Replacing the sensor set
JSK 37C/JSK 40/JSK 42
Daimler version

EN    Repair instructions
Sensor-enabled fifth wheel couplings are parts that must comply with very high safety requirements.

This repair manual is designed to act as a guide to completing repair work on our sensor set.

The use of JOST spare parts is essential. Changes or modifications of any kind invalidate any warranty claims and will lead to the component type approval being forfeited.

Operation and installation are described separately in dedicated publications.

Explanation of symbols

WARNING! Means that death, serious physical injury or significant material damage can occur if the relevant safety instructions are not followed.

ATTENTION! Means that slight physical injury or material damage can occur if the relevant safety instructions are not followed.

ADVICE! Contains additional important information.

Contents

1 Safety instructions........................................ 3
2 Intended use............................................. 4
  2.1 Use.................................................. 4
3 General................................................... 5
4 Standard/special tools and auxiliary materials........................................ 6
  4.1 Standard tools................................ 6
  4.2 Special tools................................. 6
  4.3 Auxiliary materials........................ 6
5 Sensor function test..................................... 7
  5.1 Troubleshooting.................................. 7
  5.2 Basic settings and visual inspection... 8
  5.3 Diagnostic tester.................................. 10
    5.3.1 Checking the locking sensor 10
    5.3.2 Checking the kingpin sensor 11
    5.3.3 Checking the semi-trailer sensor.................. 12
6 Repair work............................................. 13
  6.1 Preparing the fifth wheel coupling...... 13
  6.2 Removing cable fastenings and connectors.................................................. 14
  6.3 Removing the semi-trailer sensor...... 14
  6.4 Installation of connector and semi-trailer sensor........................................ 15
  6.5 Removing the kingpin sensor............ 15
  6.6 Installation and setting Kingpin sensor 16
  6.7 Removing the locking sensor
    JSK 40/JSK 42.................................... 17
  6.8 Installing the locking sensor and connector JSK 40/JSK 42.......................... 18
  6.9 Removing the locking sensor
    JSK 37C........................................... 18
  6.10 Installing the replacement lockingsensor.................................................. 20
7 Disposal instructions................................. 21
1 Safety instructions

The relevant safety regulations in your country (Health & Safety at Work, for example) apply to work with sensor-enabled fifth wheel couplings and vehicles.

The relevant safety instructions included in the vehicle and semi-trailer's operating instructions must also be complied with.

The permitted load data and safety information must be complied with during operation and installation.

For maintenance and repair work, the following sections contain safety information that is directly related to each specific activity. It is essential that you follow this safety information.
2 Intended use

2.1 Use

JOST fifth wheel couplings are mechanical connecting devices and establish a connection between the tractor and the semi-trailer. They are designed for mounting on a tractor unit.

Fifth wheel couplings, mounting plates and kingpins are vehicle-connecting parts that must comply with very high safety requirements and must also undergo design approval tests. Modifications of any kind will render both the warranty and the design approval void and therefore also cancel the vehicle’s operating licence.

JOST fifth wheel couplings are specified to comply with Regulation ECE R55 in class 50 and may be used solely in conjunction with kingpins of class H50, steering wedges and mounting plates of class J, or comparable licensed equipment. The sensors conform to Regulation ECE R10.

JOST fifth wheel couplings are suitable for use in power steering systems.

ADVICE!
Technical modifications reserved.
The latest information can be found at www.jost-world.com
Conversion work must be carried out by trained personnel in suitable workshops.

Repair work must be carried out using suitable tools and state of the art methods.

Instructions for assembly are identified by a diamond ◊.

Unless described separately, assembly is in reverse order.

The torque values shown in the diagrams are required for the subsequent assembly process.

Clean all parts thoroughly before assembly.

After completing the repair work, the fifth wheel coupling locking mechanism must be greased and its function tested.

**ATTENTION!**
The prescribed tightening torques must be adhered to!
Worn, damaged and cracked parts must always be replaced.
Repair welds must not be used.
4.1 Standard tools

4.2 Special tools

4.3 Auxiliary materials

We recommend high-pressure grease (EP), e.g. JOST high-performance lubricant (JOST Art. No. SKE 005 670 000).
# 5 Sensor function test

## 5.1 Troubleshooting

<table>
<thead>
<tr>
<th>Display Symbol</th>
<th>Display</th>
<th>Additional text</th>
<th>Problem</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>After coupling up, the following message appears:</td>
<td>The fifth wheel coupling is not closed or not closing completely.</td>
<td>Perform a function test of the fifth wheel coupling (see Section 5.2 and the installation and operating instructions JSK 36/JSK 37 and JSK 40/JSK 42, Section 3 &quot;Operation&quot; and Section 4 &quot;Maintenance and testing&quot; on the JOST website at <a href="http://www.jost-world.com">www.jost-world.com</a>). Check the magnet and sensor on the fifth wheel coupling handle (see Sections 5.2 and 5.3.1). Replace worn and faulty components (see Section 6 and repair instructions JSK 36/JSK 37 and JSK 40/JSK 42 on the JOST website at <a href="http://www.jost-world.com">www.jost-world.com</a>).</td>
</tr>
<tr>
<td>Fifth wheel coupling open</td>
<td></td>
<td></td>
<td>Check the magnet and sensor on the fifth wheel coupling handle (see Sections 5.2 and 5.3.1). Replace worn and faulty components (see Section 6 and repair instructions JSK 36/JSK 37 and JSK 40/JSK 42 on the JOST website at <a href="http://www.jost-world.com">www.jost-world.com</a>).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Locking sensor cannot be switched.</td>
<td>Check the magnet and sensor on the fifth wheel coupling handle (see Sections 5.2 and 5.3.1). Replace worn and faulty components (see Section 6 and repair instructions JSK 36/JSK 37 and JSK 40/JSK 42 on the JOST website at <a href="http://www.jost-world.com">www.jost-world.com</a>).</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Locking sensor or supply cable to sensor faulty.</td>
<td>Check the sensor, cable and handle or latch for damage (see Section 5.2). Perform a function test on the sensor (see Section 5.3.1).</td>
<td></td>
</tr>
<tr>
<td>After coupling up or on driving off, the following message appears:</td>
<td>Check fifth wheel coupling</td>
<td>Check the fifth wheel coupling and open it if necessary.</td>
<td>Fifth wheel coupling locked or locking detected, but no kingpin detected.</td>
<td>Excessive wear on the locking mechanism and/or kingpins.</td>
<td>Check the wear dimensions of the fifth wheel coupling and, if necessary, the semi-trailer (see Section 5.2 and the installation and operating instructions JSK 36/JSK 37 and JSK 40/JSK 42, Section 3 &quot;Operation&quot; and Section 4 &quot;Maintenance and testing&quot; on the JOST website at <a href="http://www.jost-world.com">www.jost-world.com</a>). Replace worn and faulty components. Adjust the locking play of the fifth wheel coupling (see Section 6 and the repair instructions JSK 36/JSK 37 and JSK 40/JSK 42, on the JOST website at <a href="http://www.jost-world.com">www.jost-world.com</a>).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The following message is displayed:</td>
<td>Sensing of fifth wheel coupling faulty</td>
<td>Clean the sensor.</td>
<td>The status of the sensor-enabled fifth wheel coupling is not being recognised correctly.</td>
<td>One or more of the fifth wheel coupling sensors did not switch or are permanently switched, e.g. due to the functional surfaces of sensors being contaminated with metal dust from abrasion.</td>
<td>Clean the functional surfaces of the sensor (see Section 5.2).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check the fifth wheel coupling sensor.</td>
<td>Check the fifth wheel coupling sensor.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Alternatively, check the semi-trailer sensor. Alternatively, check the kingpin.</td>
<td>Clean the sensor or check the fifth wheel coupling.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check the kingpin.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5.2 Basic settings and visual inspection

The fifth wheel coupling must be functioning correctly for the function test. Wear dimensions and the locking function must be checked first. Faulty or worn components must be replaced.

**ATTENTION!**
For fifth wheel couplings with sensors, different wear dimensions apply to the fifth wheel coupling wearing part (1).

Wearing part JSK 37C without plastic top plate liner.

Wearing parts JSK 37 with plastic top plate liner and JSK 40/JSK 42 with and without plastic top plate liner.
Before performing a sensor function test, the following components must first be inspected for visible mechanical damage:

1. Cover of semi-trailer sensor
2. Plug
3. Cable to sensor set
4. Handle or latch
5. Handle magnet (secured with shrink-fit hose)
6. Locking sensor
7. End face of kingpin sensor

Remove grease deposits from items 1, 2, 4, 5, 6, 7 and re-grease these areas.
5.3 Diagnostic tester

The Daimler diagnostic tester can also be used for the following tests.

If no tester is available, the test can also be performed without a tester as described below.

5.3.1 Checking the locking sensor

ATTENTION!
During the test, make sure that pin contacts and socket contacts are not bent or damaged. To ensure good contact between the measuring device and plug contact, the right mating plug should be used as a test adapter.

ATTENTION!
The locking sensor is triggered by a magnet in the handle (JSK 40/JSK 42) or in the latch (JSK 36/JSK 37). The precondition for this function test is an undamaged magnet. If the magnet in the handle (JSK 40/JSK 42) is damaged or no longer present, the handle must be replaced. If the magnet in the latch (JSK 36/JSK 37) or the shrink-fit hose securing the magnet is damaged or no longer present, the latch must be replaced.

Test material - Ohmmeter

- Power down the system (disconnect the battery).
- Disconnect the plug from the fifth wheel coupling.
- Open the coupling.
- Measure the contact resistance on the connector under the fifth wheel coupling as follows, moving the handle of type JSK 40/JSK 42 fifth wheel couplings as follows:
  - right and left
  - up and down
  - rotate.

Measuring points
- Plug pins 3 and 4
- Plug pins 3 and 5
- Plug pins 4 and 5

Resistance
- Infinite
- Infinite
- Infinite
5 Sensor function test

- Close the coupling.
- Measure the contact resistance on the connector under the fifth wheel coupling as follows, moving the handle of type JSK 40/JSK 42 fifth wheel couplings or the latch of type JSK 37 fifth wheel couplings as follows:
  - right and left
  - up and down (JSK 40/JSK 42 only)
  - rotate (JSK 40/JSK 42 only).

5.3.2 Checking the kingpin sensor

- Switch the vehicle’s ignition on.
- Open the coupling (no kingpin engaged).
- The LED on the back of the sensor must not light up brightly.
- If the LED lights up continuously, clean the area around the sensor of any grease deposits. The lock jaw must then be lubricated with new grease.

The sensor signal must be present and stable before, during and after the movements of the handle or latch. If measurements differ, the sensor must be replaced as described in Section 6.

Assembly is performed in reverse order.

<table>
<thead>
<tr>
<th>Measuring points</th>
<th>Resistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plug pins 3 and 4</td>
<td>&lt; 1 Ω</td>
</tr>
<tr>
<td>Plug pins 3 and 5</td>
<td>&lt; 1 Ω</td>
</tr>
<tr>
<td>Plug pins 4 and 5</td>
<td>&lt; 1 Ω</td>
</tr>
</tbody>
</table>

- The sensor signal must be present and stable before, during and after the movements of the handle or latch. If measurements differ, the sensor must be replaced as described in Section 6.
- Assembly is performed in reverse order.
5.3.3 Checking the semi-trailer sensor

The sensor's function LED points downwards when installed. The LED can then be observed with the help of a mirror. To do this, slide a mirror to left (arrow A) next to the right pedestal between the coupling plate and the mounting plate. The mirror must be slid to around the middle of the coupling, see arrow B.

- Switch the vehicle’s ignition on.
- Open the coupling (no semi-trailer coupled).
- The LED on the back of the sensor must not light up brightly.
- If the LED lights up continuously, clean the area around the sensor of any grease deposits. The top of the fifth wheel coupling must then be lubricated with new grease.

Switch on the sensor with size 17-30 socket. To do this, place the socket on the sensor cover, see arrow B.

- The LED on the back of the sensor must light up.
- If the LED does not light up or if it lights up continuously despite cleaning, the sensor must be replaced, see Section 6.
ATTENTION!
Worn, damaged and cracked parts must always be replaced. Repair welds must not be used. After completing the repair work, the entire fifth wheel coupling locking mechanism must be greased and its function tested.

With the diagrams, the work steps should be carried out in alphabetical order (e.g. a, b, c). Assembly is carried out in reverse order. Instructions for assembly are identified in the diagram number or in the diagram itself with a diamond ◊. The torque values shown in the diagrams are required for the subsequent assembly process. The prescribed tightening torques must be adhered to!

6.1 Preparing the fifth wheel coupling

- Disconnect the electrical connection to the tractor vehicle.

ATTENTION!
The fifth wheel coupling may only be raised using suitable lifting gear.

- Remove the fifth wheel coupling from the tractor vehicle and place on a suitable surface, e.g. workbench. Also see the repair instructions for the fifth wheel coupling in question.
6.2 Removing cable fastenings and connectors

ADVICE!
Depending on the design, the cable routing, position and number of cable ties and cable clamps may vary.

ADVICE!
Make sure the cable sleeve is not damaged during the following step.

- Using a cable cutter, remove the cable ties securing the connection cable from the locking sensor (1), the kingpin sensor (2) and the semi-trailer sensor (3) to the connector (3).
- Cable tie A is secured with a washer.

ADVICE!
Cable ties may be secured with a washer behind the main fin.

6.3 Removing the semi-trailer sensor

- Position of semi-trailer sensor (1).

ADVICE!
Installation is performed in the reverse order.

- Slide the safety slide (10) in the direction of the arrow (C) away from the plug.
- Pull the plug (11) out of the retaining plate towards the centre of the coupling plate (D).
ATTENTION!
To ensure better accessibility, loosen the hook spring (2) on the eye bolt (3). Take care not to damage the nearby lubricant line (5).

- Remove the screw (1) on the retaining plate (4) and remove the protective cap.

6.4 Installation of connector and semi-trailer sensor

Components of the semi-trailer sensor unit:

1. Screw M6 x 10 mm with washer
4. Holder
6. Semi-trailer sensor M30
7. Size 36 nut
8. Cable splice (optional)
9. Protective cap

The semi-trailer sensor is installed in the reverse order.
- Note the installation measures.

6.5 Removing the kingpin sensor

- Undo the grub screw (14).
- Remove the kingpin sensor (15).

The connector is installed in the reverse order. After this, use the supplied cable ties to refasten the cable at the points indicated in Section 6.2. Don’t forget to also secure cables and hoses that were unfastened when removing the cable ties.
### 6.6 Installation and setting Kingpin sensor

**ATTENTION!**
Before starting work, adjust the fifth wheel coupling as per the instructions for use with a new wear ring and new kingpin, as otherwise it will not be possible to install the kingpin sensor correctly! The fifth wheel coupling and kingpin sensor must be adjusted on a test bench with kingpins. A test pin SKE008630000 may be used as an option. However, this must lie with its entire surface on top of and perpendicular to the fifth wheel coupling.

- Fit a new wear ring and readjust the fifth wheel coupling as described in the installation and operating instructions or repair instructions. The installation and operating instructions and repair instructions can be obtained from the JOST website at www.jost-world.com.
- Guide a new kingpin into the fifth wheel coupling and ensure that the locking mechanism is closed and secured, as shown in the installation and operating instructions.
- Using a gauge (16), measure the distance \(X\) from position C on the fifth wheel coupling plate to the kingpin (1). Mark the point C from which you have measured using a permanent marker, so that you can reuse this position to adjust the kingpin sensor.

- Position the gauge (16) as shown above and align with position C marked previously.
- Measure the calculated setting dimension.
- Calculate the setting dimension for the kingpin sensor as follows:

\[
\text{Kingpin setting dimension: } A = X + 75.5 \text{ mm}
\]

- Insert the kingpin sensor (15) into the hole until it touches the gauge (16).
- Tighten the grub screw (14) to the specified torque.

The cables in the area of the kingpin sensor must be routed closely along the main fin. For positions and cable routes, please refer to Section 6.2.

Take care not to damage any cables when tightening cable ties.
6.7 Removing the locking sensor
JSK 40/JSK 42

To remove the locking sensor, the handle must be removed.

*Unhook the double spring (17).*

**ATTENTION!**
Risk of injury!
The double spring (17) is under tension!
When installing the double spring (17), take care to proceed as shown in the diagram.

*Undo the hex nut (18). During installation, use the hex nut supplied with the repair kit.*

*Remove the pull lever (19) from the fifth wheel coupling.*

**ADVICE!**
Position of the locking sensor (1).
Undo the screws (20)

6.8 Installing the locking sensor and connector JSK 40/JSK 42

The locking sensor is installed in the reverse order.

ATTENTION!
Note the difference between Figures 1 and 2!

Without plastic top plate liner:
- 2 x screw M6x16 (20)
- 2 x washer D6 (21)
- 2 x sleeve (22)

With plastic top plate liner:
- 2 x screw M6x16 (20)
- 2 x washer D6 (21)

The connector is installed in the reverse order.

After this, use the supplied cable ties to refasten the cable at the points indicated in Section 6.2. Don’t forget to also secure cables and hoses that were unfastened when removing the cable ties.

6.9 Removing the locking sensor JSK 37C

Position of locking sensor (1).
6 Repair work

Variant 1

- Remove the head of the blind rivets (23) using a 5.5 mm drill bit
- Undo the hex bolt M10 (24).
- Remove the latch (25) and the sensor with holder (22).

Variant 2

- Undo the hex bolt M10 (24).
- Remove the latch (25) and the sensor with holder (22).

ADVICE!
If you removed the locking sensor as shown in Figure 2b, skip Item 3.
6.10 Installing the replacement lockingsensor

Add-on parts of locking sensor JSK 37C

1

22 Locking sensor with holder
24 Hex bolt M10
25 Latch with magnet
26 Lock nut M10
29 Allen screw M5 x 10 mm
30 Washer D10
31 Sleeve
31 Spring

⚠️ ATTENTION!
Only use a new lock nut (26) for installation.

⚠️ ATTENTION!
Also note the "Repair instructions for the JSK 37 fifth wheel coupling".

- Install the locking sensor with holder (22) in the following sequence, as shown above: Allen screw M10 (24), locking sensor with holder (22), washer D10 (26), sleeve (27), spring (28) and lock nut (26).
- Position the latch (25) in installation position.
- Tighten the lock nut (26) so it is finger-tight.

ATTENTION!
Next, check that the lock is functioning correctly. After it has been deflected to the open position, the latch (25) must move independently to the stop on the holder (22).

Tighten the hex bolt (24) to the specified torque.
Installed parts are valuable raw materials that can be recycled.

They can be split into plastics, rubber and metal materials.

Plastic and rubber are labelled in accordance with VDA recommendation 260.

Before disposal, clean parts to remove any residual oil or grease.