

7 Calibration code 2401 (steering angle sensor)

9. Calibrating the steering angle sensor (2401)

Take special care when adjusting the steering angle sensor on tractors equipped with a track guidance system (VarioGuide)!

Inaccurate adjustments have a negative impact on automatic track guidance.

A high-precision, factory-fitted, laser-based steering angle sensor adjustment system was introduced on 03.12.2013.

Important: The following preparatory steps must be carried out.

- level and solid surface where possible (e.g road, gravel path)
- Engine is running
- If fault messages are displayed, the faults must be confirmed one by one.



Press "ESC" to confirm the warning and fault messages displayed on the A007 instrument panel

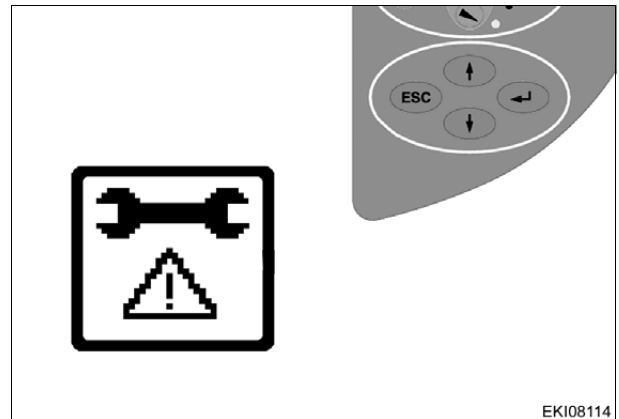
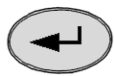


Fig. 93.

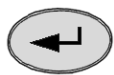
EKI08114
I000760



Press "Return" and the first main menu appears in the multiple display



Press one of the buttons repeatedly until the symbol (A) flashes



Press "Return", the second main menu appears in the multiple display

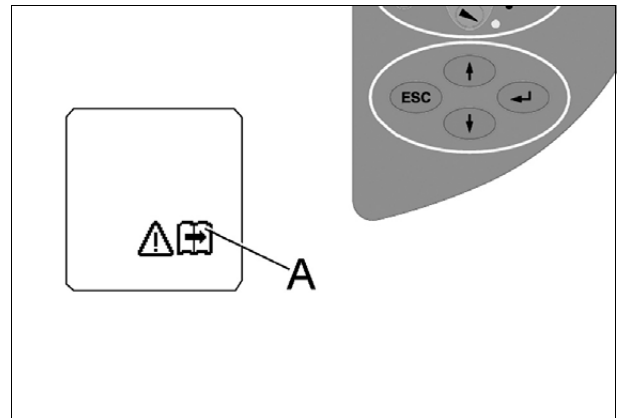


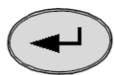
Fig. 94.

I022787

The second main menu appears in the multiple display



Press one of the buttons repeatedly until the symbol (A) flashes



Press "Return" to confirm

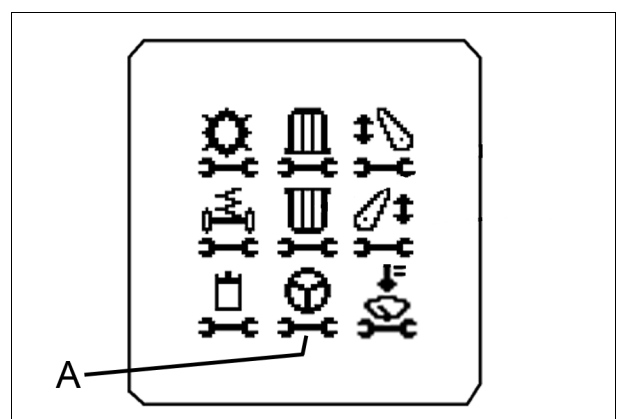


Fig. 95.

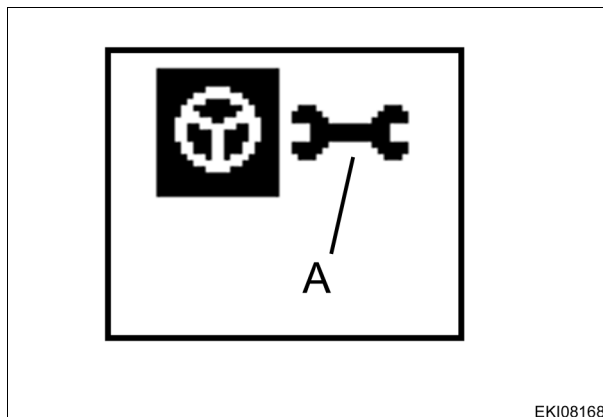
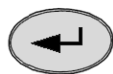
I046143



Press one of the buttons repeatedly until the symbol (A) flashes



Press "Return" to confirm



EKI08168

I000984

Fig. 96.

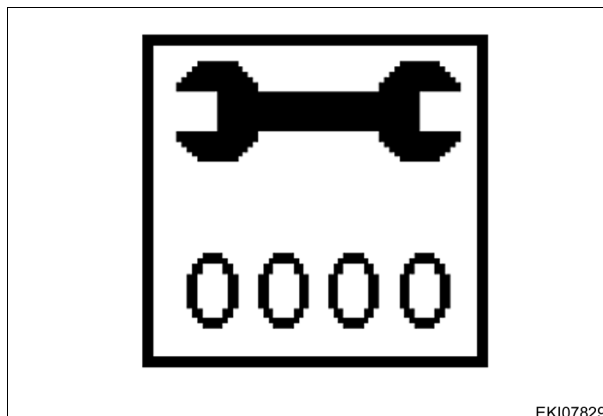
Input code **2401**



Press one of the buttons until desired number is displayed



Press "Return" to confirm



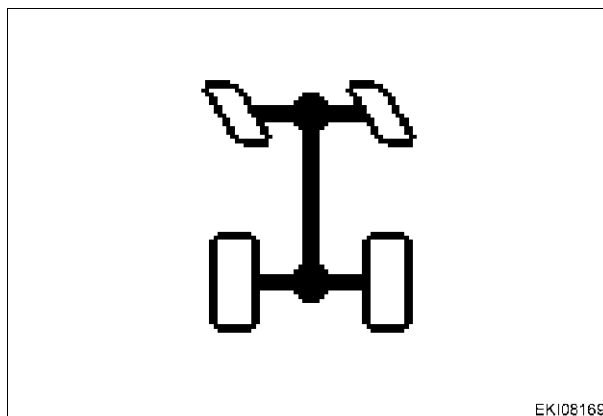
EKI07829

I000773

Fig. 97.

Drive the tractor forwards.
Turn steering wheel against the left steering lock and hold.

Press "Return" to confirm



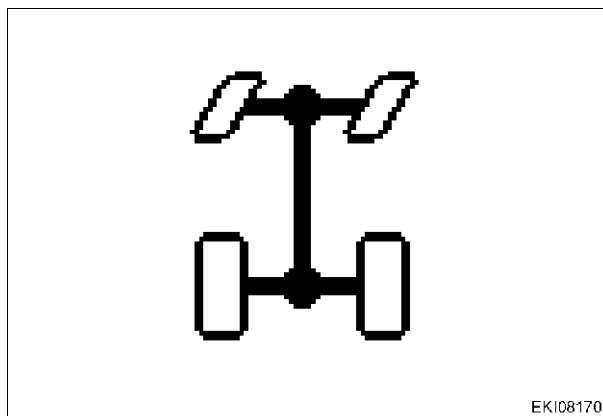
EKI08169

I000981

Fig. 98.

Drive the tractor forwards.
Turn steering wheel against the right steering lock and hold.

Press "Return" to confirm



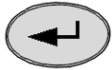
EKI08170

I000982

Fig. 99.

Make sure the front wheels are perfectly straight before adjusting the centre position. The procedure in this regard is as follows:

Drive the tractor forwards (approx. 5 to 10 [km/h])
 Drive up as accurately as possible to a mark (e. g. traffic sign) or a straight road marking.
 Drive a distance of approx. 50 [m] to ensure driving straight ahead.



Then press "Return" to confirm

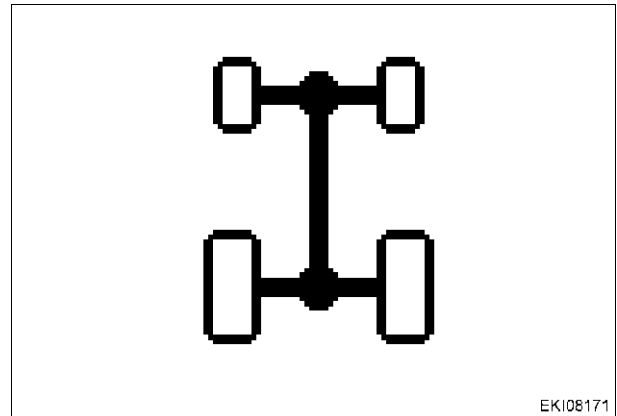


Fig. 100.

EKI08171
 I000983

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

NOTE: Settings are only stored when ignition key has been turned to "0" position.
 (Wait for at least 15 seconds before switching the ignition on again!)

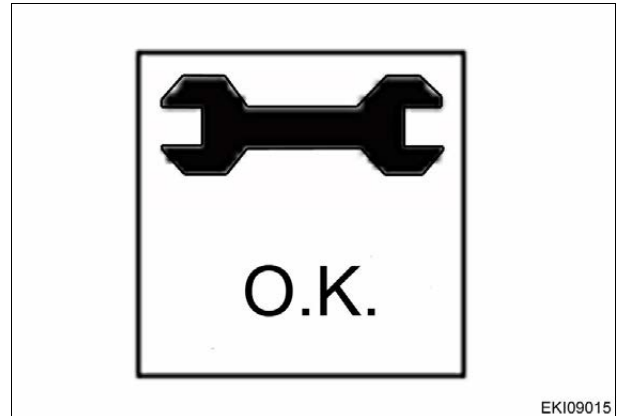


Fig. 101.

EKI09015
 I003578

If incorrect values are detected or the conditions are not met, an **ERROR** message appears

2401 = calibration code
FXX = fault code

NOTE: See also:
 *** 'Fault code for calibration code 2401' on page 193 ***



Fig. 102.

EKI09028
 I003597

Checking the adjustment accuracy

Select the correction signal (arrow).
 Press button to confirm (arrow).

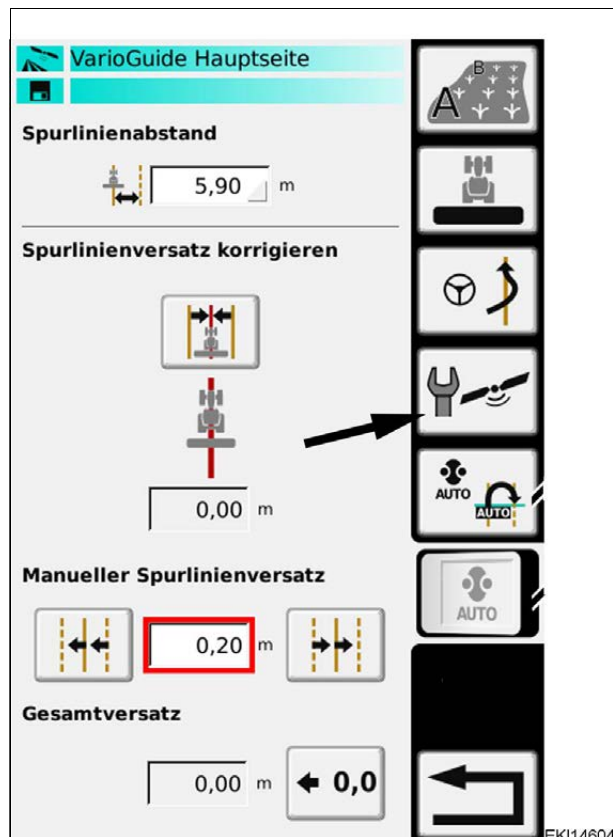


Fig. 103.

EK114604
 I051272

Select the most accurate correction signal available in the selection dialogue box.

EGNOS (Europa) (free of charge)
 Dynamic +/-30 [cm]
 Start-up time approx.5 [minutes]

WAAS (North America) (free of charge)
 Dynamic +/-30 [cm]
 Start-up time approx. 5 [minutes]

OmniStar VBS (license fee)
 Dynamic +/-20 [cm]
 Start-up time approx. 5 [minutes]

OmniStar HP (license fee)
 Dynamic +/-5 [cm]
 Start-up time approx. 20 to 30 [minutes]

RTK base station (radio license)
 Dynamic +/-2 [cm]
 Start-up time approx. 2 [minutes]

RTK network (license fee)
 Dynamic +/-2 [cm]
 Start-up time approx. 2 [minutes]

NOTE:

The highest accuracy is reached when the bar chart (arrow) shows 5 bars.

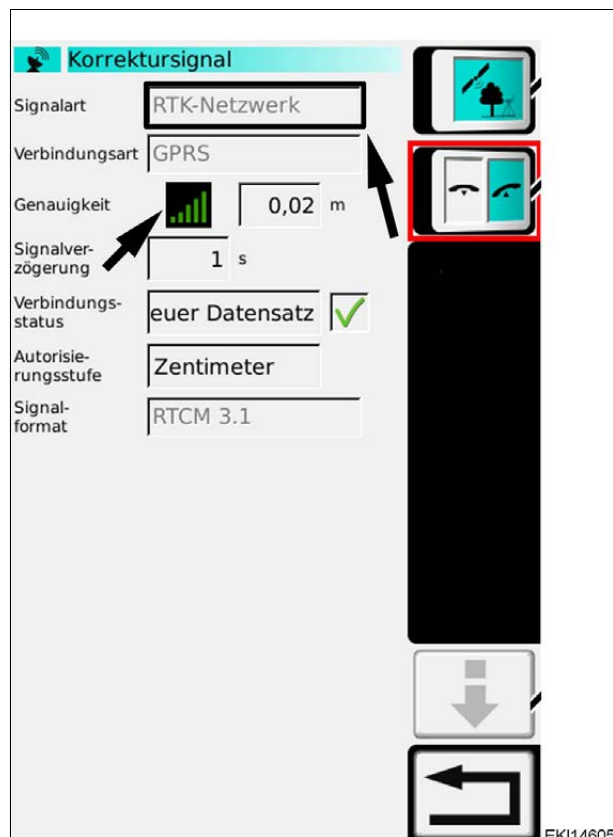


Fig. 104.

EK114605
 I051279

Record an A-B wayline in the VarioGuide system.
 Press the "field settings" button (arrow).

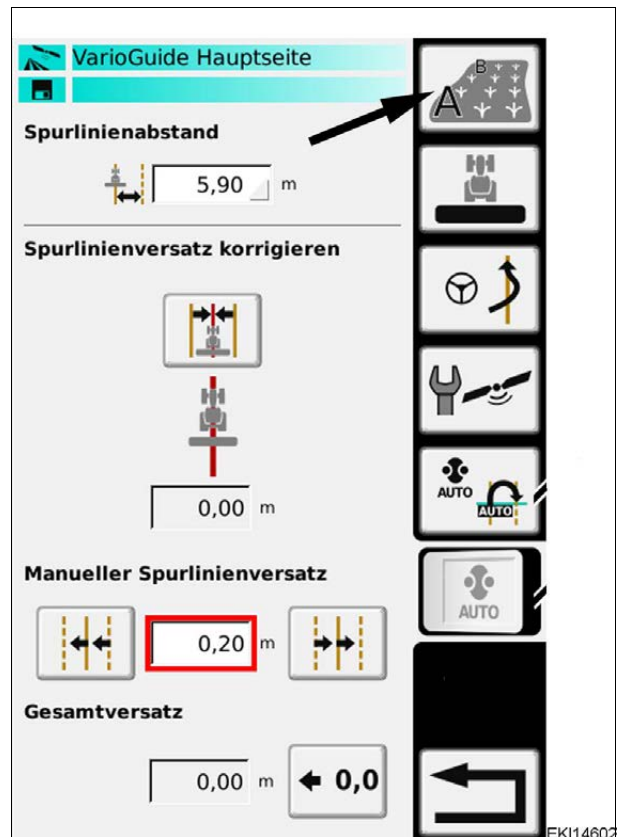


Fig. 105.

EK114602
 1051265

Add a new wayline
 Press button (E)

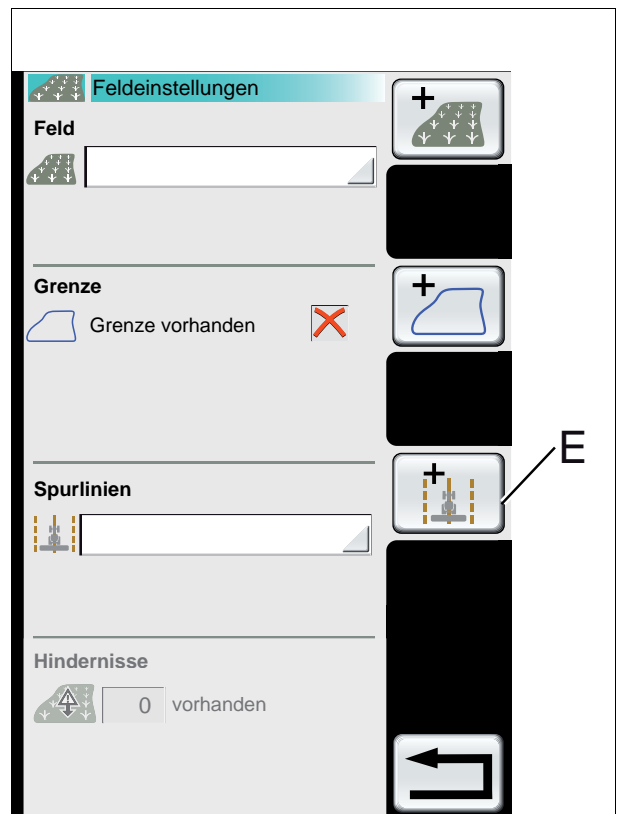


Fig. 106.

1024748

Select an A-B wayline (straight).

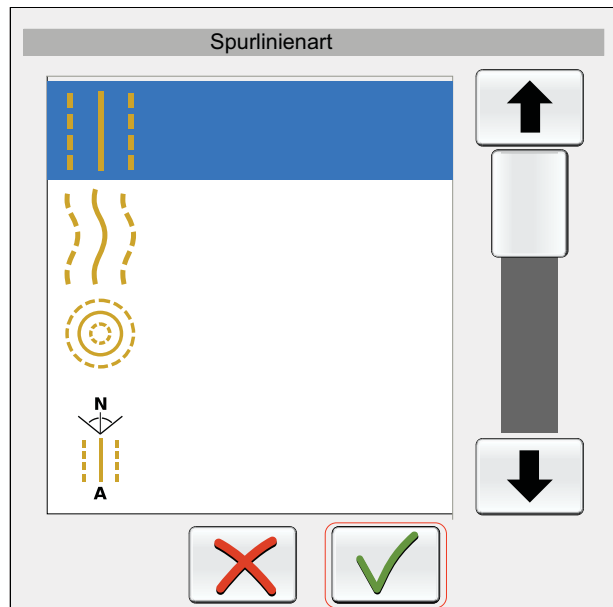


Fig. 107.

1024669

Select point A (E)

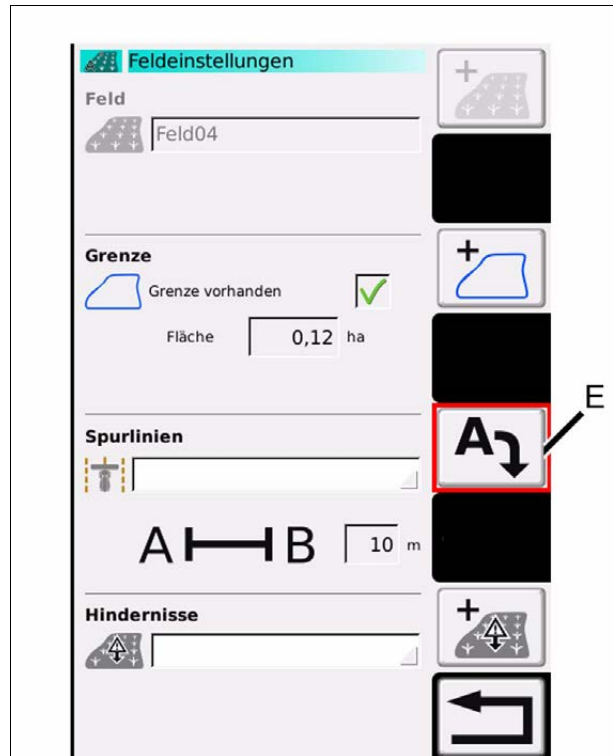


Fig. 108.

1024670

Drive at least 10 [m] and then select point (B).

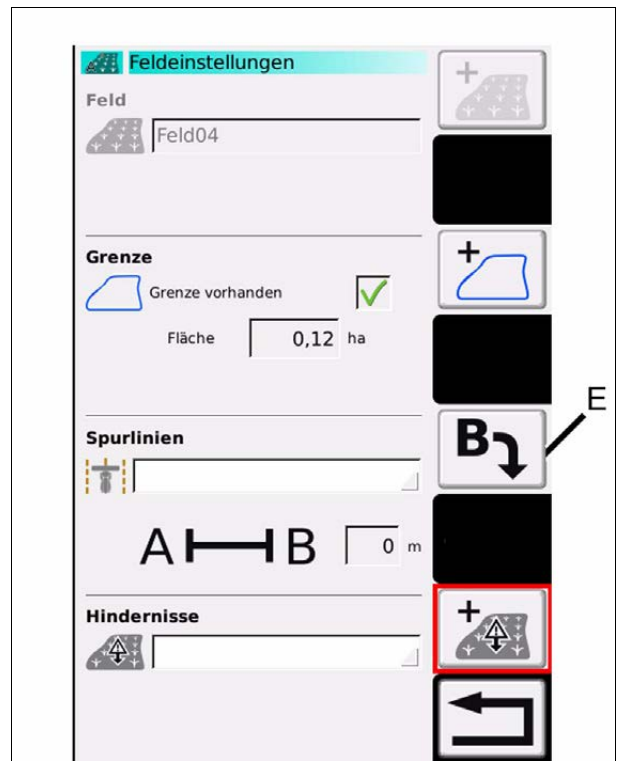


Fig. 109.

I024671

The satellite receiver has now recorded a straight wayline.

The straight wayline appears in the map view on the Vario terminal.

Switch on automatic track guidance (VarioGuide) and drive the tractor in automatic mode at least 100 [m] along the track.

Simultaneously observe the steering angle sensor in the FENDIAS diagnostics system (see the following illustrations)

Target values (virtually independent of the correction signal):

Good adjustment = 0.1 to 0.4 [°] on the steering angle sensor

Error message appears as of approx. 3 [°] on the steering angle sensor.

Track deviation can be displayed in map view (arrow)

If an accurate correction signal is used (RTK base station or RTK network), the display will show an inaccurate adjustment as a "wobble".

If the steering angle sensor is inaccurately adjusted (by more than 3 [°]) the VarioGuide system will not be able to correct track deviation precisely.

The VarioGuide system may switch itself off as a result.

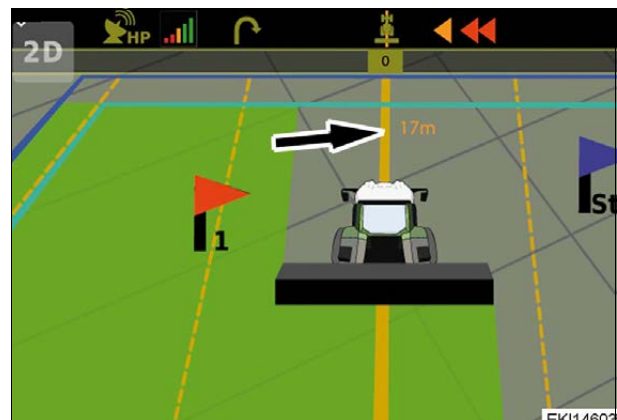


Fig. 110.

EK114603
I051268

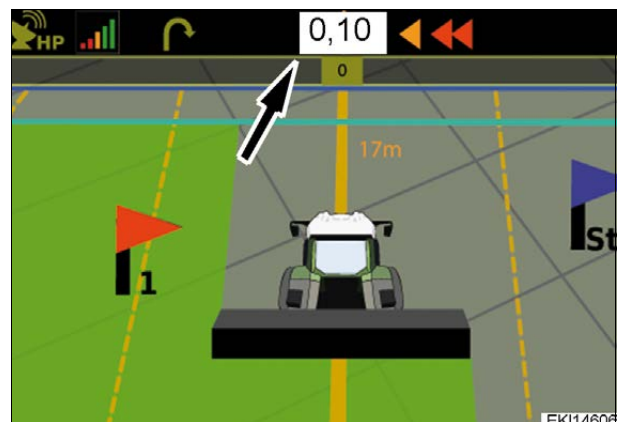


Fig. 111.

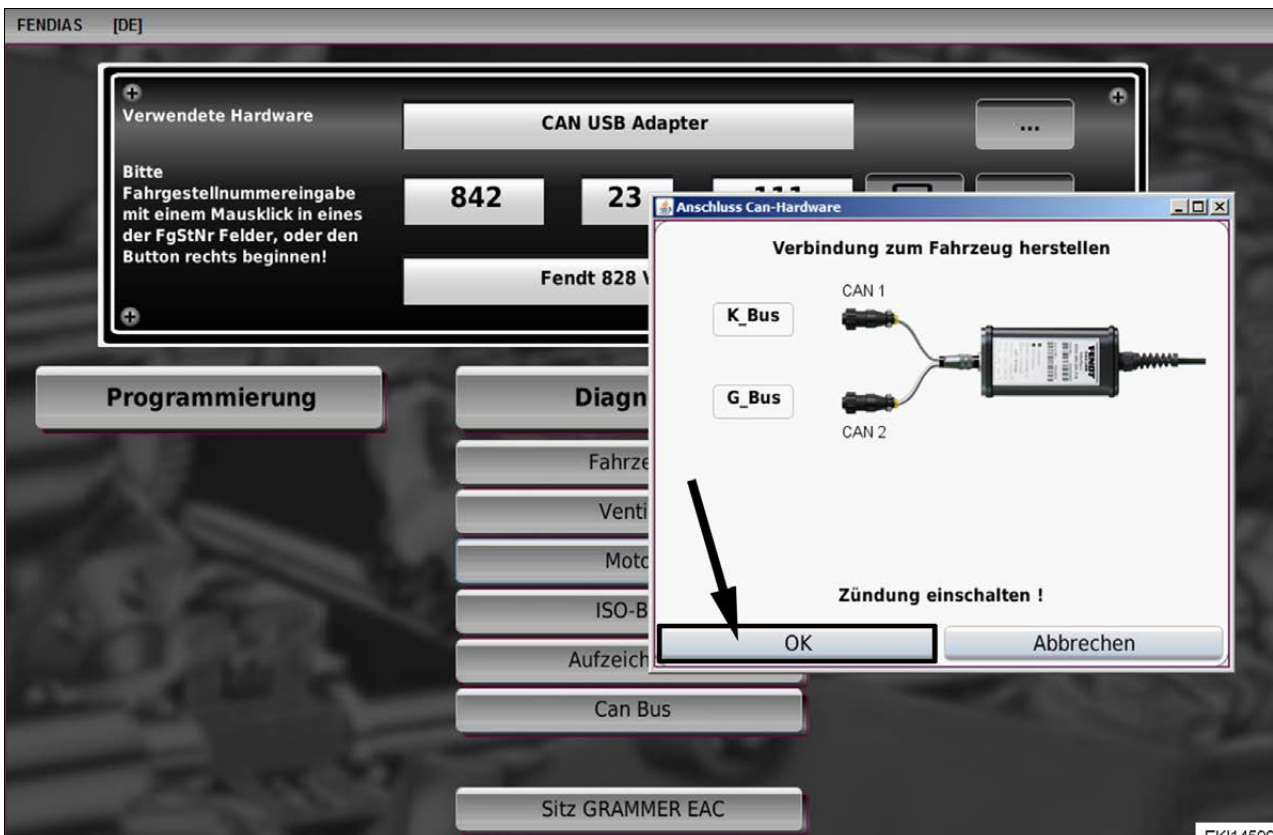
EK114606
I051284



FK114598
1051256

Fig. 112.

Select vehicle diagnostics in the FENDIAS diagnostics system (arrow).



FK114598
1051258

Fig. 113.

Connect the diagnostics adapter:
CAN1 = K BUS (comfort BUS)
CAN2 = G BUS (transmission BUS)
Press OK to conform (arrow)

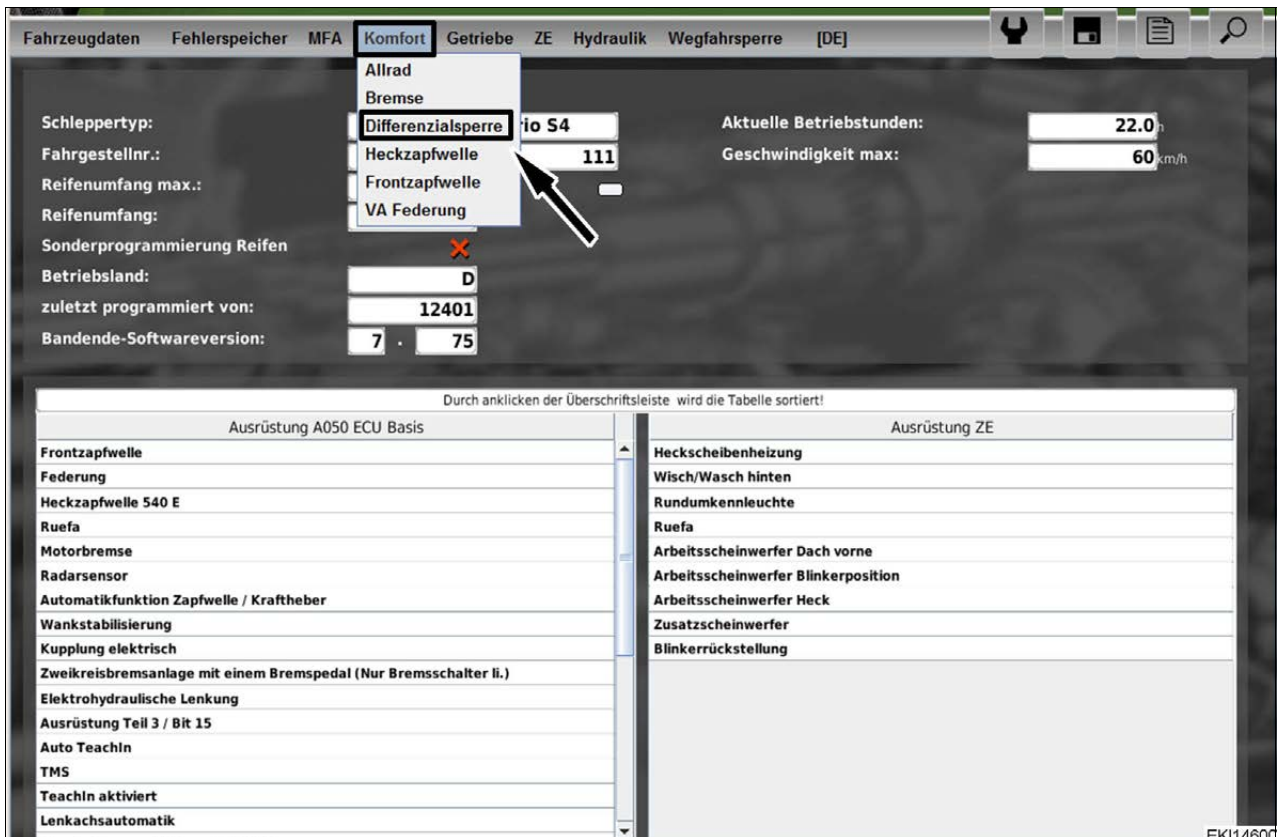


Fig. 114.

In comfort diagnostics, select differential lock diagnostics (arrow)

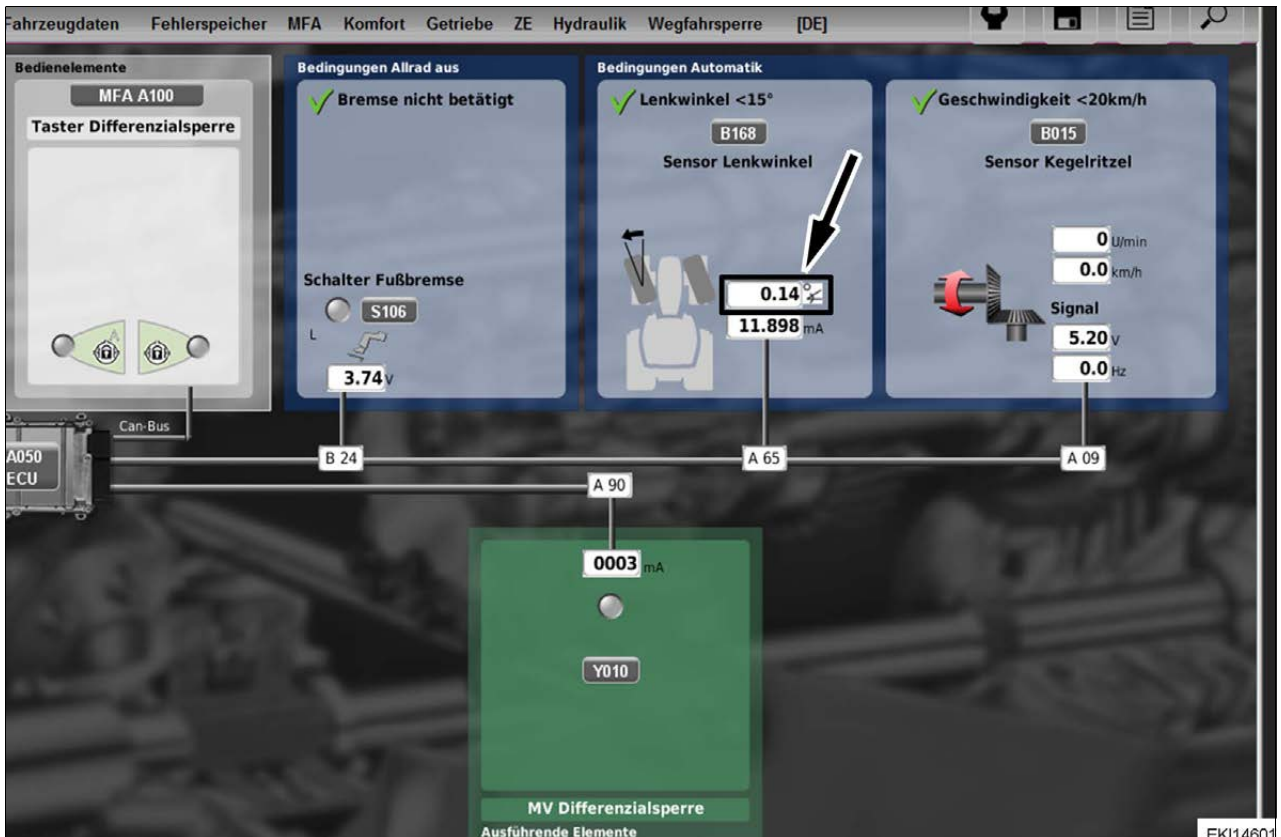


Fig. 115.

in the steering angle sensor diagnostics (arrow)

Target values (virtually independent of the correction signal)

Good adjustment = 0.1 to 0.3 [°] on the steering angle sensor

Error message appears as of approx. 3 [°] on the steering angle sensor

8 Calibration code 2403 (VarioGuide steering valve)

9. Calibration of VarioGuide control valve



DANGER:

During calibration check that there are no people or objects within the steering area! The tractor's front wheels may be deflected automatically and without warning during the calibration procedure.

During calibration, the free travel of the (Y087) valve spool is determined.
 To operate the automatic track guidance, it is essential to calibrate the steering valve.



Fig. 116.

I012196

NOTE:

If a new **A050** - ECU, basic control unit has been installed, carry out transmission calibration 4001–4010.

Important: The following preparatory steps must be carried out

- Seat switch actuated
 - Engine is running
 - Tractor stationary
 - Steering set straight
 - Steering wheel not actuated
- Warning and fault messages must be confirmed individually



Press "ESC" to confirm the warning and fault messages displayed on the A007 instrument panel

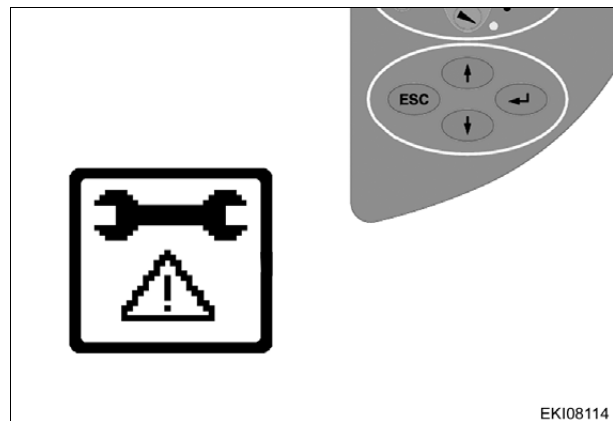


Fig. 117.

EKI08114
I000760



Press "Return" and the first main menu appears in the multiple display



Press one of the buttons repeatedly until the symbol (A) flashes



Press "Return", the second main menu appears in the multiple display

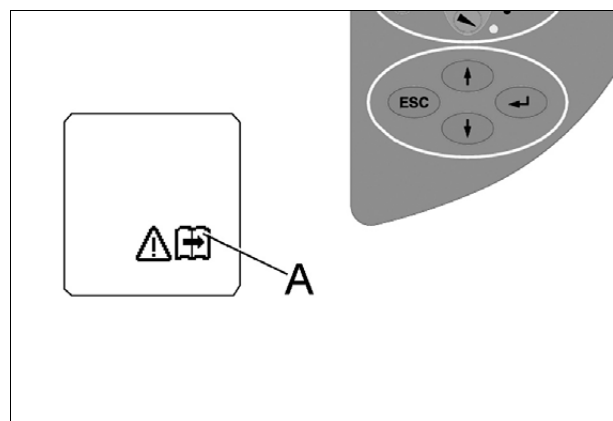


Fig. 118.

I022787

The second main menu appears in the multiple display



Press one of the buttons repeatedly until the symbol (A) flashes



Press "Return" to confirm

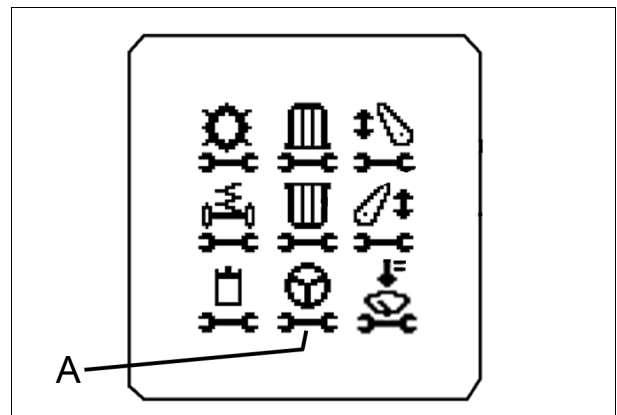


Fig. 119.

I046143



Press one of the buttons repeatedly until the symbol (A) flashes



Press "Return" to confirm

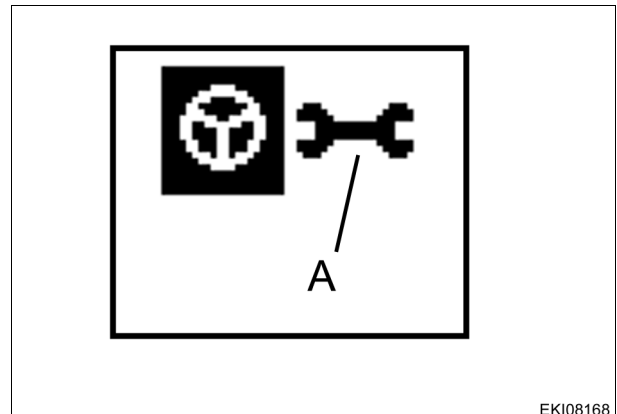


Fig. 120.

EKI08168
 I000984

Input code **2403**



Press one of the buttons until desired number is displayed



Press "Return" to confirm

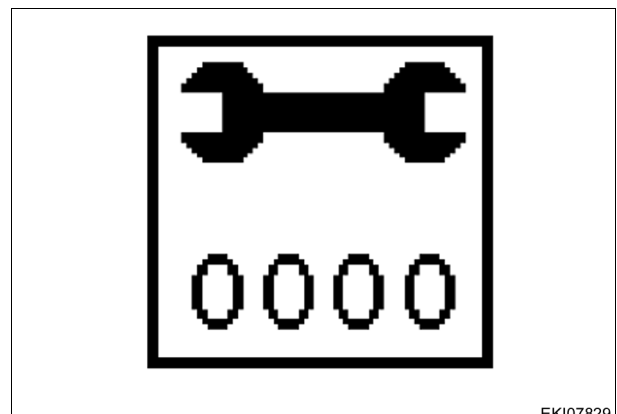


Fig. 121.

EKI07829
 I000773

The following image is displayed

NOTE: The calibration is carried out automatically.
 (approx. 5 minutes max.)
 Do not actuate steering!
 Do not leave driver seat (seat switch) !

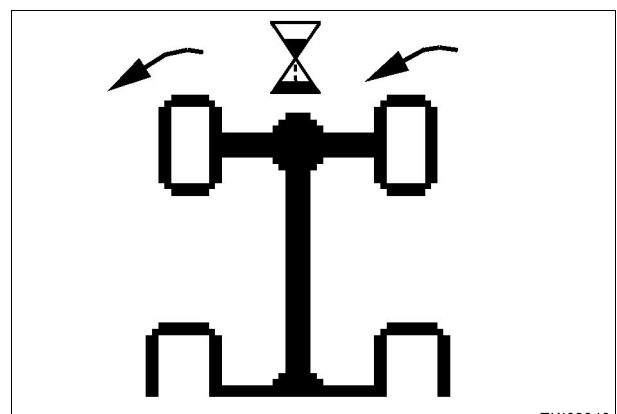
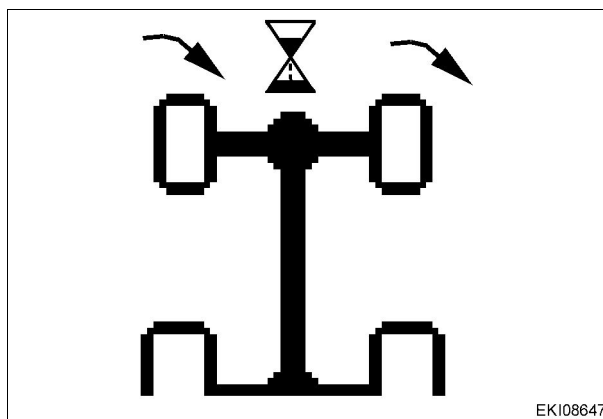


Fig. 122.

EKI08646
 I002515

The following image is displayed



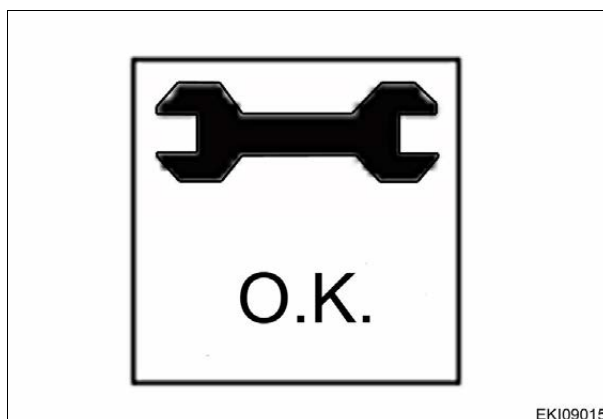
EKI08647

Fig. 123.

I002516

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

NOTE: Settings are only stored when ignition key has been turned to "0" position.
(Wait for at least 15 seconds before switching the ignition on again!)



EKI09015

Fig. 124.

I003578

If incorrect values are detected or the conditions are not met, an **ERROR** message appears

2403 = calibration code

FXX = fault code

NOTE: See also:

*** 'Fault code for calibration code 2403' on page 193 ***



EKI09029

Fig. 125.

I003598