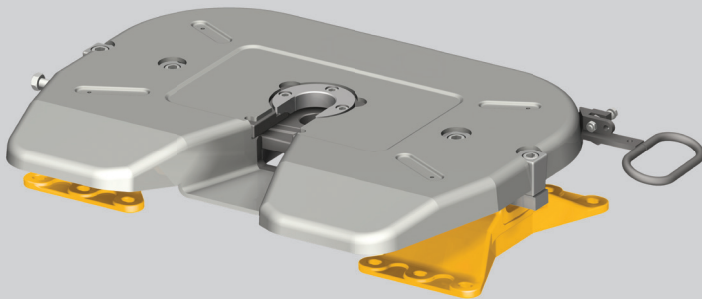


**Bedienung - Wartung**  
**Utilisation - Entretien**  
**Operation - Maintenance**  
**Comando - Manutenzione**  
**Manejo - Mantenimiento**

Sattelkupplung GES20  
Sellette d'attelage GES20  
Fifth wheel GES20  
Ralla a perno GES20  
Quinta rueda GES20



# Fifth wheel GES 20

## Mounting – Operation – Maintenance

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## Explanation of the safety symbols used

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



Hazard

This symbol signifies a danger to life and limb.



Attention

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



Note

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

## 1 Instructions

### 1.1 General instructions



Failure to comply with these instructions can result in hazardous operating conditions. Please read the instructions before mounting and commissioning the fifth wheel and comply with these instructions.

- Modifications of any type lead to a loss of warranty and render the design approval invalid
- Mounting the fifth wheel, mounting plate, slider and kingpin as well as repair and maintenance work, which is not expressly intended for the driver in the operating instructions may only be carried out by specialist personnel in suitable workshops

### 1.2 Safety instructions for operation

- Only authorized persons may operate the fifth wheel
- Only use the fifth wheel and semitrailer plate of the semitrailer if in a technically perfect condition
- The semitrailer plate must not have sharp edges, as otherwise the fifth wheel or the slide coating would be damaged
- The corresponding safety provisions must be adhered to when coupling, for example those of the liability insurance associations in Germany. Only carry out the coupling process on an even base with sufficient load-bearing capacity
- The semitrailer plate must be preferably the same height or maximum 50 mm lower than the fifth wheel plate during coupling. The height of the semitrailer can change through pressure losses in the pneumatic suspension
- Check the locking mechanism for correct locking before driving off. Only drive with the locking mechanism securely locked into place



### 1.3 Safety instructions for maintenance

- Only use the specified lubricants during maintenance work
- Maintenance work may only be carried out by trained personnel
- The fifth wheel must regularly be checked for proper functioning (see Section 4)

### 1.4 Safety instructions for mounting

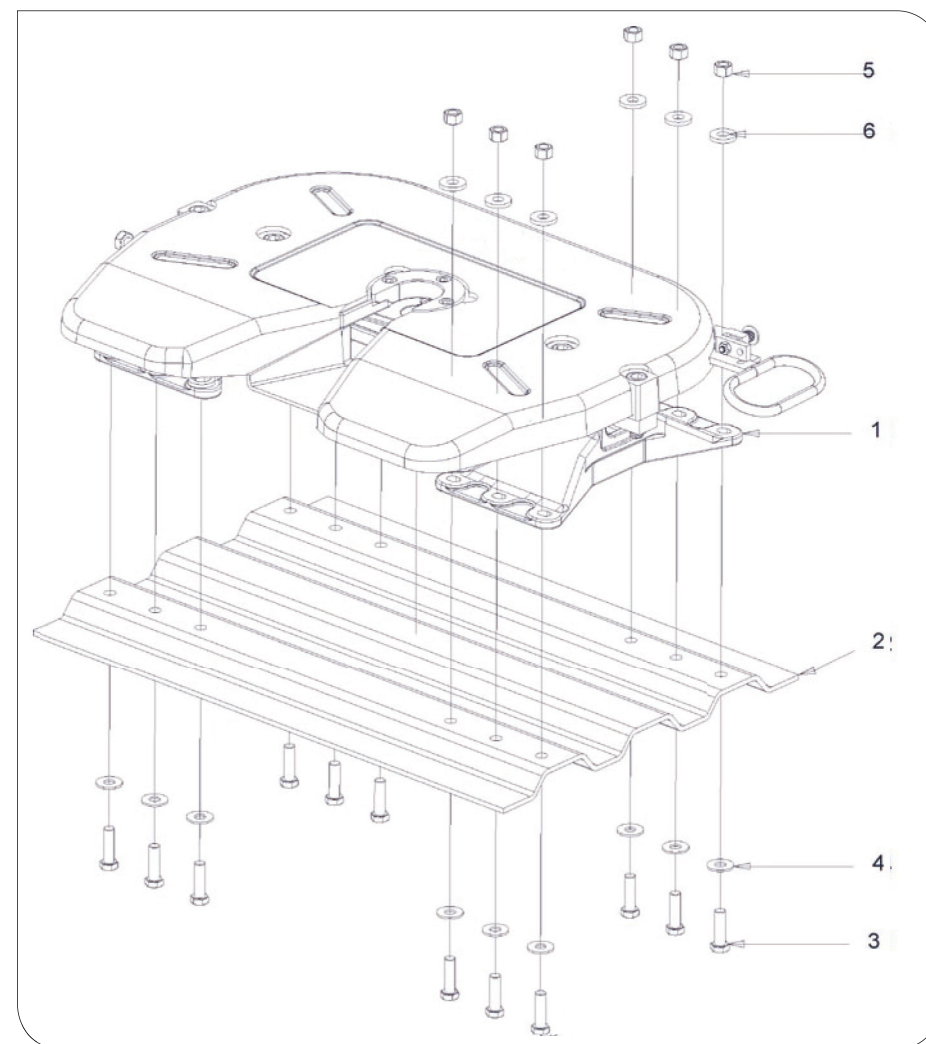
- The mounting area specified by the semitrailer tractor manufacturer must not be changed
- The subsequent mounting may only be carried out by authorized specialists
- Information of the vehicle manufacturer must be observed in respect to the type of fastening, fifth wheel lead, fifth wheel height, axle load, clearance, mounting plate, fifth wheel slider etc.
- The mounting guidelines of the mounting plate and slider manufacturer must be observed

### 1.5 Use

- Fifth wheels form the connection between the semitrailer tractor and semitrailer. They are determined for mounting on a semitrailer tractor
- The fifth wheel and mounting plate are vehicle-connecting parts requiring design approval, subject to the highest safety requirements. Changes of any type lead to a loss of warranty rendering the design approval and hence the vehicle operator authorization invalid
- The GES 20 are constructed corresponding to Directives 94/20 EC Class G50 and must be used in combination with fifth wheel kingpins of class H50 and mounting plates of class J or with comparable approved devices
- Recommended area of application: 2-axle tractor on surfaced roads (no off-road operation)
- Use with semitrailers corresponding to ISO 1726 and ISO 1726 Part 2, whose trailer plate is sufficiently rigid and even. Maximum permissible unevenness of the semitrailer plate:  
3 mm in a loaded state  
2 mm in an unloaded state

## 2 Mounting instructions

|        |   |
|--------|---|
| Item 1 | Hexagon screw DIN EN 28676<br>or DIN EN 28765 |
| Item 2 | Washer DIN 7349                               |
| Item 3 | Washer DIN 125                                |
| Item 4 | Nut DIN 980                                   |



- The mounting instructions of the relevant truck manufacturer, or if not known, those of SAF-HOLLAND must be observed for mounting the fifth wheel
- The fifth wheel is mounted on a mounting plate. We recommend using our mounting plates and the accompanying fastening sets
- The mounting plate and fifth wheel must be oriented towards the fifth wheel lead recommended by the vehicle manufacturer
- The design of the mounting plate depends on the frame width of the vehicle and the required overall height
- The fifth wheel must be fastened on the mounting plate with at least eight screws M16, quality 8.8
- **More extensive tightening torques which we recommend for our fastening sets are:**
  - 190 Nm for M16x1.5-8.8 fifth wheel on mounting plate
  - 350 Nm for M20x1.5-8.8 mounting plate on subframe
- The specifications of the automobile manufacturer in respect to tightening torques must be strictly observed
- If the fifth wheel is mounted on a slider, the applicable assembly regulations must be observed
- In Germany, the assembly of fifth wheels is subject to compulsory testing in accordance with paragraph 19-21 of the Road Traffic Regulations
- The national approval regulations must be observed when mounting the fifth wheel

- It is generally the case that layer thickness of the paintwork coating must correspond to the statutory standards in the clamping area of the screws so as not to affect the flow of force. The German Technical Inspection Association (TÜV) regulations on screws and their fastening in the vehicle construction must be adhered to
- The fifth wheel must be able to move freely and must not touch the mounting plate or parts of the frame or subframe during driving
- The fifth wheel load and the D value are the criteria for the load-bearing capacity of fifth wheels and mounting plates
- The D value can be calculated according to DIN 74081 with the following formula:

#### Calculation example

$$D = g \cdot \frac{0,6 \cdot m_K \cdot m_A}{m_K + m_A - A} \text{ in kN}$$

$$D = 9,81 \cdot \frac{0,6 \cdot 20 \cdot 30}{20 + 30 - 15} = 100,9 \text{ kN}$$

The following definitions apply:

$m_K$  = permissible total weight of the semitrailer tractor in t  $m_K = 20 \text{ t}$

$m_A$  = permissible total weight of the semitrailer in t  $m_A = 30 \text{ t}$

$A$  = permissible fifth wheel load in t  $A = 15 \text{ t}$

$g$  = Gravitational acceleration with  $9.81 \text{ m/sec.}^2$

The permissible load stress data for SAF-HOLLAND fifth wheels and mounting plates can be found in the relevant brochure sheets. They apply for operation on surfaced roads and transport conditions customary for Central Europe. Please enquire in the case of diverging application conditions.

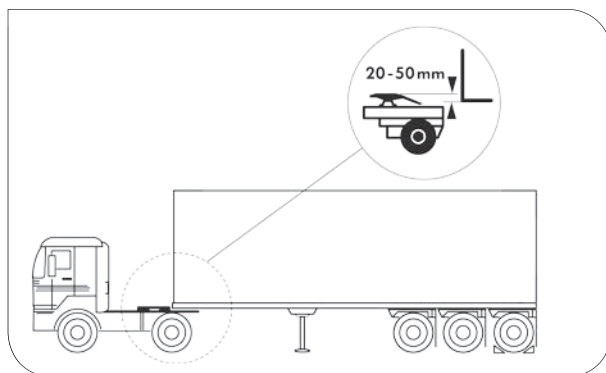
## 3 Operating instructions



The locking mechanism and the fifth wheel plate must be greased before coupling for the first time (see Section 4 Lubrication). It is also necessary to inspect whether the locking mechanism is in an open position ready for use. If not: Open the locking mechanism! (see page 52)

### 3.1 Coupling

- The semitrailer must be secured and supported
- The fifth wheel must be ready for coupling again, i.e. the unlocking handle must be fully pulled out
- The locking mechanism is in the opened position
- The semitrailer plate must be 2 cm to max. 5 cm lower than the fifth wheel plate
- Step out from between the vehicles
- Slowly drive the tractor under the semitrailer
- The locking mechanism automatically locks into place



- Locking with the safety latch:  
The safety latch automatically falls into the closed position. The unlocking handle can then no longer be moved to the left or right. If the safety latch does not latch into place and the centering cam is not beside the unlocking handle, repeat the coupling process



Coupling secured



Coupling opened

### Locking control



1. The safety catch (1) must be located downwards as shown in the figure



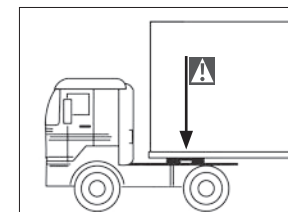
2. The semitrailer plate must be positioned on the fifth wheel without an air gap



3. Perform the start-up jerk in low gear!

It must always be checked whether the fifth-wheel coupling is correctly closed and secured! If not: Open the coupling and couple up again.

Connect the supply lines, make sure to bring the fifth wheel supports into the driving position, release the parking brake and remove the wheel chocks.





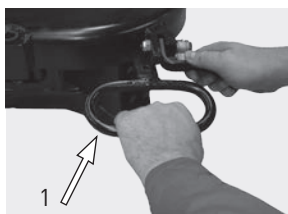
A safety device (for example a padlock) can be suspended in the borehole of the pulling eye as protection against unauthorized opening of the fifth wheel, as shown.

### 3.2 Uncoupling

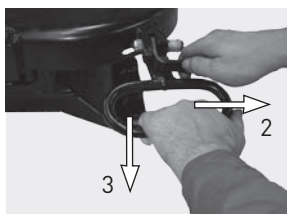
- Secure the semitrailer with chocks and apply the parking brake
- Securely support the semitrailer on a firm, even base using the fifth wheel supports
- All connecting cables between the tractor and semitrailer must be loosened
- Opening the locking mechanism of the fifth wheel: Swivel the unlocking handle to the left, pull outwards, suspend the notch on the plate edge

#### Open the fifth wheel

- Raise the safety catch (1)



- Swivel the pulling eye (2) forwards into position (loosen the safety device)
- Pull out the pulling eye (3) into position as far as the end position



- Swivel the pulled out pulling eye forwards into position and suspend on the plate edge (4)
- Drive out with the tractor. The fifth wheel is automatically ready for coupling again



## 4 Maintenance

### 4.1 Lubrication

The plate surface and locking mechanism (coupler jaw and wear ring) must be sufficiently lubricated with high-pressure long-lasting grease\* before the first coupling and then regularly **every 5,000 km**. The **old grease** on the surface must be **removed** with a spatula before each new greasing. The lubrication intervals must be adapted to the relevant operating conditions, with the result that shorter or longer intervals are possible.

\* A long-lasting high-pressure grease is recommended (NL-GI class 2) with MoS<sub>2</sub> or graphite additives, e.g. MOTOREX MOLY 218, SHELL RETINAX HDX2, Renolit LZR 2 H (suitable for central lubrication systems), Renolit FG 150. The lubrication intervals must be adapted accordingly when using other lubricants. Observe the manufacturer's information when using central lubrication systems.



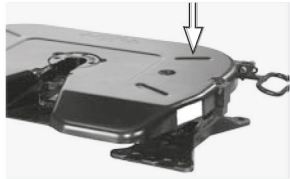
- We recommend checking the base areas of the fifth wheel and semitrailer plates for signs of damage and rectifying these if necessary during each lubrication (see also Section 5, «Wear limits»)
- Worn or damaged parts must be replaced by SAF-HOLLAND original replacement parts
- The fifth wheel should be checked for proper functioning no later than 50,000 km, corresponding to the mileage and load stress. We recommend a visual inspection every 25,000 km

## 4.2 Wear limits

The wear to the fifth wheel plate can be checked at the visible wear limits without tools or resources. The reference gauge (SAF-HOLLAND order number 659 920 032) is recommended for the wear inspection on the fifth wheel locking mechanism and on the fifth wheel kingpins.

### Coupling plate: Visual inspection

The fifth wheel plate must be removed if it is worn as far as the lubricating groove. Check the semitrailer plate and, if necessary, replace.

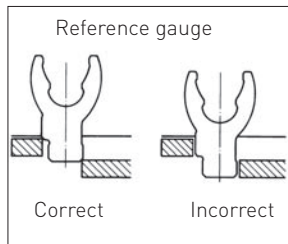


Uneven, cambered semitrailer plates lead to uneven, increased wear to the coupling plate.

### Coupling lock

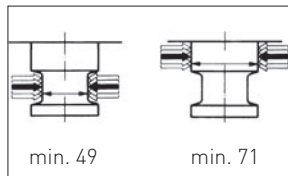
Check the wear to the locking mechanism using the reference gauge. The coupling must be readjusted if the reference gauge positioned from above slides into the locking mechanism (see Section 6 «Adjusting play!»).

If there are no further readjustment options, the wear ring and the coupler jaw must be replaced (see also Section 7 «Repairs!»). The locking mechanism must be completely replaced after 30,000 coupling cycles in all cases.



### Fifth wheel kingpin

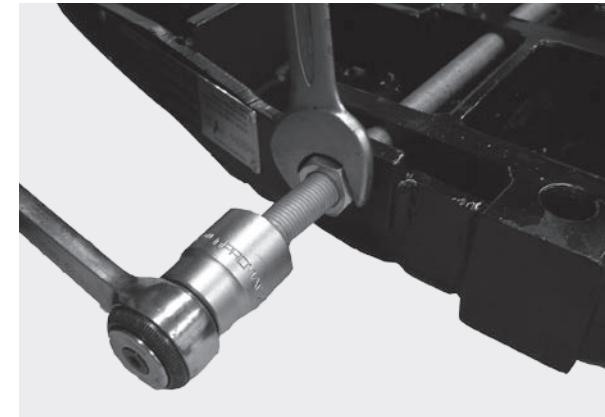
Measure both diameters with the reference gauge in a longitudinal and transverse direction. If measure 71 or 49 is reached, the fifth wheel kingpin must immediately be replaced.



## 4.3 Adjusting play

The locking mechanism of a fifth wheel is subject to a certain degree of wear, depending on the mileage and maintenance. The SAF-HOLLAND fifth wheel, type GES 20 is equipped with a readjustment for the locking mechanism.

The readjustment is intended to serve as a means of compensating the wear at the locking parts, but not those of the fifth wheel kingpins.



The readjustment of the locking mechanism must be carried out with an automatically-steered semitrailer with an unworn fifth wheel kingpin as follows:

- Uncouple the semitrailer train on an even and fixed base
- Loosen counter nuts
- Unscrew the adjusting screw (SW 24) approx. 15 revolutions
- Couple the semitrailer, if necessary bring the locking latch into the end position with gentle taps against the pulling eye
- Unlock the pulling eye, swivel into position and hold (supervision by assistant)
- Screw in adjusting screw (SW 24) again, until the pulling eye starts to move (supervision by assistant)
- To set the recommended base play of 0.3 mm, screw in the adjusting screw a further 1 1/2 revolutions and secure with counter nut



- Apply the brake of the semitrailer
- Approach with the semitrailer tractor and check the maximum play in the locking mechanism



If increased play is still given, the wear ring (Section 5.2) and locking hook must be replaced in accordance with the repair instructions.



When adjusting the fifth wheel locking mechanism, ensure that the fifth wheel kingpin has a play of minimum 0.3 mm in the locking mechanism of the fifth wheel.

The locking into place of the safety catch after coupling serves as a locking control. If the locking mechanism does not close fully, the adjusting screw must be screwed in again until the play is correct. If the play is still too great after adjusting the locking mechanism, the locking readjustment is fatigued. The following wearing parts must then be replaced:

1. Wear ring (Section 5.2)
2. Coupler jaw (Section 5.1)

If the wear dimensions are reached on the fifth wheel kingpin (see Section on wear limits), the kingpin must be replaced.

## 5 Repairs

Each fifth wheel is provided with a serial number which is stamped on the type plate and on the plate edge via the tension bails.

You can find information on replacement parts or repair sets at [www.safholland.com](http://www.safholland.com) or via the contract address on page 21.



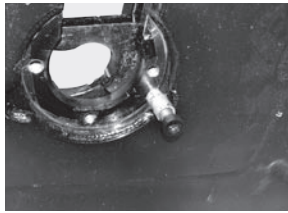
The following standard tools are required for repair work on the GES 20:

- 1 torque wrench
- 1 use hexagon socket SW 12 mm
- 1 use hexagon socket SW 17 mm
- 1 hammer
- 1 drift punch Ø 8 mm
- 1 screw driver
- 1 ring open-end wrench SW 24 mm

### 5.1 Replacing the coupler jaw, bearing insert and rubber cushion

1. Unscrew four hexagon socket screws (SW 17) of the bracket fastening
2. Unscrew tension bails at the sides
3. Lower the fifth wheel plate from the brackets and place on two 10 cm high squared timbers on the work table. The bearing blocks remain on the vehicle or mounting plate
4. Unhook spring on the coupler jaw. Bring the locking mechanism into the driving position and also unhook the spring on the unlocking handle





5. Remove the pin from the coupler jaw



6. Remove coupler jaw, clean the borehole on the fifth wheel and coat with long-lasting high-pressure grease

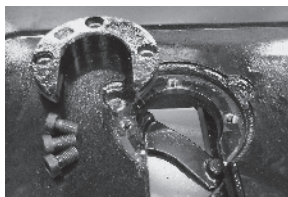
7. Insert new coupler jaw. Insert pin



## 5.2 Replacing the wear ring

8. Unscrew the cap screws SW 12. Remove the wear ring by turning it. Clean the wear ring on the coupling plate

9. Coat the new wear ring at the machined areas with long-lasting high-pressure grease and insert



The wear ring must lock flush with the coupling plate! Tighten with new self-locking fillister-head screws. Tightening torque: 30 Nm.

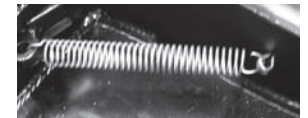
10. Hook up both tension springs again and pull the locking handle outwards so as to bring the locking mechanism into the driving position



Install tension springs «A» 662 133 411 in the correct position (see image on the right)!

11. Check the bearing insert and rubber cushion for wear, if necessary replace.

- Assembly aid: Adhesive point, silicon point on bearing shell underside
- Dry bracket, clean without cleaning agents





### 5.3 Mounting the fifth wheel on the brackets

Insert rubber cushion in the brackets. Lower coupling plate onto the brackets. Ensure perfect positioning of the bearing shells while doing this!

Push in tension bails at the sides.

Bevel facing upwards, located on the coupling plate.

Tighten four hexagon socket screws (SW 17) of the bracket fastening with 400 Nm.



New self-locking screws must be used after each repair!



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**Customer Service**      **+49 6095 301-602**

**Aftermarket**  
**Spare Parts**      **+49 6095 301-301**

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