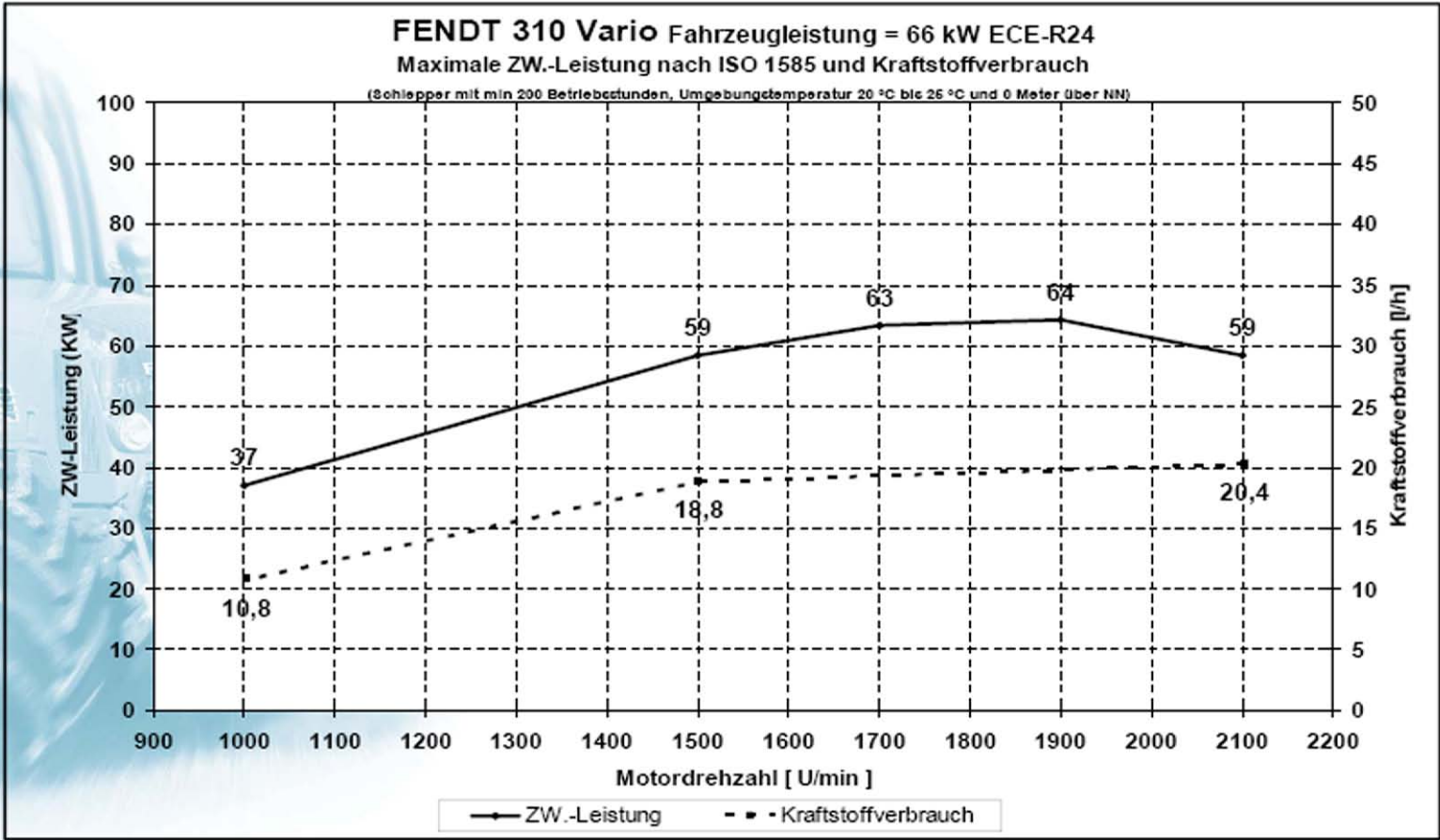
A

Allgemeines

Datum	Stand	Seite	Zapfwellenleistung und Kraftstoffverbrauch	Kapitelzahl	Reg.	Docu-No.
18.09.2007	a	2/4		2000	A	000045

FENDT

FENDT 310 Vario 337 .. 0101-



EKI08998

FENDT 300 Vario

Motor / Gesamtsystem
Zapfwellenleistung und Kraftstoffverbrauch

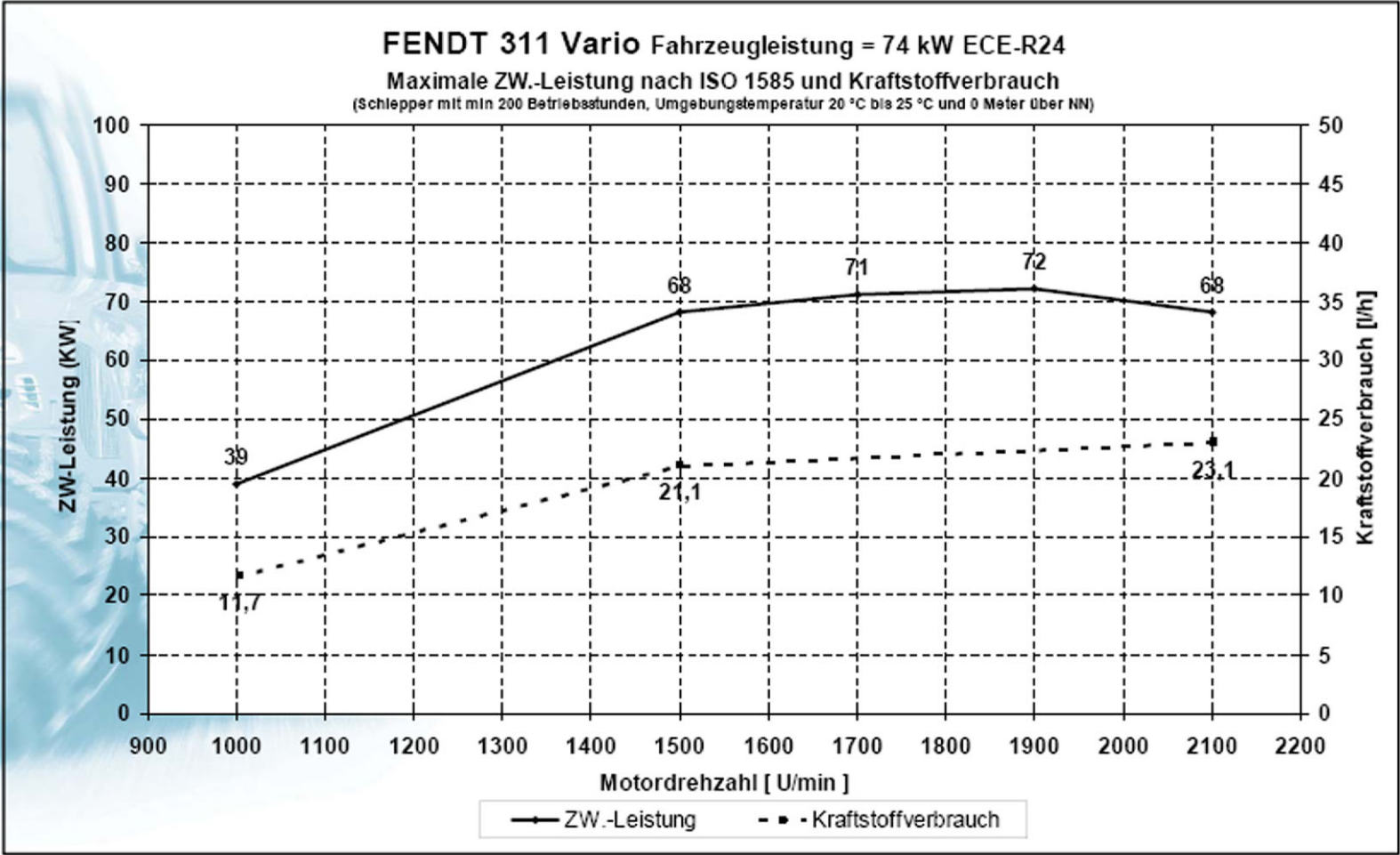
A

Allgemeines

Datum	Stand	Seite	Zapfwellenleistung und Kraftstoffverbrauch		Kapitelzahl	Reg.	Docu-No.
18.09.2007	a	3/4			2000	A	000045



FENDT 311 Vario 338 .. 0101-



EKI08999

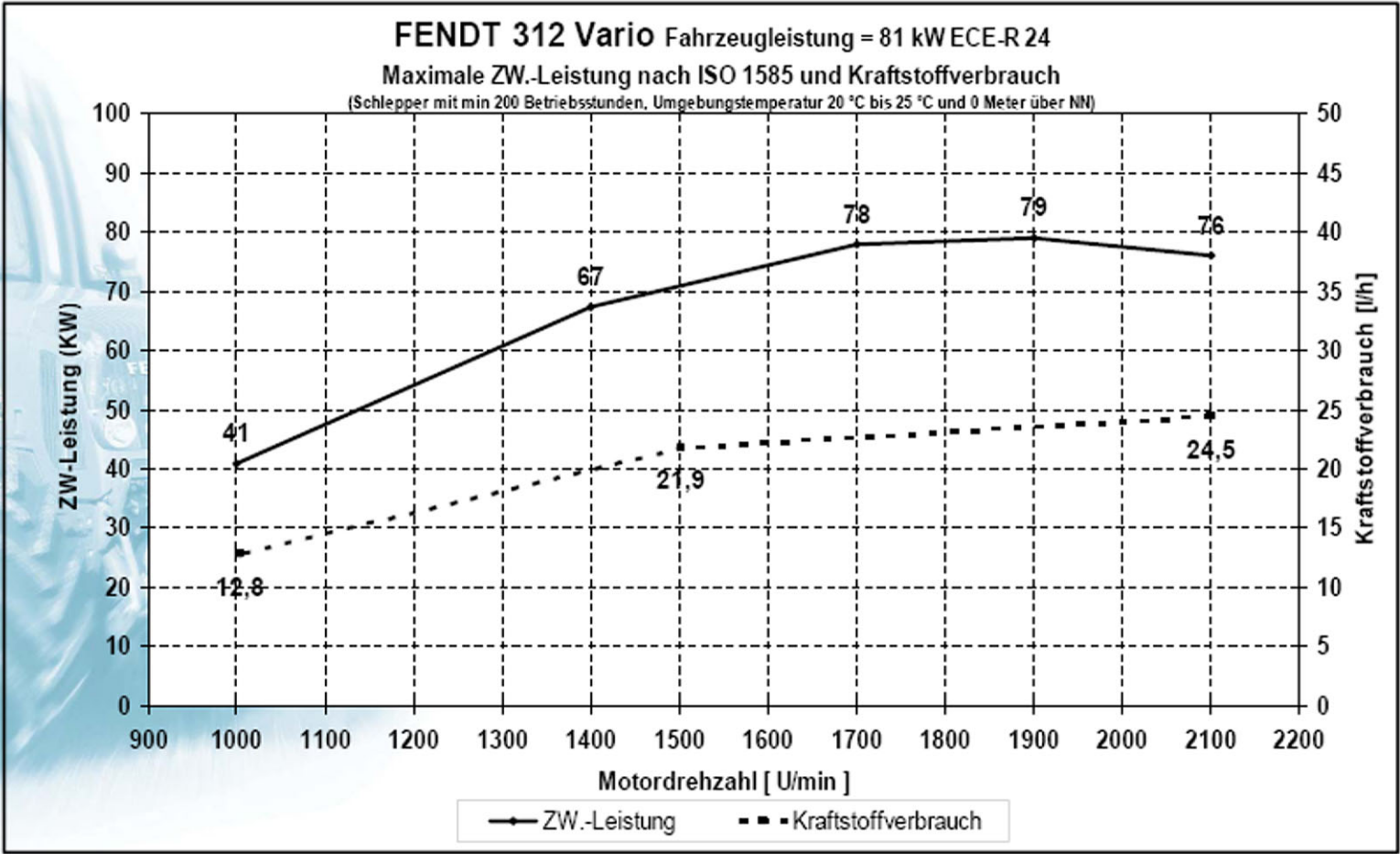
FENDT 300 Vario	Motor / Gesamtsystem
Zapfwellenleistung und Kraftstoffverbrauch	
A	

Allgemeines

Datum	Stand	Seite	Zapfwellenleistung und Kraftstoffverbrauch	Kapitelzahl	Reg.	Docu-No.
18.09.2007	a	4/4		2000	A	000045

FENDT

FENDT 312 Vario 339 .. 0101-



EKI09000

FENDT 300 Vario

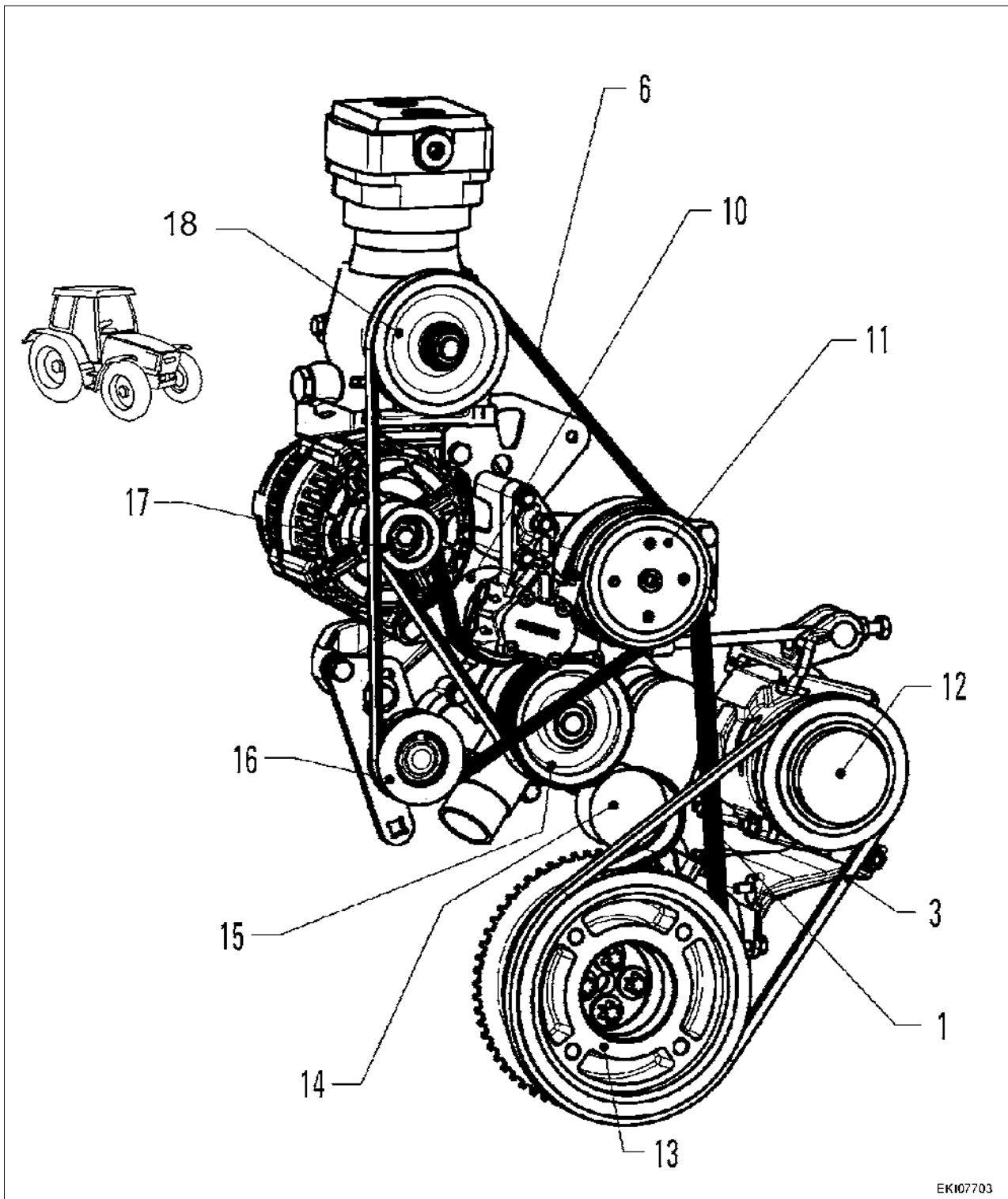
Motor / Gesamtsystem
Zapfwellenleistung und Kraftstoffverbrauch

A

Allgemeines

Fendt 300 Vario

Engine / General system
Belt drive Deutz TCD 2012

A


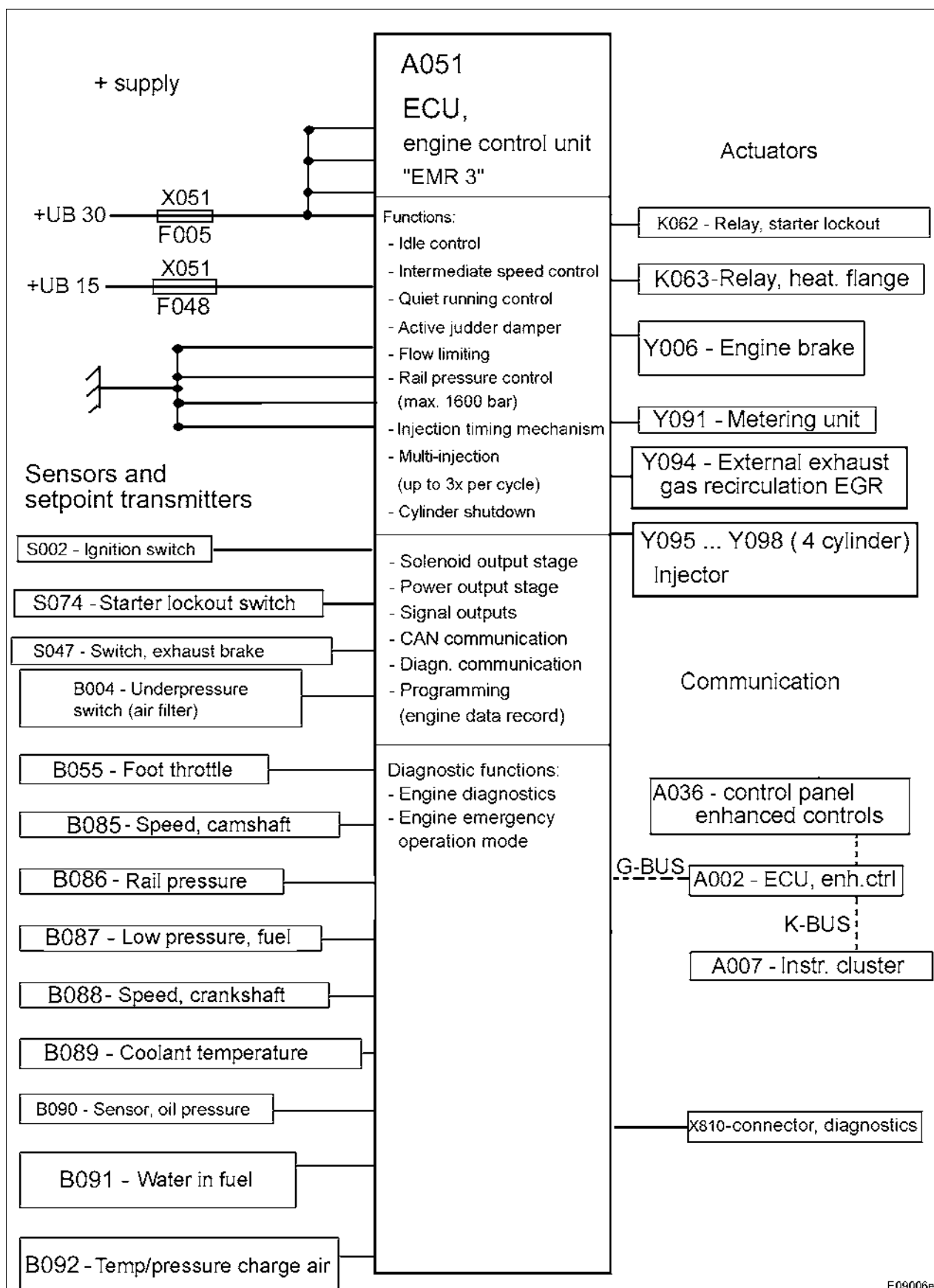
EK107703

Date	Version	Page	Capitel	Index	Docu-No.
13.09.2007	a	1/1	2000	A	000035

Belt drive Deutz TCD 2012

Fendt 300 Vario

Engine / General system
A051- ECU, engine control unit (EDC 7)

A

E09006en

Date	Version	Page	A051- ECU, engine control unit (EDC 7)	Capitel	Index	Docu-No.
17.09.2007	a	1/4		2000	A	000037

Fendt 300 Vario	Engine / General system A051- ECU, engine control unit (EDC 7)	A
------------------------	---	----------

Tasks of the A051 - ECU, engine control unit (EDC 7)

The A051 - ECU, engine control unit (EDC 7) governs and controls the engine.

The A051 - ECU has the following control functions:

Variable-speed governance

The A051 - ECU maintains the set engine speed constant under load, as long as there is enough engine power available.

Limiting maximum speed ("speed regulation")

Limiting torque

Limiting maximum torque (maximum injection)

Rail - pressure governance

The Y091 - metering unit feeds the amount of fuel into the rail that is currently being injected by the injectors (Y095 - Y098). A B086 - rail pressure sensor is fitted that reports the actual pressure of the A051 - ECU, engine control unit (EDC 7).

Multiple injection

To reduce exhaust gas and noise emissions, the injectors (Y095 - Y098) are activated up to three times per cycle by the A051 - ECU, engine control unit (EDC 7).

Cylinder shut-off

If the A051 - ECU, engine control unit (EDC 7) detects a short circuit in an injector (Y095 - Y098) (short circuit low - high), the injector is no longer activated (disabled).

Engine start

If all input signals are present, the starting procedure is started.

Note:

If the rpm signals (camshaft) (crankshaft) are missing, the starting procedure is cancelled after 5 sec.

Engine stop

The injectors are no longer controlled.

Monitoring and signal output functions

Coolant temperature and charge air temperature --> error display and/or reduced performance.

See Chapter 0000 Reg. B - Fault codes

Boost pressure-dependent engine control ("LDA function")

If the charge air temperature rises, injection volume is restricted.

If the boost pressure falls, injection volume is restricted.

Preventing formation of smoke

Note:

There is an atmospheric pressure sensor in the A051 - ECU, engine control unit (EDC 7)

Boost pressure (overpressure) = absolute pressure (B092 - sensor) - atmospheric pressure (A051 - ECU)

Correction for altitude

Avoids puffs of smoke due to low atmospheric density

Protects engine from low atmospheric density.

At high altitudes (Andes, Himalayas, etc.) the maximum engine power is restricted

Temperature dependent start control system ("Number of starts")

Improves ability to start, smoke-free cold start that is less harmful to the engine

Date	Version	Page	A051- ECU, engine control unit (EDC 7)	Capitel	Index	Docu-No.
17.09.2007	a	2/4		2000	A	000037

Fendt 300 Vario	Engine / General system A051- ECU, engine control unit (EDC 7)	A
------------------------	---	----------

Control of the cold-start system

The R002 - heating flange is controlled by the A051 - ECU, engine control unit (EDC 7).
The indicator lamp for the R002 - heating flange is located in the A007 - instrument cluster

Control of the injectors

Fuel is injected by energising the injector, the duration determines injection quantity
Injection occurs up to 3 times per cycle

Control of exhaust gas recirculation (EGR)

Depending on the engine's operating conditions, a certain quantity of exhaust gas is returned

Emergency running / if necessary, stopping engine

See Chapter 0000 Reg. B - Fault codes
see Chapter 2000 Reg. A - Emergency mode

Control of the exhaust brake

The Y006 - solenoid valve, exhaust brake is controlled by the A051 - ECU, engine control unit (EDC 7).

Fault memory in A051 - ECU, engine control unit (EDC 7)

The A051 - ECU, engine control unit (EDC 7) directs EMR errors to the A007 - instrument cluster, where the error messages are output on a display. (FENDT fault code)

Fault diagnostics with service diagnostics program (SERDIA)

Read out all sensors such as A051 - ECU, engine control unit (EDC 7) ("Program: measured values")
Graphic display of measured values ("Program: Graphic readings")
Read out fault memory (SERDIA fault code)
Test functions of all actuators (Program: Functional test")

Play engine record with service diagnostics program (SERDIA)

In order for the A051 - ECU, engine control unit (EDC 7) to control the engine optimally, it is necessary to load engine characteristics (maximum power, engine cutoff speed, the engine operating map (injection volume at a certain operating point), maximum perm. operating temperature, etc.) into the A051 - ECU, engine control unit (EDC 7).

The engine record (consists of rating, engine-specific data (mechanical tolerances), equipment status (aggregate engine or vehicle engine)) is read into the A051 - ECU, engine control unit (EDC 7) with the service diagnostics program (SERDIA).

Note:

If an engine record is loaded that does not match the tractor's chassis number, or an A051 - ECU, engine control unit (EDC 7) is installed that does not match the tractor's chassis number, all warranty claims as well as the general operating licence, and therefore also insurance coverage, expire!!

Installing an A051 - ECU, engine control unit (EDC 7) that does not match the tractor's chassis number limits tractor performance!

**Tractor's chassis number and engine number and the interface serial number (intermediate cable SERDIA diagnostics program) are stored in the A051 - ECU, engine control unit (EDC 7).
calculated fuel consumption**

The A051 - ECU, engine control unit (EDC 7) calculates engine fuel consumption in l/h, which is then displayed in the instrument cluster.

Date	Version	Page	A051- ECU, engine control unit (EDC 7)	Capitel	Index	Docu-No.
17.09.2007	a	3/4		2000	A	000037

Fendt 300 Vario	Engine / General system A051- ECU, engine control unit (EDC 7)	A
------------------------	---	----------

Input signal

The sensors mounted on the engine supply the electronics in the **A051 - ECU, engine control unit (EDC 7)** with all relevant physical quantities.

- B004 - vacuum switch (air filter)
- B035 - sensor, hand throttle (setpoint: engine speed)
- B055 - sensor, foot throttle (engine speed setpoint)
- B085 - camshaft speed
- B086 - rail pressure sensor
- B087 - fuel low pressure
- B088 - crankshaft speed
- B089 - Deutz temperature sensor
- B090 - sensor, oil pressure
- B091 - sensor, water in fuel
- B092 - sensor, boost pressure / temperature
- **Via CAN bus system:**
- Memory keys in control panel
- TMS Tractor Management System

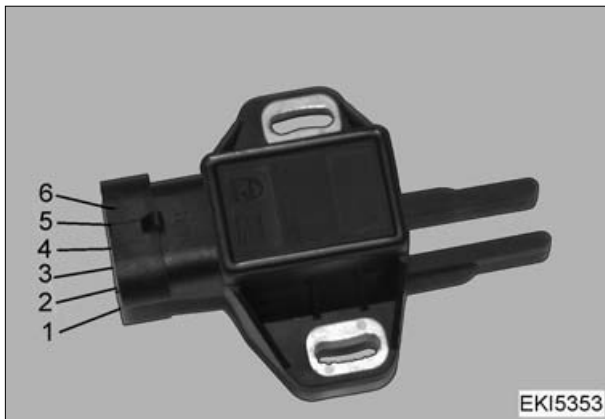
The A051 - ECU, engine control unit (EDC 7) controls and governs the actuators according to the information on the current engine status and the specifications (accelerator, hand throttle, memory keys on the joystick, TMS).

Actuators that are fitted in the diesel engine are:

- K008 - relay, starter lockout
- K063 - relay, heating flange
- Y006 - solenoid valve, exhaust brake
- Y091 - metering unit (diesel)
- Y094 - EGR actuator (exhaust gas recirculation)
- Y095 - injector 1
- Y096 - injector 2
- Y097 - injector 3
- Y098 - injector 4

Date	Version	Page	A051- ECU, engine control unit (EDC 7)	Capitel	Index	Docu-No.
17.09.2007	a	4/4		2000	A	000037

Fendt 300 Vario	Engine / General system B055 - sensor, foot throttle	A
------------------------	---	----------



Pin	Function
1	Ground
2	+ Supply (5.0 VDC)
3	Signal (idle switch)
4	Ground
5	+ Supply (5.0 VDC)
6	Signal

Task:

The B055 - sensor, foot throttle sends the driver's torque / load request to the A051 - ECU, engine control unit (EDC 7).

Function

The B055 - sensor, foot throttle comprises a potentiometer and an idle switch. (redundant)

When the foot throttle (accelerator pedal) is pressed, a shaft in the pedal encoder is turned. The **potentiometer**, which is located at the end of the shaft, sends an analogue voltage signal to the A051 - ECU, engine control unit (EDC 7). The A051 - ECU, engine control unit (EDC 7) determines the exact pedal position from this voltage value, i.e. the current driver request (target value). To increase driving comfort, the pedal position is map-controlled and dampened.

The voltage signal of the potentiometer is responsible for speed control, driving pedal mode and the Tractor Management System (TMS). The sensors are supplied by the A051 - ECU, engine control unit (EDC 7).

If this voltage signal fails, the tractor goes into emergency operating mode (loss of enhanced control). TMS, pedal mode and the memory keys cannot be preselected.

In the same way, the **idle switch** is closed when the foot throttle (accelerator pedal) is actuated (foot throttle not actuated, switch open; foot throttle activated, switch closed). This voltage signal is transmitted to the A051 - ECU, engine control unit (EDC 7). The A051 - ECU, engine control unit (EDC 7) determines the foot throttle resting position from these two voltage values.

Both voltage signals from the B055 - foot throttle sensor are compared with each other. If the A051 - ECU, engine control unit (EDC 7) detects faulty values from the potentiometer and idle switch, a plausibility error is output.

Note:

see also Chapter 9000 Reg. E B055 - sensor, foot throttle

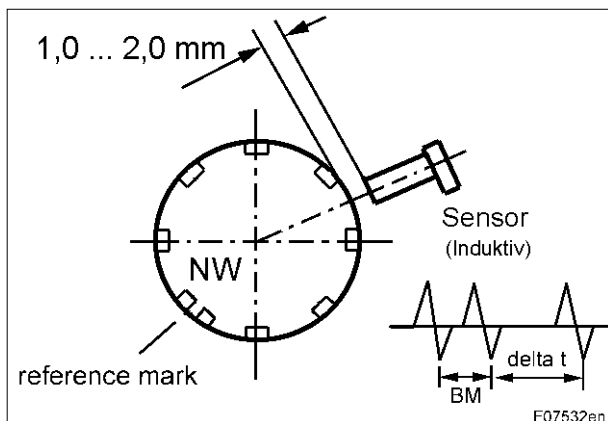
Date	Version	Page	B055 - sensor, foot throttle	Capitel	Index	Docu-No.
18.09.2007	a	1/1		2000	A	000043

Fendt 300 Vario	Engine / General system B085 - camshaft speed	A
------------------------	--	----------



Pin	Function
1	Signal
2	Ground
3	Shielding against interference

Tasks of the B085 - camshaft speed



Detection of the current engine position (combustion cylinder 1)

Detection of engine speed (camshaft speed) for emergency running mode

On-board diagnosis

The B085 - camshaft speed is required for synchronising injection. It supplies the speed signal and reports the position of the camshaft, combustion cylinder 1. The reference mark must then align with the B088 - crankshaft speed.

When the camshaft turns, the marks on the camshaft gear induce AC voltage (VAC) in the B085 - camshaft speed.

The A051 - ECU, engine control unit calculates the camshaft speed from the voltage frequency

The double tooth (reference mark) causes a change in frequency

The double tooth (reference mark) is used to identify the current camshaft position and appears once per cycle, TDC combustion cylinder 1.

Note:

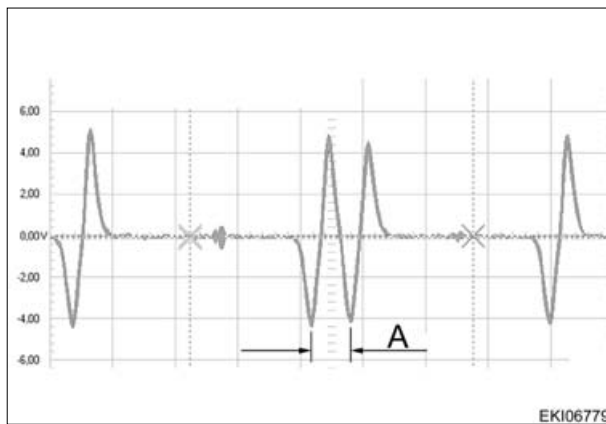
Working cycle (4-cycle engine)

2 crankshaft revolutions

1 camshaft revolution

Date	Version	Page	Capitel	Index	Docu-No.
17.09.2007	a	1/2	B085 - camshaft speed	2000	A
					000038

Fendt 300 Vario	Engine / General system B085 - camshaft speed	A
------------------------	--	----------

Oscilloscope screen B085 - camshaft speed**A** = Reference mark (combustion cylinder 1)**Note:**

see also Chapter 9000 Reg. E B085 - Camshaft speed

Date	Version	Page	Capitel	Index	Docu-No.
17.09.2007	a	2/2	2000	A	000038

Fendt 300 Vario

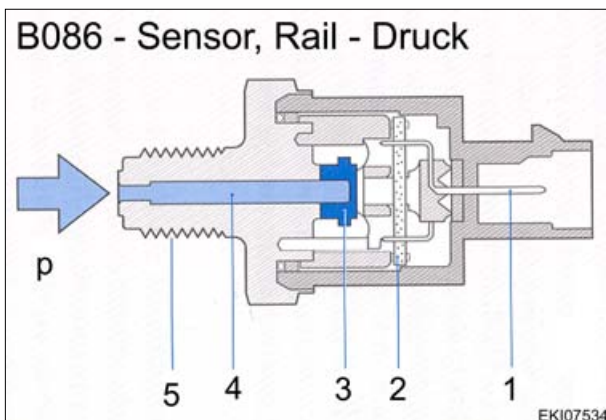
Engine / General system
B086 - rail pressure sensor

A**Danger:**

After turning of the engine, wait at least 30 seconds before starting to work on the fuel system!!



Pin	Function
1	Ground
2	Signal
3	Supply



Item	Designation
1	Connector
2	Evaluation circuit
3	Steel diaphragm with strain gauge resistors
4	Pressure connection
5	Screw thread
P	Rail pressure (during normal operation 400 to approx. 1400 bar)

Design and operating principle of B086 - rail pressure sensor

The core of the sensor comprises a steel diaphragm (3), on which strain gauge resistors are vapour-deposited in a bridge circuit.

As soon as the pressure that is to be measured works on the steel diaphragm (3) via the pressure connection (4), the strain gauge resistors change their resistance value due to bending of the diaphragm.

The output voltage of 0 - 80 mV generated by the bridge circuit is transmitted to an evaluation circuit (2) through connecting lines.

The evaluation circuit amplifies the bridge signal to approx. 0.5 VDC during idle speed and approx. 4.5 VDC at maximum pressure, and directs the signal to the A051 - ECU, engine control unit (EDC 7)

The A051 - ECU, engine control unit (EDC 7) controls the fuel high pressure in the rail (pressure accumulator) with the help of the Y091 - metering unit

Note:

also see Chapter 9000 Reg. E B086 Rail pressure sensor

Rail pressure is output in the Deutz 'SERDIA' diagnostic program as target and actual values

Date	Version	Page	B086 - rail pressure sensor	Capitel	Index	Docu-No.
17.09.2007	a	1/1		2000	A	000039

Fendt 300 Vario	Engine / General system B087 - fuel low pressure and B090 - oil pressure sensor	A
------------------------	--	----------



Pin	Function B087	Function B090
1	+ supply	+ supply
2	Signal	Signal
3	Not assigned	Ground
4	Ground	-

Task:

Component B087 reports the fuel low pressure (primary pressure) to A051 - ECU, engine control unit (EDC 7)

Component B090 reports engine oil pressure to A051 - ECU, engine control unit (EDC 7)

Function

The fuel pressure, oil pressure (physical quantity) is converted to a voltage signal (electric quantity). The pressure and signal voltage are proportional, e.g. when fuel pressure increases, the signal voltage increases accordingly.

Note:

see also Chapter 9000 Reg. E B087 - Fuel low pressure

see also Chapter 9000 Reg. E B090 - Oil pressure sensor

The fuel low pressure and oil pressure are output in the Deutz 'SERDIA' diagnostic program

Date	Version	Page		Capitel	Index	Docu-No.
17.09.2007	a	1/1	B087 - fuel low pressure and B090 - oil pressure sensor	2000	A	000040

FENDT 300 Vario
FENDT 400 COM III
FENDT 7/800 COM III

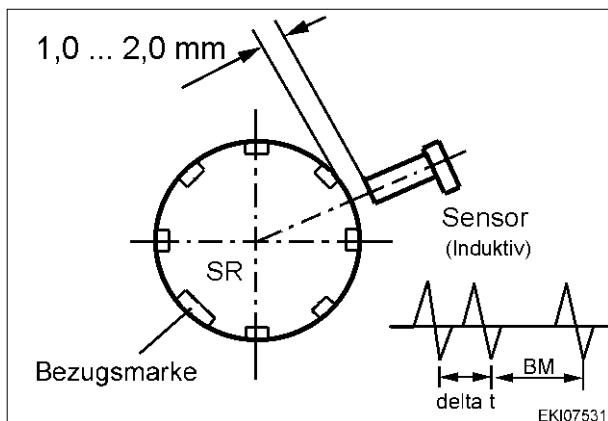
Motor / Gesamtsystem
B088 - Kurbelwellendrehzahl

A



Kontakt	Funktion
1	Signal
2	Masse
3	Abschirmung gegen Störeinflüsse

Aufgaben des B088 - Kurbelwellendrehzahl



Erkennung der momentanen Motorstellung
 (OT 1. Zylinder und 4. Zylinder)
 (OT 1. Zylinder und 6. Zylinder)
Erkennung der Motordrehzahl
Eigendiagnose

Bei drehender Kurbelwelle wird durch die Zähne der Zahnscheibe am Schwungrad in B088 - Kurbelwellendrehzahl eine Wechselspannung (VAC) induziert.

Aus der Spannungsfrequenz errechnet die A051 - ECU, Motorsteuergerät die Motordrehzahl.

Die Lücke (Bezugsmarke) in den Markierungen bewirkt, dass keine Spannung induziert wird.

Diese Lücke wird zur Erkennung der momentanen Kurbelwellenstellung verwendet, und erscheint 2x pro Arbeitsspiel

Zur Synchronisierung der Einspritzung ist der B085 - Sensor (Nockenwelle) notwendig. Er liefert nur 1 OT - Signal (Verbrennung 1. Zylinder) pro Arbeitsspiel, und muss mit der Bezugsmarke (des 1. Zylinders) an der Kurbelwelle fluchten

Hinweis:

Arbeitsspiel (Viertakt - Motor)

2 Kurbelwellenumdrehungen

1 Nockenwellenumdrehung

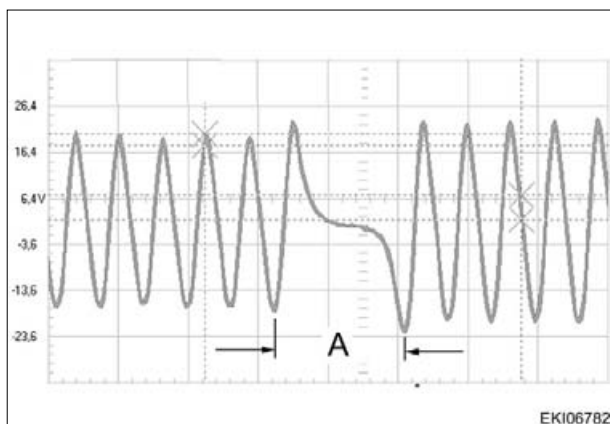
Datum	Stand	Seite	B088 - Kurbelwellendrehzahl	Kapitelzahl	Reg.	Docu-No.
18.09.2007	a	1/2		2000	A	000044

FENDT 300 Vario
FENDT 400 COM III
FENDT 7/800 COM III

Motor / Gesamtsystem
B088 - Kurbelwellendrehzahl

A

Oszilloskopbild vom B088 - Kurbelwellendrehzahl



A = Bezugsmarke
 (OT 1. Zylinder und 6. Zylinder)

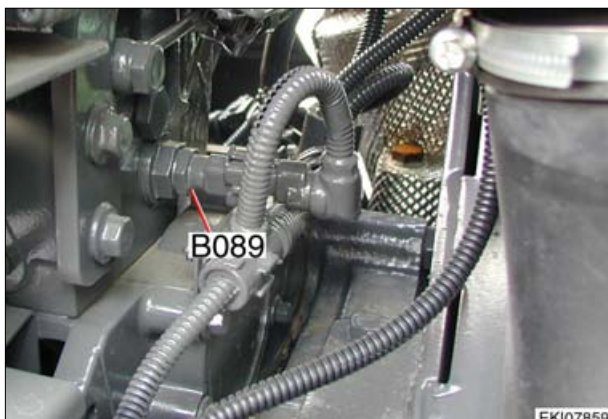
Hinweis:

siehe auch Kapitel 9000 Reg. E B088 - Kurbelwellendrehzahl

Es ist auch möglich den Sensorwert über das Deutz- Diagnoseprogramm "SERDIA" auszulesen

Datum	Stand	Seite	B088 - Kurbelwellendrehzahl	Kapitelzahl	Reg.	Docu-No.
18.09.2007	a	2/2		2000	A	000044

Fendt 300 Vario	Engine / General system B089 - Deutz temperature sensor	A
------------------------	--	----------



Pin	Function
1	Ground
2	Signal

Task:

Component B089 reports engine temperature to A051 - ECU, engine control unit (EDC 7)

This temperature signal can be used several ways:

- Engine control
- Temperature indicator in A007 - instrument cluster
- Control of heating flange under 5°C

Function

The temperature sensor's resistance changes dependent on temperature. NTC (negative temperature coefficient) or PTC (positive temperature coefficient) sensors are used.

The B089 - Deutz temperature sensor is an NTC sensor, which means that the resistance values decrease as temperature increases.

Note:

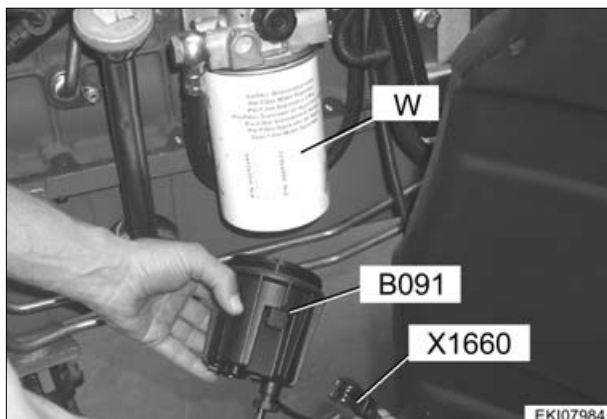
see also Chapter 9000 Reg. E B089 - Deutz temperature sensor

The engine temperature is output in the Deutz 'SERDIA' diagnostic program

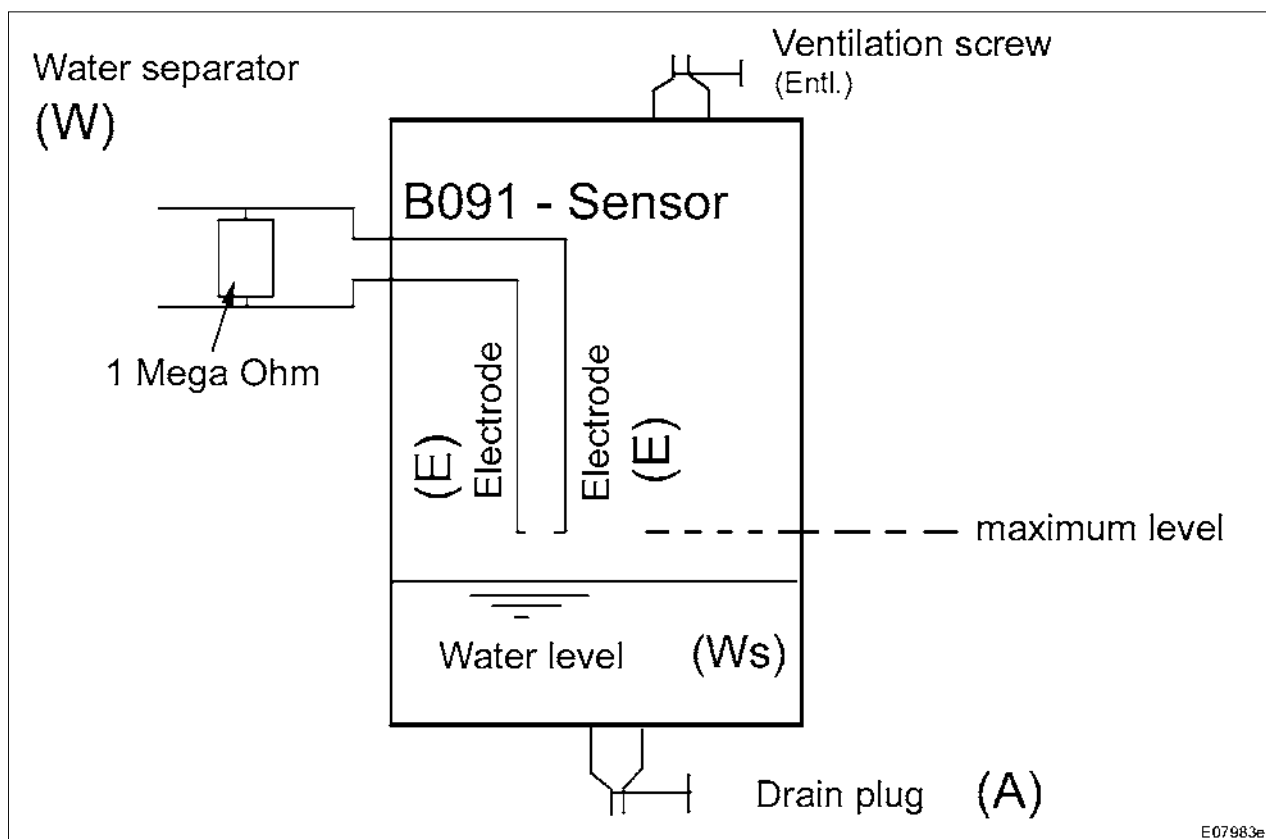
Date	Version	Page	B089 - Deutz temperature sensor	Capitel	Index	Docu-No.
17.09.2007	a	1/1		2000	A	000041

Fendt 300 Vario

Engine / General system
B091 - sensor, water in fuel

A

Pin	Function
1	Ground
2	Signal

Function

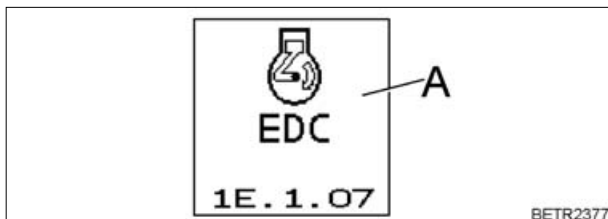
E07983en

Item	Designation	Item	Designation
A	Drain plug	Entl.	Ventilation screw
B091	Sensor, water in fuel	W	Water separator
E	Electrode	ws	Water level

The B091 - sensor, water in diesel, measures the water level in the water separator. If the water level reaches the maximum level, both electrode contacts are closed by the water. This is detected as a fault, the signal is reported to the instrument cluster through the bus system. And output as the following warning.

Date	Version	Page	B091 - sensor, water in fuel	Capitel	Index	Docu-No.
17.09.2007	a	1/2		2000	A	000042

Fendt 300 Vario	Engine / General system B091 - sensor, water in fuel	A
------------------------	---	----------



If the water level reaches maximum level:
Notice (A) appears in the multiple display, drain water and dirt

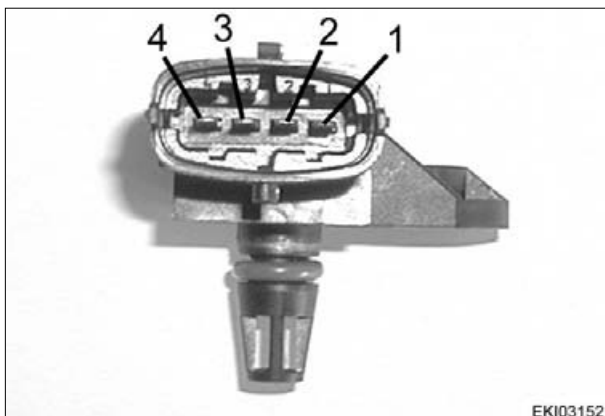
Note:
also see Chapter 9000 Reg. E B091 - water in fuel sensor

Date	Version	Page	B091 - sensor, water in fuel	Capitel	Index	Docu-No.
17.09.2007	a	2/2		2000	A	000042

Fendt 300 Vario
FENDT 400 COM III
FENDT 7/800 COM III

Engine / General system
B092 - sensor, boost pressure / temperature

A



Pin	Function
1	Ground
2	Signal temperature
3	Supply
4	Signal pressure

Task:

Component B092 reports the boost pressure and charge air temperature to A051 - ECU, engine control unit (EDC 7)

The B092 - sensor, boost pressure / temperature is a combi-sensor. There are two sensors in one component with the same power supply.

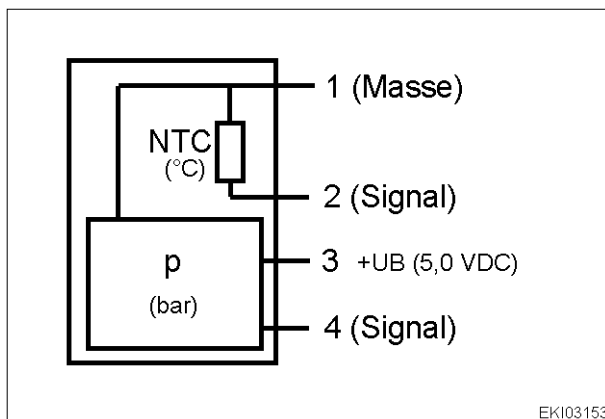
Function of the pressure sensor:

The boost pressure (physical quantity) is converted to a voltage signal (electric quantity). The pressure and signal voltage are proportional, e.g. when boost pressure increases, the signal voltage increases accordingly. ("LDA function")

Function of the temperature sensor:

The temperature sensor's resistance changes dependent on temperature. NTC (negative temperature coefficient) or PTC (positive temperature coefficient) sensors are used.

The B092 - sensor boost pressure / temperature is an NTC sensor, which means that the resistance values decrease as temperature increases.



Circuit diagram for B092 - sensor,
boost pressure / temperature

Note:

see also Chapter 9000 Reg. E B092 - sensor, boost pressure / temperature

The B092 - sensor, boost pressure / temperature can be read out with the Deutz "SERDIA" diagnostic program

Date	Version	Page	B092 - sensor, boost pressure / temperature	Capitel	Index	Docu-No.
14.08.2007	a	1/1		2000	A	000030

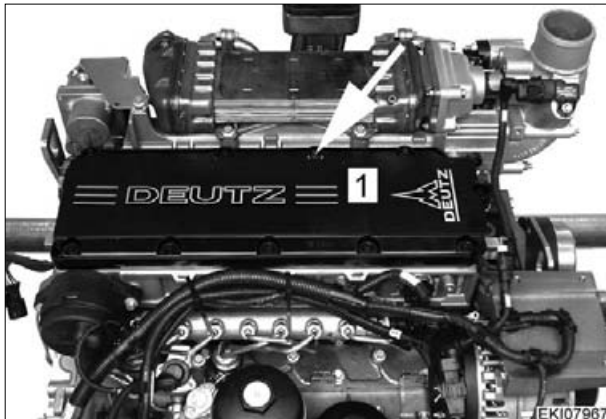
**Fendt 300 Vario
FENDT 400 COM III
FENDT 7/800 COM III**

Engine / cylinder head Setting valve clearance

F

Note:

Please also refer to Service Information 28/2007



Remove covering strip
Unscrew screws (1)
Remove valve cover (arrowed)



Turn crankshaft until all valves overlap in cylinder 1.

Note: cylinder 1 on flywheel

Valves in cylinder 4 (TCD 2012 L04) or cylinder 6 (TCD 2012 L06) can now be set, see valve clearance setting scheme!

Turn anti-clockwise at generator!

Valve clearance setting scheme for engine: (TCD 2012 L04)

Valve overlap

1	3	4	2
4	2	1	3

EKI00238

Valve clearance setting scheme for engine: (TCD 2012 L06)

Valve overlap

1	5	3	6	2	4
6	2	4	1	5	3

EKI00239

Date	Version	Page	Setting valve clearance	Capitel	Index	Docu-No.
21.08.2007	a	1/4		2010	F	000004

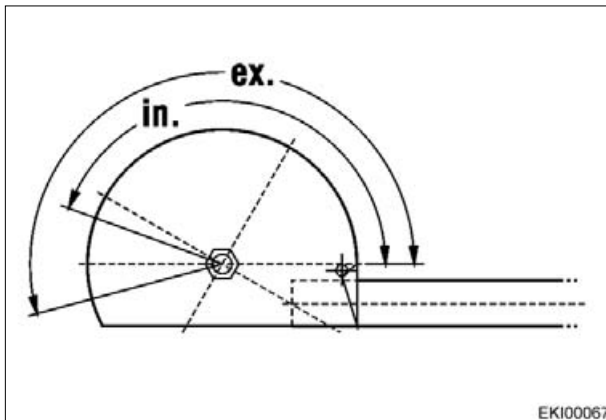
**Fendt 300 Vario
FENDT 400 COM III
FENDT 7/800 COM III**

Engine / cylinder head Setting valve clearance

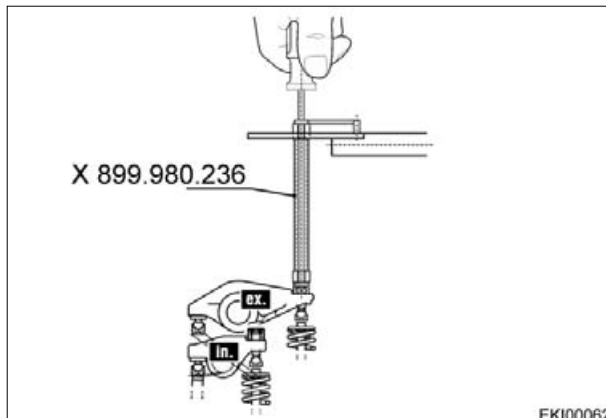
F

Note:

Valve overlap means that: outlet valves are not yet closed, inlet valves are beginning to open.



in.	Inlet valve
ex.	Exhaust valve
X899.980.236.000	Setting tool (middle)
X899.980.236.010	Setting tool (long) more clearance to injector cable
X899.980.236.020	Setting tool (short) required for FENDT 400

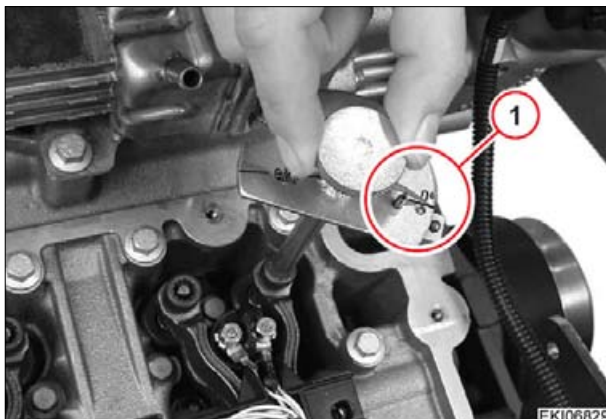


Set valve clearance at relevant cylinder with valve adjusting tool.

To do so, loosen all lock nuts of rocker arm gear. Unscrew adjusting screws by one turn anti-clockwise.

At valve which is being set, turn adjusting screw clockwise until it is clearance-free.

In other words, there is no clearance between rocker arm and valve and no pressure is exerted on valve.



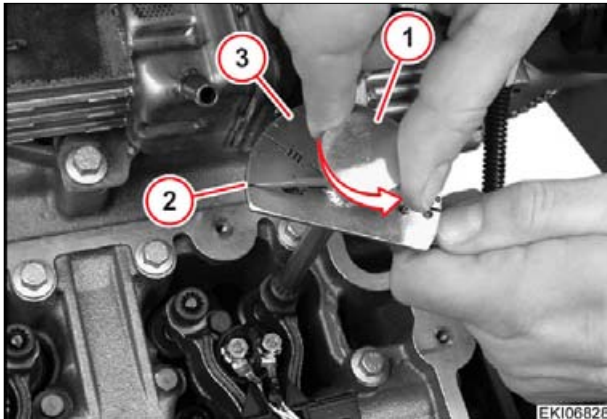
Set pointer on screwdriver on gauge plate to 0° (1) taking care not to turn screwdriver again.

Date	Version	Page	Setting valve clearance	Capitel	Index	Docu-No.
21.08.2007	a	2/4		2010	F	000004

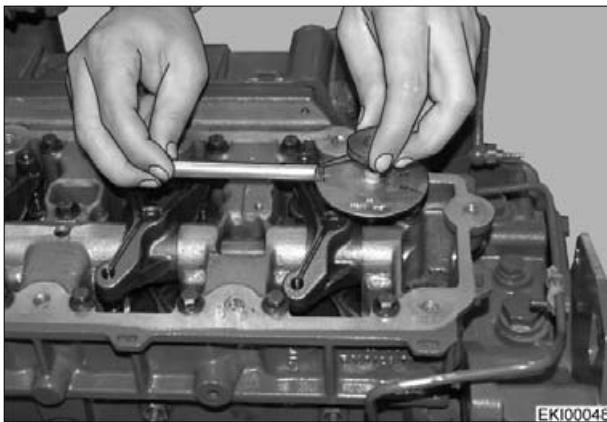
**Fendt 300 Vario
FENDT 400 COM III
FENDT 7/800 COM III**

Engine / cylinder head Setting valve clearance

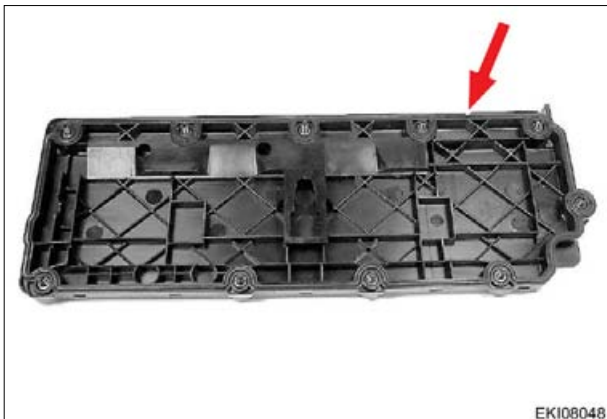
F



Hold gauge plate (3) precisely in this position and turn adjusting screw anti-clockwise using screwdriver (1) until pointer is at 'in' or 'ex' mark (2).



Hold screwdriver precisely in this position and tighten lock nut using polygon head socket wrench.



Clean sealing surface on valve cover and rocker arm housing
Insert new gasket (arrowed)



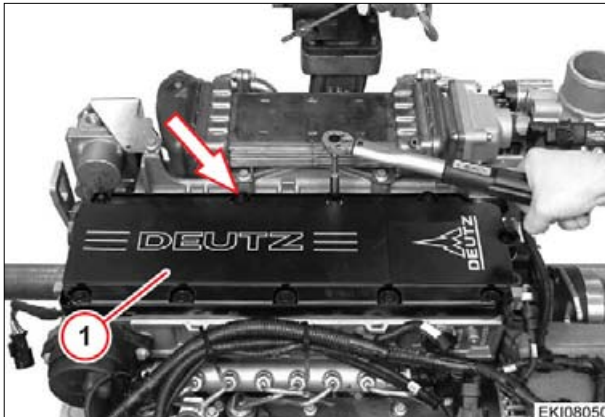
Check screw and gasket (arrowed)

Date	Version	Page	Capitel	Index	Docu-No.
21.08.2007	a	3/4	Setting valve clearance	2010	F 000004

**Fendt 300 Vario
FENDT 400 COM III
FENDT 7/800 COM III**

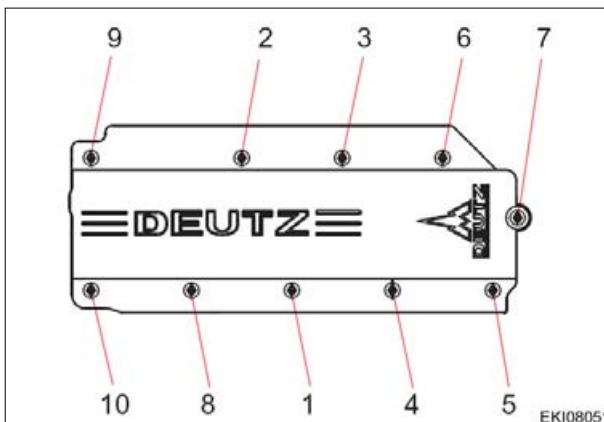
Engine / cylinder head Setting valve clearance

F



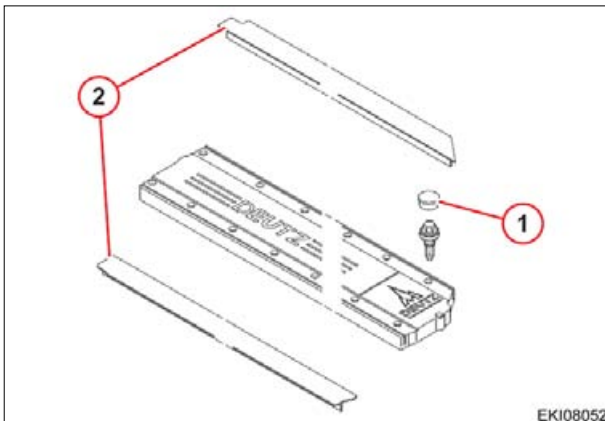
E-UCV-M

Fit valve cover (1)
Insert all screws (arrowed)



E-UCV-M

Tighten all screws
Tightening torque = 9 +/- 1 Nm
Note:
Observe tightening sequence
Same procedure for 6-cylinder engine



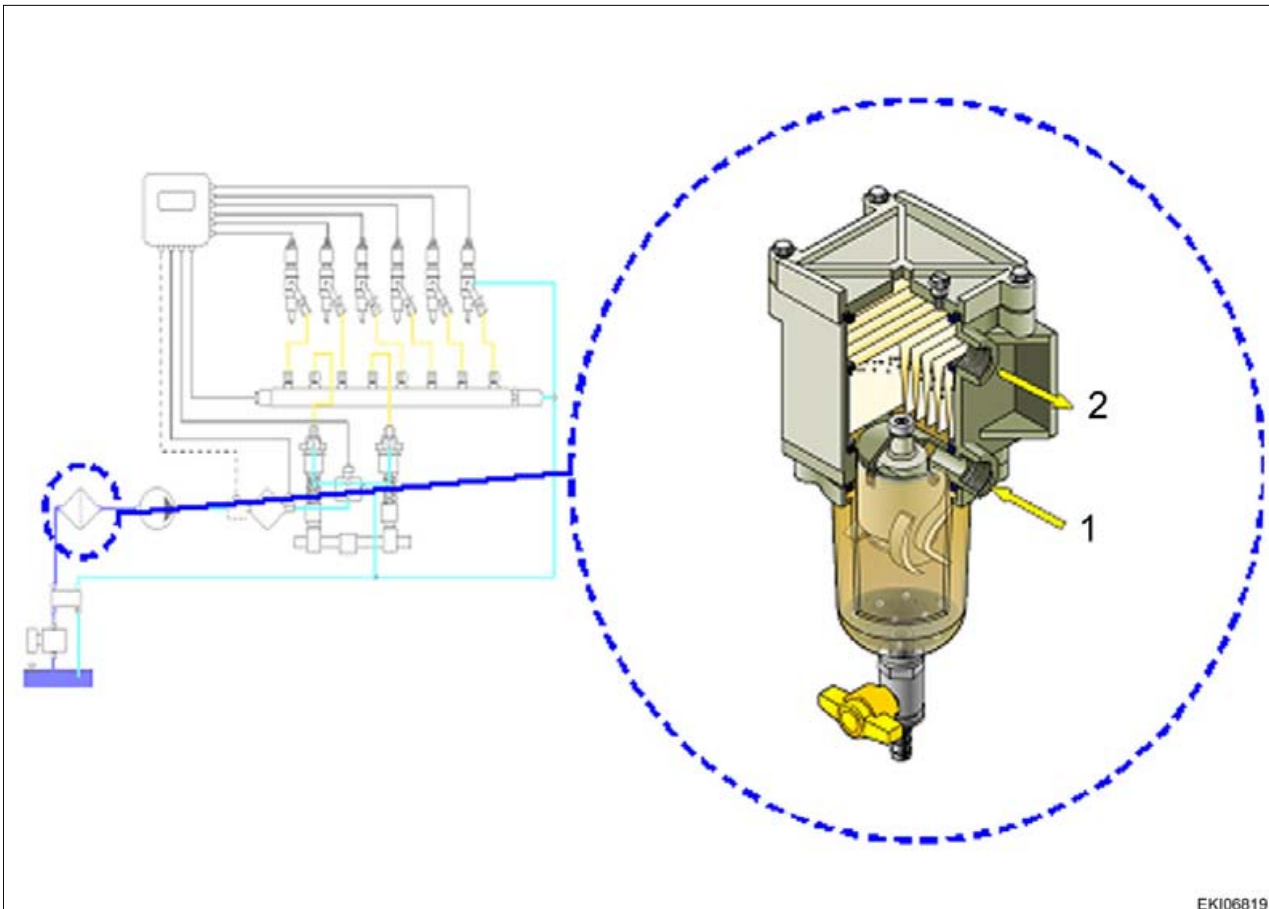
E-UCV-M

Press in all plugs (1)
Mount covering strip (2)

Fendt 300 Vario
FENDT 400 COM III
FENDT 7/800 COM III

Engine / Fuel system
Water separator (prefilter)

A



Water separator with prefilter

1. Fuel inflow from tank
2. Fuel outflow into system

- Filter unit 30 µm
- Water separation greater than 98%
- Water sump with B091 - sensor, water present in diesel
- Mechanical drain valve

Principle:

The common rail system is very sensitive to impurities and water. That is the reason this filter is fitted in all common rail engines. In addition, the filter is also monitored by the B091 - sensor, water present in diesel.

Depending on the tractor model and chassis number, different models have been fitted. The picture shows the initial model, which has been changed to a filter with an integrated hand primer on all tractor models.

This prefilter precleans the contaminated fuel.

- The water that is present in the fuel collects in the filter's sight glass.
 - The largest impurities are removed by the filter (filter element).
- If the water level in the filter reaches the maximum level, the sensor outputs a warning, which is displayed in the instrument cluster. The water must be drained immediately.

Note:

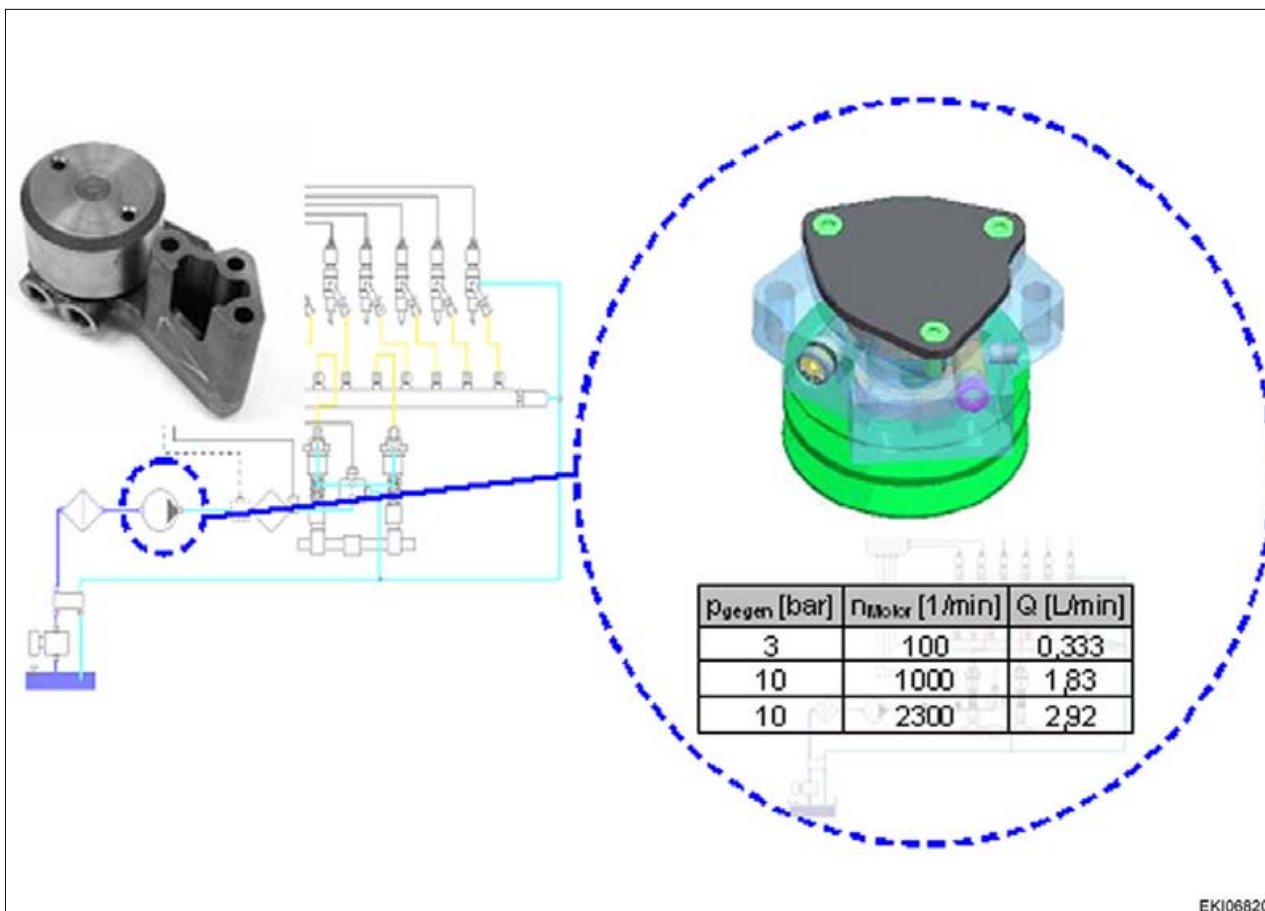
see Operating Manual Chapter: Service and Maintenance

Date	Version	Page	Capitel	Index	Docu-No.
17.08.2007	a	1/1	2060	A	000004

Fendt 300 Vario
FENDT 400 COM III
FENDT 7/800 COM III

Engine / Fuel system
Fuel delivery pump

A



Fuel delivery pump

The fuel delivery pump sucks the fuel out of the fuel tank through the prefilter and delivers it to the metering unit. Intake pressure is 0.5 to 0.8 bar and delivery pressure is maintained at approx. 7 bar by the spill valve.

The delivery capacity is almost proportional to speed and lies at approx. 175 l/h at 2300 rpm. The geared pump is maintenance-free and is lubricated and cooled by the fuel that is delivered. The fuel delivery pump is driven by a belt.

Date	Version	Page	Fuel delivery pump	Capitel	Index	Docu-No.
17.08.2007	a	1/1		2060	A	000005

**Fendt 300 Vario
FENDT 400 COM III
FENDT 7/800 COM III**

**Engine / Fuel system
Y091 - metering unit**

A



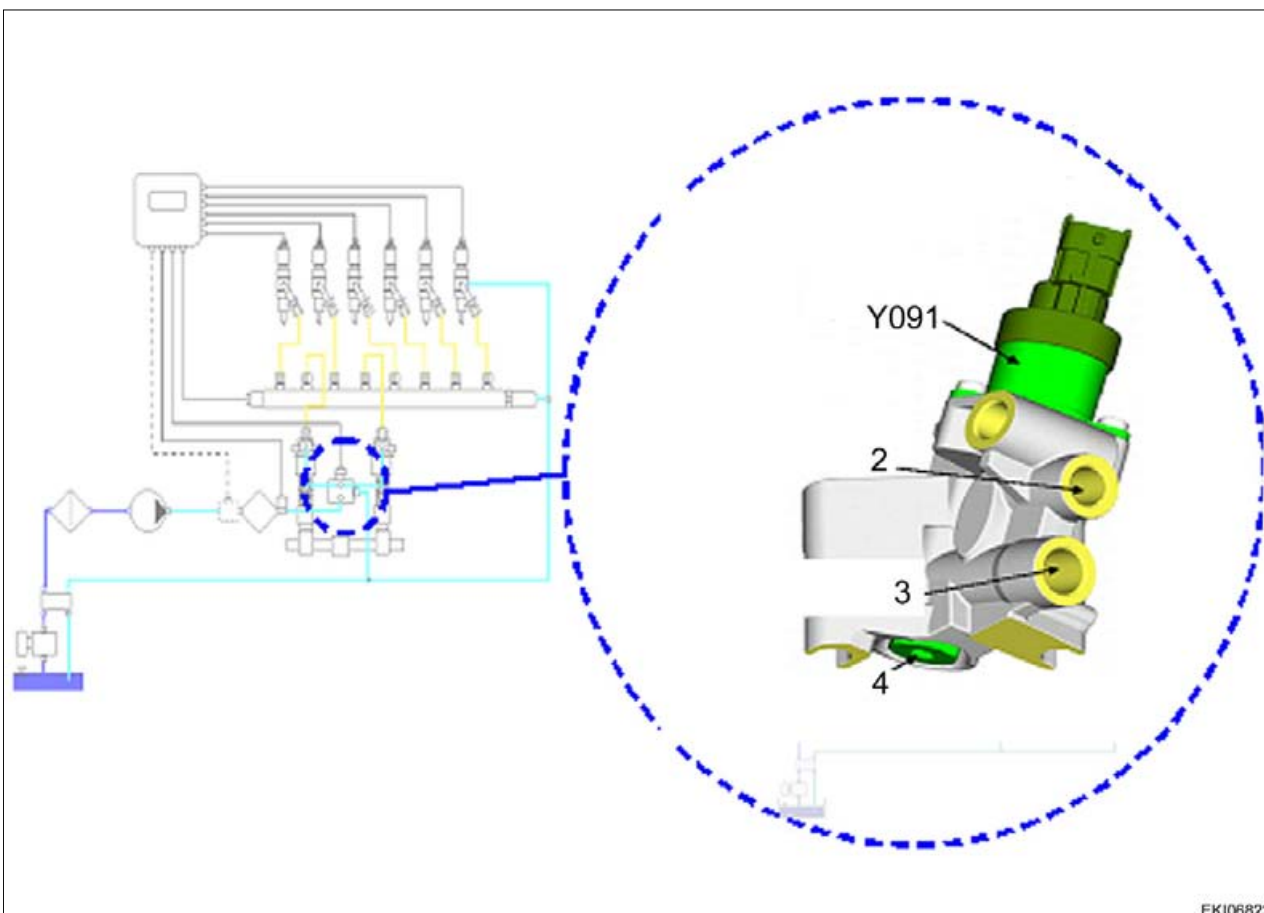
Danger:

After turning off the engine, wait at least 30 seconds before starting to work on the fuel system!!



Warning:

**Ensure strict cleanliness!
see Service Information 14/2007.**



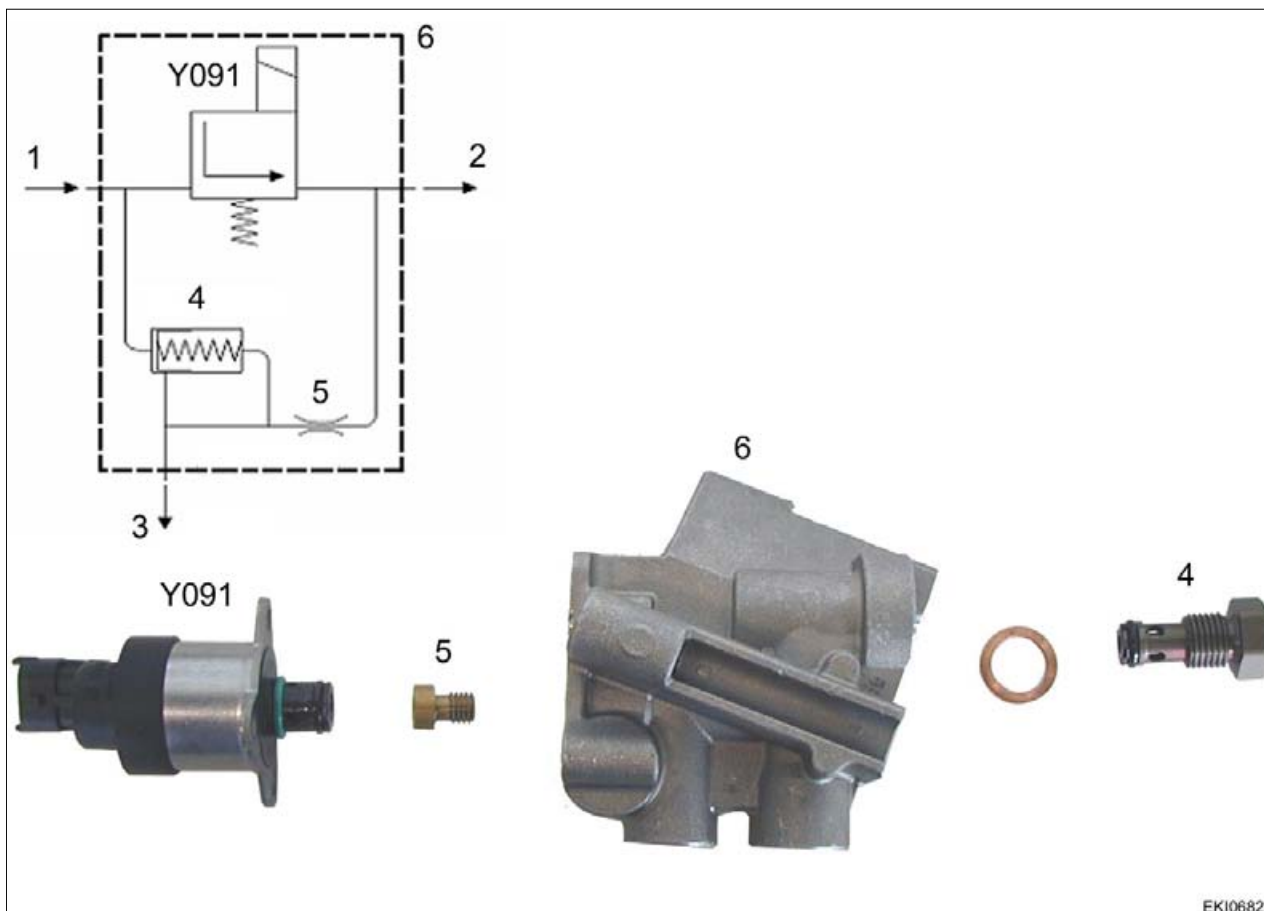
Date	Version	Page	Y091 - metering unit	Capitel	Index	Docu-No.
17.08.2007	a	1/3		2060	A	000006

Fendt 300 Vario
FENDT 400 COM III
FENDT 7/800 COM III

Engine / Fuel system
Y091 - metering unit

A

Fuel path: metering unit



EKI06821

Item	Designation	Item	Designation
Y091	Metering unit	3	Return flow
1	Inflow	4	Spill valve
2	to the high pressure pumps	5	Zero delivery throttle

The metering unit, which is activated by the engine control unit dependent on engine load and speed, doses the amount of fuel that goes to the high pressure pumps.

In this way, the pressure in the rail can be regulated.

If the metering unit is not activated, the spring (11) presses the plunger (10) upwards. The flow from the fuel delivery pump to the high pressure pump is all the way open and a large quantity of fuel goes to the high pressure pumps.

The solenoid in the metering unit is activated by a pulse width modulated signal from the engine control unit. Depending on the duty cycle, the plunger (10) changes the flow to the high pressure pumps.

The higher the duty cycle, the lower the flow rate.

The fuel that does not go to the high pressure pumps flows back to the fuel tank via the spill valve. On all tractor models, except FENDT 300 Vario and FENDT 400 COM III, the engine control unit is cooled by the fuel return system.

The engine control unit controls rail pressure through the metering unit together with the B086 - rail pressure sensor. The metering unit is the actuator in the high pressure control circuit.

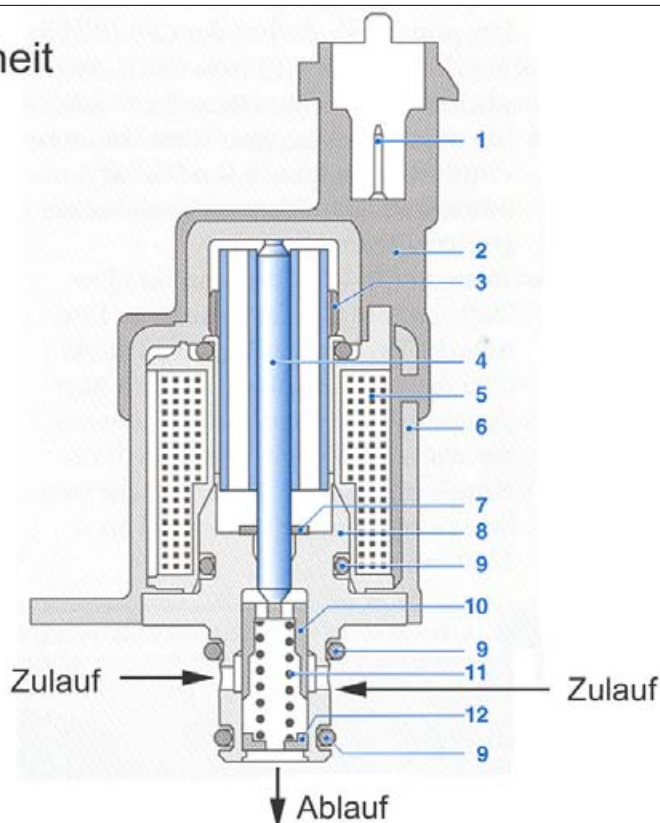
Date	Version	Page	Y091 - metering unit	Capitel	Index	Docu-No.
17.08.2007	a	2/3		2060	A	000006

Fendt 300 Vario
FENDT 400 COM III
FENDT 7/800 COM III

Engine / Fuel system
Y091 - metering unit

A

Y091 - Zumeßeinheit



EKI07571

Item	Designation	Item	Designation
1	X1662 - separation point	7	Residual air disc
2	Housing	8	Magnet core
3	Bearing	9	O-ring
4	Anchor with tappet	10	Plunger with control slots
5	Coil with body	11	Spring
6	Housing	12	Retaining element

The magnetically actuated piston (10) opens a flow cross-section corresponding to its position.

The Y091 - solenoid valve is activated by means of a PWM signal (proportional magnet)

Power consumption 0 VDC --> full flow rate

Note:

Emergency operating mode:

If the engine control unit detects a fault, the emergency operating mode is activated. In this case, the metering unit is no longer energised, the rail pressure increases since the high pressure pumps receive the full inflow. At a pressure of approx. 1800 bar, the high pressure relief valve opens. The engine then runs in emergency mode for 4 minutes at the most. The engine is automatically shutdown by the engine control unit, since the fuel is heated up through the pressure relief valve.

Date	Version	Page	Y091 - metering unit	Capitel	Index	Docu-No.
17.08.2007	a	3/3		2060	A	000006

**Fendt 300 Vario
FENDT 400 COM III
FENDT 7/800 COM III**

**Engine / Fuel system
High pressure pump (PF 45)**

A



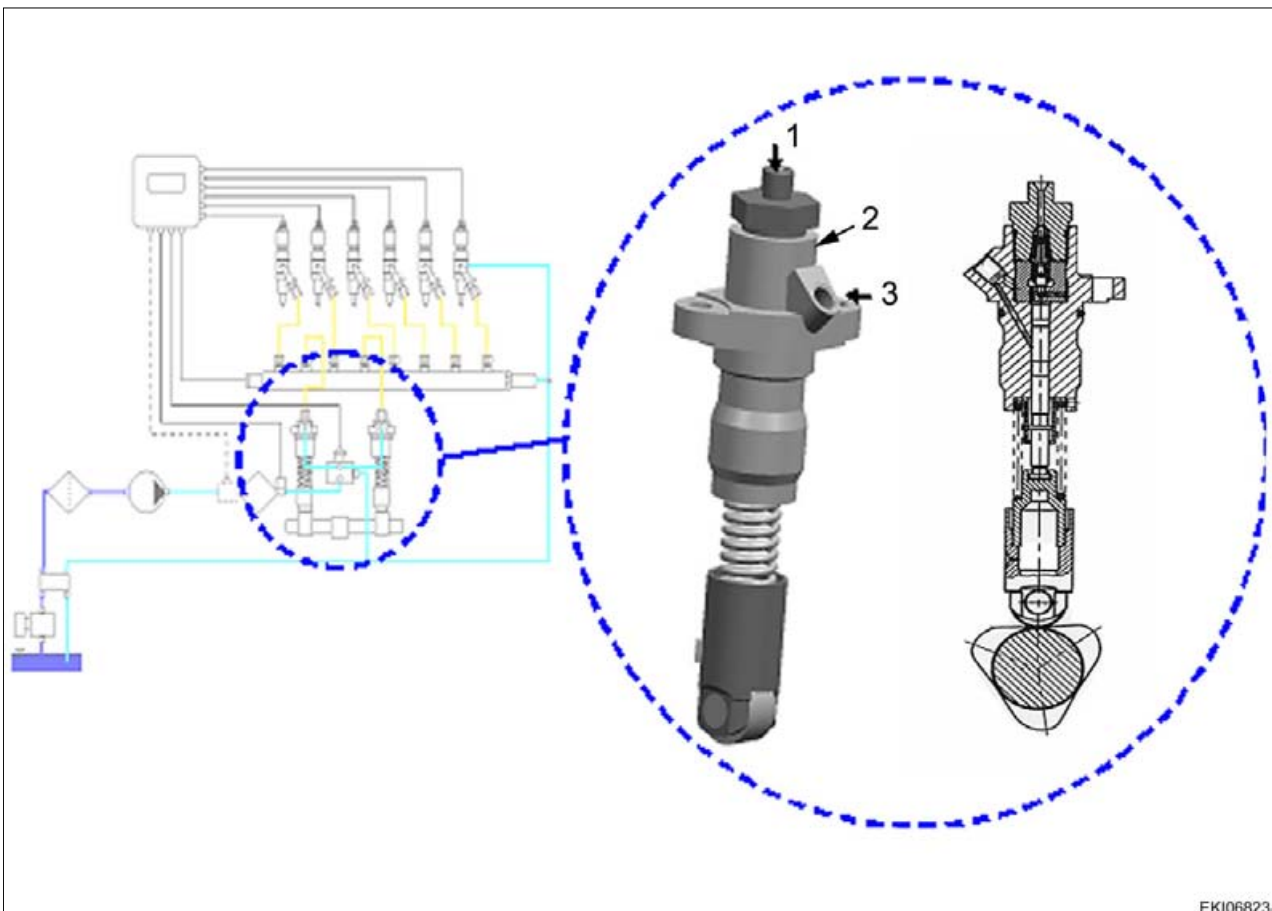
Danger:

After turning off the engine, wait at least 30 seconds before starting to work on the fuel system!!



Warning:

**Ensure strict cleanliness!
see Service Information 14/2007.**



EK106823

The high pressure pumps fulfil two functions.

- fuel intake
- pumping fuel

The high pressure pumps deliver high fuel pressure and suppress fluctuations of the required drive torque.

The high pressure pumps are driven by the camshaft via roller tappets. On 4-cylinder engines the camshaft has 2 cams, since 2 cylinders are supplied by each high pressure pump. On 6-cylinder engines the camshaft has 3 cams, since 3 cylinders are supplied by each high pressure pump.

The drive on the high pressure pumps is lubricated with engine oil. For this reason the Deutz common rail system is approved for use with RME fuel.

Date	Version	Page	Capitel	Index	Docu-No.
20.08.2007	a	1/2	High pressure pump (PF 45)	2060	A
					000007

Fendt 300 Vario FENDT 400 COM III FENDT 7/800 COM III	Engine / Fuel system High pressure pump (PF 45)	A
--	--	----------

Additional conditions:

- High pressure area disconnected hydraulically during intake
- High pressure pumps can only be filled at a primary pressure greater than 1.7 bar

Date	Version	Page	High pressure pump (PF 45)	Capitel	Index	Docu-No.
20.08.2007	a	2/2		2060	A	000007

**Fendt 300 Vario
FENDT 400 COM III
FENDT 7/800 COM III**

**Engine / Fuel system
High pressure accumulator (rail)**

A



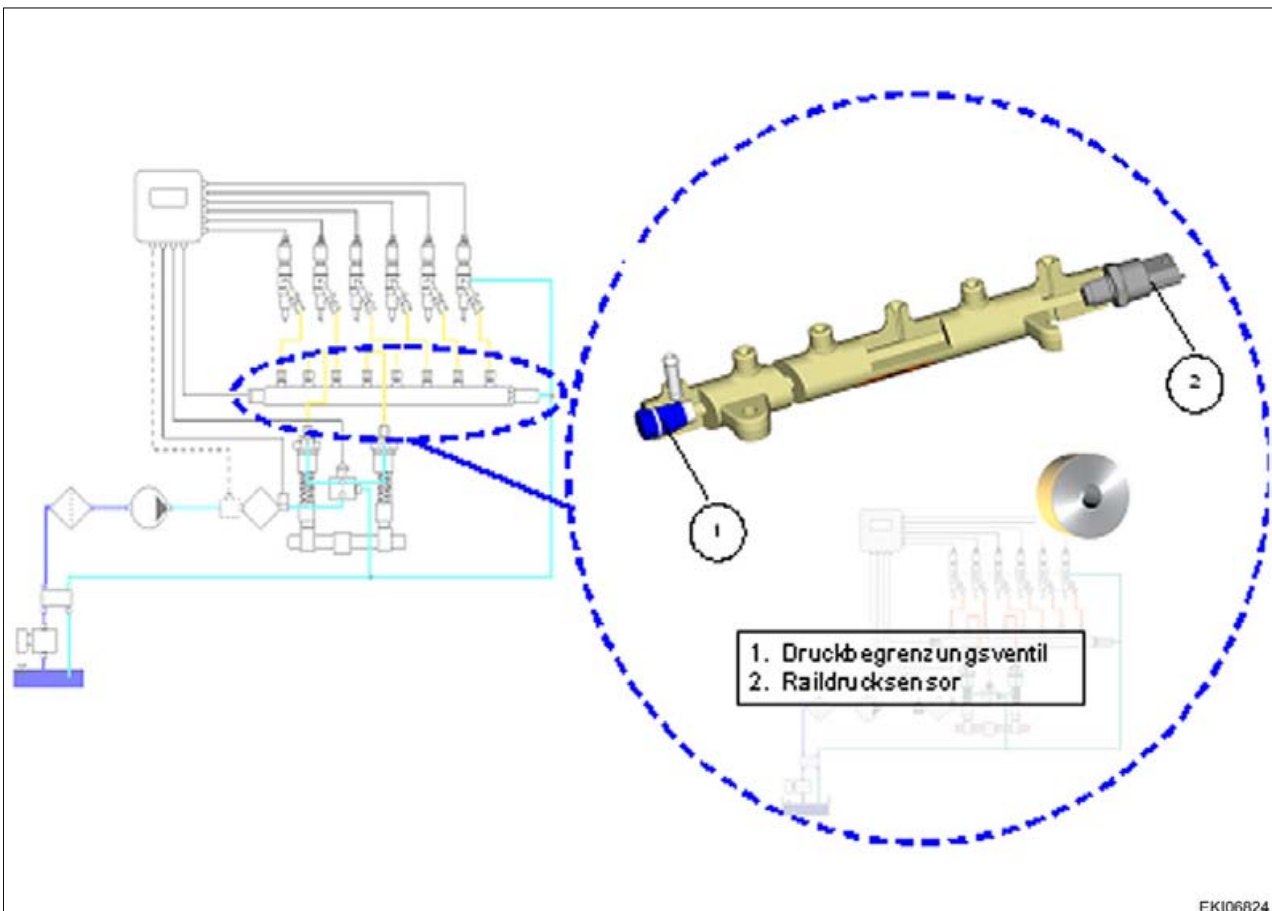
Danger:

After turning off the engine, wait at least 30 seconds before starting to work on the fuel system!!



Warning:

**Ensure strict cleanliness!
see Service Information 14/2007.**



1	High pressure relief valve	2	Rail pressure sensor
---	----------------------------	---	----------------------

The high pressure accumulator comprises a distribution pipe and the lines to the injectors. The fuel is stored in the high pressure accumulator at a high pressure. This dampens pressure oscillations that are caused by the pump and injection. Thus pressure remains almost constant, even when large quantities of fuel are taken out.

High pressure relief valve

The high pressure relief valve limits the maximum perm. fuel pressure in the rail to approx. 1800 bar. This protects the high pressure circuit from damage.

During emergency operation of the engine, the high pressure relief valve is deliberately opened. Opening the high pressure relief valve heats up the fuel strongly. That is why the engine continues to run max. 4 minutes (emergency running) and is then automatically shut down by the A051 - ECU, engine control unit (EDC 7).

Date	Version	Page	High pressure accumulator (rail)	Capitel	Index	Docu-No.
20.08.2007	a	1/2		2060	A	000008

Fendt 300 Vario FENDT 400 COM III FENDT 7/800 COM III	Engine / Fuel system High pressure accumulator (rail)	A
--	--	----------

Rail pressure sensor

Reports current rail pressure to the A051 - ECU, engine control unit (EDC 7) and, together with the metering unit, controls rail pressure.

Note:

also see Chapter 2000 Reg. A B086 Rail pressure sensor

also see Chapter 2060 Reg. A Design and function of the high pressure relief valve

also see Chapter 2060 Reg. G High pressure relief valve and Removing and installing rail pressure sensor

also see Chapter 9000 Reg. E B086 Rail pressure sensor

Rail pressure is output in the Deutz 'SERDIA' diagnostic program as target and actual values

Date	Version	Page	High pressure accumulator (rail)	Capitel	Index	Docu-No.
20.08.2007	a	2/2		2060	A	000008

**Fendt 300 Vario
FENDT 400 COM III
FENDT 700/800 COM III**

Engine / Fuel system Design and function of the high pressure relief valve

A



Danger:

After turning off the engine, wait at least 30 seconds before starting to work on the fuel system!!



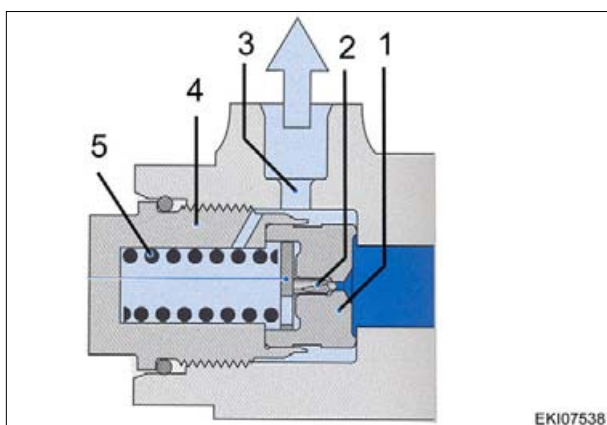
Tasks:

- The high pressure relief valve limits the maximum perm. fuel pressure in the rail (pressure accumulator) to approx. 1800 bar
- Enables emergency operating mode

Note:

After the high pressure relief valve has been activated approx. 30 times, the high pressure relief valve should be replaced.

If the high pressure relief valve leaks, the fuel is heated



Item	Designation
1	Valve core
2	Valve piston
3	Low pressure range (return flow)
4	Valve support
5	Compression spring
6	Disc washer
7	Rail (high pressure accumulator)

The pressure relief valve is a mechanical component. It comprises the following parts:

- a housing with an exterior thread to screw on to the rail (high pressure accumulator)
- a connection to the rail on the return line to the fuel tank (3)
- a movable plunger (2)
- a compression spring (5)

The housing has a bore on the connection side to the rail, which is closed by the bevel-formed end of a plunger pressing on a sealing seat on the inside of the housing.

When the max. perm. high pressure (approx. 1800 bar) is exceeded, the plunger (2) opens and the opening pressure then acts on the disc washer (6). Since its surface area is larger, the pressure in the rail drops to approx. 700 bar. The fuel flows back to the tank via the return connection (3). The fuel is heated up when the high pressure relief valve is opened. That is why the engine runs max. 4 minutes (emergency mode) and then shuts down automatically through the A051 - ECU, engine control unit (EDC 7).

The high pressure relief valve cannot be closed while the engine is running, the engine must always be switched off either by the A051 - ECU, engine control unit (EDC 7) or the driver

Date	Version	Page	Design and function of the high pressure relief valve	Capitel	Index	Docu-No.
09.08.2007	a	1/2		2060	A	000002

Fendt 300 Vario FENDT 400 COM III FENDT 700/800 COM III	Engine / Fuel system Design and function of the high pressure relief valve	A
--	--	----------

If the engine is switched off, the pressure relief valve closes after approx. 30 seconds

If the A051 - ECU, engine control unit (EDC 7) detects a fault in the fuel system, the emergency mode is activated.



BETR1974

Warning **high pressure relief valve open**

A fault code is saved FC 1.2.51; FC 1E1.51 (300 Vario)

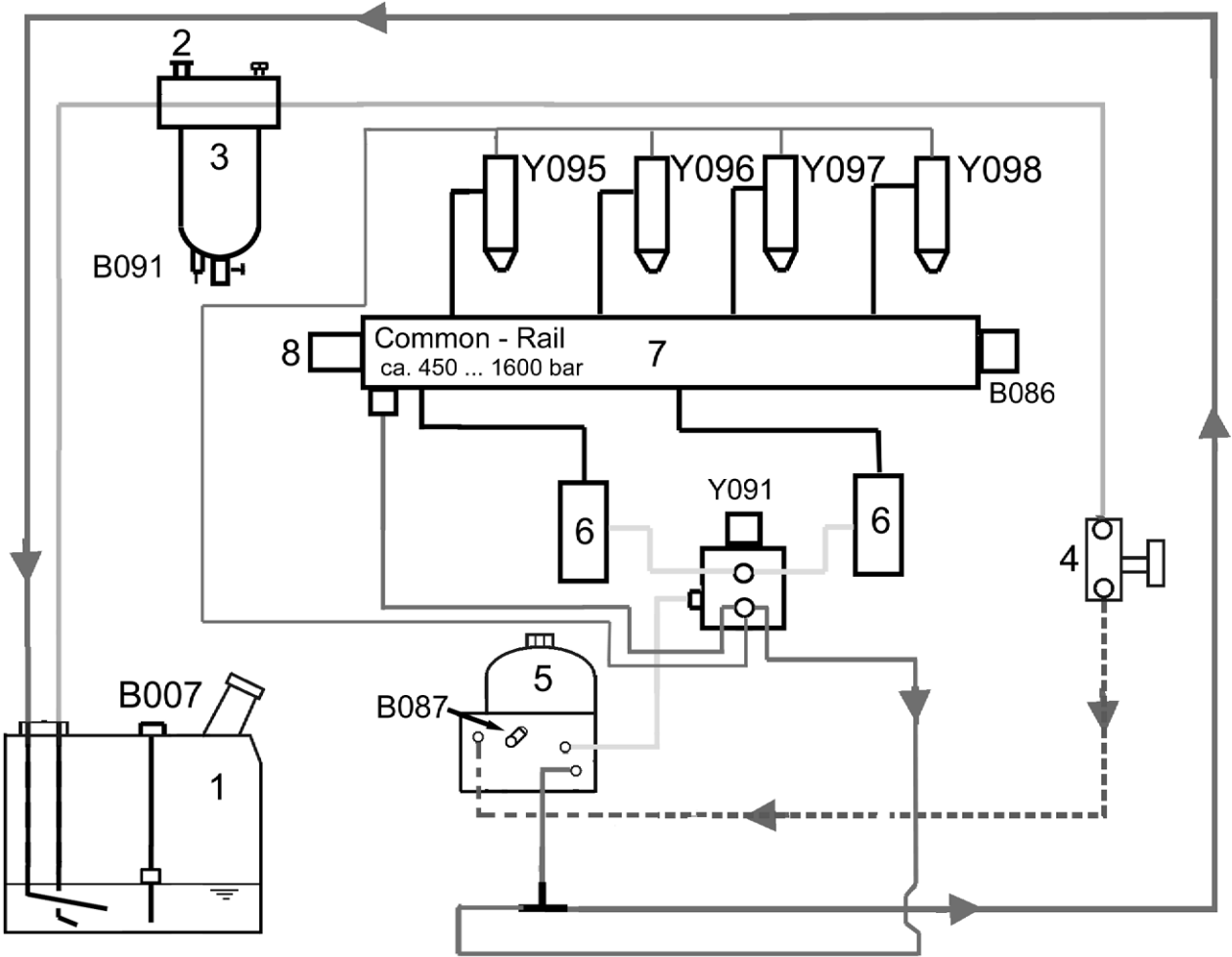
Date	Version	Page		Capitel	Index	Docu-No.
09.08.2007	a	2/2	Design and function of the high pressure relief valve	2060	A	000002

FENDT 300 COM III

Motor / Kraftstoffanlage
Kraftstoff - System

A

EKI09001



Datum	Stand	Seite	Kraftstoff - System		Kapitelzahl	Reg.	Docu-No.
18.09.2007	a	1/2			2060	A	000011

FENDT 300 COM III	Motor / Kraftstoffanlage Kraftstoff - System	A
--------------------------	---	----------

Pos.	Benennung	Pos.	Benennung
1	Kraftstoffbehälter	B007	Tauchrohrgeber (Kraftstoff)
2	Handpumpe	B086	Rail Drucksensor
3	Wasserabscheider (Vorfilter)	B087	Kraftstoffniederdruck
4	Förderpumpe	B091	Sensor, Wasser im Kraftstoff
5	Kraftstoff - Filter (Hauptfilter)	Y095	Einspritzventil 1
6	Hochdruckpumpe	Y096	Einspritzventil 2
7	Common Rail (Hochdruckspeicher)	Y097	Einspritzventil 3
8	Hochdruck - DBV	Y098	Einspritzventil 4

Wartung der Kraftstoffanlage

siehe auch:

- Betriebsanleitung
- Betriebsstoffliste

Austausch und Wartung entsprechend Wartungsplan - bei Nachlassen der Motorleistung evtl. schon früher.

Hinweis:

Kraftstoffanlage entlüften siehe Kapitel 2060 Reg. G

Datum	Stand	Seite	Kapitelzahl	Reg.	Docu-No.
18.09.2007	a	2/2	2060	A	000011

**Fendt 300 Vario
FENDT 400 COM III
FENDT 7/800 COM III**

**Engine / Fuel system
Y095....Y101 - injector 1....6**

A



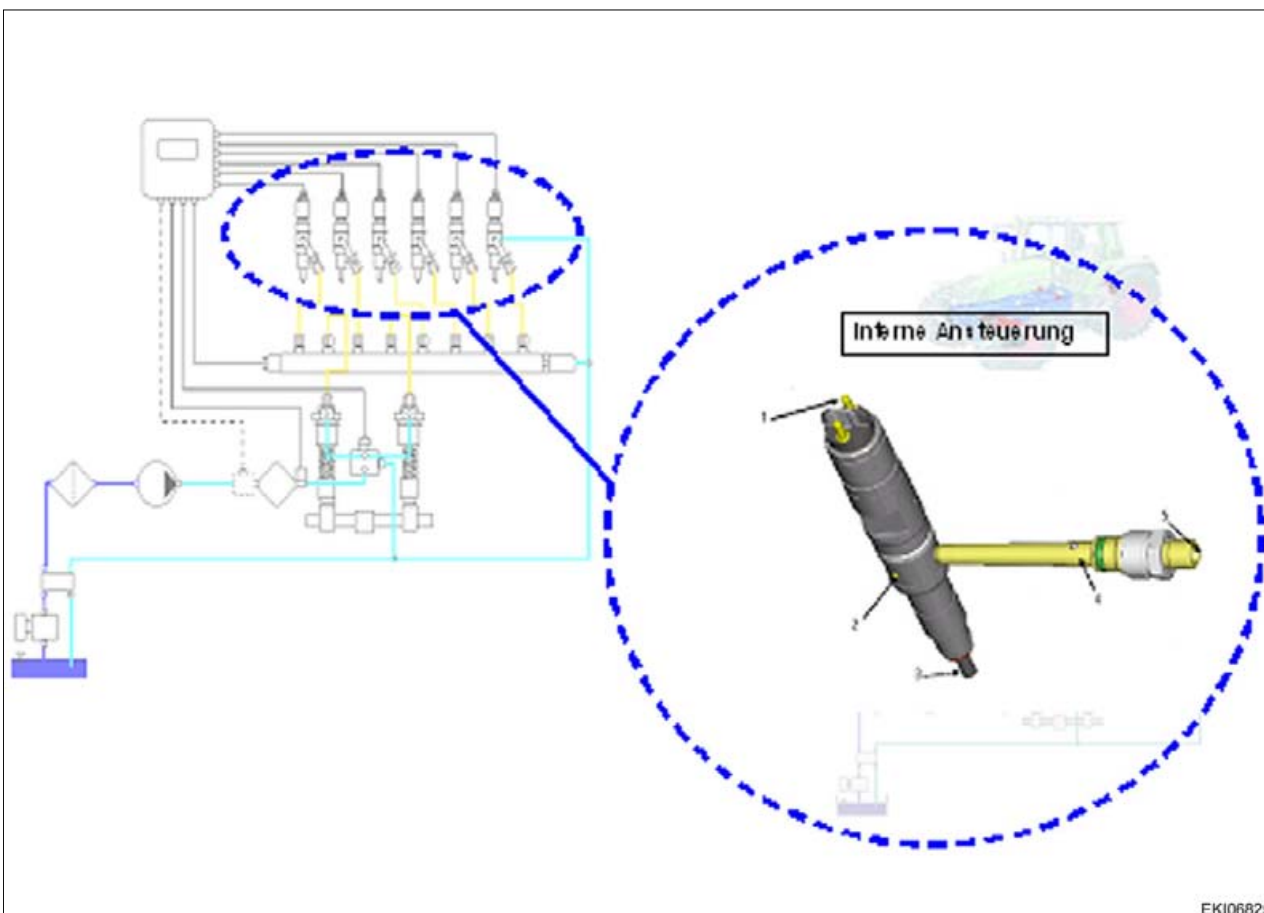
Danger:

After turning off the engine, wait at least 30 seconds before starting to work on the fuel system!!



Warning:

**Ensure strict cleanliness!
see Service Information 14/2007.**



Item	Designation	Item	Designation
1	Electrical connection	4	External high pressure connection
2	Return flow	5	High pressure connection from rail
3	Nozzle		

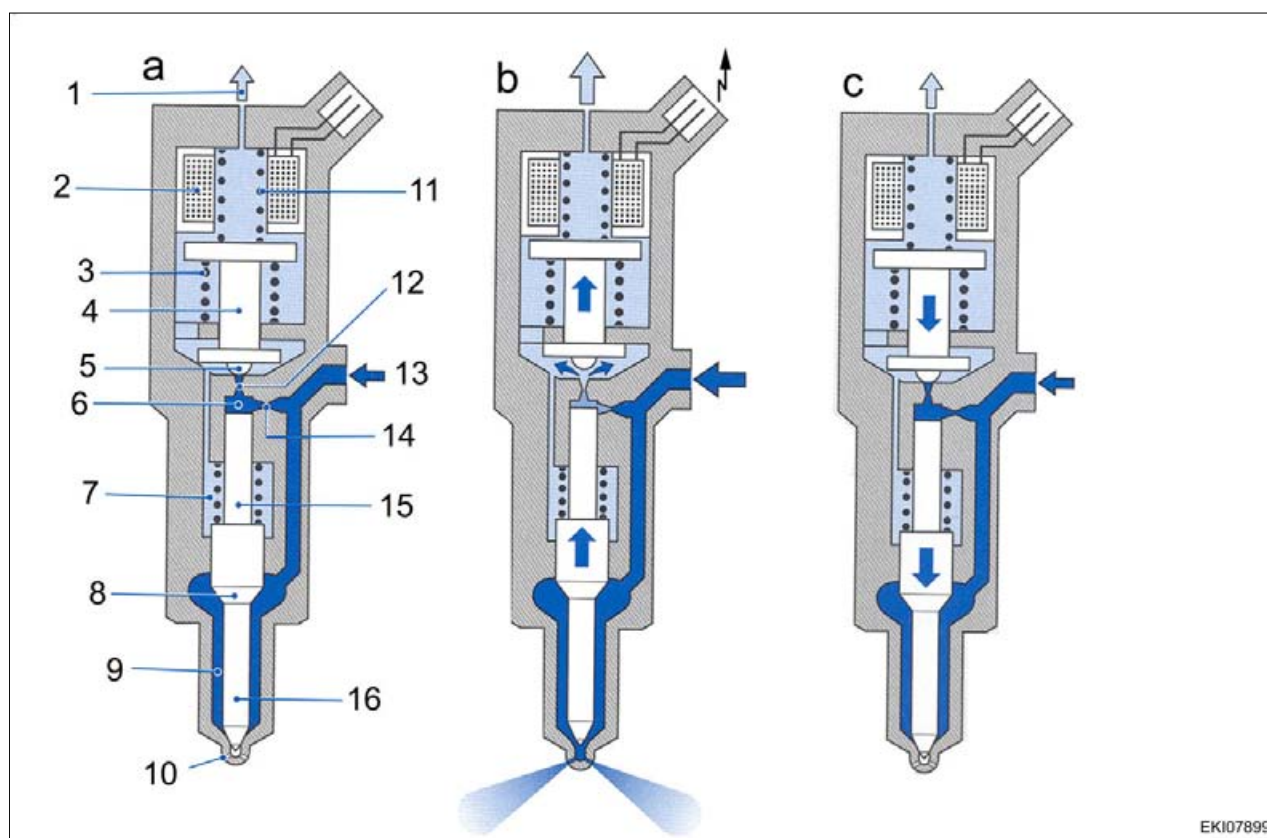
Date	Version	Page	Y095....Y101 - injector 1....6	Capitel	Index	Docu-No.
20.08.2007	a	1/3		2060	A	000009

Fendt 300 Vario
FENDT 400 COM III
FENDT 7/800 COM III

Engine / Fuel system
Y095....Y101 - injector 1....6

A

Sectional view: injector



EK107899

Item	Designation	Item	Designation
A	Rest position	7	Nozzle spring
B	Injector opens "start of injection"	8	Seat of nozzle needle
C	Injector closes "End of injection"	9	Chamber volume
1	Fuel return	10	Spray tip (multi-hole nozzle)
2	Solenoid	11	Solenoid valve spring
3	Lifting spring	12	Discharge throttle
4	Solenoid anchor	13	High pressure connection
5	Valve ball	14	Feed throttle
6	Valve control cavity	15	Plunger (control plunger)
		16	Nozzle needle

Functional description: injector

Rest position (a)

Fuel coming from the high pressure accumulator (arrow) through the high pressure connection (13) and feed throttle (14), floods the valve control cavity (6) and chamber space (9). Rail pressure builds up in both spaces. The additional force of the nozzle spring (7) (50N) prevents the injector from opening, even if there is no rail pressure present.

Injector opens "start of injection" (b)

By energising the solenoid (2) (approx. 20 A), the magnetic force acting on the solenoid anchor (4) exceeds the closing force of the solenoid valve spring (11). A high 20-amp current serves to open the injector quickly. When the closing power is overcome, the valve ball (5) opens the outflow bore (0.26 mm) and the fuel pressure in the valve control cavity (6) is relieved. This small amount of fuel required for opening the injector flows back to the tank via the fuel return.

Each time the injector is opened, a small quantity of fuel goes to the return line.

Date	Version	Page	Y095....Y101 - injector 1....6	Capitel	Index	Docu-No.
20.08.2007	a	2/3		2060	A	000009

**Fendt 300 Vario
FENDT 400 COM III
FENDT 7/800 COM III**

**Engine / Fuel system
Y095....Y101 - injector 1....6**

A

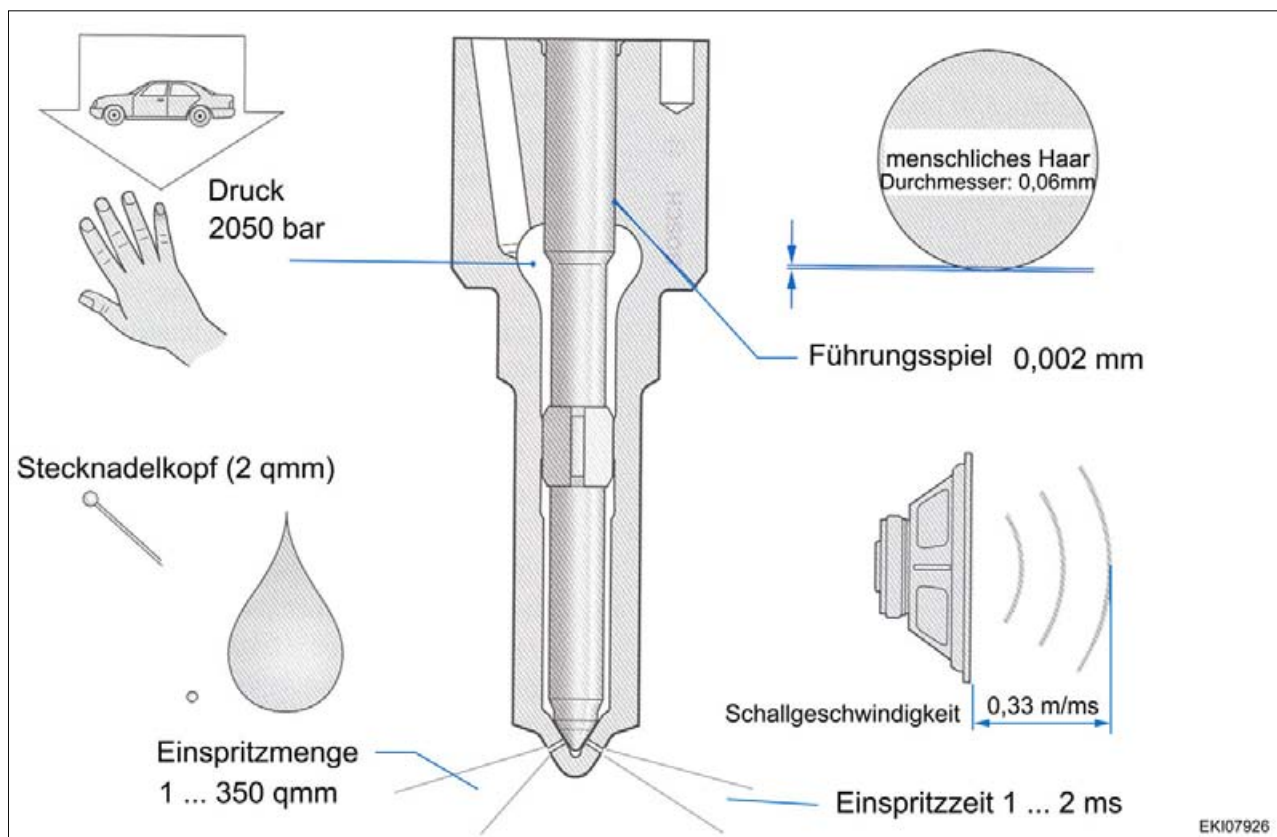
After reaching maximum stroke (approx. 50 μm), the current is reduced to a holding current of approx. 12 A, 0.3 ms after activation began.

Injector closes 'end of injection '

The A051 - ECU, engine control unit (EDC 7) switches the holding current off. Below the cut-off current (approx. 8 A), the solenoid valve closes, the nozzle needle (16) closes.

The fuel volume in the solenoid valve space dampens the vibrations of the solenoid anchor. The pressure in the fuel return (1), or respectively the pressure in the valve anchor space, should be between 0.3 - 1.0 bar to ensure adequate damping. Too high an increase in pressure causes excessive damping and negatively affects metering .

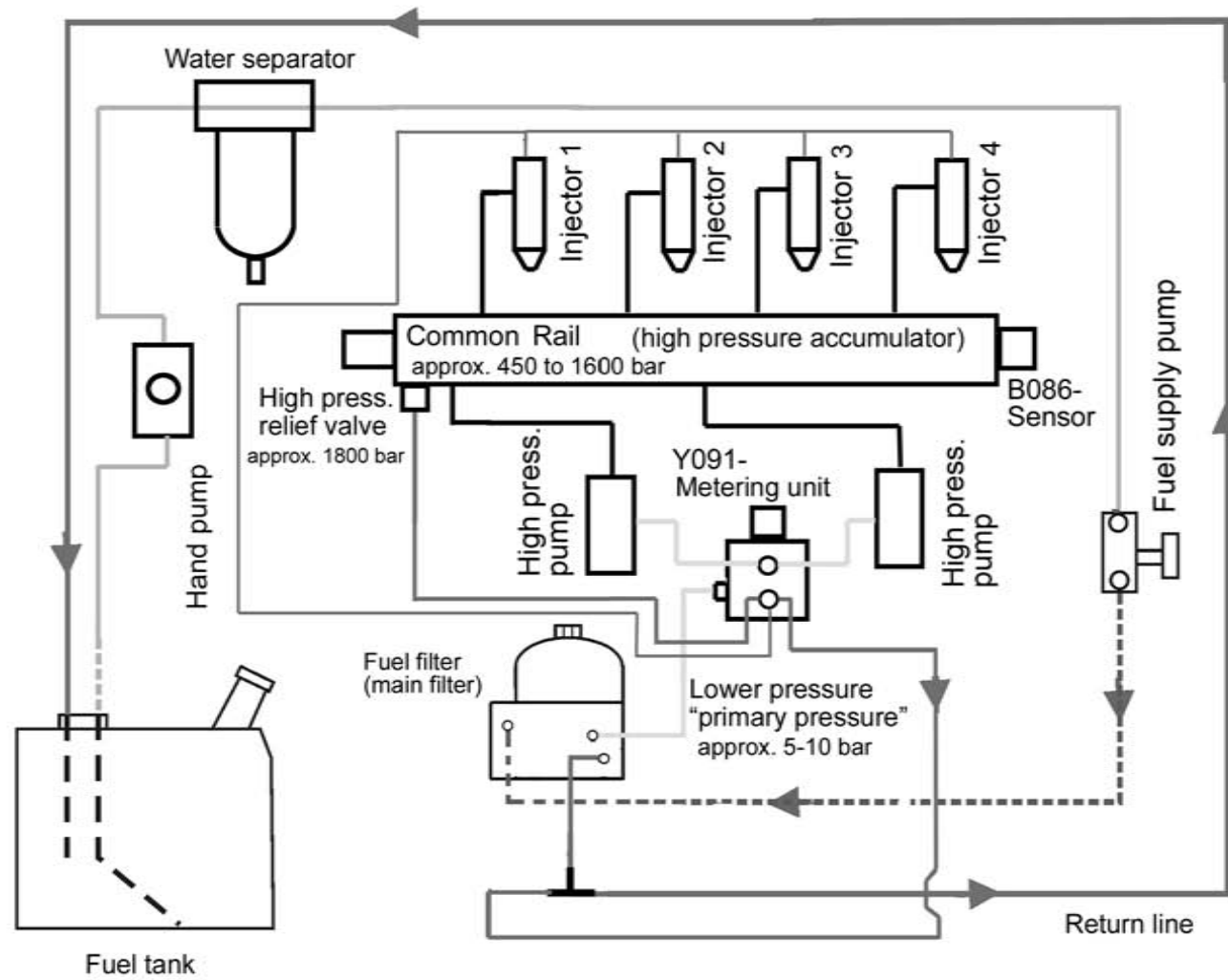
Forces, clearance and fuel quantities on injector



Note:

see also Chapter 2712 Reg. E Removing and installing injector
also see Chapter 9000 Reg. E Y095....Y101 - injector 1....6

Date	Version	Page	Capitel	Index	Docu-No.
20.08.2007	a	3/3	Y095....Y101 - injector 1....6	2060	A
					000009



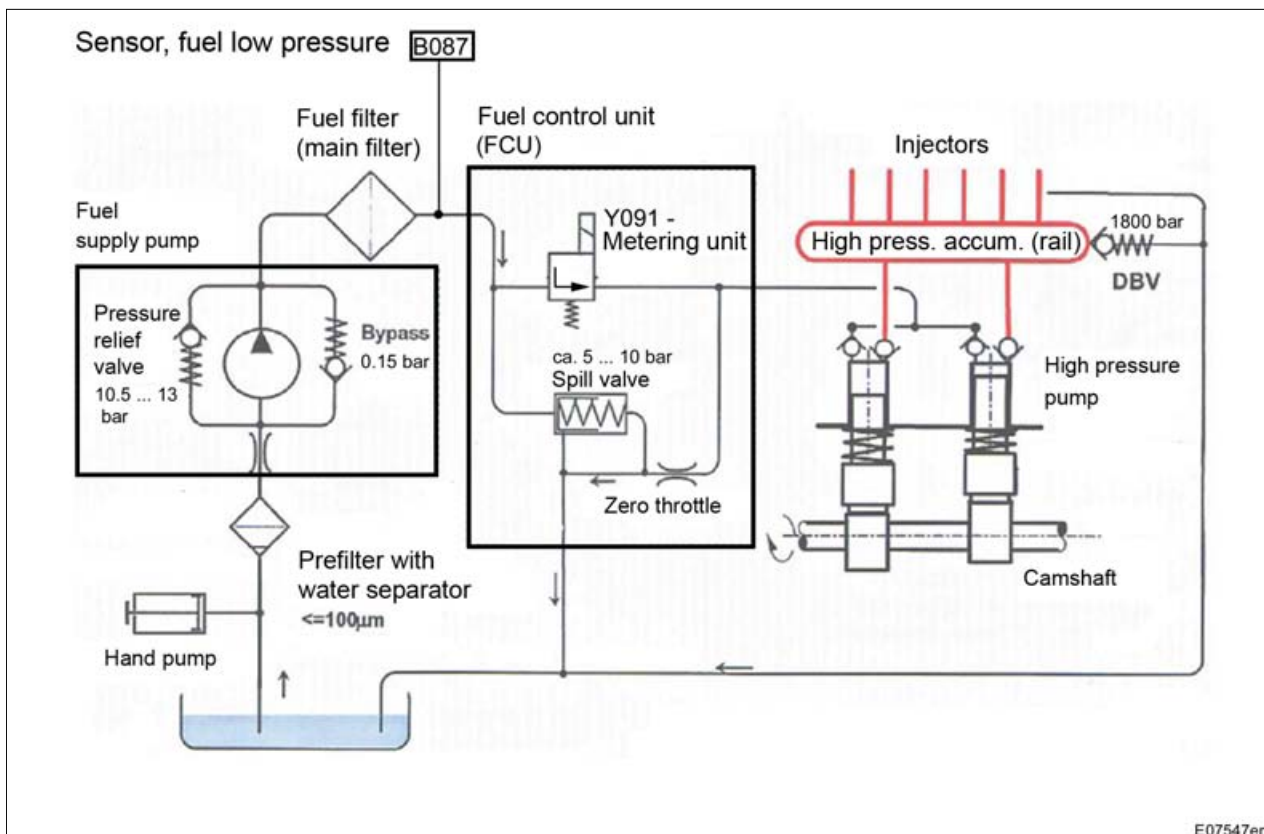
Fuel system FENDT 300 Vario

E07872en

Date	Version	Page	Fuel plan FENDT 300 Vario	
13.09.2007	a	1/2		
			Capitel	Index
			2060	A
				000010

Fendt 300 Vario

Engine / Fuel system
Fuel plan FENDT 300 Vario

A

Date	Version	Page	Capitel	Index	Docu-No.
13.09.2007	a	2/2	2060	A	000010

**Fendt 300 Vario
FENDT 400 COM III
FENDT 700/800 COM III**

Engine / Fuel system

Removing and installing high pressure relief valve and rail pressure sensor

G



Danger:

After turning off the engine, wait at least 30 seconds before starting to work on the fuel system!!



Warning:

Ensure strict cleanliness!
see Service Information 14/2007.

Removing and installing high pressure relief valve



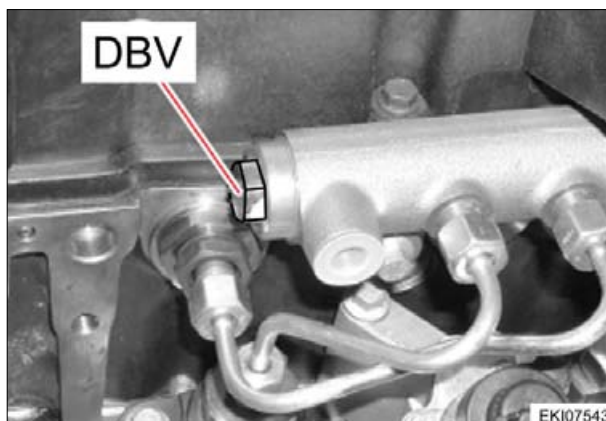
The high pressure relief valve limits the maximum perm. fuel high pressure in the rail (pressure accumulator) to approx. 1800 bar

Note:

After the high pressure relief valve has been activated approx. 30 times, the high pressure relief valve should be replaced.

If the high pressure relief valve leaks, the fuel is heated

The B086 - rail pressure sensor and the high pressure relief valve must always be replaced at the same time



Unscrew high pressure relief valve from rail

Note:

Collect fuel that flows out



Check thread and sealing edge for any damage (arrowed)

Date	Version	Page	Capitel	Index	Docu-No.
08.08.2007	a	1/3	2060	G	000006

Fendt 300 Vario
FENDT 400 COM III
FENDT 700/800 COM III

Engine / Fuel system

Removing and installing high pressure relief valve and rail pressure sensor

G



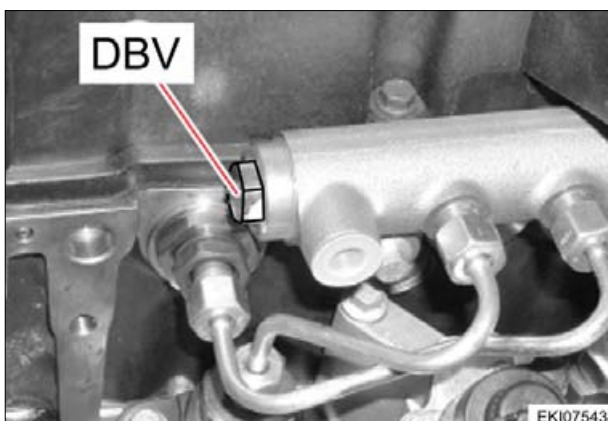
Carefully remove round sealing ring



Fit new sealing ring (arrowed)



Lightly grease thread and sealing edge of the pressure relief valve with high-pressure grease for long-term lubrication X902.002.472



Screw in pressure relief valve with new sealing ring and tighten to **100 Nm**

Date	Version	Page	Capitel	Index	Docu-No.
08.08.2007	a	2/3	Removing and installing high pressure relief valve and rail pressure sensor	2060	G
					000006

**Fendt 300 Vario
FENDT 400 COM III
FENDT 700/800 COM III**

Engine / Fuel system

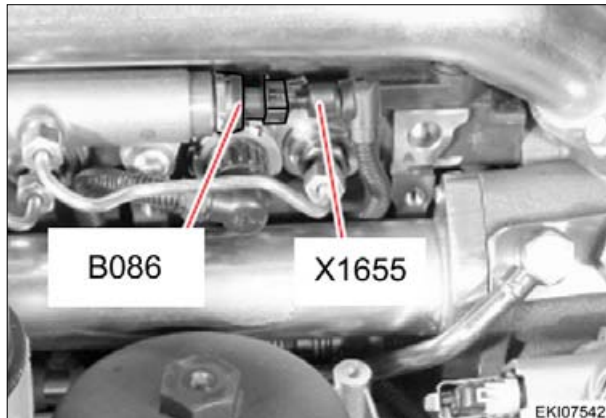
Removing and installing high pressure relief valve and rail pressure sensor

G

Removing and installing B086 - sensor, rail pressure

Note:

The B086 - rail pressure sensor and the high pressure relief valve must always be replaced at the same time



Disconnect X1655 - separation point
Unscrew B086 - rail pressure sensor

Note:

Collect fuel that flows out

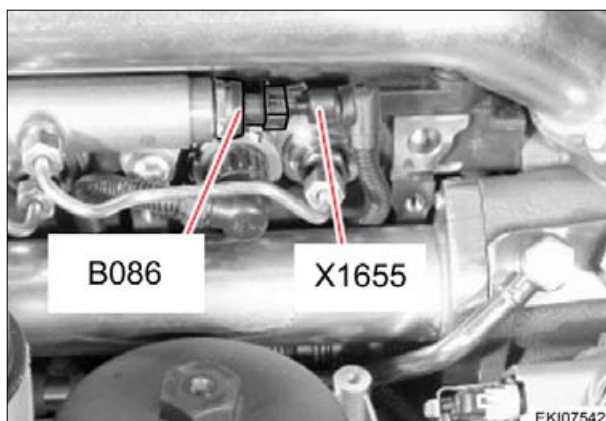


Note:

To prevent electrostatic discharge on the pin contacts of the B086 - rail pressure sensor, do not touch with bare hands

Check thread and sealing edge for any damage (arrowed)

Lightly grease thread and sealing edge of the B086 - rail pressure sensor with high-pressure grease for long-term lubrication X902.002.472



Screw in B086 - sensor and tighten to 70 Nm
Connect X1655 - separation point

Bleed fuel system with hand pump

Note:

see Chapter 2060 Reg. G Bleeding fuel system

Date	Version	Page		Capitel	Index	Docu-No.
08.08.2007	a	3/3	Removing and installing high pressure relief valve and rail pressure sensor	2060	G	000006

Fendt 300 Vario	Engine / Fuel system Bleeding the fuel system	G
------------------------	--	----------

**Danger:**

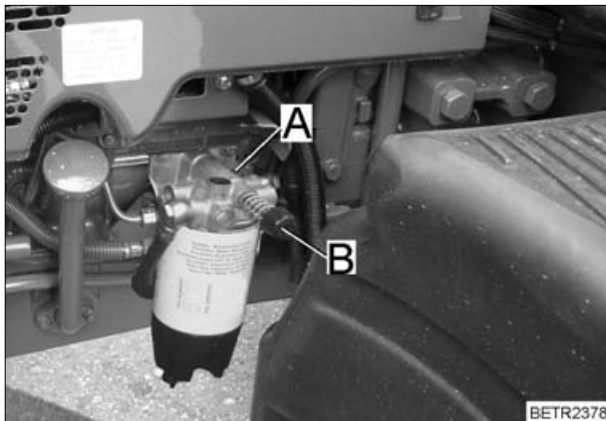
Do not open high pressure lines; serious injuries may occur because the common rail system is under permanent pressure.

**Danger:**

After turning of the engine, wait at least 30 seconds before starting to work on the fuel system!!

Note:

When bleeding, do not open any fuel or injection lines, otherwise the injection lines will have to be changed.



Open the ventilation screw (A) on the fuel prefilter. With a manual feed pump (B), pump until fuel comes out at the bleed screw (A) without bubbles. Close the ventilation screw (A) on the fuel prefilter. With a hand feed pump (B), pump until strong resistance is felt and a sound at the spill valve is heard, then pump a few times more.

Then start the tractor, maximum starter run time is 30 seconds, observe recovery times.

The high pressure accumulator (rail) (arrowed) bleeds itself automatically

Air in the high pressure system can result in impermissible pressure fluctuation in the common rail system. To prevent this, allow the tractor to operate approx. 5 minutes at low load.

Date	Version	Page	Bleeding the fuel system	Capitel	Index	Docu-No.
18.09.2007	a	1/1		2060	G	000008

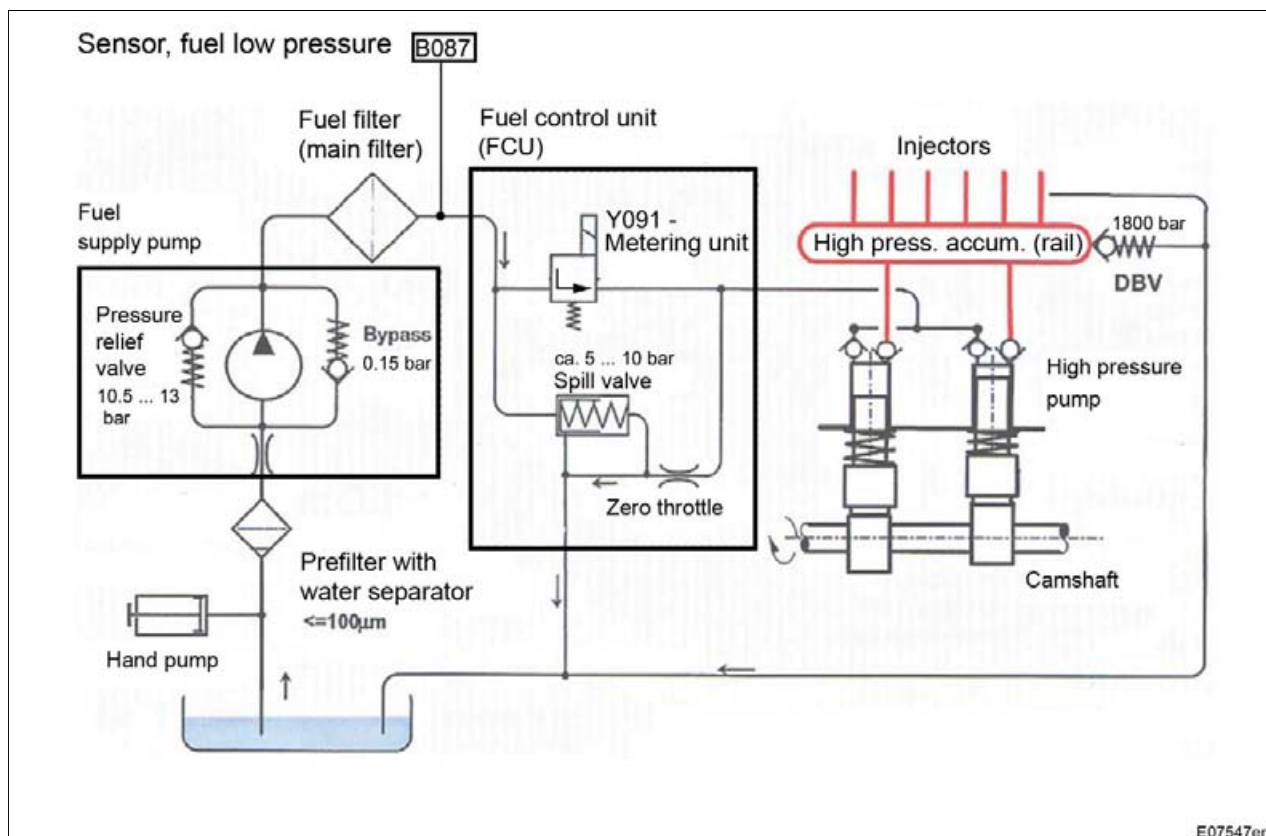
Fendt 300 Vario

Engine / Fuel system

Bleeding the fuel system

G**Danger:**

Do not open high pressure lines; serious injuries may occur because the common rail system is under permanent pressure.

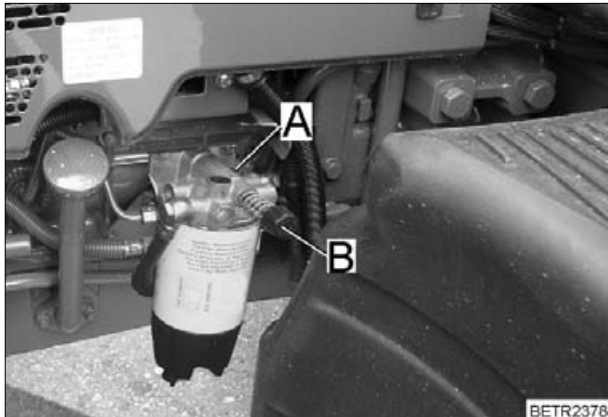


Date	Version	Page	Capitel	Index	Docu-No.
03.08.2007	a	1/2	2060	G	000004

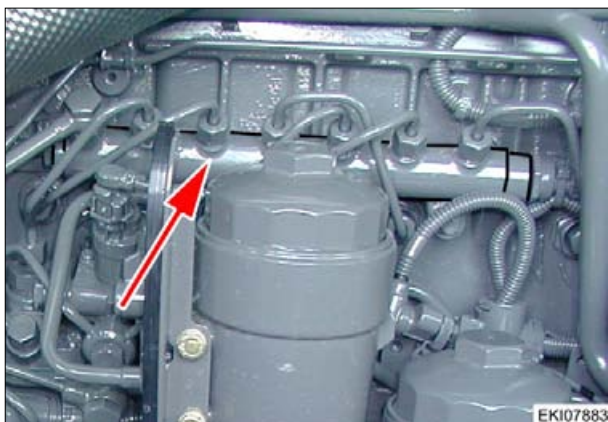
Fendt 300 Vario

Engine / Fuel system

Bleeding the fuel system

G

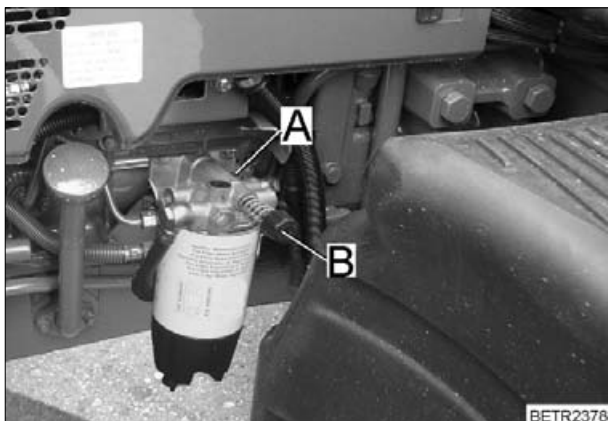
Open the ventilation screw (A) on the fuel prefilter.
Screw out hand feed pump (B).
Pump the hand feed pump (B) until a strong resistance is felt, then pump a few times more.
Close the ventilation screw (A) on the fuel prefilter.



Then start the tractor, maximum starter run time is 30 seconds, observe recovery times.

The high pressure accumulator (rail) (arrowed) bleeds itself automatically

Air in the high pressure system can result in impermissible pressure fluctuation in the common rail system. To prevent this, allow the tractor to operate approx. 5 minutes at low load.



Screw hand feed pump (B) back in.

Date	Version	Page	Bleeding the fuel system	Capitel	Index	Docu-No.
03.08.2007	a	2/2		2060	G	000004



2250 ENGINE/ENGINE HEATER

Mounting engine heater and transmission oil heater

G

Preliminary work:

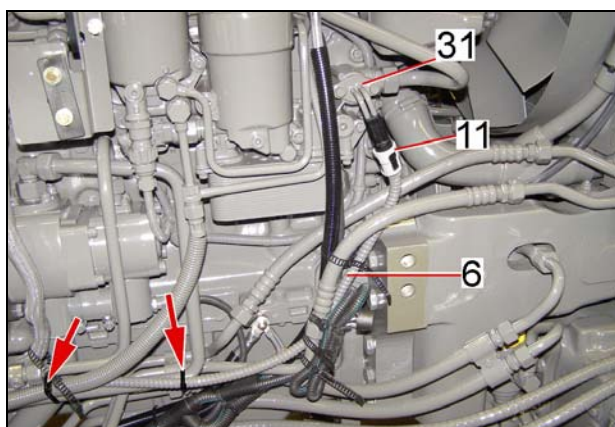
- Drain coolant.
- Drain transmission oil.
- Unscrew fuel tank.
- Raise rear of cab, if necessary.

Mounting engine oil heater:

Engine oil heater components

Item	Designation	Item	Designation
1	BRACKET_SEPARATION POINT	51	HEX SCREW_M6X16-8.8-A3L
2	BRACKET_WIRING HARNESS	52	HEX SCREW_M6X40-8.8A3L
3	DISTRIBUTOR_Y-PIECE	53	HEX SCREW_M8X16-8.8-E3B
4	CIRCLIP	60	WASHER_DIN 125-5.3-ST.A3L
5	CONNECTION CABLE_0.5M	61	WASHER_DIN 125-6.4-ST.A3L
6	EXTENSION CABLE_2.0M	70	SPRING WASHER_-8-A3L
10	MOUNTING BRACKET	71	SPRING WASHER_-5-A3L
11	CIRCLIP	72	SPRING WASHER_B8
31	HEATING ELEMENT_ENGINE	80	HEX NUT_M5-8A3L
32	SUPPLY CABLE_POWER SUPPLY	81	HEX NUT_M6-8A3L
50	HEX SCREW_M5X16-8.8A3L	100	CABLE TAPE_B175X4-SW

Assembly Instructions



1001711

- Unscrew blind flange and O-ring seal.
- Unscrew engine heater element (Item 31) and O-ring seal.
- Connect extension cable (Item 6) to the engine heater element with circlip (Item 11).
- Fasten extension cable to pressure pipe using 2x cable tie (arrowed).



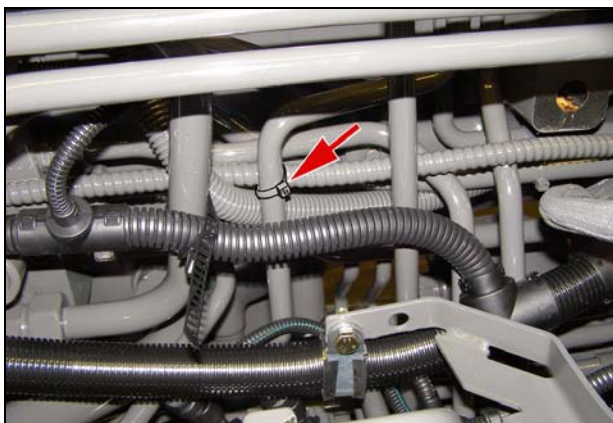
1001712

- Lay the extension cable on the tractor frame towards the transmission and fasten to the pressure pipe using cable tie (arrowed).



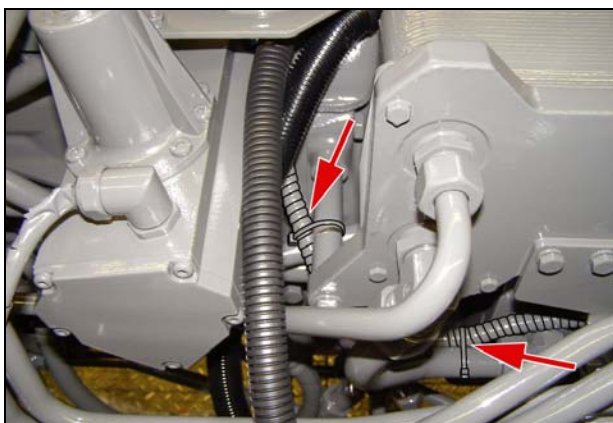
2250 ENGINE/ENGINE HEATER

Mounting engine heater and transmission oil heater

G

I001713

- Fasten extension cable to pressure pipe using cable tie (arrowed).



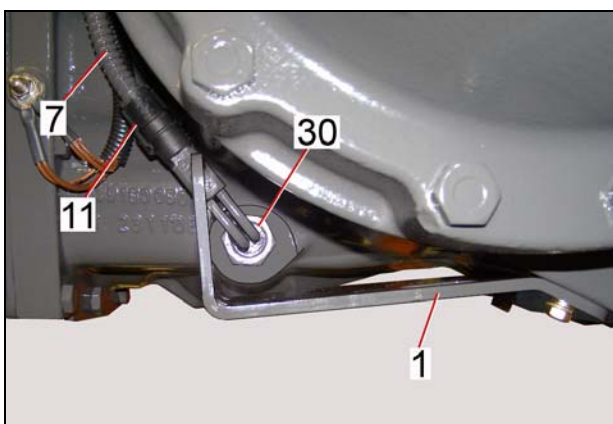
I001717

- Lay the extension cable in front of the transmission control unit upwards onto the tractor frame and fasten to the pressure pipes using a cable tie (arrowed).

Mounting transmission oil heater:

Components for transmission oil heater

Item	Designation	Item	Designation
1	GUARD	60	WASHER_DIN 125-8.4-ST.A3L
7	EXTENSION CABLE_1.5M	70	SPRING WASHER_-8-A3L
11	CIRCLIP	100	CABLE TAPE
30	HEATING ELEMENT_OIL	101	CABLE TAPE_B175X4-SW
50	HEX SCREW_M8X20-8.8A3L		



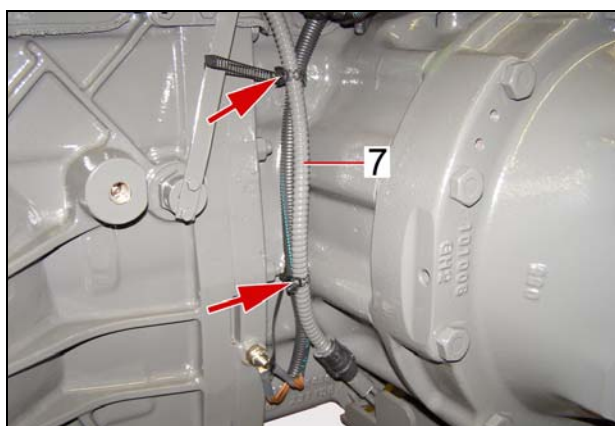
I001750

- Unscrew drain plug with seal ring.
- Screw in transmission heater element (Item 30) and seal ring.
- Connect extension cable (Item 7) using circlip (Pos. 11) on to the transmission heater element.
- Screw on guard plate (Item 1) using 2x hex screw M8x20-8.8, 2x spring washer and 2x washer.



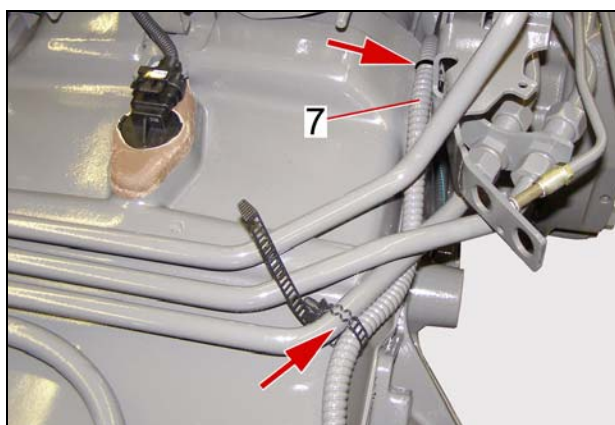
2250 ENGINE/ENGINE HEATER

Mounting engine heater and transmission oil heater

G

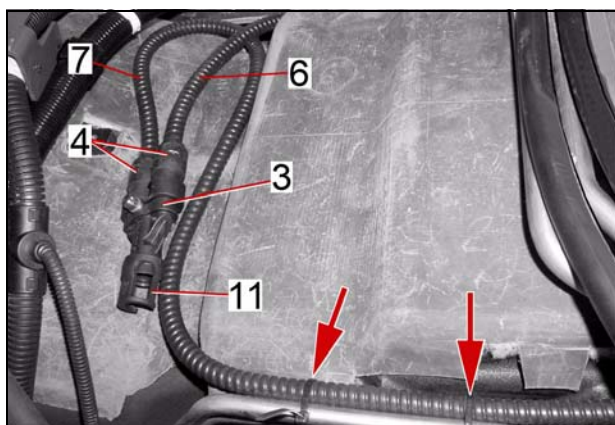
1001726

- Lay extension cable (Item 7) at the rear axle housing in an upwards direction.
- Fasten extension cable with 2x cable tie (arrowed).



1001727

- Fasten extension cable (Item 7) with 2x cable tie (arrowed).



1001728

- Lay overlength of transmission oil heater extension cable (Item 7) here.
- Attach transmission oil heater extension cable (Item 7) and engine oil heater extension cable (Item 6) to the distributor Y-piece (Item 3) using 2x circlip (Item 4).
- Fasten extension cable (Item 7) with 2x cable tie (arrowed).

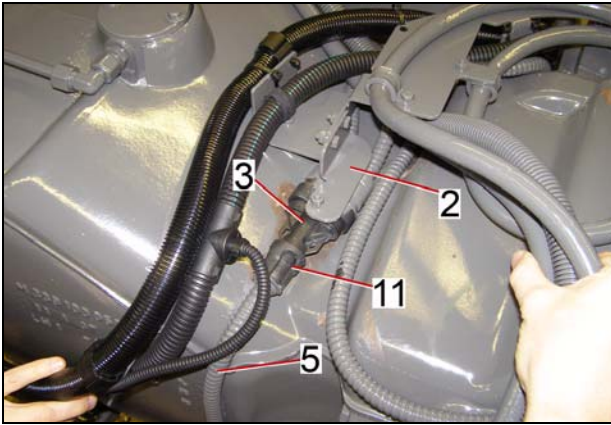


2250 ENGINE/ENGINE HEATER

Mounting engine heater and transmission oil heater

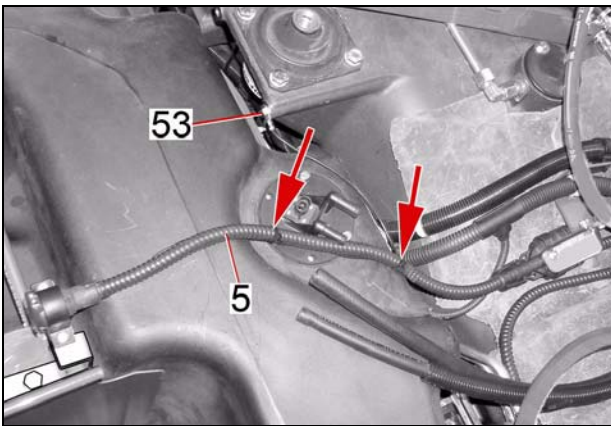
G

Mounting connection cable:



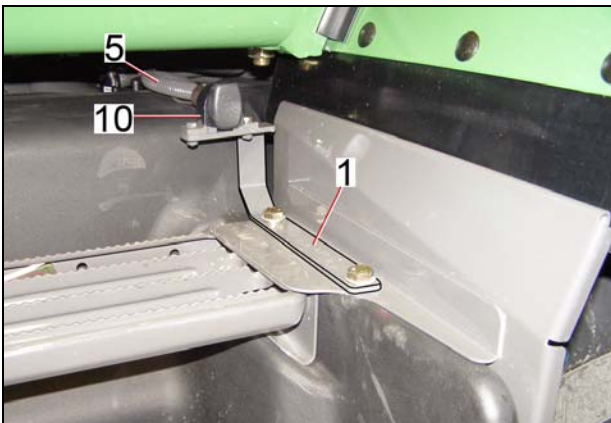
I001729

- Screw on wiring harness bracket (Item 2) with 2x (Item 51/61/71/81).
- Screw distributor Y-piece (Item 3) onto wiring harness bracket (Item 2) with (Item 52/ 61/71/ 81).
- Connect connection cable (Item 5) with circlip (Item 11) to the distributor Y-piece.



I001737

- Re-mount fuel tank.
- Lay connection cable (Item 5) towards entrance.
- Fasten extension cable (Item 5) with 2x cable tie (arrowed).
- Screw earth cable to colourless earth pin on cab bearing with screw (Item 53).



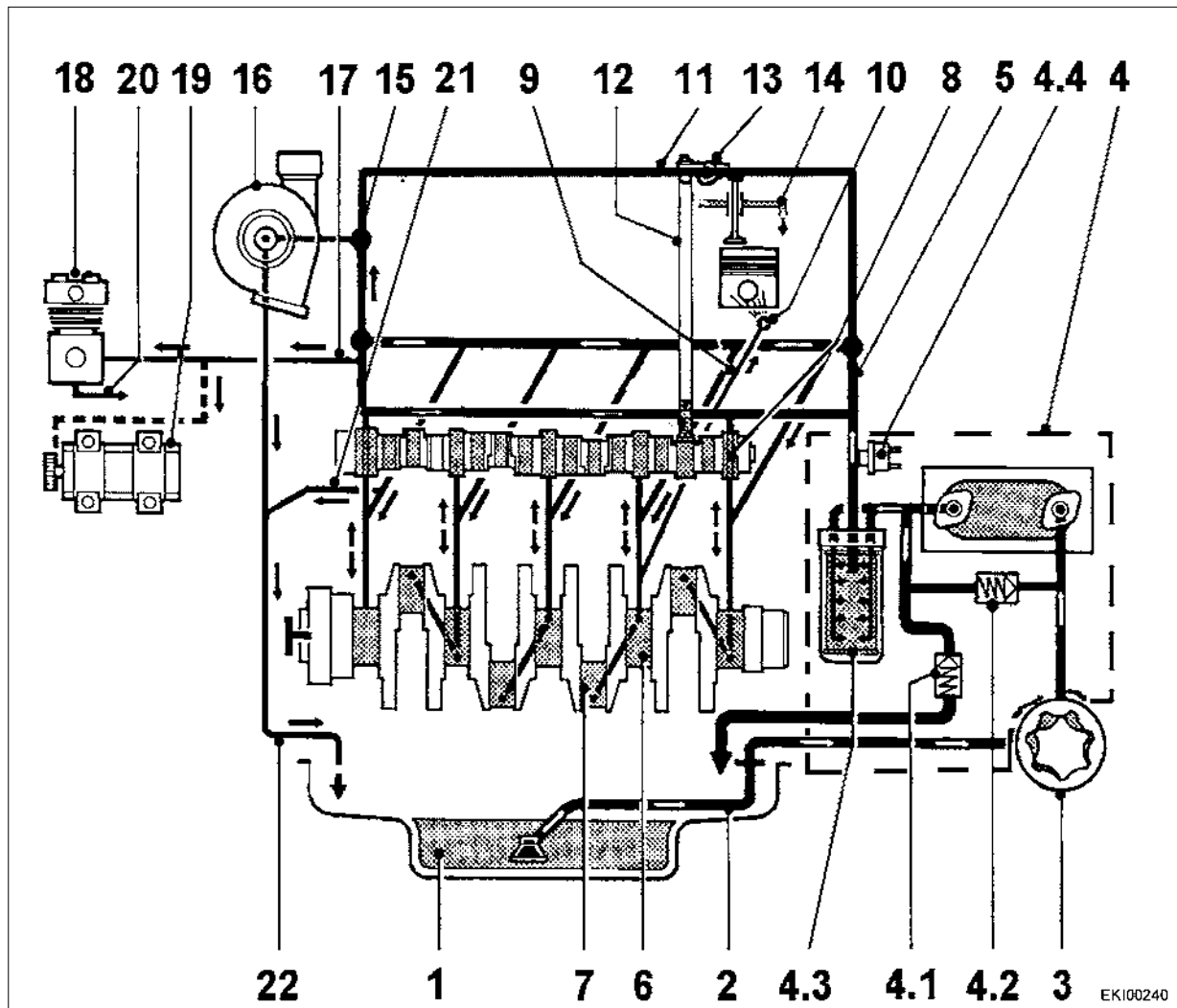
I001738

- Screw separation point bracket (Item 1) to entrance.
- Screw on extension cable (Item 5) with mounting bracket (Item 10) and 2x (Item 50/ 60/70/80) each.
- Refill coolant and transmission oil.

Fendt 300 Vario
FENDT 400 COM III
FENDT 7/800 COM III

Engine / Lubrication
Lube oil circuit

D

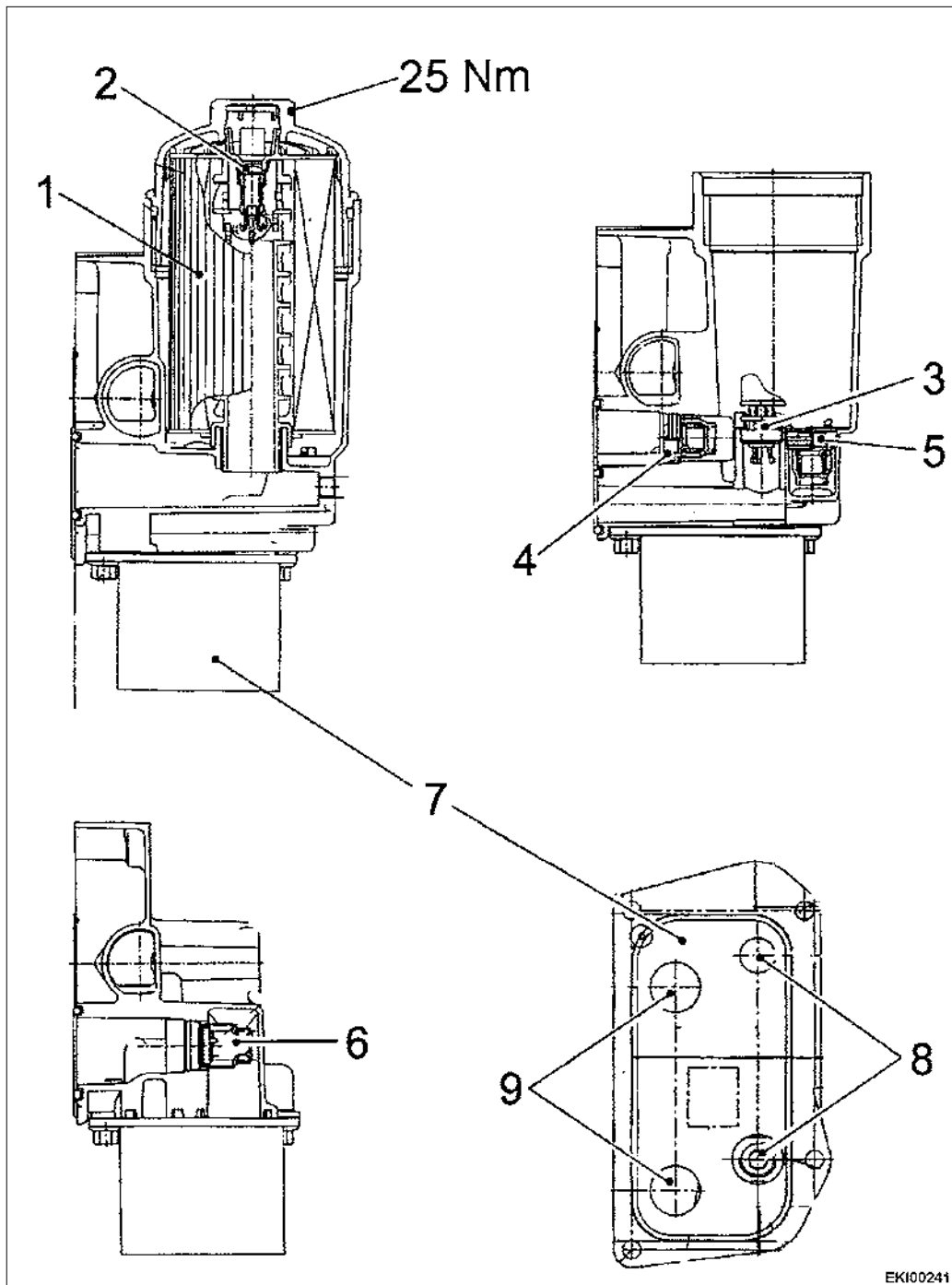


1	Oil pan	11	Lubrication of rocker arms via bores in rocker arm shafts
2	Intake line	12	Push rod
3	Lube pump	13	Rocker arm
4	Oil cooler housing	14	Return line to oil pan
4.1	- pressure relief valve lube oil; 4 ± 0.4 bar	15	Oil line to turbocharger
4.2	- radiator bypass; 1.45 ± 0.3 bar	16	Turbocharger
4.3	- Lube oil filter	17	Oil line to compressor or Hydraulic pump
4.4	- switch, engine oil pressure (B090)	18	Compressor
5	Main oil pipe	19	Hydraulic pump
6	Crankshaft main bearing	20	Return line
7	Big end bearing	21	Return line to oil pan
8	Camshaft bearing	22	Return line from turbocharger
9	Bore for piston coolant nozzle		
10	Piston coolant nozzle		

Fendt 300 Vario
FENDT 400 COM III
FENDT 7/800 COM III

Engine / Lubrication
Lube oil circuit

D

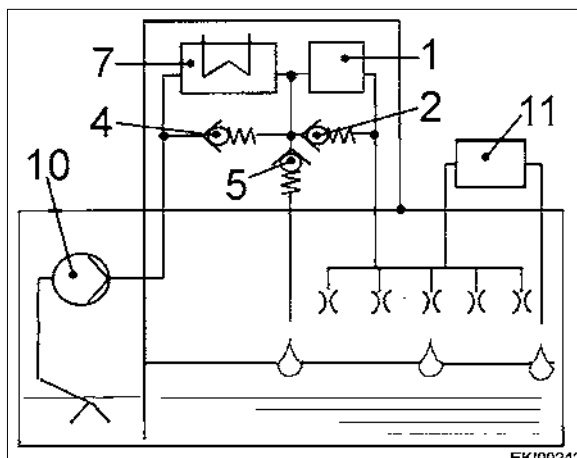


Date	Version	Page	Lube oil circuit	Capitel	Index	Docu-No.
17.08.2007	a	2/3		2312	D	000002

Fendt 300 Vario
FENDT 400 COM III
FENDT 7/800 COM III

Engine / Lubrication
Lube oil circuit

D



Item	Designation	Note
1	Oil filter	Comprises: filter housing, filter cover, filter element. Tightening torque of the cover: 25 Nm.
2	Filter bypass valve	Opening pressure: $p = 2.5 \pm 0.5$ bar.
3	Drain valve	Opens when filter cover is loosened 1 to 2 turns. Oil in filter housing runs into oil pan.
4	Cooler bypass valve	Protects cooler against pressure peaks. Opening pressure: $p = 1.45 \pm 0.3$ bar.
5	Pressure control valve	Opening pressure: $p = 4.0 \pm 0.4$ bar.
6	Return flow check valve	Prevents oil circuit from emptying when engine is switched off. Max. opening pressure 0.12 bar.
7	Oil cooler	Aluminium shell cooler
8	Water overflow	Between oil cooler housing and oil cooler
9	Oil overflow	Between oil cooler housing and oil cooler
10	Lube pump	Rotor pump; volumetric flow rate at $n = 2500$ rpm: TCD 2012 = approx. 65 l/min
11	Turbocharger	

Fendt 300 Vario

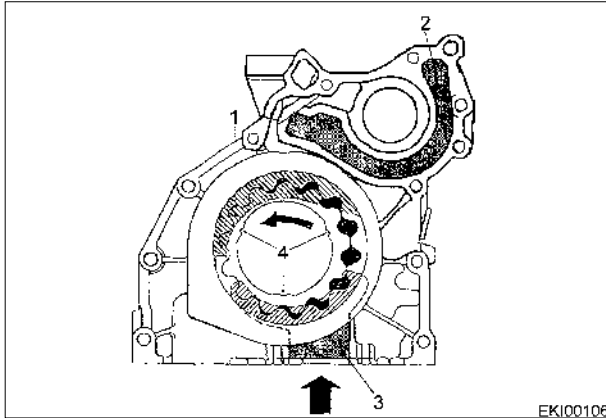
Engine / Lubrication

Lubrication pressure test

E

The engines in the TCD 2012 range have forced-feed lubrication. The lube oil flows from the lube oil pump through the oil cooler and to the oil filter. Both components are attached to the lube oil cooler housing which is flanged on to the crankcase.

The lube pump is fitted in the front part of the bearing cap in the form of a rotor pump.

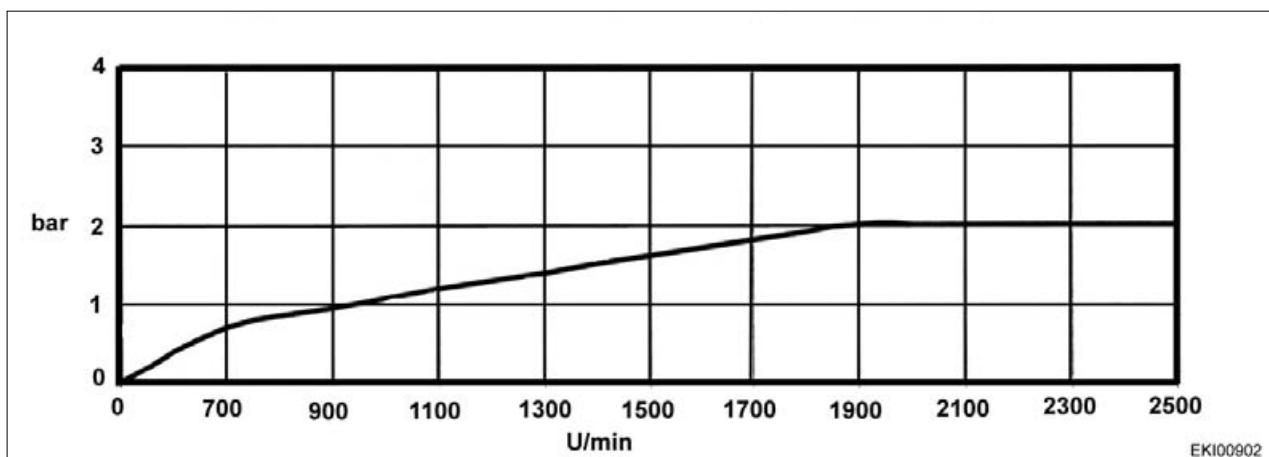


- 1 = Inner pipe
- 2 = Pressure chamber to crankcase
- 3 = Inlet chamber
- 4 = Driver profile (not at 120° pitch)



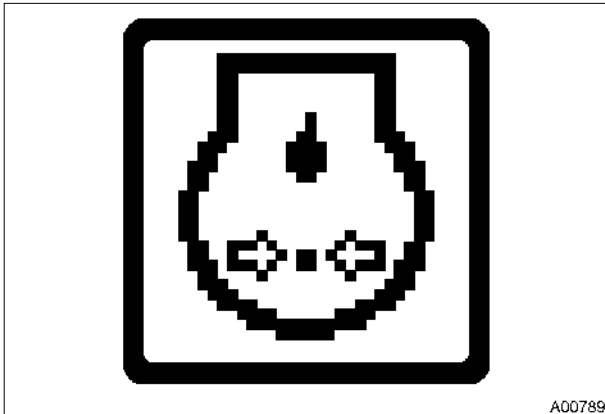
Fit M10x1 measurement adapter (X598.303.000) in filter bracket.

Minimum oil pressure at 120°C oil temperature, measured at oil filter bracket.



Fendt 300 Vario

Engine / Lubrication
Lubrication pressure test

E

A00789

If the required pressures are not reached at the respective engine speed, this fault message is displayed in the instrument cluster.



B090 = Sensor, oil pressure
 Right side of engine, on oil filter

Note:

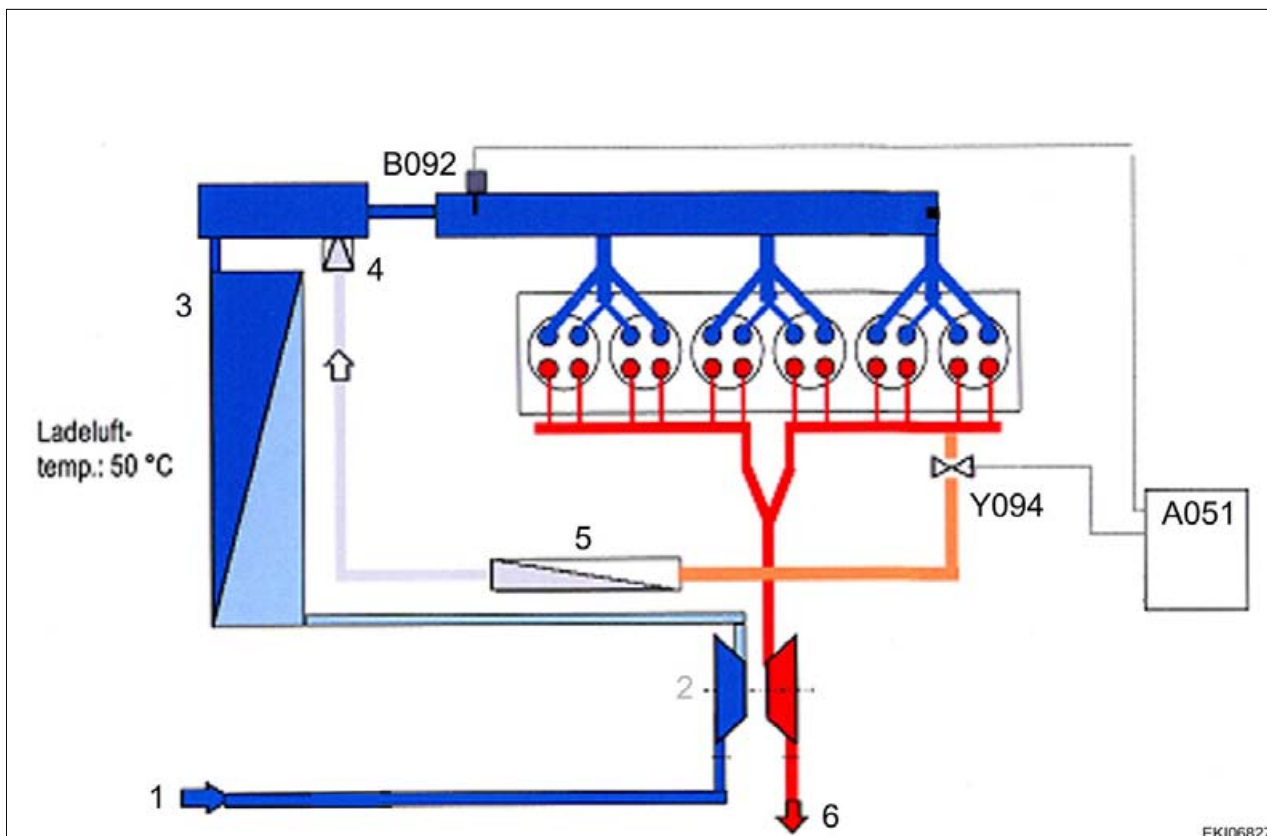
see also Chapter 9000 Reg. E B090 - Oil pressure sensor
 Oil pressure is output in the Deutz 'SERDIA' diagnostic program

Date	Version	Page	Capitel	Index	Docu-No.
18.09.2007	a	2/2	2312	E	000004

**Fendt 300 Vario
FENDT 400 COM III
FENDT 7/800 COM III**

**Engine / exhaust system
Y094 - actuator EGR (exhaust gas recirculation)**

A



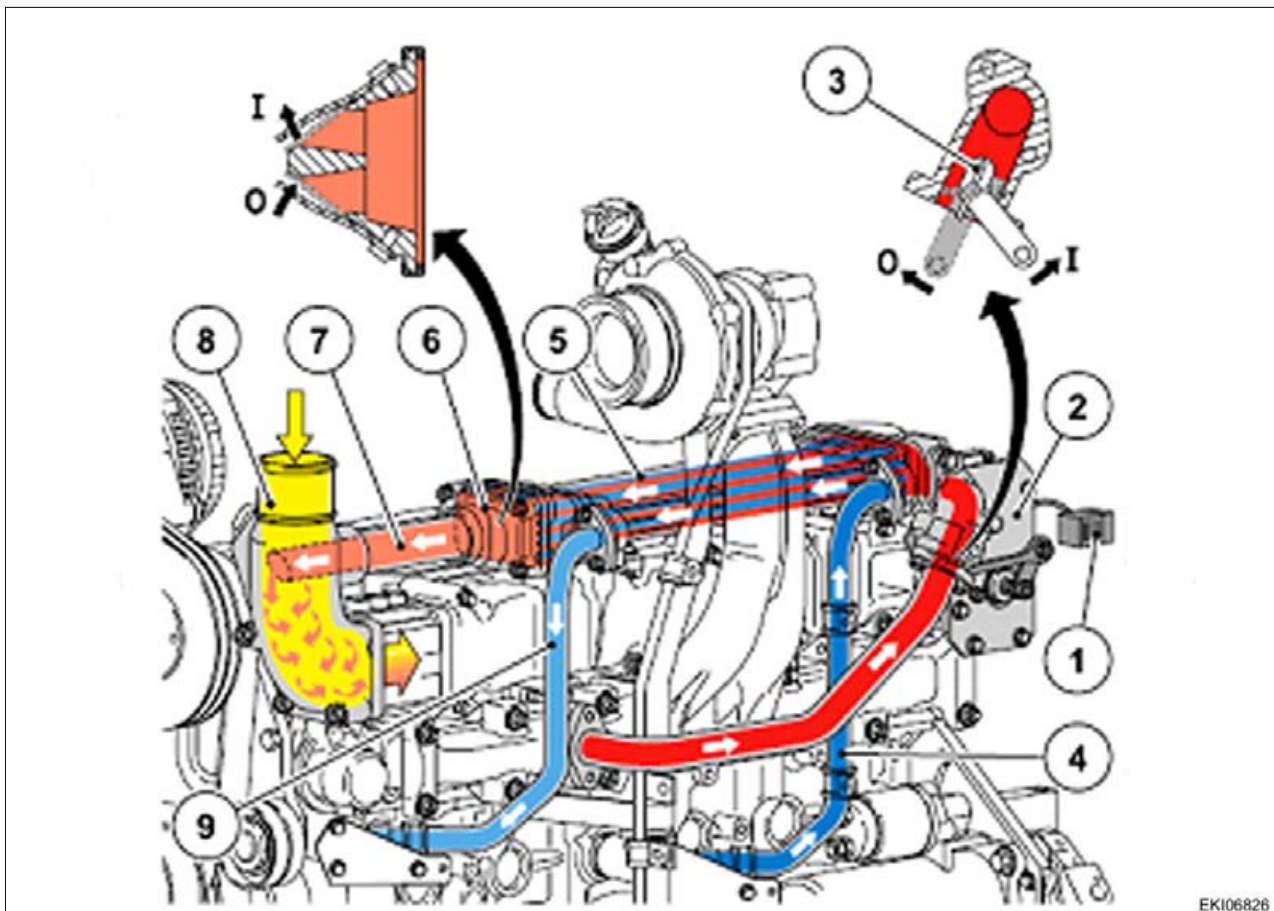
Item	Designation	Item	Designation
1	Intake air	6	Exhaust
2	Turbocharger		
3	intercooler	A051	ECU, engine control unit (EDC 7)
4	Check valve (flapper valve)	B092	Intake manifold
5	Exhaust cooler	Y094	EGR actuator (exhaust gas recirculation)

Date	Version	Page	Capitel	Index	Docu-No.
21.08.2007	a	1/3	Y094 - actuator EGR (exhaust gas recirculation)	2400	A
					000001

**Fendt 300 Vario
FENDT 400 COM III
FENDT 7/800 COM III**

**Engine / exhaust system
Y094 - actuator EGR (exhaust gas recirculation)**

A



Item	Designation	Item	Designation
1	X1674 - separation point	5	Exhaust cooler
2	Y094 - actuator EGR (exhaust gas recirculation)	6	Check valve (flapper valve)
3	Exhaust flap	7	Exhaust gas recirculation
4	Inflow, water cooling	8	Intake manifold

Reason for exhaust gas recirculation

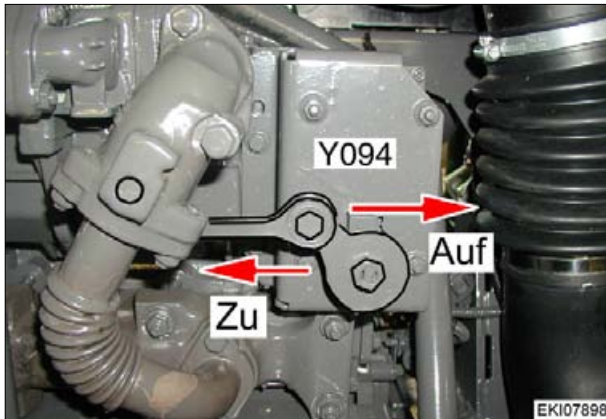
Through the exhaust gas recirculation in the combustion space (cylinder), complete combustion of the diesel-air mixture slows down and the maximum combustion temperature falls with it.

Through the lower combustion temperature, the share of nitrogen oxide in the exhaust decreases

The A051 - ECU, engine control unit (EDC 7) controls exhaust gas recirculation in the combustion space, dependent on engine load and speed

Date	Version	Page	Capitel	Index	Docu-No.
21.08.2007	a	2/3	Y094 - actuator EGR (exhaust gas recirculation)	2400	A
					000001

Fendt 300 Vario FENDT 400 COM III FENDT 7/800 COM III	Engine / exhaust system Y094 - actuator EGR (exhaust gas recirculation)	A
--	---	----------

Functional description Y094 - EGR actuator (exhaust gas recirculation)


After the ignition is switched on, the Y094 - EGR actuator goes to the end stops of the exhaust flap and calibrates them.

Within the end stops, the A051 - ECU, engine control unit (EDC 7) controls the position of the exhaust flap, dependent on engine load and speed.

Note:

If a new Y094 - servomotor is installed:

First attach the mechanical linkage on the Y094 - EGR actuator then switch ignition on, so that the Y094 - EGR actuator can calibrate the end stops of the exhaust flap.

If the linkage is not attached and the ignition is switched on, the end stops are run over during the calibration process, which results in damage to the component!

Note:

see also Chapter 9000 Reg. E Y094 - EGR actuator

The Y094 - EGR actuator can be actuated with the Deutz "SERDIA" diagnostic program, see function test

Date	Version	Page	Y094 - actuator EGR (exhaust gas recirculation)	Capitel	Index	Docu-No.
21.08.2007	a	3/3		2400	A	000001

**Fendt 300 Vario
FENDT 400 COM III
FENDT 700/800 COM III**

Engine / Injectors Removing and installing injector

G



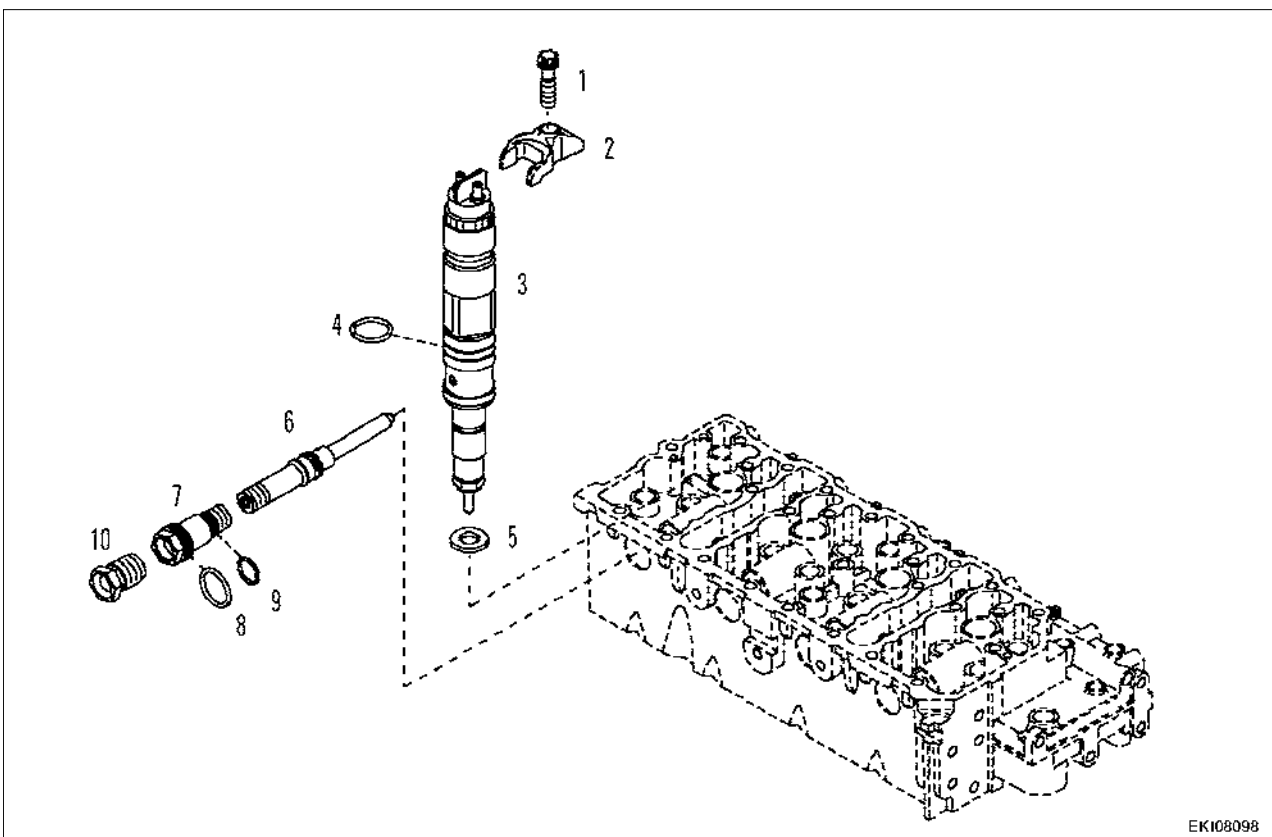
Danger:

After turning off the engine, wait at least 30 seconds before starting to work on the fuel system!!



Warning:

Ensure strict cleanliness!
see Service Information 14/2007.



EKI08098

Item	Designation	Item	Designation
1	Torx screw	6	Inlet connector
2	Clamping jaw	7	Thrust piece
3	Injector	8	Sealing ring
4	Sealing ring	9	O-ring
5	Sealing ring	10	Cap nut

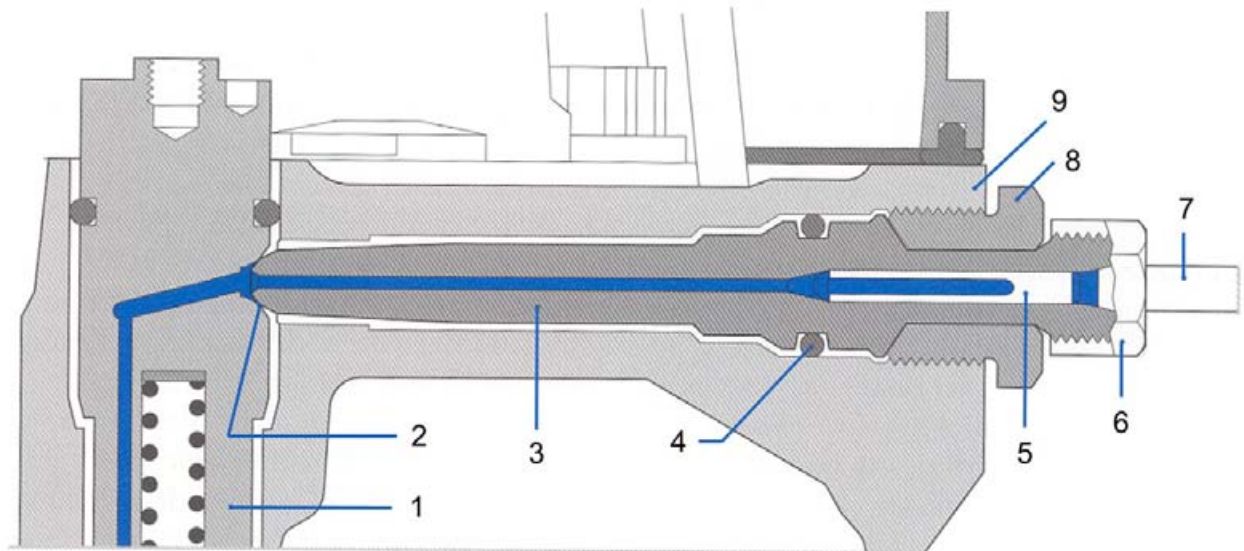
Date	Version	Page	Capitel	Index	Docu-No.
09.08.2007	a	1/12	2712	G	000004

**Fendt 300 Vario
FENDT 400 COM III
FENDT 700/800 COM III**

Engine / Injectors Removing and installing injector

G

Druckrohrstutzen



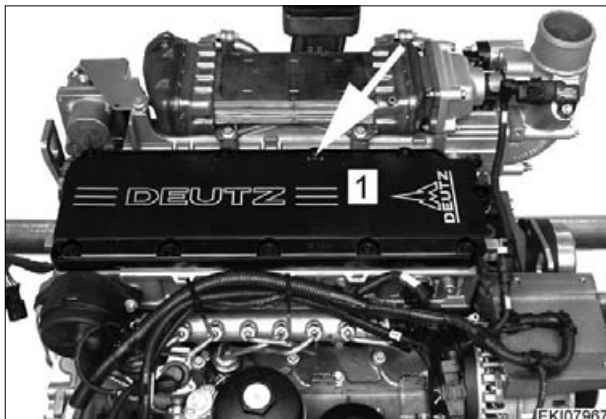
EK107927

Item	Designation	Item	Designation
1	Injector	6	Cap nut
2	Conical nipple	7	Injection line
3	Inlet connector	8	Cap nut
4	O-ring	9	Cylinder head
5	Filter		

Note:

Required tool, see:

Chapter 9920 Reg. A Special tools common rail



Remove covering strip

Unscrew screws (1)

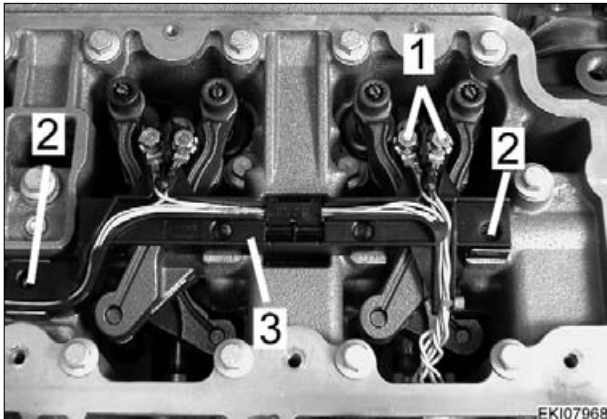
Remove valve cover (arrowed)

Date	Version	Page	Capitel	Index	Docu-No.
09.08.2007	a	2/12	2712	G	000004

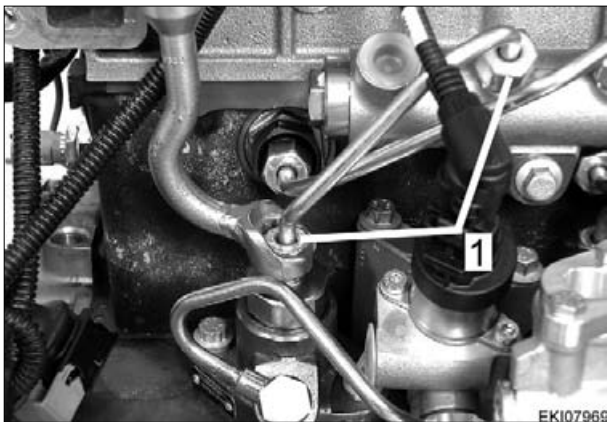
**Fendt 300 Vario
FENDT 400 COM III
FENDT 700/800 COM III**

Engine / Injectors Removing and installing injector

G



- Unscrew nuts (1)
- Remove cable from injector
- Unscrew screws (2)
- Move cable track (3) to the side



If necessary:

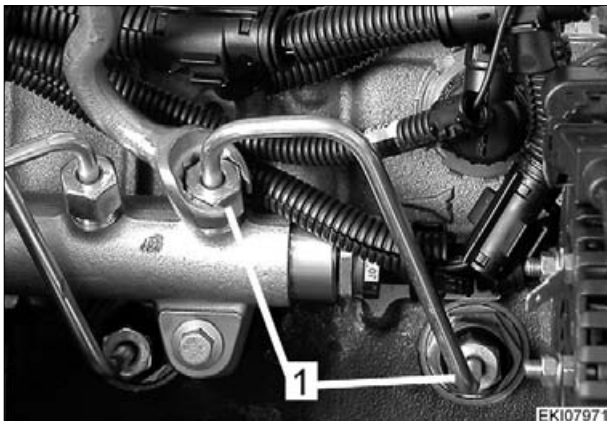
If necessary remove fuel filter bracket (when removing injector 2 cylinder)

Unscrew cap nut (1) of the high pressure line from the high pressure pump and rail

Note:

Counterhold with pipe connection of the high pressure pump

Remove high pressure line



Unscrew cap nut (1) of the injection line from the inlet connector and rail

Remove injection line



Unscrew cap nut (1)

Date	Version	Page	Capitel	Index	Docu-No.
09.08.2007	a	3/12	2712	G	000004

**Fendt 300 Vario
FENDT 400 COM III
FENDT 700/800 COM III**

Engine / Injectors Removing and installing injector

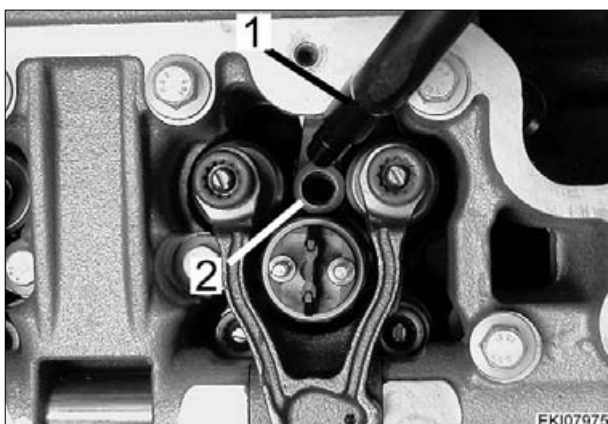
G



Pull out inlet connector (1)

Note:

Use the disassembly device (2) to do this

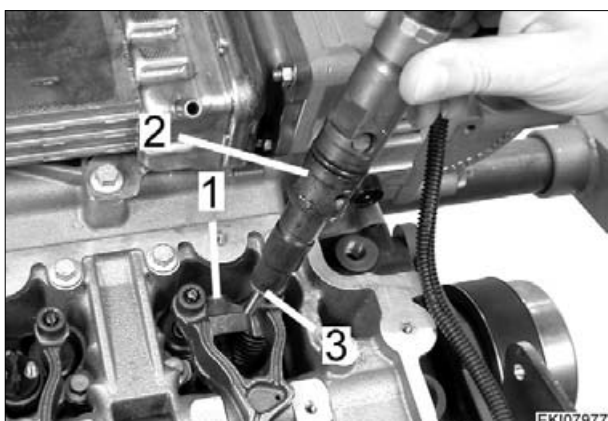


Insert lever tool (1) in to the hole (2) in the clamping jaw



Loosen injector

Use the lever tool (1) to do this



Tilt clamping jaw (1) back

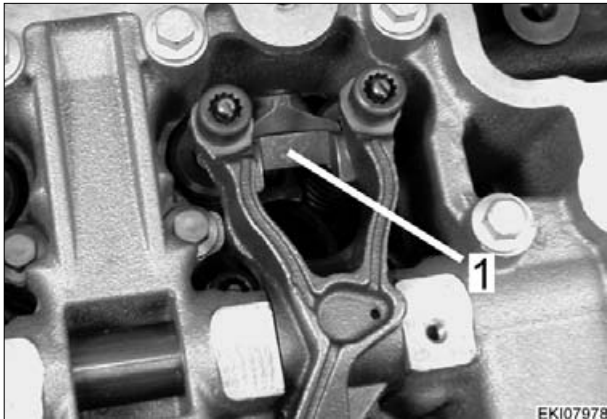
Remove injector (2) with sealing ring (3)

Date	Version	Page	Removing and installing injector	Capitel	Index	Docu-No.
09.08.2007	a	4/12		2712	G	000004

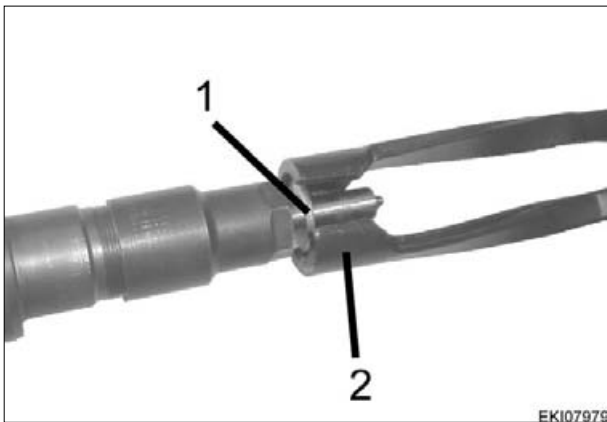
**Fendt 300 Vario
FENDT 400 COM III
FENDT 700/800 COM III**

Engine / Injectors Removing and installing injector

G



Remove clamping jaw (1)



Grasp the sealing ring (1) on injector with assembly pliers (2) and pull it out with slight turning movements.

Note:

Do not brush off the tip of the nozzle on the injector!!

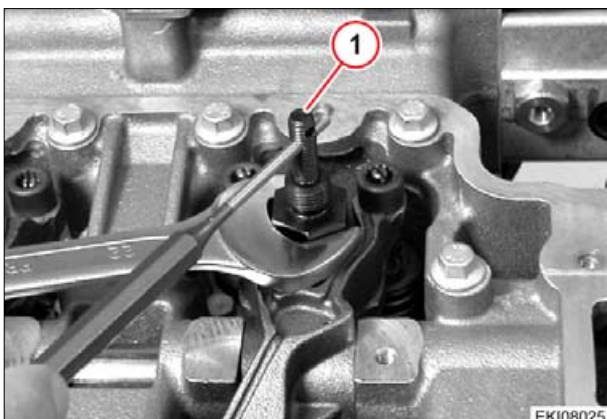
When pulling off the sealing ring (1), be careful not to damage the tip of the nozzle on the injector!!



Remove tight-fitting sealing ring from cylinder head

Insert pulling device (1)

The receiving parts (arrowed) must sit in the bore on the sealing ring



Turn spindle (1) in until the sealing ring is fixed on the pulling device

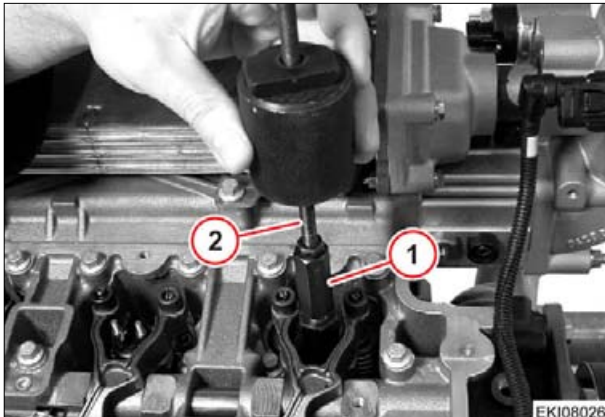
Counterhold pulling device on the nut

Date	Version	Page	Capitel	Index	Docu-No.
09.08.2007	a	5/12	2712	G	000004

**Fendt 300 Vario
FENDT 400 COM III
FENDT 700/800 COM III**

Engine / Injectors Removing and installing injector

G



Attach adapter (1) and sliding hammer (1) on pulling device
Pull sealing ring out



Carefully remove round sealing ring (1) from injector

Note:
Do not damage injector



Installing injector

Slide mounting guide (1) on to injector
Push new round sealing ring (2) on to mounting guide



Slide round sealing ring (1) on with mounting sleeve (2) up to groove (3)

Date	Version	Page	Removing and installing injector	Capitel	Index	Docu-No.
09.08.2007	a	6/12		2712	G	000004

**Fendt 300 Vario
FENDT 400 COM III
FENDT 700/800 COM III**

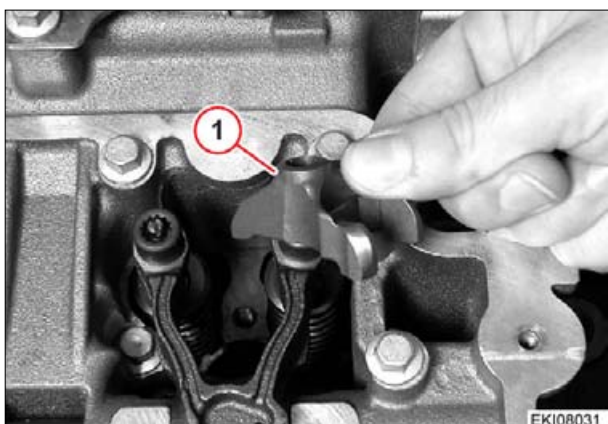
Engine / Injectors Removing and installing injector

G



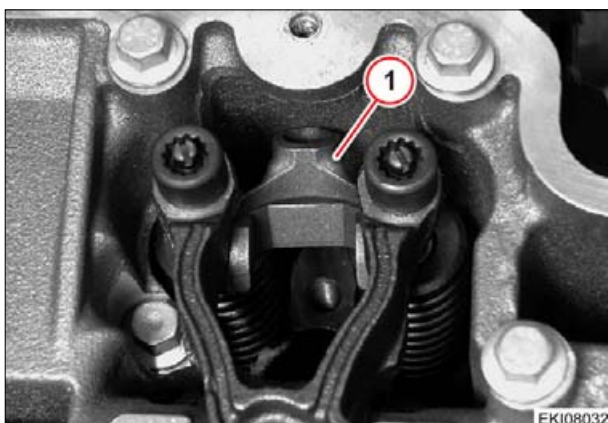
E-UCV-M

Lightly oil round sealing ring (1)
Place new sealing ring (2) on injector



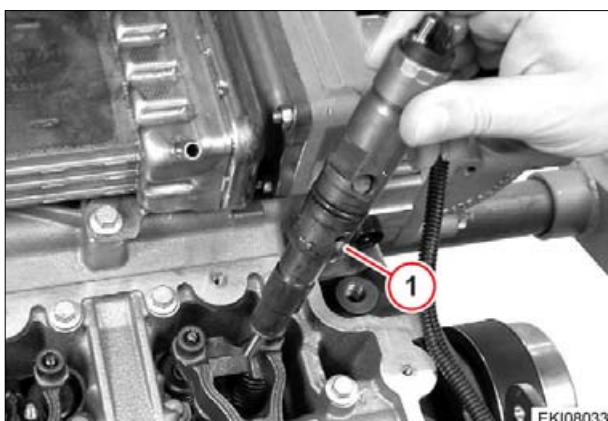
E-UCV-M

Note:
Before installing the injector, clean the bore on the cylinder head thoroughly, removing all combustion residues
Suction clean to remove dirt
Insert clamping jaw (1)



E-UCV-M

Position clamping jaw (1)



E-UCV-M

Position injector

Note:
The mounting bore (1) faces the control side

Date	Version	Page	Capitel	Index	Docu-No.
09.08.2007	a	7/12	2712	G	000004

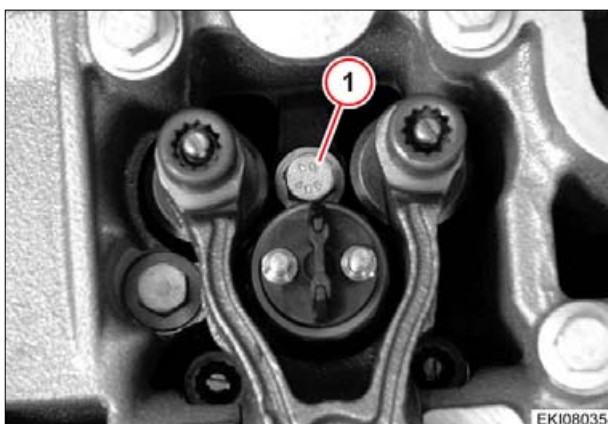
**Fendt 300 Vario
FENDT 400 COM III
FENDT 700/800 COM III**

Engine / Injectors Removing and installing injector

G



Carefully insert injector in the clamping jaw and the cylinder head



Pretighten screw (1) on the clamping jaw

Pretighten = approx. 4 Nm

Note:

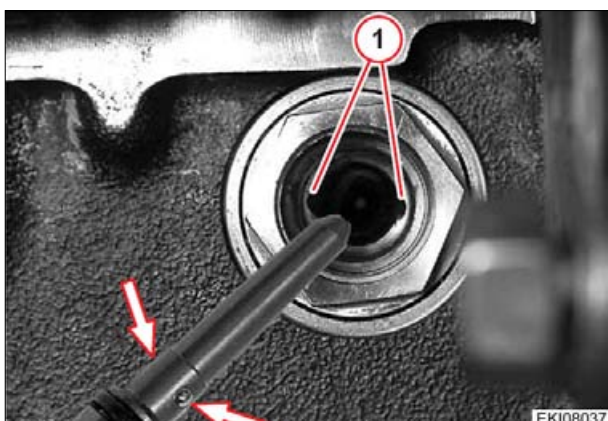
The injector must not be affected by axial forces



Pull on new round sealing ring (1)

Note:

As a rule, the inlet connector is to be replaced



Position inlet connector

The balls (arrowed) must fit in the groove (1) of the thrust piece

Date	Version	Page	Removing and installing injector	Capitel	Index	Docu-No.
09.08.2007	a	8/12		2712	G	000004

**Fendt 300 Vario
FENDT 400 COM III
FENDT 700/800 COM III**

Engine / Injectors Removing and installing injector

G

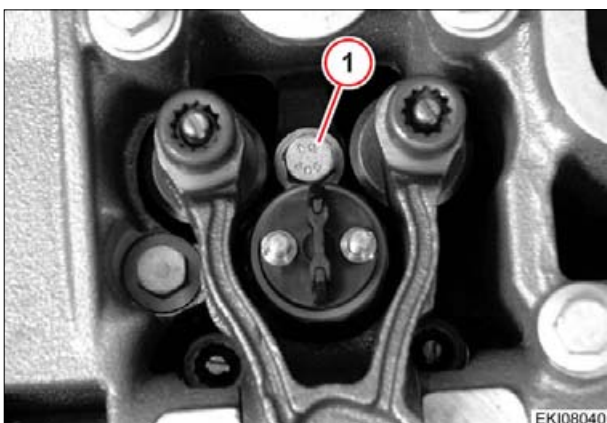
E-UCV-M

Insert inlet connector in to the thrust piece



E-UCV-M

Screw inverted nut in to stop



E-UCV-M

Relieve load on injector by loosening the screw (1)

Note:
The injector must not be affected by axial forces



E-UCV-M

Pretighten inverted nut (1)
Pretighten = approx. 15 Nm

Date	Version	Page	Removing and installing injector	Capitel	Index	Docu-No.
09.08.2007	a	9/12		2712	G	000004

**Fendt 300 Vario
FENDT 400 COM III
FENDT 700/800 COM III**

Engine / Injectors Removing and installing injector

G



E-UCV-M

Tighten screw (arrowed) on the clamping jaw

Tightening torque = 20 +3 Nm



E-UCV-M

Tighten inverted nut

Tightening torque = 42 +/- 2 Nm



E-UCV-M

Note:

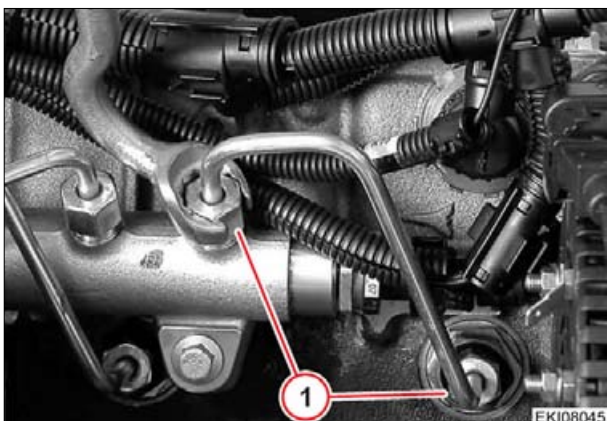
As a rule, after disassembly the injection lines should be replaced

Place new injection line (1) on inlet connector and rail

Pretighten cap nut

Pretighten = approx. 3 Nm

Check to ensure proper position of the injection lines



E-UCV-M

Tighten cap nut (1)

Tightening torque = 25 +/- 2.5 Nm

Note:

Use special key

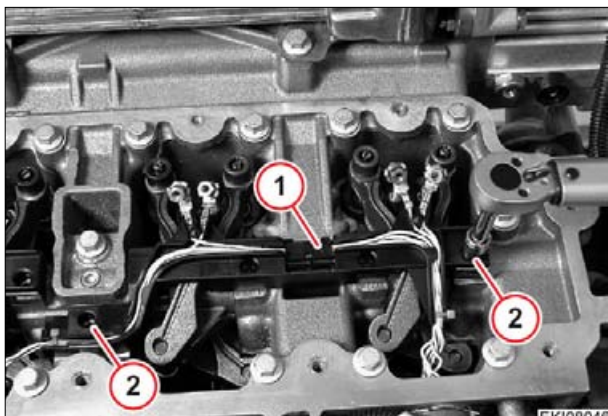
Install the injection line, ensuring it is free of tension

Date	Version	Page	Capitel	Index	Docu-No.
09.08.2007	a	10/12	2712	G	000004

**Fendt 300 Vario
FENDT 400 COM III
FENDT 700/800 COM III**

Engine / Injectors Removing and installing injector

G

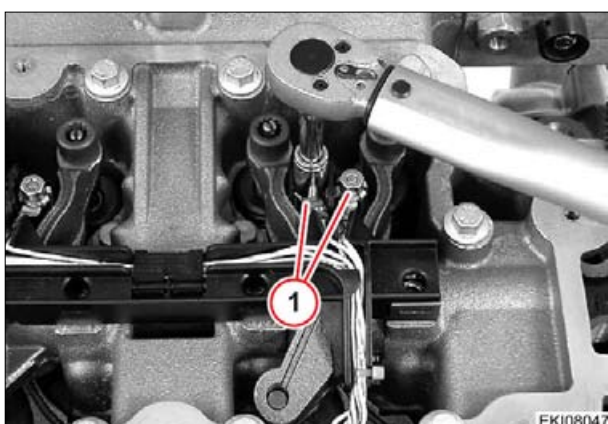


E-UCV-38

Put cable track (1) in place

Tighten screw (2)

Tightening torque = 8.5 Nm

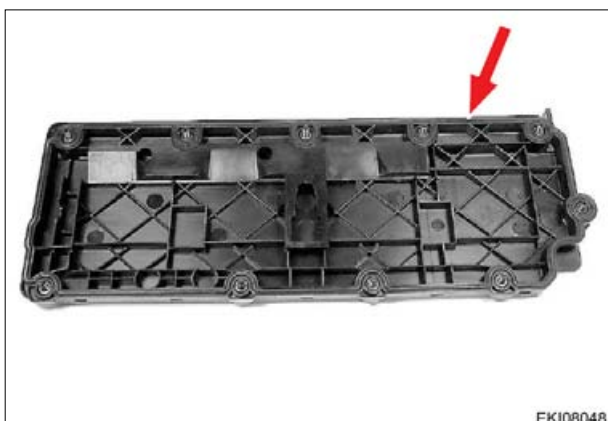


E-UCV-38

Attach cable to injector

Carefully tighten nuts (1)

Tightening torque = 1.5 +/- 0.25 Nm



E-UCV-38

Clean sealing surface on valve cover and rocker arm housing

Insert new gasket (arrowed)



E-UCV-38

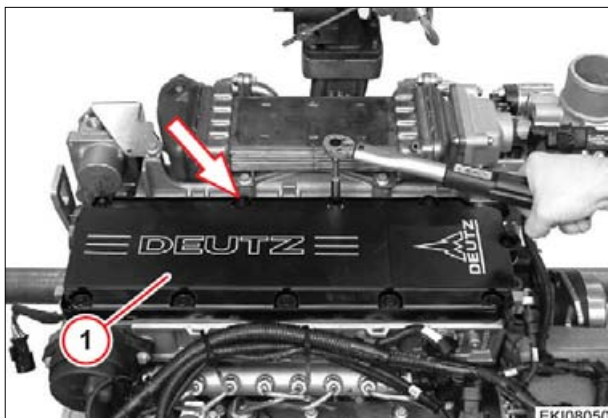
Check screw and gasket (arrowed)

Date	Version	Page	Capitel	Index	Docu-No.
09.08.2007	a	11/12	2712	G	000004

**Fendt 300 Vario
FENDT 400 COM III
FENDT 700/800 COM III**

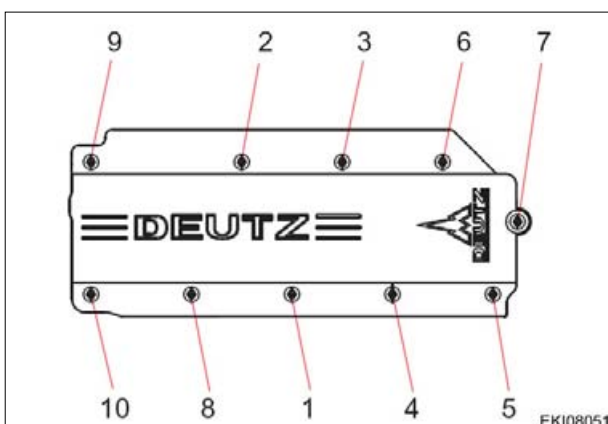
Engine / Injectors Removing and installing injector

G



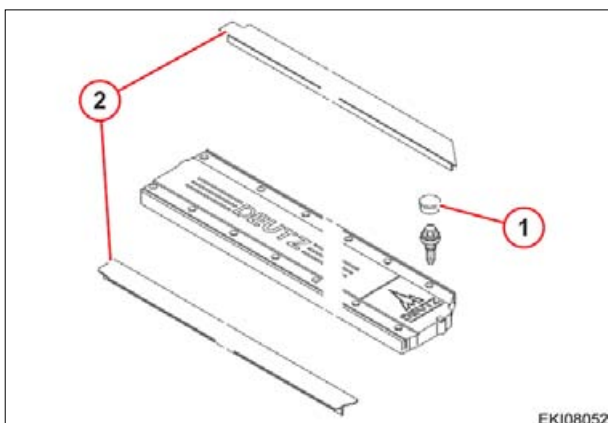
E-UCY-18

Fit valve cover (1)
Insert all screws (arrowed)



E-UCY-18

Tighten all screws
Tightening torque = 9 +/- 1 Nm
Note:
Observe tightening sequence
Same procedure for 6-cylinder engine



E-UCY-18

Press in all plugs (1)
Mount covering strip (2)

Date	Version	Page	Capitel	Index	Docu-No.
09.08.2007	a	12/12	2712	G	000004



AIR CONDITIONING SYSTEM
Important Notes

G

Notes on installing an air conditioning system using PAG ND8 refrigerant oil and R134A coolant.

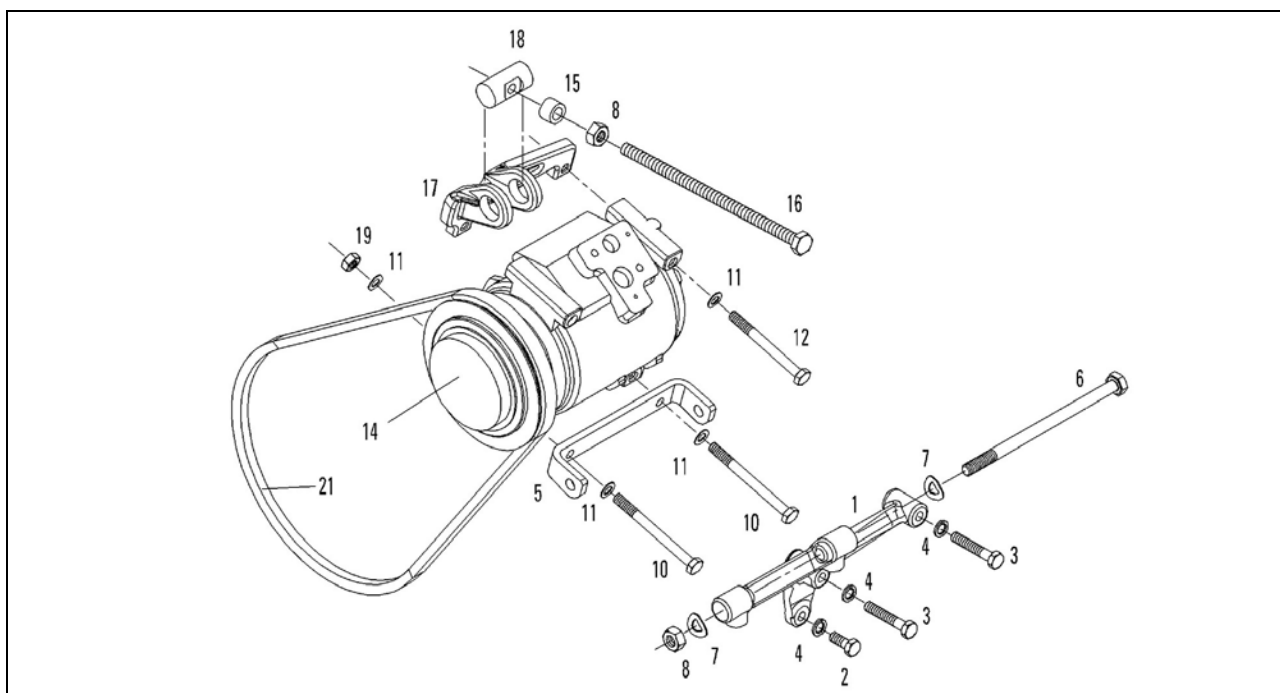
1. R134A coolant and PAG oil are extraordinarily hygroscopic, so contact with ambient air must be as short as possible.
2. After use, ensure that the refrigerant oil canister is sealed airtight.
3. Open up the air conditioning compressor just before fitting the pipe group to the connecting piece, to prevent ingress of moisture.
4. Do not use any mineral refrigerant oils in R134A air conditioning systems.
5. Do not use parts or material from R12 air conditioning systems in R134A air conditioning systems.
6. Use only the Air-Conditioning Service Station for R134A coolant.
7. To avoid contact with mineral refrigerant oils, keep R12 and R134A tools separate.
8. When handling refrigerant oil, observe disposal and other regulations in force.
9. When fitting, oil all O-rings with PAG ND8 refrigerant oil.

Environmental and safety notes:

All work on refrigerant circuits must be carried out by specialists from authorised workshops only. Under no circumstances may the coolant escape into the free air (German Statute Book §. 8, CFC - Halon legislation, 06.09.1991)

NOTE:

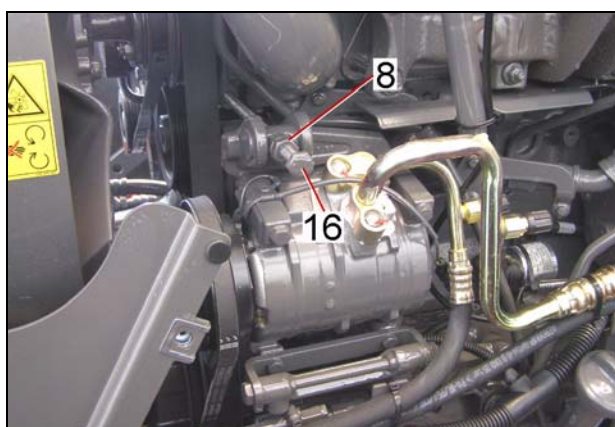
For operation and maintenance, see operating manual.



1001772

Item	Designation	Item	Designation
1	CONSOLE	11	SPRING WASHER 6
2	HEX BOLT M8X20-8.8A3L	12	HEX BOLT M8X80-8.8A3L
3	HEX BOLT M8X45-8.8A3L	14	MAGNETIC CLUTCH
4	SPRING WASHER 8	15	BUSH
5	MOUNTING BRACKET	16	HEX BOLT M10X200-8.8A3L
6	HEX BOLT M10X170-8.8A3L	17	COUNTERBEARING
7	SPRING WASHER B10	18	THREADED SHAFT
8	HEX NUT M10	19	HEX NUT M8
10	HEX BOLT M8X90 WAF-10.9	21	V-BELT

- Mount compressor with the help of the drawing and the parts list.



1001785

Tensioning compressor V-belt:

- Loosen locking nut (Item 8).
- Adjust tensioning bolt (Item 16).
- Re-tighten locking nut (Item 8).

Strand pull:

Fitting tensioning (initial tension) 700 ± 50 Nm

Re-tensioning (operating tension) 400 ± 50 Nm

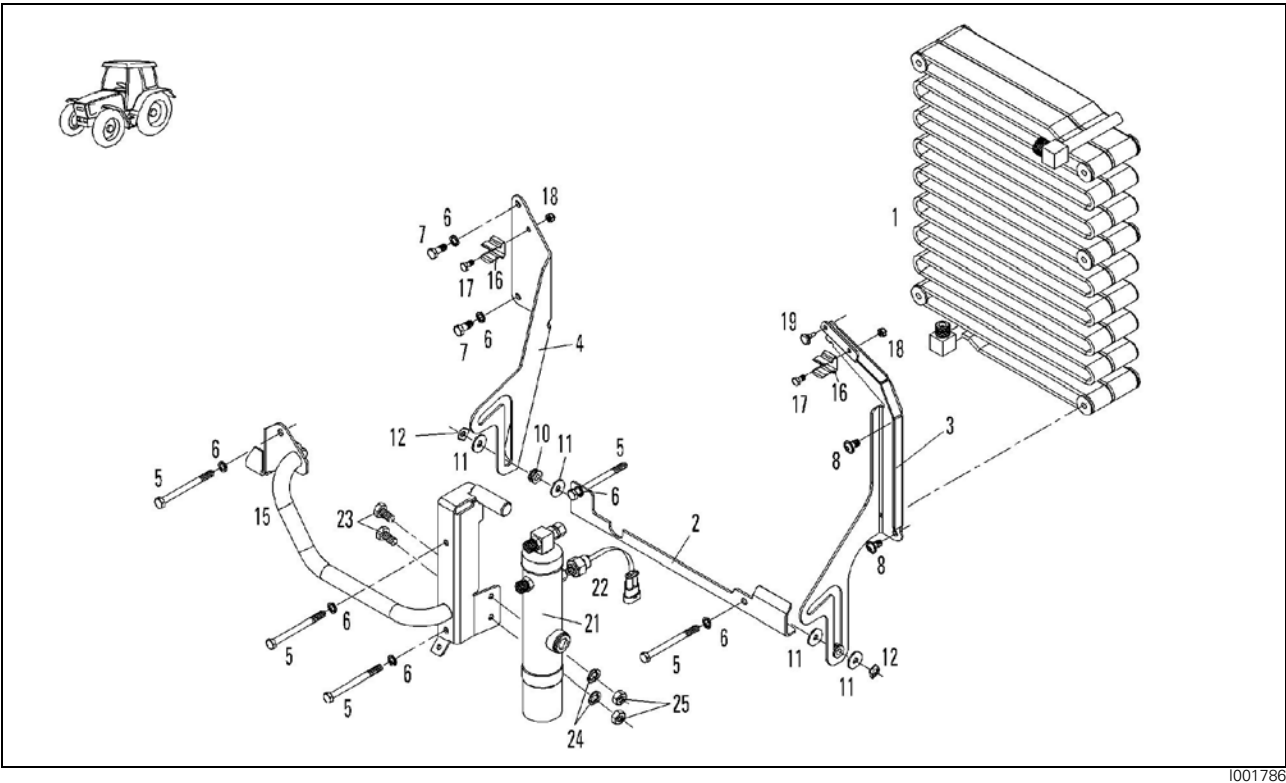
V-belt tension (strand pull) measured at the centre point between both pulleys, using Optibelt tension gauge I.



AIR CONDITIONING SYSTEM

Mounting fitting condenser and fluid reservoir

G



Assembly Instructions

Item	Designation	Item	Designation
1	CONDENSER	15	BRACKET
2	BEARING	16	SPRING
3	BRACKET	17	HEX BOLT M6X12-8.8A3L
4	BRACKET	18	HEX NUT DIN6925 M6 8.8-A3L
5	HEX BOLT M8X95-8.8A3L	19	PLUG
6	SPRING WASHER 8	21	FLUID RESERVOIR
7	HEX BOLT M8X20-8.8A3L	22	PRESSURE SWITCH
8	CHEESE-HEAD SCREW M8X16 10.9 A3R	23	HEX BOLT M6X16-8.8A3L
10	GROMMET	24	SPRING WASHER 6
11	WASHER 8.4	25	HEX NUT DIN934 M6-8-A3L
12	DUO-CLIP		

- Mount complete condenser using the drawing and the parts list.

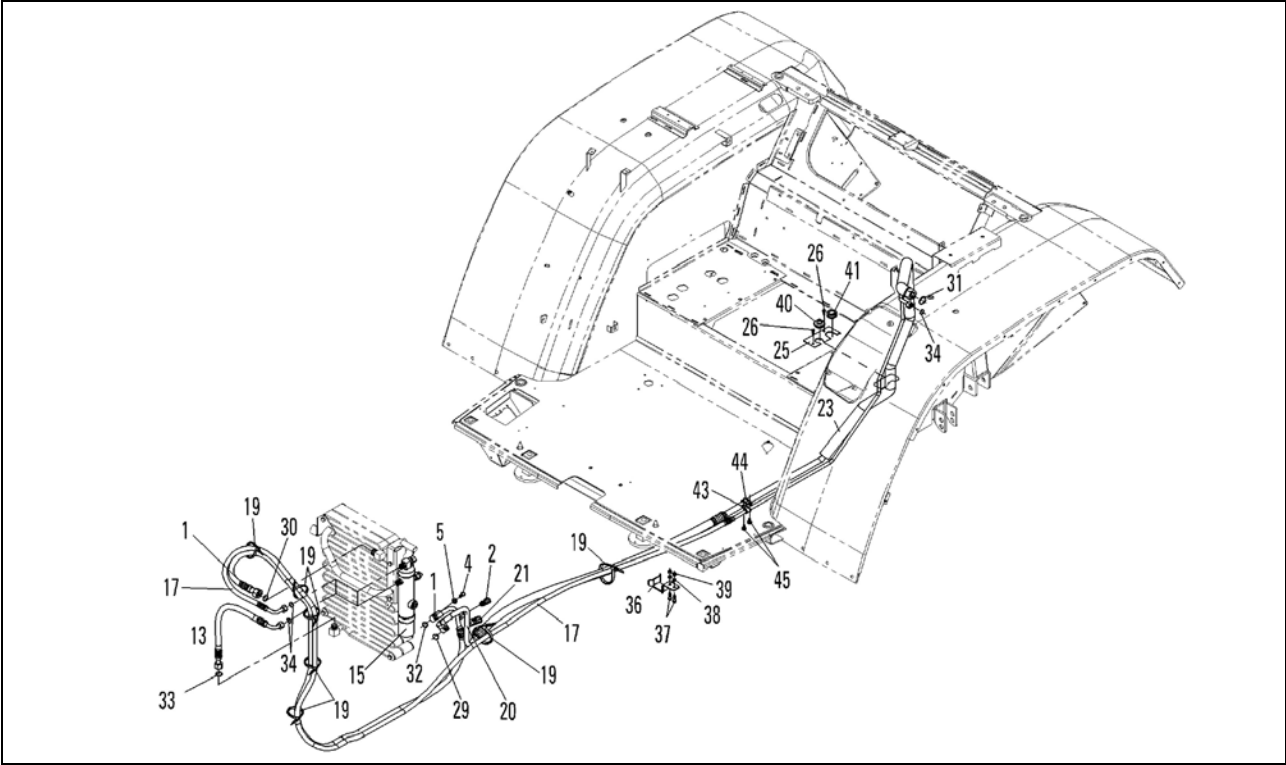


AIR CONDITIONING SYSTEM

Coolant lines

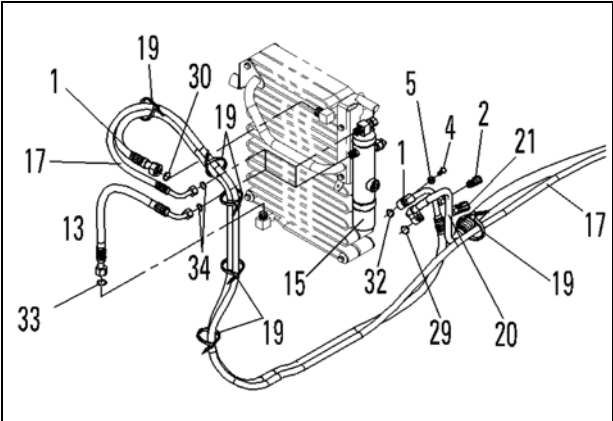
G

Coolant lines in the area of the condenser and the engine compartment, left



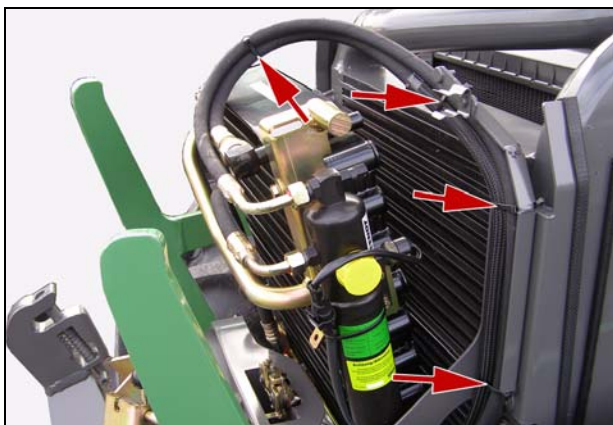
1001838

Item	Designation	Item	Designation
1	COOLANT TUBE	30	O-RING_13.9X1.78
2	VALVE	31	O-RING_17X1.78
4	HEX SCREW_M6X25-8.8A3L	32	O-RING
5	SPRING WASHER_-6-A3L	33	O-RING_11.1X1.78
13	COOLANT TUBE	34	O-RING_7.9X1.78
15	FLUID RESERVOIR	36	BRACKET
17	COOLANT TUBE	37	HEX BOLT_M6X20-8.8A3L
19	CABLE TIE_ B290X4.8-SW	38	SPRING WASHER_8-6-A3L
20	COOLANT TUBE	39	HEX NUT_M6-8A3L
21	VALVE	40	GROMMET
23	TUBE_FIXL.1000	41	CABLE GROMMET_20X28X36
25	COVER PLATE	43	PIPE CLAMP 1.10/15-W1
26	SHEET METAL SCREW_ 4.8X9.5	44	PIPE CLAMP 1.18/15-W1
29	O-RING	45	SELF-TAPPING_SCREW M6X12-A3L



1001849

- Mount the coolant lines in the area of the condenser and the engine compartment left-hand side.



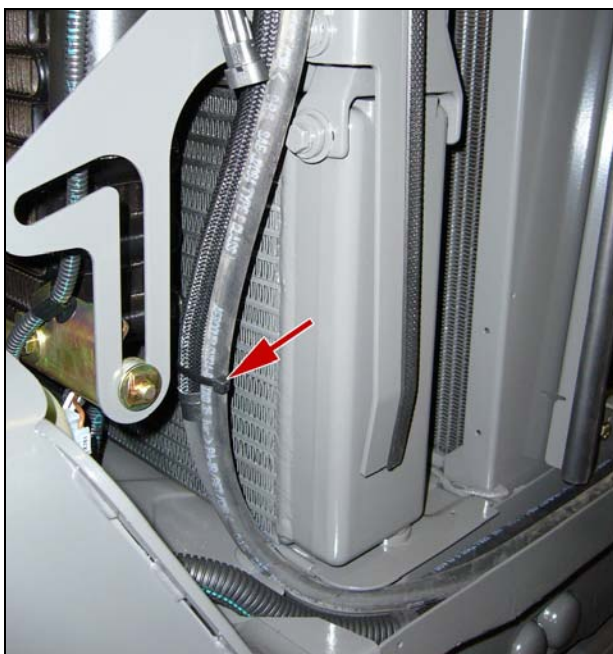
I001850

- Attach the coolant lines with the cable ties (arrowed).



I001853

- Lay the coolant lines lengthwise such that the condenser can be moved and rotated into the raised position.



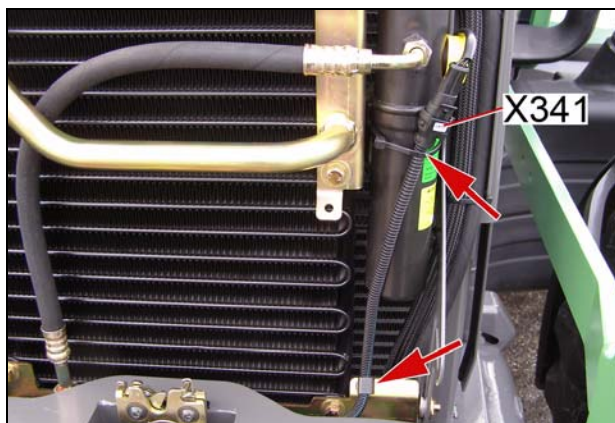
I001851

- Lay the coolant lines past the radiator on the left-hand side and attach with cable tie (arrowed).



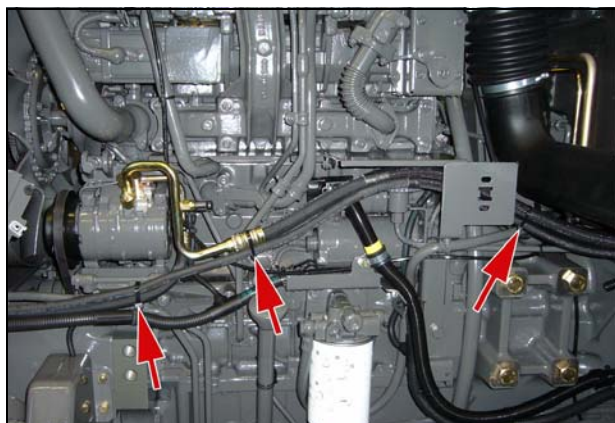
I001852

- Screw on metal panel.



I001854

- Connect separation point (X341) to high-pressure/low-pressure switch (S035).
- Attach cable harness with cable tie and clip (arrowed).



I001855

- Screw coolant lines into compressor, use included O-rings.
- Lay the coolant line to the left of the engine in the direction of the cab and attach using cable tie (arrowed).



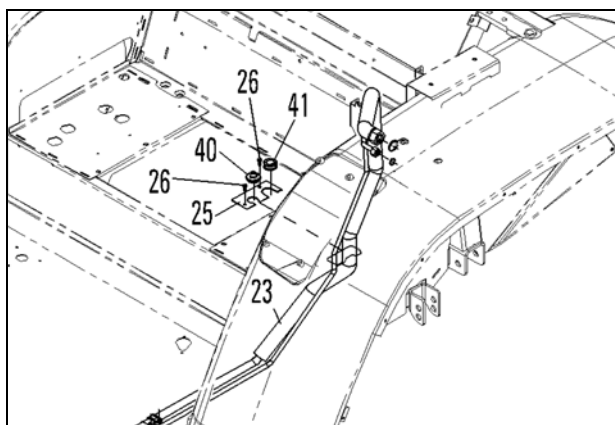
I001856

- Connect separation point (X342) to magnetic clutch of air conditioning compressor (Y024).



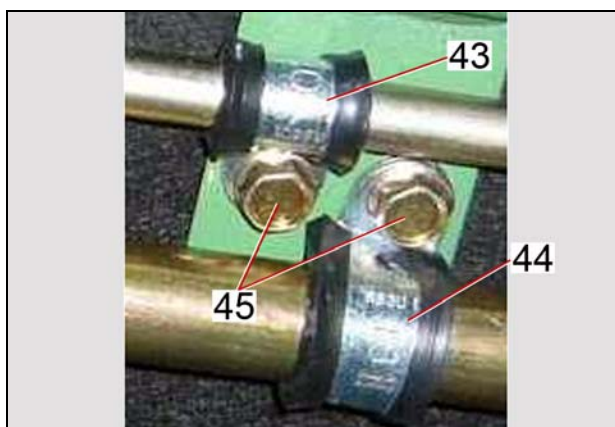
1001858

- Lay coolant lines on cab floor, guide through opening in cab floor.



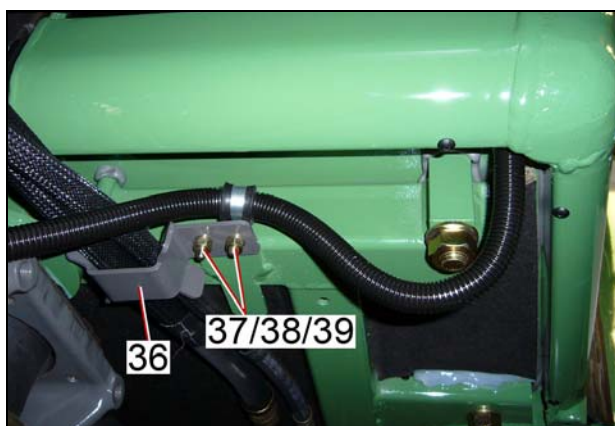
1001859

- Insert grommet (Item 40) and cable grommet (Item 41).
- Screw down cover plate (Item 25) with sheet metal screws (Item 26).
- Seal feed-throughs with sealant.



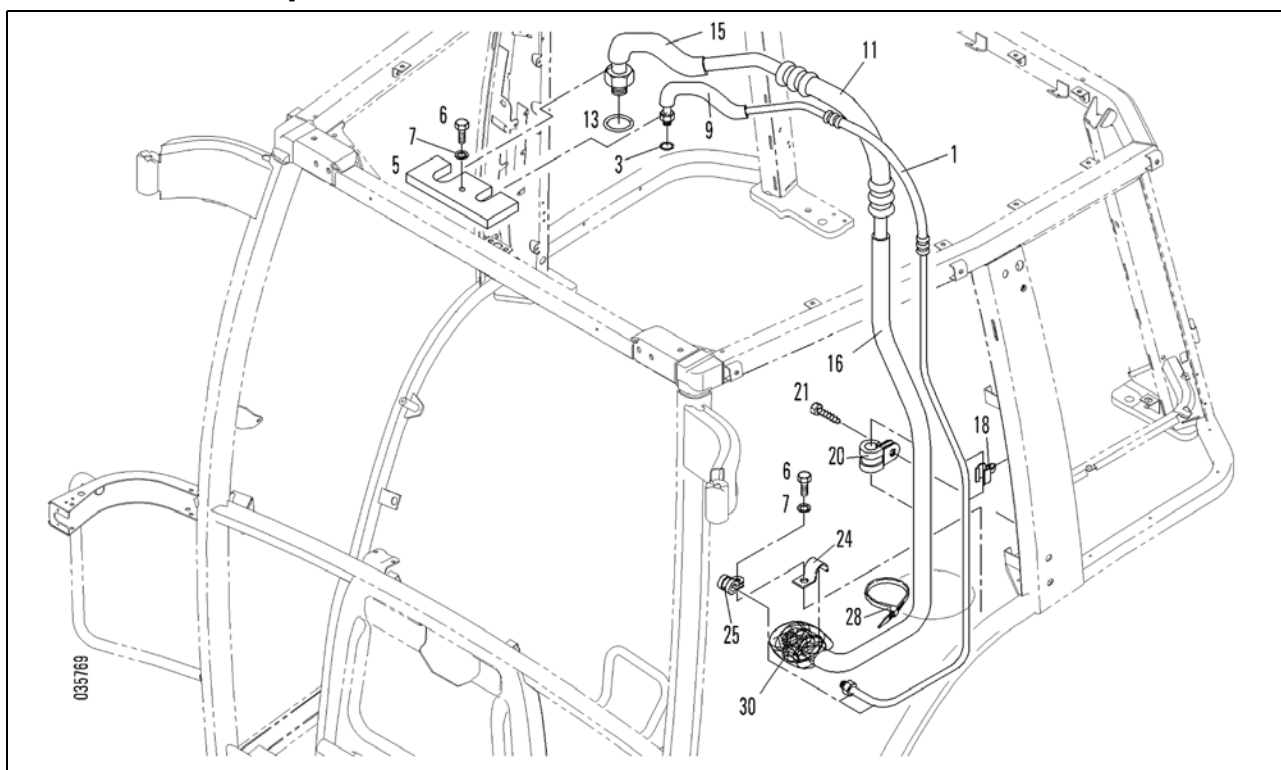
1001860

- Attach coolant pipes to underside of cab with pipe clamps (Items 43, 44) and 2x self-tapping screws M6x12 (Item 45).



1001861

- Attach bracket (Item 36) to the left-hand cab underside using 2x bolts M6x20/spring washer/nut M6 (Items 37/38/39).

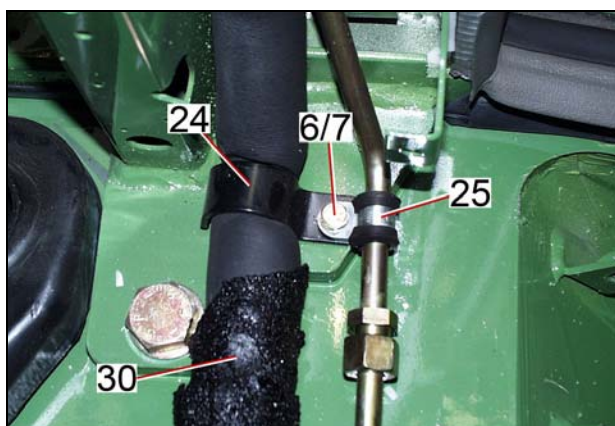
Coolant lines on B-pillar

1001857

Assembly Instructions

Item	Designation	Item	Designation
1	COOLANT TUBE	18	CABLE FASTENER
3	O-RING_7.9X1.78	20	PIPE CLAMP
5	CLAMPING SHOE	21	SHEET METAL SCREW_ST6.3X22-C-H-A3L
6	HEX SCREW_M6X16-8.8-A3L	24	CLAMP
9	SPRING WASHER_FWN 65208-6-A3L	25	PIPE CLAMP RSGU 1.10/15-W1
11	COOLANT TUBE	28	CABLE TIE_ B290X4.8-SW
13	O-RING_17X1.78	30	NODRIP TAPE
15	TUBE_FIXL.1000		
16	TUBE_FIXL.1000		

- Mount the coolant lines in the B-pillar and roof area.



1001862

- Attach coolant pipe using fixing clamp (Item 24), pipe clamp (Item 25), bolt M6X16 and spring washer.



1001869

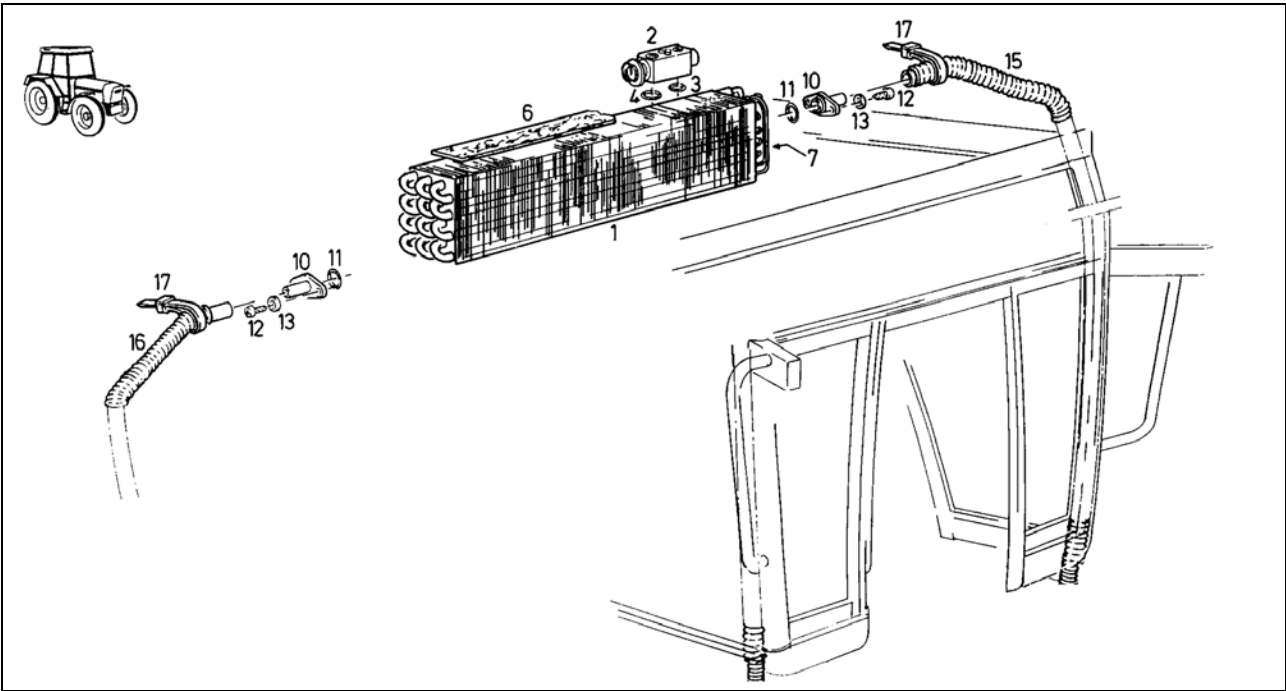
- Attach coolant pipe to B-pillar using pipe clamp (Item 20) and sheet metal screw 6.3x22 (Item 21).
- Tie coolant pipe to B-pillar with cable tie (Item 18).



AIR CONDITIONING SYSTEM

Evaporator and condensed water drain tube

G

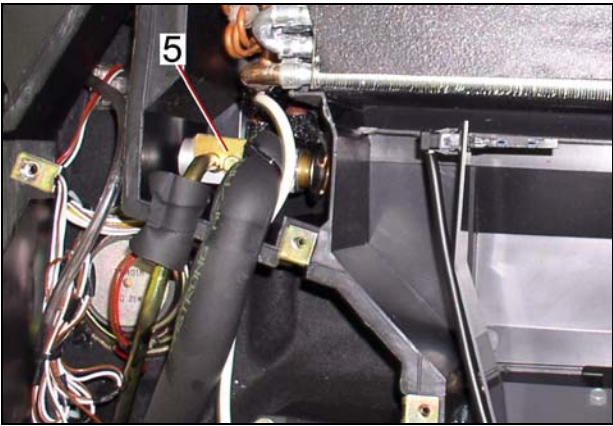


1001863

Assembly Instructions

Item	Designation	Item	Designation
1	EVAPORATOR	11	O-ring 12.3X2.4
2	EXPANSION VALVE	12	Fixing bolt 4X14
3	SEAL RING	13	WASHER 4.3
4	SEAL RING	15	CORRUGATED HOSE 2X2050 MM
6	SEALING STRAP	16	CORRUGATED HOSE 2X2050 MM
7	NODRIP TAPE	17	CABLE TAPE
10	COUPLINGS		

- Fit complete evaporator using the drawing and the parts list.

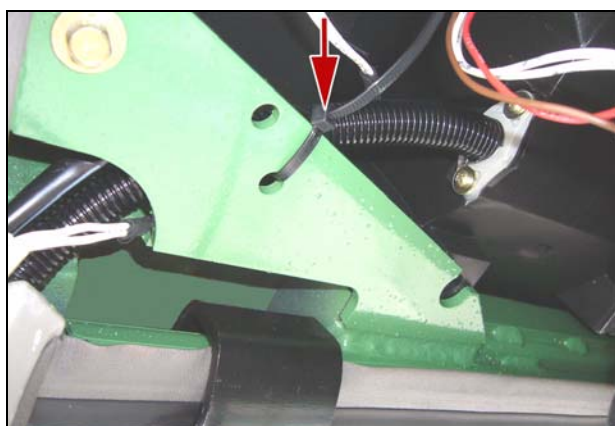


1001864

- Attach coolant lines to evaporator expansion valve using clamping shoe (Item 5) (screw M6X16, spring washer). Include O-rings.



AIR CONDITIONING SYSTEM Evaporator and condensed water drain tube

G

I001865

- Remove interior trim on A-pillar right and left.
- Fit the corrugated hose on the left and right of the evaporator and then route downwards via the A-pillar.

Fasten corrugated hose on left and right using cable tie (arrowed).



I001866

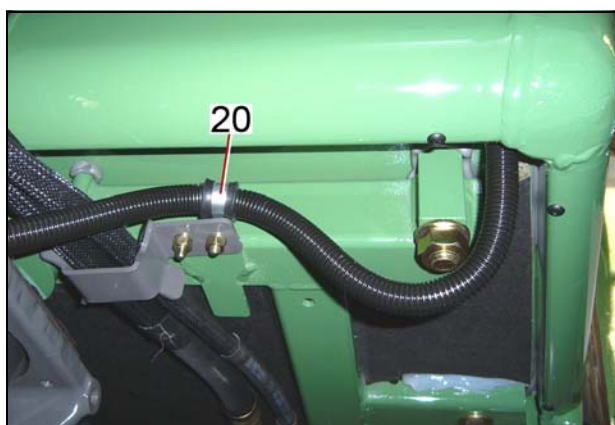
- Seal corrugated hose on both sides of A-pillar using silicon.



I001867

Right side:

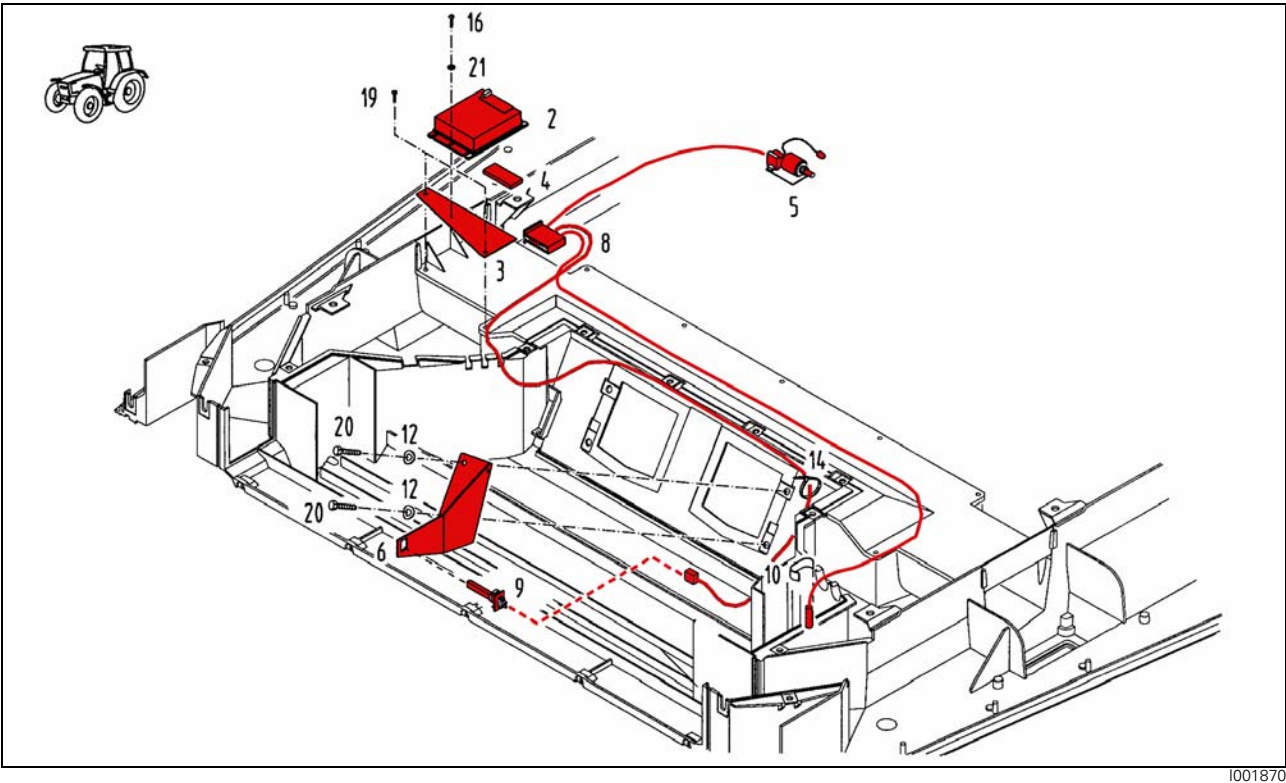
- Attach corrugated hose with pipe clamp (Item 20) and self-tapping screw M6x12 (Item 30).



I001868

Left side:

- Attach corrugated hose with pipe clamp (Item 20).

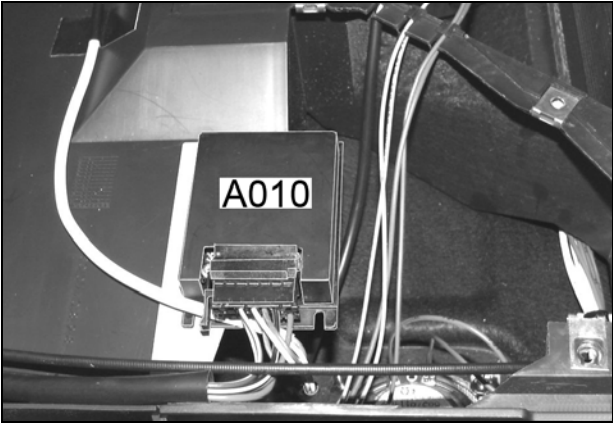


I001870

Assembly Instructions

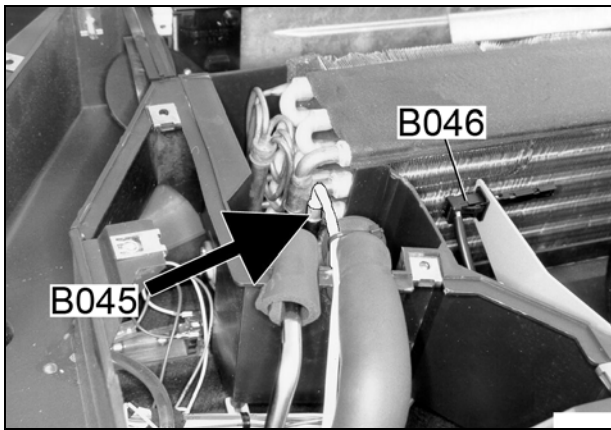
Item	Designation	Item	Designation
2	ELECTRONICS BOX (A010)	10	CLIP
3	PLATE	12	SPRING WASHER B6
4	CUT SEALING TAPE TO REQUIRED LENGTH	14	TIE WRAP B100X2.5
5	AIR CONDITIONING SYSTEM POTENTIOMETER (S044)	16	SHEET METAL SCREW 3.5X13
6	ARM	20	SHEET METAL SCREW 6.3X25
8	CABLE HARNESS SENSOR	21	SERRATED WASHER 5.3
9	TEMPERATURE SENSOR (B046)		

- Unclip ventilation Bowden cable, remove trim panel.
- Attach arm (Item 6).



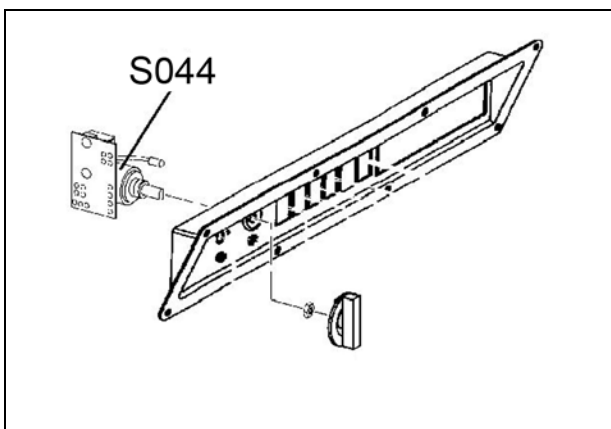
I001871

- Attach electronics box (A010) with plate (Item 3), with sealing tape (Item 4) underneath.
- Lay electrical cables.



1001872

- Fit air conditioning sensor (NTC2) (B045) on the right at the evaporator inlet (suction pipe from expansion valve) with clip.
- Clip air conditioning sensor (NTC1) (B046) into arm.



1001873

- Fit air conditioning switch (S044) into console, fit with hex nut M10. Fit indicator lamp.
- Fit operating button.

**General**

Every air conditioning system filled with coolant basically operates under over-pressure that is the same throughout the entire circuit and depends on the ambient temperature.

In operation, the working pressure is different on the pressure side and vacuum side of the compressor. These differences in pressure are influenced by the exterior or interior temperature, the relative humidity and the rotational speed of the compressor. Working pressures that differ from normal point to a fault in the system.

When carrying out repair or fitting work on the air conditioning system, open spots (screw connections) must always be closed with suitable caps to prevent the ingress of moisture.

When evacuating or filling, use only Air-Conditioning Service Stations for R134A coolant.

Evacuating

- Remove sealing caps from the valves.
- Connect up red hose to the pressure side, blue hose to the vacuum side.

Evacuate to an under-pressure of 1-0.6 mbar (absolute pressure).

Evacuation time approx. 30 mins. depending on weather and humidity.

Leak test

If the under-pressure is reached, or if the pressure rises to over 5 mbar after the vacuum pump has been switched off for approx. 10 mins, the system is leaking or damp.

- Fill with coolant via the Air Conditioning Service Station until the pressure rises to 4-5 bar
- Using a contrast agent, a UV lamp (see KDM 32/06) and a leakage detector unit, search for and isolate leakages in the high-pressure and low-pressure sides.

Filling

- Fill with PAG ND8 (X902.013.573.000) refrigerant oil at the same pressure as the coolant, or fill it into the vacuum line of the compressor before evacuating it (add contrast agent).
- Fill R134A liquid coolant using the filling station.

IMPORTANT:

Only fill via the high-pressure side of the system.

Only fill gaseous coolant via the low-pressure side.

Start tractor. Allow to run at idle.

Switch on air conditioning system, compressor must also run if at least 2 bar pressure is present in the system.

Air conditioning system filling quantities

Coolant R134A	1300 g
Pag lubricating oil	300 ccm

Each newly delivered Denso compressor is filled with 180 + 20 ccm oil. When retrofitting the air conditioning system, the vacuum line must be filled with 100 ccm of oil before first use of the air-conditioning system.

**Checking coolant level**

1001877

Check at a temperature of at least 20°C ambient temperature.

- Start tractor, run engine at approx. 1200 rpm, heat cab.
- Switch on air conditioning system, set to full power.

NOTE:

If the filling is correct, after the compressor has run for approx. five minutes, the large colourless ball in the dryer/receiver should swim freely and with no air bubbles. The presence of a few bubbles is not critical. Coolant must only be added if foam is observed. If the orange indicator ball (dry condition) turns colourless (moist condition), this indicates the presence of moisture in the system. The dryer/receiver must be replaced!

Pressure testing

Initially, only check for 3 minutes at idle speed (due to compressor lubrication).

- Connect a high- and low-pressure manometer to the pressure and vacuum sides.
- Start tractor, switch on air conditioning system.
- Run for approx. 15 minutes at approx. 1200 rpm.

After finishing the pressure test, unscrew the test manometer and refit the sealing caps.

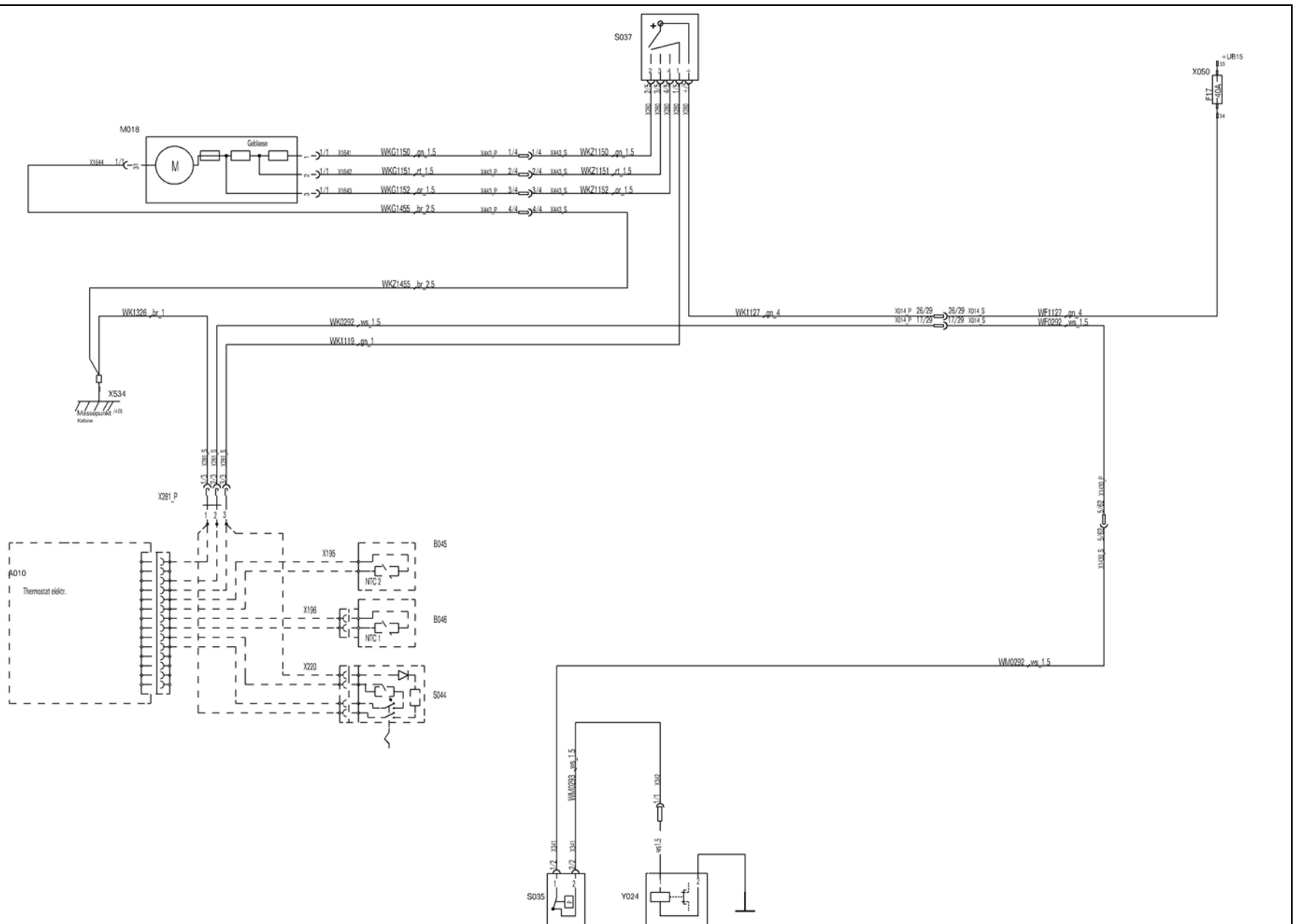
Pressures with compressor running at an ambient temperature of 20°C

Vacuum side (blue) approx. 0.7-1.2 bar

Pressure side (red) approx. 10-15 bar

Caution:

If the high-pressure switch is not working, switch the air-conditioning system off immediately, as the coolant will be released at a pressure of > 28 bar via the safety valve.



1001881

Fendt 300 Vario**Cab / General system**
Remove cab**G****Equipment required:**

- Hoist (cab approx. 700 kg)
- Hoisting yoke (DIY, see Chapter 9920 Reg. A)
- Trestles (800 kg)

**Preliminary work:**

Lower rear power lift.

Prop tractor, taking appropriate safety precautions, and remove both rear wheels.

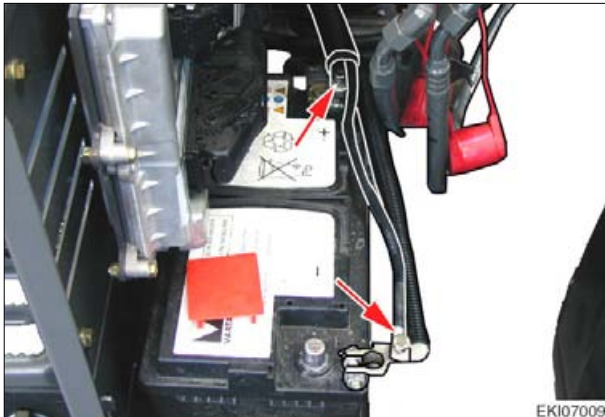


Remove side panel and drain coolant.



Remove battery cover.

Date	Version	Page	Remove cab	Capitel	Index	Docu-No.
24.01.06	a	1/10		8100	G	000015

Fendt 300 Vario**Cab / General system**
Remove cab**G**

Disconnect vehicle battery and unscrew both cables (arrowed).



Disconnect heater hoses and connect with each other.

Note:
Heater on OFF



Lift foot mat on right side, remove screw for cab bearing.



Remove metal panels.

Date	Version	Page	Remove cab	Capitel	Index	Docu-No.
24.01.06	a	2/10		8100	G	000015

Fendt 300 Vario

Cab / General system
Remove cab

G



Unlock strain relief with a suitable tool.



Unlock and unplug both connectors and remove brown ground cable.



Remove hose clips and pull cable harness to rear.



Remove metal panel.

Date	Version	Page	Remove cab	Capitel	Index	Docu-No.
24.01.06	a	3/10		8100	G	000015

Fendt 300 Vario**Cab / General system
Remove cab****G**

EKI07011



Remove spring clip and unhook ball ends.



EKI07012



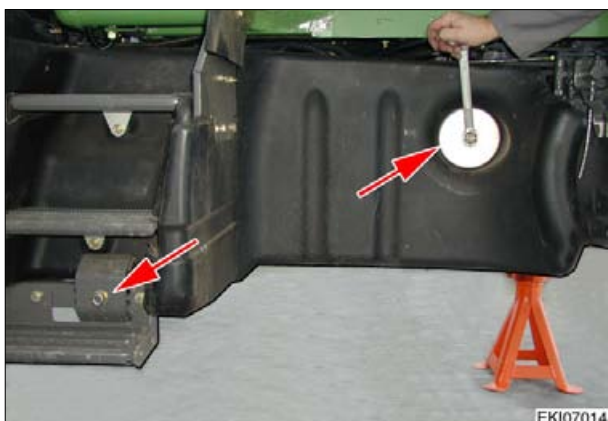
Mark volume adjusters (arrowed) and pull off.



EKI07013



If fitted, unhook remote control for Bowden cable and push through the rear wall.



EKI07014



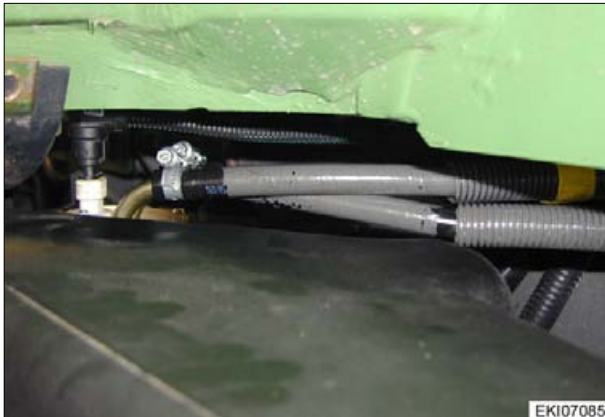
Unscrew both nuts (see arrows) from the tank bearing and loosen metal side panel on the lower step (not shown in picture).

Date	Version	Page	Remove cab	Capitel	Index	Docu-No.
24.01.06	a	4/10		8100	G	000015

Fendt 300 Vario

Cab / General system

Remove cab

G

Disconnect fuel level sensor and remove intake and return lines.
Remove fuel tank.



Remove cotter and pull out pin.
Unscrew retaining screw M6, loosen locknut and unhook Bowden cable.



Disconnect both hydraulic lines (circled).

Note:
Collect any escaping oil.



Disconnect both brake lines, unclip spring clips and pull brake hoses out of bracket.

Note:
Collect any escaping oil.

Date	Version	Page	Remove cab	Capitel	Index	Docu-No.
24.01.06	a	5/10		8100	G	000015

Fendt 300 Vario**Cab / General system**
Remove cab**G**

Unscrew three screws from intake pipe (see arrow) on the cab.



Loosen clip and completely remove intake pipe.



Unscrew screw from blower shaft and remove it.



Unscrew steering column panelling and remove it.

Date	Version	Page	Remove cab	Capitel	Index	Docu-No.
24.01.06	a	6/10		8100	G	000015

Fendt 300 Vario**Cab / General system**
Remove cab**G**

Loosen screw.
Pull off steering column.



Screw off steering servo unit and pry out of
bracket.



Lift left side of foot mat and remove screws for cab
bearing.



Unhook condenser and disconnect cable coupler
X341.

Date	Version	Page	Remove cab	Capitel	Index	Docu-No.
24.01.06	a	7/10		8100	G	000015

Fendt 300 Vario**Cab / General system**
Remove cab**G**

Unscrew 4 screws and remove cable ties.



Unscrew 2 screws at bottom of condenser.

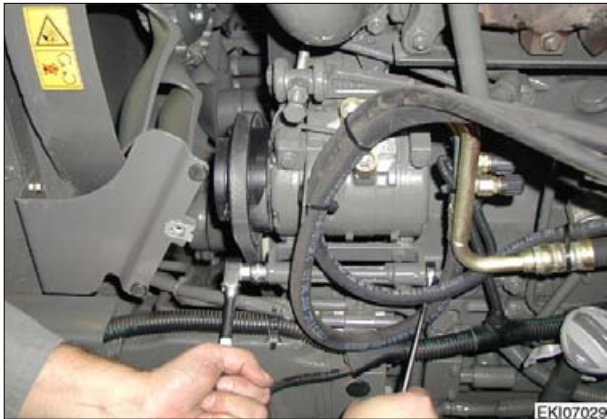


Place condenser in cab.



Disconnect separation point X342.

Date	Version	Page	Remove cab	Capitel	Index	Docu-No.
24.01.06	a	8/10		8100	G	000015

Fendt 300 Vario**Cab / General system**
Remove cab**G**

Loosen tensioning screw.
Remove AC compressor.



Fasten AC compressor on cab.



Remove both plastic plugs.



Mount hoisting yoke (DIY hoisting yoke,
see Chapter 9920).

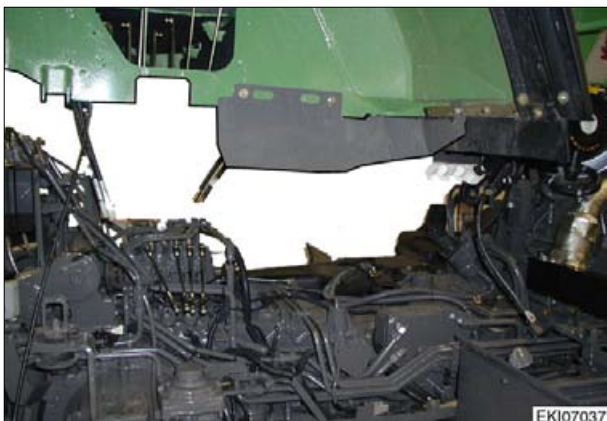
Date	Version	Page	Remove cab	Capitel	Index	Docu-No.
24.01.06	a	9/10		8100	G	000015

Fendt 300 Vario**Cab / General system**
Remove cab**G**

Unscrew both rear cab bearings.



Carefully lift cab and ensure that all components have adequate clearance, be particularly careful that the steering servo unit does not slide out of the cab.



Raised cab.

Date	Version	Page	Remove cab	Capitel	Index	Docu-No.
24.01.06	a	10/10		8100	G	000015

Fendt 300 Vario**Cab / General system**
Fitting cab**G**

E-UCS-M

When setting down the cab, make sure that the hydraulic linkage is guided into the service openings.



E-UCS-M

When setting down the cab, guide the steering servo unit into the receptacle.



E-UCS-M

Press steering servo unit in to the 4 bores.



E-UCS-M

Mount rear cab bearing on both sides.

Date	Version	Page	Fitting cab	Capitel	Index	Docu-No.
27.01.2006	a	1/9		8100	G	000016

Fendt 300 Vario	Cab / General system Fitting cab	G
------------------------	---	----------



E-UCV-M

Remove lifting tool and fit sealing plugs.



E-UCV-M

Mount steering servo unit.



E-UCV-M

Slide steering column on to steering servo unit and tighten fitting bolt to 35 Nm.



E-UCV-M

Mount both front cab bearings and tighten to 290 Nm.

Date	Version	Page	Fitting cab	Capitel	Index	Docu-No.
27.01.2006	a	2/9		8100	G	000016

Fendt 300 Vario	Cab / General system Fitting cab	G
------------------------	---	----------



E-UCS-M

Tighten both rear cab bearings.



E-UCS-M

Mount steering column panel.



E-UCS-M

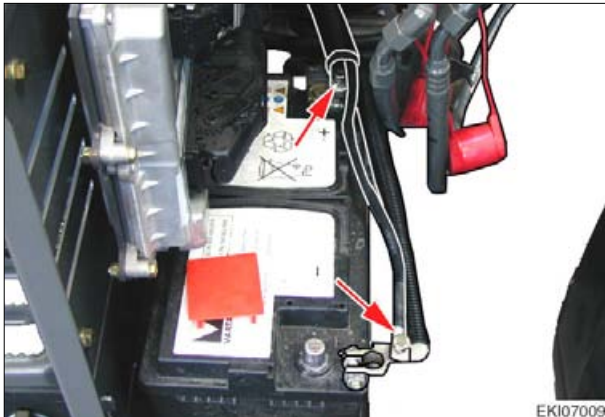
Insert blower shaft and mount.



E-UCS-M

Mount heater hoses.

Date	Version	Page	Fitting cab	Capitel	Index	Docu-No.
27.01.2006	a	3/9		8100	G	000016

Fendt 300 Vario**Cab / General system
Fitting cab****G**

E-UCS-M

Connect cab power supply (arrowed).



E-UCS-M

Connect cab ground.



E-UCS-M

Mount clip (arrowed).



E-UCS-M

Plug in cable couplers X1375 and X1430.

Date	Version	Page	Fitting cab	Capitel	Index	Docu-No.
27.01.2006	a	4/9		8100	G	000016

Fendt 300 Vario

Cab / General system
Fitting cab

G



E-UCS-M

Mount strain relief.



E-UCS-M

Mount both metal panels.



E-UCS-M

Connect vehicle battery and mount cover.



E-UCS-M

Fit volume adjusters on to valves.
Hook in actuating linkage and secure.

Date	Version	Page	Fitting cab	Capitel	Index	Docu-No.
27.01.2006	a	5/9		8100	G	000016

Fendt 300 Vario

Cab / General system
Fitting cab

G



E-UCV-18

Mount metal panel.



E-UCV-18

Hook in hand brake Bowden cable and screw tight.



E-UCV-18

Tighten hydraulic lines.



E-UCV-18

Tighten brake line and slide on securing clips.

Date	Version	Page	Fitting cab	Capitel	Index	Docu-No.
27.01.2006	a	6/9		8100	G	000016

Fendt 300 Vario**Cab / General system**
Fitting cab**G**

E-UCS-M8

Install AC compressor.

Mount v-belt tension with tensioning screw according to specifications.

Then tighten AC compressor.



E-UCS-M8

Connect separation point X342 magnetic clutch AC compressor and fasten to coolant line with cable tie.



E-UCS-M8

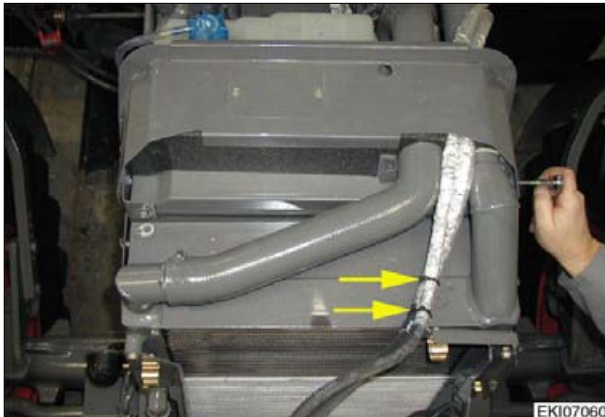
Mount condenser.



E-UCS-M8

Connect cable coupler X341 and hook condenser in to original position.

Date	Version	Page	Fitting cab	Capitel	Index	Docu-No.
27.01.2006	a	7/9		8100	G	000016

Fendt 300 Vario**Cab / General system
Fitting cab****G**

E-UCV-M

Mount metal panel and secure coolant hoses with cable ties (arrowed).



E-UCV-M

Mount air intake.
Insert rubber pad (arrowed) in the notch.
Tighten hose clip on air filter.



E-UCV-M

Mount intake pipe on A-pillar.



E-UCV-M

Slide on insulating mat and tank bracket.

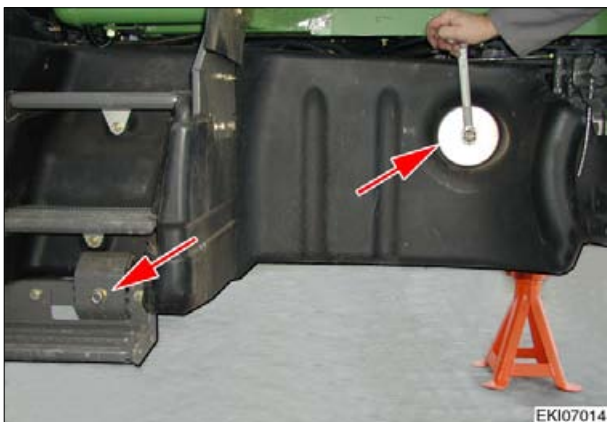
Date	Version	Page	Fitting cab	Capitel	Index	Docu-No.
27.01.2006	a	8/9		8100	G	000016

Fendt 300 Vario**Cab / General system
Fitting cab****G**

E-UCS-18

Install and connect fuel tank.

Plug in fuel level sensor B007 cable coupler X156.



E-UCS-18

Mount fuel tank (see arrow) and screw side metal panel on to the bottom step.

Concluding work:

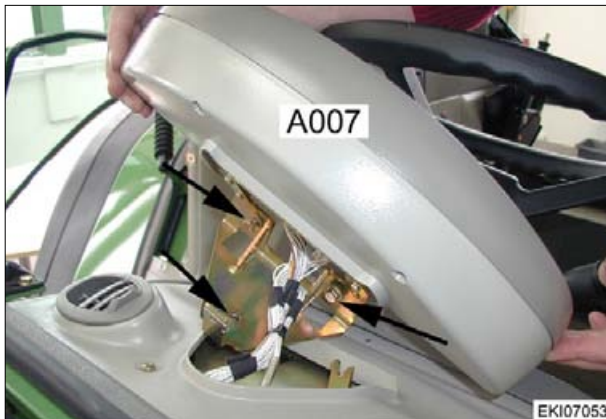
Bleeding brakes, see Chapter 1070 Reg.G.

Fit wheels.

If necessary, hook in the remote control for the hitch.

Note:**Fill up coolant, allow machine to run and check for proper functioning and tightness against leakage.**

Date	Version	Page	Fitting cab	Capitel	Index	Docu-No.
27.01.2006	a	9/9		8100	G	000016

FENDT 300 Vario**Cab / Heater**
Removing and installing M009 - heater blower**G**

Remove A007 - instrument cluster. (arrowed)
Remove upper steering column panel



Remove bracket



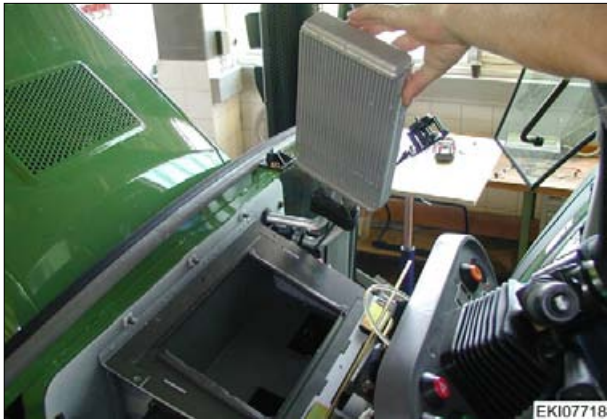
Remove switch for the blower temperature



Remove air duct

Date	Version	Page	Capitel	Index	Docu-No.
25.07.2007	a	1/3	8113	G	000002

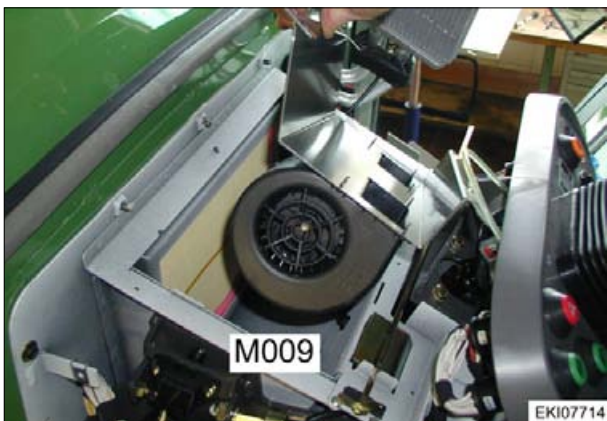
Removing and installing M009 - heater blower

FENDT 300 Vario**Cab / Heater**
Removing and installing M009 - heater blower**G**

Place heat exchanger carefully to the side



Remove bracket



Remove M009 - heater blower

**Note:**

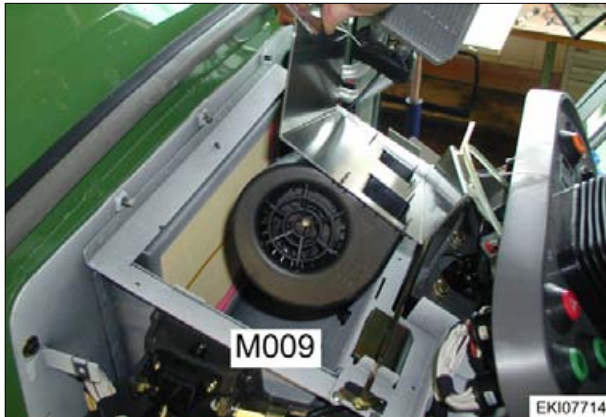
The resistor board can be replaced

Date	Version	Page	Capitel	Index	Docu-No.
25.07.2007	a	2/3	8113	G	000002

FENDT 300 Vario

Cab / Heater
Removing and installing M009 - heater blower

G



1-00018

Reinstall the M009 - heater blower in reverse order



Note:

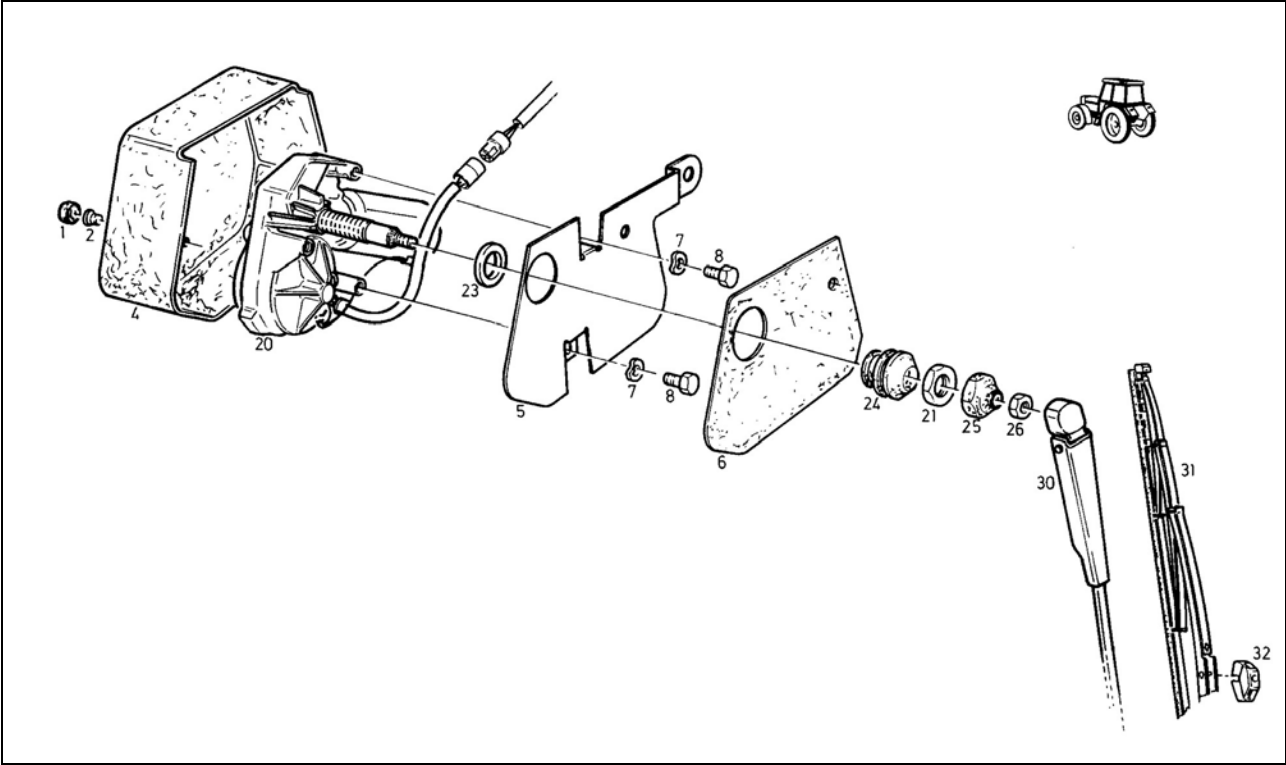
When installing, ensure that all gaskets are seated properly!

Date	Version	Page	Removing and installing M009 - heater blower	Capitel	Index	Docu-No.
25.07.2007	a	3/3		8113	G	000002



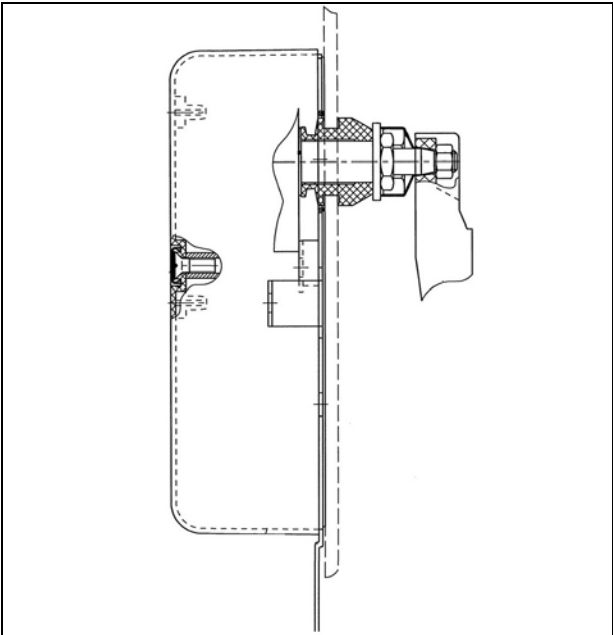
CAB / WINDSCREEN WIPERS
Mounting rear windscreen wipers

G



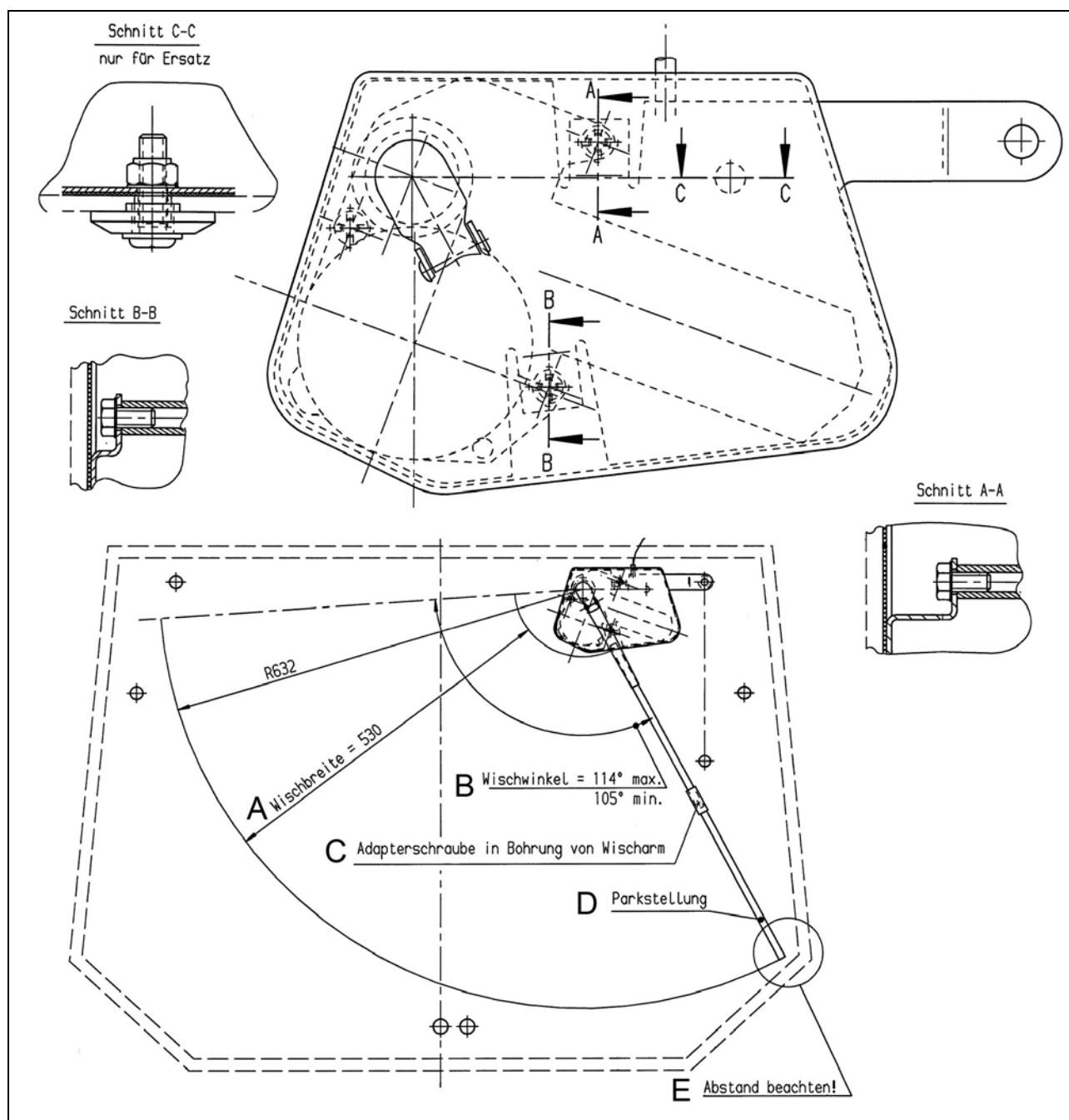
1001899

Item	Designation	Item	Designation
1	CAP	21	HEX NUT M16X1
2	COUNTERSUNK SCREW M6X16-4.8A3L	23	SPACER
4	COVER	24	WASHER SEAL
5	BASE PLATE	25	CAP
6	RUBBER PLATE	26	M8 HEX NUT
7	SPRING WASHER 6-A3L	30	WIPER ARM
8	HEX SCREW M6X12-8.8A3L	31	WIPER BLADE
20	WIPER MOTOR	32	ADAPTER



1001902

- Mount rear windscreen wipers using the drawings and parts list as reference.



1001903



1001901

Adjustment instructions for wiper blade

A = Wiper width

B = Wiping angle

C = Adapter screw in bore of wiper arm

E = Observe distance

D = Parking position

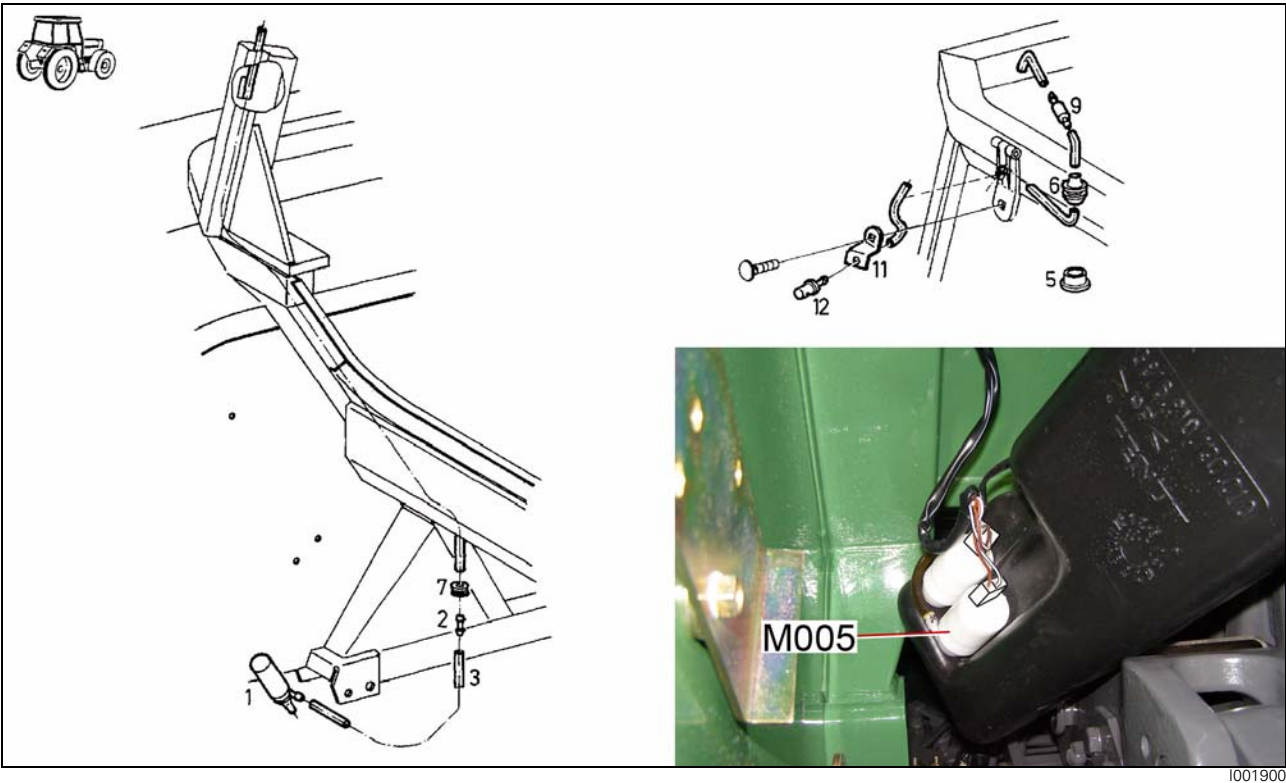
- Pull forward separation point (X258) behind roof lining, guide through grommet in cab roof and connect to wiper motor (M004).
- Fasten surplus separation point (arrowed) using cable tie.



CAB / WINDSCREEN WIPERS

Mounting rear windscreen washer

G



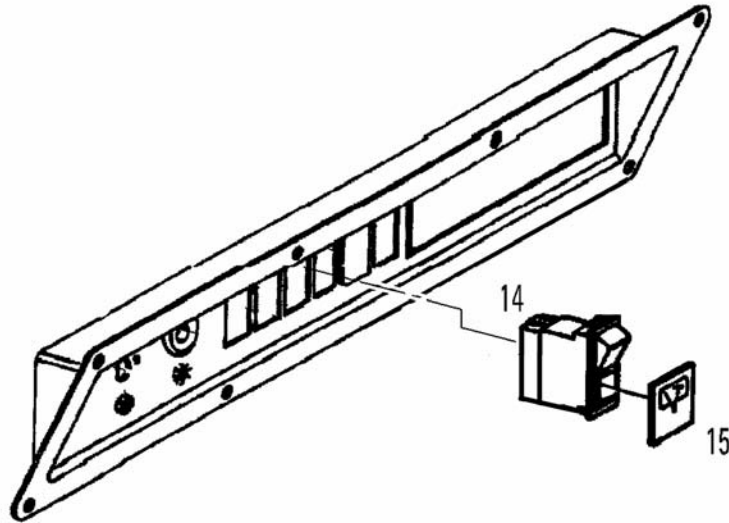
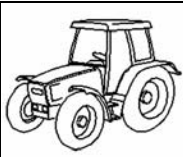
I001900

Item	Designation	Item	Designation
1	PUMP	7	CABLE BUSHING 9X12X16
2	COUPLINGS	9	NON-RETURN VALVE
3	HOSE 5X1.5 2400 MM CUT TO LENGTH	11	BRACKET
5	PLUG, NOT REQUIRED WITH WIND-SCREEN WASHER	12	DOUBLE NOZZLE
6	GROMMET		



I001905

- Mount rear windscreen washer completely.
- Attach separating point to rear wiper pump (M005).



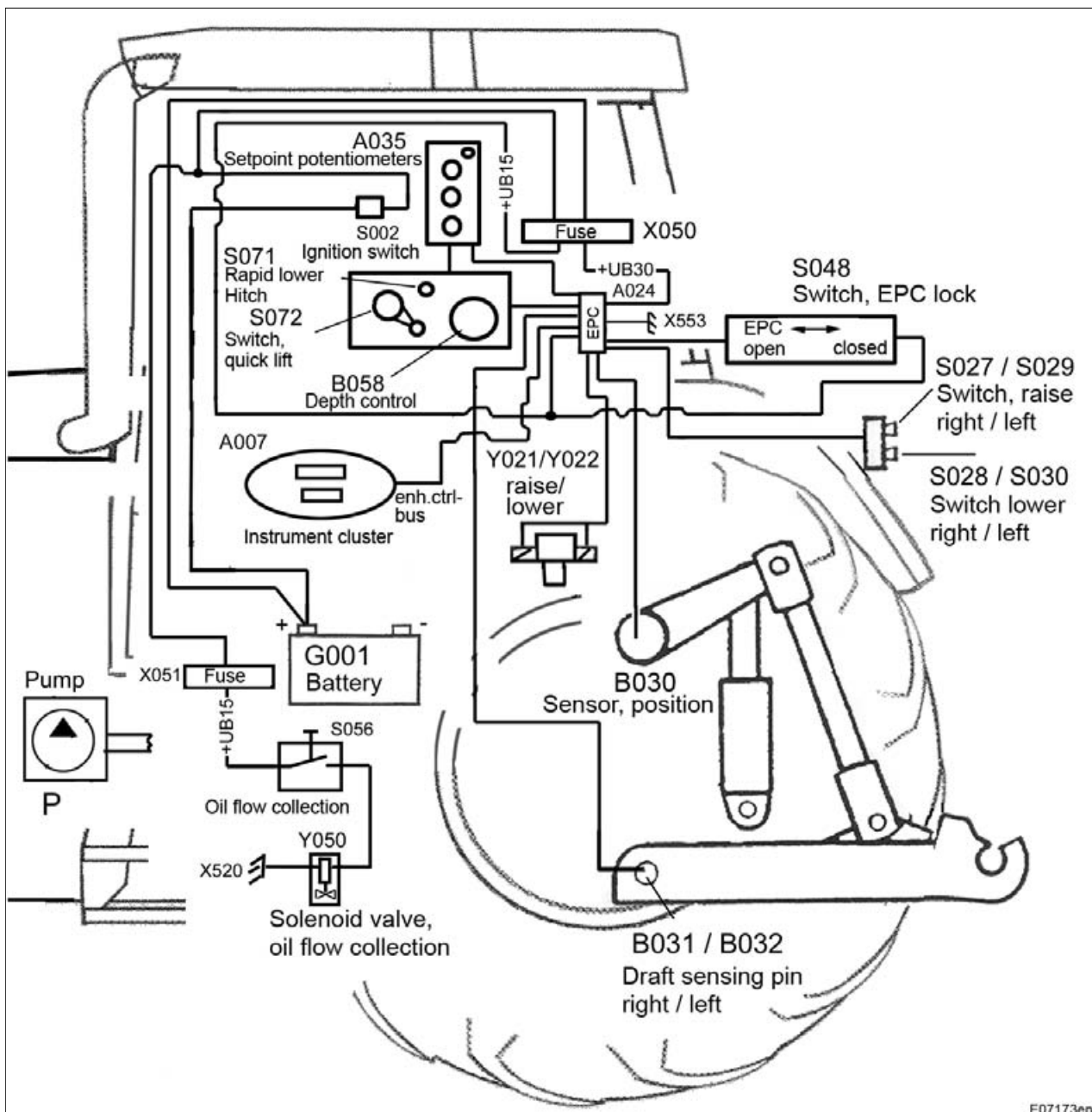
I001914

Assembly Instructions



I001915

- Unscrew console and swivel downwards.
- Mount toggle switch (Item 14 / S010) and insert (Item 15).
- Attach separating point (X273) to toggle switch.

Fendt 300 Vario
Power lift / Electrohydraulic control EPC
EPC - rear power lift
A

E07173en

Item	Designation	Item	Designation
A007	Instrument cluster	S030	External switch lower, left
A024	ECU, EPC B	S048	Switch EPC lock
A035	EPC control panel (potentiometer set-point)	S056	Switch, oil flow collector
B030	Sensor, position	S071	Switch, rapid lowering / hitch
B031	Draft sensing pin right	S072	Switch, quick lift
B032	Draft sensing pin, left	X050	Fuse holder 1 compl
B058	Depth control	X051	Fuse holder 2 compl
G001	Battery (12 VDC)	X520	Ground
K-bus	Enhanced control bus	X553	Ground
S002	Ignition switch	Y021	Solenoid valve, rear power lift raise
S027	External switch 'raise', right	Y022	Solenoid valve, rear power lift lower

Date	Version	Page	EPC - rear power lift	Capitel	Index	Docu-No.
24.07.2007	a	1/2		8610	A	000024

Fendt 300 Vario	Power lift / Electrohydraulic control EPC EPC - rear power lift	A
------------------------	--	----------

Item	Designation	Item	Designation
S028	External switch lower, right	Y050	Solenoid valve, oil flow collector
S029	External switch raise, left	P	Hydraulic pump

Note:

see Chapter 9000 Register E - Measuring and testing A024 - ECU, EPC B electrically

Date	Version	Page	EPC - rear power lift	Capitel	Index	Docu-No.
24.07.2007	a	2/2		8610	A	000024

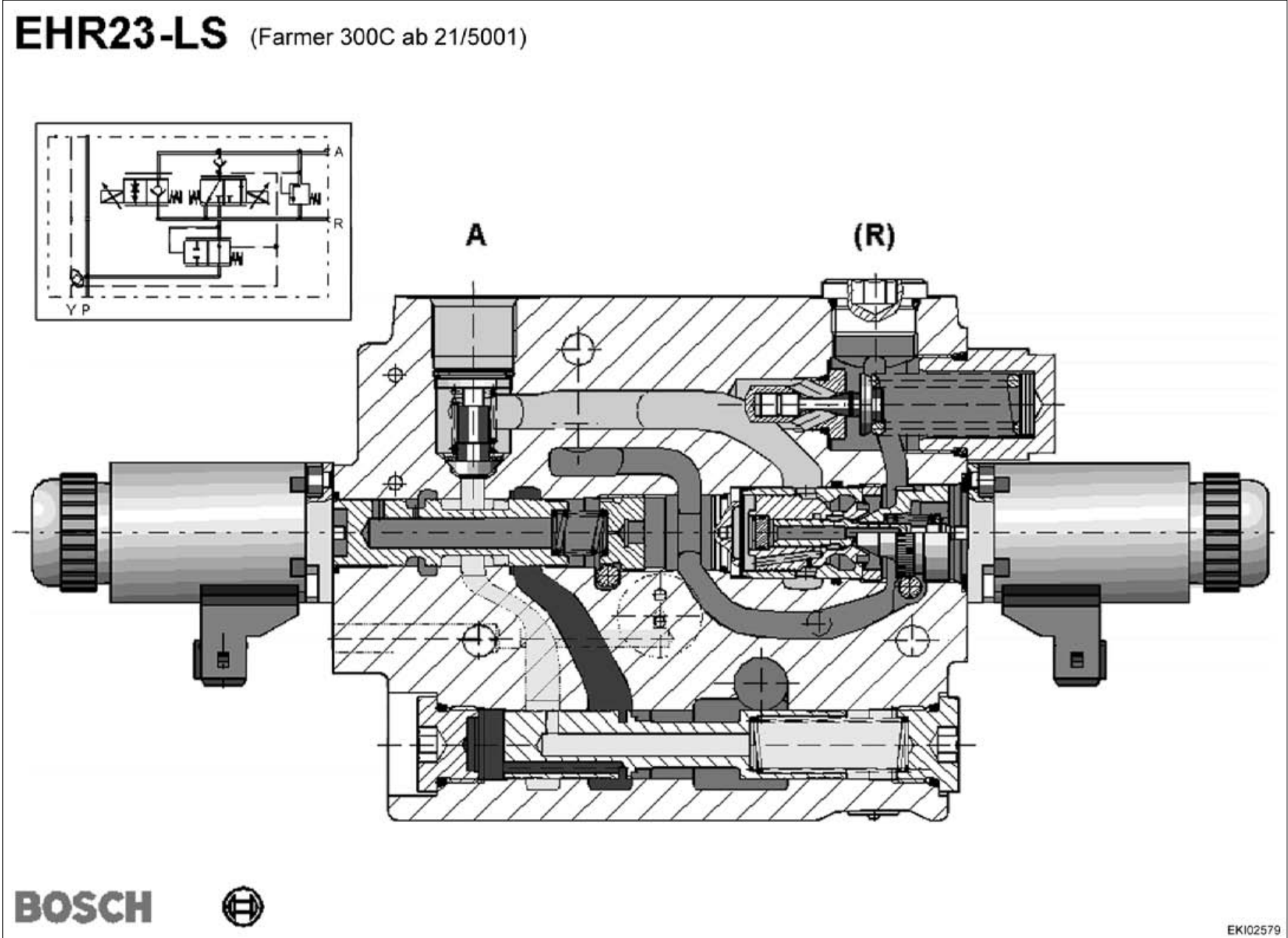
Farmer 300 C	Power lift / Electrohydraulic control EPC Troubleshooting table for power lift and service hydraulics (hydraulics)	B
---------------------	---	----------

Troubleshooting table for power lift and service hydraulics (hydraulics)			
Fault	Cause	Remedy	
1. Power lift switched to EPC. Operate control valve manually, power lift can not be raised and lowered.	1a No oil or too little oil in hydraulic tank	Check oil level / top up.	
	1b Control valve defective.	1b	Fit new control valve.
2. Power lift switched to EPC. Operate control valve manually. Power lift can be raised and lowered. However, does not work electrically / electronically.	2a No charging current D+ from alternator (battery charge indicator lit)	2a	Check EPC relay; see also Chapter 9000 Reg. E - A024 - EPC ECU
	2b Fault in electrics / electronics	2b	See Faults in electrics / electronics, Chapter 8610 Reg.B
3. Power lift and/or external cylinder, e.g. front loader, 'Raise' function too little with warm hydraulic oil	3a Min. hydraulic pressure of 200 bar is not reached. Measure pressure	3a	Check pressure control valve in terminal plate AP; Chapter 9620 Reg.A
	3b Hydraulic pump defective.	3b	Check hydraulic pump with flow-rate meter. Fit new hydraulic pump, if necessary.
	3c Mounted implement too heavy.	3c	Connect mounted implement differently. If possible, use lighter implement.
4. Power lift does not go to end shutoff	4a No overtravel at lift arms	4a	Set power lift end shutoff. See Chapter 8610 Reg. G - B030-sensor, position; installation and removal
	4b Position sensor B030 gives incorrect signal values	4b	Measuring and testing position sensor B030 - Chapter 9000 Reg.E
	4c Mounted implement non-standard (too wide) or category not set correctly, or implement too heavy.	4c	Adapt mounted implement to standard, set category in accordance with standard, reduce implement weight.
5. Power lift lowers load slightly and then raises it again (approx. every 20 sec).	5a Internal leakage in lifting cylinder.	5a	Seal pressure pipe on lifting cylinder and subject lift to load. - If lift lowers, fit new lifting cylinder. Seal lifting cylinder.
	5b Internal leakage in control valve.	5b	Seal pressure pipes on lifting cylinder and subject lift to load. - If lift does not lower, fit new control valve.
6. Hydraulic oil becomes too warm	6 Flow setting at respective auxiliary control unit too high	6	Check flow setting.
7. Power lift lowers and rises in 'Floating position' setting	7 Mounted implement	7	Mounted implement non-standard. Check mounted implement for lateral clearance.

Date	Version	Page	Troubleshooting table for power lift and service hydraulics (hydraulics)	Capitel	Index	Docu-No.
11.02.2002	a	1/1		8610	B	000007

Farmer 300 C	Power lift / Electrohydraulic control EPC	
Sectional view and circuit diagram of EHR 23 LS (Farmer 300C)		C

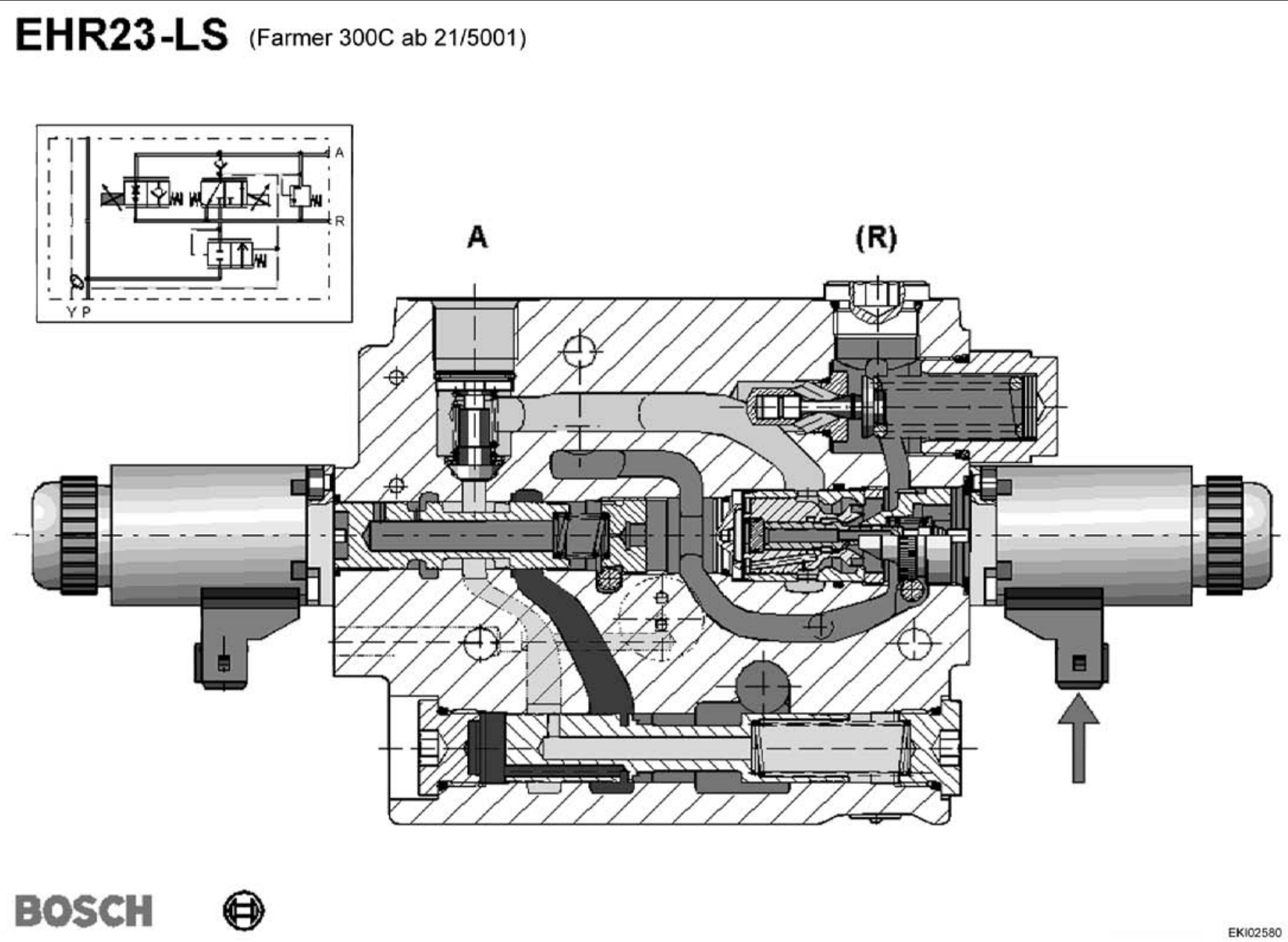
Neutral position



Date	Version	Page	Sectional view and circuit diagram of EHR 23 LS (Farmer 300C)			
20.02.2002	a	1/3	Capitel	Index	Docu-Nb.	
			8610	C	000008	

Farmer 300 C	Power lift / Electrohydraulic control EPC	
Sectional view and circuit diagram of EHR 23 LS (Farmer 300C)		C

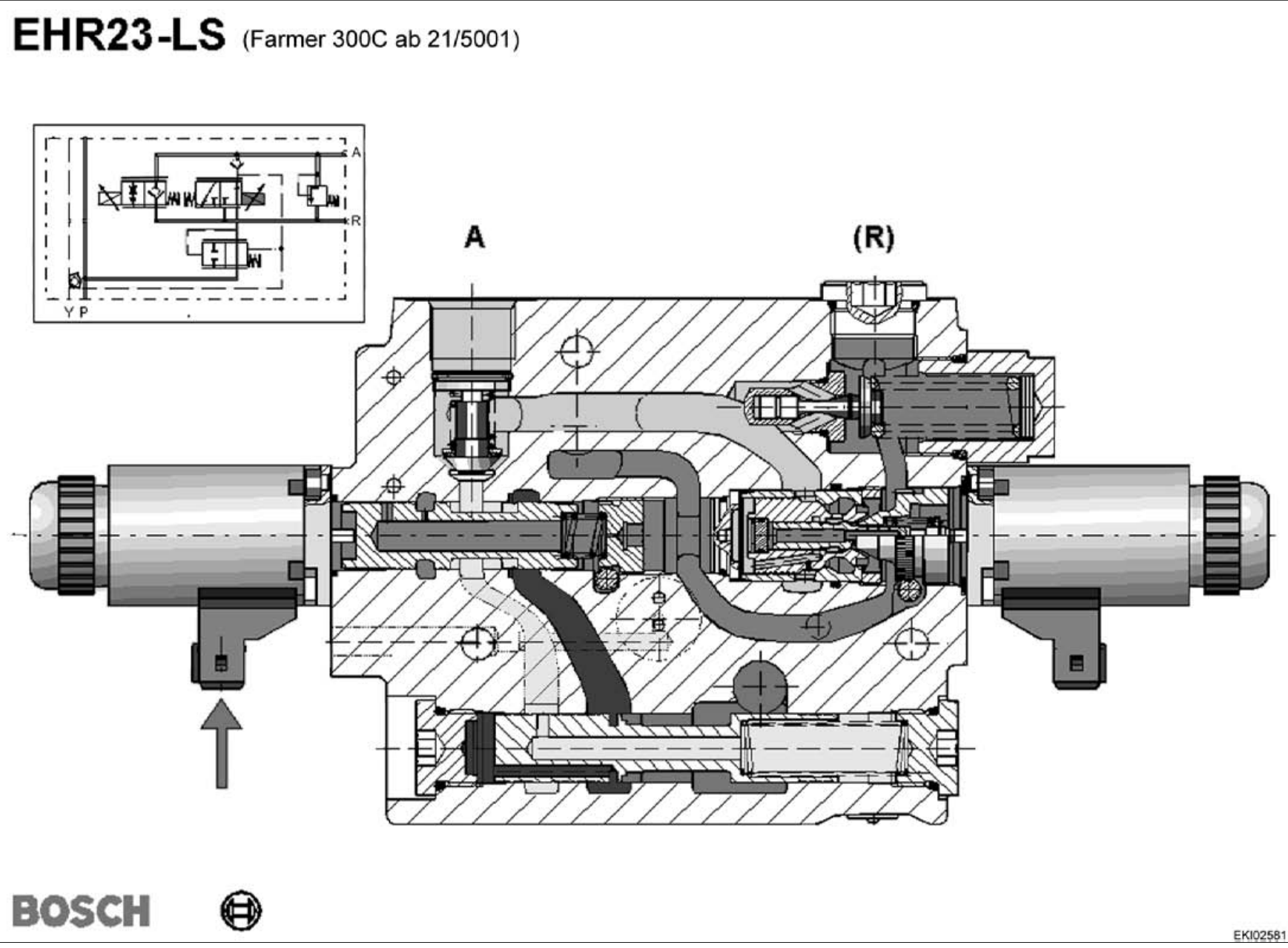
Lower position



Date	Version	Page	Capitel	Index	Docu-No.
20.02.2002	a	2/3	Sectional view and circuit diagram of EHR 23 LS (Farmer 300C)	8610	C 000008

Farmer 300 C	Power lift / Electrohydraulic control EPC	
Sectional view and circuit diagram of EHR 23 LS (Farmer 300C)		C

Raise position



Date	Version	Page	Capital	Index	Docu-Nb.
20.02.2002	a	3/3	8610	C	000008

Sectional view and circuit diagram of EHR 23 LS (Farmer 300C)

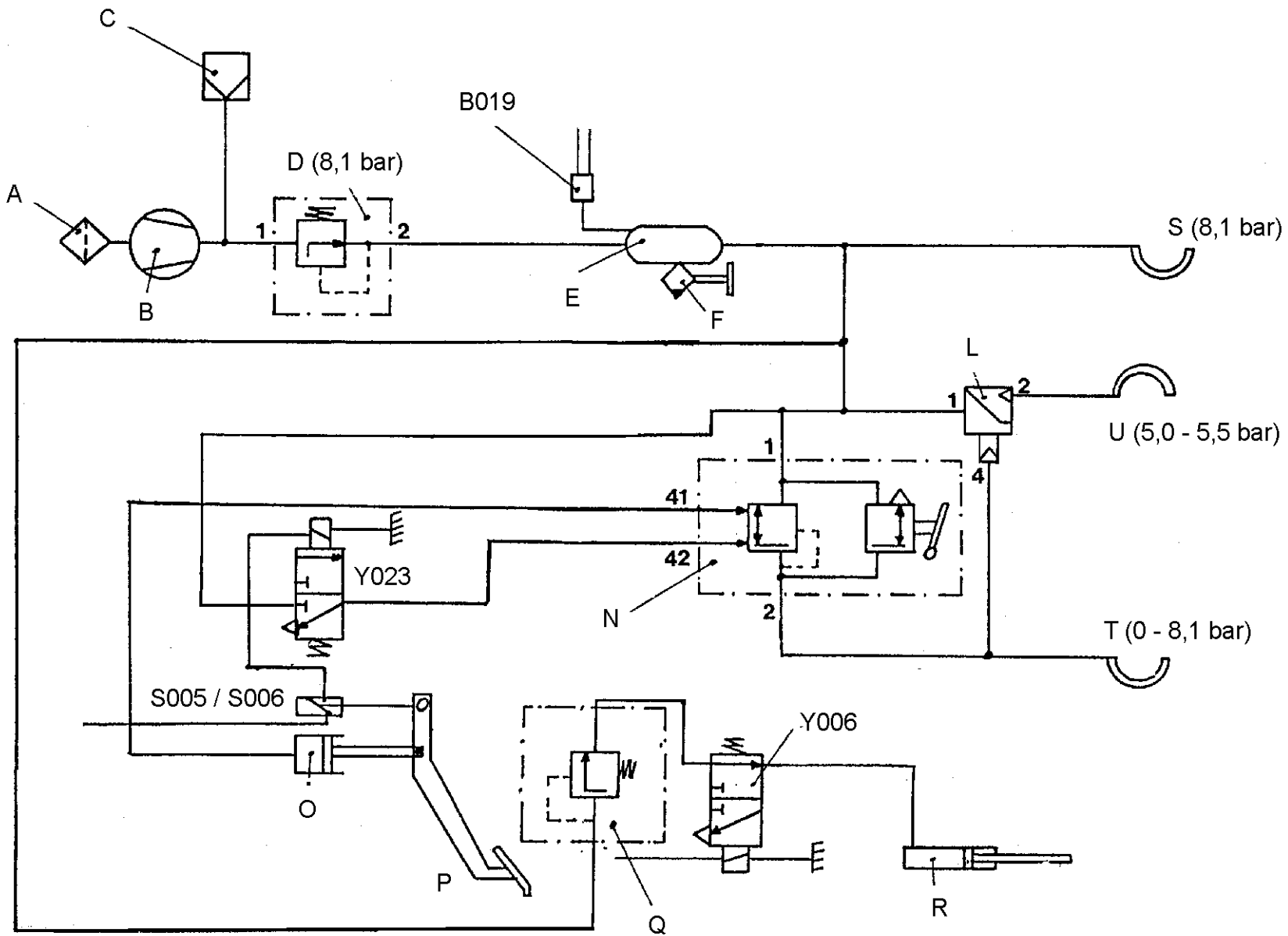
FENDT 300 Vario	Air compressor / General system Air compressor plan	C
------------------------	--	----------

Date	Version	Page	Air compressor plan	Capitel	Index	Docu-No.
07.08.2007	a	1/3		8800	C	000007

FENDT 300 Vario

Air compressor / General system
Air compressor plan

C



EK108914

Date	Version	Page	Air compressor plan			Capitel	Index	Docu-No.
07.08.2007	a	2/3				8800	C	000007

FENDT 300 Vario	Air compressor / General system Air compressor plan	C
------------------------	--	----------

Item	Designation	Item	Designation
A	Air filter	O	Service brake
B	Compressor	P	Brake pedal
C	Antifreeze pump	Q	Spill valve
D	Pressure regulator 8.1 bar	Y006	Valve, exhaust brake
E	Air tank	R	Exhaust brake
F	Drain valve	S	Coupling head, red 8.1 bar (storage tank)
B019	Pressure sensor, compressed air	T	Coupling head, yellow 0 - 8.1 bar (brake)
L	Trailer control valve (single-line brake)		
Y023	3-way directional control valve (pilot valve)	U	Coupling head, black 5.0 - 5.5 bar (single-line brake)
N	Trailer control valve		
S005	Switch, right brake		
S006	Switch, left brake		

Note:**Chapter 8800 Reg. B - Troubleshooting flowchart, compressed air****Chapter 8800 Reg. D - Position of components, air compressor****Chapter 8800 Reg. E - Checking dual-line brake system in tractor****Chapter 8800 Reg. E - Checking single-line brake system in tractor****Chapter 8820 Reg. F - Setting pressure regulator (8.1 bar)****Chapter 8820 Reg. F - Trailer control valve (single-line)**

Date	Version	Page	Air compressor plan	Capitel	Index	Docu-No.
07.08.2007	a	3/3		8800	C	000007

Fendt 300 Vario

Air compressor / General system
Position of components, air compressor

D**Air filter**

On engine bulkhead



Open bonnet

**Compressor**

Front right side of engine



Open bonnet

**Antifreeze pump**

On right rear of tractor

**Pressure regulator (8.1 bar)**

Right side of tractor, on axle tube



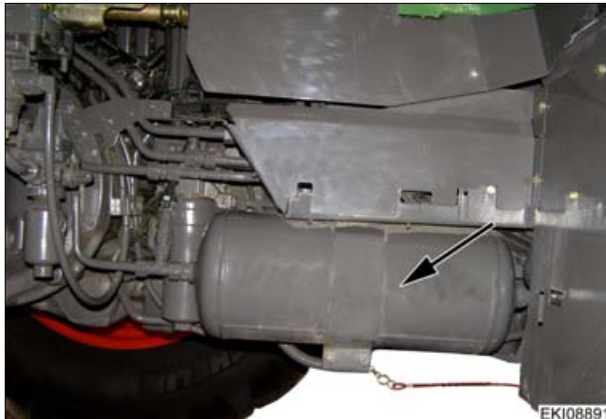
Remove right rear wheel



Date	Version	Page	Position of components, air compressor	Capitel	Index	Docu-No.
07.08.2007	a	1/4		8800	D	000005

Fendt 300 Vario

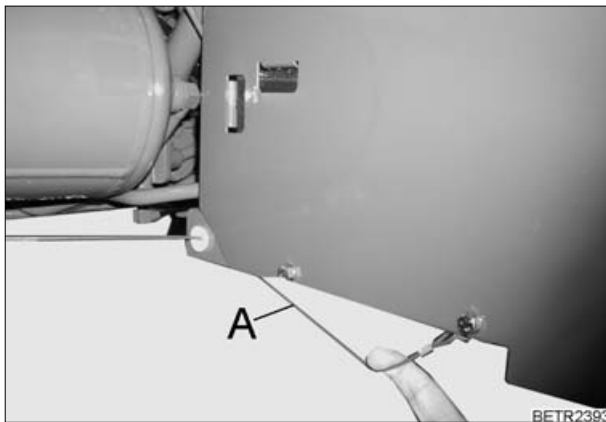
Air compressor / General system
Position of components, air compressor

D**Air tank**

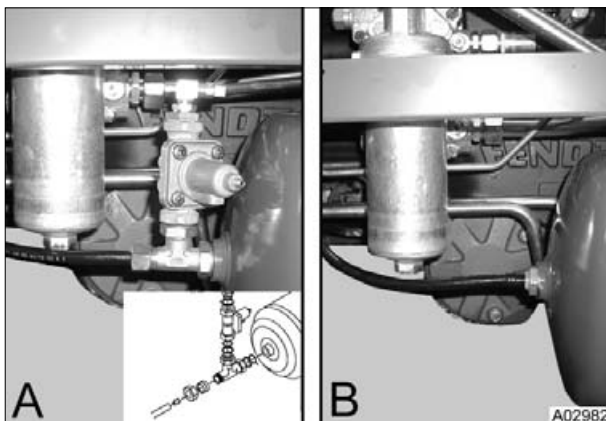
Right side of tractor



Remove right rear wheel

**Pull rope for drain valve**

Right side of tractor

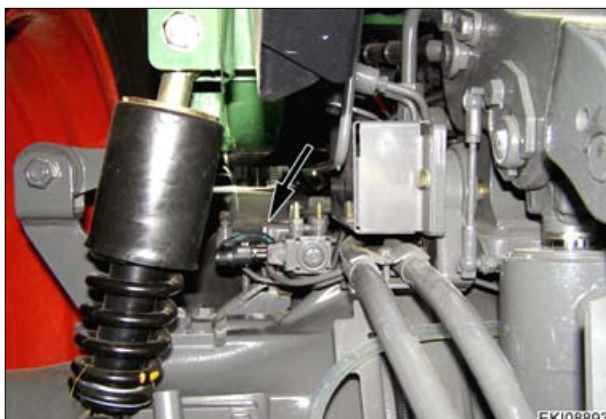
**Spill valve (exhaust brake)**

Spill valve installed near exhaust brake

Right side of tractor



Remove right rear wheel

**Trailer control valve (dual-line brake)**

on left axle point



Remove guard

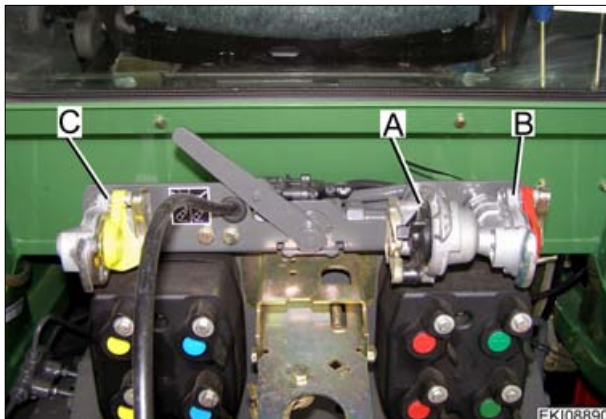


Date	Version	Page	Position of components, air compressor	Capitel	Index	Docu-No.
07.08.2007	a	2/4		8800	D	000005

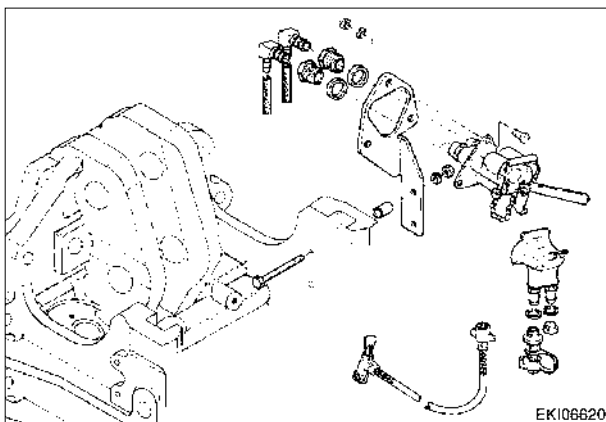
Fendt 300 Vario

Air compressor / General system

Position of components, air compressor

D

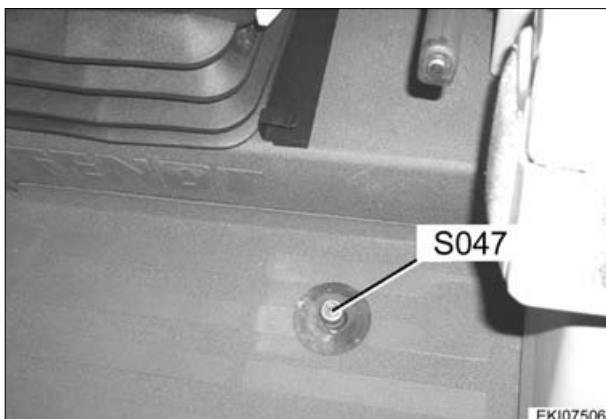
- A = Coupling head (black), single-line brake system connection
- B = Coupling head (red), dual-line system, storage tank
- C = Coupling head (yellow), dual-line system, brakes

**Coupling head (Italy)****Trailer control valve (single-line brake)**

Right side of tractor



Remove right rear wheel

**B019 - pressure sensor, compressed air****Note:****Chapter 9000 Reg. E - Measuring and testing**

Right side of tractor



Remove right rear wheel



Date	Version	Page	Position of components, air compressor	Capitel	Index	Docu-No.
07.08.2007	a	3/4		8800	D	000005

Fendt 300 Vario

Air compressor / General system
Position of components, air compressor

D**X006 - solenoid valve, exhaust brake**

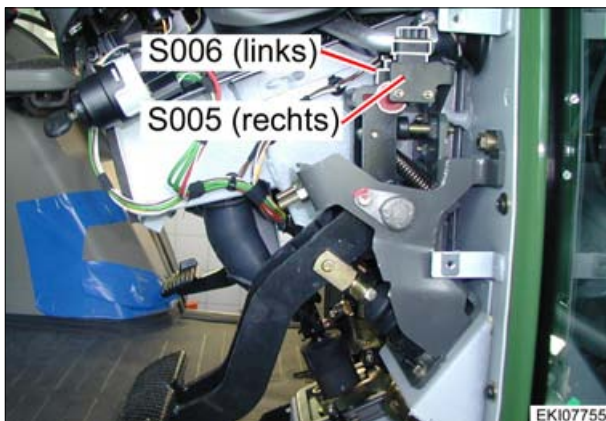
On right side of tractor on engine bulkhead



Open bonnet

**Y023 - 3-way directional control valve (pilot valve)****Note:****Chapter 9000 Reg. E - Measuring and testing**
on left axle point

Remove guard

**S005 / S006 - switch, brake****Note:****Chapter 9000 Reg. E - Measuring and testing**
At top of brake pedals

Remove panel

Note:**Chapter 8800 Reg. C - Air compressor plan****Chapter 8800 Reg. E - Checking dual-line brake system in tractor****Chapter 8800 Reg. E - Checking single-line brake system in tractor****Chapter 8820 Reg. F - Setting pressure regulator (8.1 bar)****Chapter 8820 Reg. F - Trailer control valve (single-line)**

Date	Version	Page	Position of components, air compressor	Capitel	Index	Docu-No.
07.08.2007	a	4/4		8800	D	000005

Service Training

Electrical and hydraulic diagrams

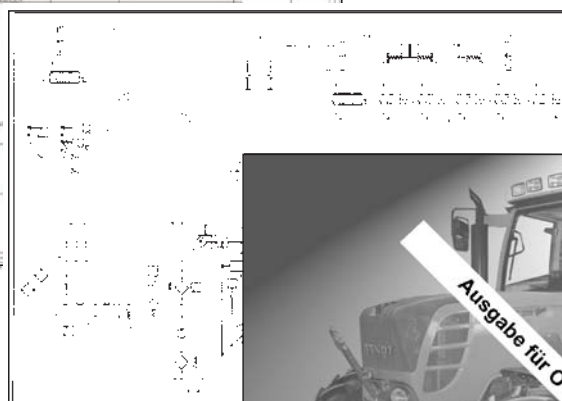
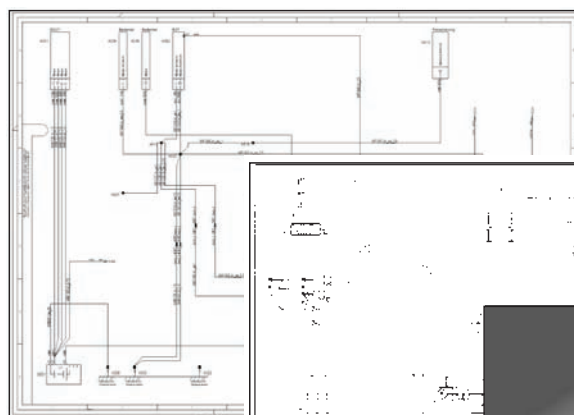
FENDT 300 Vario

FENDT 309 Vario from .. / 0101 - to .. / 1000

FENDT 310 Vario from .. / 0101 - to .. / 1000

FENDT 311 Vario from .. / 0101 - to .. / 1000

FENDT 312 Vario from .. / 0101 - to .. / 1000



Edition
05/2006

3185 G - en

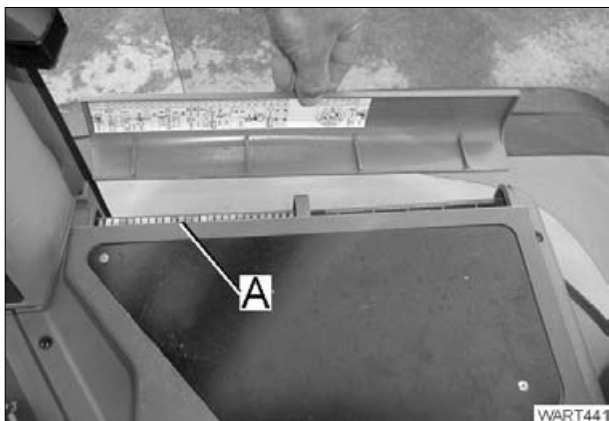
X990.005.444.010 - English

Electrics / Fuses

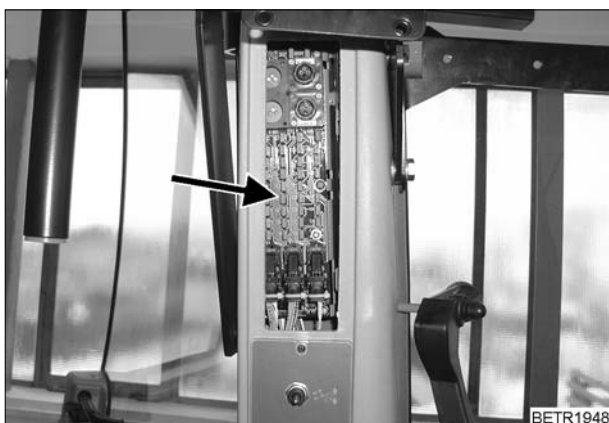
Fuse holder X050, X051 and A013

C**Danger:**

Use only genuine fuses! Electrical system will be destroyed if fuses with too high ratings are used. Beware of fire risk!



Fuse holder (X050, X051)



Fuse holder (A013)

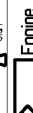
Unscrew cover panel.

Electrics / Fuses

Fuse holder X050, X051 and A013

C

Fuse holder X050

Nr.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	
PIN				30	30	30	30		30	30	30	30	15	15	15	15	15	15		15	15		15	15	15	15	15	30		
Wert(A)				25	25	15	15		15	15	25	5	10	10	15	5	40	15		10	15		15	10	25	10	5	10		
Verbraucher																														
339.900.040.302																														

BETR1896

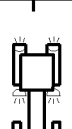
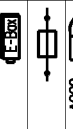
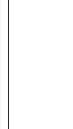
BETR1896

Fuse no.	Pin	Rating (A)	Consumer
1	-	-	-
2	-	-	-
3	-	-	-
4	30	25	Heater plug starter switch position ON
5	30	25	Control module
6	30	15	Hazard warning lights pushbutton
7	30	15	Headlights pushbutton
8	30	10	-
9	30	15	Relay no. 56a (headlights)
10	30	15	Relay no. 56b (dipped beam)
11	30	25	Socket 25 A
12	30	5	EPC
13	15	10	Radio
14	15	25	Heater switch
15	15	15	Hazard warning lights pushbutton
16	15	5	Headlights pushbutton
17	15	40	Blower switch
18	15	15	Front wipers pulse generator
19	15	10	-
20	15	10	Steering column switch (multifunction switch)
21	15	15	Driver seat, seat heating
22	-	-	-
23	15	15	Brake relay
24	15	10	3rd hydraulic circuit relay
25	15	25	Rear window heater, mirror heater
26	15	10	Socket 10 A
27	-	-	-
28	-	-	-
29	15	25	not assigned

Electrics / Fuses

Fuse holder X050, X051 and A013

C**Fuse holder X051**

Nr.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
PIN		58	58	58	58	58	58	58			30E	30E	30E	15E	15E	15E	15E	15E	15E	15/58	15/58	15/58	R	54	58L	L	58R	30	
Wert(A)		5	25	15	15	15	5	5			40	10	15	5	5	5	5	5	5	5	10	10	10	10	10	10	10	5	
Verbraucher																													

BETR1897

Fuse no.	Pin	Rating (A)	Consumer
31	-	-	-
32	58	5	Instrument cluster
33	58	25	Front work lights switch
34	58	15	Front work lights switch
35	58	15	Rear working lights switch
36	58	15	Rear working lights switch
37	58	5	Right rear taillamp, right position lamp
38	58	5	Left rear taillamp, left position lamp
39	-	-	-
40	-	-	-
41	30E	40	Enhanced controls e-box
42	30E	5	Fuseboard
43	30E	15	Actuator unit control
44	15E	5	Control console
45	15E	5	Enhanced controls e-box
46	15E	5	Vario terminal
47	15E	5	Turboclutch solenoid valve
48	15E	5	Control module
49	15E	5	Instrument cluster, hand throttle
50	15/58	5	Engine control diagnostics
51	15/58	10	Implement socket, communications box load circuit
52	54	10	EPC
53	R	10	Front socket on front power lift, trailer socket
54	54	10	Trailer socket
55	58L	10	Front socket on front power lift, trailer socket
56	L	10	Front socket on front power lift, trailer socket
57	58R	10	Trailer socket
58	30	10	E-box, instrument cluster
59	-	-	-

Electrics / Fuses

Fuse holder X050, X051 and A013

C

Sicherung	Trennst.	Komponente	Trennst.
01	X200/10	Drehzahlsensor Hydrostat	X163
02	X200/11	Drehzahlsensor Kegelritzel	X164
03	X200/12	Drehwinkelsensor Kupplungspedal	X166
04	X200/14	Bedienteil	X1358
05	X200/4	Drehwinkelsensor Federung	X152
06	X201/11		
07	X201/12		
08	X201/13		
09	X201/6		
10	X200/6	Hochdrucksensor1	X157
11	X200/9	Drehzahlsensor Motor	X159
12	X200/17		
13	X200/16	Drehzahlsensor Zapfwelle hi.	X169
14	X200/15	Drehzahlsensor Zapfwelle vo.	X151
15	X200/5	Hochdrucksensor2	X177
16	X201/5		
17	X201/4		
18	X201/18		

339.900.040.320

BETR1949

fuse	Connector	Components	Comp. li. cpl.
01	X200/10	Hydrostat speed sensor	X163
02	X200/11	Bevel pinion position sensor	X164
03	X200/12	Clutch pedal rotary position sensor	X166
04	X200/14	Control unit	X1358
05	X200/04	Suspension position sensor	X152
06	X201/11	-	-
07	X201/12	-	-
08	X201/13	-	-
09	X201/06	-	-
10	X200/06	High pressure sensor 1	X157
11	X200/09	Engine speed sensor	X169
12	X200/17	-	-
13	X200/16	PTO speed sensor rear	X169
14	X200/15	PTO speed sensor front	X151
15	X200/05	High pressure sensor 2	X177
16	X201/05	-	-
17	X201/04	-	-
18	X201/18	-	-

Electrics / General system
Overview of components FENDT 300 Vario - pilot production

C**Component list: Circuit diagram set 339.900.000.003****Note:**

The entries in the tractor range column refer to the relevant circuit diagrams (sheet no.).

DIN	Designation	Con- nector	Fendt 300 Vario
A002	ECU, enhanced control	X031	3, 4, 6, 9, 18, 21, 22, 23, 24, 25, 26, 30
A007	Instrument cluster	X100 X101	2, 4, 6, 7, 8, 17, 18, 19
A009	Actuator unit	X037	21, 22
A010	Thermostat (air-conditioning)	X281	14
A013	Circuit board_fuse	X200 X201 X202	2, 4, 6, 18, 21, 22, 23, 24, 25
A024	ECU, EPC B	X850	18, 20
A035	Control unit, EPC B	X1353	20
A036	Control panel, enhanced control	X1357 X1358	2, 4, 6, 19, 22, 23, 24, 25, 26, 30
A051	ECU, engine control unit (EDC 7)	X1466	4, 6, 21, 30, 33
A055	Modasys	X1411	29
A056	Radio	X1315 X1316	28

DIN	Designation	Con- nector	Fendt 300 Vario
B002	Sensor, front PTO stub shaft speed	X151	25
B003	Sensor, front axle suspension position	X152	24
B004	Vacuum switch (air filter)	X153	30
B007	Level sensor (fuel)	X156	19
B008	High pressure sensor (pressure in ML transmission)	X157	22
B009	Discharge temperature sensor	X158	22
B010	Sensor, engine speed (is used to control the ML - transmission "load limit control")	X159	23
B014	Sensor, drive accumulator shaft hydrostat	X163	22
B015	Sensor, bevel pinion	X164	22
B017	Sensor, clutch pedal	X166	23
B019	Sensor, compressed air volume	X168	19
B020	Sensor, rear PTO stub shaft speed	X169	25
B030	Sensor, rear power lift position	X178	20
B031	Draft sensing pin right	X179	20
B032	Draft sensing pin, left	X180	20
B035	Sensor, hand throttle	X183	30
B039	High pressure sensor 2	X177	22
B045	Sensor, air-conditioning system 1 (protection against icing)	X195	14
B046	Sensor, air-conditioning system 2 (controls cool air)	X196	14

Electrics / General system
Overview of components FENDT 300 Vario - pilot production

C

DIN	Designation	Con- nector	Fendt 300 Vario
B050	Loudspeaker left	X311 X312	28
B051	Loudspeaker right	X289 X290	28
B055	Sensor, foot throttle	X898	30
B058	Depth control (EPC - B)	X1356	20
B080	Sensor, hydraulic oil temperature	X1585	19
B085	Camshaft speed	X1678	33
B086	Rail pressure sensor	X1655	33
B087	Fuel low pressure	X1656	33
B088	Crankshaft speed	X1657	33
B089	Temperature sensor Deutz	X1658	33
B091	Sensor, water in fuel	X1660	33
B092	Sensor, charge air pressure / temperature	X1661	33
B093	Oil pressure temperature 2	X1666	33

DIN	Designation	Con- nector	Fendt 300 Vario
E001	H4 headlamp right	X350	7
E002	H4 headlamp left	X351	7
E003	H4 additional headlamp right	X352	7
E004	Left H4 additional headlamp	X353	7
E005	Turn signal indicator / position lamp front right	X372 X378	7, 8
E006	Turn signal indicator / position lamp front left	X373 X379	7, 8
E007	Right rear taillamp	X106 X113	7, 8, 9
E008	Left rear taillamp	X116 X117	7, 8, 9
E009	License plate lighting right	X374 X375	7
E010	License plate lighting left	X376 X377	7
E011	Work light in roof rear right	X385 X386	12
E012	Work light in roof rear left	X388 X389	12
E013	Work light in roof front right	X291	11
E014	Work light in roof front left	X294	11
E015	Work light front on right direction indicator	X292X- 293	11
E016	Work light front on left direction indicator	X295X- 296	11
E017	Work light on taillamp bracket right	X366	12
E018	Work light on taillamp bracket left	X367	12
E019	Lighting, cab	X308 X309 X310	28
E020	EPC light	X282 X283	11
E021	Rotating beacon right	X346	10
E022	Rotating beacon left	X345	10

Electrics / General system
Overview of components FENDT 300 Vario - pilot production

C

DIN	Designation	Con- nector	Fendt 300 Vario
E023	Rear window heater	X259 X260	15
E054	Right wide vehicle marker light	X896	7
E055	Left wide vehicle marker light	X897	7

DIN	Designation	Con- nector	Fendt 300 Vario
G001	Battery (12 VDC)	X060 X067 X505 X581	4, 5
G002	Generator	X062 X064	5, 19

DIN	Designation	Con- nector	Fendt 300 Vario
H005	Horn	X998 X999	7
H006	Buzzer	X204	19
H007	Buzzer reverse travel	X1544	23

DIN	Designation	Con- nector	Fendt 300 Vario
K001	Relay, +UB 15 (switched positive)	X1371	5, 31
K002	Relay, +UB 58 (lighting)	X1371	5, 31
K004	Relay, 56a (main beam)	X1371	7, 31
K005	Relay, 56b (dipped beam)	X1371	7, 31
K007	Relay, brake	X1371	9, 31
K009	Relay, windscreen wiper	X1371	10, 31
K010	Relay, direction indicator controller	X1371	8, 31
K013	Relay, 3rd hydraulic circuit	X1371	27, 31
K047	Relay, hydraulic trailer brake (Italy)	X1371	9, 31
K060	Relay, clutch / turboclutch	X1371	22, 31
K062	Relay, EDC	X1371	30, 31
K063	Relay, heating flange	X1663 X1664 X1665	33
K064	Battery disconnect relay	X1696 X1697 X1698 X1699	5
K065	Relay, starter	X1648	30

DIN	Designation	Con- nector	Fendt 300 Vario
M001	Starter	X061	5, 30
M002	Front wiper motor	X347	10
M003	Front wiper pump	X301	10
M004	Rear wiper motor	X258	10
M005	Rear wiper pump	X303	10
M007	Seat compressor	X830	16

Electrics / General system
Overview of components FENDT 300 Vario - pilot production

C

DIN	Designation	Con- nector	Fendt 300 Vario
M009	Heater blower	X285 X286 X287 X288	13
M014	Roof blower (infinitely adjustable) (optional)	X460	14
M018	Roof blower (3-speed)	X1641 X1642 X1643 X1644	14

DIN	Designation	Con- nector	Fendt 300 Vario
S001	Steering column switch	X215 X245	7, 8, 10
S002	Switch, ignition	X072	5, 30
S003	Switch, headlights	X080	7
S004	Switch, hazard warning light	X216	8
S005	Switch, right brake	X217	9
S006	Switch, left brake	X218	9
S007	Switch, additional headlamps	X219	7
S008	Switch, front working lights	X275	11
S009	Switch, rear work lights	X274	12
S010	Switch, rear wiper motor	X273	10
S011	Switch, rotating beacon	X270 X271 X272	10
S015	Switch, hand brake	X226	9, 22
S017	Switch, transmission oil contamination	X228	22
S019	Switch, PTO ON rear left	X229	25
S020	Switch, PTO ON rear right	X230	25
S027	Switch, external raise, right (rear power lift)	X237	20
S028	Switch, external lower, right (rear power lift)	X238	20
S029	Switch, external raise, left (rear power lift)	X239	20
S030	Switch, external lower, left (rear power lift)	X240	20
S031	Switch, right door contact	X279	28
S032	Switch, left door contact	X299	28
S033	Switch, heater blower	X247	13
S035	Switch, high/low-pressure (air-conditioning)	X341	14
S037	Switch, heater blower (3-speed)	X280	14
S038	Rear window heater switch	X267 X268 X269	15
S044	Potentiometer, air-conditioning	X220	14
S047	Switch, engine brake	X140	30
S048	Switch, EPC lock	X148	20
S049	Switch, 3rd hydraulic circuit	X431	27
S056	Switch, oil flow collector	X1019	20
S059	Switch, hydraulic trailer brake (Italy)	X1056	9

Electrics / General system	C
Overview of components FENDT 300 Vario - pilot production	

DIN	Designation	Con- nector	Fendt 300 Vario
S061	Switch, rapid reverse	X1040	23
S069	Switch, roof blower (infinitely adjustable) (optional)	X468	14
S070	Switch, transmission setting (driving mode / idle) "towing mode"	X1340	22
S071	Switch, rapid lowering / hitch	X1355 , X1359, X1360	20
S072	Switch, quick lift	X1354, X1361, X1362, X1363	20
S074	Switch, transmission neutral, starter lockout	X1429	22, 30
S083	Switch, battery disconnect relay	X1645	5
S084	Switch, ON/OFF hydr. trailer brake (France)	X1646	27

DIN	Designation	Con- nector	Fendt 300 Vario
X007	Implement socket		17
X014	Cable coupler for cab / cab base		7, 8, 10, 11, 12, 14, 15, 16, 28
X016	Cable coupler		7, 12
X017	Front socket, only with front power lift		7, 8
X018	Trailer socket		7, 8, 9
X023	Socket, 3rd hydraulic circuit		27
X031	Separation point on A002 - ECU, enhanced control		4, 6, 9, 18, 21, 22, 23, 24, 25, 26, 30
X037	Separation point on A009 - actuator unit		21, 22
X050	Fuse holder 1 compl		5, 6, 7, 8, 9, 10, 13, 14, 15, 16, 20, 27, 28
X051	Fuse holder 2 compl		5, 6, 7, 8, 9, 11, 12, 17, 20, 22, 30
X053	Positive bolt		5
X058	Battery terminal (+UB 30)		5
X060	G001 battery negative (terminal 31)		4
X061	M001 - starter terminal 30		5
X062	G002 - generator terminal B+		5
X064	G002 - generator terminal D+		19
X072	Separation point on S002 - ignition switch		5, 30
X080	Separation point on S003 - switch, driving lamps		7

DIN	Designation	Con- nector	Fendt 300 Vario
X100	Separation point on A007 - instrument cluster "blue"		7, 8, 17, 18, 19
X101	Separation point on A007 - instrument cluster "yellow"		4, 6, 19
X109	Tractor body ground on A002 - ECU, enhanced control		4
X120	Separation point on E008 - rear left tail- lamp (turn signal indicator L)		7, 8, 9

Electrics / General system
Overview of components FENDT 300 Vario - pilot production

C

DIN	Designation	Con- nector	Fendt 300 Vario
X121	Separation point on E007 - rear right taillamp (turn signal indicator R)		7, 8, 9
X140	Separation point on S047 - engine brake switch		30
X148	Separation point on S048 - EPC lock switch		20
X151	Separation point on B002 - front PTO stub shaft speed sensor		25
X152	Separation point on B003 - front axle suspension position sensor		24
X153	Separation point on B004 - vacuum switch (air filter)		30
X156	Separation point on B007 - level sensor (fuel)		19
X157	Separation point on B008 - high pressure sensor (pressure in ML transmission)		22
X158	Separation point on B009 - discharge temperature		22
X159	Separation point on B010 - engine speed sensor		23
X163	Separation point on B014 - hydrostat accumulator shaft sensor		22
X164	Separation point on B015 - bevel pinion sensor		22
X166	Separation point on B017 - clutch pedal sensor		23
X168	Separation point on B019 - compressed air supply sensor		19
X169	Separation point on B020 - rear PTO stub shaft speed sensor		25
X177	Separation point on B039 - high pressure sensor 2 (currently not assigned)		22
X178	Separation point on B030 - rear power lift position sensor		20
X179	Separation point on B031 - right draft sensing pin sensor		20
X180	Separation point on B032 - left draft sensing pin sensor		20
X183	Separation point on B035 - hand throttle sensor		30

DIN	Designation	Con- nector	Fendt 300 Vario
X200	Separation point on 013 - microfuse board		4, 6, 18, 21, 22, 23, 24, 25
X204	Separation point on H006 - buzzer		19
X215	Separation point on S001 - steering column switch		8, 10
X216	Separation point on S004 - hazard warning light switch		8
X217	Separation point on S005 - right brake switch		9

Electrics / General system
Overview of components FENDT 300 Vario - pilot production

C

DIN	Designation	Con- nector	Fendt 300 Vario
X218	Separation point on S006 - left brake switch		9
X219	Separation point on S007 - additional headlamp switch		7
X220	Separation point on S044 - air-conditioning switch		14
X226	Separation point on 015 - hand brake switch		9, 22
X228	Separation point on S017 - transmission oil contamination switch		22
X229	Separation point on 019 - switch, PTO engage rear left		25
X230	Separation point on S020 - switch, PTO engage rear right		25
X237	Separation point on S027 - switch, external raise, right (rear power lift)		20
X238	Separation point on S028 - switch, external lower, right (rear power lift)		20
X239	Separation point on S029 - switch, external raise, left (rear power lift)		20
X240	Separation point on S030 - switch, external lower, left (rear power lift)		20
X245	Separation point on S001 - steering column switch		7, 10
X246	Separation point on S002 - ignition switch		5
X247	Separation point on S033 - switch, heater blower		13
X254	Socket 10 ampere		16
X255	Socket 25 ampere (+ supply)		16
X256	Socket 25 ampere (ground)		16
X258	Separation point on M004 - rear wiper motor		10
X259	Separation point on E023 - rear window heater (ground)		15
X260	Separation point on E023 - rear window heater (+ supply)		15
X267	Separation point on S038 - switch, rear window heater		15
X268	Separation point on S038 - switch, rear window heater		15
X269	Separation point on S038 - switch, rear window heater		15
X270	Separation point on S011 - switch, rotating beacon		10
X271	Separation point on S011 - switch, rotating beacon		10
X272	Separation point on S011 - switch, rotating beacon		10
X273	Separation point on S010 - switch, rear wiper motor		10
X274	Separation point on S009 - rear work light switch		12
X275	Separation point on S008 - front work light switch		11

Electrics / General system
Overview of components FENDT 300 Vario - pilot production

C

DIN	Designation	Con- nector	Fendt 300 Vario
X276	Cable coupler, E021 - right rotating beacon		10
X279	Separation point on S031 - switch, right door contact		28
X280	Separation point on S037 - switch, heater blower		14
X281	Cable coupler, air-conditioning		14
X282	Separation point on E020 - EPC lighting (+ supply)		11
X283	Separation point on E020 - EPC lighting (ground)		11
X284	Cable coupler M002 - front wiper motor		10
X285	Separation point on M009 - heater blower (level 1)		13
X286	Separation point on M009 - heater blower (level 2)		13
X287	Separation point on M009 - heater blower (level 3)		13
X288	Separation point on M009 - heater blower (ground)		13
X289	Separation point on B051 - right loud-speaker		28
X290	Separation point on B051 - right loud-speaker		28
X291	Separation point on E013 - front right roof work light		11
X292	Separation point on E015 - front work light at right direction indicator		11
X293	Separation point on E015 - front work light at right direction indicator		11
X294	Separation point on E014 - front left roof work light		11
X295	Separation point on E016 - front work light at left direction indicator		11
X296	Separation point on E016 - front work light at left direction indicator		11
X297	Cable coupler M002 - front wiper motor		10
X298	Cable coupler, E022 - left rotating beacon		10
X299	Separation point on S032 - switch, left door contact		28

DIN	Designation	Con- nector	Fendt 300 Vario
X301	Separation point on M003 - front wiper pump		10
X303	Separation point on M005 - rear wiper pump		10
X308	Separation point on E019 - cab lighting		28
X309	Separation point on E019 - cab lighting		28
X310	Separation point on E019 - cab lighting		28
X311	Separation point on B050 - left loud-speaker		28

Electrics / General system
Overview of components FENDT 300 Vario - pilot production

C

DIN	Designation	Con- nector	Fendt 300 Vario
X312	Separation point on B050 - left loud-speaker		28
X317	Separation point on Y004 - solenoid valve, clutch / turboclutch		22
X319	Separation point on Y008 - solenoid valve, rear PTO clutch		25
X320	Separation point on Y009 - 4WD solenoid valve		26
X321	Separation point on Y010 - solenoid valve, differential lock (rear)		26
X322	Separation point on Y011 - solenoid valve, front PTO clutch		25
X323	Separation point on Y012 - solenoid valve, suspension load		24
X324	Separation point on Y013 - lower suspension solenoid valve		24
X325	Separation point on Y014 - suspension "raise" solenoid valve		24
X332	Separation point on Y021 - solenoid valve, raise (rear power lift)		20
X333	Separation point on Y022 - solenoid valve, lower (rear power lift)		20
X334	Separation point on Y023 - compressed air pilot control solenoid valve		9
X341	Separation point on S035 - high pressure/low pressure switch (air-conditioning)		14
X342	Separation point on Y024 - AC compressor magnetic clutch		14
X345	Separation point on E022 - left rotating beacon		10
X346	Separation point on E021 - rotating beacon right		10
X347	Separation point on M002 - front wiper motor		10
X350	Separation point on E001 - H4 right headlamp		7
X351	Separation point on E002 - H4 left headlamp		7
X352	Separation point on E003 - H4 right additional headlamp		7
X353	Separation point on E004 - H4 left additional headlamp		7
X360	Separation point on Y026 - solenoid valve, rear PTO setting I (540 rpm)		25
X361	Separation point on Y027 - solenoid valve, rear PTO setting II (750 rpm)		25
X366	Separation point on E017 - work light on right taillamp holder		12
X367	Separation point on E018 - work light on left taillamp holder		12
X368	Separation point on Y028 - solenoid valve, rear PTO setting III (1000 rpm)		25
X372	Separation point on E005 - front right turn signal indicator / position lamp		7

Electrics / General system
Overview of components FENDT 300 Vario - pilot production

C

DIN	Designation	Con- nector	Fendt 300 Vario
X373	Separation point on E006 - front left turn signal indicator / position lamp		7
X374	Separation point on E009 - right licence plate light		7
X375	Separation point on E009 - right licence plate light		7
X376	Separation point on E010 - left licence plate light		7
X377	Separation point on E010 - left licence plate light		7
X378	Separation point on E005 - front right turn signal indicator / position lamp		7
X379	Separation point on E006 - front left turn signal indicator / position lamp		7
X380	Separation point on E005 - front right turn signal indicator / position lamp		8
X381	Separation point on E006 - front left turn signal indicator / position lamp		8
X385	Separation point on E011 - rear right roof work light		12
X386	Separation point on E011 - rear right roof work light		12
X387	Separation point on E011 - rear right roof work light		12
X388	Separation point on E012 - rear left roof work light		12
X389	Separation point on E012 - rear left roof work light		12
X390	Separation point on E012 - rear left roof work light		12

DIN	Designation	Con- nector	Fendt 300 Vario
X431	Cable coupler on S049 - switch, 3rd hydraulic circuit		27
X500	Ground pin, oil pan right		4
X503	Ground pin, oil pan right		4, 24, 27
X504	Grounding point		9
X505	G001 battery (terminal 31) "ground"		4
X520	Ground pin, oil pan right		4, 7, 20, 24, 25, 27
X531	Ground pin, right B-pillar		4
X532	Ground pin, body/cab		4, 7, 12, 28
X533	Ground pin, body/cab		4, 10, 11, 12
X534	Ground pin, body/cab		4, 14, 15, 16, 17
X536	Ground pin, body/cab		4, 7, 11
X550	Ground pin, right mudguard		4
X551	Ground pin, right cab base		4, 5, 10, 19, 30
X552	Ground pin, cab base		4, 7, 8, 9
X553	Ground pin, cab base		4, 5, 16, 20, 22, 23, 27
X554	Ground pin, cab base		4, 6, 9, 13, 27, 30
X560	Ground pin, cab junction		4
X565	Ground pin, cab base		4, 12
X570	Ground pin, transmission		4, 7
X571	Ground pin, transmission		4, 9, 22, 25, 26

Electrics / General system
Overview of components FENDT 300 Vario - pilot production

C

DIN	Designation	Con- nector	Fendt 300 Vario
X574	Ground pin, cab junction		4

DIN	Designation	Con- nector	Fendt 300 Vario
X600	Connector, CAN high		18
X601	Connector, CAN low		18
X607	Connector, +UB 30		5
X608	Connector, +UB 15		5
X609	Connector, +UB 58 lighting		7
X610	Connector, right turn signal indicator		8
X611	Connector, left turn signal indicator		8
X612	Connector, +UB 15 wipers and rotating beacon		10
X613	Connector, sensor system ground		4, 22, 23
X617	Connector, CAN low		21
X618	Connector, CAN high		21
X619	Connector, electronics ground		4, 22
X620	Connector, electronics ground		4
X624	Connector, CAN high		18
X625	Connector, CAN low		18
X627	Connector, sensor system ground		4, 16, 25
X628	Connector, +UB 30		6
X630	Connector, brake lamp (terminal 54)		9
X631	Connector, LED rear PTO ON		25
X638	Connector, sensor system ground		4, 22, 25
X650	Connector, headlamp 56 a (main beam)		7
X651	Connector, headlamp 56 b (dipped beam)		7
X671	Connector, sensor system ground		4, 23, 24, 25
X676	Connector, left and right draft sensing pins ground		20
X676	Connector, +UB left and right draft sensing pins		20
X678	Connector, analogue ground		19, 22
X684	Connector, UB 30 engine control unit		6

DIN	Designation	Con- nector	Fendt 300 Vario
X700	Connector, rear work light ground		12
X810	EDC diagnostics socket (engine control unit)		30
X830	Cable coupler (M007 - seat compressor and S053 - seat switch)		16
X850	Separation point on ECU, EPC B		18, 20
X896	Separation point on E054 - right wide vehicle marker light		7
X897	Separation point on E055 - left wide vehicle marker light		7
X898	Separation point on B055 - foot throttle sensor		30

Electrics / General system
Overview of components FENDT 300 Vario - pilot production

C

DIN	Designation	Con- nector	Fendt 300 Vario
X998	Separation point on H005 - horn (ground)		7
X999	Separation point on H005 - horn (+ supply)		7
X1019	Separation point on S056 - switch, oil flow collector		20
X1020	Separation point on Y050 - solenoid valve, oil flow collector		20
X1022	Separation point on Y052 - solenoid valve, hydr. trailer brake (Italy)		9
X1040	Separation point on S061 - switch, rapid reverse (F/R control)		23
X1056	Separation point on S059 - switch, compressed air supply		9
X1315	Separation point on A015 - radio (compact plug)		28
X1316	Separation point on A015 - radio (compact plug)		28
X1317	Cable coupler (M009 - heater blower)		13
X1340	Separation point on S070 - switch, driving mode /idle		22
X1353	Separation point on A035 - control panel EPC B		20
X1354	Separation point on S072 - switch, quick lift		20
X1355	Separation point on S071 - switch, rapid lower / hitch		20
X1356	Separation point on B058 - sensor, depth control		20
X1357	Separation point on A036 - control panel, enhanced control		4, 22, 24, 25, 26
X1358	Separation point on A036 - control panel, enhanced control		4, 6, 19, 23, 25, 30
X1359	Separation point on S071 - switch, rapid lower / hitch		20
X1360	Separation point on S071 - switch, rapid lower / hitch		20
X1361	Separation point on S072 - switch, quick lift		20
X1362	Separation point on S072 - switch, quick lift		20
X1363	Separation point on S072 - switch, quick lift		20
X1371	Relay base		5, 7, 8, 9, 10, 22, 27, 30
X1375	Cable coupler cab base / chassis		4, 7, 8, 9, 19, 20, 21, 22, 25, 26
X1378	Connector, +UB stab (10 VDC) (EPC B)		20
X1381	Connector, +UB stab (10 VDC) (EPC B)		20
X1411	Separation point on A055 - ECU, Modasys (mobile data logging) (optional)		29
X1421	Cable coupler, cab base		5, 17, 30
X1429	Separation point on S074 - neutral switch (transmission), "starter lockout"		22, 30
X1430	Cable coupler cab base / chassis		4, 5, 6, 7, 8, 9, 14, 19, 20, 21, 23, 24, 25, 27, 30
X1463	Connector, CAN high		21

Electrics / General system
Overview of components FENDT 300 Vario - pilot production

C

DIN	Designation	Con- nector	Fendt 300 Vario
X1464	Connector, CAN low		21
X1466	Separation point on A051 - ECU, EDC "engine control unit"		4, 6, 21, 30
X1526	Connector, ground (B055 - foot throttle sensor)		30
X1527	Connector, +UB foot throttle (5.0 VDC)		30
X1528	Connector, sensor system supply		30
X1529	Separation point on X053 - positive bolt		5
X1534	Separation point on X053 - positive bolt		5
X1544	Separation point on H007 - buzzer, re-verse travel		23
X1560	EDC diagnostics		6, 30
X1585	Separation point on B080 - sensor, hydraulic oil temperature		19
X1625	Spare wires		19
X1626	Spare wires		19
X1627	Spare wires		23
X1628	Spare wires		23

DIN	Designation	Con- nector	Fendt 300 Vario
X1631	Battery negative (terminal 31)		4
X1632	Battery positive (terminal 30)		5
X1634	Connector (+ UB 30)		5, 6, 28
X1635	Cable coupler, cab base		6, 18
X1636	Cable coupler (Modasys)		29
X1639	Connector (enhanced control BUS) (CAN high)		29
X1640	Connector (enhanced control BUS) (CAN low)		29
X1641	Separation point on M018 - roof blower (3-speed)		14
X1642	Separation point on M018 - roof blower (3-speed)		14
X1643	Separation point on M018 - roof blower (3-speed)		14
X1644	Separation point on M018 - roof blower (3-speed)		14
X1645	Separation point on S083 - switch, battery disconnect relay		5
X1646	Separation point on S084 - switch, ON/OFF hydr. trailer brake (France)		27
X1647	Separation point on Y089 - solenoid valve, ON/OFF hydr. trailer brake (France)		27
X1648	Separation point on K065 - relay, starter		30
X1655	Separation point on B086 - rail pressure sensor		33
X1656	Separation point on B087 - fuel low pressure		33
X1657	Separation point on B088 - crankshaft speed		33
X1658	Separation point on B089 - temperature sensor Deutz		33

Electrics / General system	C
Overview of components FENDT 300 Vario - pilot production	

DIN	Designation	Con- nector	Fendt 300 Vario
X1660	Separation point on B091 - sensor, water in fuel		33
X1661	Separation point on B092 - boost pressure sensor		33
X1662	Separation point on Y091 - metering unit (fuel)		33
X1663	Separation point on K063 - relay, heating flange		33
X1664	Separation point on K063 - relay, heating flange		33
X1665	Separation point on K063 - relay, heating flange		33
X1666	Separation point on B093 - oil pressure temperature 2		33
X1671	Separation point on A051 - ECU, engine control unit (EDC 7)		33
X1672	Separation point on A051 - ECU, engine control unit (EDC 7)		33
X1673	Cable coupler EDC		33
X1674	Separation point on Y094 - EGR actuator (exhaust gas recirculation)		33
X1675	Connector, ground		33
X1676	Connector, +UB 12 VDC		33
X1678	Separation point on B085 - camshaft speed		33
X1679	Separation point on Y006 - solenoid valve, engine brake		33
X1696	Separation point on K064 - battery disconnect relay		5
X1697	Separation point on K064 - battery disconnect relay		5
X1698	Separation point on K064 - battery disconnect relay		5
X1699	Separation point on K064 - battery disconnect relay		5

DIN	Designation	Con- nector	Fendt 300 Vario
Y004	Solenoid valve, clutch / turboclutch	X317	22
Y006	Solenoid valve, engine brake	X1679	33
Y008	Solenoid valve, rear PTO clutch	X319	25
Y009	Solenoid valve, 4WD	X320	26
Y010	Solenoid valve, differential lock (rear)	X321	26
Y011	Solenoid valve, front PTO clutch	X322	25
Y012	Solenoid valve, load suspension	X323	24
Y013	Solenoid valve, lower suspension	X324	24
Y014	Solenoid valve, raise suspension	X325	24
Y021	Solenoid valve, raise (rear power lift)	X332	20
Y022	Solenoid valve, lower (rear power lift)	X333	20
Y023	Solenoid valve, compressed air pilot control system	X334	9
Y024	Magnetic clutch, air-conditioning compressor	X342	14

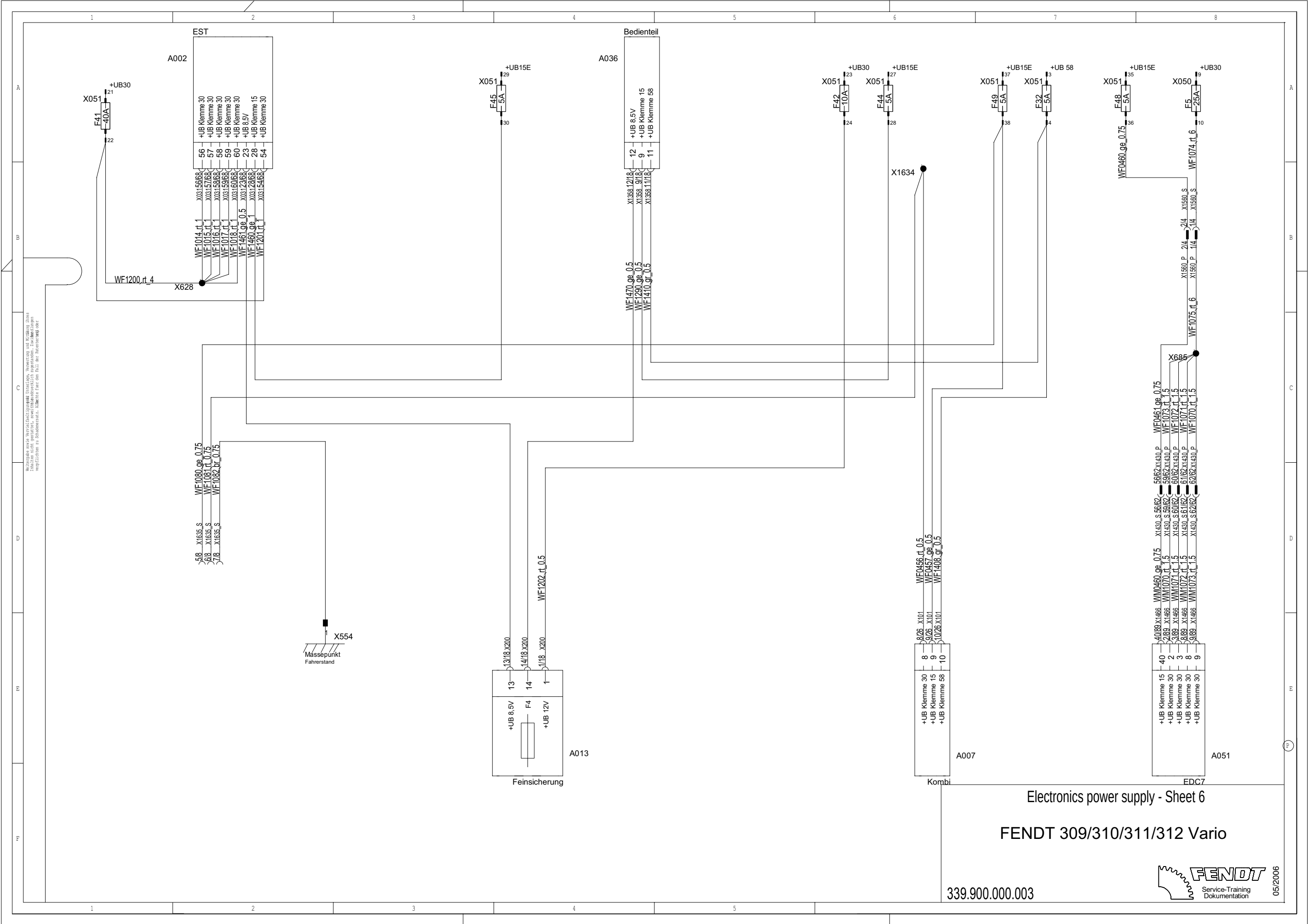
Electrics / General system			C
Overview of components FENDT 300 Vario - pilot production			
DIN	Designation	Con- nector	Fendt 300 Vario
Y026	Solenoid valve, rear PTO setting I (540 rpm)	X360	25
Y027	Solenoid valve, rear PTO setting II (750 rpm or ground PTO)	X361	25
Y028	Solenoid valve, rear PTO setting III (1000 rpm)	X368	25
Y050	Solenoid valve, oil flow collector	X1020	20
Y052	Solenoid valve, hydraulic trailer brake (Italy)	X1022	9
Y089	Solenoid valve, ON/OFF hydr. trailer brake (France)	X1647	27
Y091	Metering unit (fuel)	X1662	33
Y094	EGR actuator (exhaust gas recirculation)	X1674	33
Y095	Injector 1	X1673	33
Y096	Injector 2	X1673	33
Y097	Injector 3	X1673	33
Y098	Injector 4	X1673	33

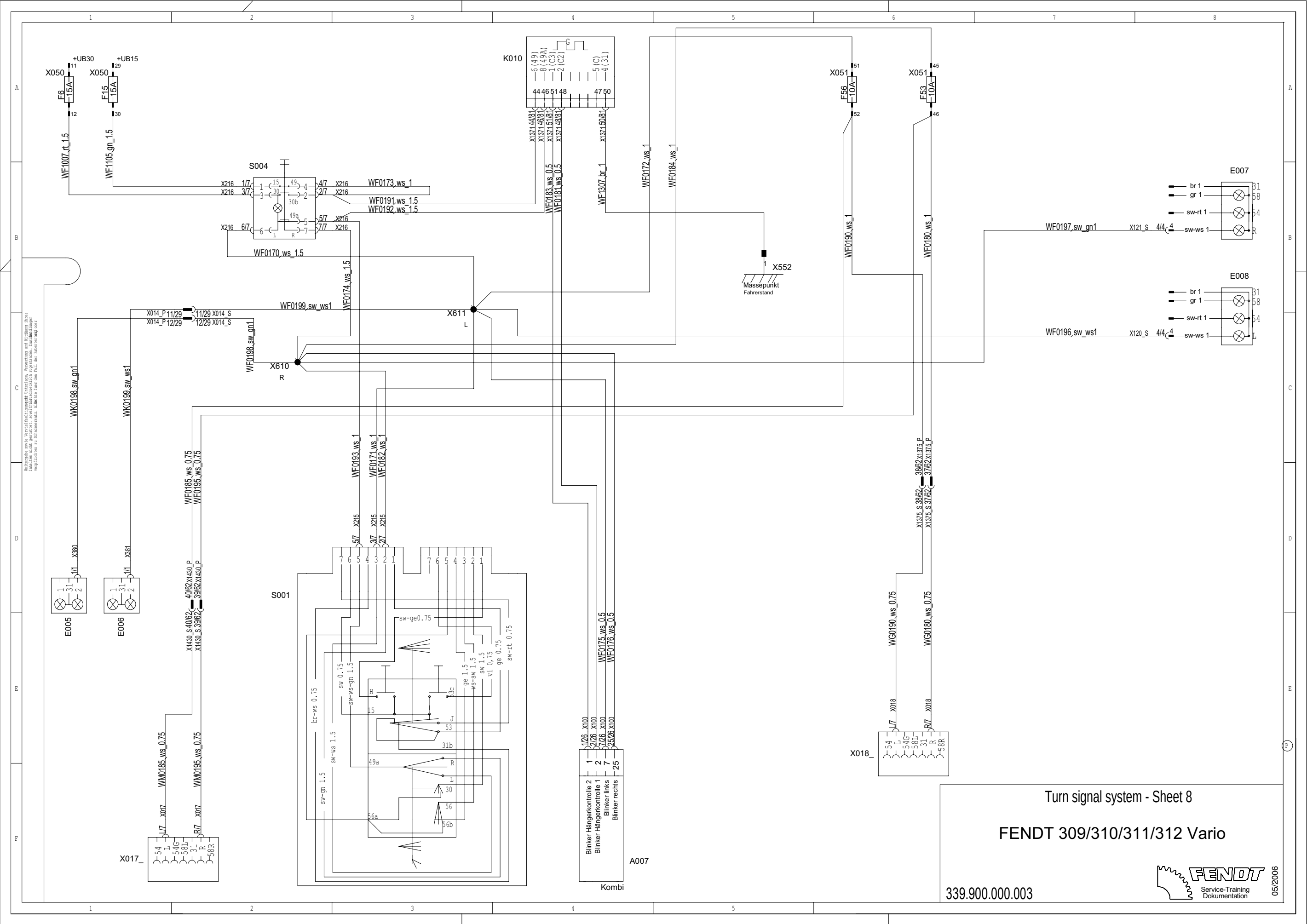
Electrics / General system Overview of circuit diagram FENDT 300 Vario - pilot production	C
--	---

Contents of circuit diagrams

Sheet 2	= Microfuse, instrument cluster, control panel - Sheet 2
Sheet 3	= Electronics box
Sheet 4	= Grounding system
Sheet 5	= Power supply + UB
Sheet 6	= Power supply to electronic systems
Sheet 7	= Lighting with horn
Sheet 8	= Indicators
Sheet 9	= Brake lamp, compressed air pilot control, hydraulic brake - Sheet 9
Sheet 10	= Wipers and rotating beacon
Sheet 11	= Front work lights
Sheet 12	= Rear work lights
Sheet 13	= Heater
Sheet 14	= Ventilation and air-conditioning
Sheet 15	= Heated rear window
Sheet 16	= Sockets, seat compressor
Sheet 17	= Implement socket
Sheet 18	= Enhanced control BUS (CAN Bus)
Sheet 19	= Instrument cluster
Sheet 20	= Electronic lifting gear control
Sheet 21	= Transmission bus
Sheet 22	= Transmission control unit
Sheet 23	= Transmission control unit
Sheet 24	= Suspension
Sheet 25	= PTO shaft
Sheet 26	= Four-wheel drive and differential lock
Sheet 27	= 3rd hydraulic circuit, brake load circuit
Sheet 28	= Lighting, cab and radio
Sheet 29	= Modasys data transfer
Sheet 30	= EDC control unit
Sheet 31	= Appendix relay positions
Sheet 32	= Appendix relay design
Sheet 33	= Control module

																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		</	
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	----	--





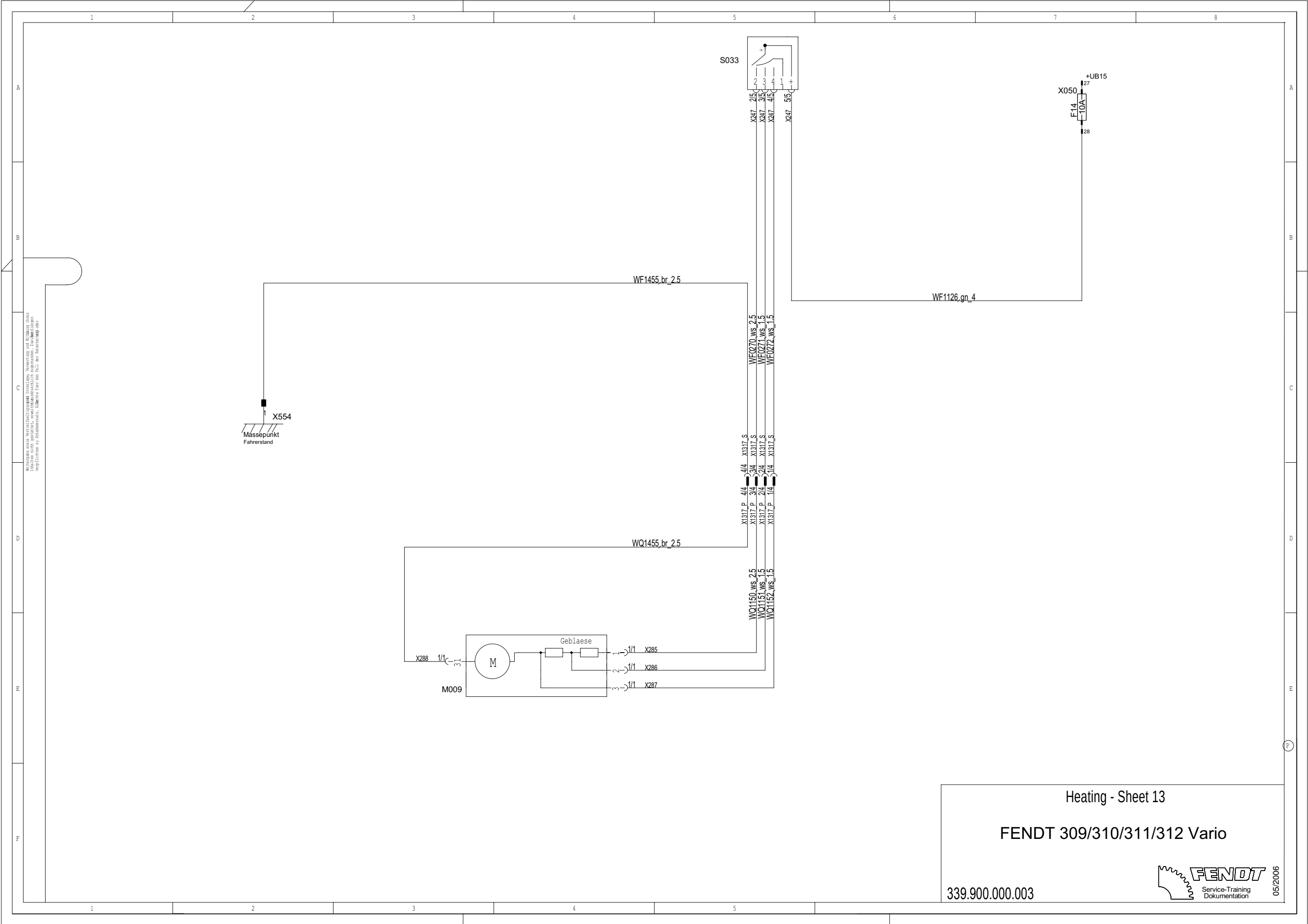
Turn signal system - Sheet 8

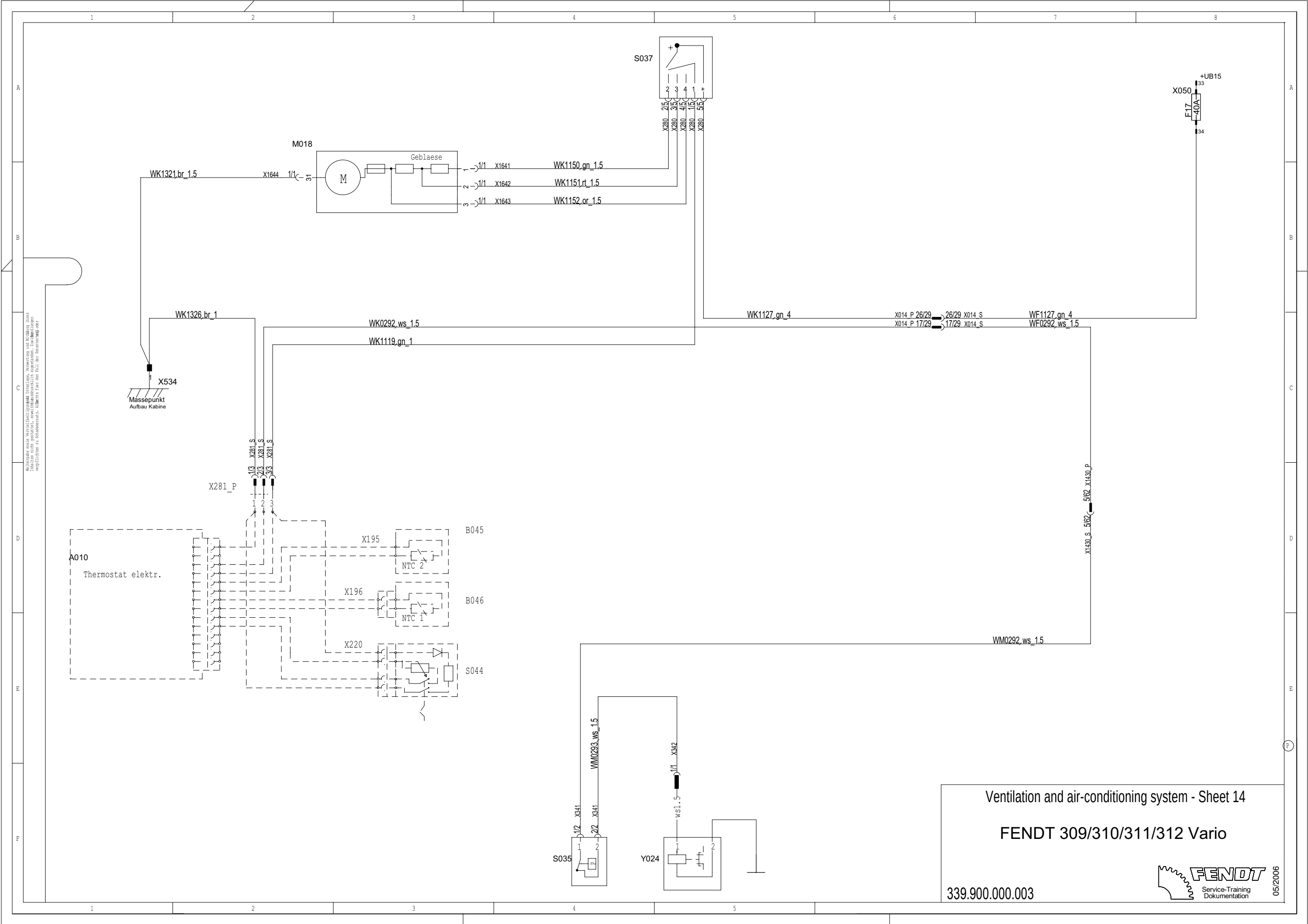
FENDT 309/310/311/312 Vario

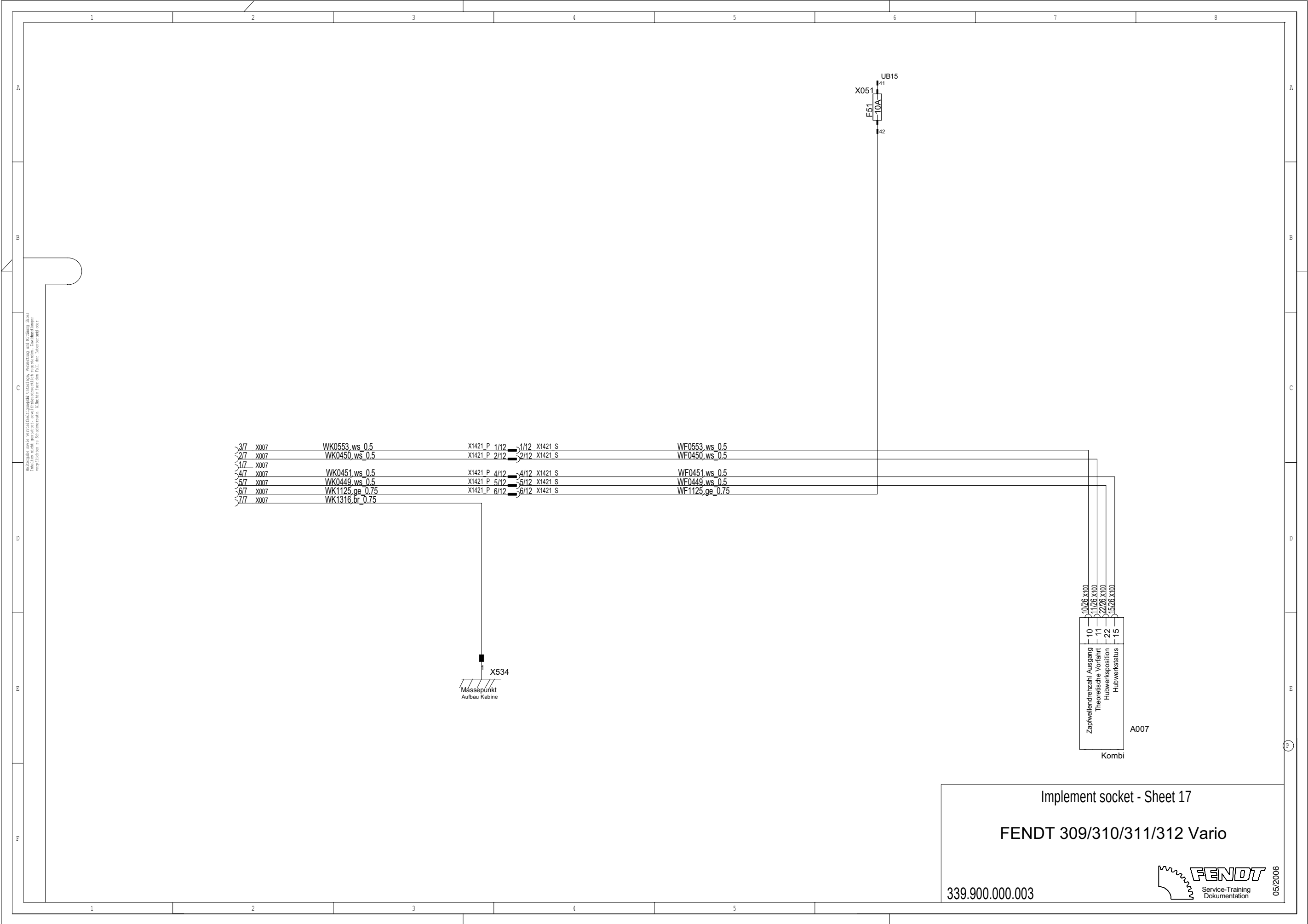
339.900.000.003



05/2006







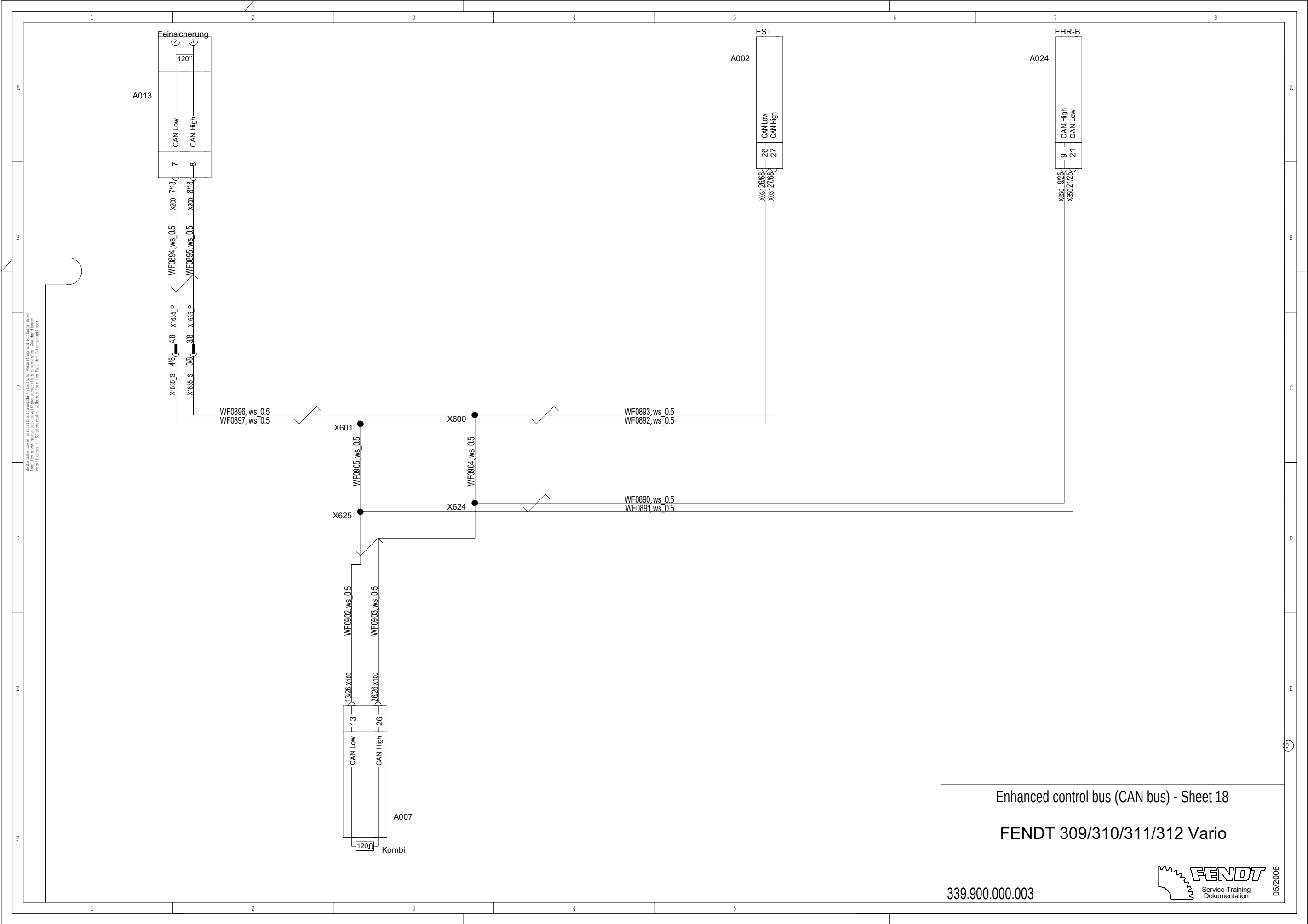
Implement socket - Sheet 17

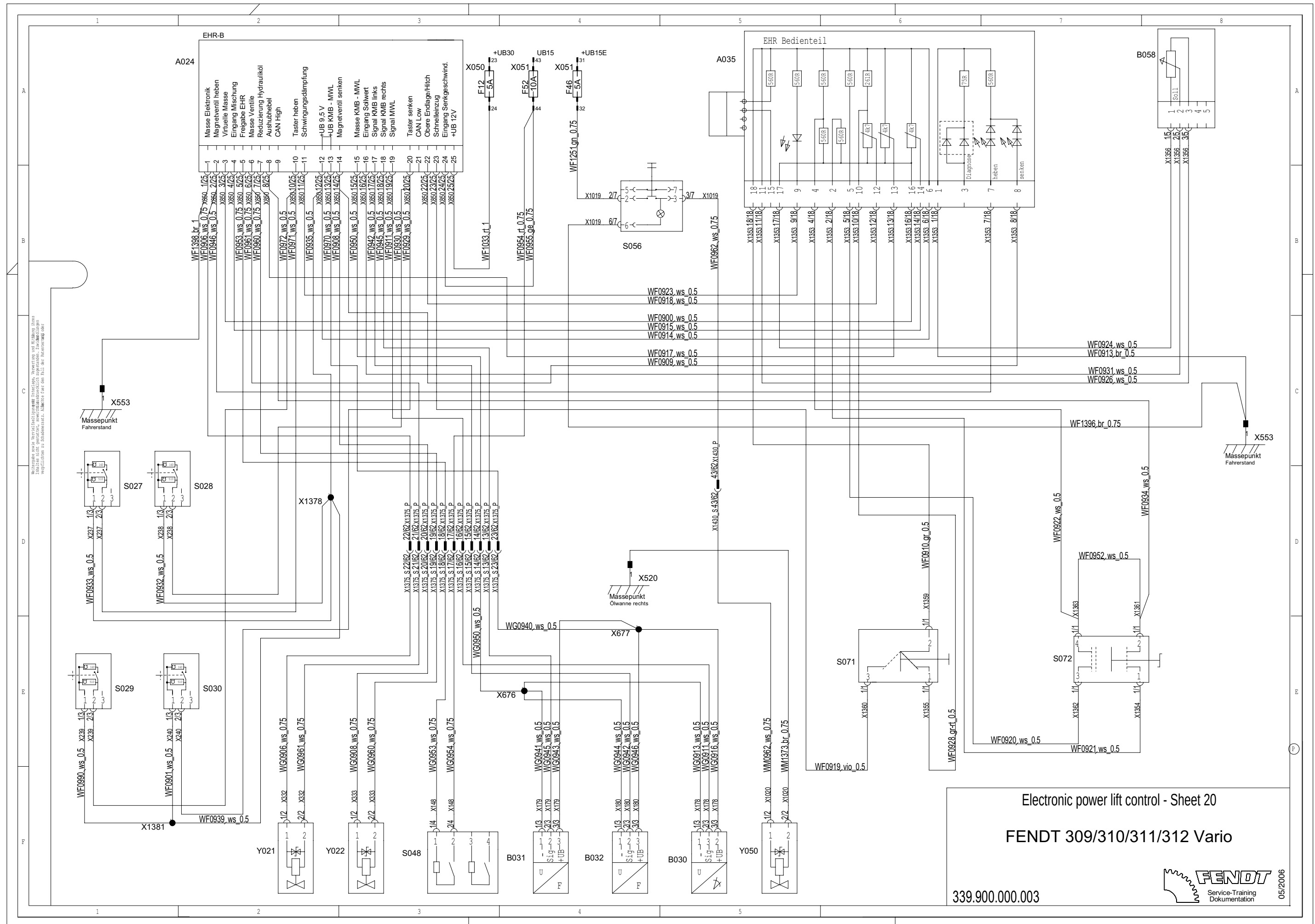
FENDT 309/310/311/312 Vario

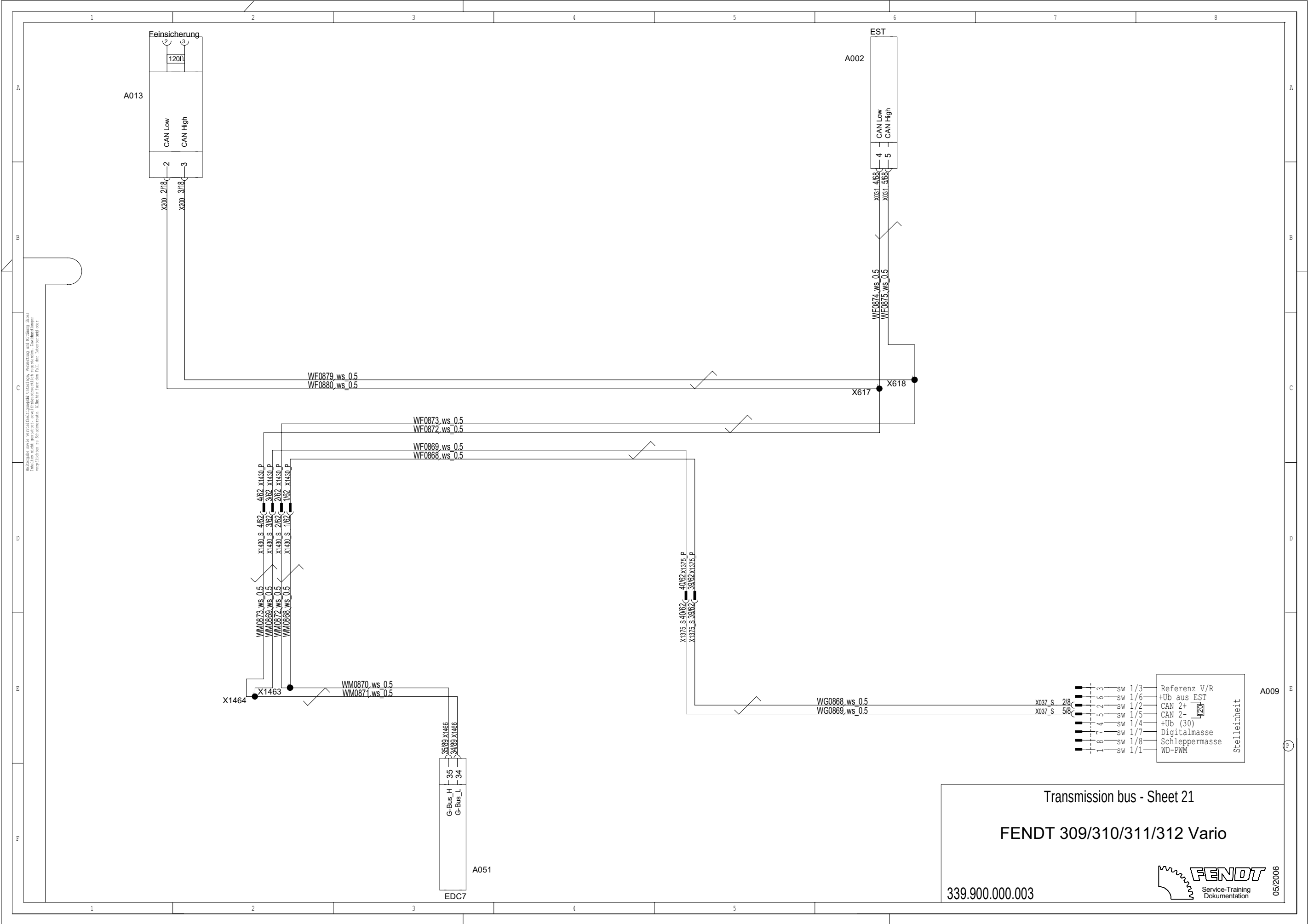
339.900.000.003

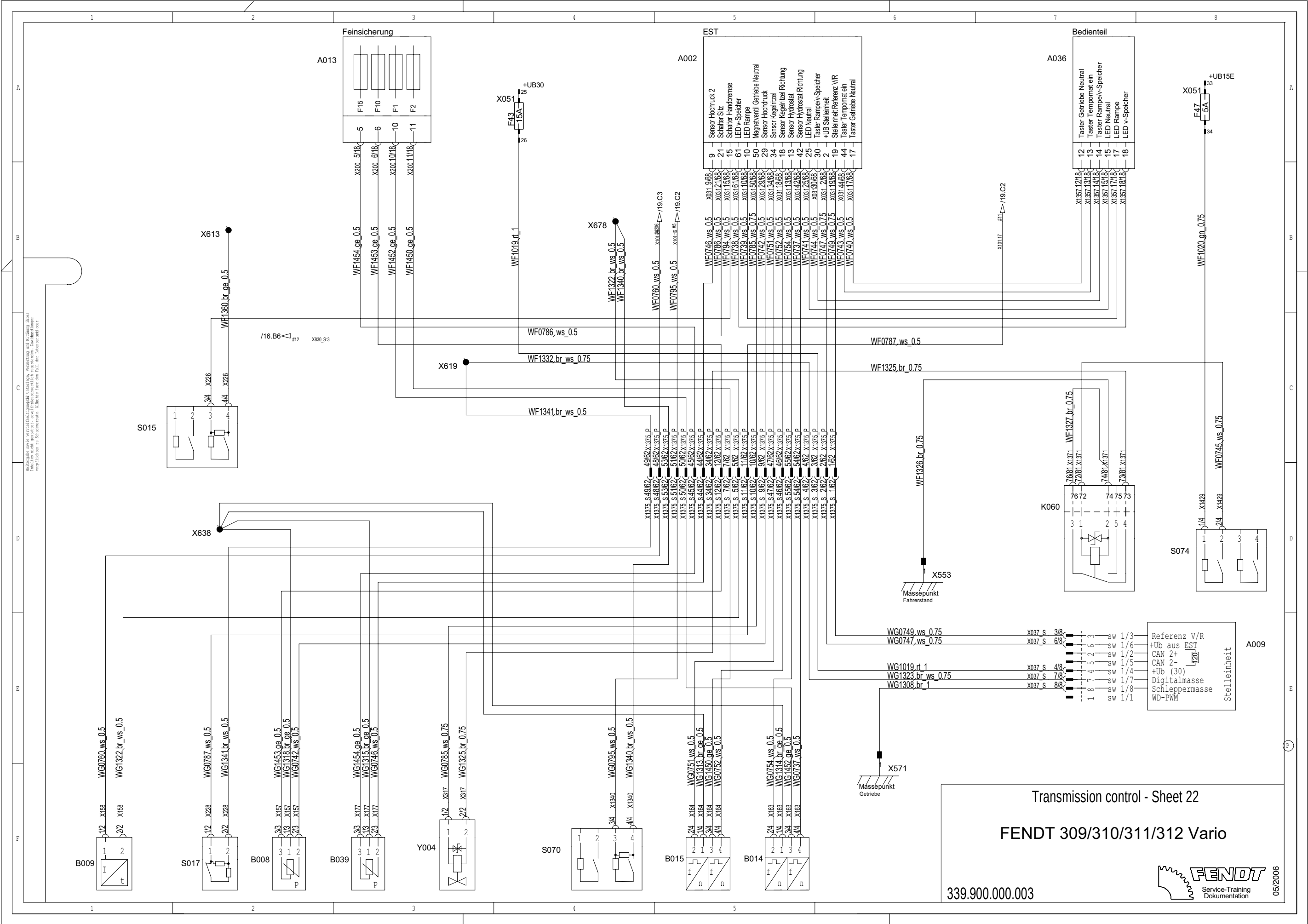


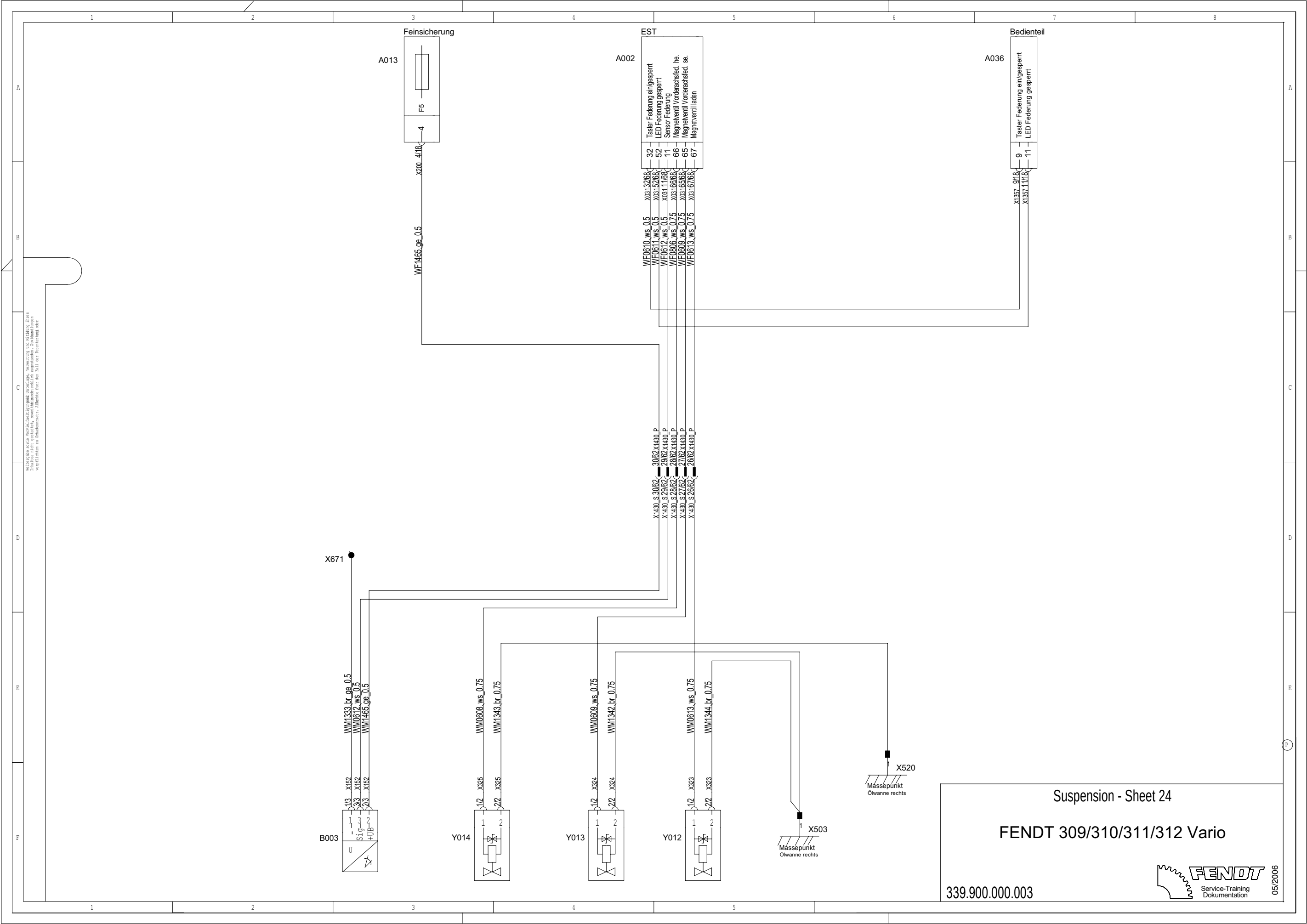
05/2006

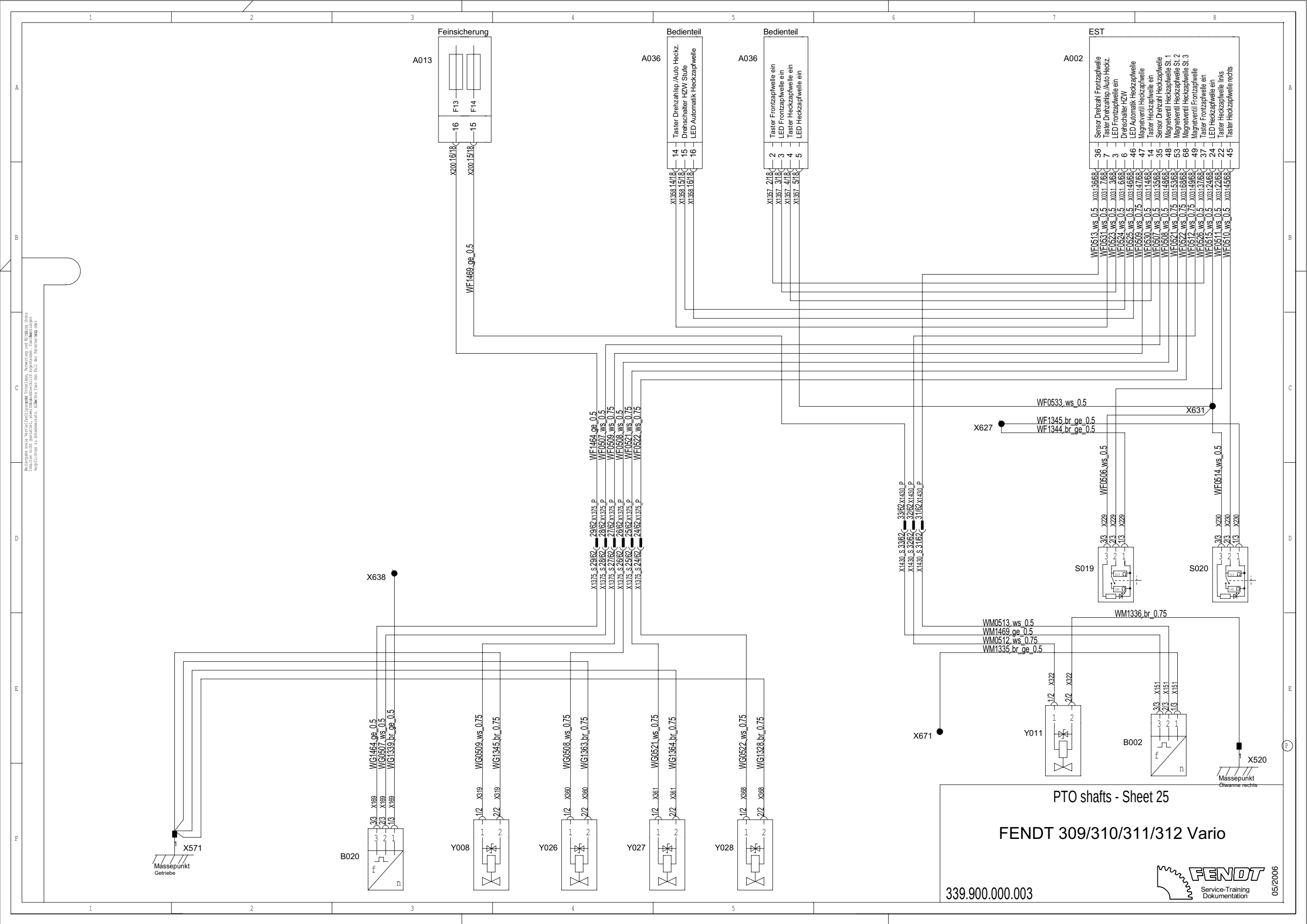


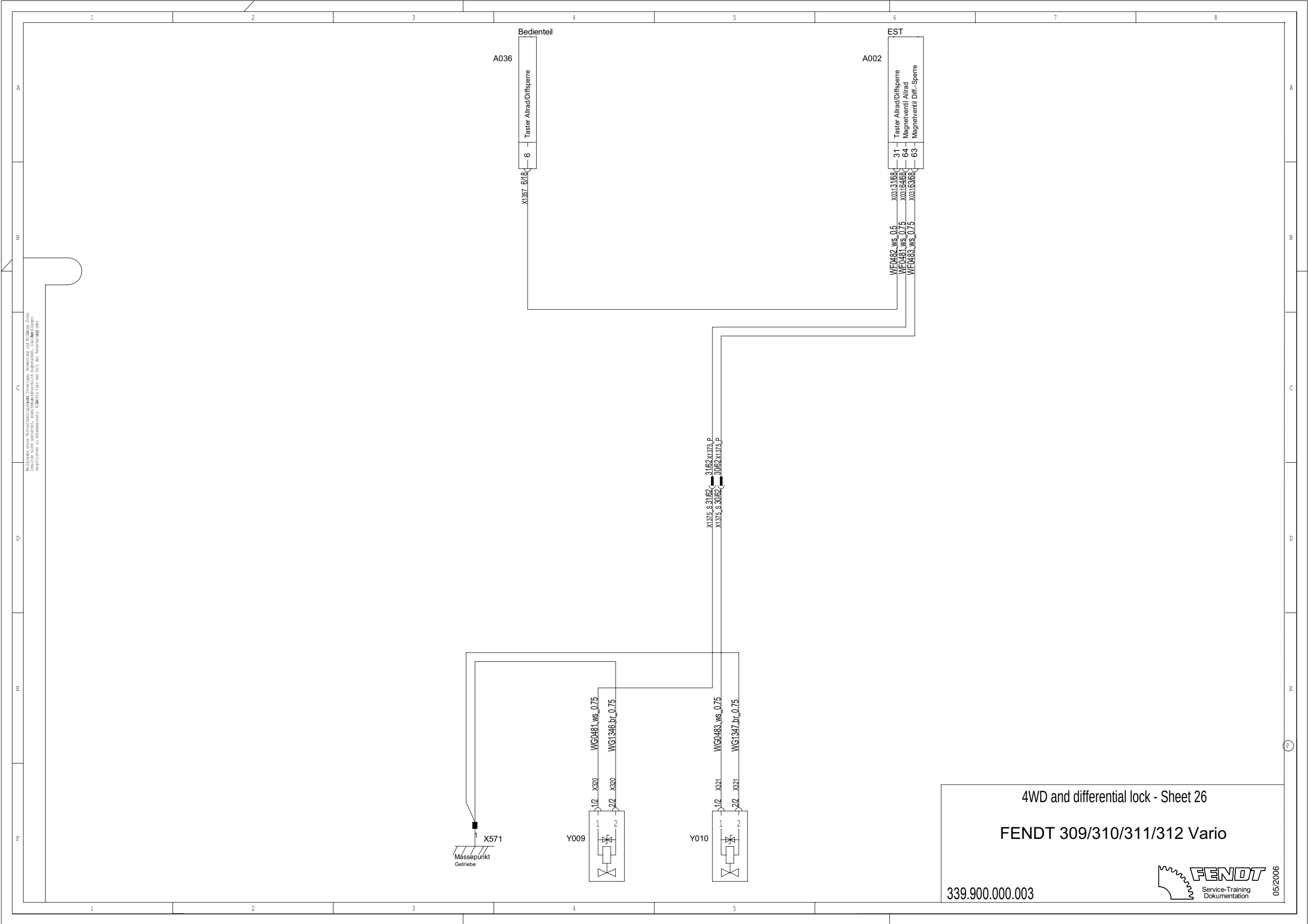


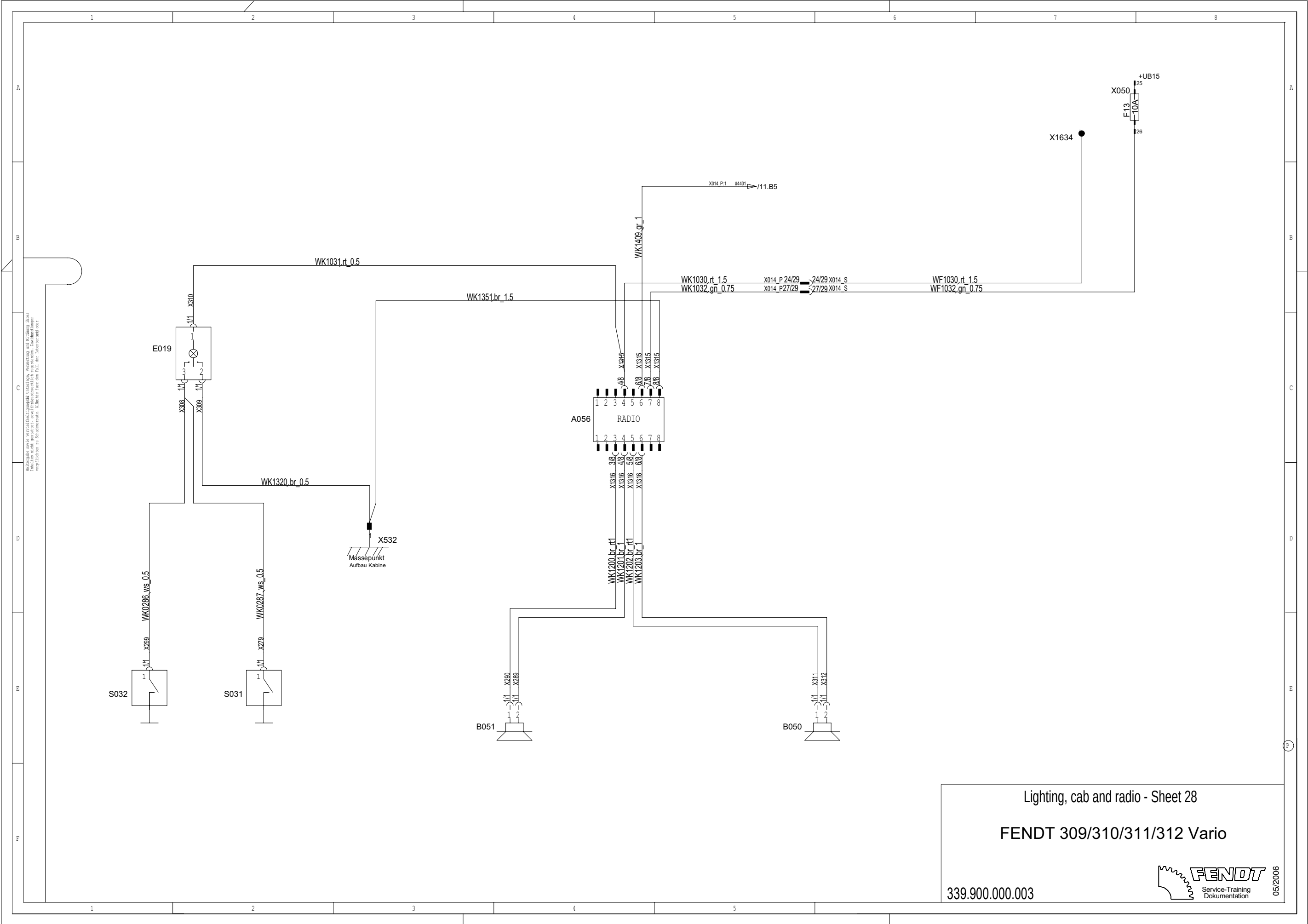












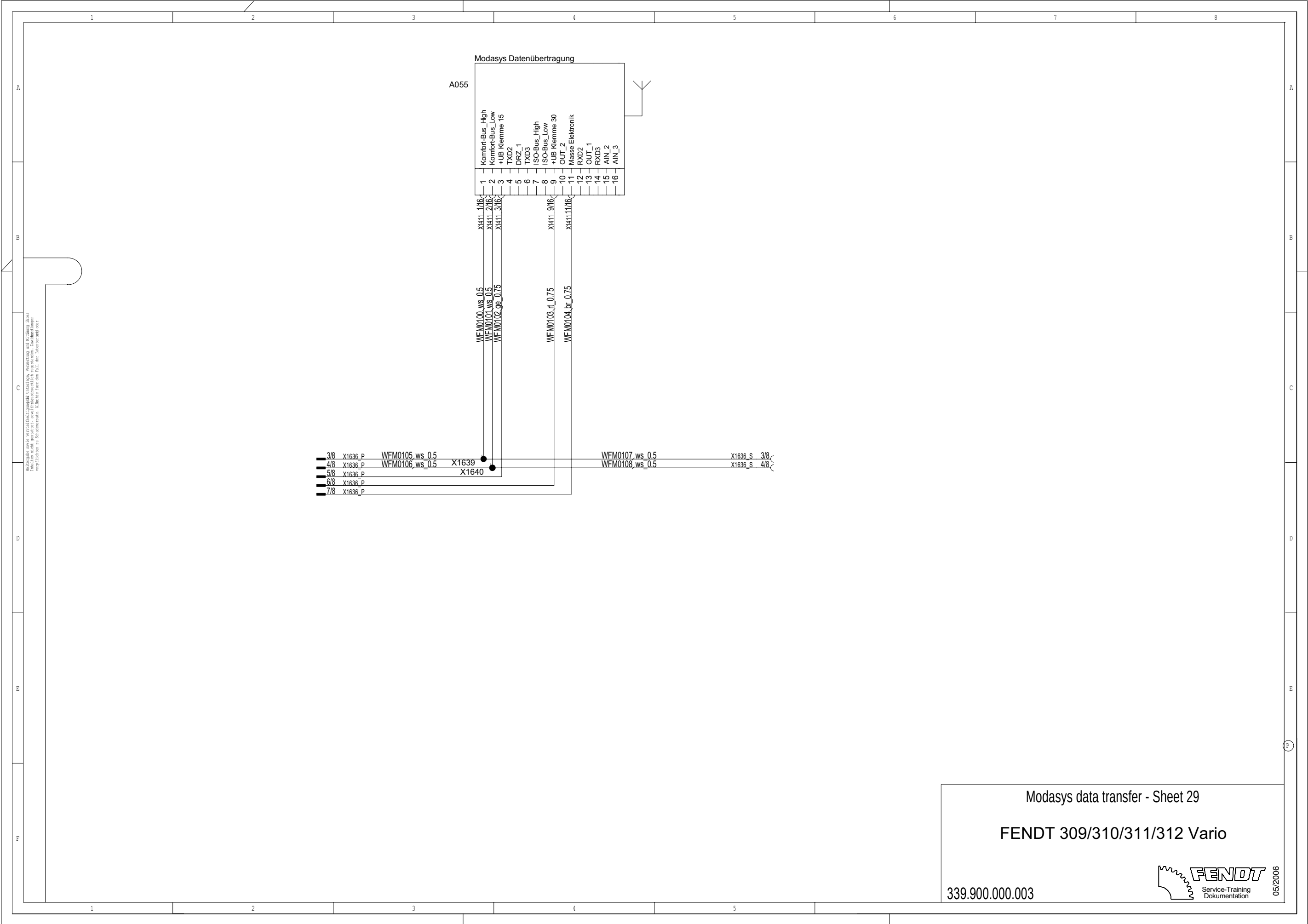
Lighting, cab and radio - Sheet 28

FENDT 309/310/311/312 Vario

339.900.000.003



05/2006



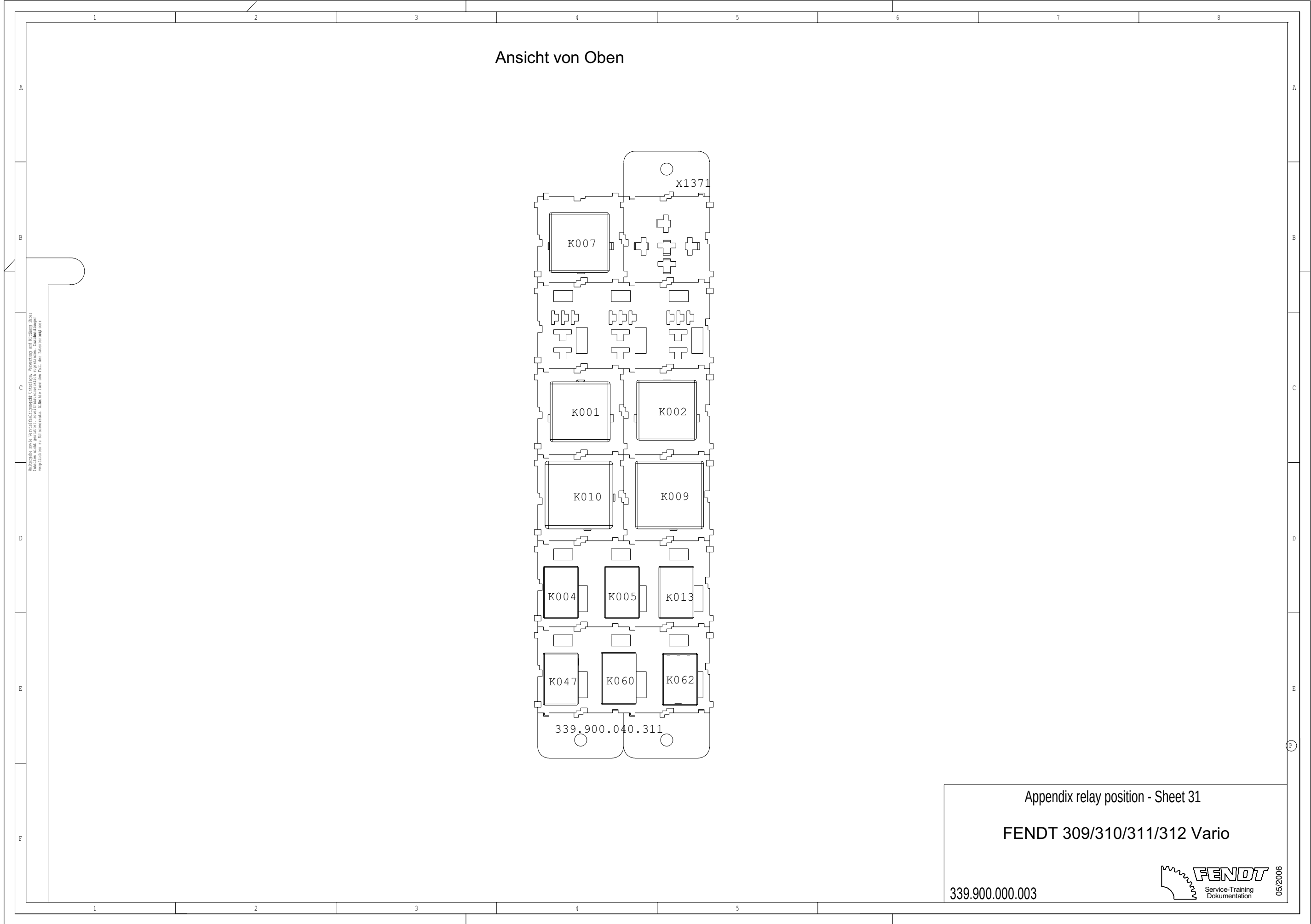
Modasys data transfer - Sheet 29

FENDT 309/310/311/312 Vario

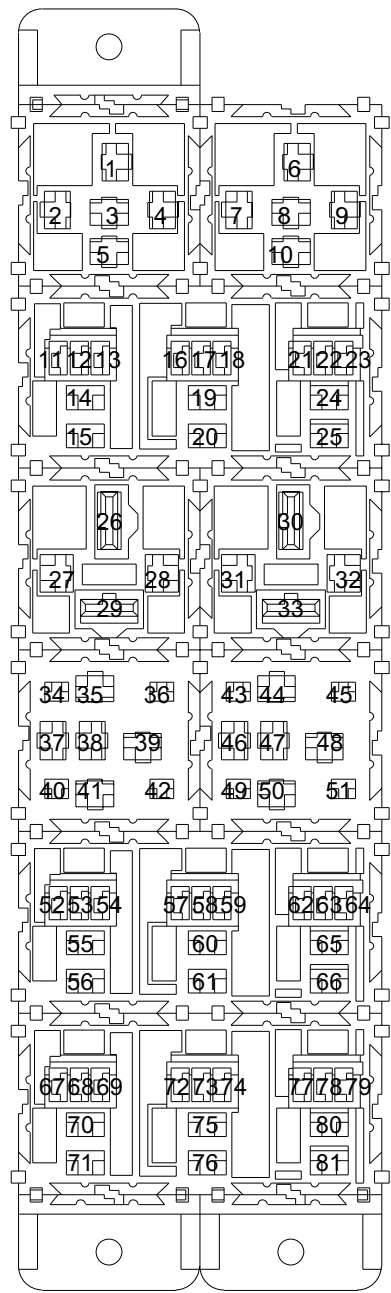
339.900.000.003



05/2006



Ansicht hinten



Wichtige Hinweise:
- Die Relais sind nur für den Einsatz in den angegebenen Fahrzeugen geeignet.
- Die Relais sind nicht für den Einsatz in anderen Fahrzeugen geeignet.
- Die Relais sind nicht für den Einsatz in anderen Fahrzeugen geeignet.

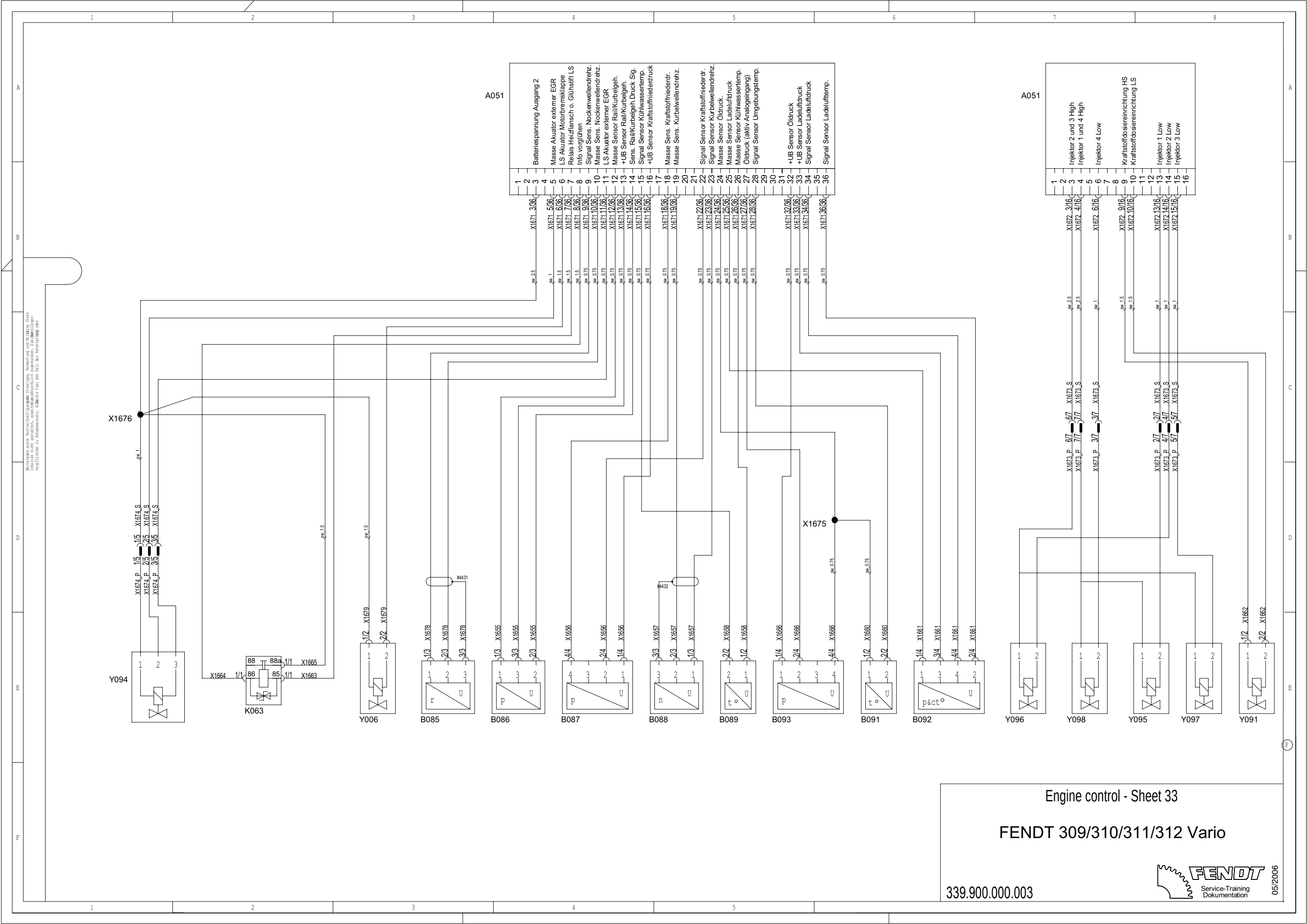
Appendix relay design - Sheet 32

FENDT 309/310/311/312 Vario

339.900.000.003



05/2006



Service Training

Electrical and hydraulic diagrams

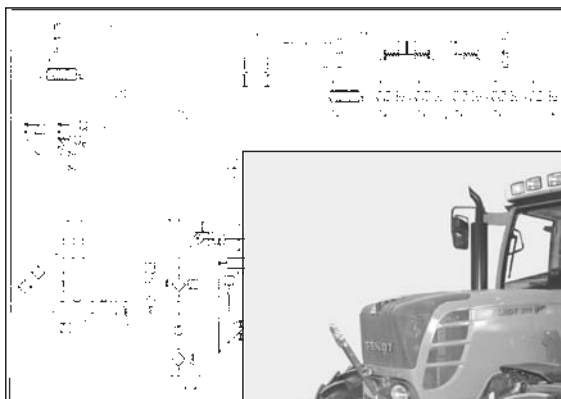
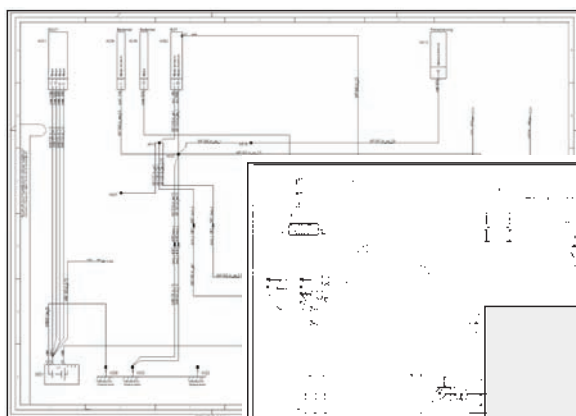
FENDT 300 Vario

FENDT 309 Vario from .. / 1001 -

FENDT 310 Vario from .. / 1001 -

FENDT 311 Vario from .. / 1001 -

FENDT 312 Vario from .. / 1001 -



Edition
09/2006

3186 G - en

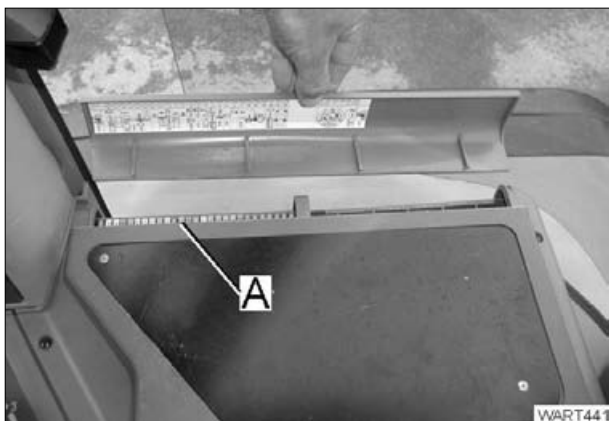
X990.005.445.010 - English

Electrics / Fuses

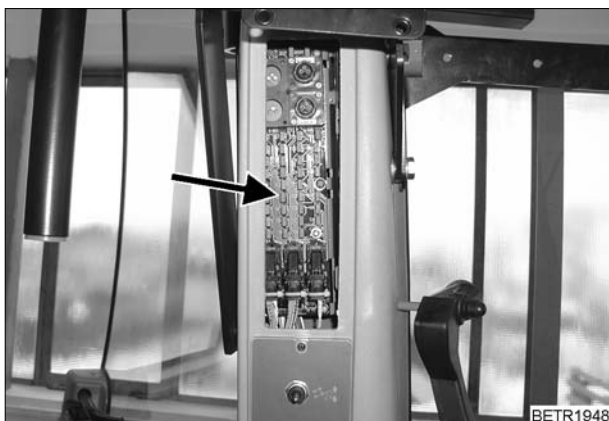
Fuse holder X050, X051 and A013

C**Danger:**

Use only genuine fuses! Electrical system will be destroyed if fuses with too high ratings are used. Beware of fire risk!



Fuse holder (X050, X051)



Fuse holder (A013)

Unscrew cover panel.

Electrics / Fuses

Fuse holder X050, X051 and A013

C

Fuse holder X050

Nr.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
PIN				30	30	30	30		30	30	30	30	15	15	15	15	15	15		15	15		15	15	15	15	15	30	
Wert(A)				25	25	15	15		15	15	25	5	10	10	15	5	40	15		10	15		15	10	25	10	5	10	
Verbraucher																													
339.900.040.302																													

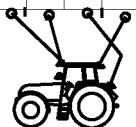
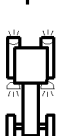
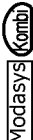
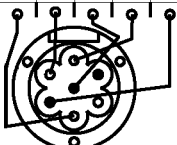
BETR1896

Fuse no.	Pin	Rating (A)	Consumer
1	-	-	-
2	-	-	-
3	-	-	-
4	30	25	Heater plug starter switch position ON
5	30	25	Control module
6	30	15	Hazard warning lights pushbutton
7	30	15	Headlights pushbutton
8	30	10	-
9	30	15	Relay no. 56a (headlights)
10	30	15	Relay no. 56b (dipped beam)
11	30	25	Socket 25 A
12	30	5	EPC
13	15	10	Radio
14	15	25	Heater switch
15	15	15	Hazard warning lights pushbutton
16	15	5	Headlights pushbutton
17	15	40	Blower switch
18	15	15	Front wipers pulse generator
19	15	10	-
20	15	10	Steering column switch (multifunction switch)
21	15	15	Driver seat, seat heating
22	-	-	-
23	15	15	Brake relay
24	15	10	3rd hydraulic circuit relay
25	15	25	Rear window heater, mirror heater
26	15	10	Socket 10 A
27	-	-	-
28	-	-	-
29	15	25	not assigned

Electrics / Fuses

Fuse holder X050, X051 and A013

C**Fuse holder X051**

Nr.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	
PIN		58	58	58	58	58	58	58			30E	30E	30E	15E	15E	15E	15E	15E	15E	15/58	15/58	15/58	R	54	58L	L	58R	30		
Wert(A)		5	25	15	15	15	5	5			40	10	15	5	5	5	5	5	5	5	5	10	10	10	10	10	10	10	5	
Verbraucher																														

BETR189

BETR1897

Fuse no.	Pin	Rating (A)	Consumer
31	-	-	-
32	58	5	Instrument cluster
33	58	25	Front work lights switch
34	58	15	Front work lights switch
35	58	15	Rear working lights switch
36	58	15	Rear working lights switch
37	58	5	Right rear taillamp, right position lamp
38	58	5	Left rear taillamp, left position lamp
39	-	-	-
40	-	-	-
41	30E	40	Enhanced controls e-box
42	30E	5	Fuseboard
43	30E	15	Actuator unit control
44	15E	5	Control console
45	15E	5	Enhanced controls e-box
46	15E	5	Vario terminal
47	15E	5	Turboclutch solenoid valve
48	15E	5	Control module
49	15E	5	Instrument cluster, hand throttle
50	15/58	5	Engine control diagnostics
51	15/58	10	Implement socket, communications box load circuit
52	54	10	EPC
53	R	10	Front socket on front power lift, trailer socket
54	54	10	Trailer socket
55	58L	10	Front socket on front power lift, trailer socket
56	L	10	Front socket on front power lift, trailer socket
57	58R	10	Trailer socket
58	30	10	E-box, instrument cluster
59	-	-	-

Electrics / Fuses

Fuse holder X050, X051 and A013

C

Sicherung	Trennst.	Komponente	Trennst.
01	X200/10	Drehzahlsensor Hydrostat	X163
02	X200/11	Drehzahlsensor Kegelritzel	X164
03	X200/12	Drehwinkelsensor Kupplungspedal	X166
04	X200/14	Bedienteil	X1358
05	X200/4	Drehwinkelsensor Federung	X152
06	X201/11		
07	X201/12		
08	X201/13		
09	X201/6		
10	X200/6	Hochdrucksensor1	X157
11	X200/9	Drehzahlsensor Motor	X159
12	X200/17		
13	X200/16	Drehzahlsensor Zapfwelle hi.	X169
14	X200/15	Drehzahlsensor Zapfwelle vo.	X151
15	X200/5	Hochdrucksensor2	X177
16	X201/5		
17	X201/4		
18	X201/18		

339.900.040.320

BETR1949

fuse	Connector	Components	Comp. li. cpl.
01	X200/10	Hydrostat speed sensor	X163
02	X200/11	Bevel pinion position sensor	X164
03	X200/12	Clutch pedal rotary position sensor	X166
04	X200/14	Control unit	X1358
05	X200/04	Suspension position sensor	X152
06	X201/11	-	-
07	X201/12	-	-
08	X201/13	-	-
09	X201/06	-	-
10	X200/06	High pressure sensor 1	X157
11	X200/09	Engine speed sensor	X169
12	X200/17	-	-
13	X200/16	PTO speed sensor rear	X169
14	X200/15	PTO speed sensor front	X151
15	X200/05	High pressure sensor 2	X177
16	X201/05	-	-
17	X201/04	-	-
18	X201/18	-	-

Electrics / General system	C
Component overview FENDT 300 Vario starting with series production	

Component list: Circuit diagram set 339.900.000.004

Note:

The entries in the tractor range column refer to the relevant circuit diagrams (sheet no.).

DIN	Designation	Con- nector	Fendt 300 Vario
A002	ECU, enhanced control	X031	3, 4, 6, 9, 18, 21, 22, 23, 24, 25, 26, 30
A007	Instrument cluster	X100 X101	2, 4, 6, 7, 8, 17, 18, 19
A009	Actuator unit	X037	21, 22
A010	Thermostat (air-conditioning)	X281	14
A013	Circuit board_fuse	X200 X201 X202	2, 4, 6, 18, 21, 22, 23, 24, 25
A024	ECU, EPC B	X850	18, 20
A035	Control unit, EPC B	X1353	20
A036	Control panel, enhanced control	X1357 X1358	2, 4, 6, 19, 22, 23, 24, 25, 26, 30
A051	ECU, engine control unit (EDC 7)	X1466	4, 6, 21, 30, 33
A055	Modasys	X1411	29
A056	Radio	X1315 X1316	28

DIN	Designation	Con- nector	Fendt 300 Vario
B002	Sensor, front PTO stub shaft speed	X151	25
B003	Sensor, front axle suspension position	X152	24
B004	Vacuum switch (air filter)	X153	30
B007	Level sensor (fuel)	X156	19
B008	High pressure sensor (pressure in ML transmission)	X157	22
B009	Discharge temperature sensor	X158	22
B010	Sensor, engine speed (is used to control the ML - transmission "load limit control")	X159	23
B014	Sensor, drive accumulator shaft hydrostat	X163	22
B015	Sensor, bevel pinion	X164	22
B017	Sensor, clutch pedal	X166	23
B019	Sensor, compressed air volume	X168	19
B020	Sensor, rear PTO stub shaft speed	X169	25
B030	Sensor, rear power lift position	X178	20
B031	Draft sensing pin right	X179	20
B032	Draft sensing pin, left	X180	20
B035	Sensor, hand throttle	X183	30
B039	High pressure sensor 2	X177	22
B045	Sensor, air-conditioning system 1 (protection against icing)	X195	14
B046	Sensor, air-conditioning system 2 (controls cool air)	X196	14
B050	Loudspeaker left	X311 X312	28

Electrics / General system

Component overview FENDT 300 Vario starting with series production

C

DIN	Designation	Con- nector	Fendt 300 Vario
B051	Loudspeaker right	X289 X290	28
B055	Sensor, foot throttle	X898	30
B058	Depth control (EPC - B)	X1356	20
B080	Sensor, hydraulic oil temperature	X1585	19
B085	Camshaft speed	X1678	33
B086	Rail pressure sensor	X1655	33
B087	Fuel low pressure	X1656	33
B088	Crankshaft speed	X1657	33
B089	Temperature sensor Deutz	X1658	33
B090	Sensor, oil pressure	X1659	33
B091	Sensor, water in fuel	X1660	33
B092	Sensor, boost pressure / temperature	X1661	33

DIN	Designation	Con- nector	Fendt 300 Vario
E001	H4 headlamp right	X350	7
E002	H4 headlamp left	X351	7
E003	H4 additional headlamp right	X352	7
E004	Left H4 additional headlamp	X353	7
E005	Turn signal indicator / position lamp front right	X372 X378	7, 8
E006	Turn signal indicator / position lamp front left	X373 X379	7, 8
E007	Right rear taillamp	X106 X113	7, 8, 9
E008	Left rear taillamp	X116 X117	7, 8, 9
E009	License plate lighting right	X374 X375	7
E010	License plate lighting left	X376 X377	7
E011	Work light in roof rear right	X385 X386	12
E012	Work light in roof rear left	X388 X389	12
E013	Work light in roof front right	X291	11
E014	Work light in roof front left	X294	11
E015	Work light front on right direction indicator	X292 X293	11
E016	Work light front on left direction indicator	X295 X296	11
E017	Work light on taillamp bracket right	X366	12
E018	Work light on taillamp bracket left	X367	12
E019	Lighting, cab	X308 X309 X310	28
E020	EPC light	X282 X283	11
E021	Rotating beacon right	X346	10
E022	Rotating beacon left	X345	10
E023	Rear window heater	X259 X260	15

Electrics / General system	C
Component overview FENDT 300 Vario starting with series production	

DIN	Designation	Con- nector	Fendt 300 Vario
E054	Right wide vehicle marker light	X896	7
E055	Left wide vehicle marker light	X897	7
E112	Licence plate light (low roof)	X1706	34
E115	Work light on left taillamp (low roof)	X367	34

DIN	Designation	Con- nector	Fendt 300 Vario
G001	Battery (12 VDC)	X060 X067 X505 X581	4, 5
G002	Generator	X062 X064	5, 19

DIN	Designation	Con- nector	Fendt 300 Vario
H005	Horn	X998 X999	7
H006	Buzzer	X204	19
H007	Buzzer reverse travel	X1544	23

DIN	Designation	Con- nector	Fendt 300 Vario
K001	Relay, +UB 15 (switched positive)	X1371	5, 31
K002	Relay, +UB 58 (lighting)	X1371	5, 31
K004	Relay, 56a (main beam)	X1371	7, 31
K005	Relay, 56b (dipped beam)	X1371	7, 31
K007	Relay, brake	X1371	9, 31
K009	Relay, windscreen wiper	X1371	10, 31
K010	Relay, direction indicator controller	X1371	8, 31
K013	Relay, 3rd hydraulic circuit	X1371	27, 31
K047	Relay, hydraulic trailer brake (Italy)	X1371	9, 31
K060	Relay, clutch / turboclutch	X1371	22, 31
K062	Relay, EDC	X1371	30, 31
K063	Relay, heating flange	X1663 X1664 X1665	33
K064	Battery disconnect relay	X1696 X1697 X1698 X1699	5
K065	Relay, starter	X1648	30
K066	Relay, compressed air pilot control	X1371	9, 31

DIN	Designation	Con- nector	Fendt 300 Vario
M001	Starter	X061	5, 30
M002	Front wiper motor	X347	10
M003	Front wiper pump	X301	10
M004	Rear wiper motor	X258	10
M005	Rear wiper pump	X303	10
M007	Seat compressor	X830	16

Electrics / General system	C
Component overview FENDT 300 Vario starting with series production	

DIN	Designation	Con- nector	Fendt 300 Vario
M009	Heater blower	X285 X286 X287 X288	13
M014	Roof blower (infinitely adjustable) (optional)	X460	14
M018	Roof blower (3-speed)	X1641 X1642 X1643 X1644	14

DIN	Designation	Con- nector	Fendt 300 Vario
R002	Heating flange	X991 X1701	33

DIN	Designation	Con- nector	Fendt 300 Vario
S001	Steering column switch	X215 X245	7, 8, 10
S002	Switch, ignition	X072	5, 30
S003	Switch, headlights	X080	7
S004	Switch, hazard warning light	X216	8
S005	Switch, right brake	X217	9
S006	Switch, left brake	X218	9
S007	Switch, additional headlamps	X219	7
S008	Switch, front working lights	X275	11
S009	Switch, rear work lights	X274	12
S010	Switch, rear wiper motor	X273	10
S011	Switch, rotating beacon	X270 X271 X272	10
S015	Switch, hand brake	X226	9, 22
S017	Switch, transmission oil contamination	X228	22
S019	Switch, PTO ON rear left	X229	25
S020	Switch, PTO ON rear right	X230	25
S027	Switch, external raise, right (rear power lift)	X237	20
S028	Switch, external lower, right (rear power lift)	X238	20
S029	Switch, external raise, left (rear power lift)	X239	20
S030	Switch, external lower, left (rear power lift)	X240	20
S031	Switch, right door contact	X279	28
S032	Switch, left door contact	X299	28
S033	Switch, heater blower	X247	13
S035	Switch, high/low-pressure (air-conditioning)	X341	14
S037	Switch, heating blower (3-speed)	X280	14
S038	Rear window heater switch	X267 X268 X269	15

Electrics / General system	C
Component overview FENDT 300 Vario starting with series production	

DIN	Designation	Con- nector	Fendt 300 Vario
S044	Potentiometer, air-conditioning	X220	14
S047	Switch, engine brake	X140	30
S048	Switch, EPC lock	X148	20
S049	Switch, 3rd hydraulic circuit	X431	27
S056	Switch, oil flow collector	X1019	20
S059	Switch, hydraulic trailer brake (Italy)	X1056	9
S061	Switch, rapid reverse	X1040	23
S069	Switch, roof blower (infinitely adjustable) (optional)	X468	14
S070	Switch, transmission setting (driving mode / idle) "towing mode"	X1340	22
S071	Switch, rapid lowering / hitch	X1355 , X1359, X1360	20
S072	Switch, quick lift	X1354, X1361, X1362, X1363	20
S074	Switch, transmission neutral, starter lockout	X1429	22, 30
S083	Switch, battery disconnect relay	X1645	5
S084	Switch, ON/OFF hydr. trailer brake (France)	X1646	27

DIN	Designation	Con- nector	Fendt 300 Vario
X007	Implement socket		17
X014	Cable coupler for cab / cab base		7, 8, 10, 11, 12, 14, 15, 16, 28
X016	Cable coupler		7, 12
X017	Front socket, only with front power lift		7, 8
X018	Trailer socket		7, 8, 9
X023	Socket, 3rd hydraulic circuit		27
X031	Separation point on A002 - ECU, enhanced control		4, 6, 9, 18, 21, 22, 23, 24, 25, 26, 30
X037	Separation point on A009 - actuator unit		21, 22
X050	Fuse holder 1 compl		5, 6, 7, 8, 9, 10, 13, 14, 15, 16, 20, 27, 28
X051	Fuse holder 2 compl		5, 6, 7, 8, 9, 11, 12, 17, 20, 22, 30
X053	Positive bolt		5
X058	Battery terminal (+UB 30)		5
X060	G001 battery negative (terminal 31)		4
X061	M001 - starter terminal 30		5
X062	G002 - generator terminal B+		5
X064	G002 - generator terminal D+		19
X072	Separation point on S002 - ignition switch		5, 30
X080	Separation point on S003 - switch, driving lamps		7
X086	Separation point on Y006 - solenoid valve, engine brake		33

Electrics / General system

Component overview FENDT 300 Vario starting with series production

C

DIN	Designation	Con- nector	Fendt 300 Vario
X100	Separation point on A007 - instrument cluster "blue"		7, 8, 17, 18, 19
X101	Separation point on A007 - instrument cluster "yellow"		4, 6, 19
X109	Tractor body ground on A002 - ECU, enhanced control		4
X120	Separation point on E008 - Rear left tail-lamp (turn signal indicator L)		7, 8, 9
X121	Separation point on E007 - Rear right taillamp (turn signal indicator R)		7, 8, 9
X140	Separation point on S047 - engine brake switch		30
X148	Separation point on 048 - EPC lock switch		20
X151	Separation point on B002 - front PTO stub shaft speed sensor		25
X152	Separation point on B003 - front axle suspension position sensor		24
X153	Separation point on B004 - vacuum switch (air filter)		30
X156	Separation point on B007 - level sensor (fuel)		19
X157	Separation point on B008 - high pressure sensor (pressure in ML transmission)		22
X158	Separation point on B009 - discharge temperature		22
X159	Separation point on B010 - engine speed sensor		23
X163	Separation point on B014 - hydrostat accumulator shaft sensor		22
X164	Separation point on B015 - bevel pinion sensor		22
X166	Separation point on B017 - clutch pedal sensor		23
X168	Separation point on B019 - compressed air supply sensor		19
X169	Separation point on B020 - rear PTO stub shaft speed sensor		25
X177	Separation point on B039 - high pressure sensor 2 (currently not assigned)		22
X178	Separation point on B030 - rear power lift position sensor		20
X179	Separation point on B031 - right draft sensing pin sensor		20
X180	Separation point on B032 - left draft sensing pin sensor		20
X183	Separation point on B035 - hand throttle sensor		30
X195	Separation point on B045 - sensor, air-conditioning 1 (protection against icing)		14
X196	Separation point on B046 - sensor, air-conditioning 2 (controls cool air)		14

Electrics / General system	C
Component overview FENDT 300 Vario starting with series production	

DIN	Designation	Con- nector	Fendt 300 Vario
X200	Separation point on A013 - microfuse board		4, 6, 18, 21, 22, 23, 24, 25
X204	Separation point on H006 - buzzer		19
X215	Separation point on S001 - steering column switch		8, 10
X216	Separation point on S004 - hazard warning light switch		8
X217	Separation point on S005 - right brake switch		9
X218	Separation point on S006 - left brake switch		9
X219	Separation point on S007 - additional headlamp switch		7
X220	Separation point on S044 - air-conditioning switch		14
X226	Separation point on S015 - hand brake switch		9, 22
X228	Separation point on S017 - transmission oil contamination switch		22
X229	Separation point on S019 - switch, PTO engage rear left		25
X230	Separation point on S020 - switch, PTO engage rear right		25
X237	Separation point on S027 - switch, external raise, right (rear power lift)		20
X238	Separation point on S028 - switch, external lower, right (rear power lift)		20
X239	Separation point on S029 - switch, external raise, left (rear power lift)		20
X240	Separation point on S030 - switch, external lower, left (rear power lift)		20
X245	Separation point on S001 - steering column switch		7, 10
X246	Separation point on S002 - ignition switch		5
X247	Separation point on S033 - switch, heater blower		13
X254	Socket 10 ampere		16
X255	Socket 25 ampere (+ supply)		16
X256	Socket 25 ampere (ground)		16
X258	Separation point on M004 - rear wiper motor		10
X259	Separation point on E023 - rear window heater (ground)		15
X260	Separation point on E023 - rear window heater (+ supply)		15
X267	Separation point on S038 - switch, rear window heater		15
X268	Separation point on S038 - switch, rear window heater		15
X269	Separation point on S038 - switch, rear window heater		15
X270	Separation point on S011 - switch, rotating beacon		10

Electrics / General system			C
Component overview FENDT 300 Vario starting with series production			
DIN	Designation	Con- nector	Fendt 300 Vario
X271	Separation point on S011 - switch, rotating beacon		10
X272	Separation point on S011 - switch, rotating beacon		10
X273	Separation point on S010 - switch, rear wiper motor		10
X274	Separation point on S009 - rear work light switch		12
X275	Separation point on S008 - front work light switch		11
X276	Cable coupler, S021 - right rotating beacon		10
X279	Separation point on S031 - switch, right door contact		28
X280	Separation point on S037 - switch, heater blower		14
X281	Cable coupler, air-conditioning		14
X282	Separation point on E020 - EPC lighting (+ supply)		11
X283	Separation point on E020 - EPC lighting (ground)		11
X284	Cable coupler M002 - front wiper motor		10
X285	Separation point on M009 - heater blower (level 1)		13
X286	Separation point on M009 - heater blower (level 2)		13
X287	Separation point on M009 - heater blower (level 3)		13
X288	Separation point on M009 - heater blower (ground)		13
X289	Separation point on B051 - right loudspeaker		28
X290	Separation point on B051 - right loudspeaker		28
X291	Separation point on E013 - front right roof work light		11
X292	Separation point on E015 - front work light at right direction indicator		11
X293	Separation point on E015 - front work light at right direction indicator		11
X294	Separation point on E014 - front left roof work light		11
X295	Separation point on E016 - front work light at left direction indicator		11
X296	Separation point on E016 - front work light at left direction indicator		11
X297	Cable coupler M002 - front wiper motor		10
X298	Cable coupler, E022 - left rotating beacon		10
X299	Separation point on S032 - switch, left door contact		28

Electrics / General system

Component overview FENDT 300 Vario starting with series production

C

DIN	Designation	Con- nector	Fendt 300 Vario
X301	Separation point on M003 - front wiper pump		10
X303	Separation point on M005 - rear wiper pump		10
X308	Separation point on E019 - cab lighting		28
X309	Separation point on E019 - cab lighting		28
X310	Separation point on E019 - cab lighting		28
X311	Separation point on B050 - left loud-speaker		28
X312	Separation point on B050 - left loud-speaker		28
X317	Separation point on Y004 - solenoid valve, clutch / turboclutch		22
X319	Separation point on Y008 - solenoid valve, rear PTO clutch		25
X320	Separation point on Y009 - 4WD solenoid valve		26
X321	Separation point on Y010 - solenoid valve, differential lock (rear)		26
X322	Separation point on Y011 - solenoid valve, front PTO clutch		25
X323	Separation point on Y012 - solenoid valve, suspension load		24
X324	Separation point on Y013 - lower suspension solenoid valve		24
X325	Separation point on Y014 - suspension "raise" solenoid valve		24
X332	Separation point on Y021 - solenoid valve, raise (rear power lift)		20
X333	Separation point on Y022 - solenoid valve, lower (rear power lift)		20
X334	Separation point on Y023 - compressed air pilot control solenoid valve		9
X341	Separation point on S035 - high pressure/low pressure switch (air-conditioning)		14
X342	Separation point on Y024 - AC compressor magnetic clutch		14
X345	Separation point on E022 - left rotating beacon		10
X346	Separation point on E021 - rotating beacon right		10
X347	Separation point on M002 - front wiper motor		10
X350	Separation point on E001 - H4 right headlamp		7
X351	Separation point on E002 - H4 left headlamp		7
X352	Separation point on E003 - H4 right additional headlamp		7
X353	Separation point on E004 - H4 left additional headlamp		7
X360	Separation point on Y026 - solenoid valve, rear PTO setting I (540 rpm)		25

Electrics / General system	C
Component overview FENDT 300 Vario starting with series production	

DIN	Designation	Con- nector	Fendt 300 Vario
X361	Separation point on Y027 - solenoid valve, rear PTO setting II (750 rpm)		25
X366	Separation point on E017 - work light on right taillamp holder		12
X367	Separation point on E018 - work light on left taillamp holder		12
X368	Separation point on Y028 - solenoid valve, rear PTO setting III (1000 rpm)		25
X372	Separation point on E005 - front right turn signal indicator / position lamp		7
X373	Separation point on E006 - front left turn signal indicator / position lamp		7
X374	Separation point on E009 - right licence plate light		7
X375	Separation point on E009 - right licence plate light		7
X376	Separation point on E010 - left licence plate light		7
X377	Separation point on E010 - left licence plate light		7
X378	Separation point on E005 - front right turn signal indicator / position lamp		7
X379	Separation point on E006 - front left turn signal indicator / position lamp		7
X380	Separation point on E005 - front right turn signal indicator / position lamp		8
X381	Separation point on E006 - front left turn signal indicator / position lamp		8
X385	Separation point on E011 - rear right roof work light		12
X386	Separation point on E011 - rear right roof work light		12
X387	Separation point on E011 - rear right roof work light		12
X388	Separation point on E012 - rear left roof work light		12
X389	Separation point on E012 - rear left roof work light		12
X390	Separation point on E012 - rear left roof work light		12

DIN	Designation	Con- nector	Fendt 300 Vario
X431	Cable coupler on S049 - switch, 3rd hydraulic circuit		27
X443	Cable coupler, cab roof		14
X500	Ground pin, oil pan right		4
X503	Ground pin, oil pan right		4, 9, 24, 27
X505	G001 battery (terminal 31) "ground"		4
X520	Ground pin, oil pan right		4, 7, 20, 24, 25, 27
X531	Ground pin, right B-pillar		4
X532	Ground pin, body/cab		4, 7, 12, 28
X533	Ground pin, body/cab		4, 10, 11, 12
X534	Ground pin, body/cab		4, 14, 15, 16, 17

Electrics / General system	C
Component overview FENDT 300 Vario starting with series production	

DIN	Designation	Con- nector	Fendt 300 Vario
X536	Ground pin, body/cab		4, 7, 11
X550	Ground pin, right mudguard		4
X551	Ground pin, right cab base		4, 5, 10, 19, 30
X552	Ground pin, cab base		4, 7, 8, 9
X553	Ground pin, cab base		4, 5, 16, 20, 22, 23, 27
X554	Ground pin, cab base		4, 6, 9, 13, 27, 30
X560	Ground pin, cab junction		4
X565	Ground pin, cab base		4, 12
X570	Ground pin, transmission		4, 7
X571	Ground pin, transmission		4, 9, 22, 25, 26
X574	Ground pin, cab junction		4
X581	Ground pin, engine		33

DIN	Designation	Con- nector	Fendt 300 Vario
X600	Connector, CAN high		18
X601	Connector, CAN low		18
X607	Connector, +UB 30		5
X608	Connector, +UB 15		5
X609	Connector, +UB 58 lighting		7
X610	Connector, right turn signal indicator		8
X611	Connector, left turn signal indicator		8
X612	Connector, +UB 15 wipers and rotating beacon		10
X613	Connector, sensor system ground		4, 22, 23
X617	Connector, CAN low		21
X618	Connector, CAN high		21
X619	Connector, electronics ground		4, 22
X620	Connector, electronics ground		4
X624	Connector, CAN high		18
X625	Connector, CAN low		18
X627	Connector, sensor system ground		4, 16, 25
X628	Connector, +UB 30		6
X630	Connector, brake lamp (terminal 54)		9
X631	Connector, LED rear PTO ON		25
X638	Connector, sensor system ground		4, 22, 25
X650	Connector, headlamp 56 a (main beam)		7
X651	Connector, headlamp 56 b (dipped beam)		7
X671	Connector, sensor system ground		4, 23, 24, 25
X676	Connector, left and right draft sensing pins ground		20
X676	Connector, +UB left and right draft sensing pins		20
X678	Connector, analogue ground		19, 22
X684	Connector, UB 30 engine control unit		6

Electrics / General system

Component overview FENDT 300 Vario starting with series production

C

DIN	Designation	Con- nector	Fendt 300 Vario
X700	Connector, rear work light ground		12
X810	EDC diagnostics socket (engine control unit)		30
X830	Cable coupler (M007 - seat compressor and S053 - seat switch)		16
X850	Separation point on ECU, EPC B		18, 20
X896	Separation point on E054 - right wide vehicle marker light		7
X897	Separation point on E055 - left wide vehicle marker light		7
X898	Separation point on B055 - foot throttle sensor		30

DIN	Designation	Con- nector	Fendt 300 Vario
X991	Separation point on R002 - heating flange		33
X998	Separation point on H005 - horn (ground)		7
X999	Separation point on H005 - horn (+ supply)		7
X1019	Separation point on S056 - switch, oil flow collector		20
X1020	Separation point on Y050 - solenoid valve, oil flow collector		20
X1022	Separation point on Y052 - solenoid valve, hydr. trailer brake (Italy)		9
X1040	Separation point on S061 - switch, quick reverse (F/R control)		23
X1056	Separation point on S059 - switch, compressed air supply		9
X1315	Separation point on A056 - radio (compact plug)		28
X1316	Separation point on A056 - radio (compact plug)		28
X1317	Cable coupler (M009 - heater blower)		13
X1340	Separation point on S070 - switch, driving mode / idle		22
X1353	Separation point on A035 - control panel EPC B		20
X1354	Separation point on S072 - switch, quick lift		20
X1355	Separation point on S071 - switch, rapid lower / hitch		20
X1356	Separation point on B058 - sensor, depth control		20
X1357	Separation point on A036 - control panel, enhanced control		4, 22, 24, 25, 26
X1358	Separation point on A036 - control panel, enhanced control		4, 6, 19, 23, 25, 30
X1359	Separation point on S071 - switch, rapid lower / hitch		20

Electrics / General system	C
Component overview FENDT 300 Vario starting with series production	

DIN	Designation	Con- nector	Fendt 300 Vario
X1360	Separation point on S071 - switch, rapid lower / hitch		20
X1361	Separation point on S072 - switch, quick lift		20
X1362	Separation point on S072 - switch, quick lift		20
X1363	Separation point on S072 - switch, quick lift		20
X1371	Relay base		5, 7, 8, 9, 10, 22, 27, 30
X1375	Cable coupler cab base / chassis		4, 7, 8, 9, 19, 20, 21, 22, 25, 26
X1378	Connector, +UB stab (10 VDC) (EPC B)		20
X1381	Connector, +UB stab (10 VDC) (EPC B)		20
X1411	Separation point on A055 - ECU, Modasys (mobile data logging) (optional)		29
X1421	Cable coupler, cab base		5, 17, 30
X1429	Separation point on S074 - neutral switch (transmission), "starter lockout"		22, 30
X1430	Cable coupler cab base / chassis		4, 5, 6, 7, 8, 9, 14, 19, 20, 21, 23, 24, 25, 27, 30
X1463	Connector, CAN high		21
X1464	Connector, CAN low		21
X1466	Separation point on A051 - ECU, EDC "engine control unit"		4, 6, 21, 30
X1526	Connector, ground (B055 - foot throttle sensor)		30
X1527	Connector, +UB foot throttle (5.0 VDC)		30
X1528	Connector, sensor system supply		30
X1529	Separation point on X053 - positive bolt		5
X1534	Separation point on X053 - positive bolt		5
X1544	Separation point on H007 - buzzer, reverse travel		23
X1585	Separation point on B080 - sensor, hydraulic oil temperature		19
X1625	Spare wires		19
X1626	Spare wires		19
X1627	Spare wires		23
X1628	Spare wires		23

DIN	Designation	Con- nector	Fendt 300 Vario
X1631	Battery negative (terminal 31)		4
X1632	Battery positive (terminal 30)		5
X1634	Connector (+ UB 30)		5, 6, 28
X1635	Cable coupler, cab base		6, 18
X1636	Cable coupler (Modasys)		29
X1639	Connector (enhanced control BUS) (CAN high)		29
X1640	Connector (enhanced control BUS) (CAN low)		29
X1641	Separation point on M018 - roof blower (3-speed)		14
X1642	Separation point on M018 - roof blower (3-speed)		14

Electrics / General system	C
Component overview FENDT 300 Vario starting with series production	

DIN	Designation	Con- nector	Fendt 300 Vario
X1643	Separation point on M018 - roof blower (3-speed)		14
X1644	Separation point on M018 - roof blower (3-speed)		14
X1645	Separation point on S083 - switch, battery disconnect relay		5
X1646	Separation point on S084 - switch, ON/OFF hydr. trailer brake (France)		27
X1647	Separation point on Y089 - solenoid valve, ON/OFF hydr. trailer brake (France)		27
X1648	Separation point on K065 - relay, starter		30
X1654	Separation point on B085 - camshaft speed		33
X1655	Separation point on B086 - rail pressure sensor		33
X1656	Separation point on B087 - fuel low pressure		33
X1657	Separation point on B088 - crankshaft speed		33
X1658	Separation point on B089 - temperature sensor Deutz		33
X1659	Separation point on B090 - sensor, oil pressure		33
X1660	Separation point on B091 - sensor, water in fuel		33
X1661	Separation point on B092 - boost pressure sensor		33
X1662	Separation point on Y091 - metering unit (fuel)		33
X1663	Separation point on K063 - relay, heating flange		33
X1664	Separation point on K063 - relay, heating flange		33
X1665	Separation point on K063 - relay, heating flange		33
X1671	Separation point on A051 - ECU, engine control unit (EDC 7)		33
X1672	Separation point on A051 - ECU, engine control unit (EDC 7)		33
X1673	Cable coupler EDC		33
X1674	Separation point on Y094 - EGR actuator (exhaust gas recirculation)		33
X1675	Connector, ground		33
X1676	Connector, +UB 12 VDC		33
X1696	Separation point on K064 - battery disconnect relay		5
X1697	Separation point on K064 - battery disconnect relay		5
X1698	Separation point on K064 - battery disconnect relay		5
X1699	Separation point on K064 - battery disconnect relay		5
X1700	Separation point on K063 - relay, heating flange		33

Electrics / General system	C
Component overview FENDT 300 Vario starting with series production	

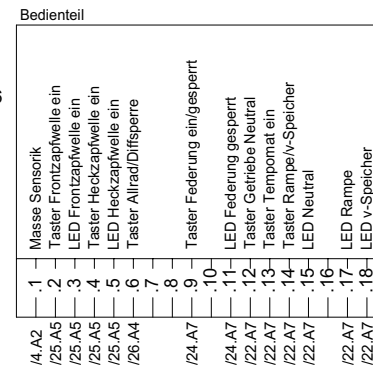
DIN	Designation	Con- nector	Fendt 300 Vario
X1701	Separation point on R002 - heating flange		33
X1702	Separation point on K063 - relay, heating flange		33
X1703	Separation point on G002 - generator		5
X1704	Separation point on E008 - rear left taillamp (low roof)		34
X1705	Separation point on E112 - licence plate light (low roof)		34
X1706	Separation point on E112 - licence plate light (low roof)		34
X1707	Connector (+ UB 30)		5

DIN	Designation	Con- nector	Fendt 300 Vario
Y004	Solenoid valve, clutch / turboclutch	X317	22
Y006	Solenoid valve, engine brake	X1679	33
Y008	Solenoid valve, rear PTO clutch	X319	25
Y009	Solenoid valve, 4WD	X320	26
Y010	Solenoid valve, differential lock (rear)	X321	26
Y011	Solenoid valve, front PTO clutch	X322	25
Y012	Solenoid valve, load suspension	X323	24
Y013	Solenoid valve, lower suspension	X324	24
Y014	Solenoid valve, raise suspension	X325	24
Y021	Solenoid valve, raise (rear power lift)	X332	20
Y022	Solenoid valve, lower (rear power lift)	X333	20
Y023	Solenoid valve, compressed air pilot control system	X334	9
Y024	Magnetic clutch, air-conditioning compressor	X342	14
Y026	Solenoid valve, rear PTO setting I (540 rpm)	X360	25
Y027	Solenoid valve, rear PTO setting II (750 rpm or ground PTO)	X361	25
Y028	Solenoid valve, rear PTO setting III (1000 rpm)	X368	25
Y050	Solenoid valve, oil flow collector	X1020	20
Y052	Solenoid valve, hydraulic trailer brake (Italy)	X1022	9
Y089	Solenoid valve, ON/OFF hydr. trailer brake (France)	X1647	27
Y091	Metering unit (fuel)	X1662	33
Y094	EGR actuator (exhaust gas recirculation)	X1674	33
Y095	Injector 1	X1673	33
Y096	Injector 2	X1673	33
Y097	Injector 3	X1673	33
Y098	Injector 4	X1673	33

Electrics / General system Overview of circuit diagrams for FENDT 300 Vario	C
--	---

Contents of circuit diagrams

Sheet 2	= Microfuse, instrument cluster, control panel - Sheet 2
Sheet 3	= Electronics box
Sheet 4	= Grounding system
Sheet 5	= Power supply + UB
Sheet 6	= Power supply to electronic systems
Sheet 7	= Lighting and horn in accordance with STVZO (Germany's Federal Highway Code)
Sheet 8	= Indicators
Sheet 9	= Brake lamp, compressed air pilot control, hydraulic brake - Sheet 9
Sheet 10	= Wipers and rotating beacon
Sheet 11	= Front work lights
Sheet 12	= Rear work lights
Sheet 13	= Heater
Sheet 14	= Ventilation and air-conditioning
Sheet 15	= Heated rear window
Sheet 16	= Sockets, seat compressor
Sheet 17	= Implement socket
Sheet 18	= Enhanced control BUS (CAN Bus)
Sheet 19	= Instrument cluster
Sheet 20	= Electrohydraulic lifting gear control
Sheet 21	= Transmission bus
Sheet 22	= Transmission control unit
Sheet 23	= Transmission control unit
Sheet 24	= Suspension
Sheet 25	= PTO shaft
Sheet 26	= 4WD and differential locks
Sheet 27	= 3rd hydraulic circuit
Sheet 28	= Lighting, cab and radio
Sheet 29	= Modasys data transfer
Sheet 30	= EDC control unit
Sheet 31	= Appendix relay block
Sheet 32	= Appendix relay base
Sheet 33	= Control module
Sheet 34	= Low roof version



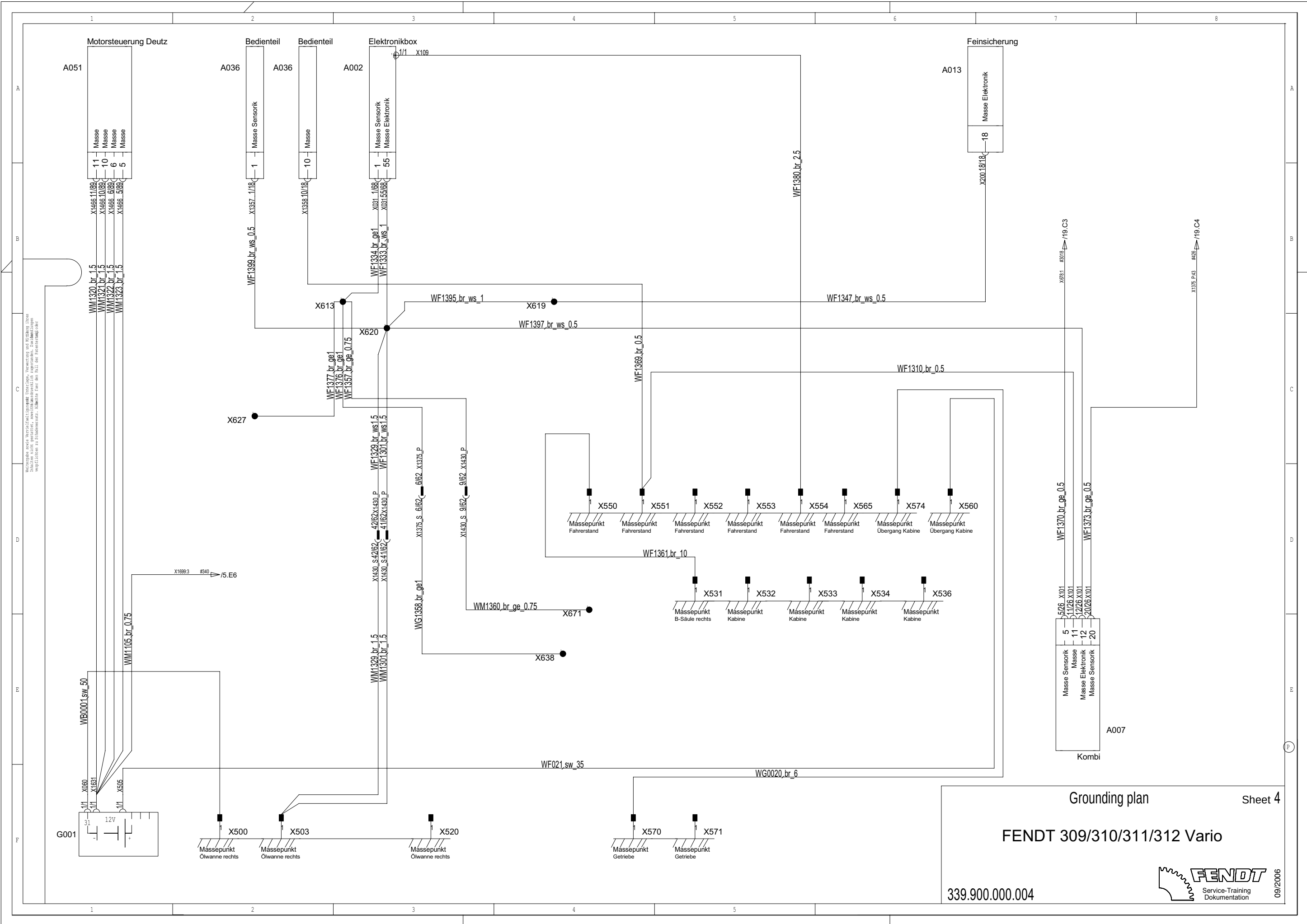
Electronics box

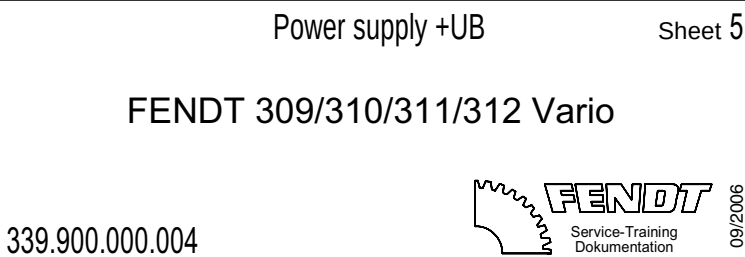
Sheet 3

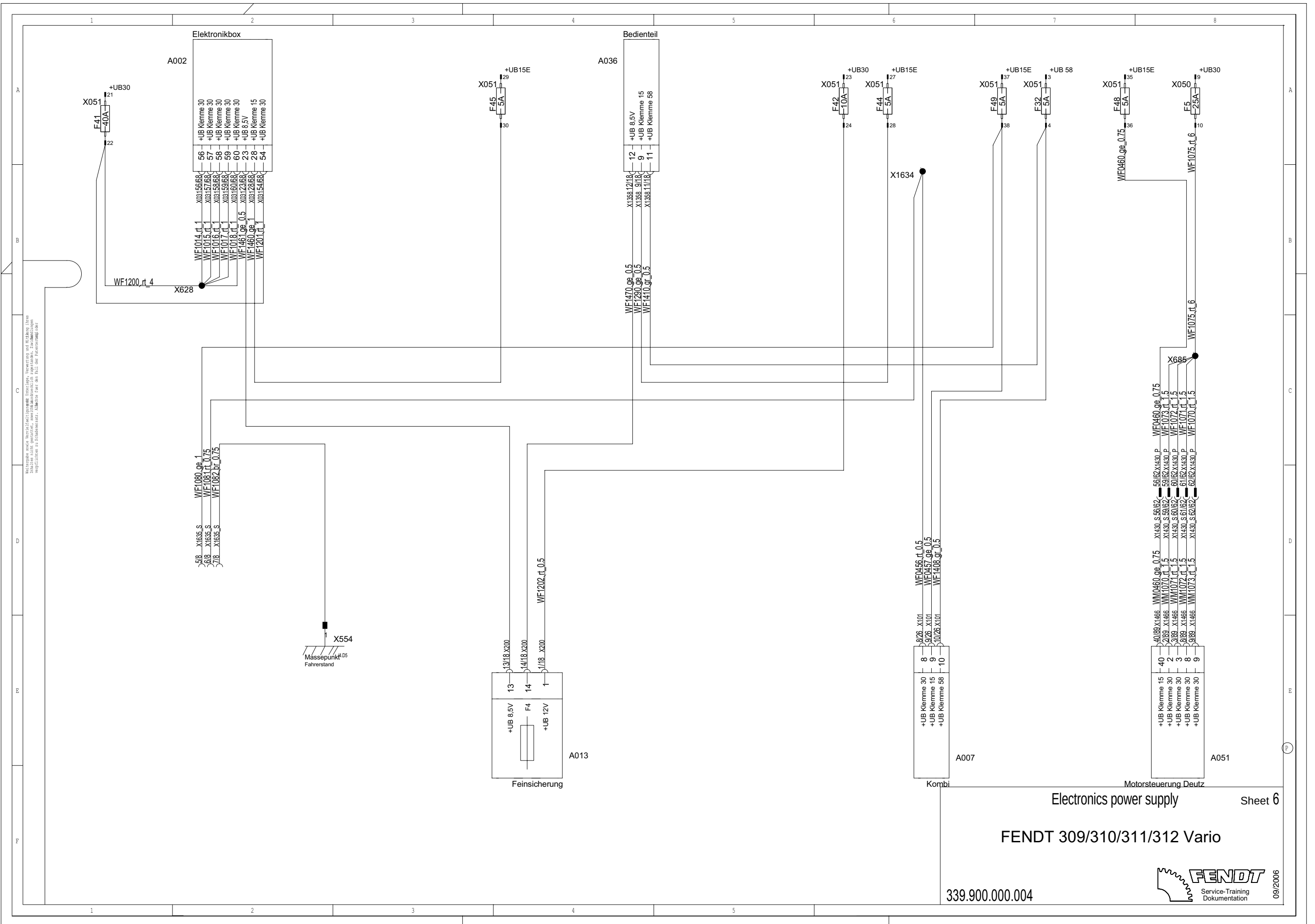
FENDT 309/310/311/312 Vario

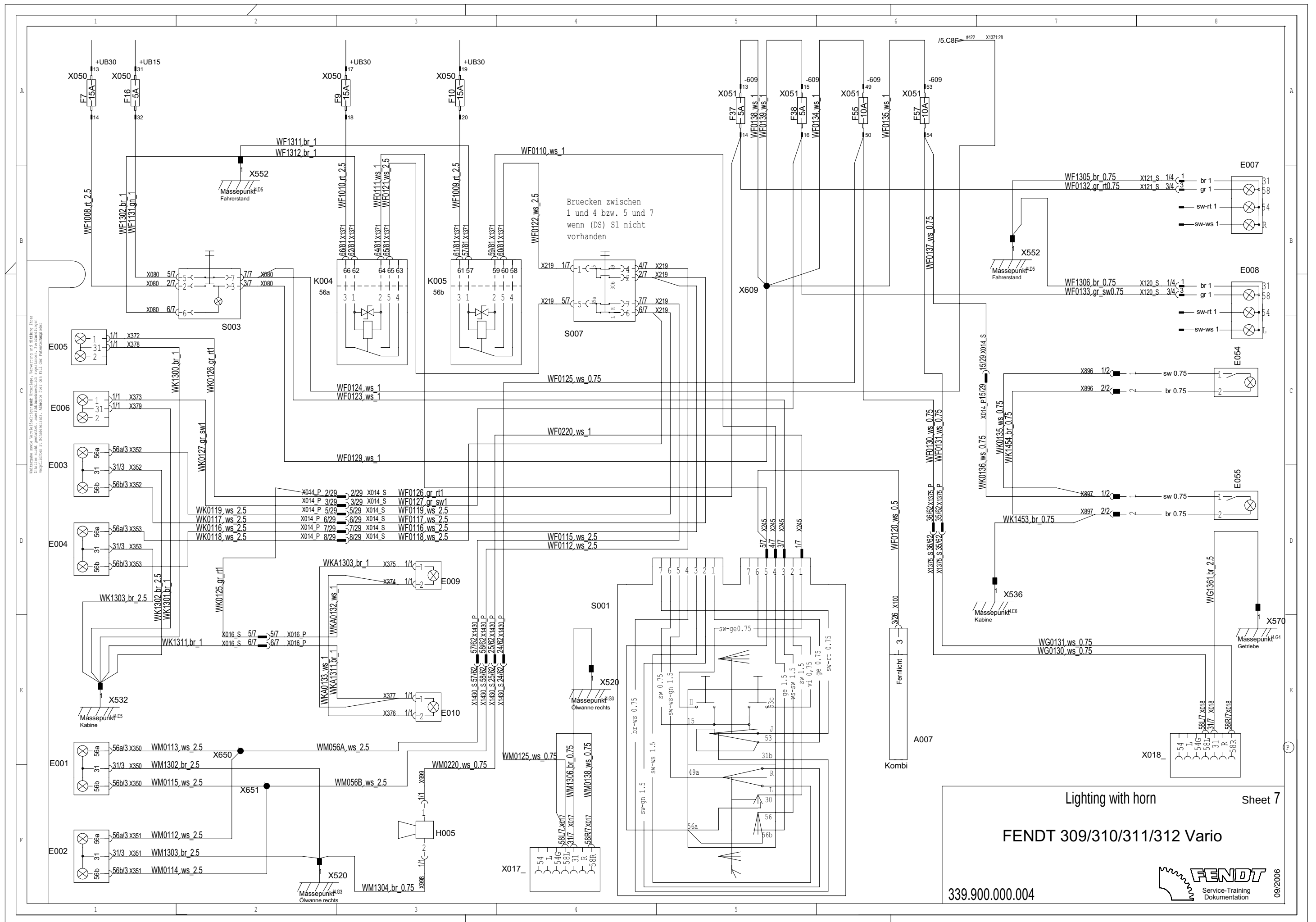
339.900.000.004

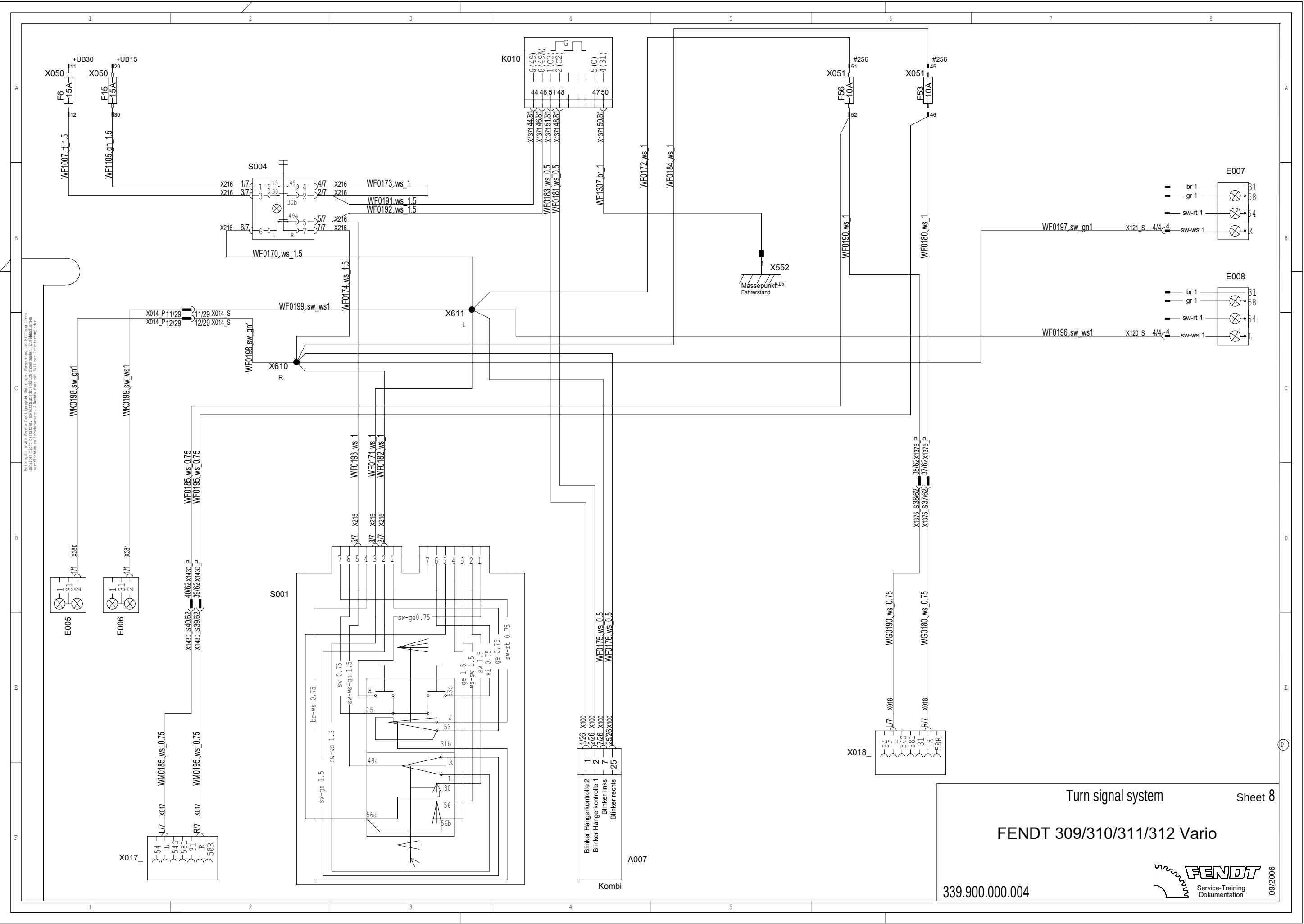


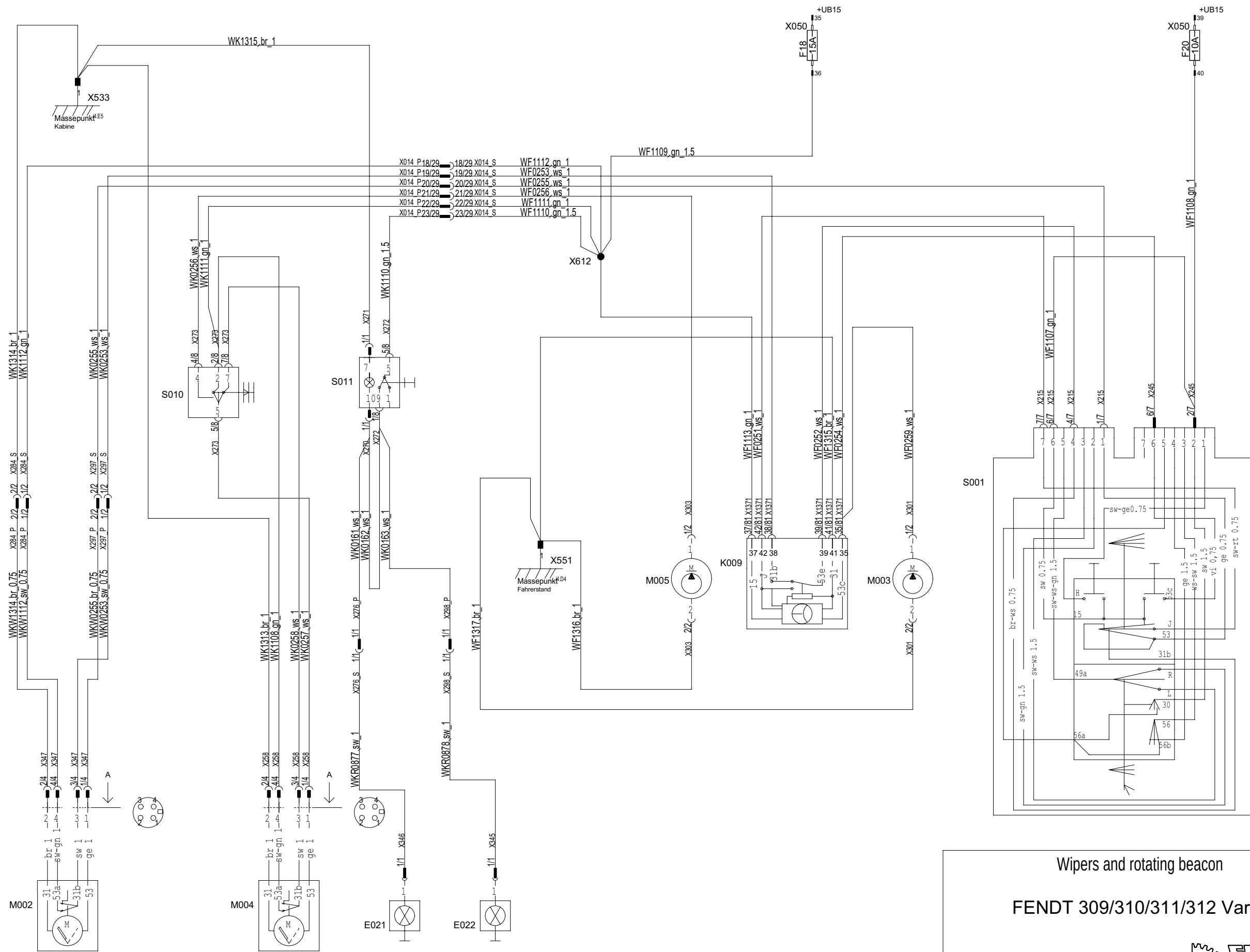












Sheet 10

Wipers and rotating beacon

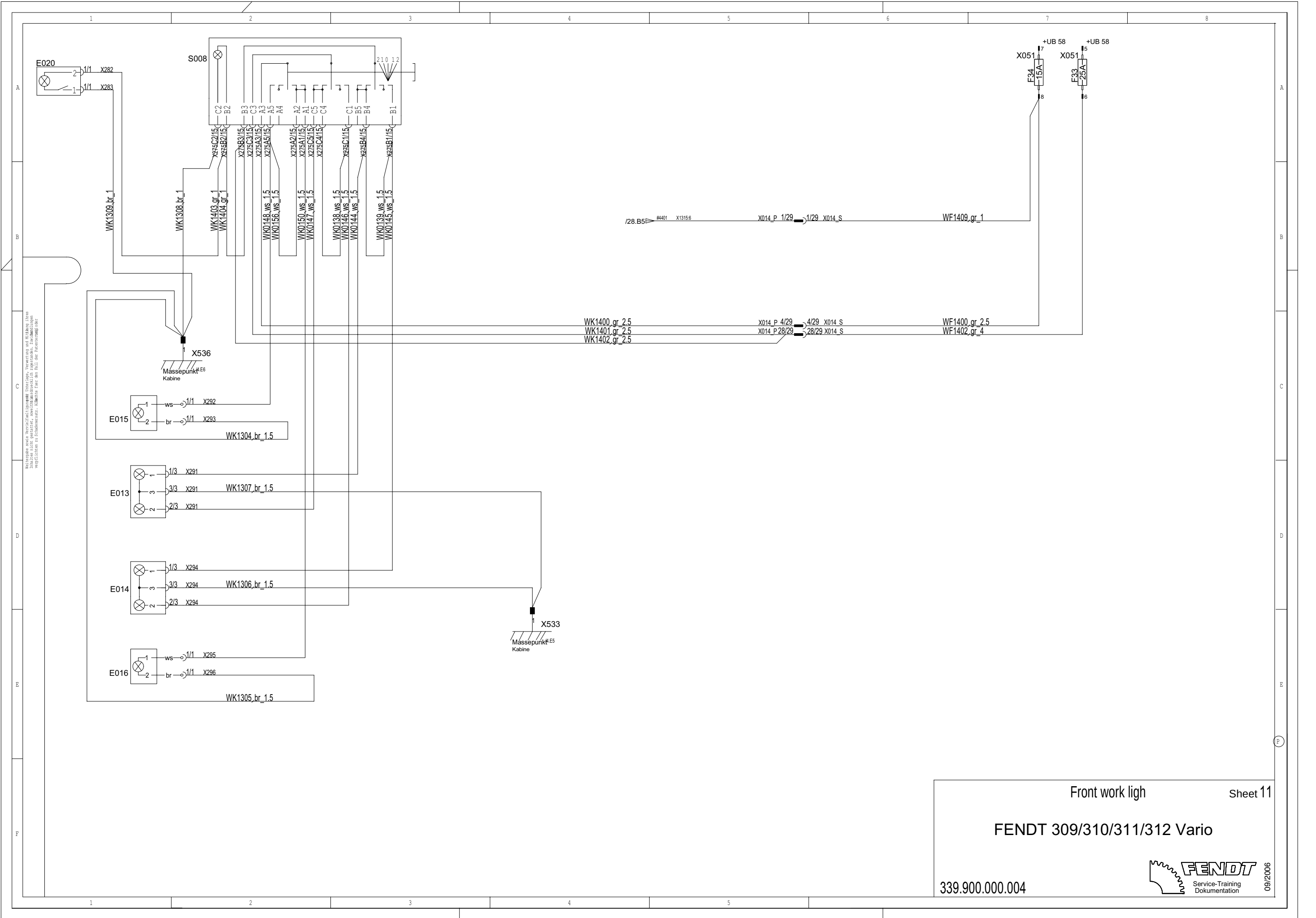
FENDT 309/310/311/312 Vario

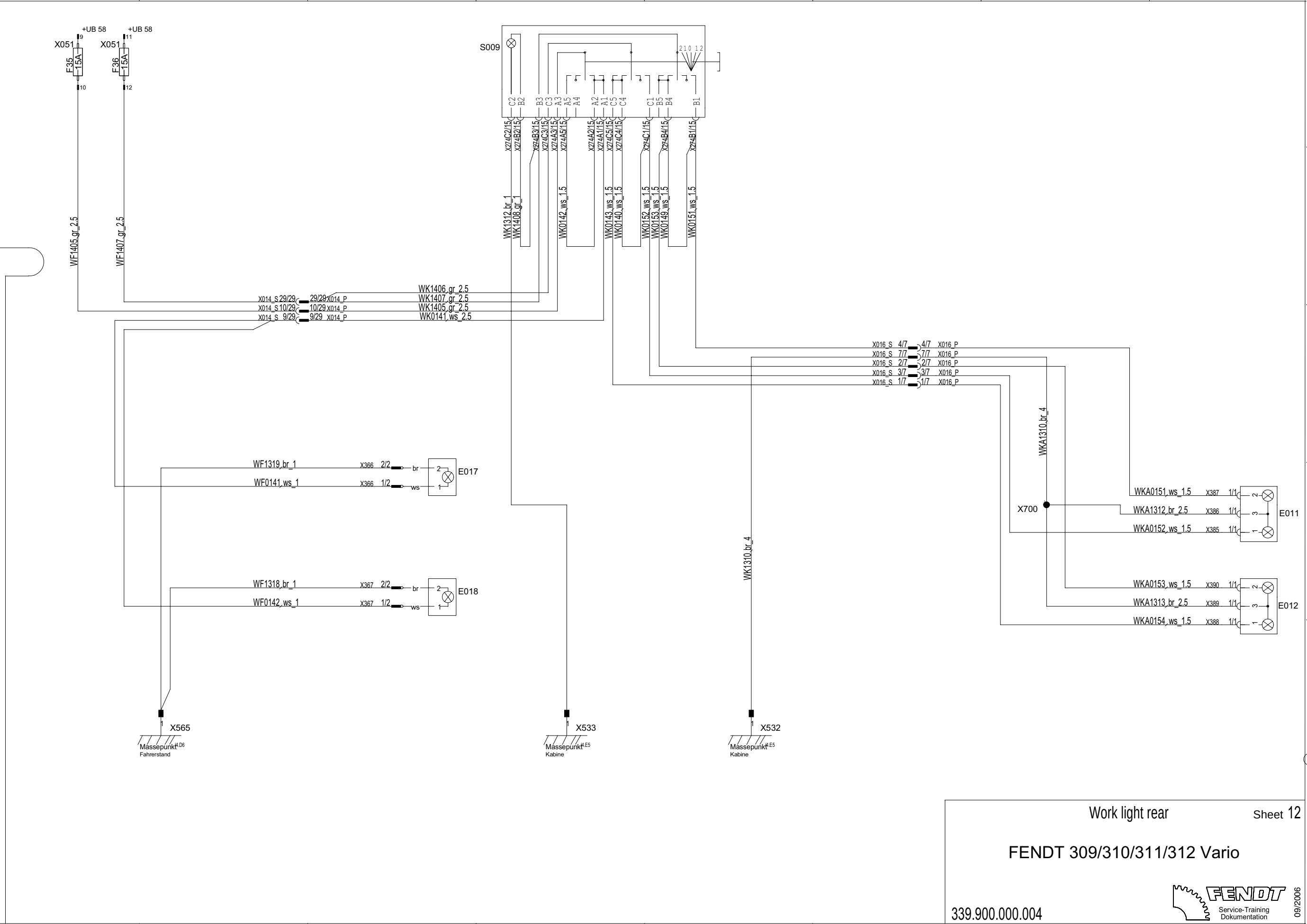
339.900.000.004

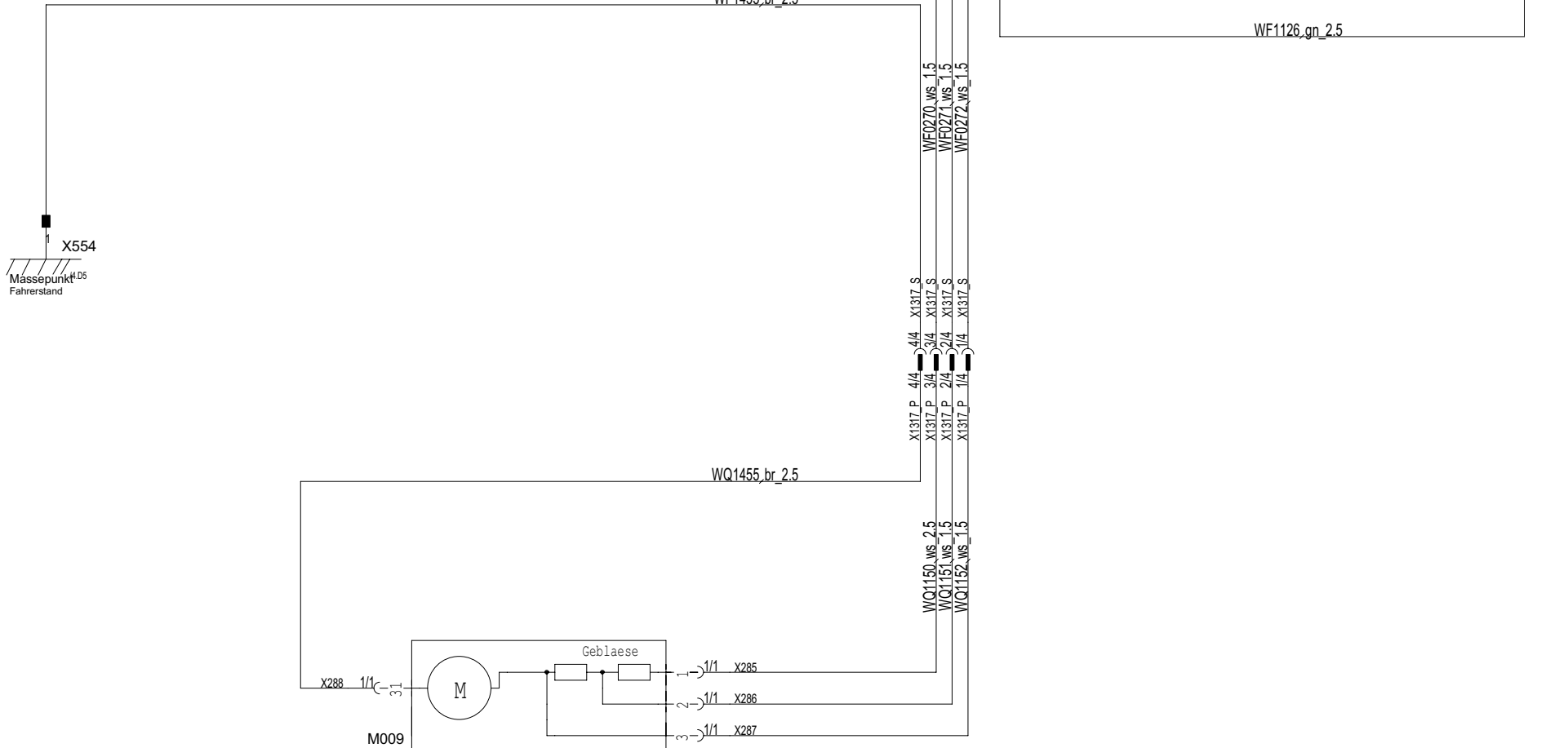


Service-Training
Dokumentation

09/2006







Heating

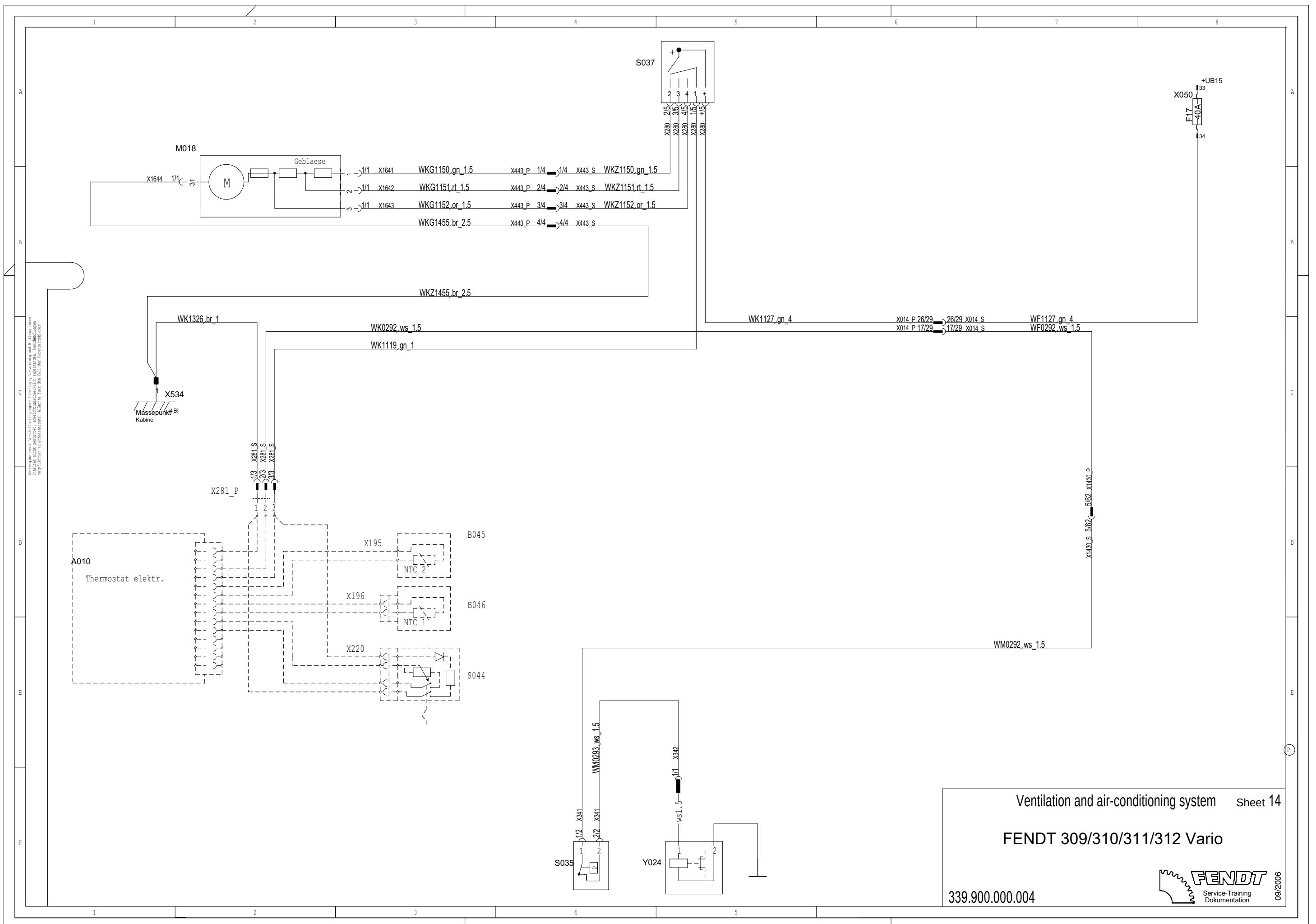
Sheet 13

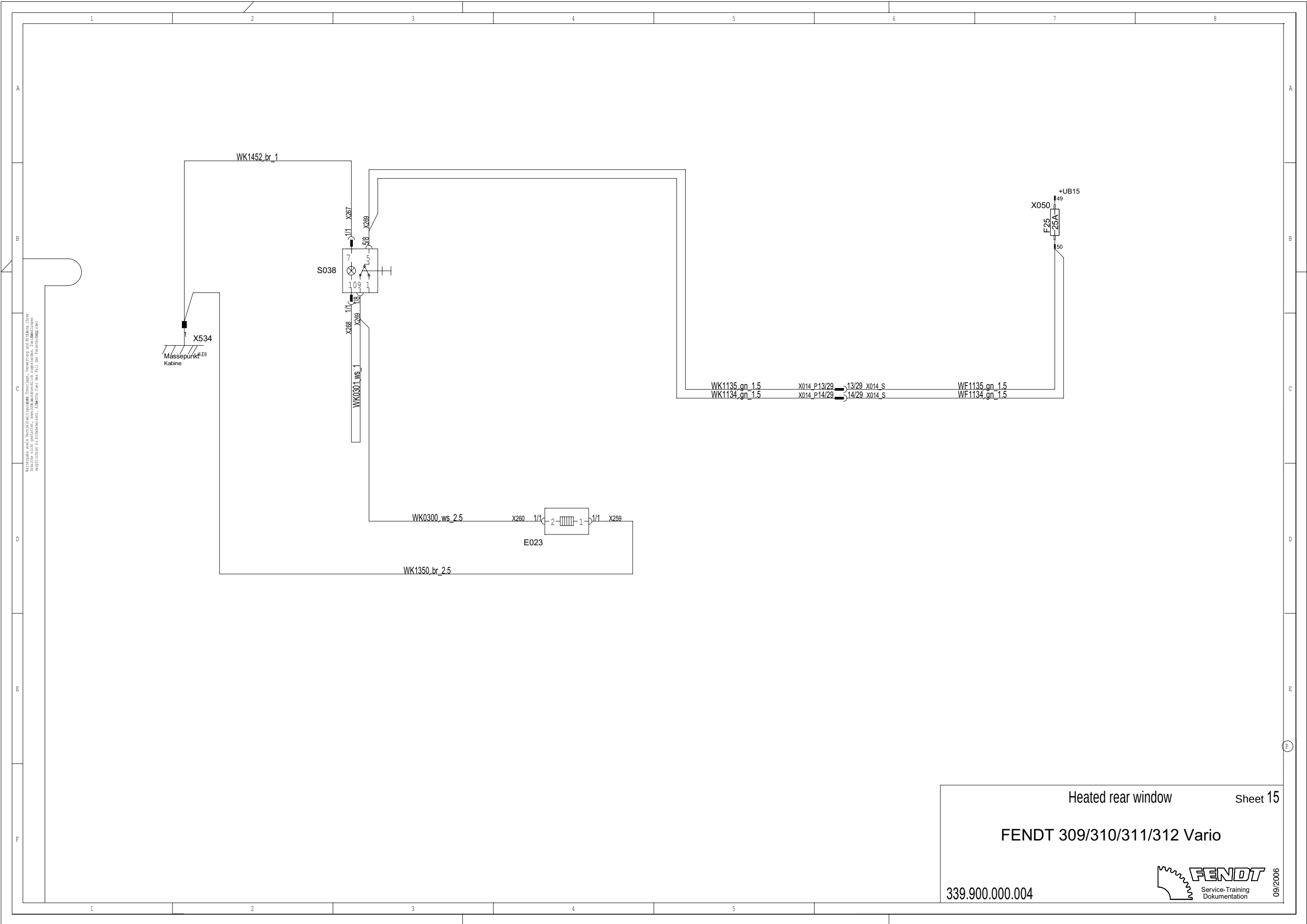
FENDT 309/310/311/312 Vario

339.900.000.004



09/2006





Heated rear window

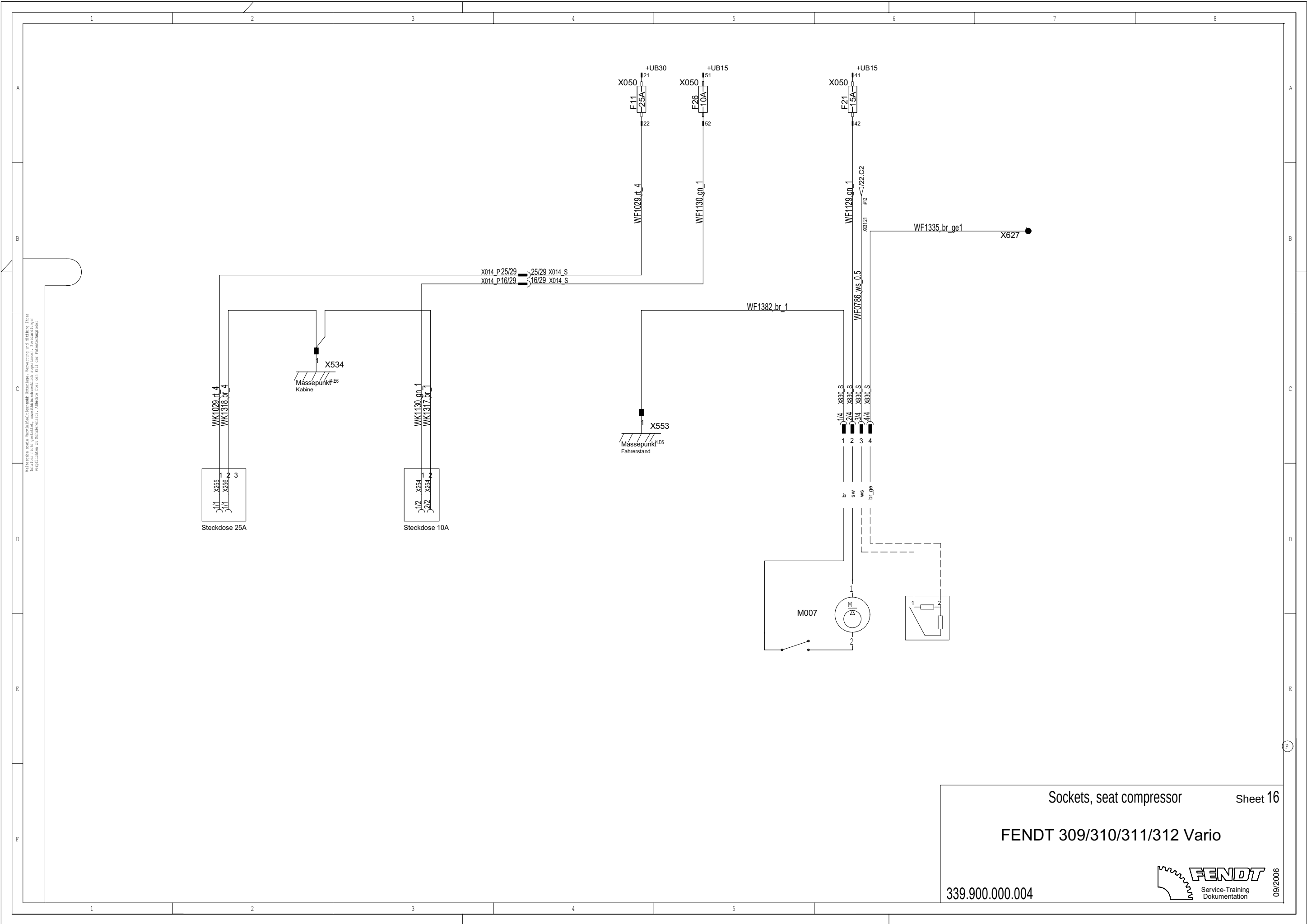
Sheet 15

FENDT 309/310/311/312 Vario

339.900.000.004


Service-Training
Dokumentation

09/2006



Sockets, seat compressor

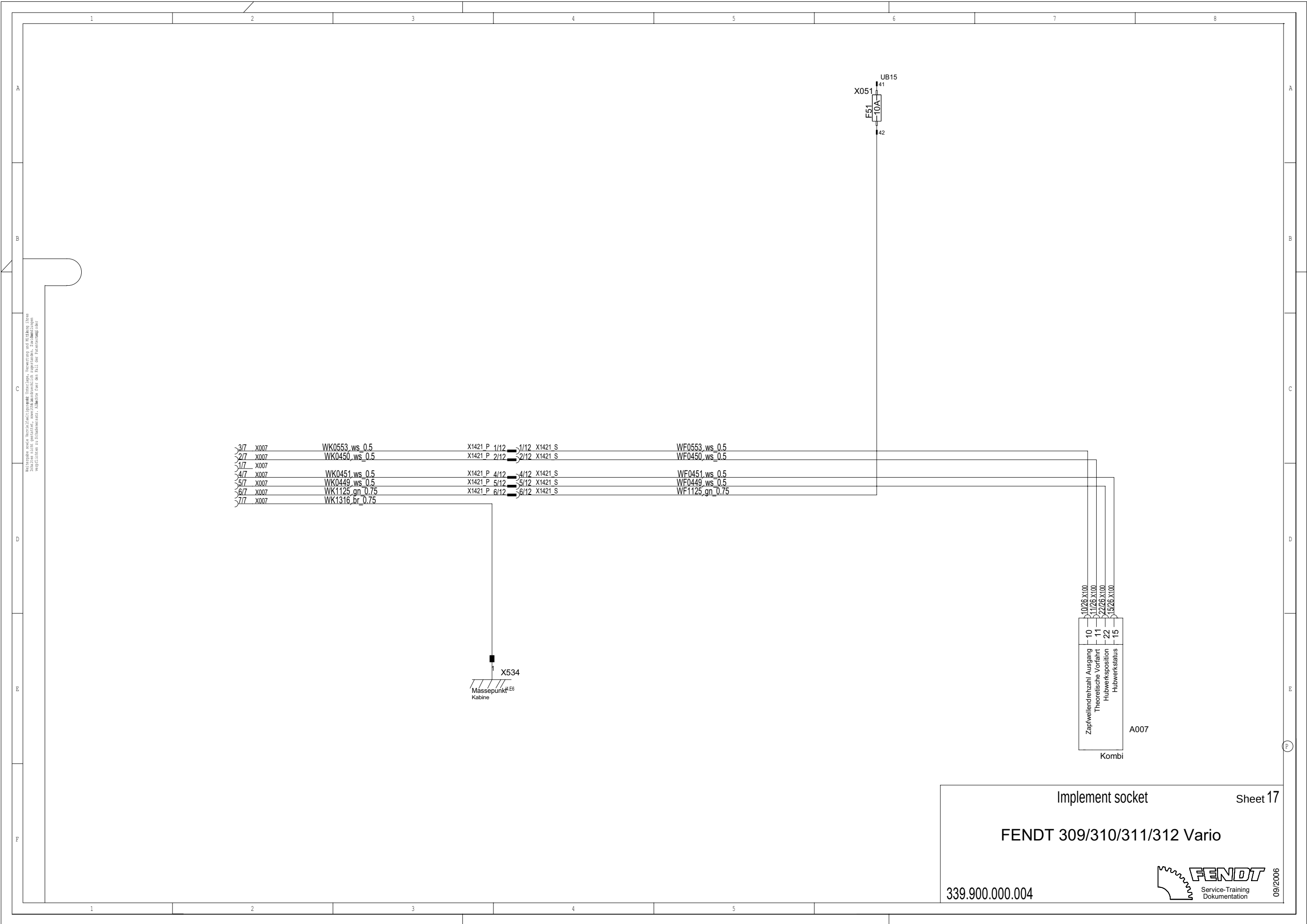
Sheet 16

FENDT 309/310/311/312 Vario

339.900.000.004



09/2006



Implement socket

Sheet 17

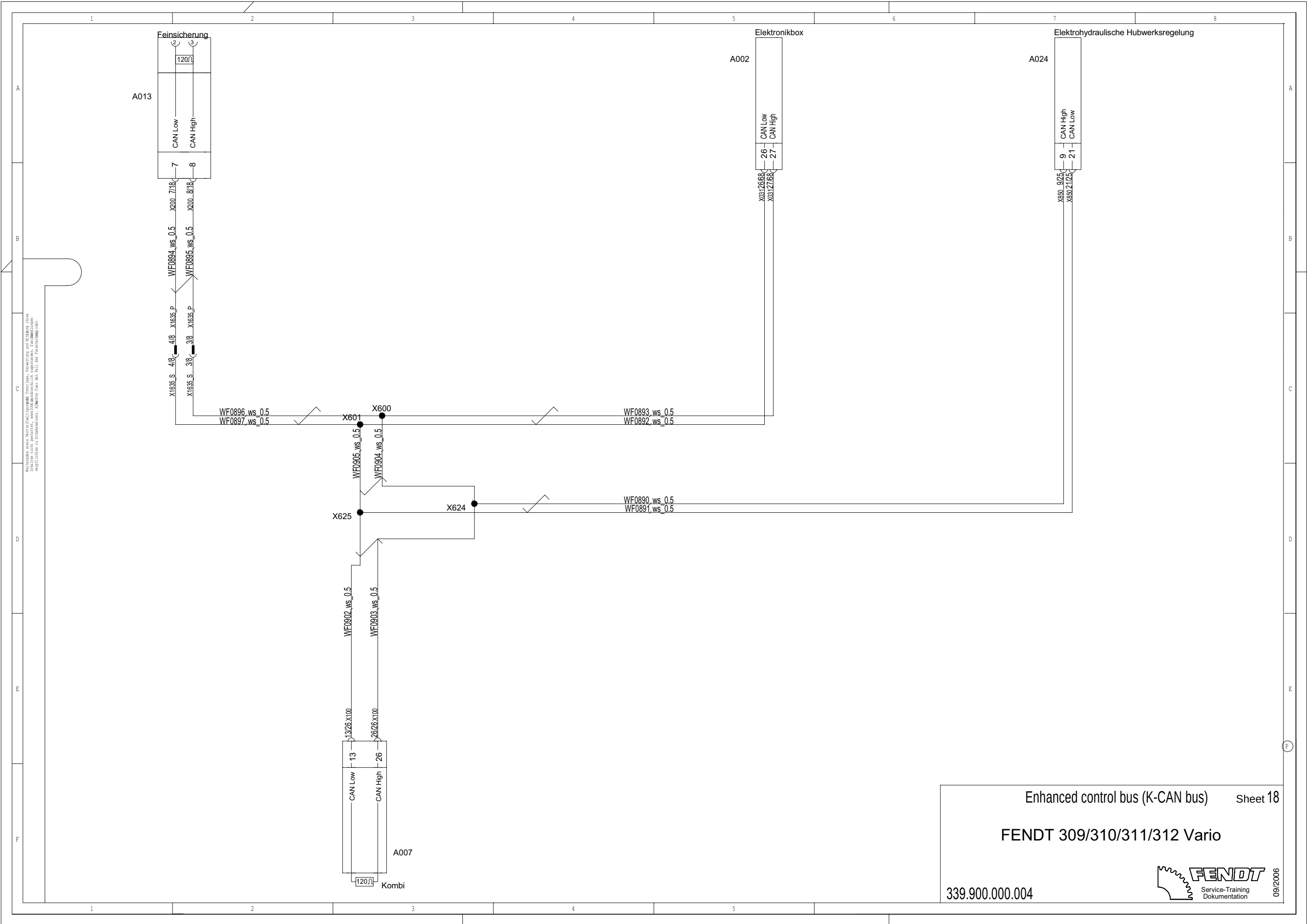
FENDT 309/310/311/312 Vario

339.900.000.004



Service-Training
Dokumentation

09/2006



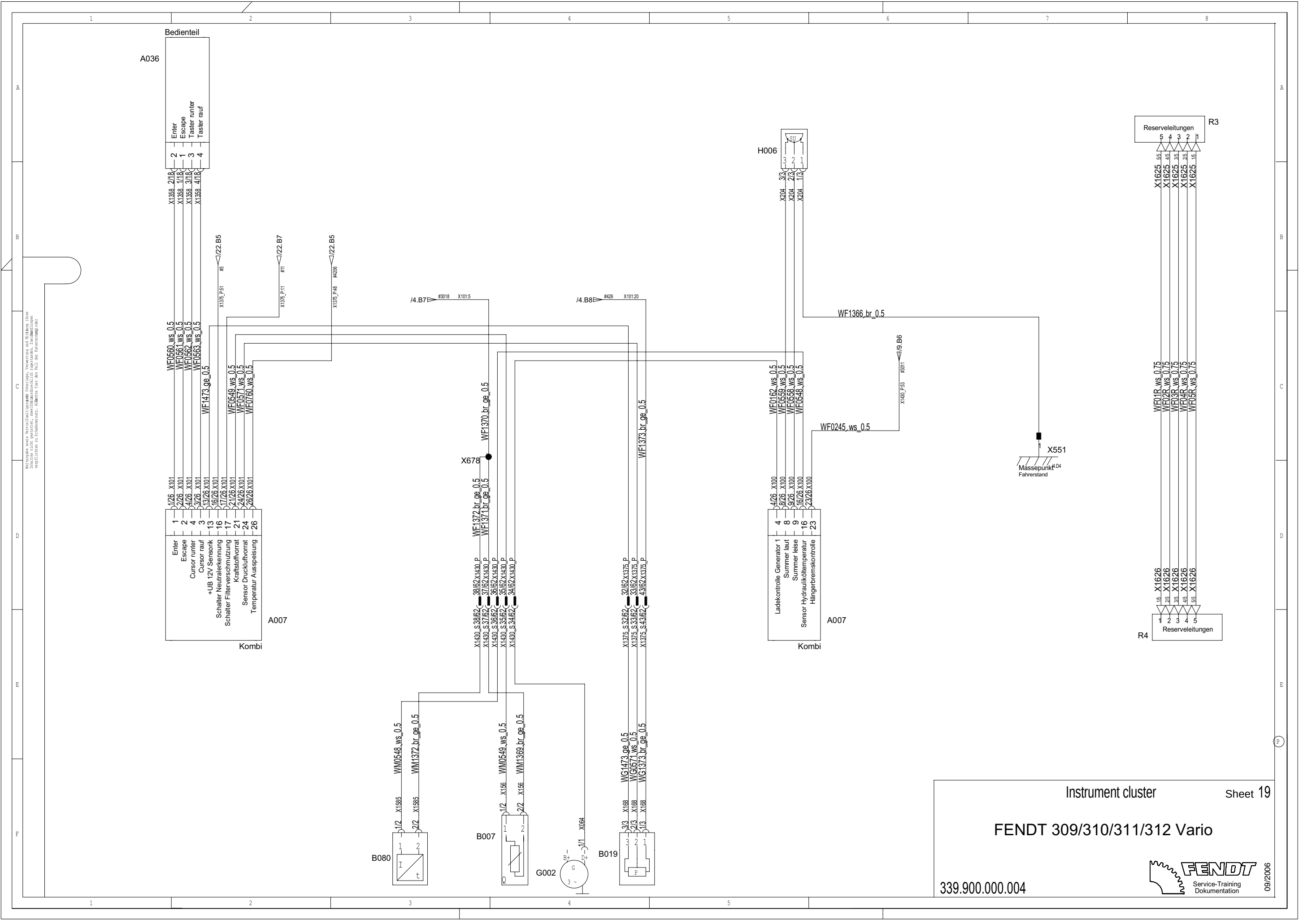
Enhanced control bus (K-CAN bus) Sheet 18

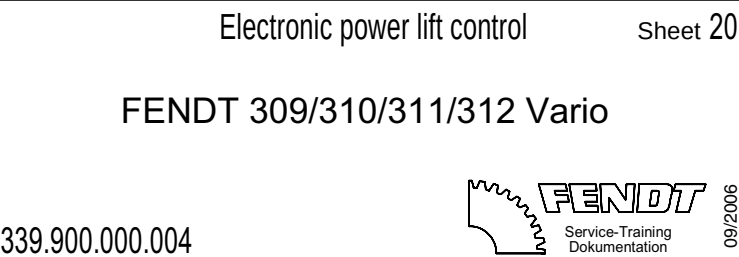
FENDT 309/310/311/312 Vario

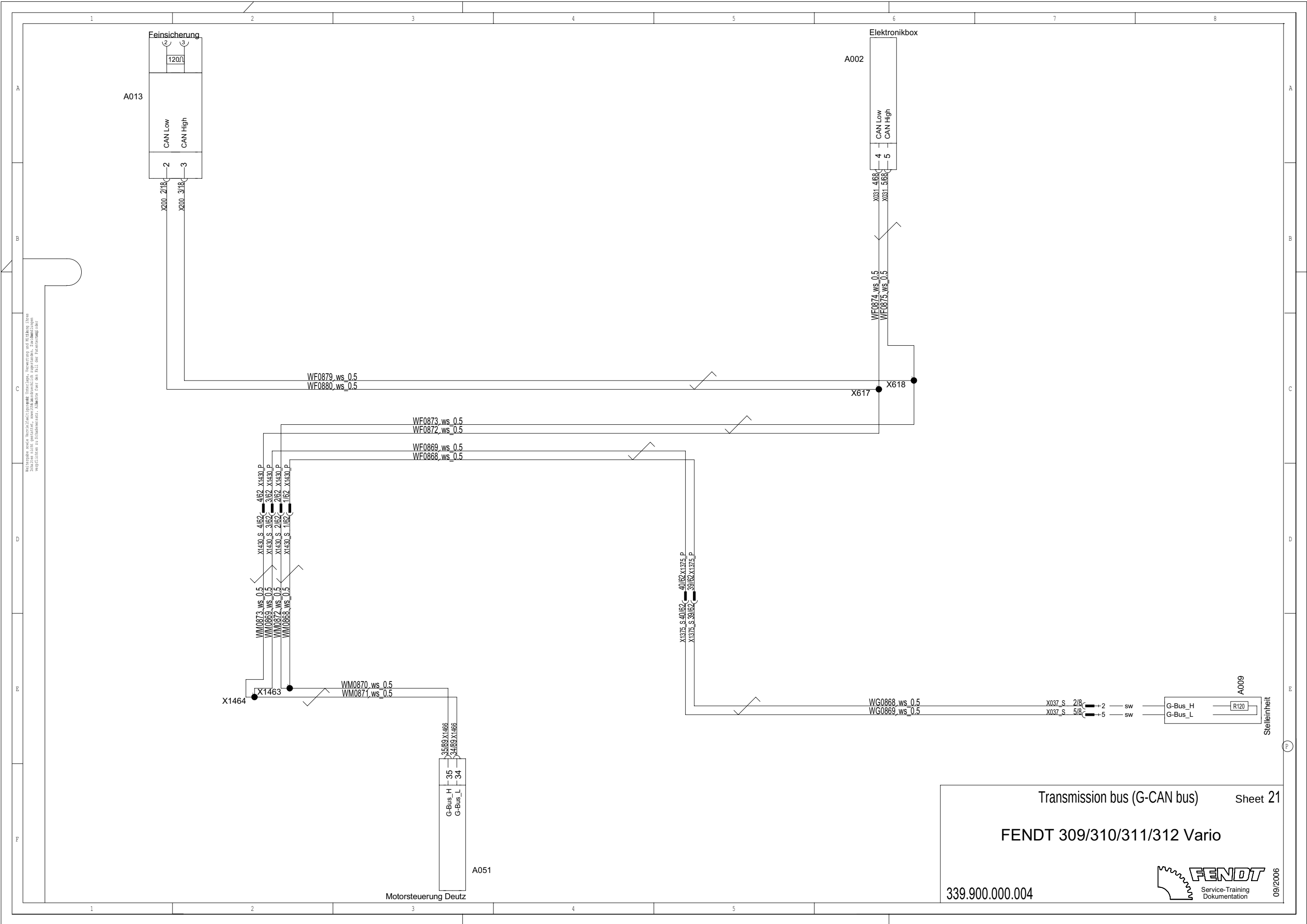
339.900.000.004



09/2006







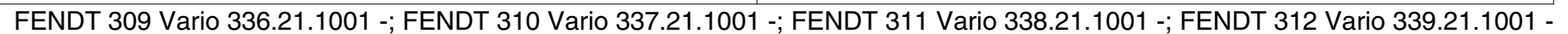
Transmission bus (G-CAN bus) Sheet 21

FENDT 309/310/311/312 Vario

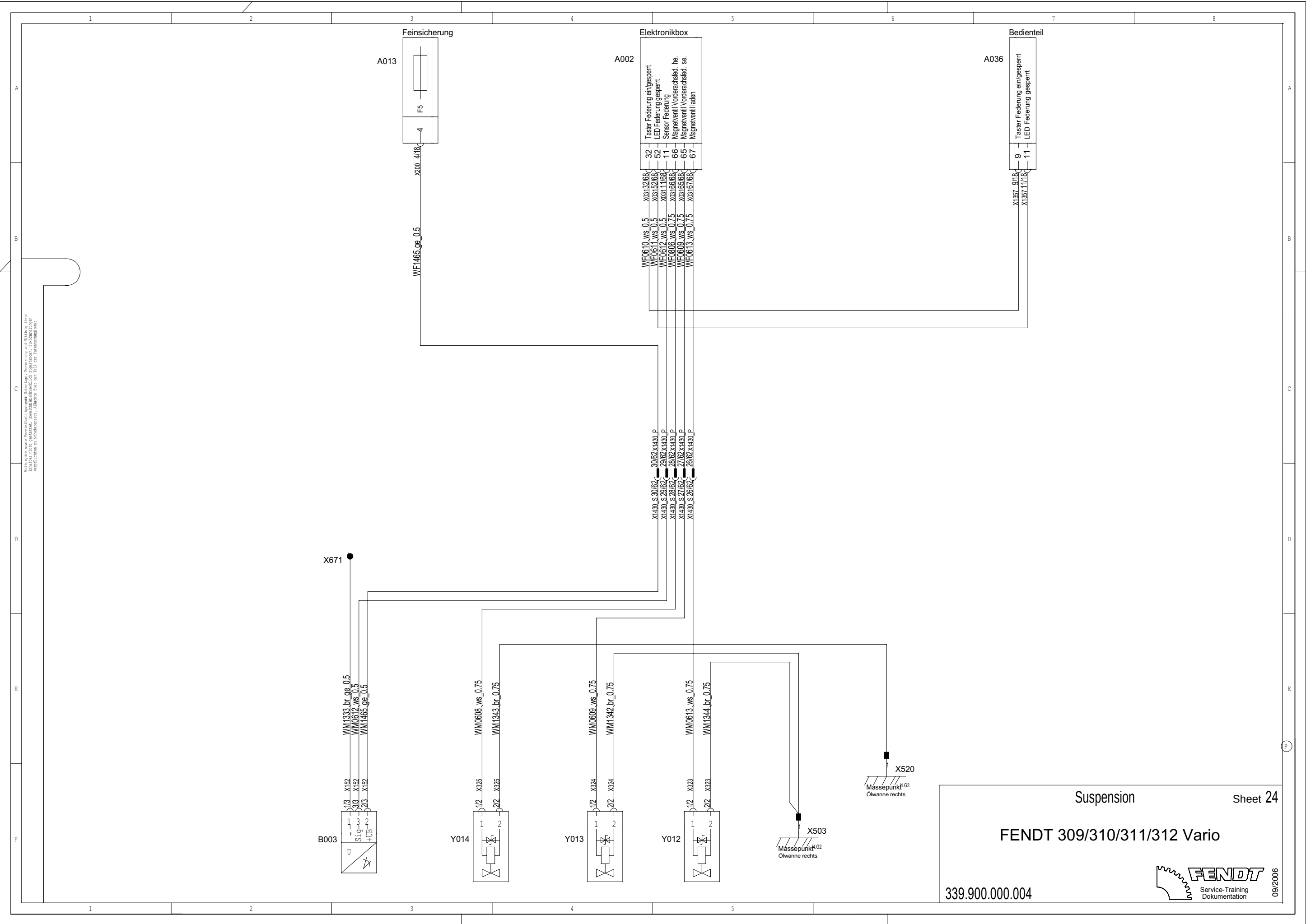
339.900.000.004

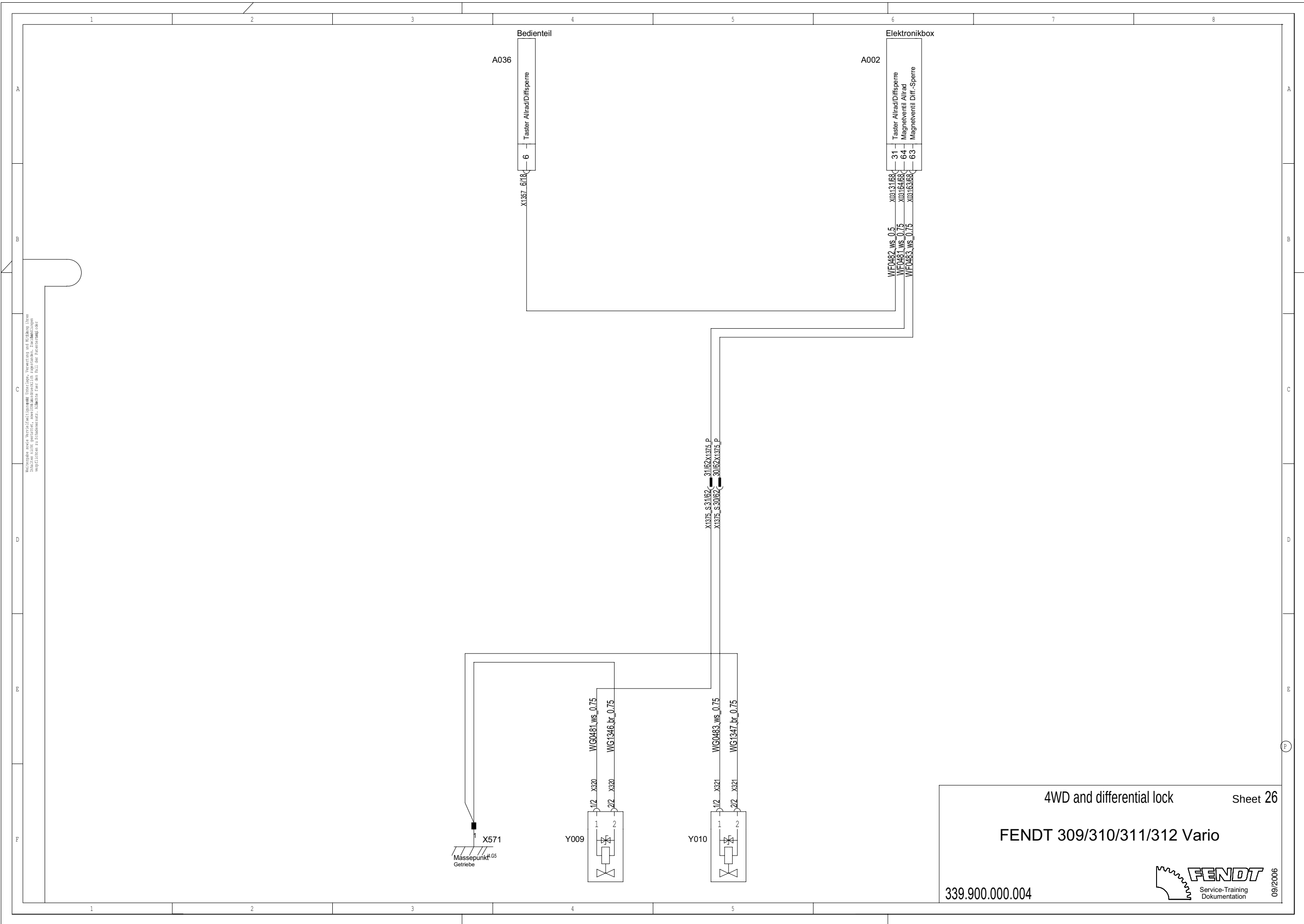


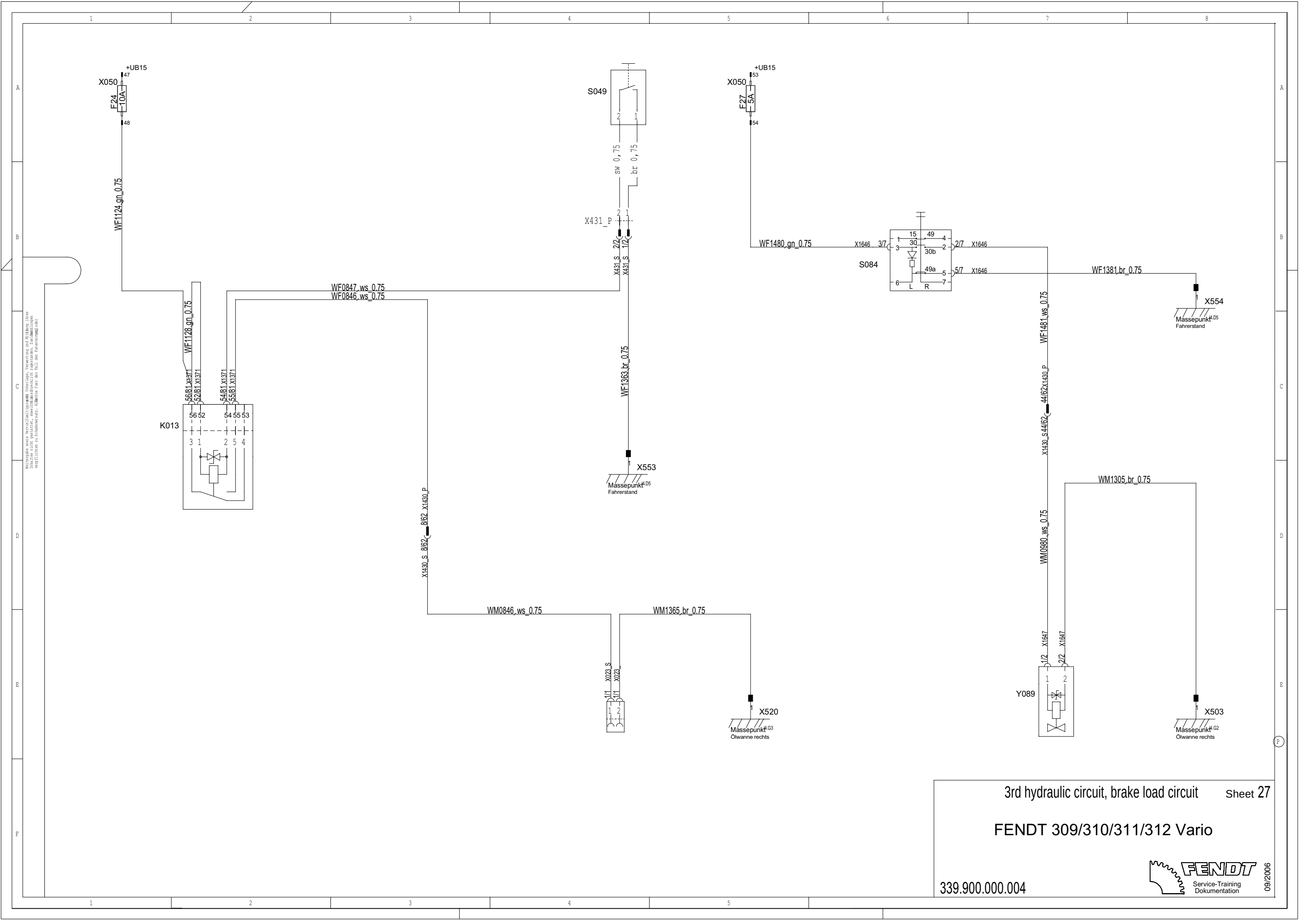
09/2006

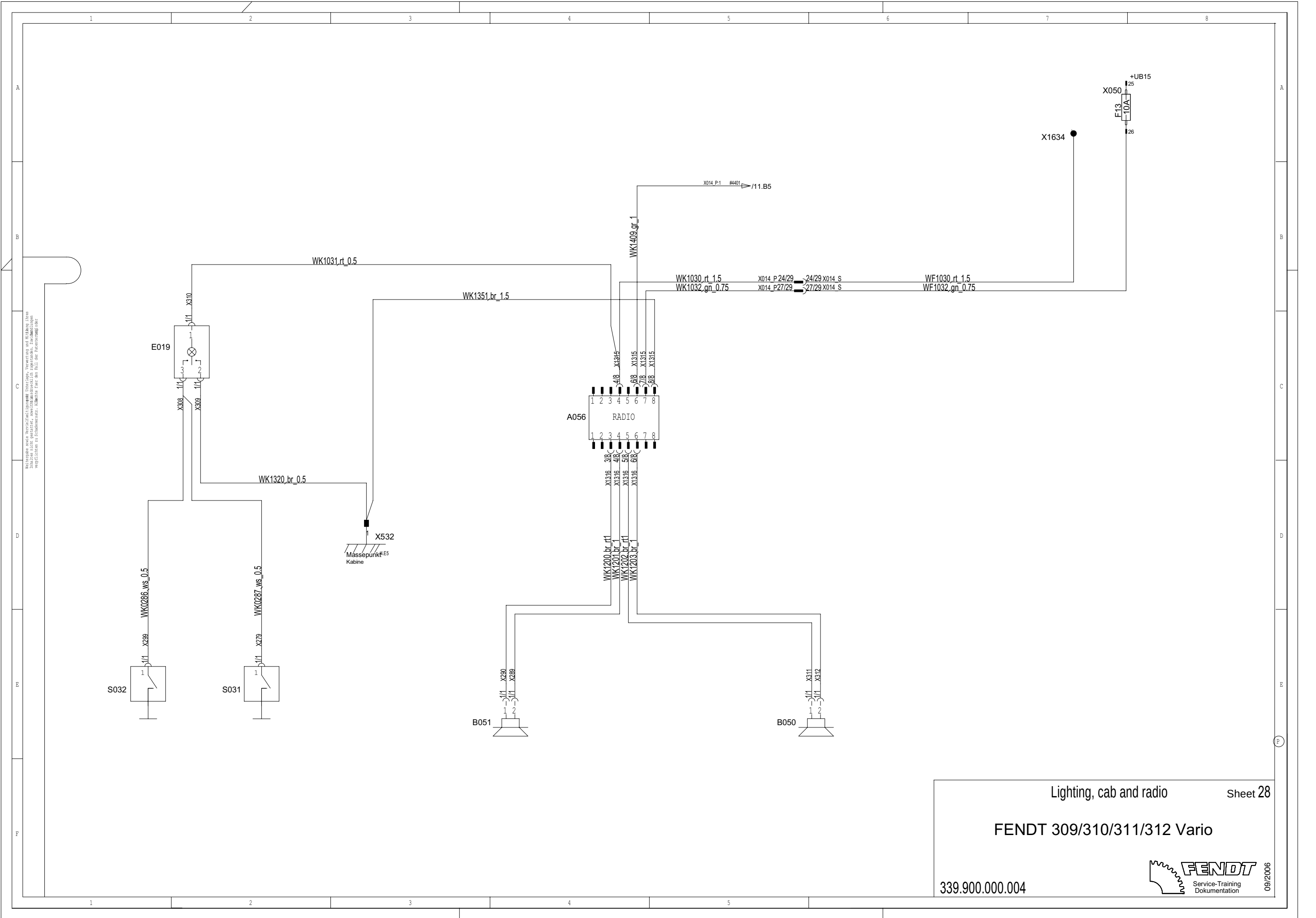


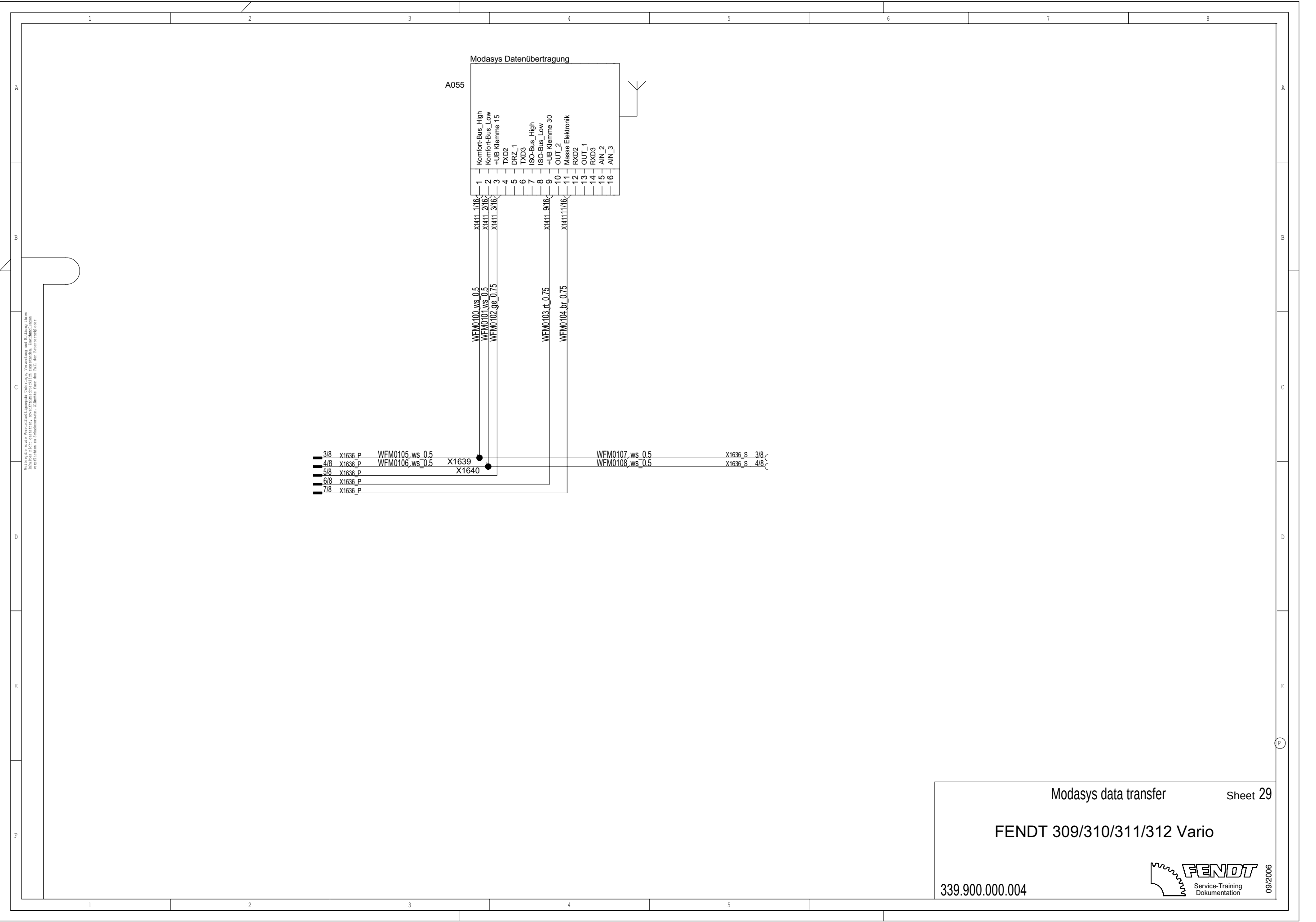


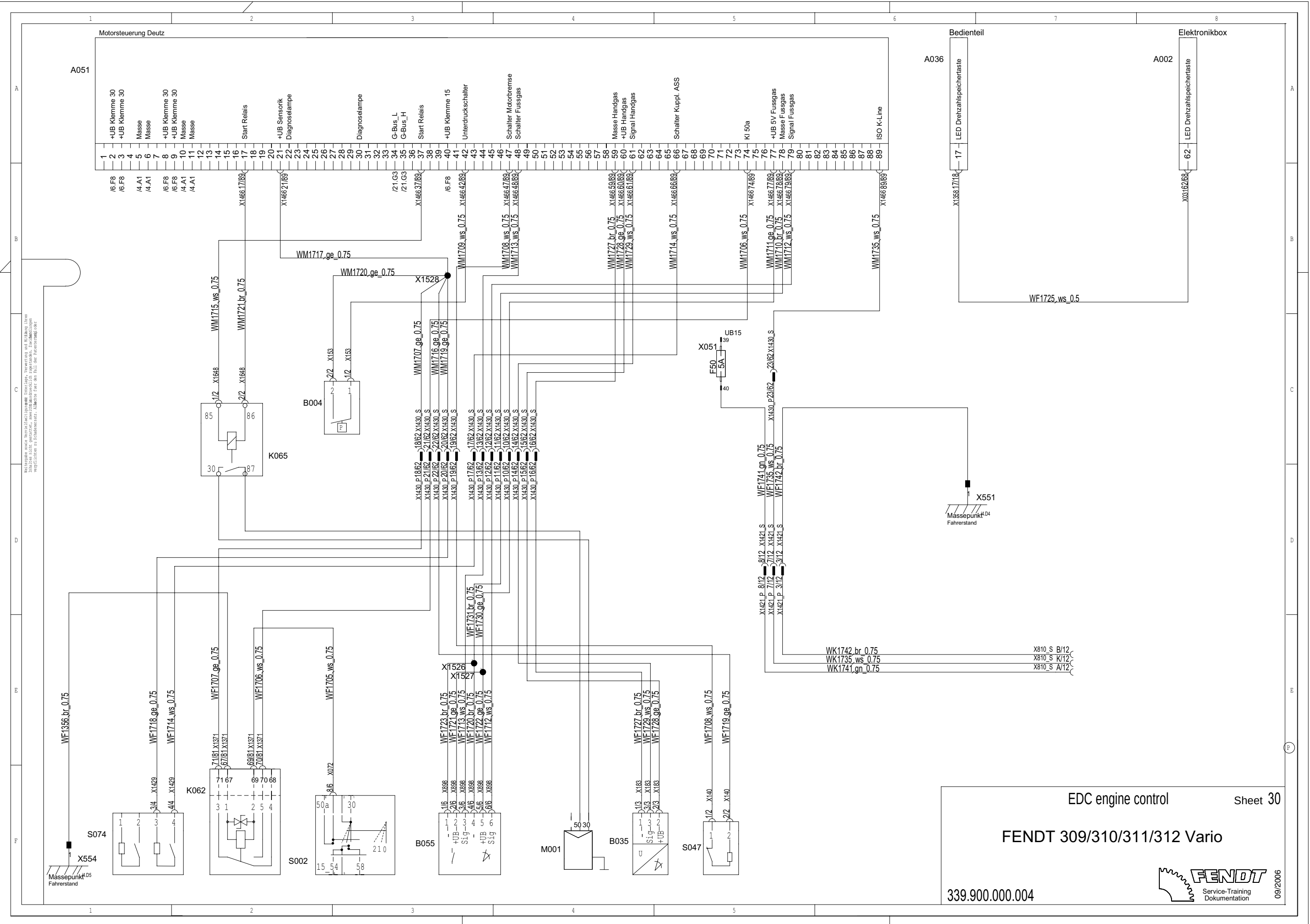




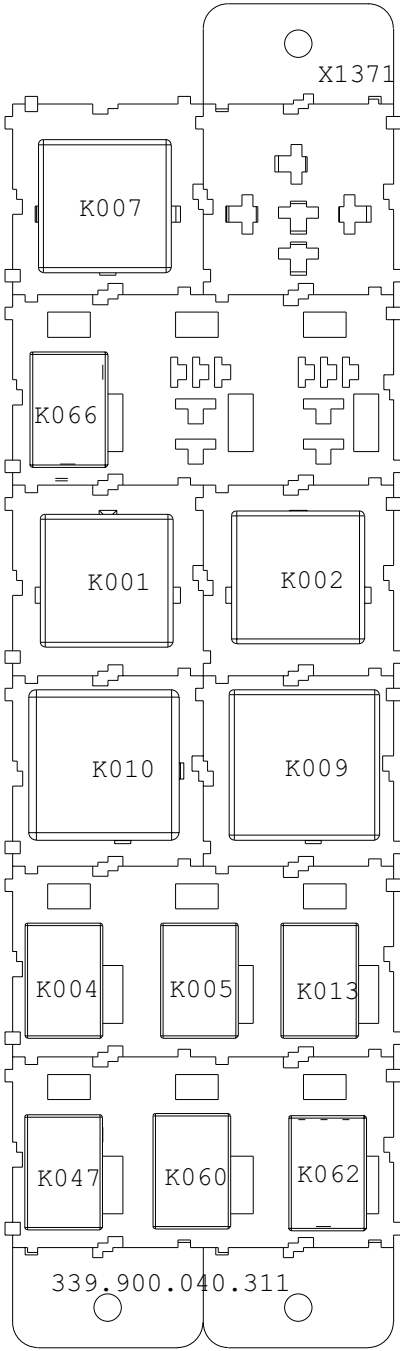








Ansicht von Oben



Appendix relay position

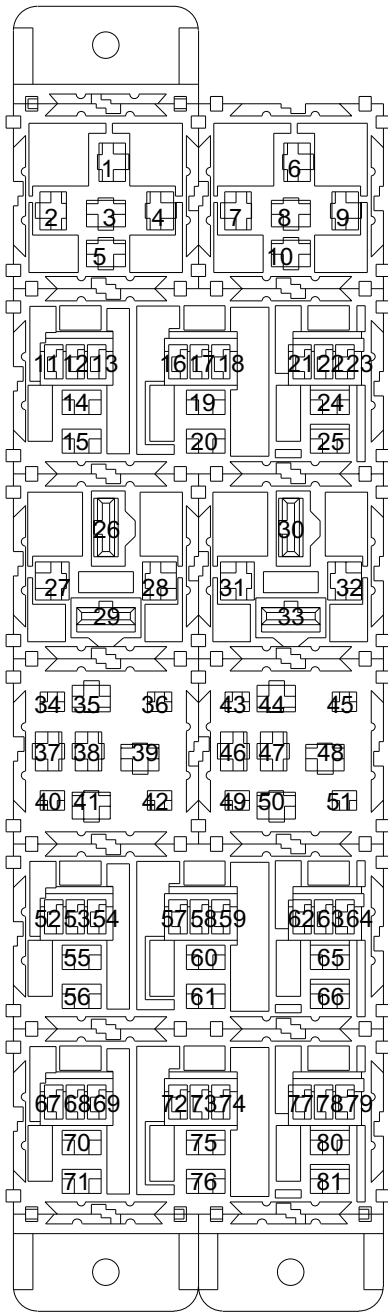
Sheet 31

FENDT 309/310/311/312 Vario

339.900.000.004



Ansicht hinten



Appendix relay design Sheet 32

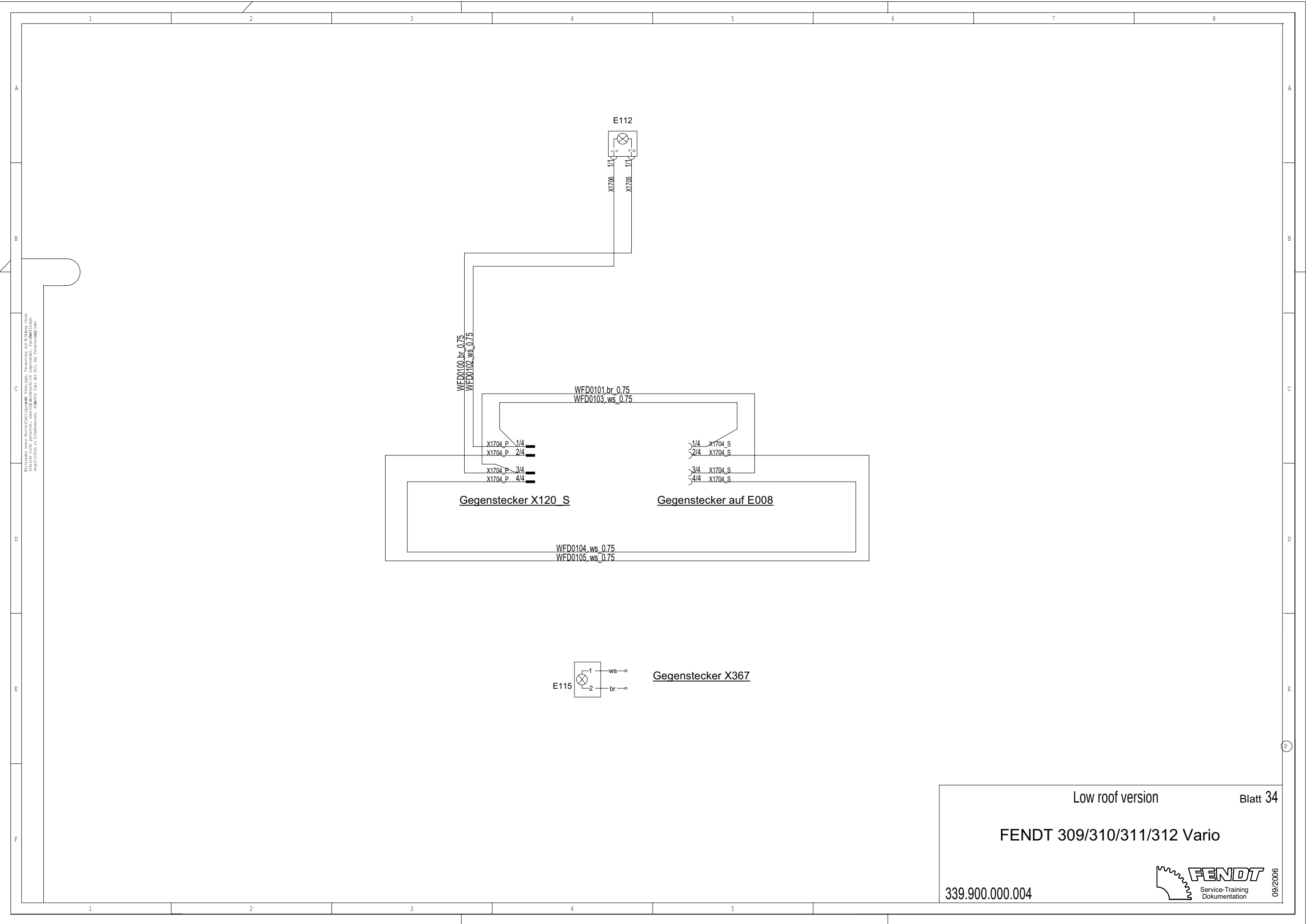
FENDT 309/310/311/312 Vario

339.900.000.004



09/2006





Service Training

Electrical and hydraulic circuit diagrams

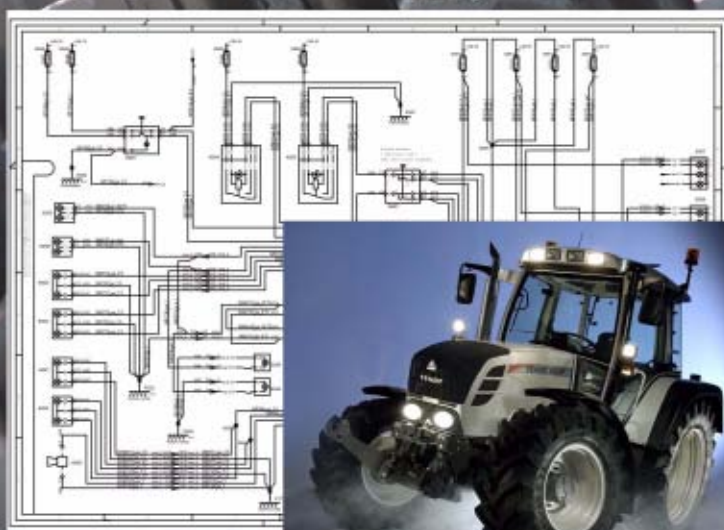
FENDT 300 Vario COM III

336 .. 1149-

337 .. 1216-

338 .. 1157-

339 .. 1526-



X990.005.455.010 - Englisch



Editon
06/2007

9000 - OVERALL SYSTEM/ELECTRICAL SYSTEM**C - Documents and diagrams**

Fuse assignment – fuse holders X050, X051 and A013	3
Component overview FENDT 300 Vario – COM III.....	7
Microfuse, instrument panel, control panel – Sheet 2.....	19
Electronics box – Sheet 3	21
Earth layout – Sheet 4	23
Power supply – Sheet 5.....	25
Electronics power supply – Sheet 6	27
Lighting with warning horn – Sheet 7.....	29
Indicator unit – Sheet 8.....	31
Brake light, compressed air pilot control system, hydraulic brake – Sheet 9	33
Wiper, rotating beacon – Sheet 10	35
Front work light – Sheet 11	37
Rear work light – Sheet 12	39
Heater – Sheet 13.....	41
Ventilation and air conditioning system – Sheet 14	43
Heated rear window – Sheet 15.....	45
Sockets, seat compressor – Sheet 16.....	47
Implement socket – Sheet 17	49
Enhanced control bus (CAN bus) – Sheet 18.....	51
Instrument panel – Sheet 19	53
Electronic power lift control – Sheet 20	55
Transmission bus – Sheet 21	57
Transmission control system – Sheet 22.....	59
Transmission control system – Sheet 23.....	61
Suspension – Sheet 24.....	63
PTOs – Sheet 25.....	65
4WD and differential lock – Sheet 26.....	67
3. Hydraulic circuit, brake power supply – Sheet 27.....	69
Lighting, cab and radio – Sheet 28	71
Modasys data transfer – Sheet 29.....	73
EDC engine control – Sheet 30	75
Relay block X1371 (plan view) – Sheet 31	77
Relay block X1371 (underside view) – Sheet 32.....	79
Engine control, Deutz – Sheet 33.....	81
Low roof version – Sheet 34	83
Hands-free device – Sheet 35	85

1005 - TRANSMISSION/TRANSMISSION CONTROL SYSTEM**C - Documents and diagrams**

Transmission hydraulics circuit diagram – 339.100.000.002.....	87
--	----

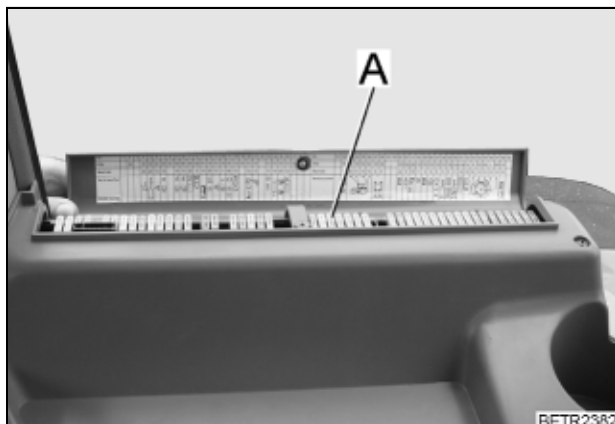
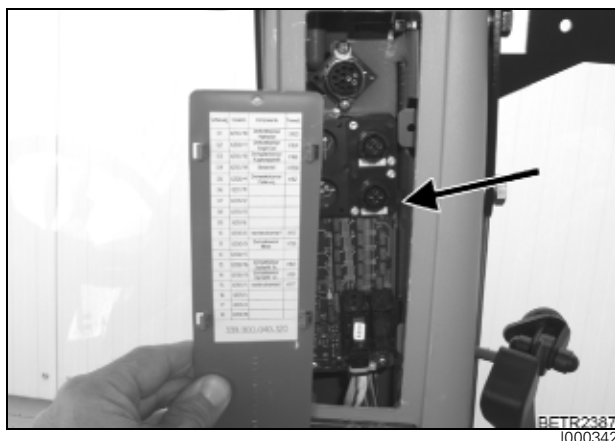
9600 - OVERALL SYSTEM/HYDRAULIC EQUIPMENT**C - Documents and diagrams**

Working and steering hydraulics circuit diagram – 339.950.000.001	89
---	----

Table of contents



OVERALL SYSTEM/ELECTRICAL SYSTEM

Fuse assignment – fuse holders X050, X051 and A013**C****DANGER:****Use only genuine fuses! The use of over-rated fuses will destroy the electrical unit! Fire hazard!****Fuse holder (X050, X051, F060-F066)****Fuse holder (A013)**

Service Training



OVERALL SYSTEM/ELECTRICAL SYSTEM

Fuse assignment – fuse holders X050, X051 and A013

C

Fuse holder X050

Nr.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
PIN				30	30	30	30		30	30	30	30	15	15	15	15	15	15		15	15		15	15	15	15	15	30	
Wert(A)				25	25	15	15		15	15	25	5	10	10	15	5	40	15		10	15		15	10	25	10	5	10	
Verbraucher																													
339.900.040.302																													

BETR1898

1000343

Fuse no.	PIN	Value (A)	Consumer
1	-	-	-
2	-	-	-
3	-	-	-
4	30	25	Preheat starter switch, ON position
5	30	25	Engine control
6	30	15	Pressure switch, hazard warning light
7	30	15	Pressure switch, drive light
8	30	10	-
9	30	15	Relay no. 56a (main beam)
10	30	15	Relay No. 56b (dipped beam)
11	30	25	25 A socket
12	30	5	EPC
13	15	10	Radio
14	15	15	Heater switch
15	15	15	Pressure switch, hazard warning light
16	15	5	Pressure switch, drive light
17	15	40	Fan switch
18	15	15	Front windscreen wipers pulse generator
19	15	10	-
20	15	10	Steering column switch (combination switch)
21	15	15	Driver seat, seat heater
22	-	-	-
23	15	15	Brake relay
24	15	10	3rd hydraulic circuit relay
25	15	25	Rear window heater, mirror heater
26	15	10	10 A socket
27	15	5	E-box, instrument panel
28	30	10	Hydraulic trailer brake load switchover
29	15	25	Not assigned



OVERALL SYSTEM/ELECTRICAL SYSTEM

Fuse assignment – fuse holders X050, X051 and A013

C

Fuse holder X051

Nr.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
PIN		58	58	58	58	58	58	58			30E	30E	30E	15E	15E	15E	15E	15E	15E	15/58	15/58	15/58	R	54	58L	L	58R	30	
Wert(A)		5	25	15	15	15	5	5			40	10	15	5	5	5	5	5	5	5	10	10	10	10	10	10	10	5	
Verbraucher																													

BETR1897

1000344

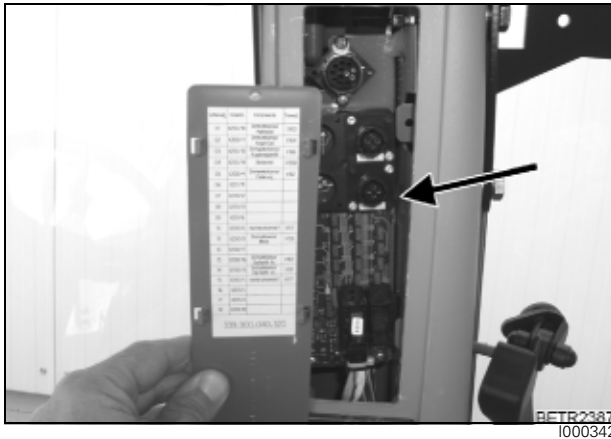
Fuse no.	PIN	Value (A)	Consumer
31	-	-	-
32	58	5	Instrument panel, control panel
33	58	25	Front work lights switch
34	58	25	Front work lights switch
35	58	25	Rear work lights switch
36	58	25	Rear work lights switch
37	58	5	Rear right tail lamp, right position light
38	58	5	Rear left tail lamp, left position light
39	-	-	-
40	-	-	-
41	30E	40	Enhanced control E-box
42	30E	10	Fuse board
43	30E	15	Control, actuator
44	15E	5	Control panel
45	15E	5	Enhanced control E-box
46	15E	5	Terminal
47	15E	5	Turbo clutch solenoid valve
48	15E	5	Engine control
49	15E	5	Instrument panel, Modasys
50	15/58	5	Engine control diagnostics
51	15/58	10	Implement socket, communications box power supply
52	15/58	10	EPC
53	R	10	Front socket for front power lift, trailer socket
54	54	10	Trailer socket
55	58L	10	Front socket for front power lift, trailer socket
56	L	10	Front socket for front power lift, trailer socket
57	58R	10	Trailer socket
58	30	10	Battery disconnect relay
59	-	-	-



OVERALL SYSTEM/ELECTRICAL SYSTEM

Fuse assignment – fuse holders X050, X051 and A013

C



Fuse holder (A013)

Fuse assignment, fuse holder (A013)

Fuse no.	Separation point	Component	Comp. Separation point
01	X200/10	Hydrostat speed sensor	X163
02	X200/11	Bevel pinion speed sensor	X164
03	X200/12	Rotary position sensor, clutch pedal	X166
04	X200/14	Control panel	X1358
05	X200/4	Rotary position sensor, suspension	X152
06	X201/11	-	-
07	X201/12	-	-
08	X201/13	-	-
09	X201/6	-	-
10	X200/6	High-pressure sensor 1	X157
11	X200/9	Engine speed sensor	X159
12	X200/17	-	-
13	X200/16	Rear PTO speed sensor	X169
14	X200/15	Front PTO speed sensor	X151
15	X200/5	High-pressure sensor 2	X177
16	X201/5	-	-
17	X201/4	-	-
18	X201/18	-	-



Component list applies for circuit diagram set 339.900.000.006

NOTE:

The entries in the tractor series column refer to the circuit diagrams concerned (sheet no.)

DIN component designation	Separation point	Circuit diagram sheet no.
A002 - ECU, enhanced control	X031	3, 4, 6, 9, 18, 21, 22, 23, 24, 25, 26, 30
A007 - Instrument panel	X100 X101	2, 4, 6, 7, 8, 17, 18, 19
A009 - Actuator unit	X037	21, 22
A010 - Thermostat (air conditioning system)	X281	14
A011 - Radar sensor	X479	25
A013 - PCB, microfuses	X200 X201 X202	2, 4, 6, 18, 21, 22, 23, 24, 25
A024 - ECU, EPC B	X850	18, 20
A034 - Driving switch, CAN bus	X1050	3, 6, 22, 23, 29
A035 - Control panel, EPC B	X1353	20
A036 - Control panel, comfort actuation	X1357 X1358	2, 4, 6, 19, 22, 23, 24, 25, 26, 30
A051 - ECU, engine control unit (EDC 7).	X1466	4, 6, 21, 30, 33
A055 - Modasys	X1411	29
A056 - Radio	X1315 X1316	28, 35
A060 - Hands-free device	X1765	3, 35

DIN component designation	Separation point	Circuit diagram sheet no.
B002 - Sensor, front PTO speed	X151	25
B003 - Sensor, front axle suspension position	X152	24
B004 - Vacuum switch (air filter)	X153	30
B007 - Level sensor (fuel)	X156	19
B008 - Sensor, high-pressure 1	X157	22
B009 - Discharge temperature	X158	22
B010 - Sensor, engine speed	X159	23
B014 - Sensor, hydrostatic collecting shaft	X163	22
B015 - Sensor, bevel pinion	X164	22
B017 - Sensor, clutch pedal	X166	23
B019 - Sensor, compressed air supply	X168	19
B020 - Sensor, rear PTO speed (stub shaft)	X169	25
B030 - Sensor, rear power lift position	X178	20
B031 - Sensor, right draught sensing pin	X179	20
B032 - Sensor, left draught sensing pin	X180	20
B035 - Sensor, hand throttle	X183	30
B039 - Sensor, high-pressure 2	X177	22
B045 - Sensor, air conditioning system 1	X195	14
B046 - Sensor, air conditioning system 2	X196	14



OVERALL SYSTEM/ELECTRICAL SYSTEM

Component overview FENDT 300 Vario – COM III**C**

DIN component designation	Separation point	Circuit diagram sheet no.
B050 - Loudspeaker, left	X311 X312	28
B051 - Loudspeaker, right	X289 X290	28
B055 - Sensor, foot throttle	X898	30
B058 - Depth control (EPC B)	X1356	20
B080 - Sensor, hydraulic oil temperature	X1585	19
B085 - Camshaft speed	X1654	33
B086 - Rail pressure sensor	X1655	33
B087 - Fuel low pressure	X1656	33
B088 - Crankshaft speed	X1657	33
B089 - Temperature sensor, Deutz	X1658	33
B090 - Sensor, oil pressure	X1659	33
B091 - Sensor, water in fuel	X1660	33
B092 - Sensor, charge air pressure/temperature	X1661	33
B094 - Sensor, steering angle (4WD differential lock)	X209	33
B095 - Microphone	X1766	35

DIN component designation	Separation point	Circuit diagram sheet no.
E001 - H4 headlight, right	X350	7
E002 - H4 headlight, left	X351	7
E003 - H4 additional headlight, right	X352	7
E004 - H4 additional headlight, left	X353	7
E005 - Direction indicator/position light, front right	X372 X378 X380	7, 8
E006 - Direction indicator/position light, front left	X373 X379 X381	7, 8
E007 - Tail light rear right	X121	7, 8, 9
E008 - Tail light rear left	X120	7, 8, 9
E009 - Licence plate lighting, right	X374 X375	7
E010 - Licence plate lighting, left	X376 X377	7
E011 - Work light in roof, rear right	X385 X386 X387	12
E012 - Work light in roof, rear left	X388 X389 X390	12
E013 - Work light in roof, front right	X291	11
E014 - Work light in roof, front left	X294	11
E015 - Work light front on right direction indicator	X292 X293	11
E016 - Work light front on left direction indicator	X295 X296	11
E017 - Work light on taillamp holder right	X366	12



OVERALL SYSTEM/ELECTRICAL SYSTEM

Component overview FENDT 300 Vario – COM III**C**

DIN component designation	Separation point	Circuit diagram sheet no.
E018 - Work light on taillamp holder left	X367	12
E019 - Lighting, cab	X308 X309 X310	28
E020 - Lighting (EPC)	X282 X283	11
E021 - Rotating beacon, right	X346	10
E022 - Rotating beacon, left	X345	10
E023 - Rear window heater	X259 X260	15
E037 - Seat heater	X830	7
E049 - Indicator lamp, ABS	X1049	7
E054 - Wide vehicle marker lights, right	X896	34
E055 - Wide vehicle marker lights, left	X897	34

DIN component designation	Separation point	Circuit diagram sheet no.
G001 - Battery 1 (12 VDC)	X060 X067 X505 X581	4, 5
G002 - Alternator 1	X062 X064	5, 19

DIN component designation	Separation point	Circuit diagram sheet no.
H005 - Horn	X998 X999	7
H006 - Audio warning signal	X204	19
H007 - Signaltongeber, Rückwärtsfahrt	X1544	23

DIN component designation	Separation point	Circuit diagram sheet no.
K001 - Relay, + UB 15 (switched positive)	X1371	5, 31
K002 - Relay, + UB 58 (lighting)	X1371	5, 31
K004 - Relay, 56a (main beam)	X1371	7, 31
K005 - Relay, 56b (dipped beam)	X1371	7, 31
K007 - Relay, brake	X1371	9, 31
K009 - Relay, windscreen wiper	X1371	10, 31
K010 - Relay, direction indicator sensor	X1371	8, 31
K013 - Relay, hydraulic circuit 3	X1371	27, 31
K047 - Relay, hydraulic trailer brake (Italy)	X1371	9, 31
K060 - Relay, clutch/turbo-clutch	X1371	22, 31
K063 - Heater flange relay	X1663 X1664 X1665	33



OVERALL SYSTEM/ELECTRICAL SYSTEM

Component overview FENDT 300 Vario – COM III**C**

DIN component designation	Separation point	Circuit diagram sheet no.
K064 - Battery disconnect relay	X1696 X1697 X1698 X1699	5
K065 - Starter relay	X1648	30
K066 - Relay, compressed air pilot control	X1371	9, 31

DIN component designation	Separation point	Circuit diagram sheet no.
M001 - starter.	X061	5, 30
M002 - Front wiper motor	X347	10
M003 - Wiper pump, front	X301	10
M004 - Rear wiper motor	X258	10
M005 - Wiper pump, rear	X303	10
M007 - Motor, seat adjustment (seat compressor)	X830	16
M009 - Motor, heater fan	X285 X286 X287 X288	13
M014 - Roof fan (continuous) (optional)	X460	14
M018 - Roof fan (3-speed)	X1641 X1642 X1643 X1644	14

DIN component designation	Separation point	Circuit diagram sheet no.
R002 - Heater flange	X991 X1701	33

DIN component designation	Separation point	Circuit diagram sheet no.
S001 - Switch, steering column	X215 X245	7, 8, 10
S002 - Switch, ignition	X072	5, 30
S003 - Switch, drive light	X080	7
S004 - Switch, hazard warning light	X216	8
S005 - Switch, right brake	X217	9
S006 - Switch, left brake	X218	9
S007 - Switch, additional headlight	X219	7
S008 - Switch, front work light	X275	11
S009 - Switch, rear work light	X274	12
S010 - Switch, rear wiper motor	X273	10
S011 - Switch, rotating beacon	X270 X271 X272	10
S015 - Switch, hand brake	X226	9, 22
S017 - Switch, transmission oil contamination	X228	22



OVERALL SYSTEM/ELECTRICAL SYSTEM

Component overview FENDT 300 Vario – COM III**C**

Service Training

DIN component designation	Separation point	Circuit diagram sheet no.
S019 - Switch (external), rear left PTO	X229	25
S020 - Switch (external), rear right PTO	X230	25
S027 - Switch (external), raise rear power lift, right	X237	20
S028 - Switch (external), lower rear power lift, right	X238	20
S029 - Switch (external), raise rear power lift, left	X239	20
S030 - Switch (external), lower rear power lift, left	X240	20
S031 - Switch, right door contact	X279	28
S032 - Switch, left door contact	X299	28
S033 - Switch, heater fan	X247	13
S035 - Switch, high-pressure/low-pressure (air conditioning system)	X341	14
S037 - Switch, heater fan (3-speed)	X280	14
S038 - Switch, rear window heater	X267 X268 X269	15
S044 - Potentiometer, air conditioning system	X220	14
S047 - Switch, engine brake	X140	30
S048 - Switch, lock EPC	X148	20
S049 - Switch, hydraulic circuit 3	X431	27
S056 - Switch, oil flow collector	X1019	20
S059 - Switch, hydraulic trailer brake	X1056	9
S061 - Switch, quick reverse	X1040	23
S069 - Switch, roof fan (continuous)	X468	14
S070 - Switch, transmission range (travel range)	X1340	22
S071 - Switch, quick entry/hitch	X1355 X1359 X1360	20
S072 - Switch, quick lift	X1354 X1361 X1362 X1363	20
S074 - Switch, transmission neutral,	X1429	22, 30
S083 - Switch, battery disconnect relay	X1645	5
S084 - Switch, hydraulic trailer brake ON/OFF (France)	X1646	27

DIN component designation	Circuit diagram sheet no.
X007 - Implement socket	17
X014 - Cable coupling, cab/operator platform	7, 8, 10, 11, 12, 14, 15, 16, 28
X016 - Cable coupling	7, 12
X017 - Front socket near front power lift	7, 8
X018 - Trailer socket	7, 8, 9
X023 - Socket, hydraulic circuit 3	27
X031 - Separation point on A002 ECU, enhanced control	4, 6, 9, 18, 21, 22, 23, 24, 25, 26, 30
X037 - Separation point on A009 actuator unit	21, 22
X050 - Fuse holder 1	5, 6, 7, 8, 9, 10, 13, 14, 15, 16, 20, 27, 28



OVERALL SYSTEM/ELECTRICAL SYSTEM

Component overview FENDT 300 Vario – COM III**C**

DIN component designation	Circuit diagram sheet no.
X051 - Fuse holder 2	5, 6, 7, 8, 9, 11, 12, 17, 20, 22, 30
X053 - Plus bolts	5
X058 - Battery terminal (+ UB 30)	5
X060 - Separation point on G001 battery, negative terminal (terminal 31)	4
X061 - Separation point on M001 starter (terminal 30)	5
X062 - G002 alternator, terminal B+	5
X064 - Separation point on G002 alternator (terminal D+)	19
X072 - Separation point on S002 ignition	5, 30
X080 - Separation point on S003 switch, headlight	7
X082 - Separation point on S012 switch, starter lockout	33
X086 - Separation point on Y006 solenoid valve, engine brake	36
X100 - Separation point on A007 instrument panel, "blue"	7, 8, 17, 18, 19
X101 - Separation point on A007 instrument panel, "yellow"	4, 6, 19
X109 - Bodywork earth on A002 ECU, enhanced control	4
X120 - Separation point on E008 tail lamp, rear left (direction indicator L)	7, 8, 9
X121 - Separation point on E007 tail lamp, rear right (direction indicator R)	7, 8, 9
X140 - Separation point on S047 switch, engine brake	30
X148 - Separation point on S048 switch, lock EPC	20
X151 - Separation point on B002 sensor, front PTO stub shaft speed	24
X152 - Separation point on B003 sensor, front suspension position	31
X153 - Separation point on B004 vacuum switch (air filter)	30
X156 - Separation point on B007 fuel level sensor	19
X157 - Separation point on B008 sensor, high pressure 1	22
X158 - Separation point on B009 discharge temperature	22
X159 - Separation point on B010 sensor, engine speed	23
X163 - Separation point on B014 sensor, hydrostatic collecting shaft	22
X164 - Separation point on B015 sensor, bevel pinion	22
X166 - Separation point on B017 sensor, clutch pedal	23
X168 - Separation point on B019 sensor, compressed air supply	19
X169 - Separation point on B020 sensor, rear PTO stub shaft speed	25
X177 - Separation point on B039 sensor, high pressure 2	22
X178 - Separation point on B030 sensor, rear power lift position	20
X179 - Separation point on B031 sensor, right draught sensing pin	20
X180 - Separation point on B032 sensor, left draught sensing pin	20
X183 - Separation point on B035 sensor, hand throttle	30
X195 - Separation point on B045 sensor, air conditioning system 1	14
X196 - Separation point on B046 sensor, air conditioning system 2	14
X200 - Separation point on A013 PCB, microfuses	4, 6, 18, 21, 22, 23, 24, 25
X204 - Separation point on H006 audio warning signal	19
X215 - Separation point on S001 switch, steering column	8, 10
X216 - Separation point on S004 switch, hazard warning light	8
X217 - Separation point on S005 switch, right brake	9
X218 - Separation point on S006 switch, left brake	9
X219 - Separation point on S007 switch, auxiliary headlamp	7
X220 - Separation point on S044 switch, air conditioning system	14
X226 - Separation point on S015 switch, hand brake	9, 22
X228 - Separation point on S017 switch, transmission oil contamination	22



OVERALL SYSTEM/ELECTRICAL SYSTEM

Component overview FENDT 300 Vario – COM III**C**

DIN component designation	Circuit diagram sheet no.
X229 - Separation point on S019 switch, rear left PTO "ON"	25
X230 - Separation point on S020 switch, rear right PTO "ON"	25
X237 - Separation point on S027 switch (external), raise rear power lift, right	20
X238 - Separation point on S028 switch (external), lower rear power lift, right	20
X239 - Separation point on S029 switch (external), raise rear power lift, left	20
X240 - Separation point on S030 switch (external), lower rear power lift, left	20
X245 - Separation point on S001 switch, steering column	7, 10
X246 - Separation point on S002 switch, ignition	5
X247 - Separation point on S033 switch, heater fan	13
X254 - 10 amp socket	16
X255 - 25 amp socket (+ supply)	16
X256 - 25 amp socket (earth)	16
X258 - Separation point on M004 rear wiper motor	10
X259 - Separation point on E023 rear window heater (earth)	15
X260 - Separation point on E023 rear window heater (+ supply)	15
X267 - Separation point on S038 switch, rear window heater	15
X268 - Separation point on S038 switch, rear window heater	15
X269 - Separation point on S038 switch, rear window heater	15
X270 - Separation point on S011 switch, rotating beacon	10
X271 - Separation point on S011 switch, rotating beacon	10
X272 - Separation point on S011 switch, rotating beacon	10
X273 - Separation point on S010 switch, rear wiper motor	10
X274 - Separation point on S009 switch, rear work light	12
X275 - Separation point on S008 switch, front work light	11
X276 - Cable coupling, E021 right rotating beacon	10
X279 - Separation point on S031 switch, right door contact	28
X280 - Separation point on S037 switch, heater fan	14
X281 - Cable coupling, air conditioning system	14
X282 - Separation point on E020 EPC lighting (+ supply)	11
X283 - Separation point on E020 EPC lighting (earth)	11
X284 - Cable coupling, M002 front wiper motor	10
X285 - Separation point on M009 heater fan (speed 1)	13
X286 - Separation point on M009 heater fan (speed 2)	13
X287 - Separation point on M009 heater fan (speed 3)	13
X288 - Separation point M009 heater fan (earth)	13
X289 - Separation point on B051 loudspeaker, right	28
X290 - Separation point on B051 loudspeaker, right	28
X291 - Separation point on E013 work light in roof, front right	11
X292 - Separation point on E015 work light in roof, front right	11
X293 - Separation point on E015 work light in roof, front right	11
X294 - Separation point on E014 work light in roof, front left	11
X295 - Separation point on E016 work light in roof, front left	11
X296 - Separation point on E016 work light in roof, front left	11
X297 - Cable coupling, M002 front wiper motor	10
X298 - Cable coupling, E022 left rotating beacon	10
X299 - Separation point on S032 switch, left door contact	28
X301 - Separation point on wiper pump, front	10
X303 - Separation point on M005 wiper pump, rear	10



DIN component designation	Circuit diagram sheet no.
X308 - Separation point on E019 lighting, cab	28
X309 - Separation point on E019 lighting, cab	28
X310 - Separation point on E019 lighting, cab	28
X311 - Separation point on B050 loudspeaker, left	28
X312 - Separation point on B050 loudspeaker, left	28
X317 - Separation point on Y004 solenoid valve, turbo-clutch	22
X319 - Separation point on Y008 solenoid valve, rear PTO (clutch)	25
X320 - Separation point on Y009 solenoid valve, 4WD	26
X321 - Separation point on Y010 solenoid valve, differential lock (rear)	26
X322 - Separation point on Y011 solenoid valve, front PTO (clutch)	25
X323 - Separation point on Y012 solenoid valve, load suspension	24
X324 - Separation point on Y013 solenoid valve, lower suspension	24
X325 - Separation point on Y014 solenoid valve, raise suspension	24
X332 - Separation point on Y021 solenoid valve, raise (rear power lift)	20
X333 - Separation point on Y022 solenoid valve, lower (rear power lift)	20
X334 - Separation point on Y023 solenoid valve, compressed air pilot control	9
X341 - Separation point on S035 switch, high-pressure/low-pressure (air conditioning system)	14
X342 - Separation point on Y024 magnetic clutch, air conditioning compressor	14
X345 - Separation point on E021 right rotating beacon	10
X346 - Separation point on E021 left rotating beacon	10
X347 - Separation point on M002 front wiper motor	10
X350 - Separation point on E001 H4 headlight, right	7
X351 - Separation point on E002 H4 headlight, left	7
X352 - Separation point on E003 H4 additional headlight, right	7
X353 - Separation point on E004 H4 additional headlight, left	7
X360 - Separation point on Y026 solenoid valve, rear PTO, stage I	25
X361 - Separation point on Y027 solenoid valve, rear PTO, stage II	25
X366 - Separation point on E017 work light on right tail lamp bracket	12
X367 - Separation point on E018 work light on left tail lamp bracket	12
X368 - Separation point on Y028 solenoid valve, rear PTO stage III	25
X372 - Separation point on E005 direction indicator/position light, front right	7
X373 - Separation point on E006 direction indicator/position light, front left	7
X374 - Separation point on E009 licence plate illumination, right	7
X375 - Separation point on E009 licence plate illumination, right	7
X376 - Separation point on E010 licence plate illumination, left	7
X377 - Separation point on E010 licence plate illumination, left	7
X378 - Separation point on E005 direction indicator/position light, front right	7
X379 - Separation point on E006 direction indicator/position light, front left	7
X380 - Separation point on E005 direction indicator/position light, front right	8
X381 - Separation point on E006 direction indicator/position light, front left	8
X385 - Separation point on E011 work light in roof, rear right	12
X386 - Separation point on E011 work light in roof, rear right	12
X387 - Separation point on E011 work light in roof, rear right	12
X388 - Separation point on E012 work light in roof, rear left	12
X389 - Separation point on E012 work light in roof, rear left	12
X390 - Separation point on E012 work light in roof, rear left	12



OVERALL SYSTEM/ELECTRICAL SYSTEM

Component overview FENDT 300 Vario – COM III**C**

DIN component designation	Circuit diagram sheet no.
X431 - Separation point on S049 switch, hydraulic circuit 3	27
X443 - Cabel coupling, cab roof	14
X460 - Separation point on M014 roof fan (continuous, optional)	14
X468 - Separation point on M069 switch, roof fan (continuous)	14
X500 - Earth pin, oil sump right	4
X503 - Earth pin, oil sump right	4, 9, 24, 27
X505 - G001 battery (terminal 31) "earth"	4
X520 - Earth pin, oil sump right	4, 7, 20, 24, 25, 27
X531 - Earth pin, B-pillar right	4
X532 - Earth pin, cab body	4, 7, 12, 28
X533 - Earth pin, cab body	4, 10, 11, 12
X534 - Earth pin, cab body	4, 5, 14, 15, 16, 17
X536 - Earth pin, cab body	4, 7, 11
X550 - Earth pin, right mudguard	4
X551 - Earth pin, operator platform right	4, 5, 10, 19, 30
X552 - Earth pin, operator platform	4, 7, 8, 9
X553 - Earth pin, operator platform	4, 5, 16, 20, 22, 23, 27
X554 - Earth pin, operator platform	4, 6, 9, 13, 14, 27
X560 - Earth pin, transition to cab	4
X565 - Earth pin, operator platform	4, 12
X570 - Earth pin, transmission	4, 7
X571 - Earth pin, transmission	4, 9, 22, 25, 26
X574 - Earth pin, transition to cab	4
X581 - Earth pin, engine	33
X600 - Connector, CAN high	18
X601 - Connector, CAN low	19
X607 - Connector, + UB 30	5
X608 - Connector, + UB 15	5
X609 - Connector, + UB 58, lighting	7
X610 - Connector, right direction indicator	8
X611 - Connector, left direction indicator	8
X612 - Connector + UB 15, wipers and rotating beacon	10
X613 - Connector, sensor system earth	4, 22, 23
X617 - Connector, CAN low	21
X618 - Connector, CAN high	21
X619 - Connector, electronics earth	4, 22
X620 - Connector, electronics earth	4
X624 - Connector, CAN high	18
X625 - Connector, CAN low	18
X627 - Connector, sensor system earth	4, 16, 25
X628 - Connector, + UB 30	6
X630 - Connector, brake light (terminal 54)	9
X631 - Connector, rear PTO "ON" LED	25
X638 - Connector, sensor system earth	4, 22, 25
X650 - Connector, headlight 56a (main beam)	7
X651 - Connector, headlight 56b (dipped beam)	7
X671 - Connector, sensor system earth	4, 23, 24, 25
X676 - Connector, draught sensing pin earth	20



OVERALL SYSTEM/ELECTRICAL SYSTEM

Component overview FENDT 300 Vario – COM III**C**

DIN component designation	Circuit diagram sheet no.
X677 - Connector, + UB, right and left draught sensing pins	20
X678 - Connector, analogue earth	19, 22
X685 - Connector, + UB 30, engine control unit	6
X700 - Connector, rear work light earth	12
X792 - Connector, + UB 15 (continuous roof fan)	14
X810 - Diagnostics socket EDC (engine control unit)	30
X830 - Cable coupling (M007 seat compressor and S053 seat switch)	16
X850 - Separation point on ECU, EPC B	18, 20
X896 - Separation point on E054 wide vehicle marker light, right	7
X897 - Separation point on E055 wide vehicle marker light, left	7
X898 - Separation point on B055 sensor, foot throttle	30
X991 - Separation point on R002 heater flange	33
X998 - Separation point on H005 horn (earth)	7
X999 - Separation point on H005 horn (+ supply)	7
X1019 - Separation point on S056 switch, oil flow collector	20
X1020 - Separation point on Y050 solenoid valve, oil flow collector	20
X1022 - Separation point on Y052 solenoid valve, trailer brake (Italian model)	9
X1040 - Separation point on S061 switch, quick reverse (F/R shifting)	23
X1056 - Separation point on S059 switch, compressed air volume	9
X1315 - Separation point on A056 radio (compact plug)	28, 35
X1316 - Separation point on A056 radio (compact plug)	28
X1317 - Cable coupling, M009 heater fan	13
X1340 - Separation point on S070 switch, drive select/neutral	22
X1353 - Separation point on S035 EPC B control panel	20
X1354 - Separation point on S072 switch, quick lift	20
X1355 - Separation point on S071 switch, fast feed-in/hitch	20
X1356 - Separation point on B058 sensor, depth control	20
X1357 - Separation point on A036 control panel, comfort actuation	4, 22, 24, 25, 26
X1358 - Separation point on A036 control panel, comfort actuation	4, 6, 19, 23, 25, 30
X1359 - Separation point on S071 switch	20
X1360 - Separation point on S071 switch, fast feed-in/hitch	20
X1361 - Separation point on S072 switch, quick lift	20
X1362 - Separation point on S072 switch, quick lift	20
X1363 - Separation point on S072 switch, quick lift X1371 - Relay mounting	20
X1371 - Relay mounting	5, 7, 8, 9, 10, 22, 27, 30
X1375 - Cable coupling, operator platform/chassis	4, 7, 8, 9, 19, 20, 21, 22, 25, 26
X1378 - Connector, + UB stabiliser (10 VDC) (EPC B)	20
X1381 - Connector, + UB stabiliser (10 VDC) (EPC B)	20
X1411 - Separation point on A055 Modasys	29
X1421 - Cable coupling, operator platform	5, 17, 30
X1429 - Separation point on S074 neutral switch (transmission), "starter lock-out"	22, 30
X1430 - Cable coupling, operator platform/chassis	4, 5, 6, 7, 8, 9, 14, 19, 20, 21, 23, 24, 25, 27, 30
X1463 - Connector, CAN high	21
X1464 - Connector, CAN low	21



OVERALL SYSTEM/ELECTRICAL SYSTEM

Component overview FENDT 300 Vario – COM III**C**

DIN component designation	Circuit diagram sheet no.
X1466 - Separation point on A051 ECU, EDC "engine control unit"	4, 6, 21, 30
X1526 - Connector, earth (B055 sensor, foot throttle)	30
X1527 - Connector, + UB foot throttle (5.0 VDC)	30
X1528 - Connector, sensor system supply	30
X1529 - Separation point on X053 plus bolts	5
X1534 - Separation point on X053 plus bolts	5
X1544 - Separation point on H007 reversing buzzer	23
X1585 - Separation point on B080 sensor, hydraulic oil temperature	19
X1625 - Reserve cables	19
X1626 - Reserve cables	19
X1627 - Reserve cables	23
X1628 - Reserve cables	23
X1631 - Battery (terminal 31)	4
X1632 - Battery + (terminal 30)	5
X1634 - Connector (+ UB 30)	5, 6, 28
X1635 - Cable coupling, operator platform	6, 18
X1636 - Cable coupling (Modasys)	29
X1639 - Connector (control bus) (CAN high)	29
X1640 - Connector (control bus) (CAN low)	29
X1641 - Separation point on M018 roof fan (3-speed)	14
X1642 - Separation point on M018 roof fan (3-speed)	14
X1643 - Separation point on M018 roof fan (3-speed)	14
X1644 - Separation point on M018 roof fan (3-speed)	14
X1645 - Separation point on	5
X1646 - Separation point on S084 switch, hydraulic trailer brake ON/OFF (French model)	27
X1647 - Separation point on Y089 solenoid valve,	27
X1648 - Separation point on K065 starter relay	30
X1654 - Separation point on B085 camshaft speed	33
X1655 - Separation point on B086 rail pressure sensor	33
X1656 - Separation point on B087 fuel low pressure	33
X1657 - Separation point on B088 crankshaft speed	33
X1658 - Separation point on B089 temperature sensor, Deutz	33
X1659 - Separation point on B090 sensor, oil pressure	33
X1660 - Separation point on B091 sensor, water in fuel	33
X1661 - Separation point on B092 charge air pressure sensor	33
X1662 - Separation point on Y091 dispensing unit (fuel)	33
X1663 - Separation point on K063 relay, heater flange	33
X1664 - Separation point on K063 relay, heater flange	33
X1665 - Separation point on K063 relay, heater flange	33
X1671 - Separation point on A051 ECU, engine control unit (EDC 7)	33
X1672 - Separation point on A051 ECU, engine control unit (EDC 7)	33
X1673 - Cable coupling EDC	33
X1674 - Separation point on Y094 actuator unit, AGR (exhaust gas recirculation)	33
X1675 - Connector, earth	33
X1676 - Connector + UB 12 VDC	33
X1696 - Separation point on K064 relay, battery disconnect	5



OVERALL SYSTEM/ELECTRICAL SYSTEM

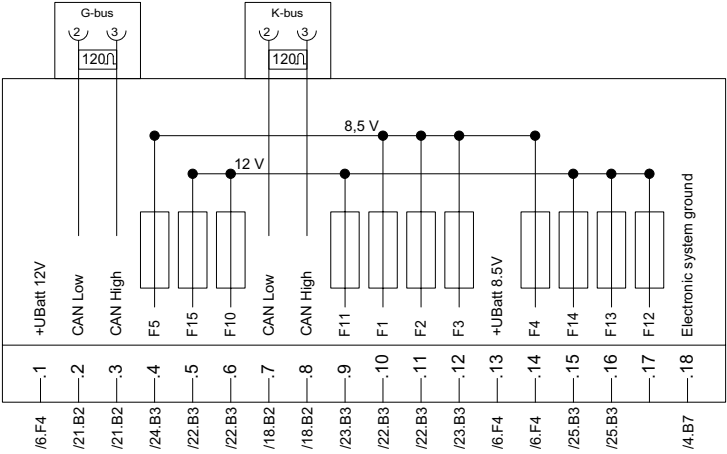
Component overview FENDT 300 Vario – COM III**C**

DIN component designation	Circuit diagram sheet no.
X1697 - Separation point on K064 relay, battery disconnect	5
X1698 - Separation point on K064 relay, battery disconnect	5
X1699 - Separation point on K064 relay, battery disconnect	5
X1700 - Separation point on K064 relay, battery disconnect	33
X1701 - Separation point on R002 heater flange	33
X1702 - Separation point on K063 relay, heater flange	33
X1703 - Separation point on G002 alternator	5
X1704 - Separation point on E008 tail lamp, rear left (roof, low)	34
X1705 - Separation point on E112 licence plate light (roof, low)	34
X1706 - Separation point on E112 licence plate light (roof, low)	34
X1707 - Connector (+ UB 30)	5
X1767 - Separation points on A056 radio to B050/B051 loudspeaker	35
X1769 - Cable coupling, air conditioning connection to the roof fan	14
X1770 - Cable coupling, roof fan connection (3-speed) to the air conditioning	14
X1771 - Cable coupling, roof fan connection (continuous) to air conditioning	14
X1772 - Earth pin, cab body	14
X1773 - Earth pin, cab body	14

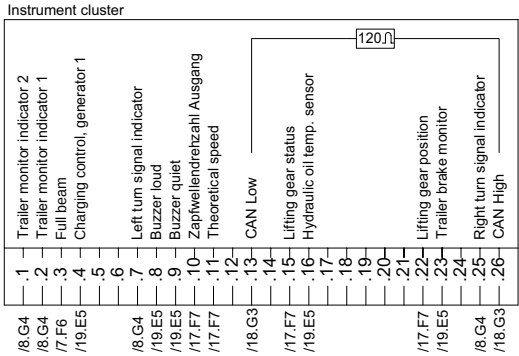
DIN component designation	Separation point	Circuit diagram sheet no.
Y004 - Magnetventil, Kupplung / Turbokupplung	X317	22
Y006 - Solenoid valve, engine brake	X1679	33
Y008 - Solenoid valve, rear PTO (clutch)	X319	25
Y009 - Solenoid valve, 4WD	X320	26
Y010 - Solenoid valve, differential lock (rear)	X321	26
Y011 - Solenoid valve, front PTO (clutch)	X322	25
Y012 - Solenoid valve, load suspension	X323	24
Y013 - Solenoid valve, lower suspension	X324	24
Y014 - Raise suspension solenoid valve	X325	24
Y021 - Magnetventil, Heben (Heckkraftheber)	X332	20
Y022 - Magnetventil, Senken (Heckkraftheber)	X333	20
Y023 - Solenoid valve, compressed air pilot control system	X334	9
Y024 - Magnetic clutch, air conditioning compressor	X342	14
Y026 - Solenoid valve, rear PTO, stage I	X360	25
Y027 - Solenoid valve, rear PTO, stage II	X361	25
Y028 - Solenoid valve, rear PTO, stage III	X368	25
Y050 - Solenoid valve, oil flow collector	X1020	20
Y052 - Solenoid valve, hydraulic trailer brake	X1022	9
Y089 - Solenoid valve, hydraulic trailer brake ON/OFF (France)	X1647	27
Y091 - Dispensing unit (fuel)	X1662	33
Y094 - Actuator unit, AGR (exhaust gas recirculation)	X1674	33
Y095 - Injector valve 1 (injector)	X1673	33
Y096 - Injector valve 2 (injector)	X1673	33
Y097 - Injector valve 3 (injector)	X1673	33
Y098 - Injector valve 4 (injector)	X1673	33

Microfuse wird verwendet, um die Lasten zu begrenzen und die Lebensdauer zu verlängern. Die Lebensdauer ist nicht garantiert, wenn die Lasten nicht begrenzt werden. Die Lebensdauer ist nicht garantiert, wenn die Lasten nicht begrenzt werden. Die Lebensdauer ist nicht garantiert, wenn die Lasten nicht begrenzt werden.

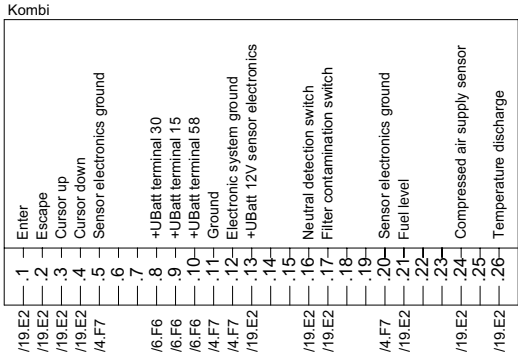
A013



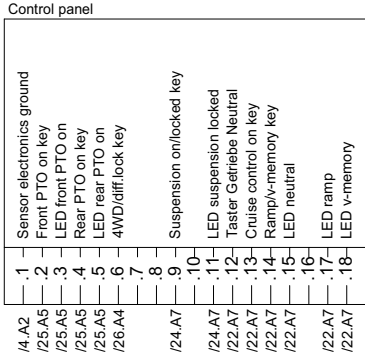
A007



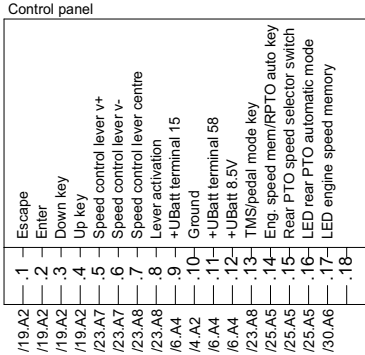
A007

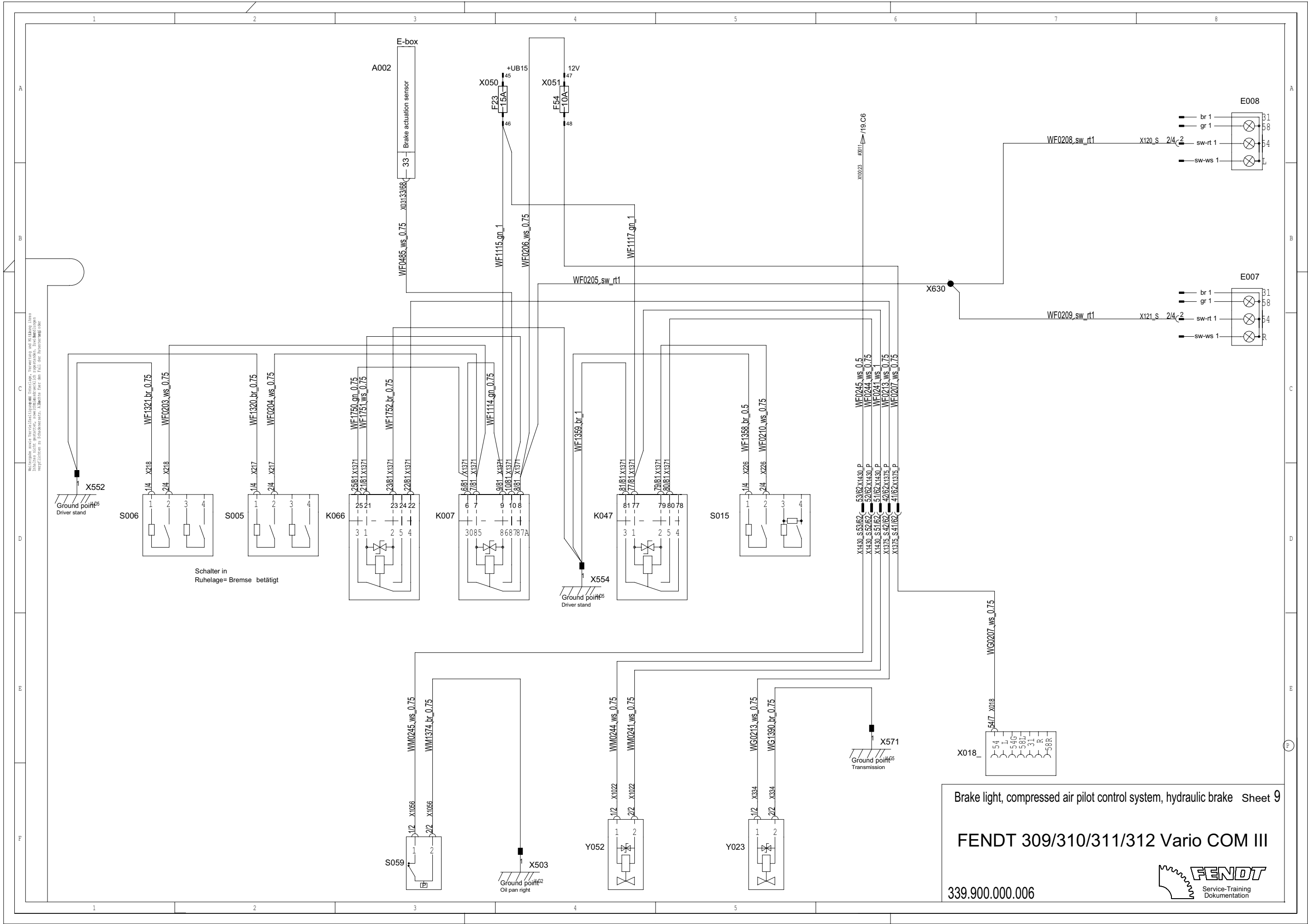


A036



A036



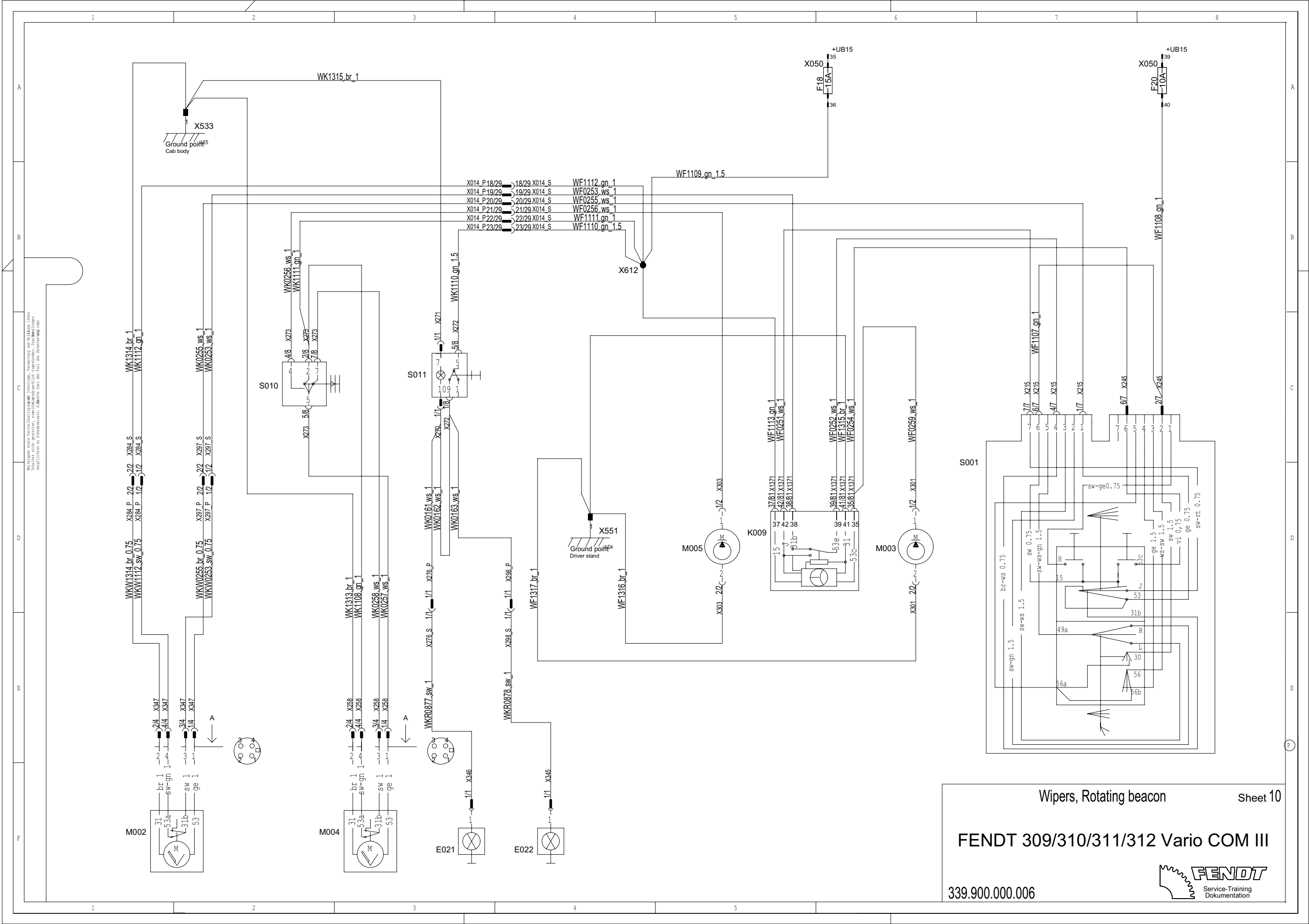


Brake light, compressed air pilot control system, hydraulic brake Sheet 9

FENDT 309/310/311/312 Vario COM III

339.900.000.006





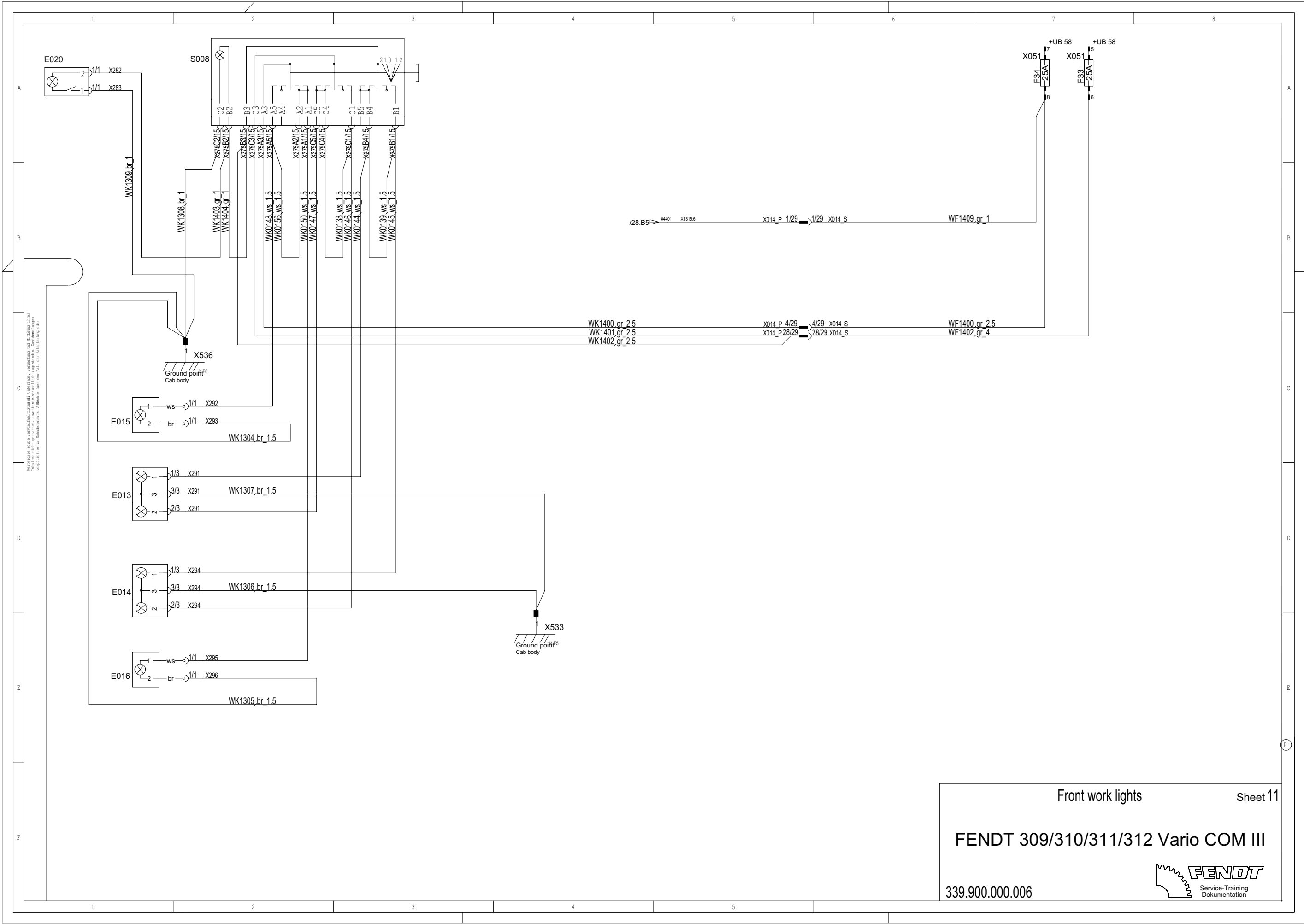
Wipers, Rotating beacon

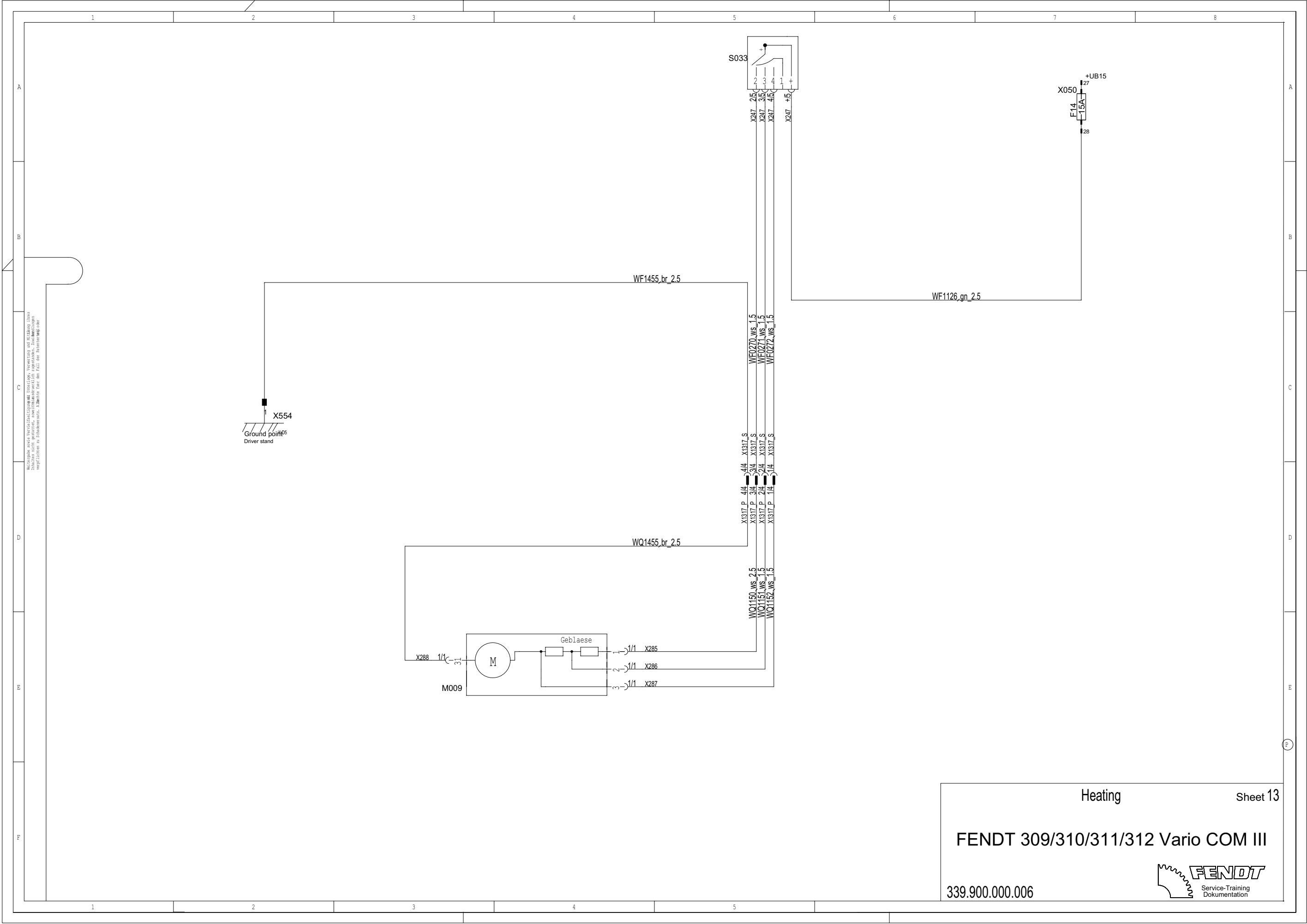
Sheet 10

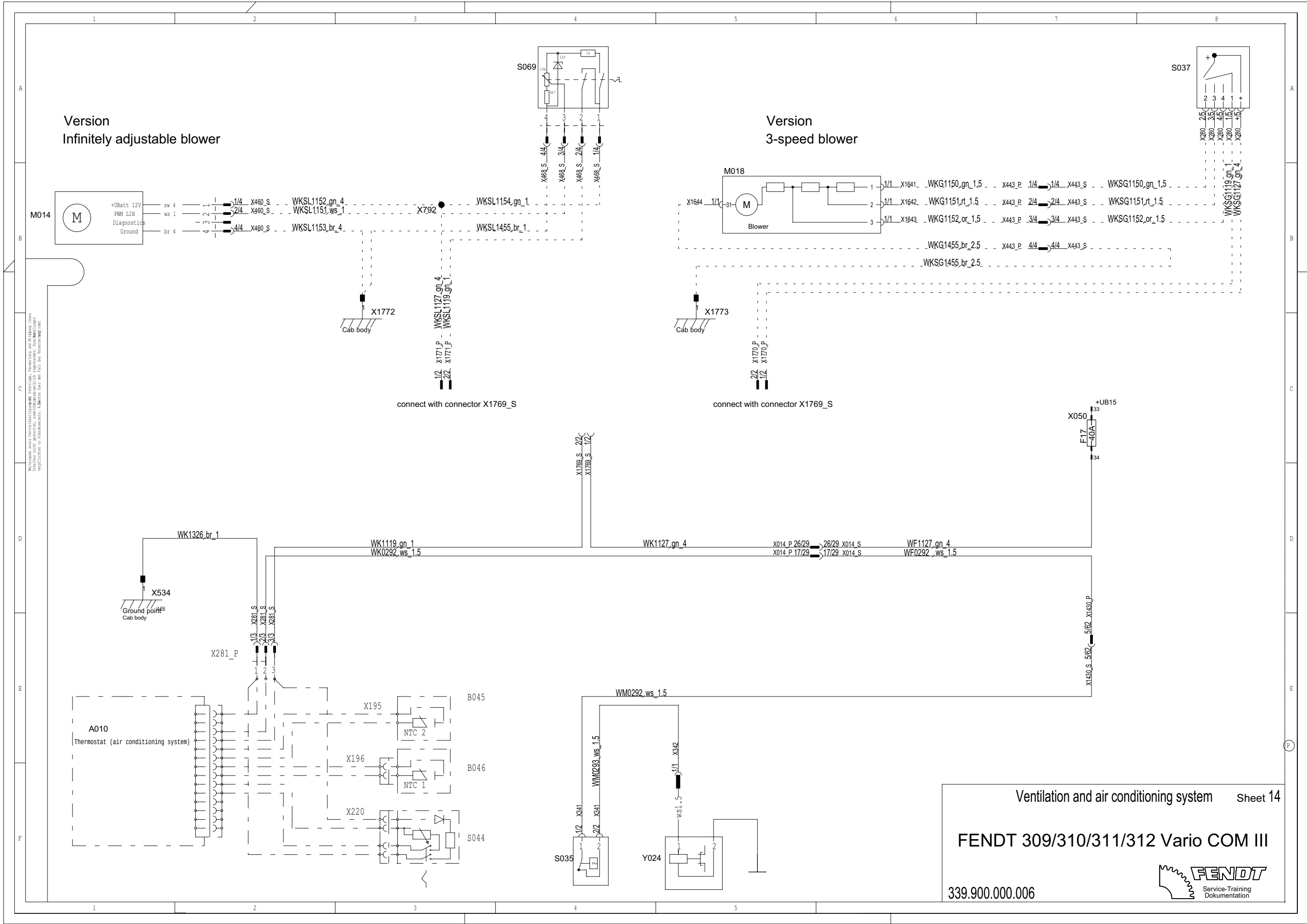
FENDT 309/310/311/312 Vario COM III

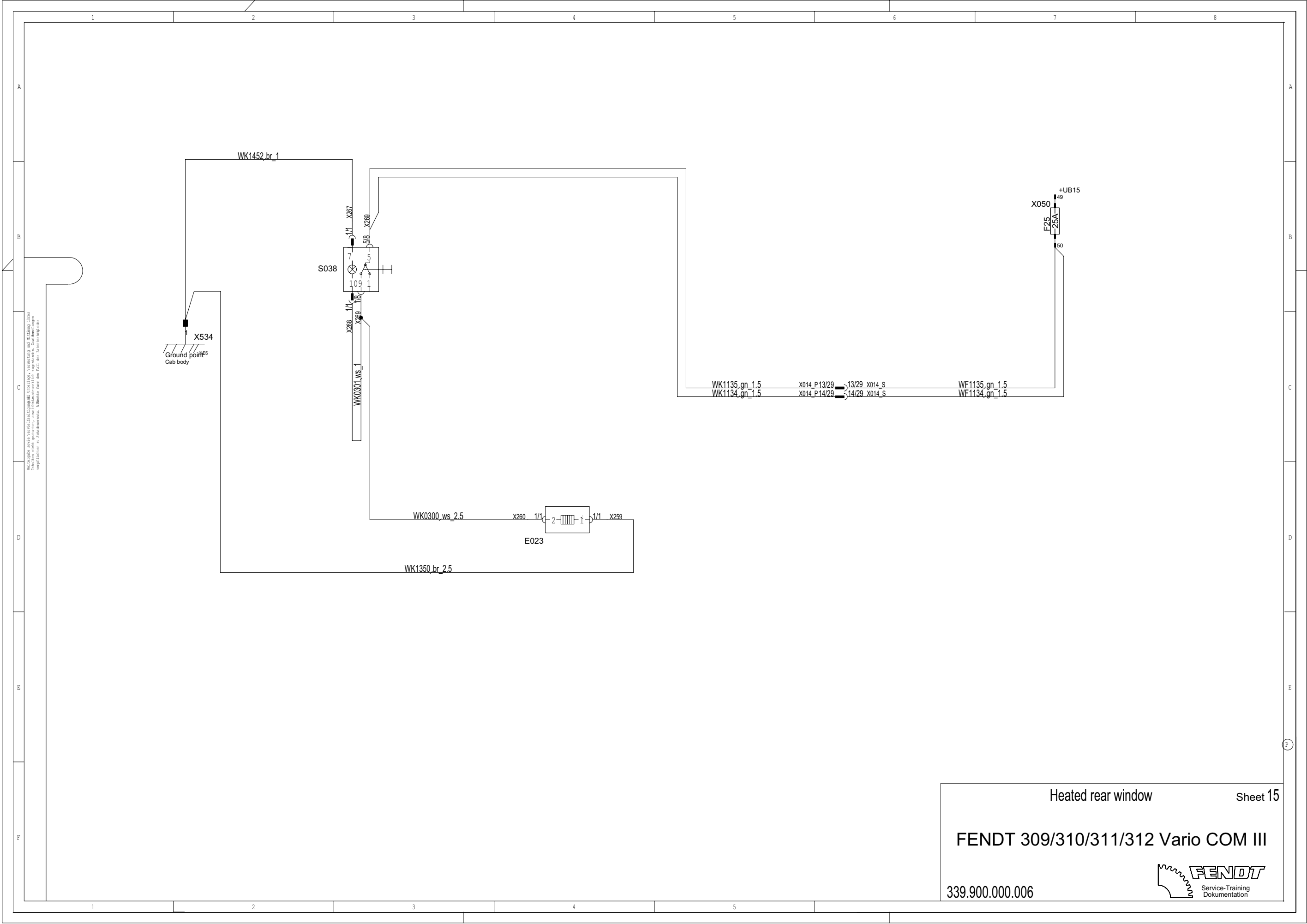
339.900.000.006

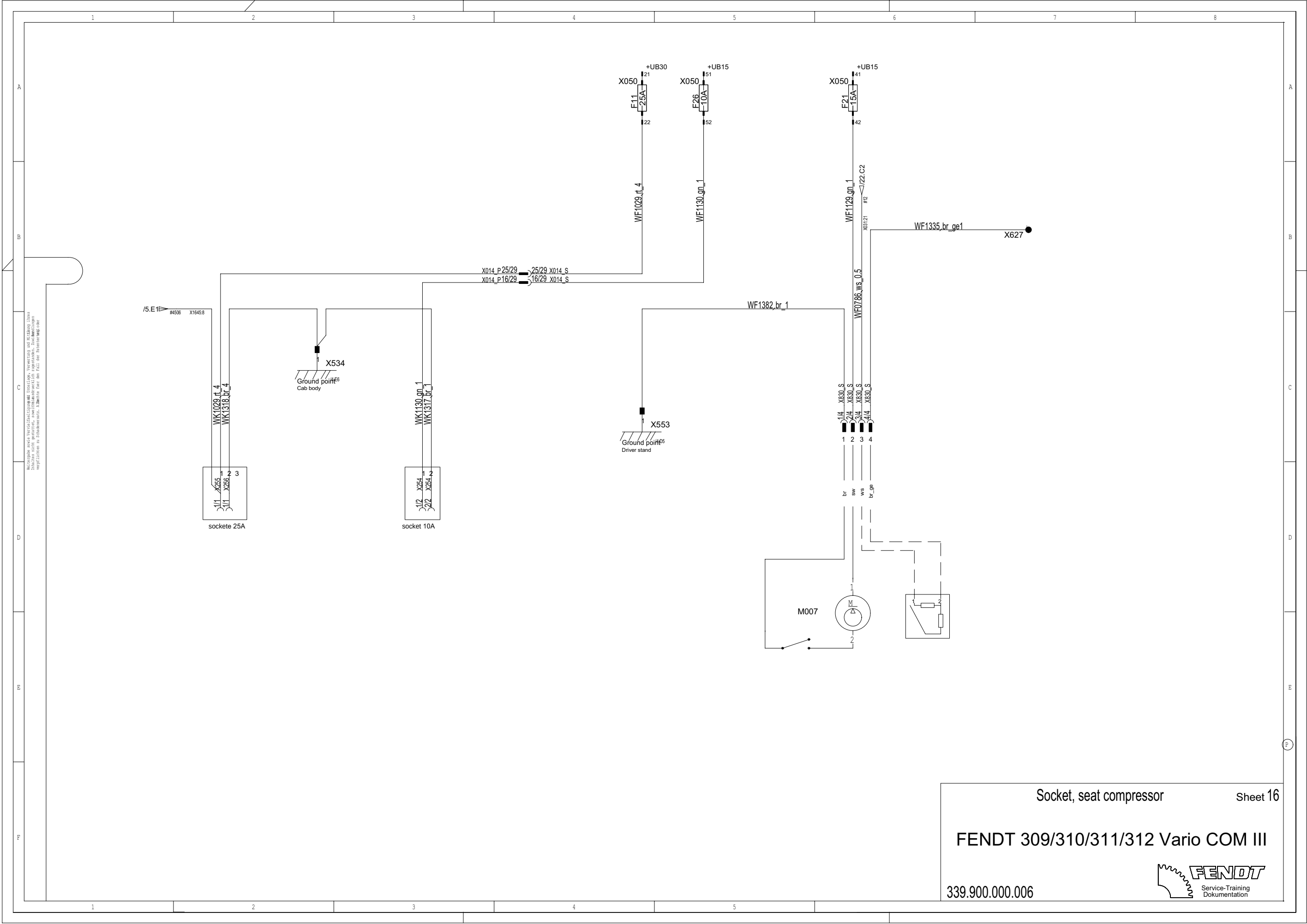


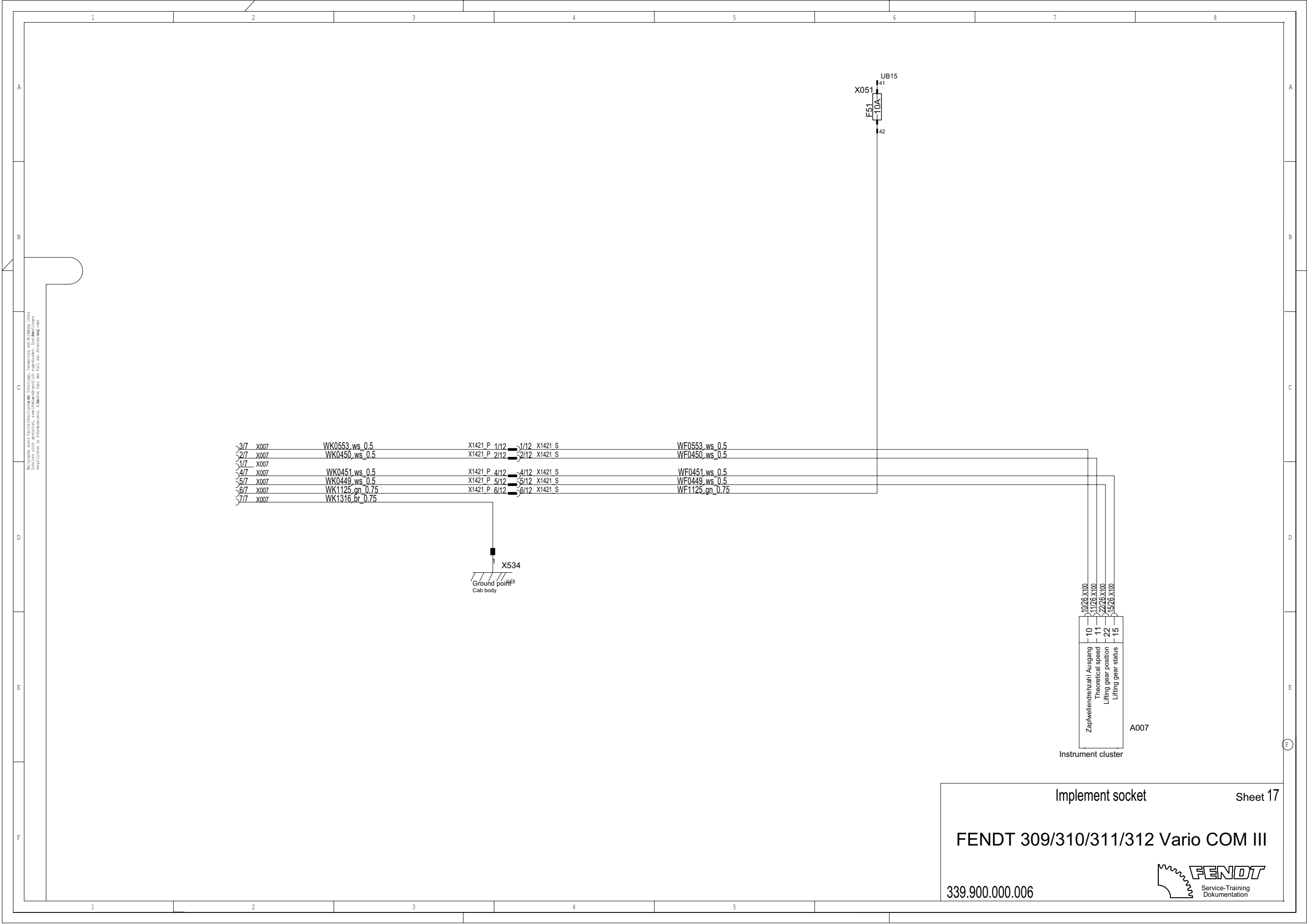


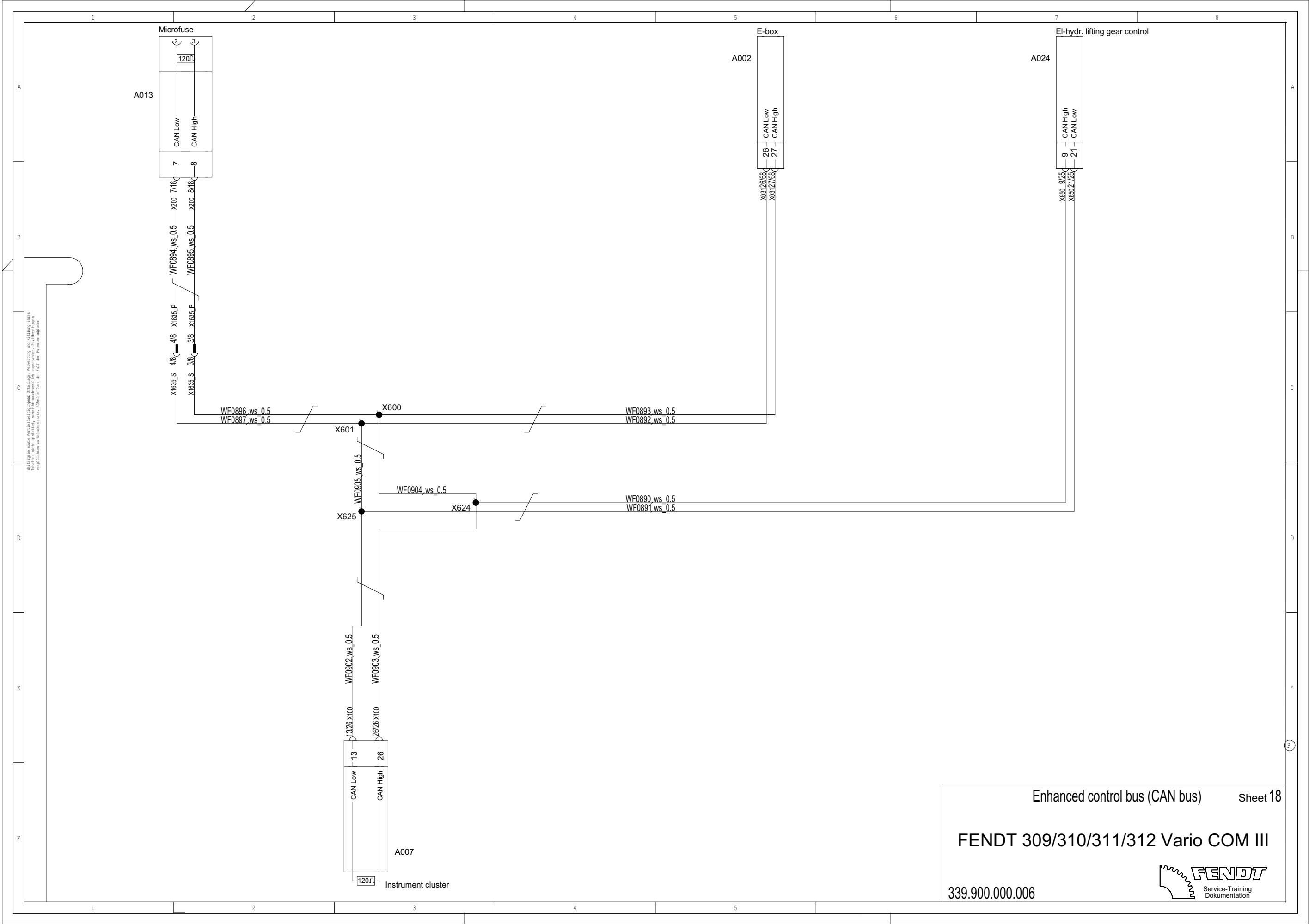


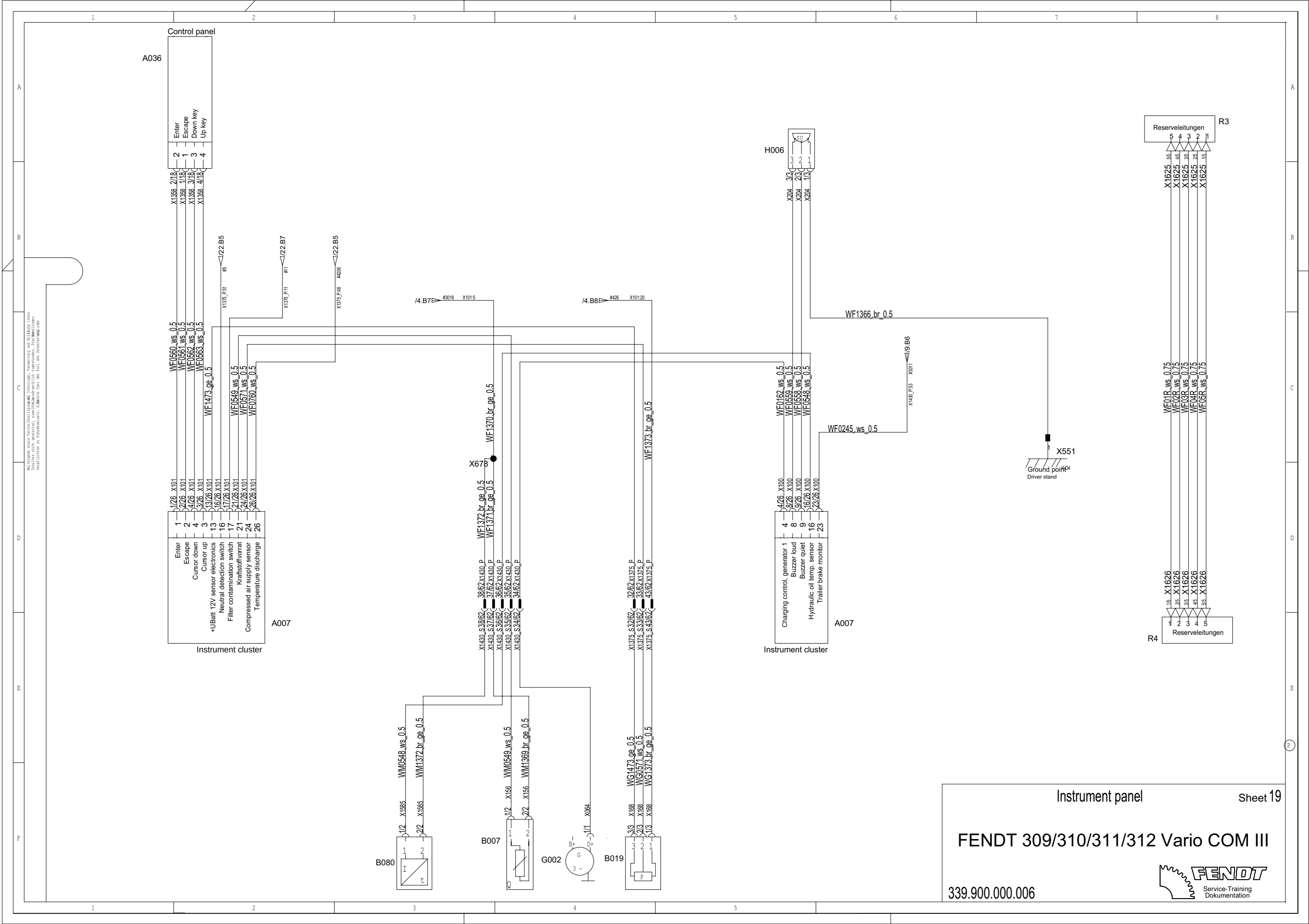


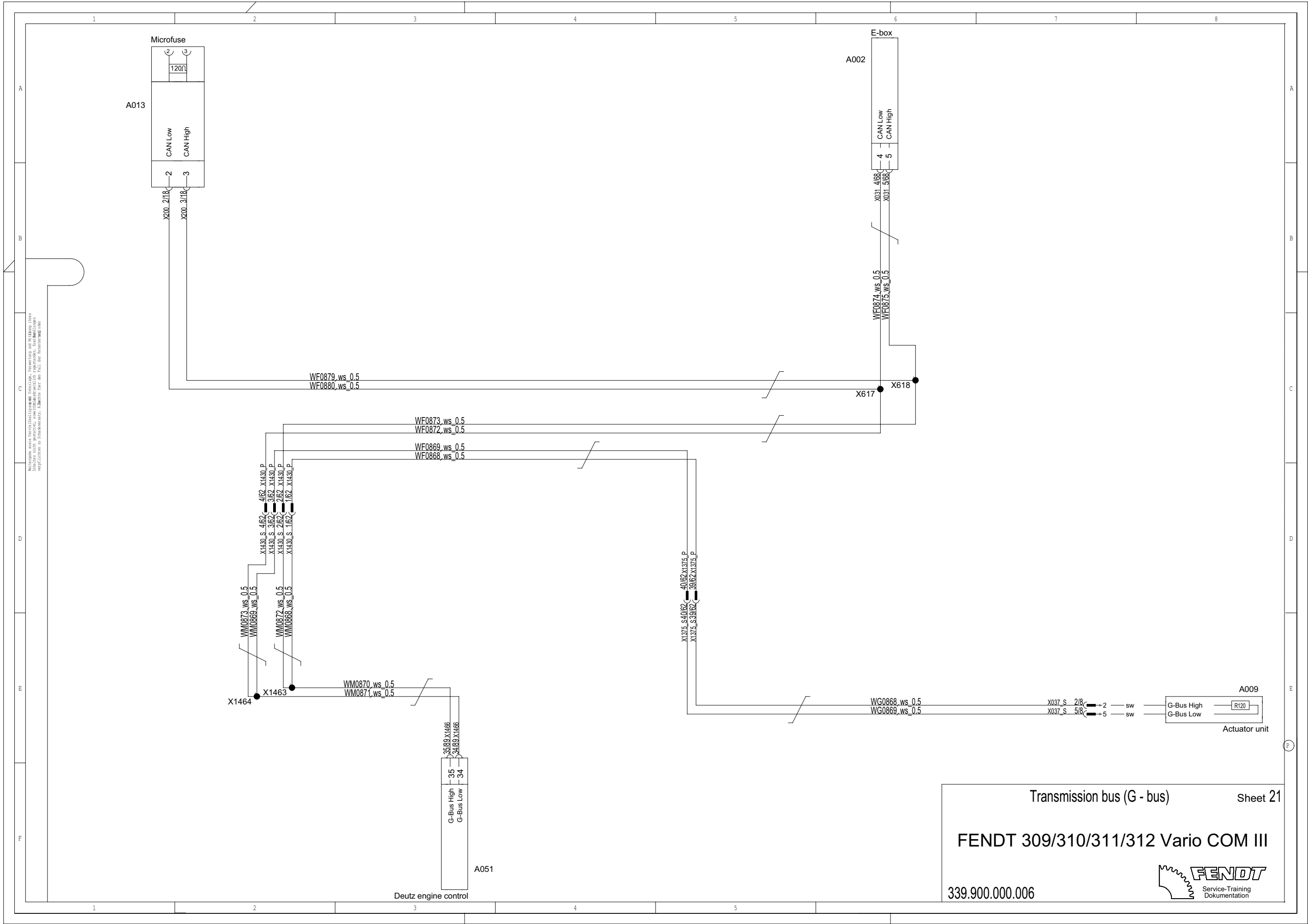


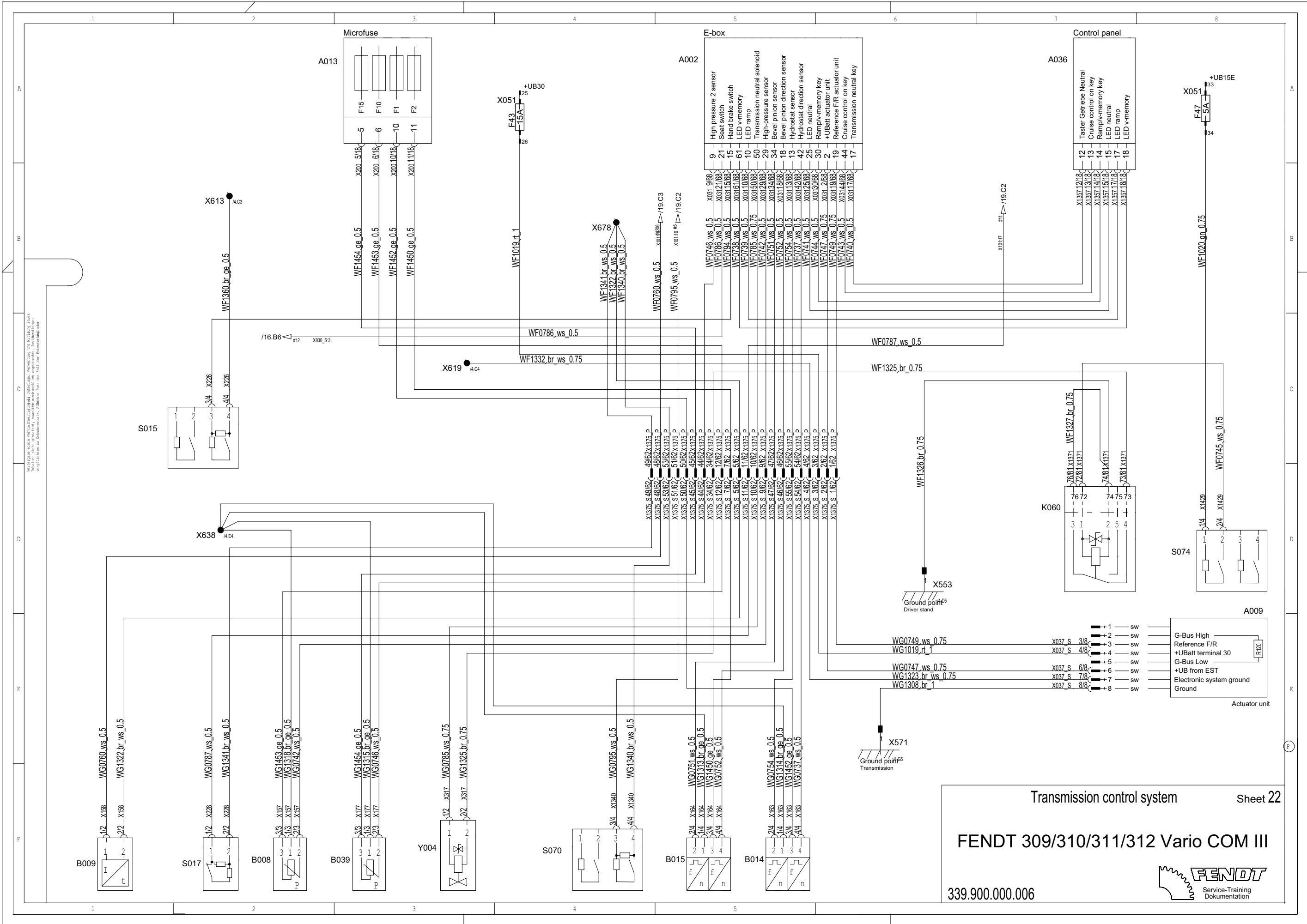


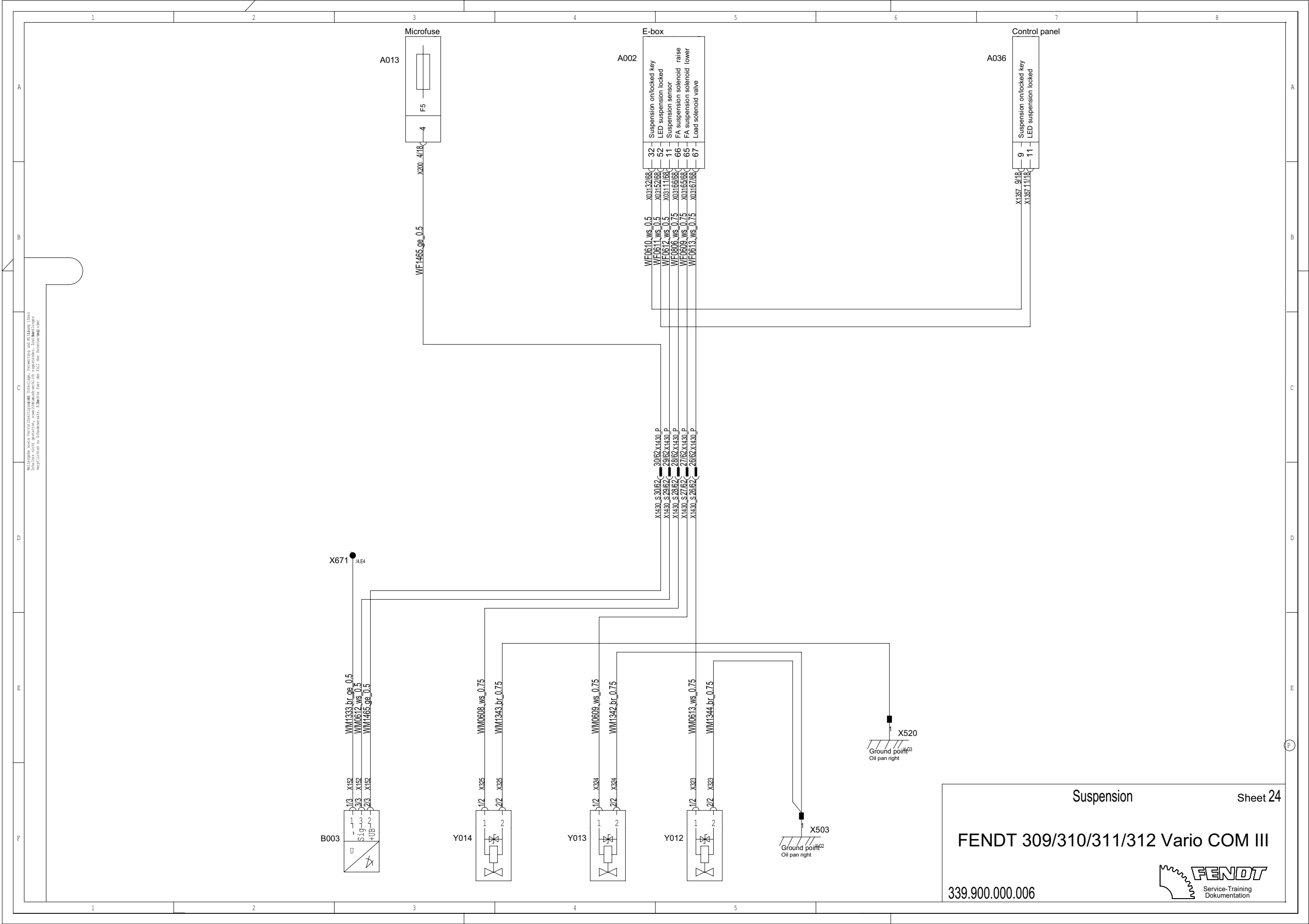


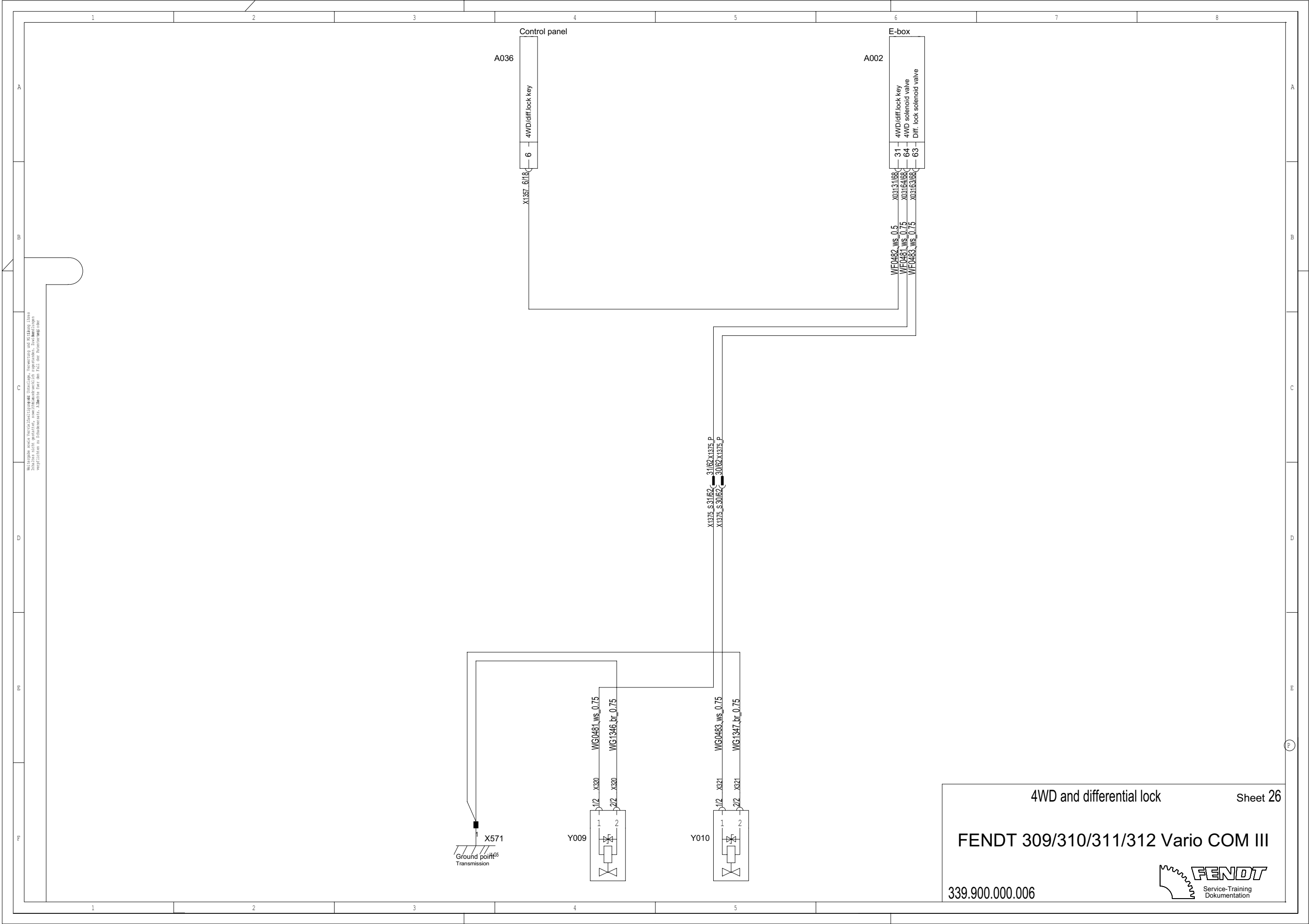


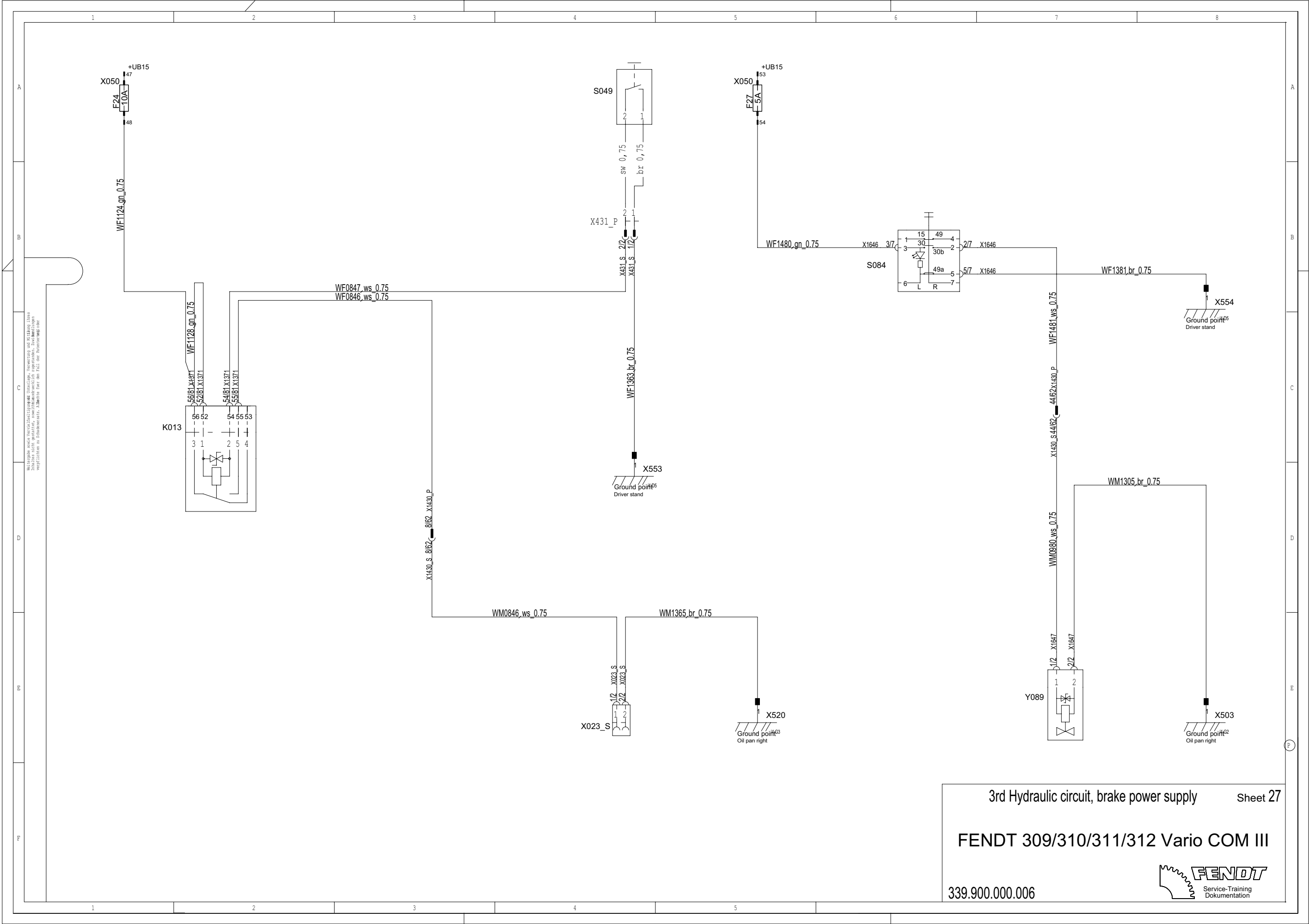


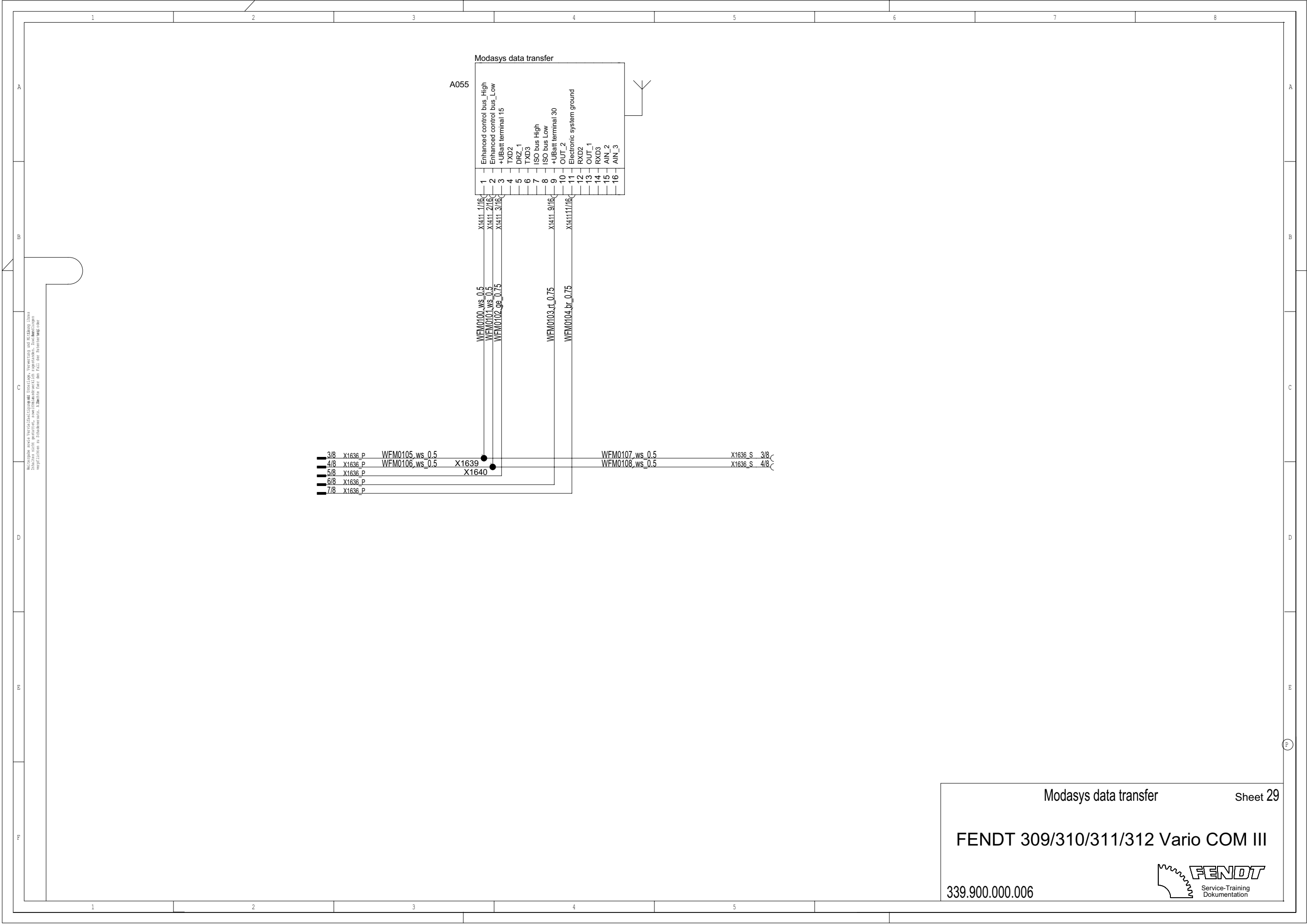




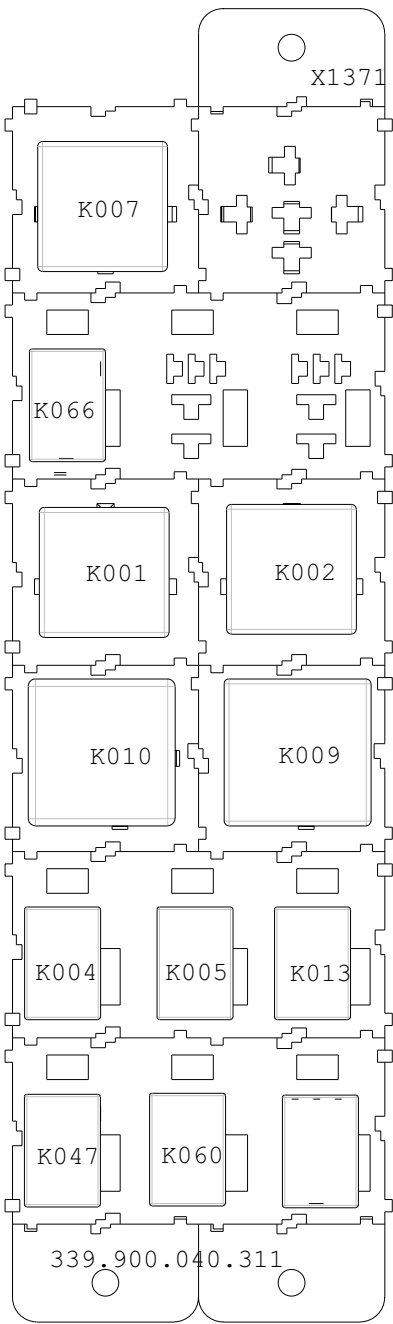








Relay block X1371 (plan view)



Werkzeuge sind vollständig auf Unterlage, Verwertung und Nutzung. Diese
haben nicht geprüften, sondern ausschließlich in der Praxis. Die
Anwendung ist ausschließlich in der Praxis. Die
Anwendung ist ausschließlich in der Praxis.

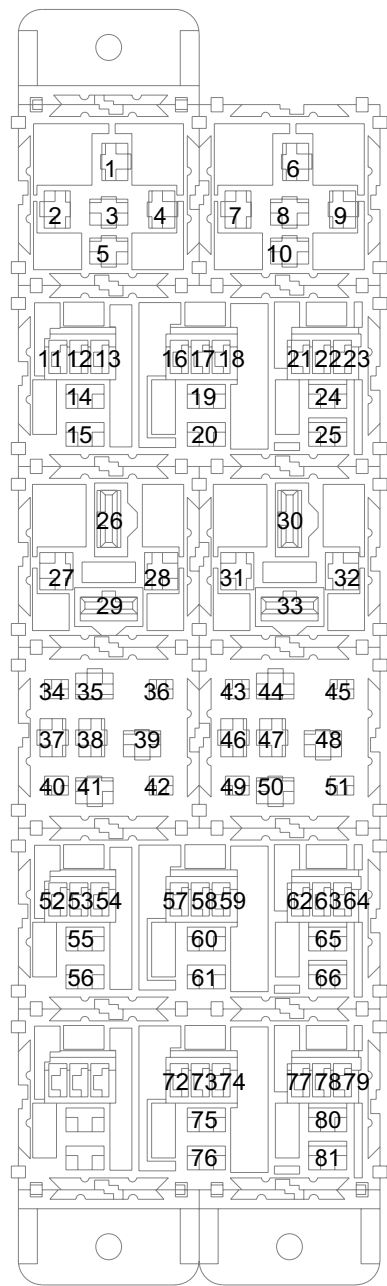
Relay block X1371 (plan view) Sheet 31

FENDT 309/310/311/312 Vario COM III

339.900.000.006



Relay block X1371 (underside view)

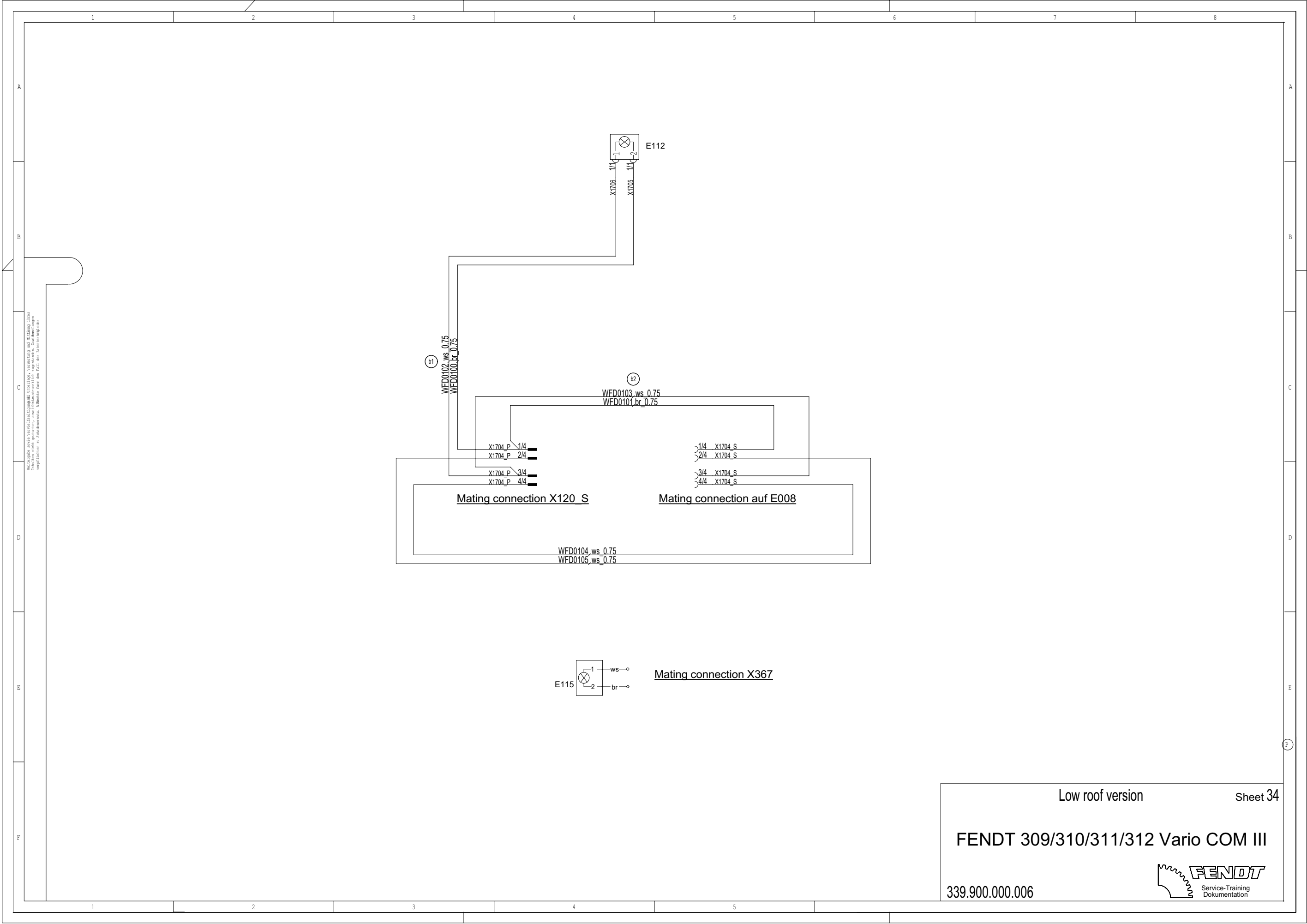


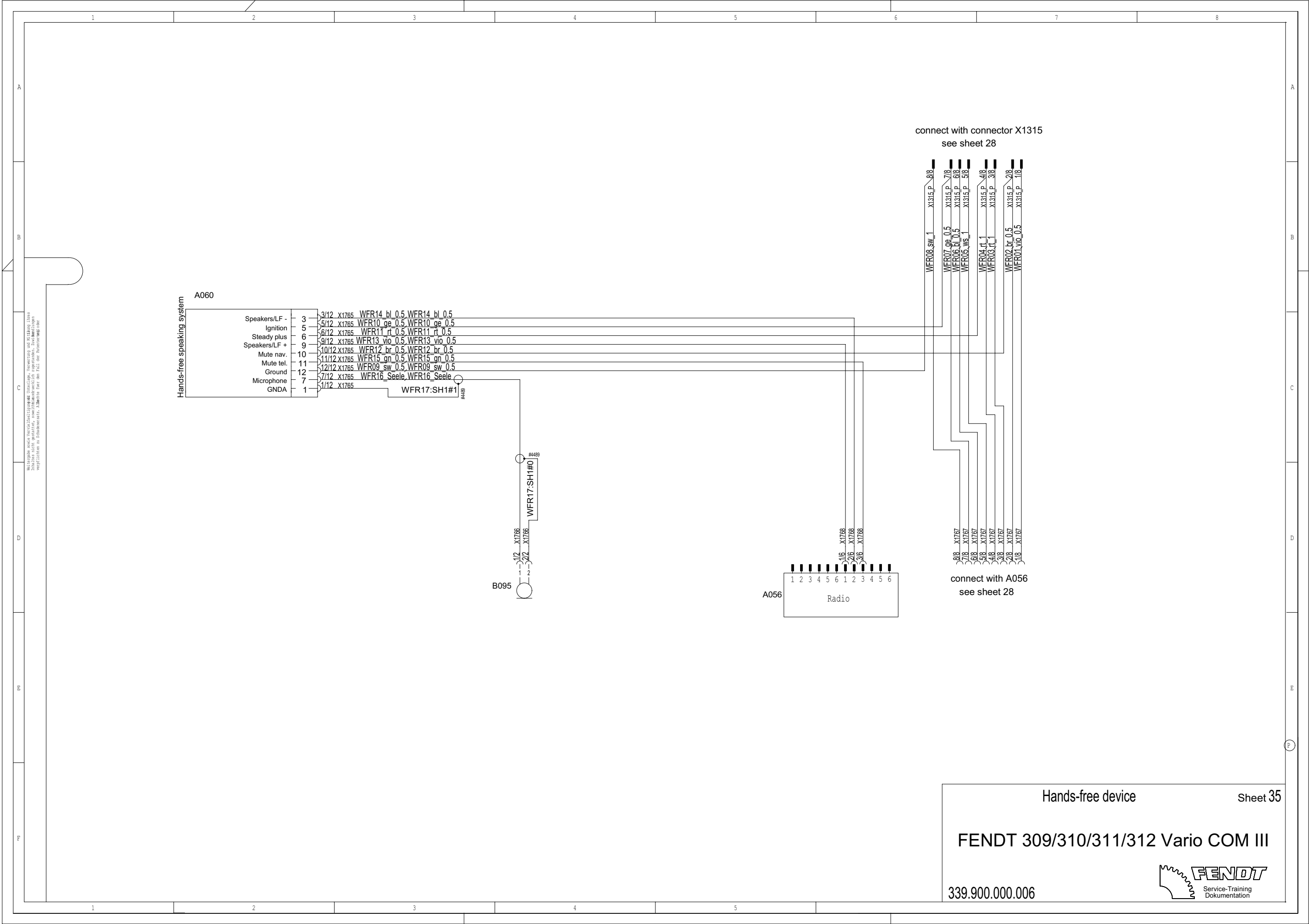
Relay block X1371 (underside view)

FENDT 309/310/311/312 Vario COM III

339.900.000.006







Service Training

Electrical and hydraulic circuit diagrams

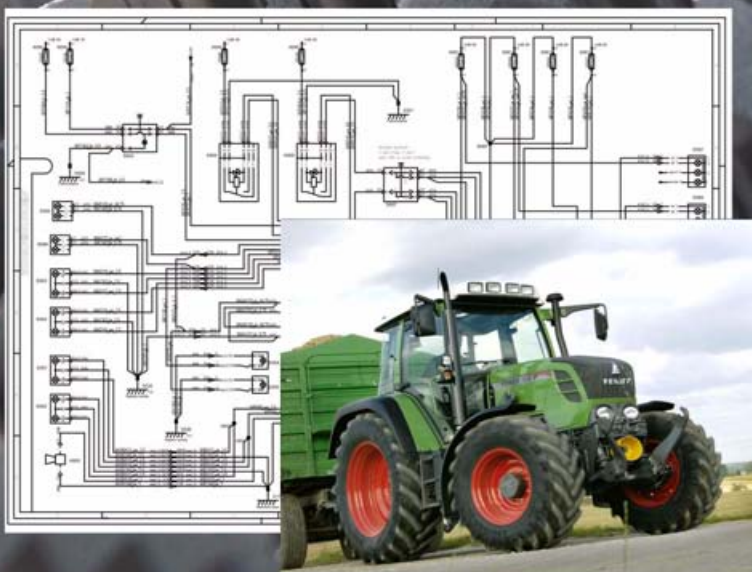
FENDT 300 Vario COM III

336 .. 1685-

337 .. 1820-

338 .. 1432-

339 .. 2688-



M000302

X990.005.466.010 - Englisch



Issue
09/2008

3401 G - en
AGCO GmbH
Johann-Georg-Fendt-Str. 4 D-87616 Marktoberdorf



Table of contents

9000 - OVERALL SYSTEM/ELECTRICAL SYSTEM

C - Documents and diagrams

Fuse assignment – fuse holders X050, X051 and A013.....	3
Component list for circuit diagram set 339.900.000.010.....	7
Instrument panel, actuator unit, microfuse, control panel - Sheet 2	23
Enhanced-control e-box, engine control, EPC-B, Modasys - Sheet 3.....	25
Earth layout – Sheet 4.....	27
Power supply – Sheet 5.....	29
Electronics power supply – Sheet 6	31
Lighting with warning horn – Sheet 7.....	33
Indicator unit – Sheet 8.....	35
Brake light, compressed air pilot control system, hydraulic brake – Sheet 9.....	37
Wiper, rotating beacon – Sheet 10	39
Front work light – Sheet 11	41
Rear work light – Sheet 12.....	42
Heater – Sheet 13.....	45
Ventilation and air conditioning system – Sheet 14	47
Heated rear window – Sheet 15.....	49
Sockets, seat compressor – Sheet 16	51
Implement socket – Sheet 17.....	53
Enhanced control bus (CAN bus) – Sheet 18.....	55
Instrument panel – Sheet 19	57
Electronic power lift control – Sheet 20.....	59
Transmission bus – Sheet 21	61
Transmission control system – Sheet 22.....	63
Transmission control system – Sheet 23.....	65
Suspension – Sheet 24.....	67
PTOs – Sheet 25.....	69
4WD and differential lock – Sheet 26	71
Brake load switch - Sheet 27.....	73
Lighting, cab and radio – Sheet 28	75
Modasys data transfer – Sheet 29.....	77
EDC engine control – Sheet 30	79
Relay block X1371 - Sheet 31	81
Relay block X1832 - Sheet 32	83
Engine control, Deutz – Sheet 33.....	85
Low roof version – Sheet 34.....	87
Hands-free device – Sheet 35	89
Front loader, hydraulic circuit 3 and 4 - Sheet 36	91
Front loader - Sheet 37	93

1005 - TRANSMISSION/TRANSMISSION CONTROL SYSTEM

C - Documents and diagrams

Transmission hydraulics circuit diagram – 339.100.000.002.....	95
--	----

9600 - OVERALL SYSTEM/HYDRAULIC EQUIPMENT

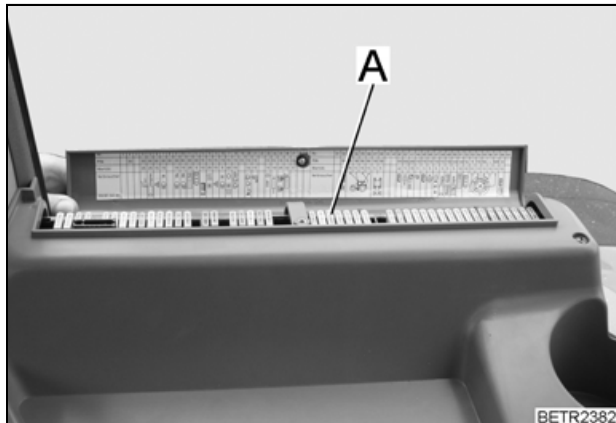
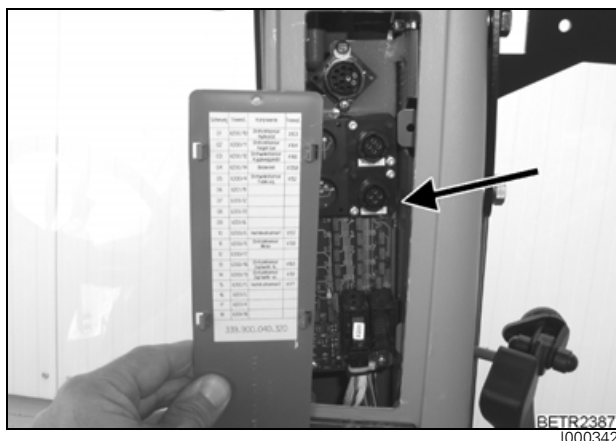
C - Documents and diagrams

Working and steering hydraulics circuit diagram – 339.950.000.001.....	97
--	----

Table of contents



OVERALL SYSTEM/ELECTRICAL SYSTEM

Fuse assignment – fuse holders X050, X051 and A013**C****DANGER:****Use only genuine fuses! The use of over-rated fuses will destroy the electrical unit! Fire hazard!****Fuse holder (X050, X051)****Fuse holder (A013)**

Service Training



OVERALL SYSTEM/ELECTRICAL SYSTEM

Fuse assignment – fuse holders X050, X051 and A013

C

Fuse holder X050

Nr.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
PIN				30	30	30	30		30	30	30	30	15	15	15	15	15	15		15	15		15	15	15	15	15	30	
Wert(A)				25	25	15	15		15	15	25	5	10	10	15	5	40	15		10	15		15	10	25	10	5	10	
Verbraucher																													
339.900.040.302																													

BETR1896

1000343

Fuse no.	PIN	Value (A)	Consumer
1	-	-	-
2	30	-	-
3	30	-	-
4	30	25	Preheat starter switch, ON position
5	30	25	Engine control
6	30	15	Pressure switch, hazard warning light
7	30	15	Pressure switch, drive light
8	30	-	-
9	30	15	Relay no. 56a (drive light)
10	30	15	Relay no. 56b (dipped beam)
11	30	25	25 A socket
12	30	5	EPC
13	15	10	Radio
14	15	15	Heater switch
15	15	15	Pressure switch, hazard warning light
16	15	5	Pressure switch, drive light
17	15	40	Fan switch
18	15	15	Front windscreen wipers pulse generator
19	15	-	-
20	15	10	Steering column switch (combination switch)
21	15	15	Driver seat, seat heater
22	-	-	-
23	15	15	Brake relay
24	15	10	3rd hydraulic circuit relay
25	15	25	Rear window heater, mirror heater
26	15	10	10 A socket
27	15	5	Hydraulic trailer brake load switchover
28	30	10	Instrument panel, radio, battery disconnect relay, Modasys
29	-	-	-

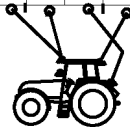
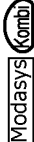
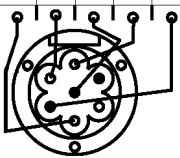


OVERALL SYSTEM/ELECTRICAL SYSTEM

Fuse assignment – fuse holders X050, X051 and A013

C

Fuse holder X051

Nr.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
PIN		58	58	58	58	58	58	58			30E	30E	30E	15E	15E	15E	15E	15E	15E	15/58	15/58	15/58	R	54	58L	L	58R	30	
Wert(A)		5	25	15	15	15	5	5			40	10	15	5	5	5	5	5	5	5	10	10	10	10	10	10	10	5	
Verbraucher																													

BETR1897

BETR1897

1000344

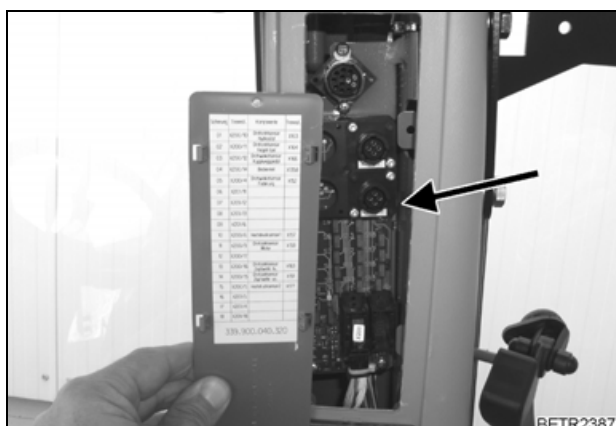
Fuse no.	PIN	Value (A)	Consumer
31	-	-	-
32	58	5	Instrument panel, control panel
33	58	25	Front work lights switch
34	58	25	Front work lights switch
35	58	25	Rear work lights switch
36	58	25	Rear work lights switch
37	58	5	Rear right tail lamp, right position light
38	58	5	Rear left tail lamp, left position light
39	-	-	-
40	-	-	-
41	30E	40	Enhanced control E-box
42	30E	10	Fuse board
43	30E	15	Control, actuator
44	15E	5	Control panel
45	15E	5	Enhanced control E-box
46	15E	5	Terminal
47	15E	5	Turbo clutch solenoid valve
48	15E	5	Engine control
49	15E	5	Instrument panel, Modasys
50	15/58	5	Engine control diagnostics
51	15/58	10	Implement socket, communications box power supply
52	15/58	10	EPC
53	R	10	Front socket for front power lift, trailer socket
54	54	10	Trailer socket
55	58L	10	Front socket for front power lift, trailer socket
56	L	10	Front socket for front power lift, trailer socket
57	58R	10	Trailer socket
58	30	5	-
59	-	-	-



OVERALL SYSTEM/ELECTRICAL SYSTEM

Fuse assignment – fuse holders X050, X051 and A013

C



Fuse holder (A013)

Fuse assignment, fuse holder (A013)

Fuse no.	Separation point	Component	Comp. Separation point
01	X200/10	Hydrostat speed sensor	X163
02	X200/11	Bevel pinion speed sensor	X164
03	X200/12	Rotary position sensor, clutch pedal	X166
04	X200/14	Control panel	X1358
05	X200/4	Rotary position sensor, suspension	X152
06	X201/11	-	-
07	X201/12	-	-
08	X201/13	-	-
09	X201/6	-	-
10	X200/6	High-pressure sensor 1	X157
11	X200/9	Engine speed sensor	X159
12	X200/17	-	-
13	X200/16	Rear PTO speed sensor	X169
14	X200/15	Front PTO speed sensor	X151
15	X200/5	High-pressure sensor 2	X177
16	X201/5	-	-
17	X201/4	-	-
18	X201/18	-	-



OVERALL SYSTEM/ELECTRICAL SYSTEM
Component list for circuit diagram set
339.900.000.010

C

DIN component designation	Separation point	Circuit diagram sheet no.
A002 - ECU, enhanced control	X031	3, 4, 6, 9, 18, 21, 22, 23, 24, 25, 26, 30
A007 - Instrument panel	X100 X101	2, 4, 6, 7, 8, 17, 18, 19
A009 - Actuator unit	X037	2, 21, 22
A010 - Thermostat (air conditioning system)	X281	14
A011 - Radar sensor	X479	25
A013 - PCB, microfuses	X200 X201 X202	2, 4, 6, 18, 21, 22, 23, 24, 25
A024 - ECU, EPC B	X850	3, 18, 20
A035 - Control panel, EPC B	X1353	20
A036 - Control panel, comfort actuation	X1357 X1358	2, 4, 6, 19, 22, 23, 24, 25, 26, 30
A051 - ECU, engine control unit (EDC 7).	X1466	3, 4, 6, 21, 30, 33
A055 - ECU, data transfer	X1411	3, 29
A056 - Radio	X1315 X1316	28, 35
A060 - Hands-free device	X1765	3, 35
A072 - Control panel, Cargo front loader	X1818 X1831	36

DIN component designation	Separation point	Circuit diagram sheet no.
B002 - Sensor, front PTO speed	X151	25
B003 - Sensor, front axle suspension position	X152	24
B004 - Vacuum switch (air filter)	X153	30
B007 - Level sensor (fuel)	X156	19
B008 - Sensor, high-pressure 1	X157	22
B009 - Discharge temperature sensor	X158	22
B010 - Sensor, engine speed	X159	23
B014 - Sensor, collecting shaft	X163	22
B015 - Sensor, bevel pinion	X164	22
B017 - Sensor, clutch pedal	X166	23
B019 - Sensor, compressed air supply	X168	19
B020 - Sensor, rear PTO speed (stub shaft)	X169	25
B030 - Sensor, rear power lift position	X178	20
B031 - Sensor, draft sensing pin, right	X179	20
B032 - Sensor, draft sensing pin, left	X180	20
B035 - Sensor, hand throttle	X183	30
B039 - Sensor, high-pressure 2	X177	22
B045 - Sensor, air conditioning system 1	X195	14
B046 - Sensor, air conditioning system 2	X196	14
B050 - Loudspeaker, left	X311 X312	28



OVERALL SYSTEM/ELECTRICAL SYSTEM

Component list for circuit diagram set 339.900.000.010

C

DIN component designation	Separation point	Circuit diagram sheet no.
B051 - Loudspeaker, right	X289 X290	28
B055 - Sensor, foot throttle	X898	30
B058 - Depth control (EPC B)	X1356	20
B080 - Sensor, hydraulic oil temperature	X1585	19
B085 - Camshaft speed sensor	X1654	33
B086 - Rail pressure sensor	X1655	33
B087 - Fuel low pressure sensor	X1656	33
B088 - Crankshaft speed sensor	X1657	33
B089 - Engine temperature sensor (Deutz)	X1658	33
B090 - Sensor, oil pressure	X1659	33
B091 - Sensor, water in fuel	X1660	33
B092 - Sensor, charge air pressure/temperature	X1661	33
B094 - Sensor, steering angle (4WD differential lock)	X209	33
B095 - Microphone	X1766	35

DIN component designation	Separation point	Circuit diagram sheet no.
E001 - H4 headlight, right	X350	7
E002 - H4 headlight, left	X351	7
E003 - H4 additional headlight, right	X352	7
E004 - H4 additional headlight, left	X353	7
E005 - Direction indicator/position light, front right	X372 X378 X380	7, 8
E006 - Direction indicator/position light, front left	X373 X379 X381	7, 8
E007 - Tail light rear right	X121	7, 8, 9
E008 - Tail light rear left	X120	7, 8, 9
E009 - Licence plate lighting, right	X374 X375	7
E010 - Licence plate lighting, left	X376 X377	7
E011 - Work light in roof, rear right	X385 X386 X387	12
E012 - Work light in roof, rear left	X388 X389 X390	12
E013 - Work light in roof, front right	X291	11
E014 - Work light in roof, front left	X294	11
E015 - Work light front on right direction indicator	X292 X293	11
E016 - Work light front on left direction indicator	X295 X296	11



OVERALL SYSTEM/ELECTRICAL SYSTEM

Component list for circuit diagram set 339.900.000.010

C

DIN component designation	Separation point	Circuit diagram sheet no.
E017 - Work light on right tail light bracket	X366	12
E018 - Work light on left tail light bracket	X367	12
E019 - Lighting, cab	X308 X309 X310	28
E020 - Lighting (EPC)	X282 X283	11
E021 - Rotating beacon, right	X346	10
E022 - Rotating beacon, left	X345	10
E023 - Rear window heater	X259 X260	15
E037 - Seat heater	X830	7
E049 - Indicator lamp, ABS	X1049	7
E054 - Wide vehicle marker lights, right	X896	7
E055 - Wide vehicle marker lights, left	X897	7
E115 - Work light on left tail light (low roof)	X367	34
E118 - Licence plate lighting (low roof)	X1705 X1706	34

DIN component designation	Separation point	Circuit diagram sheet no.
G001 - Battery 1	X060 X067 X505 X581	4, 5
G002 - Alternator 1	X062 X064	5, 19, 33

DIN component designation	Separation point	Circuit diagram sheet no.
H005 - Horn	X998 X999	7
H006 - Audio warning signal	X204	19
H007 - Blip signal, reversing	X1544	23

DIN component designation	Separation point	Circuit diagram sheet no.
K001 - Relay, + UB 15 (switched positive)	X1371	5, 31
K002 - Relay, + UB 58 (lighting)	X1371	5, 31
K004 - Relay, 56a (main beam)	X1371	7, 31
K005 - Relay, 56b (dipped beam)	X1371	7, 31
K007 - Relay, brake	X1371	9, 31
K009 - Relay, windscreen wiper	X1371	10, 31



OVERALL SYSTEM/ELECTRICAL SYSTEM

Component list for circuit diagram set 339.900.000.010

C

DIN component designation	Separation point	Circuit diagram sheet no.
K010 - Relay, direction indicator sensor	X1371	8, 31
K013 - Relay, hydraulic circuit 3	X1832	32, 36
K047 - Relay, hydraulic trailer brake (Italy)	X1371	9, 31
K060 - Relay, clutch/turbo-clutch	X1371	22, 31
K063 - Heater flange relay	X1663 X1664 X1665	33
K065 - Starter relay	X1648	30
K066 - Relay, compressed air pilot control	X1371	9, 31
K068 - Relay, battery disconnect (impulse)	X1679 X1681 X1752 X1805	5
K069 - Relay, safety function (battery disconnect)	X1371	5, 31
K071 - Relay, 4th hydraulic circuit	X1832	32, 36
K072 - Relay, front loader suspension	X1832	32, 36
K076 - Relay, 3rd hydraulic circuit for implement lock	X1832	32, 36
K077 - Relay, 4th hydraulic circuit / front loader suspension	X1832	32, 36

DIN component designation	Separation point	Circuit diagram sheet no.
M001 - starter.	X061	5, 30
M002 - Front wiper motor	X347	10
M003 - Wiper pump, front	X301	10
M004 - Rear wiper motor	X258	10
M005 - Wiper pump, rear	X303	10
M007 - Motor, seat adjustment (seat compressor)	X830	16
M009 - Motor, heater fan	X285 X286 X287 X288	13
M014 - Roof fan (continuous)	X460	14
M018 - Roof fan (3-speed)	X1641 X1642 X1643 X1644	14

DIN component designation	Separation point	Circuit diagram sheet no.
R002 - Heater flange	X991 X1701	33



OVERALL SYSTEM/ELECTRICAL SYSTEM
Component list for circuit diagram set
339.900.000.010

C

DIN component designation	Separation point	Circuit diagram sheet no.
S001 - Switch, steering column	X215 X245	7, 8, 10
S002 - Switch, ignition	X072	5, 30
S003 - Switch, drive light	X080	7
S004 - Switch, hazard warning light	X216	8
S005 - Switch, right brake	X217	9
S006 - Switch, left brake	X218	9
S007 - Switch, additional headlight	X219	7
S008 - Switch, front work light	X275	11
S009 - Switch, rear work light	X274	12
S010 - Switch, rear wiper motor	X273	10
S011 - Switch, rotating beacon	X270 X271 X272	10
S015 - Switch, hand brake	X226	9, 22
S017 - Filter contamination switch	X228	22
S019 - Button, rear PTO, external left	X229	25
S020 - Button, rear PTO, external right	X230	25
S027 - Button, rear power lift, right-hand external raise	X237	20
S028 - Button, rear power lift, right-hand external lower	X238	20
S029 - Button, rear power lift, left-hand external raise	X239	20
S030 - Button, rear power lift, left-hand external lower	X240	20
S031 - Switch, right door contact	X279	28
S032 - Switch, left door contact	X299	28
S033 - Switch, heater fan	X247	13
S035 - Switch, high-pressure/low-pressure (air conditioning system)	X341	14
S037 - Switch, heater fan (3-speed)	X280	14
S038 - Switch, rear window heater	X267 X268 X269	15
S044 - Potentiometer, air conditioning system	X220	14
S047 - Switch, engine brake	X140	30
S048 - Switch, lock EPC	X148	20
S049 - Button, hydraulic circuit 3	X431	36
S056 - Switch, oil flow collector	X1019	20
S059 - Switch, hydr. trailer brake	X1056	9
S061 - Switch, quick reverse	X1040	23
S069 - Switch, roof fan (continuous)	X468	14
S070 - Switch, transmission range (travel range/idling)	X1340	22
S071 - Switch, quick entry/hitch	X1355 X1359 X1360	20



OVERALL SYSTEM/ELECTRICAL SYSTEM

Component list for circuit diagram set 339.900.000.010

C

DIN component designation	Separation point	Circuit diagram sheet no.
S072 - Switch, quick lift	X1354 X1361 X1362 X1363	20
S074 - Switch, transmission neutral,	X1429	22, 30
S084 - Switch, hydraulic trailer brake ON/OFF (France)	X1646	27
S092 - Battery disconnect switch	X1749	5
S097 - Button, hydraulic circuit 4	X1833	36

DIN component designation	Circuit diagram sheet no.
X007 - Implement socket	17
X014 - Cable coupling, cab/operator platform	7, 8, 10, 11, 12, 14, 15, 16, 28
X016 - Cable coupling	7, 12
X017 - Front socket	7, 8
X018 - Rear socket	7, 8, 9
X023 - Socket, hydraulic circuit 3	37
X031 - Separation point on A002	4, 6, 9, 18, 21, 22, 23, 24, 25, 26, 30
X037 - Separation point on A009	21, 22
X050 - Fuse holder 1	5, 6, 7, 8, 9, 10, 13, 14, 15, 16, 20, 27, 28
X051 - Fuse holder 2	5, 6, 7, 8, 9, 11, 12, 17, 20, 22, 30
X053 - Plus bolts	5
X058 - Battery terminal (+ UB 30)	5
X060 - Separation point on G001	4
X061 - Separation point on M001	5
X062 - Separation point on G002	5
X064 - Separation point on G002	19
X072 - Separation point on S002	5, 30
X080 - Separation point on S003	7
X082 - Separation point on S012	33
X086 - Separation point on Y006	36
X100 [blau] - Separation point on A007	7, 8, 17, 18, 19
X101 [gelb] - Separation point on A007	4, 6, 19
X109 - Bodywork earth on A002	4
X120 - Separation point on E008	7, 8, 9
X121 - Separation point on E007	7, 8, 9



OVERALL SYSTEM/ELECTRICAL SYSTEM

Component list for circuit diagram set 339.900.000.010

C

DIN component designation	Circuit diagram sheet no.
X140 - Separation point on S047	30
X148 - Separation point on S048	20
X151 - Separation point on B002	24
X152 - Separation point on B003	31
X153 - Separation point on B004	30
X156 - Separation point on B007	19
X157 - Separation point on B008	22
X158 - Separation point on B009	22
X159 - Separation point on B010	23
X163 - Separation point on B014	22
X164 - Separation point on B015	22
X166 - Separation point on B017	23
X168 - Separation point on B019	19
X169 - Separation point on B020	25
X177 - Separation point on B039	22
X178 - Separation point on B030	20
X179 - Separation point on B031	20
X180 - Separation point on B032	20
X183 - Separation point on B035	30
X195 - Separation point on B045	14
X196 - Separation point on B046	14
X200 - Separation point on A013	4, 6, 18, 21, 22, 23, 24, 25
X204 - Separation point on H006	19
X215 - Separation point on S001	8, 10
X216 - Separation point on S004	8
X217 - Separation point on S005	9
X218 - Separation point on S006	9
X219 - Separation point on S007	7
X220 - Separation point on S044	14
X226 - Separation point on S015	9, 22
X228 - Separation point on S017	22
X229 - Separation point on S019	25
X230 - Separation point on S020	25
X237 - Separation point on S027	20
X238 - Separation point on S028	20
X239 - Separation point on S029	20
X240 - Separation point on S030	20
X245 - Separation point on S001	7, 10
X246 - Separation point on S002	5
X247 - Separation point on S033	13
X254 - 10 amp socket	16
X255 - 25 A socket (+ UB 30)	16
X256 - 25 amp socket (earth)	16
X258 - Separation point on M004	10
X259 - Separation point on E023	15
X260 - Separation point on E023	15
X267 - Separation point on S038	15



OVERALL SYSTEM/ELECTRICAL SYSTEM

Component list for circuit diagram set 339.900.000.010

C

DIN component designation	Circuit diagram sheet no.
X268 - Separation point on S038	15
X269 - Separation point on S038	15
X270 - Separation point on S011	10
X271 - Separation point on S011	10
X272 - Separation point on S011	10
X273 - Separation point on S010	10
X274 - Separation point on S009	12
X275 - Separation point on S008	11
X276 - Cable coupling E021	10
X279 - Separation point on S031	28
X280 - Separation point on S037	14
X281 - Cable coupling, air conditioning system	14
X282 - Separation point on E020	11
X283 - Separation point on E020	11
X284 - Cable coupling on M002	10
X285 [Stufe1] - Separation point on M009	13
X286 [Stufe2] - Separation point on M009	13
X287 [Stufe 3] - Separation point on M009	13
X288 [Masse] - Separation point on M009	13
X289 - Separation point on B051	28
X290 - Separation point on B051	28
X291 - Separation point on E013	11
X292 - Separation point on E015	11
X293 - Separation point on E015	11
X294 - Separation point on E014	11
X295 - Separation point on E016	11
X296 - Separation point on E016	11
X297 - Cable coupling on M002	10
X298 - Cable coupling on E022	10
X299 - Separation point on S032	28
X301 - Separation point on M003	10
X303 - Separation point on M005	10
X308 - Separation point on E019	28
X309 - Separation point on E019	28
X310 - Separation point on E019	28
X311 - Separation point on B050	28
X312 - Separation point on B050	28
X317 - Separation point on Y004	22
X319 - Separation point on Y008	25
X320 - Separation point on Y009	26
X321 - Separation point on Y010	26
X322 - Separation point on Y011	25
X323 - Separation point on Y012	24
X324 - Separation point on Y013	24
X325 - Separation point on Y014	24
X332 - Separation point on Y021	20
X333 - Separation point on Y022	20



OVERALL SYSTEM/ELECTRICAL SYSTEM

Component list for circuit diagram set 339.900.000.010

C

DIN component designation	Circuit diagram sheet no.
X334 - Separation point on Y023	9
X341 - Separation point on S035	14
X342 - Separation point on Y024	14
X345 - Separation point on E022	10
X346 - Separation point on E021	10
X347 - Separation point on M002	10
X350 - Separation point on E001	7
X351 - Separation point on E002	7
X352 - Separation point on E003	7
X353 - Separation point on E004	7
X360 - Separation point on Y026	25
X361 - Separation point on Y027	25
X366 - Separation point on E017	12
X367 - Separation point on E018	12
X368 - Separation point on Y028	25
X372 - Separation point on E005	7
X373 - Separation point on E006	7
X374 - Separation point on E009	7
X375 - Separation point on E009	7
X376 - Separation point on E010	7
X377 - Separation point on E010	7
X378 - Separation point on E005	7
X379 - Separation point on E006	7
X380 - Separation point on E005	8
X381 - Separation point on E006	8
X385 - Separation point on E011	12
X386 - Separation point on E011	12
X387 - Separation point on E011	12
X388 - Separation point on E012	12
X389 - Separation point on E012	12
X390 - Separation point on E012	12
X431 - Cable coupling on S049	36
X443 - Cabel coupling, cab roof	14
X460 - Separation point on M014	14
X468 - Separation point on S069	14
X500 - Earth pin, oil sump right	4
X503 - Earth pin, oil sump right	4, 9, 24, 27
X505 - G001 battery (terminal 31) "earth"	4
X520 - Earth pin, oil sump right	4, 7, 20, 24, 25
X531 - Earth pin, B-pillar right	4
X532 - Earth pin, cab body	4, 7, 12, 28
X533 - Earth pin, cab body	4, 10, 11, 12
X534 - Earth pin, cab body	4, 5, 14, 15, 16, 17
X536 - Earth pin, cab body	4, 7, 11
X550 - Earth pin, operator platform right	4
X551 - Earth pin, operator platform right	4, 5, 10, 19, 30
X552 - Earth pin, operator platform	4, 7, 8, 9



OVERALL SYSTEM/ELECTRICAL SYSTEM

Component list for circuit diagram set 339.900.000.010

C

DIN component designation	Circuit diagram sheet no.
X553 - Earth pin, operator platform	4, 5, 16, 20, 22, 23
X554 - Earth pin, operator platform	4, 6, 9, 13, 14, 27
X560 - Earth pin, transition to cab	4
X565 - Earth pin, operator platform	4, 12
X570 - Earth pin, transmission	4, 7
X571 - Earth pin, transmission	4, 9, 22, 25, 26
X574 - Earth pin, transmission	4
X581 - Earth pin, engine	33
X600 - Connector, CAN high	18
X601 - Connector, CAN low	19
X607 - Connector, + UB 30	5
X608 - Connector, + UB 15	5
X609 - Connector, + UB 58, lighting	7
X610 - Connector, right direction indicator	8
X611 - Connector, left direction indicator	8
X612 - Connector + UB 15, wipers and rotating beacon	10
X613 - Connector, sensor system earth	4, 22, 23
X617 - Connector, CAN low	21
X618 - Connector, CAN high	21
X619 - Connector, electronics earth	4, 22
X620 - Connector, sensor system earth	4
X624 - Connector, CAN high	18
X625 - Connector, CAN low	18
X627 - Connector, electronics earth	4, 16, 25
X628 - Connector, + UB 30	6
X630 - Connector, brake light (terminal 54)	9
X631 - Connector, rear PTO LED ON	25
X638 - Connector, sensor system earth	4, 22, 25
X651 - Connector, headlight 56a (main beam)	7
X650 - Connector, headlight 56b (dipped beam)	7
X671 - Connector, sensor system earth	4, 23, 24, 25
X676 - Connector, draught sensing pin earth	20
X677 - Connector, +UB draught sensing pin	20
X678 - Connector, sensor system earth	19, 22
X685 - Connector, +UB 30 A051 - ECU, engine control unit	6
X700 - Connector, rear work light earth	12
X792 - Connector, + UB 15 (continuous roof fan)	14
X810 - EDC diagnostics socket (engine control unit)	30
X830 - Cable coupling (M007 and S053)	16
X850 - Separation point on ECU, EPC B	18, 20
X896 - Separation point on E054	7
X897 - Separation point on E055	7
X898 - Separation point on B055	30
X991 - Separation point on R002	33
X998 - Separation point on H005	7
X999 - Separation point on H005	7
X1019 - Separation point on S056	20



OVERALL SYSTEM/ELECTRICAL SYSTEM

Component list for circuit diagram set 339.900.000.010

C

DIN component designation	Circuit diagram sheet no.
X1020 - Separation point on Y050	20
X1022 - Separation point on Y052	9
X1040 - Separation point on S061	23
X1056 - Separation point on S059	9
X1315 - Separation point on radio (compact plug)	28, 35
X1316 - Separation point on radio (compact plug)	28
X1317 - Cable coupling, M009	13
X1340 - Separation point on S070	22
X1353 - Separation point on A035	20
X1354 - Separation point on S072	20
X1355 - Separation point on S071	20
X1356 - Separation point on B058	20
X1357 [weiß] - Separation point on A036	4, 22, 24, 25, 26
X1358 [schwarz] - Separation point on A036	4, 6, 19, 23, 25, 30
X1359 - Separation point on S071	20
X1360 - Separation point on S071	20
X1361 - Separation point on S072	20
X1362 - Separation point on S072	20
X1363 - Separation point on S072	20
X1371 - Relay mounting	5, 7, 8, 9, 10, 22, 30, 31
X1375 - Cable coupling, operator platform/chassis	4, 7, 8, 9, 19, 20, 21, 22, 25, 26
X1378 - Connector, + UB stabiliser (10 VDC) (EPC B)	20
X1381 - Connector, + UB stabiliser (10 VDC) (EPC B)	20
X1411 - Separation point on A055	29
X1421 - Cable coupling, operator platform	5, 17, 30
X1429 - Separation point on S074	22, 30
X1430 - Cable coupling, operator platform/chassis	4, 5, 6, 7, 8, 9, 14, 19, 20, 21, 23, 24, 25, 30
X1463 - Connector, G bus_High	21
X1464 - Connector, G bus_Low	21
X1466 - Separation point on A051	4, 6, 21, 30
X1526 - Earth connector (B055)	30
X1527 - Connector, + UB foot throttle (5.0 VDC)	30
X1528 - Connector, sensor system supply	30
X1529 - Separation point on X053 plus bolts	5
X1534 - Separation point on X053 plus bolts	5
X1544 - Separation point on H007	23
X1585 - Separation point on B080	19
X1625 - Reserve cables	19
X1626 - Reserve cables	19
X1627 - Reserve cables	23
X1628 - Reserve cables	23
X1631 - Battery (terminal 31)	4
X1632 - Battery + (terminal 30)	5
X1634 - Connector (+ UB 30)	5, 6, 28
X1635 - Cable coupling, operator platform	6, 18



OVERALL SYSTEM/ELECTRICAL SYSTEM

Component list for circuit diagram set 339.900.000.010

C

DIN component designation	Circuit diagram sheet no.
X1636 - Cable coupling (Modasys)	29
X1639 - Connector, K bus_High	29
X1640 - Connector, K bus_Low	29
X1641 - Separation point on M018	14
X1642 - Separation point on M018	14
X1643 - Separation point on M018	14
X1644 - Separation point on M018	14
X1646 - Separation point on S084	27
X1647 - Separation point on Y089	27
X1648 - Separation point on K065	30
X1654 - Separation point on B085	33
X1655 - Separation point on B086	33
X1656 - Separation point on B087	33
X1657 - Separation point on B088	33
X1658 - Separation point on B089	33
X1659 - Separation point on B090	33
X1660 - Separation point on B091	33
X1661 - Separation point on B092	33
X1662 - Separation point on Y091	33
X1663 - Separation point on K063	33
X1664 - Separation point on K063	33
X1665 - Separation point on K063	33
X1671 - Separation point on A051	33
X1672 - Separation point on A051	33
X1673 - Cylinder head cable coupling (injectors)	33
X1674 - Separation point on Y094	33
X1675 - Connector, earth	33
X1676 - Connector + UB 12 VDC	33
X1679 - Separation point on K068	5
X1681 - Separation point on K068	5
X1700 - Separation point on K063	33
X1701 - Separation point on R002	33
X1702 - Separation point on K063	33
X1703 - Separation point on G002	5
X1704 - Separation point on E008	34
X1705 - Separation point on E118	34
X1706 - Separation point on E118	34
X1707 - Connector (+ UB 30)	5
X1749 - Separation point on S092	5
X1752 - Separation point on K068	5
X1767 - Separation point on radio to B050/B051	35
X1769 - Cable coupling, air conditioning connection to the roof fan	14
X1770 - Cable coupling, roof fan connection (3-speed) to the air conditioning	14
X1771 - Cable coupling, roof fan connection (continuous) to air conditioning	14
X1772 - Earth pin, cab body	14



OVERALL SYSTEM/ELECTRICAL SYSTEM

Component list for circuit diagram set 339.900.000.010

C

DIN component designation	Circuit diagram sheet no.
X1773 - Earth pin, cab body	14
X1805 - Separation point on K068	5
X1813 - Separation point on Y109	37
X1814 - Separation point on Y110	37
X1815 - Separation point on Y111	37
X1816 - Separation point on Y112	37
X1818 - Separation point on A072	36
X1831 - Separation point on A072	36
X1832 - Cargo relay block	32, 36
X1833 - Separation point on S097	36
X4000 - UB 15 connector	36
X4001 - Cab earth pin	4
X4002 - Cable coupling, 3rd and 4th hydraulic circuit	36
X4003 - Separation point, Cargo front loader multi-coupler	37
X4004 - Separation point, Cargo front loader	37
X4005 - Cargo earth connector	37
X4006 - Separation point, front loader 3rd hydraulic circuit	37

DIN component designation	Separation point	Circuit diagram sheet no.
Y004 - Clutch/turbo clutch solenoid valve	X317	22
Y006 - Solenoid valve, engine brake	X1679	33
Y008 - Solenoid valve, rear PTO (clutch)	X319	25
Y009 - Solenoid valve, 4WD	X320	26
Y010 - Solenoid valve, differential lock	X321	26
Y011 - Front PTO solenoid valve (clutch)	X322	25
Y012 - Oil pre-heater/load suspension solenoid valve	X323	24
Y013 - Solenoid valve, lower suspension	X324	24
Y014 - Raise suspension solenoid valve	X325	24
Y021 - Raise solenoid valve (rear power lift)	X332	20
Y022 - Lower solenoid valve (rear power lift)	X333	20
Y023 - Solenoid valve, compressed air pilot control system	X334	9
Y024 - Magnetic clutch, air conditioning compressor	X342	14
Y026 - Solenoid valve, rear PTO, stage I	X360	25
Y027 - Solenoid valve, rear PTO, stage II	X361	25
Y028 - Solenoid valve, rear PTO, stage III	X368	25
Y050 - Solenoid valve, oil flow collector	X1020	20
Y052 - Solenoid valve, hydraulic trailer brake	X1022	9
Y089 - Solenoid valve, hydraulic trailer brake ON/OFF (France)	X1647	27
Y091 - Dispensing unit (fuel)	X1662	33
Y094 - Actuator unit, AGR (exhaust gas recirculation)	X1674	33
Y095 - Injector valve 1 (injector)	X1673	33
Y096 - Injector valve 2 (injector)	X1673	33
Y097 - Injector valve 3 (injector)	X1673	33
Y098 - Injector valve 4 (injector)	X1673	33



OVERALL SYSTEM/ELECTRICAL SYSTEM

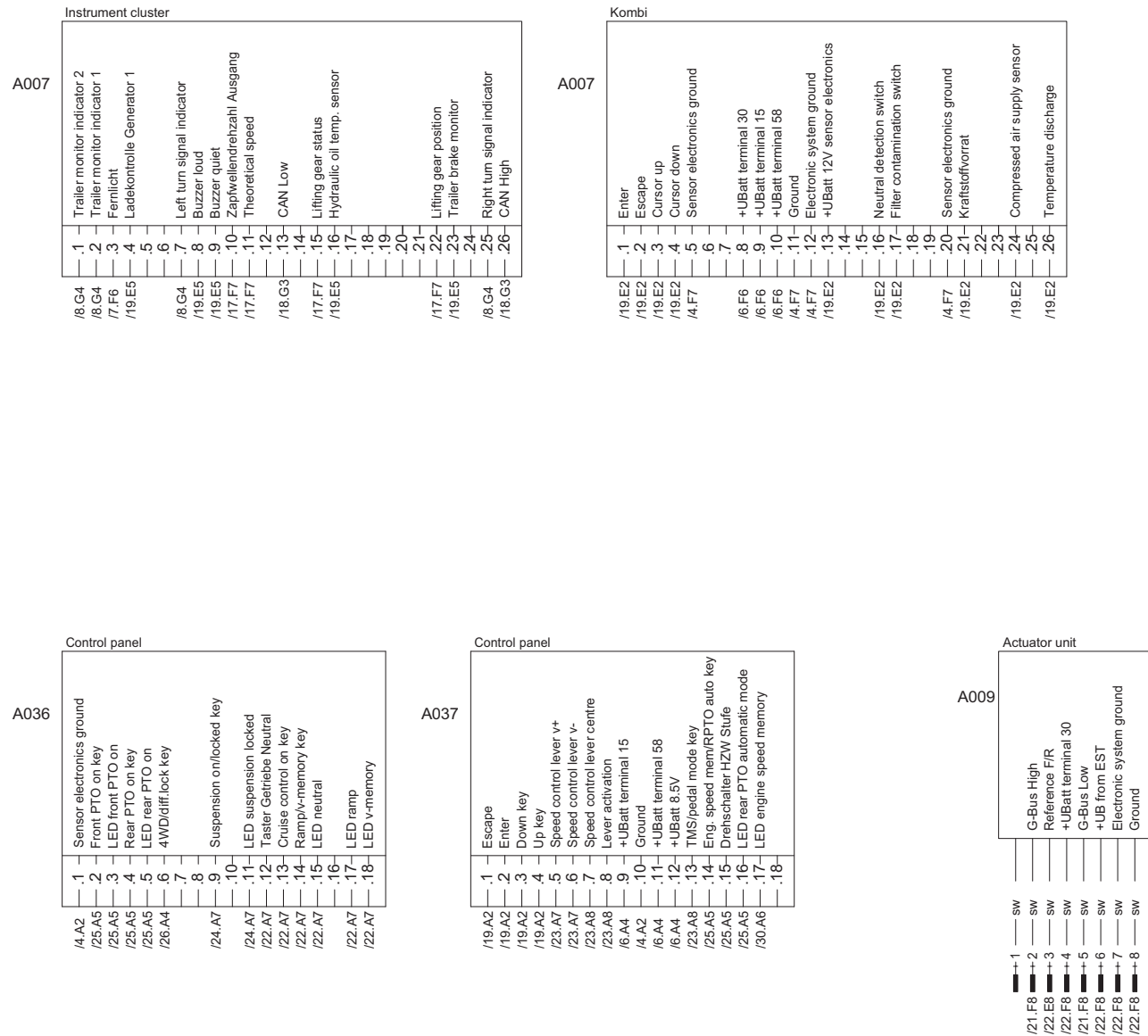
Component list for circuit diagram set **339.900.000.010**

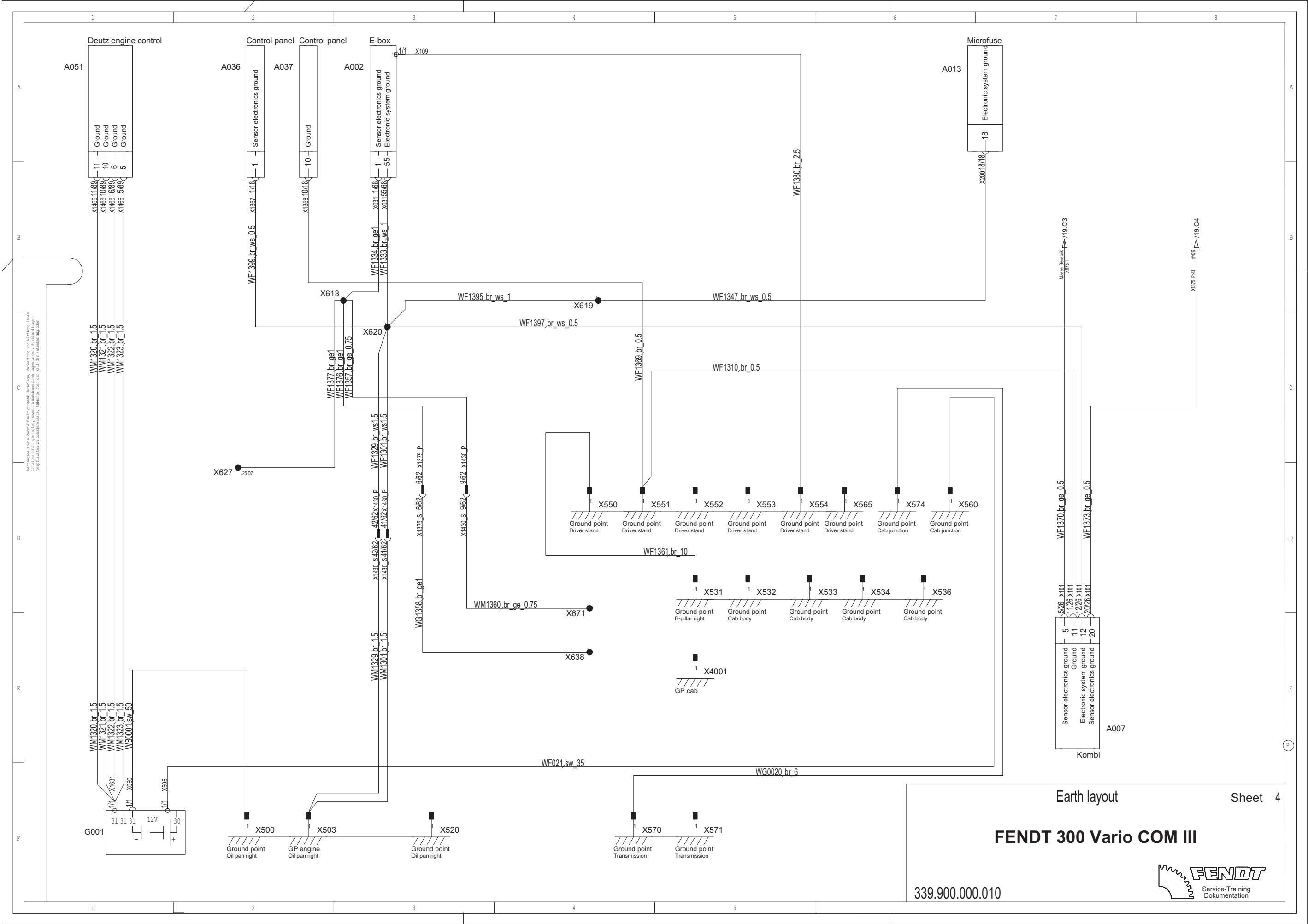
C

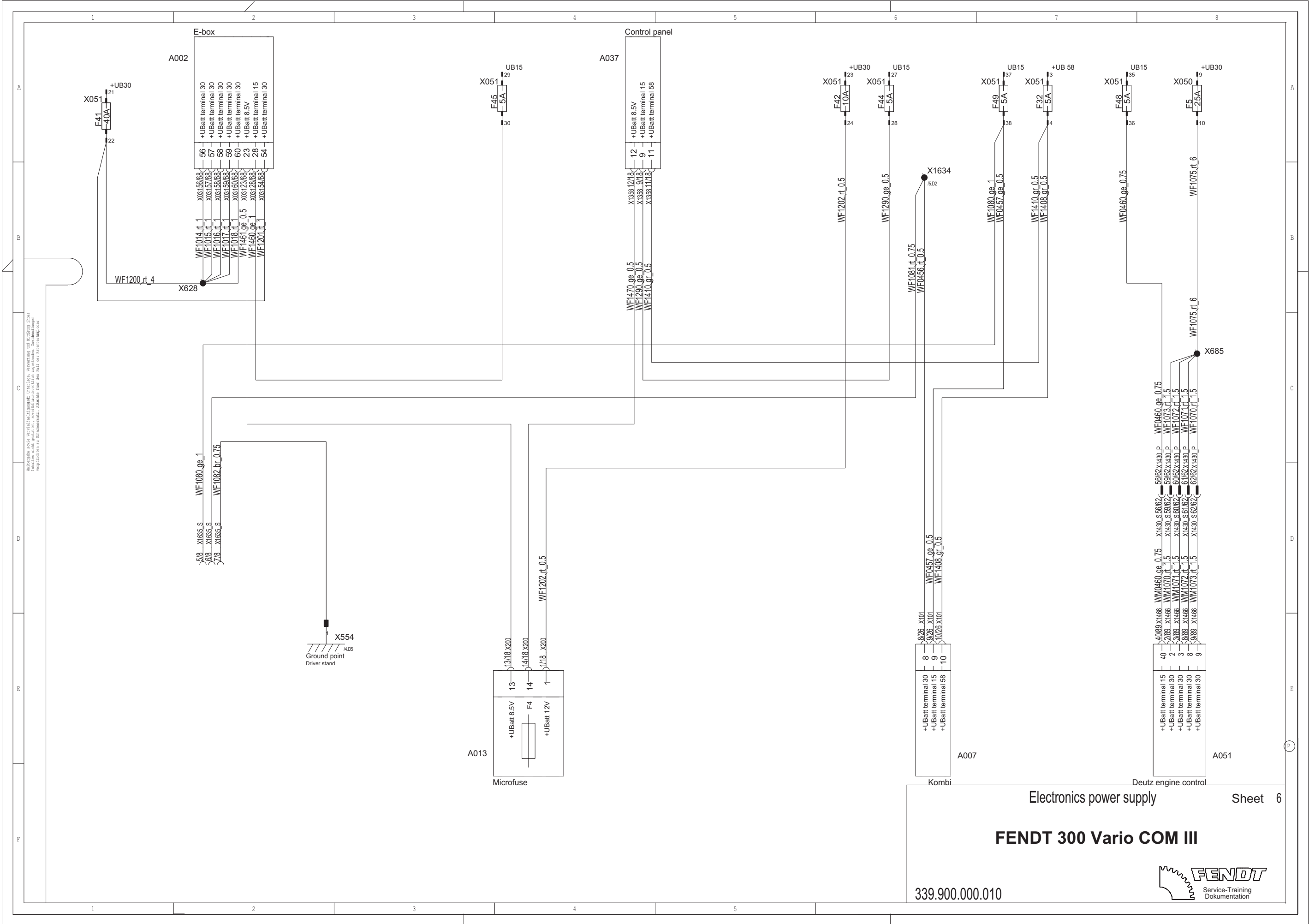
DIN component designation	Separation point	Circuit diagram sheet no.
Y109 - Solenoid valve, Cargo front loader, implement lock	X1813	37
Y110 - Solenoid valve, Cargo front loader, 3rd hydraulic circuit	X1814	37
Y111 - Solenoid valve, Cargo front loader, 4th hydraulic circuit	X1815	37
Y112 - Solenoid valve, Cargo front loader, suspension	X1816	37

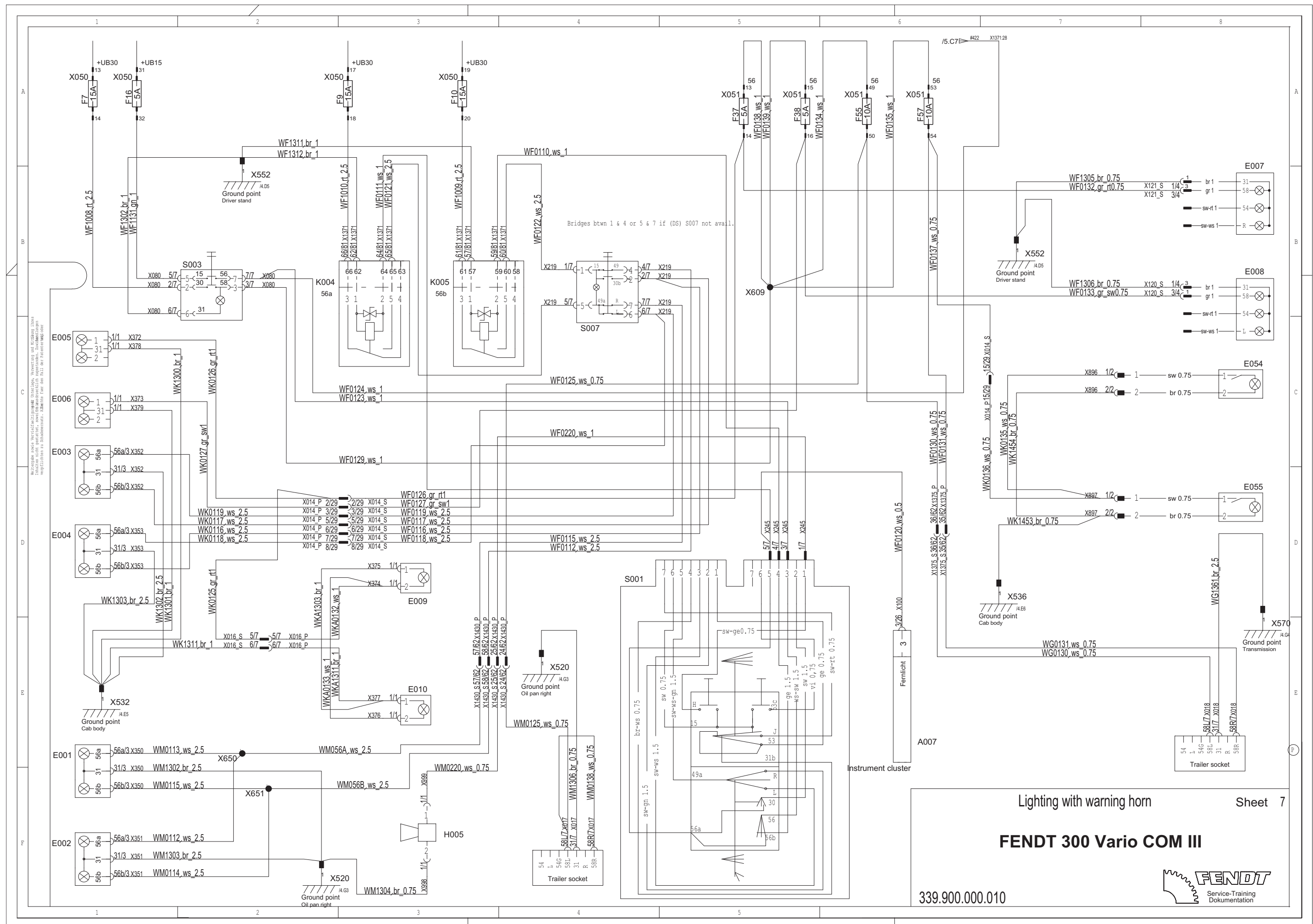
List of electrical circuit diagrams

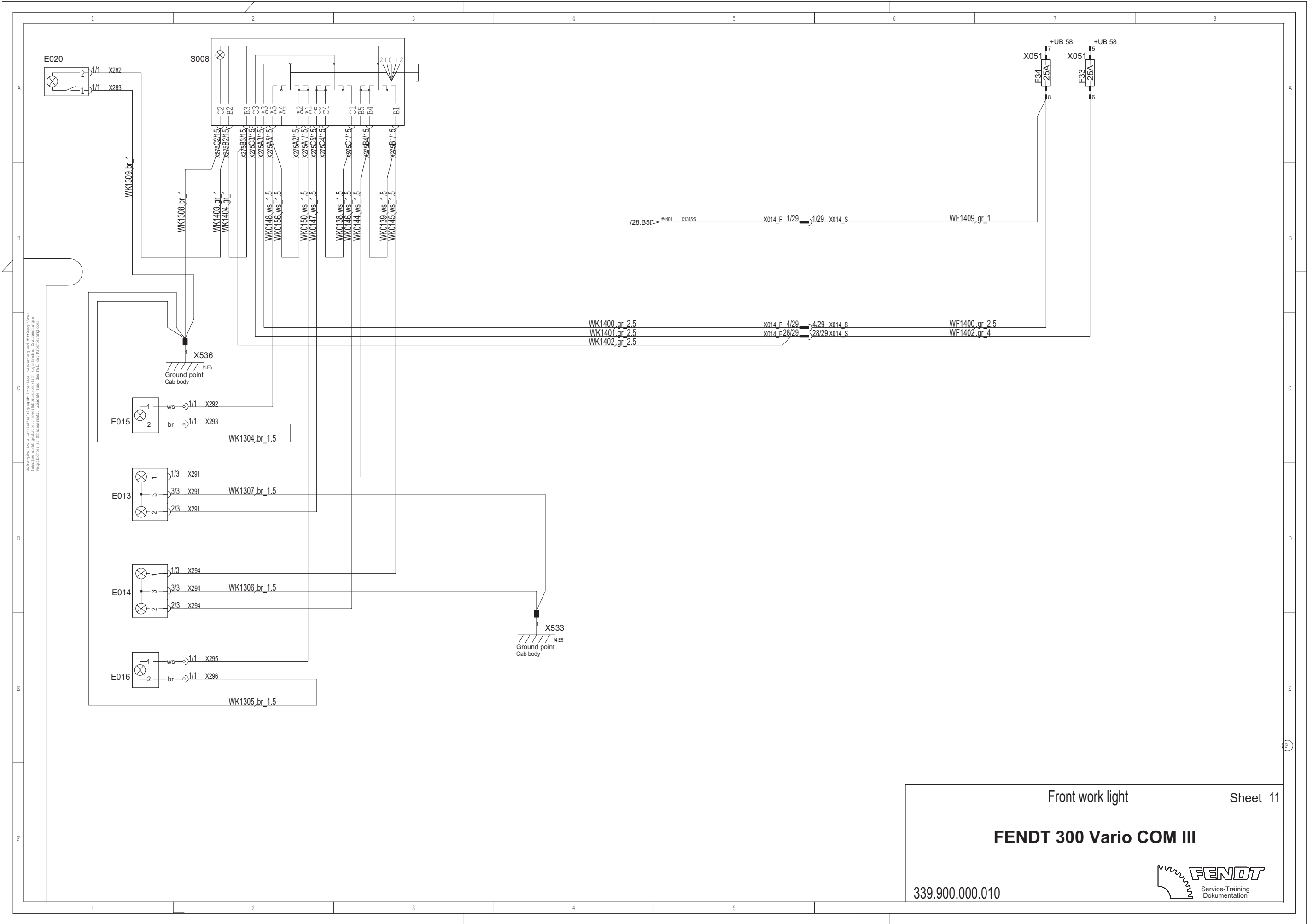
Instrument panel, actuator unit, microfuse, control panel - Sheet 2	23
Enhanced-control e-box, engine control, EPC-B, Modasys - Sheet 3.....	25
Earth layout – Sheet 4.....	27
Power supply – Sheet 5	29
Electronics power supply – Sheet 6	31
Lighting with warning horn – Sheet 7.....	33
Indicator unit – Sheet 8.....	35
Brake light, compressed air pilot control system, hydraulic brake – Sheet 9.....	37
Wiper, rotating beacon – Sheet 10	39
Front work light – Sheet 11	41
Rear work light – Sheet 12.....	42
Heater – Sheet 13.....	45
Ventilation and air conditioning system – Sheet 14	47
Heated rear window – Sheet 15.....	49
Sockets, seat compressor – Sheet 16	51
Implement socket – Sheet 17.....	53
Enhanced control bus (CAN bus) – Sheet 18.....	55
Instrument panel – Sheet 19	57
Electronic power lift control – Sheet 20.....	59
Transmission bus – Sheet 21	61
Transmission control system – Sheet 22	63
Transmission control system – Sheet 23.....	65
Suspension – Sheet 24.....	67
PTOs – Sheet 25.....	69
4WD and differential lock – Sheet 26	71
Brake load switch - Sheet 27	73
Lighting, cab and radio – Sheet 28	75
Modasys data transfer – Sheet 29.....	77
EDC engine control – Sheet 30	79
Relay block X1371 - Sheet 31	81
Relay block X1832 - Sheet 32	83
Engine control, Deutz – Sheet 33.....	85
Low roof version – Sheet 34.....	87
Hands-free device – Sheet 35	89
Front loader, hydraulic circuit 3 and 4 - Sheet 36	91
Front loader - Sheet 37	93

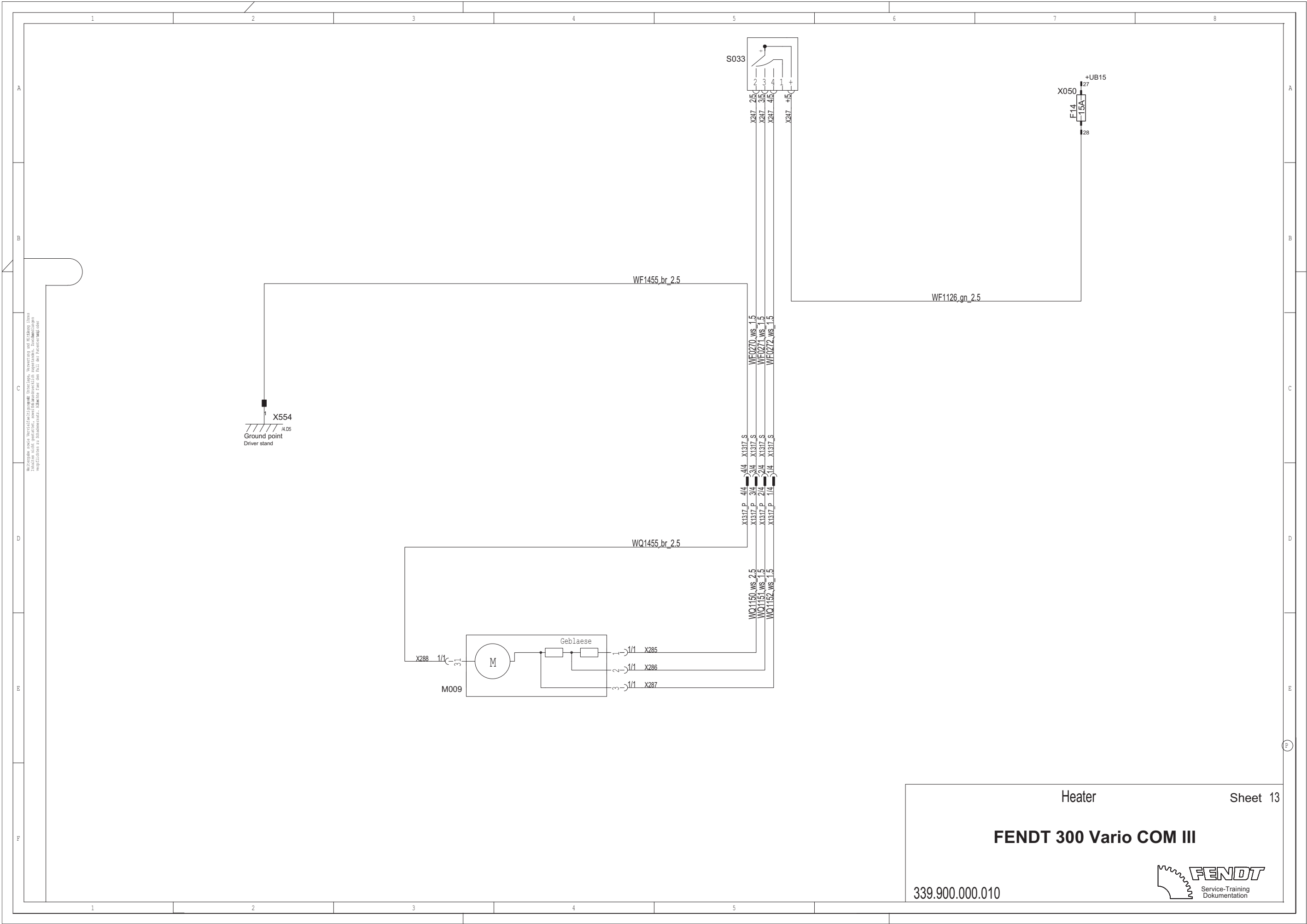


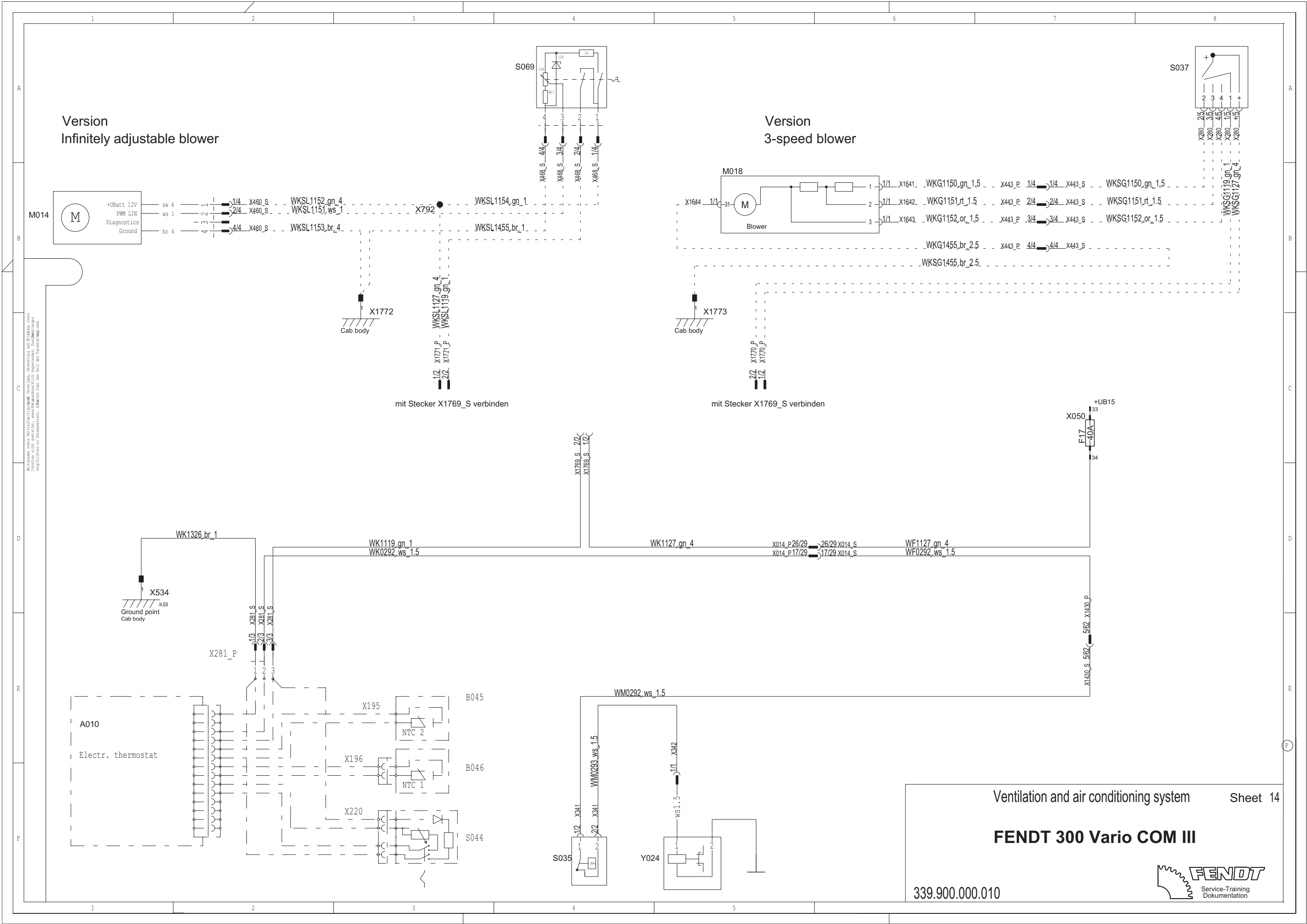


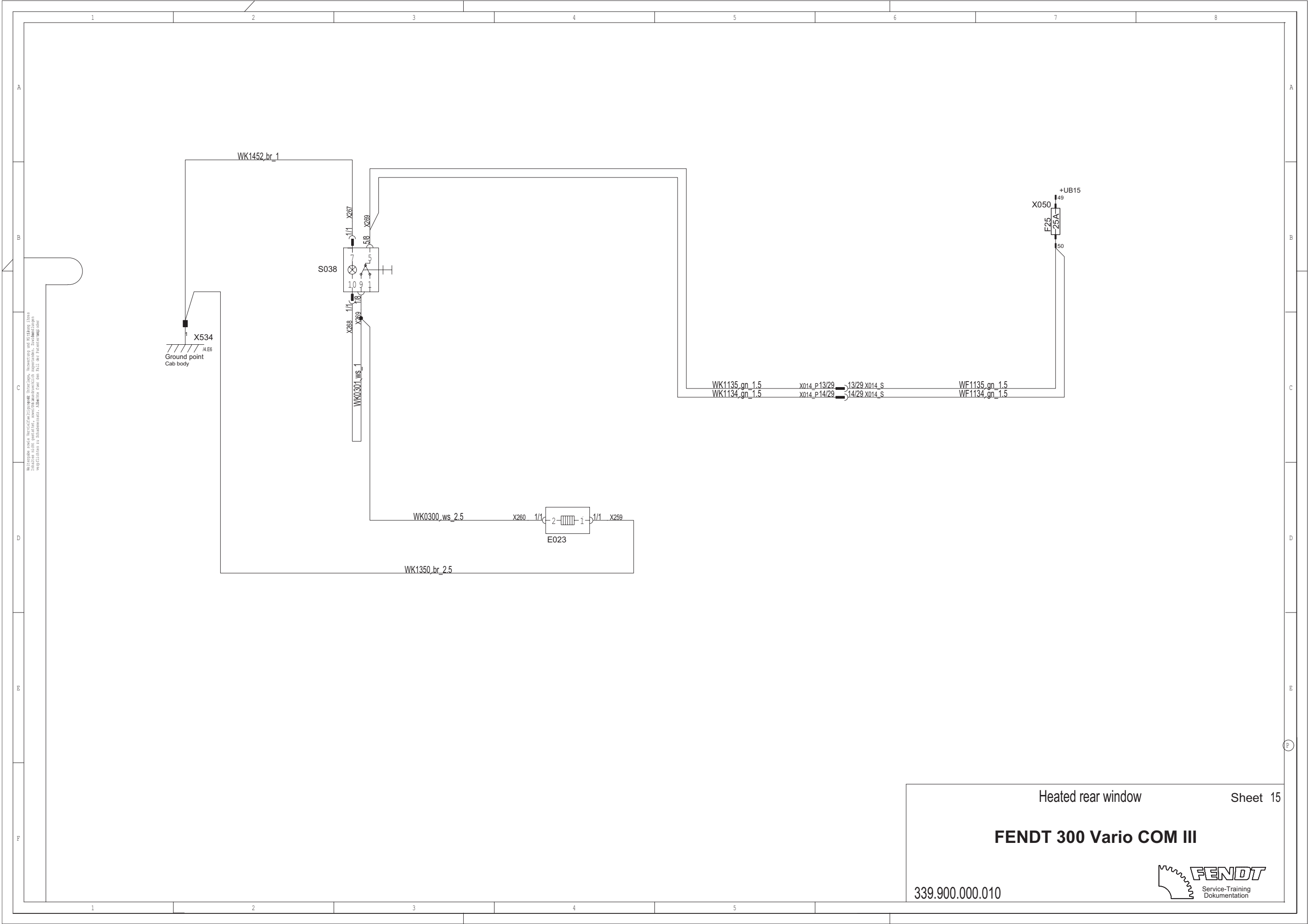


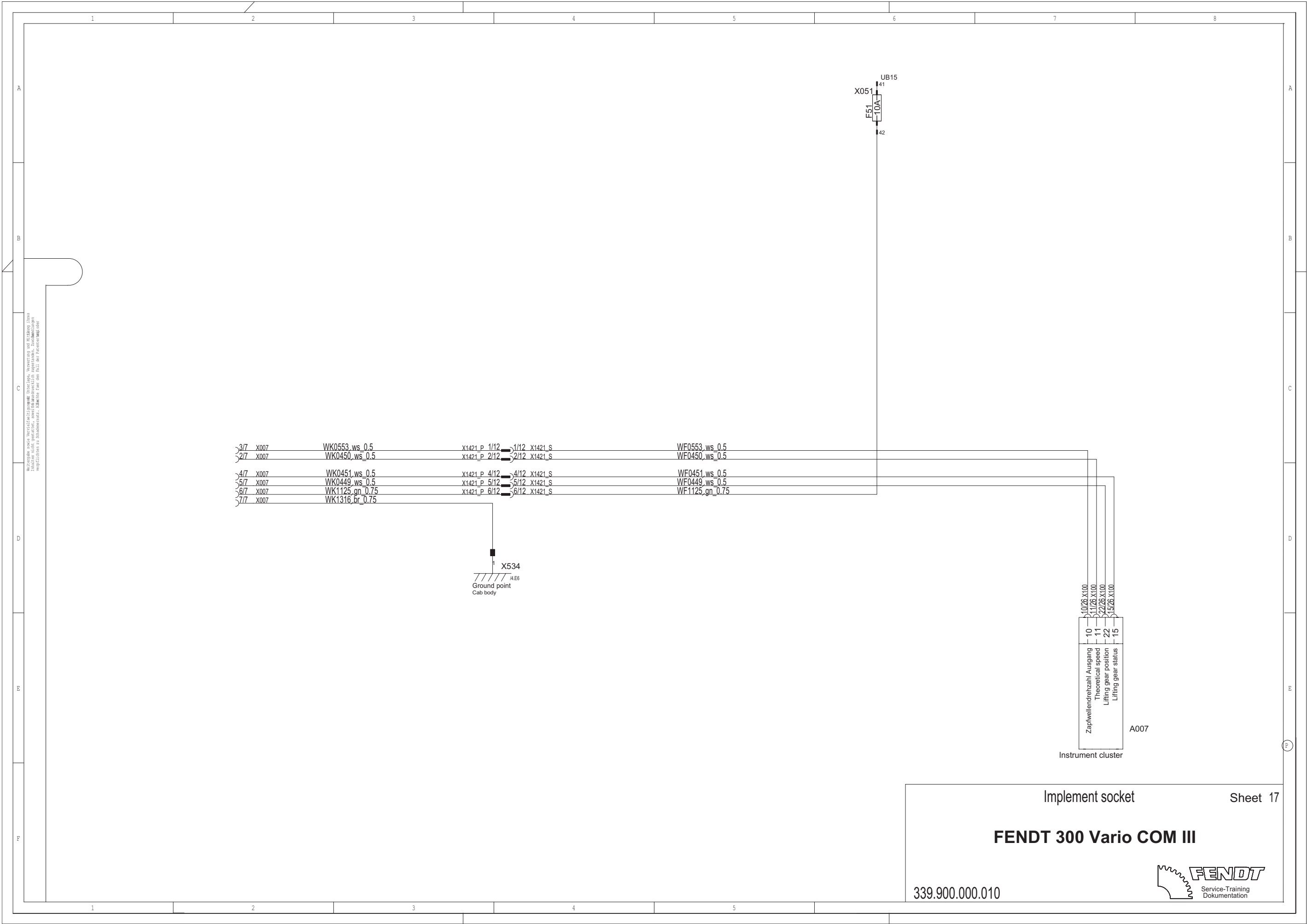


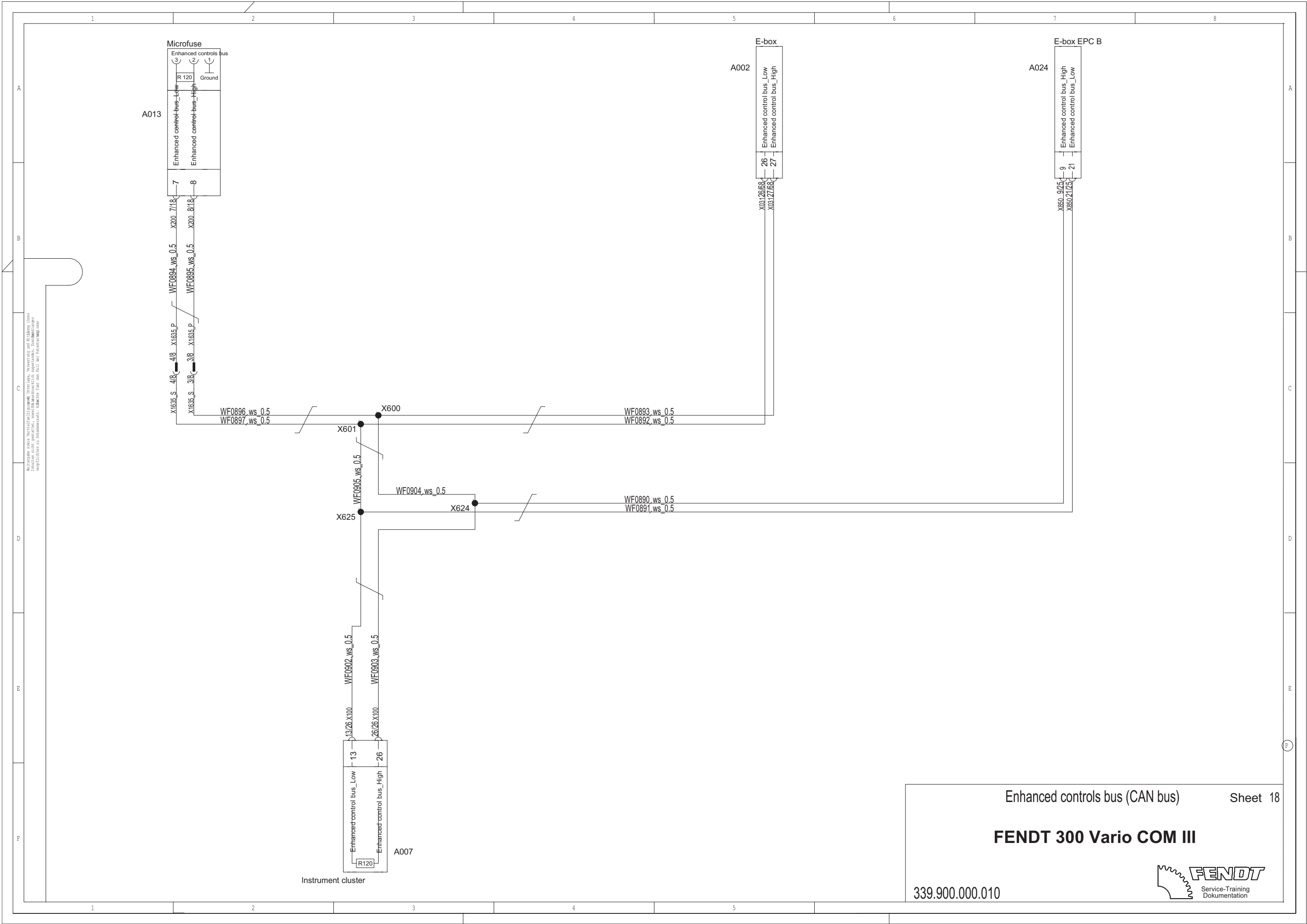


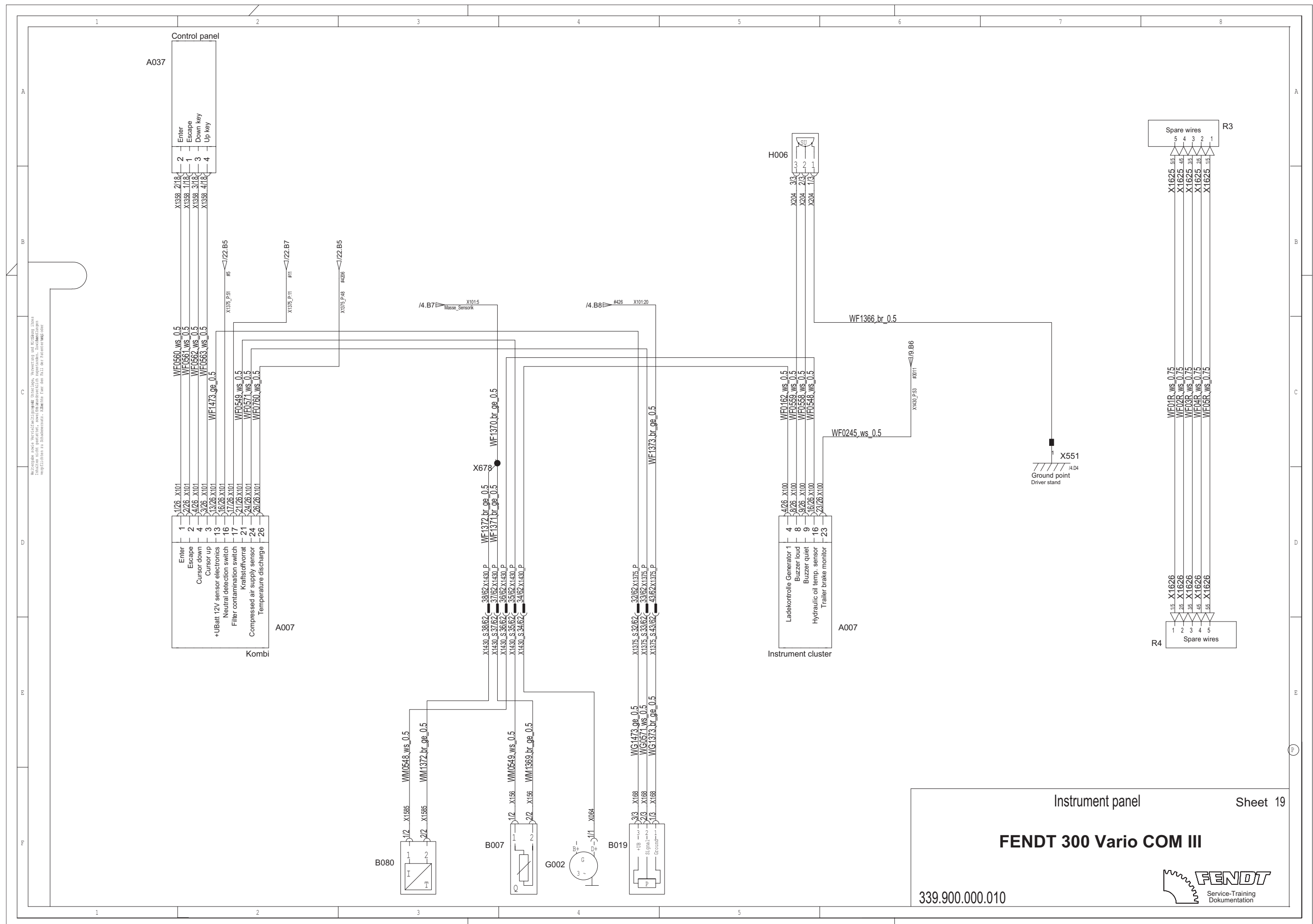


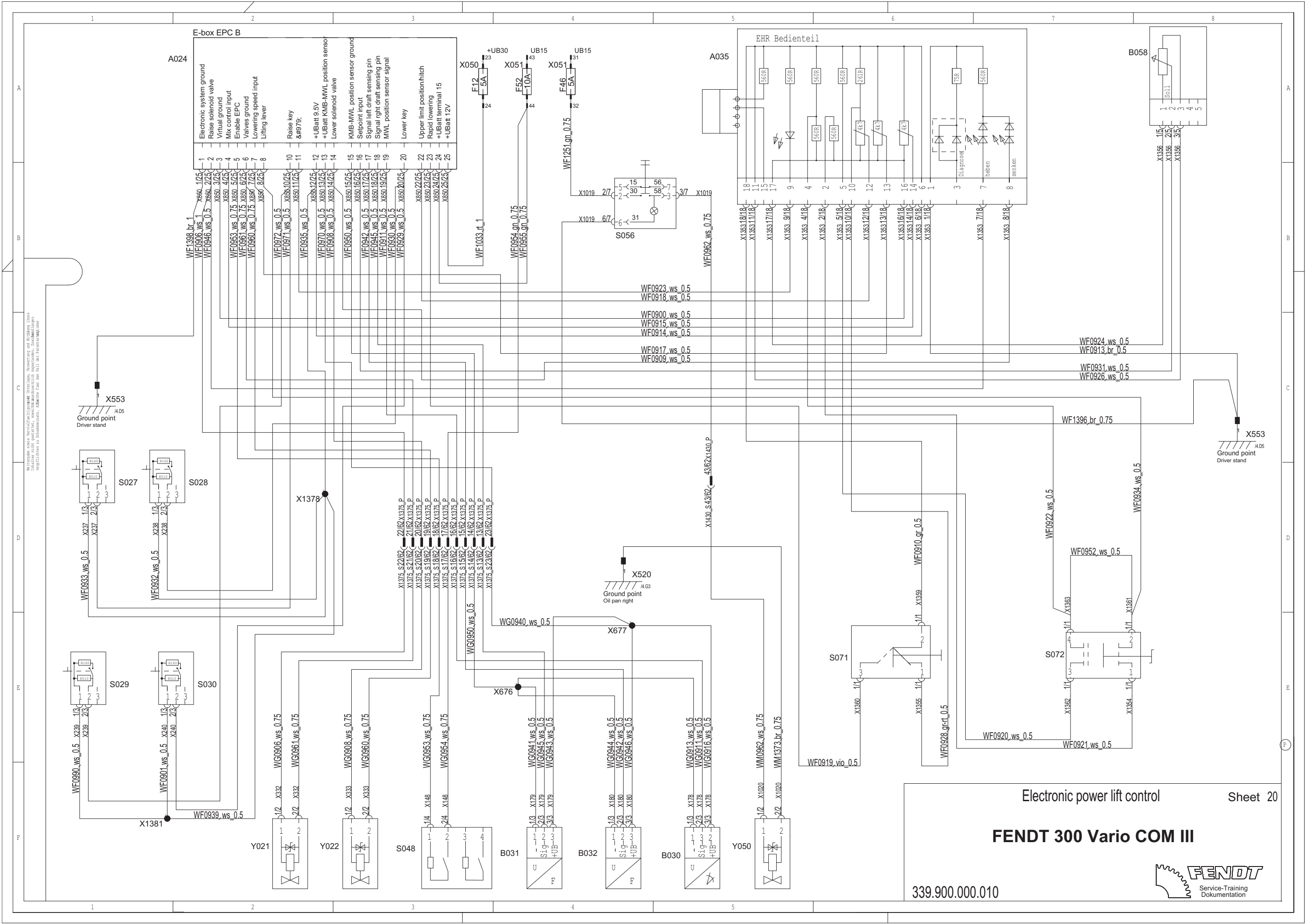


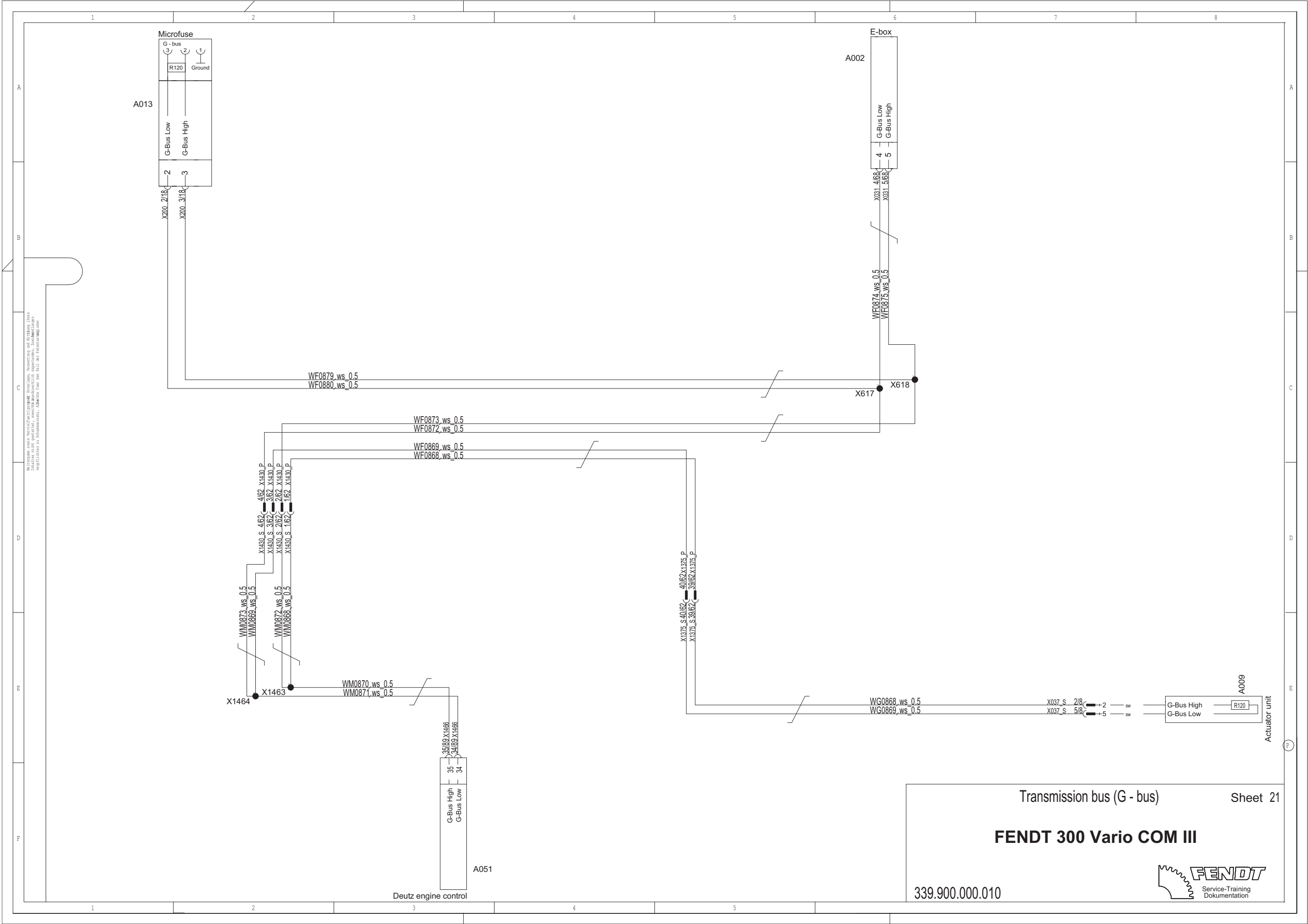


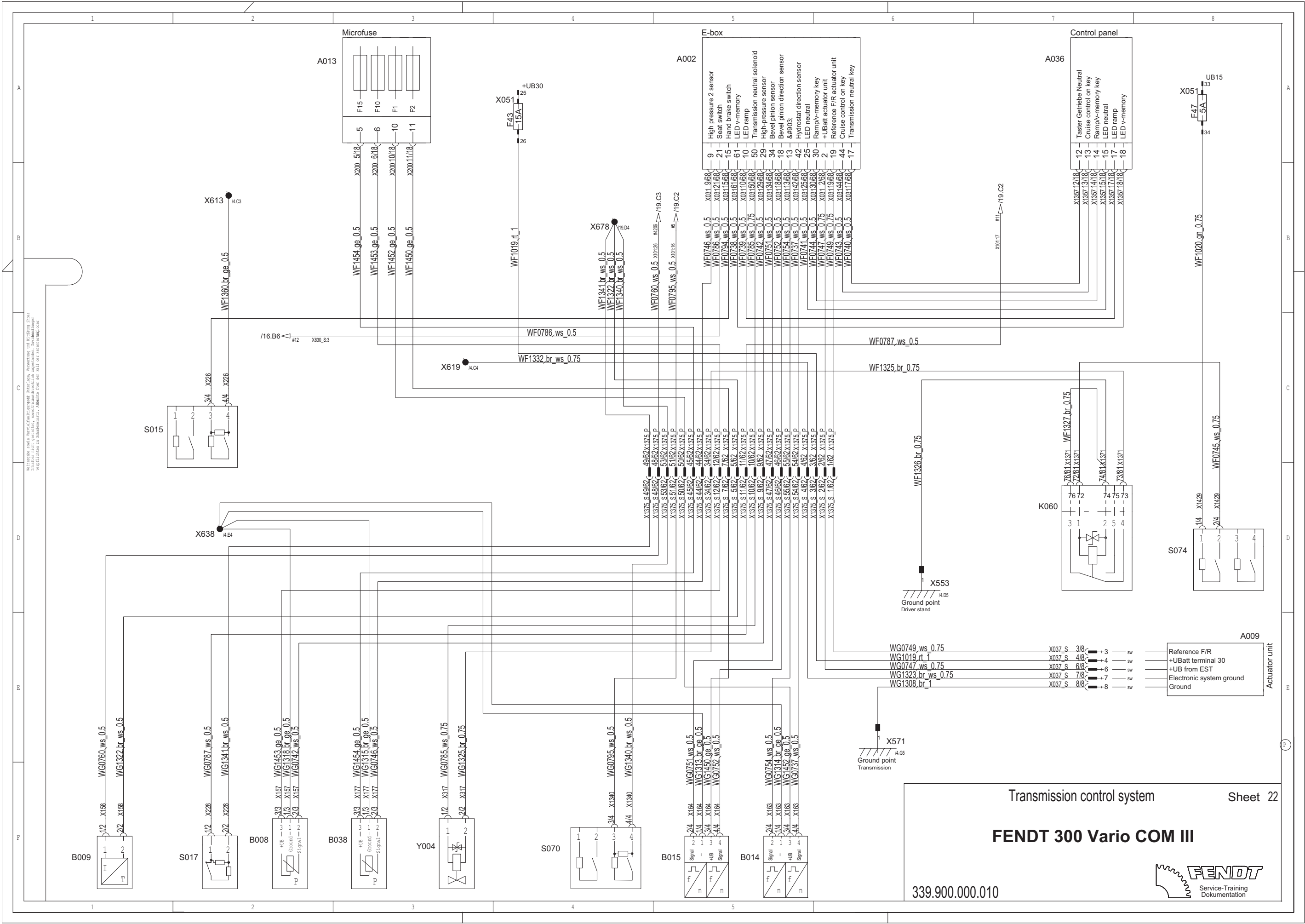


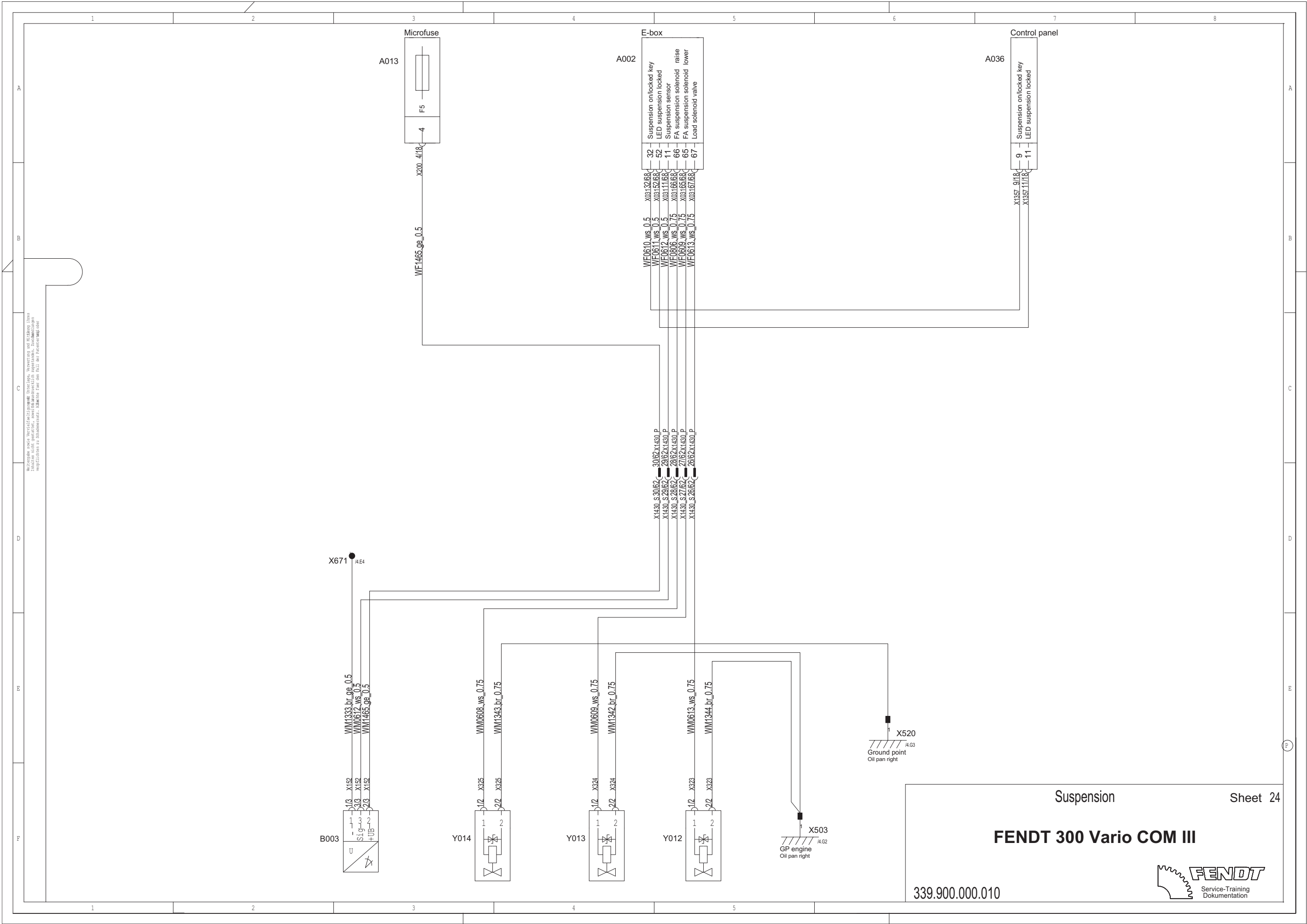


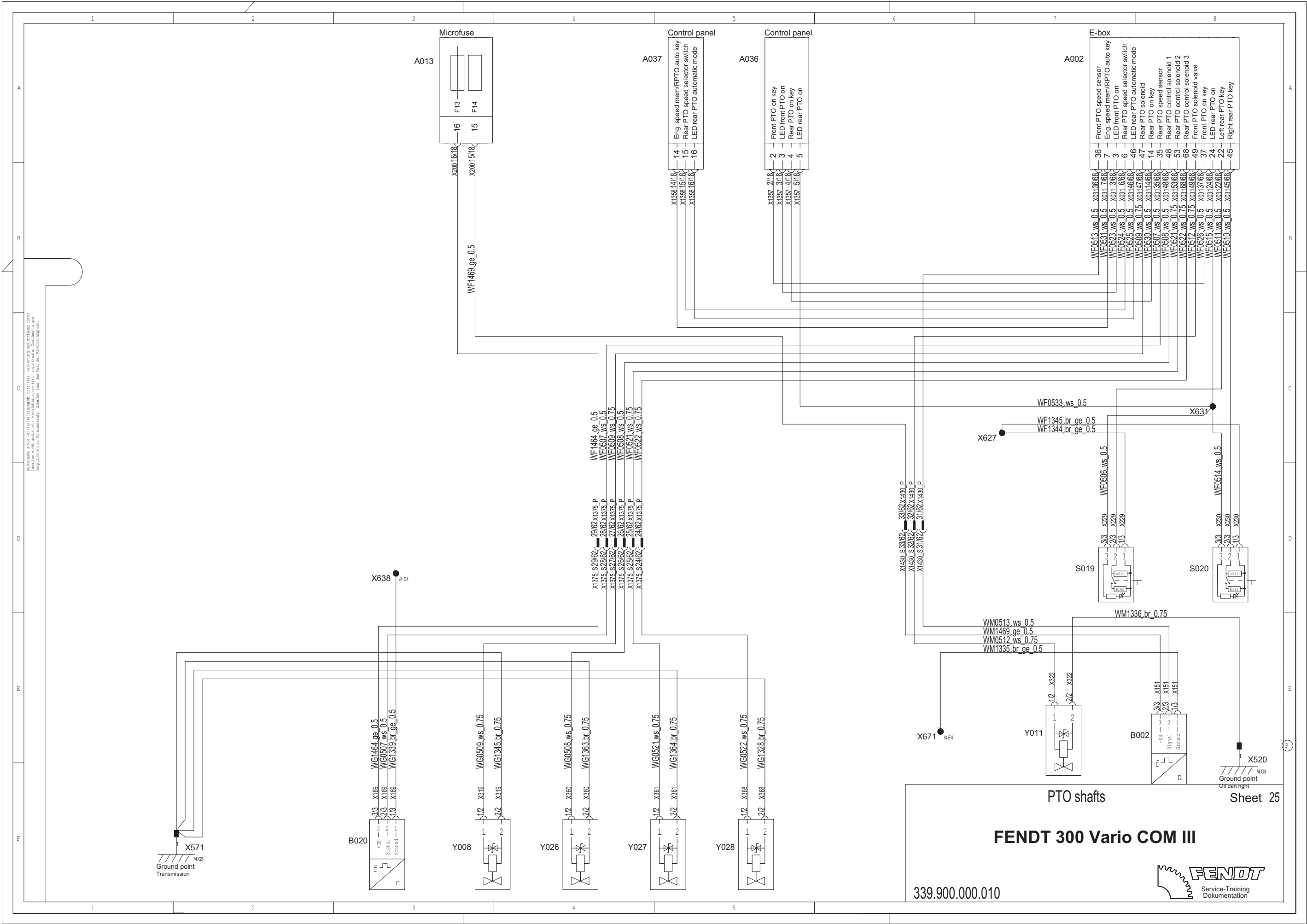


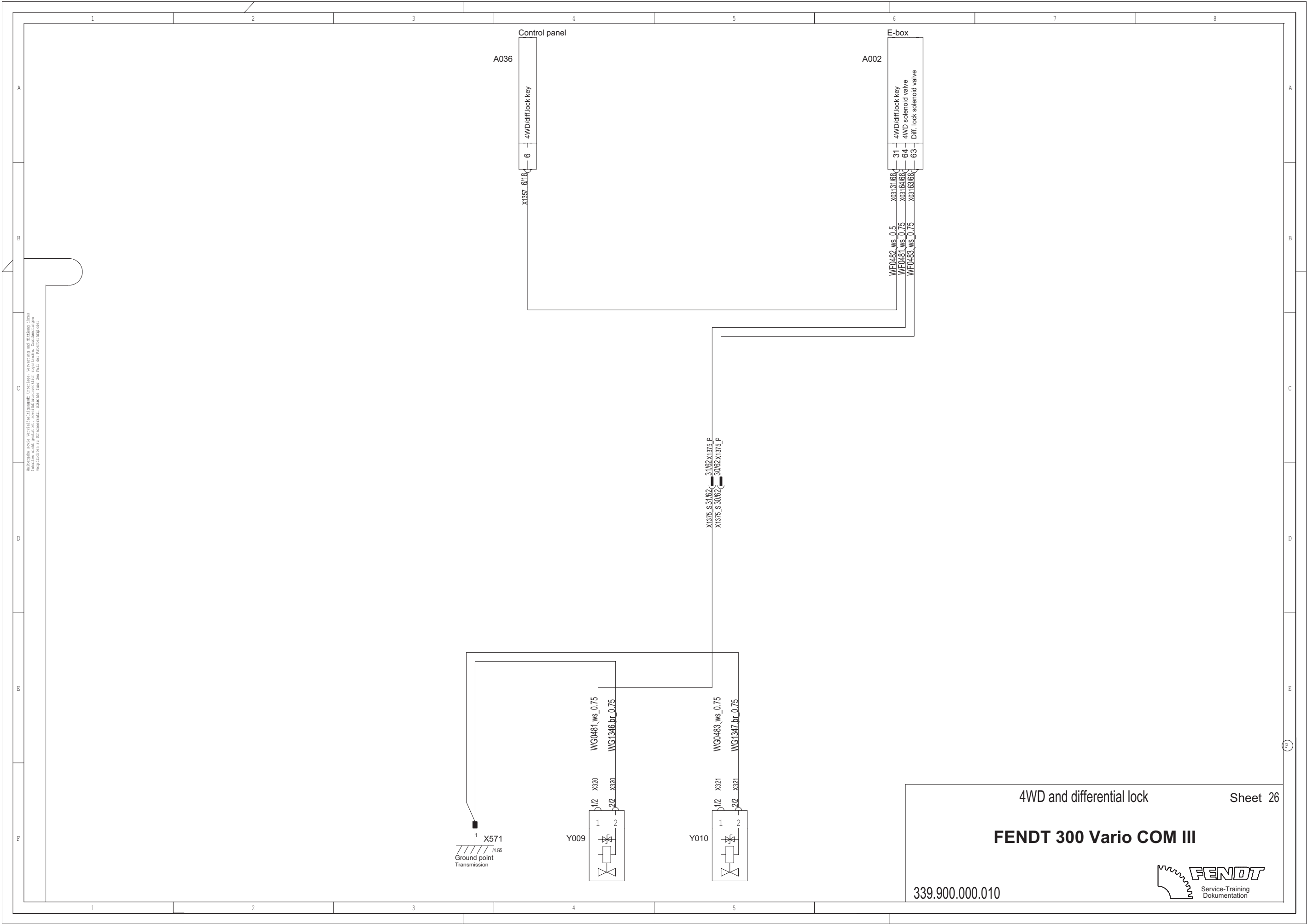


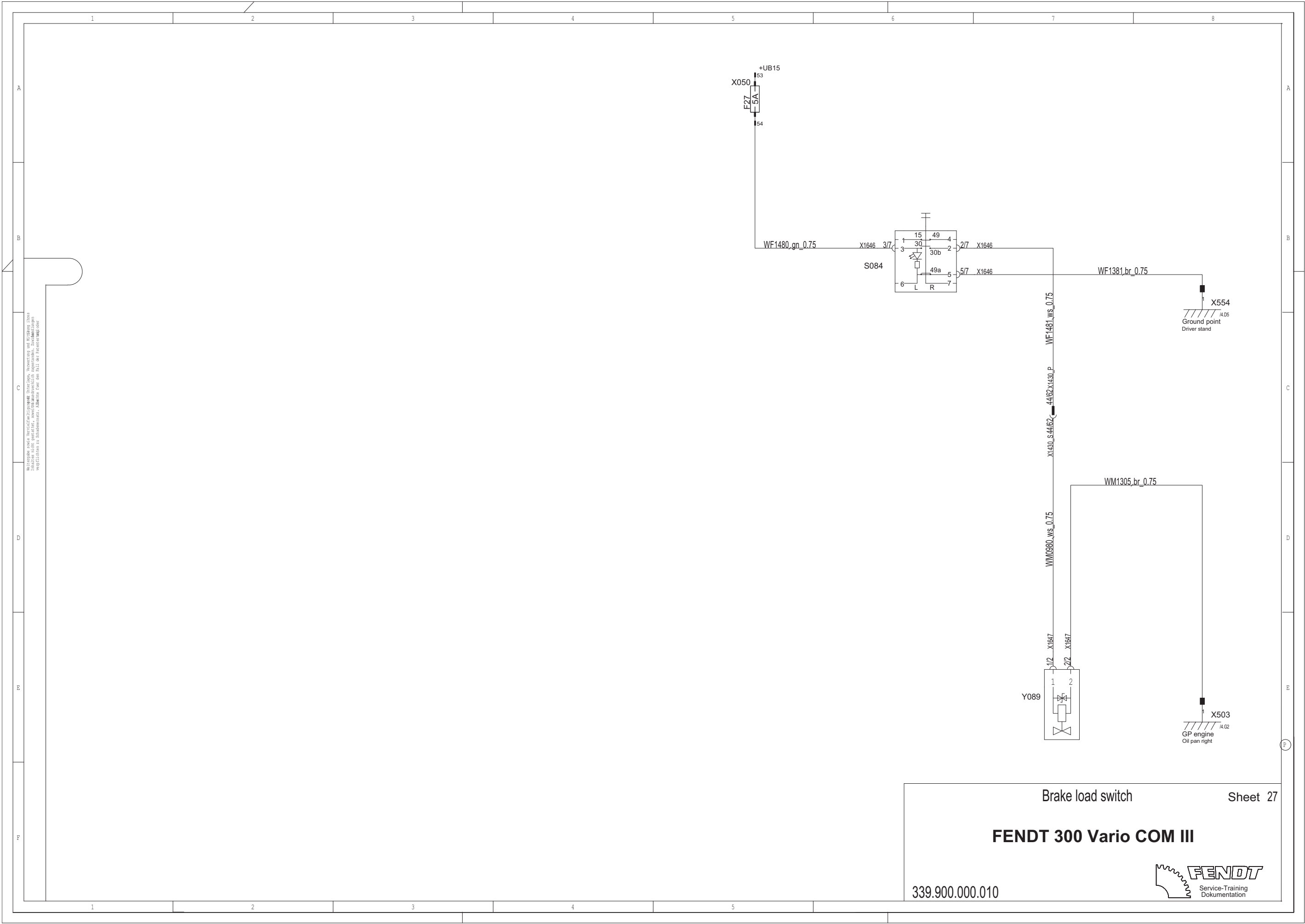


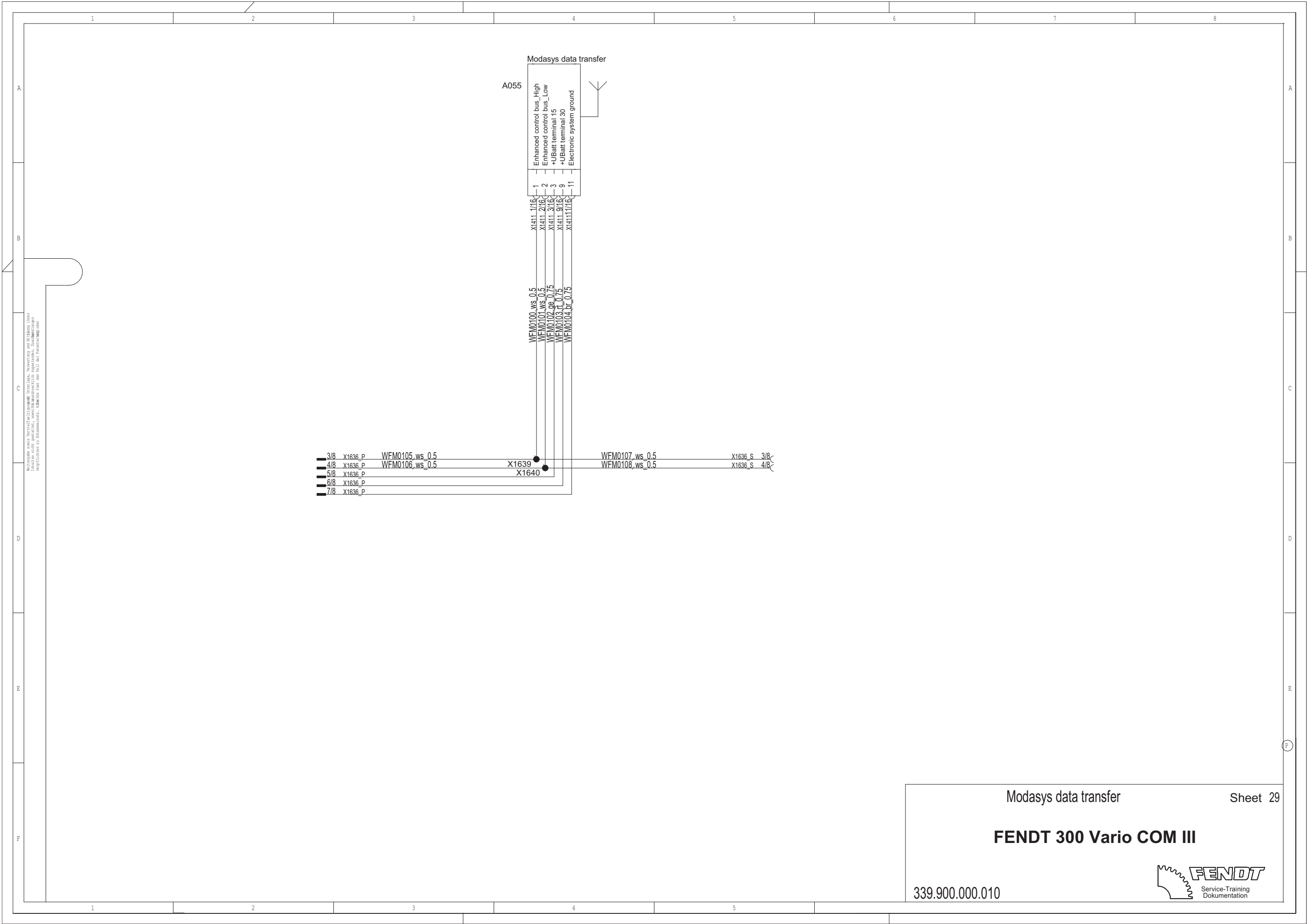


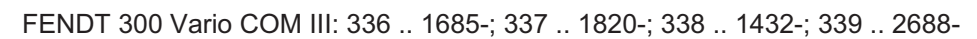


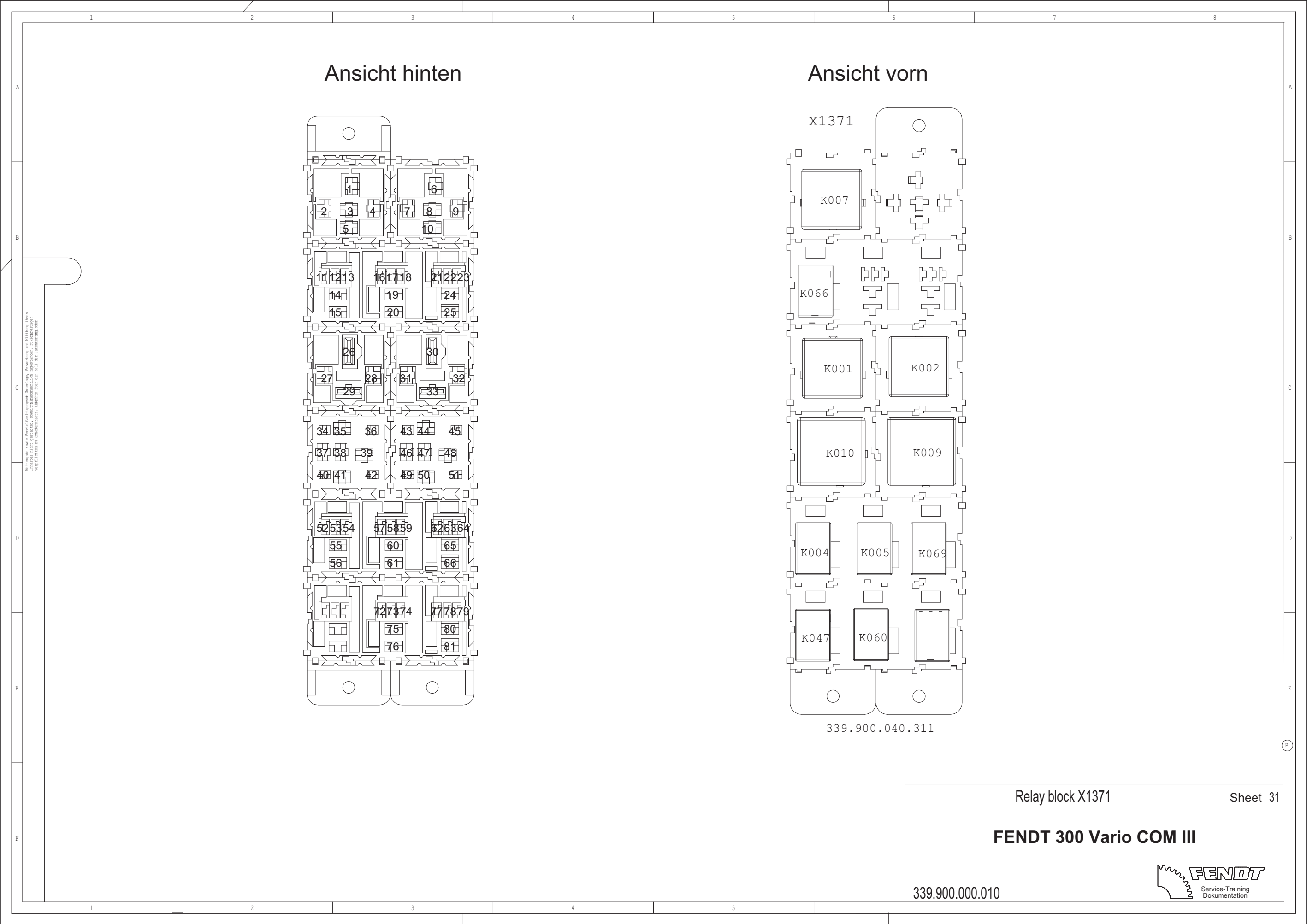




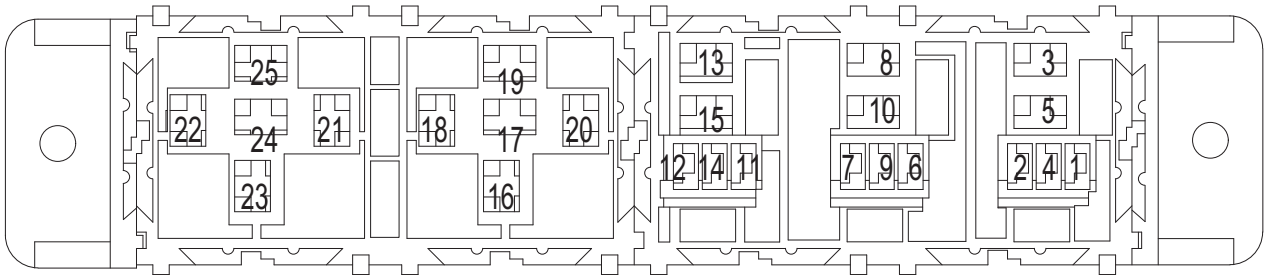




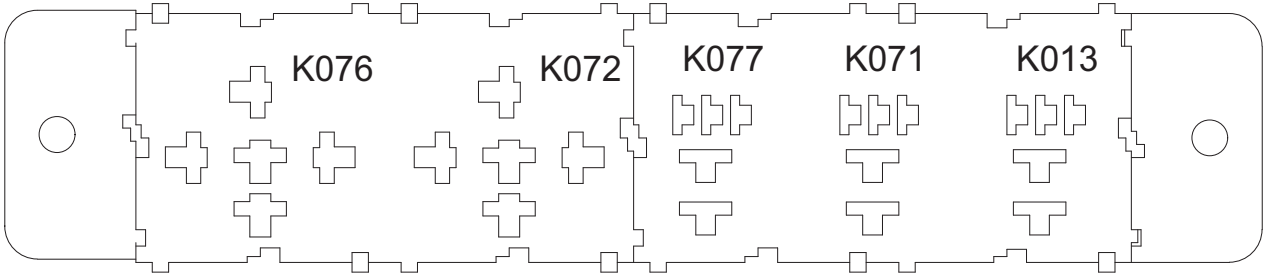




Ansicht von unten



Ansicht von oben



G081.508.150.815
X1832

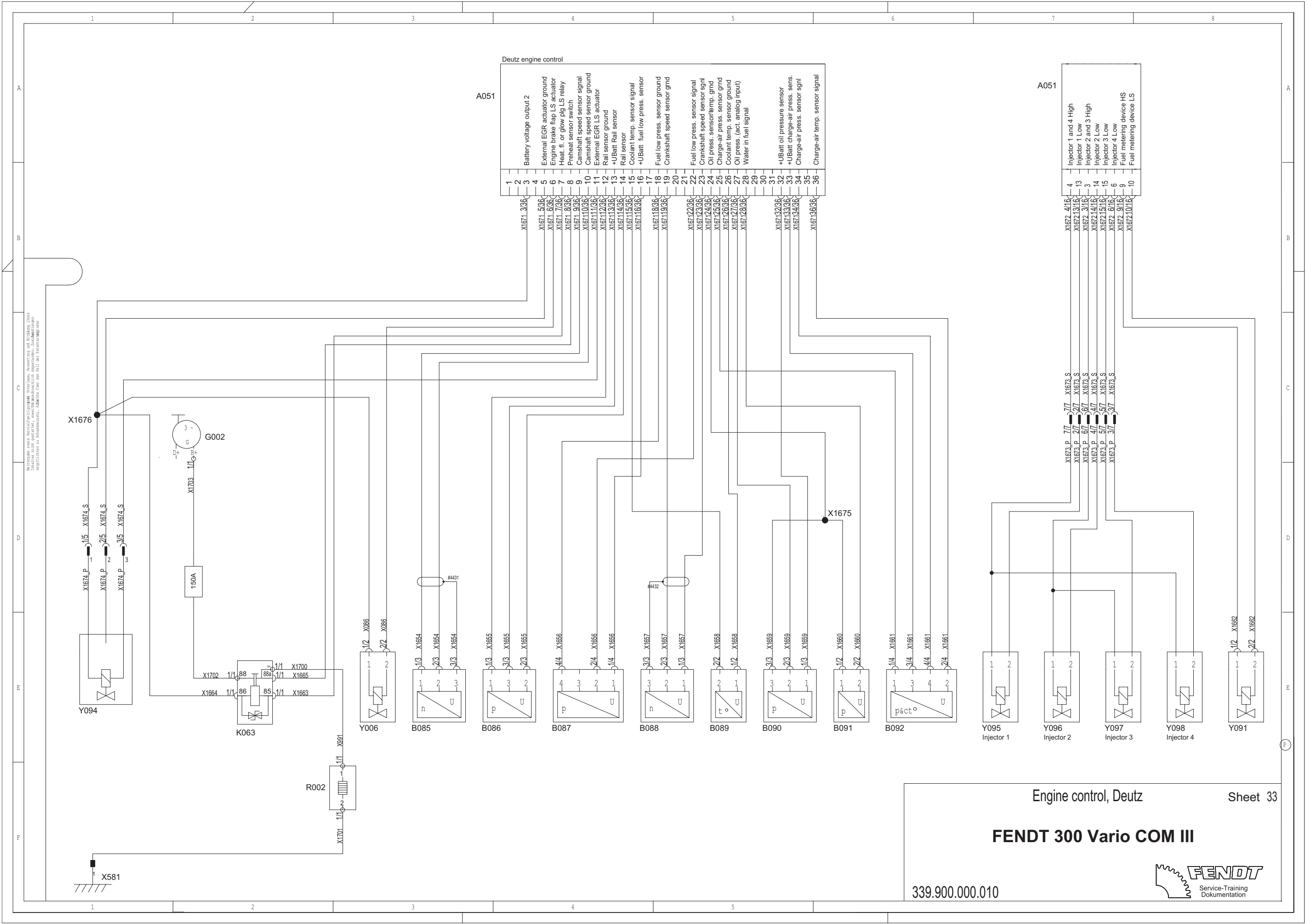
Relay block X1832

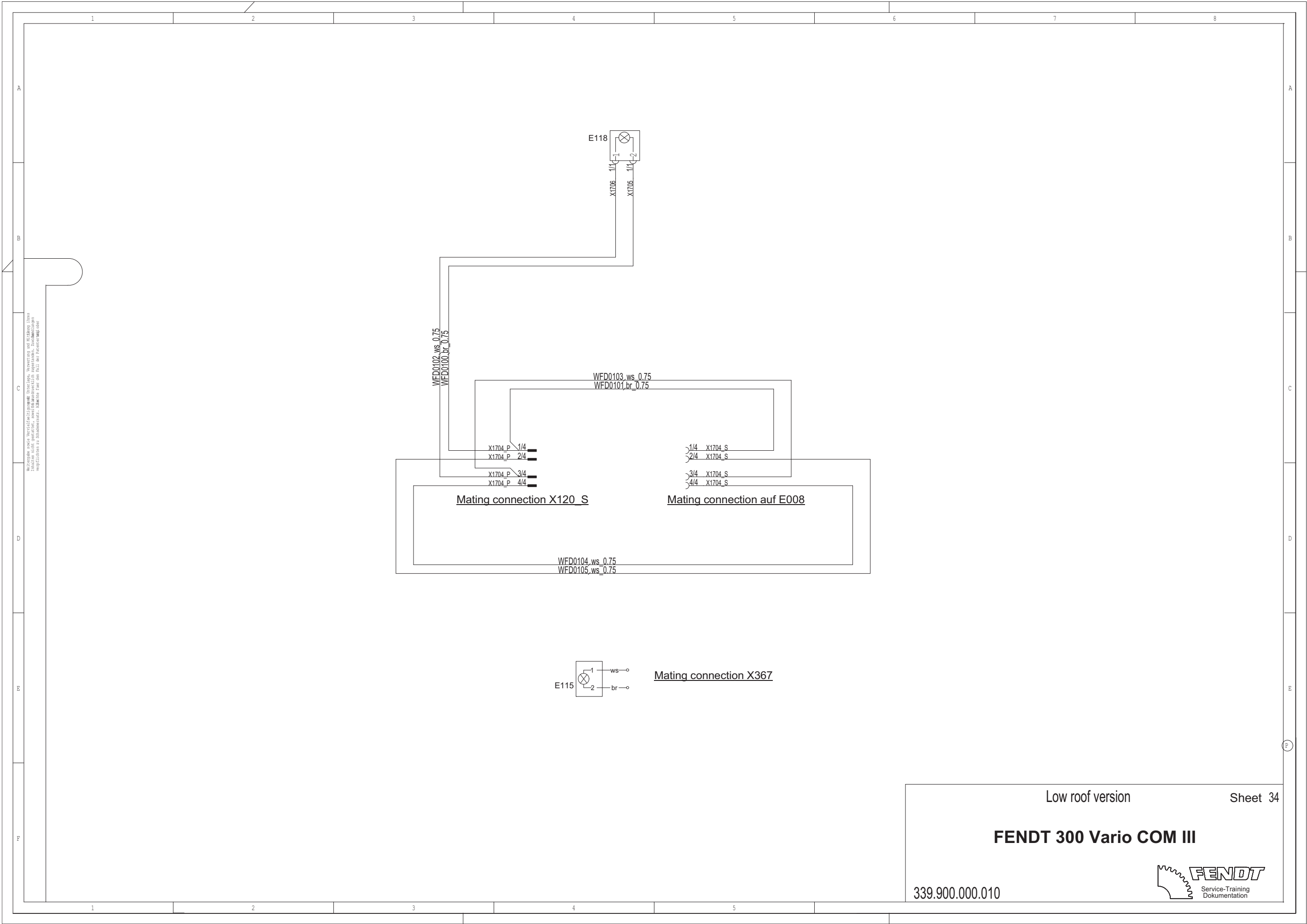
Sheet 32

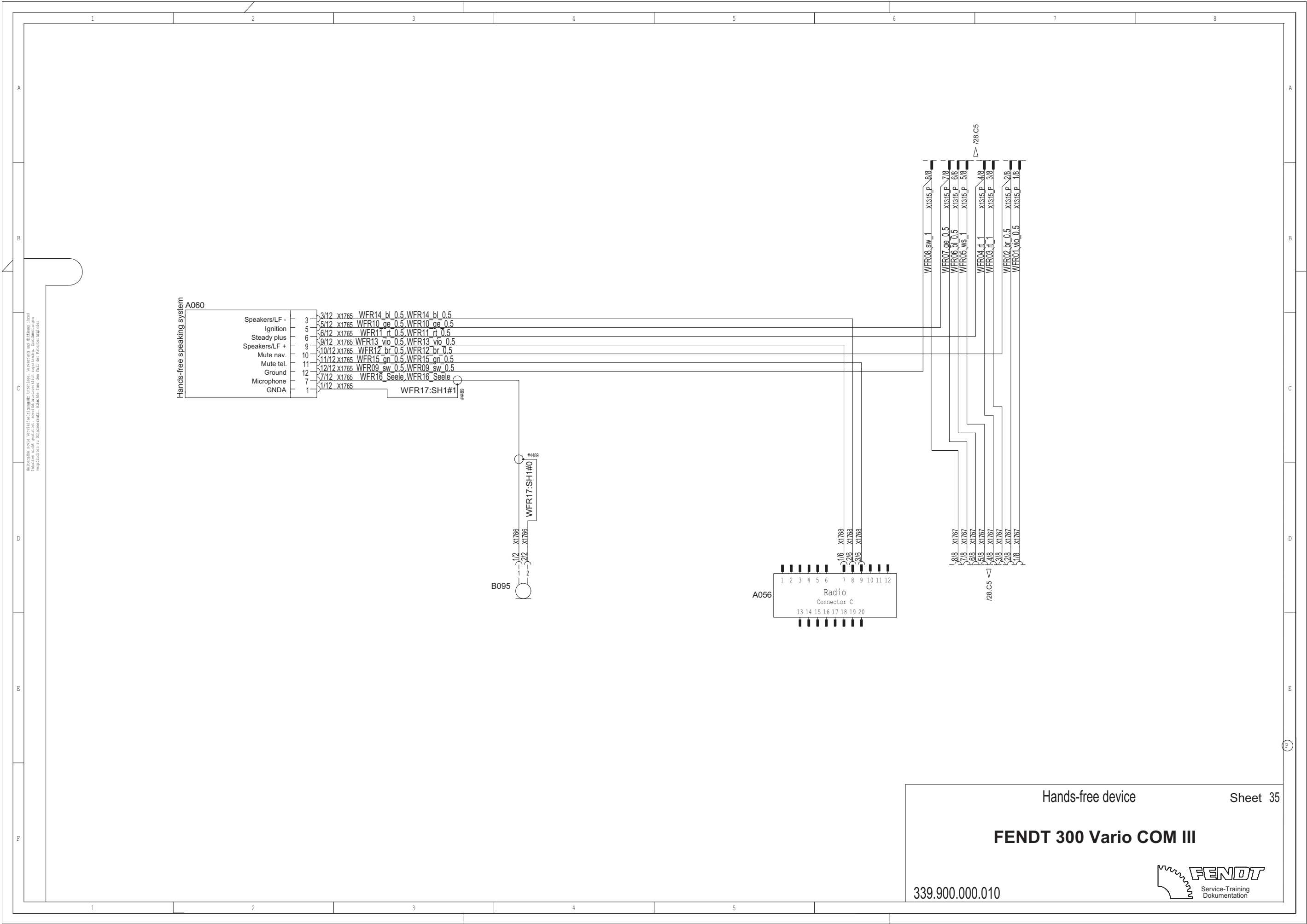
FENDT 300 Vario COM III

339.900.000.010









Fendt 300 Vario

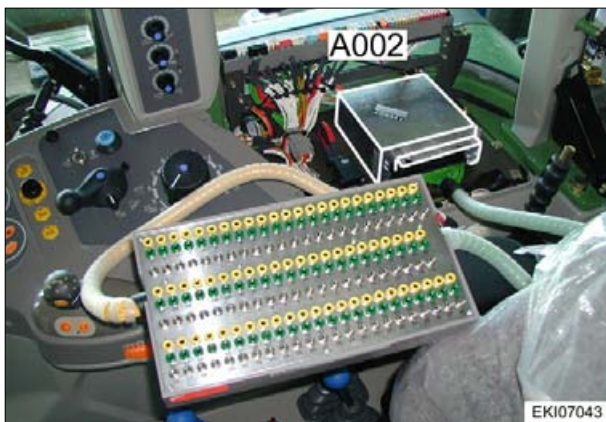
Electrics / General system
A002 - ECU, enhanced control

E**A002** = ECU, enhanced control

X031 = Separation point at
 A002 - ECU, enhanced control
 In cab on right mudguard



Remove panel



Connect e - adapter box X899.980.208.100
 directly to the A002 - ECU, enhanced control

Measuring the supply voltage for the A002 - ECU, enhanced control

+ UB 30 (battery voltage)				
Test	Pin	Specified value	Condition	Possible cause of fault
+ supply	54	approx. 12.0 VDC	Engine off	Fuse (F041) in X051 or in wiring See also Electronics power supply circuit diagram
		approx. 14 VDC	Engine running	
Ground Electronic	55			
+ supply	54	Voltage drop max. 1 VDC from last reading	Also connect approx. 55 W bulb	Voltage must remain stable even under load; if voltage drop is greater than approx. 1 VDC, remove contact resistors (e.g. at fuse).
Ground Electronic	55			

Date	Version	Page	A002 - ECU, enhanced control	Capitel	Index	Docu-No.
23.01.06	a	1/18		9000	E	000304

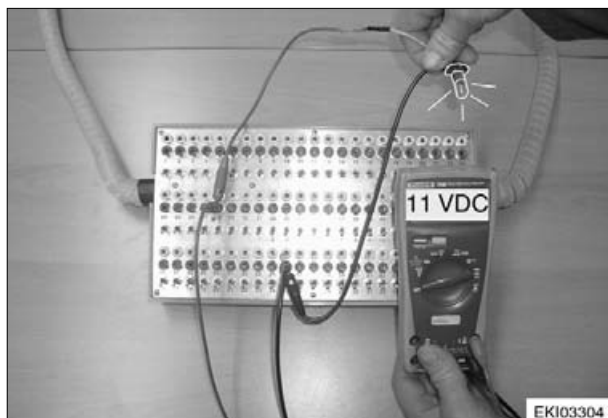
Fendt 300 Vario	Electrics / General system A002 - ECU, enhanced control	E
------------------------	--	----------

+ UB 30 (battery voltage)

Test	Pin	Specified value	Condition	Possible cause of fault
+supply (output stage supply)	56, 57, 58, 59, 60	approx. 12.0 VDC	Engine off	Fuse (F041) in X051 or in wiring See also Electronics power supply circuit diagram
		approx. 14 VDC	Engine running	
Ground Electronic	55			
+supply (output stage supply)	56, 57, 58, 59, 60	Voltage drop max. 1 VDC from last reading	Also connect approx. 55 W bulb	Voltage must remain stable even under load; if voltage drop is greater than approx. 1 VDC, remove contact resistors (e.g. at fuse).
Ground Electronic	55			

+ UB 15 (switched voltage; ignition switch)

Test	Pin	Specified value	Condition	Possible cause of fault
+ supply Ignition ON	28	approx. 12.0 VDC	Engine off	Fuse (F054) in X051 or in wiring See also Electronics power supply circuit diagram
		approx. 14 VDC	Engine running	
Ground Electronic	55			
+ supply	28	Voltage drop max. 1 VDC from last reading	Also connect approx. 55 W bulb	Voltage must remain stable even under load; if voltage drop is greater than approx. 1 VDC, remove contact resistors (e.g. at fuse).
Ground Electronic	55			

**Note:**

If voltage drop is greater than approx. 1 VDC, remove contact resistors (e.g. at fuse).

Date	Version	Page	A002 - ECU, enhanced control	Capitel	Index	Docu-No.
23.01.06	a	2/18		9000	E	000304

Fendt 300 Vario	Electrics / General system A002 - ECU, enhanced control	E
------------------------	--	----------

**Battery voltage (UBatt)**

Connect positive and negative terminals of the G001 - battery with a multimeter (voltmeter).

Diesel engine not running = approx. 12 VDC

Starting diesel engine = approx. 8 VDC
(M001 - starter draws current)

Diesel engine is running = approx. 14.0 VDC
(G002 - generator produces charging current)

Pin assignment and signal values**Note:**

All measured values +/- 10%

All readings measured to pin 55 (electronic system ground)

Pin on the A002	Pin description	Signal type / condition	Signal	Signal from A002 - ECU (line interrupted)	Signal from component (line interrupted)
1	A002 - ECU, enhanced control sensor system ground (analogue ground)	Ground			
2	A009 - actuator unit, supply Ignition ON	Digital output	approx. 12 VDC	0 VDC	0 VDC
3	LED on front PTO-clutch key engage seasonal disconnect, ignition ON, start engine	Digital output Front PTO disengaged (LED off) Front PTO engaged (LED is lit)	approx. 0.13 VDC 14 VDC	0.13 / 14 VDC	0 VDC
4	Transmission bus Ignition ON	CAN low	approx. 2.3 VDC	approx. 2.4 VDC	approx. 2.5 VDC
5	Transmission bus Ignition ON	CAN high	approx. 2.6 VDC	approx. 2.5 VDC	approx. 2.4 VDC
4	Transmission bus	CAN low	60 ohm	2x120 ohm parallel	A013 - circuit board (120 ohm) and A009 - actuator unit (120 ohm)

Date	Version	Page	A002 - ECU, enhanced control	Capitel	Index	Docu-No.
23.01.06	a	3/18		9000	E	000304

Fendt 300 Vario	Electrics / General system A002 - ECU, enhanced control	E
------------------------	--	----------

Pin on the A002	Pin description	Signal type / condition	Signal	Signal from A002 - ECU (line interrupted)	Signal from component (line interrupted)
5	Ignition OFF	CAN high			
6	Rear PTO-speed selector (potentiometer) (A036 - control panel) Ignition ON	Current input - 4 mA - 20 mA		0 VDC	6.6 VDC
		Rear PTO setting "0"	1.1 VDC		
		Rear PTO setting "540" (540 rpm)	2.0 VDC		
		Rear PTO setting "540E" (750 rpm) or "WZ" (ground PTO)	2.8 VDC		
		Rear PTO setting "1000" (1000 rpm)	3.6 VDC		
7	Rear PTO automatic mode key and engine memory key (A036 - control panel) Ignition ON	Current input - 4 mA - 20 mA		0 VDC	8.5 VDC
		Rear PTO automatic mode key and engine memory key not actuated	1.1 VDC		
		Engine memory key actuated	2.3 VDC		
		Rear PTO automatic mode key actuated	3.0 VDC		
		Rear PTO automatic mode key and engine memory key actuated simultaneously	3.7		
8	B017 - sensor, clutch pedal Ignition ON	Current input - 4 mA - 20 mA		0 VDC	6.9 VDC
		Clutch pedal not actuated	1.0 VDC		
		Clutch pedal actuated	3.2 VDC		
9	Sensor, high pressure thrust-draft detection (not yet assigned)	Current input - 4 mA - 20 mA	-	-	-
10	LED on acceleration ramp key (I/II) Ignition ON	Current input 4 mA - 20 mA		8.2 VDC	0 VDC
		Ramp I (LED ON)	5.5 VDC		
		Ramp II (LED OFF)	2.0 VDC		
11	B003 - sensor, front axle suspension position Ignition ON	Analogue input 0-8.5 VDC			
		Suspension lock (lower limit position)	4.5 VDC	0 VDC	4.5 VDC
		Suspension ON (middle position)	3.0 VDC	0 VDC	3.0 VDC
		Suspension raise (upper limit position)	0.7 VDC	0 VDC	0.7 VDC

Date	Version	Page	A002 - ECU, enhanced control	Capitel	Index	Docu-No.
23.01.06	a	4/18		9000	E	000304

Fendt 300 Vario	Electrics / General system A002 - ECU, enhanced control	E
------------------------	--	----------

Pin on the A002	Pin description	Signal type / condition	Signal	Signal from A002 - ECU (line interrupted)	Signal from component (line interrupted)
12	B010 - sensor, engine speed 1 Ignition ON	Frequency input		7.5 VDC	0 VDC
		Depending on trigger wheel setting	5.4 VDC 1.1 VDC		
		Engine is running	approx. 1.5 VDC		
13	B014 - sensor, hydrostat accumulator shaft (speed signal) Ignition ON	Frequency input		7.5 VDC	0 VDC
		Depending on trigger wheel setting	5.4 VDC 1.1 VDC		
		Tractor driving	approx. 3.5 VDC		
14	Rear PTO clutch key (A036 - control panel) Ignition ON	Digital input		8.2 VDC	0 VDC
		Rear PTO clutch key not actuated	5.1 VDC		
		Rear PTO clutch key actuated	2.4 VDC		
15	S015 - switch, hand brake Ignition ON	Digital input		8.2 VDC	0 VDC
		Hand brake released	2.4 VDC		
		Hand brake on	5.1 VDC		

Pin on the A002	Pin description	Signal type / condition	Signal	Signal from A002 - ECU (line interrupted)	Signal from component (line interrupted)
16	Speed control lever (v+) (A036 - control panel) Ignition ON	Digital input		8.2 VDC	0 VDC
		Speed control lever not actuated	5.1 VDC		
		Speed control lever moved forward ("forward")	2.4 VDC		
17	Transmission neutral "N" key (A036 - control panel) Ignition ON	Digital input		8.2 VDC	0 VDC
		Transmission neutral "N" key not actuated	5.1 VDC		
		Transmission neutral "N" key actuated	2.4 VDC		

Date	Version	Page	A002 - ECU, enhanced control	Capitel	Index	Docu-No.
23.01.06	a	5/18		9000	E	000304

Fendt 300 Vario	Electrics / General system A002 - ECU, enhanced control	E
------------------------	--	----------

Pin on the A002	Pin description	Signal type / condition	Signal	Signal from A002 - ECU (line interrupted)	Signal from component (line interrupted)
18	B015 - sensor, bevel pinion (rotational direction) Ignition ON	Digital input Tractor driving forward Tractor driving in reverse	 5.1 VDC 2.4 VDC	8.2 VDC	0 VDC
19	A009 - actuator unit, reference F/R Ignition ON	Digital input Depends upon position of the switch	 5.1 VDC 2.4 VDC	8.2 VDC	0 VDC
20	Activation key on speed control lever (A036 - control panel) Ignition ON	Digital input Activation key not actuated Activation key actuated	 5.1 VDC 2.4 VDC	8.2 VDC	0 VDC
21	Seat switch (not yet assigned)	Digital input	-	-	-
22	S019 - switch, rear PTO ON, rear left Ignition ON	Digital input Switch not actuated Switch actuated	 5.1 VDC 2.4 VDC	8.2 VDC	0 VDC
23	A013 - circuit board_fuse Ignition ON	8.5 VDC output (supply for sensors)	8.5 VDC	8.5 VDC	0 VDC
24	LED on S019/S020 - rear button rear PTO ON and LED on rear PTO clutch (A036) Ignition ON, start engine, select PTO setting	Digital output Rear PTO disengaged (LED OFF) Rear PTO engaged (LED ON)	 0.13 VDC 14 VDC	0.13 / 14 VDC	0 VDC
25	LED on transmission neutral "N" key (A036 - control panel) Ignition ON	Digital output "N" key actuated (LED is lit) --> transmission in neutral "N" key not actuated (LED OFF) --> ACTIVE STATIONARY MODE	 12 VDC 0.13 VDC	12 / 0.13 VDC	0 VDC

Date	Version	Page	A002 - ECU, enhanced control	Capitel	Index	Docu-No.
23.01.06	a	6/18		9000	E	000304

Fendt 300 Vario	Electrics / General system A002 - ECU, enhanced control	E
------------------------	--	----------

Pin on the A002	Pin description	Signal type / condition	Signal	Signal from A002 - ECU (line interrupted)	Signal from component (line interrupted)
26	A002 - ECU, enhanced control (K-BUS interface) Ignition ON	CAN low	approx. 2.4 VDC	approx. 2.4 VDC	approx. 2.5 VDC
27	A002 - ECU, enhanced control (K-BUS interface) Ignition ON	CAN high	approx. 2.5 VDC	approx. 2.5 VDC	approx. 2.4 VDC
26	Enhanced controls bus	CAN low	40 ohm	3x120 ohm parallel	A007 - instrument cluster (120 ohm); A013 - circuit board (120 ohm); A024 - ECU, EPC B (120 ohm)
27	Ignition OFF	CAN high			
28	A002 - ECU, enhanced control (+supply +UB 15) Ignition ON, start engine	D+ input (Note: see Measuring the supply voltage)	14 VDC	0 VDC	14 VDC
29	B008 - sensor, transmission high pressure Ignition ON, start engine	Current input 0 mA - 20 mA Transmission neutral (transmission pressure = 0 bar) Transmission active; run transmission against high pressure --> transmission pressure = approx. 550 bar (Note: also see diagnostics in A007 - instrument cluster)	0.8 VDC 3.9 VDC	0 VDC	10.3 VDC
30	Acceleration ramp key (I / II) and speed memory key (A036 - control panel) Ignition ON	Current input 0 mA - 20 mA Acceleration ramp key (I / II) and speed memory key not actuated Speed memory key actuated Acceleration ramp key actuated Acceleration ramp key and speed memory key actuated simultaneously	1.1 VDC 2.3 VDC 3.0 VDC 3.7 VDC	0 VDC	8.5 VDC

Date	Version	Page	A002 - ECU, enhanced control	Capitel	Index	Docu-No.
23.01.06	a	7/18		9000	E	000304

Fendt 300 Vario	Electrics / General system A002 - ECU, enhanced control	E
------------------------	--	----------

Pin on the A002	Pin description	Signal type / condition	Signal	Signal from A002 - ECU (line interrupted)	Signal from component (line interrupted)
31	4WD key and diff. lock key (A036 - control panel) Ignition ON	Current input 0 mA - 20 mA 4WD key and diff. lock key not actuated Diff. lock key actuated 4WD key actuated 4WD key and diff. lock key actuated simultaneously	1.1 VDC 2.3 VDC 3.0 VDC 3.7 VDC	0 VDC	8.5 VDC
32	Front axle suspension ON key and front axle suspension lock key (A036 - control panel) Ignition ON	Current input 0 mA - 20 mA Front axle suspension ON key and front axle suspension lock key not actuated Front axle suspension ON key actuated Front axle suspension lock key actuated Front axle suspension lock key and front axle suspension ON key actuated simultaneously	1.1 VDC 2.3 VDC 3.0 3.7	0 VDC	8.5 VDC
33	K007 - relay, brake Ignition ON	Analogue input 0-8.5 VDC Foot brake not actuated Foot brake actuated	12 VDC 0 VDC	0 VDC	12/0 VDC
34	B015 - sensor, bevel pinion (speed signal) Ignition ON	Frequency input Depending on trigger wheel setting Tractor driving	5.4 VDC 1.1 VDC 3.3 VDC	7.5 VDC	0 VDC
35	B020 - sensor, rear PTO (PTO stub shaft) Ignition ON	Frequency input Depending on trigger wheel setting Rear PTO turning	5.4 VDC 1.1 VDC 2.0	7.5 VDC	0 VDC

Date	Version	Page	A002 - ECU, enhanced control	Capitel	Index	Docu-No.
23.01.06	a	8/18		9000	E	000304

Fendt 300 Vario	Electrics / General system A002 - ECU, enhanced control	E
------------------------	--	----------

Pin on the A002	Pin description	Signal type / condition	Signal	Signal from A002 - ECU (line interrupted)	Signal from component (line interrupted)
36	B002 - sensor, front PTO stub shaft speed Ignition ON	Frequency input Depending on trigger wheel setting Front PTO rotating	 5.4 VDC 1.1 VDC 2.8 VDC	7.5 VDC	0 VDC
37	Front PTO clutch key (A036 - control panel) Ignition ON	Digital input Front PTO clutch key not actuated Front PTO clutch key actuated	 5.1 VDC 2.4 VDC	8.2 VDC	0 VDC
38	Speed control lever (v-) (A036 - control panel) Ignition ON	Digital input Speed control lever not actuated Speed control lever pulled back (v-)	 5.1 VDC 2.4 VDC	8.2 VDC	0 VDC
39	S061 - switch, rapid reverse (forward) Ignition ON	Digital input Switch not actuated Switch pushed forward	 5.1 VDC 2.4 VDC	8.2 VDC	0 VDC
40	S061 - switch, rapid reverse (reverse) Ignition ON	Digital input Switch, rapid reverse not actuated Switch, rapid reverse pulled back	 5.1 VDC 2.4 VDC	8.2 VDC	0 VDC
41	Speed control lever (middle position) (A036 - control panel) Ignition ON	Digital input Speed control lever in middle position Speed control lever pushed forward or pulled back	 2.4 VDC 5.1 VDC	8.2 VDC	0 VDC
42	B014 - sensor, hydrostat accumulator shaft (rotational direction) Ignition ON	Digital input Tractor driving forward Tractor driving in reverse	 2.4 VDC 5.1 VDC	8.2 VDC	0 VDC
43	TMS/pedal mode key ON (not yet assigned)	Digital input			

Date	Version	Page	A002 - ECU, enhanced control	Capitel	Index	Docu-No.
23.01.06	a	9/18		9000	E	000304

Fendt 300 Vario	Electrics / General system A002 - ECU, enhanced control	E
------------------------	--	----------

Pin on the A002	Pin description	Signal type / condition	Signal	Signal from A002 - ECU (line interrupted)	Signal from component (line interrupted)
44	Cruise control "C" key (A036 - control panel) Ignition ON	Digital input Cruise control "C" key not actuated Cruise control "C" key actuated	 5.1 VDC 2.4 VDC	8.2 VDC	0 VDC
45	S020 - switch, rear PTO ON, rear right Ignition ON	Digital input Rear PTO ON key not actuated Rear PTO ON key actuated	 5.1 VDC 2.4 VDC	8.2 VDC	0 VDC

Pin on the A002	Pin description	Signal type / condition	Signal	Signal from A002 - ECU (line interrupted)	Signal from component (line interrupted)
46	LED on rear PTO automatic mode ON key Ignition ON, start engine, unlock EPC and select rear PTO setting	Pulse width output Rear PTO automatic mode switched off (LED OFF) Rear PTO automatic mode switched on (LED ON)	 0.2 VDC 14 VDC	0.2/ 14 VDC	0 VDC
47	Y008 - solenoid valve, rear PTO (clutch) Ignition ON, start engine	Pulse width output Rear PTO disengaged Rear PTO engaged	 0 VDC 14 VDC	Briefly 14 VDC then 0.2 VDC	0 VDC
48	Y026 - solenoid valve, rear PTO setting "540" (Note: setting "540" = 540 rpm) Ignition ON, start engine	Pulse width output Rear PTO setting "540" not preselected Rear PTO setting "540" preselected	 0 VDC 14 VDC	Briefly 14 VDC then 0.2 VDC	0 VDC
49	Y011 - solenoid valve, front PTO (clutch) Ignition ON, start engine Engage seasonal disconnect:	Pulse width output Front PTO disengaged (LED off) Front PTO engaged (LED is lit)	 0 VDC 14 VDC	Briefly 14 VDC then 0.2 VDC	0 VDC

Date	Version	Page	A002 - ECU, enhanced control	Capitel	Index	Docu-No.
23.01.06	a	10/18		9000	E	000304

Fendt 300 Vario	Electrics / General system A002 - ECU, enhanced control	E
------------------------	--	----------

Pin on the A002	Pin description	Signal type / condition	Signal	Signal from A002 - ECU (line interrupted)	Signal from component (line interrupted)
50	Y004 - solenoid valve, clutch / turboclutch Note: for testing the ECU, set engine speed above 1300 rpm. The voltage/ current that the ECU sends to Y004 - solenoid valve is dependent on the speed of the diesel engine "turboclutch" 800 rpm (about 0.3 ampere) --> 1250 rpm (about 1.4 ampere)	Pulse width output	0 VDC	Briefly 14 VDC then 0.2 VDC	0 VDC
		Transmission neutral key "N" actuated (LED is lit) (Y004 open --> power interruption)			
		Transmission neutral key "N" actuated (LED OFF) "ACTIVE STATIONARY MODE" and drive clutch not actuated (Y004 closed --> positively engaged)			
		Drive clutch actuated (Y004 open --> power interruption)			
51	H007 - buzzer reversing warning Ignition ON, start engine	Pulse width output	0.2 VDC 0.2 VDC 14 VDC	0.2 / 14 VDC	0 VDC
		Tractor stopped			
		Tractor driving forward			
		Tractor driving in reverse			
52	LED on front axle suspension lock key (A036 - control panel) Ignition ON, start engine	Pulse width output	0.2 VDC 14 VDC	0.2 / 14 VDC	0 VDC
		Suspension ON (LED OFF)			
		Suspension locked (LED is lit)			
53	Y027 - solenoid valve, rear PTO "540E" (750 rpm) Ignition ON, start engine	Pulse width output	0 VDC 14 VDC	Briefly 14 VDC then 0.2 VDC	0 VDC
		Rear PTO setting "540E" not preselected			
		Rear PTO setting "540E" preselected			

Date	Version	Page	A002 - ECU, enhanced control	Capitel	Index	Docu-No.
23.01.06	a	11/18		9000	E	000304

Fendt 300 Vario	Electrics / General system A002 - ECU, enhanced control	E
------------------------	--	----------

Pin on the A002	Pin description	Signal type / condition	Signal	Signal from A002 - ECU (line interrupted)	Signal from component (line interrupted)
54	A002 - ECU, enhanced control (+supply +UB 30) Ignition OFF	+UB 30 (Note: see Measuring the supply voltage)	12 VDC	0 VDC	12 VDC
55	A002 - ECU, enhanced control ground electronics	Digital ground			
56..60	A002 - ECU, enhanced control (output stage supply +UB 30) Ignition OFF	+UB 30, output stage supply	12 VDC	0 VDC	12 VDC

Pin on the A002	Pin description	Signal type / condition	Signal	Signal from A002 - ECU (line interrupted)	Signal from component (line interrupted)
61	LED on speed memory "Memo Speed" key (A036 - control panel) Ignition ON	Digital output "Memo Speed" key not actuated (LED OFF) "Memo Speed" key actuated (LED is lit)	0.2 VDC 12 VDC	0.2 / 12 VDC	0 VDC
62	LED on speed memory "Memo Engine Speed" key (A036 - control panel) Ignition ON, start engine	Digital output "Memo Engine Speed" key not actuated (LED OFF) "Memo Engine Speed" key actuated (LED is lit)	0.2 VDC 14 VDC	Briefly 14 VDC then 0.2 VDC	0 VDC
63	Y010 - solenoid valve, diff. lock ("rear lock") Ignition ON, start engine	Digital output Front diff. lock disengaged Front diff. lock engaged	0 VDC 14 VDC	Briefly 14 VDC then 0.2 VDC	0 VDC
64	Y009 - solenoid valve, 4WD Ignition ON, start engine	Digital output 4WD disengaged 4WD engaged	14 VDC 0 VDC	Briefly 14 VDC then 0.2 VDC	0 VDC

Date	Version	Page	A002 - ECU, enhanced control	Capitel	Index	Docu-No.
23.01.06	a	12/18		9000	E	000304

Fendt 300 Vario	Electrics / General system A002 - ECU, enhanced control	E
------------------------	--	----------

Pin on the A002	Pin description	Signal type / condition	Signal	Signal from A002 - ECU (line interrupted)	Signal from component (line interrupted)
65	Y013 - solenoid valve, suspension lower (Note: to lower the suspension, Y013 - solenoid valve, suspension lower and Y012 - solenoid valve, load are energised at the same time) Ignition ON, start engine	Digital output Press and hold down the suspension lower ("lock") key longer than 2secs. The suspension is lowered to the lower limit position. The Y013 - solenoid valve is energised as long as the suspension lower ("locked") key is actuated.	14 VDC	Briefly 14 VDC then 0.2 VDC	0 VDC
66	Y014 - solenoid valve, suspension raise (Note: to raise the suspension, Y014 - solenoid valve, suspension raise and Y012 - solenoid valve, load are energised at the same time) Ignition ON, start engine	Digital output Press and hold down the suspension ON key longer than 2secs. The suspension is raised to the limit position. The Y014 - solenoid valve is energised as long as the suspension raise key is actuated.	14 VDC	Briefly 14 VDC then 0.2 VDC	0 VDC

Date	Version	Page	A002 - ECU, enhanced control	Capitel	Index	Docu-No.
23.01.06	a	13/18		9000	E	000304

Fendt 300 Vario	Electrics / General system A002 - ECU, enhanced control	E
------------------------	--	----------

Pin on the A002	Pin description	Signal type / condition	Signal	Signal from A002 - ECU (line interrupted)	Signal from component (line interrupted)
67	Y012 - solenoid valve, front axle suspension load Ignition ON, start engine	Digital output		Briefly 14 VDC then 0.2 VDC	0 VDC
		Press and hold down the suspension lower ("lock") key longer than 2secs. The suspension is lowered to the lower limit position. (The Y012 - solenoid valve is energised as long as the suspension raise key is actuated)	14 VDC		
		Press and hold the suspension ON key longer than 2secs. The suspension is raised to the limit position (the Y012 - solenoid valve is energised as long as the key is actuated)	14 VDC		
68	Y028 - solenoid valve, rear PTO setting "1000" (1000 rpm) Ignition ON, start engine	Digital output		Briefly 14 VDC then 0.2 VDC	0 VDC
		Rear PTO setting "1000" not preselected	0 VDC		
		Rear PTO setting "1000" preselected	14 VDC		

Date	Version	Page	A002 - ECU, enhanced control	Capitel	Index	Docu-No.
23.01.06	a	14/18		9000	E	000304

Fendt 300 Vario	Electrics / General system A002 - ECU, enhanced control	E
------------------------	--	----------

Functional description: Components with frequency inputs to the A002 - ECU

The A002 - ECU delivers a basic signal voltage of **approx. 7.5 VDC**

This basic signal voltage is reduced in the event of a connected component:

which is reduced to **1.1 VDC or 5.4 VDC** (depending on the trigger wheel setting)

The A002 - ECU calculates the rotational frequency of the shaft (rotational speed) from the number of voltage fluctuations (1.1 VDC and 5.4 VDC).

Note:

Hall sensors are used as rotational speed sensors.

Signal from the Hall sensors when tractor is stationary --> 5.4 VDC

If the trigger wheel is turned by hand (magnetic field in the Hall sensor changes)

--> briefly 1.1 VDC, then 5.4 VDC

When a trigger wheel is turning, a mean voltage sets in. The level of the mean voltage depends on the number of impulses per revolution (number of teeth on the trigger wheel)

The mean voltage is independent of the shaft speed (revolutions/min)

Functional description: Components with digital inputs to the A002 - ECU

The A002 - ECU delivers a basic signal voltage of **approx. 8.2 VDC**

Depending on the position of the switch, the basic signal voltage from the A002 - ECU is reduced:

which is reduced to **2.4 VDC** (internal resistance of component 121 ohms) or **5.1 VDC** (internal resistance of component 510 ohms).

The desired function is carried out in the A002 - ECU because of the voltage level.

Functional description: Components with digital outputs to the A002 - ECU

The A002 - ECU delivers a voltage of **0 VDC or 12 VDC** (black - white circuit) to power the components

In the event of a mechanical or electrical fault in the component or cable harness, the component is briefly energised, then the A002 - ECU detects the fault and switches the voltage off.

Functional description: Components with pulse width outputs to the A002 - ECU

The A002 - ECU delivers a voltage of **0 VDC or 12 VDC** to power the components

The voltage increase to 12 VDC or the voltage shutoff to 0 VDC is proportionally controlled

In the event of a mechanical or electrical fault in the component or cable harness, the component is briefly energised, then the A002 - ECU detects the fault and switches the voltage off.

Date	Version	Page	A002 - ECU, enhanced control	Capitel	Index	Docu-No.
23.01.06	a	15/18		9000	E	000304

Fendt 300 Vario	Electrics / General system A002 - ECU, enhanced control	E
------------------------	--	----------

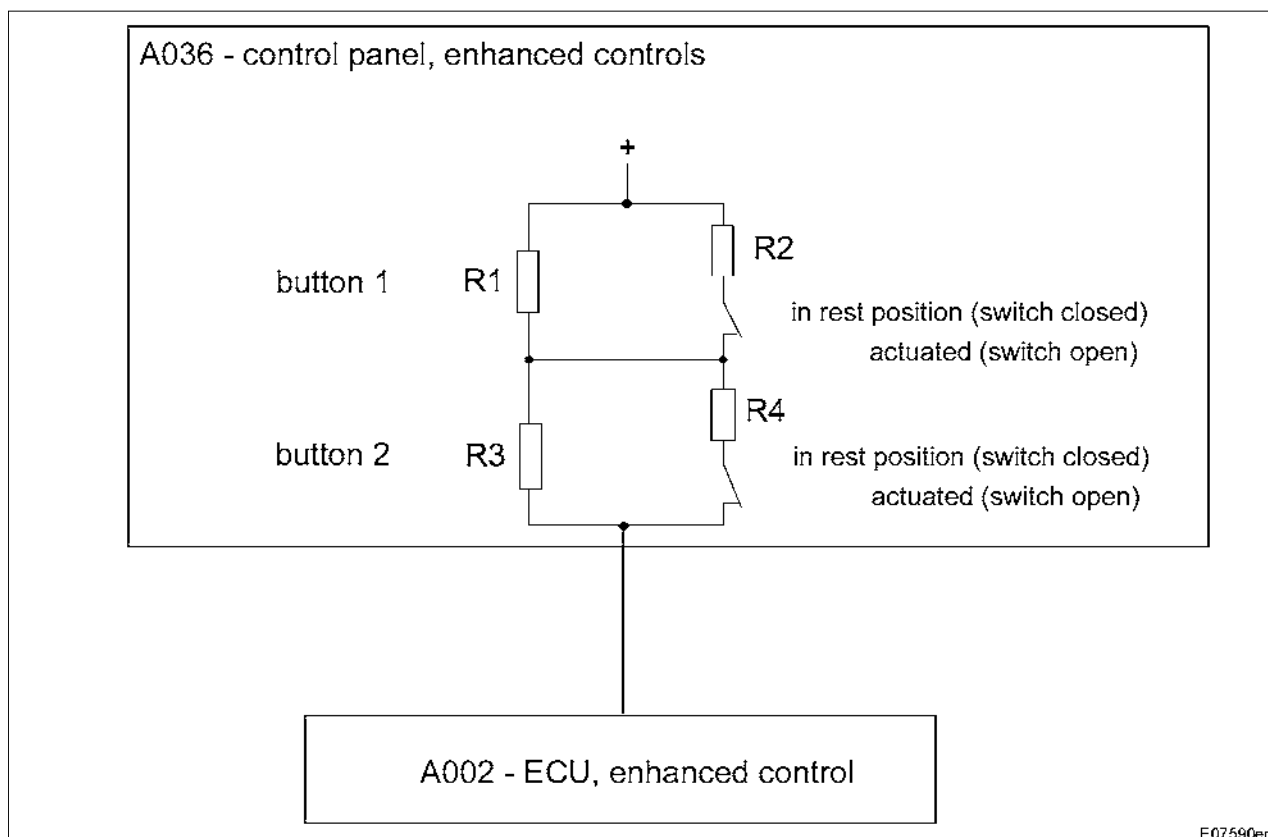
Block diagram for the enhanced control keys:

Key "Memo Engine" and key "Rear PTO automatic mode"

Key "Memo Speed" and key "Acceleration ramp I/II"

Key "4WD" and key "Diff. lock"

Key "Suspension ON" and key "Suspension lock"

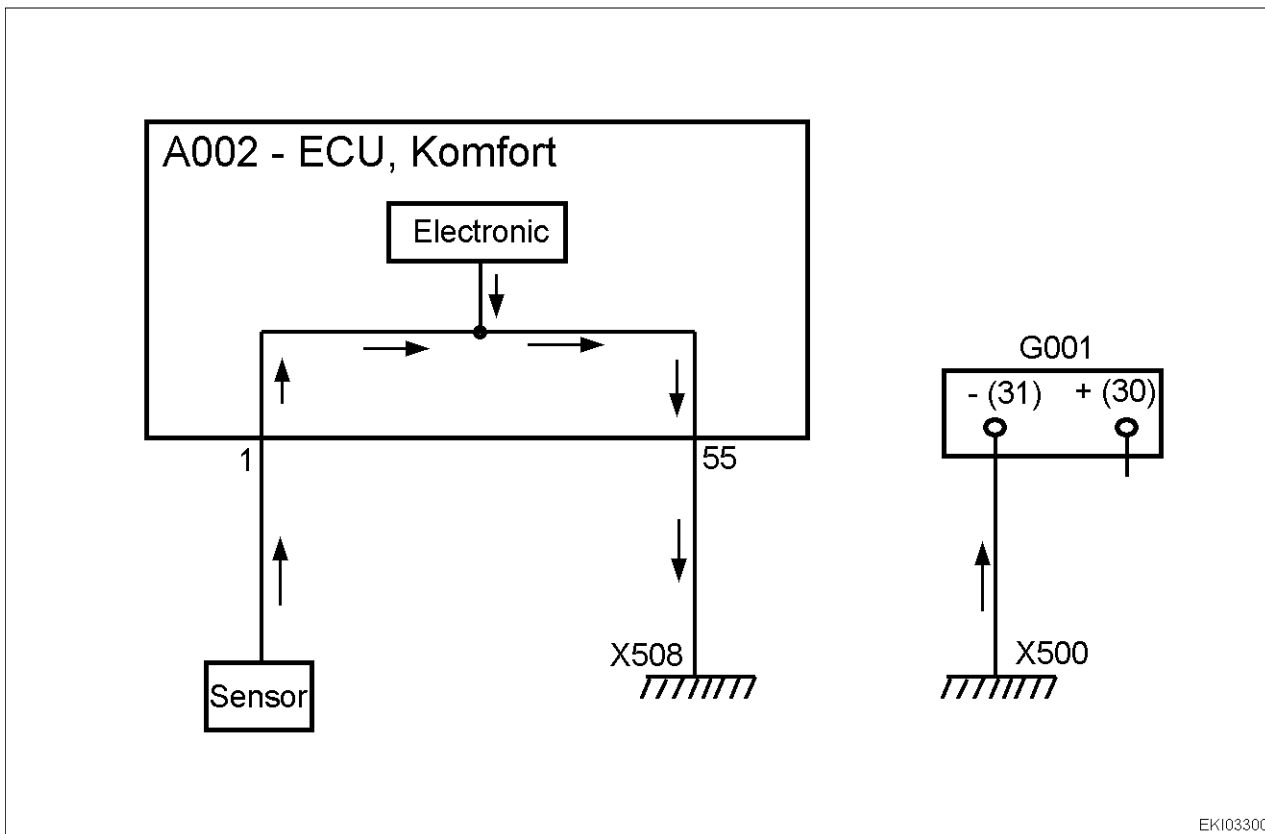


E07590en

Date	Version	Page	Capitel	Index	Docu-No.
23.01.06	a	16/18	A002 - ECU, enhanced control	9000	E
					000304

Fendt 300 Vario	Electrics / General system A002 - ECU, enhanced control	E
------------------------	---	----------

Description: Sensor system ground (pin 1) / Electronics ground (pin 55)

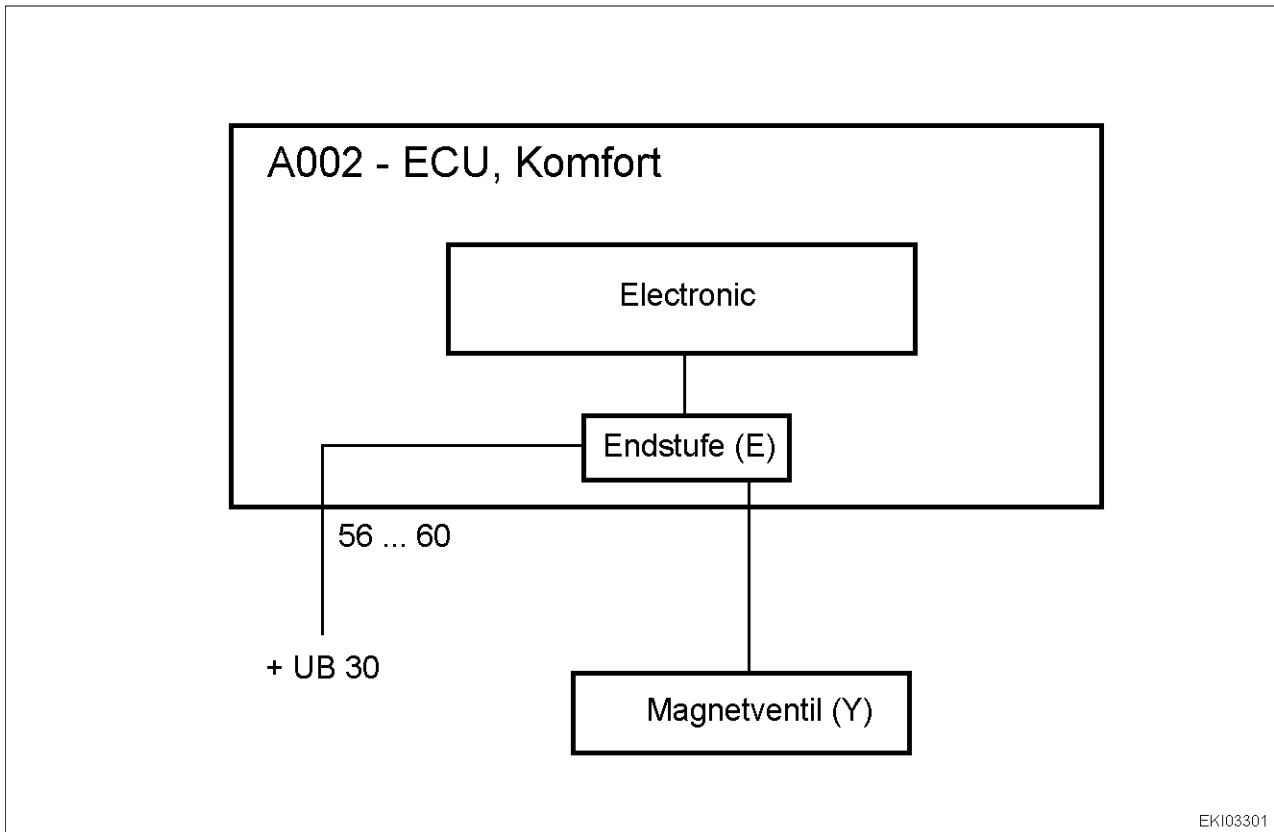


To avoid parasitic indication on the internal electronics of the A002 - ECU, all sensor grounds are brought together to pin 1 of the A002 - ECU.

The ground to the grounding point on the tractor body is lead through the A002 - ECU via pin 55. Ground runs via the tractor body to the negative terminal on the G001 - battery

Date	Version	Page	A002 - ECU, enhanced control	Capitel	Index	Docu-No.
23.01.06	a	17/18		9000	E	000304

Fendt 300 Vario	Electrics / General system A002 - ECU, enhanced control	E
------------------------	--	----------

Description: end stage

EKI03301

An end stage (E) is an "electronic relay".

With a small control current from the electronics of the A002 - ECU, an output current is switched to the solenoid valves (Y).

The end stage supplies are between pins 56 ... 60

The end stages are monitored. If there is too high or too low a current to the end stage, a fault is output and the end stage switches off.

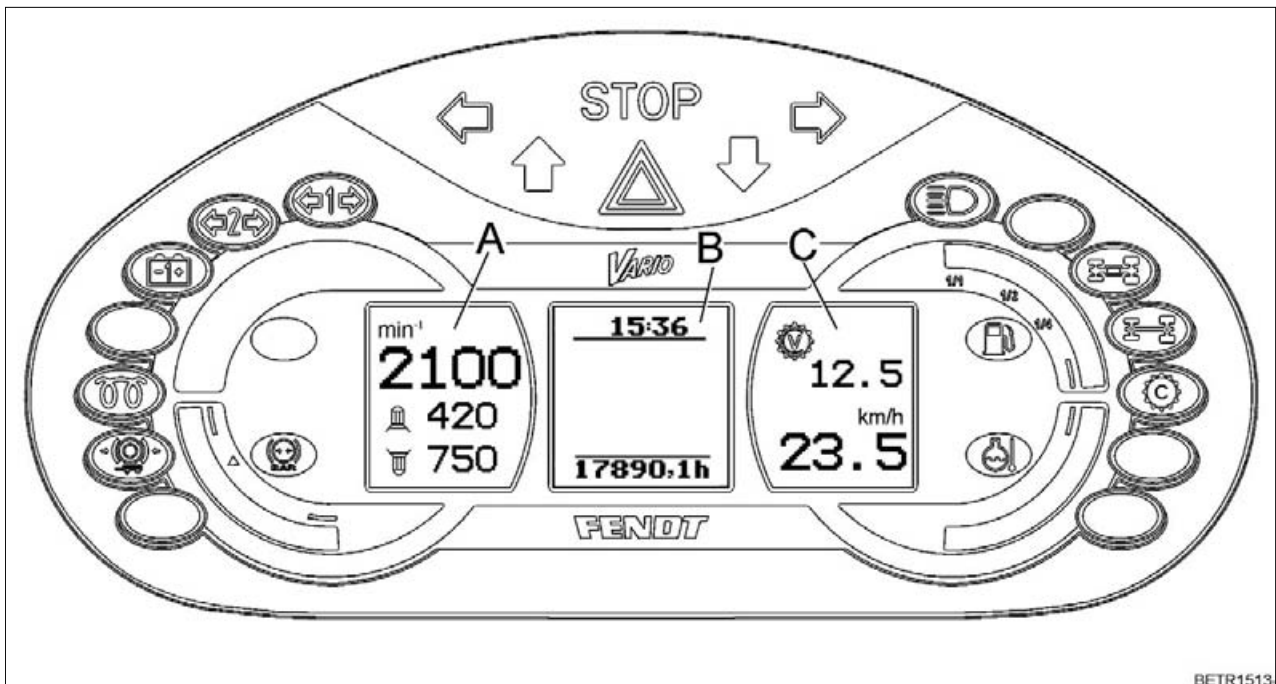
current too high --> short circuit in the cable loom

current too low --> interruption in wiring

Date	Version	Page	A002 - ECU, enhanced control	Capitel	Index	Docu-No.
23.01.06	a	18/18		9000	E	000304

Fendt 300 Vario

Electrics / General system
A007 - instrument cluster

E

BETR1513

- A** = Operating status display: displays engine and PTO speeds
B = Multiple display: displays time, operating hours, warning and fault messages
C = Operating status display: displays travel speed information.

Turn signal indicator trailer 1



Turn signal indicator trailer 2



Generator not charging



Preheat indicator



Hydraulic trailer brake (Italian version)



Fuel



Compressed-air volume



Coolant temperature



Cruise control engaged



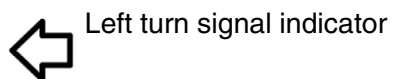
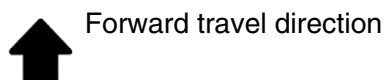
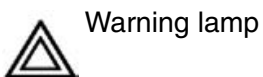
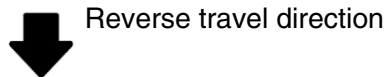
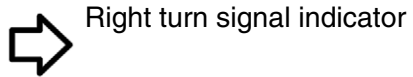
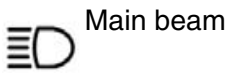
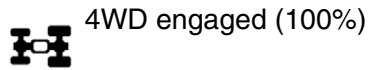
Rear - differential lock engaged (100 %)



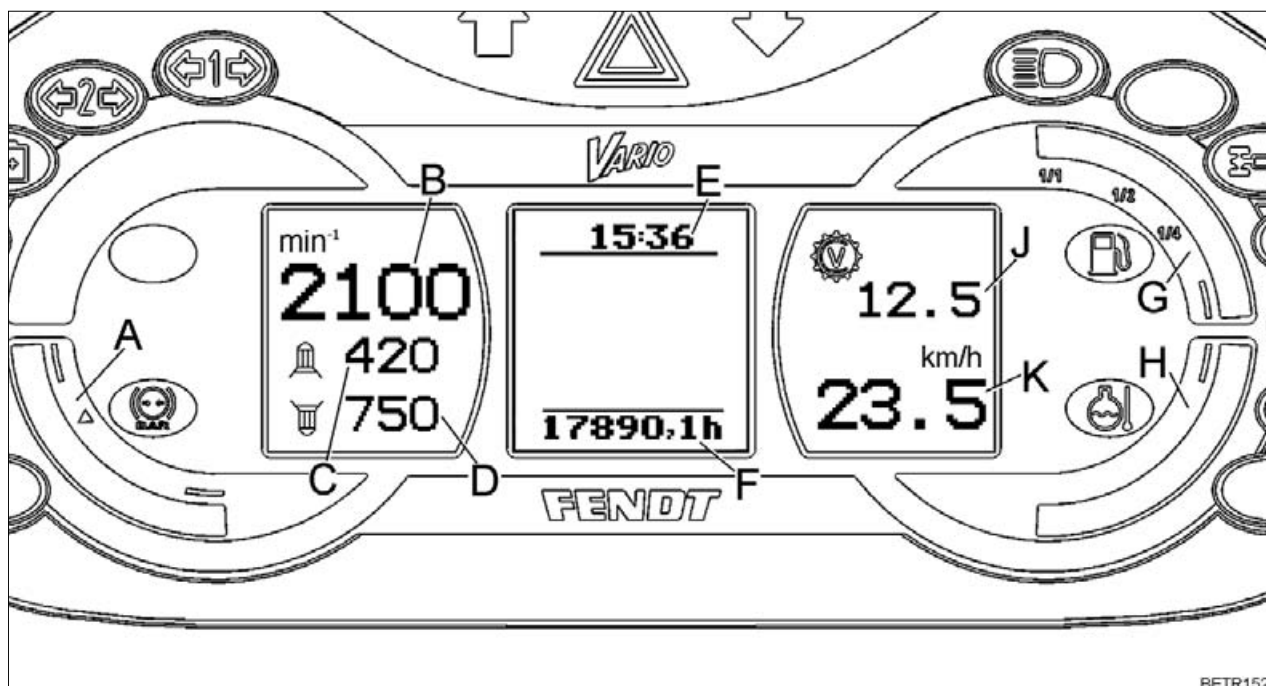
Front differential lock (self-locking differential "Locomatic")

Date	Version	Page	Capitel	Index	Docu-No.
25.01.06	a	1/14	A007 - instrument cluster	9000	E
					000305

Fendt 300 Vario	Electrics / General system A007 - instrument cluster	E
------------------------	---	----------



Date	Version	Page	A007 - instrument cluster	Capitel	Index	Docu-No.
25.01.06	a	2/14		9000	E	000305

Fendt 300 VarioElectrics / General system
A007 - instrument cluster**E****Operating status display**

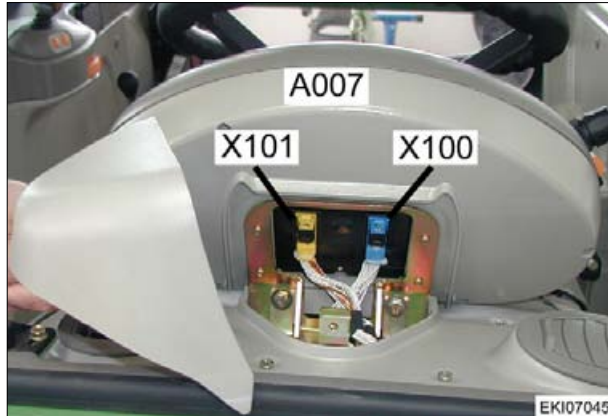
BETR152C

Item	Function	Display
A	Hydraulic oil level (not assigned in Farmer 300 Vario)	-
B	Compressed air supply: Indicator flashes in red zone Indicator in green zone	Operating pressure not reached Operating pressure reached
C	Engine speed display Idle Rated engine speed (no-load speed)	800 rpm 2200 rpm
D	Rear PTO speed Setting I (540) Setting II (540 E) Setting III (1000)	540 rpm 750 rpm 1000 rpm
E	Front PTO speed	1000 rpm
F	Time	Hours : minutes
G	Operating hours	Hours
H	Fuel supply indicator: Indicator 1/1 "full" (12 bars) Indicator 1/2 (8 bars) Indicator 1/4 (4 bars) Indicator R 'Reserve' (1 bar) Indicator R "Reserve flashes" (1 bar flashes)	approx. 207 ltr approx. 110 ltr approx. 47 ltr approx. 18 ltr 18 ... 0 ltr
J	Coolant temperature indicator: Indicator in green zone Indicator in red zone	
K	Stored cruise control speed ("Memo Speed" button on A036 - control panel)	

Date	Version	Page	A007 - instrument cluster	Capitel	Index	Docu-No.
25.01.06	a	3/14		9000	E	000305

Fendt 300 Vario	Electrics / General system A007 - instrument cluster	E
------------------------	---	----------

Item	Function	Display
		km/h or miles/hr
L	Travel speed indicator Note: in order to display the exact speed, it is necessary to calibrate the indicator	km/h or miles/hr
M	Cruise control ON indicator	



A007 = Instrument cluster

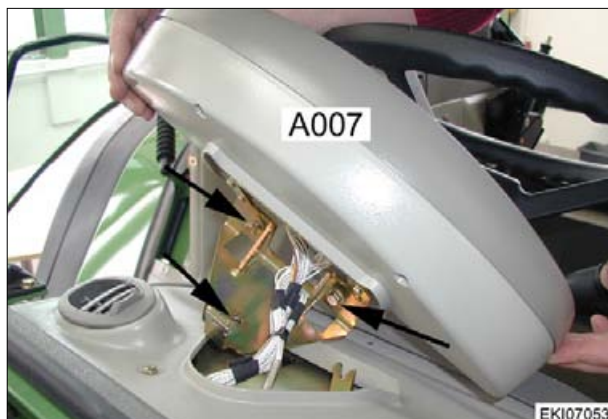
X100 = Separation point "blue"

X101 = Separation point "yellow"

On steering column unit



Remove rear panel



To remove A007 - instrument cluster, unscrew the screws (arrowed)

Date	Version	Page	A007 - instrument cluster	Capitel	Index	Docu-No.
25.01.06	a	4/14		9000	E	000305

Fendt 300 Vario

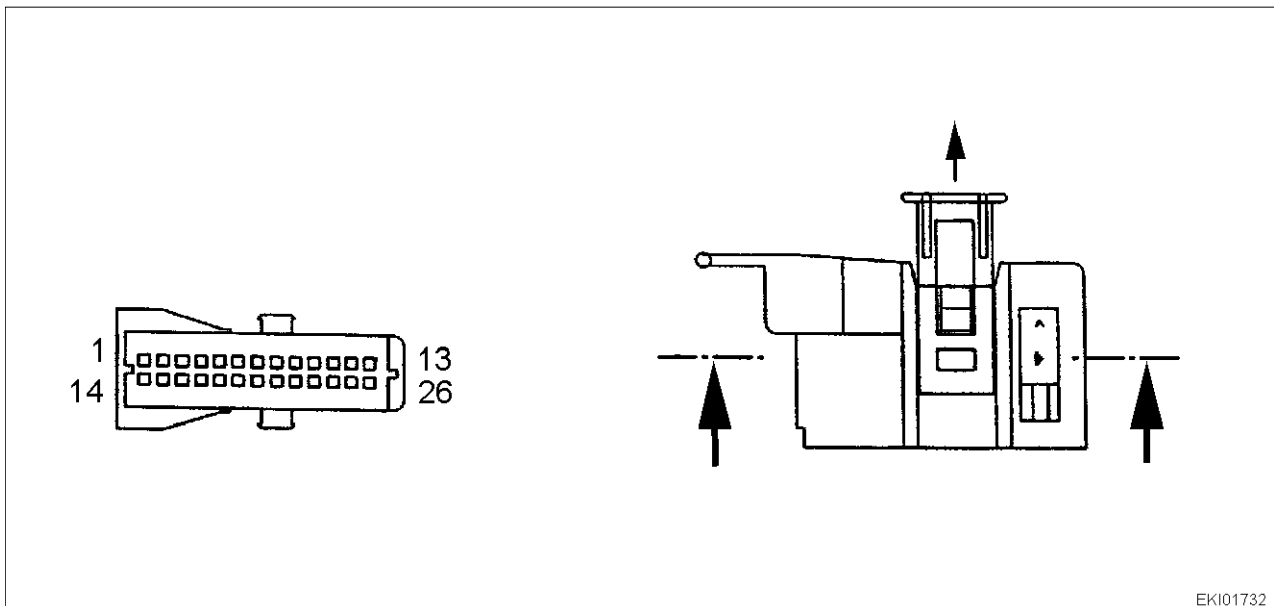
Electrics / General system
A007 - instrument cluster

E

Connect e-adapter box X 899.980.208.100 to A007 - instrument cluster using adapter cable X 899.980.208.204

Pin on separation point	Pin on the X 899.980.208.100 adapter box (68-pin)
Separation point X101 "yellow" (1 .. 26)	1 ... 26
Separation point X100 "blue" (1 ... 26)	31 ... 56

Plan view of handle recess (plug)



Date	Version	Page	A007 - instrument cluster	Capitel	Index	Docu-No.
25.01.06	a	5/14		9000	E	000305

Fendt 300 Vario	Electrics / General system A007 - instrument cluster	E
------------------------	---	----------

Measuring the supply voltage of A007 - instrument cluster

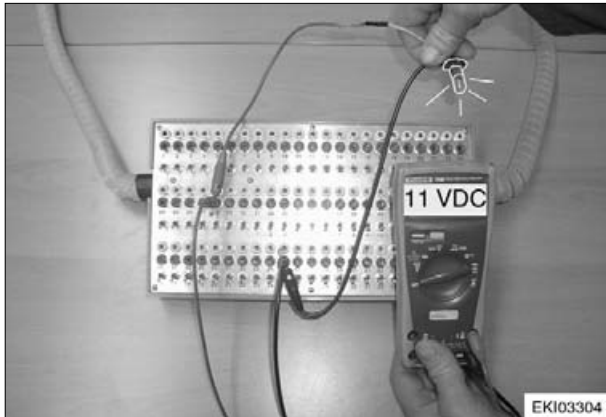
X101 - separation point "yellow"				
+ UB 30 (battery voltage)				
Test	Pin	Specified value	Condition	Possible cause of fault
+ supply	8	12.0 VDC	Ignition OFF	Fuse (F58) in X051 or in wiring. See also Electronics power supply circuit diagram
		approx. 14 VDC	Engine running	
Digital ground (electronics ground)	12			
+ supply	8	Voltage drop max. 1 VDC from last reading	Also connect approx. 55 W bulb	Voltage must remain stable even under load; if voltage drop is greater than approx. 1 VDC, remove contact resistors (e.g. at fuse).
Digital ground (electronics ground)	12			

X101 - separation point 'yellow'				
+ UB 15 (switched voltage, ignition switch)				
Test	Pin	Specified value	Condition	Possible cause of fault
+ supply	9	12.0 VDC	Ignition ON	Fuse (F049) in X051 or in wiring. See also Electronics power supply circuit diagram
		approx. 14 VDC	Engine running	
Digital ground (electronics ground)	12			
+ supply	9	Voltage drop max. 1 VDC from last reading	Also connect approx. 55 W bulb	Voltage must remain stable even under load; if voltage drop is greater than approx. 1 VDC, remove contact resistors (e.g. at fuse).
Digital ground (electronics ground)	12			

Date	Version	Page	A007 - instrument cluster	Capitel	Index	Docu-No.
25.01.06	a	6/14		9000	E	000305

Fendt 300 Vario

Electrics / General system
A007 - instrument cluster

E**Note:**

If voltage drop is greater than approx. 1 VDC,
 remove contact resistors (e.g. at fuse)

**Battery voltage**

Connect positive and negative terminals of the
 G001 - battery with a multimeter (voltmeter).

Diesel engine not running = approx. 12 VDC

Starting diesel engine = approx. 8 VDC
 (M001 - starter draws current)

Diesel engine is running = approx. 13.8 VDC
 (G002 - generator produces charging current)

Date	Version	Page	A007 - instrument cluster	Capitel	Index	Docu-No.
25.01.06	a	7/14		9000	E	000305

Fendt 300 Vario	Electrics / General system A007 - instrument cluster	E
------------------------	---	----------

Separation point X100 "blue"					
Ground from pin 12 separation point X101 'yellow'					
Ignition ON					
Note: all readings +/- 10%					
Pin	Pin description	Condition	Signal	Signal from A002 - instrument cluster (line interrupted)	Signal from component (line interrupted)
1	K010 - direction indicator controller C3 (trailer 2) Ignition ON	Connected trailer lighting	12 VDC pulse	0 VDC	12 VDC pulse
2	K010 - direction indicator controller C2 (trailer 1) Ignition ON	Connected trailer lighting	12 VDC pulse	0 VDC	12 VDC pulse
3	S001 - control stalk Ignition ON	Main beam indicator: Main beam (56a)	12 VDC	0 VDC	12 VDC
4	G002 - generator Ignition on, engine off	Charge indicator D+ Charge indicator is lit	1.4 VDC	11.4 VDC	0.4 VDC
	Ignition on, engine on	Charge indicator not lit	14 VDC	14 VDC	14 VDC
5	Not assigned				
6	Not assigned				
7	S001 - control stalk Ignition ON	Turn signal indicator left (L): Flash to left	12 VDC pulse	0 VDC	12 VDC pulse
8	H006 - buzzer Ignition ON	Acoustic warning signal: Buzzer loud	12 VDC pulse	12 VDC pulse	0 VDC
9	Not assigned				
10	X007 - implement socket	Rear PTO speed: Ignition ON	12 VDC	12 VDC	0 VDC
		Engine running and rear PTO disengaged	14 VDC or 0 VDC	14 VDC or 0 VDC	0 VDC
		Engine running and rear PTO engaged	approx. 6.5 VDC (UBatt/-2)	approx. 6.5 VDC (UBatt/2)	0 VDC
11	X007 - implement socket	Transmission signal (theoretical speed): Ignition ON	12 VDC	12 VDC	0 VDC
		Ignition ON and start engine, speed 0 km/h	14 VDC	14 VDC	0 VDC
		Speed over 1.0 km/h	approx. 6.5 VDC (UBatt/-2)	approx. 6.5 VDC (UBatt/2)	0 VDC

Date	Version	Page	A007 - instrument cluster			Capitel	Index	Docu-No.
25.01.06	a	8/14				9000	E	000305

Fendt 300 Vario	Electrics / General system A007 - instrument cluster	E
------------------------	---	----------

Separation point X100 "blue"					
Ground from pin 12 separation point X101 'yellow'					
Ignition ON					
Note: all readings +/- 10%					
Pin	Pin description	Condition	Signal	Signal from A002 - instrument cluster (line interrupted)	Signal from component (line interrupted)
12	Not assigned				
13	Enhanced control BUS (CAN low) Note: final resistance in A013 - fuseboard (120 ohm) ; in A007 - instrument cluster (120 ohm) ; in A024 - ECU, EPC B (120 ohm)	Ignition OFF: measure resistance between CAN low (pin 13) and CAN high (pin 26) Ignition ON: measure voltage between CAN low (pin 13) and ground (X101, pin 12)	approx. 40 ohm (3 x 120 ohm parallel) 2.4 VDC	2.1 VDC	approx. 3.0 VDC
14	Not assigned				
15	X007 - implement socket Ignition ON, start engine	Lifting gear status: Lower Stop Raise	0 VDC 0 VDC 14 VDC	0 VDC 0 VDC 14 VDC	0 VDC 0 VDC 0 VDC
16	B080 - sensor, hydraulic oil temperature Ignition ON	Hydraulic oil temperature: Temperature approx. 15 °C Temperature greater than 102 °C (approx. 220 ohm) (warning message)	2.1 VDC 294 mVDC	4.8 VDC 4.8 VDC	0 VDC 0 VDC
17 .. 21	Not assigned				
22	X007 - implement socket Ignition ON, start engine	Lifting gear position: Rear power lift lower limit position Rear power lift upper limit position	0 VDC 14 VDC	0 VDC 14 VDC	0 VDC 14 VDC

Date	Version	Page	A007 - instrument cluster	Capitel	Index	Docu-No.
25.01.06	a	9/14		9000	E	000305

Fendt 300 Vario	Electrics / General system A007 - instrument cluster	E
------------------------	---	----------

Separation point X100 "blue"					
Ground from pin 12 separation point X101 'yellow'					
Ignition ON					
Note: all readings +/- 10%					
Pin	Pin description	Condition	Signal	Signal from A002 - instrument cluster (line interrupted)	Signal from component (line interrupted)
23	S059 - switch, hydraulic trailer brake (Italy) Note: S059 - switch connects to ground Ignition ON	Release hydraulic trailer brake	11.3 VDC	11.3 VDC	0 VDC
		Tractor braked with hand brake / trailer is braked hydraulically (indicator lamp not lit)			
		Tractor braked with hand brake / pressure on the hydraulic connection is released via S059 - switch. The trailer is now braked with spring force (trailer can be coupled/uncoupled) (indicator lamp is lit)	0 VDC	11.3 VDC	0 VDC
24	Not assigned				
25	S001 - control stalk Ignition ON	Turn signal indicator right (R): Flash to right	12 VDC pulse	0 VDC	12 VDC pulse
26	Enhanced control BUS (CAN high) Note: final resistance in A013 - fuseboard (120 ohm) ; in A007 - instrument cluster (120 ohm) ; in A024 - ECU, EPC B (120 ohm)	Ignition OFF: measure resistance between CAN low (pin 13) and CAN high (pin 26)	approx. 40 ohm (3 x 120 ohm parallel)		
		Ignition ON: measure voltage between CAN high (pin 26) and ground (X101, pin 12)	approx. 2.5 VDC	approx. 2.8 VDC	approx. 1.8 VDC

Date	Version	Page	A007 - instrument cluster	Capitel	Index	Docu-No.
25.01.06	a	10/14		9000	E	000305

Fendt 300 Vario	Electrics / General system A007 - instrument cluster	E
------------------------	---	----------

Separation point X101 "yellow"					
Ground from pin 12 separation point X101 'yellow'					
Ignition ON					
Note: all readings +/- 10%					
Pin	Pin description	Condition	Signal	Signal from A002 - instrument cluster (line interrupted)	Signal from component (line interrupted)
1	"ENTER" key (A036 - control panel) Ignition ON	"ENTER" key not actuated	1.7 VDC	5.0 VDC	0 VDC
		"ENTER" key actuated	0.5 VDC		
2	"ESC" key (A036 - control panel) Ignition ON	'ESC' key not actuated	1.7 VDC	5.0 VDC	0 VDC
		"ESC" key actuated	0.5 VDC		
3	"Cursor up" key (A036 - control panel) Ignition ON	'Cursor up' key not actuated	1.7 VDC	5.0 VDC	0 VDC
		'Cursor up' key actuated	0.5 VDC		
4	'Cursor down' key (A036 - control panel) Ignition ON	'Cursor down' key not actuated	1.7 VDC	5.0 VDC	0 VDC
		"Cursor down" key actuated	0.5 VDC		
5	Analogue ground (sensor electronics ground)	-	-		
6	Not assigned				
7	Not assigned				
8	+supply (+Ub 30)	Ignition OFF	12 VDC	0 VDC	12 VDC
9	+supply (+Ub 15)	Ignition OFF	0 VDC	0 VDC	0 VDC
		Ignition ON	12 VDC	0 VDC	12 VDC
10	Lighting (+UB 58) Ignition ON	Lighting OFF	0 VDC	0 VDC	0 VDC
		Lighting ON	12 VDC	0 VDC	12 VDC
11	Tractor body ground (terminal 31)	-	-		
12	Digital ground (electronics ground)	-	-		
13	+UB 12 VDC	Ignition OFF	0 VDC	0 VDC	0 VDC
		Ignition ON	12 VDC	12 VDC	0 VDC
14	Not assigned				

Date	Version	Page	A007 - instrument cluster	Capitel	Index	Docu-No.
25.01.06	a	11/14		9000	E	000305

Fendt 300 Vario	Electrics / General system A007 - instrument cluster	E
------------------------	---	----------

Separation point X101 "yellow"					
Ground from pin 12 separation point X101 'yellow'					
Ignition ON					
Note: all readings +/- 10%					
Pin	Pin description	Condition	Signal	Signal from A002 - instrument cluster (line interrupted)	Signal from component (line interrupted)
15	Not assigned				
16	S070 - switch, transmission setting (driving mode / idle) Ignition ON	Transmission shifted to driving mode	3.8 VDC	11.4 VDC	0 VDC
		Transmission in idle	1.3 VDC		
17	S017 - transmission oil contamination Ignition ON, start engine	Transmission high pressure filter in order (S017 - switch closed)	1.4 VDC	14 VDC	0 VDC
		Transmission high pressure filter contaminated (S017 - switch open)	4.6 VDC		
18	Not assigned				
19	Not assigned				
20	Analogue ground (sensor electronics ground)	-	-		
21	B007 - level sensor (fuel)	Fuel indicator "EMPTY" (1 bar flashes)	0.2 VDC	9.6 VDC (ignition ON) or approx. 11.6 VDC (engine running)	0 VDC
		Fuel indicator "1/2" (8 bars)	3.2 VDC		
		Fuel indicator '1/1' (12 bars)	4.7 VDC		
22	Hydraulic oil supply (not assigned in FENDT 300 Vario)	-			
23	Not assigned				
24	B019 - Sensor, compressed air volume	Compressed air indicator "red zone" (1 bar flashes)	0.27 VDC	9.6 VDC (ignition ON) or 11.6 VDC (engine running)	0 VDC
		Compressed air indicator "cut-off pressure" (9 bars)	1.64 VDC		

Date	Version	Page	A007 - instrument cluster	Capitel	Index	Docu-No.
25.01.06	a	12/14		9000	E	000305

Fendt 300 Vario	Electrics / General system A007 - instrument cluster	E
------------------------	---	----------

Separation point X101 "yellow"					
Ground from pin 12 separation point X101 'yellow'					
Ignition ON					
Note: all readings +/- 10%					
Pin	Pin description	Condition	Signal	Signal from A002 - instrument cluster (line interrupted)	Signal from component (line interrupted)
		Compressed air indicator "overpressure" (12 bars and warning)	1.8 VDC		
25	Not assigned				
26	B009 - discharge temperature (transmission oil) Note: if transmission "ACTIVE", then the temperature must be greater than -10 °C after 15 minutes, otherwise fault code 04.1.89 Ignition ON	Transmission oil temperature approx. 60°C	1.58 VDC	4.5 VDC	0 VDC
		Transmission oil temperature approx. 105 °C (35 ohm) "warning message"	0.52 VDC		
		Transmission oil temperature approx. 110 °C (31 ohm) "Warning message + fault code"	0.49 VDC		

Date	Version	Page	A007 - instrument cluster	Capitel	Index	Docu-No.
25.01.06	a	13/14		9000	E	000305

Fendt 300 Vario	Electrics / General system A007 - instrument cluster	E
------------------------	---	----------

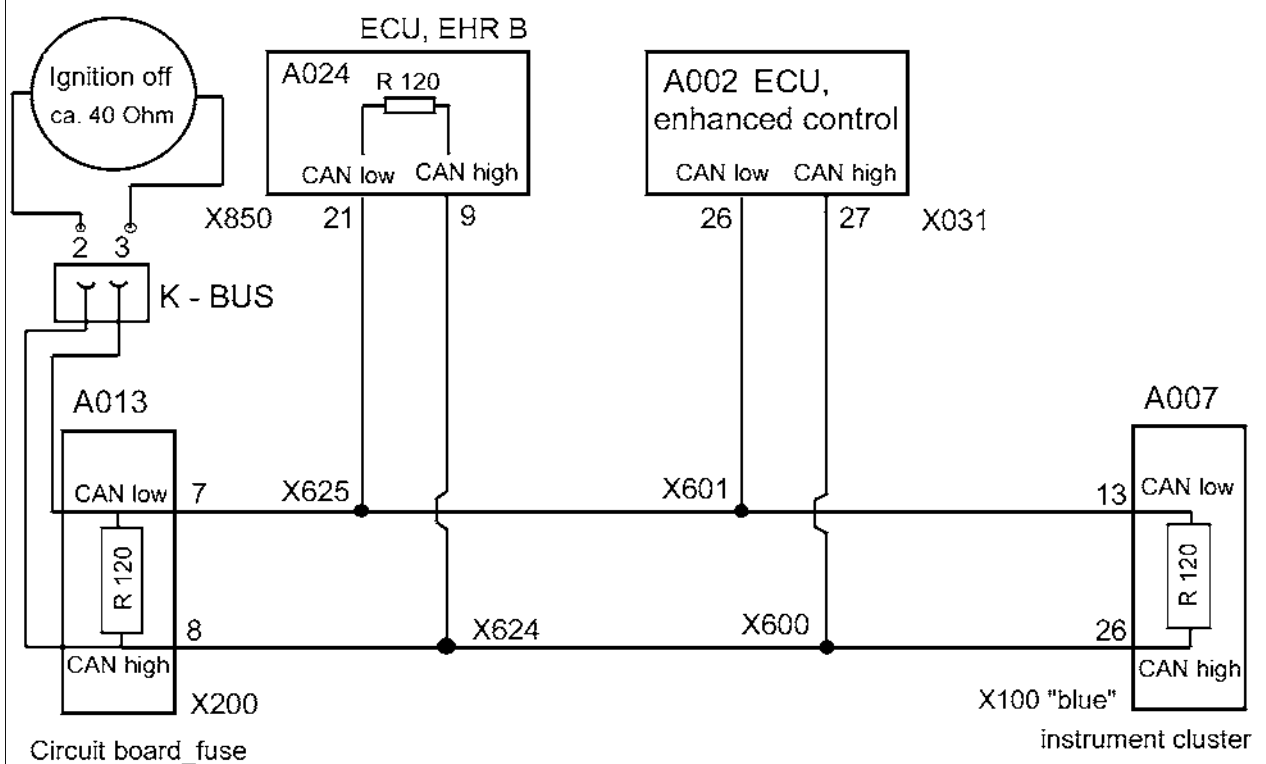
Enhanced control bus (K-BUS)

Note:

see also:

Chapter 9000 Reg.E - Measuring and testing CAN-BUS

Block diagram: enhanced control BUS



E07440en

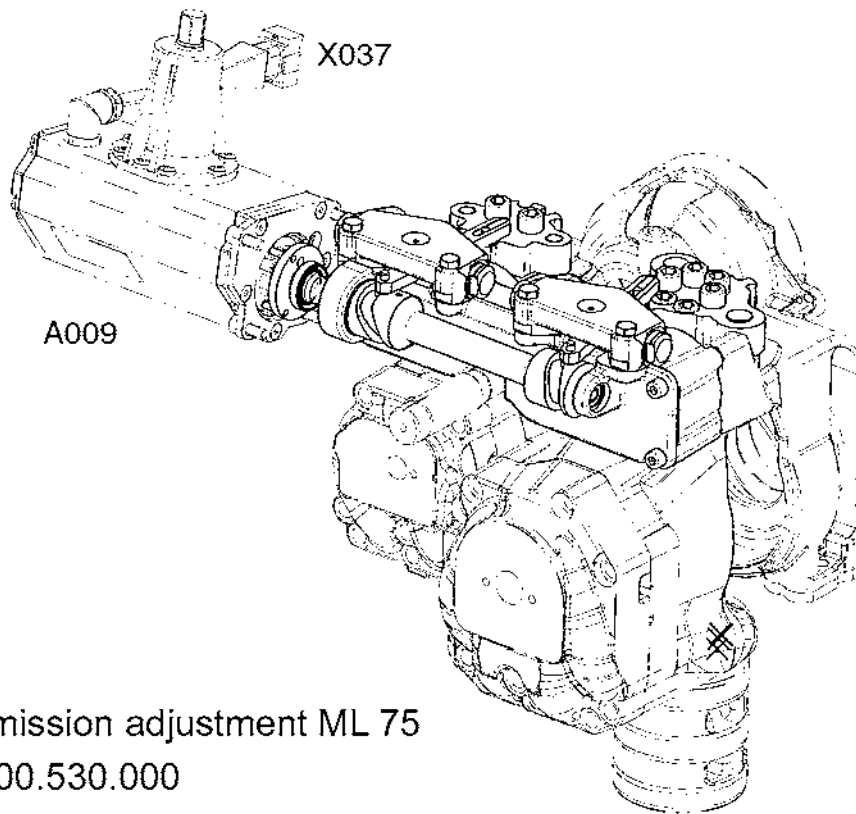
Item	Designation	Remark
K-bus	Enhanced controls bus	
A002 X031	ECU, enhanced control Separation point on A002	
A007 X100 'blue'	Instrument cluster Separation point on A007	Bus terminator - resistance = 120 ohm
A013 X200	Circuit board_fuse Separation point on A013	Bus terminator - resistance = 120 ohm
A024 X850	ECU, EPC B Separation point on A024	Bus terminator - resistance = 120 ohm
X600	Can high connector	
X601	Can low connector	
X624	Can high connector	
X625	Can low connector	

Date	Version	Page	A007 - instrument cluster	Capitel	Index	Docu-No.
25.01.06	a	14/14		9000	E	000305

Fendt 300 Vario

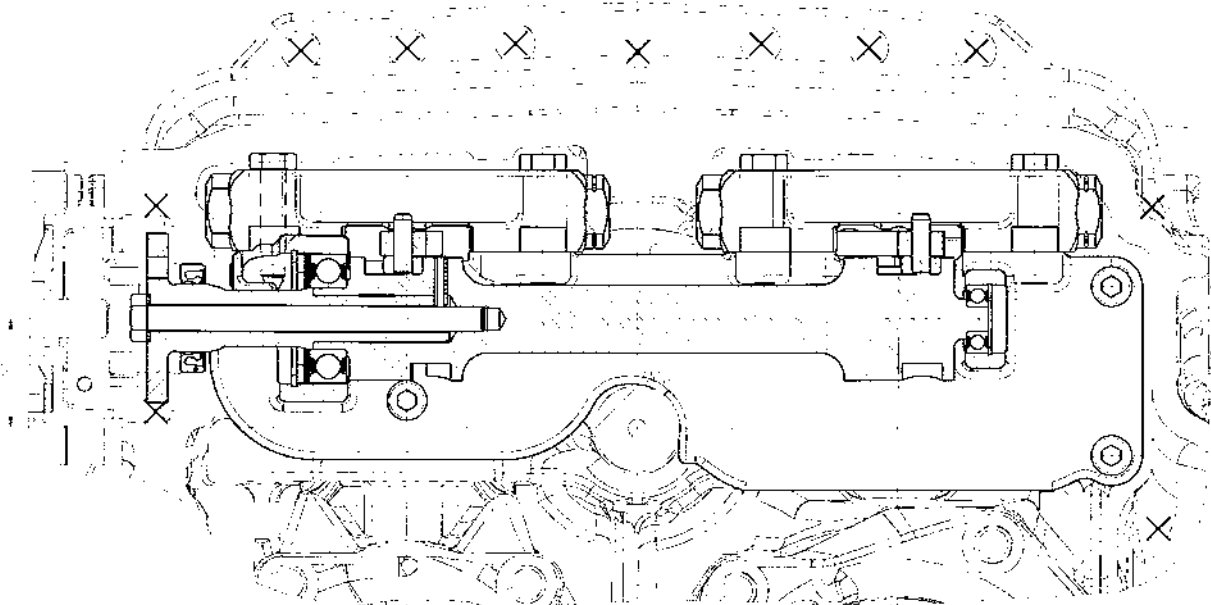
Electrics / General system
A009 - actuator unit

E



Transmission adjustment ML 75
339.100.530.000

E07270en



Transmission adjustment ML 75
339.100.530.000

E07271en

Date	Version	Page	Capitel	Index	Docu-No.
22.02.06	a	1/11	A009 - actuator unit	9000	E
					000308

Fendt 300 Vario

Electrics / General system
A009 - actuator unit

E**A009** = Actuator unit

X037 = Separation point on the actuator unit
 On the right side of the transmission



Remove right rear wheel
 Remove metal panel



Pin	Function
1	Not assigned
2	CAN high (transmission BUS)
3	Reference F/R (forward/reverse)
4	+ UB 30
5	CAN low (transmission BUS)
6	+ UB from A002 - ECU
7	Digital ground
8	Tractor ground

Fendt 300 Vario	Electrics / General system A009 - actuator unit	E
------------------------	---	----------

Testing A009 - actuator unit

Note:

Connect adapter cable X 899.980.246.207 to cable coupler X037.
Ignition 'ON'

Testing + supply of electric motor on A009 - actuator unit

Test	Pin	Specified value	Condition	Possible cause of fault
Electric motor supply	4	12 - 14 VDC	+UB 30	Check fuse (F43) in X051
Ground	8			
Electric motor supply	4	Voltage drop max. 1 VDC from last reading	Also connect approx. 55 W bulb	Voltage must remain stable even under load
Ground	8			



Note:

If voltage drop is greater than approx. 1 VDC, remove contact resistors (e.g. at fuse).

Date	Version	Page	A009 - actuator unit	Capitel	Index	Docu-No.
22.02.06	a	3/11		9000	E	000308

Fendt 300 Vario	Electrics / General system A009 - actuator unit	E
------------------------	--	----------

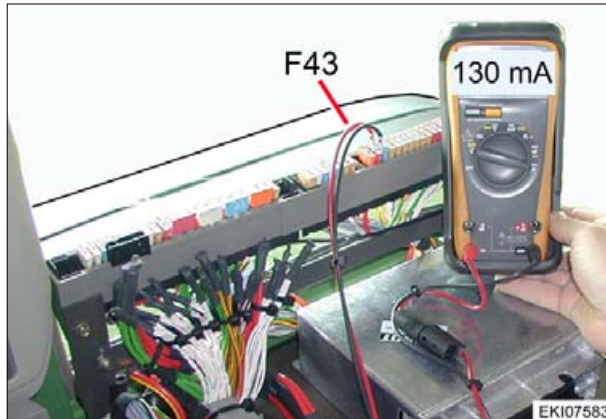
Testing electronic control of the A009 - actuator unit

Test	Pin	Specified value	Condition	Possible cause of fault
+UB from A002 - ECU, enhanced control	6	12.0 VDC to 14.0 VDC		
Digital ground	7			

Reference F/R	3	2.4 VDC or 5.0 VDC	Ignition ON and slowly turn A009 - actuator unit by hand. The voltage signal must change between 2.4 VDC and 5.0 VDC.	
Digital ground	7			

CAN high (transmission BUS)	2	60 ohm	Ignition OFF	Measured value 120 ohm: fault in A009 - actuator unit or A013 - circuit board_microfuse or in the wiring
CAN low (transmission BUS)	5			

Date	Version	Page	A009 - actuator unit	Capitel	Index	Docu-No.
22.02.06	a	4/11		9000	E	000308

Fendt 300 VarioElectrics / General system
A009 - actuator unit**E****Testing power consumption of A009 - actuator unit (electric motor)****Connect multimeter (ammeter)**

Pull out fuse F43 and connect multimeter (**measuring range at least 3 ampere**) between the pins

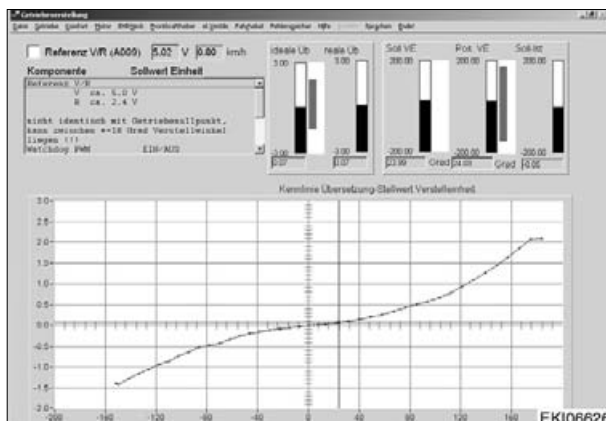
Note:

Adapter cable with free-standing fuse (DIY)

**Connect multimeter (voltmeter)**

Connect X899.980.246.207 - adapter cable (8-pin) to X037 - separation point

Measure **pin 4 (+UB 30)** and **pin 8 (ground)**



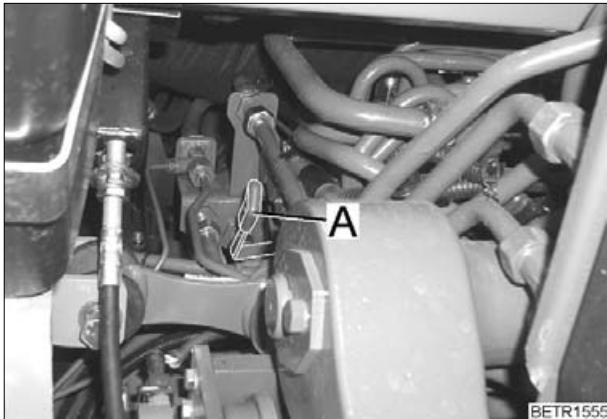
Connect PC and select the transmission control diagnostics window from the transmission menu.

If a fault occurs, it can then be determined at which displacement angle this fault occurs.

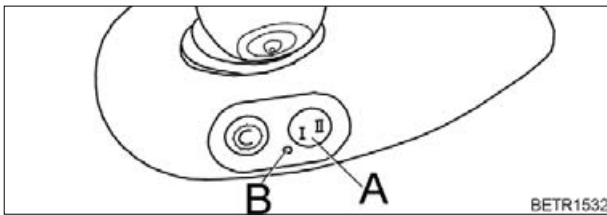
Date	Version	Page	A009 - actuator unit	Capitel	Index	Docu-No.
22.02.06	a	5/11		9000	E	000308

Fendt 300 Vario

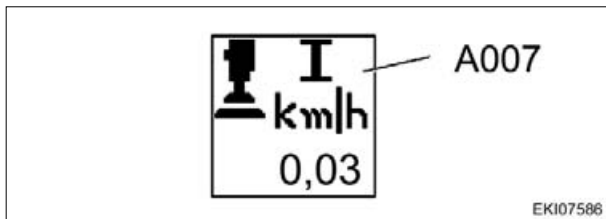
Electrics / General system
A009 - actuator unit

E

Shift range selector into idle

Idle = Pull lever (A) back**Range ON** = Shift lever (A) forward

Set key (A) to acceleration ramp I, LED (B) is lit

Set the lowest acceleration in the
A007 - instrument cluster**lowest acceleration** = 0.03 km/h**Note:**
also see Operating Manual

Release hand brake.

Secure tractor against rolling, if necessary

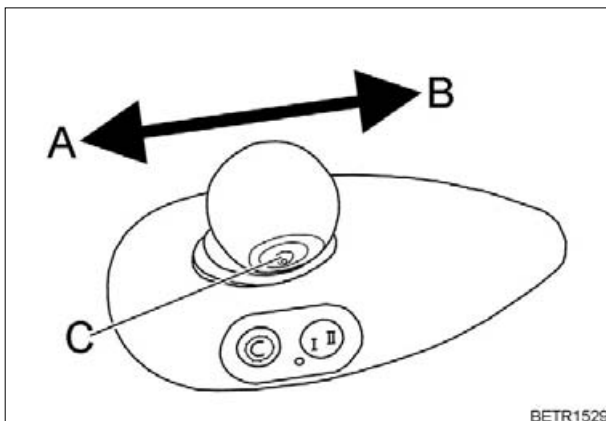
Date	Version	Page	A009 - actuator unit	Capitel	Index	Docu-No.
22.02.06	a	6/11		9000	E	000308

Fendt 300 Vario**Electrics / General system**
A009 - actuator unit**E**

Press neutral key "N" (LED OFF)



The tractor goes into "ACTIVE STATIONARY MODE"

**A** = Forward travel direction**B** = Reverse travel direction**C** = Activating key

Tractor in "ACTIVE STATIONARY MODE", set engine speed to approx. 1400 rpm, press activation key, press speed control lever (A) forward and hold.

Transmission ratio is adjusted in forward direction until the maximum displacement has been reached, or an error occurs.

Tractor in 'ACTIVE STATIONARY MODE', set engine speed to approx. 1400 rpm, press activation key, pull speed control lever (B) back and hold.

Transmission ratio is adjusted in reverse direction until the maximum displacement has been reached, or an error occurs.

Date	Version	Page	A009 - actuator unit	Capitel	Index	Docu-No.
22.02.06	a	7/11		9000	E	000308

Fendt 300 Vario	Electrics / General system A009 - actuator unit	E
------------------------	--	----------



Transmission ratio can be observed in the diagnostics menu in the A007 - instrument cluster

IDEAL = Setpoint of A002 - ECU, enhanced control

VE = Displacement angle of the A009 - actuator unit

REAL = Ratio actually set in the transmission

Forward travel:

IDEAL = 0 to 10000 (maximum value)

VE = 0 to 9984 (maximum value)

REAL = 0 to 10000 (maximum value)

Reverse travel:

IDEAL = 0 to 10000 (maximum value)

VE = 0 to 9984 (maximum value)

REAL = 0 to 10000 (maximum value)

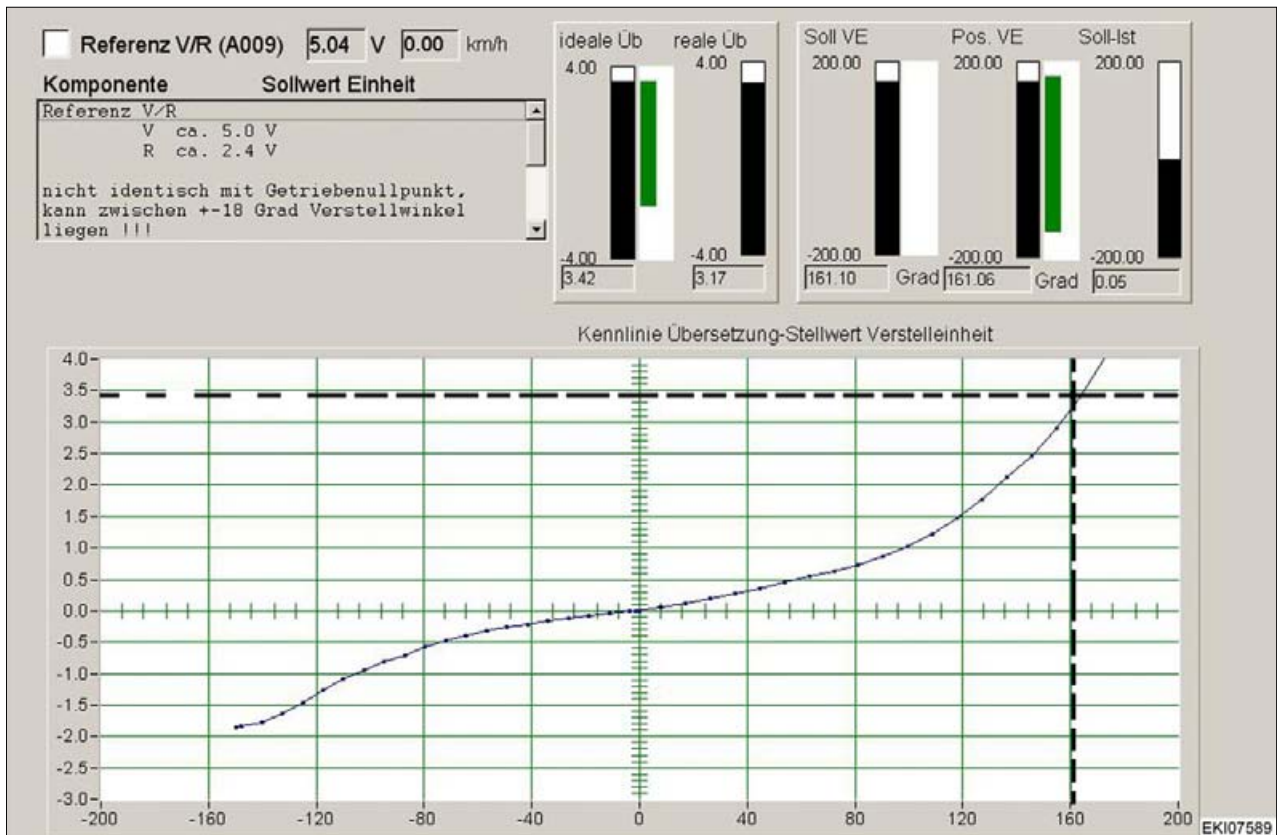
Date	Version	Page	A009 - actuator unit	Capitel	Index	Docu-No.
22.02.06	a	8/11		9000	E	000308

Fendt 300 Vario

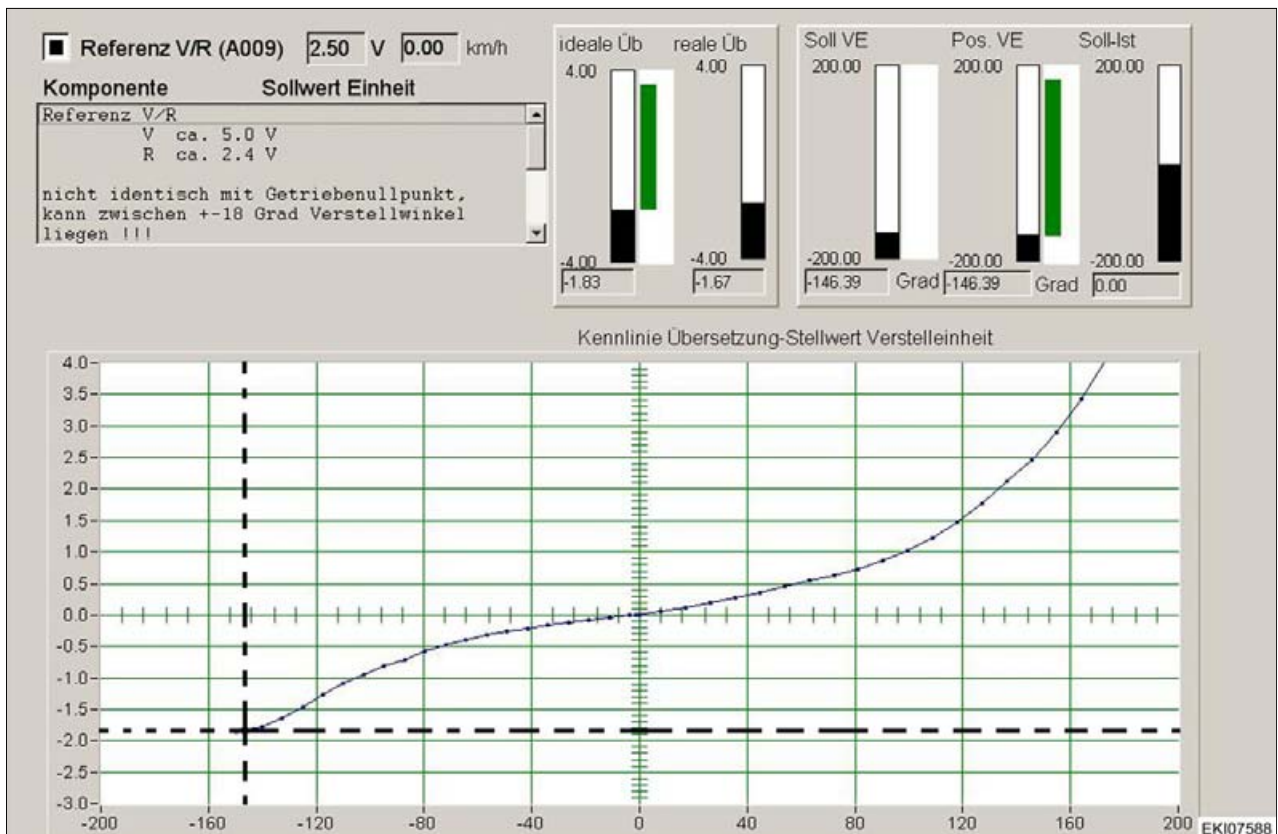
Electrics / General system
A009 - actuator unit

E

Maximum ratio "forward" (approx. 161.06° displacement angle)



Maximum ratio 'reverse' (approx. 146.39° displacement angle)



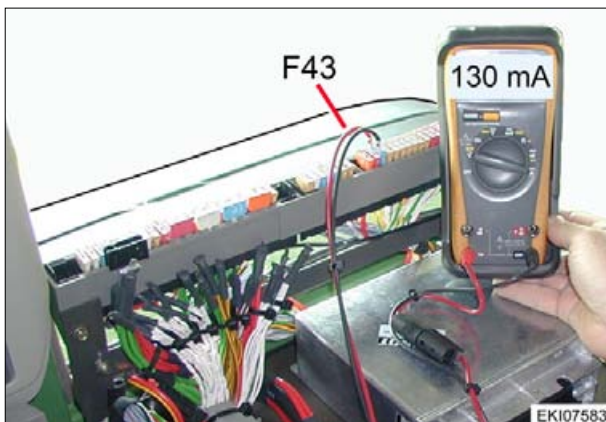
Date	Version	Page	A009 - actuator unit			Capitel	Index	Docu-No.
22.02.06	a	9/11				9000	E	000308

Fendt 300 Vario

Electrics / General system
A009 - actuator unit

E**Testing voltage (Volt):**

Target value during the displacement process:
const. 14 VDC

**Testing power consumption (ampere):**

Target value during the displacement process:
up to 100 mA +/- 50 mA (depends strongly on temperature)

Note:

Display on measuring device jumps

electrical effects that can arise when testing the A009 - actuator unit and their possible causes

Voltage (volt) constant and current (ampere) goes towards zero	Yes --->	Replace A009 - actuator unit (electric motor in the actuator unit is faulty)
No		
Voltage (volt) drops	Yes --->	Check voltage to A009 - actuator unit (+UB 30)
No		
Voltage (volt) constant and current (ampere) increases (up to 2500 mA)	Yes --->	a) A009 - actuator unit does not run smoothly. Unscrew dom from the actuator unit and remount. Replace A009 - actuator unit, if necessary
		b) Transmission displacement shaft does not turn easily. Carefully remove A009 - actuator unit (- without turning the actuator shaft -) from the transmission block. With two fingers, test if actuator shaft turns easily.

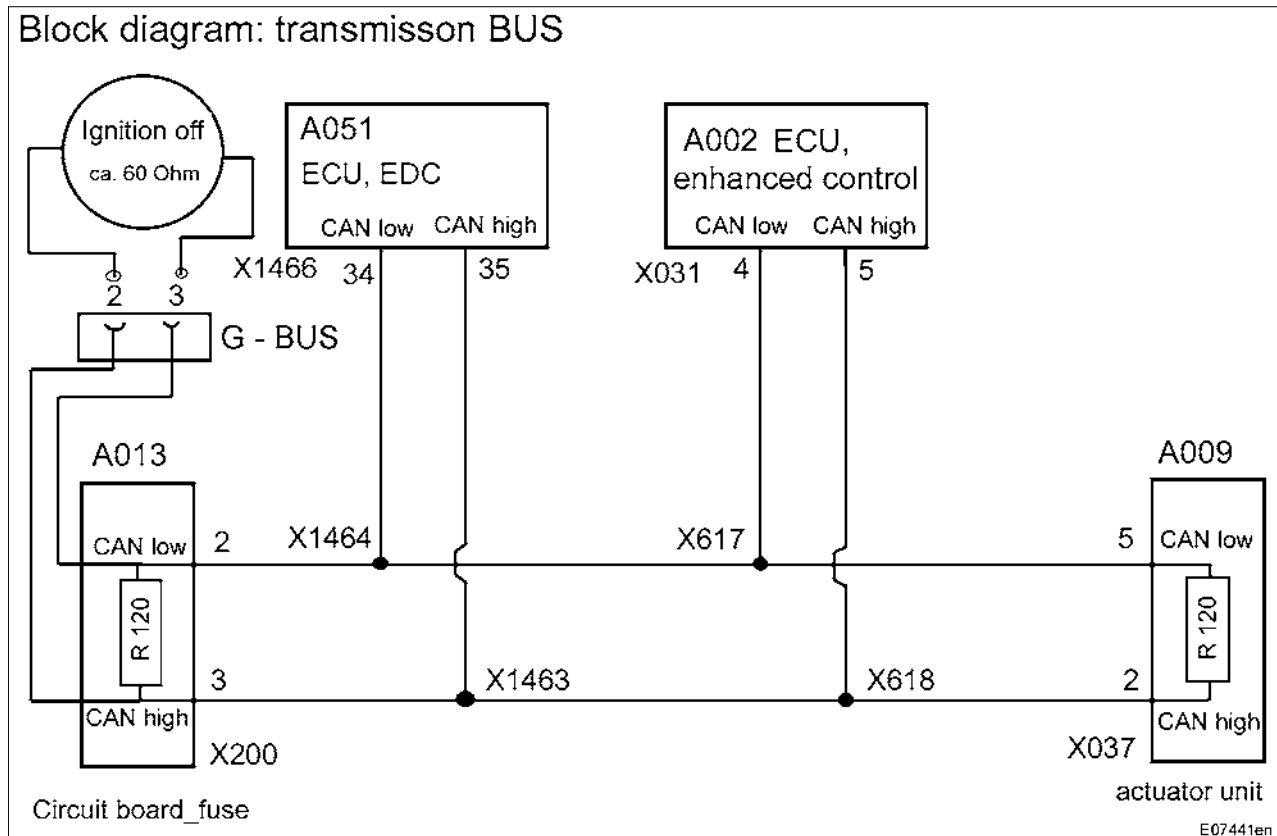
Fendt 300 Vario	Electrics / General system A009 - actuator unit	E
------------------------	---	----------

Transmission bus (G-bus)

Note:

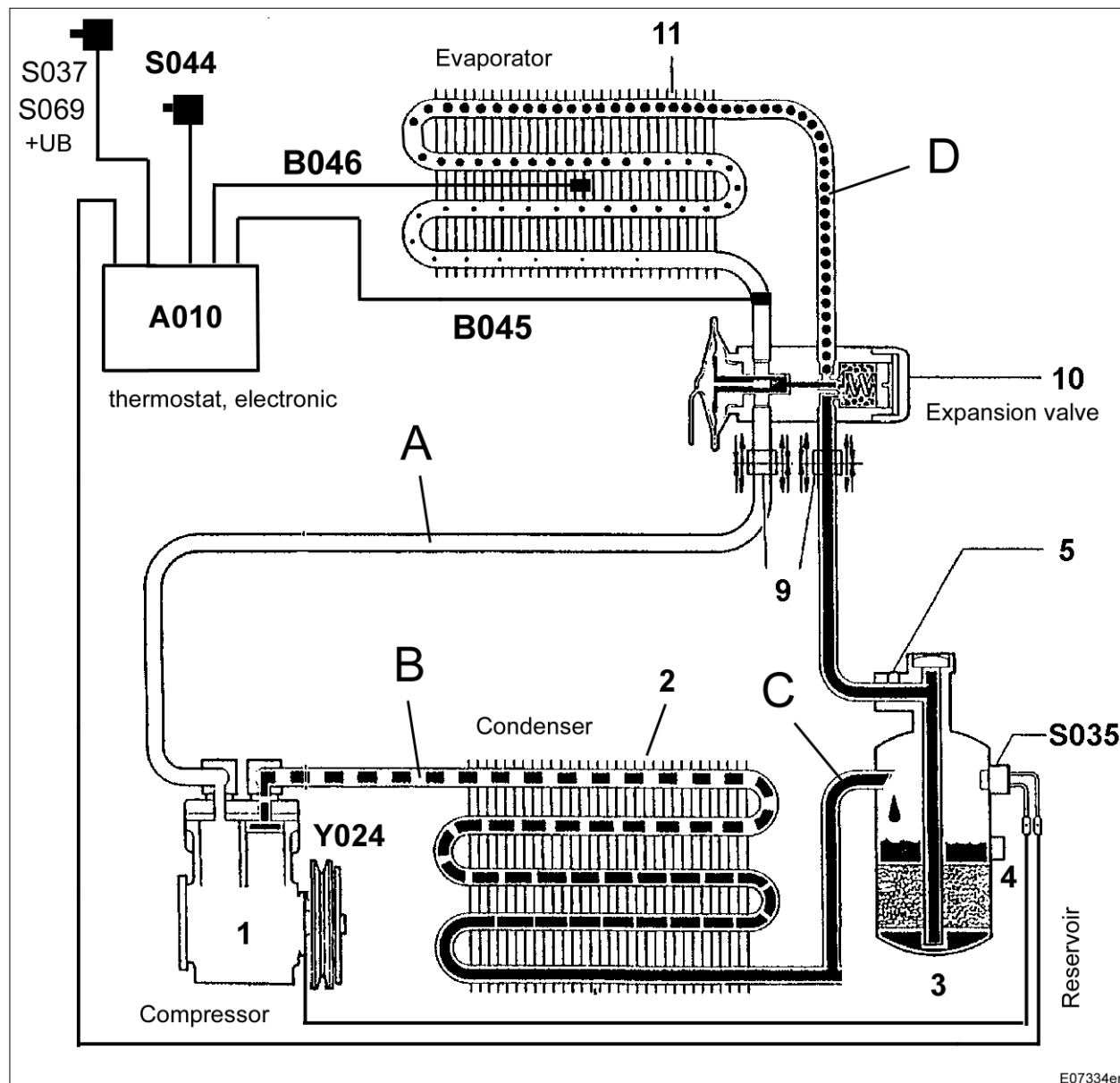
see also:

Chapter 9000 Reg.E - Measuring and testing CAN-BUS



Item	Designation	Remark
G-BUS	Transmission bus	
A002	ECU, enhanced control	
X031	Separation point on A002	
A009	Actuator unit (transmission)	Bus terminator - resistance = 120 ohm
X037	Separation point on A009	
A013	Circuit board_fuse	Bus terminator - resistance = 120 ohm
X200	Separation point on A013	
A051	ECU, EDC 'Engine control unit'	
X1466	Separation point on A051	
X617	Can low connector	
X618	Can high connector	
X1463	Can high connector	
X1464	Can low connector	

Date	Version	Page	A009 - actuator unit	Capitel	Index	Docu-No.
22.02.06	a	11/11		9000	E	000308

Fendt 300 Vario
Electrics / General system
A010 - thermostat, electronic
E**Refrigerant circuit**

1	Compressor	B046	Sensor, temperature 1
2	Condenser	S035	High-/low-pressure switch
3	Reservoir	S037	Switch, roof blower (3-speed)
4	Inspection glass	S044	AC potentiometer
5	Fuse	S069	Switch, roof blower (infinitely adjustable) (optional)
9	Separation point	Y024	Magnetic clutch
10	Expansion valve		
11	Evaporator		
A010	Electronic thermostat	A	Low pressure, gaseous
B045	Sensor, temperature 2	B	High pressure, gaseous
		C	High pressure, liquid
		D	Intake pressure, liquid

Date	Version	Page	A010 - thermostat, electronic	Capitel	Index	Docu-No.
27.02.06	a	1/7		9000	E	000310

Fendt 300 Vario	Electrics / General system A010 - thermostat, electronic	E
------------------------	---	----------

Functional description of refrigerant circuit

The **compressor** (1) entrains gaseous refrigerant and compresses it.

The **condenser** (2) liquefies the gaseous refrigerant.

The **reservoir** (3), also termed 'drier', serves as the storage vessel and absorbs any moisture from the refrigerant.

The **expansion valve** (10), also termed the injector, is a regulator which injects the optimum volume of refrigerant into the evaporator.

The refrigerant which is injected in liquid form is evaporated in the **evaporator** (11). The coldness generated is directed into the cab on the air current from the blower.

Functional description: climate-control system

The air current temperature is preselected using potentiometer **S044** .

B046 - sensor, temperature measures the temperature in the blower air current.

B045 - sensor, temperature measures the temperature in the area of the suction line (danger of icing)

A010 - thermostat switches +UB to the **Y024** magnetic clutch of the AC compressor.

Thermostat A010 interrupts the power supply to the magnetic clutch Y024 if:

- the **B046** - temperature sensor indicates the preset air current-temperature.
- or

- the **B045** - temperature sensor indicates icing of the suction line.

Supply +UB of the **A010** - thermostat: from fusebox **X050 fuse 17** to the **S037 (3-speed) or S069 (infinitely adjustable)** - blower switch

System temperature monitor (overheating)

The **fuse** is fitted at the top of the reservoir for safety reasons. It melts at temperatures above 112°C, and the refrigerant escapes. The reservoir and refrigerant must be replaced.

Date	Version	Page	A010 - thermostat, electronic	Capitel	Index	Docu-No.
27.02.06	a	2/7		9000	E	000310

Fendt 300 Vario	Electrics / General system A010 - thermostat, electronic	E
------------------------	---	----------

AC system pressure monitor

The **S035** - high pressure/low-pressure switch is mounted on the reservoir (drier). (see drawing: Refrigerant circuit).

The **S035** - switch monitors compression in the reservoir.

Operating points: S035 - high pressure/low-pressure switch

	(High pressure)	(Low pressure)
	maximum pressure (bar)	minimum pressure (bar)
Switch open	28 +/- 2	< 2
Switch closed	22 +/- 2	> 2

If the compression in the system is too high (>28 bar), the **S035** - switch interrupts the voltage to the **Y024** - magnetic clutch

Possible causes of excessive pressure in the system are:

- Overheating (condenser soiled)
- Expansion valve iced up
- System overfilled (too much refrigerant)

If the compression in the system becomes too low (<2 bar), the **S035** switch interrupts the voltage supply to the **Y024** - magnetic clutch.

Possible causes of inadequate pressure in the system are:

- Leaks in the system
- System inadequately filled (too little refrigerant)

Maintenance of the air-conditioning system (see also tractor Operator's Manual)

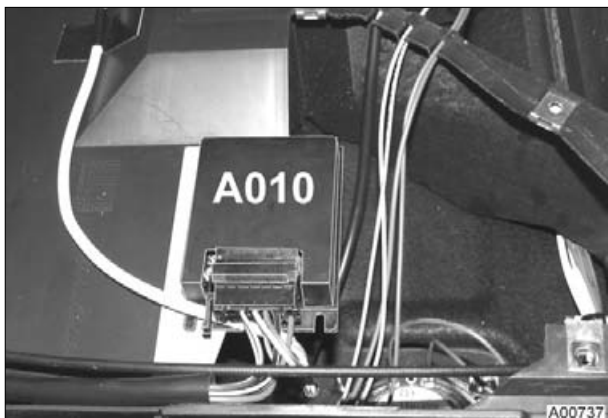
- Refrigerant 134 a
- With the compressor running, the white ball must be floating in the upper half of the inspection glass (on the fluid reservoir). (If necessary, top up with refrigerant.)
- If the blue ball turns pink, this is an indication of moisture in the system.
- Various manufacturers offer filling units for evacuating and filling the air-conditioning system. (For details of how to fill the air-conditioning system, please refer to the filling-unit operating manual.)
- Even in winter the air-conditioning system should be switched on for approx. 10 min every month, with ventilation set to recirculation mode. (**Note:** If the system is not used for excessive periods, the low-temperature oil (compressor lubricant) and the refrigerant can separate!)
- Air-conditioning compressor v-belt: the belt tension (strand pull) is measured in the middle between the pulleys using an "Optibelt tension gauge", strand force 400+50 N (40+5 Kp) - profile 13mm.

Power consumption of air-conditioning system

- When first switched on approx. 6 kW (= 8 hp)
- In operation approx. 4 kW (= 5 hp)

Date	Version	Page	A010 - thermostat, electronic	Capitel	Index	Docu-No.
27.02.06	a	3/7		9000	E	000310

Fendt 300 Vario	Electrics / General system A010 - thermostat, electronic	E
------------------------	---	----------



A010 = Electronic thermostat

Top right in cab roof

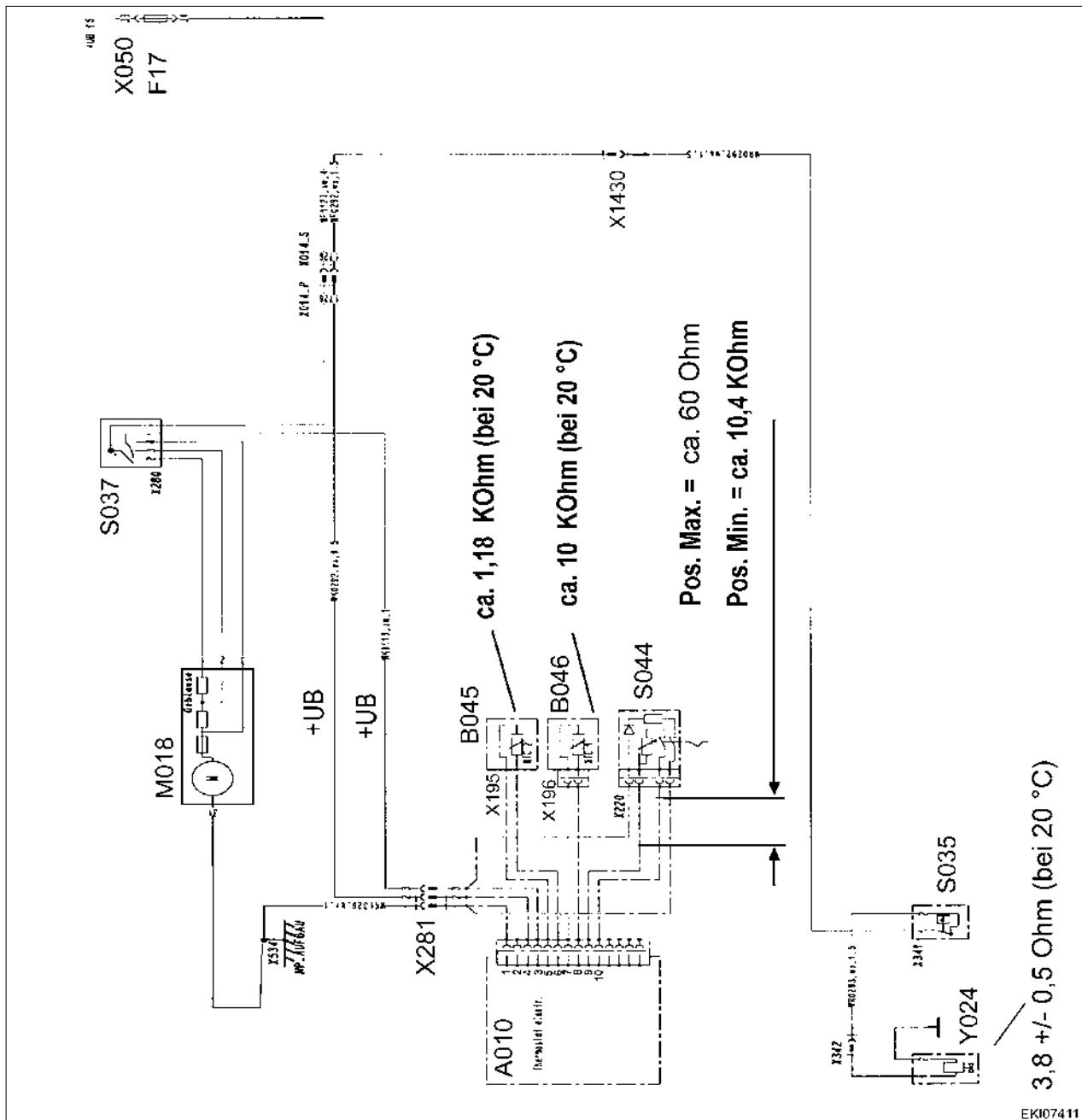


Remove cab roof.

Date	Version	Page	A010 - thermostat, electronic	Capitel	Index	Docu-No.
27.02.06	a	4/7		9000	E	000310

Fendt 300 Vario

Electrics / General system
A010 - thermostat, electronic

E**Note:**

All measured values +/- 10%

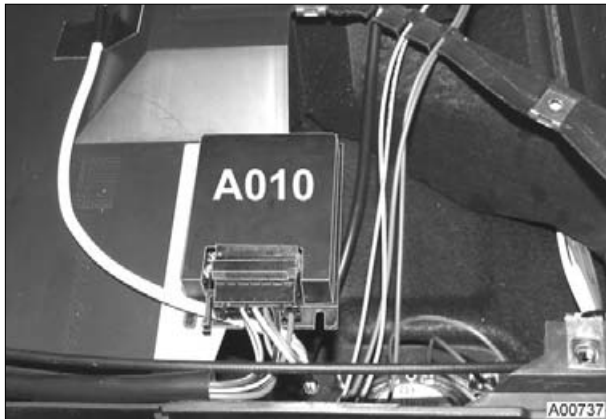
A010	Electronic thermostat	S035	Switch, high/low pressure
B045	Sensor, temperature 2 (NTC)	S037	Blower switch, 3-speed (optional: S069 - switch and infinitely adjustable blower)
B046	Sensor, temperature 1 (NTC)	S044	Potentiometer
M018	Blower (optional: infinitely adjustable)	Y024	Magnetic clutch

Note:NTC = **N**egative **T**emperature **C**oefficient

i. e. with increasing ambient temperature, the resistance of the sensor decreases

Date	Version	Page	A010 - thermostat, electronic	Capitel	Index	Docu-No.
27.02.06	a	5/7		9000	E	000310

Fendt 300 Vario	Electrics / General system A010 - thermostat, electronic	E
------------------------	---	----------



Pin	Colour	Function
1	Brown	Ground
2	-	Not assigned
3	red	S037 or S069 (+UB)
4	Black/yellow	Y024 (+UB)
5	Blue	B045 - sensor
6	Brown	B045 - sensor
7	White	B046 - sensor
8	White	B046 - sensor
9	Brown/yellow	S044 - potentiometer
10	Brown/yellow	S044 - potentiometer

Pin	Pin description	Condition	Signal
1	Ground		
2	Not assigned		
3	S037 - roof blower switch (3-speed) or S069 - roof blower switch (infinitely adjustable)	Ignition ON Roof blower ON Roof blower OFF	12 VDC to 14 VDC 0 VDC
4	Y024 - magnetic clutch	Ignition ON A010 switches on A010 switches off	12 VDC to 14 VDC 0 VDC
5 6	B045 - temperature sensor 2	Disconnect A010	approx. 1.18 kilohm at 20°C
7 8	B046 - temperature sensor 1	Disconnect A010	approx. 10 kilohm at 20°C
9 10	S044 - AC potentiometer	Disconnect A010 Max. position Min. position	approx. 60 ohm approx. 10.4 kilohm

Note:

All measured values +/- 10%

B045 and B046 are Negative Temperature Coefficient sensors,

i. e. with increasing ambient temperature, the resistance of the sensor decreases

Date	Version	Page	Capitel	Index	Docu-No.
27.02.06	a	6/7	A010 - thermostat, electronic	9000	E 000310

Fendt 300 Vario	Electrics / General system A010 - thermostat, electronic	E
------------------------	---	----------

The A010 - electronic thermostat switches is a function of:

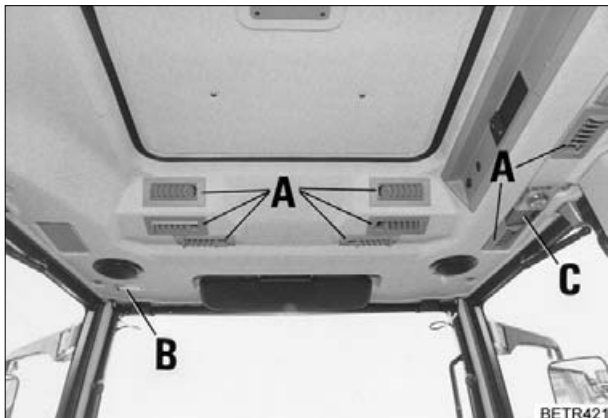
- S037 or S069 - roof blower switch (**supply A010**)
- S044 - AC potentiometer (**setpoint**)
- B046 - temperature sensor 1 in air current (**actual value**)
- B045 - temperature sensor 2 on evaporator (**safeguard against system icing up**)
- S035 - high pressure/low-pressure switch (**coolant circuit protection**)

Voltage (12 VDC to 14 VDC) to Y024 - magnetic clutch
(air-conditioning compressor switches on)

Fault location in air-conditioning

Air-conditioning compressor does not switch on

1. Check X050 , fuse F17 (+UB 15). (supply for M018 - roof blower (3-speed) or M014 - roof blower (infinitely adjustable) and A010 - electronic thermostat)
2. Supply Y024 - magnetic clutch with 12 VDC from external source (check: does magnetic clutch operate?).
3. Check S037 or S069 - switch for continuity (supply A010 - electronic thermostat. "Green indicator lamp").
4. Check S035 - high pressure/low-pressure switch for continuity. (check refrigerant circuit).
5. Check all connectors for continuity.
6. Test voltage output of A010 - electronic thermostat at Y024 - magnetic clutch.
7. Check operation of B045 - sensor, B046 - sensor and S044 - potentiometer (see table above).



Testing air-conditioning performance

- Hold thermometer in fan air current and measure air current temperature directly at air nozzle outlet (A).

Target value: approx. 6°C - 8°C at 25°C ambient temperature

Note:

Set recirculation switch to recirculation mode to ensure optimum cooling performance.

Note:

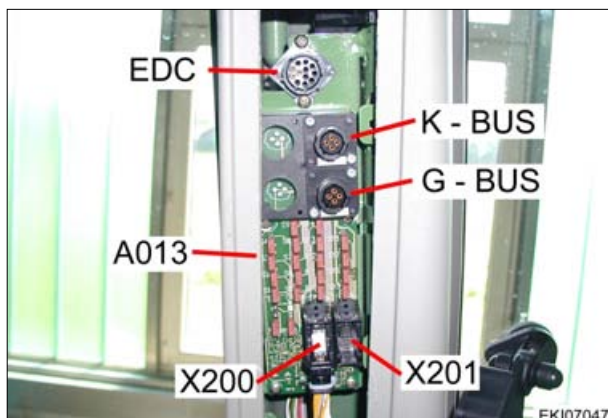
If target value is not achieved, recirculation filter, condenser or evaporator may be soiled/clogged (please see Operating Manual for details of how to clean).

Date	Version	Page	A010 - thermostat, electronic	Capitel	Index	Docu-No.
27.02.06	a	7/7		9000	E	000310

Fendt 300 Vario

Electrics / General system

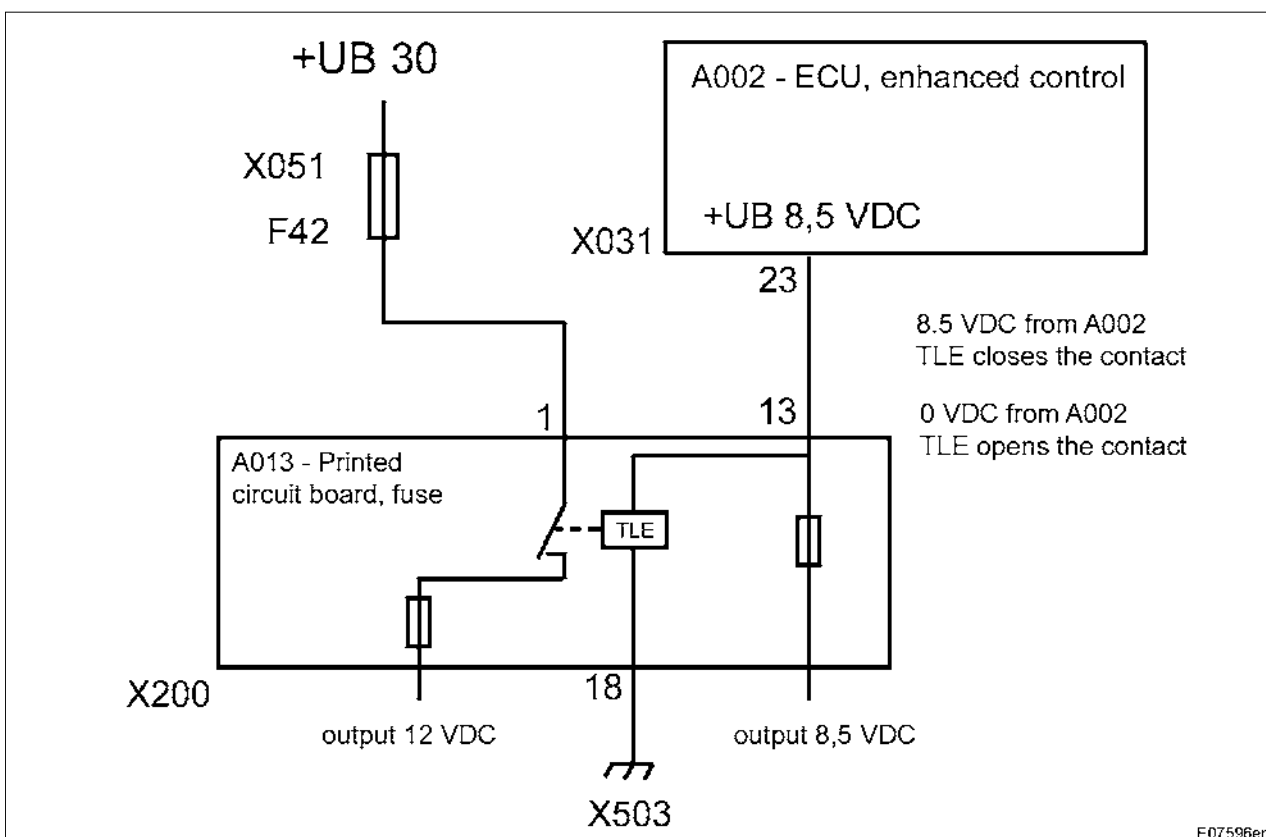
A013 - Printed circuit board, fuse

E**A013** = Circuit board with microfuses 500 mA**X200** = Separation point on the circuit board**X201** = Separation point on the circuit board (**not assigned**)**G-bus** = Transmission bus**K-bus** = Enhanced control bus**EDC** = Engine diagnostics

On right B-pillar



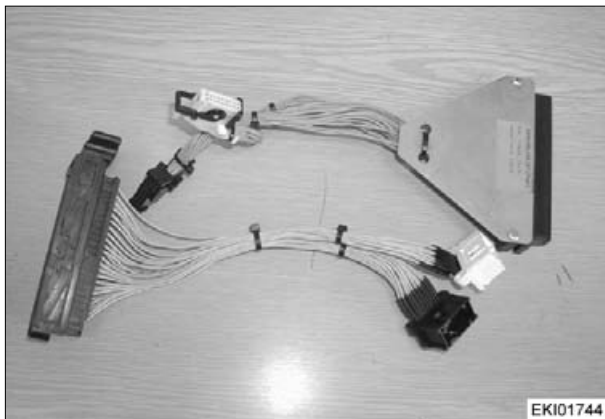
Remove panel



Date	Version	Page	A013 - Printed circuit board, fuse	Capitel	Index	Docu-No.
27.02.06	a	1/4		9000	E	000309

Fendt 300 Vario	Electrics / General system A013 - Printed circuit board, fuse	E
------------------------	--	----------

Item	Designation	Remark
A002	ECU, enhanced control	
X031	Separation point on A002	
Pin 23	+ supply for the A013 - circuit board_fuse (8.5 VDC)	Ignition 'ON'
A013	Circuit board_fuse	
X200	Separation point on A013	
Pin 1	+ supply for the A013 - circuit board_fuse (12 VDC)	
Pin 13	+ supply for the A013 - circuit board_fuse (8.5 VDC)	Switch on ignition, A002 - ECU, enhanced control transmits 8.5 VDC to A013 - circuit board The 8.5 VDC supply: - the microfuses (8.5 VDC) - the TLE switch the TLE switch switches 12 VDC to the microfuses (12 VDC)
Pin 18	Ground Electronic	
X503	Grounding point	



Connect e-adapter box X899.980.208.100 directly to A013 - circuit board, fuse with adapter cable X899.980.208.207

Pin on separation point	Pin on the X899.980.208.100 adapter box (68-pin)
Separation point X200 "black connector" (1 ... 18)	31 ... 48

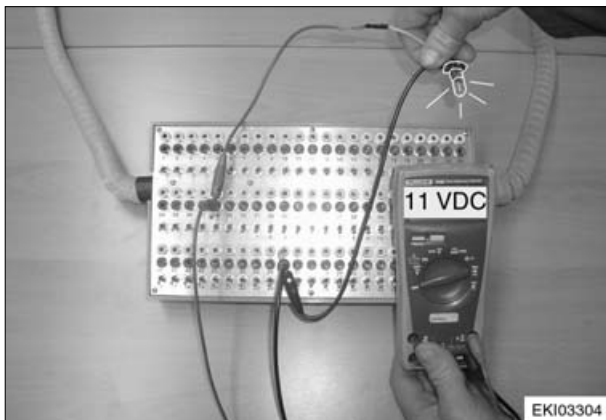
Date	Version	Page	A013 - Printed circuit board, fuse	Capitel	Index	Docu-No.
27.02.06	a	2/4		9000	E	000309

Fendt 300 Vario	Electrics / General system A013 - Printed circuit board, fuse	E
------------------------	--	----------

Measuring the power supply for the A013 - circuit board, fuse (X200 separation point)

X200 - separation point (switch on ignition)					
Pin	Description	Signal - type / condition	Signal	Signal line interrupted Signal from A002 - ECU, enhanced control	Signal from component (A013 - circuit board fuse)
13	+ supply	+Vbatt 8.5 VDC	8.5 VDC	8.5 VDC	0 VDC
18	Electronics ground				

X200 - separation point				
+ Vbatt 30				
Test	Pin	Specified value	Condition	Possible cause of fault
+ supply	1	12 VDC	Ignition OFF	Fuse (F042) in X051 or in wiring. See also Electronics power supply circuit diagram
		Approx. 13 - 14 VDC	Engine running	
Electronics ground	18			
+ supply	1	Voltage drop max. 1 VDC from last reading	Also connect approx. 55 W bulb	Voltage must remain stable even under load; if voltage drop is greater than approx. 1 VDC, remove contact resistors (e.g. at fuse).
Electronics ground	18			



Note:

If voltage drop is greater than approx. 1 VDC, remove contact resistors (e.g. at fuse).

Date	Version	Page	A013 - Printed circuit board, fuse	Capitel	Index	Docu-No.
27.02.06	a	3/4		9000	E	000309

Fendt 300 Vario	Electrics / General system A013 - Printed circuit board, fuse	E
------------------------	--	----------

Fuses (X200 separation point)

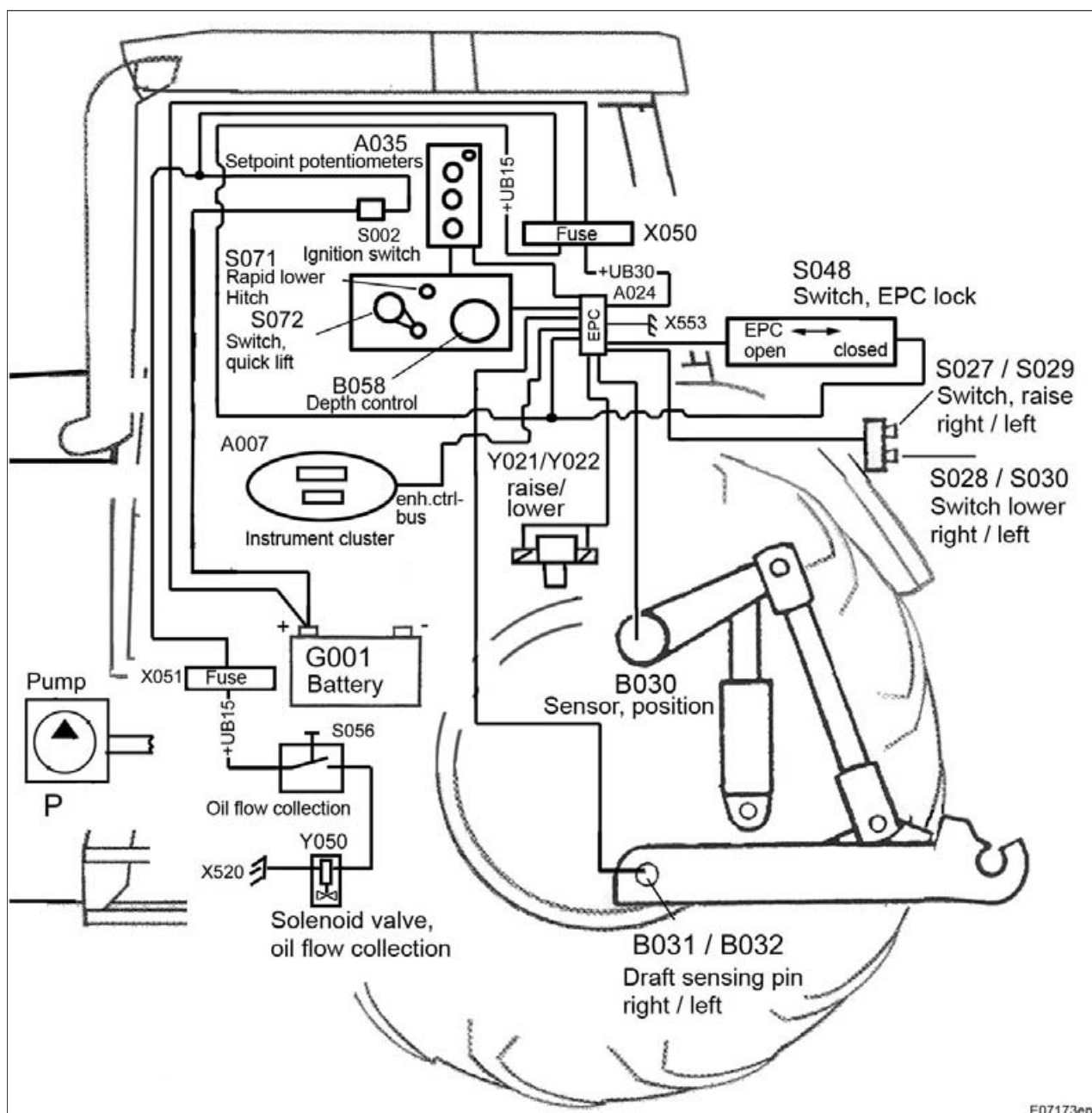
Pin	fuse	Specified value	Components
1		12 VDC	+ Vbatt 30 (fuse F042)
2	-	approx. 2.35 VDC	G - BUS (CAN low) *
3	-	approx. 2.6 VDC	G - BUS (CAN high) *
4	F5	8.5 VDC	B003 - sensor, front axle suspension position
5	F15	12 VDC	B083 - sensor, high pressure thrust-draft detection (not yet assigned)
6	F10	12 VDC	B008 - high pressure sensor
7	-	approx. 2.46 VDC	K - BUS (CAN low) *
8	-	approx. 2.5 VDC	K - BUS (CAN high) *
9	F11	12 VDC	B010 - sensor, engine speed
10	F1	8.5 VDC	B014 - sensor, hydrostat
11	Press F2	8.5 VDC	B015 - sensor, bevel pinion
12	F3	8.5 VDC	B017 - sensor, clutch pedal
13	-	8.5 VDC	+Vbatt 8.5 VDC from A002 - ECU, enhanced control
14	F4	8.5 VDC	A036 - control panel, enhanced controls
15	F14	12 VDC	B002 - sensor, front PTO speed (stub shaft)
16	F13	12 VDC	B020 - sensor, rear PTO speed (stub shaft)
17	F12	12 VDC	No function assigned
18	-	-	Electronics ground

* Testing CAN - BUS see Chapter 9000 Reg. E

Fuses (X201 separation point)**Note:**

Fuses F6 to F9 and F16 to F18 are not assigned

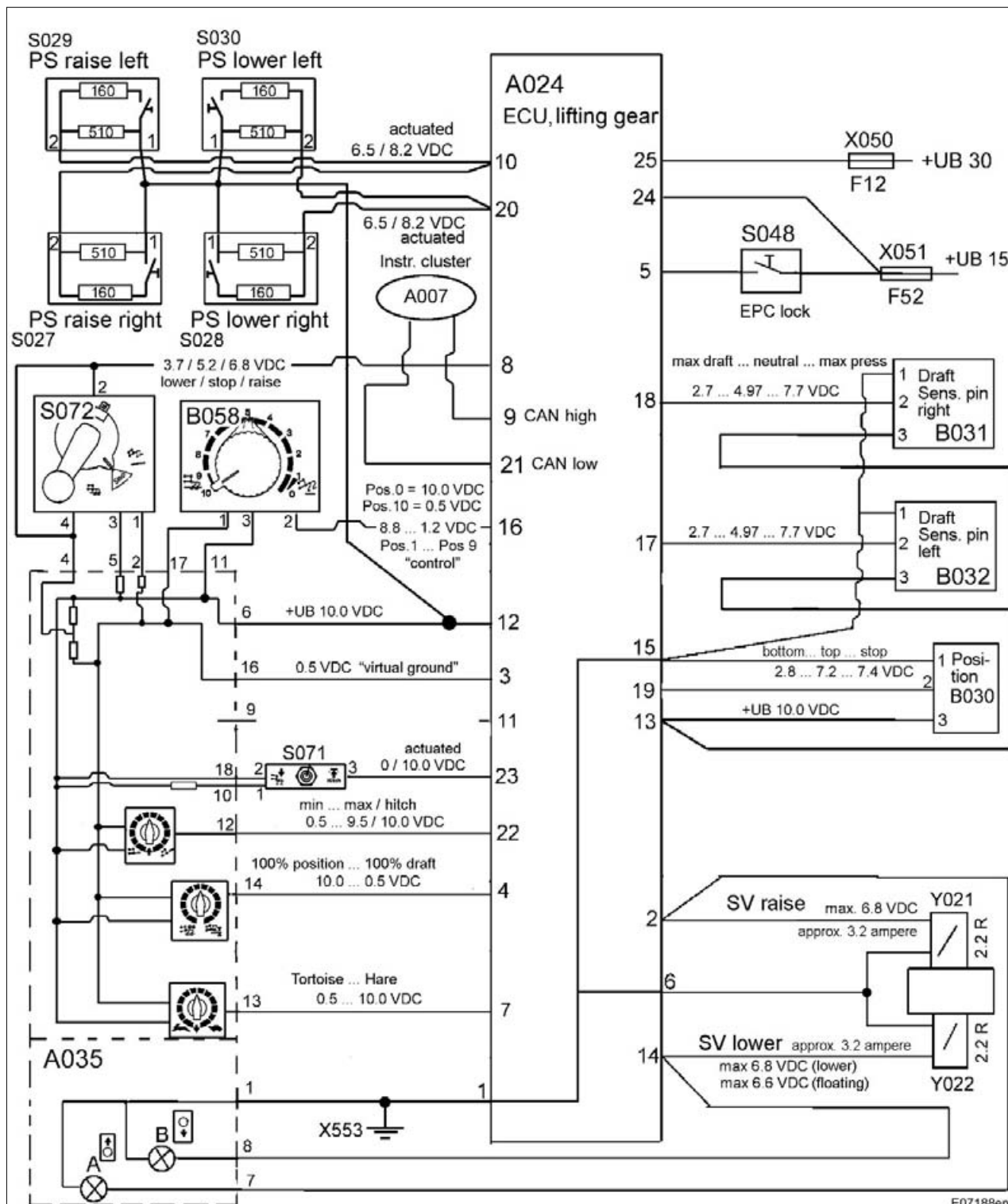
Date	Version	Page	A013 - Printed circuit board, fuse	Capitel	Index	Docu-No.
27.02.06	a	4/4		9000	E	000309

Fendt 300 Vario
Electrics / General system
A024 - ECU, EPC B
E

E07173en

Item	Designation	Item	Designation
A007	Instrument cluster	S030	External switch lower, left
A024	ECU, EPC B	S048	Switch EPC lock
A035	EPC control panel (potentiometer setpoint)	S056	Switch, oil flow collector
B030	Sensor, position	S071	Switch, rapid lowering / hitch
B031	Draft sensing pin right	S072	Switch, quick lift
B032	Draft sensing pin, left	X050	Fuse holder 1 compl
B058	Depth control	X051	Fuse holder 2 compl
G001	Battery (12 VDC)	X520	Ground
K-bus	Enhanced controls bus	X553	Ground
S002	Ignition switch	Y021	Solenoid valve, rear power lift raise
S027	External switch 'raise', right	Y022	Solenoid valve, rear power lift lower
S028	External switch lower, right	Y050	Solenoid valve, oil flow collector
S029	External switch raise, left	P	Hydraulic pump

Date	Version	Page	A024 - ECU, EPC B	Capitel	Index	Docu-No.
27.01.06	a	1/12		9000	E	000306

Fendt 300 Vario**Electrics / General system**
A024 - ECU, EPC B**E****Block diagram A024 - ECU EPC B**

E07188en

Note:

All measured values +/- 10%

+UB 15 (switched plus after battery, output) (12 - 14 VDC)

Date	Version	Page	A024 - ECU, EPC B	Capitel	Index	Docu-No.
27.01.06	a	2/12		9000	E	000306

Fendt 300 Vario

Electrics / General system

A024 - ECU, EPC B

E**A024** = ECU, EPC B

on right mudguard



Remove panel and control console

**A035** = Control panel EPC (setpoint potentiometer)

On right B-pillar

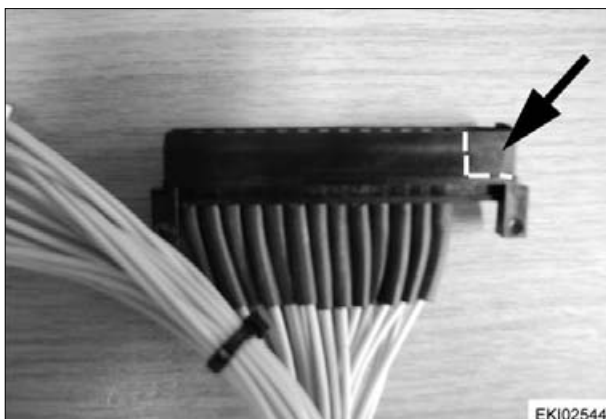


Unscrew control panel



Connect e-adapter box X 899.980.208.100 directly to A024 - EPC, EPC B using adapter cable X 899.980.208.201.

Ignition ON

**Note:**

Saw off edge of adapter cable X 899.980.208.201 as shown.

Note:

The adapter cable goes on the second row on the e-adapter box X 899.980.208.100 (68-pin)

Second row = pin 31 pin 68

Date	Version	Page	Capitel	Index	Docu-No.
27.01.06	a	3/12	A024 - ECU, EPC B	9000	E 000306

Fendt 300 Vario	Electrics / General system A024 - ECU, EPC B	E
------------------------	---	----------

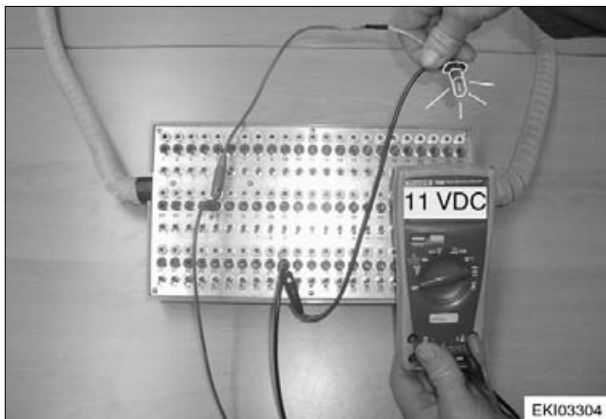
Measuring the supply voltage for the A024 - ECU, EPC

+ UB 30 (battery voltage)

Test	Pin	Specified value	Condition	Possible cause of fault
+ supply	25	approx. 12 VDC	Engine stopped, ignition off	With reading 0 VDC: fuse (F12) in X050 or in wiring
		14 VDC	Engine running	
Ground	1			
+ supply	25	Voltage drop: 1 VDC max. relative to last measurement	Also connect approx. 55 W bulb	Voltage must remain stable even under load
Ground	1			

+ UB 15 (switched voltage; ignition switch)

Test	Pin	Specified value	Condition	Possible cause of fault
+ supply	24	approx. 12 VDC	Engine stopped, ignition on	With reading 0 VDC: fuse (F52) in X051 or in wiring
		14 VDC	Engine running	
Ground	1			
+ supply	24	Voltage drop: 1 VDC max. relative to last measurement	Also connect approx. 55 W bulb	Voltage must remain stable even under load
Ground	1			



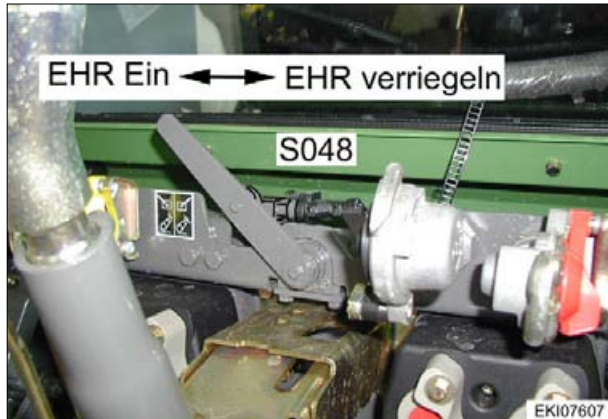
Note:

If voltage drop is greater than approx. 1 VDC, remove contact resistors (e.g. at fuse)

Date	Version	Page	A024 - ECU, EPC B	Capitel	Index	Docu-No.
27.01.06	a	4/12		9000	E	000306

Fendt 300 Vario	Electrics / General system A024 - ECU, EPC B	E
------------------------	---	----------

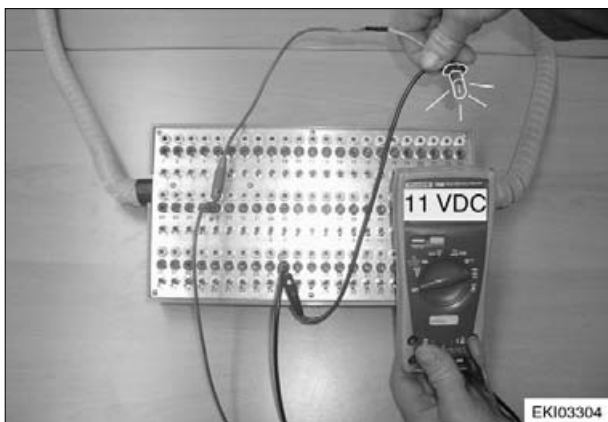
Testing S048 - EPC lock switch "block drawbar"



S048 = Switch, EPC lock 'block drawbar'
At rear of tractor



S048 - switch, EPC lock				
Switch on ignition (+UB 15)				
Test	Pin	Specified value	Condition	Possible cause of fault
S048 - EPC lock switch Ignition ON	5	2.2 VDC	Lifting gear on S048 - switch locked (solenoid switch open)	
		12 VDC	Lifting gear on S048 - switch unlocked (solenoid switch closed)	
Ground	1			
S048 - EPC lock switch	5	Voltage drop approx. 1 VDC from last reading	Lifting gear unlocked, also connect one bulb with about 10 Watt	
Ground	1			



Note:

Maximum load 10 Watt !!!

Note:

If voltage drop is greater than approx. 1 VDC, remove contact resistors (e.g. at fuse)

Date	Version	Page	A024 - ECU, EPC B	Capitel	Index	Docu-No.
27.01.06	a	5/12		9000	E	000306

Fendt 300 Vario

Electrics / General system
A024 - ECU, EPC B

E

Testing S072 - quick lift switch

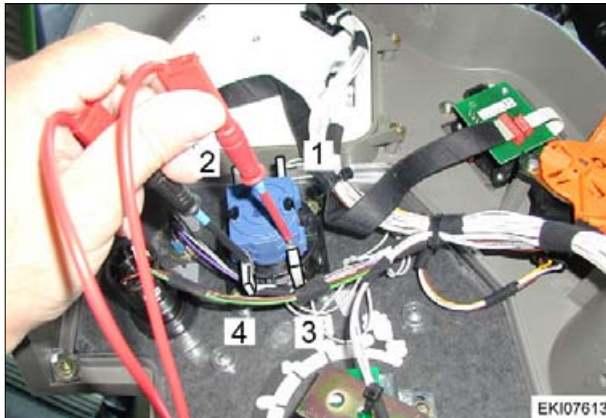


Control unit on right on mudguard

B058 = Depth control

S071 = Hitch switch

S072 = Quick lift switch



Testing quick lift switch without measuring instrument

- Ignition on, engine on
- Quick lift switch to STOP

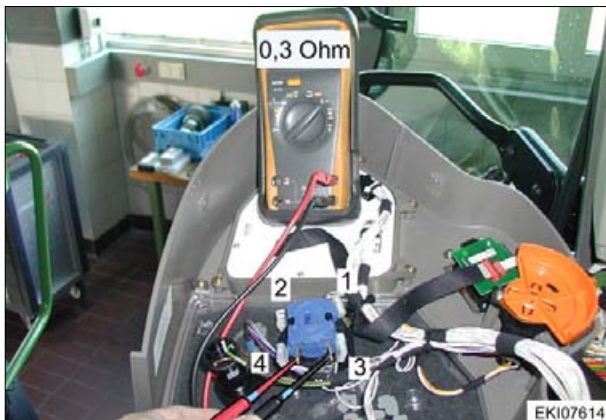
Bypass quick lift switch:

Terminals 4 and 3, rear power lift must rise.

Terminals 2 and 1, rear power lift must lower.

Note:

If nothing happens, test quick lift switch (see following tests).



Testing quick lift switch for continuity (ohms)

- Pull out quick lift switch plug.

In 'Raise' position:

Terminals 3 + 4 , target value approx. 0.3 ohms (continuity)

Terminals 1 + 2, infinite resistance (no continuity)

In 'Lower' (control action) position

Terminals 1 + 2 , target value approx. 0.3 ohms (continuity)

Terminals 3 + 4, infinite resistance (no continuity)

Fendt 300 Vario	Electrics / General system A024 - ECU, EPC B	E
------------------------	---	----------

Pin assignment and signal values

Note:

All readings +/- 10%

Pin on A024	Pin description	Signal type / condition	Signal	Signal from A024 - ECU, EPC (line interruption)	Signal from component (line interrupted)
1	Ground	Ground			
2	Y021 - solenoid valve, rear power lift raise Ignition ON, start engine , unlock EPC on quick lift switch	Raise rear power lift	approx. 6.8 VDC approx. 3.2 ampere	0.2 VDC	0 VDC
3	Ground for control panel "virtual ground" Ignition ON	"Virtual ground"	0.5 VDC	0 VDC	9.8 VDC
4	Position - draft potentiometer Ignition ON	100% position	10.0 VDC	0 VDC	10.0 VDC
		100 % draft	0.5 VDC	0 VDC	0.5 VDC
5	S048 - switch EPC lock (resistance = approx. 100 ohm) Ignition ON	EPC on S048 - switch unlocked (solenoid switch closed)	12 VDC	2.2 VDC	12 VDC
		EPC on S048 - switch locked (solenoid switch open)	2.2 VDC	2.2 VDC	0 VDC
6	Ground for Y021/Y022 - solenoid valve raise/lower	Ground	-	-	-
7	Lowering throttle (A035 - control panel) Ignition ON	Tortoise	0.5 VDC	0 VDC	0.5 VDC
		Hare	10.0 VDC	0 VDC	10.0 VDC
8	S072 - quick lift switch Ignition ON	Transport (raise)	6.8 VDC	0 VDC	6.8 VDC
		Stop	5.2 VDC	0 VDC	5.2 VDC
		Control (lower)	3.7 VDC	0 VDC	3.7 VDC
9	Enhanced control BUS (CAN high) Note: final resistance in A013 - fuseboard (120 ohm) ; in A007 - instrument cluster ; in A024 - ECU,EPC B (120 ohm)	Ignition OFF: measure resistance between CAN high (pin 9) and CAN low (pin 21)	approx. 40 ohm (3 x 120 ohm parallel)		
		Ignition ON: measure voltage between CAN high (pin 9) and ground (pin 1)	approx. 2.5 VDC	approx. 2.9 VDC	approx. 1.8 VDC

Date	Version	Page	A024 - ECU, EPC B	Capitel	Index	Docu-No.
27.01.06	a	7/12		9000	E	000306

Fendt 300 Vario	Electrics / General system A024 - ECU, EPC B	E
------------------------	---	----------

Pin on A024	Pin description	Signal type / condition	Signal	Signal from A024 - ECU, EPC (line interrupted)	Signal from component (line interrupted)
10	S027 / S029 - external switch raise right / left	S027 and S029 - switch not actuated	6.5 VDC	1.7 VDC	10.0 VDC
		S027 or S029 - switch actuated	8.2 VDC		
11	Vibration damping ON key (not assigned in FENDT 300 Vario) (Note: the cut-in speed for vibration damping is set on the A007 - instrument cluster and transmitted via the enhanced BUS on A024 - ECU, EPC)				
12	+ supply for the EPC sensor electronics Ignition ON	+UB stab 10.0 VDC	10.0 VDC	10.0 VDC	1.2 VDC
13	+ supply for: B030 - sensor position; B031 - draft sensing pin right ; B032 - draft sensing pin left Ignition ON	+UB stab 10.0 VDC	10.0 VDC	10.0 VDC	0 VDC
14	Y022 - solenoid valve, rear power lift lower Ignition ON, start engine , unlock EPC on quick lift switch	Lower rear power lift: Lower (100% position and lowering throttle on hare) Floating position (depth control on pos. 10) Lower (100% position) dependent on position of lowering throttle	6.8 VDC approx. 6.6 VDC max. 3.2 ampere 0 ... 3.2 ampere	0.27 VDC	0.16 VDC
15	Ground for: B030 - sensor position; B031 - draft sensing pin right ; B032 - draft sensing pin left	Ground	-		
16	Depth control Ignition ON	Position 10 (floating position) Position 0 (transport position) Position 1 ... 9 (control)	0.5 VDC 10.0 VDC 8.8 - 1.2 VDC		
17	B032 - draft sensing pin left Ignition ON	Max. draft force Neutral Max. compressive force	2.7 VDC 4.97 VDC 7.7 VDC		

Date	Version	Page	A024 - ECU, EPC B	Capitel	Index	Docu-No.
27.01.06	a	8/12		9000	E	000306

Fendt 300 Vario	Electrics / General system A024 - ECU, EPC B	E
------------------------	---	----------

Pin on A024	Pin description	Signal type / condition	Signal	Signal from A024 - ECU, EPC (line interrupted)	Signal from component (line interrupted)
18	B031 - draft sensing pin right Ignition ON	Max. draft force	2.7 VDC	0 VDC	2.7 VDC
		Neutral	4.97 VDC	0 VDC	4.97 VDC
		Max. compressive force	7.7 VDC	0 VDC	7.7 VDC
19	B030 - sensor, rear power lift position Ignition ON, start engine , unlock EPC on quick lift switch	Set position-draft control on 100% position Set lift height limiter to max. lift height Switch S072 - quick lift switch to control (lower)			
		Depth control on position 10 (floating position)	2.8 VDC	0 VDC	2.8 VDC
		Depth control on position 0 (transport position)	7.2 VDC	0 VDC	7.2 VDC
		Move rear power lift against the mechanical limit position with the S027 or S029 - external switch raise (Note: if the rear power lift is raised or lowered with the external switch, the internal actuator locks. To unlock key reset)	7.4 VDC	0 VDC	7.4 VDC
20	S028/S030 - external switch lower right / left Ignition ON	S028 and S030 - switch not actuated	6.5 VDC	1.7 VDC	10.0 VDC
		S028 and S030 - switch actuated	8.2 VDC		

Pin on A024	Pin description	Signal type / condition	Signal	Signal from A024 - ECU, EPC (line interrupted)	Signal from component (line interrupted)
21	Enhanced control BUS (CAN low) Note: final resistance in A013 - fuseboard (120 ohm) ; in A007 - instrument cluster ; in A024 - ECU,EPC B (120 ohm)	Ignition OFF: measure resistance between CAN high (pin 9) and CAN low (pin 21)	approx. 40 ohm (3 x 120 ohm parallel)		
		Ignition ON: measure voltage between CAN low (pin 21) and ground (pin 1)	2.5 VDC	2.1 VDC	3.2 VDC

Date	Version	Page	A024 - ECU, EPC B	Capitel	Index	Docu-No.
27.01.06	a	9/12		9000	E	000306

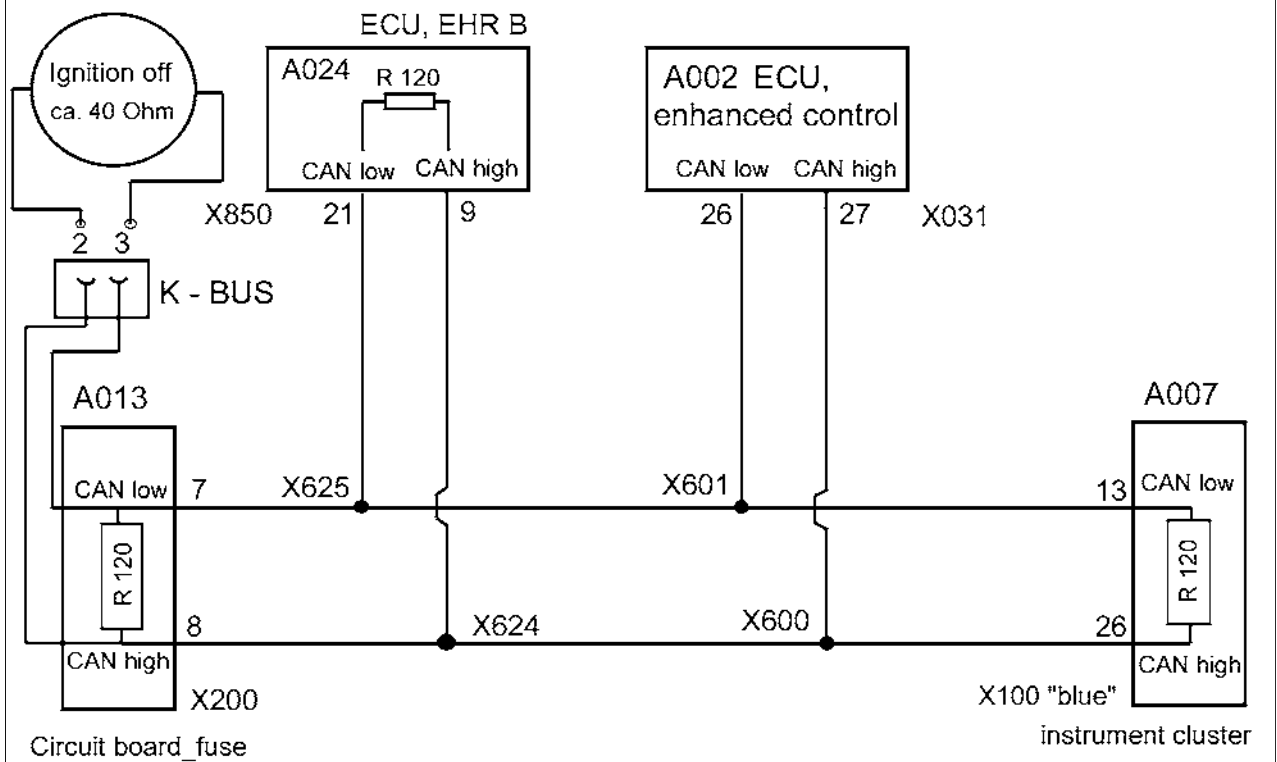
Fendt 300 Vario	Electrics / General system A024 - ECU, EPC B	E
------------------------	---	----------

Pin on A024	Pin description	Signal type / condition	Signal	Signal from A024 - ECU, EPC (line interruption)	Signal from component (line interrupted)
22	lift height limiter Ignition ON	Lift height limiter on min	0.5 VDC	0 VDC	0.5 VDC
		Lift height limiter on max.	9.5 VDC	0 VDC	9.5 VDC
		Lift height limiter on max. and S071 - hitch switch actuated	10.0 VDC	0 VDC	10.0 VDC
23	Rapid lowering key Ignition ON	Rapid lowering key not actuated	0 VDC	0 VDC	0 VDC
		Rapid lowering key actuated	10.0 VDC	0 VDC	10.0 VDC
24	+ supply for the A024 - ECU, EPC Ignition ON	+ UB 15	12 VDC	0 VDC	12 VDC
25	+ supply for the A024 - ECU, EPC Ignition OFF	+UB 30	12 VDC	0 VDC	12 VDC

Date	Version	Page	A024 - ECU, EPC B	Capitel	Index	Docu-No.
27.01.06	a	10/12		9000	E	000306

Fendt 300 VarioElectrics / General system
A024 - ECU, EPC B**E****Enhanced control bus (K-BUS)****Note:**

see also:

Chapter 9000 Reg.E - Measuring and testing CAN-BUS**Block diagram: enhanced control BUS**

Item	Designation	Remark
K-bus	Enhanced controls bus	
A002 X031	ECU, enhanced control Separation point on A002	
A007 X100 'blue'	Instrument cluster Separation point on A007	Bus terminator - resistance = 120 ohm
A013 X200	Circuit board_fuse Separation point on A013	Bus terminator - resistance = 120 ohm
A024 X850	ECU, EPC B Separation point on A024	Bus terminator - resistance = 120 ohm
X600	Can high connector	
X601	Can low connector	
X624	Can high connector	
X625	Can low connector	

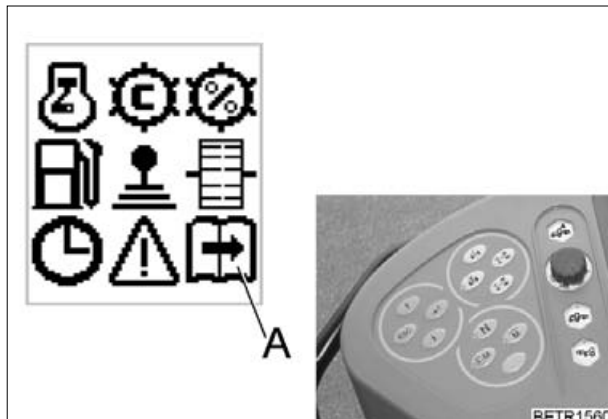
Date	Version	Page	Capitel	Index	Docu-No.
27.01.06	a	11/12	A024 - ECU, EPC B	9000	E 000306

Fendt 300 Vario

Electrics / General system
A024 - ECU, EPC B

E

Changing switch-on speed of vibration damping



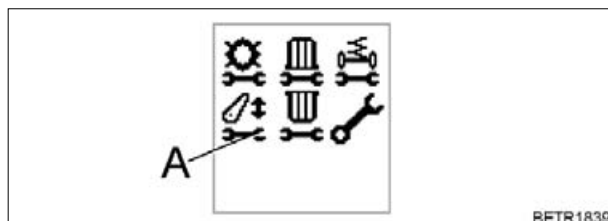
Press key, the first main menu appears on the multiple display.



Press either of the keys repeatedly until symbol (A) flashes.



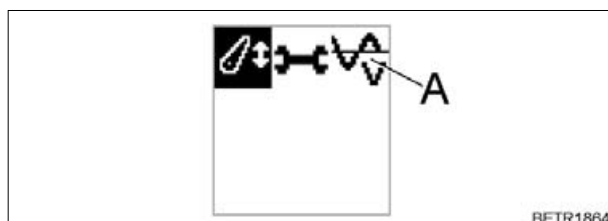
Press key, the second main menu level appears on the multiple display.



Press either of the keys repeatedly until symbol (A) flashes.



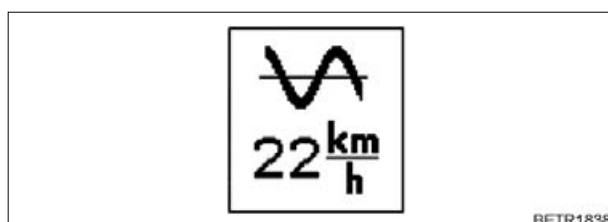
Press key, the following screen is displayed on the multiple display.



Press either of the keys repeatedly until symbol (A) flashes.



Press key, the following screen is displayed on the multiple display.



Press any key until the desired switch-on speed appears.

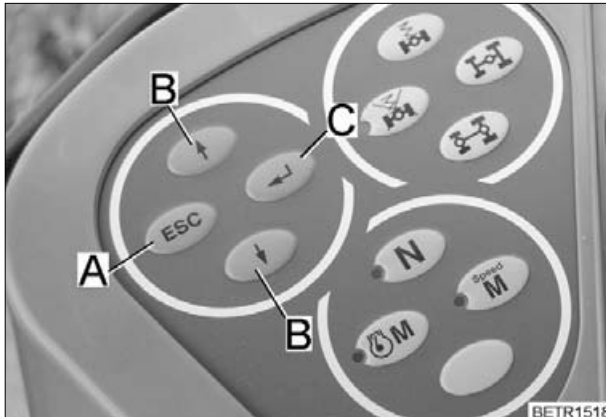


Store with key.

Date	Version	Page	A024 - ECU, EPC B	Capitel	Index	Docu-No.
27.01.06	a	12/12		9000	E	000306

Fendt 300 Vario

Electrics / General system
A036 - control panel, enhanced controls

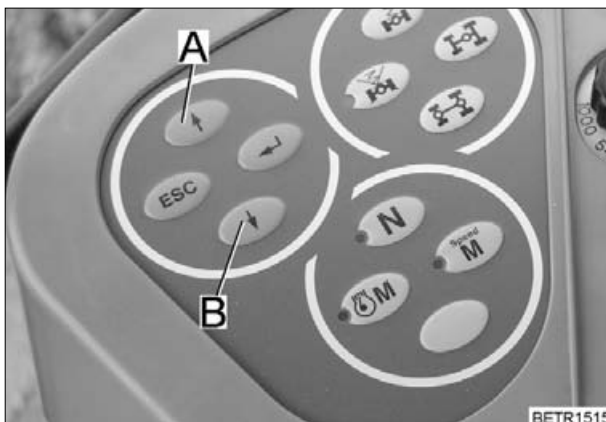
E

**Control keys for the multiple display
 (in A007 - instrument cluster)**

A ("ESC") = Return to previous menu level

B ("Cursor") = Key for browsing through the menu levels and setting functions (e.g. time)

C ("Return") = Key for calling up menu levels and for accepting settings (e.g. time)



Instrument lighting

If the vehicle lighting (+UB 58) is not switched on, instrument lighting can be set with the keys (A/B)

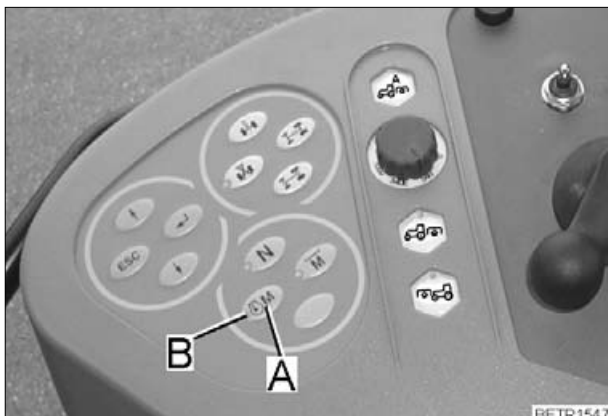
By pressing and holding the key (A), brightness increases

By pressing and holding the key (B), brightness decreases

Fendt 300 Vario

Electrics / General system

A036 - control panel, enhanced controls

E

Maintaining and storing the current engine speed

A = Engine speed memory "Memo engine"

B = LED engine speed memory

Note:

No stored engine speed should be preselected with key (A), LED (B) must not be lit.

- Driving to desired engine speed
- If key (A) is **pressed less than 2 seconds**, the current engine speed is maintained without being stored
- If key (A) is pressed longer than 2 seconds, the engine speed is stored. This setting remains in memory after the ignition has been switched off (LED is lit)

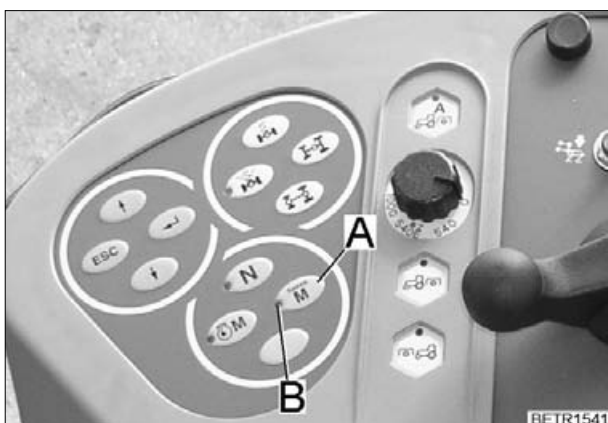
Recalling engine speed memory

LED (B) is lit

- Briefly press key (A) (less than 2 seconds), the engine speed that is stored in memory is targeted

The stored engine speed is cancelled if:

- the engine brake is actuated
- the foot brake is actuated
- overridden with hand throttle



Cruise control memory

A "Memo speed" = Cruise control memory

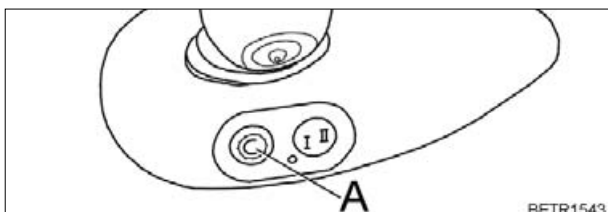
B = LED cruise control memory

Note:

Cruise control is only possible at engine speeds above 1300 rpm

No stored speed should be preselected with key (A), LED (B) must not be lit.

- Accelerate to the desired speed.
- Press key (A) longer than 2 seconds (LED is lit)

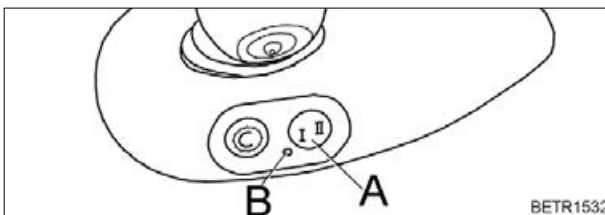


- Recall the stored speed from cruise control memory with key (A)

Date	Version	Page	A036 - control panel, enhanced controls	Capitel	Index	Docu-No.
13.02.06	a	2/16		9000	E	000307

Fendt 300 Vario

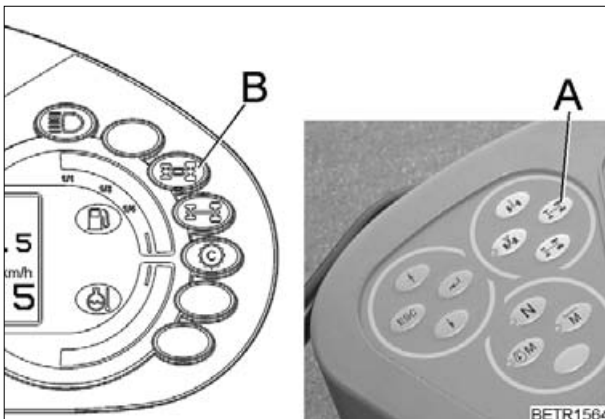
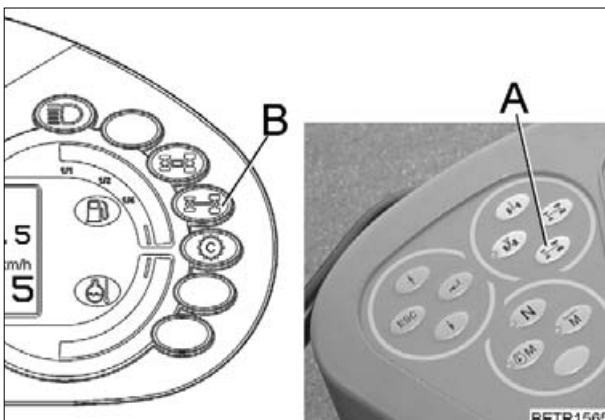
Electrics / General system
A036 - control panel, enhanced controls

E**Transmission neutral****n** = Transmission neutral**Acceleration ramp (I / II)****A** = Acceleration ramp (I / II) key**B** = LED on acceleration ramp (I/II) key

Two different acceleration ramps can be set with key (A)

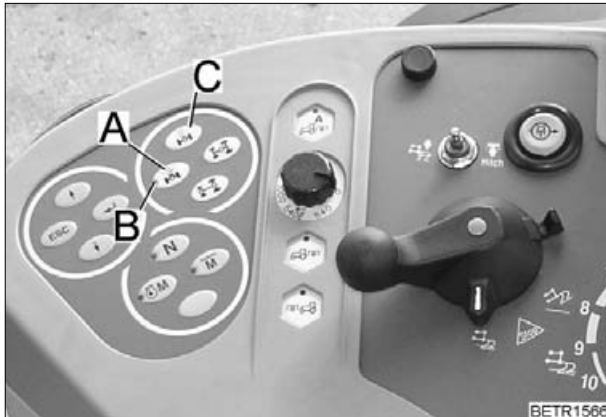
Rate I = 0.03 ... 0.5 km/h ; 1 km/h ; 1.5 km/h (can be set on A007 - instrument cluster)**Rate II** = 2.0 kph

In Ramp I LED (B) is lit

**4WD****A** = 4WD clutch key (100%)**B** = 4WD indicator lamp**Differential lock****A** = Differential lock clutch (100%) key**B** = Differential lock indicator lamp

Fendt 300 Vario

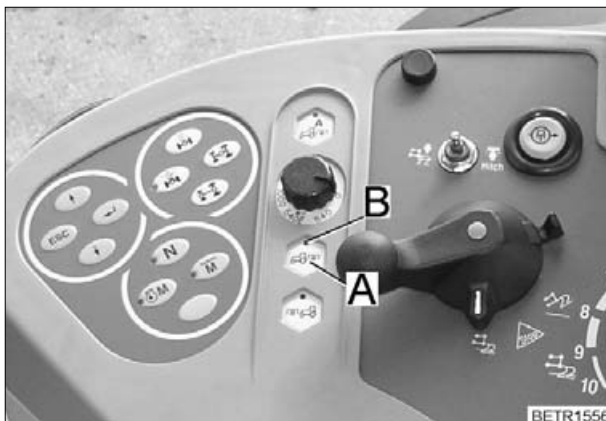
Electrics / General system
A036 - control panel, enhanced controls

E**Front axle suspension**

- A** = Suspension lock key
B = LED suspension lock
C = Suspension ON key

**Preselecting PTO speed**

- A** = Rotary switch for PTO speeds
540 = 540 rpm
540E = 750 rpm
WZ = Ground PTO (optional)
1000 = 1000 rpm

**Rear PTO clutch**

- A** = Rear PTO clutch key
B = LED rear PTO clutch

If the rear PTO is engaged, LED (B) is lit

The engagement process is dependent on the actuation time of the key (A)

less than 5 seconds

- Gentle start-up. The PTO clutch automatically adapts to the implement requirements

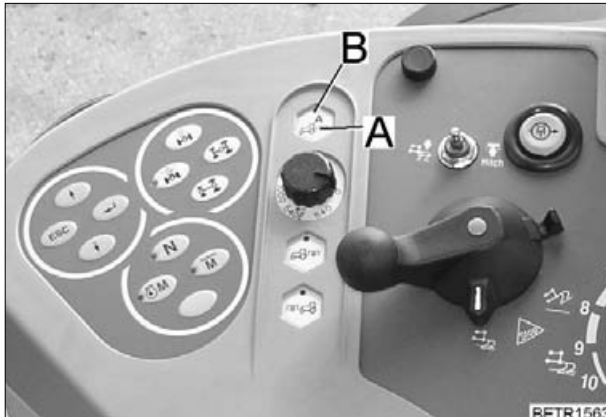
more than 5 seconds

- Speed and fault monitor are skipped

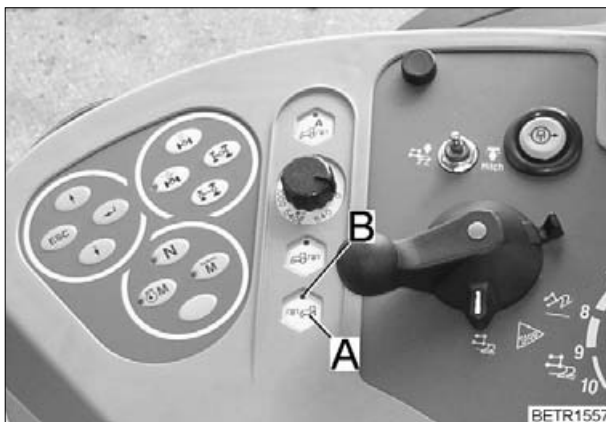
Date	Version	Page	A036 - control panel, enhanced controls	Capitel	Index	Docu-No.
13.02.06	a	4/16		9000	E	000307

Fendt 300 Vario

Electrics / General system
A036 - control panel, enhanced controls

E**Rear PTO automatic mode****A** = Rear PTO automatic mode key**B** = LED rear PTO automatic mode**Prerequisites:**

- The engine must be running
 - Travel speed must be greater than 0.6 km/h
 - The EPC must be unlocked
 - The PTO speed setting must be preselected
- If automatic mode is switched on, LED (B) is lit
 The rear PTO switches ON - OFF when the lifting gear passes over a preset position.

**Front PTO****A** = Front PTO clutch key**B** = LED front PTO clutch

If the front PTO is engaged, LED (B) is lit

The engagement process is dependent on the actuation time of the key (A)

less than 5 seconds

- Gentle start-up. The PTO clutch automatically adapts to the implement requirements

more than 5 seconds

- Speed and fault monitor are skipped

Date	Version	Page	A036 - control panel, enhanced controls	Capitel	Index	Docu-No.
13.02.06	a	5/16		9000	E	000307

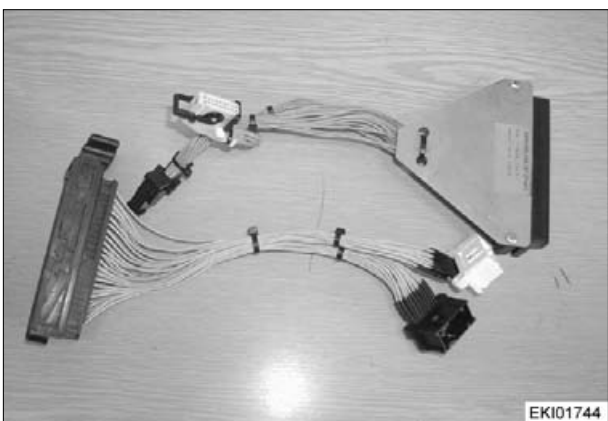
Fendt 300 Vario

Electrics / General system

A036 - control panel, enhanced controls

E**A036** = Control panel, enhanced control**X1357** = Separation point on control panel**X1358** = Separation point on control panel on right mudguard

Remove control console



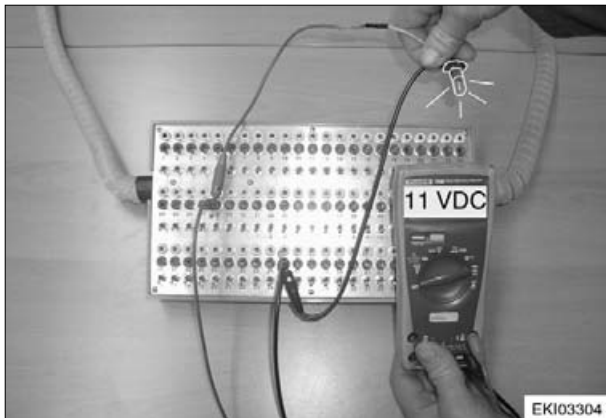
Connect e-adaptor box X899.980.208.100 directly to A036 - control panel using adapter cable X 899.980.208.207.

Pin on separation point	Pin on the X 899.980.208.100 adapter box (68-pin)
X1358 "white"	1 ... 26
X1357 "black"	31 ... 56

Fendt 300 Vario	Electrics / General system A036 - control panel, enhanced controls	E
------------------------	--	----------

Measuring the supply voltage for A036 - control panel, enhanced controls

X1358 - separation point "white"				
+ UB 15 (switched voltage, ignition switch)				
Test	Pin	Specified value	Condition	Possible cause of fault
+ supply	9	12 VDC	Ignition ON	Fuse (F044) in X051 or in wiring. See also Electronics power supply circuit diagram
		14 VDC	Engine running	
Electronics ground	10			
+ supply	9	Voltage drop max. 1 VDC from last reading	Also connect approx. 55 W bulb	Voltage must remain stable even under load; if voltage drop is greater than approx. 1 VDC, remove contact resistors (e.g. at fuse)
Electronics ground	10			



Note:

If voltage drop is greater than approx. 1 VDC, remove contact resistors (e.g. at fuse)

Date	Version	Page	A036 - control panel, enhanced controls	Capitel	Index	Docu-No.
13.02.06	a	7/16		9000	E	000307

Fendt 300 Vario	Electrics / General system A036 - control panel, enhanced controls	E
------------------------	--	----------

X1358 - separation point 'white'

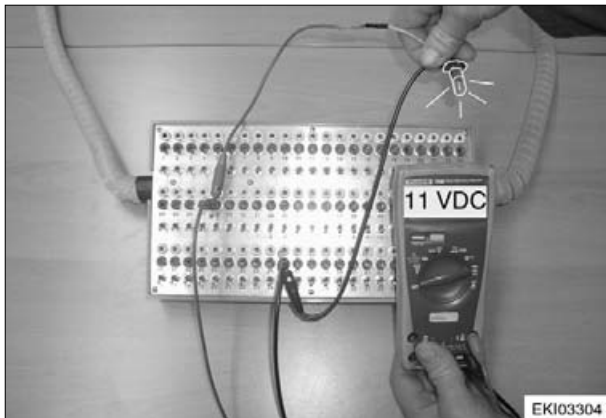
+ UB 8.5 VDC (from the A013 - circuit board_fuse) (Note: the voltage 8.5 VDC comes from A002 - ECU,enhanced control (pin 23))

Test	Pin	Specified value	Condition	Possible cause of fault
+ supply	12	8.5 VDC	Ignition ON	Microfuse (F4) in A013, fault in the A002 - ECU,enhanced control or in wiring. See also Electronics power supply circuit diagram
		8.5 VDC	Engine running	
Electronics ground	10			

X1358 - separation point 'white'

+UB 58 (lighting)

Test	Pin	Specified value	Condition	Possible cause of fault
+ supply	11	12.0 VDC	Ignition ON and switch on lighting	Fuse (F032) in X051 or in wiring. See also Electronics power supply circuit diagram
		14 VDC	Engine running	
Digital ground (electronics ground)	10			
+ supply	11	Voltage drop max. 1 VDC from last reading	Also connect approx. 55 W bulb	Voltage must remain stable even under load; if voltage drop is greater than approx. 1 VDC, remove contact resistors (e.g. at fuse).
Digital ground (electronics ground)	10			

**Note:**

If voltage drop is greater than approx. 1 VDC, remove contact resistors (e.g. at fuse)

Date	Version	Page	A036 - control panel, enhanced controls	Capitel	Index	Docu-No.
13.02.06	a	8/16		9000	E	000307

Fendt 300 Vario	Electrics / General system A036 - control panel, enhanced controls	E
------------------------	---	----------

Pin assignment and signal values

Note:

All measured values +/- 10%

Separation point X1357 "black"					
Ground from pin 1 (sensor electronics ground)					
Pin	Description	Signal - type / condition	Signal	Signal from A036 - control panel (line interruption)	Signal from component (line interrupted)
1	Sensor system ground	Ground	-	-	-
2	Front PTO clutch key Ignition ON	Front PTO clutch key not actuated	5.1 VDC	0 VDC	8.2 VDC
		Front PTO clutch key actuated	2.4 VDC		
3	LED on key, front PTO-clutch engage seasonal disconnect, ignition ON, start engine	Front PTO disengaged (LED off)	approx. 0.13 VDC	0 VDC	0.13 / 14 VDC
		Front PTO engaged (LED is lit)	14 VDC		
4	Rear PTO clutch key Ignition ON	Rear PTO clutch key not actuated	5.1 VDC	0 VDC	8.2 VDC
		Rear PTO clutch key actuated	2.4 VDC		
5	LED on rear PTO-clutch key (A036 / S019 / S020) Ignition ON, start engine, select PTO setting	Rear PTO disengaged (LED OFF)	approx. 0.13 VDC	0 VDC	0.13 / 14 VDC
		Rear PTO engaged (LED ON)	14 VDC		
6	4WD key and diff. lock key Ignition ON	4WD key and diff. lock key not actuated	1.1 VDC	8.5 VDC	0 VDC
		Diff. lock key actuated	2.3 VDC		
		4WD key actuated	3.0 VDC		
		4WD key and diff. lock key actuated simultaneously	3.7 VDC		
7	Not assigned				
8	Not assigned				

Date	Version	Page	A036 - control panel, enhanced controls	Capitel	Index	Docu-No.
13.02.06	a	9/16		9000	E	000307

Fendt 300 Vario	Electrics / General system A036 - control panel, enhanced controls	E
------------------------	---	----------

Separation point X1357 "black"					
Ground from pin 1 (sensor electronics ground)					
Pin	Description	Signal - type / condition	Signal	Signal from A036 - control panel (line interruption)	Signal from component (line interrupted)
9	front axle suspension ON key and front axle suspension lock key Ignition ON	Front axle suspension ON key and front axle suspension lock key not actuated	1.1 VDC	8.5 VDC	0 VDC
		Front axle suspension ON key actuated	2.3 VDC		
		Front axle suspension lock key actuated	3.0 VDC		
		Front axle suspension lock key and front axle suspension lock ON actuated simultaneously	3.7 VDC		
10	Not assigned				
11	LED on front axle suspension locked key Ignition ON, start engine	Front axle suspension ON (LED OFF)	0.2 VDC	0 VDC	0.2 14 VDC
		Front axle suspension locked (LED is lit)	14 VDC		
12	Transmission neutral 'N' key Ignition ON	Transmission neutral 'N' key not actuated	5.1 VDC	0 VDC	8.2 VDC
		Transmission neutral 'N' key actuated	2.4 VDC		
13	Cruise control 'C' key Ignition ON	Cruise control 'C' key not actuated	5.1 VDC	0 VDC	8.2 VDC
		Cruise control 'C' key actuated	2.4 VDC		
14	Acceleration ramp (I / II) key and Memo Speed key Ignition ON	Acceleration ramp (I / II) key and Memo Speed key not actuated	1.1 VDC	8.5 VDC	0 VDC
		Speed memory key actuated	2.3 VDC		
		Acceleration ramp (I / II) key actuated	3.0 VDC		
		Acceleration ramp (I / II) key and Memo Speed key actuated simultaneously	3.7 VDC		

Date	Version	Page	A036 - control panel, enhanced controls	Capitel	Index	Docu-No.
13.02.06	a	10/16		9000	E	000307

Fendt 300 Vario	Electrics / General system A036 - control panel, enhanced controls	E
------------------------	---	----------

Separation point X1357 "black"					
Ground from pin 1 (sensor electronics ground)					
Pin	Description	Signal - type / condition	Signal	Signal from A036 - control panel (line interruption)	Signal from component (line interrupted)
15	LED on transmission neutral "N" key Ignition ON, start engine	'N' key actuated (LED is lit) --> transmission in neutral	12 VDC	0 VDC	12 / 0.13 VDC
		'N' key actuated (LED OFF) --> ACTIVE STATIONARY MODE	approx. 0.13 VDC		
16	Not assigned				
17	LED on acceleration ramp (I/II) key Ignition ON	Ramp I key actuated (LED is lit)	5.5 VDC	0 VDC	8.2 VDC
		Ramp II key actuated (LED is not lit)	2.0 VDC		
18	LED on speed memory "Memo Speed" key Ignition ON	'Memo Speed' key not actuated (LED OFF)	0.2 VDC	0 VDC	0.2 / 12 VDC
		'Memo Speed' key actuated (LED is lit)	12 VDC		

Separation point X1358 "white"					
Ground from pin 10 (sensor electronics ground)					
Pin	Description	Signal - type / condition	Signal	Signal from A036 - control panel (line interruption)	Signal from component (line interrupted)
1	"ESC" key Ignition ON	'ESC' key not actuated	1.7 VDC	0 VDC	5.0 VDC
		'ESC' key actuated	0.5 VDC		
2	"ENTER" key Ignition ON	'ENTER' key not actuated	1.7 VDC	0 VDC	5.0 VDC
		'ENTER' key actuated	0.5 VDC		
3	"Cursor down" key Ignition ON	'Cursor down' key not actuated	1.7 VDC	0 VDC	5.0 VDC
		'Cursor down' key actuated	0.5 VDC		
4	"Cursor up" key Ignition ON	'Cursor up' key not actuated	1.7 VDC	0 VDC	5.0 VDC
		'Cursor up' key actuated	5.0 VDC		

Date	Version	Page	A036 - control panel, enhanced controls	Capitel	Index	Docu-No.
13.02.06	a	11/16		9000	E	000307

Fendt 300 Vario	Electrics / General system A036 - control panel, enhanced controls	E
------------------------	---	----------

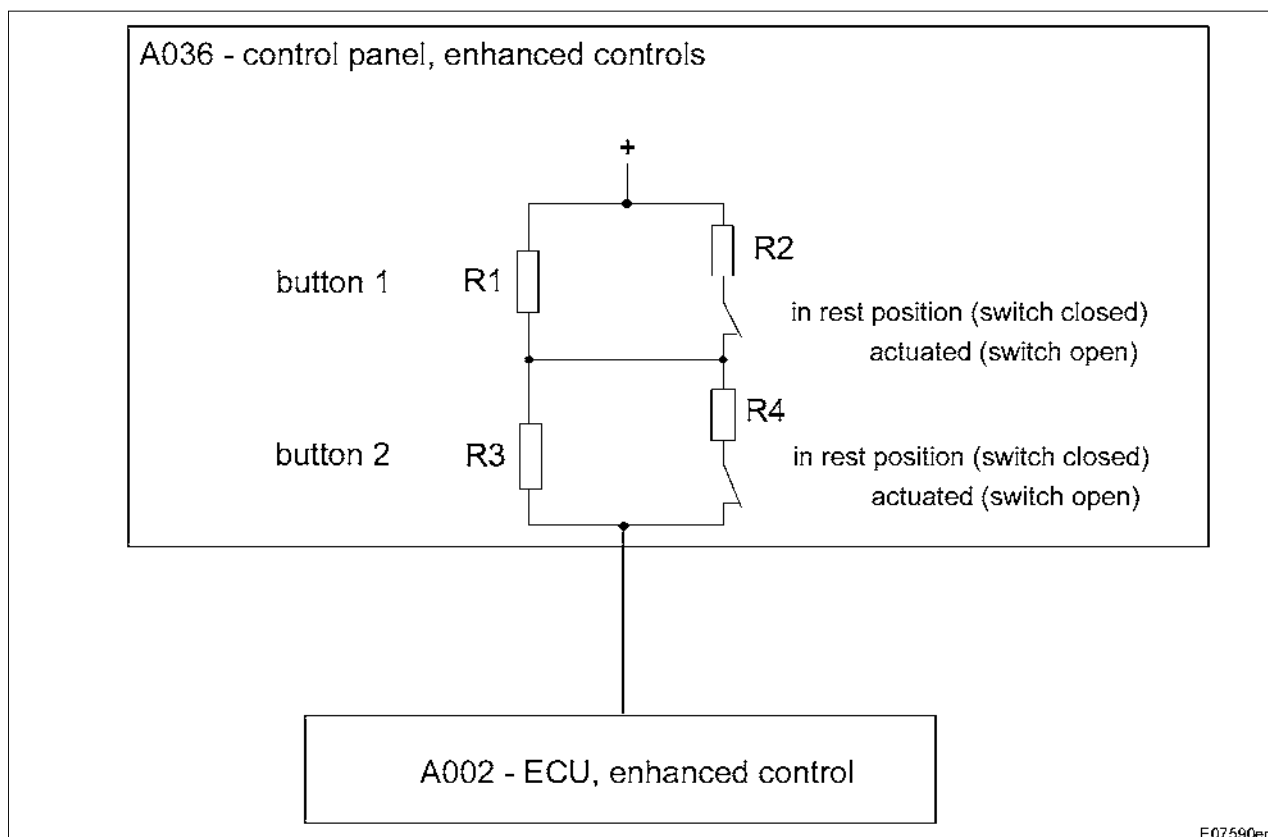
Separation point X1358 "white"					
Ground from pin 10 (sensor electronics ground)					
Pin	Description	Signal - type / condition	Signal	Signal from A036 - control panel (line interruption)	Signal from component (line interrupted)
5	Speed control lever v+ Ignition ON	Speed control lever not actuated	5.1 VDC	0 VDC	8.2 VDC
		Speed control lever moved forward (v+)	2.4 VDC		
6	Speed control lever v- Ignition ON	Speed control lever not actuated	5.1 VDC	0 VDC	8.2 VDC
		Speed control lever pulled back (v-)	2.4 VDC		
7	Speed control lever middle position Ignition ON	Speed control lever in middle position	2.4 VDC	0 VDC	8.2 VDC
		Speed control lever moved forward or backward	5.1 VDC		
8	Activation key on speed control lever Ignition ON	Activation key on speed control lever not actuated	5.1 VDC	0 VDC	8.2 VDC
		Activation key on speed control lever actuated	2.4 VDC		
9	+supply (+Ub 15)	Ignition OFF	0 VDC	0 VDC	0 VDC
		Ignition ON	12 VDC	0 VDC	12 VDC
10	Sensor system ground	-	-	-	-
11	Lighting (+UB 58)	Lighting OFF	0 VDC	0 VDC	0 VDC
		Lighting ON	12 VDC	0 VDC	12 VDC
12	+supply (+UB 8.5 VDC)	Ignition OFF	0 VDC	0 VDC	0 VDC
		Ignition ON	8.5 VDC	0 VDC	8.5 VDC
13	"TMS / pedal mode" key	Not assigned	-	-	-
14	Rear PTO automatic mode and memo engine key Ignition ON	Rear PTO automatic mode and memo engine key not actuated	1.1 VDC	8.5 VDC	0 VDC
		Memo engine key actuated and rear PTO-automatic mode key not actuated	2.3 VDC		
		rear PTO-automatic mode actuated and memo engine key not actuated	3.0 VDC		
		Rear PTO automatic mode key and engine memory key actuated simultaneously	3.7 VDC		

Date	Version	Page	A036 - control panel, enhanced controls	Capitel	Index	Docu-No.
13.02.06	a	12/16		9000	E	000307

Fendt 300 Vario	Electrics / General system A036 - control panel, enhanced controls	E
------------------------	---	----------

Separation point X1358 "white"					
Ground from pin 10 (sensor electronics ground)					
Pin	Description	Signal - type / condition	Signal	Signal from A036 - control panel (line interruption)	Signal from component (line interrupted)
15	Rear PTO speed selector (potentiometer) Ignition ON	Rear PTO setting '0'	1.1 VDC	6.6 VDC	0 VDC
		Rear PTO setting '540' (540 rpm)	2.0 VDC		
		Rear PTO setting '540E' (750 rpm) or 'WZ' (ground PTO)	2.8 VDC		
		Rear PTO setting '1000' (1000 rpm)	3.6 VDC		
16	LED on rear PTO automatic mode ON key Ignition ON, start engine, unlock EPC and select rear PTO setting	Rear PTO automatic mode switched off (LED OFF)	0.2 VDC	0 VDC	0.2 / 14 VDC
		Rear PTO automatic mode switched on (LED is lit)	14 VDC		
17	LED on memo engine key Ignition ON, start engine	Memo engine key (engine speed memory) not actuated (LED OFF)	0.2 VDC	0 VDC	0.2 / 14 VDC
		Memo engine key (engine speed memory) actuated (LED is lit)	14 VDC		
18	Not assigned				

Date	Version	Page	A036 - control panel, enhanced controls	Capitel	Index	Docu-No.
13.02.06	a	13/16		9000	E	000307

Fendt 300 Vario**Electrics / General system**
A036 - control panel, enhanced controls**E****Block diagram for the enhanced control keys:**Key '**Memo Engine**' and key '**Rear PTO automatic mode**'Key '**Memo Speed**' and key '**Acceleration ramp I/II**'Key '**4WD**' and key '**Diff. lock**'Key '**Suspension ON**' and key '**Suspension lock**'

E07590en

Date	Version	Page	A036 - control panel, enhanced controls	Capitel	Index	Docu-No.
13.02.06	a	14/16		9000	E	000307

Fendt 300 Vario	Electrics / General system A036 - control panel, enhanced controls	E
------------------------	---	----------

Block diagram for the enhanced control keys:

Key front PTO clutch

Key rear PTO clutch

Key transmission neutral "N"

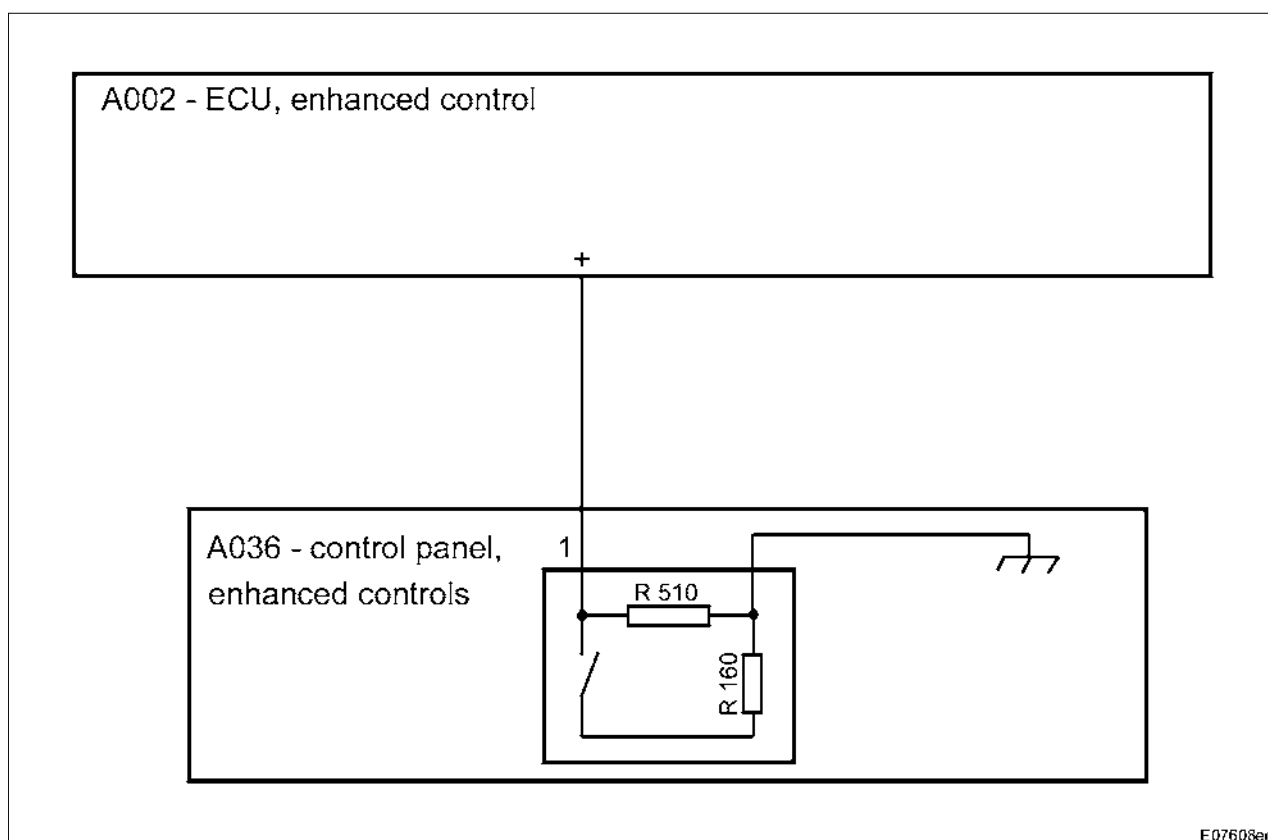
Key cruise control "C"

Speed control lever v+

Speed control lever v-

Speed control lever middle position

Activation key on speed control lever



Date	Version	Page	A036 - control panel, enhanced controls	Capitel	Index	Docu-No.
13.02.06	a	15/16		9000	E	000307

Fendt 300 Vario	Electrics / General system A036 - control panel, enhanced controls	E
------------------------	--	----------

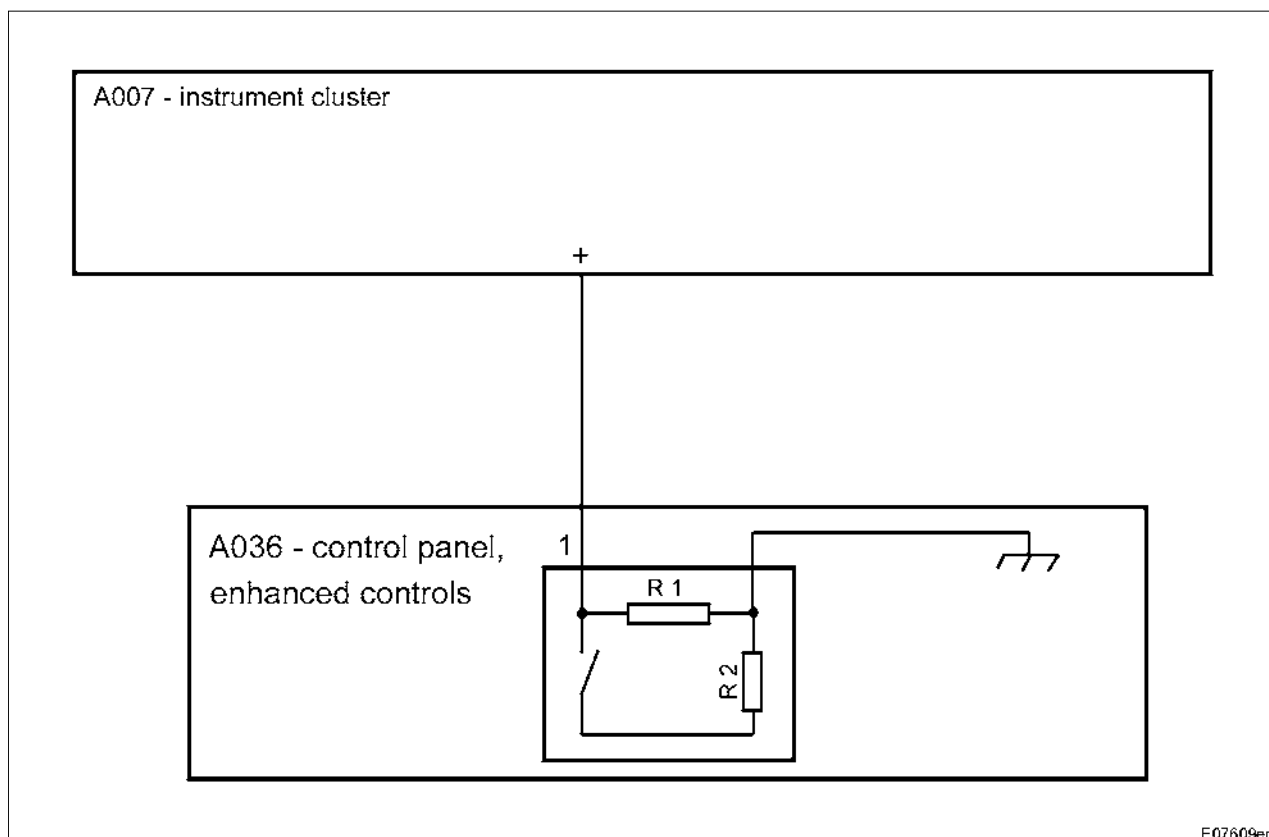
Block diagram for the enhanced control keys:

Key **ESC**

Key **Enter**

Key **Cursor down**

Key **Cursor up**

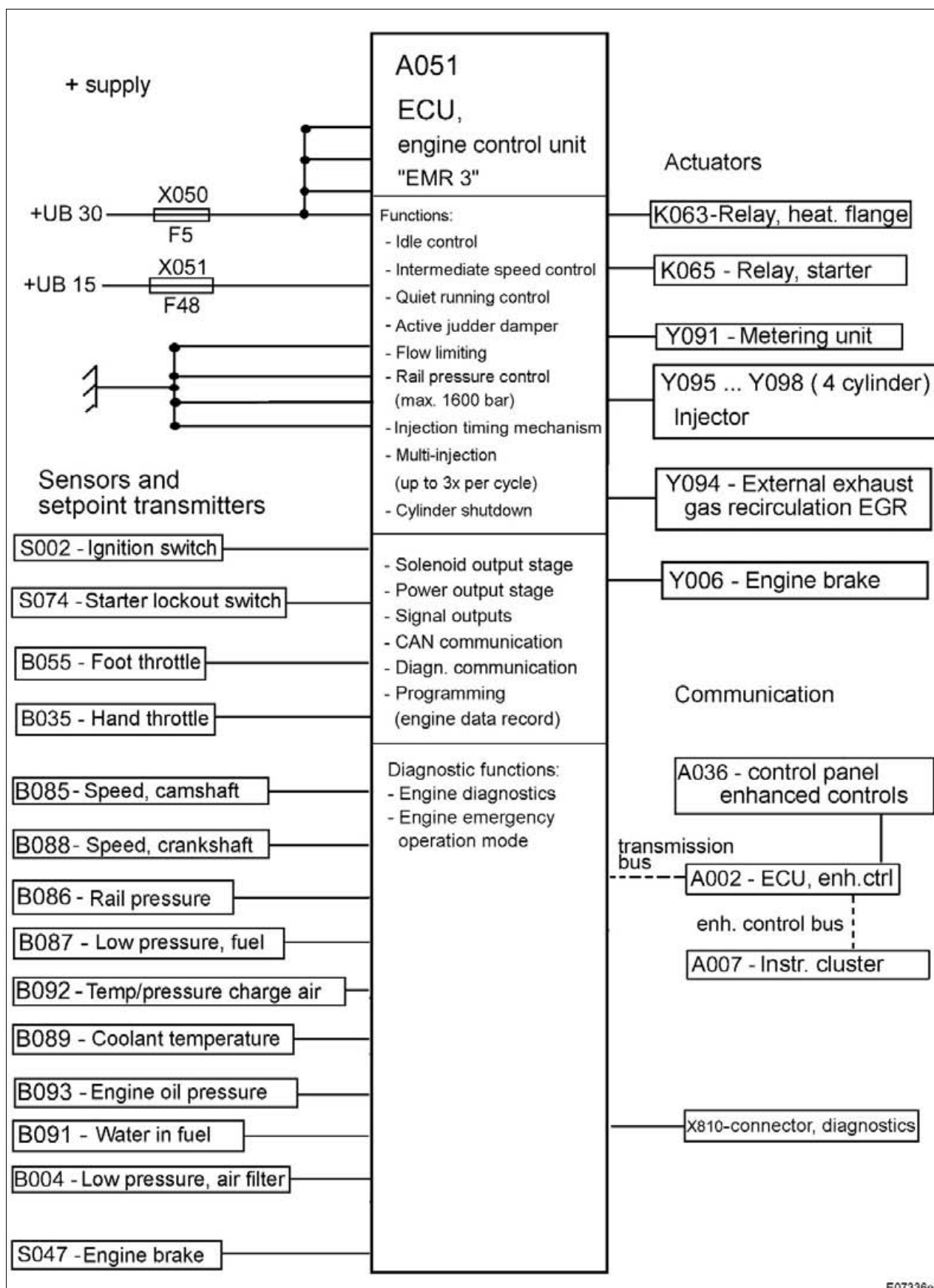


Date	Version	Page	A036 - control panel, enhanced controls	Capitel	Index	Docu-No.
13.02.06	a	16/16		9000	E	000307

Fendt 300 Vario

Electrics / General system

A051 - ECU, engine control unit "engine controller"

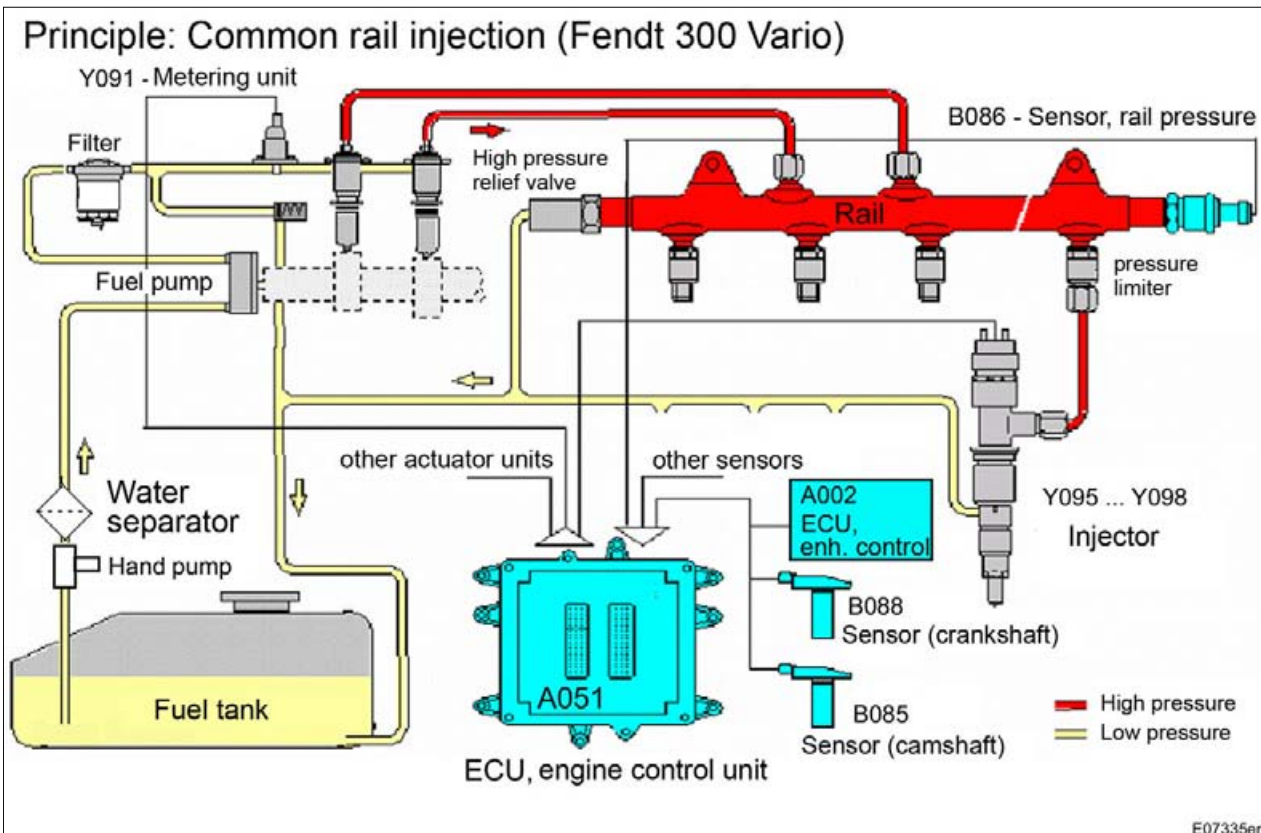
E

E07336en

Date	Version	Page	A051 - ECU, engine control unit "engine controller"	Capitel	Index	Docu-No.
01.03.06	a	1/12		9000	E	000311

Fendt 300 Vario

Electrics / General system
A051 - ECU, engine control unit "engine controller"

E**Principal: Common rail injection**

A051 = Engine control unit 'engine controller'
 At right entrance step



Remove battery case.

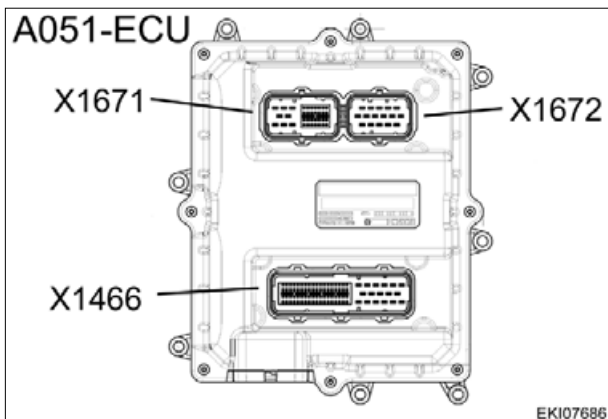


Date	Version	Page	Capitel	Index	Docu-No.
01.03.06	a	2/12	A051 - ECU, engine control unit "engine controller"	9000	E
					000311

Fendt 300 Vario

Electrics / General system

A051 - ECU, engine control unit "engine controller"

E

Separation point on the A051 - ECU, engine control unit	
Separation point	Adapter cable
X1466	X 899.980.208.217
X1671 X1672	X 899.980.208.218



Connect e-adapter box X899.980.208.100 to separation point X1466 on the A051 - ECU, engine control unit with adapter cable X899.980.208.217

Fendt 300 Vario	Electrics / General system A051 - ECU, engine control unit "engine controller"	E
------------------------	--	----------

Measuring the supply voltage for the A051 - ECU, engine control unit

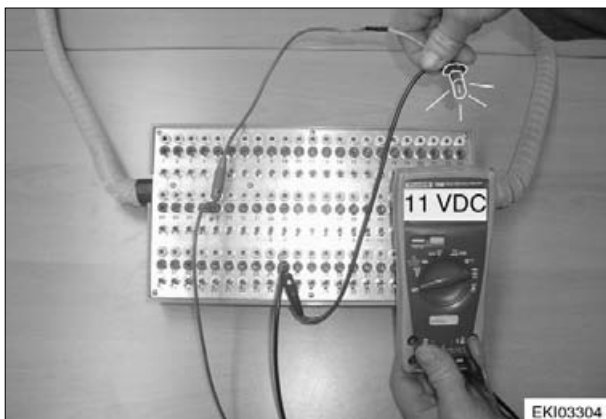
X1466 - separation point "vehicle connector"					
+ UB 30 (battery voltage)					
Test	Pin on X1466 separation point	Pin at the 68-pin adapter box	Specified value	Condition	Possible cause of fault
+ supply	2	2	12.0 VDC	Engine stopped, ignition off	Fuse (F5) in X050 or in wiring. See also Electronics power supply circuit diagram
	3	3			
	8	8			
	9	9			
			Approx. 13 - 14 VDC	Engine running	
Ground Electronic	5	5			
	6	6			
	10	10			
	11	11			
+ supply	2	2	Voltage drop max. 1 VDC from last reading	Also connect approx. 55 W bulb	Voltage must remain stable even under load; if voltage drop is greater than approx. 1 VDC, remove contact resistors (e.g. at fuse).
	3	3			
	8	8			
	9	9			
Ground Electronic	5	5			
	6	6			
	10	10			
	11	11			

Date	Version	Page	A051 - ECU, engine control unit "engine controller"	Capitel	Index	Docu-No.
01.03.06	a	4/12		9000	E	000311

Fendt 300 Vario	Electrics / General system A051 - ECU, engine control unit "engine controller"	E
------------------------	---	----------

X1466 - separation point 'vehicle connector'**+ UB 15 (switched voltage, ignition switch)**

Test	Pin on X1466 separation point	Pin at the 68-pin adapter box	Specified value	Condition	Possible cause of fault
+ supply	40	40	12.0 VDC	Engine stopped, ignition on	Fuse (F48) in X051 or in wiring. See also Electronics power supply circuit diagram
			Approx. 13 - 14 VDC	Engine running	
Ground Electronic	5	5			
	6	6			
	10	10			
	11	11			
+ supply	40	40	Voltage drop max. 1 VDC from last reading	Also connect approx. 55 W bulb	Voltage must remain stable even under load; if voltage drop is greater than approx. 1 VDC, remove contact resistors (e.g. at fuse).
Ground Electronic	5	5			
	6	6			
	10	10			
	11	11			

**Note:**

If voltage drop is greater than approx. 1 VDC, remove contact resistors (e.g. at fuse).

Date	Version	Page	A051 - ECU, engine control unit "engine controller"	Capitel	Index	Docu-No.
01.03.06	a	5/12		9000	E	000311

Fendt 300 Vario	Electrics / General system	E
A051 - ECU, engine control unit "engine controller"		



Connect e-adapter box X899.980.208.100 to separation point X1466 on the A051 - ECU, engine control unit with adapter cable X899.980.208.217

Signal voltages at X1466 - separation point vehicle connector

Pin on X1466 separation point	Pin on the 68-pin adapter box	Description	Signal - type / condition	Signal	Signal from the A051 - ECU; E-DC (line interrupted)	Signal from component (line interrupted)
1	-	Not assigned	-	-	-	-
2	2	+supply (+Ub 30)	Ignition OFF	12 VDC	12 VDC	12 VDC
3	3	+supply (+Ub 30)	Ignition OFF	12 VDC	12 VDC	12 VDC
4	-	Not assigned	-	-	-	-
5	5	Ground	-	-	-	-
6	6	Ground	-	-	-	-
7	-	Not assigned	-	-	-	-
8	8	+supply (+Ub 30)	Ignition OFF	12 VDC	12 VDC	12 VDC
9	9	+supply (+Ub 30)	Ignition OFF	12 VDC	12 VDC	12 VDC
10	10	Ground	-	-	-	-
11	11	Ground	-	-	-	-
12 .. 16	-	Not assigned	-	-	-	-
17	17	K065 - relay, starter	Ignition ON	3.5 VDC	3.5 VDC	approx. 0 VDC
			Start engine	Briefly 12 VDC then 3.5 VDC	3.5 VDC	Briefly 12 VDC then approx. 0.15 VDC
18 .. 20	-	Not assigned	-	-	-	-
21	21	+UB supply sensor electronics	Ignition OFF	0 VDC	0 VDC	0 VDC
			Ignition ON	12 VDC	12 VDC	0 VDC
22	22	Diagnosis lamp				
23 .. 29	-	Not assigned				
30	30	Diagnosis lamp				

Date	Version	Page	A051 - ECU, engine control unit "engine controller"	Capitel	Index	Docu-No.
01.03.06	a	6/12		9000	E	000311

Fendt 300 Vario	Electrics / General system	E
A051 - ECU, engine control unit "engine controller"		

Pin on X1466 separation point	Pin on the 68-pin adapter box	Description	Signal - type / condition	Signal	Signal from the A051 - ECU; E-DC (line interrupted)	Signal from component (line interrupted)
31 .. 33	-	Not assigned				
34	34	G - BUS low	Ignition OFF, resistance measured between pin 34 and 35 to cable harness	approx. 60 ohm (2 x 120 ohm parallel)		
35	35	G - BUS high				
36	-	Not assigned				
37	37	K065 - relay, starter (Note: A051 switches voltage off after approx. 4 seconds. If A051 detects a speed, A051 switches voltage off)	Ignition ON	3.5 VDC	0.15 VDC	3.5 VDC
			S002 - ignition switch on setting 2 (terminal 50a) "Start"	Briefly 12 VDC then 3.5 VDC	Briefly 12 VDC then 0 VDC	0 VDC
38 ... 39	-	Not assigned				
40	40	+supply (+Ub 15)	Ignition OFF	0 VDC	0 VDC	0 VDC
			Ignition ON	12 VDC	0 VDC	12 VDC
41	-	Not assigned				
42	42	B004 - vacuum switch (on air filter)	Vacuum less than approx. 65 mbar (switch open)	0 VDC	0 VDC	0 VDC
			Vacuum greater than 65 mbar -> switch closed --> acoustic warning, warning message	12 VDC	0 VDC	12 VDC
43 .. 46	-	Not assigned				
47	47	S047 - switch, engine brake	Switch not actuated	12 VDC	0 VDC	12 VDC
			Switch actuated	0 VDC	0 VDC	0 VDC
48	48	B055 - sensor, foot throttle (TMS detection)	Accelerator pedal not pressed (switch open)	0 VDC	0 VDC	0 VDC
			Accelerator pedal pressed (switch closed)	4.8 VDC	4.8 VDC	5.8 VDC
49 .. 58	-	Not assigned				
59	59	Ground for B035 - sensor, hand throttle				

Date	Version	Page	A051 - ECU, engine control unit "engine controller"	Capitel	Index	Docu-No.
01.03.06	a	7/12		9000	E	000311

Fendt 300 Vario	Electrics / General system	E
	A051 - ECU, engine control unit "engine controller"	

Pin on X1466 separation point	Pin on the 68-pin adapter box	Description	Signal - type / condition	Signal	Signal from the A051 - ECU; E-DC (line interrupted)	Signal from component (line interrupted)
60	60	+ supply for B035 - sensor, hand throttle		5.0 VDC	5.0 VDC	0 VDC
61	61	Signal for B035 - sensor, hand throttle	Hand throttle on lower stop (idle)	4.5 VDC	0 VDC	4.5 VDC
			Hand throttle on upper stop (full throttle)	0.7 VDC	0 VDC	0.7 VDC
62 .. 65	-	Not assigned				
66	62	S074 - switch, starter lockout (on clutch pedal)	Clutch pedal not pressed (switch open)	0 VDC	0 VDC	0 VDC
			Clutch pedal pressed (switch closed)	12 VDC	0 VDC	12 VDC
67 .. 73	-	Not assigned				
74	63	Terminal 50a	Clutch pedal pressed and ignition switch set to Pos.2 (50a) Note: pin 17 open, so the tractor does not start	12 VDC	0 VDC	12 VDC
75 .. 76	-	Not assigned				
77	64	+Ub 5.0 VDC for the B055 - sensor, foot throttle		5.0 VDC	5.0 VDC	0.11 VDC
78	65	Ground for the B055 - sensor, foot throttle				
79	66	Signal on B055 - sensor, foot throttle	Accelerator not actuated	0.6 VDC	0 VDC	0.6 VDC
			Accelerator actuated	4.16 VDC	0 VDC	4.16 VDC
80 .. 88	-	Not assigned				
89	67	X810 - diagnostics socket				

Date	Version	Page	A051 - ECU, engine control unit "engine controller"	Capitel	Index	Docu-No.
01.03.06	a	8/12		9000	E	000311

Fendt 300 Vario	Electrics / General system	E
A051 - ECU, engine control unit "engine controller"		

X899.980.208.218 - Adapterkabel



Connect e-adapter box X899.980.208.100 to separation point X1671 on the A051 - ECU, engine control unit with adapter cable X899.980.208.218

Signals at X1671 - separation point, engine connector

Pin on X1671 separation point	Pin on the 68-pin adapter box	Description	Signal - type / condition	Signal	Signal from the A051 - ECU; E-DC (line interrupted)	Signal from component (line interrupted)
1 .. 2		Not assigned				
3	33	+ supply for Y094 - EGR (exhaust gas recirculation)		12 VDC	12 VDC	approx. 2.8 VDC
4		Not assigned				
5	35	Ground for Y094 - EGR (exhaust gas recirculation)		-	-	-
6	36	Y006 - solenoid valve, engine brake	Engine running, engine brake not actuated	14 VDC	3.3 VDC	0 VDC
			Engine brake actuated (Note: engine speed greater than 1100 rpm)	0 - 14 VDC	0.5 - 3.3 VDC	0 VDC
7	37	K063 - relay, heating flange	Preheating not active			
			Preheating active (indicator lamp is lit)			
8	38	K063 - relay, heating flange (switch preheat sensor)	Preheating not active			
			Preheating active (indicator lamp is lit)			
9	39	Signal on B085 - sensor, camshaft	Idle speed (800 rpm)	approx. 1.3 VAC	0 VAC	approx. 2.5 VAC
			1600 rpm	approx. 2.2 VAC	0 VAC	approx. 5.0 VAC

Date	Version	Page	A051 - ECU, engine control unit "engine controller"	Capitel	Index	Docu-No.
01.03.06	a	9/12		9000	E	000311

Fendt 300 Vario	Electrics / General system	E
	A051 - ECU, engine control unit "engine controller"	

Pin on X1671 separation point	Pin on the 68-pin adapter box	Description	Signal - type / condition	Signal	Signal from the A051 - ECU; E-DC (line interrupted)	Signal from component (line interrupted)
			2200 rpm (no-load speed)	approx. 2.67 VAC	0 VAC	approx. 6.7 VAC
10	40	Ground for B085 - sensor, camshaft		-	-	-
11	41	Signal for Y094 - EGR (exhaust gas recirculation)	Diesel engine not under load (1200 rpm)	0.5 - 1.4 VDC	3.2 VDC	14 VDC
12	42	Ground for B086 - sensor, rail pressure		-	-	-
13	43	+ supply for B086 - sensor, rail pressure		5.0 VDC	5.0 VDC	0 VDC
14	44	Signal on B086 - sensor, rail pressure	Idle (800 rpm) , diesel engine not under load	Approx. 1.4 VDC	5.0 VDC	0.5 / approx. 2.1 VDC (engine running)
15	45	Signal on B089 - sensor, coolant temperature	approx. 20 °C coolant temperature	approx. 2.5 ki-ohm		
			approx. 90 °C coolant temperature	approx. 240 ohm		
16	46	+ supply for B087 - sensor, fuel low pressure		5.0 VDC	5.0 VDC	0 VDC
17		Not assigned				
18	48	Ground for B087 - sensor, fuel low pressure		-	-	-
19	49	Ground for B088 - sensor, crankshaft		-	-	-
20 .. 21		Not assigned		-	-	-
22	52	Signal on B087 - sensor, fuel low pressure	Idle (800 rpm) , diesel engine not under load (approx. 5 bar fuel pressure)	approx. 4.0 VDC	0	approx. 4.0 VDC
23	53	Signal on B088 - sensor, crankshaft	Idle speed (800 rpm)	approx. 15.0 VAC	0 VAC	approx. 15.0 VAC
			1600 rpm	approx. 22.9 VAC	0 VAC	approx. 22.9 VAC
			2200 rpm (no-load speed)	approx. 26.2 VAC	0 VAC	approx. 26.2 VAC

Date	Version	Page	Capitel	Index	Docu-No.
01.03.06	a	10/12	A051 - ECU, engine control unit "engine controller"	9000	E
					000311

Fendt 300 Vario	Electrics / General system	E
	A051 - ECU, engine control unit "engine controller"	

Pin on X1671 separation point	Pin on the 68-pin adapter box	Description	Signal - type / condition	Signal	Signal from the A051 - ECU; E-DC (line interrupted)	Signal from component (line interrupted)
24	54	Ground for B093 - sensor engine oil pressure and ground for B091 - sensor, ambient temperature		-	-	-
25	55	Ground for B092 - sensor, charge air pressure / temp.		-	-	-
26	56	Ground for B089 - sensor, coolant temperature		-	-	-
27	57	Signal on B093 - sensor, engine oil pressure	at approx. 4 bar (engine oil pressure)	2.0 VDC	5.4 VDC	2.0 VDC
			at approx. 2 bar (engine oil pressure)	1.0 VDC	5.4 VDC	1.0 VDC
			at approx. 1 bar (engine oil pressure)	0.5 VDC	5.4 VDC	0.5 VDC
28	58	Signal on B091 - sensor, water in fuel				
29 .. 31		Not assigned				
32	62	+ supply for the B093 - sensor, engine oil pressure		5.0 VDC	5.0 VDC	0 VDC
33	63	+ supply for the B092 - sensor, charge air pressure / temp.		5.0 VDC	5.0 VDC	0 VDC
34	64	Boost pressure - signal on B092 - sensor, charge air pressure / temp.	Idle (800 rpm) , diesel engine not under load	approx. 1.0 VDC	5.4 VDC	approx. 1.0 VDC
			No-load speed (2200 rpm), diesel engine not under load	Approx. 1.6 VDC	5.4 VDC	Approx. 1.6 VDC
35	65	Not assigned				
36	66	Temperature - signal on B092 - sensor, charge air pressure / temp.	at approx. 20 °C	2.5 ki- lohm		
			at approx. 90 °C	250 ohm		

Date	Version	Page	A051 - ECU, engine control unit "engine controller"	Capitel	Index	Docu-No.
01.03.06	a	11/12		9000	E	000311

Fendt 300 Vario	Electrics / General system	E
A051 - ECU, engine control unit "engine controller"		



Connect e-adapter box X899.980.208.100 to separation point X1672 on the A051 - ECU, engine control unit with adapter cable X899.980.208.218

Signals at X1672 - separation point, engine connector

Note:

For measuring the Y - injectors, also see:
Chapter 9000 Reg. E - Y095 ... Y098 - injector 1...4

Pin on X1672 separation point	Pin on the 68-pin adapter box	Description	Signal - type / condition	Signal	Signal from the A051 - ECU; E-DC (line interrupted)	Signal from component (line interrupted)
1 ... 2	-	Not assigned				
3	3	Y096 - injector 2 and Y097 - injector 3 (High)				
4	4	Y095 - injector 1 and Y098 - injector 4 (High)				
5	-	Not assigned				
6	6	Y098 - injector 4 (Low)	Resistance (pin 6 and pin 4)	0.5 ohm		
7 ... 8	-	Not assigned				
9	9	Y091 - metering unit (High)	Resistance (pin 9 and pin 10)	3.6 ohm		
10	10	Y091 - metering unit (Low)				
11 ... 12	-	Not assigned				
13	13	Y095 - injector 1 (Low)	Resistance (pin 13 and pin 4)	0.5 ohm		
14	14	Y096 - injector 2 (Low)	Resistance (pin 14 and pin 3)	0.5 ohm		
15	15	Y097 - injector 3 (Low)	Resistance (pin 15 and pin 3)	0.5 ohm		
16	-	Not assigned				

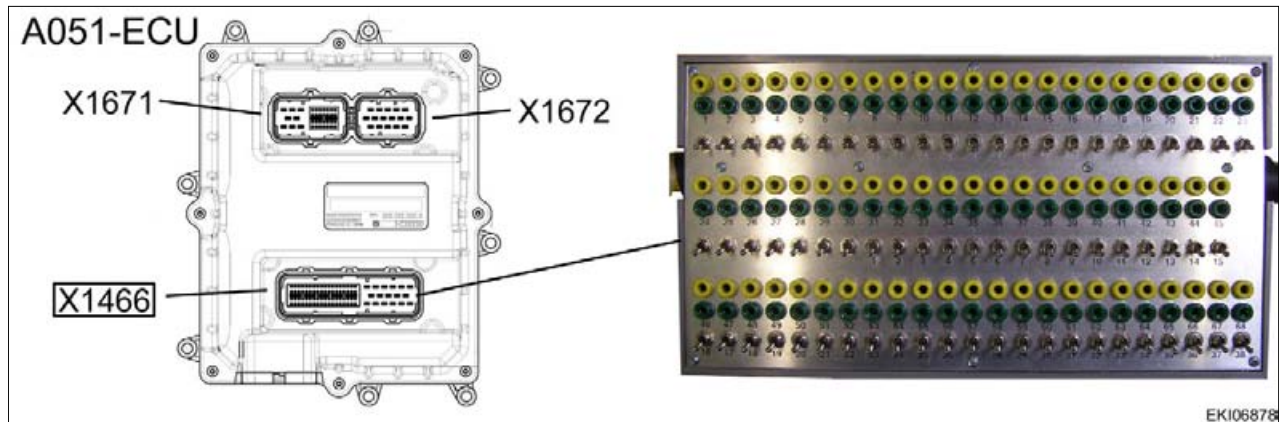
Date	Version	Page	A051 - ECU, engine control unit "engine controller"	Capitel	Index	Docu-No.
01.03.06	a	12/12		9000	E	000311

**Fendt 300 Vario
FENDT 4/7/800 COM III
FENDT 900 COM III**

**Electrics / General system
Cross-reference list**

E

Cross-reference for adapter cable X899.980.208.217 for testing the A051 - ECU, engine control unit (EDC 7) with adapter box X899.980.208.100.



Separation point X1466	adapter box	Designation		
Pin	Pin	Vario 300	4 / 7 / 800	900 COM III
1	1			
2	2	+ Vbatt 30	+ Vbatt 30	+ Vbatt 30
3	3	+ Vbatt 30	+ Vbatt 30	+ Vbatt 30
4	4			
5	5	Ground	Ground	Ground
6	6	Ground	Ground	Ground
7	7			
8	8	+ Vbatt 30	+ Vbatt 30	+ Vbatt 30
9	9	+ Vbatt 30	+ Vbatt 30	+ Vbatt 30
10	10	Ground	Ground	Ground
11	11	Ground	Ground	Ground
14	12			Fan terminal 86
15	13			Fan terminal 85
16	14			
17	15	Start relay	Start relay	Start relay
21	16	+Vbatt sensor electronics	+Vbatt sensor electronics	+Vbatt sensor electronics
22	17	Diagnosis lamp		
23	18			
24	19			
25	20			
26	21			Oil level
27	22			Oil temperature
28	23			Ground oil temp.
29	24			Digital ground
30	25	Diagnosis lamp		
34	26	G - BUS low	G - BUS low	G - BUS low
35	27	G - BUS high	G - BUS high	G - BUS high
36	28			
37	29	Start relay	Start relay	Start relay
38	30			
39	31			
40	32	+ Vbatt 15	+ Vbatt 15	+ Vbatt 15

Date	Version	Page		Capitel	Index	Docu-No.
16.10.2007	a	1/2	Cross-reference list	9000	E	000520

Fendt 300 Vario FENDT 4/7/800 COM III FENDT 900 COM III	Electrics / General system Cross-reference list	E
--	--	----------

Separation point X1466	adapter box	Designation		
Pin	Pin	Vario 300	4 / 7 / 800	900 COM III
41	33			
42	34	B004	B004	B004
47	35	S047	S047	S047
48	36	B055 switch		
49	37			
50	38			
51	39			
52	40		EDC bus Low	
53	41		EDC bus High	
54	42		Cold start aid	
55	43			S034
59	44	B035 ground		
60	45	B035 +Vbatt		
61	46	B035 signal		
66	47	S074	S012	S012
67	48			Ground fan
68	49			+Vbatt fan
69	50			Signal fan
70	51			
71	52			
72	53			Ground oil level
73	54			
74	55	Terminal 50a	Terminal 50a	Terminal 50a
75	56			
76	57			
77	58	B055 +Vbatt	B055 +Vbatt	B055 +Vbatt
78	59	B055 ground	B055 ground	B055 ground
79	60	B055 signal	B055 signal	B055 signal
88	61			
89	62	ISO K-line	ISO K-line	ISO K-line

Note:

Pins on the adapter box that are not described here have no function when cross-referencing A051 - ECU, engine control unit to adapter box X899.980.208.100.

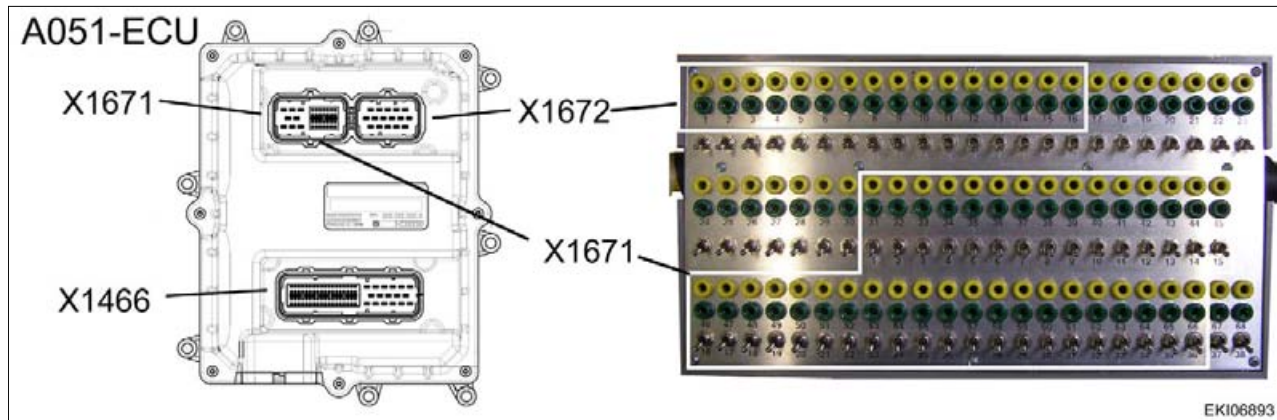
Date	Version	Page		Capitel	Index	Docu-No.
16.10.2007	a	2/2	Cross-reference list	9000	E	000520

**Fendt 300 Vario
FENDT 400 COM III
FENDT 7/800 COM III**

**Electrics / General system
Adapter cable pin assignment**

E

Pin assignment for adapter cable X899.980.208.218 for testing the A051 - ECU, engine control unit (EDC 7) with adapter box X899.980.208.100.



Connector X1672	adapter box	Designation		
Pin	Pin	300 Vario 400 COM III	7 / 800 COM III	900 COM III
1	1			
2	2			
3	3	Injector 2 / 3 High	Injector 4 / 5 / 6 High	Injector 4 / 5 / 6 High
4	4	Injector 1 / 4 High	Injector 1 / 2 / 3 High	Injector 1 / 2 / 3 High
5	5			
6	6	Injector 4 Low	Injector 3 Low	Injector 3 Low
7	7			
8	8			
9	9	Y091 High	Y091 High	Y091 High
10	10	Y091 Low	Y091 Low	Y091 Low
11	11			
12	12		Injector 5 Low	Injector 5 Low
13	13	Injector 1 Low	Injector 1 Low	Injector 1 Low
14	14	Injector 2 Low	Injector 4 Low	Injector 4 Low
15	15	Injector 3 Low	Injector 2 Low	Injector 2 Low
16	16		Injector 6 Low	Injector 6 Low

Fendt 300 Vario FENDT 400 COM III FENDT 7/800 COM III	Electrics / General system Adapter cable pin assignment	E
--	--	----------

Connector X1671	adapter box	Designation		
Pin	Pin	300 Vario 400 COM III	7 / 800 COM III	900 COM III
1	31 / 1			
2	32 / 2			
3	33 / 3	+Vbatt output 2	+Vbatt output 2	+Vbatt output 2
4	34 / 4			
5	35 / 5	Ground Y094	Ground Y094	Ground Y094
6	36 / 6	Signal Y006	Signal Y006	Signal Y006
7	37 / 7	Activation K063	Activation K063	Activation K063
8	38 / 8	Preheating info	Preheating info	Preheating info
9	39 / 9	Signal B085	Signal B085	Signal B085
10	40 / 10	Ground B085	Ground B085	Ground B085
11	41 / 11	Activation Y094	Activation Y094	Activation Y094
12	42 / 12	Ground B086	Ground B086	Ground B086
13	43 / 13	+Vbatt B086	+Vbatt B086	+Vbatt B086
14	44 / 14	Signal B086	Signal B086	Signal B086
15	45 / 15	Signal B089	Signal B089	Signal B089
16	46 / 16	+Vbatt B087	+Vbatt B087	+Vbatt B087
17	47 / 17			
18	48 / 18	Ground B087	Ground B087	Ground B087
19	49 / 19	Ground B088	Ground B088	Ground B088
20	50 / 20			
21	51 / 21			
22	52 / 22	Signal B087	Signal B087	Signal B087
23	53 / 23	Signal B088	Signal B088	Signal B088
24	54 / 24	Ground B090 / B091	Ground B090 / B091	Ground B090 / B091
25	55 / 25	Ground B092	Ground B092	Ground B092
26	56 / 26	Ground B089	Ground B089	Ground B089
27	57 / 27	Signal B090	Signal B090	Signal B090
28	58 / 28	Signal B091	Signal B091	Signal B091
29	59 / 29			
30	60 / 30			
31	61 / 31			
32	62 / 32	+Vbatt B090	+Vbatt B090	+Vbatt B090
33	63 / 33	+Vbatt B092	+Vbatt B092	+Vbatt B092
34	64 / 34	Signal B092 pressure	Signal B092 pressure	Signal B092 pressure
35	65 / 35			
36	66 / 36	Signal B092 temperature	Signal B092 temperature	Signal B092 temperature

Note:

Pins on the adapter box that are not described here have no function for the A051 - ECU, engine control unit on adapter box X899.980.208.100.

Date	Version	Page	Adapter cable pin assignment	Capitel	Index	Docu-No.
17.10.2007	a	2/2		9000	E	000522

A close-up photograph of a Bosch X1466 engine control unit (ECU) mounted on a metal plate. The ECU is a black plastic housing with a large multi-pin connector on top. The pins are numbered 1 through 89. The unit is secured with several screws. To the left of the ECU, there are two other connectors: a yellow one and a black one. A black corrugated hose is visible on the right side. Two white labels are attached to the metal plate. The first label is a Bosch label with the text 'Made in Germany', 'BOSCH', '0281 020 010', '0421 4432', and a QR code. The second label is a Motorr label with the text 'Motorr 10188533', 'Enginecode C3CT261', and a barcode.

Date	Version	Page	Pin assignment A051 - ECU, engine control unit	Capitel	Index	Docu-No.
16.10.2007	a	1/2		9000	E	000521

Fendt 300 Vario
FENDT 4/7/800 COM III
FENDT 900 COM III

Electrics / General system
Pin assignment A051 - ECU, engine control unit

E



Date	Version	Page	Pin assignment A051 - ECU, engine control unit	Capitel	Index	Docu-No.
16.10.2007	a	2/2		9000	E	000521

Fendt 300 Vario

Electrics / General system

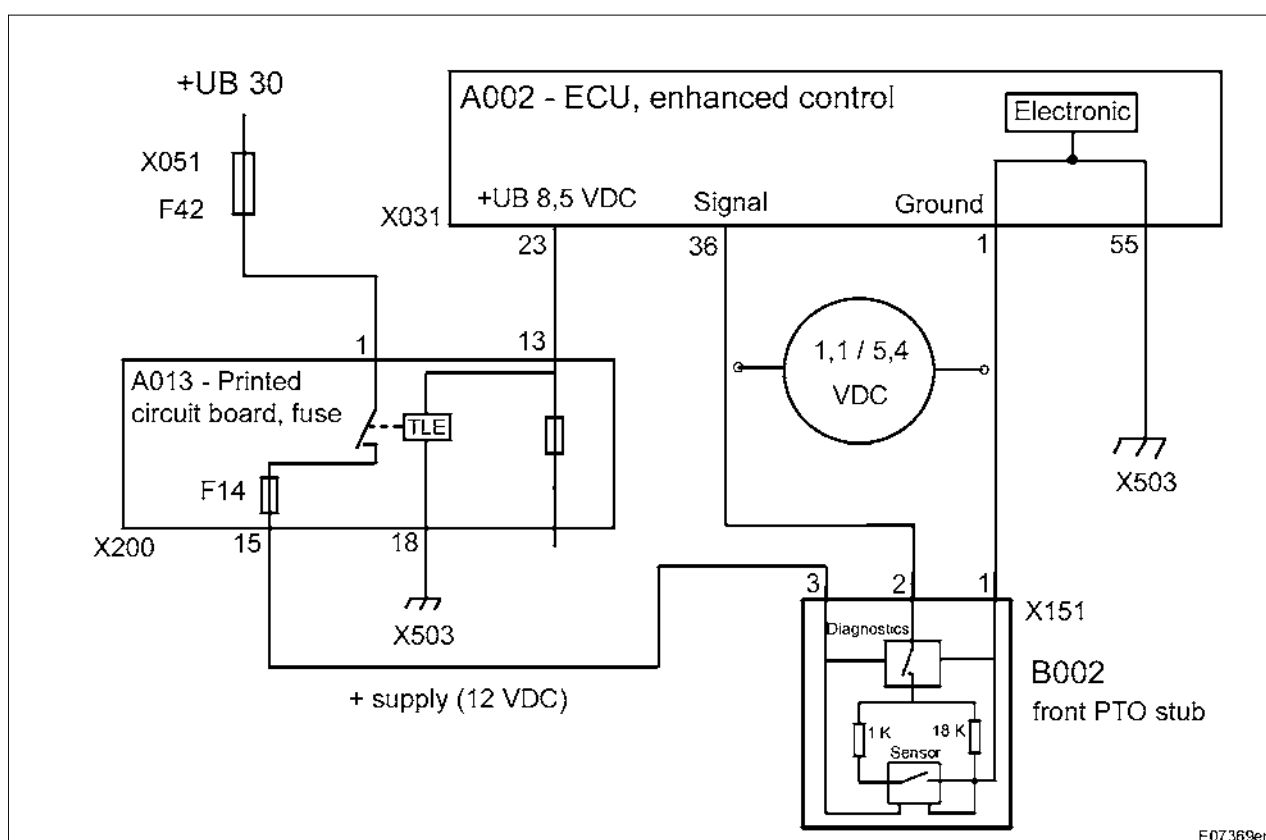
B002 - sensor, front PTO stub shaft speed

E**B002** = Sensor, front PTO stub shaft speed**X151** = Separation point on B002

At front on front PTO transmission



Remove protective from funnel front PTO



E07369en

Item	Designation	Remark
A002	ECU, enhanced control	
X031	Separation point on A002	
Pin 23	+ supply for the A013 - circuit board_fuse (8.5 VDC)	Ignition 'ON'
Pin 1	Sensor system ground	
Pin 55	Electronics ground	
Pin 36	Signal	At standstill: depending on position of trigger wheel (1.1 or 5.4 VDC)
A013	Circuit board_fuse	
F14	Microfuse no. 14	
X200	Separation point on A013	

Date	Version	Page	Capitel	Index	Docu-No.
03.03.06	a	1/3	B002 - sensor, front PTO stub shaft speed	9000	E 000312

Fendt 300 Vario	Electrics / General system B002 - sensor, front PTO stub shaft speed	E
------------------------	---	----------

Item	Designation	Remark
Pin 1	+ supply for the A013 - circuit board_fuse (12 VDC)	
Pin 13	+ supply for the A013 - circuit board_fuse (8.5 VDC)	Ignition 'ON'
Pin 18	Ground Electronic	
Pin 15	+ supply for the B002 - sensor	Ignition 'ON'
B002	Sensor, front PTO stub shaft speed	
X151	Separation point on B002 sensor	
Pin 1	Ground	
Pin 3	+ Supply (12 VDC)	Ignition 'ON'
Pin 2	Signal	At standstill: depending on position of trigger wheel (1.1 or 5.4 VDC)
X051	Fuse holder 2	
F42	Fuse no. 42	
X503	Grounding point	



A002 - ECU	
Pin	Function
1	Ground
36	Signal



B002 - sensor	
Pin	Function
1	Ground
2	Signal
3	+ supply

Date	Version	Page	B002 - sensor, front PTO stub shaft speed	Capitel	Index	Docu-No.
03.03.06	a	2/3		9000	E	000312

Fendt 300 Vario	Electrics / General system B002 - sensor, front PTO stub shaft speed	E
------------------------	---	----------

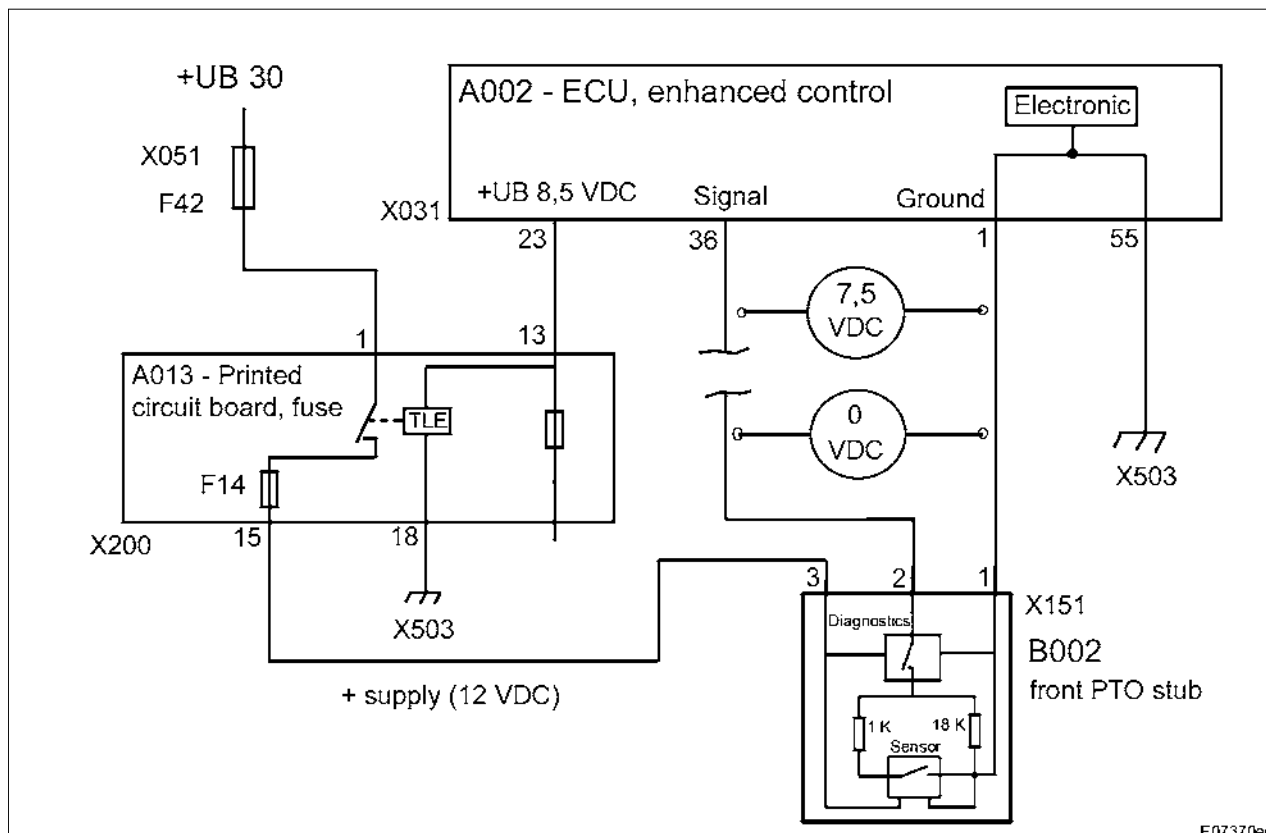
Note:

Connect adapter cable X 899.980.246.205 directly to B002 - sensor.

Ignition ON

All measured values +/- 10%

Test	Pin	Specified value	Condition	Possible cause of fault
Supply	3	12 VDC to 14 VDC		Microfuse (14) within A013 or within wiring
Ground	1			
Speed signal	2	approx. 2.8 VDC	Front PTO rotating	A) Reading 7.5 VDC, fault in component B) Reading 0 VDC: - Unplug component and measure at plug - If reading is 0 VDC, fault in A002 (pin 36) or in wiring - If reading is 7.5 VDC, fault in component
		1.1 VDC or 5.4 VDC	Front PTO stationary	
Ground	1			

Possible causes

Date	Version	Page	B002 - sensor, front PTO stub shaft speed	Capitel	Index	Docu-No.
03.03.06	a	3/3		9000	E	000312

Fendt 300 Vario

Electrics / General system

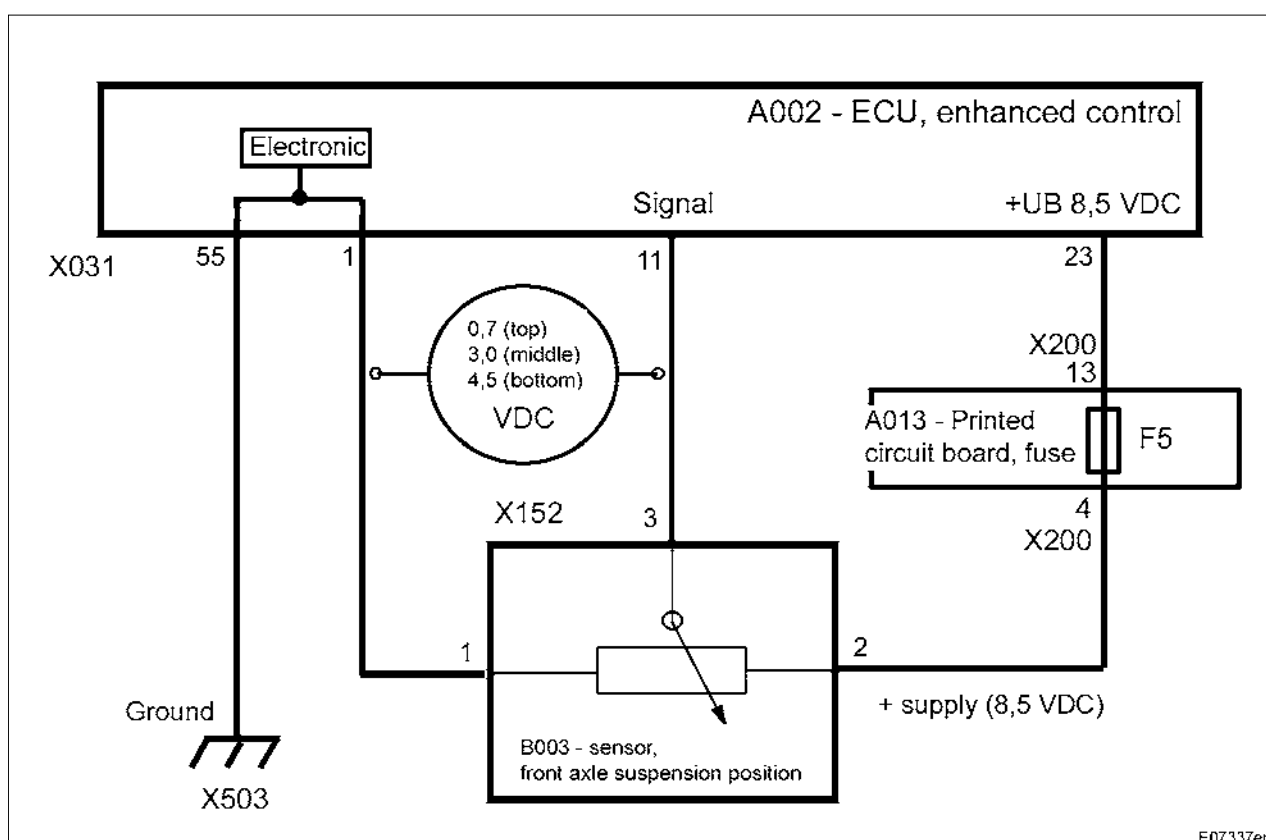
B003 - sensor, front axle suspension position

E**B003** = Sensor, front axle suspension position**X152** = Separation point on B003

Left side of tractor, on the lateral arm



Remove guard



E07337en

Item	Designation	Remark
A002	ECU, enhanced control	
X031	Separation point on A002	
Pin 23	+ supply for the A013 - circuit board_fuse (8.5 VDC)	Ignition 'ON'
Pin 1	Sensor system ground	
Pin 55	Electronics ground	
Pin 11	Signal	
A013	Circuit board_fuse	
F5	Microfuse no. 5	
X200	Separation point on A013	

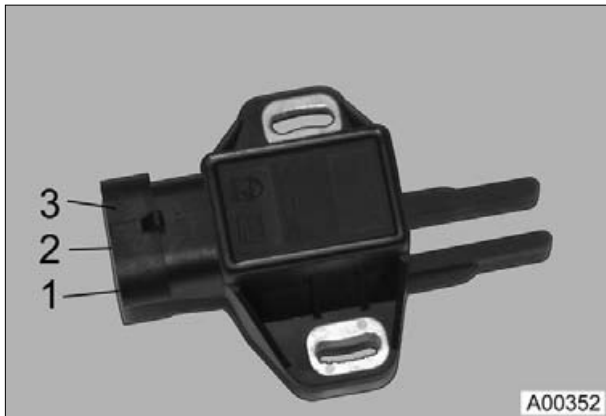
Date	Version	Page	Capitel	Index	Docu-No.
03.03.06	a	1/4	B003 - sensor, front axle suspension position	9000	E 000313

Fendt 300 Vario	Electrics / General system B003 - sensor, front axle suspension position	E
------------------------	---	----------

Item	Designation	Remark
Pin 13	+ supply for the A013 - circuit board_fuse (8.5 VDC)	Ignition 'ON'
Pin 4	+ supply for the B003 - sensor	Ignition 'ON'
B003	Sensor, front axle suspension position	
X152	Separation point on B003 sensor	
Pin 1	Ground	
Pin 2	+ Supply (8.5 VDC)	Ignition 'ON'
Pin 3	Signal	
X503	Grounding point	



A002 - ECU	
Pin	Function
1	Ground
11	Signal



B003 - Sensor	
Pin	Function
1	Ground
2	+ supply
3	Signal

Date	Version	Page	B003 - sensor, front axle suspension position	Capitel	Index	Docu-No.
03.03.06	a	2/4		9000	E	000313

Fendt 300 Vario	Electrics / General system B003 - sensor, front axle suspension position	E
------------------------	---	----------

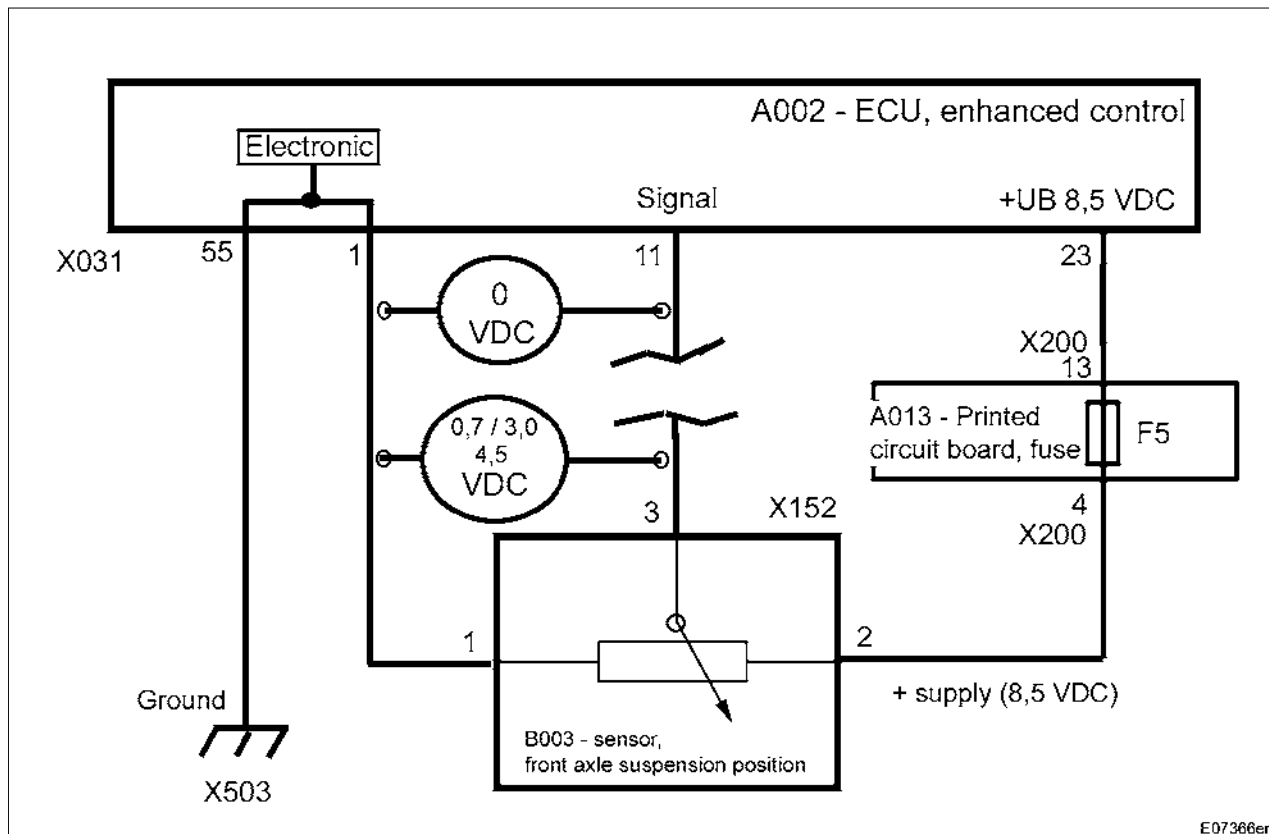
Note:

Connect adapter cable X 899.980.246.205 directly to B003 - sensor.

Ignition 'ON'.

All measured values +/- 10%

Test	Pin	Specified value	Condition	Possible cause of fault
Supply	2	8.5 VDC		Microfuse (F5) in A013 or within wiring
Ground	1			
signal voltage	3	Approx. 0.7 VDC +/-0.3 VDC	Upper limit position	if line is interrupted 0.7 / 3.0 / 4.5 VDC (depending on position of the front axle)
		Approx. 3.0 VDC +/-0.3 VDC	Middle position	
		approx. 4.5 VDC	Lower limit position 'Suspension locked'	
Ground	1			

Possible cause of fault

E07366en

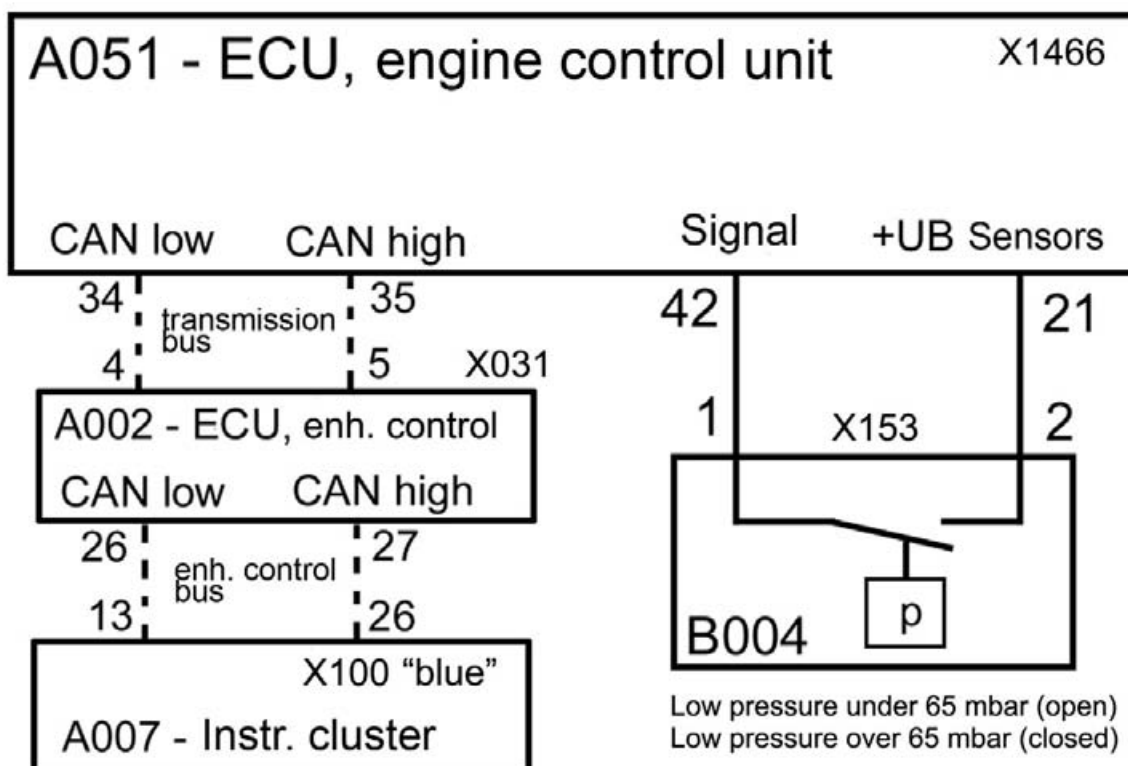
Date	Version	Page	B003 - sensor, front axle suspension position	Capitel	Index	Docu-No.
03.03.06	a	3/4		9000	E	000313

Fendt 300 Vario	Electrics / General system B003 - sensor, front axle suspension position	E
------------------------	--	----------

**Note:**

the B003 - sensor, front axle suspension position must be calibrated
see: Chapter 0000 Reg. F - Calibrating suspension (Calibration code 7666)

Date	Version	Page	B003 - sensor, front axle suspension position	Capitel	Index	Docu-No.
03.03.06	a	4/4		9000	E	000313

Fendt 300 Vario
Electrics / General system
B004 - underpressure switch
E**B004** = Sensor, underpressure**X153** = Separation point on B004
On air filter

E07367en

Item	Designation	Remark
A002	ECU, enhanced control	
X031	Separation point on A002	
Pin 4	Transmission BUS (CAN low)	
Pin 5	Transmission BUS (CAN high)	
Pin 26	Enhanced control BUS (CAN low)	
Pin 27	Enhanced control BUS (CAN high)	
A007	Instrument cluster	

Date	Version	Page	Capitel	Index	Docu-No.
27.03.06	a	1/4	B004 - underpressure switch	9000	E 000314

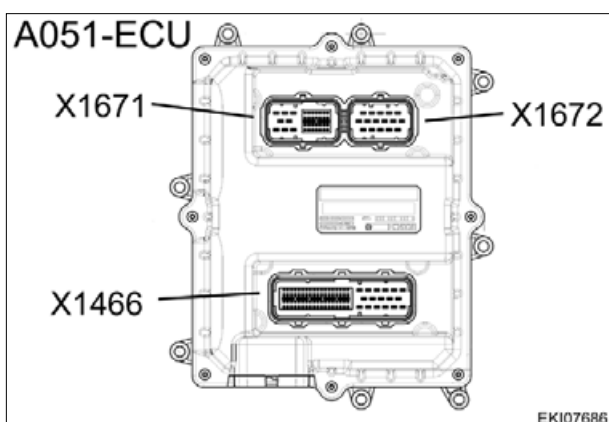
Fendt 300 Vario	Electrics / General system B004 - underpressure switch	E
------------------------	---	----------

Item	Designation	Remark
X100	Separation point "blue" on A007	
Pin 13	Enhanced control BUS (CAN low)	
Pin 26	Enhanced control BUS (CAN high)	
A051	ECU, engine control unit	
X1466	Separation point on A051	
Pin 21	+ supply for the B004 - vacuum switch	Ignition 'ON'
Pin 42	Signal	
Pin 34	Transmission BUS (CAN low)	
Pin 35	Transmission BUS (CAN high)	
B004	Underpressure switch	
X153	Separation point on B004	
Pin 2	+ supply for the B004 - vacuum switch	Ignition 'ON'
Pin 1	Signal	



A051 = ECU, EDC

At right entrance step



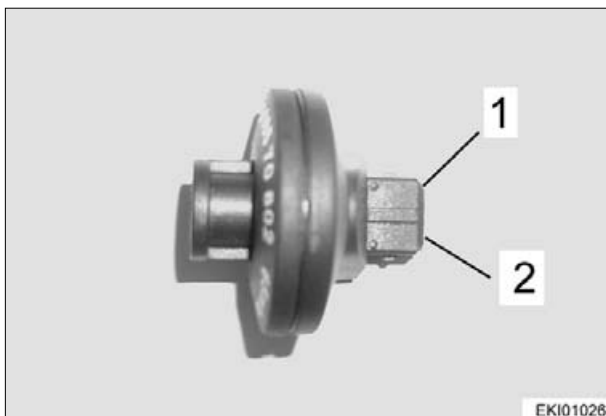
Measuring point on A051 - ECU, engine control unit (X1466 - separation point)

Pin	Function
21	+UB sensor electronics
42	Signal (vacuum)

Date	Version	Page	B004 - underpressure switch	Capitel	Index	Docu-No.
27.03.06	a	2/4		9000	E	000314

Fendt 300 Vario

Electrics / General system
B004 - underpressure switch

E**B004 - vacuum switch (X153-separation point)**

Pin	Function
1	Signal (vacuum)
2	+UB sensor electronics

**Testing + supply**

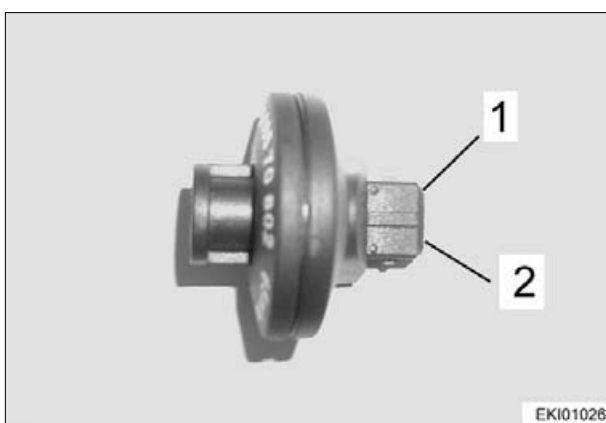
Connect adapter cable X 899.980.246.201 to B004 - vacuum switch

Measure between pin 2 (+UB sensor electronics) and vehicle ground

Ignition ON

Target value: 12 VDC

If the specified value is not reached, check wiring



Underpressure [mbar]	Resistance [ohm]	Warning display
less than 65	infinite (switch open)	
greater than 65	approx. 0 bar (switch closed)	Acoustic warning signal and warning message

Fendt 300 Vario	Electrics / General system B004 - underpressure switch	E
------------------------	---	----------



Check warning message (air filter clogged) in A007 - instrument cluster

Disconnect X153 - separation point from B004 - sensor

Connect adapter cable X 899.980.246.201 to cable

Connect pins 1 and 2 with each other



Ignition ON

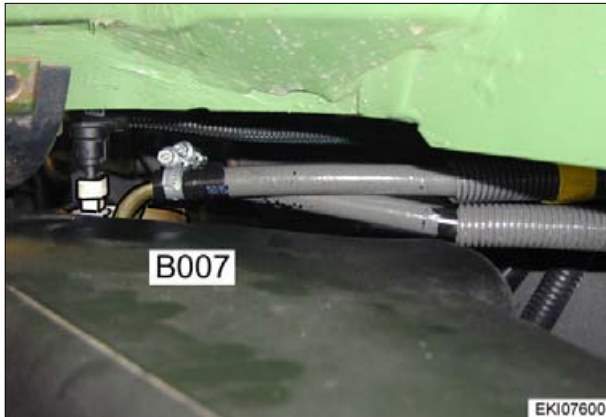
In the A007 - instrument cluster,
a warning message that the air filter is clogged
appears

Date	Version	Page	B004 - underpressure switch	Capitel	Index	Docu-No.
27.03.06	a	4/4		9000	E	000314

Fendt 300 Vario

Electrics / General system
B007 - level sensor, fuel

E



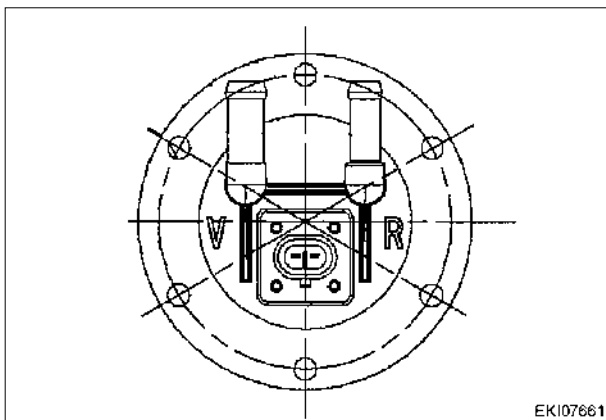
B007 = Level sensor, fuel

X156 = Separation point on B007

On left side of tractor, on fuel tank



Remove left rear wheel



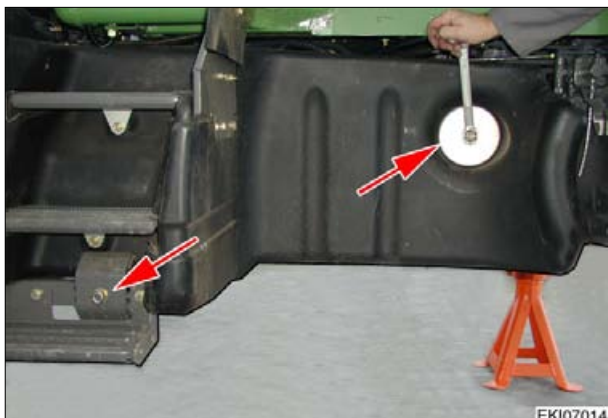
V = Feed

R = Return flow

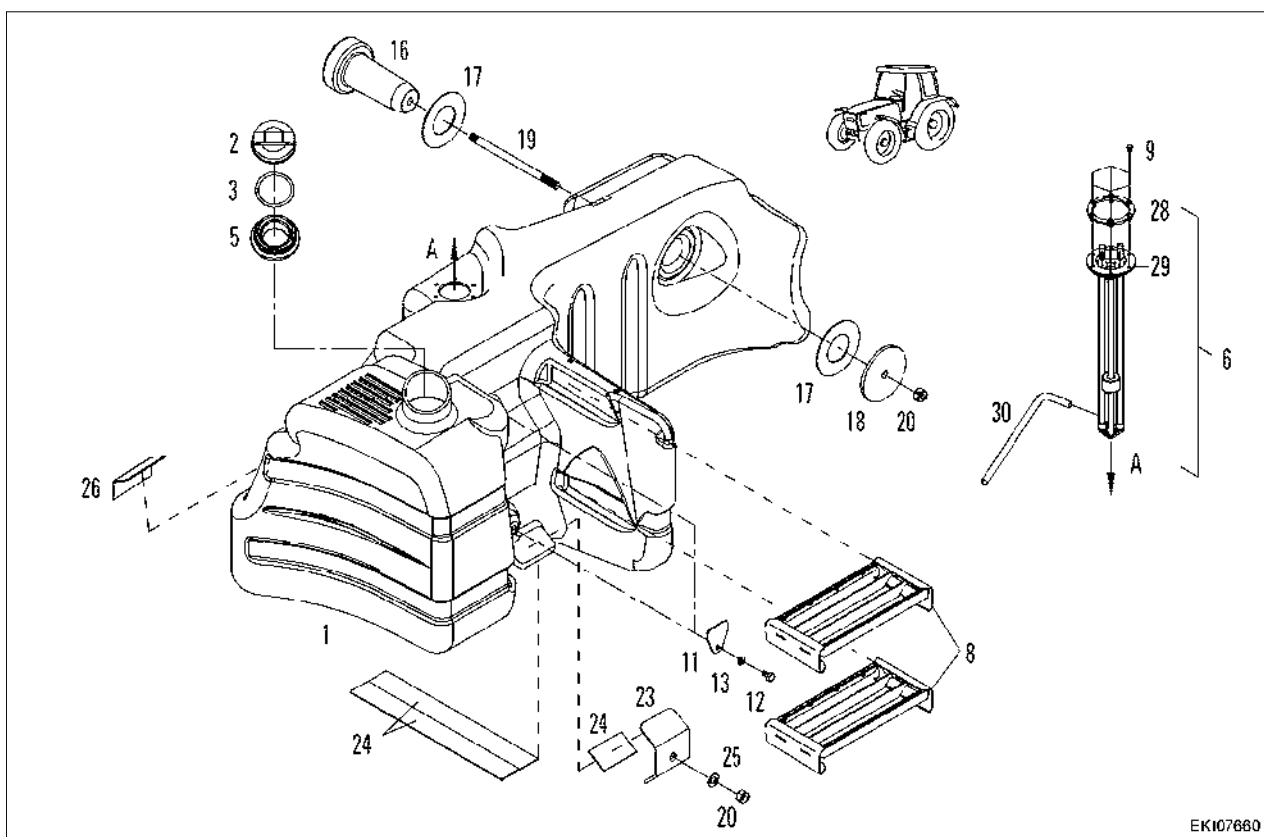
Date	Version	Page	B007 - level sensor, fuel	Capitel	Index	Docu-No.
27.03.06	a	1/6		9000	E	000315

Fendt 300 Vario

Electrics / General system
B007 - level sensor, fuel

E**To remove the B007 - level sensor:**

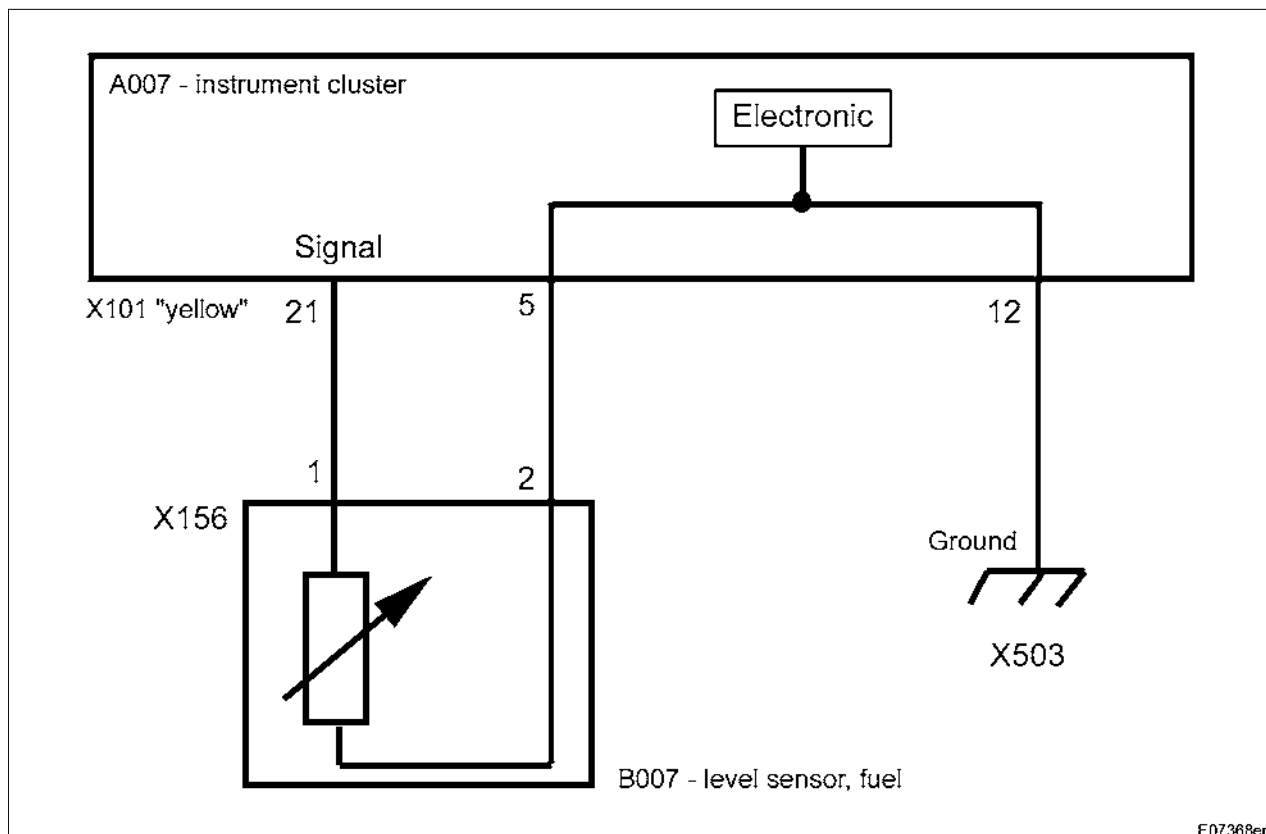
Unscrew both nut (see arrow) from the fuel tank bearing and pull fuel tank out approx. 8cm



Date	Version	Page	B007 - level sensor, fuel	Capitel	Index	Docu-No.
27.03.06	a	2/6		9000	E	000315

Fendt 300 Vario

Electrics / General system
B007 - level sensor, fuel

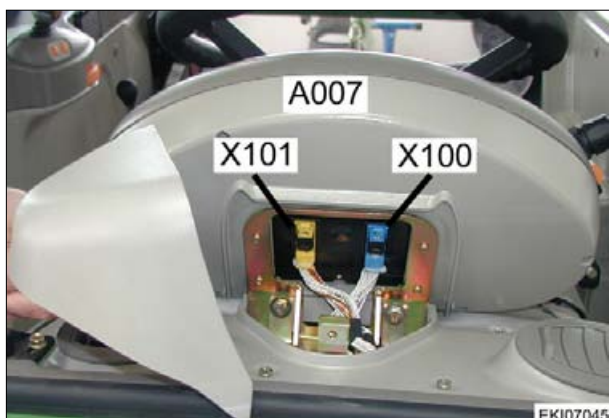
E

E07368en

Item	Designation	Remark
A007	Instrument cluster	
X101 'yellow'	Separation point on A007	
Pin 21	Signal	
Pin 5	Sensor system ground	
Pin 12	Ground Electronic	
B007	Level sensor, fuel	
X156	Separation point on B007	
Pin 1	Signal	
Pin 2	Ground	
X503	Ground pin	

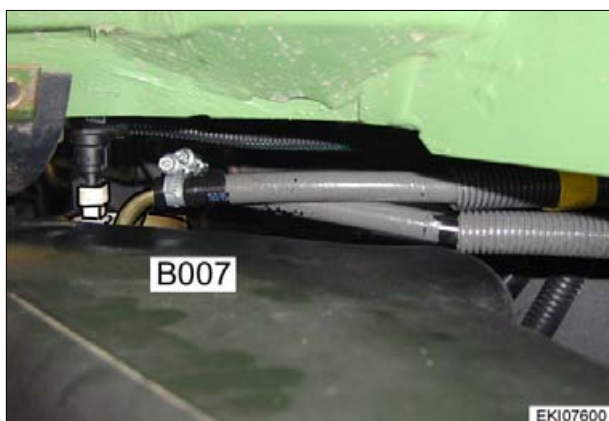
Fendt 300 Vario

Electrics / General system
B007 - level sensor, fuel

E

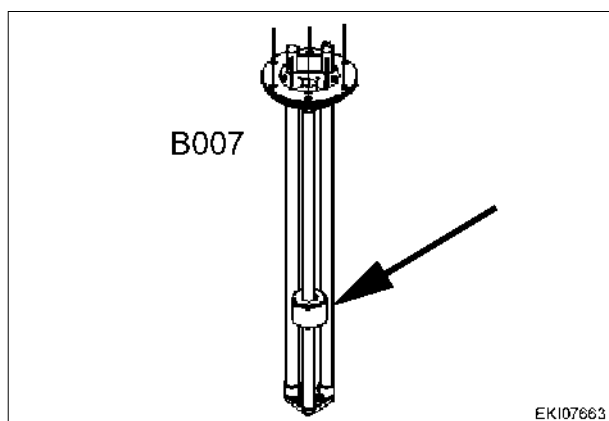
**A007 - instrument cluster
 (X101 - separation point "yellow")**

Pin	Function
21	Signal
5	Ground



B007 - level sensor (X156 - separation point)

Pin	Function
1	Signal
2	Ground



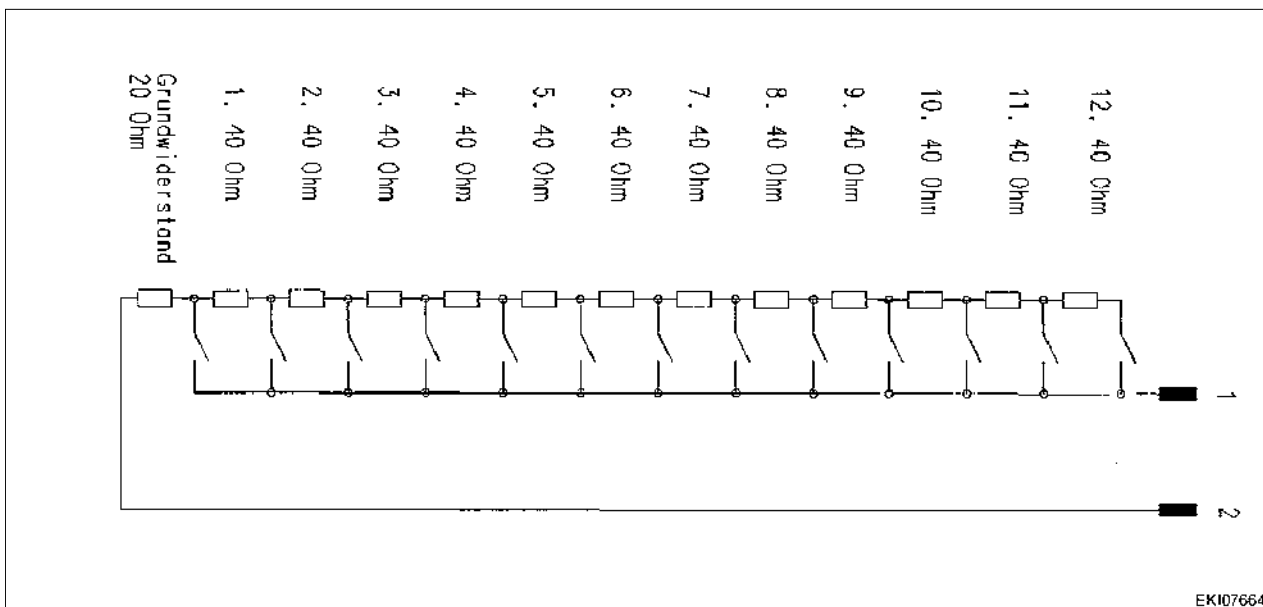
Testing B007 - fuel level sensor:

Remove B007 - level sensor

Connect adapter cable X 899.980.246.204 to
 B007 - level sensor

Move float (arrowed) by hand

Fendt 300 Vario	Electrics / General system B007 - level sensor, fuel	E
------------------------	---	----------



When the float makes contact with the switch, the switch closes.

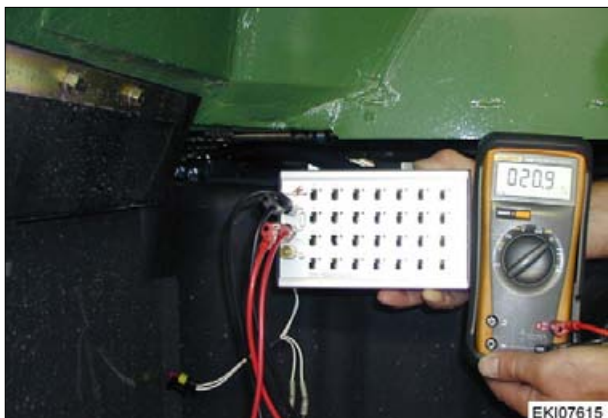
Since the resistors are connected in series, a total resistance arises.

Test total resistance with multimeter (ohmmeter)

(See table below for resistance values)

Date	Version	Page	Capitel	Index	Docu-No.
27.03.06	a	5/6	B007 - level sensor, fuel	9000	E
					000315

Fendt 300 Vario	Electrics / General system B007 - level sensor, fuel	E
------------------------	---	----------



Testing fuel display in A007 - instrument cluster

Connect adapter cable X 899.980.246.204 to X156 - separation point (connection to B007 remains isolated).

Connect resistance decade X 899.980.224

Ignition 'ON'

Apply corresponding resistance (see table below) and compare to display in A007 - instrument cluster

Note:

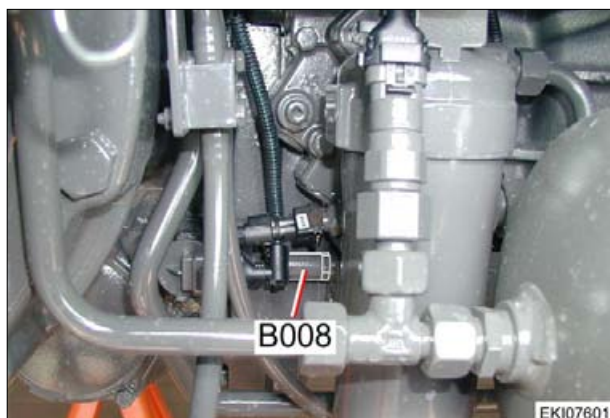
Observe adaptation time of approx. 1 minute

B007 - fuel level sensor (Note: all values are approximate values)			
Display on A007 - instrument cluster	Signal	Resistance on B007 - level sensor	Litres
1 bar (flashes) ("EMPTY")	0.20 VDC	20 ohms	0 litres
1 bar	0.60 VDC	60 ohm	18 litres
2 bars	0.95 VDC	100 ohm	28 litres
3 bars	1.35 VDC	140 ohms	37 litres
4 bars	1.70 VDC	180 ohm	47 litres
5 bars	2.10 VDC	220 ohm	57 litres
6 bars	2.45 VDC	260 ohms	75 litres
7 bars	2.80 VDC	300 ohm	93 litres
8 bars	3.20 VDC	340 ohm	110 litres
9 bars	3.60 VDC	380 ohm	137 litres
10 bars	4.00 VDC	420 ohm	160 litres
11 bars	4.34 VDC	460 ohm	174 litres
12 bars	4.70 VDC	500 ohms	182 litres
12 bars ("FULL")	5.00 VDC	500 ohms	207 litres

Fendt 300 Vario

Electrics / General system

B008 - high pressure sensor (transmission)

E**B008** = High pressure sensor**X157** = Separation point on B008**Note:**

The B008 high pressure sensor is not fitted as standard.

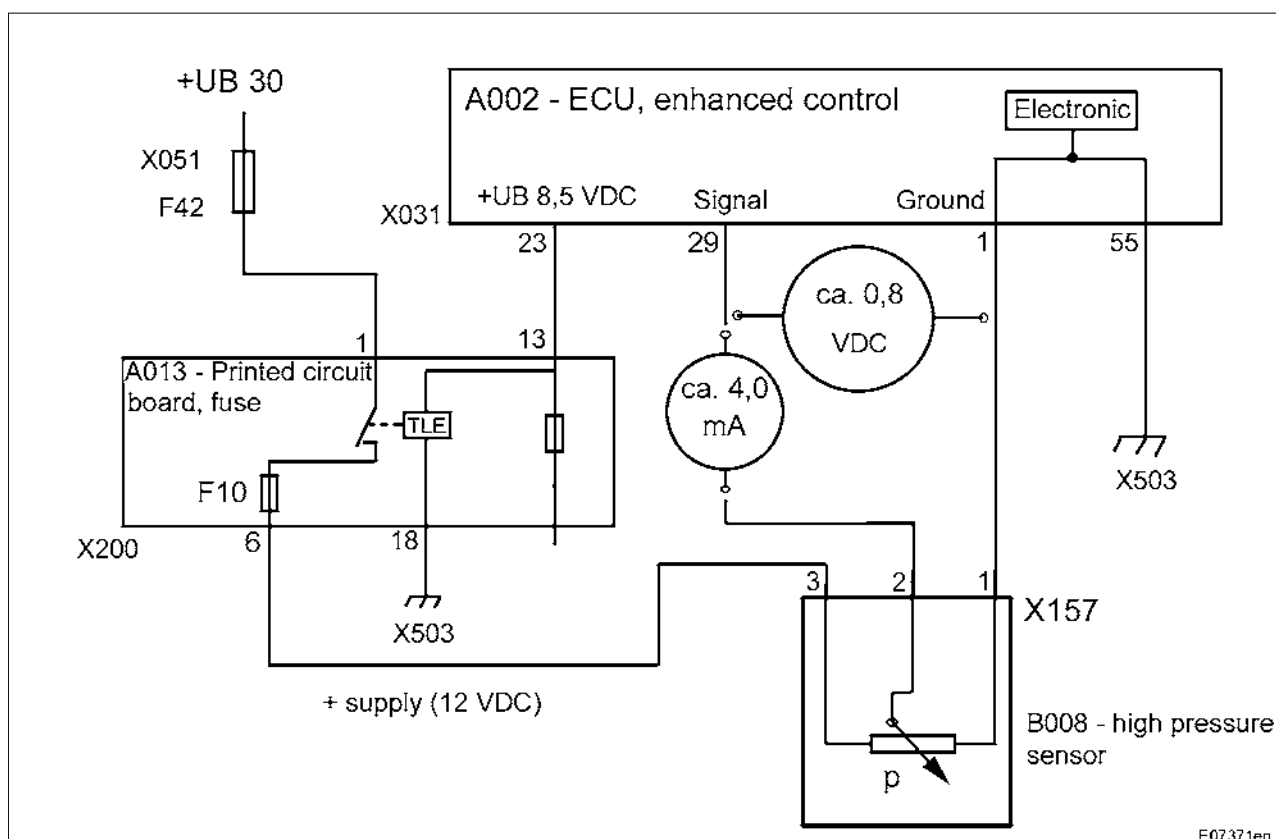
The B008 high pressure sensor must be installed to calibrate the transmission.



On the right side of the transmission, on valve block



Remove right rear wheel and metal panels



E07371en

Item	Designation	Remark
A002	ECU, enhanced control	
X031	Separation point on A002	
Pin 23	+ supply for the A013 - circuit board_fuse (8.5 VDC)	Ignition 'ON'
Pin 1	Sensor system ground	
Pin 55	Ground Electronic	
Pin 29	Signal	depending on high pressure in transmission (see table)
A013	Circuit board_fuse	
F10	Microfuse no. 10	

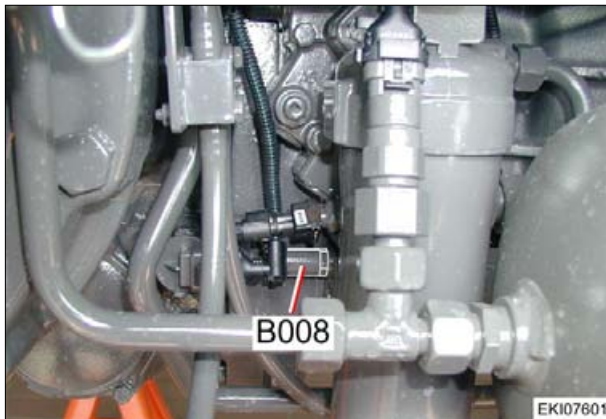
Date	Version	Page	B008 - high pressure sensor (transmission)	Capitel	Index	Docu-No.
28.03.06	a	1/7		9000	E	000316

Fendt 300 Vario	Electrics / General system B008 - high pressure sensor (transmission)	E
------------------------	--	----------

Item	Designation	Remark
X200	Separation point on A013	
Pin 1	+ supply for the A013 - circuit board_fuse (12 VDC)	
Pin 13	+ supply for the A013 - circuit board_fuse (8.5 VDC)	Ignition 'ON'
Pin 18	Ground Electronic	
Pin 6	+ supply for the B008 - high pressure sensor	Ignition 'ON'
B008	High pressure sensor (ML - transmission)	
X157	Separation point at B008 - high pressure sensor	
Pin 1	Ground	
Pin 3	+ Supply (12 VDC)	Ignition 'ON'
Pin 2	Signal	depending on high pressure in transmission (see table)
X051	Fuse holder 2	
F42	Fuse no. 42	
X503	Grounding point	



A002 - ECU (X031-separation point)	
Pin	Function
1	Ground
9	Signal



B008 - high pressure sensor (X157 - separation point)	
Pin	Function
1	Ground
2	Signal
3	+ supply

Date	Version	Page	B008 - high pressure sensor (transmission)	Capitel	Index	Docu-No.
28.03.06	a	2/7		9000	E	000316

Fendt 300 Vario	Electrics / General system B008 - high pressure sensor (transmission)	E
------------------------	---	----------

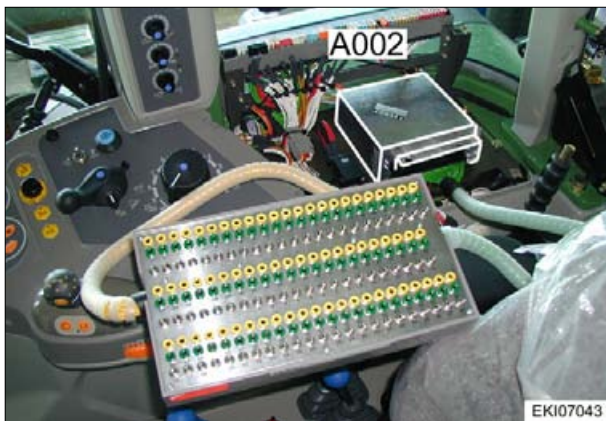
Note:

Connect adapter cable X 899.980.246.205 directly to component B008.

Ignition 'ON'

Test	Pin	Specified value	Condition	Possible cause of fault
Supply	3	12.0 VDC to 14.0 VDC		Microfuse (10) within A013 or within wiring
Ground	1			

Signal	2	0.8 VDC	0 bar (transmission in neutral)	
Ground	1			



Connect e-adapter box X 899.980.208.100 to A002 - ECU, enhanced control.

Test	Pin	Specified value	Condition	Possible cause of fault
Power consumption	29	approx. 4.0 mA	Connect ammeter to pin 29 of test socket green and yellow. Switch toggle switch (29) to Isolate.	

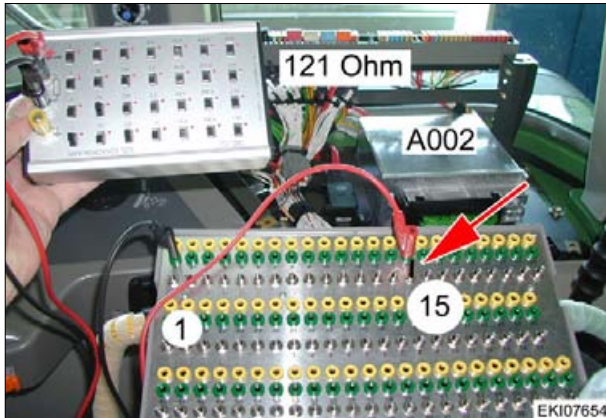
Date	Version	Page	B008 - high pressure sensor (transmission)	Capitel	Index	Docu-No.
28.03.06	a	3/7		9000	E	000316

Fendt 300 Vario

Electrics / General system
B008 - high pressure sensor (transmission)

E**Warning:**

All four wheels of tractor must be jacked up for following test
 (to prevent accidents).

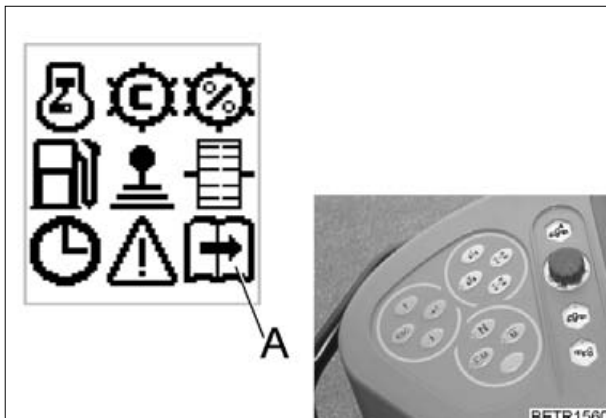


Connect e-adapter box X 899.980.208.100 to A002 - ECU, enhanced control.

**Open pin 15 (S015 - switch, hand brake)
 (arrowed)**

With the resistance decade box X 899.980.224 apply a resistance of **121 ohm** to **pin 15 (green socket)** and **pin 1**

This procedure hides the 'hand brake' warning message

**Start engine**

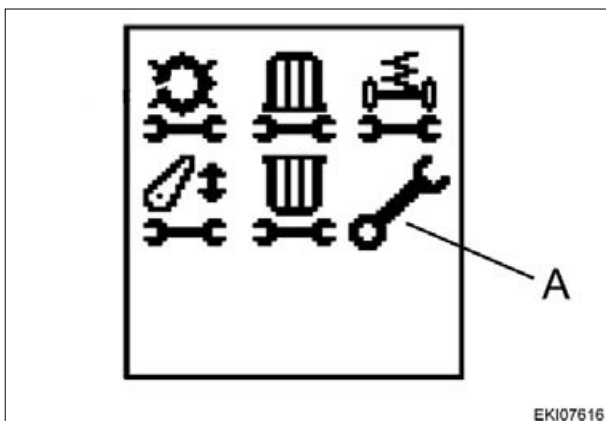
Press key, the first main menu appears on the multiple display.



Press either of the keys repeatedly until symbol (A) flashes.



Accept with the Return key



The second main menu level appears on the multiple display.



Press either of the keys repeatedly until symbol (A) flashes.

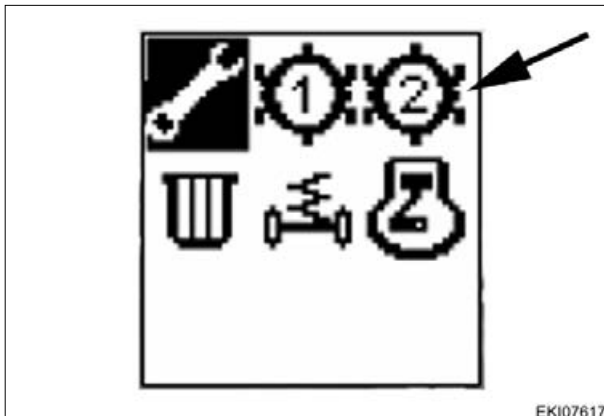


Accept with the Return key

Fendt 300 Vario

Electrics / General system

B008 - high pressure sensor (transmission)

E

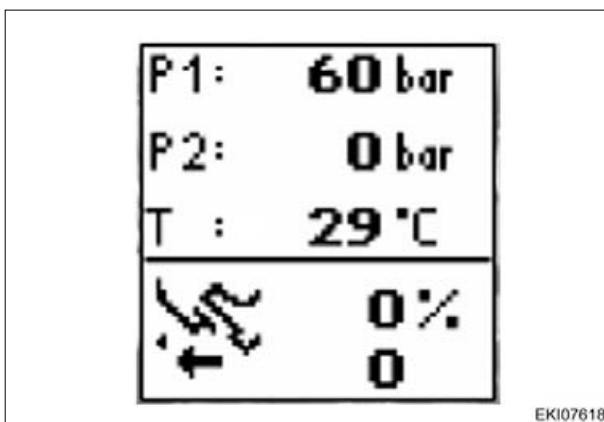
Diagnostics menus appear on the multiple display



Press either of the keys repeatedly until the symbol 'transmission diagnostics 2' flashes. (arrowed)



Accept with the Return key



The diagnostics screen appears

P1 = B008 - high pressure sensor
(must be installed for diagnostics)

P1 = **550 bar (maximum pressure)**

P2 = Not assigned

T = Transmission discharge temperature

Displacement angle from B017 - sensor, clutch pedal

Date	Version	Page	B008 - high pressure sensor (transmission)	Capitel	Index	Docu-No.
28.03.06	a	5/7		9000	E	000316

Fendt 300 Vario

Electrics / General system
B008 - high pressure sensor (transmission)

E**Actuate hand and foot brake**

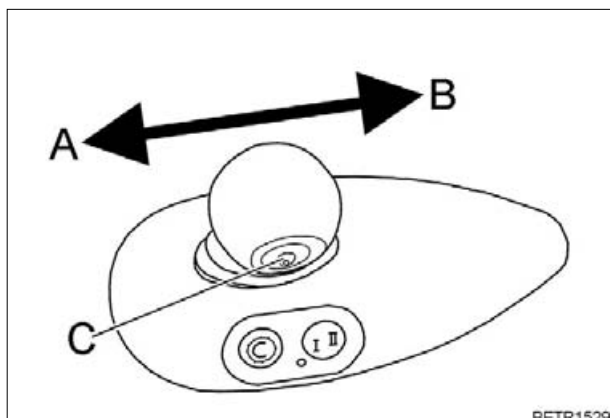
Press neutral "N" key (LED OFF)



The tractor goes into 'ACTIVE STATIONARY MODE'

Date	Version	Page	B008 - high pressure sensor (transmission)	Capitel	Index	Docu-No.
28.03.06	a	6/7		9000	E	000316

Fendt 300 Vario	Electrics / General system B008 - high pressure sensor (transmission)	E
------------------------	--	----------



A = Forward travel direction

B = Reverse travel direction

C = Activating key

Tractor in 'ACTIVE STATIONARY MODE', set engine speed to greater than 1400 rpm, press activation key, press speed control lever (A) forward and hold.

The transmission ratio continues to adjust forward until maximum displacement has been reached.

Tractor in 'ACTIVE STATIONARY MODE', set engine speed to greater than 1400 rpm, press activation key, pull speed control lever (B) back and hold.

The transmission ratio continues to adjust in reverse until maximum displacement has been reached.

Note:

The Y004 - solenoid valve clutch/turboclutch is closed (transmission is positively engaged) if:
Drive clutch is not actuated
Engine speed greater than 1400 rpm

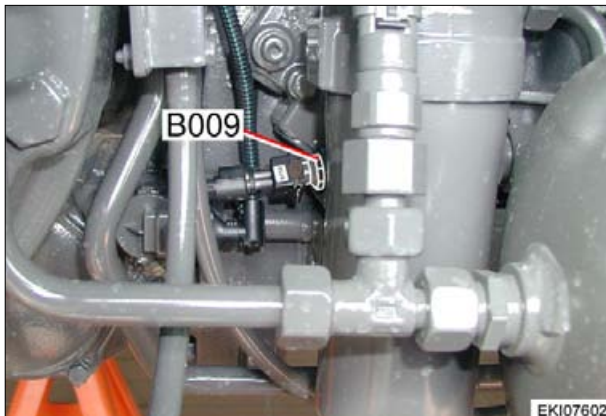
Carry out high pressure test for maximum of 5 seconds only (to prevent oil temperature from rising too much).

Pin	condition	Pressure	Specified value	Specified value
29	Neutral "N" key pressed (transmission in neutral)	0 bar	0.8 VDC	4.0 mA
	Transmission "Active" Engine speed greater than 1400 rpm			
		20 bar	0.9 VDC	5 mA
		100 bar	1.4 VDC	7 mA
		200 bar	1.9 VDC	10 mA
		300 bar	2.5 VDC	13 mA
		400 bar	3.1 VDC	16 mA
		560 bar	3.8 VDC	19 mA

Date	Version	Page		Capitel	Index	Docu-No.
28.03.06	a	7/7	B008 - high pressure sensor (transmission)	9000	E	000316

Fendt 300 Vario

Electrics / General system
B009 - sensor, discharge temperature

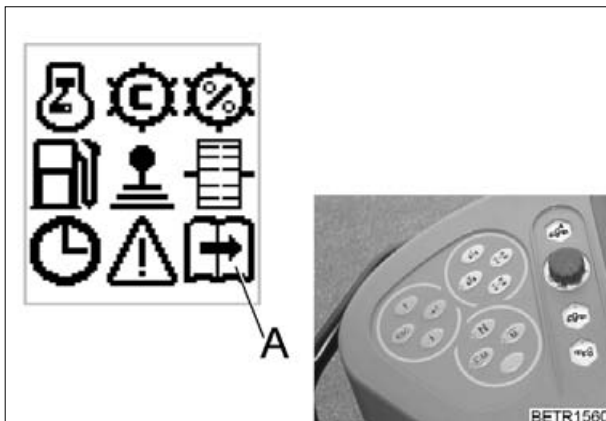
E**B009** = Sensor, discharge temperature**X158** = Separation point on B009

On the right side of the transmission, on valve block (infeed and discharge)



Remove right rear wheel, remove metal panel

Calling up discharge temperature on A007 - instrument cluster



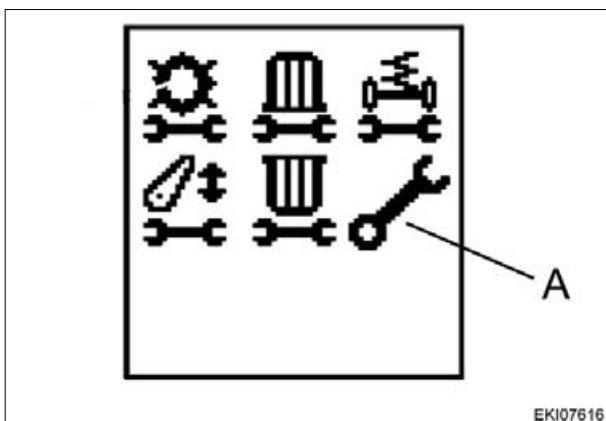
Press key, the first main menu appears on the multiple display.



Press either of the keys repeatedly until symbol (A) flashes.



Accept with the Return key



The second main menu level appears on the multiple display.



Press either of the keys repeatedly until symbol (A) flashes.

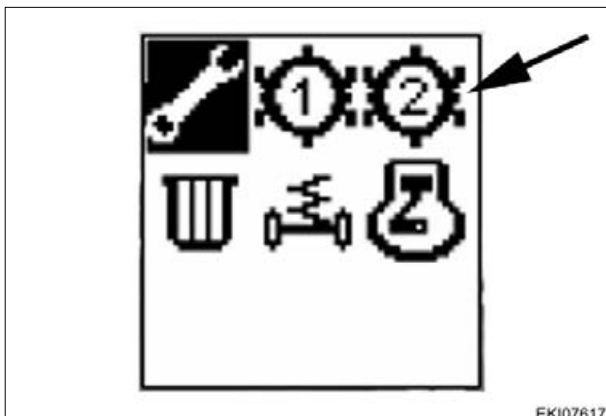


Accept with the Return key

Date	Version	Page	B009 - sensor, discharge temperature	Capitel	Index	Docu-No.
29.03.06	a	1/5		9000	E	000317

Fendt 300 Vario

Electrics / General system
B009 - sensor, discharge temperature

E

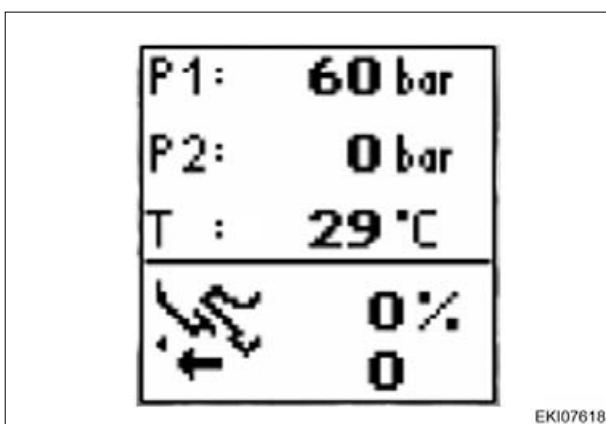
Diagnostics menus appear on the multiple display



Press either of the keys repeatedly until the symbol 'transmission diagnostics 2' flashes. (arrowed)



Accept with the Return key



The diagnostics screen appears

P1 = B008 - high pressure sensor (must be installed for diagnostics)

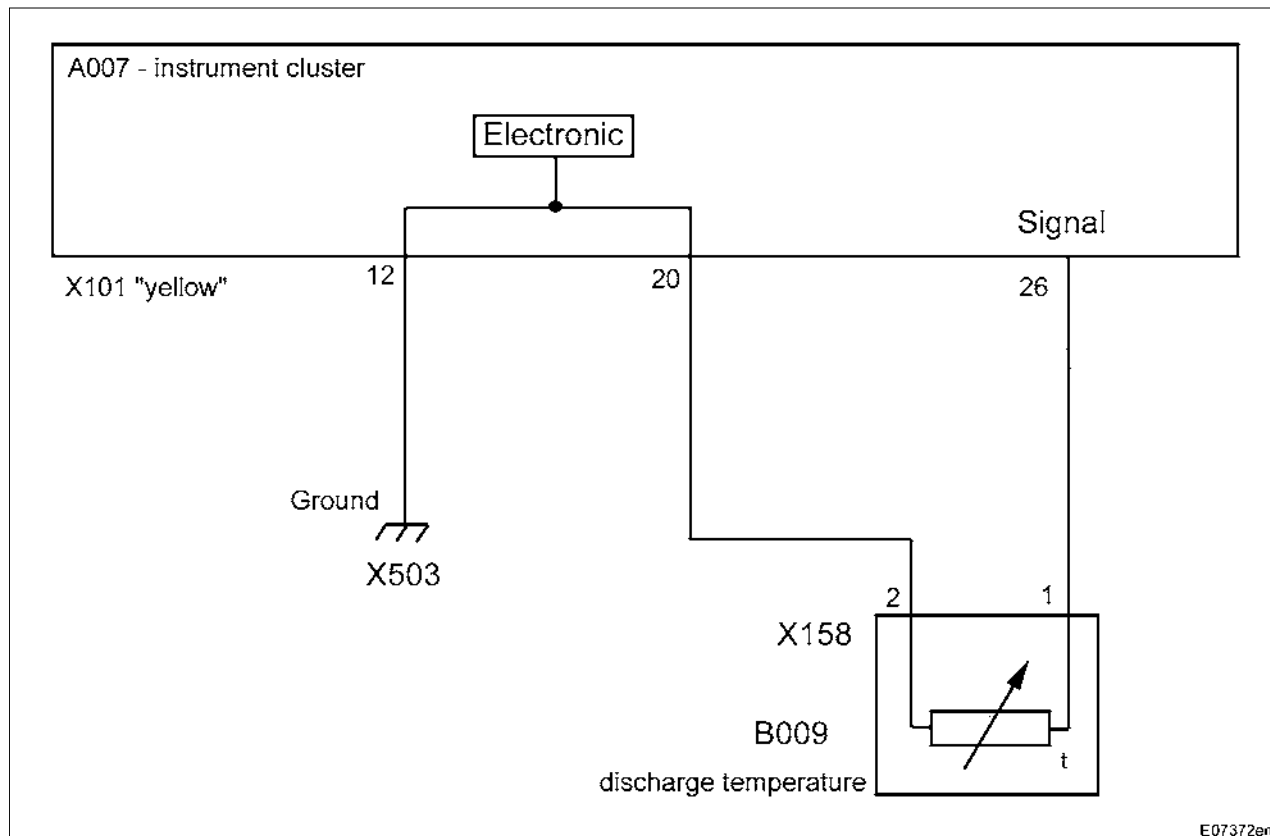
P2 = Not assigned

T = Transmission discharge temperature

Displacement angle from B017 - sensor, clutch pedal

Fendt 300 Vario

Electrics / General system
B009 - sensor, discharge temperature

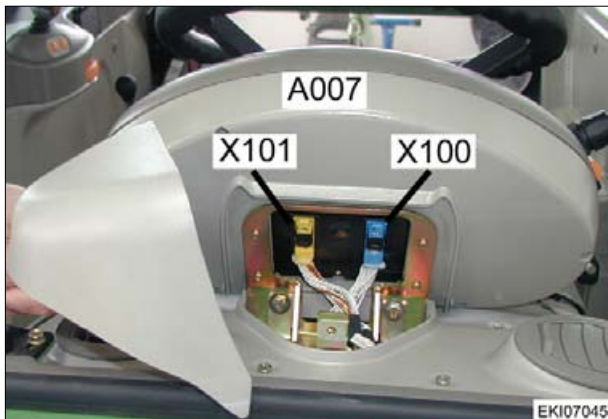
E**Testing B009 - sensor, discharge temperature**

Item	Designation	Remark
A007	Instrument cluster	
X101 'yellow'	Separation point on A007	
Pin 26	Signal	
Pin 20	Sensor system ground	
Pin 12	Electronics ground	
B009	Discharge temperature sensor	
X158	Separation point on B009	
Pin 1	Signal	
Pin 2	Ground	
X503	Grounding point	

Fendt 300 Vario

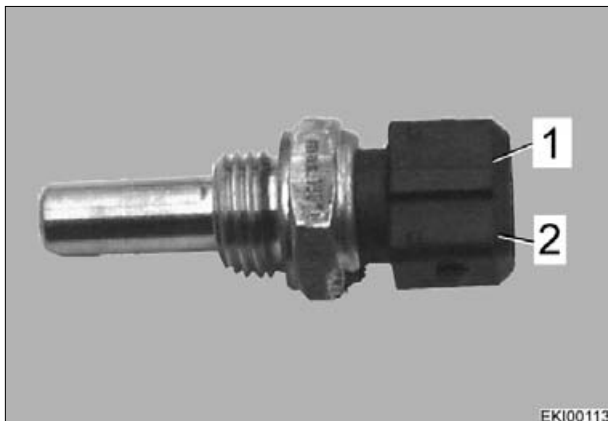
Electrics / General system

B009 - sensor, discharge temperature

E

A007 - instrument cluster
(X101 - separation point 'yellow')

Pin	Function
26	Signal
20	Ground

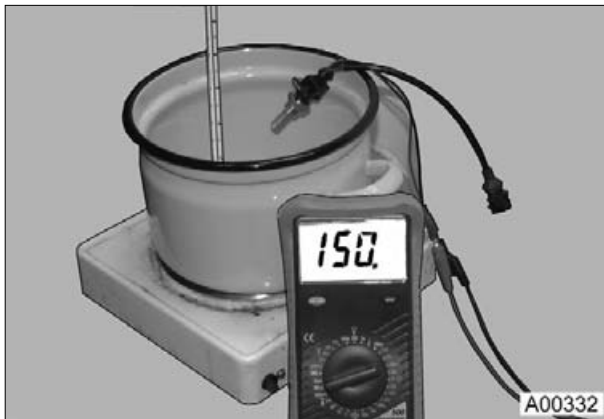


B009 - discharge temperature
(X158 - separation point)

Pin	Function
1	Signal
2	Ground

Fendt 300 Vario

Electrics / General system
B009 - sensor, discharge temperature

E**Testing B009 - sensor, discharge temperature**

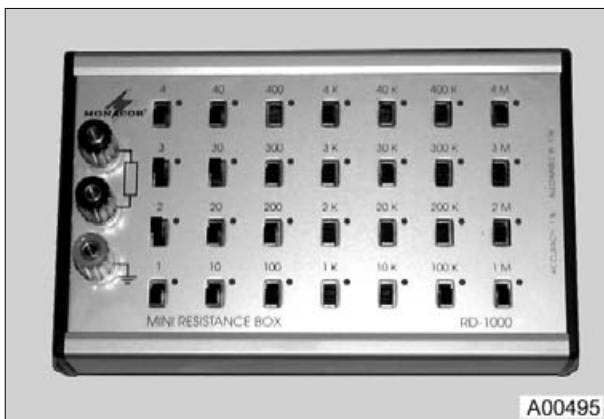
Connect adapter cable X 899.980.246.201 to
 B009 - sensor

Heat sensor in water bath

Specified values: see table



Temperature	Resistance	Fault code
50 °C	210 ohm	
60 °C	147 ohm	
95 °C	51 ohm	
105 °C	37 ohm	
106 °C	36 ohm	Warning display
110 °C	33 ohm	Warning message + fault code 04.1.53

**Testing temperature warning in A007 - instrument cluster**

Connect adapter cable X 899.980.246.201 to
 X158 - separation point (connection to
 B009 - sensor remains disconnected)

Connect resistance decade box X 890.980.224

Ignition 'ON'

Apply a resistance of 33 ohm (110 °C) (see table)

Note:

Observe adaptation time of approx. 1 minute



**The transmission oil temperature warning
 appears in A007 - instrument cluster
 Additionally, the fault code 04.1.53 is stored**

Date	Version	Page	B009 - sensor, discharge temperature	Capitel	Index	Docu-No.
29.03.06	a	5/5		9000	E	000317

Fendt 300 Vario

Electrics / General system
B010 - sensor, engine speed

E

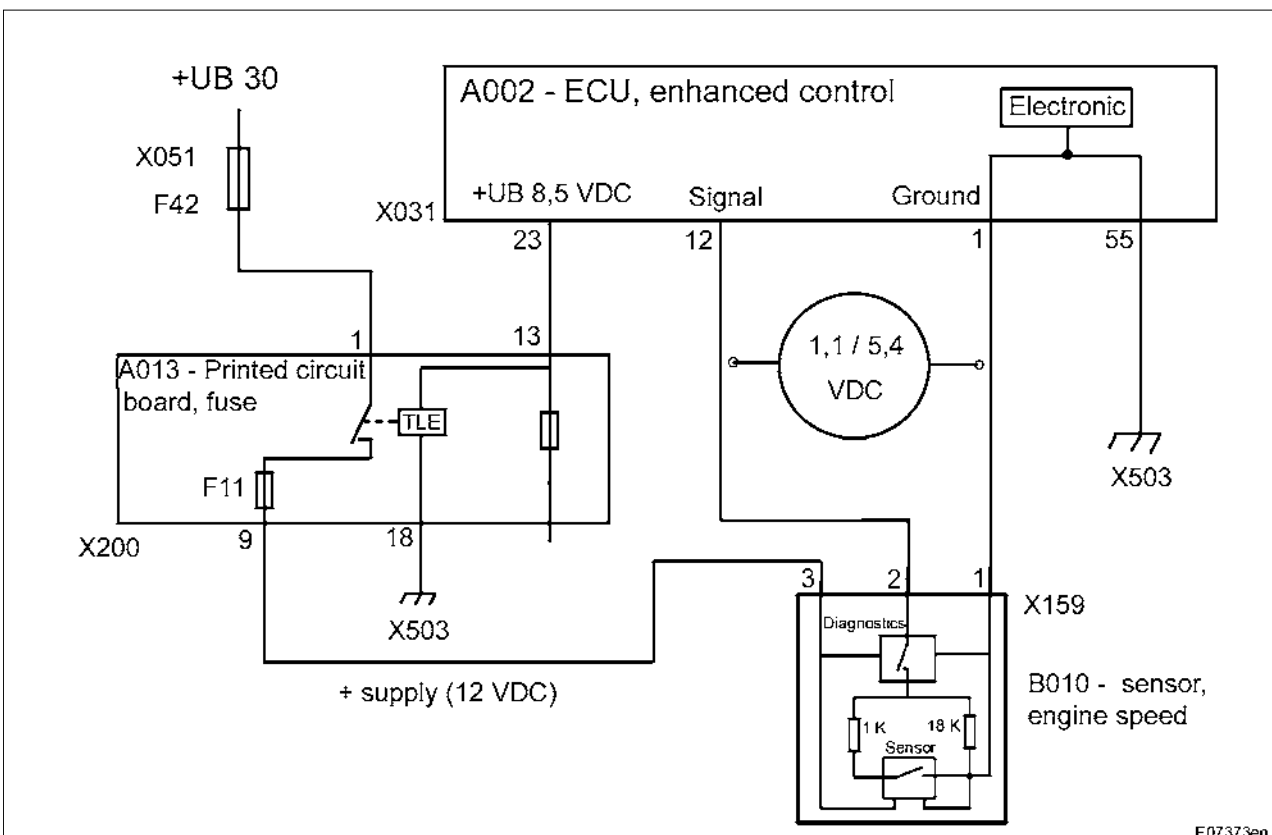
B010 = Sensor, engine speed (is used to control the ML - transmission 'load limit control')

X159 = Separation point on B010

On left side of tractor, on flywheel housing



Open bonnet



E07373en

Item	Designation	Remark
A002	ECU, enhanced control	
X031	Separation point on A002	
Pin 23	+ supply for the A013 - circuit board_fuse (8.5 VDC)	Ignition 'ON'
Pin 1	Sensor system ground	
Pin 55	Ground Electronic	
Pin 12	Signal	
A013	Circuit board_fuse	
F11	Microfuse no. 11	
X200	Separation point on A013	

Date	Version	Page	Capitel	Index	Docu-No.
29.03.06	a	1/3	B010 - sensor, engine speed	9000	E 000319

Fendt 300 Vario	Electrics / General system B010 - sensor, engine speed	E
------------------------	---	----------

Item	Designation	Remark
Pin 1	+ supply for the A013 - circuit board_fuse (12 VDC)	
Pin 13	+ supply for the A013 - circuit board_fuse (8.5 VDC)	Ignition 'ON'
Pin 18	Ground Electronic	
Pin 9	+ supply for the B010 - sensor	Ignition 'ON'
B010	Sensor, engine speed (is used to control the ML - transmission)	
X159	Separation point on B010 - sensor	
Pin 1	Ground	
Pin 3	+ Supply (12 VDC)	Ignition 'ON'
Pin 2	Signal	
X051	Fuse holder 2	
F42	Fuse no. 42	
X503	Grounding point	



A002 - ECU	
Pin	Function
1	Ground
12	Signal



B010 - Sensor	
Pin	Function
1	Ground
2	Signal
3	+ supply

Date	Version	Page	B010 - sensor, engine speed	Capitel	Index	Docu-No.
29.03.06	a	2/3		9000	E	000319

Fendt 300 Vario	Electrics / General system B010 - sensor, engine speed	E
------------------------	--	----------

Note:

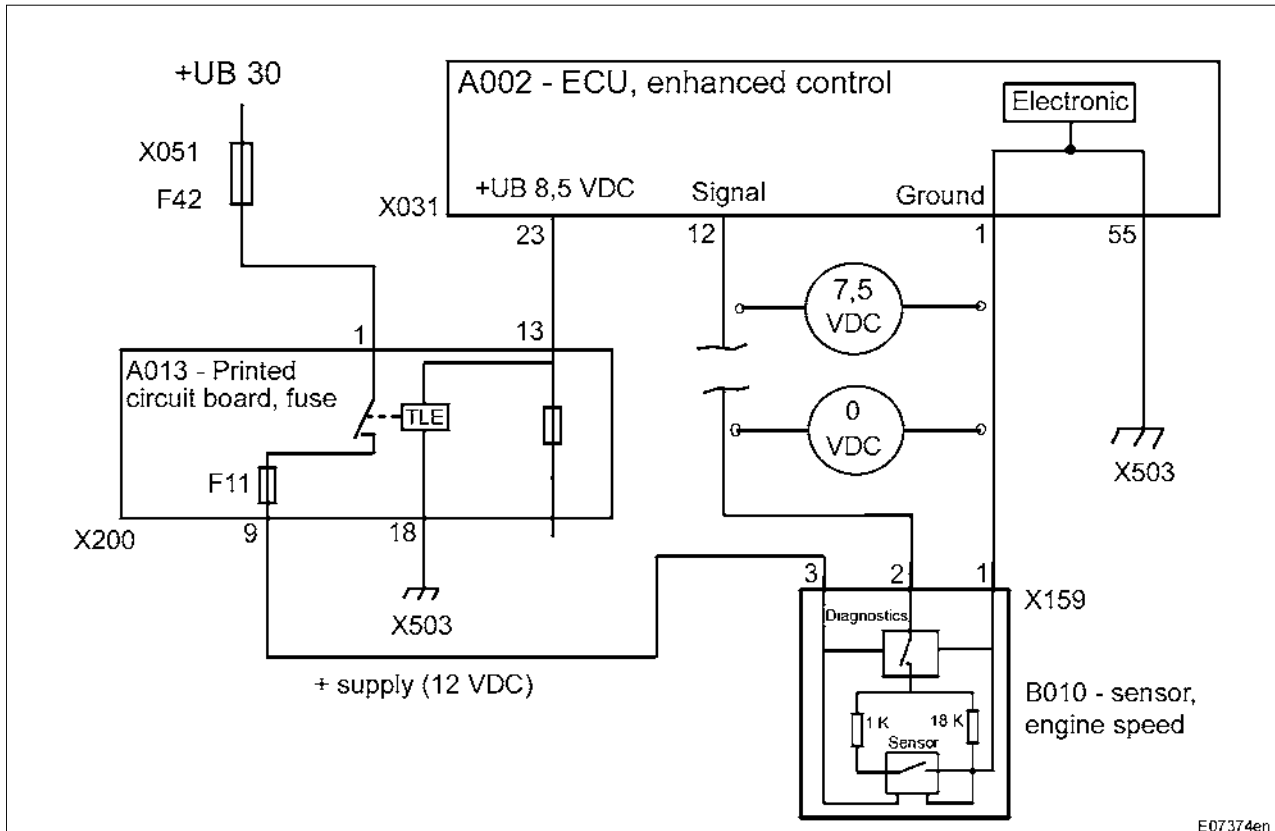
Connect adapter cable X 899.980.246.205 directly to B010 - sensor.

Ignition ON

All measured values +/- 10%

Test	Pin	Specified value	Condition	Possible cause of fault	
Supply	3	12 VDC to 14 VDC		Microfuse (11) within A013 or within wiring	
Ground	1				
Speed signal	2	approx. 1.5 VDC	Engine running	A)	Reading 7.5 VDC, fault in component Reading 0 VDC: - Unplug component and measure at plug - If reading is 0 VDC, fault in A002 (pin 12) or in wiring - If reading is 7.5 VDC, fault in component
		1.1 VDC or 5.4 VDC	Engine off	B)	
				-	
Ground	1			-	

Possible cause of fault



Date	Version	Page	B010 - sensor, engine speed	Capitel	Index	Docu-No.
29.03.06	a	3/3		9000	E	000319

Note:
Alternative: remove driver seat, fold floor mat to side and remove floor panel



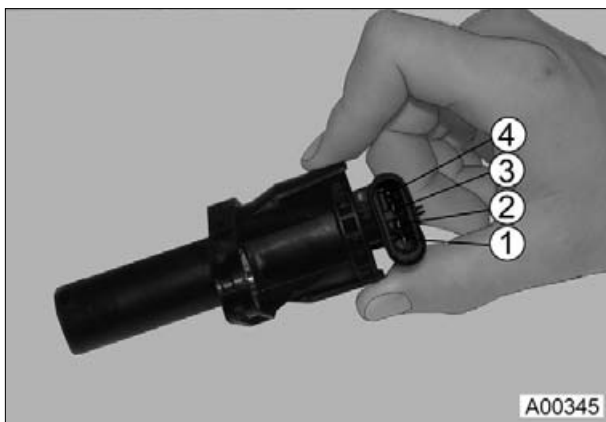
Date	Version	Page	B014 - sensor, hydrostat	Capitel	Index	Docu-No.
03.04.06	a	1/4		9000	E	000320

Fendt 300 Vario	Electrics / General system B014 - sensor, hydrostat	E
------------------------	--	----------

Item	Designation	Remark
Pin 1	+ supply for the A013 - circuit board_fuse (12 VDC)	
Pin 13	+ supply for the A013 - circuit board_fuse (8.5 VDC)	Ignition 'ON'
Pin 18	Ground Electronic	
Pin 10	+ supply for the B014 - sensor	Ignition 'ON'
B014	Sensor, hydrostat	
X163	Separation point on B014 - sensor	
Pin 1	Ground	
Pin 3	+ Supply (8.5 VDC)	Ignition 'ON'
Pin 2	Speed signal	
Pin 4	Rotational direction signal	
X051	Fuse holder 2	
F42	Fuse no. 42	
X503	Grounding point	



A002 - ECU (X031)	
Pin	Function
1	Ground
13	Speed signal
42	Rotational direction signal



B014 - sensor (X163)	
Pin	Function
1	Ground
2	Speed signal
3	+ Supply (8.5 VDC)
4	Rotational direction signal

Date	Version	Page	B014 - sensor, hydrostat	Capitel	Index	Docu-No.
03.04.06	a	2/4		9000	E	000320

Fendt 300 Vario	Electrics / General system B014 - sensor, hydrostat	E
------------------------	--	----------

Note:

Connect adapter cable X 899.980.246.206 directly to component B014.

Ignition 'ON'.

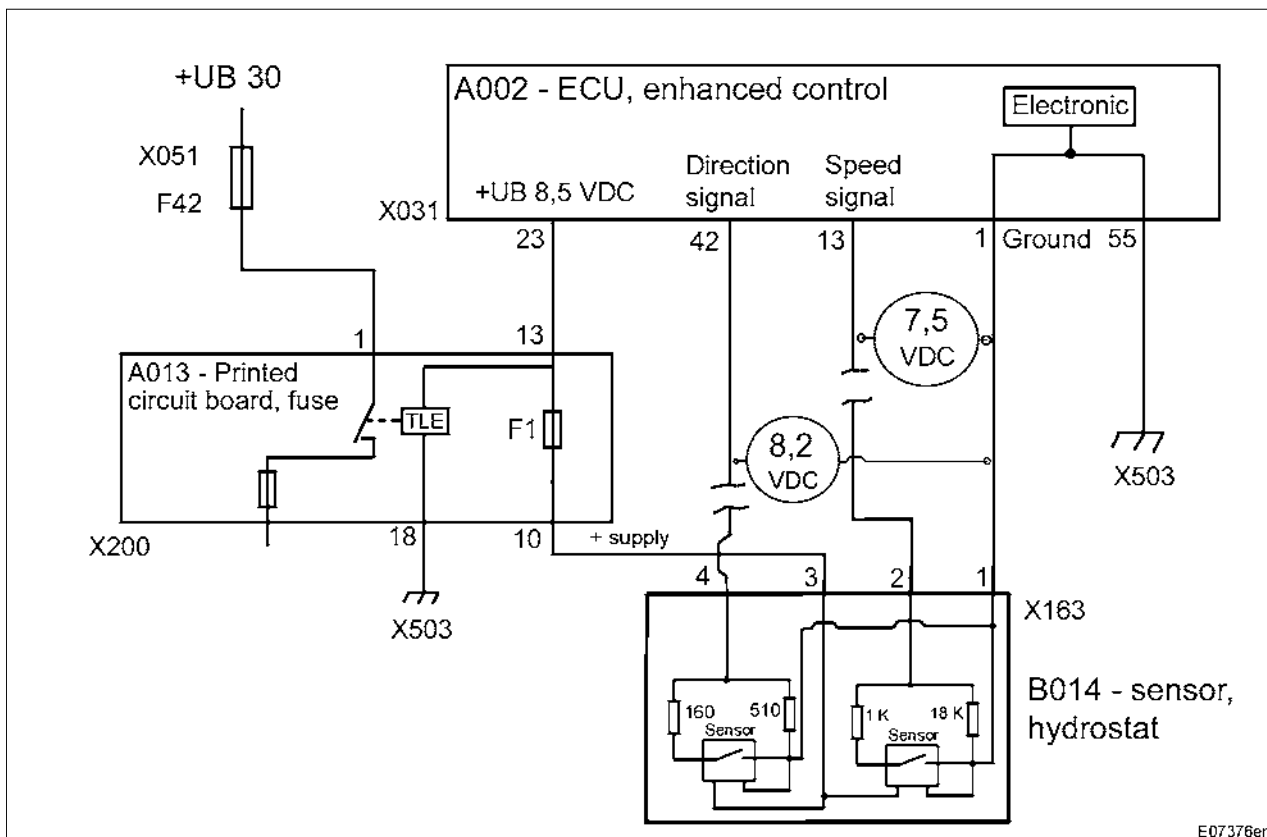
Test	Pin	Specified value	Condition	Possible cause of fault
Supply	3	8.5 VDC		Microfuse (F1) within A013 or within wiring
Ground	1			

Speed signal	2	3.5 VDC	Tractor driving	A) Reading 7.5 VDC: fault in component. B) Reading 0 VDC: - Unplug component - If reading is 0 VDC, fault in A002 (pin 13) or in wiring - If reading is 7.5 VDC - fault in component.
		1.1 VDC or 5.4 VDC	Tractor is stationary	
Ground	1			

Rotational direction	4	2.4 VDC	Tractor driving forward	A) Reading 8.2 VDC: fault in component. B) Reading 0 VDC: - Unplug component - If reading is 0 VDC, fault in A002 (pin 42) or in wiring - If reading is 8.2 VDC fault in component.
		5.1 VDC	Tractor driving in reverse	
Ground	1			

Fendt 300 Vario

Electrics / General system
B014 - sensor, hydrostat

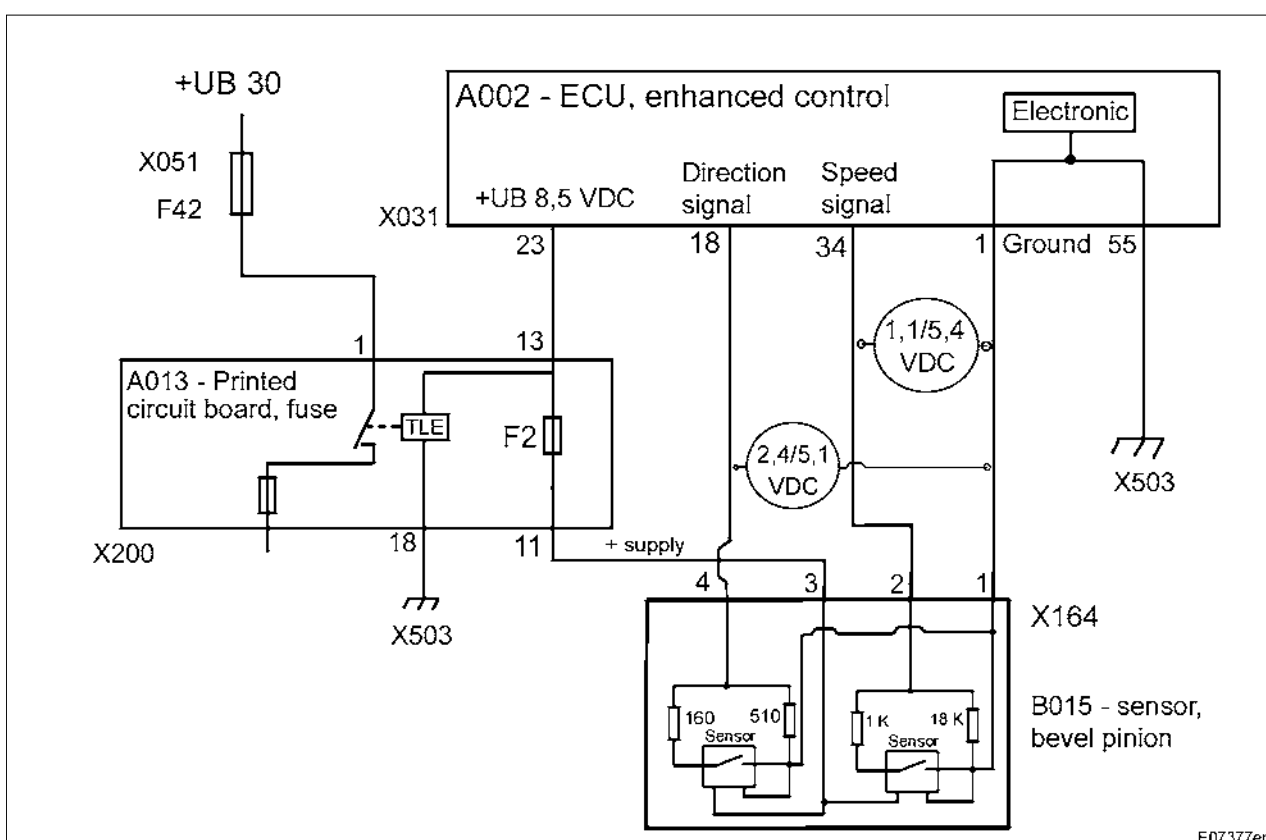
E**Possible cause of fault**

Date	Version	Page	B014 - sensor, hydrostat	Capitel	Index	Docu-No.
03.04.06	a	4/4		9000	E	000320

X164 = Separation point on B015
on right side of transmission



Remove right rear wheel, remove metal panel



Item	Designation	Remark
A002	ECU, enhanced control	
X031	Separation point on A002	
Pin 23	+ supply for the A013 - circuit board_fuse (8.5 VDC)	Ignition 'ON'
Pin 1	Sensor system ground	
Pin 55	Ground Electronic	
Pin 34	Speed signal	
Pin 18	Rotational direction signal	
A013	Circuit board_fuse	
Press F2	Microfuse no. 2	
X200	Separation point on A013	

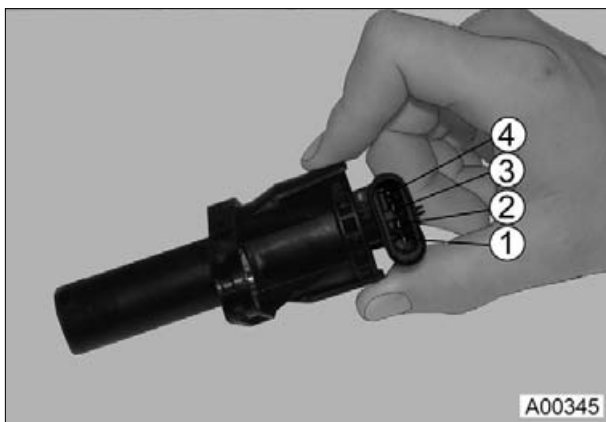
Date	Version	Page	B015 - sensor, bevel pinion	Capitel	Index	Docu-No.
03.04.2006	a	1/4		9000	E	000321

Fendt 300 Vario	Electrics / General system B015 - sensor, bevel pinion	E
------------------------	---	----------

Item	Designation	Remark
Pin 1	+ supply for the A013 - circuit board_fuse (12 VDC)	
Pin 13	+ supply for the A013 - circuit board_fuse (8.5 VDC)	Ignition 'ON'
Pin 18	Ground Electronic	
Pin 11	+ supply for the B015 - sensor	Ignition 'ON'
B015	Sensor, bevel pinion	
X164	Separation point on B015 - sensor	
Pin 1	Ground	
Pin 3	+ Supply (8.5 VDC)	Ignition 'ON'
Pin 2	Speed signal	
Pin 4	Rotational direction signal	
X051	Fuse holder 2	
F42	Fuse no. 42	
X503	Grounding point	



A002 - ECU (X031-separation point)	
Pin	Function
1	Ground
34	Speed signal
18	Rotational direction signal



B015 - sensor (X164-separation point)	
Pin	Function
1	Ground
2	Speed signal
3	+ Supply (8.5 VDC)
4	Rotational direction signal

Date	Version	Page	B015 - sensor, bevel pinion	Capitel	Index	Docu-No.
03.04.2006	a	2/4		9000	E	000321

Fendt 300 Vario	Electrics / General system B015 - sensor, bevel pinion	E
------------------------	---	----------

Note:

Connect adapter cable X 899.980.246.206 directly to component B015.

Ignition 'ON'.

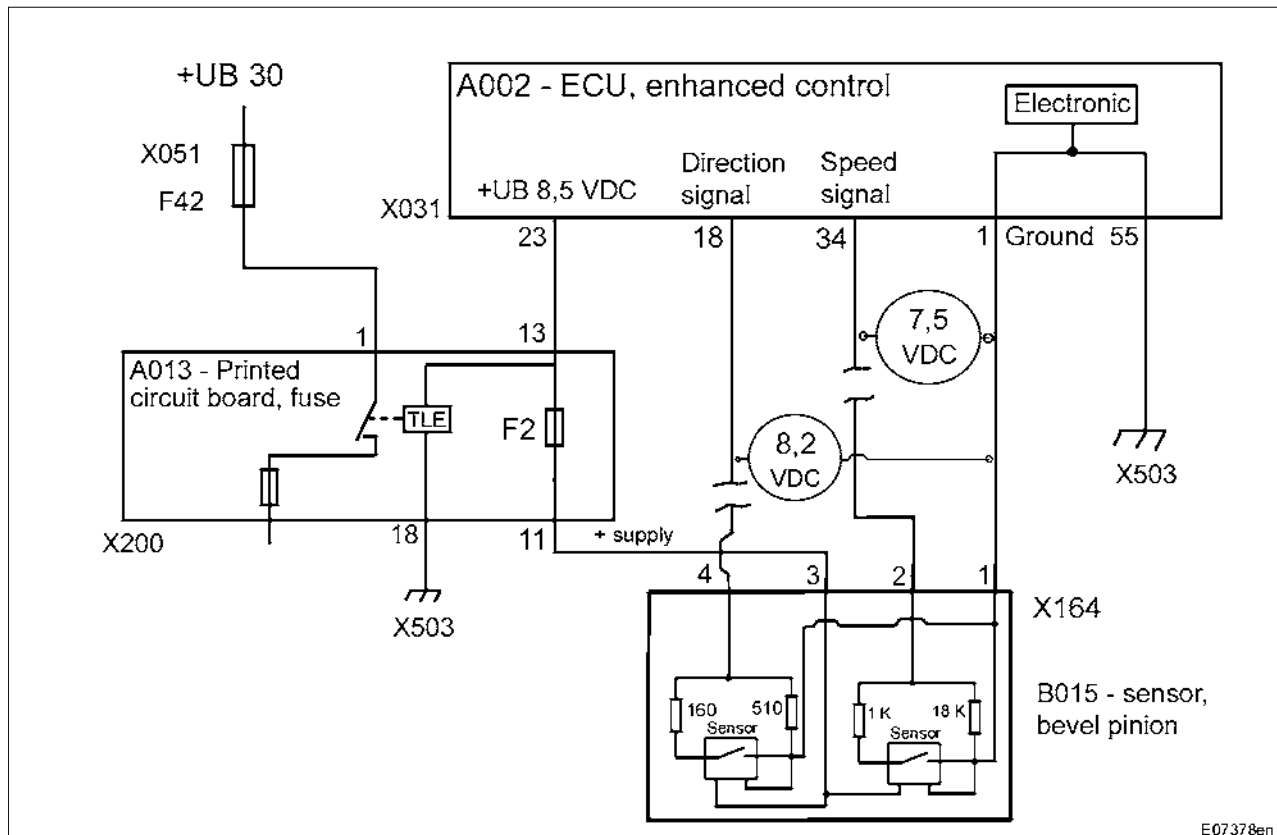
Test	Pin	Specified value	Condition	Possible cause of fault
Supply	3	8.5 VDC		Microfuse (2) within A013 or within wiring
Ground	1			

Speed signal	2	3.3 VDC	Tractor driving	A) Reading 7.5 VDC: fault in component. B) Reading 0 VDC: - Unplug component - If reading is 0 VDC, fault in A002 (pin 34) or in wiring - If reading is 7.5 VDC - fault in component.
		1.0 VDC or 5.0 VDC	Tractor is stationary	
Ground	1			

Rotational direction	4	5.1 VDC	Tractor driving forward	A) Reading 8.2 VDC: fault in component. B) Reading 0 VDC: - Unplug component - If reading is 0 VDC, fault in A002 (pin 18) or in wiring - If reading is 8.2 VDC fault in component.
		2.4 VDC	Tractor driving in reverse	
Ground	1			

Fendt 300 Vario

Electrics / General system
B015 - sensor, bevel pinion

E**Possible cause of fault**

Date	Version	Page	B015 - sensor, bevel pinion	Capitel	Index	Docu-No.
03.04.2006	a	4/4		9000	E	000321

Fendt 300 Vario	Electrics / General system B017 - sensor, clutch pedal	E
------------------------	---	----------



B017 = Sensor, clutch pedal

X166 = Separation point on B017

Left side in steering column unit



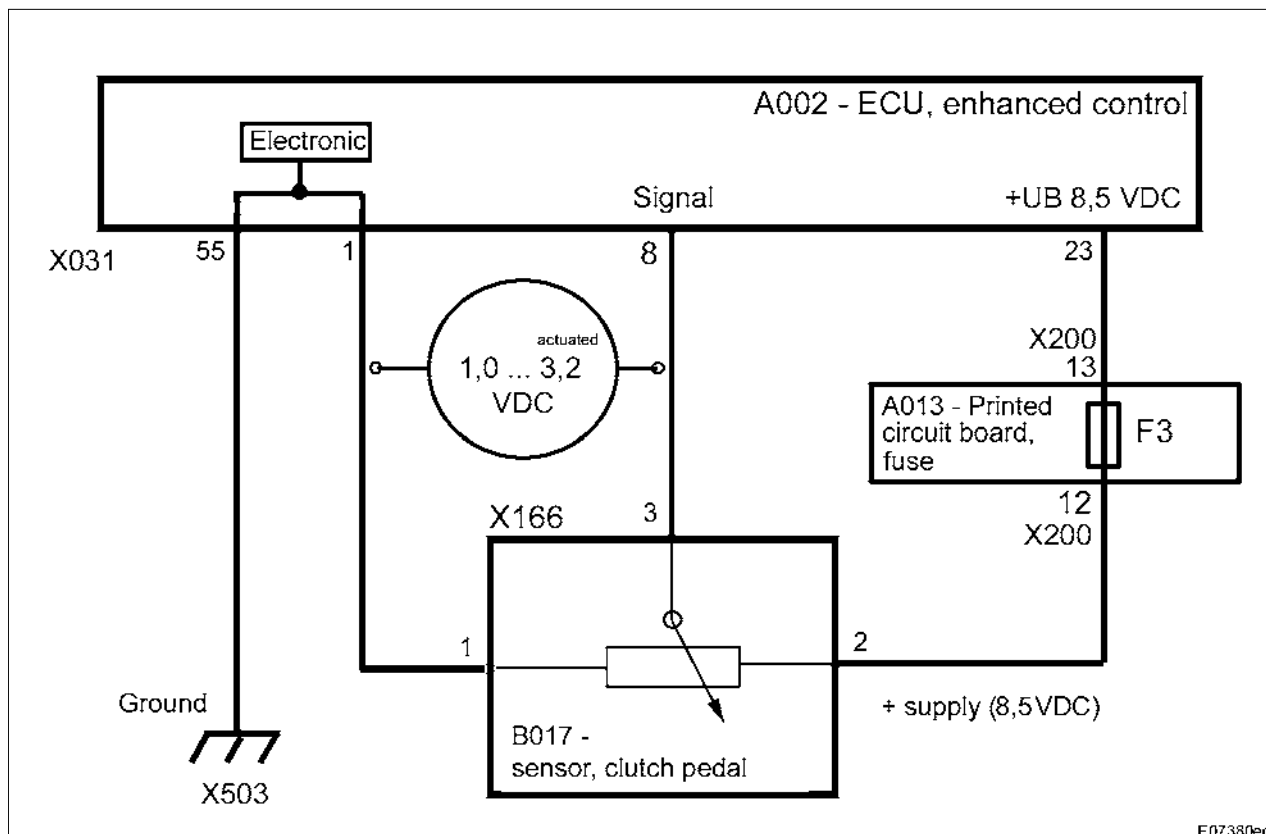
Remove side panel



Note:

To remove the side panel, remove the dashboard and unscrews screw (arrowed)

Date	Version	Page	Capitel	Index	Docu-No.
03.04.2006	a	1/4	B017 - sensor, clutch pedal	9000	E
					000322

Fendt 300 Vario
Electrics / General system
B017 - sensor, clutch pedal
E

E07380en

Item	Designation	Remark
A002	ECU, enhanced control	
X031	Separation point on A002	
Pin 23	+ supply for the A013 - circuit board_fuse (8.5 VDC)	Ignition 'ON'
Pin 1	Sensor system ground	
Pin 55	Ground Electronic	
Pin 8	Signal	
A013	Circuit board_fuse	
F3	Microfuse no. 3	
X200	Separation point on A013	
Pin 13	+ supply for the A013 - circuit board_fuse (8.5 VDC)	Ignition 'ON'
Pin 4	+ supply for the B017 - sensor	Ignition 'ON'
B017	Sensor, clutch pedal	
X166	Separation point on B017 - sensor	
Pin 1	Ground	
Pin 2	+ Supply (8.5 VDC)	Ignition 'ON'
Pin 3	Signal	
X503	Grounding point	

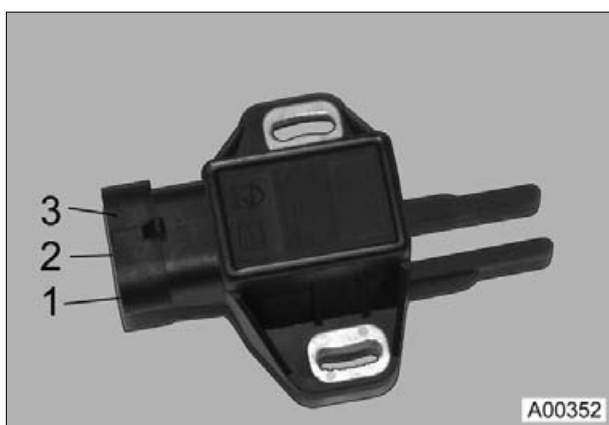
Date	Version	Page	B017 - sensor, clutch pedal	Capitel	Index	Docu-No.
03.04.2006	a	2/4		9000	E	000322

Fendt 300 Vario

Electrics / General system
B017 - sensor, clutch pedal

E**A002 - ECU (X031-separation point)**

Pin	Function
1	Ground
2	Signal

**B017 - sensor (X166-separation point)**

Pin	Function
1	Ground
2	+ supply
3	Signal

Fendt 300 Vario	Electrics / General system B017 - sensor, clutch pedal	E
------------------------	---	----------

Note:

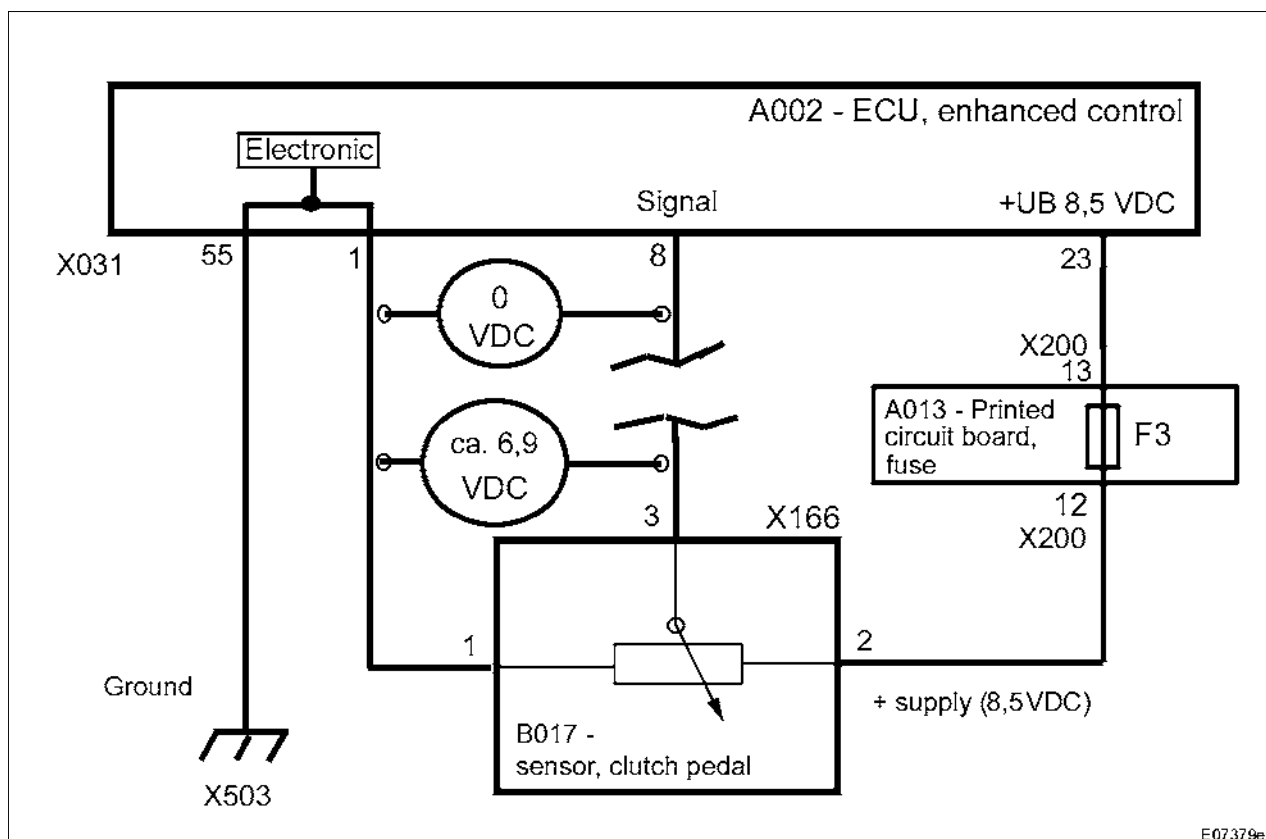
Connect adapter cable X 899.980.246.205 directly to B017 - sensor.

Ignition 'ON'.

All measured values +/- 10%

Test	Pin	Specified value	Condition	Possible cause of fault
+ supply	2	8.5 VDC		Microfuse (F3) within A013 or within wiring
Ground	1			

signal voltage	3	1.0 VDC	Clutch pedal not actuated	
		3.2 VDC	Clutch pedal actuated	
Ground	1			

Possible cause of fault

E07379en

**Note:**

The B017 - sensor, clutch pedal must be calibrated

see: Chapter 0000 Reg. F - Calibrating drive clutch pedal (Calibration code 4001)

Date	Version	Page	B017 - sensor, clutch pedal	Capitel	Index	Docu-No.
03.04.2006	a	4/4		9000	E	000322

Fendt 300 Vario

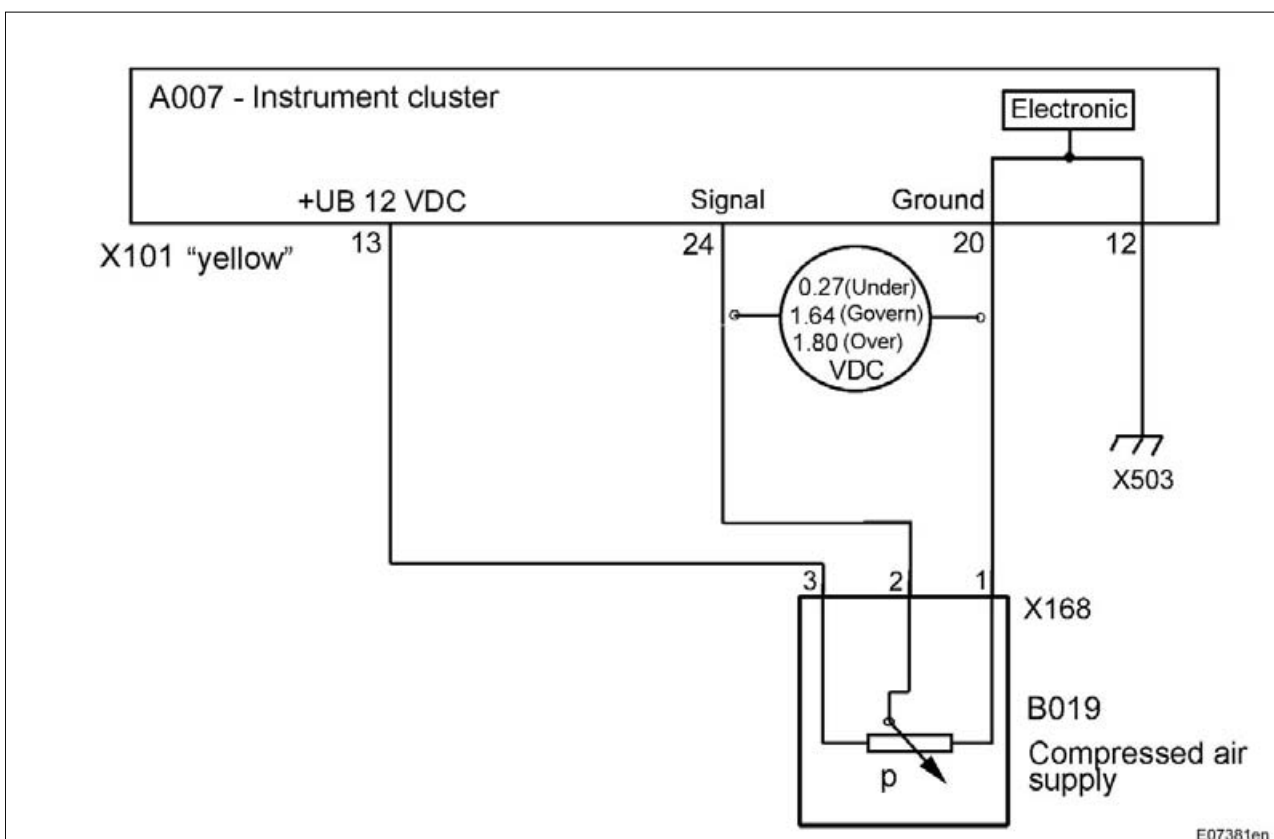
Electrics / General system
B019 - Sensor, compressed air volume

E**B019** = Sensor, compressed air volume**X168** = Separation point on B019

On right side of tractor



Remove right rear wheel, remove metal panel



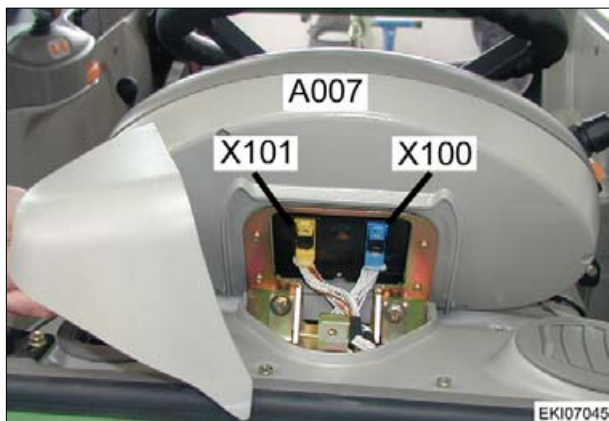
E07381en

Item	Designation	Remark
A007	Instrument cluster	
X101 'yellow'	Separation point on A007	
Pin 13	+UB sensor electronics (12 VDC)	Ignition 'ON'
Pin 24	Signal	
Pin 20	Sensor system ground	
Pin 12	Ground Electronic	
B019	Sensor, compressed air volume	
X168	Separation point on B019	
Pin 1	Ground	

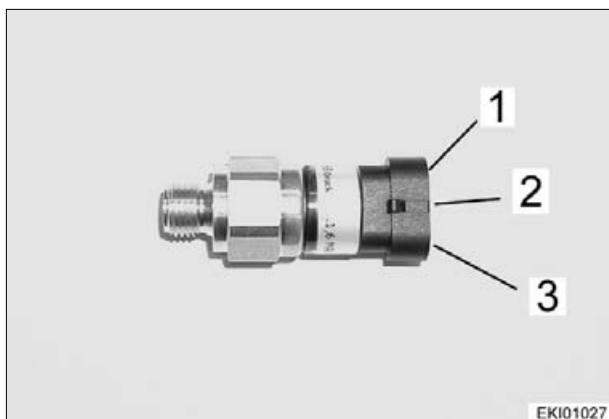
Date	Version	Page	Capitel	Index	Docu-No.
03.04.2006	a	1/6	B019 - Sensor, compressed air volume	9000	E 000323

Fendt 300 Vario	Electrics / General system B019 - Sensor, compressed air volume	E
------------------------	--	----------

Item	Designation	Remark
Pin 2	Signal	
Pin 3	+ Supply (12 VDC)	
X503	Grounding point	



A007 - instrument cluster (X101 - separation point 'yellow')	
Pin	Function
24	Signal
20	Ground



B019 - sensor (X168-separation point)	
Pin	Function
1	Ground
2	Signal
3	+ supply

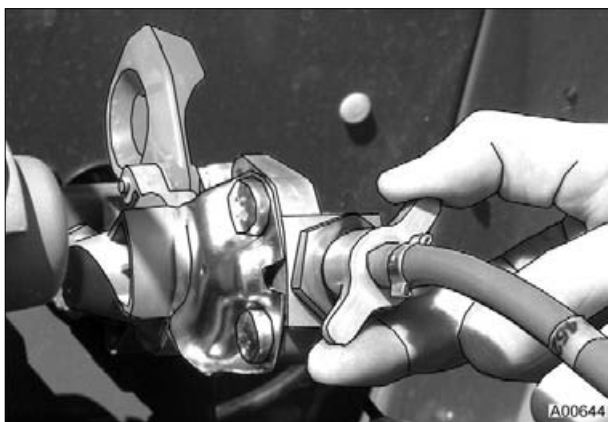
Date	Version	Page	B019 - Sensor, compressed air volume	Capitel	Index	Docu-No.
03.04.2006	a	2/6		9000	E	000323

Fendt 300 Vario

Electrics / General system
B019 - Sensor, compressed air volume

E**Note:**

Connect adapter cable X 899.980.246.205 directly to B019 - sensor.



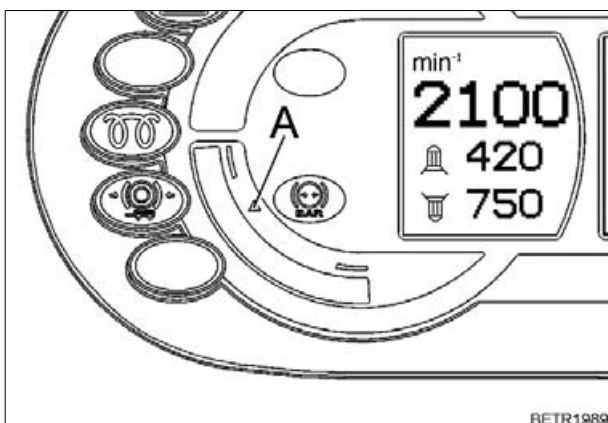
Release pressure from air compressor. Connect test pressure gauge to **red coupling head** (reservoir).

Connect pin 1 (ground) and pin 2 (signal) to pressure transducer B019.

Start engine.

Note:

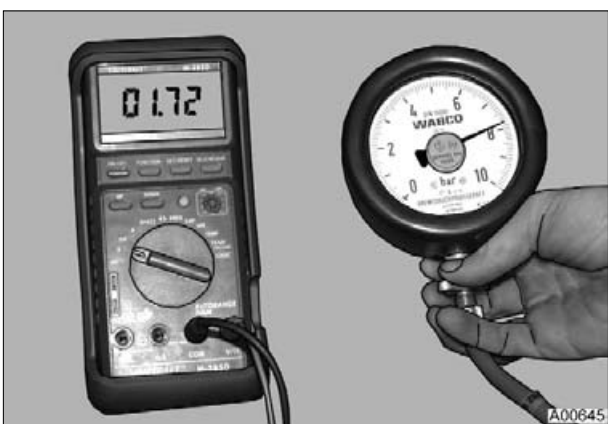
Pressure regulator vents at approx. 8.4 bar.



Compressed-air volume is displayed on A007 - instrument cluster. (Pos. A)

Operating pressure has been attained when indicator (A) is in the green zone.

If pressure in the air tank is too low, indicator flashes in the red zone.

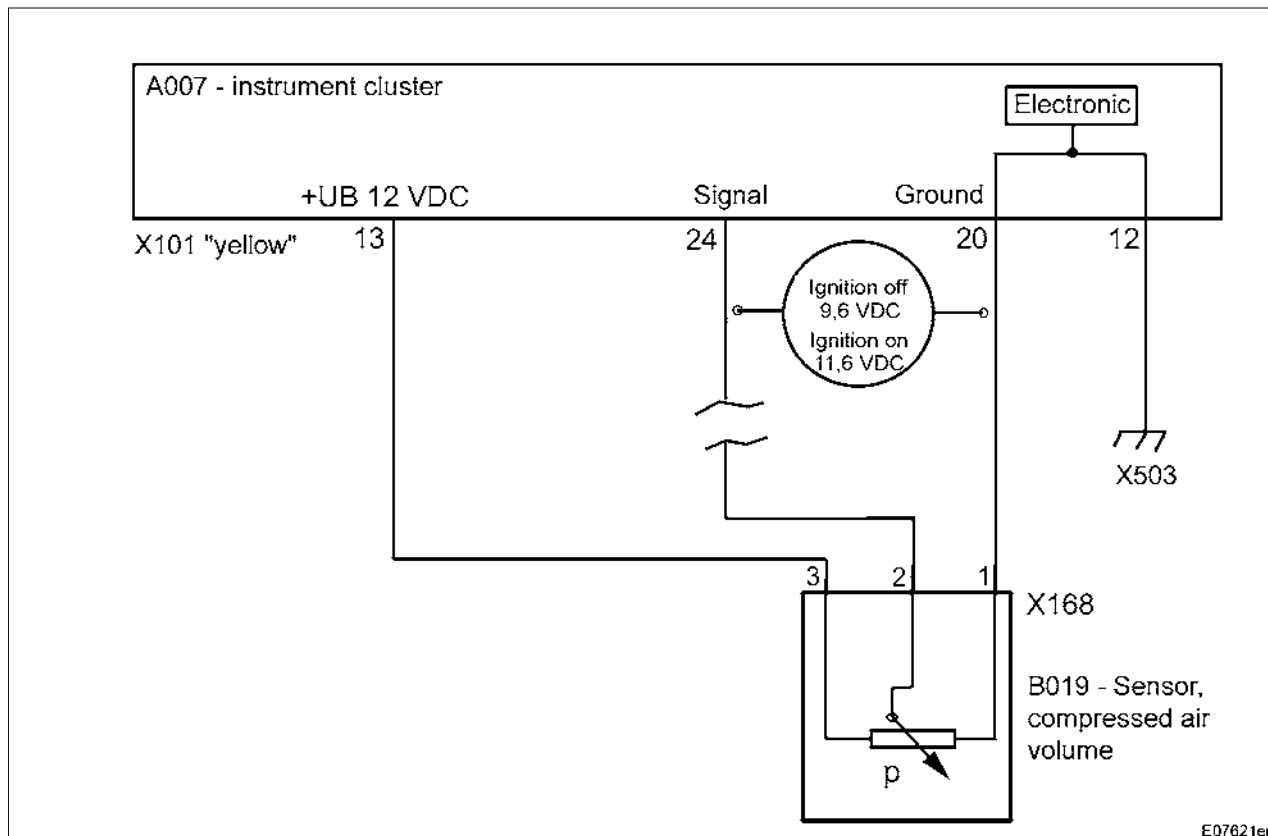
**Note: all readings are approximate values**

Voltage	Pressure	Display in A007 - instrument cluster
0.31 VDC	0 bar	1 bar flashes
0.40 VDC	0.5 bar	1 bar
0.51 VDC	1.1 bar	2 bars
0.65 VDC	1.9 bar	3 bars
0.80 VDC	2.7 bar	4 bars
0.94 VDC	3.5 bar	5 bars
1.09 VDC	4.4 bar	6 bars
1.24 VDC	5.2 bar	7 bars
1.37 VDC	5.9 bar	8 bars
1.53 VDC	6.8 bar	9 bars
1.67 VDC	7.6 bar	10 bars
1.79 VDC	8.3 bar	11 bars
1.80 VDC	8.4 bar	12 bars

Fendt 300 Vario

Electrics / General system

B019 - Sensor, compressed air volume

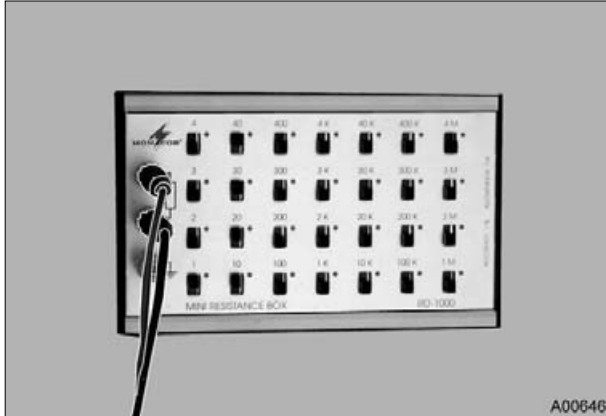
E**Possible cause of fault**

Fendt 300 Vario

Electrics / General system
B019 - Sensor, compressed air volume

E

Testing indicator (compressed air volume) in A007 - instrument cluster

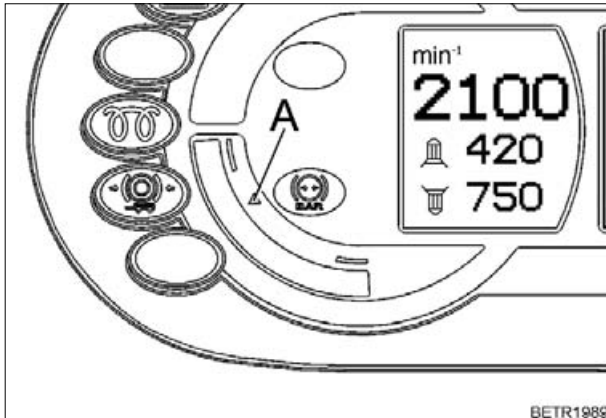


Testing indicator (compressed air volume) in A007 - instrument cluster

Connect adapter cable X 899.980.246.205 to X168 - component separation point.

Connect resistance decade box X 899.980.224 and apply the appropriate resistance (see table below).

Ignition 'ON'.



Compressed-air volume is displayed on A007 - instrument cluster. (Pos. A)

Operating pressure has been attained when indicator (A) is in the green zone.

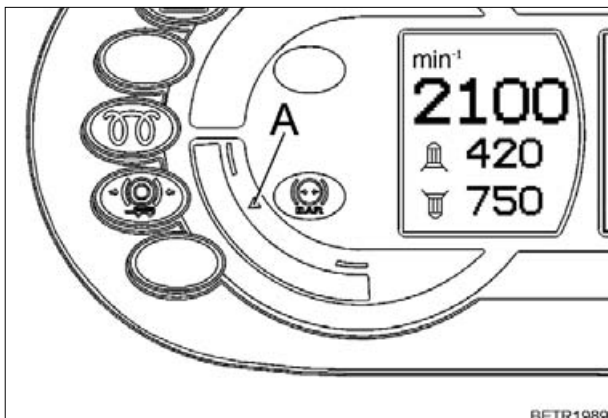
If pressure in the air tank is too low, indicator flashes in the red zone.

Note: all readings are approximate values

Resistance	Voltage	Display in A007 - instrument cluster
20 ohms	0.31 VDC	1 bar (flashes)
25 ohm	0.40 VDC	1 bar
32 ohm	0.51 VDC	2 bars
41 ohm	0.65 VDC	3 bars
50 ohm	0.80 VDC	4 bars
59 ohm	0.94 VDC	5 bars
68 ohm	1.09 VDC	6 bars
77 ohm	1.24 VDC	7 bars
86 ohm	1.37 VDC	8 bars
96 ohm	1.53 VDC	9 bars
104 ohm	1.67 VDC	10 bars
112 ohm	1.79 VDC	11 bars
113 ohm	1.80 VDC	12 bars

Fendt 300 Vario

Electrics / General system
B019 - Sensor, compressed air volume

E**Leak test of compressed air system**

To be carried out with stopped engine and a full air tank, indicator on A007 - instrument cluster must remain unchanged for at least 3 minutes.

**Draining the tank**

Press in draining pin at the bottom of the tank every day, or pull cable (A) and drain condensate.

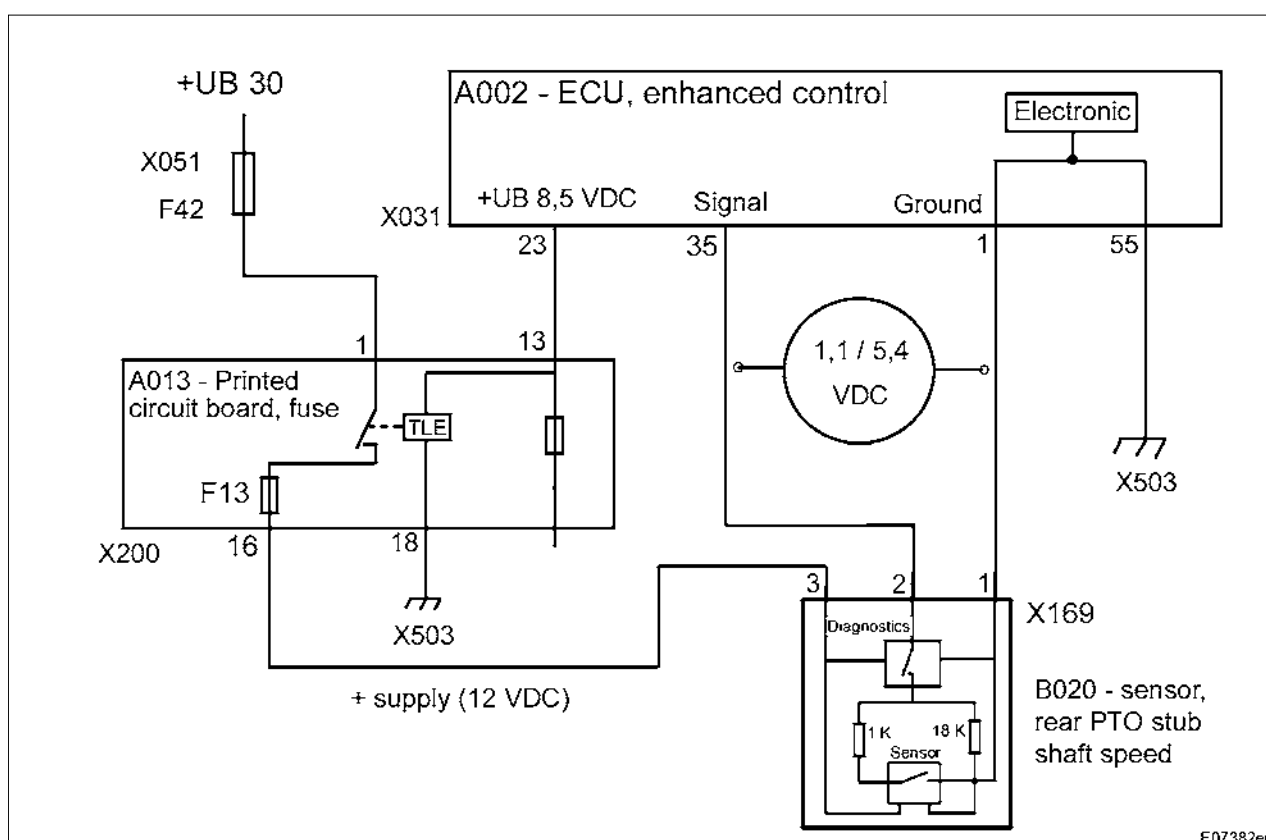
Date	Version	Page	B019 - Sensor, compressed air volume	Capitel	Index	Docu-No.
03.04.2006	a	6/6		9000	E	000323

Fendt 300 Vario

Electrics / General system
B020 - sensor, rear PTO stub shaft speed

E**B020** = Sensor, rear PTO stub shaft speed**X169** = Separation point on B020

On the rear PTO - stub shaft



E07382en

Item	Designation	Remark
A002	ECU, enhanced control	
X031	Separation point on A002	
Pin 23	+ supply for the A013 - circuit board_fuse (8.5 VDC)	Ignition 'ON'
Pin 1	Sensor system ground	
Pin 55	Ground Electronic	
Pin 35	Signal	At standstill: depending on position of trigger wheel (1.1 or 5.4 VDC)
A013	Circuit board_fuse	
F13	Microfuse no. 13	
X200	Separation point on A013	

Date	Version	Page	Capitel	Index	Docu-No.
04.04.2006	a	1/4	B020 - sensor, rear PTO stub shaft speed	9000	E 000324

Fendt 300 Vario	Electrics / General system B020 - sensor, rear PTO stub shaft speed	E
------------------------	--	----------

Item	Designation	Remark
Pin 1	+ supply for the A013 - circuit board_fuse (12 VDC)	
Pin 13	+ supply for the A013 - circuit board_fuse (8.5 VDC)	Ignition 'ON'
Pin 18	Ground Electronic	
Pin 16	+ supply for the B020 - sensor	Ignition 'ON'
B020	Sensor, rear PTO stub shaft speed	
X169	Separation point on B020 - sensor	
Pin 1	Ground	
Pin 3	+ Supply (12 VDC)	Ignition 'ON'
Pin 2	Signal	At standstill: depending on position of trigger wheel (1.1 or 5.4 VDC)
X051	Fuse holder 2	
F42	Fuse no. 42	
X503	Grounding point	



A002 - ECU (X031-separation point)	
Pin	Function
1	Ground
35	Signal



B020 - sensor (X169-separation point)	
Pin	Function
1	Ground
2	Signal
3	+ supply

Date	Version	Page	B020 - sensor, rear PTO stub shaft speed	Capitel	Index	Docu-No.
04.04.2006	a	2/4		9000	E	000324

Fendt 300 Vario	Electrics / General system B020 - sensor, rear PTO stub shaft speed	E
------------------------	--	----------

Note:

Connect adapter cable X 899.980.246.205 directly to B020 - sensor.

Ignition ON

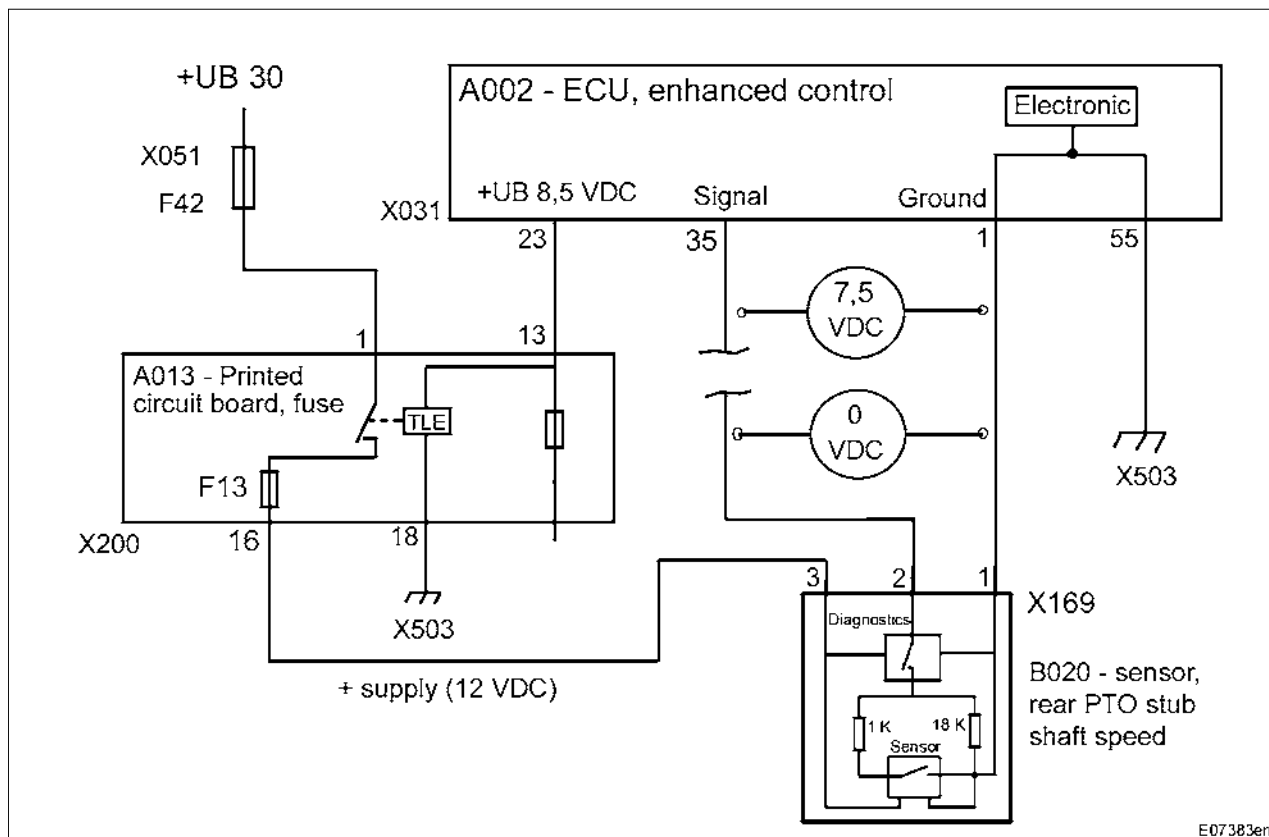
All measured values +/- 10%

Test	Pin	Specified value	Condition	Possible cause of fault
Supply	3	12 VDC to 14 VDC		Microfuse (F13) in A013 or within wiring
Ground	1			
Speed signal	2	approx. 2.0 VDC	Rear PTO turning	A) Reading 7.5 VDC, fault in component
		1.1 VDC or 5.4 VDC	Rear PTO not turning	B) Reading 0 VDC:
				- Unplug component and measure at plug
				- If reading is 0 VDC, fault in A002 (pin 35) or in wiring
Ground	1			- If reading is 7.5 VDC, fault in component

Date	Version	Page		Capitel	Index	Docu-No.
04.04.2006	a	3/4	B020 - sensor, rear PTO stub shaft speed	9000	E	000324

Fendt 300 Vario

Electrics / General system
B020 - sensor, rear PTO stub shaft speed

E**Possible cause of fault**

Fendt 300 Vario

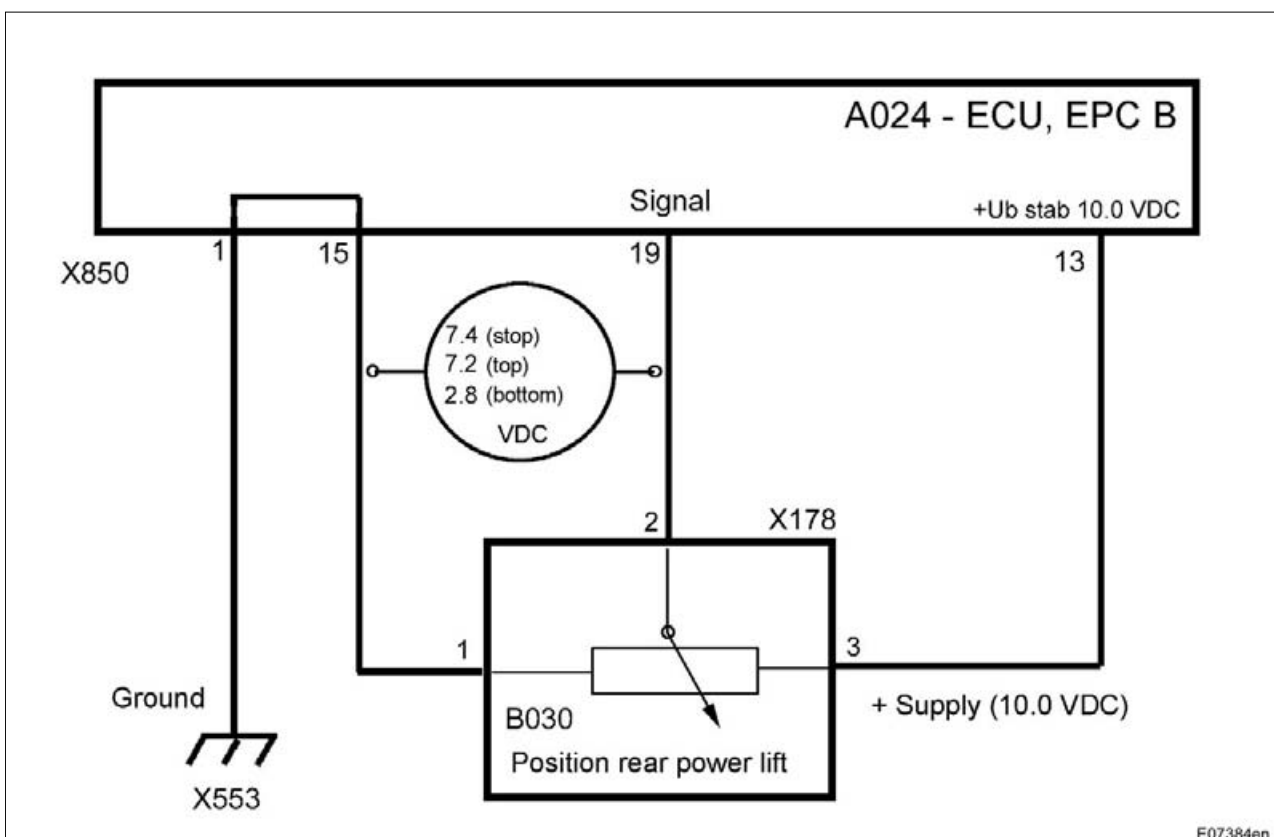
Electrics / General system
B030 - sensor, rear power lift position

E**B030** = Sensor, rear power lift position**X178** = Separation point on B030

On left lift arm



Remove guard



E07384en

Item	Designation	Remark
A024	ECU, EPC B	
X850	Separation point on A024	
Pin 13	+Ub stab (10.0 VDC)	Ignition 'ON'
Pin 15	Sensor system ground	
Pin 1	Electronics ground	
Pin 19	Signal	
B030	Sensor, rear power lift position	
X178	Separation point on B030 - sensor	
Pin 1	Ground	

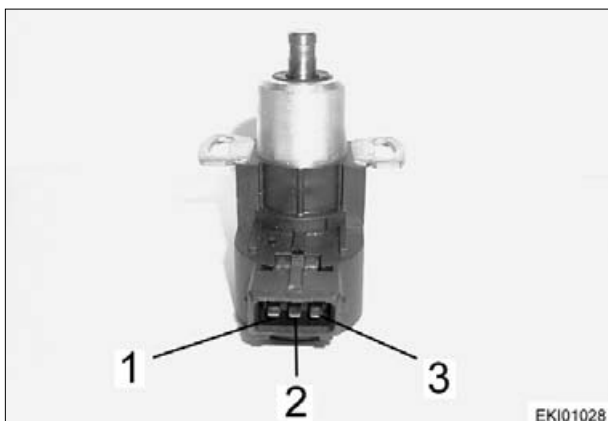
Date	Version	Page	Capitel	Index	Docu-No.
04.04.2006	a	1/4	B030 - sensor, rear power lift position	9000	E 000325

Fendt 300 Vario	Electrics / General system B030 - sensor, rear power lift position	E
------------------------	---	----------

Item	Designation	Remark
Pin 3	+ supply (10.0 VDC)	Ignition 'ON'
Pin 2	Signal	
X553	Grounding point	



A024 - ECU (X850-separation point)	
Pin	Function
13	+ supply
15	Ground
19	Signal



B030 - sensor (X178-separation point)	
Pin	Function
1	Ground
2	Signal
3	+ supply



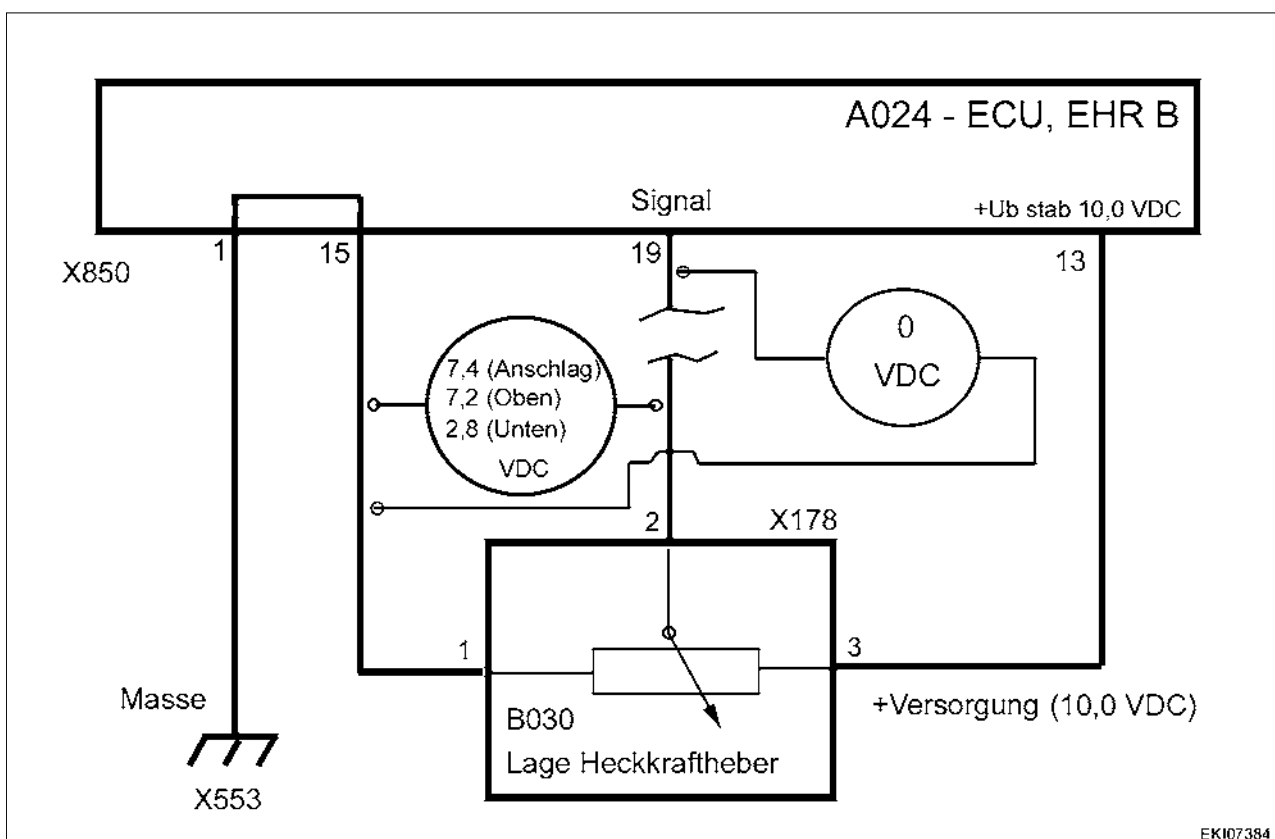
Connect adapter cable X 899.980.246.202 directly to B030 - sensor.
Ignition 'ON'

Date	Version	Page	B030 - sensor, rear power lift position	Capitel	Index	Docu-No.
04.04.2006	a	2/4		9000	E	000325

Fendt 300 Vario	Electrics / General system B030 - sensor, rear power lift position	E
------------------------	--	----------

Test	Pin	Specified value	Condition	Possible cause of fault
+ supply	3	10.0 +/- 7% VDC		Supply and ground come from A024 - ECU, EPC B
Ground	1			
Signal	2	2.8 VDC	Lift assembly lowered	
		7.2 VDC	Lift assembly raised	
		7.4 VDC	Mech. stop	
Ground	1			

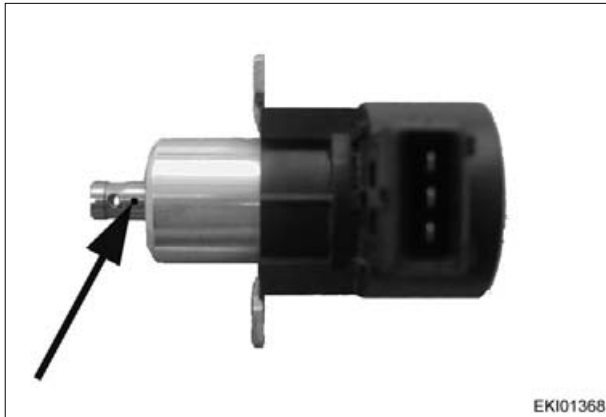
Possible cause of fault



EK107384

Date	Version	Page	B030 - sensor, rear power lift position	Capitel	Index	Docu-No.
04.04.2006	a	3/4		9000	E	000325

Fendt 300 Vario	Electrics / General system B030 - sensor, rear power lift position	E
------------------------	---	----------



EKI01368

Fitting tip:

When installed, the notch (arrowed) in the actuating shaft faces the electrical connection.



EKI07623

Note:

The rear power lift must be calibrated

Also see:

Chapter 0000 Reg. F - Calibration 8001
(B058 - depth control)

Chapter 0000 Reg. F - Calibration 8002
(B030 - sensor, rear power lift position)

Date	Version	Page	B030 - sensor, rear power lift position	Capitel	Index	Docu-No.
04.04.2006	a	4/4		9000	E	000325

Fendt 300 Vario

Electrics / General system
B031/B032 - draft sensing pin right/left

E**B031** = Sensor, draft sensing pin, right**X179** = Separation point on B031 (right)**B032** = Sensor, draft sensing pin, left**X180** = Separation point on B032 (left)

On bottom link mounts



Functional description of the B031/B032 - draft sensing pin (right / left)

The B031/B032 - draft sensing pin is configured as the bearing bolt for the lower control link, which can electrically record the forces at the articulation point as a function of direction.

A transformer is located in a bore in the pin symmetrically to the shear plane of the bearing points to measure the shear forces acting on the pin. In conjunction with the pin surrounding it, this transformer forms a magnetic circuit.

The B031/B032 - draft sensing pin is fed with a 10.0 VDC supply voltage at pins 1 (-) 3 (+).

The supply voltage is converted into an alternating voltage in the B031/B032 - draft sensing pin.

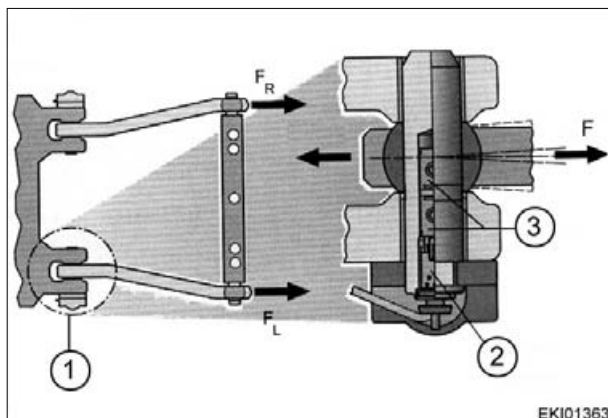
If the B031/B032 - draft sensing pin is subjected to a shear load by tensile and compressive forces between the bearing points, the pin's magnetic properties change.

This change causes the voltage at the signal line, pin 2, to change also.

When not under load (neutral) there is a voltage of approx. 4.97 VDC at the signal line.

This changes when under load.

The change is proportional to the force F and is a function of direction. The specified installation position must be complied with.



Tensile and compressive forces F on
 B031/B032 - draft sensing pin

F = Tensile or compressive force

F_R = Force acting on right lower control link

F_L = Force acting on left bottom link

1 = Bottom link bearing

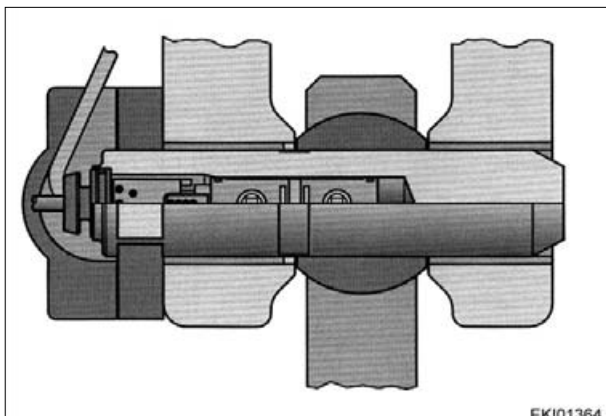
2 = Integrated electronics

3 = Coils, transformer

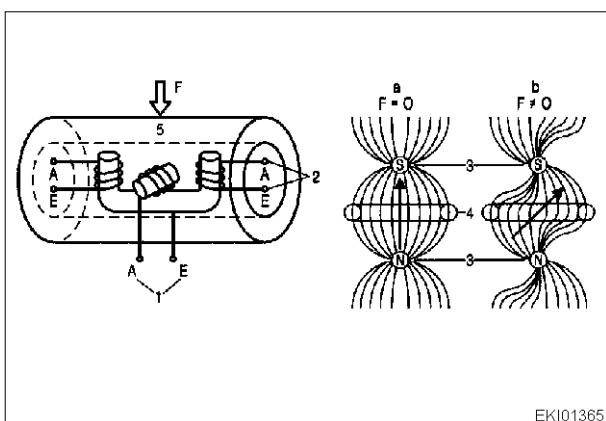
Date	Version	Page	Capitel	Index	Docu-No.
12.04.2006	a	1/7	B031/B032 - draft sensing pin right/left	9000	E 000326

Fendt 300 Vario

Electrics / General system
B031/B032 - draft sensing pin right/left

E

Design of B031/B032 - draft sensing pin



Operating principle of B031/B032 - draft sensing pin

- 1 = Primary coil
- 2 = secondary coil
- 3 = Primary pole face
- 4 = Secondary pole face
- 5 = Steel sleeve
- F = Tensile or compressive force
- a = symmetrical magnetic field
- b = Asymmetrical magnetic field

Date	Version	Page	Capitel	Index	Docu-No.
12.04.2006	a	2/7	9000	E	000326

Fendt 300 Vario

Electrics / General system

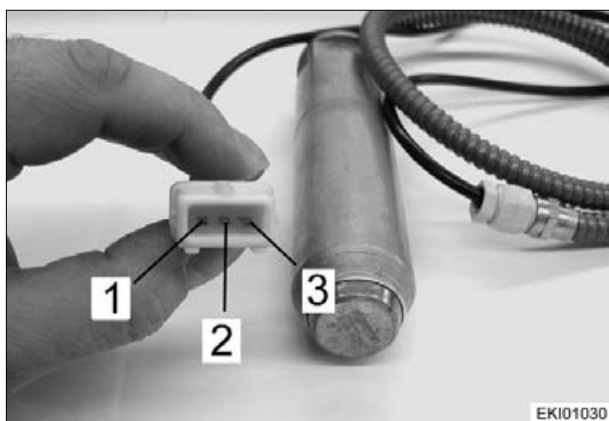
B031/B032 - draft sensing pin right/left

E**A024 - ECU (X850-separation point)****B031 - right draft sensing pin**

Pin	Function
13	+ supply
15	Ground
18	Signal

**A024 - ECU (X850-separation point)****B032 - left draft sensing pin**

Pin	Function
13	+ supply
15	Ground
17	Signal

**B031/B032 - draft sensing pin (X179-separation point and X180-separation point)**

Pin	Function
1	Ground
2	Signal
3	+ supply

Fendt 300 Vario	Electrics / General system B031/B032 - draft sensing pin right/left	E
------------------------	--	----------



When checking signal voltage, press bottom link back with tyre lever.

Note:

Connect adapter cable X 899.980.246.202 directly to B031 / B032 - draft sensing pin. Ignition ON

Test	Pin	Specified value	Condition	Possible cause of fault
Supply	3	10.0 VDC		Supply and ground from A024 - ECU, EPC B If a draft sensing pin is faulty, the EPC locks
Ground	1			
Signal	2	2.50 VDC	Tensile load	
		4.97 +/- 10% VDC	Neutral	
		7.7 VDC	Compressive load	
Ground	1			

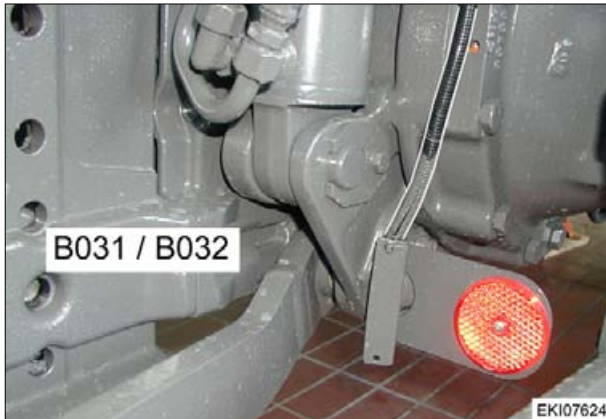
Date	Version	Page	B031/B032 - draft sensing pin right/left	Capitel	Index	Docu-No.
12.04.2006	a	5/7		9000	E	000326

Fendt 300 Vario

Electrics / General system
B031/B032 - draft sensing pin right/left

E

If a draft sensing pin is faulty, A024 - ECU, EPC B locks



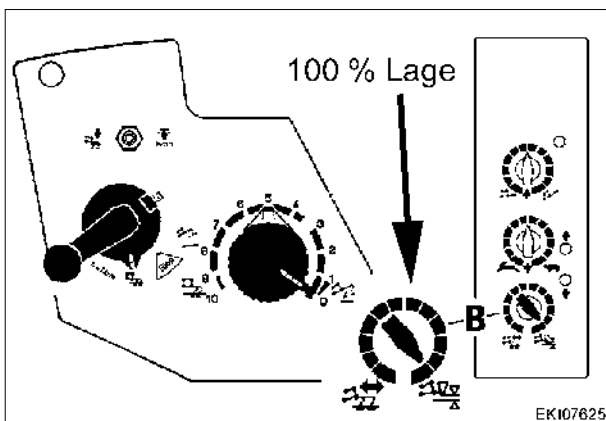
If B031 or B032 - draft sensing pin is faulty,
 A024 - ECU, EPC B locks

**To unlock:**

Ignition 'OFF'

A002 - ECU, enhanced control switches off

(A002 - ECU, enhanced control switches off after approx. 15 seconds)

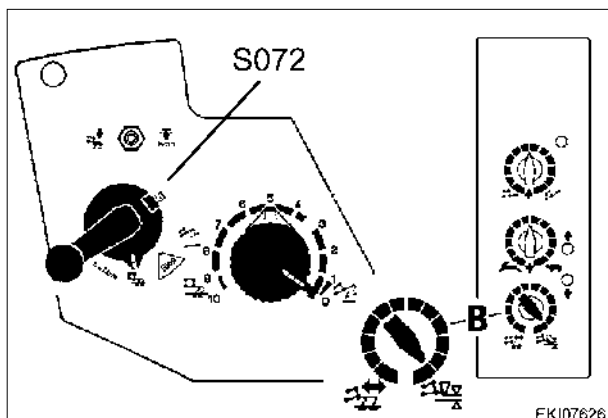


Set potentiometer (B) to 100% position control
 (turn all the way to the right)

Date	Version	Page	B031/B032 - draft sensing pin right/left	Capitel	Index	Docu-No.
12.04.2006	a	6/7		9000	E	000326

Fendt 300 Vario

Electrics / General system
B031/B032 - draft sensing pin right/left

E

Turn ignition on and start engine

Unlock A024 - ECU, EPC B with S072 - quick lift switch

To unlock, turn S072 - switch all the way around once

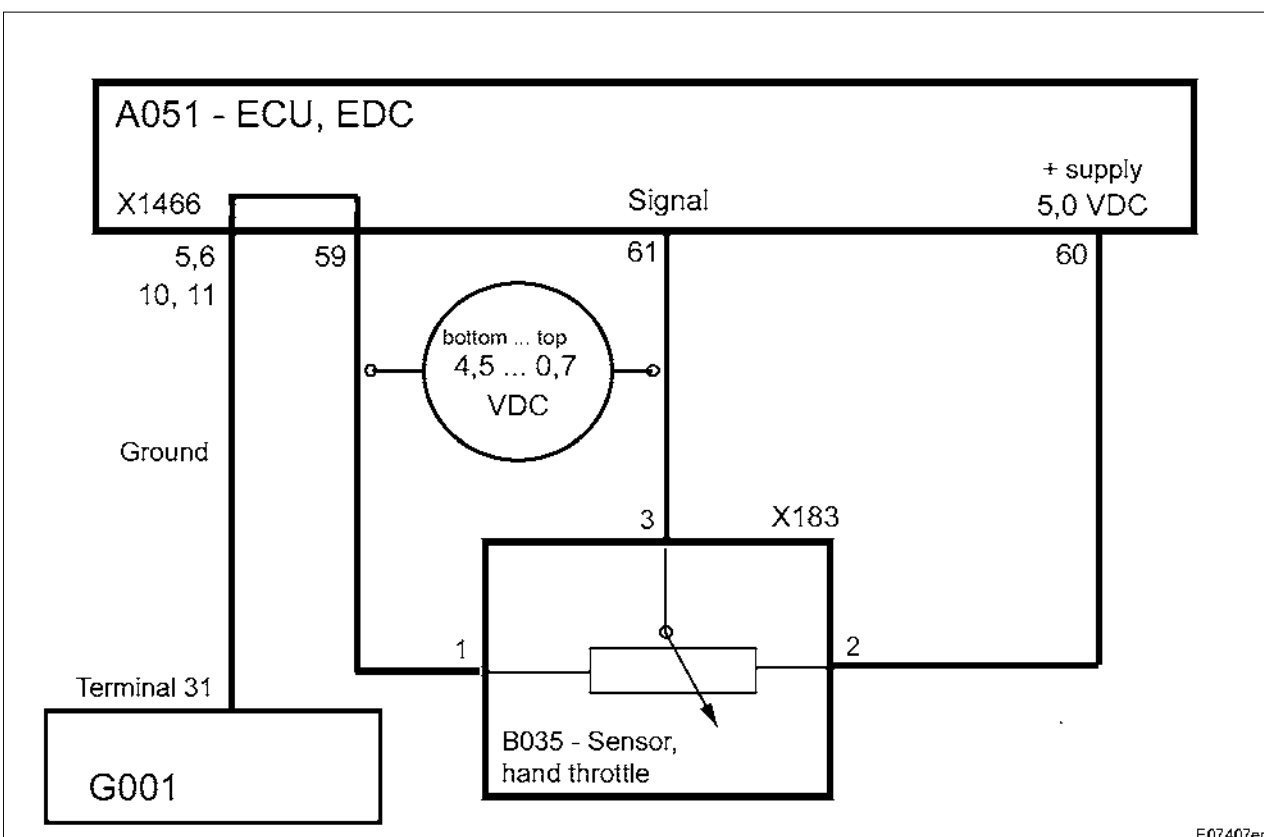
Note:

After unlocking, the raising or lowering speed is reduced until the set position is reached
 Normal speed can be reached immediately by switching briefly to 'Stop'

Date	Version	Page	B031/B032 - draft sensing pin right/left	Capitel	Index	Docu-No.
12.04.2006	a	7/7		9000	E	000326

Fendt 300 Vario
Electrics / General system
B035 - Sensor, hand throttle
E**B035** = Sensor, hand throttle**X183** = Separation point on B035
on right mudguard

Remove control console



E07407en

Item	Designation	Remark
A051	ECU, EDC	
X1466	Separation point on A051	
Pin 60	+ supply	Ignition 'ON'
Pin 59	Sensor system ground	
Pin 5,6,10,11	Ground Electronic	
Pin 61	Signal	
B035	Sensor, hand throttle	
X183	Separation point on B035 - sensor	
Pin 1	Ground	
Pin 2	+ supply	Ignition 'ON'

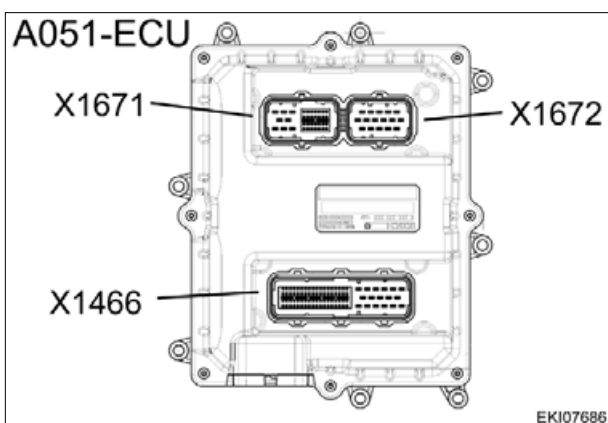
Date	Version	Page		Capitel	Index	Docu-No.
12.04.2006	a	1/4	B035 - Sensor, hand throttle	9000	E	000327

Fendt 300 Vario	Electrics / General system B035 - Sensor, hand throttle	E
------------------------	--	----------

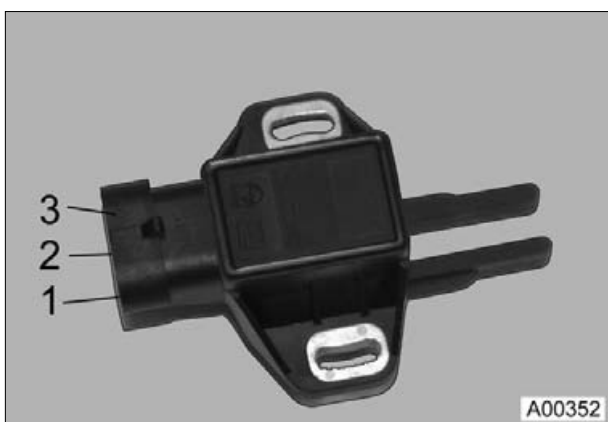
Item	Designation	Remark
Pin 3	Signal	
G001	Battery	
Terminal 31	Battery negative	

**A051 = ECU, EDC**

At right entrance step


**Measuring point on
A051 - ECU, engine
control unit (X1466 -
separation point)**

	Pin
+ supply	60
Ground	59
Signal	61

**B035 - sensor (X183)**

Pin	Function
1	Ground
2	+ supply
3	Signal

Date	Version	Page	B035 - Sensor, hand throttle	Capitel	Index	Docu-No.
12.04.2006	a	2/4		9000	E	000327

Fendt 300 Vario	Electrics / General system B035 - Sensor, hand throttle	E
------------------------	--	----------

Note:

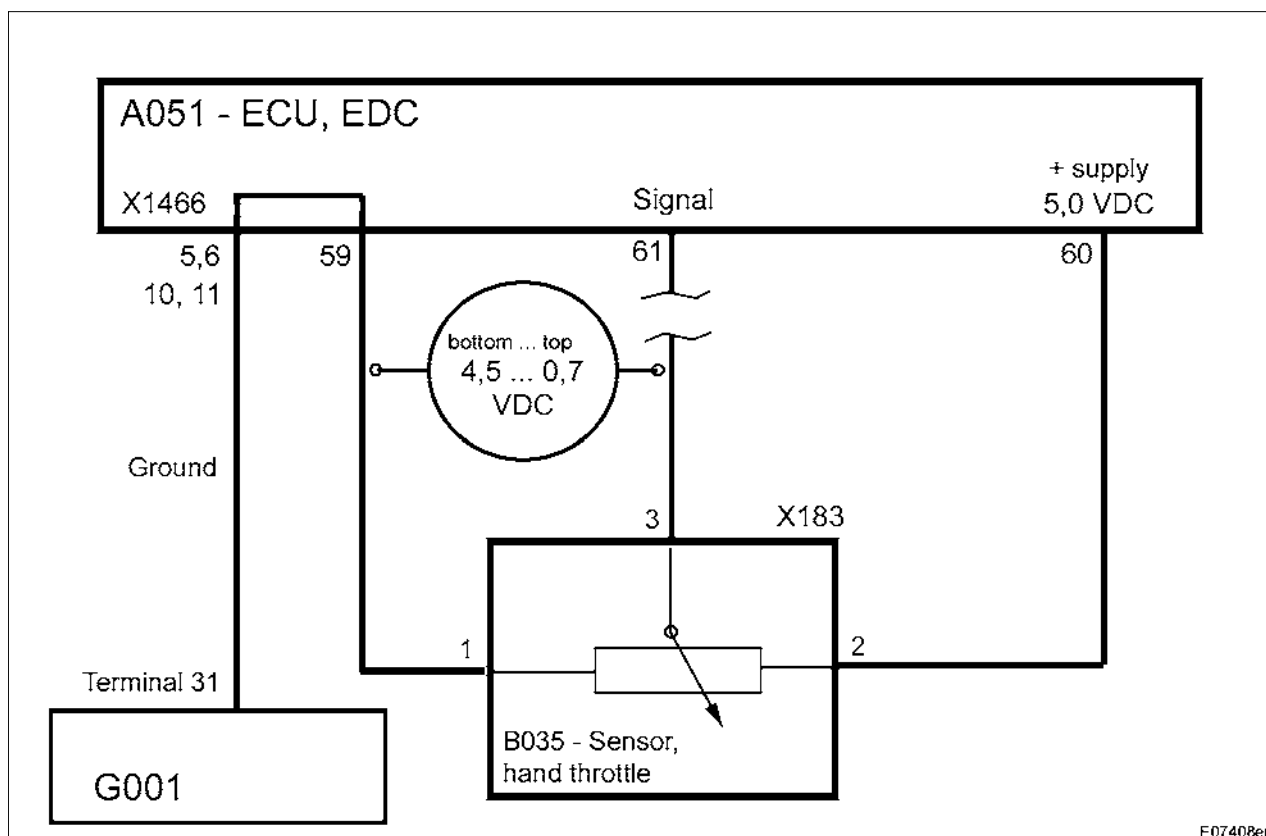
Connect adapter cable X 899.980.246.205 directly to B035 - sensor.

Ignition 'ON'.

All measured values +/- 10%

Test	Pin	Specified value	Condition	Possible cause of fault
+ supply	2	5.0 VDC		Wiring or A051 - ECU
Ground	1			

signal voltage	3	4.5 VDC	Hand throttle on lower stop (idle)	
		0.7 VDC	Hand throttle on upper stop (full throttle)	
Ground	1			

Possible cause of fault

E0740Ben

Date	Version	Page	B035 - Sensor, hand throttle	Capitel	Index	Docu-No.
12.04.2006	a	3/4		9000	E	000327

Fendt 300 Vario	Electrics / General system B035 - Sensor, hand throttle	E
------------------------	--	----------



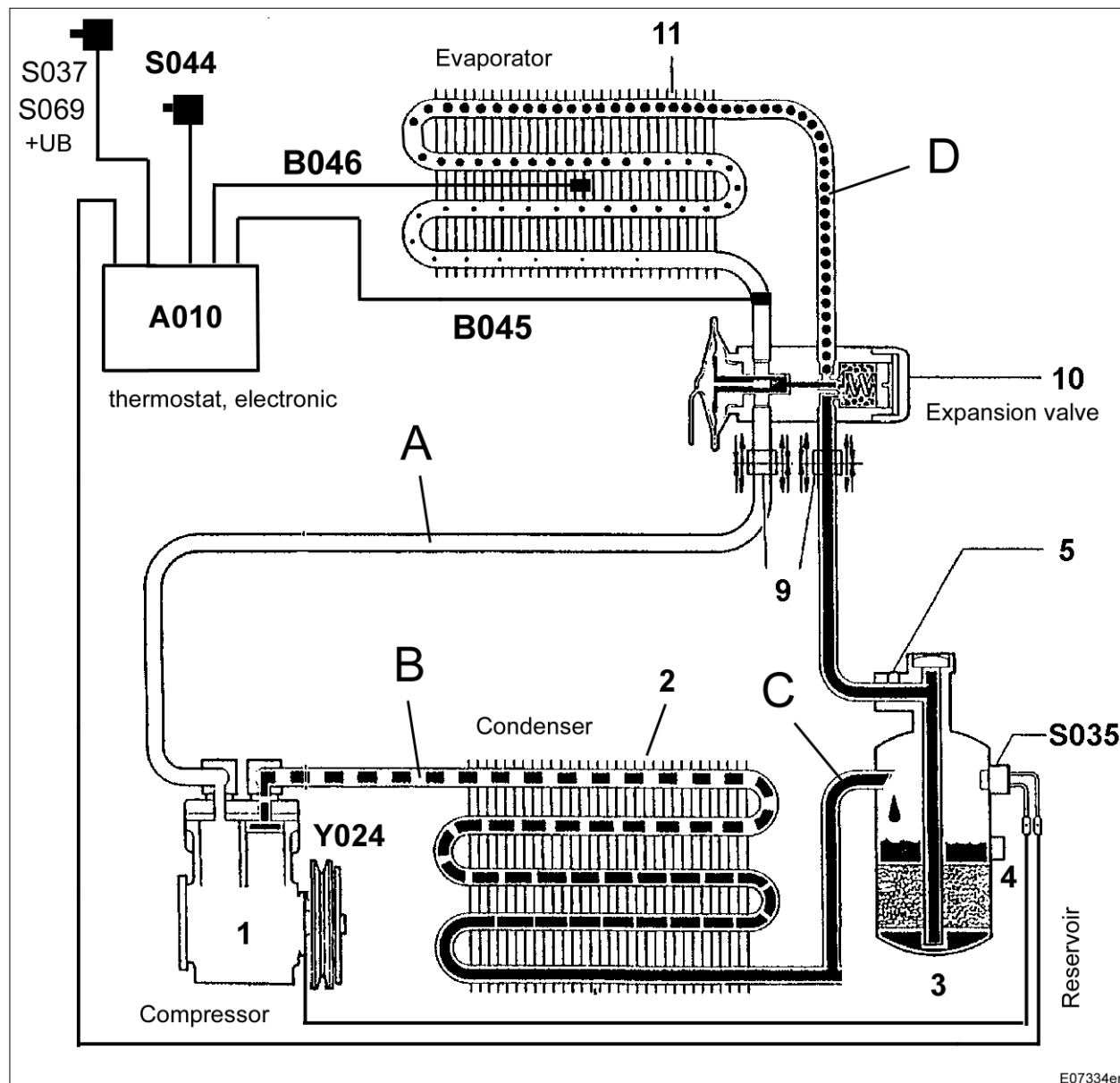
Note:

The B035 - sensor, hand throttle must be calibrated
see: Chapter 0000 Reg. F - Calibrating hand throttle (Calibration code 4002)

Date	Version	Page	B035 - Sensor, hand throttle	Capitel	Index	Docu-No.
12.04.2006	a	4/4		9000	E	000327

Fendt 300 Vario

Electrics / General system
B045 / B046 - sensor, air-conditioning

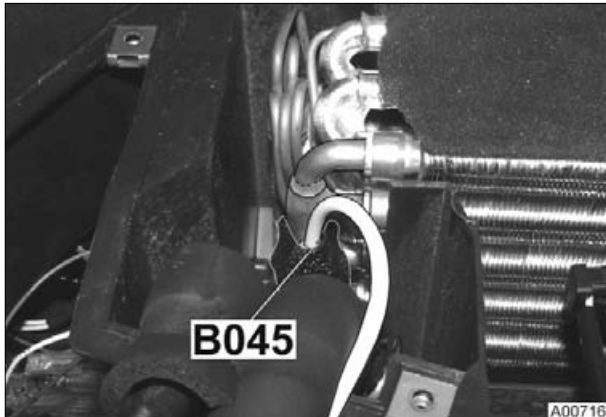
E**Refrigerant circuit**

1	Compressor	B046	Temp. sensor 1
2	Condenser	S035	High-/low-pressure switch
3	Reservoir	S037	Switch, roof blower (3-speed)
4	Inspection glass	S044	AC potentiometer
5	Fuse	S069	Switch, roof blower (infinitely adjustable) (optional)
9	Separation point	Y024	Magnetic clutch
10	Expansion valve		
11	Evaporator		
A010	Electronic thermostat	A	Low pressure, gaseous
B045	Temp. sensor 2	B	High pressure, gaseous
		C	High pressure, liquid
		D	Intake pressure, liquid

Date	Version	Page	B045 / B046 - sensor, air-conditioning	Capitel	Index	Docu-No.
12.04.2006	a	1/4		9000	E	000328

Fendt 300 Vario

Electrics / General system
B045 / B046 - sensor, air-conditioning

E

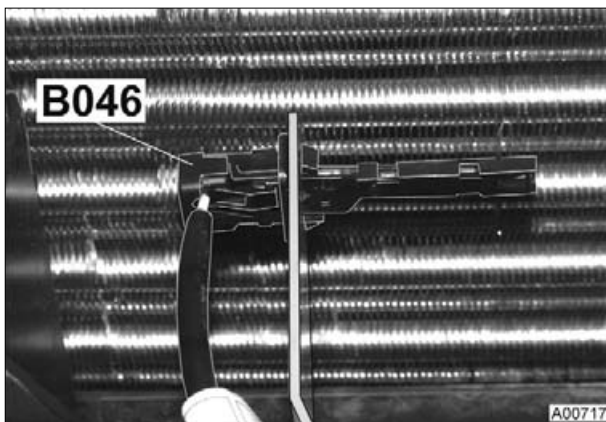
Remove cab roof. Top right between A- and B-pillar at air-conditioning expansion valve.

B045 = sensor, air-conditioning (NTC2).

Prevents expansion valve from icing up when air-conditioning is on.
 Temperature + 1°C to 4°C

Note:

NTC = Negative **T**emperature **C**oefficient
 In other words, the sensor resistance decreases with increasing ambient temperature.



Remove roof cover from cab, then unscrew plastic cover.

B046 = Sensor, air-conditioning 2 (NTC 1).

Regulates cooling air when
air-conditioning is on.

Note:

NTC = Negative **T**emperature **C**oefficient
 In other words, the sensor resistance decreases with increasing ambient temperature.

UB 15

X050

F17

S037

M018

+UB

+UB

X281

A010

B045

B046

S044

X195

X196

X1430

Y024

S035

ca. 1,18 KOhm (bei 20 °C)

ca. 10 KOhm (bei 20 °C)

Pos. Max. = ca. 60 Ohm

Pos. Min. = ca. 10,4 KOhm

3,8 +/- 0,5 Ohm (bei 20 °C)

EKI0741

All measured values +/- 10%

A010	Electronic thermostat	S035	High/low pressure switch
B045	Temp. sensor 2 (NTC)	S037	Blower switch, 3-speed (optional: S069 - switch and infinitely adjustable blower)
B046	Temp. sensor 1 (NTC)	S044	Potentiometer
M018	Blower (optional: infinitely adjustable)	Y024	Magnetic clutch

NTC = N egative T emperature C oefficient

In other words, the sensor resistance decreases with increasing ambient temperature.

Date	Version	Page	B045 / B046 - sensor, air-conditioning	Capitel	Index	Docu-No.
12.04.2006	a	3/4		9000	E	000328

Fendt 300 Vario	Electrics / General system B045 / B046 - sensor, air-conditioning	E
------------------------	--	----------

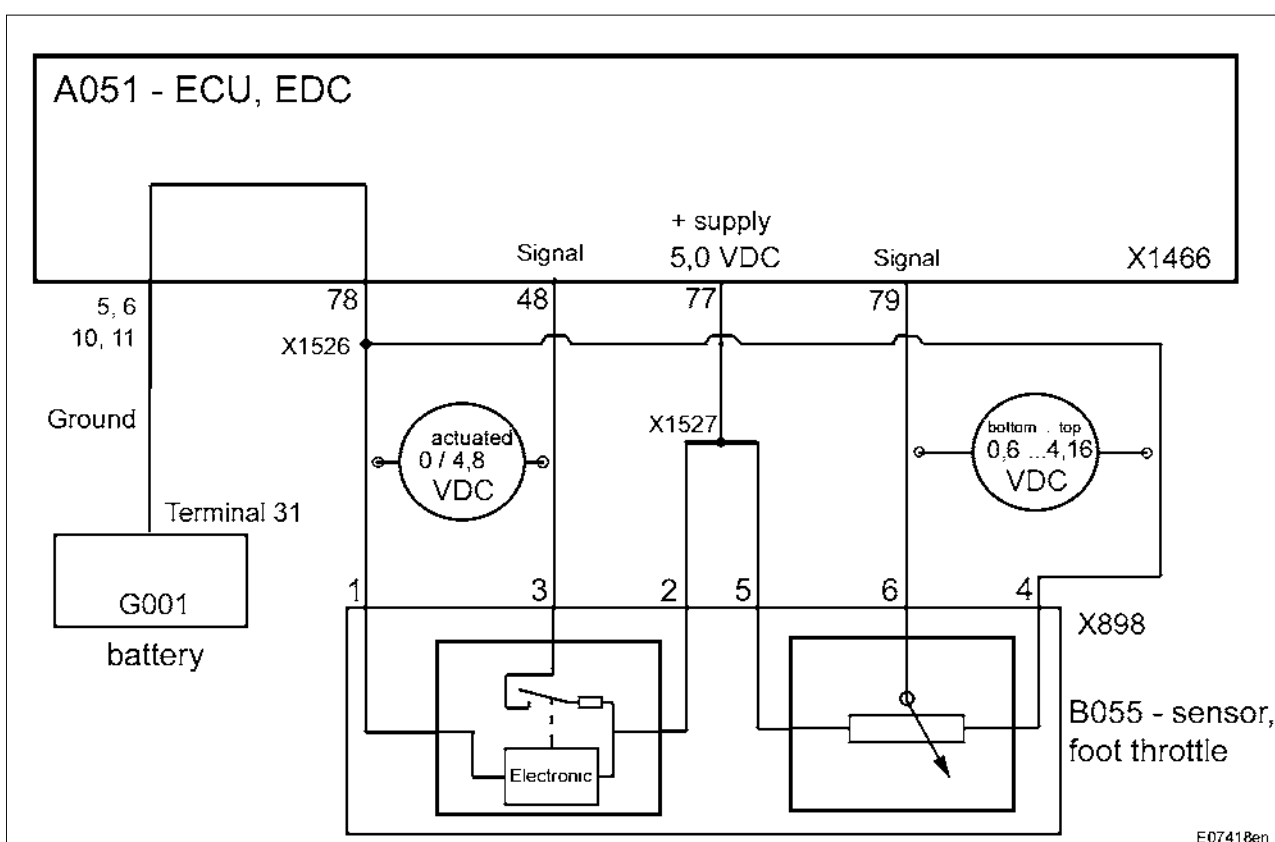
Readings: B045 - sensor, air-conditioning 2 (protection against icing)

Test	Pin	Specified value	Condition	Remark
Resistance	1 (blue)	approx. 1.18 kilohm	At 20°C ambient temperature	Sensor (NTC) resistance decreases with increasing ambient temperature
	2 (brown)			

Note:**All readings +/- 10%****Readings: B046 - sensor, air-conditioning 1 (temperature in air current)**

Test	Pin	Specified value	Condition	Remark
Resistance	1 (white)	approx. 10 kilohm	At 20°C ambient temperature	Sensor (NTC) resistance decreases with increasing ambient temperature
	2 (white)			

Note:**All readings +/- 10%**



Date	Version	Page	B055 - sensor, foot throttle	Capitel	Index	Docu-No.
12.04.2006	a	1/4		9000	E	000329

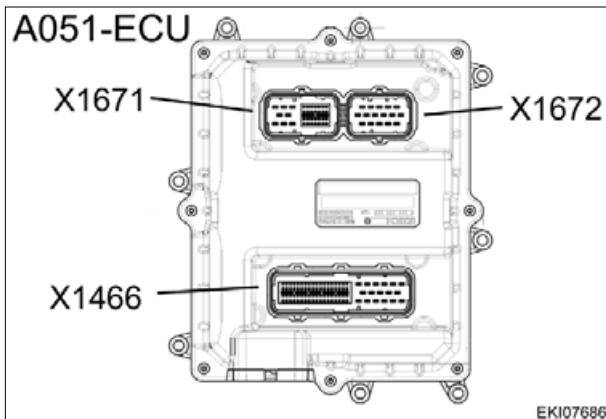
Fendt 300 Vario	Electrics / General system B055 - sensor, foot throttle	E
------------------------	--	----------

Item	Designation	Remark
Pins 2 and 5	+ supply	Ignition 'ON'
Pin 3	Signal (switch)	
Pin 6	Signal (potentiometer)	
G001	Battery	
Terminal 31	Battery negative	



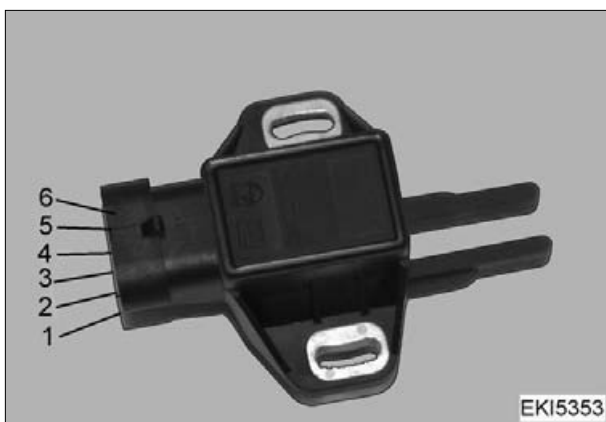
A051 = ECU, EDC

At right entrance step



Measuring point on A051 - ECU, engine control unit (X1466 - separation point)

Pin	Function
77	+ supply
78	Ground
48	Signal
79	Signal



B055 - Sensor (X898)

Pin	Function
1	Ground
2	+ supply
3	Signal
4	Ground
5	+ supply
6	Signal

Date	Version	Page	B055 - sensor, foot throttle	Capitel	Index	Docu-No.
12.04.2006	a	2/4		9000	E	000329

Fendt 300 Vario	Electrics / General system B055 - sensor, foot throttle	E
------------------------	--	----------

Note:

Connect adapter cable X899.980.246.208 directly to B055 - foot throttle.
Ignition 'ON'.

Test	Pin	Specified value	Condition	Possible cause of fault
+ supply	2	5.0 VDC		Wiring or A051 - ECU
Ground	1			

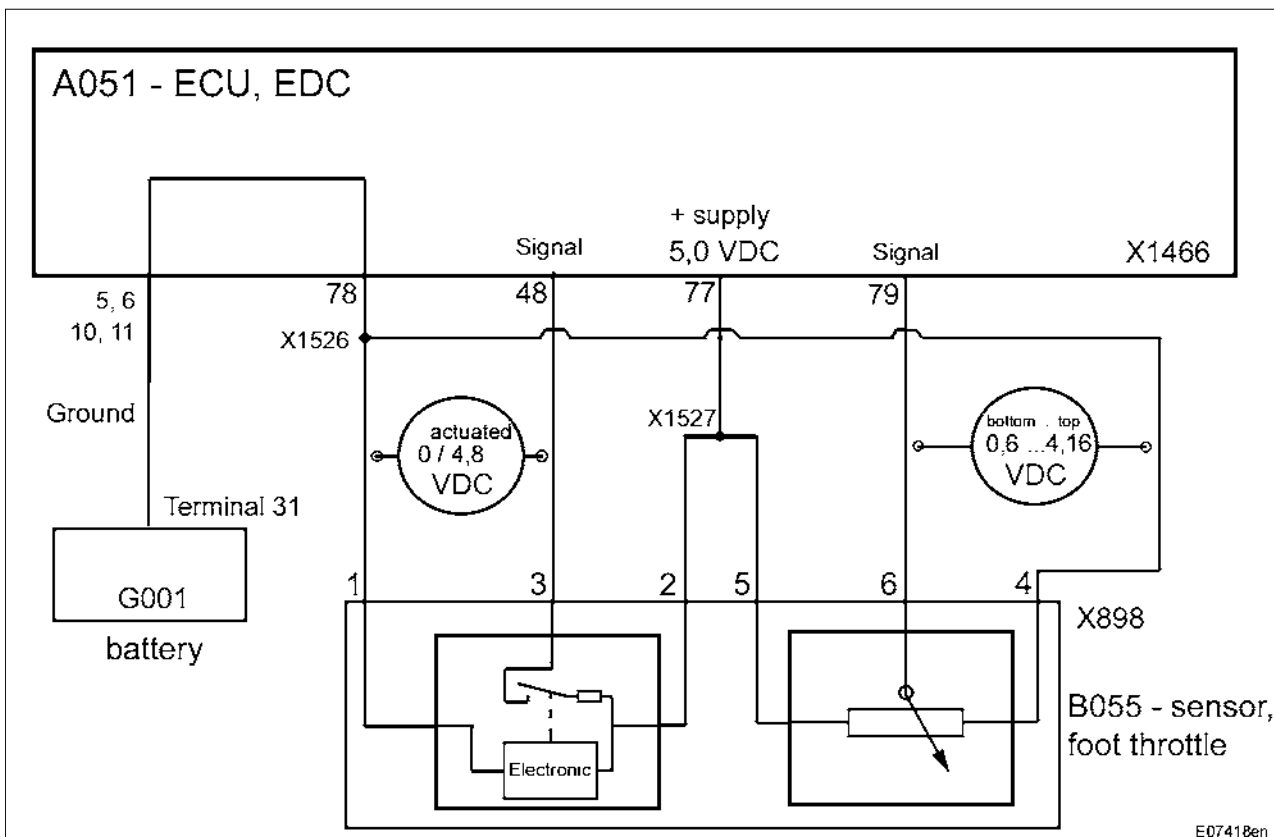
Signal voltage (switch)	3	0 VDC	Foot throttle not pressed (switch open)	
		4.8 VDC	Foot throttle pressed (switch open)	
Ground	1			

Test	Pin	Specified value	Condition	Possible cause of fault
+ supply	5	5.0 VDC		Wiring or A051 - ECU
Ground	4			

Signal voltage (potentiometer)	6	0.6 VDC	Foot throttle not pressed	
		4.16 VDC	Foot throttle pressed	
Ground	4			

Fendt 300 Vario

Electrics / General system
B055 - sensor, foot throttle

E**Possible cause of fault****Note:**

The B055 - sensor, foot throttle must be calibrated
 see Chapter 0000 Reg.F - Calibrating foot throttle
 (calibration code 4005)

Date	Version	Page	Capitel	Index	Docu-No.
12.04.2006	a	4/4	B055 - sensor, foot throttle	9000	E
					000329

Fendt 300 Vario

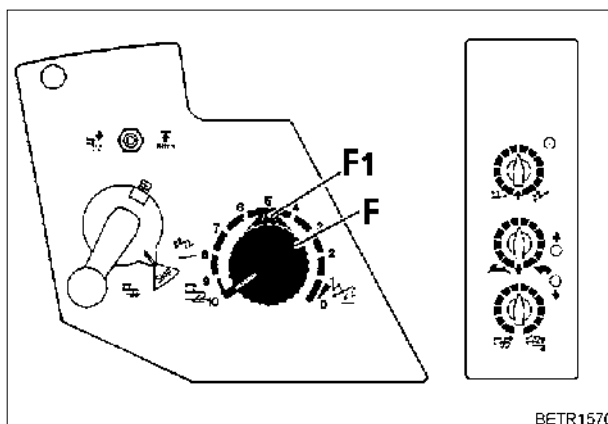
Electrics / General system
B058 - depth control EPC B

E**B058** = Depth control EPC - B**X1356** = Separation point on B058

On right mudguard

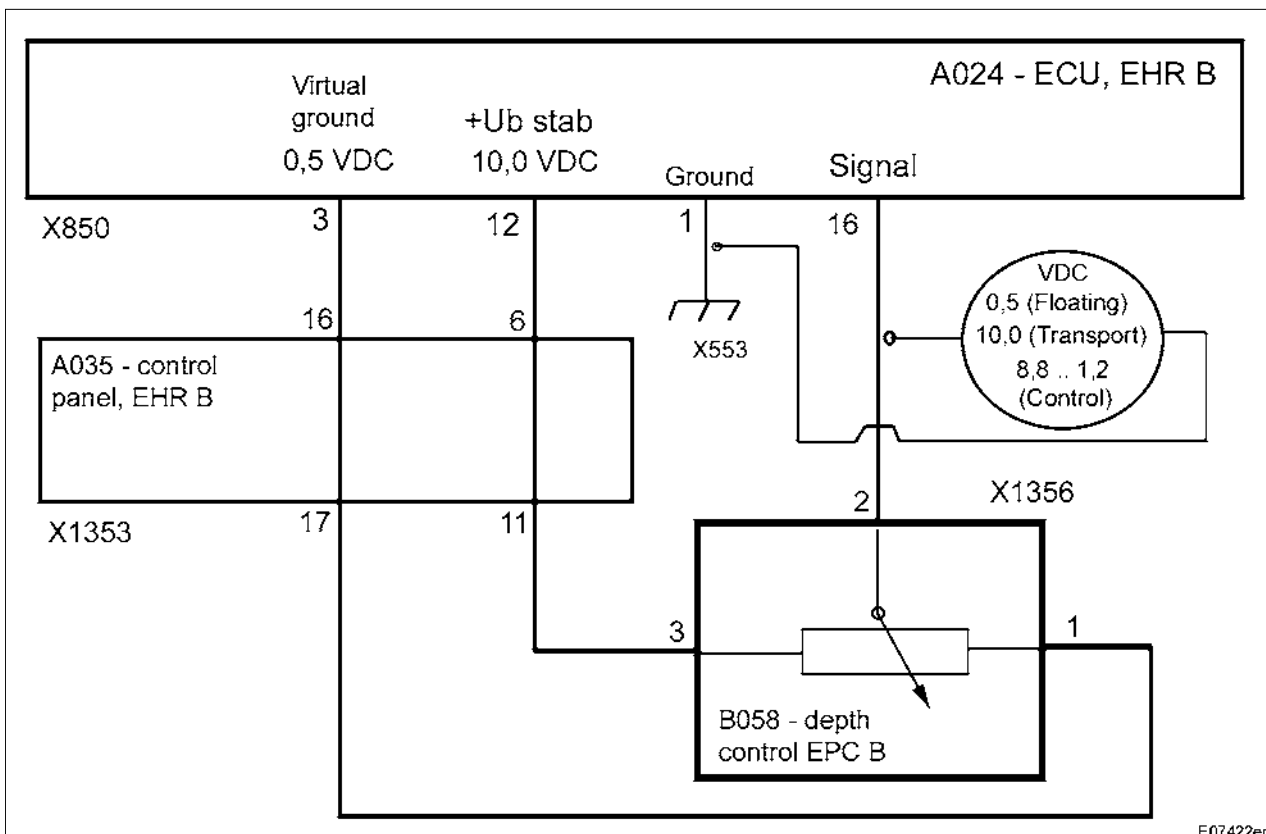


Remove control console

**F** = Knob for setting working depth**Press F1** = Setting ring, used to mark the desired working depth**to the right** = Raise**to the left** = Lower**10** = Floating position**0 - 1** = no control (transport lock)**1 - 9** = Control

Date	Version	Page	B058 - depth control EPC B	Capitel	Index	Docu-No.
13.04.2006	a	1/6		9000	E	000330

Fendt 300 Vario	Electrics / General system B058 - depth control EPC B	E
------------------------	--	----------



Item	Designation	Remark
A024	ECU, EPC B	
X850	Separation point on A024	
Pin 1	Ground	
Pin 3	Virtual ground	
Pin 12	+Ub stab	
Pin 16	Signal	
A035	Control unit, EPC B	
X1353	Separation point on A035	
Pins 6 and 11	+Ub stab	
Pins 16 and 17	Virtual ground	
B058	Depth control	
X1356	Separation point on B058	
Pin 1	Virtual ground	
Pin 2	Signal	
Pin 3	+Ub stab	
X553	Grounding point	

Date	Version	Page	Capitel	Index	Docu-No.
13.04.2006	a	2/6	B058 - depth control EPC B	9000	E
					000330

Fendt 300 Vario

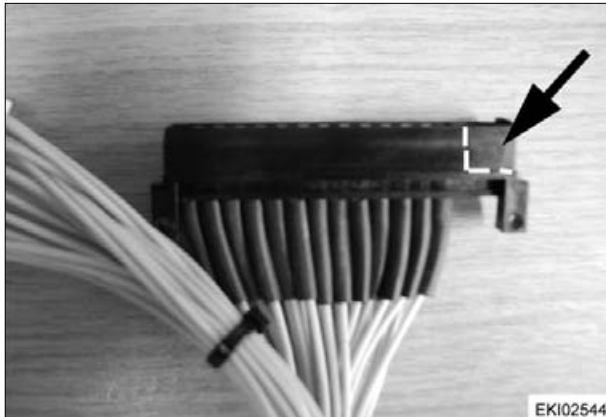
Electrics / General system
B058 - depth control EPC B

E**A024 - ECU, EPC (X850-separation point)**

Pin	Function
1	Ground
3	Virtual ground
12	+Ub stab
16	Signal

**B058 - depth control (X1356-separation point)**

Pin	Function
1	Signal
2	Virtual ground
3	+Ub stab

Fendt 300 Vario**Electrics / General system
B058 - depth control EPC B****E****Note:**

Saw off edge of adapter cable
X 899.980.208.201 as shown.



Connect e-adapter box X 899.980.208.100
directly to A024 - EPC, EPC B using adapter
cable X 899.980.208.201.

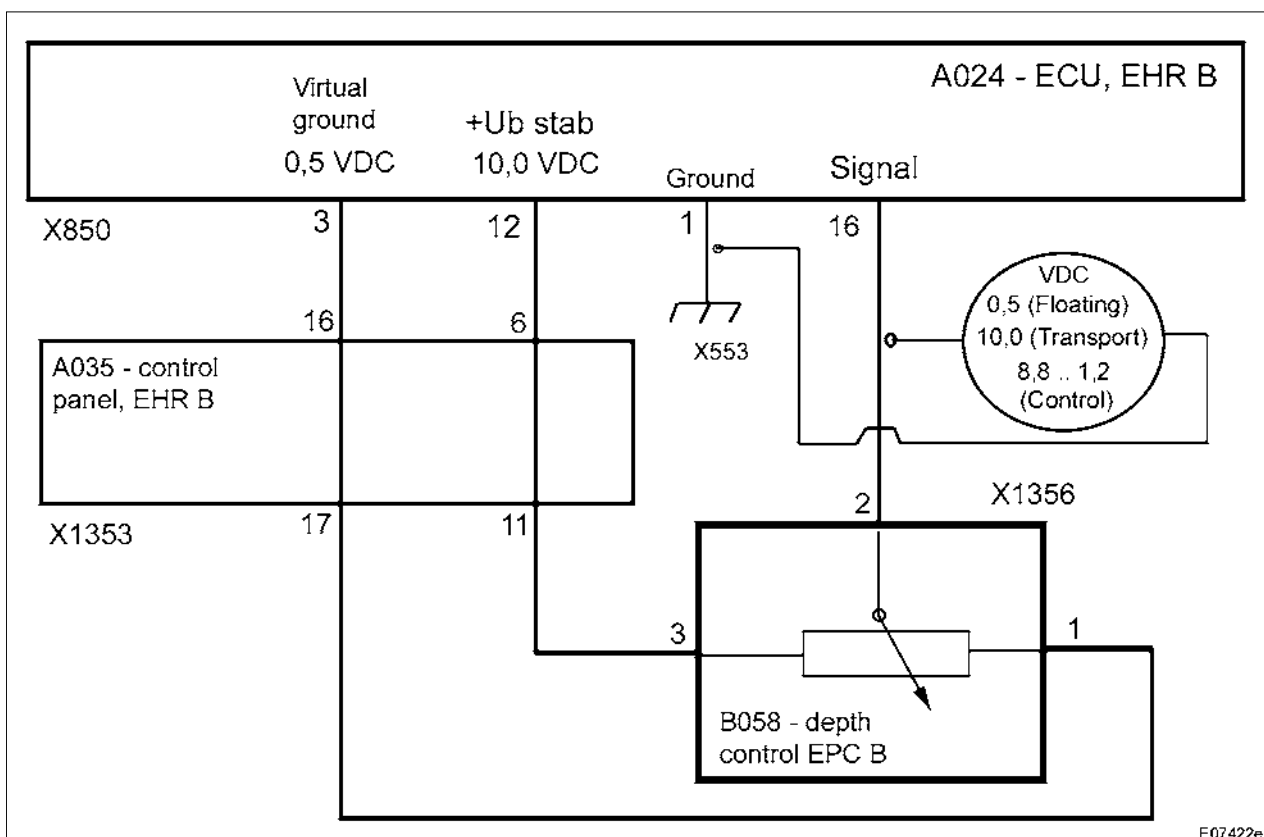
Ignition ON

Date	Version	Page	B058 - depth control EPC B	Capitel	Index	Docu-No.
13.04.2006	a	4/6		9000	E	000330

Fendt 300 Vario	Electrics / General system B058 - depth control EPC B	E
------------------------	--	----------

Test	Pin	Specified value	Condition	Possible cause of fault
+Ub stab	12	10.0 VDC		A024 - ECU, EPC B or wiring
Ground	1			
Virtual ground	3	0.5 VDC		A024 - ECU, EPC B or wiring
Ground	1			
Signal	16	0.5 VDC	Pos. 10 (floating position)	
		10.0 VDC	Pos. 0 (transport position)	
		8.8 - 1.2 VDC	Pos.1 ... pos.9 (control)	
Ground	1			

Possible cause of fault



E07422en

Date	Version	Page	B058 - depth control EPC B	Capitel	Index	Docu-No.
13.04.2006	a	5/6		9000	E	000330

Fendt 300 Vario	Electrics / General system B058 - depth control EPC B	E
------------------------	--	----------



Note:

The rear power lift must be calibrated

Also see:

Chapter 0000 Reg. F - Calibration 8001

(B058 - depth control)

Chapter 0000 Reg. F - Calibration 8002

(B030 - sensor, rear power lift position)

Date	Version	Page	B058 - depth control EPC B	Capitel	Index	Docu-No.
13.04.2006	a	6/6		9000	E	000330

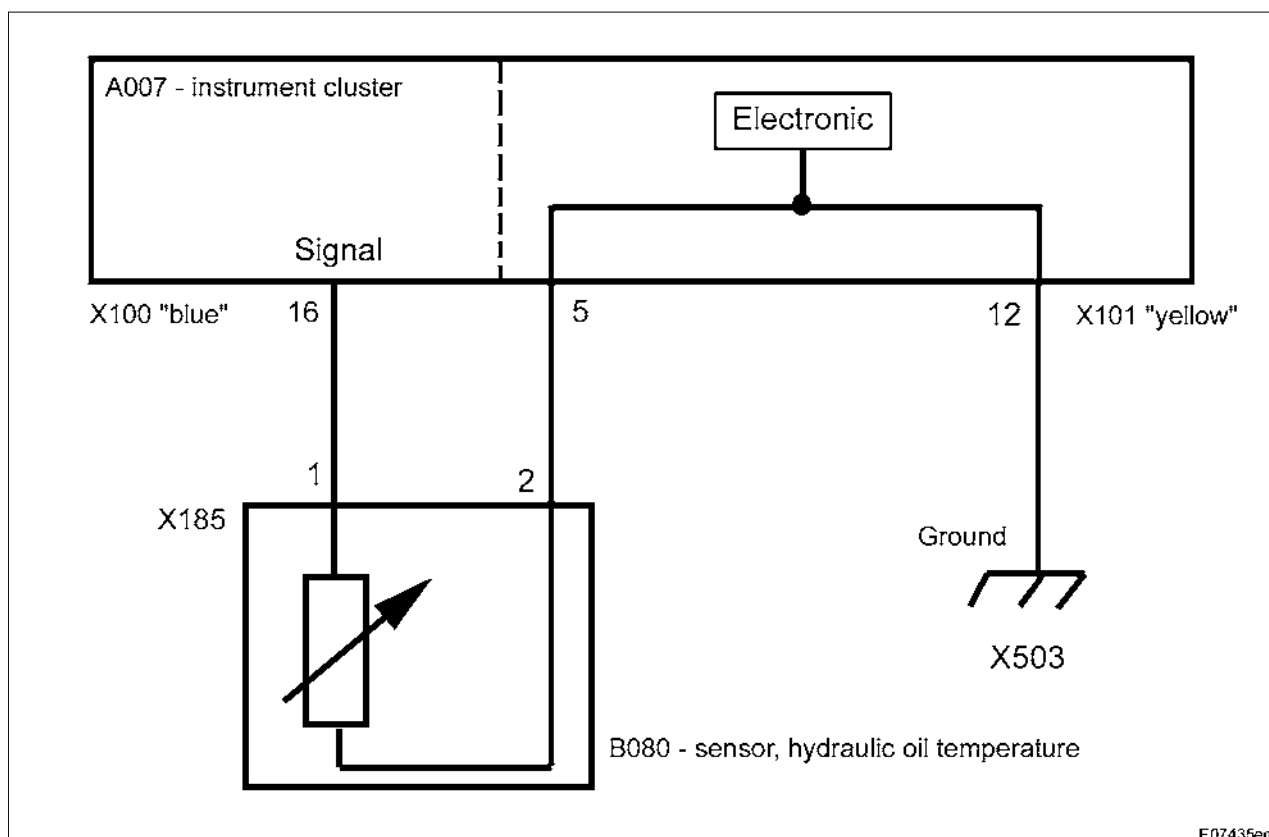
Fendt 300 Vario

Electrics / General system

B080 - sensor, hydraulic oil temperature

E**B080** = Sensor, hydraulic oil temperature**X185** = Separation point on B080

In the intake of hydraulic pump



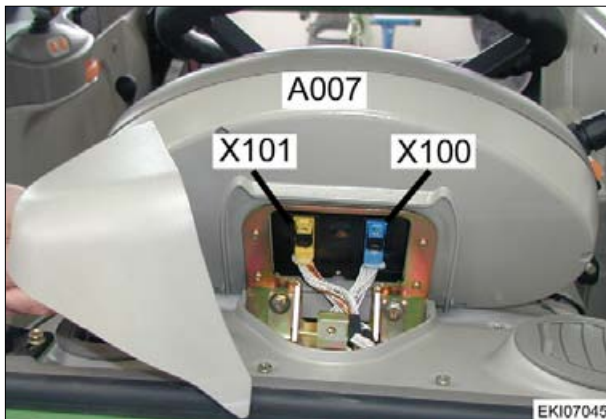
E07435en

Item	Designation	Remark
A007	Instrument cluster	
X100 'blue'	Separation point on A007	
Pin 16	Signal	
X101 'yellow'	Separation point on A007	
Pin 5	Sensor system ground	
Pin 12	Electronics ground	
B080	Sensor, hydraulic oil temperature	
X185	Separation point on B080	
Pin 1	Signal	
Pin 2	Ground	
X503	Grounding point	

Date	Version	Page	Capitel	Index	Docu-No.
18.04.2006	a	1/4	B080 - sensor, hydraulic oil temperature	9000	E
					000331

Fendt 300 Vario

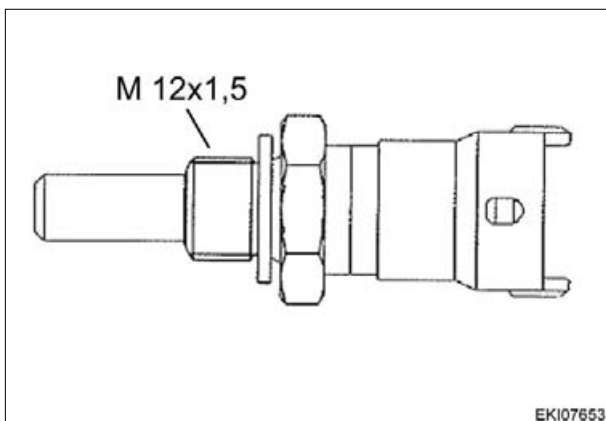
Electrics / General system
B080 - sensor, hydraulic oil temperature

E**A007 - instrument cluster****X101 'yellow'**

Pin	Function
05	Sensor system ground
12	Electronics ground

X100 'blue'

Pin	Function
16	Signal

**B080 - hydraulic oil temperature
(X185-separation point on B080)**

Pin	Function
1	Signal
2	Ground

**Testing B080 - sensor, hydraulic oil temperature**

Connect adapter cable (DIY) to B080 - sensor
 (connection to cable harness remains disconnected)

Test resistance with multimeter (ohmmeter)

Heat B080 - sensor in water bath

(See table for resistance values)

Fendt 300 Vario	Electrics / General system B080 - sensor, hydraulic oil temperature	E
------------------------	--	----------

Characteristic from B080 - sensor, hydraulic oil temperature

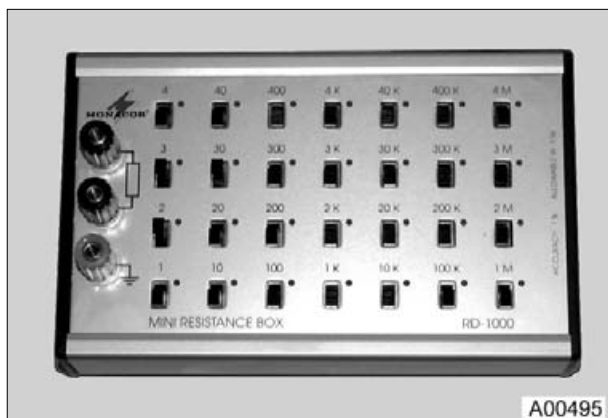
All readings are approximate values	
Hydraulic oil temperature (°C)	Resistance (kilohm)
-40	45.3
-30	26.1
-20	15.5
-10	9.4
-5	7.4
0	5.9
5	4.7
10	3.8
20	2.5
25	2.0
30	1.7
40	1.2
50	0.8
60	0.6
70	0.4
80	0.3
90	0.2
100	0.18
110	0.14
120	0.11

Date	Version	Page	B080 - sensor, hydraulic oil temperature	Capitel	Index	Docu-No.
18.04.2006	a	3/4		9000	E	000331

Fendt 300 Vario

Electrics / General system

B080 - sensor, hydraulic oil temperature

E

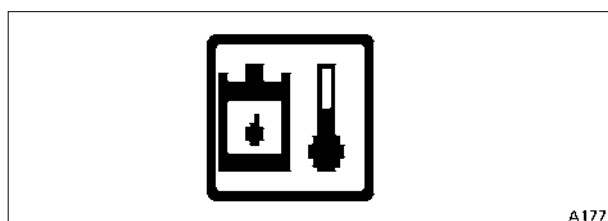
Testing hydraulic oil temperature in A007 - instrument cluster

Connect adapter cable (DIY) to X185 - separation point (connection to B080 - sensor remains disconnected)

Connect resistance decade box X 899.980.224

Select desired resistance (see table).

Ignition 'ON'



Note:

Observe adaptation time of approx. 1 minute

The warning "hydraulic oil temperature" appears in A007 - instrument cluster

Date	Version	Page	B080 - sensor, hydraulic oil temperature	Capitel	Index	Docu-No.
18.04.2006	a	4/4		9000	E	000331

Fendt 300 Vario

Electrics / General system
B085 - sensor, EDC (camshaft)

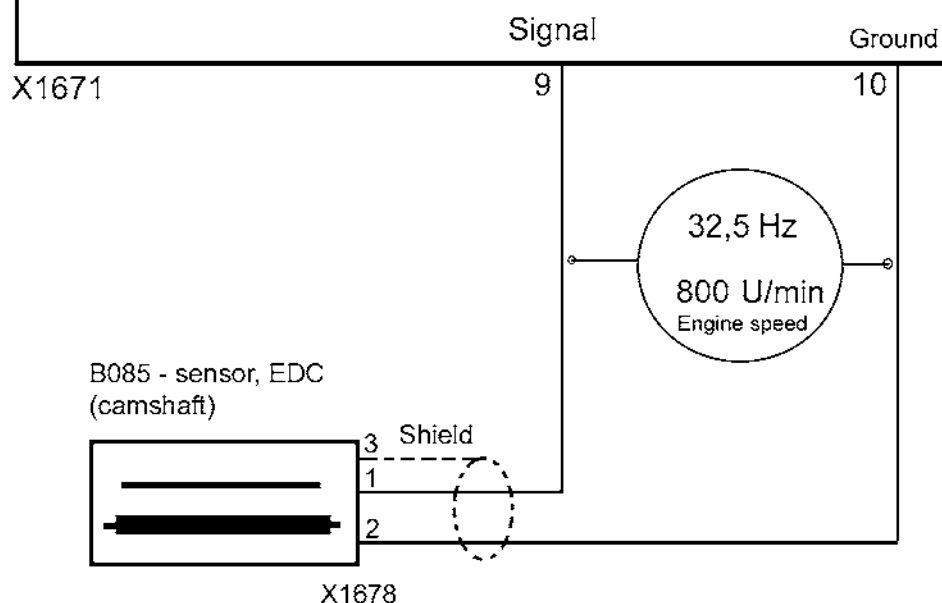
E**B085** = Sensor, EDC camshaft**X1678** = Separation point on B085 sensor

On right side of engine, on flywheel housing

Note:

The B085 - sensor, EDC (camshaft) is required for synchronising injection. It delivers only 1 signal per working cycle, and must line up with the reference mark (of 1st cylinder) on the crankshaft. B088 - sensor, EDC (crankshaft)

A051 - ECU, engine control unit "engine controller"



E07526en

Item	Designation	Remark
A051	ECU, EDC	
X1671	Separation point on A051	
Pin 9	Signal	
Pin 10	Ground for B085 - sensor	
B085	Sensor, camshaft (induction-type pulse generator)	
X1678	Separation point on B085	

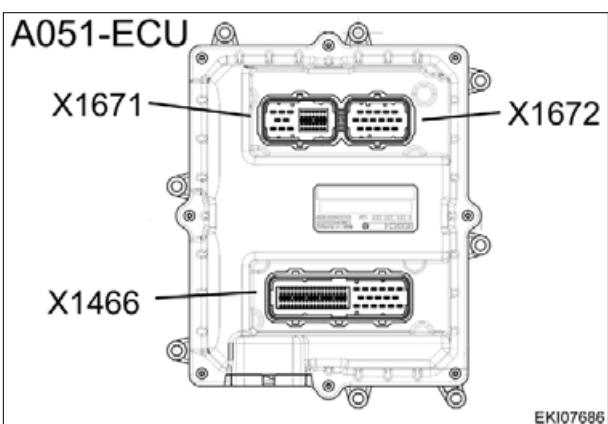
Date	Version	Page	Capitel	Index	Docu-No.
24.05.2006	a	1/7	B085 - sensor, EDC (camshaft)	9000	E 000361

Fendt 300 Vario

Electrics / General system
B085 - sensor, EDC (camshaft)

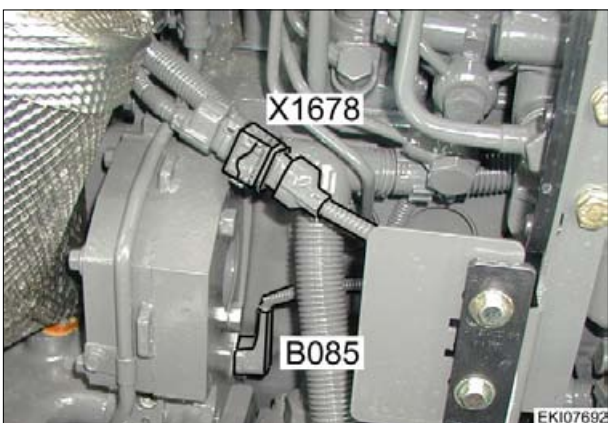
E**A051** = ECU, EDC

At right entrance step



Measuring point on A051 - ECU, engine control unit (X1671 - separation point)

Pin	Function
9	Signal
10	Ground for B085 - sensor



Measuring point on B085 - Sensor (X1678 - separation point)

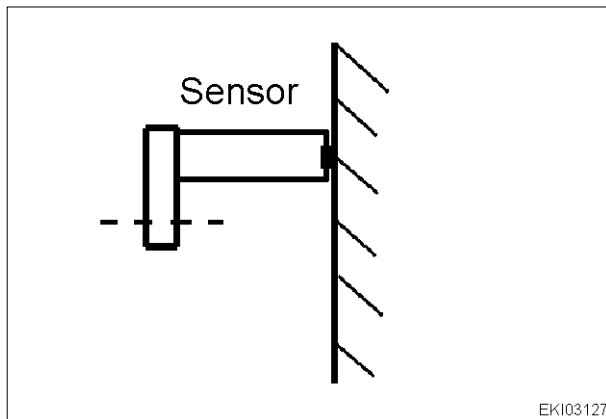
Pin	Function
1	Signal
2	Ground
3	Shielding against interference

Fendt 300 Vario	Electrics / General system B085 - sensor, EDC (camshaft)	E
------------------------	---	----------

Measuring internal resistance of the B085 - sensor

Test	Pin	Specified value	Condition	Possible cause of fault
Signal	1	approx. 3.9 kilohm	Switch off ignition; connect adapter cable X899.980.246.202 only to B085 - sensor (X1678 - separation point)	Reading infinite: component fault
Ground	2			

Testing permanent magnet of the induction-type pulse generator



Test permanent magnet of the induction-type pulse generator.

Hold induction-type pulse generator against a metal plate.

The induction-type pulse generator must 'stick' to the metal plate

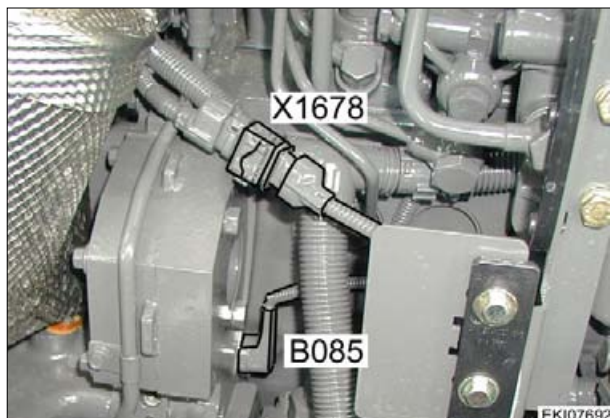
Date	Version	Page	B085 - sensor, EDC (camshaft)	Capitel	Index	Docu-No.
24.05.2006	a	3/7		9000	E	000361

Fendt 300 Vario

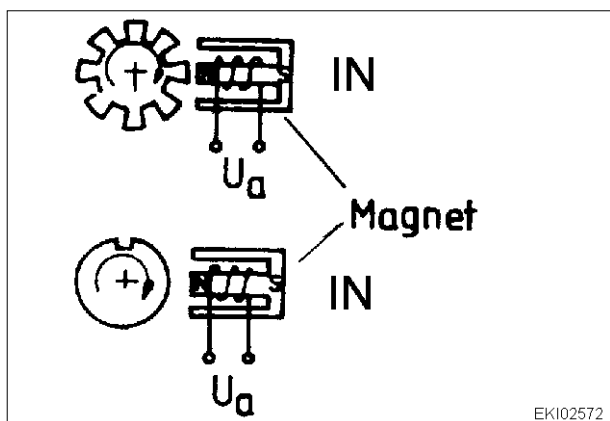
Electrics / General system
B085 - sensor, EDC (camshaft)

E

Measuring induced voltage and frequency



Connect adapter cable X899.980.246.202 to the B085 - sensor, EDC (camshaft) (X1671 - separation point).



IN = Induction-type pulse generator

Ua = induced voltage

Measuring induction-type pulse generators

The **induction-type pulse generator** receives pulses directly from a pulse generator (gearwheel or disc). If the magnetic field of the induction-type pulse generator is cut by measuring points, an **AC induced voltage (VAC)** is generated.

The A051 - ECU, EDC "engine control unit" calculates speed from the number of voltage impulses (frequency).

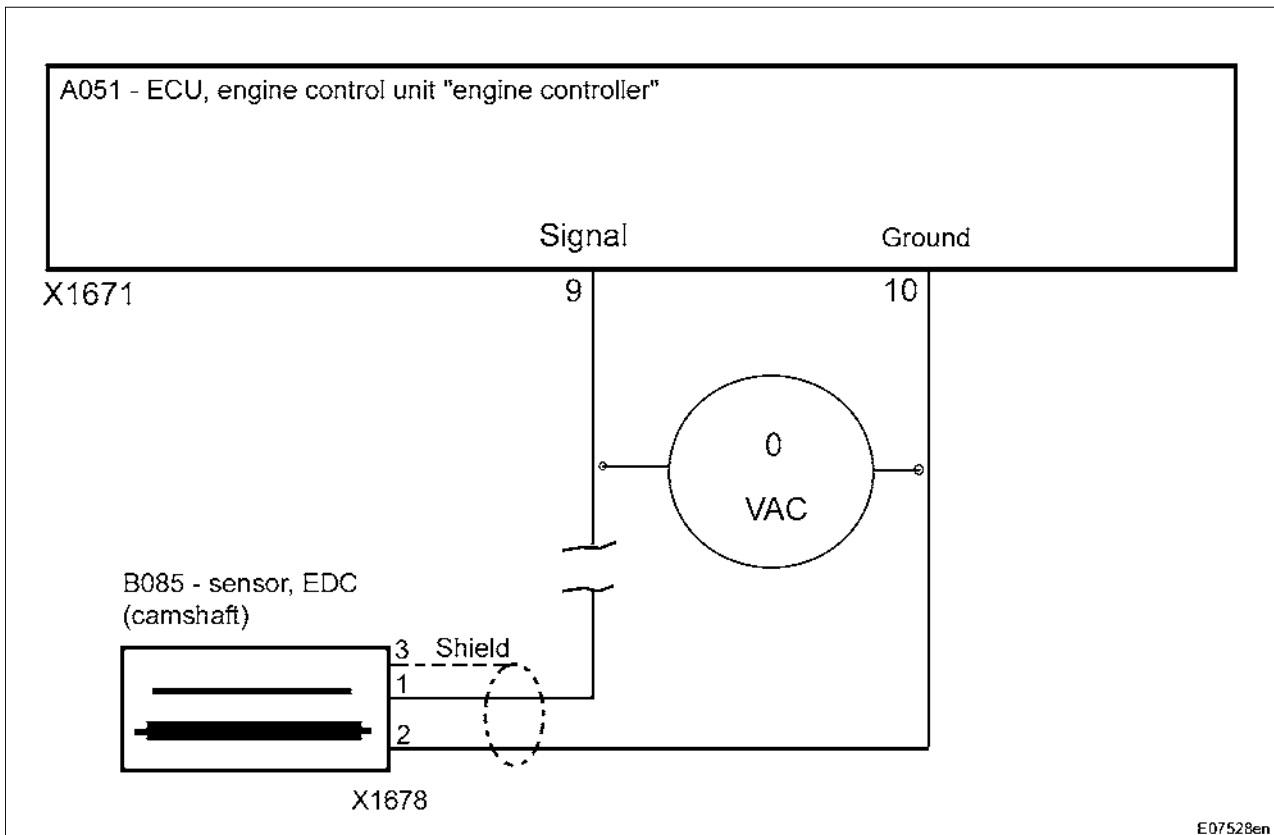
The number of voltage pulses is proportional to the speed (i.e. the voltage rises with increasing speed).

B085 - sensor, EDC (camshaft)

Engine revolutions	Induced voltage (AC voltage VAC)	Frequency
Stationary (0 rpm)	0 VAC	0 Hz
Idling (800 rpm)	approx. 1.30 VAC	approx. 32.5 Hz
At medium speed (1600 rpm)	approx. 2.20 VAC	approx. 66.0 Hz
At no-load engine speed (2200 rpm)	approx. 2.67 VAC	approx. 90.0 Hz

Fendt 300 Vario

Electrics / General system
B085 - sensor, EDC (camshaft)

E**Possible cause of fault**

Date	Version	Page	Capitel	Index	Docu-No.
24.05.2006	a	5/7	9000	E	000361

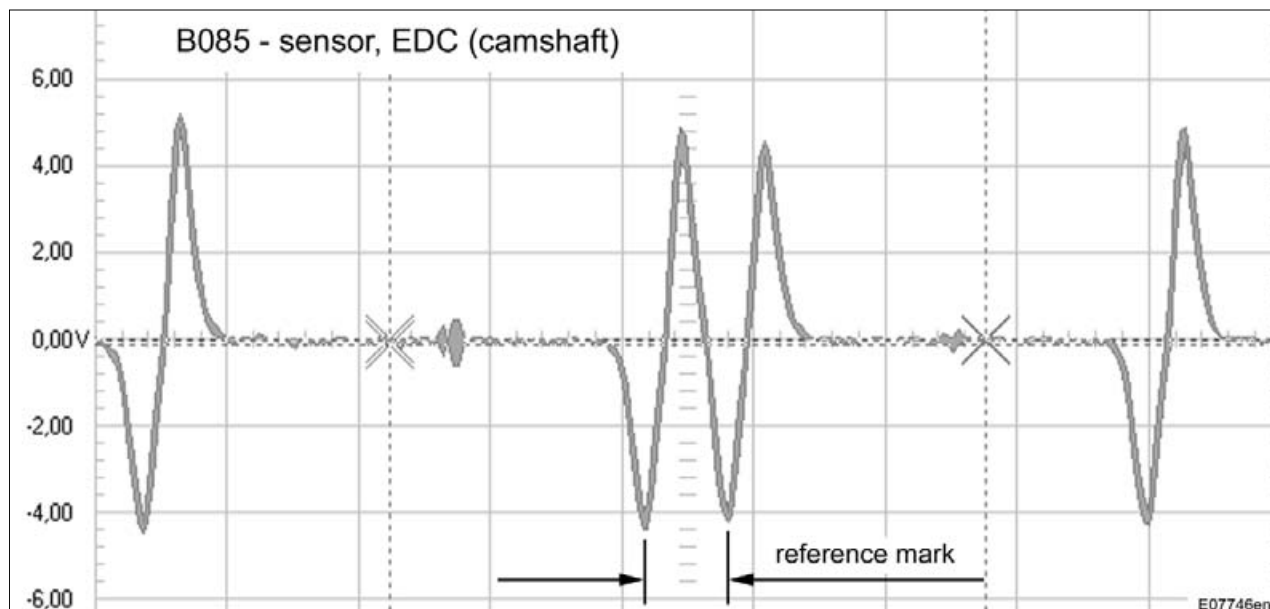
B085 - sensor, EDC (camshaft)

Fendt 300 Vario

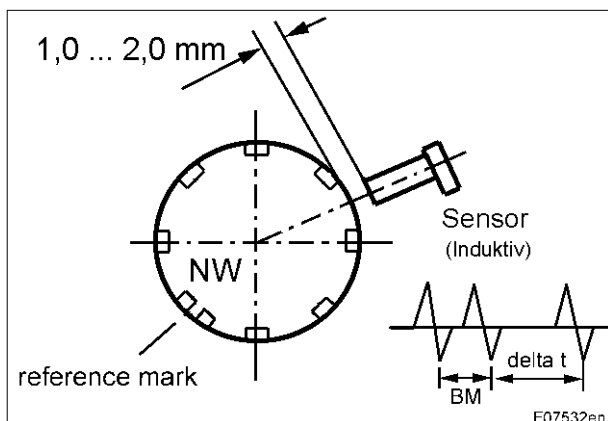
Electrics / General system
B085 - sensor, EDC (camshaft)

E

Oscilloscope screen of B085 - sensor, EDC (camshaft)



Calculating the crankshaft revolutions (engine speed) using the oscilloscope

**NW** = Camshaft gear**delta t** = Time between two voltage spikes

The A051 - ECU, EDC calculates engine speed
 based on the voltage spikes

Distance: sensor to camshaft gear**1.0 - 2.0 mm**

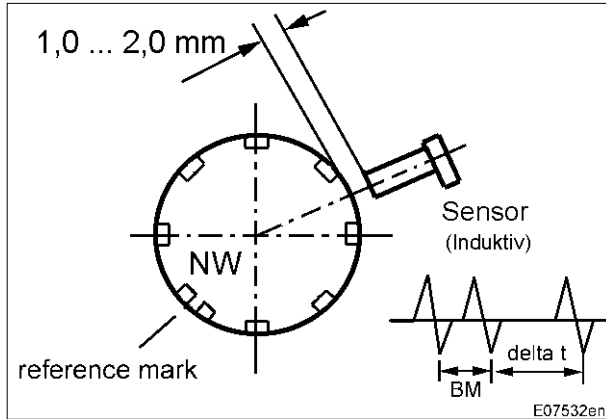
Date	Version	Page	Capitel	Index	Docu-No.
24.05.2006	a	6/7	B085 - sensor, EDC (camshaft)	9000	E
					000361

Fendt 300 Vario

Electrics / General system
B085 - sensor, EDC (camshaft)

E

Detecting current engine position



The B085 - sensor (camshaft) is required for synchronising injection. It delivers only 1 signal per working cycle, and must line up with the reference mark (of 1st cylinder) on the crankshaft. **B088 - sensor, EDC (crankshaft)**

When the camshaft turns, the mark on the camshaft gear induces AC voltage (VAC) in the B085 - sensor.

The A051 - ECU, EDC calculates camshaft speed based on the voltage frequency

The double tooth (reference mark) causes a change in frequency

The double tooth (reference mark) is used to detect the current camshaft position, and appears once in every working cycle.

Note:

Working cycle (4-cycle engine)

2 crankshaft revolutions

1 camshaft revolution

Date	Version	Page	Capitel	Index	Docu-No.
24.05.2006	a	7/7	B085 - sensor, EDC (camshaft)	9000	E
					000361

Fendt 300 Vario	Electrics / General system B086 - sensor, rail pressure (high pressure)	E
------------------------	--	----------



Danger:

After turning of the engine, wait at least 30 seconds before starting to work on the fuel system!!

Note:

Lower pressure 'primanry pressure' approx 5...10 bar



B086 = Sensor, rail pressure (high pressure)

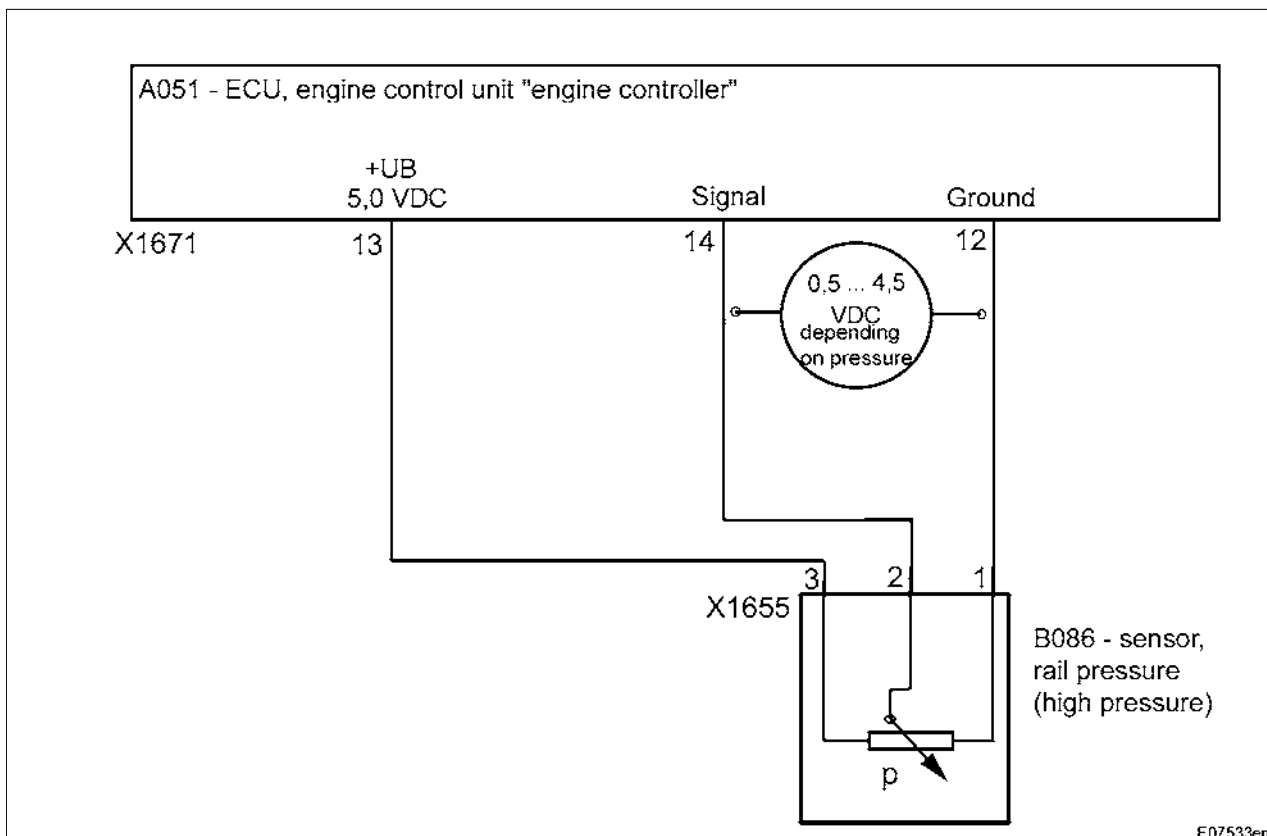
X1655 = Separation point on sensor, rail pressure
on rail (high pressure accumulator)



Date	Version	Page	B086 - sensor, rail pressure (high pressure)	Capitel	Index	Docu-No.
29.05.2006	a	1/8		9000	E	000363

Fendt 300 Vario

Electrics / General system
B086 - sensor, rail pressure (high pressure)

E

Item	Designation	Remark
A051	ECU, EDC	
X1671	Separation point on A051	
Pin 12	Ground for B086 - sensor	
Pin 13	+ supply for B086 - sensor	
Pin 14	Signal	
B086	Sensor, rail pressure (high pressure)	
X1655	Separation point on B086	

**A051** = ECU, EDC

At right entrance step

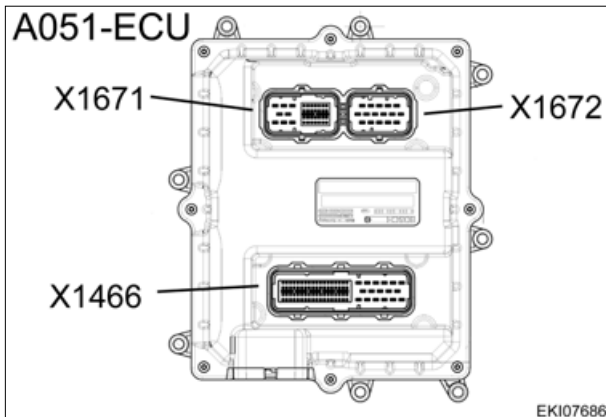


Date	Version	Page	Capitel	Index	Docu-No.
29.05.2006	a	2/8	B086 - sensor, rail pressure (high pressure)	9000	E
					000363

Fendt 300 Vario

Electrics / General system

B086 - sensor, rail pressure (high pressure)

E

Measuring point on A051 - ECU, engine control unit (X1671 - separation point)

Pin	Function
12	Ground for B086 - sensor
13	+ supply
14	Signal



Connect e-adapter box X899.980.208.100 to separation point X1671 on the A051 - ECU, engine control unit with adapter cable X899.980.208.218

Pin	Function
42 (on the 68-pin adapter box)	Ground for B086 - sensor
43 (on the 68-pin adapter box)	+ supply
44 (on the 68-pin adapter box)	Signal

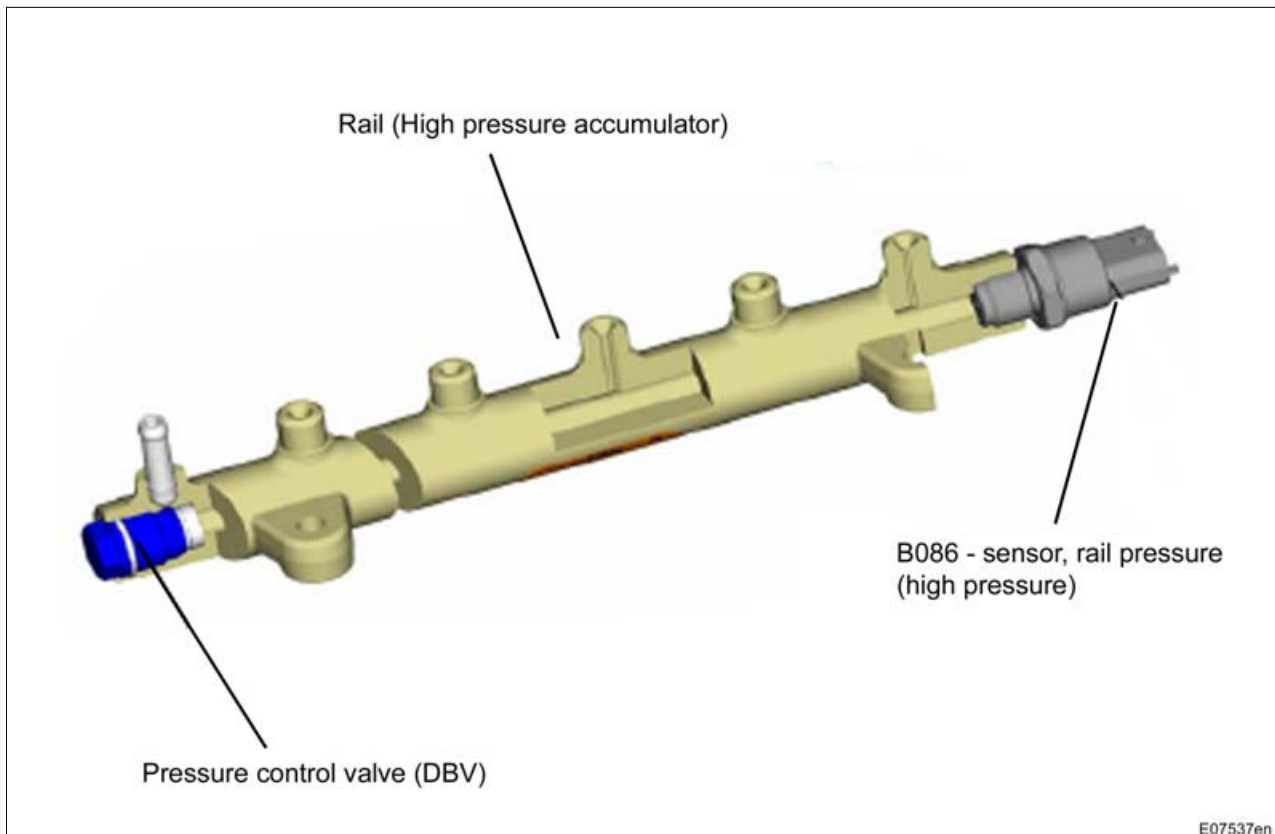


Measuring point on B086 - sensor (X1655 - separation point)

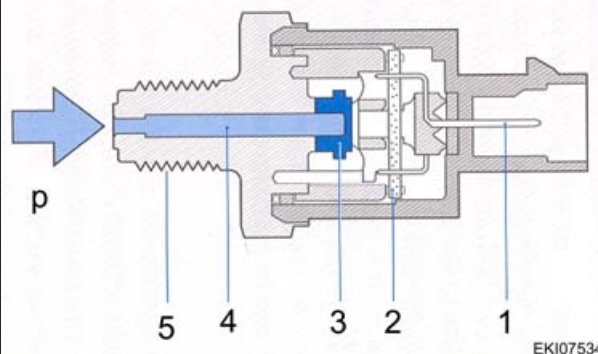
Pin	Function
1	Ground
2	Signal
3	+ supply

Fendt 300 Vario

Electrics / General system
B086 - sensor, rail pressure (high pressure)

E

B086 - Sensor, Rail - Druck



Item	Designation
1	Connector
2	Evaluation circuit
3	Steel diaphragm with strain gauge resistors
4	Pressure connection
5	Screw thread
P	Fuel high pressure (during normal operation 400 to approx. 1600 bar)

Design and operating principle of B086 - rail pressure sensor

The core of the sensor comprises a steel diaphragm (3), on which strain gauge resistors are vapour-deposited in a bridge circuit.

As soon as the pressure that is to be measured works on the steel diaphragm (3) via the pressure connection (4), the strain gauge resistors change their resistance value due to bending of the diaphragm.

The output voltage of 0 ... 80 mV generated by the bridge circuit is transmitted to an evaluation circuit (2) through connecting lines.

The evaluation circuit amplifies the bridge signal to 0 ... approx. 5 VDC and transmits the signal to the A051 - ECU, EDC "engine control unit"

The A051 - ECU, EDC "engine control unit" controls the fuel high pressure in the rail (pressure accumulator) with the help of the Y091 - metering unit

Date	Version	Page	B086 - sensor, rail pressure (high pressure)	Capitel	Index	Docu-No.
29.05.2006	a	4/8		9000	E	000363

Fendt 300 Vario

Electrics / General system
B086 - sensor, rail pressure (high pressure)

E**Internal resistance of the B086 - sensor (rail depressurised)**

Switch off engine and wait at least 30 seconds
 (the pressure in the rail (high pressure accumulator) drops)

Ignition "OFF"

Connect e-adapter box X899.980.208.100 to
 X1671 - separation point on the A051 - ECU, EDC
 with adapter cable X899.980.208.218

Open pin 44 and pin 42 on the e-adapter box.
 Measure pins to B086 - sensor with multimeter
 (ohmmeter)

Specified value: infinite resistance (OL)

**Testing + supply for the B086 - sensor**

Switch off engine and wait at least 30 seconds
 (the pressure in the rail (high pressure accumulator) drops)

Ignition ON

Connect e-adapter box X899.980.208.100 to
 X1671 - separation point on the A051 - ECU, EDC
 with adapter cable X899.980.208.218

Measure pin **43 and pin 42** (ground) on
 e-adapter box with multimeter (voltmeter)

Specified value: approx. 5.0 VDC

**Testing signal on B086 - sensor**

Connect e-adapter box X899.980.208.100 to
 X1671 - separation point on the A051 - ECU, EDC
 with adapter cable X899.980.208.218

Measure pin **44 and pin 42** (ground) on
 e-adapter box with multimeter (voltmeter)

Start diesel engine

**Specified value: is dependent on the engine
 speed and engine load**

Fendt 300 Vario	Electrics / General system B086 - sensor, rail pressure (high pressure)	E
------------------------	---	----------

Fuel pressure in high pressure accumulator "rail pressure" (engine not under load)

Note: engine not under load

Note: The fuel pressure in the high pressure accumulator (rail pressure) is read out in the Deutz "SERDIA" diagnostic program.

Engine speed	Fuel pressure in high pressure accumulator (rail pressure)	Signal voltage
Ignition on, engine off	approx. 0 bar	approx. 0.5 VDC
800 rpm	approx. 420 bar	Approx. 1.4 VDC
1200 rpm	approx. 670 bar	approx. 2.0 VDC
1600 rpm	approx. 780 bar	approx. 2.2 VDC
2000 rpm	approx. 720 bar	approx. 2.0 VDC
2200 rpm	approx. 750 bar	approx. 2.1 VDC

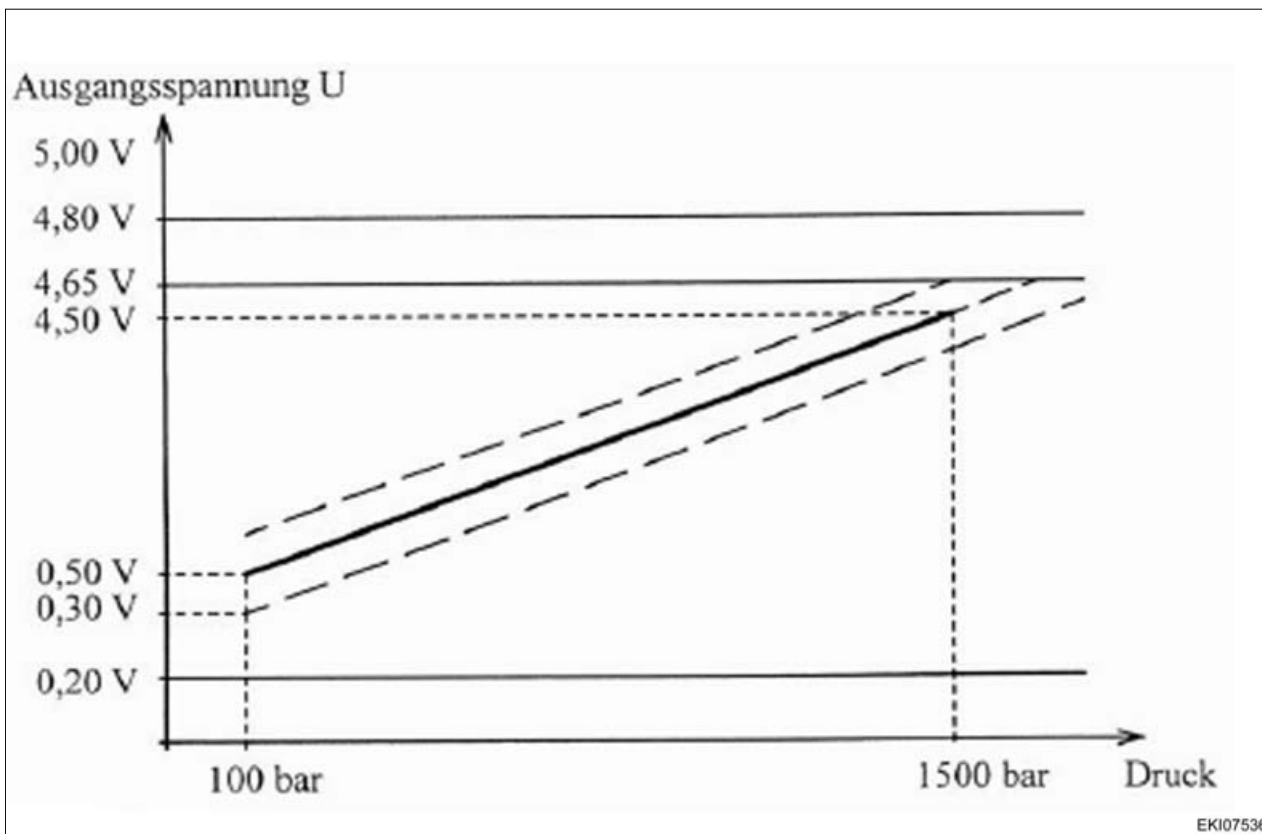
Date	Version	Page	B086 - sensor, rail pressure (high pressure)	Capitel	Index	Docu-No.
29.05.2006	a	6/8		9000	E	000363

Fendt 300 Vario

Electrics / General system
B086 - sensor, rail pressure (high pressure)

E

Fuel pressure in high pressure accumulator "rail pressure" is dependent on the engine load



EKI07536

The B086 - sensor, rail pressure measures the actual pressure in the high pressure circuit and transmits a voltage signal to the A051 - ECU, EDC "engine control unit" for further processing. Precise logging of high pressure in the rail is essential for proper functioning of the common rail system.

For this reason the tolerances for the B086 - sensor are very low when measuring pressure.

Measuring accuracy is approx. 30 bar

Fuel high pressure	Signal voltage	Condition
approx. 100 bar	0.5 VDC	Ignition ON
approx. 350 bar	1.2 VDC	
approx. 400 bar	1.36 VDC	Idle (800 rpm)
500 bar approx.	1.65 VDC	
approx. 600 bar	1.93 VDC	
approx. 800 bar	2.50 VDC	
approx. 1000 bar	3.07 VDC	
approx. 1200 bar	3.64 VDC	
approx. 1400 bar	4.21 VDC	
approx. 1500 bar	4.50 VDC	
approx. 1600 bar (maximum pressure)	4.78 VDC	Put tractor under maximum load on the dynamometric brake

Date	Version	Page	B086 - sensor, rail pressure (high pressure)	Capitel	Index	Docu-No.
29.05.2006	a	7/8		9000	E	000363

Fendt 300 Vario	Electrics / General system B086 - sensor, rail pressure (high pressure)	E
------------------------	--	----------

In case of fault

For values less than 0.2 VDC and greater than 4.8 VDC, the B086 - sensor is detected as faulty by the A051 - ECU, EDC "engine control unit "



In the case of a fault, the A051 - ECU, EDC "engine control unit" "blindly" actuates the Y091 - metering unit

The Y091 - metering unit is then without power, which means it is fully open

This causes the high pressure relief valve to open

In idle this results in a pressure of approx. 400 bar



After the high pressure relief valve opens, the warning " **high pressure relief valve open**" appears in the A007 - instrument cluster

High pressure (approx. 400 bar) is relieved through the pressure relief valve, which causes the fuel to heat.

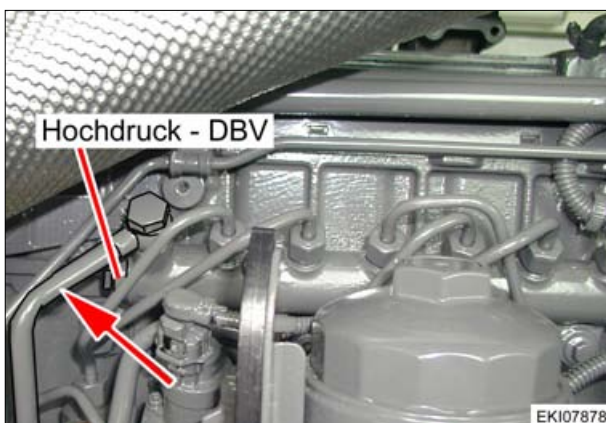
That is why the A051 - ECU,EDC automatically turns the engine off the approx. 3 minutes.

Restarting tractor:

Ignition "OFF"

Wait at least 30 seconds, so that the pressure in the rail (high pressure accumulator) can drop.

Start tractor



Note:

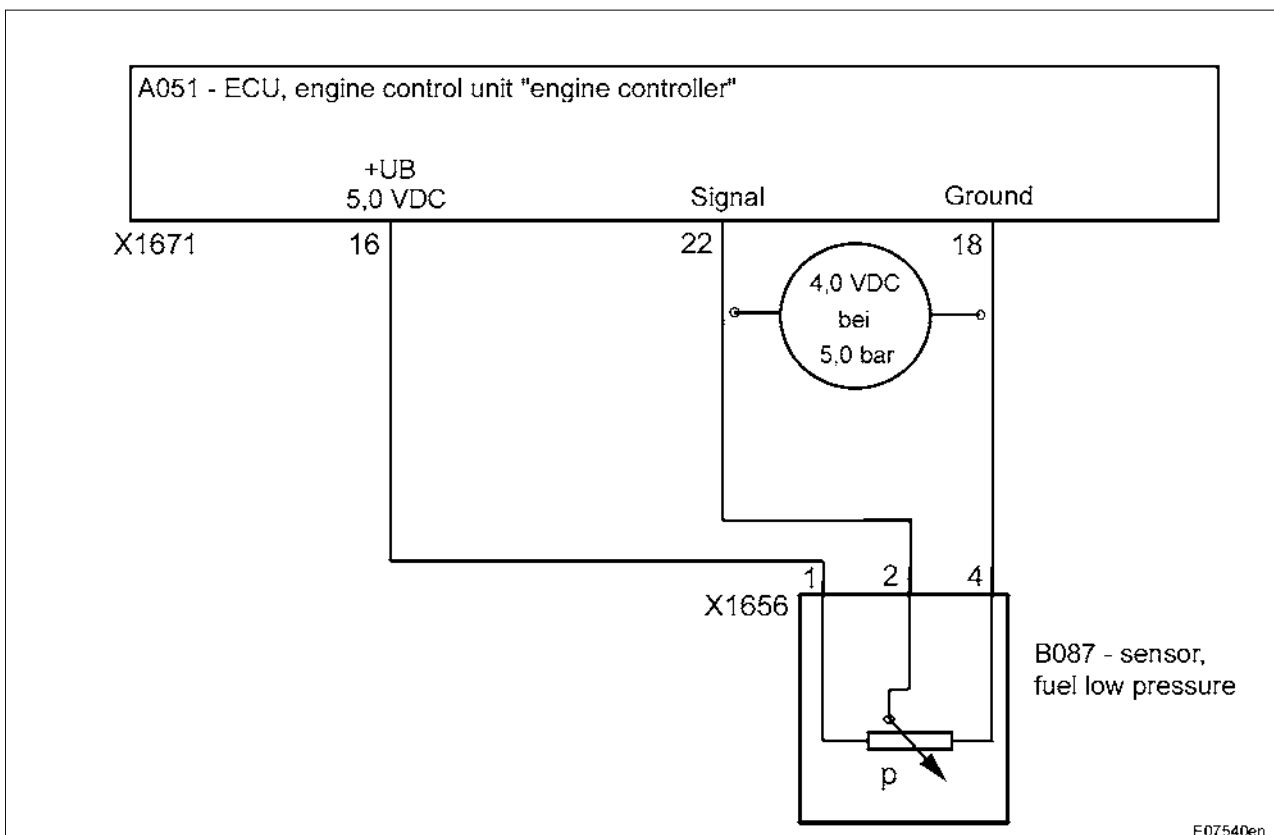
When the high pressure relief valve opens, the return line (arrowed) is heated

After approx. 3 minutes, the engine is switched off through the A051 - ECU,EDC

Note:

Installing and removing pressure relief valve and sensor see Chapter 2060 Fuel system Reg. G

Date	Version	Page	B086 - sensor, rail pressure (high pressure)	Capitel	Index	Docu-No.
29.05.2006	a	8/8		9000	E	000363

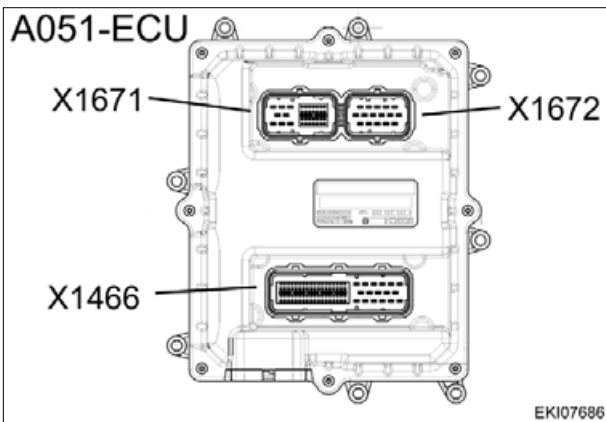
Fendt 300 Vario**Electrics / General system****B087 - sensor, fuel low pressure (fuel pressure behind the fuel filter)****E****B087** = Sensor, fuel low pressure (filter monitoring)**X1656** = Separation point on sensor, fuel low pressure "primary pressure" on fuel filter**B090** = Sensor, engine oil pressure

Item	Designation	Remark
A051	ECU, EDC	
X1671	Separation point on A051	
Pin 16	+ Supply (5.0 VDC)	
Pin 18	Ground for B087	
Pin 22	Signal	
B087	Sensor, fuel low pressure (filter clogging)	
X1656	Separation point on B087	

Date	Version	Page	Capitel	Index	Docu-No.
29.05.2006	a	1/6	B087 - sensor, fuel low pressure (fuel pressure behind the fuel filter)	9000	E 000364

Fendt 300 Vario**Electrics / General system****B087 - sensor, fuel low pressure (fuel pressure behind the fuel filter)****E****A051 = ECU, EDC**

At right entrance step

**Measuring point on A051 - ECU, engine control unit (X1671 - separation point)**

Pin	Function
16	+ supply for B087
18	Ground for B087
22	Signal

X899.980.208.218 - Adapterkabel**Connect e-adapter box X899.980.208.100 to X1671 - separation point on the A051 - ECU, engine control unit with adapter cable X899.980.208.218**

Pin	Function
48 (on the 68-pin adapter box)	Ground for B087 - sensor
46 (on the 68-pin adapter box)	+ supply for B087 - sensor
52 (on the 68-pin adapter box)	Signal

Fendt 300 Vario	Electrics / General system	E
B087 - sensor, fuel low pressure (fuel pressure behind the fuel filter)		



Measuring point on B087 - Sensor (X1678 - separation point)	
Pin	Function
1	+ supply
2	Signal
3	Not assigned
4	Ground

Date	Version	Page		Capitel	Index	Docu-No.
29.05.2006	a	3/6	B087 - sensor, fuel low pressure (fuel pressure behind the fuel filter)	9000	E	000364

Fendt 300 Vario**Electrics / General system****B087 - sensor, fuel low pressure (fuel pressure behind the fuel filter)****E****Internal resistance of the B087 - sensor (low pressure system depressurised)**

Switch off diesel engine and wait at least 30 seconds

Ignition 'OFF'

Connect e-adapter box X899.980.208.100 to X1671 - separation point on the A051 - ECU, EDC with adapter cable X899.980.208.218

Open pin 52 and pin 48 on the e-adapter box. Measure pins to B087 - sensor with multimeter (ohmmeter)

Specified value: approx. 120 kilohm

**Testing + supply for the B087 - sensor**

Ignition ON

Connect e-adapter box X899.980.208.100 to X1671 - separation point on the A051 - ECU, EDC with adapter cable X899.980.208.218

Measure at pin 46 and pin 48 (ground) on e-adapter box with multimeter (voltmeter)

Specified value: approx. 5.0 VDC

**Testing signal on B087 - sensor**

Connect e-adapter box X899.980.208.100 to X1671 - separation point on the A051 - ECU, EDC with adapter cable X899.980.208.218

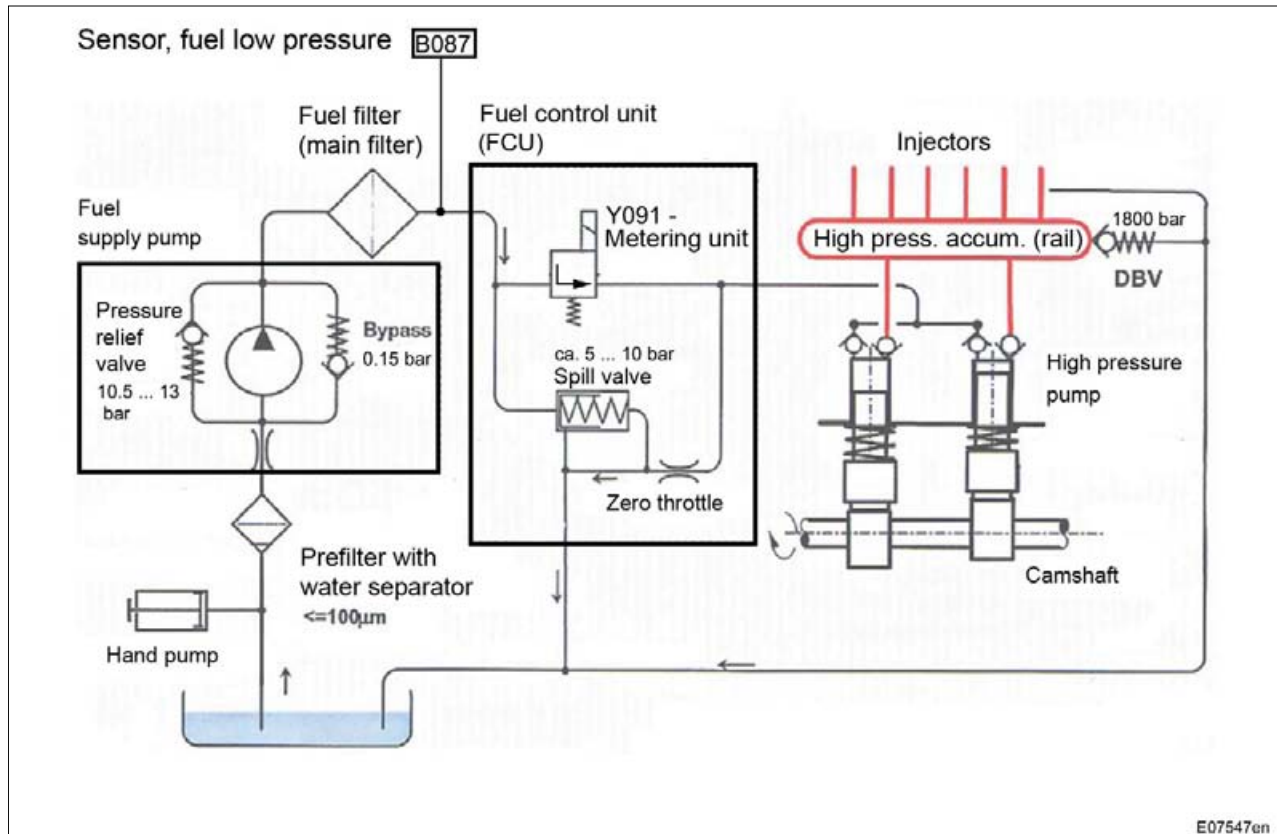
Measure at pin 52 and pin 48 (ground) on e-adapter box with multimeter (voltmeter)

Start diesel engine

Specified value: approx. 4.0 VDC (at 5 bar)

Fendt 300 Vario

Electrics / General system

B087 - sensor, fuel low pressure (fuel pressure behind the fuel filter)**E****Measuring fuel low pressure "primary pressure" (B087 - sensor)**

Connect pressure gauge on measuring point

Note: The fuel low pressure is dependent on the fuel temperature)**Fuel low pressure "primary pressure"
(at operating temperature)
(bar)**

approx. 5 bar (independent of engine speed)

**Signal from B087 - sensor
(VDC)**

approx. 4.0 VDC

Date	Version	Page	Capitel	Index	Docu-No.
29.05.2006	a	5/6	B087 - sensor, fuel low pressure (fuel pressure behind the fuel filter)	9000	E
					000364

Fendt 300 Vario**Electrics / General system****B087 - sensor, fuel low pressure (fuel pressure behind the fuel filter)****E**

If the specified value for fuel low pressure is not reached (approx. 5 bar):

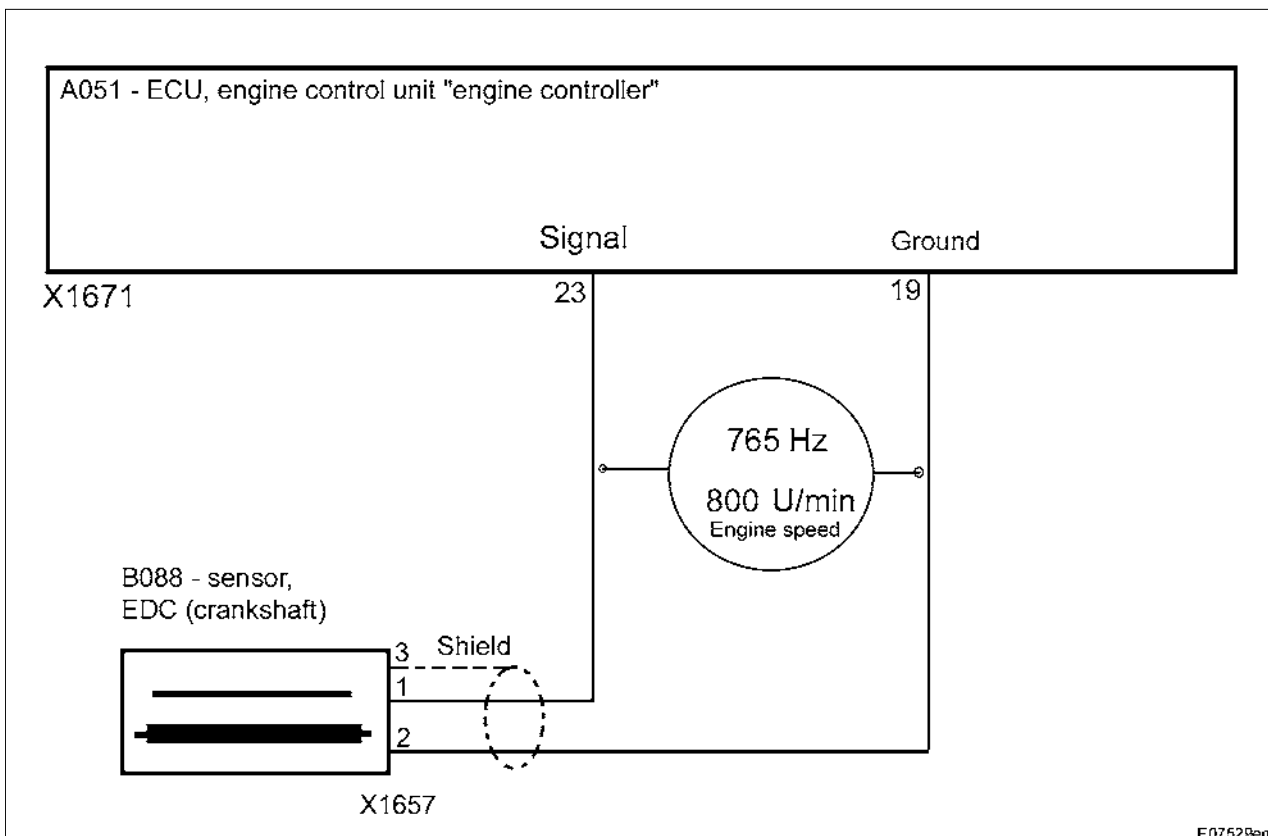
- Not enough fuel
- Fuel filter (main filter) clogged
- Water separator (prefilter) clogged
- Leakage in hand pump
- Leakage in fuel supply pump

Date	Version	Page		Capitel	Index	Docu-No.
29.05.2006	a	6/6	B087 - sensor, fuel low pressure (fuel pressure behind the fuel filter)	9000	E	000364

Fendt 300 Vario**Electrics / General system**
B088 - sensor, EDC (crankshaft)**E****B088** = Sensor, EDC (crankshaft)
Front of engine, on crankshaft**X1657** = Separation point on B088 - sensor, EDC
(crankshaft)
on right side of engine

Fendt 300 Vario

Electrics / General system
B088 - sensor, EDC (crankshaft)

E

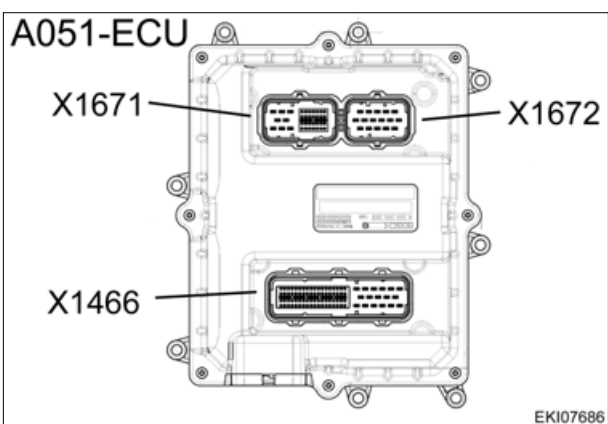
Item	Designation	Remark
A051	ECU, EDC	
X1671	Separation point on A051	
Pin 23	Signal	
Pin 19	Ground for B088 - sensor	
B088	Sensor, crankshaft (induction-type pulse generator)	
X1657	Separation point on B088	

Fendt 300 Vario

Electrics / General system
B088 - sensor, EDC (crankshaft)

E**A051** = ECU, EDC

At right entrance step



Measuring point on A051 - ECU, engine control unit (X1671 - separation point)

Pin	Function
23	Signal
19	Ground for B088 - sensor



Measuring point on B088 - sensor (X1657 - separation point)

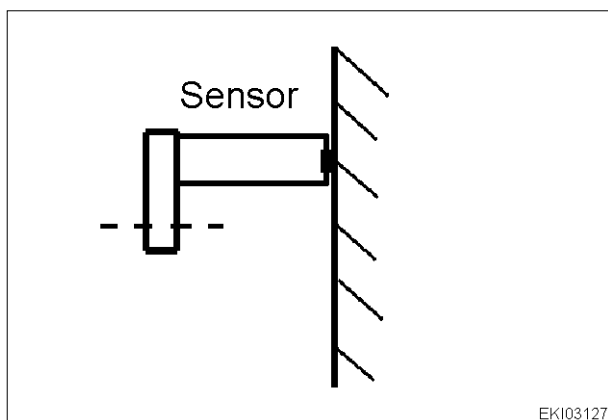
Pin	Function
1	Signal
2	Ground
3	Shielding against interference

Fendt 300 Vario	Electrics / General system B088 - sensor, EDC (crankshaft)	E
------------------------	--	----------

Measuring internal resistance of the B088 - sensor

Test	Pin	Specified value	Condition	Possible cause of fault
Signal	1	approx. 930 ohm	Switch off ignition; connect adapter cable X899.980.246.202 only to B088 - sensor (X1657 - separation point)	Reading infinite: component fault
Ground	2			

Testing permanent magnet of the induction-type pulse generator



Test permanent magnet of the induction-type pulse generator.

Hold induction-type pulse generator against a metal plate.

The induction-type pulse generator must 'stick' to the metal plate

Date	Version	Page	B088 - sensor, EDC (crankshaft)	Capitel	Index	Docu-No.
26.05.2006	a	4/8		9000	E	000362

Fendt 300 Vario

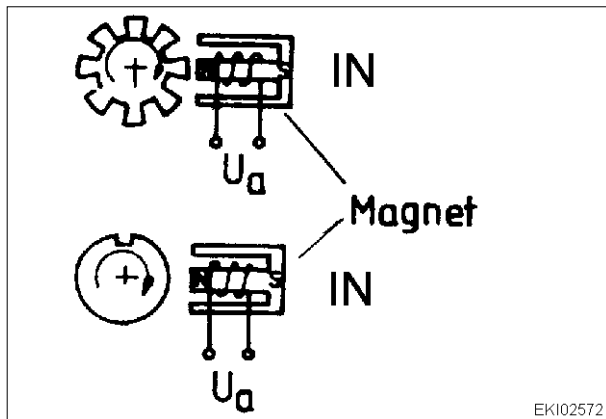
Electrics / General system
B088 - sensor, EDC (crankshaft)

E

Measuring induced voltage and frequency



Connect adapter cable X899.246.202 to the B088 - sensor, EDC (crankshaft) (X1657 - separation point).



IN = Induction-type pulse generator

Ua = induced voltage

Measuring induction-type pulse generators

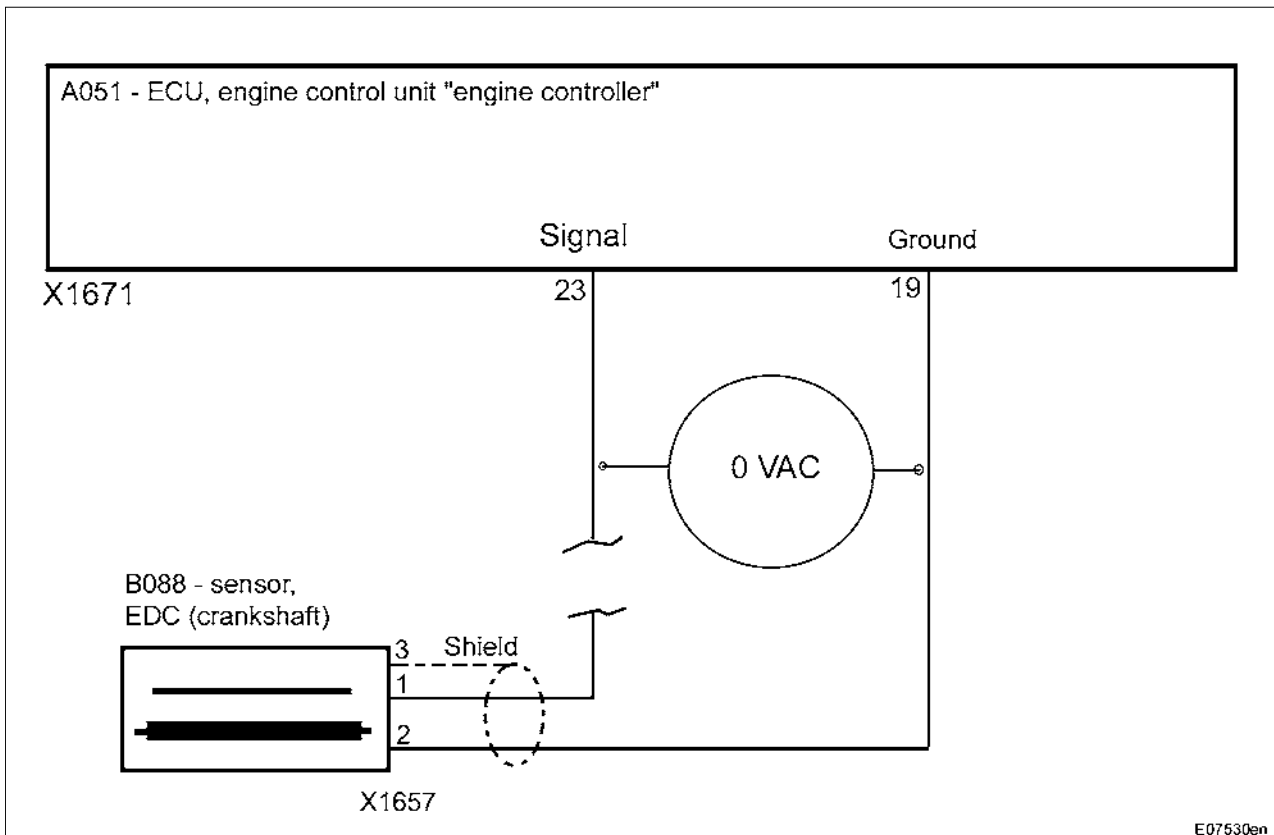
The **induction-type pulse generator** receives pulses directly from a pulse generator (gearwheel or disc). If the magnetic field of the induction-type pulse generator is cut by measuring points, an **AC induced voltage (VAC)** is generated.

The A051 - ECU, EDC 'engine control unit' calculates speed from the number of voltage impulses (frequency).

The number of voltage pulses is proportional to the speed (i.e. the voltage rises with increasing speed).

B088 - sensor, EDC (crankshaft)

Engine revolutions	Induced voltage (AC voltage VAC)	Frequency
Stationary (0 rpm)	0 VAC	0 Hz
Idling (800 rpm)	15.0 VAC	765 Hz
At medium speed (1600 rpm)	22.9 VAC	1.55 KHz
At no-load engine speed (2200 rpm)	26.2 VAC	2.1 KHz

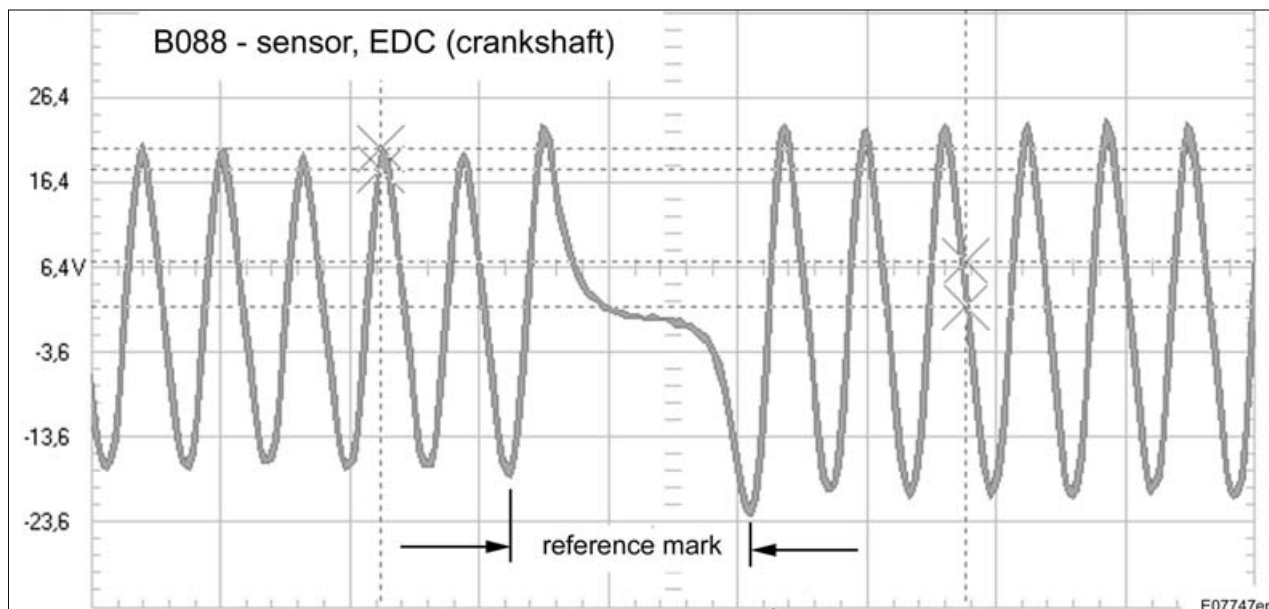
Fendt 300 Vario**Electrics / General system**
B088 - sensor, EDC (crankshaft)**E****Possible cause of fault**

Fendt 300 Vario

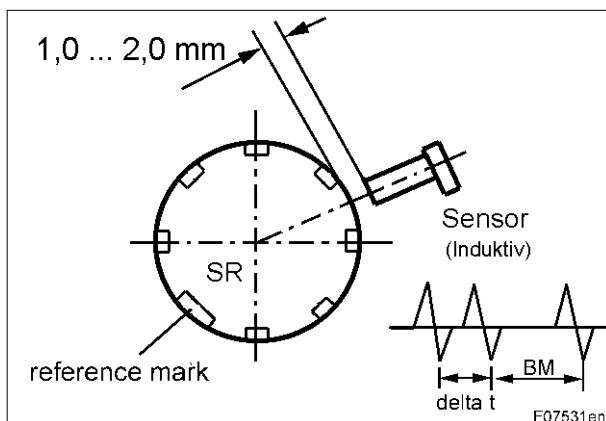
Electrics / General system
B088 - sensor, EDC (crankshaft)

E

Oscilloscope screen of B088 - sensor, EDC (crankshaft)



Calculating the crankshaft revolutions (engine speed) using the oscilloscope

**SR** = Flywheel**delta t** = Time between two voltage spikes

The A051 - ECU, EDC calculates engine speed
 based on the voltage spikes

Distance: sensor to flywheel**0.5 - 1.0 mm**

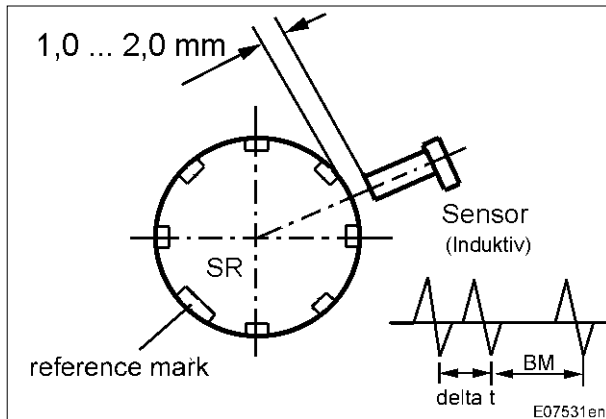
Date	Version	Page	B088 - sensor, EDC (crankshaft)	Capitel	Index	Docu-No.
26.05.2006	a	7/8		9000	E	000362

Fendt 300 Vario

Electrics / General system
B088 - sensor, EDC (crankshaft)

E

Detecting current engine position



When the crankshaft turns, the marks on the flywheel induce AC voltage (VAC) in the B088 - sensor.

The A051 - ECU, EDC calculates engine speed based on the voltage frequency

The gap (reference mark) in the marks has the effect that no voltage is induced.

This gap is used to detect the current crankshaft position and appears twice per working cycle

The B085 - sensor (camshaft) is required for synchronising injection. It delivers only 1 signal per working cycle, and must line up with the reference mark (of 1st cylinder) on the crankshaft.

Note:

Working cycle (4-cycle engine)

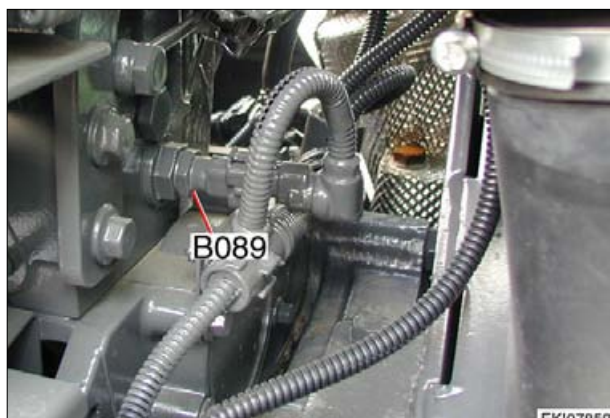
2 crankshaft revolutions

1 camshaft revolution

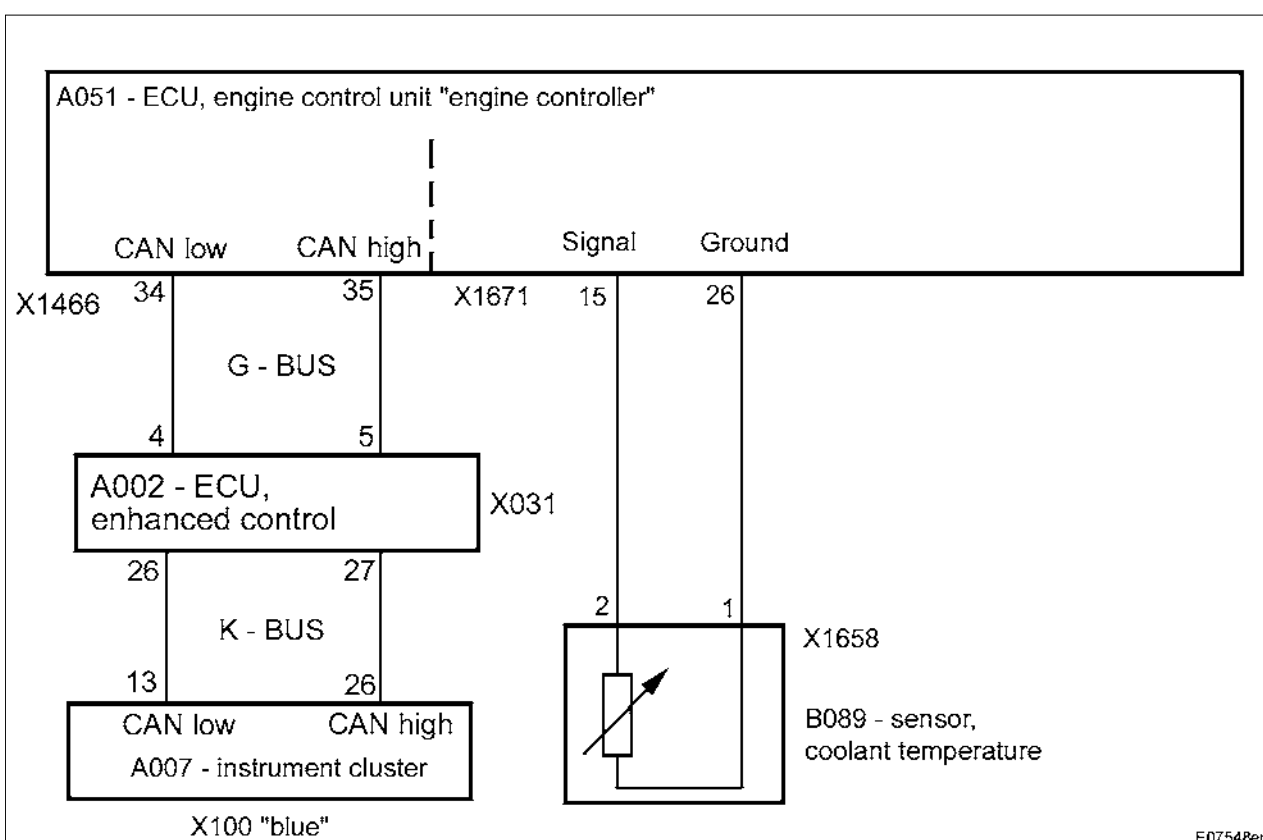
Date	Version	Page	B088 - sensor, EDC (crankshaft)	Capitel	Index	Docu-No.
26.05.2006	a	8/8		9000	E	000362

Fendt 300 Vario

Electrics / General system
B089 - sensor, coolant temperature

E**B089** = Sensor, coolant temperature**X1658** = Separation point on B089 sensor

On face end of cylinder head (flywheel side)



E07548en

Item	Designation	Remark
A051	ECU, EDC	
X1671	Separation point on A051	
Pin 15	Signal	
Pin 26	Ground for B089 - sensor	
X1466	Separation point on A051	
Pin 34	CAN low	
Pin 35	CAN high	
B089	Sensor, coolant temperature	
X1658	Separation point on B089	
A002	ECU, enhanced control	

Date	Version	Page	Capitel	Index	Docu-No.
30.05.2006	a	1/6	B089 - sensor, coolant temperature	9000	E 000365

Fendt 300 Vario	Electrics / General system B089 - sensor, coolant temperature	E
------------------------	---	----------

Item	Designation	Remark
X031	Separation point on A002	
A007	Instrument cluster	
X100 'blue'	Separation point on A007	
G-BUS	Transmission bus	
K-bus	Enhanced controls bus	

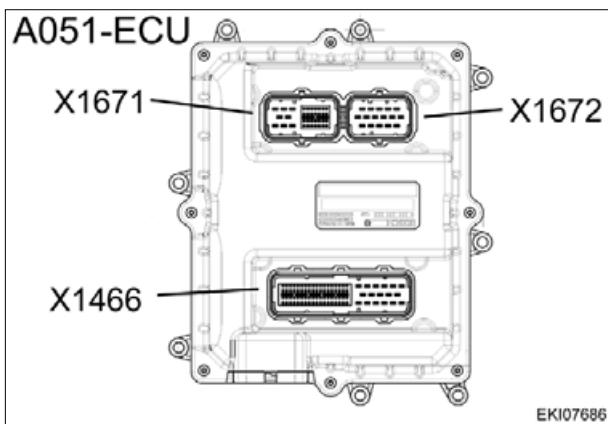
Date	Version	Page	Capitel	Index	Docu-No.
30.05.2006	a	2/6	B089 - sensor, coolant temperature	9000	E
					000365

Fendt 300 Vario

Electrics / General system
B089 - sensor, coolant temperature

E**A051** = ECU, EDC

At right entrance step



Measuring point on A051 - ECU, engine control unit (X1671 - separation point)

Pin	Function
15	Signal
26	Ground for B089 - sensor

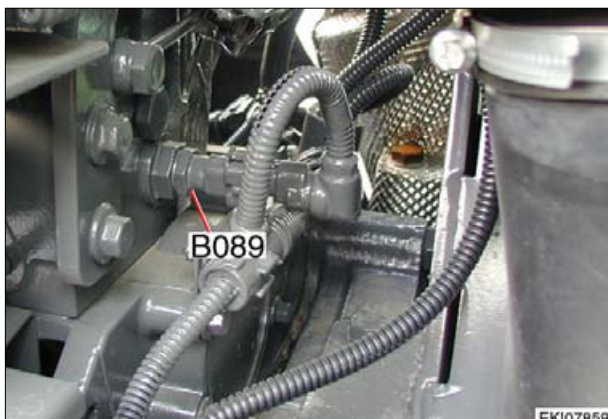


Connect e-adapter box X899.980.208.100 to X1671 on the A051 - ECU, engine control unit with adapter cable X899.980.208.218

Pin	Function
45 (on the 68-pin adapter box)	Signal
56 (on the 68-pin adapter box)	Ground for B089 - sensor

Fendt 300 Vario

Electrics / General system
B089 - sensor, coolant temperature

E
**Measuring point on B089 - sensor
 (X1658 - separation point)**

Pin	Function
1	Ground
2	Signal


Testing B089 - sensor, coolant temperature

Connect adapter cable X899.980.259.104 to
 B089 - sensor

Test resistance with multimeter (ohmmeter)

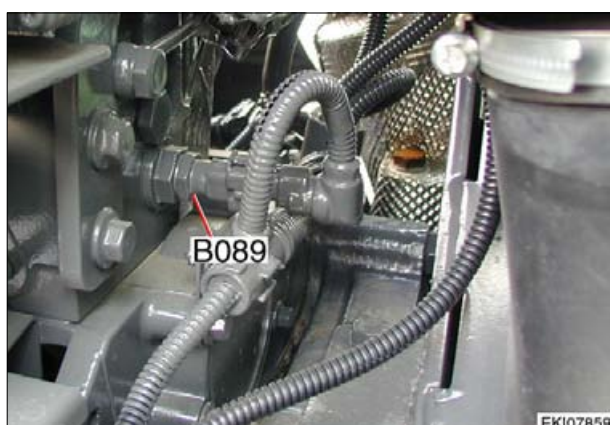
Heat B089 - sensor in water bath

(See table for resistance values)

Fendt 300 Vario	Electrics / General system B089 - sensor, coolant temperature	E
------------------------	--	----------

Characteristic from B089 - sensor, coolant temperature

Coolant temperature (°C)	Resistance	Display in A007- instrument cluster
-40	45.3 kilohm	
-30	26.1 kilohm	
-20	15.5 kilohm	
-10	9.4 kilohm	
-5	7.4 kilohm	
0	5.9 kilohm	
5	4.7 kilohm	
10	3.8 kilohm	
20	2.5 kilohm	
25	2.1 kilohm	
30	1.7 kilohm	
40	1.2 kilohm	
50	800 ohms	
60	600 ohms	
70	400 ohms	1 bar
74	380 ohms	2 bars
78	340 ohms	3 bars
82	300 ohms	4 bars
86	260 ohms	5 bars
90	240 ohms	6 bars
94	210 ohms	7 bars
98	190 ohms	8 bars
102	170 ohms	9 bars
106	150 ohms	10 bars
110	140 ohms	11 bars 'red zone'
113	130 ohms	12 bars 'red zone'



Testing coolant temperature in A007 - instrument cluster

Connect adapter cable X899.980.259.104 to X1658 - separation point (connection to B089 remains disconnected)

Connect resistance decade box X 899.980.224

Ignition 'ON'

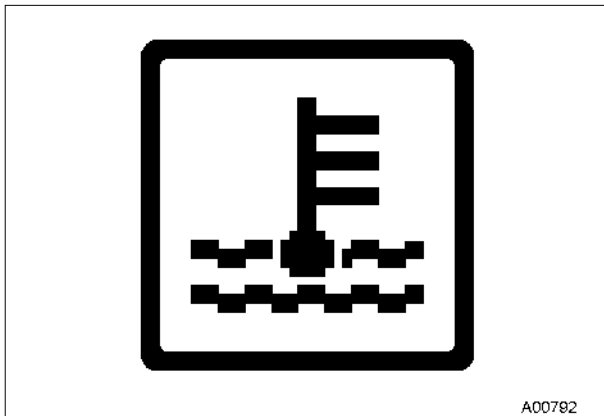
Apply the corresponding resistance (see table) and compare to the display in A007 - instrument cluster

Note:

Observe adaptation time

Date	Version	Page	B089 - sensor, coolant temperature	Capitel	Index	Docu-No.
30.05.2006	a	5/6		9000	E	000365

Fendt 300 Vario	Electrics / General system B089 - sensor, coolant temperature	E
------------------------	--	----------

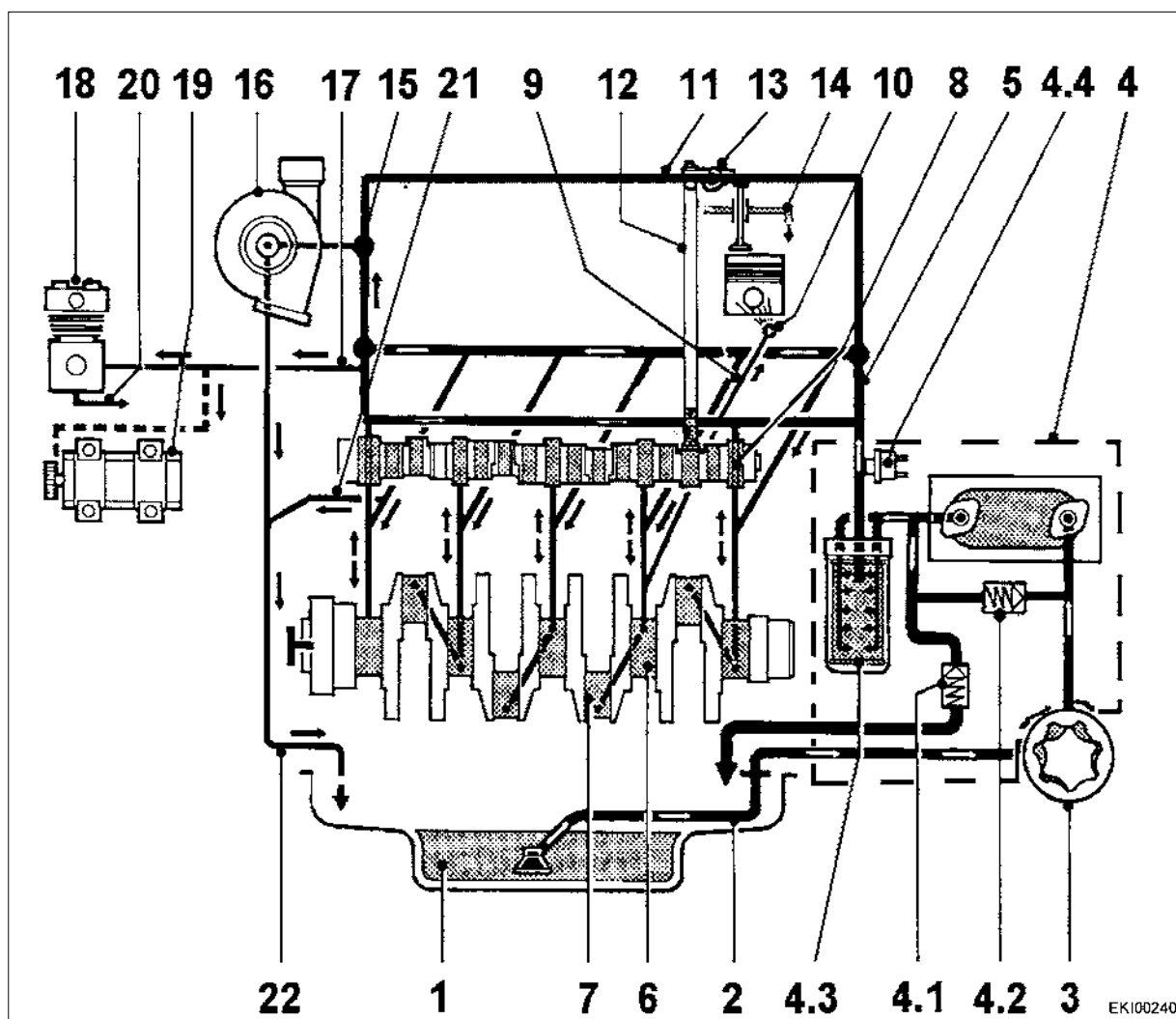


Warning: coolant temperature

Date	Version	Page	B089 - sensor, coolant temperature	Capitel	Index	Docu-No.
30.05.2006	a	6/6		9000	E	000365

Fendt 300 Vario

Electrics / General system
B090 / B093 - sensor, engine oil pressure

E

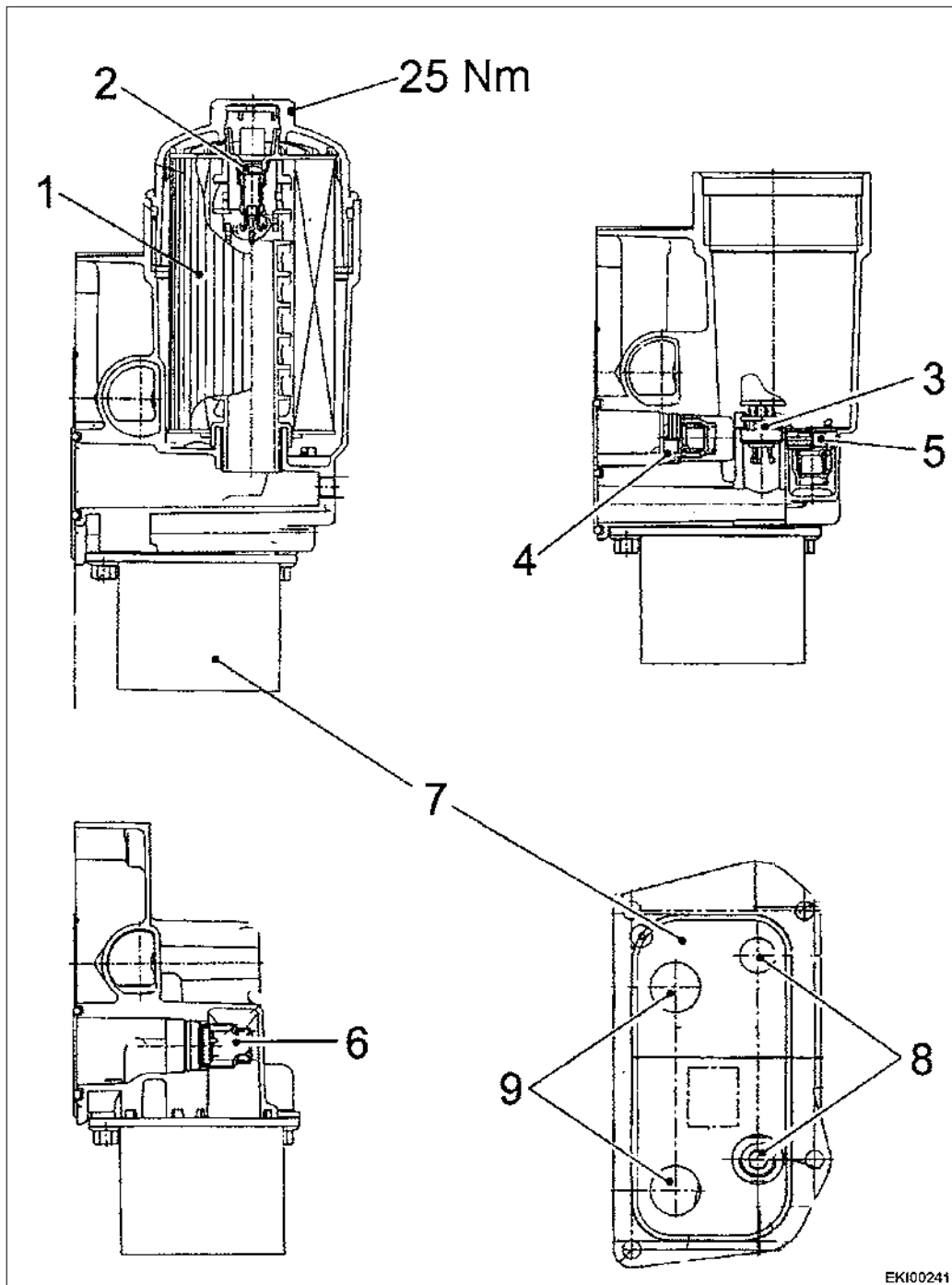
EKI00240

1	Oil pan	11	Lubrication of rocker arms via bores in rocker arm shafts
2	Intake line	12	Push rod
3	Lube oil pump	13	Rocker arm
4	Oil cooler housing	14	Return line to oil pan
4.1	- pressure relief valve lube oil; 4 ± 0.4 bar	15	Oil line to turbocharger
4.2	- radiator bypass; 1.45 ± 0.3 bar	16	Turbocharger
4.3	- Lube oil filter	17	Oil line to compressor or hydraulic pump
4.4	- switch, engine oil pressure (B093 / B090)	18	Compressor
5	Main oil pipe	19	Hydraulic pump
6	Crankshaft main bearing	20	Return line
7	Big end bearing	21	Return line to oil pan
8	Camshaft bearing	22	Return line from turbocharger
9	Bore for piston coolant nozzle		
10	Piston coolant nozzle		

Fendt 300 Vario

Electrics / General system
B090 / B093 - sensor, engine oil pressure

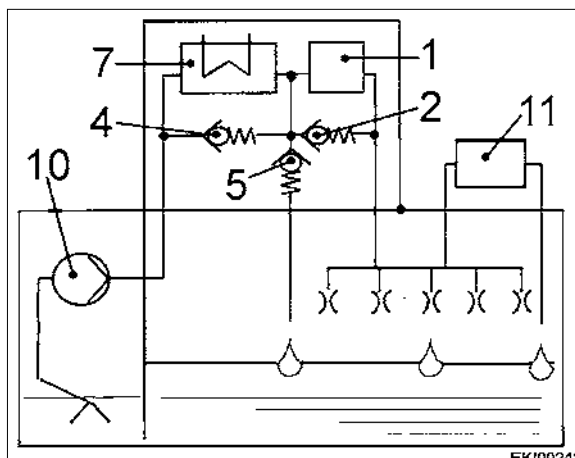
E



Date	Version	Page	Capitel	Index	Docu-No.
31.05.2006	a	2/10	B090 / B093 - sensor, engine oil pressure	9000	E
					000368

Fendt 300 Vario

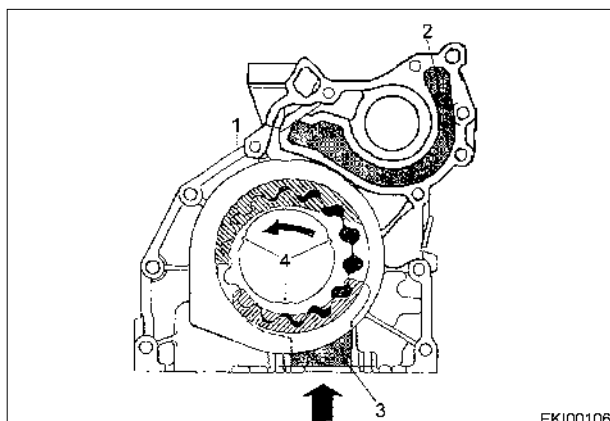
Electrics / General system
B090 / B093 - sensor, engine oil pressure

E

Item	Designation	Remarks
1	Oil filter	Comprises: filter housing, filter cover, filter element. Tightening torque of the cover: 25 Nm.
2	Filter bypass valve	Opening pressure: $p = 2.5 \pm 0.5$ bar.
3	Drain valve	Opens when filter cover is loosened 1 to 2 turns. Oil in filter housing runs into oil pan.
4	Cooler bypass valve	Protects cooler against pressure peaks. Opening pressure: $p = 1.45 \pm 0.3$ bar.
5	Pressure control valve	Opening pressure: $p = 4.0 \pm 0.4$ bar.
6	Return flow check valve	Prevents oil circuit from emptying when engine is switched off. Max. opening pressure 0.12 bar.
7	Oil cooler	Aluminium shell cooler
8	Water overflow	Between oil cooler housing and oil cooler
9	Oil overflow	Between oil cooler housing and oil cooler
10	Lube oil pump	Rotor pump; volumetric flow rate at $n = 2500$ rpm: TCD 2012 = approx. 65 l/min
11	Turbocharger	

The TCD 2012 series engines have a forced-feed lubrication system. The lube oil flows from the lube oil pump through the oil cooler to the oil filter. Both components are mounted on the oil cooler housing, which is in turn mounted on the crankcase.

The lube pump is fitted in the front part of the bearing cap in the form of a rotor pump.

**Lube pump**

- 1 = Inner pipe
- 2 = Pressure chamber to crankcase
- 3 = Inlet chamber
- 4 = Driver profile (not at 120° pitch)

Date	Version	Page	Capitel	Index	Docu-No.
31.05.2006	a	3/10	B090 / B093 - sensor, engine oil pressure	9000	E
					000368

Fendt 300 Vario	Electrics / General system B090 / B093 - sensor, engine oil pressure	E
------------------------	---	----------



B093 = Sensor, engine oil pressure (pilot production)
on engine oil filter housing



B087 = Sensor, fuel low pressure



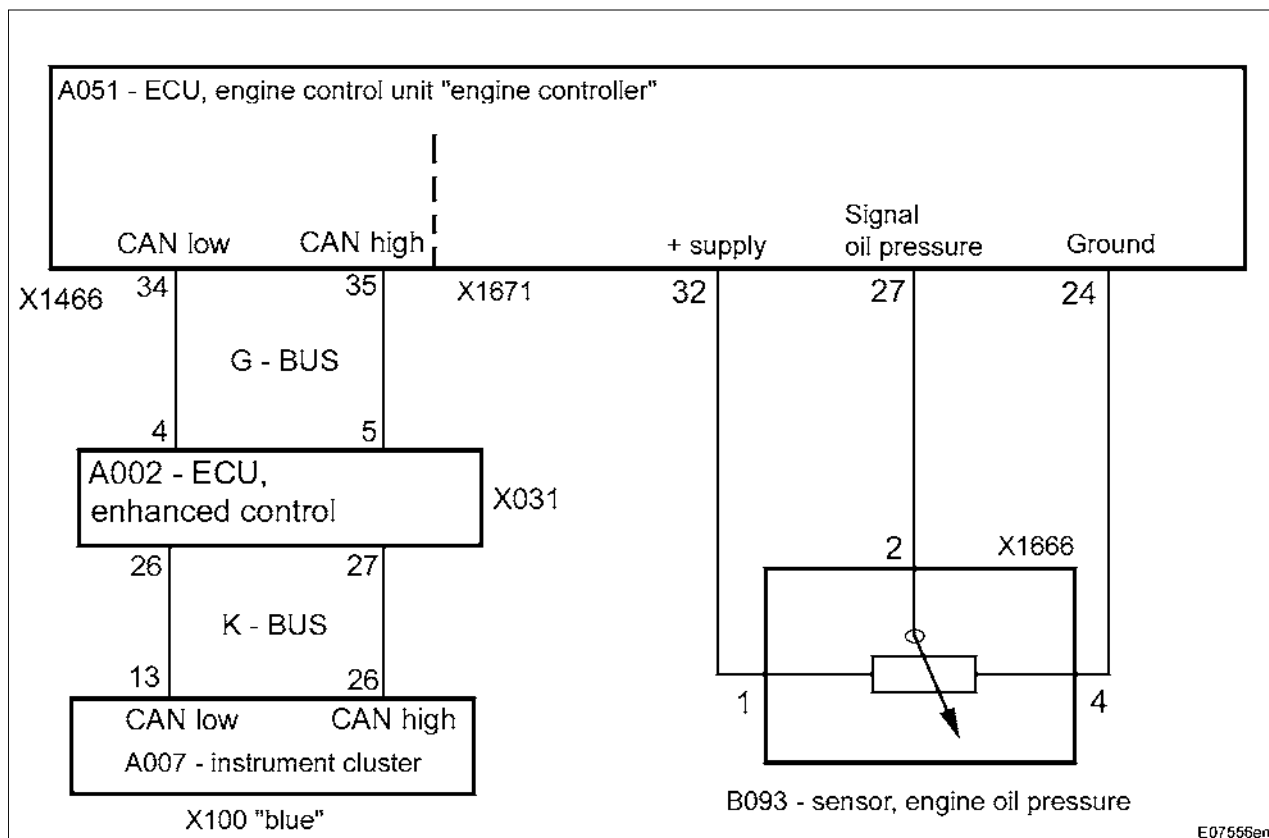
B090 = Sensor, engine oil pressure (starting with series production, chassis no. 1001)
on engine oil filter housing



B087 = Sensor, fuel low pressure

Date	Version	Page	Capitel	Index	Docu-No.
31.05.2006	a	4/10	B090 / B093 - sensor, engine oil pressure	9000	E
					000368

Fendt 300 Vario	Electrics / General system B090 / B093 - sensor, engine oil pressure	E
------------------------	---	----------

Block diagram: B093 - Sensor (pilot production)

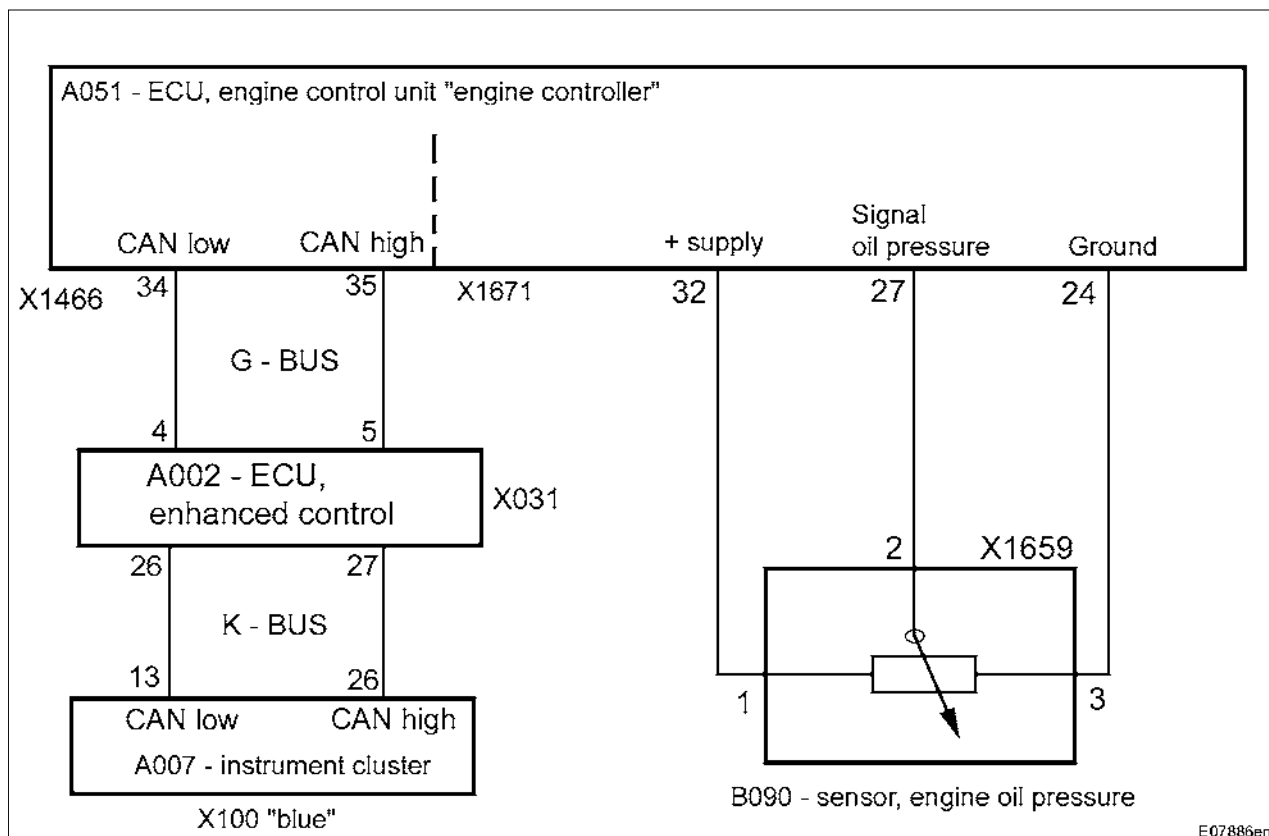
E07556en

Item	Designation	Remark
A051	ECU, EDC	
X1671	Separation point on A051	
Pin 24	Ground for B093 - sensor	
Pin 27	Signal	
Pin 32	+ Supply (5.0 VDC)	
X1466	Separation point on A051	
Pin 34	CAN low	
Pin 35	CAN high	
B093	Sensor, engine oil pressure	
X1666	Separation point on B093	
A002	ECU, enhanced control	
X031	Separation point on A002	
A007	Instrument cluster	
X100 'blue'	Separation point on A007	
G-BUS	Transmission bus	
K-bus	Enhanced controls bus	

Date	Version	Page	B090 / B093 - sensor, engine oil pressure	Capitel	Index	Docu-No.
31.05.2006	a	5/10		9000	E	000368

Fendt 300 Vario	Electrics / General system B090 / B093 - sensor, engine oil pressure	E
------------------------	---	----------

Block diagram: B090 - sensor (starting with series production)



Item	Designation	Remark
A051	ECU, EDC	
X1671	Separation point on A051	
Pin 24	Ground for B093 - sensor	
Pin 27	Signal	
Pin 32	+ Supply (5.0 VDC)	
X1466	Separation point on A051	
Pin 34	CAN low	
Pin 35	CAN high	
B090	Sensor, engine oil pressure	
X1659	Separation point on B090	
A002	ECU, enhanced control	
X031	Separation point on A002	
A007	Instrument cluster	
X100 'blue'	Separation point on A007	
G-BUS	Transmission bus	
K-bus	Enhanced controls bus	

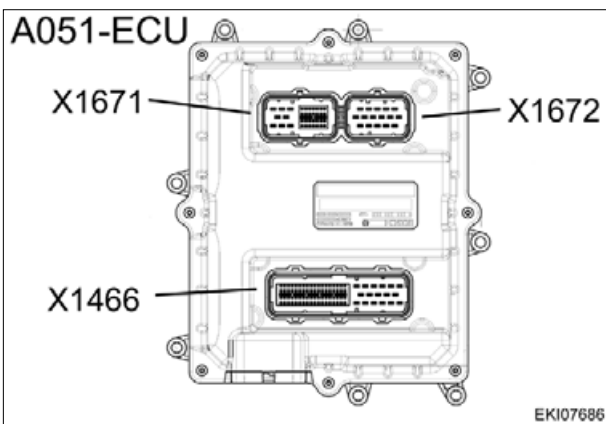
Date	Version	Page	B090 / B093 - sensor, engine oil pressure	Capitel	Index	Docu-No.
31.05.2006	a	6/10		9000	E	000368

Fendt 300 Vario

Electrics / General system
B090 / B093 - sensor, engine oil pressure

E**A051** = ECU, EDC

At right entrance step



Measuring point on A051 - ECU, engine control unit (X1671 - separation point)

Pin	Function
24	Ground
27	Signal
32	+ Supply (5.0 VDC)



Connect e-adapter box X899.980.208.100 to X1671 on the A051 - ECU, engine control unit with adapter cable X899.980.208.218

Pin	Function
54 (on the 68-pin adapter box)	Ground
57 (on the 68-pin adapter box)	Signal
62 (on the 68-pin adapter box)	+ Supply (5.0 VDC)

Fendt 300 Vario

Electrics / General system
B090 / B093 - sensor, engine oil pressure

E

Pilot production	
Measuring point on B093 - sensor (X1666 - separation point)	
Pin	Function
1	+ supply
2	Signal
3	Not assigned
4	Ground



starting with series production (starting with chassis no.. 1001)	
Measuring point on B090 - sensor (X1659 - separation point)	
Pin	Function
1	+ supply
2	Signal
3	Ground

Fendt 300 Vario

Electrics / General system
B090 / B093 - sensor, engine oil pressure

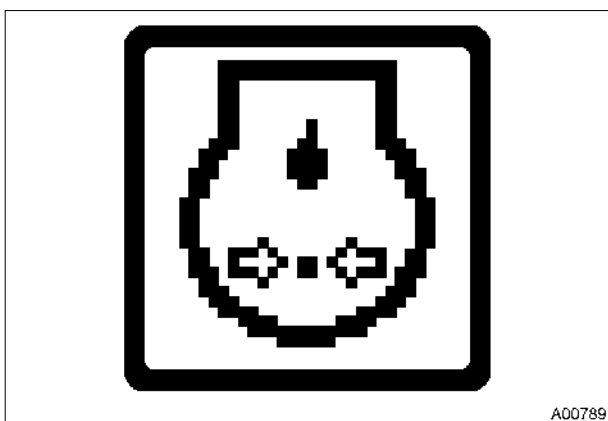
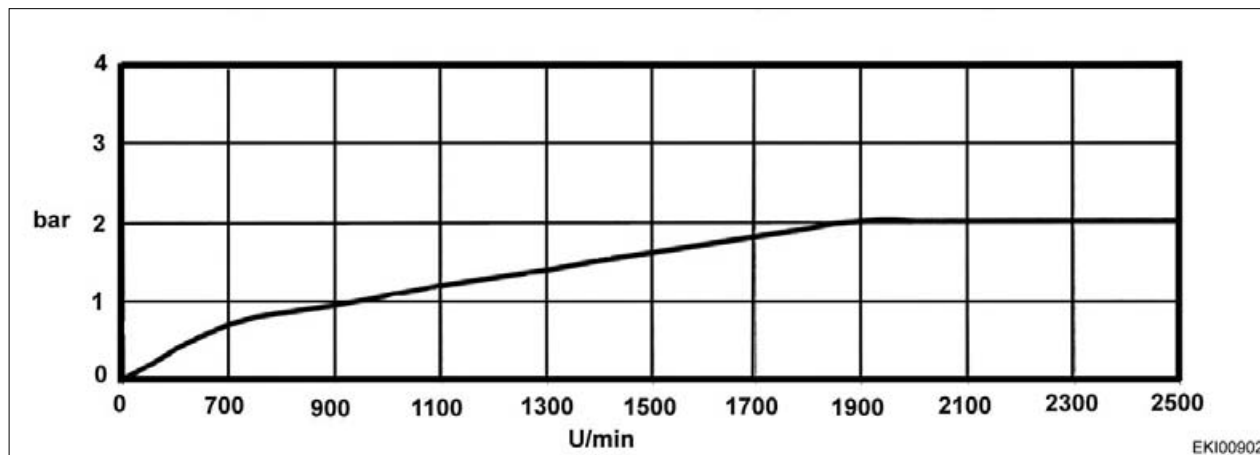
E

Testing engine oil pressure with pressure gauge



Fit M10x1 measurement adapter (X598.303.000) in filter bracket.

Minimum oil pressure at 120°C oil temperature, measured at oil filter bracket.



If the required pressures are not reached at the respective engine speed, this fault message is displayed on the instrument cluster.

Fendt 300 Vario	Electrics / General system B090 / B093 - sensor, engine oil pressure	E
------------------------	---	----------

Testing B093 - sensor

Note:

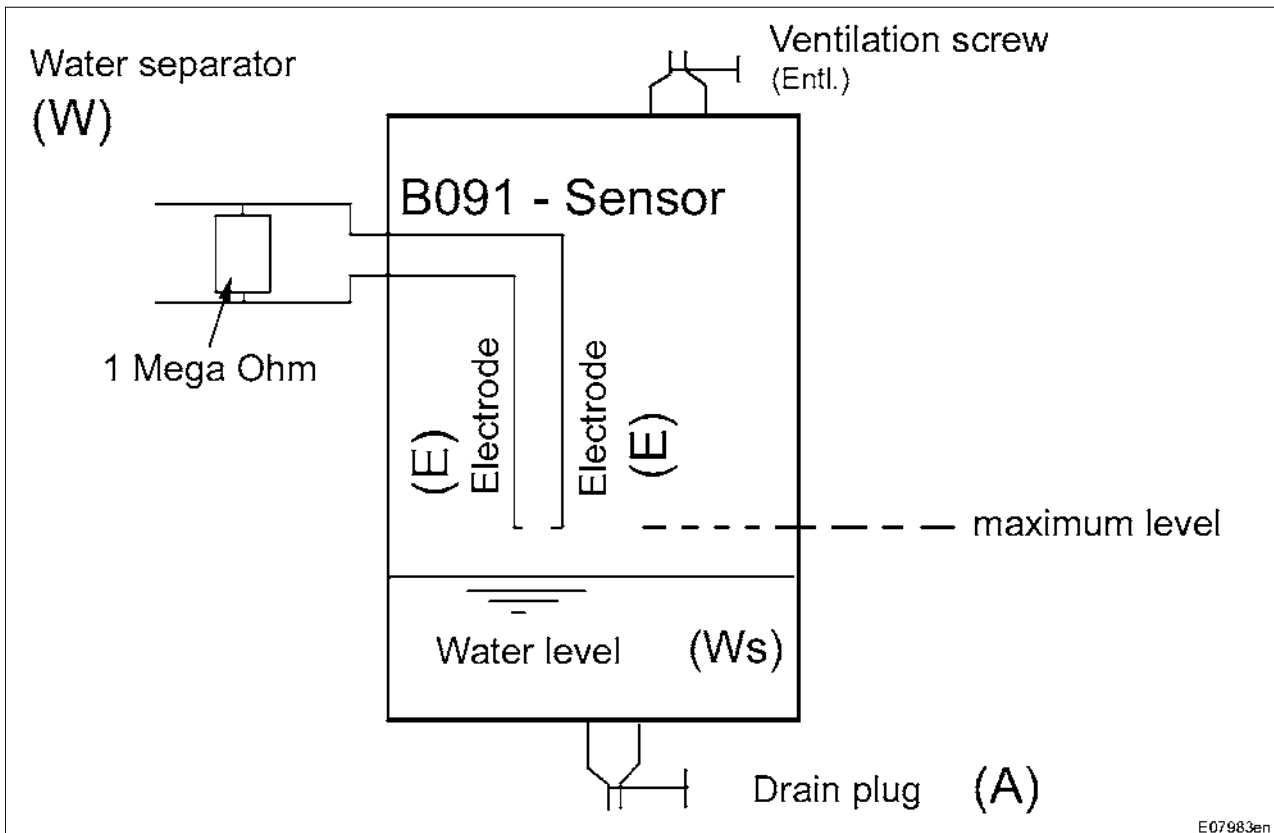
Ignition 'ON'

Test	Pin	Specified value	Pressure	Remark
+ supply	1	5.0 VDC		Check A051 - ECU, EDC
Ground	4			
Signal	2	0.5 VDC	1.0 bar	
		1.0 VDC	2.0 bar	
		1.5 VDC	3.0 bar	
		2.0 VDC	4.0 bar	
		2.5 VDC	5.0 bar	
		3 VDC	6.0 bar	
		3.1 VDC	6.3 bar	
Ground	4			

Date	Version	Page	Capitel	Index	Docu-No.
31.05.2006	a	10/10	9000	E	000368

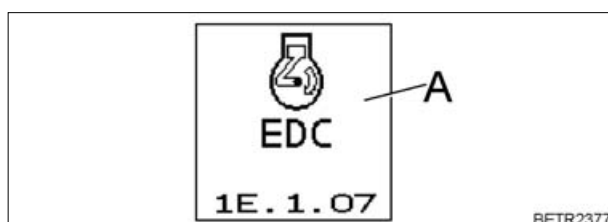
Fendt 300 Vario

Electrics / General system
B091 - sensor, water in fuel

E**B091 - sensor, water in fuel function**

The B091 - sensor measures the water level in the water separator

Item	Designation	Item	Designation
A	Drain plug	Entl.	Ventilation screw
B091	Sensor, water in fuel	W	Water separator
E	Electrode	ws	Water level

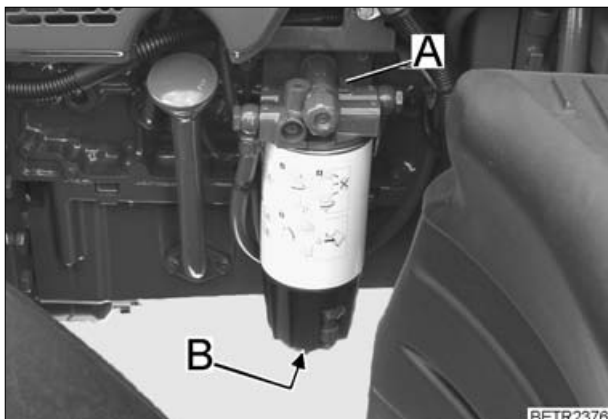
**If the water level reaches maximum level:**

Notice (A) appears in the multiple display, drain water and dirt

Date	Version	Page	B091 - sensor, water in fuel	Capitel	Index	Docu-No.
31.05.2006	a	1/5		9000	E	000366

Fendt 300 Vario

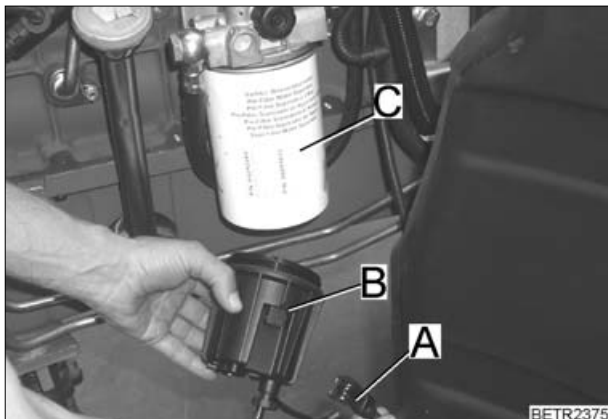
Electrics / General system
B091 - sensor, water in fuel

E**Draining off water and dirt**

- Switch engine off.
- Open vent screw (A).
- Open drain screw (B).
- Drain water and dirt. Collect in a suitable receptacle and dispose of in an environmentally acceptable manner.
- Close vent screw (A).
- Close drain screw (B).
- Start engine, test fuel prefilter for leaks.

Changing the filter

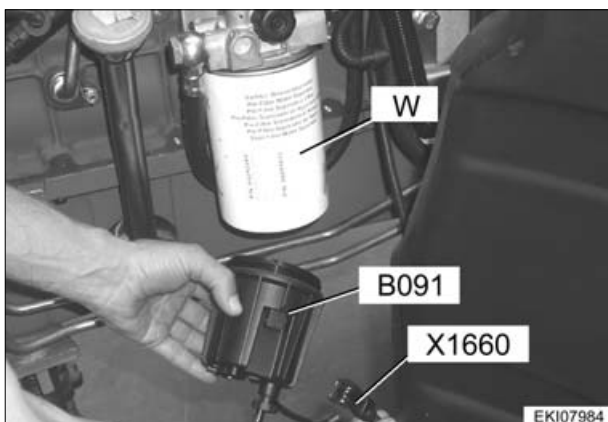
Fitting new parts and maintenance in accordance with the maintenance plan - when engine power is reduced or, if necessary, earlier.



- Switch engine off.
- Disconnect X1660 - separation point (A), unscrew filter cover (B).
- Screw out filter cartridge (C).
- Lightly oil seals or spray with diesel.
- Tighten the filter cartridge (C) by hand until the seal makes contact.
- Tighten the filter cartridge (C) by another half turn (18 Nm).
- Connect X1660 - separation point (A), screw on filter cover (B).
- Bleed air from fuel system.
- Start engine, test fuel prefilter for leaks.

Note:

Used fuel filters are rubbish to be specially disposed of.



B091 = Sensor, water in fuel

X1660 = Separation point on B091

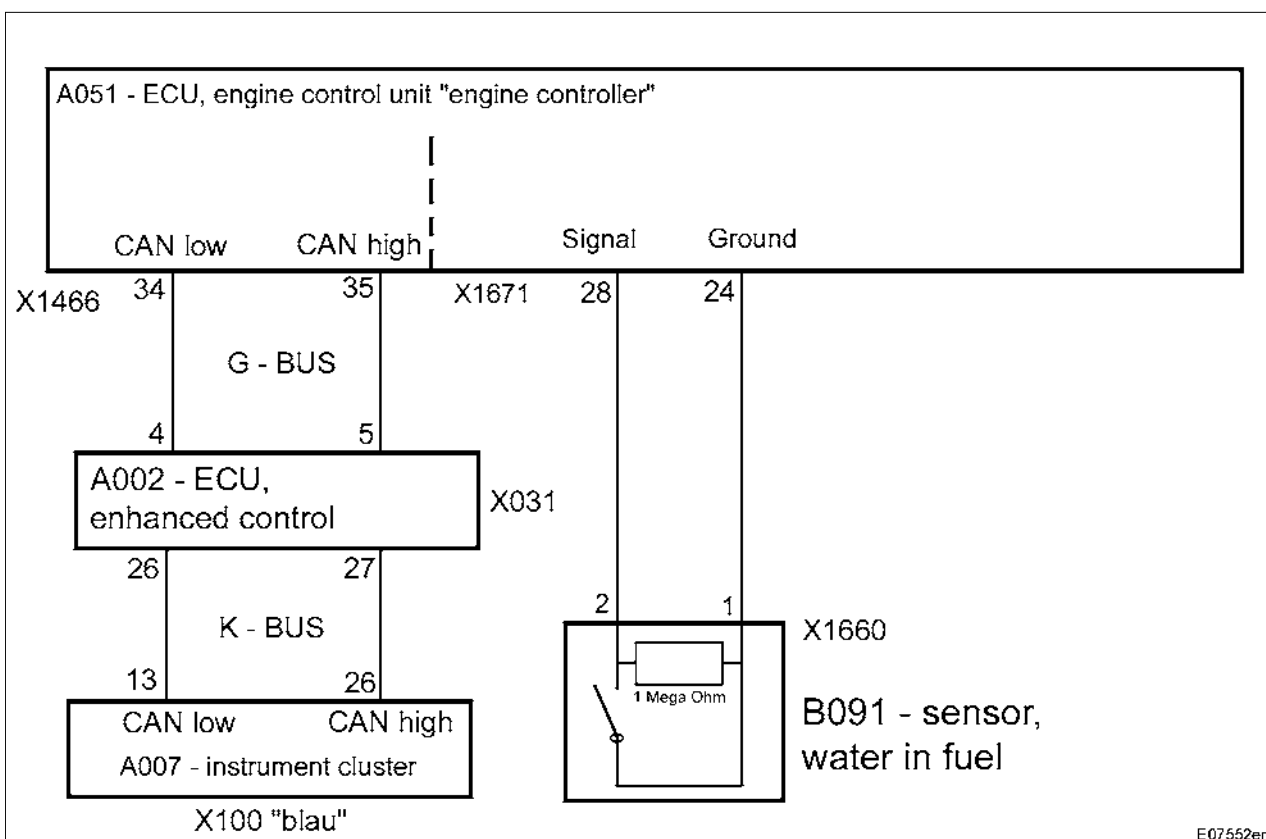
W = Water separator

Left side of tractor



Date	Version	Page	B091 - sensor, water in fuel	Capitel	Index	Docu-No.
31.05.2006	a	2/5		9000	E	000366

Fendt 300 Vario	Electrics / General system B091 - sensor, water in fuel	E
------------------------	--	----------



Item	Designation	Remark
A051	ECU, EDC	
X1671	Separation point on A051	
Pin 24	Ground for B091 - sensor	
Pin 28	Signal	
X1466	Separation point on A051	
Pin 34	CAN low	
Pin 35	CAN high	
B091	Sensor, water in fuel	
X1660	Separation point on B091	
A002	ECU, enhanced control	
X031	Separation point on A002	
A007	Instrument cluster	
X100 "blue"	Separation point on A007	
G-BUS	Transmission bus	
K-bus	Enhanced controls bus	

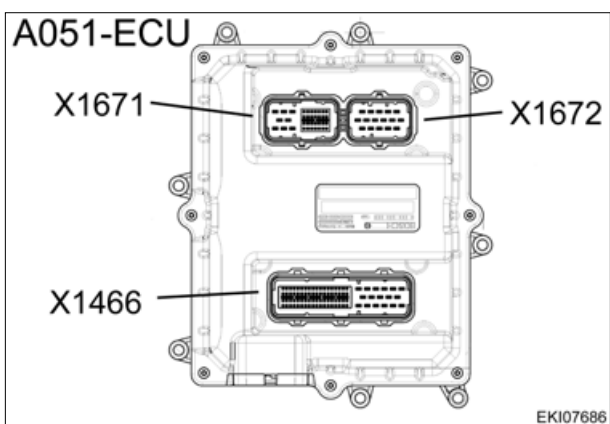
Date	Version	Page	B091 - sensor, water in fuel	Capitel	Index	Docu-No.
31.05.2006	a	3/5		9000	E	000366

Fendt 300 Vario

Electrics / General system
B091 - sensor, water in fuel

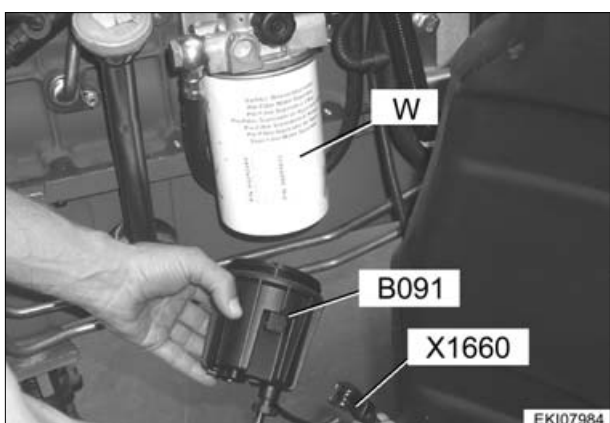
E**A051** = ECU, EDC

At right entrance step



**Measuring point on
 A051 - ECU, engine
 control unit (X1671 - se-
 paration point)**

Pin	Function
24	Ground for B091 - sensor
28	Signal



**Measuring point on
 B091 - sensor (X1660 -
 separation point)**

Pin	Function
1	Ground
2	Signal

Fendt 300 Vario	Electrics / General system B091 - sensor, water in fuel	E
------------------------	--	----------

Note:

Connect adapter cable X 899.980.246.201 directly to B091.
Ignition 'ON'.

Test	Pin	Specified value	Condition	Possible cause of fault
Signal	2	4,4 VDC	Switch open	Short to ground, fault in component, A051 ECU, EDC
		0 VDC	Switch close	
Ground	1			

Note:

Bleeding the fuel system, see Capitel 2060 fuel system Reg. G

Date	Version	Page	B091 - sensor, water in fuel	Capitel	Index	Docu-No.
31.05.2006	a	5/5		9000	E	000366

Fendt 300 Vario

Electrics / General system

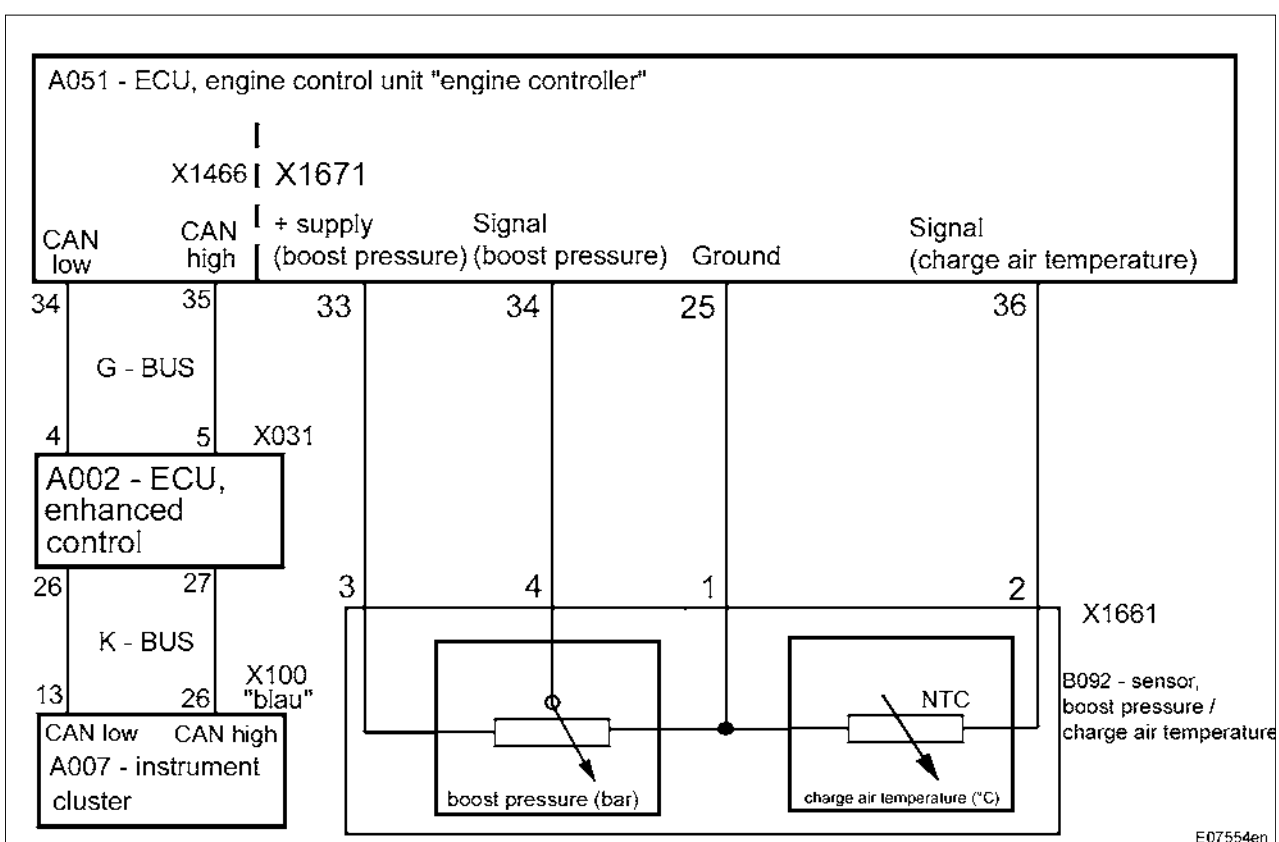
B092 - sensor, boost pressure / charge air temperature

E

B092 = Sensor, boost pressure / charge air temperature



On front of engine on intake manifold



Item	Designation	Remark
A051	ECU, EDC	
X1671	Separation point on A051	
Pin 25	Ground	
Pin 33	+ supply (boost pressure)	
Pin 34	Signal (boost pressure)	serves for engine control
Pin 36	Signal (charge air temperature)	serves for displaying the warning in the A007 - instrument cluster
X1466	Separation point on A051	
Pin 34	CAN low	
Pin 35	CAN high	

Date	Version	Page	Capitel	Index	Docu-No.
31.05.2006	a	1/8	B092 - sensor, boost pressure / charge air temperature	9000	E 000367

Fendt 300 Vario	Electrics / General system B092 - sensor, boost pressure / charge air temperature	E
------------------------	---	----------

Item	Designation	Remark
B092	Sensor, boost pressure / charge air temperature	
X1661	Separation point on B092	
A002	ECU, enhanced control	
X031	Separation point on A002	
A007	Instrument cluster	
X100 'blue'	Separation point on A007	
G-BUS	Transmission bus	
K-bus	Enhanced controls bus	

Date	Version	Page	Capitel	Index	Docu-No.
31.05.2006	a	2/8	B092 - sensor, boost pressure / charge air temperature 9000	E	000367

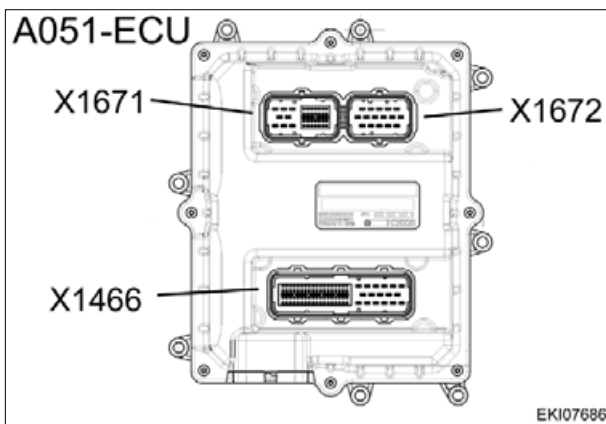
Fendt 300 Vario

Electrics / General system

B092 - sensor, boost pressure / charge air temperature

E**A051** = ECU, EDC

At right entrance step



Measuring point on A051 - ECU, engine control unit (X1671 - separation point)

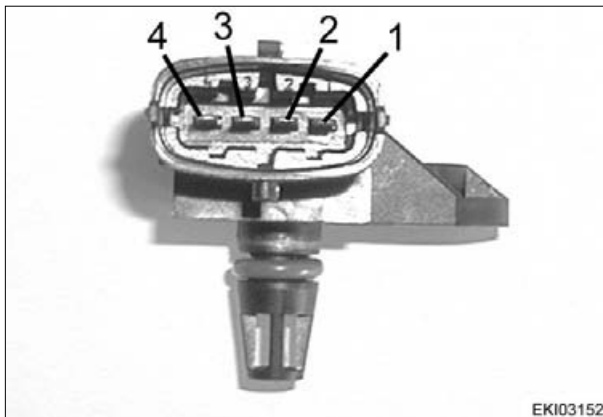
Pin	Function
25	Ground for B092 - sensor
33	+ supply (boost pressure)
34	Signal (boost pressure)
36	Signal (charge air temperature)



Connect e-adapter box X899.980.208.100 to X1671 on the A051 - ECU, engine control unit with adapter cable X899.980.208.218

Pin	Function
55 (on the 68-pin adapter box)	Ground for B092 - sensor
63 (on the 68-pin adapter box)	+ supply (boost pressure)
64 (on the 68-pin adapter box)	Signal (boost pressure)
66 (on the 68-pin adapter box)	Signal (charge air temperature)

Fendt 300 Vario	Electrics / General system	E
B092 - sensor, boost pressure / charge air temperature		



Measuring points on B092 - sensor (X1661 - separation point)	
Pin	Function
1	Ground (for charge air temperature and boost pressure)
2	Signal (charge air temperature)
3	+ supply (5.0 VDC) (for boost pressure)
4	Signal (boost pressure)

about engine control (A051 - ECU, EDC)

The B092 - sensor measures the boost pressure and charge air temperature. The signals are sent to A051 - ECU, EDC

In the A051 - ECU, boost pressure is used for engine control ("LDA - function").

about charge air temperature warning (in A007 - instrument cluster)

The A051 - ECU, EDC measures the charge air temperature from B092 - sensor and send it to A002 - ECU, enhanced control via the G-BUS.

The "warning threshold" for charge air temperature is stored in the A002 - ECU.

If the charge air temperature exceeds the warning threshold, A002 - ECU puts out an error message.

The error message goes to the A007 - instrument cluster via the K-BUS and appears in the display.

Date	Version	Page		Capitel	Index	Docu-No.
31.05.2006	a	4/8	B092 - sensor, boost pressure / charge air temperature	9000	E	000367

Fendt 300 Vario	Electrics / General system B092 - sensor, boost pressure / charge air temperature	E
------------------------	---	----------

Testing sensor - charge air temperature

Note:

the B092 - sensor (charge air temperature) is an NTC - sensor (Negative Temperature Coefficient)

With increasing temperature, the resistance of the sensor decreases

Temperature [°C]	Resistance [ohm]	Fault code
- 30	27 K	
- 20	16 K	
- 10	9.4 K	
- 5	7.4 K	
0	5.9 K	
5	4.7 K	
10	3.8 K	
20	2.5 K	
30	1.7 K	
60	610	
70	450	
80	330	
90	250	
95	210	Warning, acoustic warning signal
100	190	
110	140	
120	110	
130	85	

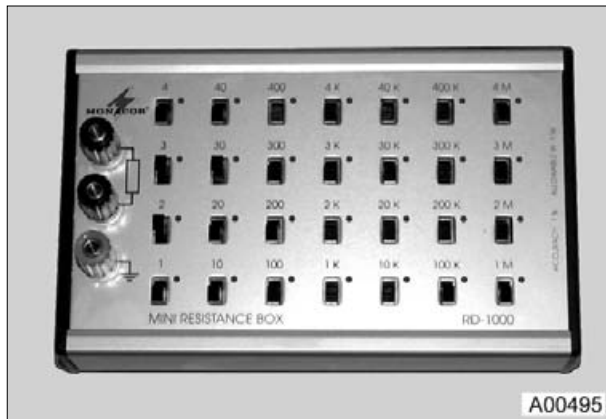
Note:

All measured values +/- 5%

Date	Version	Page		Capitel	Index	Docu-No.
31.05.2006	a	5/8	B092 - sensor, boost pressure / charge air temperature	9000	E	000367

Fendt 300 Vario	Electrics / General system	E
	B092 - sensor, boost pressure / charge air temperature	

Testing warning (charge air temperature) in A007 - instrument cluster



Checking warning with resistance decade box X 899.980.224.

Ignition 'OFF'

Disconnect component separation point on B092 - sensor.

Connect adapter cable X 899.980.259.102 and resistance decade box X 899.980.224 only to cable harness

Select desired resistance (according to table).

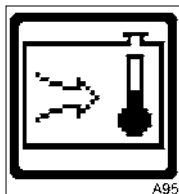
Ignition 'ON'

Acoustic warning signal and warning is displayed in A007 - instrument cluster .

Note:

Observe adaptation time

Charge air temperature warning display



Date	Version	Page		Capitel	Index	Docu-No.
31.05.2006	a	6/8	B092 - sensor, boost pressure / charge air temperature	9000	E	000367

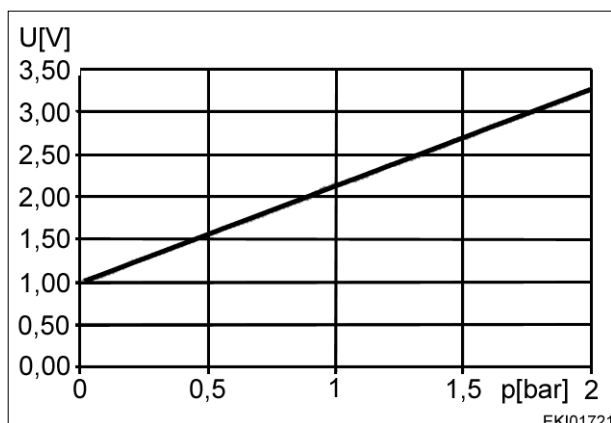
Fendt 300 Vario	Electrics / General system	E
B092 - sensor, boost pressure / charge air temperature		

Testing sensor - boost pressure

Test	Pin	Specified value	Condition	Possible cause of fault
Supply	3	5.0 VDC		A051 - ECU, EDC or in wiring
Ground	1			

Signal	4	approx. 1.0 VDC	Cold engine, engine off	A) Reading 0 VDC, fault in component or fault in wiring (signal line). B) Reading 4.8 VDC: Fault in component or in wiring (ground cable).
		approx. 1.0 VDC	Cold engine, engine on approx. 800 rpm	
		approx. 1.6 VDC	approx. 2200 rpm (no-load engine speed)	
Ground	1			

Dependency of signal voltage from B092 - Sensor to boost pressure of engine



- Put engine under load with a dynamometric brake (turbocharger builds up boost pressure)

p [bar] = Boost pressure (pressure above atmospheric air pressure)

U [VDC] = Signal voltage on B092 - sensor

Boost pressure (overpressure) (bar)	Signal voltage (VDC)
0	approx. 1.0
0.5	approx. 1.55
1.0	approx. 2.1
max. 1.6	approx. 2.7

The signal voltage increases with rising boost pressure

Signal voltage (1.0 VDC ... 2.7 VDC) = Boost pressure (0 ... about 1.6 bar)

Date	Version	Page		Capitel	Index	Docu-No.
31.05.2006	a	7/8	B092 - sensor, boost pressure / charge air temperature	9000	E	000367

Fendt 300 Vario	Electrics / General system	E
	B092 - sensor, boost pressure / charge air temperature	



Measuring boost pressure

Remove B092 - sensor.

Install adapter piece X899.980.294.000

Screw on pressure gauge

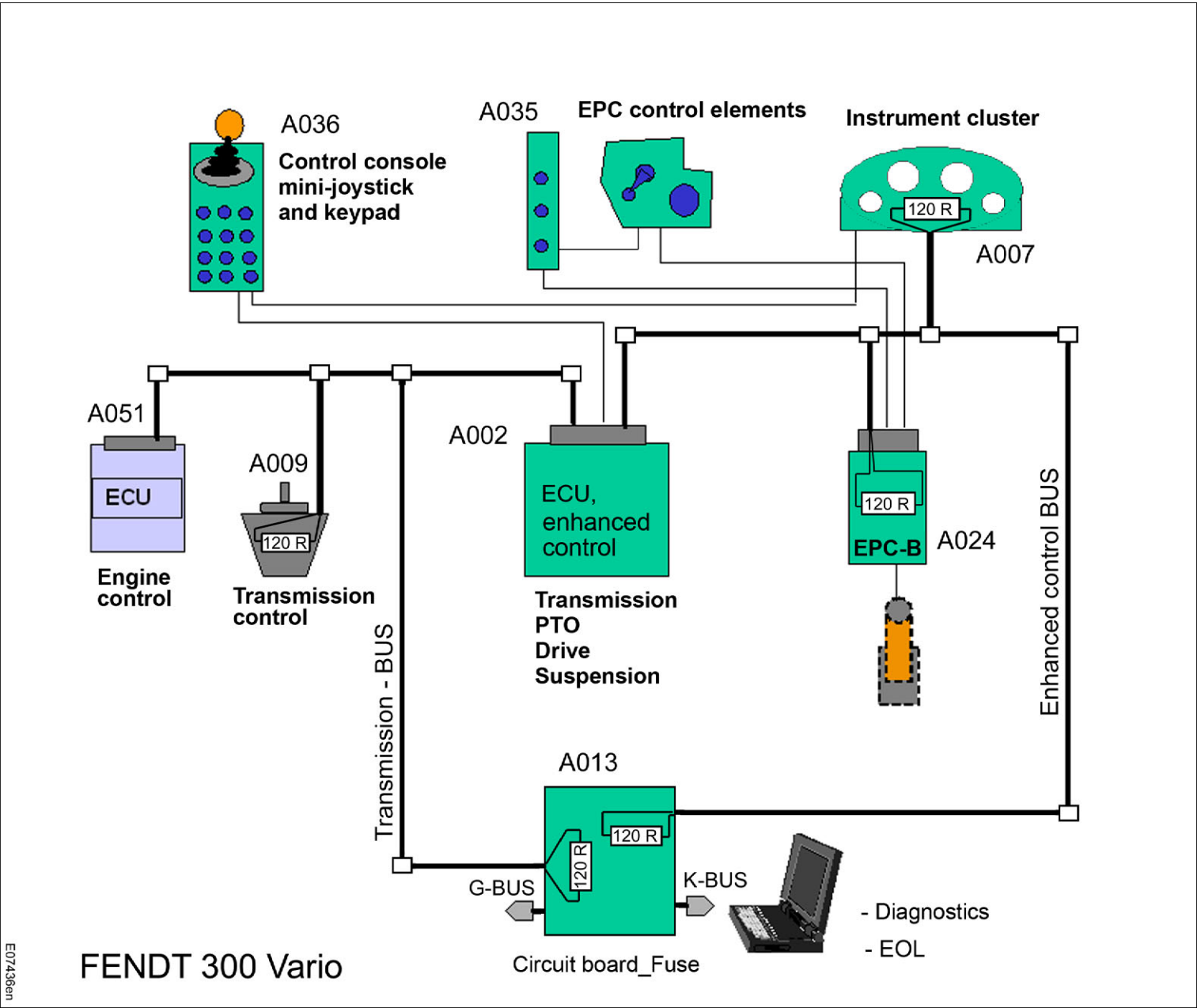
max. boost pressure = approx. 1.6 bar

Note:

- check level of engine oil
- check level of coolant
- drive tractor at operating temperature
- Put engine under load with a dynamometric brake (turbocharger builds up boost pressure)

Date	Version	Page		Capitel	Index	Docu-No.
31.05.2006	a	8/8	B092 - sensor, boost pressure / charge air temperature	9000	E	000367

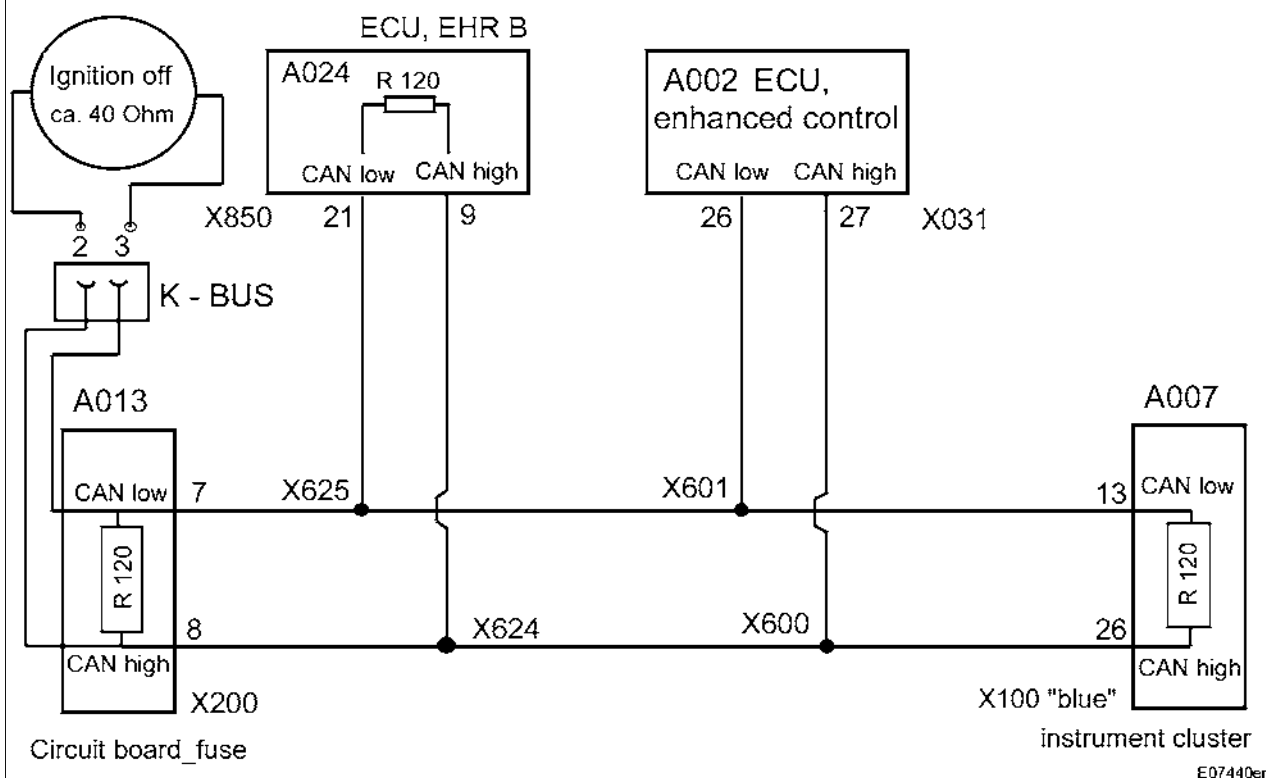
Date	Version	Page	CAN Bus (enhanced control BUS)			Capitel	Index	Docu-No.
07.07.2006	a	1/11				9000	E	000391



Fendt 300 Vario	Electrics / General system	Testing
CAN Bus (enhanced control BUS)		E

Fendt 300 Vario

Electrics / General system
CAN Bus (enhanced control BUS)

E**Block diagram: enhanced control BUS**

Item	Designation	Remark
K-bus	Enhanced controls bus	
A002 X031	ECU, enhanced control Separation point on A002	
A007 X100 'blue'	Instrument cluster Separation point on A007	Bus terminator - resistance = 120 ohm
A013 X200	Circuit board_fuse Separation point on A013	Bus terminator - resistance = 120 ohm
A024 X850	ECU, EPC B Separation point on A024	Bus terminator - resistance = 120 ohm
X600	Can high connector	
X601	Can low connector	
X624	Can high connector	
X625	Can low connector	

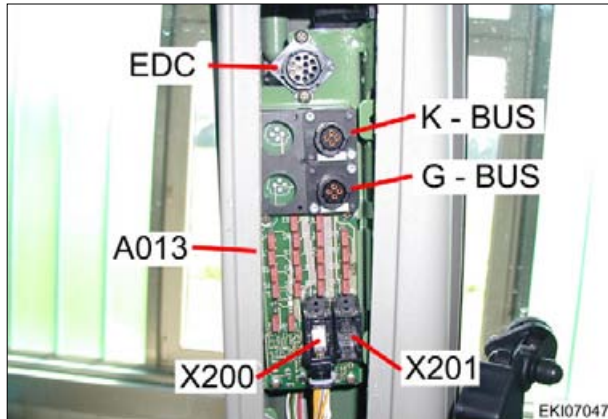
Measuring the CAN BUS system (enhanced control BUS)

- **Call up fault code on A007 - instrument cluster** (see Chapter 0000 Reg. B - Fault code table)
- **Measuring + supply to the corresponding CAN BUS participant**
(see Chapter 9000 Reg. E - Measuring and testing electr. components)
- **Measuring CAN BUS voltage (VDC)** (Note: The CAN BUS voltage is an approximate value)
- **Measuring CAN Bus line** (terminating resistors and wiring)

Date	Version	Page	CAN Bus (enhanced control BUS)	Capitel	Index	Docu-No.
07.07.2006	a	2/11		9000	E	000391

Fendt 300 Vario

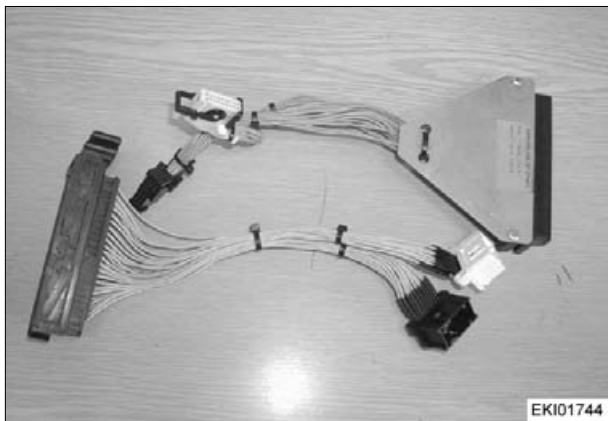
Electrics / General system
CAN Bus (enhanced control BUS)

E
Measuring CAN BUS (enhanced control BUS) voltage (approximate value)
**A013** = Circuit board with microfuses 500 mA**X200** = Separation point on the circuit board**X201** = Separation point on the circuit board (**not assigned**)**G-bus** = Transmission bus**K-bus** = Enhanced controls bus**EDC** = Engine diagnostics

On right B-pillar



Remove panel



Connect e-adapter box X899.980.208.100 directly to A013 - circuit board, fuse with adapter cable X899.980.208.207

Pin on the X 899.980.208.100 adapter box (68-pin)

Separation point X200 'black connector' (1 ... 18)

Pin on the
X 899.980.208.100
adapter box (68-pin)
31 ... 48

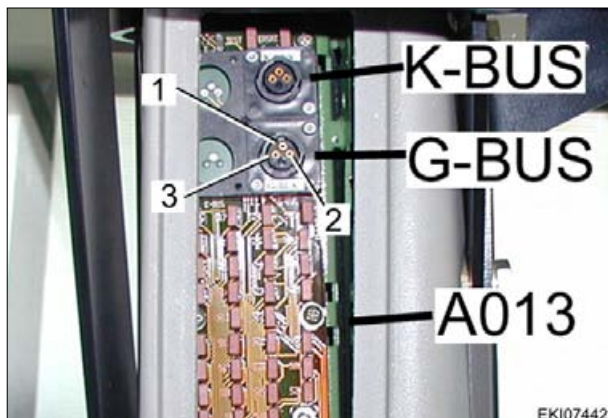
A013 - circuit board fuse (X200 - separation point)			
Pin	fuse	Specified value	Components
7	-	approx. 2.46 VDC	K - BUS (CAN low)
18	-		Electronics ground
8	-	approx. 2.5 VDC	K - BUS (CAN high)
18	-		Electronics ground

Fendt 300 Vario

Electrics / General system
CAN Bus (enhanced control BUS)

E

Testing terminating resistors of enhanced control BUS



Testing terminating resistors on enhanced control BUS

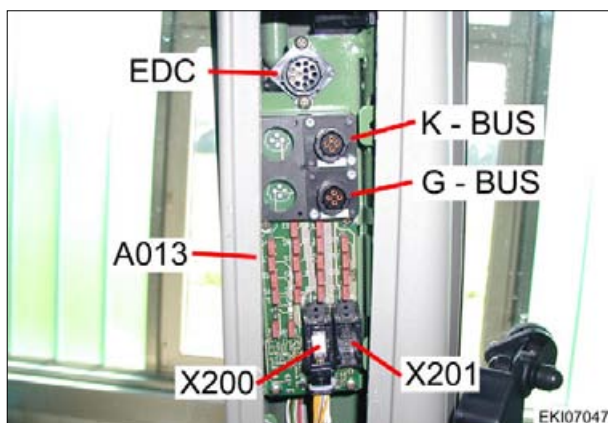
Ignition 'OFF'

Set multimeter to ohms

Connect measuring tips to **pin 2 and pin 3 on the K-BUS socket**

The terminating resistors (120 ohm each) in the A013 - circuit board_fuse, in the A007 - instrument cluster and in the A024 - ECU, EPC B are connected in parallel

Specified value: approx. 40 ohm +/- 10%



If the specified value (approx. 40 ohm) is not reached:

Testing terminal resistor in the A013 - circuit board_fuse

Ignition OFF

Disconnect X200 - separation point on the A013 - circuit board_fuse

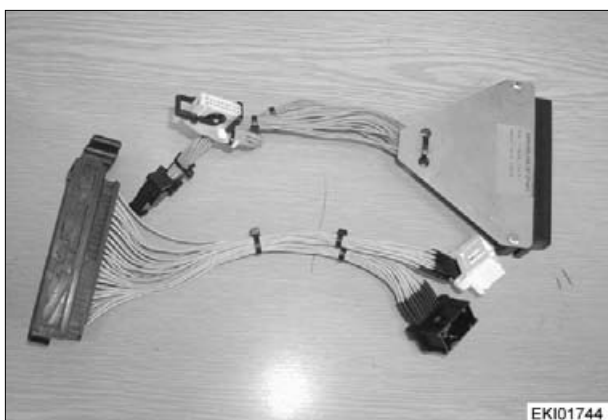
Connect adapter cable X899.980.208.207 with e-adapter box X899.980.208.100 **on to the A013 - circuit board_fuse**

Connect measuring tips to **pin 2 and pin 3 on the X200 - separation point**

Specified value: 120 ohms

Note:

Open pins on the e-adapter box X899.980.208.100 and measure to A013 - circuit board_fuse

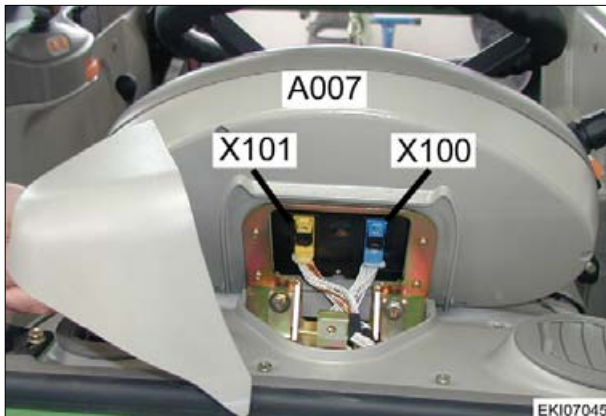


Connect e-adapter box X899.980.208.100 directly to A013 - circuit board_fuse with adapter cable X899.980.208.207

	Pin on the X 899.980.208.100 adapter box (68-pin)
Pin on separation point	
Separation point X200	31 ... 48
'black connector' (1 ... 18)	

Fendt 300 Vario

Electrics / General system
CAN Bus (enhanced control BUS)

E

**Testing terminating resistor in
A007 - instrument cluster**

Ignition OFF

Disconnect X100 - separation point "blue" from
A007 - instrument cluster

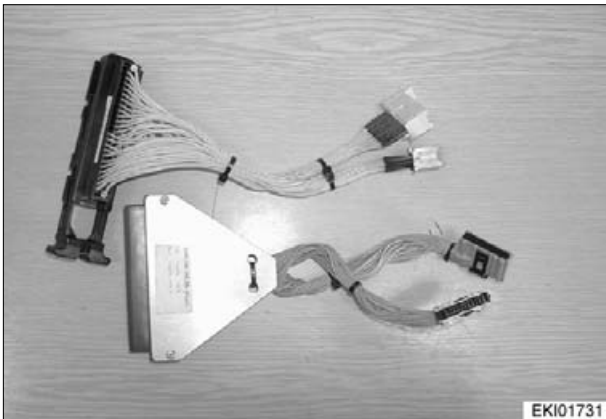
Connect adapter cable X899.980.208.204 with
e-adapter box X899.980.208.100 **on to
A007 - instrument cluster**

With measuring tips, measure **pin 13 and pin 26
on the X100 - separation point 'blue'**

Specified value: 120 ohms

Note:

**Open pins on the e-adapter box
X899.980.208.100 and measure to
A007 - instrument cluster**



**Connect e-adapter box X 899.980.208.100 to
A007 - instrument cluster using adapter cable
X 899.980.208.204**

Pin on separation point	Pin on the X 899.980.208.100 adapter box (68-pin)
Separation point X101 'yellow' (1 .. 26)	1 ... 26
Separation point X100 'blue' (1 ... 26)	31 ... 56

Fendt 300 Vario

Electrics / General system
CAN Bus (enhanced control BUS)

E

**Testing terminating resistor in the
A024 - ECU, EPC B**

Ignition OFF

Disconnect X850 - separation point on the
A024 - ECU EPC B

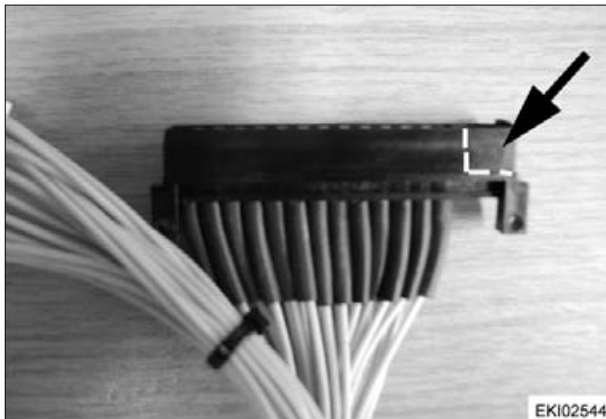
Connect adapter cable X899.980.208.201 with
e-adapter box X899.980.208.100 **on the
A024 - ECU, EPC B**

With the measuring tips, measure **pin 9 and pin
21**

Specified value: 120 ohms

Note:

Open pins on the e-adapter box
X899.980.208.100 and measure to
A024 - ECU, EPC B



Note:

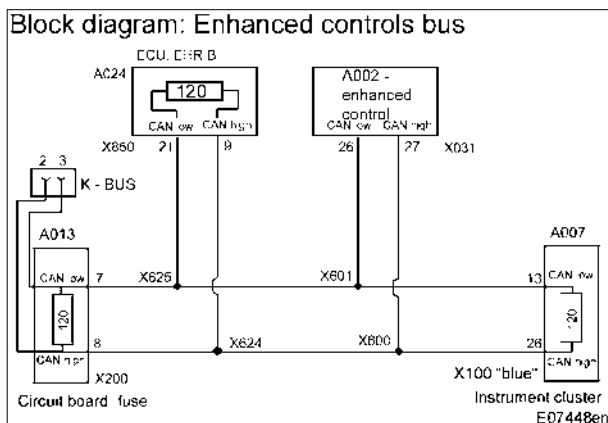
Saw off edge of adapter cable
X 899.980.208.201 as shown.

Note:

The adapter cable goes on the second row on
the e-adapter box X 899.980.208.100 (68-pin)
Second row = pin 31 pin 68

Fendt 300 Vario

Electrics / General system
CAN Bus (enhanced control BUS)

E**Testing wiring on enhanced control BUS****Caution! Disconnect all bus participants for this test!!!**

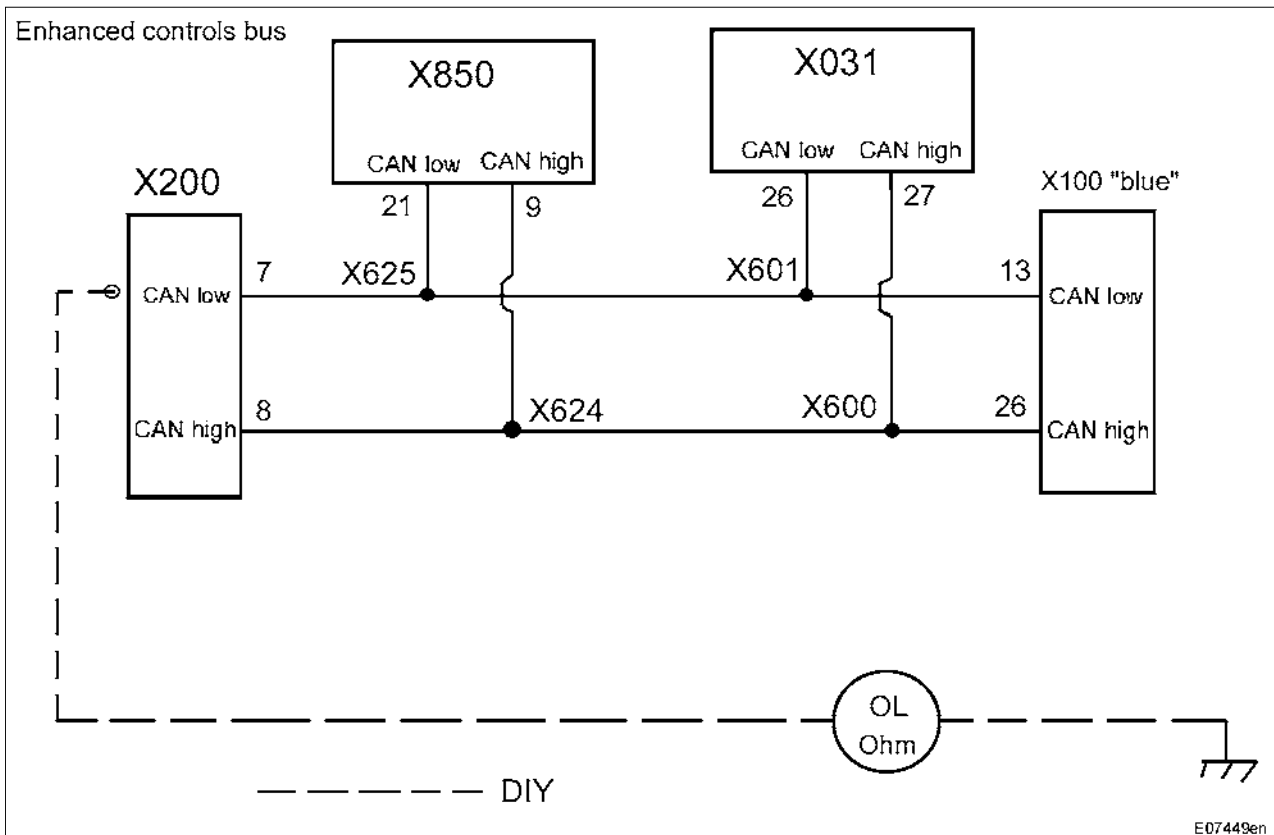
Important:
DISCONNECT ALL BUS
PARTICIPANTS!!!!!!!!!!

Otherwise the electronic system will be damaged

Date	Version	Page	CAN Bus (enhanced control BUS)	Capitel	Index	Docu-No.
07.07.2006	a	7/11		9000	E	000391

Fendt 300 Vario

Electrics / General system
CAN Bus (enhanced control BUS)

E**Test enhanced control bus line for short to ground**

Measure CAN bus line to ground

Specified value: infinite resistance (OL)

Note:

If a low ohm resistance develops, there is a short to ground (e.g. on the separation points, connectors, wiring)

Date	Version	Page	CAN Bus (enhanced control BUS)	Capitel	Index	Docu-No.
07.07.2006	a	8/11		9000	E	000391

Fendt 300 Vario

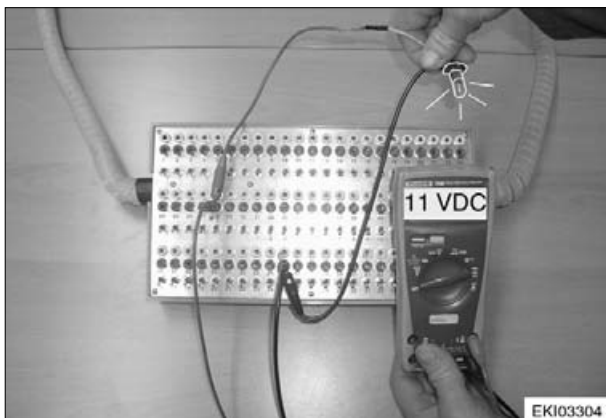
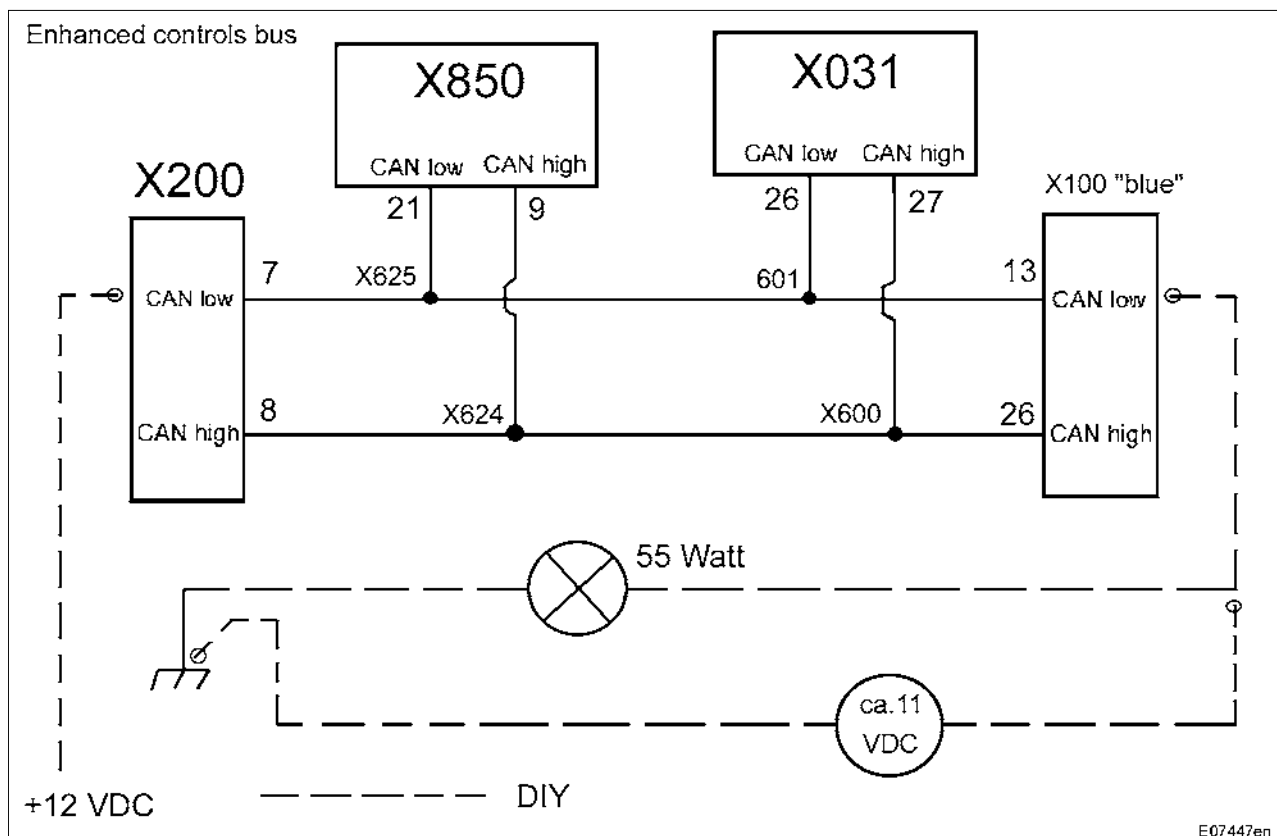
Electrics / General system
CAN Bus (enhanced control BUS)

E

Testing enhanced control bus line under load (55 Watt)

Caution! Disconnect all bus participants !!!

**Ensure that no short to ground exists in the CAN bus line during this test!!
 (Danger of short circuit!!!)**



Note:

If the voltage drop is greater than approx. 1 VDC, eliminate transition resistors (e.g. on the separation points, connectors, wiring)

Date	Version	Page	CAN Bus (enhanced control BUS)	Capitel	Index	Docu-No.
07.07.2006	a	9/11		9000	E	000391

Fendt 300 Vario	Electrics / General system CAN Bus (enhanced control BUS)	E
------------------------	--	----------

Caution! Disconnect all bus participants !!! (Otherwise the electronic system will be damaged)

Ensure that no short to ground exists in the CAN bus line during this test!!

Load enhanced control BUS (line CAN low) with 55 Watt and 12 VDC from an external source

Separation point	Pin	Specified value	Condition	Possible cause of fault
X200 (A013)	7	approx. 11 VDC	Load line (CAN low) with 55 Watt and 12 VDC from an external source	Transition resistor on connector (see Chapter 9000 Reg. C - electr. circuit diagram enhanced control BUS)
X850 (A024)	21			
X200 (A013)	7	approx. 11 VDC	Load line (CAN low) with 55 Watt and 12 VDC from an external source	Transition resistor on connector (see Chapter 9000 Reg. C - electr. circuit diagram enhanced control BUS)
X031(A002)	26			
X200 (A013)	7	approx. 11 VDC	Load line (CAN low) with 55 Watt and 12 VDC from an external source	Transition resistor on connector (see Chapter 9000 Reg. C - electr. circuit diagram enhanced control BUS)
X100 (A007)	13			

Caution! Disconnect all bus participants !!! (Otherwise the electronic system will be damaged)

Ensure that no short to ground exists in the CAN bus line during this test!!

Load enhanced control BUS (line CAN high) with 55 Watt and 12 VDC from an external source

Separation point	Pin	Specified value	Condition	Possible cause of fault
X200 (A013)	8	approx. 11 VDC	Load line (CAN high) with 55 Watt and 12 VDC from an external source	Transition resistor on connector (see Chapter 9000 Reg. C - electr. circuit diagram enhanced control BUS)
X850 (A024)	9			
X200 (A013)	8	approx. 11 VDC	Load line (CAN high) with 55 Watt and 12 VDC from an external source	Transition resistor on connector (see Chapter 9000 Reg. C - electr. circuit diagram enhanced control BUS)
X031(A002)	27			
X200 (A013)	8	approx. 11 VDC	Load line (CAN high) with 55 Watt and 12 VDC from an external source	Transition resistor on connector (see Chapter 9000 Reg. C - electr. circuit diagram enhanced control BUS)
X100 (A007)	26			

Date	Version	Page	CAN Bus (enhanced control BUS)	Capitel	Index	Docu-No.
07.07.2006	a	10/11		9000	E	000391

Fendt 300 Vario

Electrics / General system
CAN Bus (enhanced control BUS)

E
Separation points and connectors on enhanced control BUS (K - BUS)
**X600** = Connector (WF0893 ; WF0896 ; WF0904)**X601** = Connector (WF0892 ; WF0897 ; WF0905)**X624** = Connector (WF0890 ; WF0903 ; WF0904)**X625** = Connector (WF0891 ; WF0902 ; WF0905)

On right mudguard



Remove panel

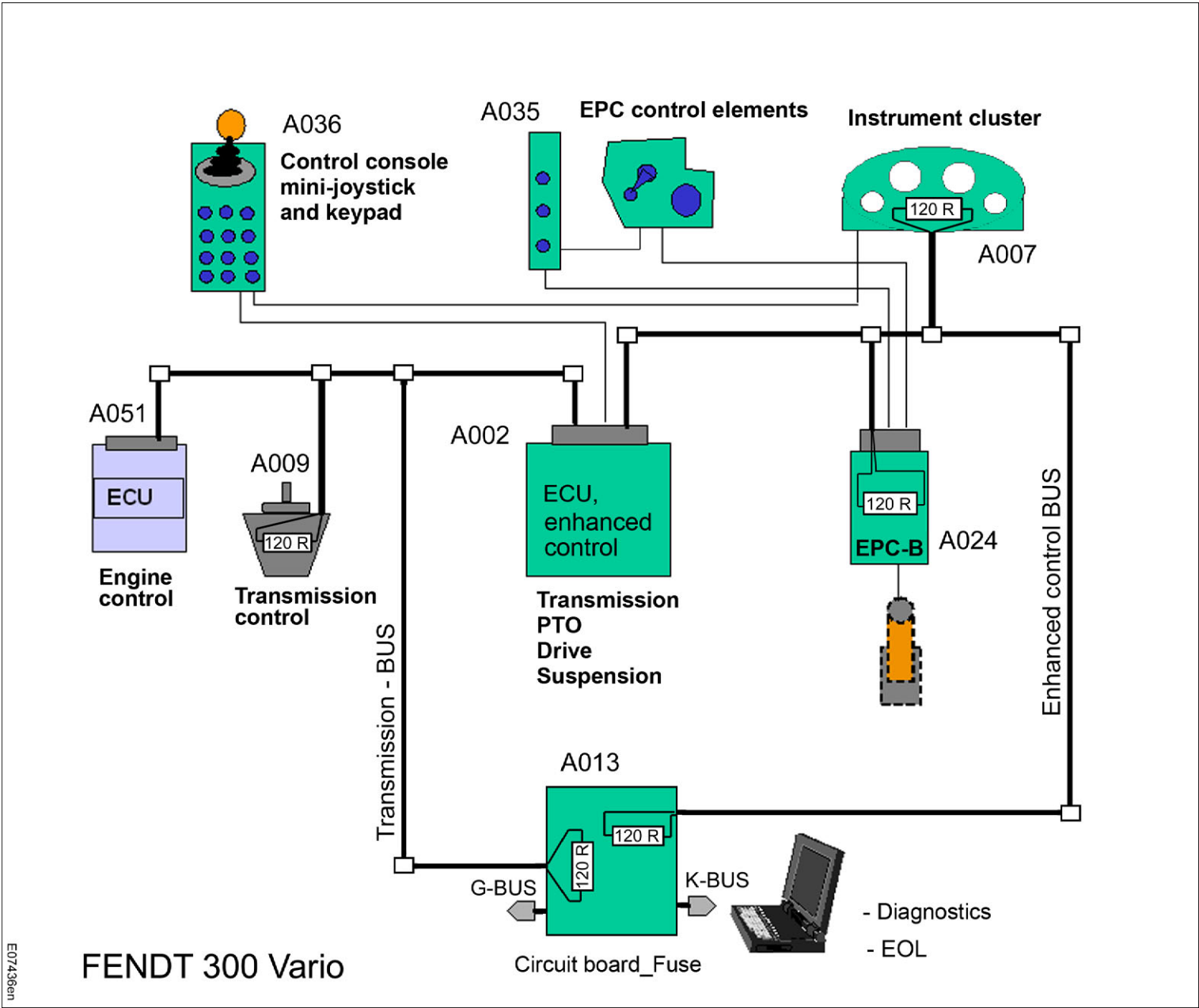
**X1635** = Separation point (8-pin)

On right mudguard



Remove panel

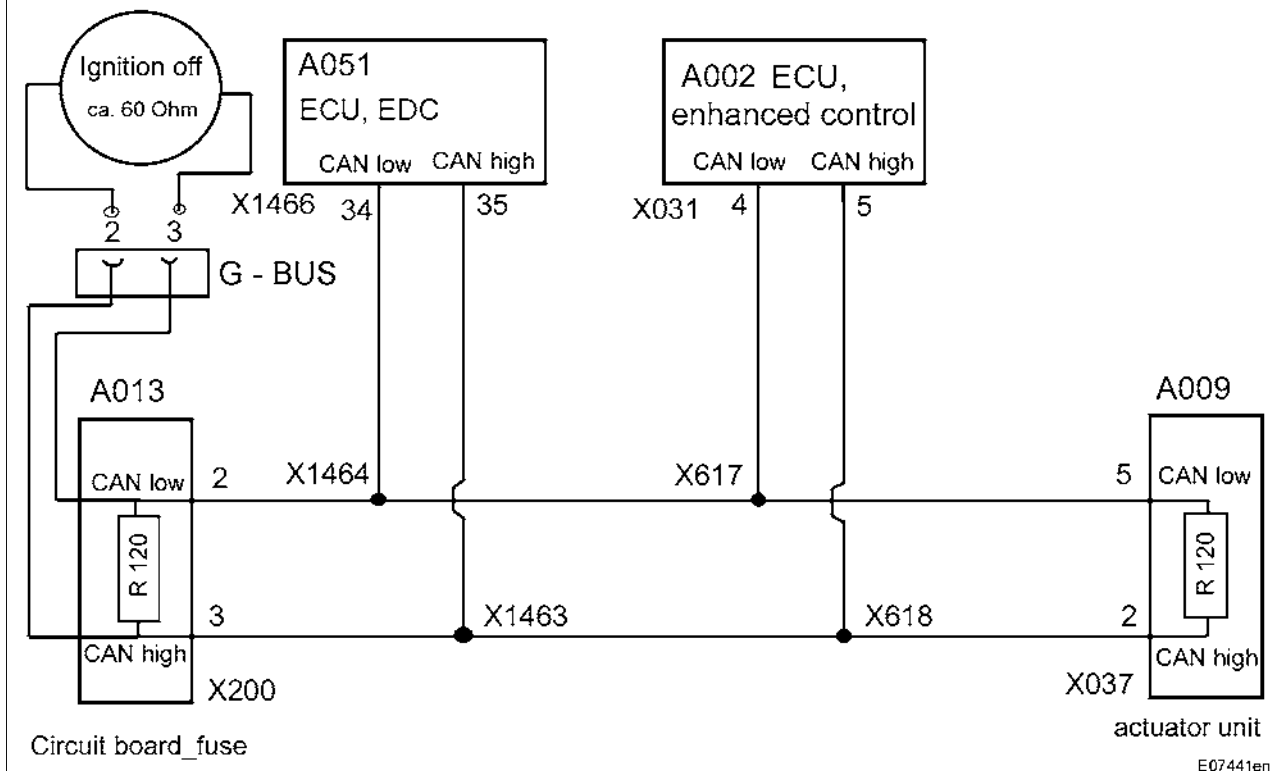
Date	Version	Page	CAN Bus (transmission BUS)			Capitel	Index	Docu-No.
18.04.2006	a	1/10				9000	E	000332



Fendt 300 Vario	Electrics / General system	Testing
CAN Bus (transmission BUS)		E

Fendt 300 Vario	Electrics / General system CAN Bus (transmission BUS)	E
------------------------	---	----------

Block diagram: transmission BUS



Item	Designation	Remark
G-BUS	Transmission bus	
A002	ECU, enhanced control	
X031	Separation point on A002	
A009	Actuator unit (transmission)	Bus terminator - resistance = 120 ohm
X037	Separation point on A009	
A013	Circuit board_fuse	Bus terminator - resistance = 120 ohm
X200	Separation point on A013	
A051	ECU, EDC 'Engine control unit'	
X1466	Separation point on A051	
X617	Can low connector	
X618	Can high connector	
X1463	Can high connector	
X1464	Can low connector	

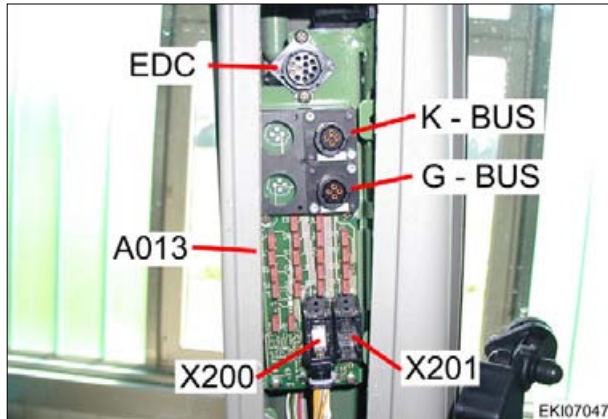
Measuring the CAN BUS System (enhanced control BUS and transmission BUS)

- **Call up fault code on A007 - instrument cluster** (see Chapter 0000 Reg. B - Fault code table)
- **Measuring + supply to the corresponding CAN BUS participant**
(see Chapter 9000 Reg. E - Measuring and testing electr. components)
- Measuring CAN BUS voltage (VDC) (Note: The CAN BUS voltage is an approximate value)
- **Measuring CAN Bus line** (terminating resistors and wiring)

Date	Version	Page	CAN Bus (transmission BUS)	Capitel	Index	Docu-No.
18.04.2006	a	2/10		9000	E	000332

Fendt 300 Vario	Electrics / General system CAN Bus (transmission BUS)	E
------------------------	---	----------

Measuring CAN BUS (transmission BUS) voltage (approximate value)



A013 = Circuit board with microfuses 500 mA

X200 = Separation point on the circuit board

X201 = Separation point on the circuit board (**not assigned**)

G-bus = Transmission bus

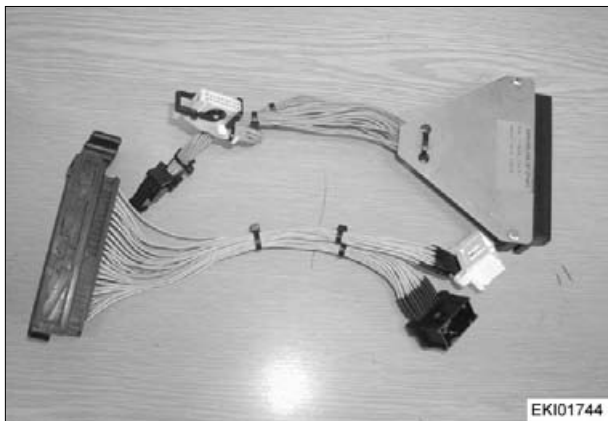
K-bus = Enhanced controls bus

EDC = Engine diagnostics

On right B-pillar



Remove panel



Connect e-adapter box X899.980.208.100 directly to A013 - circuit board, fuse with adapter cable X899.980.208.207

Pin on the	Pin on the
X 899.980.208.100	X 899.980.208.100
adapter box (68-pin)	adapter box (68-pin)

Separation point X200	31 ... 48
'black connector' (1 ... 18)	

A013 - circuit board fuse (X200 - separation point)			
Pin	fuse	Specified value	Components
2	-	approx. 2.3 VDC	G - BUS (CAN low)
18	-		Electronics ground
3	-	approx. 2.6 VDC	G - BUS (CAN high)
18	-		Electronics ground

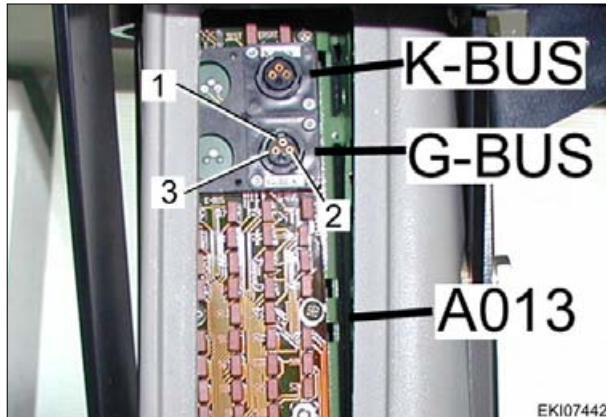
Date	Version	Page	CAN Bus (transmission BUS)	Capitel	Index	Docu-No.
18.04.2006	a	3/10		9000	E	000332

Fendt 300 Vario

Electrics / General system
CAN Bus (transmission BUS)

E

Testing terminating resistors from transmission BUS



Testing terminating resistors on transmission BUS

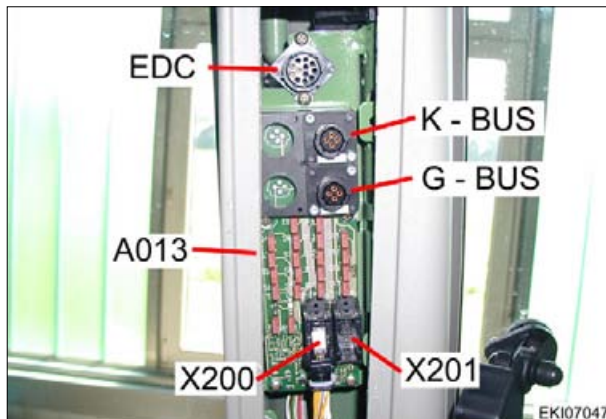
Ignition 'OFF'

Set multimeter to ohms

Connect measuring tips to **pin 2 and pin 3 on the G-BUS socket**

The terminating resistors in the A013 - circuit board_fuse and in the A009 - actuator unit (each 120 ohm) are connected in parallel

Specified value: approx. 60 ohm +/- 10%



If the specified value (approx. 60 ohm) is not reached:

Testing terminal resistor in the A013 - circuit board_fuse

Disconnect X200 - separation point on the A013 - circuit board_fuse

Connect adapter cable X899.980.208.207 with e-adapter box X899.980.208 **on to the A013 - circuit board_fuse**

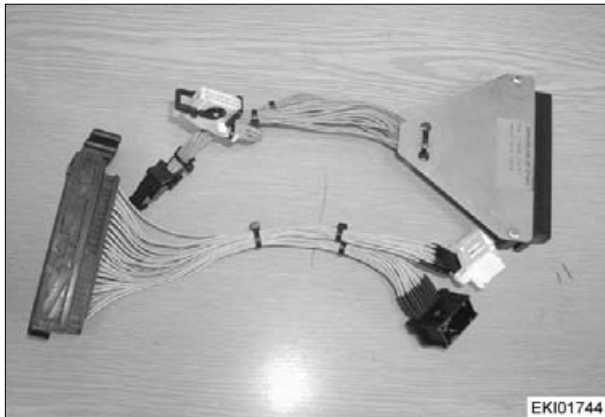
Open pin 2 and 3 on the e-adapter box X899.980.208.100

Connect measuring tips to **pin 2 and pin 3 on the X200 - separation point (measure to A013 - circuit board_fuse)**

Specified value: 120 ohm

Fendt 300 Vario

Electrics / General system
CAN Bus (transmission BUS)

E

Connect e-adapter box X899.980.208.100 directly to A013 - circuit board, fuse with adapter cable X899.980.208.207

Pin on the separation point	Pin on the X 899.980.208.100 adapter box (68-pin)
Separation point X200 'black connector' (1 ... 18)	31 ... 48
Separation point X201 'black connector' (1 ... 18)	31 ... 48
Separation point X202 'black connector' (1 ... 18)	31 ... 48



Testing terminating resistor in the A009 - actuator unit

Disconnect X037 - separation point on the A009 - actuator unit

Plug adapter cable X899.980.246.207 **only on to the A009 - actuator unit**

Connect measuring tips to **pin 2 and pin 5 on the X037 - separation point (measure to A009 - actuator unit)**

Specified value: 120 ohms

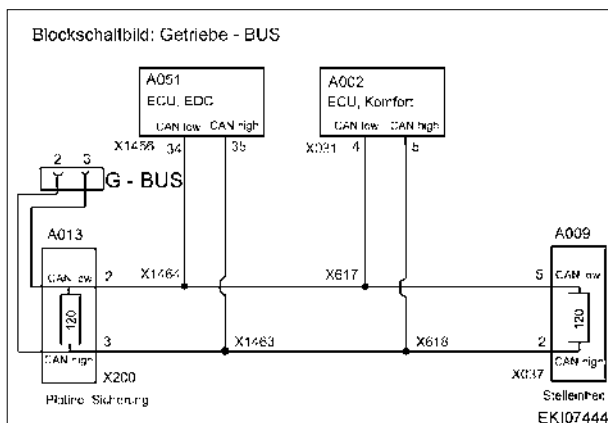
Fendt 300 Vario

Electrics / General system
CAN Bus (transmission BUS)

E

Testing wiring on transmission BUS

Caution! Disconnect all bus participants for this test!!!



Important:

DISCONNECT ALL BUS PARTICIPANTS!!!!!!!!!!

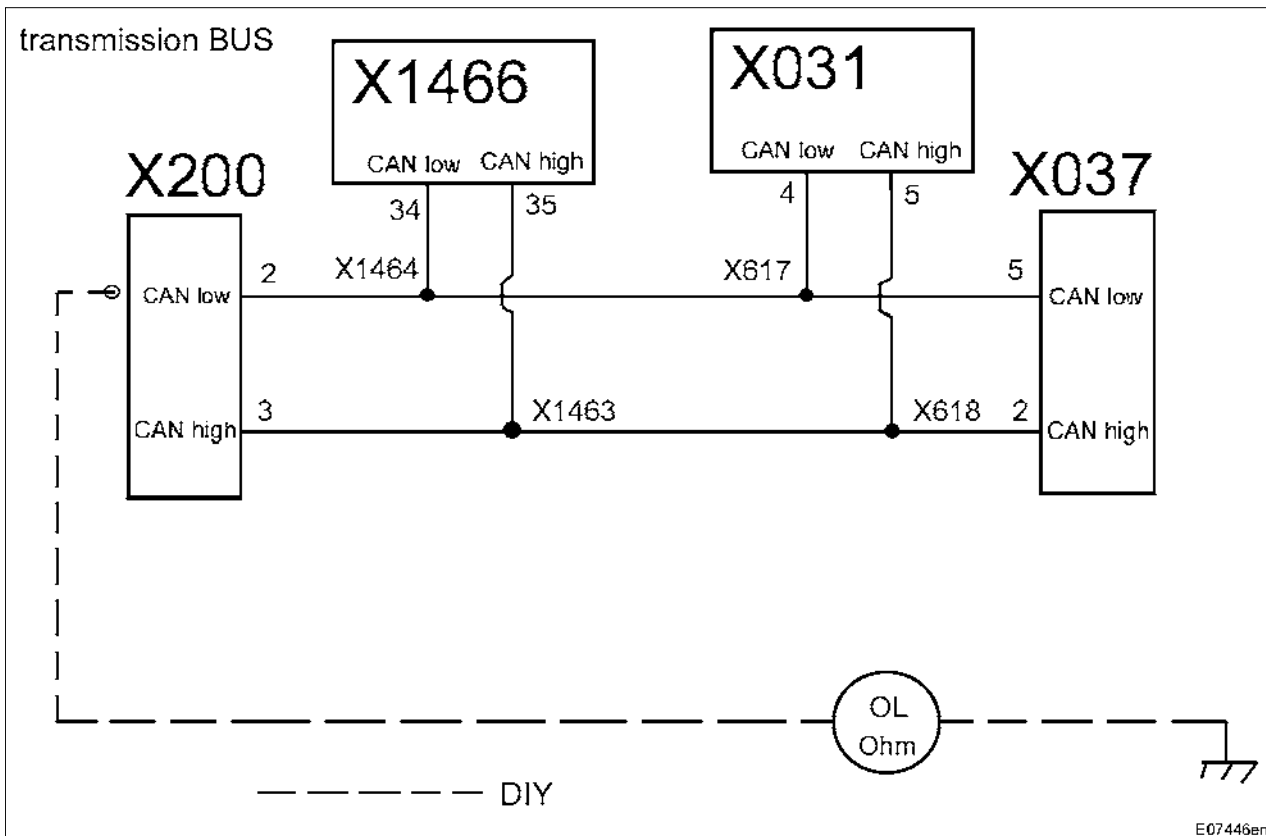
Otherwise the electronic system will be damaged

- A002 - ECU, enhanced control (X031 - separation point)
- A009 - actuator unit (X037 - separation point)
- A013 - circuit board_fuse (X200 - separation point)
- A051 - ECU, EDC (X1466 - separation point)

Date	Version	Page	Capitel	Index	Docu-No.
18.04.2006	a	6/10	CAN Bus (transmission BUS)	9000	E
					000332

Fendt 300 Vario

Electrics / General system
CAN Bus (transmission BUS)

E**Testing transmission bus line for short to ground**

Measure CAN bus line to ground

Specified value: infinite resistance (OL)

Note:

If a low ohm resistance develops, there is a short to ground (e.g. on the separation points, connectors, wiring)

Date	Version	Page	CAN Bus (transmission BUS)	Capitel	Index	Docu-No.
18.04.2006	a	7/10		9000	E	000332

Fendt 300 Vario

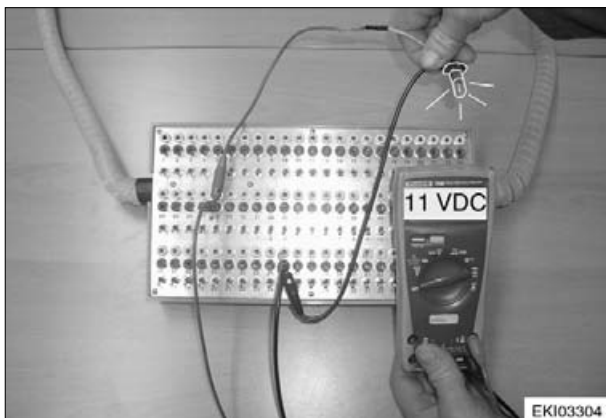
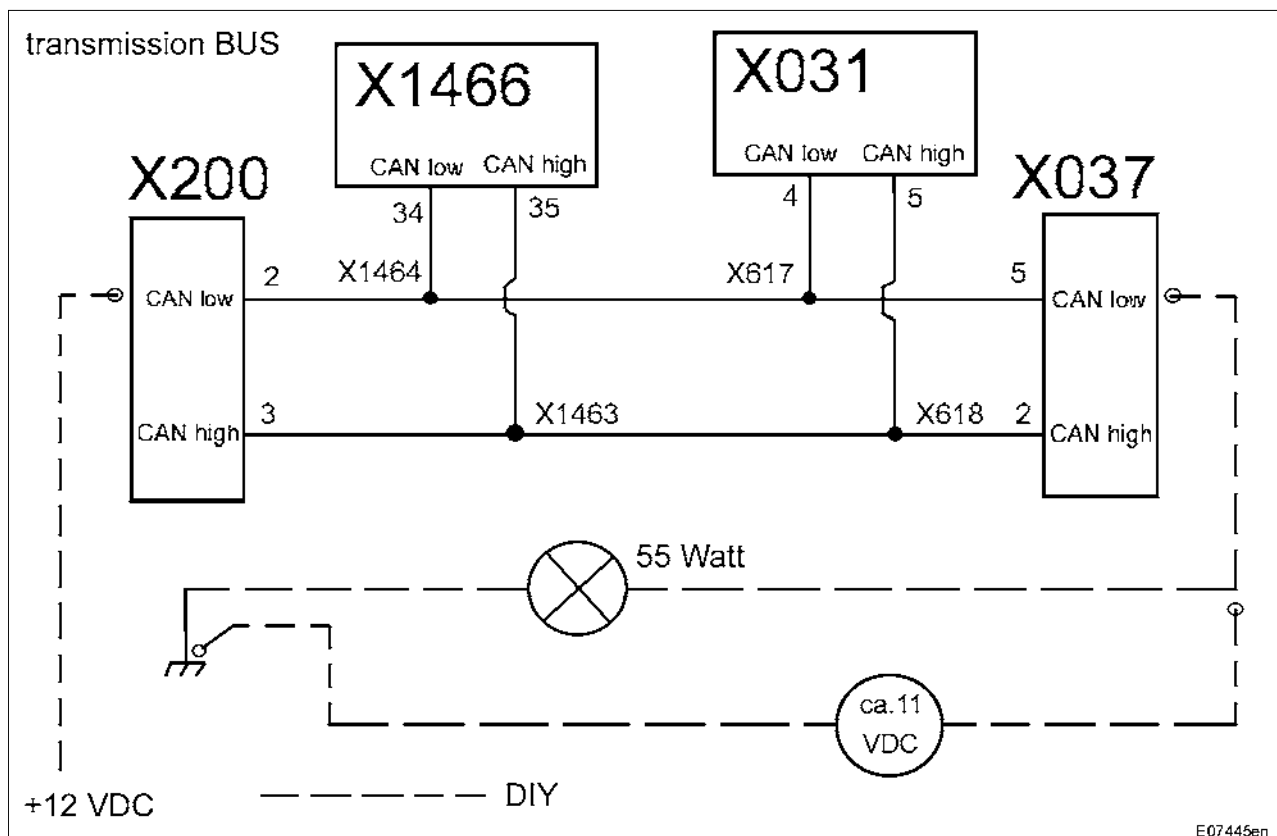
Electrics / General system
CAN Bus (transmission BUS)

E

Testing transmission bus line under load (55 Watt)

Caution! Disconnect all bus participants !!!

**Ensure that no short to ground exists in the CAN bus line during this test!!
 (Danger of short circuit!!!)**



Note:

If the voltage drop is greater than approx. 1 VDC, eliminate transition resistors (e.g. on the separation points, connectors, wiring)

Fendt 300 Vario	Electrics / General system CAN Bus (transmission BUS)	E
------------------------	--	----------

Caution! Disconnect all bus participants !!! (Otherwise the electronic system will be damaged)

Ensure that no short to ground exists in the CAN bus line during this test!!

Load transmission BUS (line CAN low) with 55 Watt and 12 VDC from an external source

Separation point	Pin	Specified value	Condition	Possible cause of fault
X200 (A013)	2	approx. 11 VDC	Load line (CAN low) with 55 Watt and 12 VDC from an external source	Transition resistor on connector (see Chapter 9000 Reg. C - electr. circuit diagram transmission BUS)
X037 (A009)	5			
X200 (A013)	2	approx. 11 VDC	Load line (CAN low) with 55 Watt and 12 VDC from an external source	Transition resistor on connector (see Chapter 9000 Reg. C - electr. circuit diagram transmission BUS)
X031(A002)	4			
X200 (A013)	2	approx. 11 VDC	Load line (CAN low) with 55 Watt and 12 VDC from an external source	Transition resistor on connector (see Chapter 9000 Reg. C - electr. circuit diagram transmission BUS)
X1466 (A051)	34			

Caution! Disconnect all bus participants !!! (Otherwise the electronic system will be damaged)

Ensure that no short to ground exists in the CAN bus line during this test!!

Load transmission BUS (line CAN high) with 55 Watt and 12 VDC from an external source

Separation point	Pin	Specified value	Condition	Possible cause of fault
X200 (A013)	3	approx. 11 VDC	Load line (CAN high) with 55 Watt and 12 VDC from an external source	Transition resistor on connector (see Chapter 9000 Reg. C - electr. circuit diagram transmission BUS)
X037 (A009)	2			
X200 (A013)	3	approx. 11 VDC	Load line (CAN high) with 55 Watt and 12 VDC from an external source	Transition resistor on connector (see Chapter 9000 Reg. C - electr. circuit diagram transmission BUS)
X031(A002)	5			
X200 (A013)	3	approx. 11 VDC	Load line (CAN high) with 55 Watt and 12 VDC from an external source	Transition resistor on connector (see Chapter 9000 Reg. C - electr. circuit diagram transmission BUS)
X1466 (A051)	35			

Date	Version	Page	CAN Bus (transmission BUS)	Capitel	Index	Docu-No.
18.04.2006	a	9/10		9000	E	000332

Fendt 300 Vario

Electrics / General system
CAN Bus (transmission BUS)

E

Separation points on transmission BUS (G - BUS)



X617 = Connector (WF0872 ; WF0874 ; WF0880)

X618 = Connector (WF0873 ; WF0875 ; WF0879)
 On right mudguard



Remove panel



X1375 = Separation point

X1430 = Separation point
 At right entrance step



X1463 = Connector
 (WF0868 ; WF0870 ; WF0872)

X1464 = Connector
 (WF0869 ; WF0871 ; WF0873)
 At right entrance step



Remove battery case.

Date	Version	Page	CAN Bus (transmission BUS)	Capitel	Index	Docu-No.
18.04.2006	a	10/10		9000	E	000332

Fendt 300 Vario

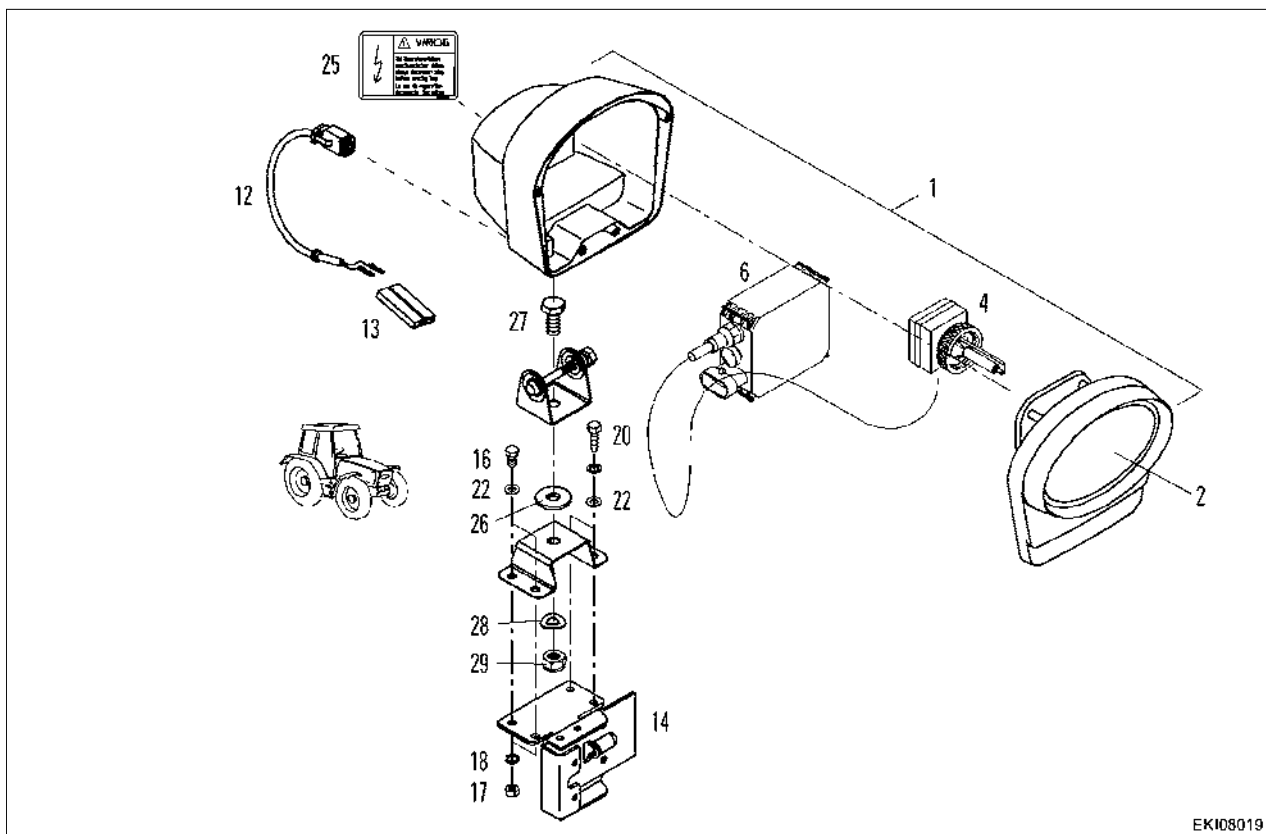
Electrics / General system
E015 / E016 - work lights (XENON)

E**E013** = Work light in roof front right**X291** = Separation point on E013**E014** = Work light in roof front left**X294** = Separation point on E014**E015** = Work light front on right direction indicator**X292** = Separation point on E015**X293** = Separation point on E015**E016** = Work light front on left direction indicator**X295** = Separation point on E016**X296** = Separation point on E016**E015 / E016 optional****XENON - headlamp available**

Date	Version	Page	E015 / E016 - work lights (XENON)	Capitel	Index	Docu-No.
21.08.2006	a	1/4		9000	E	000398

Fendt 300 Vario

Electrics / General system
E015 / E016 - work lights (XENON)

E

EKI08019

Item	Designation	Item	Designation
1	Work lights	17	Hexagon nut
2	Lamp housing	18	Spring washer
4	Gas discharge lamp "burner" DS1 35 W X 825.283.480.000	20	Self-tapping screw
6	Ballast "ignitor"	22	Washer
12	Cable loom	25	Sticker
13	Connector	26	Friction washer
14	Bracket right / left	27	Hexagon screw
16	Hexagon screw	28	Spring washer
		29	Hexagon nut

Fendt 300 Vario	Electrics / General system E015 / E016 - work lights (XENON)	E
------------------------	---	----------

Operating principle of the E015 / E016 - headlamp (XENON)

The XENON headlamp is basically comprised of a gas discharge lamp ("burner") and ballast ("ignitor"). When the XENON headlamp is switched on, the ballast ("ignitor") produces a very high voltage (ca. 25000 VDC)

That creates an arc in the gas discharge lamp ("burner").

The gas, which is sealed in the gas discharge lamp "burner", is excited and emits light.

The "ignition voltage" drops off.

When igniting the arc: voltage about 25000 VDC , power consumption about 20 ampere.

During operation approx. 42 watt power consumption (12 VDC / 3.5 ADC) per headlamp.

When operating the E015 / E016 - headlamp (XENON), please note:

- Turning on several XENON headlamps simultaneously, can cause an overload in the on-board power system, due to a sudden gate trigger current (approx. 20 ampere / work light).

Switch the XENON headlamps on one after another, with enough time in between, while the diesel engine is running.

- Due to the design of the gas discharge lamp ("burner"), the horizontal tilt should not exceed +/- 35°, otherwise the service life of the lamp will be reduced considerably.
- Do not look directly into the intense light.
- Clean the glass lens (item 2) occasionally when **cold** .
- Do not use cleaning agents that are aggressive or scratch.



Caution:

Do not clean the hot glass lens (item 2) with fluids when the light is switched on. Danger of cracking!!



Danger:

Always remove connector plug A when servicing or repairing (lamp operates with high voltage) !!

Date	Version	Page	E015 / E016 - work lights (XENON)	Capitel	Index	Docu-No.
21.08.2006	a	3/4		9000	E	000398

Fendt 300 Vario	Electrics / General system E015 / E016 - work lights (XENON)	E
------------------------	---	----------

Safety precautions for replacing the gas discharge lamp ("burner") !!!

- Always switch off the headlamp when replacing the bulb ("burner") and disconnect from power supply.
- Never reach into the lamp holder.
- The electrical connection between the gas discharge lamp and ballast is a high voltage connection and must not be disconnected.
- The ballast ("ignitor") must not be operated without the gas discharge lamp ("burner"), since dangerous voltage peaks, which can lead to damage, may arise at the lamp base .
- Allow the gas discharge lamp ("burner") to cool.
- Wear protective glasses and gloves when changing the gas discharge lamp ("burner").
- The glass tube of the gas discharge lamp ("burner") is filled with various gases and metal halides and is under pressure (danger of shattering !!!)
- Never touch the glass tube on the gas discharge lamp ("burner"), only touch the lamp at the base.
- Carefully remove fingerprints from the bulb with a clean cloth and alcohol.
- Only operate the gas discharge lamp ("burner") in a closed lamp.
- If the gas discharge lamp ("burner") should break within a closed room (workshop), the room must be aired at least 20 minutes and all people must leave the room, to prevent health hazards through contact with the gases.
- The gas discharge lamp which has been removed, must be disposed of as hazardous waste.



+ Checking the power supply to the E015 / E016 - headlamp

Disconnect left and right headlamp.



Unscrew and remove metal cover from the indicator light holder.

Test at the connector with a multimeter +supply and ground.

Switch on the corresponding headlamps:

Target value: approx. 12 VDC

Date	Version	Page	E015 / E016 - work lights (XENON)	Capitel	Index	Docu-No.
21.08.2006	a	4/4		9000	E	000398

Fendt 300 Vario	Electrics / General system G001 - battery	E
------------------------	--	----------



G001 = Battery (12 VDC / 90 Ah)

At right entrance step



Remove cover



Technical specifications		
	Speci- fied va- lue	Remarks
Nominal voltage	12 VDC	The nominal voltage is dependent on the number of cells. A battery with a nominal voltage of 12 VDC has 6 cells (1 cell = 2 VDC)
Nominal capacity	90 Ah	The nominal capacity is dependent on the size of the battery and indicates the available amount of electricity. If, for example, the nominal capacity is divided by 20, you get the nominal current with which a battery can be discharged for 20 hours. A battery with 90 Ah can deliver a current of 4.5 amperes for 20 hours.
When discharging battery		When discharging the battery, an electric current is released, the terminal voltage drops, sulphuric acid is used up and water is produced, the acid density sinks
Battery test (without battery testing device)		Turn on vehicle lighting and start engine. If the lights weaken, the battery charge level is poor.
Battery test (with battery testing device)		see manufacturer specifications for the testing device
When charging the battery		When charging the battery, an electric current is bound, the terminal voltage and the acid density increase. Towards the end of charging, oxygen is created on the positive plate and hydrogen on the negative plate, an explosive gas may form. Therefore ventilate the charging area well, do not use open flames and do not create sparks
Acid density	Fully charged	1.28 kg/ltr (frostproof to - 68 °C)
	Half charged	1.20 .kg/ltr (frostproof to - 27 °C)
	Empty	1.12 .kg/ltr (frostproof- 10 °C)
Self-discharging (approx. 1% per day)		Over time the battery loses its charge through self-discharging (approx. 1% per day) even if no current has been used. (for example, if the tractor has not been driven often) Self-discharging increases through impurities in the battery acid (ageing of battery). That is why a battery that has not be in operation can be fully discharged in approx. 3 - 4 months.
Evaporation		The fluid level sinks due to evaporation, especially in the summer, and the battery must be filled up to the acid level mark with distilled water.

Date	Version	Page	G001 - battery	Capitel	Index	Docu-No.
08.05.2006	a	1/5		9000	E	000334

Fendt 300 Vario	Electrics / General system G001 - battery	E
------------------------	--	----------

Technical specifications

	Speci- fied va- lue	Remarks
When recharging with battery chargers		When recharging with a battery charger, the battery must be disconnected from the tractor mains. Unscrew the sealing plugs. Connect the positive terminal with the positive terminal on the charger. Connect the negative terminal with the negative terminal of the charger. The charging current should be 1/10 of the battery capacity. (e.g. a 90-Ah battery should be charged with a charging current of approx. 9 ampere). Grease the terminals with battery grease. Keep the vent holes in the sealing plugs open.
When jump-starting		When jump-starting a vehicle with a discharged battery with a vehicle with a full battery, connect the positive terminals and the negative terminals with each other and run the engine on the vehicle with the full battery at a higher idle speed

**Danger:****To prevent battery short circuits when removing:****When removing:****First disconnect the negative terminal,
then disconnect the positive terminal****When installing:****First connect the positive line,
then connect the negative terminal**

Date	Version	Page		Capitel	Index	Docu-No.
08.05.2006	a	2/5	G001 - battery	9000	E	000334

Fendt 300 Vario	Electrics / General system G001 - battery	E
------------------------	--	----------

Note:

Check battery charge with aid of open-circuit voltage.

Test conditions: ambient temperature approx. 27°C



For six hours before test do not charge battery or connect to consumer. Disconnect ground cable from battery.

Connect multimeter (voltmeter).

Target values at 27°C:

12.8 VDC = **full**

12.1 VDC to 12.25 VDC = **1/2**

11.4 VDC to 11.8 VDC = **empty**



Complaint: battery discharges without consumers being switched on.

Check discharge current using multimeter (ammeter).

Switch off all consumers. Disconnect battery's ground cable, and connect multimeter (ammeter) in series.

Consumption

when ignition ON = approx. 3.50 ADC

when ignition is OFF and K064 - battery disconnect relay is engaged = approx. 3 mADC

Date	Version	Page		Capitel	Index	Docu-No.
08.05.2006	a	3/5	G001 - battery	9000	E	000334

Fendt 300 Vario

Electrics / General system
G001 - battery

E

K064 - battery disconnect relay (optional)

Electric main switch A "battery disconnect relay"**Disengagement conditions**

- Engine OFF
- Ignition OFF

Note:

After switching ignition OFF, wait approx. 5 seconds until the main power circuit is switched off. Otherwise the stored settings (e.g. cruise control) will be erased.

Switching off main power circuit

- Slide switch (arrowed) downwards
- Press toggle switch (A) upwards

Note:

If the main power circuit is switched off, no circuits function, except for the radio, clock and interior lighting.

Switching on main power circuit

- Slide switch (arrowed) downwards
- Press toggle switch (A) downwards

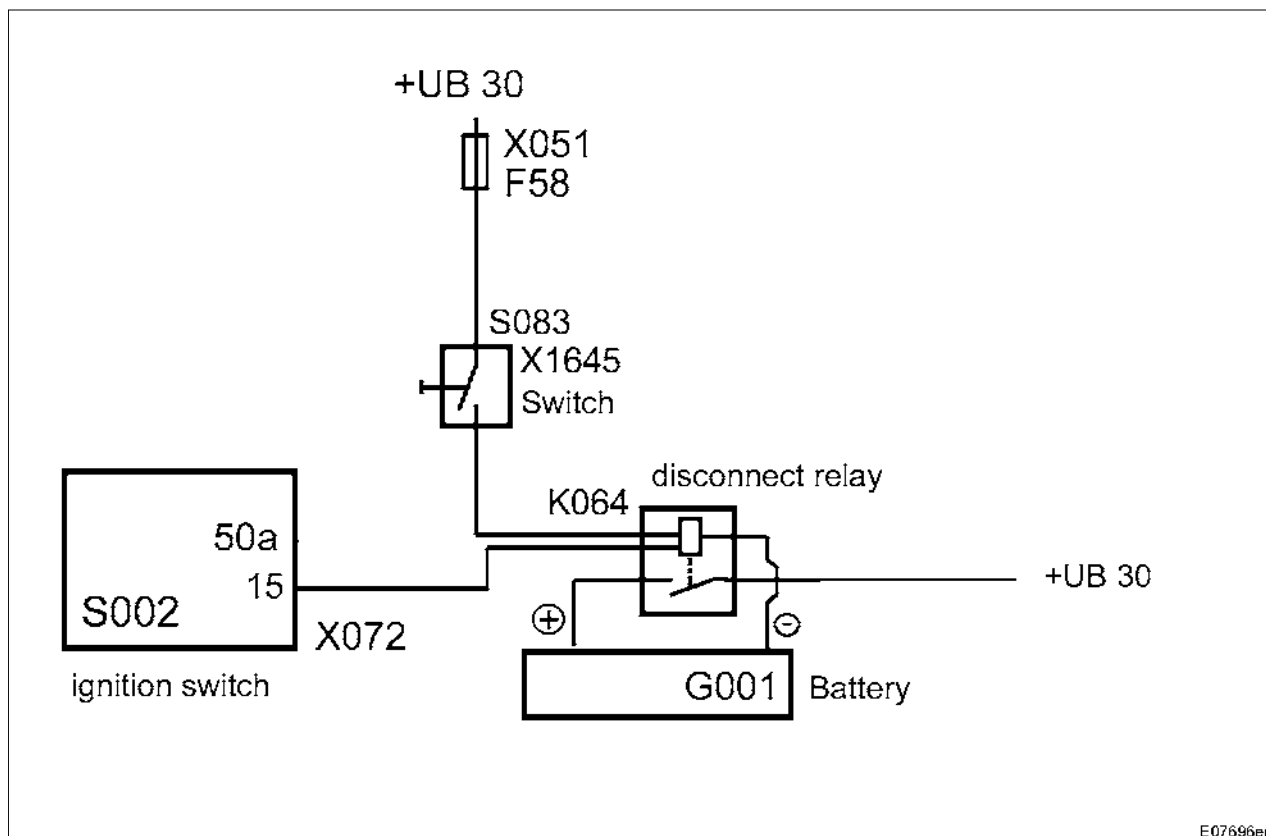
Note:

Only switch on the ignition after the main power circuit has been switched on, otherwise the K064 - battery disconnect relay cannot close the electric circuit

Date	Version	Page	G001 - battery	Capitel	Index	Docu-No.
08.05.2006	a	4/5		9000	E	000334

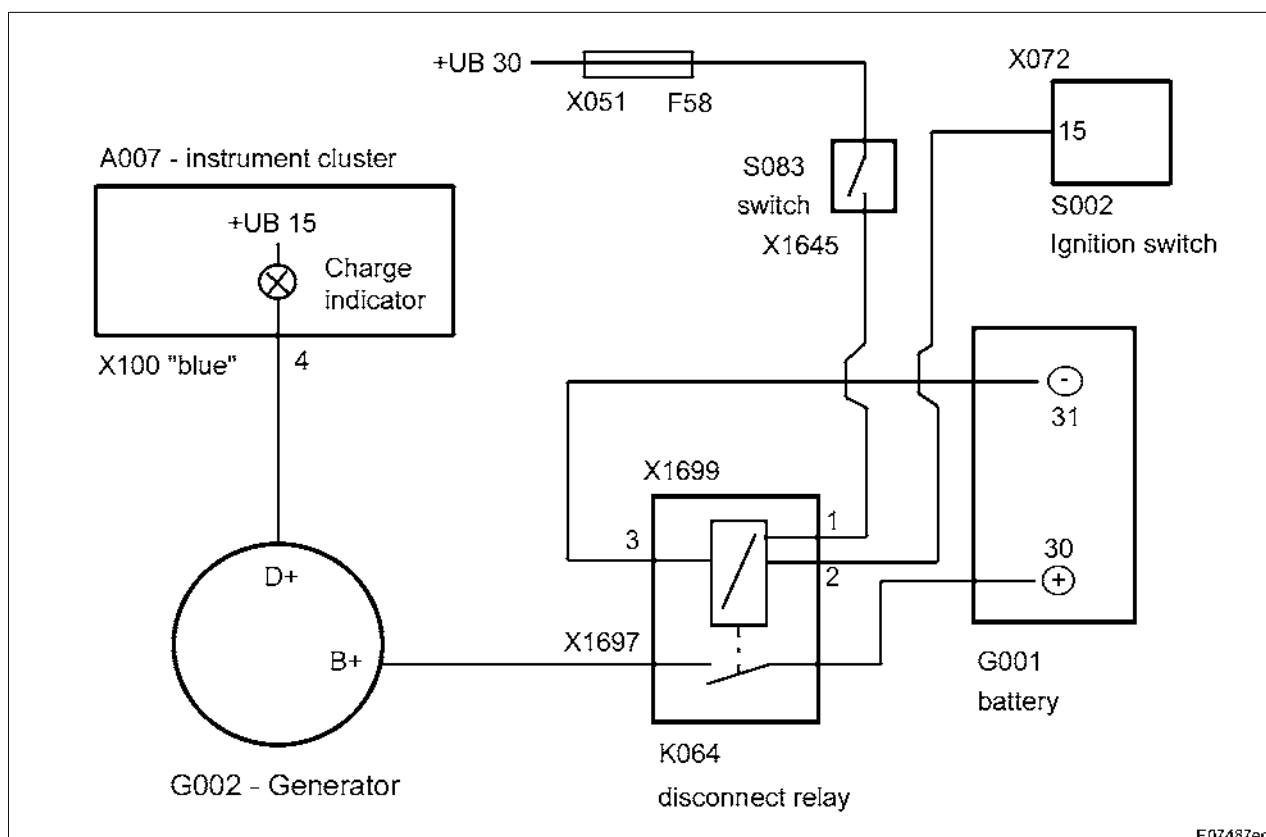
Fendt 300 Vario	Electrics / General system G001 - battery	E
------------------------	--	----------

Block diagram K064 - battery disconnect relay



Item	Designation	Remark
G001	Battery	
K064	Battery disconnect relay (optional) +UB 30 via S083 - switch (switching voltage) (12 VDC) +UB 15 via S002 - ignition switch (holding voltage) (12 VDC)	
S002	Ignition switch	
S083	Switch, battery disconnect relay	Start tractor: First close S083 - switch then switch on S002 - ignition switch Turn off tractor: first switch off S002 - ignition switch then disconnect S083 - switch
X051	Fuse holder 2 compl	

Date	Version	Page	G001 - battery	Capitel	Index	Docu-No.
08.05.2006	a	5/5		9000	E	000334

Fendt 300 Vario
Electrics / General system
G002 - generator
E

E07487en

Item	Designation	Remark
A007	Instrument cluster (X100 - separation point "blue")	
G001	Battery	
G002	Generator	
K064	Battery disconnect relay	Start tractor: First close S083 - switch then switch on S002 - ignition switch Turn off tractor: first switch off S002 - ignition then disconnect S083 - switch
S002	Ignition switch	
S083	Switch, battery disconnect relay	
X051	Fuse holder 2 compl	

Date	Version	Page	G002 - generator	Capitel	Index	Docu-No.
08.05.2006	a	1/5		9000	E	000335

Fendt 300 Vario	Electrics / General system G002 - generator	E
------------------------	--	----------



G002 = Generator (14 VDC / 150 ampere)
on right side of engine



Note:

To prevent damage to the rectifier and controller, The G002 - generator must only be operated when connected to the battery or another consumer (e.g. vehicle lighting).



Measuring the limit voltage with a multimeter (voltmeter):

When engine running,

charge indicator is off,

Connect B+ (rt 16) on G002 - generator and ground

Specified value: 13.8 - 14.5 VDC at 20°C
ambient temperature (no load on G002 - generator).

If different, have G002- generator repaired by a specialised workshop.

Battery G001 not being charged, or insufficiently charged	
V-belt too loose	Tighten V-belt, see description below
An interruption or transition resistance in charging current circuit	Remove the interruption or transition resistance in the charging current circuit
G001 - battery defective	Test battery G001 with test instrument, or replace if necessary
G002 - generator defective	Test G002 - generator charging voltage. If necessary, have generator repaired by a specialised workshop

Charge indicator lamp not lit when engine is stopped and ignition is on	
G001 - battery discharged	Charge battery G001 with the charger
G001 - battery defective	Test battery G001 with test instrument, or replace if necessary
Electric cables loose or damaged	Replace the electric cables, tighten connections
Indicator lamp (LED) faulty	Replace A007 - instrument cluster
Governor damaged	Have G002 - generator repaired by a specialised workshop
Short circuit in a positive diode at G002 - generator	Have G002 - generator repaired by a specialised workshop
Brushes worn	Have G002 - generator repaired by a specialised workshop
Oxide layer on slip rings, break in the rotor winding	Have G002 - generator repaired by a specialised workshop

Date	Version	Page	G002 - generator	Capitel	Index	Docu-No.
08.05.2006	a	2/5		9000	E	000335

Fendt 300 Vario	Electrics / General system G002 - generator	E
------------------------	--	----------

Charge indicator lit continuously at high rpm

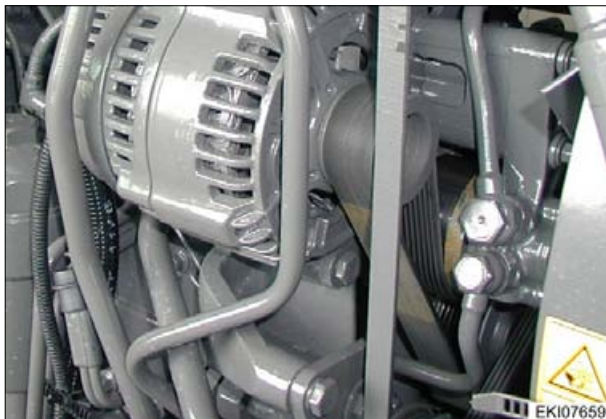
D+ cable shorted to ground	Replace cable or remove the short
Governor damaged	Have G002 - generator repaired by a specialised workshop
Overvoltage protection damaged	Have G002 - generator repaired by a specialised workshop
Rectifier damaged, slip rings dirty, short circuit on DF line or in rotor winding	Have G002 - generator repaired by a specialised workshop

Charge indicator lamp is lit when engine is stopped, but darkens or dims when engine is running

Transition resistors in the charging current circuit or in the wire to the charge indicator lamp	Remove the transition resistors
Governor damaged	Have G002 - generator repaired by a specialised workshop
G002 - generator defective	Have G002 - generator repaired by a specialised workshop

Charge indicator lamp flickers

Governor damaged	Have G002 - generator repaired by a specialised workshop
------------------	--



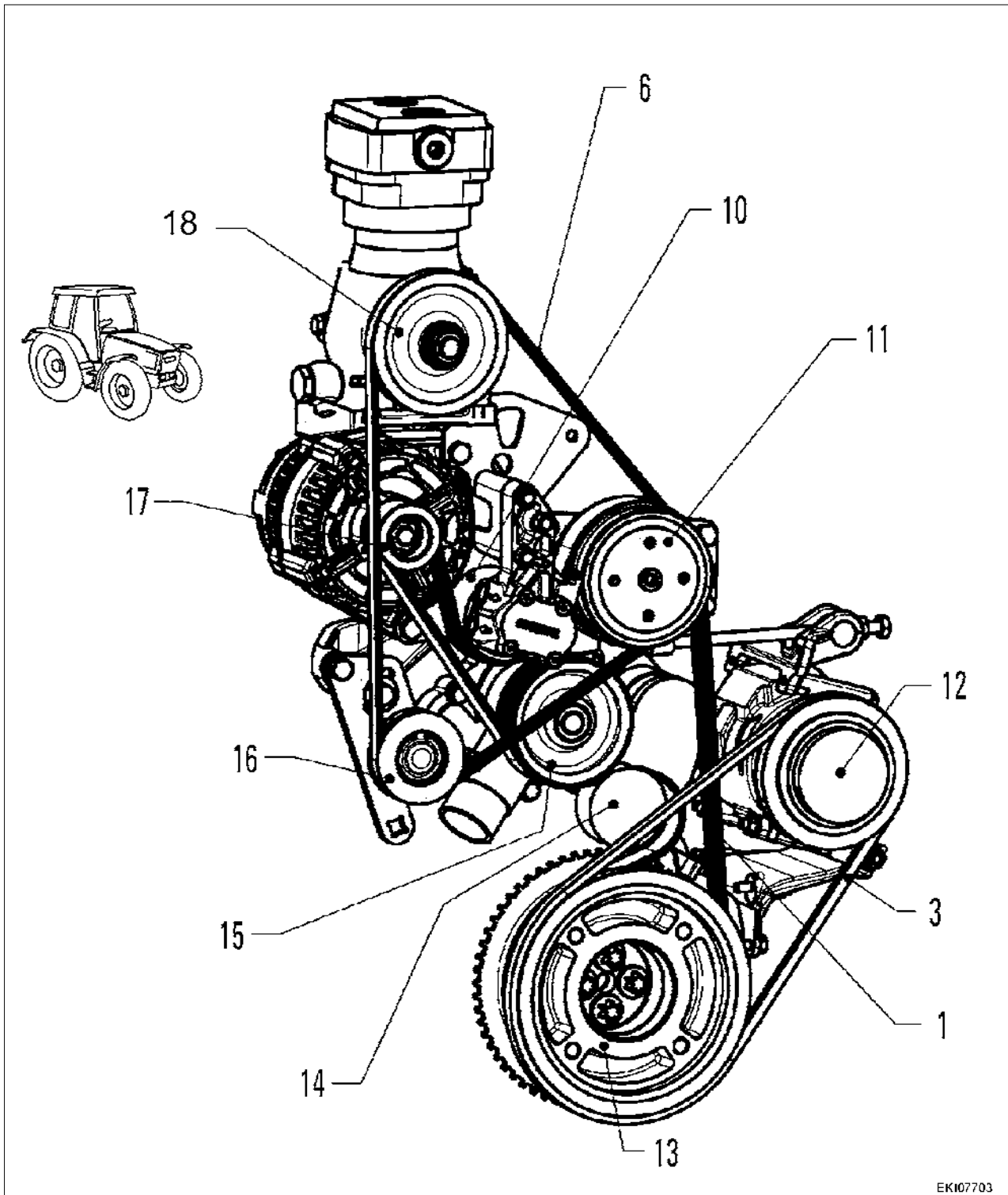
The power belt (A) is equipped with an automatic tensioning system.

- Check for cracks, oil fouling, signs of overheating and wear.
- Replace damaged belts.

Note:

The tensioning pulley must be replaced every time the power belt is replaced.

Date	Version	Page	G002 - generator	Capitel	Index	Docu-No.
08.05.2006	a	3/5		9000	E	000335

Fendt 300 Vario**Electrics / General system**
G002 - generator**E****Belt drive**

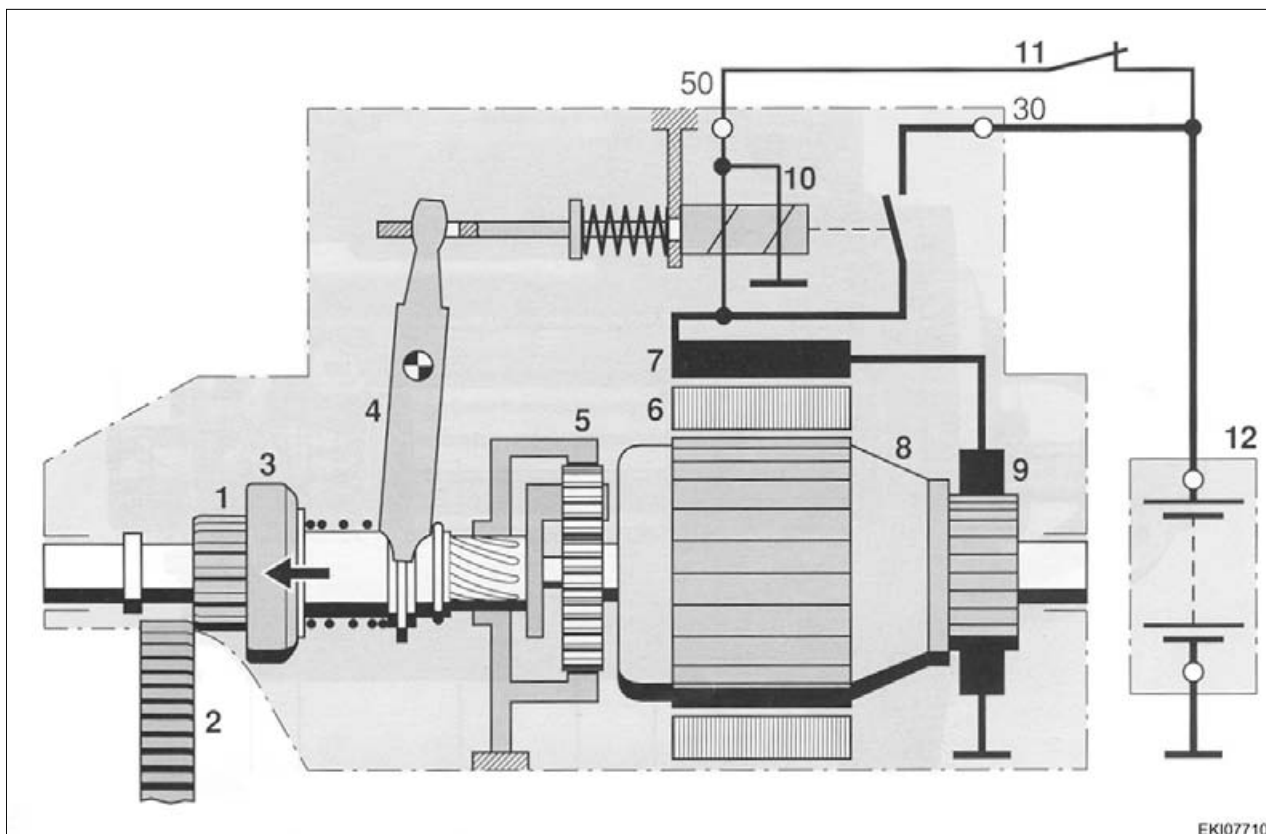
EK107703

Date	Version	Page	G002 - generator	Capitel	Index	Docu-No.
08.05.2006	a	4/5		9000	E	000335

Fendt 300 Vario	Electrics / General system G002 - generator	E
------------------------	--	----------

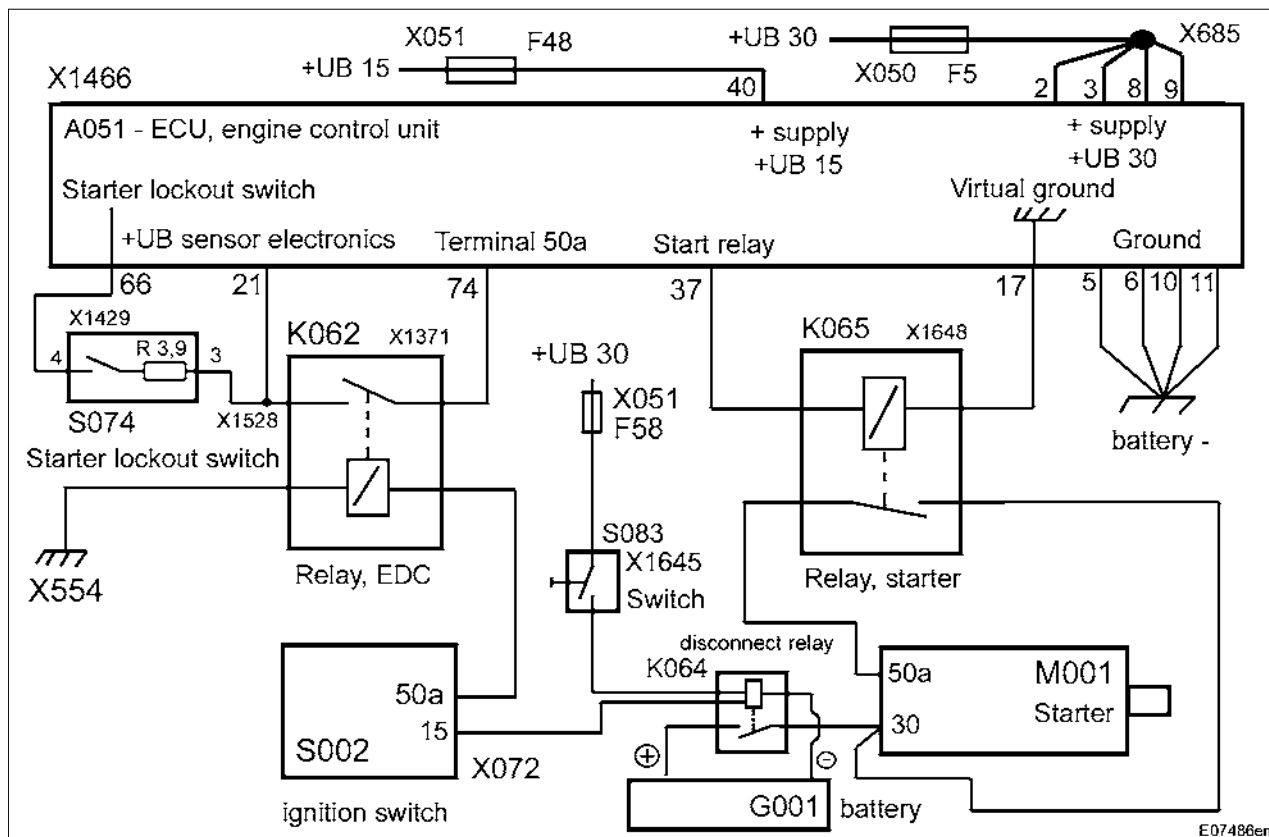
Item	Designation	Item	Designation
1	Belt	13	Crankshaft
3	Belt	14	Tensioning pulley (spring loaded)
6	Belt	15	Water pump
10	Fuel supply pump	16	Idler pulley
11	Fan drive	17	Generator
12	AC compressor	18	Air compressor

Date	Version	Page	G002 - generator	Capitel	Index	Docu-No.
08.05.2006	a	5/5		9000	E	000335

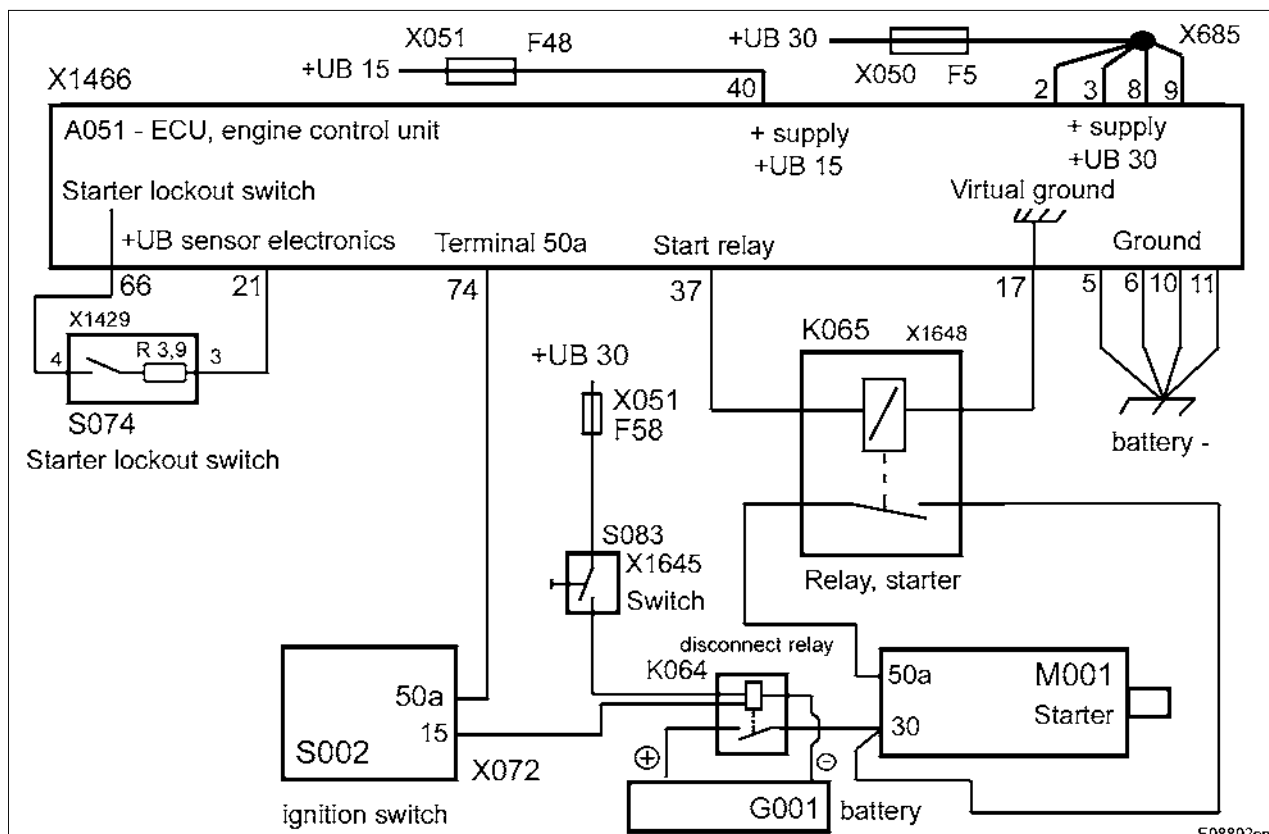
Fendt 300 VarioElectrics / General system
M001 - starter motor**E**

EKI07710

Item	Designation	Item	Designation
1	Pinion	7	Exciter winding
2	Gear ring	8	Rotor
3	Roller freewheel	9	Commutator with carbon brushes
4	Engaging lever	10	Solenoid switch with pull-in and holding winding
5	Planetary gear (reduction gear)	11	K065 - starter relay
6	Pole shoe	12	G001 - battery

Fendt 300 Vario**Electrics / General system**
M001 - starter motor**E****VERSION A**

E07486en

VERSION B

E08892en

Date	Version	Page	M001 - starter motor	Capitel	Index	Docu-No.
08.05.2006	a	2/10		9000	E	000336

Fendt 300 Vario	Electrics / General system M001 - starter motor	E
------------------------	--	----------

Item	Designation	Remark
A051	ECU, EDC "engine control unit" (X1466 - separation point)	
Pin 2, 3, 8, 9	+supply (+UB 30) (12 VDC)	
Pin 40	+supply (+UB 15) (12 VDC)	Ignition ON
Pin 5, 6, 10, 11	Ground	
Pin 21	+UB sensor electronics	
Pin 66	Starter lockout switch	Operate clutch pedal.
Pin 74	Terminal 50a	Turn S002 - ignition switch to position "Start"
Pin 37	+UB (switching voltage on K065 - starter relay,)	
Pin 17	Virtual ground (ground on K065 - starter relay)	
G001	Battery	
K062	Relay, EDC (terminal 50a from S002 - ignition switch) (X1371 - separation point)	
K064	Battery disconnect relay (optional) +UB 30 via S083 - switch (switching voltage) (12 VDC) +UB 15 via S002 - ignition switch (holding voltage) (12 VDC)	
K065	Relay, starter (X1648 - separation point)	
M001	Starter	
S002	Ignition switch	
S074	Switch, starter lockout	Operate clutch pedal.
S083	Switch, battery disconnect relay	Start tractor: First close S083 - switch then switch on S002 - ignition switch Turn off tractor: first switch off S002 - ignition switch then disconnect S083 - switch
X050	Fuse holder 1 compl	
X051	Fuse holder 2 compl	
X554	Grounding point	

Date	Version	Page	M001 - starter motor	Capitel	Index	Docu-No.
08.05.2006	a	3/10		9000	E	000336

Fendt 300 Vario	Electrics / General system M001 - starter motor	E
------------------------	--	----------

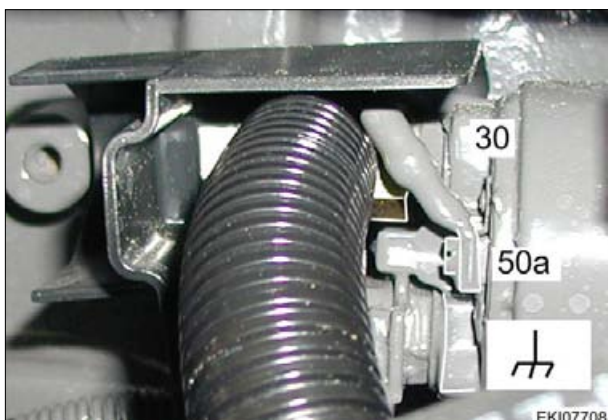
Procedure for starting tractor:

- If necessary, switch on **S083 - switch (battery disconnect relay)**
- Turn **S002 - ignition switch** to position "ignition ON". **A051 - ECU, EDC** switches on
- Close **S074 - switch, starter lockout** (operate drive clutch)
- Turn **S002 - ignition switch** to position "Start"
- **K065 - relay, starter** switches +UB 30 to pin 50a on **M001 - starter motor**



M001 = Starter (12 VDC / 3 KW)

On left side of engine



Pin	Function
30	Direct input from battery positive terminal
50	Starter control unit



For coolant temperature below 5°C

Disconnect K063 - relay, heating flange

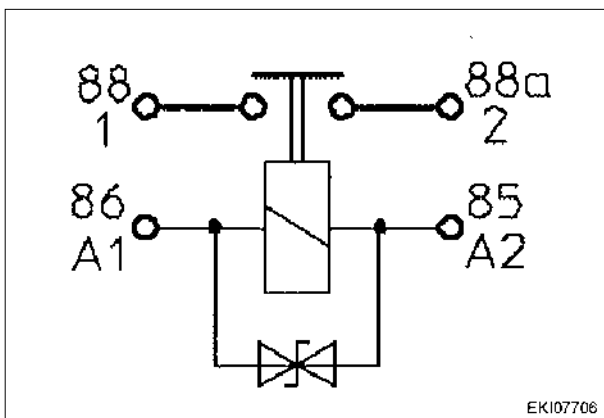
If coolant temperature is below 5°C, A052 - ECU, EDC "engine control unit" switches on R002 - heating flange via K063 - relay, this causes the battery voltage +UB30 to drop.

Note:

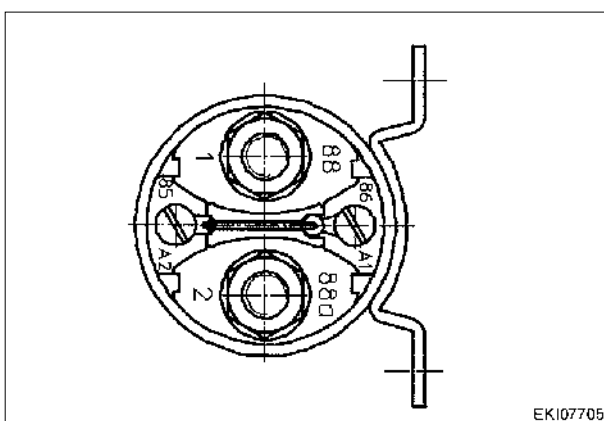
see also:

Chapter 9000 Reg. C - Electrical circuit diagrams (Sheet 33 - Deutz engine control)

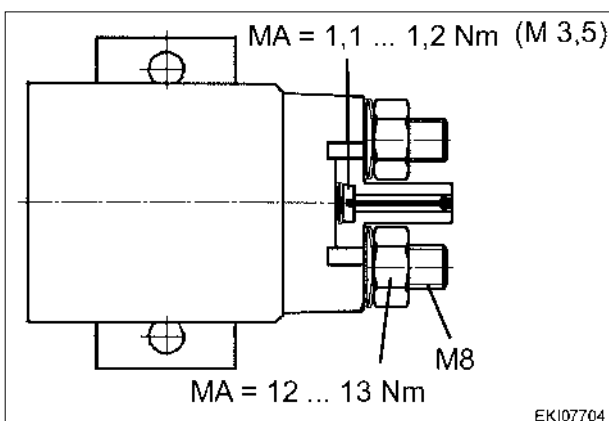
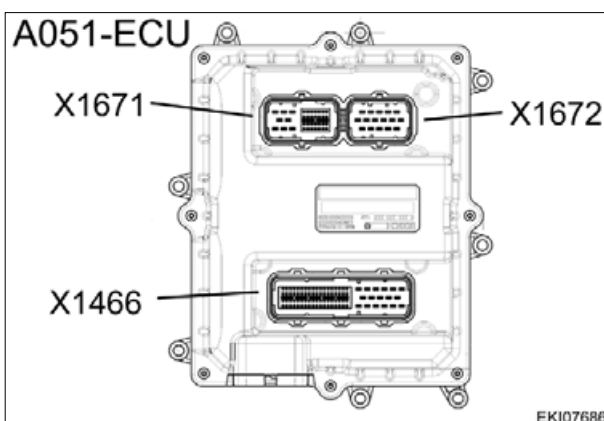
Date	Version	Page	M001 - starter motor	Capitel	Index	Docu-No.
08.05.2006	a	4/10		9000	E	000336

Fendt 300 Vario
Electrics / General system
M001 - starter motor
E**Circuit diagram of K063 - relay, heating flange****Note:**

Inductive resistance = 20 ohm +/- 10%



Unscrew terminal 85

**When screwing on the terminal note:****Thread M8** = 12 ... 13 Nm**Thread M3.5** = 1.1 ... 1.2 Nm

Disconnect X1671 - separation point on
 A051 - ECU, EDC "engine control unit" (prevents
 engine from starting)

Date	Version	Page	Capitel	Index	Docu-No.
08.05.2006	a	5/10	M001 - starter motor	9000	E
					000336

Fendt 300 Vario

Electrics / General system
M001 - starter motor

E**Check the voltage drop when starting**

Actuate M001 - starter motor.

With a voltmeter, measure the voltage at pin 30 of M001 - starter motor and vehicle ground.

Specified value: approx. 9.5 VDC

Note:

M001 - starter motor turns approx. 5 seconds, then A051 - ECU, EDC interrupts the starter circuit

**Testing power consumption of M001 - starter motor**

Test power consumption on the line (UB 30) with clip-on ammeter or ammeter

Specified value: approx. 400 amp

Note:

M001 - starter motor turns approx. 5 seconds, then A051 - ECU, EDC interrupts the starter circuit

Note:

The specified value of about 9.5 VDC / 400 Amp depends on charge level of the battery and on temperature (ambient temperature and/or engine temperature) The power consumption of the M001 - starter motor increases at low temperatures

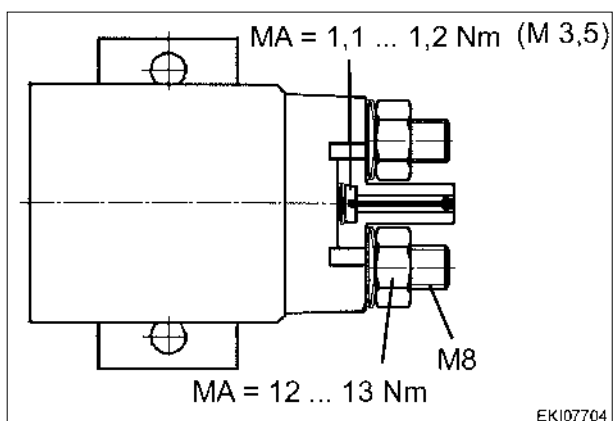
If approx. value is not reached, there is a fault in battery and / or lead (positive and ground).

Date	Version	Page	Capitel	Index	Docu-No.
08.05.2006	a	6/10	M001 - starter motor	9000	E 000336

Fendt 300 Vario
Electrics / General system
M001 - starter motor
E

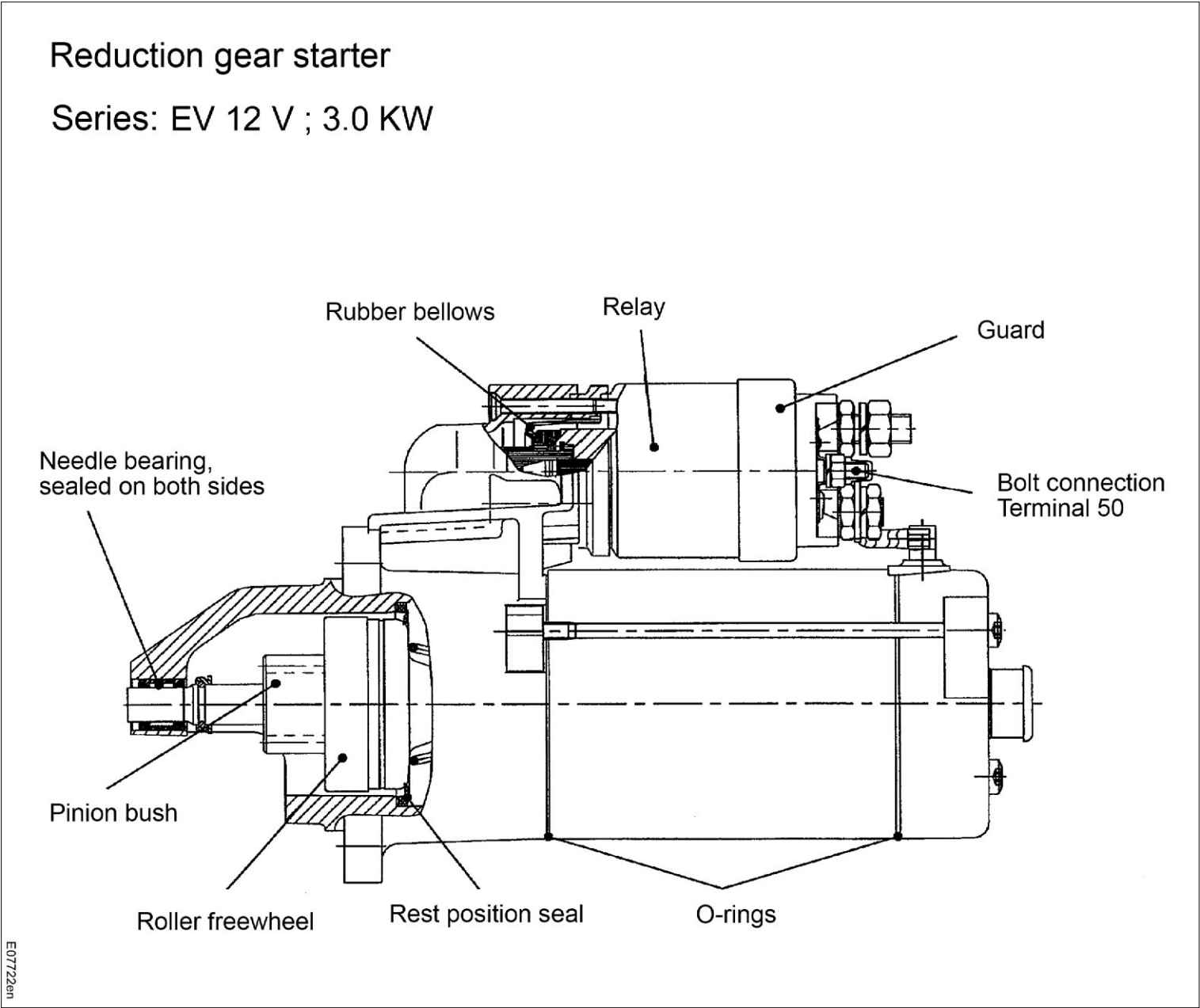
If necessary:

Connect K063 - relay, heating flange

**When screwing on the terminal note:****Thread M8** = 12 ... 13 Nm**Thread M3.5** = 1.1 ... 1.2 Nm**After measuring is complete**Connect X1671 - separation point to
A051 - ECU, EDC "engine control unit"Delete existing fault code in A007 - instrument
cluster

Fendt 300 Vario	Electrics / General system M001 - starter motor	E
-----------------	--	---

Technical drawing of M001 - starter motor



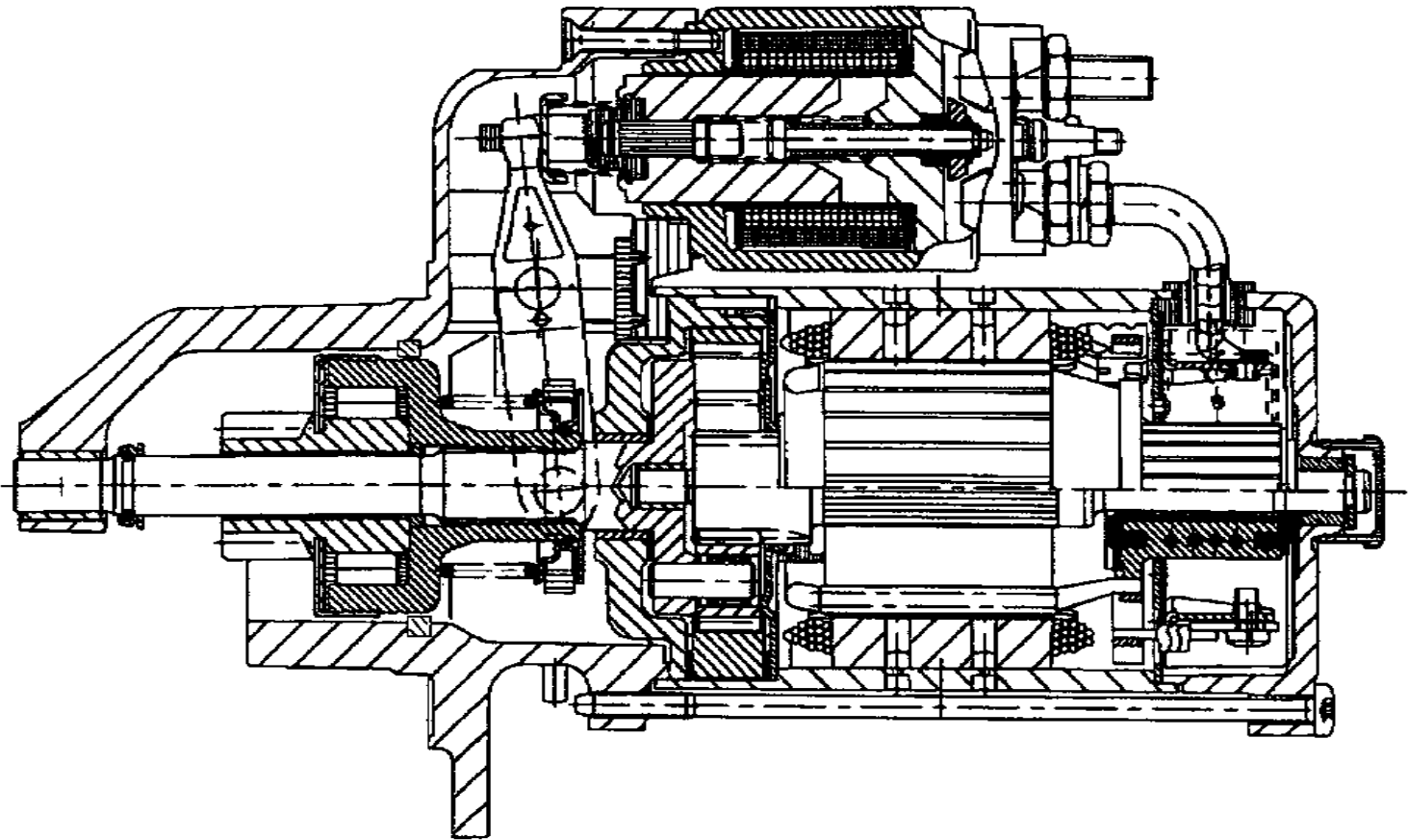
Date	Version	Page	M001 - starter motor		Capitel	Index	Docu-Nb.
08.05.2006	a	8/10			9000	E	000336

Fendt 300 Vario

Electrics / General system
M001 - starter motor

E

Reduction gear starter
Series: EV 12 V ; 3,0 KW



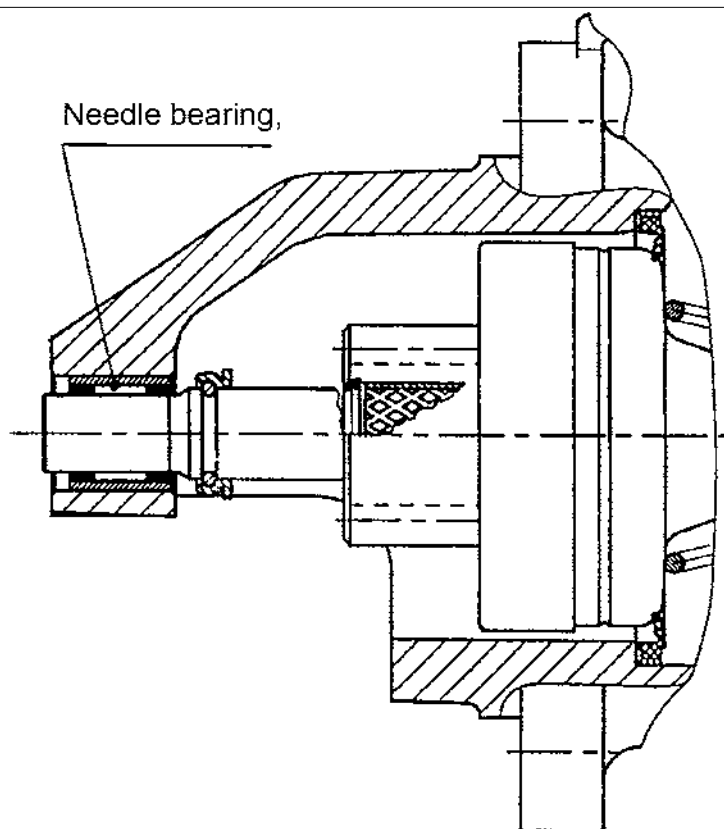
LD/12:sen

Date	Version	Page	M001 - starter motor			Capitel	Index	Docu.No.
08.05.2006	a	9/10				9000	E	000336

Fendt 300 Vario

Electrics / General system
M001 - starter motor

E



E07724en

Date	Version	Page	M001 - starter motor	Capitel	Index	Docu-No.
08.05.2006	a	10/10		9000	E	000336

Fendt 300 Vario

Electrics / General system
M002 / M004 - front / rear wiper motor

E

In windscreen:

M002 = **front wiper motor**X347 = **cable coupler** to front wiper motor**Testing wiper motor M002**

Switch on ignition and wiper motor.

Connect yellow electric cable and ground (wiper motor) at cable coupler X347.

If voltage is present and wiper motor M002 is not running, wiper motor M002 is defective.

**Testing wiper shut-off (park position)**

Ignition 'ON'

Connect black/green electric cable and ground (wiper motor) at cable coupler X347.

Is voltage present?

Switch wipers on, wiper motor runs.

Connect black electric cable and ground (wiper motor).

Voltage pulsates. If voltage does not pulsate, final shutdown in wiper motor is defective.

Date	Version	Page	M002 / M004 - front / rear wiper motor	Capitel	Index	Docu-No.
10.05.2006	a	1/2		9000	E	000337

Fendt 300 Vario**Electrics / General system**
M002 / M004 - front / rear wiper motor**E**

In rear window:

M004 = rear wiper motor

Note:**Test rear wiper motor in same manner as front wiper motor M002.**

Remove panels on rear wiper motor M004.

X258 = cable coupler on rear wiper motor

Note:**The X259 and X260 - separation points are the connections for the E023 - rear window heater**

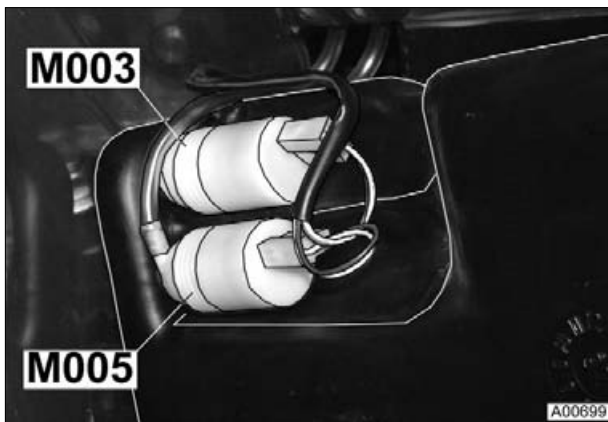
Date	Version	Page	M002 / M004 - front / rear wiper motor	Capitel	Index	Docu-No.
10.05.2006	a	2/2		9000	E	000337

Fendt 300 Vario
Electrics / General system
M003 - wiper pump, front
E**M003** = Wiper pump, front**M005** = Wiper pump, rear

On left rear mudguard



Remove windscreen washer tank



Pin	Function
1 (white)	+ supply
2 (brown)	Ground



Check power consumption of M003 - wiper pump.
 Remove fuse no. F020 (10 A) from fuse holder 1 (X050).

Connect multimeter (ammeter) in place of fuse.

Note:

Protect one test lead of multimeter with 16 amp fuse (free-standing fuse).

Note:
 Ignition 'ON'

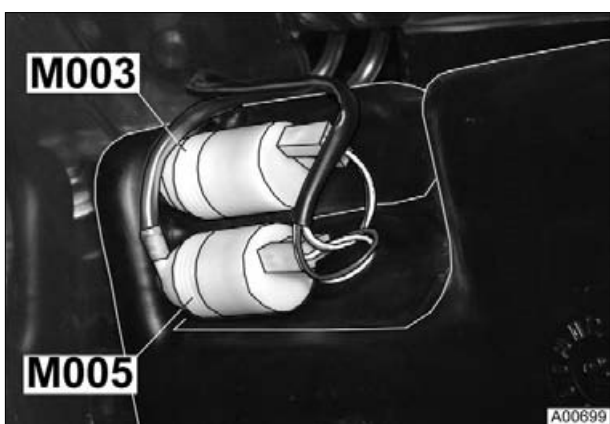
Test	Pin	Specified value	Condition	Remark
Power consumption	Between fuse F020	approx. 3 A	Actuate windscreen washer	+ supply to fuse F020
		0 A	Windscreen washer not actuated	

Note:
 All readings +/- 10%

Date	Version	Page	M003 - wiper pump, front	Capitel	Index	Docu-No.
10.05.2006	a	1/1		9000	E	000338

Fendt 300 Vario
Electrics / General system
M005 - wiper pump, rear
E**M003** = Wiper pump, front**M005** = Wiper pump, rear
on left rear mudguard

Remove windscreen washer tank



Pin	Function
1 (white)	+ supply
2 (brown)	Ground



Check power consumption of M005 - wiper pump.
 Remove fuse no. F018 (15 A) from fuse holder 1 (X050).

Connect multimeter (ammeter) in place of fuse.

Note:

Protect one test lead of multimeter with 16 amp fuse (free-standing fuse).

Note:

Ignition 'ON'

Date	Version	Page	M005 - wiper pump, rear	Capitel	Index	Docu-No.
10.05.2006	a	1/2		9000	E	000339

Fendt 300 Vario	Electrics / General system M005 - wiper pump, rear	E
------------------------	---	----------

Test	Pin	Specified value	Condition	Remark
Power consumption	Between fuse F018	approx. 2.6 A	S010 - switch, rear wiper motor Stage 1: M004 - wiper motor running M005 - wiper pump stationary	+ supply to fuse F018
		approx. 4.9 A	S010 - switch, rear wiper motor Stage 2: M004 - wiper motor running M005 - wiper pump running	

Note:**All readings +/- 10%**

Date	Version	Page	M005 - wiper pump, rear	Capitel	Index	Docu-No.
10.05.2006	a	2/2		9000	E	000339

Fendt 300 Vario

Electrics / General system

M007 - seat adjustment motor (compressor)

E**M007** = seat adjustment motor (compressor)

On driver seat spring unit:



remove rubber bellows.

**Testing seat adjustment motor**

Test power consumption.

Fuse F21 in X050 - fuse holder 1

Actuate seat adjustment motor M007 and read off power consumption.

Target value: 7.0 amps +/- 10%

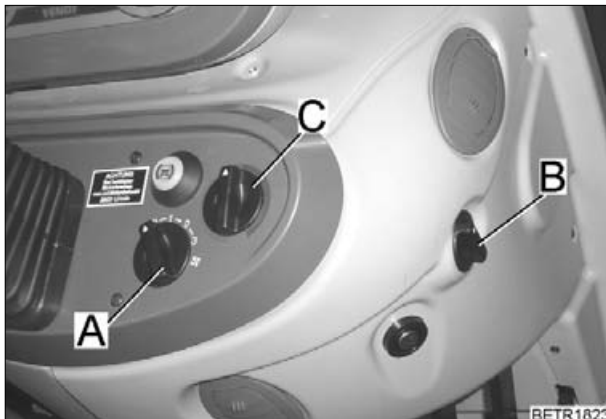
Note:

See electric circuit diagram -
Chapter 9000 Reg. C

Date	Version	Page	M007 - seat adjustment motor (compressor)	Capitel	Index	Docu-No.
10.05.2006	a	1/1		9000	E	000340

Fendt 300 Vario

Electrics / General system
M009 - heater blower

E**Note:**

The heating effect depends on the coolant temperature.

Switch M009 - heater blower on with S033 - heater switch (A).

- 0** Blower off.
1 Blower speed 1.
2 Blower speed 2.
3 Blower speed 3.

Guiding air flow with knob (B).

through air vents in the footwell and in front of the windscreen.



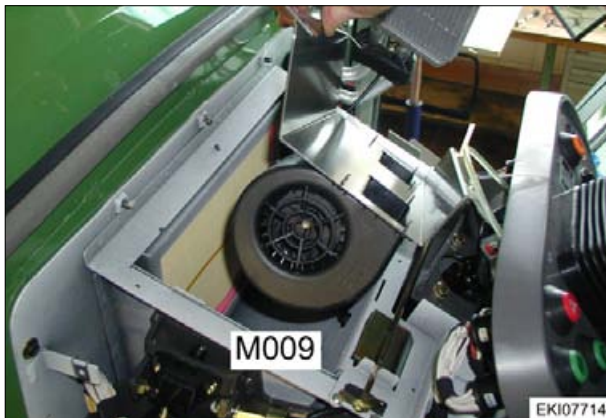
through air vent nozzles on windscreen.

Setting temperature range with knob (C).

The temperature is adjusted steplessly by turning the knob.

Note:

If operating the air-conditioning, set blower to "0".



M009 = Heater blower

At top of steering column



Remove A007 instrument cluster, panel and air duct. Place heat exchanger to the side

**Note:**

If the blower makes noise, check gaskets on air duct

Date	Version	Page	M009 - heater blower	Capitel	Index	Docu-No.
10.05.2006	a	1/3		9000	E	000341

Fendt 300 Vario

Electrics / General system
M009 - heater blower

E

X1317 = Separation point for M009 - heater blower

Left side in steering column unit



Remove panel



X050 = Fuse holder 1 compl.

X051 = Fuse holder 2 compl.



Testing power consumption of heater blower.

Pull fuse F14 out of X050 - fuse holder 1.

Connect multimeter (ammeter) in place of fuse.

Note:

Protect one test lead of multimeter with 16 amp fuse (free-standing fuse).

Fendt 300 Vario	Electrics / General system M009 - heater blower	E
------------------------	---	----------



Start blower motor and read off power consumption.	
Switch position	Amps
0	0 ADC
1	approx. 4.5 ADC
2	approx. 5.5 ADC
3	approx. 7.6 ADC

Note:

Removing and installing M009 - heater blower see also capitel 8113 Cab Index G

Date	Version	Page	M009 - heater blower	Capitel	Index	Docu-No.
10.05.2006	a	3/3		9000	E	000341

**Fendt 300 Vario
FENDT 400 COM III
FENDT 7/800 COM III**

**Electrics / General system
M014 - infinitely adjustable roof blower**

E

Note:

Available as an option for FENDT 300 Vario starting with the following chassis numbers:
336/21/1149; 337/21/1216; 338/21/1157; 339/21/1526



Disassemble roof cowl and unscrew black plastic cover: **M014 - infinitely adjustable roof blower** for air-conditioning system.



Test blower motor: test power consumption of the blower motor: Pull out fuse no.17 on X050 - fuse holder 1. Connect multimeter (ammeter) in place of fuse.

Note:

AC controller on setting "0".

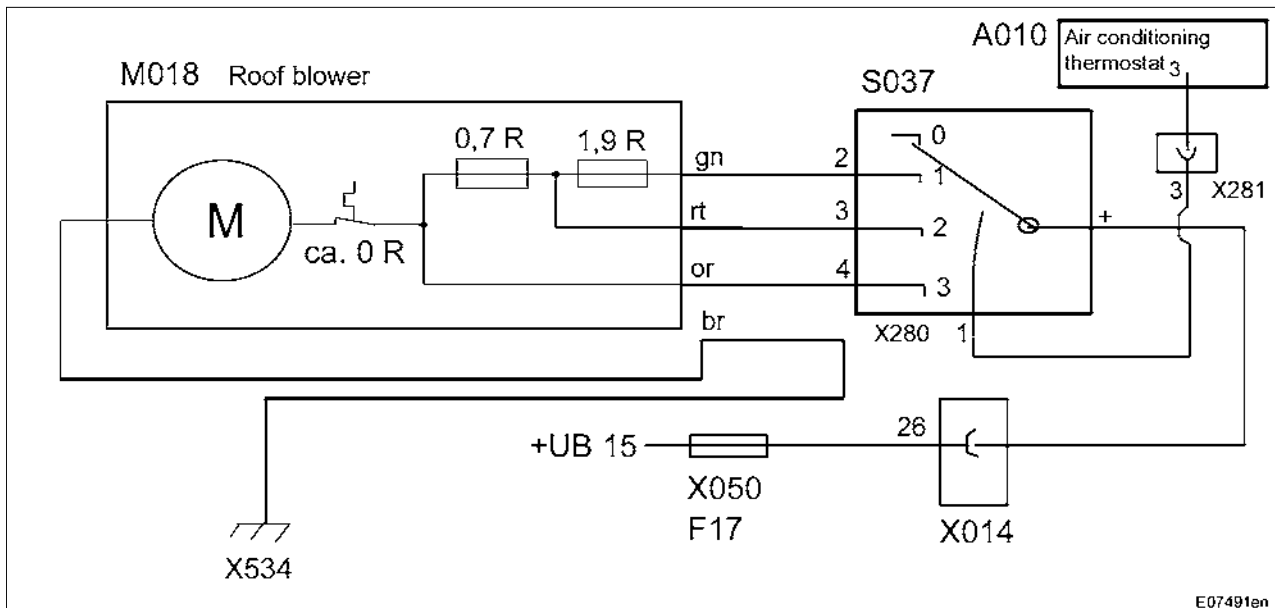
Protect one test lead of multimeter with 16 amp fuse (free-standing fuse).

Switch position	Amps
Run blower and read off power consumption.	
0	0
Min	0.9
Continual increase	
Max	13.5
All values +/- 10%	

Fendt 300 Vario

Electrics / General system

M018 - Roof blower (recirculation / fresh air / AC)

E

Item	Designation	Item	Designation
A010	Air conditioning thermostat	X050	Fuse holder 1
M018	Roof blower	X280	Separation point
S037	Switch, blower	X281	Separation point
X014	Separation point	X534	Grounding point

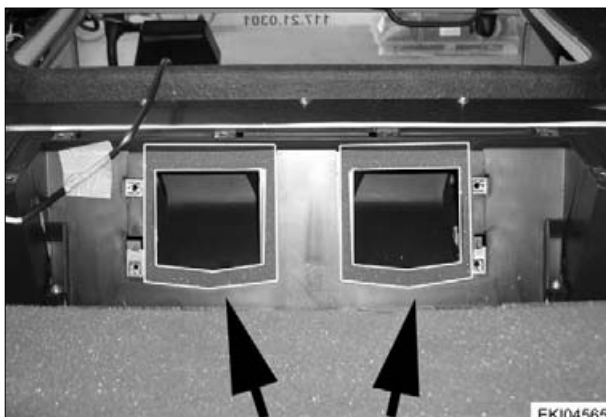


M018 = Roof blower levels 1, 2 and 3 for air-conditioning.

On top under the cab roof



Remove roof cover from cab, then unscrew plastic cover

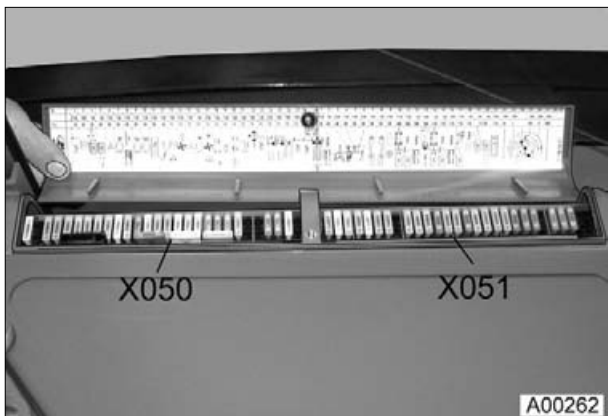
**Note:**

If the blower makes noise: remove the M018 - blower and check the gaskets (arrowed)

Date	Version	Page	M018 - Roof blower (recirculation / fresh air / AC)	Capitel	Index	Docu-No.
10.05.2006	a	1/4		9000	E	000342

Fendt 300 Vario

Electrics / General system
M018 - Roof blower (recirculation / fresh air / AC)

E

At right rear in cab:

Remove cover.

X050 = fuse holder 1 compl.

X051 = fuse holder 2 compl.



Adapter cable with a 'free-standing fuse' 16 (DIY)
 for testing the power consumption of the blower
 motor

**Testing M018 - blower:**

Checking power consumption of blower motor:

Pull fuse F17 out of X050 - fuse holder 1. Connect
 multimeter (ammeter) in place of fuse.

Fendt 300 Vario

Electrics / General system
M018 - Roof blower (recirculation / fresh air / AC)

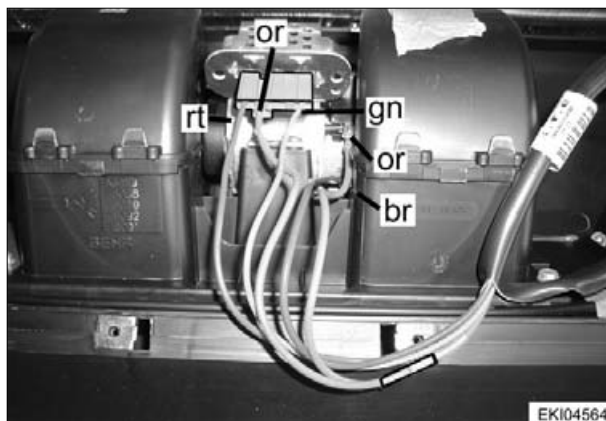
E**Run engine and read off power consumption.**

Switch position	Amps
0	0
1	approx. 6.7
2	approx. 12.3
3	approx. 19.0
All readings +/- 20%	

**Testing blower resistance on S037 - switch**

Disconnect S037 - switch

With a multimeter (ohmmeter):

measure green and red cables **Specified value: approx. 1.9 ohms**measure red and orange cables **Specified value: approx. 0.7 ohms**measure green and orange cables **Specified value: approx. 2.6 ohms**measure green cable and vehicle ground **Specified value: approx. 2.6 ohms**

If the specified values (resistance) are not reached, measure resistance directly at the blower

remove roof

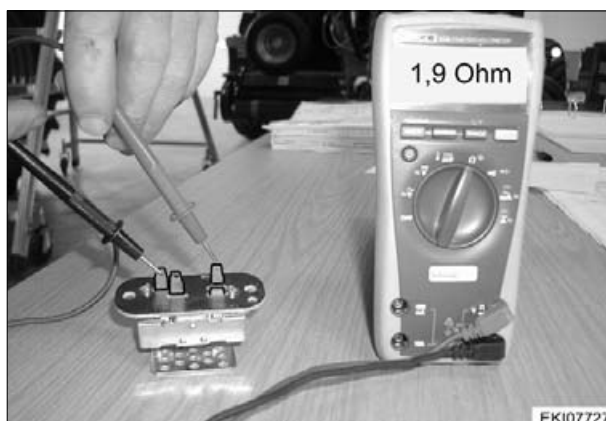
Remove plug.

or = orange (blower stage 3)

rt = red (blower stage 2)

gn = green (blower stage 1)

BR = brown (ground):

**Checking the blower resistance**

In event of complaint that power supply is OK, but blower motor is not running.

Test the resistance with the multimeter (ohmmeter):

Measure at pins (see figure) **Specified value: 1.9 ohms**

Date	Version	Page	M018 - Roof blower (recirculation / fresh air / AC)	Capitel	Index	Docu-No.
10.05.2006	a	3/4		9000	E	000342

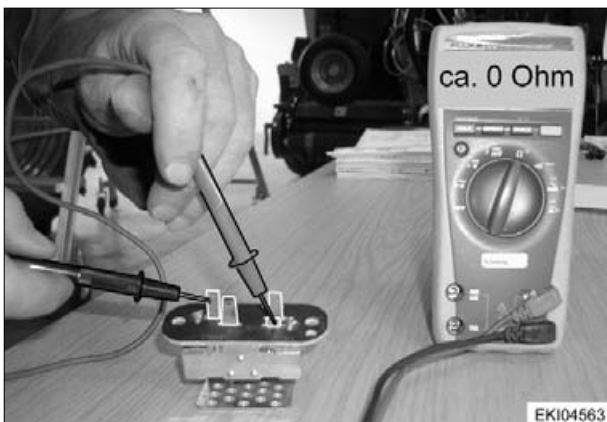
Fendt 300 Vario	Electrics / General system M018 - Roof blower (recirculation / fresh air / AC)	E
------------------------	--	----------



Test the resistance with the multimeter (ohmmeter):

Measure at pins (see figure)

Specified value: 0.7 ohms



Measure at pins (see figure)

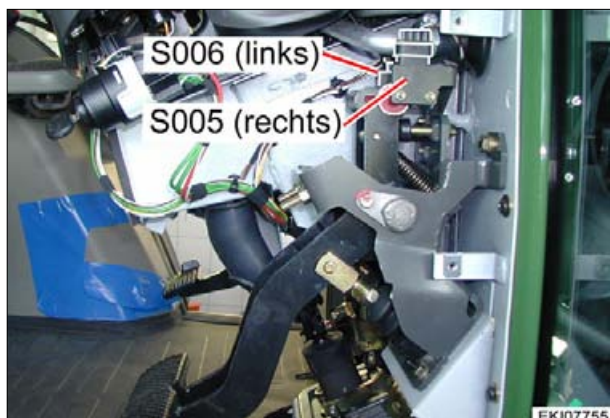
Specified value: approx. 0 ohms

Date	Version	Page	Capitel	Index	Docu-No.
10.05.2006	a	4/4	M018 - Roof blower (recirculation / fresh air / AC)	9000	E
					000342

Fendt 300 Vario

Electrics / General system

S005 / S006 - right / left brake solenoid switch

E**S005** = Switch, right brake**S006** = Switch, left brake**X217** = Separation point on S005 - switch, right brake**X218** = Separation point on S006 - switch, left brake

under dashboard



Remove dashboard

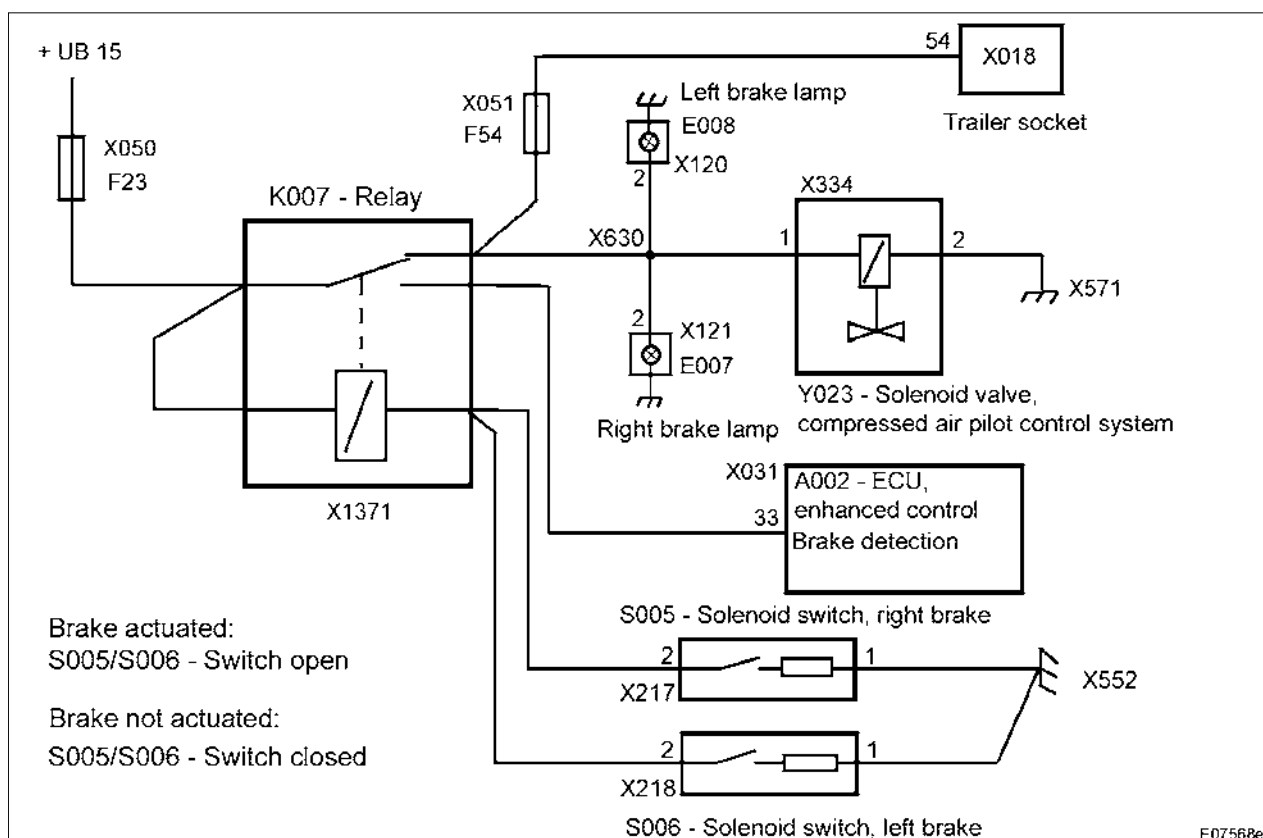
Block diagram S005/S006 - solenoid switch, brake (pilot production)

336 /21/ 0101 to 1000

337 /21/ 0101 to 1000

338 /21/ 0101 to 1000

339 /21/ 0101 to 1000



Date	Version	Page	Capitel	Index	Docu-No.
11.05.2006	a	1/7	S005 / S006 - right / left brake solenoid switch	9000	E

000343

Fendt 300 Vario	Electrics / General system S005 / S006 - right / left brake solenoid switch	E
------------------------	--	----------

Item	Designation	Remark
A002	ECU, enhanced control	
X031	Separation point on A002	
Pin 33	Brake detection	Brake not actuated: 12 VDC Brake actuated: 0 VDC
E007	Right brake lamp	
X121	Separation point on E007	
E008	Left brake lamp	
X120	Separation point on E008	
K007	Relay, brake	
X1371	Relay base	
S005	Solenoid switch, right brake	
X217	Separation point on S005	
S006	Solenoid switch, left brake	
X218	Separation point on S006	
X018	Trailer socket	
X050	Fuse holder 1	
X051	Fuse holder 2	
X552	Grounding point	
X571	Grounding point	
X630	Connector	
Y023	Solenoid valve, compressed air pilot control system	
X334	Separation point on Y023	

Date	Version	Page	Capitel	Index	Docu-No.
11.05.2006	a	2/7	S005 / S006 - right / left brake solenoid switch	9000	E
					000343

Fendt 300 Vario

Electrics / General system
S005 / S006 - right / left brake solenoid switch

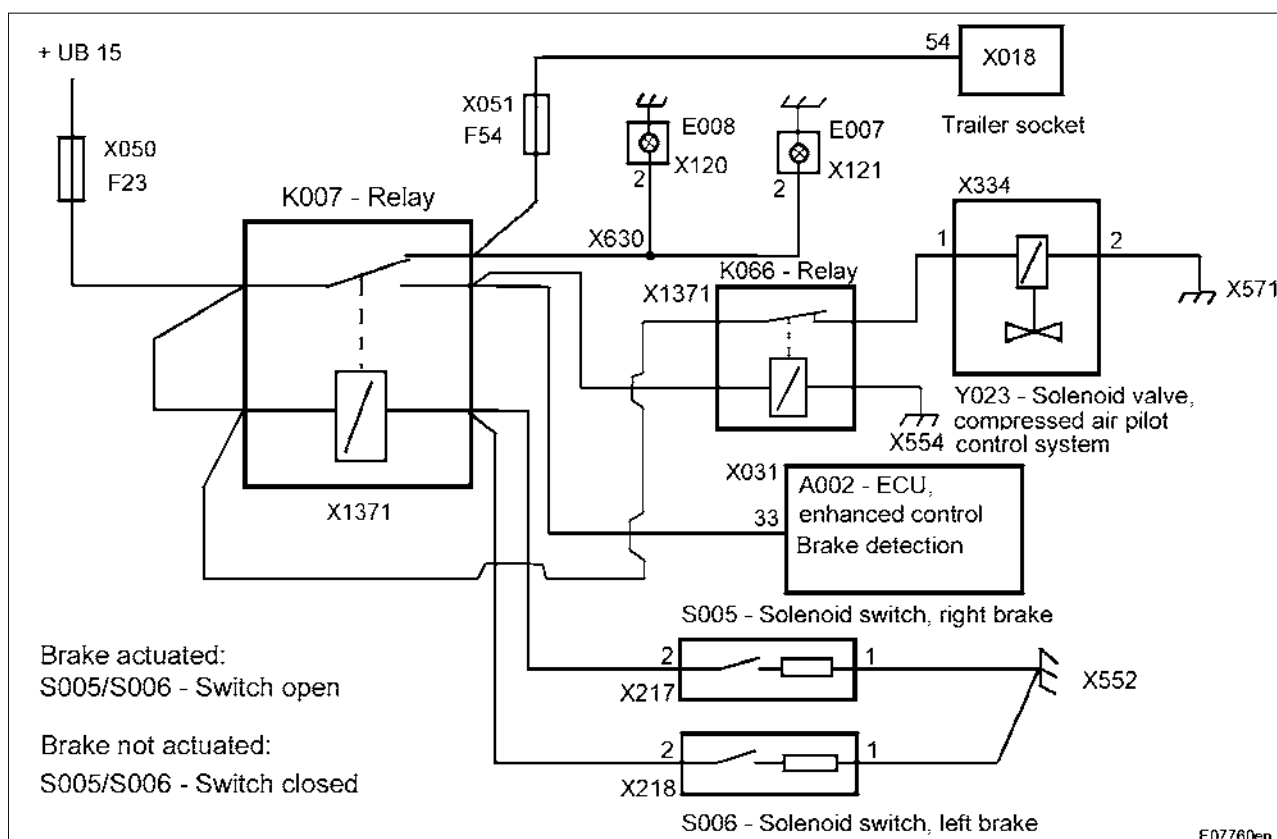
E**Block diagram S005/S006 - solenoid switch, brake**

336 / 21 / 0101 chassis no. 1001 and up

337 / 21 / 0101 chassis no. 1001 and up

338 / 21 / 0101 chassis no. 1001 and up

339 / 21 / 0101 chassis no. 1001 and up



Item	Designation	Remark
A002	ECU, enhanced control	
X031	Separation point on A002	
Pin 33	Brake detection	Brake not actuated: 12 VDC Brake actuated: 0 VDC
E007	Right brake lamp	
X121	Separation point on E007	
E008	Left brake lamp	
X120	Separation point on E008	
K007	Relay, brake	
X1371	Relay base	
K066	Relay, compressed air pilot control	
X1371	Relay base	

Date	Version	Page	Capitel	Index	Docu-No.
11.05.2006	a	3/7	S005 / S006 - right / left brake solenoid switch	9000	E 000343

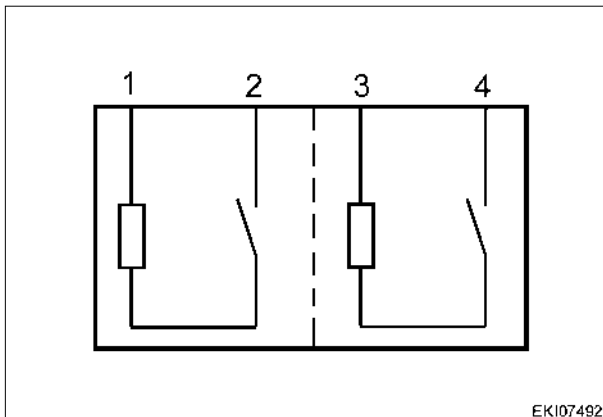
Fendt 300 Vario	Electrics / General system S005 / S006 - right / left brake solenoid switch	E
------------------------	--	----------

Item	Designation	Remark
S005	Solenoid switch, right brake	
X217	Separation point on S005	
S006	Solenoid switch, left brake	
X218	Separation point on S006	
X018	Trailer socket	
X050	Fuse holder 1	
X051	Fuse holder 2	
X552	Grounding point	
X554	Grounding point	
X571	Grounding point	
X630	Connector	
Y023	Solenoid valve, compressed air pilot control system	
X334	Separation point on Y023	

Date	Version	Page	S005 / S006 - right / left brake solenoid switch	Capitel	Index	Docu-No.
11.05.2006	a	4/7		9000	E	000343

Fendt 300 Vario

Electrics / General system
S005 / S006 - right / left brake solenoid switch

E

**Measuring points on
 S005 / S006 - solenoid switch**

Pin	Function
1	Ground
2	Actuation
3	Not assigned
4	Not assigned



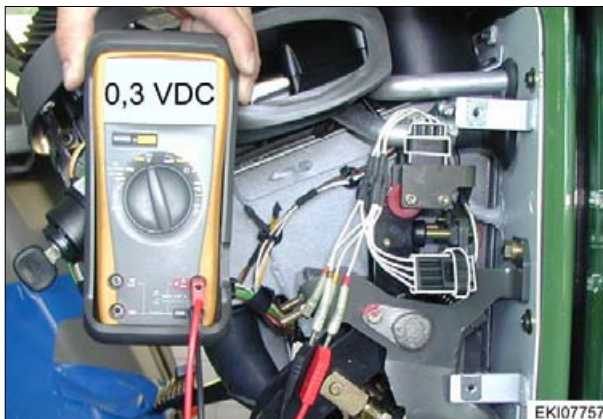
**Testing resistance (ohm) of
 S005 / S006 - switch**

Connect multimeter (ohmmeter) only to the respective switch with adapter cable X899.980.246.206

Measure pins 1 and 2

Pedal in rest position (switch closed) :
 approx. 4.1 ohm

Pedal actuated (switch open) : infinite resistance



Testing voltage (VDC) on solenoid switch

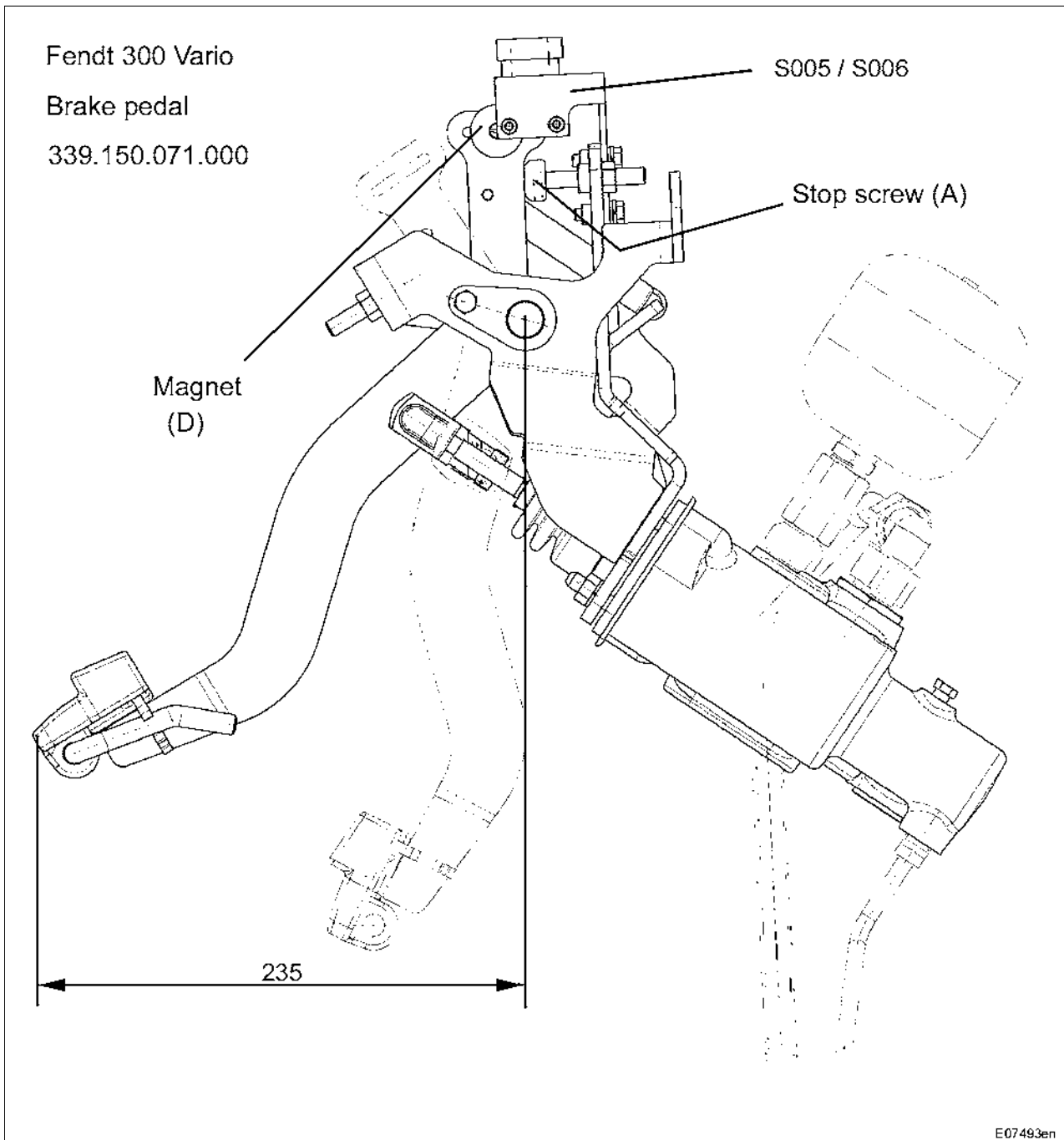
Connect multimeter (voltmeter) to respective solenoid switch with adapter cable X 899.980.246.206

Ignition 'ON'

Measure pins 1 and 2

Pedal in rest position (switch closed) : approx. 0.3 ohm

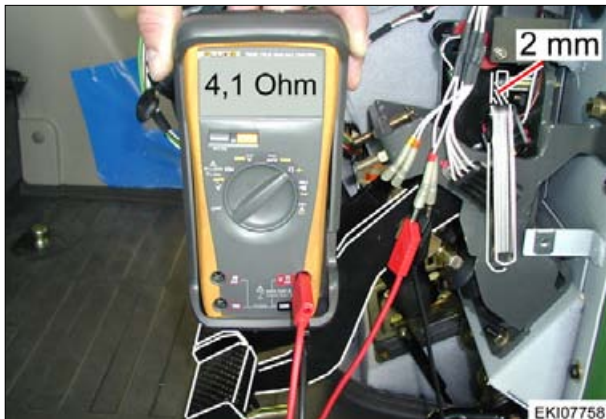
Pedal actuated (switch open) : approx. 12 ohm

Fendt 300 Vario**Electrics / General system
S005 / S006 - right / left brake solenoid switch****E****Setting magnet (D) to S005 / S006 - switch**

Date	Version	Page	S005 / S006 - right / left brake solenoid switch	Capitel	Index	Docu-No.
11.05.2006	a	6/7		9000	E	000343

Fendt 300 Vario

Electrics / General system
S005 / S006 - right / left brake solenoid switch

E**Setting magnet to S005 / S006 - switch**

Release brake pedals, **setting is performed individually**

Place a **2mm spacer** between the snubber of the stop screw A and brake pedal:

That corresponds to a pedal travel of approx. 9 mm

Connect adapter cable X899.980.246.206 only to the S005 - switch

Connect multimeter (ohmmeter) to pin 1 (brown) and pin 2 (white) on S005 - switch

Push magnet D towards S005 - switch until the ohmmeter indicates continuity (switch is closed, resistance approx. 4.1 ohm)

Tighten magnet D

Remove spacer (2 mm) from between snubber of stop screw A and brake pedal.

Note:

The magnet for solenoid switch S006 is set in same manner.

**Checking setting of magnet to S005 / S006 - switch**

With multimeter (ohmmeter) measure at pin 1 (brown) and pin 2 (white) on S005 - switch

Release brake pedals

in rest position (solenoid switch closed) :

Resistance approx. 4.1 ohm

Slowly actuate individual wheel brake (the solenoid switch must open)

After the brake pedal travels

22 mm, the S005 - switch (infinite resistance) opens

When the brake pedal returns to rest position, the S005 - switch must close again, at the latest, 5 mm before reaching rest position (resistance approx. 4.1 ohm)

Note:

The magnet for solenoid switch S006 is set in same manner.

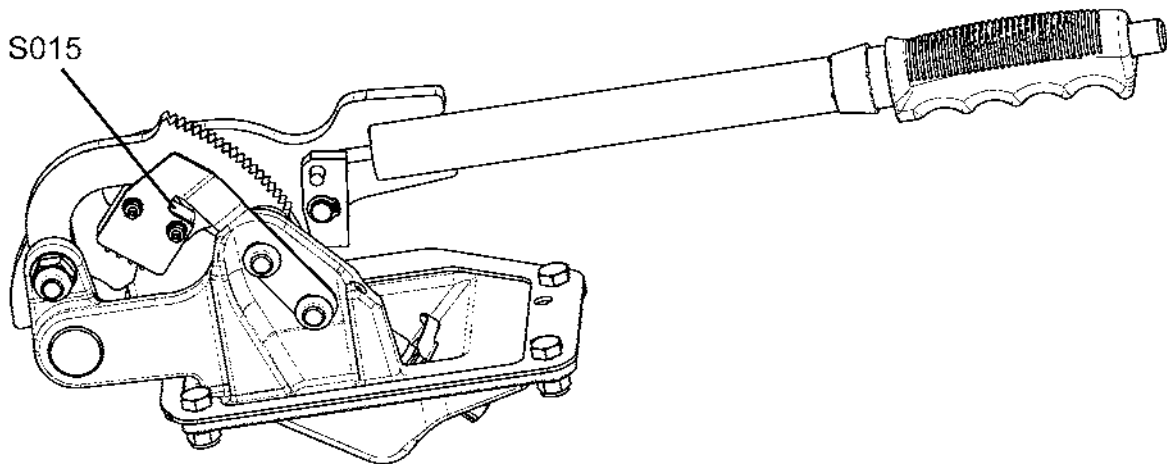
Date	Version	Page	Capitel	Index	Docu-No.
11.05.2006	a	7/7	S005 / S006 - right / left brake solenoid switch	9000	E 000343

Fendt 300 Vario	Electrics / General system S015 - switch, hand brake	E
------------------------	---	----------

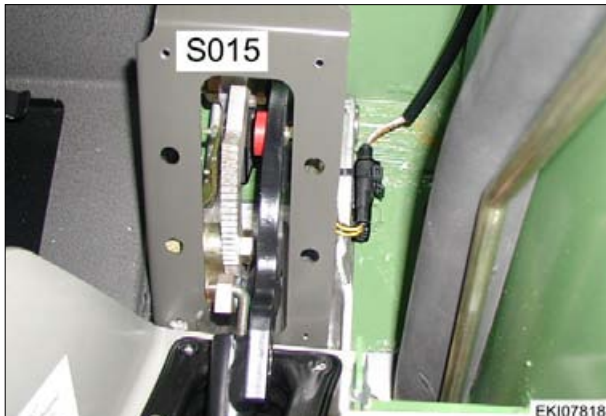
FENDT 300 Vario

Handbrake

G 339.150.030.020



E07817en



S015 = Switch, hand brake

On left in cab, on hand brake lever

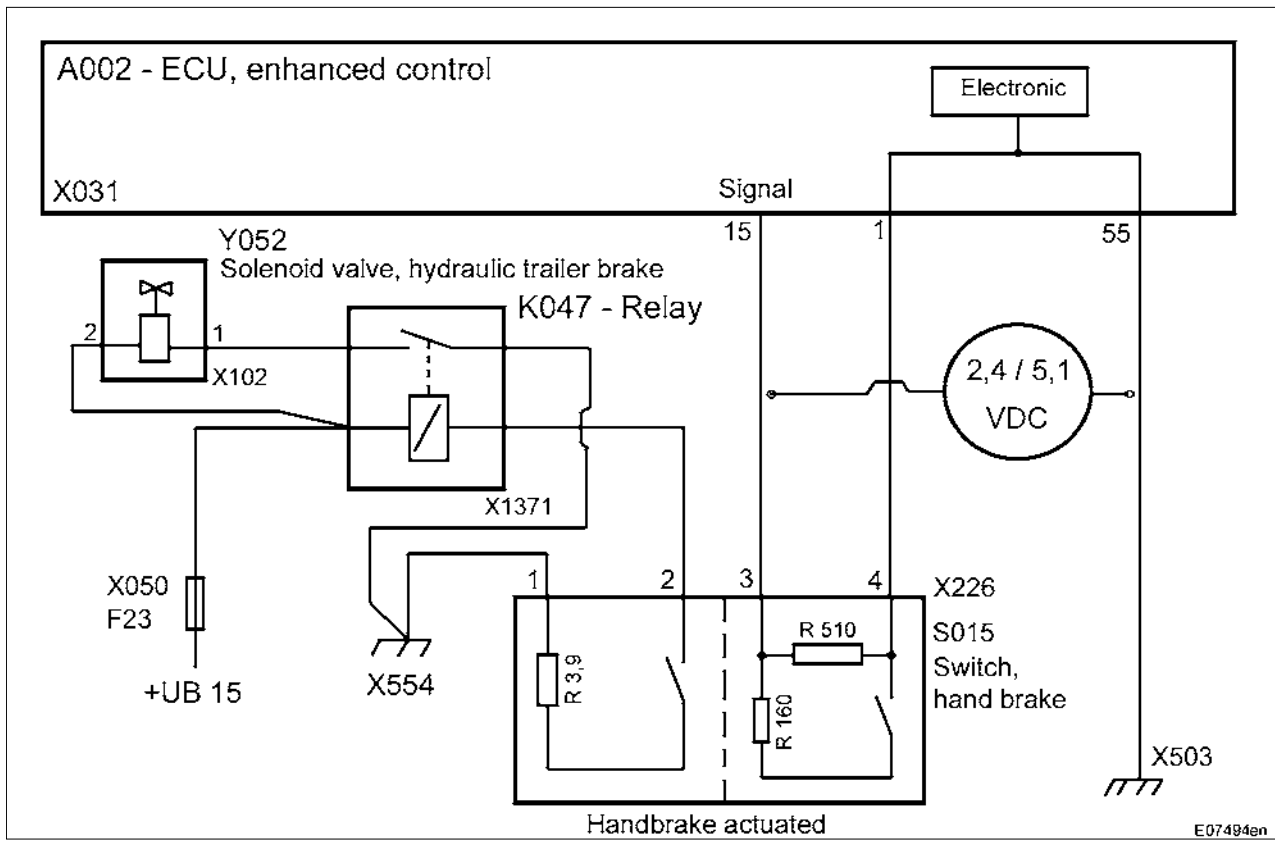


Remove cover panels



Date	Version	Page	Capitel	Index	Docu-No.
11.05.2006	a	1/4	S015 - switch, hand brake	9000	E
					000344

Fendt 300 Vario	Electrics / General system S015 - switch, hand brake	E
------------------------	--	----------



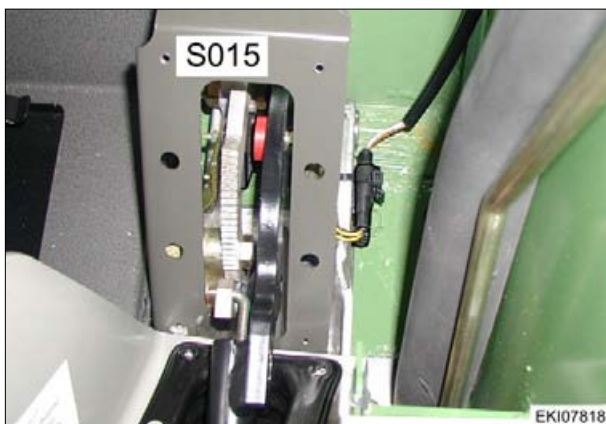
Item	Designation	Remark
A002	ECU, enhanced control	
X031	Separation point on A002	
Pin 1	Sensor system ground	
Pin 55	Ground Electronic	
Pin 15	Signal	
K047	Relay, hydraulic trailer brake (Italy)	
X1371	Relay base	
S015	Switch, hand brake	
X226	Separation point on S015 - switch	
X050	Fuse holder 1	
F23	Fuse no. 23	
X503	Grounding point	
X554	Grounding point	
Y052 (optional)	Solenoid valve, hydraulic trailer brake (Italy)	
X102	Separation point on Y052 - solenoid valve	

Date	Version	Page	S015 - switch, hand brake	Capitel	Index	Docu-No.
11.05.2006	a	2/4		9000	E	000344

Fendt 300 Vario	Electrics / General system S015 - switch, hand brake	E
------------------------	---	----------



A002 - ECU (X031-separation point)	
Pin	Function
1	Ground
15	Signal



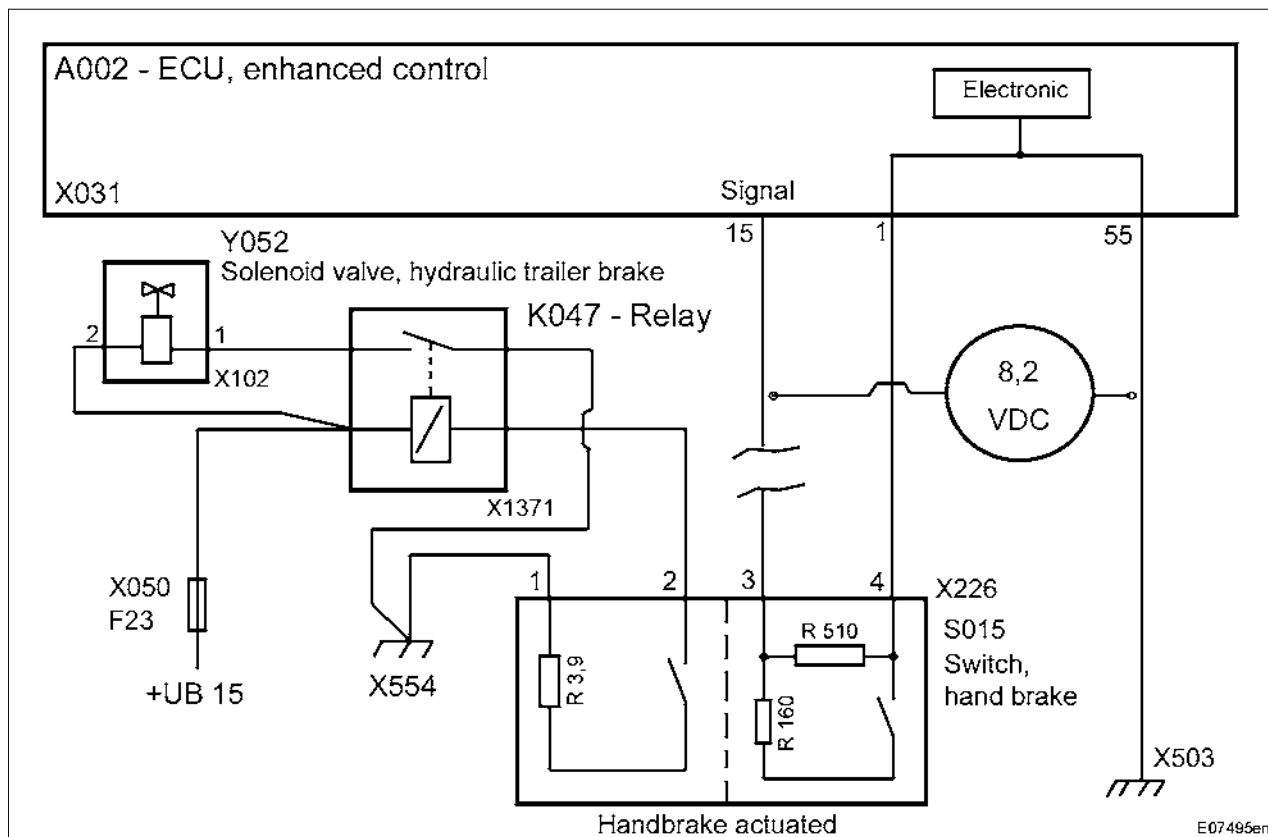
S015 - switch (X226-separation point)	
Pin	Function
1	Y052 - hydr. trailer brake
2	Y052 - hydr. trailer brake
3	A002 - ECU, enhanced control "transmission control"
4	A002 - ECU, enhanced control 'transmission control'

Note:

Connect adapter cable X 899.980.246.206 directly to S015 - switch. Ignition 'ON'.

Test	Pin	Specified value	Condition	Possible cause of fault
Ground for K047	1	approx. 0.5 VDC	Hand brake released	
		12 VDC	Hand brake on	
Ground for K047	2			
Signal	3	2.4 VDC	Hand brake released	If measured value is 0 VDC: fault in wiring or in A002 - ECU If measured value is 8.2 VDC, fault in wiring or switch
		5.1 VDC	Hand brake on	
Ground	4			

Date	Version	Page	S015 - switch, hand brake	Capitel	Index	Docu-No.
11.05.2006	a	3/4		9000	E	000344

Fendt 300 Vario**Electrics / General system**
S015 - switch, hand brake**E****Possible cause of fault**

Date	Version	Page	Capitel	Index	Docu-No.
11.05.2006	a	4/4	9000	E	000344

Fendt 300 Vario

Electrics / General system
S017 - switch, filter clogging

E**S017** = Switch, filter clogging (transmission oil)

Right side of transmission, on high
 pressure filter housing



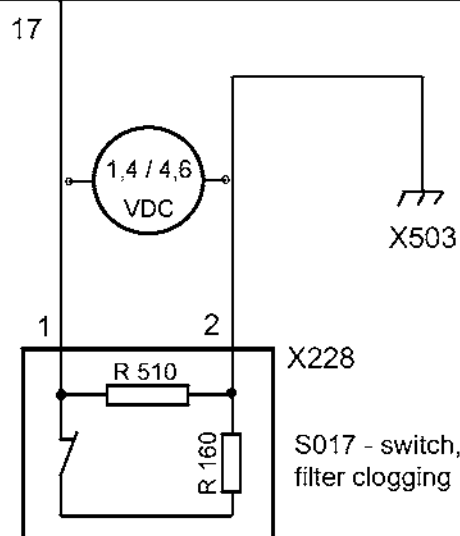
Remove right rear wheel, remove metal
 guard

A007 - instrument cluster

X101 "yellow"

Signal

Filter in order: 1,4 VDC (120 Ohm)
 Filter contaminated: 4,6 VDC (510 Ohm)



X228

S017 - switch,
 filter clogging

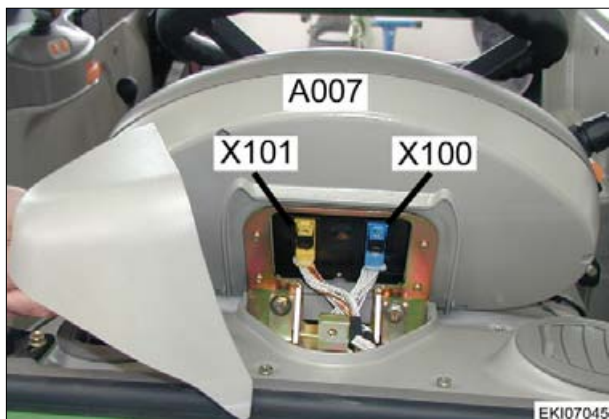
E07496en

Item	Designation	Remark
A007	Instrument cluster	
X101	Separation point 'yellow' at A007 - instrument cluster	
Pin 17	Signal	
S017	Switch, filter clogging	
X228	Separation point on S017 - switch	
Pin 1	Signal	
Pin 2	Ground	
X503	Grounding point	

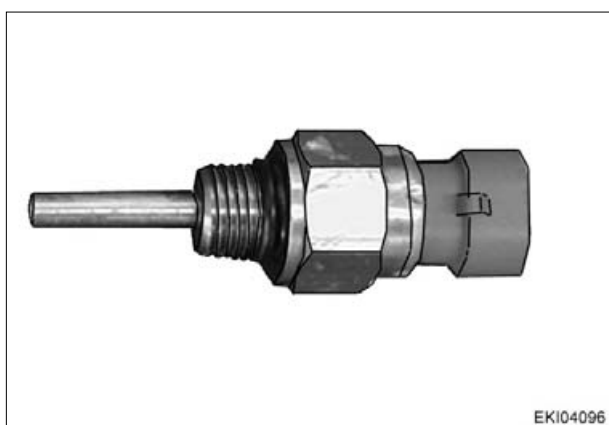
Date	Version	Page	Capitel	Index	Docu-No.
11.05.2006	a	1/4	S017 - switch, filter clogging	9000	E 000345

Fendt 300 Vario

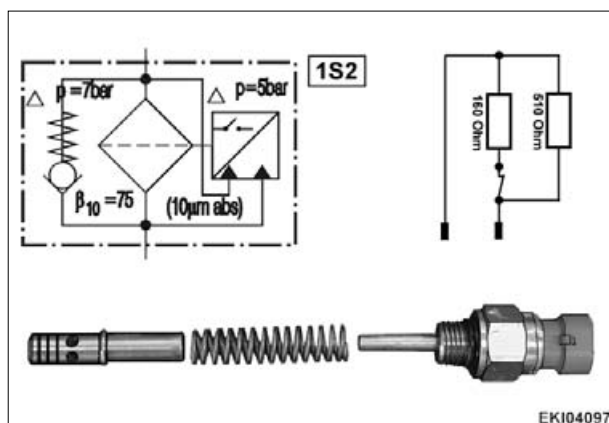
Electrics / General system
S017 - switch, filter clogging

E**A007 - instrument cluster (X101 - 'yellow')**

Pin	Function
17	Signal

**S017 - switch (X228-separation point)**

Pin	Function
1	Signal
2	Ground

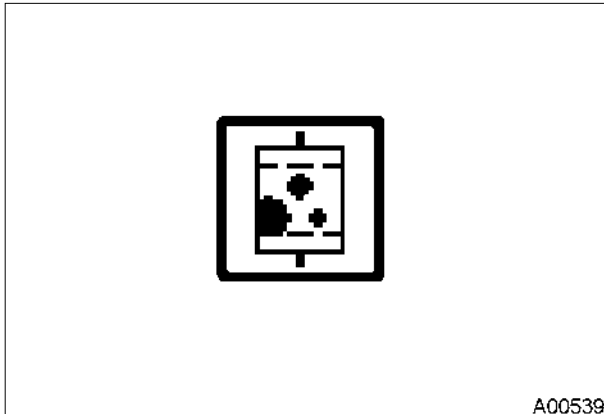


The resistors (510 ohm and 160 ohm) are switched via a reed element. The solenoid is located in the plunger of the bypass valve.

Note:

Before fitting, oil thread of the switch, put on sealing ring and turn as far as stop.

Fendt 300 Vario	Electrics / General system S017 - switch, filter clogging	E
------------------------	--	----------

**Note:**

A warning message (pressure filter clogged) is displayed on the instrument cluster if the following conditions are present:

1. Engine running.
2. Transmission oil temperature greater than 50°C (thermo switch resistance < 150 ohms).
3. Pressure differential upstream and downstream of pressure filter > 5 bar.
4. Items 1 to 3 must obtain for longer than two minutes.

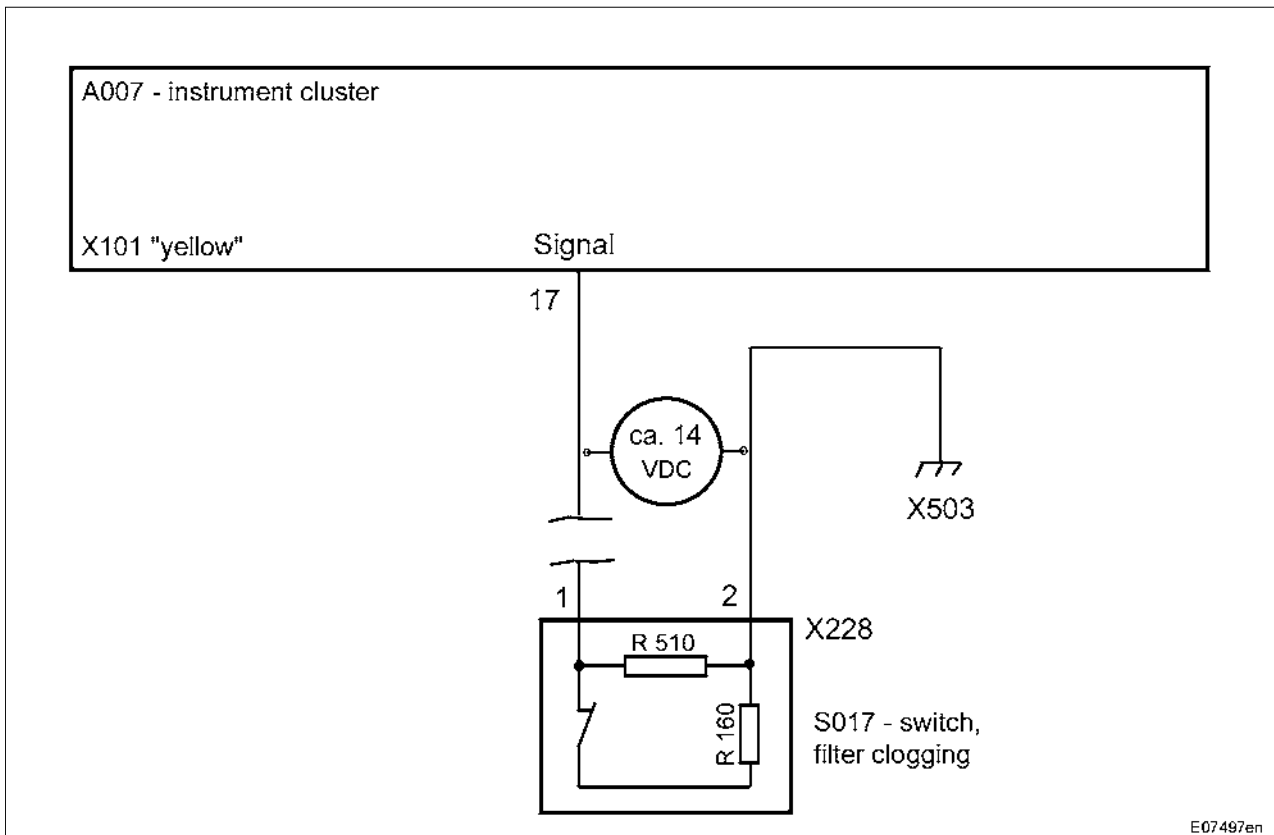
Note:

Connect adapter cable X 899.980.246.204 directly to S017 - switch. Ignition 'ON'.

Signal	1	1.4 VDC	Transmission high pressure filter in order (S017 - switch closed 120 ohm)	A) Reading 14 VDC, fault in wiring or in component (switch) B) Reading 0 VDC: - Unplug component - If measured value is 0 VDC, fault in wiring or A007 - instrument cluster - If measured value is 14 VDC, fault in the component (switch)
		4.6 VDC	Oil temperature < 0° or contaminated pressure filter (S017 - switch open, 510 ohm)	
Ground	2			

Fendt 300 Vario

Electrics / General system
S017 - switch, filter clogging

E**Possible cause of fault**

Fendt 300 Vario

Electrics / General system
S019 / S020 - PTO on switch, left / right rear

E**Operating the rear PTO**

- Engage or disengage the rear PTO with the key (A).
- When the PTO is engaged, the LED (B) next to key (A) is lit

The engagement process is dependent on the actuation time of key (A)

For less than 5 sec.

Gentle start-up, PTO clutch adapts automatically to implement's requirements.

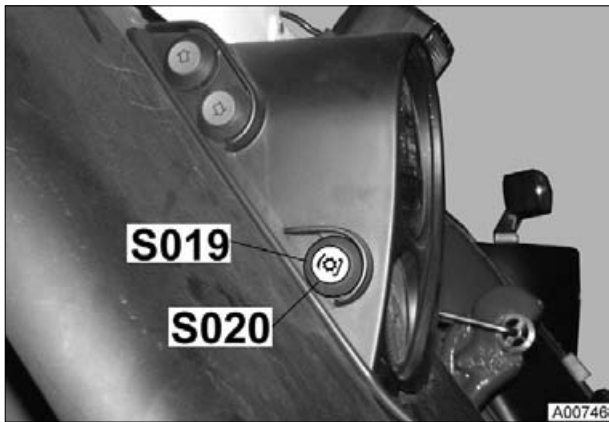
Above 5 Sec.

Speed and electronic monitoring are bypassed.

Note:

If no PTO speed has been selected when engaging the PTO, the PTO disengages after a few seconds and a warning message is displayed on the multiple display
When changing PTO speeds, always shift to neutral first, then select the desired PTO speed.

Disengage the rear PTO before switching off implements that require high initial power to start.

**External control**

- Press the left or right S019 / S020 - switch on the taillamp unit to ENGAGE and DISENGAGE.

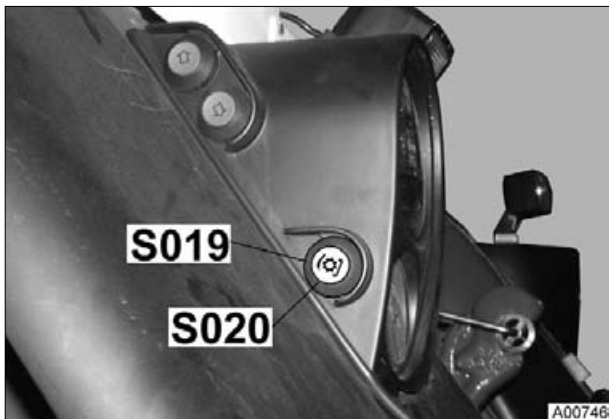
Note:

In the version with ground PTO, S019 / S020 - switch are not fitted.

EPC safety lock

PTO only runs as long as S019 or S020 - switch is pressed.

If the S019 or S020 - switch is kept pressed until its red light comes on, the PTO shaft will remain active.



S019 = Switch, PTO ON rear left

S020 = Switch, PTO ON rear right

On taillamp unit



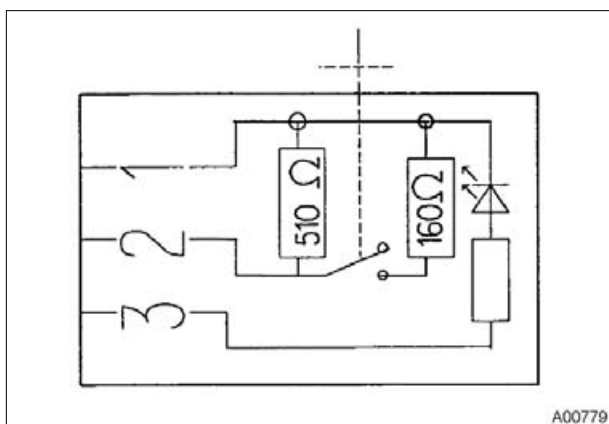
Date	Version	Page	Capitel	Index	Docu-No.
12.05.2006	a	1/5	S019 / S020 - PTO on switch, left / right rear	9000	E 000346

Fendt 300 Vario

Electrics / General system
S019 / S020 - PTO on switch, left / right rear

E**A002 - ECU (X031)**

Pin	Function
S019 - switch	
1	Ground
22	Signal
24	LED Rear PTO ON
S020 - switch	
1	Ground
45	Signal
24	LED Rear PTO ON

**S019 / S020 - switch**

Pin	Function
1	Ground
2	Signal
3	LED

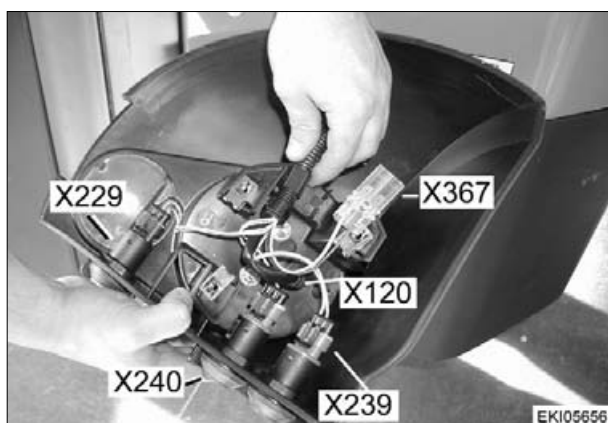
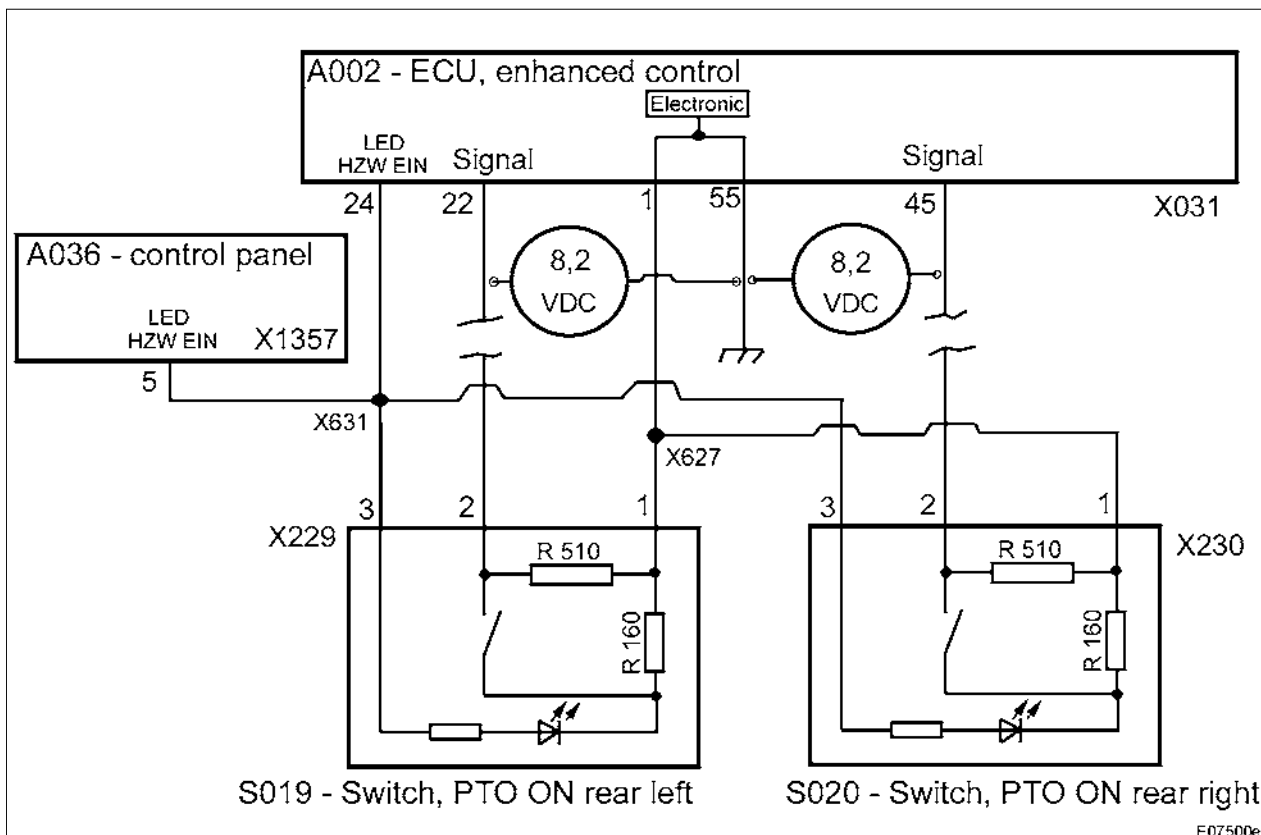
Fendt 300 Vario	Electrics / General system S019 / S020 - PTO on switch, left / right rear	E
------------------------	--	----------

Pin assignment and test values of S019 - switch					
Pin no.	Pin no.	S019 - switch not pressed	S019 - switch pressed	PTO engaged	PTO disengaged
S019 Rear PTO ON switch, rear left	A002 ECU, enhan- ced control	ohm / VDC	ohm / VDC	LED on VDC	LED off VDC
1 (ground)	1 (ground)	approx. 510 / 5.1	approx. 121 / 2.4	approx. 14	approx. 0.13
2 (signal)	22 (signal)	Pin no. on A002 1 and 22	Pin no. on A002 1 and 22	Pin no. on A002 1 and 24	Pin no. on A002 1 and 24
3 (LED)	24 (signal)				

Pin assignment and test values of S020 - switch					
Pin no.	Pin no.	S020 - switch not pressed	S020 - switch pressed	PTO engaged	PTO disengaged
S020 Rear PTO ON switch, rear right	A002 ECU, enhan- ced control	ohm / VDC	ohm / VDC	LED on VDC	LED off VDC
1 (ground)	1 (ground)	approx. 510 / 5.1	approx. 121 / 2.4	approx. 14	approx. 0.13
2 (signal)	45 (signal)	Pin no. 1 and 45	Pin no. 1 and 45	Pin no. 1 and 24	Pin no. 1 and 24
3 (LED)	24 (LED)				

Fendt 300 Vario

Electrics / General system
S019 / S020 - PTO on switch, left / right rear

E**Possible cause of fault**

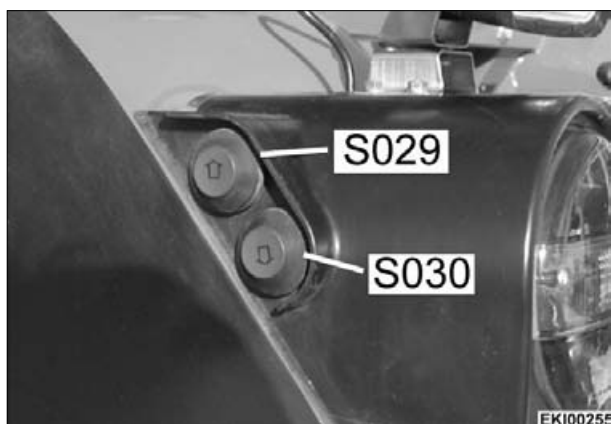
To remove S019 or S020 - switch : remove taillamp housing and disconnect

- X120 - separation point, 3 light taillamp unit
- X229 - separation point, rear PTO clutch
- X239 - separation point, raise rear power lift (HKH raise)
- X240 - separation point, lower rear power lift (HKH lower)
- X367 - separation point, work light

Fendt 300 Vario	Electrics / General system	E
S027 / S028 / S029 / S030 - external switch (rear power lift)		

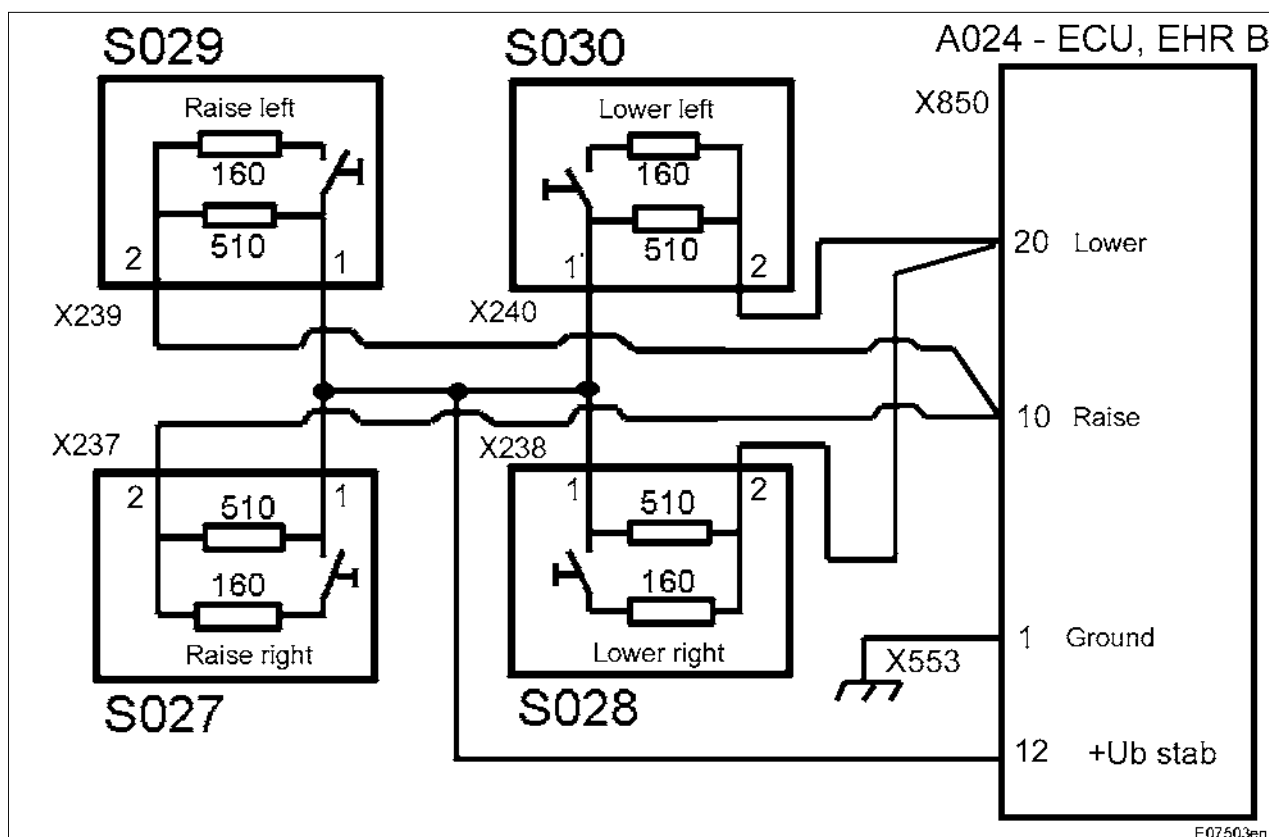


S027 = Right external switch 'Raise'
S028 = 'Lower' external button right



S029 = Left external switch 'Raise'
S030 = Left external switch 'Lower'

Date	Version	Page	Capitel	Index	Docu-No.
16.05.2006	a	1/4	S027 / S028 / S029 / S030 - external switch (rear power lift)	9000	E
				E	000347

Fendt 300 VarioElectrics / General system
S027 / S028 / S029 / S030 - external switch (rear power lift)**E**

E07503en

Item	Designation	Remark
A024	ECU, EPC B	
X850	Separation point on A024	
Pin 12	+Ub stab (10.0 VDC)	Ignition 'ON'
Pin 1	Ground Electronic	
Pin 10	Signal raise	
Pin 20	Signal lower	
S027	External switch 'raise', right	
X237	Separation point on S027	
S028	External switch lower, right	
X238	Separation point on S028	
S029	External switch raise, left	
X239	Separation point on S029	
S030	External switch lower, left	
X240	Separation point on S030	

Fendt 300 Vario

Electrics / General system
 S027 / S028 / S029 / S030 - external switch (rear power lift)

E**A024 - ECU (X850-separation point)**

Pin	Function
12	+ supply
1	Ground
10	Signal 'raise'
20	Signal 'lower'



Pin	Function
1	Power output
2	Power input
3	Not assigned

Note:

Ignition 'OFF' Resistance measured directly on switch

Switch position		Resistance
0 = rest position	Switch not pressed	510 ohms
1 = active	Switch pressed	121 ohms

Fendt 300 Vario	Electrics / General system S027 / S028 / S029 / S030 - external switch (rear power lift)	E
------------------------	--	----------

Note:

Connect e-adapter box X 899.980.208.100 directly to A024 - EPC, EPC B using adapter cable X 899.980.208.201.

Ignition 'ON'.

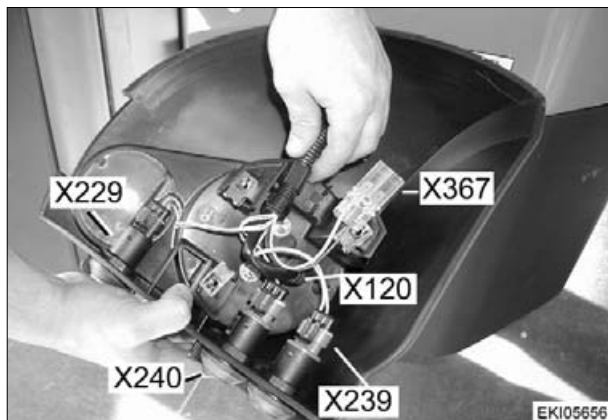
Voltage measurement refers to ground pin no.1 on the A024 - ECU, EPC B

Test	Pin	Specified value	Condition	Possible cause of fault
+ supply	12	10.0 VDC		
Ground	1			
Signal 'raise'	10	6.5 VDC	Switch not actuated	
		8.2 VDC	Switch actuated	
Signal 'lower'	20	6.5 VDC	Switch not actuated	
		8.2 VDC	Switch actuated	
Ground	1			

Note:

see also:

Chapter 9000 Reg. E - Measuring and testing- A024 - ECU,EPC B

**To remove:**

Remove taillamp housing and disconnect

X120 - separation point, 3-light taillamp unit

X229 - separation point, rear PTO clutch

X239 - separation point, raise rear power lift (HKH raise)

X240 - separation point, lower rear power lift (HKH lower)

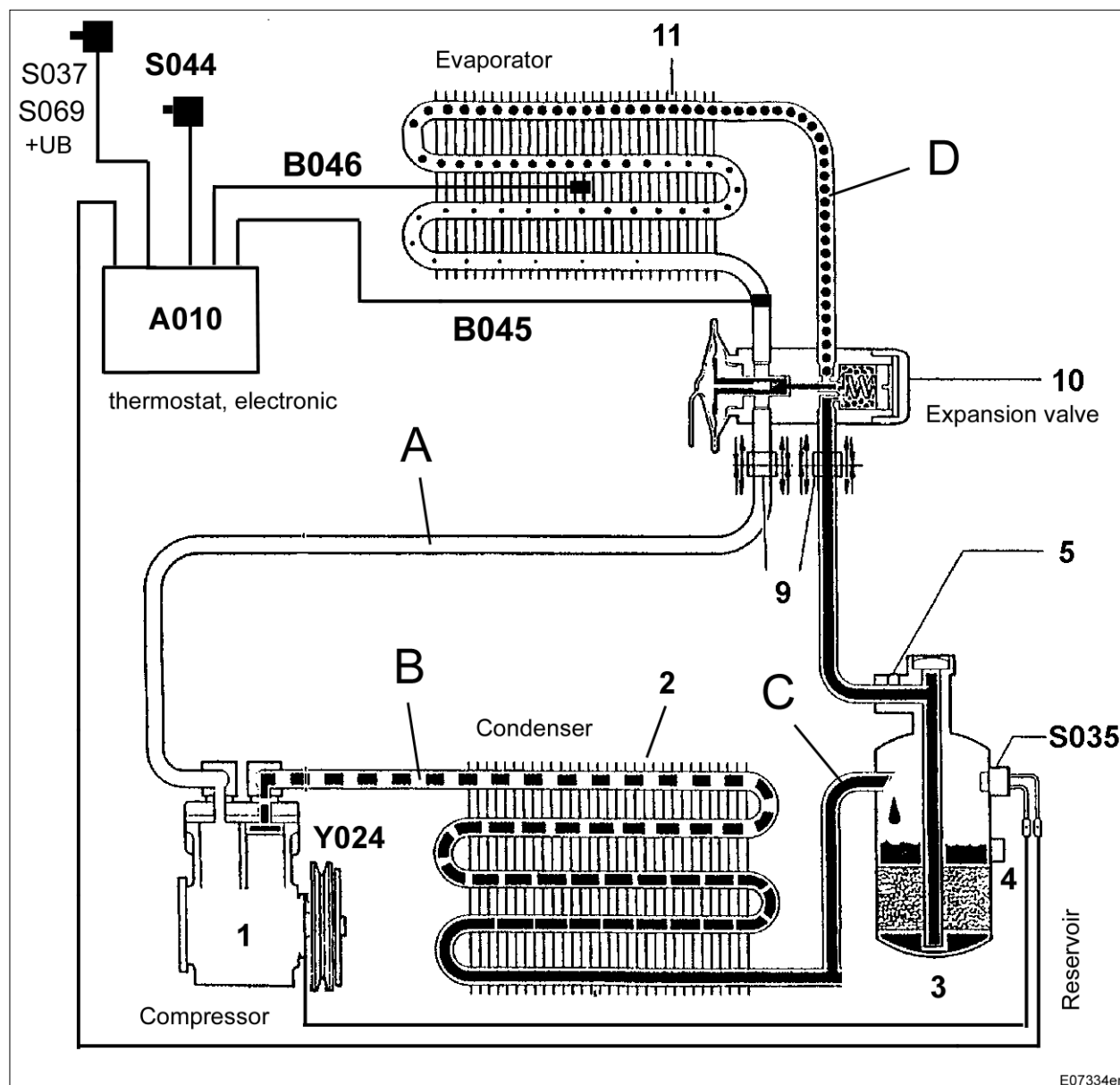
X367 - separation point, work light

Date	Version	Page		Capitel	Index	Docu-No.
16.05.2006	a	4/4	S027 / S028 / S029 / S030 - external switch (rear power lift)	9000	E	000347

Fendt 300 Vario

Electrics / General system

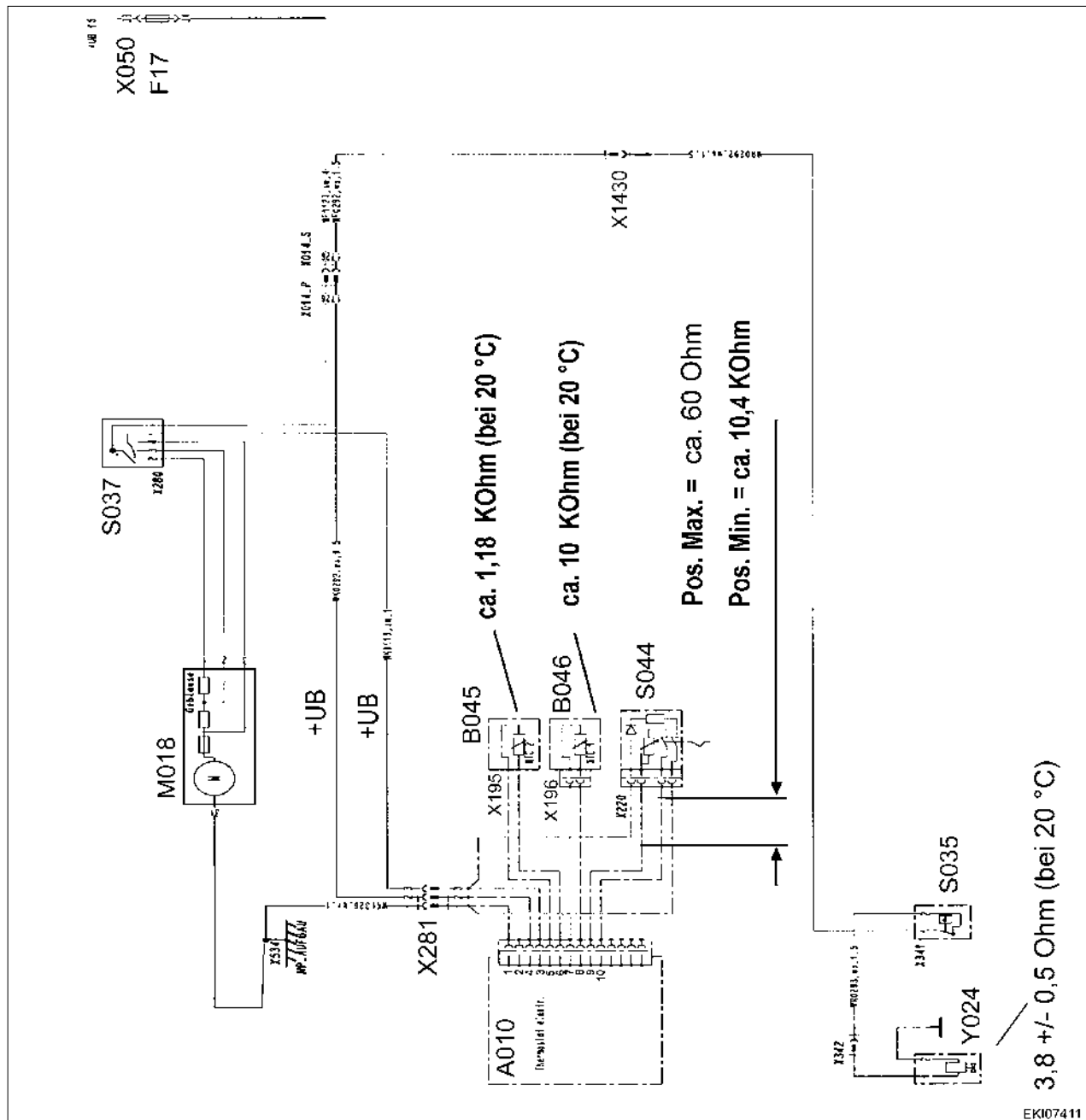
S035 - switch high / low pressure (AC)

E**Refrigerant circuit**

1	Compressor	B046	Temp. sensor 1
2	Condenser	S035	High-/low-pressure switch
3	Reservoir	S037	Switch, roof blower (3-speed)
4	Inspection glass	S044	AC potentiometer
5	Fuse	S069	Switch, roof blower (infinitely adjustable) (optional)
9	Separation point	Y024	Magnetic clutch
10	Expansion valve		
11	Evaporator		
A010	Electronic thermostat	A	Low pressure, gaseous
B045	Temp. sensor 2	B	High pressure, gaseous
		C	High pressure, liquid
		D	Intake pressure, liquid

Date	Version	Page	S035 - switch high / low pressure (AC)	Capitel	Index	Docu-No.
17.05.2006	a	1/4		9000	E	000348

Fendt 300 Vario	Electrics / General system S035 - switch high / low pressure (AC)	E
------------------------	---	----------



Note:

All measured values +/- 10%

A010	Electronic thermostat	S035	High/low pressure switch
B045	Temp. sensor 2 (NTC)	S037	Blower switch, 3-speed (optional: S069 - switch and infinitely adjustable blower)
B046	Temp. sensor 1 (NTC)	S044	Potentiometer
M018	Blower (optional: infinitely adjustable)	Y024	Magnetic clutch

Note:

NTC = Negative Temperature Coefficient

In other words, the sensor resistance decreases with increasing ambient temperature.

Date	Version	Page	S035 - switch high / low pressure (AC)	Capitel	Index	Docu-No.
17.05.2006	a	2/4		9000	E	000348

Fendt 300 Vario	Electrics / General system S035 - switch high / low pressure (AC)	E
------------------------	--	----------

System pressure monitoring

The **S035 - switch, high pressure / low pressure** is mounted on the reservoir (receiver-drier).
The S035 - switch monitors compression in the reservoir.



S035 = Switch, high/low pressure
In front of radiators on reservoir



Operating points of S035 - high pressure/low-pressure switch

	High pressure maximum pressure (bar)	Low pressure minimum pressure (bar)
S035 - switch open	28 +/- 2	< 2
S035 - switch closed	22 +/- 3	> 2

If the compression in the system is too high (>28 bar), the S035 - switch interrupts the voltage to the Y024 - magnetic clutch

Possible causes of excessive pressure in the system are:

- Overheating (condenser soiled)
- Expansion valve iced up
- Too much refrigerant in circuit

If the compression in the system becomes too low (<2 bar), the S035 - switch interrupts the voltage supply to the Y024 - magnetic clutch.

Possible causes of too little pressure in the system are:

- Leaks in the system
- Not enough refrigerant in the circuit

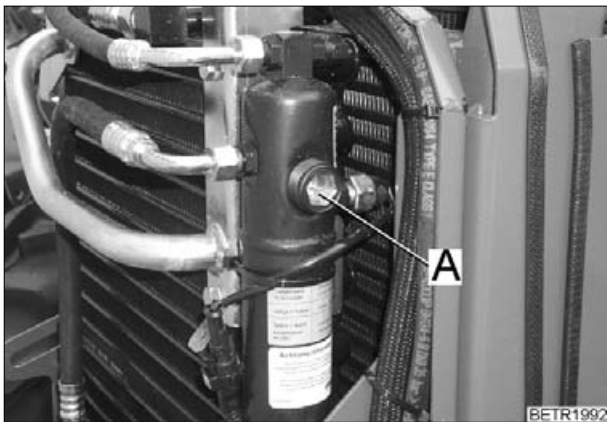
Date	Version	Page		Capitel	Index	Docu-No.
17.05.2006	a	3/4	S035 - switch high / low pressure (AC)	9000	E	000348

Fendt 300 Vario

Electrics / General system
S035 - switch high / low pressure (AC)

E

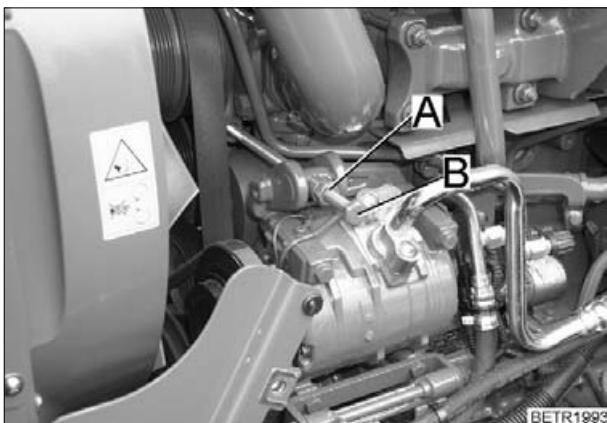
- If dirty, blow or spray out condenser from the inside to outside.

**Checking refrigerant level**

- Turn on system, compressor must be running.
At an engine speed of 2,000 rpm; white ball (A) in the sight glass of the fluid tank must float.
Topping up with refrigerant or replacing the tank / drier only in workshop!

Note:

The blue ball turning pink indicates moisture in the system.

**Compressor v-belt**

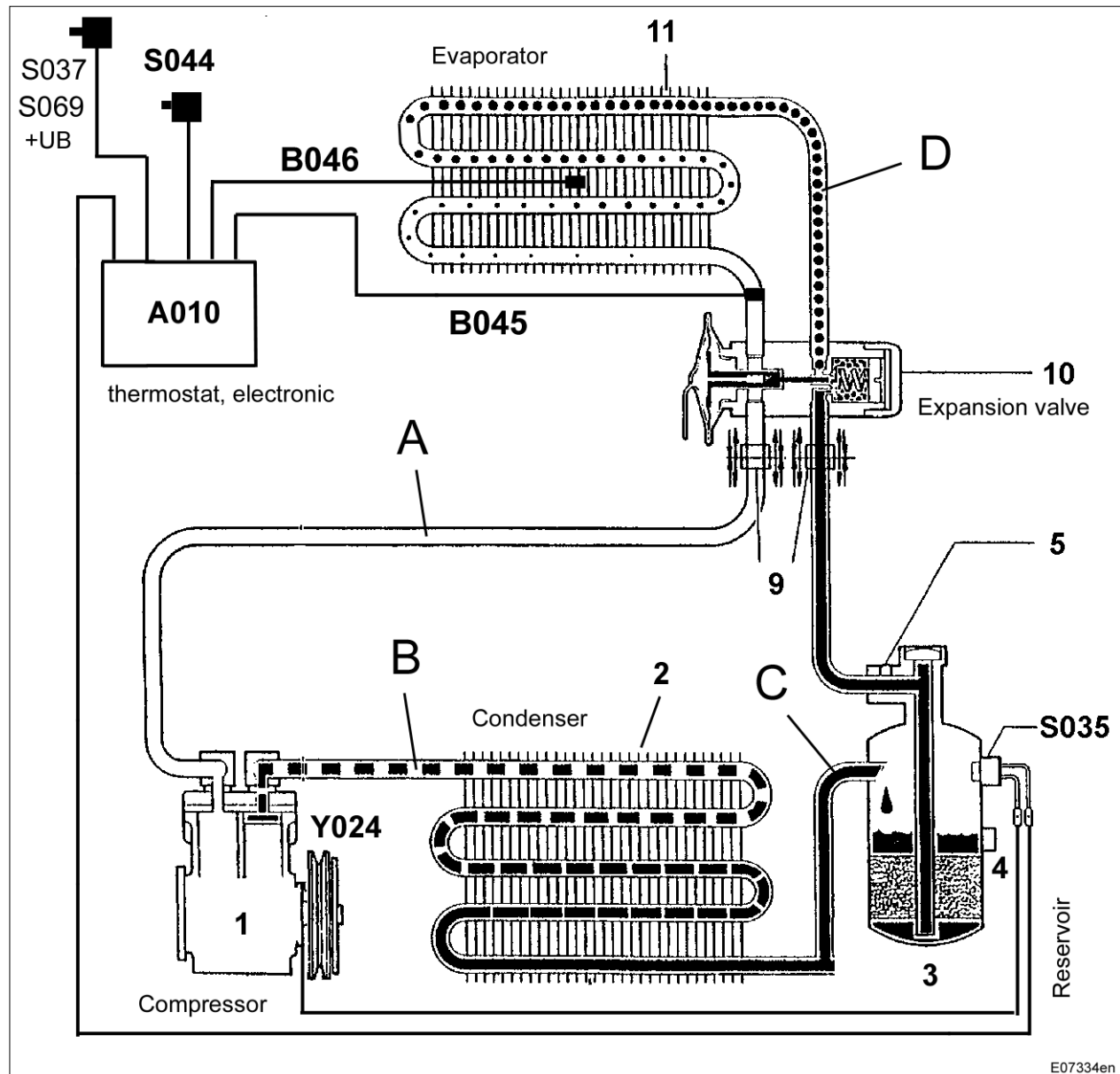
V-belt tension (strand pull) is to be measured at midpoint between pulleys with Optibelt tension gauge I.

- Loosen screw (A).
- Adjustment with clamping screw (B).
- Tighten screw (B).

Strand pull (operating tension) 400 + 50 N
 (40 + 5 kp) - profile 13 mm.

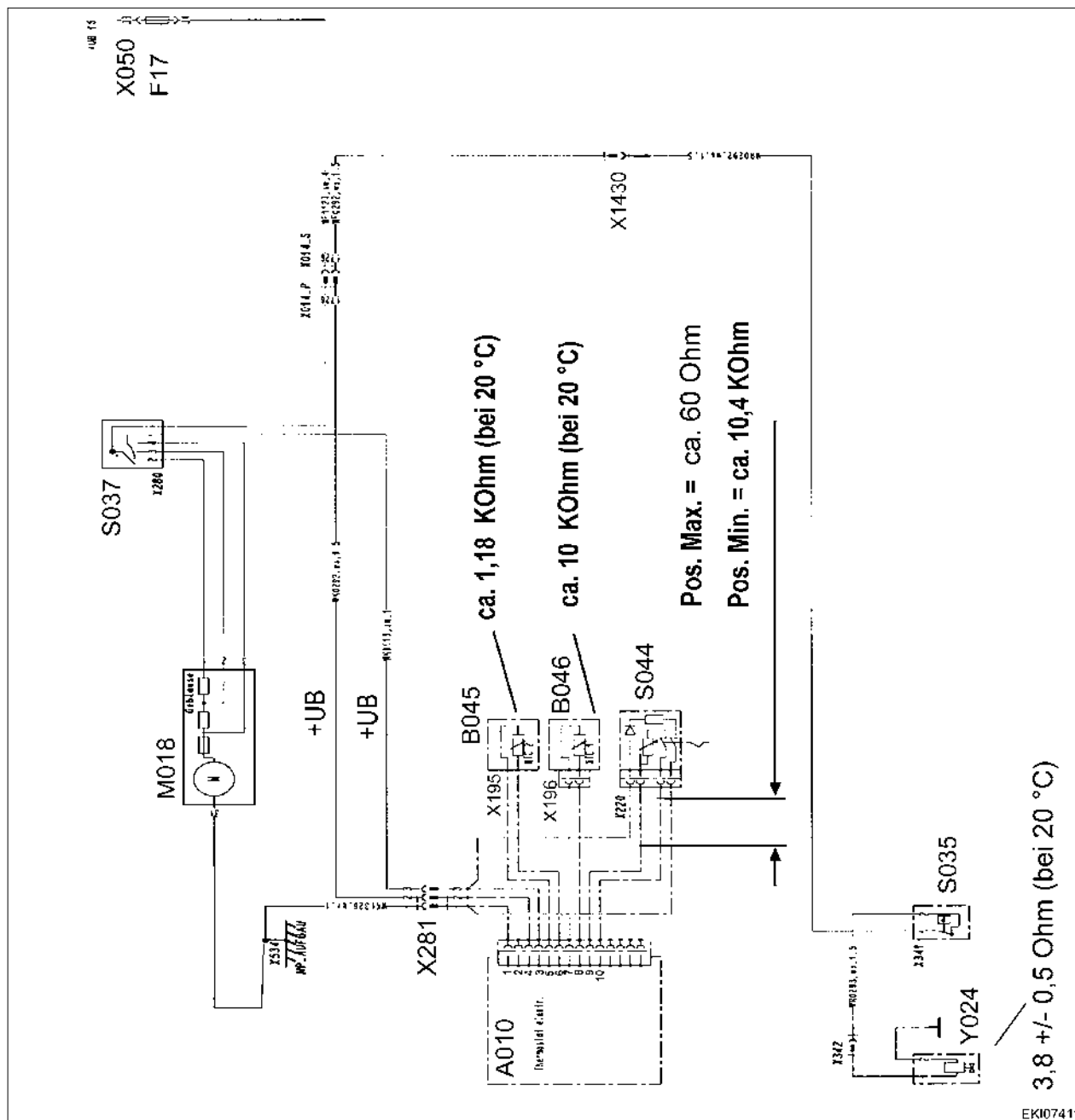
Fendt 300 Vario

Electrics / General system
S044 - switch, air-conditioning

E**Refrigerant circuit**

1	Compressor	B046	Temp. sensor 1
2	Condenser	S035	High-/low-pressure switch
3	Reservoir	S037	Switch, roof blower (3-speed)
4	Inspection glass	S044	AC potentiometer
5	Fuse	S069	Switch, roof blower (infinitely adjustable) (optional)
9	Separation point	Y024	Magnetic clutch
10	Expansion valve		
11	Evaporator		
A010	Electronic thermostat	A	Low pressure, gaseous
B045	Temp. sensor 2	B	High pressure, gaseous
		C	High pressure, liquid
		D	Intake pressure, liquid

Date	Version	Page	S044 - switch, air-conditioning	Capitel	Index	Docu-No.
17.05.2006	a	1/3		9000	E	000349

Fendt 300 Vario**Electrics / General system**
S044 - switch, air-conditioning**E****Note:**

All measured values +/- 10%

A010	Electronic thermostat	S035	High/low pressure switch
B045	Temp. sensor 2 (NTC)	S037	Blower switch, 3-speed (optional: S069 - switch and infinitely adjustable blower)
B046	Temp. sensor 1 (NTC)	S044	Potentiometer
M018	Blower (optional: infinitely adjustable)	Y024	Magnetic clutch

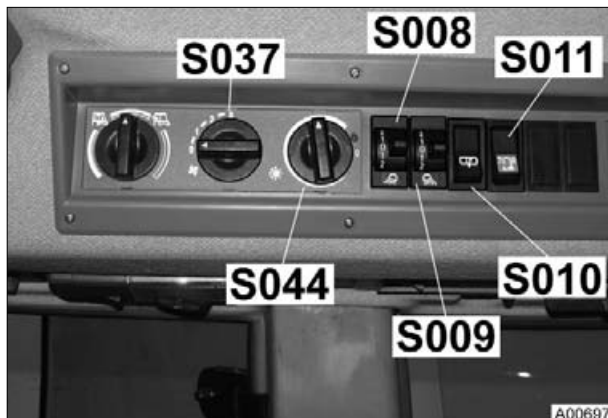
Note:**NTC = N**egative **T**emperature **C**oefficient

In other words, the sensor resistance decreases with increasing ambient temperature.

Date	Version	Page	S044 - switch, air-conditioning	Capitel	Index	Docu-No.
17.05.2006	a	2/3		9000	E	000349

Fendt 300 Vario

Electrics / General system
S044 - switch, air-conditioning

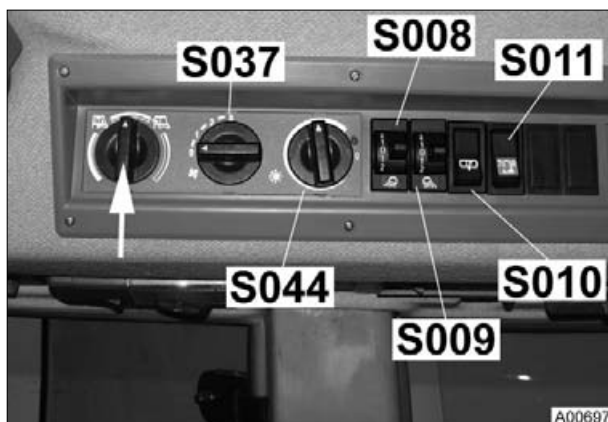
E

S044 = Switch, air-conditioning system. **Air current temperature is preselected (setpoint)**

top right in cab



Remove cover



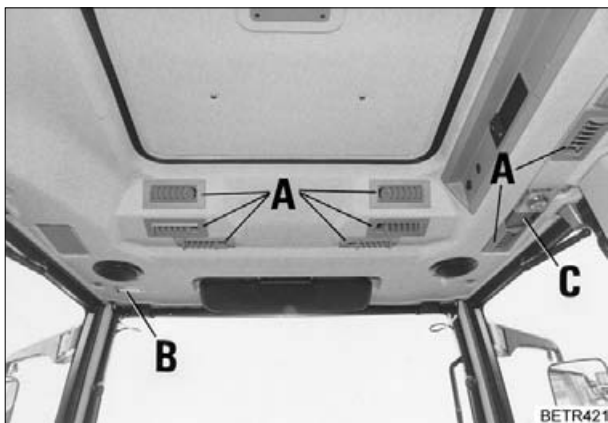
Switch on air-conditioning

Switch on S037 - switch, blower (level 1, 2, or 3) or S069 - switch blower infinitely adjustable (optional)

On S044 - switch, air-conditioning; preselect temperature (setpoint) - "green indicator lamp is lit"

Note:

Set recirculation switch (arrowed) to recirculation mode to ensure optimum cooling performance.



Checking performance of air-conditioning

- Hold thermometer in fan air current and measure air current temperature directly at air nozzle outlet (A).

Target value: approx. 6°C - 8°C at 25°C ambient temperature

Note:

Set recirculation switch to recirculation mode to ensure optimum cooling performance.

Note:

If target value is not achieved, recirculation filter, condenser or evaporator may be soiled/clogged (please see Operating Manual for details of how to clean).

Test	Pin	Specified value	Condition	Remark
Resistance	1 (brown/yellow)	approx. 10.4 kilohm	Position Min.	
	2 (brown/yellow)	approx. 60 ohms	Position Max.	

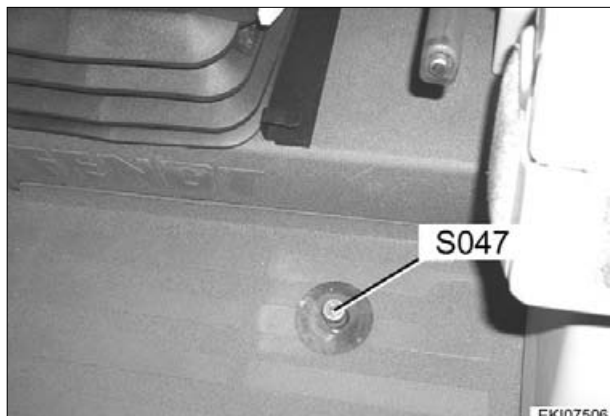
Note:

All readings +/- 10%

Date	Version	Page	S044 - switch, air-conditioning	Capitel	Index	Docu-No.
17.05.2006	a	3/3		9000	E	000349

Fendt 300 Vario

Electrics / General system
S047 - switch, engine brake

E

S047 = Engine brake tappet switch
 Cab floor

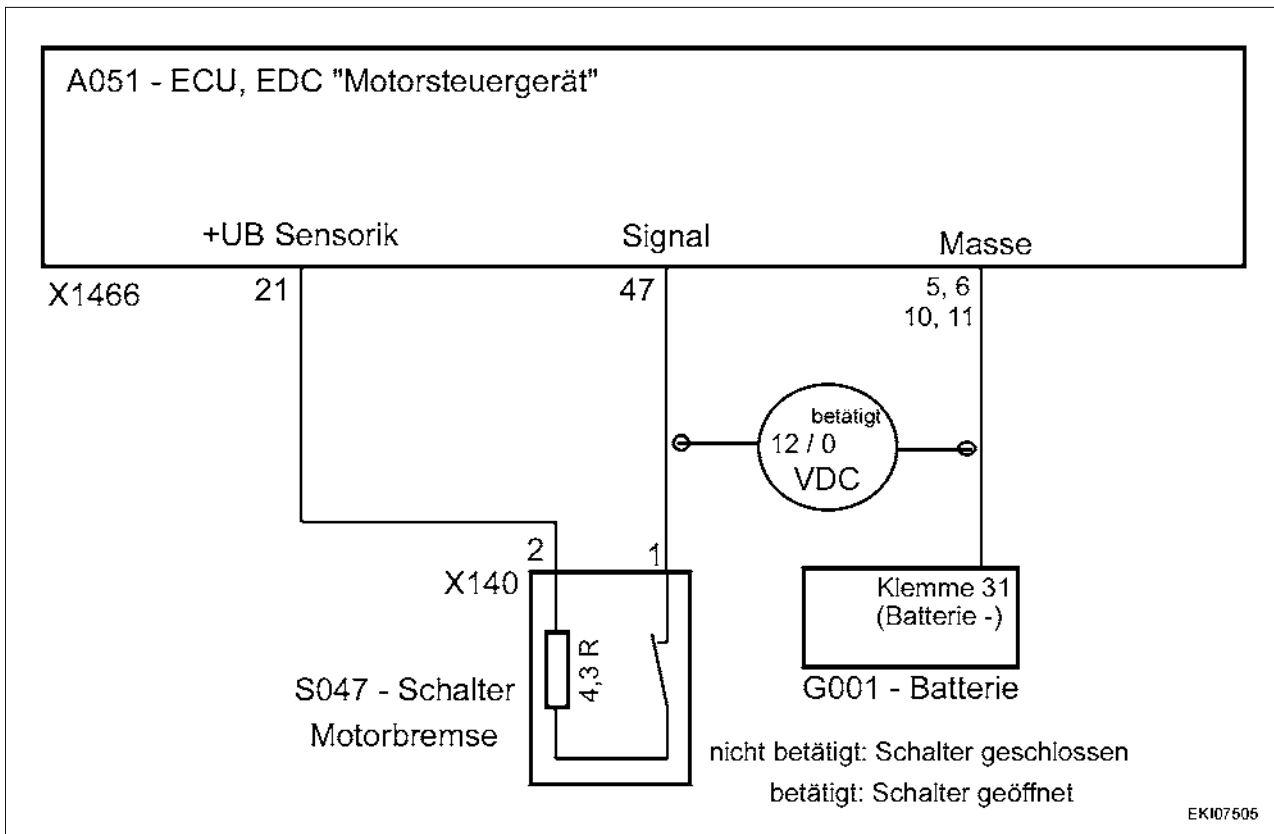
**Function of the engine brake:**

- Press S047 - switch, engine brake
- The engine brake only functions at engine speeds above 1100 rpm.
 At an engine speed below 1100 rpm, the engine brake is without function.
 The full braking effect is only available at higher engine speeds

Note:

Maximum perm. engine speed = 2600 rpm

Date	Version	Page	S047 - switch, engine brake	Capitel	Index	Docu-No.
17.05.2006	a	1/4		9000	E	000350

Fendt 300 Vario
Electrics / General system
S047 - switch, engine brake
E

Item	Designation	Remark
A051	ECU, EDC "Engine control unit"	
X1466	Separation point on A051	
Pin 21	+UB sensor electronics	
Pin 5,6,10,11	Ground Electronic	
Pin 47	Signal	
S047	Switch, engine brake	
X140	Separation point on S047	
G001	Battery	
Terminal 31	Battery negative	

Fendt 300 Vario

Electrics / General system
S047 - switch, engine brake

E

Measuring point on A051 - ECU, engine control unit (X1466 - separation point)

Pin	Function
21	+UB sensor electronics
47	Signal
5, 6, 10, 11	Ground



Pin	Function
1	Signal
2	+UB sensor electronics

Fendt 300 Vario	Electrics / General system S047 - switch, engine brake	E
------------------------	--	----------

Measure the signal voltage



Note:

Connect e-adapter box X899.980.208.100 directly to A051 - ECU, EDC "engine control unit" with adapter cable X899.980.208.217
Separation point X1466
Ignition "ON"

Test	Pin	Specified value	Condition	Possible cause of fault
+UB sensor electronics	21	12 VDC		Wiring or A051 - ECU
Ground	5			
Signal	47	12 VDC	Engine brake not activated	
		0 VDC	Engine brake activated	
Ground	5			

Measure resistance (ohm)

Note:

Ignition "OFF"

Open pin 21 and 47

Measure to S047 - Sensor

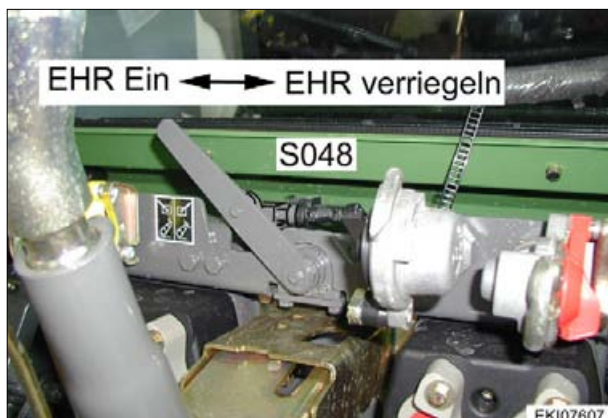
Test	Pin	Specified value	Condition	Possible cause of fault
+UB sensor electronics	21	4.3 ohm	S047 - switch not actuated	
Signal	47	Infinite resistance	S047 - switch actuated	

Date	Version	Page		Capitel	Index	Docu-No.
17.05.2006	a	4/4	S047 - switch, engine brake	9000	E	000350

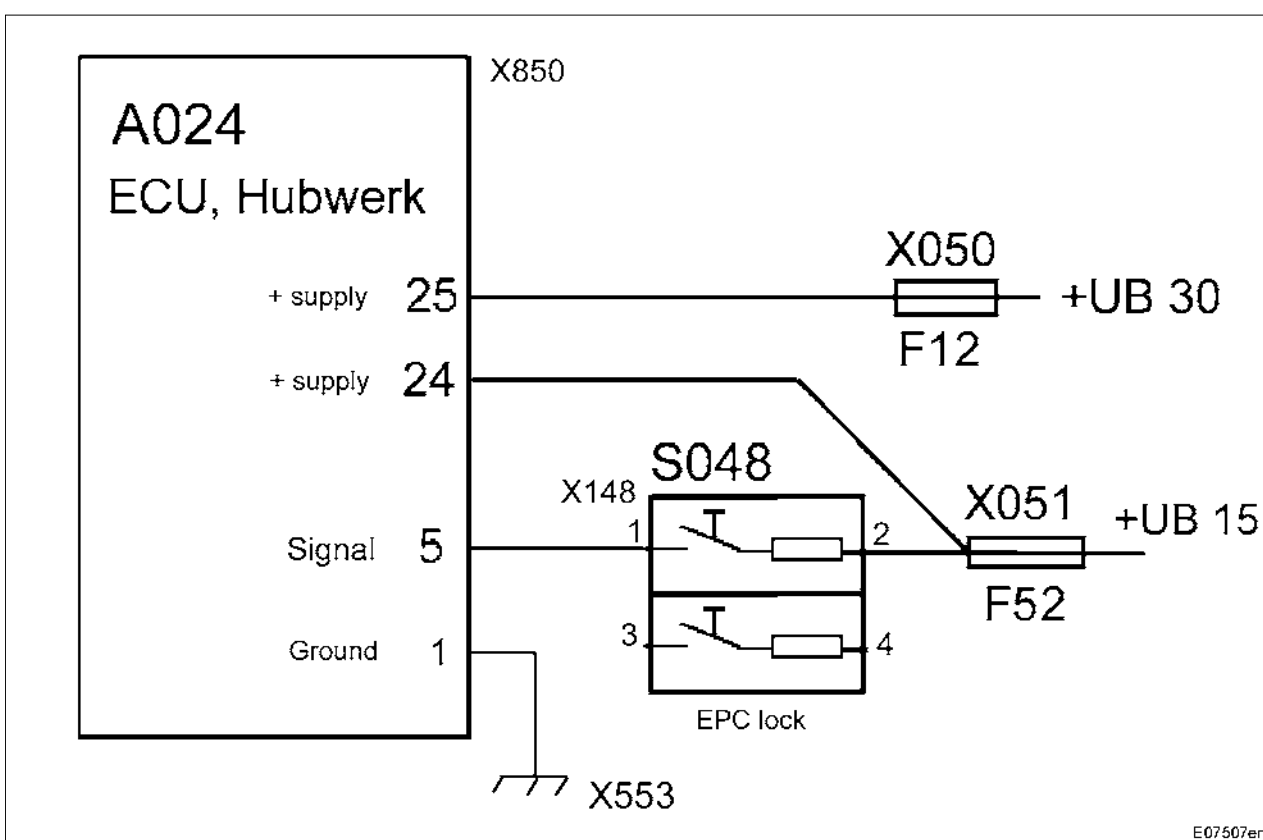
Fendt 300 Vario

Electrics / General system

S048 - switch, EPC lock "block drawbar"

E

S048 = Switch, EPC lock 'block drawbar'
At rear of tractor



Item	Designation	Remark
A024	ECU, EPC B	
X850	Separation point on A024	
Pin 5	Release EPC	Ignition ON, S048 - switch closed
Pin 24	Input lowering speed	
Pin 25	+supply (+UB 12 VDC)	
S048	Switch EPC lock	
X148	Separation point on S048	
Pin 1	Actuation	
Pin 2	Actuation	
Pin 3	Not assigned	
Pin 4	Not assigned	

Date	Version	Page	Capitel	Index	Docu-No.
18.05.2006	a	1/3	S048 - switch, EPC lock "block drawbar"	9000	E 000351

Fendt 300 Vario	Electrics / General system S048 - switch, EPC lock "block drawbar"	E
------------------------	---	----------

Item	Designation	Remark
X050	Fuse holder 1	
X051	Fuse holder 2	
X553	Grounding point	



A024 - ECU (X850-separation point)	
Pin	Function
1	Ground
5	EPC release



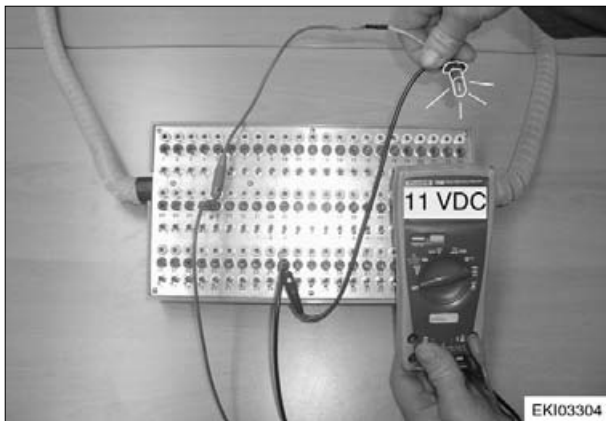
S048 - switch, EPC lock (X148-separation point)	
Pin	Function
1	Actuation
2	Actuation
3	Not assigned
4	Not assigned

Date	Version	Page	S048 - switch, EPC lock "block drawbar"	Capitel	Index	Docu-No.
18.05.2006	a	2/3		9000	E	000351

Fendt 300 Vario	Electrics / General system S048 - switch, EPC lock "block drawbar"	E
------------------------	---	----------

S048 - switch, EPC lock**Switch on ignition (+UB 15)**

Test	Pin	Specified value	Condition	Possible cause of fault
S048 - EPC lock switch	5	2.2 VDC	Lifting gear on S048 - switch locked (solenoid switch open)	
Ignition ON		12 VDC	Lifting gear on S048 - switch unlocked (solenoid switch closed)	
Ground	1			
S048 - EPC lock switch	5	Voltage drop approx. 1 VDC from last reading	Lifting gear unlocked, also connect one bulb with about 10 Watt	
Ground	1			

**Note:****Maximum load 10 Watt !!!****Note:****If voltage drop is greater than approx. 1 VDC, remove contact resistors (e.g. at fuse)**

Date	Version	Page	S048 - switch, EPC lock "block drawbar"	Capitel	Index	Docu-No.
18.05.2006	a	3/3		9000	E	000351

Fendt 300 Vario

Electrics / General system
S056 - switch, oil flow collector

E

S056 = Switch, oil flow collector
 On right mudguard



During normal operation the flow from the steering pump is directed to the hydraulic tank. This enables maximum engine output to the wheels/PTO with reduced hydraulic oil heating and low fuel consumption.

If the flow from the hydraulic pump is not sufficient, e.g. for operations involving the front loader/hay loader, the steering pump can be switched off.

Controlling the oil flow

The volumetric capacity is switched on or off by pressing switch (A).

- If the S056 - switch is not actuated, the volumetric capacity is approx. 48 l/min.
- If the S056 - switch is actuated, indicator lamp in pushbutton is lit, volumetric capacity is approx. 78 l/min.

Recommendation

When operating a hay loader:

When loading in the field (slow floor conveyor speed), drive without switching on oil flow. Before unloading (high floor conveyor speed) switch it on and after unloading, switch it back off again.

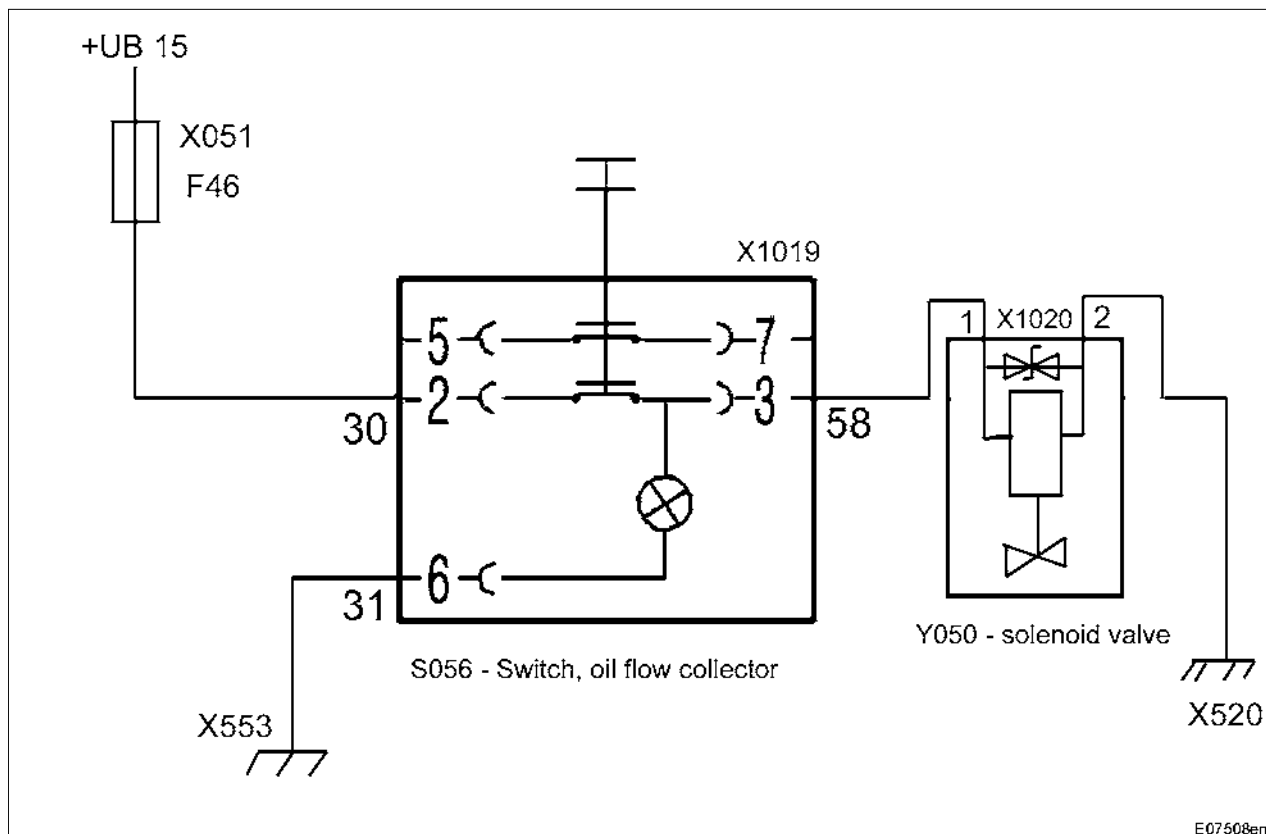
Note:

Switch on the oil flow only as long as a large amount of oil is actually required, and then switch it off again.

Date	Version	Page	S056 - switch, oil flow collector	Capitel	Index	Docu-No.
18.05.2006	a	1/2		9000	E	000352

Fendt 300 Vario

Electrics / General system
S056 - switch, oil flow collector

E

E07508en

Item	Designation	Remark
S056	Switch, oil flow collector	
X1019	Separation point on S056	
Pin 2	Actuation (of UB 15)	Ignition ON: 12 VDC
Pin 3	Actuation (to Y050 - solenoid valve)	Switch open = 0 VDC
		Switch closed = 12 VDC
Pin 6	Indicator lamp	Switch open = monitoring OFF
		Switch closed = monitoring ON

**Testing resistance (ohm) of switch**

Disconnect S056 - switch

With multimeter (ohmmeter), test the switch for continuity

Measure at pin 2 (30) and pin 3 (58)

S058 - switch not actuated (oil flow collector OFF), infinite resistance

S058 - switch actuated (oil flow collector ON), approx. 0 ohm (continuity)

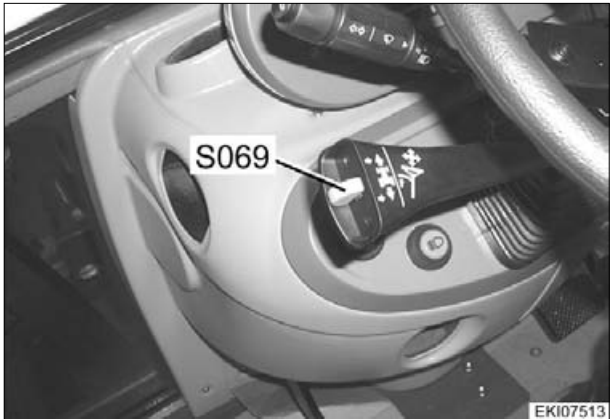
Measure at pin 2 (30) and pin 6 (31)

S058 - switch not actuated (oil flow collector OFF), infinite resistance

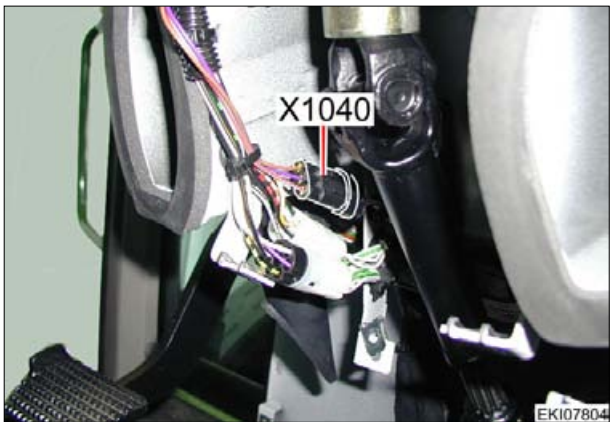
S058 - switch actuated (oil flow collector ON), approx. 0 ohm (continuity)

Date	Version	Page		Capitel	Index	Docu-No.
18.05.2006	a	2/2	S056 - switch, oil flow collector	9000	E	000352

Fendt 300 Vario	Electrics / General system S061 - switch, rapid reverse	E
------------------------	--	----------



S061 = Switch, rapid reverse
On the steering wheel stalk



X1040 = Separation point on S061
On bottom of steering column unit

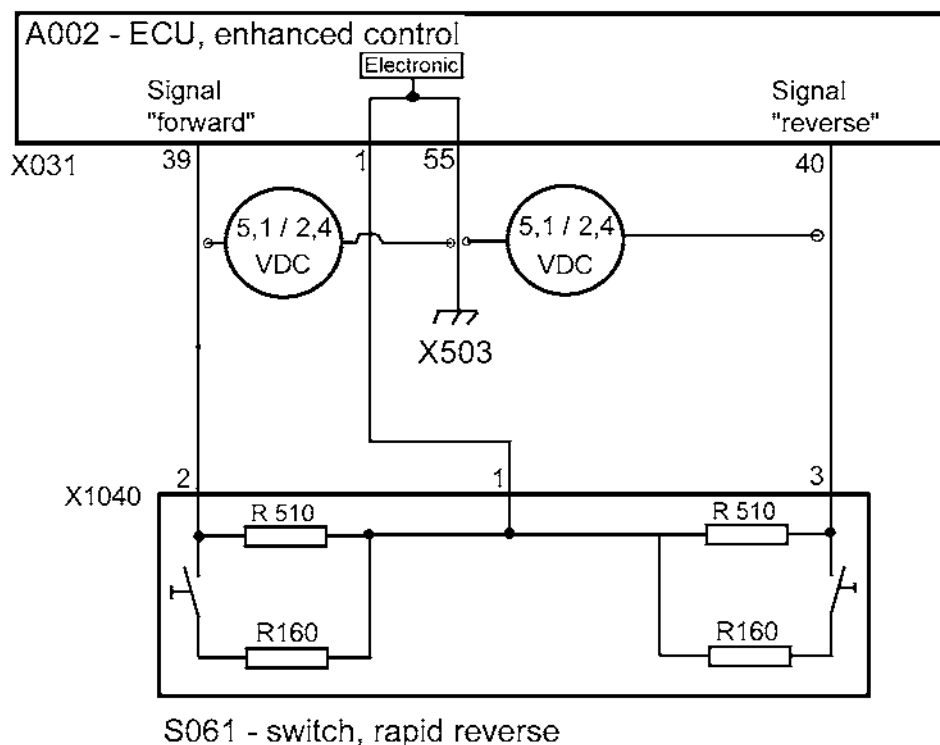


Remove panel

Date	Version	Page	Capitel	Index	Docu-No.
18.05.2006	a	1/4	S061 - switch, rapid reverse	9000	E
					000354

Fendt 300 Vario

Electrics / General system
S061 - switch, rapid reverse

E

E07512en

Item	Designation	Remark
A002	ECU, enhanced control	
X031	Separation point on A002	
Pin 39	Signal "forward"	
Pin 40	Signal "reverse"	
Pin 1	Sensor system ground	
Pin 55	Ground Electronic	
S061	Switch, rapid reversing	
X1040	Separation point on S061	

Fendt 300 Vario

Electrics / General system
S061 - switch, rapid reverse

E**A002 - ECU (X031-separation point)**

Pin	Function
1	Sensor system ground
55	Ground Electronic
39	Signal 'forward'
40	Signal 'reverse'

**S061 - switch (X1040-separation point)**

Pin	Function
1	Sensor system ground
2	Signal 'forward'
3	Signal 'reverse'

Testing resistance (ohm)**Note:**

Ignition 'OFF'

Connect adapter cable X 899.980.246.204 to X1040 - separation point only

Test	Pin	Specified value	Condition	Remark
Resistance	1	510 ohms	Switch not pressed	
		121 ohms	Switch "forward" pressed	
	2			

Test	Pin	Specified value	Condition	Remark
Resistance	3	510 ohms	Switch not pressed	
		121 ohms	Switch "reverse" pressed	
	1			

Date	Version	Page	S061 - switch, rapid reverse	Capitel	Index	Docu-No.
18.05.2006	a	3/4		9000	E	000354

Fendt 300 Vario	Electrics / General system S061 - switch, rapid reverse	E
------------------------	---	----------

Testing voltage

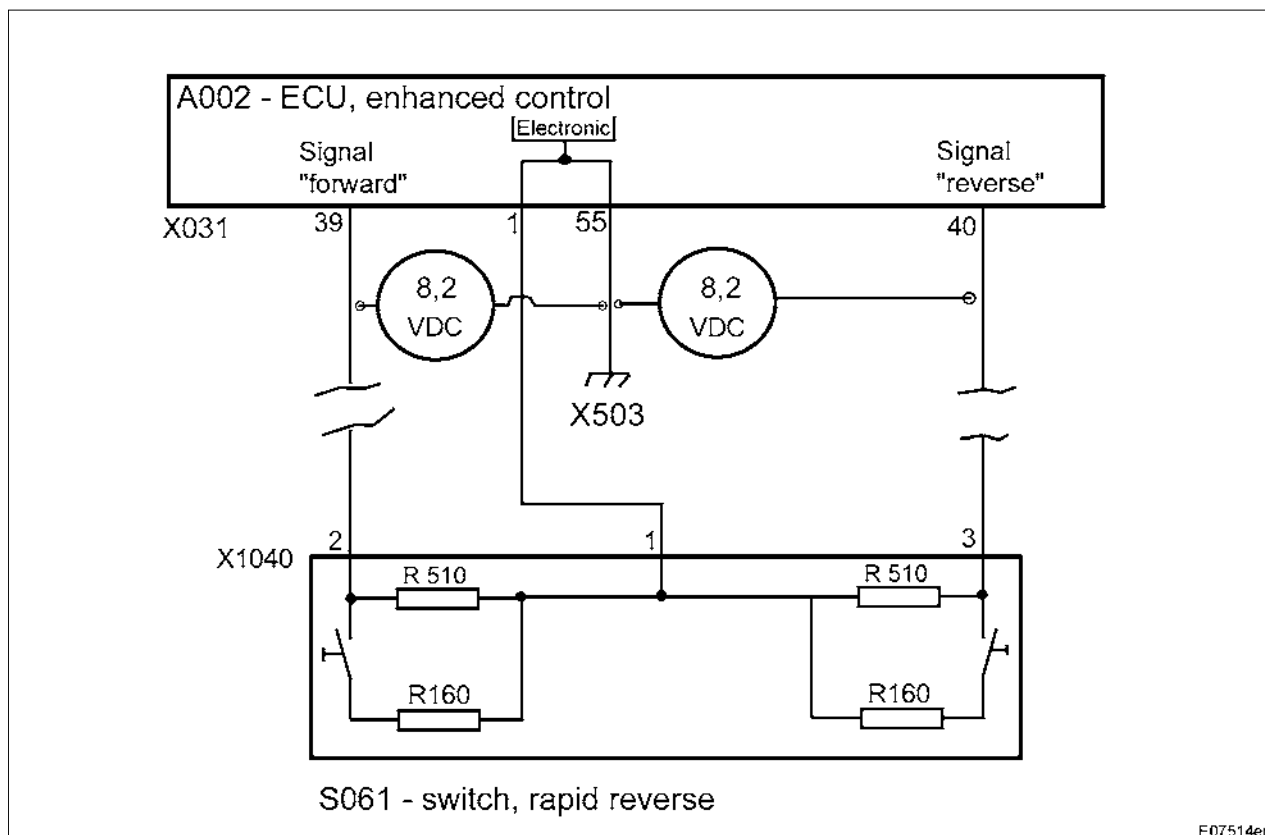
Note:

Ignition 'ON'

Test	Pin	Specified value	Condition	Possible cause of fault
Signal (forward)	2	5.1 VDC	Switch not pressed	If measured value is 0 VDC: fault in wiring or in A002 - ECU If measured value is 8.2 VDC, fault in wiring or switch
		2.4 VDC	Switch 'forward' pressed	
Ground	1			

Test	Pin	Specified value	Condition	Possible cause of fault
Signal (reverse)	3	5.1 VDC	Switch not pressed	If measured value is 0 VDC: fault in wiring or in A002 - ECU If measured value is 8.2 VDC, fault in wiring or switch
		2.4 VDC	Switch 'reverse' pressed	
Ground	1			

Possible cause of fault



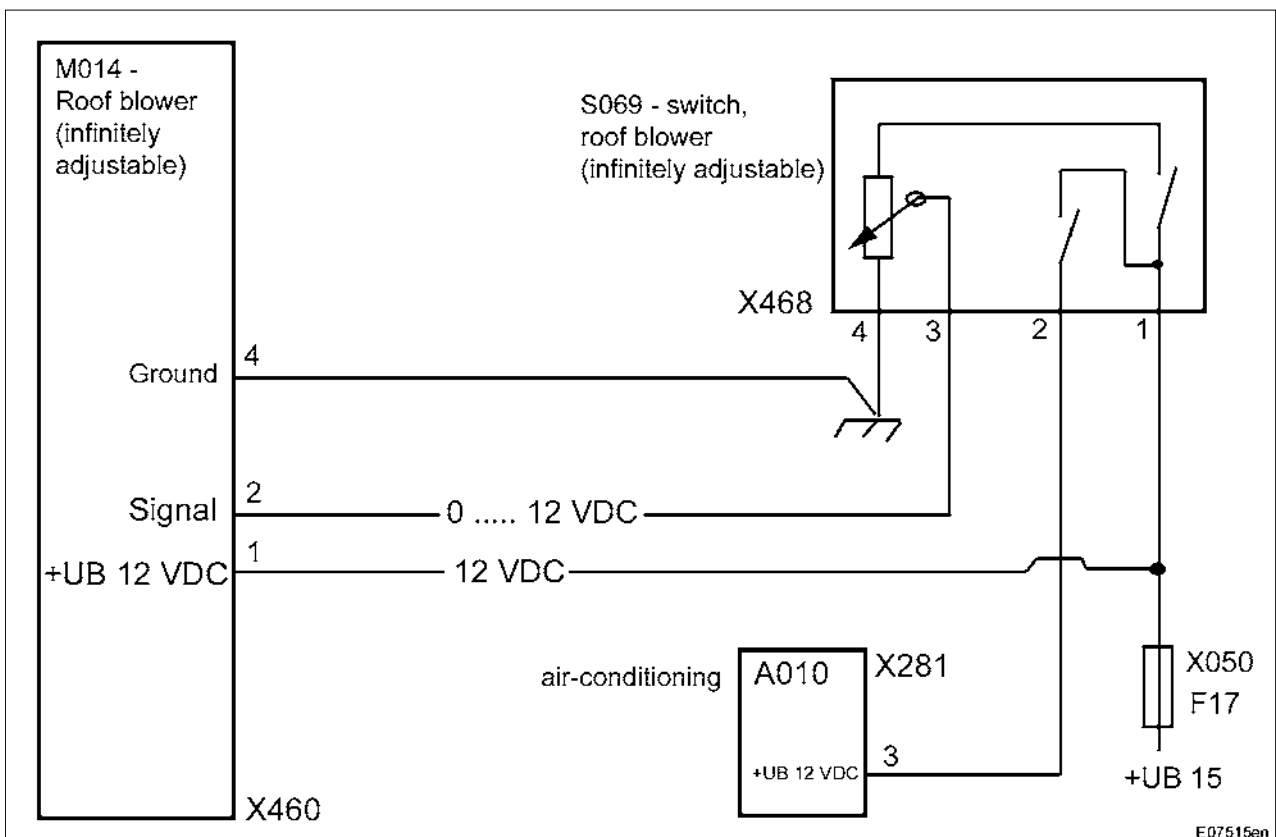
Date	Version	Page	Capitel	Index	Docu-No.
18.05.2006	a	4/4	S061 - switch, rapid reverse 9000	E	000354

Fendt 300 Vario

Electrics / General system
S069 - switch, roof blower (infinitely adjustable)

E**S069** = Switch, roof blower (infinitely adjustable)

Top right in cab roof



E07515en

Item	Designation	Remark
S069	Switch, roof blower (infinitely adjustable) 'potentiometer'	
X468	Separation point on S069	
Pin 1	+ supply 12 VDC	Ignition ON
Pin 2	+ supply for the A010 - air-conditioning thermostat	Ignition ON , S069 - switch not on setting "0"
Pin 3	Signal (blower speed) 0 ... 12 VDC	
Pin 4	Ground	
M014	Roof blower (infinitely adjustable)	

Date	Version	Page	S069 - switch, roof blower (infinitely adjustable)	Capitel	Index	Docu-No.
22.05.2006	a	1/2		9000	E	000355

Fendt 300 Vario	Electrics / General system S069 - switch, roof blower (infinitely adjustable)	E
------------------------	--	----------

Item	Designation	Remark
X460	Separation point on M014	
A010	Air conditioning thermostat	
X281	Separation point, air-conditioning	
X050	Fuse block 1	



Remove face plate in cab roof. Ignition ON, S069 - switch switched on. Measure S069 - switch directly on the pins.

Measure pin 1 (+UB 15) and **pin 4** (ground), switch on ignition

Specified value: 12 VDC

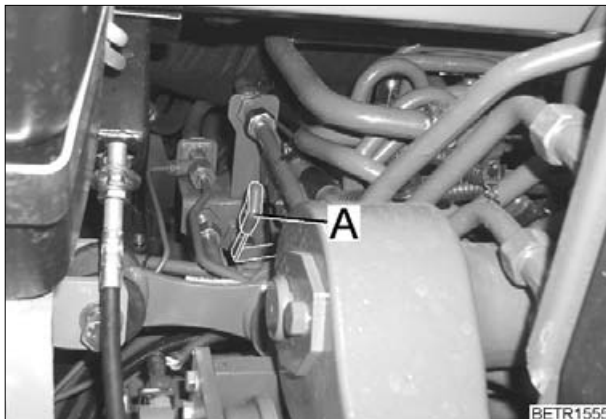
Measure pin 2 (AC) and **pin 4** (ground), S069 - switch not on setting "0"

Specified value: 12 VDC

Measure pin 3 (blower speed) and **pin 4** (ground), turn S069 - switch

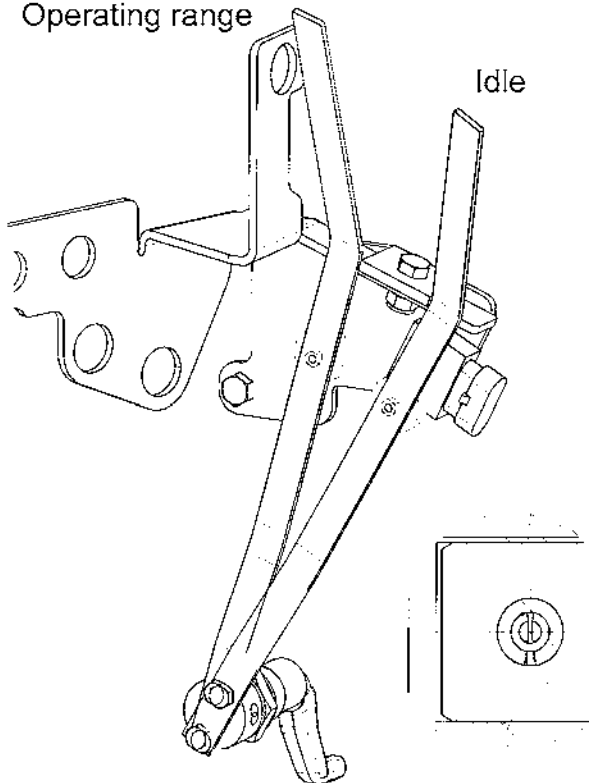
Specified value: 0 ... 12 VDC

Date	Version	Page	Capitel	Index	Docu-No.
22.05.2006	a	2/2	S069 - switch, roof blower (infinitely adjustable)	9000	E
					000355

Fendt 300 Vario**Electrics / General system**
S070 - switch, transmission setting (driving mode / idle)**E**

- Pull range selector (A) back- **transmission in idle**
- Push range selector (A) forward- **transmission in driving mode**

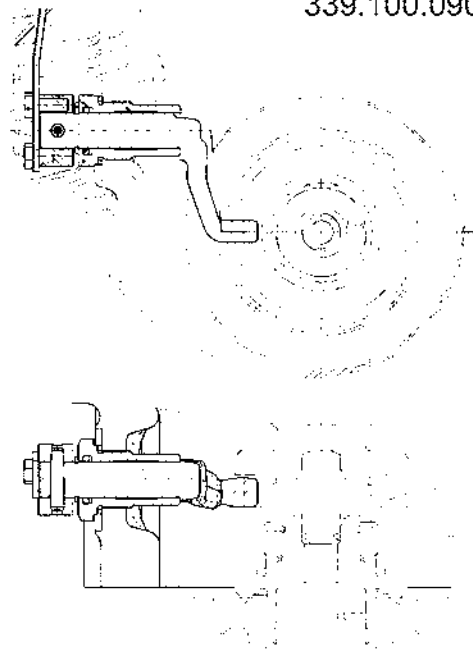
Operating range



Idle

Idle switch (FENDT 300 Vario)

339.100.090.000



E07808en

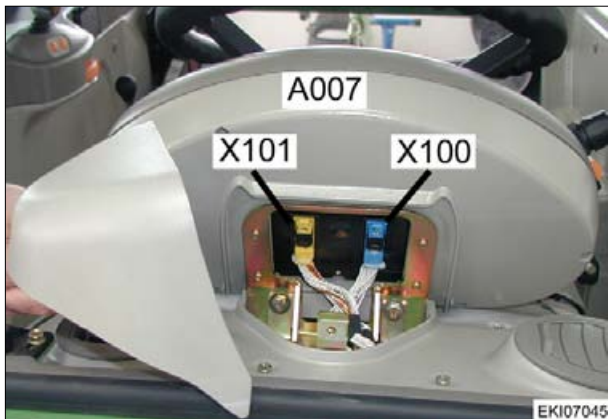
Date	Version	Page		Capitel	Index	Docu-No.
22.05.2006	a	1/4	S070 - switch, transmission setting (driving mode / idle)	9000	E	000356

A close-up photograph of the engine compartment of a green vehicle. The image shows various mechanical components, including hoses, belts, and a valve. A red arrow points to a component labeled 'S070'. The engine block has 'EK107805' printed on it.

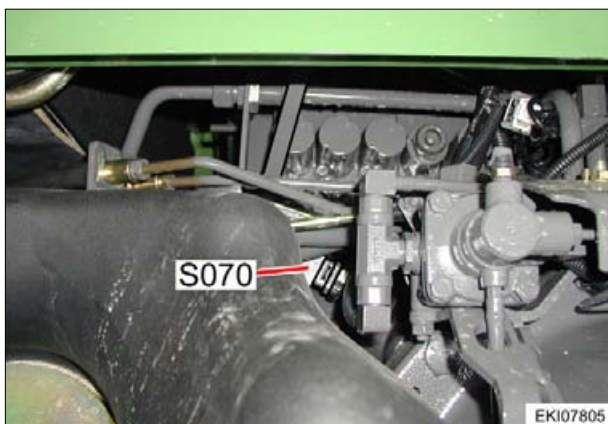


Date	Version	Page		Capitel	Index	Docu-No.
22.05.2006	a	2/4	S070 - switch, transmission setting (driving mode / idle	9000	E	000356

Fendt 300 Vario	Electrics / General system S070 - switch, transmission setting (driving mode / idle)	E
------------------------	--	----------



A007 - instrument cluster (X101 - 'yellow')	
Pin	Function
5	Sensor system ground
12	Electronics ground
16	Signal



S070 - switch (X1340-separation point)	
Pin	Function
1	Not assigned
2	Not assigned
3	Signal
4	Ground

Note:

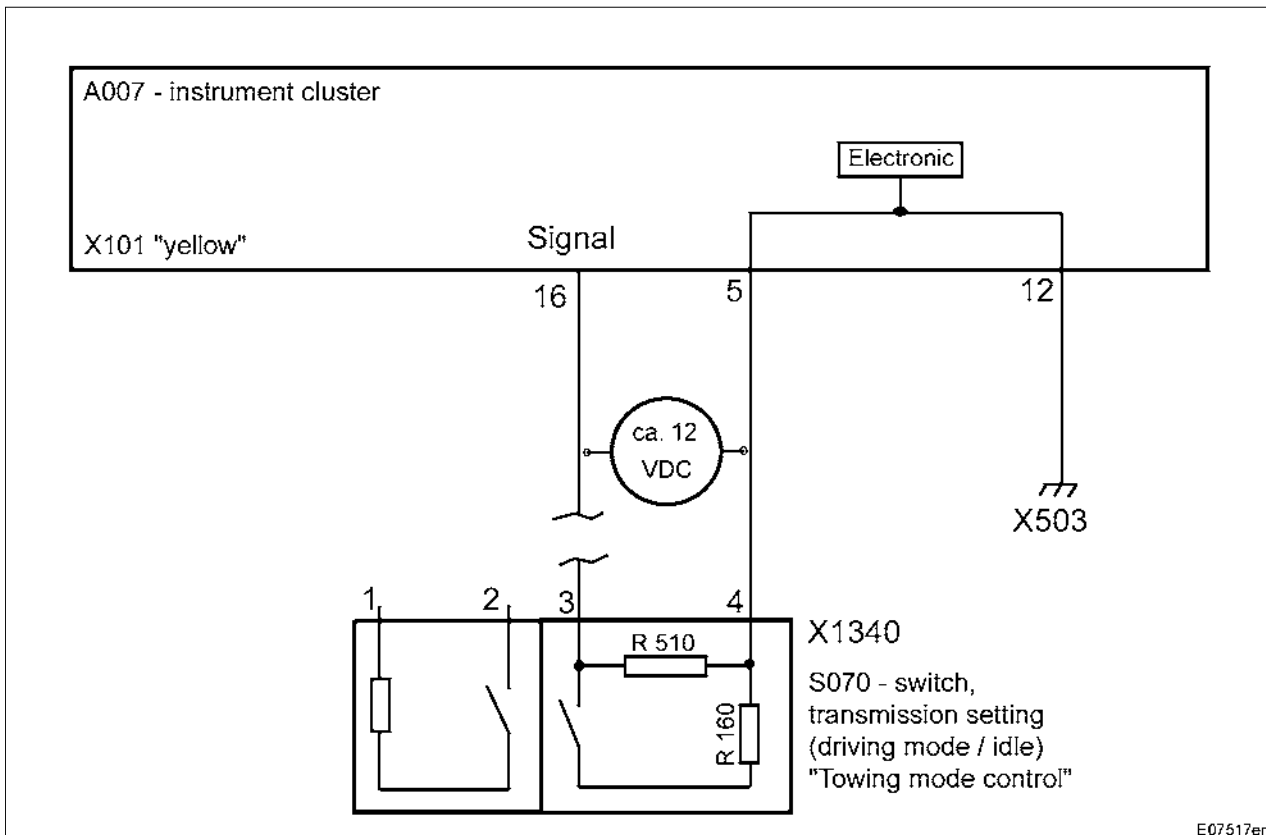
Connect adapter cable X 899.980.246.206 directly to S070 - switch. Ignition 'ON'.

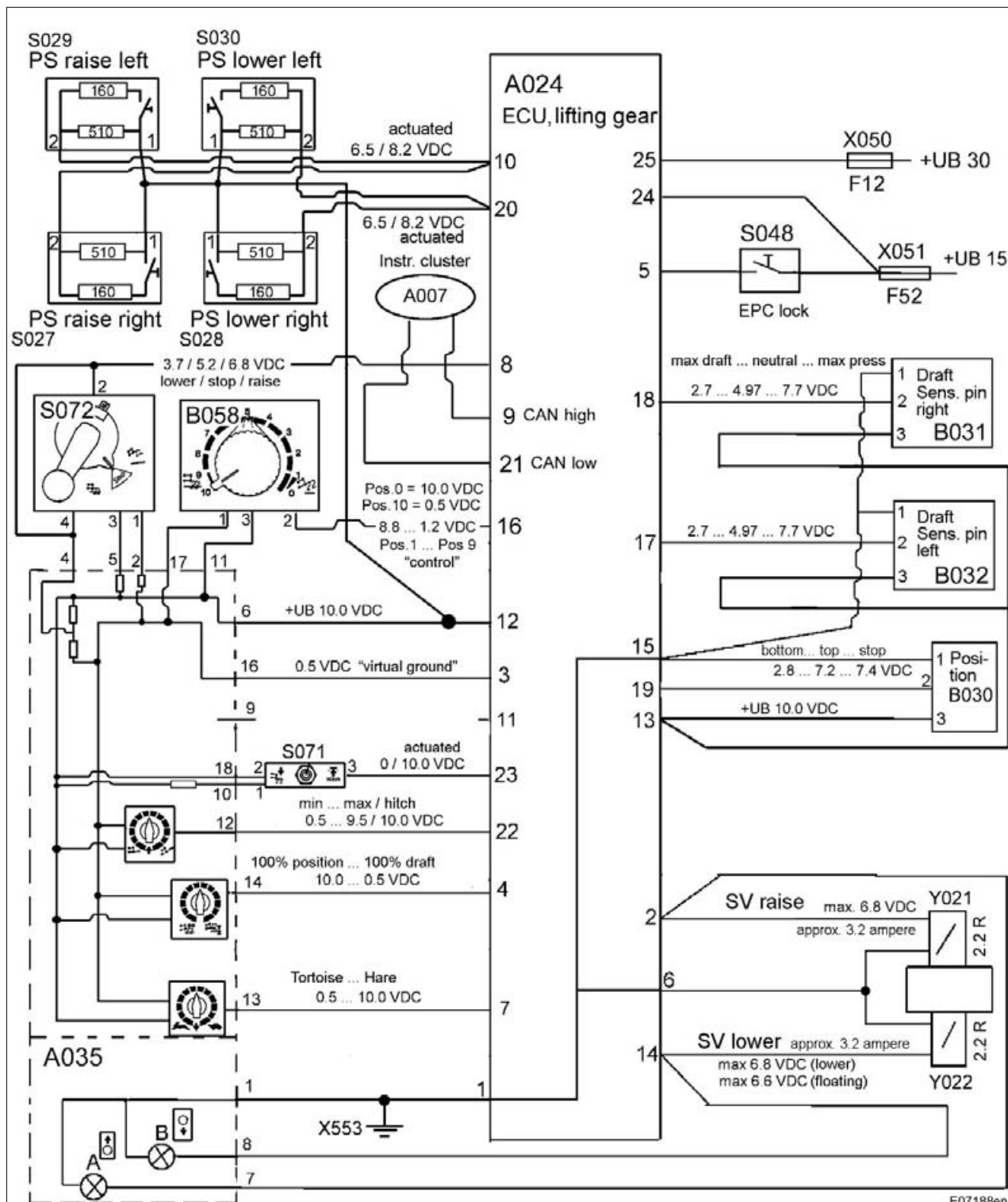
Test	Pin	Specified value	Condition	Possible cause of fault
Signal	3	3.8 VDC	Transmission in range (resistance 510 ohm)	If measured value is 0 VDC, fault in wiring or A007 - instrument cluster If measured value is approx. 12 VDC, fault in wiring or switch
		1.3 VDC	Transmission in idle (resistance 120 ohm)	
Ground	4			

Date	Version	Page		Capitel	Index	Docu-No.
22.05.2006	a	3/4	S070 - switch, transmission setting (driving mode / idle)	9000	E	000356

Fendt 300 Vario

Electrics / General system
S070 - switch, transmission setting (driving mode / idle)

E**Possible cause of fault**

Fendt 300 Vario**Electrics / General system**
S072 - switch, quick lift**E****Block diagram A024 - ECU EPC B**

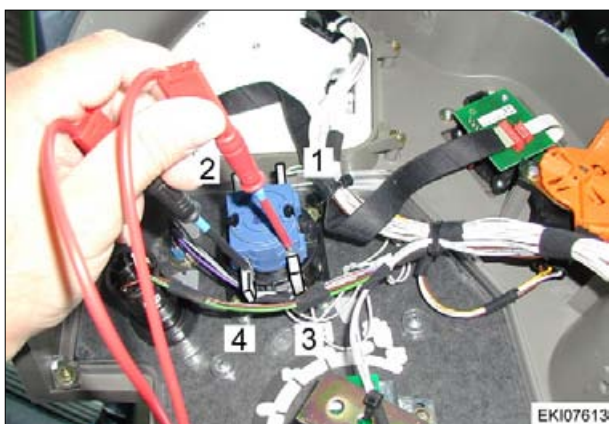
E07188en

Note:**All measured values +/- 10%****+UB 15 (switched plus after battery, output) (12 - 14 VDC)**

Date	Version	Page	S072 - switch, quick lift	Capitel	Index	Docu-No.
22.05.2006	a	1/2		9000	E	000357

Fendt 300 Vario**Electrics / General system**
S072 - switch, quick lift**E**

Control unit on right on mudguard

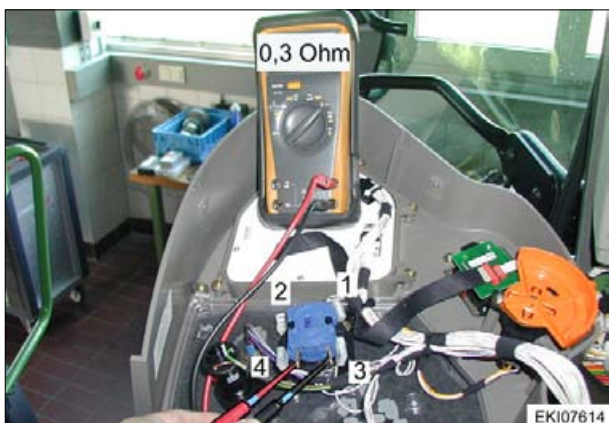
B058 = Depth control**S071** = Hitch switch**S072** = Quick lift switch**Testing quick lift switch without measuring instrument**

- Ignition on, engine on
- Quick lift switch to STOP

Bypass quick lift switch:

Terminals 4 and 3, rear power lift must rise.

Terminals 2 and 1, rear power lift must lower.

Note:**If nothing happens, test quick lift switch (see following tests).****Testing quick lift switch for continuity (ohms)**

- Pull out quick lift switch plug.

In 'Raise' position:

Terminals 3 + 4 , target value approx. 0.3 ohms (continuity)

Terminals 1 + 2, infinite resistance (no continuity)

In 'Lower' (control action) position

Terminals 1 + 2 , target value approx. 0.3 ohms (continuity)

Terminals 3 + 4, infinite resistance (no continuity)

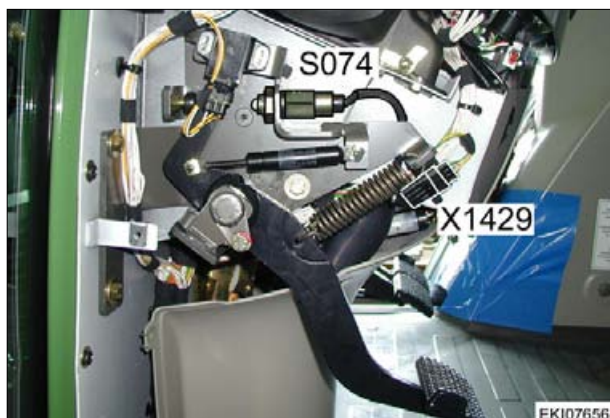
Note:**For further testing see:****Chapter 9000 Reg. E - A024 - ECU,EPC B (Measuring and testing)**

Date	Version	Page	S072 - switch, quick lift	Capitel	Index	Docu-No.
22.05.2006	a	2/2		9000	E	000357

Fendt 300 Vario

Electrics / General system

S074 - switch, transmission neutral / starter lockout

E

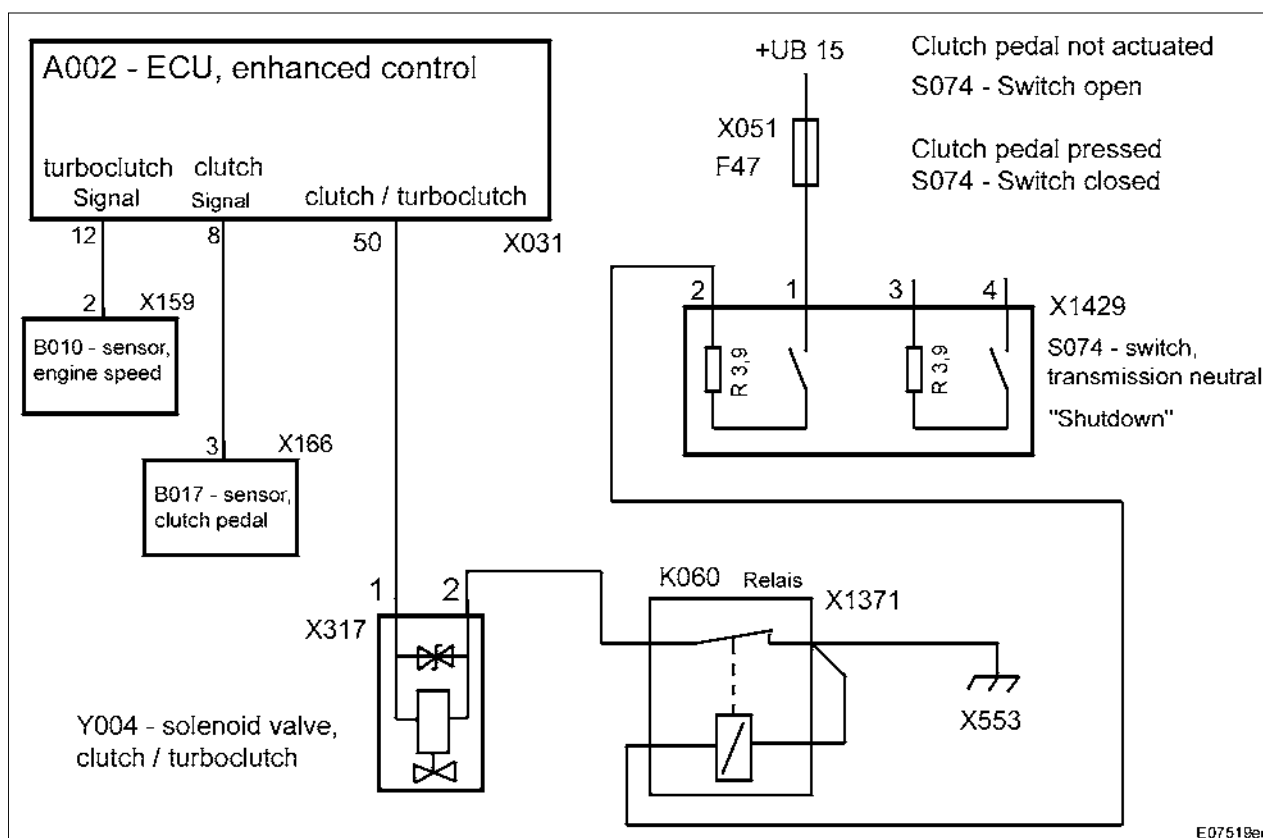
S074 = Switch, transmission neutral / starter lockout

X1429 = Separation point on S074
On left of steering column



Remove panel

Circuit diagram: transmission neutral (S074; pin 1 and 2)



E07518en

Item	Designation	Remark
A002	ECU, enhanced control	
X031	Separation point on A002	
Pin 8	B017 - sensor, clutch pedal "clutch function"	also see: Chapter 9000 Reg. E - B017 - Clutch pedal sensor
Pin 12	B010 - sensor, engine speed "turboclutch function"	also see: Chapter 9000 Reg. E - B010 - Engine speed sensor
Pin 50	Y004 - solenoid valve, clutch / turboclutch	also see: Chapter 9000 Reg. E - Y004 - solenoid valve, clutch / turboclutch
B010	Sensor, engine speed	
X159	Separation point on B010	

Date	Version	Page	Capitel	Index	Docu-No.
23.05.2006	a	1/12	S074 - switch, transmission neutral / starter lockout	9000	E 000358

Fendt 300 Vario	Electrics / General system	E
	S074 - switch, transmission neutral / starter lockout	

Item	Designation	Remark
B017	Sensor, clutch pedal	
X166	Separation point on B017	
K060	Relay	
X1371	Relay base	
S074	Switch, transmission neutral / starter lockout switch	
X1429	Separation point on S074	
X051	Fuse block 2	
Y004	Solenoid valve, clutch / turbo-clutch	Y004 - solenoid valve energised = transmission positively engaged Y004 - Solenoid valve receives no power = transmission not positively engaged "neutral"
X317	Separation point on Y004	

Clutch function



The **B017 - sensor** determines the position of the clutch pedal.



The **Y004 - solenoid valve** is energised proportionally, depending on the clutch pedal position.

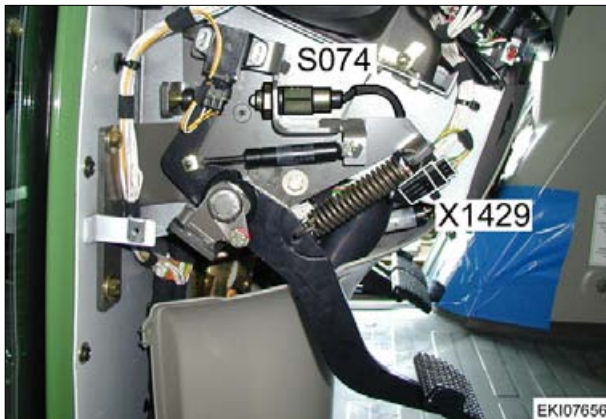
Clutch pedal not actuated = approx. 1.4 ampere (transmission positively engaged)

Clutch pedal actuated = Power consumption drops to 0 ampere (transmission is no longer fully positively engaged) "slipping clutch"

Date	Version	Page	S074 - switch, transmission neutral / starter lockout	Capitel	Index	Docu-No.
23.05.2006	a	2/12		9000	E	000358

Fendt 300 Vario

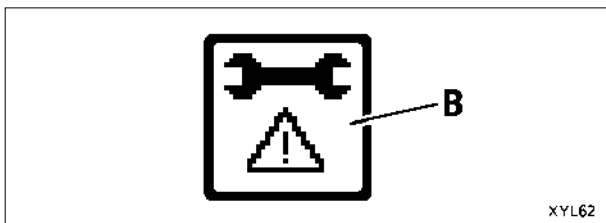
Electrics / General system
S074 - switch, transmission neutral / starter lockout

E

If the clutch pedal is fully actuated, the **S074 - switch** interrupts the circuit



from Y004 - solenoid valve "final shutdown"

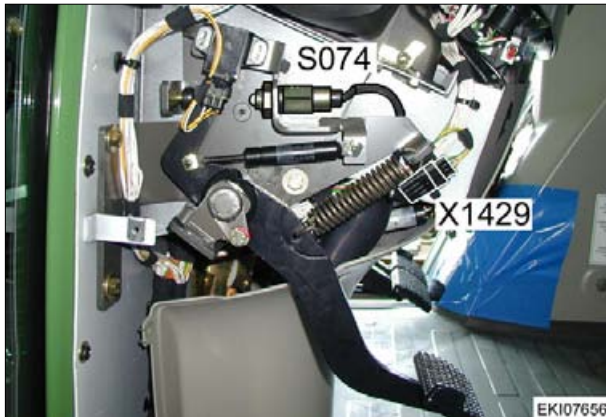


In emergency operating mode (also see Chapter 1005 Reg. A - transmission emergency operating mode), the S074 - switch switches the clutch to "black - white" mode.

Proportional actuation of the clutch is no longer possible.

Date	Version	Page	Capitel	Index	Docu-No.
23.05.2006	a	3/12	S074 - switch, transmission neutral / starter lockout	9000	E
					000358

Fendt 300 Vario	Electrics / General system	E
	S074 - switch, transmission neutral / starter lockout	



S074 - switch (X1429-separation point)	
Pin	Function
1	+UB 15 (clutch / turboclutch)
2	Actuation to K060 - relay (clutch / turboclutch)
3	Starter lockout switch
4	Starter lockout switch

Measure the signal voltage

Note:

Connect adapter cable X899.980.246.206 directly to S074 - switch. Separation point X1429 Ignition "ON"

Test	Pin	Specified value	Condition	Possible cause of fault
+ UB 15	1	12 VDC	Clutch pedal not pressed (switch open)	
		approx. 0.5 VDC	Clutch pedal pressed all the way down (switch closed)	
Actuation for K060 - relay	2			

Measure resistance (ohm)

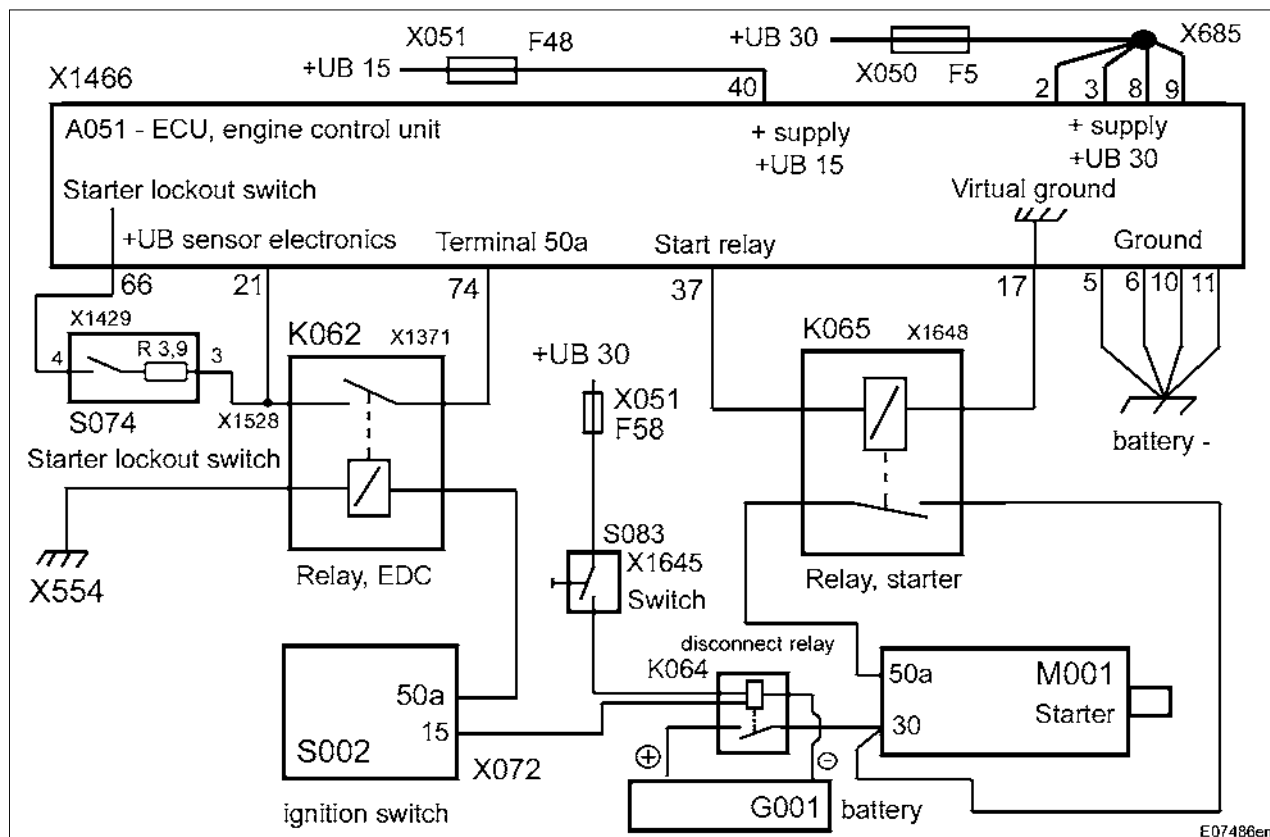
Note:

Ignition "OFF"

Connect adapter cable X899.980.246.206 only to the S074 - switch

Test	Pin	Specified value	Condition	Possible cause of fault
+ UB 15	1	Infinite	Clutch pedal not pressed (switch open)	
Actuation for K060 - relay	2	4.0 ohm	Clutch pedal pressed all the way down (switch closed)	

Date	Version	Page	S074 - switch, transmission neutral / starter lockout	Capitel	Index	Docu-No.
23.05.2006	a	4/12		9000	E	000358

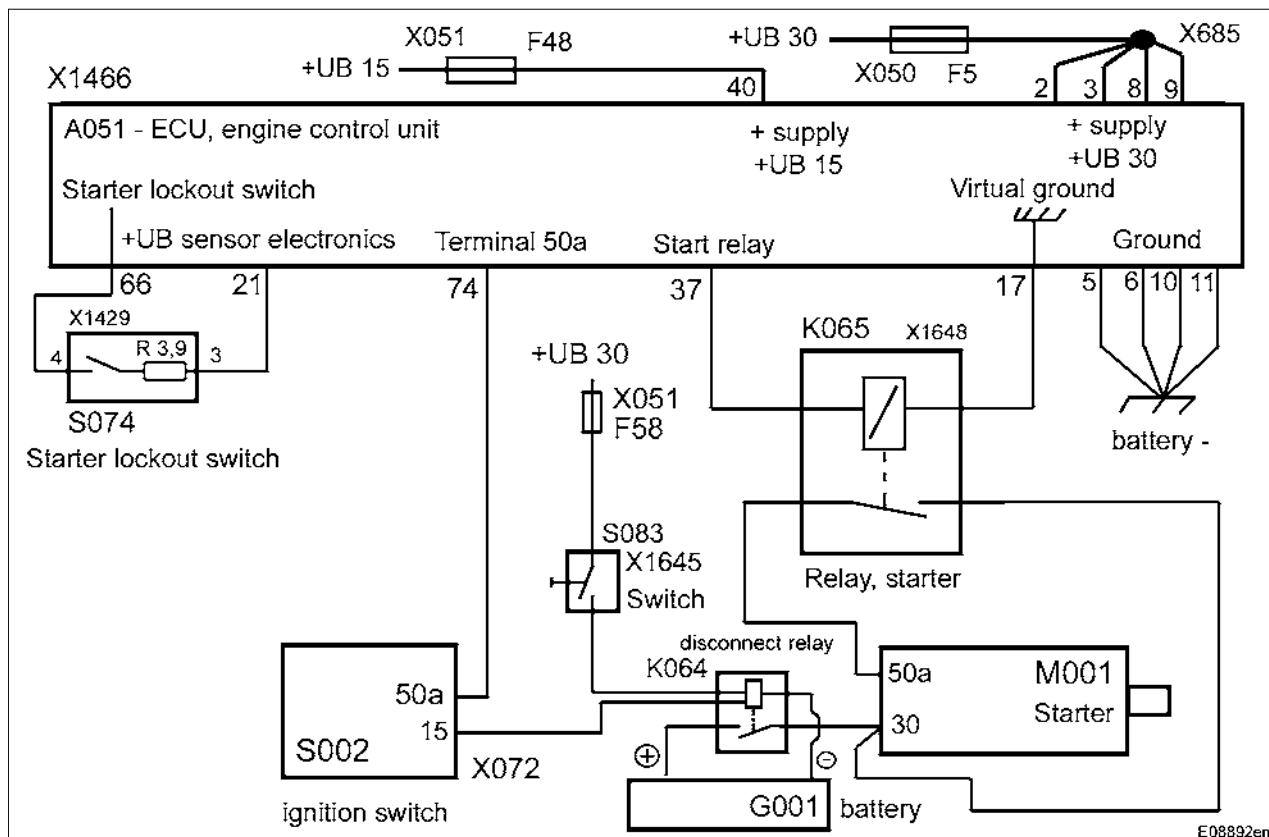
Fendt 300 VarioElectrics / General system
S074 - switch, transmission neutral / starter lockout**E****Circuit diagram: starter lock out switch (S074; pin 3 and 4)****VERSION A**

Date	Version	Page	Capitel	Index	Docu-No.
23.05.2006	a	5/12	S074 - switch, transmission neutral / starter lockout	9000	E
					000358

Fendt 300 Vario

Electrics / General system

S074 - switch, transmission neutral / starter lockout

E**VERSION B**

E08892en

Item	Designation	Remark
A051	ECU, EDC "engine control unit" (X1466 - separation point)	
Pin 2, 3, 8, 9	+supply (+UB 30) (12 VDC)	
Pin 40	+supply (+UB 15) (12 VDC)	Ignition ON
Pin 5, 6, 10, 11	Ground	
Pin 21	+UB sensor electronics (12 VDC)	
Pin 66	Starter lockout switch	Operate clutch pedal.
Pin 74	Terminal 50a	Turn S002 - ignition switch to position "Start"
Pin 37	+UB (switching voltage on K065 - starter relay)	
Pin 17	Virtual ground (ground on K065 - starter relay)	
G001	Battery	
K062	Relay, EDC (terminal 50a from S002 - ignition switch) (X1371 - separation point)	
K064	Battery disconnect relay (optional) +UB 30 via S083 - switch (switching voltage) (12 VDC)	

Date	Version	Page	Capitel	Index	Docu-No.
23.05.2006	a	6/12	S074 - switch, transmission neutral / starter lockout	9000	E 000358

Fendt 300 Vario	Electrics / General system	E
S074 - switch, transmission neutral / starter lockout		

Item	Designation	Remark
	+UB 15 via S002 - ignition switch (holding voltage) (12 VDC)	
K065	Relay, starter (X1648 - separation point)	
M001	Starter	
S002	Ignition switch	
S074	Switch, starter lockout (X1429 - separation point)	Operate clutch pedal.
S083	Switch, battery disconnect relay	Start tractor: First close S083 - switch then switch on S002 - ignition switch Turn off tractor: first switch off S002 - ignition switch then disconnect S083 - switch
X050	Fuse holder 1 compl	
X051	Fuse holder 2 compl	
X554	Grounding point	

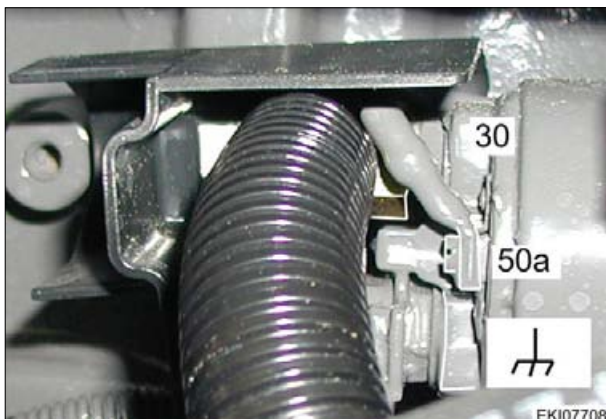
Starter lockout function



If fitted:

Set S083 - switch, battery disconnect relay to setting I

K064 - battery disconnect relay energised



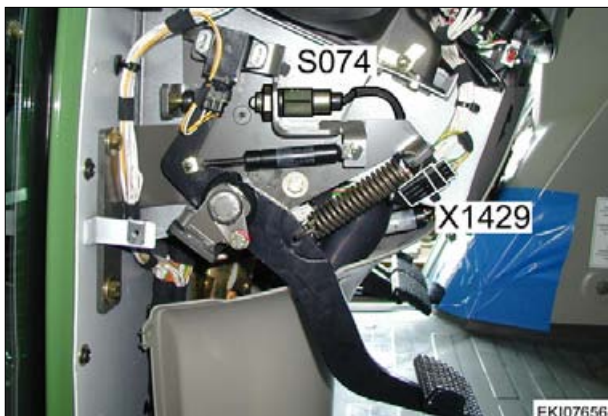
There is voltage is on M001 - starter (clip 30)

Date	Version	Page		Capitel	Index	Docu-No.
23.05.2006	a	7/12	S074 - switch, transmission neutral / starter lockout	9000	E	000358

Fendt 300 Vario

Electrics / General system

S074 - switch, transmission neutral / starter lockout

E

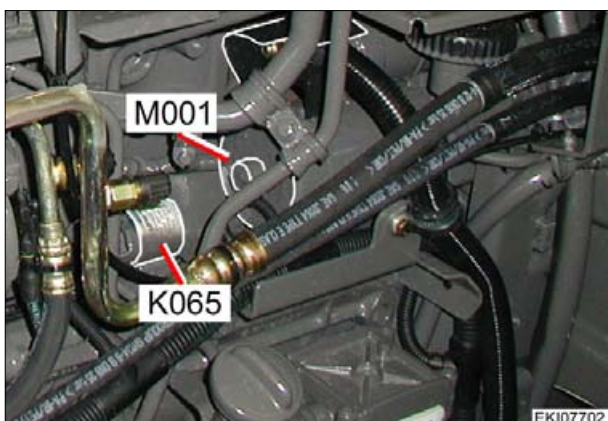
Press clutch pedal down all the way.
S074 - switch closed



Turn **S002 - ignition switch** to position "Start"
K062 - relay closes



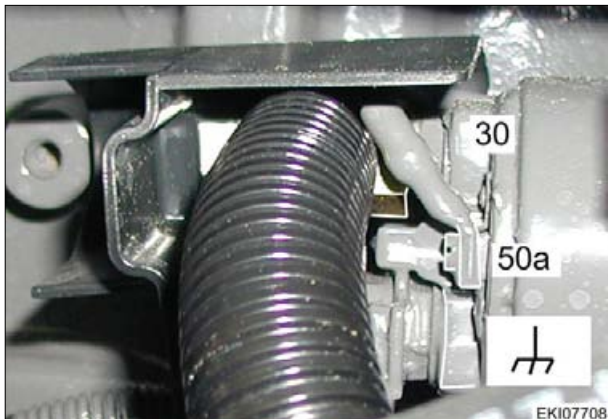
There is voltage on pin 74 (50a) and pin 66
(starter lockout switch) on the **A051 - ECU,EDC** .



K065 - relay closes

Date	Version	Page	S074 - switch, transmission neutral / starter lockout	Capitel	Index	Docu-No.
23.05.2006	a	8/12		9000	E	000358

Fendt 300 Vario	Electrics / General system S074 - switch, transmission neutral / starter lockout	E
------------------------	--	----------



Terminal 50a on M001 - starter is energised.
The M001 - starter is activated and the engine starts.

Date	Version	Page		Capitel	Index	Docu-No.
23.05.2006	a	9/12	S074 - switch, transmission neutral / starter lockout	9000	E	000358

Fendt 300 Vario

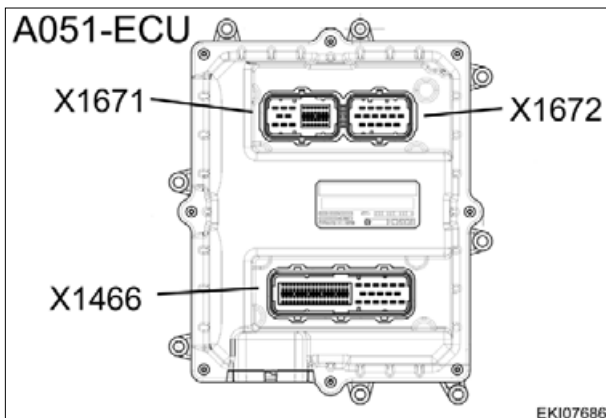
Electrics / General system
S074 - switch, transmission neutral / starter lockout

E**Testing S074 - starter lockout switch**

S074 - switch (X1429)	
Pin	Function
1	+UB 15 (clutch / turboclutch)
2	Actuation to K060 - relay (clutch / turboclutch)
3	Starter lockout switch
4	Starter lockout switch

**A051** = ECU, EDC

At right entrance step

**Measuring point on A051 - ECU, engine control unit (X1466 - separation point)**

Pin	Function
5, 6, 10, 11	Ground
17	Ground for K065 - relay
21	+UB sensor electronics (5.0 VDC)
37	Actuation for K065 - relay
66	Starter lockout switch
74	Terminal 50a

Fendt 300 Vario	Electrics / General system S074 - switch, transmission neutral / starter lockout	E
------------------------	--	----------

Measure resistance (ohm)

Note:

Ignition "OFF"

Connect adapter cable X899.980.246.206 only to the S074 - switch

Test	Pin	Specified value	Condition	Possible cause of fault
Starter lockout switch	3	Infinite	Clutch pedal not pressed (switch open)	
Starter lockout switch	4	4.0 ohm	Clutch pedal pressed all the way down (switch closed)	

Measure the signal voltage

Note:

Connect adapter cable X899.980.246.206 directly to S074 - switch. Separation point X1429

Ignition "ON"

Test	Pin	Specified value	Condition	Possible cause of fault
Starter lockout switch	4	approx. 0 VDC	Clutch pedal not pressed (switch open)	
		12 VDC	Clutch pedal pressed all the way down (switch closed)	
Vehicle ground				

Date	Version	Page		Capitel	Index	Docu-No.
23.05.2006	a	11/12	S074 - switch, transmission neutral / starter lockout	9000	E	000358

Fendt 300 Vario	Electrics / General system S074 - switch, transmission neutral / starter lockout	E
------------------------	--	----------

X1371 - relay base



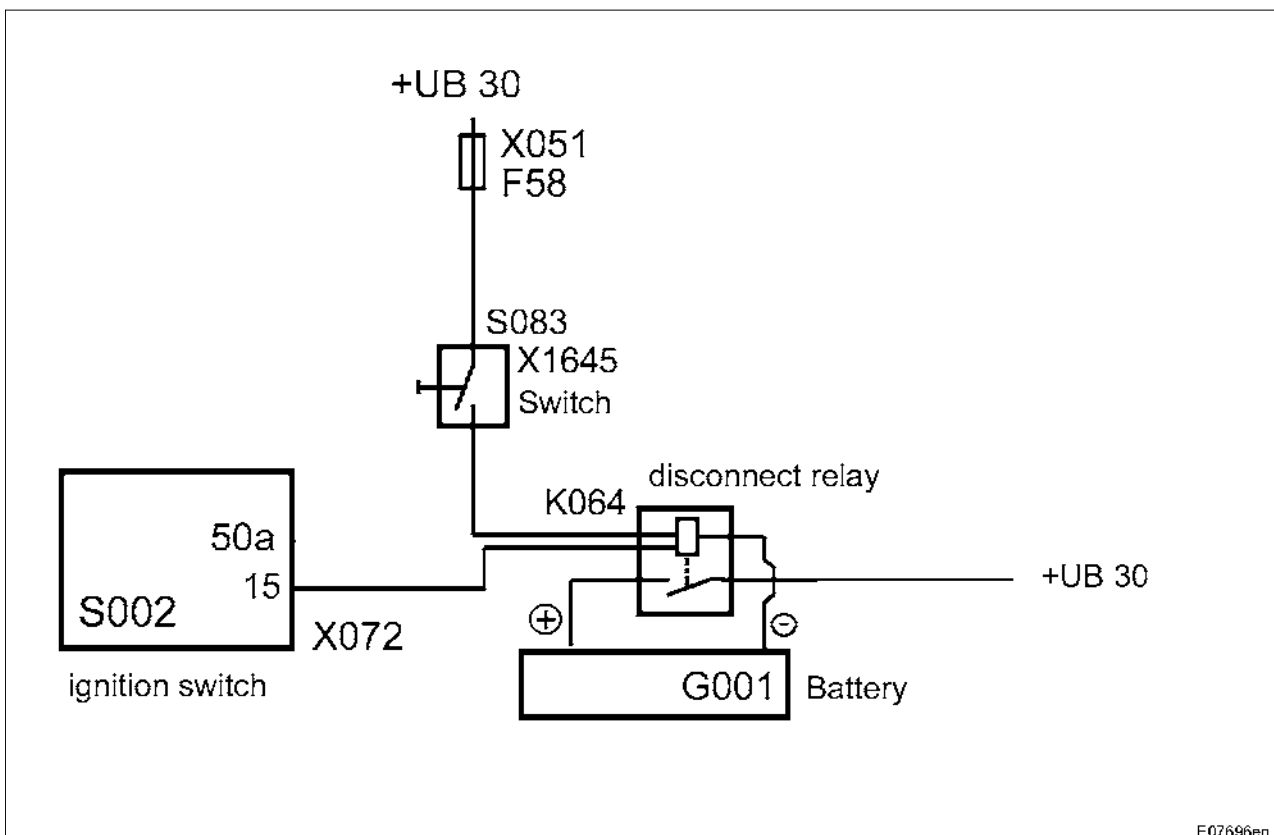
Date	Version	Page	Capitel	Index	Docu-No.
23.05.2006	a	12/12	S074 - switch, transmission neutral / starter lockout 9000	E	000358

Fendt 300 Vario

Electrics / General system
S083 - switch, battery disconnect relay

E

S083 = Switch for K064 battery disconnect relay
 top right in cab



E07696en

Date	Version	Page	S083 - switch, battery disconnect relay	Capitel	Index	Docu-No.
24.05.2006	a	1/2		9000	E	000359

Fendt 300 Vario	Electrics / General system S083 - switch, battery disconnect relay	E
------------------------	---	----------

Item	Designation	Remark
G001	Battery	
K064	Battery disconnect relay (optional) +UB 30 via S083 - switch (switching voltage) (12 VDC) +UB 15 via S002 - ignition switch (holding voltage) (12 VDC)	
M001	Starter	
S002	Ignition switch	
S083	Switch, battery disconnect relay	Start tractor: First close S083 - switch then switch on S002 - ignition switch Turn off tractor: first switch off S002 - ignition switch then disconnect S083 - switch
X051	Fuse holder 2 compl	



Disengagement conditions

- Engine OFF
- Ignition OFF

Note:

After switching ignition off (+UB 15), wait approx. 5 seconds until the main power circuit (+UB 30) is switched off.

Otherwise the stored settings (e.g. cruise control) will be erased.

Switching off (+UB 30) main power circuit

- Press lock (arrowed) downwards
- Press S083 - switch upwards

Note:

If the main power circuit (+UB 30) is switched off, circuits do not function, except for the radio, clock and interior lighting.

Switching on (+UB 30) main power circuit

- Press lock (arrowed) downwards
- Press S083 - switch downwards

Note:

Only switch on the ignition (+UB 15) "holding voltage on K064 - relay" after the main power circuit (+UB 30) "switching voltage on K064 - relay" has been switched on

Date	Version	Page		Capitel	Index	Docu-No.
24.05.2006	a	2/2	S083 - switch, battery disconnect relay	9000	E	000359

Fendt 300 Vario

Electrics / General system

S084 - switch ON/OFF hydr. trailer brake (France)

E

S084 = Switch ON/OFF hydr. trailer brake (France)

On the dashboard



Y089 = Solenoid valve ON/OFF hydr. trailer brake (France)

Right side of tractor, on battery box

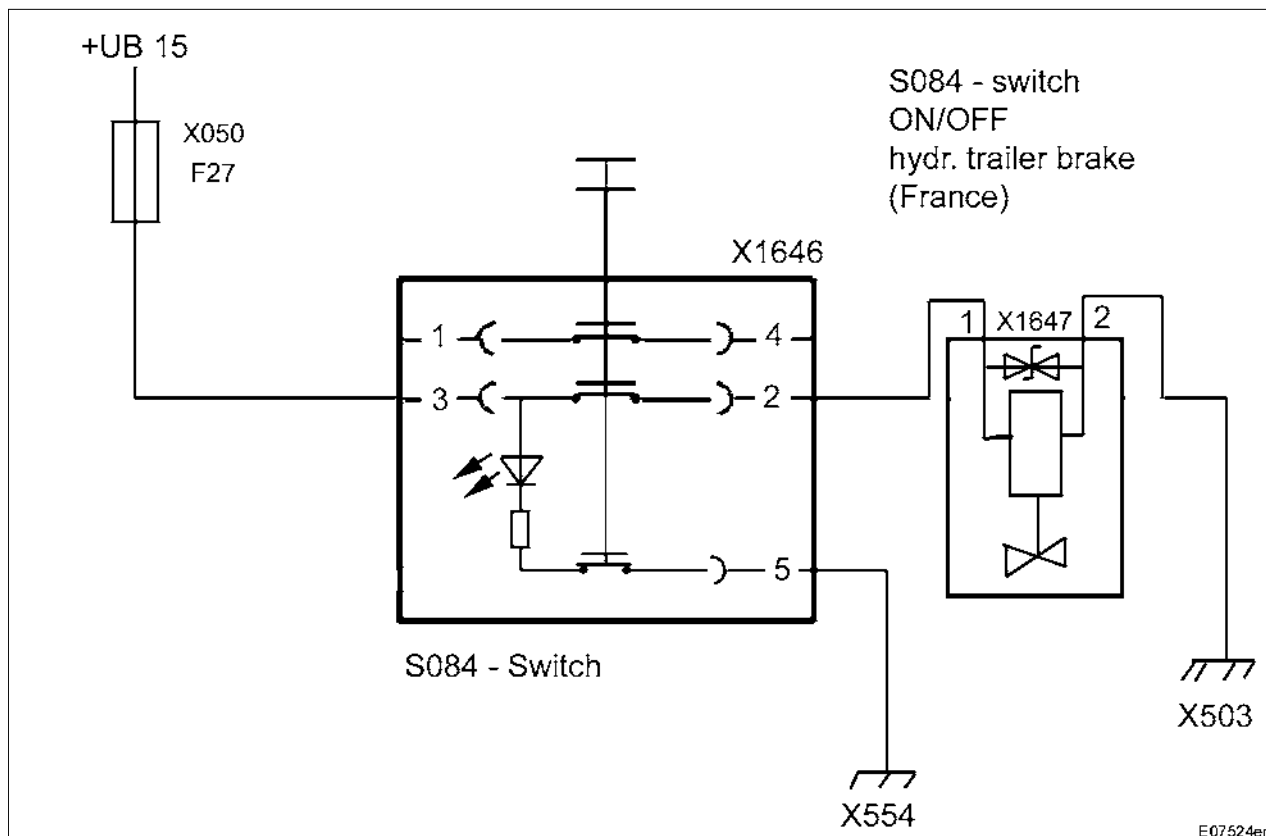


Date	Version	Page	Capitel	Index	Docu-No.
24.05.2006	a	1/3	S084 - switch ON/OFF hydr. trailer brake (France)	9000	E
					000360

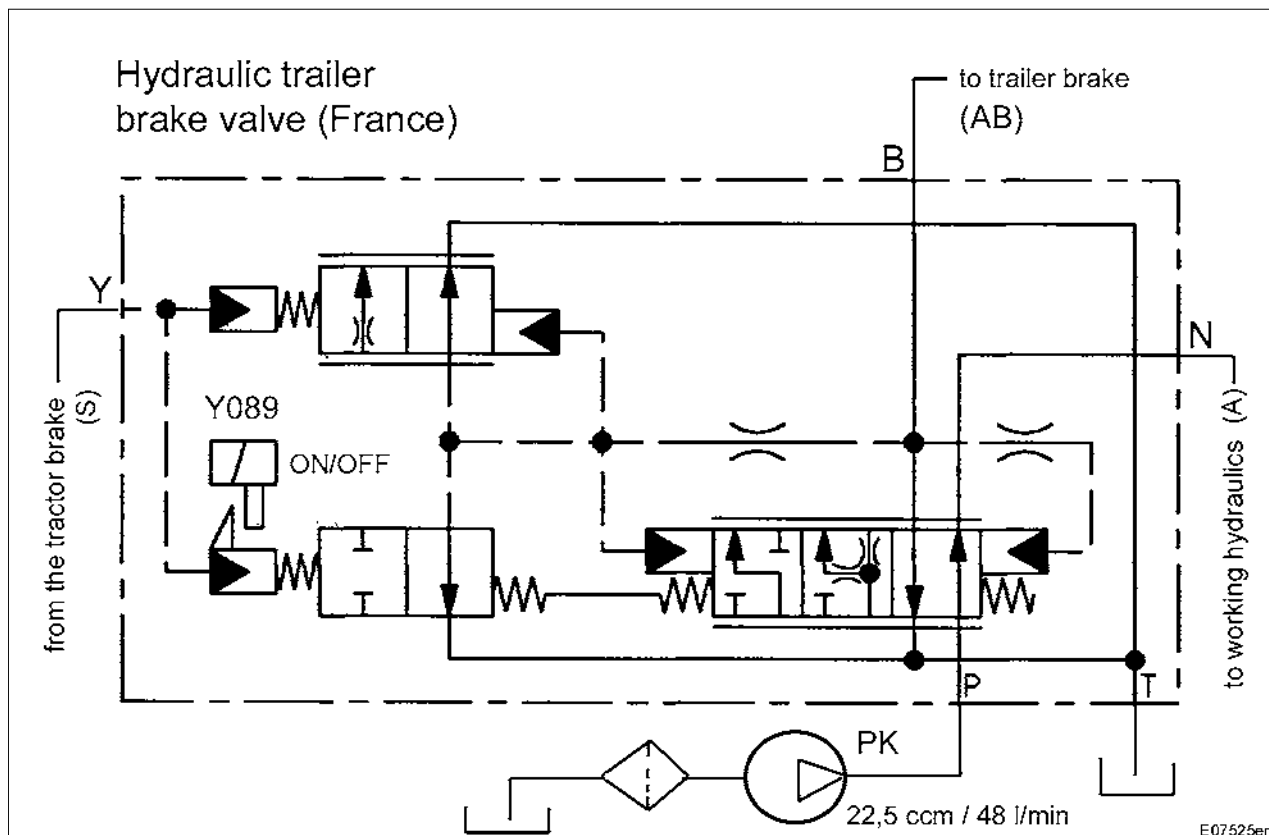
Fendt 300 Vario

Electrics / General system

S084 - switch ON/OFF hydr. trailer brake (France)

E

Item	Designation	Remark
S084	Switch, ON/OFF hydr. trailer brake (France)	
X1646	Separation point on S084	
Pin 3	Actuation (of UB 15)	Ignition ON: 12 VDC
Pin 2	Actuation (to Y089 - solenoid valve)	Switch open = 0 VDC
Pin 5	LED	Switch closed = 12 VDC
		Switch open = LED OFF
		Switch closed = LED ON
Y089	Solenoid valve, ON/OFF hydr. trailer brake (France)	
X1647	Separation point on Y089	

Fendt 300 VarioElectrics / General system
S084 - switch ON/OFF hydr. trailer brake (France)**E****Hydraulic trailer brake valve (France)**

Item	Designation	Item	Designation
P	PK - hydraulic pump working hydraulics	T	Return flow
N	to working hydraulics (A)	Y	from the tractor brake (S) (transmission oil)
B	to trailer brake (AB)	Y089	Solenoid valve ON / OFF

**Hydraulic trailer brake ON (LED is lit)**

Trailer is braked hydraulically (Y089 - solenoid valve energised)

Hydraulic trailer brake OFF (LED is not lit)

Trailer is not braked hydraulically (Y089 - solenoid valve receives no power)

Date	Version	Page	Capitel	Index	Docu-No.
24.05.2006	a	3/3	S084 - switch ON/OFF hydr. trailer brake (France)	9000	E 000360

Fendt 300 Vario

Electrics / General system

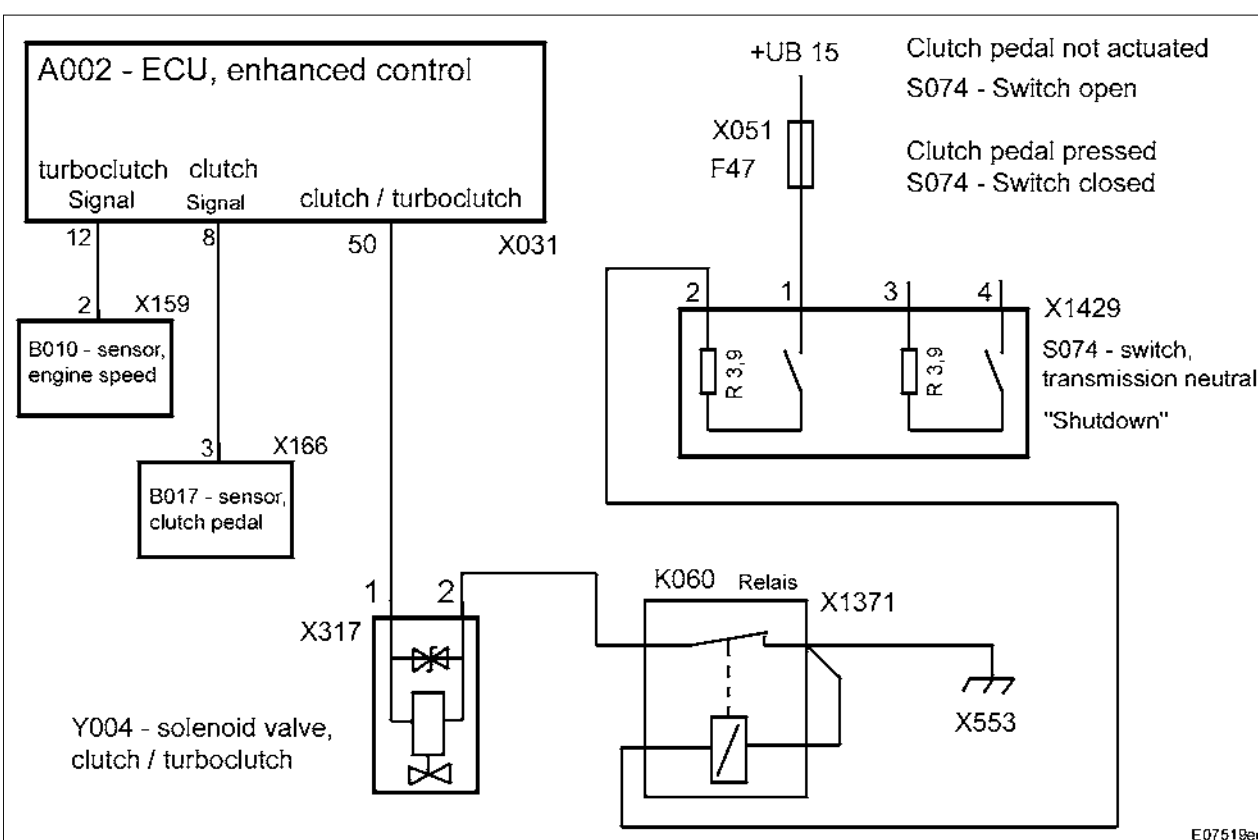
Y004 - solenoid valve, clutch / turboclutch

E**Y004** = Solenoid valve, clutch / turboclutch**X317** = Separation point on Y004

On the right side of the transmission



Remove right rear wheel



Item	Designation	Remark
A002	ECU, enhanced control	
X031	Separation point on A002	
Pin 8	B017 - sensor, clutch pedal 'clutch function'	also see: Chapter 9000 Reg. E - B017 - Clutch pedal sensor
Pin 12	B010 - sensor, engine speed 'turboclutch function'	also see: Chapter 9000 Reg. E - B010 - Engine speed sensor
Pin 50	Y004 - solenoid valve, clutch / turboclutch	
B010	Sensor, engine speed	
X159	Separation point on B010	

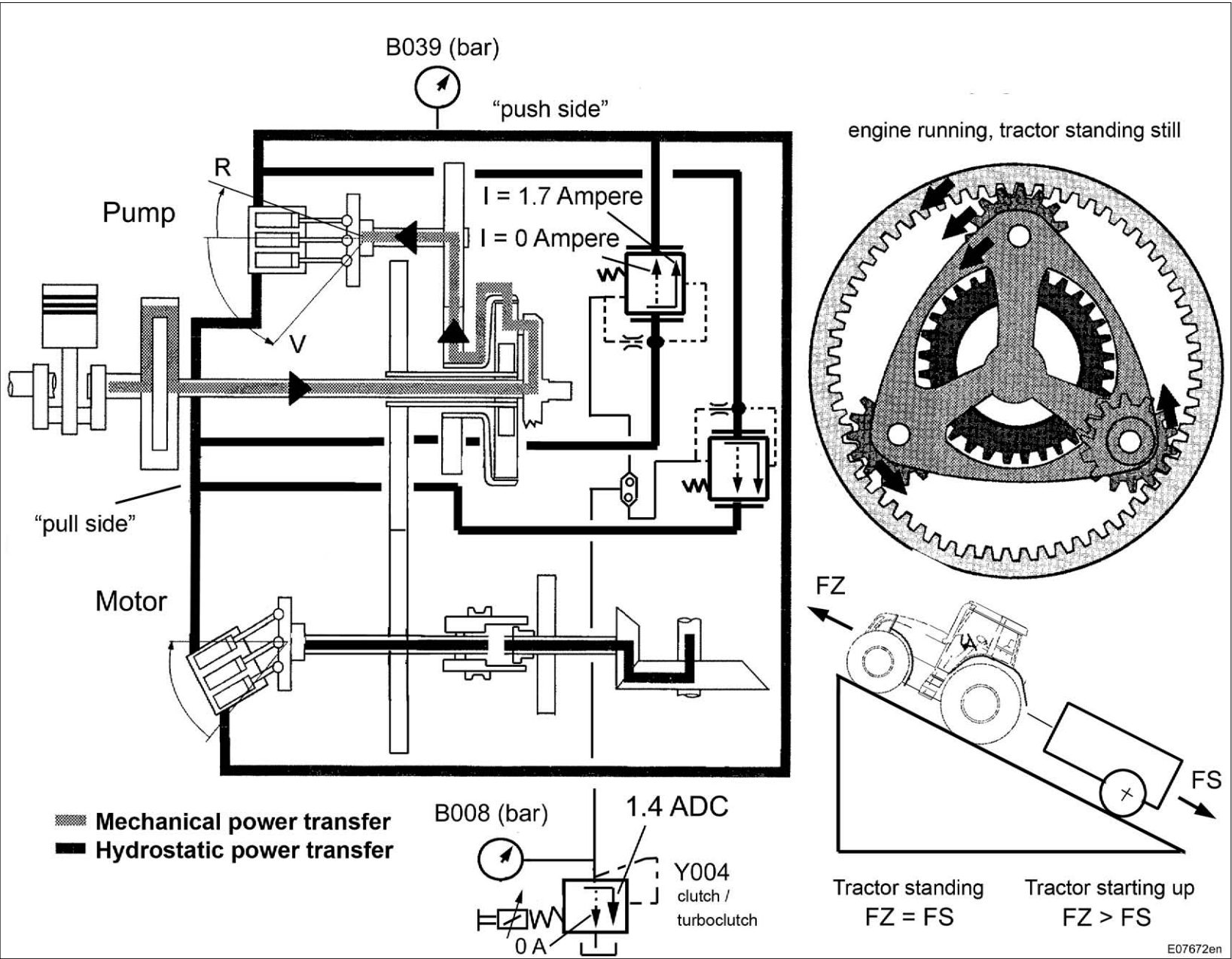
Date	Version	Page	Capitel	Index	Docu-No.
01.06.2006	a	1/8	Y004 - solenoid valve, clutch / turboclutch	9000	E 000369

Fendt 300 Vario	Electrics / General system Y004 - solenoid valve, clutch / turboclutch	E
------------------------	--	----------

Item	Designation	Remark
B017	Sensor, clutch pedal	
X166	Separation point on B017	
K060	Relay	
X1371	Relay base	
S074	Switch, transmission neutral / starter lockout switch	
X1429	Separation point on S074	
X051	Fuse block 2	
Y004	Solenoid valve, clutch / turboclutch	Y004 - solenoid valve energised = transmission positively engaged Y004 - Solenoid valve receives no power = transmission not positively engaged 'neutral'
X317	Separation point on Y004	

Date	Version	Page	Capitel	Index	Docu-No.
01.06.2006	a	2/8	9000	E	000369

Date	Version	Page	Y004 - solenoid valve, clutch / turboclutch			Capitel	Index	Docu-No.
01.06.2006	a	3/8				9000	E	000369



Fendt 300 Vario

Electrics / General system
Y004 - solenoid valve, clutch / turboclutch

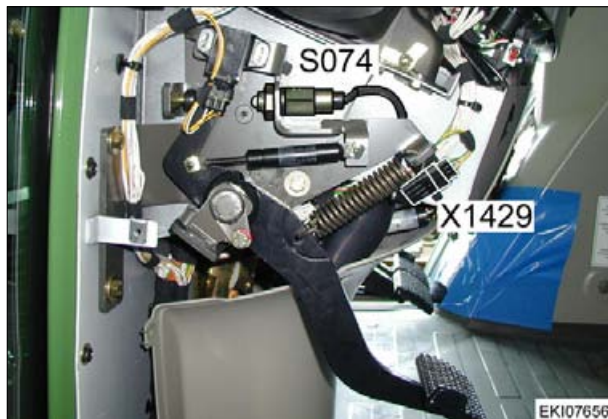
E**Clutch function**

The B017 - sensor determines the position of the clutch pedal.

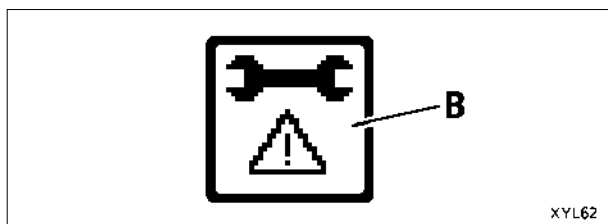
The Y004 - solenoid valve is energised proportionally, depending on the clutch pedal position.

Clutch pedal not actuated = approx.
 1.4 ampere (transmission positively engaged)

Clutch pedal is actuated: = Powerconsumption drops to 0 ampere (transmission is no longer fully positively engaged) 'slipping clutch'



If the clutch pedal is pressed down all the way, the **S074 - switch** interrupts the electric circuit from **Y004 - solenoid valve** "final shutdown"



In emergency operating mode (also see Chapter 1005 Reg. A - transmission emergency operating mode), the S074 - switch switches the clutch to 'black - white' mode.

Proportional actuation of the clutch is no longer possible.

Date	Version	Page	Y004 - solenoid valve, clutch / turboclutch	Capitel	Index	Docu-No.
01.06.2006	a	4/8		9000	E	000369

Fendt 300 Vario	Electrics / General system Y004 - solenoid valve, clutch / turboclutch	E
------------------------	---	----------

**Y004 - solenoid valve (X317 - separation point)**

Pin	Function
1	Signal
2	Ground

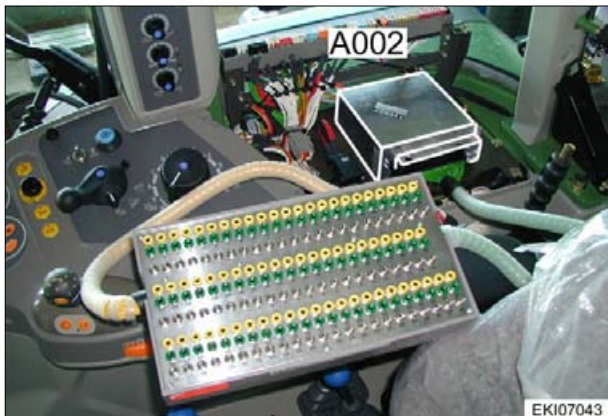
Measure resistance (ohm)**Note:****Ignition 'OFF'****Connect adapter cable X 899.980.246.201 only to Y004 - solenoid valve**

Test	Pin	Specified value	Condition	Remark
Resistance	1	6.4 ohms	20°C solenoid temperature	
		9.7 ohms	150°C solenoid temperature	
	2			

Date	Version	Page	Y004 - solenoid valve, clutch / turboclutch	Capitel	Index	Docu-No.
01.06.2006	a	5/8		9000	E	000369

Fendt 300 Vario	Electrics / General system Y004 - solenoid valve, clutch / turboclutch	E
------------------------	--	----------

Measuring power consumption (ampere)



Ignition 'OFF'

Connect e-adapter box X 899.980.208.100 directly to A002 - ECU, enhanced control.

Open pin 50 and measure with multimeter (ammeter).

Ignition 'ON'

Note:

Set the measuring range of the multimeter

The Y004 solenoid valve, turboclutch is actuated from A002 - ECU, enhanced.

The electric power consumption is dependent on the engine speed.

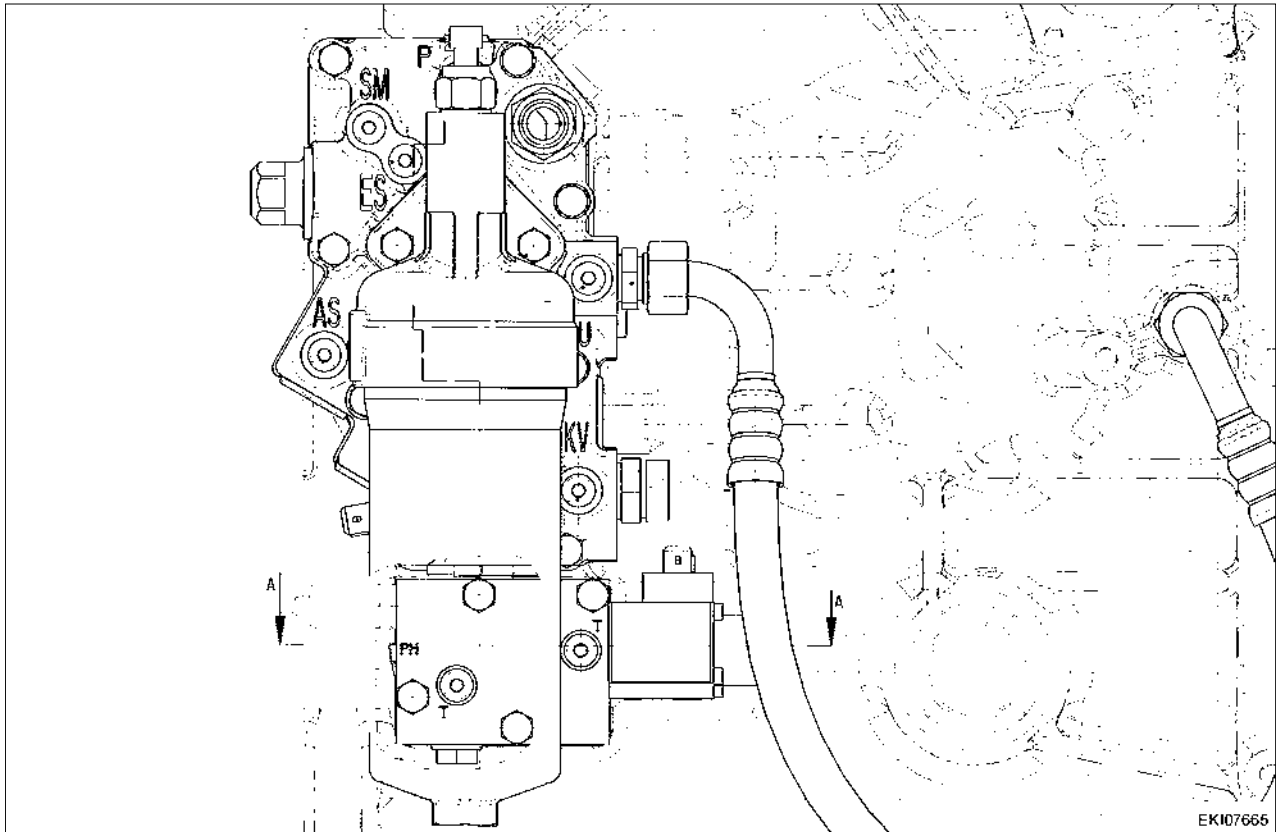
Power consumption rises with increasing engine speed

Transmission "active" and ratio preselected (readings: all wheels jacked up and 4WD engaged)			
Note: B008 pressures (high pressure sensor 1) are read out in A007 - instrument cluster .			
Note: The readings are from a FENDT 300 Vario; the transmission pressures depend on the load on the tractor and the transmission oil temperature			
Engine speed	Power consumption	B008 - high pressure sensor 1	Remarks
800 rpm	0 mA DC	approx. 12 bar	Transmission in neutral (press the neutral button or pull the hand brake) Clutch pedal pressed all the way down (S074 - switch)
800 rpm	300 mA DC	approx. 20 bar	Transmission "active" and ratio preselected
1000 rpm	526 mA DC	approx. 25 bar	
1200 rpm	955 mA DC	approx. 28 bar	
1250 rpm	1.39 A DC	approx. 28 bar	
1300 rpm	1.39 A DC	approx. 28 bar	
1400 rpm	1.39 A DC	approx. 28 bar	

Date	Version	Page	Y004 - solenoid valve, clutch / turboclutch	Capitel	Index	Docu-No.
01.06.2006	a	6/8		9000	E	000369

Fendt 300 Vario	Electrics / General system Y004 - solenoid valve, clutch / turboclutch	E
------------------------	--	----------

Hydraulic connection from Y004 - solenoid valve, clutch/turboclutch

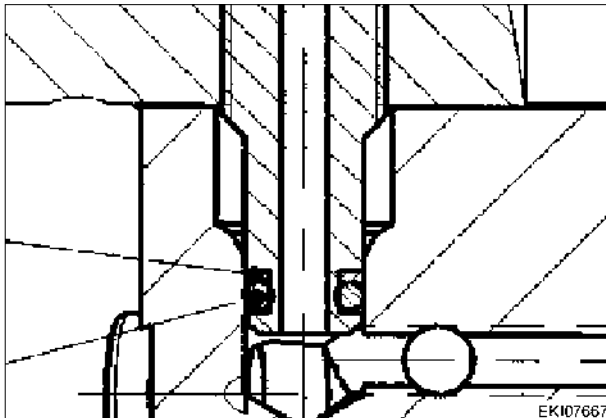
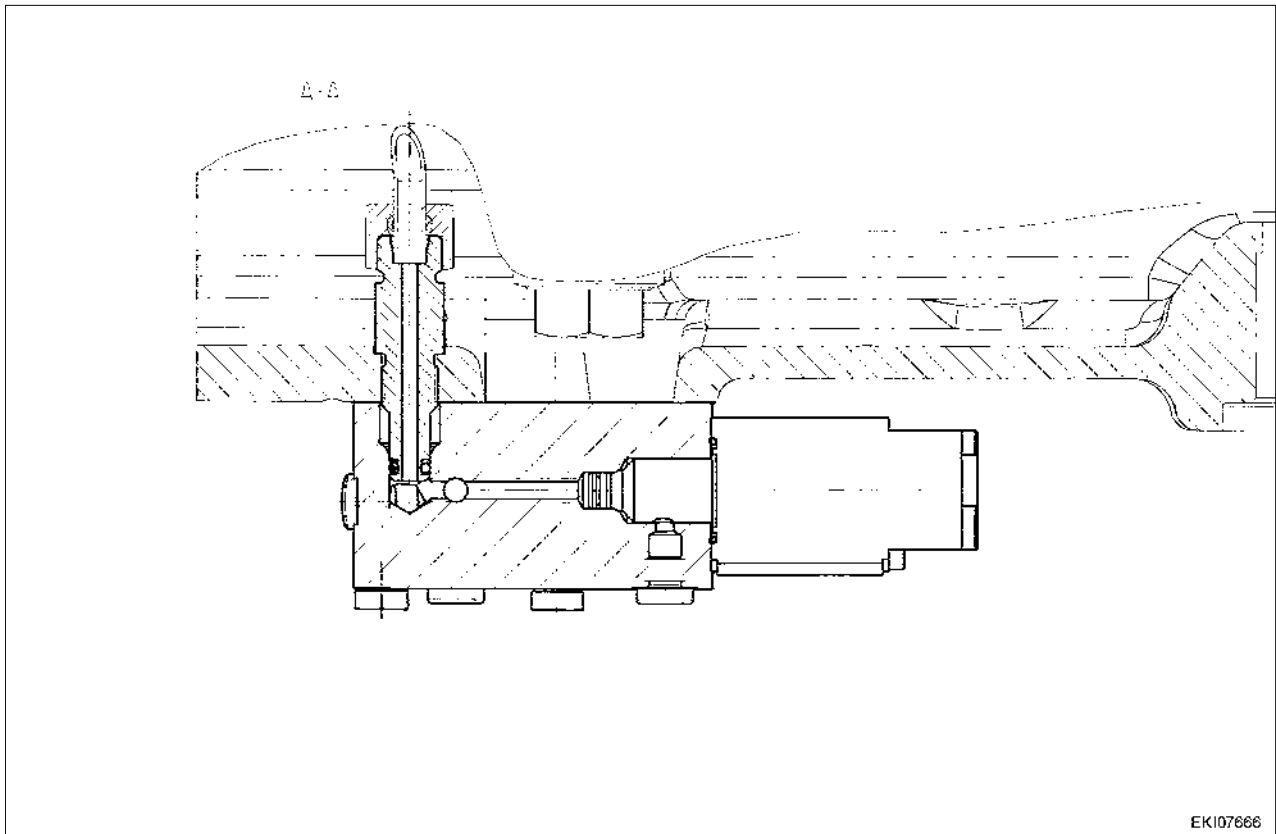


Date	Version	Page	Y004 - solenoid valve, clutch / turboclutch	Capitel	Index	Docu-No.
01.06.2006	a	7/8		9000	E	000369

Fendt 300 Vario

Electrics / General system
Y004 - solenoid valve, clutch / turboclutch

E



Note:

Take note of the position of the seal and the supporting ring

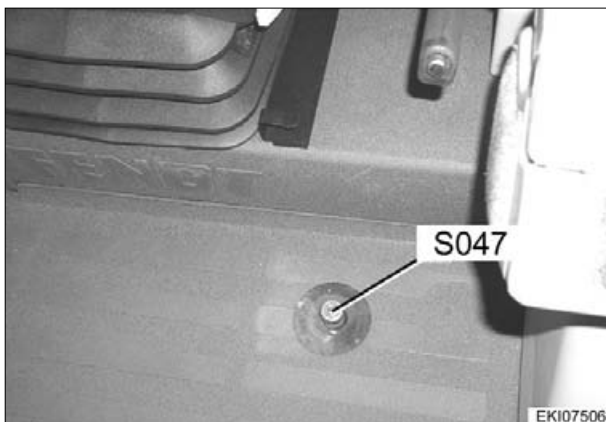
Date	Version	Page	Y004 - solenoid valve, clutch / turboclutch	Capitel	Index	Docu-No.
01.06.2006	a	8/8		9000	E	000369

Fendt 300 Vario

Electrics / General system
Y006 - solenoid valve, engine brake

E**Y006** = Solenoid valve, engine brake**X1679** = Separation point on Y006

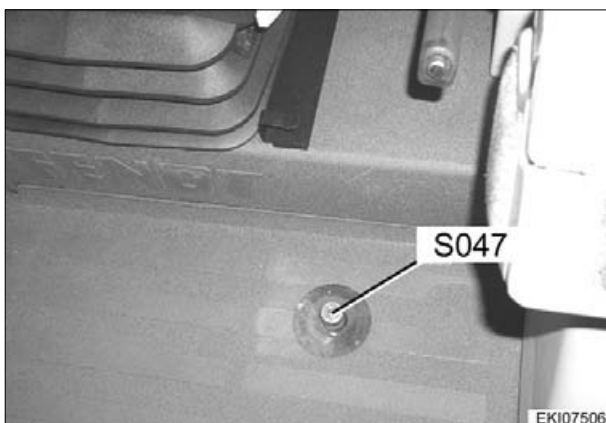
On right side of tractor on engine bulkhead

**S047** = Engine brake tappet switch

Cab floor

**Note:****See also:**

Chapter 9000 Reg. E - Measuring and testing
S047 - engine brake switch

**Engine brake function:**

Press S047 - switch, engine brake

The engine brake only functions at engine speeds above 1100 rpm.

At an engine speed below 1100 rpm, the engine brake is without function.

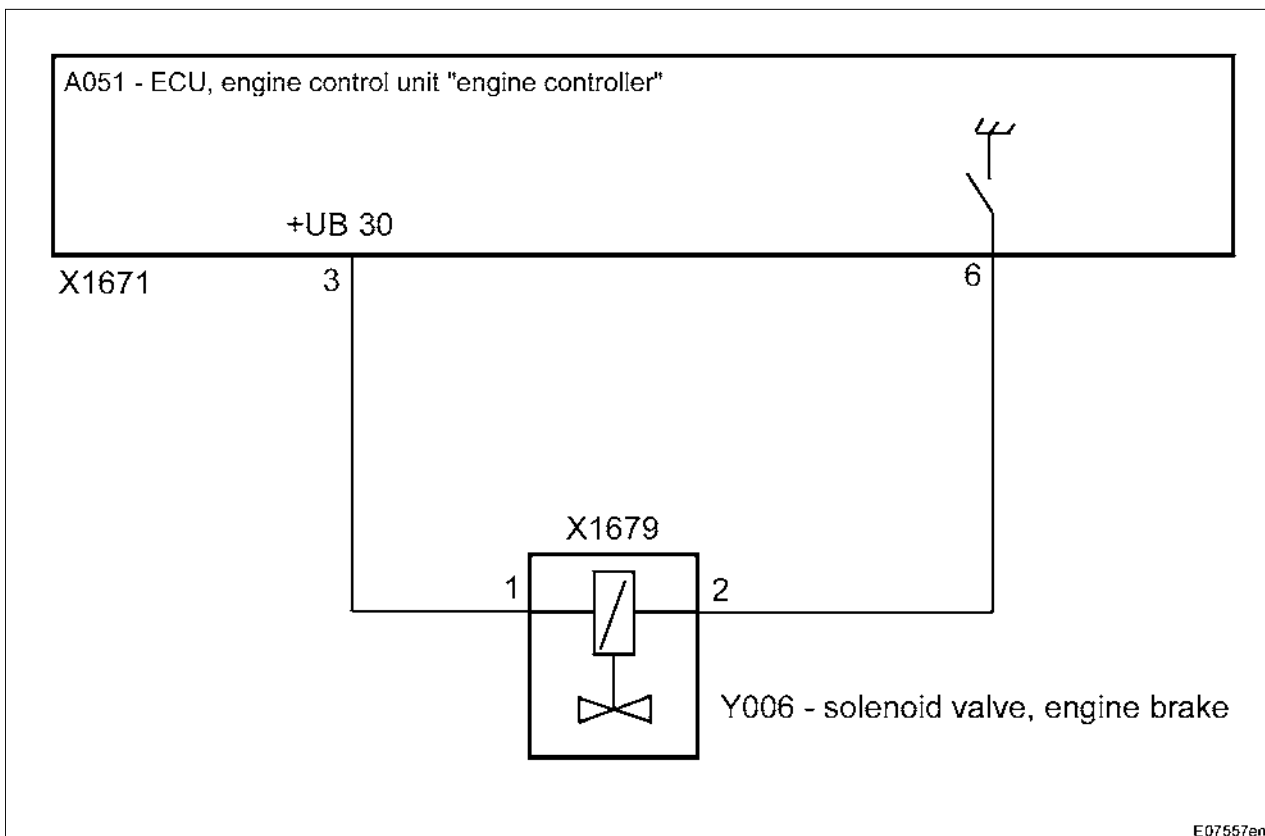
The full braking effect is only available at higher engine speeds

Note:**Maximum perm. engine speed = 2600 rpm**

Date	Version	Page	Capitel	Index	Docu-No.
01.06.2006	a	1/4	Y006 - solenoid valve, engine brake	9000	E
					000370

Fendt 300 Vario

Electrics / General system
Y006 - solenoid valve, engine brake

E

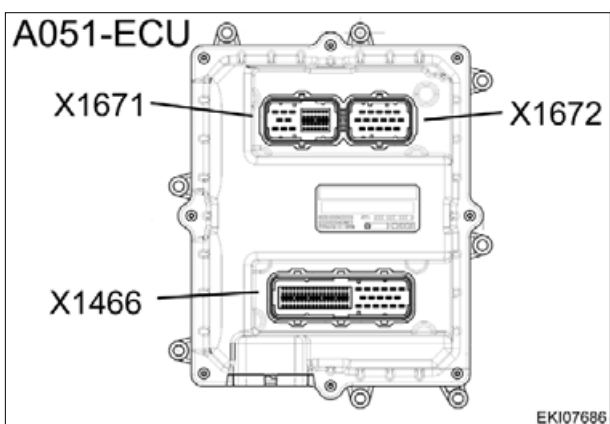
Item	Designation	Remark
A051	ECU, EDC 'Engine control unit'	
X1671	Separation point on A051	
Pin 3	+ UB 30 (battery voltage)	
Pin 6	Ground for Y006 - solenoid valve	
Y006	Solenoid valve, engine brake	
X1679	Separation point on Y006	

Fendt 300 Vario

Electrics / General system
Y006 - solenoid valve, engine brake

E**A051** = ECU, EDC

At right entrance step



Measuring point on A051 - ECU, engine control unit (X1671 - separation point)

Pin	Function
3	+ UB 30 (battery voltage)
6	Ground for Y006 - solenoid valve



Measuring points on Y006 - solenoid valve (X1679 - separation point)

Pin	Function
1	+UB 30
2	Ground

Fendt 300 Vario	Electrics / General system Y006 - solenoid valve, engine brake	E
------------------------	---	----------

Measure resistance (ohm)

Note:

Ignition 'OFF'

Connect adapter cable X 899.980.246.201 only to Y006 - solenoid valve

Test	Pin	Specified value	Condition	Remark
Resistance	1	13.5 ohms	20°C solenoid temperature	Reading: +/- 15 %
	2			

Measuring power consumption (ampere) and voltage (volt)



Measuring power consumption (ampere):

Note:

Set measuring range of the multimeter

Ignition 'OFF'

Connect e-adapter box X 899.980.208.100 directly to A051 ECU, EDC using adapter cable X 899.980.208.218.

Open pin 6 and measure with multimeter (ammeter).

Ignition 'ON'

Solenoid valve	Switch position	U	I	R
Y006 - solenoid valve, engine brake	Engine brake on (Note: engine speed greater than 1100 rpm)	approx. 14 VDC	approx. 1.0 ADC	13.5 ohms

Note:

All readings +/- 10%

Date	Version	Page	Y006 - solenoid valve, engine brake	Capitel	Index	Docu-No.
01.06.2006	a	4/4		9000	E	000370

Fendt 300 Vario

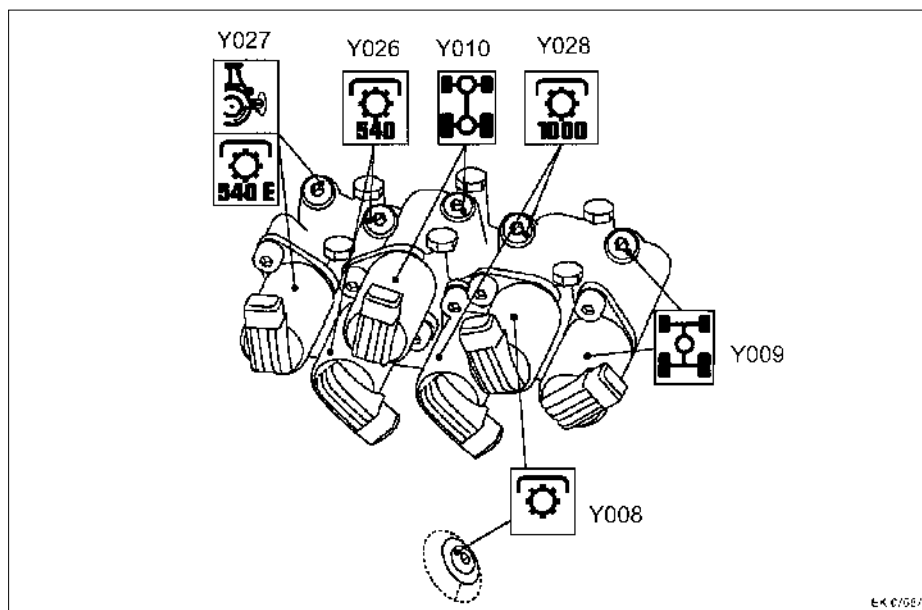
Electrics / General system
Y008 - solenoid valve, rear PTO clutch

E**Y008** = Solenoid valve, rear PTO clutch

On right side of tractor on valve block for
the enhanced control hydraulics



Remove right rear wheel, remove metal
guard



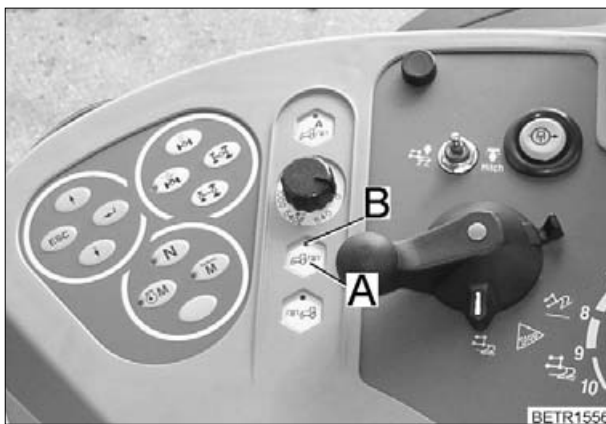
Date	Version	Page	Capitel	Index	Docu-No.
01.06.2006	a	1/5	9000	E	000371

Fendt 300 Vario

Electrics / General system
Y008 - solenoid valve, rear PTO clutch

E**Note:**

Testing rear PTO selector see:
 Chapter 9000 Reg. E - A036 - Measuring and testing A036 - control panel, enhanced controls

**Rear PTO clutch**

A = Rear PTO clutch key

B = LED rear PTO clutch

If the rear PTO is engaged, LED (B) is lit

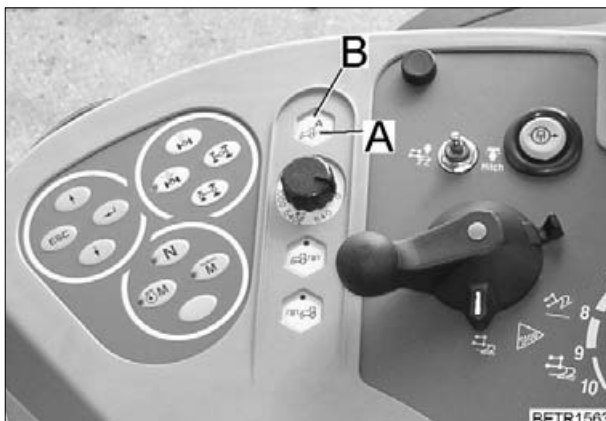
The engagement process is dependent on the actuation time of the key (A)

less than 5 seconds

- Gentle start-up. The PTO clutch automatically adapts to the implement requirements

more than 5 seconds

- Speed and fault monitor are skipped

**Rear PTO automatic mode**

A = Rear PTO automatic mode key

B = LED rear PTO automatic mode

Prerequisites:

- The engine must be running
- Travel speed must be greater than 0.6 km/h
- The EPC must be unlocked
- The PTO speed setting must be preselected

If automatic mode is switched on, LED (B) is lit

The rear PTO switches ON - OFF when the lifting gear passes over a preset position.

Fendt 300 Vario

Electrics / General system
Y008 - solenoid valve, rear PTO clutch

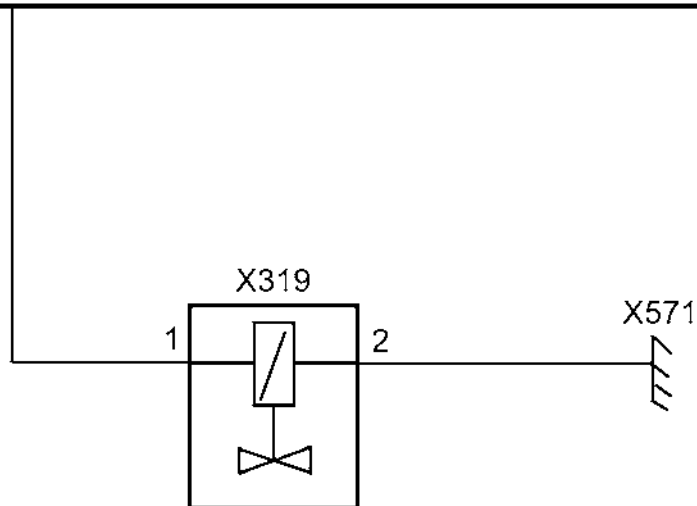
E

A002 - ECU, enhanced control

solenoid valve, rear PTO

X031

47



Y008 - solenoid valve, rear PTO clutch

E07558en

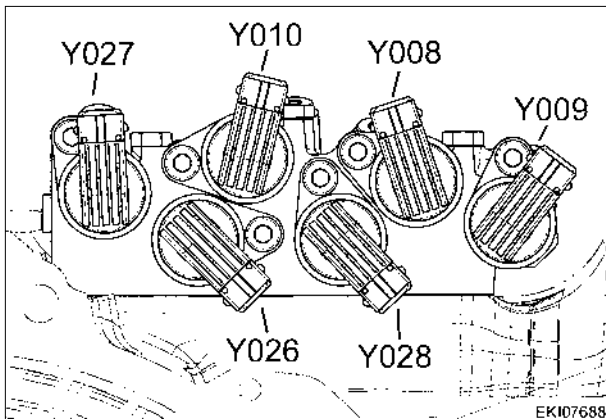
Item	Designation	Remark
A002	ECU, enhanced control	
X031	Separation point on A002	
Pin 47	Actuation for Y008 - solenoid valve	
Y008	Solenoid valve, rear PTO clutch	
X319	Separation point on Y008 - solenoid valve	
X571	Grounding point	

Fendt 300 Vario

Electrics / General system
Y008 - solenoid valve, rear PTO clutch

E**Measuring points on the A002 - ECU (X031)**

Pin	Function
47	Actuation for the Y008 - solenoid valve

**Measuring points on Y008 - solenoid valve (X319)**

Pin	Function
1	Actuation for the Y008 - solenoid valve
2	Ground

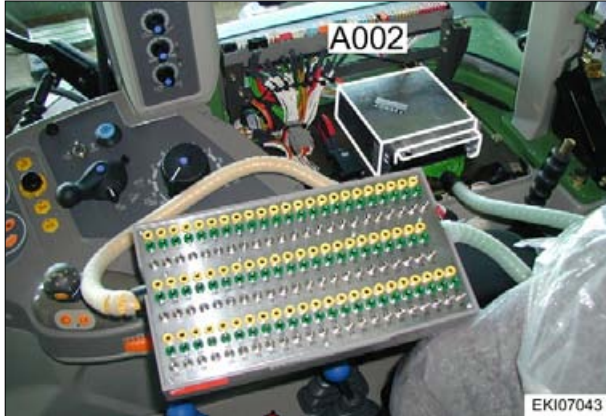
Measure resistance (ohm)**Note:****Ignition "OFF"****Connect adapter cable X 899.980.246.201 only to Y008 - solenoid valve**

Test	Pin	Specified value	Condition	Remark
Resistance	1	7.3 ohms	20°C solenoid temperature	Reading: +/- 15 %
	2			

Date	Version	Page	Y008 - solenoid valve, rear PTO clutch	Capitel	Index	Docu-No.
01.06.2006	a	4/5		9000	E	000371

Fendt 300 Vario	Electrics / General system Y008 - solenoid valve, rear PTO clutch	E
------------------------	--	----------

Measuring power consumption (ampere) and voltage (volt)



Note:

Set measuring range of the multimeter

Connect e-adapter box X 899.980.208.100 directly to A002 - ECU, enhanced control.

Measuring voltage (Volt):

Measure pin 47 and pin 55 (ground) on the A002 - ECU, enhanced control

Ignition ON and start engine

Select rear PTO setting and engage rear PTO

Measuring power consumption (ampere):

Open pin 47 and measure with multimeter (ampere).

Ignition ON and start engine

Select rear PTO setting and engage rear PTO

Solenoid valve	Switch position	U	I	R
		[VDC]	[ADC]	[ohm]
Y008 - solenoid valve, rear PTO clutch	ON / OFF	14 / 0	approx. 1.7	7.3

Note:

All readings +/- 10%

Functional description: Pulse Width Modulation (PWM)

The **A002 - ECU, enhanced control** supplies a voltage for energising the solenoid valves of **0 VDC or 14 VDC** .

The **increase in voltage to 14 VDC** or the **voltage switch-off to 0 VDC** is **controlled** (proportional) In the event of a mechanical or electrical fault in the component or cable harness, the component is briefly energised, then the A002 - ECU detects the fault and switches the voltage off.

Date	Version	Page		Capitel	Index	Docu-No.
01.06.2006	a	5/5	Y008 - solenoid valve, rear PTO clutch	9000	E	000371

Fendt 300 Vario

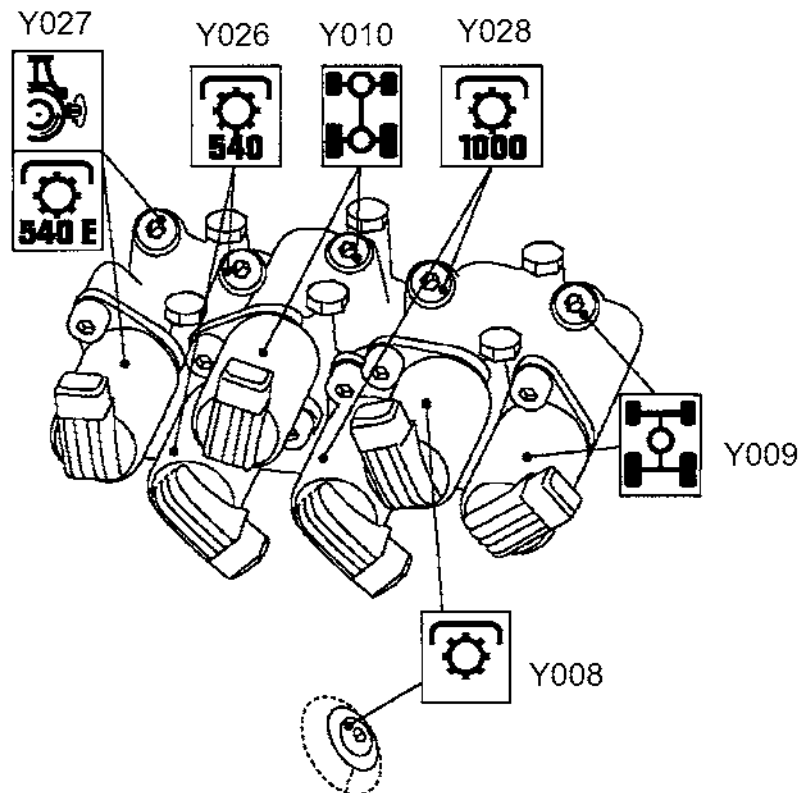
Electrics / General system
Y009 - solenoid valve, 4WD

E**Y009** = Solenoid valve, 4WD

On right side of tractor on valve block for
 the enhanced control hydraulics



Remove right rear wheel, remove metal
 guard



EKI07687

Date	Version	Page	Capitel	Index	Docu-No.
01.06.2006	a	1/5	9000	E	000372

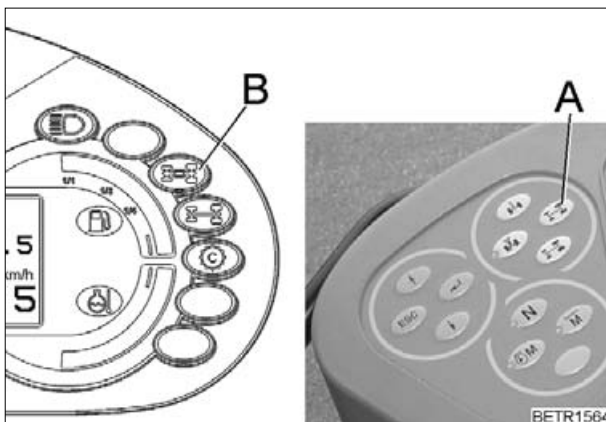
Y009 - solenoid valve, 4WD

Fendt 300 Vario

Electrics / General system
Y009 - solenoid valve, 4WD

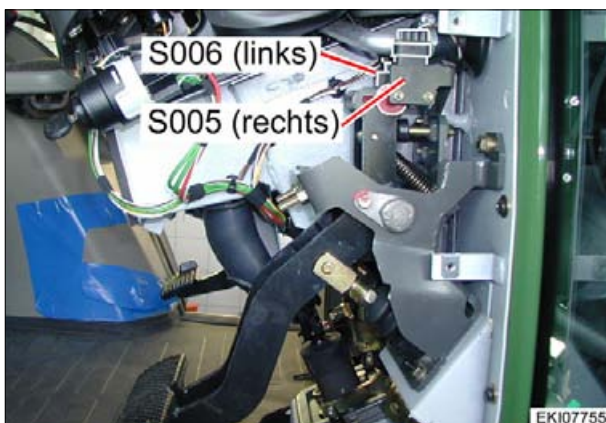
E**Note:**

Testing 4WD engagement see:
 Chapter 9000 Reg. E - A036 - Measuring and testing A036 - control panel, enhanced controls

**4WD**

A = 4WD clutch key (100% engaged)

B = 4WD indicator lamp



When both foot brake pedals are pressed
 (S005 and S006 - switch actuated), 4WD is engaged.

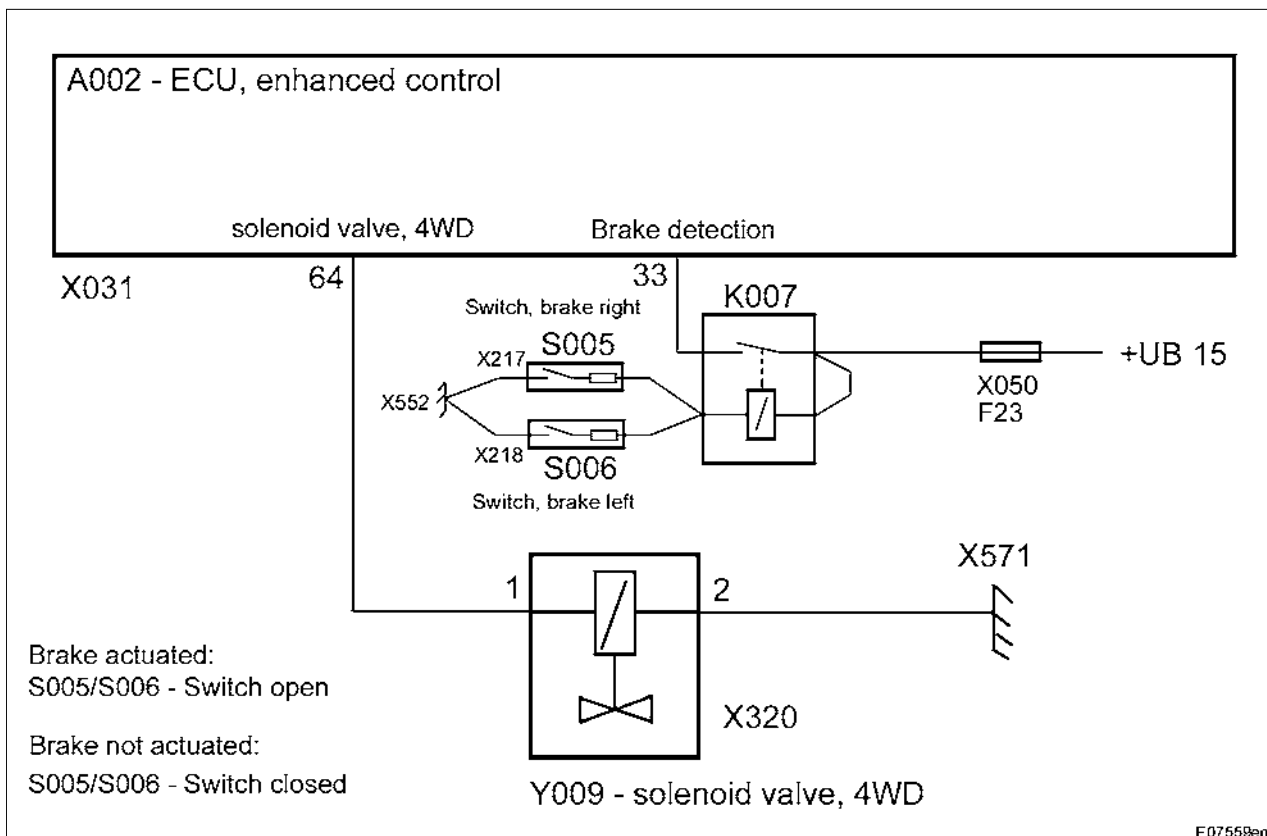
When the individual wheel brake is pressed
 (S005 or S006 - switch actuated), the 4WD remains disengaged

Note:

see also:

Chapter 9000 Reg. E - S005 / S006 - switch brake right / left (measuring and testing)

Date	Version	Page	Capitel	Index	Docu-No.
01.06.2006	a	2/5	Y009 - solenoid valve, 4WD	9000	E
					000372

Fendt 300 Vario
Electrics / General system
Y009 - solenoid valve, 4WD
E

Item	Designation	Remark
A002	ECU, enhanced control	
X031	Separation point on A002	
Pin 64	Actuation for the Y009 - solenoid valve	
Y009	Solenoid valve, 4WD	
X320	Separation point on Y009 - solenoid valve	
X571	Grounding point	

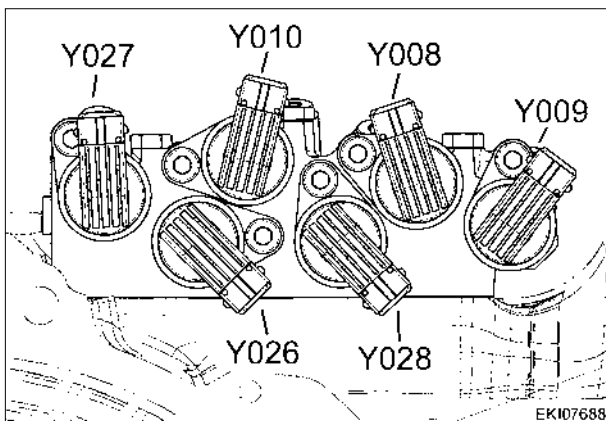
Fendt 300 Vario

Electrics / General system
Y009 - solenoid valve, 4WD

E

**Measuring points on the A002 - ECU
 (X031-separation point)**

Pin	Function
64	Actuation for the Y009 - solenoid valve



**Measuring points on Y009 - solenoid valve
 (X320 - separation point)**

Pin	Function
1	Actuation for the Y009 - solenoid valve
2	Ground

Measure resistance (ohm)

Note:

Ignition 'OFF'

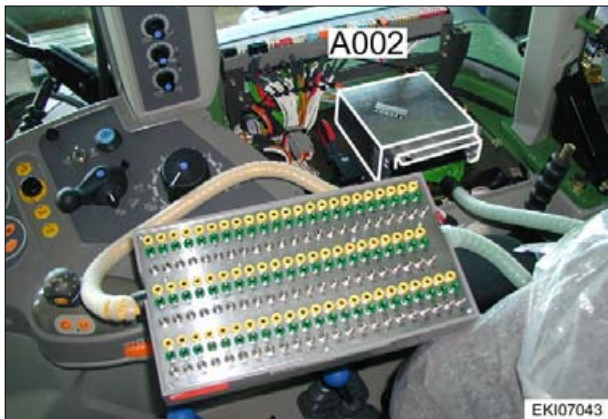
Connect adapter cable X 899.980.246.201 only to Y009 - solenoid valve

Test	Pin	Specified value	Condition	Remark
Resistance	1	7.3 ohms	20°C solenoid temperature	Reading: +/- 15 %
	2			

Date	Version	Page	Y009 - solenoid valve, 4WD	Capitel	Index	Docu-No.
01.06.2006	a	4/5		9000	E	000372

Fendt 300 Vario	Electrics / General system Y009 - solenoid valve, 4WD	E
------------------------	--	----------

Measuring power consumption (ampere) and voltage (volt)



Note:

Set measuring range of the multimeter

Connect e-adapter box X 899.980.208.100 directly to A002 - ECU, enhanced control.

Measuring voltage (Volt):

Measure pin 64 and pin 55 (ground) on the A002 - ECU, enhanced control

Ignition ON and start engine
4WD engaged

Measuring power consumption (ampere):

Open pin 64 and measure with multimeter (ampere).

Ignition ON and start engine
4WD engaged

The 4WD is disengaged using oil pressure				
Solenoid valve	Switch position	U	I	R
		[VDC]	[ADC]	[ohm]
Y009 - solenoid valve, 4WD	ON / OFF	0 / 14	approx. 1.7	7.3

Note:

All readings +/- 10%

Functional description: digital output

The **A002 - ECU, enhanced control** supplies a voltage for energising the solenoid valves: of **0 VDC or 14 VDC (black - white)** circuit

If there is a mechanical or electrical fault in the component or cable harness, the component is energised briefly, then the A002 - ECU, enhanced control detects the fault and switches the voltage off.

Date	Version	Page	Capitel	Index	Docu-No.
01.06.2006	a	5/5	Y009 - solenoid valve, 4WD	9000	E 000372

Fendt 300 Vario

Electrics / General system

Y010 - solenoid valve, differential lock

E

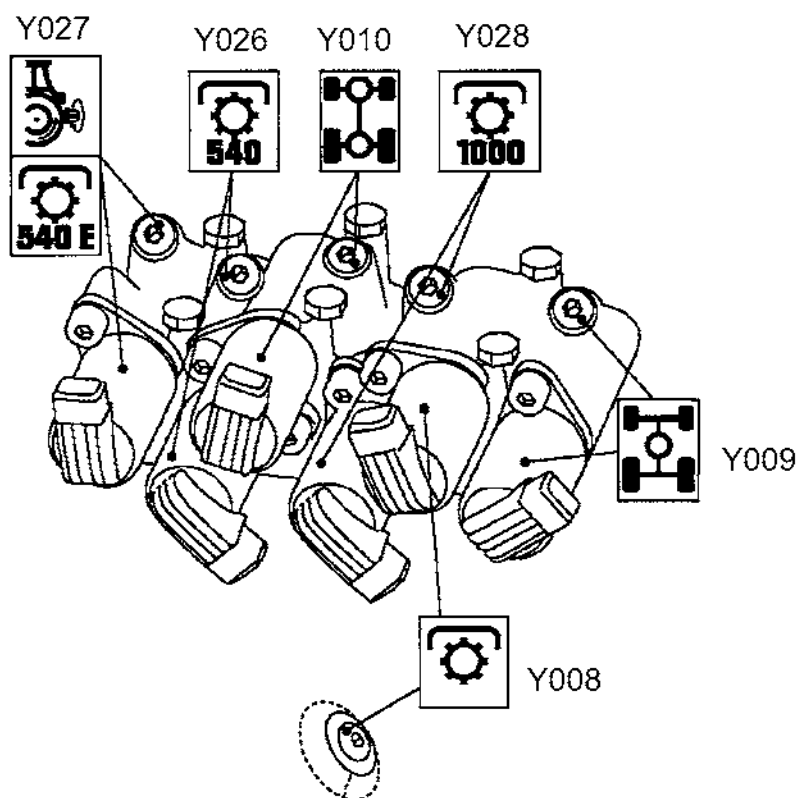
EKI07689

Y010 = Solenoid valve, differential lock (rear)

On right side of tractor on valve block for
the enhanced control hydraulics



Remove right rear wheel, remove metal
guard



EKI07687

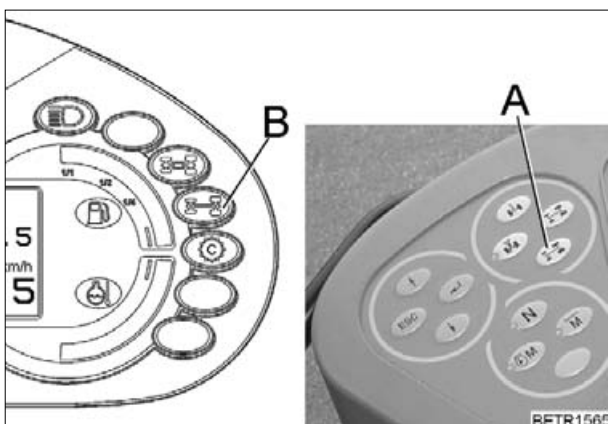
Date	Version	Page	Y010 - solenoid valve, differential lock	Capitel	Index	Docu-No.
01.06.2006	a	1/5		9000	E	000373

Fendt 300 Vario

Electrics / General system
Y010 - solenoid valve, differential lock

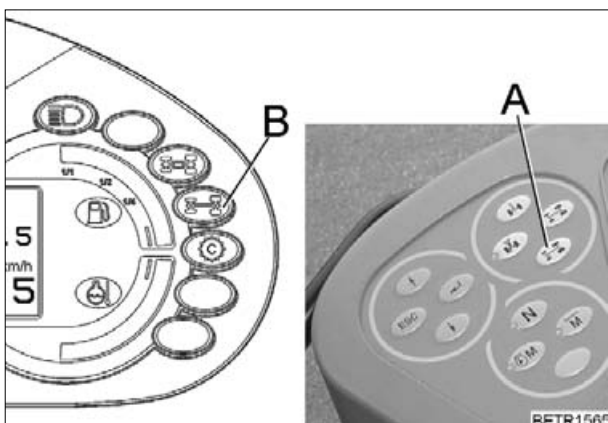
E**Note:**

Testing the diff. lock selector:
 Chapter 9000 Reg. E - A036 - Measuring and testing A036 - control panel, enhanced controls



Differential lock

- A** = Differential lock clutch key (100% engaged)
B = Differential lock indicator lamp

**To disengage the differential lock:**

Press key (A) , the indicator lamp (B) goes out.

Date	Version	Page	Y010 - solenoid valve, differential lock	Capitel	Index	Docu-No.
01.06.2006	a	2/5		9000	E	000373

Fendt 300 Vario

Electrics / General system

Y010 - solenoid valve, differential lock

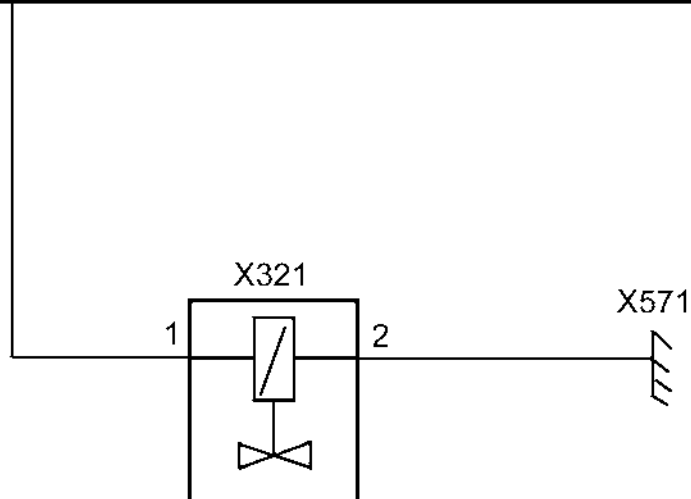
E

A002 - ECU, enhanced control

solenoid valve, differential lock

X031

63



Y010 - solenoid valve, differential lock

E07560en

Item	Designation	Remark
A002	ECU, enhanced control	
X031	Separation point on A002	
Pin 63	Actuation for the Y010 - solenoid valve	
Y010	Solenoid valve, differential lock	
X321	Separation point on Y010 - solenoid valve	
X571	Grounding point	

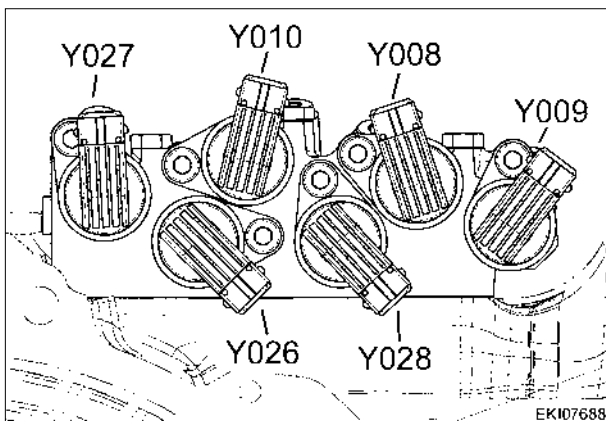
Fendt 300 Vario

Electrics / General system
Y010 - solenoid valve, differential lock

E

**Measuring points on the A002 - ECU
 (X031-separation point)**

Pin	Function
63	Actuation for the Y010 - solenoid valve



**Measuring points on Y010 - solenoid valve
 (X321 - separation point)**

Pin	Function
1	Actuation for the Y010 - solenoid valve
2	Ground

Measure resistance (ohm)

Note:

Ignition 'OFF'

Connect adapter cable X 899.980.246.201 only to Y010 - solenoid valve

Test	Pin	Specified value	Condition	Remark
Resistance	1	7.3 ohms	20°C solenoid temperature	Reading: +/- 15 %
	2			

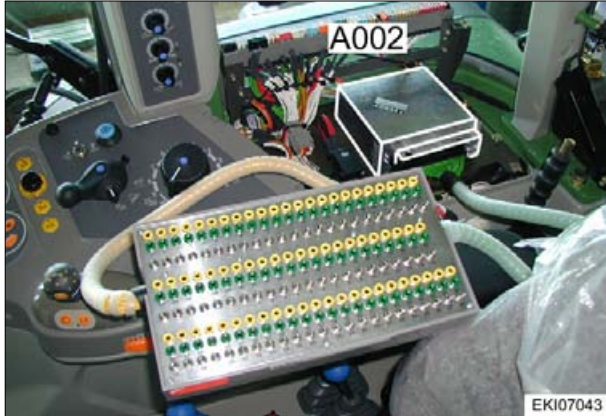
Date	Version	Page	Y010 - solenoid valve, differential lock	Capitel	Index	Docu-No.
01.06.2006	a	4/5		9000	E	000373

Fendt 300 Vario

Electrics / General system
Y010 - solenoid valve, differential lock

E

Measuring power consumption (ampere) and voltage (volt)

**Note:****Set measuring range of the multimeter**

Connect e-adapter box X 899.980.208.100 directly to A002 - ECU, enhanced control.

Measuring voltage (volt):

Measure pin 63 and pin 55 (ground) on the A002 - ECU, enhanced control

Ignition ON and start engine

Engage diff. lock

Measuring power consumption (ampere):

Open pin **63** and measure with multimeter (ampere).

Ignition ON and start engine

Engage diff. lock

Solenoid valve	Switch position	U	I	R
		[VDC]	[ADC]	[ohm]
Y010 - solenoid valve, diff. lock	ON / OFF	14 / 0	approx. 1.7	7.3

Note:

All readings +/- 10%

Functional description: digital output

The **A002 - ECU, enhanced control** supplies a voltage for energising the solenoid valves: of **0 VDC or 14 VDC (black - white)** circuit

If there is a mechanical or electrical fault in the component or cable harness, the component is energised briefly, then the A002 - ECU, enhanced control detects the fault and switches the voltage off.

Fendt 300 Vario

Electrics / General system
Y011 - solenoid valve, front PTO clutch

E

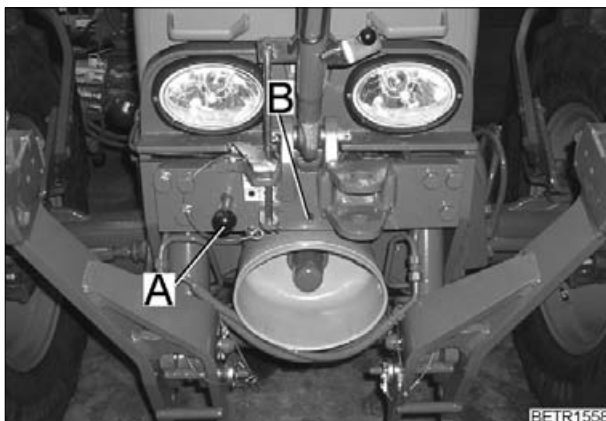
Y011 = Solenoid valve, front PTO clutch
 On front PTO transmission



Remove front plate

**Note:**

Testing front PTO engagement see:
 Chapter 9000 Reg. E - A036 - Measuring and
 testing A036 - control panel, enhanced
 controls

**Engage seasonal disconnect:**

Switch engine off.

Pull lever (A) forwards.

Direction of rotation of front PTO = clockwise,
 looking in direction of travel.

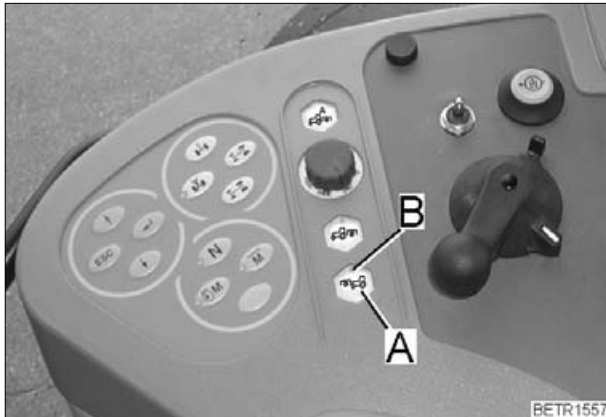
Note:

If the seasonal disconnect can not be enabled
 (tooth on tooth), turn gearwheels using a
 screwdriver through opening (B).

Date	Version	Page	Y011 - solenoid valve, front PTO clutch	Capitel	Index	Docu-No.
01.06.2006	a	1/5		9000	E	000374

Fendt 300 Vario

Electrics / General system
Y011 - solenoid valve, front PTO clutch

E**Front PTO****A** = Front PTO clutch key**B** = LED front PTO clutch

If the front PTO is engaged, LED (B) is lit

The engagement process is dependent on the actuation time of the key (A)

less than 5 seconds

- Gentle start-up. The PTO clutch automatically adapts to the implement requirements

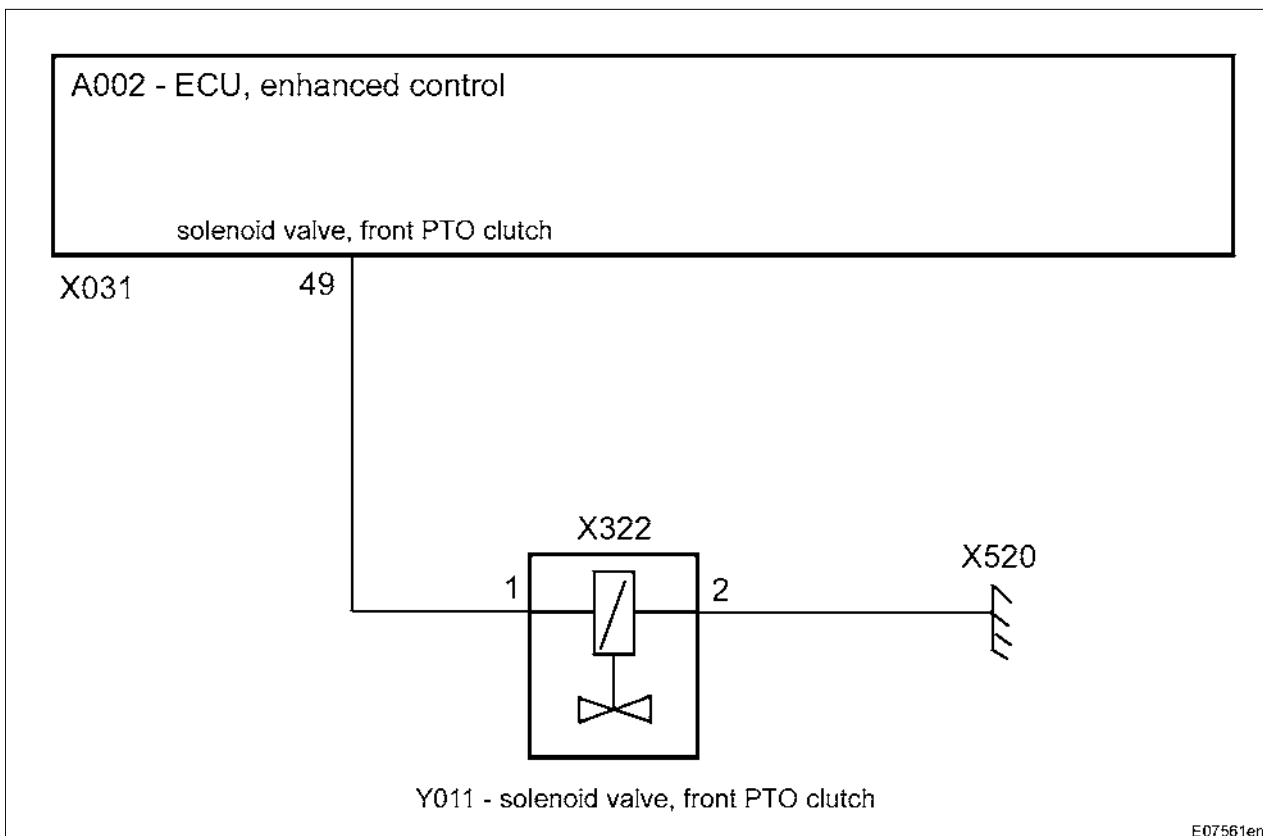
more than 5 seconds

- Speed and fault monitor are skipped

Date	Version	Page	Y011 - solenoid valve, front PTO clutch	Capitel	Index	Docu-No.
01.06.2006	a	2/5		9000	E	000374

Fendt 300 Vario

Electrics / General system
Y011 - solenoid valve, front PTO clutch

E

Item	Designation	Remark
A002	ECU, enhanced control	
X031	Separation point on A002	
Pin 49	Actuation for the Y011 - solenoid valve	
Y011	Solenoid valve, front PTO clutch	
X322	Separation point on Y010 - solenoid valve	
X520	Grounding point	

Fendt 300 Vario	Electrics / General system Y011 - solenoid valve, front PTO clutch	E
------------------------	---	----------



Measuring points on the A002 - ECU (X031-separation point)	
Pin	Function
49	Actuation for the Y011 - solenoid valve



Measuring points on Y011 - solenoid valve (X322 - separation point)	
Pin	Function
1	Actuation for the Y011 - solenoid valve
2	Ground

Measure resistance (ohm)

Note:

Ignition 'OFF'

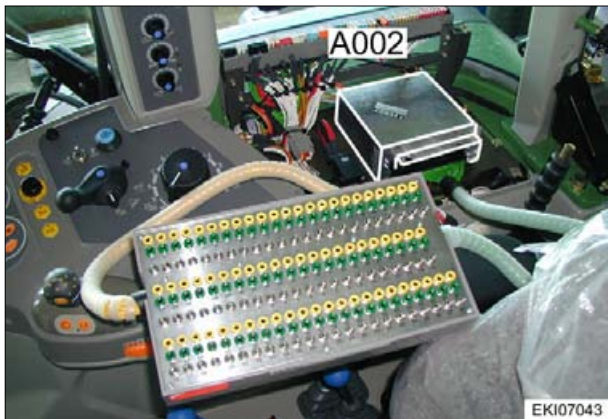
Connect adapter cable X 899.980.246.201 only to Y011 - solenoid valve

Test	Pin	Specified value	Condition	Remark
Resistance	1	7.9 ohms	20°C solenoid temperature	Reading: +/- 15 %
	2			

Date	Version	Page	Y011 - solenoid valve, front PTO clutch	Capitel	Index	Docu-No.
01.06.2006	a	4/5		9000	E	000374

Fendt 300 Vario	Electrics / General system Y011 - solenoid valve, front PTO clutch	E
------------------------	---	----------

Measuring power consumption (ampere) and voltage (volt)



Note:

Set measuring range of the multimeter

Connect e-adapter box X 899.980.208.100 directly to A002 - ECU, enhanced control.

Measuring voltage (volt):

Measure pin 49 and pin 55 (ground) on the A002 - ECU, enhanced control

Ignition ON and start engine

Engage front PTO

Measuring power consumption (ampere):

Open pin 49 and measure with multimeter (ampere).

Ignition ON and start engine

Engage front PTO

Solenoid valve	Switch position	U [VDC]	I [ADC]	R [ohm]
Y011 - solenoid valve, front PTO clutch	ON / OFF	14 / 0	approx. 1.75	7.9

Note:

All readings +/- 10%

Functional description: Pulse Width Modulation (PWM)

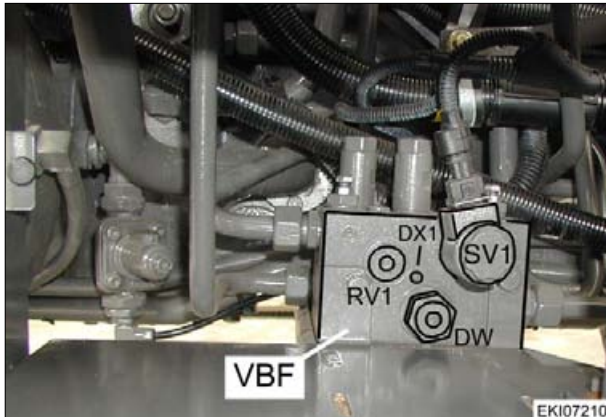
The **A002 - ECU, enhanced control** supplies a voltage for energising the solenoid valves of **0 VDC or 14 VDC**.

The **increase in voltage to 14 VDC** or the **voltage switch-off to 0 VDC** is **controlled** (proportional) In the event of a mechanical or electrical fault in the component or cable harness, the component is briefly energised, then the **A002 - ECU, enhanced control** detects the fault and switches the voltage off.

Date	Version	Page	Capitel	Index	Docu-No.
01.06.2006	a	5/5	Y011 - solenoid valve, front PTO clutch	9000	E 000374

Fendt 300 Vario

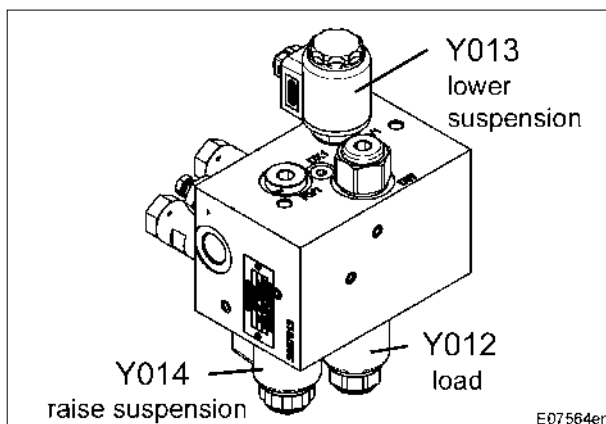
Electrics / General system
Y012 - solenoid valve, load

E

VBF = Front axle suspension valve block
 On the right side of the transmission



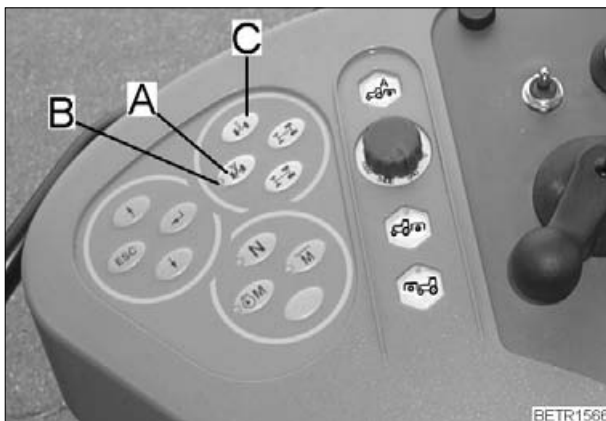
Remove tool box



Y012 = Solenoid valve, 'load'

Y013 = Solenoid valve, lower suspension

Y014 = Solenoid valve, raise suspension



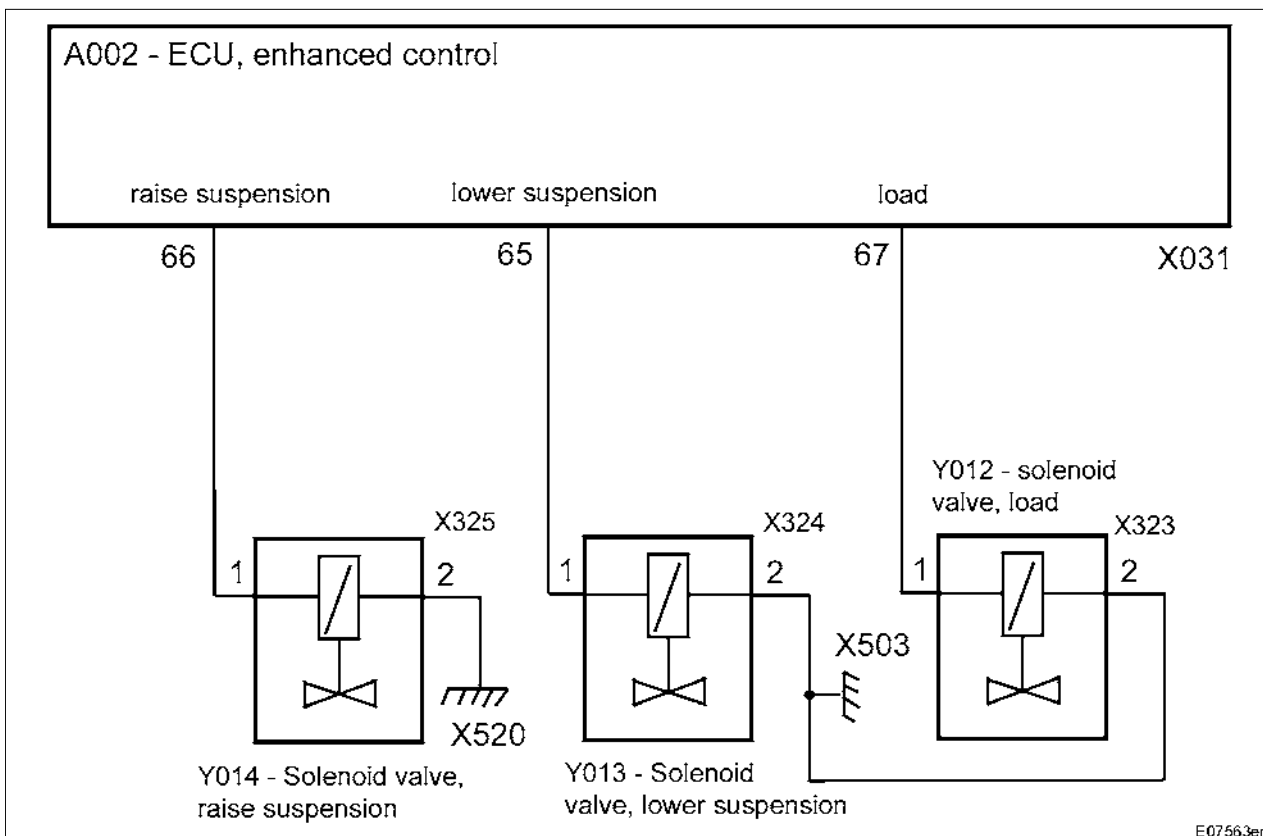
When actuating the front axle suspension
 (Y014 - solenoid valve, raise or Y013 - solenoid valve, lower) the **Y012 - solenoid valve, load is energised.**

A = Lower suspension key ("lock")

B = LED lower suspension ('lock')

C = Raise suspension key ("suspension ON")

Date	Version	Page	Capitel	Index	Docu-No.
02.06.2006	a	1/4	9000	E	000375

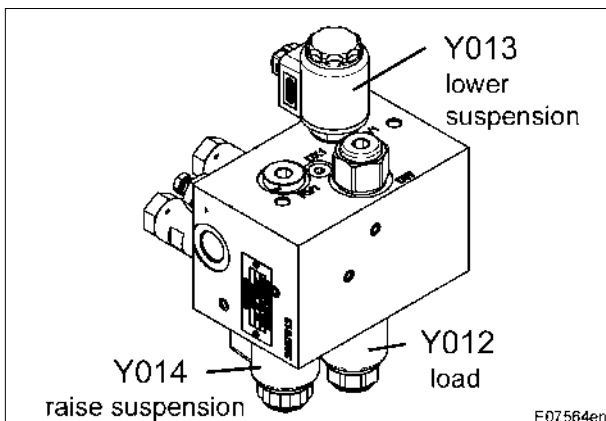
Fendt 300 Vario
Electrics / General system
Y012 - solenoid valve, load
E

Item	Designation	Remark
A002	ECU, enhanced control	
X031	Separation point on A002	
Pin 65 "lower suspension"	Actuation for the Y013 - solenoid valve	
Pin 66 'raise suspension'	Actuation for the Y014 - solenoid valve	
Pin 67 "load"	Actuation for the Y012 - solenoid valve	
Y012	Solenoid valve, 'load'	
X323	Separation point on Y012 - solenoid valve	
Y013	Solenoid valve, lower suspension	when lowering the suspension, Y013 and Y012 are energised
X324	Separation point on Y013 - solenoid valve	
Y014	Solenoid valve, raise suspension	when raising the suspension, Y014 and Y012 are energised
X325	Separation point on Y014 - solenoid valve	
X503	Grounding point	
X520	Grounding point	

Date	Version	Page	Capitel	Index	Docu-No.
02.06.2006	a	2/4	Y012 - solenoid valve, load	9000	E
					000375

Fendt 300 Vario**Electrics / General system
Y012 - solenoid valve, load****E****Measuring points on the A002 - ECU
(X031-separation point)**

Pin	Function
65	Actuation for the Y013 - solenoid valve, suspension lower
66	Actuation for the Y014 - solenoid valve, suspension raise
67	Actuation for the Y012 - solenoid valve, Laden

**Measuring points on Y012 - solenoid valve
(X323 - separation point)**

Pin	Function
1	Actuation for the Y012 - solenoid valve
2	Ground

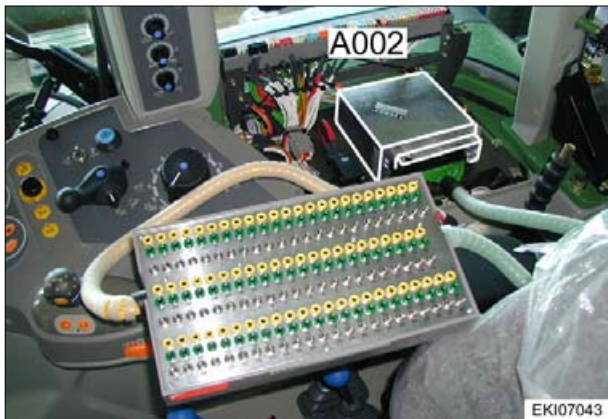
Measure resistance (ohm)**Note:****Ignition 'OFF'****Connect adapter cable X 899.980.246.201 only to Y012 - solenoid valve**

Test	Pin	Specified value	Condition	Remark
Resistance	1	8.1 ohms	20°C solenoid temperature	Reading: +/- 15 %
	2			

Date	Version	Page	Y012 - solenoid valve, load	Capitel	Index	Docu-No.
02.06.2006	a	3/4		9000	E	000375

Fendt 300 Vario	Electrics / General system Y012 - solenoid valve, load	E
------------------------	--	----------

Measuring power consumption (ampere) and voltage (volt)



Note:

Set measuring range of the multimeter

Connect e-adapter box X 899.980.208.100 directly to A002 - ECU, enhanced control.

Measuring voltage (volt):

Measure pin 67 and pin 55 (ground) on the A002 - ECU, enhanced control

Ignition ON and start engine

Raising or lowering the front axle suspension

Measuring power consumption (ampere):

Open pin **67** and measure with multimeter (ampere).

Ignition ON and start engine

Raising or lowering the front axle suspension

Solenoid valve	Switch position	U [VDC]	I [ADC]	R [ohm]
Y012 - solenoid valve, load	Suspension ON or suspension locked	0	0	8.1
Y012 - solenoid valve, load	Raise suspension or lower suspension	14	approx. 1.6	8.1

Note:

All readings +/- 10%

Functional description: digital output

The **A002 - ECU, enhanced control** supplies a voltage for energising the solenoid valves: of **0 VDC or 14 VDC (black - white)** circuit

If there is a mechanical or electrical fault in the component or cable harness, the component is energised briefly, then the A002 - ECU, enhanced control detects the fault and switches the voltage off.

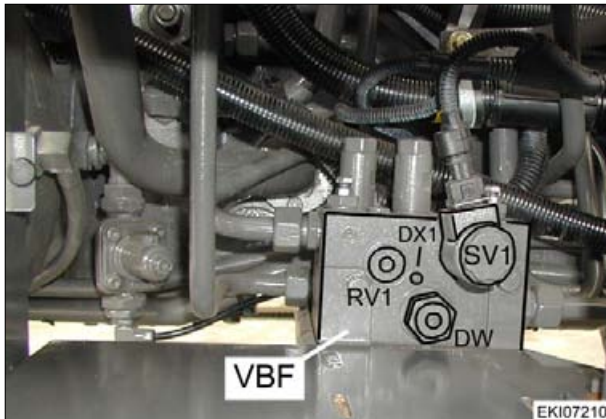
Date	Version	Page	Capitel	Index	Docu-No.
02.06.2006	a	4/4	9000	E	000375

Fendt 300 Vario

Electrics / General system
Y013 - Solenoid valve, lower suspension

E**Danger:**

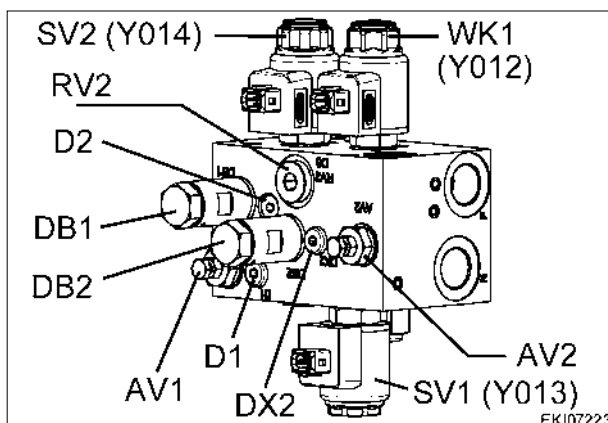
The front axle suspension hydraulic are under pressure (200 bar) (even when locked)
 The system must be depressurised before beginning work on the hydraulics!!
 To do this, open stopcocks V1 and AV2 anti-clockwise. (the front axle may lower)



VBF = Front axle suspension valve block
 On the right side of the transmission



Remove tool box



AV1 = Front axle suspension pressure relief (piston side)

AV2 = Front axle suspension pressure relief (piston rod side)

SV1 (Y013) = Solenoid valve, front axle suspension lower 'lock'

SV2 (Y014) = Solenoid valve, front axle suspension raise

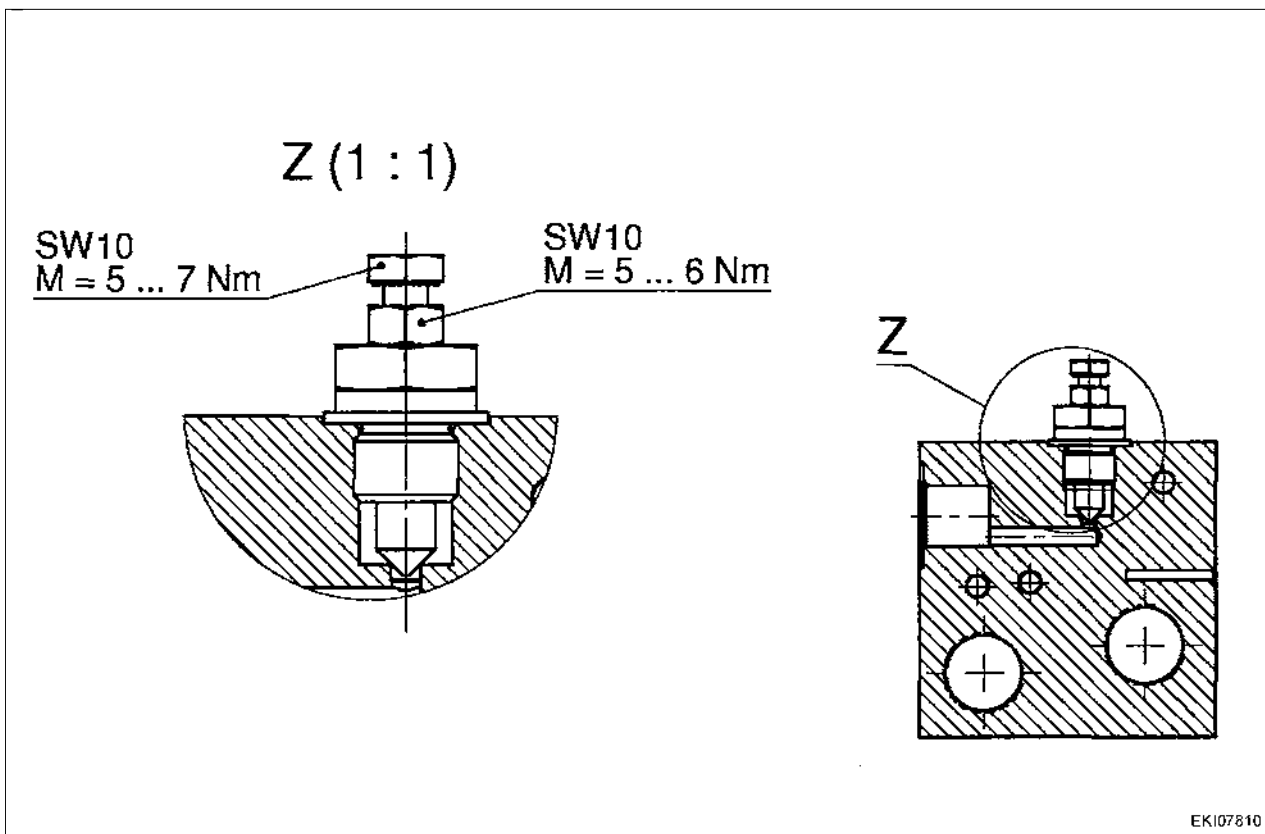
WK1 (Y012) = Solenoid valve, front axle suspension load

Date	Version	Page	Capitel	Index	Docu-No.
02.06.2006	a	1/6	Y013 - Solenoid valve, lower suspension	9000	E
					000376

Fendt 300 Vario

Electrics / General system
Y013 - Solenoid valve, lower suspension

E

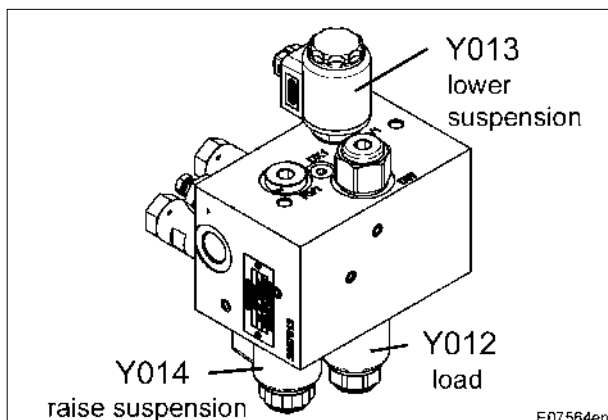
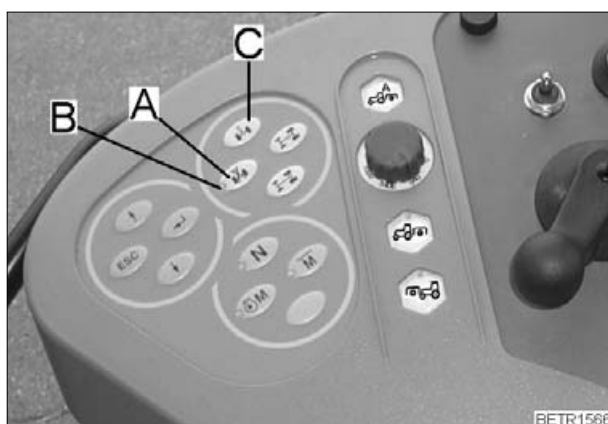


Date	Version	Page	Y013 - Solenoid valve, lower suspension	Capitel	Index	Docu-No.
02.06.2006	a	2/6		9000	E	000376

Fendt 300 Vario

Electrics / General system

Y013 - Solenoid valve, lower suspension

E**Y012** = Solenoid valve, 'load'**Y013** = Solenoid valve, lower suspension**Y014** = Solenoid valve, raise suspension**When actuating the front axle suspension**

(Y014 - solenoid valve, raise or Y013 - solenoid valve, lower) the **Y012 - solenoid valve, load is energised.**

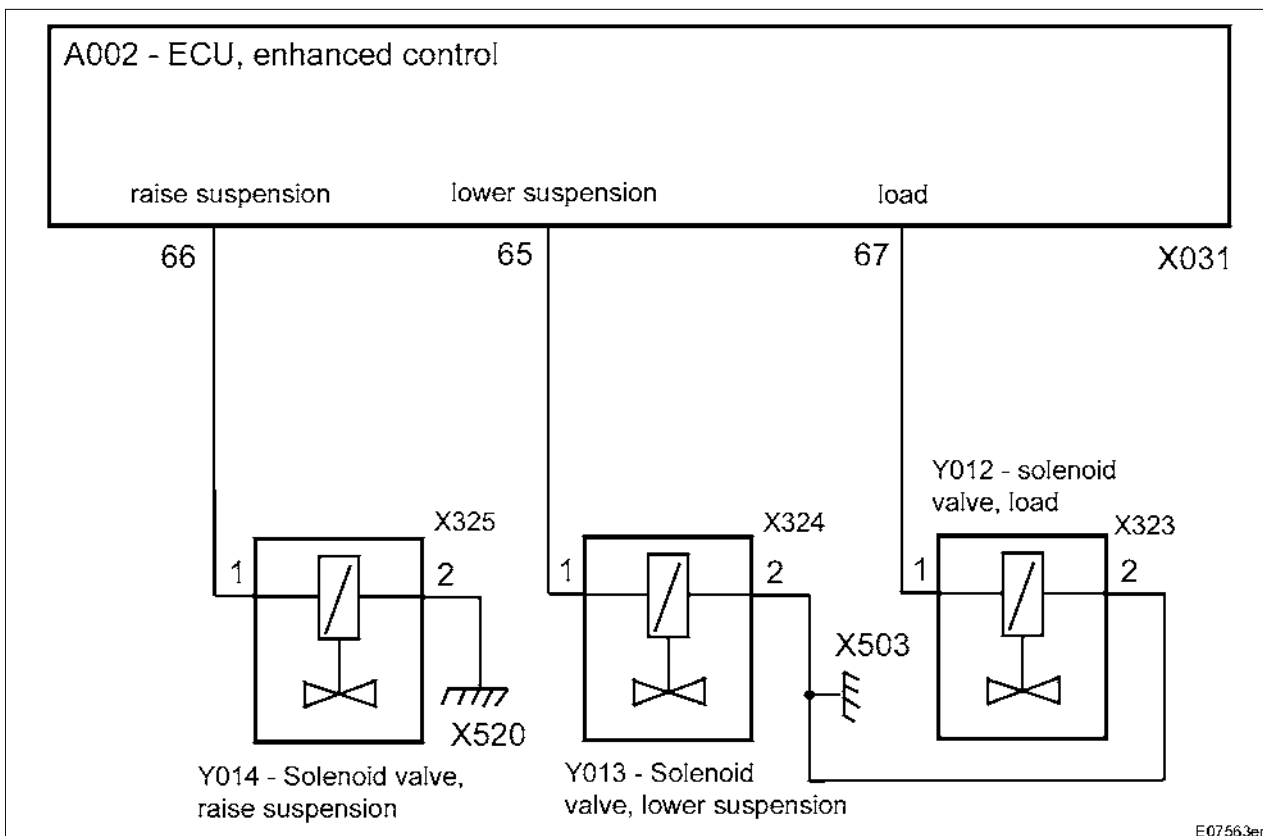
A = Lower suspension key ('lock')**B** = LED lower suspension ('lock')**C** = Raise suspension ('suspension ON')

Date	Version	Page	Capitel	Index	Docu-No.
02.06.2006	a	3/6	Y013 - Solenoid valve, lower suspension	9000	E
					000376

Fendt 300 Vario

Electrics / General system

Y013 - Solenoid valve, lower suspension

E

Item	Designation	Remark
A002	ECU, enhanced control	
X031	Separation point on A002	
Pin 65 'lower suspension'	Actuation for the Y013 - solenoid valve	
Pin 66 'raise suspension'	Actuation for the Y014 - solenoid valve	
Pin 67 'load'	Actuation for the Y012 - solenoid valve	
Y012	Solenoid valve, 'load'	
X323	Separation point on Y012 - solenoid valve	
Y013	Solenoid valve, lower suspension	when lowering the suspension, Y013 and Y012 are energised
X324	Separation point on Y013 - solenoid valve	
Y014	Solenoid valve, raise suspension	when raising the suspension, Y014 and Y012 are energised
X325	Separation point on Y014 - solenoid valve	
X503	Grounding point	
X520	Grounding point	

Date	Version	Page	Capitel	Index	Docu-No.
02.06.2006	a	4/6	Y013 - Solenoid valve, lower suspension	9000	E 000376

Fendt 300 Vario

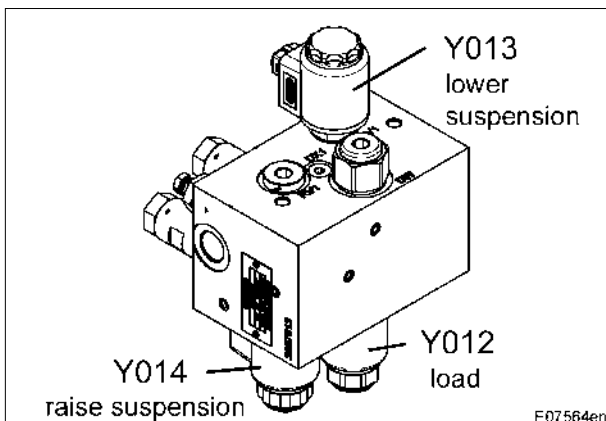
Electrics / General system

Y013 - Solenoid valve, lower suspension

E

**Measuring points on the A002 - ECU
(X031-separation point)**

Pin	Function
65	Actuation for the Y013 - solenoid valve, suspension lower
66	Actuation for the Y014 - solenoid valve, suspension raise
67	Actuation for the Y012 - solenoid valve, Laden



**Measuring points on Y013 - solenoid valve
(X323 - separation point)**

Pin	Function
1	Actuation for the Y013 - solenoid valve
2	Ground

Measure resistance (ohm)

Note:

Ignition 'OFF'

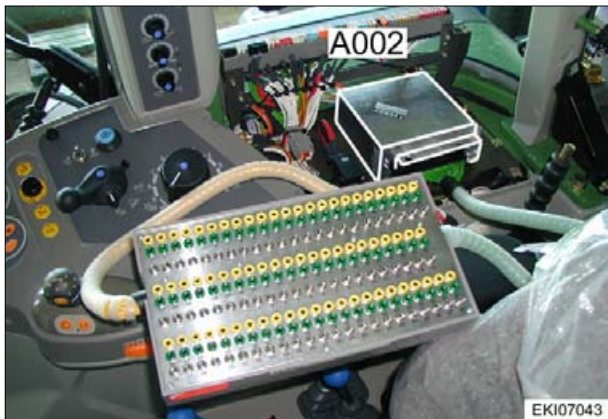
Connect adapter cable X 899.980.246.201 only to Y013 - solenoid valve

Test	Pin	Specified value	Condition	Remark
Resistance	1	8.1 ohms	20°C solenoid temperature	Reading: +/- 15 %
	2			

Date	Version	Page	Y013 - Solenoid valve, lower suspension	Capitel	Index	Docu-No.
02.06.2006	a	5/6		9000	E	000376

Fendt 300 Vario	Electrics / General system Y013 - Solenoid valve, lower suspension	E
------------------------	---	----------

Measuring power consumption (ampere) and voltage (volt)



Note:

Set measuring range of the multimeter

Connect e-adapter box X 899.980.208.100 directly to A002 - ECU, enhanced control.

Measuring voltage (volt):

Measure pin 65 and pin 55 (ground) on the A002 - ECU, enhanced control

Ignition ON and start engine

Lower front axle suspension

Measuring power consumption (ampere):

Open pin 65 and measure with multimeter (ampere).

Ignition ON and start engine

Lower front axle suspension

Solenoid valve	Switch position	U	I	R
		[VDC]	[ADC]	[ohm]
Y013 - Solenoid valve, 'lower'	Suspension ON or suspension locked	0	0	8.1
Y013 - Solenoid valve, 'lower'	Suspension lowering	14	approx. 1.6	8.1

Note:

All readings +/- 10%

Functional description: digital output

The **A002 - ECU, enhanced control** supplies a voltage for energising the solenoid valves: of **0 VDC or 14 VDC (black - white)** circuit

If there is a mechanical or electrical fault in the component or cable harness, the component is energised briefly, then the A002 - ECU, enhanced control detects the fault and switches the voltage off.

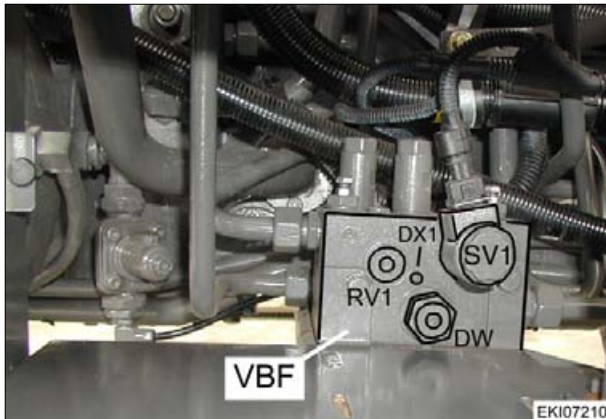
Date	Version	Page		Capitel	Index	Docu-No.
02.06.2006	a	6/6	Y013 - Solenoid valve, lower suspension	9000	E	000376

Fendt 300 Vario

Electrics / General system
Y014 - solenoid valve, raise suspension

E**Danger:**

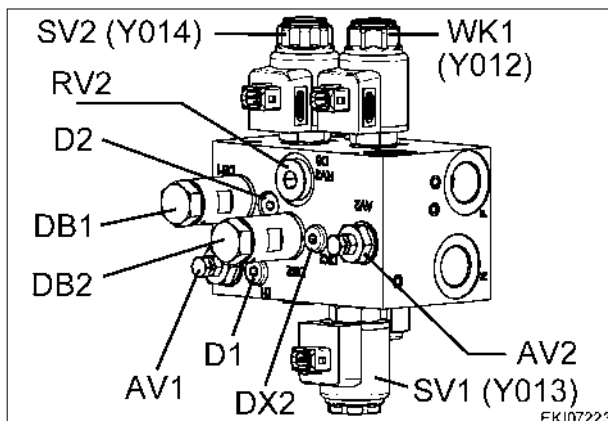
The front axle suspension hydraulic are under pressure (200 bar) (even when locked)
 The system must be depressurised before beginning work on the hydraulics!!
 To do this, open stopcocks AV1 and AV2 anti-clockwise. (the front axle may lower)



VBF = Front axle suspension valve block
 On the right side of the transmission



Remove tool box



AV1 = Front axle suspension pressure relief (piston side)

AV2 = Front axle suspension pressure relief (piston rod side)

SV1 (Y013) = Solenoid valve, front axle suspension lower 'lock'

SV2 (Y014) = Solenoid valve, front axle suspension raise

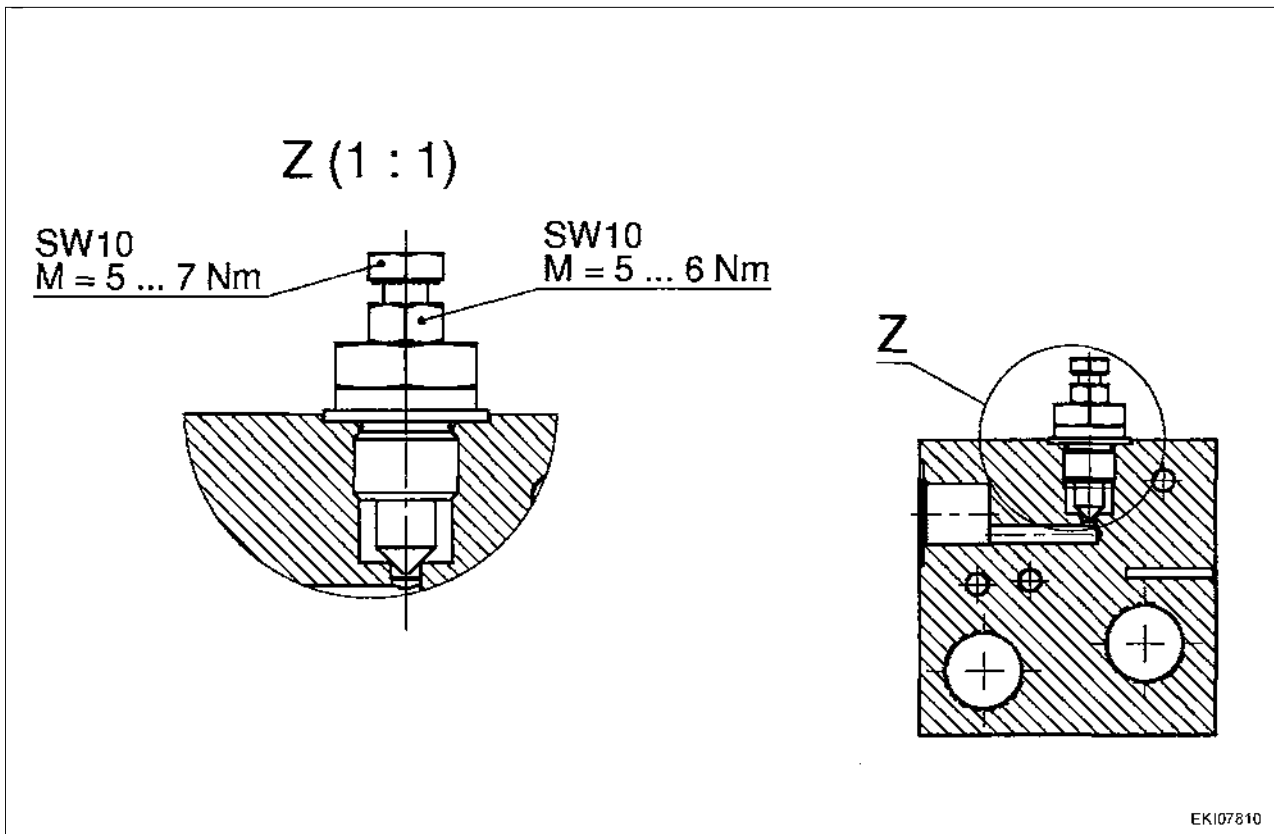
WK1 (Y012) = Solenoid valve, front axle suspension load

Date	Version	Page	Y014 - solenoid valve, raise suspension	Capitel	Index	Docu-No.
02.06.2006	a	1/6		9000	E	000377

Fendt 300 Vario

Electrics / General system
Y014 - solenoid valve, raise suspension

E

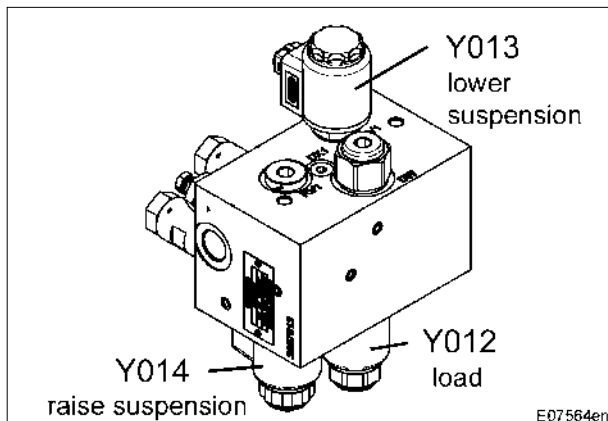
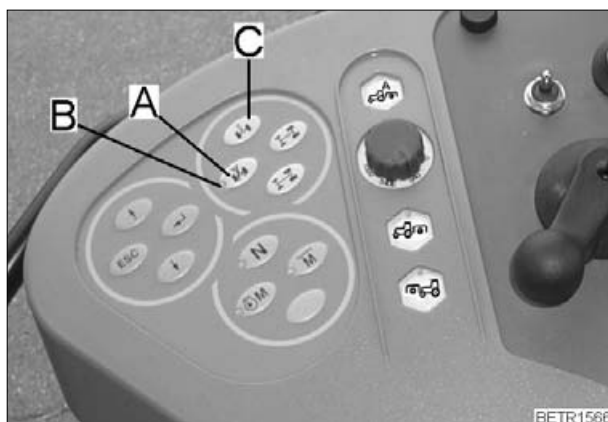


Date	Version	Page	Y014 - solenoid valve, raise suspension	Capitel	Index	Docu-No.
02.06.2006	a	2/6		9000	E	000377

Fendt 300 Vario

Electrics / General system

Y014 - solenoid valve, raise suspension

E**Y012** = Solenoid valve, 'load'**Y013** = Solenoid valve, lower suspension**Y014** = Solenoid valve, raise suspension

When actuating the front axle suspension
 (Y014 - solenoid valve, raise or Y013 - solenoid valve, lower) the **Y012 - solenoid valve, load is energised.**

A = Lower suspension key ('lock')**B** = LED lower suspension ('lock')**C** = Raise suspension key ('suspension ON')

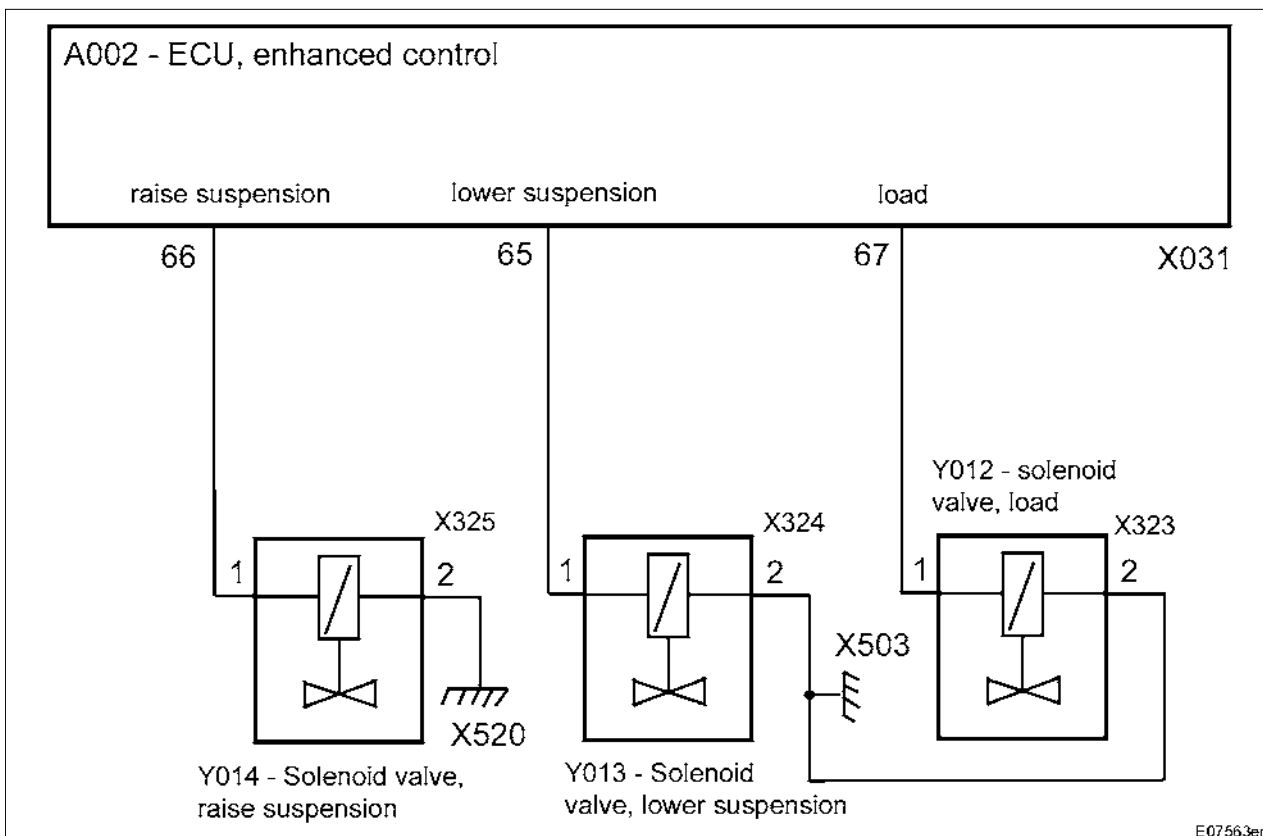
Date	Version	Page	Capitel	Index	Docu-No.
02.06.2006	a	3/6	9000	E	000377

Y014 - solenoid valve, raise suspension

Fendt 300 Vario

Electrics / General system

Y014 - solenoid valve, raise suspension

E

Item	Designation	Remark
A002	ECU, enhanced control	
X031	Separation point on A002	
Pin 65 'lower suspension'	Actuation for the Y013 - solenoid valve	
Pin 66 'raise suspension'	Actuation for the Y014 - solenoid valve	
Pin 67 'load'	Actuation for the Y012 - solenoid valve	
Y012	Solenoid valve, 'load'	
X323	Separation point on Y012 - solenoid valve	
Y013	Solenoid valve, lower suspension	when lowering the suspension, Y013 and Y012 are energised
X324	Separation point on Y013 - solenoid valve	
Y014	Solenoid valve, raise suspension	when raising the suspension, Y014 and Y012 are energised
X325	Separation point on Y014 - solenoid valve	
X503	Grounding point	
X520	Grounding point	

Date	Version	Page	Y014 - solenoid valve, raise suspension	Capitel	Index	Docu-No.
02.06.2006	a	4/6		9000	E	000377

Fendt 300 Vario

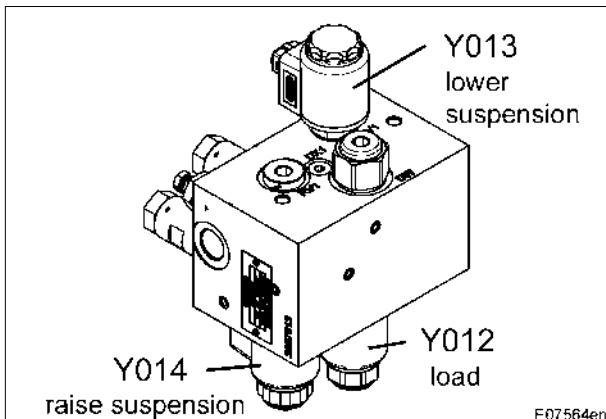
Electrics / General system

Y014 - solenoid valve, raise suspension

E

**Measuring points on the A002 - ECU
(X031-separation point)**

Pin	Function
65	Actuation for the Y013 - solenoid valve, suspension lower
66	Actuation for the Y014 - solenoid valve, suspension raise
67	Actuation for the Y012 - solenoid valve, Laden



**Measuring points on Y014 - solenoid valve
(X325 - separation point)**

Pin	Function
1	Actuation for the Y014 - solenoid valve
2	Ground

Measure resistance (ohm)

Note:

Ignition 'OFF'

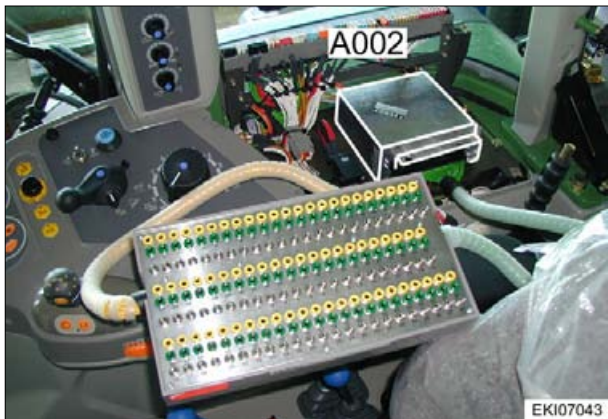
Connect adapter cable X 899.980.246.201 only to Y014 - solenoid valve

Test	Pin	Specified value	Condition	Remark
Resistance	1	8.1 ohms	20°C solenoid temperature	Reading: +/- 15 %
	2			

Date	Version	Page	Y014 - solenoid valve, raise suspension	Capitel	Index	Docu-No.
02.06.2006	a	5/6		9000	E	000377

Fendt 300 Vario	Electrics / General system Y014 - solenoid valve, raise suspension	E
------------------------	---	----------

Measuring power consumption (ampere) and voltage (volt)



Note:

Set measuring range of the multimeter

Connect e-adapter box X 899.980.208.100 directly to A002 - ECU, enhanced control.

Measuring voltage (volt):

Measure pin 66 and pin 55 (ground) on the A002 - ECU, enhanced control

Ignition ON and start engine

Lower front axle suspension

Measuring power consumption (ampere):

Open pin 66 and measure with multimeter (ampere).

Ignition ON and start engine

Lower front axle suspension

Solenoid valve	Switch position	U [VDC]	I [ADC]	R [ohm]
Y014 - Solenoid valve, raise	Suspension ON or suspension locked	0	0	8.1
Y014 - Solenoid valve, raise	Raise suspension	14	approx. 1.6	8.1

Note:

All readings +/- 10%

Functional description: digital output

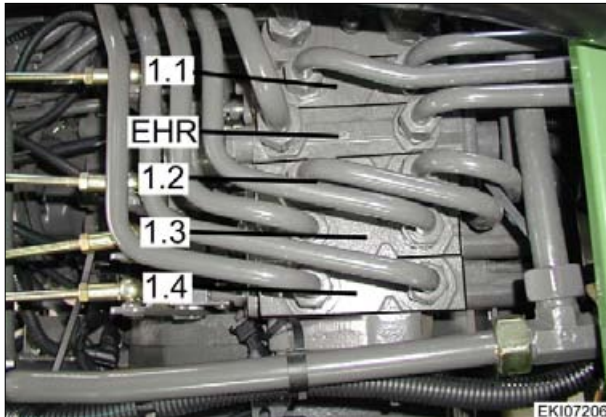
The **A002 - ECU, enhanced control** supplies a voltage for energising the solenoid valves: of **0 VDC or 14 VDC (black - white)** circuit

If there is a mechanical or electrical fault in the component or cable harness, the component is energised briefly, then the A002 - ECU, enhanced control detects the fault and switches the voltage off.

Date	Version	Page	Y014 - solenoid valve, raise suspension	Capitel	Index	Docu-No.
02.06.2006	a	6/6		9000	E	000377

Fendt 300 Vario

Electrics / General system
Y021 / Y022 - solenoid valve, rear power lift raise/lower

E

1.1 = auxiliary control valve "yellow"

1.2 = auxiliary control valve "blue"

1.3 = auxiliary control valve "red"

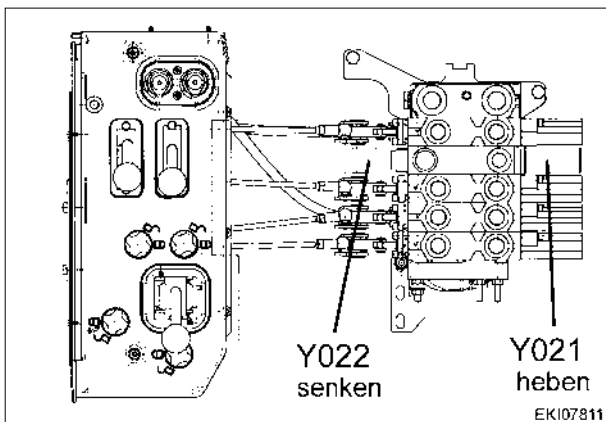
1.4 = auxiliary control valve "green"

EHR = EPC valve

On top of rear axle housing



Lay driver seat floor mat to the side and
 remove the floor panel

**Y021** = Solenoid valve, rear power lift 'raise'**Y022** = Solenoid valve, rear power lift 'lower'**Note:**

**The Y021/Y022 - solenoid valves, raise/lower
 can also be actuated mechanically!**

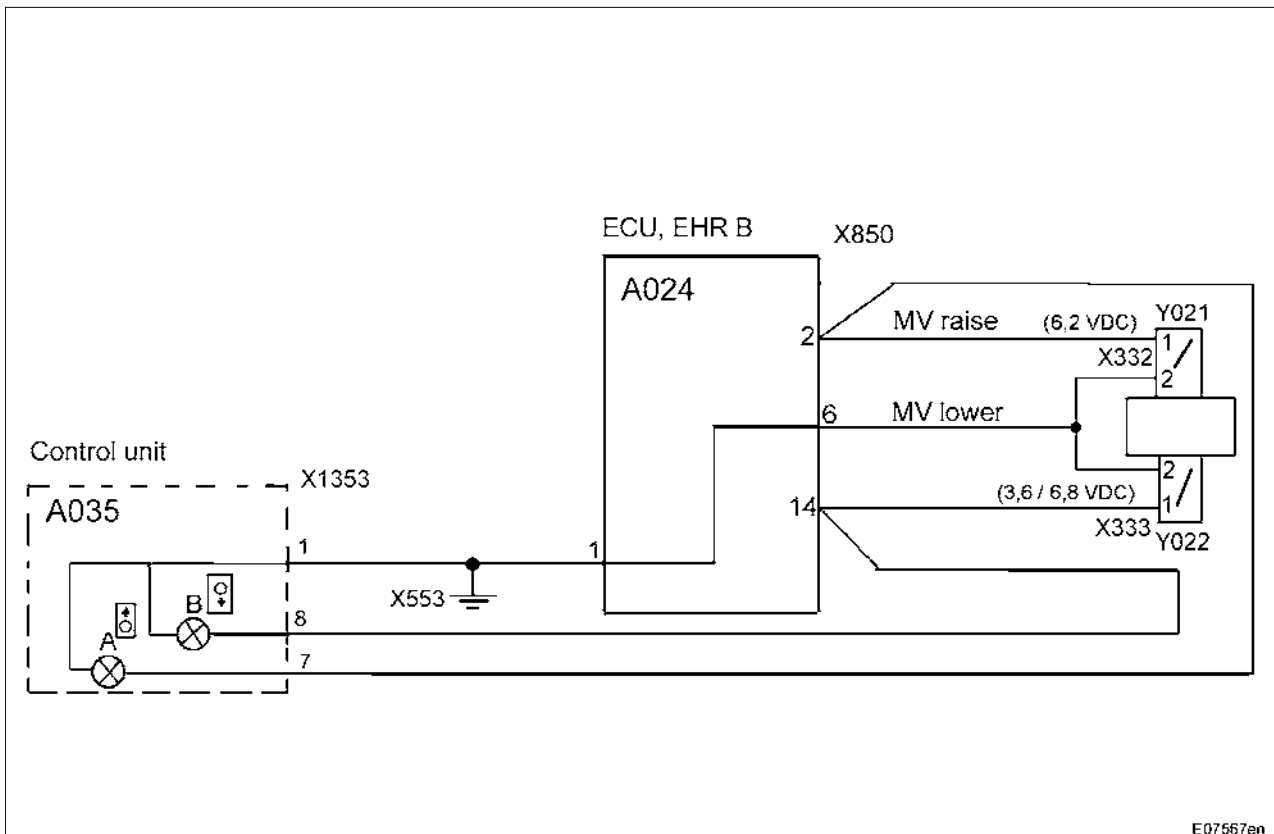
**If the rear power lift raises and lowers when
 mechanically actuated, there is an
 electric/electronic fault.**

**If the rear power lift does not raise and lower
 when mechanically actuated, there is a
 hydraulic fault.**

Fendt 300 Vario

Electrics / General system

Y021 / Y022 - solenoid valve, rear power lift raise/lower

E

Item	Designation	Remark
A024	ECU, EPC B	
X850	Separation point on A024	
Pin 1	Ground Electronic	
Pin 2	Y021 - solenoid valve, rear power lift raise	energised during raising
Pin 6	Sensor system ground	
Pin 14	Y022 - solenoid valve, rear power lift lower	energised during lowering
Y021	Solenoid valve, rear power lift 'raise'	
X332	Separation point on Y021	
Y022	Solenoid valve, rear power lift 'lower'	
X333	Separation point on Y022	
A035	Control unit, EPC B	
X1353	Separation point on A035	
X553	Grounding point	

Date	Version	Page	Capitel	Index	Docu-No.
02.06.2006	a	2/6	Y021 / Y022 - solenoid valve, rear power lift raise/lower	9000	E

000378

Fendt 300 Vario

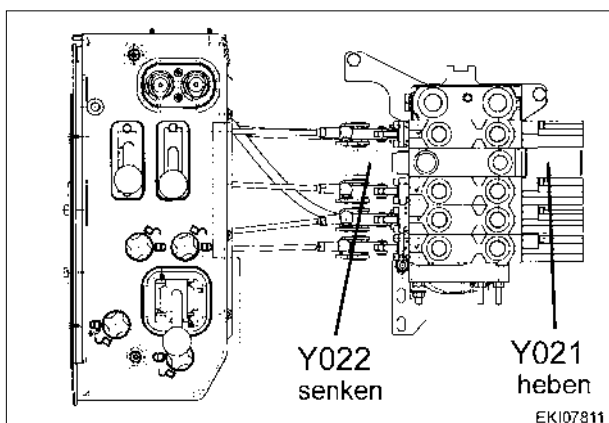
Electrics / General system

Y021 / Y022 - solenoid valve, rear power lift raise/lower

E

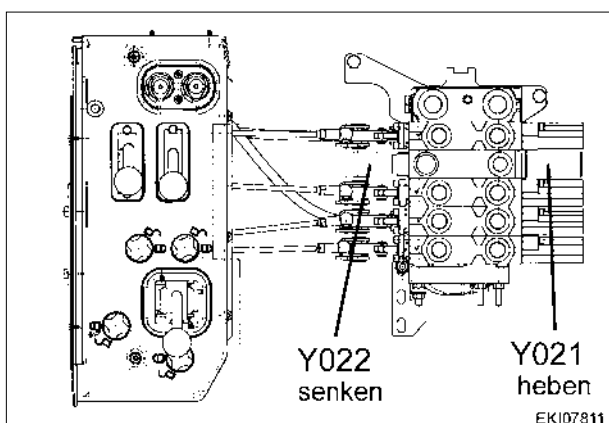
**Measuring points on the A024 - ECU
(X850-separation point)**

Pin	Function
2	Actuation for the Y021 - solenoid valve, rear power lift raise
6	Ground
14	Actuation for the Y022 - solenoid valve, rear power lift lower



Measuring points on Y021 - solenoid valve, rear power lift raise (X332-separation point)

Pin	Function
1	Actuation
2	Ground



Measuring points on Y022 - solenoid valve, rear power lift lower (X333-separation point)

Pin	Function
1	Actuation
2	Ground

Fendt 300 Vario	Electrics / General system Y021 / Y022 - solenoid valve, rear power lift raise/lower	E
------------------------	--	----------

Measure resistance (ohm)**Note:**

Ignition 'OFF'

Connect adapter cable X899.980.208.208 only to Y021 / Y022 - solenoid valve

Y021 - solenoid valve, rear power lift raise

Test	Pin	Specified value	Condition	Remark
Resistance	1	2.2 ohms	20°C solenoid temperature	Reading: +/- 15 %
	2			

Y022 - solenoid valve, rear power lift lower

Test	Pin	Specified value	Condition	Remark
Resistance	1	2.2 ohms	20°C solenoid temperature	Reading: +/- 15 %
	2			

Date	Version	Page		Capitel	Index	Docu-No.
02.06.2006	a	4/6	Y021 / Y022 - solenoid valve, rear power lift raise/lower	9000	E	000378

Fendt 300 Vario	Electrics / General system Y021 / Y022 - solenoid valve, rear power lift raise/lower	E
------------------------	--	----------

Y021 - solenoid valve: measure power consumption (ampere) and voltage (volt)



Note:

Set measuring range of the multimeter

Connect e-adapter box X 899.980.208.100 directly to A024 - ECU, EPC B using adapter cable X 899.980.208.201

Measuring voltage (volt):

Measure pin 2 and pin 1 (ground) on the A024 - ECU, EPC B

Ignition ON and start engine

Raise rear power lift

Measuring power consumption (ampere):

Open pin 2 and measure with multimeter (ampere).

Ignition ON and start engine

Raise rear power lift

Solenoid valve	Switch position	U [VDC]	I [ADC]	R [ohm]
Y021 - solenoid valve, rear power lift raise	Rear power lift not active	0	0	2.2
Y021 - solenoid valve, rear power lift raise	Rear power lift raising	approx. 6.8	approx. 3.2	2.2

Fendt 300 Vario	Electrics / General system Y021 / Y022 - solenoid valve, rear power lift raise/lower	E
------------------------	--	----------

Y022 - solenoid valve: measure power consumption (ampere) and voltage (volt)



Note:

Set measuring range of the multimeter

Connect e-adapter box X 899.980.208.100 directly to A024 - ECU, EPC B using adapter cable X 899.980.208.201

Measuring voltage (volt):

Measure pin 14 and pin 1 (ground) on the A024 - ECU, EPC B

Ignition ON and start engine

Lower rear power lift.

Measuring power consumption (ampere):

Open pin **14** and measure with multimeter (ampere).

Ignition ON and start engine

Lower rear power lift.

Solenoid valve	Switch position	U [VDC]	I [ADC]	R [ohm]
Y022 - solenoid valve, rear power lift lower	Rear power lift not active	0	0	2.2
Y022 - solenoid valve, rear power lift lower	Rear power lift lowering (100% position and lowering throttle on hare)	approx. 6.8	approx. 3.2	2.2
	depends on lowering throttle	0 ... approx. 6.8	0 ... approx. 3.2	2.2
	in floating position	approx. 6.6	approx. 3.0	2.2

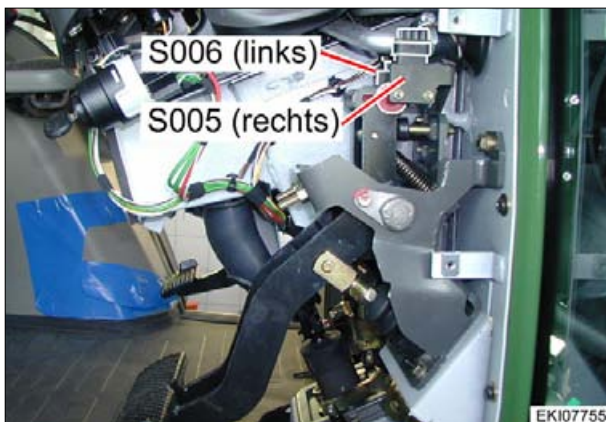
Fendt 300 Vario	Electrics / General system Y023 - solenoid valve, compressed air pilot control	E
------------------------	--	----------



Y023 = Solenoid valve, compressed air pilot control system on left axle point



Remove guard



Note:

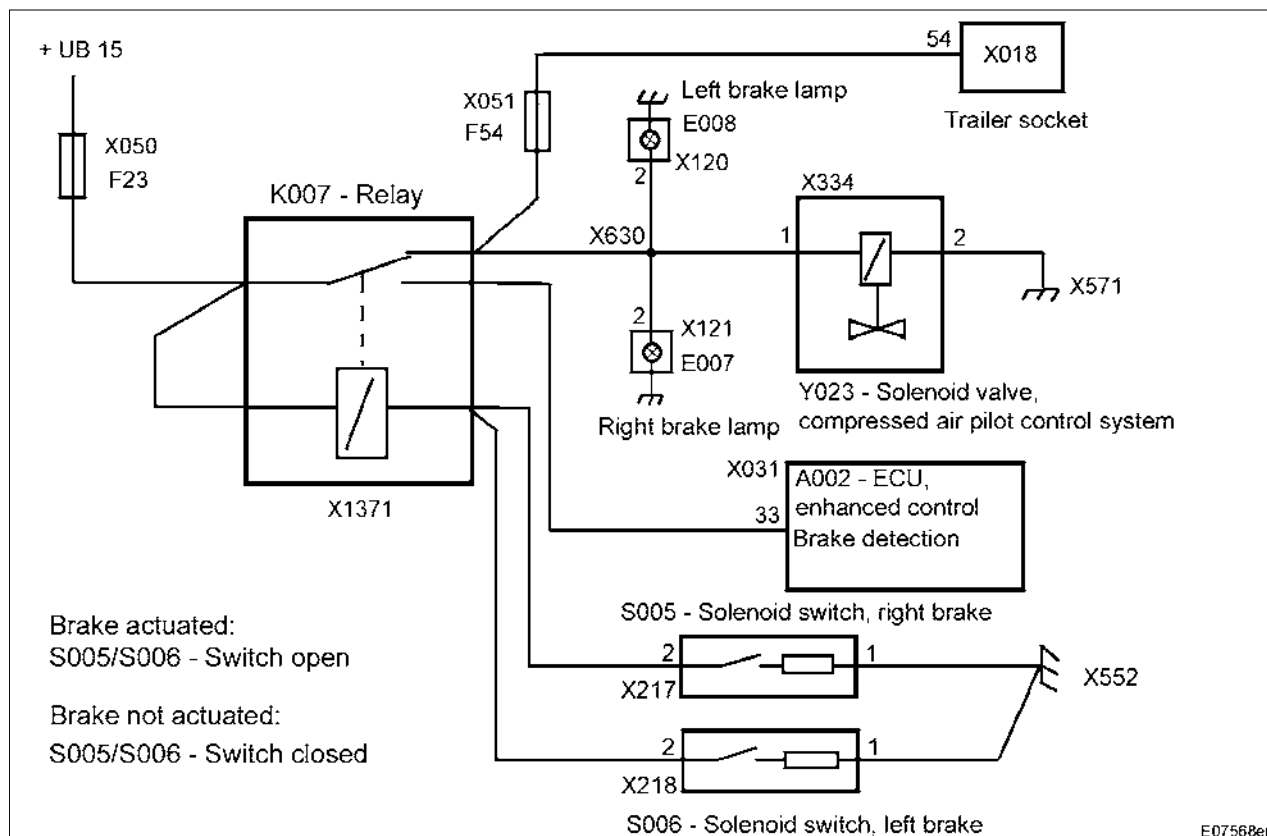
Setting the compressed air pilot control, see: Chapter 9000 Reg. E - S005 / S006 - solenoid switch, brake right / left

Date	Version	Page	Y023 - solenoid valve, compressed air pilot control	Capitel	Index	Docu-No.
03.06.2006	a	1/6		9000	E	000379

Fendt 300 Vario

Electrics / General system

Y023 - solenoid valve, compressed air pilot control

E**Pilot production version (circuit diagram 339.900.000.003)**

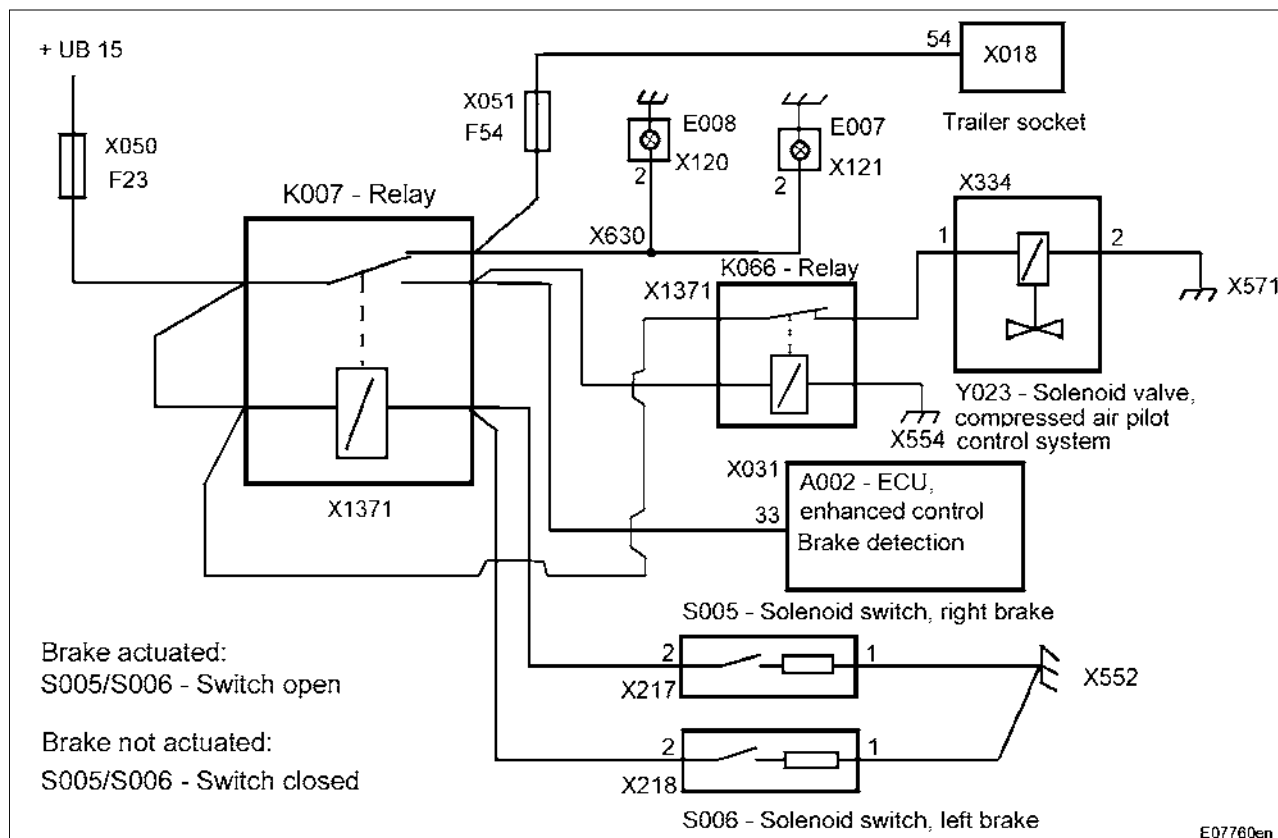
Item	Designation	Remark
A002	ECU, enhanced control	
X031	Separation point on A002	
Pin 33	Brake detection	
E007	Right brake lamp	
X121	Separation point on E007	
E008	Left brake lamp	
X120	Separation point on E008	
K007	Relay, brake	
X1371	Relay base	
S005	Solenoid switch, right brake	
X217	Separation point on S005	
S006	Solenoid switch, left brake	
X218	Separation point on S006	
X018	Trailer socket	
X050	Fuse holder 1	
X051	Fuse holder 2	

Date	Version	Page	Capitel	Index	Docu-No.
03.06.2006	a	2/6	Y023 - solenoid valve, compressed air pilot control	9000	E 000379

Fendt 300 Vario	Electrics / General system Y023 - solenoid valve, compressed air pilot control	E
------------------------	--	----------

Item	Designation	Remark
X552	Grounding point	
X571	Grounding point	
X630	Connector	
Y023	Solenoid valve, compressed air pilot control system	
X334	Separation point on Y023	

Date	Version	Page	Capitel	Index	Docu-No.
03.06.2006	a	3/6	Y023 - solenoid valve, compressed air pilot control	9000	E
					000379

Fendt 300 VarioElectrics / General system
Y023 - solenoid valve, compressed air pilot control**E****Series production version (circuit diagram 339.900.000.004)**

Item	Designation	Remark
A002	ECU, enhanced control	
X031	Separation point on A002	
Pin 33	Brake detection	
E007	Right brake lamp	
X121	Separation point on E007	
E008	Left brake lamp	
X120	Separation point on E008	
K007	Relay, brake	
X1371	Relay base	
K066	Relay, compressed air pilot control	
X1371	Relay base	
S005	Solenoid switch, right brake	
X217	Separation point on S005	
S006	Solenoid switch, left brake	
X218	Separation point on S006	

Date	Version	Page	Capitel	Index	Docu-No.
03.06.2006	a	4/6	Y023 - solenoid valve, compressed air pilot control	9000	E 000379

Fendt 300 Vario	Electrics / General system Y023 - solenoid valve, compressed air pilot control	E
------------------------	--	----------

Item	Designation	Remark
X018	Trailer socket	
X050	Fuse holder 1	
X051	Fuse holder 2	
X552	Grounding point	
X554	Grounding point	
X571	Grounding point	
X630	Connector	
Y023	Solenoid valve, compressed air pilot control system	
X334	Separation point on Y023	



Measuring points on Y023 - solenoid valve (X334 - separation point)

Pin	Function
1	Actuation for the Y023 - solenoid valve
2	Ground

Measure resistance (ohm)

Note:

Ignition 'OFF'

Connect adapter cable X899.980.246.201 only to Y023 - solenoid valve

Test	Pin	Specified value	Condition	Remark
Resistance	1	13.2 ohms	20°C solenoid temperature	Reading: +/- 15 %
	2			

Date	Version	Page	Capitel	Index	Docu-No.
03.06.2006	a	5/6	Y023 - solenoid valve, compressed air pilot control	9000	E 000379

Fendt 300 VarioElectrics / General system
Y023 - solenoid valve, compressed air pilot control**E****Measuring power consumption (ampere) and voltage (volt)****Note:****Set measuring range of the multimeter****Measuring voltage (volt):**

Connect adapter cable X899.980.246.201 to the Y023 - solenoid valve

Ignition 'ON'

Measure pin 1 and pin 2 (ground)

Actuate foot brake.

**Note:****Set measuring range of the multimeter****Measuring power consumption (ampere):**

Ignition 'OFF'

Connect e-adapter box X899.980.208.100 to **X1430 - separation point** with adapter cable X899.980.208.219**Open pin 42**Measure **pin 42** with multimeter (ampere)

Ignition 'ON'

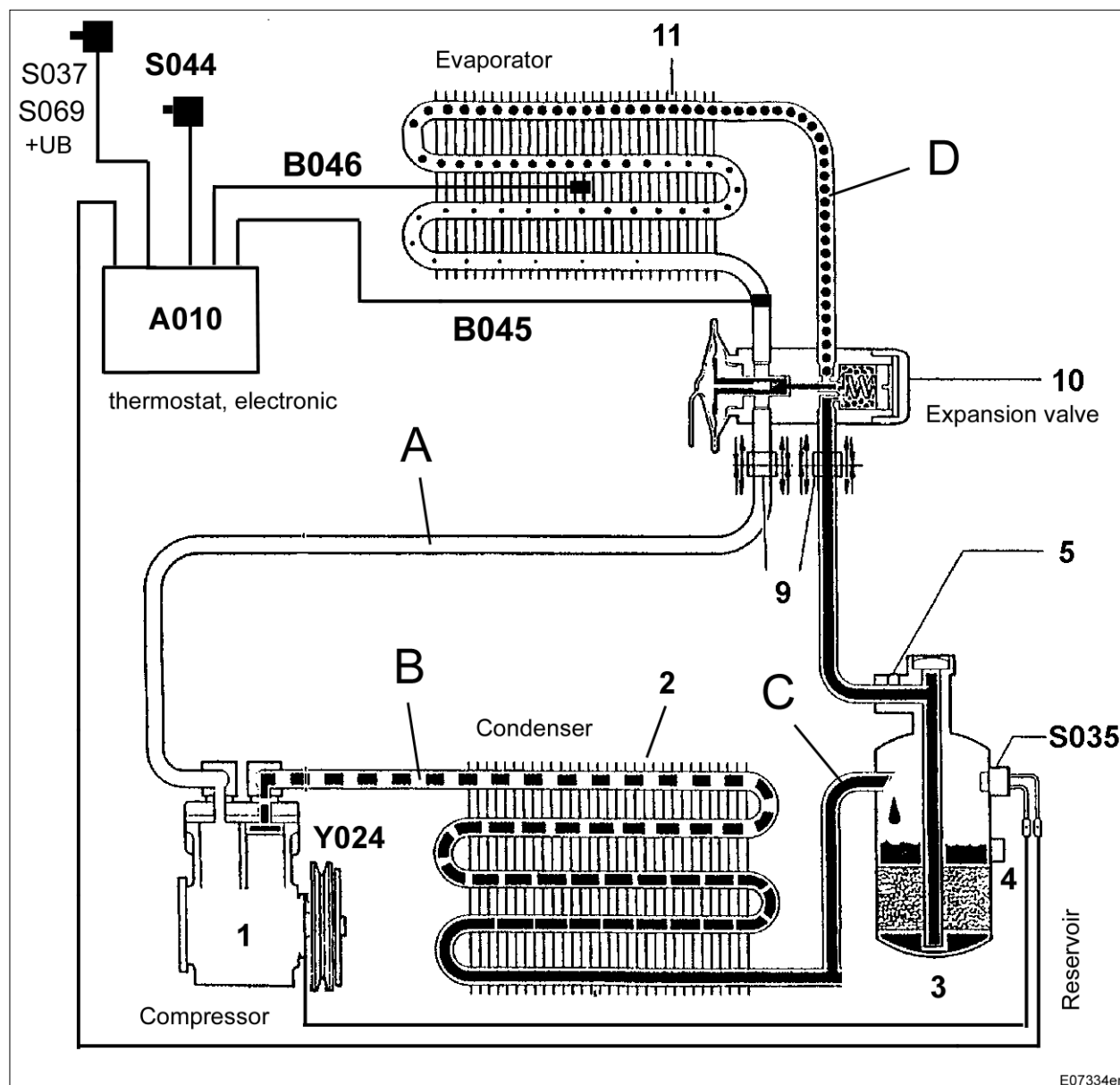
Apply the hand brake

Solenoid valve	Switch position	U	I	R
		[VDC]	[ADC]	[ohm]
Y023 - solenoid valve, compressed air pilot control	Brake not actuated	0	0	13.2
Y023 - solenoid valve, compressed air pilot control	Brake actuated	12	approx. 1.0	13.2

Note:**All readings +/- 10%**

Fendt 300 Vario

Electrics / General system
Y024 - magnetic clutch, air-conditioning

E**Refrigerant circuit**

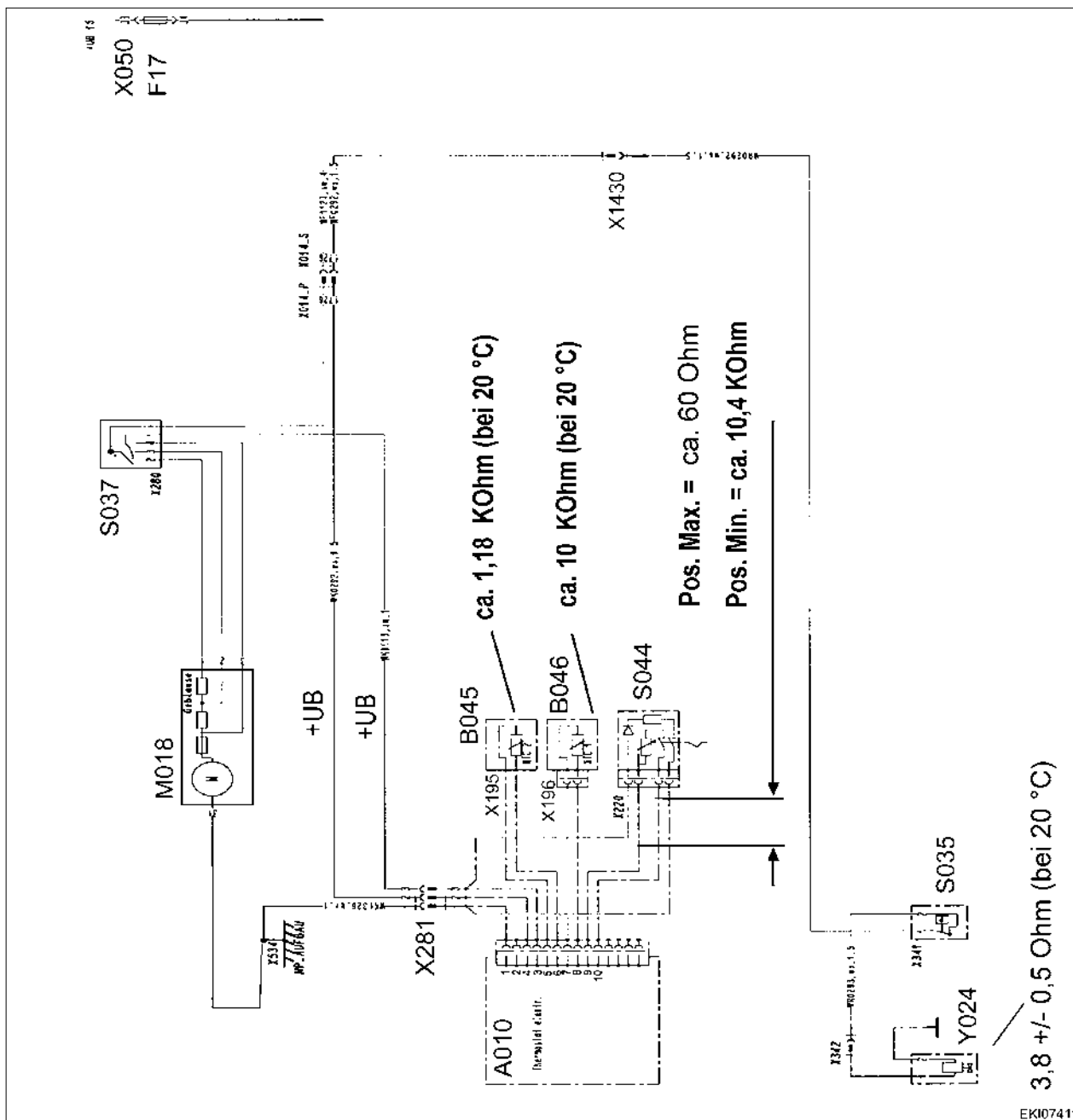
E07334en

1	Compressor	B046	Temp. sensor 1
2	Condenser	S035	High-/low-pressure switch
3	Reservoir	S037	Switch, roof blower (3-speed)
4	Inspection glass	S044	AC potentiometer
5	Fuse	S069	Switch, roof blower (infinitely adjustable) (optional)
9	Separation point	Y024	Magnetic clutch
10	Expansion valve		
11	Evaporator		
A010	Electronic thermostat	A	Low pressure, gaseous
B045	Temp. sensor 2	B	High pressure, gaseous
		C	High pressure, liquid
		D	Intake pressure, liquid

Date	Version	Page	Y024 - magnetic clutch, air-conditioning	Capitel	Index	Docu-No.
03.06.2006	a	1/4		9000	E	000380

Fendt 300 Vario

Electrics / General system
Y024 - magnetic clutch, air-conditioning

E

EK107411

Note:

All measured values +/- 10%

A010	Electronic thermostat	S035	High/low pressure switch
B045	Temp. sensor 2 (NTC)	S037	Blower switch, 3-speed (optional: S069 - switch and infinitely adjustable blower)
B046	Temp. sensor 1 (NTC)	S044	Potentiometer
M018	Blower (optional: infinitely adjustable)	Y024	Magnetic clutch

Note:NTC = **N**egative **T**emperature **C**oefficient

In other words, the sensor resistance decreases with increasing ambient temperature.

Date	Version	Page	Capitel	Index	Docu-No.
03.06.2006	a	2/4	Y024 - magnetic clutch, air-conditioning	9000	E
					000380

Fendt 300 Vario	Electrics / General system Y024 - magnetic clutch, air-conditioning	E
------------------------	---	----------

The A010 - electronic thermostat switches as a function of:

- S037 or S069 - roof blower switch (**supply A010**)
- S044 - AC potentiometer (**setpoint**)
- B046 - temp. sensor 1 in air current (**actual value**)
- B045 - temp. sensor 2 on evaporator (**safeguard against system icing up**)
- S035 - high pressure/low-pressure switch (**coolant circuit protection**)

**Voltage (12 VDC to 14 VDC) to Y024 - magnetic clutch
(air-conditioning compressor switches on)**

Fault location in air-conditioning

Air-conditioning compressor does not switch on

1. Check X050, fuse F17 (+UB 15). (supply for M018 - roof blower (3-speed) or M014 - roof blower (infinitely adjustable) and A010 - electronic thermostat)
2. Supply Y024 - magnetic clutch with 12 VDC from external source (check: does magnetic clutch operate?).
3. Check S037 or S069 - switch for continuity (supply A010 - electronic thermostat. "Green indicator lamp").
4. Check S035 - high pressure/low-pressure switch for continuity (check refrigerant circuit).
5. Check all connectors for continuity.
6. Check voltage output of A010 - electronic thermostat at Y024 - magnetic clutch.
7. Check operation of B045 - sensor, B046 - sensor and S044 - potentiometer (see table above).

Date	Version	Page	Y024 - magnetic clutch, air-conditioning	Capitel	Index	Docu-No.
03.06.2006	a	3/4		9000	E	000380

Fendt 300 Vario

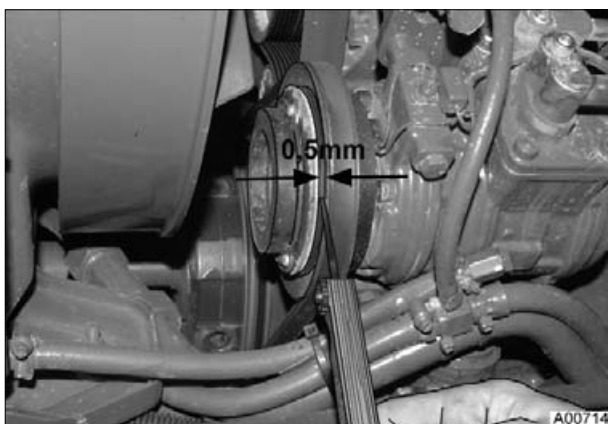
Electrics / General system
Y024 - magnetic clutch, air-conditioning

E

Testing the **resistance of solenoid** of magnetic clutch Y024 using multimeter (ohmmeter).

Specified value: 3.8 +/- 0.5 ohms at 20°C

Grounding point (arrowed) for magnetic clutch Y024



Measure gap between spring plate and v-belt pulley at several locations using two feeler gauges.

Specified value: 0.5 +/- 0.15 mm

If different, adjust with spacer washers under the spring plate. Coat thread of spring plate mounting screws with synthetic bonding agent X 903.050.084 and tighten to 14 Nm.

Date	Version	Page	Y024 - magnetic clutch, air-conditioning	Capitel	Index	Docu-No.
03.06.2006	a	4/4		9000	E	000380

Fendt 300 Vario

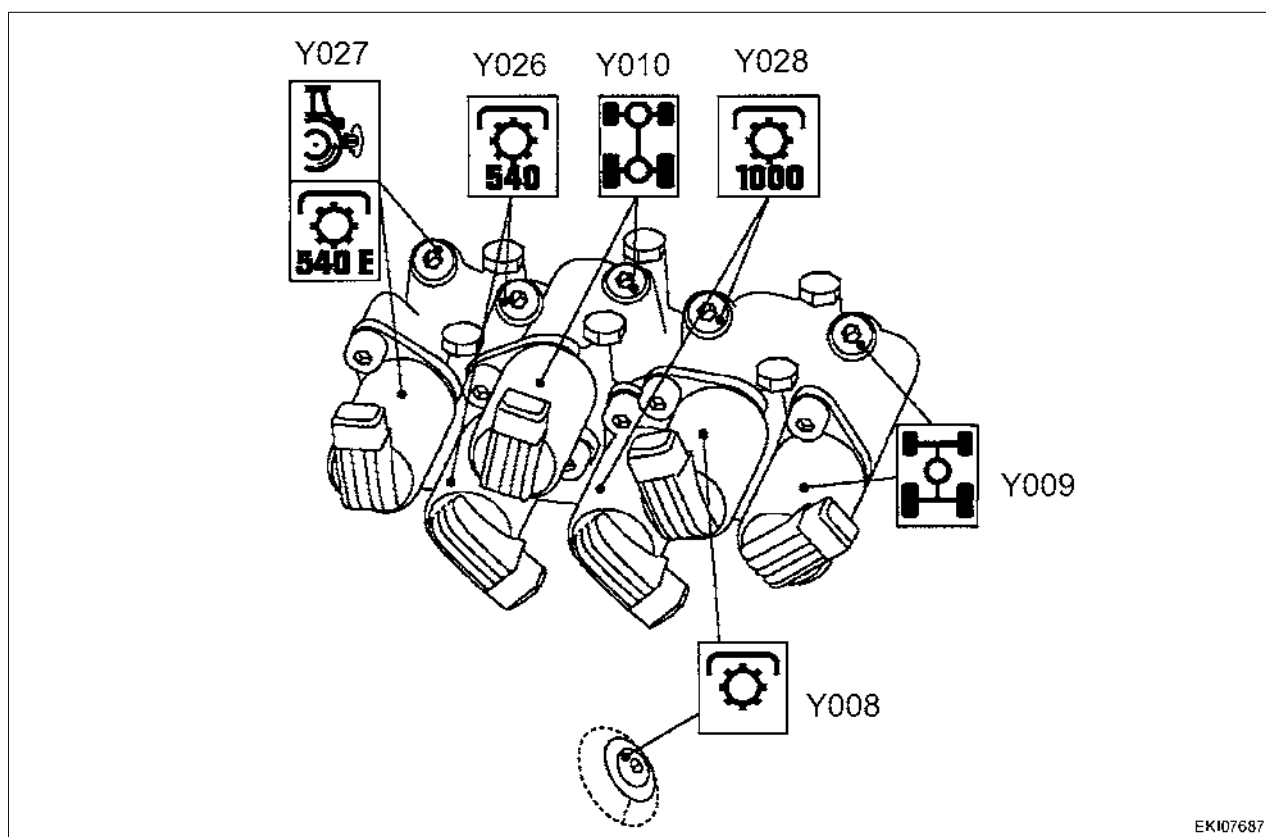
Electrics / General system

Y026 / Y027 / Y028 - solenoid valve, PTO 540 / 540E / 1000**E****Y026** = Solenoid valve, rear PTO '540' (540 rpm)**Y027** = Solenoid valve, rear PTO '540E' (750 rpm)**Y027** = or**Y027** = Solenoid valve, ground PTO 'WZ'**Y028** = Solenoid valve, rear PTO '1000' (1000 rpm)

On right side of tractor on valve block for the enhanced control hydraulics



Remove right rear wheel, remove metal guard



EKI07687

Date	Version	Page		Capitel	Index	Docu-No.
03.06.2006	a	1/6	Y026 / Y027 / Y028 - solenoid valve, PTO 540 / 540E / 1000	9000	E	000381

Fendt 300 Vario

Electrics / General system

Y026 / Y027 / Y028 - solenoid valve, PTO 540 / 540E / 1000

E**Note:**

Testing rear PTO speed selector see:
Chapter 9000 Reg. E - A036 - Measuring and
testing A036 - control panel, enhanced
controls

**Preselecting PTO speed**

A = Rotary switch for PTO speeds

540 = 540 rpm

540E = 750 rpm

WZ (optional) = Ground PTO

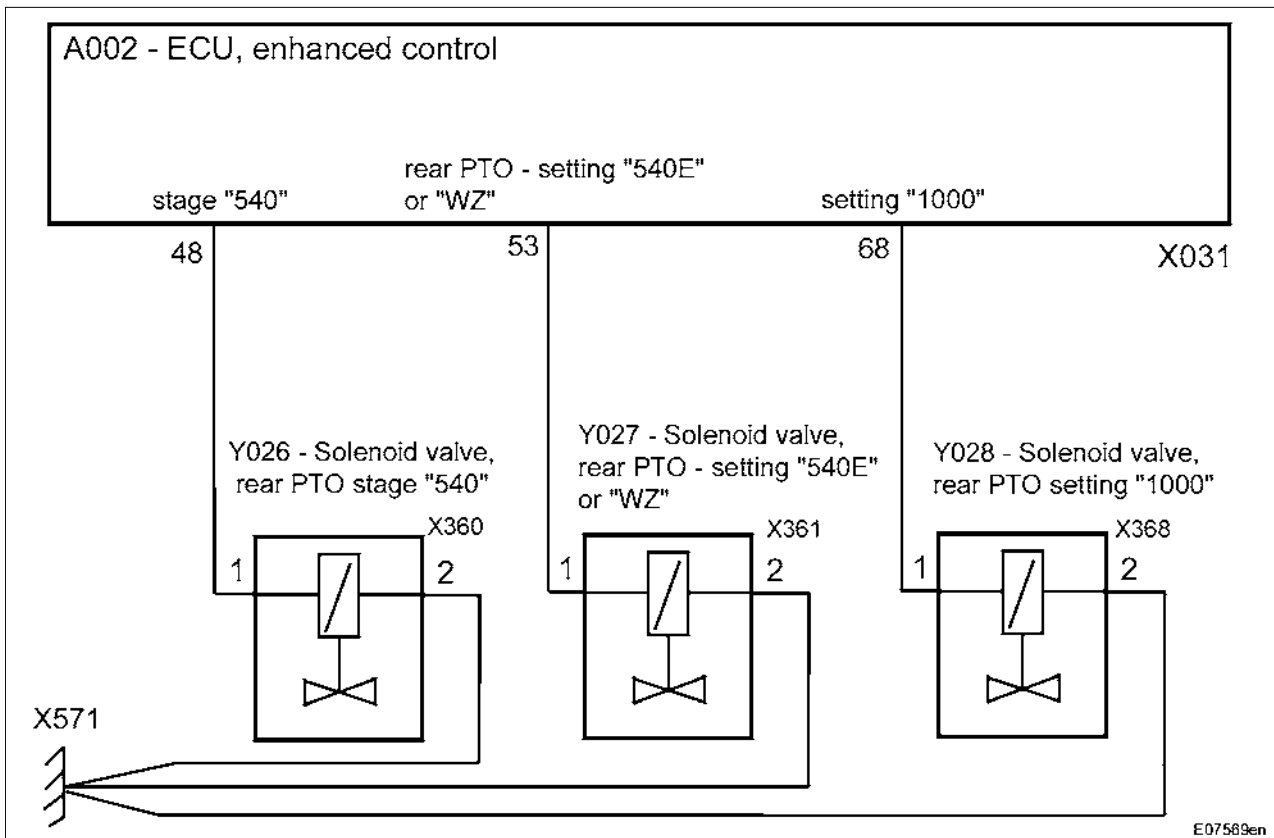
1000 = 1000 rpm

Date	Version	Page		Capitel	Index	Docu-No.
03.06.2006	a	2/6	Y026 / Y027 / Y028 - solenoid valve, PTO 540 / 540E / 1000	9000	E	000381

Fendt 300 Vario

Electrics / General system

Y026 / Y027 / Y028 - solenoid valve, PTO 540 / 540E / 1000

E

Item	Designation	Remark
A002	ECU, enhanced control	
X031	Separation point on A002	
Pin 48	Actuation for the Y026 - solenoid valve	
Pin 53	Actuation for the Y027 - solenoid valve	
Pin 68	Actuation for the Y028 - solenoid valve	
Y026	Solenoid valve, rear PTO stage '540'	
X319	Separation point on Y026 - solenoid valve	
Y027	Solenoid valve, rear PTO - setting "540E" or "WZ"	
X361	Separation point on Y027 - solenoid valve	
Y028	Solenoid valve, rear PTO setting '1000'	
X368	Separation point at Y028 - solenoid valve	
X571	Grounding point	

Date	Version	Page		Capitel	Index	Docu-No.
03.06.2006	a	3/6	Y026 / Y027 / Y028 - solenoid valve, PTO 540 / 540E / 1000	9000	E	000381

Fendt 300 Vario	Electrics / General system Y026 / Y027 / Y028 - solenoid valve, PTO 540 / 540E / 1000	E
------------------------	--	----------



Measuring points on the A002 - ECU (X031-separation point)	
Pin	Function
48	Actuation for the Y026 - solenoid valve
53	Actuation for the Y027 - solenoid valve
68	Actuation for the Y028 - solenoid valve



Measuring points on Y026 / Y027 / Y028 - solenoid valve (X360 / X361 / 368)	
Pin	Function
1	Actuation for the solenoid valve
2	Ground

Measure resistance (ohm)

Note:

Ignition 'OFF'

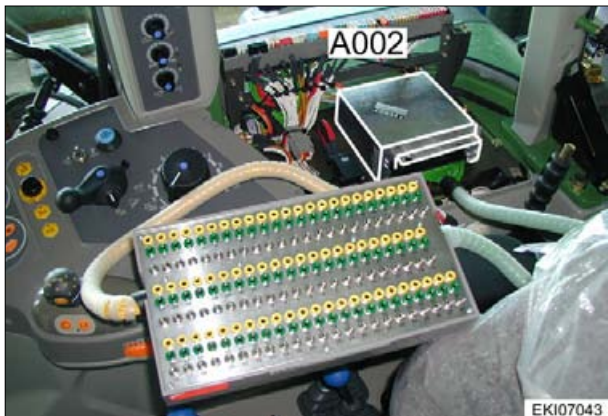
Connect adapter cable X 899.980.246.201 only to Y026 / Y027 / Y028 - solenoid valve

Test	Pin	Specified value	Condition	Remark
Resistance	1	7.5 ohm	20°C solenoid temperature	Reading: +/- 15 %
	2			

Date	Version	Page		Capitel	Index	Docu-No.
03.06.2006	a	4/6	Y026 / Y027 / Y028 - solenoid valve, PTO 540 / 540E / 1000	9000	E	000381

Fendt 300 Vario	Electrics / General system	E
Y026 / Y027 / Y028 - solenoid valve, PTO 540 / 540E / 1000		

Y026 - solenoid valve: measure power consumption (ampere) and voltage (volt)



Note:

Set measuring range of the multimeter

Connect e-adapter box X 899.980.208.100 directly to A002 - ECU, enhanced control.

Measuring voltage (volt):

Measure pin 48 and pin 55 (ground) on the A002 - ECU, enhanced control

Ignition ON and start engine

Preselect rear PTO setting "540"

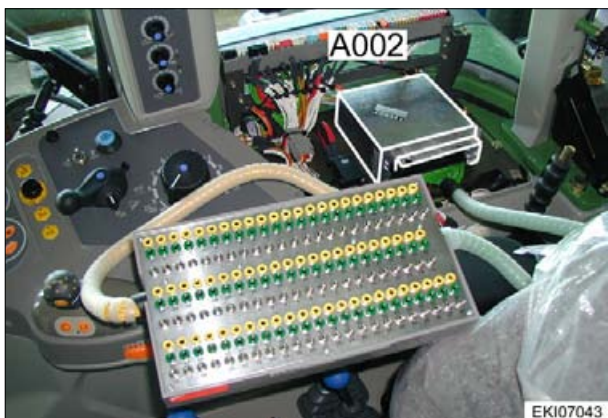
Measuring power consumption (ampere):

Open pin 48 and measure with multimeter (ampere).

Ignition ON and start engine

Preselect rear PTO setting '540'

Y027 - solenoid valve: measure power consumption (ampere) and voltage (volt)



Note:

Set measuring range of the multimeter

Connect e-adapter box X 899.980.208.100 directly to A002 - ECU, enhanced control.

Measuring voltage (volt):

Measure pin 53 and pin 55 (ground) on the A002 - ECU, enhanced control

Ignition ON and start engine

Preselect rear PTO setting "540E" or "WZ"

Measuring power consumption (ampere):

Open pin 53 and measure with multimeter (ampere).

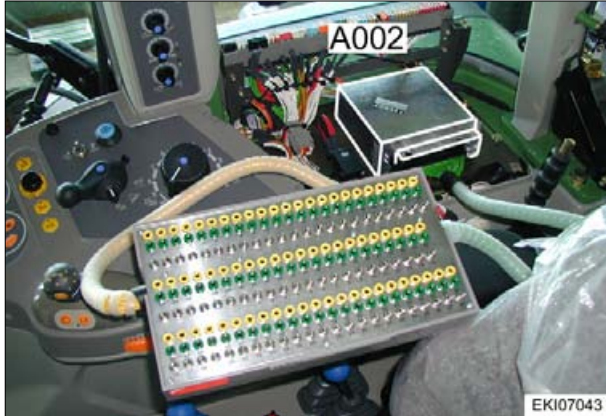
Ignition ON and start engine

Preselect rear PTO setting '540E' or 'WZ'

Date	Version	Page	Capitel	Index	Docu-No.
03.06.2006	a	5/6	Y026 / Y027 / Y028 - solenoid valve, PTO 540 / 540E / 1000	9000	E 000381

Fendt 300 Vario	Electrics / General system	E
Y026 / Y027 / Y028 - solenoid valve, PTO 540 / 540E / 1000		

Y028 - solenoid valve: measure power consumption (ampere) and voltage (volt)



Note:

Set measuring range of the multimeter

Connect e-adapter box X 899.980.208.100 directly to A002 - ECU, enhanced control.

Measuring voltage (volt):

Measure pin 68 and pin 55 (ground) on the A002 - ECU, enhanced control

Ignition ON and start engine

Preselect rear PTO setting '1000'

Measuring power consumption (ampere):

Open pin **68** and measure with multimeter (ampere).

Ignition ON and start engine

Preselect rear PTO setting '1000'

Solenoid valve	Switch position	U	I	R
		[VDC]	[ADC]	[ohm]
Y026 - solenoid valve, rear PTO setting "540"	ON / OFF	14 / 0	approx. 1.7	7.5
Y027 - solenoid valve, rear PTO setting "540E" or "WZ"	ON / OFF	14 / 0	approx. 1.7	7.5
Y028 - solenoid valve, rear PTO setting '1000'	ON / OFF	14 / 0	approx. 1.7	7.5

Note:

All readings +/- 10%

Functional description: Pulse Width Modulation (PWM) (Y026 / Y027 - solenoid valve, setting "540" / "540E")

The **A002 - ECU, enhanced control** supplies a voltage for energising the solenoid valves of **0 VDC or 14 VDC** .

The **increase in voltage to 14 VDC** or the **voltage switch-off to 0 VDC** is **controlled** (proportional) In the event of a mechanical or electrical fault in the component or cable harness, the component is briefly energised, then the A002 - ECU, enhanced control detects the fault and switches the voltage off.

Functional description: digital output (Y028 - solenoid valve, setting "1000")

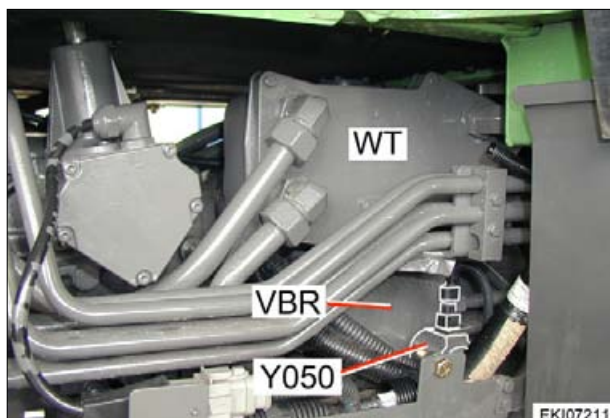
The **A002 - ECU, enhanced control** supplies a voltage for energising the solenoid valves: of **0 VDC or 14 VDC (black - white)** circuit

If there is a mechanical or electrical fault in the component or cable harness, the component is energised briefly, then the A002 - ECU, enhanced control detects the fault and switches the voltage off.

Date	Version	Page	Capitel	Index	Docu-No.
03.06.2006	a	6/6	Y026 / Y027 / Y028 - solenoid valve, PTO 540 / 540E / 1000	9000	E 000381

Fendt 300 Vario

Electrics / General system
Y050 - solenoid valve, oil flow collector

E

VBR = Return flow valve block

WT = Heat exchanger transmission / hydraulic oil

Y050 = Solenoid valve, oil flow collector

On the right side of the transmission



Remove right rear wheel and metal panels

**S056** = Switch, oil flow collector

On right mudguard

**Note:**

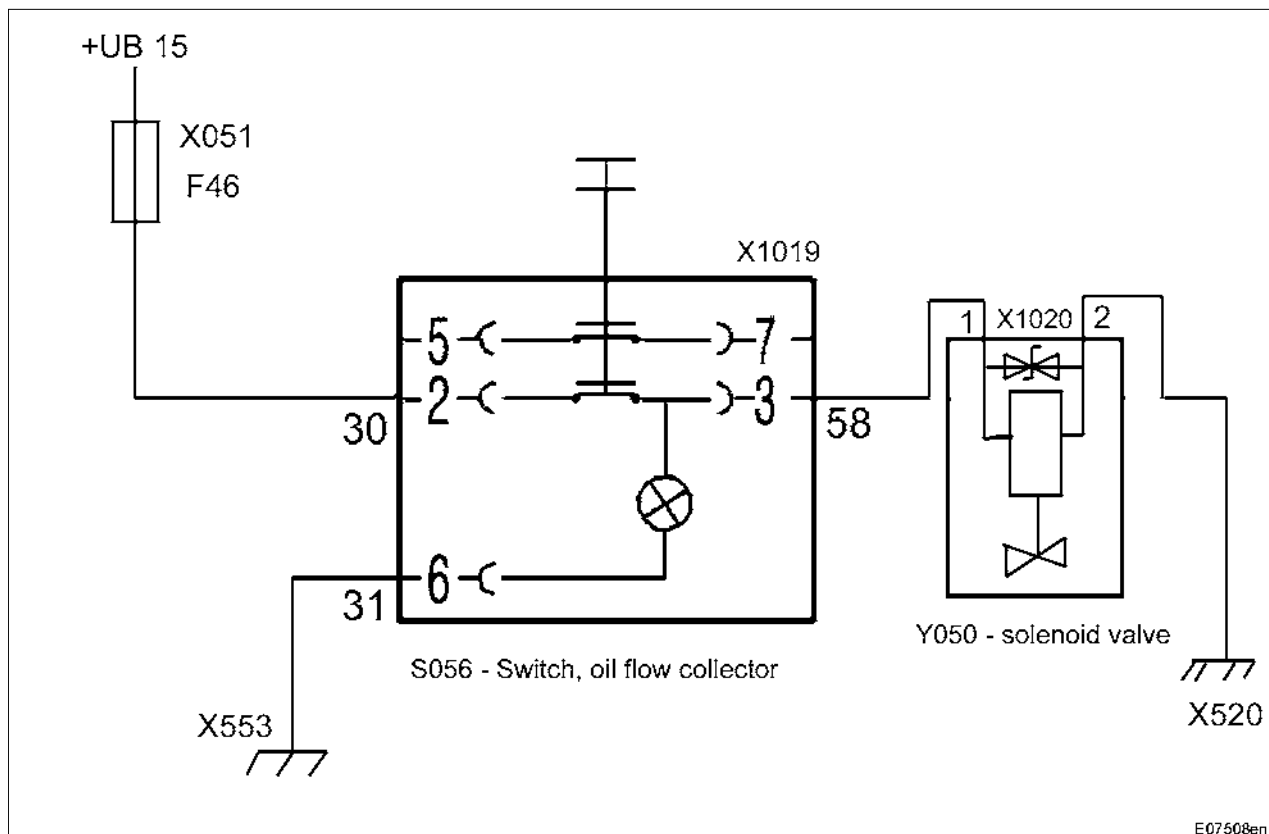
see also:

Chapter 9000 Reg. E - S056 - Measuring and testing oil flow collector switch

Date	Version	Page	Y050 - solenoid valve, oil flow collector	Capitel	Index	Docu-No.
06.06.2006	a	1/4		9000	E	000382

Fendt 300 Vario

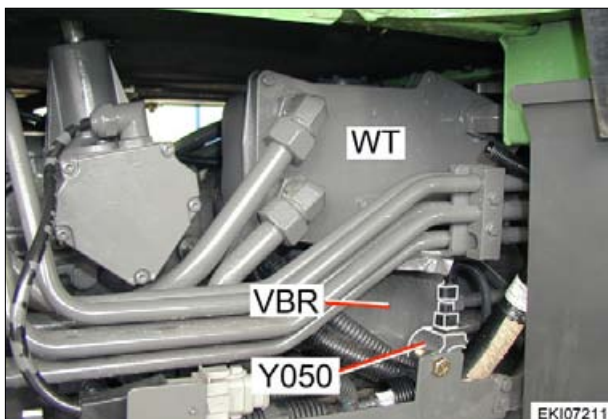
Electrics / General system
Y050 - solenoid valve, oil flow collector

E

E07508en

Item	Designation	Remark
S056	Switch, oil flow collector	
X1019	Separation point on S056	
Pin 2	Actuation (of UB 15)	
Pin 3	Actuation (to Y050 - solenoid valve)	
Pin 6	Indicator lamp	
Y050	Solenoid valve, oil flow collector	
X1020	Separation point on Y050	
X051	Fuse holder 1	
X520	Grounding point	
X553	Grounding point	

Fendt 300 Vario	Electrics / General system Y050 - solenoid valve, oil flow collector	E
------------------------	---	----------



Measuring points on Y050 - solenoid valve (X1020 - separation point)	
Pin	Function
1	Actuation for the Y050 - solenoid valve
2	Ground

Measure resistance (ohm)

Note:

Ignition 'OFF'

Connect adapter cable X899.980.246.201 only to Y050 - solenoid valve

Test	Pin	Specified value	Condition	Remark
Resistance	1	8.1 ohms	20°C solenoid temperature	Reading: +/- 15 %
	2			

Date	Version	Page	Y050 - solenoid valve, oil flow collector	Capitel	Index	Docu-No.
06.06.2006	a	3/4		9000	E	000382

Fendt 300 Vario

Electrics / General system
Y050 - solenoid valve, oil flow collector

E

Measuring power consumption (ampere) and voltage (volt)

**Note:****Set measuring range of the multimeter****Measuring voltage (volt):**

Connect adapter cable X899.980.246.201 to the
 Y050 - solenoid valve

Ignition 'ON'

Measure at pin 1 and pin 2 (ground)

Switch oil flow collector ON

**Measuring power consumption (ampere):**

Ignition 'OFF'

Connect e-adapter box X899.980.208.100 to
X1430 - separation point with adapter cable
 X899.980.208.219

Open pin 43

Measure **pin 43** with multimeter (ampere)

Ignition 'ON'

Apply the hand brake

Solenoid valve	Switch position	U	I	R
		[VDC]	[ADC]	[ohm]
Y050 - solenoid valve, oil flow collection	Oil flow collector not actuated	0	0	8.1
Y050 - solenoid valve, oil flow collection	Oil flow collector actuated	12	approx. 1.5	8.1

Note:

All readings +/- 10%

Date	Version	Page	Capitel	Index	Docu-No.
06.06.2006	a	4/4	9000	E	000382

Fendt 300 Vario

Electrics / General system
Y089 - solenoid valve, ON/OFF hydr. trailer brake (France)

E

Y089 = Solenoid valve ON/OFF hydr. trailer brake (France)



S084 = Switch ON/OFF hydr. trailer brake (France)

On the dashboard

**Note:**

see also:

Chapter 9000 Reg. E - Measuring and testing
S084 - hydr. trailer brake switch ON/OFF (France)



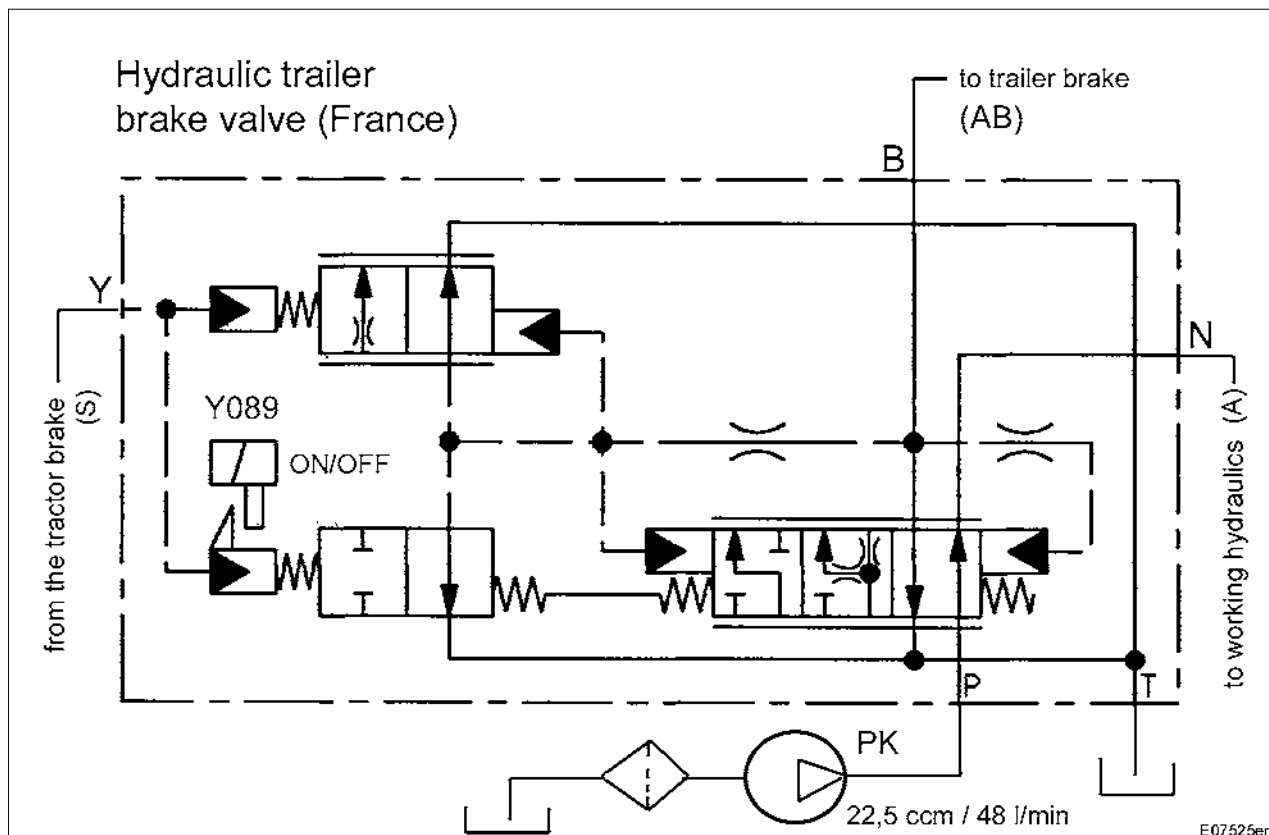
Hydraulic trailer brake ON (LED is lit)

Trailer is braked hydraulically

Hydraulic trailer brake OFF (LED is not lit)

Trailer is not braked

Date	Version	Page		Capitel	Index	Docu-No.
06.06.2006	a	1/5	Y089 - solenoid valve, ON/OFF hydr. trailer brake (France)	9000	E	000385

Fendt 300 VarioElectrics / General system
Y089 - solenoid valve, ON/OFF hydr. trailer brake (France)**E****Hydraulic trailer brake valve (France)**

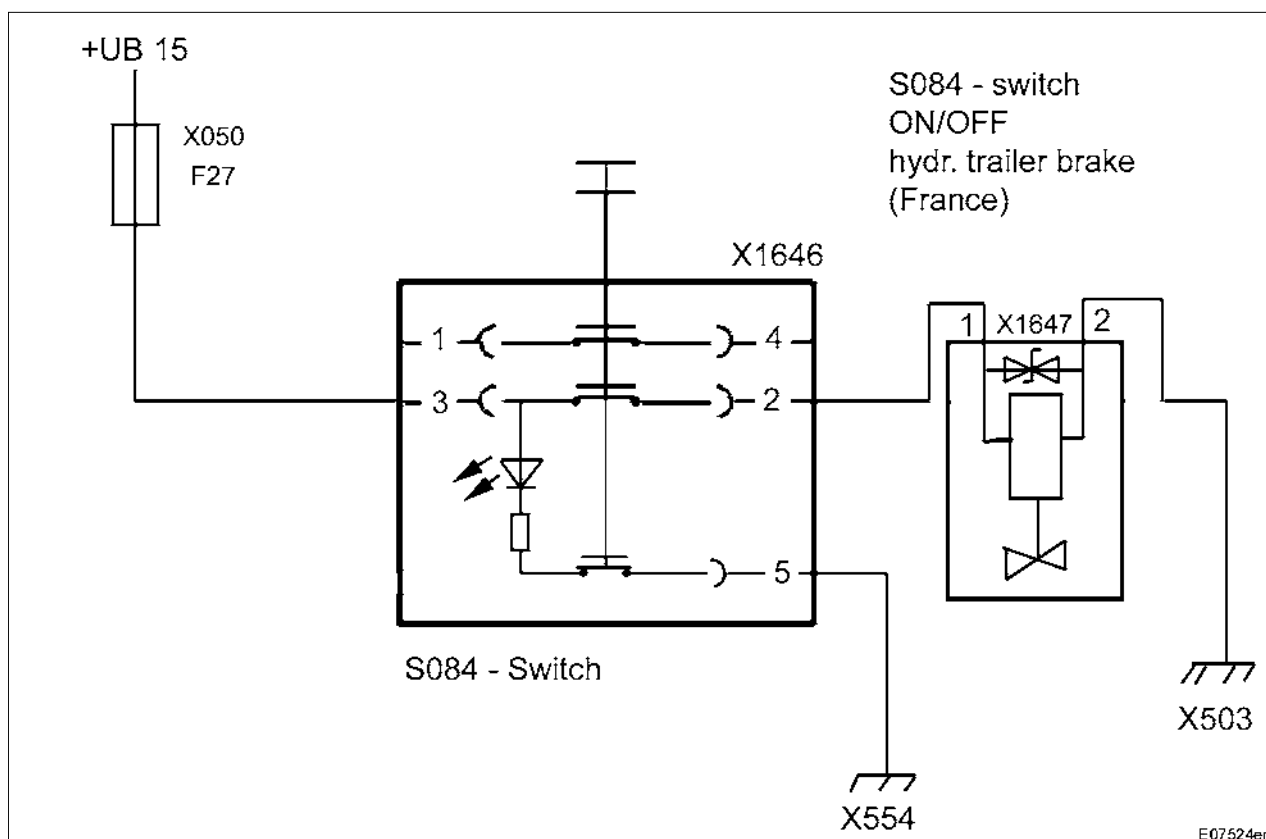
Item	Designation	Item	Designation
P	PK - hydraulic pump working hydraulics	T	Return flow
N	to working hydraulics (A)	Y	from the tractor brake (S) (transmission oil)
B	to trailer brake (AB)	Y089	Solenoid valve ON / OFF

Date	Version	Page	Capitel	Index	Docu-No.
06.06.2006	a	2/5	Y089 - solenoid valve, ON/OFF hydr. trailer brake (France)	9000	E 000385

Fendt 300 Vario

Electrics / General system

Y089 - solenoid valve, ON/OFF hydr. trailer brake (France)

E

Item	Designation	Remark
S084	Switch, ON/OFF hydr. trailer brake (France)	
X1646	Separation point on S084	
Pin 3	Actuation (of UB 15)	
Pin 2	Actuation (to Y089 - solenoid valve)	
Pin 5	LED	
Y089	Solenoid valve, ON/OFF hydr. trailer brake (France)	
X1647	Separation point on Y089	

Fendt 300 Vario	Electrics / General system Y089 - solenoid valve, ON/OFF hydr. trailer brake (France)	E
------------------------	---	----------



**Measuring points on Y089 - solenoid valve
(X1647 - separation point)**

Pin	Function
1	Actuation for the Y089 - solenoid valve
2	Ground

Measure resistance (ohm)

Note:

Ignition 'OFF'

Connect adapter cable X899.980.246.201 only to Y089 - solenoid valve

Test	Pin	Specified value	Condition	Remark
Resistance	1	8.7 ohms	20°C solenoid temperature	Reading: +/- 15 %
	2			

Date	Version	Page	Capitel	Index	Docu-No.
06.06.2006	a	4/5	Y089 - solenoid valve, ON/OFF hydr. trailer brake (France) 9000	E	000385

Fendt 300 Vario	Electrics / General system	E
Y089 - solenoid valve, ON/OFF hydr. trailer brake (France)		

Measuring power consumption (ampere) and voltage (volt)



Note:

Set measuring range of the multimeter

Measuring voltage (volt):

Connect adapter cable X 899.980.246.201 to Y089 - solenoid valve

Ignition 'ON'

Measure pin 1 and pin 2 (ground)

Actuate S084 - switch (LED is lit) "**trailer brake ON**"



Note:

Set measuring range of the multimeter

Measuring power consumption (ampere):

Ignition 'OFF'

Connect e-adapter box X899.980.208.100 to **X1430 - separation point** with adapter cable X899.980.208.219

Open pin 44

Measure **pin 44** with multimeter (ampere)

Ignition 'ON'

Actuate S084 - switch (LED is lit) "**trailer brake ON**"

Solenoid valve	Switch position	U [VDC]	I [ADC]	R [ohm]
Y089 - solenoid valve, hydr. trailer brake ON/OFF	S084 - switch not actuated (LED off) " trailer brake OFF "	0	0	8.7
Y089 - solenoid valve, hydr. trailer brake ON/OFF	S084 - switch actuated (LED is lit) " trailer brake ON "	12	approx. 1.4	8.7

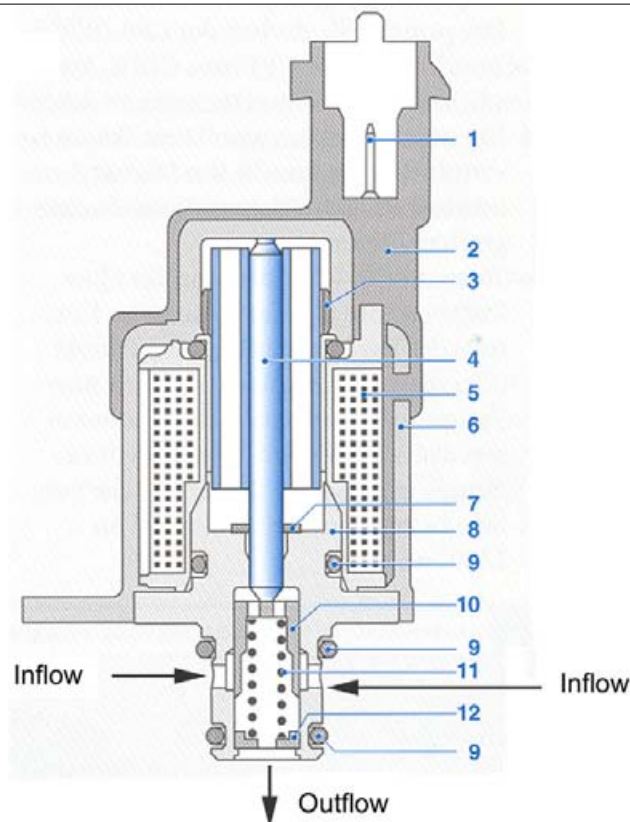
Note:

All readings +/- 10%

Date	Version	Page		Capitel	Index	Docu-No.
06.06.2006	a	5/5	Y089 - solenoid valve, ON/OFF hydr. trailer brake (France)	9000	E	000385

Fendt 300 Vario
Electrics / General system
Y091 - metering unit
E**Y091** = Metering unit (fuel)**X1662** = Separation point on Y091
on right side of engine

Y091 - metering unit



E07571en

Item	Designation	Item	Designation
1	X1662 - separation point	7	Residual air disc
2	Housing	8	Magnet core
3	Bearing	9	O-ring
4	Anchor with tappet	10	Plunger with control slots
5	Coil with body	11	Spring
6	Housing	12	Retaining element

The magnetically actuated piston (10) opens a flow cross-section, corresponding to its position.

The Y091 - solenoid valve is activated by means of a PWM signal (proportional magnet)

Power consumption 0 VDC --> full flow rate

Date	Version	Page	Y091 - metering unit	Capitel	Index	Docu-No.
06.06.2006	a	1/8		9000	E	000386

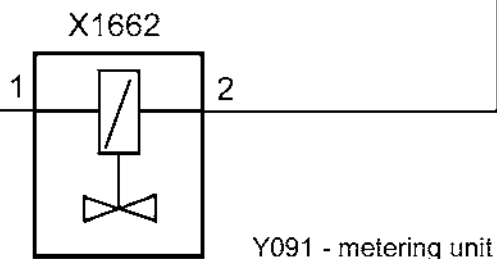
Fendt 300 Vario
Electrics / General system
Y091 - metering unit
E

A051 - ECU, engine control unit

X1672

9

10



E07570en

Item	Designation	Remark
A051	ECU, EDC	
X1672	Separation point on A051	
Pin 9	Actuation for Y091	
Pin 10	Actuation for Y091	
Y091	Metering unit (fuel)	
X1662	Separation point on Y091	

**A051** = ECU, EDC

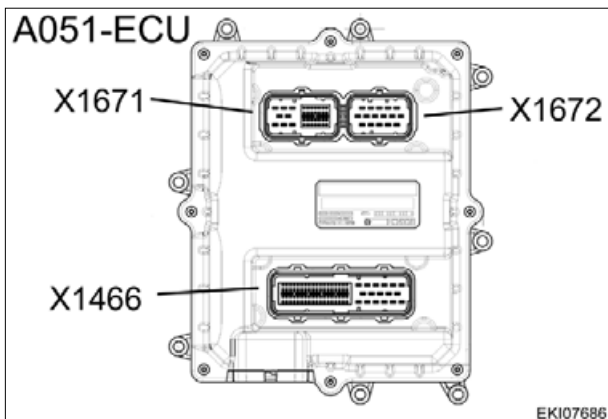
At right entrance step



Date	Version	Page	Y091 - metering unit	Capitel	Index	Docu-No.
06.06.2006	a	2/8		9000	E	000386

Fendt 300 Vario

Electrics / General system
Y091 - metering unit

E

Measuring points on A051 - ECU, engine control unit (X1672 - separation point)

Pin	Function
9	+ supply
10	Ground



Connect e-adapter box X899.980.208.100 to X1672 on the A051 - ECU, engine control unit with adapter cable X899.980.208.218

Pin	Function
9 (on the 68-pin adapter box)	Actuation for the Y091
10 (on the 68-pin adapter box)	Actuation for the Y091



Measuring points on B091 - sensor (X1662 - separation point)

Pin	Function
1	+ supply
2	Ground

Fendt 300 Vario	Electrics / General system Y091 - metering unit	E
------------------------	--	----------

Measure resistance (ohm)

Note:

Ignition "OFF"

Connect adapter cable X899.980.259.104 only to Y091 - metering unit

Test	Pin	Specified value	Condition	Remark
Resistance	1	approx. 3.6 ohm	20°C solenoid temperature	Reading: +/- 15 %
	2			

Measuring voltage (volt)

Note: engine not under load

Solenoid valve	Switch position	U
Y091 - metering unit Measure pins 1 and 2	Ignition on, engine off	Briefly 1.8 VDC then 0 VDC
	Engine running (independent of engine speed)	approx. 4.3 VDC

Note:

All readings +/- 10%

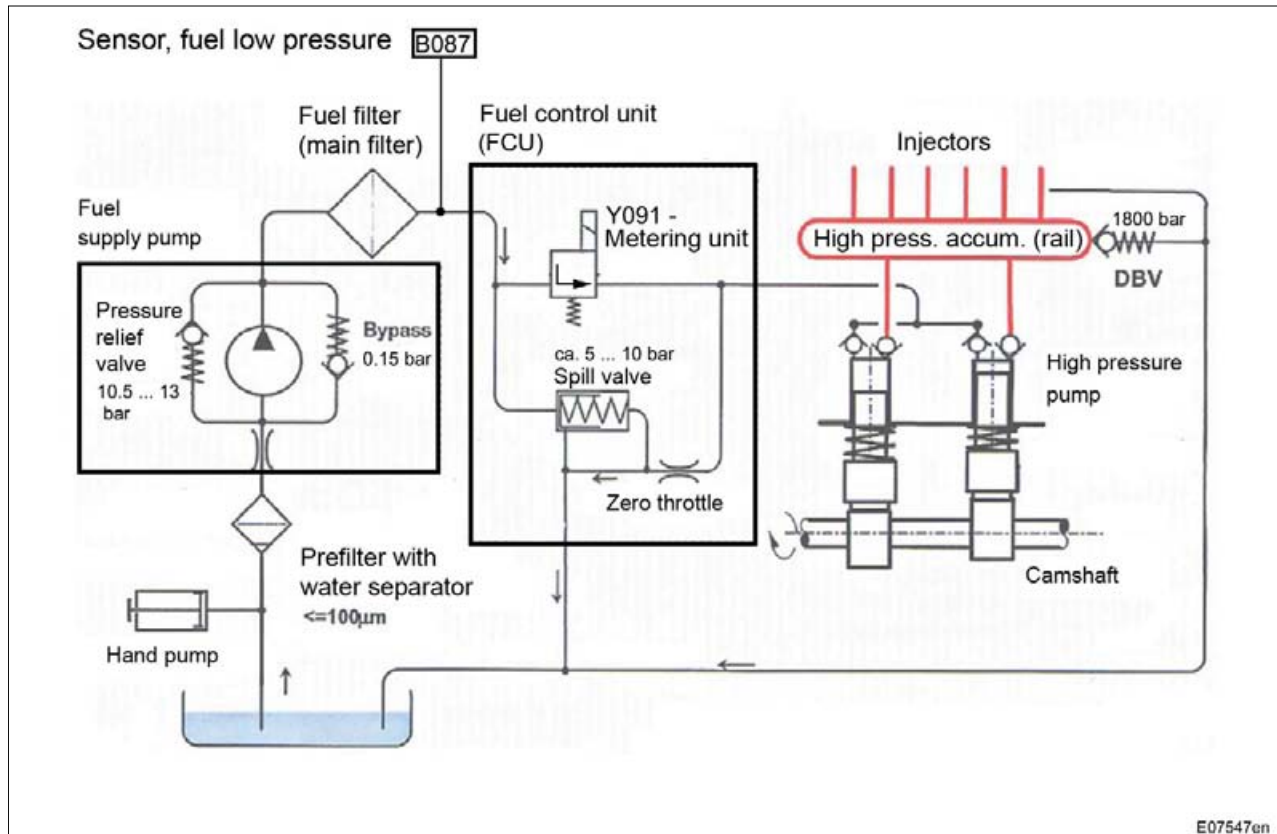
Date	Version	Page	Y091 - metering unit	Capitel	Index	Docu-No.
06.06.2006	a	4/8		9000	E	000386

Fendt 300 Vario

Electrics / General system
Y091 - metering unit

E

Testing fuel pressure (low pressure) on the Y091 - metering unit



Testing fuel pressure (low pressure) before the Y091 - metering unit:

Screw in measuring connection fuel filter housing
 Connect pressure gauge with measurement range 0 - 25 bar.

Specified value: 5 - 10 bar

Testing fuel pressure (low pressure) after the Y091 - metering unit:

Install adapter piece and measuring connection after the Y091 - metering unit

Connect pressure gauge with measurement range 0 - 25 bar.

Specified value: dependent on engine load

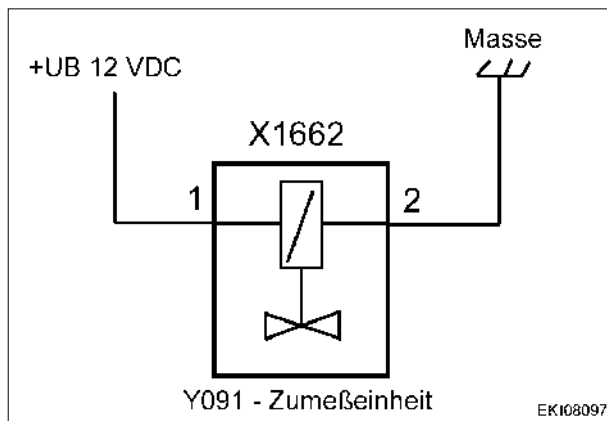
Y091 - metering unit fully energised "idle"
 (metering unit almost closed) : approx. 1 bar

Y091 - metering unit without power "full load"
 (metering unit fully open) : approx. 5 ... 10 bar

Date	Version	Page	Y091 - metering unit	Capitel	Index	Docu-No.
06.06.2006	a	5/8		9000	E	000386

Fendt 300 Vario	Electrics / General system Y091 - metering unit	E
------------------------	--	----------

	Fuel pressure before the Y091 - metering unit	Fuel pressure after the Y091 - metering unit
Diesel engine not under load Idling (800 rpm)	approx. 5 bar (spill valve opens)	approx. 1 bar
At no-load engine speed (2200 rpm)	approx. 5 bar (spill valve opens)	approx. 1 bar
Apply 12 VDC external current to Y091 - metering unit (Y091 - metering unit fully closed)	approx. 5 bar	approx. 0 bar (engine goes off)
Y091 - metering unit without power (disconnect connector) (Y091 - metering unit fully open)	approx. 5 bar	approx. 5 bar
Engine goes into emergency operating mode (Emergency run time: approx. 3 minutes)		



Apply 12 VDC external current to Y091 - metering unit

Y091 - metering unit completely closed
--> the engine goes off

Date	Version	Page	Y091 - metering unit	Capitel	Index	Docu-No.
06.06.2006	a	6/8		9000	E	000386

Fendt 300 VarioElectrics / General system
Y091 - metering unit**E****Diesel engine emergency operating mode**

The Y091 - metering unit is without power, that means it is fully open

This opens the high pressure relief valve

In idle this results in a pressure of approx. 400 bar



After the high pressure relief valve opens, the warning " **high pressure relief valve open**" appears in the A007 - instrument cluster

High pressure (approx. 400 bar) is relieved through the pressure relief valve, which causes the fuel to heat.

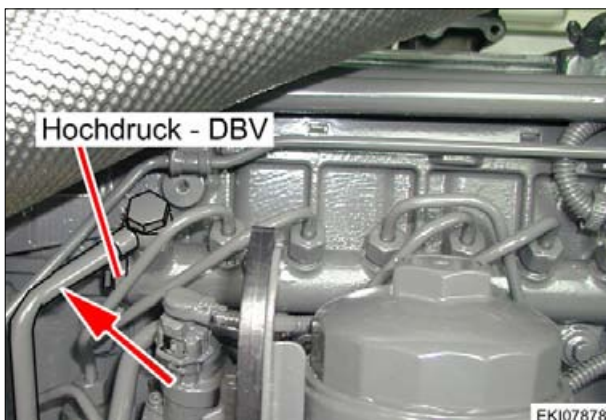
That is why the A051 - ECU,EDC automatically turns the engine off the approx. 3 minutes.

Restarting tractor:

Ignition "OFF"

Wait at least 30 seconds, so that the pressure in the rail (high pressure accumulator) can drop.

Start tractor



Note:

When the high pressure relief valve opens, the return line (arrowed) is heated

After approx. 3 minutes, the engine is switched off through the A051 - ECU,EDC

Date	Version	Page	Y091 - metering unit	Capitel	Index	Docu-No.
06.06.2006	a	7/8		9000	E	000386

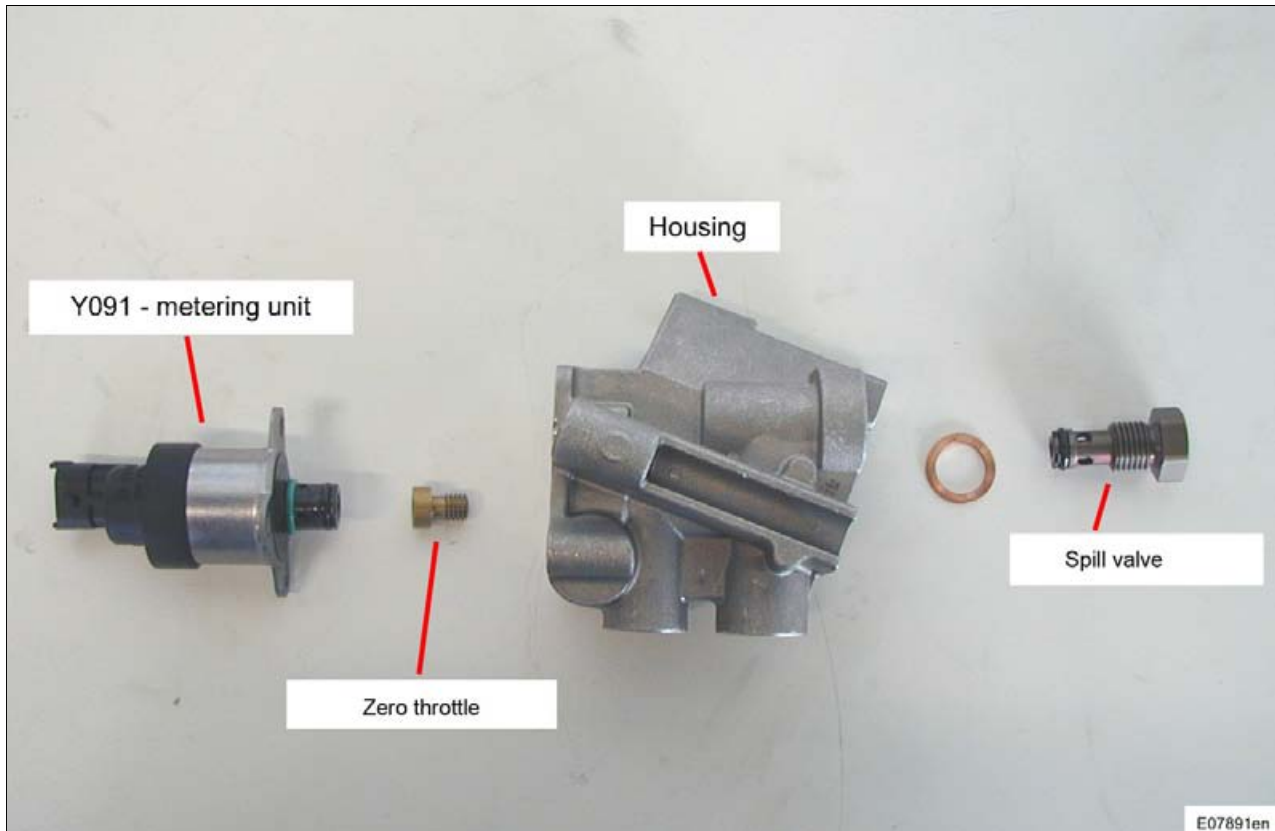
Fendt 300 Vario	Electrics / General system Y091 - metering unit	E
------------------------	---	----------

Removing Y091 - metering unit and fuel control unit (FCU)



Danger:

After turning of the engine, wait at least 30 seconds before starting to work on the fuel system!!



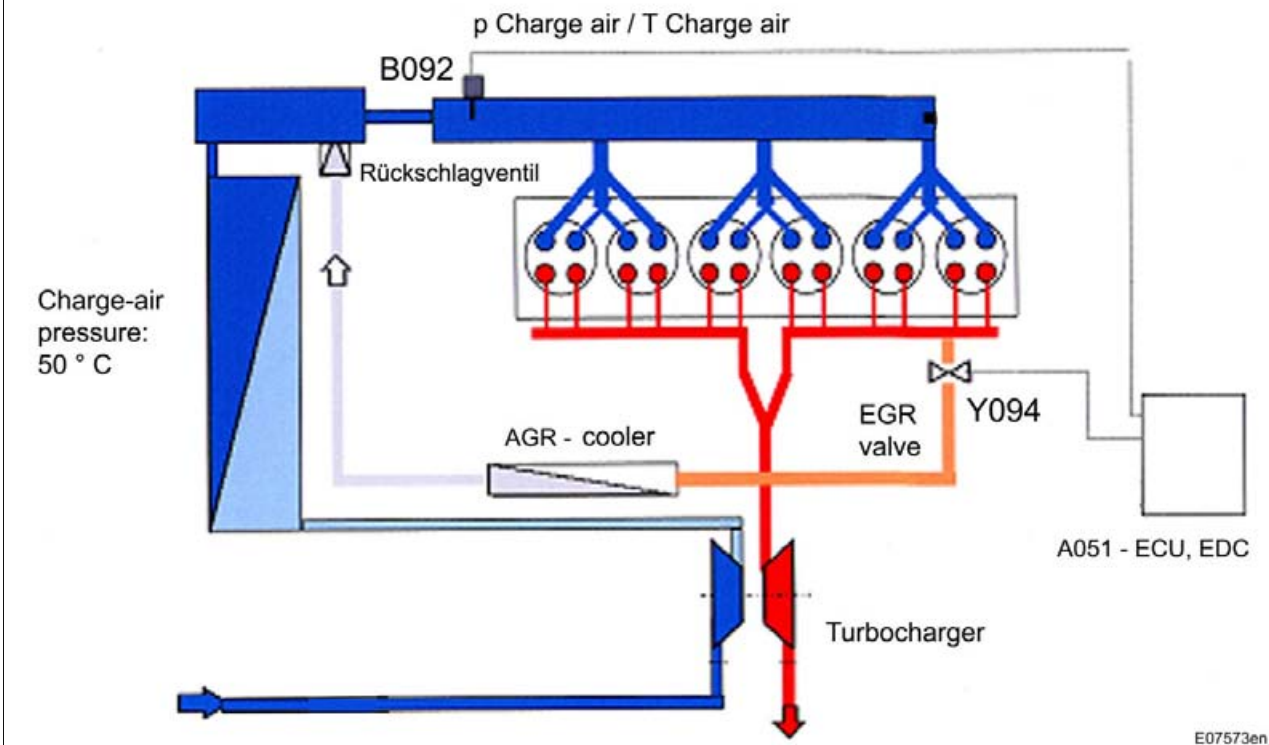
Date	Version	Page	Y091 - metering unit	Capitel	Index	Docu-No.
06.06.2006	a	8/8		9000	E	000386

Fendt 300 Vario

Electrics / General system
Y094 - servomotor, exhaust gas recirculation

E

Schematics: exhaust gas recirculation (AGR)

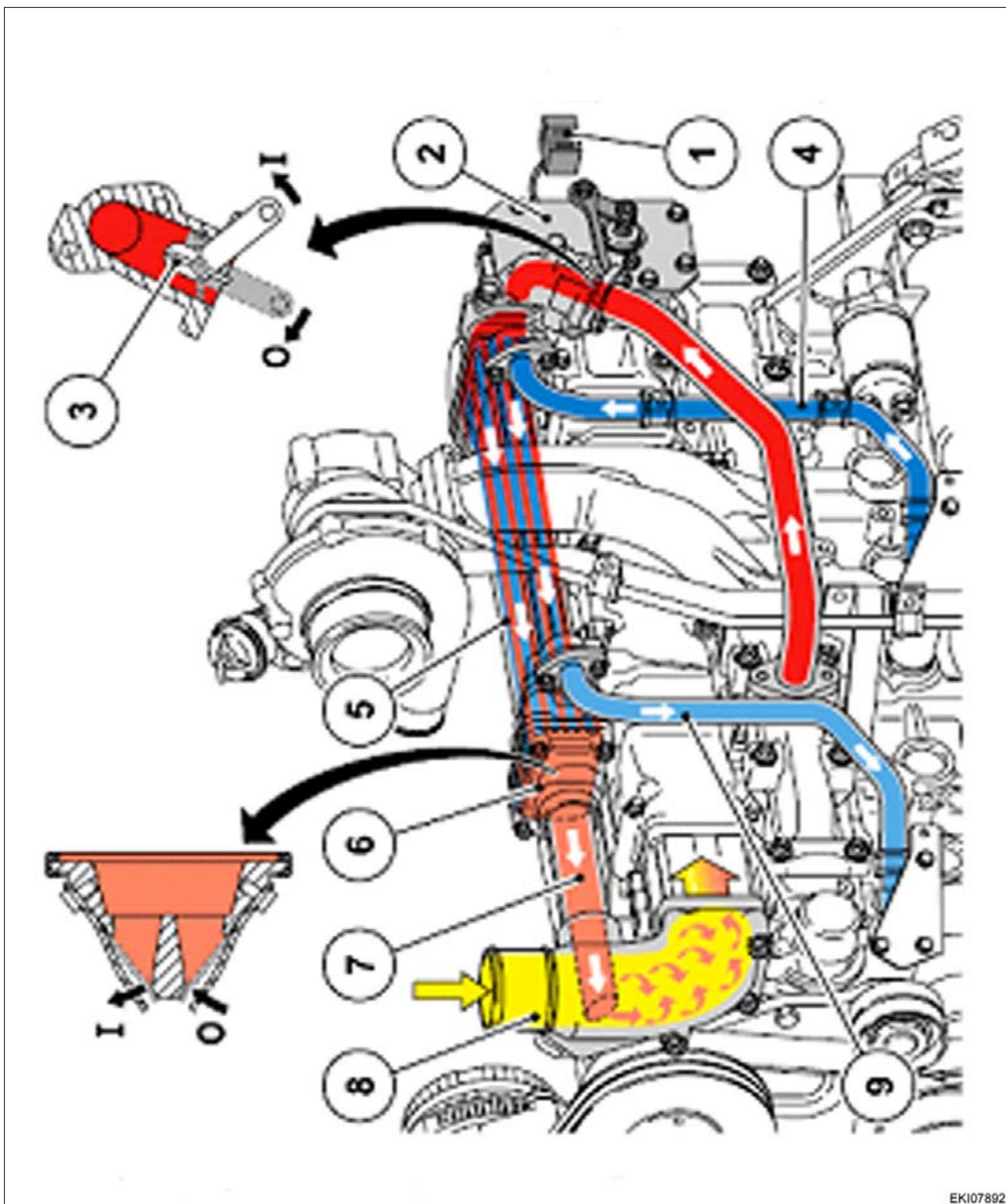


Date	Version	Page	Capitel	Index	Docu-No.
06.06.2006	a	1/7	Y094 - servomotor, exhaust gas recirculation	9000	E

000387

Fendt 300 Vario

Electrics / General system
Y094 - servomotor, exhaust gas recirculation

E

EKI07892

Item	Designation	Item	Designation
1	X1674 - separation point	5	Exhaust cooler
2	Y094 - servomotor, exhaust gas recirculation	6	Check valve (flapper valve)
3	Exhaust flap	7	Exhaust gas recirculation
4	Inflow, water cooling	8	Intake manifold

Date	Version	Page	Capitel	Index	Docu-No.
06.06.2006	a	2/7	Y094 - servomotor, exhaust gas recirculation	9000	E 000387

Fendt 300 Vario

Electrics / General system
Y094 - servomotor, exhaust gas recirculation

E

Reason for exhaust gas recirculation

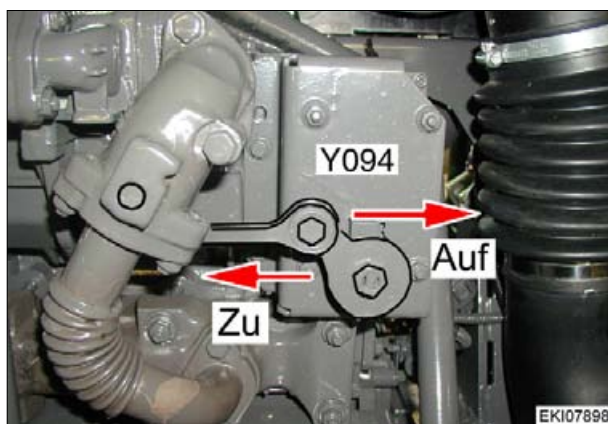
Through the exhaust gas recirculation in the combustion space (cylinder), complete combustion of the diesel-air mixture slows down and the maximum combustion temperature falls with it.

Through the lower combustion temperature, the share of nitrogen oxide in the exhaust decreases

The A051 - ECU,EDC controls exhaust gas recirculation in the combustion space, dependent on engine load and speed

The maximum exhaust gas recirculation is approx. 10 ... 12%

Functional description Y094 - servomotor, exhaust gas recirculation



After ignition ON, the Y094 - servomotor targets the end stops of the exhaust flap

Within the end stops, the A051 - ECU,EDC controls the position of the exhaust flap, dependent on engine load and speed

Note:

If a new Y094 - servomotor is installed:
First attach the mechanical linkage on the Y094 - servomotor
then switch ignition ON, so that the Y094 - servomotor can calibrate the end stops of the exhaust flap.

(If the ignition is switched on before the linkage is attached, calibration is faulty. The faulty calibration can not be reset!!)



Y094 = Servomotor, exhaust gas recirculation

X1674 = Separation point on Y094 - servomotor

On left side of engine

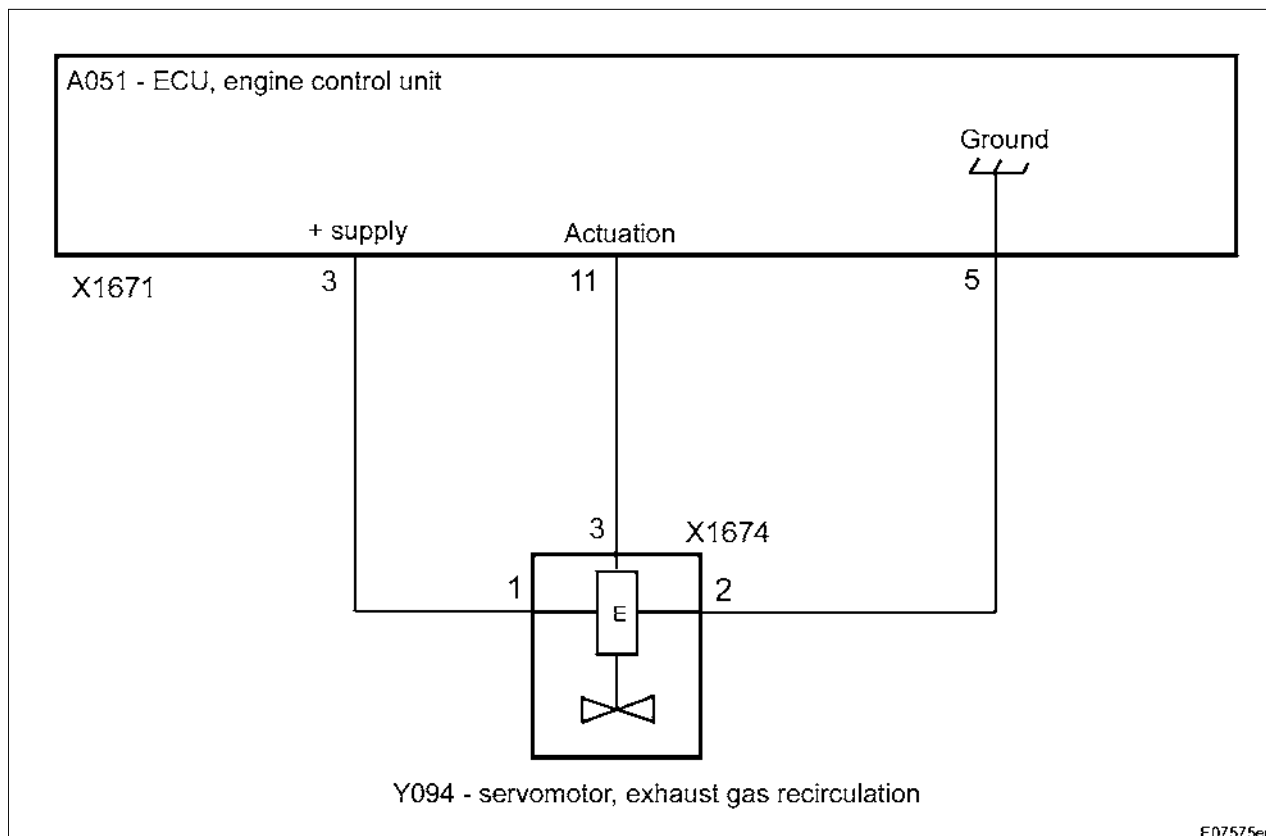


Date	Version	Page	Capitel	Index	Docu-No.
06.06.2006	a	3/7	Y094 - servomotor, exhaust gas recirculation	9000	E
					000387

Fendt 300 Vario

Electrics / General system

Y094 - servomotor, exhaust gas recirculation

E

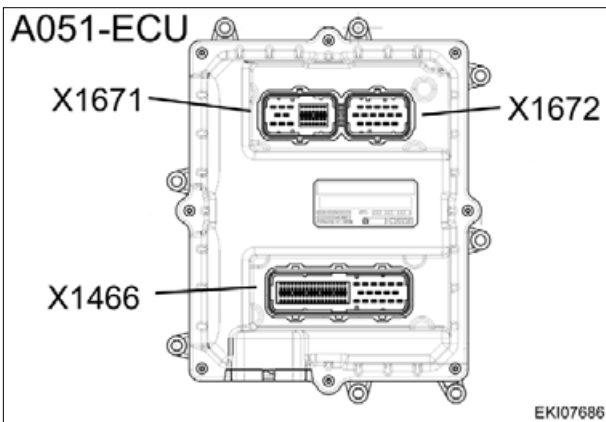
Item	Designation	Remark
A051	ECU, EDC	
X1671	Separation point on A051	
Pin 3	+ supply	
Pin 5	Ground for Y094	
Pin 11	Actuation	
Y094	Servomotor, exhaust gas recirculation	
X1674	Separation point on Y094	

Fendt 300 Vario

Electrics / General system
Y094 - servomotor, exhaust gas recirculation

E**A051** = ECU, EDC

At right entrance step



Measuring points on A051 - ECU, engine control unit (X1671 - separation point)

Pin	Function
3	+ supply
5	Ground
11	Actuation for the Y094 - servomotor

X899.980.208.218 - Adapterkabel

Connect e-adapter box X899.980.208.100 to X1671 on the A051 - ECU, engine control unit with adapter cable X899.980.208.218

Pin	Function
33 (on the 68-pin adapter box)	+ Supply (5.0 VDC)
35 (on the 68-pin adapter box)	Ground for Y094 - servomotor
41 (on the 68-pin adapter box)	Actuation for the Y094 - servomotor

Fendt 300 Vario

Electrics / General system

Y094 - servomotor, exhaust gas recirculation

E

**Measuring points on B094- sensor
(X1671 - separation point)**

Pin	Function
1	+ supply
2	Ground
3	Actuation
4	Not assigned
5	Not assigned

Measuring resistance (ohm)



Measuring resistance (ohm)

Note:

Set measuring range of the multimeter

Ignition 'OFF'

Connect e - adapter box X 899.980.208.100 to
A051, ECU EDC with adapter cable
X899.980.208.218

Open pin 41 and pin 35 and measure pins to
Y094 - servomotor with multi-meter (ohmmeter)

Specified value: approx. 56.6 kilohm

Fendt 300 Vario

Electrics / General system
Y094 - servomotor, exhaust gas recirculation

E

Measuring + supply and actuation



Measuring + supply:

Note:

Set measuring range of the multimeter

Ignition 'OFF'

Connect e - adapter box X 899.980.208.100 to A051, ECU EDC with adapter cable X899.980.208.218

Measure at pins 33 and 35 with multimeter (ohmmeter).

Ignition 'ON'

Target value: 12 VDC



Measuring actuation:

Note:

Set measuring range of the multimeter

Ignition 'OFF'

Connect e - adapter box X 899.980.208.100 to A051, ECU EDC with adapter cable X899.980.208.218

Measure pins 41 and 35 with multimeter (voltmeter).

Ignition 'ON'

Specified value: Actuation is dependent on the engine speed and engine load (see table)

Note: engine not under load

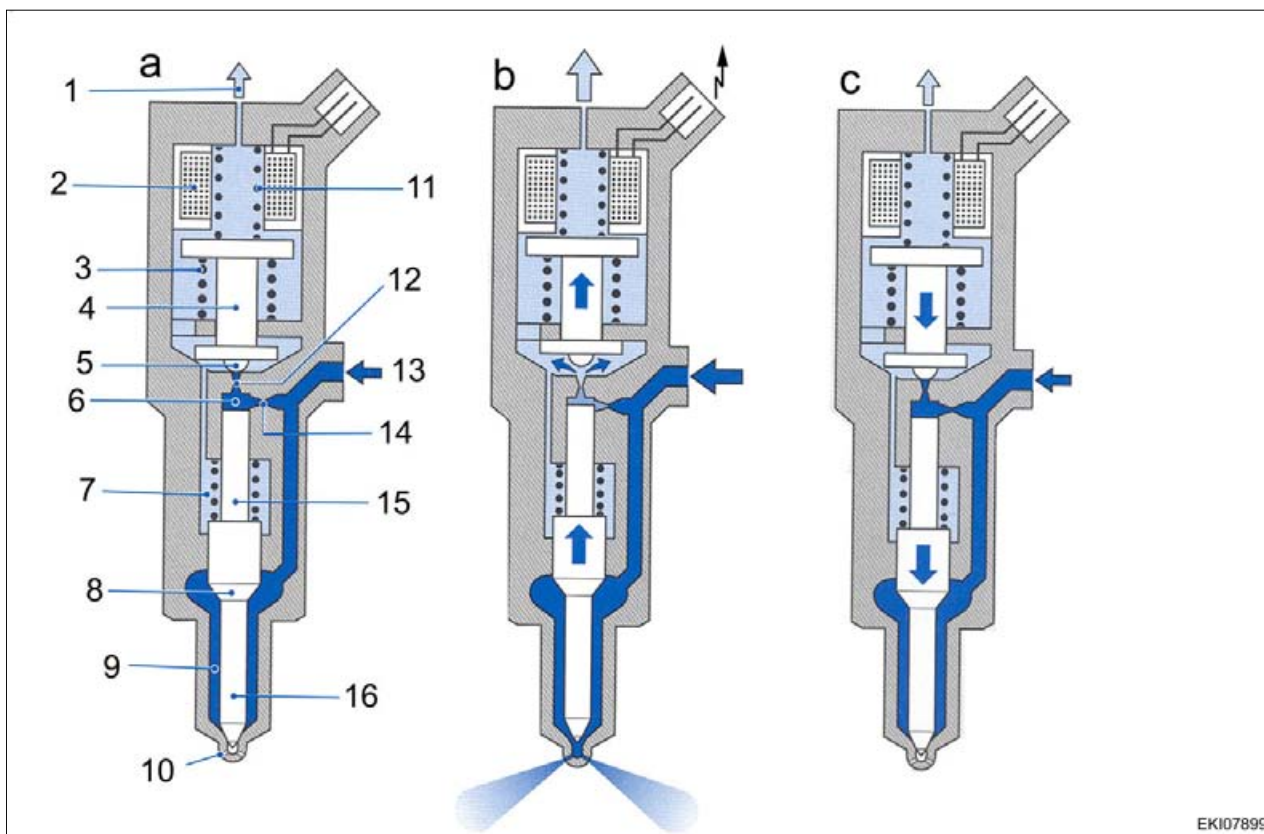
Engine speed	Actuation (approx. values)
800 rpm	0.5 VDC
1200 rpm	0.5 - 1.4 VDC
1600 rpm	0.5 - 2.0 VDC
2000 rpm	0.5 - 2.7 VDC
2200 rpm	0.5 - 2.7 VDC

Fendt 300 Vario

Electrics / General system
Y095 ... Y098 - injector 1 ...4

E**Danger:**

After turning of the engine, wait at least 30 seconds before starting to work on the fuel system!!

Functional description: injector

EKI07899

Item	Designation	Item	Designation
a	Rest position	7	Nozzle spring
b	Injector opens "start of injection"	8	Seat of nozzle needle
c	Injector closes "end of injection"	9	Chamber volume
		10	Spray tip (multi-hole nozzle)
1	Fuel return	11	Solenoid valve spring
2	Solenoid	12	Discharge throttle
3	Lifting spring	13	High pressure connection
4	Solenoid anchor	14	Feed throttle
5	Valve ball	15	Plunger (control plunger)
6	Valve control cavity	16	Nozzle needle

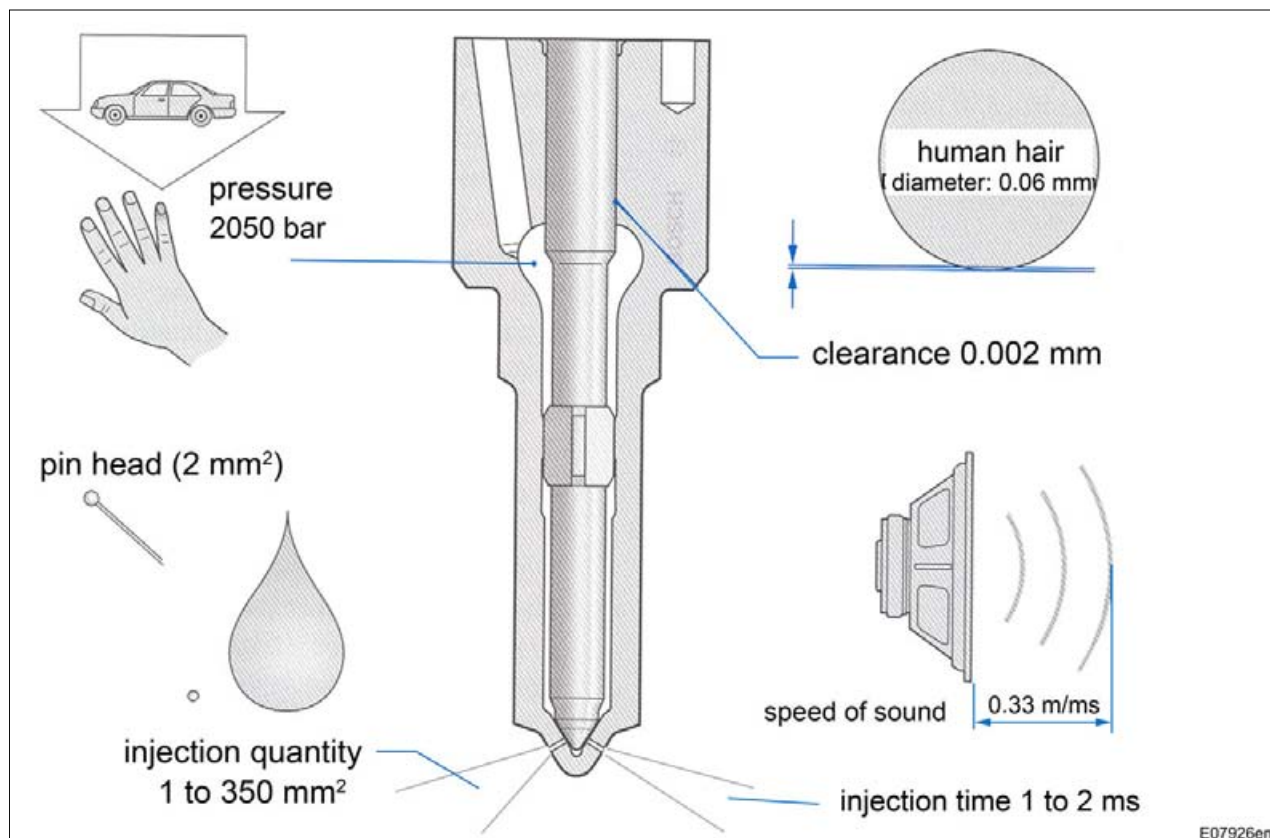
Date	Version	Page		Capitel	Index	Docu-No.
02.08.2006	a	1/8	Y095 ... Y098 - injector 1 ...4	9000	E	000397

Fendt 300 Vario

Electrics / General system
Y095 ... Y098 - injector 1 ...4

E

Forces, clearance and fuel quantities on injector

**Y095** = Injector 1**Y096** = Injector 2**Y097** = Injector 3**Y098** = Injector 4

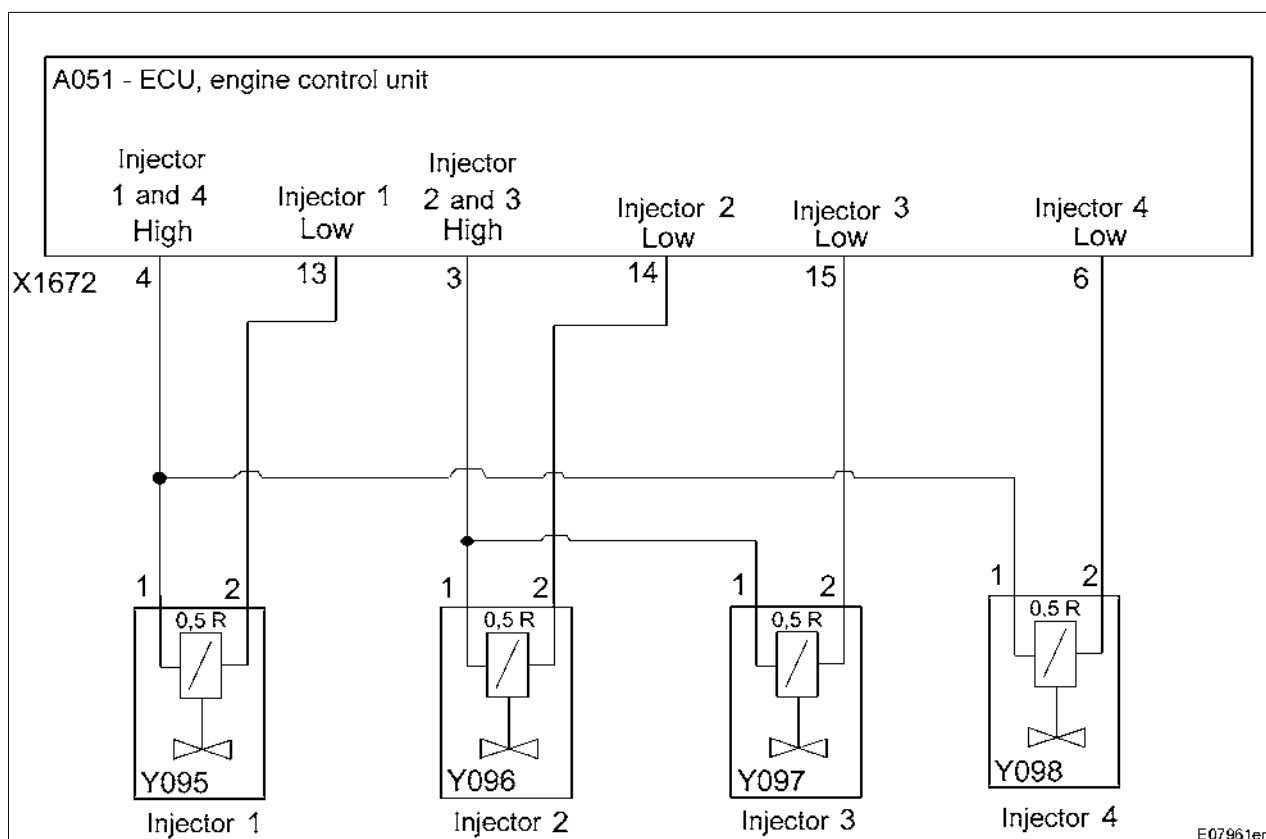
in cylinder head (injector 1 on the flywheel side)



Remove valve cover

Fendt 300 Vario

Electrics / General system
Y095 ... Y098 - injector 1 ...4

E

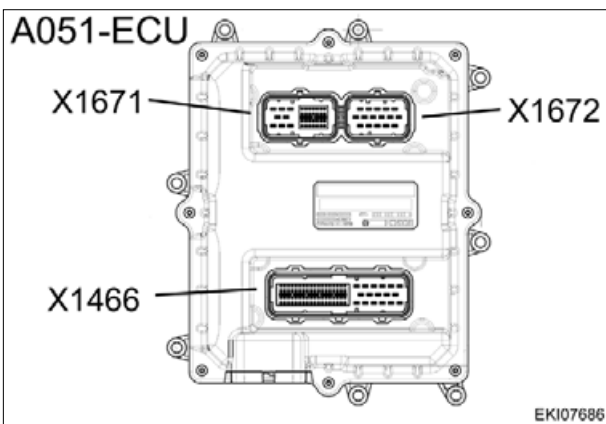
Item	Designation	Remark
A051	ECU, EDC	
X1672	Separation point on A051	
Pin 3	Injector 2 and 3 (High)	
Pin 4	Injector 1 and 4 (High)	
Pin 6	Injector 4 (Low)	Actuation from injector 4
Pin 13	Injector 1 (Low)	Actuation from injector 1
Pin 14	Injector 2 (Low)	Actuation from injector 2
Pin 15	Injector 3 (Low)	Actuation from injector 3
Y095	Injector 1	
Y096	Injector 2	
Y097	Injector 3	
Y098	Injector 4	

Fendt 300 Vario

Electrics / General system
Y095 ... Y098 - injector 1 ...4

E**A051** = ECU, EDC

At right entrance step



Measuring point on A051 - ECU, engine control unit (X1672 - separation point)

Pin	Function
3	Injector 2 and 3 (High)
4	Injector 1 and 4 (High)
6	Injector 4 (Low)
13	Injector 1 (Low)
14	Injector 2 (Low)
15	Injector 3 (Low)



Connect e-adapter box X899.980.208.100 to separation point X1672 on the A051 - ECU, engine control unit with adapter cable X899.980.208.218

Pin	Function
3 (on the 68-pin adapter box)	Injector 2 and 3 (High)
4 (on the 68-pin adapter box)	Injector 1 and 4 (High)
6 (on the 68-pin adapter box)	Injector 4 (Low)
13 (on the 68-pin adapter box)	Injector 1 (Low)
14 (on the 68-pin adapter box)	Injector 2 (Low)
15 (on the 68-pin adapter box)	Injector 3 (Low)

Fendt 300 Vario

Electrics / General system
Y095 ... Y098 - injector 1 ...4

E**Measuring point on Y - injector**

Pin	Function
1	High
2	Low

Measuring resistance (ohm)**Measuring resistance (ohm)**

Ignition "OFF"

Connect e - adapter box X 899.980.280.100 to
 A051 - ECU EDC with adapter cable
 X899.980.280.218

open corresponding pins (see table below)

With multimeter (ohmmeter), measure pins to
 Y-injector

Specified value: 0.5 ohms

Pin (at the 68-pin adapter box)	Injector	Specified value
4 and 13	Y095 - Injector 1	0.5 ohms
3 and 14	Y096 - Injector 2	0.5 ohms
3 and 15	Y097 - Injector 3	0.5 ohms
4 and 6	Y098 - Injector 4	0.5 ohms

Fendt 300 Vario	Electrics / General system Y095 ... Y098 - injector 1 ...4	E
------------------------	---	----------

Measuring voltage (volt)



Measuring voltage (volt)

Ignition "OFF"

Connect e - adapter box X 899.980.280.100 to
A051 - ECU EDC with adapter cable
X899.980.280.218

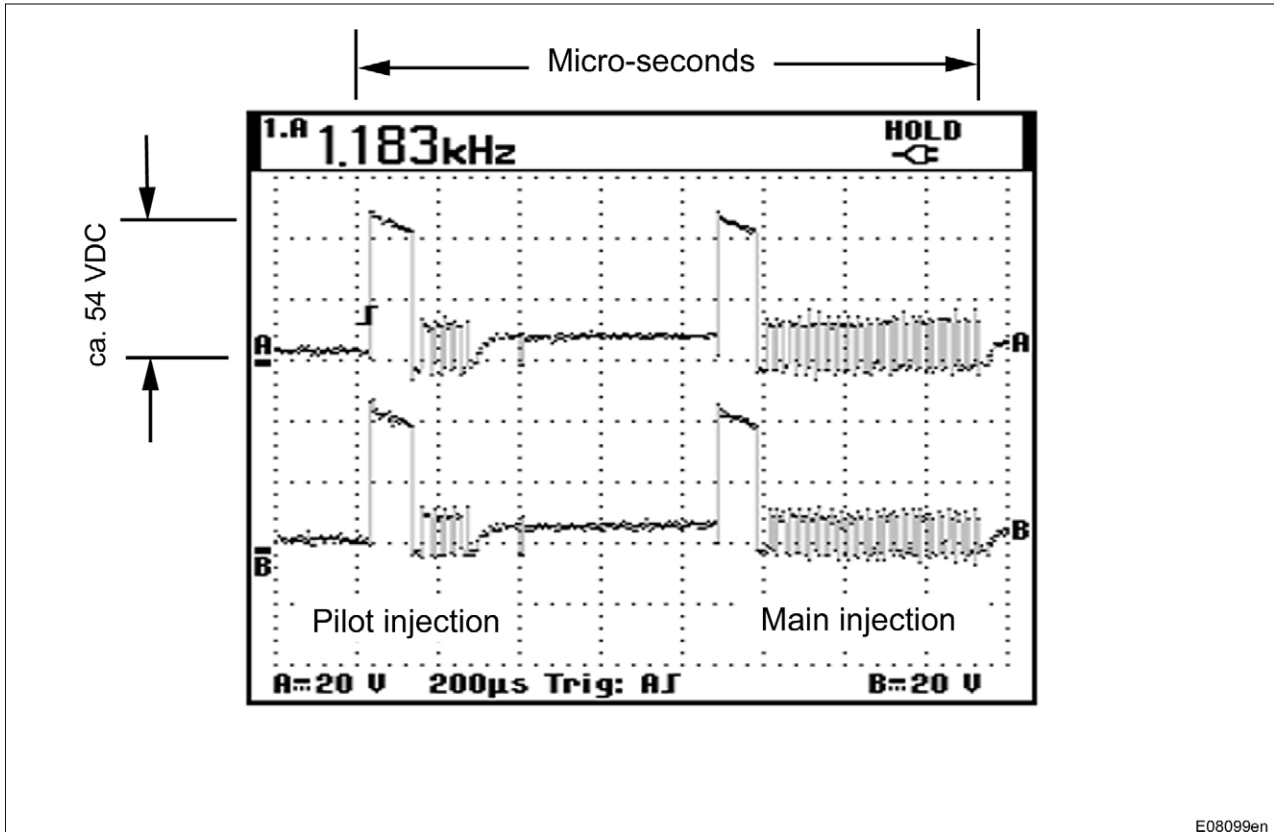
with multimeter (ohmmeter), measure
corresponding pins (see table below) to
Y - injector

Switch ignition on, engine on

**Specified value: is dependent on the engine
speed and engine load**

Note: engine not under load

Pin (at the 68-pin adapter box)	Injector	Specified value (approx. values)
4 and 13	Y095 - Injector 1	800 rpm = 35 mVDC
3 and 14	Y096 - Injector 2	1200 rpm = 45 mVDC
3 and 15	Y097 - Injector 3	1600 rpm = 65 mVDC
4 and 6	Y098 - Injector 4	2000 rpm = 82 mVDC 2200 rpm = 90 mVDC

Fendt 300 Vario**Electrics / General system
Y095 ... Y098 - injector 1 ...4****E****Oscilloscope screen**

Date	Version	Page	Capitel	Index	Docu-No.
02.08.2006	a	7/8	9000	E	000397

Fendt 300 Vario	Electrics / General system Y095 ... Y098 - injector 1 ...4	E
------------------------	---	----------

Testing hydraulic function of Y - injector ("cylinder shut-off")



Cylinder shut-off

Ignition "OFF"

Connect e - adapter box X 899.980.280.100 to
A051 - ECU EDC with adapter cable
X899.980.280.218

Start engine

Switch off the injectors one at a time and observe
how the engine runs

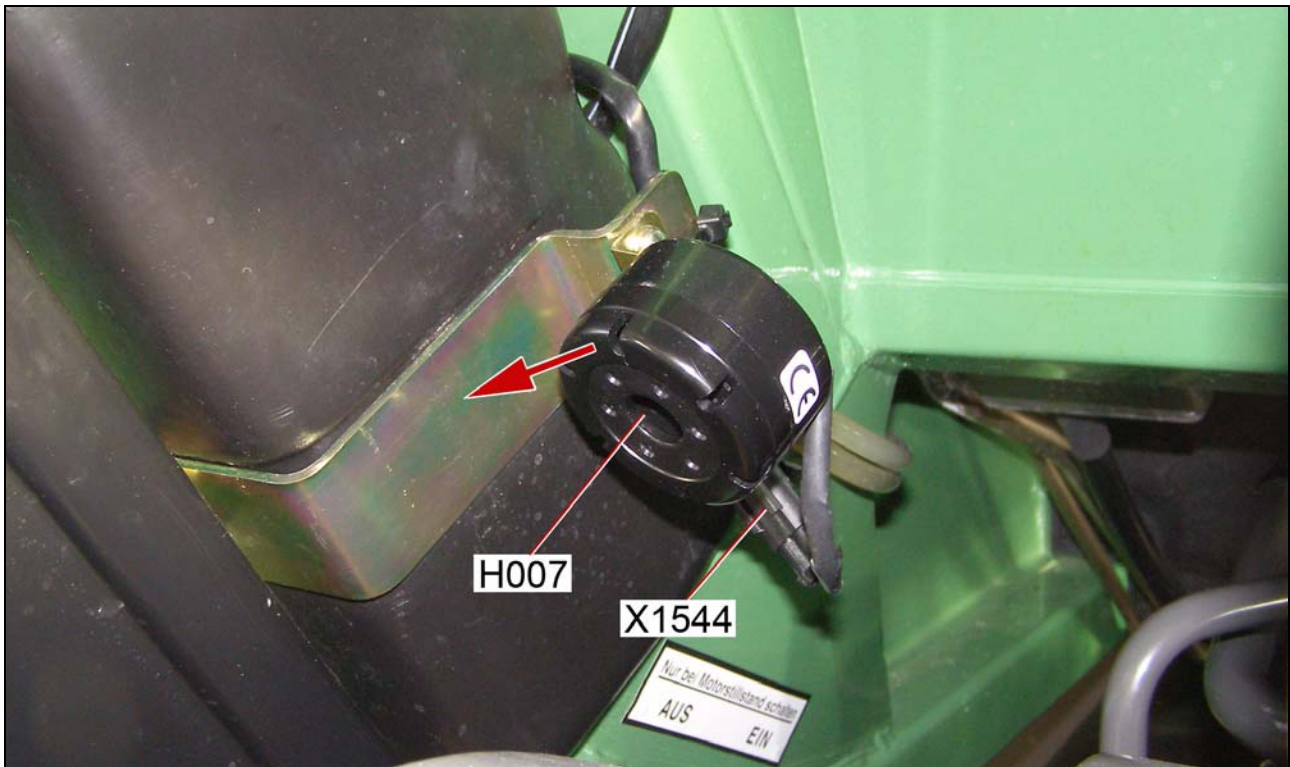
open corresponding pins (see table below)

**If the engine continues to run the same, then
the injector is faulty**

Note: engine not under load

Note: observe engine running. If the engine continues to run the same, then the injector is faulty

Pin (at the 68-pin adapter box)	Pin (at the 68-pin adapter box) open	To be switched off:
4 and 13	13	Y095 - Injector 1
3 and 14	14	Y096 - Injector 2
3 and 15	15	Y097 - Injector 3
4 and 6	6	Y098 - Injector 4



I001917

- Replace the bracket of the windscreen washer tank (arrowed).
- Pull separating point (X1544) from behind the windscreen washer tank.
- Screw reversing buzzer (H007) on to windscreen washer tank bracket.
- Attach separating point (X1544).

The buzzer is immediately active without an additional relay and without EOL programming.



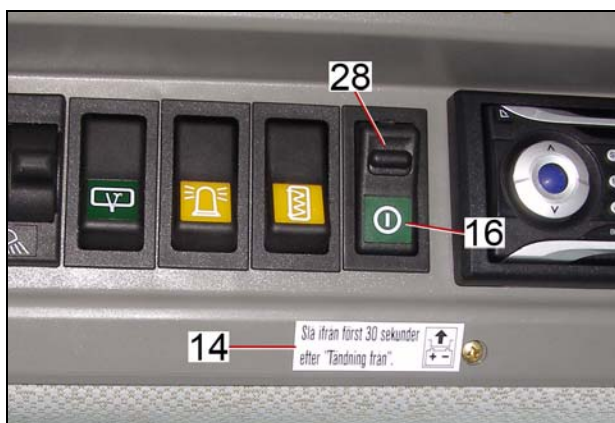
ELECTRICAL SYSTEM/STARTER LOCKOUT

Mounting battery disconnect

G

1001775

- Unscrew radio trim from inside cab roof and swivel downwards.
- Remove trim (arrowed).
- Pull separation point (X1645) forwards.



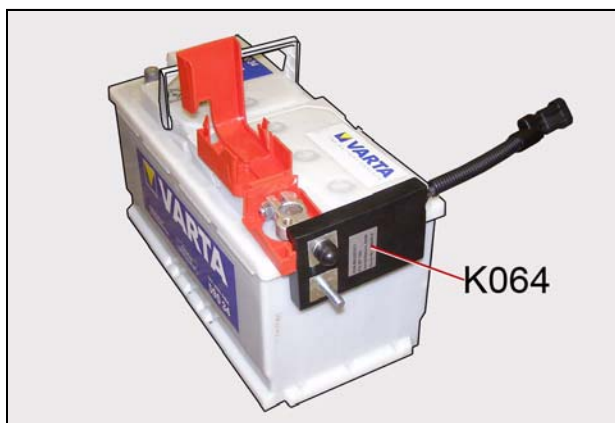
1001776

- Clip insert (Pos. 16) into toggle switch (Item 28).
- Insert toggle switch (Item 28 / S083) into radio trim.
- Attach separation point (X1645) to toggle switch.
- Re-mount radio trim.
- Attach decal (Item 14) below toggle switch.



1001777

- Remove trim from battery
- Remove dummy plug from separation (X1699) point.
- Unscrew cables from positive and negative terminals.



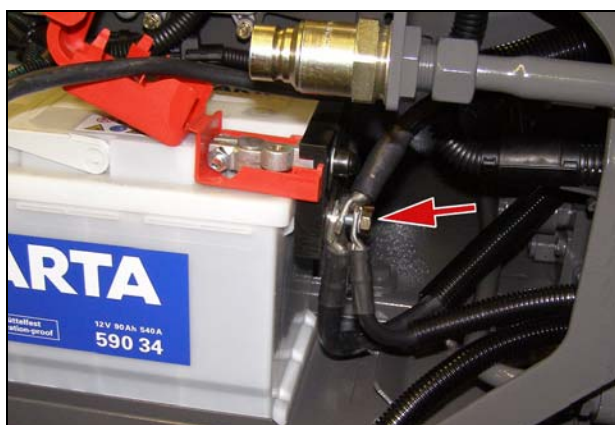
1001778

- Screw on battery disconnect relay (K064) to positive battery terminal.



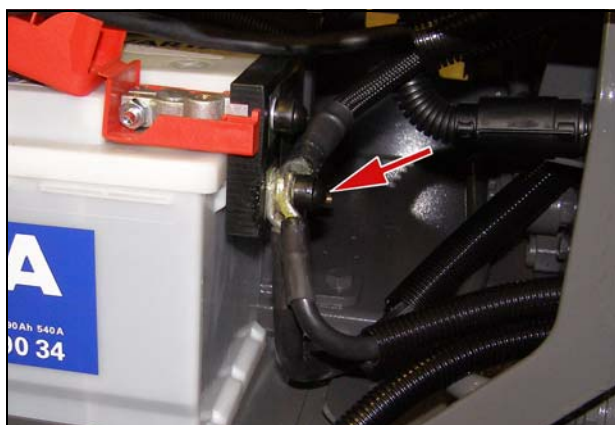
1001779

- Attach separation point (X1699) to connector on battery disconnect relay.



1001780

- Screw wiring harnesses to battery disconnect relay.



1001781

- Grease cable lugs, attach protective cap.



1001782

- Screw on power cable for radio and clock.



ELECTRICAL SYSTEM/STARTER LOCKOUT
Mounting battery disconnect

G

1001783

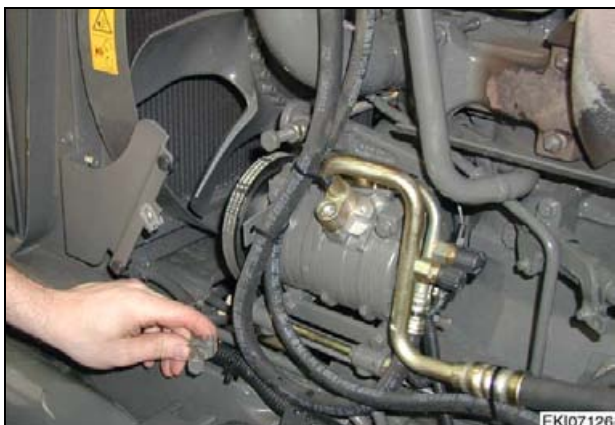
- Mount battery completely.



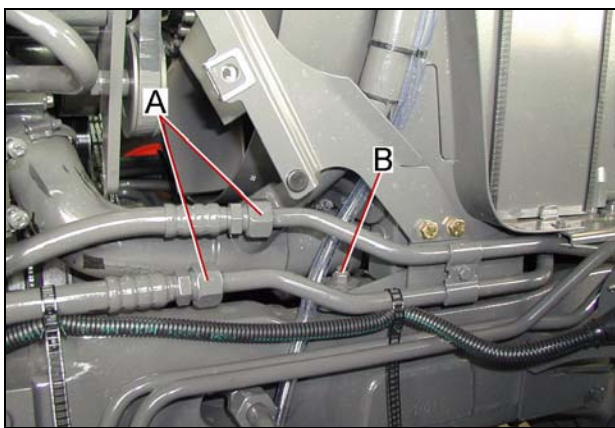
FRONT POWER LIFT Remove obstructing parts

G

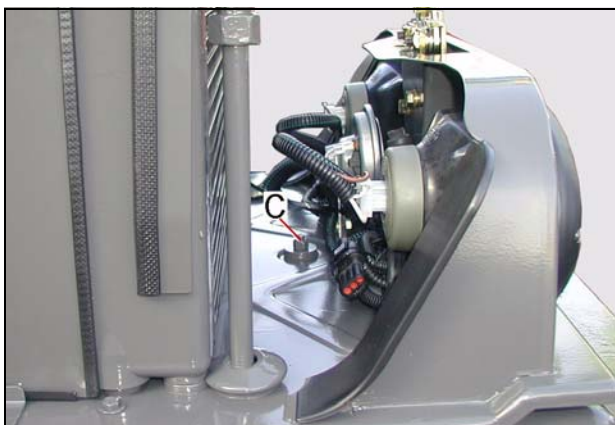
Assembly Instructions



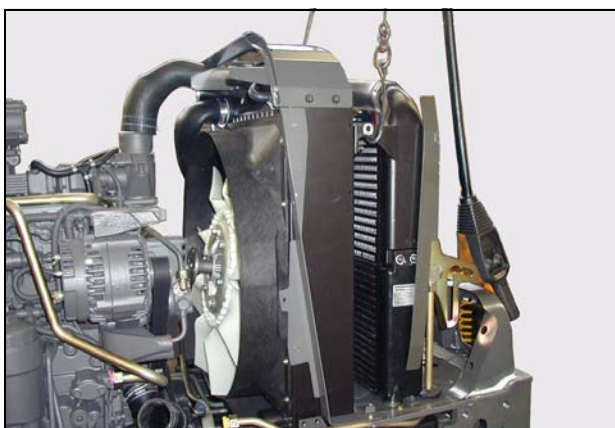
- Remove side panel and drain coolant.



- Release connections (item A).
- Remove one screw on the left and right of the radiator block (item B).



- Disconnect separation point on headlight and horn and retract cable set.
- Remove one screw from radiator block, front centre (item C)



- Release all engine to radiator hose couplings.
- Unscrew radiator at its hub where necessary.
- Carefully raise radiator block using crane.
- Unscrew front-end weight.



FRONT POWER LIFT Mounting lifting gear

G



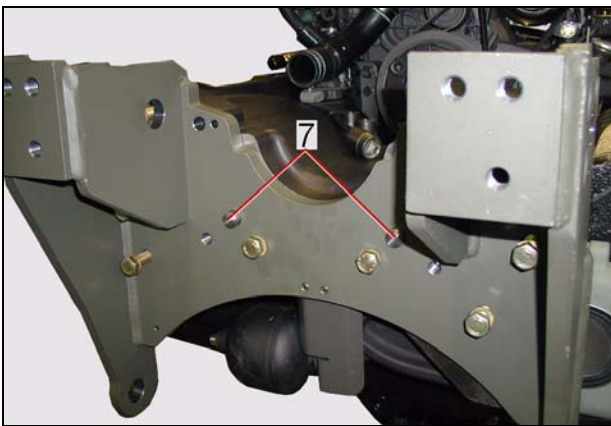
I001328

- Screw diaphragm accumulator to frame using bracket.

2 x M10X35 hex screws

2 x 10 spring washers

- Insert screws and parallel pins into frame.

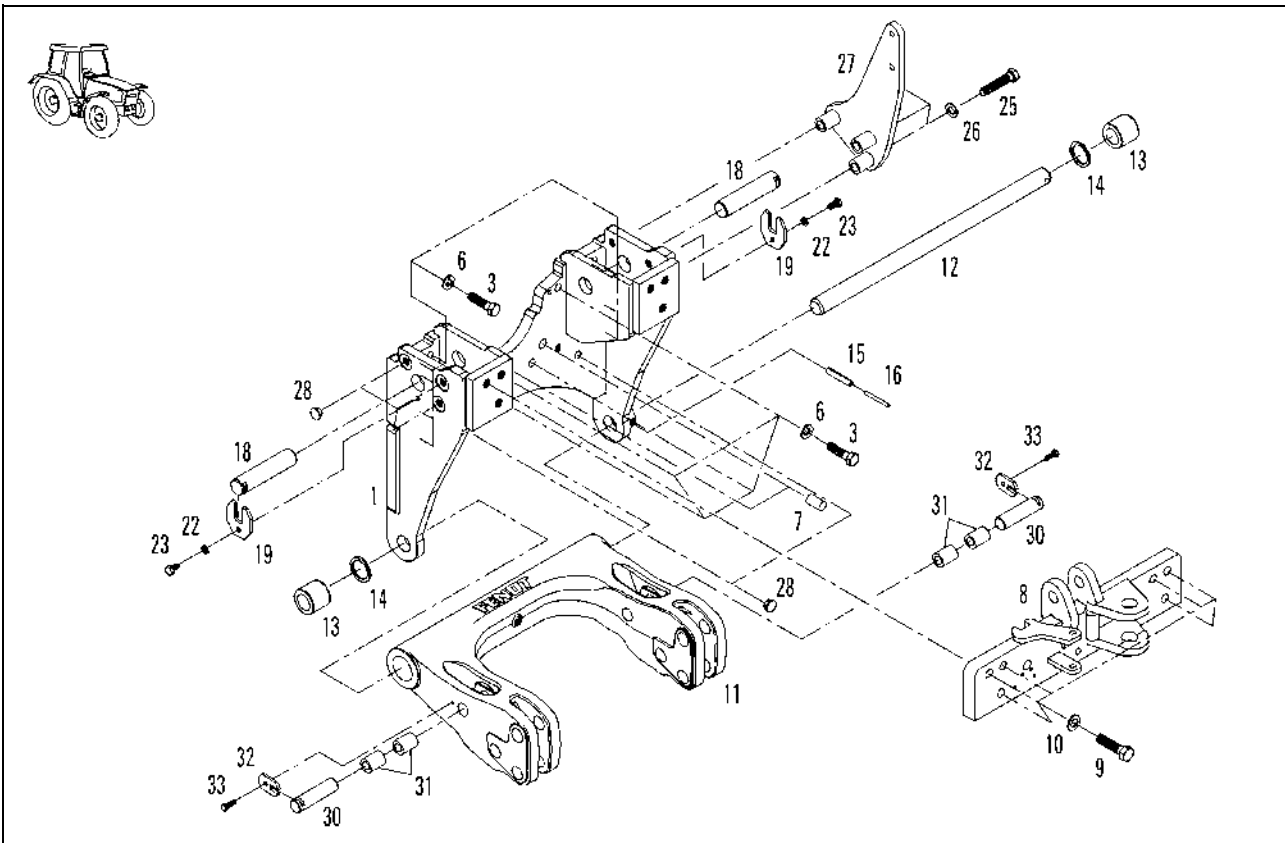


I001329

- Clean mounting flange using ductor.
- Flange frame, tap in parallel pins (Item 7).
- Tighten all screws.
- Continue to mount lifting gear using the drawing and parts list below.

Shaft (Item 12) coated with K3k grease during mounting procedure.

Assembly Instructions



I001164



FRONT POWER LIFT
Mounting lifting gear

G

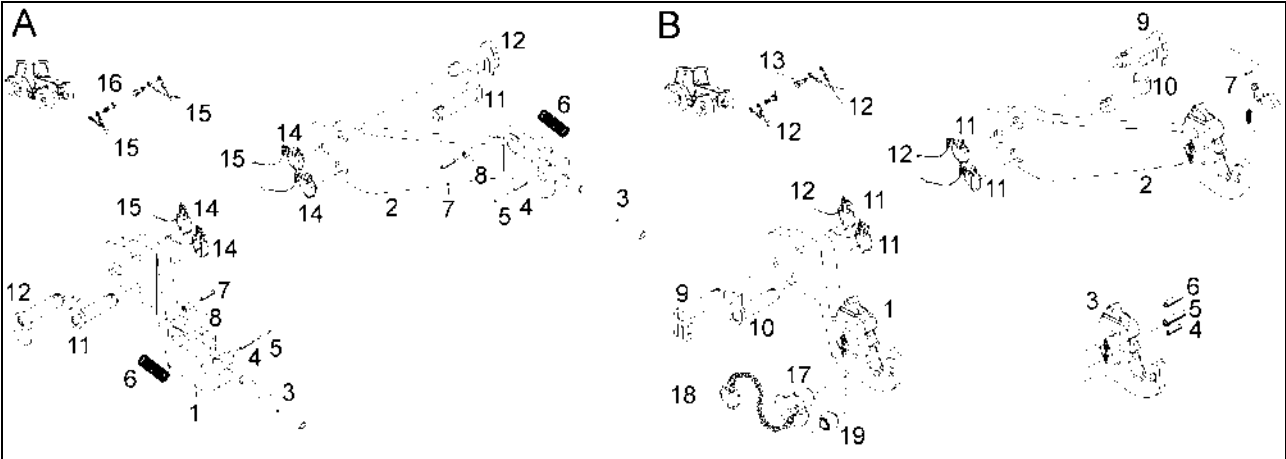
Item	Designation	Item	Designation
1	FRAME	18	PIN
3	HEX SCREW M16X60-8.8A3L	19	SECURING PLATE
6	SPRING WASHER FWN 6508-16-A3L	22	SPRING WASHER 10-A3L
7	PARALLEL PIN M6X36-ST50K	23	HEX SCREW M10X20-8.8A3L
8	CROSS BAR	25	HEX SCREW M16X80-8.8A3L
9	SOCKET HEAD CAP SCREW M18X70-8.8-A3L	26	SPRING WASHER 16-A3L
10	WASHER	27	BRACKET LEFT/BRACKET RIGHT
11	FRAME	28	DRAIN PLUGS
12	SHAFT	30	PIN
13	BUSH	31	SEALING WASHER
14	WASHER	32	SECURING PLATE
15	CLAMPING PIN 12X65	33	HEX SCREW M8X25-8.8A3L
16	CLAMPING PIN 7X65		



FRONT POWER LIFT

Mount lower link

G



I001407

- A = Lower link, standard
- B = Lower link with quick-release coupling

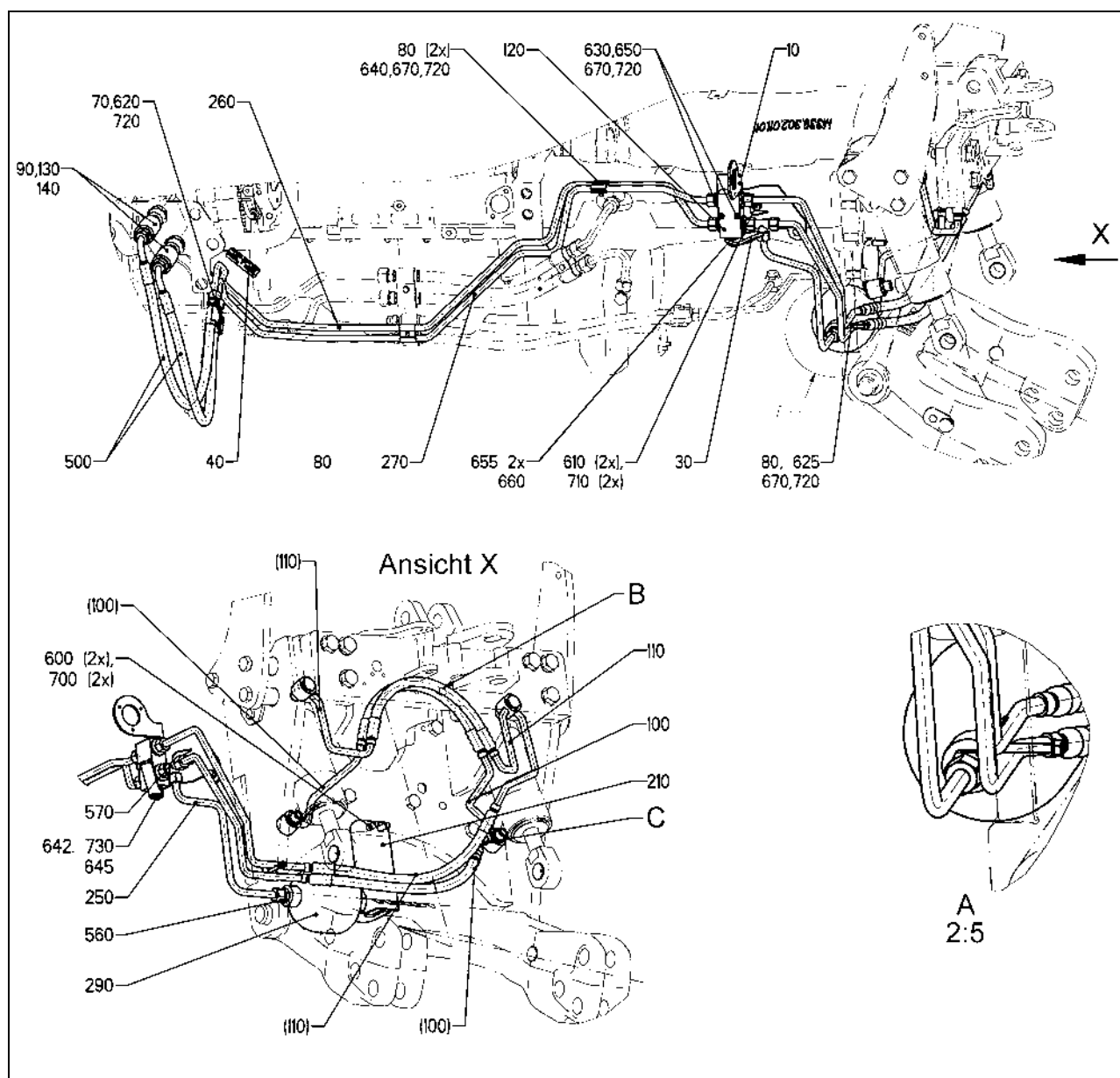
Item	Designation	Item	Designation
1	LINK	1	LINK
2	LINK	2	LINK
3	PIN	3	LOWER LINK
4	ROLL PIN 6x40	4	ROLL PIN 6x32
5	ROLL PIN 3.5x40	5	ROLL PIN 13x36
6	DISENGAGING SPRING	6	ROLL PIN 10x36
7	ROLL PIN 8x40	7	PARTS SET
8	BUSH	9	PIN
11	PIN	10	PIN
12	PIN	11	LINCH PIN 12x45
14	LINCH PIN 12x45	12	CABLE
15	CABLE	13	HEX SCREW M8X25-8.8A3L
16	HEX SCREW M8X25-8.8A3L	17	BALL PROFILE
		18	LINCH PIN
		19	BALL SLEEVE

Assembly Instructions



FRONT POWER LIFT Piping SA/DA

G



1001166

- Mount piping using the drawing and parts list below as reference.

Mounting instructions

B = Respect clearance to front PTO solenoid valve.

C = Respect clearance to front power lift frame.

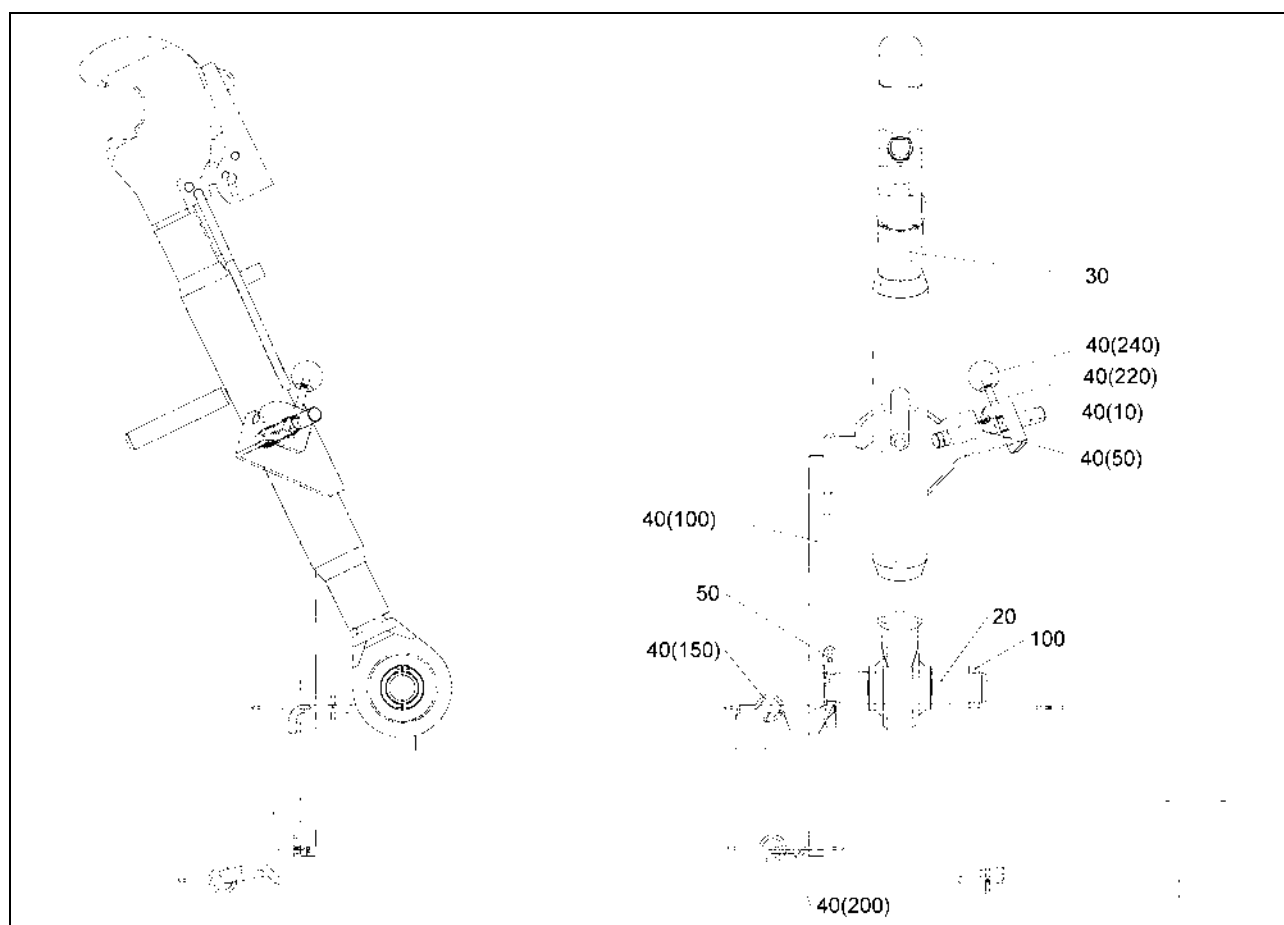
Item	Designation	Item	Designation
10	BRACKET	560	GE-SCREW-IN COUPLINGS
30	LEVER	570	T-COUPPLINGS
40	PLATE	600	HEX SCREW_M10X30-8.8A3L
70	CLAMP	610	HEX SCREW_M8X20-8.8A3L
80	CLAMP	620	HEX SCREW_M6X35-8.8A3L
90	DUST CAP-RED	625	HEX SCREW_M6X45-8.8A3L
100	PRESSURE LINE	630	HEX SCREW_M6X50-8.8A3L
110	PRESSURE LINE	640	HEX SCREW_M6X25-8.8A3L
120	BALL VALVE_DOUBLE	642	HEX SCREW_M5X16-8.8A3L
130	COUPLING SLEEVE	645	WASHER_5.3-140HV-A3L



FRONT POWER LIFT
Piping SA/DA

G

Item	Designation	Item	Designation
140	CONNECTOR	650	WASHER_6.4-140HV-A3L
210	BRACKET	655	WASHER_12-ST.A3L
250	PRESSURE PIPE	660	WASHER_13-ST.A3L
250	PRESSURE PIPE	670	HEX NUT_M6-8A3L
260	PRESSURE PIPE	700	SPRING WASHER_FWN 65208-10-A3L
270	PRESSURE PIPE	710	SPRING WASHER_FWN 65208-8-A3L
290	DIAPHRAGM ACCUMULATOR	720	SPRING WASHER_FWN 65208-6-A3L
500	PRESSURE HOSE	730	SPRING WASHER_FWN 65208-5-A3L



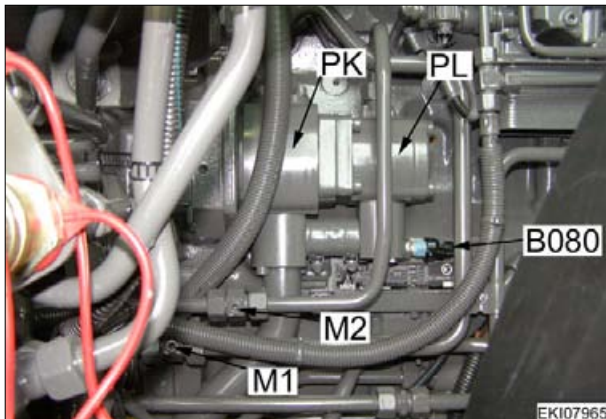
1001435

- Apply a thin coat of Longtime 3EP to bolts (item 20).

Item	Designation	Item	Designation
20	PIN	40(150)	CABLE
30	TOP LINK	40(200)	COTTER PIN 3.2
40(10)	PIN	40(220)	STUD BOLT M6x45 8.8-A3L
40(50)	PRESSURE SPRING	40(240)	BALL END
40(100)	BRACKET	50	LINCH PIN 12x45
		100	ROLL PIN 8x36

Fendt 300 Vario

Hydraulic pump assembly / General system
Working hydraulics / Steering hydraulics

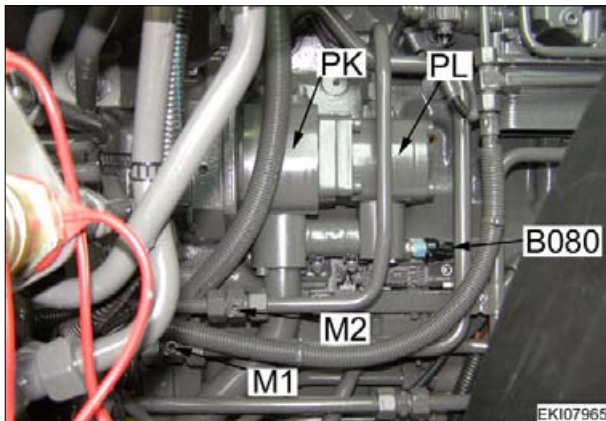
A**Pump, working hydraulics (PK)**

PK = Pump, working hydraulics (constant-flow)

B080 = Sensor, hydraulic oil temperature

M1 = Measuring point for pump, working hydraulics (PK)

- Hydraulic oil temperature approx. 50°C
- Engine speed = 1000 rpm
- deflect auxiliary control valve (move to stop).

Target value: 200 bar**Note:****Chapter 0000 Reg. D - Position of hydraulic components****Pump, steering (PL)**

PL = Pump, steering

B080 = Sensor, hydraulic oil temperature

M2 = Measuring point for pump, steering (PL)

- Hydraulic oil temperature approx. 50°C
- Engine speed = 1000 rpm
- Turn steering to full lock.

Target value: 180 +5 bar (for 4WD tractor)**Target value: 140 +5 bar (for rear-wheel-drive tractor)**

Date	Version	Page	Capitel	Index	Docu-No.
04.08.2006	a	1/2	Working hydraulics / Steering hydraulics	9400	A
					000003

Fendt 300 Vario

Hydraulic pump assembly / General system
Working hydraulics / Steering hydraulics

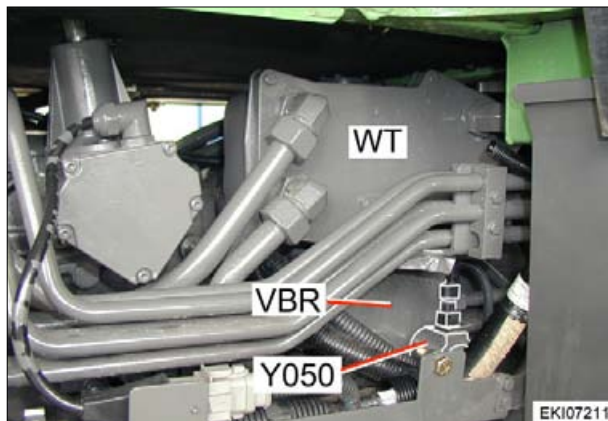
A**Oil flow collector**

S056 = Oil flow collector button

- Engine speed = 1000 rpm
- Steering is not actuated,
- Engage oil flow collector (press button S056)
- Deflect auxiliary control valve (move to stop).

Target value: 200 bar**Note:**

Pressure relief valve (200 bar) in terminal plate AP is actuated.



Y050 = Oil flow collector valve

- Engine speed = 1000 rpm
- Turn steering to full lock.
- Engage oil flow collector (press button S056)
- deflect auxiliary control valve (move to stop).

Pump pressure, steering (PL) increases from 180 +5 bar to 200 bar (4WD tractor)

Pump pressure, steering (PL) increases from 140 +5 bar to 200 bar (RWD tractor)

Reason:

The major proportion of the oil passes via the pressure relief valve in the terminal plate AP to the return flow.

The amount of oil in the steering unit LE is reduced, and the pressure relief valve in the steering unit LE closes

Fendt 300 Vario	Hydraulics / General system Technical specifications: service and steering hydraulics	A
------------------------	--	----------

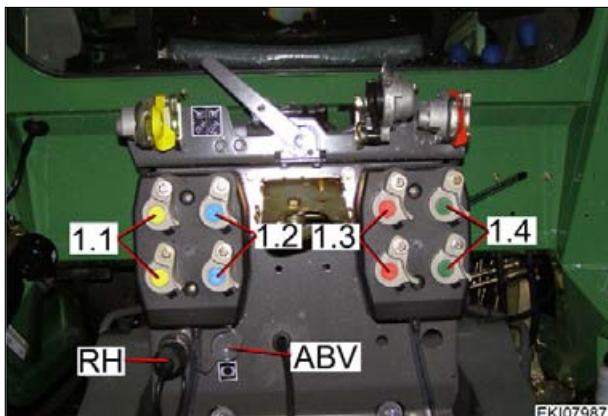
Selected technical data: working and steering hydraulics	
Component	Specifications
Working and steering hydraulics	Load sensing hydraulic with fixed displacement pump
Pump PK (working hydraulics)	
Transmission ratio (diesel engine: pump)	0.978
Max. pressure	200 bar
Delivery capacity / pump speed	22.5 ccm
Delivery capacity at rated engine speed = 2100 rpm	48 l/min
Pump PL (steering pump)	
Transmission ratio (diesel engine: pump)	0.978
Max. pressure	200 bar
Delivery capacity / pump speed	14 ccm
Delivery capacity at rated engine speed = 2100 rpm	30 l/min
Oil flow collector	Standard
Maximum delivery capacity (PK + PL) at rated engine speed (2100 rpm)	Approx. 78 l/min
Maximum available oil quantity	approx. 45 l
Heat exchanger: gear oil / hydraulic oil	Standard
Auxiliary control valves	SB 23 LS (mechanically actuated)
Auxiliary control valves "crossgate lever" (standard)	1.1 "yellow" and 1.2 "blue"
Auxiliary control valves (optional)	1.3 "red" and 1.4 "green"
Auxiliary control valves with flow control	1.1 "yellow" and 1.3 "red" 15 ... 65 l/min (yellow) 15 ... 70 l/min (red)
Rear power lift (position - draft - mixed control) with vibration damping	EPC - B (Bosch)
Continuous lifting power at rear power lift	46.4 KN (4.6 tons)
Front power lift (hydr. connection centre)	single-acting sa / double-acting da (switchable)
Continuous lifting power at front power lift	28.4 KN (2.8 tons)
Hydr. trailer brake valve	
Italian version (load relief via solenoid valve)	Optional
French version (purely hydraulic)	Optional

Date	Version	Page	Capitel	Index	Docu-No.
04.08.2006	a	1/4	Technical specifications: service and steering hydraulics 9600	A	000013

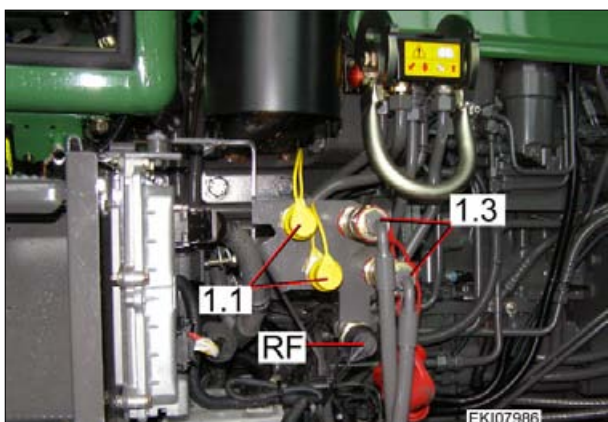
Fendt 300 Vario

Hydraulics / General system

Technical specifications: service and steering hydraulics

A**Hydraulic connections, rear**

- 1.1 = Valve, yellow
- 1.2 = Valve, blue
- 1.3 = Valve, red (optional extra)
- 1.4 = Valve, green (optional extra)
- RH = Return flow rear
- ABV = hydraulic trailer brake valve (optional extra)

**Centre hydraulic connections**

- 1.1 = Valve, yellow
- 1.3 = Valve, red
- RF = Return flow front

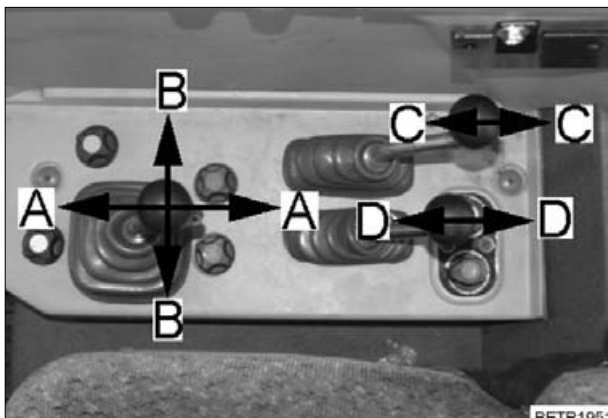
**Multi-coupling (optional extra)**

- Valves, yellow and blue as well as front return flow

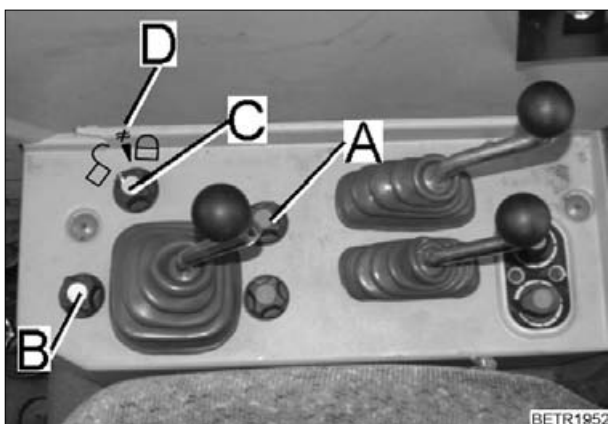
Fendt 300 Vario

Hydraulics / General system

Technical specifications: service and steering hydraulics

A**Valves**

- Valve, yellow (standard), actuation direction (A)
- Valve, blue (standard), actuation direction (B)
- Valve, red (optional extra), actuation direction (C)
- Valve, green (optional extra), actuation direction (D)



The blue valve (1.2) can be locked in floating position by turning rotary control (C). (e.g. for front loader operations)

To block the floating position, turn the lock from the locked neutral position to position (D).

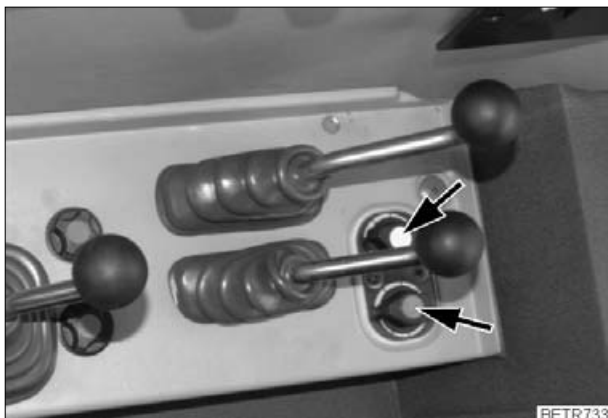
The yellow valve (1.1) can be locked in the "raise" position

with rotary control (B), and the red valve (1.3) likewise with rotary control (A).

(e.g. for operation with constant consumers)

Note:

The lock can be released again by means of a light jerk (kick-out) on the crossgate lever or lever.



The oil quantity for the yellow and red valves is infinitely variable by means of a flow regulator.

- Yellow valve from 15 to 65 l/min
- Red valve from 15 to 70 l/min

Set rotary controls (arrowed) depending on oil requirement

Date	Version	Page	Technical specifications: service and steering hydraulics	Capitel	Index	Docu-No.
04.08.2006	a	3/4		9600	A	000013

Fendt 300 Vario	Hydraulics / General system	A
Technical specifications: service and steering hydraulics		



Engage and disengage function for hydraulic multi-circuit system (oil flow collector)

The oil flow collector is engaged or disengaged by pressing button (S056).

When it is engaged, it means that the return flow of the steering hydraulics is fed into the working hydraulics circuit.

- Pushbutton not actuated (delivery capacity approx. 48 l/min)
- Pushbutton actuated, lamp in pushbutton lights up (delivery capacity approx. 78 l/min)

Note:

If the increased delivery capacity is not required, switch off the function using switch (S056). Otherwise the hydraulics have an increased power requirement!

Calculating delivery capacity without oil-flow connection (e.g. engine speed = 1500 rpm)

Note:

Transmission ratio: engine / pump = 0.978

Pump speed = 1500 rpm / 0.978

Pump speed = 1535 rpm

- Delivery capacity per revolution of the working hydraulics pump = 22.5 ccm

Delivery capacity = 22.5 ccm x 1535 rpm

Delivery capacity = (34537 ccm/min) / 1000 (l/min)

Delivery capacity = approx. 34 l/min

Calculating delivery capacity with oil-flow connection (e.g. engine speed = 1500 rpm)

Note:

Transmission ratio: engine / pump = 0.978

Pump speed = 1500 rpm x 0.978

Pump speed = 1535 rpm

- Delivery capacity per revolution of the working hydraulics pump = 22.5 ccm

- Delivery capacity per revolution of steering pump = 14 ccm

Delivery capacity = (22.5 ccm x 1535 rpm) + (14 ccm x 1535 rpm)

Delivery capacity = 34537 ccm/min + 21490 ccm/min

Delivery capacity = (56027 ccm/min) / (1000 l/min)

Delivery capacity = approx. 56 l/min

Date	Version	Page	Capitel	Index	Docu-No.
04.08.2006	a	4/4	Technical specifications: service and steering hydraulics	9600	A
					000013



Hydraulics / General system Hydraulic circuit diagram - key	C
--	----------

Hydraulic circuit diagram: 339.950.000.001

Item		Designation	Item		Designation
1.1.		Auxiliary control valve position 1 "yellow"	FSP		Front power lift accumulator
1.2.		Auxiliary control valve position 2 "blue"	HKH		Rear power lift
1.3.		Auxiliary control valve position 3 "red"	LE		Steering unit
1.4.		Auxiliary control valve position 4 "green"	OETR		Hydraulic oil thermostat
Anschluß A		to break-away coupling -	PK		Pump, constant delivery 22.5 ccm / revolution 48 l / min
Anschluß B		to break-away coupling +	PL		Pump, steering 14 ccm / revolution 30 l / min
Hydr. ABV		Hydraulic trailer brake valve (Italian or French version)	PVL		Steering priority valve
AP		Terminal plate	RF		Return filter
ASP		Accumulator (front axle suspension)	RV 1		Suspension shutoff valve
AV1		Front axle suspension pressure relief (piston side)	RV 2		Suspension shutoff valve
AV2		Front axle suspension pressure relief (piston rod side)	RV 9		Oil flow collector shutoff valve
AV8		Double stopcock, front power lift	SF		Intake filter
AV9		Stopcock EPC lock "rigid drawbar"	SV 1	Y013	Solenoid valve, front axle suspension lower "lock"
BF		Ventilation filter	SV 2	Y014	Solenoid valve, front axle suspension raise
DB 1		Suspension pressure relief valve (250 bar)	SV 5	Y050	Solenoid valve, oil flow collector
DB 2		Suspension pressure relief valve (180 bar)	TWK-KOET	B080	Sensor, hydraulic oil temperature (102 +/- 3 °C)
DBV- 1		Pressure relief valve in the mounting plate (200 +5 bar)	VBR		Return flow valve block
DBV- 2		Pressure relief valve for the hydraulic pump (200 bar)	VBF		Front axle suspension valve block
DW		Pressure compensator - front axle suspension	WK 1	Y012	Solenoid valve, front axle suspension load
DW 1		Pressure compensator - mounting plate	WT		Heat exchanger (hydraulic oil / transmission oil)
DW 2		Pressure compensator - mounting plate (LS pressure increase)	ZF		Front axle suspension cylinder
EPC		Electrohydraulic lifting gear control (EPC-B)	ZFKH		Front power lift cylinder
EP		End plate	ZHKH		Rear power lift cylinder
FKH		Front power lift	ZL		Steering cylinder
MV1	Y052	Solenoid valve, hydraulic trailer brake (Italian version)	ZSP		Auxiliary suspension accumulator
Measuring points					
			M1		pump, constant-flow
			M2		Pump, steering

Lenkung

Allradmaschinen:

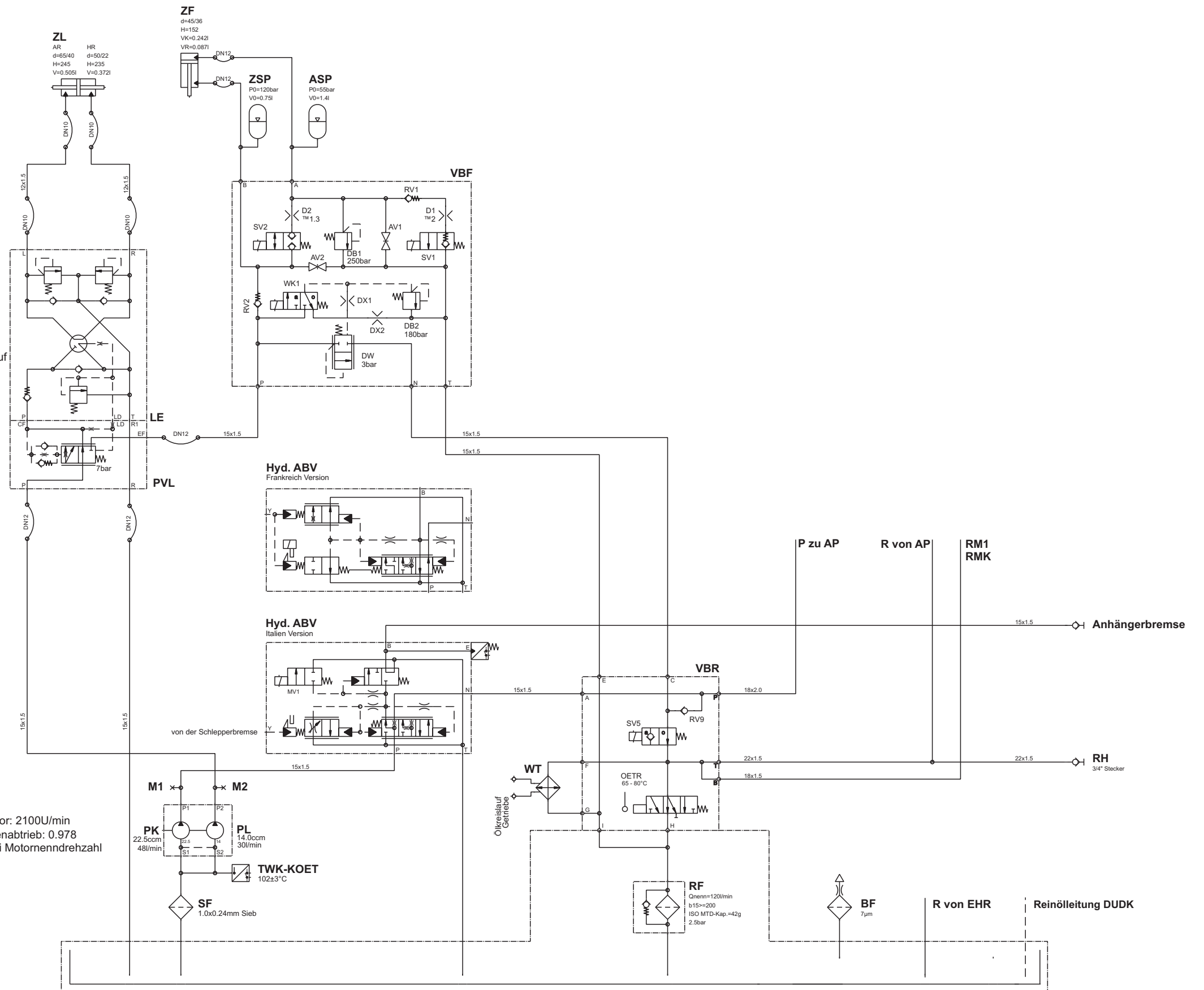
Lenkeinheit Bosch Rexroth LAGU, 100 ccm/U
mit Umschaltung des Verdrängungsvolumens auf
50 ccm/U bei Ausfall der Hilfskraftunterstützung
DBV 180+5 bar, Schockventile 220 bar

Hinterradmaschinen:

Lenkeinheit Bosch Rexroth LAGC, 100 ccm/U
DBV 140+5 bar, Schockventile 200 bar

Pumpenantriebe

Nenn Drehzahl Motor: 2100U/min
Übersetzung Nebenabtrieb: 0.978
Qges = 78l/min bei Motornenn Drehzahl



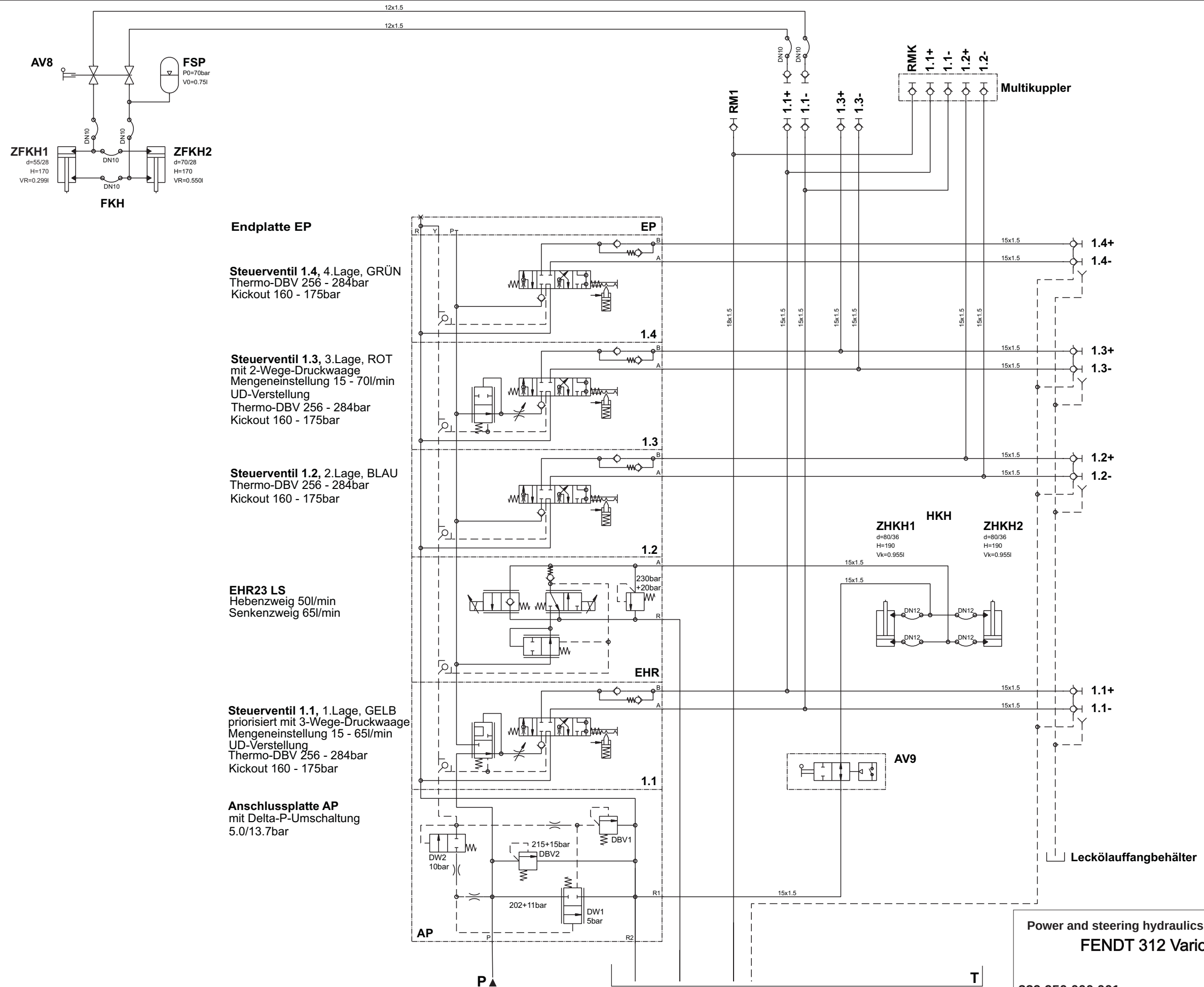
Power and steering hydraulics (Suspension, Steering, ABV)

FENDT 312 Vario from .. / 0101

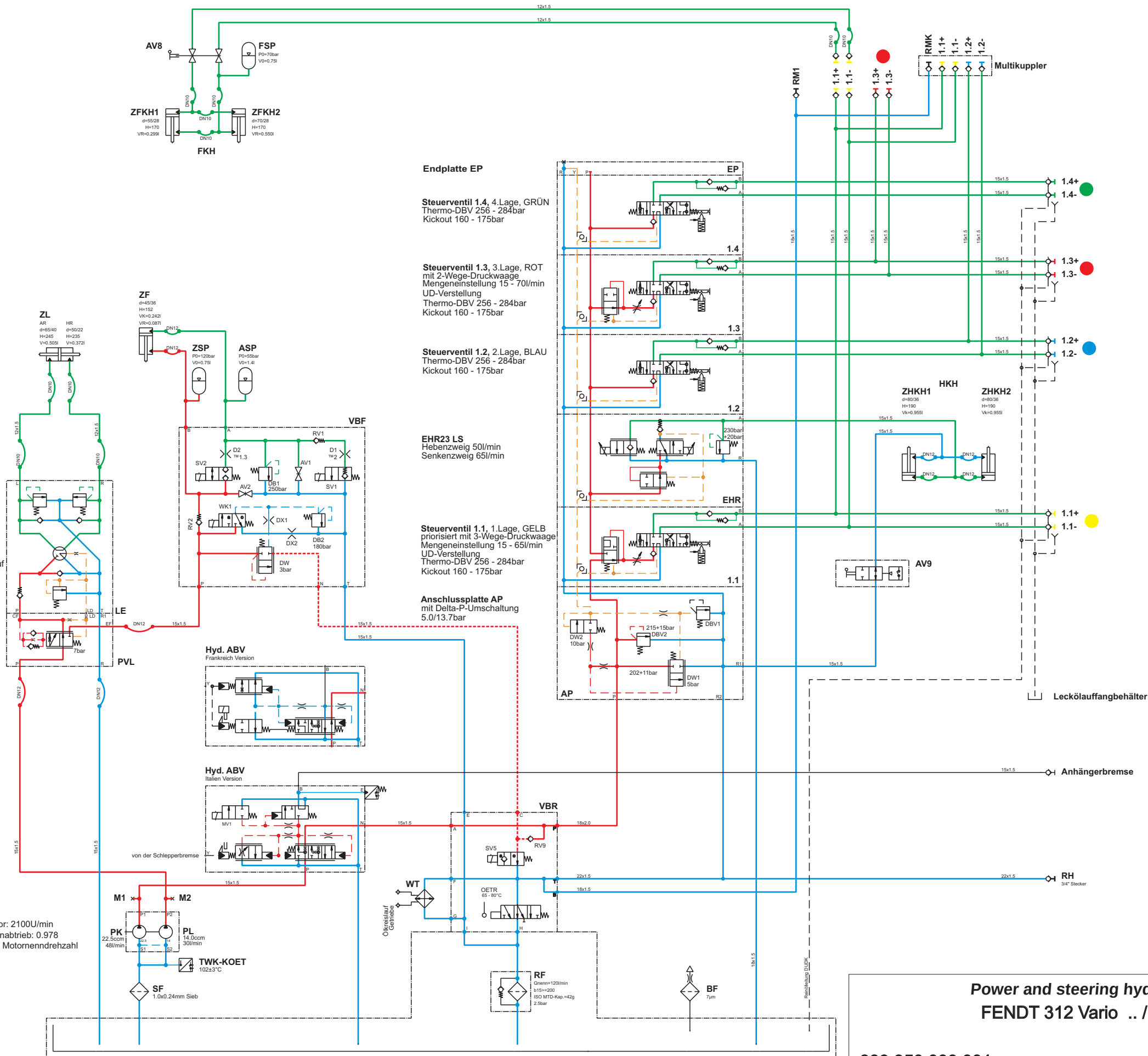
339.950.000.001

FENDT
Service-Training
Dokumentation

05/2006



339.950.000.001



Lenkung
Allradmaschinen:
Lenkeinheit Bosch Rexroth LAGU, 100 ccm/U
mit Umschaltung des Verdrängungsvolumens auf
50 ccm/U bei Ausfall der Hilfskraftunterstützung
DBV 180+5 bar, Schockventile 220 bar

Hinterradmaschinen:
Lenkeinheit Bosch Rexroth LAGC, 100 ccm/U
DBV 140+5 bar, Schockventile 200 bar

Pumpenantriebe
Nennndrehzahl Motor: 2100U/min
Übersetzung Nebenantrieb: 0.978
Qges = 78l/min bei Motorenndrehzahl

Power and steering hydraulics
FENDT 312 Vario .. / 1001

339.950.000.001

FENDT
Service-Training
Dokumentation

Feb. 2006

Hydraulics / General system

Hydraulic circuit diagram - key

C

Hydraulic circuit diagram: 339.950.000.001

Item		Designation	Item		Designation
1.1.		Auxiliary control valve position 1 "yellow"	FSP		Front power lift accumulator
1.2.		Auxiliary control valve position 2 "blue"	HKH		Rear power lift
1.3.		Auxiliary control valve position 3 "red"	LE		Steering unit
1.4.		Auxiliary control valve position 4 "green"	OETR		Hydraulic oil thermostat
Anschluß A		to break-away coupling -	PK		Pump, constant delivery 22.5 ccm / revolution 48 l / min
Anschluß B		to break-away coupling +	PL		Pump, steering 14 ccm / revolution 30 l / min
Hydr. ABV		Hydraulic trailer brake valve (Italian or French version)	PVL		Steering priority valve
AP		Terminal plate	RF		Return filter
ASP		Accumulator (front axle suspension)	RV 1		Suspension shutoff valve
AV1		Front axle suspension pressure relief (piston side)	RV 2		Suspension shutoff valve
AV2		Front axle suspension pressure relief (piston rod side)	RV 9		Oil flow collector shutoff valve
AV8		Double stopcock, front power lift	SF		Intake filter
AV9		Stopcock EPC lock "rigid drawbar"	SV 1	Y013	Solenoid valve, front axle suspension lower "lock"
BF		Ventilation filter	SV 2	Y014	Solenoid valve, front axle suspension raise
DB 1		Suspension pressure relief valve (250 bar)	SV 5	Y050	Solenoid valve, oil flow collector
DB 2		Suspension pressure relief valve (180 bar)	TWK-KOET	B080	Sensor, hydraulic oil temperature (102 +/- 3 °C)
DBV- 1		Pressure relief valve in the mounting plate (200 +5 bar)	VBR		Return flow valve block
DBV- 2		Pressure relief valve for the hydraulic pump (200 bar)	VBF		Front axle suspension valve block
DW		Pressure compensator - front axle suspension	WK 1	Y012	Solenoid valve, front axle suspension load
DW 1		Pressure compensator - mounting plate	WT		Heat exchanger (hydraulic oil / transmission oil)
DW 2		Pressure compensator - mounting plate (LS pressure increase)	ZF		Front axle suspension cylinder
EPC		Electrohydraulic lifting gear control (EPC-B)	ZFKH		Front power lift cylinder
EP		End plate	ZHKH		Rear power lift cylinder
FKH		Front power lift	ZL		Steering cylinder
MV1	Y052	Solenoid valve, hydraulic trailer brake (Italian version)	ZSP		Auxiliary suspension accumulator
Measuring points					
			M1		pump, constant-flow
			M2		Pump, steering

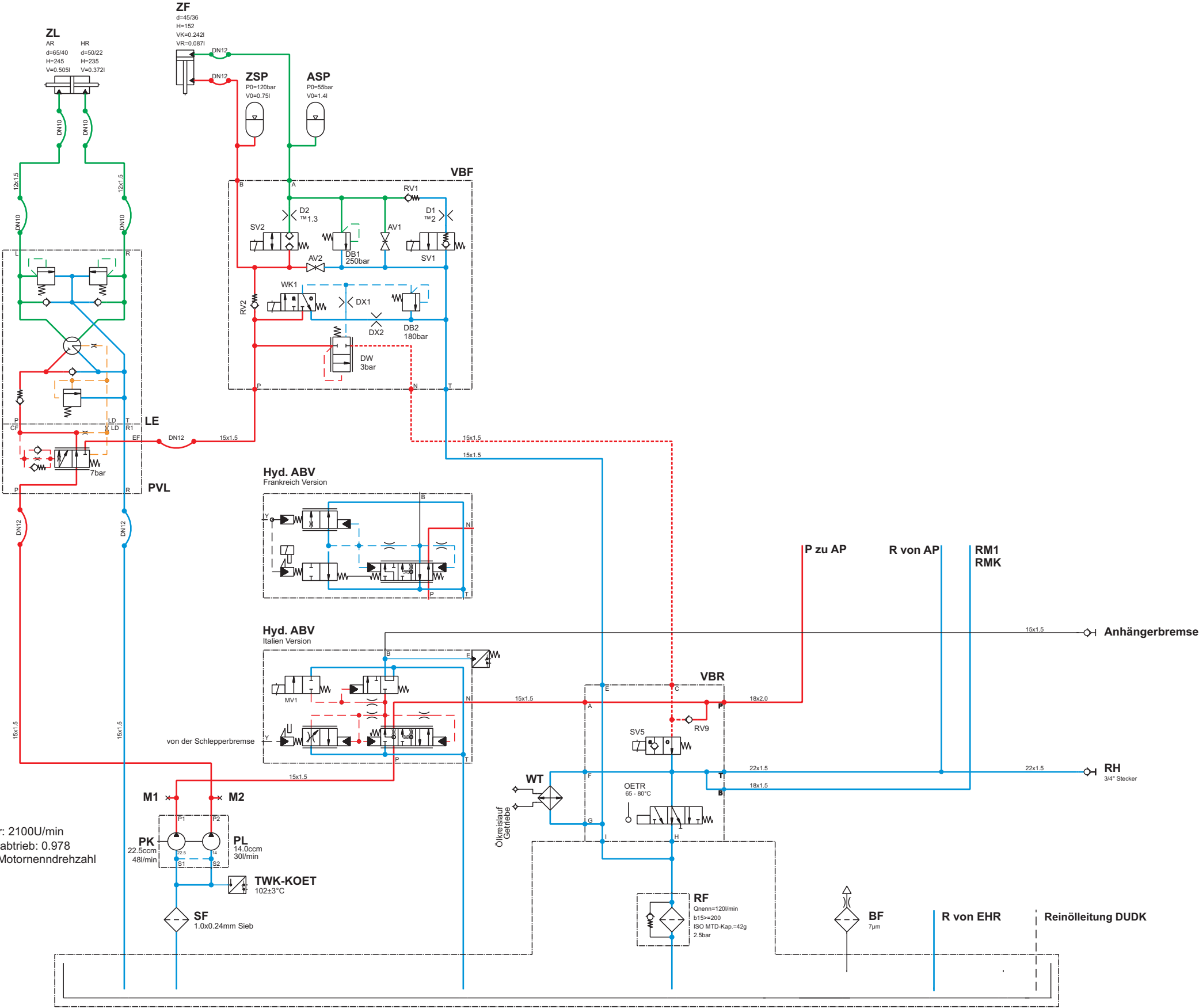
Lenkung

Allradmaschinen:
Lenkeinheit Bosch Rexroth LAGU, 100 ccm/U
mit Umschaltung des Verdrängungsvolumens auf
50 ccm/U bei Ausfall der Hilfskraftunterstützung
DBV 180+5 bar, Schockventile 220 bar

Hinterradmaschinen:
Lenkeinheit Bosch Rexroth LAGC, 100 ccm/U
DBV 140+5 bar, Schockventile 200 bar

Pumpenantriebe

Nenn Drehzahl Motor: 2100U/min
Übersetzung Nebenabtrieb: 0.978
Qges = 78l/min bei Motornenn Drehzahl



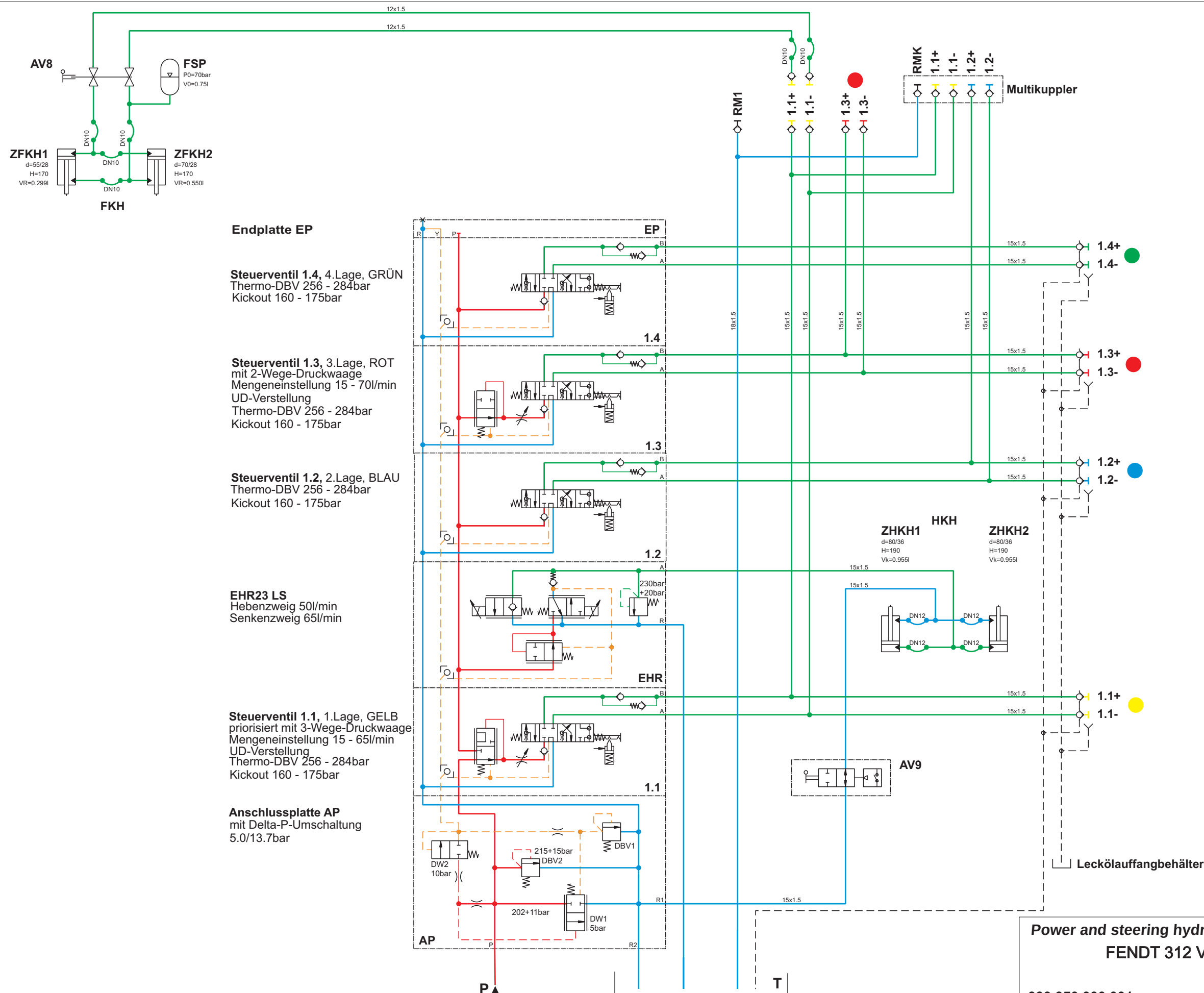
Power and steering hydraulics (Suspension / Steering, ABV)

FENDT 312 Vario .. / 1001

339.950.000.001



Feb. 2006



Power and steering hydraulics (Spool valve / Rear power lift)

FENDT 312 Vario .. / 1001

339.950.000.001

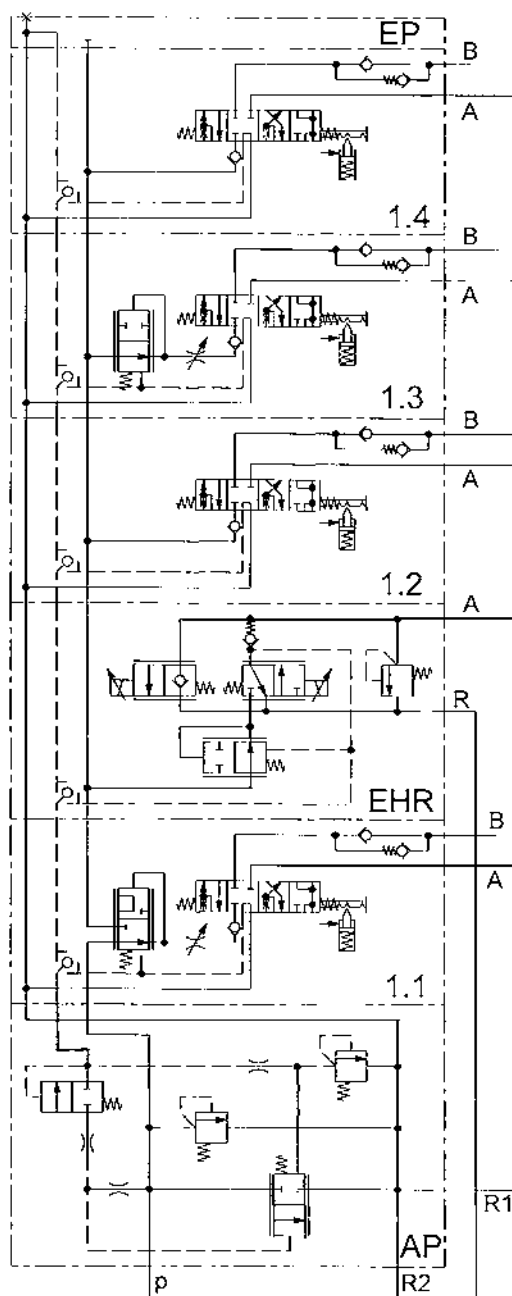
FENDT
Service-Training
Dokumentation

Feb. 2006

Fendt 300 Vario

Hydraulics / Valve assemblies

Auxiliary control valves and terminal plate AP

A

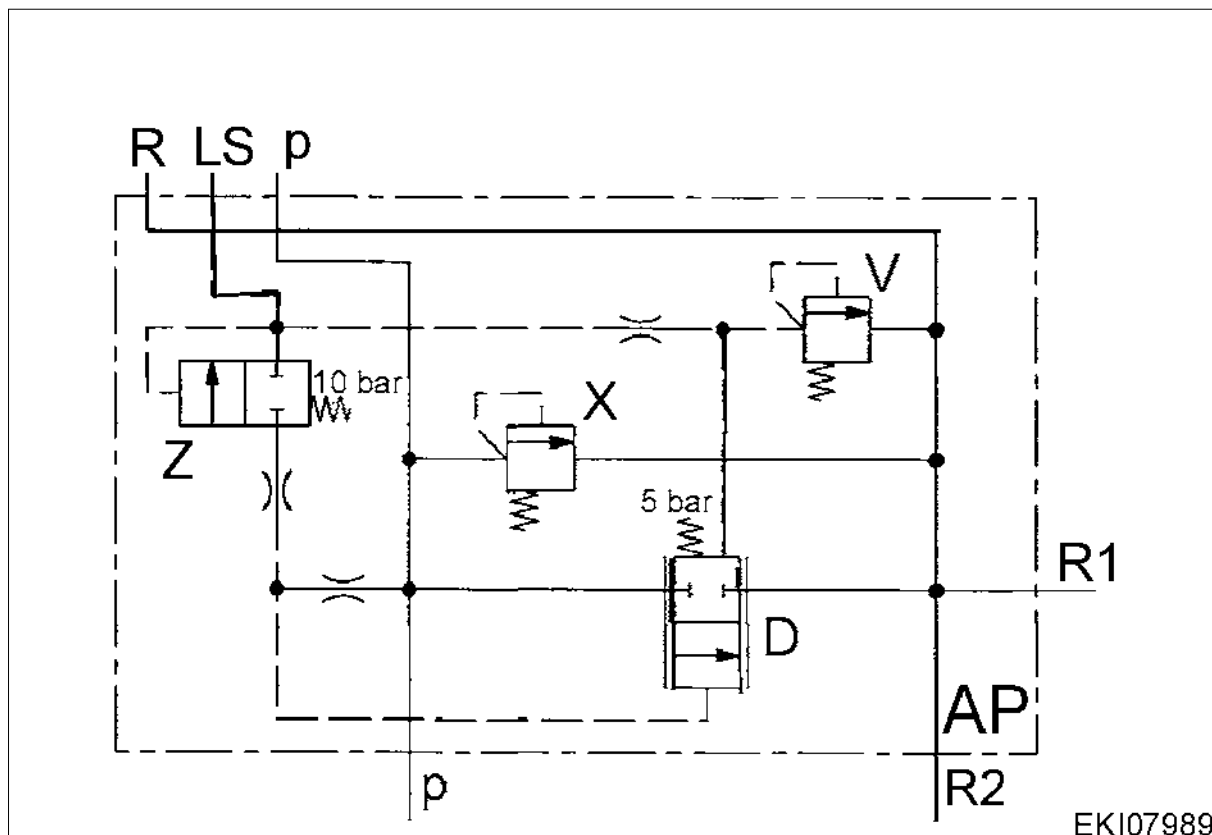
EKI07985

Layout of the valve array

- **Terminal plate AP**
- **1.1** Yellow auxiliary valve with priority control (SB 23 LS)
- **EPC** B control valve (EPC 23 LS)
- **1.2** Blue auxiliary valve (SB 23 LS)
- **1.3** Red auxiliary valve with flow restrictor (SB 23 LS) (optional)
- **1.4** Green auxiliary valve (SB 23 LS) (optional)

Date	Version	Page	Capitel	Index	Docu-No.
07.08.2006	a	1/11	Auxiliary control valves and terminal plate AP	9620	A
					000010

Design and function of terminal plate AP



The terminal plate AP contains:

- Feed and return-flow connections (p and R) of auxiliary control valve array
- Pressure compensator (D)
- Pressure relief valve 1 (V) (maximum pressure limit 200 bar)
- Sequence valve (Z) (delta p switchover)
- Pressure relief valve 2 (X) (215 + 15 bar)

The pressure compensator (D) has 3 functions

- It operates as a **3-way flow regulator** In connection with the instantaneous restrictor cross-sections on the auxiliary control valves' spool valves. The load-sensing pressure (LS pressure) acts on the spring side of the pressure compensator D via the control line LS. The spring in the pressure compensator D and the sequence valve Z determine the pressure differential (delta p) at the auxiliary control valves' spool valves. The pressure differential (delta p) is held at a constant level by the pressure compensator D (maximum: delta p = 13.7 bar) (i.e. the flow rate (l/min) of the auxiliary control valves is kept constant).
- When the control line LS is not under load (auxiliary control valves not actuated), the pressure compensator (D) opens under the action of the feed pressure p and enables **neutral circulation**.
- The pressure compensator (D) acts in conjunction with the pressure control valve 1 (V) as a **pressure relief valve** to protect the maximum operating pressure (200 bar).

Sequence valve (Z)

If no auxiliary control valve is actuated (neutral circulation)

low pressure gradient (5 bar) = low loss of power at the pressure compensator D

Auxiliary control valve is actuated

The **volumetric flow rate Q (l/min)** at the auxiliary control valves' spool valves is a function of the pressure differential (delta p) at the spool valves.

higher pressure gradient (13.7 bar) = maximum flow rate

The changeover (13.7 bar / 5 bar) is carried out via the sequence valve (Z)

Date	Version	Page	Capitel	Index	Docu-No.
07.08.2006	a	2/11	Auxiliary control valves and terminal plate AP	9620	A
					000010

Fendt 300 Vario

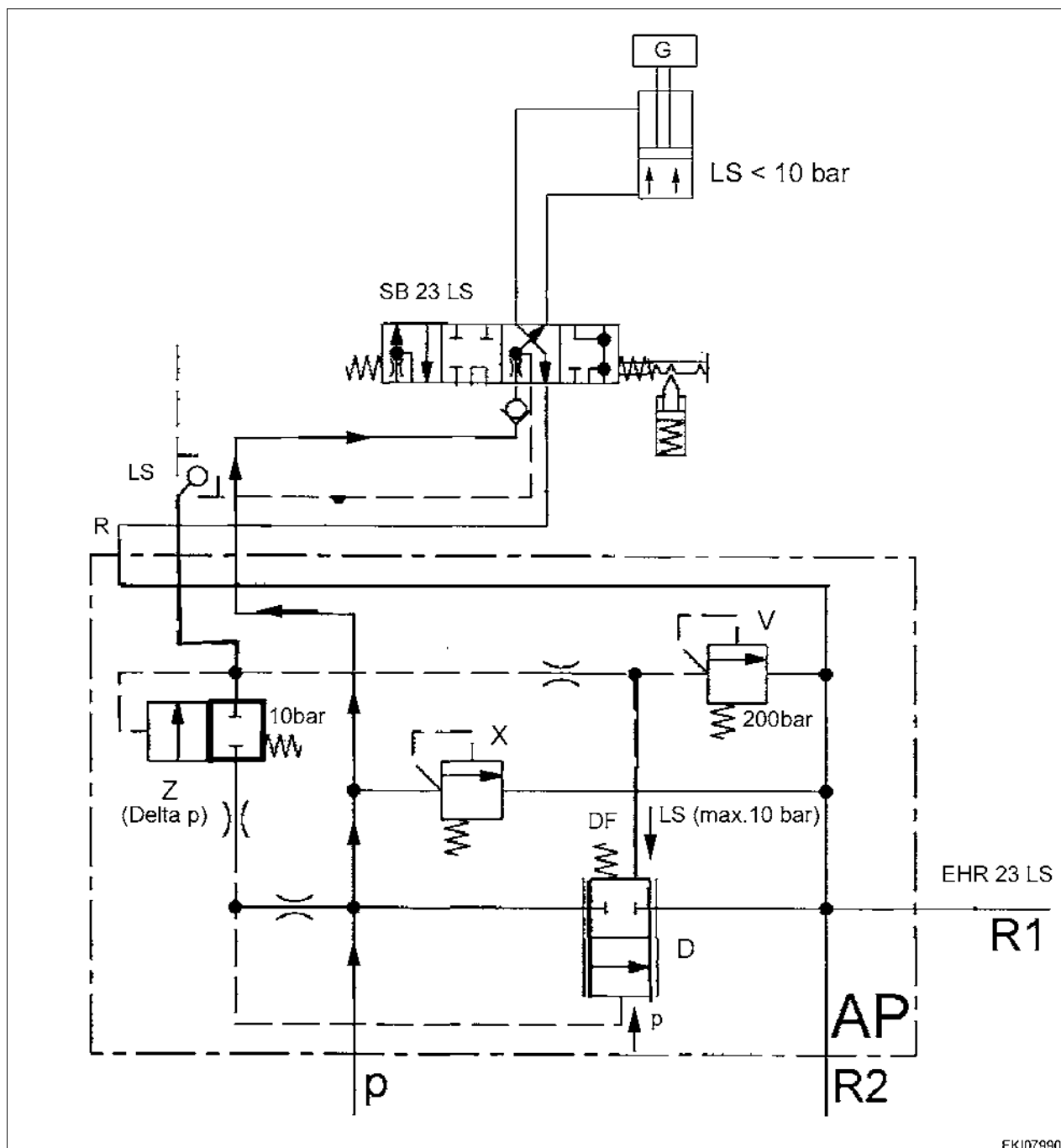
Hydraulics / Valve assemblies

Auxiliary control valves and terminal plate AP

A**Terminal plate AP**

no auxiliary valve actuated (neutral circulation)

or no auxiliary control valve actuated (load-sensing pressure LS less than 10 bar)



EKI07990

Item	Designation	Item	Designation
AP	Terminal plate	P	Pump pressure
D	Pressure compensator	LS	Load-sensing pressure
V	Pressure relief valve 1	R	Return flow
Z	Sequence valve (delta p)	DF	Compression spring (5 bar)
X	Pressure relief valve 2		

Date	Version	Page	Auxiliary control valves and terminal plate AP	Capitel	Index	Docu-No.
07.08.2006	a	3/11		9620	A	000010

Fendt 300 Vario

Hydraulics / Valve assemblies
Auxiliary control valves and terminal plate AP

A**Equilibrium of forces at the pressure compensator D**

$$p = DF (5 \text{ bar}) + LS$$

Pressure differential (delta p) at auxiliary control valve (see figure under 'General principles')

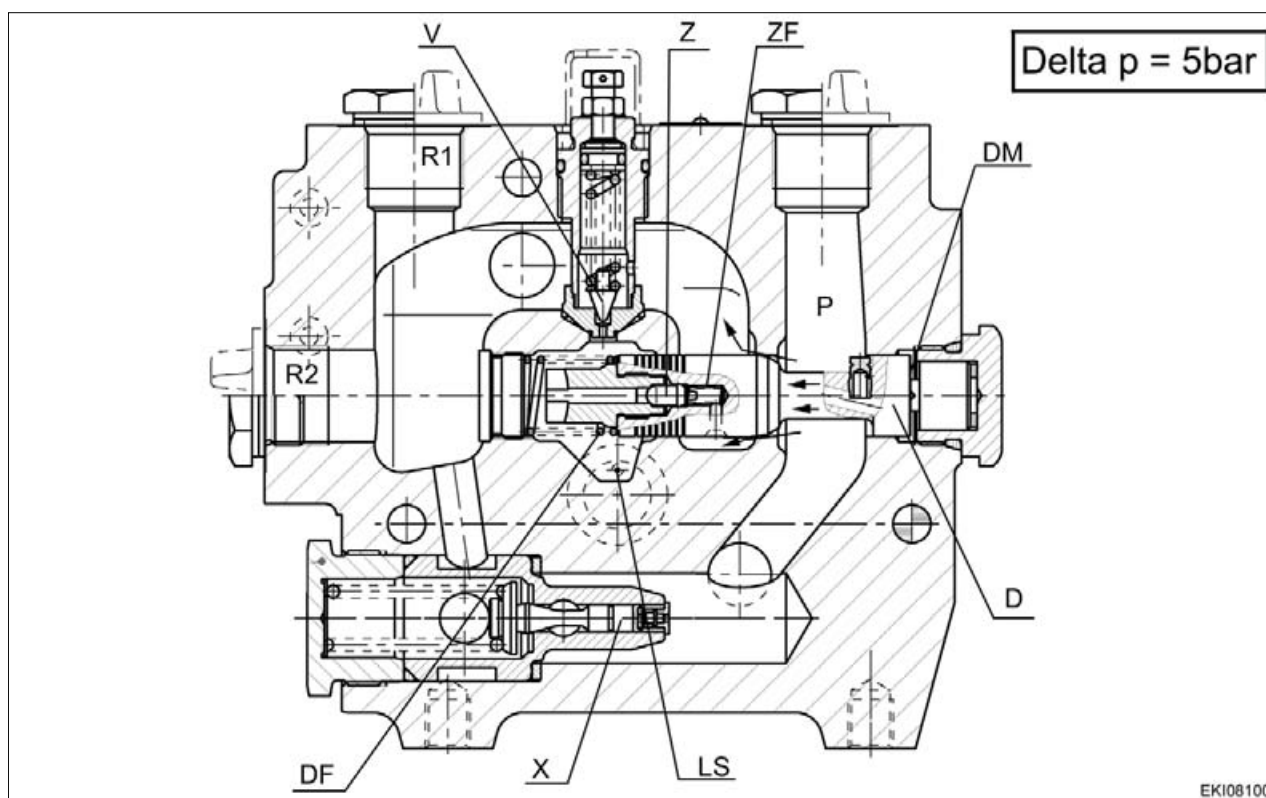
$$\Delta p = p - LS$$

$$\Delta p = DF (5 \text{ bar}) + LS - LS$$

$$\Delta p = DF (5 \text{ bar})$$

Terminal plate AP

No auxiliary control valve actuated,
 or load-sensing pressure LS less 10 bar



Item	Designation	Item	Designation
D	Pressure compensator	V	Pressure relief valve 1
DM	Pressure compensator measuring face	X	Pressure relief valve 2
DF	Pressure compensator spring (5 bar)	P	Pump pressure
Z	Sequence valve	LS	Load-sensing pressure
ZF	Sequence valve spring	R	Return flow

Load-sensing pressure $LS \leq 10 \text{ bar}$

Sequence valve Z is closed by spring force.

Spring of pressure compensator D is pretensioned to 5 bar.

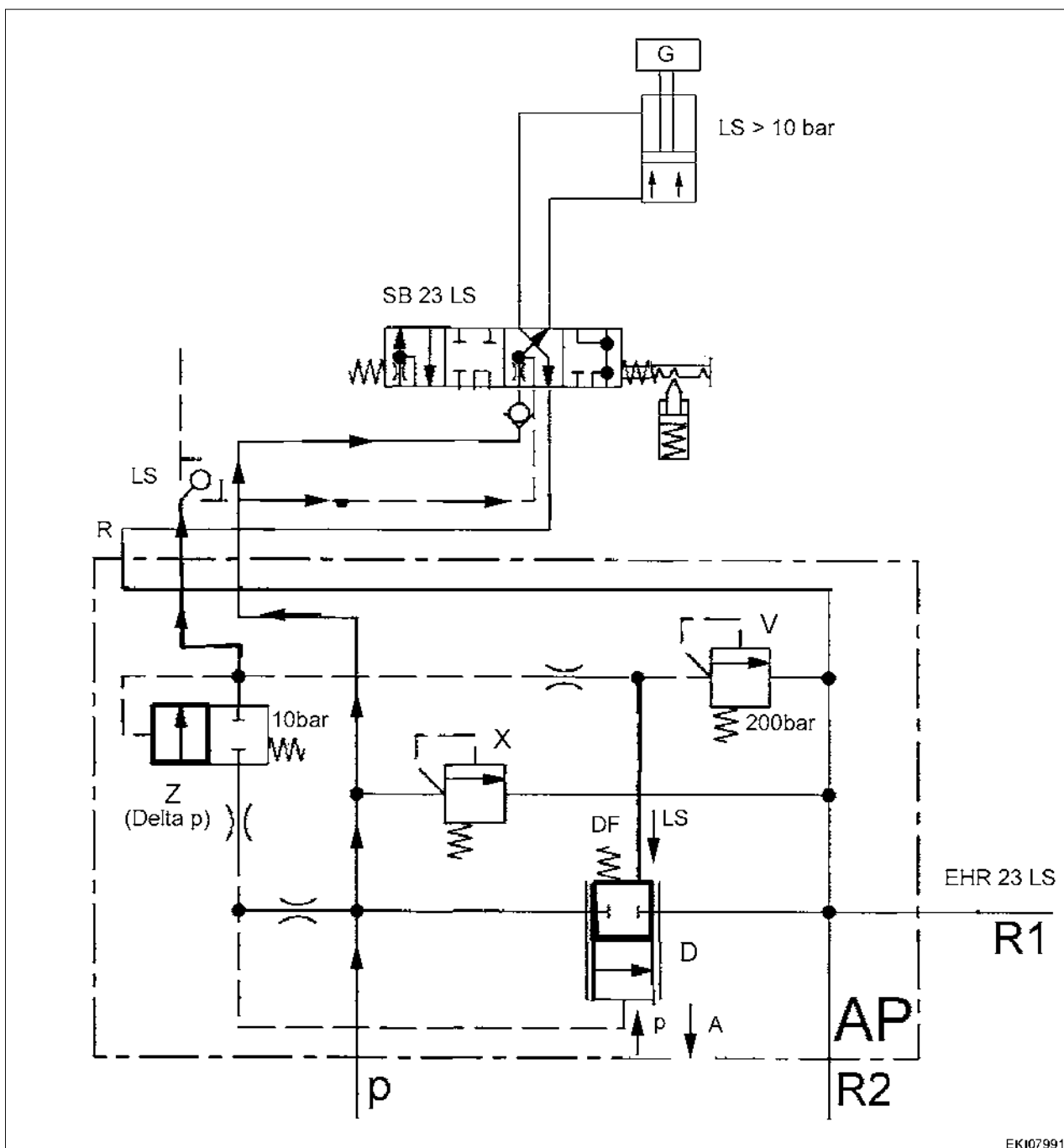
The pressure compensator D connects the feed line p to the return line R.

Date	Version	Page	Auxiliary control valves and terminal plate AP	Capitel	Index	Docu-No.
07.08.2006	a	4/11		9620	A	000010

<i>Fendt 300 Vario</i>	Hydraulics / Valve assemblies Auxiliary control valves and terminal plate AP	A
------------------------	--	----------

Terminal plate AP

Auxiliary control valve actuated (load-sensing pressure LS greater than 10 bar)



Item	Designation	Item	Designation
AP	Terminal plate	LS	Load-sensing pressure
D	Pressure compensator	R	Return flow
V	Pressure control valve 1	DF	Compression spring (5 bar)
Z	Sequence valve (delta p)	A	Press loss at restrictor (approx. 8.7 bar)
P	Pump pressure	X	Pressure relief valve 2

Date	Version	Page	Auxiliary control valves and terminal plate AP	Capitel	Index	Docu-No.
07.08.2006	a	5/11		9620	A	000010

Fendt 300 Vario

Hydraulics / Valve assemblies

Auxiliary control valves and terminal plate AP

A**Equilibrium of forces at the pressure compensator D**

$$p = DF (5 \text{ bar}) + LS + A (8.7 \text{ bar})$$

Pressure differential (delta p) at auxiliary control valve (see figure under 'General principles')

$$\text{Delta } p = p - LS$$

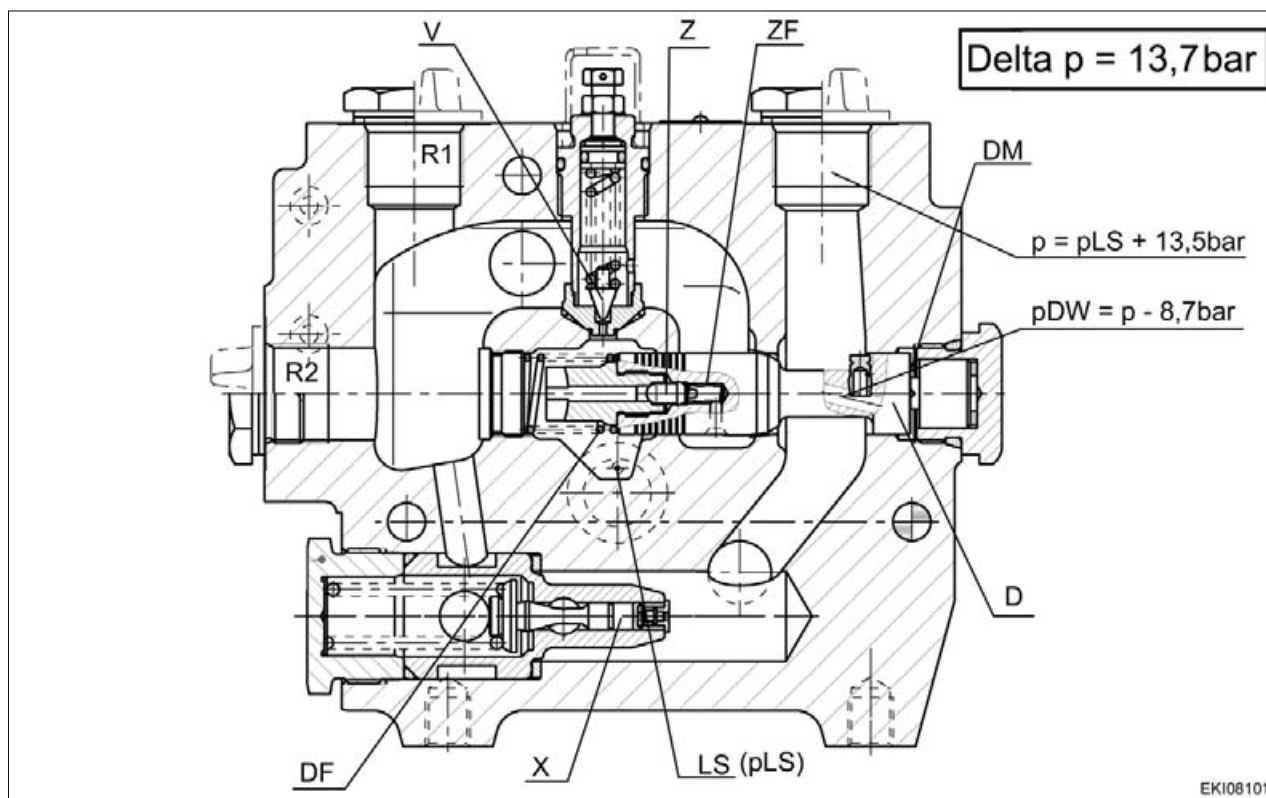
$$\text{Delta } p = DF (5 \text{ bar}) + LS + A (8.7 \text{ bar}) - LS$$

$$\text{Delta } p = DF (5 \text{ bar}) + A (8.7 \text{ bar})$$

$$\text{Delta } p = 13.7 \text{ bar}$$

Terminal plate AP

Auxiliary control valve actuated (load-sensing pressure LS greater than 10 bar)



Item	Designation	Item	Designation
D	Pressure compensator	P	Pump pressure
DM	Pressure compensator measuring face	pDW	Pressure at pressure compensator measuring face
DF	Pressure compensator spring (5 bar)	LS	Load-sensing pressure
Z	Sequence valve	R	Return flow
ZF	Sequence valve spring	X	Pressure relief valve 2
V	Pressure relief valve 1		

Load-sensing pressure LS is generated

The sequence valve Z is actuated at approx. 10 bar load-sensing pressure LS.

The pressure compensator measuring face DM is not under load (equating to a strengthening of the pressure compensator spring).**It is as if the spring of the pressure compensator D is pretensioned to '13.7 bar'.**

Date	Version	Page	Auxiliary control valves and terminal plate AP	Capitel	Index	Docu-No.
07.08.2006	a	6/11		9620	A	000010

Date	Version	Page	Auxiliary control valves and terminal plate AP	Capitel	Index	Docu-No.
07.08.2006	a	7/11		9620	A	000010

Fendt 300 Vario	Hydraulics / Valve assemblies Auxiliary control valves and terminal plate AP	A
------------------------	--	----------

At a load-sensing pressure LS greater than 200 bar, pressure relief valve 1 (V) opens

The load-sensing pressure LS at the pressure compensator D is relieved by routing it to the return flow.

The pressure compensator D opens against the compression spring DF.

The volumetric capacity of the pump is relieved via the pressure compensator D by routing it to the return flow.

The pressure relief valve 2 (X) serves as protection and opens at 215 + 15 bar.

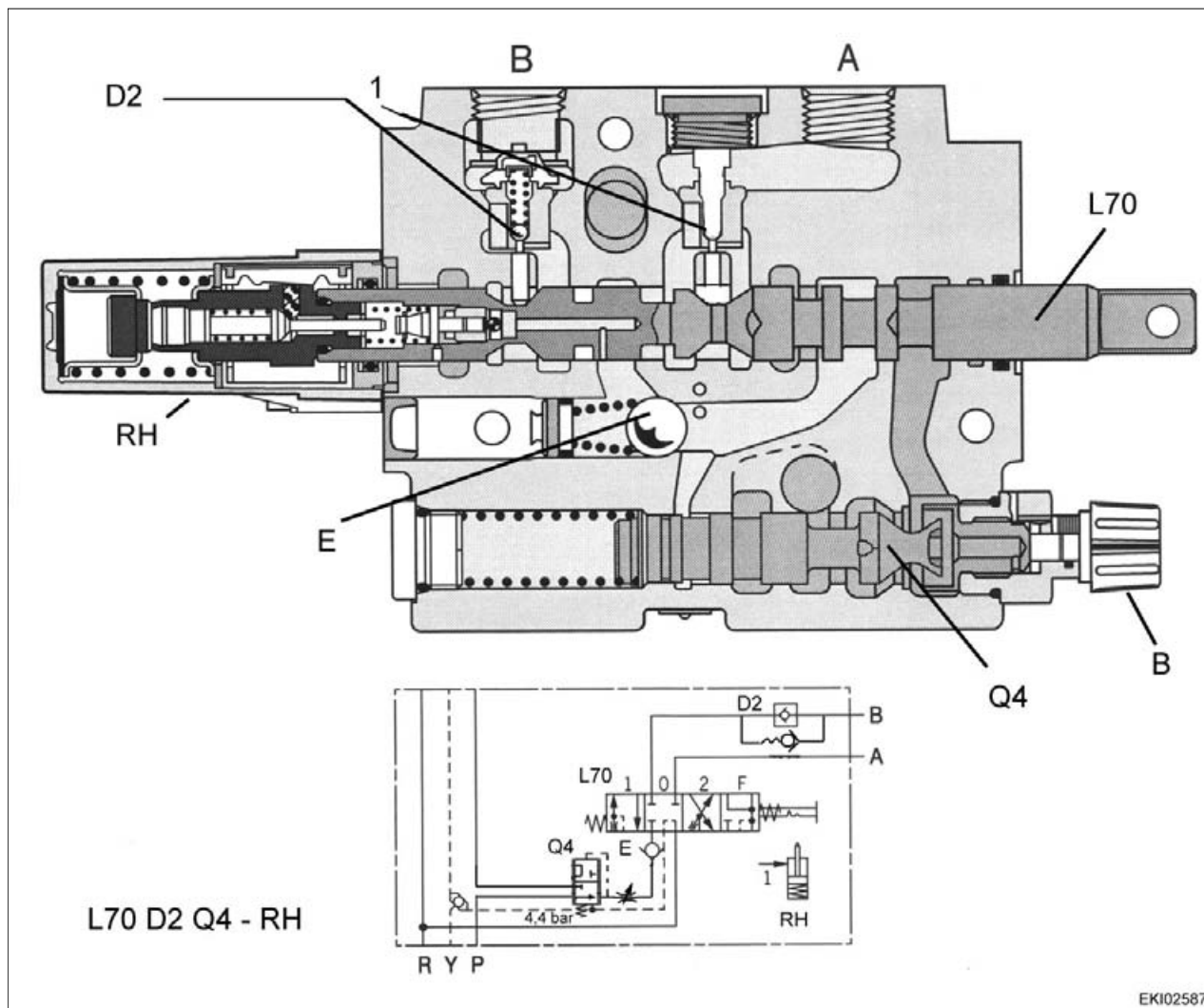
Date	Version	Page	Auxiliary control valves and terminal plate AP	Capitel	Index	Docu-No.
07.08.2006	a	8/11		9620	A	000010

Fendt 300 Vario

Hydraulics / Valve assemblies
Auxiliary control valves and terminal plate AP

A

Auxiliary control valve SB 23 LS with priority valve and flow restrictor (yellow)

L70 D2 Q4 - RH

Item	Designation	Item	Designation
L70	Spool valve (with floating position)	E	Check valve
D2	Shutoff valve (mechanically resettable)	B	Volume adjustment
Q4	Pressure compensator (priority valve and flow restrictor)		
RH	Catch, hydraulic disengagement	1	No shutoff valve fitted

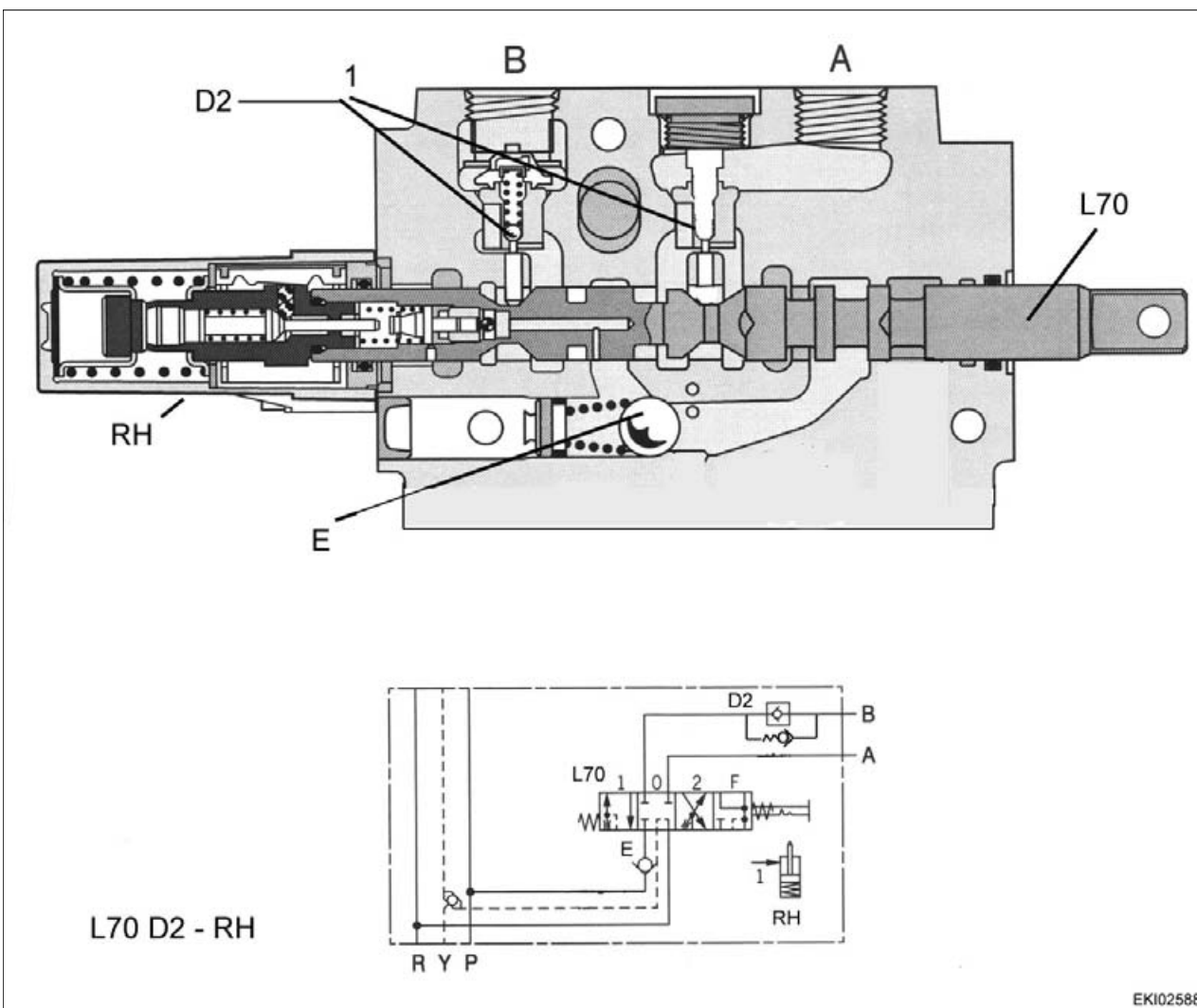
Auxiliary control valve SB 23 LS without flow restrictor (blue, green)

L70 D2 - RH

Date	Version	Page	Auxiliary control valves and terminal plate AP	Capitel	Index	Docu-No.
07.08.2006	a	9/11		9620	A	000010

Fendt 300 Vario

Hydraulics / Valve assemblies
Auxiliary control valves and terminal plate AP

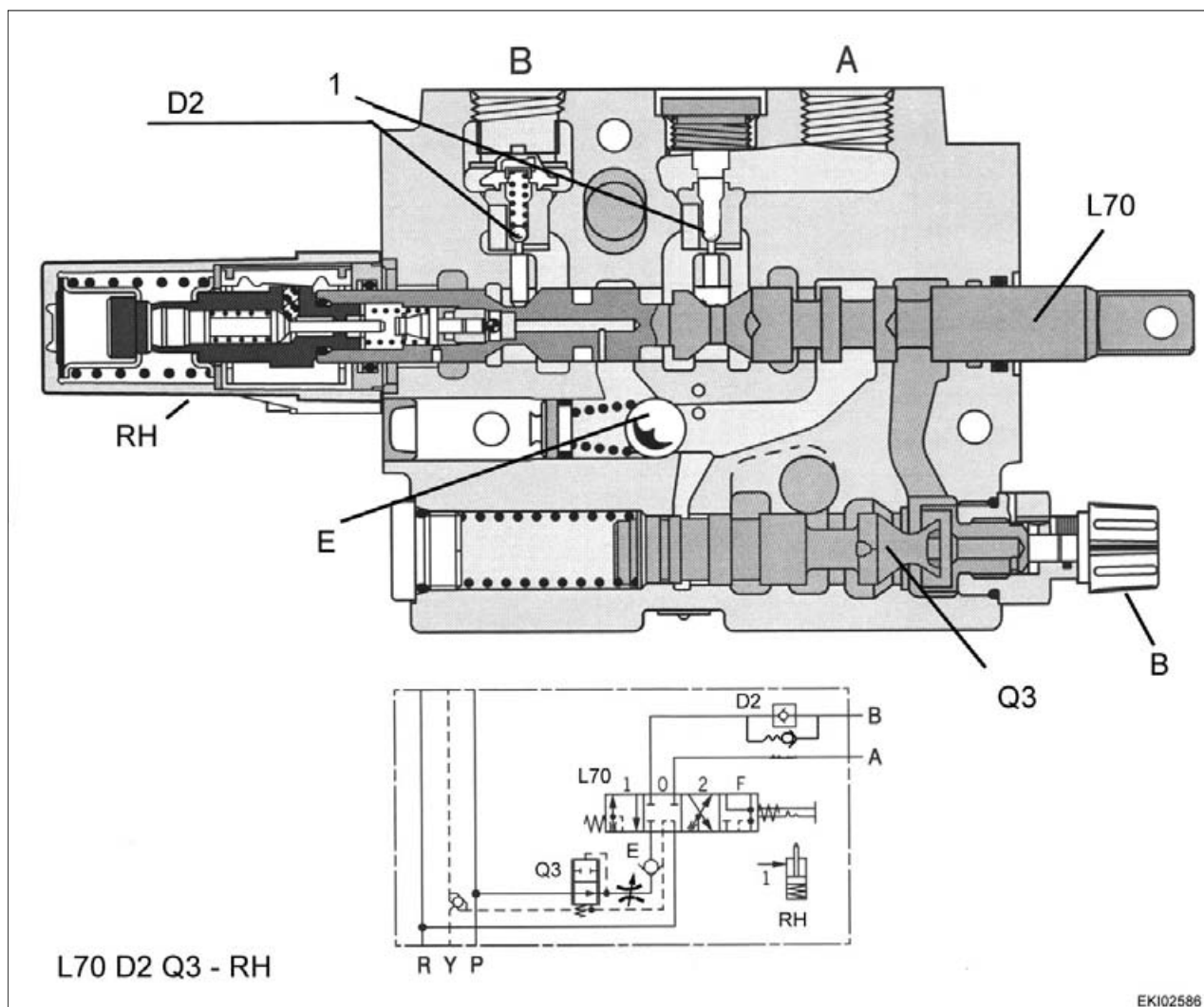
A

Item	Designation	Item	Designation
L70	Spool valve (with floating position)	E	Check valve
D2	Shutoff valve (mechanically resettable)		
RH	Catch, hydraulic disengagement	1	No shutoff valve fitted

Date	Version	Page	Auxiliary control valves and terminal plate AP	Capitel	Index	Docu-No.
07.08.2006	a	10/11		9620	A	000010

Fendt 300 Vario

Hydraulics / Valve assemblies
Auxiliary control valves and terminal plate AP

A**Auxiliary control valve SB 23 LS with flow restrictor (red)****L70 D2 Q3 - RH**

Item	Designation	Item	Designation
L70	Spool valve (with floating position)	E	Check valve
D2	Shutoff valve (mechanically resettable)	B	Volume adjustment
Q3	Pressure compensator (flow restrictor)		
RH	Catch, hydraulic disengagement	1	No shutoff valve fitted

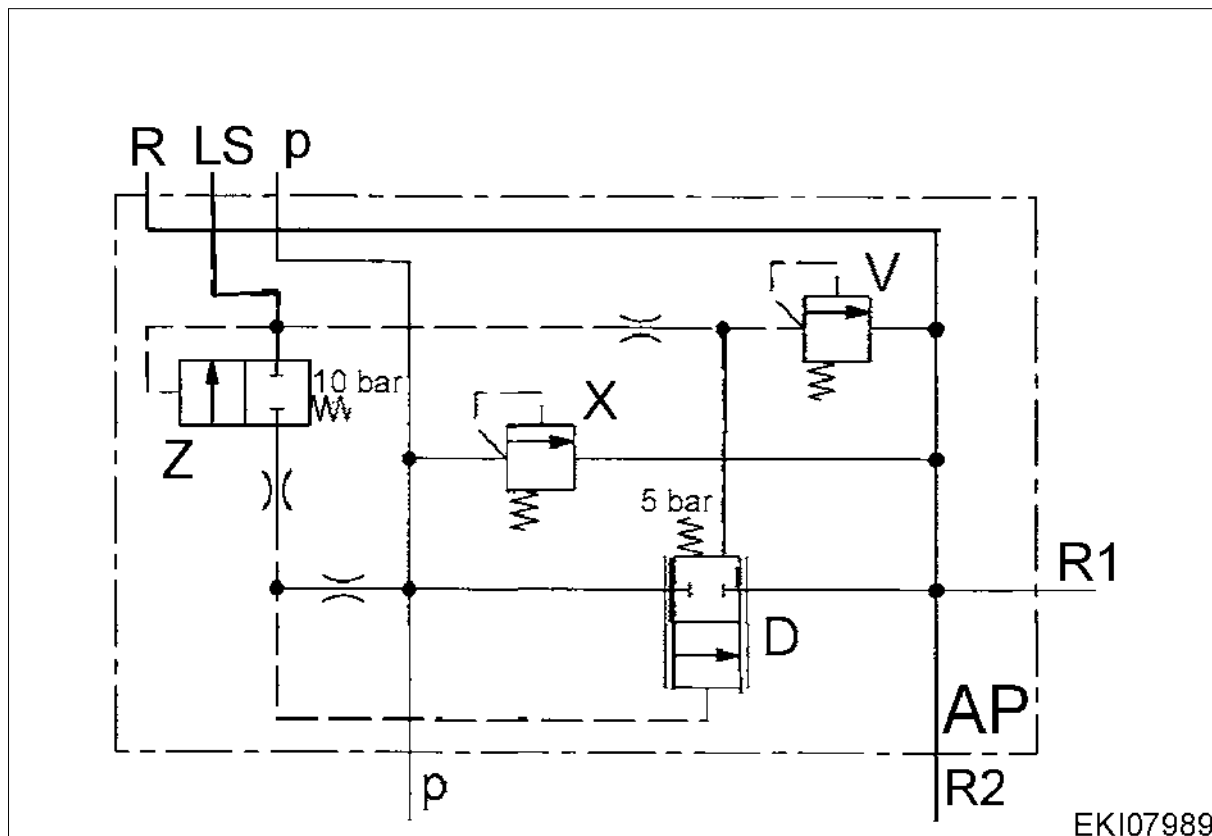
Date	Version	Page	Auxiliary control valves and terminal plate AP	Capitel	Index	Docu-No.
07.08.2006	a	11/11		9620	A	000010

Fendt 300 Vario**Hydraulics / Valve assemblies**

Terminal plate AP - circulation pressure / max. pump pressure / delta p pressure increase

E**Note:**

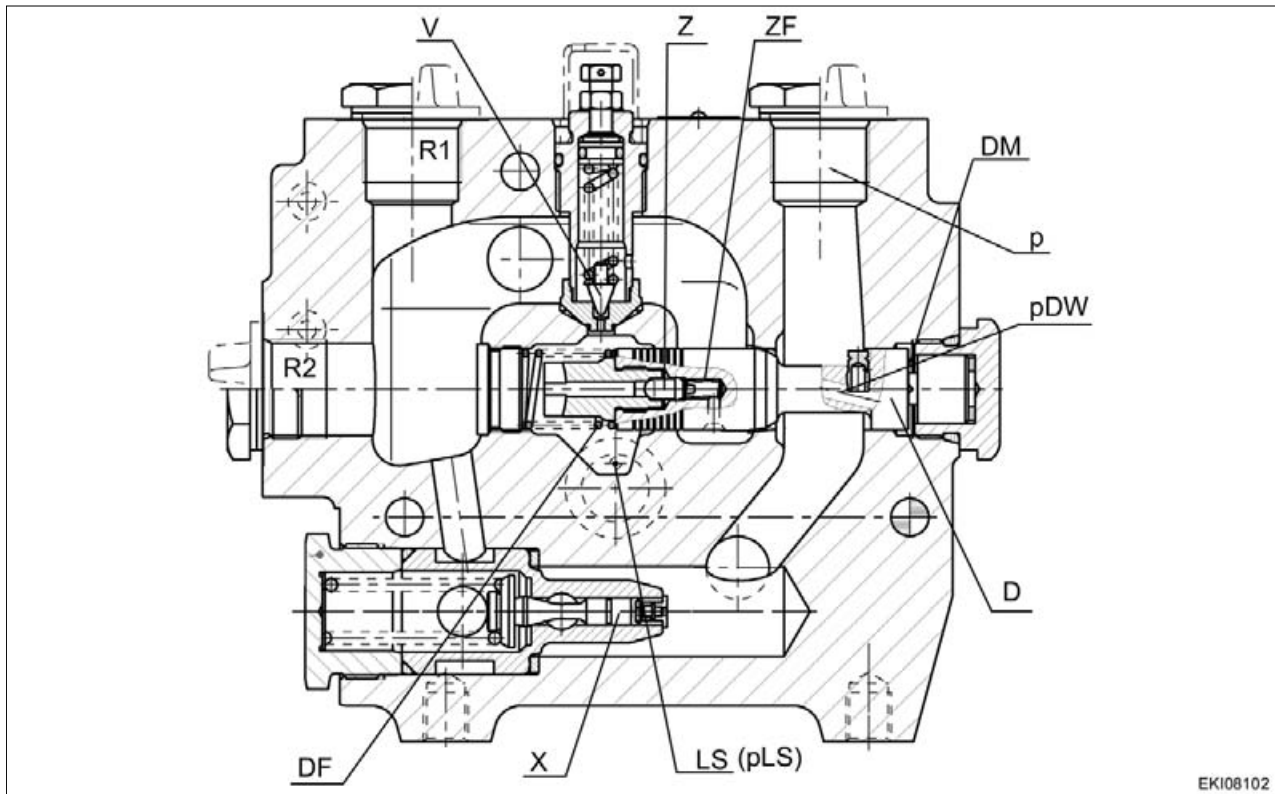
For a general functional description see Chapter 9620 Reg. A - Auxiliary valves and terminal plate (AP)

Hydraulic circuit diagram of terminal plate AP

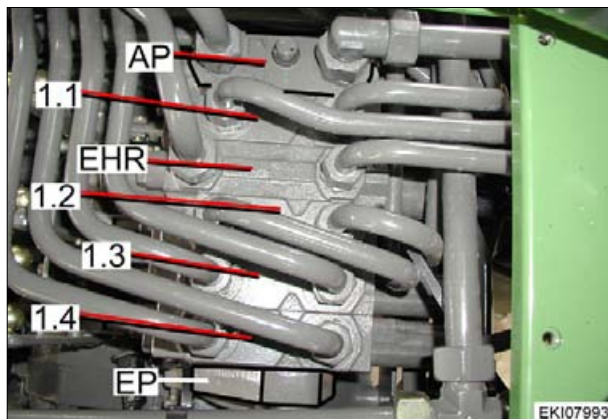
Item	Designation	Item	Designation
P	Pump pressure	D	Pressure compensator (5 bar)
LS	Load-sensing pressure	Z	Sequencer valve (10 bar) (delta p switchover)
R	Return flow	V	Pressure relief valve 1
X	Pressure relief valve 2		

Fendt 300 Vario**Hydraulics / Valve assemblies**

Terminal plate AP - circulation pressure / max. pump pressure / delta p pressure increase

E**Sectional view of terminal plate AP**

Item	Designation	Item	Designation
D	Pressure compensator	P	Pump pressure
DM	Pressure compensator measuring face	pDW	Pressure at pressure compensator measuring face
DF	Pressure compensator spring (5 bar)	LS	Load-sensing pressure
Z	Sequence valve	R	Return flow
ZF	Sequence valve spring (10 bar)	X	Pressure relief valve 2
V	Pressure relief valve 1		



AP = Terminal plate

1.1 = auxiliary control valve "yellow"

EPC = EPC valve

1.2 = auxiliary control valve "blue"

1.3 = auxiliary control valve "red"

1.4 = auxiliary control valve "green"

On rear axle housing



Remove driver seat and floor panel.

Date	Version	Page	Capitel	Index	Docu-No.
08.08.2006	a	2/8	Terminal plate AP - circulation pressure / max. pump pressure / delta p pressure increase 9620	E	000005

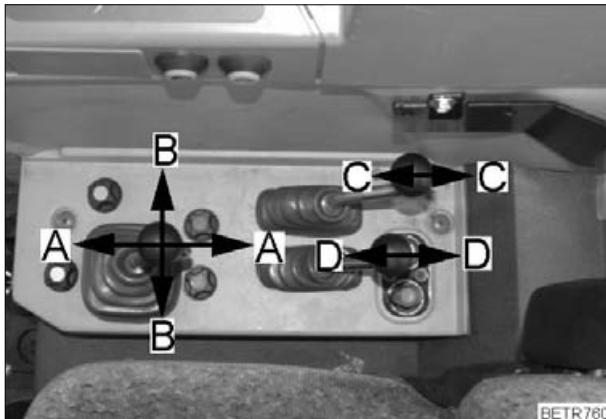
Fendt 300 Vario**Hydraulics / Valve assemblies**

Terminal plate AP - circulation pressure / max. pump pressure / delta p pressure increase

E**Testing circulation pressure of pump, working hydraulics (PK)****Note:**

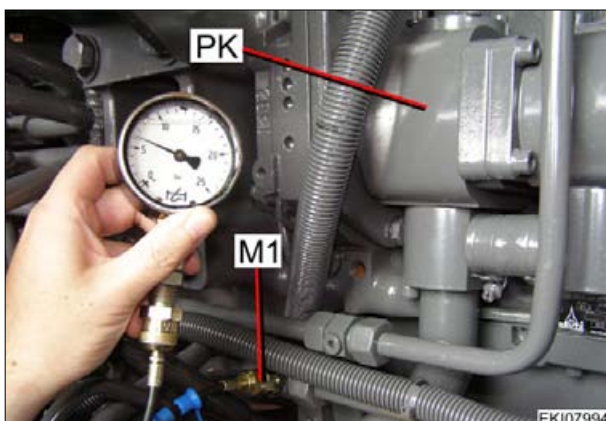
Check hydraulic oil level and top up, if necessary.

Hydraulic oil temperature approx. 50°C

Auxiliary control valves and rear power lift EPC **not** actuated.**Note:**

Disengage oil flow collector (lamp in pressure switch S056 goes out)

If the oil flow collector has been engaged (lamp in pushbutton lights up), the circulation pressure increases (reason: increased delivery capacity).



Connect pressure gauge (measurement range 25 bar) to measuring point M1 (pump, working hydraulics).

Target value: 5 bar (at idling speed)

800 rpm (idle speed) = 5 + 2 bar

1000 rpm = approx. 7 bar

1200 rpm = approx. 7.5 bar

1400 rpm = approx. 8 bar

1600 rpm = approx. 8.5 bar

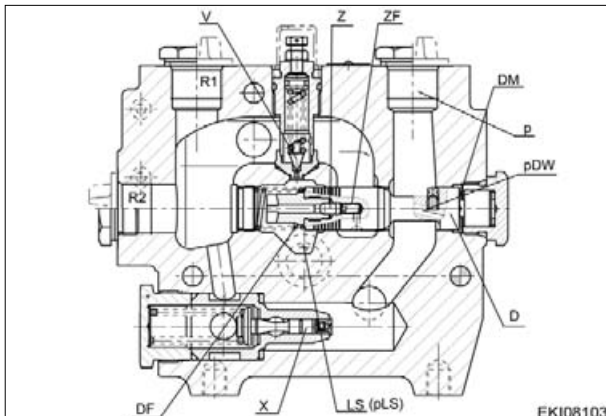
1800 rpm = approx. 9.5 bar

2100 rpm (rated speed) = 11 bar

Date	Version	Page	Capitel	Index	Docu-No.
08.08.2006	a	3/8	Terminal plate AP - circulation pressure / max. pump pressure / delta p pressure increase	9620	E
					000005

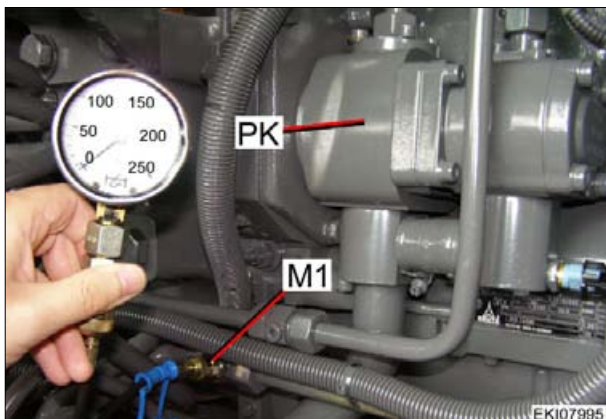
Fendt 300 Vario**Hydraulics / Valve assemblies**

Terminal plate AP - circulation pressure / max. pump pressure / delta p pressure increase

E**If the setpoint valve is not reached:**Check valve slide of **pressure compensator D** for ease of movement.Check **sequence valve Z** for ease of movement.**Testing pump pressure p (max. 200 bar) of pump, working hydraulics (PK)****Note:**

Check hydraulic oil level and top up, if necessary.

Hydraulic oil temperature approx. 50°C



Connect pressure gauge (min. measurement range 250 bar) to measuring point M1 (pump, working hydraulics).

Engine speed 1000 rpm

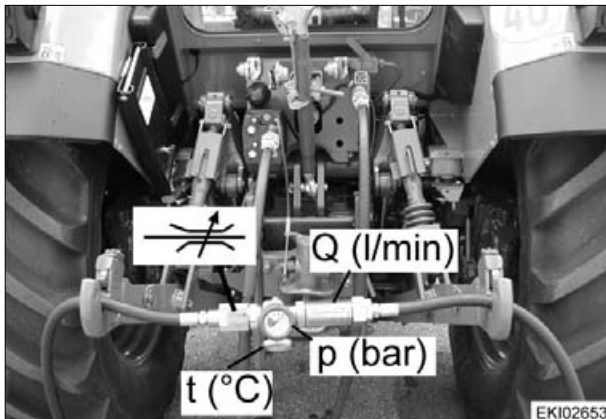
Deflect auxiliary control valve.

Target value: 200 -15 bar

Date	Version	Page	Capitel	Index	Docu-No.
08.08.2006	a	4/8	Terminal plate AP - circulation pressure / max. pump pressure / delta p pressure increase 9620	E	000005

Fendt 300 Vario**Hydraulics / Valve assemblies**

Terminal plate AP - circulation pressure / max. pump pressure / delta p pressure increase

E**If the target value (200 -15 bar) is not reached**Check **pump, working hydraulics PK** for leaks.

- Connect hydraulic test unit to rear hydraulic coupling (e.g. to auxiliary control valve 1.2 "blue") and free return flow.

- **Engine speed 1000 rpm**

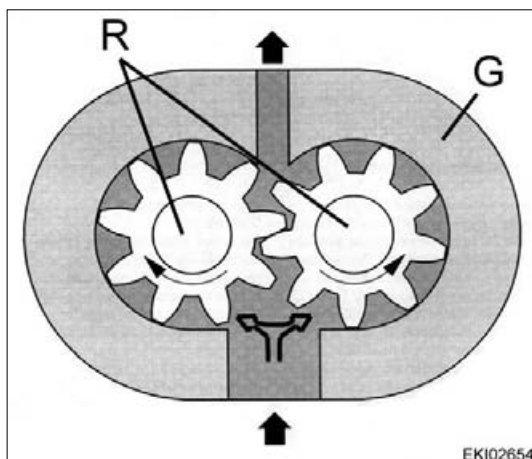
- Deflect auxiliary control valve "blue"

Volumetric capacity of pump, working hydraulics (at engine speed 1000 rpm) = **approx. 23 l/min**

Slowly close restrictor on hydraulic test unit.

The volumetric capacity must remain constant.**The pressure p at the hydraulic coupling increases.****At 200 bar the pressure relief valve in the terminal plate AP opens, and the flow rate at the hydraulic coupling falls.****Repeat the measurement at various engine speeds (see table).****Checking pump, working hydraulics PK for leaks.****Note: switch off oil flow collector system****Pump speed = engine speed / 0.978****Volumetric capacity of pump PK = 22.5 ccm/revolution**

Engine speed n rpm	Delivery capacity Q l/min	Max. pump pressure p bar
1000	23	200 - 15
1600	37	200 - 15
2100	50	200 - 15

If the max. pump pressure p (200 -15 bar) **and** the corresponding volumetric capacity are not achieved (see table), this indicates that the pump is worn. (wear between pump rotor R and housing G).**Note:****Complaint: "Rear power lift only rises at rated engine speed"**

Date	Version	Page	Capitel	Index	Docu-No.
08.08.2006	a	5/8	9620	E	000005

Terminal plate AP - circulation pressure / max. pump pressure / delta p pressure increase

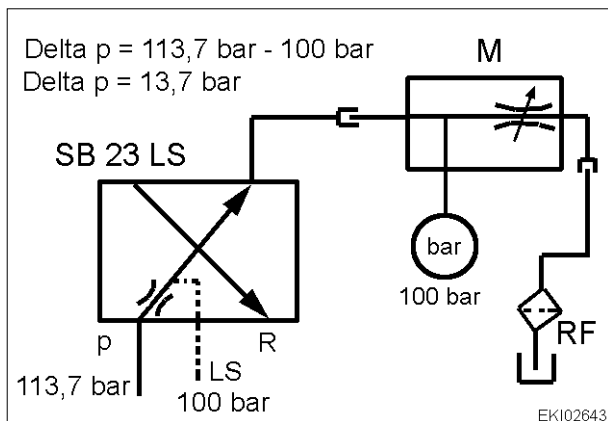
Fendt 300 Vario**Hydraulics / Valve assemblies**

Terminal plate AP - circulation pressure / max. pump pressure / delta p pressure increase

E**Testing pressure increase delta p****Note:**

Check hydraulic oil level and top up, if necessary.

Hydraulic oil temperature approx. 50°C

**Delta p = pump pressure 'p' - load-sensing pressure 'LS'****P** = Pump pressure, working hydraulics**LS** = load-sensing pressure**SB 23 LS** = auxiliary control valve**RF** = return-flow filter (tractor)**M** = hydraulic test unit**Note:**

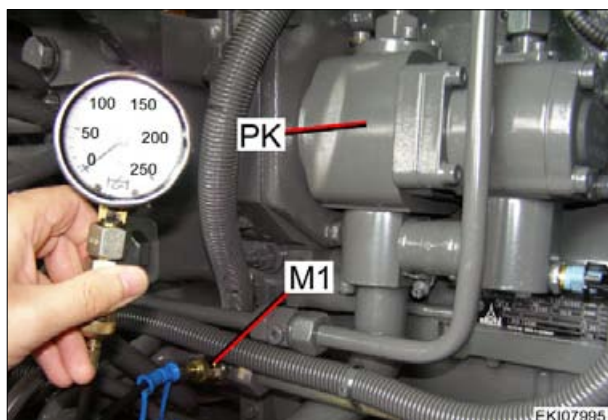
<U> Connect oil flow collection system </U> (lamp in pushbutton A lights up).

Delivery capacity increases as a result of the oil flow collection system.

The maximum volumetric capacity flows via the spool valve of the auxiliary control valve (SB 23 LS).

The maximum pressure differential delta p is acting on the auxiliary control valve.

Delta p is necessary for the desired oil volume to flow at the spool valve of the auxiliary control valves (SB 23 LS).

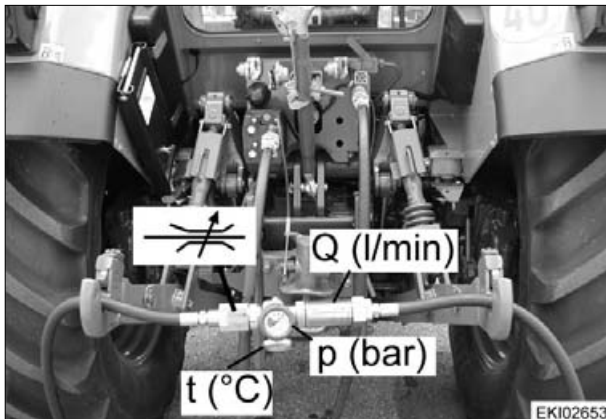
**Pump pressure 'p'**

Connect pressure gauge (min. measurement range 250 bar) to measuring point M1 (pump, working hydraulics).

Date	Version	Page		Capitel	Index	Docu-No.
08.08.2006	a	6/8	Terminal plate AP - circulation pressure / max. pump pressure / delta p pressure increase	9620	E	000005

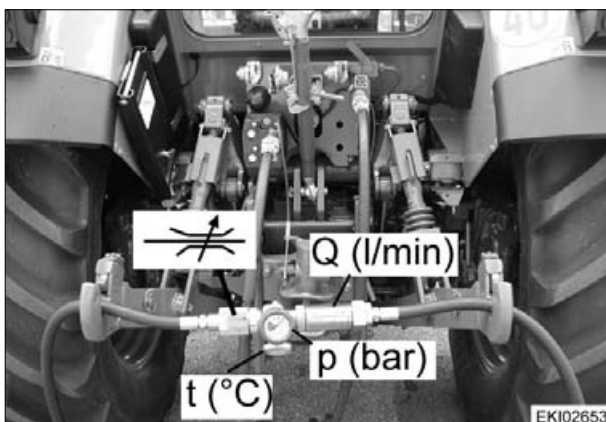
Fendt 300 Vario**Hydraulics / Valve assemblies**

Terminal plate AP - circulation pressure / max. pump pressure / delta p pressure increase

E**Load-sensing pressure LS**

Connect hydraulic test unit (with restrictor and 250 bar pressure gauge), e.g. to auxiliary control valve 1.2 "blue".

Connect return flow of hydraulic test unit to "free return flow" of hydraulic coupling, black.



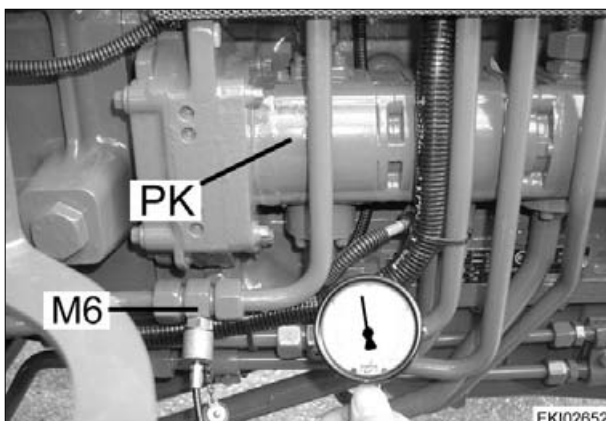
Engine speed = 1600 rpm

Deflect auxiliary control valve 'blue'.

Slowly close restrictor on hydraulic test unit.

Load-sensing pressure (LS) is displayed on pressure gauge.

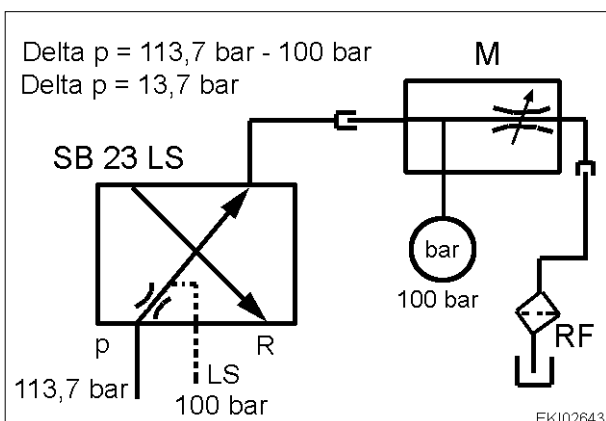
Set load-sensing pressure to 100 bar.



Pressure of **approx. 113.7 bar** is shown at pump pressure 'p' pressure gauge.

Note:

Pump pressure "p" is a function of:
hydraulic oil temperature t (°C)
volumetric capacity Q (l/min) of pump, working hydraulics



Delta p = pump pressure 'p' - load-sensing pressure 'LS'

Delta $p = 113.7 \text{ bar} - 100 \text{ bar}$

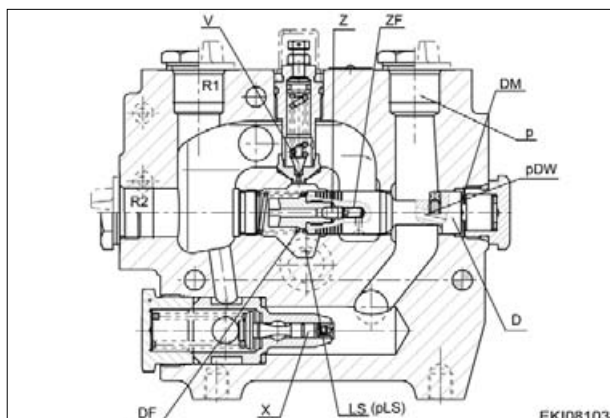
Date	Version	Page	Capitel	Index	Docu-No.
08.08.2006	a	7/8	Terminal plate AP - circulation pressure / max. pump pressure / delta p pressure increase 9620	E	000005

Fendt 300 Vario

Hydraulics / Valve assemblies

Terminal plate AP - circulation pressure / max. pump pressure / delta p pressure increase

E



If delta p = 13.7 bar is not reached:

Test circulation pressure of pump, working hydraulics (PK) (see above).

Testing pump pressure (max. 200 bar) of pump, working hydraulics (PK) (see above).

Check compression spring and spool valve of sequence valve (Z) for ease of movement.



OVERALL SYSTEM/ELECTRONICS

Retrofitting Tractor Management System (TMS) and 4WD/differential lock auto mode system

G

Retrofit kit: Tractor Management System (TMS) and 4WD/differential lock auto mode system

NOTE:

The Tractor Management System (TMS) and 4WD/differential lock auto mode system are retrofitted and programmed as part of a package



EKI08562

1002423

Contents: retrofit kit		
Designation	Spare part number	Note
Installation kit for seat switch	F718.500.030.090	Seat switch, rocker Various installation items
B008 high-pressure sensor (transmission)	G718.970.020.021	-
B039 high-pressure sensor (push/pull detection)	G718.970.020.021	-
TMS label	725.500.020.840	-
End-of-line program EOL 7.60 or above	-	Notes on programming: – Tractor Management System (TMS) – 4WD/differential lock auto mode system
Operating manual FENDT 300 Vario	339.000.000.003 de 339.000.000.013 en 339.000.000.023 fr 339.000.000.033 it 339.000.000.043 es 339.000.000.063 nl	only in modification kit de U339.970.110 only in modification kit en U339.970.120 only in modification kit fr U339.970.130 only in modification kit it U339.970.140 only in modification kit es U339.970.150 only in modification kit nl U339.970.160



OVERALL SYSTEM/ELECTRONICS

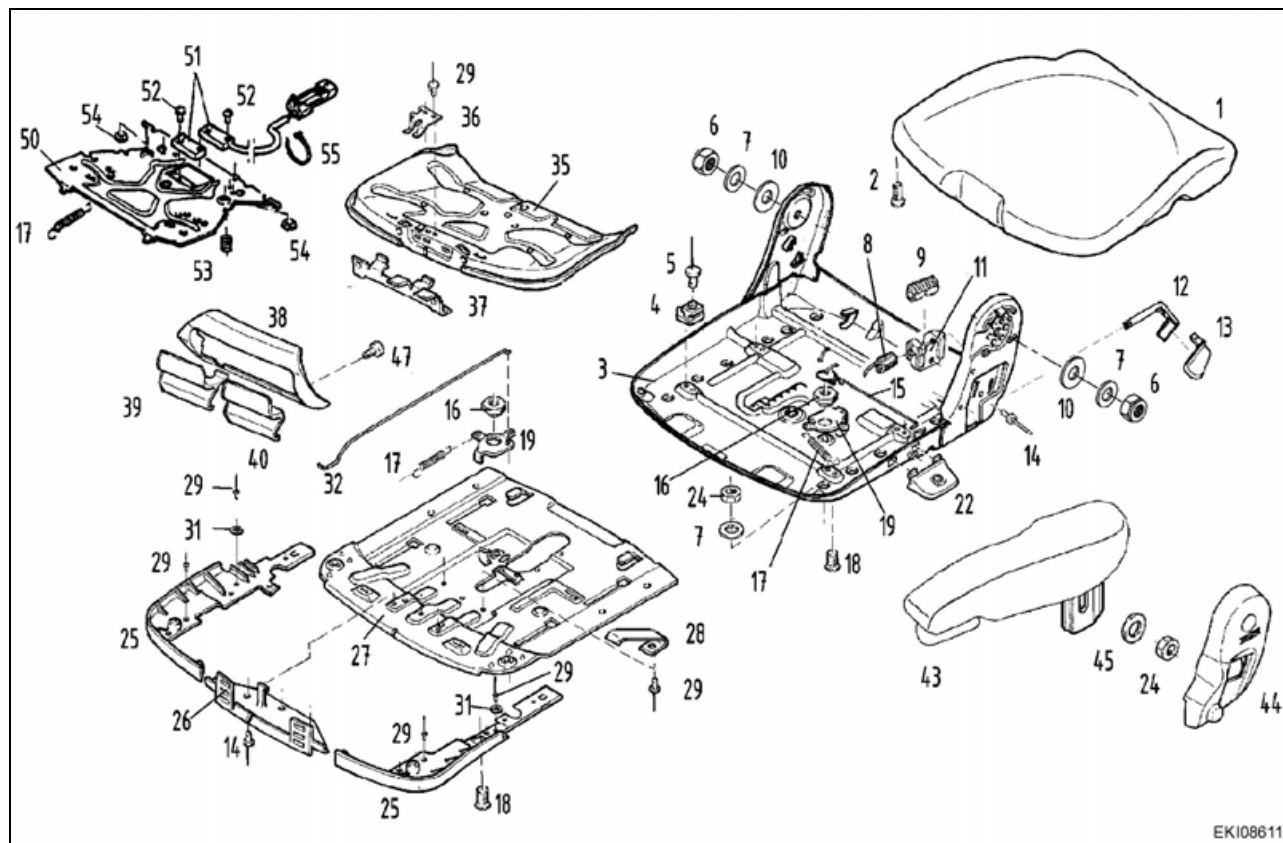
Retrofitting Tractor Management System (TMS) and 4WD/differential lock auto mode system

G

Contents: retrofit kit

Designation	Spare part number	Note
Installation instructions TMS system and 4WD/differential lock auto mode system	X990.006.756.000 de, en, fr, it, es, nl	-

Fitting seat switch to driver seat



EKI08611

1002445

Assembly Instructions

Item	Designation	Item	Designation
1	Seat upholstery	26	Grid
2	Half-round-headed screw	27	Plate
3	Seat plate	28	Spring panel
4	Slider	29	Rivet
5	Rivet	31	Washer
6	Nut	32	Linkage
7	Washer	35	Rocker
8	Spiral spring	36	Spring panel
9	Lock	37	Locking lever
10	Washer	38	Cover
11	Bearing	39	Handle
12	Lever	40	Handle
13	Handle	43	Armrest
14	Rivet	44	Cover
15	Linkage	45	Washer
16	Ring	47	Oval-head screw
17	Tension spring	50	Seat switch (rocker)

336 .. 0101-1000
336 .. 1001-
337 .. 0101-1000
337 .. 1001-
338 .. 0101-1000

338 .. 1001-
339 .. 0101-1000
339 .. 1001-

9700 G T000803
Version 2
19/06/2008

3



OVERALL SYSTEM/ELECTRONICS

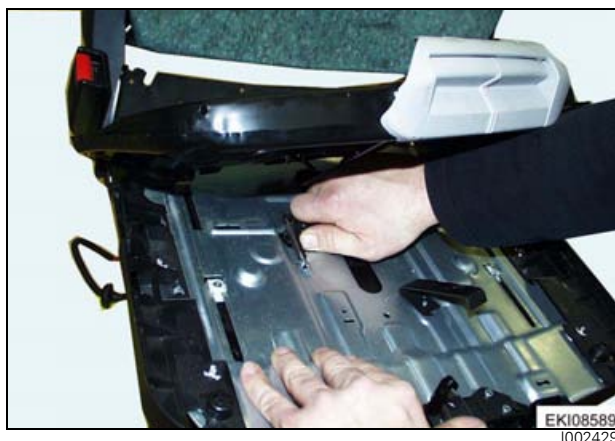
Retrofitting Tractor Management System (TMS) and 4WD/differential lock auto mode system

G

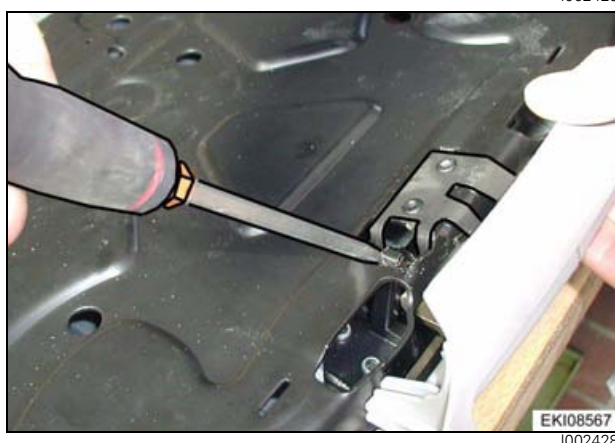
Item	Designation	Item	Designation
18	Countersunk screw	51	Switch (switch and magnet)
19	Lever	52	Rivet
22	Handle	53	Pressure spring
24	Nut	54	Buffer
25	Cover	55	Cable ties



Unscrew seat upholstery (1)



Exert excessive pressure against lever (19)
Carefully unthread the plate (27) and remove



Snap out the spring cover (36)
Raise the rocker (35)



OVERALL SYSTEM/ELECTRONICS

Retrofitting Tractor Management System (TMS) and 4WD/differential lock auto mode system

G

EKI08568

I002430



Remove the linkage (32)
Remove the rocker (35)



EKI08569

I002431

**NOTE:**

Note the fitting position of the switch

Rivet the seat switch (51) to the upper side of the rocker (35)

Route the wiring through the drilling (arrow)



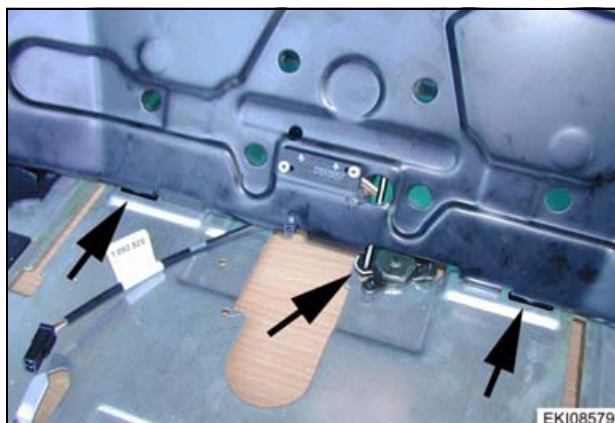
I002432



Secure the switch wires with cable ties

NOTE:

Do not allow the routing of the cable to become looped, as its length is limited.



EKI08579

I002433



Attach the linkage (32) to the lever (19)
Thread the rocker (35) onto the plate (27)

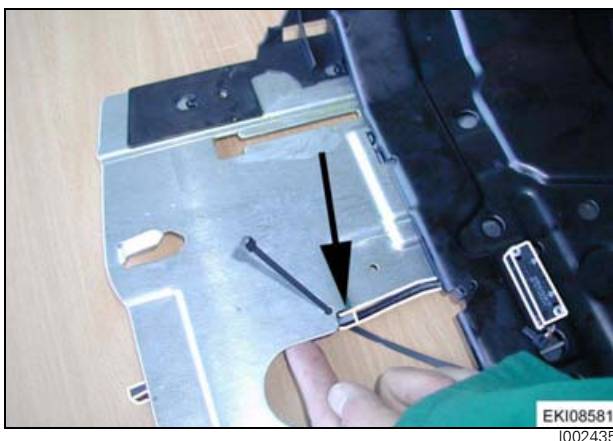


OVERALL SYSTEM/ELECTRONICS

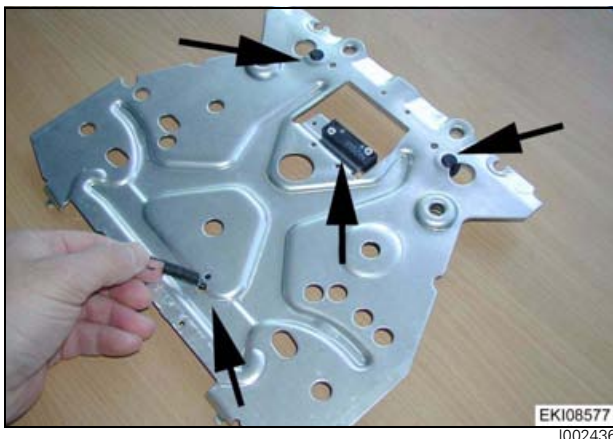
Retrofitting Tractor Management System (TMS) and 4WD/differential lock auto mode system

G

Emplace the rocker (35)

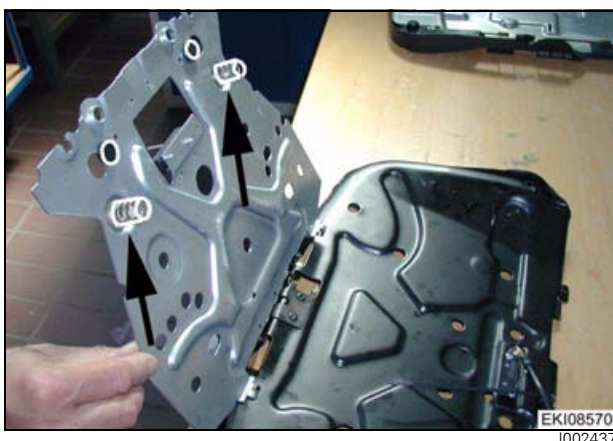


Using a cable tie, secure the switch wiring at the position indicated (arrow)

Rivet the magnet (51) onto the rocker (50) **(the arrows on the magnet point towards the switch)**

Insert 2 x buffers (54)

Attach tension spring (17)



Fit 2 x pressure springs (53)

OVERALL SYSTEM/ELECTRONICS

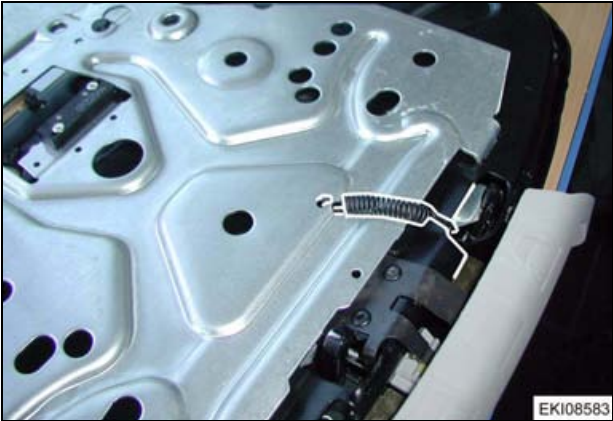
Retrofitting Tractor Management System (TMS)
and 4WD/differential lock auto mode system

G

Assembly Instructions



Thread the rocker (50) into the rocker (35)



Attach tension spring (17)



Check the functioning of the seat switch:	
Rocker not under load (switch open)	510 ohms
Rocker under load (switch closed)	121 ohms



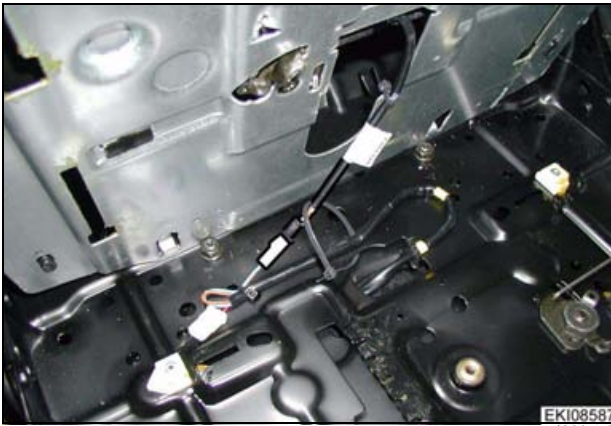
Check the slider (4) for wear and apply grease



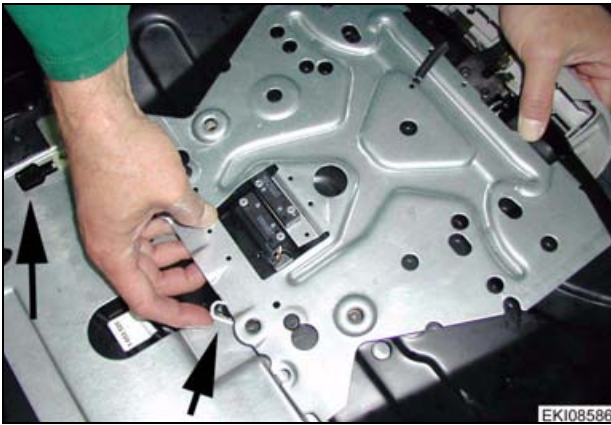
OVERALL SYSTEM/ELECTRONICS

Retrofitting Tractor Management System (TMS) and 4WD/differential lock auto mode system

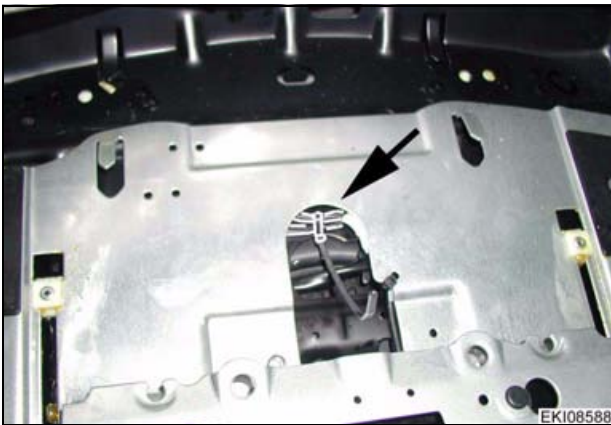
G



Plug in the wire from the seat switch
Put the cable ties in place, but do not yet secure the wiring



Put the plate (27) onto the sliders.
Exert excessive pressure onto the lever (19) and thread the plate (27) onto the sliders (4).



Push the plate (27) completely forwards and secure the wiring with the cable tie.

NOTE:

Push the plate (27) backwards and forwards.

Ensure that the wiring connections have free movement.



Push the driver seat completely forwards.
If necessary, slightly turn the driver seat.
Screw on the seat upholstery (1)

NOTE:

Cut away any upholstery packaging material (poly bags) that may be present on the underside in the area of the rocker (50).



OVERALL SYSTEM/ELECTRONICS

Retrofitting Tractor Management System (TMS) and 4WD/differential lock auto mode system

G

Fit the B008/B039 high-pressure sensor



B008 high-pressure sensor (transmission) X157 separation point on B008



On the right side of the transmission, on the valve block



Remove right rear wheel and panel



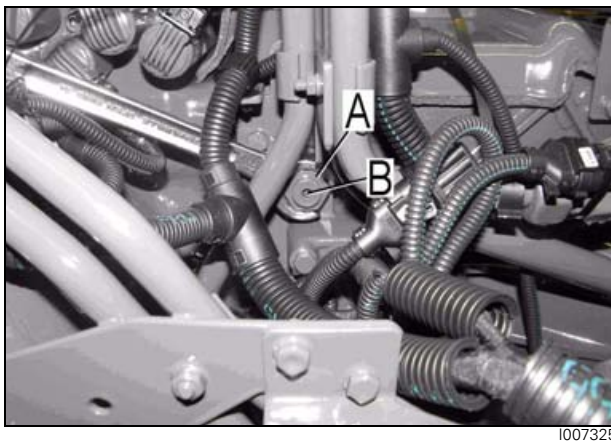
B039 high-pressure sensor (push/pull de- tection) X177 separation point on B039



On the right side of the transmission, on the housing



Remove right rear wheel and panel



NOTE:

The socket (A) must be held back with an open-ended spanner when the cap screw (B) or pressure sensor (B039) are being unscrewed. When unscrewing, a certain torque can damage the interior hose and result in further consequences (no transmission push detection, leakage of drive train transmission oil in the oil sump).



Route wiring and fix with cable ties





OVERALL SYSTEM/ELECTRONICS

Retrofitting Tractor Management System (TMS) and 4WD/differential lock auto mode system

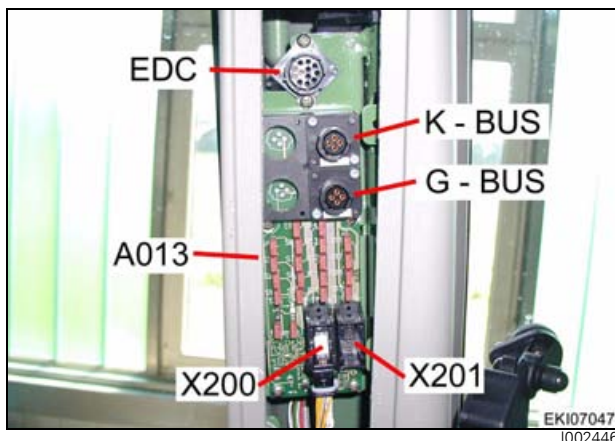
G

Programming Tractor Management System (TMS) and 4WD/differential lock auto mode system

NOTE:

The Tractor Management System (TMS) and 4WD/differential lock auto mode system are programmed as part of a package.

Programming tractor with EOL 7.60 or higher

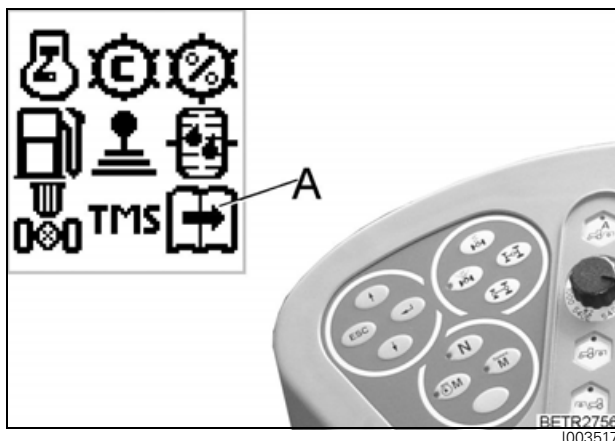


Connect USB adapter X899.980.206.216 or 218 to the K bus and G bus

Connectors on the adaptor cable

- 1** = K bus
- 2** = G bus

Calibrating the transmission and rear power lift



Press button, the first main menu level appears on the multiple display.

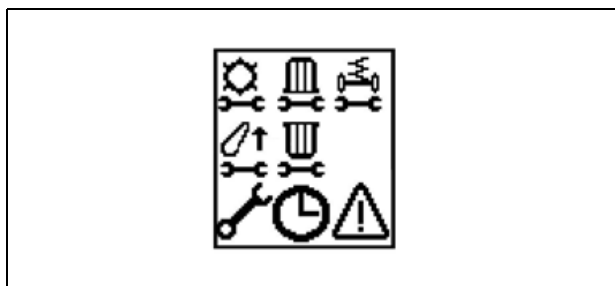


Press one of the buttons repeatedly until the symbol (A) flashes.



Press the button, the second main menu level appears on the multiple display.

Second main menu level



Transmission menu



Rear power lift menu



Press one of the buttons repeatedly until the desired symbol flashes



Press the button, the multiple display switches to the selected menu level.

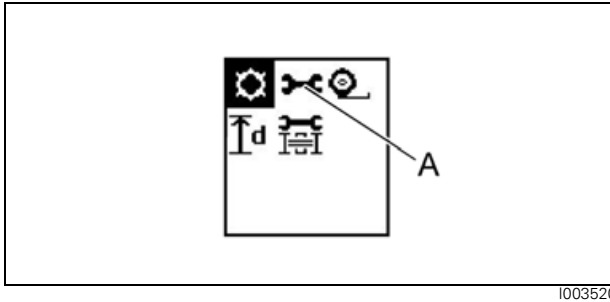


OVERALL SYSTEM/ELECTRONICS

Retrofitting Tractor Management System (TMS) and 4WD/differential lock auto mode system

G

Transmission menu level



1003520

Calibrating the transmission



Press one of the buttons repeatedly until the symbol (A) flashes



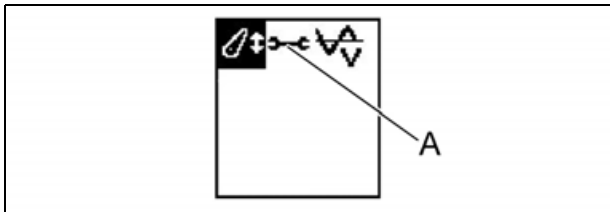
Press "Return" to confirm,

NOTE:

for further calibration, please refer to Service Training FENDT 300 Vario
Observe the calibration sequence

- Calibrating the drive clutch pedal (**calibration code 4001**)
- Calibrating the hand throttle (**calibration code 4002**)
- Calibrating the foot throttle (**calibration code 4005**)
- Calibrating the gear ratio characteristic (**calibration code 4007**)
- Calibrating the turbo clutch (**calibration code 4009**)
-

Rear power lift menu level



1003521

Calibrating the rear power lift



Press one of the buttons repeatedly until the symbol (A) flashes



Press "Return" to confirm,

NOTE:

for further calibration, please refer to Service Training FENDT 300 Vario

- Calibration of the depth control (**calibration code 8001**)
- Calibration of rear power lift position (**calibration code 8002**)

Function: Tractor Management System (TMS) and 4WD/differential lock auto mode

NOTE:

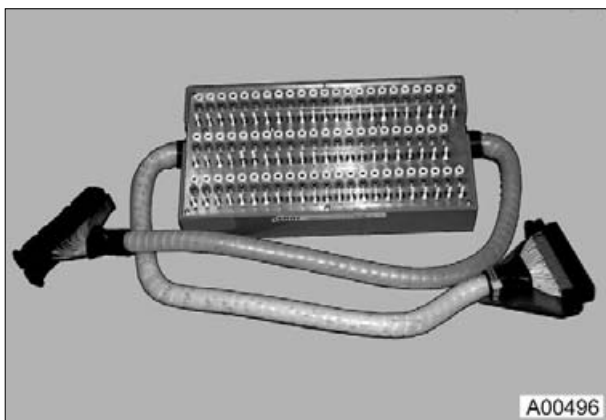
See also:

Operating manual FENDT 300 Vario (339.000.000.003 German)

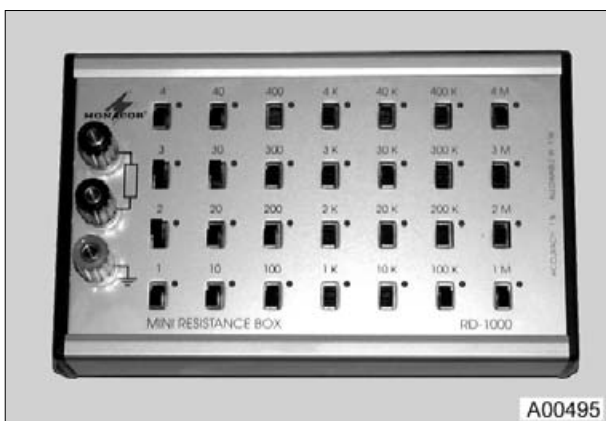
Fendt 300 Vario	Service / Special tools Special tools general	A
------------------------	--	----------

Note:

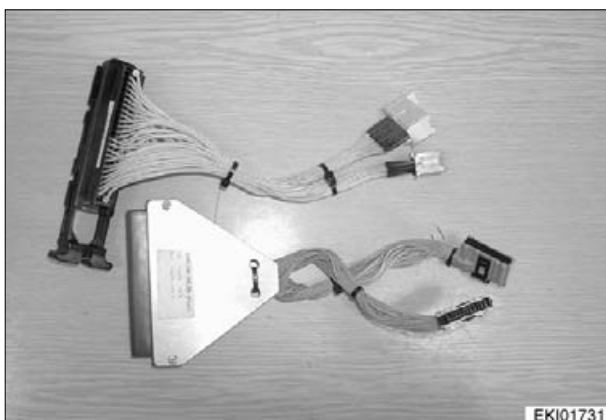
Special tools also see film set X 899.980.247.000

**X 899.980.208.100**

E-adapter box for universal testing of electrical and electronic systems

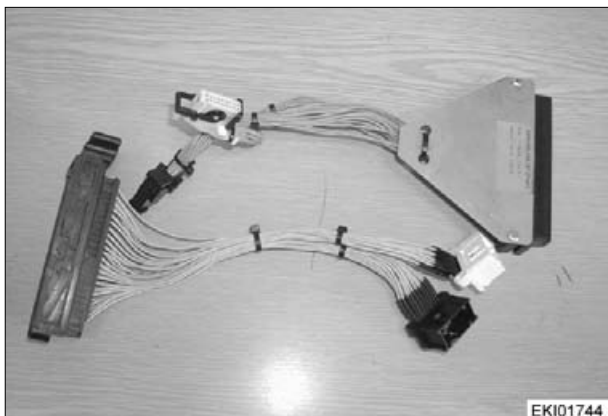
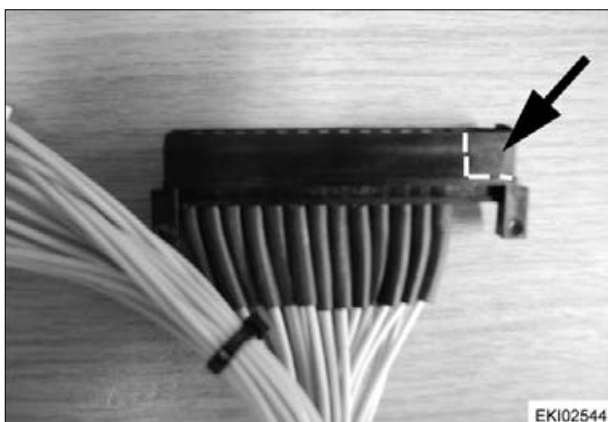
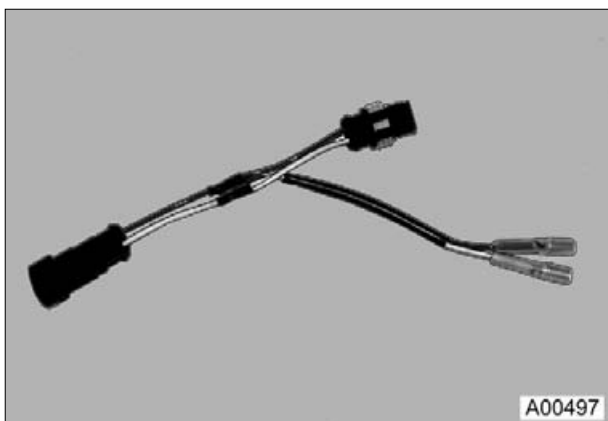
**X 899.980.224.000**

Resistance decade box for testing electronic display instruments

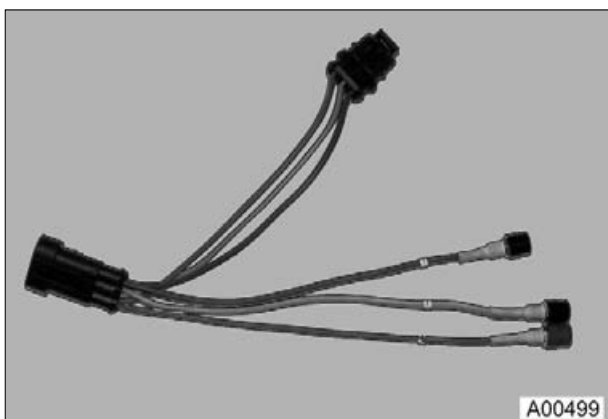
**X 899.980.208.204**

Adapter cable 26 / 26 / 68-pin, instrument cluster

Date	Version	Page	Special tools general	Capitel	Index	Docu-No.
20.09.2006	a	1/6		9920	A	000013

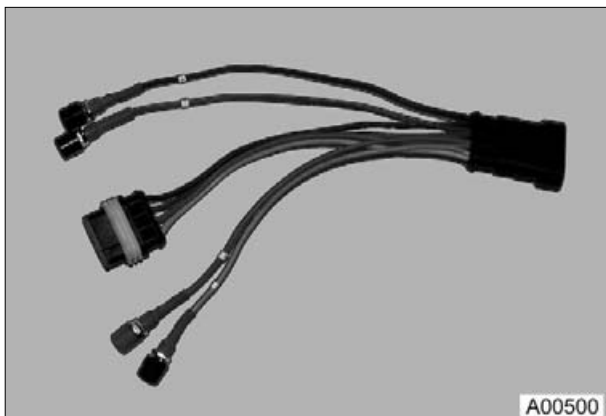
Fendt 300 Vario
Service / Special tools
Special tools general
A**X 899.980.208.207**
 Adapter cable 18 / 18 / 68-pin, keypad, microfuse
 board
**X 899.980.208.201**
 Adapter cable 25/68-pin
 A024 - ECU, EPC B
**X 899.980.246.204**

Adapter cable for 2-pin cable coupler (Superseal)

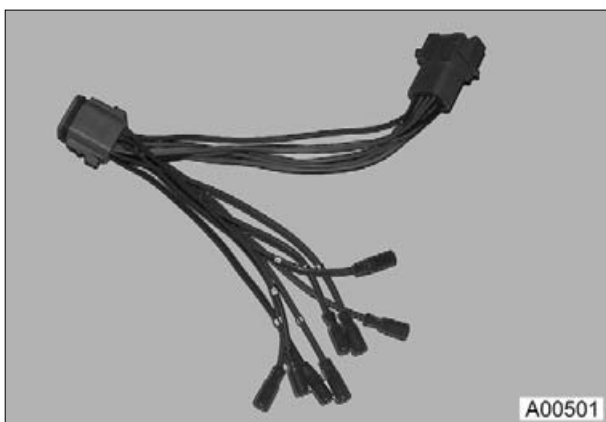
**X 899.980.246.205**

Adapter cable for 3-pin cable coupler (Superseal)

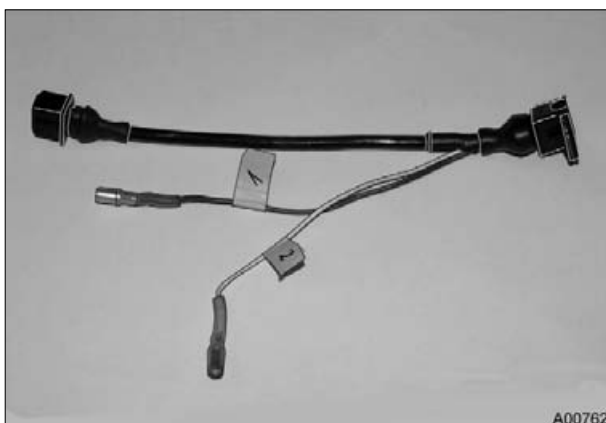
Date	Version	Page	Special tools general	Capitel	Index	Docu-No.
20.09.2006	a	2/6		9920	A	000013

Fendt 300 Vario
Service / Special tools
Special tools general
A**X 899.980.246.206**

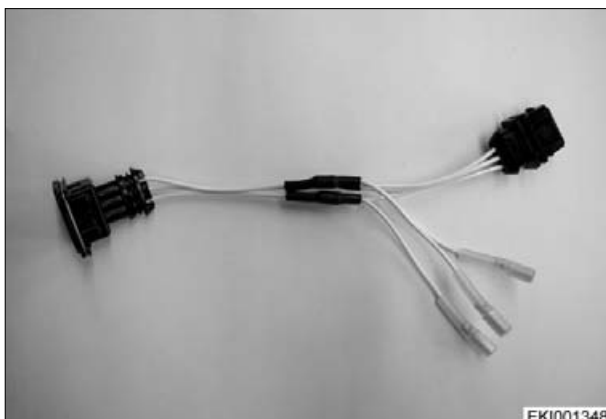
Adapter cable for 4-pin cable coupler (Superseal)

**899.980.246.207**

Adapter cable for 8-pin cable coupler

**X 899.980.246.201**

Adapter cable for 2-pin cable couplers (Minitimer), e.g. solenoid valves (4WD, PTO, diff. lock, EPC, front axle suspension)

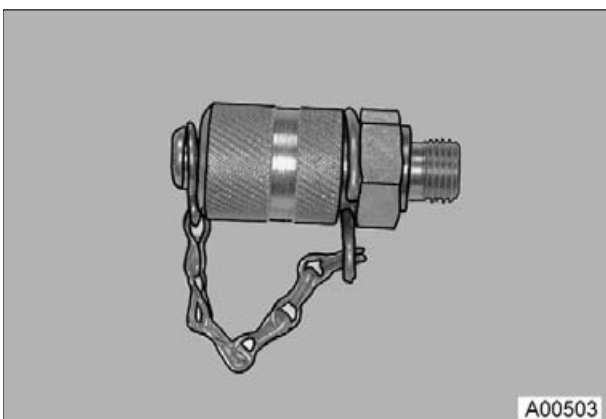
**X 899.980.246.202**

Adapter cable for 3-pin cable couplers (Minitimer), e.g. position sensor, draft sensing pin (EPC)

Date	Version	Page	Special tools general	Capitel	Index	Docu-No.
20.09.2006	a	3/6		9920	A	000013

Fendt 300 Vario
Service / Special tools
Special tools general
A**X 899.980.188.000**

Hose-clamp hook for sealing hose assemblies

**X 598.303.000.000**

Screw coupling with M10x1 thread for measuring hydraulic pressures

**X 899.980.249.100**

Measuring case with 8 pressure gauges, 8 high pressure hoses, 8 screw connections M 10x1 and 2 adapters M 10x1 / M 12x1.5. Pressure gauges: 1 x 16 bar, 5 x 60 bar, 2 x 600 bar



External oil filling unit with superfine pressure filter; always required if the high pressure circuit in the ML transmission has been opened

X 899.980.255.000

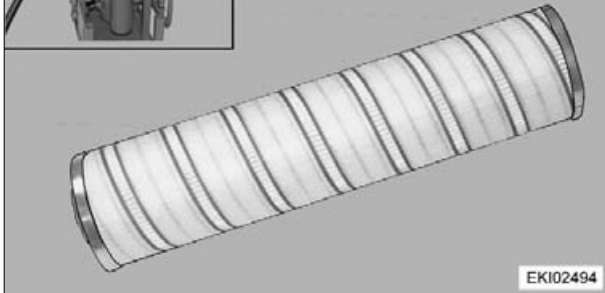
Oil filling unit

X 899.980.255.100

Superfine filter element

Date	Version	Page	Special tools general	Capitel	Index	Docu-No.
20.09.2006	a	4/6		9920	A	000013

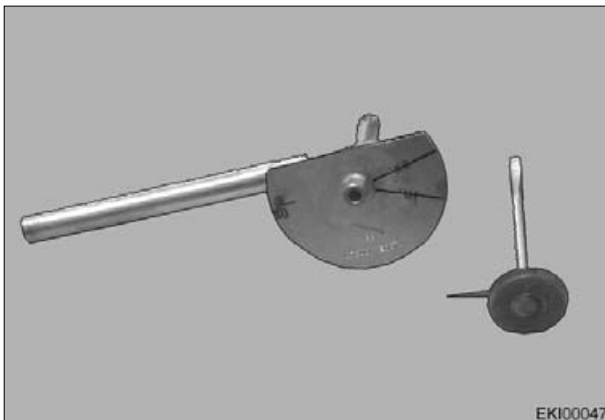
Fendt 300 Vario	Service / Special tools Special tools general	A
------------------------	--	----------



EKI02494

X 899.980.221.100

Ultra fine filter element in the oil filling station
(Pall)



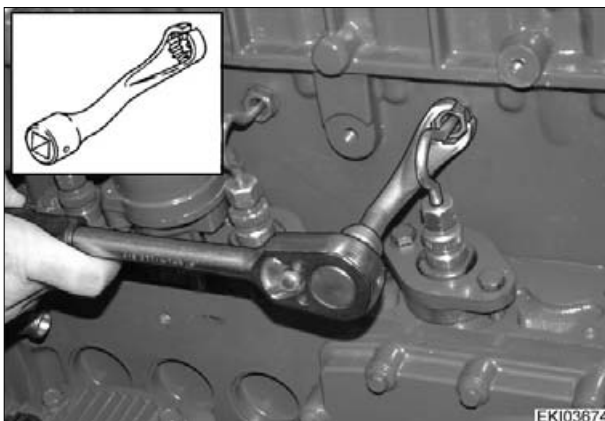
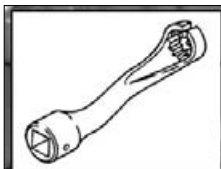
EKI00047

X 899.980.236.000 = 65 mm

X 899.980.236.010 = 85 mm

X 899.980.236.020 = 45 mm

Valve clearance setting tool



EKI03674

X 899.980.238.000

Special key (crowfoot) for injection lines.

Date	Version	Page	Special tools general	Capitel	Index	Docu-No.
20.09.2006	a	5/6		9920	A	000013

Fendt 300 Vario
Service / Special tools
Special tools general
A**X 899.980.217.000**

Measuring case (fuel pilot pressure)

Contents

- pressure gauge, measurement range 1.0 bar underpressure to 1.5 bar overpressure
- pressure gauge, measurement range up to 60 bar
- test connection, M10x1
- test hose
- double screw coupling
- screw coupling
- hollow-core screw, M12x1.5
- hollow-core screw, M14x1.5
- ring adapter, 14 mm
- measuring adapter, M10x1 (X 596.135.000.000)
- pipe (X 595.340.200.000)
- spacer (395.100.070.650)

Date	Version	Page	Special tools general	Capitel	Index	Docu-No.
20.09.2006	a	6/6		9920	A	000013

Fendt 300 Vario	Service / Special tools Special tools	A
------------------------	--	----------

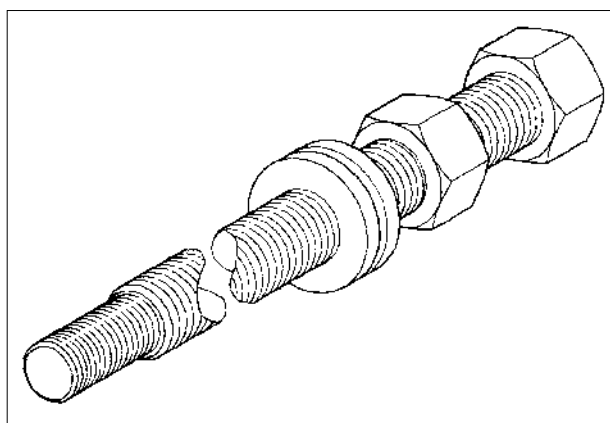
Note:

Special tools also see film set X 899.980.247.000



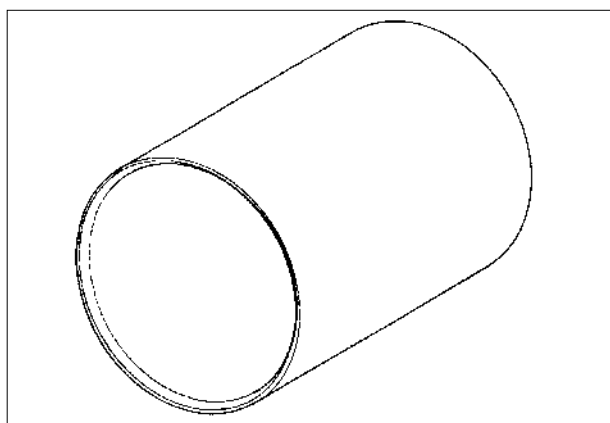
X 899.980.300.000

Lifting device Vario transmission unit



X 899.980.138.000

Tensioning screw

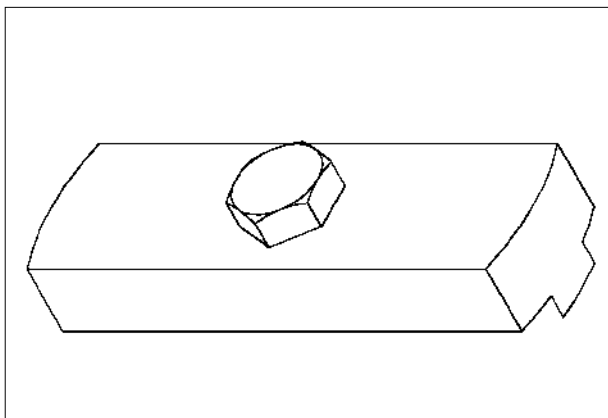


X 899.980.197.000

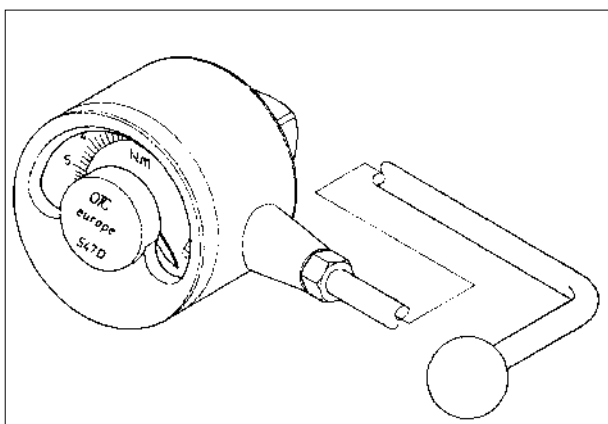
Retracting device rear axle shaft

Date	Version	Page	Special tools	Capitel	Index	Docu-No.
12.09.2006	a	1/2		9920	A	000009

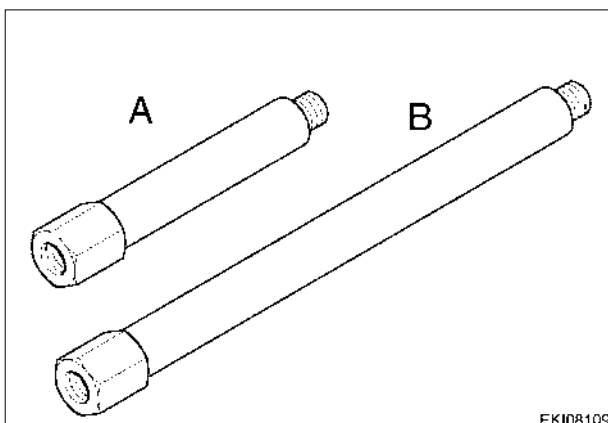
Fendt 300 Vario	Service / Special tools Special tools	A
------------------------	--	----------

**X 899.980.208.100**

Turning device for differential groove nut

**X 899.980.151.000**

Torque gauge

A = **X 899.980.301.000** Measuring adapter
M10 x 1 shortB = **X 899.980.302.000** Measuring adapter
M10 x 1 long

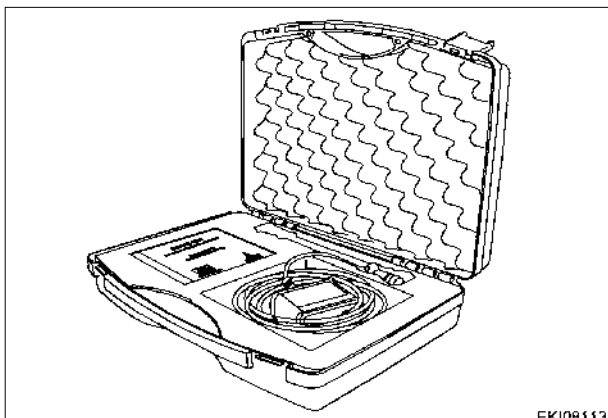
EK108109

Date	Version	Page	Special tools	Capitel	Index	Docu-No.
12.09.2006	a	2/2		9920	A	000009

**Fendt 300 Vario
FENDT 400 COM III
FENDT 7/800 COM III**

**Service / Special tools
Special tool common rail (adapter cable)**

A



EKI08113

X 899.980.260.102

EMR SERDIA Diagnostics testing box
for testing the EMR control unit
(DEUTZ diesel engines)

Important:

**For EDC 7 engines, only use the USB
Diagnostic Interface**



EKI06837

X 899.980.208.218

Adapter cable for A051, ECU engine control unit
EDC 7

for measuring on separation point
X1671/ X1672, EDC 7

Note:

For adapter box X 899.980.208.100 (68-pin)



EKI06838

X 899.980.208.217

Adapter cable for A051, ECU engine control unit
EDC 7

for measuring on separation point X1466, EDC 7

Note:

Use cross-reference list for 89-pin to 68-pin

Note:

For adapter box X 899.980.208.100 (68-pin)

X899.980.304.202



EKI08705

X 899.980.304.202

Adapter cable for A051, ECU engine control unit
EDC 7

Note:

**This cable can be used for all common rail
tractors
(FENDT 300, 400, 700, 800, 900 COM III)**

Note:

For adapter box X 899.980.304.000 (160-pin)

Date	Version	Page	Special tool common rail (adapter cable)	Capitel	Index	Docu-No.
20.09.2006	a	1/3		9920	A	000012

**Fendt 300 Vario
FENDT 400 COM III
FENDT 7/800 COM III**

**Service / Special tools
Special tool common rail (adapter cable)**

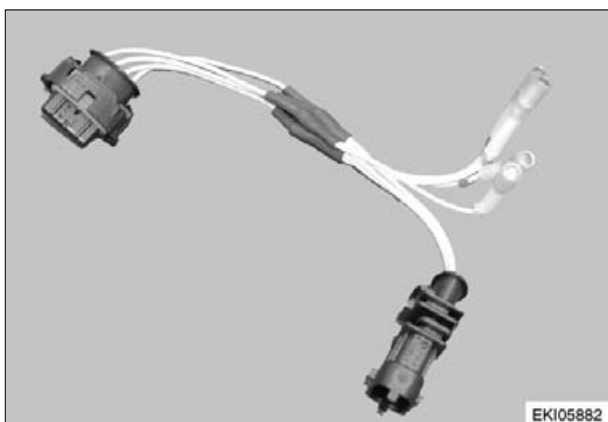
A



X 899.980.259.101

6-pin adapter cable

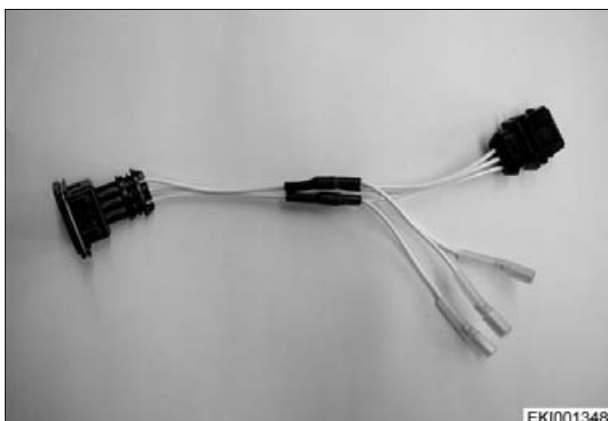
for measuring on Y095 - Y101 injector,
(separation point X1673, X1753) EDC 7



X 899.980.259.102

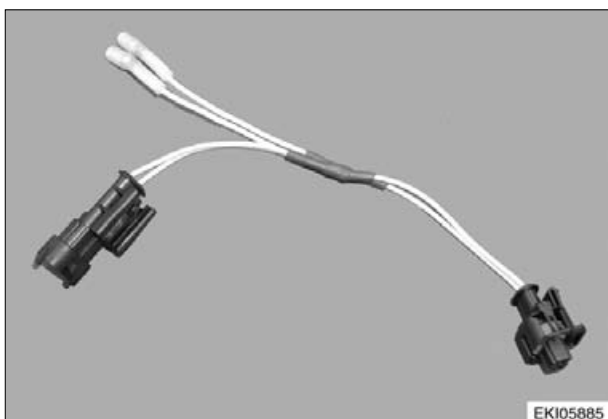
4-pin adapter cable

for measuring on B092 - sensor, charge air
temperature/boost pressure



X 899.980.246.202

for measuring on B085 / B088 - sensor, camshaft /
crankshaft speed



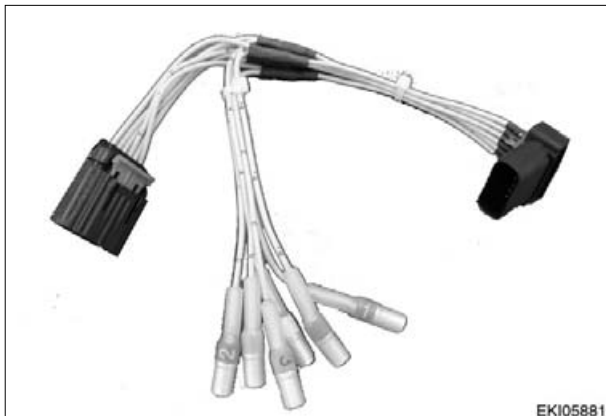
X 899.980.259.104

2-pin adapter cable

for measuring on B089 - sensor, water
temperature

Date	Version	Page	Special tool common rail (adapter cable)	Capitel	Index	Docu-No.
20.09.2006	a	2/3		9920	A	000012

Fendt 300 Vario FENDT 400 COM III FENDT 7/800 COM III	Service / Special tools Special tool common rail (adapter cable)	A
--	---	----------



X 899.980.246.208

6-pin adapter cable

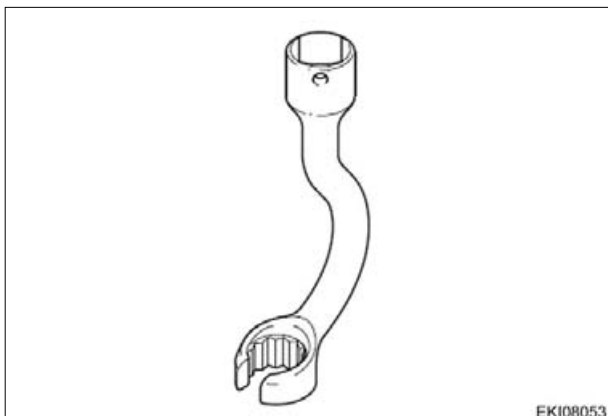
for testing the B055 - combi-sensor, foot throttle

Date	Version	Page	Special tool common rail (adapter cable)	Capitel	Index	Docu-No.
20.09.2006	a	3/3		9920	A	000012

Fendt 300 Vario
FENDT 400 COM III
FENDT 700/800 COM III

Service / Special tools
Special tool common rail

A



Special key (SW 17) , for removing and installing high pressure lines

X 899.980.238 V

Please order the following special tools from the following address

Wilbär

Wilhelm Bäcker GmbH & Co.KG

Post box 14 05 80

42826 Remscheid

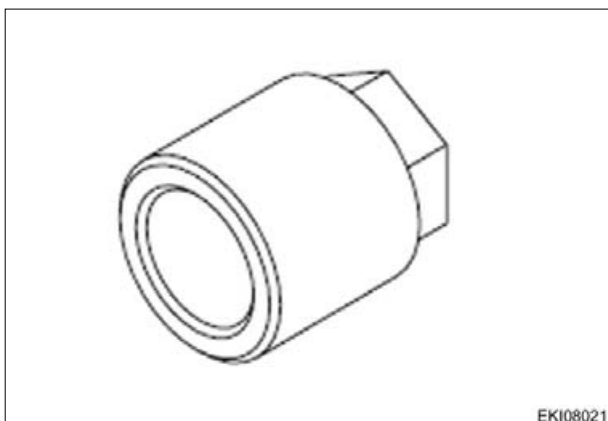
Germany

Phone: +49 (0) 21 91 - 9339 - 200

Fax: +49 (0) 21 91 - 9339 - 0

E-mail: info@wilbaer.de

web: <http://www.deutz-tools.com>



Removal device for removing the inlet connector

Order number: 110 630



Lever tool for removing injectors

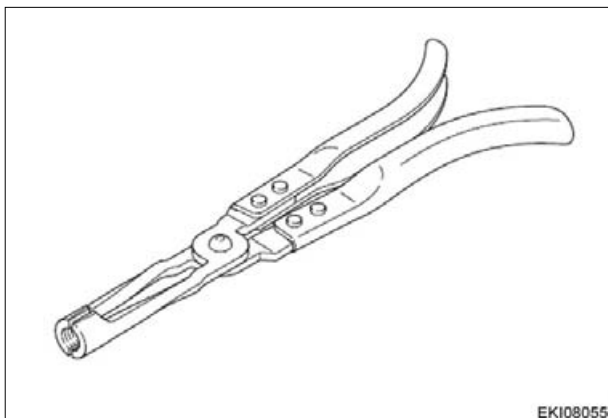
Order number: 110 620

Date	Version	Page	Special tool common rail	Capitel	Index	Docu-No.
09.08.2007	a	1/2		9920	A	000014

Fendt 300 Vario
FENDT 400 COM III
FENDT 700/800 COM III

Service / Special tools
Special tool common rail

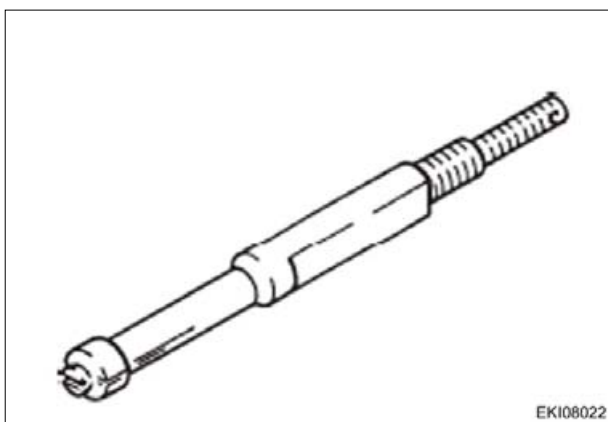
A



EKI08055

Assembly pliers

Order number: 8024

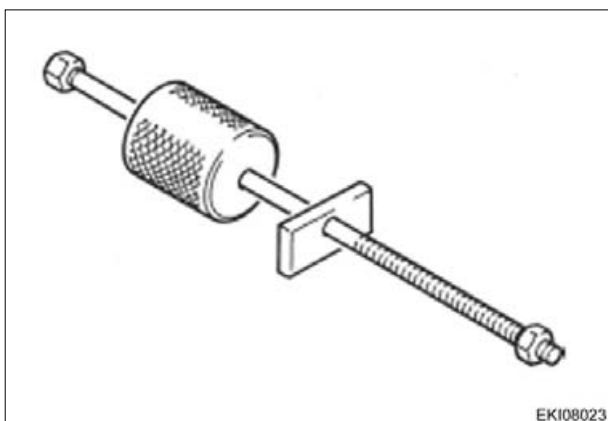


EKI08022

Pulling device for removing tight injector sealing ring

Order number: 120 680

to be used with sliding hammer 150 800



EKI08023

Sliding hammer

Order number: 150 800

to be used with pulling device 120 680



EKI08054

Assembly case (for removing and installing round sealing rings)

Case complete with:

Disassembly tool 110 901 and three mounting sleeves with guide

- High pressure pump (diameter 36 mm), 110 902
- Injector 2V-engine (diameter 16 mm), 110903
- Injector 4V-engine (diameter 23 mm), 110904

Order number: 110 900

Date	Version	Page	Special tool common rail	Capitel	Index	Docu-No.
09.08.2007	a	2/2		9920	A	000014