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.

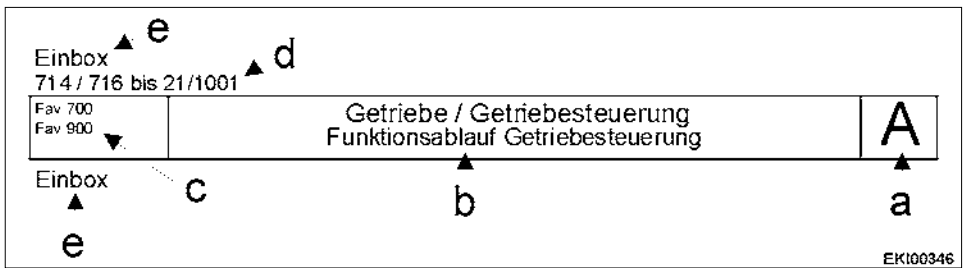
Each assembly is subdivided into various registers which are labelled with an index letter.
These are as follows.

A - General
B - Faults
C - Documents and plans
D - Position of components
E - Measuring and testing
F - Settings and calibration
G - Repairs
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
b Chapter / section
c Type validity
d Validity: chassis no.
e Other notes on validity

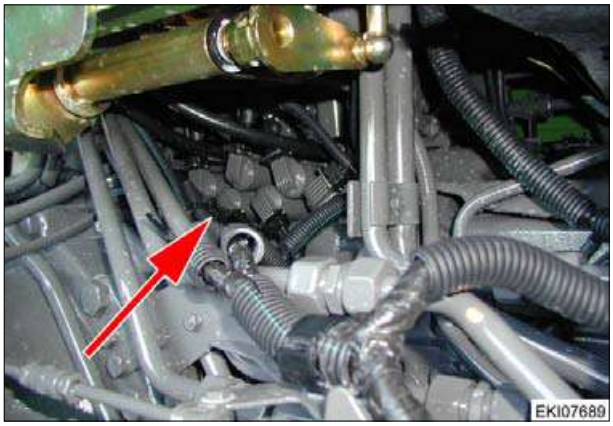
Selected technical data: rear PTO and front PTO				
Tractor model	**309 Vario Rear wheel/4WD**	**310 Vario Rear wheel/4WD**	**311 Vario 4WD**	**312 Vario 4WD**
Chassis no.	**336 /../**	**337 /../**	**338 /../**	**339 /../**
Rear PTO				
Fuels and lubricants	(Oil quantity and oil quality: also see List 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	1000	1000	1000
	540 (optional)	540 (optional)	540 (optional)	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 **Electrical / electronic components - Y**	**D**

Y004 = Solenoid valve, clutch / turboclutch
X317 = Separation point on Y004
On the right side of the transmission

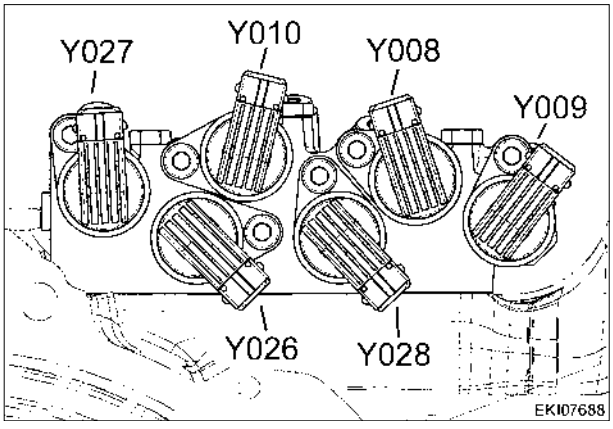
Remove right rear wheel

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

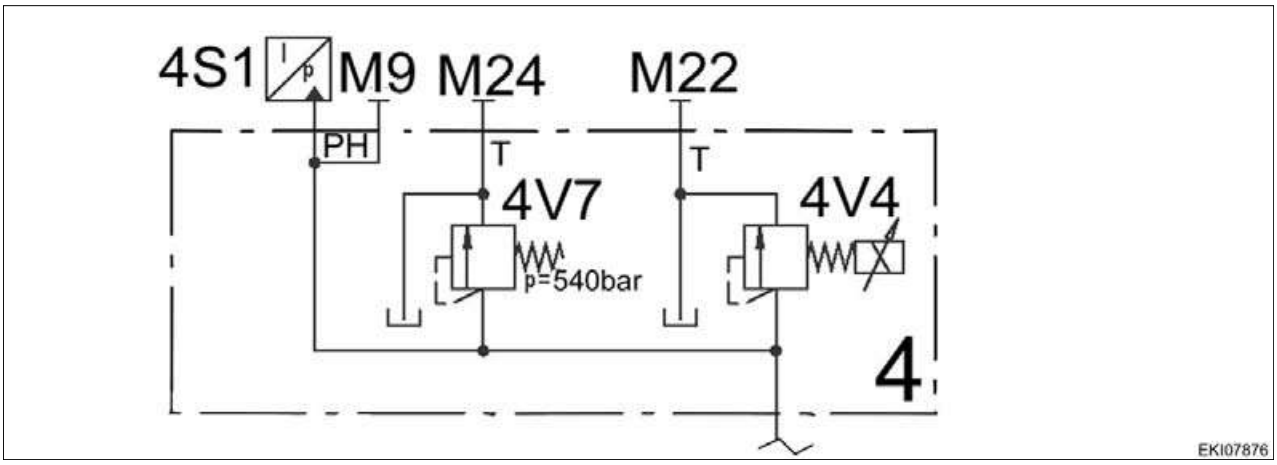
Remove right rear wheel, remove metal guard



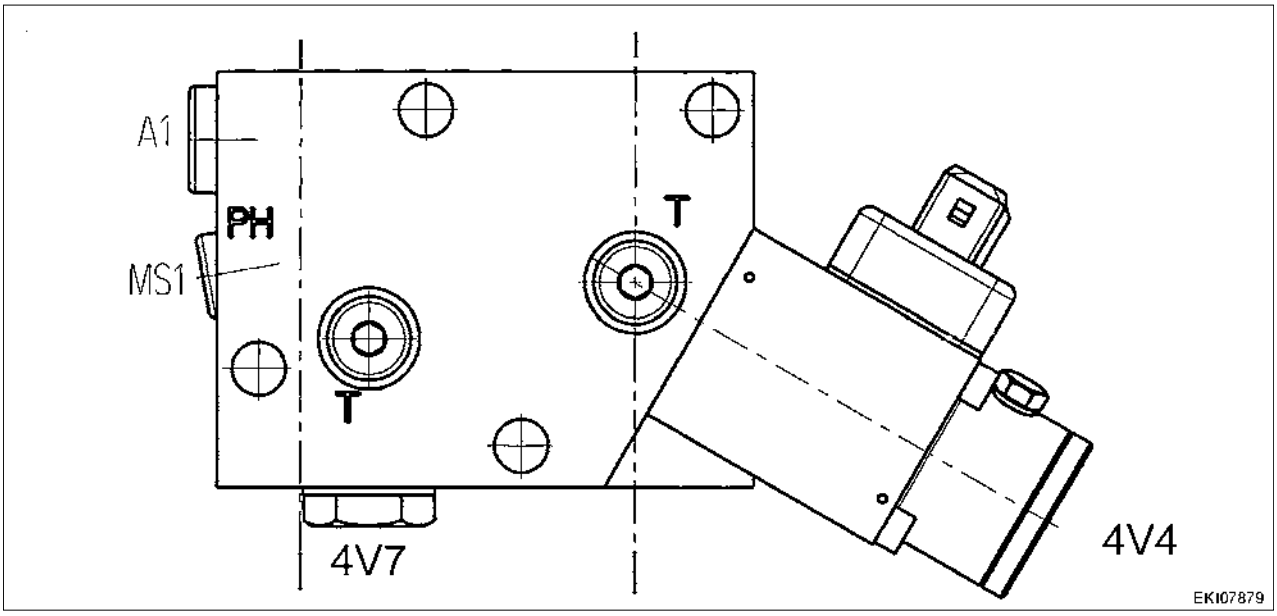
Y008 = Solenoid valve, rear PTO clutch
X319 = Separation point on Y008
Y009 = Solenoid valve, 4WD
X320 = Separation point on Y009
Y010 = Solenoid valve, differential lock (rear)
X321 = Separation point on Y010

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

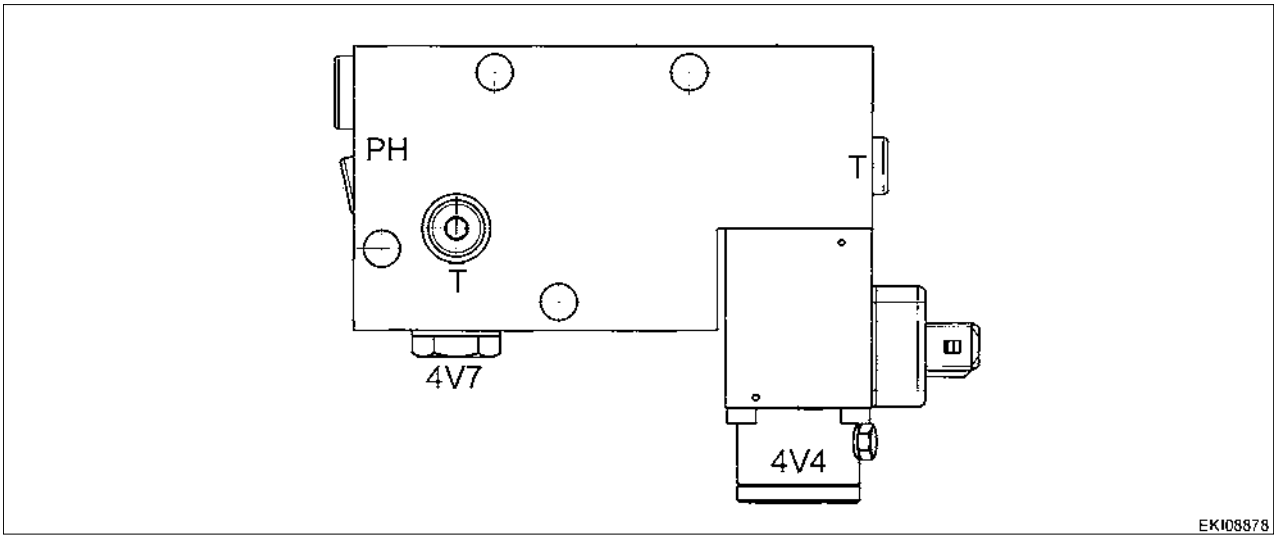
Valve block clutch/turboclutch



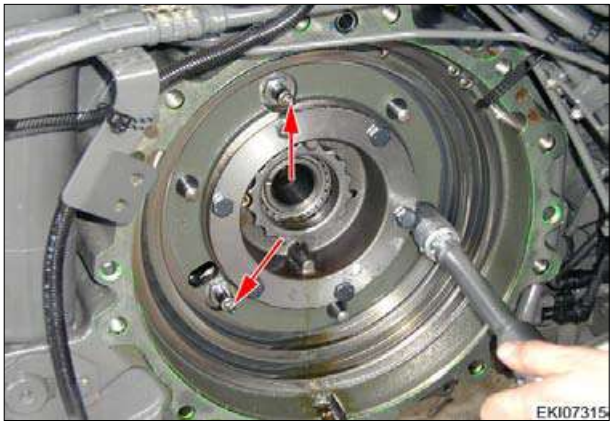
Version "A"



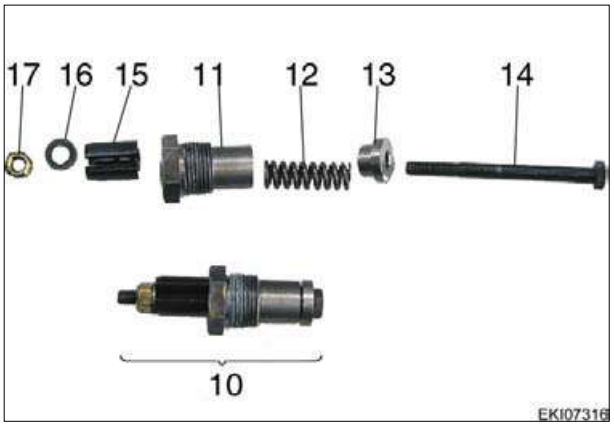
Version "B"



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



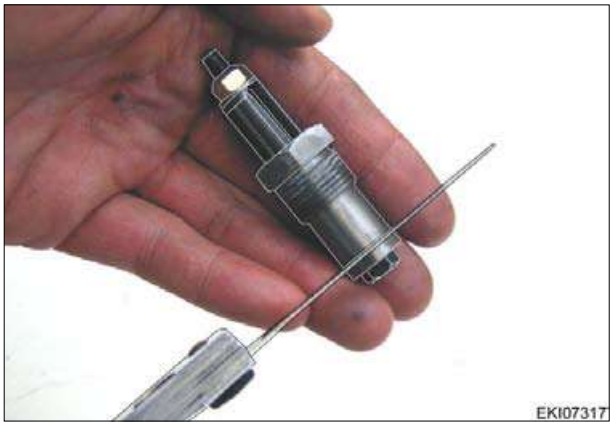
Remove the 3 brake adjusters (arrowed).



Installing rear brake

Brake adjuster disassembled/assembled.

Note:
Visually check parts, replace faulty components, always exchange lock nut (17).

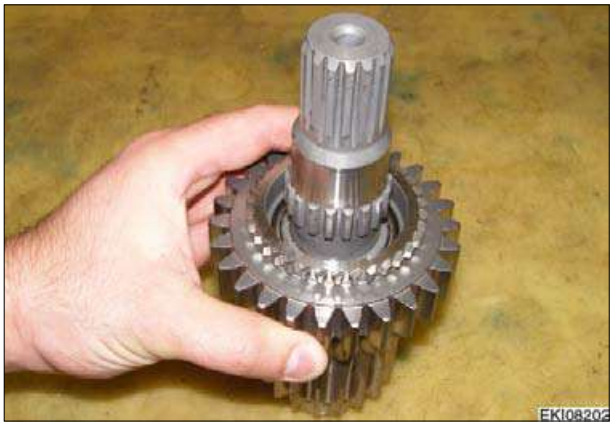


Assemble brake adjuster (10), adjust clearance to 0.7 mm + 0.05 mm.

Clean threaded bores, apply screw locking compound X 903 050 084 000 and mount the 3 brake adjusters (10) and tighten to 90 Nm.

Shaft (1) components

Slide on oiled needle bearing (9).

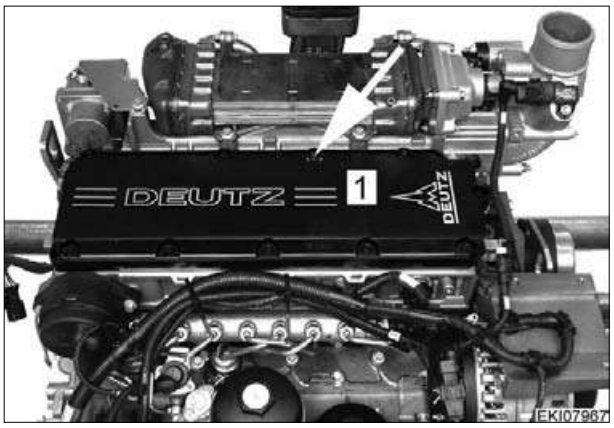


Fit spur gear (10).

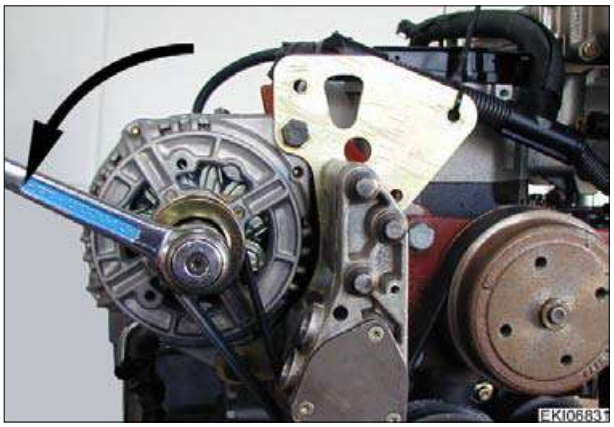
Fit guide sleeve (5) with collar facing towards the spur gear (10).

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)



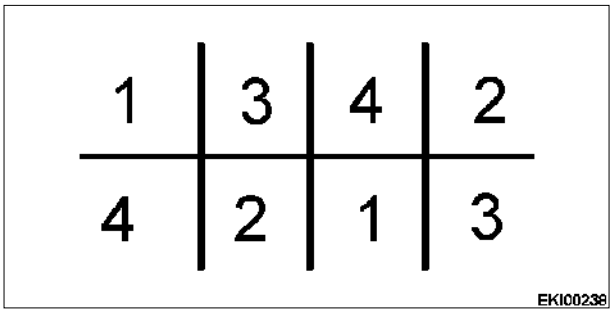
Turn crankshaft until all valves overlap in cylinder 1.

Note: cylinder 1 on flywheel

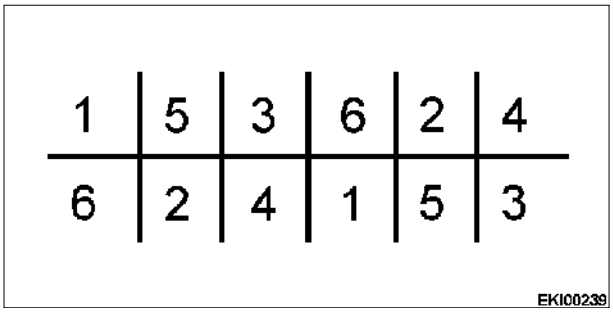
Valves in cylinder 4 (TCD 2012 L04) or cylinder 6 (TCD 2012 L06) can now be set, see valve clearance setting scheme!

Turn anti-clockwise at generator!

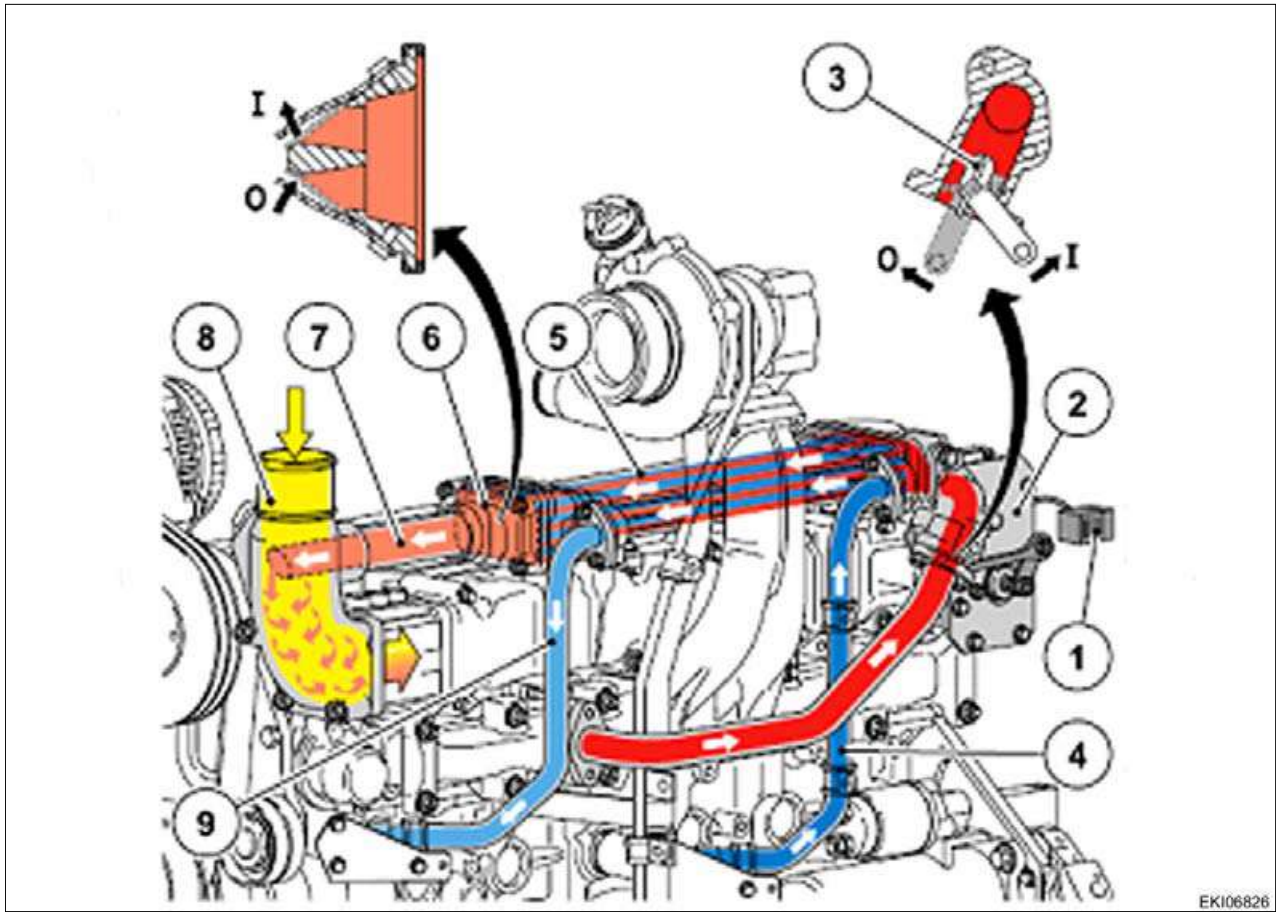
Valve clearance setting scheme for engine: (TCD 2012 L04)
Valve overlap



Valve clearance setting scheme for engine: (TCD 2012 L06)
Valve overlap



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 (flatter 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

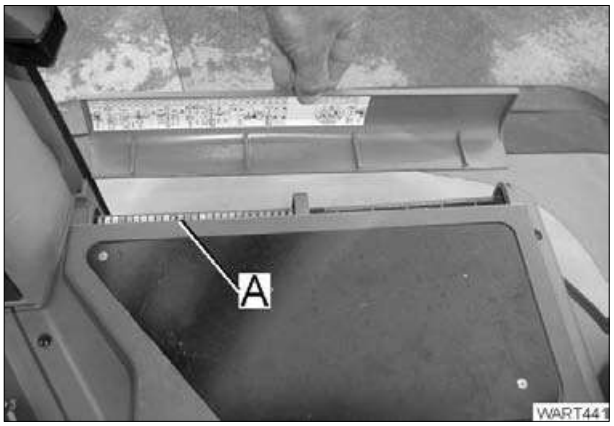
The A051 - ECU,engine control unit (EDC 7) controls exhaust gas recirculation in the combustion space, dependent on engine load and speed

Electrics / Fuses

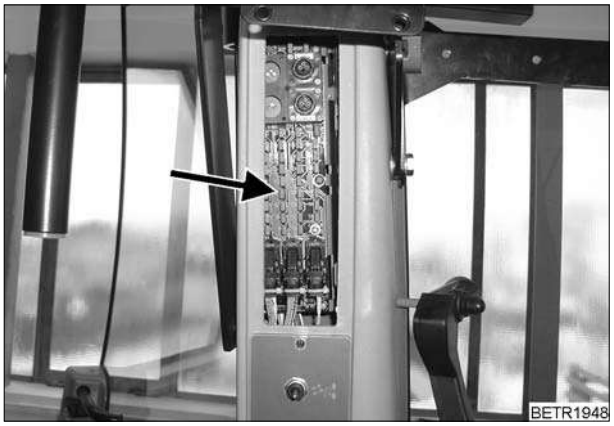
Fuse holder X050, X051 and A013

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)

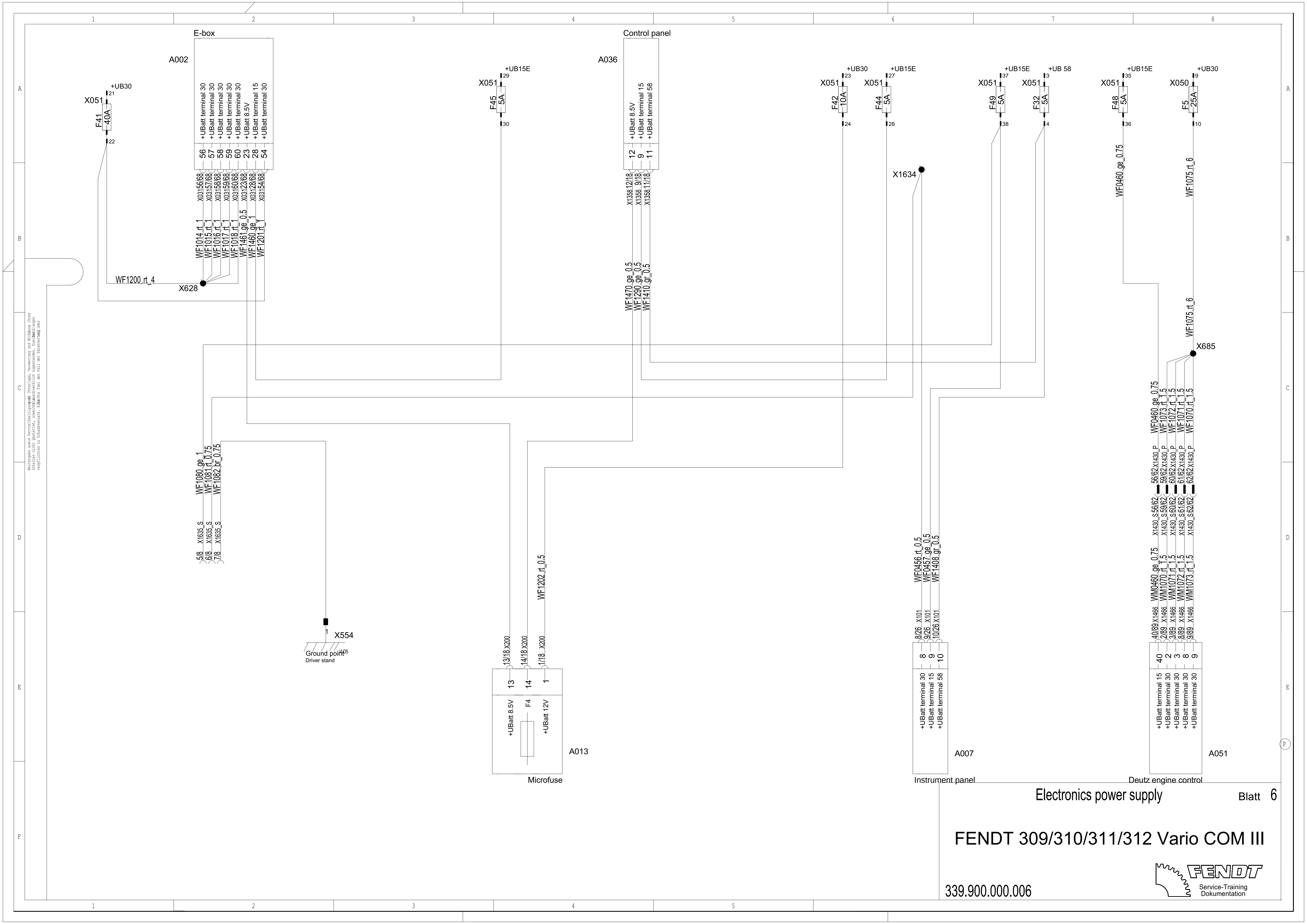
Unscrew cover panel.

Electrics / General system

Overview of circuit diagrams for FENDT 300 Vario

C

Contents of circuit diagrams

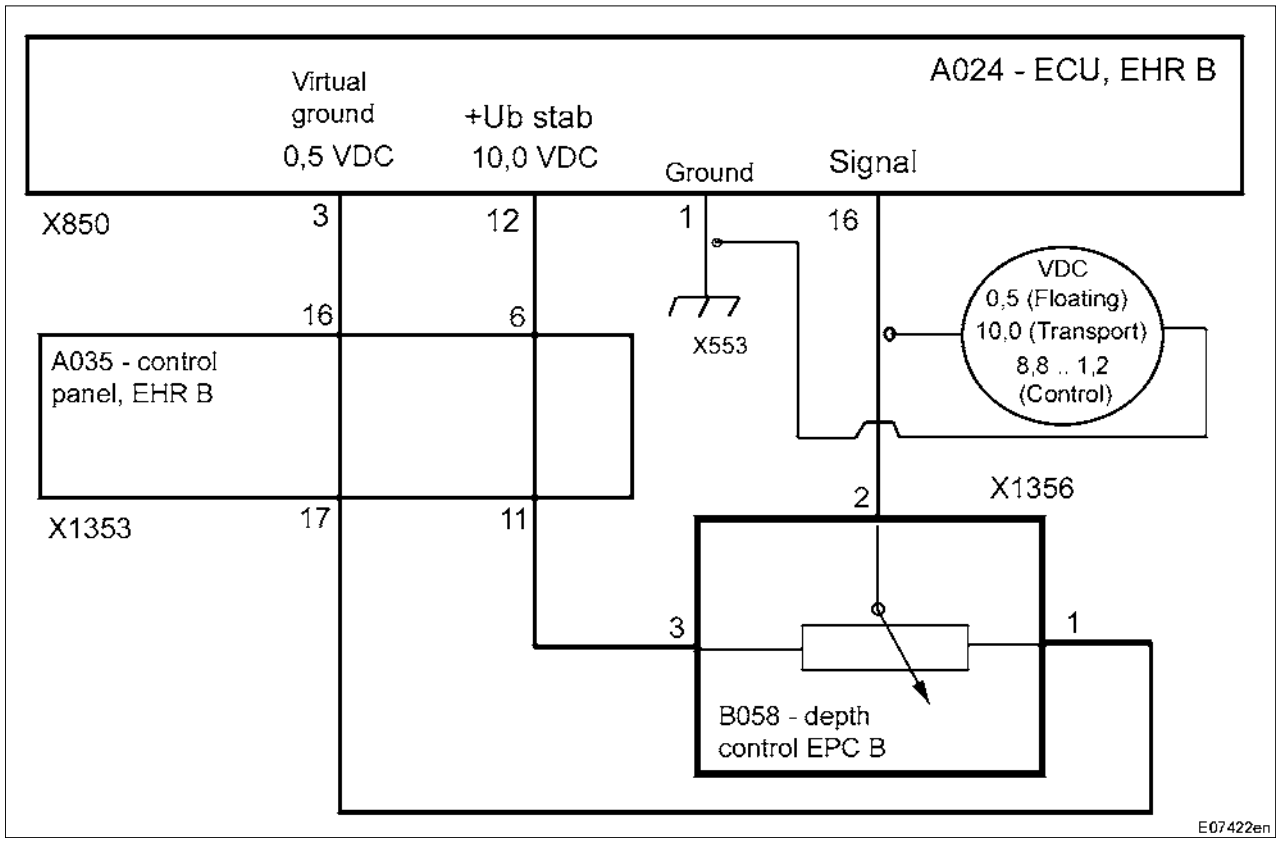

E-box
A002
Control panel
A036
X051
F41
40A
+UB30
F45
5A
+UB15E
F42
10A
F44
5A
F49
5A
F32
5A
+UB 58
F48
5A
X050
F5
25A
+UBatt terminal 30
+UBatt terminal 15
+UBatt terminal 58
+UBatt 8.5V
X628
WF1200_rt_4
X1634
X685
WF0460_ge_0.75
WF1075_rt_6
WF1080_ge_1
WF1081_rt_0.75
WF1082_br_0.75
WF1202_rt_0.5
WF0456_rt_0.5
WF0457_ge_0.5
WF1408_gr_0.5
WF1470_ge_0.5
WF1290_ge_0.5
WF1410_gr_0.5
X554
Ground point
Driver stand
A013
+UBatt 12V
F4
Microfuse
A007
Instrument panel
A051
Deutz engine control
Electronics power supply
Blatt 6
FENDT 309/310/311/312 Vario COM III
339.900.000.006
FENDT
Service-Training
Dokumentation

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)	Release hydraulic trailer brake			
	Note: S059 - switch connects to ground	Tractor braked with hand brake / trailer is braked hydraulically (indicator lamp not lit)	11.3 VDC	11.3 VDC	0 VDC
	Ignition ON	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	Turn signal indicator right (R):		0 VDC	12 VDC pulse
	Ignition ON	Flash to right	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

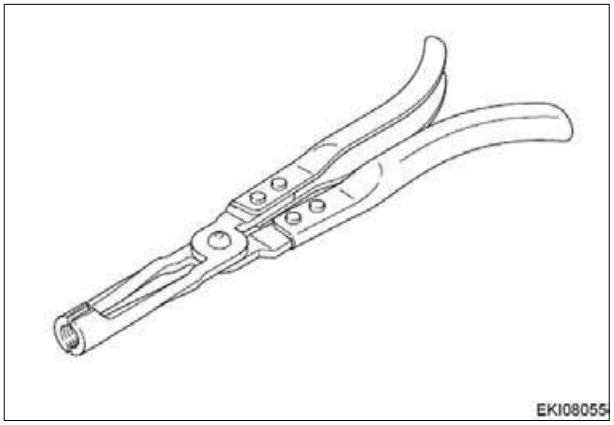
Pin on X1671 separation point	Pin on the 68-pin adapter box	Description	Signal - type / condition	Signal	Signal from the A051 - ECU;E-DC (line interrupted)	Signal from component (line interrupted)
			2200 rpm (no-load speed)	approx. 2.67 VAC	0 VAC	approx. 6.7 VAC
10	40	Ground for B085 - sensor, camshaft		-	-	-
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 kilohm		
			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

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

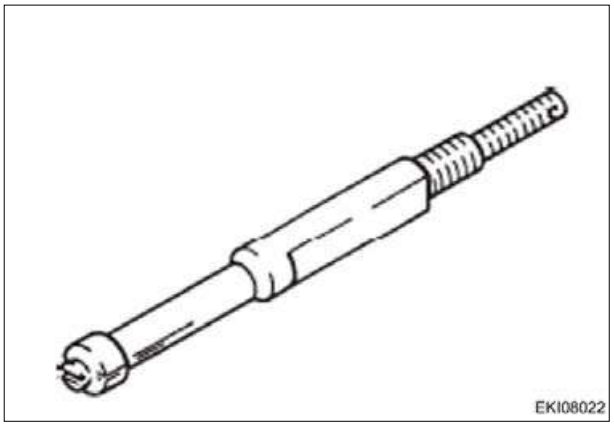


Fendt 300 Vario *FENDT 400 COM III* *FENDT 700/800 COM III*	Service / Special tools **Special tool common rail**	**A**



Assembly pliers

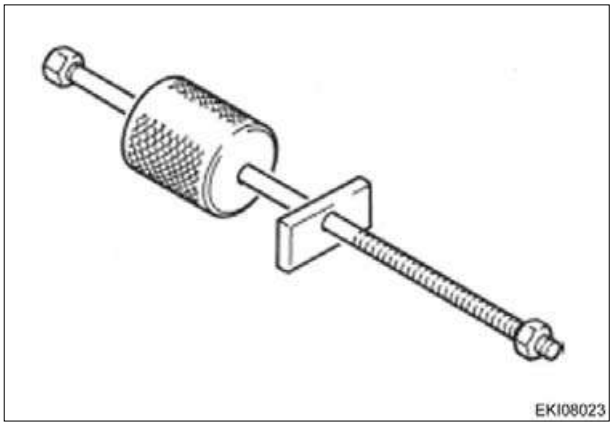
Order number: 8024



Pulling device for removing tight injector sealing ring

Order number: 120 680

to be used with sliding hammer 150 800



Sliding hammer

Order number: 150 800

to be used with pulling device 120 680

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