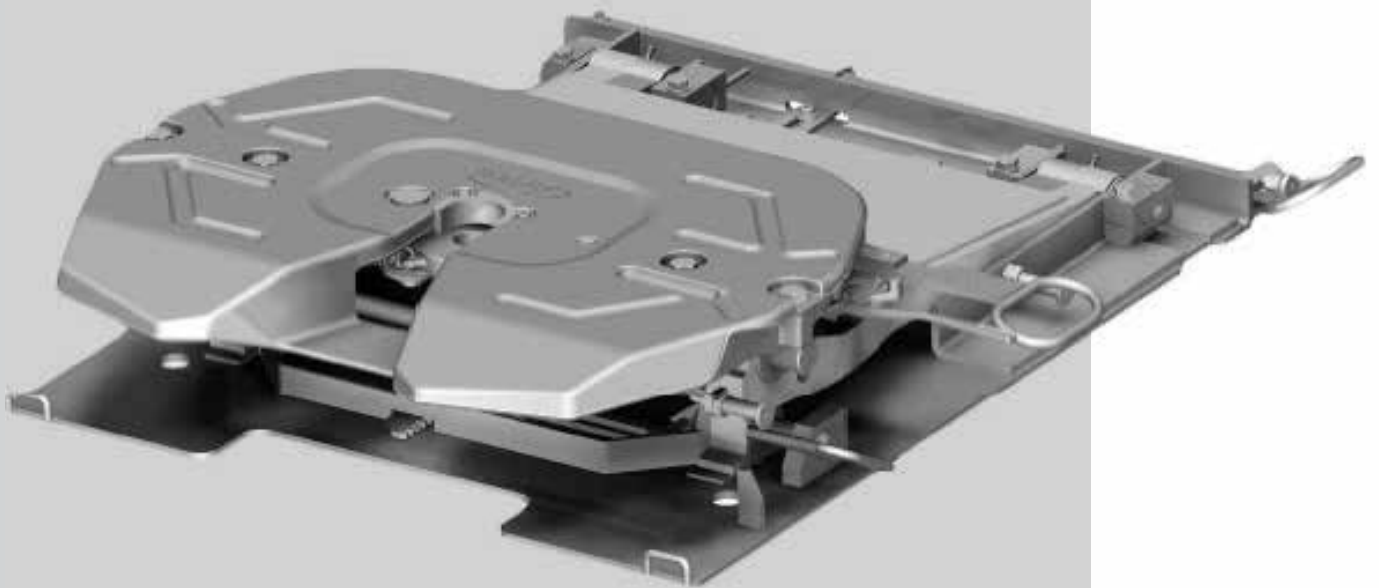


## Mounting - Operation - Maintenance

Fifth Wheel

SK-S 36.20 H

SK-S 36.20 H G2



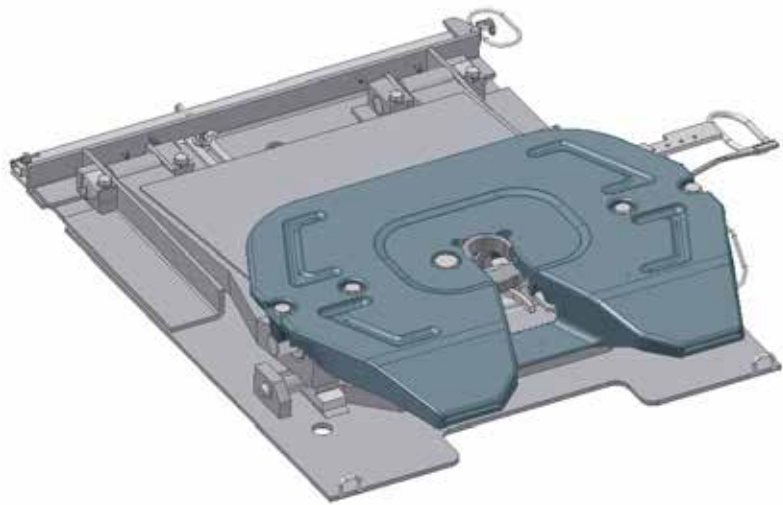
# Fifth Wheel SK-S 36.20 H

Mounting / Maintenance / Operation



Typ SK-S 36.20 H

Typ SK-S 36.20 H G2



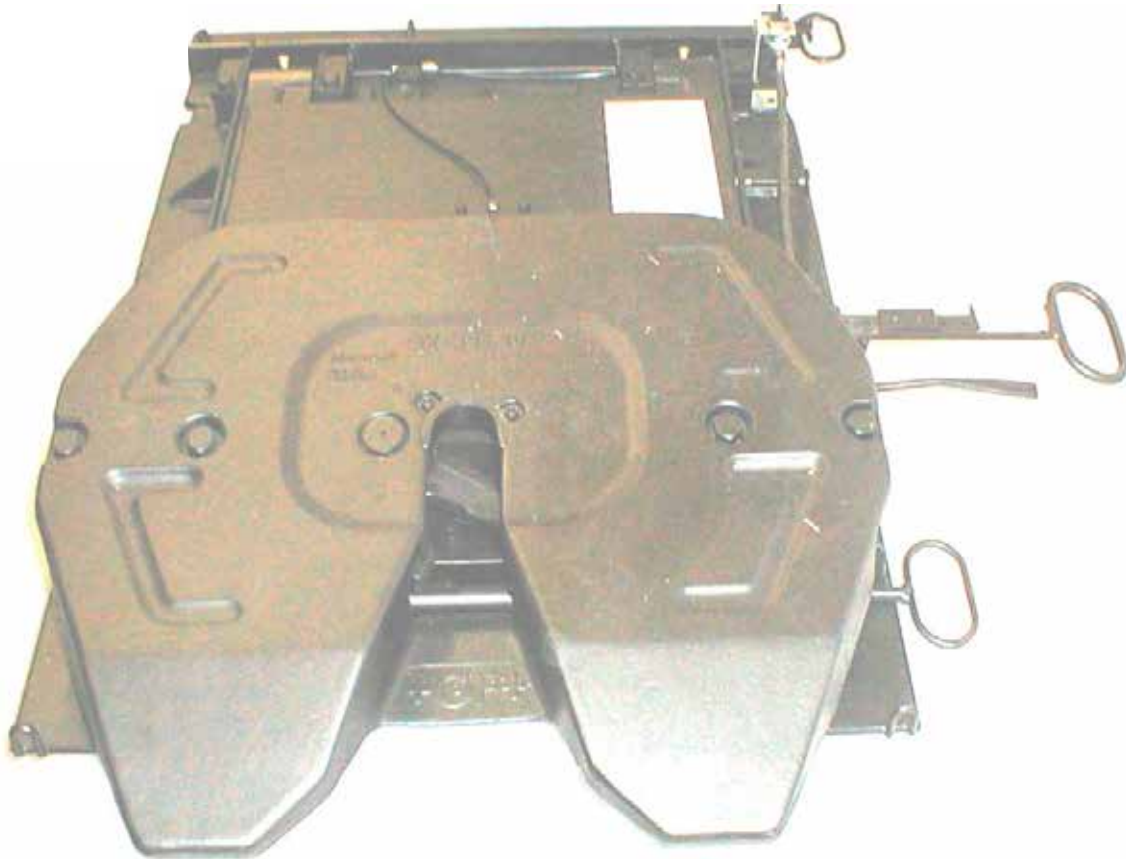
The SAF-HOLLAND adjustable height fifth wheel SK-S 36.20 H is concipated for use on two-axle tractors for high volume transport. It allows you to utilise your tractor also for standard size semi-trailers.

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## General Information

Failure to observe these instructions can lead to dangerous operating conditions. Please read through and carefully follow these instructions before mounting the fifth wheel and using it for the first time.

- Modifications of any kind will invalidate warranty claims and result in the cancellation of the design approval.
- The mounting of adjustable height fifth wheels as well as repair work, may only be carried out by trained personnel or in suitable workshops.



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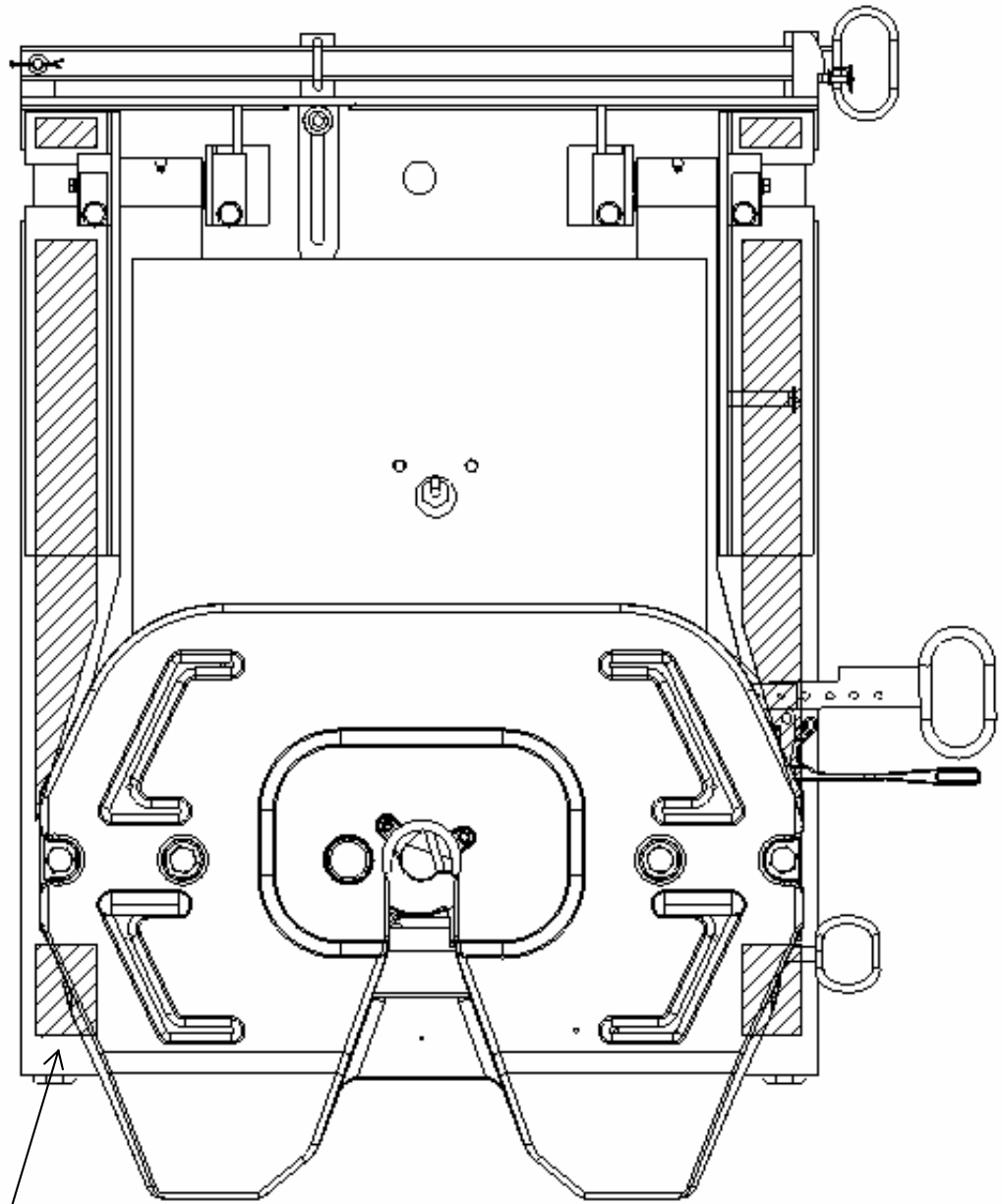
# **Fifth Wheel SK-S 36.20 H**

## **Mounting Maintenance and Operating Instructions**

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# 1. Mounting Instructions



In the hatched areas must be positioned the attachment screws.

Schraube	A <sub>s</sub>	d	Fkl.	Anzahl	F <sub>v</sub>	M <sub>A</sub>	Summe	F <sub>GV zul.</sub>	* Anz/2	SF	τ <sub>a</sub>	SF	σ <sub>l</sub>	SF
	[mm <sup>2</sup> ]	[mm]			[kN]	[Nm]	[kN]	[kN]	[kN]		N/mm <sup>2</sup>		N/mm <sup>2</sup>	
<b>M20x1,5</b>	272	20	10,9	<b>10</b>	<b>200</b>	<b>555</b>	2000	32	160	3,3	72	3,3	58	7,2
<b>M20x1,5</b>	272	20	8,8	<b>12</b>	<b>138</b>	<b>390</b>	1656	22	132	2,7	60	4,0	48	8,8
<b>M20</b>	245	20	10,9	<b>10</b>	<b>173</b>	<b>502</b>	1730	28	138	2,9	80	3,0	58	7,2
<b>M20</b>	245	20	8,8	<b>14</b>	<b>121</b>	<b>352</b>	1694	19	136	2,7	57	4,2	93	10,2
<b>M18x1,5</b>	219	18	10,9	<b>12</b>	<b>157</b>	<b>414</b>	1884	25	150	3,3	75	3,3	54	7,2
<b>M18x1,5</b>	219	18	8,8	<b>16</b>	<b>110</b>	<b>287</b>	1760	18	144	3,0	56	4,3	40	10,4
<b>M18</b>	193	18	10,9	<b>12</b>	<b>134</b>	<b>378</b>	1608	21	126	2,6	85	2,8	54	7,8
<b>M18</b>	193	18	8,8	<b>18</b>	<b>95</b>	<b>263</b>	1701	15	135	2,8	57	4,2	36	12,0
<b>M16x1,5</b>	167	16	10,9	<b>14</b>	<b>121</b>	<b>273</b>	1694	19	133	1,8	84	2,8	52	8,1
<b>M16x1,5</b>	167	16	8,8	<b>20</b>	<b>82</b>	<b>186</b>	1644	13	130	2,7	59	4,1	36	11,6
<b>M16</b>	157	16	10,9	<b>16</b>	<b>111</b>	<b>256</b>	1776	18	144	3,0	78	3,1	45	9,3

- 
- When mounting the fifth wheel, follow the relevant mounting instructions as provided by SAF-HOLLAND and the vehicle manufacturer.
  - The SAF-HOLLAND adjustable height fifth wheel is designed for installation to the vehicle frame via an angular profile.
  - Align the adjustable height fifth wheel in the driving position to the semi-trailer extension and secure it in accordance with the guidelines of the vehicle manufacturer.
  - The quantity of screws and mechanical properties is shown on the table (Page 4).

• We recommend: Attach the fifth wheel on subframe with at least 10 x M20 screws, grade 10.9 .

• With smaller diameter fixing bolts the number of them should be correspondingly increased.

- The thickness of the paint layer in the locking region of the bolts must comply with standards prescribed by law and not impair the clamping pressure. Comply with Governmental inspection regulations on bolts and fasteness in vehicle construction.
- In the Federal Republic of Germany, the mounting of fifth wheels is subject to approval under paragraphs 19 - 21 of the Regulations Governing the Use of Vehicles for Road Traffic.
- It is a requirement that the technical data be entered into the appropriate Vehicle Registration Documents in accordance with the local Vehicle Registration Regulations (e.g. §27 of the Regulations Governing the Registration of Road Vehicles in Germany).
- Applicable national regulations must be observed when installing the fifth wheel.
- Maximum air pressure for actuating the adjustable height fifth wheel: 8 bar.

- 
- The criteria for determining the max. permissible load for the adjustable height fifth wheel are the D-value and superimposed load.  
The D-value is calculated according to DIN 74081, with the following formula:

Example of a calculation:

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

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

**Key:**

$m_K$  = permissible gross weight of the tractor in t    **Example:**     $m_K = 20 \text{ t}$   
 $m_A$  = permissible gross weight of the semitrailer in t                       $m_A = 30 \text{ t}$   
 $A$  = permissible vertical load on the tractor in t                       $A = 15 \text{ t}$   
 $g$  = Earthgravitation  $9,81 \text{ m/sec.}^2$

The data for permissible loads for adjustable height fifth wheels can be found in our respective brochure. These data apply for use on paved roads and transport conditions as customary in Central Europe. Please contact us if used under other conditions.

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## 2. Operating Instructions

### Attention

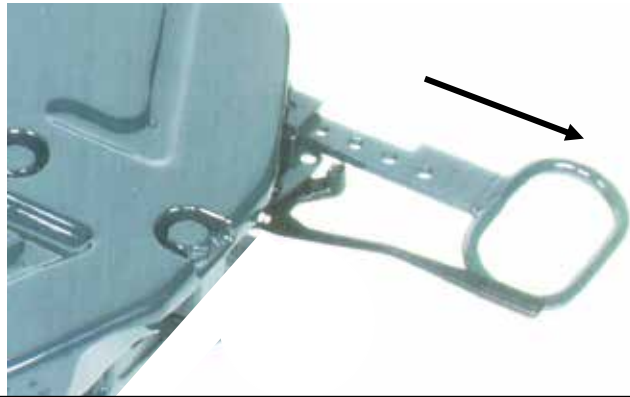
Before putting the fifth wheel into operation, apply ample coatings of long-life, high- pressure grease to the fifth wheel plate, the locking parts and the wearing ring.

### 2.1 Coupling

The semitrailer must be chocked and supported.

The fifth wheel must be ready for coupling, i.e. the unlocking handle must be fully extended.

The locking mechanism is in the open position.



- The semitrailer plate must be approx. 5 cm lower than the fifth wheel coupler plate.
- Upon releasing the locking handle, the coupler plate tilts automatically into the operating position (warning: keep hands off).
- Make sure there is no one between the tractor and semitrailer.
- Reverse with the tractor slowly under the semitrailer.
- The locking mechanism engages automatically.

### Important: Start-up jerk to be made in low gear

#### Attention:

Do not commence driving under any circumstances without having checked the locking mechanism for proper locking, whether the king pin is in position and the mechanism properly locked.

Connect the supply cables, put the landing gear in drive position, release the brake and remove the wedges.



## 2.2 Uncoupling

Secure the wheels of the semi-trailer with chocks.

Raise the semi-trailer using the landing gear until sufficient relief is given to the suspension of the towing vehicle.

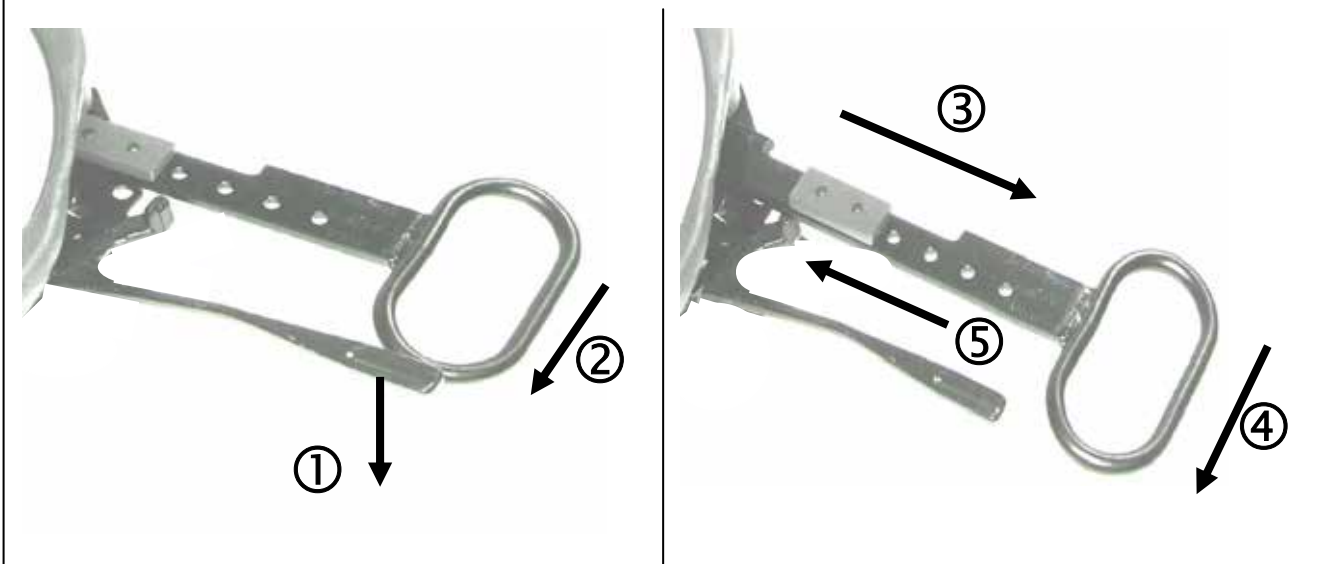
Disconnect the supply cables.

Open the locking mechanism:

With spring hook:

Push hook downward ① (One hand handling).

Swivel the unlocking handle to the rear ②, pull it out ③, and hook its lug onto the edge of the plate ④ ⑤.



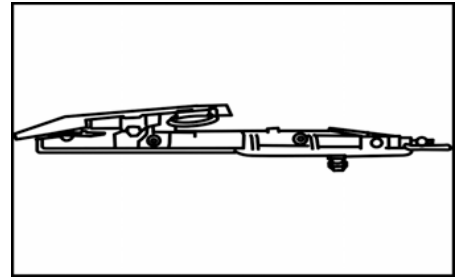
Drive the tractor out.

The fifth wheel is automatically ready for coupling again.

## 2.3 Adjusting the height

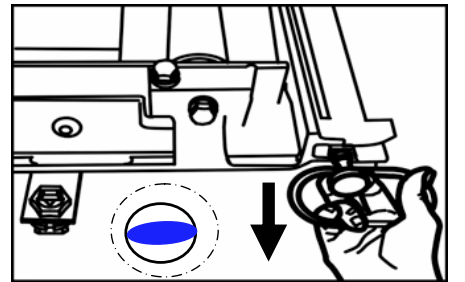
**Initial height** → **upper position**

1. Initial height.

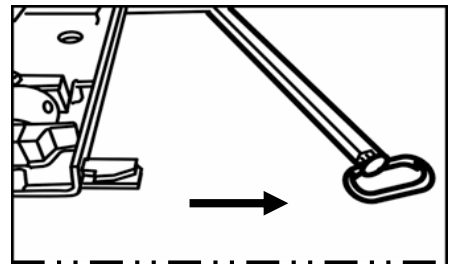


2. Release locking lever.

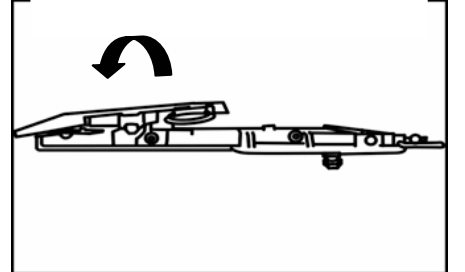
**Important:**  
Actuating valve must be closed.



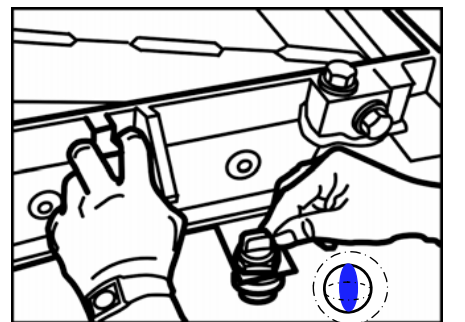
3. Pull lever forward to stop.



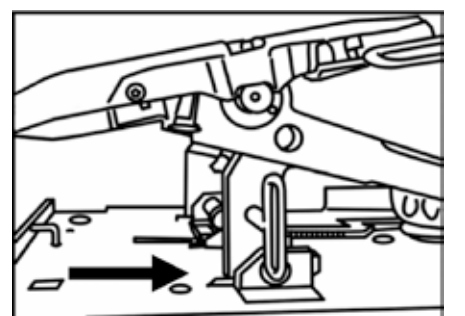
- Upon releasing, the coupler plate is brought automatically into the correct operating position, regardless of what the initial position was.



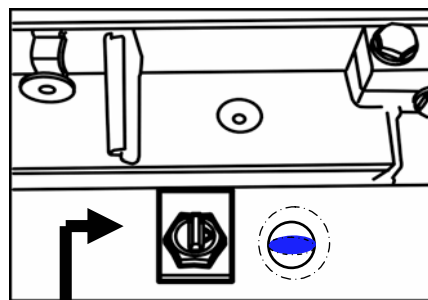
4. Pull lock and hold with one hand, open actuating valve with other hand.  
The fifth wheel slightly above the upper driving position.



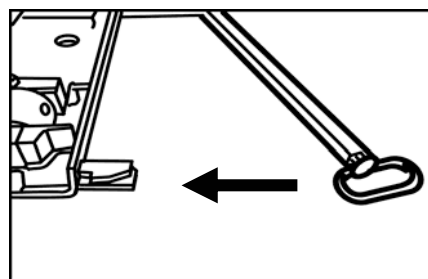
5. Swing support forward to stop.



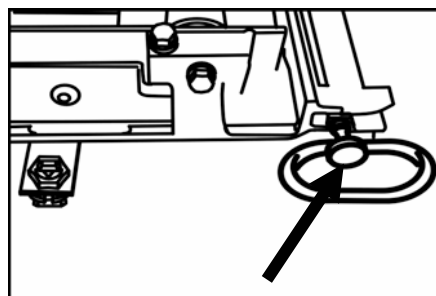
6. Close actuating valve, adjustable height fifth wheel lifts to upper position.



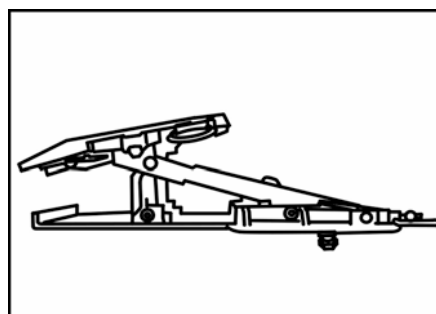
7. Move locking lever to rear.



8. Lock must be engaged automatically.  
Verify !



9. Upper position.



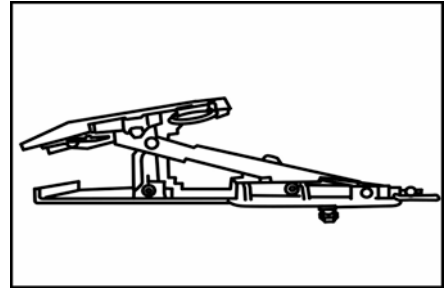
### Attention:

**When adjusting the driving height, no person must be in the area of the tractor and fifth wheel apart from the operator of the adjustable fifth wheel.**

**Driving is only permitted with the lever lock engaged and actuating valve closed.**

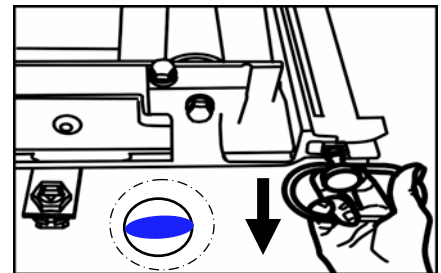
## Upper position → initial height

10. Upper position.

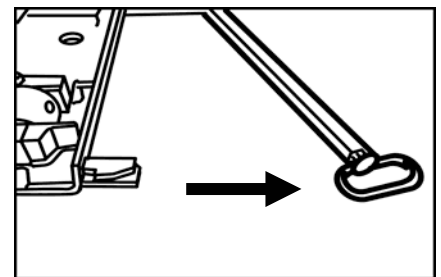


11. Release locking lever.

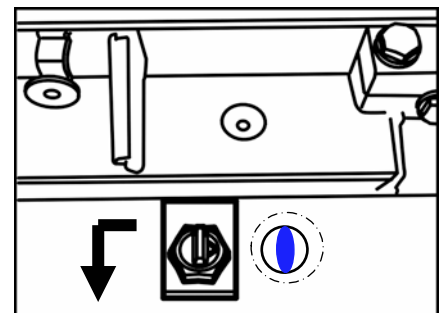
**Important:**  
Actuating valve must be closed.



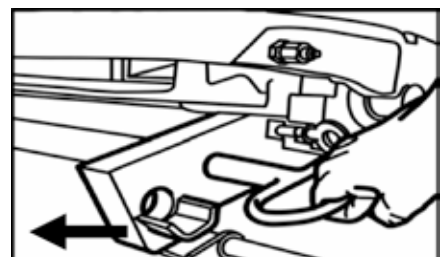
12. Pull lever forward to stop.



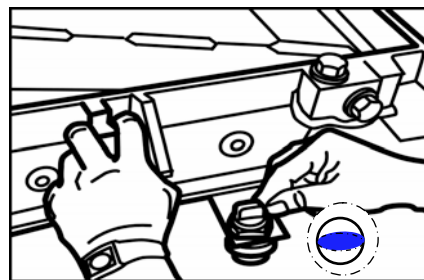
13. Open actuating valve to lower the adjustable height fifth wheel.



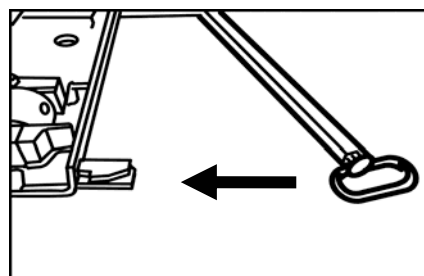
14. Swing support to rear.



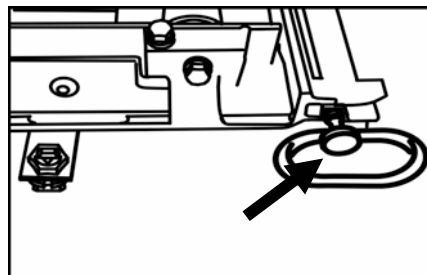
15. Pull lock and hold with one hand, close actuating valve with other hand, adjustable high fifth wheel lowers to initial position.



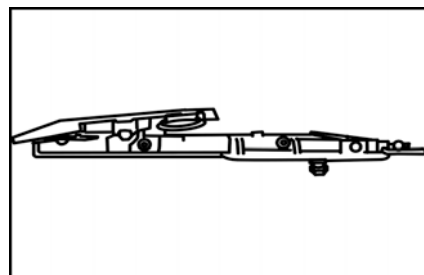
16. Move locking lever to rear.



17. Lock must be engaged automatically.  
Verify !



18. Initial height.



**Attention:**

When adjusting the driving height, no person must be in the area of the tractor and fifth wheel apart from the operator of the adjustable fifth wheel.

Driving is only permitted with the lever lock engaged and actuating valve closed.

---

## 3. Maintenance

### 3.1. Lubrication

#### Fifth wheel plate and base plate

Apply ample coatings of long-life high-pressure grease\* to the surface of the plate and to the base plate prior to first time use, and then regular every **5000 km**.

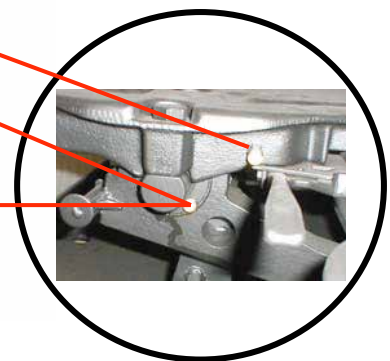
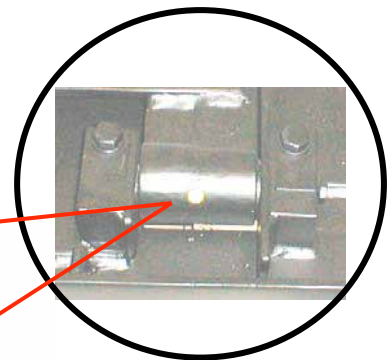
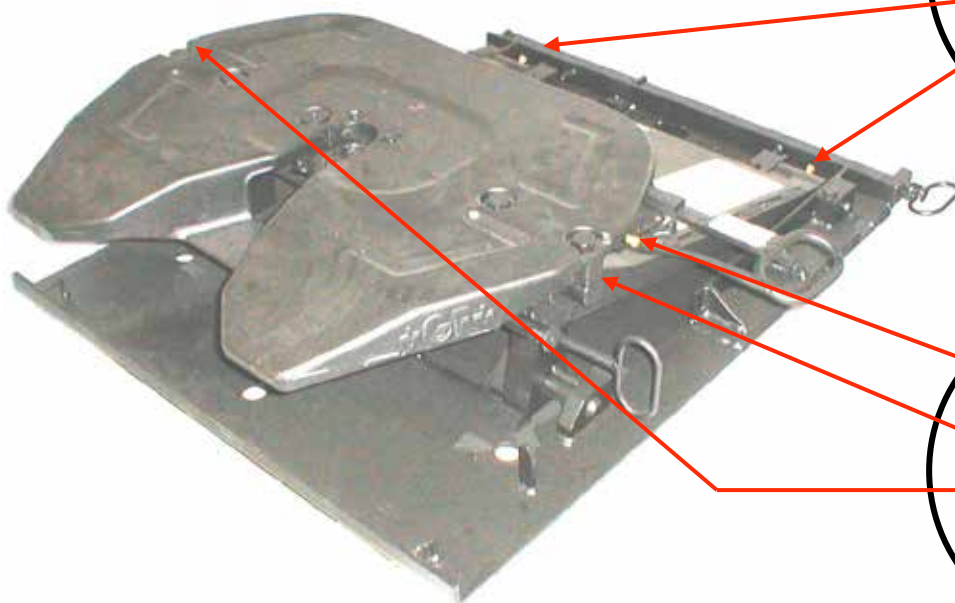
In addition, all bearing points must be greased once a month.

The lubrication-intervals must suite the operating conditions, which may lead to shorter or longer intervals.

#### Locking mechanism and bearing

The SAF-HOLLAND adjustable height fifth wheel **SK-S 36.20 H** is equipped with a greasing system for the bearing and locking mechanism.

The **lubricating point** for the locking mechanism and bearings (see arrows).



\* We recommend using a long-time high pressure lubricant (NLGI class 2) with MoS<sub>2</sub> or graphite additives, e.g. MOTOREX MOLY 218, SHELL RETINAX HDX2, Renolit LZR 2 (suitable for central lubrication systems), Renolit FG 150. If other lubricants are used, the lubrication intervals are to be adapted accordingly. When used with a central lubrication system obey the instructions of the manufacturer.

#### Central lubrication

The attachments provided should preferably be used when mounting a central lubrication system:

Ensure that the operation and freedom of movement of the fifth wheel are not impaired by any part of the lubrication system.

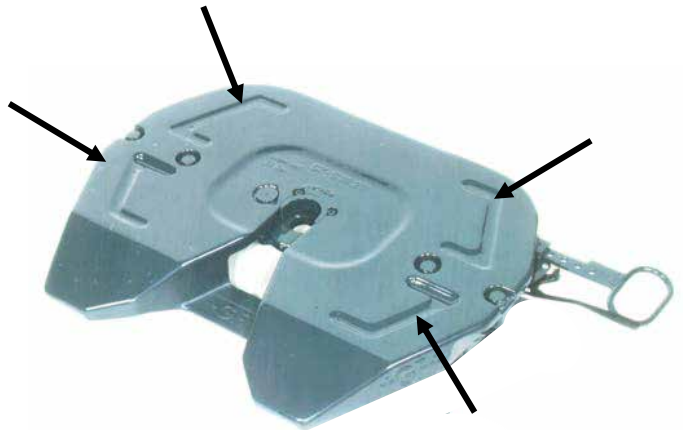
## 3.2 Wear Limits

The wear on the coupler plate and the plastic bearings can be checked on the visible evidence of wear, i.e. without using any tools.

Check the wear on the fifth wheel locking mechanism and the kingpin. We recommend: Use our limit gauge (SAF-HOLLAND Order No. A 659 920 032).

### Coupler Plate

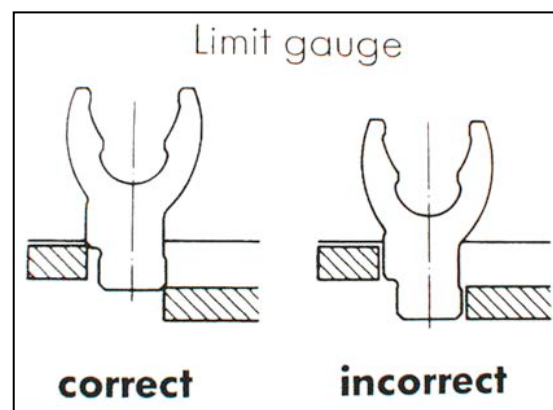
The coupler plate must be replaced when it is worn down to the bottom of the lubrication grooves. Check also the semi-trailer plate and replace it if necessary.



### Locking mechanism

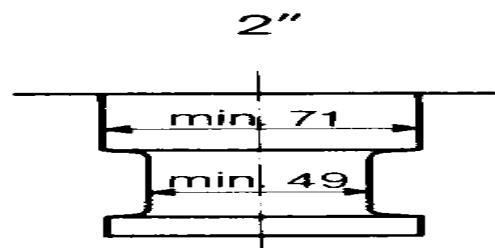
Use the limit gauge to check wear on the locking mechanism. If the limit gauge slips into the locking mechanism from above, the mechanism must be adjusted (**see 3.3**).

If there is no further possibility for adjusting, the wearing ring and the coupler jaw must be replaced.



### Kingpin

Measure both diameters in the longitudinal and transverse directions using the limit gauge. If the diameters have been worn down to 71 and 49, it is imperative that the kingpin must be replaced.



### 3.3. Adjusting play

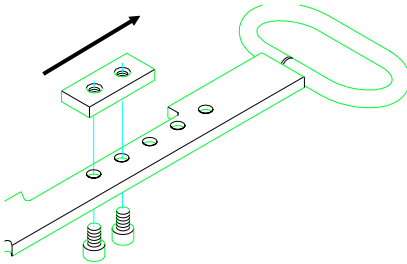
The locking mechanism of a fifth wheel is subject to a certain degree of wear, depending upon working conditions and maintenance.

The SAF-HOLLAND SK-S 36.20 H, fifth wheels are equipped with an adjusting mechanism to compensate for play.

This mechanism is intended to compensate for wear on the locking parts only, but **not on the kingpin**.

#### Adjusting the fifth wheel's locking mechanism

- The adjustment must be carried out with a **new kingpin**.



- Remove the fillister screw (6 mm across flats) from the adjusting piece of the unlocking handle. The displacement of the adjusting piece to the next hole of the unlocking handle, produces an **adjustment of 0,5 mm**. Reinsert the screw and tighten it with 25 Nm.
- Repeat this procedure as required when making further adjustment.

#### Attention:

When adjusting the locking mechanism, ensure that the kingpin has a play of at least 0,5 mm in the locking mechanism of the fifth wheel.

After coupling, the snap hook must be inserted or the spring hook fall into place to confirm, that the mechanism is properly closed.

If the mechanism does not close completely, reverse the adjustment. Ensure a minimum play of 0,5 mm.

If no further adjustment is possible, the coupler jaw and the wearing ring must be replaced.

If the kingpin is below the minimum permitted limits (see page 14), it must be replaced.



---

## 3.4 Repairs

A serial number is embossed on the manufacturer's plate and rim of the plate above the tension bow on each fifth wheel for proper identification.

The following standard tools are required for repair work on the SK-S 36.20 H , SK-S 36.20 HW and SK-S 36.20 H G2:

- 1 400 Nm torque wrench
- 1 hexagon socket insert, 6 mm across flats
- 1 hexagon socket insert, 7 mm across flats
- 1 hexagon socket insert, 17 mm across flats
- 1 nut insert, 30 mm across flats
- 1 nut –Torx T50 across flats
- 1 hammer
- 1 combination pliers
- 1 punch, 30 mm Ø
- 1 screwdriver
- 1 combination wrench, 16 mm across flats
- 1 round-nosed pliers for external holding, 2.3 mm Ø

### 3.4.1 Replacing the wearing ring

1. Unscrew the 2 fillister head screws (7 mm across flats) and remove the wearing ring, by turning it 90° around. Clean the wearing ring seat on the coupler plate.



2. Coat the machined surfaces of the new wearing ring with multi-purpose grease, and insert, turning it about 90°, into the final position.

**Attention:** The top of the wearing ring must be level with the coupler plate surface .

Use new self securing fillister head screws and tighten them with a torque of 46 Nm.



### 3.4.2 Replacing the coupler jaw

SK-S 36.20 HW

1. Remove the slide plates.



SK-S 36.20 H & SK-S 36.20 H G2

2. Undo all 4 hex. head screws (30 across flats) of the base plate.



SK-S 36.20 HW

Undo all 4 hex. socket screws (17 mm across flats) of the base plate

3. Unhook the springs from the coupler jaw and the unlocking handle.



4. Remove the external locking ring and the washer..

SK-S 36.20 HW

5. Remove the lock nut from the coupler jaw.



6. Remove the pin from the coupler jaw.

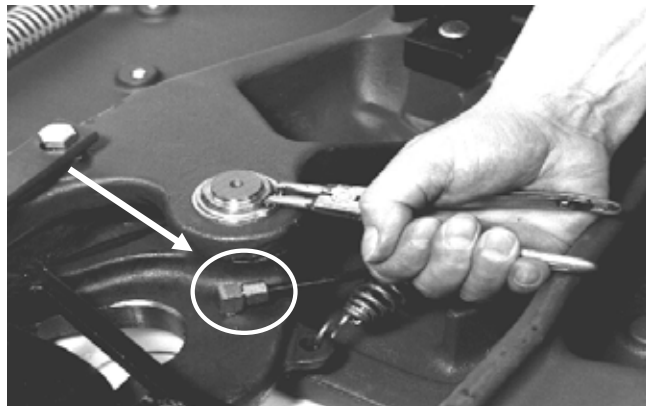


7. Remove the coupler jaw, clean the borehole on the coupler plate and coat the pin with multi-purpose grease.



8. Insert the new coupler jaw, and pin.

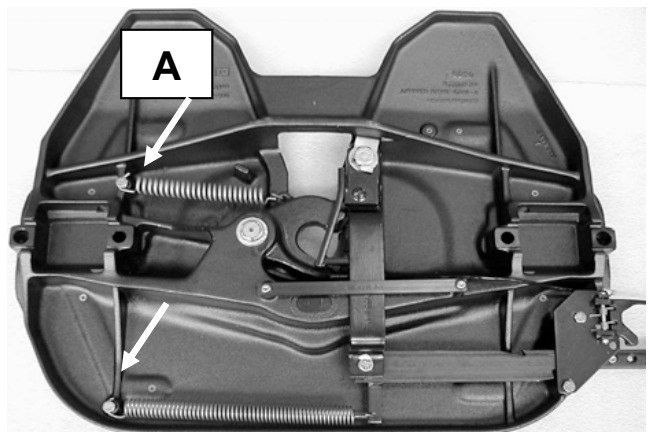
9. Secure pin with the washer and the external locking ring



### SK-S 36.20 HW

Fasten the lubrication pipe for the coupler jaw.

10. Attach the two tension springs on the coupler jaw and the unlocking handle. Pull the unlocking handle outwards to set the locking mechanism into coupling position.



**Attention:**  
Insert spring A 662 126 411 in right position



### 3.4.3 Mounting the fifth wheel on the base plate:

#### SK-S 36.20 H & SK-S 36.20 H G2

1. Tighten all four ( 30 mm across flats ) hex. head screws with a torque of 400 Nm.

#### SK-S 36.20 HW

- Tighten all four ( 17 mm across flats ) fillister screws with hex. socket with a torque of 400 Nm.



#### SK-S 36.20 HW

- 2 Tighten the slide plates, using new self-locking bolts with a torque of 10 Nm.

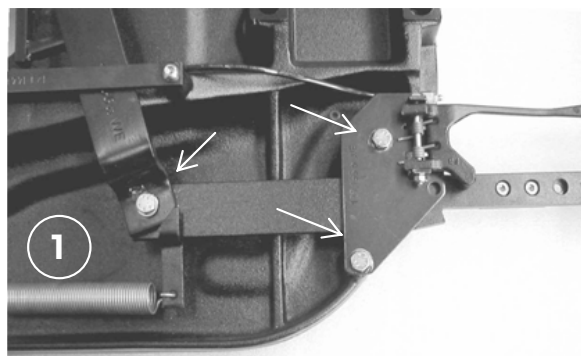


#### Attention:

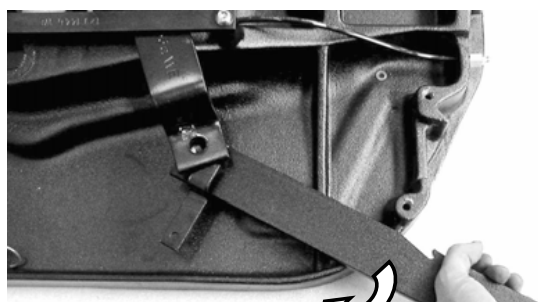
New self-locking bolts must be used for each mounting.

### Replacing the unlocking handle

1. Unhook tension spring 1.
2. Undo all screws on safety latch and locking hook/unlocking handle.



1. Remove unlocking handle by turning it sideways and insert new one.
2. Attach safety latch. Replace old screws with new self-locking ones and tighten them with a torque of 46 Nm.
3. Insert tension spring 1.





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