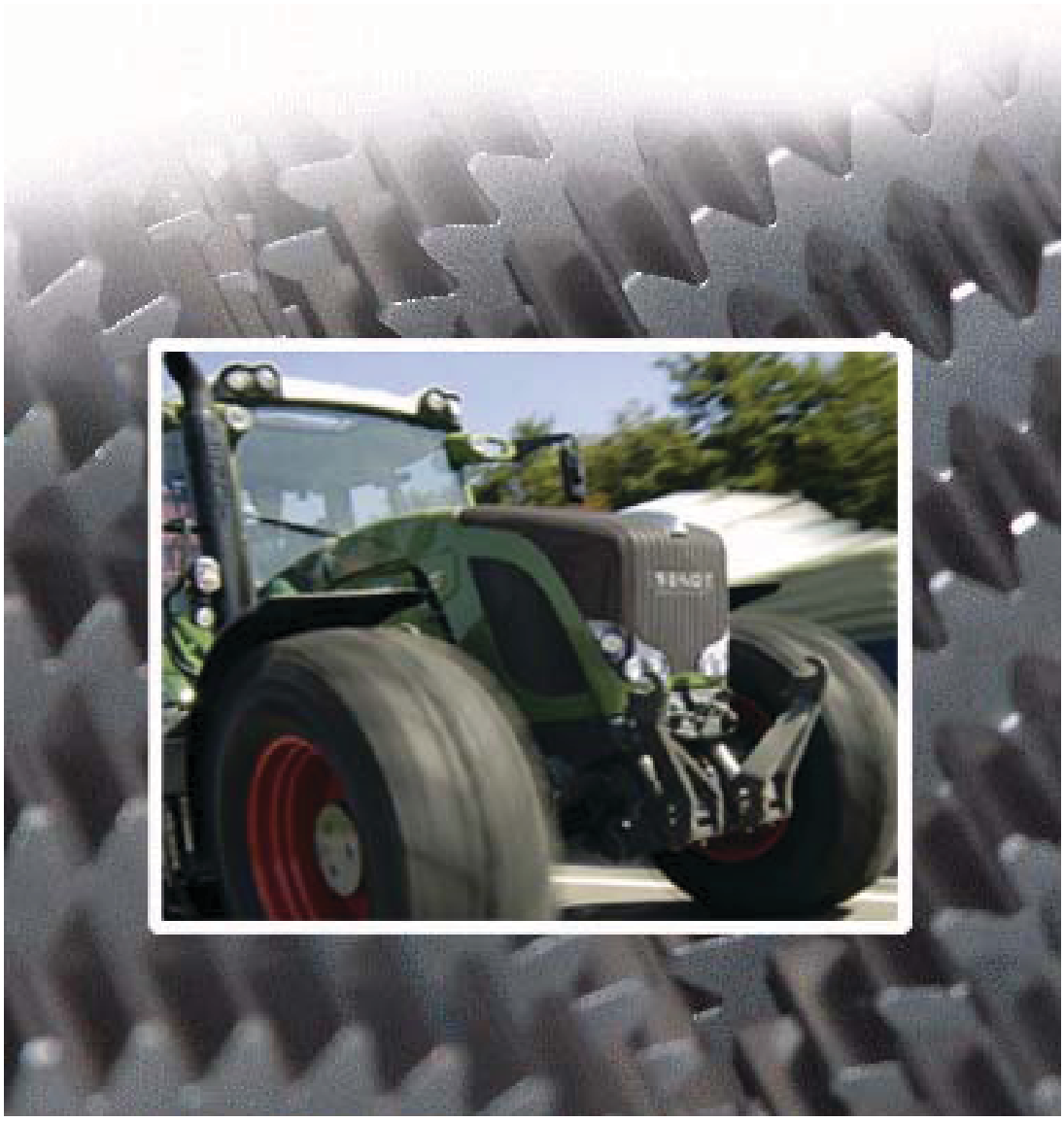
Workshop Service Manual

FENDT 900 Vario - COM III

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934 .. 1001-



AGCO GmbH - Johann-Georg-Fendt-Str. 4 D-87616 Marktoberdorf
FENDT is a worldwide brand of AGCO

Edition 02/2010
No. X990.005.057.012
3510 G - en
FENDT 900 Vario COM III - EAME
English

FENDT

Volume 2

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**!**

FENDT 900 Vario - COM III

Unkt Id 0

0000 Overall system/tractor
1005 Overall system/transmission
1010 Transmission/differential
1015 Transmission/axle drive
1050 Transmission/housing
1070 Transmission / Brake system
1080 Transmission/drive train
1200 Transmission/front PTO
1220 Transmission / Live PTO
1320 Transmission/front wheel drive
2000 Overall system/engine
2010 Engine/cylinder head
2050 Engine/cooling
2060 Engine/fuel system
2210 Engine/crankcase
2312 Engine/lubrication
2400 Engine/exhaust system
2712 Engine/injectors
3000 Overall system/front axle
3120 Front axle/steering cylinder
3180 Front axle/cardan shaft

Unkt Id 1

4000 Overall system/steering
4090 Steering system / hydraulic steering unit
5030 Vehicle layout/operator's seat
5500 Overall system/air conditioning system
8100 Overall system/cab
8610 Power lift/EPC electro-hydraulic control
8631 Power lift/hydraulic lift
8800 Overall system/compressed air system

Unkt Id 2

9000 Overall system/electrical system
9015 Electrical system/starter lockout

Unkt Id 3

9410 Hydraulic pump installation/LS pump
9430 Hydraulic pump installation/steering pump
9534 Hydraulic piping/"Rüfa"reverse operation
9600 Overall system/hydraulic equipment
9605 Hydraulic equipment/hydraulic connections
9610 Hydraulic equipment/central control block (ZSB)
9620 Hydraulic equipment/valve fitting
9700 Overall system/electronics
9920 Service/special tools
9975 Service/SERDIA - Deutz engine diagnostics program

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1 Steering hydraulics

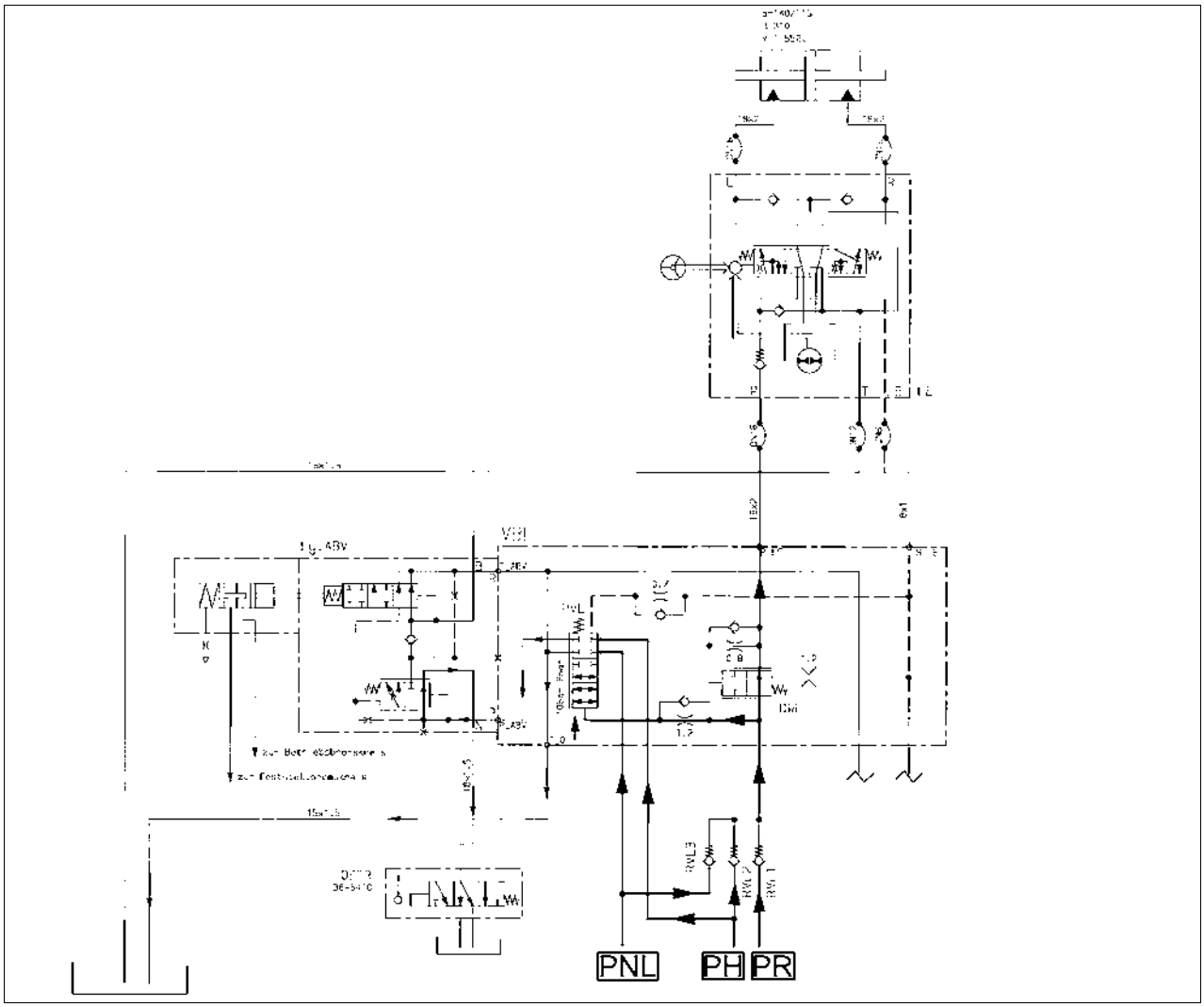


Fig. 1. I001340

Normal operation from the LS pump (PR)
During normal operation, the oil flows from the LS pump (PR) to non-return valve, steering 1 (RVL1), opens it against the spring force and then flows via the steering pressure compensator (DWL) to the steering unit (LE). From non-return valve, steering 1 (RVL1), the oil also flows to the steering priority valve (PVL) and pushes it against the spring force upwards as far as it will go, so that the auxiliary pump lines (PH) and emergency steering pump (PNL) are connected to the tank. Since the LS pump pressure is higher than the pressure of the other two pumps, non-return valves, steering 2 + 3 (RVL2 + RVL3) are closed by the LS pump pressure in addition to the spring.

Operation from the auxiliary pump PH
If the LS pump is being used to capacity by other consumers (high oil volume needed), the pressure in the LS pump line falls. Consequently, the auxiliary pump (PH) pressure is higher than the LS pump (PR) pressure and as such opens non-return valve, steering2 (RVL2) and closes non-return valves, steering 1 + 3 (RVL1 + RVL3). The pressure at the priority valve (PVL) falls below 10 bar and the valve is pushed by the spring force to the central position. This severs the connection from auxiliary pump to tank and the oil can flow over the steering pressure compensator (DWL) to the steering unit (LE). The connection from emergency steering pump to tank remains intact.

Operation from the emergency steering pump (PNL)
If the diesel engine is off and the tractor is being towed, the emergency steering pump (PNL) is active. From the emergency steering pump (PNL), the oil flows to non-return valve, steering 3 (RVL3), opens it and closes non-return valves, steering 1 + 2 (RVL1 +2), in addition to the spring force. The pressure at the steering priority valve (PVL) falls below 6 bar and is pushed down by the spring force as far as it will go. This severs the connection from the emergency steering pump to the tank and allows the oil to flow through the steering pressure compensator (DWL) to the steering unit (LE).

2 Steering hydraulics

Engine OFF

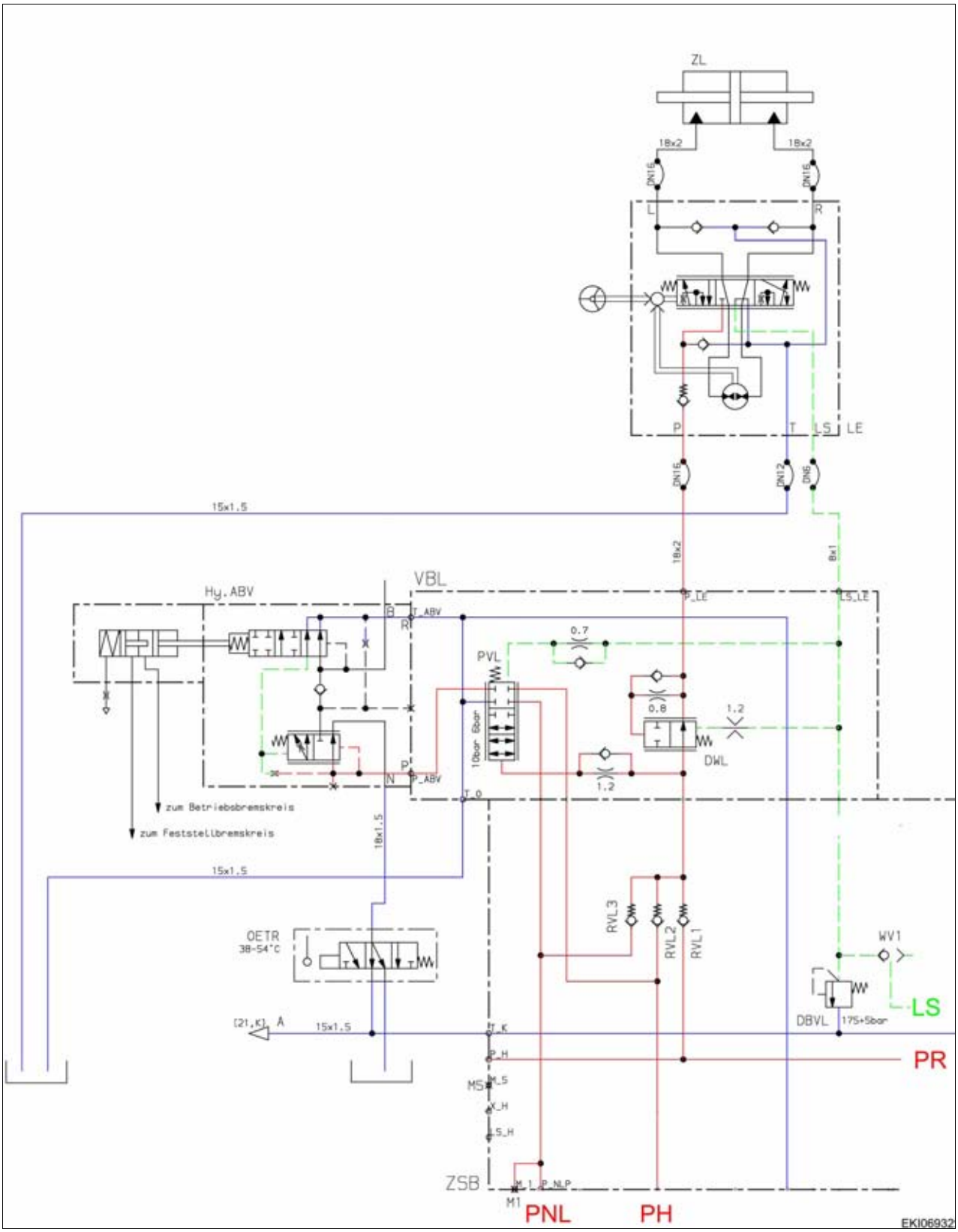


Fig. 2. I007364

LS pump supplies oil to steering

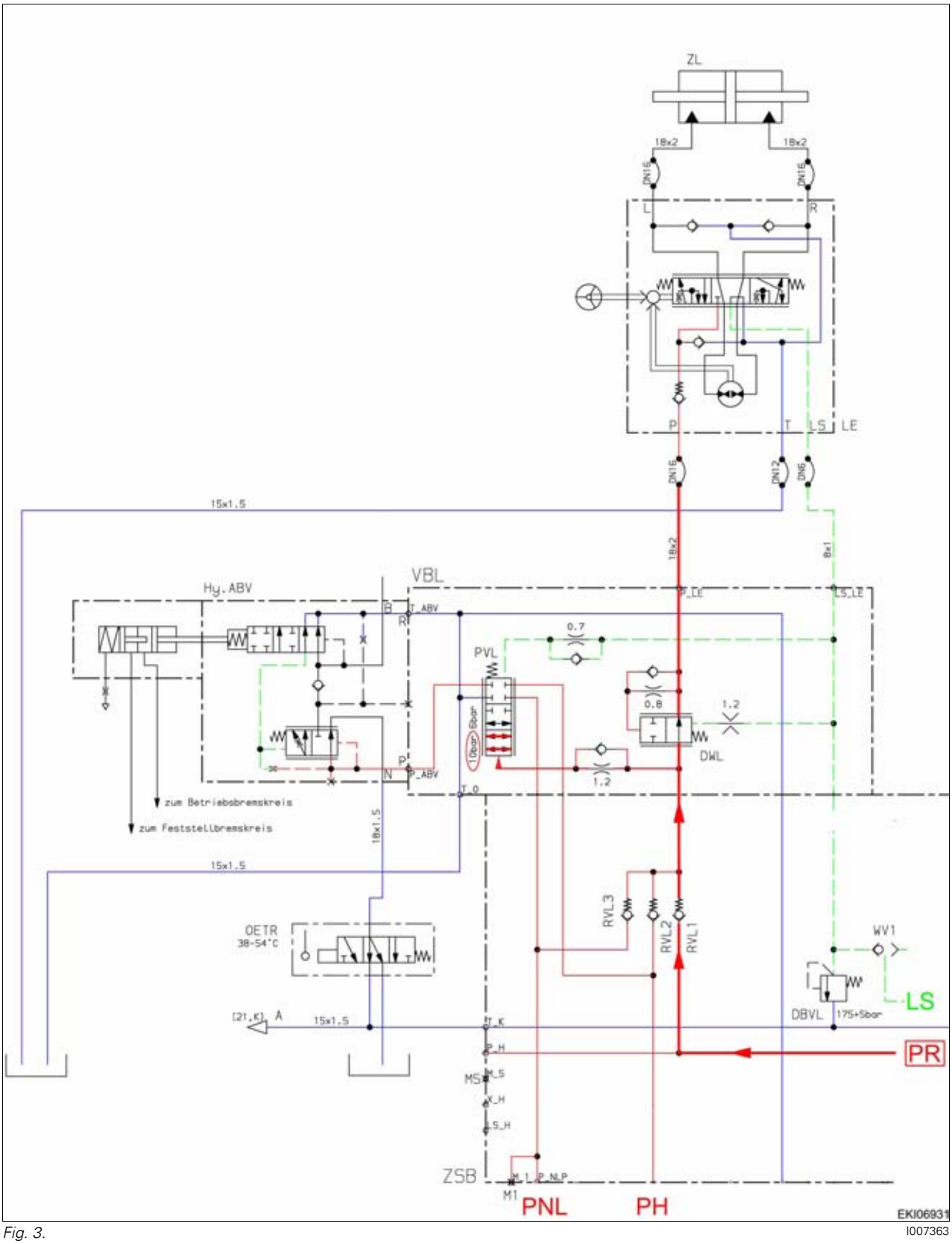


Fig. 3.

I007363

Auxiliary pump supplies oil to steering

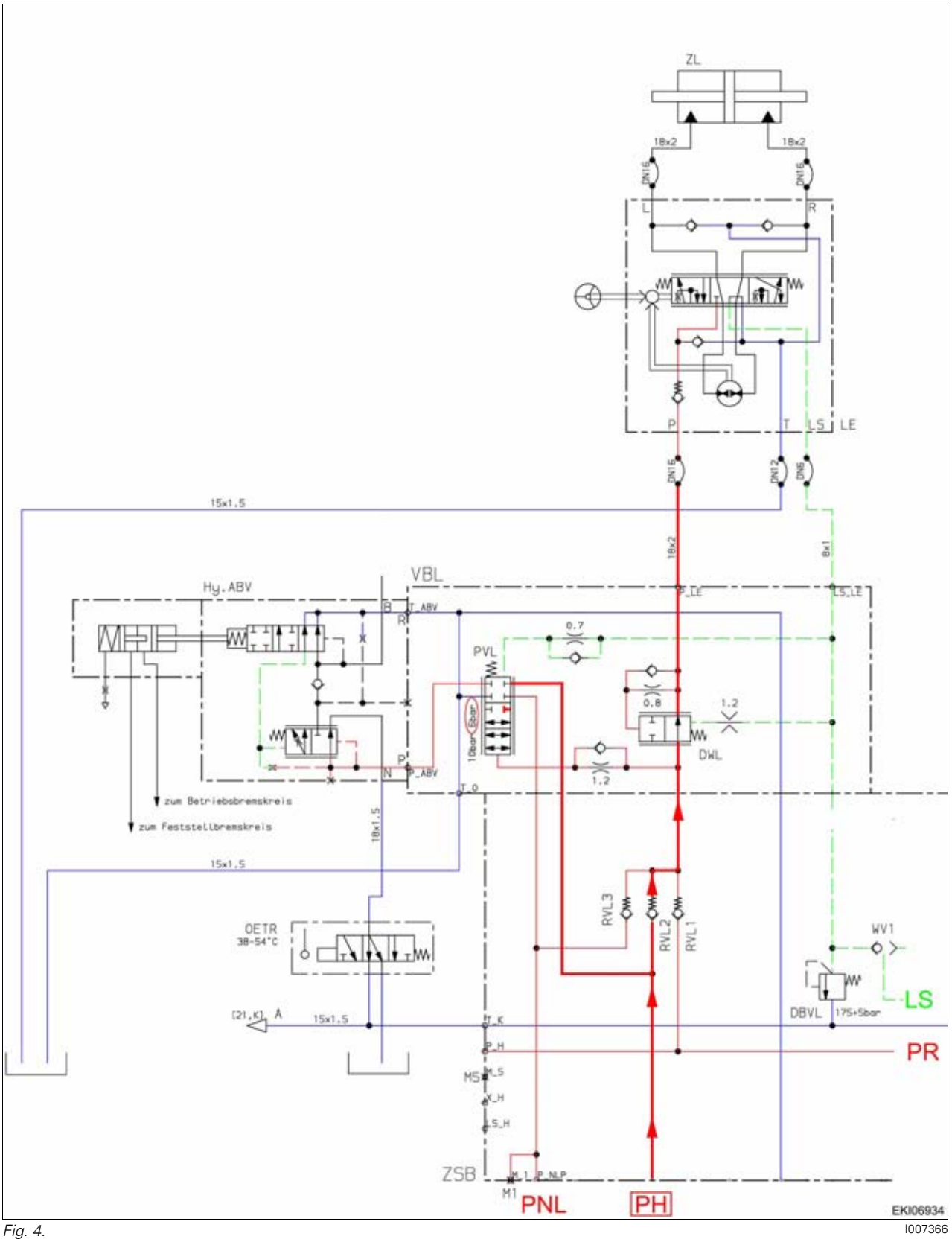


Fig. 4.

I007366

Wheel-driven steering pump supplies oil to steering

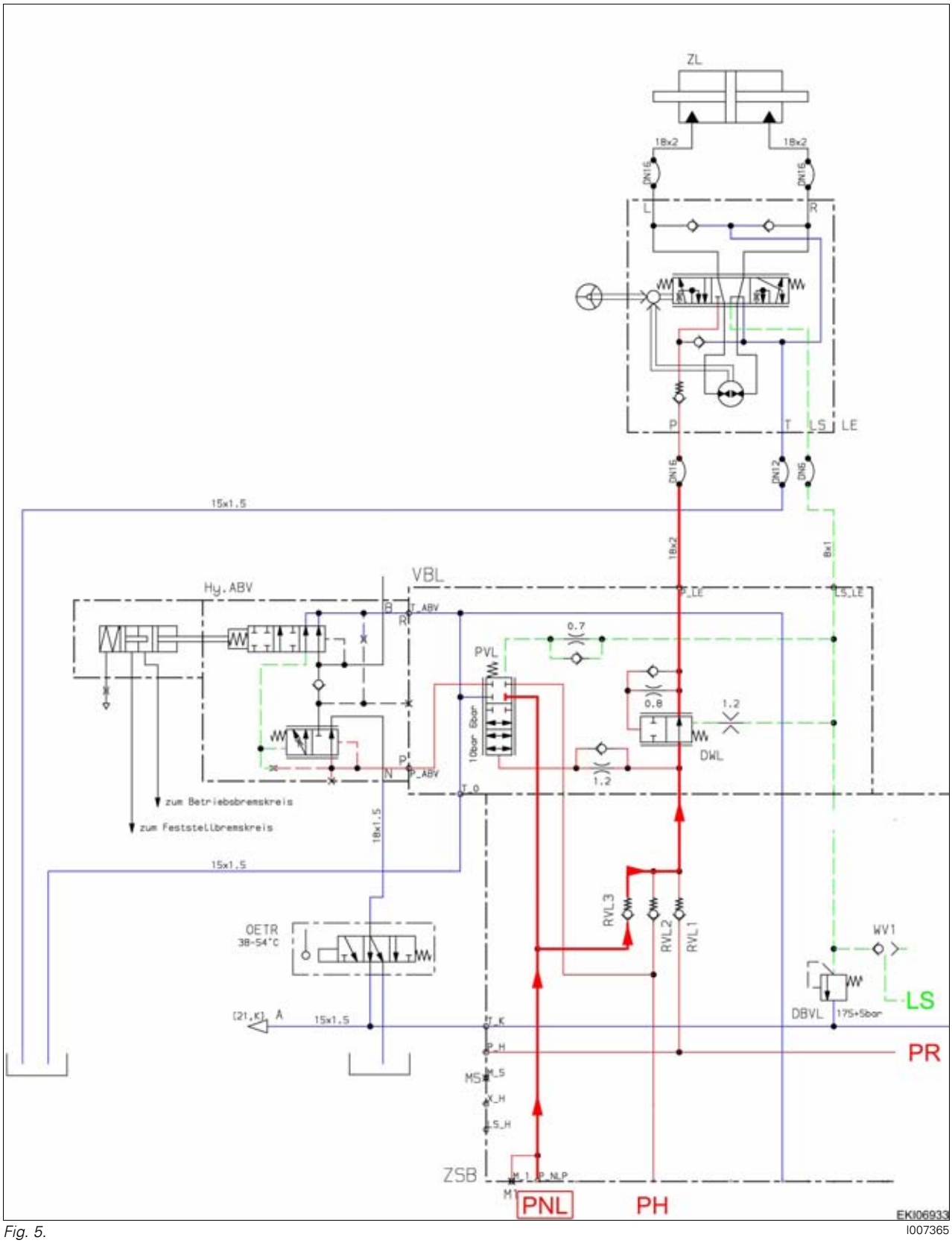


Fig. 5.

I007365

G Repair

1 Removing the steering servo unit 15
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1 Removing the steering servo unit

Preliminary work:

– Remove the cab, see Chapter 8100
– If necessary, remove the cab panel
– Remove the steering column panel

Remove the protective pan.



Fig. 1. I001491

Loosen and remove bolt on the steering column.



Fig. 2. I001524

Pull the steering column off the servo unit.



Fig. 3. I001525

Remove both rubber gaskets (arrowed).

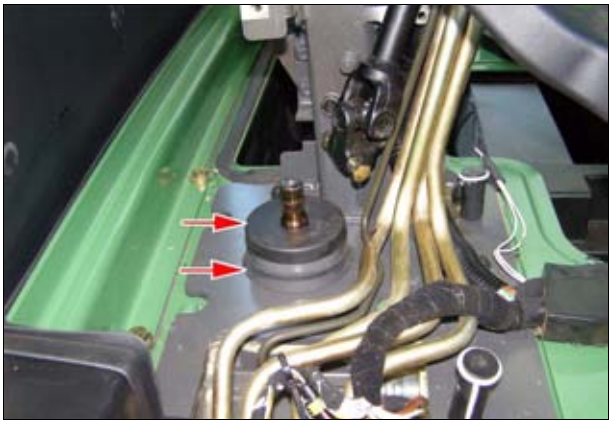


Fig. 4. I001533

Loosen hose clamps on the heat exchanger, disconnect hoses.



Fig. 5. I001493

Remove clamps on the hot water lines.

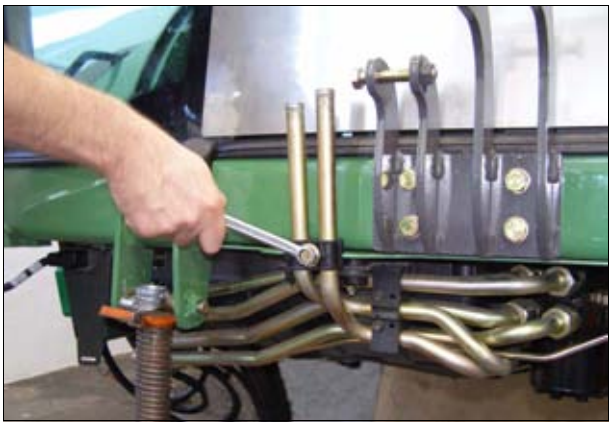


Fig. 6. I001526

Remove the hot water lines.



Fig. 7. I001528

Loosen fixing clamps on the hydraulic lines.



Fig. 8. I001529

Loosen retaining bracket for the hydraulic lines.

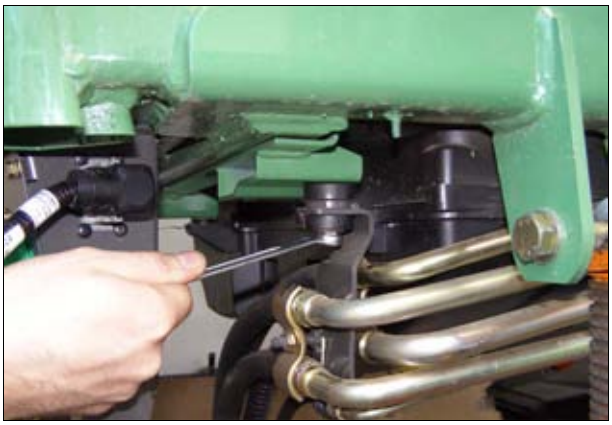


Fig. 9. I001530

Loosen retaining bolts on the servo unit.



Fig. 10. I001531

Remove servo unit together with lines and bracket downwards.



Fig. 11. I001532

2 Installing the steering servo unit

Mount servo unit together with the hydraulic lines and bracket.



Fig. 12. I001532

Screw in and tighten servo unit retaining bolts.



Fig. 13. I001531

Mount bracket for the hydraulic lines with the bolt.

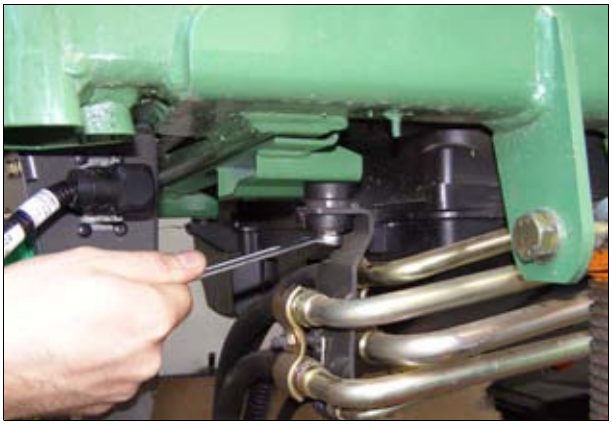


Fig. 14. I001530

Mount fixing clamps for the hydraulic lines.



Fig. 15. I001529

Mount heating lines.



Fig. 16. I001528

Mount fixing clamp for the heater lines.

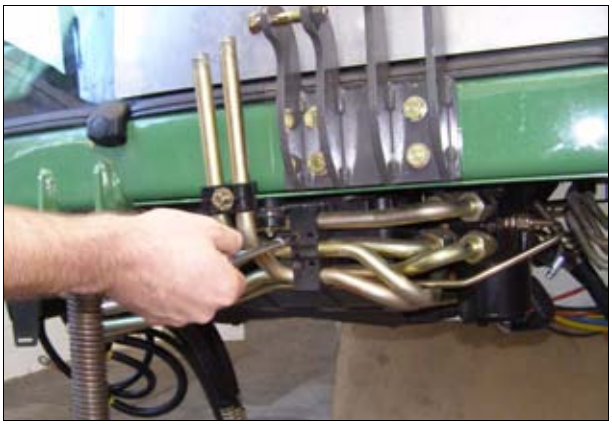


Fig. 17. I001527

Connect hoses to the heat exchanger and secure with clamps.



Fig. 18. I001493

Fit both rubber gaskets.

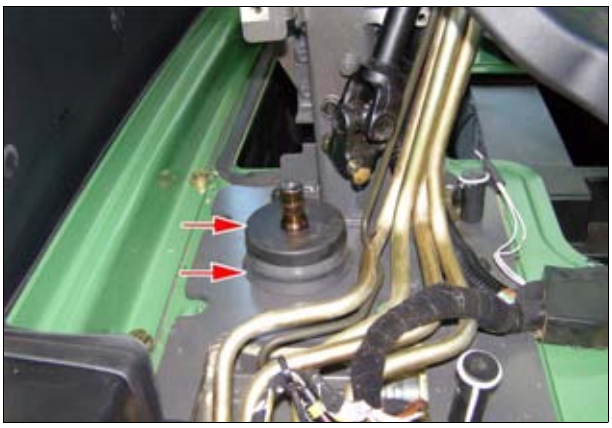


Fig. 19. I001533

Place steering column on servo unit.



Fig. 20. I001525

Fit and tighten retaining bolt for the steering column.



Fig. 21. I001524

Thread the lines for the compressed air brake system through the opening in the protective pan and mount the protective pan.



Fig. 22. I001491

Final procedures:

– Install the steering column panel
– Install the cab panel
– Attach the cab, see chapter 8100

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Steering system / hydraulic steering unit

4090 Steering system / hydraulic steering unit

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A General

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1 Auto-Guide system diagram

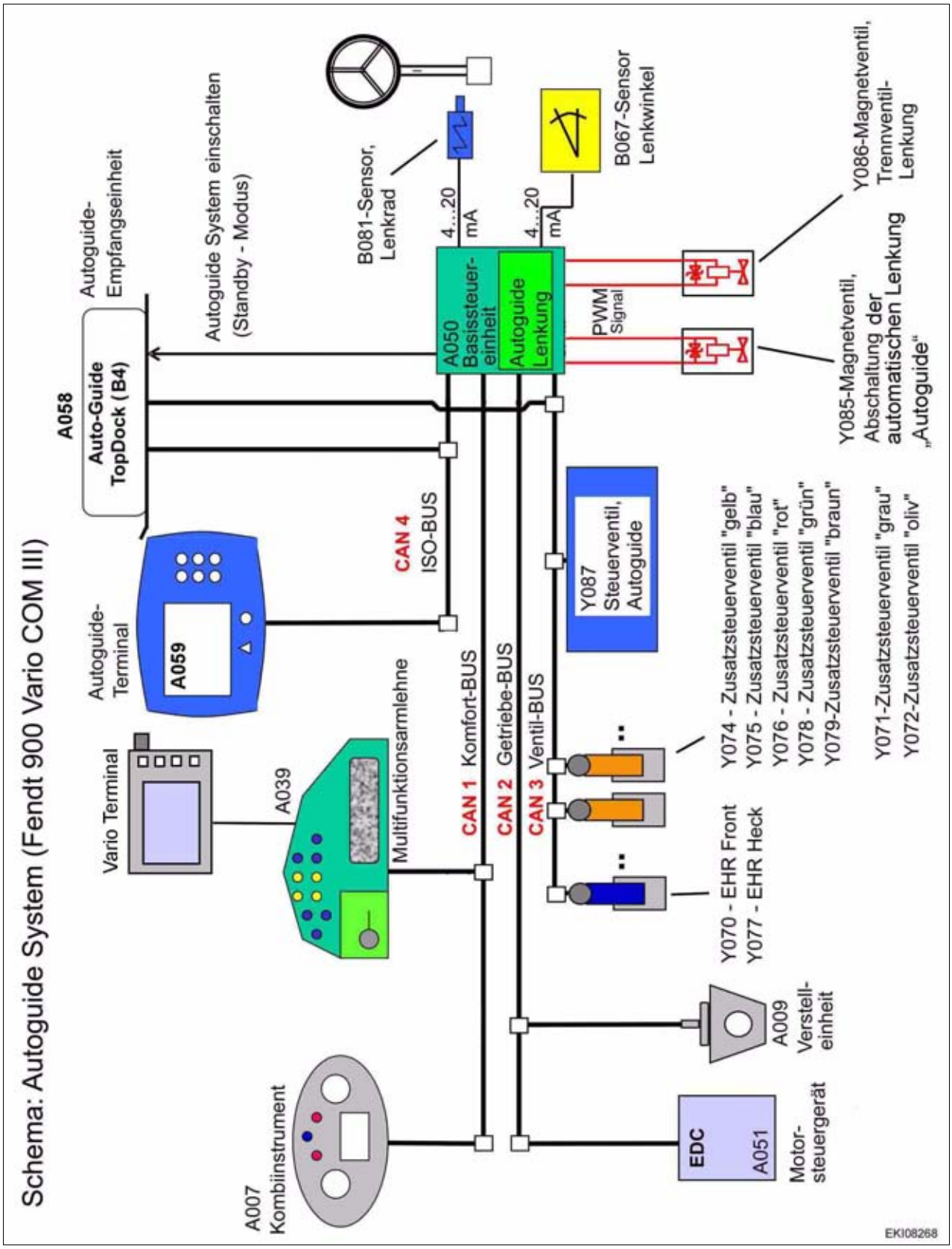


Fig. 1. I002162

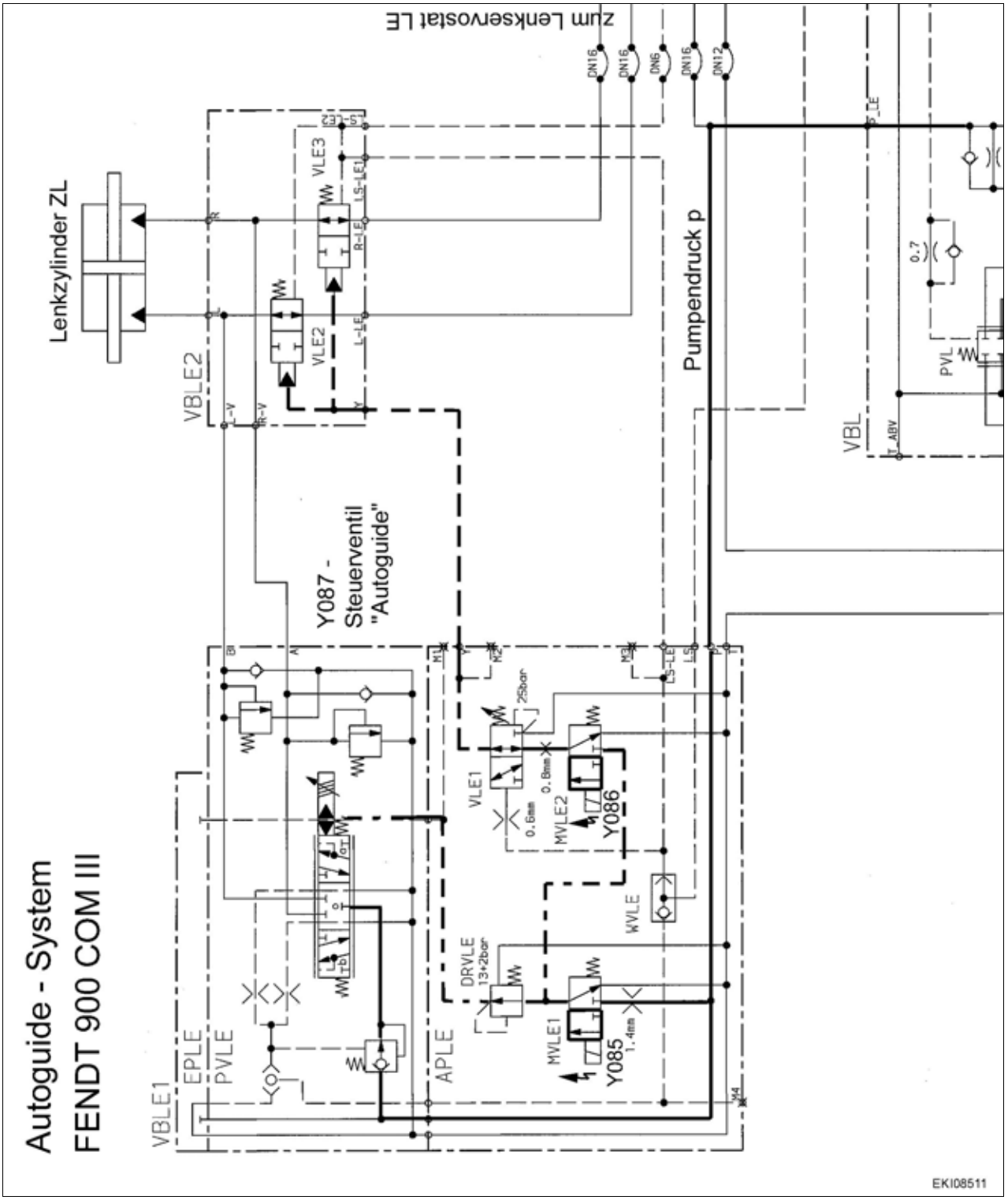


Fig. 2. I002163

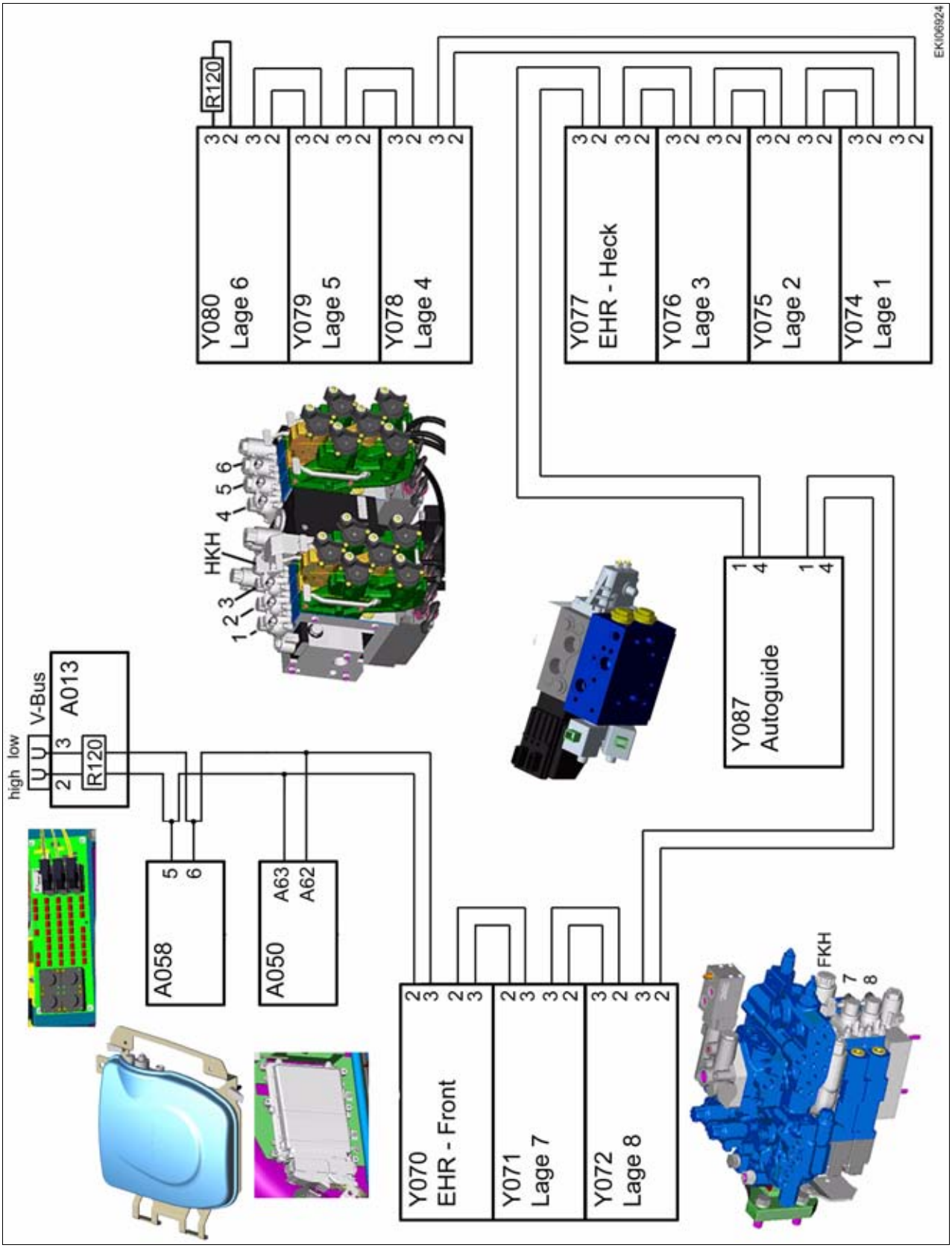


Fig. 3.

I004837

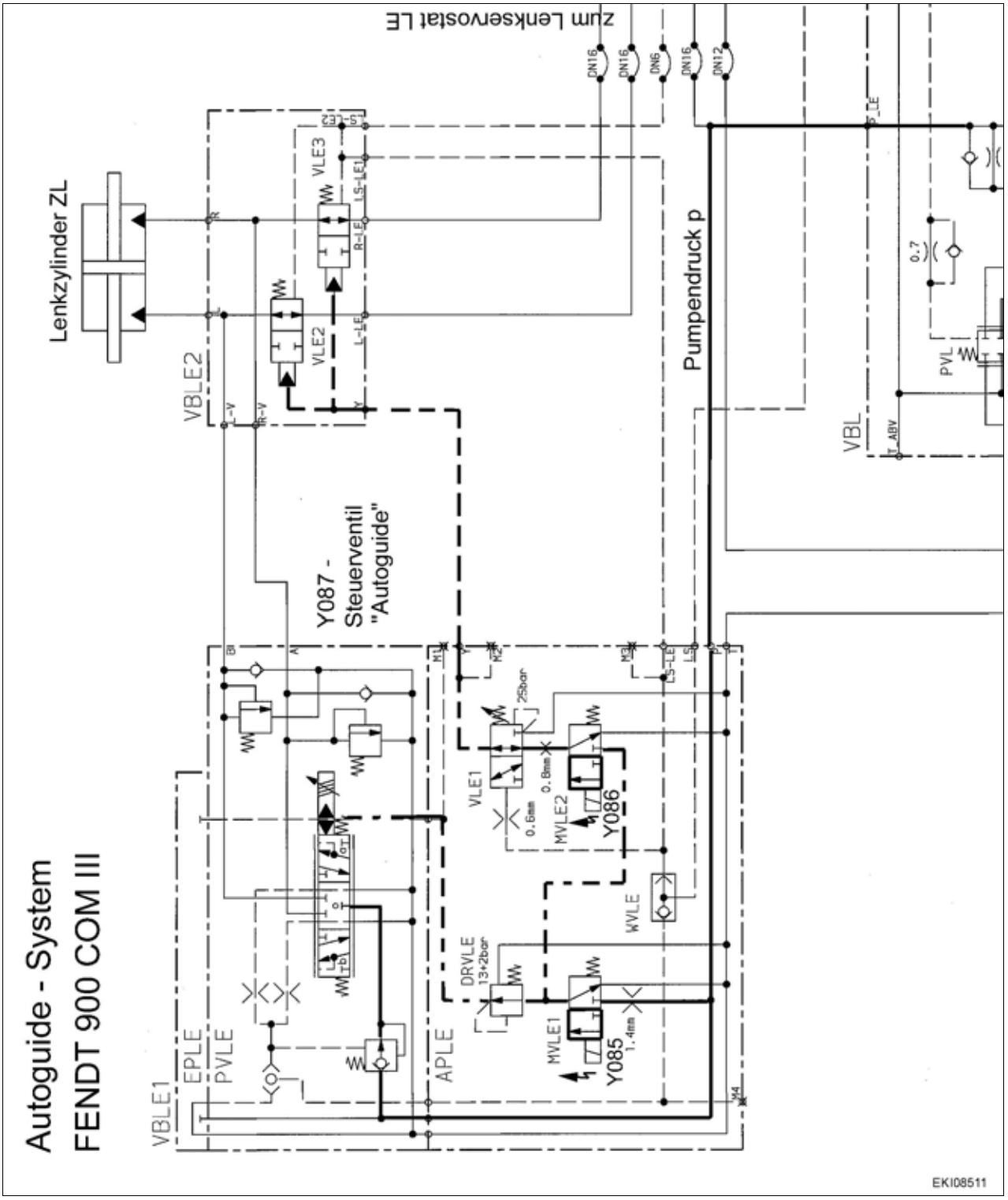


Fig. 4. I002163

2 Test report (checklist): Starting up a tractor with OmniStar correction signal "fax template"

Tractor chassis number:

The following steps must be carried out for ordering and activating the correction signal from OmniStar (**OmniStar VBS**; **OmniStar HP**) (see checklist)

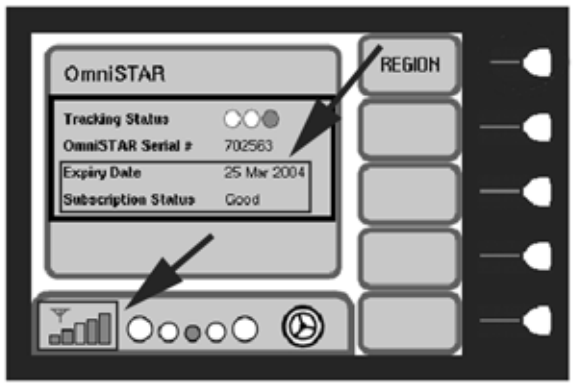


Fig. 5. I002633

Step	Reference	OK
General information on the Auto-Guide correction signal (OmniStar VBS; OmniStar HP)	*see §10*	
Ordering the OmniStar correction signal (OmniStar VBS; OmniStar HP)	*see §11*	
Activating the OmniStar correction signal (OmniStar VBS; OmniStar HP)	*see §12*	
Setting the Auto-Guide standby time on the A059 Auto-Guide terminal	*see §6*	
Calibrating the B067 steering angle sensor Calibration code: 2401	*see §7*	
Calibrating the Y087 Auto-Guide control valve Calibration code: 2403	*see §8*	
Calibrating roll bias of the DMU "gyro compass" (only required for OmniStar HP or base station)	*see §20*	
Carrying out the Auto-Guide function test	*see §7*	
"Upgrade" from OmniStar VBS standard system to OmniStar HP precision	*see §13*	

Customer number:
Date:
Signature:

3 Working with the Auto-Guide system

Working with the Auto-Guide automatic track guidance

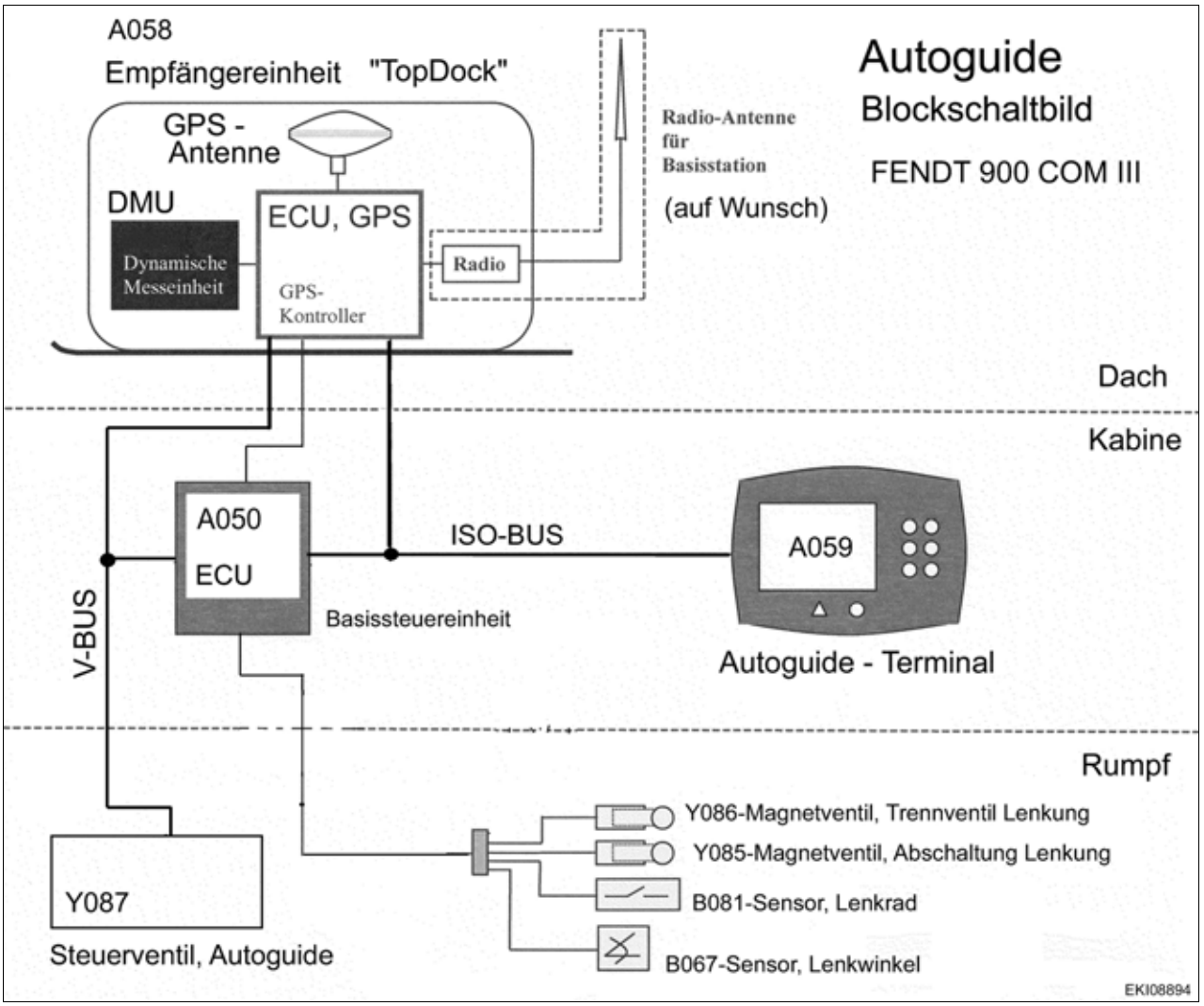


Fig. 6. I003317

Item	Designation	Function
A050	**ECU, basic control unit**	- Receives steering signals from the A058 Auto-Guide TopDock (GPS ECU) The A050 ECU, basic control unit actuates the tractor's steering with help from the Y087 Auto-Guide control valve. **Note: The dynamic behaviour of the steering is stored in the A050 ECU, basic control unit (Tune Set).** - Sends the current steering angle (actual value) to the A058 Auto-Guide TopDock (GPS ECU) - Switches off automatic track guidance if there is a manual intervention on the steering wheel - Disconnects the Y087 Auto-Guide control valve from the steering servo unit
A058	**Auto-Guide TopDock**	
	GPS aerial (not replaceable)	- Receives the signals from the satellite (position signal and OmniStar correction signal)
	GPS ECU (not replaceable)	- Processes the signals from the satellite (position signal and correction signal) - Calculates the track deviation - Sends steering signals (target value) to the A050 ECU, basic control unit
	DMU gyro compass (replaceable)	- Records the tractor's incline - Calculates the accelerations around the coordinate axes
	Radio module and aerial (replaceable)	- Receives the correction signal (radio signal) from the base station Note: The base station (optional) calculates a correction signal.
A059	**Auto-Guide terminal**	- Carry out settings for the operation (e.g. implement width) - Fault code output - Programming the Auto-Guide system
B067	**Sensor, steering angle**	Records the current steering angle (actual value)
B081	**Steering wheel sensor**	Records any manual intervention on the steering wheel
Y085	**Steering switch-off solenoid valve**	Switches off automatic track guidance
Y086	**Steering disconnect solenoid valve**	Disconnects the Y087 Auto-Guide control valve from the steering servo unit (The steering wheel remains still during automatic track guidance.)
Y087	**Auto-Guide control valve**	Controls the flow of hydraulic fluid to the steering cylinder
ISO bus	**ISO bus**	Connection between Auto-Guide components
V bus	**Valve bus**	Connection between Auto-Guide components

A058 Auto-Guide TopDock (receiver unit)
X1633 separation point
The A058 Auto-Guide TopDock receives and processes the **position signals (GPS satellites)**.
The A058 Auto-Guide TopDock receives and processes the **correction signal (OmniStar satellite)**.
The A058 Auto-Guide TopDock receives and processes the **base station's correction signal (radio wave)**.

NOTE: *A correction signal is necessary to operate the Auto-Guide automatic track guidance system.*
Correction signal from OmniStar (VBS or HP) or the correction signal from the base station



Above in the ceiling compartment

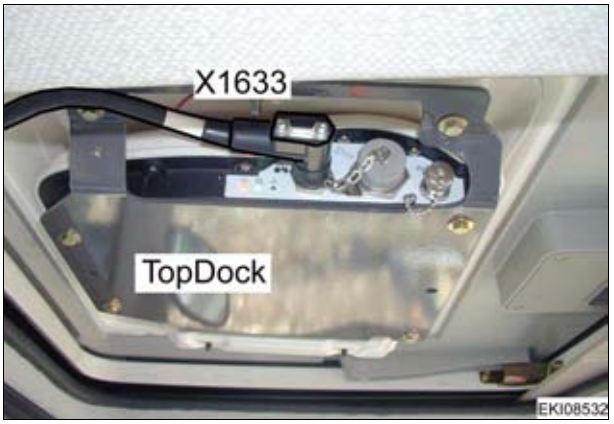
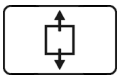


Fig. 7. I002345

GPS aerial
The GPS aerial is securely attached to the A058 Auto-Guide TopDock (receiver unit) and cannot be removed.



Remove protective cover.

NOTE: *Removal of the GPS aerial during the warranty period is not permitted!!*

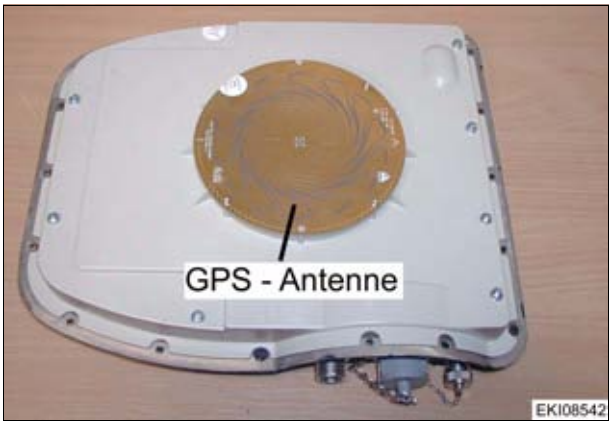
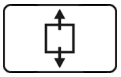


Fig. 8. I002357

DMU (gyro compass)
The DMU can be removed.

NOTE: *See also:*
Chapter 9000 Reg. E – Measuring and testing A058 Auto-Guide TopDock.



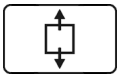
Remove cover.



Fig. 9. I002355

Radio module (installed when operating a base station)
The radio module receives the correction signal from the base station (radio waves).
The radio module can be removed.

NOTE: *See also:*
Chapter 9000 Reg. E – Measuring and testing A058 Auto-Guide TopDock.



Remove cover.



Fig. 10. I002356

A059 Auto-Guide terminal
The purpose of the A059 Auto-Guide terminal is:
- To operate the Auto-Guide system
- To display the satellites
- To display fault codes
- To program the Auto-Guide system (software)



Fig. 11. I001366

A050 ECU, basic control unit
The purpose of the A050 ECU, basic control unit is to control:
- Y087 Auto-Guide control valve (hydr. steering)
- Y086 steering disconnect solenoid valve
- Y085 solenoid valve for automatic track guidance switch-off

The A050 ECU, basic control unit detects:
- B081 steering wheel sensor
- B087 steering angle sensor



Fig. 12. I001030

B067 - Sensor, steering angle
X1508 - Separation point on B067


Front axle, right

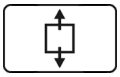
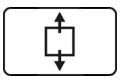

Detach cover



Fig. 13. I001081

B081 - Steering wheel sensor (360°)


In the intermediate piece on the steering servo unit.


Access to the B081 sensor via the cab. Remove the steering column cover.

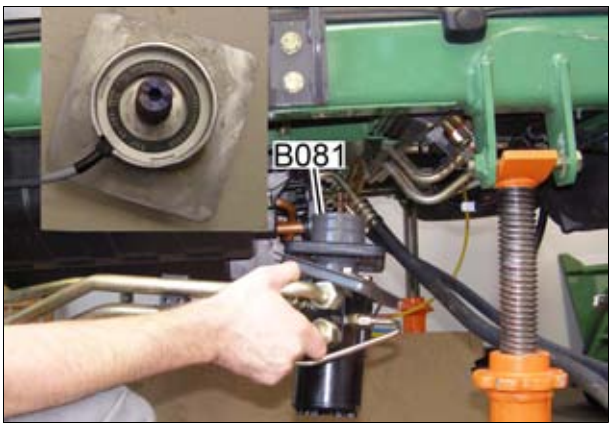
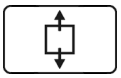


Fig. 14. I001998

Y085 - Pilot pressure/switch-off solenoid valve (Auto-Guide)
X1513 - Separation point on Y085



Right side of transmission.



Remove right rear wheel and panel.

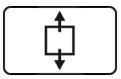


Fig. 15. I001987

Y086 - Solenoid valve, steering disconnect (Auto-Guide)
X1514 - Separation point on Y086



Right side of transmission.



Remove right rear wheel and panel.

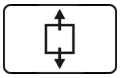


Fig. 16. I001987

Y087 - Steering valve block, Auto-Guide
X1588 - Separation point on Y087
X1589 - Separation point on Y087



Right side of transmission.



Remove right rear wheel and panel.

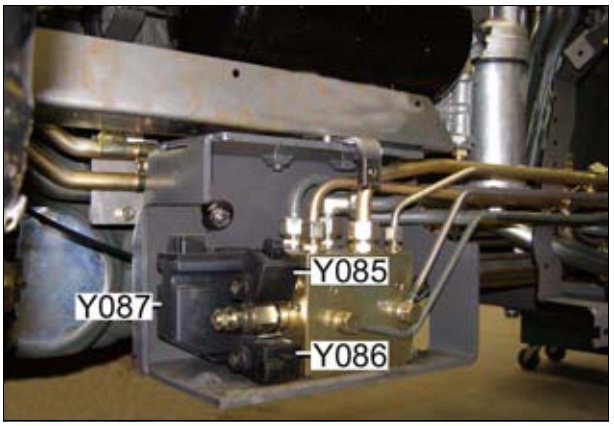


Fig. 17. I001987

Local base station (optional)
The **GPS aerial (receiver unit)** receives GPS position signals and calculates the correction signal.
The **radio module (transmitter)** sends the correction signal (radio wave) to the A058 Auto-Guide TopDock.
The **radio aerial** boosts the correction signal.

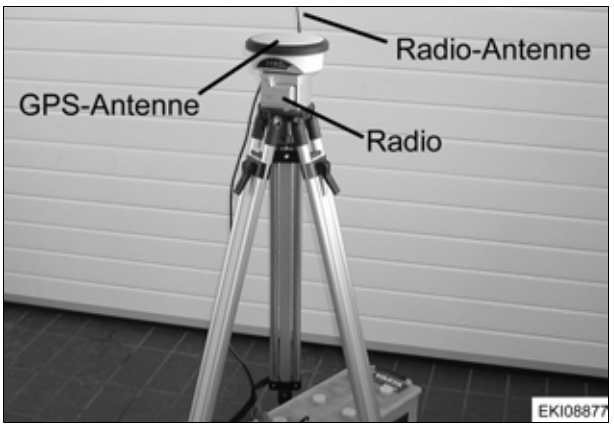


Fig. 18. I003290

4 Auto-Guide: Adjusting the ISO BUS on the tractor

Attach the short-circuit connector **E** to the ISO BUS socket.

or

Connect the ISO BUS implement.

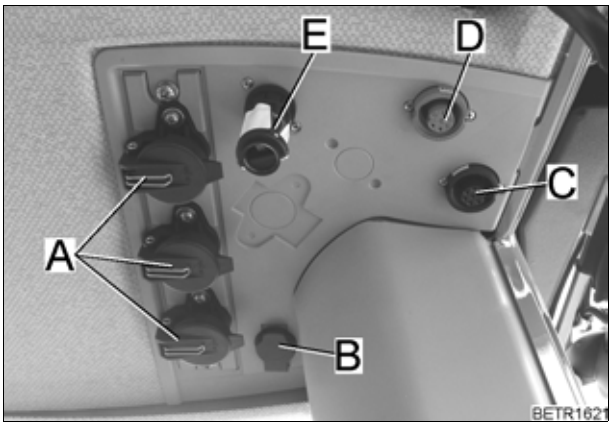


Fig. 19. I003280

For operation of the Auto-Guide system, it is necessary that the **ISO BUS tractor data** is set to **active.**
Press **F6**.

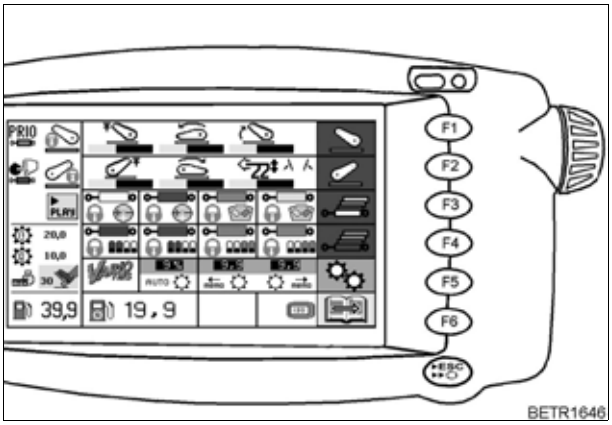


Fig. 20. I003282

The sub-menu is displayed.
Press **F6**.

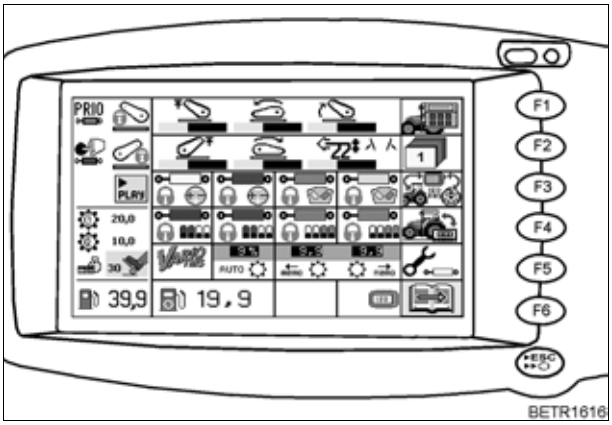


Fig. 21. I002751

The sub-menu is displayed.
Press **F5**.

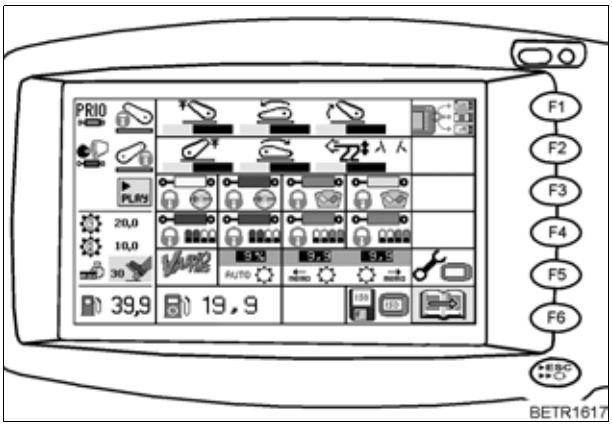


Fig. 22. I003283

The sub-menu is displayed.

For operation of the Auto-Guide system, it is necessary that the **ISO BUS tractor data** is set to **active.**



Continue pressing the **F5** key until the display joystick and **tractor data active** is displayed / **Auto-Guide operation is possible**



Deactivation of ISO BUS



Vario terminal and joystick not active, an external ISO terminal can be used. **Tractor data active** / **Auto-Guide operation possible**



Vario terminal not active. Joystick and **tractor data active** / **Auto-Guide operation possible**

NOTE: *Return with "ESC".*
Settings are active after exiting the sub-menu.

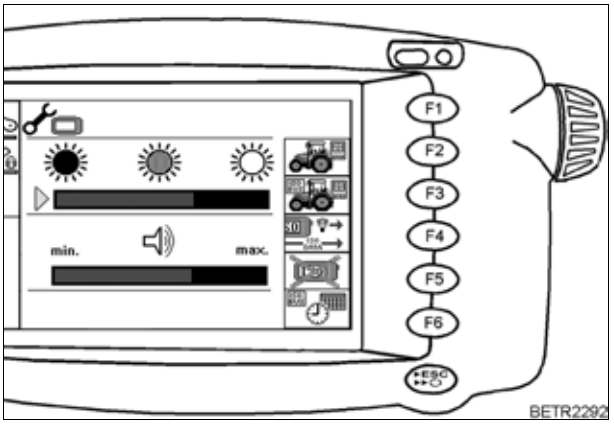


Fig. 23. I003284

5 Auto-Guide: Switching standby mode/automatic track guidance on and off

B = Auto-Guide standby button
A= automatic track guidance on/off button

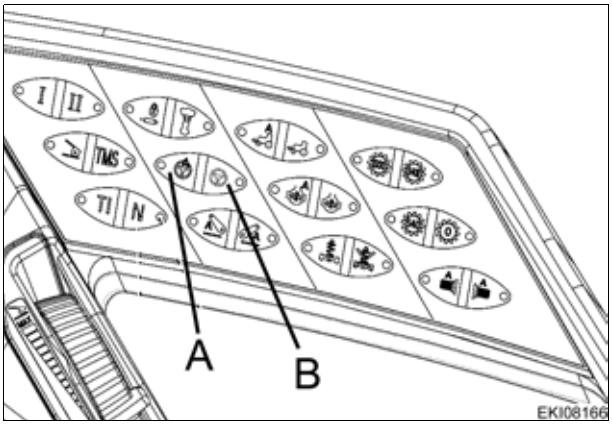


Fig. 24. I000979

- Switching the Auto-Guide to standby mode - Switching automatic track guidance on and off Ignition ON, Engine is running	
Button	**Function**
B	**Switching the Auto-Guide "automatic track guidance" system to standby mode** Switch ignition on and start engine. **NOTE:** *After the ignition has been switched off and on again (Reset), the Auto-Guide system returns to the last state selected:* *Standby mode Off (LED Off) or* *Standby mode On (LED flashing)* Standby mode Off (LED Off) Press button B once **Standby mode On "partially active state" = LED flashing** Maximum speed possible A058 Auto-Guide TopDock (receiver unit) searches for or maintains connection with the GPS satellites **Automatic track guidance (button A) cannot be activated** Standby mode On (LED flashing). Press button B once **Standby mode On "fully active state" (LED lit)** Maximum speed is limited to 25 km/h A058 Auto-Guide TopDock (receiver unit) searches for or maintains connection with the GPS satellites **Automatic track guidance (button A) can be activated** Press and hold button B (LED goes out) **Standby mode Off = LED is off** The Auto-Guide system is switched off. The A058 Auto-Guide TopDock (receiver unit) loses the GPS satellites Automatic track guidance (button A) cannot be activated Maximum speed possible
A	**Switch on the Auto-Guide "automatic track guidance" system** **Automatic track guidance disengages = LED is off** **Automatic track guidance engages = LED is lit** (The tractor is guided along the track automatically)

Alternatively, automatic track guidance can also be engaged and disengaged using the button (arrow) on the 059 Auto-Guide terminal.
When automatic track guidance is active, the display on the A059 Auto-Guide terminal is highlighted in green.

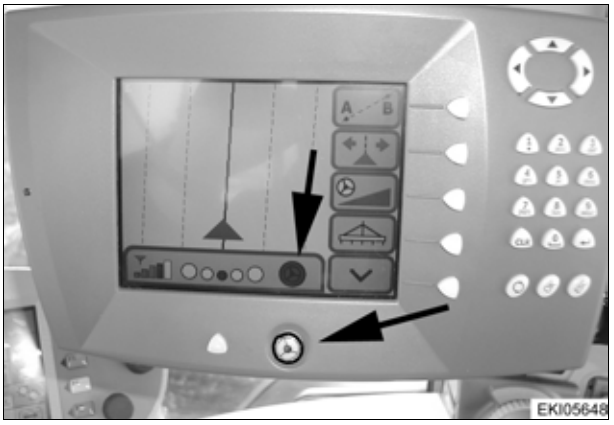


Fig. 25. I003027

6 Setting the Auto-Guide standby time on the A059 Auto-Guide terminal

NOTE: *Standby time:*
The time for which the A058 Auto-Guide TopDock remains energised after the ignition is switched off is referred to as the standby time.
The connection to the GPS satellites is maintained for as long as the A058 Auto-Guide TopDock is energised. This reduces the startup time for the system when automatic track guidance is activated again. As a result, greater accuracy is achieved more quickly.

The red LED (arrow) indicates that the A058 Auto-Guide TopDock is energised.

The green LED indicates that the A058 Auto-Guide TopDock is receiving GPS satellites.

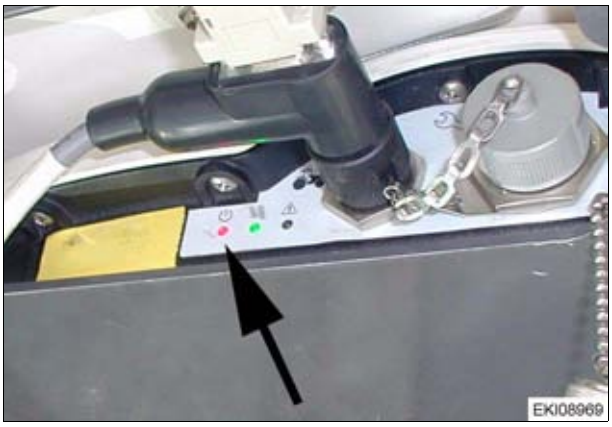


Fig. 26. I003338



Set Vario terminal to ISO BUS operation

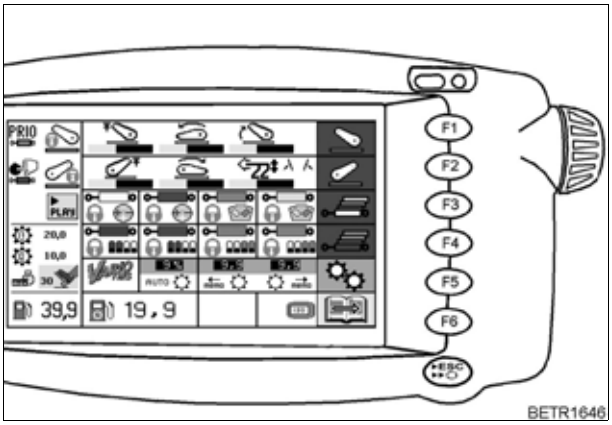


Fig. 27. I003282

Plug short-circuit connector (E) into the X028 ISO BUS socket

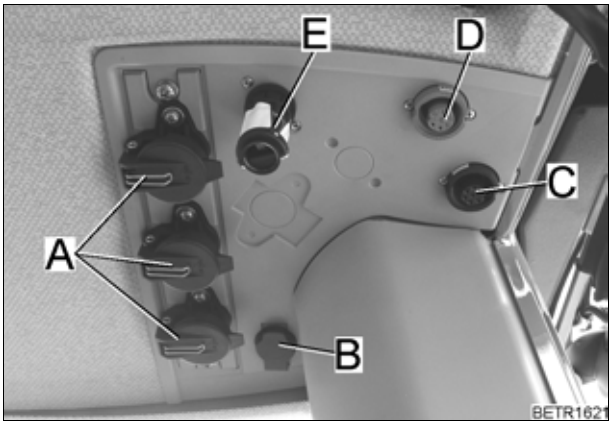


Fig. 28. I003280

Switch on ignition.
The A059 Auto-Guide terminal starts up (takes approx. 2 minutes)
Confirm language selection by pressing **Enter**



Fig. 29. I003306

Confirm warning message (DISCLAIMER) by pressing **OK**



Fig. 30. I002571

Scroll with the **arrow key**.



Fig. 31. I003307

Continue to the settings menu with the **spanner key**.



Fig. 32. I003332

The settings menu appears.

Press the **arrow** button to continue.



Fig. 33. I003333

The second screen is displayed.

Press the **Stand-By** button to continue to standby mode



Fig. 34. I003334

The setting for the standby time appears



Select hours, minutes and seconds with the arrow buttons.
Note: The current selection is highlighted in blue.



Enter the desired standby time (max. 48 hours) using the alphanumeric keypad.



Press "Return" to confirm settings.



Fig. 35. I002418

NOTE: *Standby time:*
The time for which the A058 Auto-Guide TopDock remains energised after the ignition is switched off is referred to as the standby time.
The connection to the GPS satellites is maintained for as long as the A058 Auto-Guide TopDock is energised.
This reduces the startup time for the system when automatic track guidance is activated again. As a result, greater accuracy is achieved more quickly.

The red LED (arrow) indicates that the A058 Auto-Guide TopDock is energised.

The green LED indicates that the A058 Auto-Guide TopDock is receiving GPS satellites.

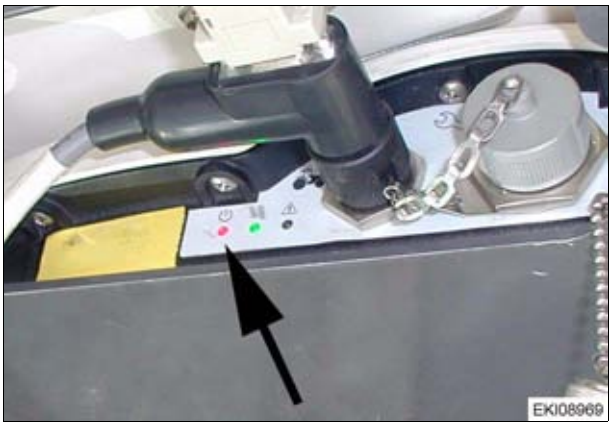


Fig. 36. I003338

The set time can be reset to zero by pressing the "Delete" button.



Fig. 37. I002422

7 Auto-Guide function test (brief instructions)

NOTE: *We recommend function testing after the installation or new delivery of Auto-Guide.*

NOTE: *Also refer to the operator's manual for operating Auto-Guide.*

If necessary: Order and activate the OmniStar correction signal

Order and activate the OmniStar correction signal (VBS or HP)

NOTE: *See also:*
Chapter 4090 Reg. A - Ordering the OmniStar correction signal (VBS or HP)
Chapter 4090 Reg. A - Activating the OmniStar correction signal (VBS or HP)



Fig. 38. I003371

Checking the subscription status of the OmniStar correction signal (HP or VBS)

Scroll with the **arrow key**.



Fig. 39. I003307

Continue to the settings menu with the **spanner key**.



Fig. 40. I003332

Press the **Correction Signal** key



Fig. 41. I003361

The **Correction "Signal Sources"** screen is displayed.



– Select the desired correction signal using the arrow keys.



– Confirm the selection with the **Enter** key



Fig. 42. I003371

The region selection screen appears.



– Select the desired region using the arrow keys.



– Confirm the selection with the **Enter** key



Fig. 43. I003373

Press the **Details** key.



Fig. 44. I003362

Once activation is completed, the correction signal subscription appears.

– **Expiry Date**

– **Subscription Status**

NOTE: *When a valid correction signal is received, the reception status is shown.*
The Auto-Guide system requires at least 3 bars to operate properly.
Additional bars indicate a higher level of accuracy.

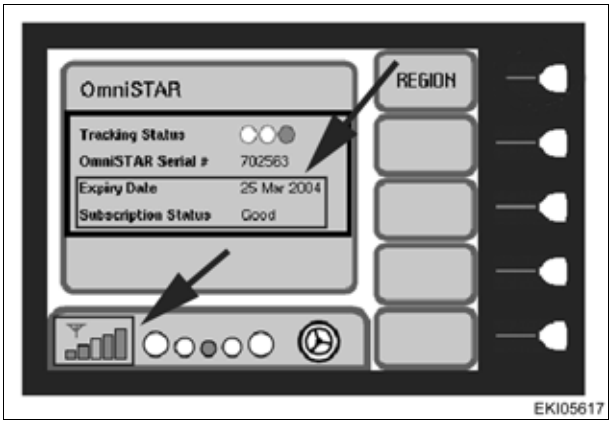


Fig. 45. I002633

Expiry Date	
N/A	No correction signal subscription available
25 Mar 2004	**Correction signal subscription available** The expiry date of the correction signal subscription is displayed.

Subscription Status	
No ...	No correction signal subscription available
Expired	Correction signal subscription has expired
Good	**Correction signal subscription is available**

Ordering the base station and putting it into operation

The base station supplies the "Local Base" correction signal.



Fig. 46. I002984

NOTE: *See also:*
Chapter 4090 Reg. A - Ordering a base station and the Auto-Guide software upgrade
Chapter 4090 Reg. A - Ordering a radio licence for the base station
Chapter 4090 Reg. A - Installing the radio module on the A058 Auto-Guide TopDock (tractor)
Chapter 4090 Reg. A - Installing the base station
Chapter 4090 Reg. A - Setting the frequency and channel of the radio module (tractor and base station)
Chapter 4090 Reg. A - Tractor and base station

Selecting the correction signal on the A059 Auto-Guide terminal

Attach the short-circuit connector **E** to the ISO BUS socket.

or

Connect the ISO BUS implement.

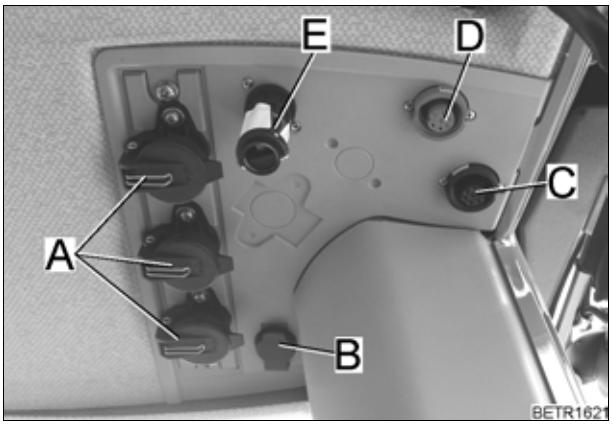


Fig. 47. I003280

For operation of the Auto-Guide system, it is necessary that the **ISO BUS tractor data** is set to **active.**
Press **F6**.

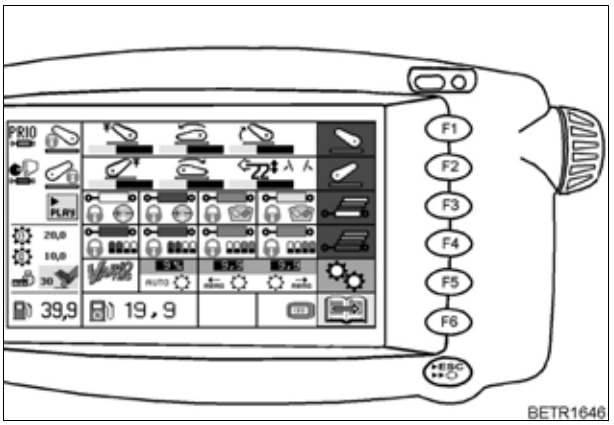


Fig. 48. I003282

The sub-menu is displayed.
Press **F6**.

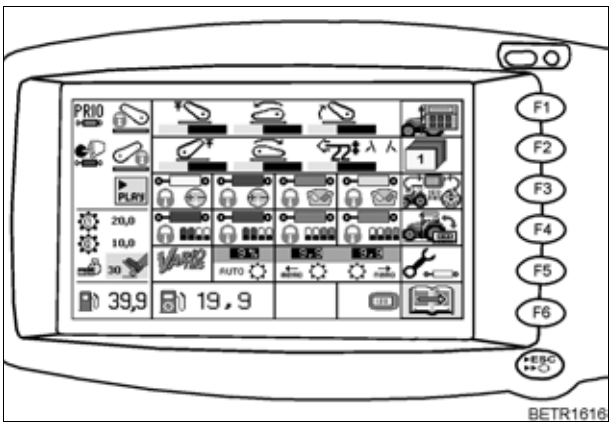


Fig. 49. I002751

The sub-menu is displayed.
Press **F5**.

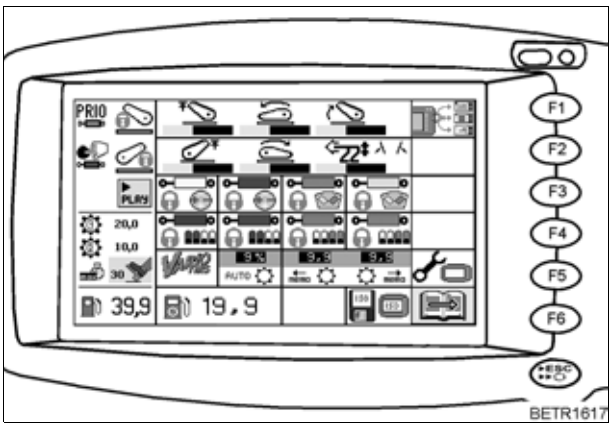


Fig. 50. I003283

Check Chassis Range!

The sub-menu is displayed.

For operation of the Auto-Guide system, it is necessary that the **ISO BUS tractor data** is set to **active.**



Continue pressing the **F5** key until the display joystick and **tractor data active** is displayed / **Auto-Guide operation is possible**



Deactivation of ISO BUS



Vario terminal and joystick not active, an external ISO terminal can be used. **Tractor data active** / **Auto-Guide operation possible**



Vario terminal not active. Joystick and **tractor data active** / **Auto-Guide operation possible**

NOTE: *Return with "ESC".*
Settings are active after exiting the sub-menu.

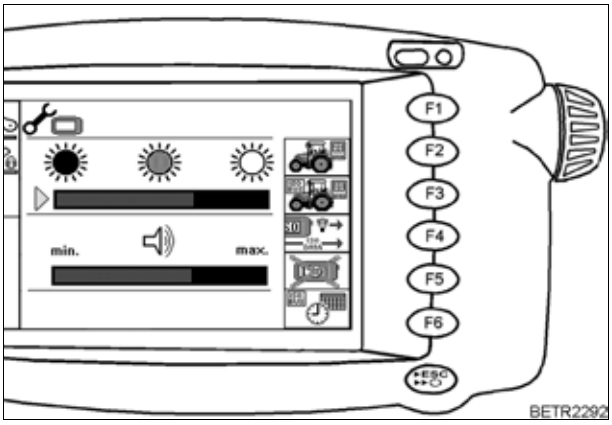


Fig. 51. I003284

Switch the Auto-Guide system to standby mode "partially active" (A058 Auto-Guide TopDock is energised).
Actuate the standby switch (B).
The LED on the standby switch (B) flashes

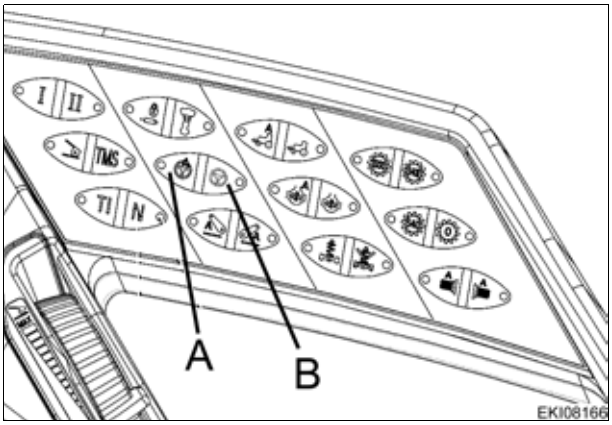


Fig. 52. I000979

Selecting the correction signal on the A059 Auto-Guide terminal.

Scroll with the **arrow key**.



Fig. 53. I003307

Continue to the settings menu with the **spanner key**.



Fig. 54. I003332

Press the **Correction Signal** key



Fig. 55. I003361

The **Correction "Signal Sources"** screen is displayed.



Select a correction signal

- VBS correction signal (OmniStar)
- HP correction signal (OmniStar)
- Local Base correction signal (base station)

NOTE: *The signal highlighted in blue is selected*





Fig. 56. I003371

– Confirm the selection with the **Enter** key

Check Chassis Range!

The region selection screen appears.



– Select the desired region using the arrow keys.



– Confirm the selection with the **Enter** key



Fig. 57. I003373

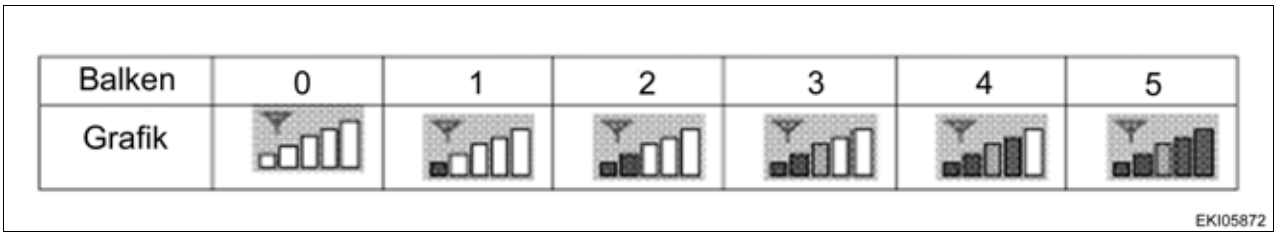


Fig. 58. I002543

Bars	0	1	2	3	4	5
Designation	No GPS signal	GPS signal exists, but no correction signal (DGPS) is available	Patch available, but poor accuracy	adequate accuracy	good accuracy	best accuracy
Steering Assist	No	No	No	Yes	Yes	Yes

Setting the implement on the A059 Auto-Guide terminal

Press the "Implement" key.



Fig. 59. I003015

Check Chassis Range!

The sub-menu is displayed.
Implement



Select the **Width** using the arrow keys (Note: The current selection is highlighted in blue).



Press "Reset" to reset implement width to zero



Enter the implement width using the alphanumeric keypad. **Note:** To insert a comma, press and hold key 1.



Call up offset using the arrow keys.



Fig. 60. I003016

The offset setting appears.



Press "Reset" to reset track offset to zero.



Choose right or left offset with the arrow keys.



Use the alphanumeric keypad to enter the offset. **Note:** To insert a comma, press and hold key 1.



Press "CLR" to delete the last character.



Confirm the width and offset with the "Return" key.



Fig. 61. I003017

The track offset entered for the implement is displayed on the A059 Auto-Guide terminal with a coloured arrow.



Fig. 62. I003031

Check Chassis Range!

The sub-menu "**Implement Name**" is displayed.



Delete the implement name with the "Reset" key.



Enter the implement name using the alphanumeric keypad (Note: Press and hold down key until the desired digit is set).



Press "CLR" to delete the last character.



Confirm the implement name with the "**Return**" key.



Fig. 63. I003018

If an implement name is entered that is already in use, an error message appears.
Press "**OK**" to return to the "Implement Name" screen, to enter a new name.



Fig. 64. I003019

Press the "**Recall**" key in the "Implement" sub-menu.



Fig. 65. I003020

The "**Recall Implement**" sub-menu is displayed.



Select the desired implement with the arrow keys.



Confirm the selection with the "**Return**" key.



Fig. 66. I003021

Defining the wayline

A wayline is a straight line between two waypoints (reference points).
The wayline is used as a reference for further field runs (see diagram).

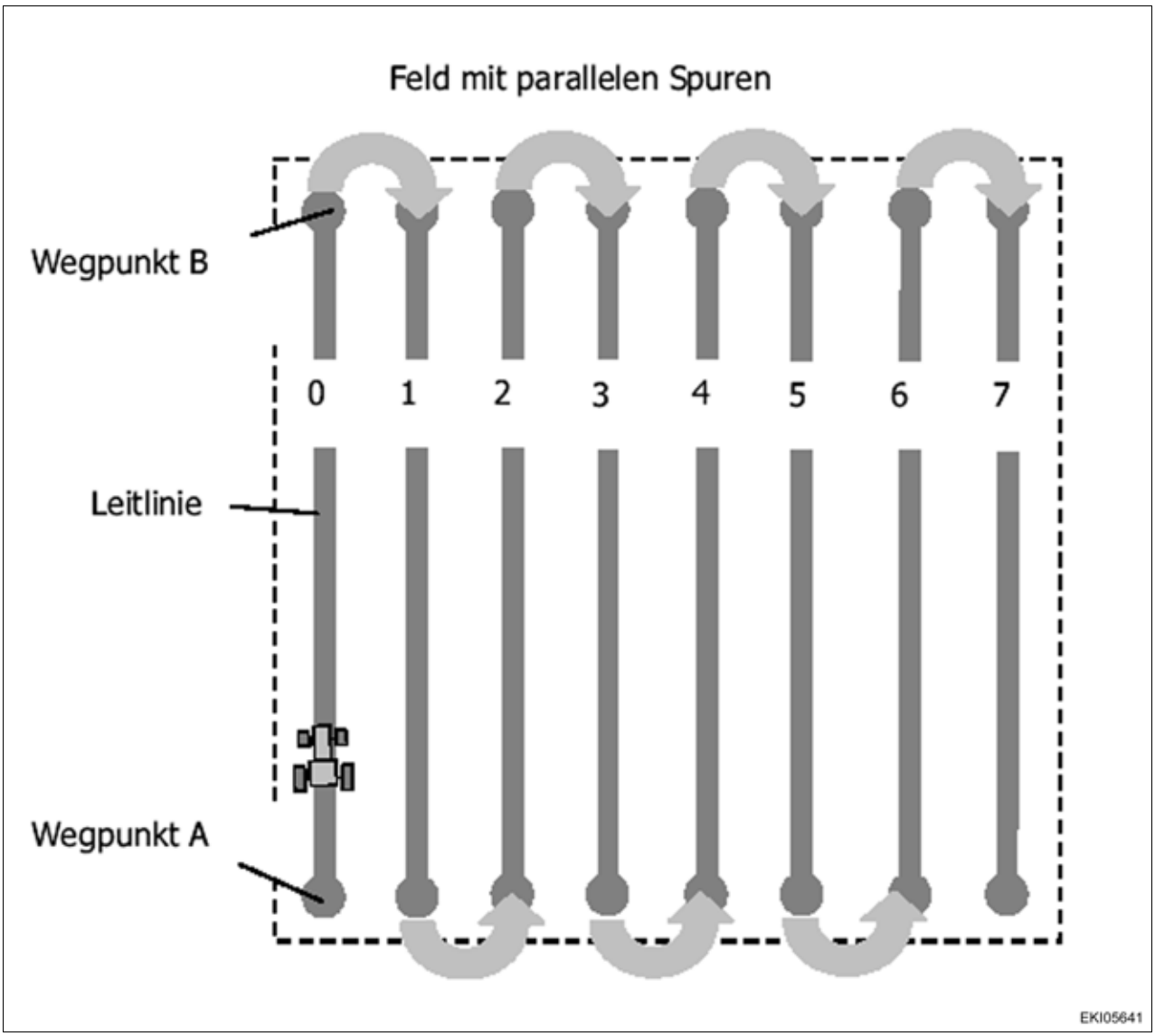


Fig. 67. I003022

Drive the tractor to the desired wayline starting point (Waypoint A).
Press the "Waypoint" key.

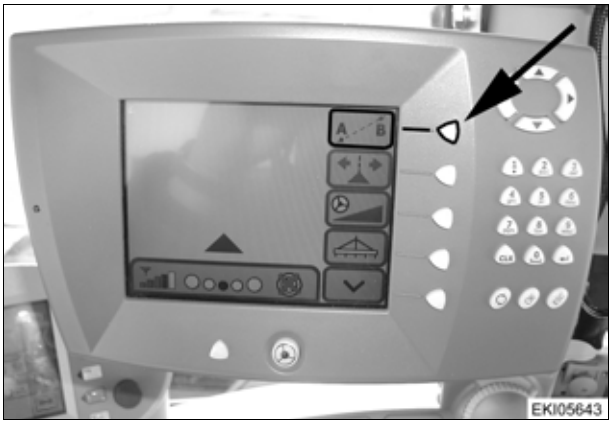


Fig. 68. I003023

The waypoints sub-menu is displayed.

NOTE: *The bar indicator must show at least 3 bars. More bars indicate higher satellite signal strength.*

Confirm waypoint A.
If waypoint A is recognised by the A058 Auto-Guide Top-Dock, it is highlighted in green.

Drive tractor to the second desired waypoint — waypoint B.
Waypoint B must be at least 10m from waypoint A.

NOTE: *The further the waypoints are from each other, the more accurate the wayline will be.*



Fig. 69. I003024

Confirm waypoint B.
If waypoint B is recognised by the A058 Auto-Guide Top-Dock, it is highlighted in green.



Fig. 70. I003025

Check Chassis Range!

The sub-menu "Field Name" is displayed.



Delete the field name with the "Reset" key.



Enter the field name using the alphanumeric keypad (Note: Press and hold down key until the desired digit is set).



Press "CLR" to delete the last character.



Confirm the field name with the "**Return**" key.

The map view appears.

NOTE: *The bar indicator must show at least 3 bars. More bars indicate higher satellite signal strength.*

Bars	Function
1	GPS position signal received
2	GPS position signal received Correction signal received
3 - 5	Accuracy

The wayline and lines parallel to the wayline are displayed on the screen.

From this point, the Auto-Guide (automatic track guidance system) is operational.

Button B = standby button
Button A = Activate automatic track guidance



Fig. 71. I003026



Fig. 72. I002541

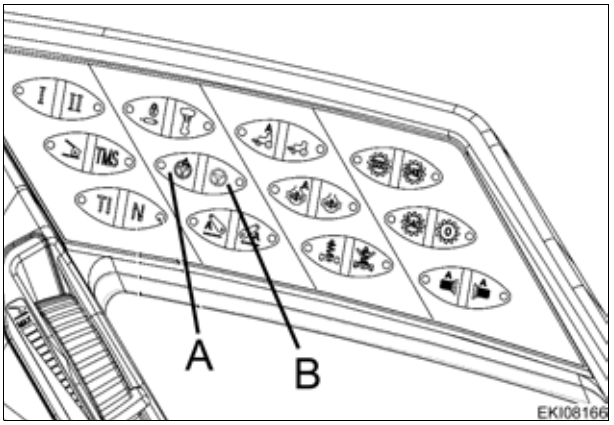


Fig. 73. I000979

Check Chassis Range!

Buttons	Function
Button B (standby switch) (LED off)	**Standby mode off**
Press button B (standby switch) (LED flashes) "partially active" **Note:** Automatic track guidance cannot be activated from this state.	**Standby mode on "partially active"** - GPS satellites are being received - No speed restriction **Note:** **We recommend already engaging the switch position during the drive to the field, since depending on correction signal, highest accuracy is available after 50 to 60 minutes.**
Press button B (standby switch) (LED lit) "fully active". **Note:** Automatic track guidance can be activated from this state.	**Standby mode on "fully active"** - GPS satellites are being received - Max. speed is restricted to 25 km/h.
Press button A (LED lights up)	Automatic track guidance switches on

Alternatively, automatic track guidance can be switched on by pressing the "steering wheel" button on the A059 Auto-Guide terminal.

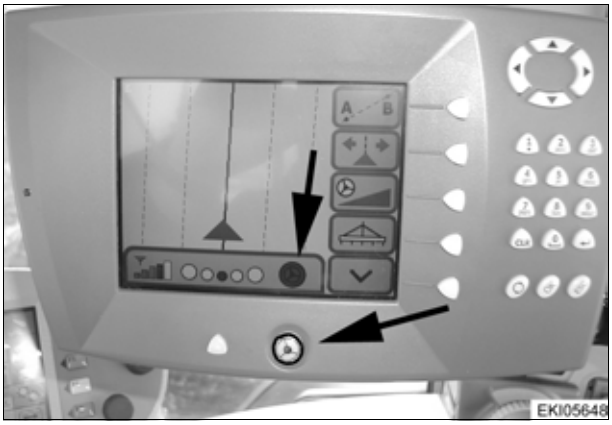


Fig. 74. I003027

Switch-on and switch-off conditions for automatic track guidance

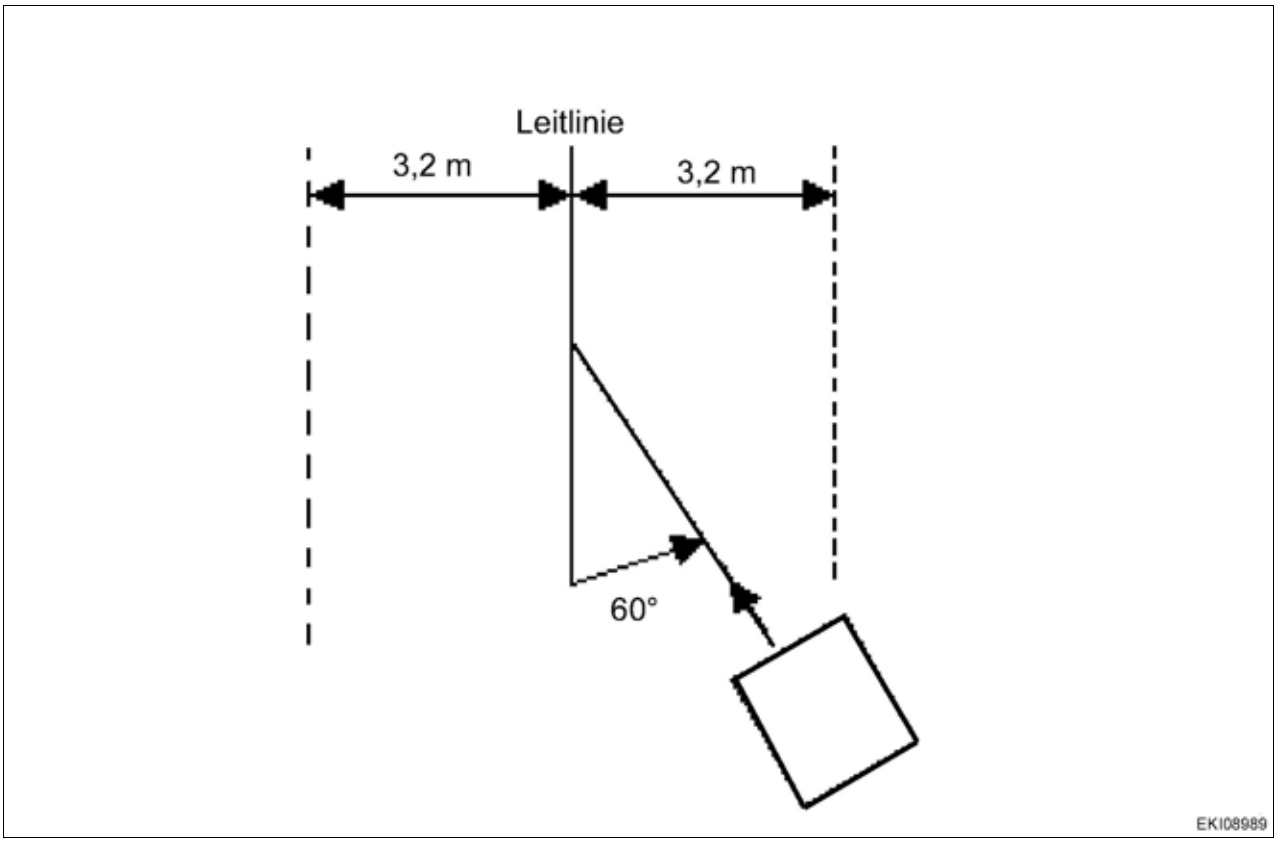


Fig. 75. I003514

Switch-on conditions for automatic track guidance	
Conditions	**Limits for engagement**
Angle to wayline	**The approach angle in relation to the wayline** is less than 60°.
Travel speed	**Forward speed** is greater than 0.4 km/h and less than 25 km/h. **Reverse speed** may not exceed 25 km/h.
Cross track	**The cross track** must be less than 3.2 m on either side of the wayline.
GPS satellite	**The signal strength** must display a minimum of 3 bars. More bars indicate a higher level of accuracy.

Switch-off conditions for automatic track guidance	
Conditions	**Switch-off value**
Tractor steering wheel	**If the steering wheel is moved** (B081 steering wheel sensor), automatic track guidance switches off.
Direction of travel	**Changing the direction of travel** causes automatic track guidance to switch off.

8 Reading serial numbers and authorisation codes using the A059 Auto-Guide terminal

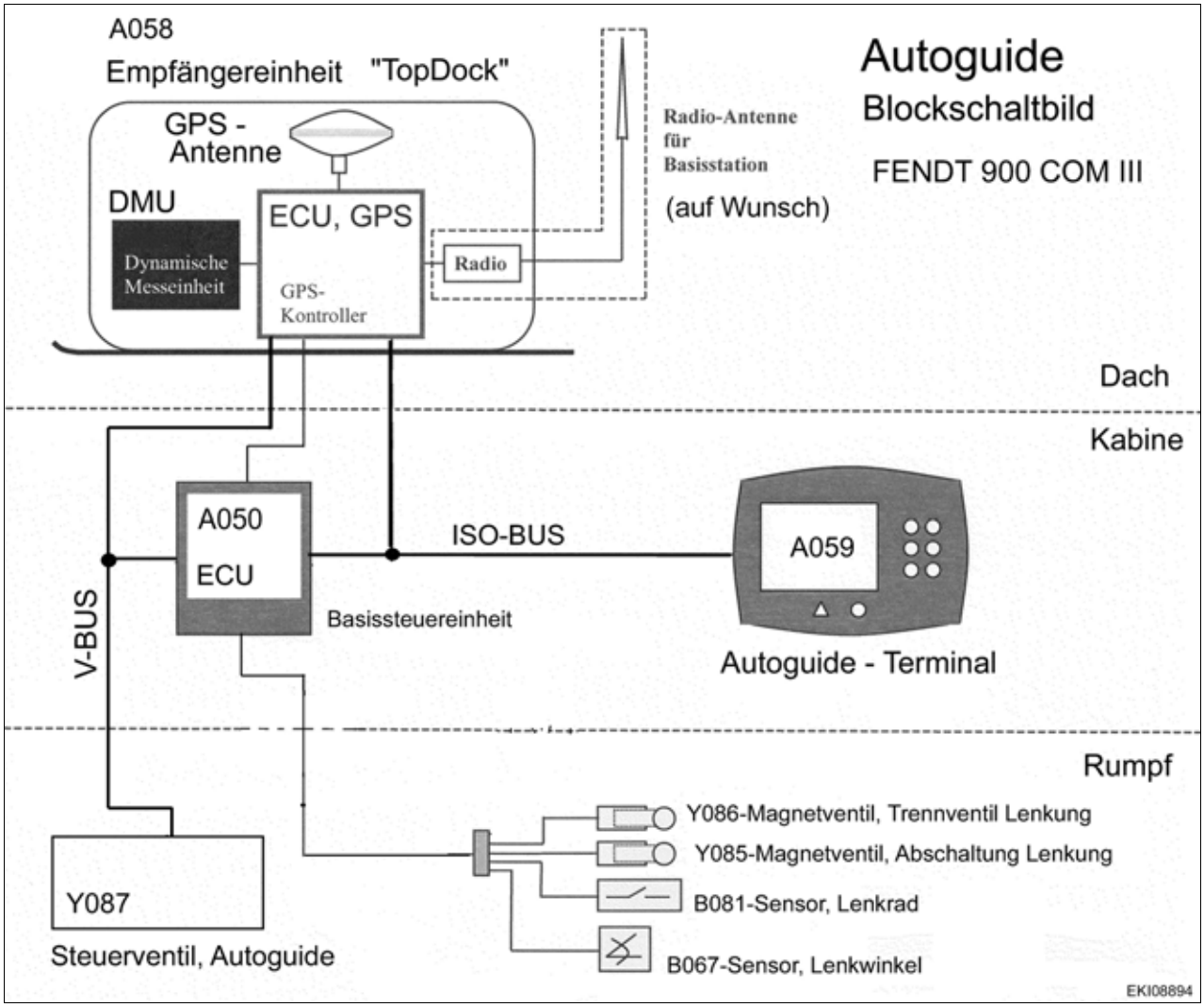


Fig. 76. I003317

Auto-Guide serial numbers and authorisations are stored in the GPS ECU (also known as the BSAC receiver).
The GPS ECU can be read using the A059 Auto-Guide terminal.
The GPS ECU is securely attached to the A058 Auto-Guide TopDock and cannot be removed.

Switch on ignition.
Switch Auto-Guide to standby mode via button (B) (A058 Auto-Guide TopDock is energised)
The LED on the standby switch (B) flashes

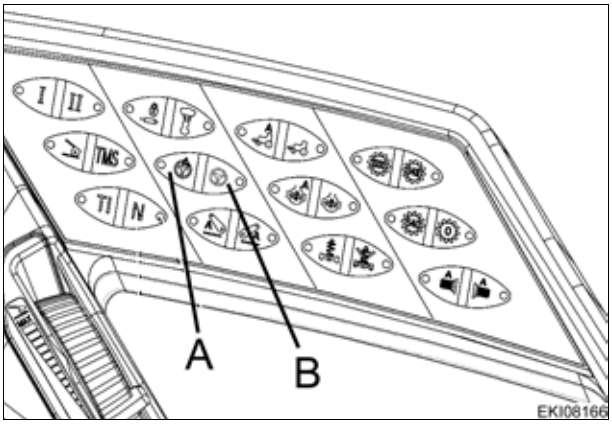


Fig. 77. I000979

The red LED (arrow) indicates that the A058 Auto-Guide TopDock is energised.

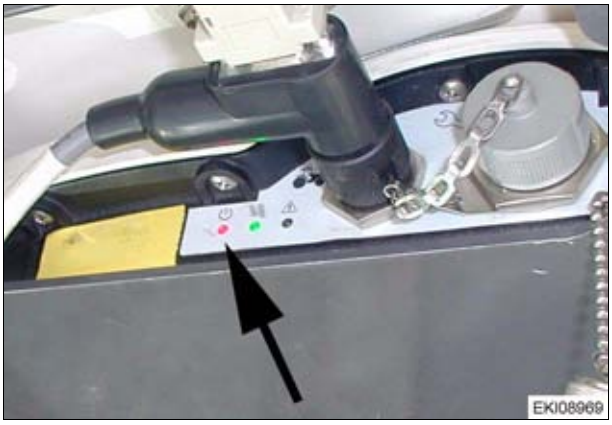


Fig. 78. I003338

Reading serial numbers and authorisation codes using the A059 Auto-Guide terminal

– Scroll with the **arrow key**



Fig. 79. I003307

– Switch to the status indicator with the **measuring gauges**



Fig. 80. I003308

– The "Status" screen is displayed.
– This page displays the status of the Auto-Guide components.



A green tick means that the component is operational.



A red cross means that the component is not operational.

DMU = electronic gyro compass (in the A058 TopDock)
Correction = Correction signal reception
GPS = ECU, GPS (electronic box in the A058 TopDock)
Steer = A050 ECU, basic control unit
Comms = Connection between Auto-Guide components



Fig. 81. I003309

Press **DETAILS** in the "Status" screen



Fig. 82. I003311

An overview with **"GPS Details"** system information appears

Scroll with the arrow keys



Fig. 83. I003339

An overview with **"Software Versions"** system information appears

Scroll with the arrow keys



Fig. 84. I003340

An overview with **"Hardware Details"** system information appears

Scroll with the arrow keys



Fig. 85. I003341

An overview with **"General Information"** system information appears

Scroll with the arrow keys



Fig. 86. I003342

An overview with **"Base Station Details"** system information appears

NOTE: *The "Base Station Details" page only appears if the base station is selected as a correction signal*



Fig. 87. I003343

Reading serial numbers and authorisation codes

GPS - Details		
Detail	**Description**	**Note**
Auth Level **(Auto-Guide service tool = current NovAtel Auth Level)**	**Display of accuracy for which the Auto-Guide system is authorised (Authorization)** **Authorisation from NovAtel** (manufacturer of the hardware and software for determining the position)	**Display: WAASLBA** Authorisation for OmniStar VBS/OmniStar HP **Display: WRT20LBA or RT2WLBA** Authorisation for OmniStar HP and base station
System Authcode (Auto-Guide service tool = current Beeline Auth Level)	**Display of accuracy for which the Auto-Guide system is authorised** **Display in cm / dm / sm** **Authorisation from Beeline** (manufacturer of the track guidance software)	**OmniStar VBS** = sm - accuracy **OmniStar HP** = dm - accuracy **Base station** = cm - accuracy

Software - Versions		
Detail	**Description**	**Note**
Terminal	Display of the current software version for **A059 Auto-Guide terminal**	AG 4.0.14 (version: July 2007)
Controller	Display of the current software version for **A058 Auto-Guide TopDock (GPS ECU)** Note: This software (Beeline) is for automatic track guidance	4.0.1.7 (version: July 2007)
VIU	Display of the current software version for **A050 - ECU, basic control unit** for automatic track guidance	The A050 ECU, basic control unit has been programmed with EOL **The tune sets (vehicle-specific settings) are also automatically installed thanks to the EOL program.** Alternatively, the tune sets can be installed with the A059 Auto-Guide terminal
NovAtel FW BSAC (Auto-Guide service tool = GPS firmware version)	Display of the current software version for **A058 Auto-Guide TopDock (GPS ECU)** Note: The software (NovAtel) is for determining the position	2.303 (version: July 2007)

Hardware Details		
Detail	**Description**	**Note**
DMU Type	**Type of DMU** (gyro compass) in A058 TopDock.	Example: Six Axis (6 axis compass)
DMU S/No	**Serial number of DMU** (gyro compass)	Example: 060 1000021
BSAC Radio Type	Radio type When operating a base station, a correction signal is sent with the help of a radio module from the base station to the tractor (A058 TopDock). Radio on the base station = transmitter Radio on the tractor (A058) = receiver	Radio type = SATEL Radio type (Australia, USA) = FREEWAVE
BSAC Radio S/No.	Radio module serial number	Example: 1
BSAC S/No. (Auto-Guide service tool = GPS serial number)	A058 Auto-Guide TopDock (GPS ECU) serial number	Example: SAS 053 691 60

General Information		
Detail	**Description**	**Note**
Tune Set Version	**Display of the current tune set settings version** Tune set = vehicle-specific settings Vehicle-specific settings are found in the tune set settings. In other words, this is how the vehicle's steering reacts. Tune set data includes: - Vehicle dimensions - Dynamic behaviour of the steering - etc.	Example: 2006.2 (version: July 2007)

Base Station Details (this page is only displayed if a base station is used)		
Detail	**Description**	**Note**
Serial No.	**GPS aerial serial number (base station)**	Note: Display set to "Unknown"

NOTE: *If it is not possible to read the serial numbers and authorisation codes with the A059 Auto-Guide terminal, the A058 Auto-Guide TopDock (GPS ECU) can be read using the Auto-Guide service tool.*

See also:
Chapter 4090 Reg. A - Reading serial numbers and authorisation codes using the Auto-Guide service tool



Fig. 88. I003331

9 Reading serial numbers and authorisation codes using the Auto-Guide service tool

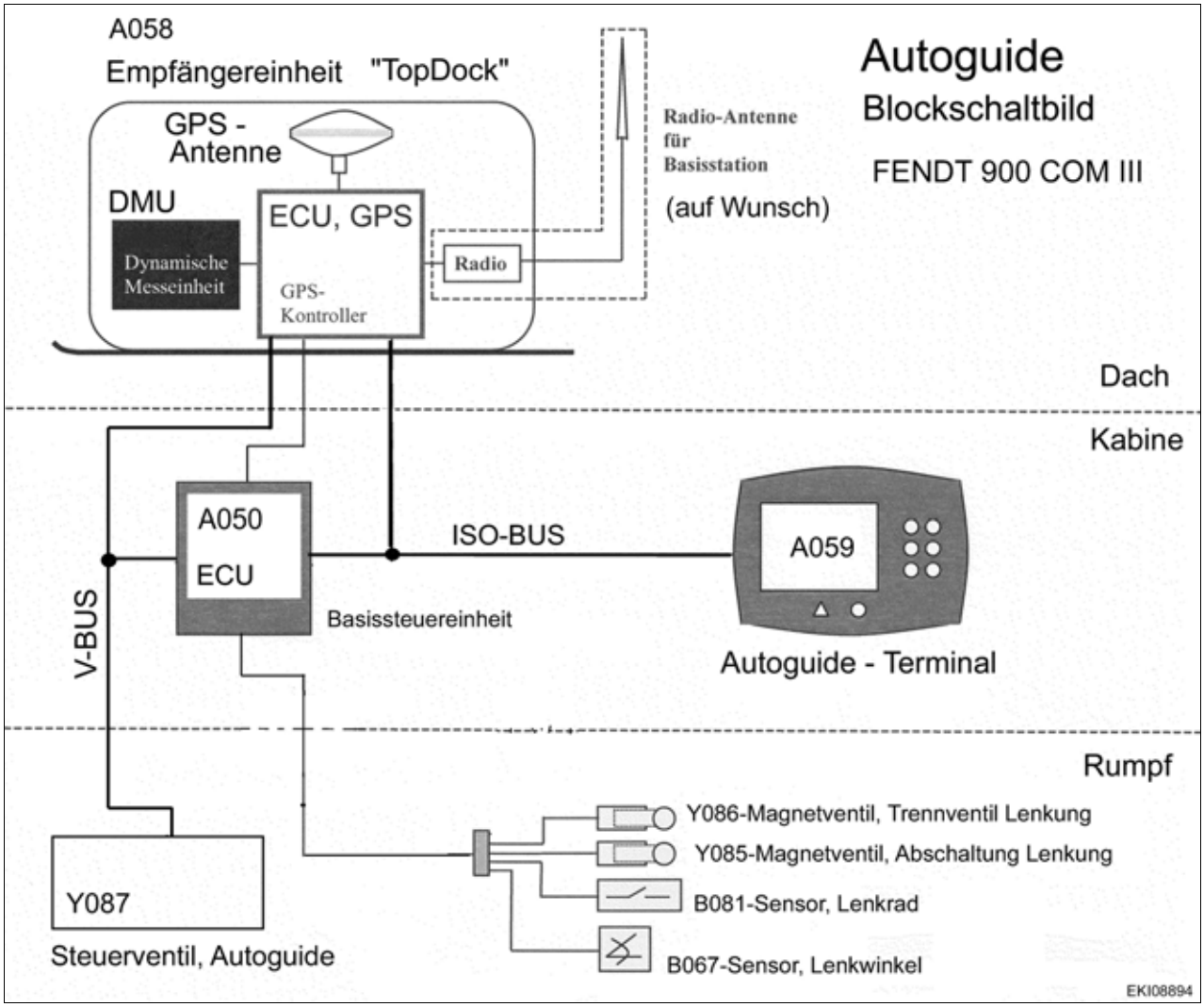


Fig. 89. I003317

Auto-Guide serial numbers and authorisations are stored in the GPS ECU (also known as the BSAC receiver).
The GPS ECU can be read using the Auto-Guide service tool.
The GPS ECU is securely attached to the A058 Auto-Guide TopDock and cannot be removed.

The serial numbers and authorisation codes can be read directly off the A058 Auto-Guide TopDock (GPS ECU) using the Auto-Guide service tool.

Connect the serial cable to the PC.



Fig. 90. I003345

Connect the serial cable to the A058 Auto-Guide Top-Dock.



Fig. 91. I003331

Switch on ignition.
Switch Auto-Guide to standby mode via button (B) (A058 Auto-Guide TopDock is energised)
The LED on the standby switch (B) flashes

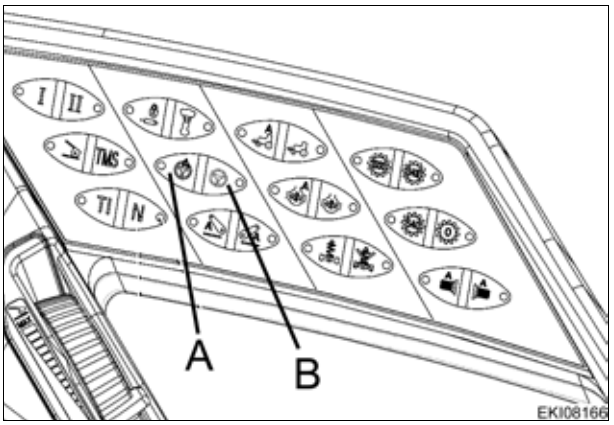


Fig. 92. I000979

The red LED (arrow) indicates that the A058 Auto-Guide TopDock is energised.

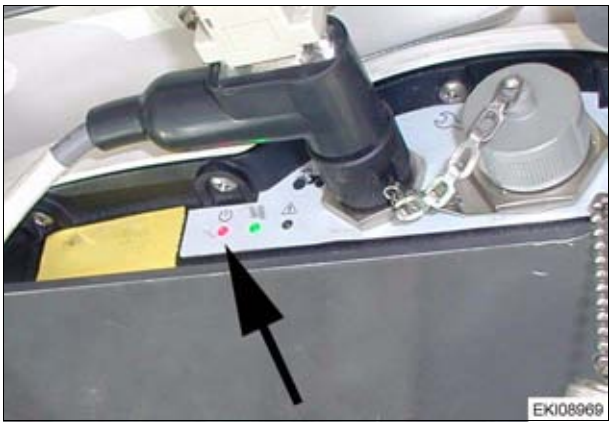


Fig. 93. I003338

Reading serial numbers and authorisation codes using the Auto-Guide service tool

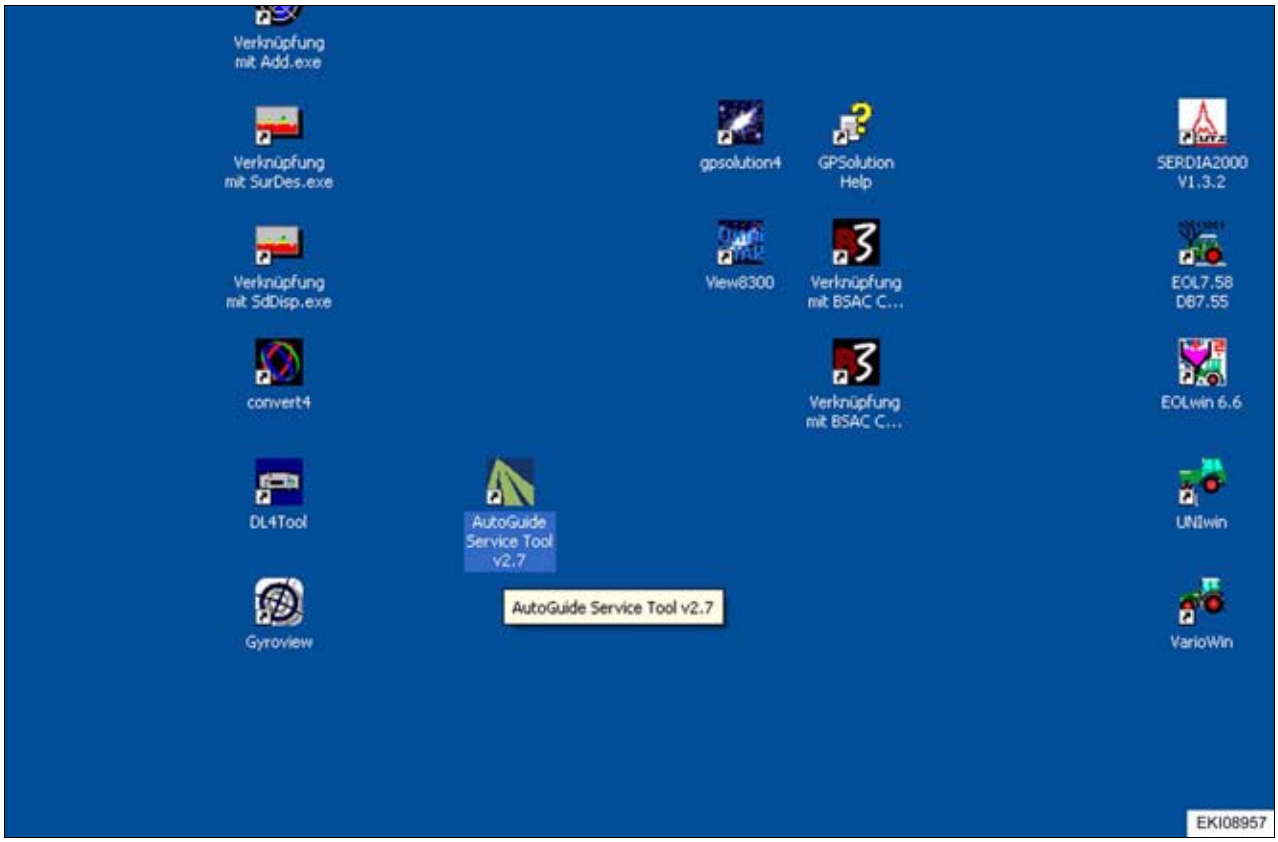


Fig. 94. I003346

Double-click the Auto-Guide service tool icon.
The Auto-Guide service tool starts.

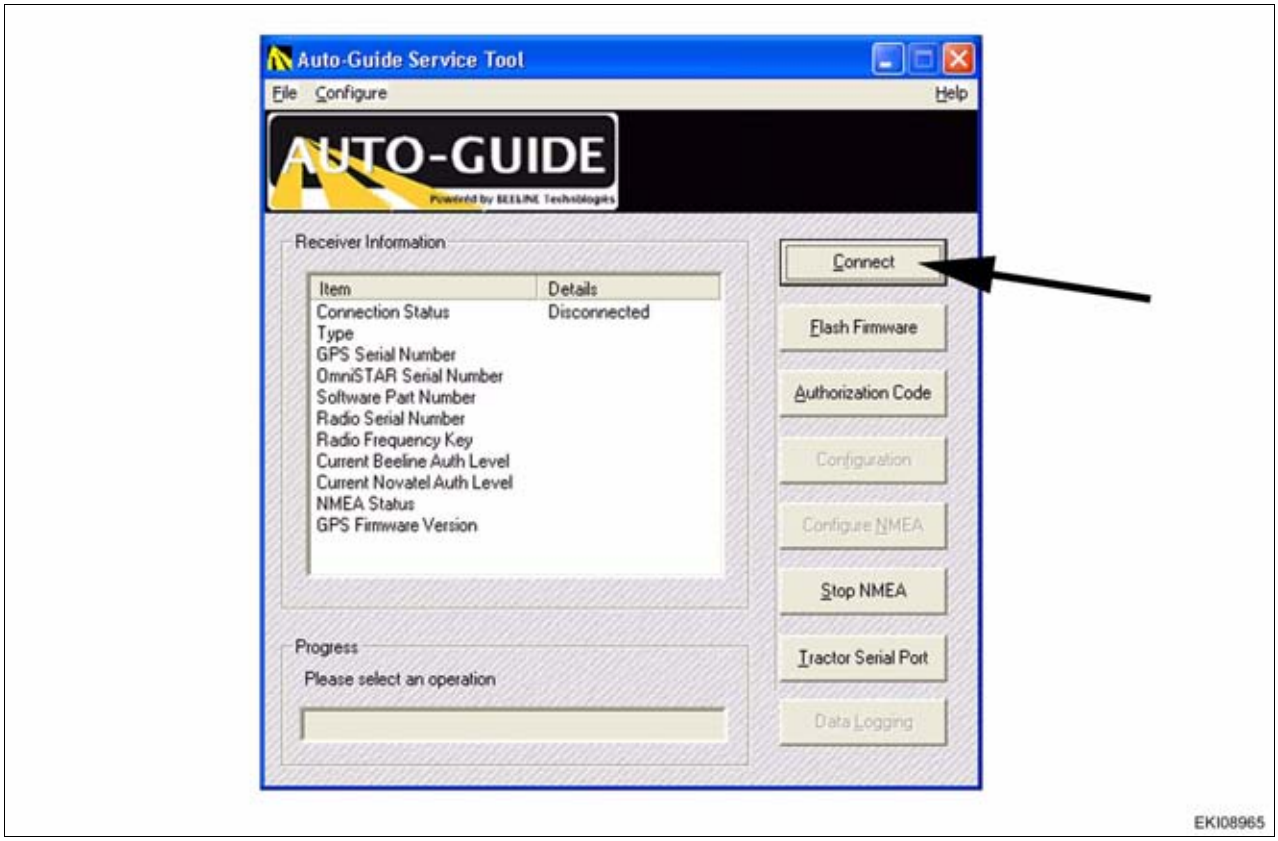


Fig. 95. I003358

Click the **Connect** button.

A connection is established between the PC and the A058 Auto-Guide TopDock (GPS ECU).

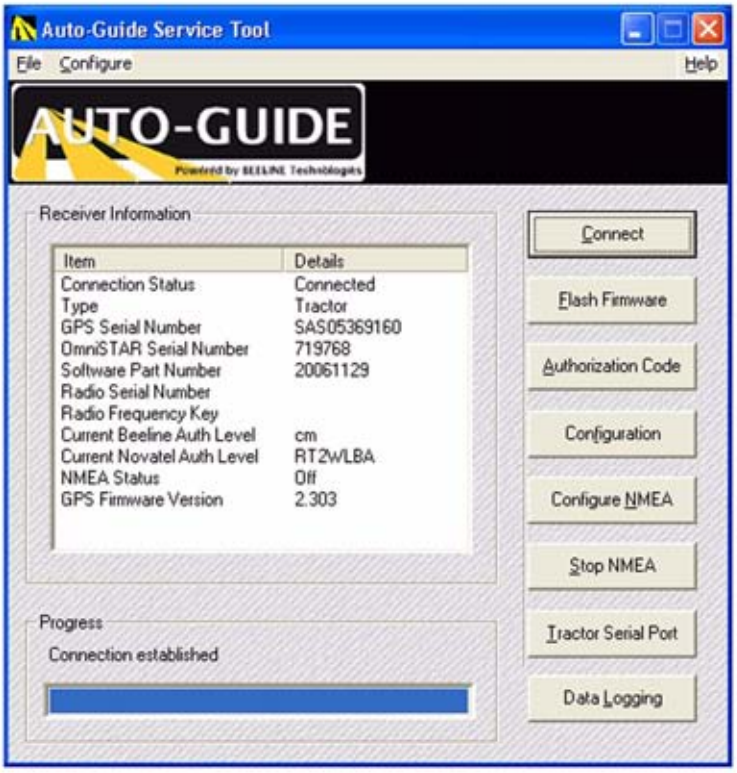


Fig. 96. I003359

An overview of Auto-Guide serial numbers and authorisations appears.

Designation in Auto-Guide service tool	Designation in A059 Auto-Guide terminal	Note
Connection Status	-	A connection has been established between the PC and the A058 Auto-Guide TopDock (GPS ECU).
Type	-	Tractor
GPS Serial Number	**BSAC S/No.** (page: details)	**A058 Auto-Guide TopDock (GPS ECU) serial number** For example: SAS 053 691 60
OmniStar Serial Number	**OmniStar Serial #** (page: correction signal)	**Serial number from the A058 Auto-Guide TopDock (GPS ECU) for the OmniStar correction signal** Example: 71 97 68
Software Part Number	-	-
Radio Serial Number	-	-
Radio Frequency Key	-	-
Current Beeline Auth Level	**System Authcode** (page: details)	**Display of accuracy for which the Auto-Guide system is authorised** Authorisation from Beeline (manufacturer of the track guidance software) Example: OmniStar VBS = **sm** OmniStar HP = **dm** Base station = **cm**

Designation in Auto-Guide service tool	Designation in A059 Auto-Guide terminal	Note
Current Novatel Auth Level	**Auth Level** (page: details)	**Display of accuracy for which the Auto-Guide system is authorised** Authorisation from NovAtel (manufacturer of the hardware and software for determining the position) **WAASLBA** (OmniStar VBS/OmniStar HP) **WRT20LBA or RT2WLBA** (OmniStar HP/base station)
NMEA Status	-	Status for recording GPS data off on
GPS Firmware Version	**NovAtel FW BSAC** (page: details)	**Display of the current software version for A058 Auto-Guide TopDock (GPS ECU)** The software (NovAtel) is for determining the position. Example: 2.303

10 General information on the Auto-Guide correction signal - OmniStar VBS, OmniStar HP, WAAS/EGNOS

Correction signals via OmniStar (OmniStar VBS; OmniStar HP)
OmniStar BV
PO Box 113
2260 AC Leidschendam
Netherlands
Telephone: +31 (0)70 31 70 900
Fax: +31 (0)70 31 70 919
E-mail: info@omnistar.nl
Internet: www.omnistar.nl

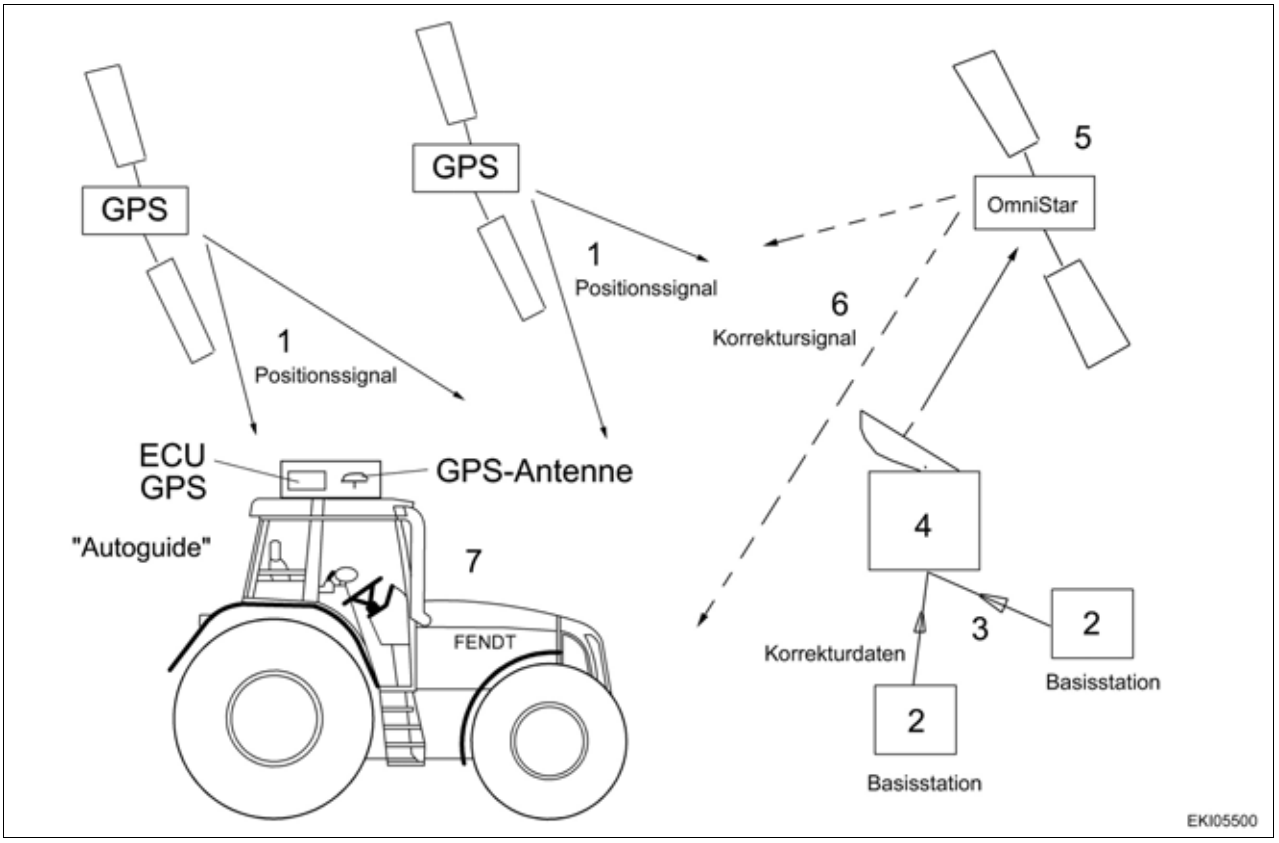


Fig. 97. I002610

– GPS satellites send position signals (1)
– OmniStar's permanent base stations compare this data with its true position (2)
– Correction data is transmitted to the OmniStar satellite (3, 4, 5)
– Auto-Guide receives both signals (position signal 1 and correction signal 6) and uses both to calculate more accurate position data (7)

Accuracy of different correction signals

	Standard system		**Precision system**
Correction signal	**Public provider**	**OmniStar**	**OmniStar**
	Correction signal: WAAS (North America) EGNOS (Europe)	**Correction signal: OmniStar VBS Startup time until max. accuracy:** approx. 1 minute	**Correction signal: OmniStar HP Startup time until max. accuracy:** approx. 30 to 60 minutes
Static accuracy	+/- 80 to 100 cm	+/- 60 to 80 cm	+/- 10 cm
Dynamic accuracy	+/- 20 to 25 cm	+/- 15 to 20 cm	+/- 5 cm
Application examples	Tillage, plant protection, fertilising	Tillage, plant protection, fertilising	Plant protection, fertilising, seed drilling

Check Chassis Range!

Accuracy shown is GPS accuracy (position signal + correction signal)

Accuracies that can actually be attained depend on:

– the ground conditions
– the terrain
– the implement
– the number of position satellites that can be received (reception can be influenced by forest edges, slopes etc.)

Definition of static accuracy

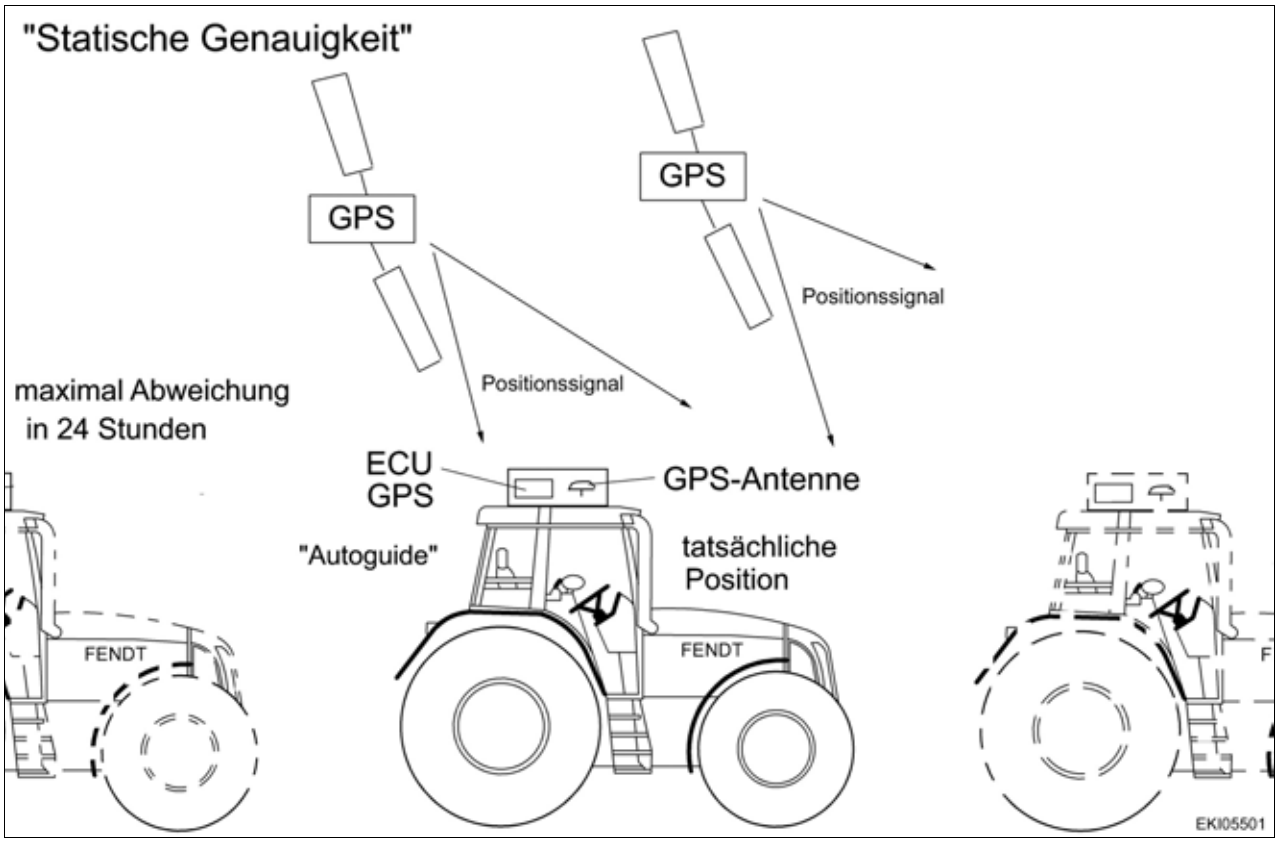


Fig. 98. I002611

Definition of static accuracy

The tractor is in a fixed position.
The satellite does not always "see" the tractor in the same position but in various positions over a period of 24 hours.
The deviation from the true position is referred to as **"static accuracy"**.

Definition of dynamic accuracy

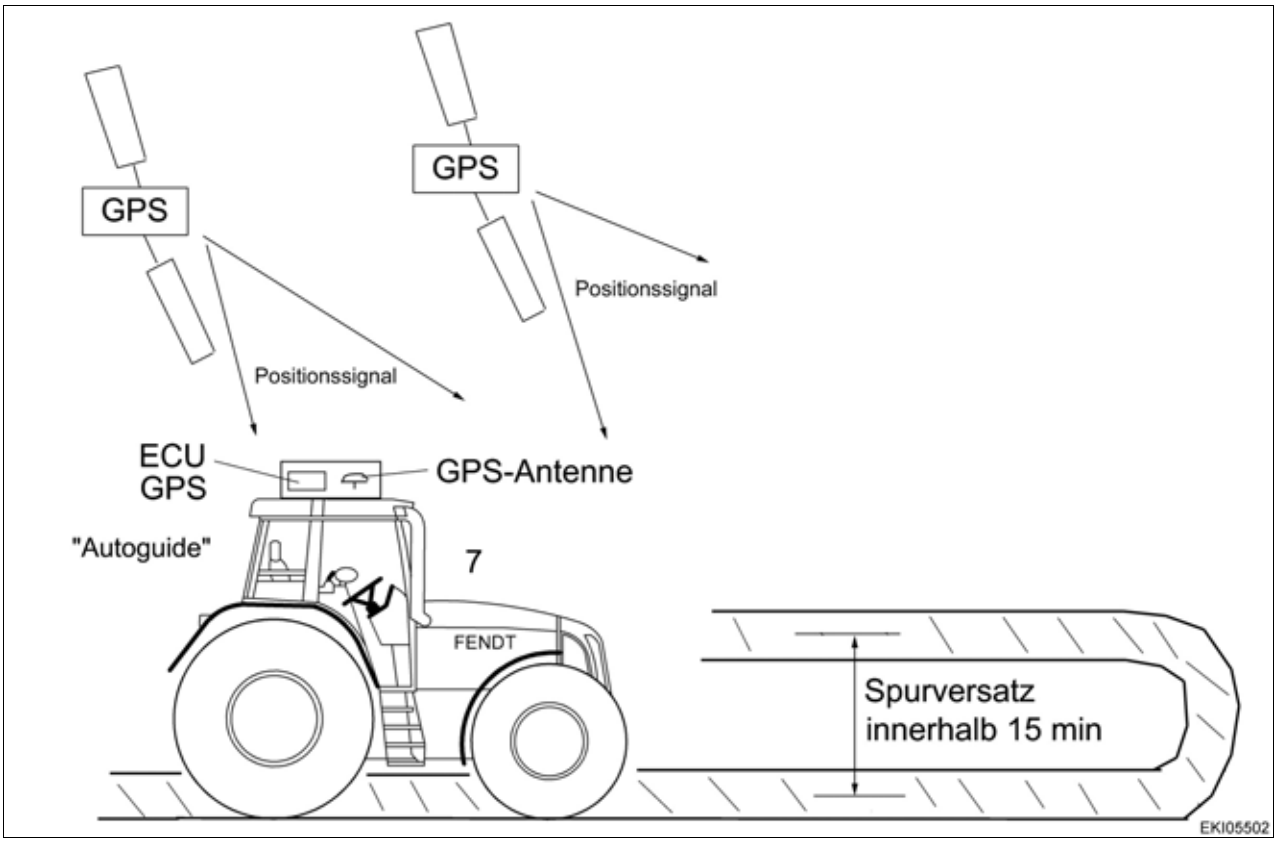


Fig. 99. I002612

Dynamic accuracy (= pass-to-pass accuracy) indicates the accuracy that can be attained "in most cases" from pass to pass within a period of 15 minutes.

Comparison of correction signals (WAAS/EGNOS; OmniStar VBS; OmniStar HP)

NOTE: *Since the correct reception of correction signals depends on various factors (see below), we recommend that a demonstration of the Auto-Guide system is always carried out on the customer's fields before purchase, to ensure correct operation of the Auto-Guide system.*

WAAS (North America) / EGNOS (Europe)	
Advantages	**Disadvantages**
Free service	Only available in Europe and the USA
Wide signal coverage in the USA, Western and Central Europe	Availability is not guaranteed and is not yet stable in Europe.
Accurate positioning requires only a short amount of time	The correction signal can be obstructed by obstacles to the South (especially in Northern Europe)
Accuracy is regained quickly after the signal has been obstructed	The signal can shift, especially over a longer period of time

OmniStar VBS (FENDT recommends this correction signal)	
Advantages	**Disadvantages**
Accurate positioning requires only a short amount of time	Annual subscription costs
Wide signal coverage over 90% of the world's landmass	The correction signal can be obstructed by obstacles to the South (especially in Northern Europe)
Greater operational security than WAAS/EGNOS	The signal can shift, especially over a longer period of time
Accuracy is regained more quickly after the signal has been obstructed	Less expensive subscriptions only allow a vehicle to work within a limited area ("farm subscription")

OmniStar HP (FENDT recommends this correction signal)	
Advantages	**Disadvantages**
High, repeatable accuracy	Annual subscription fee, expensive hardware and software
Wide signal coverage over 90% of the world's landmass	The correction signal can be obstructed by obstacles to the South (especially in Northern Europe)
Greater operational security than WAAS/EGNOS	When the GPS or correction signal has been lost for a prolonged period or after the system is restarted, Auto-Guide needs a few minutes before work can be begin and approx. 1 hour to attain specific accuracy (10 cm or 5 cm). –> Not suitable for small fields with many trees

Checklist (which correction signal is suitable)

Area conditions	WAAS/EGNOS	OmniStar VBS (recommended by Fendt)	OmniStar HP (recommended by Fendt)
Large trees that obstruct the signal from the South, especially in small fields	-	-	-
Small fields, single trees, only pass-to-pass accuracy is important	X	X	-
Large fields, repeatability of accuracy is important	-	-	X
Fields with hilly terrain in northern countries	-	X	-
Large fields, open terrain	X	X	X

Prices for OmniStar (the prices in the FENDT price list are authoritative)

(A selection of correction signals from OmniStar)

NOTE: *Please contact your AGCO - FENDT factory representative for current prices and discounts!*

Prices for OmniStar correction signals (as at 01.2007)				
	3-month subscription	each additional month	1-year subscription	Area limitations
Standard Auto-Guide (OmniStar VBS)	EUR 395 EUR 595	EUR 100 EUR 150	EUR 795 EUR 1195	up to 25 km radius regional (country)
Auto-Guide precision (OmniStar HP)	EUR 650 EUR 995	EUR 175 EUR 200	EUR 1195 EUR 1595	up to 25 km radius regional (country)
Minimum reception time for correction signals: 3 months				
Note: All prices are subject to change				

11 Ordering the OmniStar correction signal (VBS or HP)

Procedure for ordering the OmniStar correction signal (VBS or HP)

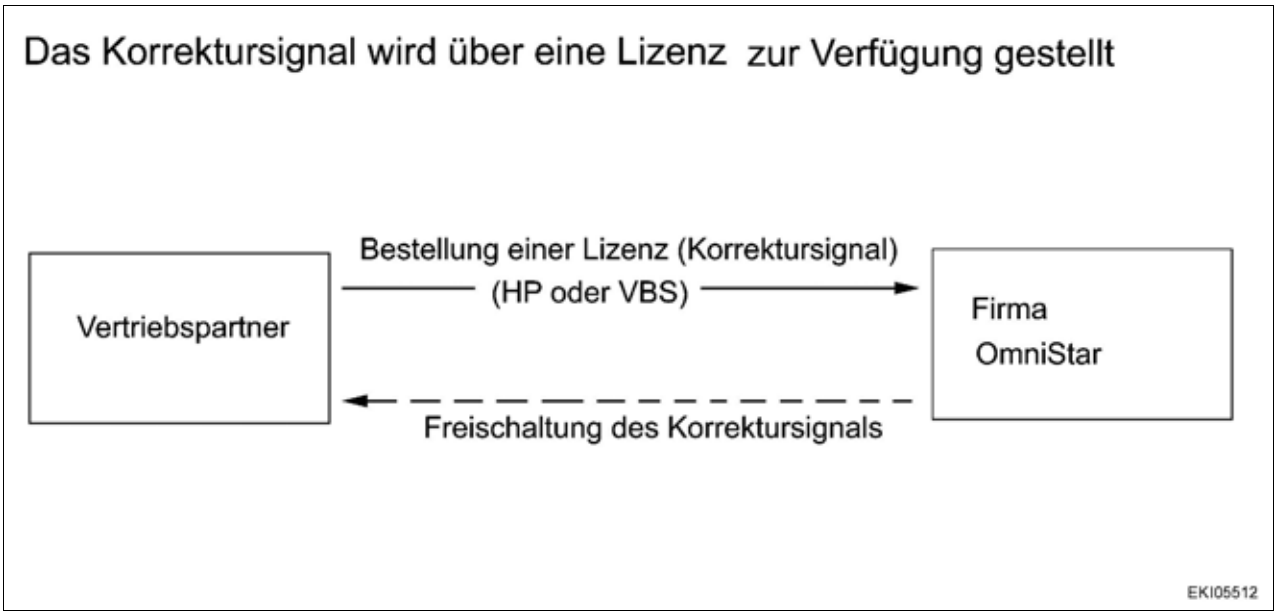


Fig. 100. I003360

NOTE:

- *The correction signal must be ordered from OmniStar for new machines with Auto-Guide and when machines are retrofitted with Auto-Guide.*
- *The supplied package does not include a valid OmniStar (correction signal) subscription.*
- *The A058 Auto-Guide TopDock (GPS ECU) has been configured to receive the OmniStar VBS correction signal as standard*

Your dealer orders a subscription (HP or VBS correction signal) from OmniStar directly. OmniStar then activates the correction signal.

The most important end user prices are listed in the FENDT PRICELIST. Please contact your AGCO - FENDT factory representative for further details such as discounts and dealer prices.

Contact address for OmniStar:
OmniStar BV
PO Box 113
2260 AC Leidschendam
Netherlands
Telephone: +31 (0)70 31 70 900
Fax: +31 (0)70 31 70 919
E-mail: info@omnistar.nl
Internet: www.omnistar.nl

Foreign-language assistance is available during core business hours (9:00 to 15:00 GMT+1)

Print out the order form for the OmniStar correction signal from AGCO - NET

Web address (order form for OmniStar correction signal subscription)
https://net.agcocorp.com
User ID: ..... (Dealer's user ID)
Password: ..... (Dealer's password)
Sales / Documents / Auto-Guide order form for OmniStar signal subscription

Check Chassis Range!

Sample order form

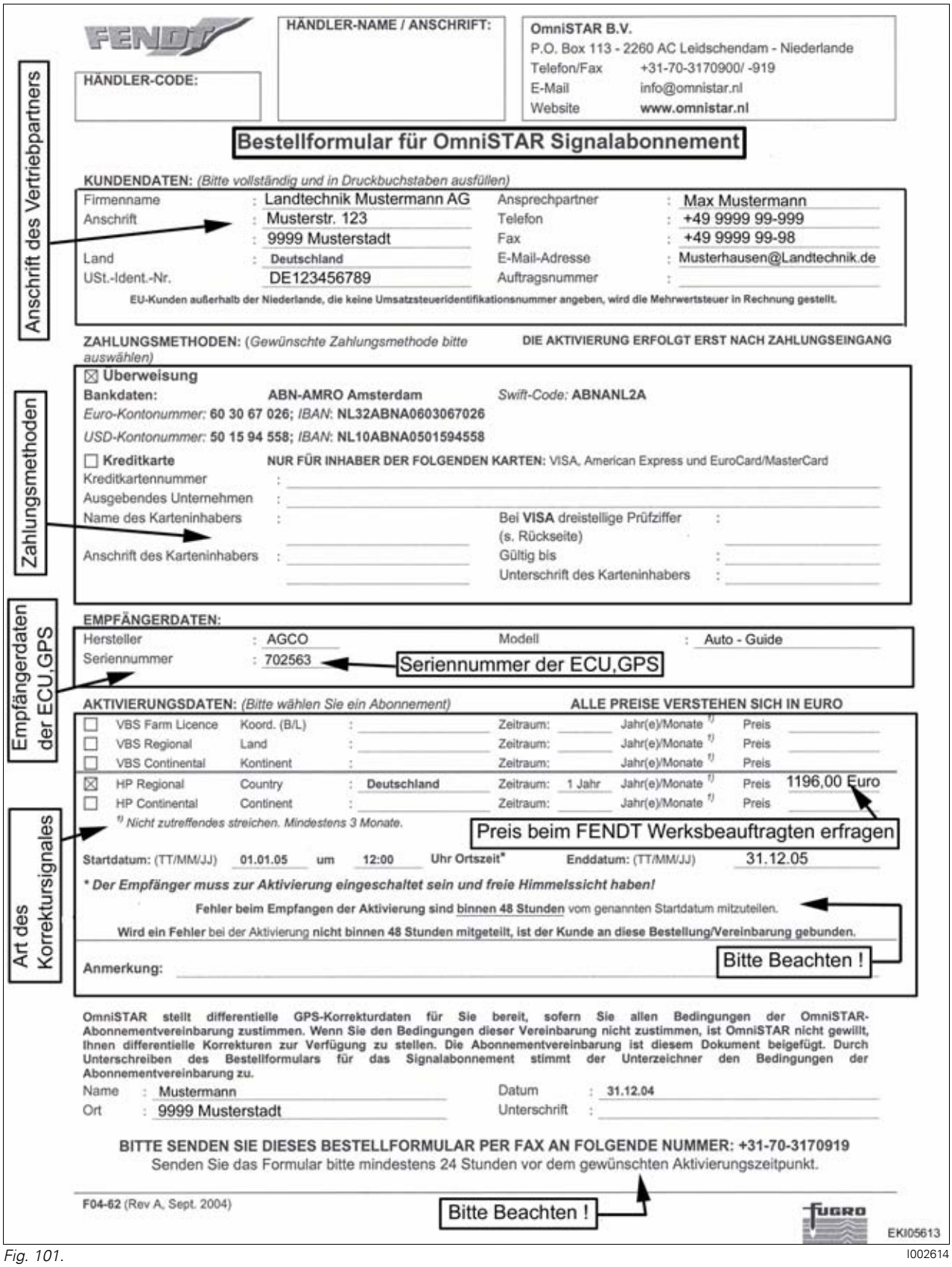


Fig. 101. I002614

Methods of payment

The minimum subscription period for the correction signal is 3 months.

OmniStar will not activate the correction signal until payment has been received, so please order the (correction signal) subscription in good time

Please contact your AGCO - FENDT factory representative for prices and discounts for the OmniStar correction signals.

NOTE: *The OmniStar general terms and conditions are attached to the order form.*

Reading the OmniStar serial number

Reading the OmniStar serial number:

Scroll with the **arrow key**.



Fig. 102. I003307

Continue to the settings menu with the **spanner key**.



Fig. 103. I003332

Press the **Correction Signal** key



Fig. 104. I003361

Check Chassis Range!

The correction signal screen is displayed

Press the **Details** key.



Fig. 105. I003362

The **OmniStar menu** is displayed

- Tracking Status
  displays the reception status of the correction signal (must be "green" when the subscription is received)
- **OmniStar Serial #**
  displays the serial number of the A058 Auto-Guide TopDock (GPS ECU)
  The serial number (arrow) is required for ordering the OmniStar (correction signal) subscription
- Expiry Date
  displays the expiry date of the correction signal subscription
- Subscription Status
  "Good" = valid subscription for correction signal
  "Expired" = the subscription for the correction signal has expired

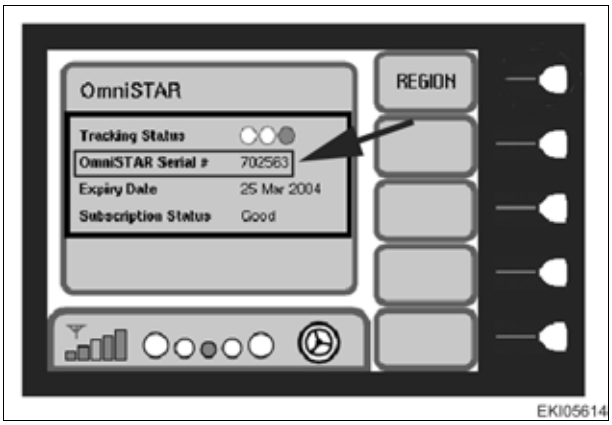


Fig. 106. I002623

We recommend writing the OmniStar serial number on the A058 Auto-Guide TopDock



Fig. 107. I003364

Return with "**ESC**".



Fig. 108. I002622

Check Chassis Range!

12 Activating the OmniStar correction signal (VBS or HP)

Activation data (activating the OmniStar correction signal)

OmniStar correction signal activation is transmitted to the A058 Auto-Guide TopDock once via satellite.

A date and time when the satellite will begin transmitting the correction signal to the A058 Auto-Guide TopDock will be indicated on the order form.

The tractor must have a clear view of the sky at the arranged time (see order form)

NOTE: *See also:*
Chapter 4090 Reg. A - Ordering the OmniStar correction signal (VBS or HP)

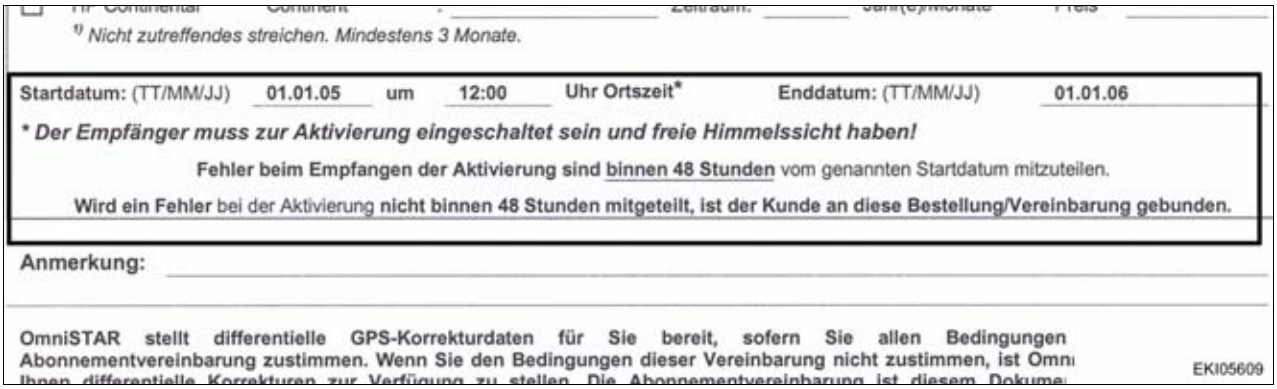


Fig. 109. I002632

Attach the short-circuit connector **E** to the ISO BUS socket.

or

Connect the ISO BUS implement.

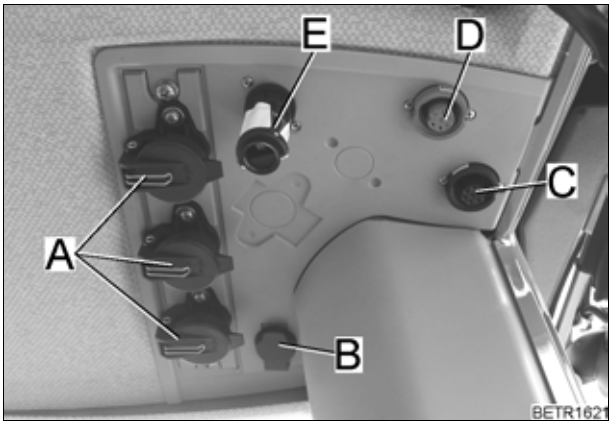


Fig. 110. I003280

For operation of the Auto-Guide system, it is necessary that the **ISO BUS tractor data** is set to **active.**



Continue pressing the **F5** key until the display joystick and **tractor data active** is displayed / **Auto-Guide operation is possible**



Deactivation of ISO BUS



Vario terminal and joystick not active, an external ISO terminal can be used. **Tractor data active** / **Auto-Guide operation possible**



Vario terminal not active. Joystick and **tractor data active** / **Auto-Guide operation possible**

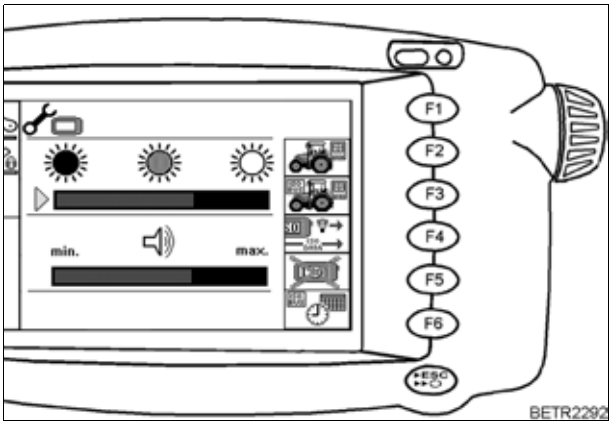


Fig. 111. I003284

NOTE: *Return with "ESC".*
Settings are active after exiting the sub-menu.

Check Chassis Range!

Switch on ignition.
Switch the Auto-Guide system to standby mode "partially active" (A058 Auto-Guide TopDock is energised).
The LED on the standby switch (B) flashes

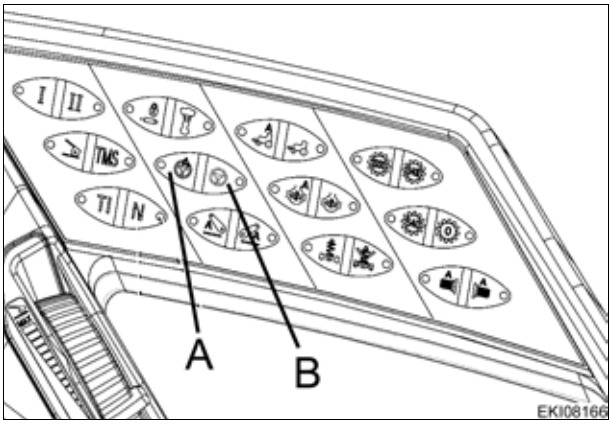


Fig. 112. I000979

The red LED (arrow) indicates that the A058 Auto-Guide TopDock is energised.

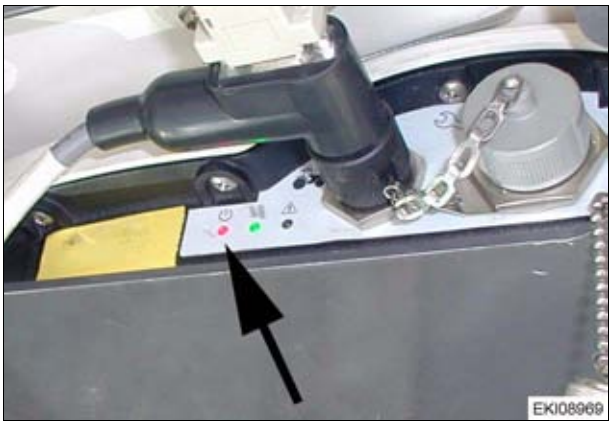


Fig. 113. I003338

Scroll with the **arrow key**.



Fig. 114. I003307

Continue to the settings menu with the **spanner key**.



Fig. 115. I003332

Press the **Correction Signal** key



Fig. 116. I003361

The **Correction "Signal Sources"** screen is displayed.



– Select the desired correction signal using the arrow keys.



– Confirm the selection with the **Enter** key



Fig. 117. I003371

The region selection screen appears.



– Select the desired region using the arrow keys.



– Confirm the selection with the **Enter** key



Fig. 118. I003373

Press the **Details** key.



Fig. 119. I003362

The **OmniStar** sub-menu is displayed

The activation process begins at this point

The tractor must have a clear view of the sky at the arranged time.

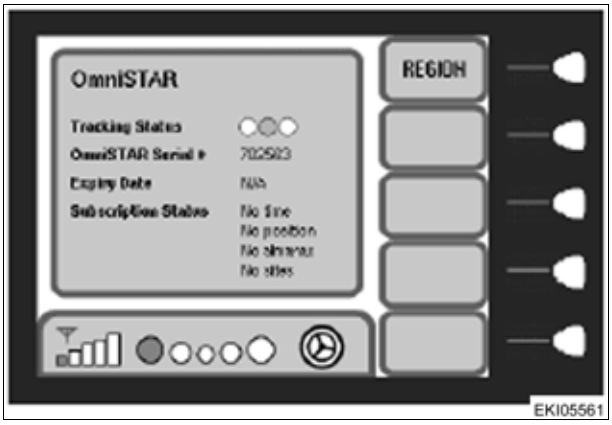


Fig. 120. I002631

The displays for **Tracking Status** change from red to yellow and then to green
This process may take a few minutes.

If the Subscription Status display has not changed after 15 to 30 minutes, please contact OmniStar by phone and request a repeat transmission of the correction signal.

Telephone (OmniStar): +31 (0)70 31 70 900

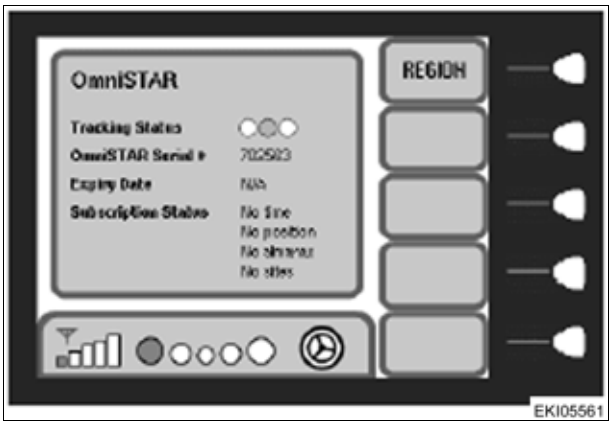


Fig. 121. I002631

NOTE: *It may be as much as an hour before these displays appear.*

Once activation is completed, the correction signal subscription appears.

– **Expiry Date**

– **Subscription Status**

NOTE: *When a valid correction signal is received, the reception status is shown.*
The Auto-Guide system requires at least 3 bars to operate properly.
Additional bars indicate a higher level of accuracy.

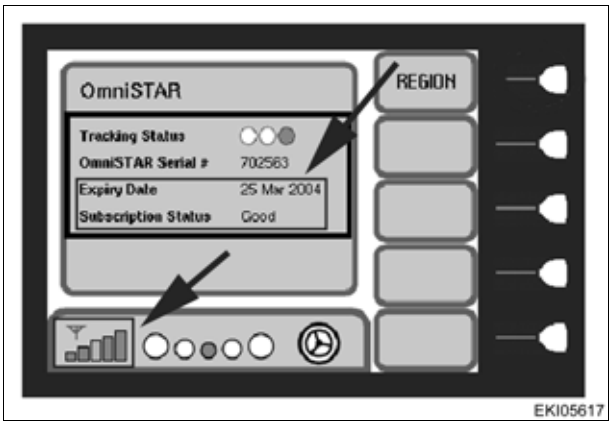


Fig. 122. I002633

Expiry Date	
N/A	No correction signal subscription available
25 Mar 2004	**Correction signal subscription available** The expiry date of the correction signal subscription is displayed.

Subscription Status	
No ...	No correction signal subscription available
Expired	Correction signal subscription has expired
Good	**Correction signal subscription is available**

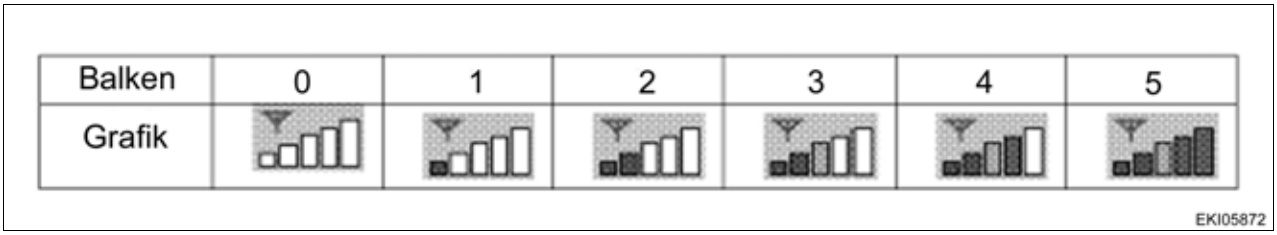


Fig. 123. I002543

Bars	0	1	2	3	4	5
Designation	No GPS signal	GPS signal exists, but no correction signal (DGPS) is available	Patch available, but poor accuracy	adequate accuracy	good accuracy	best accuracy
Steering Assist	No	No	No	Yes	Yes	Yes

Extending the OmniStar correction signal subscription

The expiry date for the correction signal subscription is displayed in the OmniStar menu.
Once this date has been reached, the subscription must be renewed.
If the correction signal subscription has expired, "Subscription Status Expired" is displayed.
The correction signal subscription can be renewed using the order form on AGCO NET

NOTE: *See also:*
Chapter 4090 Reg. A - Auto-Guide correction signal - Ordering the OmniStar correction signal (VBS or HP)

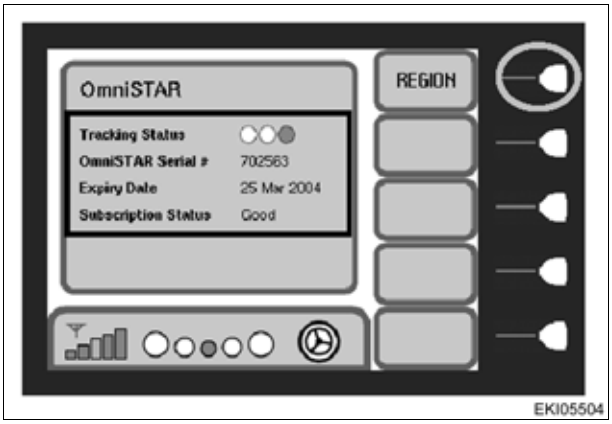


Fig. 124. I002627

13 "Upgrade" from OmniStar VBS standard system to OmniStar HP precision ("upgrade")

If the VBS standard system is to be converted to the HP precision system, the A058 Auto-Guide TopDock (GPS ECU) must be upgraded to the HP system — "Upgrade"

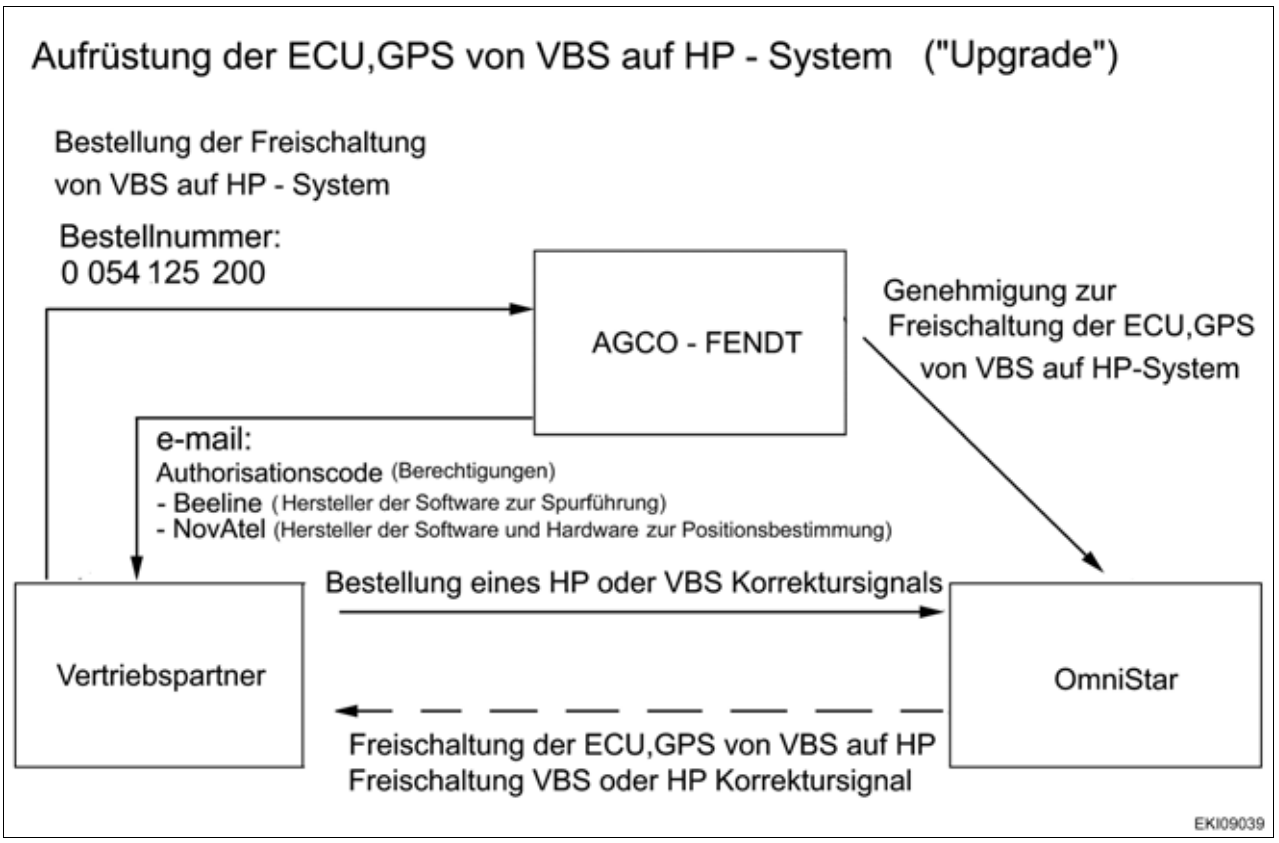


Fig. 125. I003746

Print out the order form for the HP upgrade from AGCO NET

Web address (order form for upgrade to HP)
https://net.agcocorp.com
User ID: ..... (Dealer's user ID)
Password: ..... (Dealer's password)
Path: Sales / FENDT / Documents / **Find documents where ...** For **AND Title or Description or Document contains**, enter **Auto-Guide**; for **AND Modified in the last …….. Days**, enter **9999**

Sample order form for the HP upgrade

Check Chassis Range!

Auto-Guide Aufrüstung (Upgrade) Bestellformular

AGCO

AUTO-GUIDE

Händlerdaten:

Händlernummer:	**Ansprechpartner:**
Händlername:	**Telefon:**
Strasse:	**Fax:**
PLZ:	**E-Mail:**
Ort:	**Land:**

Kundendaten:

Kundenname:	**Telefon:**
Strasse:	**Fax:**
PLZ:	**E-Mail:**
Ort:	**Land:**

Maschinendaten:

Fahrgestellnummer:	
OmniSTAR Seriennummer* (7…..):	
Seriennummer GPS Empfänger (SVA… oder SPA…):**	

*** Die Bestellung kann nur mit Angabe der OmniSTAR Seriennummer bearbeitet werden.**
**** Die Empfängerseriennummer ist nur beim Upgrade auf die Basisstation erforderlich.**
Die Vorgehensweise zum Auslesen der Seriennummern ist in der Auto-Guide Bedienungsanleitung und in der Serviceanleitung beschrieben.

	Bestellnummer:	Artikel:
☐	0054.125.200	Software Upgrade zum Aufrüsten von Standard VBS auf Präzision HP
☐	0054.105.201	Software Upgrade zum Aufrüsten von Standard VBS auf Hochpräzision BS Basisstation
☐	0054.105.202	Software Upgrade zum Aufrüsten von Präzision HP auf Hochpräzision BS Basisstation

Händlerstempel	**Ort, Datum**	**Unterschrift**

Bitte das ausgefüllte Formular per Fax an Ihre zuständige Kundenbetreuung schicken.

EKI06582

Fig. 126. I003378

NOTE: ***Fax*** *the order form from AGCO NET to AGCO-FENDT*

The A058 Auto-Guide TopDock (GPS ECU) must be activated for continuous reception of the HP correction signal. Your dealer will use the HP "Upgrade" form (see above) to order **spare part number 0 054 125 200** from AGCO / FENDT; you will also need to provide your **OmniStar serial number (OmniStar Serial #)** and the **serial number of your A058 Auto-Guide TopDock "GPS receiver" (BSAC S/No)**.

Check Chassis Range!

Reading the OmniStar serial number

Reading the OmniStar serial number:

Scroll with the **arrow key**.



Fig. 127. I003307

Continue to the settings menu with the **spanner key**.



Fig. 128. I003332

Press the **Correction Signal** key



Fig. 129. I003361

The correction signal screen is displayed

Press the **Details** key.



Fig. 130. I003751

Check Chassis Range!

Read the OmniStar serial number

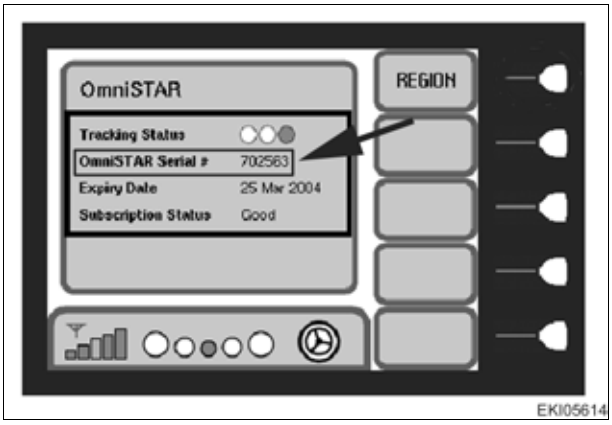


Fig. 131. I002623

Reading the serial number of the A058 Auto-Guide TopDock "GPS receiver"

Reading the serial number of the A058 Auto-Guide TopDock "GPS receiver":

– Scroll with the **arrow key**



Fig. 132. I003307

– Switch to the status indicator with the **measuring gauges**



Fig. 133. I003308

Press **DETAILS** in the "Status" screen



Fig. 134. I003311

Use the arrow buttons to scroll until the **"Hardware Details"** system information appears.

BSAC S/No = Serial number of the A058 Auto-Guide TopDock (GPS ECU)
Example: SAS 053 691 60



Fig. 135. I003341

The dealer faxes the HP upgrade order form (see above) to:
AGCO / FENDT GmbH
Johann-Georg-Fendt-Straße 4
87616 Marktoberdorf
Fax: +49 (0)8342 / 77 - 236
or
Fax: +49 (0) 8342 / 77 - 498

NOTE: *Export markets should contact their AGCO - FENDT spare parts service.*

AGCO FENDT will send an email to OmniStar and will grant the release to switch activation of the A058 Auto-Guide TopDock (GPS ECU) from VBS to HP.

AGCO FENDT will send an email with the authorisation codes to the dealer.
Authorisation code (NovAtel)
Authorisation for the level of accuracy for which the Auto-Guide system has been enabled.
NovAtel (manufacturer of the hardware and software for determining the position)

Authorisation code (Beeline)
Authorisation for the level of accuracy for which the Auto-Guide system has been enabled.
Beeline (manufacturer of the track guidance software)

Entering the authorisation code at the A059 Auto-Guide terminal

Reading the OmniStar serial number:

Scroll with the **arrow key**.



Fig. 136. I003307

Check Chassis Range!

Continue to the settings menu with the **spanner key**.



Fig. 137. I003332

Press the **Correction Signal** key



Fig. 138. I003361

The correction signal screen is displayed

Press the **Authcode** key



Fig. 139. I003743

Warning message **T2607** appears
If an invalid authorisation code is entered, the Auto-Guide system switches off.
Auto-Guide can no longer be used.

Confirm the warning message with **OK**



Fig. 140. I003744

The window for entering the authorisation code appears

NovAtel authorisation (manufacturer of the hardware and software for determining the position)

Beeline authorisation (manufacturer of the automatic track guidance software)

The authorisation codes are entered at the A059 Auto-Guide terminal and confirmed with the Enter button one after the other.



Enter the authorisation code using the alphanumeric keypad. **Note:** To insert a comma, press and hold key 1.

Confirm the entry with the "Return" key.



NOTE: *The authorisation codes can also be entered with the **Auto-Guide Service Tool**.*



Fig. 141. I003745

Activating the OmniStar HP correction signal

The dealer orders the HP correction signal from OmniStar using the order form from AGCO - NET.
OmniStar activates the HP correction signal.

NOTE: *See also:*
Chapter 4090 Reg. A -Ordering the OmniStar correction signal
Chapter 4090 Reg. A - Activating the OmniStar correction signal

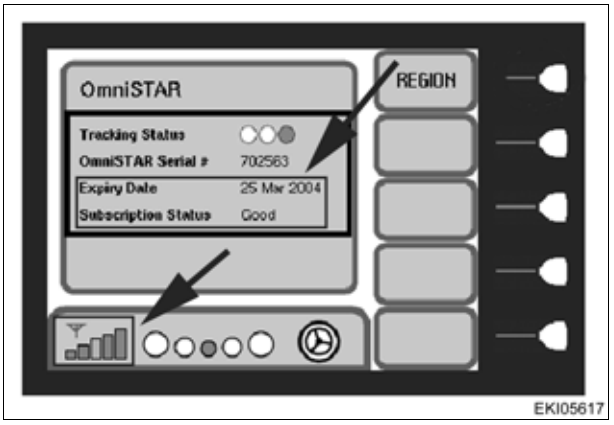


Fig. 142. I002633

NOTE: *Once the A058 Auto-Guide TopDock (GPS ECU) has been upgraded from VBS to the HP system, it is not possible to go back to VBS from HP!*
The A058 Auto-Guide TopDock (GPS ECU) that has been upgraded to the HP system can process the VBS correction signal as well as the HP correction signal!

14 Test report (checklist): Starting up a base station "fax template"

Tractor chassis number:

The following steps must be carried out in order to set up and start up a base station (see checklist)

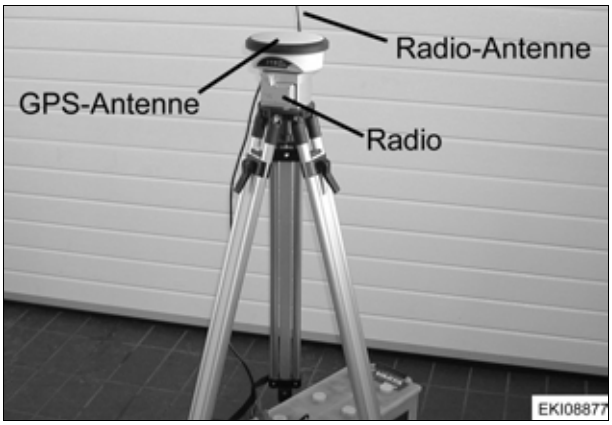


Fig. 143. I003290

Step	Reference	OK
General information on the Auto-Guide correction signal (base station)	*see §15*	
Ordering the base station and the Auto-Guide software upgrade to BS base station	*see §16*	
Ordering a radio licence for the base station **Note:** The correction signal is transmitted from the base station to the tractor via radio	*see §17*	
Installing the "radio receiver" module to the A058 Auto-Guide TopDock (tractor)	*see §18*	
Installing the base station ("radio transmitter" and GPS aerial radio module)	*see §19*	
Setting the frequency and channel of the radio module (tractor and base station)	*see §20*	
Start-up: Tractor and base station	*see §21*	
Calibrating the B067 steering angle sensor Calibration code: 2401	*see §7*	
Calibrating the Y087 Auto-Guide control valve Calibration code: 2403	*see §8*	
Calibrating roll bias of the DMU "gyro compass"	*see §20*	
Setting the Auto-Guide standby time on the A059 Auto-Guide terminal	*see §6*	
Ordering a new Auto-Guide operator's manual if necessary	see AGCO NET for this	
Carrying out the Auto-Guide function test	*see §7*	

Customer number:
Date:
Signature:

15 Auto-Guide correction signal (base station)

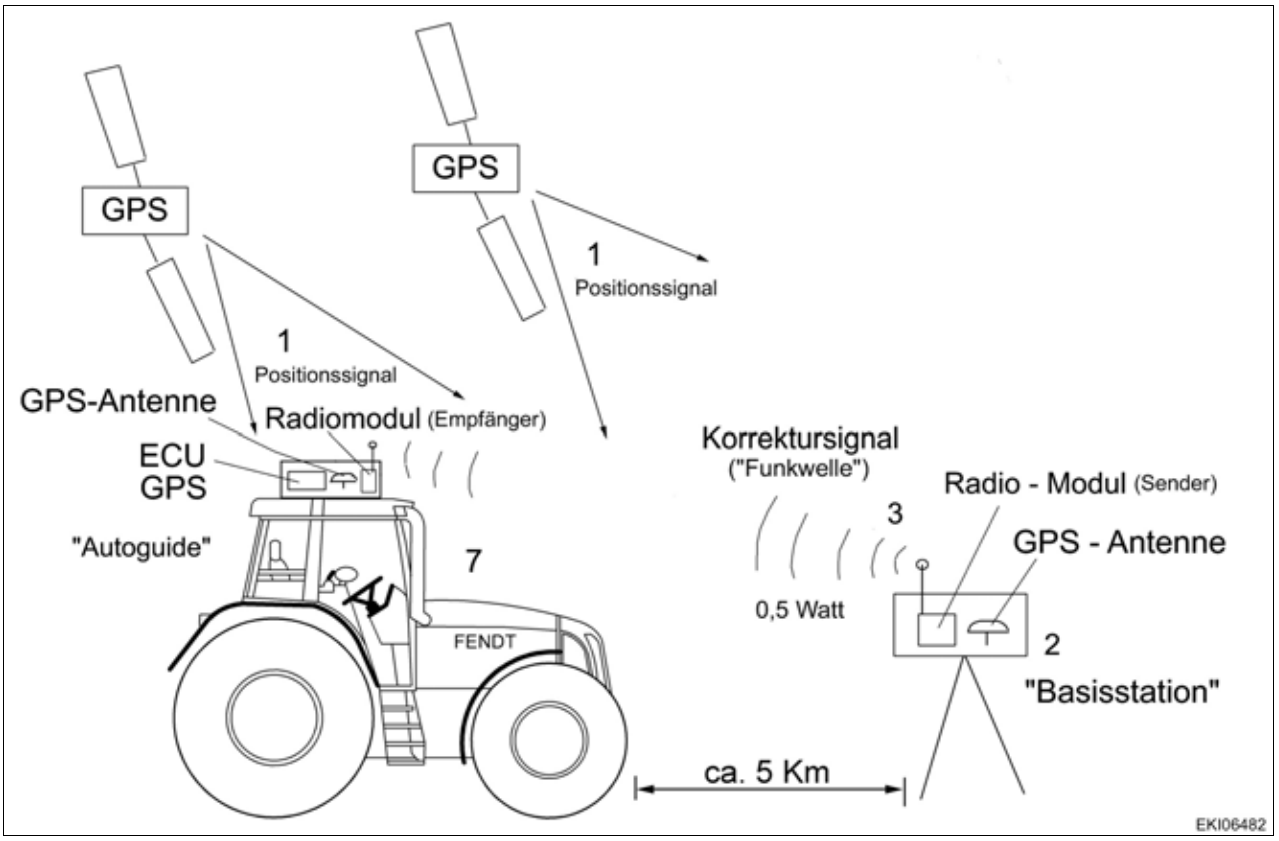


Fig. 144. I002788

– GPS satellites send position signals (1)
– The base station (2) (FENDT) compares this data with its true position
– Correction signals (3) are transmitted from the base station (transmitter) to the tractor (receiver) using a radio module
– Auto-Guide receives both signals (position signal 1 and correction signal 3) and determines more exact position data (7)

Technical data: Radio module	
Manufacturer	SATEL
Operating voltage	9 to 30 VDC
Operating temperature	- 25°C to + 55°C
Transmitting power	approx. 0.5 to 1.0 Watt
Frequency range	380 to 470 MHz
Transmitting range (radius)	approx. 5 km

NOTE: *The correction signal is transmitted to the tractor via a radio module.*
The transmitting power of the radio module is approx. 0.5 Watt (depending on country).
An application for the assignment of a free transmission frequency must be filed with the respective network operator.

How does the base station determine its position?

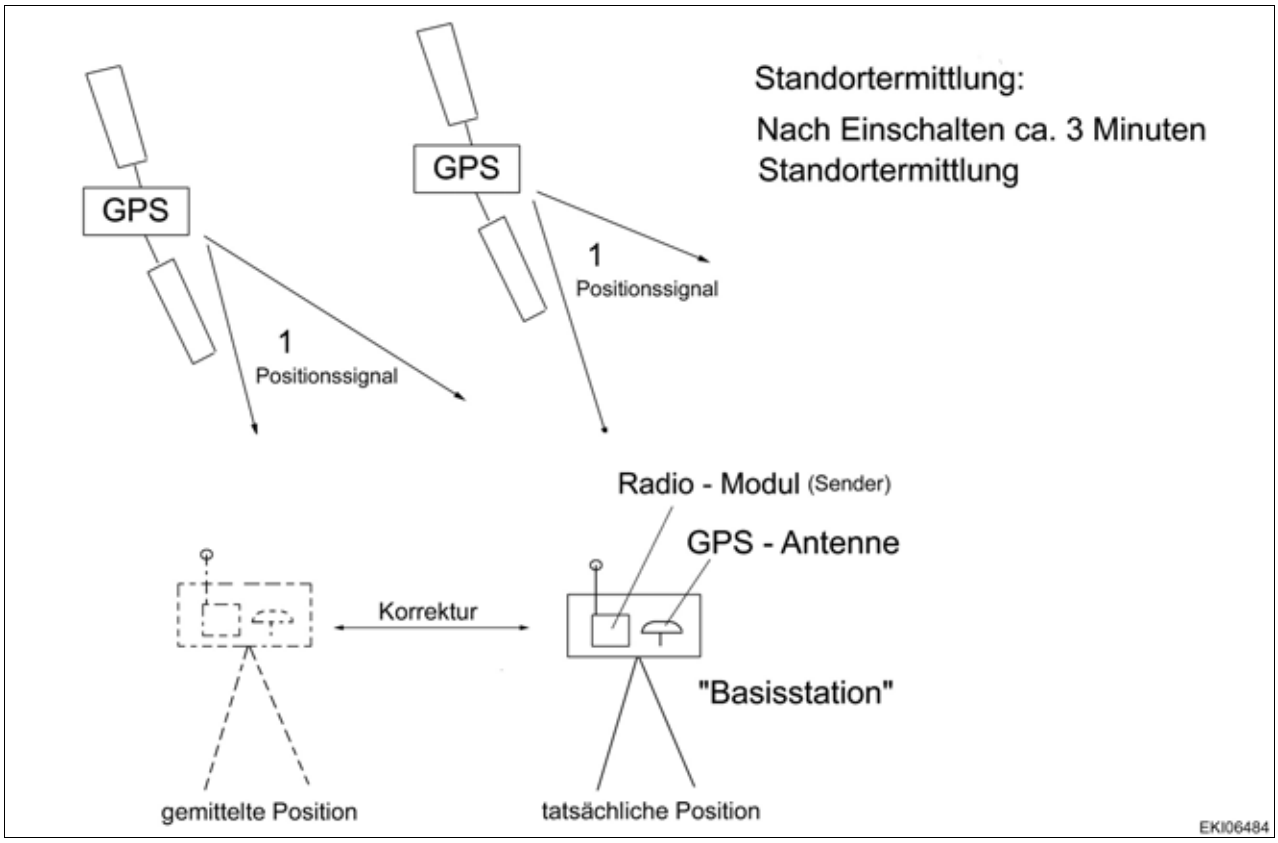


Fig. 145. I002790

Switch on the base station.

In the first 3 minutes or so, the GPS satellites do not always "see" the base station in the same position, but rather in different positions.

After approx. 3 minutes, the base station determines an average from the different positions.
This average is defined as the "averaged position".
The correction signal is calculated from this "averaged position".

NOTE: *A new average is calculated every time the base station is switched off then back on.*
This in turn means that the tractor drives with an offset.
This offset can be compensated for by entering an "Offset" in the Auto-Guide terminal (see Auto-Guide function test (brief instructions))

Accuracy of the correction signal

	Base station
Static accuracy (approximate values)	+/- 10 cm
Dynamic accuracy (approximate values)	+/- 5 cm
Application examples	Tillage, plant protection, fertilising, seed drilling

NOTE: *For the accuracy of other correction signals (OmniStar/WAAS-EGNOS),*
see chapter 4090 Reg. A - Auto-Guide correction signal - OmniStar VBS, OmniStar HP, WAAS/EGNOS

Accuracy shown is GPS accuracy (position signal + correction signal).

Accuracies that can actually be attained depend on:
– ground conditions
– terrain
– implement
– number of position satellites that can be received (reception can be influenced by forest edges, slopes etc.)

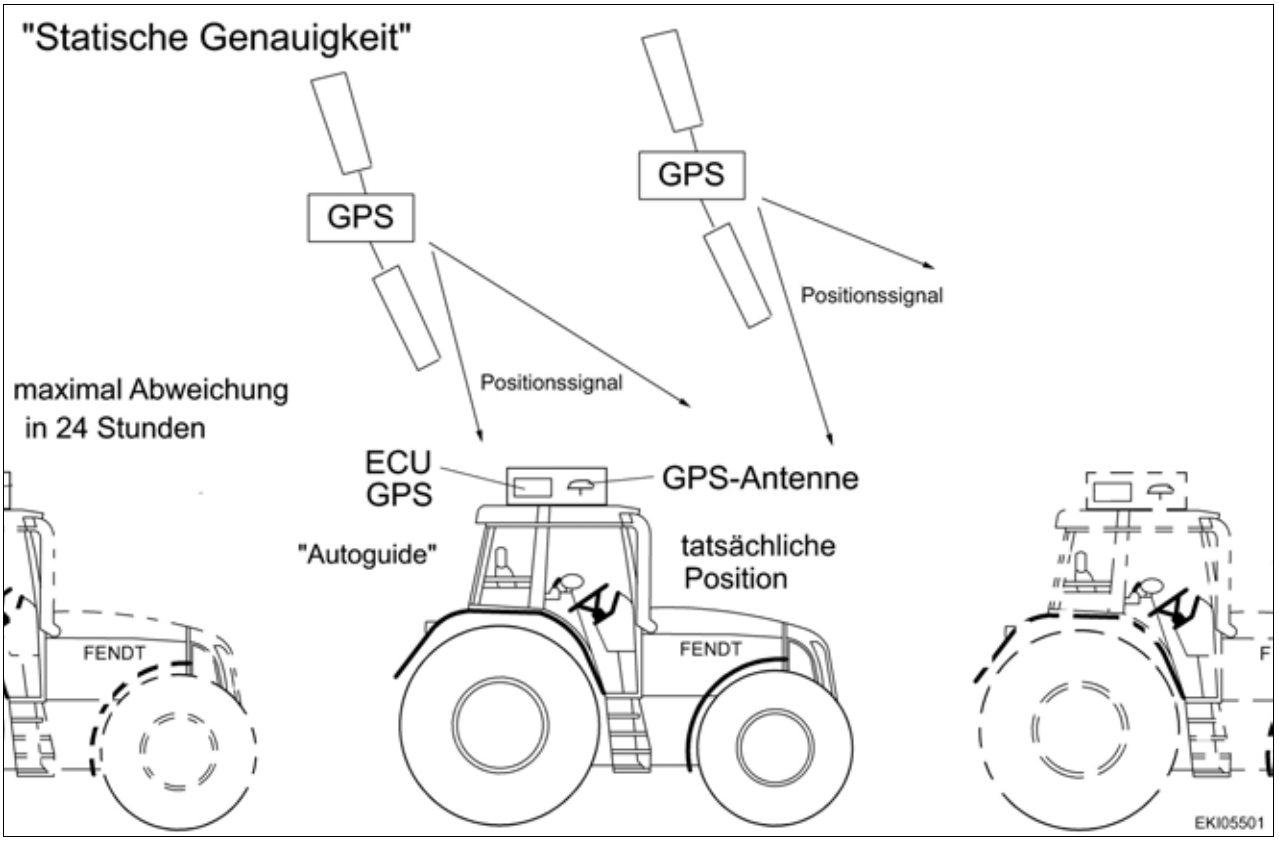


Fig. 146. Definition of static accuracy I002611

Definition of static accuracy
The tractor is in a fixed position.
The satellite does not always "see" the tractor in the same position but in various positions over a period of 24 hours.
The deviation from the true position is referred to as **"static accuracy"**.

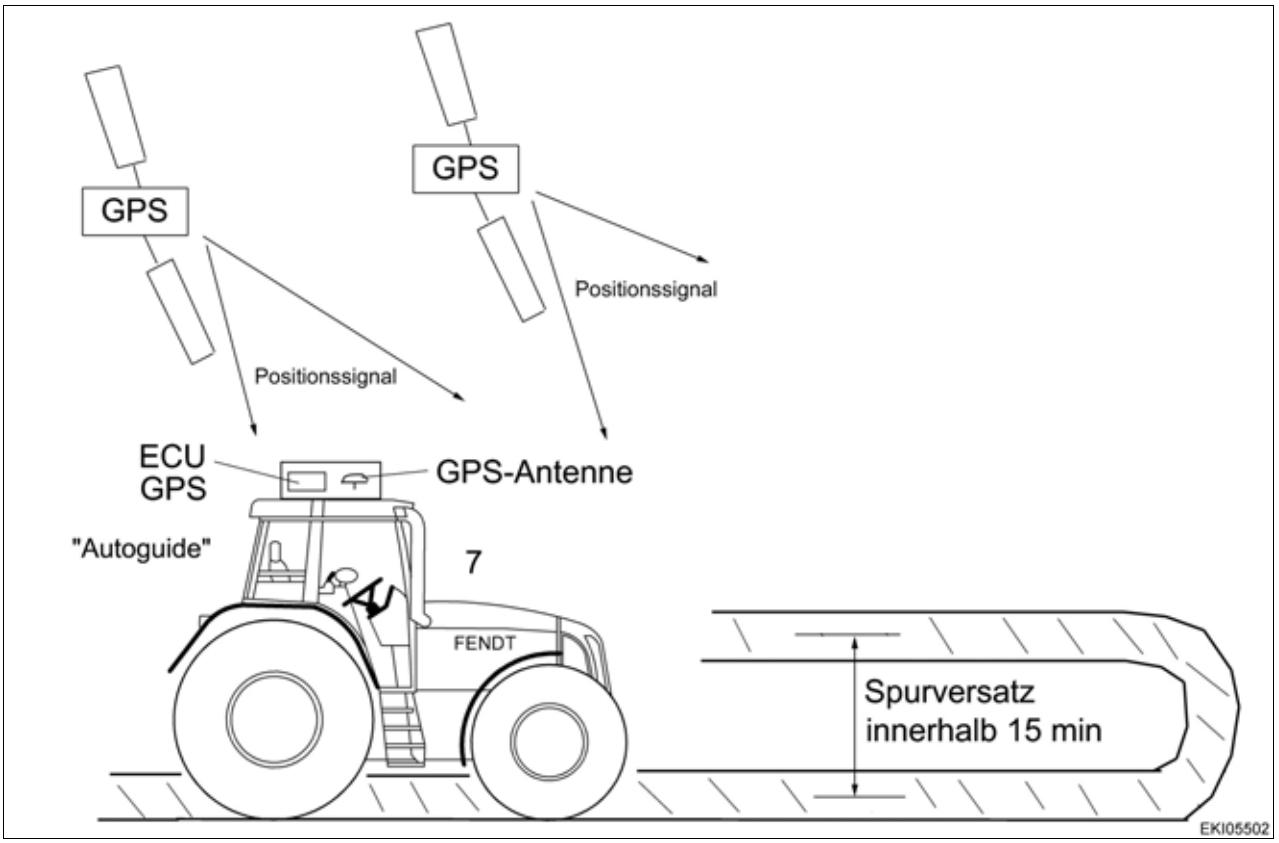


Fig. 147. Definition of dynamic accuracy I002612

Dynamic accuracy (= pass-to-pass accuracy) indicates the accuracy that can be attained "in most cases" from pass to pass within a period of 15 minutes.

16 Ordering the base station and the Auto-Guide software upgrade to BS base station

Procedure for ordering a base station (FENDT)

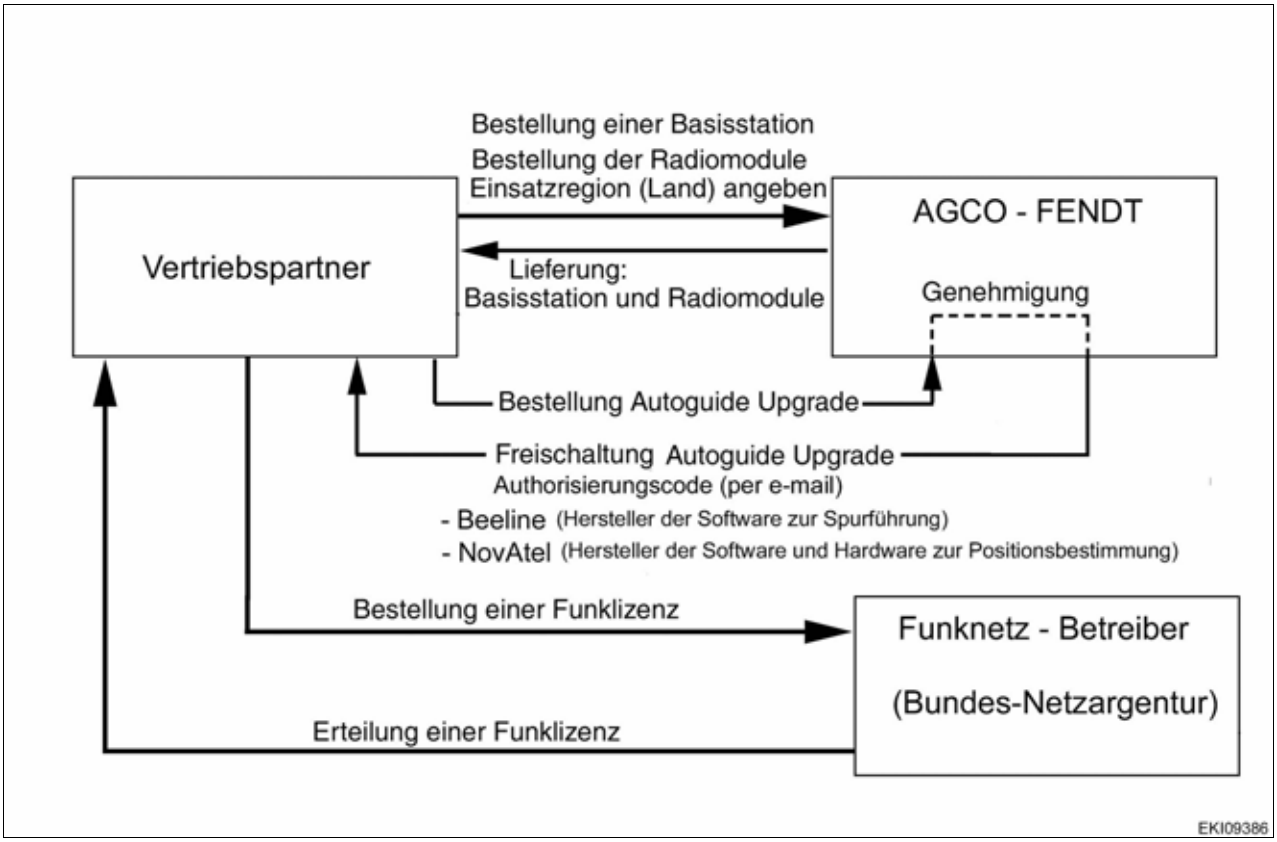


Fig. 148. I006141

Ordering a base station and the radio modules

Ordering the base station (stand, GPS aerial)

Ordering the radio modules ("transmitter" radio module on the base station; "receiver" radio module on the tractor)

See also: "EPSILON" electronic spare parts catalogue

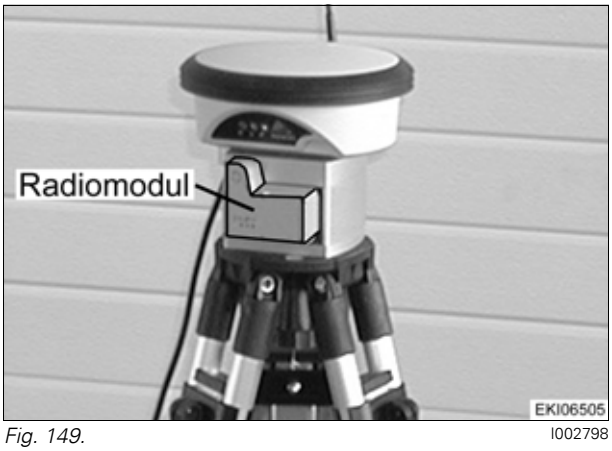


Fig. 149. I002798

Ordering the Auto-Guide upgrade (software upgrade)

Web address (order form for the base station)
https://net.agcocorp.com
User ID: ..... (Dealer's user ID)
Password: ..... (Dealer's password)
Sales / Fendt / Documents / Find documents where ...

Auto-Guide Aufrüstung (Upgrade) Bestellformular

Händlerdaten:

Händlernummer:	**Ansprechpartner:**
Händlername:	**Telefon:**
Strasse:	**Fax:**
PLZ:	**E-Mail:**
Ort:	**Land:**

Kundendaten:

Kundenname:	**Telefon:**
Strasse:	**Fax:**
PLZ:	**E-Mail:**
Ort:	**Land:**

Maschinendaten:

Fahrgestellnummer:	
OmniSTAR Seriennummer* (7…..):	
Seriennummer GPS Empfänger (SVA… oder SPA…):**	

*** Die Bestellung kann nur mit Angabe der OmniSTAR Seriennummer bearbeitet werden.**
**** Die Empfängerseriennummer ist nur beim Upgrade auf die Basisstation erforderlich.**
Die Vorgehensweise zum Auslesen der Seriennummern ist in der Auto-Guide Bedienungsanleitung und in der Serviceanleitung beschrieben.

	Bestellnummer:	Artikel:
☐	0054.125.200	Software Upgrade zum Aufrüsten von Standard VBS auf Präzision HP
☐	0054.105.201	Software Upgrade zum Aufrüsten von Standard VBS auf Hochpräzision BS Basisstation
☐	0054.105.202	Software Upgrade zum Aufrüsten von Präzision HP auf Hochpräzision BS Basisstation

Händlerstempel	**Ort, Datum**	**Unterschrift**

Bitte das ausgefüllte Formular per Fax an Ihre zuständige Kundenbetreuung schicken.

EKI06582

Fig. 150. I003378

Reading the serial number of the A058 Auto-Guide TopDock "GPS receiver"

– Scroll with the **arrow key**



Fig. 151. I003307

– Switch to the status indicator with the **measuring gauges**



Fig. 152. I003308

The "Status" screen is displayed.



Fig. 153. I003309

Press **DETAILS** in the "Status" screen



Fig. 154. I003311

Use the arrow buttons to scroll until the **"Hardware Details"** system information appears.

BSAC S/No = Serial number of the A058 Auto-Guide TopDock (GPS ECU)
Example: SAS 053 691 60



Fig. 155. I003341

Use the arrow buttons to scroll until the **"Software Versions"** system information appears

NovAtel FW BSAC "GPS Firmware Version" = Display of the A058 Auto-Guide TopDock software version

NOTE: *The software (NovAtel) is for determining the position*

Example: 2.303 (version: July 2007)



Fig. 156. I003340

Reading the OmniStar serial number

Scroll with the **arrow key**.



Fig. 157. I003307

Continue to the settings menu with the **spanner key**.



Fig. 158. I003332

Press the **Correction Signal** key



Fig. 159. I003361

The correction signal screen is displayed

Press the **Details** key.



Fig. 160. I003362

Read the OmniStar serial number

Return with "ESC".

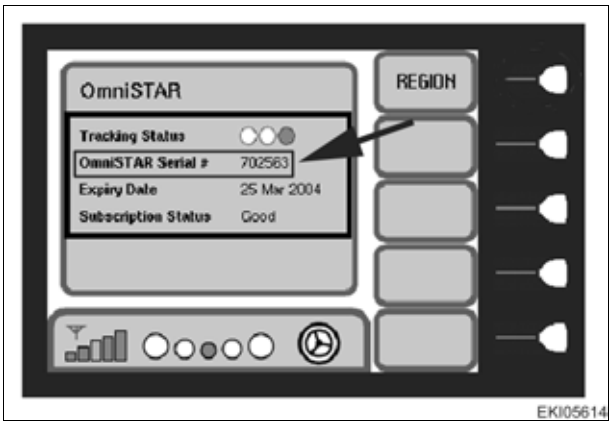


Fig. 161. I002623

The dealer faxes the Auto-Guide software upgrade order form (see above) to:
AGCO / FENDT GmbH
87616 Marktoberdorf
Johann-Georg Fendt Straße
Fax: +49 (0)8342 / 77 - 236
or
Fax: +49 (0)8342 / 77 - 498

NOTE: *Export markets should contact their AGCO - FENDT spare parts service.*

AGCO/Fendt sends two authorisation codes by email
- **Beeline** (manufacturer of the track guidance software)
- **NovAtel** (manufacturer of the hardware and software for determining the position)

These two authorisation codes must be entered in the A059 Auto-Guide terminal

These two authorisation codes are used to activate the Auto-Guide software upgrade.



Fig. 162. I002806

Activating the Auto-Guide software upgrade

Scroll with the **arrow key**



Fig. 163. I003307

Continue to the settings menu with the **spanner key**.



Fig. 164. I003332

Press the **Correction Signal** key



Fig. 165. I003361

Press the **Authcode** key



Fig. 166. I003379

Warning T2607 appears

This operation may render the Auto-Guide inoperable.
Refer to the Operator Manual before proceeding.
Press OK to continue or
press ESC to cancel



Fig. 167. I003380

The window for entering the authorisation code appears

NovAtel authorisation (manufacturer of the hardware and software for determining the position)

Beeline authorisation (manufacturer of the automatic track guidance software)

The authorisation codes are entered at the A059 Auto-Guide terminal and confirmed with the Enter button one after the other.



Enter the authorisation code using the alphanumeric keypad. **Note:** To insert a comma, press and hold key 1.

Confirm the entry with the "Return" key.



NOTE: *The authorisation codes can also be entered with the **Auto-Guide Service Tool**.*



Fig. 168. I003745

17 Ordering a radio licence for the base station

NOTE: *A radio licence must be applied for from the relevant network operator.*
The user of the base station is responsible for applying for a radio licence (frequency assignment).
The operation of a base station without a radio licence (frequency assignment) will result in a caution and may lead to prosecution.

The base station transmits the correction signal to the Auto-Guide on the tractor via a **radio module (transmitter)**

A radio licence is required to operate a radio transmitter.

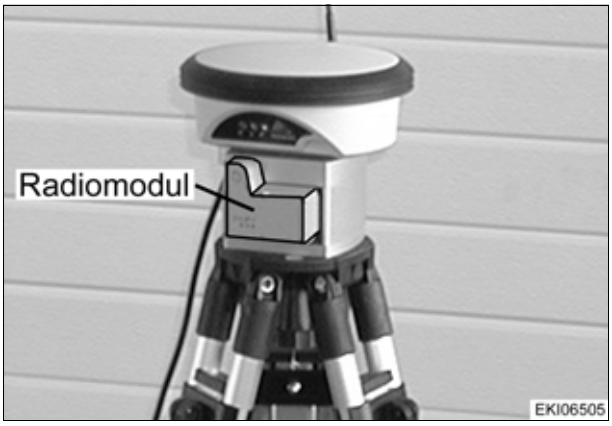


Fig. 169. I002798

The **radio module (receiver)** on the A058 Auto-Guide receives the correction signal



Fig. 170. I002356

Responsible network operator (selection)

Country	Contact
Belgium	http://www.ibpt.be
Denmark	http://www.itst.dk/
Germany	http://www.Bundesnetzagentur.de
England	http://www.open.gov.uk/radiocom
Finland	http://www.ficora.fi/suomi/radio/index.htm
France	http://www.arcep.fr/
Ireland	http://www.comreg.ie/
Italy	http://www.agcom.it/
Netherlands	http://www.agentschap-telecom.nl/
Austria	http://www.rtr.at/
Portugal	http://www.icp.pt/
Sweden	http://www.pts.se/
Switzerland	http://www.bakom.ch/en/index.html
Spain	http://www2.setsi.mityc.es/Secciones/espectro/

Ordering a radio license (applies to Germany)

NOTE: *The user of the base station is responsible for applying for a radio licence (frequency assignment).*
The operation of a base station without a radio licence (frequency assignment) will result in a caution and may lead to prosecution.

Radio modules (data transmitters) are used to transmit correction signals between the base station and the Auto-Guide tractor.

The radio modules (data transmitters) used in Germany are operated with power of 0.5 Watt and in the frequency range of 430 MHz.

Every frequency used in Germany requires prior assignment by the Federal Network Agency under Section 55, Part 1, of the Telecommunications Act (TKG).
Fees must be paid for the assignment and use of frequencies.

Radio licence fees (valid for Germany)	
Procedure	**Costs (as at 12.05)**
Frequency assignment	approx. EUR 120 (one-time)
Fees per base station (transmitter)	approx. EUR 20 (annually)

Accessing the request for radio licence assignment on the Internet
www.Bundesnetzagentur.de



Fig. 171. I002807

The home page appears.
Click **Sachgebiete** (Areas).

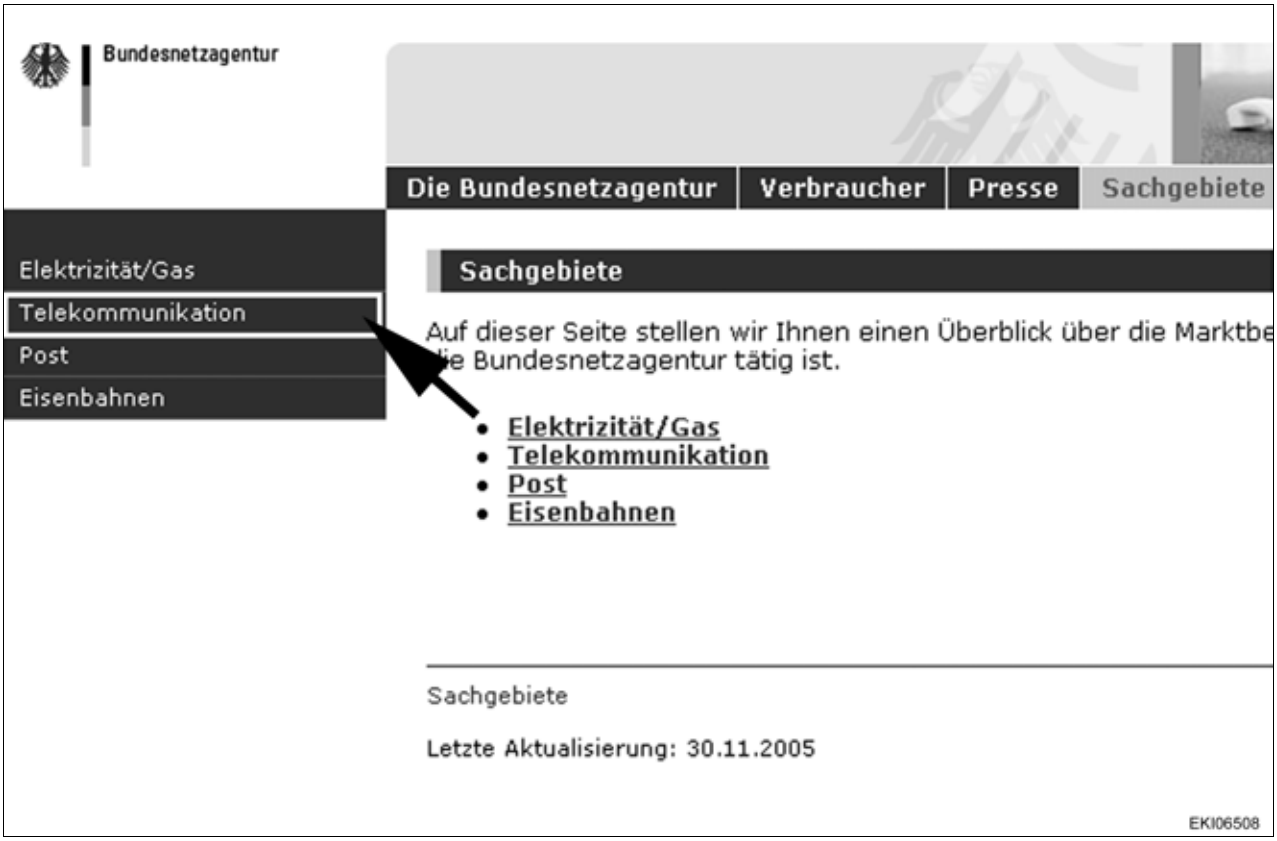


Fig. 172. I002808

The Sachgebiete (Areas) sub-menu appears.
Click **Telekommunikation** (Telecommunications).

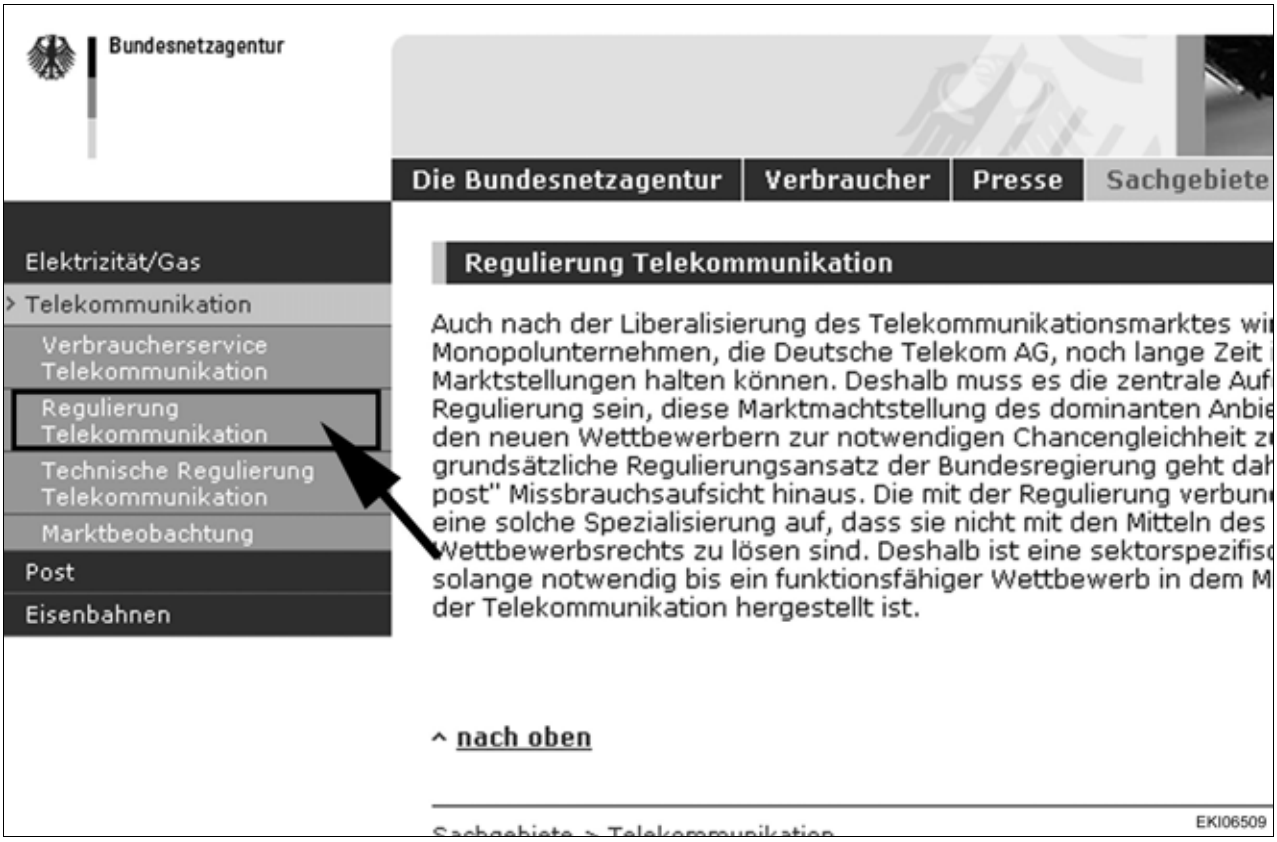


Fig. 173. I003383

The Telekommunikation (Telecommunications) sub-menu appears.
Click **Regulierung Telekommunikation** (Telecoms Regulation).

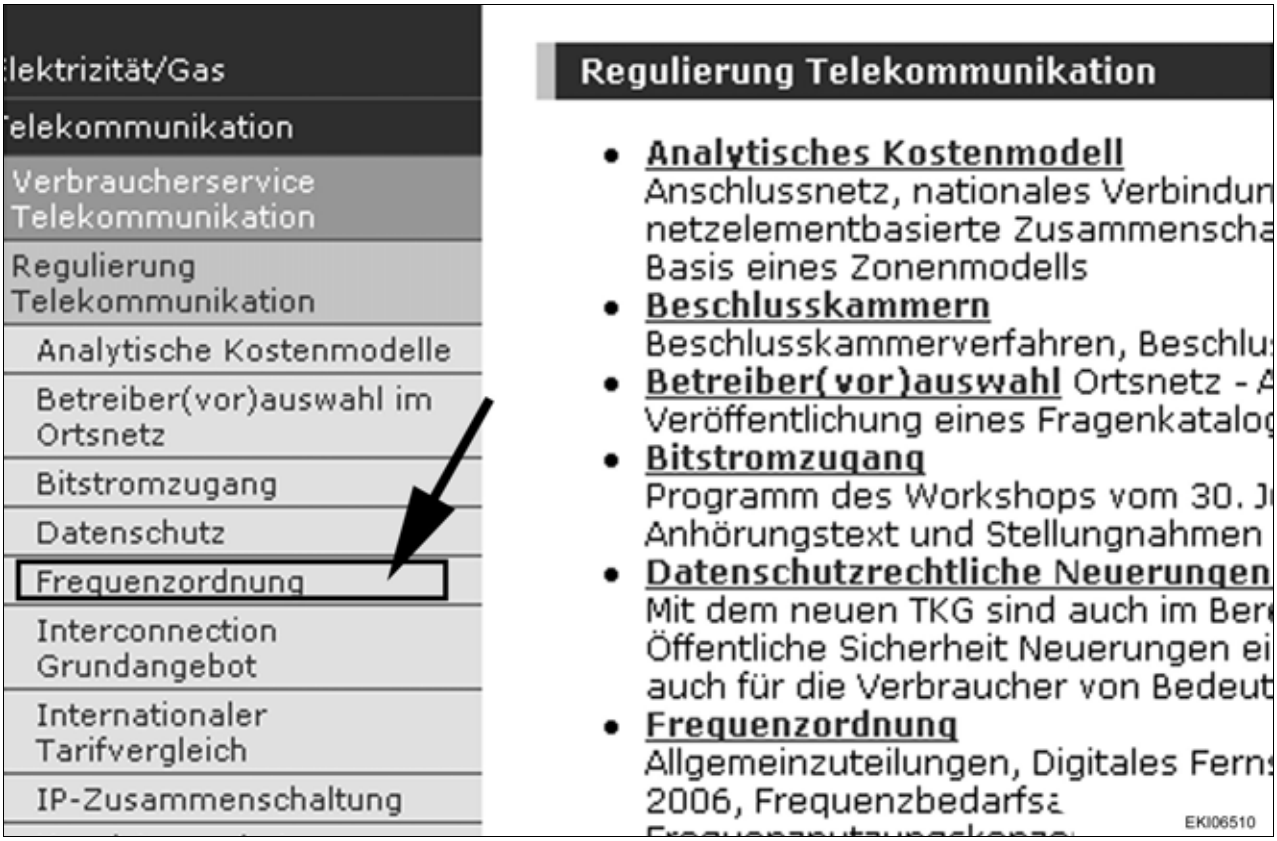


Fig. 174. I003384

The Regulierung Telekommunikation (Telecoms Regulation) sub-menu appears.
Click **Frequenzordnung** (Frequency Management).

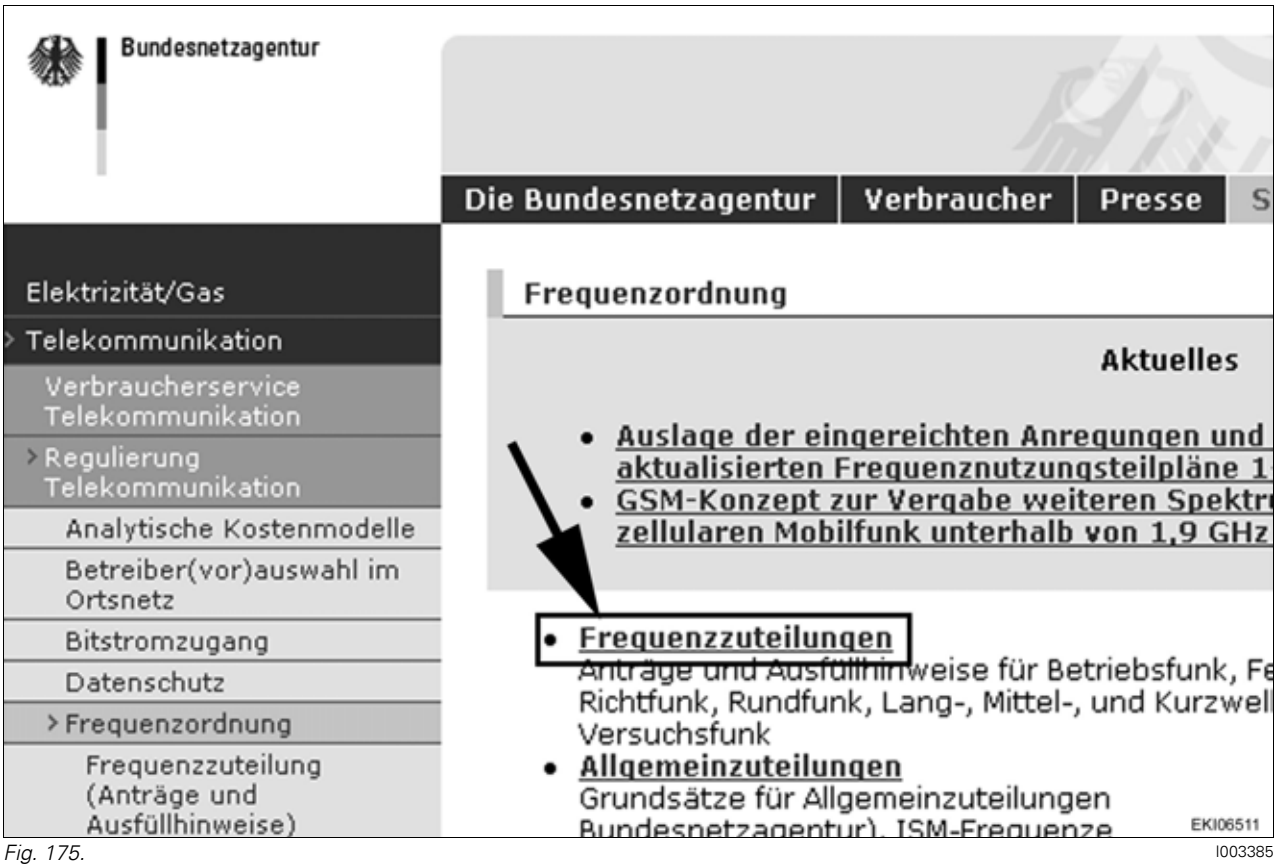


Fig. 175. I003385

The Frequenzordnung (Frequency Management) sub-menu appears.
Click **Frequenzzuteilung** (Frequency Assignment).

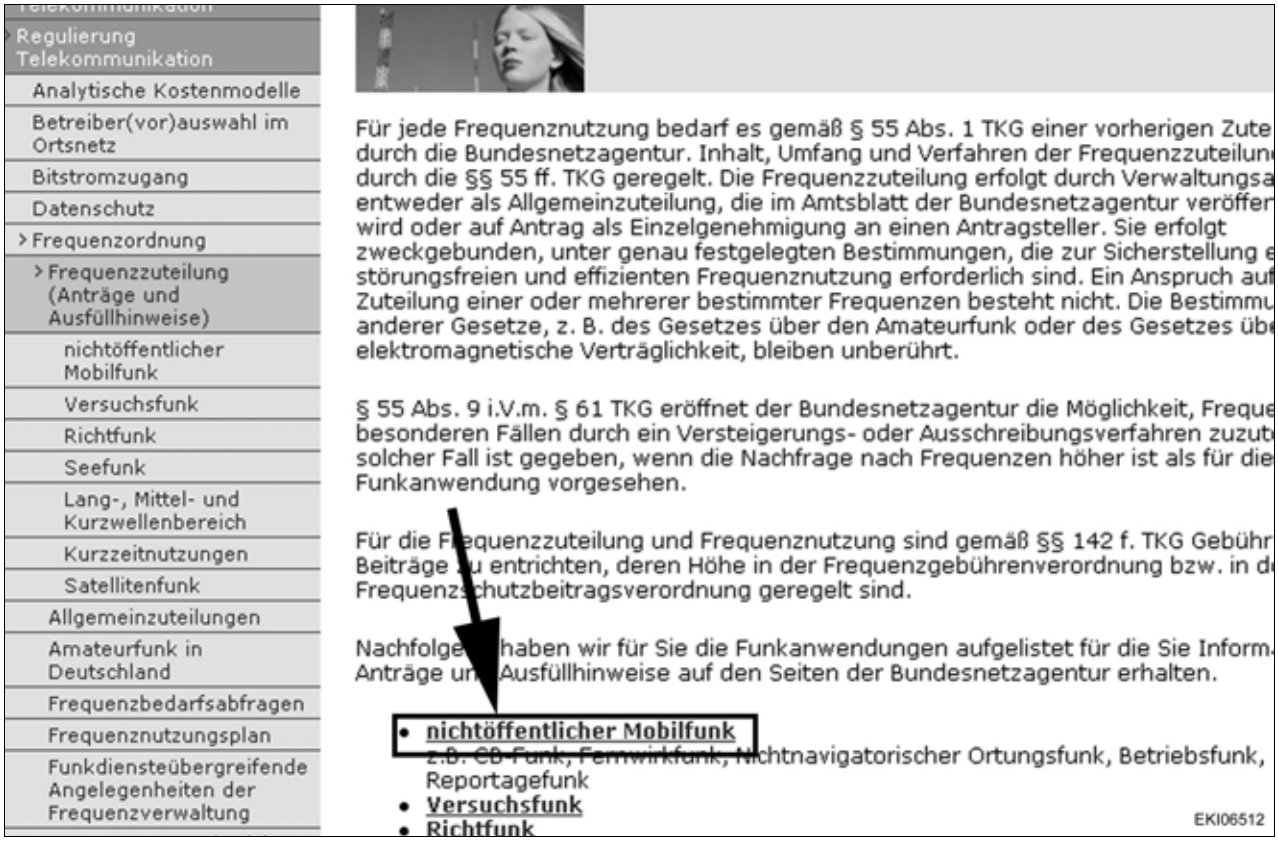


Fig. 176. I003386

The Frequenzzuteilung (Frequency Assignment) sub-menu appears.
Click **nichtöffentlicher Mobilfunk** (Private Mobile Radio).

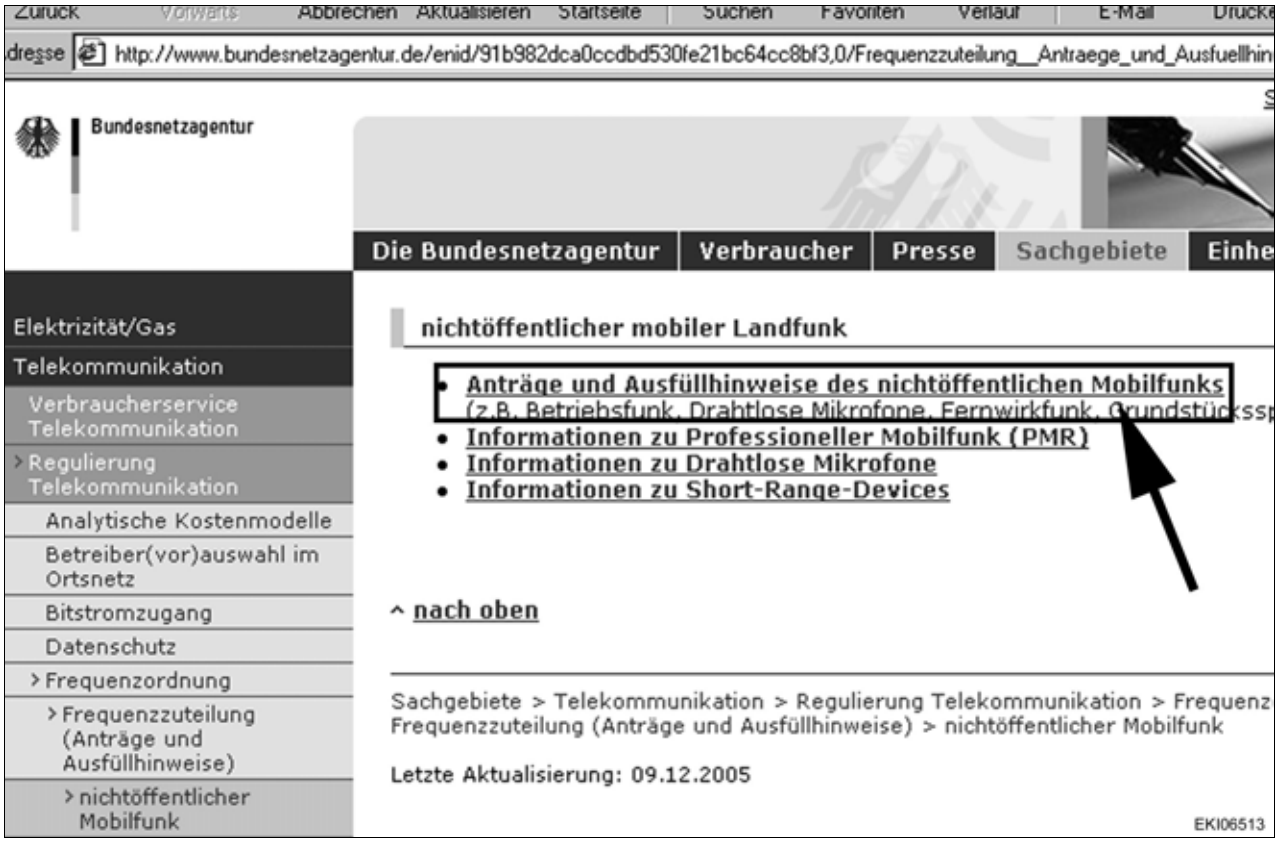


Fig. 177. I003387

The nichtöffentlicher Mobilfunk (Private Mobile Radio) sub-menu appears.

Click **Anträge und Ausfüllhinweise des nichtöffentlichen Mobilfunks (Anträge nömL)** (Application forms and guidance on the completion of application forms for private mobile radio).

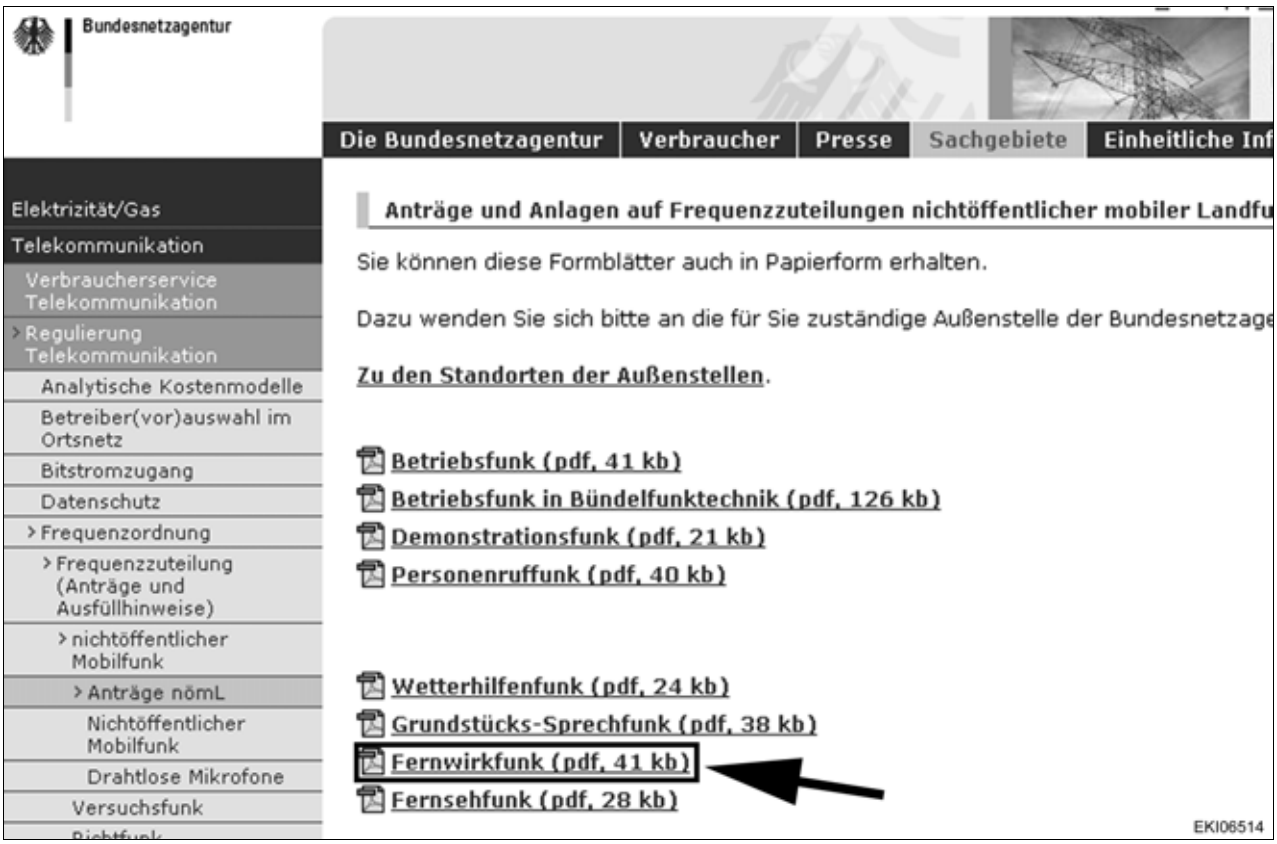


Fig. 178. I002814

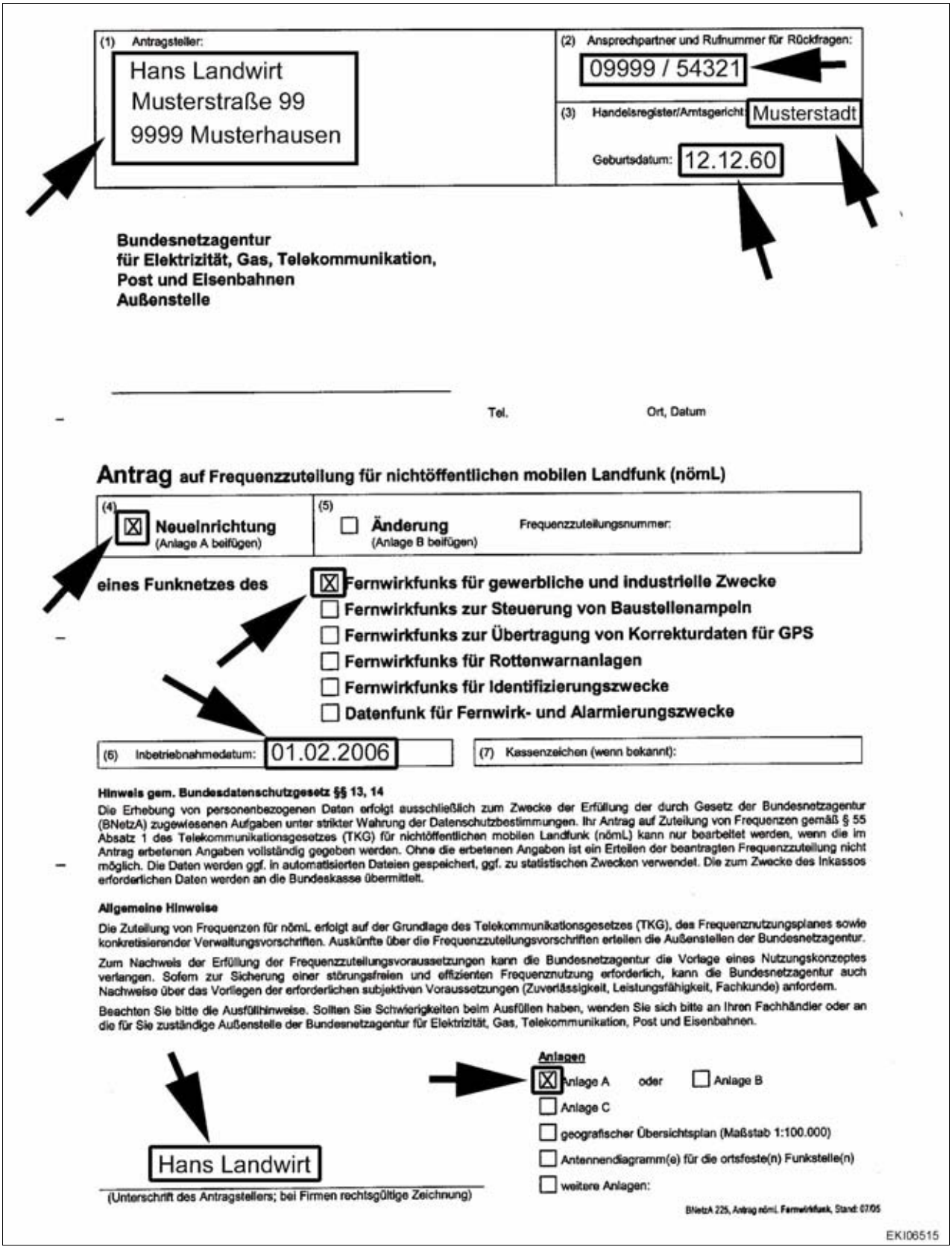
Click **Fernwirkfunk (pdf, 41 kb)** (Remote control radio).

– **Confirm any warnings that appear** with **OK**.
– The **radio licence** application form will be opened in Adobe Reader.

Fill in the application form for radio licence assignment

The application form includes:
– Application
– Appendices (A, B, C)
– Information on filling out form

Instructions for completion:
– Fill in the first page (see image)
  Check **Fernwirkfunks für gewerbliche und industrielle Zwecke** (Remote control radio for commercial and industrial purposes).
– **For a new application, fill in Appendix A.**
  Do **not** fill in Appendices B and C.
– Complete one application for each base station (transmitter). No frequency assignment is required for the "TopDock" (receiver) on the tractor



(1) Antragsteller:
Hans Landwirt
Musterstraße 99
9999 Musterhausen

(2) Ansprechpartner und Rufnummer für Rückfragen:
09999 / 54321

(3) Handelsregister/Amtsgericht: Musterstadt

Geburtsdatum: 12.12.60

Bundesnetzagentur
für Elektrizität, Gas, Telekommunikation,
Post und Eisenbahnen
Außenstelle

Tel. Ort, Datum

Antrag auf Frequenzzuteilung für nichtöffentlichen mobilen Landfunk (nömL)

(4) ☒ **Neueinrichtung** (Anlage A beifügen)

(5) ☐ **Änderung** (Anlage B beifügen) Frequenzzuteilungsnummer:

eines Funknetzes des

☒ **Fernwirkfunks für gewerbliche und industrielle Zwecke**
☐ **Fernwirkfunks zur Steuerung von Baustellenampeln**
☐ **Fernwirkfunks zur Übertragung von Korrekturdaten für GPS**
☐ **Fernwirkfunks für Rottenwarnanlagen**
☐ **Fernwirkfunks für Identifizierungszwecke**
☐ **Datenfunk für Fernwirk- und Alarmierungszwecke**

(6) Inbetriebnahmedatum: 01.02.2006

(7) Kassenzeichen (wenn bekannt):

Hinweis gem. Bundesdatenschutzgesetz §§ 13, 14

Die Erhebung von personenbezogenen Daten erfolgt ausschließlich zum Zwecke der Erfüllung der durch Gesetz der Bundesnetzagentur (BNetzA) zugewiesenen Aufgaben unter strikter Wahrung der Datenschutzbestimmungen. Ihr Antrag auf Zuteilung von Frequenzen gemäß § 55 Absatz 1 des Telekommunikationsgesetzes (TKG) für nichtöffentlichen mobilen Landfunk (nömL) kann nur bearbeitet werden, wenn die im Antrag erbetenen Angaben vollständig gegeben werden. Ohne die erbetenen Angaben ist ein Erteilen der beantragten Frequenzzuteilung nicht möglich. Die Daten werden ggf. in automatisierten Dateien gespeichert, ggf. zu statistischen Zwecken verwendet. Die zum Zwecke des Inkassos erforderlichen Daten werden an die Bundeskasse übermittelt.

Allgemeine Hinweise

Die Zuteilung von Frequenzen für nömL erfolgt auf der Grundlage des Telekommunikationsgesetzes (TKG), des Frequenznutzungsplanes sowie konkretisierender Verwaltungsvorschriften. Auskünfte über die Frequenzzuteilungsvorschriften erteilen die Außenstellen der Bundesnetzagentur.

Zum Nachweis der Erfüllung der Frequenzzuteilungsvoraussetzungen kann die Bundesnetzagentur die Vorlage eines Nutzungskonzeptes verlangen. Sofern zur Sicherung einer störungsfreien und effizienten Frequenznutzung erforderlich, kann die Bundesnetzagentur auch Nachweise über das Vorliegen der erforderlichen subjektiven Voraussetzungen (Zuverlässigkeit, Leistungsfähigkeit, Fachkunde) anfordern.

Beachten Sie bitte die Ausfüllhinweise. Sollten Sie Schwierigkeiten beim Ausfüllen haben, wenden Sie sich bitte an Ihren Fachhändler oder an die für Sie zuständige Außenstelle der Bundesnetzagentur für Elektrizität, Gas, Telekommunikation, Post und Eisenbahnen.

Hans Landwirt
(Unterschrift des Antragstellers; bei Firmen rechtsgültige Zeichnung)

Anlagen
☒ Anlage A oder ☐ Anlage B
☐ Anlage C
☐ geografischer Übersichtsplan (Maßstab 1:100.000)
☐ Antennendiagramm(e) für die ortsfeste(n) Funkstelle(n)
☐ weitere Anlagen:

BNetzA 225, Antrag nöml. Fernwirkfunk, Stand: 07/05

EKI06515

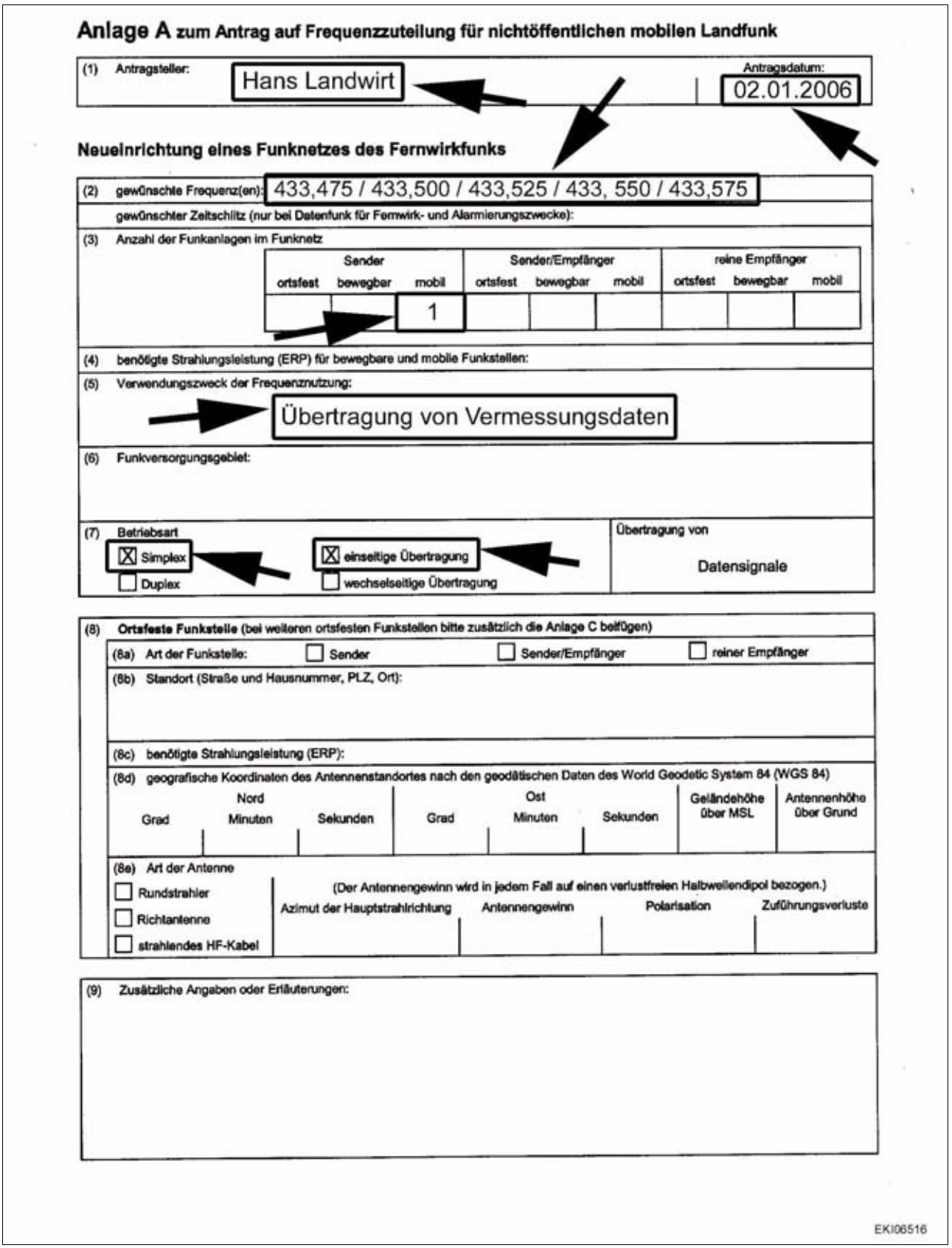
Fig. 179. I006167

For a new application, fill in Appendix A.

Instructions for completing Appendix A

- Point (2) - enter desired frequencies **433.475 / 433.500 / 433.525 / 433.550 / 433.575 MHz**
- Point (3) - Enter the **number** of base stations (transmitters). The base station is a **mobile** transmitter.
- Point 5 - Enter **Übertragung von Vermessungsdaten** (transmission of survey data).

– Point (7) - Check **Simplex** and **einseitige Übertragung** (unidirectional transmission).



Anlage A zum Antrag auf Frequenzzuteilung für nichtöffentlichen mobilen Landfunk

(1) Antragsteller: Hans Landwirt — Antragsdatum: 02.01.2006

Neueinrichtung eines Funknetzes des Fernwirkfunks

(2) gewünschte Frequenz(en): 433,475 / 433,500 / 433,525 / 433, 550 / 433,575

gewünschter Zeitschlitz (nur bei Datenfunk für Fernwirk- und Alarmierungszwecke):

(3) Anzahl der Funkanlagen im Funknetz

Sender			Sender/Empfänger			reine Empfänger		
ortsfest	bewegbar	mobil	ortsfest	bewegbar	mobil	ortsfest	bewegbar	mobil
		1						

(4) benötigte Strahlungsleistung (ERP) für bewegbare und mobile Funkstellen:

(5) Verwendungszweck der Frequenznutzung: Übertragung von Vermessungsdaten

(6) Funkversorgungsgebiet:

(7) Betriebsart: ☒ Simplex ☐ Duplex — ☒ einseitige Übertragung ☐ wechselseitige Übertragung — Übertragung von: Datensignale

(8) **Ortsfeste Funkstelle** (bei weiteren ortsfesten Funkstellen bitte zusätzlich die Anlage C beifügen)

(8a) Art der Funkstelle: ☐ Sender ☐ Sender/Empfänger ☐ reiner Empfänger

(8b) Standort (Straße und Hausnummer, PLZ, Ort):

(8c) benötigte Strahlungsleistung (ERP):

(8d) geografische Koordinaten des Antennenstandortes nach den geodätischen Daten des World Geodetic System 84 (WGS 84)

Nord			Ost			Geländehöhe über MSL	Antennenhöhe über Grund
Grad	Minuten	Sekunden	Grad	Minuten	Sekunden		

(8e) Art der Antenne

☐ Rundstrahler
☐ Richtantenne
☐ strahlendes HF-Kabel

(Der Antennengewinn wird in jedem Fall auf einen verlustfreien Halbwellendipol bezogen.)

Azimut der Hauptstrahlrichtung	Antennengewinn	Polarisation	Zuführungsverluste

(9) Zusätzliche Angaben oder Erläuterungen:

EKI06516

Fig. 180. I006168

Submitting the application to a regional office of the German Federal Network Agency (Bundesnetzagentur)
The addresses and responsibilities of the regional offices are listed on the Internet.
Web address: www.Bundesnetzagentur.de

www.Bundesnetzagentur.de

The home page appears.

Click **Über die Agentur** (The Agency).

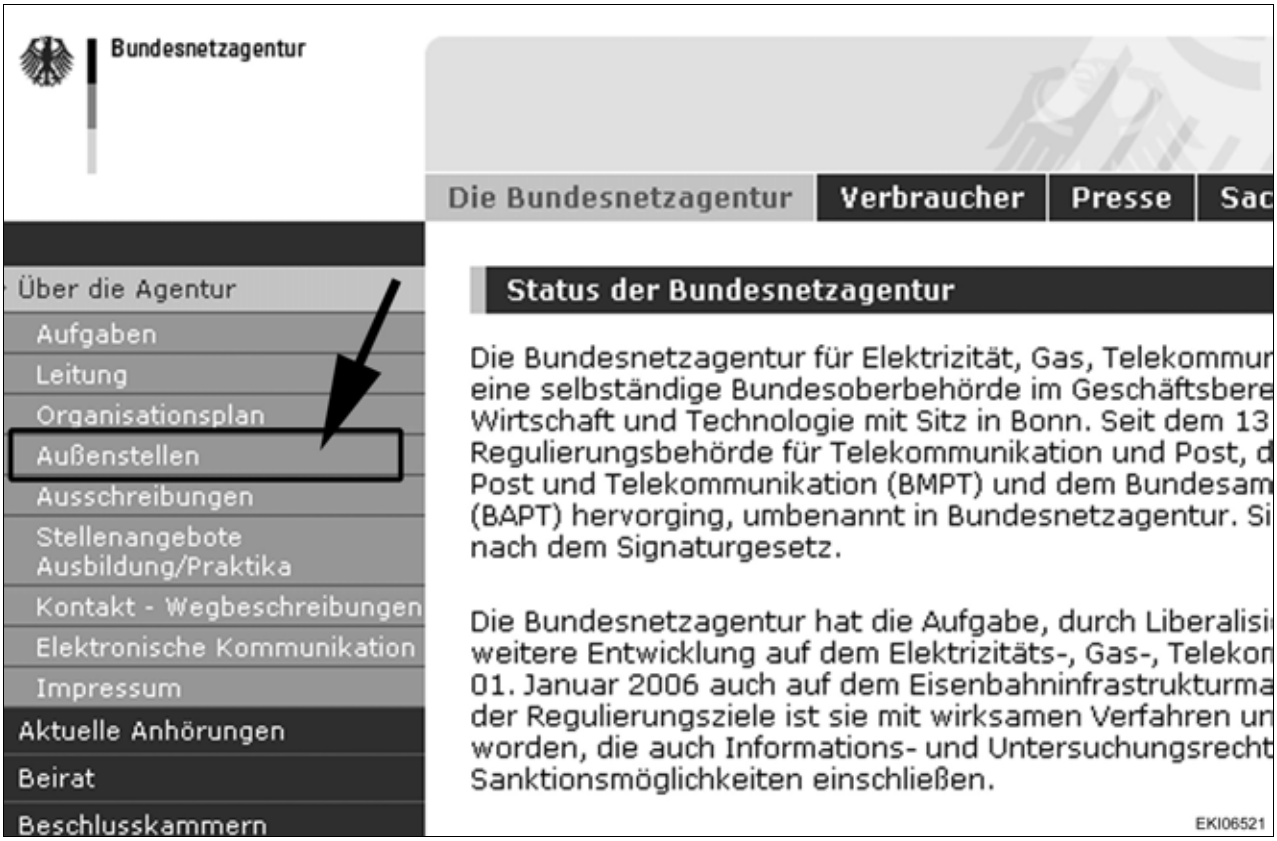


Fig. 181. I003388

The Über die Agentur (The Agency) sub-menu appears.

Click **Außenstellen** (Federal Network Agency's Regional Offices).

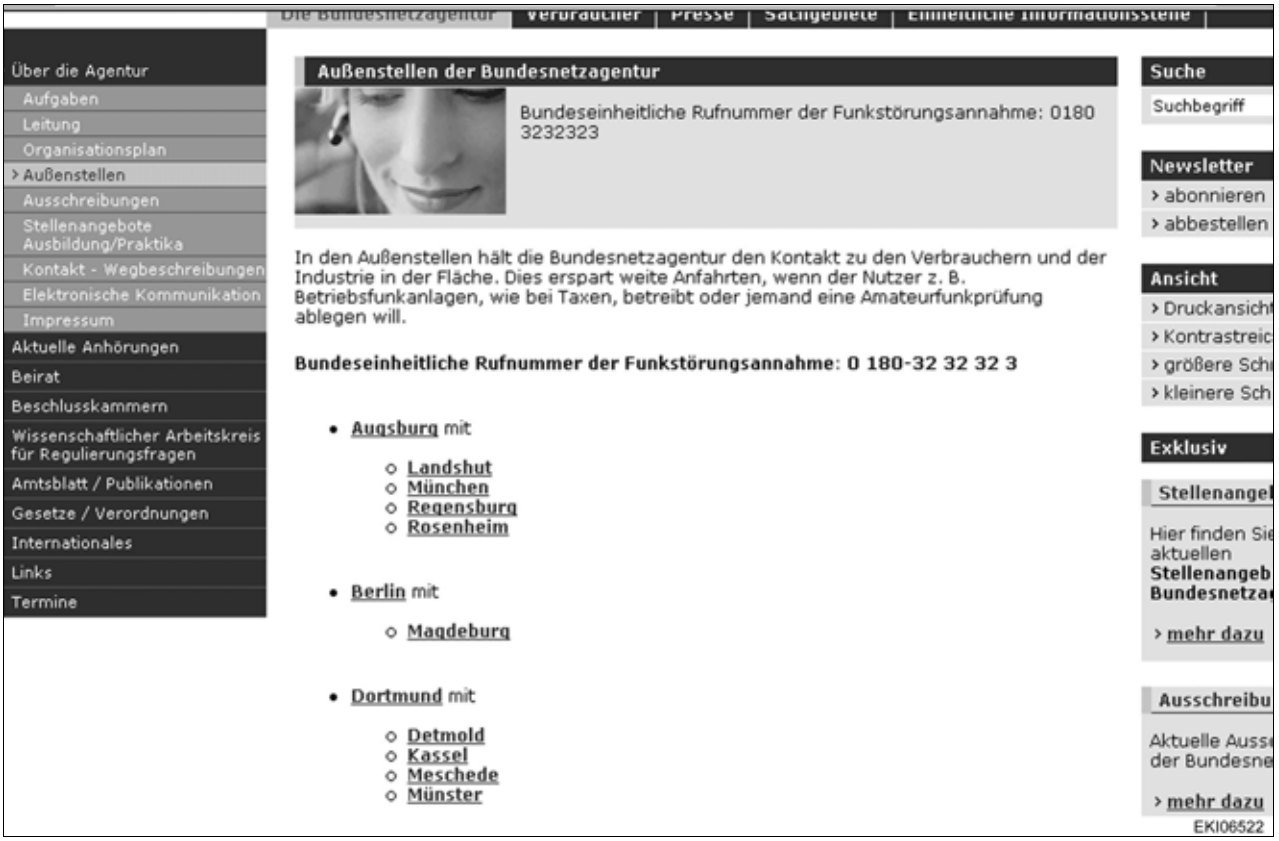


Fig. 182. I003389

A list of all the regional offices of the Federal Network Agency appears.

Select the **applicable regional office**.

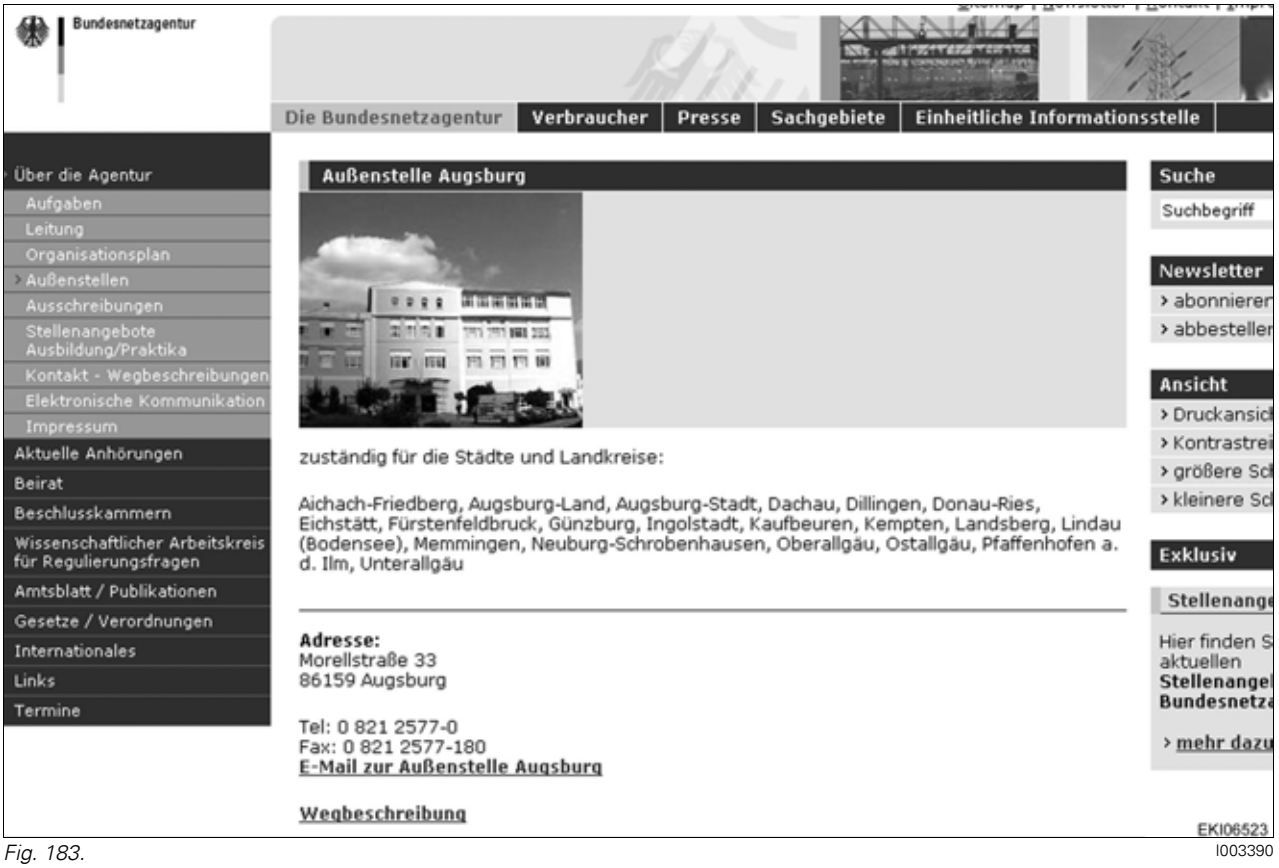


Fig. 183. I003390

A list with the addresses for the regional offices appears.

Operating the base station outside of Germany

NOTE: *The operation of radio systems is subject to the regulations of national authorities.*
Most of the responsible authorities in other European countries are listed on the website of the German Federal Network Agency (Bundesnetzagentur).

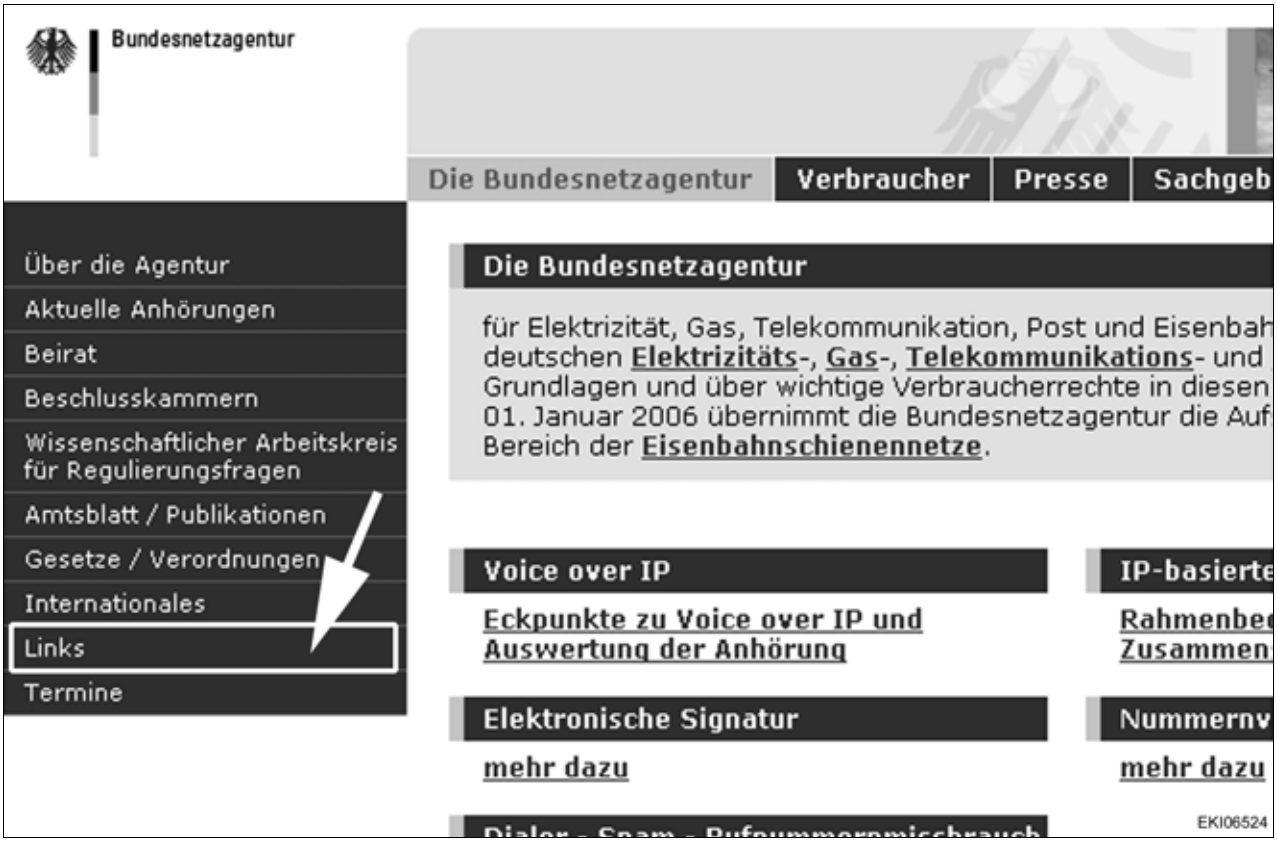


Fig. 184. I002821

www.Bundesnetzagentur.de

The home page appears.
Click **Links** (Useful Links).



Fig. 185. I003391

A list of European and international regulation authorities appears.

Select either European or international regulation authorities.



Fig. 186. I003392

The addresses for the regulation authorities appear.

18 Installing the radio module on the A058 Auto-Guide TopDock (tractor)

Disconnect and remove A058 Auto-Guide TopDock.

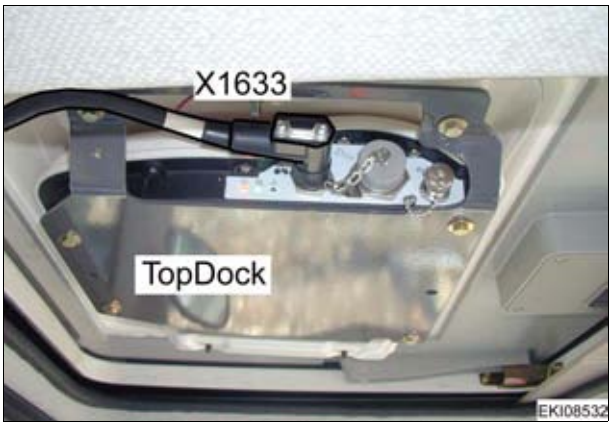


Fig. 187. I002345

Remove retaining plate.



Fig. 188. I002352

Open cover of the radio module insert



Fig. 189. I002353

Install the **radio module (radio receiver)**



Fig. 190. I002356

Connect the radio aerial to the separation point (D)

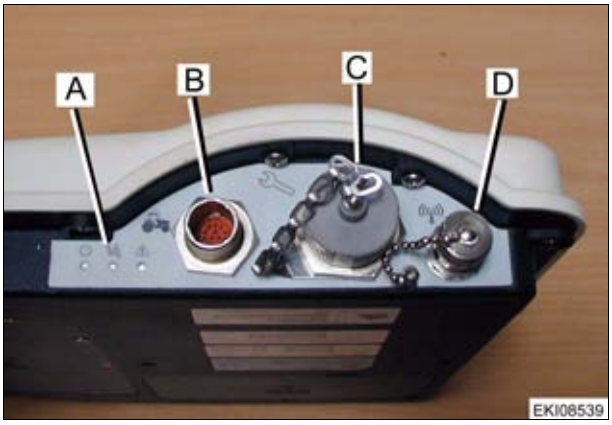


Fig. 191. I002354

Screw on the aerial cable (arrow)

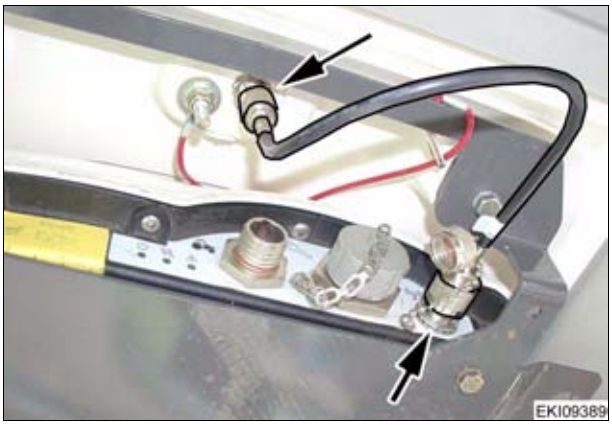


Fig. 192. I006190

NOTE: *Ensure there is sufficient clearance for the connection cable (X1633)!*

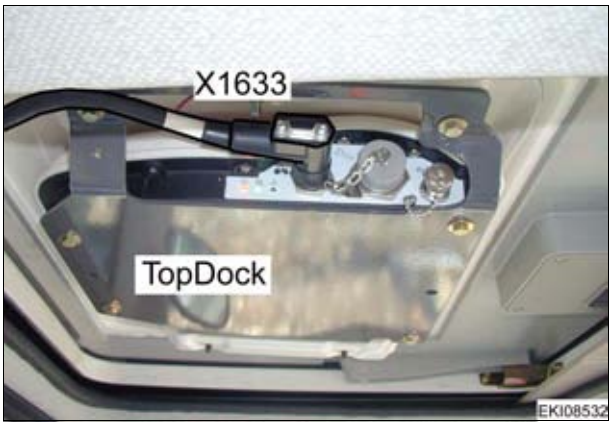


Fig. 193. I002345

Screw on the aerial.

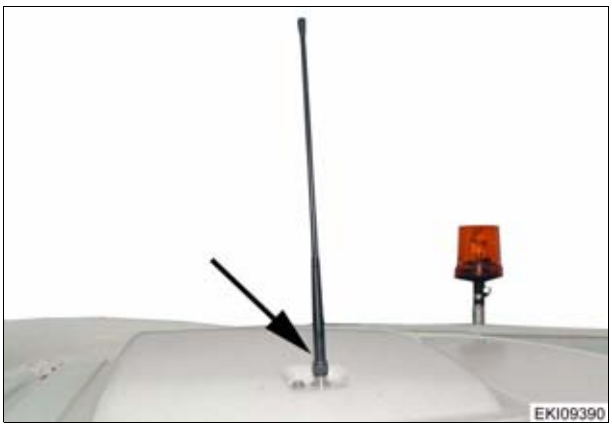


Fig. 194. I006191

919 .. 0101-1000
919 .. 1001-
922 .. 0101-1000
922 .. 1001-
925 .. 0101-1000
925 .. 1001-
928 .. 0101-1000
928 .. 1001-
931 .. 0101-1000
931 .. 1001-
934 .. 0101-1000
934 .. 1001-

The base station transmits the correction signal to the Auto-Guide on the tractor (A058 Auto-Guide TopDock) via a **radio module (transmitter)**

A radio licence is required to operate a radio transmitter.

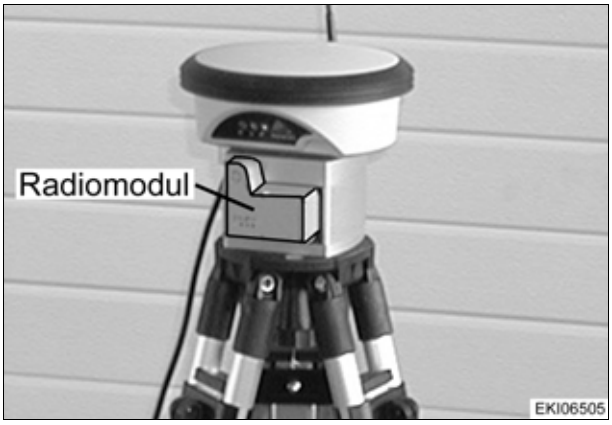


Fig. 195. I002798

NOTE: *A radio licence must be applied for from the responsible network operator*
The operation of a base station (transmitter) without a radio licence (frequency assignment) will result in a caution and may lead to prosecution.
See also:
Chapter 4090 Reg. A - Ordering a radio licence for the base station

NOTE: *The frequency of the radio module must be programmed.*
See also:
Chapter 4090 Reg. A - Setting the frequency of the radio module (tractor and base station)

19 Installing the base station

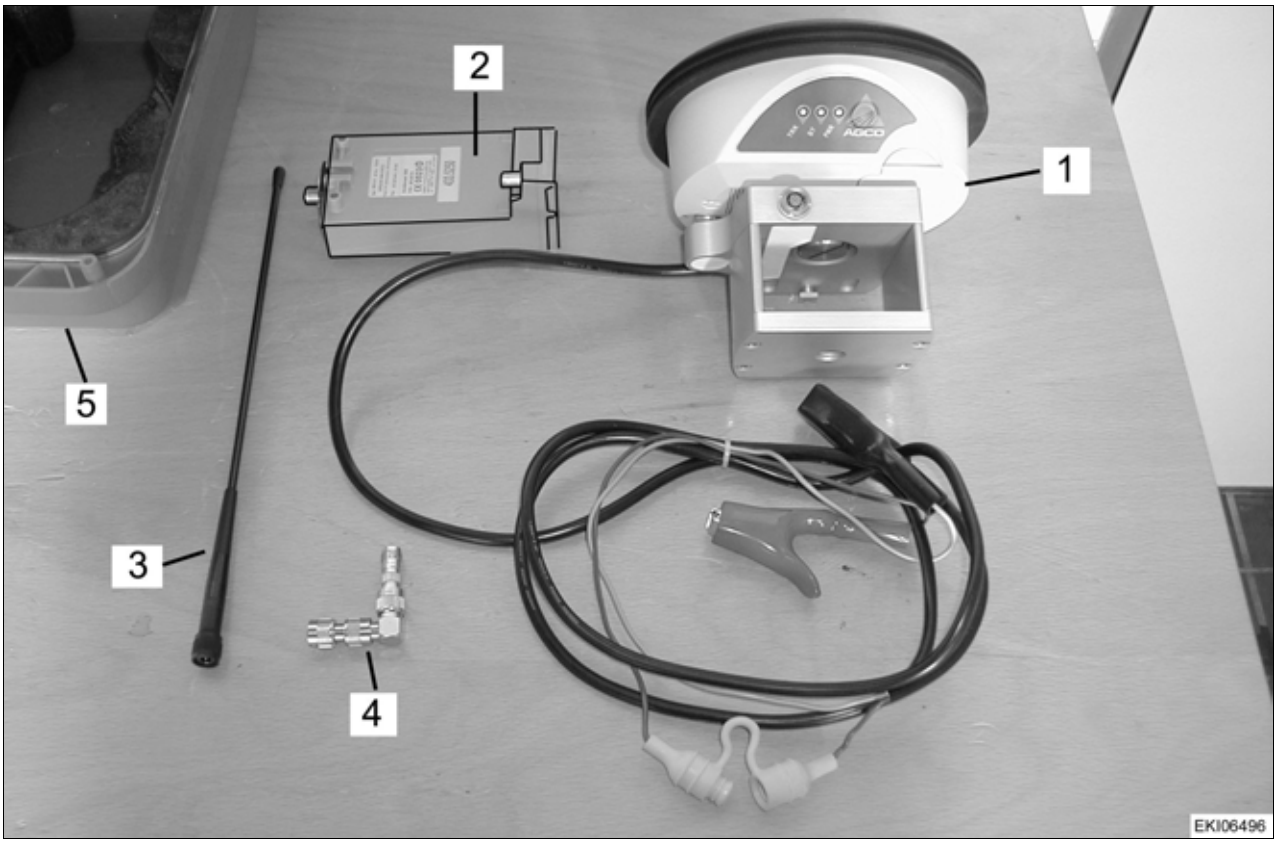


Fig. 196. I003393

Item	Designation	Item	Designation
1	GPS aerial (with +supply; 12 VDC / 5 A fuse)	4	Adapter (radio module aerial)
2	Radio module (transmitter) (transmitting power = 0.5 Watt)	5	Box
3	Radio module aerial		

NOTE: *When the GPS aerial and radio module are not being used:*
Store the GPS aerial and radio module in a dry place

– Level the stand with the aid of the spirit level
– Set the GPS aerial on the stand and screw on tight



Fig. 197. I002928

– Insert the radio module
– Connect compact plug (arrowed)



Fig. 198. I002929

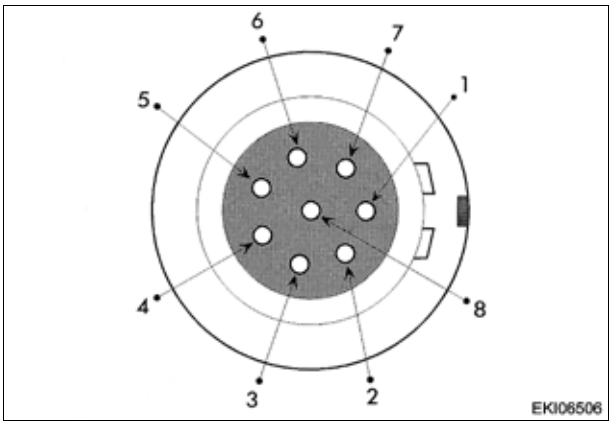


Fig. 199. I002930

Radio module pin assignment

Pin	Function
1	Hardware recognition
2	Hardware recognition
3	Earth
4	Data - receipt
5	Data - transmission
6	BUS
7	Programming/data processing; programming (12 VDC); data reception (0 VDC)
8	+ supply (12 VDC)

– Work radio module into the guide
– Lock radio module



Fig. 200. I002931

– Screw on adapter

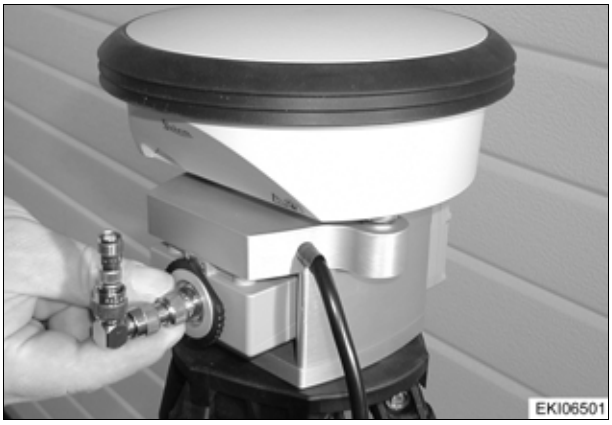


Fig. 201. I002932

– Screw on radio module aerial

NOTE: *Only operate with the supplied aerial!*
Reason:

– *If the aerial is too short --> poor transmitting power*
– *If the aerial is too long --> transmitting power too high (signal interference with other frequencies possible)*

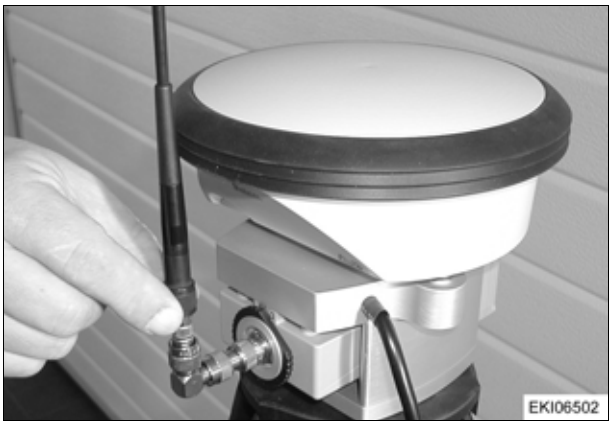


Fig. 202. I002933

– Connect + power supply
– Red terminal (brown cable) = Battery + (12 VDC)
– Black terminal (blue cable) = Battery - (earth)

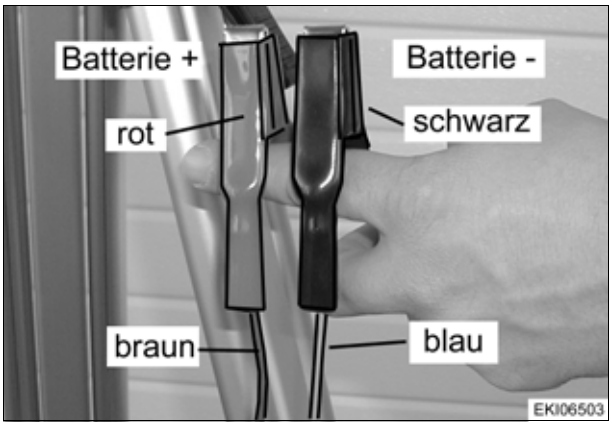


Fig. 203. I002934

Old version:

– Fit glass fuse
– Fuse (12 VDC / 5A)

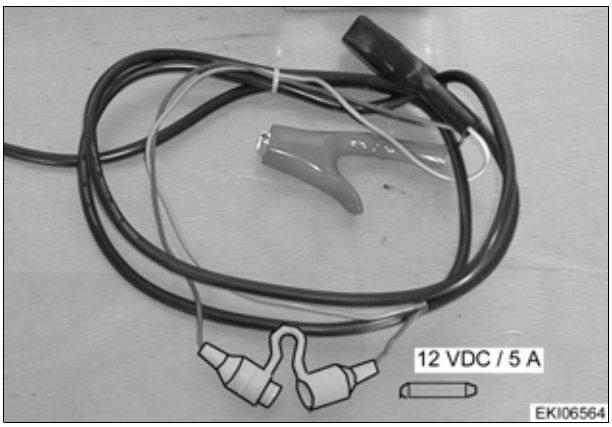


Fig. 204. I002935

New version:

– Fit plug fuse
– Fuse (12 VDC / 5A)

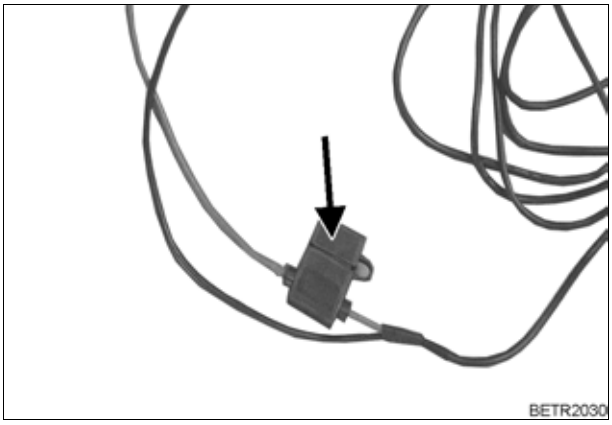


Fig. 205. I002936

– Connect + supply to battery
– **Power consumption of the base station**
approx. 500 to 600 mA

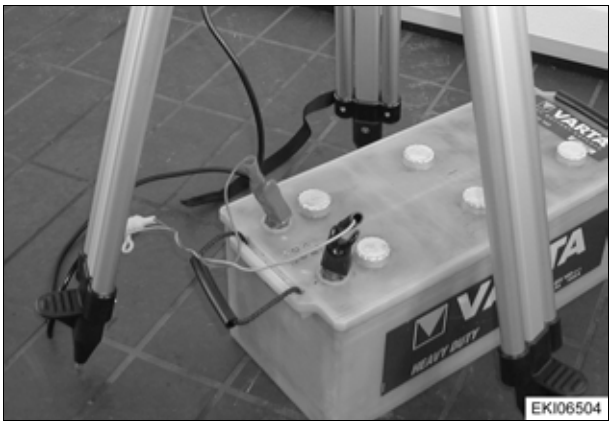


Fig. 206. I002980

The base station transmits the correction signal to the Auto-Guide on the tractor (A058 Auto-Guide TopDock) via a **radio module (transmitter)**

A radio licence is required to operate a radio transmitter.

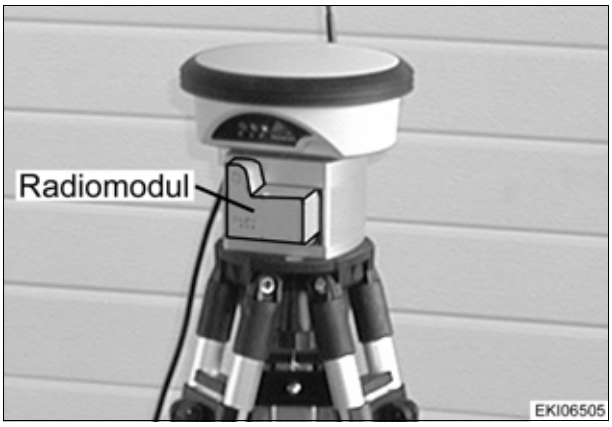


Fig. 207. I002798

NOTE: *A radio licence must be applied for from the responsible network operator*
The operation of a base station (transmitter) without a radio licence (frequency assignment) will result in a caution and may lead to prosecution.
See also:
Chapter 4090 Reg. A - Ordering a radio licence for the base station

NOTE: *The frequency of the radio module must be programmed.*
See also:
Chapter 4090 Reg. A - Setting the frequency of the radio module (tractor and base station)

20 Setting the frequency and channel of the radio module (tractor and base station)

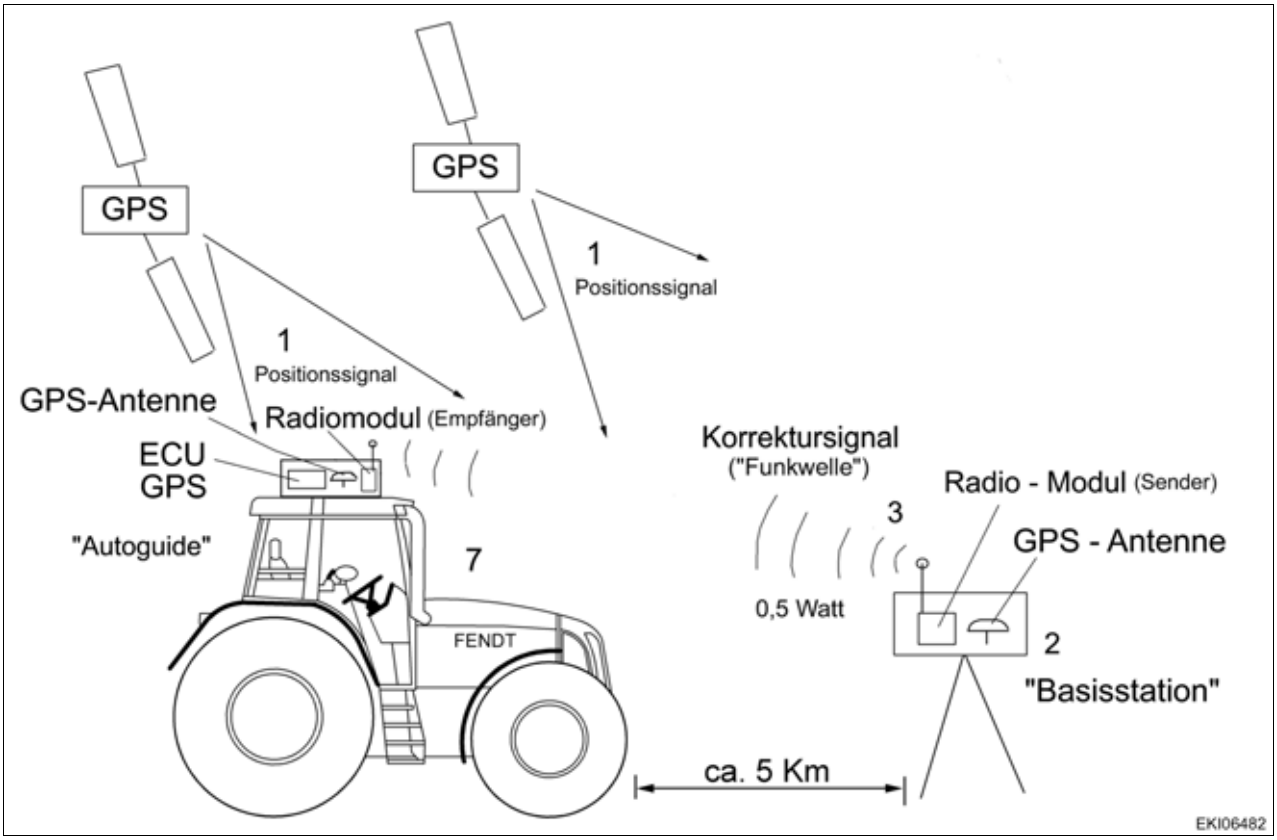


Fig. 208. I003394

– GPS satellites send position signals (1)
– The base station (2) compares this data with the actual position
– Correction signals (3) are transmitted from the base station (transmitter) to the tractor (receiver) using a radio module
– Auto-Guide receives both signals (position signal 1 and correction signal 3) and determines more exact position data (7)

The base station transmits the correction signal to the Auto-Guide on the tractor via a **radio module (transmitter)**

A radio licence is required to operate a radio transmitter.

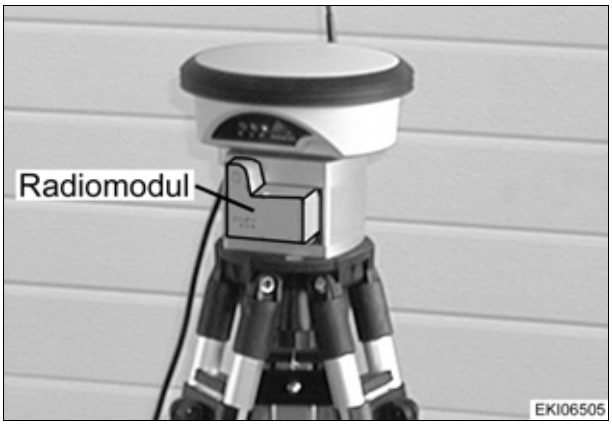


Fig. 209. I002798

The **radio module (receiver)** on the A058 Auto-Guide receives the correction signal



Fig. 210. I002356

NOTE: *A radio licence must be applied for from the relevant network operator.*
The user of the base station is responsible for applying for a radio licence (frequency assignment).
The operation of a base station without a radio licence (frequency assignment) will result in a caution and may lead to prosecution.

NOTE: *The radio module on the tractor and the radio module on the base station must be programmed to the same frequency and the same channel in order for them to communicate with each other.*

Programming the radio module on the tractor (A058 Auto-Guide TopDock — radio channel and frequency)

Fit and connect the **radio module**

NOTE: *See also:*
Chapter 4090 Reg.G - Installing the radio module on the A058 Auto-Guide TopDock (tractor)



Fig. 211. I002356



Set Vario terminal to ISO BUS operation

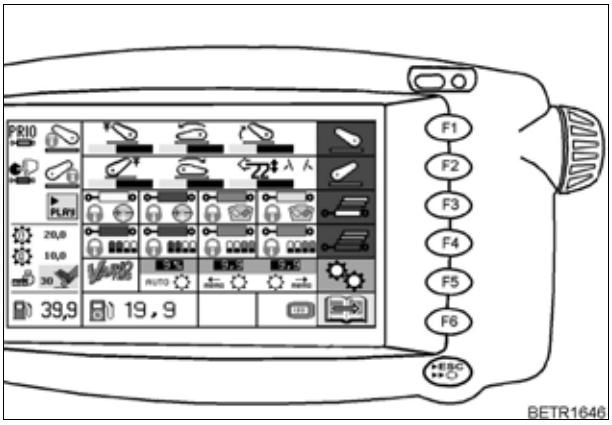


Fig. 212. I003282

Plug short-circuit connector (E) into the X028 ISO BUS socket

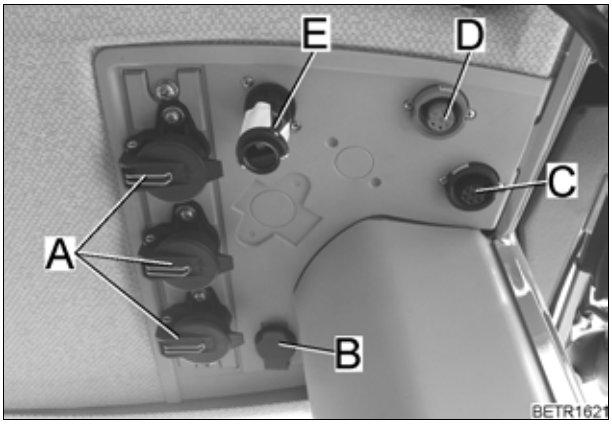


Fig. 213. I003280

Switch on ignition.
Switch the Auto-Guide system to standby mode (A058 Auto-Guide TopDock is energised)
The LED on the standby switch (B) flashes

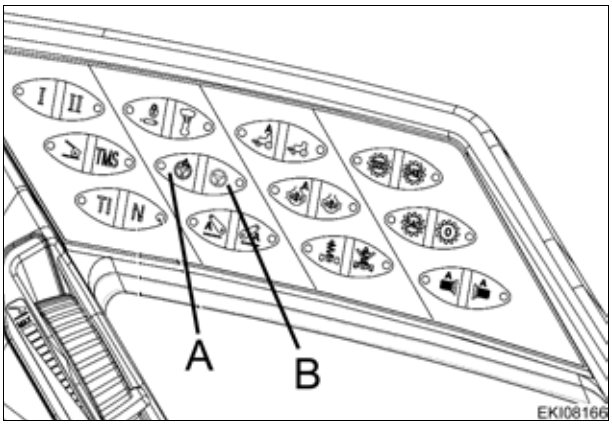


Fig. 214. I000979

The red LED (arrow) indicates that the A058 Auto-Guide TopDock is energised.

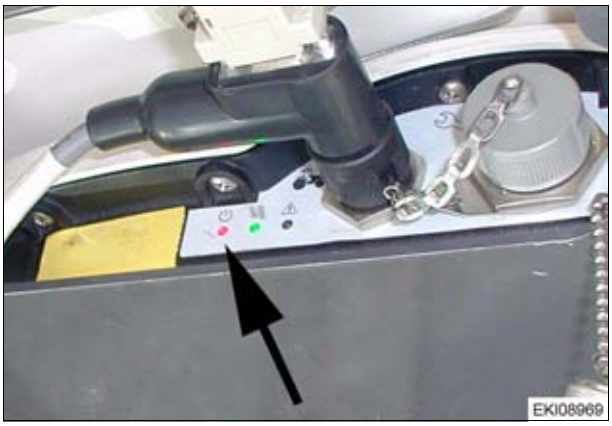


Fig. 215. I003338

Scroll with the **arrow key**.



Fig. 216. I003307

Continue to the settings menu with the **spanner key**.



Fig. 217. I003332

Press the **Correction Signal** key



Fig. 218. I003361

The screen is displayed**Correction Signal Sources**



– Select the **Local Base** correction signal using the arrow keys

NOTE: *The signal highlighted in blue is selected*



– Confirm the selection with the **Enter** key



Fig. 219. I003395

Setting the radio channel

NOTE: *Radio frequencies and channels are listed in the table below*

+/-Select



– Enter the required radio channel using the alphanumeric keypad
Note: Press and hold down key until the desired digit is set.



Confirm the entry with the **Enter** key



Fig. 220. I003396

919 .. 0101-1000
919 .. 1001-
922 .. 0101-1000
922 .. 1001-
925 .. 0101-1000
925 .. 1001-
928 .. 0101-1000
928 .. 1001-
931 .. 0101-1000
931 .. 1001-
934 .. 0101-1000
934 .. 1001-

Table: Radio frequencies and channels

Channel	Germany	Spain	Netherlands	France	Italy	UK/Ireland
-40					442,5	
-39					442,5125	
-38					442,525	
-37					442,5375	
-36					442,55	
-35					442,5625	
-34					442,575	
-33					442,5875	
-32					442,6	
-31					442,6125	
-30					442,625	
-29					442,6375	
-28					442,65	
-27					442,6625	
-26					442,675	
-25					442,6875	
-24					442,7	
-23					442,7125	
-22					442,725	
-21					442,7375	
-20					442,75	
-19					442,7625	
-18					442,775	
-17	433,1				442,7875	
-16	433,125				442,8	
-15	433,15				442,8125	
-14	433,175				442,825	
-13	433,2			444,8375	442,8375	
-12	433,225				442,85	
-11	433,25				442,8625	
-10	433,275				442,875	
-9	433,3				442,8875	
-8	433,325	406,425			442,9	
-7	433,35	406,45			442,9125	
-6	433,375	406,475			442,925	
-5	433,4	406,5			442,9375	
-4	433,425	406,525			442,95	458,525
-3	433,45	406,55			442,9625	458,55
-2	433,475				442,975	458,575
-1	433,5			444,9875	442,9875	458,6
0	433,525		439,8625		443	458,625
1	433,55				443,0125	458,65
2	433,575				443,025	458,675
3	433,6				443,0375	458,7
4	433,625				443,05	458,725

Channel	Germany	Spain	Netherlands	France	Italy	UK/Ireland
5	433,65				443,0625	458,75
6	433,675				443,075	458,775
7	433,7				443,0875	458,8
8	433,725				443,1	
9	433,75				443,1125	
10	433,775				443,125	
11	433,8				443,1375	
12	433,825				443,15	
13	433,85				443,1625	
14	433,875				443,175	
15	433,9				443,1875	
16	433,925				443,2	
17	433,95				443,2125	
18	433,975				443,225	
19	434				443,2375	
20	434,025				443,25	
21	434,05				443,2625	
22	434,075				443,275	
23	434,1				443,2875	
24	434,125				443,3	
25	434,15				443,3125	
26	434,175				443,325	
27	434,2				443,3375	
28	434,225				443,35	
29	434,25				443,3625	
30	434,275				443,375	
31	434,3				443,3875	
32	434,325				443,4	
33	434,35				443,4125	
34	434,375				443,425	
35	434,4				443,4375	
36	434,425				443,45	
37	434,45				443,4625	
38	434,475				443,475	
39	434,5				443,4875	
40	434,525				443,5	
41	434,55				443,5125	
42	434,575				443,525	
43	434,6				443,5375	
44	434,625				443,55	
45	434,65				443,5625	
46	434,675				443,575	
47	434,7				443,5875	
48	434,725				443,6	
49	434,75				443,6125	

Table: Radio frequencies and channels

Channel	Portugal	Sweden	Denmark
-40			
-39			
-38			
-37			
-36		439	
-35		439,025	
-34		439,05	
-33		439,075	
-32		439,1	
-31		439,125	
-30		439,15	
-29		439,175	
-28		439,2	
-27		439,225	
-26		439,25	
-25		439,275	
-24		439,3	
-23		439,325	
-22		439,35	
-21		439,375	
-20		439,4	
-19		439,425	
-18		439,45	
-17		439,475	
-16		439,5	
-15		439,525	
-14		439,55	
-13		439,575	
-12		439,6	
-11		439,625	
-10		439,65	
-9		439,675	
-8			
-7			
-6			
-5			
-4			
-3	458,1125		
-2	458,125		
-1	458,1375		443,95
0	458,15		434
1			434,05
from 2 to 49	**No radio frequencies available**	**No radio frequencies available**	**No radio frequencies available**

Programming the base station on the radio module (radio channel and frequency)

Disconnect + supply to base station

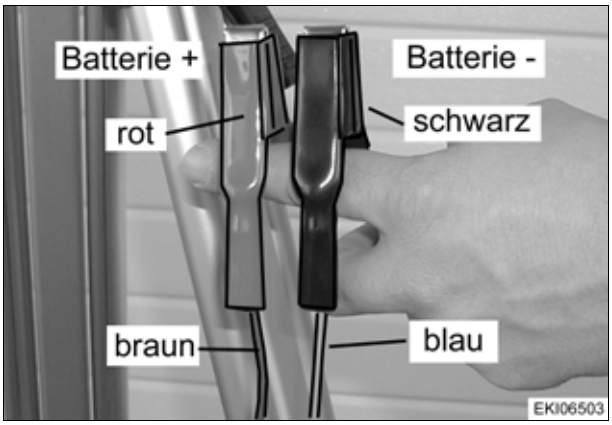


Fig. 221. I002934

Unscrew radio aerial and adapter

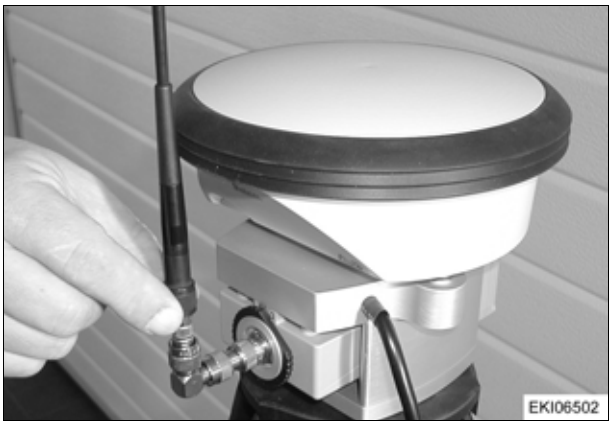


Fig. 222. I002933

Unlock radio module



Fig. 223. I002931

Remove radio module



Fig. 224. I002929

Programming the radio module on the A058 Auto-Guide TopDock (B4)

Install the radio module of the base station on the A058 Auto-Guide TopDock with **adapter cable X 899.980.288.208**.



Fig. 225. I006171

Set the radio channel as described above



Fig. 226. I003396

21 Start-up: Tractor and base station

The GPS signal reception and radio transmitter can be obstructed by dense trees, copses, buildings, high-voltage power lines etc.

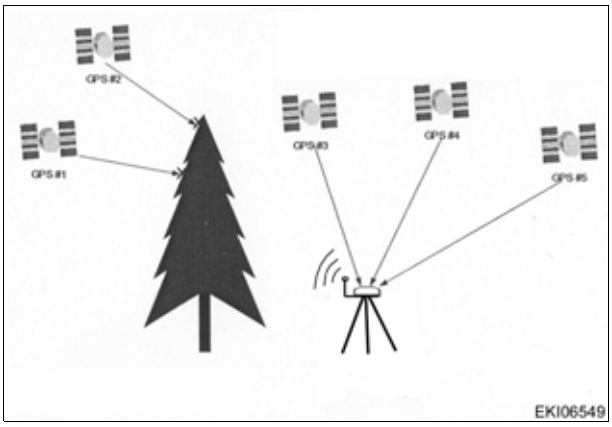


Fig. 227. I003398

When setting up the base station on a slope, the GPS satellites may lie outside of the visibility range of the GPS aerial.

NOTE: *Remedy:*
Level the base station through vertical adjustment with the aid of the tripod legs.

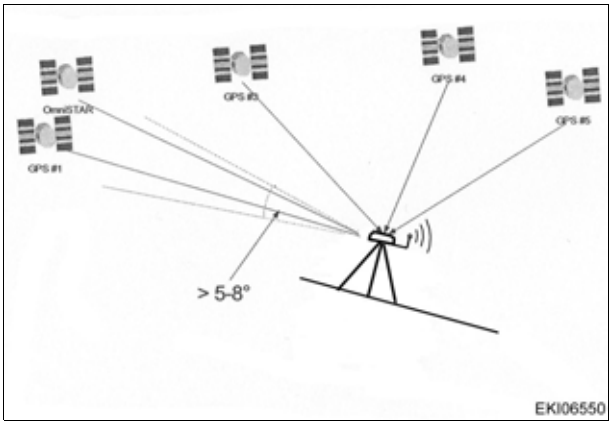


Fig. 228. I003399

The maximum range of the radio signal (correction signal) is approx. 5 km

The tractor may lose the radio signal (correction signal) at distances greater than 5 km.

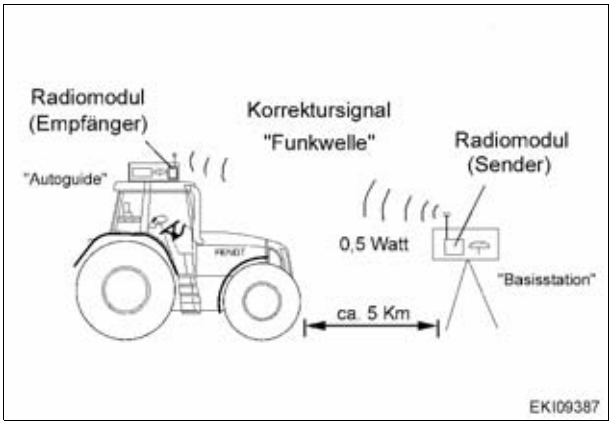


Fig. 229. I006152

The base station must have a clear view of the sky.



Fig. 230. I002984

– Connect + power supply
– Red terminal (brown cable) = Battery + (12 VDC)
– Black terminal (blue cable) = Battery - (earth)

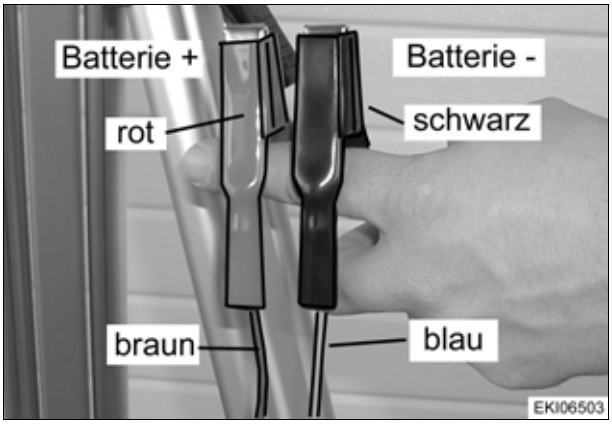


Fig. 231. I002934

Old version:

– Fit glass fuse
– Fuse (12 VDC / 5A)

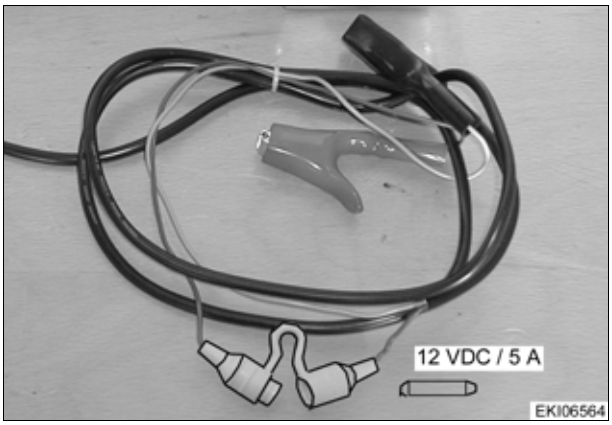


Fig. 232. I002935

New version:

– Fit plug fuse
– Fuse (12 VDC / 5A)

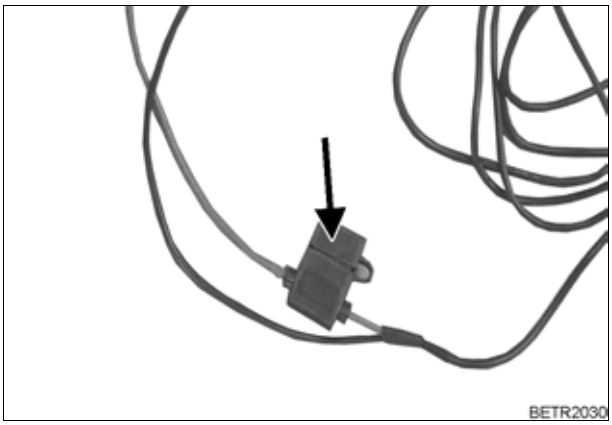


Fig. 233. I002936

– Connect + supply to battery
– **Power consumption of the base station**
approx. 500 to 600 mA

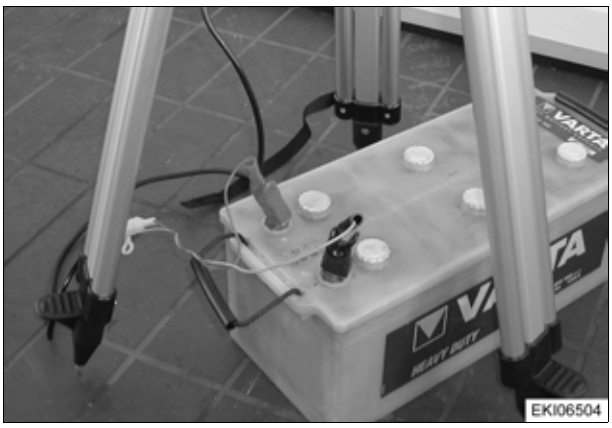


Fig. 234. I002980

Installing the A058 Auto-Guide TopDock on the tractor

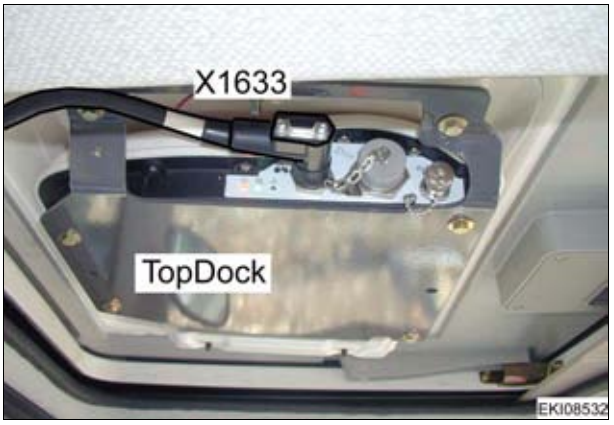


Fig. 235. I002345

Plug short-circuit connector (E) into the X028 ISO BUS socket

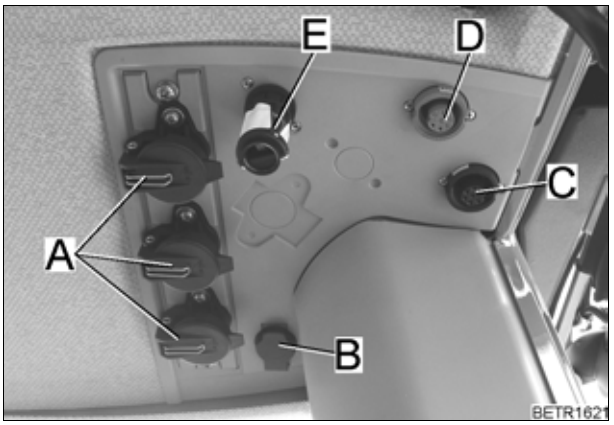


Fig. 236. I003280

For operation of the Auto-Guide system, it is necessary that the **ISO BUS tractor data** is set to **active.**



Continue pressing the **F5** key until the display joystick and **tractor data active** is displayed / **Auto-Guide operation is possible**



Deactivation of ISO BUS



Vario terminal and joystick not active, an external ISO terminal can be used. **Tractor data active** / **Auto-Guide operation possible**



Vario terminal not active. Joystick and **tractor data active** / **Auto-Guide operation possible**

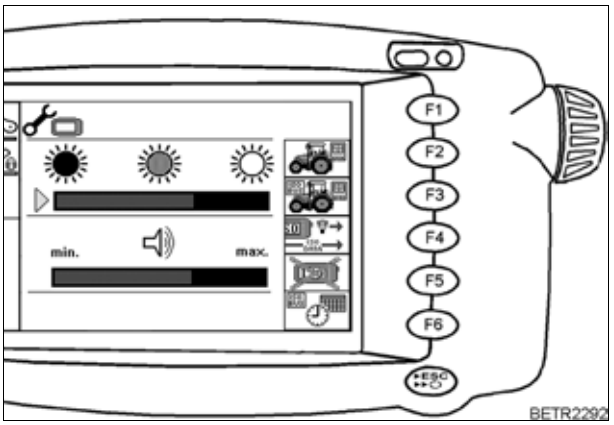


Fig. 237. I003284

NOTE: *Return with "ESC".*
Settings are active after exiting the sub-menu.

Switch on ignition.
Switch the Auto-Guide system to standby mode (A058 Auto-Guide TopDock is energised)
The LED on the standby switch (B) flashes

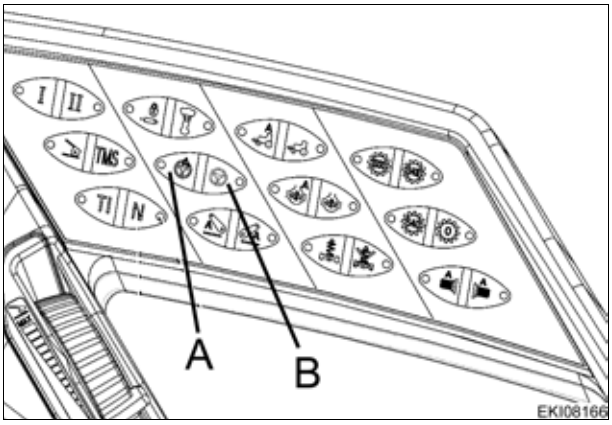


Fig. 238. I000979

The red LED (arrow) indicates that the A058 Auto-Guide TopDock is energised.

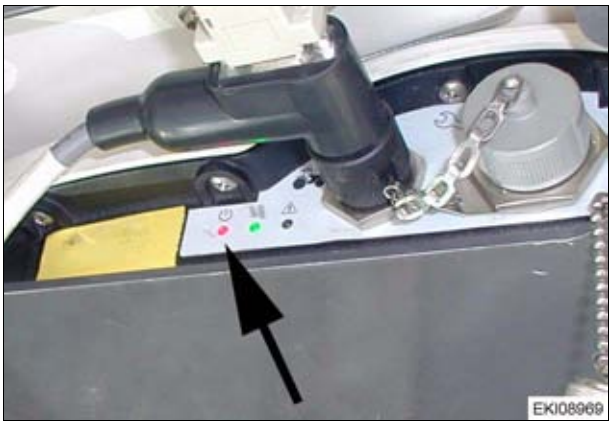


Fig. 239. I003338

Indicator lights on the base station



Fig. 240. I003401

	TRK "Tracking" (reception of GPS satellites)	BT "Bluetooth" (not used)	PWR "Power" (+ supply)
Function display	RED	GREEN	YELLOW
No satellites available	OFF	GREEN	YELLOW
Too few satellites available	YELLOW/flashing	GREEN	YELLOW
Sufficient number of satellites available	YELLOW	GREEN	YELLOW
Power supply too low	OFF	GREEN	RED
Bluetooth connection active	OFF	BLUE	OFF
Power supply interrupted	OFF	OFF	OFF

Calculating the correction signal
After the base station is switched on, it calculates the position data for about 3 minutes.
An average value is determined from this position data.

NOTE: *When the base station is switched off and on again, the base station recalculates the position data (for about 3 minutes) and generates an average value, i.e., it generates a new correction signal.*
This in turn means that the tractor drives with an offset.
This offset can be compensated for by entering an "Offset" in the Auto-Guide terminal (see Auto-Guide function test (brief instructions))

Indicator lights on the "transmitter" radio module (base station)



Fig. 241. I002987

	Power (+ supply)	Link (Receiving messages in the frequency range)	Rx/Tx (Receiving and transmitting messages)	Mode (Diagnostics and programming)
Data transfer OK	GREEN	OFF	GREEN/flashing	OFF
Data transfer from another transmitter	GREEN	RED	GREEN/flashing	OFF
Battery power low	GREEN	OFF	GREEN/flashing	OFF
Battery power very low	OFF	OFF	OFF	OFF

– For approximately the first 3 minutes, the indicator light (RX/TX) is off (message transmission is being generated)



Fig. 242. I002988

– After approx. 3 minutes, the indicator light (RX/TX) flashes
– Correction signals (radio) are being transmitted to the tractor

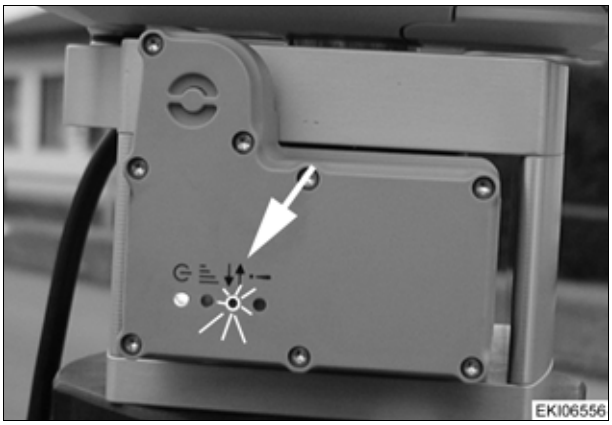


Fig. 243. I002989

Testing the function of the base station at the A059 Auto-Guide terminal

NOTE: *See also:*
Chapter 4090 Reg. A - Reading Auto-Guide system information "Details

– Scroll with the **arrow key**



Fig. 244. I003307

– Switch to the status indicator with the **measuring gauges**



Fig. 245. I003308

– The "Status" screen is displayed.



Fig. 246. I003309

Press **DETAILS** in the "Status" screen



Fig. 247. I003311

An overview with system information appears; press the arrow button repeatedly until **"Base Station Details"** appears



Fig. 248. I003343

Base Station Details (this page is only displayed if a base station is used)		
Detail	**Description**	**Note**
Latitude	**"Base station" latitude** (distance north or south of the earth's equator measured in degrees)	Example: 47.77
Longitude	**"Base station" longitude** (distance east or west from the prime meridian measured in degrees)	Example: 10.60
Altitude	**"Base station" altitude** (the vertical height above sea level. Measured according to US standard or in metric units)	Example: 732.964 m
Temperature	**"Base station" temperature** (temperature at the base station)	Operating temperature: -25°C to +55°C Note: The display is set to 0°C
Serial No.	**GPS aerial serial number (base station)**	Note: Display set to "Unknown"
Baseline	**Distance between tractor and base station**	Maximum distance for safely operating the Auto-Guide approx. 6 km
Correction Packets	**Number of correction signals** Continues counting as long as the connection to the base station is open	123 **Note: As long as it is counting, the A058 Auto-Guide TopDock is receiving a correction signal from the base station**
Lag	**Signal lag**. The time elapsed since the last correction signal was received. Measured in seconds.	- The lower the value, the higher the accuracy - The higher the value, the worse the accuracy (cause e.g. signal shadowing) **Base station** **Value: 0 seconds (no correction signal received)** **Value: 1 to 7 seconds (standard range)** **Value: 7 to 60 seconds (e.g. shadowing)** **Value greater than approx. 60 seconds (automatic track guidance switches off)**

22 Test report (checklist): Auto-Guide programming "fax template"

Tractor chassis number:

The following must be programmed:
The **A058 Auto-Guide TopDock**

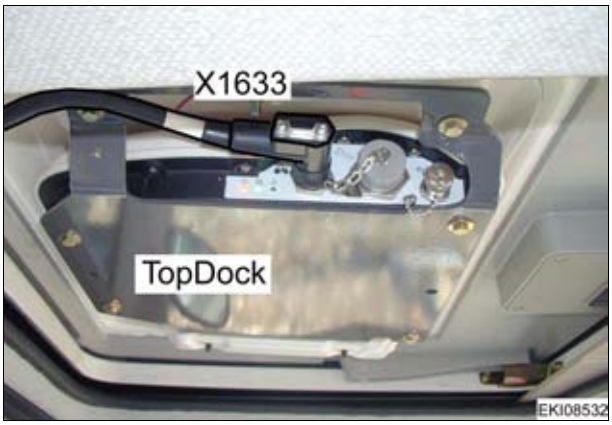


Fig. 249. I002345

The **A059 Auto-Guide terminal**



Fig. 250. I001366

The **A050 ECU, basic control unit**



Fig. 251. I001030

Checklist

Step	Reference	OK
Programming the A050 ECU, basic control unit		
Programming the A050 ECU, basic control unit	Programming the tractor with EOL (EOL 7.60 or higher)	
Programming the A058 Auto-Guide TopDock and A059 Auto-Guide terminal		

Step	Reference	OK
Creating a unique program directory in which all Auto-Guide files downloaded from AGCO NET can be stored (must remain permanently on the PC)	C:\AutoGuide\Fendt *see §23*	
Downloading Auto-Guide software from AGCO NET	*see §23*	
Formatting the PCMCIA card (Formatting means deleting old software from the PCMCIA card)	*see §23*	
Loading current Auto-Guide software (removable data carrier) onto the PCMCIA card and unpacking.	*see §23*	
Unpacking current Auto-Guide software on the PC hard drive	*see §23*	
Setting the tractor to ISO BUS (tractor data active) at the Vario terminal	*see §4*	
Reading the present software versions	*see §3*	
Programming (software update): **A059 Auto-Guide terminal**	*see §24*	
Programming (software update): **A058 Auto-Guide TopDock**	*see §25* or *see §26*	
After programming		
The OmniStar correction signal (OmniStar VBS or OmniStar HP) may have to be requested again.	*see §11*	
Activating the OmniStar correction signal (OmniStar VBS or OmniStar HP)	*see §12*	
Calibrating the B067 steering angle sensor Calibration code: 2401	*see §7*	
Calibrating the Y087 Auto-Guide control valve Calibration code: 2403	*see §8*	
Calibrating roll bias of the DMU "gyro compass" (only required for OmniStar HP or base station)	*see §20*	
Ordering a new Auto-Guide operator's manual if necessary	see AGCO NET for this	
Carrying out the Auto-Guide function test	*see §7*	

Customer number:
Date:
Signature:

23 Downloading Auto-Guide software from AGCO NET

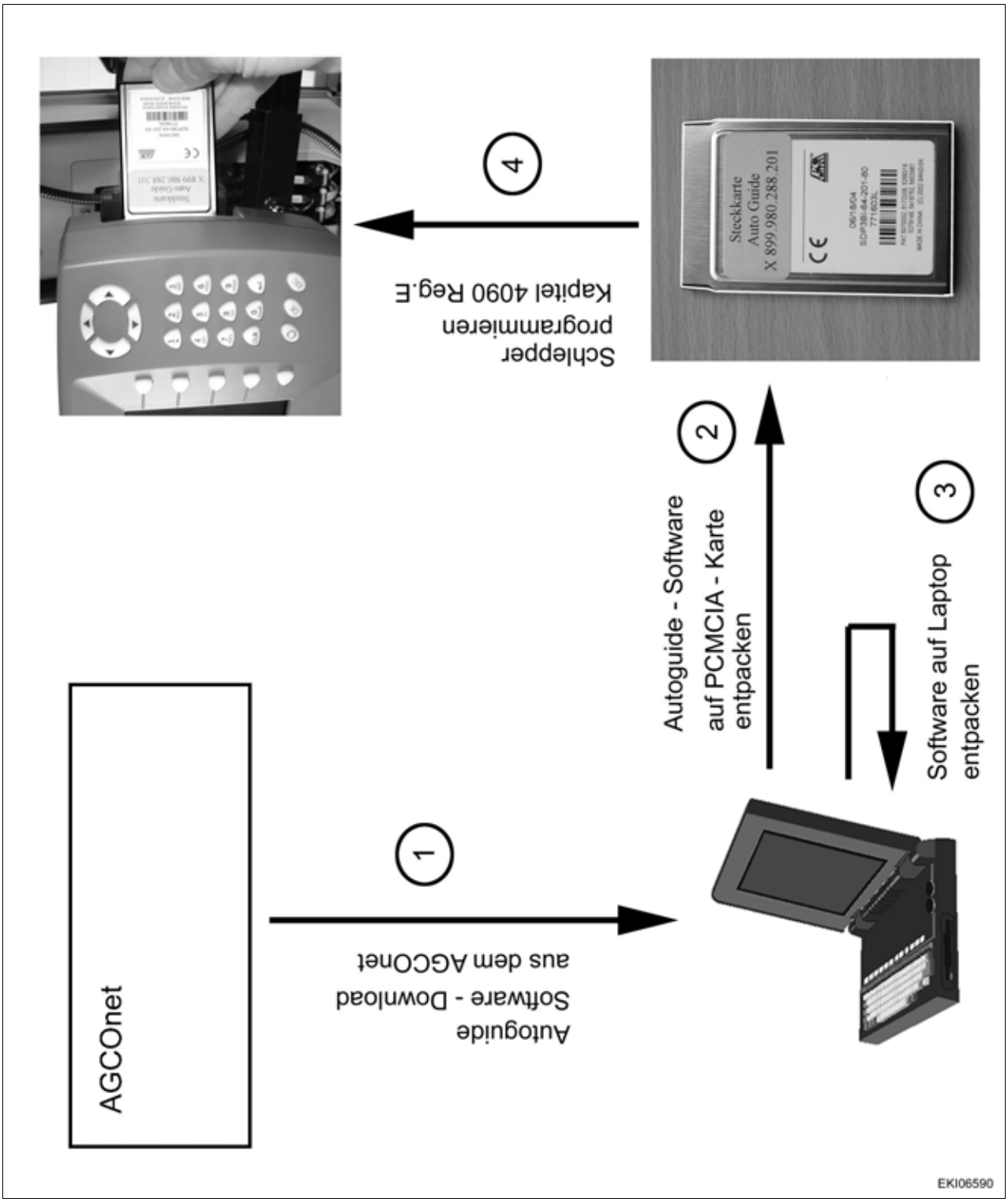


Fig. 252. I003404

Step	Designation	Step	Designation
1	Downloading Auto-Guide software from AGCO NET	3	Unpacking software on the laptop
2	Unpacking Auto-Guide software on the PCM-CIA card	4	Programming the tractor with the PCMCIA card

919 .. 1001-
922 .. 0101-1000
922 .. 1001-
925 .. 0101-1000
925 .. 1001-
928 .. 0101-1000
928 .. 1001-
931 .. 0101-1000
931 .. 1001-
934 .. 0101-1000
934 .. 1001-

Check Chassis Range!

Preliminary work for downloading the Auto-Guide software

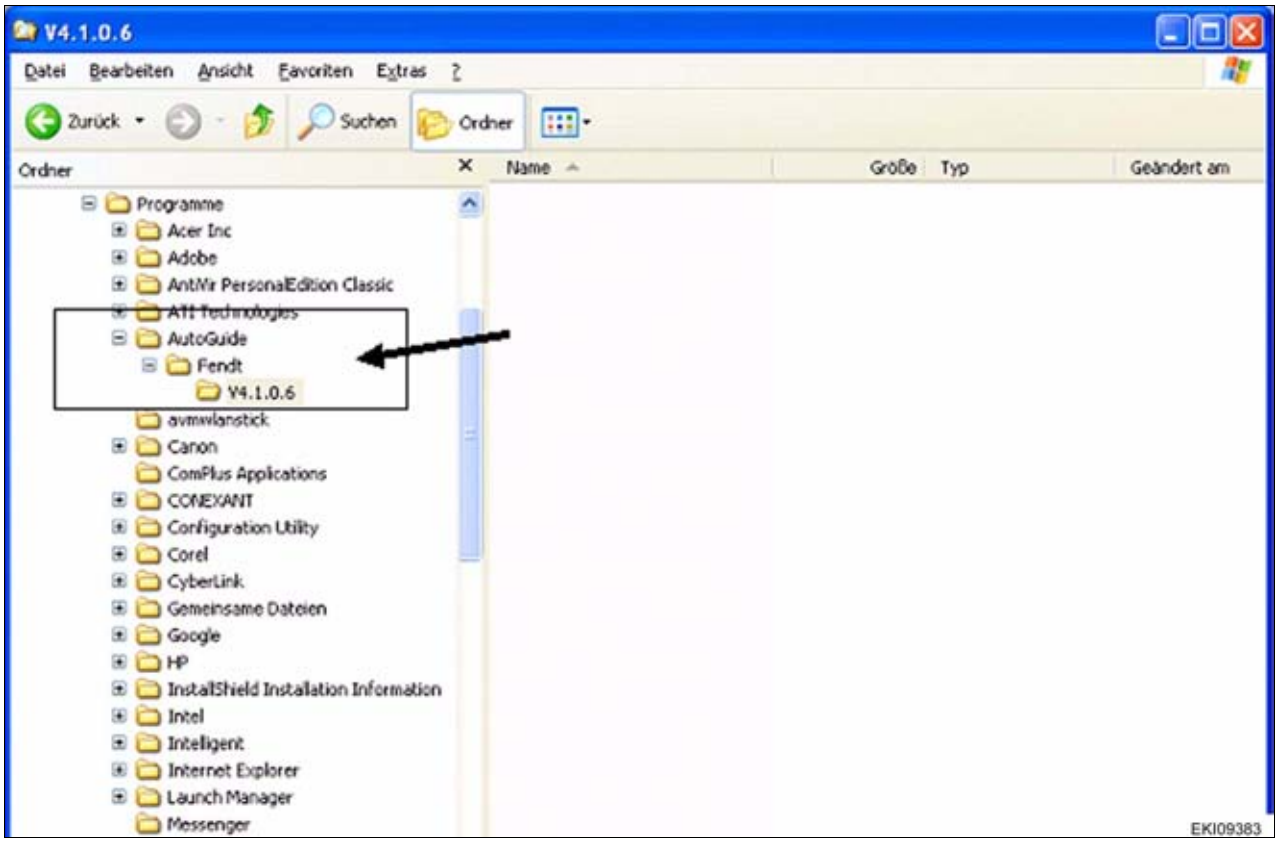


Fig. 253. I006132

– **Do once:**

Create a unique program directory in which the downloaded Auto-Guide software can be stored.
This directory also helps to make it easier to find the Auto-Guide files that are downloaded from AGCO NET.
This directory should remain permanently on the computer.
Program directory:
C:/Autoguide/Fendt

– **Before every software download**

Create a program directory in which the downloaded **software version** can be stored
for example the packed file "Autoguide_Update_AWP4_1_0_6_de.zip" is to be downloaded
Program directory:
C:/Autoguide/Fendt/V4.1.0.6

NOTE: *V4.1.0.6 = Software (as at: 08.2007)*

Download Auto-Guide software from AGCO NET

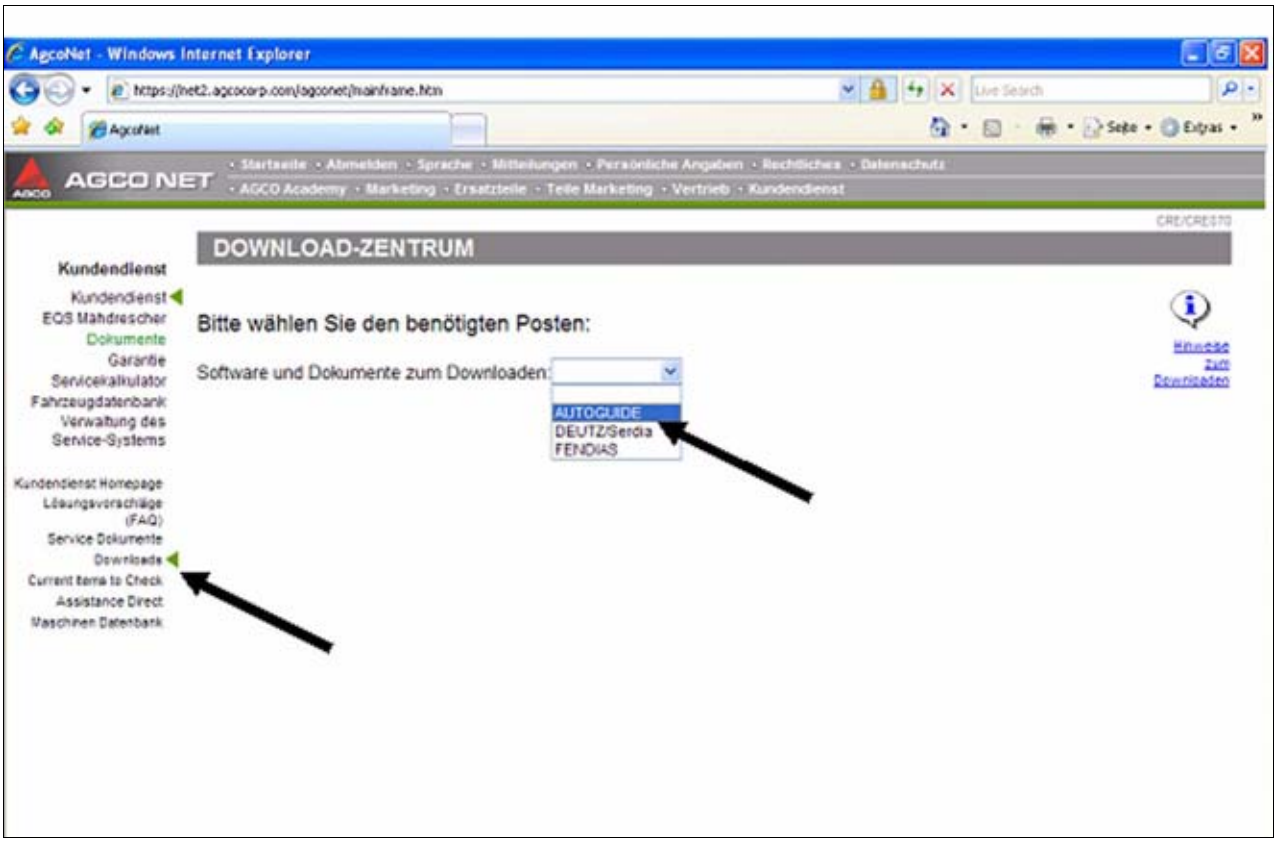


Fig. 254. I006133

Call up AGCO NET:
FENDT / Technical Service / Download Center

Select software to be downloaded:
AUTOGUIDE

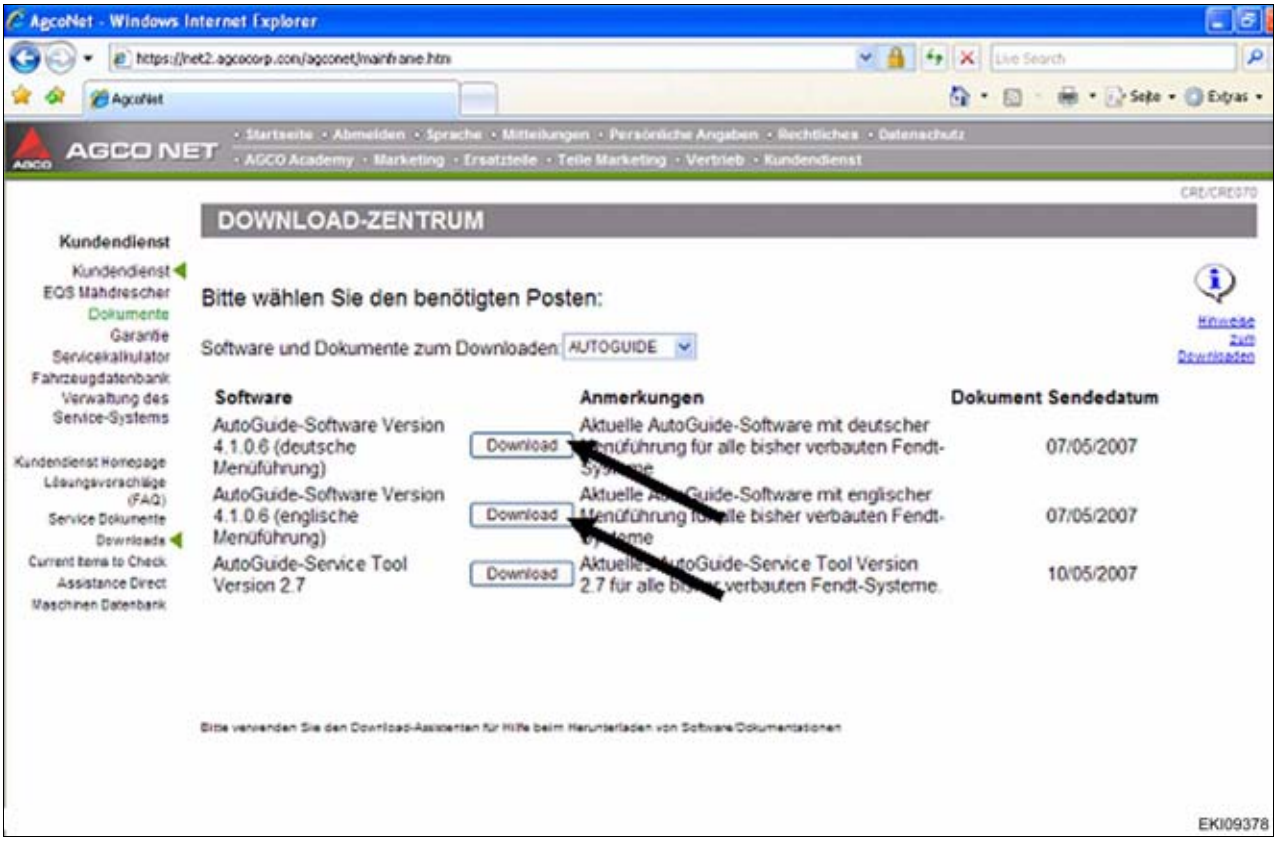


Fig. 255. I006134

Select the desired file

NOTE: *Auto-Guide software version (as at: 08.2007):*
4.1.0.6 (German menu navigation)
or
4.1.0.6 (English menu navigation)

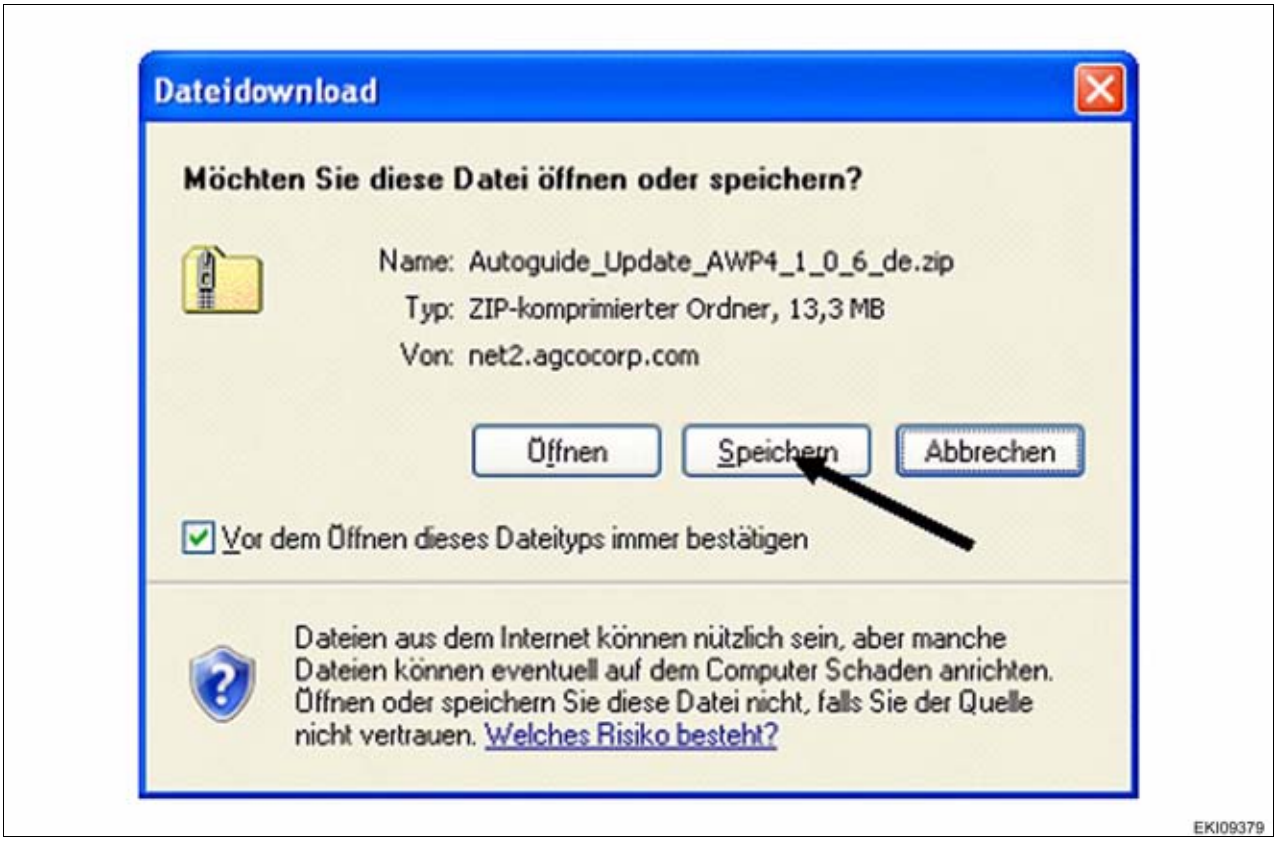


Fig. 256. I006135

A new "File Download" window appears

Start the download process by clicking **"Save"**

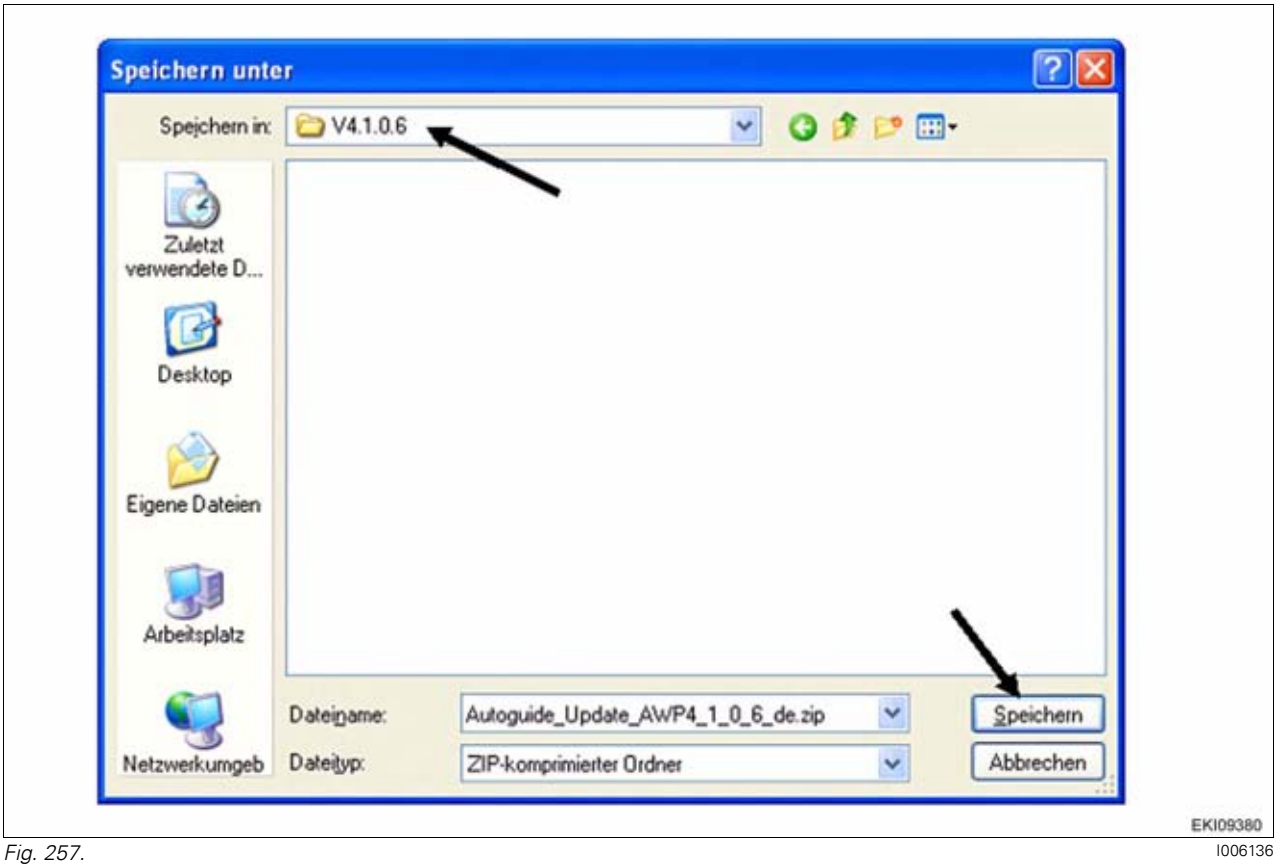


Fig. 257. I006136

The "Save As" window appears

In this window, select the directory that was created previously
Example: C:/Autoguide/Fendt/V4.1.0.6

The download operation begins after this point (i.e. the software is downloaded from AGCO NET and loaded onto the laptop)
Click **"Save"**

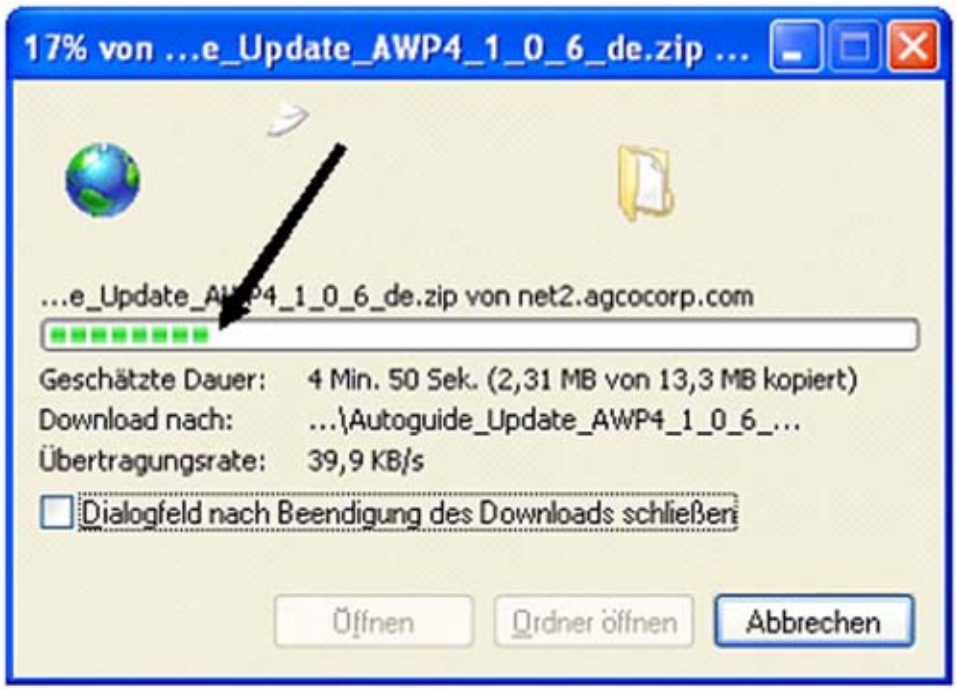


Fig. 258. I006137

The download operation will begin
Progress is shown on the bar indicator

NOTE: *If the files are large and/or the network connection is poor, the download process can take several minutes.*

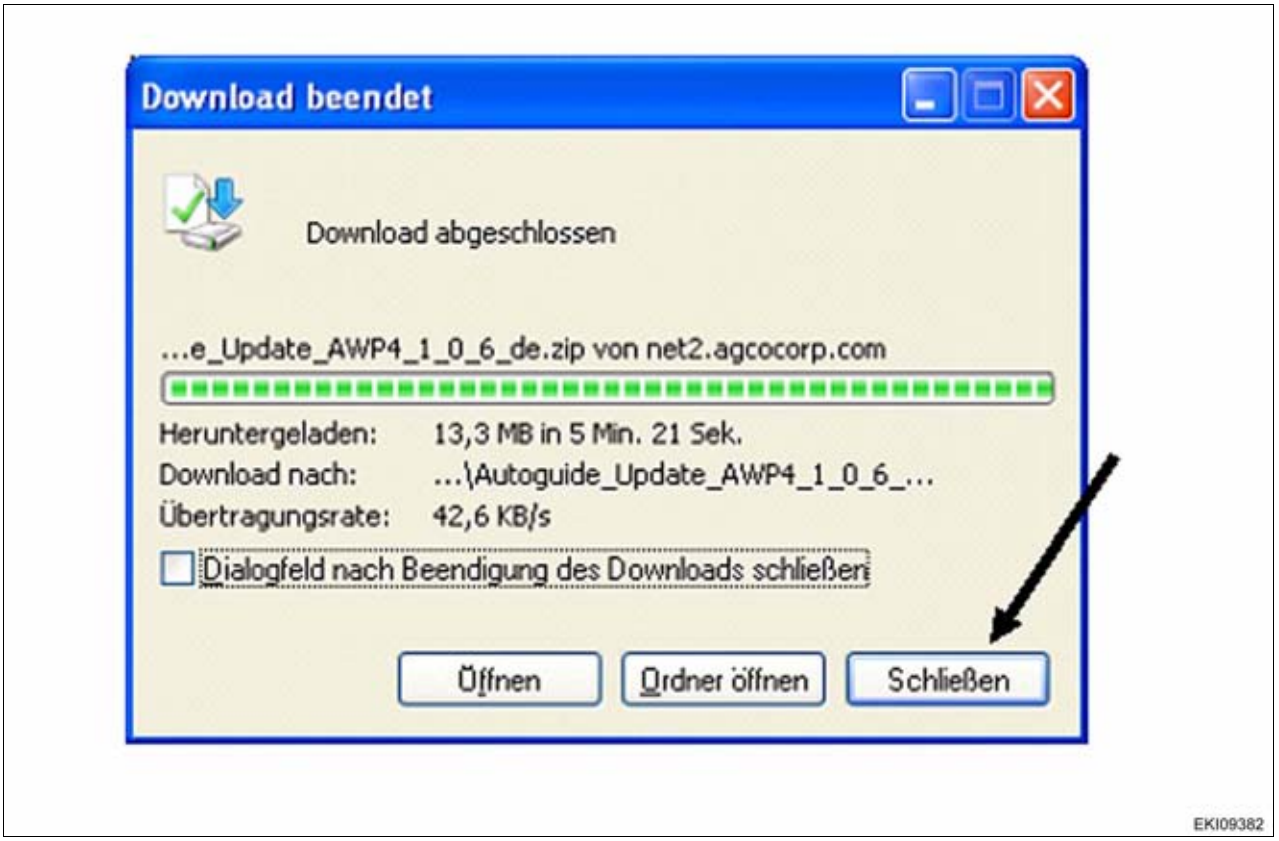


Fig. 259. I006138

After downloading is complete, click "Close" to complete the download process.
The software is now on the laptop.

Formatting the PCMCIA card

NOTE: *Formatting means deleting old software from the PCMCIA card*

Insert the PCMCIA card (X 899.980.288.201) into the laptop



Fig. 260. I003071

Check Chassis Range!

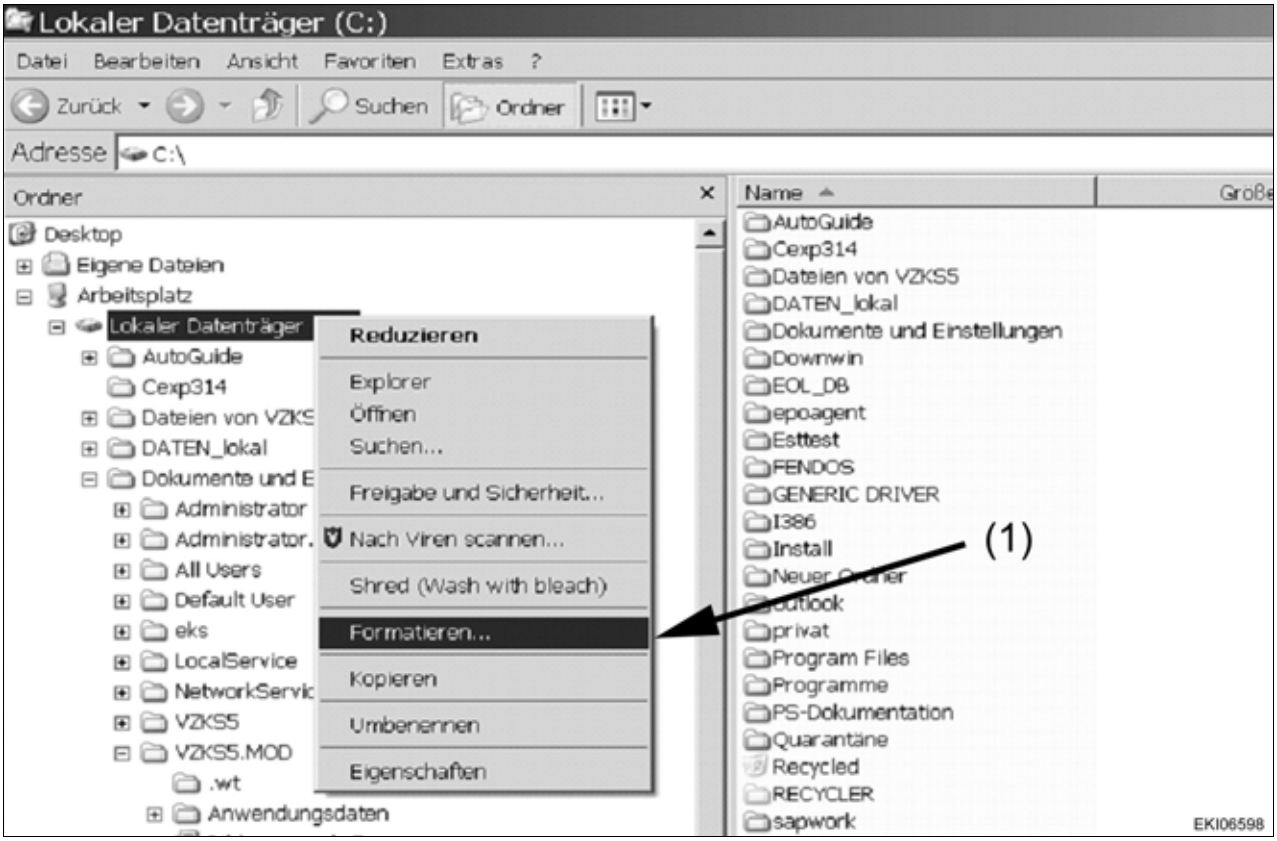


Fig. 261. I003411

– Start Explorer
– Select the PCMCIA card removable drive (usually F:)
– Click the right mouse button

(1) Select "Format..."



Fig. 262. I003412

The formatting process begins after this point (deleting software on the PCMCIA card)

(2)
The formatting window appears
Start the formatting process by clicking Start

NOTE: *The formatting operation takes approx. 60 seconds to complete*

Check Chassis Range!

Loading the new Auto-Guide software onto the PCMCIA card (removable data carrier) and unpacking

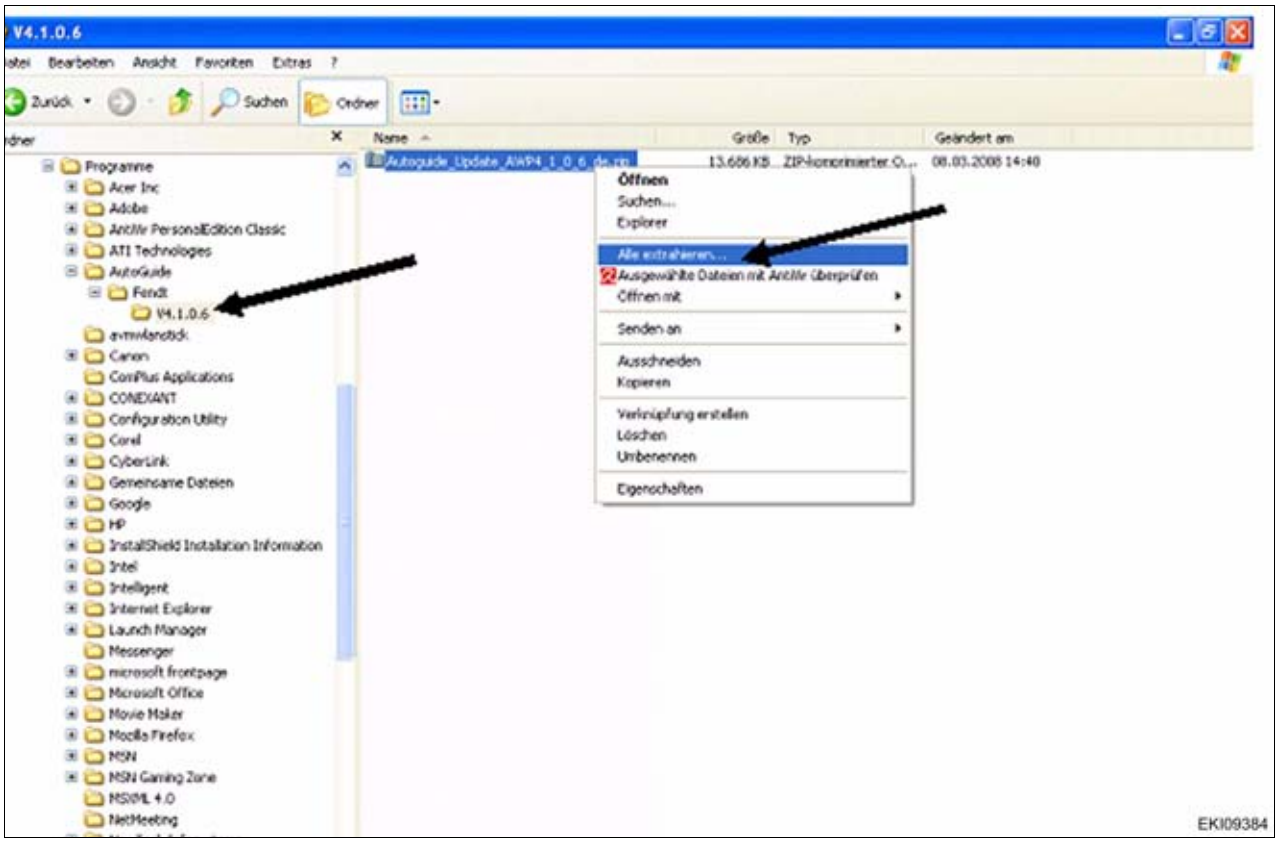


Fig. 263. I006139

Select the software that was downloaded from AGCO NET in the program directory that was defined earlier
Example: C:/Autoguide/Fendt/V4.1.0.6

The software downloaded from AGCO NET is compressed
The software must be unpacked (extracted)

– Select the packed software, click the right mouse button and click on "Extract all"
– The target for unpacking (extracting) is the drive on which the PCMCIA card is located (usually F:)
– Execute the unpacking (extraction) procedure

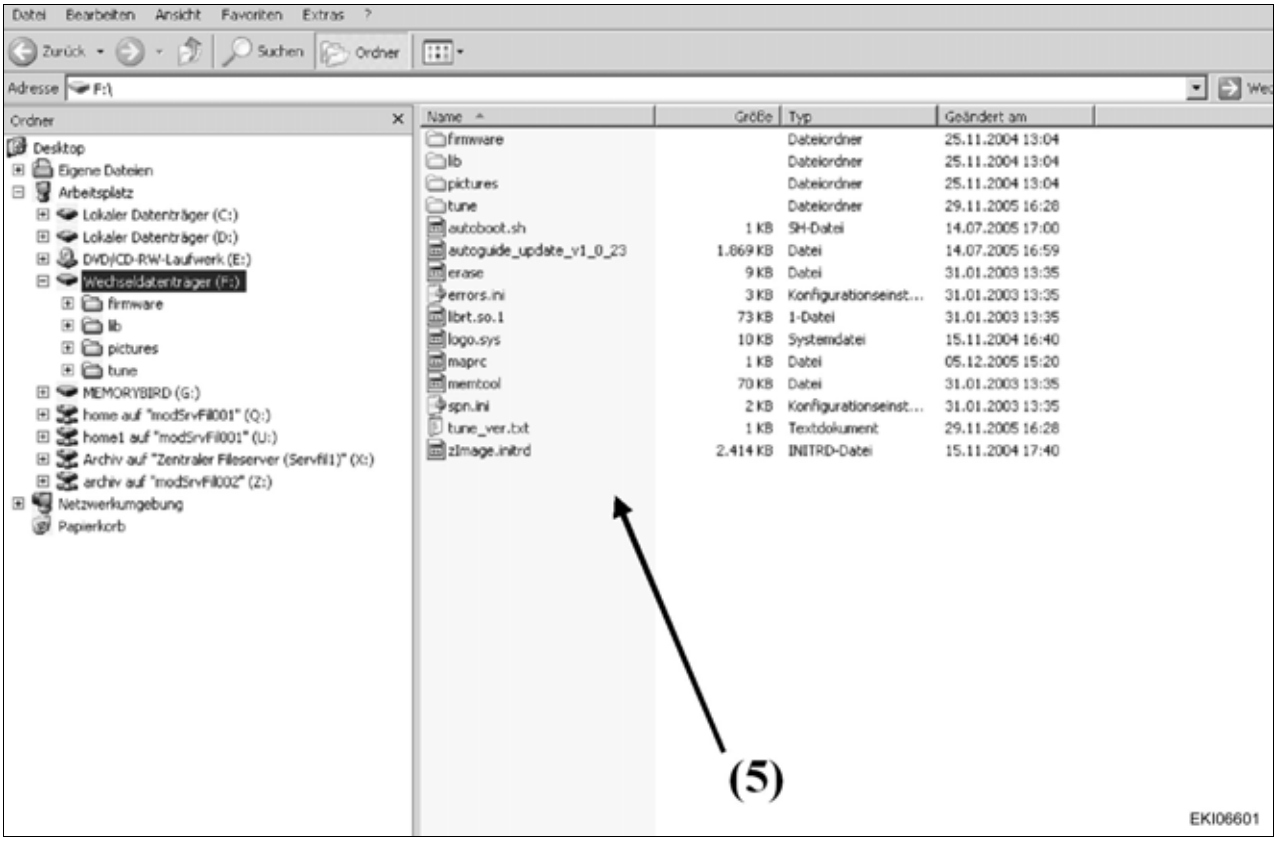


Fig. 264. I003414

(5)
Select and open the removable data carrier (PCMCIA card) (usually F:)
The data structure shown above (5) must be present on the PCMCIA card

Unpack the new Auto-Guide software on the laptop hard drive (C:)

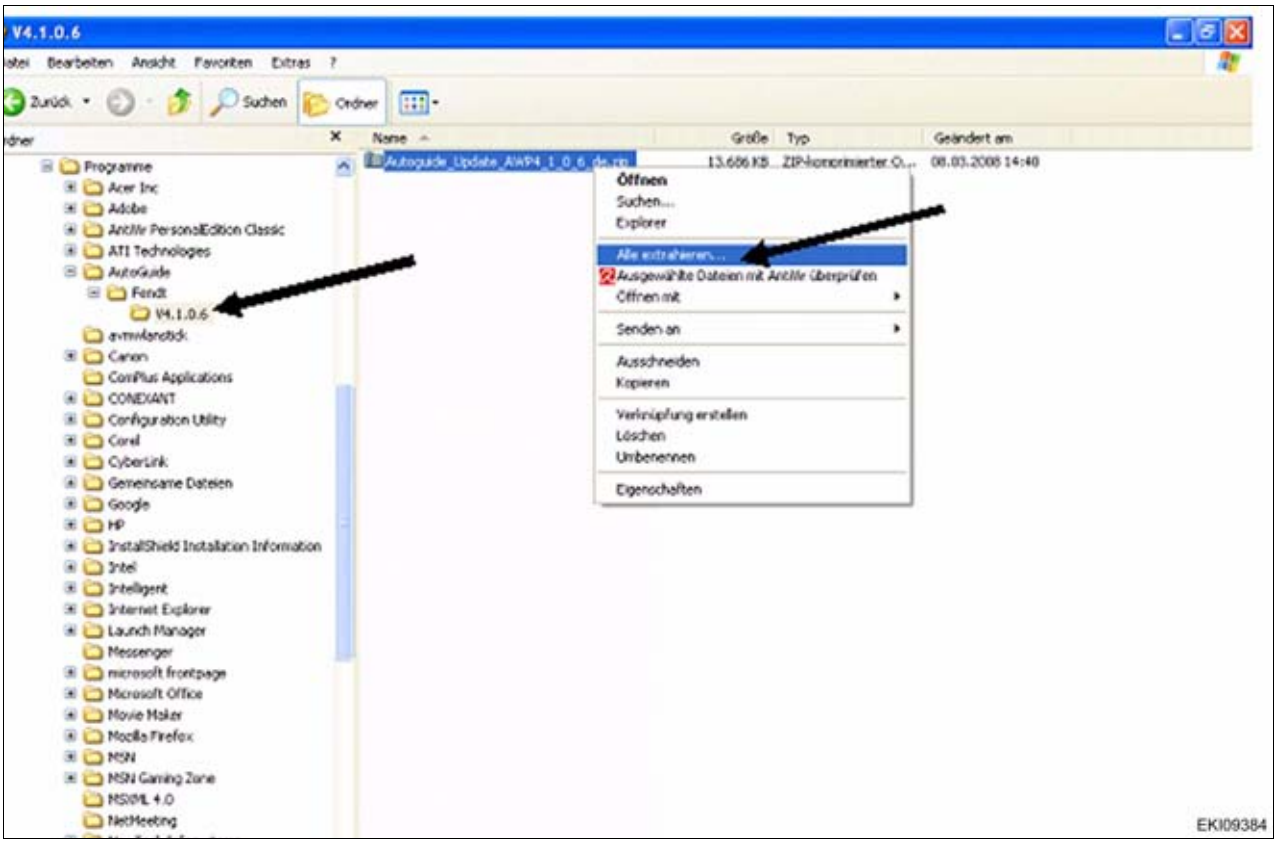


Fig. 265. I006139

919 .. 1001-
922 .. 0101-1000
922 .. 1001-
925 .. 0101-1000
925 .. 1001-
928 .. 0101-1000
928 .. 1001-
931 .. 0101-1000
931 .. 1001-
934 .. 0101-1000
934 .. 1001-

Select the software that was downloaded from AGCO NET in the program directory that was defined earlier
Example: C:/Autoguide/Fendt/V4.1.0.6

The software downloaded from AGCO NET is compressed
The software must be unpacked (extracted)

– Select the packed software, click the right mouse button and click on "Extract all"
– The target for unpacking (extracting) is the program directory that was defined earlier
Example: C:/Autoguide/Fendt/V4.1.0.6
– Execute the unpacking (extraction) procedure

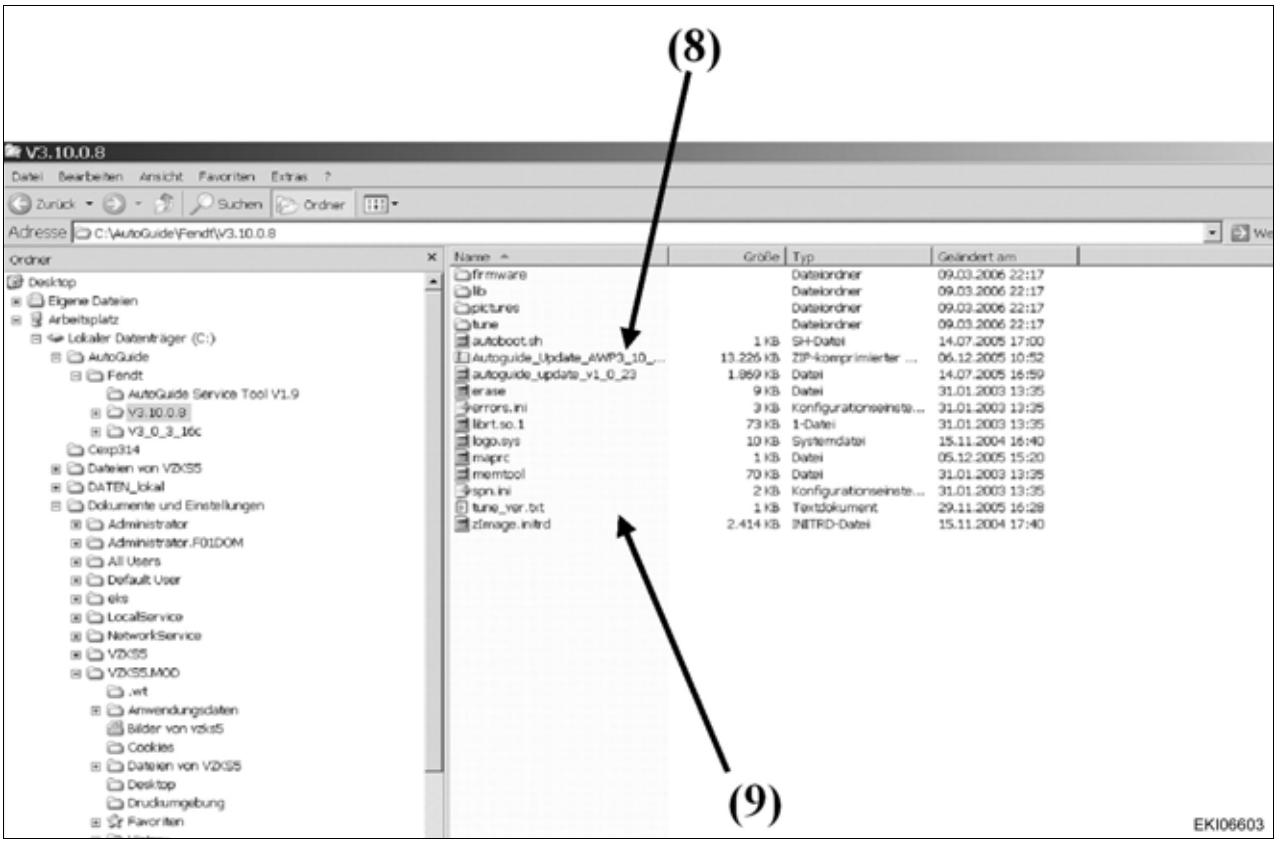


Fig. 266. I003416

Select and open the predefined program directory
Example: C:/Autoguide/Fendt/V4.1.0.6

In addition to the "ZIP file" **(8)** that was downloaded from AGCO NET, the following data structure must also be present in the same directory **(9)**

Programming the A059 Auto-Guide terminal and A058 Auto-Guide TopDock with the new software

Insert PCMCIA card X899.980.288.201 in the card slot on the A059 Auto-Guide terminal.

– Program the A059 Auto-Guide terminal
– Program the A058 Auto-Guide TopDock

NOTE: *See also:*
Chapter 4090 Reg. A - Programming the A059 Auto-Guide terminal
Chapter 4090 Reg. A - Programming the A058 Auto-Guide TopDock (using the A059 Auto-Guide terminal)



Fig. 267. I003065

Alternatively, the A058 Auto-Guide TopDock can be programmed using the **Auto-Guide Service-Tool**

NOTE: *See also:*
Chapter 4090 Reg. A - Programming the A058 Auto-Guide TopDock (using the Auto-Guide Service Tool)



Fig. 268. I003345

Check Chassis Range!

24 Programming the A059 Auto-Guide terminal (software update)

Preliminary work for programming

NOTE: *With the coolant temperature below 5°C, unscrew the separation point from the K063 heater flange relay.*
This prevents the battery voltage from dropping

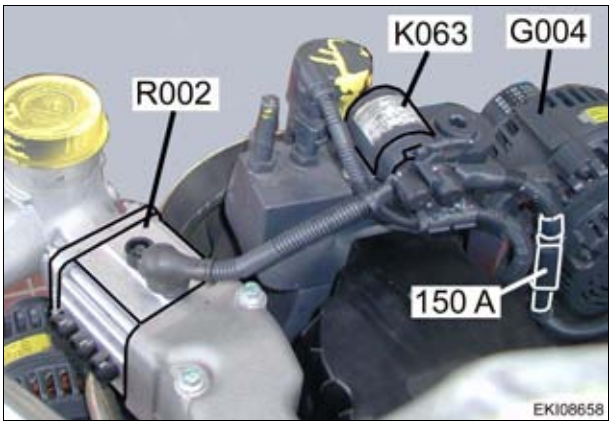


Fig. 269. I002531

K063 heater flange relay	
Pin	**Function**
86	Inductive input
85	Inductive output
88	Pin entry
88a	Pin output

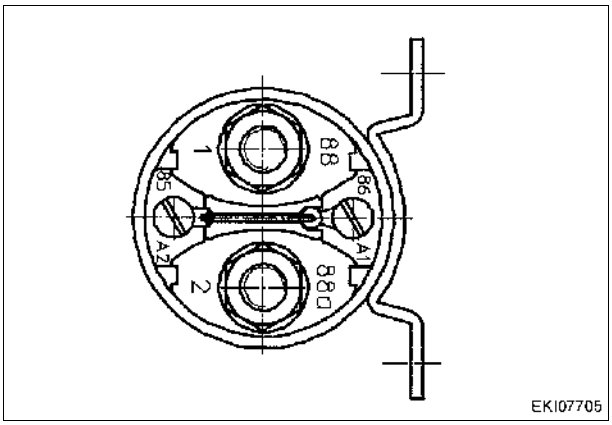


Fig. 270. I000768

Plug short-circuit connector (E) into the X028 ISO BUS socket

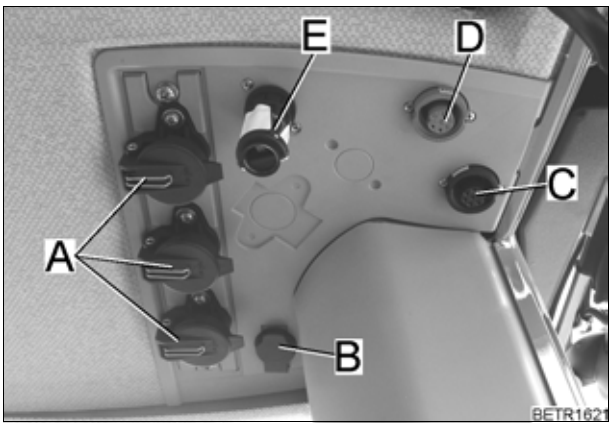


Fig. 271. I003280

For operation of the Auto-Guide system, it is necessary that the **ISO BUS tractor data** is set to **active.**



SCH321

Continue pressing the **F5** key until the display joystick and **tractor data active** is displayed / **Auto-Guide operation is possible**


SCH314

Deactivation of ISO BUS



SCH315

Vario terminal and joystick not active, an external ISO terminal can be used. **Tractor data active** / **Auto-Guide operation possible**



SCH317

Vario terminal not active. Joystick and **tractor data active** / **Auto-Guide operation possible**

NOTE: *Return with "ESC".*
Settings are active after exiting the sub-menu.

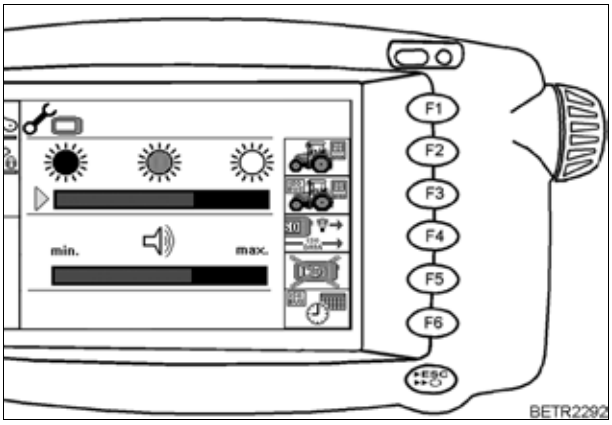


Fig. 272. I003284

Insert PCMCIA card X899.980.288.201 in the card slot on the A059 Auto-Guide terminal.



Fig. 273. I003065

Press and hold the 5 key
Switch on ignition.



Fig. 274. I003075

Check Chassis Range!

The A059 Auto-Guide terminal will switch to programming mode (Update Tool)



Fig. 275. I003325

Confirm warning message (DISCLAIMER) by pressing **OK**



Fig. 276. I002571

The Auto-Guide screen appears



– A green tick means that connection has been established with the component



– A red cross means that the connection with the component is faulty

BSAC = A058 Auto-Guide TopDock (GPS ECU)
VIU = A050 ECU, basic control unit
Terminal = A059 Auto-Guide terminal

NOTE: *The display is irrelevant in programming mode*



Fig. 277. I003327

Press the **Advanced** key



Fig. 278. I003326

This is where programming begins

Select the Auto-Guide terminal with the **Terminal Rescue** key



Fig. 279. I003329

The egg timer indicates that programming has begun
Programming takes approx. 20 minutes



Fig. 280. I003328



– A green tick indicates that programming (software download) was successful.
Return to the Auto-Guide programming screen with the **ESC** key.



– A red cross indicates that programming (software download) was not successful.
Return to the Auto-Guide programming screen with the **ESC** key.
Repeat programming of the Auto-Guide terminal.



Fig. 281. I003080

Check Chassis Range!

The Auto-Guide programming screen is displayed



Fig. 282. I003330

25 Programming the A058 Auto-Guide TopDock (software update) using the A059 Auto-Guide terminal

Preliminary work for programming

NOTE: *With the coolant temperature below 5°C, unscrew the separation point from the K063 heater flange relay.*
This prevents the battery voltage from dropping

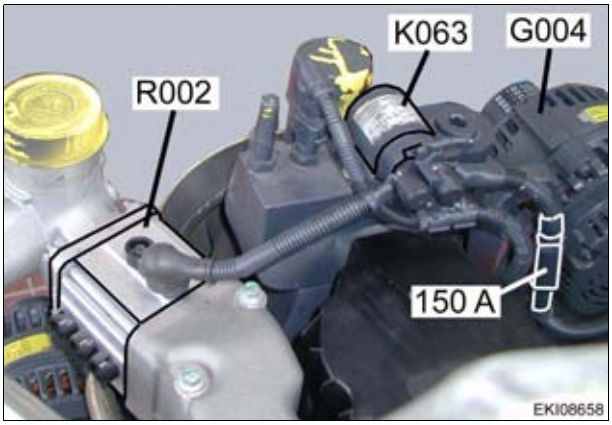


Fig. 283. I002531

K063 heater flange relay	
Pin	**Function**
86	Inductive input
85	Inductive output
88	Pin entry
88a	Pin output

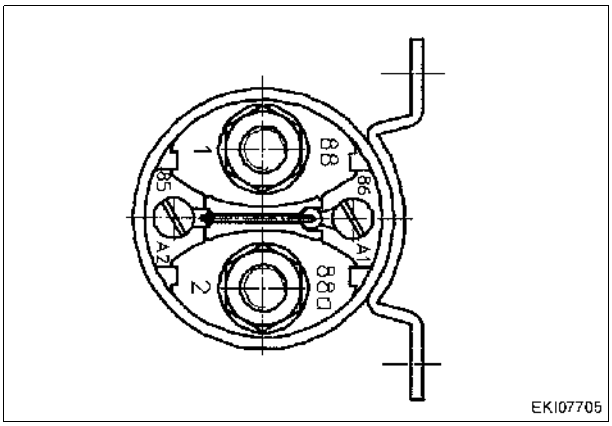


Fig. 284. I000768

Plug short-circuit connector (E) into the X028 ISO BUS socket

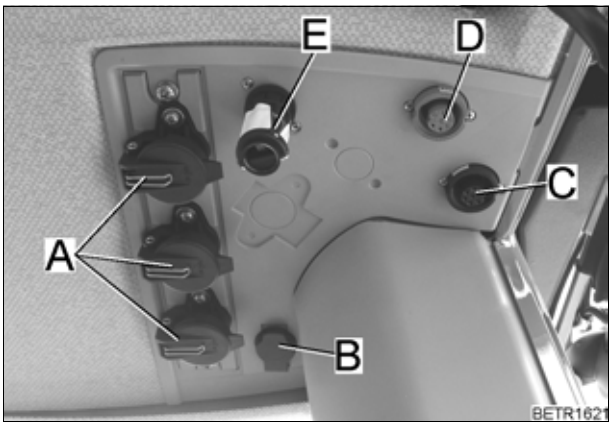


Fig. 285. I003280

Check Chassis Range!

For operation of the Auto-Guide system, it is necessary that the **ISO BUS tractor data** is set to **active.**



Continue pressing the **F5** key until the display joystick and **tractor data active** is displayed / **Auto-Guide operation is possible**



Deactivation of ISO BUS



Vario terminal and joystick not active, an external ISO terminal can be used. **Tractor data active** / **Auto-Guide operation possible**



Vario terminal not active. Joystick and **tractor data active** / **Auto-Guide operation possible**

NOTE: *Return with "ESC".*
Settings are active after exiting the sub-menu.

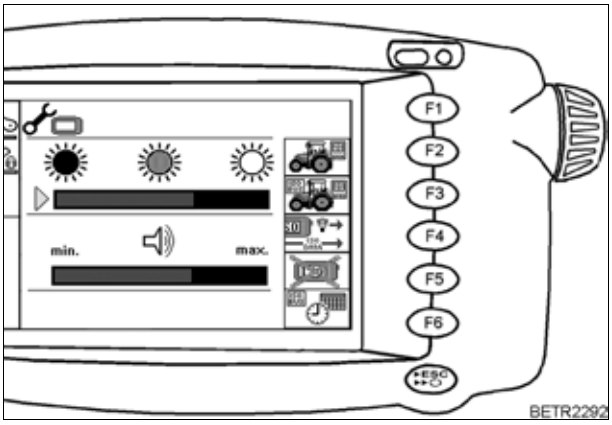


Fig. 286. I003284

The standby time on the A059 Auto-Guide terminal must be set to 0 before programming the A058 Auto-Guide TopDock

Switch on ignition.
The A059 Auto-Guide terminal starts up (takes approx. 2 minutes)
Confirm language selection by pressing **Enter**



Fig. 287. I003306

Confirm warning message (DISCLAIMER) by pressing **OK**



Fig. 288. I002571

Scroll with the **arrow key**.



Fig. 289. I003307

Continue to the settings menu with the **spanner key**.



Fig. 290. I003332

The settings menu appears.

Press the **arrow** button to continue.



Fig. 291. I003333

The second screen is displayed.

Press the **Stand-By** button to continue to standby mode



Fig. 292. I003334

Check Chassis Range!

The screen for setting the standby time appears

NOTE: *Standby time:*
The time for which the A058 Auto-Guide TopDock remains energised after the ignition is switched off is referred to as the standby time.
The connection to the GPS satellites is maintained for as long as the A058 Auto-Guide TopDock is energised.
This reduces the startup time for the system when automatic track guidance is activated again. As a result, greater accuracy is achieved more quickly.

The standby time must be set to 0 for programming the A058 Auto-Guide TopDock



Fig. 293. I003335

Programming cable X899.980.288.202 is required in order to program the A058 Auto-Guide TopDock (GPS ECU).



Fig. 294. I003082

Connect programming cable X899.980.288.202 to the A059 Auto-Guide terminal via the serial port

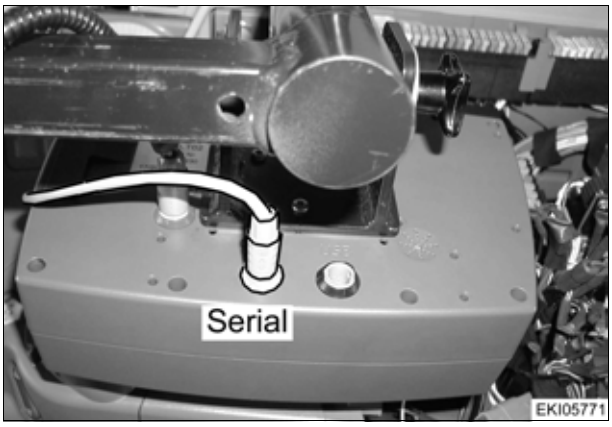


Fig. 295. I003083

Connect programming cable X899.980.288.202 to the A058 Auto-Guide TopDock via the serial port



Fig. 296. I003331

Check Chassis Range!

Insert PCMCIA card X899.980.288.201 in the card slot on the A059 Auto-Guide terminal.



Fig. 297. I003065

Press and hold the 5 key
Switch on ignition.



Fig. 298. I003075

The A059 Auto-Guide terminal will switch to programming mode (Update Tool)

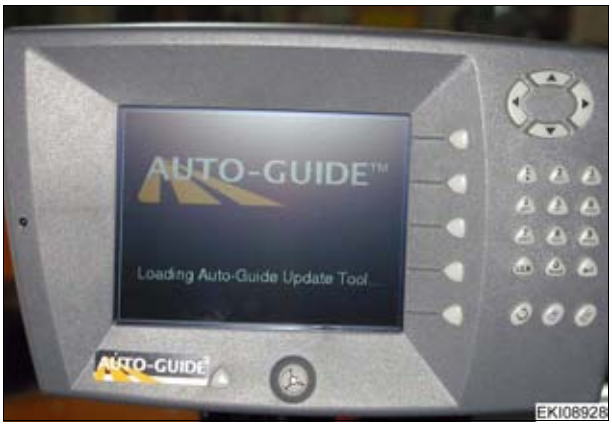


Fig. 299. I003325

Confirm warning message (DISCLAIMER) by pressing **OK**



Fig. 300. I002571

Check Chassis Range!

The Auto-Guide screen appears



– A green tick means that connection has been established with the component



– A red cross means that the connection with the component is faulty

BSAC = A058 Auto-Guide TopDock (GPS ECU)
VIU = A050 ECU, basic control unit
Terminal = A059 Auto-Guide terminal

NOTE: *The display is irrelevant in programming mode*



Fig. 301. I003327

Switch the Auto-Guide system to standby mode (A058 Auto-Guide TopDock is energised)
Actuate the standby switch (B).
The LED on the standby switch (B) flashes

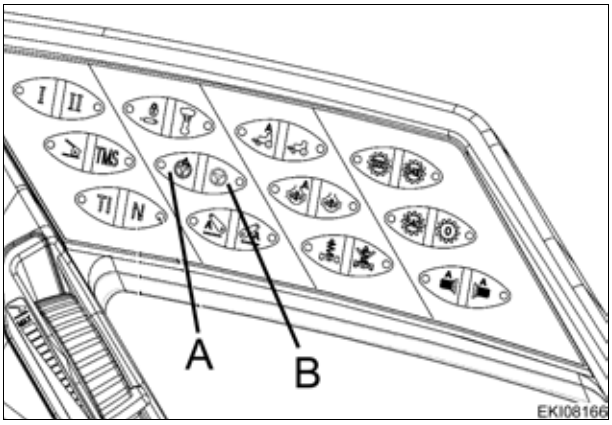


Fig. 302. I000979

The red LED (arrow) indicates that the A058 Auto-Guide TopDock is energised.

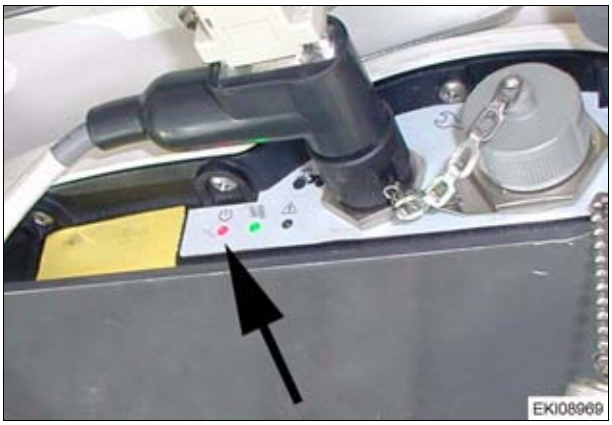


Fig. 303. I003338

Press the **Advanced** key



Fig. 304. I003326

This is where programming begins

Select the A058 Auto-Guide TopDock with the **BSAC** key



Fig. 305. I003085

The egg timer indicates that programming (software download) has started

Programming takes approx. 45 minutes



Fig. 306. I003086

During programming, the A058 Auto-Guide TopDock will be switched on and off automatically.
If this fails, a warning message is displayed.
Confirm the warning message with **OK**
Follow the instructions that appear on the terminal

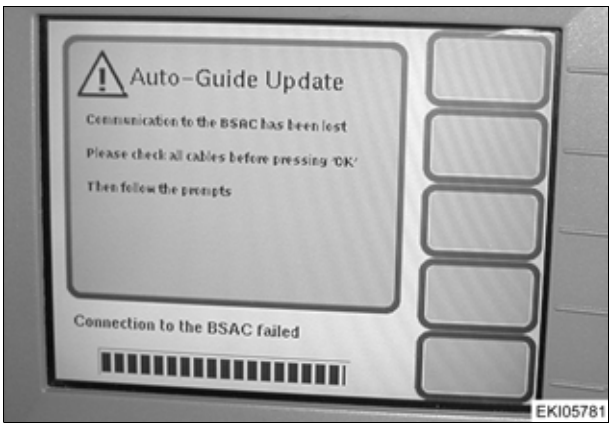


Fig. 307. I003087

Check Chassis Range!

Switch the A058 Auto-Guide TopDock off and on again within 18 seconds

Press the standby switch (B) for approx. 5 seconds (LED off) = A058 Auto-Guide TopDock off

Press the standby switch (B) (LED flashing) = A058 Auto-Guide TopDock on

NOTE: *Since several software versions are being loaded onto the A058 Auto-Guide TopDock, this process is repeated up to 4 times*

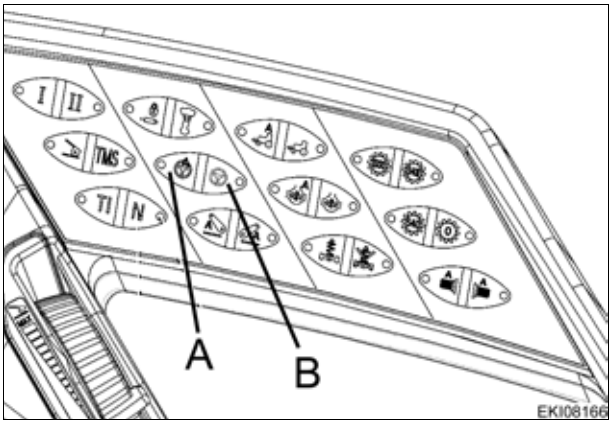


Fig. 308. I000979

The red LED is lit = A058 Auto-Guide TopDock is energised
The red LED is off = A058 Auto-Guide TopDock is not energised.

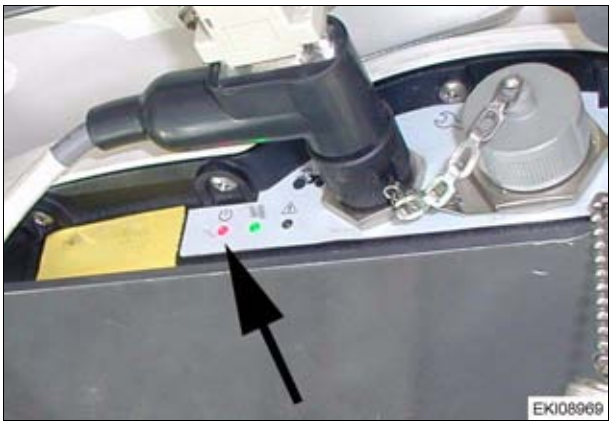


Fig. 309. I003338

The programming process is resumed

NOTE: *If programming is not resumed at this point, the programming operation must be started again*



Fig. 310. I003086

After programming has been completed:



– A green tick indicates that programming (software download) was successful.
Return to the Auto-Guide programming screen with the **ESC** key.



– A red cross indicates that programming (software download) was not successful.
Return to the Auto-Guide programming screen with the **ESC** key.
Repeat programming of the A058 Auto-Guide Top-Dock

The Auto-Guide programming screen is displayed

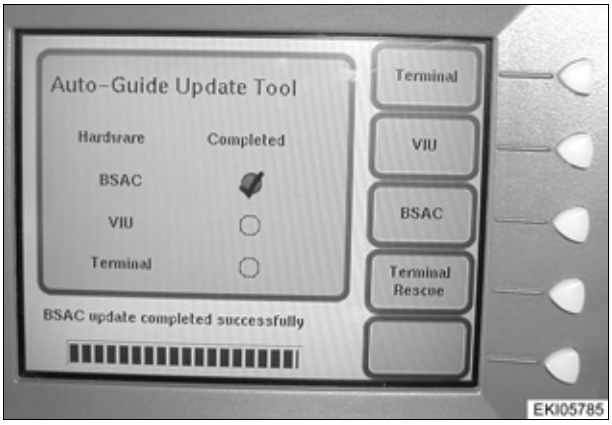


Fig. 311. I003089



Fig. 312. I003337

26 Programming the A058 Auto-Guide TopDock (software update) (using the Auto-Guide Service Tool)

Preliminary work for programming

NOTE: *With the coolant temperature below 5°C, unscrew the separation point from the K063 heater flange relay.*
This prevents the battery voltage from dropping

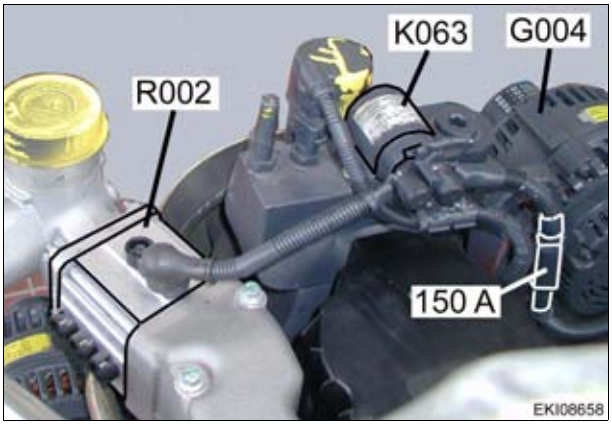


Fig. 313. I002531

K063 heater flange relay	
Pin	**Function**
86	Inductive input
85	Inductive output
88	Pin entry
88a	Pin output

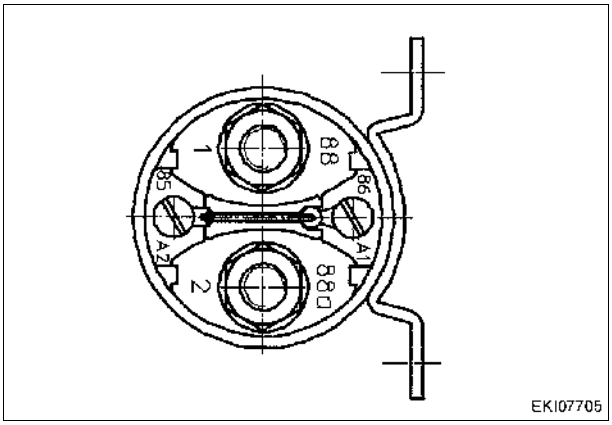


Fig. 314. I000768

Plug short-circuit connector (E) into the X028 ISO BUS socket

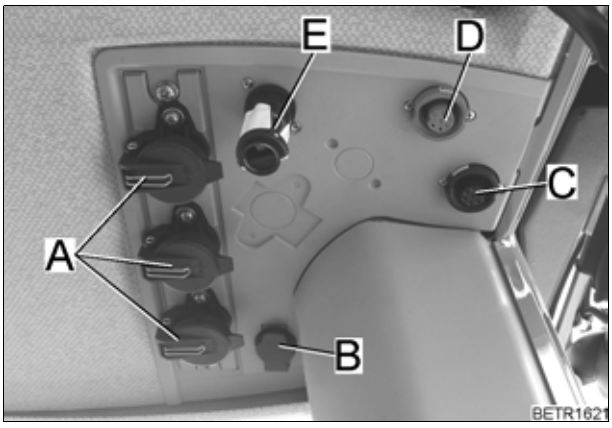


Fig. 315. I003280

For operation of the Auto-Guide system, it is necessary that the **ISO BUS tractor data** is set to **active.**



Continue pressing the **F5** key until the display joystick and **tractor data active** is displayed / **Auto-Guide operation is possible**



Deactivation of ISO BUS



Vario terminal and joystick not active, an external ISO terminal can be used. **Tractor data active** / **Auto-Guide operation possible**



Vario terminal not active. Joystick and **tractor data active** / **Auto-Guide operation possible**

NOTE: *Return with "ESC".*
Settings are active after exiting the sub-menu.

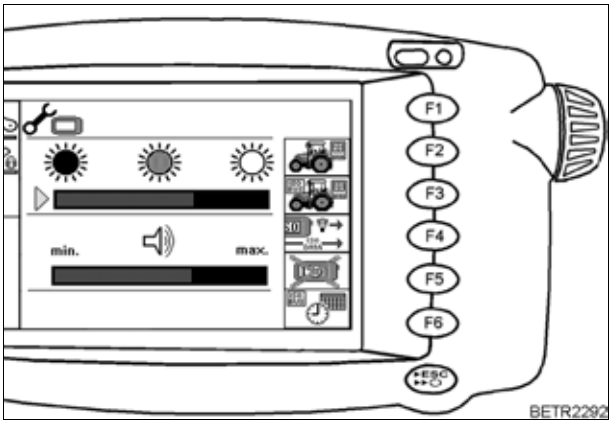


Fig. 316. I003284

The standby time on the A059 Auto-Guide terminal must be set to 0 before programming the A058 Auto-Guide TopDock

Switch on ignition.
The A059 Auto-Guide terminal starts up (takes approx. 2 minutes)
Confirm language selection by pressing **Enter**



Fig. 317. I003306

Confirm warning message (DISCLAIMER) by pressing **OK**



Fig. 318. I002571

Scroll with the **arrow key**.



Fig. 319. I003307

Continue to the settings menu with the **spanner key**.



Fig. 320. I003332

The settings menu appears.

Press the **arrow** button to continue.



Fig. 321. I003333

The second screen is displayed.

Press the **Stand-By** button to continue to standby mode



Fig. 322. I003334

Check Chassis Range!

The screen for setting the standby time appears

NOTE: *Standby time:*
The time for which the A058 Auto-Guide TopDock remains energised after the ignition is switched off is referred to as the standby time.
The connection to the GPS satellites is maintained for as long as the A058 Auto-Guide TopDock is energised.
This reduces the startup time for the system when automatic track guidance is activated again. As a result, greater accuracy is achieved more quickly.

The standby time must be set to 0 for programming the A058 Auto-Guide TopDock



Fig. 323. I003335

Connect the serial cable to the PC.

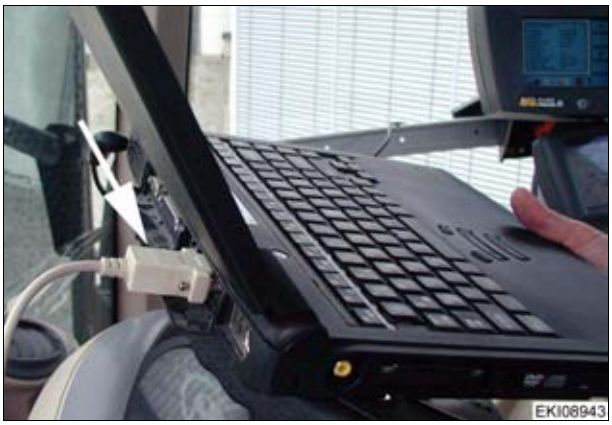


Fig. 324. I003345

Connect the serial cable to the A058 Auto-Guide TopDock.



Fig. 325. I003331

Switch on ignition.
Switch the Auto-Guide system to standby mode (A058 Auto-Guide TopDock is energised)
The LED on the standby switch (B) flashes

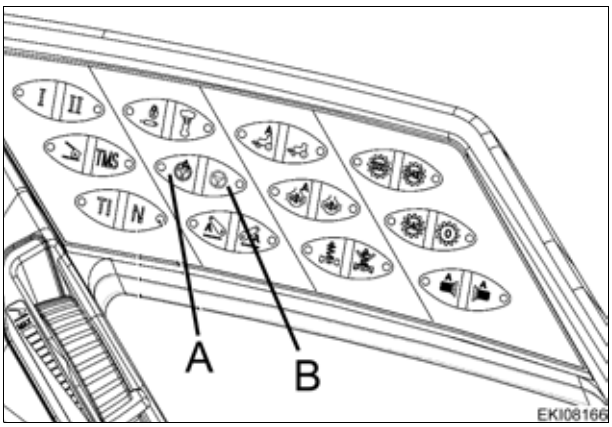


Fig. 326. I000979

Check Chassis Range!

The red LED (arrow) indicates that the A058 Auto-Guide TopDock is energised.

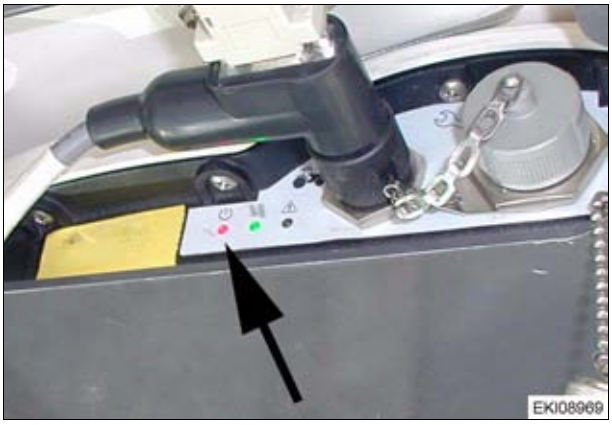


Fig. 327. I003338

Programming with the Auto-Guide service tool

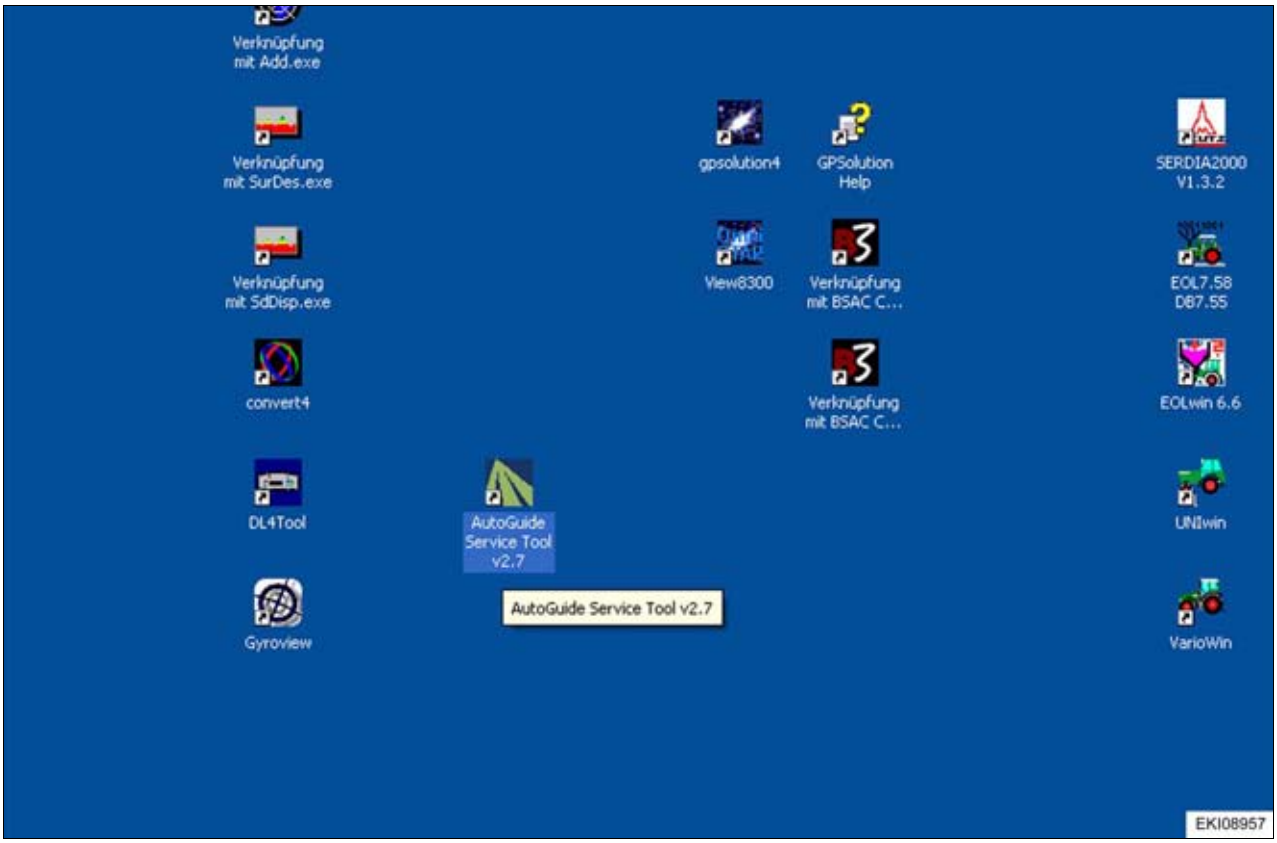


Fig. 328. I003346

Double-click the Auto-Guide service tool icon.
The Auto-Guide service tool starts.

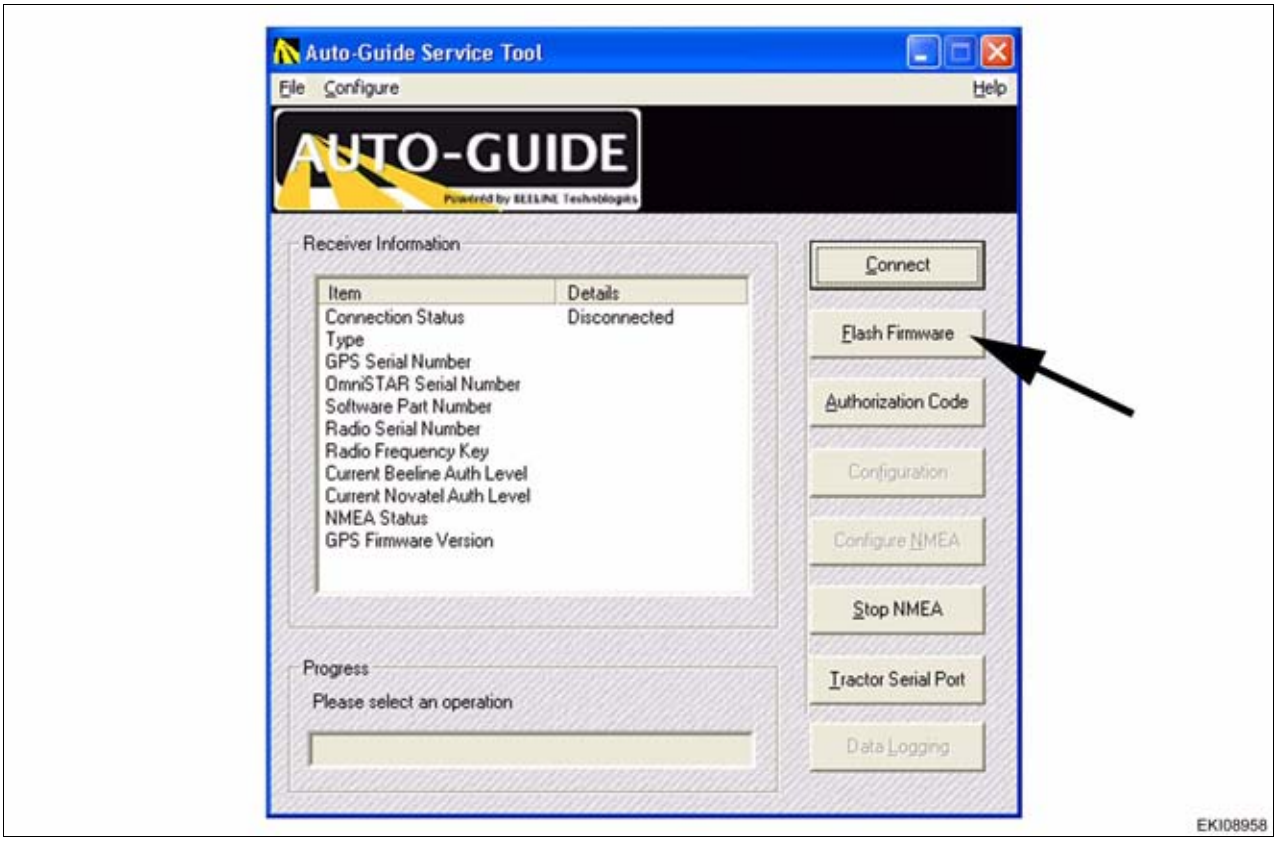


Fig. 329. I003347

The Auto-Guide service tool is displayed

Click **Flash Firmware**

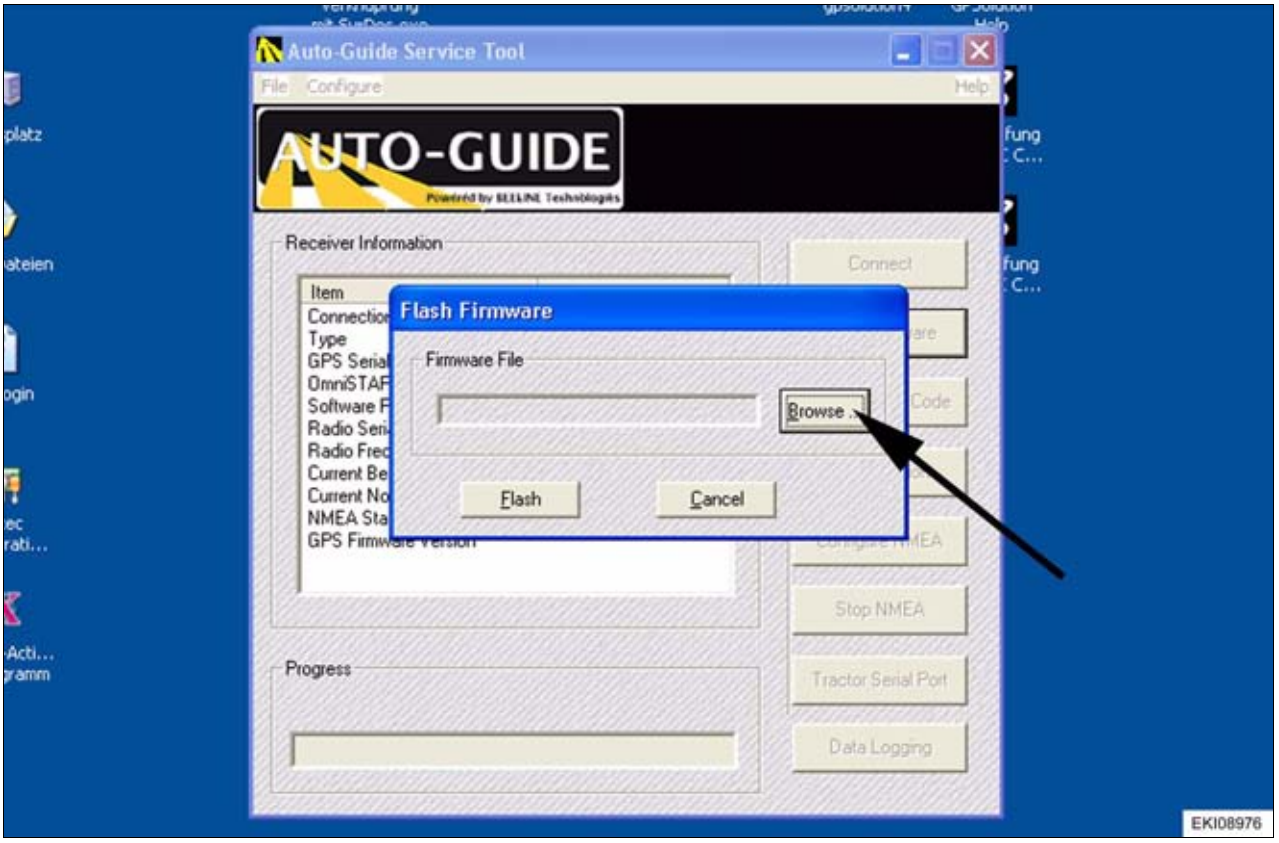


Fig. 330. I003354

Click **Browse**

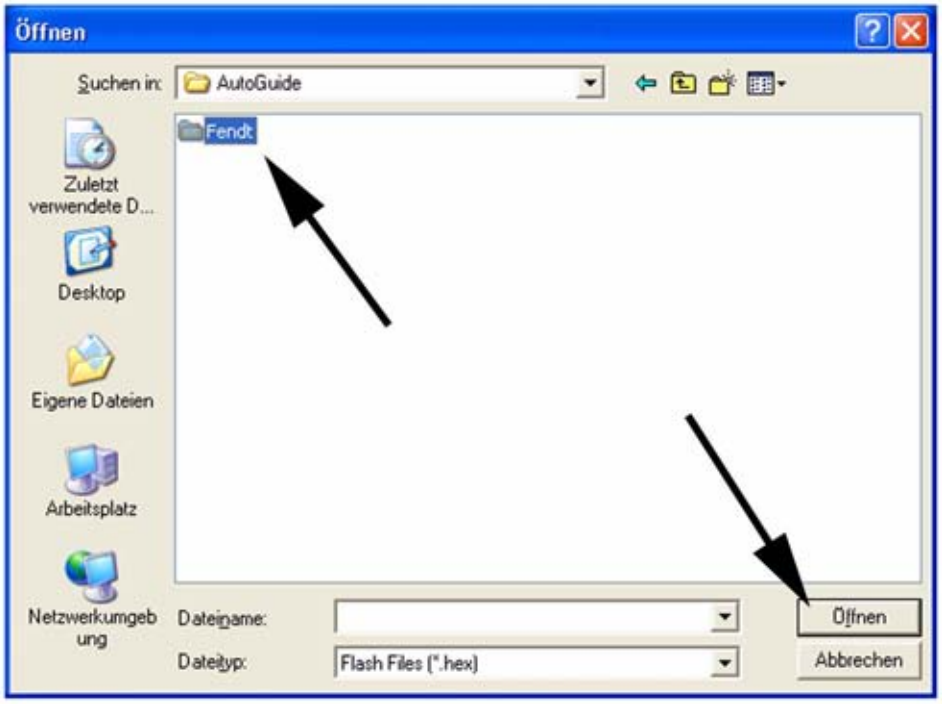


Fig. 331. I003355

Select and open the **Fendt** folder

Path: C:/AutoGuide/Fendt/V4.1.0.6.de/firmware/b3

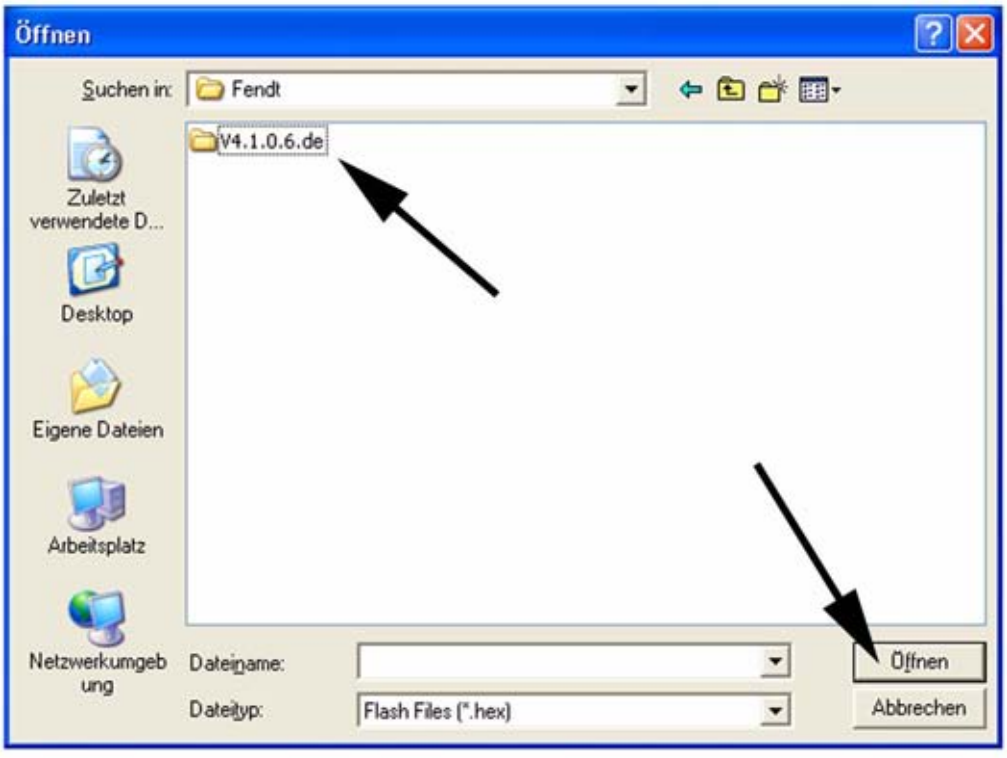


Fig. 332. I003348

Check Chassis Range!

Select and open the **V4.1.0.6.de** folder

NOTE: *V4.1.0.6.de = The latest software version (as at July 2007) with German menu navigation (de)*

Path: C:/AutoGuide/Fendt/V4.1.0.6.de/firmware/b3

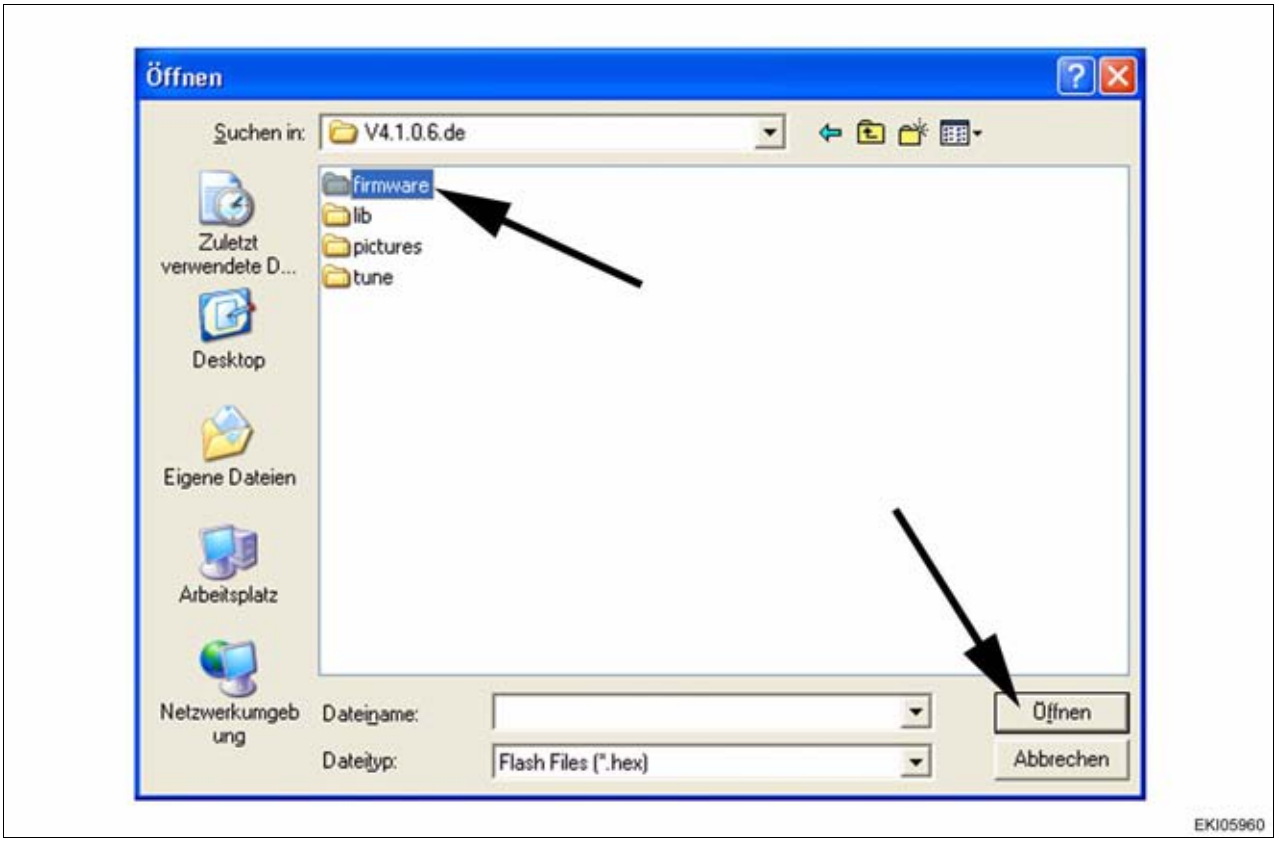


Fig. 333. I003349

Select and open the **firmware** folder

Path: C:/AutoGuide/Fendt/V4.1.0.6.de/firmware/b3

Check Chassis Range!

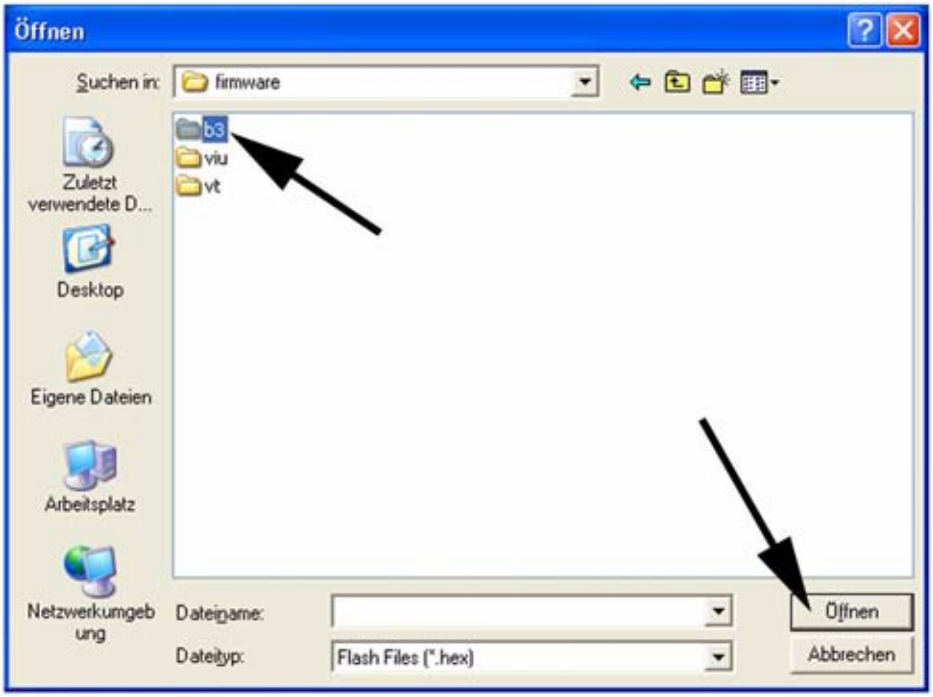


Fig. 334. I003350

Select and open the **b3** folder

Path: C:/AutoGuide/Fendt/V4.1.0.6.de/firmware/b3

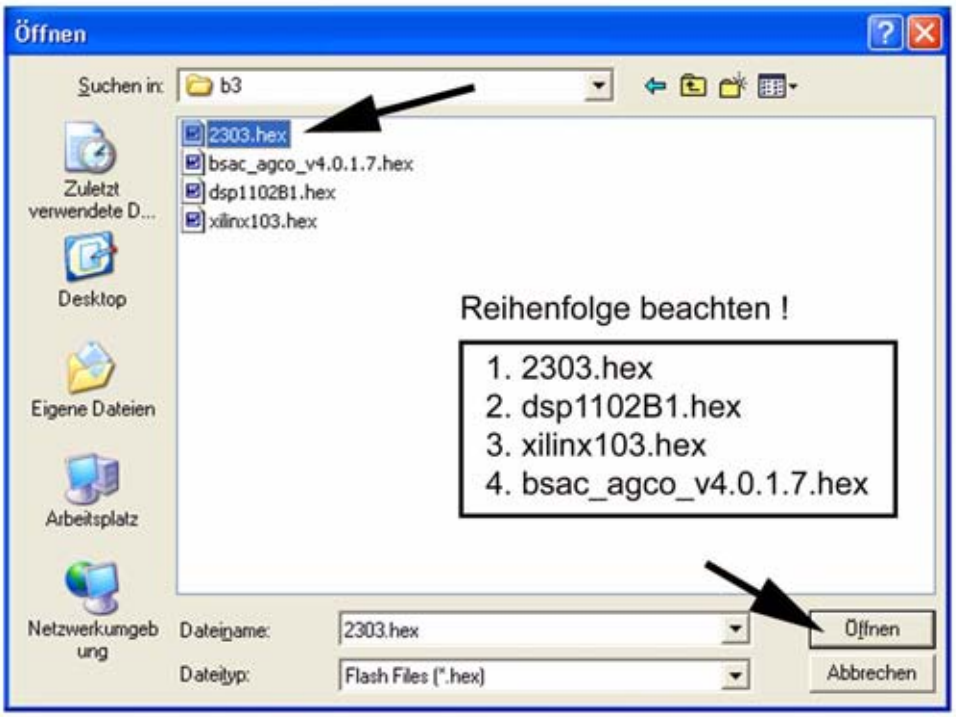


Fig. 335. I003351

The data sets are displayed

NOTE: *The data sets must be loaded onto the A058 Auto-Guide TopDock in a predefined sequence!*
1. 2303.hex
2. dsp1102B1.hex
3. xilinx103.hex
4. bsac_agco_v4.0.1.7.hex

Select and open the first data set (2303.hex)

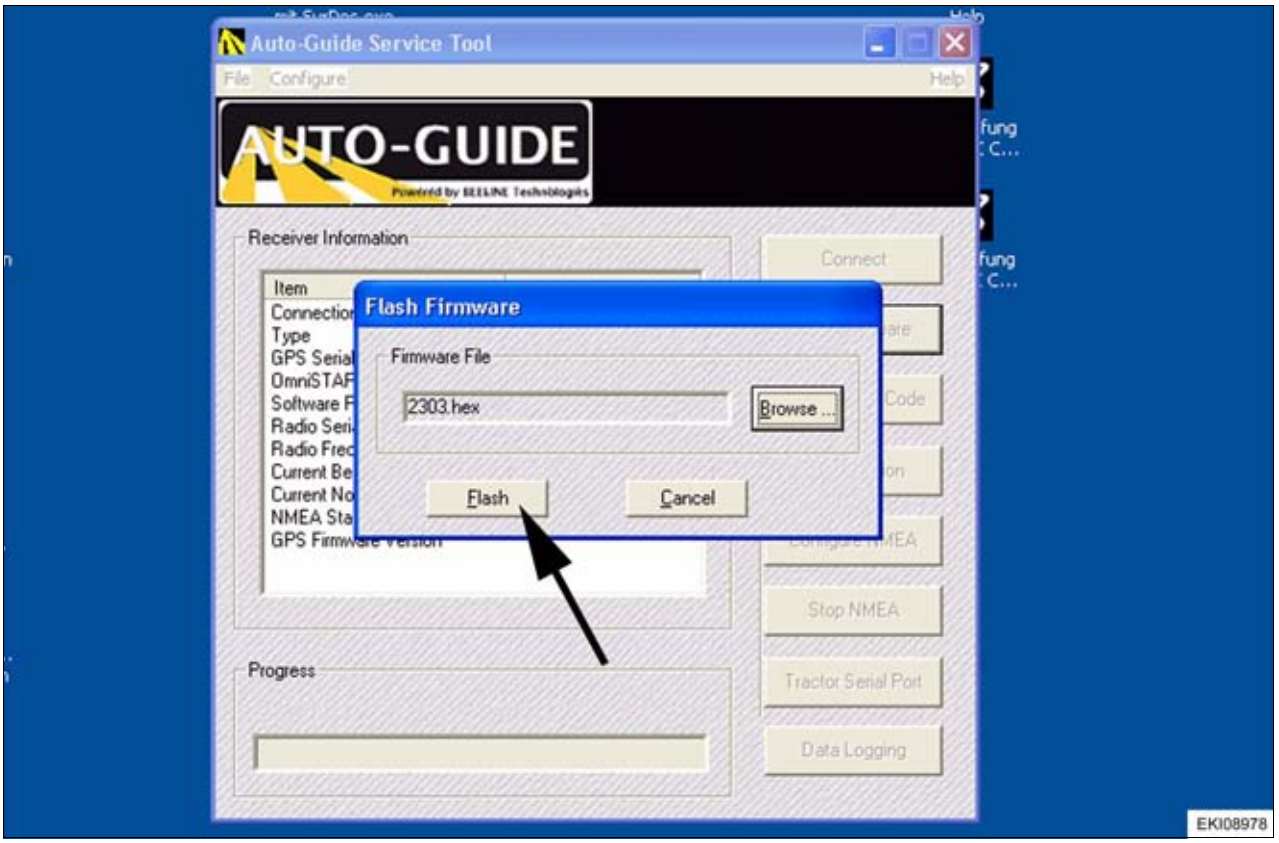


Fig. 336. I003356

Click **Flash**

The software is now loaded onto the A058 Auto-Guide TopDock

Check Chassis Range!

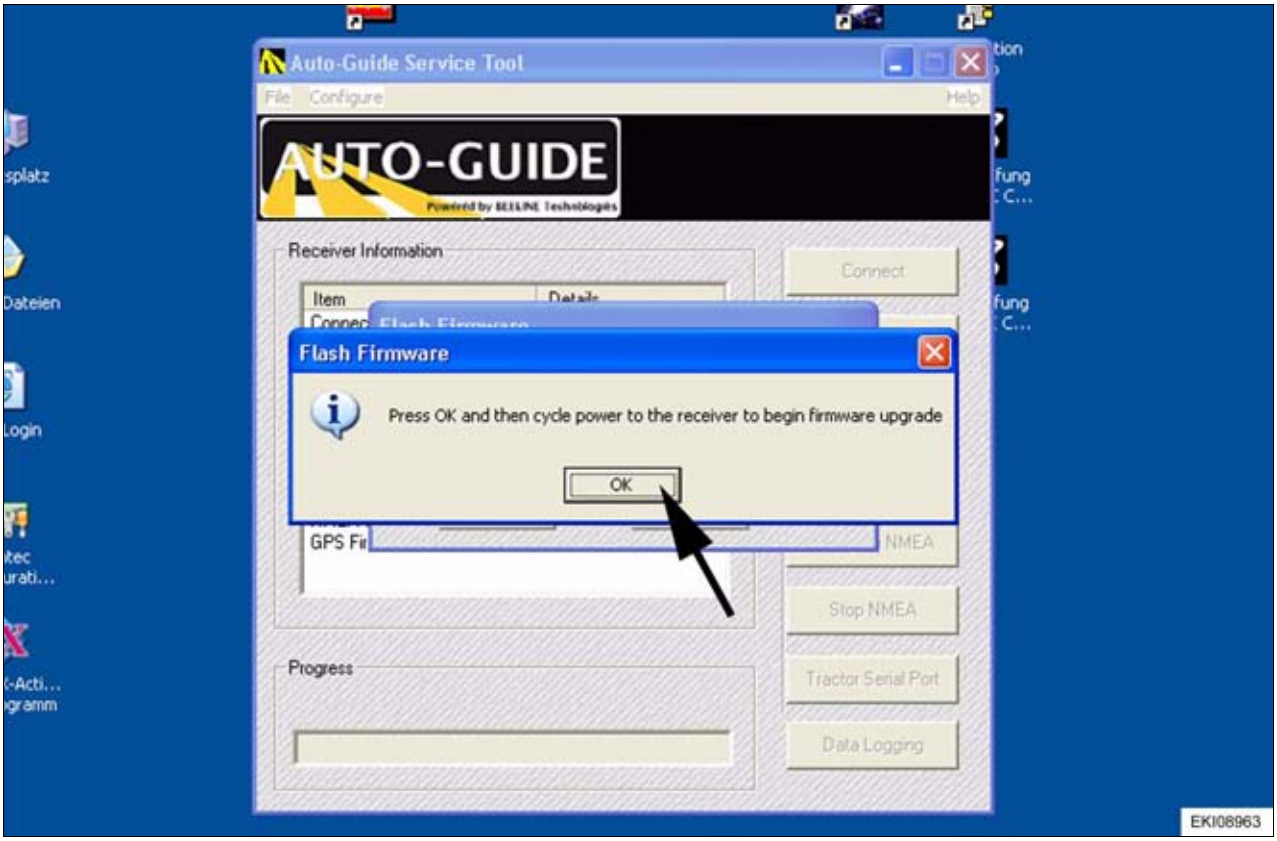


Fig. 337. I003352

Press OK to continue

Switch the Auto-Guide standby switch off and on again within 15 seconds (resetting the A058 Auto-Guide Top-Dock)

Switch the A058 Auto-Guide TopDock off and on again within 15 seconds

Press the standby switch (B) for approx. 5 seconds (LED off) = A058 Auto-Guide TopDock off

Press the standby switch (B) (LED flashing) = A058 Auto-Guide TopDock on

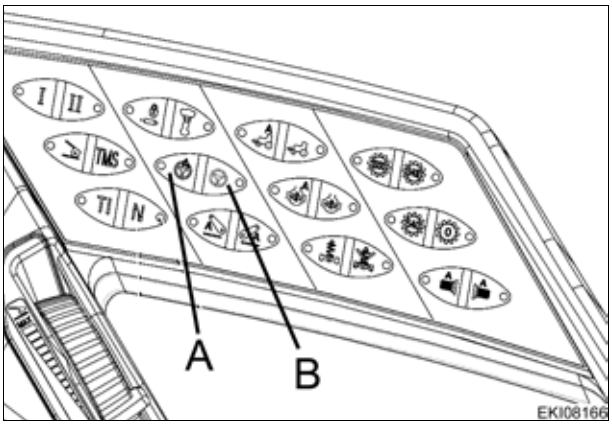


Fig. 338. I000979

The red LED is lit = A058 Auto-Guide TopDock is energised
The red LED is off = A058 Auto-Guide TopDock is not energised.

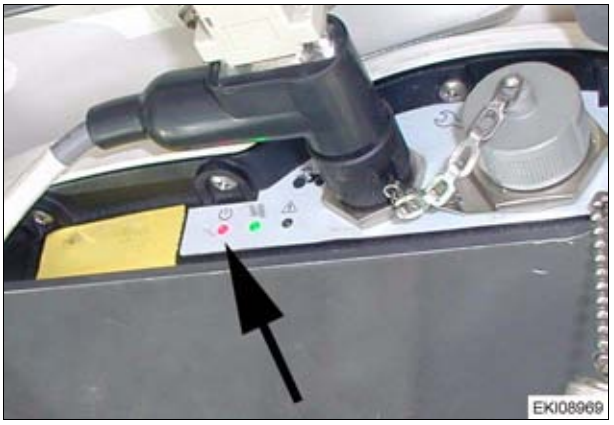


Fig. 339. I003338

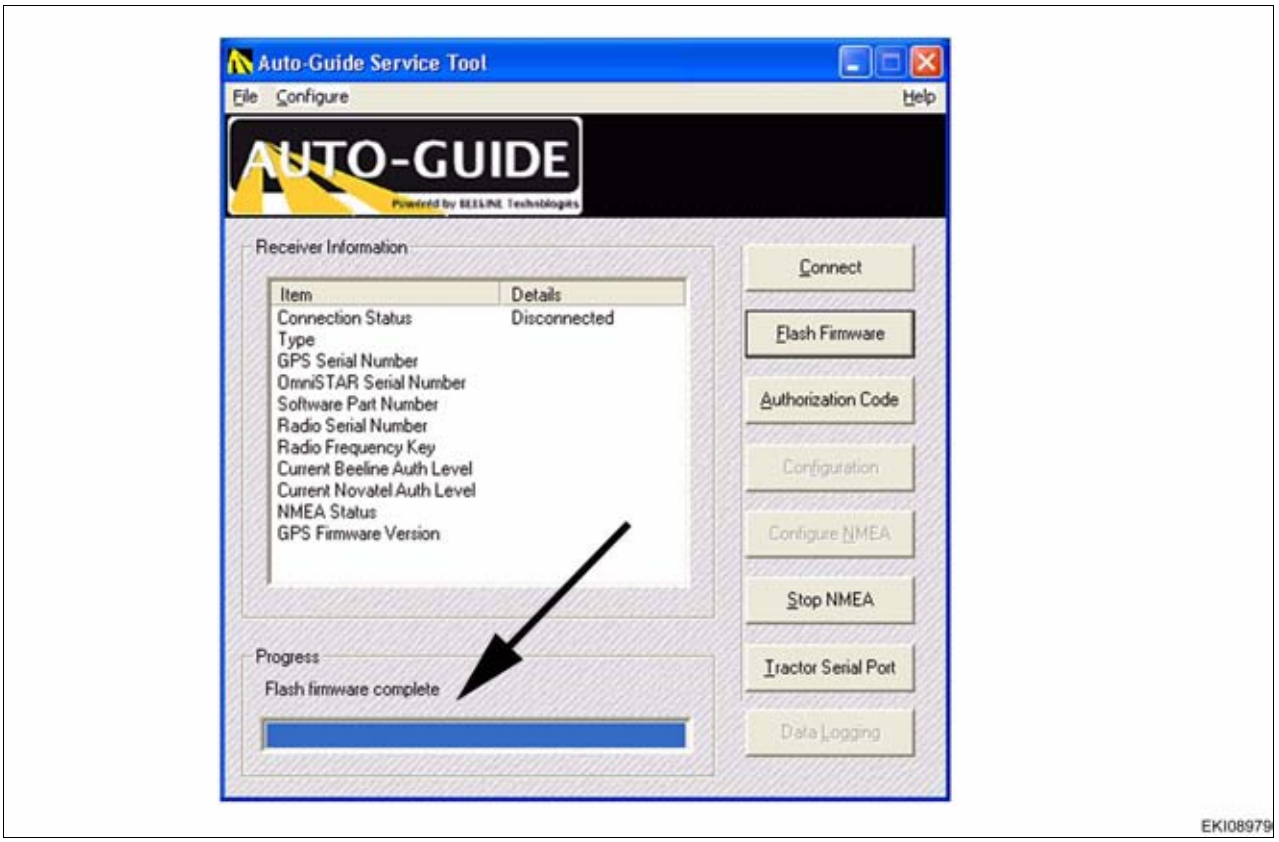


Fig. 340. I003357

If the data set has been programmed successfully, the following message will appear: **Flash firmware complete**

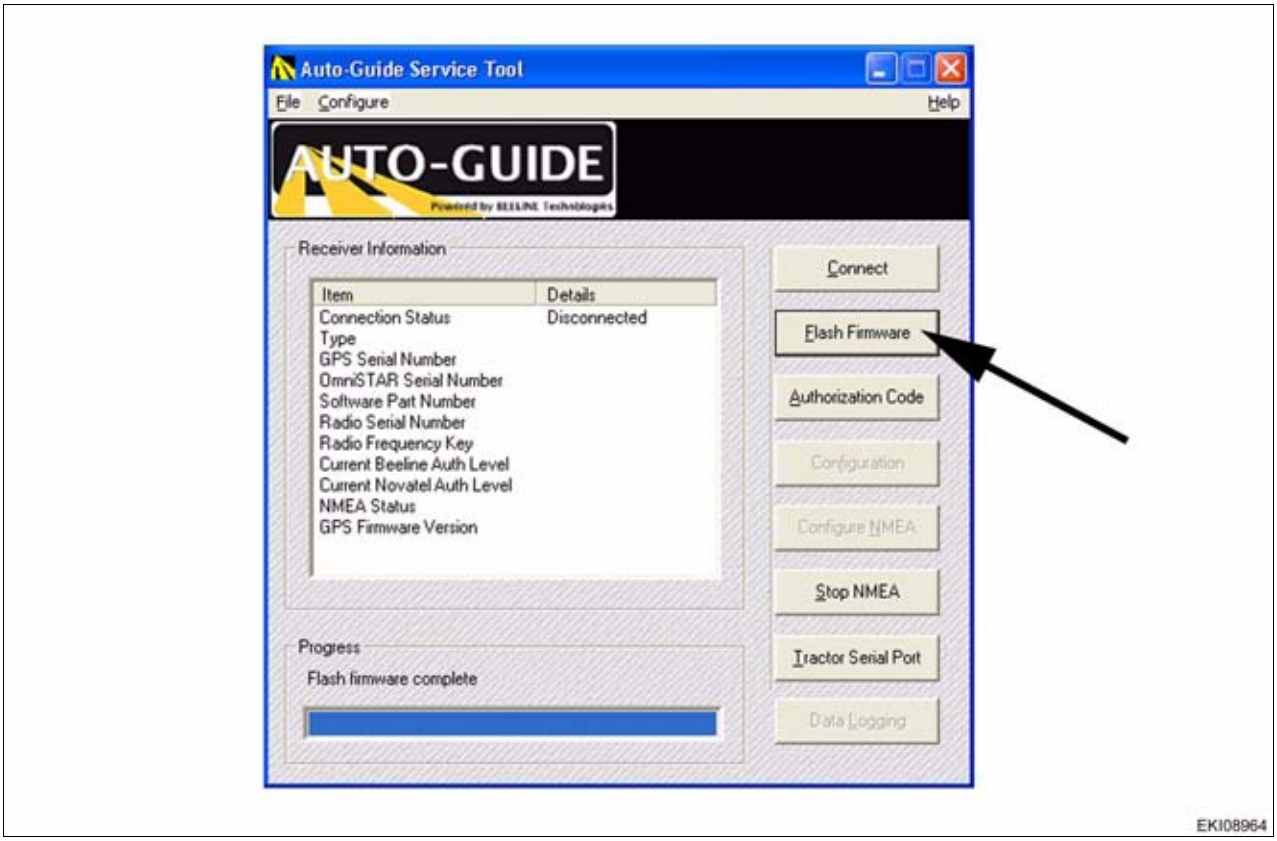


Fig. 341. I003353

Follow the same procedure for the other 3 data sets in the correct sequence

Check Chassis Range!

B Faults

1 Auto-Guide – error code table 165
2 Auto-Guide system: Offset cross track ("AUTO-OFFSET") 192
3 Reading Auto-Guide system information "Details" 194
4 Checking the satellite reception by the Auto-Guide system 202
5 Checking Auto-Guide (range: hydraulic steering) with A059-Auto-Guide terminal 209
6 Setting the frequency and channel of the radio module (tractor and base station) 212

Check Chassis Range!

1 Auto-Guide – error code table

Warning and fault messages

The A059 Auto-Guide terminal has two types of error messages:

Warning messages

Warning messages are information messages that inform of changes to the Auto-Guide system.

Fault message

A fault message points out an event that disengages the automatic steering ("Steering Assist"), the driver must again assume manual control of the tractor.

Confirm the warning and fault messages with **OK**



Fig. 1. I002560

Warning and fault messages

Code	Type
Code B	System reports (fault in the satellite reception and analysis): These messages come from the **A058 Auto-Guide TopDock (receiver unit)**
Code T	Terminal reports (fault in the operation): These messages come from the **A059 Auto-Guide terminal**
Code V	VIU reports (fault in the steering system): These reports come from the **A050 ECU, basic control unit** **Note:** The defects (Code V) are also displayed on the A007 instrument panel

Reading the error memory on the A059 Auto-Guide terminal ("system log")

The "system log" displays Auto-Guide error messages.

Ignition ON,

The A059 Auto-Guide terminal starts up (takes approx. 2 minutes)

Confirm warning message (DISCLAIMER) by pressing **OK.**



Fig. 2. I002571

– Scroll with the **arrow key**



Fig. 3. I003307

– Switch to the status indicator with the **measuring gauges**



Fig. 4. I003308

– The "Status" screen is displayed.
– This page displays the status of the Auto-Guide components.



A green tick means that the component is operational.



A red cross means that the component is not operational.

DMU = electronic gyro compass (in the A058 TopDock)
Correction = Correction signal reception
GPS = ECU, GPS (electronic box in the A058 TopDock)
Steer = A050 ECU, basic control unit
Comms = Connection between Auto-Guide components



Fig. 5. I003309

– From the "Status" screen, press the **System Log** button



Fig. 6. I003318



Press the arrow keys to read lengthy error messages



Press Update to update the error messages

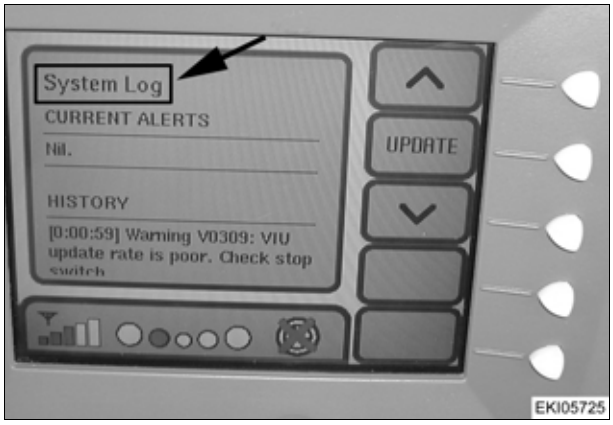


Fig. 7. I002559

System messages from A058 Auto-Guide TopDock (receiver unit)

Message	Description	Remedy
B 0012	**A058 Auto-Guide TopDock** Fault	– Disconnect and reconnect the X1633 separation point on A058 Auto-Guide TopDock – Call up the "Details" on the "Status" screen to view the current operating statuses
B 0100	**A058 Auto-Guide TopDock**: **DMU (gyro compass)** Vertical acceleration is too high	– Disconnect and reconnect the X1633 separation point on A058 Auto-Guide TopDock – Call up the "Details" on the "Status" screen to view the current operating statuses
B 0101	**A058 Auto-Guide TopDock: DMU (gyro compass)** Vertical acceleration is too low	– Disconnect and reconnect the X1633 separation point on the Auto-Guide TopDock – Call up the "Details" on the "Status" screen to view the current operating statuses
B0113	**A058 Auto-Guide TopDock: DMU (gyro compass)** The vertical acceleration sensor is not calibrated.	– Calibrate roll bias (carry out calibration using HP/RTK correction signal) **HP** = OmniStar correction signal **RTK** = correction signal from the base station
B 0200	**A058 Auto-Guide TopDock: DMU (gyro compass)** The yaw sensor is above the normal operating range (yaw = revolving on the vehicle's vertical axis)	– Disconnect and reconnect the X1633 separation point on the Auto-Guide TopDock – Call up the "Details" on the "Status" screen to view the current operating statuses
B 0201	**A058 Auto-Guide TopDock: DMU (gyro compass)** The yaw sensor is below the normal operating range (yaw = revolving on the vehicle's vertical axis)	– Disconnect and reconnect the X1633 separation point on the Auto-Guide TopDock – Call up the "Details" on the "Status" screen to view the current operating statuses
B 0210	**A058 Auto-Guide TopDock: DMU (gyro compass)** The yaw sensor is above the normal yaw rate when vehicle is stationary (yaw = revolving on the vehicle's vertical axis)	– Disconnect and reconnect the X1633 separation point on the Auto-Guide TopDock – Call up the "Details" on the "Status" screen to view the current operating statuses

Message	Description	Remedy
B 0211	**A058 Auto-Guide TopDock:** **DMU (gyro compass)** The yaw sensor is below the normal yaw rate when vehicle is stationary (yaw = revolving on the vehicle's vertical axis)	– Disconnect and reconnect the X1633 separation point on the Auto-Guide TopDock – Call up the "Details" on the "Status" screen to view the current operating statuses
B 0213	**A058 Auto-Guide TopDock:** **DMU (gyro compass)** The yaw acceleration sensor is not calibrated.	– Calibrate roll bias (carry out calibration using HP/RTK correction signal) **HP** = OmniStar correction signal **RTK** = correction signal from the base station
B 0301	**A058 Auto-Guide TopDock** Voltage supply below minimum voltage of 7.0 VDC	Check voltage supply: - Check F22 fuse - Check A050 ECU, basic control unit (activation signal for A058 Auto-Guide TopDock)
B 0500	**A058 Auto-Guide TopDock** overloaded	– Disconnect and reconnect the X1633 separation point on the Auto-Guide TopDock – Call up the "Details" on the "Status" screen to view the current operating statuses
B 0605	**A058 Auto-Guide TopDock:** **GPS aerial** The electrical circuit of the GPS aerial is open	– Disconnect and reconnect the X1633 separation point on the Auto-Guide TopDock – Call up the "Details" on the "Status" screen to view the current operating statuses
B 0606	**A058 Auto-Guide TopDock:** **GPS aerial** The electrical circuit of the GPS aerial has a short circuit to earth	– Disconnect and reconnect the X1633 separation point on the Auto-Guide TopDock – Check cables and connectors – Call up the "Details" on the "Status" screen to view the current operating statuses
B 0609	**A058 Auto-Guide TopDock:** **GPS aerial** GPS aerial failure	– Disconnect and reconnect the X1633 separation point on the Auto-Guide TopDock – Call up the "Details" on the "Status" screen to view the current operating statuses
B 0700	**A058 Auto-Guide:** **DMU (gyro compass)** DMU (gyro compass) temperature is above maximum operating temperature of 85.0°C	– Ensure that DMU temperature does not exceed maximum operating temperature – Call up the "Details" on the "Status" screen to view the current operating statuses
B 0701	**A058 Auto-Guide TopDock:** **DMU (gyro compass)** DMU (gyro compass) temperature is below minimum operating temperature of -45°C	– Ensure that DMU temperature does not drop below minimum operating temperature – Call up the "Details" on the "Status" screen to view the current operating statuses
B 0809	**A058 Auto-Guide TopDock:** **DMU (gyro compass)** The data update rate is not normal (fewer than 40 packets per second)	– Call up the "Details" on the "Status" screen and check the "DMU Packets/Sec". The update rate during operation should be between 70 and 90 packets per second; reprogram A058 Auto-Guide TopDock – If the update rate is below 70 packets per second: Disconnect and reconnect the X1633 separation point on the Auto-Guide TopDock – Check the DMU "gyro compass" connector (**Note**: See also chapter 9000 Reg.E – A058 ECU, Measuring and testing Auto-Guide TopDock) – Call up the "Details" on the "Status" screen to view the current operating statuses

Message	Description	Remedy
B 0812	**A058 Auto-Guide Top-Dock:** **DMU (gyro compass)** Communication between GPS receiver unit and DMU disrupted	– Disconnect and reconnect the X1633 separation point on the Auto-Guide TopDock – Check the DMU "gyro compass" connector (**Note**: See also chapter 9000 Reg.E – A058 ECU, Measuring and testing Auto-Guide TopDock)
B 0813	**A058 Auto-Guide Top-Dock:** **DMU (gyro compass)** The DMU is not calibrated	Carry out the calibration for the roll bias
B 0900	**A058 Auto-Guide Top-Dock** The temperature of the A058 Auto-Guide Top-Dock is above the maximum operating temperature of 85°C	– Ensure that the temperature of the A058 Auto-Guide TopDock does not exceed the maximum operating temperature
B 0901	**A058 Auto-Guide Top-Dock** The temperature of the A058 Auto-Guide Top-Dock is below the minimum operating temperature of -40°C	– Ensure that the temperature of the A058 Auto-Guide TopDock does not fall below the minimum operating temperature
B 0902	**A058 Auto-Guide Top-Dock** The power supply (+UB 30) of the A058 Auto-Guide TopDock lies above the max. voltage of 16.0 VDC	– Check the G002 alternator 1 – Check the G004 alternator 2
B 0903	**A058 Auto-Guide Top-Dock:** **GPS aerial** The GPS aerial or the A058 Auto-Guide Top-Dock cannot receive the L1 signal frequency from the satellite.	– Disconnect and reconnect the X1633 separation point on the Auto-Guide TopDock – Call up the "Details" on the "Status-screen" to read out the active operating status
B 0904	**A058 Auto-Guide Top-Dock:** **GPS aerial** The GPS aerial or the A058 Auto-Guide Top-Dock cannot receive the L2 signal frequency from the satellite.	– Disconnect and reconnect the X1633 separation point on the Auto-Guide TopDock – Call up the "Details" on the "Status-screen" to read out the active operating status
B 0905	**A058 Auto-Guide Top-Dock:** **Radio module (receiver)** The radio module is not recognised by the A058 Auto-Guide TopDock	– Disconnect and reconnect the X1633 separation point on the Auto-Guide TopDock – Check the pins on the radio module With sporadic occurrence: warning message only
B 1012	**Base station:** **GPS aerial** Fault in the GPS receiver of the base station	– Unclamp and re-clamp (reset) the power supply to the base station

Message	Description	Remedy
B 1100	**Base station:** **GPS aerial** The GPS aerial temperature is too high Temperature = max. 100°C	Ensure that the base station temperature does not exceed the maximum operating temperature
B 1101	**Base station:** **GPS aerial** The GPS aerial temperature is too low Temperature = min -40°C	Ensure that the base station temperature does not drop below the minimum operating temperature
B 1200	**Base station:** **GPS aerial** The power supply of the GPS aerial lies above the maximum voltage of approx. 16.0 VDC	– Check the power supply on the base station (specified value: 10 ... 15 VDC)
B 1201	**Base station:** **GPS aerial** The power supply of the GPS aerial lies below the min. voltage of approx. 7.0 VDC	– Check the power supply on the base station (specified value: 10 ... 15 VDC)
B 1309	**Base station:** **GPS aerial** The GPS aerial cannot receive the L1 signal frequency from the satellite.	– Unclamp and re-clamp (reset) the power supply to the base station
B 1409	**Base station:** **GPS aerial** The GPS aerial cannot receive the L2 signal frequency from the satellite.	– Unclamp and re-clamp (reset) the power supply to the base station
B 1500	**Base station:** **GPS aerial** The processor (CPU) of the GPS aerial (receiver unit) was momentarily overloaded	– Unclamp and re-clamp (reset) the power supply to the base station
B 1605	**Base station:** **GPS aerial** The electrical circuit of the GPS aerial to the receiver unit is open or poor	– Unclamp and re-clamp (reset) the power supply to the base station
B 1606	**Base station:** **GPS aerial** The electrical circuit of the GPS aerial has a short circuit to earth	– Unclamp and re-clamp (reset) the power supply to the base station

Message	Description	Remedy
B 1609	**Base station:** **GPS aerial** GPS aerial failure	– Unclamp and re-clamp (reset) the power supply to the base station
B 3202	**Base station:** **GPS aerial** Correction signal is erratic, intermittent or wrong	– For WAAS correction signal: Tractor must have a clear view of the sky. --- Check on the A059 Auto-Guide terminal whether the signal strength display shows at least 3 bars. If fewer than 3 bars are displayed, wait until the signal strength increases – For OmniStar VBS/OmniStar HP: Check whether the correction signal license has expired. --- Check on the A059 Auto-Guide terminal whether the signal strength display shows at least 3 bars. If fewer than 3 bars are displayed, wait until the signal strength increases – For RT20 or RT2 accuracy position: communication problem with the base station. Check whether the local base station is functioning correctly. The tractor must have a clear view of the local base station. --- Check on the A059 Auto-Guide terminal whether the signal strength display shows at least 3 bars. If fewer than 3 bars are displayed, wait until the signal strength increases. ---- Drive nearer to the local base station; if this solves the problem, the tractor was outside the range of the local base station.
B 3213	Invalid authorisation code	Check authorisation code

System messages from the A059 Auto-Guide terminal

Message	Description	Remedy
T 0101	Internal fault, appeared when loading the problem report file	– Switch ignition off and on (reset)
T 0300	Fault when adjusting the submenu "set waypoints A and B"	– Switch ignition off and on (reset)
T 0301	Fault when adjusting the sub-menu "set waypoints A and B"	– Switch ignition off and on (reset)
T 0302	Fault when setting the waypoint	– Switch ignition off and on (reset)
T 0303	Waypoint cannot be set	– Check the signal strength. At least 3 bars must be displayed. If fewer bars are displayed, wait until the signal strength increases. – The min. distance between waypoint A and waypoint B must be 10 m. – First set waypoint A – Check the Auto-Guide standby switch (A039 multifunction armrest MFA) – Check the correction signal license
T 0304	The connection between the A059 Auto-Guide terminal and the A058 Auto-Guide TopDock is interrupted. Auto-Guide operation is not possible	– Switch ignition off and on (reset) – Check the wiring set and connector between A059 Auto-Guide terminal and the A058 Auto-Guide TopDock
T 0305	Defect when setting the waypoint Incorrect status	– Switch ignition off and on (reset)
T 0306	Waypoints cannot be set as the automatic track guide is active.	– Switch off the automatic track guide

Message	Description	Remedy
T 0307	**Field memory (saving agricultural fields)** The maximum memory capacity of the A059 Auto-Guide terminal has been reached	– Delete fields that are no longer needed; see Auto-Guide operating manual
T 0308	**Field memory (saving agricultural fields)** Approaching the maximum memory capacity of the A059 Auto-Guide terminal	– Delete fields that are no longer needed; see Auto-Guide operating manual – If the maximum memory capacity is reached, fault T 0307 is displayed
T 0500	Fault when calling up the A058 Auto-Guide TopDock status	– Switch ignition off and on (reset)
T 0501	Fault when calling up the A058 Auto-Guide TopDock status (internal code error)	– Switch ignition off and on (reset)
T 0502	The A058 Auto-Guide TopDock has established a connection to the connected components	– Display only (no fault)
T 0503	The A058 Auto-Guide TopDock has not established a connection to the connected components	– Check the wiring and connectors between the A059 Auto-Guide terminal and the A058 Auto-Guide TopDock – Check the Auto-Guide standby switch (A039 multifunction armrest MFA) – Disconnect and reconnect the X1633 separation point on the Auto-Guide TopDock
T 0600	Signal strength cannot be displayed	Check the correction signal
T 0601	Track positioning cannot be displayed	Check the correction signal
T 0602	Signal strength cannot be received	Check the correction signal
T 0603	Track positioning cannot be received	Check the correction signal
T 0700	Internal fault when adjusting the implement width	– Switch ignition off and on (reset) – Restart the implement width
T 0701	Implement width cannot be adjusted. A connection between the A059 Auto-Guide terminal and the A058 Auto-Guide TopDock cannot be established	– Check the wiring and connectors between the A059 Auto-Guide terminal and the A058 Auto-Guide TopDock – Check the Auto-Guide standby switch (A039 multifunction armrest MFA) – Disconnect and reconnect the X1633 separation point on the Auto-Guide TopDock
T 0702	Implement width limit not set within 0.001 and 2540 metres	Ensure that the implement width limit has not been set to 0, and is within 0.001 and 2540 metres
T 0703	Implement width limit not set within 0.1 and 99,999.9 inches	Ensure that the implement width limit has not been set to 0, and is within 0.1 and 99,999.9 inches
T 0704	Implement offset not set within 0 and 2450 metres	Ensure that the implement offset is within 0 and 2450 metres

Message	Description	Remedy
T 0705	Implement offset not set within 0.1 and 99,999.9 inches	Ensure that the implement offset lies within 0.1 and 99,999.9 inches
T 0706	No direction (left or right) is set for the implement offset	Set the direction for the implement offset on the Auto-Guide terminal
T 0707	The direction has been set for the implement offset, the implement offset limit has not been entered	Enter an implement offset limit (metres or inches) on the Auto-Guide terminal
T 0708	Implement memory The maximum memory capacity of the A059 Auto-Guide terminal has been reached	– Delete implements that are no longer needed; see Auto-Guide operating manual
T 0709	**I**mplement memory Approaching the maximum memory capacity of the A059 Auto-Guide terminal	– Delete implements that are no longer needed; see Auto-Guide operating manual – If the maximum memory capacity is reached, fault T 0708 is displayed
T 0710	The automatic track guide does not switch on as no implement has been entered	Enter implement
T 0711	Implement link length of 0 and 327 m exceeded Link length = distance from three-point rear power lift to the work area of the implement This entry is needed when a contour or circle is retraced	Ensure that the implement link length is set between 0 and 327 metres
T 0712	Implement link length Ensure that the implement link length is set between 0 and 12,900 inches Link length = distance from three-point rear power lift to the work area of the implement This entry is needed when a contour or circle is retraced	Ensure that the implement link length is set between 0 and 12,900 inches
T 0800	Internal error when setting the wayline offset	– Switch ignition off and on (reset) – Re-enter the wayline offset
T 0801	Wayline offset cannot be adjusted The connection between the A059 Auto-Guide terminal and the A058 Auto-Guide TopDock is interrupted	– Check the wiring and connectors between the A059 Auto-Guide terminal and the A058 Auto-Guide TopDock – Check the Auto-Guide standby switch (A039 multifunction armrest MFA) – Disconnect and reconnect the X1633 separation point on the Auto-Guide TopDock

Message	Description	Remedy
T 0802	Internal error when setting the wayline offset Invalid offset	– Switch ignition off and on (reset) – Re-enter the wayline offset
T 0803	The wayline offset was selected, but not the offset direction	Set the wayline offset direction
T 0804	The wayline offset direction was selected, but not the offset value	Set the wayline offset
T 0805	The wayline offset value is not within the set limits, appears only when metric units are set	Ensure that the offset value is set within the limits (0 to 2540 metres)
T 0806	The automatic wayline offset cannot be calculated when no implement width is set	Set the implement width
T 0807	The automatic wayline offset cannot be calculated when no waypoints are set	Set waypoints A and B
T 0808	The automatic wayline offset cannot be calculated when neither the waypoints nor the implement width is set	Set the implement width and the waypoints A and B
T 0809	Track line offset outside permissible range. The valid range is between 0 and 12,900 inches	Set new waypoints A and B
T 0810	The real-time track line offset is outside the permissible range. The valid range is between 0 and 10 metres	Set new waypoints A and B
T 0811	The real-time track line offset is outside the permissible range. The valid range is between 0 and 400 inches	Set new waypoints A and B
T 0812	The total track line offset is outside the permissible range. The valid range is between 0 and 327 metres	Set new waypoints A and B
T 0813	The total track line offset is outside the permissible range. The valid range is between 0 and 12,900 inches	Set new waypoints A and B
T 0900	Connection to the A058 Auto-Guide TopDock is interrupted Internal code error on the A058 Auto-Guide TopDock	Switch the Auto-Guide standby switch off and on again Standby switch off = LED off

Message	Description	Remedy
T 1000	Connection to the A058 Auto-Guide TopDock is interrupted Internal code error on the A058 Auto-Guide TopDock	Switch the Auto-Guide standby switch off and on again Standby switch off = LED off
T 1001	Warning message: This process is not possible while the field calculation is in progress.	Restart the process
T 1002	Warning message: The accuracy has been downgraded to RT 20 The repetition accuracy cannot be guaranteed.	Confirm warning message with OK to return to map view
T 1100	Connection to the A058 Auto-Guide TopDock is interrupted Internal code error on the A058 Auto-Guide TopDock	Switch the Auto-Guide standby switch off and on again Standby switch off = LED off
T 1101	Fault in the A059 Auto-Guide terminal when adjusting the steering response. The A058 Auto-Guide TopDock does not respond.	If this error occurs, the steering response on the A059 Auto-Guide terminal is set to the middle value
T 1102	Fault in reading the steering response setting. Reading error.	If this error occurs, the steering response is set to the middle value
T 1200	Fault in reading the unit of measurement. Reading error.	If this error occurs, measurement units are set to metric.
T 1201	Fault occurred while setting measurement units. The A058 Auto-Guide TopDock does not respond.	– Check the wiring set and connector between A059 Auto-Guide terminal and the A058 Auto-Guide TopDock – Check the Auto-Guide standby switch (A039 multifunction armrest MFA)
T 1202	Warning message All values invalid if unit of measurement is changed. It is not possible to enable automatic track guidance without specifying the working width.	Press OK to continue. Press ESC to cancel.
T 1300	Fault in calibrating the B067 steering angle sensor The A058 Auto-Guide TopDock does not respond. **Note:** See also chapter 0000 Reg.F - Calibration code 2401 (steering angle sensor)	– Check the wiring set and connector between A059 Auto-Guide terminal and the A058 Auto-Guide TopDock – Engine is running, switch on the Auto-Guide standby switch (LED on) – Check the X1403 separation point on the A050 ECU, basic control unit
T 1301	The B067 steering angle sensor cannot be calibrated as long as the automatic track guide is active on the A059 Auto-Guide terminal	– Switch off the automatic track guide on the A059 Auto-Guide terminal – Engine is running, switch on the Auto-Guide standby switch (LED on) – Check the wiring set and connector between A059 Auto-Guide terminal and the A058 Auto-Guide TopDock – Check the X1403 separation point on the A050 ECU, basic control unit

Message	Description	Remedy
T 1302	The driver attempts to switch on the automatic track guide while the B067 steering angle sensor is being calibrated	Do not switch on the automatic steering system ("Steering Assist") until the B067 steering angle sensor calibration is completed.
T 1303	**Tractor in forward operation** The automatic track guide does not engage when the speed is above 25 km/h	Reduce vehicle speed.
T 1304	**Tractor in forward operation** The automatic track guide does not engage when the speed is above 25 km/h	Reduce vehicle speed.
T 1305	**Tractor in reverse operation** The automatic track guide does not engage when the speed is above 25 km/h	Reduce vehicle speed.
T 1306	**Tractor in reverse operation** The automatic track guide does not engage when the speed is above 25 km/h	Reduce vehicle speed.
T 1500	Fault in the adjustment of the correction signal	– Check the wiring set and connector between A059 Auto-Guide terminal and the A058 Auto-Guide TopDock – Check the X1403 separation point on the A050 ECU, basic control unit
T 1501	Fault in the read-out of the correction signal from the A059 Auto-Guide terminal	If this error occurs, the WAAS correction signal is adjusted in the A059 Auto-Guide terminal
T 1502	Warning: The base station type cannot be selected.	Check communication
T 1503	Warning: The previous base station type cannot be re-selected.	
T 1504	Warning: Tower mode cannot be selected	Check communication
T 1505	Warning: The previous tower mode cannot be re-selected.	
T 1506	This information is not available for the correction signal selected	Press OK to continue
T 1507	Warning: This information is not available for the correction signal selected	

Message	Description	Remedy
T 1508	The correction signal cannot be changed if automatic track guidance is enabled.	Switch off automatic track guidance to continue.
T 1700	Automatic track guidance has been switched off unexpectedly.	Switch automatic track guidance back on
T 1701	Too large a distance to the wayline during automatic track guidance	Reduce distance
T 1800	Fault in the test of the steering system with the aid of the A059 Auto-Guide terminal Fault occurred upon manual activation of the steering.	Auto-Guide system (reset) – Switch off the ignition and unplug the X1633 separation point on the Auto-Guide TopDock – Plug in the X1633 separation point on the Auto-Guide TopDock and switch on the ignition
T 1801	Fault in the test of the steering system with the aid of the A059 Auto-Guide terminal The automatic track guide is active.	Switch off the automatic track guide
T 1802	The driver attempts to switch on the automatic track guide while the steering test is running	Do not switch on the automatic track guide until the steering test is completed
T 1803	Safety message that is displayed on the A059 Auto-Guide terminal before the steering test.	Follow the instructions displayed
T 1804	The steering test cannot be carried out as long as the tractor is in motion	Bring the tractor to a standstill
T 1900	Fault when setting the region (Europe, North America etc.), internal code error	– Switch ignition off and on (reset)
T 1901	Fault when setting the region (Europe, North America etc.), check the connection between the A058 Auto-Guide TopDock und the A059 Auto-Guide terminal	Check the wiring and connectors between the A059 Auto-Guide terminal and the A058 Auto-Guide TopDock
T 2000	The day and night mode cannot be switched over while the automatic track guide is engaged	Switch off the automatic track guide on the A059 Auto-Guide terminal (Note: A signal tone shows that the automatic track guide has been switched off); switch between day and night mode
T 2100	The tractor type must be specified	Specify tractor type
T 2101	Call up tractor type	Select tractor type or Press ESC to cancel
T 2102	The tractor type entered already exists	Specify new tractor type

Message	Description	Remedy
T 2200	No implement name was specified	Specify an implement name and confirm with "Enter"
T 2201	The entry for the implement name was not confirmed	Confirm the implement name with "Enter"
T 2202	The implement name specified already exists	Change the implement name
T 2203	The implement width cannot be accessed No communication between the A059 Auto-Guide terminal and the A058 Auto-Guide TopDock	– Confirm the message and re-confirm the implement width – Switch ignition off and on (reset)
T 2204	The width of the implement cannot be imported as this has been stored under a different unit of measurement.	Change unit of measurement
T 2300	The field name was not specified	Specify the field name and confirm with "Enter"
T 2301	The field name was not confirmed	Confirm the field name with "Enter"
T 2302	The field name cannot be accessed No communication between the A059 Auto-Guide terminal and the A058 Auto-Guide TopDock	– Confirm the message and re-access the field name – Switch ignition off and on (reset)
T 2303	The field name already exists	Change the field name
T 2304	The field name cannot be accessed as the automatic track guide is active	– Switch off the automatic track guide
T 2305	The field was processed with another signal (base station and correction signal).	– Follow the display on the A059 Auto-Guide terminal
T 2306	The field was processed with another correction signal.	– Follow the display on the A059 Auto-Guide terminal
T 2307	The field was processed with another base station.	– Follow the display on the A059 Auto-Guide terminal
T 2308	The field surface cannot be called up as long as the wayline calculation is in progress	Allow wayline calculation to complete and re-start process
T 2309	Caution The max. speed (km/h) for contour and circle track guidance is limited. High speeds can lead to dangerous driving situations	Press OK to continue

Message	Description	Remedy
T 2310	Caution The max. speed (mph) for contour and circle track guidance is limited High speeds can lead to dangerous driving situations	Press OK to continue
T 2311	The field surface database is updated and the field list is not sorted or filtered in the process	Press OK to continue
T 2400	The name entered already exists	Delete existing name or change name
T 2401	The selected name is currently active	– Change the name
T 2402	The data card is not recognised	– Ensure that the data card is correctly inserted
T 2403	The selected name is currently active	– Change the name
T 2404	The selected name is currently active	– Change the name
T 2405	The selected name cannot be used The memory capacity has been reached	– Change the name
T 2406	The selected name is reserved	– Change the name
T 2407	The implements cannot be used. The memory capacity has been reached	– Delete unneeded implements
T 2408	Warning message: Do you wish to delete all selected items?	– Follow the display on the A059 Auto-Guide terminal
T 2409	Warning message	– Follow the display on the A059 Auto-Guide terminal
T 2410	Warning message	– Follow the display on the A059 Auto-Guide terminal
T 2411	More than one item was selected. Please select only one item.	Press OK to return to the previous screen
T 2500	Data logging not possible while data card not inserted.	Insert a data card to continue.
T 2501	Data card has been removed	Insert a data card to continue.
T 2502	Data card was detected Data logging enabled	Press **OK** to continue
T 2503	Data card full	– Insert a new data card or create space on existing card – Press **OK** to continue
T 2504	Data card error	– Insert data card again – Try a new data card – Press **OK** to continue

Message	Description	Remedy
T 2600	The A058 Auto-Guide TopDock does not respond when asked for the authorisation code	– Check the wiring and connectors between the A059 Auto-Guide terminal and the A058 Auto-Guide TopDock – Disconnect and reconnect the X1633 separation point on the Auto-Guide TopDock
T 2601	An error occurred with the authorisation code request, rendering the system inoperable (only with local base station)	– Re-program the Auto-Guide system (please see: Auto-Guide programming) – If applicable, read out the serial number of the A058 Auto-Guide TopDock and ask FENDT customer service (Tel.: +49 (0) 8342/77-123 or Fax: +49 (0) 8342/77-222) for the authorisation code.
T 2602	An error occurred while setting authorisation code. The A058 Auto-Guide TopDock does not respond (with local base station only)	– Check the connection of the A059 Auto-Guide terminal to the A058 Auto-Guide TopDock – If applicable, reprogram the Auto-Guide system (please see: Auto-Guide programming)
T 2603	An error occurred while setting authorisation code. No communication between the A059 Auto-Guide terminal and A058 Auto-Guide TopDock (with local base station only)	– Check the connection of the A059 Auto-Guide terminal to the A058 Auto-Guide TopDock – If applicable, reprogram the Auto-Guide system (please see: Auto-Guide programming)
T 2604	Invalid authorisation code	– Ensure that you have the correct authorisation code. Re-enter the authorisation code – If applicable, read out the serial number of the A058 Auto-Guide TopDock and ask FENDT customer service (Tel.: +49 (0) 8342/77-123 or Fax: +49 (0) 8342/77-222) for the authorisation code.
T 2605	Invalid authorisation code	– Ensure that you have the correct authorisation code. Re-enter the authorisation code – If applicable, read out the serial number of the A058 Auto-Guide TopDock and ask FENDT customer service (Tel.: +49 (0) 8342/77-123 or Fax: +49 (0) 8342/77-222) for the authorisation code.
T 2606	Invalid authorisation code	– Ensure that you have the correct authorisation code. Re-enter the authorisation code – If applicable, read out the serial number of the ECU, GPS "TopDock" and ask FENDT customer service (Tel.: +49 (0) 8342/77-123 or Fax: +49 (0) 8342/77-222) for the authorisation code.
T 2607	Warning message: The entry of an invalid authorisation code causes the Auto-Guide system to switch off (Auto-Guide can no longer be used)	Use a valid authorisation code
T 2608	The A058 Auto-Guide TopDock is not authorised for the selected correction signal	Press OK to continue. Order correction signal if required and enter authorisation code
T 2700	The travel direction button "cycle button" was pushed while the tractor was moving (The tractor must be stationary before the operating direction can be switched.)	Stop the tractor. Press the travel direction button "cycle-button" (No)

Message	Description	Remedy
T 2701	Fault when switching the operating direction The A058 Auto-Guide Top-Dock does not respond.	– Check the wiring and connectors between the A059 Auto-Guide terminal and the A058 Auto-Guide TopDock – Disconnect and reconnect the X1633 separation point on the Auto-Guide TopDock
T 2800	The data card was removed during the save operation. Not all data was transferred.	Repeat saving operation
T 2801	The data card was removed during the reading operation. Not all data was read	Repeat reading operation
T 2802	The data card is full No data can be exported	– Insert new data card or delete data
T 2803	No item was selected. Please select an item	Press OK to continue
T 2900	Fault during discovery of local base station (internal code error)	Re-program the Auto-Guide system (see also: Auto-Guide programming)
T 2901	Contact could not be made with the local base station. Check the communication between A058 Auto-Guide TopDock and base station	– Disconnect and reconnect the X1633 separation point on the Auto-Guide TopDock – Check the connection of A058 Auto-Guide TopDock to the base station.
T 2902	The A058 Auto-Guide Top-Dock remains in "discovery mode"	Switch on the local base station
T 2903	When working with the local base station: The current correction signal source is not adjusted to the "local base station"	When working with the local base station: Enter the local base station as correction source
T 2904	The name of the local base station is not specified	– Specify name
T 2905	The network name is not specified	– Specify name
T 2906	One or more settings are invalid	– Check the settings
T 2907	The network name already exists	– Change name
T 2908	Warning message Through this action, the position determination of the base station will be switched off	– Follow the display on the A059 Auto-Guide terminal
T 2909	Warning message The base station must be switched off and on again (Reset)	– Follow the display on the A059 Auto-Guide terminal
T 2910	The radio module was briefly not recognised. Changes may possibly not be carried out	Check the wiring set

Message	Description	Remedy
T 2911	Fault in the communication between the base station and the A058 AutoGuide TopDock.	Repeat process, once communication has been re-established.
T 2912	The automatic track guide is currently switched on. Changes are not taken into account as long as the automatic track guide remains switched on.	– Switch off the automatic track guide
T 2913	The network requested does not exist	Select a different network
T 2914	This action is not possible with the radio module type selected	
T 2915	The channel is outside the permissible range. The valid range is between -40 and 40	Select a different radio channel
T 2916	The channel cannot be set	Check connection to radio module
T 3000	The OmniStar settings screen was called up although neither OmniStar VBS nor OmniStar HP is entered as the correction source.	Set OmniStar VBS or OmniStar HP as the correction signal
T 3100	Warning message: Distance to an obstacle (e.g. headland) is outside of the setting range. Setting range 1 ... 50 metres	– Enter a distance between 1 and 50 metres
T 3101	Warning message: Distance to an obstacle (e.g. headland) is outside of the setting range. Adjustment range 36 ... 12,700 inches	– Enter a distance between 36 and 12,700 inches
T 3102	The distance entered is outside the permissible range. The valid range is between 0.01 and 5 metres	Enter valid distance
T 3103	The distance entered is outside the permissible range. The valid range is between 0.1 and 400 inches	Enter valid distance
T 3200	The data card was not correctly removed	– Replace data card – Repeat attempted operation – Press the "Data Logging" button – Press the "EJECT" button – Remove data card

Message	Description	Remedy
T 3201	The collected data was transferred to the data card. Please press 'EJECT' in the Data Logging Module before removing the data card.	– Follow the display on the A059 Auto-Guide terminal
T 3202	Note: The data card can now be removed	Press OK to continue
T 3300	NMEA (standard for the communication of GPS data) name was not specified	Specify the NMEA Name
T 3301	The NMEA (standard for the communication of GPS data) name already exists	Change NMEA Name
T 3302	The NMEA (standard for GPS data communication) setup cannot be selected	Check communication
T 3303	Max. memory space has been reached	Delete unnecessary settings
T 3304	The max. memory capacity has been reached No further adjustments can be made	Follow the display on the A059 Auto-Guide terminal
T 3400	Circle accuracy not yet sufficient to define pivot	– Press the OK button to confirm the message – Continue defining pivot until accuracy indicator is green
T 3401	Attempt to recall pivot field, but pivot feature not enabled.	Enable pivot feature
T 3402	Correction signal too weak.	Wait until correction signal is available again
T 3500	Tune set cannot be selected	Check the connection between the A059 Auto-Guide terminal and the A058 Auto-Guide TopDock
T 3600	Correction signal too weak. The function for recording boundaries/obstacles cannot be used	Wait until the correction signal has sufficient accuracy.
T 3601	The name for the boundary or obstacle already exists.	Either delete existing boundary/obstacle or enter new name
T 3602	The function for contour track guidance is not available	
T 3603	The values selected for the alarm are outside the permissible range. Time between 1 and 60 seconds Distance between 1 and 100 metres	Enter permissible time and permissible distance

Message	Description	Remedy
T 3604	The values selected for the alarm are outside the permissible range. Time between 1 and 60 seconds Distance between 1 and 328 feet	Enter permissible time and permissible distance
T 3605	A boundary has already been recorded for this field	Press OK to continue Press ESC to cancel
T 3700	Field with contour recording could not be read as contour track guidance has not been enabled.	Enable contour track guidance
T 3701	The contour recorded must comprise at least 4 points	Re-record contour
T 3702	The correction signal is too weak to record a contour	Wait until the correction signal has sufficient accuracy.
T 3703	The correction signal is too weak to record a contour	Wait until the correction signal has sufficient accuracy.
T 3800	Connection to the A058 Auto-Guide TopDock is faulty.	Check connection to the A058 Auto-Guide TopDock

A050-ECU, basic control unit error messages

Message	Description	Remedy
V 0309	A050-ECU, basic control unit does not respond	– Switch ignition off and on (reset) – Check the connector and wiring of the A050 ECU, basic control unit
V 0319	The "Tuneset" data are not valid The data do not belong to the tractor series	Select the correct tractor series

Auto-Guide system restrictions and possible assistance

Fault mode	Possible cause:	Indication	Remedy
The display of the automatic steering system ("Steering Assist") shows a cross. The automatic track guide ("Auto-Guide") is prevented	The steering wheel is turned by the operator		The operator must stop turning the steering wheel
	B081 steering wheel sensor		Check the B081 steering wheel sensor
	The Auto-Guide system is in simple standby mode (LED flashes) "partially active"		Activate the standby switch, the Auto-Guide system enters the extended standby mode (LED is illuminated) "fully active" The automatic track guide can be activated from the extended standby mode.

Fault mode	Possible cause:	Indication	Remedy
	Road speed is not between 1 Km/h25 Km/h ... **in forward travel** or 1 km/h ... 25 km/h **in reverse travel**		Adjust the road speed
	No valid waypoints A and B were defined	No lines are displayed in the guide view in the A059 Auto-Guide terminal	Set the waypoints A and B on the A059 Auto-Guide Terminal ("SET Waypoints")
	The GPS position accuracy is not sufficient	The signal strength display shows fewer than 3 bars	Observe: Restrictions in the reception of the GPS position signal and the correction signal
	The automatic steering system ("Steering Assist") was turned on when the tractor was too far from the desired path	The distance from the desired path is greater than 3.20 m or more than half the path width	Drive the tractor closer to the desired path before the automatic steering system is turned on ("Steering Assist")
	The automatic steering ("Steering Assist") was turned on at too great a deviation from the desired travel direction	The approach angle to the desired path is greater than 60°	Decrease the approach angle to the desired path
	Failure of one or more ECUs (electronic boxes)	Reported by the diagnostic system on the A059 Auto-Guide terminal. Check the ECUs on the "status screen"	Check the Auto-Guide components and wiring harness
The display of the automatic steering system ("Steering Assist") is green but the automatic track guide ("Auto-Guide") does not engage	The ISO-BUS transmits no commands		– Adjust the ISO BUS in the Vario terminal (A039 multifunction armrest) – Check the wiring set
The automatic steering system ("Steering Assist") is engaged but the automatic track guide ("Auto-Guide") does not drive straight on the track	The B067 steering angle sensor has mechanical or electrical tolerances	The B067 steering angle sensor delivers an imprecise target value	Calibrate the B067 steering angle sensor
	The centre position of the B067 steering angle sensor is not accurately calibrated	The B067 steering angle sensor delivers an imprecise target value	Calibrate the B067 steering angle sensor
	Roll bias of the DMU ("gyro compass") is too large **Only when using:** **– OmniStar HP correction signal** **– Local base station**	The tractor has too large a roll deviation	– a.) Calibrate the DMU ("gyro compass") – b.) Check the basic settings of the implement
	The steering response is not suitable for the application	– If the tractor reacts excessively nervous and adheres too strictly to the track, the setting is too high – If the tractor moves too slowly over the track, the setting is too low	– a.) Adjust the steering response on the A059 Auto-Guide terminal

Fault mode	Possible cause:	Indication	Remedy
	Incorrect correction signal selected	On the A059 Auto-Guide terminal under "advanced settings", WAAS or OmniStar VBS are set as the correction signal although the OmniStar HP correction signal with a higher accuracy would be more suitable **Advantage of OmniStar HP = higher accuracy Disadvantage of OmniStar HP = long startup time**	Select the OmniStar HP correction signal (an upgrade of the ECU, GPS is required for using OmniStar HP) (see Auto-Guide correction signal)
	Incorrect correction signal selected	OmniStar HP is set as the correction signal on the A059 Auto-Guide terminal under "advanced settings" although the OmniStar VBS correction signal would be more suitable **Advantage of OmniStar VBS = short startup time Disadvantage of OmniStar VBS = less accurate**	
	The local base station is not firmly attached and moves (Note: The local base station is an optional unit. With the help of the local base station a correction signal is sent over radio waves to the A058 Auto-Guide TopDock. The "local base" correction signal must be selected on the A059-Auto-Guide Terminal.)	The stand of the local base station allows for movements of the GPS aerial (receiver unit)	Securely attach the local base station in order to avoid movements. If required, fasten the local base station to a post or a concrete base.
	External sources cause disturbances in the radio connection between the local base station and the A058 Auto-Guide TopDock	The correction signal (radio signal) of the local base station is temporarily lost	Remove the radio signal disturbance (the distance from the local base station to the tractor may be too great; drive the tractor closer to the base station)
	Failure of the DMU (gyro compass)	Is displayed as a error report from the A059-Auto-Guide Terminal	Replace the DMU (gyro compass)
	A058 Auto-Guide TopDock is not firmly fitted to the tractor		Tighten the TopDock retainer
	Movements of the trailer coupling or the tool bar allow lateral movements of the implement during operation (Note: Auto-Guide steers the tractor, not the implement!)	The tractor moves straight ahead but the mounted implement moves from side to side during operation	Tighten the drawbar

Fault mode	Possible cause:	Indication	Remedy
	GPS signal strength is not optimal	Only 3 or 4 bars are displayed for the GPS signal strength	This is a normal operating condition. An optimal signal strength exists when 5 bars are displayed. (See also Auto-Guide fault code table, section: Restrictions in the reception of the GPS position signal and the correction signal)
	GPS position deviations	After successful operation the Auto-Guide system displays a clear track overlap or a track underlap during a later run (the GPS satellite displays a position deviation over a long period of time).	Use the "wayline offset" function on the Auto-Guide terminal to make corrections
	In the event of poor ground conditions or with mounted implements, the tractor pulls away from the path	The track guide works better with the implement raised or with other ground conditions	Reduce speed, decrease working depth; check the implement settings
	The implement settings are not optimal (Note: Auto-Guide steers the tractor, not the implement!)	The track guide works better with the implement raised or with other ground conditions	Check the settings of the implement. Note: The use of an unsteered front packer affects the steering of the tractor!
The automatic track guide (Auto-Guide) disengages during operation	The steering wheel was turned (B081 steering wheel sensor) when the track guide (Auto-Guide) was switched on		Normal operating condition
	The tractor speed is not between 1 and 25 km/h at forward travel or 1 and 25 km/h at reverse travel		Adjust the tractor speed
	The GPS position signal or the correction signal is not available in sufficient signal strength (at least 3 bars).		See also Auto-Guide fault code table, section: Restrictions in the reception of the GPS position signal and the correction signal
	The "Automatic track guide on" switch was switched off (A039 multifunction armrest)		Switch on the "Automatic track guide on" switch (LED is illuminated)
	The B067 steering angle sensor delivers a faulty signal	Diagnostic message on the A059 Auto-Guide terminal and on the A007 instrument panel	Calibrate the B067 steering angle sensor, check the wiring set and sensor
	In the event of poor ground conditions or with mounted implements, the tractor pulls away from the path. If the distance from the path is too great, the automatic track guide(Auto-Guide) disengages		Reduce the tractor speed. Adjust the working depth of the mounted implement. Check the setting of the mounted implement.

Fault mode	Possible cause:	Indication	Remedy
The automatic track guide is engaged, but excessive underlapping occurs	The implement width is incorrectly set on the A059 Auto-Guide terminal	The same under or overlapping occurs at every run	The width of the implement is entered on the A059 Auto-Guide terminal. (See Auto-Guide function test "Auto-Guide brief instructions")
	The implement offset is incorrectly set on the A059 Auto-Guide terminal	Overlapping occurs between the first two runs. Underlapping occurs between the next two runs.	The implement offset is set on the A059 Auto-Guide terminal. (See Auto-Guide function test "Auto-Guide brief instructions")
	The implement is not pulled concentrically by the tractor	Drawbar or towing device does not pull concentrically	Mount the implement in such a way that it is pulled concentrically to the tractor
	GPS position deviations	After successful operation the Auto-Guide system displays a clear track overlap or a track underlap during a later run (the GPS satellite displays a position deviation over a long period of time).	Use the "wayline offset" function on the A059 Auto-Guide terminal to make corrections
	Roll bias calibration is incorrect **Note:** **Only when using:** **– OmniStar HP correction signal** **– Local base station**	Overlapping occurs between the first two runs and underlapping during the next two runs. Even with dismounted implements the tractor follows another path along the wayline depending on the direction.	Carry out roll bias calibration: Drive the tractor up and down the same path with Auto-Guide engaged. The system determines a medium roll bias and compensates it. (See also: Auto-Guide operating manual)
	GPS signal strength is not optimal	Only 3 or 4 bars are displayed for the GPS signal strength	This is a normal operating condition. An optimal signal strength exists when 5 bars are displayed. (See also Auto-Guide fault code table, section: Restrictions in the reception of the GPS position signal and the correction signal)
GPS signal strength does not suffice for operation of automatic track guide (Auto-Guide) - less than 3 bars of signal strength	Correction signal not available	On the "Details" screen the signal quality is displayed as "Searching". Or the "tracking status" is displayed in red on the "OmniStar" screen.	Check whether a valid correction signal license is available. Check whether the correction signal is shadowed (e.g. on the edges of forests, power lines etc.)
	The license for the reception of the OmniStar correction signal has expired	On the "OmniStar" screen an older date is displayed under "expiry date". The "tracking status" is displayed in red	Order a new correction signal license from OmniStar (see Auto-Guide correction signal)
	Excessive ionospheric activity (unavoidable atmospheric condition)	In the signal strength, 2 bars are displayed over a longer period of time	Unavoidable - wait until the conditions improve
	Poor GPS satellite constellation	In the signal strength, 2 bars are displayed over a longer period of time. On the "Details" screen 4 or less satellites are displayed	In the Auto-Guide terminal, call up the "satellite quality forecast" to see when the satellite reception conditions will improve

Fault mode	Possible cause:	Indication	Remedy
	Reception error due to concrete, buildings or bodies of water	Plastered surfaces, buildings or bodies of water are located near the tractor	Keep away from hard and/or reflective surfaces
	The GPS position signal is shadowed by trees or buildings	Restricted view of the open sky	Drive away from the shadowing
	The Auto-Guide system calculates the position	2 bars are displayed in the signal strength	Wait until the Auto-Guide system has determined its position. The bar display of the signal strength increases
	Failure of the A058 Auto-Guide TopDock	Fault code is displayed on the A059-Auto-Guide terminal	Check connector and wiring set. If required, replace the TopDock (Note: If a new TopDock is installed, a new OmniStar correction signal license must be applied for.)
	The A058 Auto-Guide TopDock downloads a software update from the correction signal satellite	Over a longer time, 1 bar of signal strength is displayed. This procedure occurs very rarely. In the OmniStar correction signal, this is displayed on the "OmniStar- Settings" screen. "Subscription status" = "needs update"	The A058 Auto-Guide TopDock downloads software data from the correction signal satellite Wait until the procedure complete (max. 60 minutes)
	Signal shadowing on the edge of the field caused by trees	1to 2 bars of signal strength are displayed on the field edge. 3 bars or more are displayed in the middle of the field	Headland further away from the forest edge. Use OmniStar VBS instead of OmniStar HP when regularly driving near forest edges. (Reason: After a signal shadowing, the OmniStar VBS again reaches a high accuracy after a short time. OmniStar HP requires a longer time to reach a high accuracy.)
	Signal shadowing caused by operation on a slope	1to 2 bars of signal strength are displayed on the slope. 3 bars or more are displayed on the level surface	If required, use the OmniStar VBS correction signal. (Reason: After a signal shadowing, the OmniStar VBS again reaches a high accuracy after a short time. OmniStar HP requires a longer time to reach a high accuracy.)

Fault mode	Possible cause:	Indication	Remedy
	The OmniStar VBS was not upgraded to OmniStar HP	1 signal strength bar is displayed over a longer time period. This is displayed on the "OmniStar settings" screen with the "needs update" subscription status together with a valid date of the HP system	Confirm that the customer has obtained an HP upgrade (spare part number: 0 054.125.200) from AGCO Parts (Fendt components). Request OmniStar to resend the HP upgrade by satellite (see Auto-Guide correction signal)
	No OmniStar correction signal is available in the operating region of the tractor.	"Out of region" is displayed on the OmniStar screen	The operating region of the tractor is determined during the purchase of the OmniStar correction signal. (see Auto-Guide correction signal)
	No OmniStar correction signal is available in the operating region of the tractor.	"Wet error" is displayed on the OmniStar screen	Inform OmniStar where this error occurred

Fault mode	Possible cause:	Indication	Remedy
Waypoints (A and B) cannot be set	Poor reception of the GPS position signal	Fewer than 3 bars are displayed	see "Restrictions in the reception of the GPS position signal and the correction signal"
	Points A and B are too close together	Error message T 0303 is displayed on the A059 Auto-Guide terminal	Ensure that the distance between points A and B is at least 10 m
The A059 Auto-Guide terminal does not communicate with the A058 Auto-Guide TopDock	Baud rate of the ISO BUS is incorrectly set.	The ISO BUS screen shows a baud rate of 125 kb/s instead of 250 kb/s	Ensure that a conversion to ISO BUS was made
The Auto-Guide software can not be installed	Programming cable is defective	Repeated communication errors in the Auto-Guide update software	Check and if required replace the programming cable
The correction signal is not available. (The signal quality on the "Details" screen is displayed as "Searching")	The local base station (optional) does not respond	The local base station is selected on the Auto-Guide terminal but the signal source is displayed on the "Details" screen as "Searching"	Check the functioning of the local base station
	Incorrect OmniStar signal region specified	The wrong "Region" is displayed under "OmniStar" settings	Specify the correct region under "OmniStar" settings
	The correction signal is shadowed by trees	The correction signal is lost if the tractor travels near a tree line in the South (of the northern hemisphere) or in the North (of the southern hemisphere) and the signal quality on the "Details" screen is displayed as "Searching"	Avoid extended periods of operation in the vicinity of large tree lines. Select a more suitable correction signal source (e.g. OmniStar VBS or a local base station) for these conditions

Fault mode	Possible cause:	Indication	Remedy
	Free correction signal (WAAS/EGNOS) is not available	Only 1 signal strength bar is displayed over an extended time period if the "WAAS/EGNOS" correction signal is selected	Access the Internet page http://esamultimedia.esa.int/docs/egnos/estb/schedule.htm and check the WAAS/EGNOS status. If required, order an OmniStar correction signal (VBS or HP)
	Loss of the correction signal during operation on a steep gradient	Successful operation on level ground, however the correction signal is sometimes lost during operation on larger slopes	Should this problem occur over extended time periods, use "OmniStar VBS" or "WAAS/EGNOS" instead of "OmniStar HP". In this situation a local base station may be required
Faulty reception of the OmniStar correction signal license	Correction signal satellite is not visible	The correction signal source on the "Details" screen is displayed as "Searching". The "tracking status" on the "OmniStar" settings screen is shown in red	See Auto-Guide correction signal
	OmniStar did not send the complete required correction signal license data of a new ECU, GPS (receiver)	The license status is displayed as "link error" on the "OmniStar" settings screen	Request the "link vectors" from OmniStar
	HP upgrade was not installed	1 signal strength bar is displayed over a longer time period. This is displayed on the "OmniStar settings" screen with the "needs update" licence status together with a valid expiry date for the HP system.	Confirm that the customer has obtained an upgrade to the OmniStar HP correction signal (order number: 0 054.125.200). Request OmniStar to resend the HP upgrade (see Auto-Guide correction signal)
	An attempt was made to receive an OmniStar correction signal license while "WAAS/EGNOS" or a "local base station" was set on the Auto-Guide terminal.	The signal source is set to "local base station" or to "WAAS/EGNOS".	Set the "OmniStar VBS" signal source on the Auto-Guide terminal (Note: With the setting at "OmniStar VBS" the VBS and the HP correction signal can be received)
	An attempt was made to receive an "OmniStar VBS" correction signal license while "OmniStar HP" was set on the Auto-Guide terminal	The signal source is set to "OmniStar HP"	Set the signal source "OmniStar VBS" on the Auto-Guide terminal (Note: If required, order the HP upgrade, order number: 0 054.125.200, from AGCO Parts)
	Incorrect serial numbers (A058 Auto-Guide TopDock "GPS receiver unit") were delivered to OmniStar	"OmniStar serial #" on the OmniStar settings screen does not correspond to the "match number" provided by OmniStar	Recheck the serial number of the ECU, GPS before notifying OmniStar. (Note: A correction signal that was incorrectly sent due to an incorrect serial number will be invoiced by OmniStar!)

2 Auto-Guide system: Offset cross track ("AUTO-OFFSET")

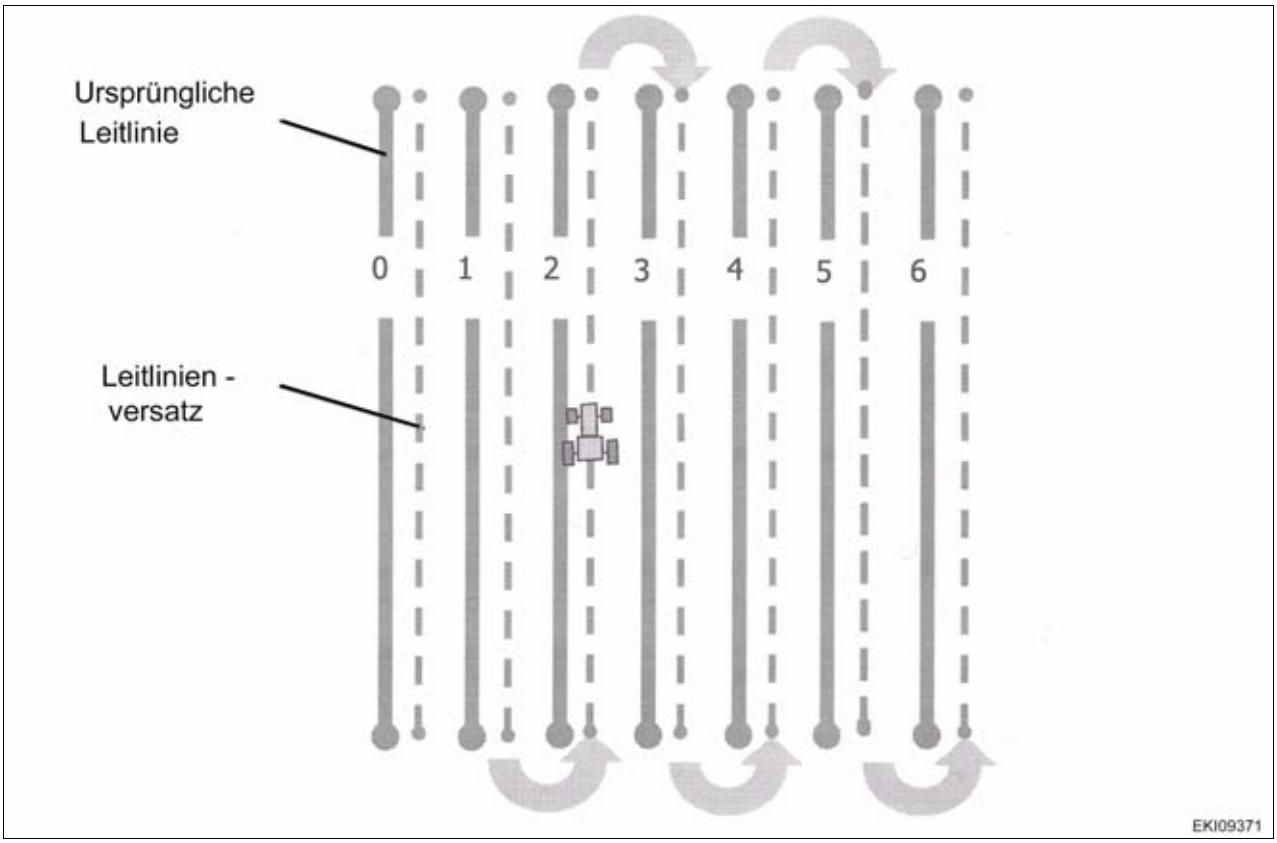


Fig. 8. I006091

The AUTO-OFFSET function automatically sets the track offset to the current value of the cross track.

Use this function to offset the wayline:
– If the base station is moved to a different location to the one where the wayline was previously set.
– To compensate for signal deviation on systems with lower accuracy.

Press **OFFSET WAYLINE**.

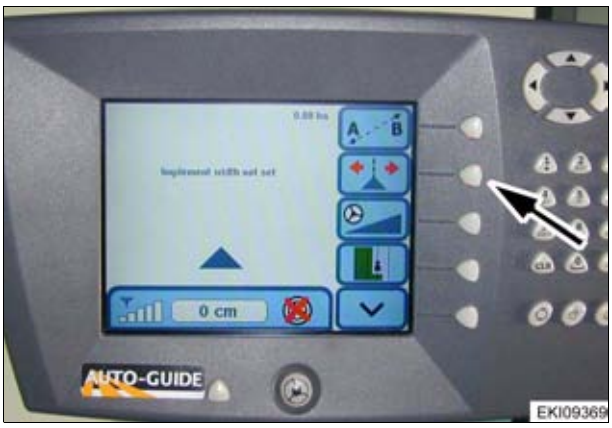


Fig. 9. I006082

919 .. 0101-1000
919 .. 1001-
922 .. 0101-1000
922 .. 1001-
925 .. 0101-1000
925 .. 1001-
928 .. 0101-1000
928 .. 1001-
931 .. 0101-1000
931 .. 1001-
934 .. 0101-1000
934 .. 1001-

Drive the tractor along the track
The current cross track value is displayed as OFFSET WAYLINE.
Press the **AUTO OFFSET** button.
The cross track is now compensated for.



Confirm the value by pressing the "Return" button.



Delete the value by pressing the "Reset" button.



Enter a new value using the alphanumeric keypad. Confirm the value by pressing "Return". Press "ESC" to cancel the process.

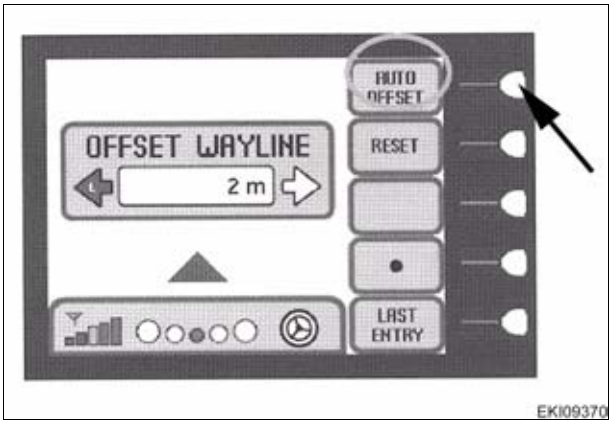


Fig. 10.

3 Reading Auto-Guide system information "Details"

Analysis of the satellite reception data ("Details")
The Details screen displays system information.

– Scroll with the **arrow key**



Fig. 11. I003307

– Switch to the status indicator with the **measuring gauges**



Fig. 12. I003308

– The "Status" screen is displayed.
– This page displays the status of the Auto-Guide components.



A green tick means that the component is operational.



A red cross means that the component is not operational.

DMU = electronic gyro compass (in the A058 TopDock)
Correction = Correction signal reception
GPS = ECU, GPS (electronic box in the A058 TopDock)
Steer = A050 ECU, basic control unit
Comms = Connection between Auto-Guide components



Fig. 13. I003309

Press **DETAILS** in the "Status" screen



Fig. 14. I003311

An overview with **"GPS Details"** system information appears

Scroll with the arrow keys



Fig. 15. I003339

An overview with **"Software Versions"** system information appears

Scroll with the arrow keys



Fig. 16. I003340

An overview with **"Hardware Details"** system information appears

Scroll with the arrow keys



Fig. 17. I003341

An overview with **"General Information"** system information appears

Scroll with the arrow keys



Fig. 18. I003342

An overview with **"Base Station Details"** system information appears

NOTE: *The "Base Station Details" page only appears if the base station is selected as a correction signal*



Fig. 19. I003343

System information (Details)

GPS - Details		
Detail	**Description**	**Note**
Latitude	**"Tractor" latitude** (distance north or south of the earth's equator measured in degrees)	Example: 47.77
Longitude	**"Tractor" longitude** (distance east or west from the prime meridian measured in degrees)	Example: 10.60
Altitude	**"Tractor" altitude** (the vertical height above sea level. Measured according to US standard or in metric units)	Example: 732.964 m
Position Type	**Position type** (the current quality level for determining the GPS position. From lowest to highest: GPS, DGPS, DF-DGPS, RT20FLOAT, RT2FLOAT, RT2FIXED)	The display should show DGPS or higher to operate the Auto-Guide, when using the tractor outside. **GPS** = GPS position signal is being received, no correction signal **DGPS =** Correction signal (WAAS, CDGPS, **OmniStar VBS**, EGNOS) **DF-DGPS =** Correction signal (**OmniStar HP**) **RT ... =** Correction signal (**base station**)

GPS - Details		
Detail	**Description**	**Note**
Accuracy	**Accuracy**. An estimate of the distance between the estimated position and the actual position. Measured according to US standard or in metric units.	Specifies the static accuracy. The longer the Auto-Guide system runs, the more accurate the Auto-Guide system becomes. **OmniStar VBS** = 0.8 m (in optimum conditions) **OmniStar HP** = 0.1 m (in optimum conditions) **Base station** = 0.02 m (in optimum conditions) **Note: Optimum deviation is only achieved after a longer operational period**
Signal Lag	**Signal lag**. The time elapsed since the last correction signal was received. Measured in seconds. - OmniStar VBS - OmniStar HP - Base station (RTK)	- The lower the value, the higher the accuracy - The higher the value, the worse the accuracy (cause e.g. signal shadowing) **OmniStar VBS** **Value: 0 seconds (no correction signal received)** **Value: 1 to 20 seconds (standard range)** **Value: 20 to 45 seconds (e.g. shadowing)** **Value: Greater than approx. 45 seconds (automatic track guidance switches off)** **OmniStar HP** **Value: 0 seconds (no correction signal received)** **Value: 1 to 15 seconds (standard range)** **Value: 15 to 300 seconds (e.g. shadowing)** **Value: Greater than approx. 300 seconds (automatic track guidance switches off)** **Base station** **Value: 0 seconds (no correction signal received)** **Value: 1 to 7 seconds (standard range)** **Value: 7 to 60 seconds (e.g. shadowing)** **Value greater than approx. 60 seconds (automatic track guidance switches off)**
Satellites	**The number of GPS satellites** that the GPS ECU (electronics box in the A058 TopDock) is currently using **should total between 5 and approx. 12 satellites for good reception; reception increasing with the number of satellites.**	**The following is displayed:** Number of GPS satellites, used by both the correction signal and the A058 TopDock (tractor) to jointly calculate the position. / Number of GPS satellites seen by the A058 TopDock (tractor) e.g. 12 / 12
Correction source	**Correction signal reception**	**Searching** = The correction signal is being sought **Tracking** = A correction signal is being received **Connected** = A correction signal is being received and the Auto-Guide system is ready for operation.

GPS - Details		
Detail	**Description**	**Note**
Signal Quality	**Quality of correction signal and GPS signal** (total value) in %	The value is a calculated **inaccurate value**! **0% = bad** **100% = good**
Auth Level **(Auto-Guide Service Tool = current NovAtel Auth Level)**	**Display of accuracy for which the Auto-Guide system is authorised (Authorization)** **Authorisation from NovAtel** (manufacturer of the hardware and software for determining the position)	**Display: WAASLBA** Authorisation for OmniStar VBS/OmniStar HP **Display: WRT20LBA or RT2WLBA** Authorisation for OmniStar HP and base station
System Authcode (Auto-Guide service tool = current Beeline Auth Level)	**Display of accuracy for which the Auto-Guide system is authorised** **Display in cm / dm / sm** **Authorisation from Beeline** (manufacturer of the track guidance software)	**OmniStar VBS** = sm - accuracy **OmniStar HP** = dm - accuracy **Base station** = cm - accuracy

Software - Versions		
Detail	**Description**	**Note**
Terminal	Display of the current software version for **A059 Auto-Guide terminal**	AG 4.0.14 (version: July 2007)
Controller	Display of the current software version for **A058 Auto-Guide TopDock (GPS ECU)** Note: This software (Beeline) is for automatic track guidance	4.0.1.7 (version: July 2007)
VIU	Display of the current software version for **A050 - ECU, basic control unit** for automatic track guidance	The A050 ECU, basic control unit has been programmed with EOL **The tune sets (vehicle-specific settings) are also automatically installed thanks to the EOL program.** Alternatively, the tune sets can be installed with the A059 Auto-Guide terminal
NovAtel FW BSAC (Auto-Guide service tool = GPS firmware version)	Display of the current software version for **A058 Auto-Guide TopDock (GPS ECU)** Note: The software (NovAtel) is for determining the position	2.303 (version: July 2007)

Hardware Details		
Detail	**Description**	**Note**
DMU Type	**Type of DMU** (gyro compass) in A058 TopDock.	Example: Six Axis (6 axis compass)
DMU S/No	**Serial number of DMU** (gyro compass)	Example: 060 1000021
DMU Pkts/Sec.	The total number of readings sent by the DMU per second to the A058 Auto-Guide TopDock (ECU, GPS).	**70 messages per second** or more indicates "good operation"

Hardware Details		
Detail	**Description**	**Note**
BSAC Radio Type	Radio type When operating a base station, a correction signal is sent with the help of a radio module from the base station to the tractor (A058 TopDock). Radio module on the base station = transmitter Radio module on the tractor (A058) = receiver	Radio type = SATEL Radio type (Australia, USA) = FREEWAVE
BSAC Radio S/No.	Radio module serial number	Example: 1
BSAC S/No. (Auto-Guide service tool = GPS serial number)	A058 Auto-Guide TopDock (GPS ECU) serial number	Example: SAS 053 691 60

General Information		
Detail	**Description**	**Note**
Vehicle Type	**Vehicle type (model)**	FEN 700 3 (FENDT 700 COM III) or FEN 800 3 (FENDT 800 COM III) or FE X900 (FENDT 900 COM III)
Tune Set Version	**Display of the current tune set settings version** Tune set = vehicle-specific settings Vehicle-specific settings are found in the tune set settings. In other words, this is how the vehicle's steering reacts. Tune set data includes: - Vehicle dimensions - Dynamic behaviour of the steering - etc.	Example: 2006.2 (version: July 2007)
Roll Bias	**The current estimate of the DMU (gyro compass) roll bias in °** When using the OmniStar HP or base station correction signal, the DMU (gyro compass) must be calibrated before starting work See also: Roll bias calibration	**Target value: 0 +/- 5°** Value: 0° (DMU not calibrated) Value: 0° +/-5° (DMU calibrated)

General Information		
Detail	**Description**	**Note**
VIU Control Time	**The time during which the A050 ECU, basic control unit automatically guided the tractor along the track** The A050 ECU, basic control unit steers the tractor = the time is recorded The A050 ECU, basic control unit does not steer = the time is not recorded Start of recording = from activation of automatic track guidance End of recording = deactivation of automatic track guidance	hh:mm:ss
Steering Override	**Manually turning the steering wheel (B081 steering wheel sensor)** switches off automatic track guidance	No Yes **Note: On the FENDT 900 COM III, the display is currently not in use.** **The display always shows "No"!**
Wheel Angle Figures	**Positions on B067 steering angle sensor** Calibrate the B067 steering angle sensor (Note: See also Chapter 0000 Reg.F - Calibration code 2401 (steering angle sensor)	**Left Lock (calibration value: left lock)** Example: Approx. 19535 **Center (calibrated value: centre)** Example: Approx. 11820 **Right Lock (calibrated value: right lock)** Example: 3725 **Range (working range)** Example: 19535 - 3725 = 15810 **Current Value (actual steering deflection)** Ignition on = 0 Engine running = e.g. 11725 (steering to right)

Base Station Details (this page is only displayed if a base station is used)		
Detail	**Description**	**Note**
Latitude	**"Base station" latitude** (distance north or south of the earth's equator measured in degrees)	Example: 47.77
Longitude	**"Base station" longitude** (distance east or west from the prime meridian measured in degrees)	Example: 10.60
Altitude	**"Base station" altitude** (the vertical height above sea level. Measured according to US standard or in metric units)	Example: 732.964 m
Temperature	**"Base station" temperature** (temperature at the base station)	Operating temperature: -25°C to +55°C Note: The display is set to 0°C
Serial No.	**GPS aerial serial number (base station)**	Note: Display set to "Unknown"

Base Station Details (this page is only displayed if a base station is used)		
Detail	**Description**	**Note**
Baseline	**Distance between tractor and base station**	Maximum distance for safely operating the Auto-Guide approx. 6 km
Correction Packets	**Number of correction signals** Continues counting as long as the connection to the base station is open	123 **Note: As long as it is counting, the A058 Auto-Guide TopDock is receiving a correction signal from the base station**
Lag	**Signal lag**. The time elapsed since the last correction signal was received. Measured in seconds.	- The lower the value, the higher the accuracy - The higher the value, the worse the accuracy (cause e.g. signal shadowing) **Base station** **Value: 0 seconds (no correction signal received)** **Value: 1 to 7 seconds (standard range)** **Value: 7 to 60 seconds (e.g. shadowing)** **Value greater than approx. 60 seconds (automatic track guidance switches off)**

4 Checking the satellite reception by the Auto-Guide system

Restrictions in the reception of the GPS position signal and the correction signal

NOTE: *Since the correct reception of correction signals depends on various factors (see below), we recommend that a demonstration of the Auto-Guide system is always carried out on the customer's fields before purchase, to ensure correct operation of the Auto-Guide system.*

– The Auto-Guide steering system disengages the track guide when the correction signal remains shadowed for longer than 300 seconds

– The GPS and the correction signal can be shadowed by dense trees, field groves, buildings, power lines, etc.

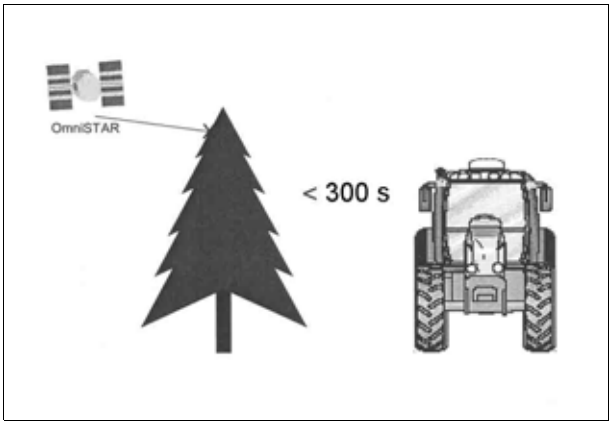


Fig. 20. I002532

– The Auto-Guide steering system loses the correction signal when the correction signal satellite is less than 5...8 degrees above the aerial level.

NOTE: *The correction signal satellite is positioned above the equator.*

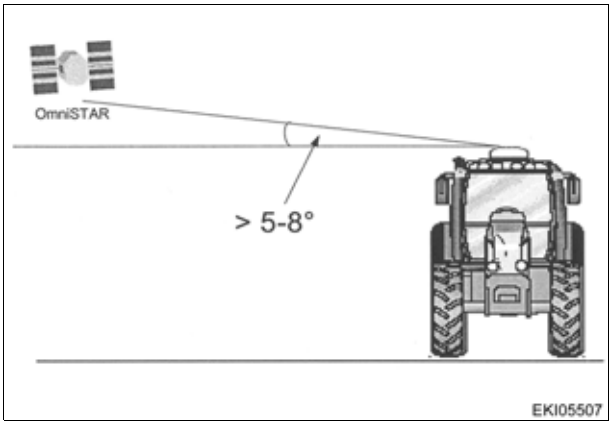


Fig. 21. I002533

– The Auto-Guide track guide system disengages the track guide when the number of satellites required for operation is not reached for more than 30 seconds. Typically a minimum of 5 satellites are necessary.

– The GPS can be shadowed by dense trees, field groves, buildings, power lines, etc.

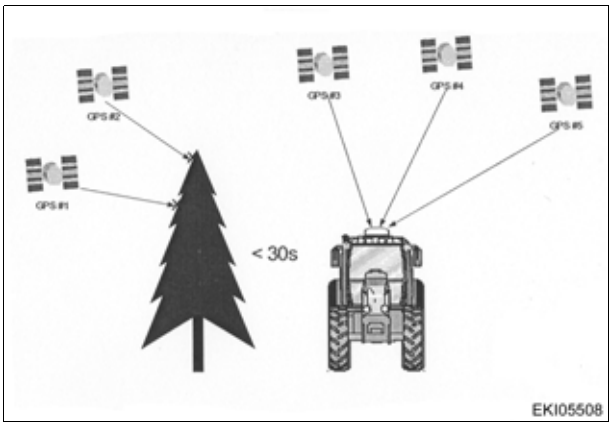


Fig. 22. I002534

– The Auto-Guide track guide system may lose the connection to certain satellites, including the correction signal satellite, if the vehicle is operated on slopes, causing the satellite to be out of view from the aerial.

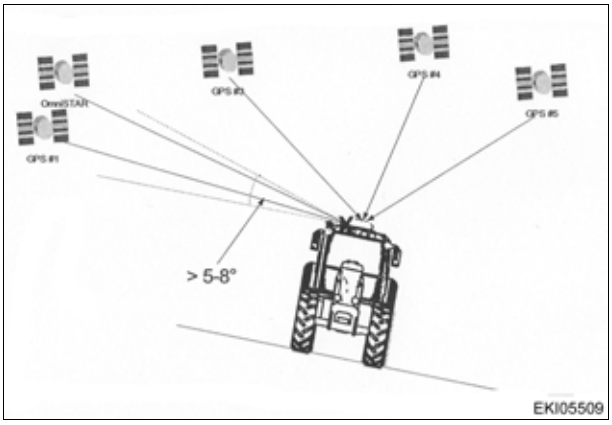


Fig. 23. I002535

– The Auto-Guide system steers the tractor and NOT the implement.
– If the implement does not run concentrically to the tractor because it is being pulled downhill, for example, deviations in accuracy may occur. Only implements mounted via a three-point linkage will offer adequate accuracy on constantly changing landscapes.

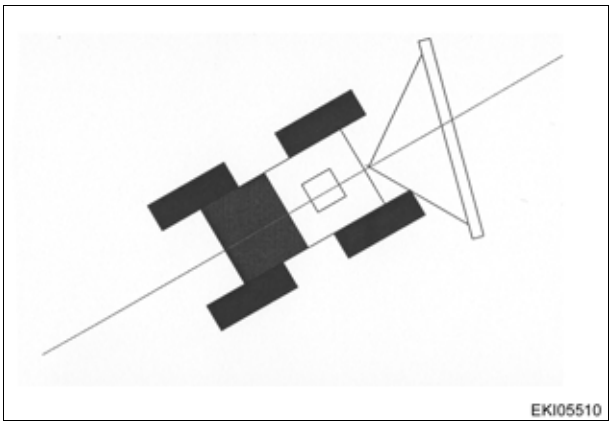


Fig. 24. I002536

– The wave angle of the correction signal decreases as the vehicle moves further north.
– The Auto-Guide system will probably have reception problems in Scandinavia, the Baltic states, central Canada, Scotland and northern England.
– This is especially true for hilly landscapes where the GPS signal can be more easily lost.

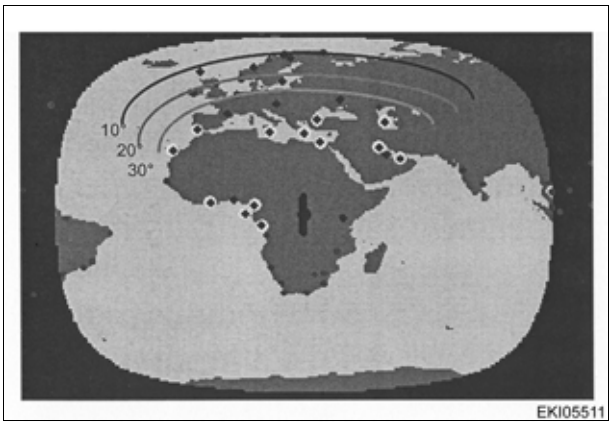


Fig. 25. I002537

– The GPS system does not offer unrestricted availability around the clock and for every location.
– This is especially true for applications requiring high accuracy.
– Should a "poor" or "fair" signal quality be displayed on the **Satellite Quality Forecast** terminal screen, one can assume that high accuracy will be achieved only after an extended period, or not at all. In the worst case the system can not be used at all.

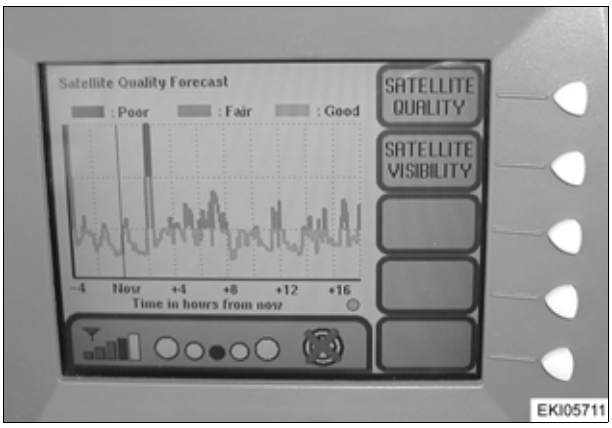


Fig. 26. I002539

Status bar

– The status bar indicator on the Auto-Guide terminal (arrow)
– The status bar indicator displays the actual strength of the GPS signal



Fig. 27. I002541

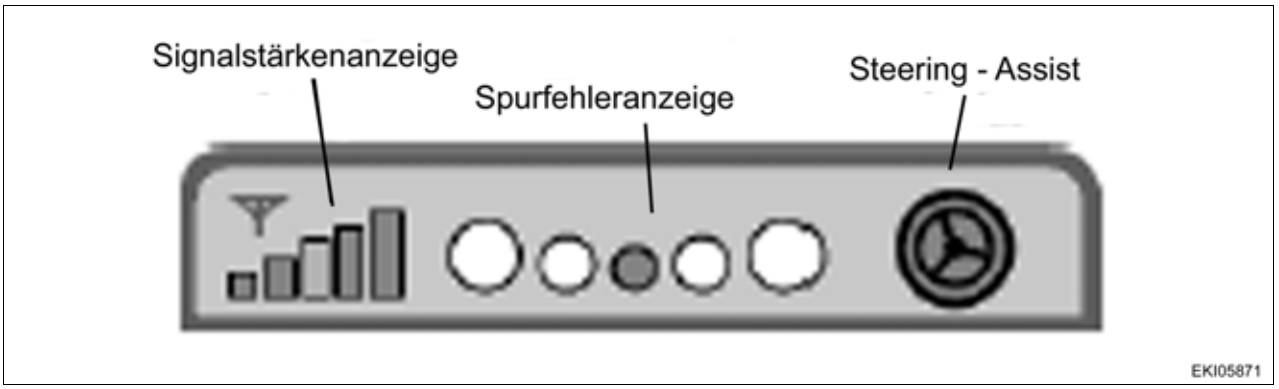


Fig. 28. I002542

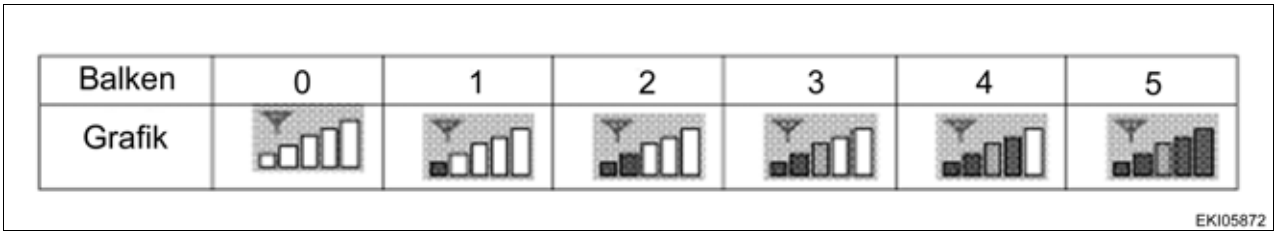


Fig. 29. I002543

Bars	0	1	2	3	4	5
Designation	No GPS signal	GPS signal exists, but no correction signal (DGPS) is available	Patch available, but poor accuracy	adequate accuracy	good accuracy	best accuracy
Steering Assist	No	No	No	Yes	Yes	Yes

Three bars are required to operate Steering Assist (automatic steering). More bars indicate higher signal strength.

Two bars or less are not sufficient to operate Steering Assist.

Call up Auto-Guide status display

Attach the short-circuit connector **E** to the ISO BUS socket.
or
Connect the ISO BUS terminal

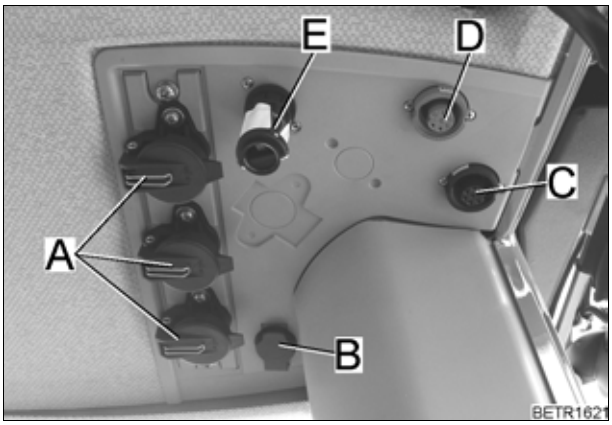


Fig. 30. I003280

For operation of the Auto-Guide system, it is necessary that the **ISO BUS tractor data** is set to **active.**

NOTE: *See also:*
Chapter 4090 Reg. A - Auto-Guide: Adjusting the ISO BUS on the tractor



Continue pressing the **F5** key until the display joystick and **tractor data active** is displayed / **Auto-Guide operation is possible**



Deactivation of ISO BUS



Vario terminal and joystick not active, an external ISO terminal can be used. **Tractor data active** / **Auto-Guide operation possible**



Vario terminal not active. Joystick and **tractor data active** / **Auto-Guide operation possible**

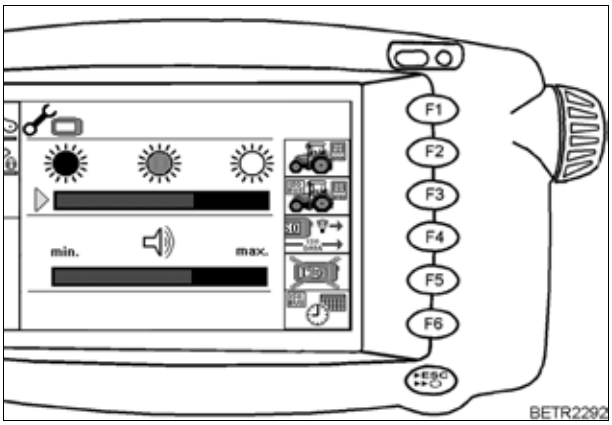


Fig. 31. I003284

Ignition ON,
the Auto-Guide system switches to standby mode
(LED on the button flashes)

The A059 Auto-Guide terminal starts up (takes approx. 2 minutes)

Confirm warning message (DISCLAIMER) by pressing **OK.**



Fig. 32. I002571

– Scroll with the **arrow key**



Fig. 33. I003307

– Switch to the status indicator with the **measuring gauges**



Fig. 34. I003308

– The "Status" screen is displayed.
– This page displays the status of the Auto-Guide components.



A green tick means that the component is operational.



A red cross means that the component is not operational.

DMU = electronic gyro compass (in the A058 TopDock)
Correction = Correction signal reception
GPS = ECU, GPS (electronic box in the A058 TopDock)
Steer = A050 ECU, basic control unit
Comms = Connection between Auto-Guide components



Fig. 35. I003309

Satellite forecast

The "satellite forecast" screen delivers a visual display and the satellite visibility for the immediate future (i.e. for the next 16 hours)

– On the "Status" screen, actuate
– **GPS forecast**



Fig. 36. I003310

The **Satellite Quality Forecast** is displayed

A forecast of the reception quality of the GPS satellite for the next 16 hours is displayed



Fig. 37. I002549

Poor . . . . . poor reception quality
Fair . . . . . fair reception quality
Good . . . . . good reception quality

Press **Satellite Visibility**

A prediction about the visible GPS satellites within the next 16 hours **(Satellite Visibility)** is displayed

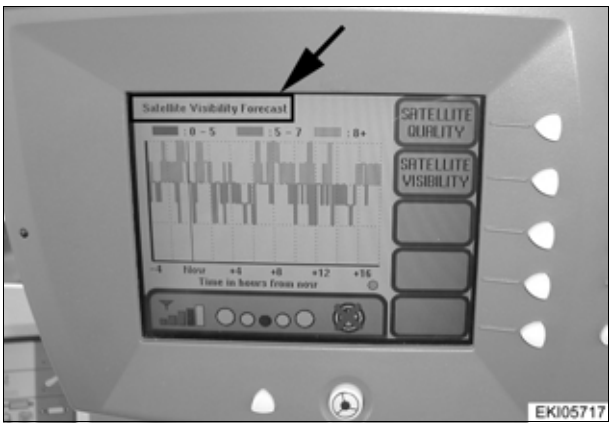


Fig. 38. I002551

Poor . . . . . poor reception quality
Fair . . . . . fair reception quality
Good . . . . . good reception quality

– Use **ESC** to return to the Status screen.



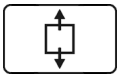
Fig. 39. I002552

5 Checking Auto-Guide (range: hydraulic steering) with A059-Auto-Guide terminal

Y087 Auto-Guide control valve
Y085 solenoid valve for automatic track guidance switch-off
Y086 steering disconnect solenoid valve



Right side of transmission.



Remove right rear wheel and panel.

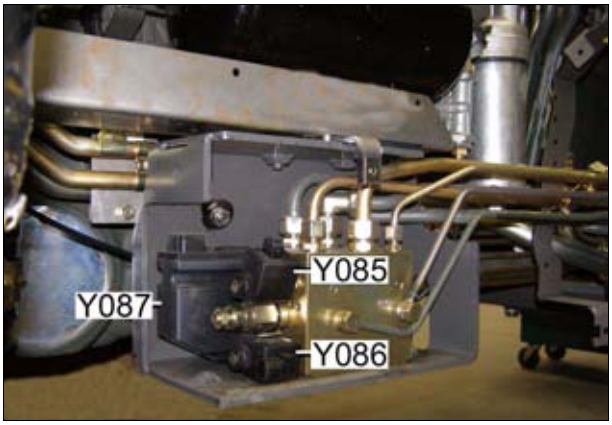


Fig. 40. I001987

The steering hydraulics for Auto-Guide automatic track guidance can be tested on the A059 Auto-Guide terminal.



Fig. 41. I001366

Steering hydraulics actuation		
Item	**Designation**	**Function**
A050	ECU, basic control unit	Actuates the steering cylinder (**Y087** Auto-Guide control valve) Switches off automatic track guidance if there is a manual intervention on the steering wheel solenoid valve for automatic track guidance switch-off)**(Y085** - Magnet-ventil, Abschaltung der automatischen Spurführung) Disconnects the Y087 Auto-Guide control valve from the steering servo unit (**Y086** steering disconnect solenoid valve)

Engine is running
Switch stand-by switch (B) to "fully active" (LED lights up)

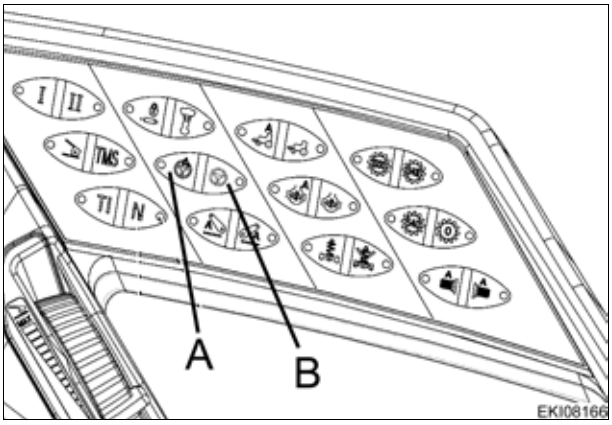


Fig. 42. I000979

Scroll with the **arrow key**



Fig. 43. I003307

Continue to the settings menu with the **spanner key**.



Fig. 44. I003332

The settings menu appears.
Press the **arrow** button to continue.



Fig. 45. I003333

Press the **Test Steering** button.



Fig. 46. I003817

The warning message appears:**T1803**

"Pulse steering causes the tractor to move. Ensure you are in a cleared space, away from people and obstacles. Press OK to continue or ESC to cancel."

Confirm the warning message with **OK**



Fig. 47. I003818

The steering test appears.

Steer to the left.
The front wheels move to the left.

Steer to the right.
The front wheels move to the right.

To exit the steering test, press **ESC**.



Fig. 48. I003819

Steering test with the A059 Auto-Guide terminal	
- The front wheels steer - Steering wheel is motionless	**Y087** Auto-Guide control valve **OK** **Y085** solenoid valve for automatic track guidance switch-off **OK** **Y086** steering disconnect solenoid valve **OK**
- The front wheels steer - Steering wheel moves with wheels	**Y086** steering disconnect solenoid valve **faulty**
- Front wheels don't steer	**Y085** solenoid valve for automatic track guidance switch-off **faulty** or **Y087** Auto-Guide control valve **faulty**

NOTE: *see §2*

see §33

see §152

see §153see §154

6 Setting the frequency and channel of the radio module (tractor and base station)

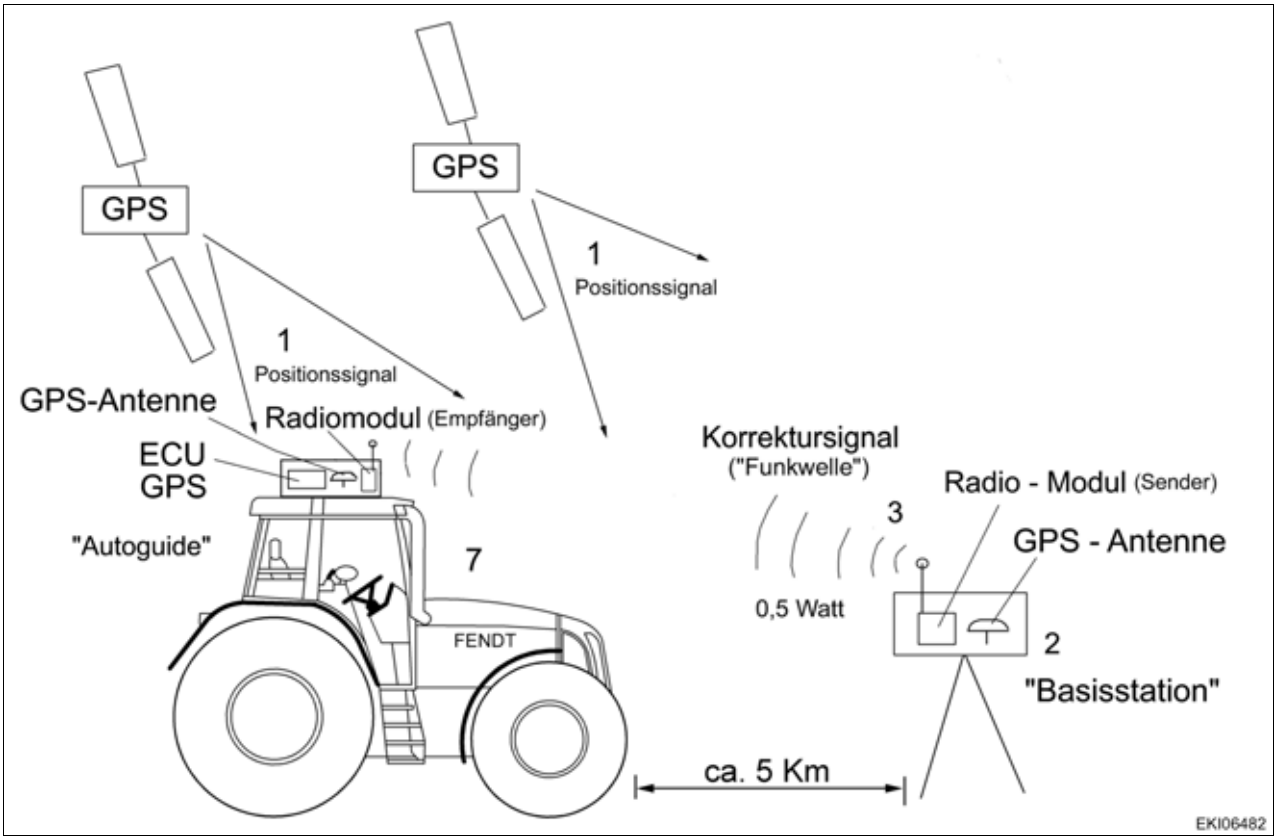


Fig. 49. I003394

– GPS satellites send position signals (1)
– The base station (2) compares this data with the actual position
– Correction signals (3) are transmitted from the base station (transmitter) to the tractor (receiver) using a radio module
– Auto-Guide receives both signals (position signal 1 and correction signal 3) and determines more exact position data (7)

The base station transmits the correction signal to the Auto-Guide on the tractor via a **radio module (transmitter)**

A radio licence is required to operate a radio transmitter.

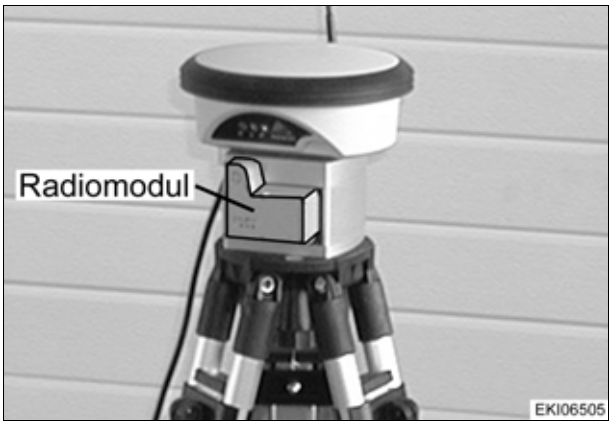


Fig. 50. I002798

The **radio module (receiver)** on the A058 Auto-Guide receives the correction signal



Fig. 51. I002356

NOTE: *A radio licence must be applied for from the relevant network operator.*
The user of the base station is responsible for applying for a radio licence (frequency assignment).
The operation of a base station without a radio licence (frequency assignment) will result in a caution and may lead to prosecution.

NOTE: *The radio module on the tractor and the radio module on the base station must be programmed to the same frequency and the same channel in order for them to communicate with each other.*

Programming the radio module on the tractor (A058 Auto-Guide TopDock — radio channel and frequency)

Fit and connect the **radio module**

NOTE: *See also:*
Chapter 4090 Reg.G - Installing the radio module on the A058 Auto-Guide TopDock (tractor)



Fig. 52. I002356



Set Vario terminal to ISO BUS operation

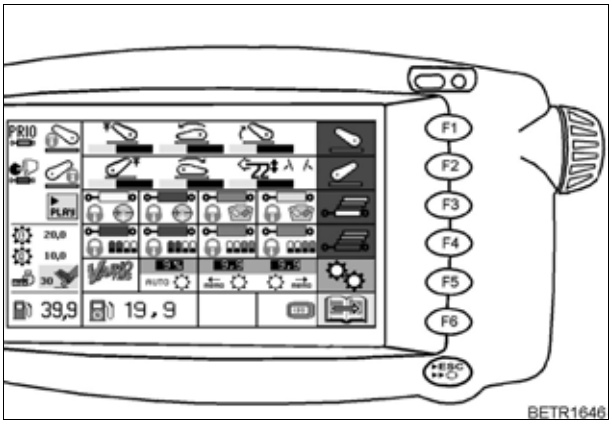


Fig. 53. I003282

Plug short-circuit connector (E) into the X028 ISO BUS socket

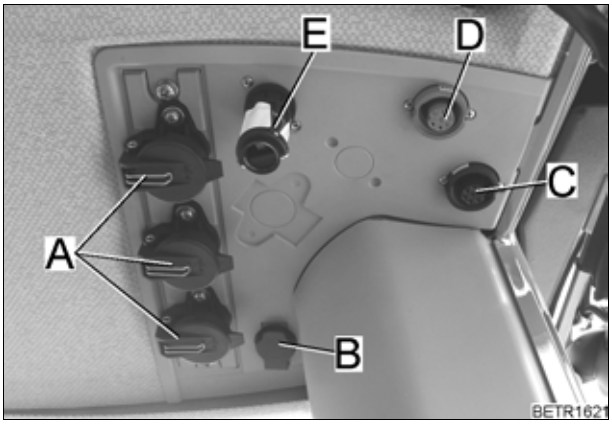


Fig. 54. I003280

Switch on ignition.
Switch the Auto-Guide system to standby mode (A058 Auto-Guide TopDock is energised)
The LED on the standby switch (B) flashes

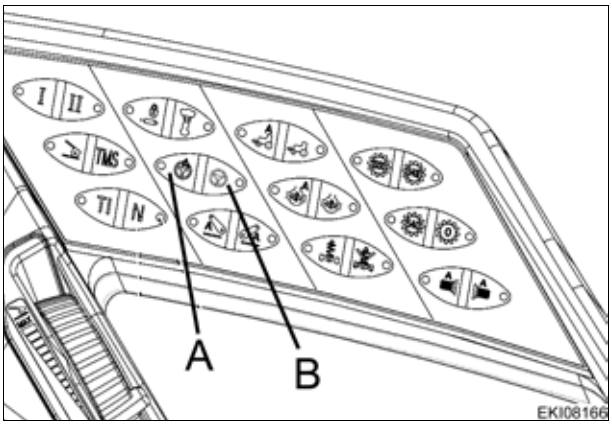


Fig. 55. I000979

The red LED (arrow) indicates that the A058 Auto-Guide TopDock is energised.

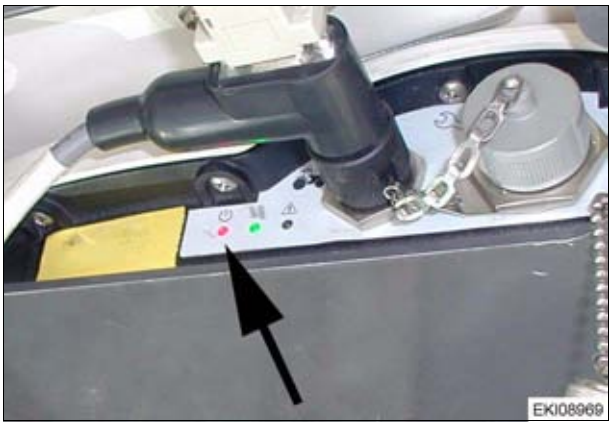


Fig. 56. I003338

Scroll with the **arrow key**.



Fig. 57. I003307

Continue to the settings menu with the **spanner key**.



Fig. 58. I003332

Press the **Correction Signal** key



Fig. 59. I003361

The screen is displayed**Correction Signal Sources**



– Select the **Local Base** correction signal using the arrow keys

NOTE: *The signal highlighted in blue is selected*



– Confirm the selection with the **Enter** key



Fig. 60. I003395

Setting the radio channel

NOTE: *Radio frequencies and channels are listed in the table below*

+/-Select



– Enter the required radio channel using the alphanumeric keypad
Note: Press and hold down key until the desired digit is set.



Confirm the entry with the **Enter** key



Fig. 61. I003396

919 .. 0101-1000
919 .. 1001-
922 .. 0101-1000
922 .. 1001-
925 .. 0101-1000
925 .. 1001-
928 .. 0101-1000
928 .. 1001-
931 .. 0101-1000
931 .. 1001-
934 .. 0101-1000
934 .. 1001-

Table: Radio frequencies and channels

Channel	Germany	Spain	Netherlands	France	Italy	UK/Ireland
-40					442,5	
-39					442,5125	
-38					442,525	
-37					442,5375	
-36					442,55	
-35					442,5625	
-34					442,575	
-33					442,5875	
-32					442,6	
-31					442,6125	
-30					442,625	
-29					442,6375	
-28					442,65	
-27					442,6625	
-26					442,675	
-25					442,6875	
-24					442,7	
-23					442,7125	
-22					442,725	
-21					442,7375	
-20					442,75	
-19					442,7625	
-18					442,775	
-17	433,1				442,7875	
-16	433,125				442,8	
-15	433,15				442,8125	
-14	433,175				442,825	
-13	433,2			444,8375	442,8375	
-12	433,225				442,85	
-11	433,25				442,8625	
-10	433,275				442,875	
-9	433,3				442,8875	
-8	433,325	406,425			442,9	
-7	433,35	406,45			442,9125	
-6	433,375	406,475			442,925	
-5	433,4	406,5			442,9375	
-4	433,425	406,525			442,95	458,525
-3	433,45	406,55			442,9625	458,55
-2	433,475				442,975	458,575
-1	433,5			444,9875	442,9875	458,6
0	433,525		439,8625		443	458,625
1	433,55				443,0125	458,65
2	433,575				443,025	458,675
3	433,6				443,0375	458,7
4	433,625				443,05	458,725

Channel	Germany	Spain	Netherlands	France	Italy	UK/Ireland
5	433,65				443,0625	458,75
6	433,675				443,075	458,775
7	433,7				443,0875	458,8
8	433,725				443,1	
9	433,75				443,1125	
10	433,775				443,125	
11	433,8				443,1375	
12	433,825				443,15	
13	433,85				443,1625	
14	433,875				443,175	
15	433,9				443,1875	
16	433,925				443,2	
17	433,95				443,2125	
18	433,975				443,225	
19	434				443,2375	
20	434,025				443,25	
21	434,05				443,2625	
22	434,075				443,275	
23	434,1				443,2875	
24	434,125				443,3	
25	434,15				443,3125	
26	434,175				443,325	
27	434,2				443,3375	
28	434,225				443,35	
29	434,25				443,3625	
30	434,275				443,375	
31	434,3				443,3875	
32	434,325				443,4	
33	434,35				443,4125	
34	434,375				443,425	
35	434,4				443,4375	
36	434,425				443,45	
37	434,45				443,4625	
38	434,475				443,475	
39	434,5				443,4875	
40	434,525				443,5	
41	434,55				443,5125	
42	434,575				443,525	
43	434,6				443,5375	
44	434,625				443,55	
45	434,65				443,5625	
46	434,675				443,575	
47	434,7				443,5875	
48	434,725				443,6	
49	434,75				443,6125	

Table: Radio frequencies and channels

Channel	Portugal	Sweden	Denmark
-40			
-39			
-38			
-37			
-36		439	
-35		439,025	
-34		439,05	
-33		439,075	
-32		439,1	
-31		439,125	
-30		439,15	
-29		439,175	
-28		439,2	
-27		439,225	
-26		439,25	
-25		439,275	
-24		439,3	
-23		439,325	
-22		439,35	
-21		439,375	
-20		439,4	
-19		439,425	
-18		439,45	
-17		439,475	
-16		439,5	
-15		439,525	
-14		439,55	
-13		439,575	
-12		439,6	
-11		439,625	
-10		439,65	
-9		439,675	
-8			
-7			
-6			
-5			
-4			
-3	458,1125		
-2	458,125		
-1	458,1375		443,95
0	458,15		434
1			434,05
from 2 to 49	**No radio frequencies available**	**No radio frequencies available**	**No radio frequencies available**

Programming the base station on the radio module (radio channel and frequency)

Disconnect + supply to base station

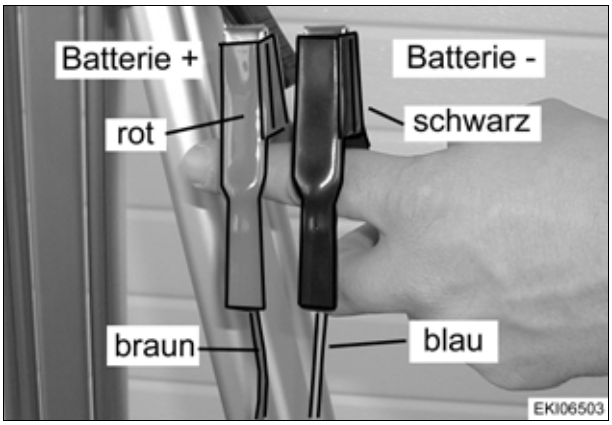


Fig. 62. I002934

Unscrew radio aerial and adapter

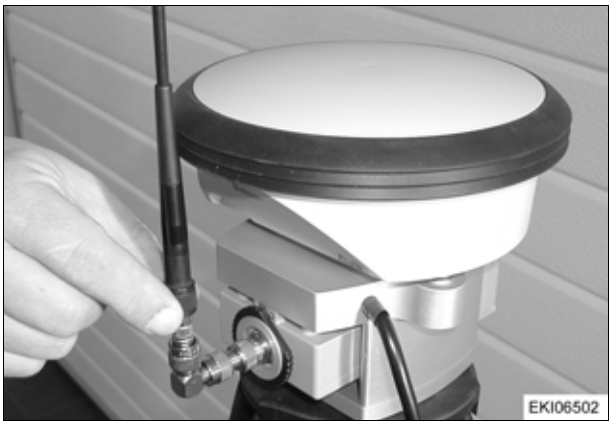


Fig. 63. I002933

Unlock radio module



Fig. 64. I002931

Remove radio module



Fig. 65. I002929

Programming the radio module on the A058 Auto-Guide TopDock (B4)

Install the radio module of the base station on the A058 Auto-Guide TopDock with **adapter cable X 899.980.288.208**.



Fig. 66. I006171

Set the radio channel as described above



Fig. 67. I003396

E Measuring and testing

1 Diagram: Auto-Guide system (automatic track guidance) 225
2 Hydraulic check of the Auto-Guide system 227

1 Diagram: Auto-Guide system (automatic track guidance)

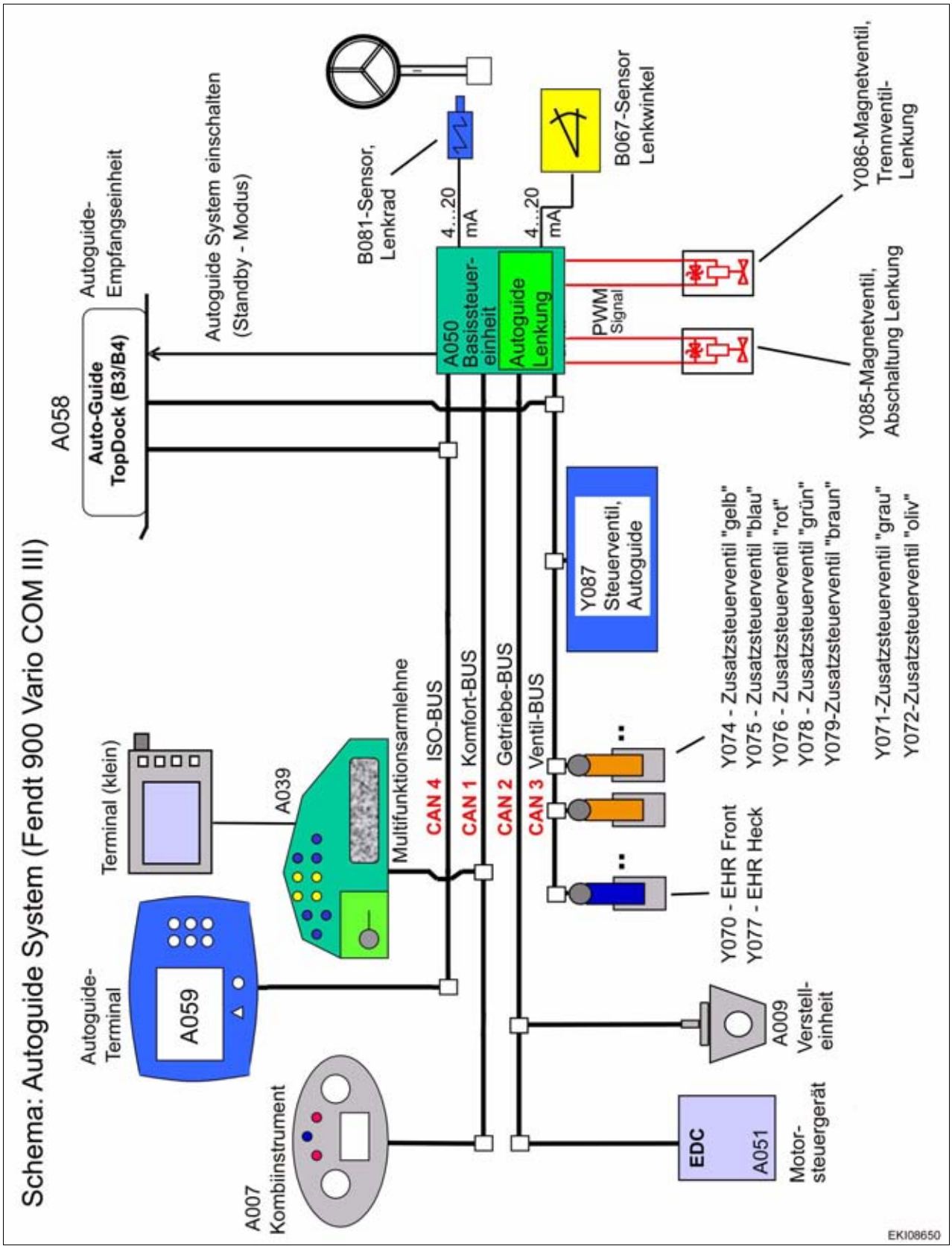


Fig. 1. I002518

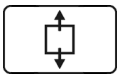
Diagram: Auto-Guide system (automatic track guidance)		
Component	**Function**	**Reference**
A039 multifunction armrest (MFA)	Auto-Guide system switched off **Auto-Guide system in "partially active" standby mode** (max. speed) LED on the standby button flashes **Auto-Guide system in "fully active" standby mode** (limited to 25 km/h) LED on standby button lit and steady **Auto-Guide system switched on** Switch on automatic track guidance LED on the On/Off button lit	Chapter 9000 Reg.E - A039 multifunction armrest
A050 ECU, basic control unit	Controls Y087 Auto-Guide control valve Energises Y085 solenoid valve for automatic track guidance switch-off Energises Y086 steering disconnect solenoid valve	Chapter 9000 Reg.E – A050 ECU, basic control unit (area: Auto-Guide "automatic track guidance")
A058 Auto-Guide TopDock "receiver unit"	Satellite receiver (GPS and correction signal), Gyro compass (DMU), Radio module (reception of the correction signal from the base station) **Calculates the steering angle (target value) for track guidance**	Chapter 9000 Reg.E - A058 Auto-Guide TopDock
A059 Auto-Guide terminal	For operating the Auto-Guide system	Chapter 9000 Reg.E - A059 Auto-Guide terminal
B067 sensor, steering angle	**Steering angle (actual value)**	**Chapter 0000 Reg. F – Calibration code 2401** Chapter 9000 Reg.E - B067 steering angle sensor
B081 sensor, steering wheel	If there is any steering intervention (B081 sensor), automatic track guidance switches off (Y085 solenoid valve)	Chapter 9000 Reg.E - B081 steering wheel sensor
Y085 solenoid valve for automatic track guidance switch-off	If there is any steering intervention (B081 sensor), automatic track guidance switches off (Y085 solenoid valve)	Chapter 9000 Reg.E – Y085 solenoid valve for automatic track guidance switch-off
Y086 steering disconnect solenoid valve	Automatic track guidance is switched on. The Y086 solenoid valve disconnects the Y087 control valve from the steering servo unit (prevents the steering wheel from turning)	Chapter 9000 Reg.E - Y086 steering disconnect solenoid valve
Y087 Autoguide control valve	Actuates the steering cylinder	**Chapter 0000 Reg. F – Calibration code 2403** Chapter 9000 Reg.E - Y087 Auto-Guide control valve

2 Hydraulic check of the Auto-Guide system

Y087 = Auto-Guide control valve
Y086 = Steering disconnect solenoid valve
Y085 = solenoid valve for automatic track guidance switch-off



Right side of transmission.



Remove panel.

NOTE: *For other components see:*
Chapter 0000 Reg. D - Electr./hydraulic component layout

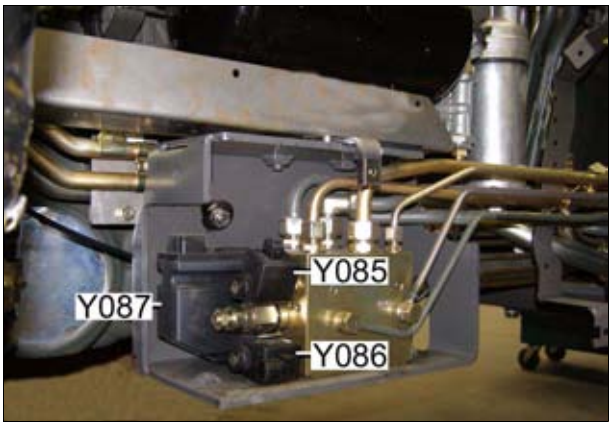


Fig. 2. I001987

NOTE: *The steering can be actuated via the A059 Auto-Guide terminal.*
See also:
Chapter 0000 Reg.A - Checking the Auto-Guide steering (area: Orbitrol steering) using the A059 Auto-Guide terminal.



Fig. 3. I003817

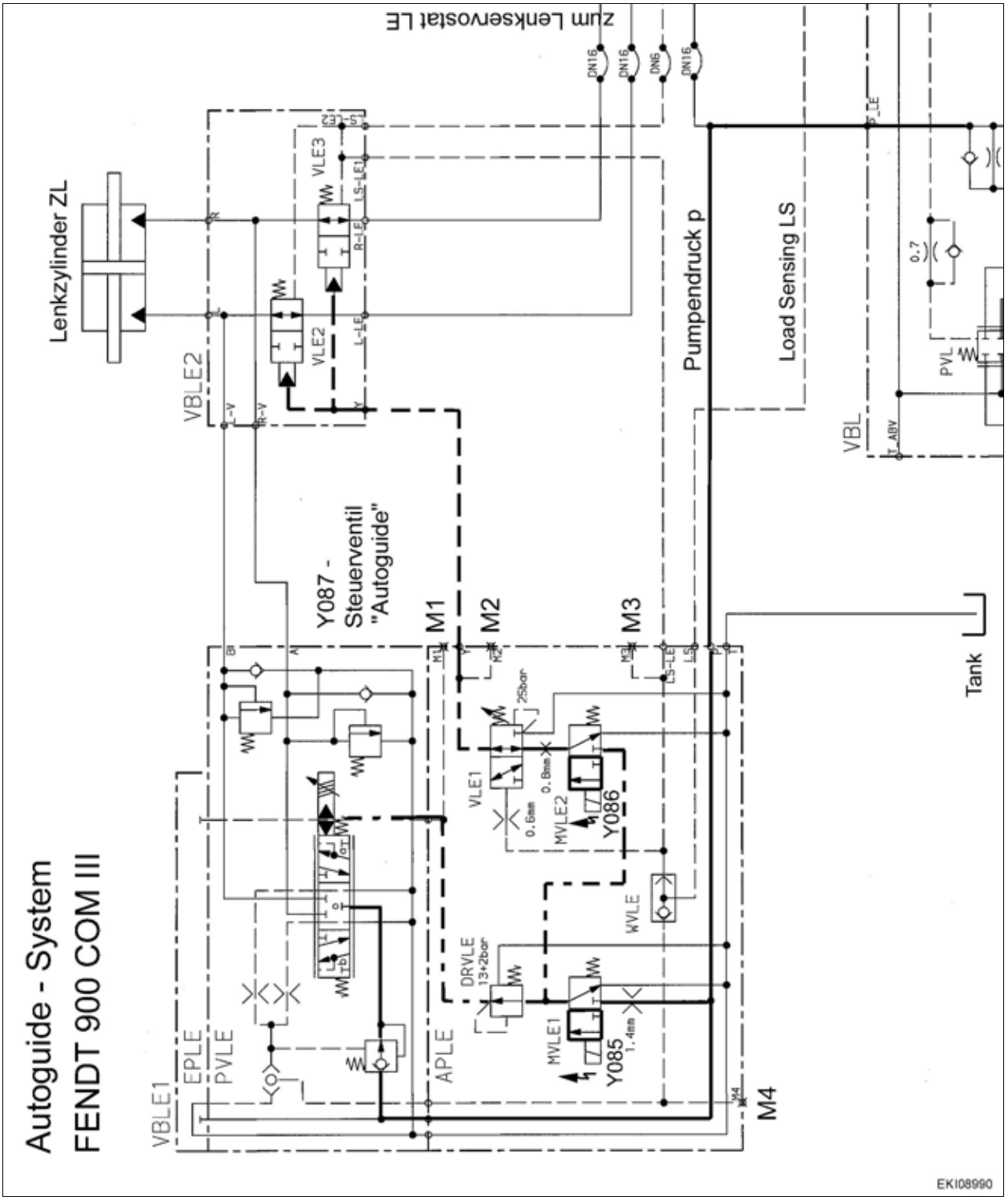


Fig. 4. I003516

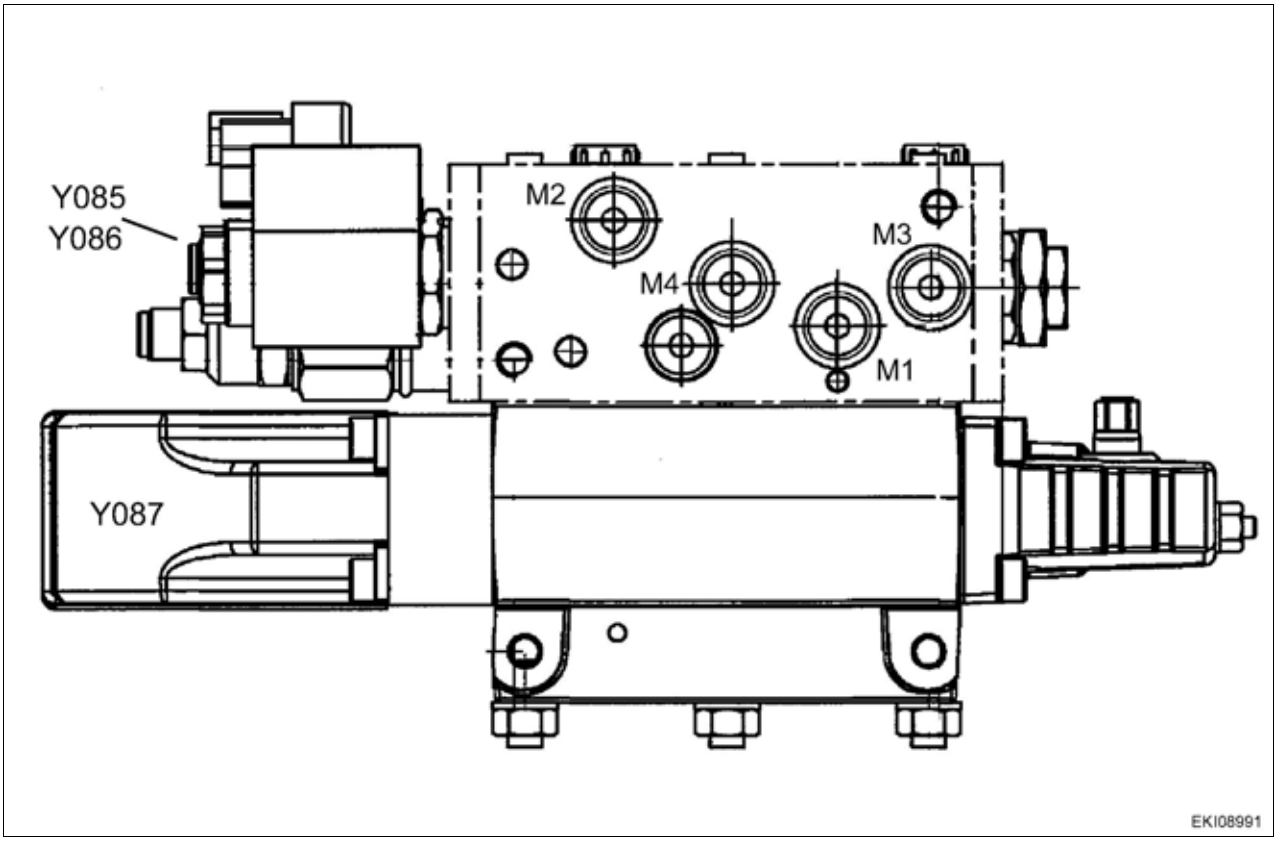


Fig. 5. I003531

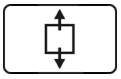
Item	Designation	Note
Y085(MVLE1)	Solenoid valve for automatic track guidance switch-off	Disengagement of automatic track guidance
Y086(MVLE2)	Steering disconnect solenoid valve	Automatic track guidance is switched on. The Y086 solenoid valve disconnects the Y087 control valve from the steering servo unit (prevents the steering wheel from turning)
Y087(PVLE)	Autoguide control valve	Actuates the steering cylinder
VBLE2	Valve block, el.-hyd. steering system 2	
VLE2 / VLE3	LE switch off valves 1 + 2 "lock valve"	Disconnects the Y087 control valve from the steering servo unit (prevents the steering wheel from turning)
ZL	Steering cylinder	
p	Pump pressure	max. 180 bar
LS	Load sensing pressure	max. 180 bar
T	Tank	-
M1	**Control pressure** for the Y087 Auto-Guide control valve	**13 bar to 15 bar**

Item	Designation	Note
M2	**Switching pressure** for VLE2 / VLE3 LE switch-off valves 1 + 2 "lock valve"	**approx. 25 bar**
M3	**Load Sensing pressure** (from the LE steering servo unit)	max. 180 bar
M4	**Load Sensing pressure** (from the Y087 Auto-Guide control valve)	max. 180 bar

M3 = LS pump measuring point (max. 200 bar)
M4 = Load Sensing pressure measuring point (LS pressure) (max. 200 bar)



Right side of tractor, on **central control block**



Remove panel.

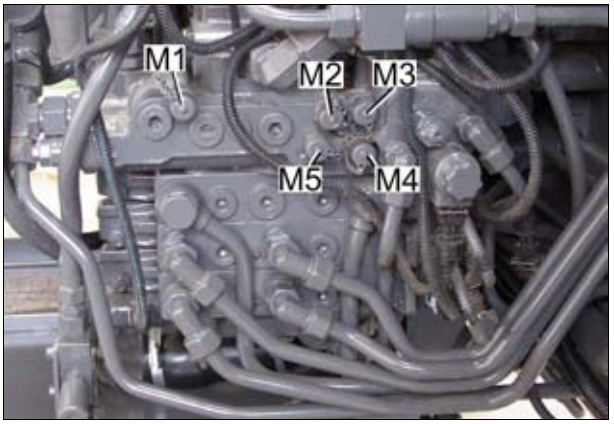


Fig. 6. I001210

Pressure measurement report (fax template)

	at the central control block		at the connector plate for the Y087 Auto-Guide control valve			
	M3	**M4**	**M3**	**M4**	**M2**	**M1**
	LS pump pressure	**LS pressure (at the load sensing pump)**	**LS pressure (from the LE steering servo unit)**	**LS pressure (from the Y087 Auto-Guide control valve)**	**Switching pressure for VLE2 / VLE3 LE switch-off valves 1 + 2 "lock valve"**	**Control pressure for the Y087 Auto-Guide control valve**
	[bar]	**[bar]**	**[bar]**	**[bar]**	**[bar]**	**bar**
	Specified value Actual value	Specified value Actual value	Specified value Actual value	Specified value Actual value	Specified value Actual value	Specified value Actual value
Engine is running, Auxiliary control valves locked, **Steering not actuated,** Automatic track guidance not actuated,	20 to 24	0	0	0	0	0
Engine is running, Auxiliary control valves locked, **Free steering when stationary**, Automatic track guidance not actuated	Depending on resistance	Depending on resistance	Depending on resistance	0	0	0

	at the central control block		at the connector plate for the Y087 Auto-Guide control valve			
	M3	M4	M3	M4	M2	M1
	LS pump pressure	LS pressure (at the load sensing pump)	LS pressure (from the LE steering servo unit)	LS pressure (from the Y087 Auto-Guide control valve)	Switching pressure for VLE2 / VLE3 LE switch-off valves 1 + 2 "lock valve"	Control pressure for the Y087 Auto-Guide control valve
	[bar]	[bar]	[bar]	[bar]	[bar]	bar
Engine is running, Auxiliary control valves locked, **Steering wheel turned to steering stop**, Automatic track guidance not actuated	195 to 200	170 to 180	170 to 180	0	0	0
	Specified value Actual value	Specified value Actual value	Specified value Actual value	Specified value Actual value	Specified value Actual value	Specified value Actual value
Engine is running, Auxiliary control valves locked, Steering not actuated, **Automatic track guide actuated**	Depending on resistance	Depending on resistance	0	Depending on resistance	approx. 25 (Y086 solenoid valve energised)	13 to 15 (Y085 solenoid valve energised)
Engine is running, Auxiliary control valves locked, **Automatic track guide actuated, Manual steering actuated "Override"**	Depending on resistance	Depending on resistance	Depending on resistance	0	0	0

Button B = standby button
Button A = Activate "Auto-Guide" automatic track guidance

NOTE: *"Autoguide" automatic track guide switched on*
See also:
Chapter 4090 Reg. A - Auto-Guide function test (brief instructions)

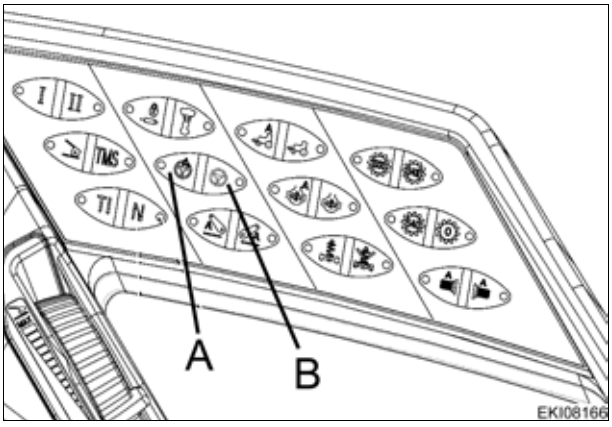


Fig. 7. I000979

A	General
B	Faults
C	Documents and Diagrams
D	Component location
E	Testing
F	Setting and Calibration
G	Repair
H	Service – Info

5030

Vehicle layout/operator's seat

5030 Vehicle layout/operator's seat

A General 5
D Component position 15
E Measuring and testing 23
F Setting and calibrating 45
G Repair 53

A General

1 Operator's seats: Overview of models 7
2 FENDT Super Comfort operator's seat (operating controls). 8
3 FENDT Evolution operator's seat/FENDT Evolution Active operator's seat (operating controls). 10

1 Operator's seats: Overview of models

FENDT 300 Vario **Tractor without TMS (operator's seat without seat contact switch)** **Tractor with TMS (operator's seat with seat contact switch)**		
FENDT spare part number	**FENDT designation**	**Grammer designation**
G 339.500.030.020	FENDT Standard (without seat contact switch)	MSG 95 A 721
G339.500.030.010	FENDT Standard (with seat contact switch)	MSG 95 A 721

FENDT 400 Vario COM III **FENDT 700 Vario COM III** **FENDT 800 Vario COM III**		
FENDT spare part number	**FENDT designation**	**Grammer designation**
G 718.501.030.010	FENDT Standard	MSG 95 A 731
G 718.501.030.020	FENDT Super Comfort	MSG 95 AL 741
G 930.500.030.040	FENDT Evolution	MSG 95 EL 741

FENDT 900 Vario COM III		
FENDT spare part number	**FENDT designation**	**Grammer designation**
G 931.502.030.011	FENDT Super Comfort	MSG 97 AL 741
G 931.502.030.030	FENDT Evolution	MSG 97 EL 741
G 931.502.030.022	FENDT Evolution Active	MSG 97 EAC 741

Grammer model designation

Seat model/suspension designation
- MSG 95 (swing, air-sprung)
- MSG 97 (wide swing, air-sprung)

Suspension design (seat lower section)
- A (pneumatic suspension with automatic height and weight adjustment)
- AL ("Super Comfort" design)
- EL ("Evolution" design)
- EAC ("Evolution Active" design)

Design and width of seat upper section
- 721 (width 490 mm with backrest adjustment and short back)
- 731 (width 530 mm with backrest adjustment and short back)
- 741 (width 550 mm and thicker with backrest adjustment and short back)

2 FENDT Super Comfort operator's seat (operating controls)

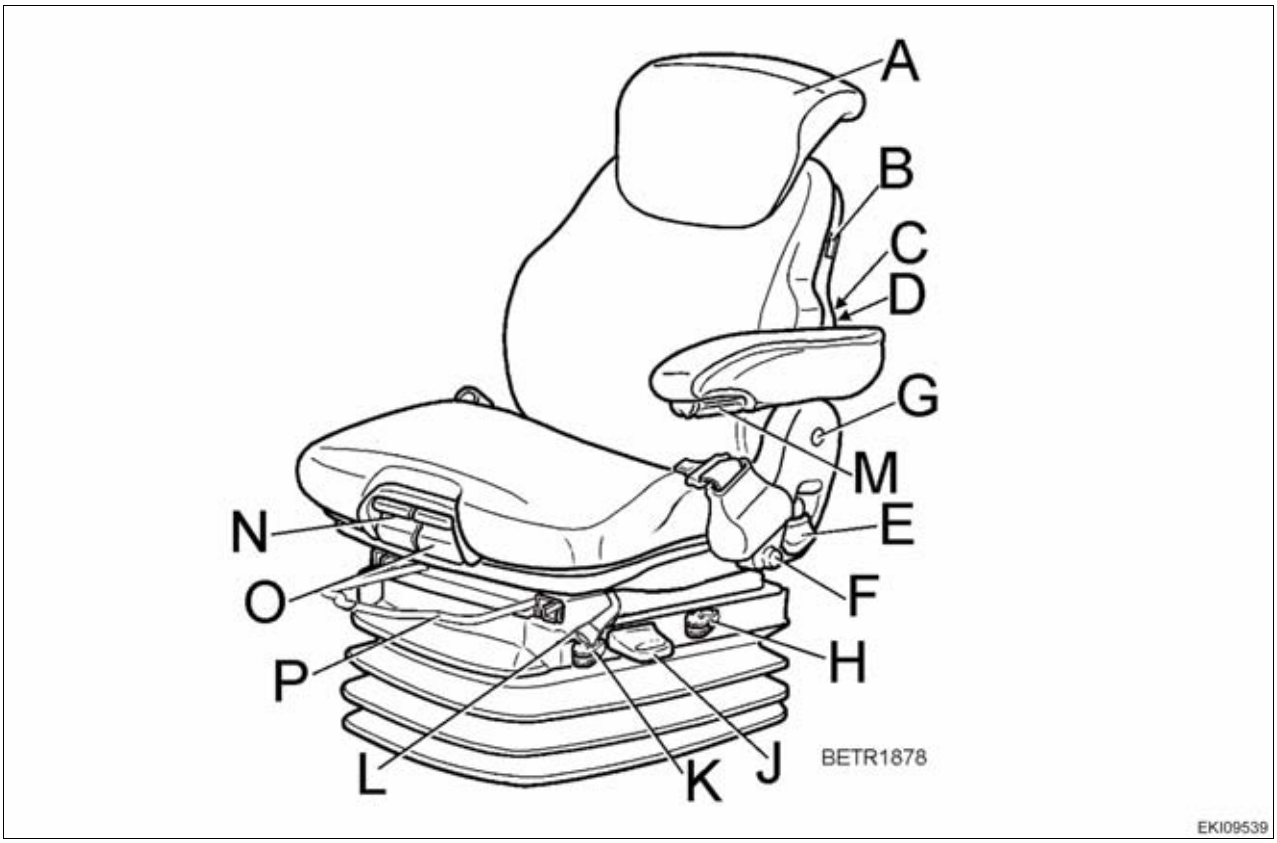


Fig. 1. FENDT Super Comfort seat I007073

FENDT Super Comfort seat	
Item	**Function**
A	**Backrest extension** Adjust the backrest extension by pulling up along notched stops. To remove the backrest extension, pull past end stop with a jerk.
B	Switch for **seat heater** 0 = Seat heater Off 1 = Seat heater On
C	Switch for **lumbar support (curvature at top)** The curvature is increased (+) or reduced (-) by pressing the corresponding switch.
D	Switch for **lumbar support (curvature at bottom)** The curvature is increased (+) or reduced (-) by pressing the corresponding switch.
E	Control for **tilt adjustment of the backrest** Pull control upwards. Adjust seat angle by pushing back on and releasing the backrest until the required position is obtained. After setting, the control must lock in place and the backrest should no longer move.
F	**Seat belt**
G	**Armrest height adjustment** Remove cap. Loosen hex nut. Move armrest to the required position. Tighten hex nut (25 Nm) Refit cap.
H	Lever for **adjusting shock absorber** Turn the lever to the required setting and release. Lever forwards = Soft suspension Lever backwards = Hard suspension

FENDT Super Comfort seat	
Item	**Function**
J	Control for combined **height and weight adjustment** The weight adjustment must be done with the vehicle at a standstill, and the operator sitting perfectly still in the operator's seat. **Weight adjustment** Briefly pull up or push down the handle **Height adjustment** Pull up or push down the handle until the required position is obtained. Actuate the compressor for 1 minute max.
K	Lever for **horizontal suspension** To compensate for shock loads in the direction of travel (e.g. when driving with a trailer), it is beneficial to engage the horizontal suspension. Lever forwards = Horizontal suspension Off Lever backwards = Horizontal suspension On When the horizontal suspension is switched off, the locking lever must audibly lock in the required position. To do this, push the seat back until it cannot be moved into any other position.
L	Lever for **swivelling seat** Pull lever; seat can now be swivelled freely to the right or left up to the end stop. After adjusting, the control must audibly lock in the required position. After locking, the operator's seat should no longer be able to be moved.
M	Adjustment wheel for **armrest tilt adjustment** The lengthways tilt of the armrest can be adjusted by turning the hand wheel. If the wheel is turned outwards (+), the armrest is raised; if it is turned inwards (-), the front of the armrest is lowered.
N	Control for **seat depth adjustment** Pull control upwards. While actuating the control, the required position can be set by sliding the seat forward or back
O	Control for **seat tilt adjustment** Pull control upwards. While actuating the control, the required position can be set by pressing on or releasing weight on the front or back of the seat
P	Lever for **lengthways adjustment** Pull control upwards. While actuating the control, the required position can be set by sliding the seat forward or back. After adjusting, the control must audibly lock in the required position. After locking, the operator's seat should no longer be able to be moved.

3 FENDT Evolution operator's seat/FENDT Evolution Active operator's seat (operating controls)

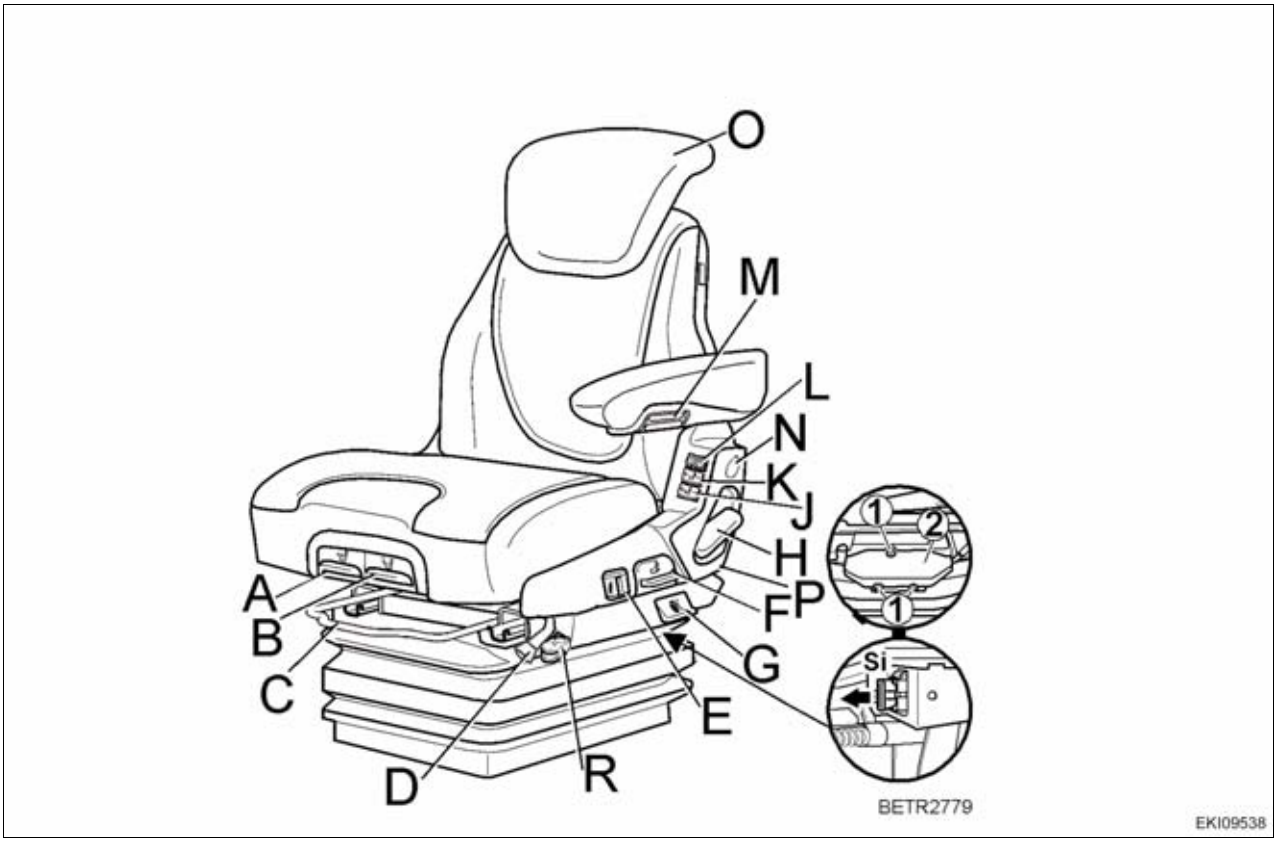


Fig. 2. FENDT Evolution/FENDT Evolution Active I007072

FENDT Evolution **- mechanically controlled suspension** **- "Ventilation" seat climate system** **- Seat heater**	
FENDT Evolution Active **- electronically controlled active suspension** **- "Ventilation" seat climate system** **- Seat heater**	
Item	**Function**
A	Control for **seat depth adjustment** Pull control upwards. While actuating the control, the required position can be set by sliding the seat forward or back
B	Control for **seat tilt adjustment** Pull control upwards. While actuating the control, the required position can be set by pressing on or releasing weight on the front or back of the seat
C	Lever for **lengthways adjustment** Pull control upwards. While actuating the control, the required position can be set by sliding the seat forward or back. After adjusting, the control must audibly lock in the required position. After locking, the operator's seat should no longer be able to be moved.

FENDT Evolution **- mechanically controlled suspension** **- "Ventilation" seat climate system** **- Seat heater**	
FENDT Evolution Active **- electronically controlled active suspension** **- "Ventilation" seat climate system** **- Seat heater**	
Item	**Function**
D	Lever for **swivelling seat** Pull lever; seat can now be swivelled freely to the right or left up to the end stop. After adjusting, the control must audibly lock in the required position. After locking, the operator's seat should no longer be able to be moved.
E	**- FENDT Evolution -** **Adjustment wheel for vertical shock absorber adjustment** Turn the lever to the required setting and release. Lever forwards = Soft suspension Lever backwards = Hard suspension
E	**- FENDT Evolution Active -** There is no adjustment wheel installed on the -FENDT Evolution Active- operator's seat **The vertical suspension of the operator's seat is regulated automatically via "Active Suspension" during travel** A position sensor has been fitted in the operator's seat. The position sensor detects the oscillation frequency at the swing. The vertical suspension is adjusted according to the oscillation frequency. **Note:** The frequency of an oscillation is the ratio of the number of periods (complete oscillations) to the observation time **- Frequency (f) = Number of oscillations / Observation time -** **This means:** **on farm tracks (high oscillation frequency) = soft suspension** **on roads (low oscillation frequency) = hard suspension** The behaviour of Active Suspension (hard or soft) can be adjusted within certain limits **See also: Chapter 5030 Reg.F - FENDT Evolution Active: Adjusting the suspension characteristic (mode)**
F	Control for combined **height and weight setting (HV)** **Procedure:** **Step 1:** **Automatic weight adjustment:** - The operator sits in the seat (seat contact switch) - Switch on ignition and remain still in seat - The seat will pump up to the central position - Wait until the automatic weight adjustment process is complete, then continue with **step 2** if necessary **Step 2:** **Height adjustment:** - If the seat is too high or too low after the automatic weight adjustment (step 1), proceed as follows - Pull the control (F) up or push it down until the required position is reached. (Do not operate the control (F) for more than 1 minute) - If the upper or lower limit is reached, height is automatically regulated upward or downward to guarantee minimum suspension travel.
G	Lever for **lateral suspension** To compensate for shock loads across the direction of travel (e.g. when driving with a trailer), it is beneficial to engage the lateral suspension. Lever down = Lateral suspension Off Lever up = Lateral suspension On

FENDT Evolution **- mechanically controlled suspension** **- "Ventilation" seat climate system** **- Seat heater**	
FENDT Evolution Active **- electronically controlled active suspension** **- "Ventilation" seat climate system** **- Seat heater**	
Item	**Function**
H	Control for **tilt adjustment of the backrest** Pull control upwards. Adjust seat angle by pushing back on and releasing the backrest until the required position is obtained. After setting, the control must lock in place and the backrest should no longer move.
J	Switch for **lumbar support (curvature at bottom)** The curvature is increased (+) or reduced (-) by pressing the corresponding switch. To prevent unnecessary air loss, do not actuate the (+) switch after the maximum curvature has been obtained; otherwise, it may result in lowering of the operator's seat.
K	Switch for **lumbar support (curvature at top)** The curvature is increased (+) or reduced (-) by pressing the corresponding switch. To prevent unnecessary air loss, do not actuate the (+) switch after the maximum curvature has been obtained; otherwise, it may result in lowering of the operator's seat.
L	Switch for **seat heater and seat climate system** The active seat climate system ensures that the seat surface will always be dry. Middle = Seat heater Off/seat climate system Off Left = Seat heater On/Seat climate system Off Right = Seat heater Off/Seat climate system On
M	Adjustment wheel for **armrest tilt adjustment** The lengthways tilt of the armrest can be adjusted by turning the hand wheel. If the wheel is turned outwards (+), the armrest is raised; if it is turned inwards (-), the front of the armrest is lowered.
N	**Armrest height adjustment** Remove cap. Loosen hex nut. Move armrest to the required position. Tighten hex nut (25 Nm) Refit cap.
O	**Backrest extension** Adjust the backrest extension by pulling up along notched stops. To remove the backrest extension, pull past end stop with a jerk.

FENDT Evolution **- mechanically controlled suspension** **- "Ventilation" seat climate system** **- Seat heater**	
FENDT Evolution Active **- electronically controlled active suspension** **- "Ventilation" seat climate system** **- Seat heater**	
Item	**Function**
P	**Seat belt mount**
R	Lever for **horizontal suspension** To compensate for shock loads in the direction of travel (e.g. when driving with a trailer), it is beneficial to engage the horizontal suspension. Lever forwards = Horizontal suspension Off Lever backwards = Horizontal suspension On When the horizontal suspension is switched off, the locking lever must audibly lock in the required position. To do this, push the seat back until it cannot be moved into any other position.
Si	**Electrical fuses** To replace the fuse: - Loosen gaiter - Pull out split pin (1) - Remove cover (2) **Fuse 1 (7.5 A) = Seat heater and seat climate system** **Fuse 2 (10 A) = Compressor and level control (height adjustment, weight adjustment)**

Seat climate system/seat heater (FENDT Evolution and FENDT Evolution Active only)
The layer of activated charcoal under the seat cover absorbs the operator's body heat and sweat to keep the seat surface pleasantly dry.
At the same time, cool, dry air flows through the ventilation layer.
The air removes the moisture from the activated charcoal layer and also cools the seat surface.

If it becomes cold, the seat heater can be switched on.

NOTE: *Functioning of the operator's seat can be impaired by dirt.*
The operator's seat should therefore be kept clean.
The upholstery does not need to be detached or removed from seat frame for cleaning.

*Do **not** clean operator's seat with a high-pressure cleaner!*
When cleaning the upholstered surfaces, do not allow moisture to soak through the upholstery!

Test standard commercial upholstery and plastic cleaners on a small patch first to make sure they do not harm the surface.

Switch position:
0 = Seat heater Off/Seat climate system Off
1 = Seat heater On/Seat climate system Off
2 = Seat heater Off/Seat climate system On

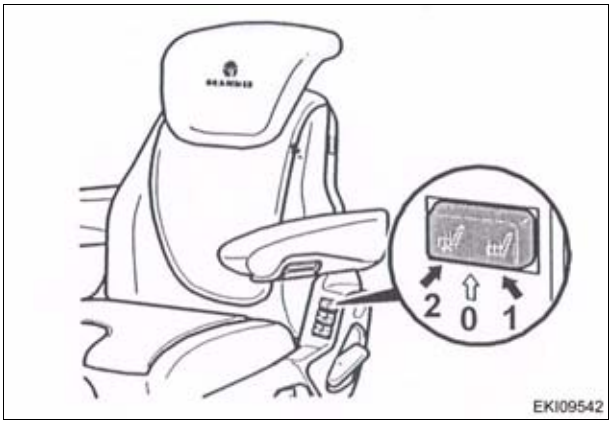


Fig. 3. I007078

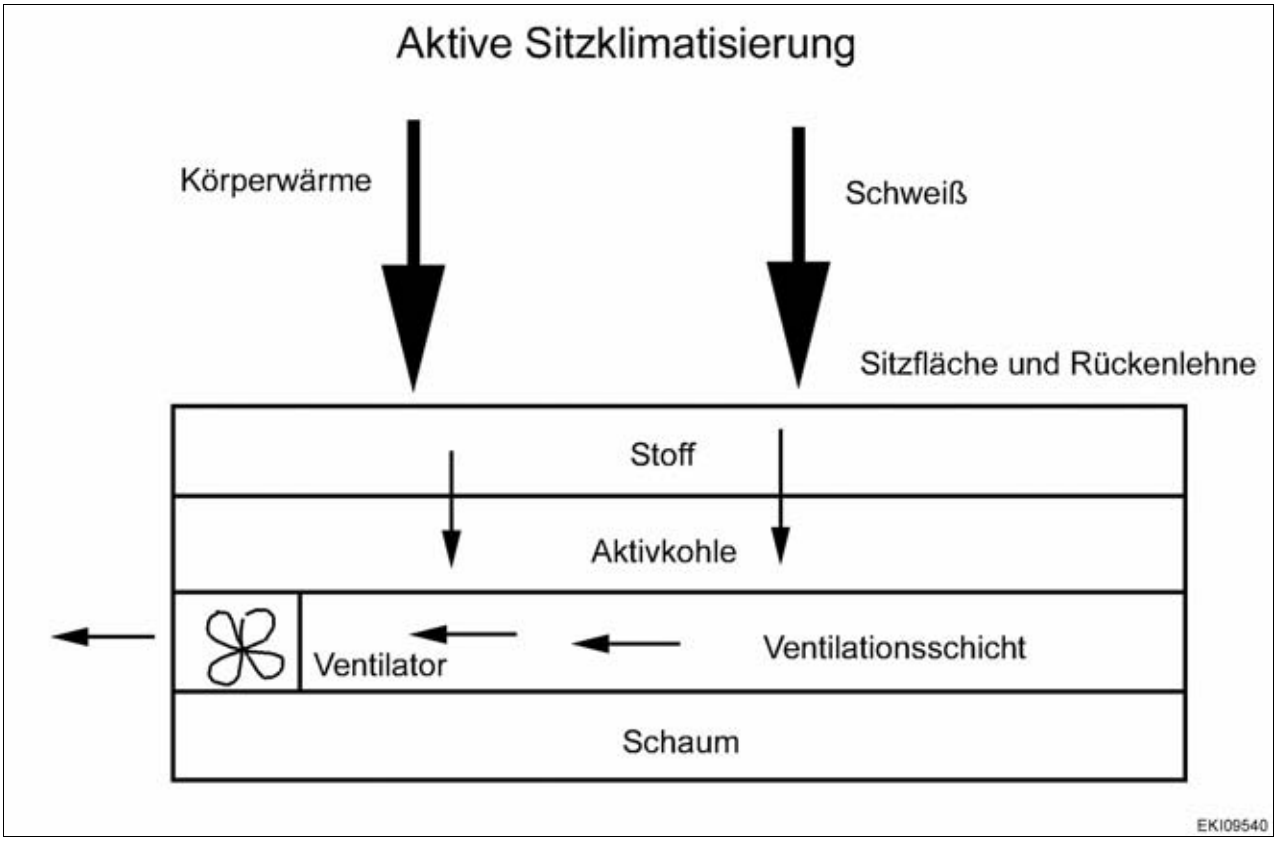


Fig. 4. Diagram: Seat climate system I007076

Seat climate system (arrowed)



Fig. 5. I007077

Seat heater (arrowed)



Fig. 6. I007077

D Component position

1 Operator's seat: FENDT Evolution Active (position of electr. components). 17

1 Operator's seat: FENDT Evolution Active (position of electr. components)

STVB 01 - Vehicle separation point (12-pin)
Si - Fuse

At the back of the seat lower section

Remove gaiter

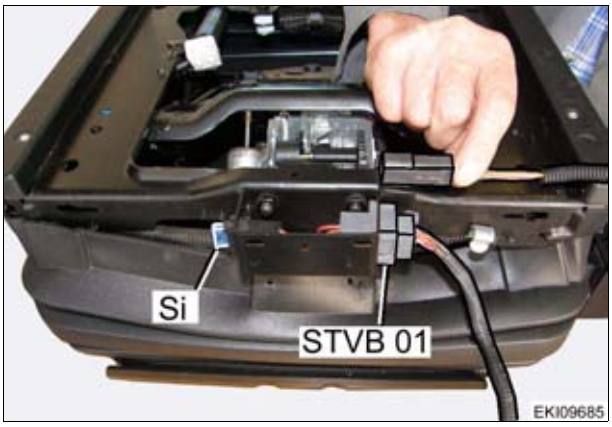


Fig. 1. I007918

Electronic control unit

STVB 02 - Connector (18-pin)

On the right side of the seat lower section in the direction of travel

Remove gaiter



Fig. 2. I007919

Compressor for
- height and weight adjustment
- active seat control while driving
The compressor provides the system pressure.
There is a pressure sensor in the electronic control unit (STVB 02) that detects the system pressure.
If the system pressure falls during operation, the compressor is switched on without changing the seat height.

STVB 04 - Earth
STVB 05 - Actuation

Starting current against pressure:
I = approx. 30 ADC
t = approx. 500 ms

After start-up:
U = 12 VDC
I = max. 7 +/- 2 ADC



Fig. 3. I007920

At the front of the seat lower section

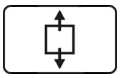
Remove gaiter

STVB 06 - Separation point for the seat upper section (6-pin)

STVB 07 - Separation point for the seat upper section (8-pin)



On top of the seat lower section



Push the seat upper section forwards

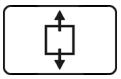


Fig. 4. I007921

STVB 08 - Separation point (3-pin)



On the backrest



Remove the seat upholstery and backrest upholstery

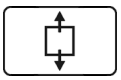


Fig. 5. I007922

STVB 09 - Separation point (2-pin)



On the backrest



Remove the seat upholstery and backrest upholstery



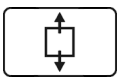
Fig. 6. I007923

Switch, seat contact/belt buckle (SBE)

STVB 10 - Separation point (2-pin)
STVB 12 - Separation point (2-pin)



On the seat lower section



Remove the seat upholstery and backrest upholstery

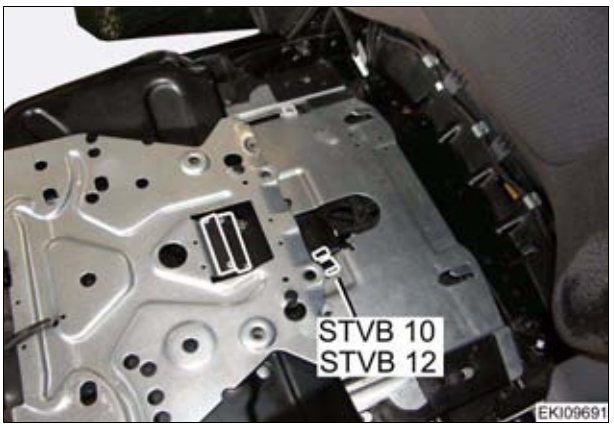


Fig. 7. I007924

Switch (HV), height and weight adjustment

STVB 13 - Separation point (3-pin)

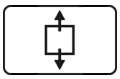
Switch not actuated
R = 510 ohms

Switch on Raise (contact 1)
R = 121 ohms

Switch on Lower (contact 3)
R = 121 ohms



On the left side of the seat upper section in the direction of travel



Remove cover.



Fig. 8. I007925

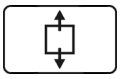
Compressor for the lumbar support (LWU)

STVB 14 - Actuation
STVB 15 - Earth

U = 12 VDC
I = max. 2 ADC



On the backrest



Remove the seat upholstery and backrest upholstery



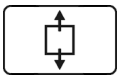
Fig. 9. I007926

STVB 19 - Separation point (8-pin)

STVB 20 - Separation point (4-pin)



On the backrest



Remove the seat upholstery and backrest upholstery



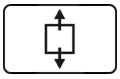
Fig. 10. I007927

Fan for the backrest upholstery
STVB 21 - Separation point (2-pin)

U = 12 VDC
I = 185 mADC



On the backrest



Remove the seat upholstery and backrest upholstery



Fig. 11. I007928

Heater for the backrest upholstery
STVB 22 - Separation point (4-pin)

U = 12 VDC
I = approx. 2.04 ADC
P = 24.46 Watt
R = 5.98 ohms

On the backrest

Remove the seat upholstery and backrest upholstery



Fig. 12. I007928

Fan for the seat upholstery
STVB 23 - Separation point (2-pin)

U = 12 VDC
I = 185 mADC

On the seat upholstery

Remove seat upholstery

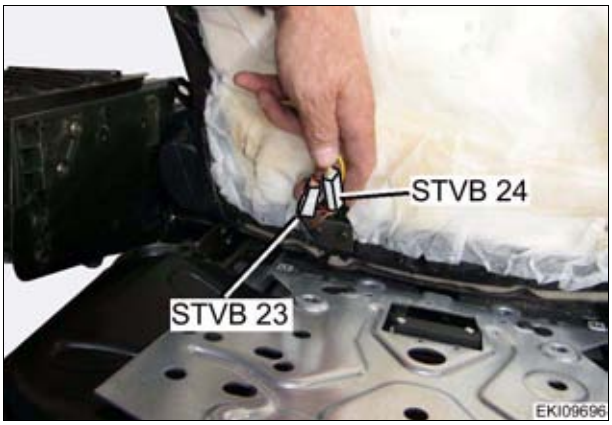


Fig. 13. I007929

Heater for the seat upholstery
STVB 24 - Separation point (4-pin)

U = 12 VDC
I = approx. 2.56 ADC
P = 30.72 Watt
R = 4.70 ohms

On the seat upholstery

Remove seat upholstery

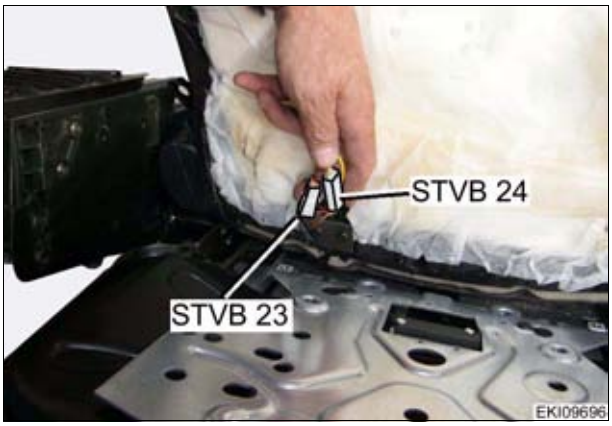


Fig. 14. I007929

Switch, "ventilation" climate system/heater

STVB 26 - Separation point (10-pin)

On the left side of the seat upper section in the direction of travel

Remove cover.

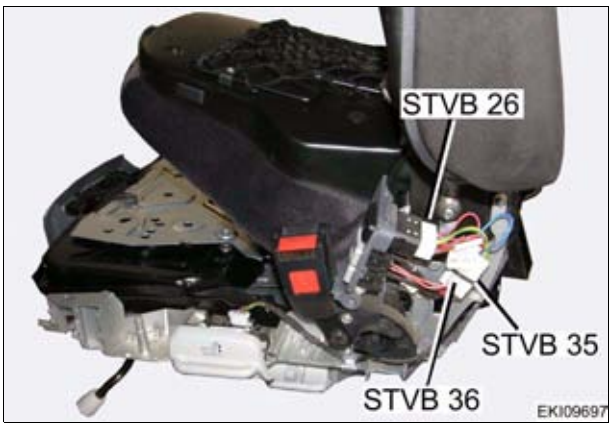


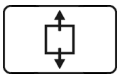
Fig. 15. I007930

Seat position detection (retractor)

STVB 30 - Separation point (3-pin) for the seat position sensor
STVB 31 - Separation point (4-pin) for the solenoid valves



At top of seat lower section



Remove seat upper section, remove cover

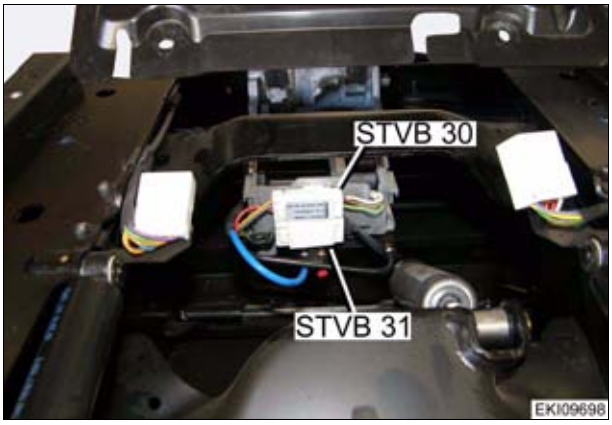
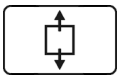


Fig. 16. I007931

STVB 32 - Separation point (4-pin)



On the left side of the seat lower section in the direction of travel



Remove gaiter



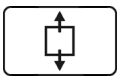
Fig. 17. I007932

Solenoid valves with additional volume

STVB 33 - Separation point (2-pin) for the pump-up-seat solenoid valve (stage 2)
STVB 34 - Separation point (2-pin) for the pump-up-seat solenoid valve (stage 1)



On the right side of the seat lower section in the direction of travel



Remove additional volume

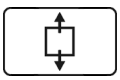


Fig. 18. I007933

STVB 35 - Separation point (6-pin)



On the left side of the seat upper section in the direction of travel



Remove cover.

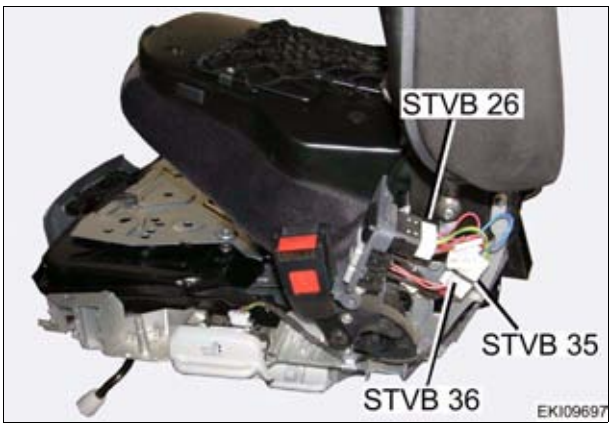


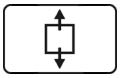
Fig. 19. I007930

Switch for the lumbar support compressor (LWU)

STVB 36 - Separation point (2-pin)



On the left side of the seat upper section in the direction of travel



Remove cover.

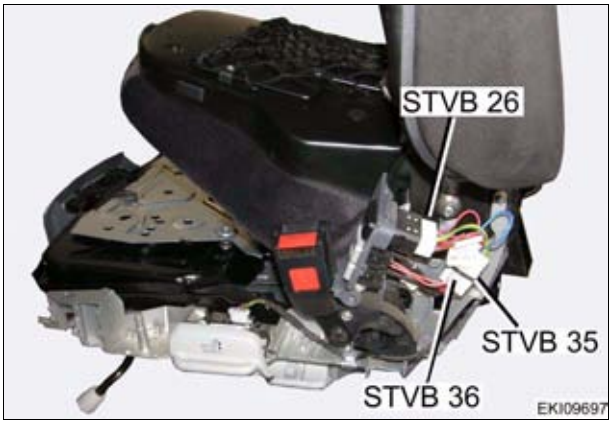


Fig. 20. I007930

E Measuring and testing

1 Operator's seat: FENDT Evolution Active (height and weight adjustment) 25
2 Operator's seat: FENDT Evolution/Evolution Active ("Ventilation" seat climate system/seat heater) 36
3 Operator's seat: FENDT Evolution/Evolution Active (lumbar support) 41

1 Operator's seat: FENDT Evolution Active (height and weight adjustment)

HV =
Control for combined height and weight adjustment

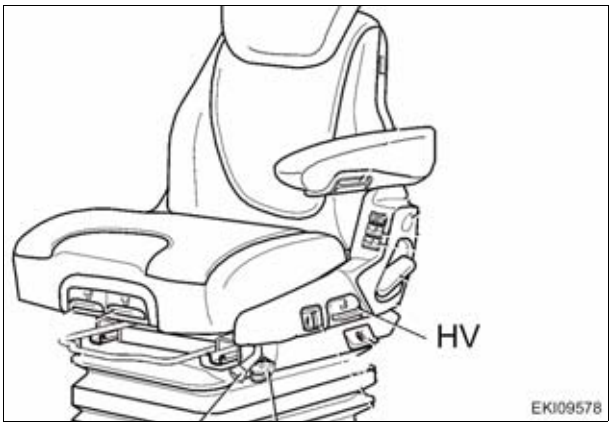


Fig. 1. I007498

- Weight adjustment (automatic) **- Height adjustment (set by the operator)**	**Procedure:** **Step 1:** **Automatic weight adjustment:** - The operator sits in the seat (seat contact switch) - Switch on ignition and remain still in seat - The seat will pump up to the central position - Wait until the automatic weight adjustment process is complete, then continue with **step 2** if necessary **Step 2:** **Height adjustment (HV):** - If the seat is too high or too low after the automatic weight adjustment (step 1), proceed as follows - Pull the control (HV) up or push it down until the required position is reached. (Do not operate the control (HV) for more than 1 minute) - If the upper or lower limit is reached, height is automatically regulated upward or downward to guarantee minimum suspension travel.
Vertical suspension of the operator's seat	**- FENDT Evolution Active -** **The vertical suspension of the operator's seat is regulated automatically via "Active Suspension" during travel** A position sensor has been fitted in the operator's seat. The position sensor detects the oscillation frequency at the swing. The vertical suspension is adjusted according to the oscillation frequency. **Note:** The frequency of an oscillation is the ratio of the number of periods (complete oscillations) to the observation time **- Frequency (f) = Number of oscillations / Observation time -** **This means:** **on farm tracks (high oscillation frequency) = soft suspension** **on roads (low oscillation frequency) = hard suspension** The behaviour of Active Suspension (hard or soft) can be adjusted within certain limits **See also: Chapter 5030 Reg.F - FENDT Evolution Active: Adjusting the suspension characteristic (mode)**

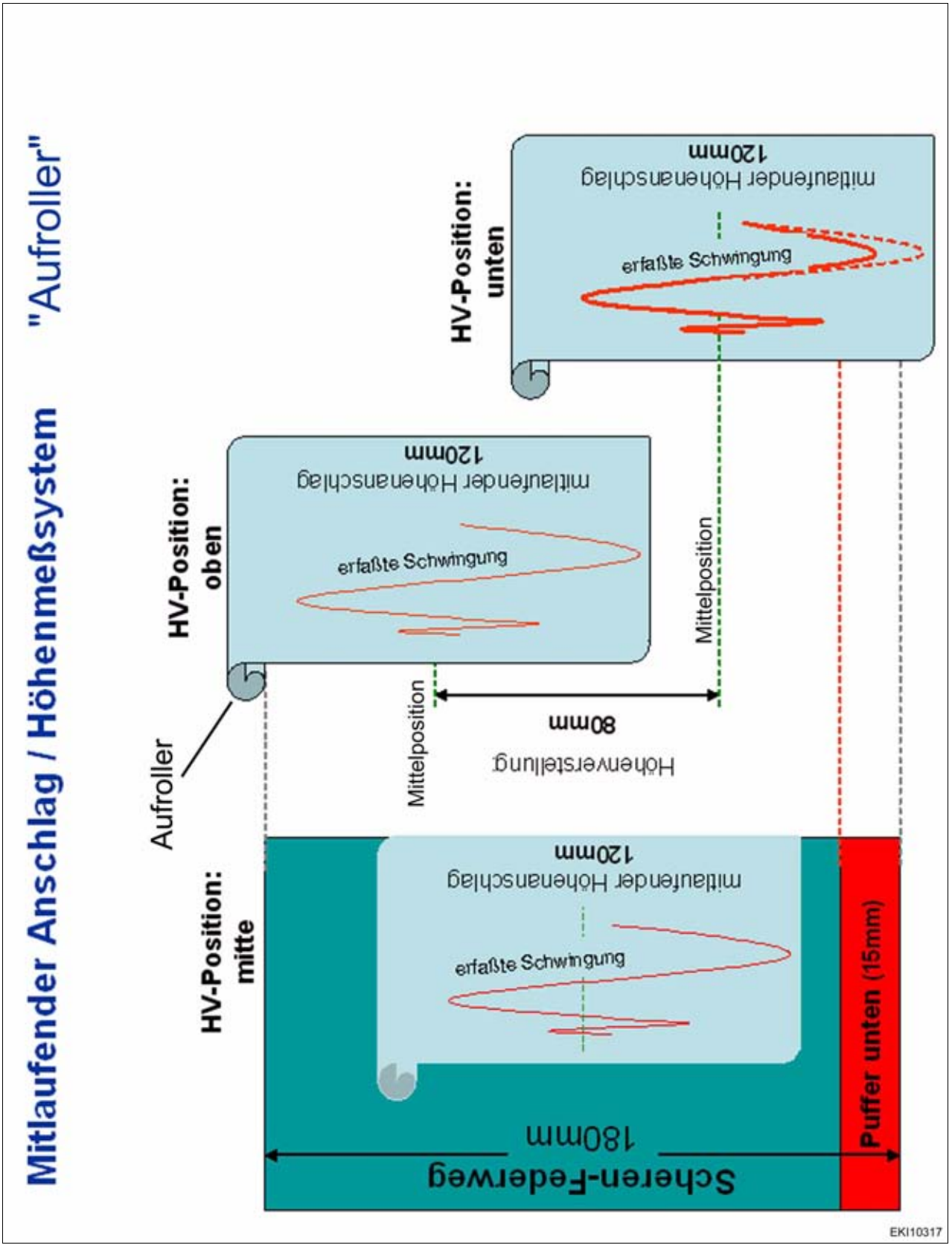


Fig. 2. I010002

Driver seat	Seat position detection "Retractor"
Swing is compressed (downwards)	Belt is retracted (with spring force in the "retractor")
Swing is decompressed (upwards)	Belt is extended



Fig. 3. I008832

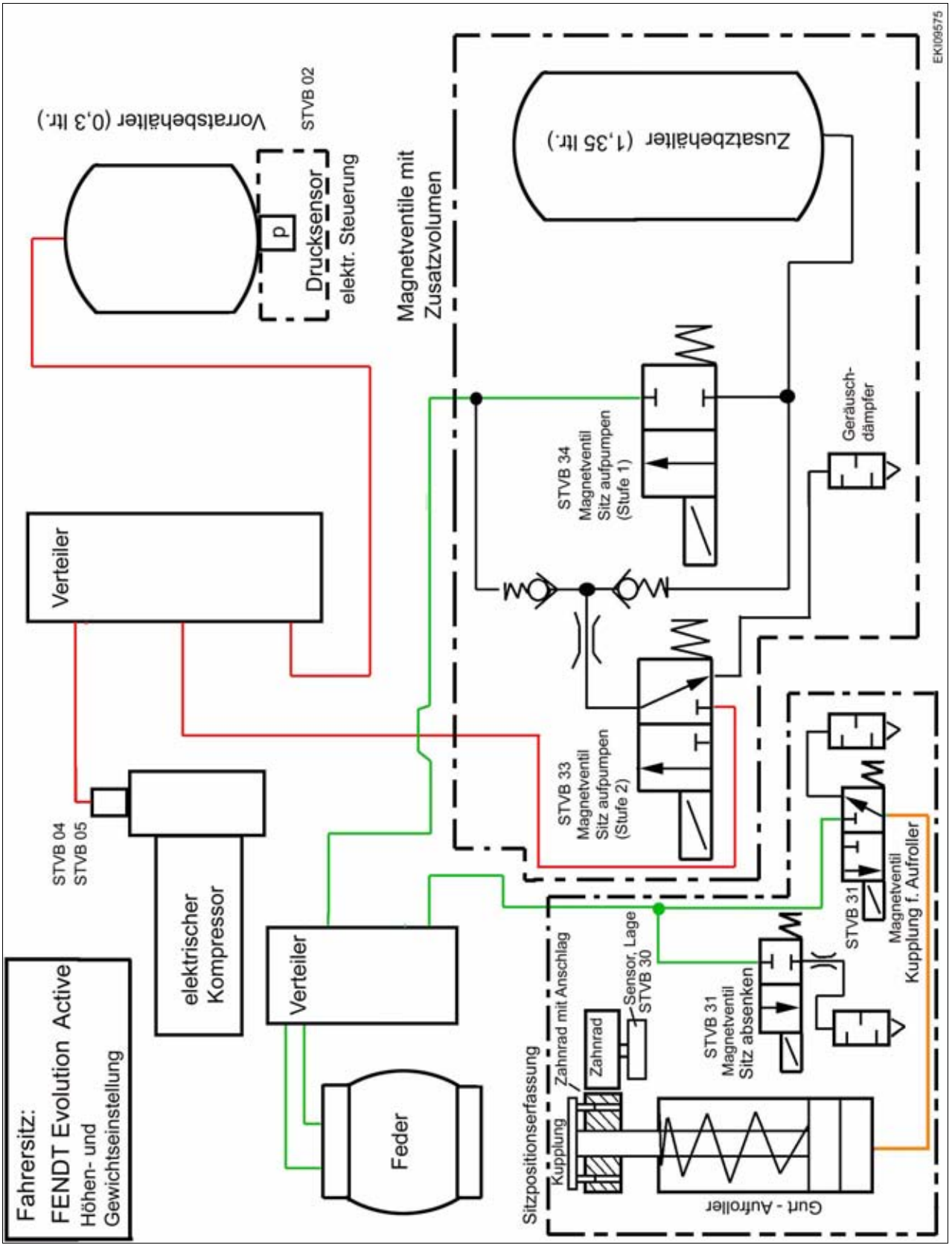


Fig. 4. Height and weight adjustment I010001

Functional description

Occupation of operator's seat (seat contact switch)
Waiting time of approx. 2 seconds

The electr. control in the spring checks the available suspension travel

If necessary:
Adapting the "new" operator weight "automatic weight adjustment"
(the vehicle seat is set to the central position of the "travelling stop" (see diagram above)
Raise the seat into the central position
- STVB 34 - Solenoid valve is energised in pulses
- STVB 33 - Solenoid valve is energised in pulses
- STVB 04/05 - Compressor switches on

Lower the seat into the central position
- STVB 31 - Solenoid valve is energised

Starting the "Active Suspension" dynamic control process

STVB 04/05 - Compressor builds up system pressure
Up to 3.7 bar overpressure depending on the operator's weight
The system pressure is detected by a pressure sensor (the pressure sensor is installed in the STVB 02 electr. control)
When the system pressure is sufficient, the STVB 04/05 compressor switches off
STVB 30 - Position sensor detects the vertical oscillations at the swing.
The suspension characteristic is adapted to the oscillation frequency
high oscillation frequency (farm track) = soft suspension
low oscillation frequency (road) = hard suspension
Pulsed adjustment of air in the pneumatic spring and additional volume
- STVB 31 - Solenoid valve (outlet air)
- STVB 33 - Solenoid valve (inlet air)
- STVB 34 - Solenoid valve (inlet air)

Replenish the air reserve as necessary when it is exhausted
- STVB 04/05 - Compressor

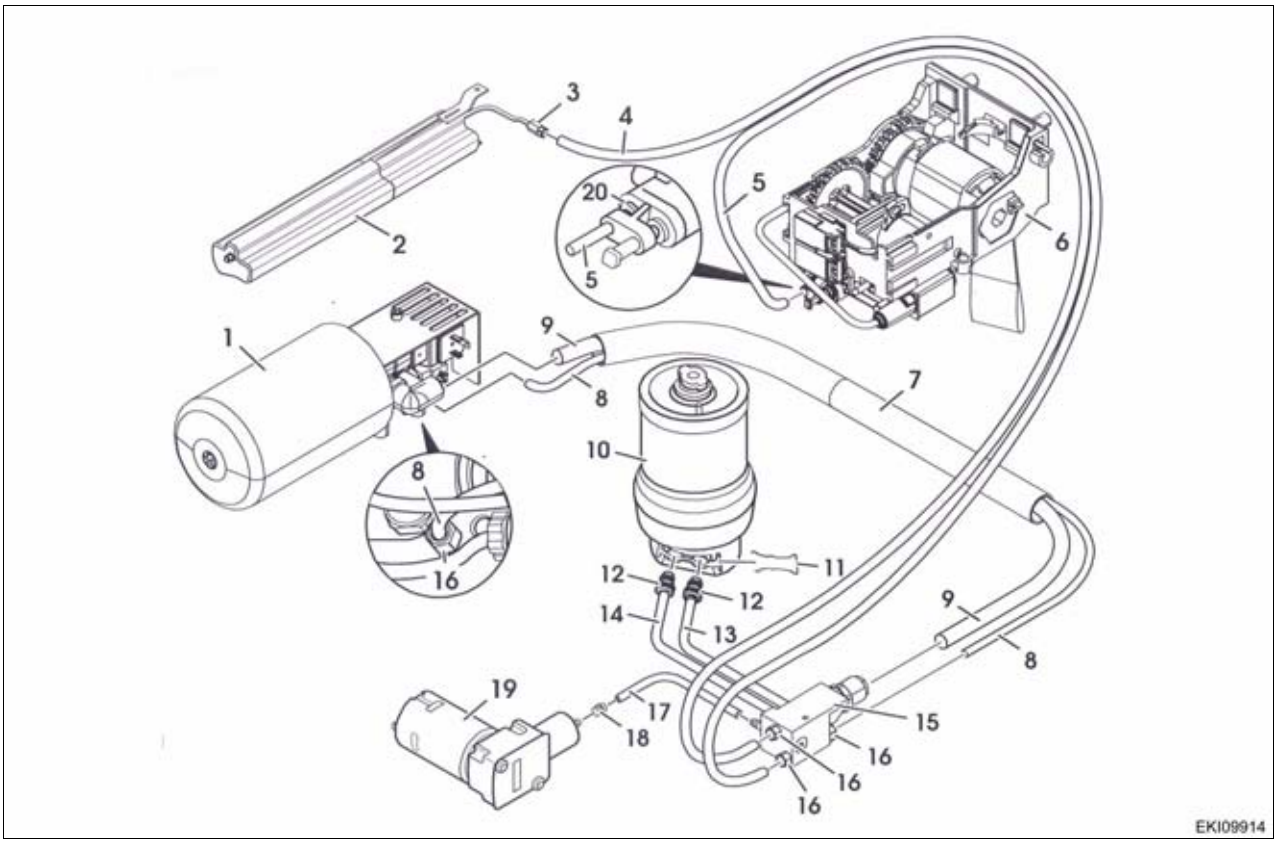


Fig. 5. Pneumatic connection diagram
I008896

Item	Designation	Item	Designation
1	Solenoid valves with additional volume (STVB 33, STVB 34)	10	Pneumatic spring
2	Elect. control with air volume (STVB 02)	15	Distributor
6	"Retractor" seat position detection (STVB 30 , STVB 31)	19	Compressor (STVB 04, STVB 05)

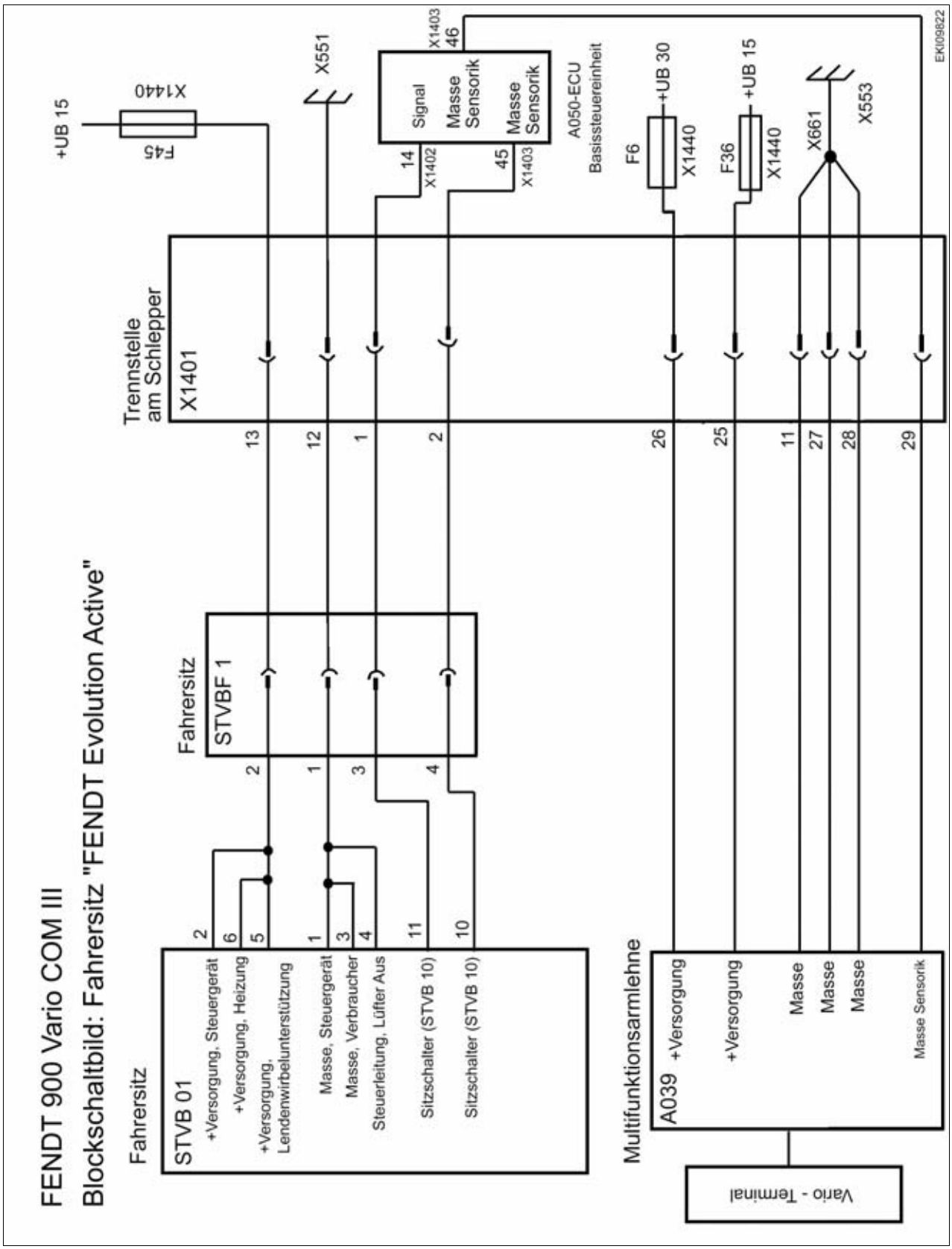


Fig. 6. + supply

I010000

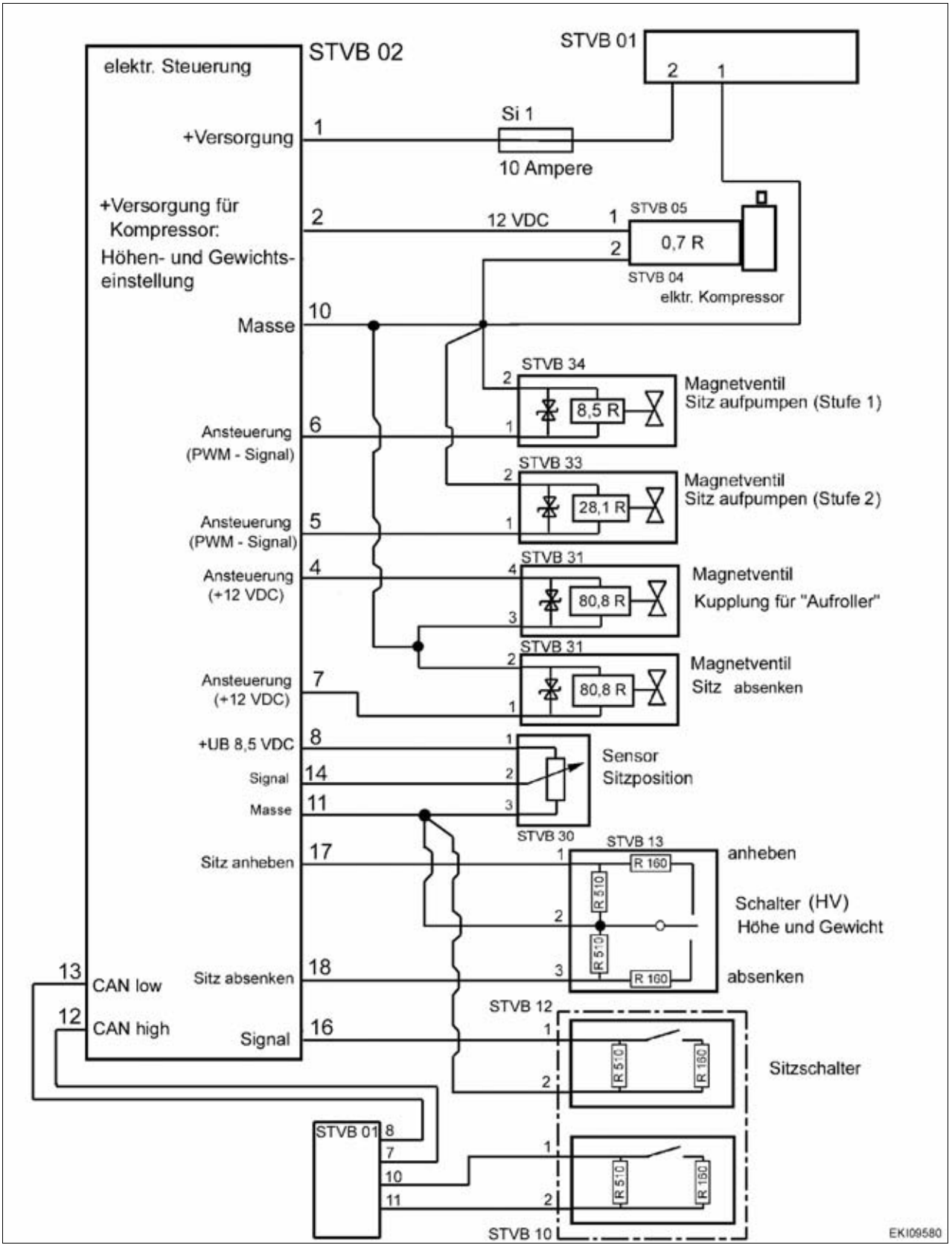


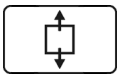
Fig. 7. Circuit diagram: Electr. control

I009999

STVBF 1 - Vehicle separation point (4-pin)
STVB 01 - Vehicle separation point (12-pin)
Si - Fuse



At the back of the seat lower section



Remove gaiter

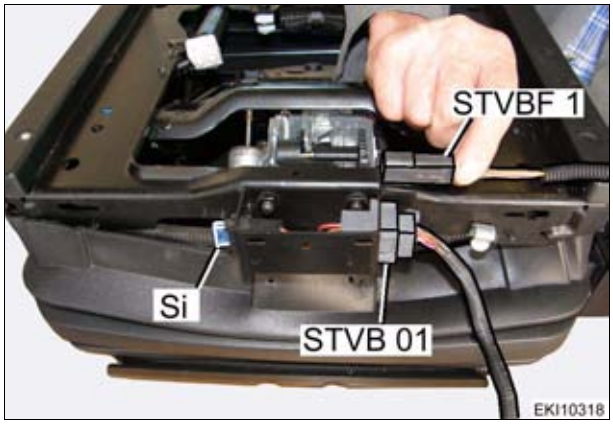


Fig. 8. I009998

"Faults that are not faults"
The "Active Suspension" dynamic control of the operator's seat during travel represents a radical difference from the conventional operator's seat.
Operators occasionally conclude that a fault has occurred, though the seat is exhibiting normal control behaviour.

Description of fault by the operator	Seat function, functional behaviour for the assumed cause of fault
Compressor starts up as soon as the seat is supplied (ignition on)	1. The necessary system pressure is built up depending on the predominant pressure in the reserve and the last saved operator pressure (required working pressure in the pneumatic spring) when the machine is restarted.
Compressor runs for varying times	1. The delivery capacity of the compressor—and thus also the time for which it must run until the reserve is full—depends on the operator pressure and therefore varies. 2. A operator may have become accustomed to a different running time but another operator may have driven the vehicle in the meantime, causing it to learn a new operator pressure. If automatic weight adjustment is interrupted after the change in operator, the system does not learn the new operator pressure. The air reserve to be built up is then determined by the pressure values of the previous operator.

Description of fault by the operator	Seat function, functional behaviour for the assumed cause of fault
Compressor runs while travelling (seat height does not change)	1. Is necessary so that the dynamic control can compensate for the loss of pressure
Operator's seat shifts up suddenly **or** **Operator's seat shifts down suddenly**	1. The height of the operator's seat is corrected while travelling to compensate for the weight difference between driving uphill and driving downhill. 2. Dynamic control of the operator's seat is felt more strongly if the "automatic weight adjustment" is interrupted by driving off or the operator moving in the seat. 3. The height of the operator's seat can be adjusted while driving with the height adjustment control (HV). The travelling height stop is also repositioned with this adjustment. The operator's seat moves to the new central position (see diagram above). 4. Because the vehicle level compensation has been delayed (driving uphill and downhill), the operator has become accustomed to the non-optimal seat position, and is then disturbed by the dynamic weight adaptation. It is necessary to delay the dynamic weight adaptation to prevent too much air from being lost from the system, e.g. no adjustment is made when the brakes are applied briefly or when the vehicle travels over small rises or hollows. Low air consumption means that the compressor does not have to run as often.
When the seat is re-occupied, automatic weight adjustment does not occur	1. The operator only left the operator's seat briefly (for less than 6 seconds) (e.g. standing up briefly). 2. When the operator's seat is re-occupied, it is compressed into a tolerable range around the centre of the travelling height stop. Because of the seat's soft characteristic, it is possible that the same operator may sit in the resting position within a wide range around a tolerable central position after it has been occupied. In order to prevent air from being exchanged every time the seat is reoccupied by the same operator, the tolerated middle range has been configured quite generously.

Fault code - Table

Fault description	Possible cause:
If the seat has been unoccupied for more than about 15 minutes, it collapses completely after a short delay when it is re-occupied or the engine is switched on again (same operator)	- Additional volume leaking - Transition between additional volume and valve unit leaking
Seat collapses immediately after it is re-occupied or on the following day without being occupied	- Pneumatic spring circuit leaking
Seat does not rise even though compressor has run for more than approx. 2 minutes	- System leaking (compressor, distributor, additional volume, reserve)
The compressor switches on repeatedly when driving on a level surface	- Pneumatic spring/additional volume leaking

Fault description	Possible cause:
The seat does not carry out automatic weight adjustment The seat is re-occupied after approx. 6 seconds and remains decompressed (seat is occupied by a lighter operator)	The emergency program is active (2 consecutive levelling attempts "to find the central position" have been unsuccessful) **Restore to status upon delivery with coded operation** **(Reset error memory in the STVB02 - electr. control):** - Operator's seat unoccupied **Height adjustment control:** **- Press upwards briefly 3 times** (within 2 seconds) then **- press down immediately for 15 to 19 seconds** The compressor will start up one or more times to confirm that the system has been reset by coded operation.
Seat adjusts for lighter operator (downwards) but not for heavier operator (upwards)	Is there a repeated clicking sound coming from the additional volume? - Test the on-board power supply under load (battery weak) - Test "automatic weight adjustment" with engine running and battery charged
Other faults	**Restore to status upon delivery with coded operation** **(Reset error memory in the STVB02 - electr. control):** - Operator's seat unoccupied **Height adjustment control:** **- Press upwards briefly 3 times** (within 2 seconds) then **- press down immediately for 15 to 19 seconds** The compressor will start up one or more times to confirm that the system has been reset by coded operation.

Restore to status upon delivery with coded operation
(Reset error memory in the STVB02 - electr. control):

Prerequisite:
Driver seat not loaded

Height adjustment control:
- Press upwards briefly 3 times (within 2 seconds)
then
- press down immediately for 15 to 19 seconds

The compressor will start up one or more times to confirm that the system has been reset by coded operation.



Fig. 9. I008067

2 Operator's seat: FENDT Evolution/Evolution Active ("Ventilation" seat climate system/seat heater)

Switch position:

0 =
Seat heater Off/"Ventilation" seat climate system Off

1 =
Seat heater On/"Ventilation" seat climate system Off

2 =
Seat heater Off/"Ventilation" seat climate system On

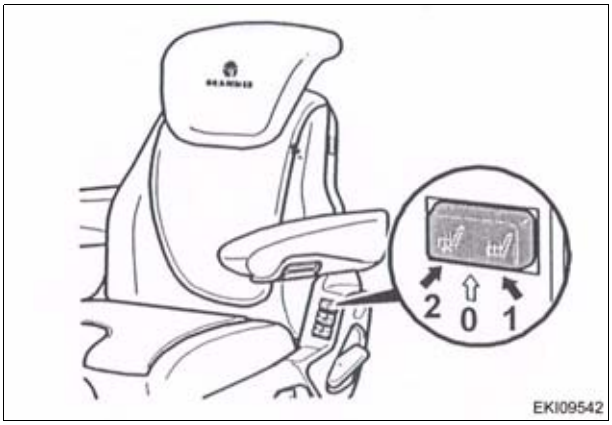


Fig. 10. I007078

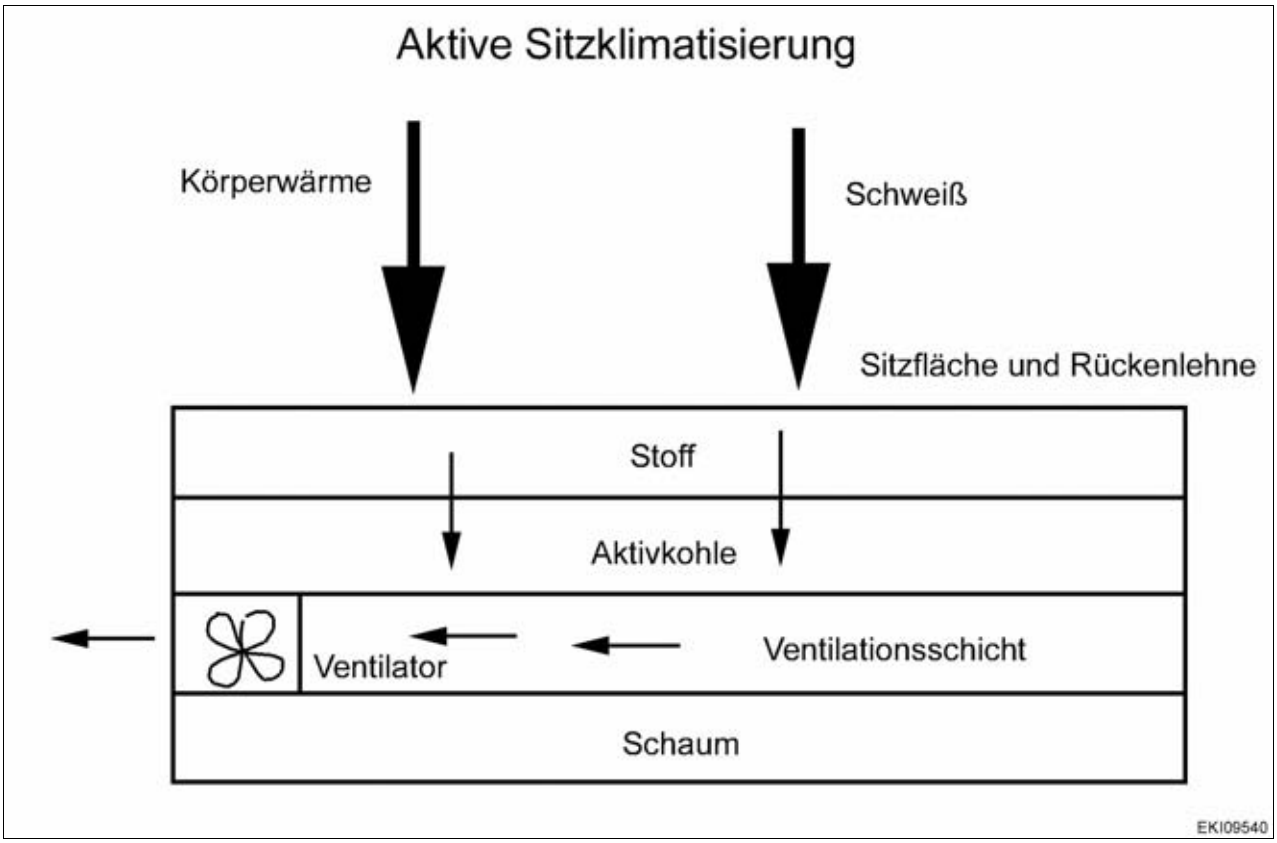


Fig. 11. Diagram: Active seat climate system I007076

Active seat climate system (arrowed)



Fig. 12. I007077

919 .. 0101-1000
919 .. 1001-
922 .. 0101-1000
922 .. 1001-
925 .. 0101-1000
925 .. 1001-
928 .. 0101-1000
928 .. 1001-
931 .. 0101-1000
931 .. 1001-
934 .. 0101-1000
934 .. 1001-

Seat heater (arrowed)



Fig. 13. I007077

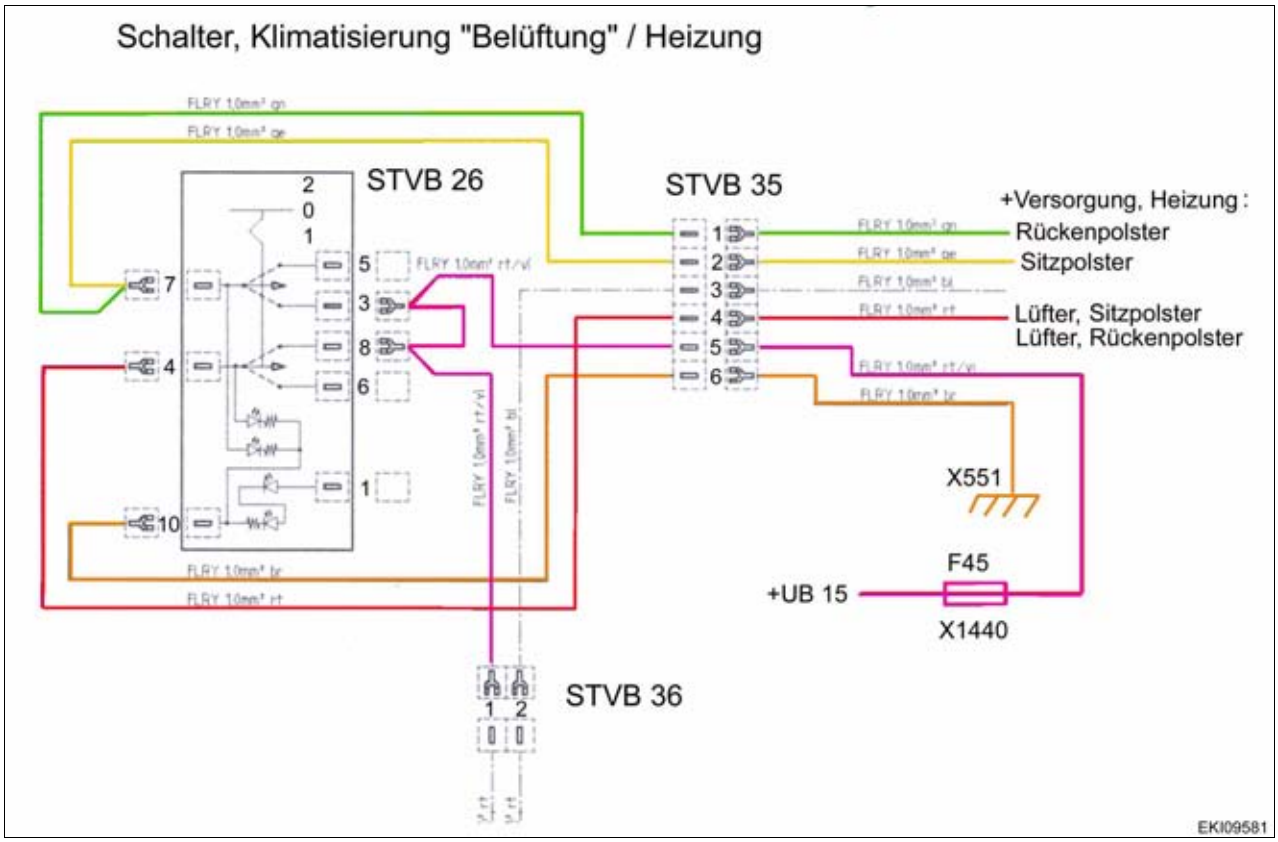


Fig. 14. I008080

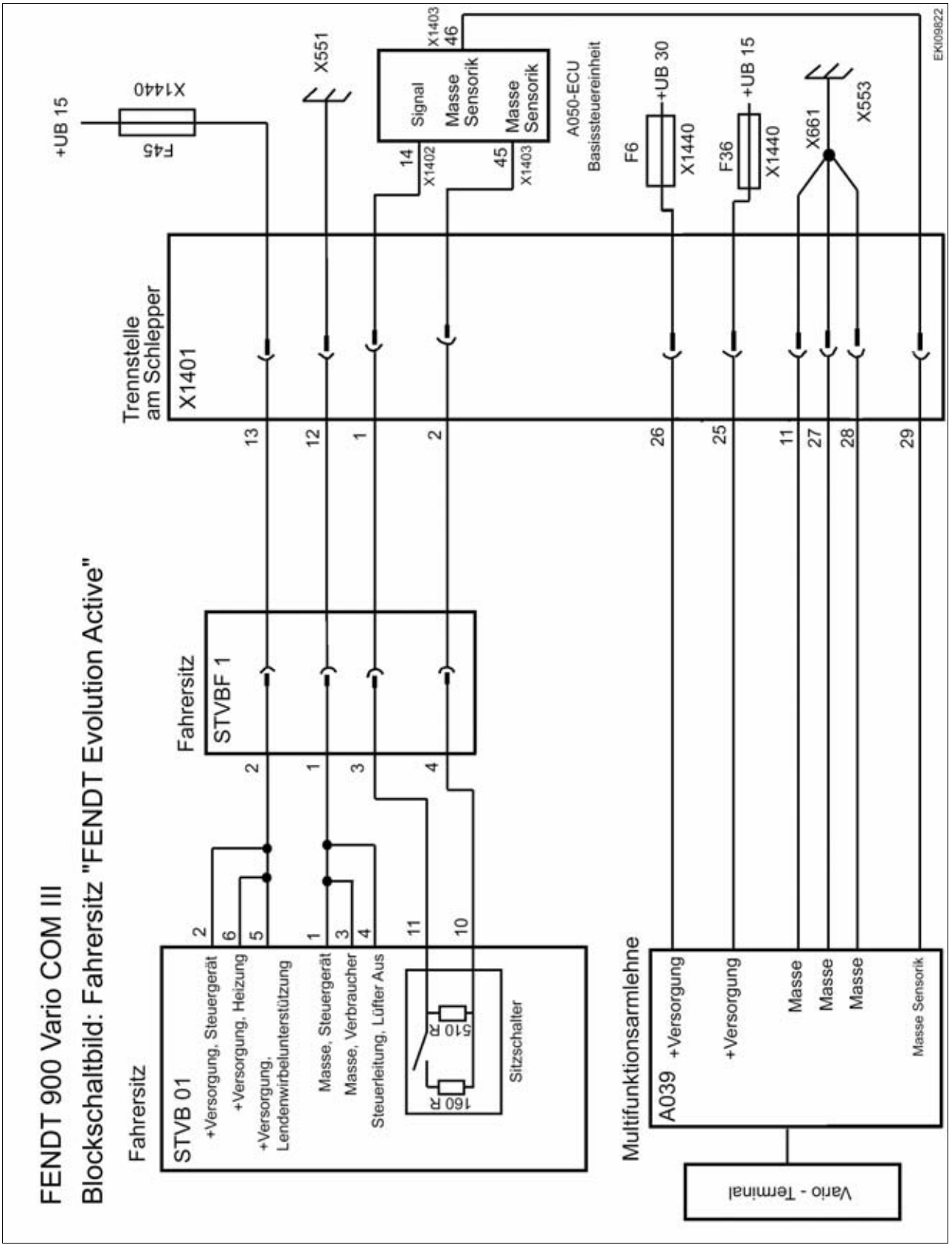


Fig. 15.

I008081

Switch, "ventilation" climate system/heater

STVB 26 - Separation point (10-pin)

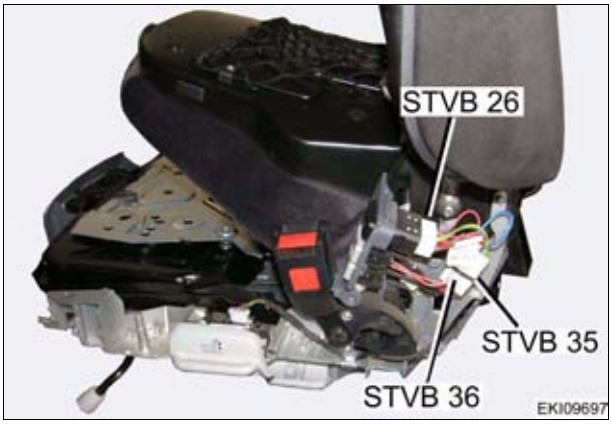


Fig. 16. I007930

Fan for the backrest upholstery

STVB 21 - Separation point (2-pin)

Measure with a multimeter:
Contact 1 = Actuation (red)
Contact 2 = Earth (brown-black)

U = 12 VDC
I = 185 mADC



Fig. 17. I007928

Heater for the backrest upholstery

STVB 22 - Separation point (4-pin)

Measure with a multimeter:
Contact 1 = Actuation (green)
Contact 3 = Earth (brown)

U = 12 VDC
I = approx. 2.04 ADC
P = 24.46 Watt
R = 5.98 ohms



Fig. 18. I007928

Fan for the seat upholstery

STVB 23 - Separation point (2-pin)

Measure with a multimeter:
Contact 1 = Actuation (red)
Contact 2 = Earth (brown-black)

U = 12 VDC
I = 185 mADC

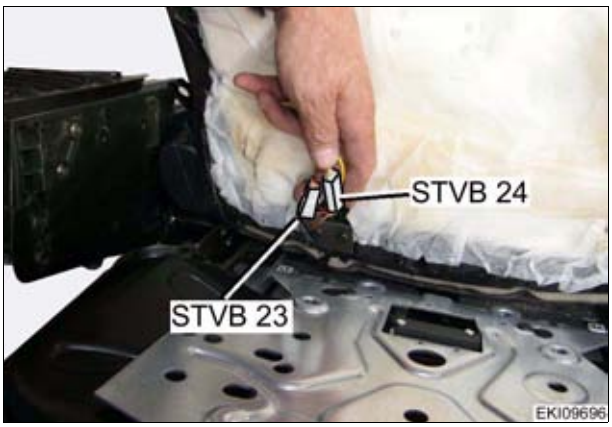


Fig. 19. I007929

Heater for the backrest upholstery

STVB 24 - Separation point (4-pin)

Measure with a multimeter:
Contact 1 = Actuation (yellow)
Contact 3 = Earth (brown)

U = 12 VDC
I = approx. 2.56 ADC
P = 30.72 Watt
R = 4.70 ohms

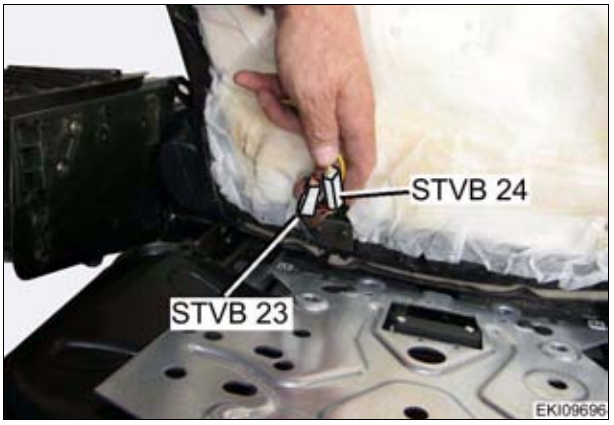


Fig. 20. I007929

3 Operator's seat: FENDT Evolution/Evolution Active (lumbar support)

K = upper lumbar support
J = lower lumbar support

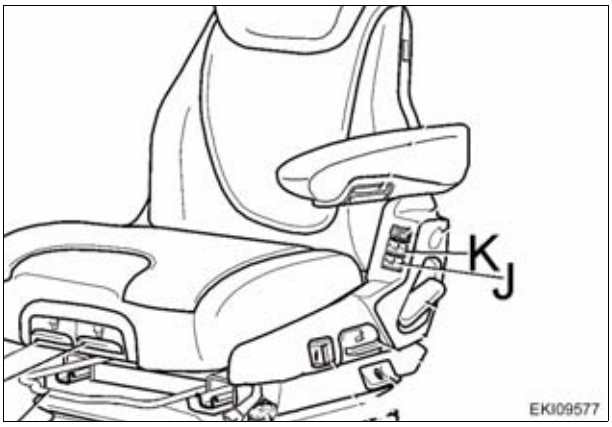


Fig. 21. I007441

Item	Function
J	Switch for **lumbar support (curvature at bottom)** The curvature is increased (+) or reduced (-) by pressing the switch. To prevent unnecessary air loss, do not actuate the (+) switch after the maximum curvature has been obtained; otherwise, it may result in lowering of the operator's seat.
K	Switch for **lumbar support (curvature at top)** The curvature is increased (+) or reduced (-) by pressing the switch. To prevent unnecessary air loss, do not actuate the (+) switch after the maximum curvature has been obtained; otherwise, it may result in lowering of the operator's seat.

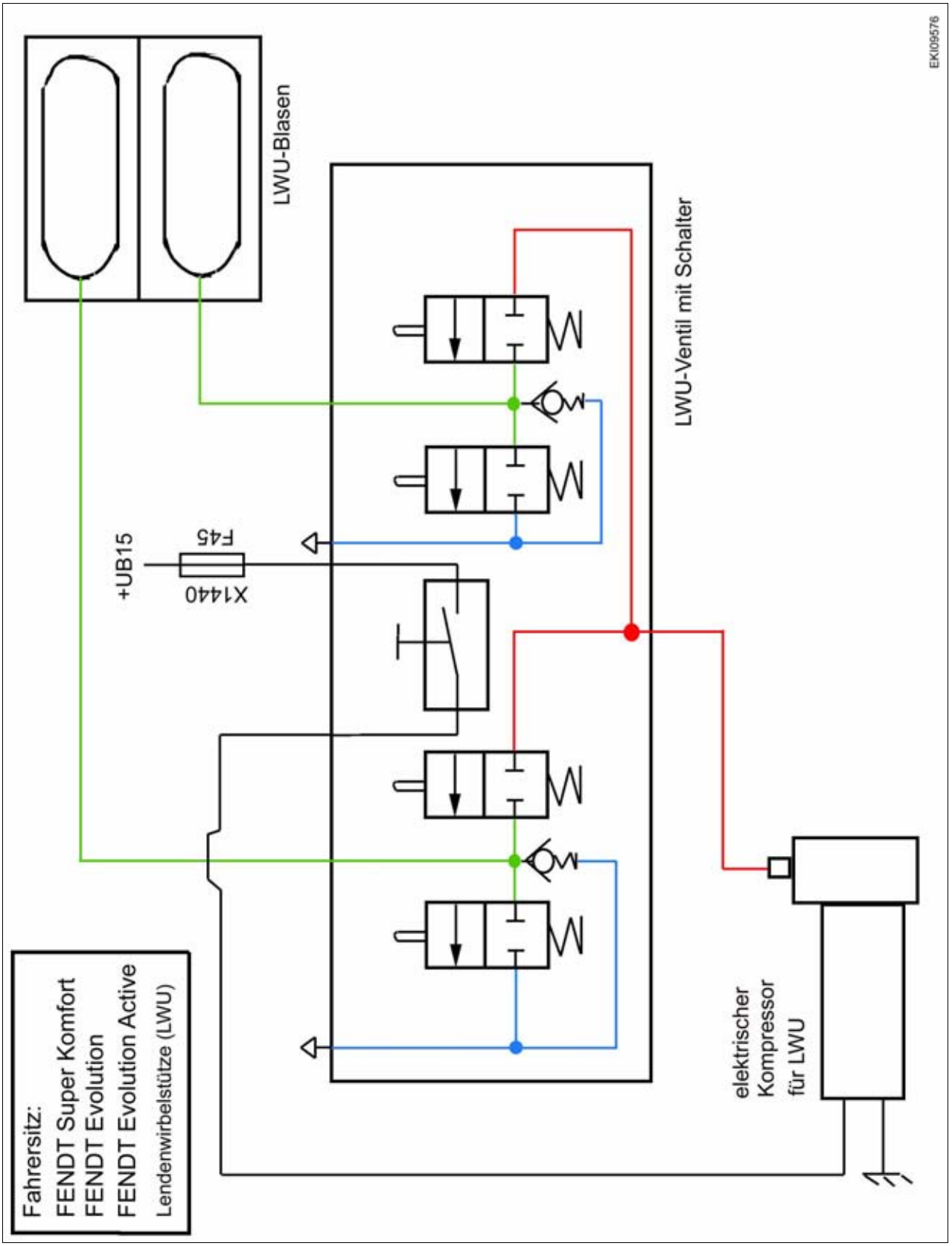


Fig. 22. I007532

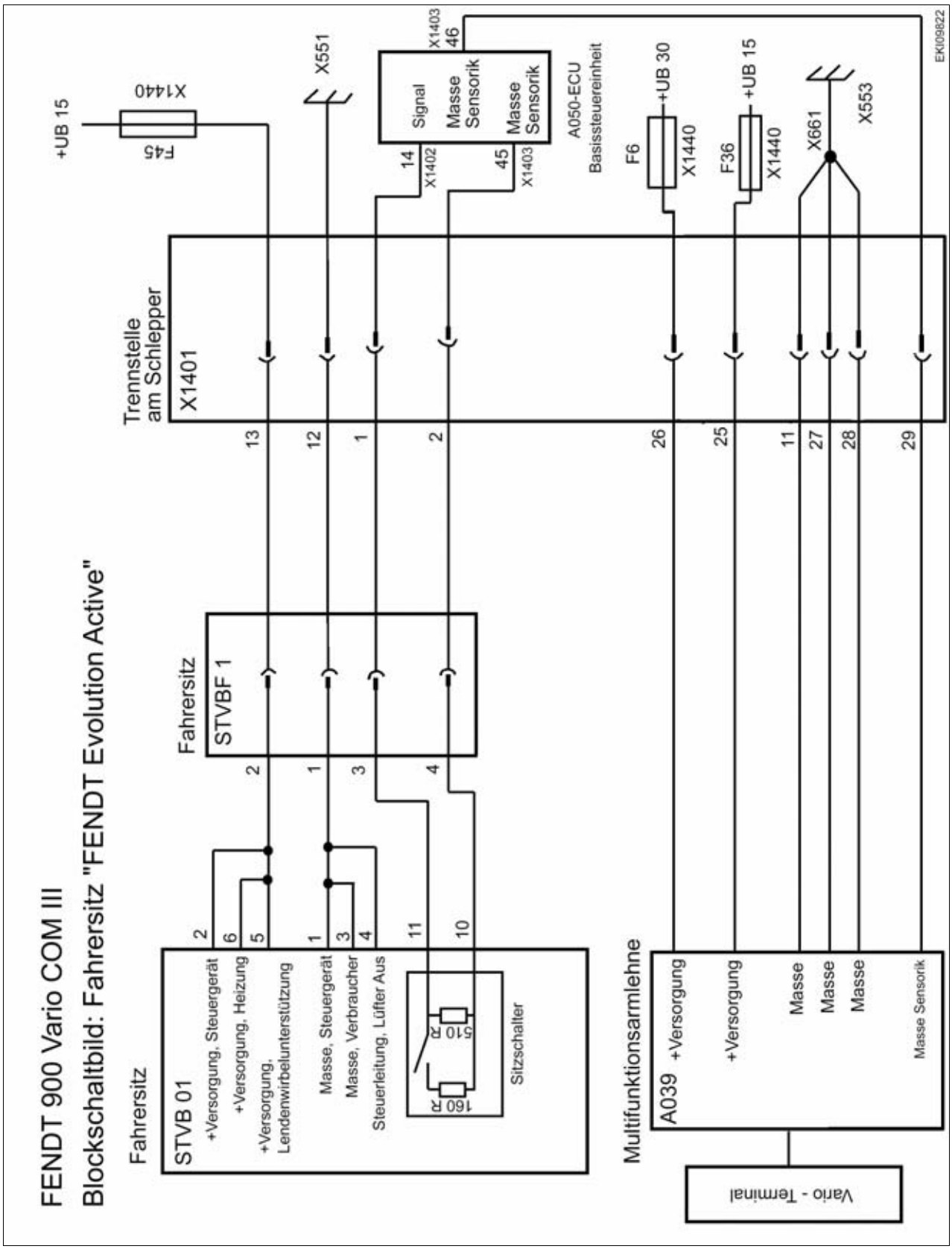


Fig. 23.

I008081

Check the compressor for the lumbar support (LWU)

Measure the contacts with a multimeter
STVB 14 - Actuation
STVB 15 - Earth

Press switch to (+)
U = 12 VDC
I = max. 2 ADC

Test compressor for loss of air.
Test lumbar support bladder for loss of air.



Fig. 24. I007926

The compressor does not switch on.
Test fuse F45 on the X1440 - fuse holder.
Check wiring (see wiring diagram)

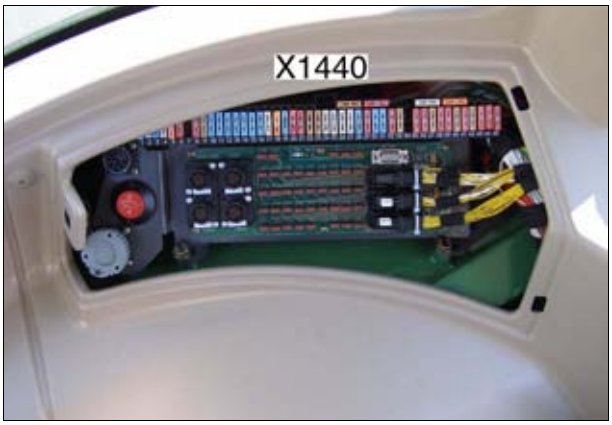


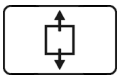
Fig. 25. I001208

Switch for the lumbar support compressor (LWU)

STVB 36 - Separation point (2-pin)



On the left side of the seat upper section in the direction of travel



Remove cover.

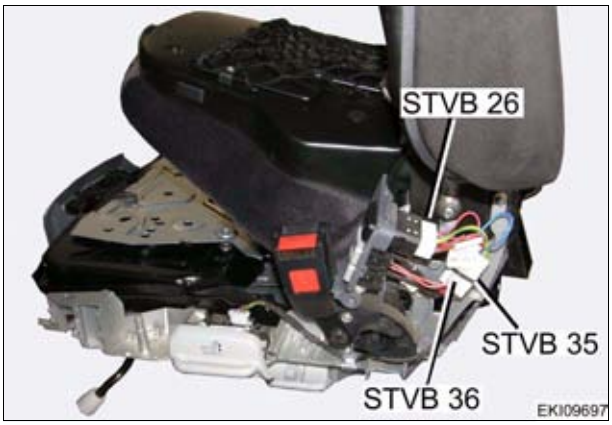


Fig. 26. I007930

F Setting and calibrating

1 Operator's seat: FENDT Evolution Active (restore to status upon delivery) 47
2 FENDT Evolution Active operator's seat: Adjusting the suspension characteristic (mode) 48
3 FENDT Evolution Active operator's seat: Calibrating the seat suspension 50

1 Operator's seat: FENDT Evolution Active (restore to status upon delivery)

Restore to status upon delivery with coded operation
(Reset error memory in the STVB02 - electr. control):

In the event of faults in height and weight adjustment, the STVB02- electr. control of the suspension system switches off. The setting described below can be used to return the STVB02 electr. control to the status it was in upon delivery.

Prerequisite:
Driver seat not loaded

Height adjustment control:
- Press upwards briefly 3 times (within 2 seconds)
then
- press down immediately for 15 to 19 seconds

The compressor will start up one or more times to confirm that the system has been reset by coded operation.



Fig. 1. I008067

NOTE: *See also: Chapter 5030 Reg.G - Operator's seat: FENDT Evolution Active (height and weight adjustment)*

2 FENDT Evolution Active operator's seat: Adjusting the suspension characteristic (mode)

WARNING: Never adjust the operator's seat while driving!

Switch for height and weight adjustment (A)



Fig. 2. I007345

The operator's seat has an electronics box.
This electronics box controls the behaviour of the suspension.
With effect from operating software "64", it is now possible to adjust the suspension characteristic (mode).

The suspension characteristic can be adjusted starting from the following vehicles:
Chassis number:
919/21/from 1109
922/21/from 1168
925/21/from 1192
928/21/from 1250
931/21/from 1160
934/21/from 1563

Adjust the suspension characteristic (mode)

1. Engine is running (prevents undervoltage on the G001 battery)
2. **Adjust the operator's seat:**
   - Weight adjustment is carried out automatically when the operator sits in the seat.
   - The adjustment operation begins automatically after about 3 seconds.
   - The automatic adjustment operation must be allowed to complete.
3. **Query the existing mode:**
   - Pull the switch (A) up 5 times within 2 seconds
   - The mode set will be output.
   Example: Mode 3 = The compressor switches on 3 times.
4. **Change the mode (see table below):**
   Pull the switch (A) up 4 times within 2 seconds
   then
   push the switch down
   Example: Mode 3 = Push down for 4 to 6 seconds.
   NOTE: *The mode set is displayed with the aid of the compressor*
   Example:
   Mode 3 has been set.
   The compressor switches on 3 times.

Operator's seat: FENDT Evolution Active		
Set mode on the height and weight adjustment control (A)	**Subjective feeling of the seat**	**Height is corrected:**
Mode 1 **4x** (pull up) **750 ms to 2 seconds** (press down)	**Soft,** Seat lowered from the central position by 20 mm **Note:** The seat tends to bottom out on bumpy roads.	Automatic
Mode 2 **4x** (pull up) **2 to 4 seconds** (press down)	**Soft**	Automatic, tolerant adjustment (adjusted less often, compressor runs less often)
Mode 3 "Standard setting" **4x** (pull up) **4 to 6 seconds** (press down)	**Soft**	Automatic
Mode 4 **4x** (pull up) **6 to 8 seconds** (press down)	**Medium**	Automatic
Mode 5 **4x** (pull up) **8 to 10 seconds** (press down)	**Hard**	Automatic tolerant adjustment (adjusted less often, compressor runs less often)

3 FENDT Evolution Active operator's seat: Calibrating the seat suspension

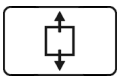
WARNING: Never calibrate the operator's seat while driving!

Seat position detection (retractor)
detects the position of the seat suspension

STVB 30 - Separation point (3-pin) for the seat position sensor
STVB 31 - Separation point (4-pin) for the solenoid valves



At top of seat lower section



Remove seat upper section, remove cover

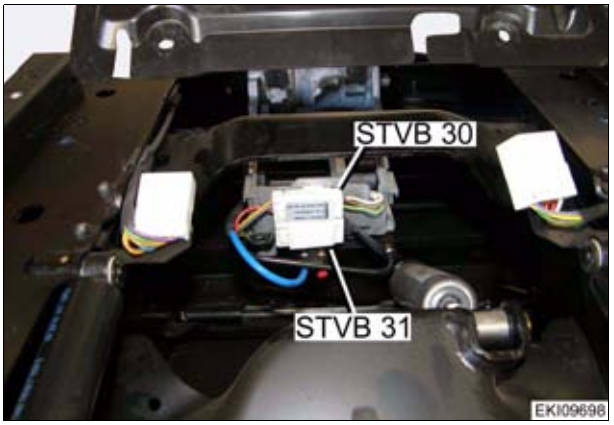


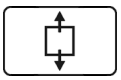
Fig. 3. I007931

Electronic control unit
processes the position signals from the seat position detector (retractor)

STVB 02 - Connector (24-pin)
STVB 03 - Connector (3-pin)



On the right side of the seat lower section in the direction of travel



Remove gaiter



Fig. 4. I007919

The seat suspension must be calibrated:
– when the electronic control unit is replaced
– when the seat position detector (retractor) is replaced

Calibration

Prerequisite:
The operator's seat must not be under load during calibration

Calibration is initiated via the height adjustment control (arrowed).



Fig. 5. I008067

The calibration operation
– **Height adjustment control:**
  Press upwards briefly 3 times
  then
  immediately press down for 1 second
  then
  immediately release the control
– **If the seat is in the middle or top position:**

The seat releases air and is then pumped up again.
The seat then stops in the top position.
or
If the seat is in the bottom position:
The seat is pumped up.
The seat then stops in the top position.

– **At the end of the first calibration step, the seat is in the top position:**
Press the height adjustment control down until
the seat lets the air out (about 5 to 6 seconds).
The calibration operation then continues automatically.
Calibration can take 2 to 10 minutes.

G Repair

1 "Evolution" seat upper section (depth and tilt adjustment), disassembly and assembly 55
2 "Evolution" seat upper section (left armrest, switches and backrest adjustment), disassembly and assembly. 65
3 "Evolution" seat upper section (right armrest) 78
4 "Evolution Active" seat lower section (suspension, horizontal suspension), disassembly and assembly. 83

1 "Evolution" seat upper section (depth and tilt adjustment), disassembly and assembly

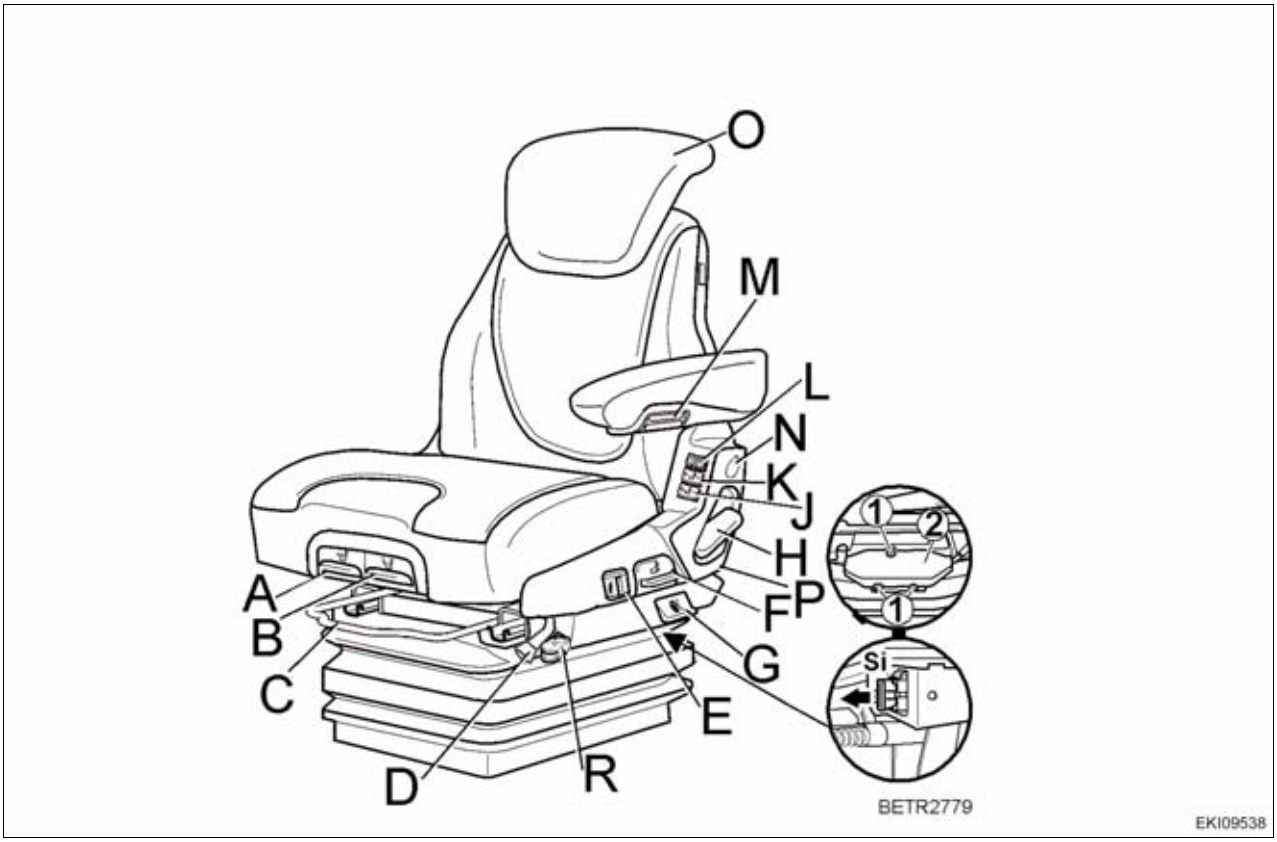


Fig. 1. FENDT Evolution/FENDT Evolution Active I007072

FENDT Evolution **- mechanically controlled suspension** **- "Ventilation" seat climate system** **- Seat heater**	
FENDT Evolution Active **- electronically controlled active suspension** **- "Ventilation" seat climate system** **- Seat heater**	
Item	**Function**
A	Control for **seat depth adjustment** Pull control upwards. While actuating the control, the required position can be set by sliding the seat forward or back
B	Control for **seat tilt adjustment** Pull control upwards. While actuating the control, the required position can be set by pressing on or releasing weight on the front or back of the seat

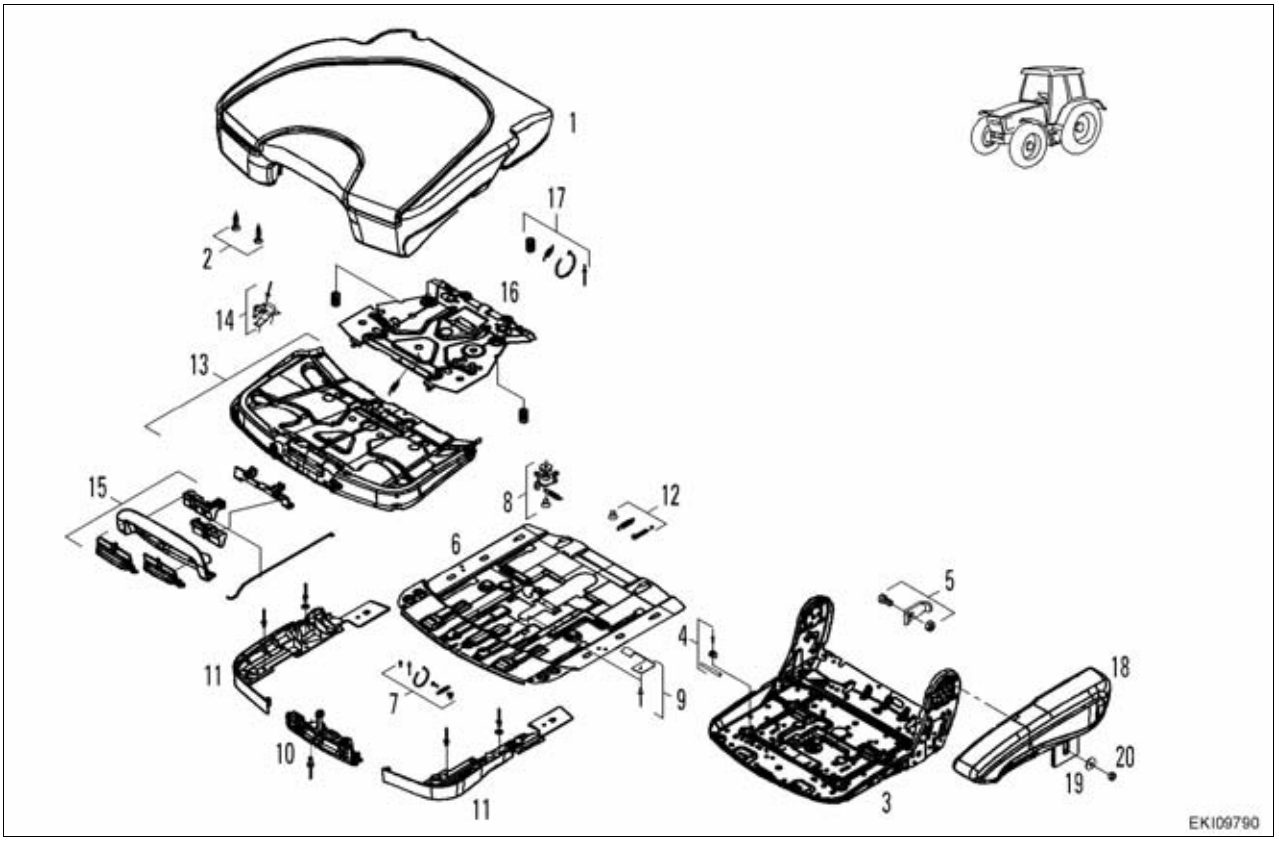


Fig. 2. Seat surface with depth and tilt adjustment I007978

Item	Designation	Item	Designation
1	Seat upholstery (with heater and fan)	11	Cover
2	Hardware set	12	Hardware set
3	Seat plate	13	Seat tilt adjustment
4	Slider	14	Spring panel
5	Stop	15	Actuation system
6	Seat depth adjustment	16	Rocker with seat switch
7	Hardware set	17	Hardware set
8	Lever	18	Armrest
9	Spring panel	19	Washer
10	Detent	20	Hex nut

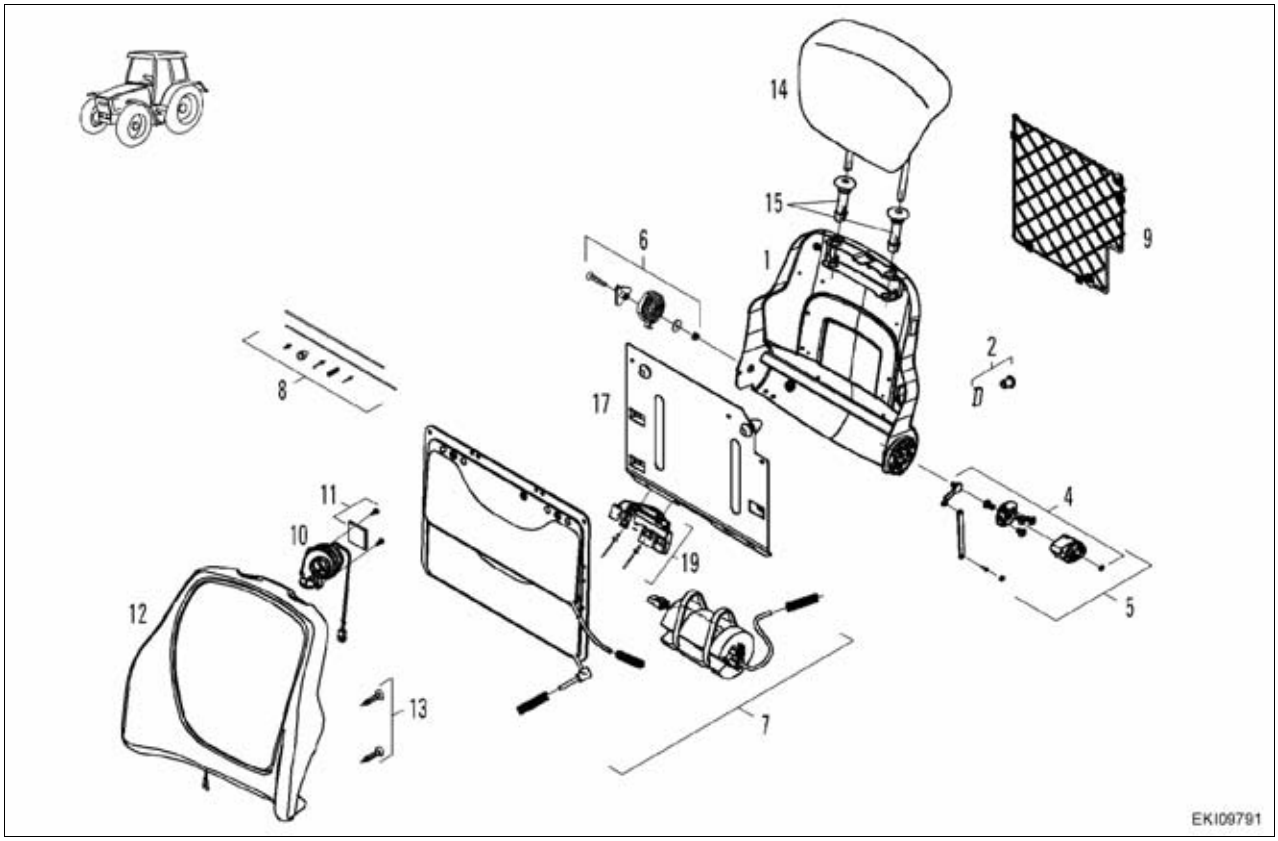


Fig. 3. Backrest I007979

Item	Designation	Item	Designation
1	Back section	10	Fan
2	Hardware set	11	Hardware set
4	Displacement	12	Backrest upholstery
5	Hardware set	13	Hardware set
6	Torsion spring	14	Backrest extension
7	Lumbar support	15	Guide sleeve
8	Hardware set	17	Plate
9	Netting	19	Distributor

Disassemble the seat upper section



Fig. 4. I007941

Pull out the backrest extension



Fig. 5. I007942

Unscrew two screws on the front of the seat upholstery



Fig. 6. I007943

Remove seat upholstery
Disconnect separation point for heater and fan



Fig. 7. I007944

Unscrew four screws on the backrest

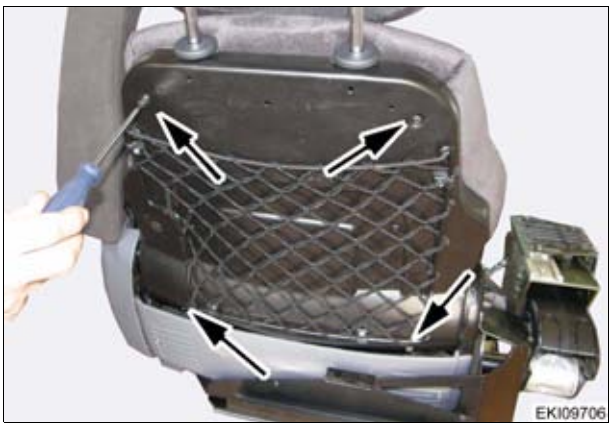


Fig. 8. I007945

Remove backrest upholstery
Disconnect separation point for heater and fan



Fig. 9. I007946

Unhook spring from the rocker



Fig. 10. I007947

Unhook rocker



Fig. 11. I007949

Remove cable tie from seat switch



Fig. 12. I007950

Pull the tilt adjustment lever and depth adjustment lever upwards
Unhook lock



Fig. 13. I007951

Remove tilt adjustment



Fig. 14. I007952

Unhook spring from seat depth adjustment lever

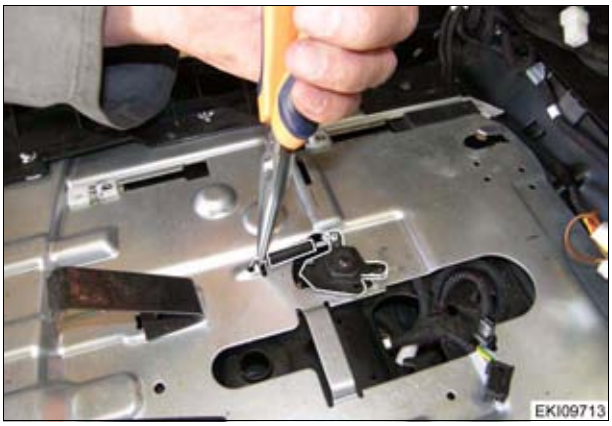


Fig. 15. I007953

Turn lever to the right



Fig. 16. I007954

Pry off spring



Fig. 17. I007955

Pull depth adjustment forwards



Fig. 18. I007956

Remove depth adjustment



Fig. 19. I007957

Assemble seat upper section

NOTE: *Ensure all components have the correct clearance during assembly.*

Check sliders for wear and replace if necessary
Lightly grease the sliders
Insert the depth adjustment

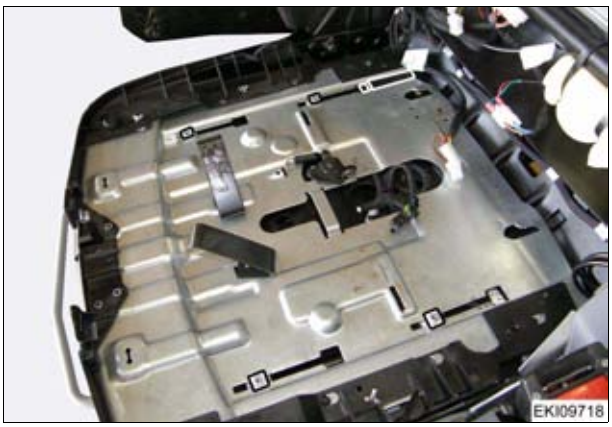


Fig. 20. I007958

Fit spring



Fig. 21. I007955

Secure separation point for seat upholstery heater and the seat upholstery fan with a cable tie

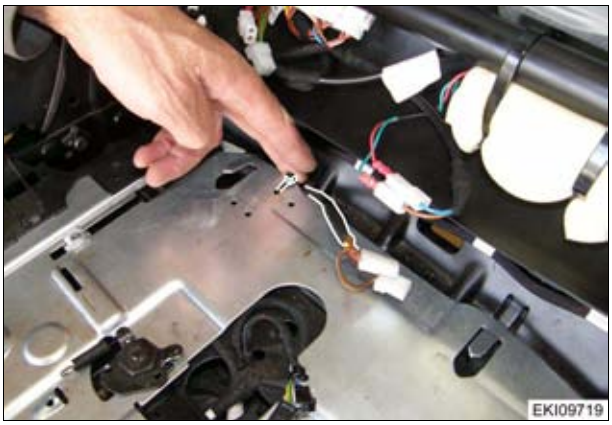


Fig. 22. I007959

Attach spring to the seat depth adjustment lever (arrowed)
Align two springs for the seat tilt adjustment (arrowed)

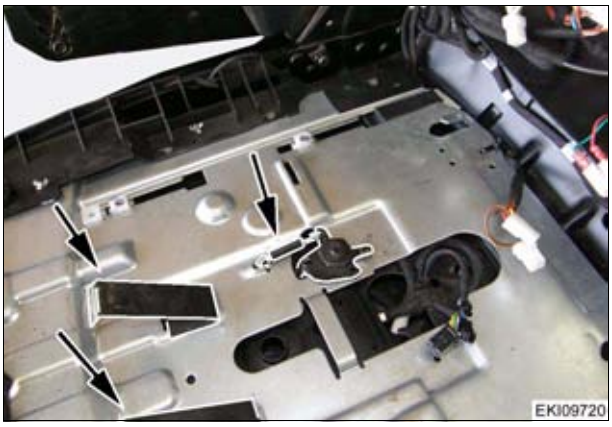


Fig. 23. I007961

Attach seat tilt adjustment (arrowed)
Attach actuator to the seat depth adjustment lever (arrowed)



Fig. 24. I007962

Pull the tilt adjustment lever and depth adjustment lever upwards
Press the seat tilt adjustment down until the adjuster locks into place



Fig. 25. I007963

Secure the seat switch separation points with a cable tie.

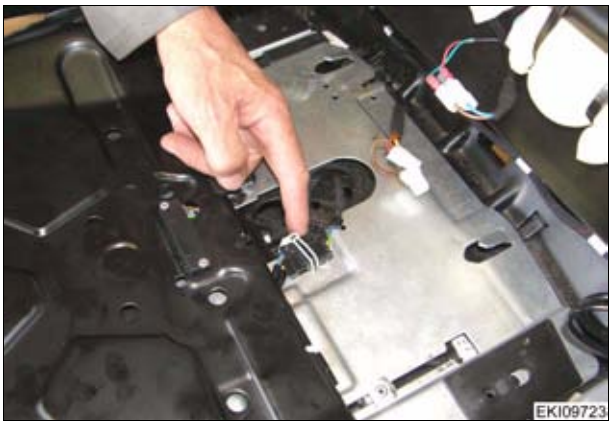


Fig. 26. I007964

Attach two pressure springs to the rocker
Install seat switch if necessary
Attach rocker



Fig. 27. I007949

Hook spring onto rocker



Fig. 28. I007947

Fit seat upholstery
Connect separation point for heater and fan



Fig. 29. I007944

Attach two screws on the front of the seat upholstery



Fig. 30. I007943

Fit backrest upholstery
Connect separation points for heater and fan
Screw four screws onto the backrest

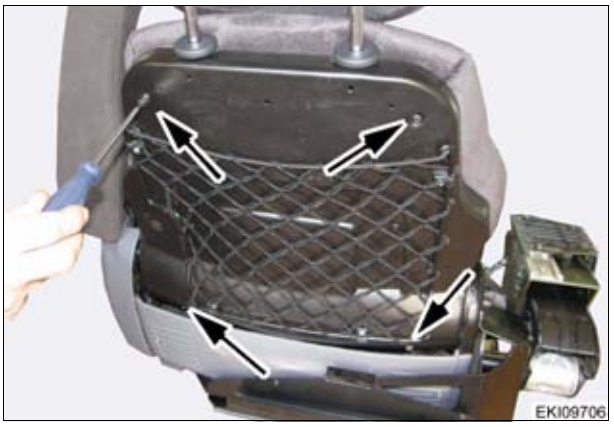


Fig. 31. I007945

Insert backrest extension.



Fig. 32. I007942

2 "Evolution" seat upper section (left armrest, switches and backrest adjustment), disassembly and assembly

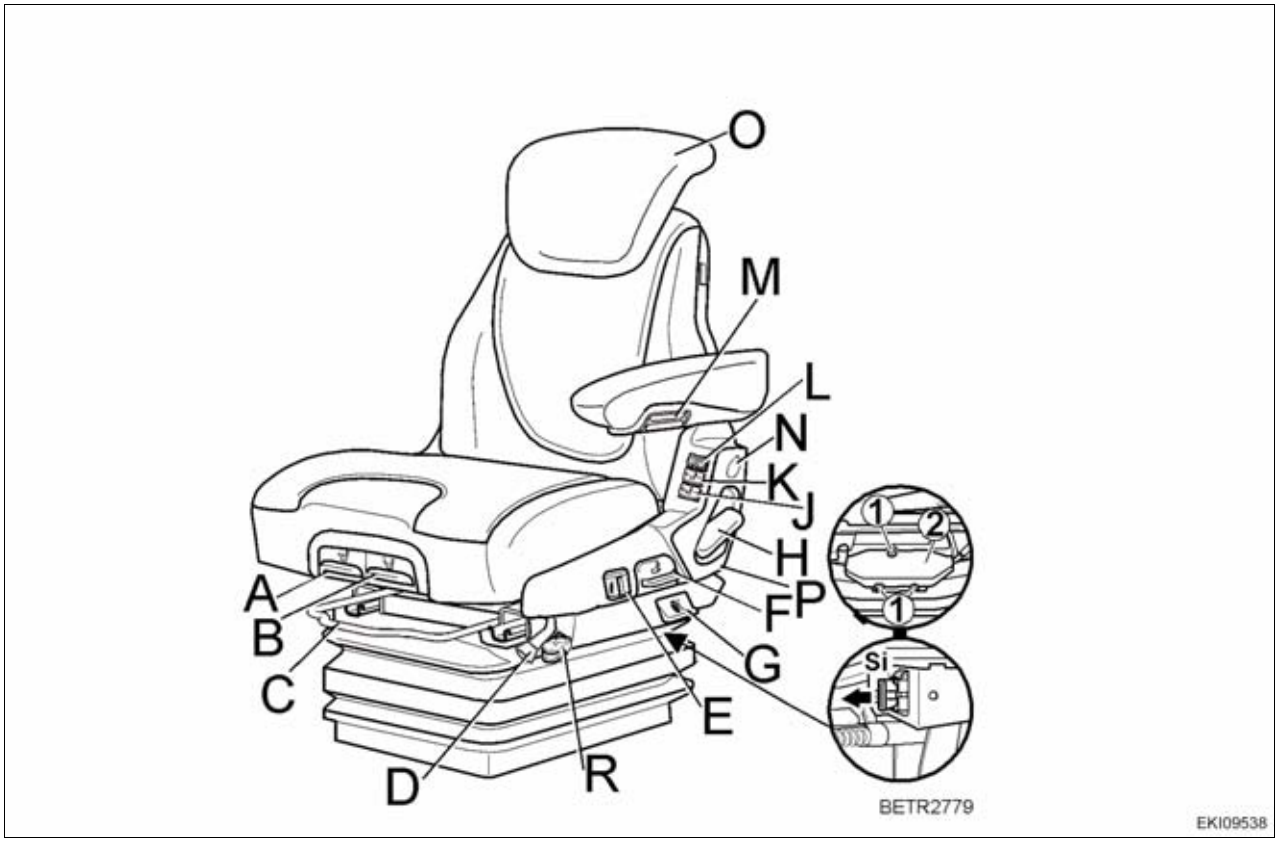


Fig. 33. FENDT Evolution/FENDT Evolution Active I007072

FENDT Evolution **- mechanically controlled suspension** **- "Ventilation" seat climate system** **- Seat heater**	
FENDT Evolution Active **- electronically controlled active suspension** **- "Ventilation" seat climate system** **- Seat heater**	
Item	**Function**
E	**FENDT Evolution** Setting the **vertical shock absorber** Turn the lever to the required setting and release. Lever forwards = Soft suspension Lever backwards = Hard suspension
E	**FENDT Evolution Active** No function
F	Control for combined **height and weight adjustment** **Weight adjustment:** Automatically adjusts as soon as the operator sits in the seat. **Height adjustment:** Pull up or push down the handle until the required position is obtained. If the upper or lower limit is reached, height is automatically regulated upward or downward to guarantee minimum suspension travel. Actuate the compressor for 1 minute max.

FENDT Evolution **- mechanically controlled suspension** **- "Ventilation" seat climate system** **- Seat heater**	
FENDT Evolution Active **- electronically controlled active suspension** **- "Ventilation" seat climate system** **- Seat heater**	
Item	**Function**
H	Control for **tilt adjustment of the backrest** Pull control upwards. Adjust seat angle by pushing back on and releasing the backrest until the required position is obtained. After setting, the control must lock in place and the backrest should no longer move.
J	Switch for **lumbar support (curvature at bottom)** The curvature is increased (+) or reduced (-) by pressing the corresponding switch. To prevent unnecessary air loss, do not actuate the (+) switch after the maximum curvature has been obtained; otherwise, it may result in lowering of the operator's seat.
K	Switch for **lumbar support (curvature at top)** The curvature is increased (+) or reduced (-) by pressing the corresponding switch. To prevent unnecessary air loss, do not actuate the (+) switch after the maximum curvature has been obtained; otherwise, it may result in lowering of the operator's seat.
L	Switch for **seat heater and seat climate system** The active seat climate system ensures that the seat surface will always be dry. Middle = Seat heater Off/seat climate system Off Left = Seat heater On/Seat climate system Off Right = Seat heater Off/Seat climate system On
M	Adjustment wheel for **armrest tilt adjustment** The lengthways tilt of the armrest can be adjusted by turning the hand wheel. If the wheel is turned outwards (+), the armrest is raised; if it is turned inwards (-), the front of the armrest is lowered.
N	**Armrest height adjustment** Remove cap. Loosen hex nut. Move armrest to the required position. Tighten hex nut (25 Nm) Refit cap.
O	**Backrest extension** Adjust the backrest extension by pulling up along notched stops. To remove the backrest extension, pull past end stop with a jerk.
P	**Seat belt mount**
R	Lever for **horizontal suspension** To compensate for shock loads in the direction of travel (e.g. when driving with a trailer), it is beneficial to engage the horizontal suspension. Lever forwards = Horizontal suspension Off Lever backwards = Horizontal suspension On When the horizontal suspension is switched off, the locking lever must audibly lock in the required position. To do this, push the seat back until it cannot be moved into any other position.

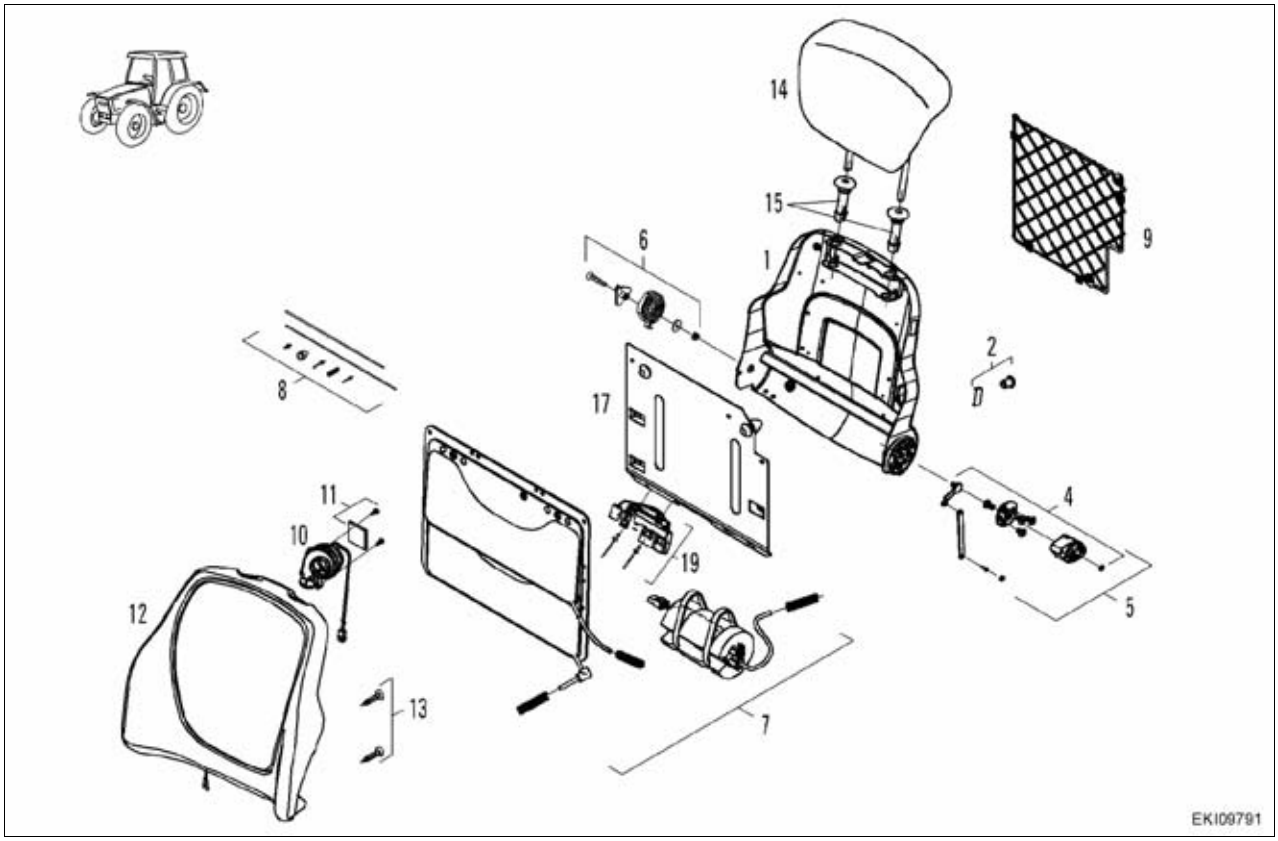


Fig. 34. Backrest
I007979

Item	Designation	Item	Designation
1	Back section	10	Fan
2	Hardware set	11	Hardware set
4	Displacement	12	Backrest upholstery
5	Hardware set	13	Hardware set
6	Torsion spring	14	Backrest extension
7	Lumbar support	15	Guide sleeve
8	Hardware set	17	Plate
9	Netting	19	Distributor

WARNING: When the adjuster is operated, the backrest is folded forwards under spring force! Hands may be trapped or cut.

Restrain the backrest against this force
Operate the adjuster carefully
The backrest is propelled forwards under spring force



Fig. 35.
I008003

Disassemble the seat upper section



Fig. 36. I007941

Pull out the backrest extension



Fig. 37. I007942

Unscrew two screws on the front of the seat upholstery



Fig. 38. I007943

Remove seat upholstery
Disconnect separation point for heater and fan



Fig. 39. I007944

Unscrew four screws on the backrest

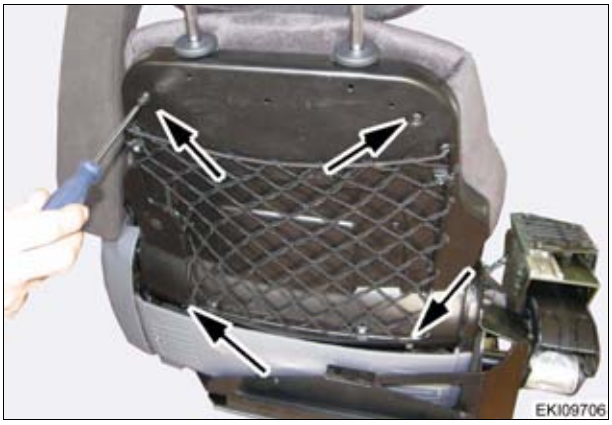


Fig. 40. I007945

Remove backrest upholstery
Disconnect separation point for heater and fan



Fig. 41. I007946

Disassemble left armrest

Remove cover.



Fig. 42. I007991

Unscrew hexagon socket head screw



Fig. 43. I007992

Remove left armrest



Fig. 44. I007994

Disassemble side cover panel

Remove plugs



Fig. 45. I007995

Pull off the backrest tilt adjustment control.



Fig. 46. I007996

Loosen screw



Fig. 47. I007997

Remove side cover panel



Fig. 48. I007998

Disassemble armrest bracket



Fig. 49. I007999

Remove belt buckle

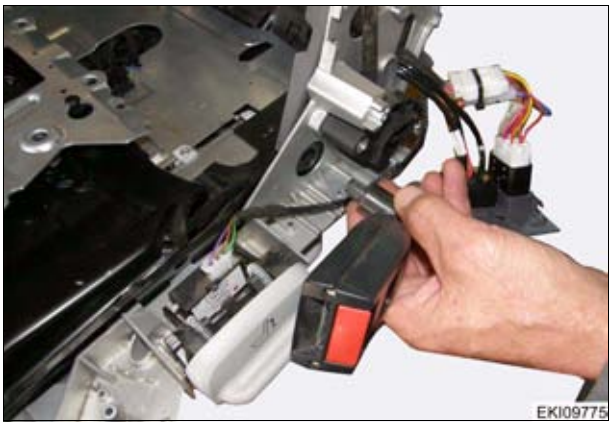


Fig. 50. I008000

Pry off circlip

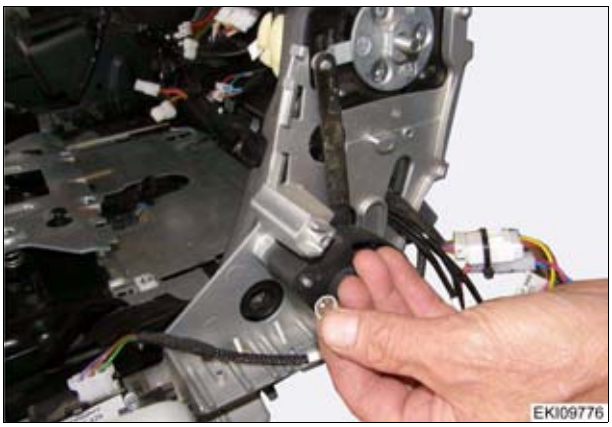


Fig. 51. I008001

Remove adjuster

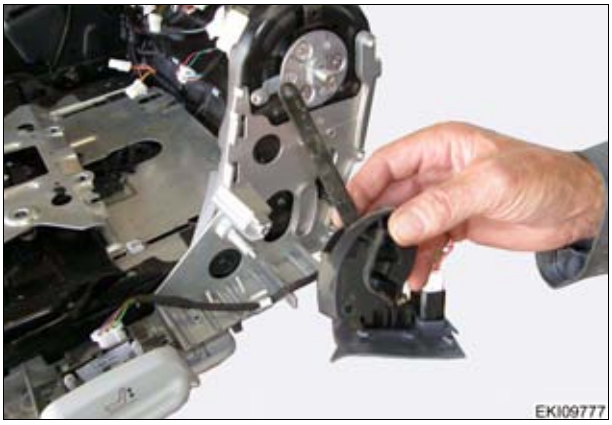


Fig. 52. I008002

WARNING: When the adjuster is operated, the backrest is folded forwards under spring force! Hands may be trapped or cut.

Restrain the backrest against this force
Operate the adjuster carefully
The backrest is propelled forwards under spring force



Fig. 53. I008003

Unscrew three screws on the adjuster
Remove adjuster



Fig. 54. I008004

On the right hand side
Loosen screw



Fig. 55. I008005

919 .. 0101-1000
919 .. 1001-
922 .. 0101-1000
922 .. 1001-
925 .. 0101-1000
925 .. 1001-
928 .. 0101-1000
928 .. 1001-
931 .. 0101-1000
931 .. 1001-
934 .. 0101-1000
934 .. 1001-

Unhook and remove torsion spring



Fig. 56. I008006

Remove backrest



Fig. 57. I008007

Install backrest and tilt adjustment

Insert bracket

NOTE: *Ensure bracket is installed in the proper position. The notch on the bracket must be facing forwards and upwards.*



Fig. 58. I008008

Fit the torsion spring on its hook

NOTE: *Ensure the torsion spring is installed in the proper position.*
The shackle on the spring must be facing to the rear.



Fig. 59. I008006

Install backrest



Fig. 60. I008009

Coat screw thread with synthetic bonding agent
X903.050.084
Tighten screw



Fig. 61. I008013

Align backrest
Fit adjustment lever



Fig. 62. I008010

Mount and tighten adjuster

NOTE: *Ensure the adjuster is fitted in the proper position. The marking (arrowed) faces the adjustment lever*



Fig. 63. I008011

Attach linkage



Fig. 64. I008012

Snap on circlip

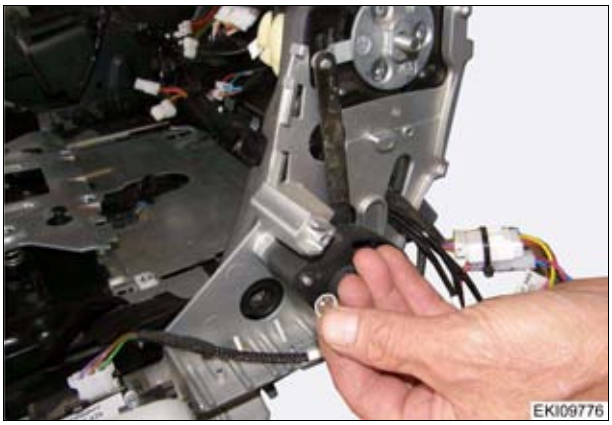


Fig. 65. I008001

Screw on armrest bracket



Fig. 66. I008014

Fit belt buckle

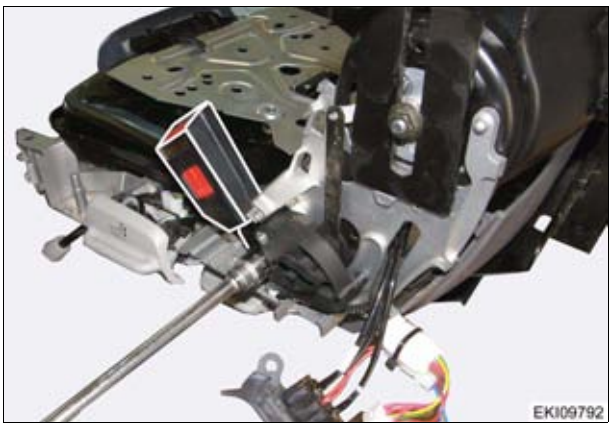


Fig. 67. I008018

Fit cover panel with switches



Fig. 68. I008019

Fit cover panel
Tighten screw



Fig. 69. I008020

Fit armrest



Fig. 70. I008021

Attach the backrest tilt adjustment control
Insert plugs



Fig. 71. I008022

Fit backrest upholstery



Fig. 72. I007946

Fit seat upholstery



Fig. 73. I007944

3 "Evolution" seat upper section (right armrest)

Remove right armrest

Pry off the circlip

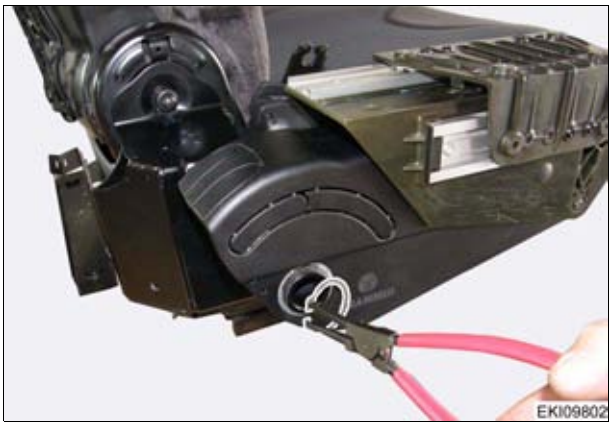


Fig. 74. I008049

Pry off the snap ring



Fig. 75. I008050

Release the tilt adjustment

Press in the damper piston rod; this releases the lock and the pressure on the damper is released



Fig. 76. I008051

Loosen screw



Fig. 77. I008052

Drive out bolt



Fig. 78. I008053

Extract damper



Fig. 79. I008054

Remove joint part



Fig. 80. I008055

Check adjuster for wear



Fig. 81. I008056

Remove horizontal adjustment



Fig. 82. I008057

Assemble armrest

Check horizontal adjustment for wear

Insert sliders



Fig. 83. I008058

Check that locking lever moves smoothly



Fig. 84. I008059

Mount "carriage" horizontal adjustment
Insert two screws (arrowed) in the slider

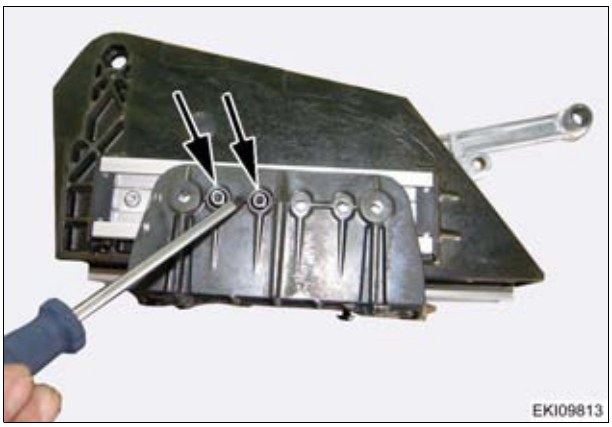


Fig. 85. I008060

Screw two screws (arrowed) into each slider

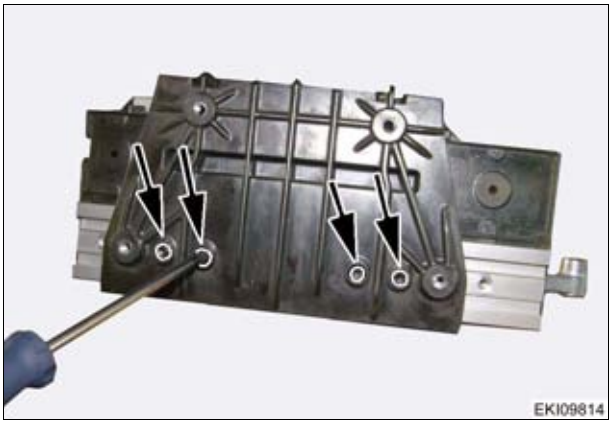


Fig. 86. I008061

Fit adjustment lever

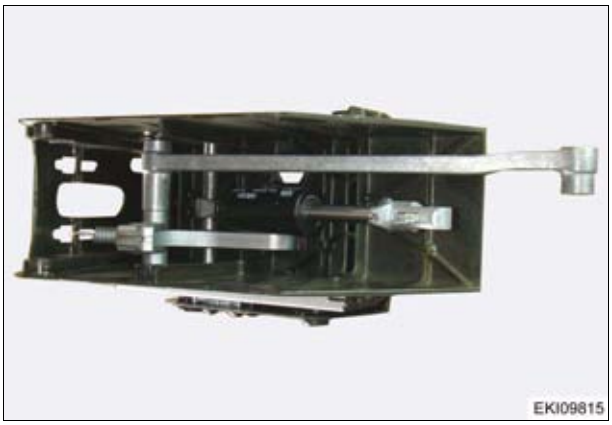


Fig. 87. I008062

Install joint part



Fig. 88. I008063

Insert tilt adjustment damper



Fig. 89. I008064

Fit armrest



Fig. 90. I008065

4 "Evolution Active" seat lower section (suspension, horizontal suspension), disassembly and assembly

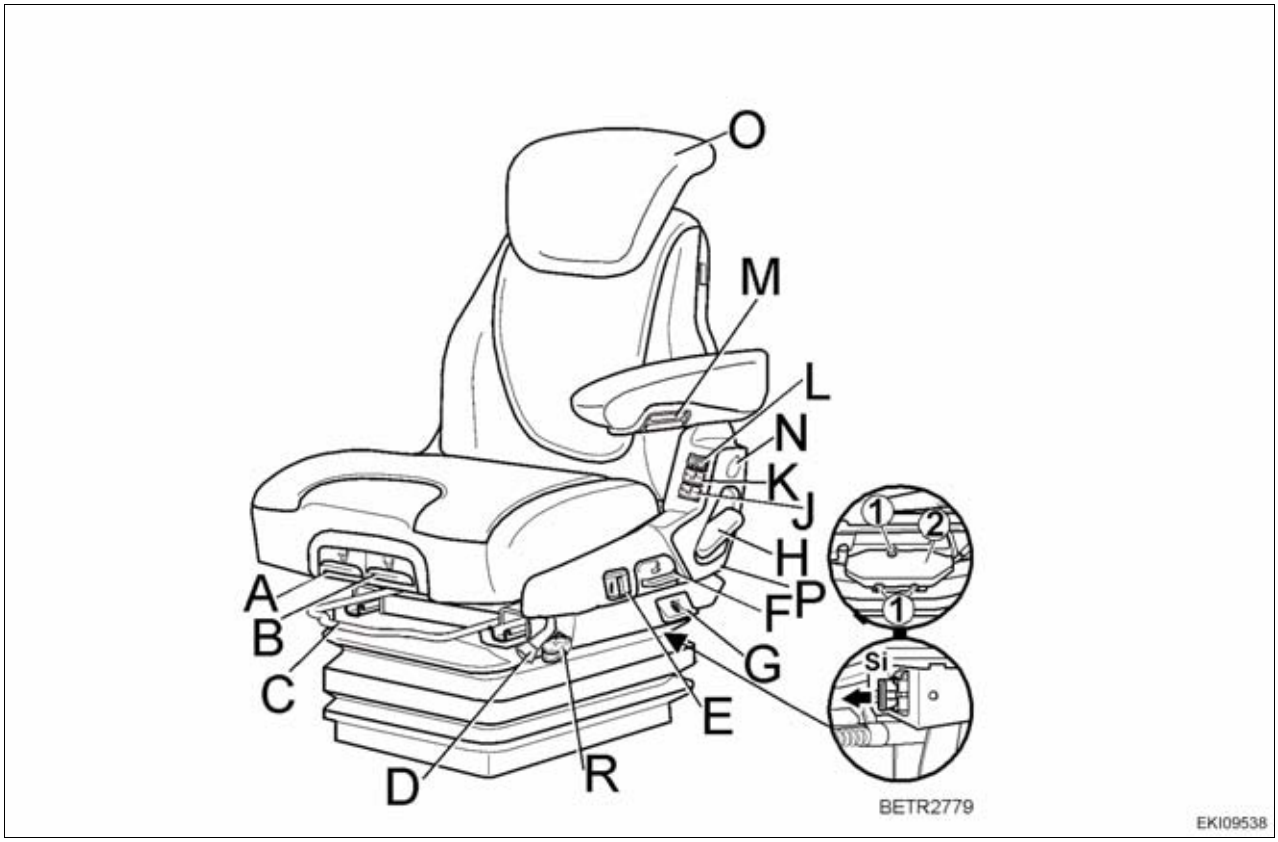


Fig. 91. FENDT Evolution Active I007072

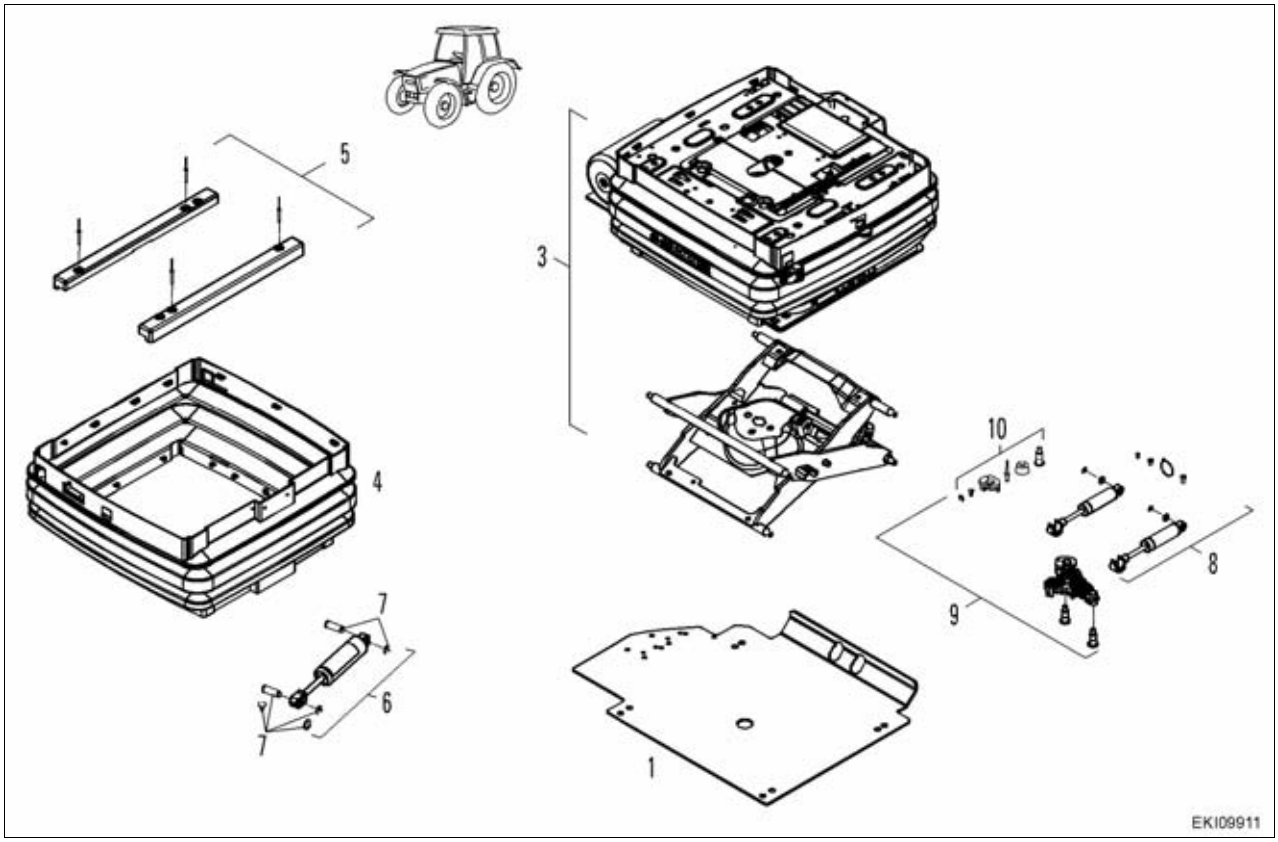


Fig. 92. Suspension I008867

Item	Designation	Item	Designation
1	Adapter plate	7	Hardware set
3	Suspension	8	Shock absorber
4	Gaiter	9	Horizontal suspension
5	Cover	10	Hardware set
6	Shock absorber		

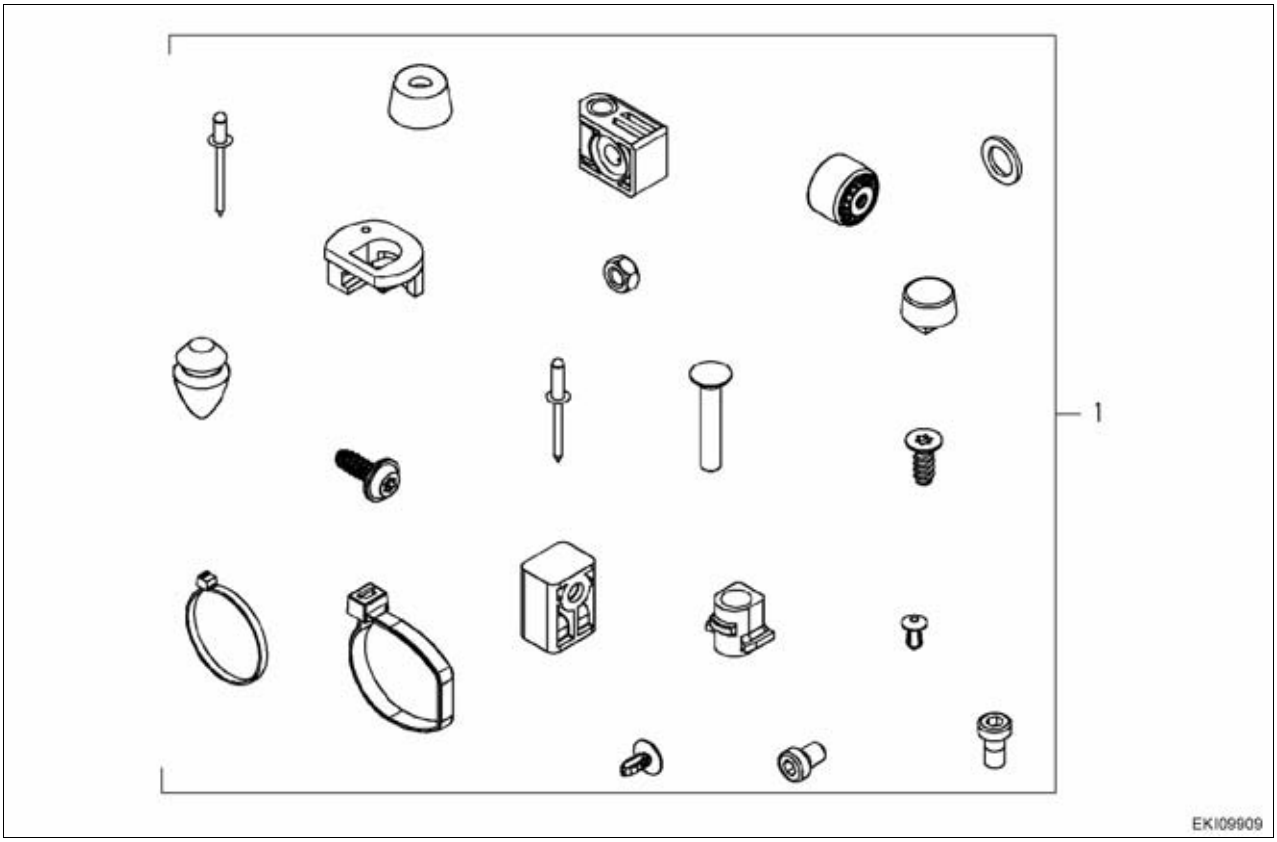


Fig. 93. Wearing parts I008859

Item	Designation	Item	Designation
1	Wearing parts set **F 931.502.030.330**		

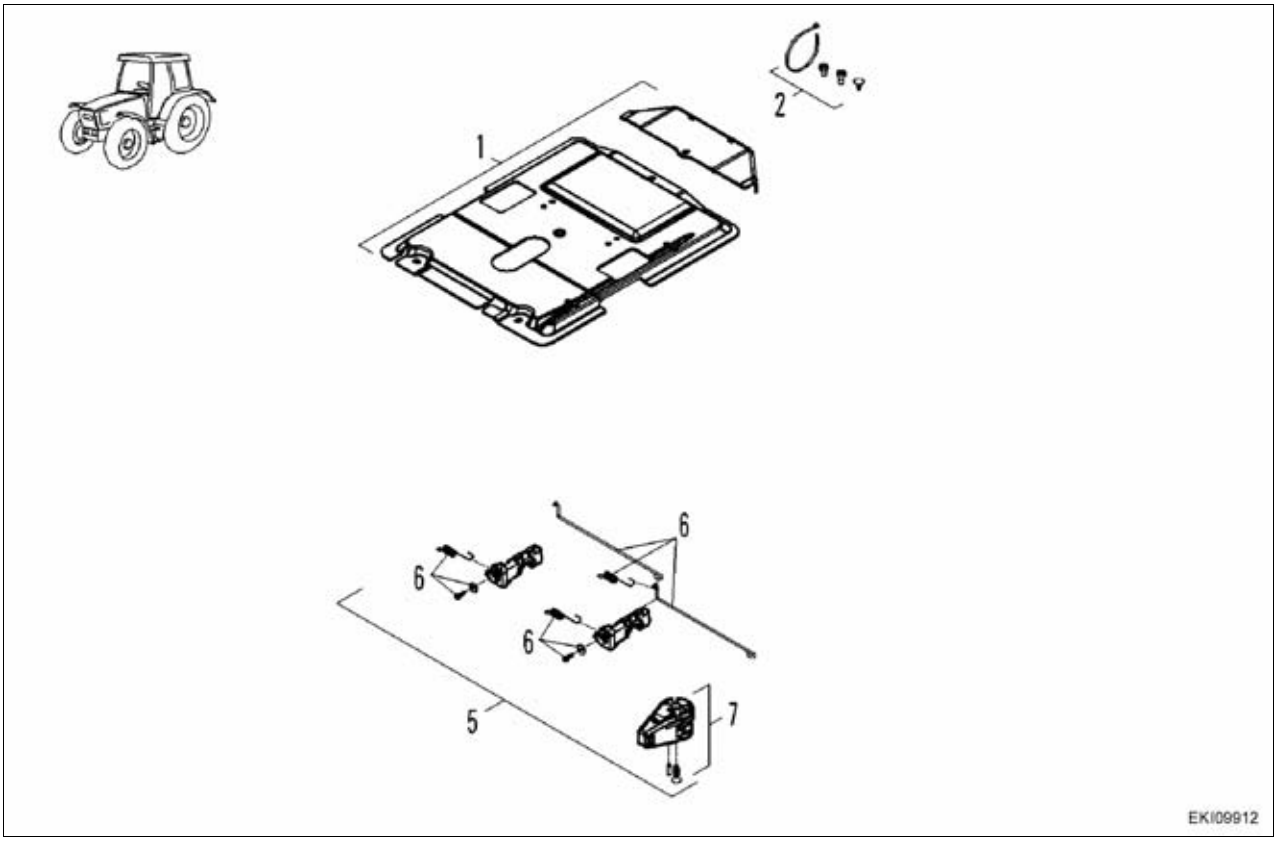


Fig. 94. Locking the horizontal suspension I008868

Item	Designation	Item	Designation
1	Cover	6	Hardware set
2	Hardware set	7	Handle
5	Locking lever		

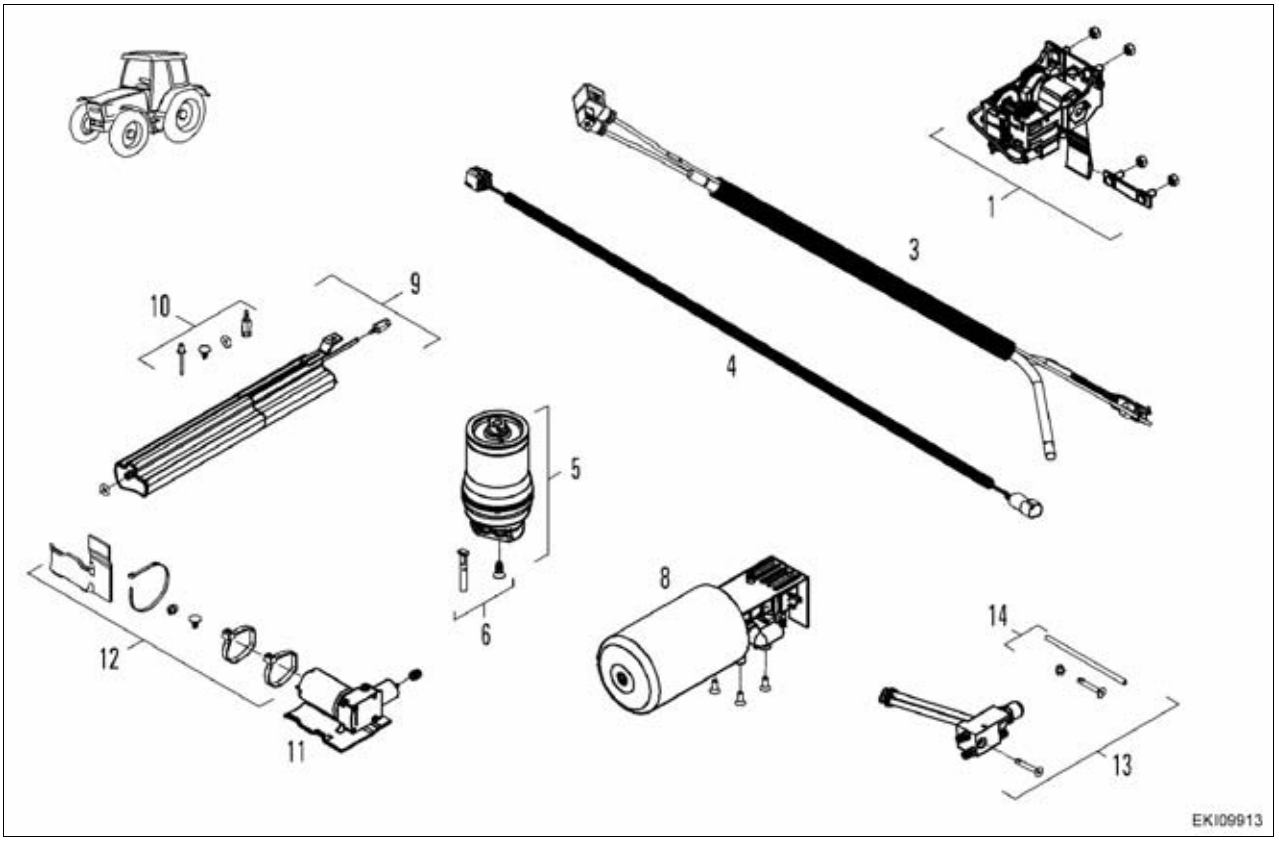


Fig. 95. Suspension (vertical) I008869

Item	Designation	Item	Designation
1	"Retractor" control	9	Control (e-box and air reservoir)
3	Wiring harness	10	Hardware set
4	Connection cable to cab	11	Compressor
5	Pneumatic spring	12	Hardware set
6	Hardware set	13	Air distributor
8	Air reservoir (additional volume)	14	Hardware set

Disassemble seat lower section

Remove seat upper section "seat pan".
Remove panel.



Fig. 96. I008739

Unhook gaiter.



Fig. 97. I008740

Remove gaiter.

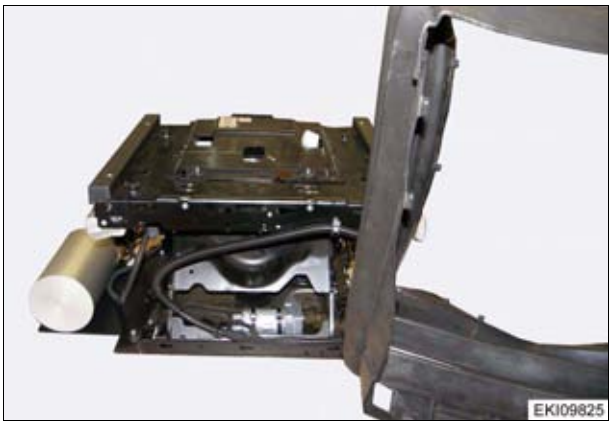


Fig. 98. I008744

Remove cover.

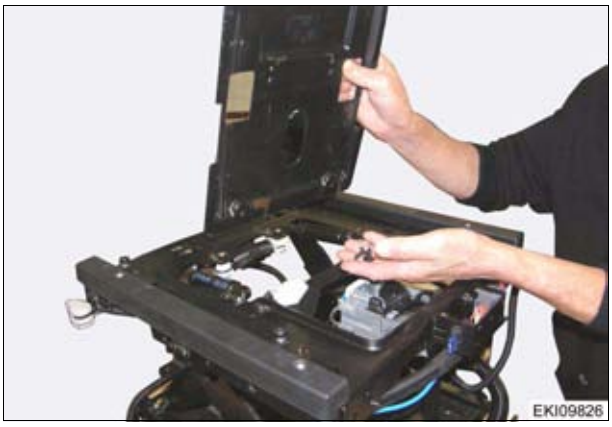


Fig. 99. I008745

Remove "retractor" control.
Unscrew two hexagon nuts.

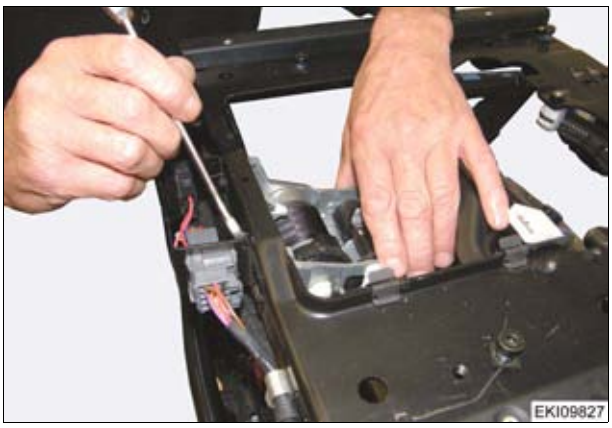


Fig. 100. I008746

Disconnect separation points.



Fig. 101. I008747

Block swing with a piece of wood.
Press ring inwards to release air hoses.
Pull out air hoses.

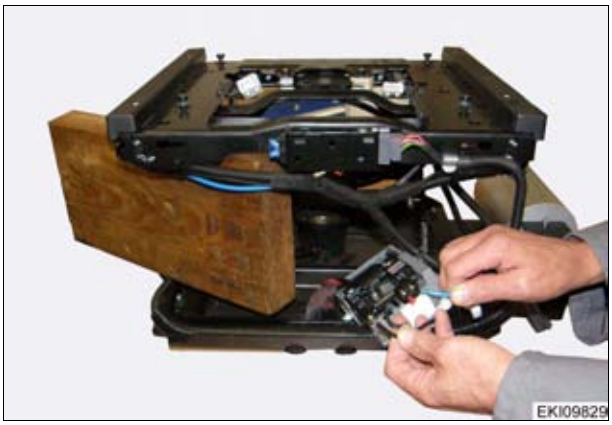


Fig. 102. I008748

Unscrew belt.
Remove "retractor" control.

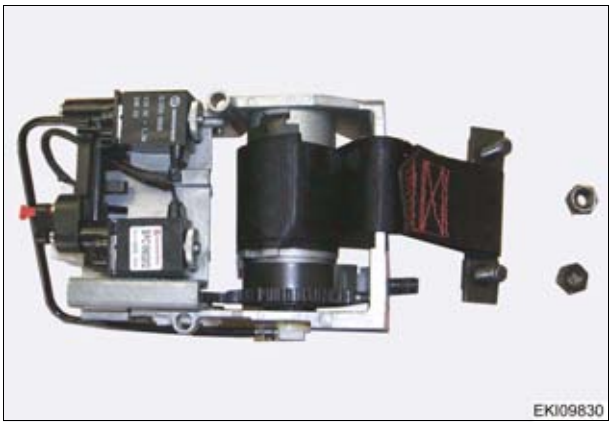


Fig. 103. I008749

Remove solenoid valves if necessary.
Release lock.
Remove solenoid valves.

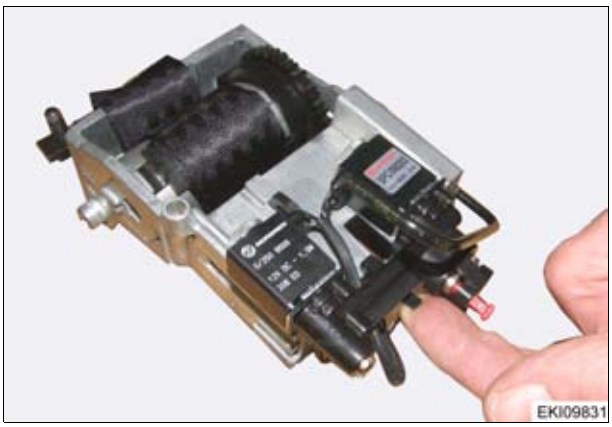


Fig. 104. I008750

Remove separation points if necessary.

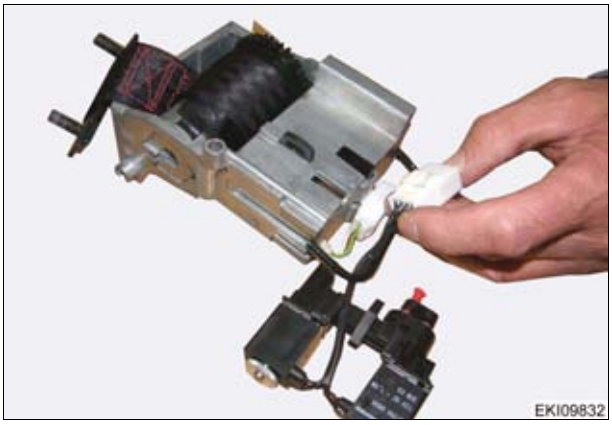


Fig. 105. I008751

NOTE: *Note the location of the position sensor.*

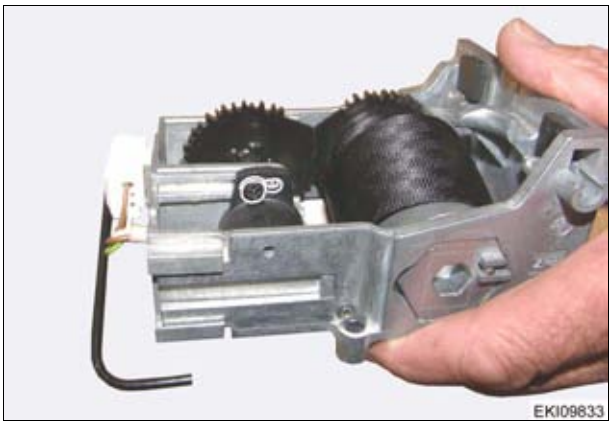


Fig. 106. I008752

Remove "additional volume" air reservoir

Unscrew hexagon socket head screws.



Fig. 107. I008754

Disconnect separation point.

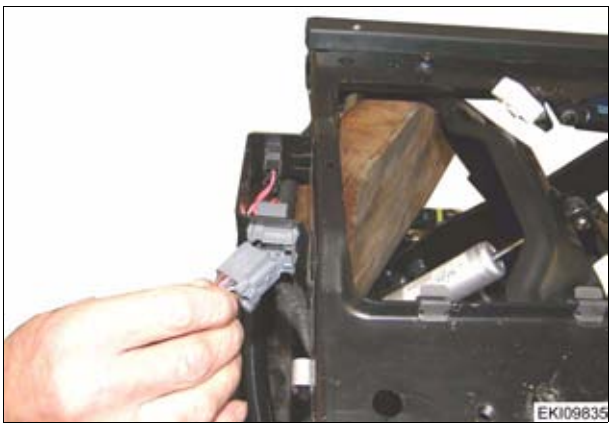


Fig. 108. I008757

Press ring inwards to release air hose.
Pull out air hose.



Fig. 109. I008758

Remove air hose.



Fig. 110. I008759

Remove "additional volume" air reservoir

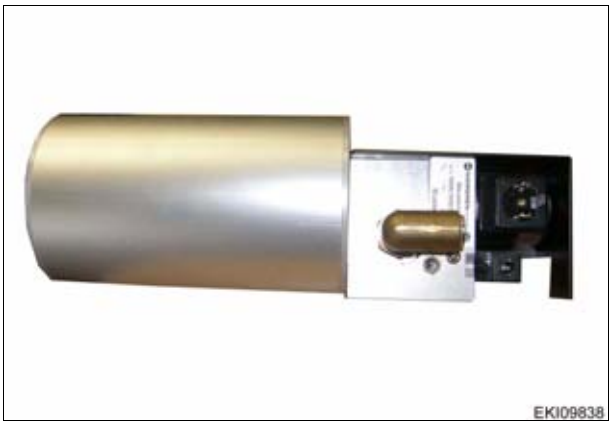


Fig. 111. I008760

Remove pneumatic spring



Fig. 112. I008761

Loosen upper pneumatic spring lock.

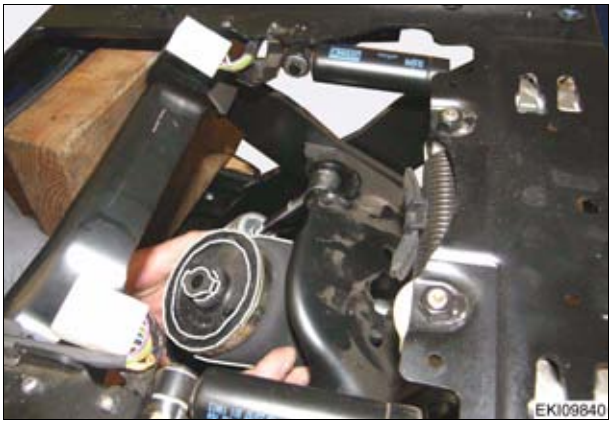


Fig. 113. I008764

Unscrew hex bolt.
Remove pneumatic spring.

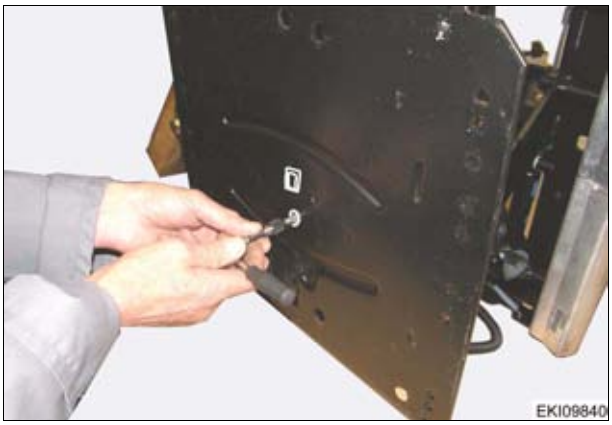


Fig. 114. I008765

Remove damper.

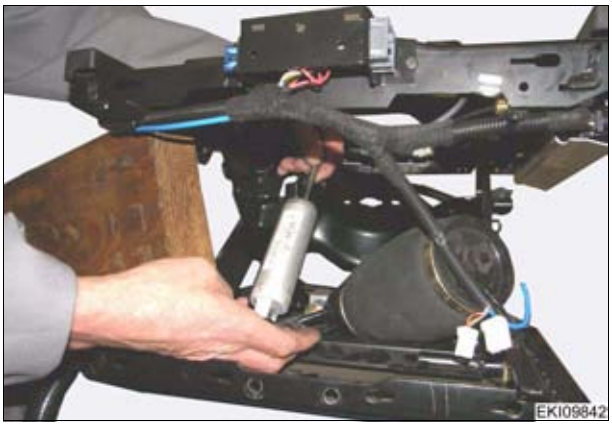


Fig. 115. I008767

Pull out spring wire.
Remove air hoses.
Remove pneumatic spring.



Fig. 116. I008769

Remove swing

Disconnect pressure hose from compressor.
To do this, loosen the lock (arrowed) and cut off the pressure hose.

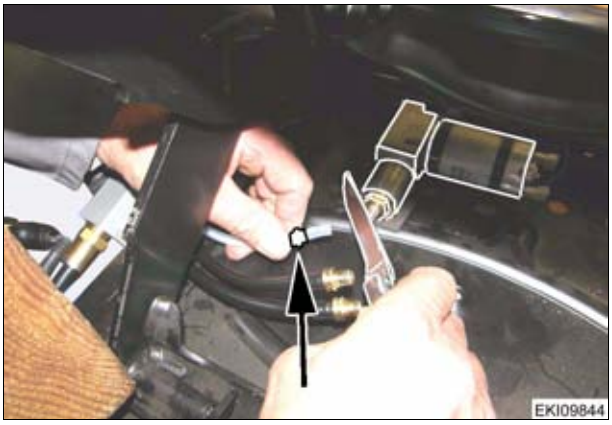


Fig. 117. I008770

Loosen thrust bearing.



Fig. 118. I008771

Loosen screw.

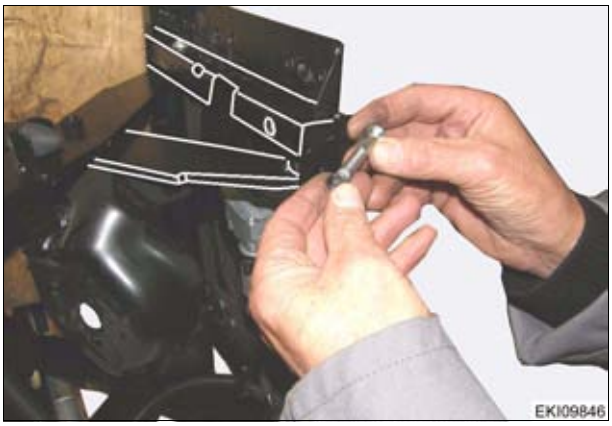


Fig. 119. I008772

Loosen thrust bearing.
Loosen screw.



Fig. 120. I008773

Loosen screw



Fig. 121. I008774

Remove stopper.

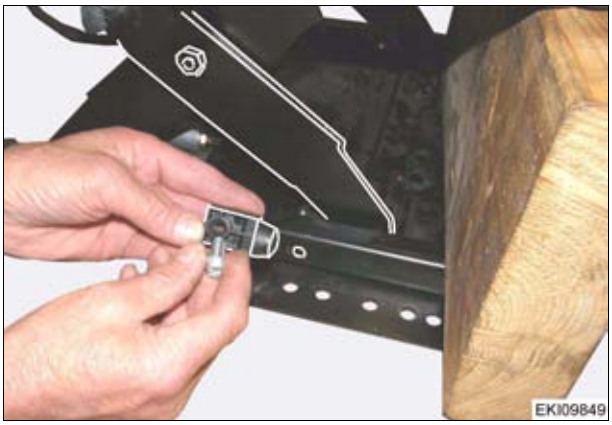


Fig. 122. I008775

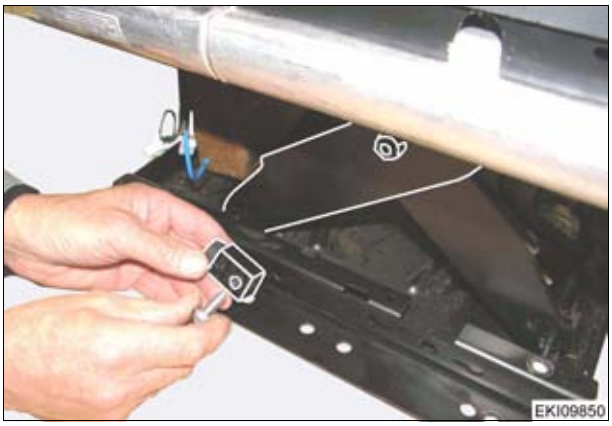


Fig. 123. I008776

Remove compressor.



Fig. 124. I008777

Extract thrust bearing.



Fig. 125. I008778

Extract bearing rollers.

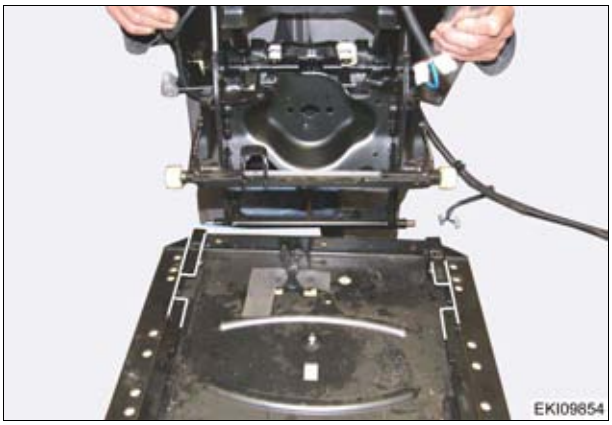


Fig. 126. I008779

Remove bearing rollers.

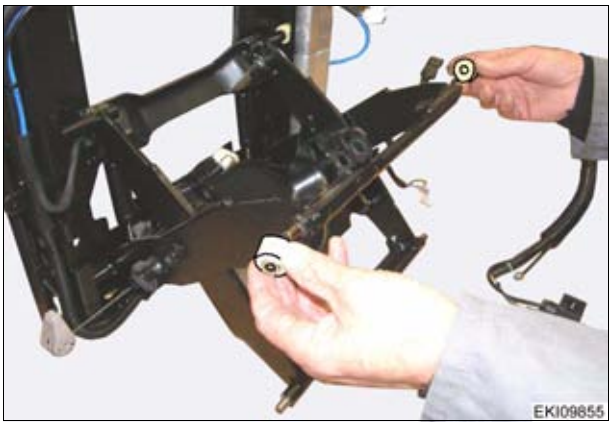


Fig. 127. I008780

Remove upper swing guide.

Remove cover.



Fig. 128. I008781

Open clinch seal on e-box.



Fig. 129. I008782

Extract e-box with air reservoir.



Fig. 130. I008783

Extract damper.
Remove suspension.

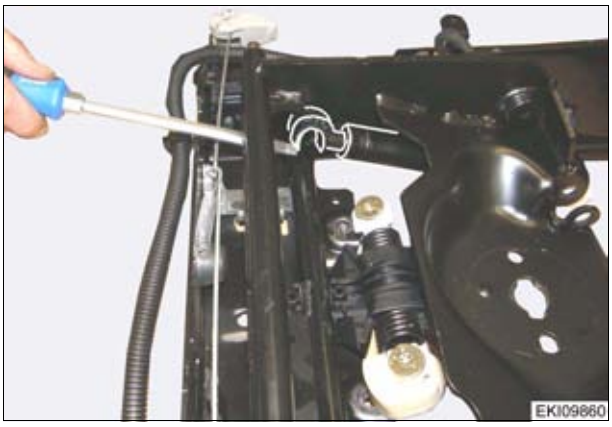


Fig. 131. I008784

Extract swing.

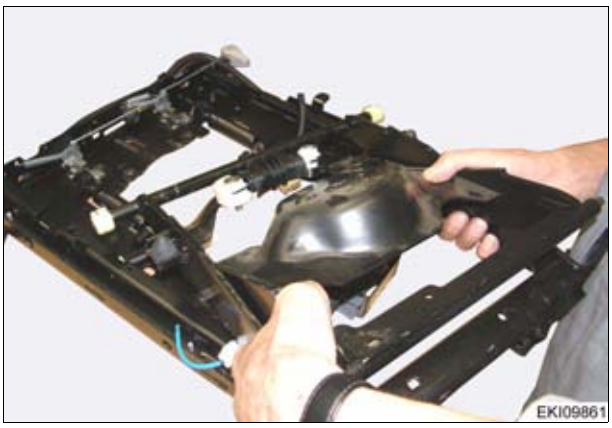


Fig. 132. I008785

Assemble seat lower section

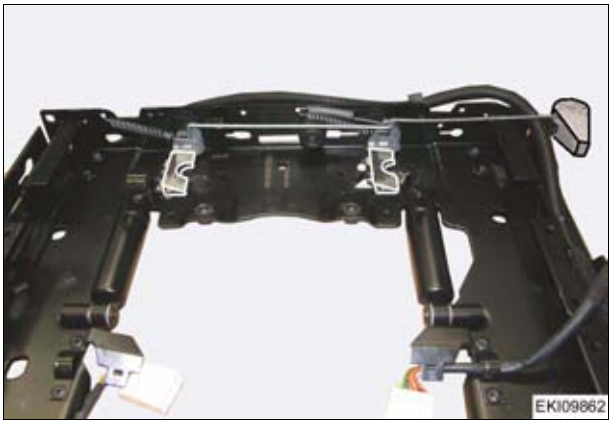


Fig. 133. I008786

Check the horizontal suspension lock if necessary.

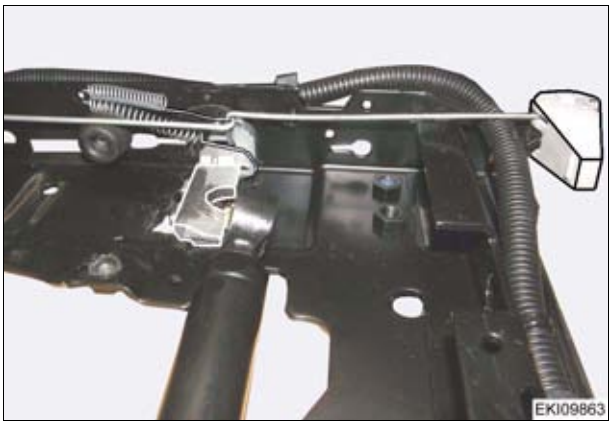


Fig. 134. I008787

Check the horizontal suspension lock if necessary.

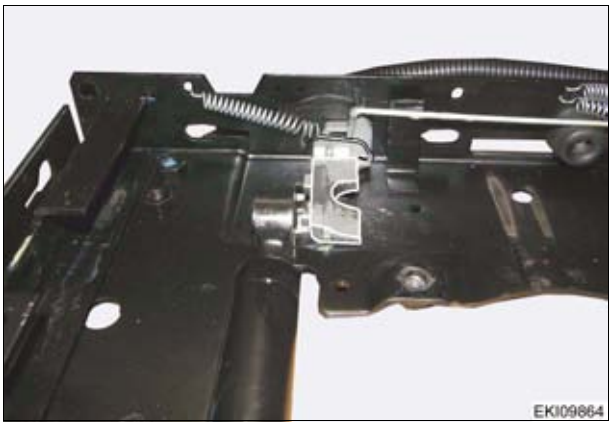


Fig. 135. I008788

Lightly grease bearing journal.
Mount bearing rollers.



Fig. 136. I008789

Fit swing.



Fig. 137. I008790

Mount horizontal suspension and screw tight.



Fig. 138. I008791

Clip on damper.

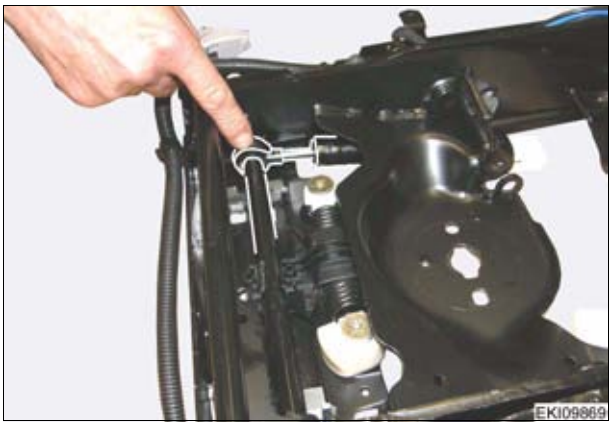


Fig. 139. I008792

Test operation of horizontal suspension lock.



Fig. 140. I008793

Grease bearing journal.
Mount bearing rollers.

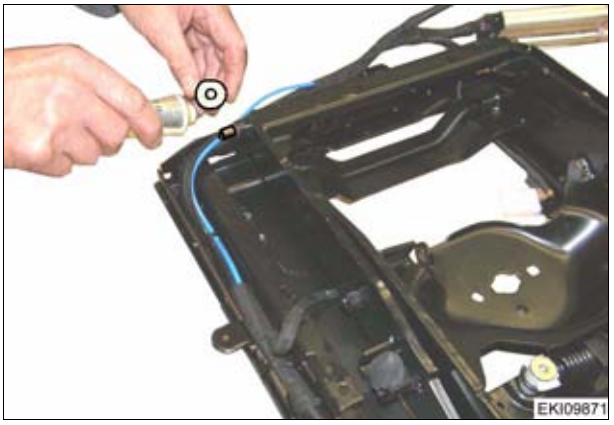


Fig. 141. I008794

Grease bearing journal.
Mount thrust bearing.



Fig. 142. I008795

Support the swing from underneath with a block of wood.

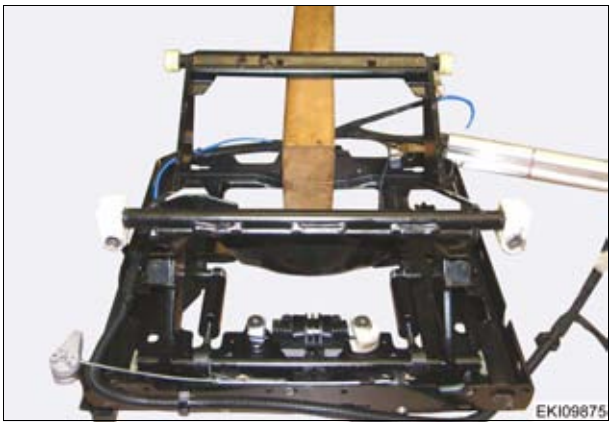


Fig. 143. I008796

Fit bearing rollers.



Fig. 144. I008797

Fit thrust bearing.



Fig. 145. I008798

Screw thrust bearing tight.



Fig. 146. I008799

Fit compressor.

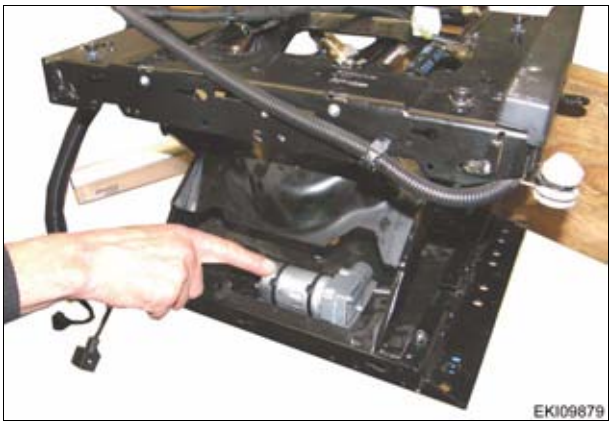


Fig. 147. I008800

Insert and tighten stopper.



Fig. 148. I008801

Install pneumatic spring.



Fig. 149. I008802

Insert pneumatic spring in the guide and screw tight.



Fig. 150. I008803

Install and lock pneumatic spring.

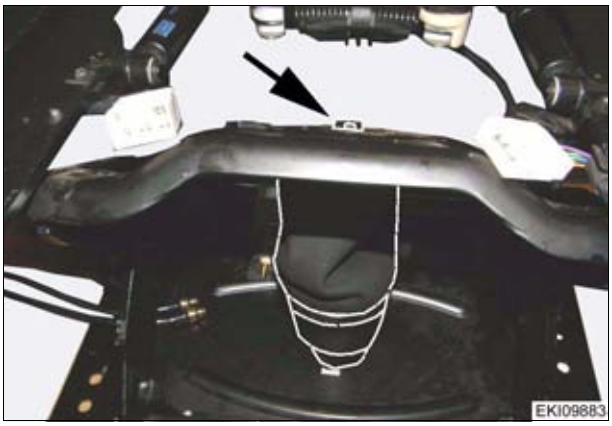


Fig. 151. I008804

Connect hoses to pneumatic spring and lock with spring wire.



Fig. 152. I008805

Screw air distributor tight.



Fig. 153. I008806

Connect separation point.

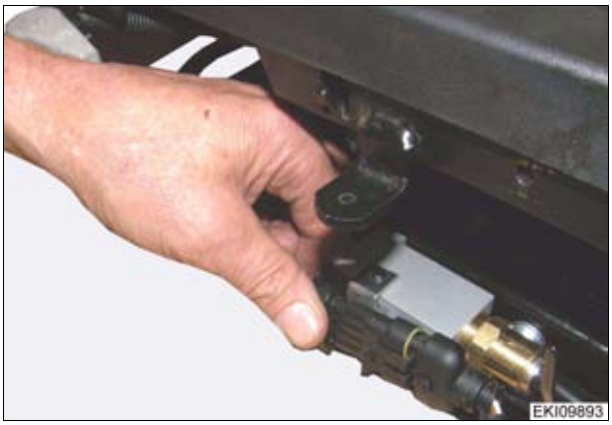


Fig. 154. I008827

Connect air hose to compressor.

NOTE: *Ensure the air hose is fitted securely!*



Fig. 155. I008807

Secure air hose with ring.



Fig. 156. I008808

Install e-box on seat console.
Use an M5 screw to screw on the e-box.

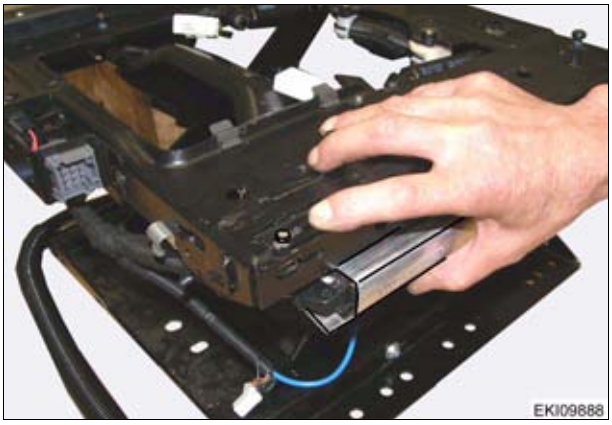


Fig. 157. I008809

Close the clinch seal on the cover.

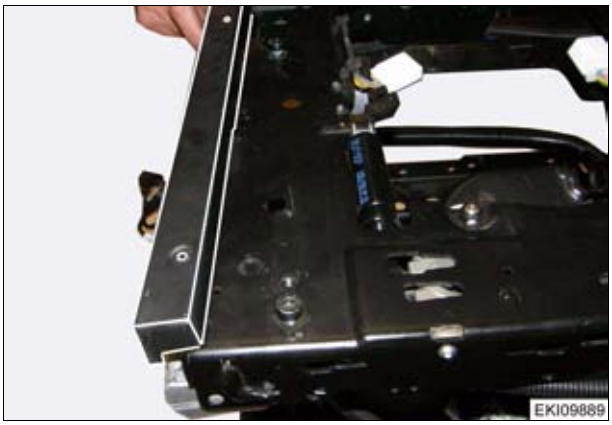


Fig. 158. I008810

Install separation points.



Fig. 159. I008811

Install damper.

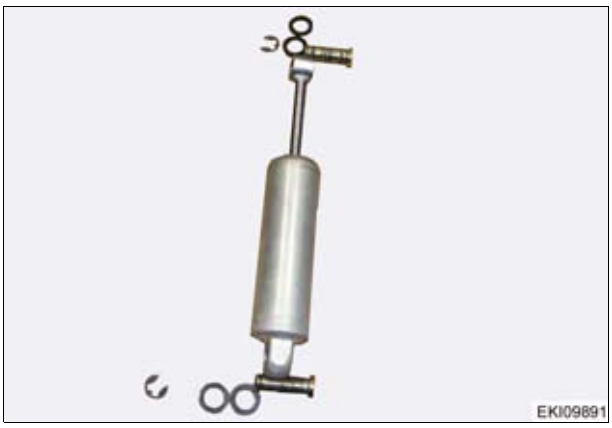


Fig. 160. I008812

Use bolts to delimit the damper on the seat console and the swing.



Fig. 161. I008813

Connect air hose (black) and check for secure connection.

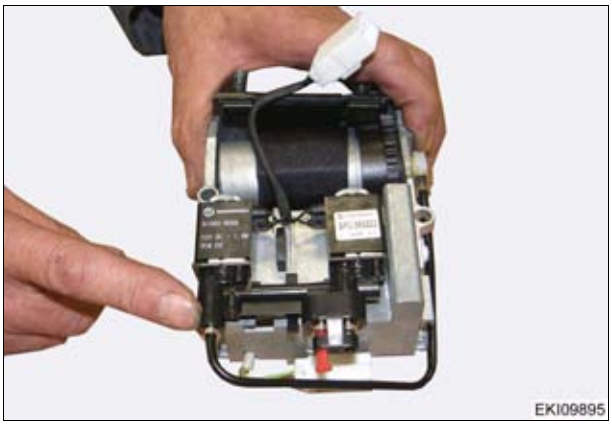


Fig. 162. I008828

Screw "retractor" control to the swing.



Fig. 163. I008829

Connect "blue" air hose and check for secure connection.



Fig. 164. I008831

Screw belt to seat console.



Fig. 165. I008832

WARNING: Do not reach into the swing.

Preload pneumatic spring with compressed air.



Fig. 166. I008833

Screw on base plate.

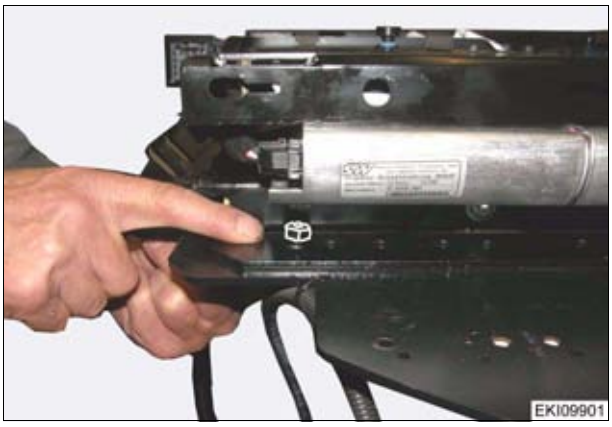


Fig. 167. I008834

Place seal over connector.



Fig. 168. I008850

Screw connector to the solenoid valves of the "additional volume" air reservoir.



Fig. 169. I008851

Connect air hoses.

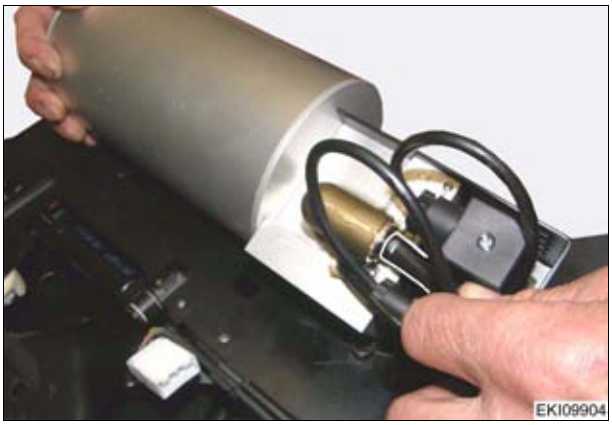


Fig. 170. I008852

Screw "additional volume" air reservoir to the seat console.



Fig. 171. I008854

Connect separation point to the operator's seat.



Fig. 172. I008853

Hook on gaiter.



Fig. 173. I008740

Fit covers.
Mount seat upper section "seat pan".



Fig. 174. I008739

A	General
B	Faults
C	Documents and Diagrams
D	Component location
E	Testing
F	Setting and Calibration
G	Repair
H	Service – Info

5500

Overall system/air conditioning system

5500 Overall system/air conditioning system

A General. 5

G Repair. 11

A General

1 Diagram: automatic air conditioning system 7

1 Diagram: automatic air conditioning system

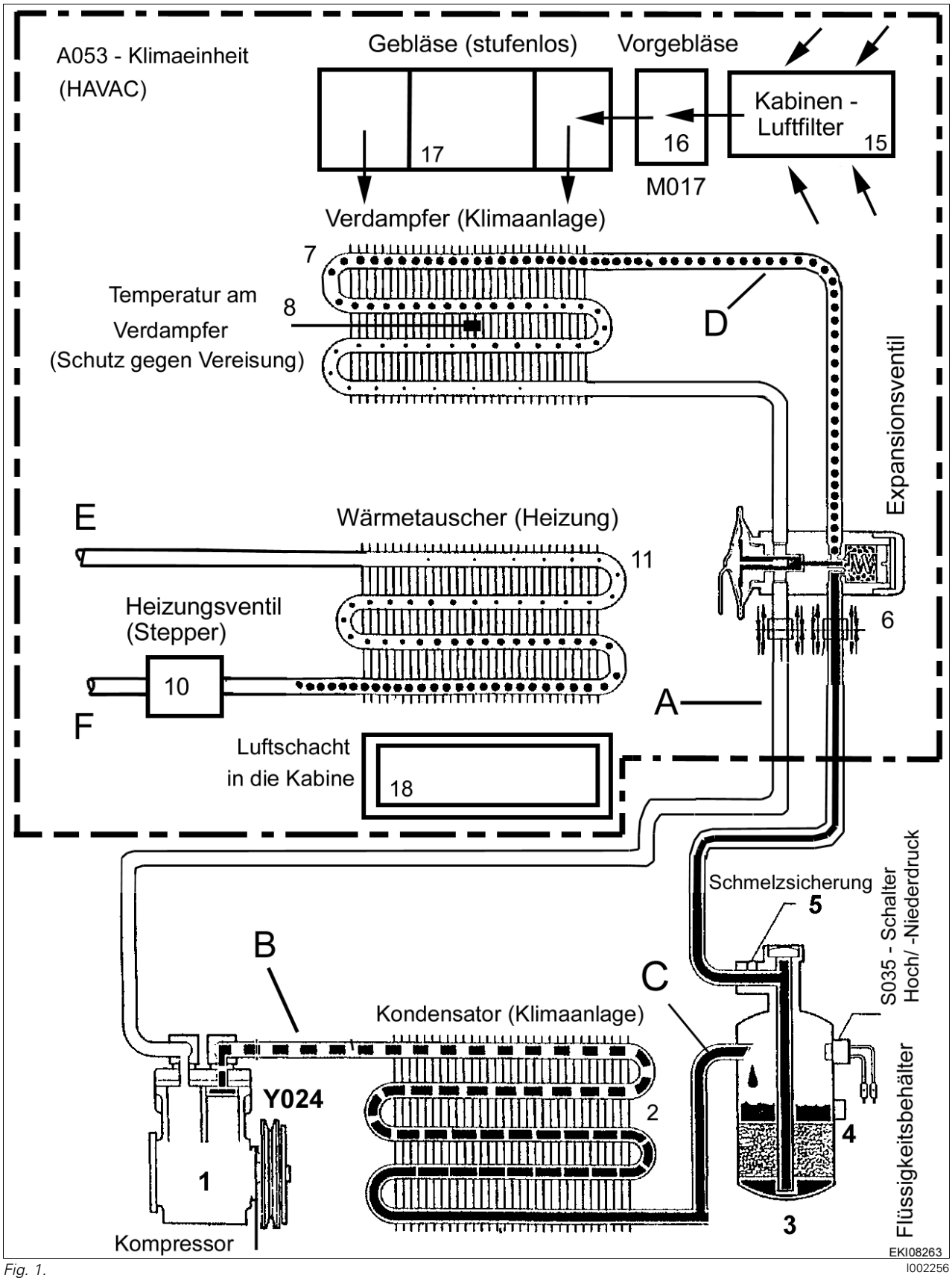


Fig. 1. I002256

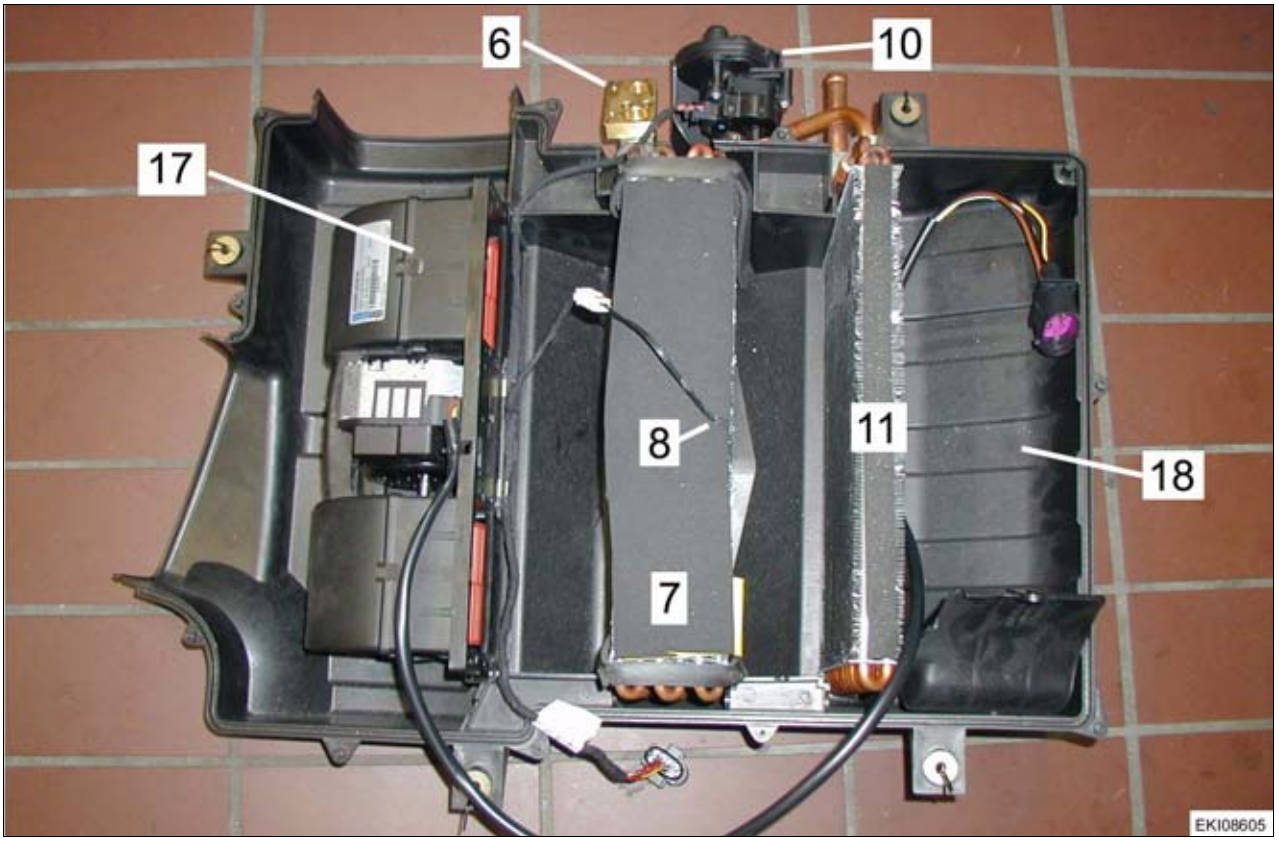


Fig. 2. I002407

Item	Designation	Item	Designation
1	Y024 compressor (air conditioning unit)	10	Heater valve
2	Condenser	11	Heat exchanger
3	Fluid reservoir	E	Hot water (feed)
S035	High/low-pressure switch	F	Hot water (discharge)
4	Sight glass		
5	Safety fuse		
6	Expansion valve	15	Air filter (cab)
7	Evaporator	16	M017 primary fan
A	Suction pressure (gaseous)	17	Fan (continuous)
B	High-pressure (gaseous)	18	Ventilating shaft
C	High-pressure (liquefied)		
D	Suction pressure (liquefied)		

NOTE: *Chapter 9000 Reg. E – Measuring and testing A053 air conditioning unit (HVAC).*
see §2



Fig. 3. I001495

The A038 ECU, central electrical system controls the automatic air conditioning system.

NOTE: *see §12*



Fig. 4. I000741

Automatic air conditioning system sensors		
Sensor	**Designation**	**Reference**
Evaporator temperature sensor (protection against icing up)	Component of A053 air conditioning system (HVAC)	*see §12*
Output temperature sensor (footwell)	B071	*see §12*
Solar sensor (sunlight "radiated warmth/brightness")	B073	*see §12*
Internal temperature sensor	B074	*see §12*
Exterior temperature sensor, (on front of air conditioning condenser)	B076	*see §12*
High pressure/low pressure switch	S035	*see §12*

Actuators on the automatic air conditioning system		
Actuator	**Designation**	**Reference**
Primary fan (intake air)	M017	*see §12*
Fan (continuous)	Component of A053 air conditioning system (HVAC)	*see §12*
Heater valve (stepper motor)	Component of A053 air conditioning system (HVAC)	*see §18* *see §12*
Air conditioning compressor	Y024	*see §12* *see §135*
Vent flap actuator motor (for top air nozzles)	M015	*see §12*
Vent flap actuator motor (for bottom air nozzles)	M016	*see §12*

G Repair

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2 Removing the air conditioning unit (HVAC) 15
3 Installing the air conditioning unit (HVAC) 20
4 Removing the air box (B071, M015, M016) 25
5 Installing the air box 28

919 .. 0101-1000
919 .. 1001-
922 .. 0101-1000
922 .. 1001-
925 .. 0101-1000
925 .. 1001-
928 .. 0101-1000
928 .. 1001-
931 .. 0101-1000
931 .. 1001-
934 .. 0101-1000
934 .. 1001-

1 Air conditioning unit service hatch

Preliminary work:

– Remove floor mat

Loosen cover screws in cab floor.



Fig. 1. I001730

Remove the service hatch cover in the cab floor.



Fig. 2. I001731

Loosen the service cover bolts on the air conditioning unit.

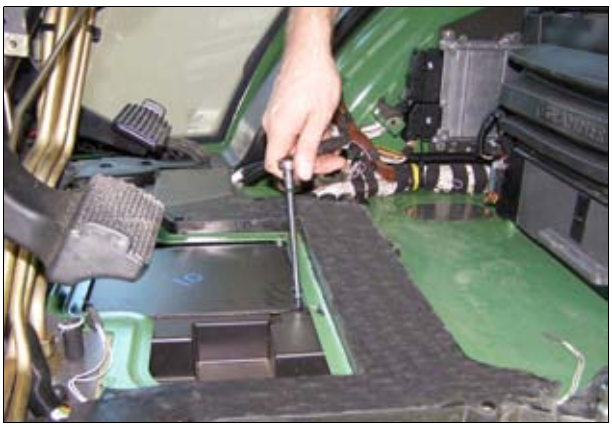


Fig. 3. I001733

Remove the air conditioning unit service hatch cover.



Fig. 4. I001734

Disconnect the connector and carefully remove the temperature sensor on the evaporator.



Fig. 5. I001735

This allows access to the expansion valve and hot water mixing valve, and enables the air conditioning unit to be cleaned.



Fig. 6. I001736

2 Removing the air conditioning unit (HVAC)

Preliminary work:

– Remove the cab (see Chapter 8100)
– If necessary, remove the cab panels

Remove floor mat from the cab.



Fig. 7. I001485

Remove panel from the ventilation shaft.

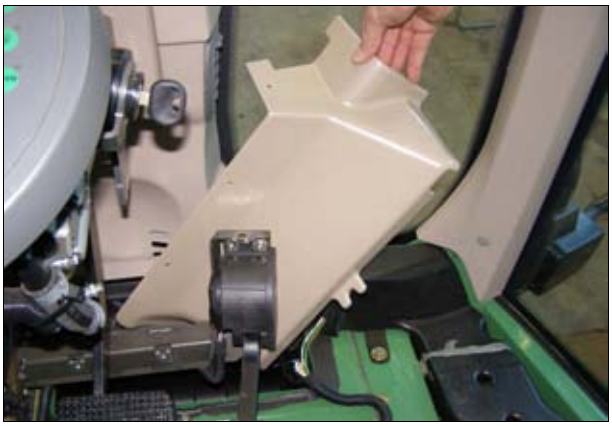


Fig. 8. I001486

Unplug the air conditioning unit.



Fig. 9. I001487

Remove the air filter cover and air filter.



Fig. 10. I001488

Remove the air filter housing.



Fig. 11. I001489

Loosen nuts on the protective pan.



Fig. 12. I001490

Remove the protective pan.



Fig. 13. I001491

Loosen air duct bolts and remove left and right air ducts.



Fig. 14. I001492

Loosen clamps and pull out the heating hoses.



Fig. 15. I001493

Loosen bolts on the air conditioning unit.

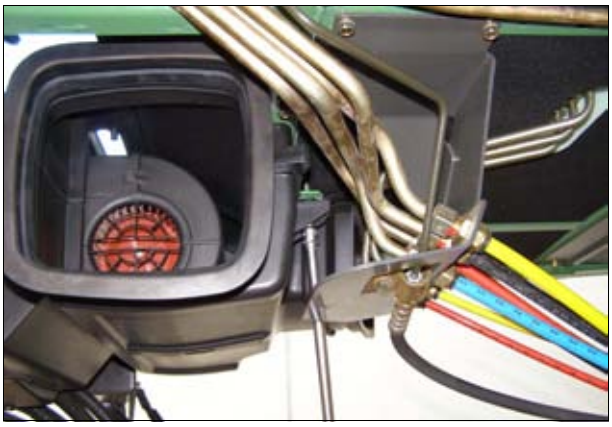


Fig. 16. I001494

Remove the entire air conditioning unit downwards.



Fig. 17. I001495

Remove both connecting sleeves.



Fig. 18. I001497

Loosen the fixing bolts on the top part of the housing.



Fig. 19. I001496

Remove top part of the air conditioning unit.



Fig. 20. I001498

Remove the evaporator from the housing.



Fig. 21. I001499

Loosen the fixing clamp and the butterfly valve fixing bolt.



Fig. 22. I001500

Remove the heat exchanger from the housing.



Fig. 23. I001501

Loosen the fan fixing bolts.



Fig. 24. I001502

Remove fan from its box.



Fig. 25. I001503

3 Installing the air conditioning unit (HVAC)

Install the fan into its box.



Fig. 26. I001503

Mount the fan fixing screws.

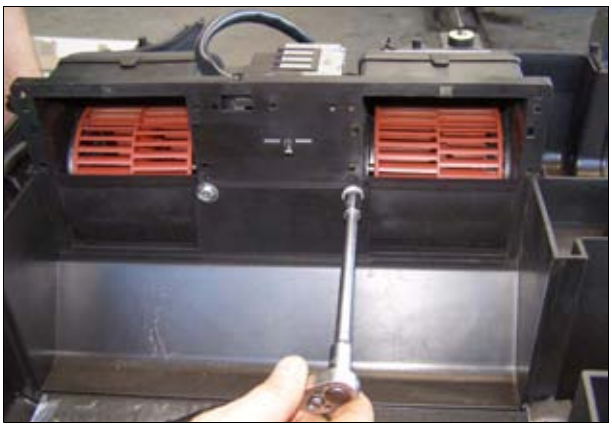


Fig. 27. I001502

Install the heat exchanger into the box.



Fig. 28. I001501

Mount the butterfly valve fixing bolt and the pipe clamp.



Fig. 29. I001500

Install the evaporator into the box.



Fig. 30. I001499

Mount the top part of the box.



Fig. 31. I001498

Fit the bolts on the air conditioning housing.



Fig. 32. I001496

Install both connecting sleeves.



Fig. 33. I001497

Mount the air conditioning unit on the underside of the cab.



Fig. 34. I001495

Mount the air conditioning unit fixing bolts.



Fig. 35. I001494

Install the heating hoses with clamps.



Fig. 36. I001493

Install left and right air ducts.



Fig. 37. I001492

Install the protective pan.



Fig. 38. I001491

Mount nuts on the protective pan.



Fig. 39. I001490

Install the air filter housing.



Fig. 40. I001489

Mount air filter and air filter cover.



Fig. 41. I001488

Plug in the air conditioning unit connector.



Fig. 42. I001487

Install the ventilation shaft panel.

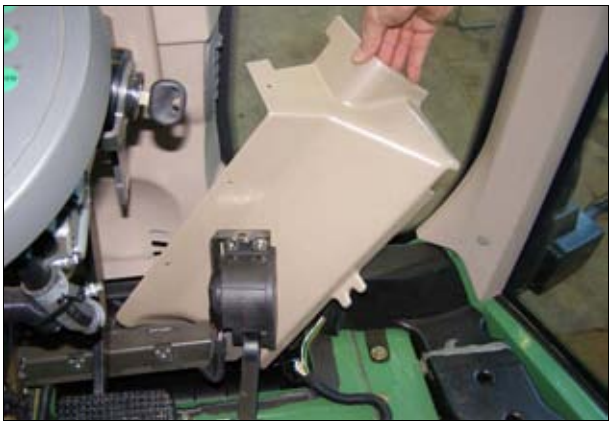


Fig. 43. I001486

Place floor mat in the cab.



Fig. 44. I001485

Final procedures:

– Install all removed panels
– Attach the cab, see chapter 8100

4 Removing the air box (B071, M015, M016)

Preliminary work:

– Remove panels on the steering column
– Remove front windscreen wiper arm
– Fold up the mat

NOTE: *Tasks have been carried out with the cab removed for better visibility.*

Loosen the nut on the windscreen wiper motor.



Fig. 45. I001515

Remove the fixing bolt on the windscreen wiper motor.

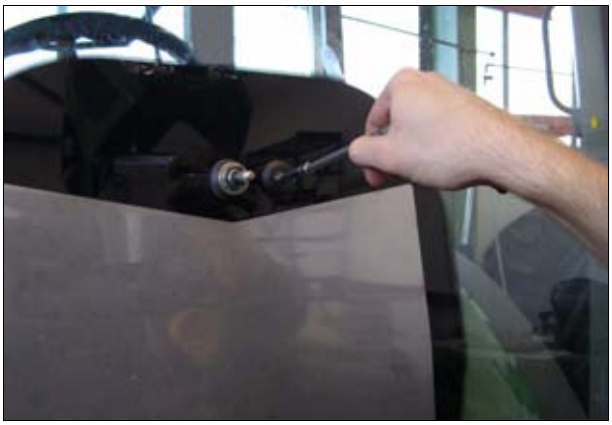


Fig. 46. I001516

Release and unplug the connector.

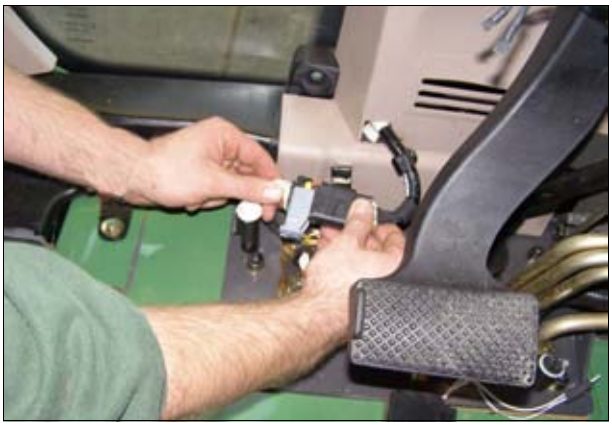


Fig. 47. I001520

Remove the bracket bolts.



Fig. 48. I001517

Remove the windscreen wiper motor.



Fig. 49. I001518

Remove the retaining bolts on the air box.



Fig. 50. I001519

Remove the air box from above.



Fig. 51. I001521

Remove the screws on the air box cover.



Fig. 52. I001522

Remove the output temperature sensor (B071) or actuator motor (M015, M016).

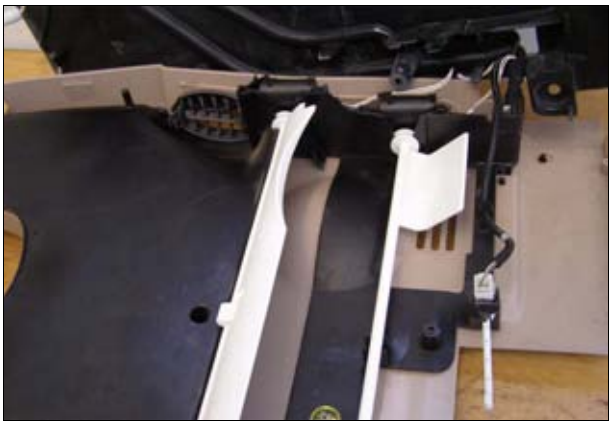


Fig. 53. I001523

5 Installing the air box

Install the output temperature sensor and actuator motors into the air box.

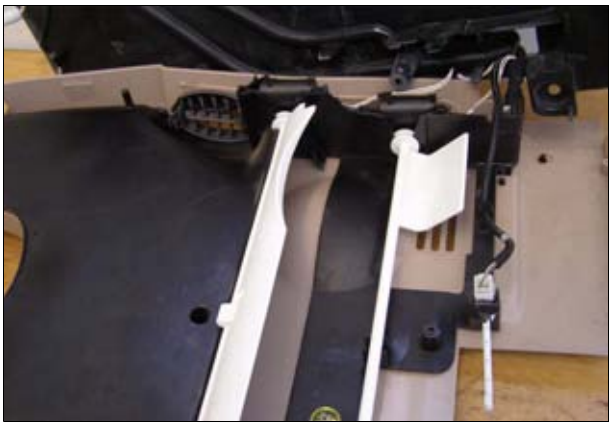


Fig. 54. I001523

Fit the air box cover and tighten screws, ensuring that the flaps can move freely.



Fig. 55. I001522

Insert the air box from above between the steering column and the windscreen.



Fig. 56. I001521

Fit retaining bolts on the air box.



Fig. 57. I001519

Install the windscreen wiper motor.



Fig. 58. I001518

Tighten the retaining bolts on the bracket.



Fig. 59. I001517

Plug in and lock the connector.

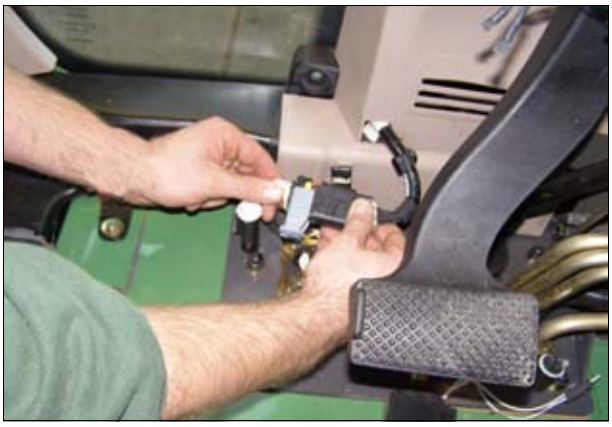


Fig. 60. I001520

Tighten the fixing bolt on the windscreen wiper motor.

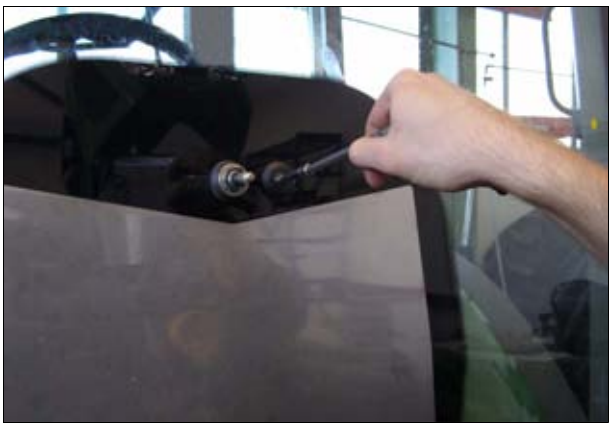


Fig. 61. I001516

Fit the nut of the windscreen wiper motor.



Fig. 62. I001515

Final procedures:

– Install the front windscreen wiper arm and align wiper area
– Replace floor mat
– Install the steering column panel

A	General
B	Faults
C	Documents and Diagrams
D	Component location
E	Testing
F	Setting and Calibration
G	Repair
H	Service – Info

8100

Overall system/cab

8100 Overall system/cab

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A General

1 Reverse drive control function and operation. 7

1 Reverse drive control function and operation

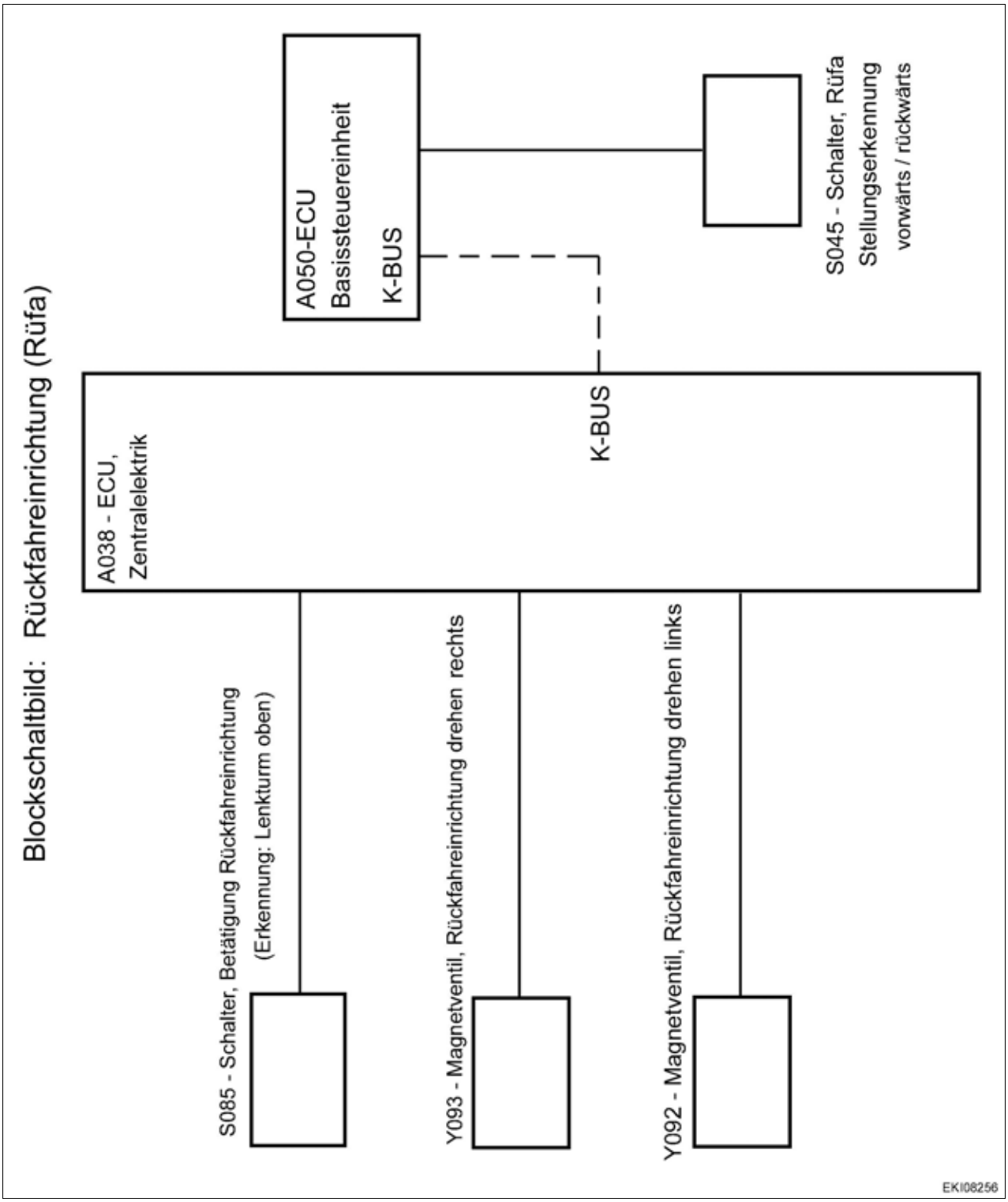


Fig. 1. I004826

Functional description: "Rüfa" reverse drive control	
Component	**Function**
S045 - Switch, reversing driver stand	Recognises the position from the operator platform (forward or reverse travel)
S085 - Switch, reverse operation (RÜFA) actuation	Recognises the position from steering column (locked at bottom or raised)
A050 - ECU, basic control unit	The **S045** - Switch, reversing driver stand transmits the position of the operator platform to the **A050** - ECU, basic control unit The **A050** - ECU, basic control unit: – Limits the maximum speed when reversing to 33 Km/h – Fixes the joystick actuation direction (**A039** - MFA, multifunction armrest). – Transmits the position of the operator platform via the control bus to the **A038** - ECU, central electrical system
A038 - ECU, central electrical system	The **A038** - ECU, central electrical system detects, via the **S085** - Switch, reverse operation (RÜFA) actuation, that the operator platform should be turned. The **S045** - Switch, reversing driver stand (**A050** - ECU, basic control unit - control bus) transmits the current operator platform position to the **A038** - ECU, central electrical system. The **A038** - ECU, central electrical system energises the Y092/Y093 solenoid valves depending on the direction the operator platform turns, so that this movement of the operator platform is pneumatically assisted.
Y092 - Solenoid valve, reverse operation (RÜFA), rotate to left	Assistance when operating the operator's seat Turn to left (Turn operator platform while reversing)
Y093 - Solenoid valve, reverse operation (RÜFA), rotate to right	Assistance when operating the operator's seat Turn to right (Turn operator platform during forward travel)

Turning the operator platform

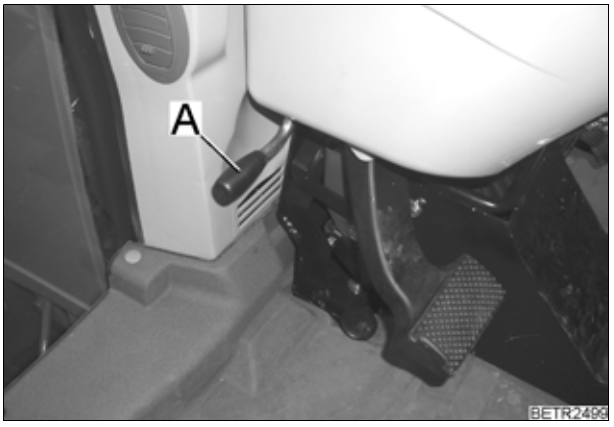


Fig. 2. I004822

Basic requirements
– Compressed air system filled
– Engine OFF
– Apply the hand brake
– Ignition ON.

Turning the operator platform
– Fold up passenger seat
– Push seat forward

– Release the lock with lever (A).
– Raise steering column
– Turn steering column clockwise as far as possible
– Fold steering down until it clicks into place

NOTE: *Turn the operator stand carefully, changing the position of any obstructing parts such as A039 multifunction armrest, terminal.*

Once the operator platform is in the reverse travel position, display (A) appears on the A007 instrument panel.

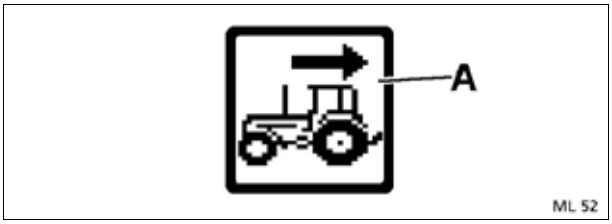


Fig. 3. I004823

NOTE: *Due to the turning assistance, it is not possible to return to the starting point during the turning process.*
The turning process must always be completed first.
The maximum speed in reverse is 33 Km/h

NOTE: *To get out of the operator's seat in reverse travel position, push the seat as far back as possible and turn it clockwise by 90°.*

NOTE: *Turn the operator stand carefully, changing the position of any obstructing parts such as A039 multifunction armrest, terminal.*

S045 switch, reverse operation positioning
X213 separation point


Cab, below rear window



Fig. 4. I003191

Solenoid for S045 switch


Cab, on steering column

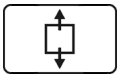

Raise steering column

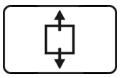


Fig. 5. I004824

S085 switch, reverse operation (detection: steering column, top)
X1650 separation point



Cab, on steering column



Raise steering column

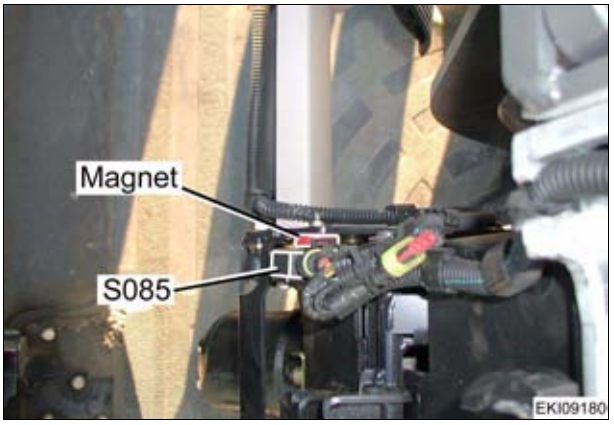


Fig. 6. I004825

Solenoid switch (contact)
(H 312.100.070.500)

Solenoid is upstream of the solenoid switch:
Switch closed

Solenoid removed from the solenoid switch:
Switch open

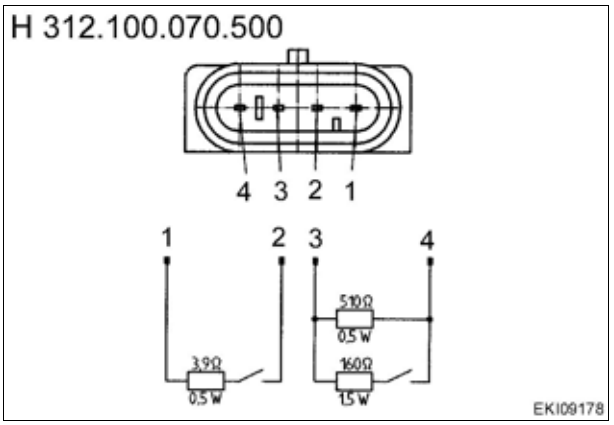


Fig. 7. I004821

G Repair

1 Removing the cab 13
2 Attaching the cab 21
3 Removing and installing the cab roof 28
4 Installing the windscreen and side window 34

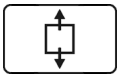
1 Removing the cab

Required tools:

- Crane
- Lifting gear (suspension device on the left and right, crossbeam)
- Support trestles
- Collecting pan for coolant

Preliminary work:

- Support the tractor to prevent any accidents and remove rear wheels
- Remove metal panels



Drain the coolant.

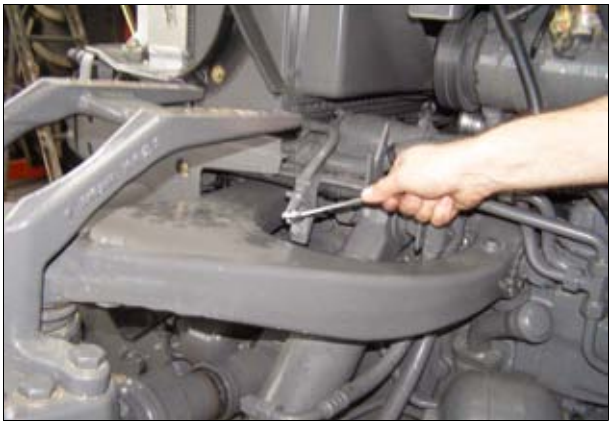
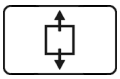


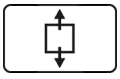
Fig. 1. I001470



Loosen the clamp on the exhaust silencer and remove the silencer.



Fig. 2. I001408



Remove the cover panel on the exhaust pipe.



Fig. 3. I001409

Disconnect terminal clamps from the battery terminals.



Fig. 4. I001413

Release latch and remove the 4 cab plugs.



Fig. 5. I001410

Remove the retaining bracket.

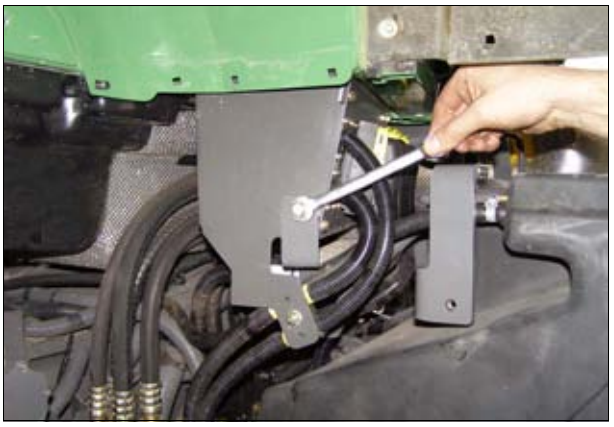


Fig. 6. I001428

Remove cable clamps and retaining brackets.



Fig. 7. I001412

Mark the hydraulic hoses for the steering system, disconnect at the separation point and seal open ends to prevent dirt from entering.



Fig. 8. I001411

Disconnect the clutch control line at the separation point and seal open ends to prevent dirt from entering.



Fig. 9. I001434

Depressurise the compressed air system, mark the compressed air hoses that lead to the cab floor and disconnect them at the separation points.
To do this, push the black plastic ring back and pull the hose out.



Fig. 10. I001414

To release the compressed air hoses, push the plastic ring back.

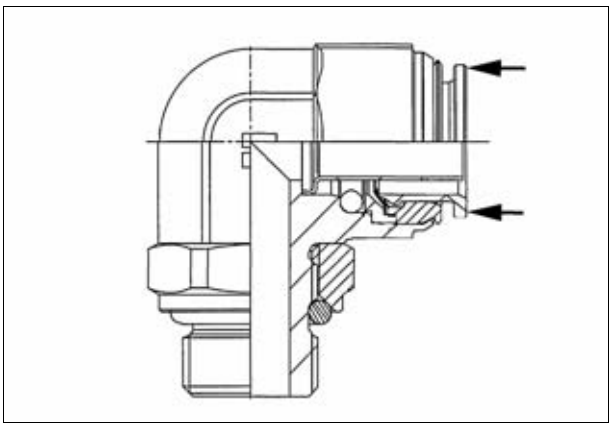


Fig. 11. I001760

Remove the remote control for the towing device from its holder.



Fig. 12. I001415

Back of left tank: loosen the clamp on the fuel line and disconnect the hose.

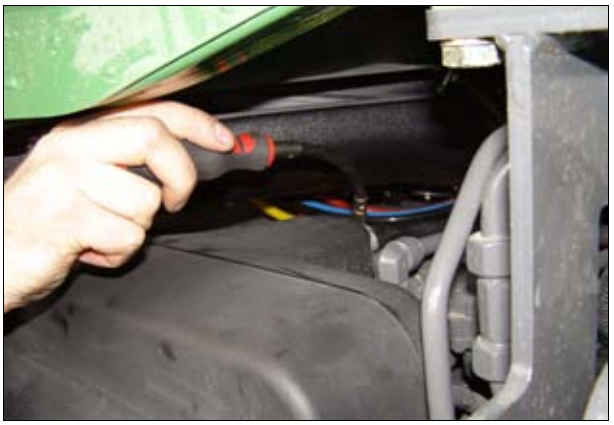


Fig. 13. I001417

Front of left tank: loosen the clamp on the fuel line and disconnect the hose.



Fig. 14. I001416

Remove the condenser bracket.

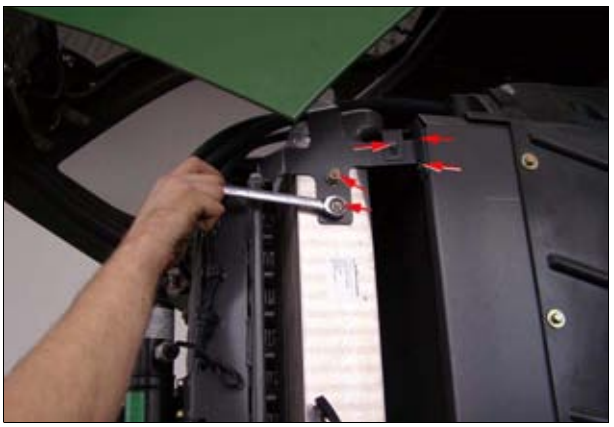


Fig. 15. I001418

Remove the guard plate from the radiator.



Fig. 16. I001419

Remove clamps and retaining brackets from the coolant hoses.



Fig. 17. I001420

Slacken and remove the air conditioning compressor belt.



Fig. 18. I001421

Remove the bolts on the air conditioning compressor. Place the air conditioning compressor and the condenser in the cab.

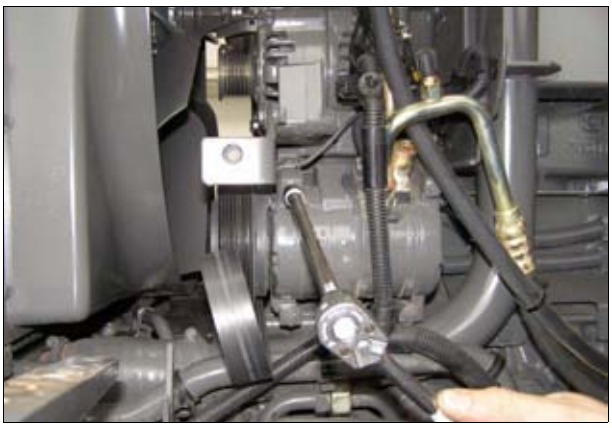


Fig. 19. I001422

Loosen hose clamps and remove the heating hoses.

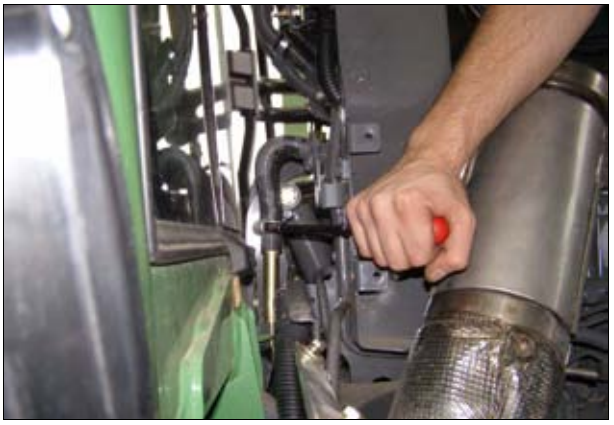


Fig. 20. I001423

Remove panels on the left and right of the cab roof.



Fig. 21. I001424

If installed: remove rotating beacons.



Fig. 22. I001425

Attach the left and right suspension device to the cab.
Use M10x30 10.9 hexagon socket head bolts.



Fig. 23. I001426

Mount the crossbeam on the left and right suspension device.
Carefully take the weight of the cab with the lifting gear.



Fig. 24. I001884

Remove bolt from the shock absorber.



Fig. 25. I001431

Remove bolt from the front cab suspension.



Fig. 26. I001472

Remove bolts from the front left and right cab bearing.



Fig. 27. I001430

Loosen bolts on the rear left and right cab bearing.



Fig. 28. I001471

Remove bolts from the rear left and right terminal block.



Fig. 29. I001433

NOTE: *Raise the cab.*
Ensure clearance for all components.

DANGER: Do not walk or stand under suspended loads!



Fig. 30. I001427

2 Attaching the cab

Attach the cab securely to the hoist and raise it to a position above the gearbox.
Ensure there is sufficient clearance between all components.

DANGER: Do not walk or stand under suspended loads!



Fig. 31. I001884

Lower the cab,
install one hexagonal bolt to both the left and right front cab bearing.
Tightening torque = 206 Nm



Fig. 32. I001430

Install the front cab suspension hexagonal bolt.
Tightening torque = 85 Nm



Fig. 33. I001472

Install the shock absorber hexagonal bolts.
Tightening torque = 85 Nm



Fig. 34. I001431

Fit left and right bearing pedestal.
Tightening torque = 85 Nm



Fig. 35. I001433

Tighten the hexagonal bolts of the left and right rear cab suspension.
Tightening torque = 85 Nm



Fig. 36. I001471

Take the condenser and air-conditioning compressor out of the cab and install in their correct positions.



Fig. 37. I001422

Fit the air-conditioning compressor drive belt.



Fig. 38. I001421

Secure the coolant hoses with clamps and retainers.



Fig. 39. I001420

Fit the ventilation plate.



Fig. 40. I001419

Fit the fuel pipe to the front left hand fuel tank using a clamp.



Fig. 41. I001416

Fit the fuel pipe to the rear left hand fuel tank using a clamp.

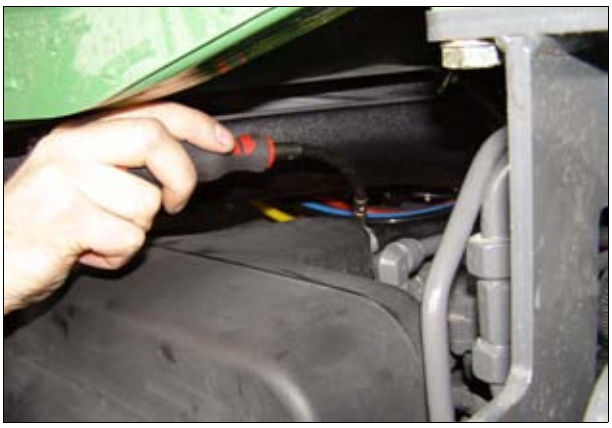


Fig. 42. I001417

Attach the trailer mechanism cable pull.



Fig. 43. I001415

Fit compressed air hoses in accordance with markings.



Fig. 44. I001414

Fit steering hydraulic hoses in accordance with markings.



Fig. 45. I001411

Fit the clutch actuator control line.



Fig. 46. I001434

Attach the cab connectors.



Fig. 47. I001410

Fit the retaining bracket.

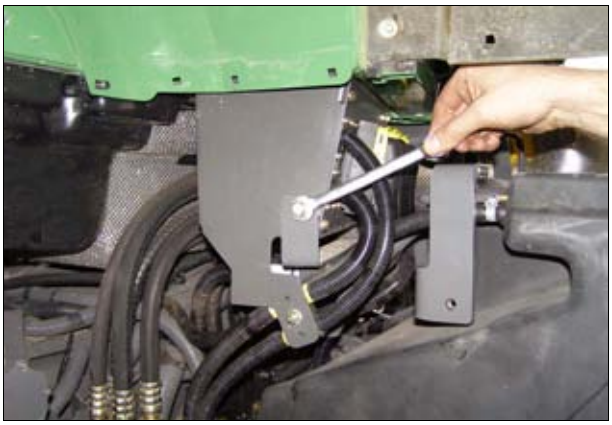


Fig. 48. I001428

Attach the battery terminal connections to the battery.



Fig. 49. I001413

Fit the cable clamps and retainers.



Fig. 50. I001412

Fit the heater hoses using hose clamps.

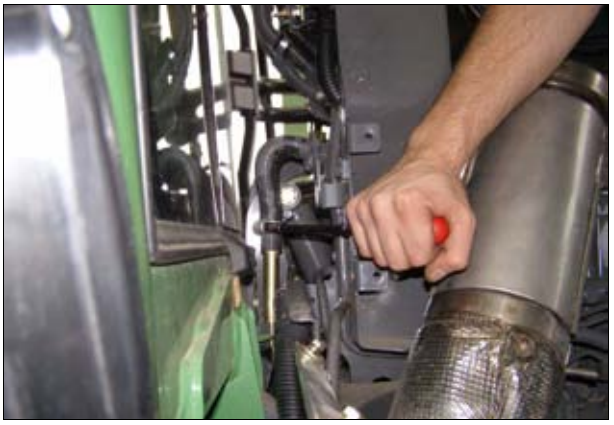


Fig. 51. I001423

Fit the cover panel on the right hand side of the tractor.



Fig. 52. I001409

Attach the silencer using a clamp.



Fig. 53. I001408

Completely remove the hoisting gear.



Fig. 54. I001426

Attach the left and right cab roof panels.



Fig. 55. I001424

If available: fit rotating beacons.



Fig. 56. I001425

Final procedures:

– Top up coolant water
– Fit cover panels
– Fit rear wheels

3 Removing and installing the cab roof

Detach sunblind at the front and back



Fig. 57. I002502

Remove edge shield from the roof hatch



Fig. 58. I002513

Remove cover from the oddments tray



Fig. 59. I002500

Unscrew connection panel on the right C pillar



Fig. 60. I002501

Remove all loudspeakers



Fig. 61. I002503

Remove interior rear view mirror



Fig. 62. I002504

Unscrew handle on the right A pillar and the roof



Fig. 63. I002507

Remove all pillar panelling on the left



Fig. 64. I002505

Remove interior lighting on the left and right



Fig. 65. I002508

Loosen rear terminal strip



Fig. 66. I002509

Remove mounting bolts on the front terminal strip and take off pillar panel



Fig. 67. I002510

Remove the cover from the rear windscreen wiper motor and disconnect the wiring



Fig. 68. I002511

Remove the mounting bolts for the roof lining



Fig. 69. I002506

Carefully remove and lower the roof lining

NOTE: *In order to remove the roof lining from the tractor, the right side window and the terminal strip must be removed.*

Disconnect front connectors on the left and right



Fig. 70. I003238

Remove headlights, disconnect wires to the headlights and pull them inside



Fig. 71. I003241

Disconnect the front and rear connectors of the windscreen washer hose (arrow)



Fig. 72. I003247

Pull wires to the rotating beacons into the vehicle



Fig. 73. I003243

Remove bracket for the socket plate

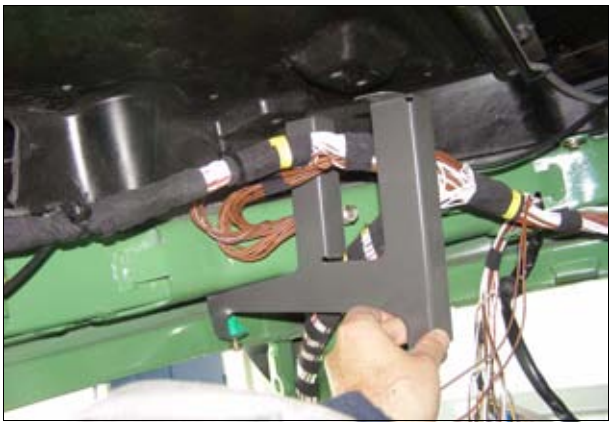


Fig. 74. I003239

Disconnect aerial wire



Fig. 75. I003240

Disconnect wires to the number plate light and pull them inside the vehicle



Fig. 76. I003242

Disconnect wires to the headlamps and pull them inside



Fig. 77. I003244

Remove cable fasteners from the roof, remove mounting bolts in the roof and lift the roof off from above



Fig. 78. I002512

NOTE: *The cab roof is installed by following the instructions for removal in reverse.*

4 Installing the windscreen and side window



Fig. 79. I008087

NOTE: *Ensure that the correct clamping plates are mounted in the right position.*
Tightening torque for all clamping plates: Tighten in increments to 7 Nm + 3 Nm



Fig. 80. I008088

919 .. 0101-1000
919 .. 1001-
922 .. 0101-1000
922 .. 1001-
925 .. 0101-1000
925 .. 1001-
928 .. 0101-1000
928 .. 1001-
931 .. 0101-1000
931 .. 1001-
934 .. 0101-1000
934 .. 1001-

NOTE: *Clamping plate tightening torque: Tighten in increments to 7 Nm + 3 Nm*

A	General
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D	Component location
E	Testing
F	Setting and Calibration
G	Repair
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8610

Power lift/EPC electro-hydraulic control

8610 Power lift/EPC electro-hydraulic control

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A General

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1 Slip control system operation and function

Functional description of the electronic slip control system

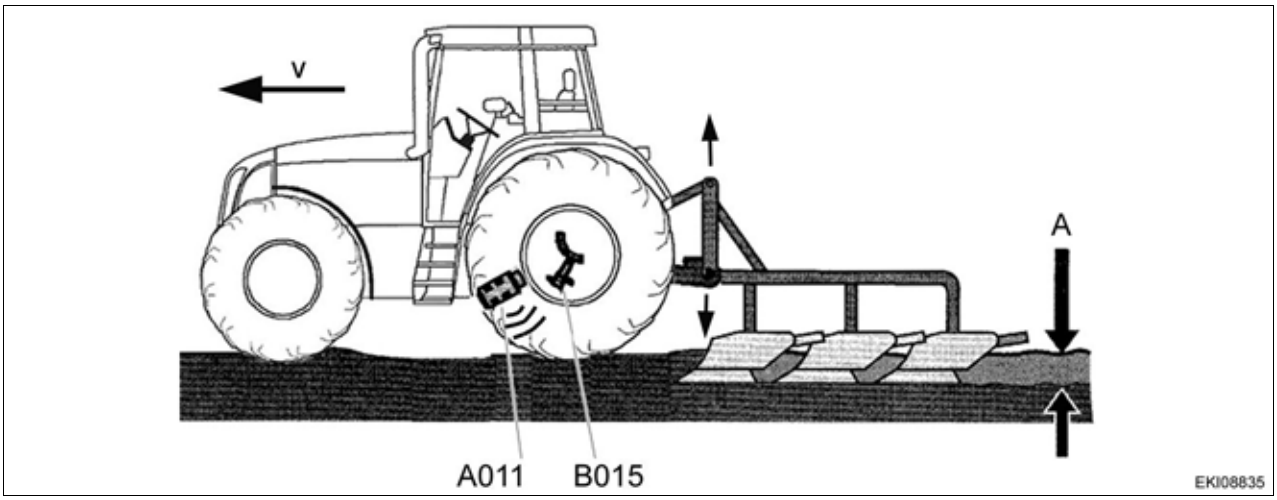


Fig. 1. I002940

Item	Designation	Item	Designation
A011	Radar sensor	A	Working depth
B015	Bevel pinion sensor	V	Travel speed

WARNING: The vehicle is equipped with an A011 radar sensor.
Do not look directly into the radar sensor (microwave radiation) !

In order to make the best possible use of the tractor's tractive power in the field, it is physically essential to allow the drive wheels a relatively large slip.
However, if the slip exceeds values of 25-30%, unacceptable drawbacks occur.
In order to control the slip for this purpose, the **actual travel speed (A011 radar sensor)** is calculated and compared with the **theoretical travel speed (B015 bevel pinion sensor)**.
The A050 ECU basic units uses these speed signals (A011, B015) to calculate the current slip of the tractor

Slip (%) =
((theoretical speed – actual speed) /theoretical speed) x 100%

Slip (%)	Rear power lift
Slip increases	**The rear power lift is raised** and reduces the traction of the mounted implement by reducing its working depth
Slip decreases	**The rear power lift is lowered**

Slip control provides the following advantages

- Time and fuel savings
- Tyre wear is reduced
- The ground is subjected to less damage
- Getting stuck is avoided
- Less pressure is placed on the driver

NOTE: *see §3*

2 Functional description of B031/B032 left/right draught sensing pin

Functional description of B031/B032 draught sensing pin (right/left)

The B031/B032 draught sensing pin is designed to be the bearing pin for the lower link, which can electrically detect the forces in the link point according to direction.

To measure the shear forces working on the pin, a transformer is fitted in a bore hole of the pin symmetrical with the bearing shear planes. This transformer forms a magnetic circuit together with the pin surrounding it.

The B031/B032 draught sensing pin is fed with a supply voltage of 8.5 VDC at pins 1 (-) and 3 (+).

The supply voltage is transformed into alternating current in the B031/B032 draught sensing pin.

If the B031/B032 draught sensing pin is subjected to shear resulting from tractive or pressure forces between the bearings, the magnetic characteristics of the pin change.

This change alters the voltage at the signal line (pin 2).

In load-free status (neutral), a voltage of approx. 4.22 VDC is present at the signal line.

The signal voltage changes under load.

The change in signal current is proportional to force F and is direction-dependent.

The fitting position of the B031/B032 draught sensing pin must be observed.

Observe the fitting position (arrow) of B031/B032 draught sensing pin.



Fig. 2. I001508

Tractive or pressure forces F acting on B031/B032 draught sensing pin

F	tractive or pressure force
FR	force on right lower link
FL	force on left lower link
1	lower link bearing
2	integrated electronics
3	coils, transformer

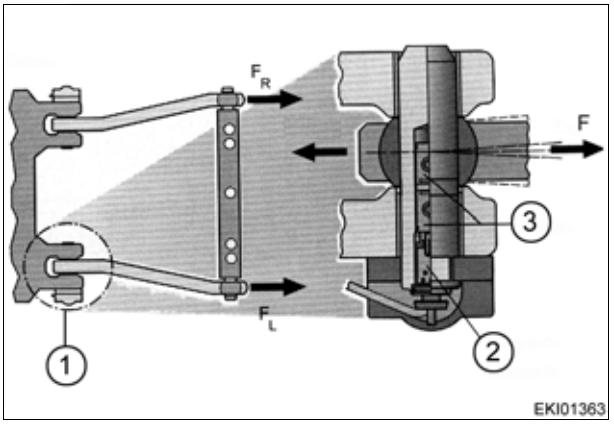


Fig. 3. I001481

Structure of B031/B032 draught sensing pin

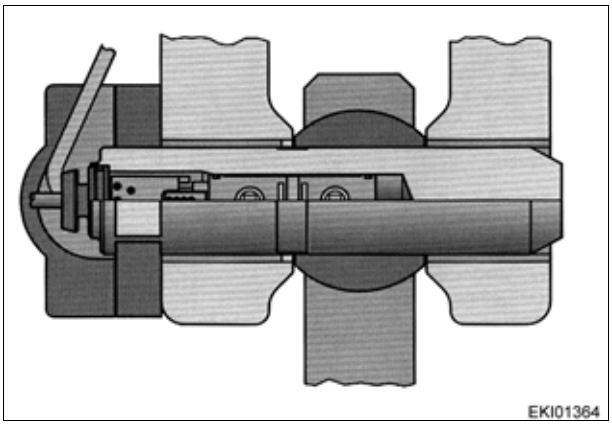


Fig. 4. I001482

Working principle of B031/B032 draught sensing pin

1	primary coil
2	secondary coil
3	primary pole surface
4	secondary pole surface
5	steel jacket
F	tractive or pressure force
a	symmetrical magnetic field
b	asymmetrical magnetic field

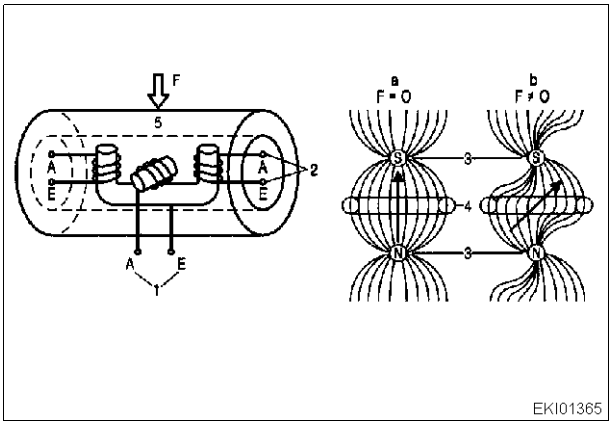


Fig. 5. I001483

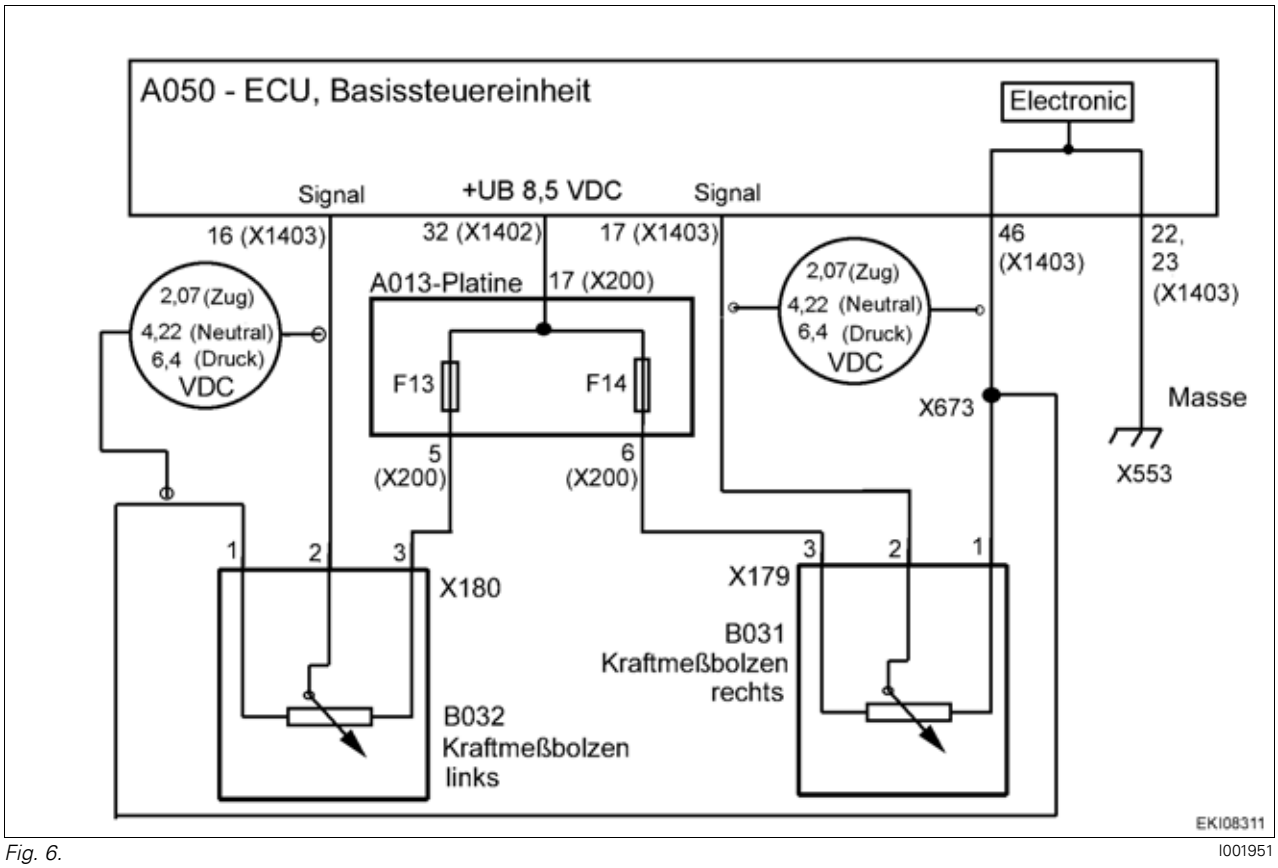


Fig. 6. I001951

Item	Designation	Note
A013 PCB microfuse (microfuse no. 13 = B032 left draught sensing pin) (microfuse no. 14 = B031 right draught sensing pin)		
X200	Separation point on A013 PCB_microfuse	
Pin 17	+ supply for the A013 PCB microfuse (8.5 VDC)	Switch on ignition.
Pin 6	+ supply for B031 draught sensing pin (8.5 VDC)	Switch on ignition.
Pin 5	+ supply for B032 draught sensing pin (8.5 VDC)	Switch on ignition.
A050 ECU, basic control unit		
X1402	Separation point on the A050 ECU, basic control unit	
X1403	Separation point on the A050 ECU, basic control unit	
Pin 32 (to X1402)	+ supply for the A013 PCB microfuse (8.5 VDC)	Switch on ignition.
Pin 17 (at X1403)	B031 signal	
Pin 16 (to X1403)	B032 signal	
Pin 46 (at X1403)	Sensor system earth	
Pins 22 and 23 (to X1403)	Electronics earth	
B031 draught sensing pin, right		
X179	Separation point on B031 draught sensing pin	
Pin 1	Earth	
Pin 2	Signal	
Pin 3	+ supply (8.5 VDC)	Switch on ignition.
B032 draught sensing pin, left		
X180	Separation point on B032 draught sensing pin	
Pin 1	Earth	
Pin 2	Signal	
Pin 3	+ supply (8.5 VDC)	Switch on ignition.
X553 earth pin		

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1 EPC valves

EPC cut-off valve, rear SA/DA (Professional)

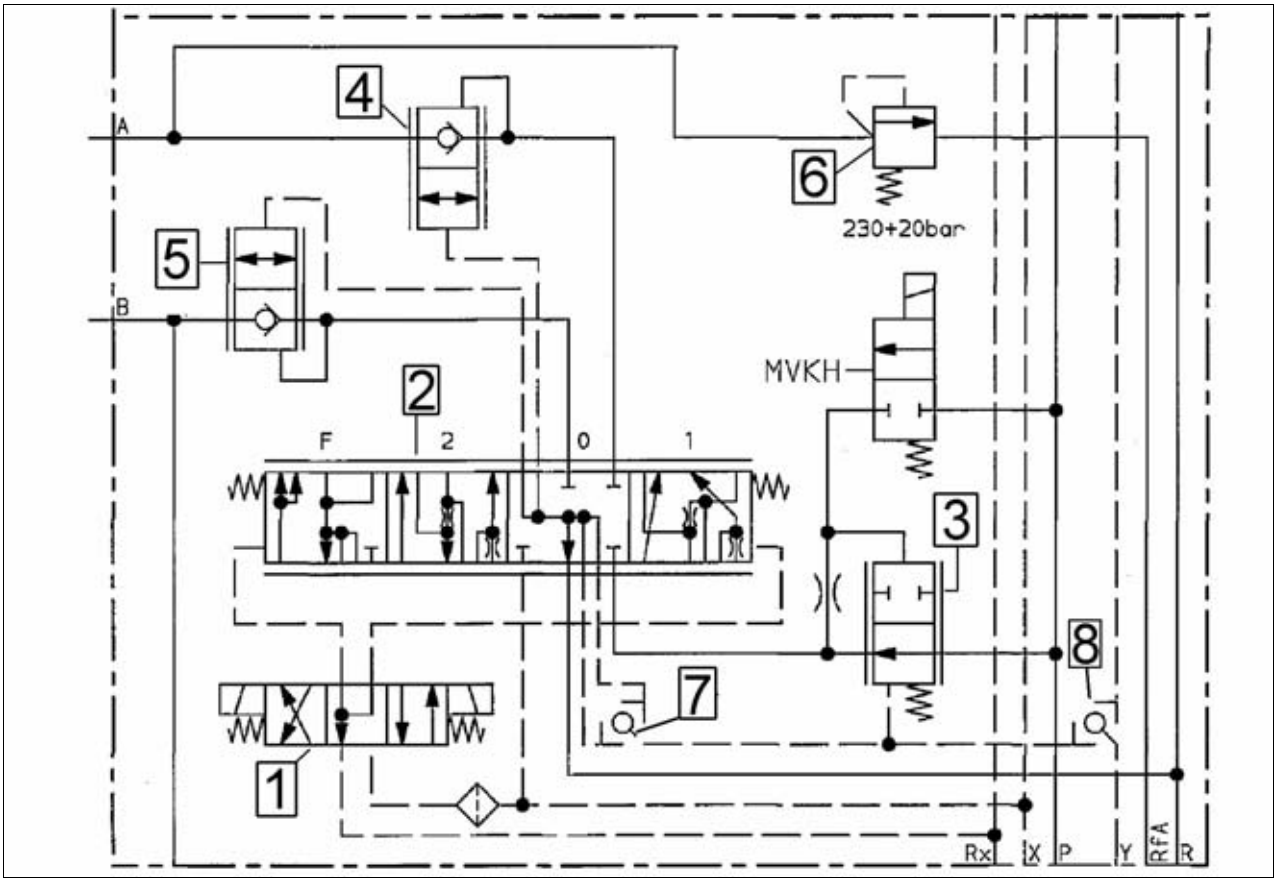


Fig. 1. I007232

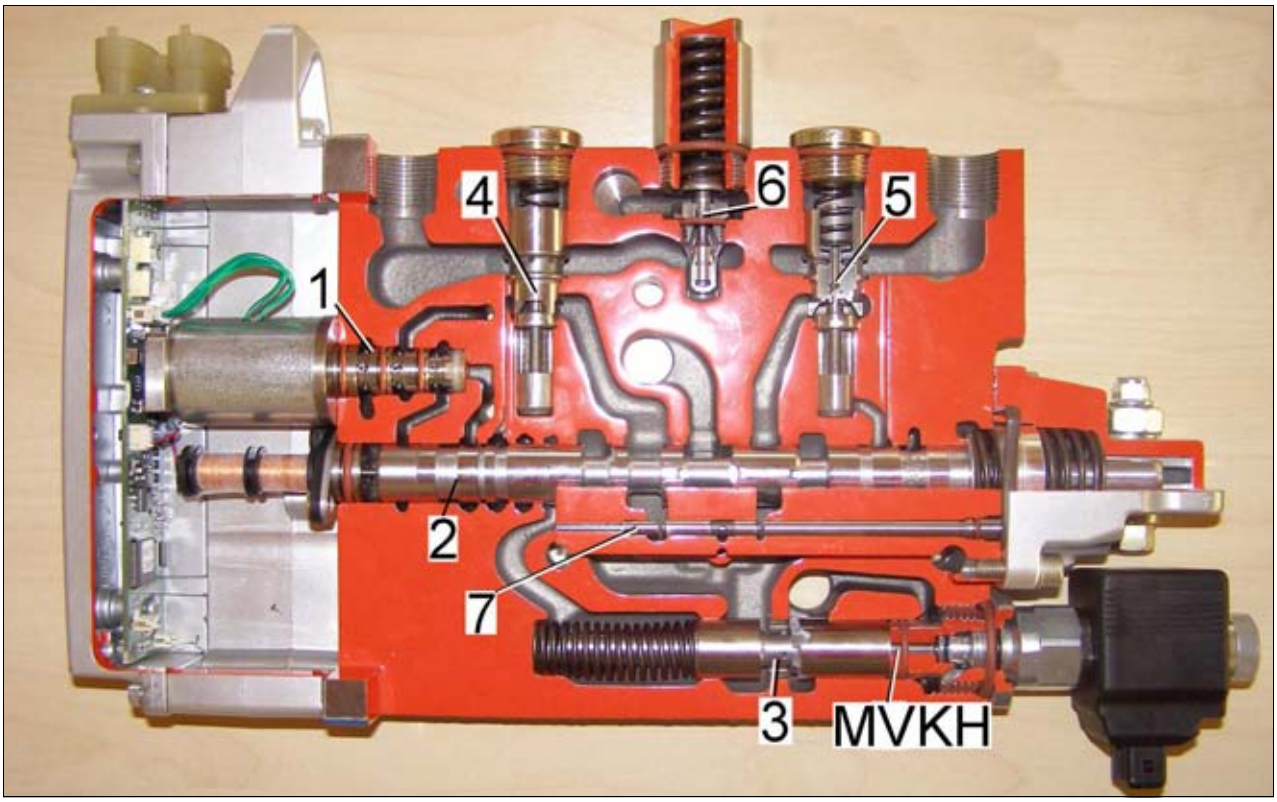


Fig. 2. EPC cut-off valve, rear SA/DA (Professional) I007231

Item	Designation
1	Pilot control actuator
2	Main actuator
	Floating position (Item F)
	Raise (Item 2)
	Neutral (Item 0)
	Lower (Item 1)
3	Pressure compensator
4	hydraulically unlockable non-return valve, output A
5	hydraulically unlockable non-return valve, output B
6	Shock valve (230 +20 bar)
7	Shuttle valve pressure A - B
8	Shuttle valve pressure valve pillar
9	Non-return valve
MVKH [Y055]	Solenoid valve, rear power lift, SA/DA (pressure compensator lock)

EPC cut-off valve, rear SA (Power)

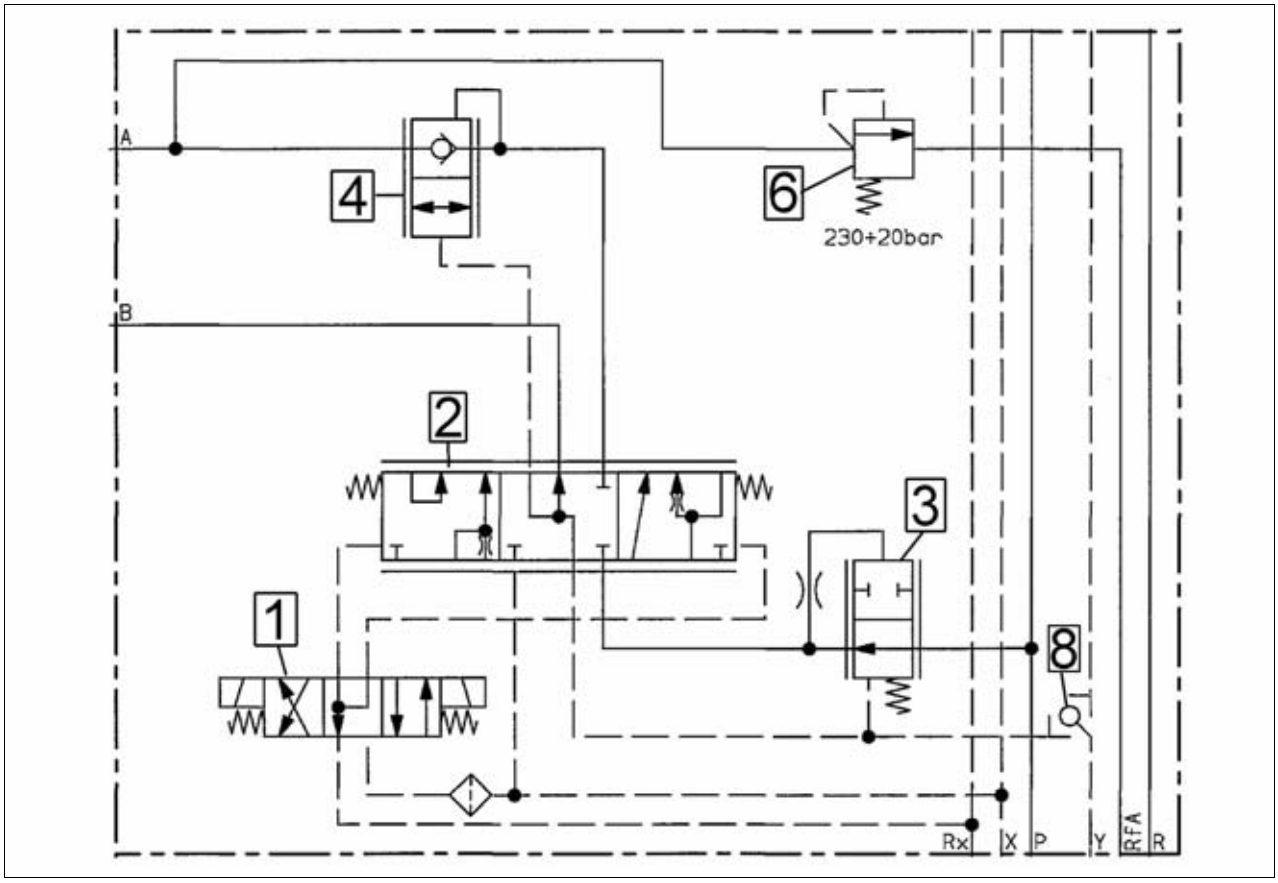


Fig. 3. I007233

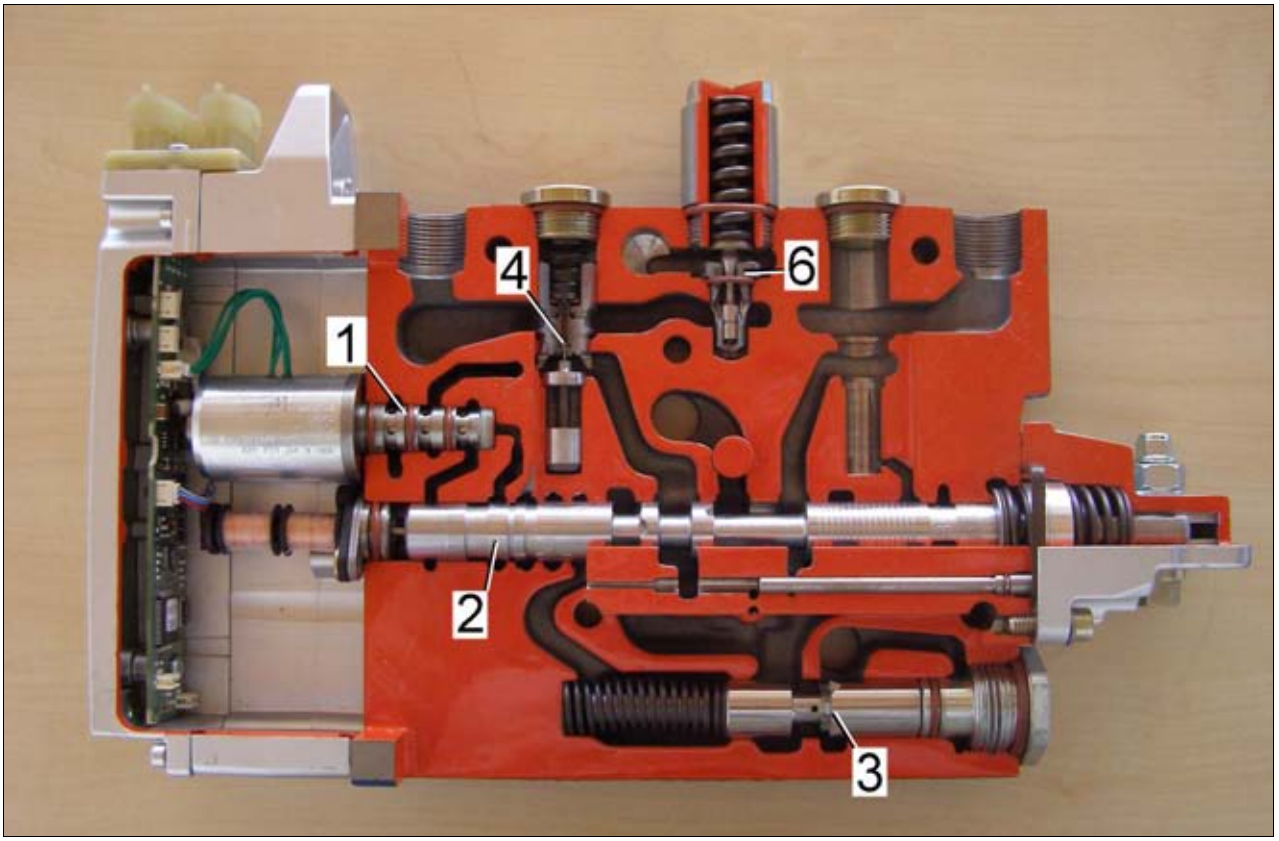


Fig. 4. EPC cut-off valve, rear SA (Power) I007234

There are four different types of valve:

– EPC cut-off valve, rear SA/DA (Professional)
– EPC cut-off valve, rear SA (Power)
– Valve for front power lift enhanced control
– Valve for standard front power lift

Front power lift enhanced control

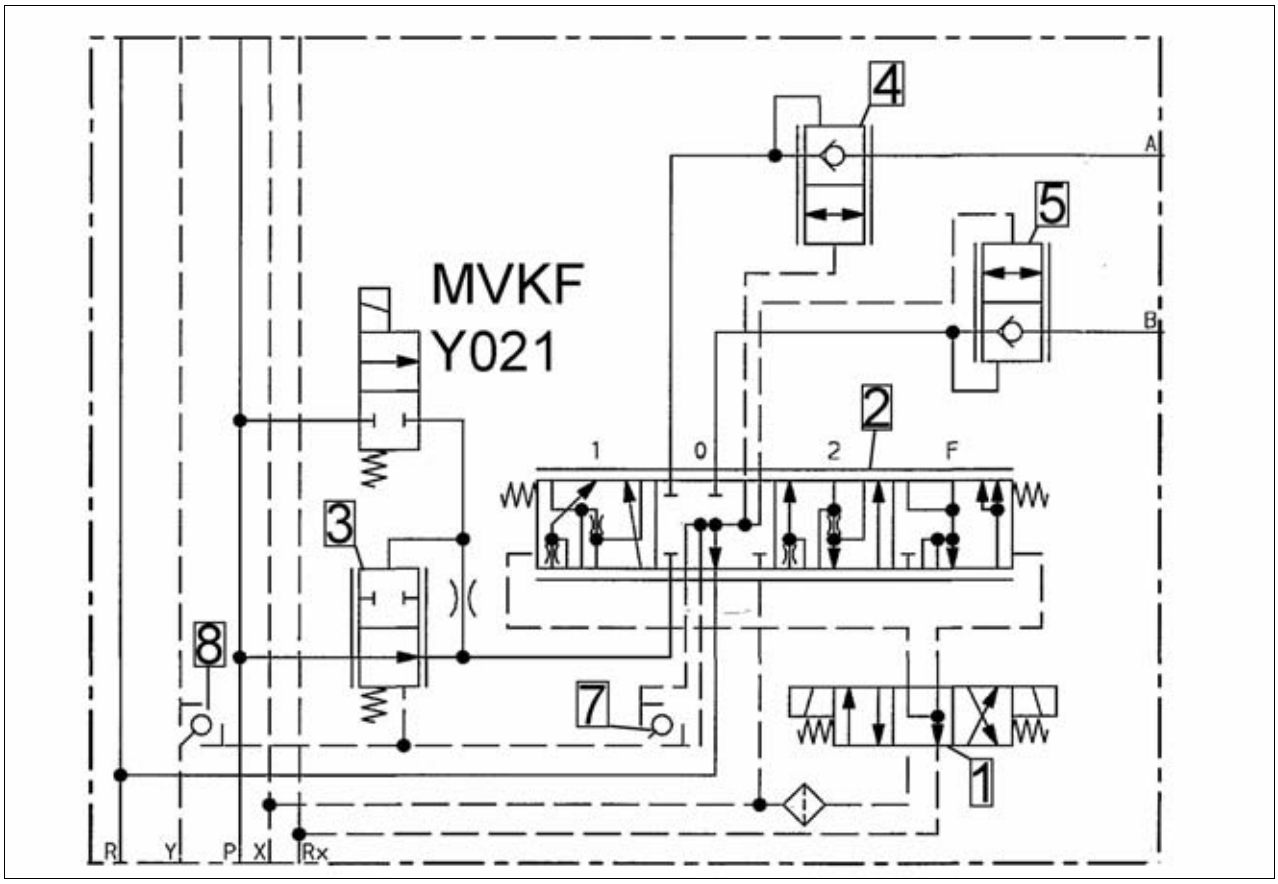


Fig. 5. I007235

Item	Designation
1	Pilot control actuator
2	Main actuator
	Floating position (Item F)
	Raise (Item 2)
	Neutral (Item 0)
	Lower (Item 1)
3	Pressure compensator
4	hydraulically unlockable non-return valve, output A
5	hydraulically unlockable non-return valve, output B
7	Shuttle valve pressure A - B
8	Shuttle valve pressure valve pillar
MVKF [Y021]	Front pressure compensator lock valve

Standard front power lift

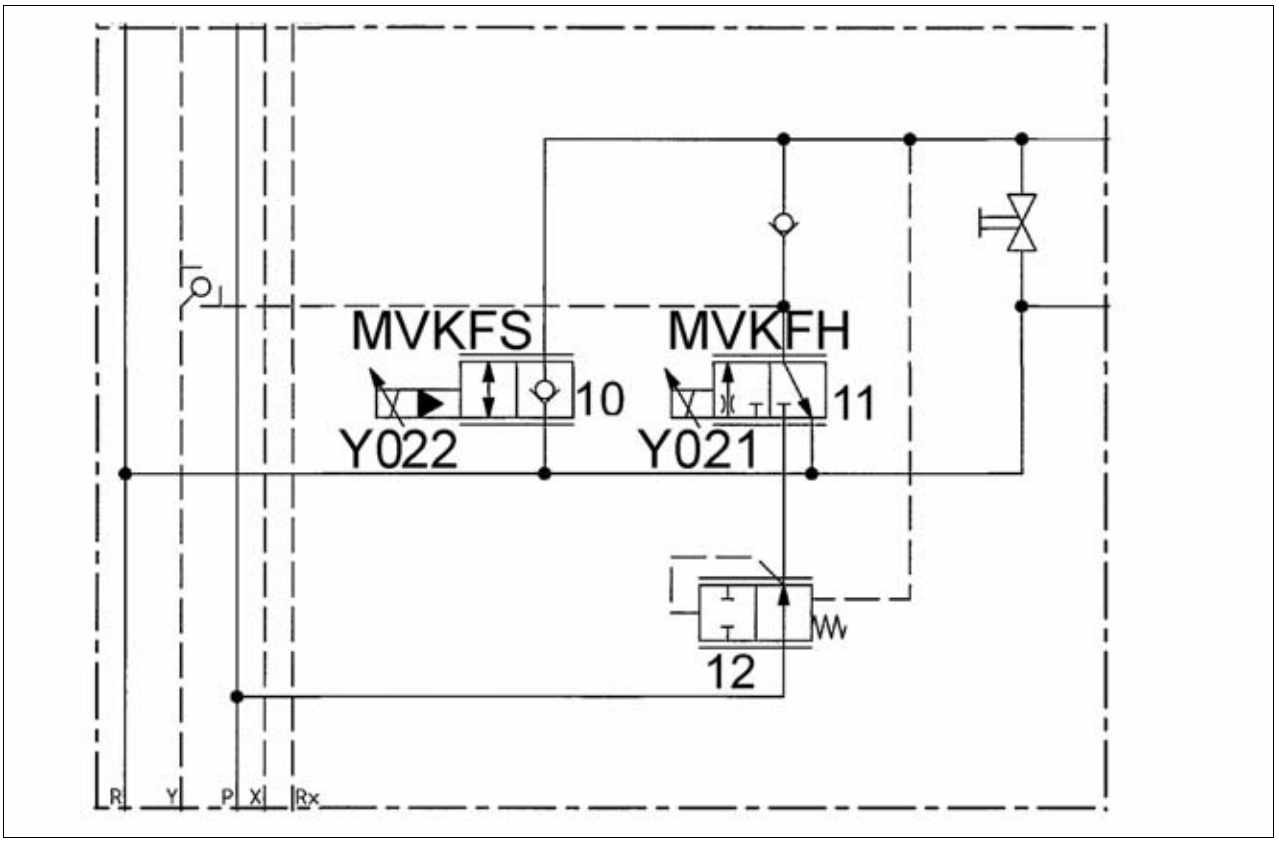


Fig. 6. I007236

Item	Designation
12	Pressure compensator
MVKFH [Y021]	Lifting solenoid valve (standard front power lift)
MVKFS [Y022]	Lowering solenoid valve (standard front power lift)

NOTE: *Is the only valve that does not require pilot pressure and does not have to be set.*

If this valve is fitted, activation is carried out by means of the linear module (rocker) of the 8th control valve (in the basic setting).

2 Functional plans

EPC rear, SA/DA

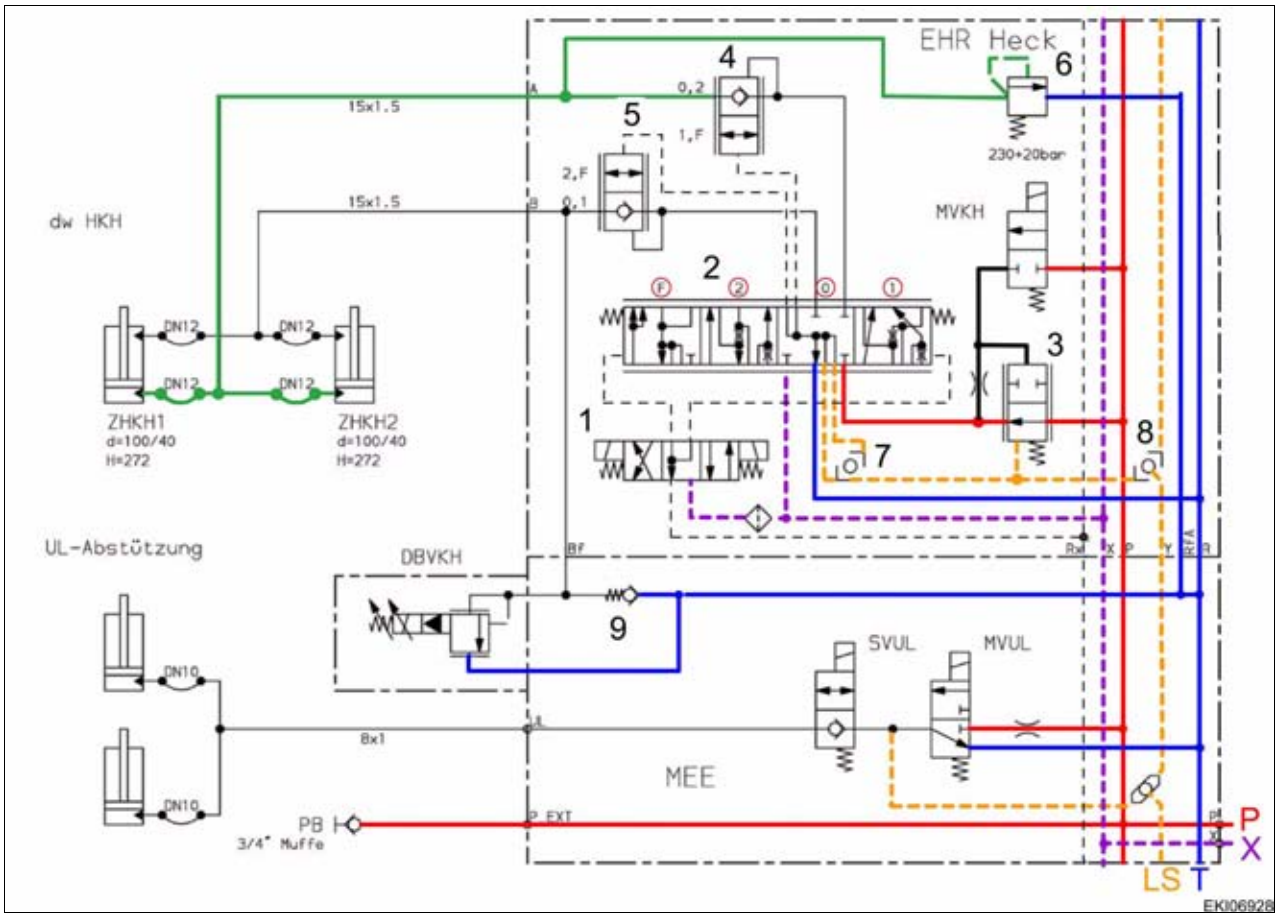


Fig. 7.

Item	Designation
1	Pilot control actuator
2	Main actuator
	Floating position (Item F)
	Raise (Item 2)
	Neutral (Item 0)
	Lower (Item 1)
3	Pressure compensator
4	hydraulically unlockable non-return valve, output A
5	hydraulically unlockable non-return valve, output B
6	Shock valve (230 +20 bar)
7	Shuttle valve pressure A - B
8	Shuttle valve pressure valve pillar
9	Non-return valve
DBVKH [Y062]	Pressure-limiting valve, rear power lift, DA (field pressure control)
MVKH [Y055]	Solenoid valve, rear power lift, SA/DA (pressure compensator lock)
red	Regulating pump pressure (M3)
orange	LS (M4)

Item	Designation
violet	Pilot pressure (M5)
green	Load pressure (consumers)
blue	Return flow

Operating status: EPC SA mode

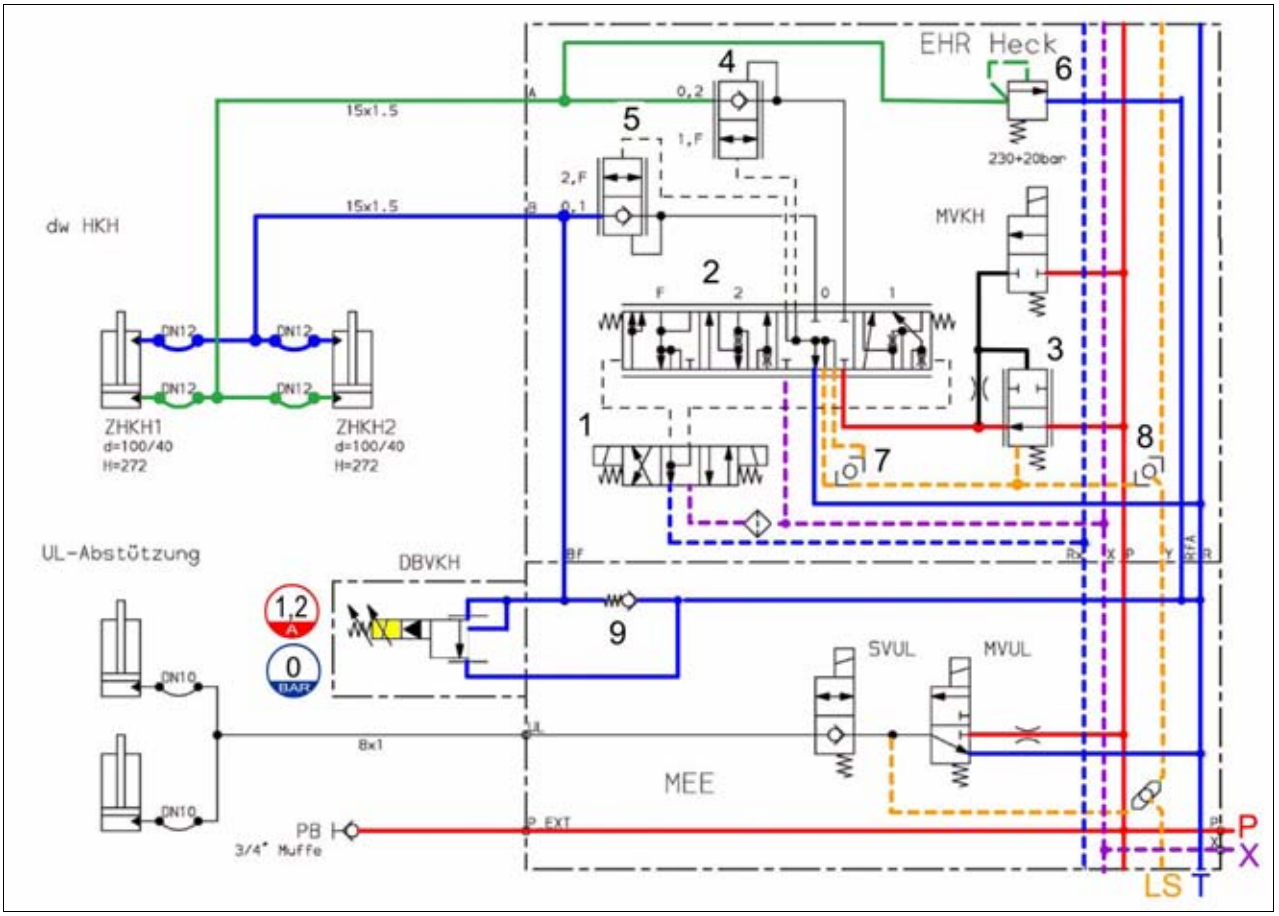


Fig. 8. I010699

NOTE: *In SA mode, the DBVKH [Y062] pressure-limiting valve, rear power lift, DA (field pressure control) is always fully energised by the A050 ECU, basic control unit (valve open), power lift locked or unlocked. The piston rod side (compression) is connected to the return flow; no pressure can be built up.*

Function:

– Engine running, power lift locked or unlocked.

– The DBVKH [Y062] pressure limiting valve, rear power lift, DA (field pressure control) is fully energised, approx. 1.2 A = 0 bar.

Operating status: EPC SA lowering

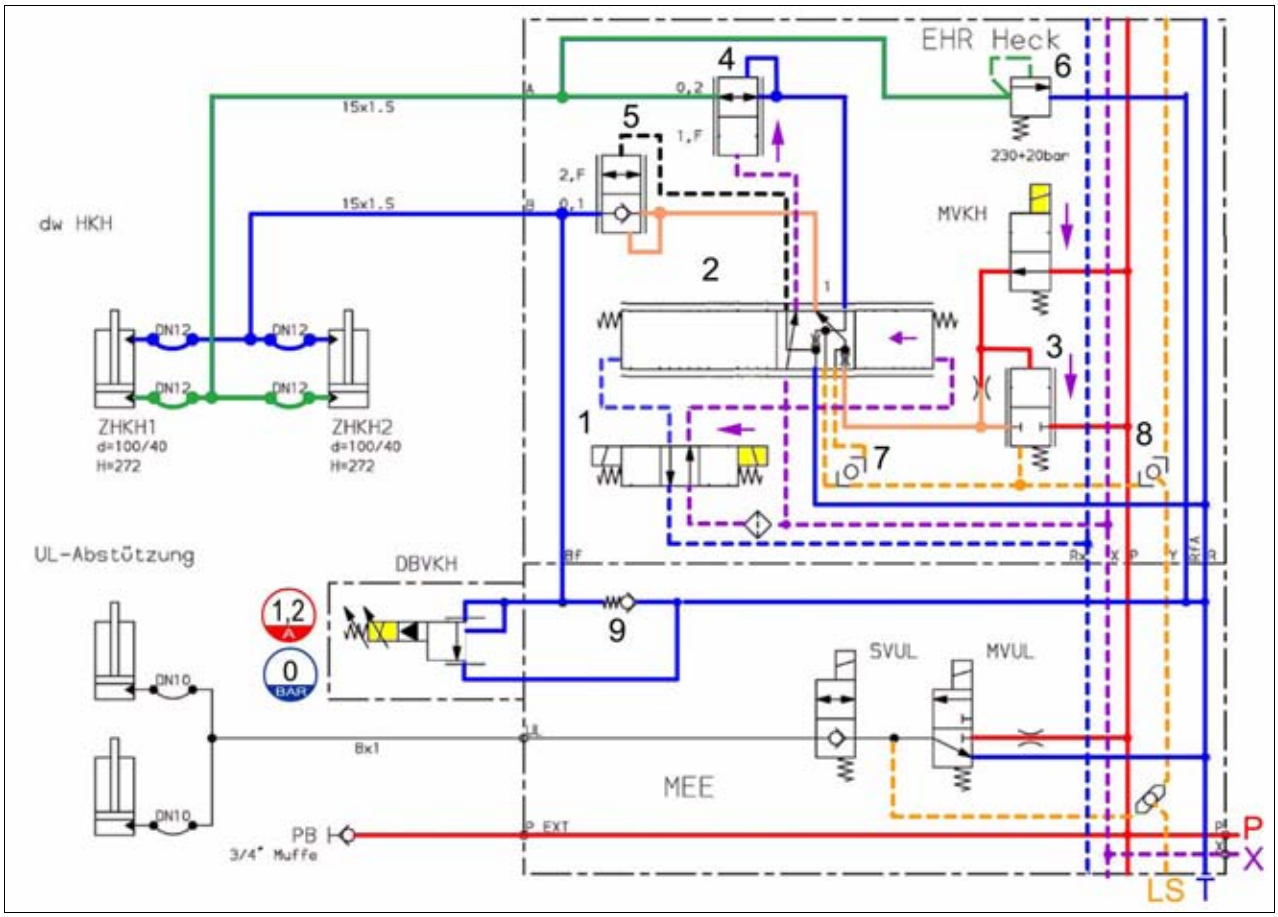


Fig. 9. I010700

Function:

- The DBVKH [Y062] pressure limiting valve, rear power lift, DA (field pressure control) is fully energised, approx. 1.2 A = 0 bar (valve opened).
- The linkage is connected to the return flow on the piston rod side (compression); no pressure can be built up.
- The pilot control actuator (1) is energised and forced to the left, which, in turn, forces the main actuator (2) hydraulically into the Lower direction.
- In addition, the MVKH [Y055] solenoid valve, rear power lift, SA/DA (pressure compensator lock) is fully energised so that no oil from pump P to the main actuator (2) reaches B; no oil is fed to the piston rod side.
- The hydr. unlockable non-return valve (4) is also opened hydraulically by the main actuator (2).
- When the main actuator is in Lower, the oil is able to flow back into the tank through the open non-return valve (4).
- Since the power lift is not actively lowered in SA mode (P to B is blocked), rear power lift cylinders 1 + 2 must draw the oil out of the return flow via the non-return valve (9) themselves.

Diagnostics: EPC SA Lowering actuated internally

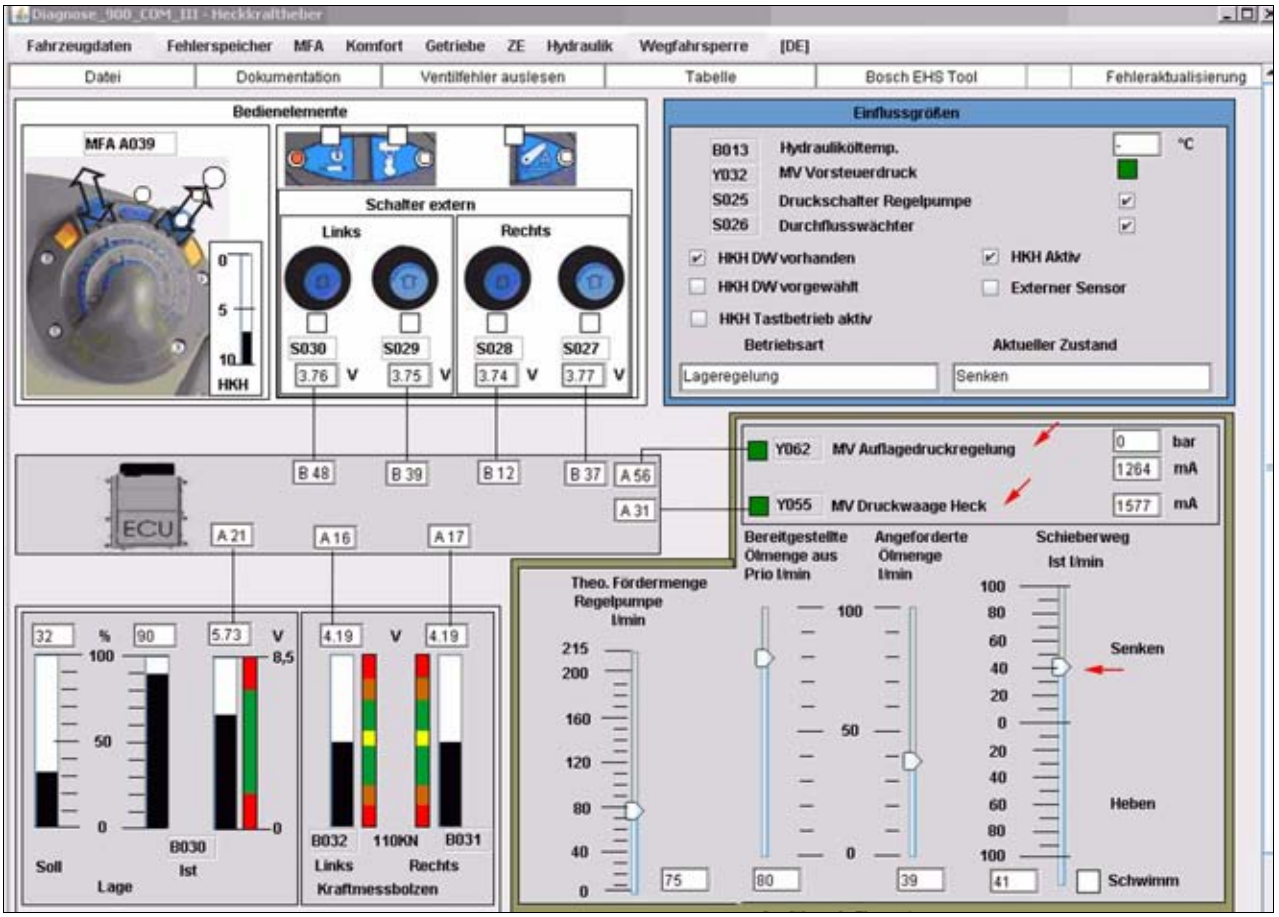


Fig. 10. I010614

NOTE: *While the SA power lift is being lowered, the Y055 rear pressure compensator solenoid valve is fully energised and the actuator is set to lower (arrow).*
It is possible that the linkage switches from SA lower to floating position of its own accord because the linkage only lowers very slowly. Then the Y055 rear pressure compensator solenoid valve will no longer be energised.

See the following diagram (arrow)

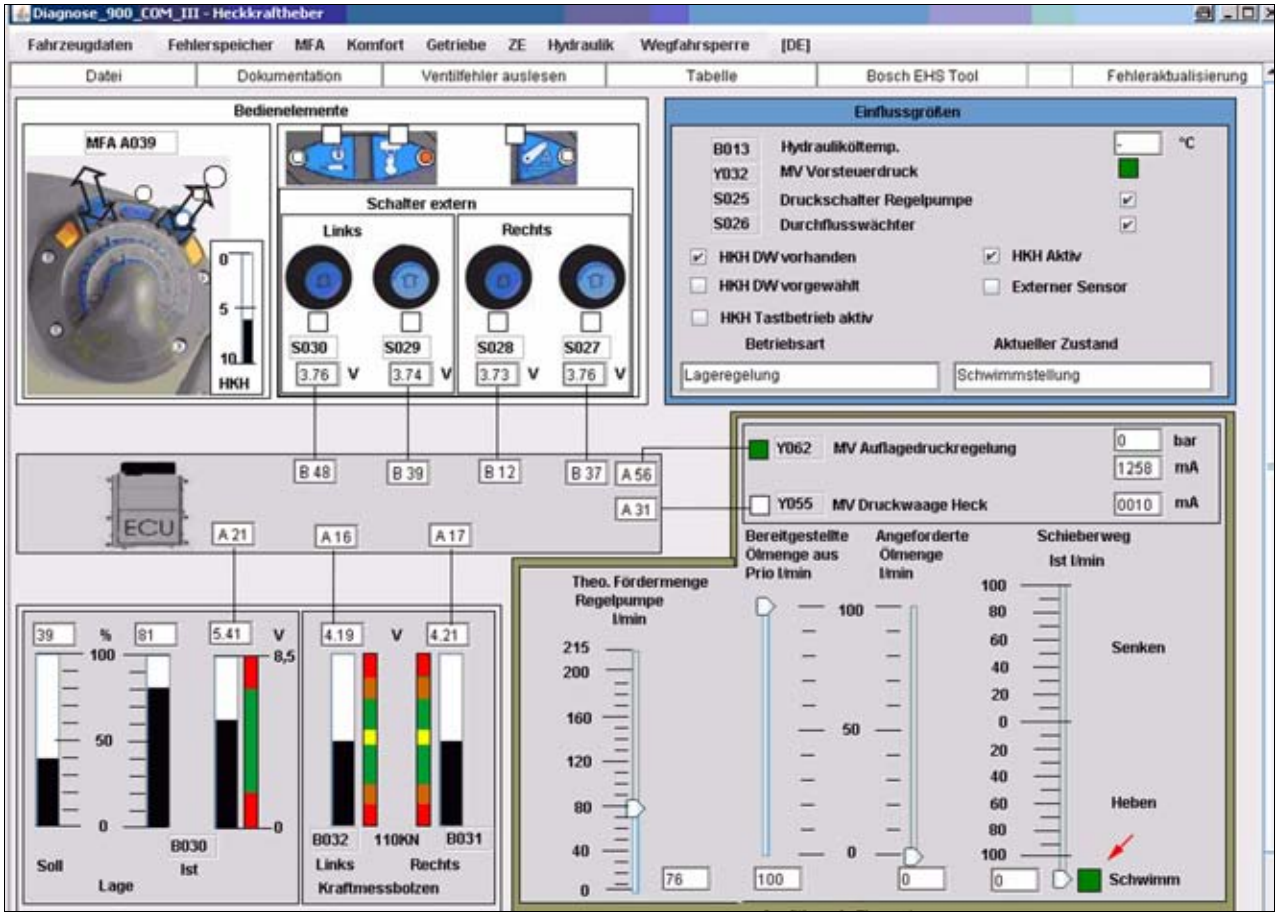


Fig. 11. I010615

Diagnostics: EPC SA Lowering actuated externally

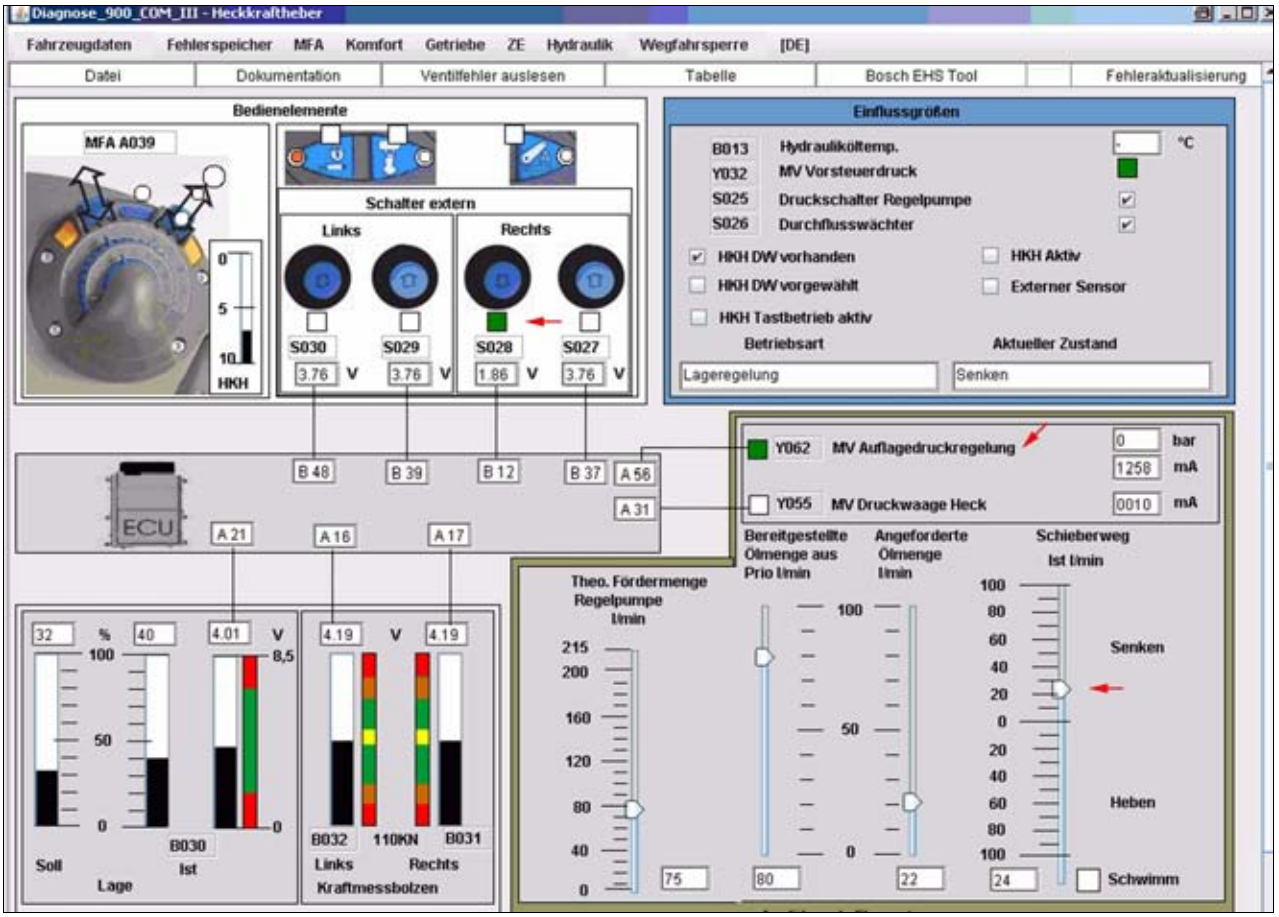


Fig. 12. I010616

NOTE: *When externally lowering the power lift (S028 pressed down), the power lift is pressed down with approx. 10 bar despite the SA position (Y062 fully energised).*

Reason:

The Y055 rear pressure compensator solenoid valve is not energised in the event of external actuation as the power lift is actively pushed down. The Y062 is fully energised, but the oil cannot flow quickly enough.

NOTE: *If the linkage is operated externally, the hydraulic lower link stabiliser (if fitted) will switch from "automatic mode" to "manual mode" for safety reasons.*

Operating status: EPC SA raising

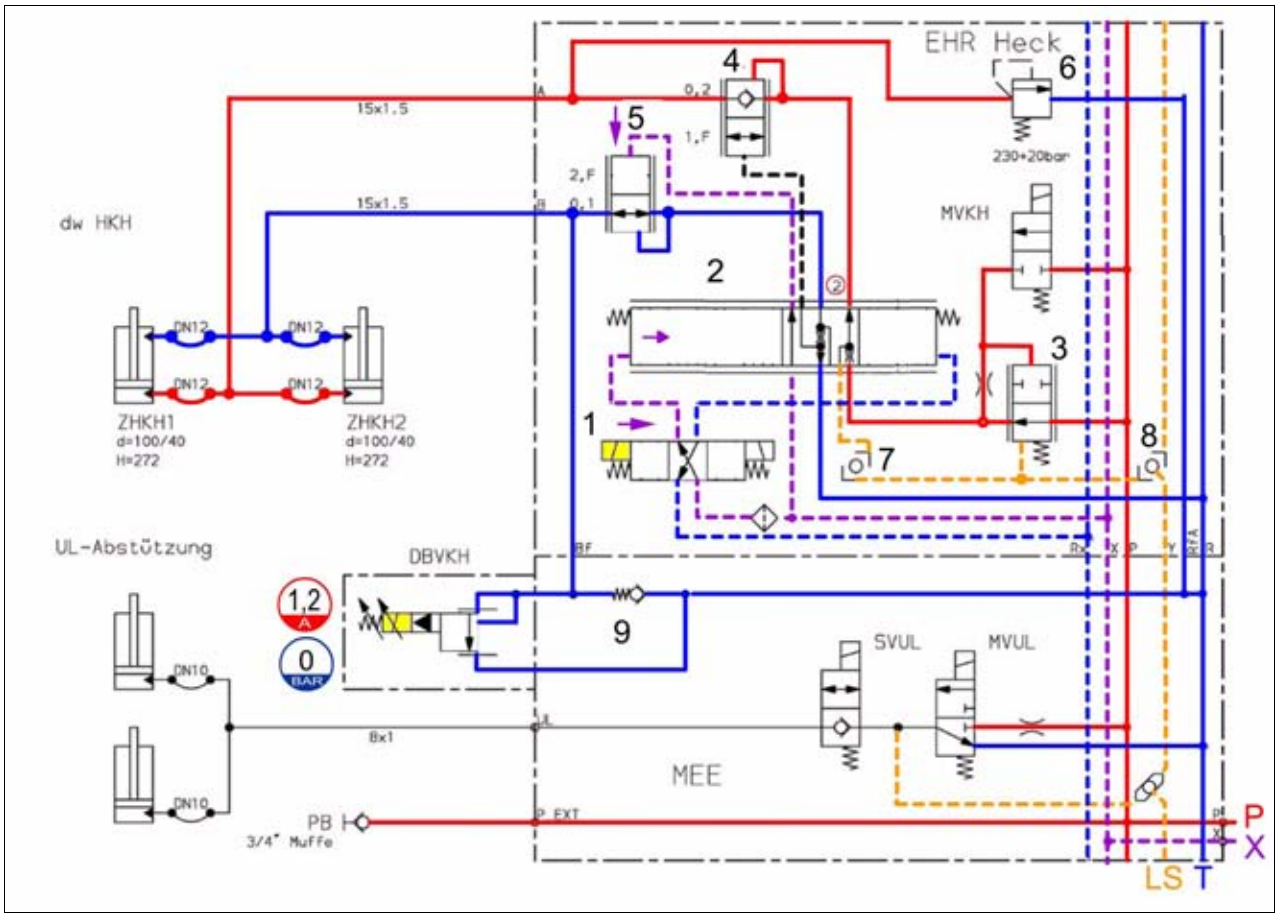


Fig. 13. I010695

Function:

– The DBVKH [Y062] pressure limiting valve, rear power lift, DA (field pressure control) remains fully energised, approx. 1.2 A = 0 bar (valve opened).

– The pilot control actuator (1) is energised and forced to the right, which, in turn, forces the main actuator (2) hydraulically into the Raise direction.

– The hydr. unlockable non-return valve (5) is also opened hydraulically by the main actuator (2).

– With the main actuator in raise mode, the oil can flow through the non-return valve (4), which is opened by the flow of oil, and can raise the linkage on the piston head side.

– The oil on the piston rod side flows back into the tank through the open non-return valve (5) and the main actuator (2).

Operating status: EPC floating position

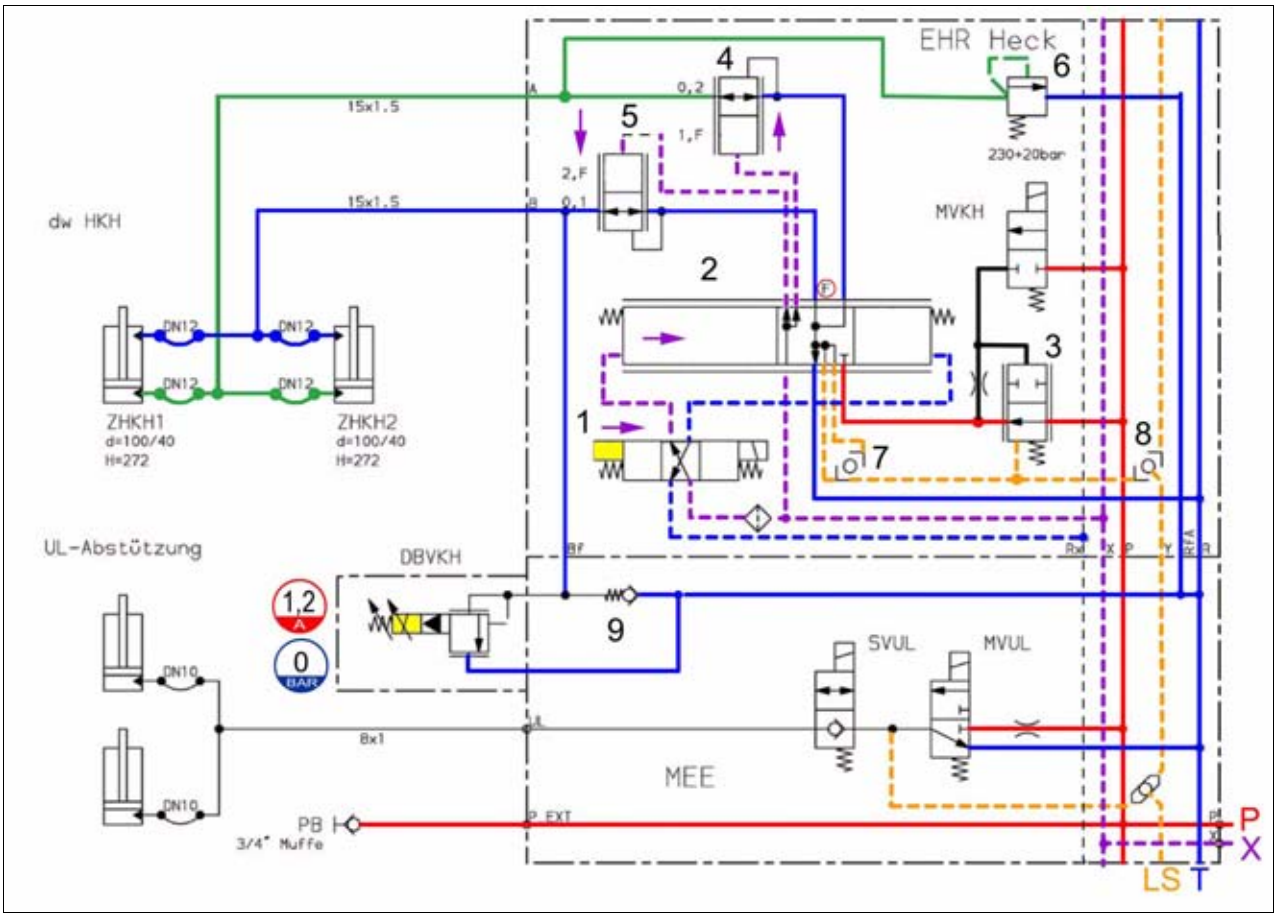


Fig. 14. I010696

Function:

– The DBVKH [Y062] pressure limiting valve, rear power lift, DA (field pressure control) remains fully energised, approx. 1.2 A = 0 bar (valve opened).

– The pilot control actuator (1) is energised and forced to the right, which, in turn, forces the main actuator (2) hydraulically into the Floating position direction.

– The hydr. unlockable non-return valves (4, 5) are also opened hydraulically by the main actuator (2).

– P of the pump is blocked by the main actuator, and LS is connected to the return flow (pump is in standby)

– The oil can flow from the piston head side to the piston rod side and back through the main actuator, or the path is open to the tank (return flow)

Operating status: EPC DA lowering

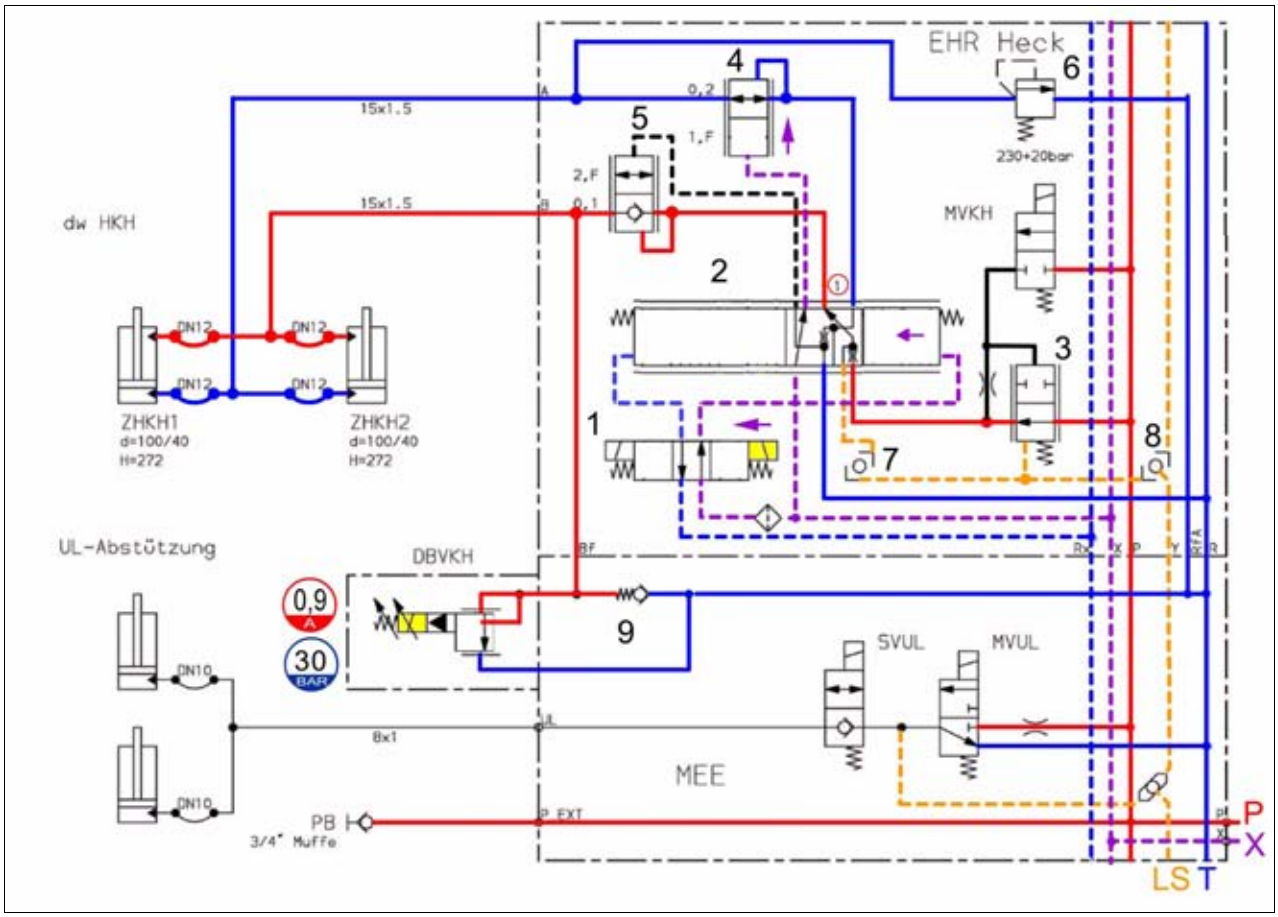


Fig. 15. I010612

NOTE: *In DA mode, the DBVKH [Y062] pressure-limiting valve, rear power lift, DA (field pressure control) is energised from the A050 ECU, basic control unit in proportion to the field pressure set, power lift locked or unlocked.*
The greater the field pressure, the less the valve is energised. 0 bar = 1.2 A (valve opened), 30 bar = 0.9 A (valve not fully closed)
The max. field pressure to be set is 50 bar; it is not possible to raise the vehicle. With the EOL 7.60 DA 7.60 version series 11/2007, it is possible to raise the vehicle in workshop mode. DBVKH pressure-limiting valve, rear power lift, DA de-energised (valve closed by spring force).
In this way, the piston rod side (compression) is connected to the return flow by the field pressure that is set.
The field pressure can be set from 0 to 50 bar7 on the A073 terminal (A4).

Function:

- The DBVKH [Y062] pressure limiting valve, rear power lift, DA (field pressure control) is energised according to the field pressure, e.g. 0.9 A = 30 bar (valve not completely closed).
- The pilot control actuator (1) is energised and forced to the left, which, in turn, forces the main actuator (2) hydraulically into the Lower direction.
- The hydr. unlockable non-return valve (4) is also opened hydraulically by the main actuator (2).
- When the main actuator is in lower mode, the oil on the piston head side is able to flow back into the tank through the open non-return valve (4).

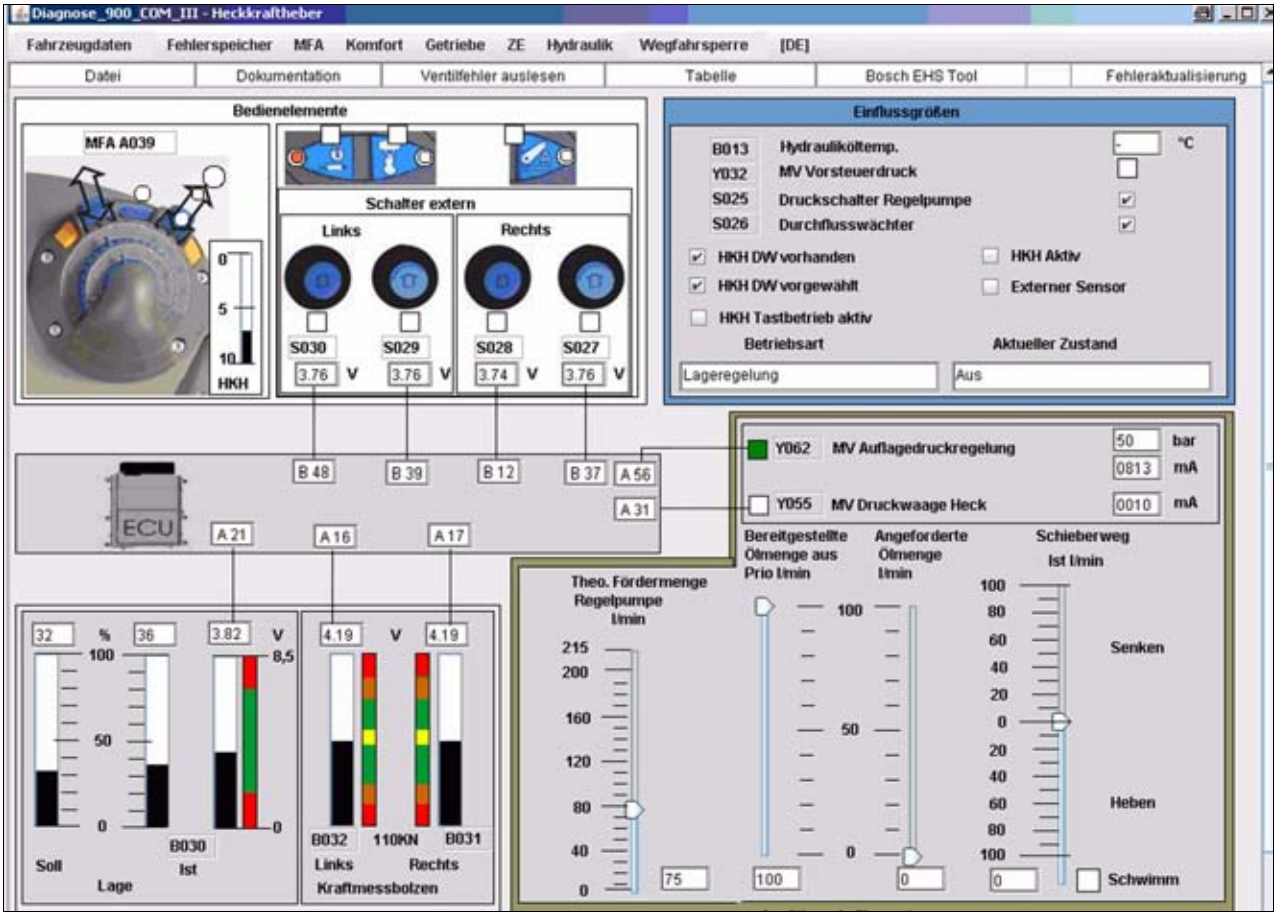


Fig. 16. I010659

Setting in the terminal **[bar]**	Current at Y062 - DBVKH **[mA]**
0	1260
10	971
20	929
30	887
40	842
50	813

Operating status: EPC DA raising

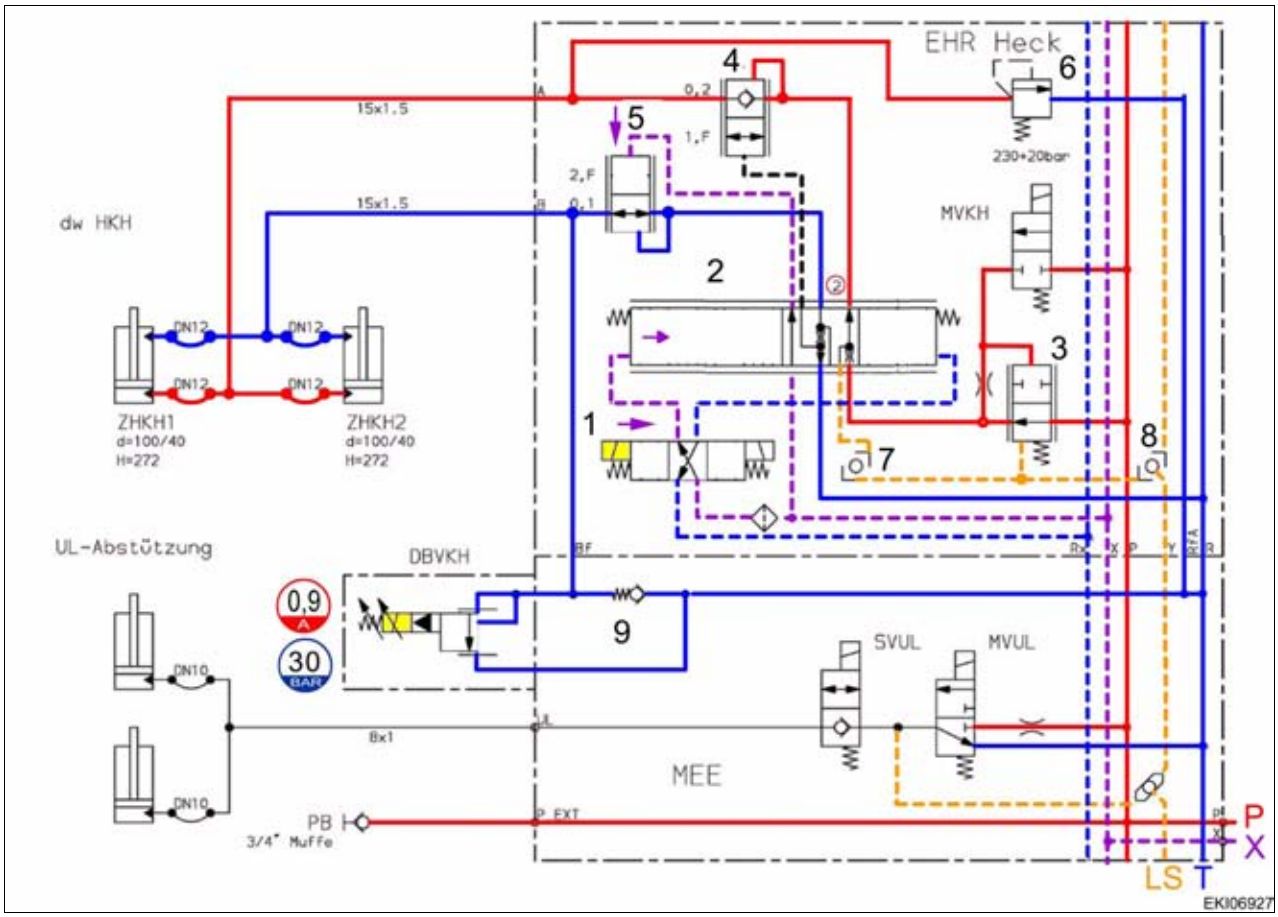


Fig. 17. I010613

Function:

– The DBVKH [Y062] pressure limiting valve, rear power lift, DA (field pressure control) is energised according to the field pressure, e.g. 0.9 A = 30 bar (valve not completely closed).

– The pilot control actuator (1) is energised and forced to the right, which, in turn, forces the main actuator (2) hydraulically into the Raise direction.

– The hydr. unlockable non-return valve (5) is also opened hydraulically by the main actuator (2).

– With the main actuator in raise mode, the oil can flow through the non-return valve (4), which is opened by the flow of oil, and can raise the linkage on the piston head side.

– The oil on the piston rod side flows back into the tank through the open non-return valve (5) and the main actuator (2).

3 Functional plan of the lower link support

Lower link support (lock)

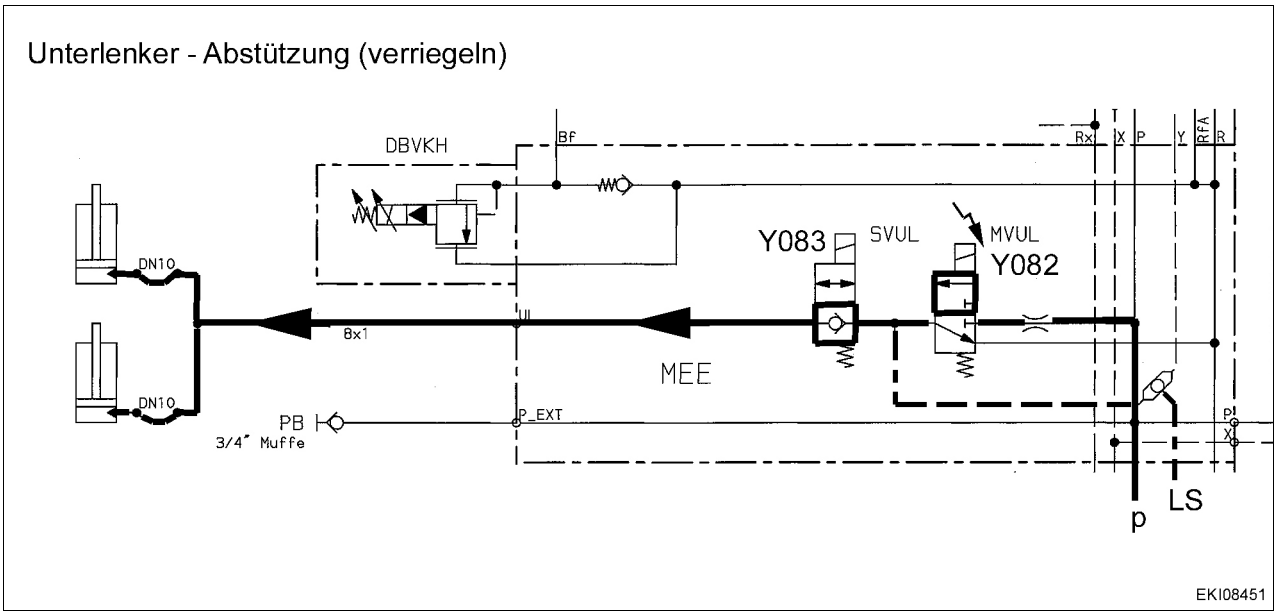


Fig. 18. I002109

Lower link support (release)

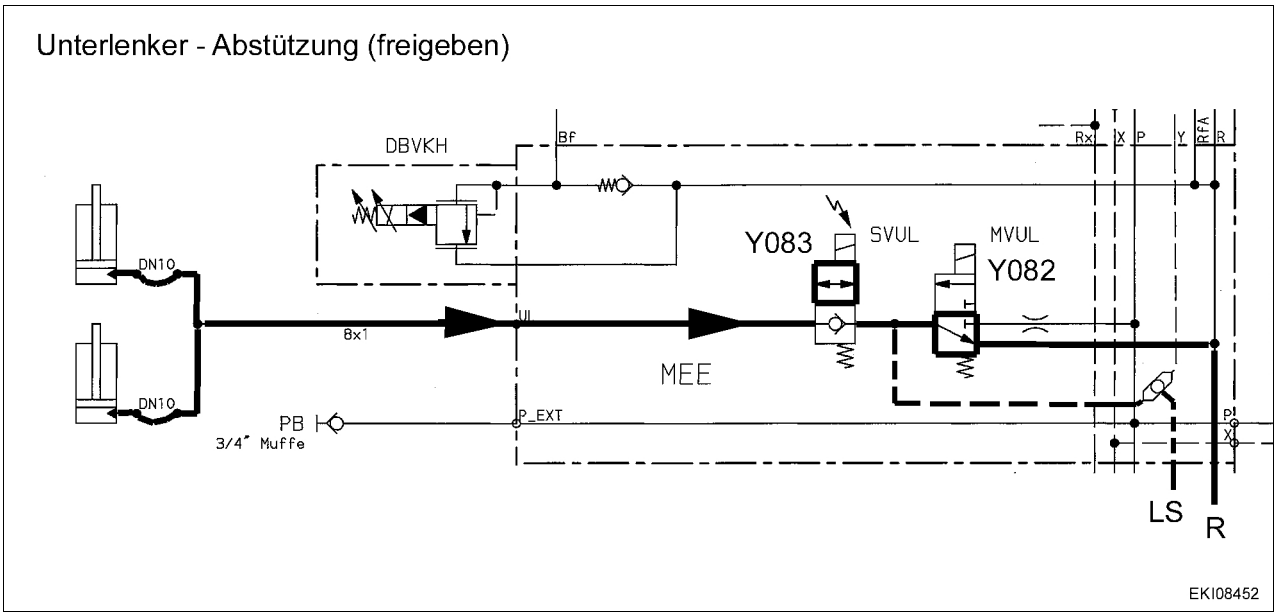


Fig. 19. I002110

NOTE: *see §150*

G Repair

1 Removing the rear EHR valve 33
2 Installing the rear EHR valve 37
3 Removing the central EHR valve 42
4 Fitting the central EPC valve 46
5 Dismantling the rear pressure-limiting valve DW Y062 52
6 Assembling the rear pressure-limiting valve DW Y062 53
7 Replacing the B030 rear power lift position sensor 54

1 Removing the rear EHR valve

Preliminary work:

– Remove cover plate
– If necessary, remove retainers
– Place an oil pad or drip tray underneath the valve block

Unplug the control valve "daisy chain" connection.



Fig. 1. I001571

Remove the hydraulic lines from the entry plate.



Fig. 2. I001572

Remove the LS lines from the entry plate, close them off in a clean condition and affix them to the cab.



Fig. 3. I001573

Unplug the Power Beyond connector from the entry plate.



Fig. 4. I001575

Loosen the lines to the EHR plate.



Fig. 5. I001581

Loosen the tie bolt nuts in accordance with the numbered sequence in the diagram.

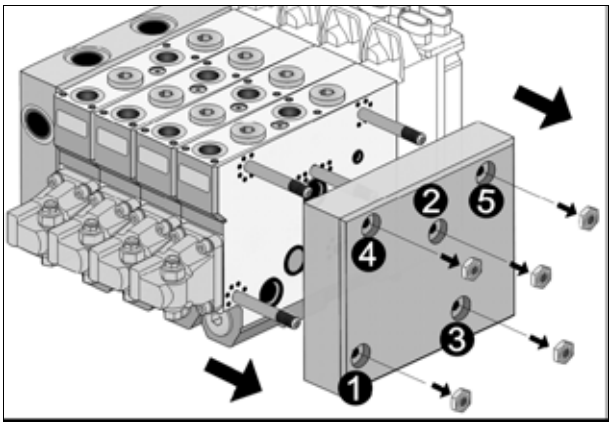


Fig. 6. I001675

Remove the nuts from the three long tie bolts.

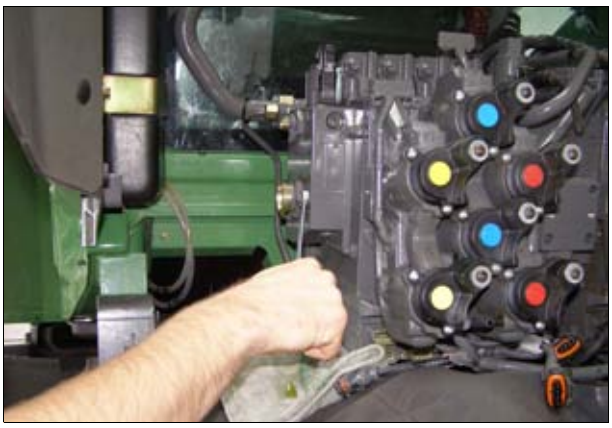


Fig. 7. I002128

Remove the entry plate sideways.



Fig. 8. I001577

Remove the three long tie bolts.



Fig. 9. I001579

Remove the nuts from the two short tie bolts.



Fig. 10. I001578

Remove the control valves sideways.

IMPORTANT: *When dismantling the valve, ensure that the shuttle valve does not fall out.*

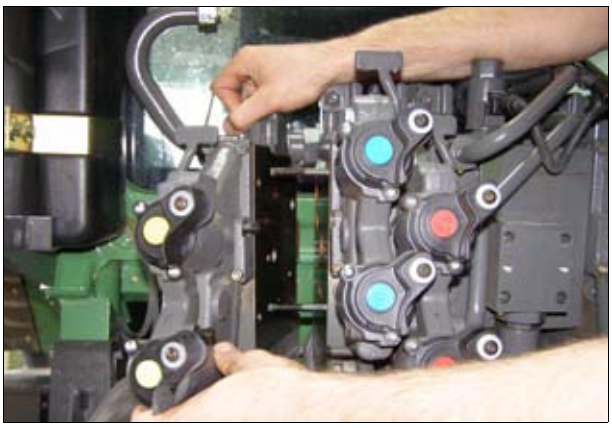


Fig. 11. I001580

Remove the EHR valve sideways.



Fig. 12. I001582

2 Installing the rear EHR valve

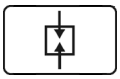
NOTE: *To prevent leaks, the O-rings of all valves should be replaced.*

NOTE: *When working on hydraulic systems, cleanliness is of paramount importance. Even the slightest amount of dirt can lead to control valves seizing.*

Preliminary work:

– The flange surfaces of the valves and the central adjoining element should be polished with carborundum rubbing stone

– The polished flange surfaces should be wiped clean with an oil-soaked cloth



Apply a thin coat of grease to the new support rings and O-rings and seat them into the central adjoining element.

– 2 x item 1 + 2: support ring and O-ring

– 1 x item 3: large O-ring

– 2 x item 5: small O-ring

Ensure that the O-rings protrude 0.3 mm beyond the flange surface.

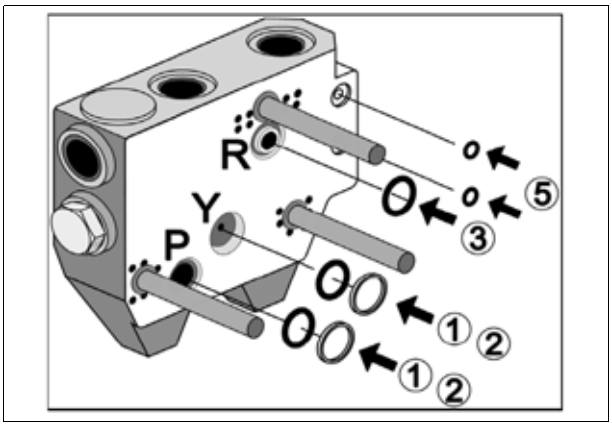
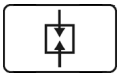


Fig. 13. I001676



Fit the new support rings in accordance with the diagram.

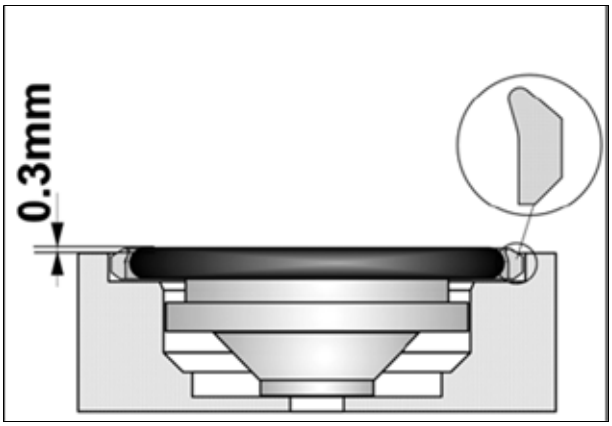
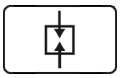


Fig. 14. I001672



Seat the shuttle valve with a thin coat of grease into the EHR valve as well as the control valves.



Fig. 15. I001684

Check the measurement of 0.5 mm.

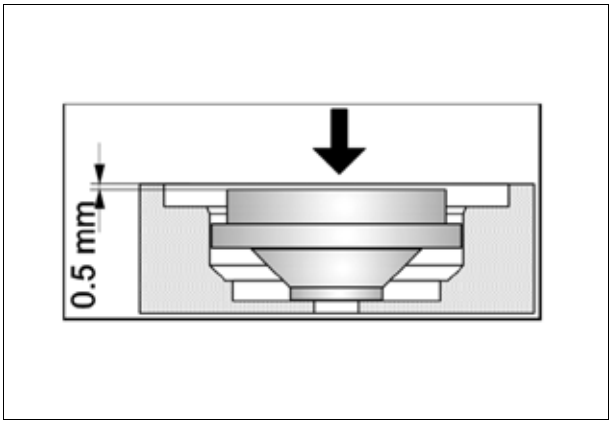


Fig. 16. I001671

Fit the new support rings in accordance with the diagram.

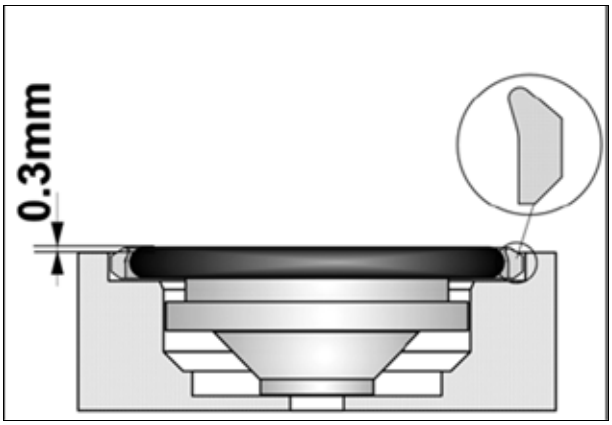


Fig. 17. I001672

Use a small amount of grease to seat the O-rings.

For each valve there are:

– 2 x item 1 + 2: support ring and O-ring
– 1 x item 3: large O-ring
– 2 x item 5: small O-ring

Ensure that the O-rings protrude 0.3 mm beyond the flange surface.

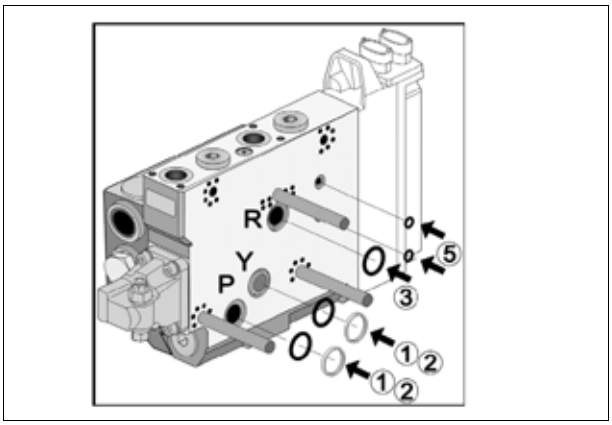


Fig. 18. I001686

Place the EHR valve onto the two short tie bolts, ensuring that the shuttle valve does not fall out.



Fig. 19. I001582

Place the control valve onto the two short tie bolts and hand-tighten the nuts so that the shuttle valves do not fall out.

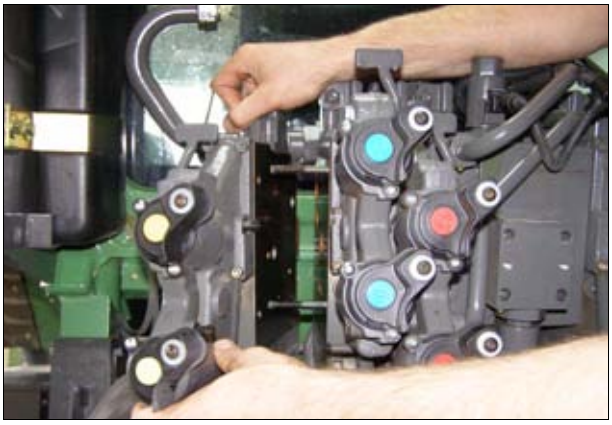


Fig. 20. I001580

Screw in the three long tie bolts.



Fig. 21. I001579

Fit the entry plate onto the tie bolts and hand-tighten the nuts.



Fig. 22. I001577

Align the valve plates with each other and tighten to a torque of 25.5 + 2.5 Nm, following the numbered sequence in the diagram.

NOTE: *The quoted tightening torque of 25.5 + 2.5 Nm applies to oiled tie bolts and nuts.*

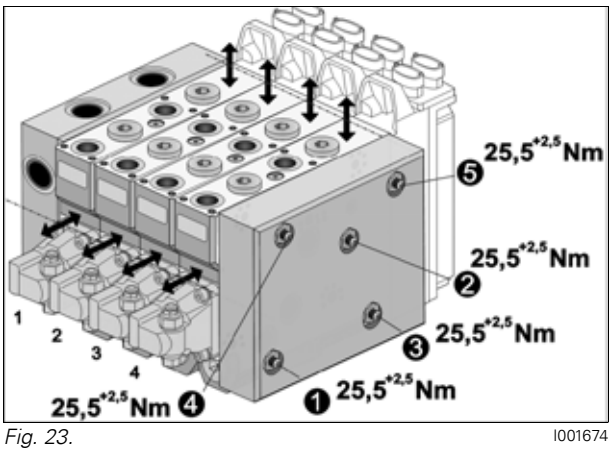


Fig. 23. I001674

Plug in the external pressure rise connector.



Fig. 24. I001575

Connect the LS line to the entry plate and tighten.



Fig. 25. I001573

Connect the hydraulic line to the entry plate and tighten.



Fig. 26. I001572

Tighten the EHR lines.



Fig. 27. I001581

Plug in the "daisy chain" connector (note the coding).

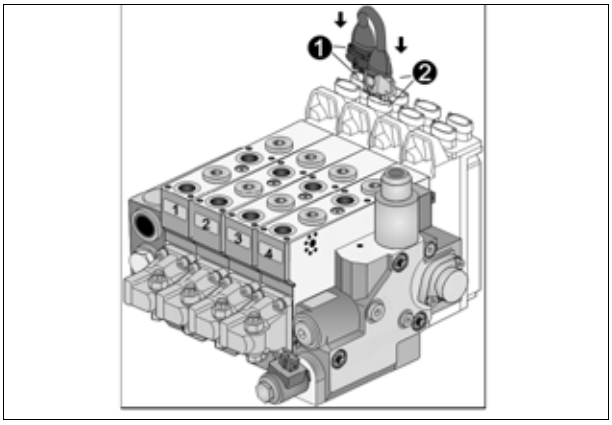


Fig. 28. I001680

Grey connector top, black connector bottom.



Fig. 29. I001571

3 Removing the central EHR valve

NOTE: *To provide a better view, the work was carried out with the right-hand fuel tank removed.*

Preliminary work:

– Place an oil pad or oil sump under the valve block

Remove the hydraulic hand-pump bolts and secure the hand pump to the side.



Fig. 30. I001652

Remove the fuel hand-pump bolts and secure the hand pump to the side.



Fig. 31. I001653

Unplug the connector of the central pre-heater solenoid valve.



Fig. 32. I001660

Unplug the "daisy chain" connector.



Fig. 33. I001661

Loosen the pilot pressure hydraulic lines on the end plate.



Fig. 34. I001654

Loosen and remove the pilot pressure line on the pilot pressure valve block.



Fig. 35. I001658

Merely loosen the control valve hydraulic lines.



Fig. 36. I001657

Merely loosen the EHR line banjo bolts.



Fig. 37. I001656

Secure the control valves to the ZBS above (e.g. with cable ties).

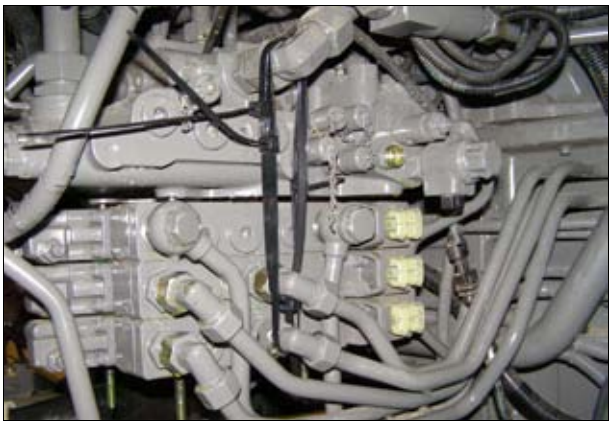


Fig. 38. I001666

Loosen the tie bolt nuts in accordance with the numbered sequence in the diagram.

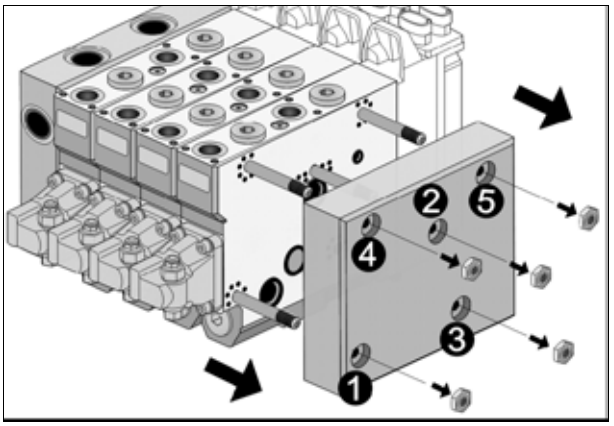


Fig. 39. I001675

Remove the nuts from the stud bolts, whilst keeping the end plate raised.



Fig. 40. I001659

Remove the end plate.



Fig. 41. I001662

Remove the control valve fixings as well as the hydraulic lines, and remove the valve downwards.

IMPORTANT: *When dismantling the valve, ensure that the shuttle valve does not fall out.*

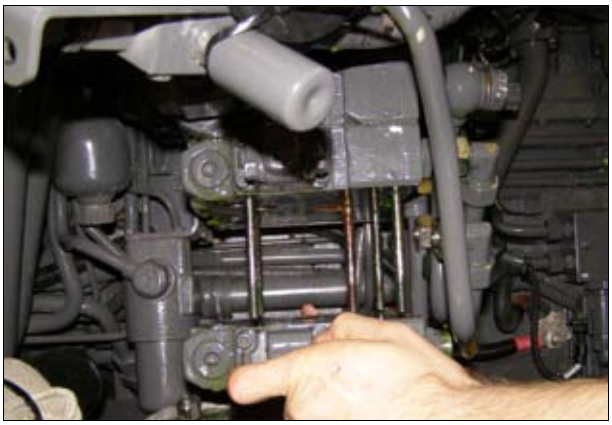


Fig. 42. I001664

Remove the EHR line banjo bolts and remove the EHR valve downwards.



Fig. 43. I001665

4 Fitting the central EPC valve

NOTE: *In order to prevent leaks, the O-rings on all valves should be replaced.*

NOTE: *When working on hydraulic systems, cleanliness is of paramount importance. Even the slightest amount of dirt may lead to control valves seizing.*

Preliminary work:

– The flange surfaces of the valves should be polished with a carborundum rubbing stone

– The polished flange surfaces should be wiped clean with an oil-soaked cloth

Apply a thin coat of grease to the new support rings and O-rings and seat them into the central control block.

– 2 x item 1 + 2: support ring and O-ring

– 1 x item 3: large O-ring

– 2 x item 5: small O-ring

Ensure that the O-rings protrude 0.3 mm beyond the flange surface.

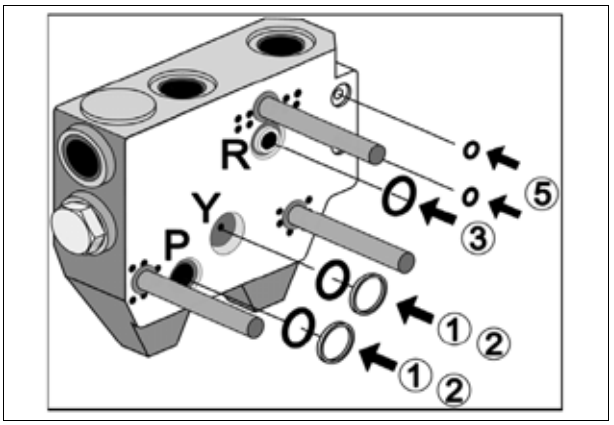


Fig. 44. I001676

Mount the support rings in accordance with the diagram.

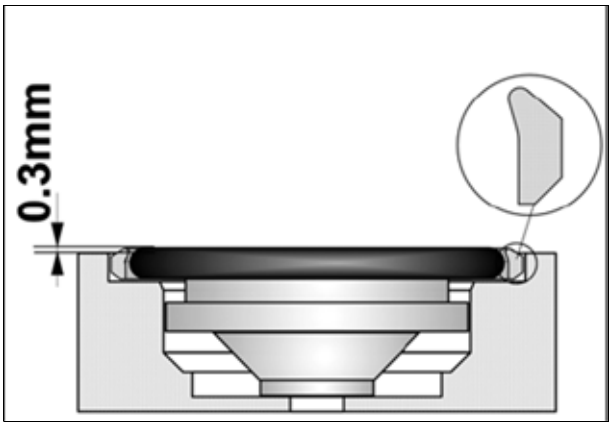


Fig. 45. I001672

Seat the shuttle valve with a thin coat of grease into the EPC valve as well as the control valves.

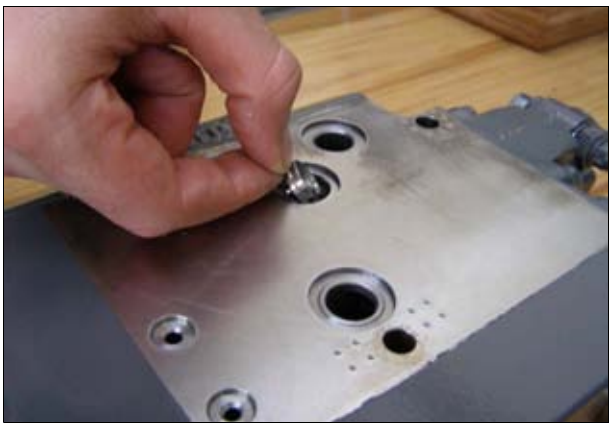


Fig. 46. I001684

Check the stand-off distance of 0.5 mm.

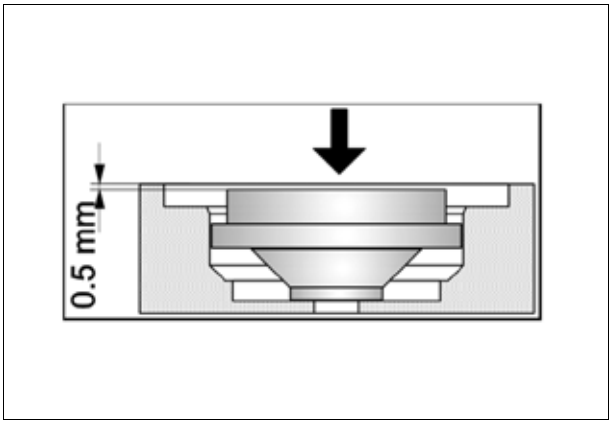


Fig. 47. I001671

Mount the support rings in accordance with the diagram.

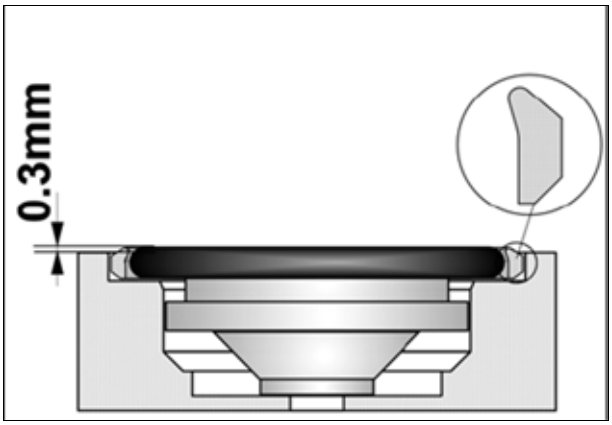


Fig. 48. I001672

Use a small amount of grease to seat the O-rings.

For each valve there are:

– 2 x item 1 + 2: support ring and O-ring
– 1 x item 3: large O-ring
– 2 x item 5: small O-ring

Ensure that the O-rings protrude 0.3 mm beyond the flange surface.

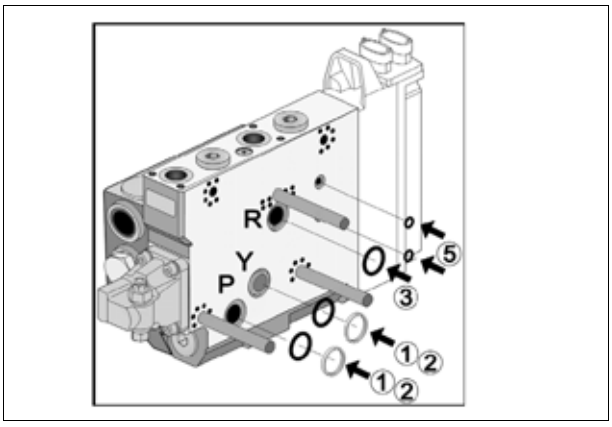


Fig. 49. I001686

Mount the EPC valve upwards onto the tie bolts and hand-tighten the banjo bolts.

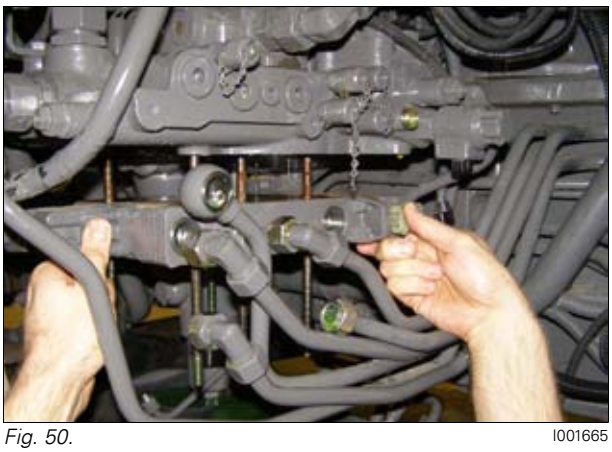


Fig. 50. I001665

Mount the control valve upwards onto the tie bolts, ensuring that the shuttle valve does not fall out.



Fig. 51. I001664

Hand-tighten the hydraulic lines and secure the control valves to the ZBS above (e.g. with cable ties).

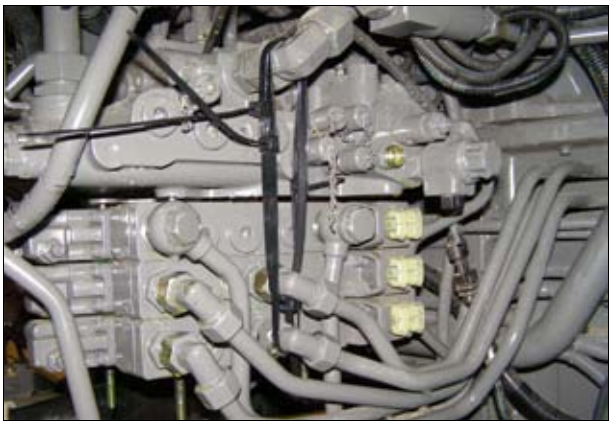


Fig. 52. I001666

Mount the end plate onto the tie bolts and hand-tighten the nuts.



Fig. 53. I001662

Align the valve plates with each other and tighten to a torque of 25.5 + 2.5 Nm, following the numbered sequence in the diagram.

NOTE: *The quoted tightening torque of 25.5 + 2.5 Nm applies to oiled tie bolts and nuts.*

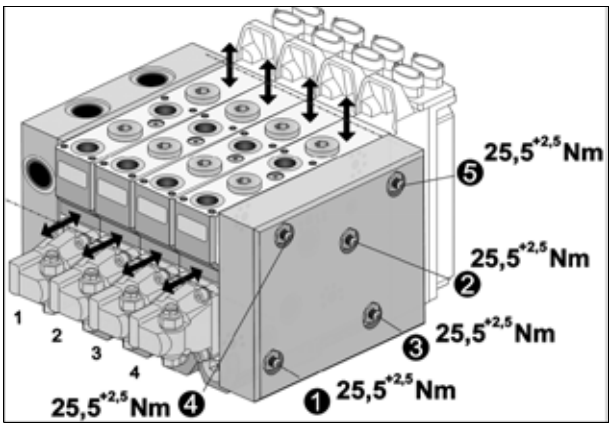


Fig. 54. I001674

919 .. 0101-1000
919 .. 1001-
922 .. 0101-1000
922 .. 1001-
925 .. 0101-1000
925 .. 1001-
928 .. 0101-1000
928 .. 1001-
931 .. 0101-1000
931 .. 1001-
934 .. 0101-1000
934 .. 1001-

Tighten the EPC valve hydraulic lines.



Fig. 55. I001656

Tighten the control valve hydraulic lines.



Fig. 56. I001657

Mount the pilot pressure line from the pilot pressure valve block to the end plate.



Fig. 57. I001658

Tighten the pilot pressure line onto the end plate.

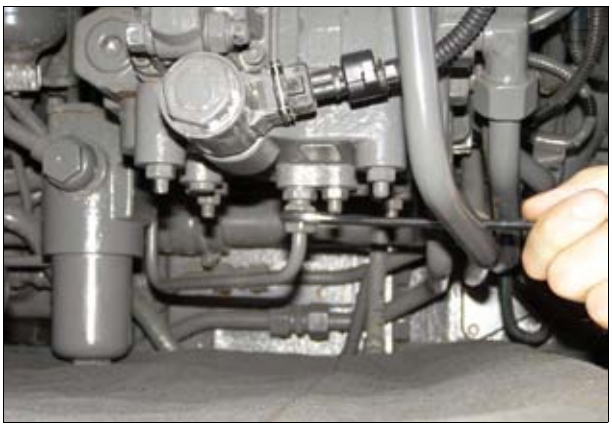


Fig. 58. I001654

Plug in the connector of the central hydraulic oil pre-heater solenoid valve.



Fig. 59. I001660

Plug in the "daisy chain" connector (note the coding).

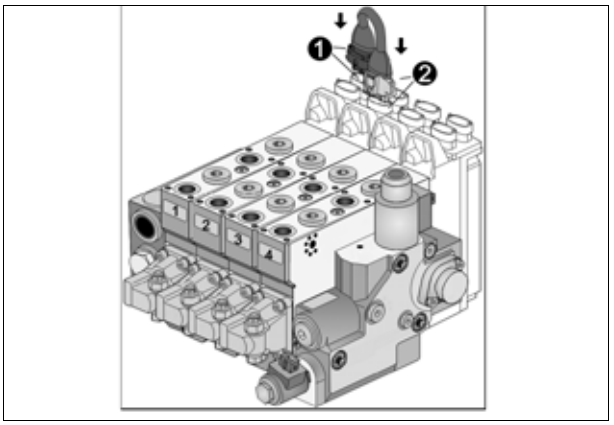


Fig. 60. I001680

1 Grey connector
2 Black connector



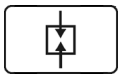
Fig. 61. I001752

Mount the fuel hand-pump.



Fig. 62. I001653

919 .. 0101-1000
919 .. 1001-
922 .. 0101-1000
922 .. 1001-
925 .. 0101-1000
925 .. 1001-
928 .. 0101-1000
928 .. 1001-
931 .. 0101-1000
931 .. 1001-
934 .. 0101-1000
934 .. 1001-



Mount the hydraulic hand-pump.



Fig. 63. I001652

5 Dismantling the rear pressure-limiting valve DW Y062

Unplug the pressure-limiting valve connector and remove bolts

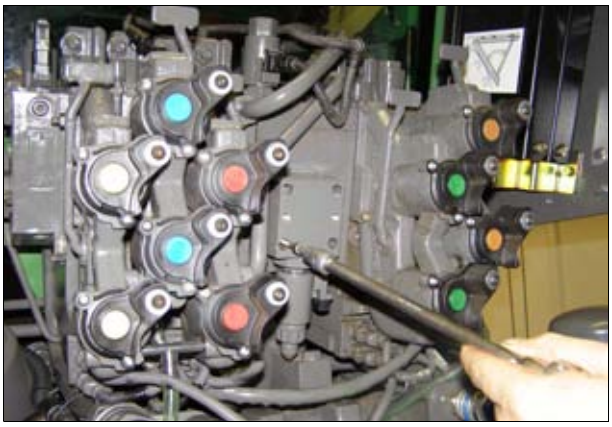


Fig. 64. I001764

Remove pressure-limiting valve from central lead-in element

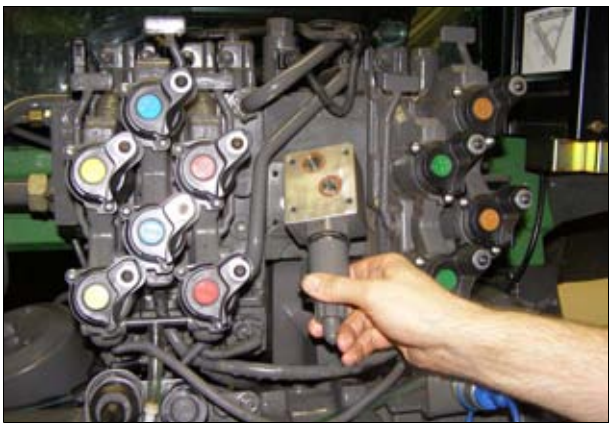


Fig. 65. I001765

Remove spacing plate

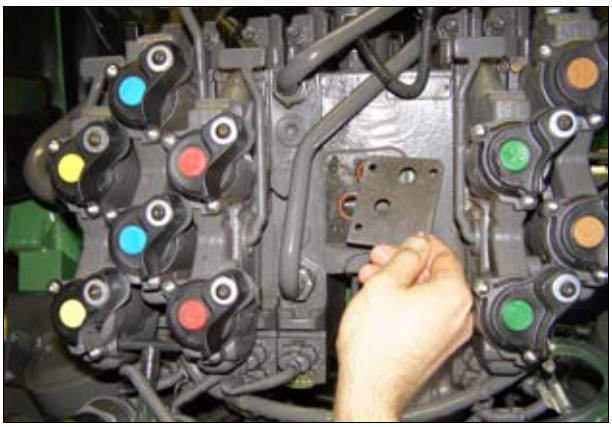
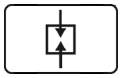


Fig. 66. I001767

6 Assembling the rear pressure-limiting valve DW Y062



Mount new O-rings in central lead-in element, applying a little grease

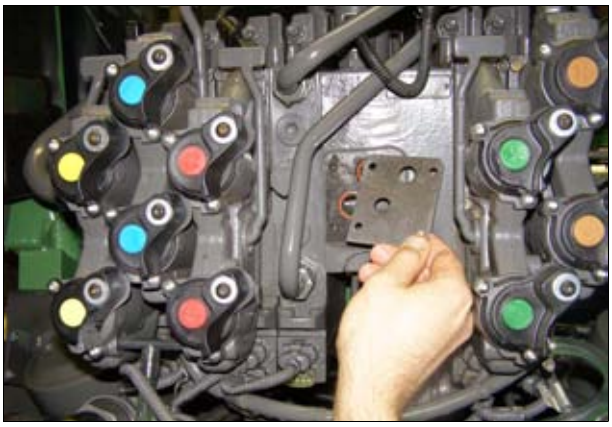
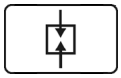


Fig. 67. I001767



Mount pressure-limiting valves with spacing plate

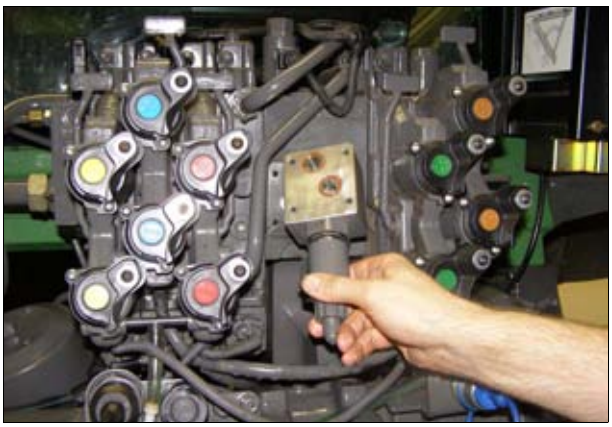
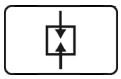


Fig. 68. I001765



Tighten bolts according to torque and insert connector

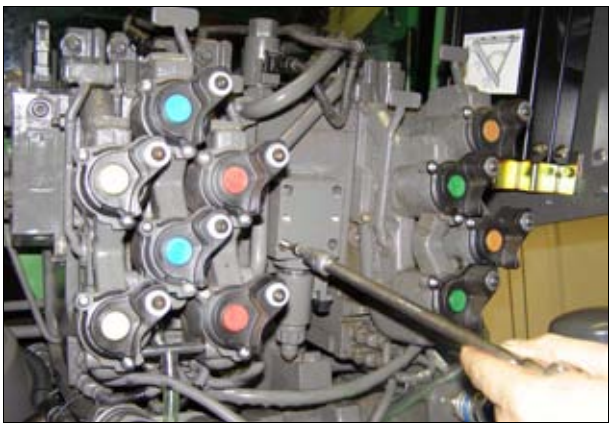


Fig. 69. I001764

7 Replacing the B030 rear power lift position sensor

In order to avoid removing the retainer (Item 1) when replacing the sensor, (which is extremely time consuming), the plastic cover (Item 19) must be destroyed on models up to the stated chassis numbers. A sheet-metal guard 931.860.100.040 must be fitted in its place.

Model	Up to chassis number	Model	Up to chassis number
FENDT 922 Vario	919.21.1791	FENDT 930 Vario	928.23.2014
FENDT 924 Vario	922.23.1849	FENDT 933 Vario	931.21.1810
FENDT 927 Vario	925.21.1881	FENDT 936 Vario	934.21.2201

Remove B030 sensor

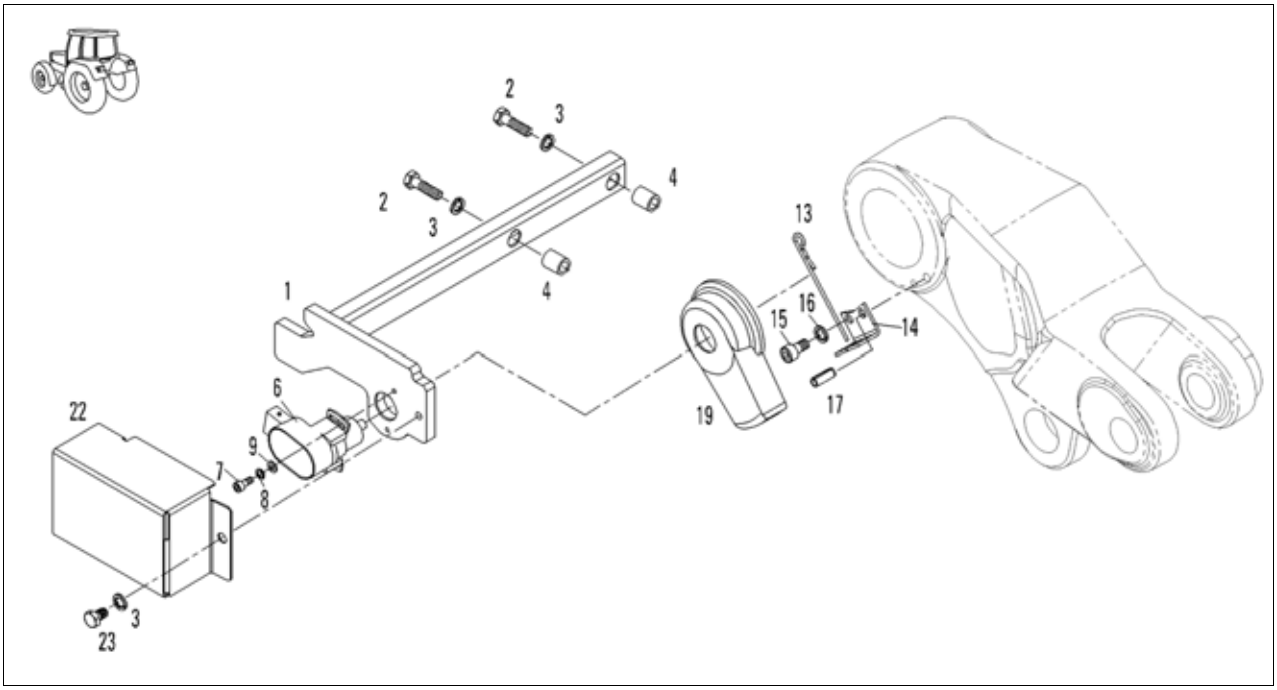


Fig. 70. I005938

– Unscrew sensor guard (Item 22).
– Destroy plastic cover (Item 19).
– Pull on drive pin (Item 13).
– Remove sensor (Item 6).
– Unscrew angle bracket (Item 14).
– Do not pull dowel pin (Item 17).

Optional: Destroy the plastic cover
– Cut out a V shape (arrow) from the plastic cover.

This provides access to the drive pin (Item 13), which can be removed with pliers. This means that the plastic cover no longer needs to be removed by force, and the sensor can be removed without any further action required.

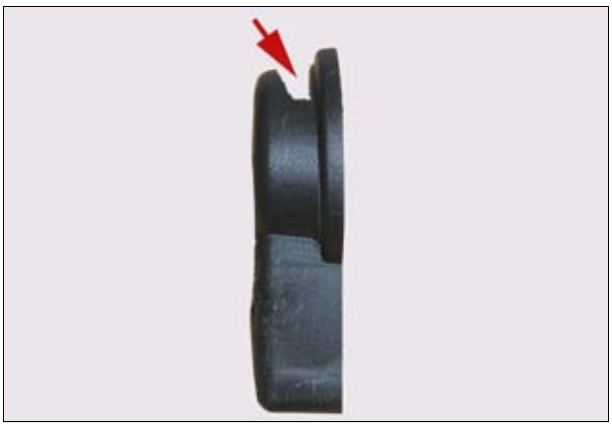


Fig. 71. I005951

Check Chassis Range!

Fit B030 sensor

– Insert new sensor in retainer and fit spring.

NOTE: *Pay attention to the rotational positioning of the sensor when fitting the spring (also see following two figures).*

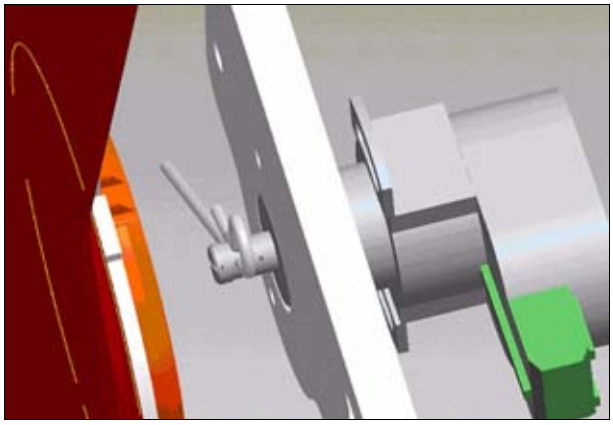


Fig. 72. I005972

– The notch in the shaft (arrow) indicates the electrical connection.

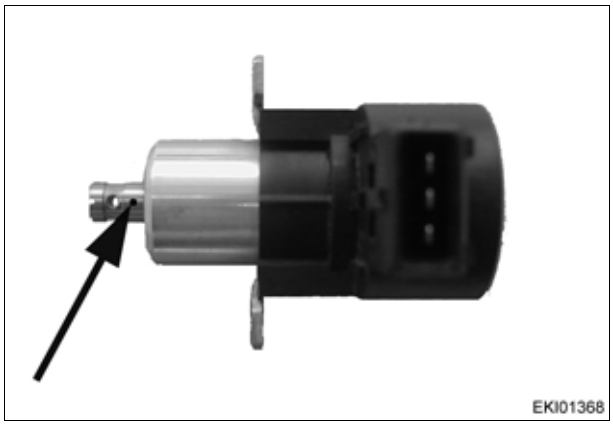


Fig. 73. I001478

– The spring wire must jut out opposite the notch. (The notch indicates the short end of the spring wire).

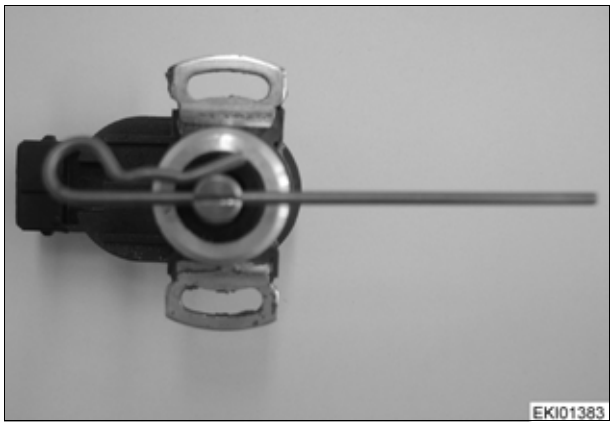


Fig. 74. I001479

– Push guard 931.860.100.040 (arrow) onto spring as shown (through opening on front side shown in figure).

The sensor must not be completely seated in the retainer; it should be pulled outwards slightly as shown.

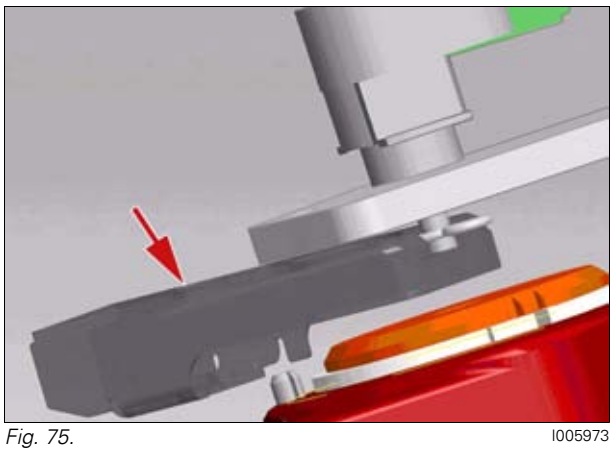


Fig. 75. I005973

– The spring (arrow) must be fed through the slot.

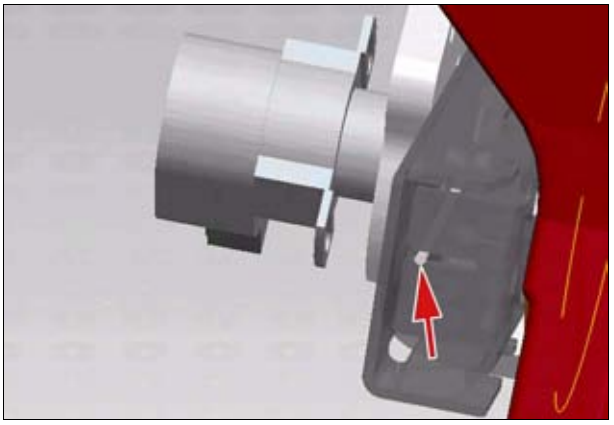


Fig. 76. I005974

– Push guard 931.860.100.040 onto dowel pin (arrow) through slot.

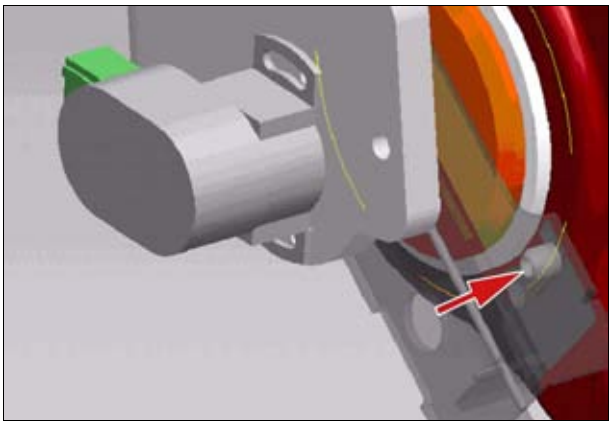


Fig. 77. I005975

– Secure sensor and guard with socket head cap screws.
– Fit sensor guard (524.860.100.100).

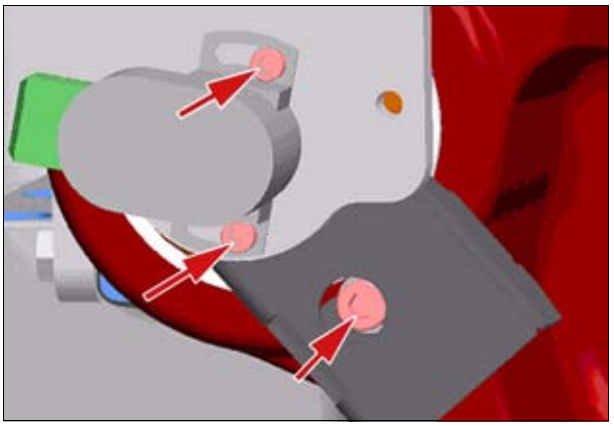


Fig. 78. I005976

Calibrate B030 rear power lift position sensor.

See also:
FENDT 900 Vario COM III workshop manual
Chapter 0000 Reg. F - General information on calibration
Chapter 0000 Reg. F - Calibration code 8002 (rear power lift position)

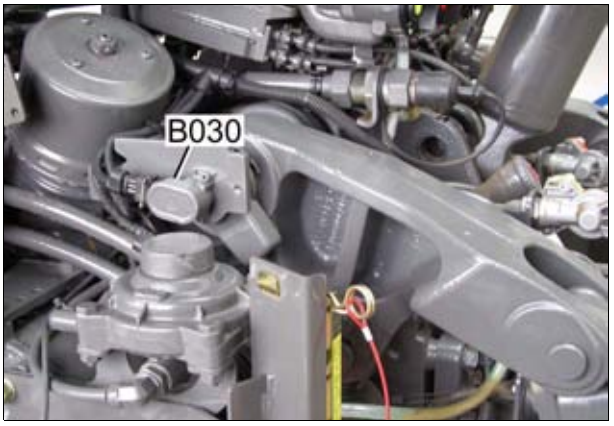


Fig. 79. I001069

Check Chassis Range!

Test: Rear power lift overtravel

– Raise lifting arms fully. (Set lift height limiter to 100%)
– Actuate S029 or S027 external rear power lift raise switch.

Lifting arms raise approx. 15 mm further, to mechanical stop.

NOTE: *The overtravel may be less than this approx. 15 mm, but a little overtravel must remain.*

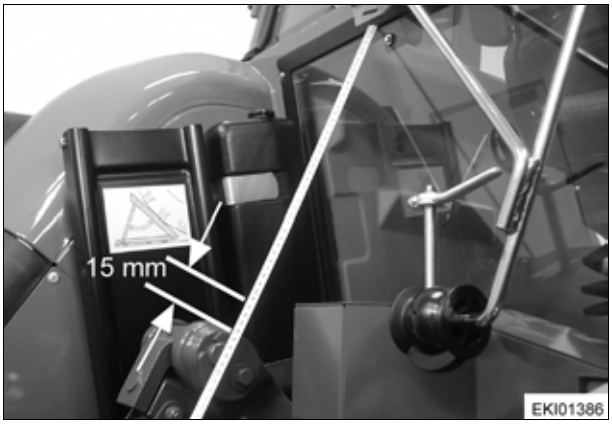


Fig. 80. I001480

Check Chassis Range!

A	General
B	Faults
C	Documents and Diagrams
D	Component location
E	Testing
F	Setting and Calibration
G	Repair
H	Service – Info

8631

Power lift/hydraulic lift

8631 Power lift/hydraulic lift

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G Repair. 11

C Documents and diagrams

1 Technical drawing of the hydr. lower link support 7

1 Technical drawing of the hydr. lower link support

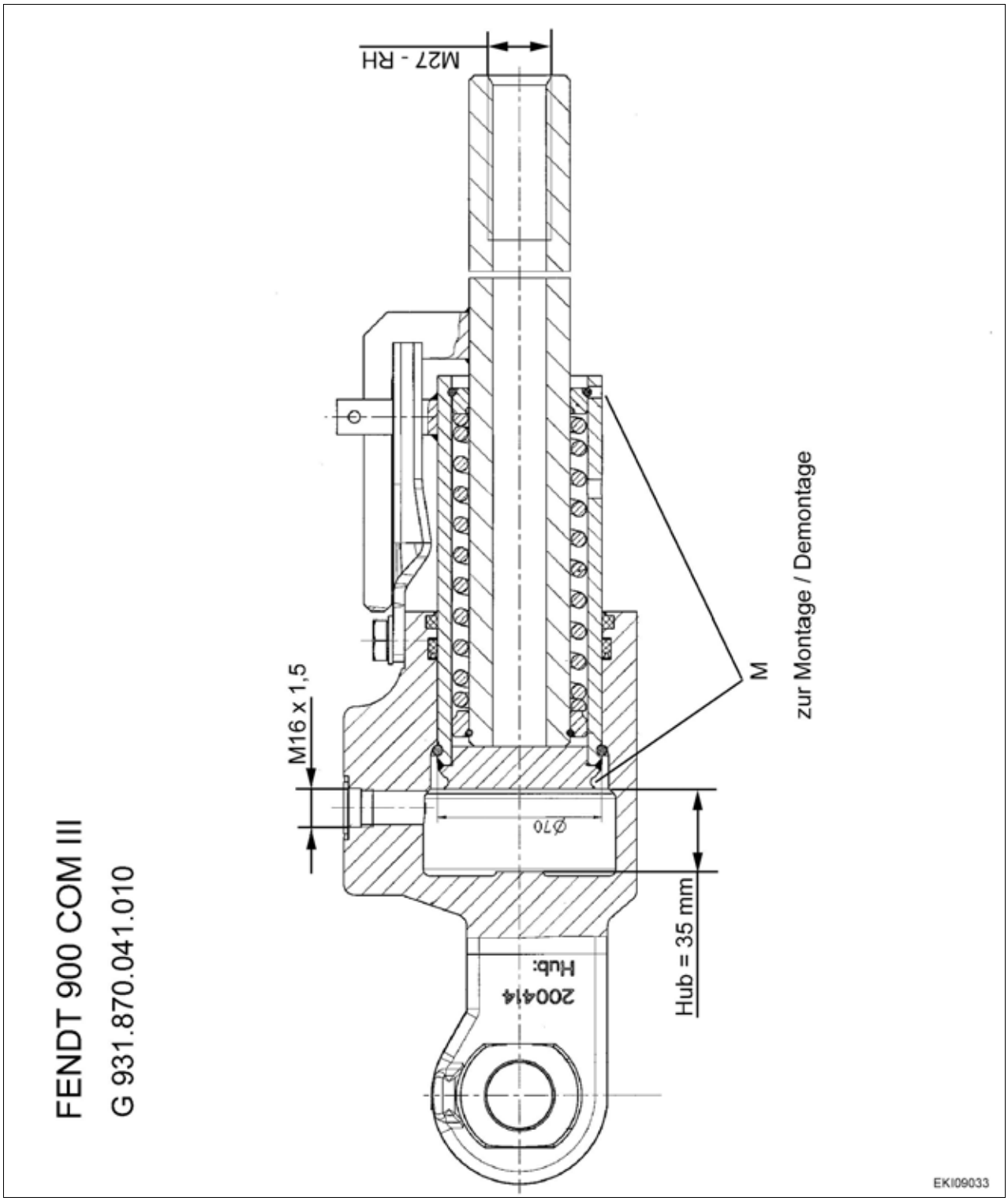


Fig. 1. I003635

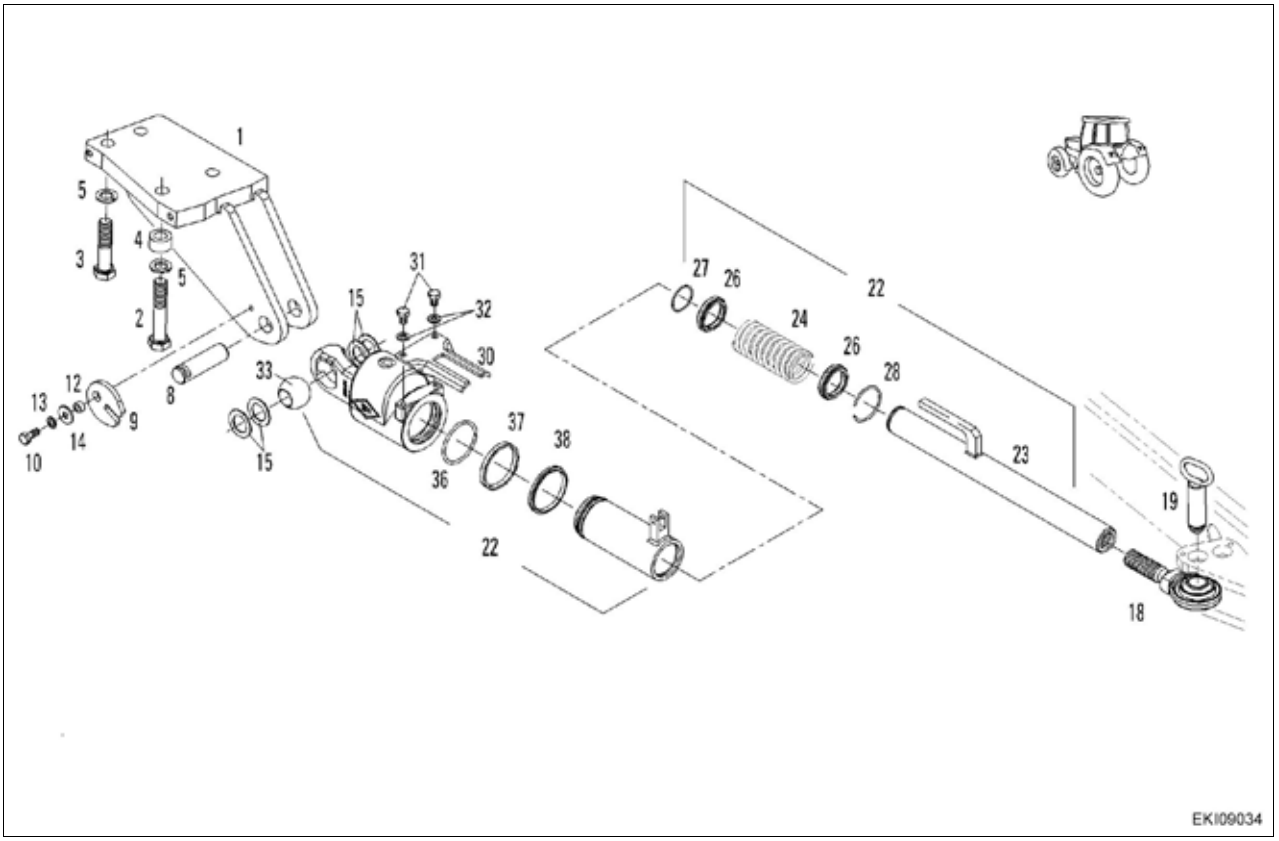


Fig. 2. I003636

Item	Designation	Item	Designation
1	Bearing	22	Push rod
2	Hex screw	23	Pipe section
3	Hex screw	24	Pressure spring
4	Bush	26	Guide ring
5	Spring washer	27	Snap ring
8	Bolt	28	Snap ring
9	Securing plate	30	Guide plate
10	Hex screw	31	Hex screw
12	Bush	32	Washer
13	Spring washer	33	Ball sleeve
14	Washer	36	Snap ring
15	Washer	37	Piston seal
18	Articulated spindle	38	Scraper ring
19	Locating pin		

Instructions for fitting and removing

Removal:
Push piston rod back
Embed snap ring (36) in groove (A) through connection bore hole M16x1.5.
Carefully pull the piston rod out

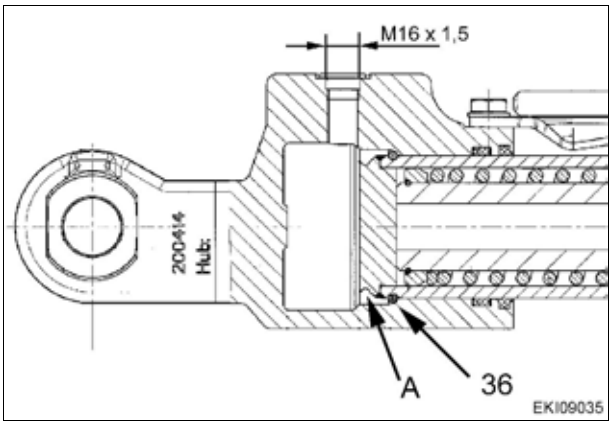


Fig. 3. I003637

Release the load on pressure spring (24).
Twist snap ring (28) out through bore (A).
Pull out pipe section

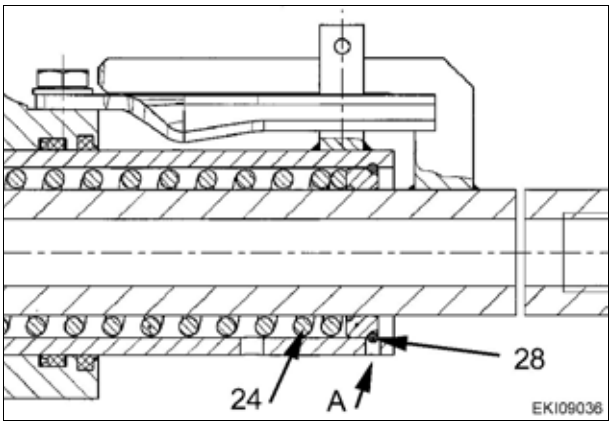


Fig. 4. I003638

Fitting:
Insert pressure spring (24).
Insert snap ring (28) in the groove through bore (A).
Turn the piston rod slowly to embed snap ring (28) in the groove

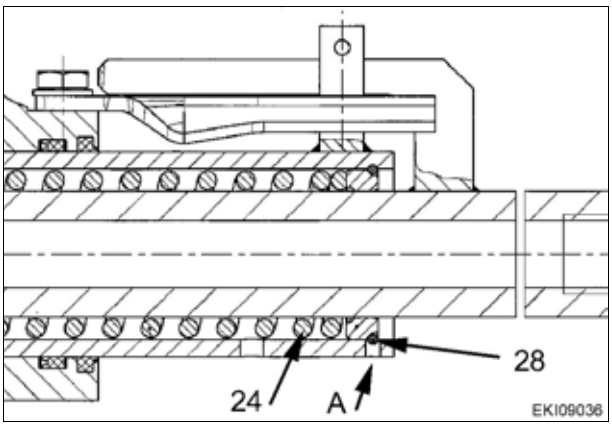


Fig. 5. I003638

Insert new piston seal (37) and scraper ring (38)
Embed snap ring (36) in groove (A).
Fit piston rod.
Embed snap ring (36) in the groove through connection bore M16x1.5

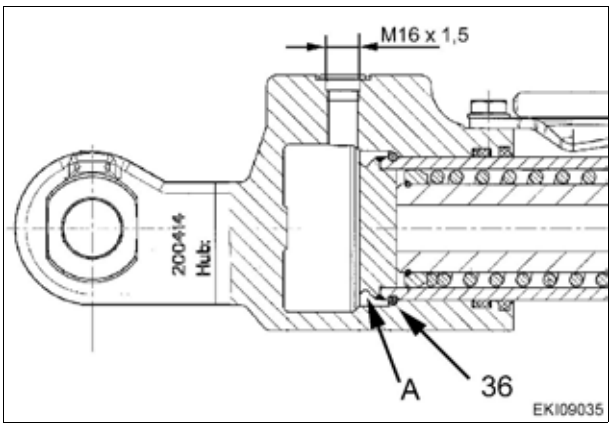


Fig. 6. I003637

Notes on the function of the hydr. lower link support

NOTE: *See also:*
Chapter 9000 Reg. E - A002 ECU, basic control unit (area: EPC rear power lift and rear power lift additional functions)



Fig. 7. I001030

NOTE: *See also:*
Chapter 9000 Reg. E - Measuring and testing Y082/Y083 solenoid valve, lower link support I/II

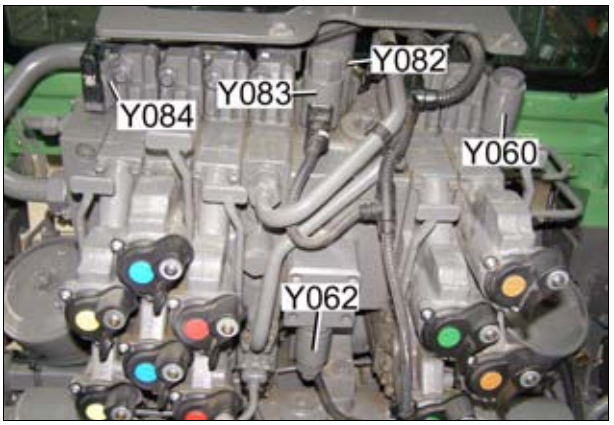


Fig. 8. I001169

G Repair

1 Removing the understeer stabiliser solenoid valve Y082/Y083 13
2 Fitting the understeer stabiliser solenoid valve Y082/Y083 15

1 Removing the understeer stabiliser solenoid valve Y082/Y083

Remove solenoid valve connector and remove solenoid coil



Fig. 1. I001768

Loosen switching valve Y083



Fig. 2. I001769

Remove switching valve Y083



Fig. 3. I001770

Loosen solenoid valve Y082



Fig. 4. I001773

Remove solenoid valve Y082



Fig. 5. I001771

2 Fitting the understeer stabiliser solenoid valve Y082/Y083

Screw solenoid valve Y082 into bore hole



Fig. 6. I001771

Tighten solenoid valve Y082 to 30 Nm (shown with solenoid valve removed)



Fig. 7. I001773

Screw switching valve Y083 into bore hole

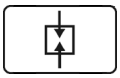


Fig. 8. I001770

Tighten switching valve Y083 to 30 Nm



Fig. 9. I001769



Mount solenoid coil and nut, tighten nut to8 Nm and insert connector



Fig. 10. I001768

A	General
B	Faults
C	Documents and Diagrams
D	Component location
E	Testing
F	Setting and Calibration
G	Repair
H	Service – Info

8800

Overall system/compressed air system

8800 Overall system/compressed air system

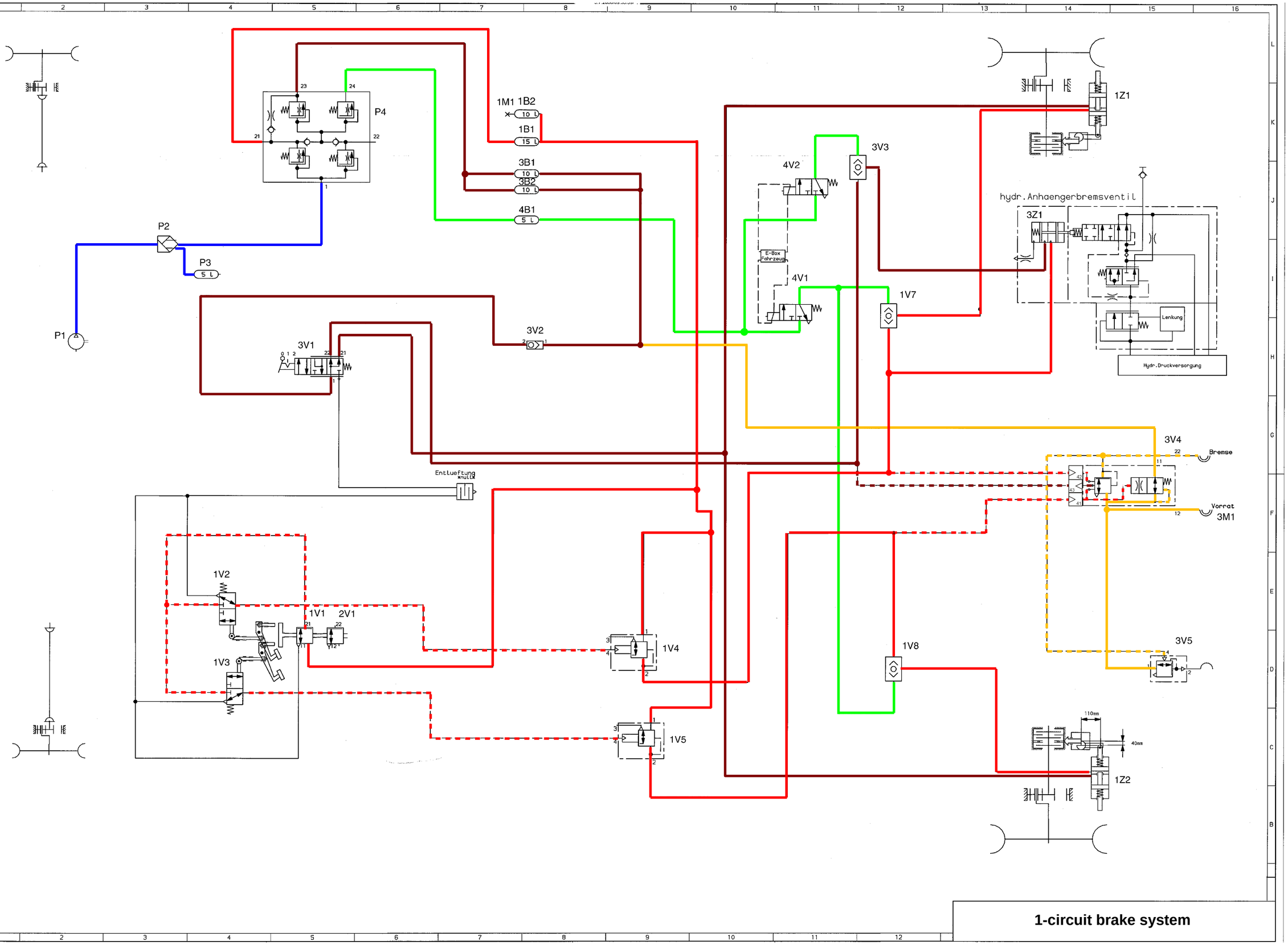
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1 Diagram of compressed air system (1-circuit and 2-circuit brake systems) 7
2 Wiring diagram: FENDT 900 COM III compressed air system (4-circuit) 8



1-circuit brake system

Circuit diagram legend: FENDT 900 Vario COM III compressed air system – 1-circuit brake system

	Pressure supply		**Actuator cylinder**
P1	Compressor	1Z1	Rear right Tristop cylinder
P2	Air dryer	1Z2	Rear left Tristop cylinder
P3	Regeneration reservoir (5 l)		
P4	4-circuit safety valve		
	Pressure accumulator		
1B1	Air reservoir – 1-circuit (15 l) (rear axle)	3Z1	Pilot head with spring-loaded function Hydr. trailer brake
1B2	Air reservoir – 1-circuit (10 l) (rear axle)		
3B1	Air reservoir – 3-circuit (15 l)	4Z1	Right suspension cylinder with control
3B2	Air reservoir – 3-circuit (10 l)	4Z2	Left suspension cylinder without control
3B3	Air reservoir – 3-circuit (10 l) – optional	4Z3	Front suspension cylinder with control
3B4	Air reservoir – 3-circuit (10 l) – optional	4Z4	Engine brake actuator cylinder
4B1	Air reservoir – 4-circuit (5 l)	4Z5	Rotary cylinder, reverse operation (Rüfa)
		4Z6	Rotary cylinder, road
	Valves		
1V1	Foot brake valve – 1-circuit (rear axle)		**Measuring points:**
1V2	Right steering brake valve	1M1	Supply pressure – circuit 1
1V3	Left steering brake valve	1M3	brake pressure right rear axle
1V4	Right relay valve	1M4	brake pressure left rear axle
1V5	Left relay valve		
1V7	Shuttle valve: foot brake / Right hold function	3M1	Supply pressure – circuit 3 (red coupling head)
1V8	Shuttle valve: foot brake / Left hold function	3M2	Spring-loaded parking brake pressure release
3V1	Parking brake valve		**Switch/sensors**
3V2	Non-return valve	1S1	Supply pressure – circuit 1
3V3	Shuttle valve, hydr. trailer brake	1S2	Right foot brake switch
3V4	Trailer control valve	1S3	Left foot brake switch
3V5	Trailer control valve (feed)	1S4	Right wear indicator
		1S5	Left wear indicator
4V1	Active hold function		
4V2	Hydr. trailer brake release valve	3S1	Parking brake switch
4V3	Swivel seat rotation facing reverse		
4V4	Swivel seat rotation facing road		
4V5	Overflow valve		
4V6	Engine brake solenoid valve		

NOTE:

Tractors fitted with a 1-circuit brake system have two foot brake pedals, and chassis number 9XX/21/XXXX.

2-circuit brake system

2Z1
P4
P2
P3
P1
1M1
1B1
15 L
3B1
10 L
3B2
10 L
4B1
5 L
2M1
2B1
15 L
3V2
3V1
1V6
Entlueftung
2Z2
1V1
2V1
4V2
3V3
E-Box Fahrzeug
4V1
1V9
3M2
1Z1
1M2
hydr. Anhaengerbremsventil
3Z1
Lenkung
Hydr. Druckversorgung
3V4
Bremse
Vorrat
3M1
3V5
58mm
40mm
1Z2

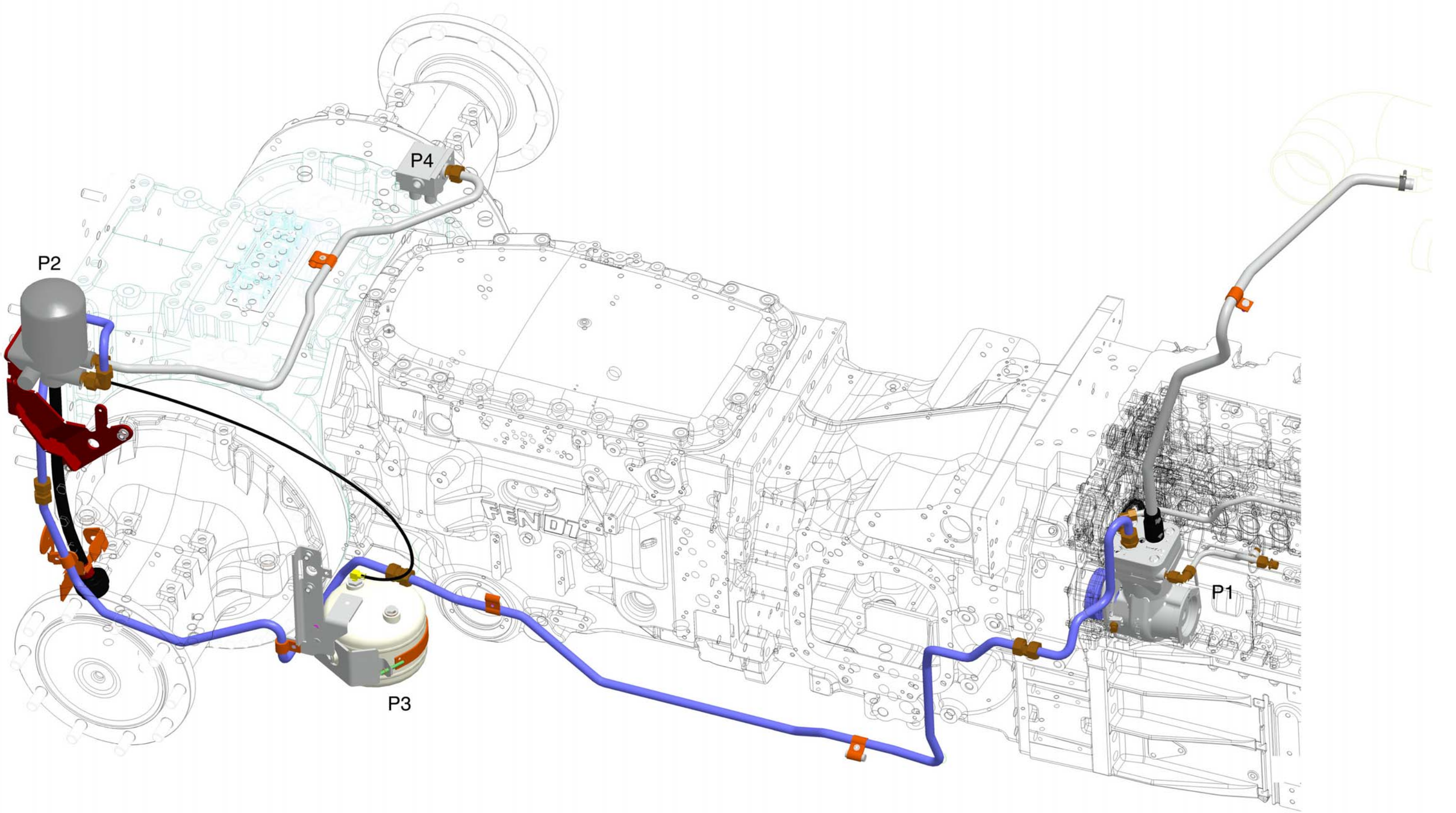
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Circuit diagram legend: FENDT 900 Vario COM III compressed air system – 2-circuit brake system

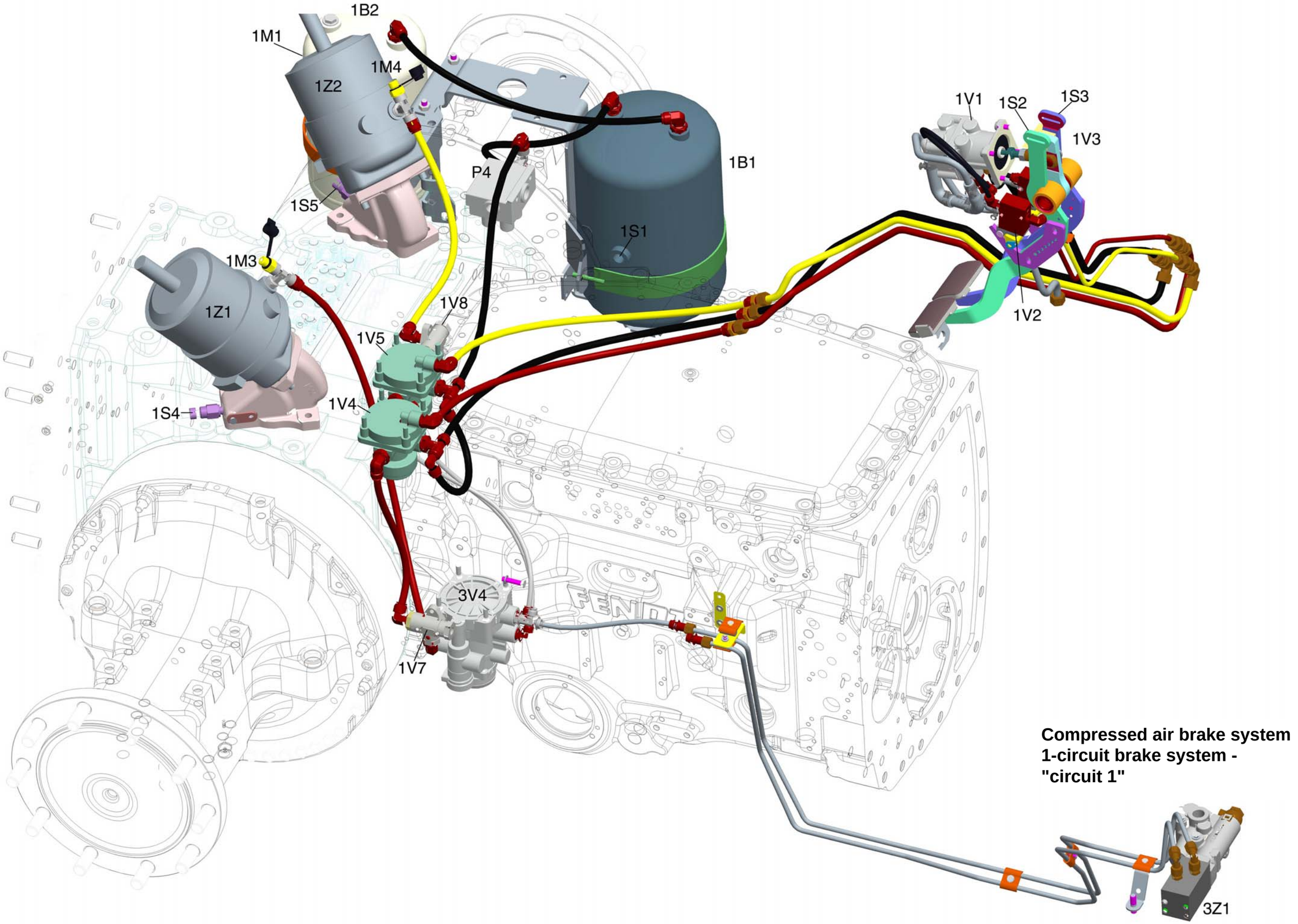
	Pressure supply		**Actuator cylinder**
P1	Compressor	1Z1	Rear right Tristop cylinder
P2	Air dryer	1Z2	Rear left Tristop cylinder
P3	Regeneration reservoir (5 l)		
P4	4-circuit safety valve	2Z1	Front right ring piston
		2Z2	Front left ring piston
	Pressure accumulator		
1B1	Air reservoir – 1-circuit (15 l) (rear axle)	3Z1	Pilot head with spring-loaded function Hydr. trailer brake
2B1	Air reservoir – 2-circuit (15 l) (VA)		
3B1	Air reservoir – 3-circuit (10 l)	4Z1	Right suspension cylinder with control
3B2	Air reservoir – 3-circuit (10 l)	4Z2	Left suspension cylinder without control
3B3	Air reservoir – 3-circuit (10 l) – optional	4Z3	Front suspension cylinder with control
3B4	Air reservoir – 3-circuit (10 l) – optional	4Z4	Engine brake actuator cylinder
4B1	Air reservoir – 4-circuit (5 l)	4Z5	Rotary cylinder, reverse operation (Rüfa)
		4Z6	Rotary cylinder, road
	Valves		
1V1	Foot brake valve – 1-circuit (rear axle)		**Measuring points:**
1V6	Rear axle relay valve	1M1	Supply pressure – circuit 1
1V9	Shuttle valve: foot brake / Hold function	1M2	Rear axle brake pressure
		2M1	Supply pressure – circuit 2
2V1	Foot brake valve – 2-circuit (VA)	2M2	Front axle brake pressure
		3M1	Supply pressure – circuit 3 (red coupling head)
3V1	Parking brake valve	3M2	Spring-loaded parking brake pressure release
3V2	Non-return valve		
3V3	Shuttle valve, hydr. trailer brake		**Switch/sensors**
3V4	Trailer control valve	1S1	Supply pressure – circuit 1
3V5	Trailer control valve (feed)	1S3	Foot brake switch
		1S4	Right wear indicator
4V1	Active hold function	1S5	Left wear indicator
4V2	Hydr. trailer brake release valve		
4V3	Swivel seat rotation facing reverse	1S2	Supply pressure – circuit 2
4V4	Swivel seat rotation facing road		
4V5	Overflow valve	3S1	Parking brake switch
4V6	Engine brake solenoid valve		

NOTE:

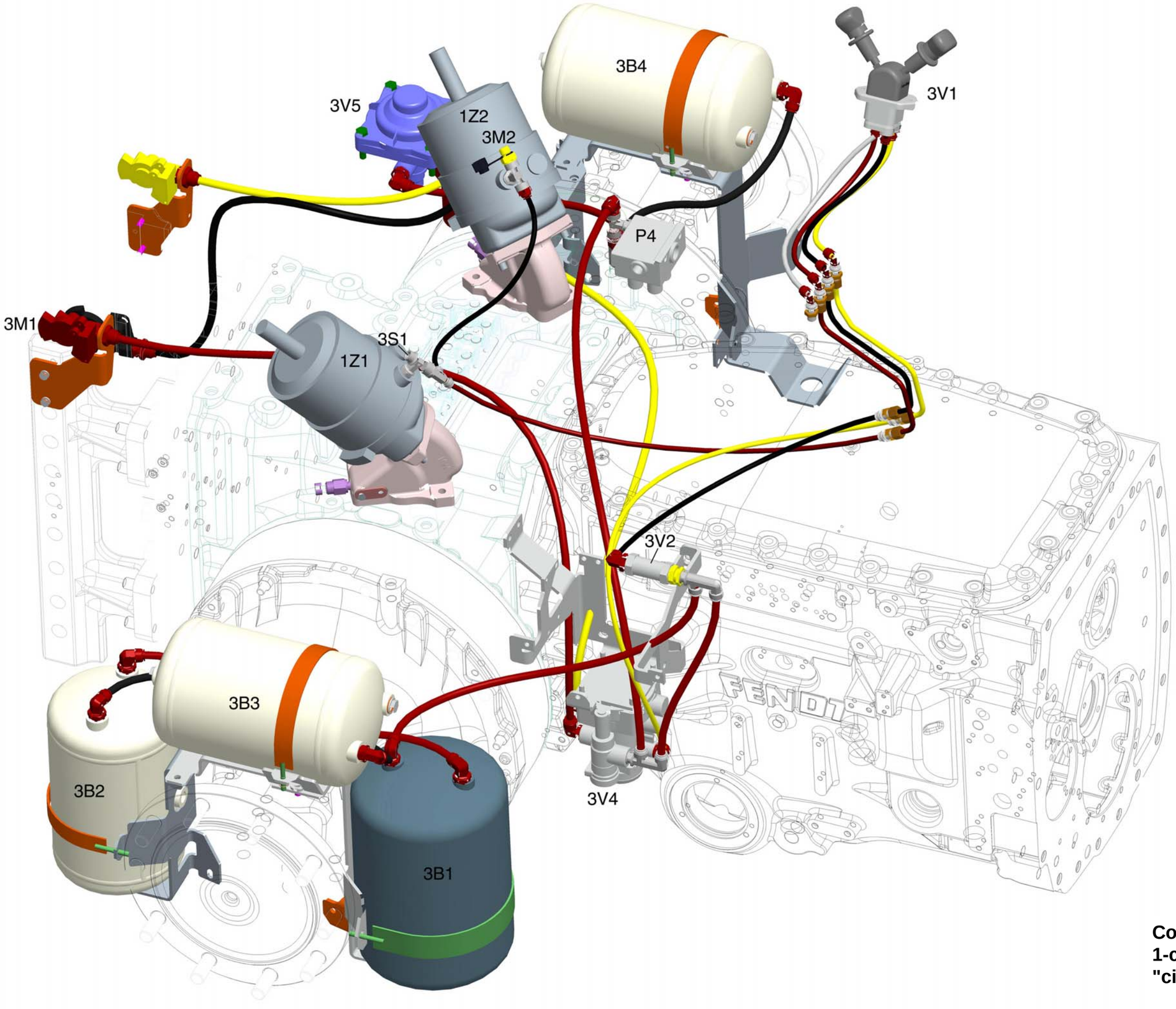
Tractors fitted with a 2-circuit brake system have only one foot brake pedal, and chassis number 9XX/23/XXXX.



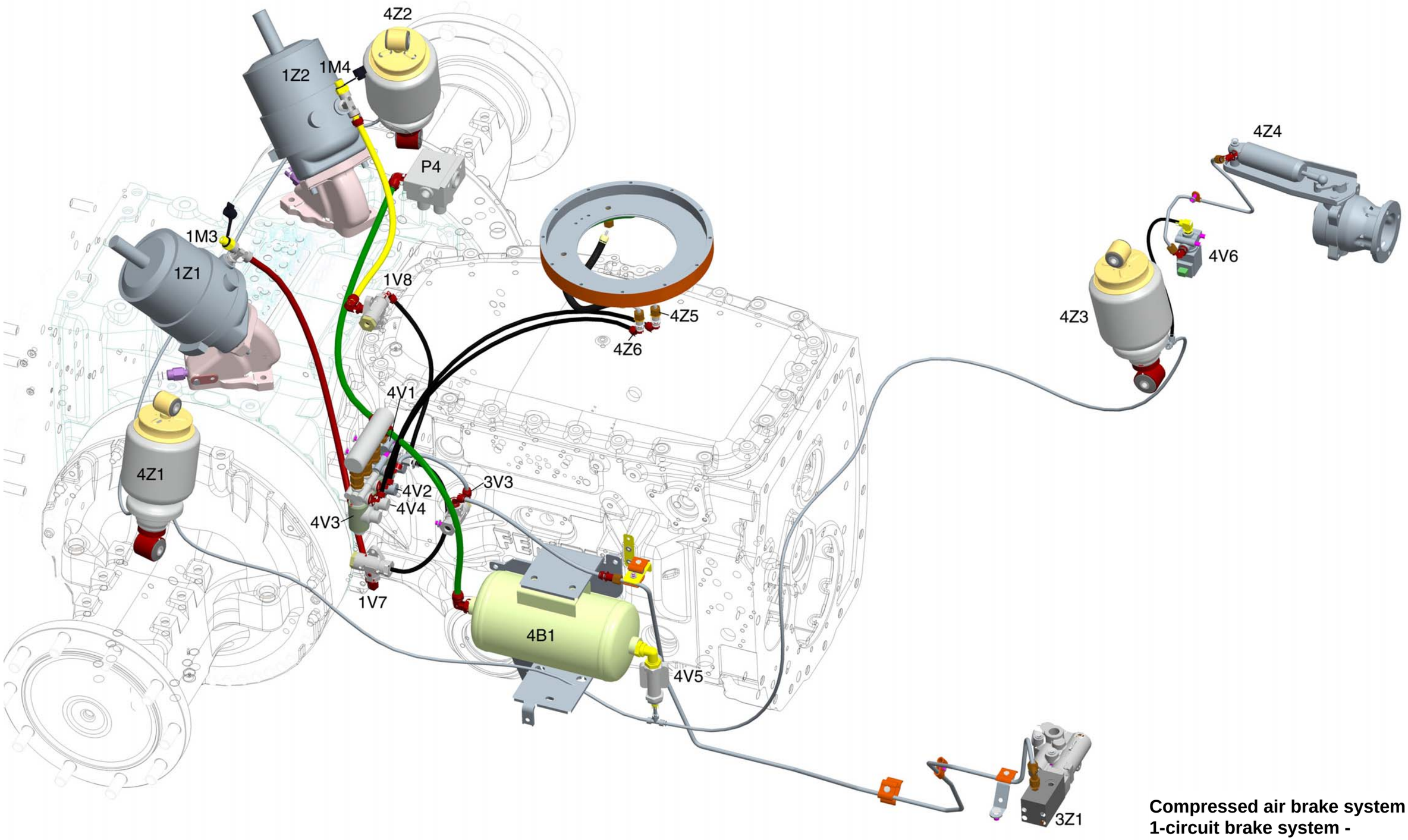
Compressed air brake system
Pressure supply



Compressed air brake system
1-circuit brake system -
"circuit 1"



Compressed air system
1-circuit brake system -
"circuit 3"



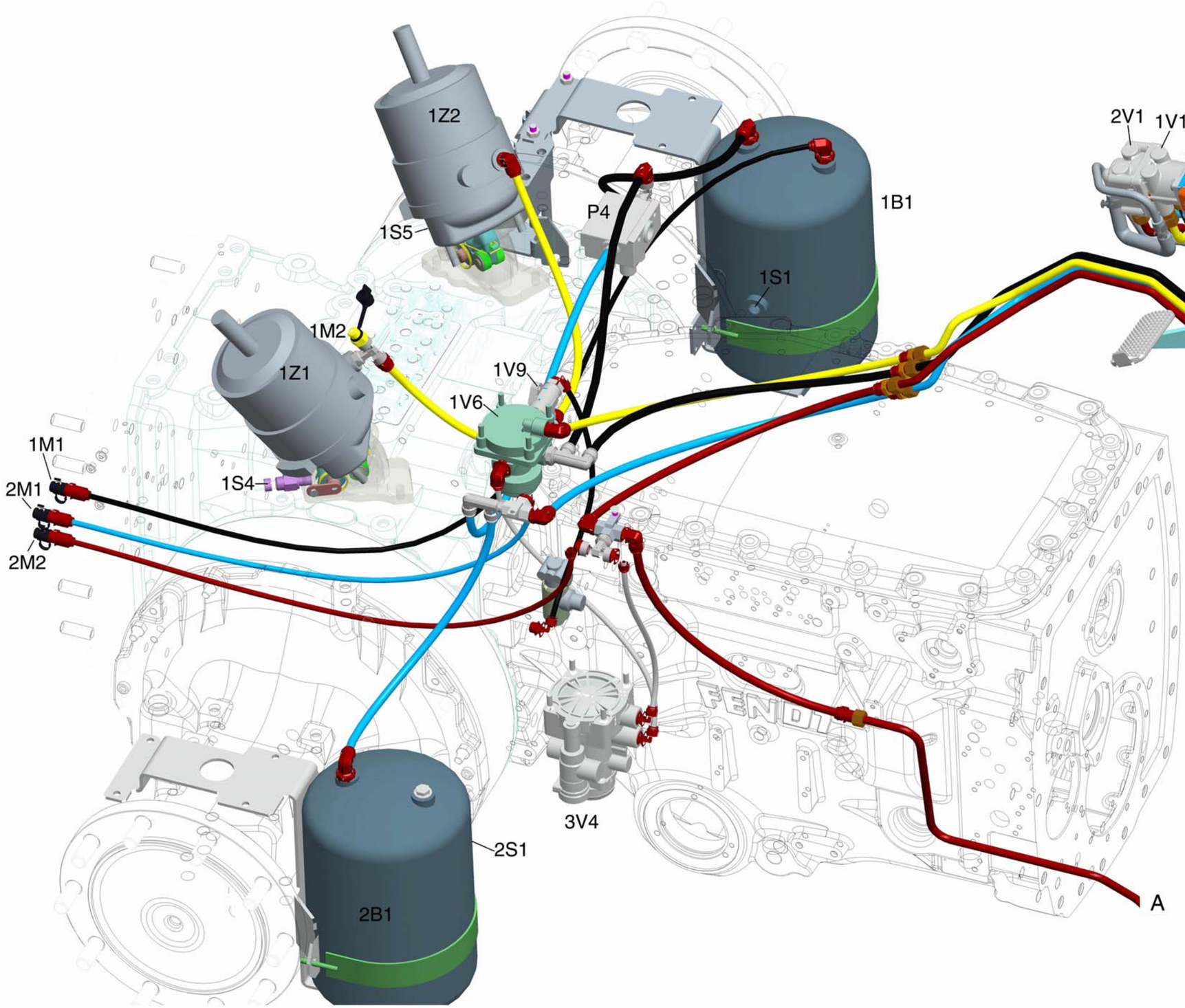
Compressed air brake system
1-circuit brake system -
"circuit 4"

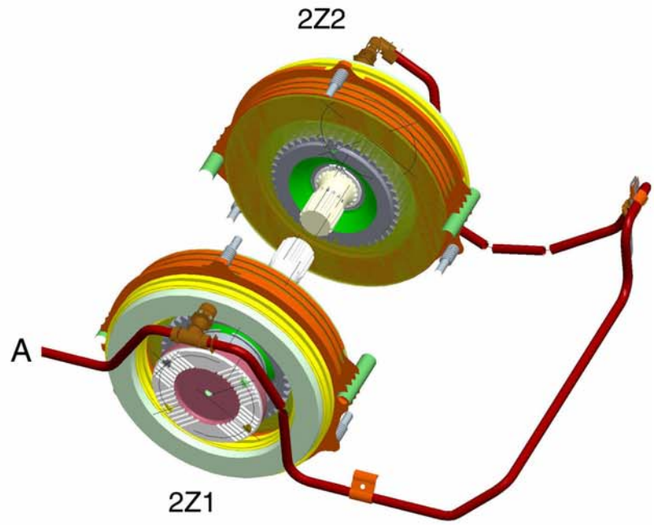
Circuit diagram legend: FENDT 900 Vario COM III compressed air system – 1-circuit brake system

	Pressure supply		**Actuator cylinder**
P1	Compressor	1Z1	Rear right Tristop cylinder
P2	Air dryer	1Z2	Rear left Tristop cylinder
P3	Regeneration reservoir (5 l)		
P4	4-circuit safety valve		
	Pressure accumulator		
1B1	Air reservoir – 1-circuit (15 l) (rear axle)	3Z1	Pilot head with spring-loaded function Hydr. trailer brake
1B2	Air reservoir – 1-circuit (10 l) (rear axle)		
3B1	Air reservoir – 3-circuit (15 l)	4Z1	Right suspension cylinder with control
3B2	Air reservoir – 3-circuit (10 l)	4Z2	Left suspension cylinder without control
3B3	Air reservoir – 3-circuit (10 l) – optional	4Z3	Front suspension cylinder with control
3B4	Air reservoir – 3-circuit (10 l) – optional	4Z4	Engine brake actuator cylinder
4B1	Air reservoir – 4-circuit (5 l)	4Z5	Rotary cylinder, reverse operation (Rüfa)
		4Z6	Rotary cylinder, road
	Valves		
1V1	Foot brake valve – 1-circuit (rear axle)		**Measuring points:**
1V2	Right steering brake valve	1M1	Supply pressure – circuit 1
1V3	Left steering brake valve	1M3	brake pressure right rear axle
1V4	Right relay valve	1M4	brake pressure left rear axle
1V5	Left relay valve		
1V7	Shuttle valve: foot brake / Right hold function	3M1	Supply pressure – circuit 3 (red coupling head)
1V8	Shuttle valve: foot brake / Left hold function	3M2	Spring-loaded parking brake pressure release
3V1	Parking brake valve		**Switch/sensors**
3V2	Non-return valve	1S1	Supply pressure – circuit 1
3V3	Shuttle valve, hydr. trailer brake	1S2	Right foot brake switch
3V4	Trailer control valve	1S3	Left foot brake switch
3V5	Trailer control valve (feed)	1S4	Right wear indicator
		1S5	Left wear indicator
4V1	Active hold function		
4V2	Hydr. trailer brake release valve	3S1	Parking brake switch
4V3	Swivel seat rotation facing reverse		
4V4	Swivel seat rotation facing road		
4V5	Overflow valve		
4V6	Engine brake solenoid valve		

NOTE:

Tractors fitted with a 1-circuit brake system have two foot brake pedals, and chassis number 9XX/21/XXXX.





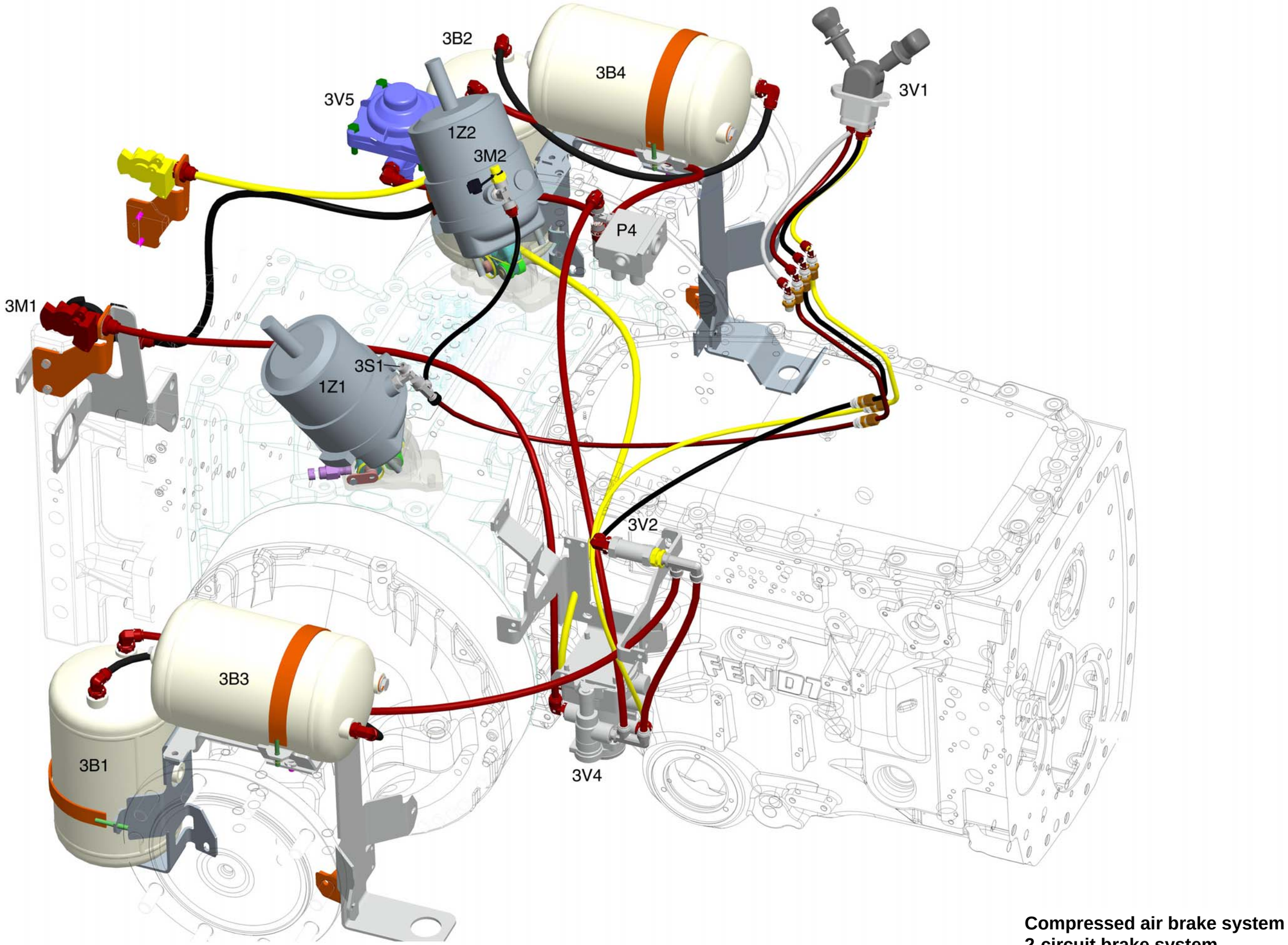
Compressed air brake system
2-circuit brake system -
"circuit 1 + 2"

Circuit diagram legend: FENDT 900 Vario COM III compressed air system – 2-circuit brake system

	Pressure supply		**Actuator cylinder**
P1	Compressor	1Z1	Rear right Tristop cylinder
P2	Air dryer	1Z2	Rear left Tristop cylinder
P3	Regeneration reservoir (5 l)		
P4	4-circuit safety valve	2Z1	Front right ring piston
		2Z2	Front left ring piston
	Pressure accumulator		
1B1	Air reservoir – 1-circuit (15 l) (rear axle)	3Z1	Pilot head with spring-loaded function Hydr. trailer brake
2B1	Air reservoir – 2-circuit (15 l) (VA)		
3B1	Air reservoir – 3-circuit (10 l)	4Z1	Right suspension cylinder with control
3B2	Air reservoir – 3-circuit (10 l)	4Z2	Left suspension cylinder without control
3B3	Air reservoir – 3-circuit (10 l) – optional	4Z3	Front suspension cylinder with control
3B4	Air reservoir – 3-circuit (10 l) – optional	4Z4	Engine brake actuator cylinder
4B1	Air reservoir – 4-circuit (5 l)	4Z5	Rotary cylinder, reverse operation (Rüfa)
		4Z6	Rotary cylinder, road
	Valves		
1V1	Foot brake valve – 1-circuit (rear axle)		**Measuring points:**
1V6	Rear axle relay valve	1M1	Supply pressure – circuit 1
1V9	Shuttle valve: foot brake / Hold function	1M2	Rear axle brake pressure
		2M1	Supply pressure – circuit 2
2V1	Foot brake valve – 2-circuit (VA)	2M2	Front axle brake pressure
		3M1	Supply pressure – circuit 3 (red coupling head)
3V1	Parking brake valve	3M2	Spring-loaded parking brake pressure release
3V2	Non-return valve		
3V3	Shuttle valve, hydr. trailer brake		**Switch/sensors**
3V4	Trailer control valve	1S1	Supply pressure – circuit 1
3V5	Trailer control valve (feed)	1S3	Foot brake switch
		1S4	Right wear indicator
4V1	Active hold function	1S5	Left wear indicator
4V2	Hydr. trailer brake release valve		
4V3	Swivel seat rotation facing reverse	1S2	Supply pressure – circuit 2
4V4	Swivel seat rotation facing road		
4V5	Overflow valve	3S1	Parking brake switch
4V6	Engine brake solenoid valve		

NOTE:

Tractors fitted with a 2-circuit brake system have only one foot brake pedal, and chassis number 9XX/23/XXXX.



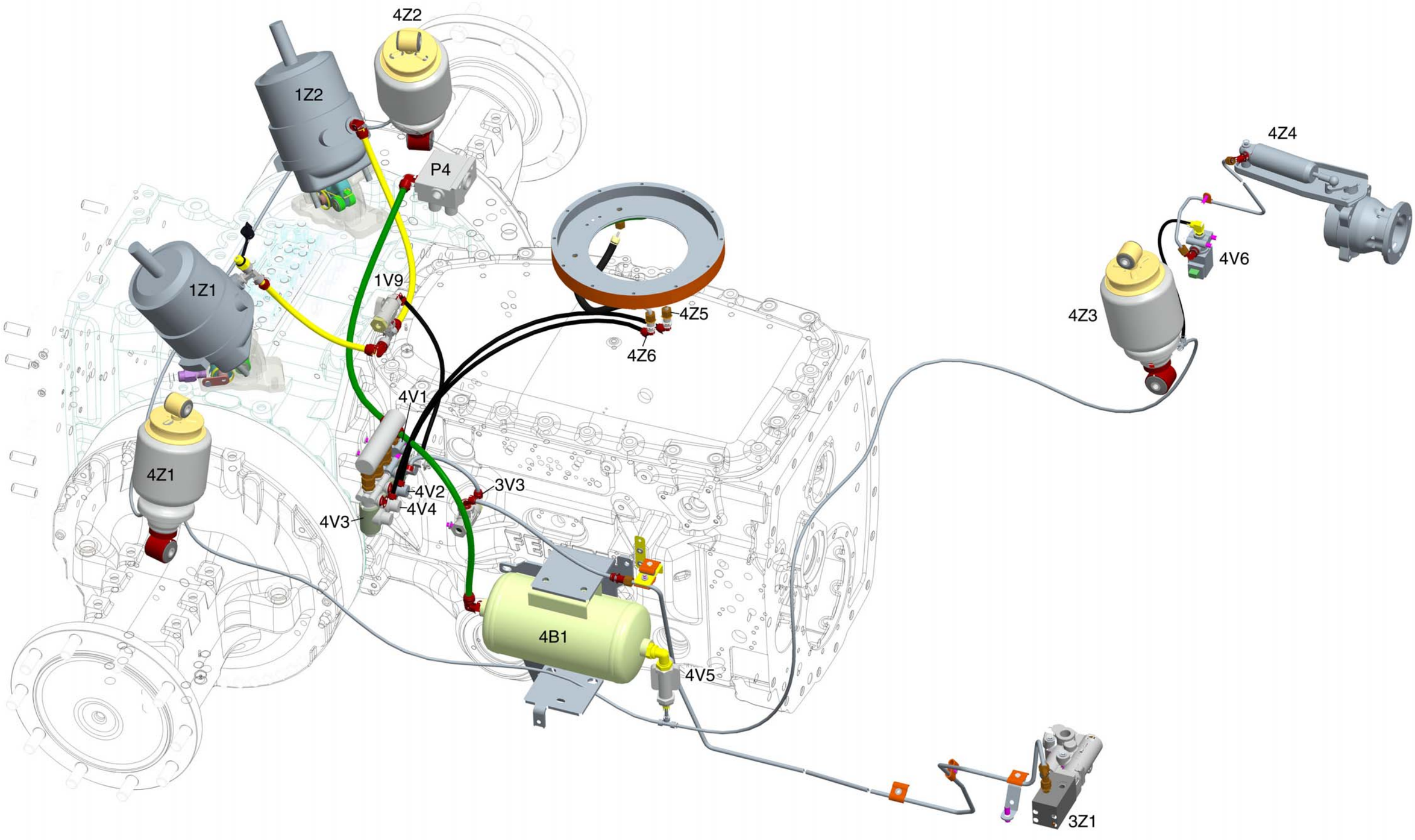
Compressed air brake system
2-circuit brake system -
"circuit 3"

Circuit diagram legend: FENDT 900 Vario COM III compressed air system – 2-circuit brake system

	Pressure supply		**Actuator cylinder**
P1	Compressor	1Z1	Rear right Tristop cylinder
P2	Air dryer	1Z2	Rear left Tristop cylinder
P3	Regeneration reservoir (5 l)		
P4	4-circuit safety valve	2Z1	Front right ring piston
		2Z2	Front left ring piston
	Pressure accumulator		
1B1	Air reservoir – 1-circuit (15 l) (rear axle)	3Z1	Pilot head with spring-loaded function Hydr. trailer brake
2B1	Air reservoir – 2-circuit (15 l) (VA)		
3B1	Air reservoir – 3-circuit (10 l)	4Z1	Right suspension cylinder with control
3B2	Air reservoir – 3-circuit (10 l)	4Z2	Left suspension cylinder without control
3B3	Air reservoir – 3-circuit (10 l) – optional	4Z3	Front suspension cylinder with control
3B4	Air reservoir – 3-circuit (10 l) – optional	4Z4	Engine brake actuator cylinder
4B1	Air reservoir – 4-circuit (5 l)	4Z5	Rotary cylinder, reverse operation (Rüfa)
		4Z6	Rotary cylinder, road
	Valves		
1V1	Foot brake valve – 1-circuit (rear axle)		**Measuring points:**
1V6	Rear axle relay valve	1M1	Supply pressure – circuit 1
1V9	Shuttle valve: foot brake / Hold function	1M2	Rear axle brake pressure
		2M1	Supply pressure – circuit 2
2V1	Foot brake valve – 2-circuit (VA)	2M2	Front axle brake pressure
		3M1	Supply pressure – circuit 3 (red coupling head)
3V1	Parking brake valve	3M2	Spring-loaded parking brake pressure release
3V2	Non-return valve		
3V3	Shuttle valve, hydr. trailer brake		**Switch/sensors**
3V4	Trailer control valve	1S1	Supply pressure – circuit 1
3V5	Trailer control valve (feed)	1S3	Foot brake switch
		1S4	Right wear indicator
4V1	Active hold function	1S5	Left wear indicator
4V2	Hydr. trailer brake release valve		
4V3	Swivel seat rotation facing reverse	1S2	Supply pressure – circuit 2
4V4	Swivel seat rotation facing road		
4V5	Overflow valve	3S1	Parking brake switch
4V6	Engine brake solenoid valve		

NOTE:

Tractors fitted with a 2-circuit brake system have only one foot brake pedal, and chassis number 9XX/23/XXXX.



Compressed air brake system
2-circuit brake system -
"circuit 4"

Circuit diagram legend: FENDT 900 Vario COM III compressed air system – 2-circuit brake system

	Pressure supply		**Actuator cylinder**
P1	Compressor	1Z1	Rear right Tristop cylinder
P2	Air dryer	1Z2	Rear left Tristop cylinder
P3	Regeneration reservoir (5 l)		
P4	4-circuit safety valve	2Z1	Front right ring piston
		2Z2	Front left ring piston
	Pressure accumulator		
1B1	Air reservoir – 1-circuit (15 l) (rear axle)	3Z1	Pilot head with spring-loaded function Hydr. trailer brake
2B1	Air reservoir – 2-circuit (15 l) (VA)		
3B1	Air reservoir – 3-circuit (10 l)	4Z1	Right suspension cylinder with control
3B2	Air reservoir – 3-circuit (10 l)	4Z2	Left suspension cylinder without control
3B3	Air reservoir – 3-circuit (10 l) – optional	4Z3	Front suspension cylinder with control
3B4	Air reservoir – 3-circuit (10 l) – optional	4Z4	Engine brake actuator cylinder
4B1	Air reservoir – 4-circuit (5 l)	4Z5	Rotary cylinder, reverse operation (Rüfa)
		4Z6	Rotary cylinder, road
	Valves		
1V1	Foot brake valve – 1-circuit (rear axle)		**Measuring points:**
1V6	Rear axle relay valve	1M1	Supply pressure – circuit 1
1V9	Shuttle valve: foot brake / Hold function	1M2	Rear axle brake pressure
		2M1	Supply pressure – circuit 2
2V1	Foot brake valve – 2-circuit (VA)	2M2	Front axle brake pressure
		3M1	Supply pressure – circuit 3 (red coupling head)
3V1	Parking brake valve	3M2	Spring-loaded parking brake pressure release
3V2	Non-return valve		
3V3	Shuttle valve, hydr. trailer brake		**Switch/sensors**
3V4	Trailer control valve	1S1	Supply pressure – circuit 1
3V5	Trailer control valve (feed)	1S3	Foot brake switch
		1S4	Right wear indicator
4V1	Active hold function	1S5	Left wear indicator
4V2	Hydr. trailer brake release valve		
4V3	Swivel seat rotation facing reverse	1S2	Supply pressure – circuit 2
4V4	Swivel seat rotation facing road		
4V5	Overflow valve	3S1	Parking brake switch
4V6	Engine brake solenoid valve		

NOTE:

Tractors fitted with a 2-circuit brake system have only one foot brake pedal, and chassis number 9XX/23/XXXX.

2 Wiring diagram: FENDT 900 COM III compressed air system (4-circuit)

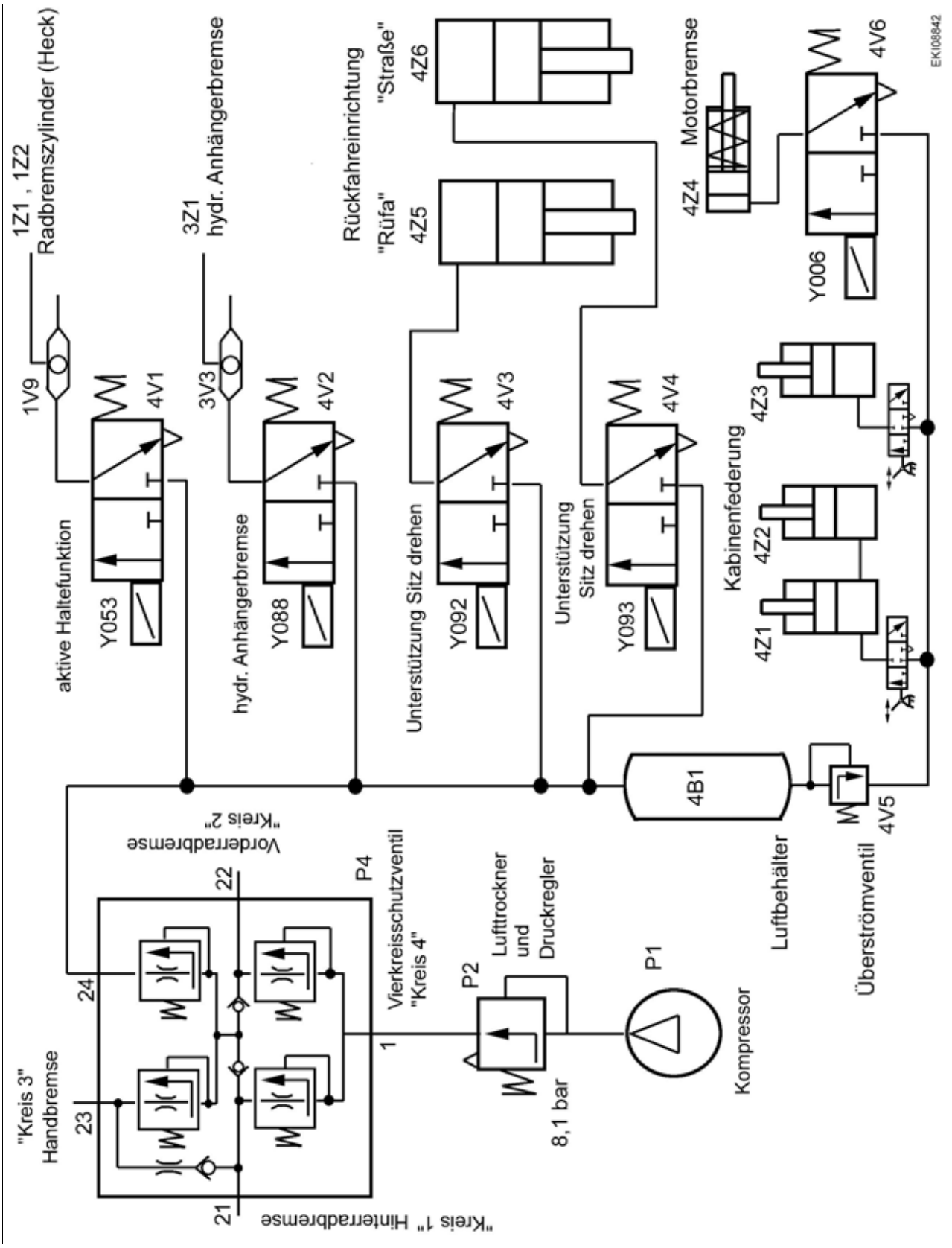


Fig. 2. I003091

Item	Designation	Item	Designation
P1	**Compressor**	3V3	Shuttle valve (on hydraulic trailer brake)
P2	Air dryer + pressure controller (8.1 bar)	3Z1	Hydr. trailer brake valve (pilot head with spring-loaded function)
P4	4-circuit safety valve	**Y092 (4V3)**	**Reverse operation (Rüfa) solenoid valve (turn in reverse direction)**
4B1	Air reservoir (5 l)	**Y093 (4V4)**	**Reverse operation (Rüfa) solenoid valve (turn in forward direction)**
4V5	Overflow valve	4Z5	Reverse operation (Rüfa) rotary cylinder (turn in reverse direction)
Y053 (4V1)	**Active hold function solenoid valve**	4Z6	Road rotary cylinder (turn in reverse direction)
1V9	Shuttle valve (for 2-circuit brake, rear wheel + front wheel brake)	**Y006**	**Engine brake solenoid valve**
1V7	Shuttle valve (for 1-circuit brake, rear wheel brake + 4WD engage)	4Z4	Engine brake actuator cylinder
1Z1	Rear right Tristop cylinder	**4Z1**	**Right suspension cylinder (cab suspension) (with control)**
1Z2	Rear left Tristop cylinder	**4Z2**	**Left suspension cylinder (cab suspension)**
Y088 (4V2)	Release hydraulic trailer brake solenoid valve	**4Z3**	**Front suspension cylinder (cab suspension) (with control)**

B Faults

1 Error search plan, compressed air system (trailer brake) 13

1 Error search plan, compressed air system (trailer brake)

WARNING: When detaching the trailer, always detach the red single-line coupling (supply) first. Only then is the trailer secured against rolling away!

The pressure controller blows off too frequently without brake operation

The pressure controller blows off too frequently without brake operation		
I		
Control range (check the pressure of the pressure controller)	**Not OK**	Adjust the pressure controller (replace if required)
I		
OK		
I		
Check the compressed air system for leaks – Screw couplings – Drain valve – Non-return valve in the pressure controller		

Incorrect reservoir pressure

Reservoir pressure not OK		
I		
Check B019 compressed air supply sensor Check B060 compressed air supply sensor For this purpose, connect the test gauge to the single-line coupling "red" (supply) and compare with the display in the A007 instrument panel	**Incorrect display (bar indicator, warning message)**	Replace B019 sensor (warning message) and B060 sensor (bar indicator)
I		
Display correct		
I		
Check the compressed air system for leaks	**Leaking**	Repair the leaks
I		
Airtight		
I		
See error pattern Air compressor fill time is too long		

Air compressor - fill time is too long

Air compressor fill time is too long		
I		
Has the pressure controller cut-out pressure been reached? Connect the test manometer on the single-line coupling supply (red) and compare with the A007 instrument panel		

Cut-out pressure is reached but the fill time is too long		
I		
Air dryer cartridge throughput too low	**Throughput too low**	Replace the cartridge
I		
Cartridge throughput OK		
I		
Check the leak-tightness of the compressed air system in braked and unbraked condition	**Leaking**	Repair the leaks
I		
Airtight		
I		
Pressure controller contaminated Check the condition of the pressure controller: Dismantle the pressure lines from the air compressor to the pressure controller; inspect, clean and, if required, replace		
I		
Fill time is still too long		
I		
Yes		
I		
Inspect the air compressor and, if required, replace it		

Cut-out pressure not reached		
I		
The pressure controller on the air bleed leaks during the filling phase	**No**	Check the leak-tightness of the brake system in braked and unbraked condition
Yes		
I		
Replace the pressure controller		
I		
Fill time is still too long		
Yes		
I		
Check the leak-tightness of the brake system in braked and unbraked condition		

Residual pressure on the single-line coupling is yellow when the brake is not operated

Residual pressure on the single-line coupling is yellow when the brake is not operated		
I		
Is the hand brake completely released?	**No**	Check the hand brake valve (3V1) Check the trailer control valve (3V4)

Yes		
I		
The pressure is dissipated	**No**	Check the settings of the compressed air pilot control system – Foot brake valve (1V1) – Foot brake valve (2V1) – Relay valve (1V4) – Relay valve (1V5) – Relay valve (1V6)
Yes		
I		
Compressed air system OK		

P2 air dryer and pressure limiter (8.1 bar)

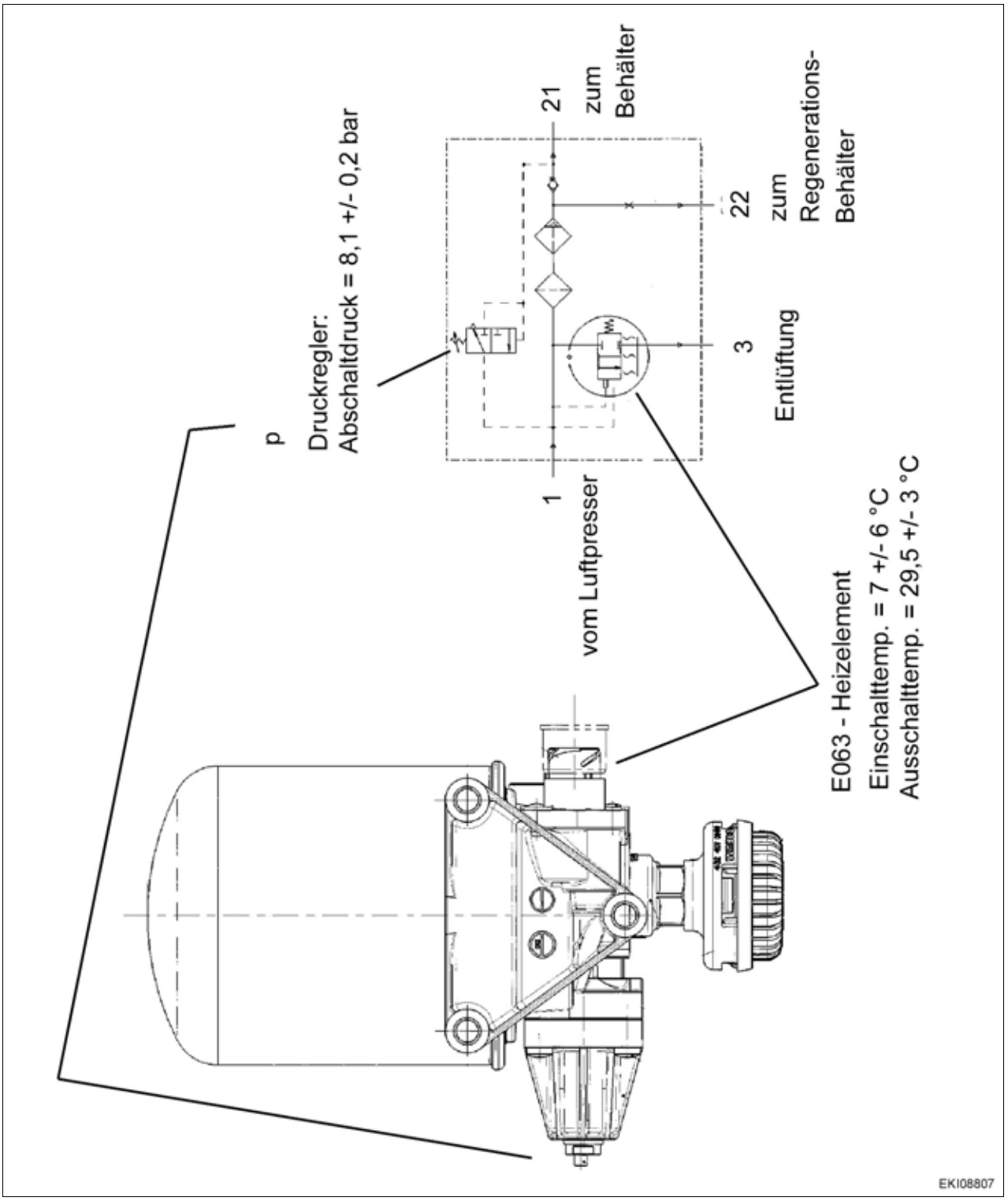


Fig. 1. I002745

Item	Designation	Item	Designation
1	from air compressor	**22**	to the regeneration tank
3	Air bleed	**p**	**Pressure controller:** **Cut-out pressure = 8.1 +/- 0.2 bar**
21	to the tank	**E063**	**Heater element:** **Switch-on temperature = 7 +/- 6°C** **Switch-off temperature = 29.5 +/- 3°C**

919 .. 0101-1000
919 .. 1001-
922 .. 0101-1000
922 .. 1001-
925 .. 0101-1000
925 .. 1001-
928 .. 0101-1000
928 .. 1001-
931 .. 0101-1000
931 .. 1001-
934 .. 0101-1000
934 .. 1001-

E Measuring and testing

1 Compressed air system (area: front wheel brake, rear wheel brake, hand brake) 19
2 Compressed air system (area: trailer brake) 26
3 Checking the P4 4-circuit safety valve 31

1 Compressed air system (area: front wheel brake, rear wheel brake, hand brake)

	1-circuit brake system	2-circuit brake system
when braking	**Rear wheel brake (1-circuit) + 4WD engagement**	**Rear wheel brake (1-circuit) + front wheel brake (2-circuit)**
Brake pedal	**Two brake pedals** (steering brake possible)	**One brake pedal** (steering brake not possible)
max. speed	**40 Km/h** (18 t permitted overall weight) **50 Km/h** (15 t permitted overall weight)	**40 Km/h** (18 t permitted overall weight) **50 Km/h** (18 t permitted overall weight) **60 Km/h** (16 t permitted overall weight)
Monitoring pressure of brake system	**B060** "1-circuit" compressed air supply sensor	**B060** "1st circuit" compressed air supply sensor **B019** "2nd circuit" compressed air supply sensor
Compressed air display	**Bar indicator** on A007 instrument panel	**Bar indicator** and **warning message** on the A007 instrument panel: the low pressure is indicated in each case
Emergency mode	If the **B060** "1st circuit" compressed air supply sensor indicates a pressure lower than approx. 4,65 bar, 4WD is permanently activated **NOTE:** *From EOL version 7.60, 4WD is switched on from a speed of 25 km/h when braking.*	If the **B060** "1-circuit" compressed air supply sensor indicates a pressure lower than approx. 4,65 bar, 4WD is permanently activated If the **B019** "2-circuit" compressed air supply sensor indicates a pressure lower than approx. 4,65 bar, 4WD is permanently activated
Parking brake	**pneumatic hand brake**, acting on the rear wheel brake	
Monitoring of the hand brake	**S080** hand brake switch	
Brake wear monitoring (rear wheel brake)	**S086/S087** right/left brake wear switch (monitors the actuation travel of the wheel brake cylinder)	

B019 compressed air supply sensor in 2-circuit "front wheel brake"
X168 separation point on B019

NOTE: *Fitted in 2-circuit brake system only.*

NOTE: *see §55*



Fig. 1. I001067

B060 compressed air supply sensor in 1-circuit "rear wheel brake"
X1410 separation point on B060

NOTE: *Fitted in 1-circuit and 2-circuit brake systems.*

NOTE: *see §55*



Fig. 2. I001453

Compressed air supply display in A007 - Instrument panel
Working pressure (approx. 8.4 bar) is reached when display (A) is in the green zone.
If the pressure detected by **B019** - Sensor, compressed air supply or by **B060** - Compressed air supply sensor is too low, display (A) flashes in the red zone.

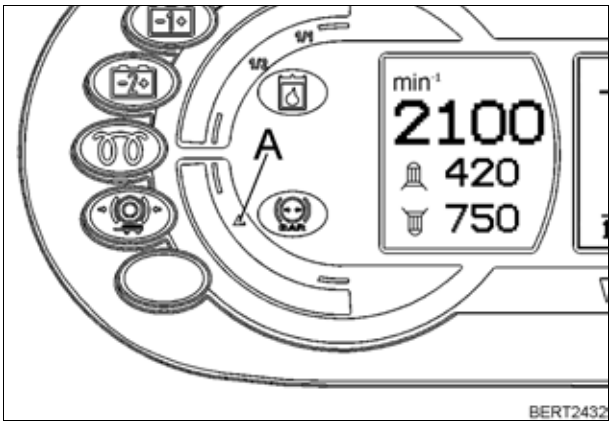


Fig. 3. I001454

Warning message
If the pressure detected by **B019** - Sensor, compressed air supply or by **B060** - Compressed air supply sensor is too low, the warning message will be displayed.

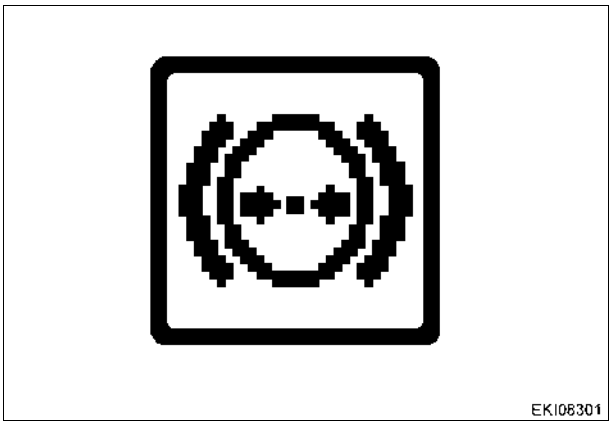


Fig. 4. I001467

Checks on the compressed air system

Leak-testing the compressed air system
The display on the A007 instrument panel must remain unchanged for at least 3 minutes with the engine stationary and the reservoir full.

NOTE: *Try not to move the cab (avoid climbing in and out) in such an event, as the pneumatic cab suspension will attempt to adjust accordingly and thus use air.*

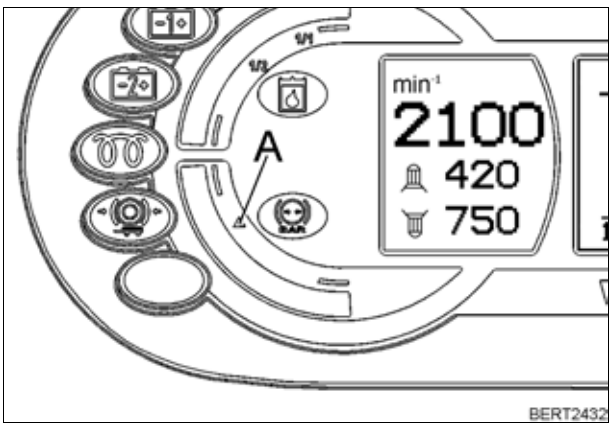


Fig. 5. I001454

Drain compressed air system
Pull cable (A) daily.
If water runs out of the drain valve, replace the air dryer cartridge and drain all compressed air tanks.

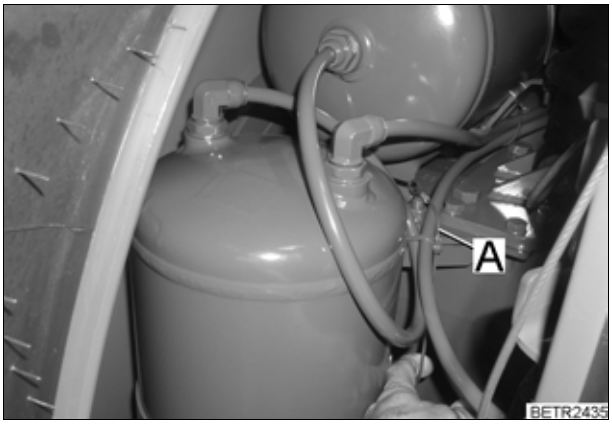


Fig. 6. I001458

Regularly replace air dryer cartridge (A) in accordance with the maintenance schedule.

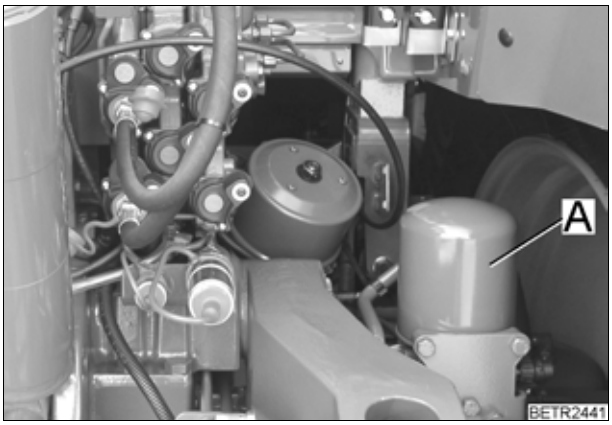


Fig. 7. I001464

Pressure checks on 1-circuit brake system (rear wheel brake "circuit 1" and 4WD engagement)

The 1-circuit brake system (rear wheel brake + 4WD engagement) has two brake pedals (A)
A steering brake is possible

NOTE: *Use steering brake only at low speeds; never jerk it, and do not use it with differential lock engaged*

Maximum permitted overall weight with equipment:
40 Km/h = 18 to
50 Km/h = 15 to

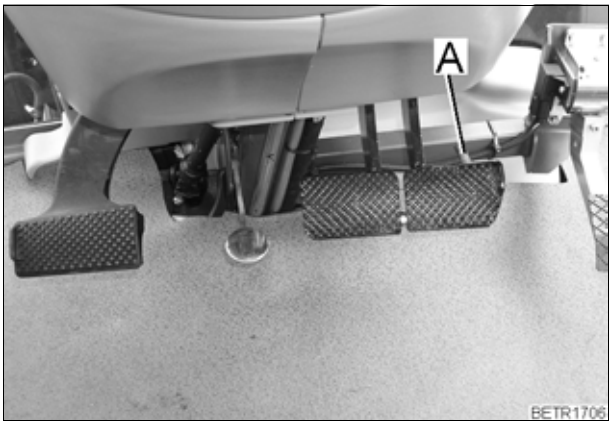


Fig. 8. I001335

1M1 (item C) = reservoir pressure (circuit 1 "Rear wheel brake")

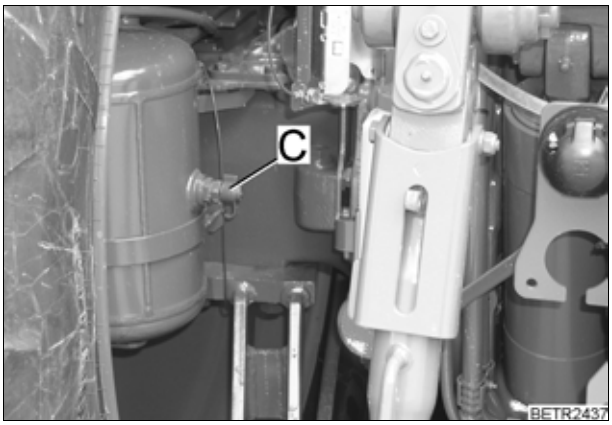


Fig. 9. I001460

Item A = brake pressure at left rear axle

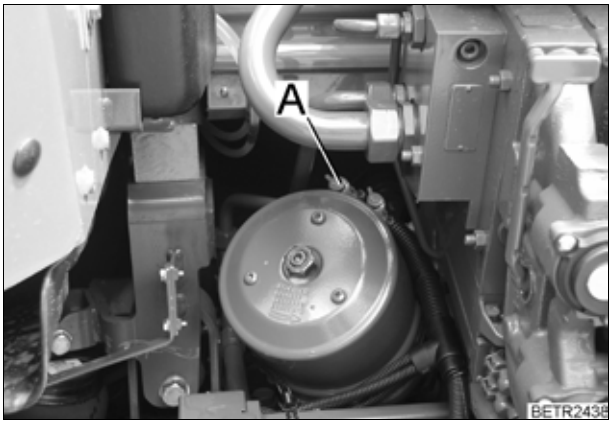


Fig. 10. I001468

Item B = brake pressure at right rear axle

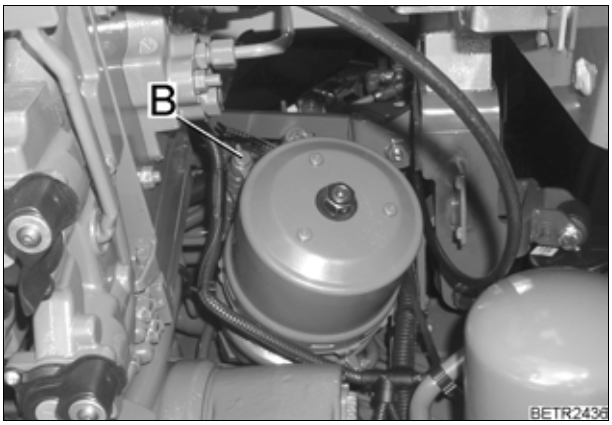


Fig. 11. I001463

Item A = brake pressure at hand brake

NOTE: *If a measuring connection is not present, screw in a measuring connection*

NOTE: *see §111*
see §113

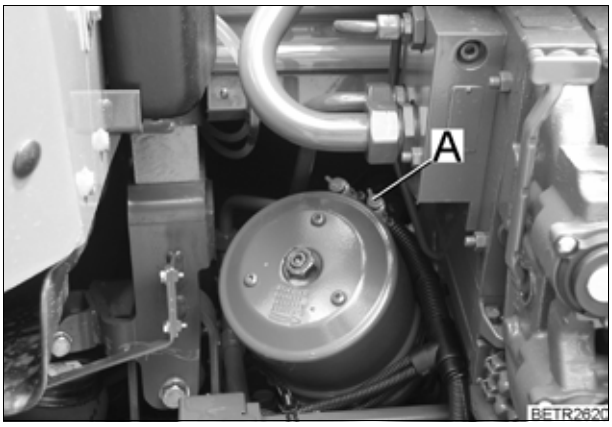


Fig. 12. I001466

Tractors with 1-circuit brake system: When braking: Rear wheel brake (1 circuit) + 4WD engagement Steering brake possible				
Measuring point	**Foot brake not applied**	**Foot brake applied**	**Release hand brake**	**Hand brake applied**
Rear wheel brake reservoir pressure (1-circuit) Measuring point: 1M1	ca. 8,1 bar (Switch-off pressure) **Note:** Time to fill - Empty reservoir - At engine idle speed approx. 3 minutes	The pressure in the reservoir falls	The pressure in the reservoir falls	The pressure in the reservoir remains constant
brake pressure left rear axle	0 bar	Brake pressure = reservoir pressure	-	-

Tractors with 1-circuit brake system: When braking: Rear wheel brake (1 circuit) + 4WD engagement Steering brake possible				
Measuring point	**Foot brake not applied**	**Foot brake applied**	**Release hand brake**	**Hand brake applied**
brake pressure right rear axle	0 bar	Brake pressure = reservoir pressure	-	-
brake pressure on hand brake	-	-	Release pressure = reservoir pressure **(hand brake released)**	0 bar **(hand brake applied)**

Pressure checks on 2-circuit brake system (rear wheel brake "circuit 1" and front wheel brake "circuit 2")

In the 2-circuit brake system (front wheel brake and rear wheel brake) there is only one brake pedal (A)
A steering brake is not possible

Maximum permitted overall weight with equipment:
40 Km/h = 18 to
50 Km/h = 18 to
60 Km/h = 16 to

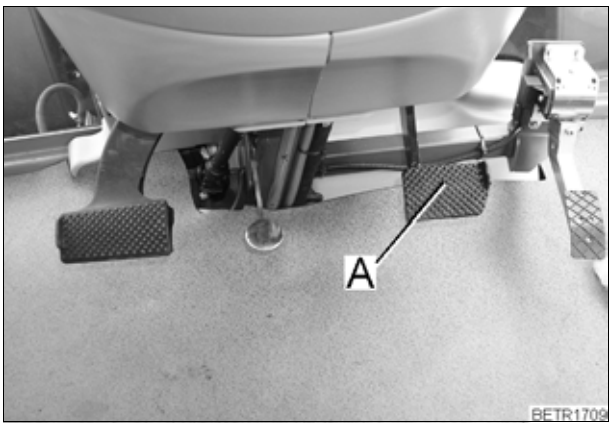


Fig. 13. I001334

1M1 (item B) = reservoir pressure in the 1st circuit (rear wheel brake)
Item C = brake pressure at the front wheel brake (2-circuit)
2M1 (item D) = reservoir pressure in the 2nd circuit (front wheel brake)

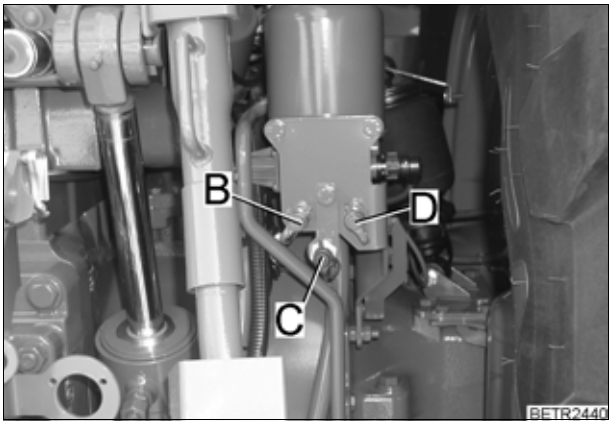


Fig. 14. I001461

Item A = rear axle brake pressure (1-circuit)

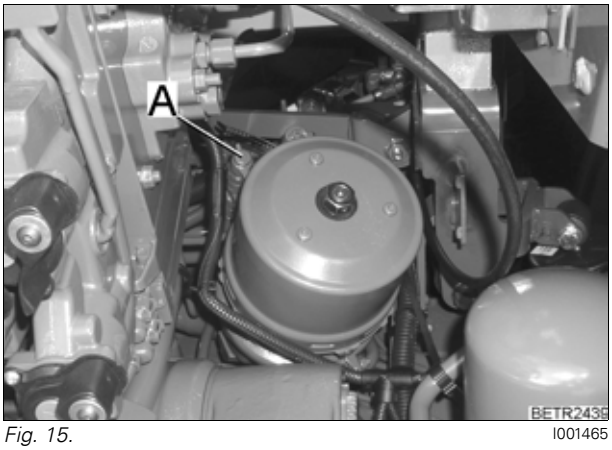


Fig. 15. I001465

Item A = brake pressure at hand brake

NOTE: *If a measuring connection is not present, screw in a measuring connection*

NOTE: *see §111*
see §113

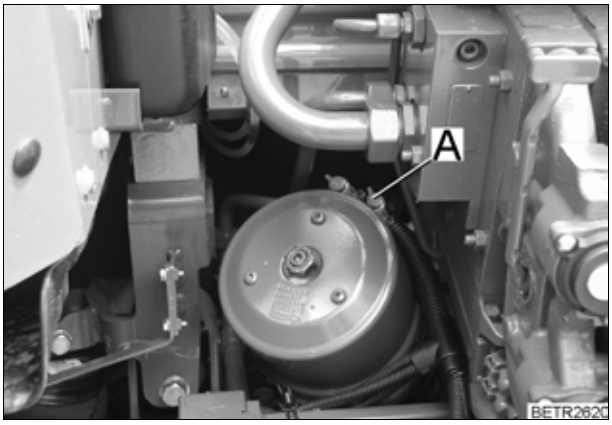


Fig. 16. I001466

Tractors with 2-circuit brake system: When braking: Rear wheel brake (1 circuit) + front wheel brake (2 circuit) Steering brake not possible				
Measuring point	**Foot brake not applied**	**Foot brake applied**	**Release hand brake**	**Hand brake applied**
Rear wheel brake reservoir pressure (1-circuit) Measuring point: 1M1	ca. 8,1 bar (Switch-off pressure) **Note:** Time to fill - Empty reservoir - At engine idle speed: approx. 3 minutes	The pressure in the reservoir falls	The pressure in the reservoir falls	The pressure in the reservoir remains constant
Brake pressure at the rear axle	0 bar	Brake pressure = reservoir pressure	-	-
Front wheel brake reservoir pressure (2-circuit) Measuring point: 2M1	ca. 8,1 bar (Switch-off pressure) **Note:** Time to fill - Empty reservoir - At engine idle speed approx. 3 minutes	The pressure in the reservoir falls	-	-
Brake pressure at the front axle	0 bar	Brake pressure = reservoir pressure	-	-
brake pressure on hand brake	-	-	8,4 bar **(hand brake released)**	0 bar **(hand brake applied)**

Diagram: actuation cylinder and wheel brake cylinder

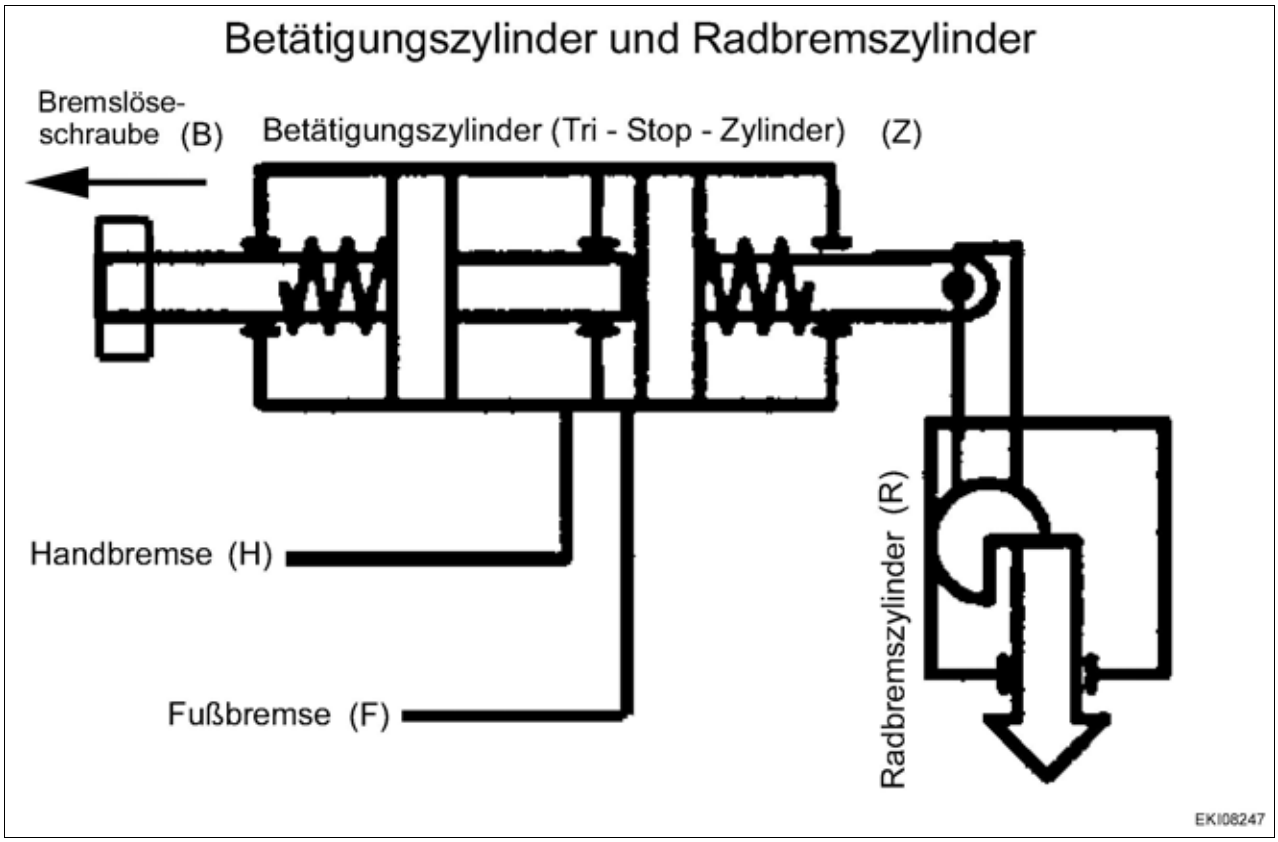


Fig. 17. I001911

Item	Designation	Item	Designation
B	Brake release screw	R	Wheel brake cylinder
F	Connection, foot brake (**Note:** the foot brake is actuated with compressed air)	Z	Actuation cylinder (tri-stop-cylinder)
H	Connection, hand brake (**Note:** the hand brake is released with compressed air)		

NOTE: *see §1*

2 Compressed air system (area: trailer brake)

Test the single line brake system in the tractor

Test the single line brake system in the tractor

A = compressed air supply
Fill the compressed air system to switch-off pressure

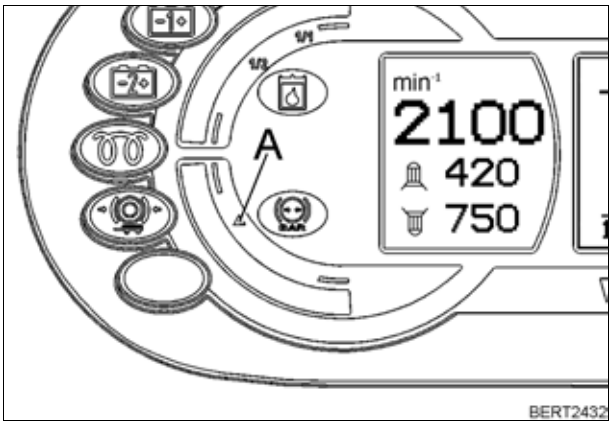


Fig. 18. I001454

Release hand brake (A)

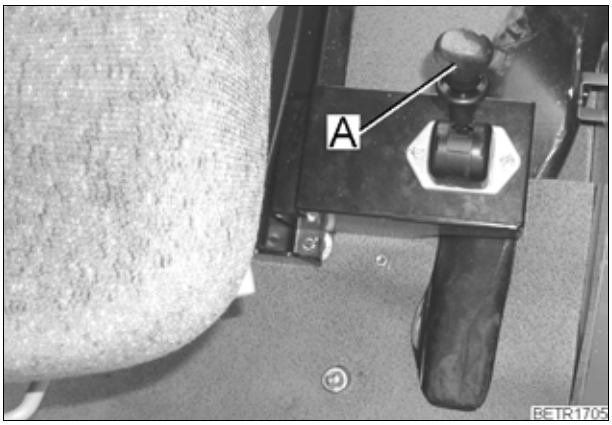


Fig. 19. I001336

A = "Black" coupling head
Connection for single-line system

NOTE: *After uncoupling, seal the openings with the dust caps*

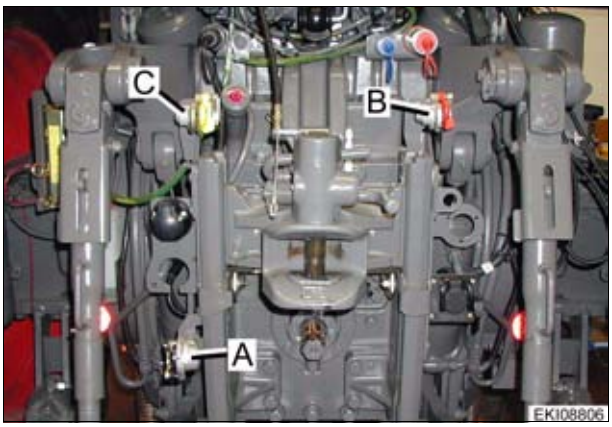


Fig. 20. I002744

A = "Black" coupling head
Connection for single-line system

Target value: 5.0 ... 5.5 bar

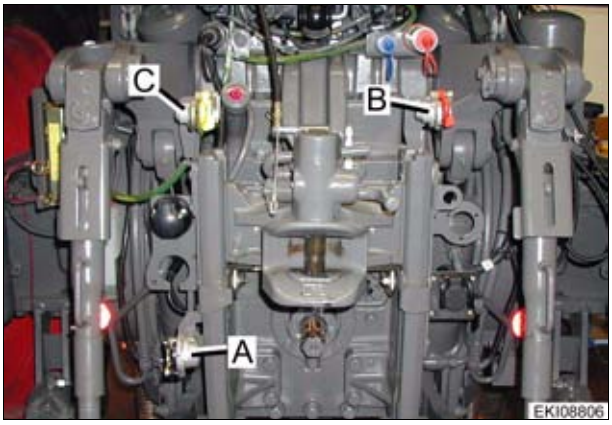


Fig. 21. I002744

Apply the foot brake slowly



Fig. 22. I002743

Watch for pressure loss while operating gently until the brake is fully applied

With partial braking of 1.0 bar (can be measured at the "yellow" coupling head):
Pressure loss at the "black" coupling head = 1.3 ... 2.5 bar

With full braking:
Pressure at the "black" coupling head = 0 bar

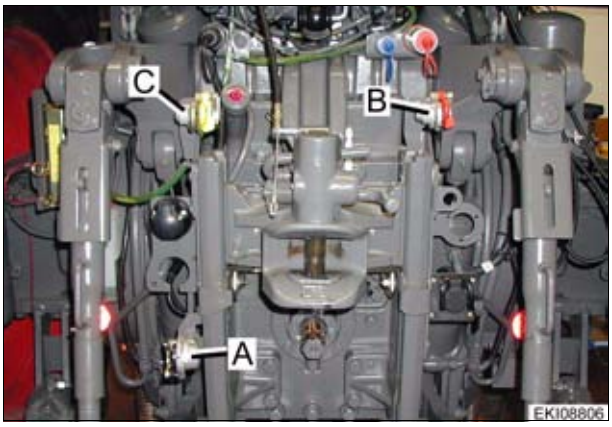


Fig. 23. I002744

Release the foot brake again



Fig. 24. I002743

Apply hand brake (A)
Pressure at the "black" coupling head = 0 bar

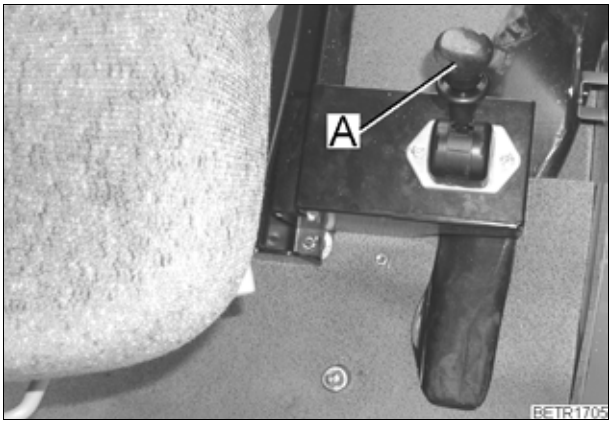


Fig. 25. I001336

Test the dual line brake system in the tractor

Test the dual line brake system in the tractor

A = compressed air supply
Fill the compressed air system to switch-off pressure

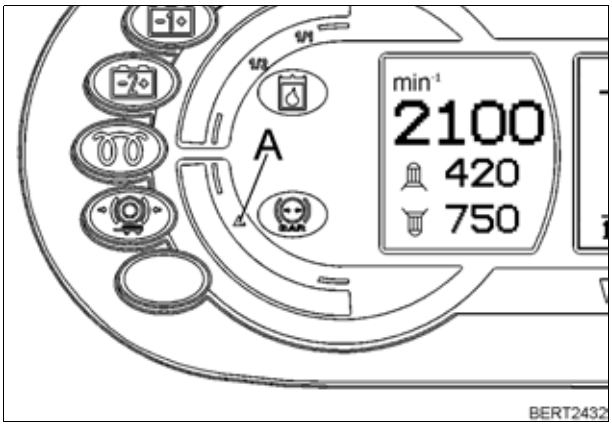


Fig. 26. I001454

B = "Red" coupling head
Two-line system, reserve

C = "Yellow" coupling head
Dual-line brake system

NOTE: *After uncoupling, seal the openings with the dust caps*

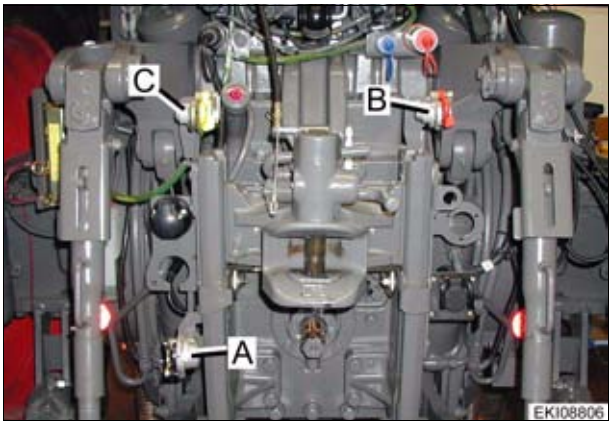


Fig. 27. I002744

Connect pressure gauge to "red" coupling head
Pressure at the "red" coupling head = 8.4 bar

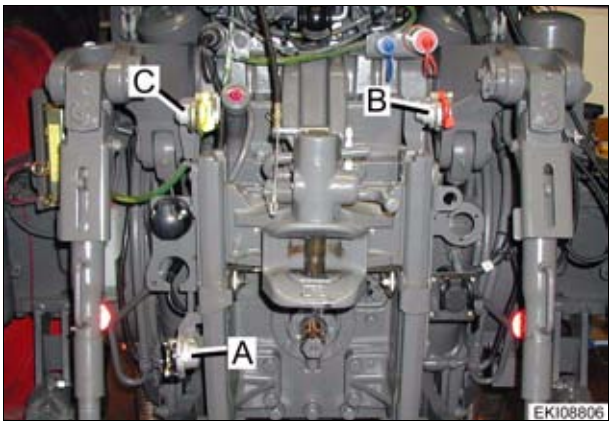


Fig. 28. I002744

Release hand brake (A)

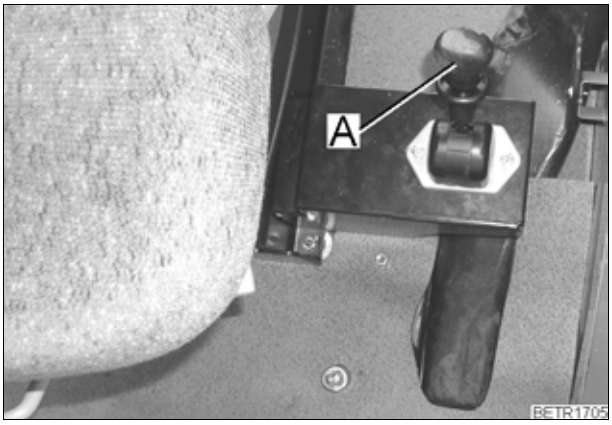


Fig. 29. I001336

Connect pressure gauge to "yellow" coupling head
Pressure at the "yellow" coupling head = 0 bar

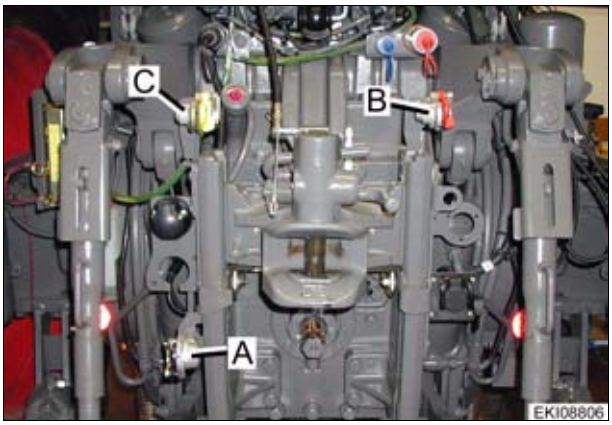


Fig. 30. I002744

Apply the foot brake slowly



Fig. 31. I002743

Watch for pressure increase while operating gently to until the brake is fully applied

Compressed air pilot control system (brake light lights up)
Pressure at "yellow" coupling head = approx. 1,0 bar

With full braking:
Pressure at "yellow" coupling head = 7.0 ... 8.1 bar

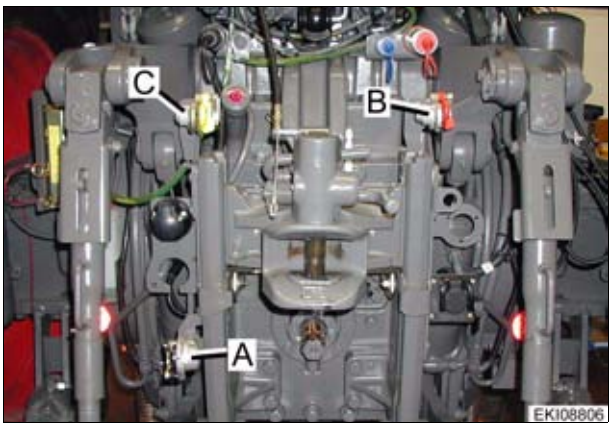


Fig. 32. I002744

Release the foot brake again



Fig. 33. I002743

Apply hand brake (A)
Pressure at "yellow" coupling head = rapid pressure increase to 7.0 ... 8.1 bar

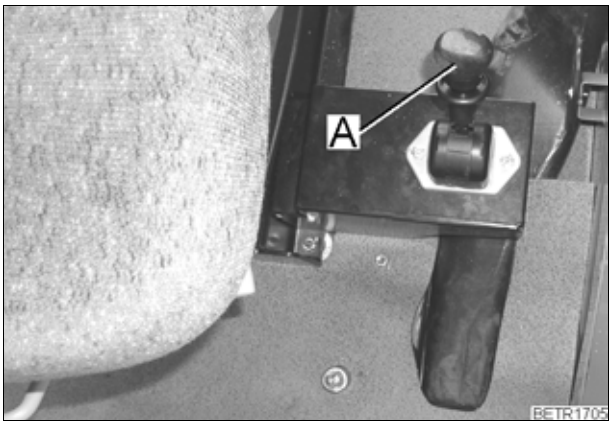


Fig. 34. I001336

3 Checking the P4 4-circuit safety valve

To check the P4 4-circuit safety valve:
Release hand brake (A)

WARNING: Make sure the tractor is secured to prevent it rolling.

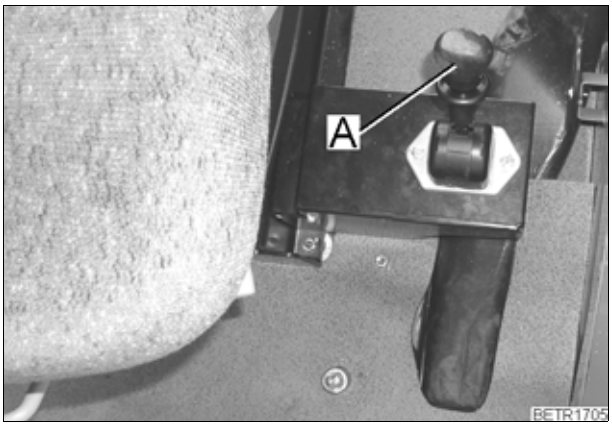


Fig. 35. I001336

P4 4-circuit safety valve

Left side, on the transmission housing



Fig. 36. I007581

The P4 4-circuit safety valve tasks involve:
– Closing off any leaky circuit from the other circuits.
– Ensuring that the intact circuits continue to be supplied with compressed air.

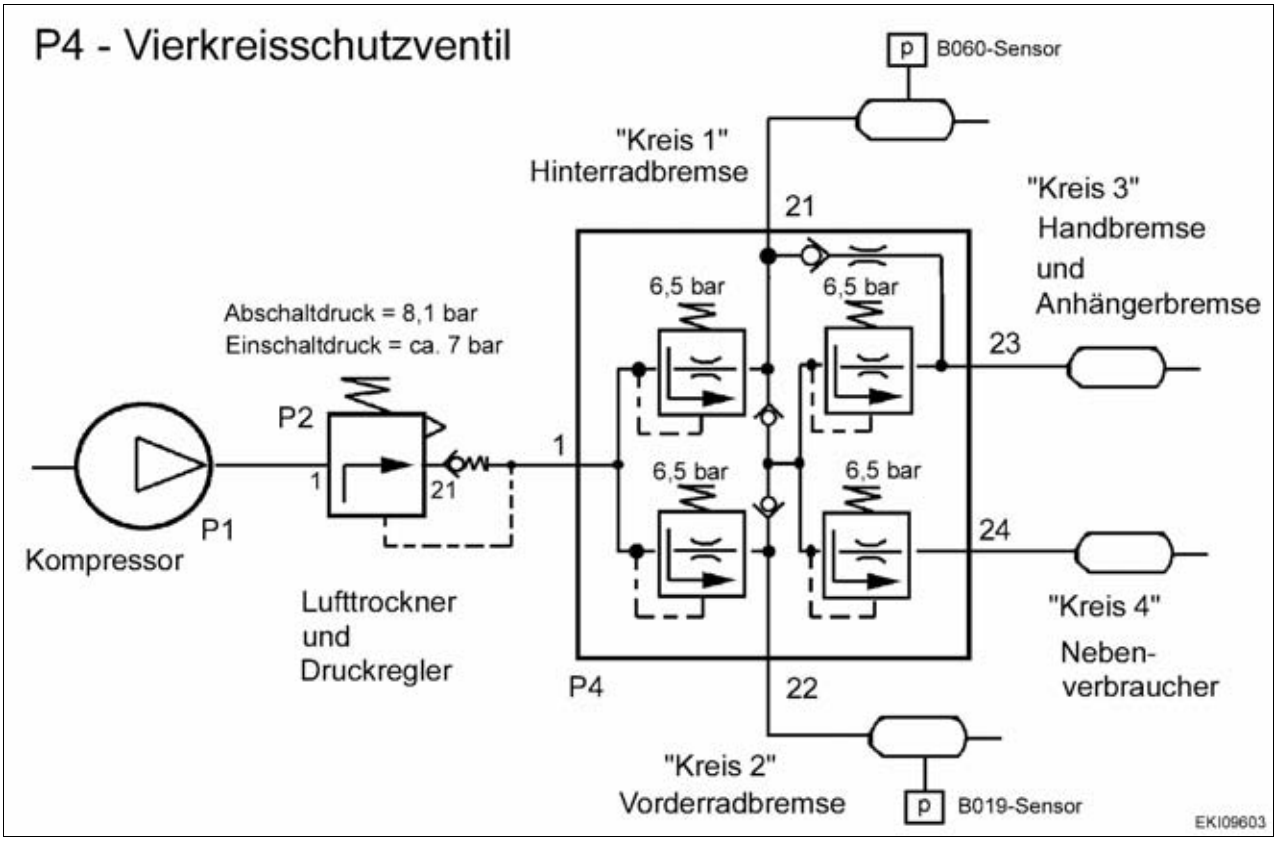


Fig. 37. I007572

FENDT 900 Vario COM III compressed air system	
Circuit	**Function**
Circuit 1 (21)	Rear wheel brake
Circuit 2 (22)	Front wheel brake
Circuit 3 (23)	Hand brake and trailer brake
Circuit 4 (24)	Auxiliaries - Pneumatic cab suspension - Active hold function (on the rear wheel brake) - Engine brake - Below

Filling the compressed air system **- The compressed air system is airtight** **- The P1 compressor pumps compressed air** **The P4 4-circuit safety valve fills Circuit 1 (rear wheel brake) and Circuit 2 (front wheel brake) and then fills Circuit 3 (hand brake and trailer brake) and Circuit 4 (auxiliaries)** **"Series connection"** **Engine speed = 780 +/- 30 rpm (idle speed)** **Filling time = approx. 3.5 minutes**	
Stage 1	The P4 4-circuit safety valve fills: - Circuit 1 (rear wheel brake) with **approx. 6,5 bar** - Circuit 2 (front wheel brake) with **approx. 6,5 bar**
Stage 2	The P4 4-circuit safety valve fills: - Circuit 4 (auxiliaries) with **ca. 6,5 bar** - Circuit 3 (hand brake and trailer brake) with **ca. 6,5 bar**
Stage 3	All circuits are filled to **8,1 bar**. The B060 sensor monitors the pressure in Circuit 1 (rear wheel brake) The B019 sensor monitors the pressure in Circuit 2 (front wheel brake) Circuits 3 (hand brake and trailer brake) and 4 (auxiliaries) are not monitored

Bleedback function:
Circuit 3 (hand brake and trailer brake) is linked to Circuit 1 (rear wheel brake) via a one-way restrictor.
Legislation for vehicles first registered from October 1994 stipulates:
When filling the depressurised supply system, the hand brake/trailer brake (Circuit 3) should be loosened first, once the pressure in the service brake (Circuit 1) is sufficiently high.

Compressed air supply display on A007 - Instrument panel

The working pressure (8,1 bar) is reached as soon as the bar indicator has reached marking (A).

NOTE: *Both sensors, **B019** - Sensor, compressed air supply and **B060** - Compressed air supply sensor are monitored by **A007** - Instrument panel. The lower pressure is always displayed.*
see §55

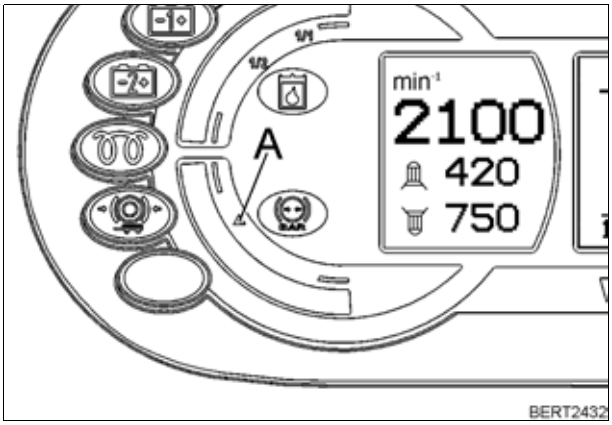


Fig. 38. I001454

Warning message for compressed air supply on A007 - Instrument panel

Monitoring the compressed air supply
If the pressure in the reservoir is too low, a warning message is displayed.

NOTE: *Both sensors, **B019** - Sensor, compressed air supply and **B060** - Compressed air supply sensor are monitored by **A007** - Instrument panel. If one of the pressures falls below the warning limit, an error message will appear with the corresponding error code.*
see §55

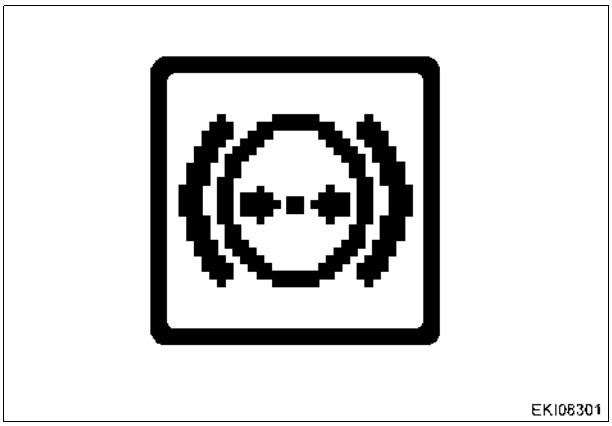


Fig. 39. I001467

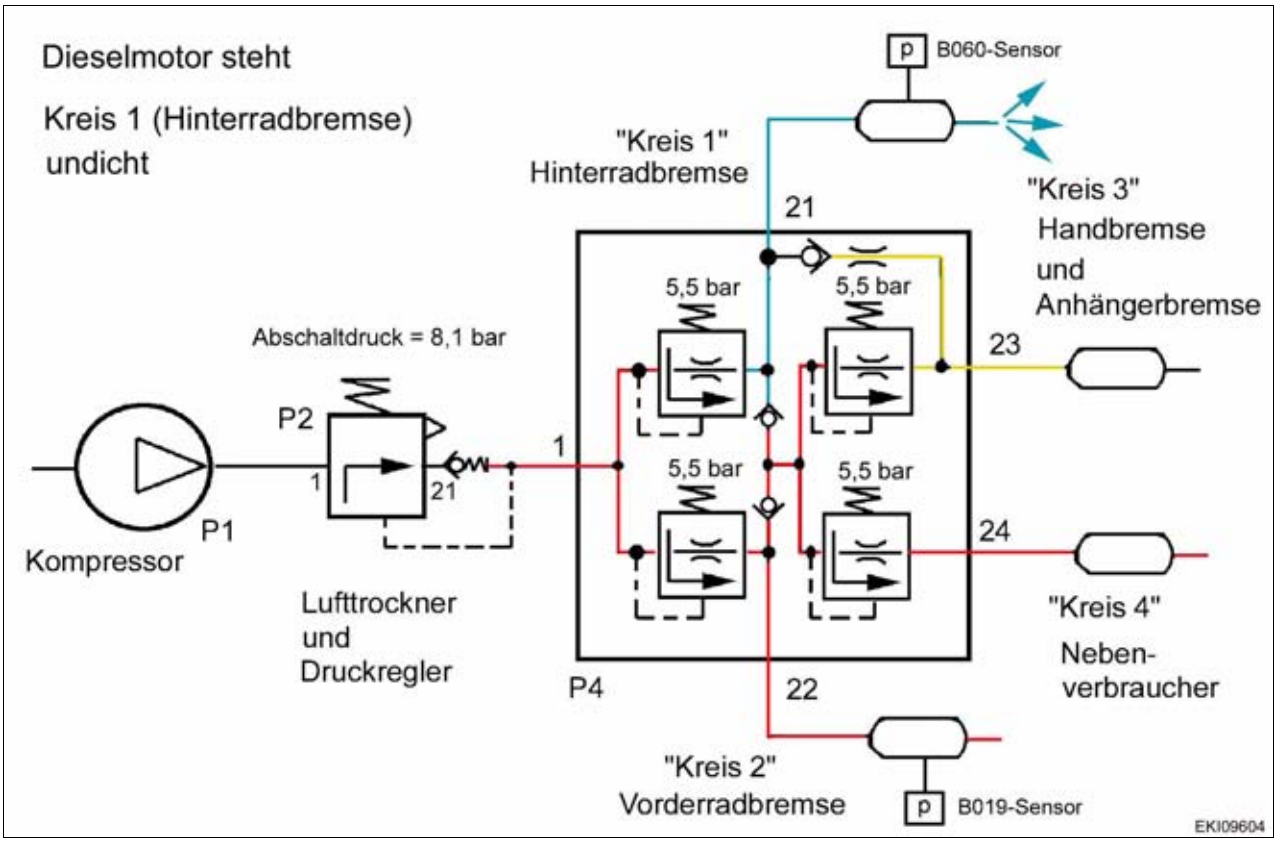


Fig. 40. Circuit 1 (rear wheel brake) leaking I007573

Circuit 1 (rear wheel brake) leaking	
Prerequisite: **Compressed air circuits with 8,1 bar** **Switch off diesel engine**	
Circuit	**Reservoir pressure (approximate values)**
Circuit 1 (rear wheel brake)	**0 bar**
Circuit 2 (front axle)	drops quickly to **5,5 bar** then drops slowly to **approx. 5,0 bar**
Circuit 3 (hand brake and trailer brake)	drops quickly to **5,5 bar** then drops slowly to **1,5 bar**
Circuit 4 (auxiliaries)	drops quickly to **5,5 bar** then drops slowly to **1,9 bar**

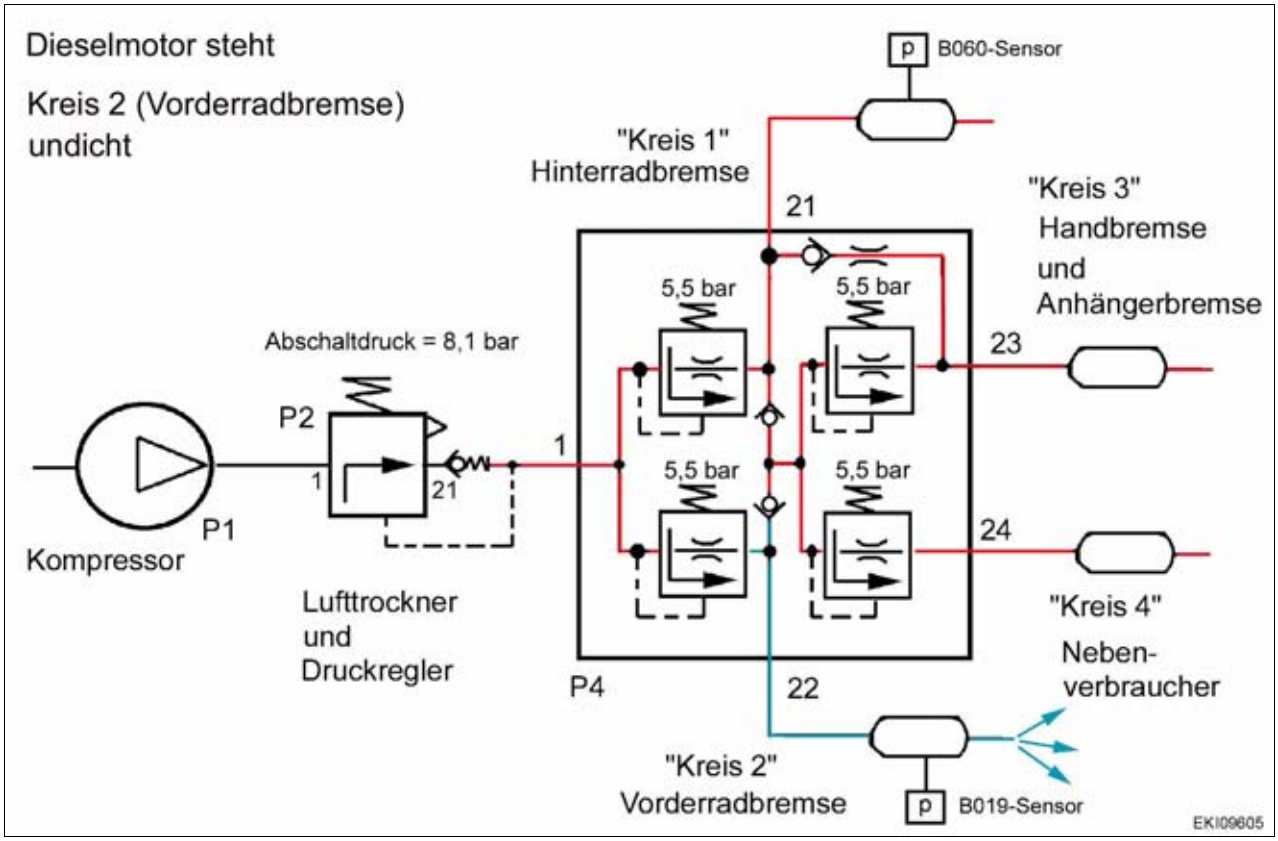


Fig. 41. Circuit 2 (front wheel brake) leaking

I007574

Circuit 2 (front wheel brake) leaking	
Prerequisite: **Compressed air circuits filled with 8,1 bar (switch-off pressure)** **Switch off diesel engine**	
Circuit	**Reservoir pressure (approximate values)**
Circuit 1 (rear wheel brake)	drops to **5,9 bar**
Circuit 2 (front axle)	drops to **0 bar**
Circuit 3 (hand brake and trailer brake)	drops to **7,5 bar**
Circuit 4 (auxiliaries)	drops to **7,5 bar**

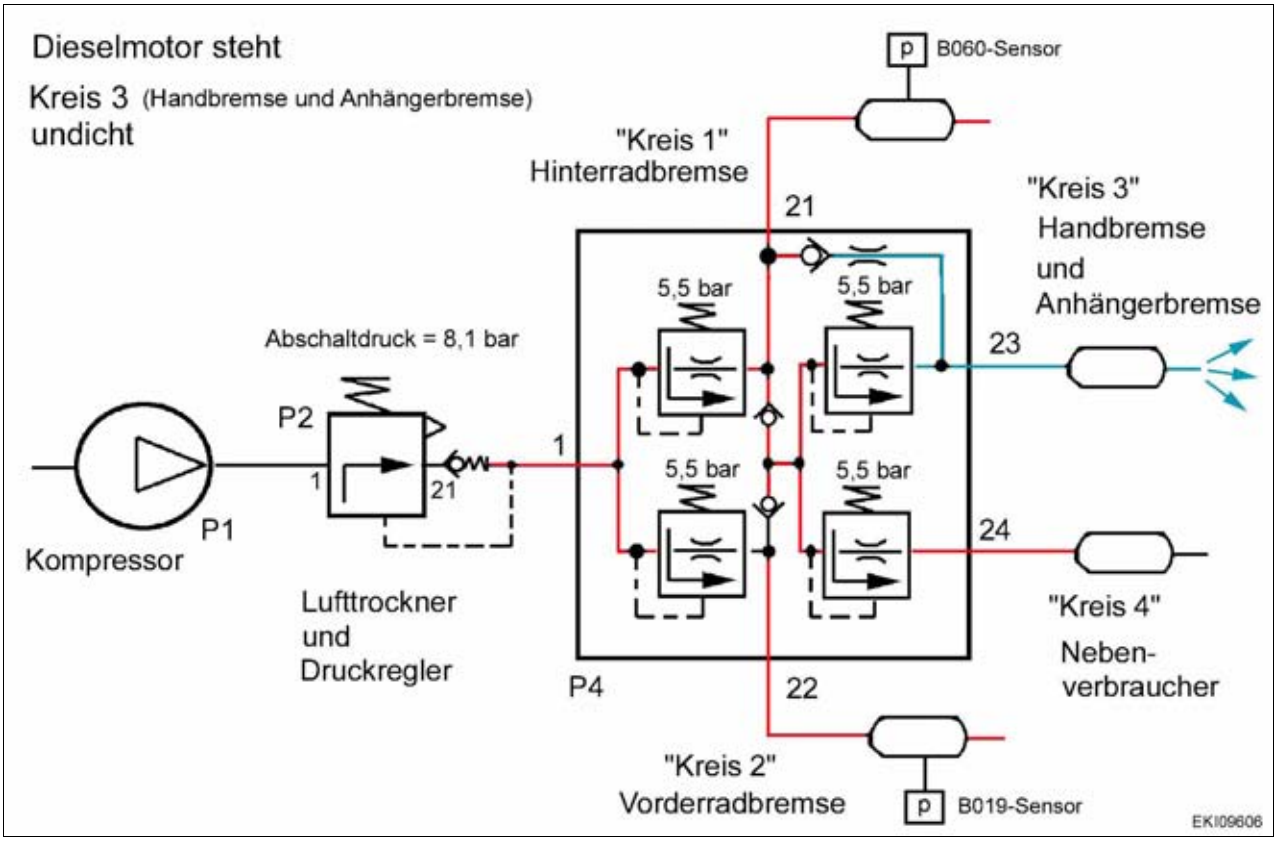


Fig. 42. Circuit 3 (hand brake and trailer brake) leaking

I007575

Circuit 3 (hand brake and trailer brake) leaking	
Prerequisite: **Compressed air circuits filled with 8,1 bar (switch-off pressure)** **Switch off diesel engine**	
Circuit	**Reservoir pressure (approximate values)**
Circuit 1 (rear wheel brake)	drops to **5,2 bar**
Circuit 2 (front axle)	drops to **5,2 bar**
Circuit 3 (hand brake and trailer brake)	drops to **0 bar**
Circuit 4 (auxiliaries)	drops to **5,2 bar**

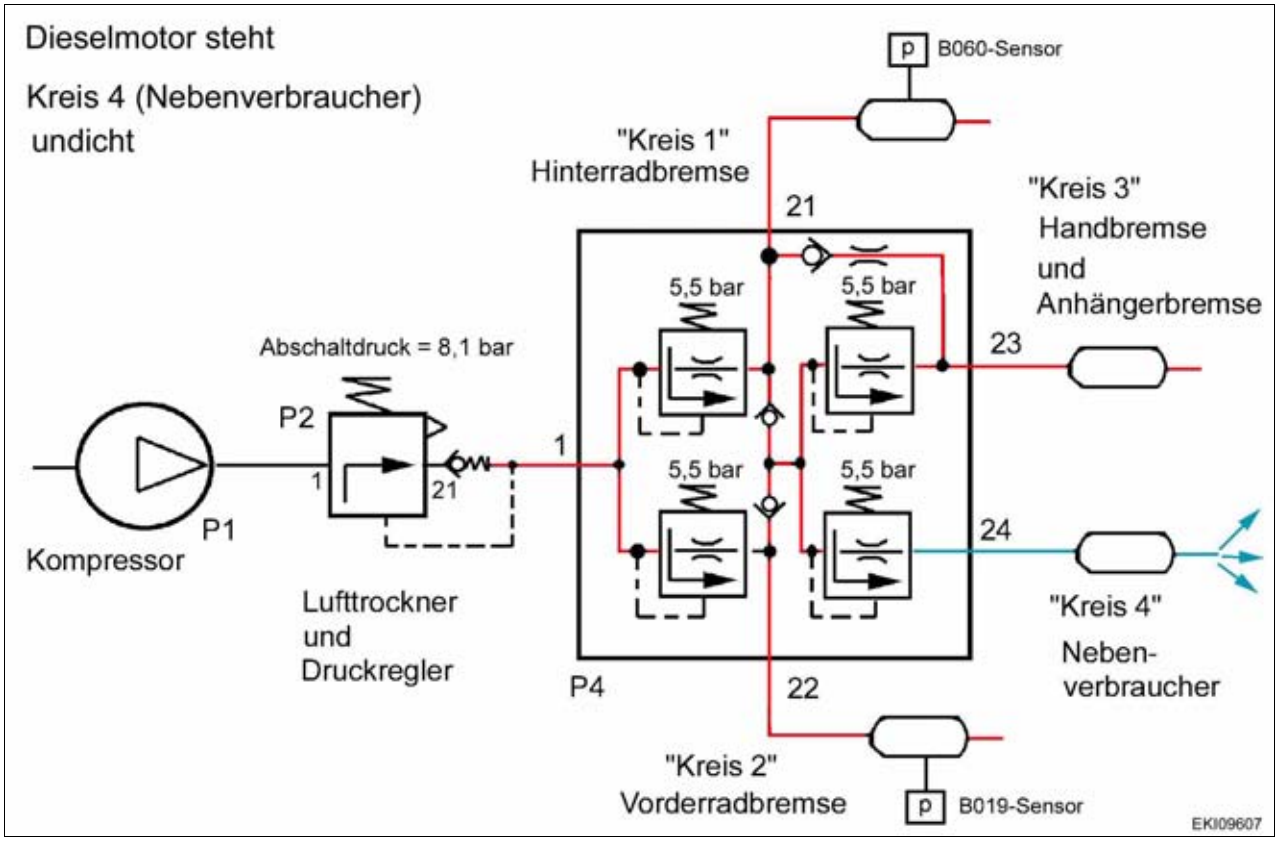


Fig. 43. Circuit 4 (auxiliaries) leaking I007577

Circuit 4 (auxiliaries) leaking	
Prerequisite: **Compressed air circuits filled with 8,1 bar (switch-off pressure)** **Switch off diesel engine**	
Circuit	**Reservoir pressure (approximate values)**
Circuit 1 (rear wheel brake)	drops to **5,3 bar**
Circuit 2 (front axle)	drops to **5,3 bar**
Circuit 3 (hand brake and trailer brake)	drops to **5,3 bar**
Circuit 4 (auxiliaries)	drops to **0 bar**

Measuring points on the tractor

To measure pressure, we recommend:
Compressed air pressure gauge (measurement range 0 to 10 bar)
Compressed air line
(available in accessory retail)



Fig. 44. I007595

Item	Designation
B	**reservoir pressure in circuit 1 (rear wheel brake)**
C	brake pressure on front wheel brake (circuit 2)
D	**reservoir pressure in circuit 2 (front wheel brake)**

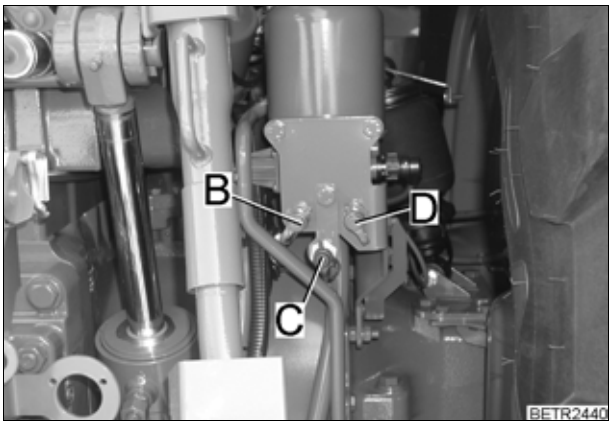


Fig. 45. I001461

Item	Designation
A	Brake pressure on the rear wheel brake



in the right actuation cylinder

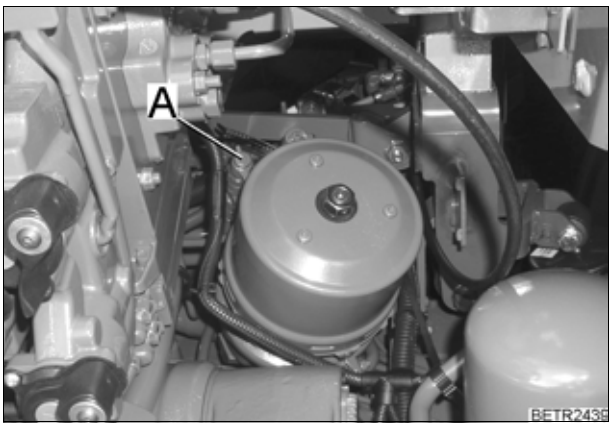


Fig. 46. I001465

Item	Designation
A	brake pressure on hand brake Note: If necessary, mount the measuring connection



on the left actuation cylinder

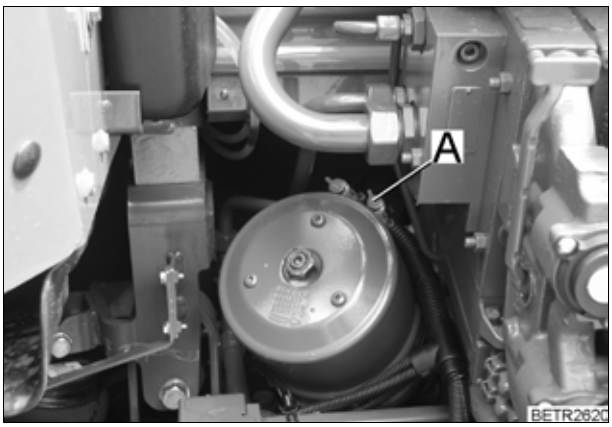


Fig. 47. I001466

Item	Designation
A	"Single-line brake, black"
B	**Reservoir pressure from Circuit 3 (hand brake and trailer brake) "Dual line, red"**
C	Brake pressure on trailer "Dual-line brake, yellow"

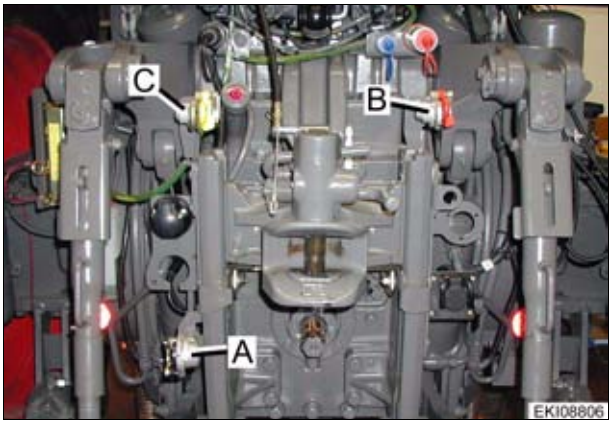


Fig. 48. I002744

Check the reservoir pressure from Circuit 4 (auxiliaries)
Unlock and pull out compressed air line


Right side of tractor

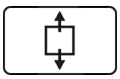
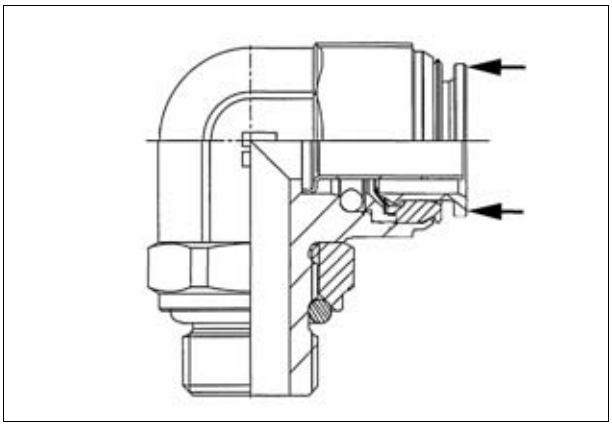

Remove right rear wheel and panels



Fig. 49. I007591

To unlock the compressed air line:
Push back collar and pull out compressed air line


Fig. 50. I001760

Fit the X596.315.700.000 - T connector
and
X334.055.000.940 compressed air line

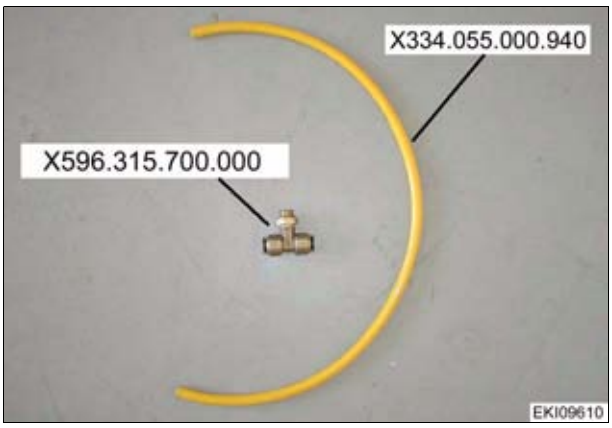


Fig. 51. I007600

Connect compressed air pressure gauge

Reservoir pressure for Circuit 4 (auxiliaries)

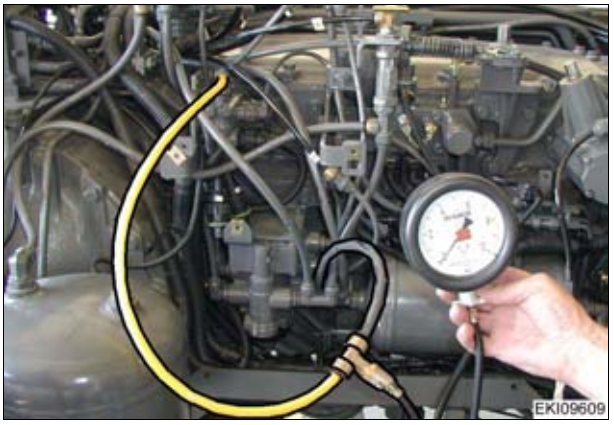


Fig. 52. I007587