

Repair instructions

Pivot bushing replacement

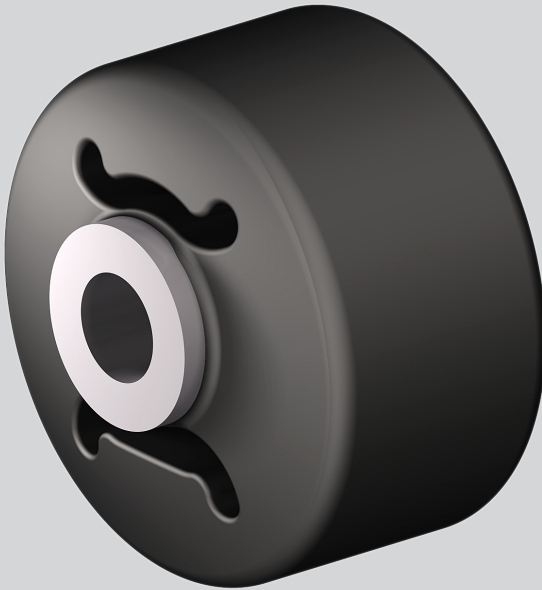


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1 General information

Please read these instructions completely and carefully prior to performing any work. Keep them in a safe place for future reference. These instructions describe how to remove and replace the pivot bushing on air suspension systems. They are intended for exclusive use by appropriately trained and qualified personnel of authorized service centers specialized in trailer vehicles and authorized specialist companies. The pivot bushing must be removed and replaced in accordance with the applicable safety regulations and good engineering practice so that employees and third parties are not exposed to danger. All safety instructions and warnings given in these instructions must be strictly followed.

1.1 Safety information

Information accented by a signal word such as DANGER, WARNING, CAUTION, or NOTICE, must be followed at all times. Additional notes are utilized to emphasize areas of procedural importance or provide additional information. Failure to follow the instructions mentioned in this publication may jeopardize the personal safety of the service technician or vehicle operator.



DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

NOTICE

NOTICE indicates a potentially hazardous situation which, if not avoided may result in property damage.



IMPORTANT

Indicates an operating procedure or practice that is essential to follow.



INFORMATION

Provides additional information.

1.2 Legal information

SAF-HOLLAND basically excludes any liability for damage unless there is gross negligence or intent on the part of SAF-HOLLAND.

SAF-HOLLAND reserves the right to change these instructions at any time without notice and does not assume any liability for the correctness, completeness, and up-to-date status of these instructions. Moreover, SAF-HOLLAND makes no expressed or implied warranty or representation based on the enclosed information. All disputes that may arise on the basis of these instructions are subject to German law. Exclusive place of jurisdiction shall be the competent court of Aschaffenburg in Germany.

The original version of these instructions is in German. Only the German instructions are binding. In case of any doubts, the German original version shall prevail.

1.3 Order and contact information

To buy the pivot bushing replacement tool (part number 3 434 3326 00), please contact SAF-HOLLAND's competent spare parts company.

If you have any questions after reading these instructions, please do not hesitate to contact SAF-HOLLAND's customer service at +49 6095 301-602 or visit SAF-HOLLAND's home page at www.safholland.com.

1.4 Other information

For illustration purposes, the trailing arm receptacle is colored in brown and both the raised bushing position locator and the orientation index "TOP" are colored in white. Please note that some pictures are displayed in a distorted way for better illustration. The pivot bushing replacement tool can be used both for removing the pivot bushing (removal tool) and for installing the pivot bushing (installation tool).

NOTICE

Risk of tool damage!

If you used an impact wrench to turn the threaded rod of the pivot bushing replacement tool, the threaded rod could be damaged due to the poor force control of the impact wrench – especially in the event of the pivot bushing being stuck.

- ▶ DO NOT use an impact wrench to turn the pivot bushing replacement tool.
Instead, use a box wrench or a socket wrench (width across flats: 46 mm).

The term "trailing arm receptacle" is often abbreviated to "receptacle" for easier reading.

2 Preparation

Prior to removing the pivot bushing, perform the following steps in accordance with the relevant operating instructions and the associated repair and maintenance manual, observing the indicated safety instructions:

1. Place wheel chocks in front of and behind the trailer wheels to prevent the trailer from rolling.



WARNING

Failure to use wheel chocks might allow the vehicle to roll which could result in death or serious injury.

2. Bleed all air from the air suspension system.
3. Place jacks under the trailing arm.
4. Remove the adjustable pivot bolt and discard along with the nuts.
5. Remove the shock absorber from the trailing arm, and discard the nuts.
6. Lower the axle.
7. Replacement parts required are: 3D Bush Replacement Kit, Part No. 4/177/3028/99.

3 Removal

3.1 Preparing the pivot bushing removal tool

The pivot bushing removal tool (hereafter abbreviated to removal tool) consists of a hex-head threaded rod (1), two thrust washers (2), a thrust bearing (3), two more thrust washers (2), a cover plate (4), a receiver tube (5), and a drive nut (9), as illustrated in Figure 1.

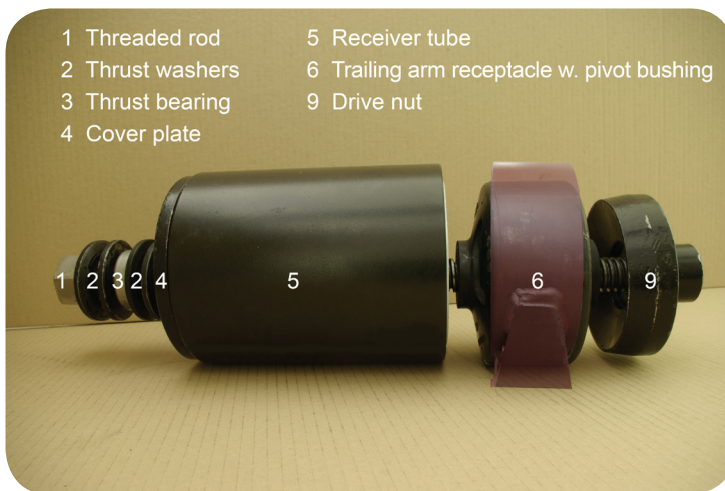


Fig. 1 · Identification of removal tool components

Prior to removing the pivot bushing, assemble the removal tool correctly. For this purpose, place the following components onto the threaded rod (1) in the specified order (Fig. 2):

- 2 thrust washers (2)
- Thrust bearing (3)
- 2 thrust washers (2)
- Cover plate (4)
- Receiver tube (5)

! IMPORTANT

When assembling the removal tool, always make sure that the receiver tube end (5) without a centering ring faces toward the cover plate. The centering ring (Fig. 3) of the receiver tube is used to center the receiver tube on the trailing arm receptacle. When the removal tool is used, the centering ring must always face toward the trailing arm receptacle.

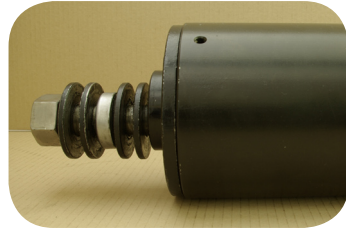


Fig. 2 · Assembled removal tool

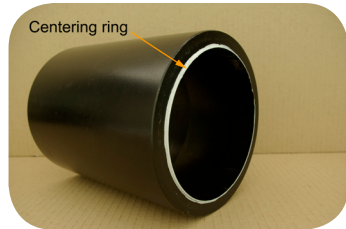


Fig. 3 · Receiver tube with centering ring

3.2 Removing the pivot bushing

! IMPORTANT

The pivot bushings must always be replaced in pairs on an axle. Always remove and replace one pivot bushing before beginning to remove the second pivot bushing in order to make sure that the pivot bushing that still has not been removed is available as a reference point for adjusting the spring center correctly.

To remove the pivot bushing, proceed as follows:

1. Identify the raised position locator (whitened in the figure and indicated by the arrow) on the pivot bushing (Fig. 4) for marking purposes.



Fig. 4 · Raised bushing position locator

2. Using a white marker pen, draw a line (Fig. 5) on the outside of the trailing arm receptacle at the raised position locator of the pivot bushing. This line marks the orientation of the existing pivot bushing within the receptacle and will be used to properly orient the replacement bushing during installation.

⚠ WARNING

Failure to properly install bushing will reduce vehicle stability which could result in death or serious injury.

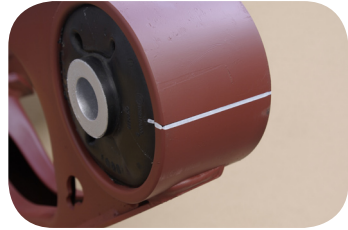


Fig. 5 · Marking the bushing orientation

3. Lubricate the thrust bearing (3) and the threads on the threaded rod (1). Use standard grease.
4. Insert the threaded rod end (1) of the correctly pre-assembled removal tool through the hole in the pivot bushing until the centering ring of the receiver tube (5) fits the receptacle (6).
Screw the drive nut (9) onto the threaded rod of the removal tool until it goes no further (Fig. 6).



Fig. 6 · Removal tool installation

5. Position a wrench on the hex-head rod (1) and turn it until the drive nut (9) and the pivot bushing are completely drawn into the receiver tube (5).
6. Remove the removal tool from the trailing arm.
7. Continue to push the pivot bushing until it is forced into the widened section of the conical receiver tube (5) from where it can be easily removed.
8. Reverse the wrench to disassemble the removal tool.
9. Clean out pieces of old bushing and any foreign material left in the receptacle using a wire brush.

4 Installation

4.1 Preparing the pivot bushing installation tool

The pivot bushing installation tool (hereafter abbreviated to installation tool) consists of a threaded rod (1), two thrust washers (2), a thrust bearing (3), two more thrust washers (2), a cover plate (4), a receiver tube (5), an **additional drive disc (8)**, and a drive nut (9).

- | | |
|------------------|---------------------------|
| 1 Threaded rod | 6 Trailing arm receptacle |
| 2 Thrust washers | 7 Pivot bushing |
| 3 Thrust bearing | 8 Drive disc |
| 4 Cover plate | 9 Drive nut |
| 5 Receiver tube | |

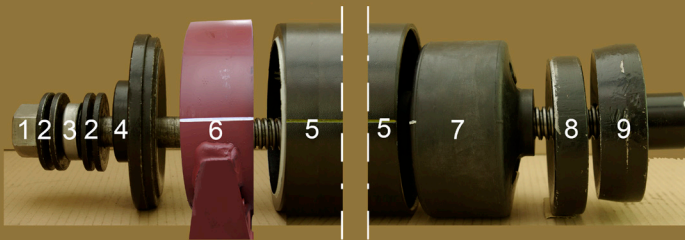


Fig. 7 · Identification of installation tool components (distorted view for better illustration)

! IMPORTANT

The centering ring of the receiver tube is used to center the receiver tube on the trailing arm receptacle. When the installation tool is used, the centering ring must always be positioned against the trailing arm receptacle.

Prior to installing the pivot bushing in the trailing arm receptacle, assemble the installation tool by placing the following components onto the threaded rod (1) in the following order (Fig. 8):

- 2 thrust washers (2)
- Thrust bearing (3)
- 2 thrust washers (2)
- Cover plate (4)

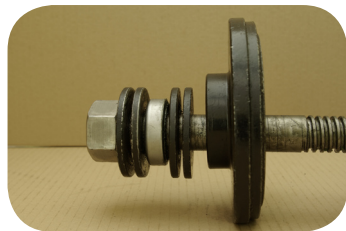


Fig. 8 · Assembled installation tool

4.2 Installing the pivot bushing

1. Lubricate the threads on the threaded rod (1).
2. Apply mounting paste evenly to the internal surface of the receptacle (6) as illustrated in Fig. 9 and to the external surface of the replacement pivot bushing (7) as shown in Fig. 10.
3. Use mounting paste P-80.



WARNING

Failure to use proper lubricant during pivot bushing installation could reduce vehicle stability which could result in death or serious injury.

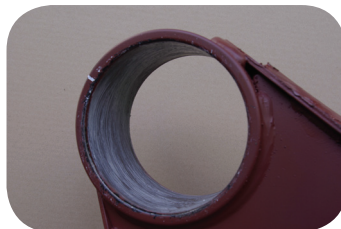


Fig. 9 · Lubricated receptacle

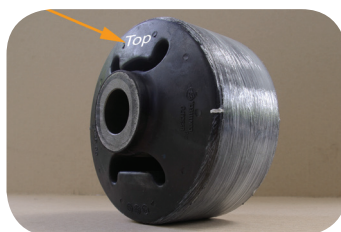


Fig. 10 · Lubricated pivot bushing

4. Insert the pivot bushing (7) into the receiver tube end (5) opposite of the centering ring. Make sure that the pivot bushing is properly aligned in the receiver tube using the bushing position locator as a reference point (Fig. 11). The bushing position locator of the replacement bushing must be aligned with the line on the outside of the receiver tube. The orientation index marked "Top" must face upward as illustrated in Fig. 10. If need be, readjust the pivot bushing.

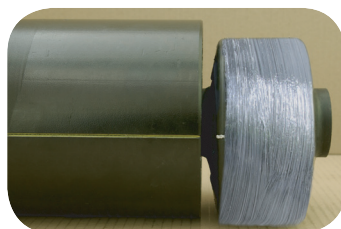


Fig. 11 · Correctly aligned pivot bushing

5. Push the pivot bushing (7) and the drive disc (8) completely into the receiver tube (5) as shown in Fig. 12.

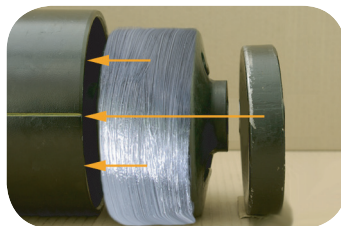


Fig. 12 · Installing the drive disc

6. Insert the threaded rod (1) of the pre-assembled installation tool from the wheel side through the receptacle, making sure that the cover plate (4) is positioned properly against the receptacle (6) as illustrated in Fig. 13.



Fig. 13 · Installed installation tool

7. Slide the equipped receiver tube (5) over the exposed threaded bolt (1) with the centering ring of the receiver tube facing toward the receptacle (6) until the receiver tube rests squarely on the receptacle. Make sure that the line previously drawn on the external surface of the receptacle is aligned with the line on the receiver tube (Fig. 14).

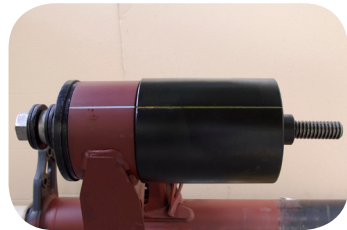


Fig. 14 · Correct receiver tube position

8. Turn the hex-head bolt (1) with a wrench and force the pivot bushing (7) into the receptacle (6) until the receiver tube becomes loose (Fig. 15).

CAUTION

Failure to support loose receiver tube may allow it to fall, resulting in minor injury or property damage.



Fig. 15 · Loose receiver tube

9. Remove the receiver tube and continue to turn the threaded rod until the pivot bushing is completely drawn into the receptacle.
10. Disassemble and remove the installation tool.

11. Check the spring center and readjust as needed.
Fig. 16 shows a spring center of 1300 mm, for example.



Fig. 16 · Checking the spring center

12. Check the proper orientation of the pivot bushing. Make sure that the orientation index marked "TOP" (in white color for illustration purposes) faces upward and that the bushing position locator of the replacement bushing is aligned with the bushing orientation line drawn on the outside of the receptacle (Fig. 17). If the replacement pivot bushing is not installed properly, remove and reinstall it.

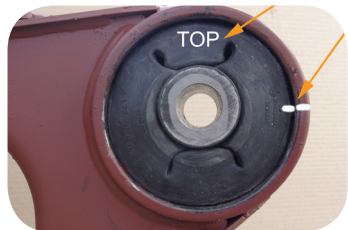


Fig. 17 · Checking the installation position

Remove the pivot bushing on the opposite axle side as described in chapter 3 and install a replacement pivot bushing as outlined in chapter 4.

5 Final steps

Upon replacement of the pivot bushing, perform the following final steps in compliance with the relevant operating instructions and the associated repair and maintenance manual, observing the indicated safety instructions and the specified tightening torques:

1. Lift the axle.
2. Install and slightly tighten new pivot bolts and nuts.
3. Install the shock absorber using new nuts.
4. Remove the jacks.
5. Apply air pressure to the air suspension system.
6. Remove the wheel chocks.
7. Adjust the ride height.
8. Check the axle alignment of the trailer.
9. Tighten the pivot bolt, referring to the appropriate tightening instructions and specifications on the following page.

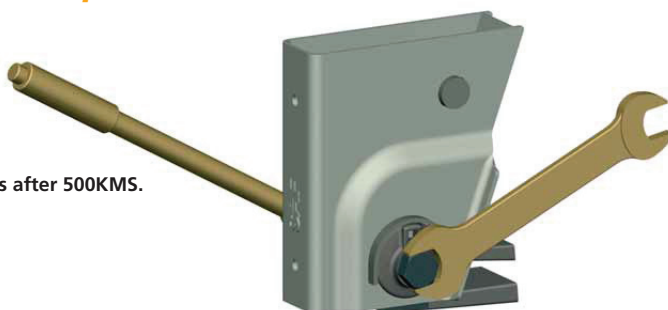
Tightening instructions for adjustable pivot bolt

Attention:

Tighten only within the specified ride height range!
No paint residues between eccentric/thrust washer and hanger!

Check torque settings after the first 5000kms for steel hangers.
For aluminium and stainless steel hangers check the torque settings after 500KMS.
Do not reuse pivot bolt and nut.
Do not oil or grease threads.

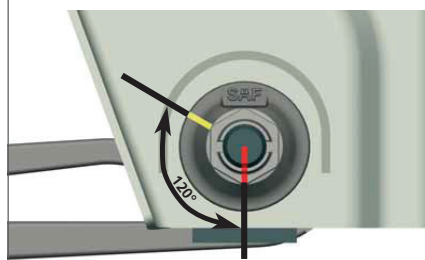
Bolt head always on the eccentric washer side.



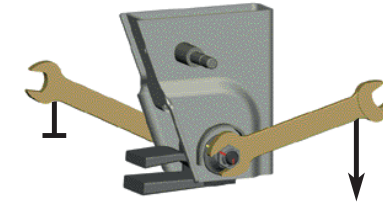
Pretightening: 400 Nm
Use Torque wrench



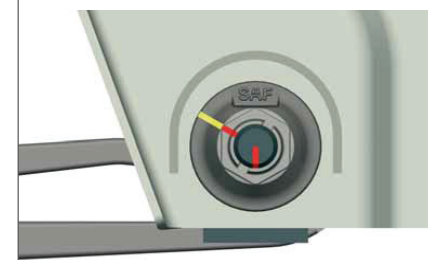
Marking for angle tightening



Angle tightening: 120°
Use impact wrench or extend lever to 2.5 m

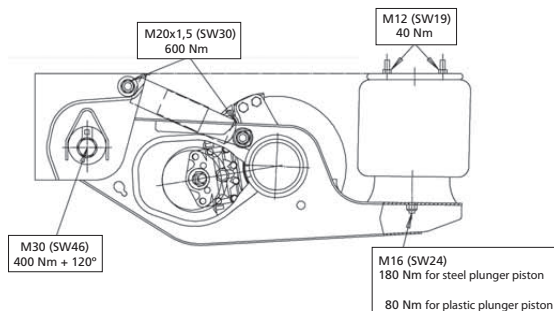


Visual inspection

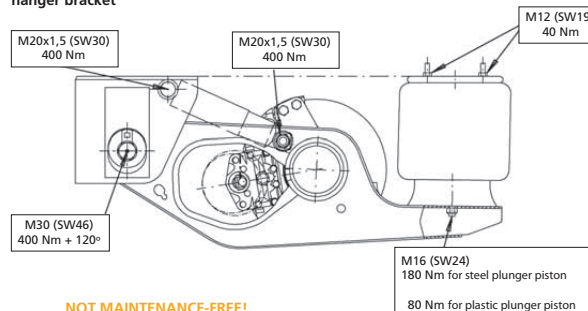


Tightening torques for SAF air suspension systems

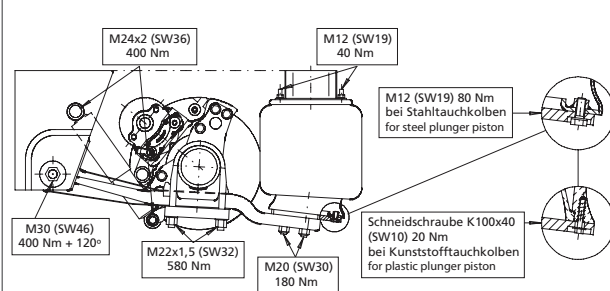
Tightening torques SAF INTRA with steel hanger bracket



Tightening torques SAF INTRA with aluminium hanger bracket and stainless steel hanger bracket



Tightening torques SAF MODUL



Attention!

- Pivot Bolt and Nut to be used only once.
- Threads not to be oiled or greased!
- Shock absorber nuts to be used only once.
- Service Intervals for Steel Hanger Brackets:
 - First check after 5000kms
 - Further checks every 12 months
- Service intervals for aluminium hanger brackets and stainless steel hanger brackets: first check after 500 km, further check after every 6 months
- Spring eye bolt: Inspection torque 1,200 Nm
Shock absorber bolt: Inspection torque 400 Nm

For transport productivity solutions, talk to the Gough Transpecs team:

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