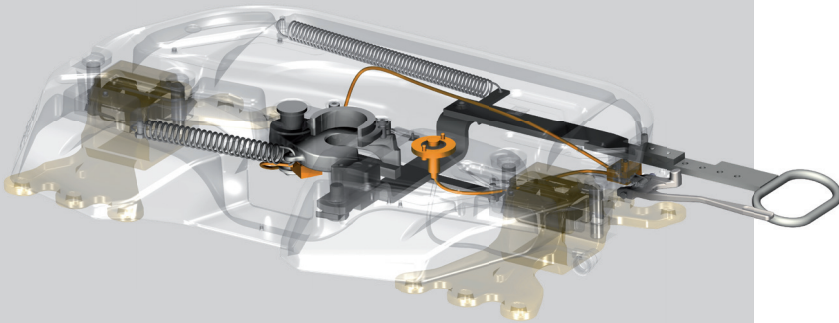


Mounting – Operation – Maintenance

RECOSS® sensor system for
SAF-HOLLAND fifth wheels

SK-S 36.20 Plus



Fifth wheel SK-S 36.20 Plus

Mounting – Operation – Maintenance

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1 Product description

1.1 Proper use

The RECOSS® fifth wheel system is only intended for:

- use with semitrailers in accordance with ISO 1726, and kingpins according to ISO 337/DIN 74080
- use with automatically-steered semitrailers in accordance with EC 94/20, Appendix V, Section 7.9.1
- use under road conditions customary in Western Europe

The system is not intended for other types of application different from those cited here—this is regarded as improper use! We draw particular attention to the fact that it is prohibited to:

- use the fifth wheel system contrary to the permissible load values (D value, imposed load)



Caution

Authorized use also involves reading these operating instructions as well as adherence to all instructions contained therein—in particular the safety instructions. It also entails carrying out all inspection and maintenance work in the specified time intervals.

If the RECOSS® fifth wheel system is not used in accordance with these provisions, safe operation is not guaranteed.

The user and not the manufacturer is responsible for all damage to persons or property resulting from improper use!

1.2 Mounting

RECOSS® - REmote COntrol Safety System

Sensor system for SAF-HOLLAND fifth wheels of type SK-S 36.20

The RECOSS system is only approved for mounting / installation on a SAF-HOLLAND fifth wheel of type SK-S 36.20.

Components of RECOSS®

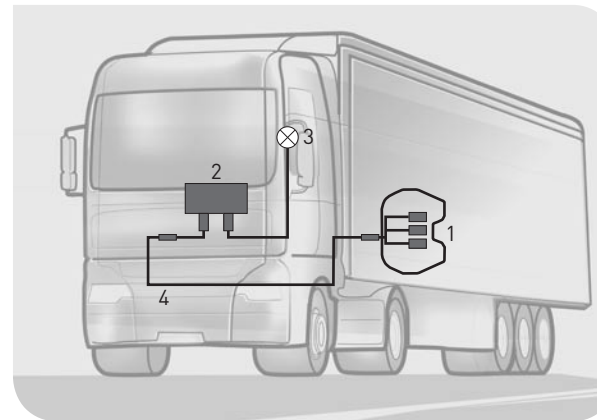


Figure 1.1

1. Fifth wheels including sensors
2. Control unit
3. Lights / display (optional scope of delivery)
4. Cable set

1.3 Functional description

The electronic monitoring system RECOSS® monitors the position of the located fifth wheel kingpin and the position of the unlocking handle via non-contact sensors. The signals of the sensors are recorded in the control unit and evaluated in respect to sequence and time interval. The „green“ display is only indicated to the driver if the coupling is closed perfectly with correctly located fifth wheel kingpin. All other conditions, including manipulations and defects, are detected by the system and displayed correspondingly.

A display is also provided for the correct coupling height as soon as the fifth wheel comes into contact with the semitrailer plate. This enables the driver to optimally adjust the pneumatic suspension to the height of the trailer.

2 EC declaration of conformity

The manufacturer: **SAF-HOLLAND GmbH, 63856 Bessenbach** hereby declares that the **fifth wheel coupling type SK-S 36.20** described below satisfies the safety and health requirements of the following EC directives: **94/20/EG**

Harmonized standards applied:	
94/20/EG	Mechanical connecting devices of motor vehicles
94/09/EG	ADR suitability in accordance with the Explosion Directive (ATEX)
95/54/EG	EMC Test
70/156/EG	Type approval for motor vehicles and their trailers
ISO/FDIS 16750	Environmental conditions and testing for el. equipment
ISO 1726	Vehicle exchangeability
ISO 3842	Assembly of fifth wheels
EN 50021	Electrical equipment for explosion-hazard areas
EN 60079-14	Equipment for gas explosion-hazard areas

Applicable national standards and technical specifications:	
TA 31	Technical requirements for vehicle components in the design approval test according to § 22a StVZO (Regulations Governing the Use of Vehicles for Road Traffic)
KBA directive	For the supply and testing of bearing components with nodular graphite in equipment for connecting vehicles
BGF instructions	Instructions for the safe coupling of motor vehicles
TÜV instructions 5205 Draft 4.5 01/99 VdTÜV	Instructions for the transportation of hazardous goods (Regulations for the road transport of hazardous goods)
44. ErgL Strassengefahr- gutvorschriften	

Modifications to the design which affect the technical data cited in the operating instructions and which affect the authorized use, i.e., which represent a considerable modification to the system, render this declaration of conformity invalid!



Alan Feltham, Head of Engineering

3 General safety instructions

3.1 Operator's obligation to observe due care

The RECOSS® fifth wheel system has been designed and constructed on the basis of a hazard analysis and under careful consideration of the harmonized standards to be complied with as well as further technical specifications. It therefore corresponds to the latest standard of technology and ensures the highest possible degree of safety.

In practical operation, however, this level of safety can only be achieved if all requisite measures are taken. The user of the vehicle has an obligation of due care to plan these measures and to supervise their execution.

In particular, the user must ensure that

- the fifth wheel is only used in accordance with the authorized application (compare Chapter 1 „Product description“)
- the system is only operated in a perfect, correctly functioning condition and that, in particular, the safety devices are checked for proper functioning at regular intervals
- requisite personal safety equipment is made available for and used by operating, maintenance, and repair personnel
- the operating instructions are available at all times, complete, and in a legible condition at the location where the system is used
- only properly trained and authorized personnel operate, maintain, and repair the system
- such personnel are instructed regularly in all relevant issues concerning occupational safety and environmental protection and are familiar with the operating instructions, especially the safety instructions included therein

- all safety and warning labels attached to the fifth wheel are not removed and remain legible at all times



Notice

Keep information available: These operating instructions must be kept in the vehicle at all times. It must be ensured that all persons who work on the vehicle can refer to the operating instructions at all times.

Supplementary to the instructions, operating directives as defined by the Occupational Safety Law and regulations governing the use of work materials must also be made available.

All safety instruction and operating instruction plates attached to the fifth wheel must be kept in a legible condition at all times. Damaged or illegible plates must be replaced immediately.

3.2 Explanation of the safety symbols used

The following safety symbols are employed in these operating instructions. These symbols are intended above all to draw the reader's attention to the text of the adjacent safety symbols.

This symbol signifies a danger to life and limb.



Danger

This symbol signifies a hazard to machinery, material, or the environment.



Caution

This symbol signifies information, which provides a better understanding of the machine operating processes.



Notice

3.3 Basic safety measures

During maintenance:

The maintenance work stipulated in the operating instructions—adjustments, cleaning, lubrication, maintenance, inspection—must be carried out at the prescribed intervals. Take note of the special information in the operating instructions concerning individual components.

The following points must be observed before carrying out maintenance work:

- Immediately replace all parts, which are not in perfect condition
- We recommend the use of Original SAF-HOLLAND spare parts
- Make sure that suitable containers are available for all materials hazardous to groundwater (greases, etc.)

After completion of the maintenance work, and before commissioning the system, the following instructions must be observed:

- Check all screw connections previously loosened for tight fitting once again (observe tightening torques!)
- Make sure that all tools, materials, and other equipment or devices used are removed from the work area again
- Ensure that all safety devices of the system function perfectly again

When working on the electrical equipment:

All work on the electrical equipment of the RECOSS® system must be carried out by trained electricians only.

Check electrical equipment regularly: Retighten any loose connections—replace damaged cables or wiring immediately.

For all work carried out on live cables, a second person must always be present to switch off the mains switch in case of emergency.

Environmental protection:

In all work carried out on and with the fifth wheel system, the regulations for the avoidance of waste must be complied with.

In particular, during installation and maintenance work and also when putting out of service, ensure that any materials hazardous to groundwater (grease, oil, coolant fluid, cleaning liquids containing solvent, etc.) do not contaminate the ground or escape into the sewage system. Such materials must be collected in suitable containers, stored, transported and correctly disposed of.

3.4 Particular types of hazard

Modifications to the RECOSS® system:

For safety reasons, no unauthorized modifications to the fifth wheel may be made—this also applies for welding work. Modifications of any kind will invalidate warranty claims and result in cancellation of the design approval.



Danger

For all intended modifications, prior written permission must be obtained from SAF-HOLLAND GmbH

Use only original replacement parts / original wearing parts / original accessory components—these parts are specially designed for the fifth wheel. In the case of non-original components, there is no guarantee that these are designed and manufactured to meet working and safety requirements.

Components and special devices not supplied by us are not approved by us for use in the fifth wheel system.

4 Mounting

In order to avoid damage to the product or serious injuries when mounting the fifth wheel or during initial operation of the vehicle, the following points must be strictly observed:



Caution

- Mounting on the vehicle chassis—mounting and installation of the fifth wheel system—may only be carried out by qualified personnel who have observed the relevant safety instructions
- Before commencing work, the fifth wheel and all accompanying components of the RECOSS® system must be thoroughly checked for transport damage
- Make sure in particular that the prescribed tightening torques are strictly adhered to
- Also read Chapter 3 „General safety instructions“

4.1 Mounting the fifth wheel on the vehicle chassis

The mounting instructions in the mounting, operating, and maintenance instructions of SK-S 36.20 (all versions and types, for example, SK-S 36.20 V, H, W) are applicable for mounting the fifth wheel on the vehicle frame.



Caution

When transporting and raising the fifth wheel, particular attention must be paid that no components and cables are damaged on the base of the coupling.

4.2 Electrical connections

4.2.1 Overview of the components

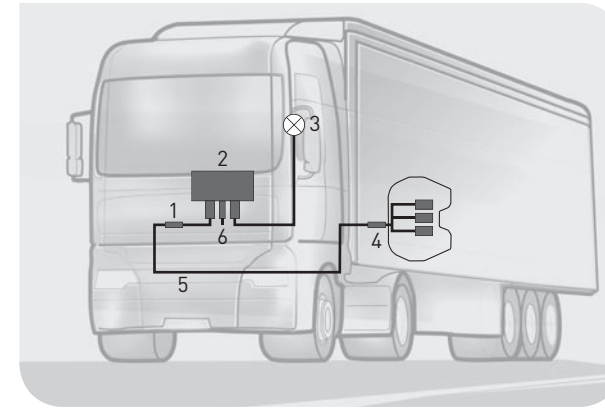


Figure 4.1

1. Plug
2. Control unit
3. Lights
Display
Display unit
4. Plug connector for fifth wheel
5. Cable
- four-wire
- double coated
6. Connections to the on-board electrics

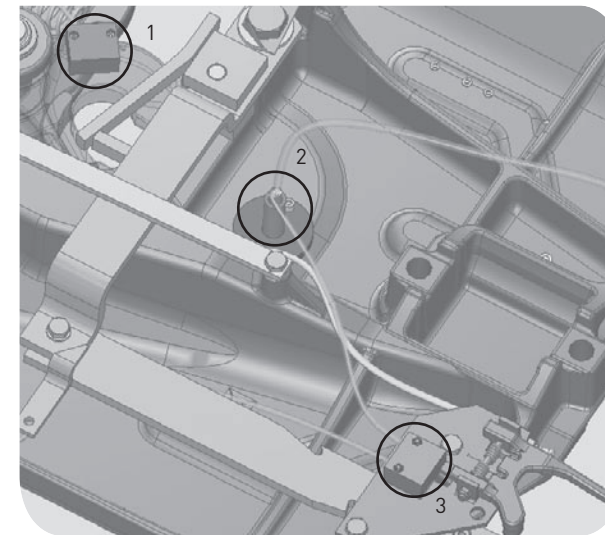


Figure 4.2

1. Sensor fifth wheel kingpin
2. Sensor semitrailer plate
3. Sensor safety lever

4.2.1.1 Control unit

The control unit (SAF-HOLLAND part number 662 129 400; Figure 4.3) is installed in the electrical compartment on the passenger side of the cab, by latching the attachment elements into the corresponding openings in the vehicle instrument panel. If the attachment plates are not extant, our attachment adapter (part number 662 129 404 or 662 129 407 for MAN TGA vehicles) should be used.

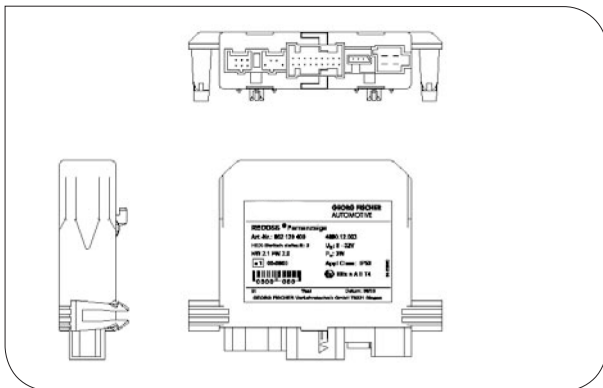


Figure 4.3

Attachment with adapter:

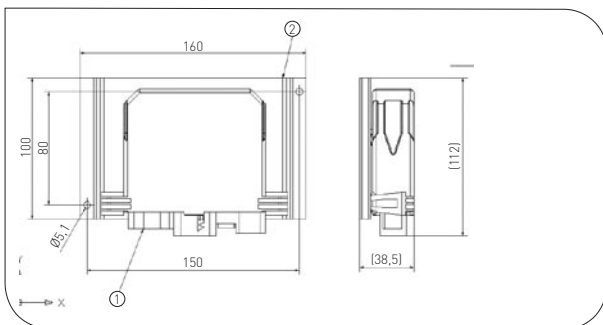


Figure 4.4

The control unit (1) is mounted via two attachment points on the adapter (2) using two screws of diameter 5 (see Figure 4.4). The attachment points in the vehicle must be adapted to the relevant vehicle type.

4.2.1.2 Connection cable

The cable (9a/9b) running from the fifth wheel to the plug connector in the cab (standard length: 8 m) should be laid according to the vehicle manufacturer's instructions.

General information for cable laying:



Caution

- The plug on the fifth wheel (plug 4) must not be installed in the pitch range of the fifth wheel (Caution: danger of crushing). We recommend installation on the frame or on an existing cable loom
- It must be ensured that the plug connector is not installed in the swiveling range of the coupling and that the cable is laid in such a way that it does not become tensioned or crushed at the maximum pitch angle
- Measure the cable lengths between the plug and fifth wheel liberally (pitch angle of the fifth wheel should be taken into account)
- Do not attach the cable to the brake fluid line in the area of the front axle!
- Ensure that cables do not rub against other vehicle parts
- Cables must be installed away from heat sources (e.g., exhaust system, engine). If necessary, a corrugated tube must be used for protection
- The vehicle suspension must be taken into account (pneumatic suspension)
- The cable must be attached by means of a sufficient number of cable clips

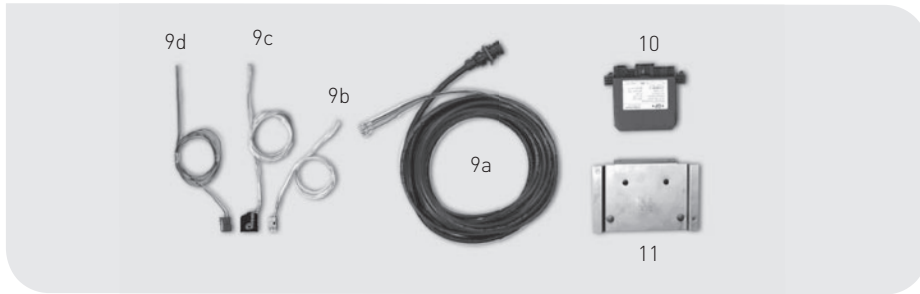


Figure 4.5

Item	Typ	No.	Order no.
9a + 9b	Frame cable coupling – control unit	1	662 129 514
9c	Connection cable for display lamps	1	663 129 503
9d	Connection cable for power supply	1	664 129 501
10	Control unit (3 sensors, ADR/GGVS compatible)	1	665 129 400
11	Attachment adapter for control unit	1	666 129 404

The cable between the fifth wheel and the control unit (9a/9b) is prefabricated and only needs to be plugged in (plug 4). A disconnect point, for instance at the driver's cab interface, can be created if needed. The connection strands from the control unit to the vehicle electrical supply system (cable 9d) or to the display elements (cable 9c) are prefabricated to fit plugs 1 and 3 and only need to be connected to the following vehicle terminals (circuit diagram see Chapter 4.2.2):

Plug 1 (Cable 9d)

Brown strand	Terminal 31 (Earth)
Black strand	Terminal 15 (24 V DC ignition)



Caution

In the case of ADR vehicles or where a battery isolating switch is installed, make sure that the control unit is switched off by the battery isolating switch (terminal 15 dead)!

4.2.1.3 Display elements

The display elements (available option) and an acoustic signaling device (buzzer) are combined in the display unit 662 129 445. This is connected only to plug 3 on the control unit at installation. Adapters and screws for installation in the driver's cab are included. The display unit must be located so that it is clearly visible to the driver.

The display elements (red and green lamps; P max = 2.4 W) must be selected and installed according to the instructions and regulations of the vehicle manufacturer, and identified as follows (self-adhesive foils enclosed):

Green lamp:



Red lamp:



Plug 3 (Cable 9c / printed braided cord)

3/13 red lamp	Red lamp
3/14 green lamp	Green lamp
3/18 GND	earthing lamp



Figure 4.6

4.2.2 Circuit diagram

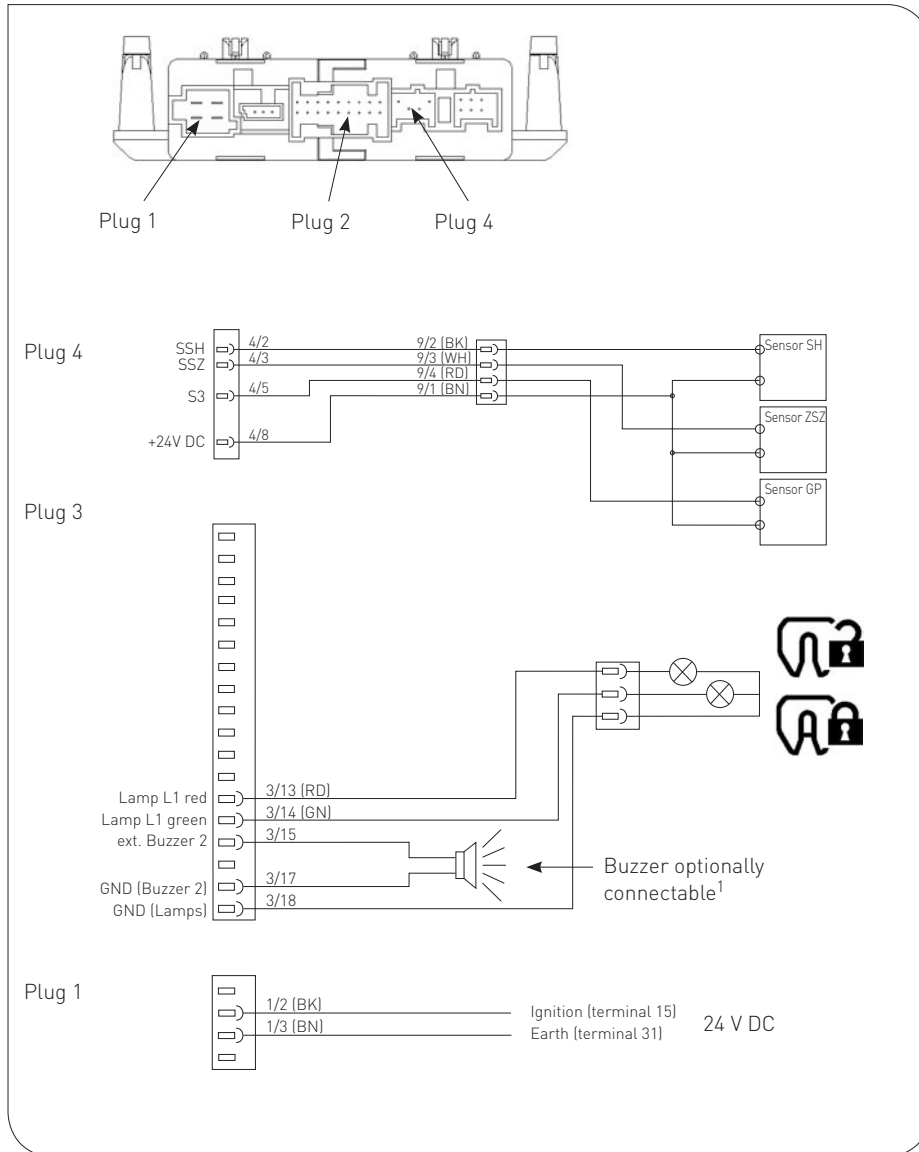


Figure 4.7

¹ Notice: The buzzer described above (not in scope of supply) can optionally be connected (pin 3/15 and 3/17), if the installation position makes it necessary.

Specification: separately excited buzzer $V_{max} = 28$ VDC
 Sound pressure = min. 85 db / 30 cm, $I_{max} = 1300$ mA



Caution

- Incorrectly wired connections can destroy the electrical / electronic components
- Electrostatic processes / current defects (overvoltage/undervoltage) can damage the electronic components and cause defects in the software
- The plug connectors must not be plugged or unplugged while current is switched on
- The warning plate on plug 4 („Do not unplug while current is switched on“) must not be removed in the case of ADR vehicles!

5 Commissioning



Notice

Be sure that the lock on the coupling is open **BEFORE** switching the system on for the first time.

5.1 Checking before first coupling

Checking the sensor system:

- Switching on the ignition activates the system self-test. The self-test indicates trouble-free system operation. Faults of any kind (e.g., defective sensors, severed cables/lines, tampering with the system, or the coupling) are indicated by the red display flashing and an acoustic signal. The self-test must run as follows:
 - Ignition on
 - Red display lights up (duration approx. 3 seconds)
 - Display switches off



Caution

No display in uncoupled condition (2 and 3 sensor system). The semitrailer plate sensor must be switched with a metal object for checking the 3 sensor system. Then the red lamp appears accompanied by a signal sound.



Caution

Ensure that the red display lights up for approx. 3 seconds during the self-test.



Notice

If error code 2 is output after the "ignition on" is switched on for the first time, turn the ignition off (while decoupled) and then on again.

If the flashing does not stop after the self-test (fault message), check whether the locking mechanism is open:

Testing to ensure that the locking mechanism is in order for coupling:

The fifth wheel must be ready for coupling, i.e., push down the safety lever with your thumb, swivel the unlocking handle to the left and pull out.

The locking mechanism is in the open position

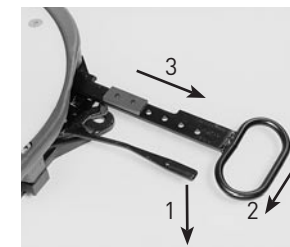


Figure 5.1

5.2 Checking after first coupling

The display changes from red to green after coupling.

Check the position of the manual safety latch: The cam of the safety latch is located to the side of the unlocking handle.

Coupling opened!



Figure 5.2

Coupling secured!



Figure 5.3

6 Operation



Caution

Switching on the ignition system activates the system self-test. Trouble-free operation is indicated when the self-test runs as follows:

1. Ignition on
2. Red light lights up
Signal (duration approx. 3 seconds)
3. No display

6.1 Coupling

The RECOSS® system is supplied with 3 sensors as standard. The third sensor is a semitrailer plate sensor which monitors the presence of the semitrailer plate and hence allows the driver to optimally adjust the pneumatic suspension of the vehicle.

Caution

- Ignition on:
(self-test)



*Approx.
3 seconds*

- no semitrailer:

No display

- possibly regulate pneumatic suspension to ...
- fifth wheel comes into contact with semitrailer plate:
(3-sensor system only)



*Frequency
0.5 Hz*

- coupling completed correctly:



*Goes out after
5 minutes*

6.2 Securing

- The safety latch automatically falls into the closed position. The unlocking handle can then no longer be moved either to the left or right
- The locked and secured locking mechanism is indicated by the green lamp (switches off after approx. 5 minutes). The green lamp only appears if the locking mechanism for the coupling is securely closed and if the fifth wheel kingpin is fixed in the locking mechanism
- If the safety latch does not click into position and the cam is not located next to the unlocking handle, the coupling operation must be repeated. (This is first indicated by the red lamp, then—after 10 seconds—by flashing of the red lamp with additional acoustic signal!) Pull out the unlocking handle once again (see 6.3)!



Caution

- If the fifth wheel kingpin is not fixed in position in the closed locking mechanism, the driver is immediately warned by flashing with additional acoustic signal!

Caution: Failure to follow these instructions could result in an accident!



Caution

If the display in the cab does not function correctly (see Self-test Chapter 8), always check directly at the coupling whether the fifth wheel coupling is properly closed and secured!

Start-up jerk to be carried out in low gear!

- Connect the supply cables
- Bring coupling support into driving position
- Release parking brake and remove chocks



Caution

The RECOSS® system does not exempt the driver from the start checks specified by the road traffic regulations! The driver must check—among other things—the state of the mechanical connection between the tractor and semitrailer before driving off.

6.3 Uncoupling

Secure the semitrailer with chocks and apply the parking brake.

Make sure that the semitrailer is located securely on a firm, level surface.

Disconnect all connecting cables between the tractor and semitrailer.

Open the fifth wheel locking mechanism: Push down the unlocking handle using your thumb (1) (single-handed operation). Swivel the unlocking handle to the left (2), pull it out (3), and hook the lug onto the edge of the plate.

The display in the cab changes from green to red after operating the unlocking handle. After 10 seconds, the display begins to flash alternately with an additional acoustic signal.

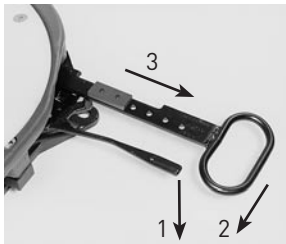


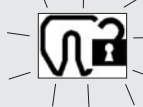
Figure 6.1

- Opening the locking mechanism:

Immediately



After 10 seconds



Frequency
1 Hz

- Completely extended:
No display!

The fifth wheel is automatically ready for coupling again.

7 Troubleshooting

In order to avoid damage to the product or serious injuries when eliminating faults on the fifth wheel, the following points must be strictly observed:



Caution

- Do not attempt to repair defects unless you possess the requisite qualifications
- Secure the operation area of the moving parts
- Also read Chapter 3 „General safety instructions“

Tools required:

1. hexagon socket key SW 3
2. hexagon socket key SW 2.5
3. fixed wrench SW 17
4. gap measuring gauge
5. cable clips
6. vehicle safety fuse 10A



Notice

The fault codes listed in the following table, which are output in the form of a flash code, are intended to help you with troubleshooting. Count the number of acoustic signals or how often the red lamp goes out every 60 seconds. The following table contains an explanation and the recommended remedial measures.

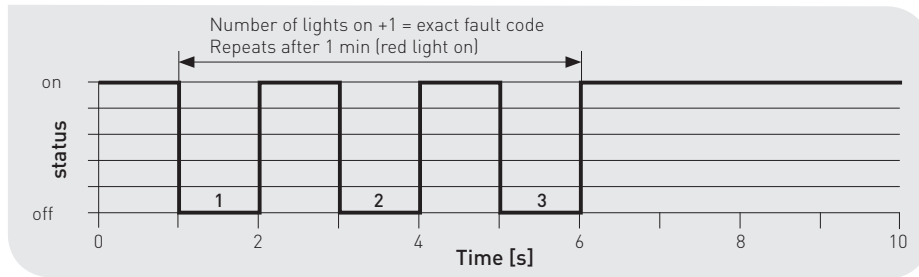


Caution

If the sensor system fails, the fifth wheel and semitrailer remain functional. The driver must check the state of the mechanical connection between the tractor and semitrailer before driving off.

Diagnosis list: Possible faults and how to resolve them

Error code display



Code	Fault at	Cause	Remedy
2	Memory comparison faults after switching on	Coupling was tampered with during the state „ignition off“	<ul style="list-style-type: none"> • uncoupling – ignition off – coupling
3	Sensor SH ⁶	Cable break or sensor defective	<ul style="list-style-type: none"> • Rectify cable break (conductor 2 or entire plug 4) or replace sensor set
4	Sensor ZSZ ⁶	Cable break or sensor defective	<ul style="list-style-type: none"> • Rectify cable break or replace sensor kit
9	Red lamp Earthing lamp	Defective Cable break	<ul style="list-style-type: none"> • Check light power cable for breakage, and replace if necessary. • Check earthing cable for breakage, and replace if necessary
10	Green lamp	Defective / Cable break	<ul style="list-style-type: none"> • Check light power cable for breakage, and replace if necessary
11	Control unit	Control unit defective	<ul style="list-style-type: none"> • Ignition OFF – ON. If no improvement: Replace control unit
13	Sensor ZSZ / SH	Sensor is on “Constant on”	<ul style="list-style-type: none"> • Clean contaminants (grease + chips) from sensor. Uncoupling – ignition OFF – ON – coupling • unlocking handle or locking mechanism retainer bent? <p>If no improvement: Replace sensor set</p>
15	Trailer plate sensor TP	sensor defective	<ul style="list-style-type: none"> • Replace sensor set
16	Undervoltage	Vehicle voltage less than 10 V	<ul style="list-style-type: none"> • Power supply – ensure 10 V

³ TP = semitrailer plate sensor (trailer plate)

⁴ ZSZ = fifth wheel kingpin; sensor ZSZ = sensor on fifth wheel kingpin

⁵ SK = fifth wheel

⁶ SH = sensor on the safety lever

On the next pages you will find additional diagnostic help, divided into conditions 1 through 3. First determine the condition under which the fault occurred.

1. Tractor without semitrailer
2. During the coupling maneuver
3. Coupled trailer (e.g., while underway)
4. Other

Condition: 1. Tractor without semitrailer

Fault arising	To be checked	Result of checking	Remedy
1. Slow acoustic signal and permanently lit up red lamp	Check sensor TP ³ for dirt	Abrasion and metal splinters in the area of the semitrailer plate sensor	<ul style="list-style-type: none"> • Clean area surrounding the semitrailer plate sensor of impurities
	Level of sensor TP ³ with the surface of the coupler plate	Sensor TP ³ is approx. 2 mm further backwards	<ul style="list-style-type: none"> • Position sensor TP³ level with the coupler plate
2. Rapid acoustic signal and flashing red lamp	Locking mechanism of the fifth wheel at the unlocking handle	Locking mechanism closed	<ul style="list-style-type: none"> • Open the locking mechanism of the coupling
		The locking mechanism is in the open condition (handle is pulled out)	<ul style="list-style-type: none"> • Check the unlocking handle for damage (deformed, twisted, etc.)
	Check unlocking handle for damage (deformed, twisted, etc.)	The unlocking handle is deformed or twisted	<ul style="list-style-type: none"> • Align the unlocking handle (remove for alignment!)
	Press the lever of the locking mechanism retainer all the way downwards	The alarm stops	<ul style="list-style-type: none"> • Check sensor SH⁶ on the locking lever for correct positioning or damage → Fix the sensor SH⁶ if it is loose (see 8.3)
		The alarm continues	<ul style="list-style-type: none"> • Check sensor ZSZ⁴ (on coupler jaw) for dirt—if necessary clean away coarse impurities (metal splinters, etc.)

Fault arising	To be checked	Result of checking	Remedy
2. Rapid acoustic signal and flashing red lamp (continued from page 99)	Check sensor ZSZ ⁴ for dirt	Abrasion and metal splinters in the area of sensor ZSZ ⁴	<ul style="list-style-type: none"> • Clean the area around the fifth wheel kingpin of impurities
		No abrasion and metal splinters in the area of sensor ZSZ ⁴	<ul style="list-style-type: none"> • Sensors defective → replace (see 8.3)

Condition: 2. During the coupling maneuver

1. During coupling no slow acoustic signal and the red lamp lights up when coming into contact with the semitrailer plate	Is the semitrailer plate of the semitrailer made of steel?	Semitrailer plate made from aluminum or carbon	<ul style="list-style-type: none"> • No fault! Aluminum semitrailer plates are not detected!
	Manually activate sensor TP ³ with a piece of metal	No acoustic signal	<ul style="list-style-type: none"> • Sensors defective → replace (see 8.3)
		Acoustic signal	<ul style="list-style-type: none"> • Position sensor TP³ level with the coupler plate
2. Rapid acoustic signal and flashing red lamp	Locking mechanism of the fifth wheel AND position of the fifth wheel kingpin	Locking mechanism retainer is not in the closed position or fifth wheel kingpin is on the SK ⁵ plate or behind the locking mechanism	<ul style="list-style-type: none"> • Caution: Incorrect coupling maneuver: Repeat the coupling maneuver
		The locking mechanism is in the open condition (handle is pulled out)	<ul style="list-style-type: none"> • Check the unlocking handle for damage (deformed, twisted, etc.)
		Locking mechanism retainer is in the closed position	<ul style="list-style-type: none"> • Uncouple and visually inspect the sensors for damage
	Sensors SH ⁶ and ZSZ ⁴	Sensors visually damaged	<ul style="list-style-type: none"> • Sensors defective → replace (see 8.3)

³ TP = semitrailer plate sensor (trailer plate)

⁴ ZSZ = fifth wheel kingpin; sensor ZSZ = sensor on fifth wheel kingpin

⁵ SK = fifth wheel

⁶ SH = sensor on the safety lever

Fault arising	To be checked	Result of checking	Remedy
2. Rapid acoustic signal and flashing red lamp (continued from page 100)		Sensors not visually damaged	<ul style="list-style-type: none"> • Touch each sensor manually with a piece of metal, and look for a reaction
		All three sensors react to the metal approaching	<ul style="list-style-type: none"> • Check play in the locking mechanism of the coupling → if necessary readjust play
			<ul style="list-style-type: none"> • Check whether the lever on the locking mechanism retainer is deformed → if necessary, align or replace
		No reaction from one or more sensors	<ul style="list-style-type: none"> • Sensors defective → replace (see 8.3)
	Check the locking mechanism retainer	Lever of the locking mechanism retainer twisted	<ul style="list-style-type: none"> • Align the lever or replace the part
		Locking mechanism retainer or unlocking handle is corroded or very dirty	<ul style="list-style-type: none"> • Clean and lubricate the wearing parts with grease or penetrating oil
	Check play in the locking mechanism of the coupling	Considerable play can be detected in the locking mechanism during the start-up jerk	<ul style="list-style-type: none"> • Readjust play in the locking mechanism

Condition: 3. Coupled traction

1. Rapid acoustic signal and flashing red lamp	Check the locking mechanism retainer	Locking mechanism is closed	<ul style="list-style-type: none"> • Check play in the locking mechanism retainer of the coupling → if necessary readjust
	Check play in the locking mechanism of the coupling	Considerable play can be detected in the locking mechanism during the start-up jerk	<ul style="list-style-type: none"> • Readjust play in the locking mechanism
		No detectable play	<ul style="list-style-type: none"> • Decoupling – ignition OFF – ON – coupling

Fault arising	To be checked	Result of checking	Remedy
2. Green lamp flickers (e.g., during braking)—it lights up constantly again during acceleration	Check play in the locking mechanism of the coupling	Considerable play can be detected in the locking mechanism during the start-up jerk	<ul style="list-style-type: none"> Readjust play in the locking mechanism
		No detectable play	<ul style="list-style-type: none"> Check fifth wheel kingpin: Lower collar $\varnothing > 71$ mm?

Condition: 4. Other

1. Every 60 seconds, a series of flashing signals and sounds can be heard	How many signals are sent in a sequence?	Between 2 and 16 flashing signals	<ul style="list-style-type: none"> According to fault code table
2. After starting (ignition on), no self-test occurs (no red display for 3 seconds)	Fuse (terminal 15)	Fuse at terminal 15 defective	<ul style="list-style-type: none"> Replace fuse

8 Maintenance



Danger

When carrying out maintenance work on the RECOSS® fifth wheel system, the following special hazards must be taken into account:

- The installation of incorrect replacement parts or wearing parts can result in serious damage to the system
- Incorrectly laid cables (e.g., bending radius too small) can cause cable scorching and fires
- Electronic components can be damaged by electrostatic effects
- Incorrectly wired connections can destroy the electrical / electronic components
- Incorrect tightening torques can cause serious personal injury and damage
- Never remove the plug connectors while live

8.1 Inspections and preventative maintenance

The RECOSS® sensor system does not contain any wearing parts, but must occasionally be checked for proper functioning (depending on the type of application):

Checking the sensor system:

1. Switching on the ignition activates the system self-test. The self-test indicates trouble-free system operation. Faults of any kind (e.g., defective sensors, severed cables/lines, tampering with the system or the coupling) are indicated by alternate flashing and an acoustic signal. The self-test must run as follows:
 - Ignition on
 - Red lamp lights up (duration approx. 3 seconds)
 - After completion of the self-test the display switches off!



Caution

It must be ensured that the red lamp lights up for approx. 3 seconds during the self-test.

- As the system runs a self-test during every coupling and uncoupling, this test (coupling and uncoupling) must be carried out at least every 6 months for vehicles which are uncoupled less than once every six months (see „Commissioning“, page 92, Chapter 5).

General maintenance instructions:

- Faults are always displayed by a red flashing display and by an acoustic signal. In this case, follow the information in the diagnosis list (Chapter 7)
- The contact surfaces of the sensors must be checked at regular intervals for significant levels of dirt and foreign bodies adhering to them and, if necessary, cleaned
- Improper treatment of the sensors can lead to system failure



Caution

Too great a play in the locking mechanism of the fifth-wheel, or an excessively worn kingpin can lead to the destruction of the sensor on the coupler jaw (cf. Item 3 in the diagnosis list).

Equalize the (normal) wear in the locking mechanism by readjusting the coupling (see Operating instructions SK-S 36.20, Chapter 6.1). A worn fifth wheel kingpin must be replaced!

Complete kits are available for installing / retrofitting existing couplings:

RECOSS® installation kits

Our RECOSS® installation kits contain all the components (control unit and cable set) necessary for connecting the safety sensor system. It does not include the functional display lamps, which have to be ordered separately from the relevant vehicle manufacturer.

Type	Order no.
Installation kit for all SK-S 36.20 models (ADR compatible)	662 129 415

RECOSS® retrofit kits

All fifth wheel models of the type SK-S 36.20 and SK-S 36.20 W can be retrofitted with the RECOSS® sensor safety system.

Type	Order no.
Retrofit kit for SK-S 36.20 complete	662 129 416
Retrofit kit for SK-S 36.20 W complete	662 129 417

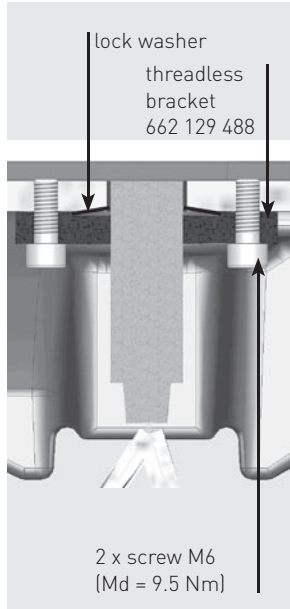


Figure 8.1

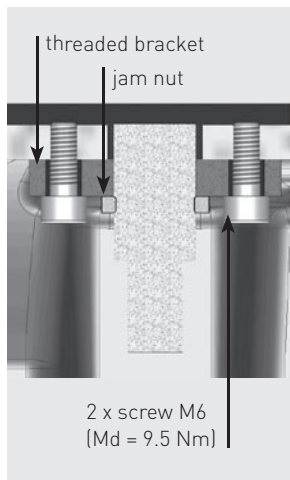


Figure 8.2

8.2 Retrofitting / replacing the sensors



Caution

For the repair, all 3 sensors are removed together, complete with the locking mechanism retainer. Replacement of individual sensors is not possible.

1. Only for retrofitting, or if the coupler jaw is worn: Remove the old coupler jaw and replace with a new coupler jaw (see Chapter 8.3, Section 1 – 662 131 115) as described in the Repair instructions (see Operating instructions SK-S 36.20, Chapter 7) Information: Coupler jaw 662 131 115 is to be used for both the “low-maintenance” and the “standard lubricated” versions. When used in a lubricated coupling, the lubrication pipe does not need to be connected to the coupler jaw.
2. Remove the old retaining bracket (loosen the two M10 bolts, SW 17) and fit a new, automatic locking mechanism retainer (including pre-installed sensors) using the new bolts enclosed (tightening torque M10: 46 Nm).
3. Attach the enclosed baseplates. Important: First clean the base with a degreasing agent and allow to dry.
4. Bolt sensor ZSZ (blue) to the coupler jaw with the microencapsulated screws enclosed (2x M4 tightening torque: 2.0 Nm). Important: The cable between sensor SH (grey) and sensor ZSZ (blue) must be laid under the bar (along the coupler plate). (See Fig. 8.1).
5. Pull the cable tight between bases 2 and 3 so that it cannot chafe against the bar and attach to the baseplates (3x) using the cable clips enclosed.

6. Secure trailer plate sensor with bracket, lock washer, and 2 M6 screws. Important: The sensor must stop level to the coupler plate. (see Fig. 8.2 and 8.3) For the version with threads on the trailer plate sensor (Fig. 8.2), the bracket with the number 662 129 195 must be used. The sensor is to be secured with the jam nut instead of the lock washer.
7. Install the fifth wheel on the chassis or bearing blocks according to the operating instructions SK-S 36.20.

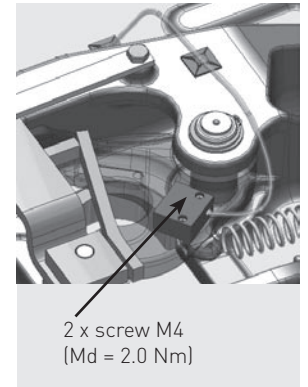


Figure 8.3

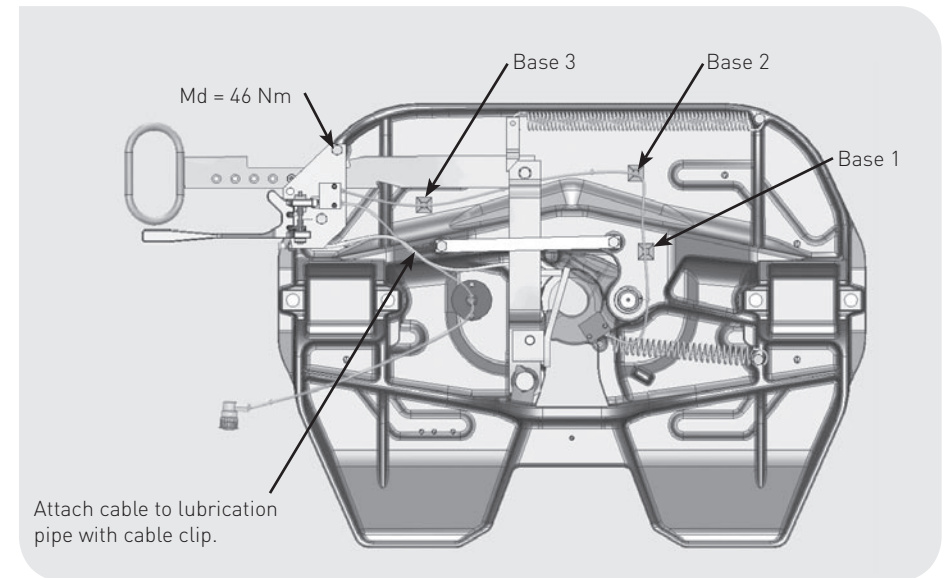


Figure 8.4

8.3 Repairs and retrofitting

RECOSS® replacement parts

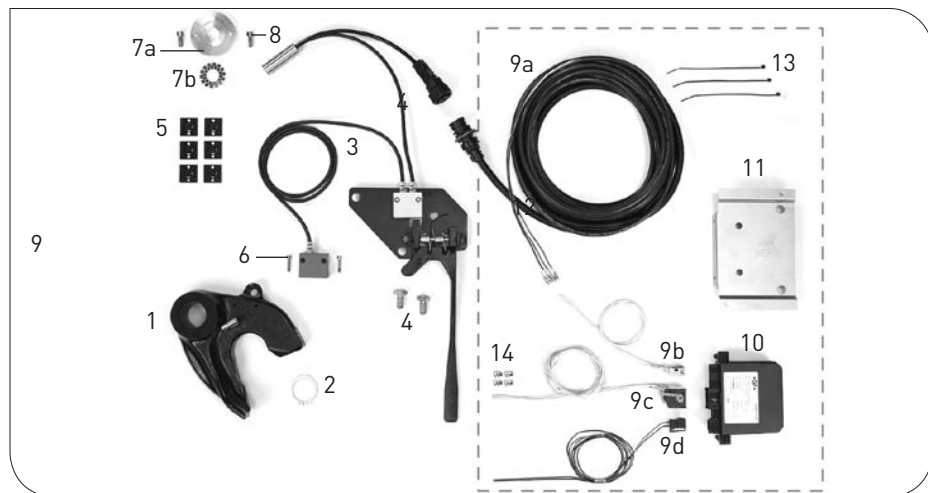


Abbildung 8.5

Item	Type	No.	Order no.
	Repair kit for locking mechanism SK-S 36.20 Plus S / WS		662 101 718
	Repair kit for locking mechanism and bearing SK-S 36.20 Plus S WS		662 101 719
	Repair kit for sensors (3-sensor version)	1	662 129 427
1	Coupler jaw SK-S 36.20 PLUS S (Fig. similar)	1	662 129 161
1	Coupler jaw SK-S 36.20 PLUS WS	1	662 131 115
2	Lock washer for coupler jaw	1	659 100 027
3	Locking protection, automatic (complete with 3 sensors)		662 129 174
4	Hex. screws for locking protection (M10)	2	659 112 359
5	Mounting base for sensor cable	6	662 129 168
6	Cap screws for sensor coupler jaw (M4)	2	659 112 376
7a	Sensor holder for sensor coupler plate *	1	662 129 195
7a	Sensor holder for sensor coupler plate *	1	662 129 488
7b	Lock washer for sensor holder 7a *	1	662 129 490
8	Cap screws for sensor coupler plate (M6)	2	659 112 352
9	Complete cable set (9a, 9b, 9c, 9d)		662 129 401
9a	Extension cable to control unit	1	662 129 504
9b	Adapter cable for control unit	1	662 129 505
9c	Connector cable for on-board electronics	1	662 129 503
9d	Connection cable for power supply	1	662 129 501
10	Control unit (3 sensors, ADR/GGVS compatible)	1	662 129 400
11	Attachment adapter for control unit	1	662 129 404
13	Cable clips	3	659 100 045
14	Labels for display elements	1	662 129 190
	* Please indicate serial no.		



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