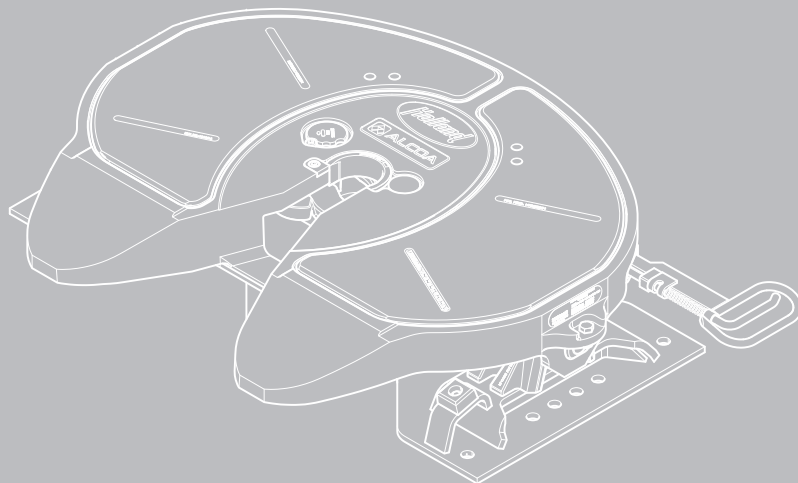


Owner's manual

FWAL-E Fifth wheel



1.1 Dear customer,

This owner's manual helps you to familiarise yourself with the products from SAF-HOLLAND Verkehrstechnik GmbH - subsequently referred to as SAF-HOLLAND - with instructions for their proper use.

The owner's manual contains important instructions on how to operate the product safely, properly and economically. Adherence to it helps prevent hazards, faults and reduce down-time and increase the reliability and service life of the product. Read the owner's manual through carefully and follow the instructions accurately.

It must be ensured that all personnel with responsibility for performing tasks on the vehicle are able to consult the owner's manual at all times.

The owner's manual must be kept in the glove compartment in the driver's cabin of the towing vehicle at all times.

1.1 Copyright

This owner's manual is classified as in accordance with the law on unfair competition.

All rights reserved by

SAF-HOLLAND Verkehrstechnik GmbH

Julius-Bührer Street. 12

78224 Singen, Germany

This owner's manual contains text and drawings that without the express permission of the manufacturer cannot be either fully or partly

- duplicated,
- distributed or
- in any other way disclosed.

Any breach or infringement will result in liability for damages.

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1 Product data

1.1 Identification of the model

Please have the exact type designation of the product ready when ordering spare parts.

The 11-digit number (serial no.) can be found on the type plate -arrow 1 -.

Additionally, the "D-value" is displayed in kilonewton -arrow 2- and the "fifth wheel load" in tons -arrow 3- on the type plate.

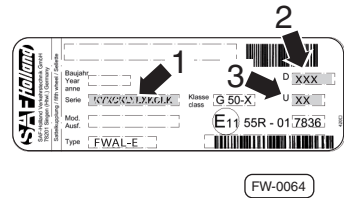


Fig. 1 · FWAL-E type plate

1.2 Position of the type plate

The type plate ⇒Fig. 2, -arrow- is located on the right side in the direction of travel of the tractor.

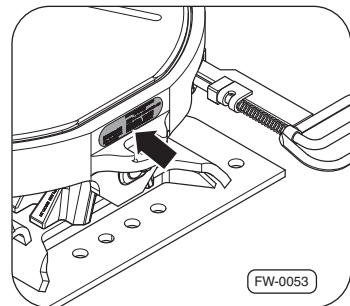


Fig. 2 · Position of the FWAL-E fifth wheel type plate

1.3 Specification

EU Declaration of Conformity

The manufacturer **SAF-HOLLAND Verkehrstechnik GmbH** hereby declares that the **fifth wheel typeFWAL-E** described below fulfils the health and safety requirements of the following EU guidelines:

Harmonised standards and guidelines used

94/20 EC	Mechanical connections set-up of the vehicle
70/156/EC	Approval type for vehicles and their semi-trailers
ISO 1726	Vehicle compatibility
ISO 3842	Road Vehicles - Fifth Wheels - Interchangeability

National standards and technical specifications used

DIN 74081	Coupling devices for articulated road trains
TA 31	Technical requirements of vehicle parts for type testing according to § 22a StVZO
BGF Bulletin	Bulletin for safe coupling of vehicles

Design changes, which affect the technical data provided in the owner's manual and the designated use, that significantly alter the system, render this Declaration of Conformity invalid!

2 Ordering spare parts

When ordering original spare parts from SAF-HOLLAND pay attention to the assembly groups of the respective product.

Non-Original spare parts have a negative effect on the function of the product, have a shorter lifetime and cause risks and hazards, which SAF-HOLLAND cannot evaluate. They also increase the inspection and servicing requirements.

SAF-HOLLAND has a extensive service network of partner companies available for technical support of SAF-HOLLAND products and the supply of parts (see back page or visit us on the internet at **www.safholland.com**).

For further instructions on identifying spare parts refer to the "After-market" section of our homepage **www.safholland.com**.

Updates are published as necessary on the internet at **www.safholland.com**.

3 General information

3.1 Liability

The "General Terms and Conditions" of SAF-HOLLAND Verkehrstechnik GmbH apply.

SAF-HOLLAND does not recognise any liability claims for personal injury or material damage which are caused by one or more of the following causes:

- Improper use of the product ⇒Page 9,
- Failure to observe the owner's manual and the safety instructions included within this,
- arbitrary constructional changes to the product,
- insufficient testing of parts, which are subject to wear ⇒Page 21,
- improper maintenance/repair or maintenance/repair work that is not performed on time ⇒Page 29,
- the use of any spare parts other than original SAF-HOLLAND Verkehrstechnik GmbH parts,
- the use of damaged parts,
- disasters due to external influences or force majeure.

3.2 Warranty and general terms and conditions of business

Refer to the "Sales" section of our home page **www.safholland.com** for information on our current warranties and general terms and conditions.

3.3 Environmental protection

All components and consumables used for maintenance and care must be disposed of in an environmentally friendly manner.

Recyclable components must be cleaned of oil and lubricants and recycled. When doing so, adhere to the disposal instructions for the respective consumables and the valid national and regional regulations.

4 Safety

4.1 Target group

The chapter on **operation** and **testing** in the owner's manual is restricted exclusively to use by the owner and personnel authorised and trained by the owner.

The user must ensure that the personnel authorised by him receive regular instruction on the content of the operating manual and in particular the safety instructions it contains.

The chapter on **installation** and **implementation** is restricted exclusively to use by the original equipment manufacturer (OEM) and personnel authorised and trained by the OEM.

The chapter on **repair** is restricted exclusively to use by authorised workshops and appropriately trained personnel using the proper tools and safety procedures.

4.2 Proper use

The product has been constructed using state-of-the-art technology and in accordance with the recognised rules of technical safety. However, its use may result in hazards for the operator or third parties or damage to the device or other objects of material value.

The FWAL-E fifth wheel is designed for the mechanical coupling of the fifth wheel tractor with the semi-trailer. During operation the fifth wheel kingpin of the semi-trailer is locked by the locking mechanism of the fifth wheel. A secondary lock prevents unexpected opening of the handle during the journey.

The product may be used exclusively with semi-trailers according to ISO 1726, and the fifth wheel kingpin according to ISO 337/DIN 74080 with the usual road conditions in Western Europe.

Proper use also includes:

- Adherence to the operating manual and implementation of the working steps stipulated in the operating manual.
- Adherence to the performance limits ⇒ Page 5 of the product.
- Adherence to all inspection and maintenance instructions ⇒ Page 23.
- The use of the auxiliary and operating materials listed ⇒ Page 27 as well as their environmentally-friendly disposal ⇒ Page 7.

Operationally safe function can only be guaranteed if all the instructions, adjustments and performance limits for the product are adhered to.

4.3 Improper use

- Use with non-standard or damaged fifth wheel kingpins (ISO 337 or DIN 74080) e.g. bent, incorrect size or dimensions, fitted on distorted uneven or damaged trailer bolster plates.
- Tow-away operations which damage or interfere with the proper operation of the fifth wheel,
- The attachment of lifting devices,
- Transport of loads in excess of the rated capacity or D-value,
- OFF ROAD applications,
- Use on stationary or sliding mount compensators,
- when the truck is not parked in a straight line with the trailer for tipping operations,
- applications other than those recommended.



Note:

SAF-HOLLAND defines the term "OFF ROAD" as unpaved, uneven or unflattened terrain on which the articulated vehicle operates. Any terrain not considered part of the public highway system falls under this heading.

4.4 Safety instructions and symbols used

The following symbols are used to denote particularly important information and sections of the text. Make sure that they are always read and adhered to before working with the product.



Danger!

This safety instruction with the exclamation mark warns of a possible safety risk or serious and fatal injuries.



Careful!

This safety instruction with the exclamation mark warns of a possible damage to the product.

**Note:**

Marking for special user tips and other particularly useful and important information for efficient and economical use.

4.5 Marking used for sections of text

- Marking for instructions for actions and information in safety instructions
- 1., 2., 3., ... Marking used for working steps

4.6 General safety instructions

In order to ensure operational and road safety of your SAF-HOLLAND fifth wheel, it is imperative that the following safety instructions are observed:

**Danger!**

Risk of serious traffic accidents due to the loss of traffic safety and operational safety, which may lead to serious or fatal injuries!

Operation

- Check the fifth wheel lock each time before operation. Failure to correctly hitch the semi-trailer can lead to the semi-trailer detaching from the tractor during the journey.

General safety instructions

- The safety and warning signs attached to the fifth wheel must not be removed and must be kept in legible condition. Signs that have become damaged or illegible must be replaced immediately.
- The truck must be parked in a straight line with the trailer during tipping operations.
- No modifications to the fifth wheel system may be made – This also applies to welding work - Invalidation of the design approval.

All planned changes must be approved in writing by SAF-HOLLAND before being carried out.

5 Installation

5.1 General instructions for installation



Danger!

Risk of serious traffic accidents due to the loss of traffic safety and operational safety, which may lead to serious or fatal injuries!

- The installation must be performed by articulated vehicle manufacturers or authorised workshops and by appropriately trained personnel.
- Reverse installation is not permitted.
- During transport and lifting of the fifth wheel, do not damage any fifth wheel components or wires.
- On the contact surface for bolts, nuts and/or washers, the paint thickness must not exceed 120 μ , in order to ensure a sufficient clamping force.
- Observe the legal clauses and approved technical safety rules for the installation of fifth wheels in the respective country of operation.



Note:

- National rules of approval apply for the installation of the fifth wheel.
- In Germany the installation of fifth wheels requires approval (STVZO §19 - 21).

5.2 D Value/fifth wheel vertical load



Danger!

Risk of serious traffic accidents due to the loss of traffic safety and operational safety, which may lead to serious or fatal injuries!

- For safe operation, the expected D-value or maximum fifth wheel vertical load must not exceed the set D-value or the fifth wheel vertical load.
- In order to achieve the maximum D-value rating, the installation must be performed according to the SAF-HOLLAND installation instructions.

All fifth wheels and king pins, tested and approved under EC type approval regulations are given a D-value ⇒ Fig. 1, –arrow 2–rating as an indication of the maximum horizontal force permitted between the towing vehicle and trailer. In order to confirm the suitability of a particular fifth wheel or king pin for a given tractor/trailer combination it is necessary to carry out a D-value calculation.

Calculation according to DIN 74081

D	D-value in kN
g	Gravity; $g = 9.81 \text{ m/s}^2$
m_K	Maximum permissible laden weight of the tractor in t
m_A	Maximum permissible laden weight of semi-trailer in t
U	Permissible fifth wheel vertical load in t

$$D = g \times \frac{0,6 \times m_K \times m_A}{m_K + m_A - U} \text{ [kN]}$$

FW-0004

Fig. 3 · D-value calculation formula

The permitted capacity data for products can be taken from the type plate ⇒ Fig. 1, the valid type approvals or our homepage www.safholland.com. They apply to operation on sealed, tarred roads and customary Western European road conditions. In the case of deviation from the installation requirements or OFF ROAD use, please consult customer services in advance. When using several coupling devices and components, the one with the lowest D-value should be observed.

Calculation example

- $g = 9.81$ (gravity)
 $m_K = 17$ (Maximum permissible laden weight of the tractor)
 $m_A = 33$ (Maximum permissible laden weight of the semi-trailer)
 $U = 10$ (Permissible fifth wheel vertical load)

$$D = 9.81 \times \frac{0,6 \times 17 \times 33}{17 + 33 - 10} \text{ [kN]}$$

$$D - \text{Wert} = 82,55 \text{ [kN]}$$

FW-0005

Fig. 4 · D-value calculation example

5.3 Mounting of the fifth wheel

Mounting overview

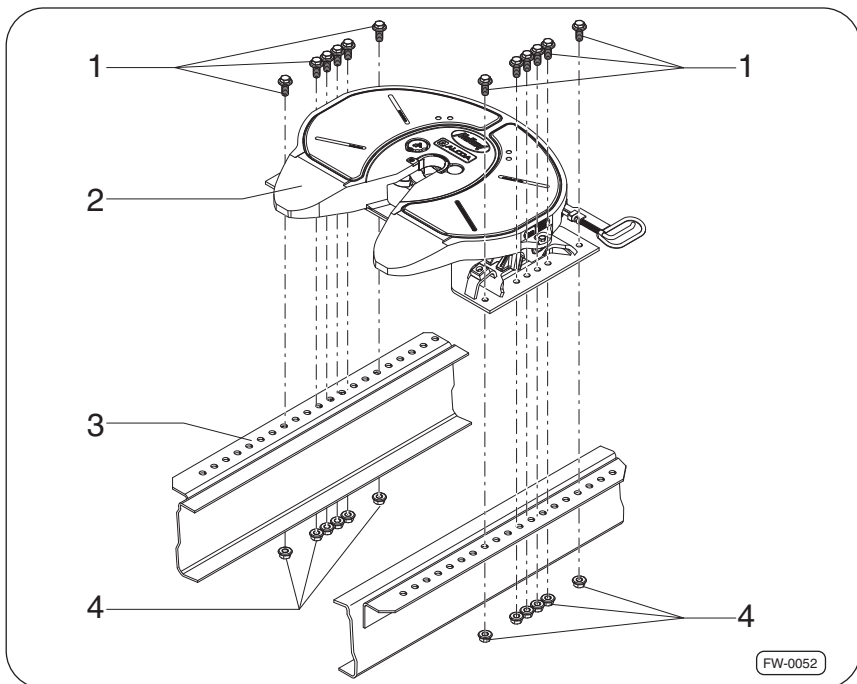


Fig. 5 · Mounting overview of the FWAL-E fifth wheel

Item	Designation	Item	Designation
-1-	Bolts (according to the vehicle manufacturer's guidelines)	-2-	Fifth wheel
-3-	Tractor frame	-4-	Nuts (according to the vehicle manufacturer's guidelines)

Mounting requirements

- For the mounting of the FWAL-E fifth wheel the special fastening set from SAF-HOLLAND should be used.
- The fifth wheel must be able to move freely in all operating conditions and cannot touch any part of the vehicle frame:
 - **Angle of tilt:** In vehicle longitudinal axis according to ISO 1726 min. 6° forwards and 7° backwards.

Procedures

- The mounting is performed according to the vehicle manufacturer's guidelines.

5.4 Functional test



Danger!

Risk of serious traffic accidents due to the loss of traffic safety and operational safety, which may lead to serious or fatal injuries!

- The bolster plate must be flat and can neither be welded nor have sharp edges - uneven bolster plates cause the articulated vehicle to run unevenly causing instability in the trailer and extensive wear to the lube plates, fifth wheel top plate, locking mechanism and fifth wheel kingpin.
- For reasons of stability, we recommend that a bolster plate with a minimum thickness of 12 mm be used. Should weaker bolster plates be used, the bolster plate must be reinforced and meet the requirements of ISO 1726 parts 1-3 and ISO 3842.

- Test the function of the system:
 - after finishing inspection or repair works,
 - before being taken into service.
- 1. Check that bolt connections are securely tightened.
- 2. Check the flatness and strength of the bolster plate.
- 3. Remove all tools, materials and other equipment used from the work area.
- 4. Check the function of the locking mechanism.

6 Implementation



Danger!

Risk of serious accidents!

The fifth wheel must be correctly installed on the vehicle
⇒Page 32.



Careful!

Risk of damage to the fifth wheel!

The condition of the bolster plate significantly influences the service life of the fifth wheel lube plates.

1. Check the fifth wheel for damage.
2. Check the fifth wheel plate is correctly installed ⇒Page 32.
3. Apply grease to the lube plates ⇒Page 27.
4. Lightly lubricate the lock ⇒Page 27.
5. Thoroughly clean the bolster plates of the semi-trailer and check for damage.
6. If necessary remove sharp edges from the front edge of the semi-trailer bolster plate and in the contact to the fifth wheel and ensure that there is a chamfer on the front edge.

7. Apply a thin layer of grease to the bolster plate of the semi-trailer according to the manufacturer's instructions, in order to prevent corrosion.
8. Lubricate the kingpin according to the manufacturer's instructions.

7 Operation

7.1 Open the fifth wheel lock

1. Hold the handle, pull the safety lever –arrow 1– and move the handle to the side –arrow 2–.

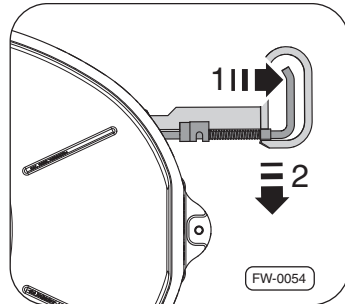


Fig. 8 · Pulling the safety lever

2. Pull the handle all the way out –arrow 3– and release the safety lever.

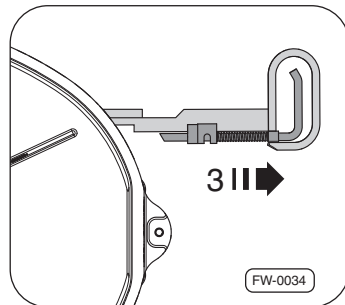


Fig. 9 · Pulling out the handle

- Push the handle back against the direction of travel –arrow 4– and hook into the handle bracket.

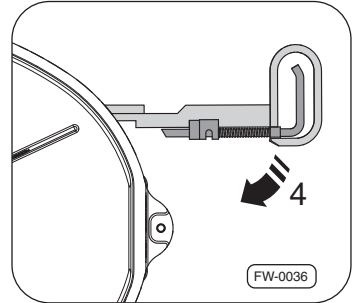


Fig. 10 · Hooking the handle in

- Ensure that the lock part swings open fully and the handle remains in a position to engage.

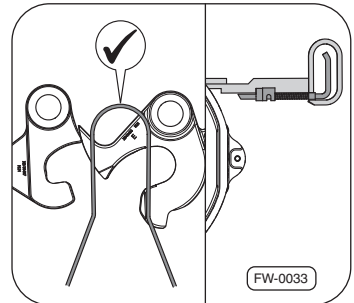


Fig. 11 · Opening the lock part

7.2 Coupling the trailer



Danger!

Risk of serious traffic accidents due to the loss of traffic safety and operational safety, which may lead to serious or fatal injuries!

Failure to correctly hitch the semi-trailer can lead to the semi-trailer detaching from the tractor during the journey.

- During the hitching no person or obstacle may be located between the tractor and semi-trailer.
- The semi-trailer must be secured and supported according to the trailer manufacturer's instructions as well as the respective legal regulations.
- Following the hitching process the visual inspection of the entire locking mechanism and safeguard should be carried out by the driver.

**Danger!**

- Before departure the connection between tractor and semi-trailer must be checked by means of a tug test.

The fifth wheel is equipped with a safety latch, which automatically falls into the closed position during the coupling process. The handle can then no longer be moved left or right. If the safety handle does not engage, the coupling of the trailer must be repeated.

1. Lock and support the semi-trailer according to the trailer manufacturer's instructions.
2. Check the fifth wheel and the fifth wheel kingpins for sufficient D-value or fifth wheel vertical load ⇒Page 12.
3. Check that the fifth wheel is ready to couple and the safety lever is unlocked. If necessary, open the fifth wheel lock ⇒Page 16.
4. Position the tractor in front of the semi-trailer ⇒Fig. 12, –item 1–.
5. Check the alignment of the fifth wheel tractor laterally to the trailer and adjust if necessary.

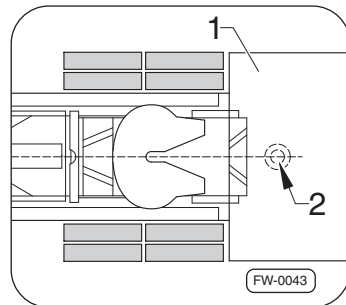


Fig. 12 · Align tractor and semi-trailer

6. Adjust the air suspension system on the tractor so that the fifth wheel plate is below the bolster plate ⇒Fig. 13.

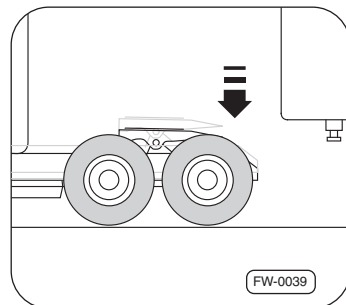


Fig. 13 · Lowering the air suspension system

7. With the tractor under the trailer, drive until the fifth wheel is approx. 50 cm in front of the fifth wheel kingpin ⇒ Fig. 14.

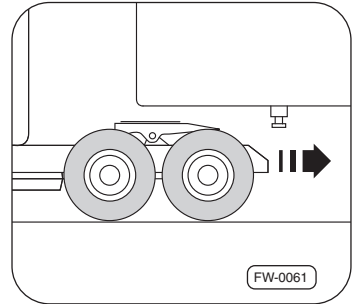


Fig. 14 · Driving the tractor under the trailer

8. Lift the fifth wheel with help from the air suspension system, until the trailer is slightly raised with the landing gear clear of the floor ⇒ Fig. 15.

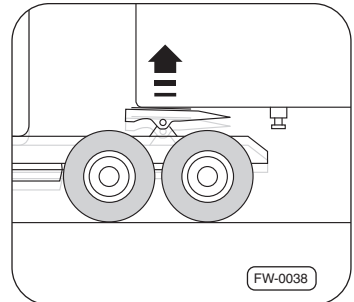


Fig. 15 · Raising the air suspension system

9. **Slowly reverse** the fifth wheel tractor until the fifth wheel locks. The lock will close automatically ⇒ Fig. 16.
10. Check that the safety handle is fully locked, if the safety handle is not fully locked, the complete coupling procedure must be repeated.
11. Perform a visual inspection of the complete lock and safeguard ⇒ Page 22.
12. Perform tug test: Set the semi-trailer brake and drive the fifth wheel tractor away in a low gear - the semi-trailer should not disengage.

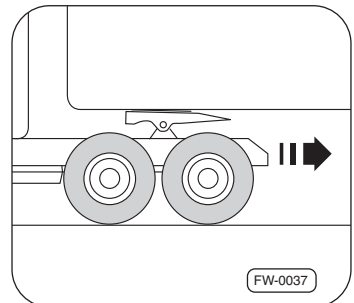


Fig. 16 · Coupling the fifth wheel tractor with the semi-trailer

13. Connect the supply lines and connecting cables between the tractor and semi-trailer.
14. Complete the coupling process according to the trailer manufacturer's instructions.

7.3 Decoupling the trailer



Danger!

Risk of serious traffic accidents due to the loss of traffic safety and operational safety, which may lead to serious or fatal injuries!

- The semi-trailer must be secured and supported according to the trailer manufacturer's instructions as well as the respective legal regulations.
- During the unhitching process no person or obstacle may be located between the tractor and semi-trailer.

1. Park the semi-trailer on firm and even ground.
2. Lock and support the semi-trailer according to the trailer manufacturer's instructions.
3. Disconnect the supply lines and connecting cables between the tractor and semi-trailer.
4. Open the fifth wheel with the handle ⇒ Page 16.
5. Drive the tractor **slowly and in a straight line** out from under the semi-trailer.
6. Finish the decoupling process according to the trailer manufacturer's information.

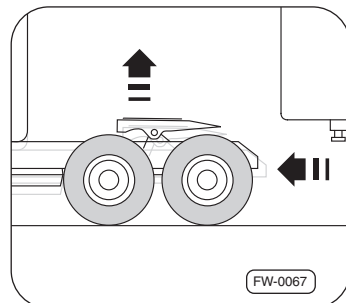


Fig. 17 · Removing the fifth wheel tractor

**Note:**

The fifth wheel is automatically ready to couple again after unlocking.

8 Testing

8.1 General test instructions

**Danger!****Risk of serious accidents, which may lead to serious or fatal injuries!**

- Repair work must only be carried out by authorised specialist workshops and by staff with the appropriate training.
- All components which are not in perfect condition must be replaced.
- The general safety inspection must be performed as per legal regulations.
- The driver is responsible for inspecting the articulated vehicle for traffic safety daily before starting a journey ⇒Page 22.
- In order to maintain operational and traffic safety, SAF-HOLLAND fifth wheels require continuous care, inspection and testing so that wear and faults can be detected in time.
- SAF-HOLLAND recommends that the tests and test tasks described in the "Testing" chapter are performed. In case of repairs always follow the SAF-HOLLAND repair instructions and directions.

8.2 Before each journey



Danger!

Risk of serious traffic accidents which may lead to serious or fatal injuries.

- The maximum permissible D-value and the fifth wheel vertical load must not be exceeded.
- The load must be secured and positioned with an even distribution.

1. Check that the safety handle is in locked position ⇒Page 22.
2. Perform a general visual inspection of the fifth wheel to make sure it is firmly locked and to check for wear, corrosion and damage.
3. Perform lock check ⇒Page 22.
4. Perform tug test: Set the semi-trailer brake and drive the fifth wheel tractor away in a low gear - the semi-trailer should not disengage.

8.3 Lock check



Danger!

Risk of serious traffic accidents due to the loss of traffic safety and operational safety, which may lead to serious or fatal injuries!

Perform lock check of the complete lock and safeguard.

⇒Fig. 18 Image	points to be checked
A	Handle is fully locked and safety handle is latched onto the fifth wheel plate.
B	No gap between trailer and fifth wheel.
C	Lock part –item 3– is securely closed around the kingpin –item 1–. Lock part –item 3– is securely fastened in the lock latch –item 2–.

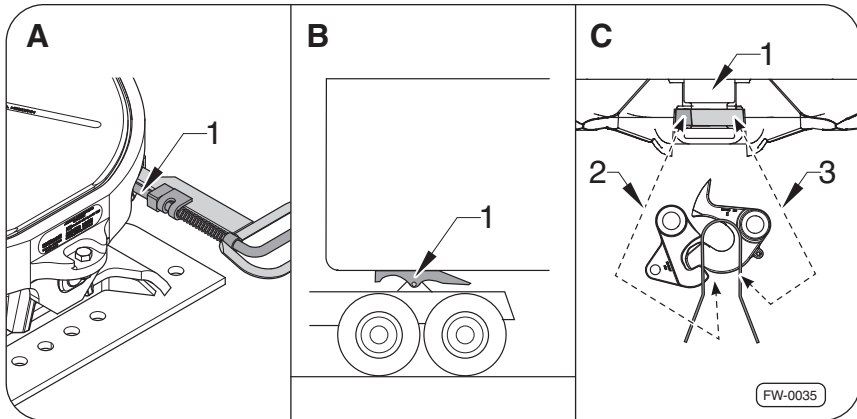


Fig. 18 · Lock check of the complete lock

Perform a visual inspection of the complete lock and safeguard.

8.4 Test schedule



Danger!

Risk of serious accidents, which may lead to serious or fatal injuries!

- Missing or damaged parts should be replaced immediately by an authorised workshop and by appropriately trained personnel.
- In the case of vehicles with extreme operating conditions, the inspection intervals must be reduced.

Inspection intervals

	Every month or 10,000 km	Every 3 months or 50,000 km	Every 6 months or 100,000 km	Every 2 years or 500,000 km
General safety inspection as per legal regulations.				
Visual inspection				
Lube plates	X	-	-	-
Wear ring	X	-	-	-
Fifth wheel plate, mounting brackets	-	X	-	-
Visual inspection of all parts for damage	X	-	-	-
Functional test				
Check that bolts are tightly fastened. Prior to initial use.	-	-	X	-
Check lock function of the fifth wheel by closing and opening the lock ⇒Page 16. Initially during commissioning.	-	X	-	-
Check for play in the fifth wheel lock or wear of the wear ring with the limit gauge and adjust if necessary ⇒Page 25.	-	-	X	-
Check the position and tight fit of the lube plates.	-	-	X	-
Check for wear of the bearing inserts and rubber dampers ⇒Page 26.	-	-	-	X
Lubricate				
Lightly lubricate the lock parts during commissioning only ⇒Page 27.	X	-	-	-
Lightly lubricate the lube plates during commissioning only ⇒Page 27.	-	X	-	-
Care				
Clean the lube plates and apply grease .	-	X	-	-

8.5 Wear check



Danger!

Risk of serious accidents, which may lead to serious or fatal injuries!

- Park the articulated vehicle on firm ground.
- Secure the articulated vehicle so that it does not roll away.
- Ensure that the fifth wheel is fully functional!
- Once the wear limits have been reached the respective parts must be replaced immediately by an authorised specialist workshop and by personnel with the appropriate training.

Lube plates



Note:

The lube plates are equipped with grooves, which act as wear indicators.

- Both lube plates must be replaced immediately, if
 - there are grooves in the inner area of the fifth wheel plates,
 - they have been worn down to the metal supports,

Wear to the side and back protective edges is normal and has no negative influence on the function and service life of the fifth wheel.

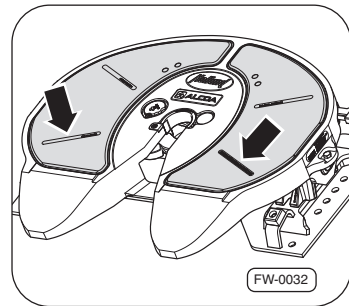


Fig. 19 · Lube plates with wear indicators

Fifth wheel lock/Wear ring

- With the two-zone limit gauge SAF-HOLLAND¹⁾, check for wear to the fifth wheel lock and the wear ring.
 - When the SAF-HOLLAND limit gauge used slides into the lock, the play of the fifth wheel must be adjusted ⇒Page 28.

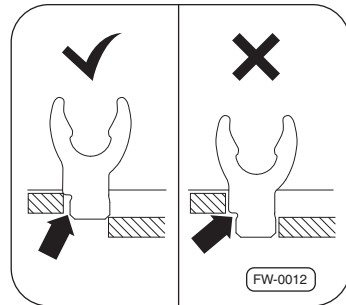


Fig. 20 · Wear checks of the fifth wheel lock and wear ring

Kingpin

- Measure both diameters with the two position limit gauge lengthwise and diagonally.
 - Once the respective dimensions of 71 mm and 49 mm have been reached, the kingpin must be replaced immediately according to the manufacturer's instructions.

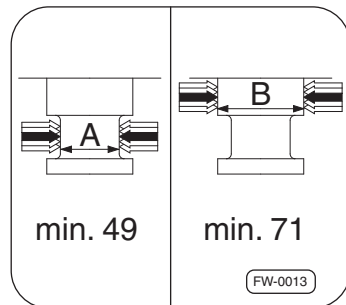


Fig. 21 · Check wear of the kingpin

Bearing

- The rubber dampers and bearing inserts must be replaced when the specified play is exceeded.

8.6 Inspecting the bearing inserts



Careful!

The rubber bushes must not be compressed during measurement.

¹⁾ order number 659 920 032


Note:

It is not necessary to dismount the fifth wheel plate for the inspection of the bearing inserts.

1. Fit a lever bar ⇒ Fig. 22, –item 1– between the base of the bearing bracket and the lower edge of the fifth wheel plate.
2. Lift lever bar –item 1–, according to –item 3–.
3. Measure the distance between the base of the bearing bracket and the lower edge of the fifth wheel plate close to the bearing pin in a non-raised and raised position –item 3–. If the measurement of the vertical play is above 9.5 mm, the bearing insert must be checked ⇒ Fig. 22.
4. Dismount the fifth wheel plate from the bearing brackets (⇒ Page 31) to perform a visual check of both bearing inserts.
5. Visually inspect both bearing inserts ⇒ Fig. 23, –item 1– for excessive wear, chips, cracks and grooves. If the bearing inserts display any defects they must be replaced ⇒ Page 38.
6. The rubber dampers and bearing inserts must be replaced when the specified play is exceeded.

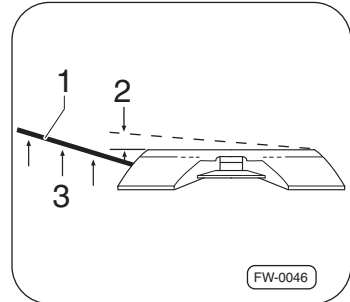


Fig. 22 · Check the clearance of the bearing insert

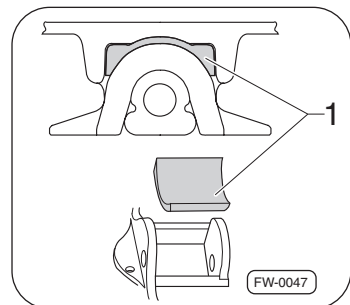


Fig. 23 · Check the bearing inserts

8.7 Lubricate

Lube plates

To lubricate the lube plates only use long-lasting high pressure grease NLGI class 2 with MoS₂ or graphite consumables, e.g. MOTOREX MOLY 218, SHELL RETINAX HDX2, Renolit LZR 2 H, Renolit FG 150. When using other lubricants the lubricating intervals should be adapted accordingly.

8.8 Play adjustment

The lock of a fifth wheel undergoes conditions, wear, dependent on driving operation and maintenance. The SAF-HOLLAND FWAL-E fifth wheel is equipped with a play adjustment for the lock.



Danger!

Risk of serious traffic accidents due to the loss of traffic safety and operational safety, which may lead to serious or fatal injuries!

- Incorrect play adjustment can result in defective locking of the fifth wheel.
- Do NOT use fifth wheels that do not operate!
- For NON-operational fifth wheels, repeat the adjustment steps or contact SAF HOLLAND.
- The play adjustment only offsets wear to the lock parts and does not compensate wear to the kingpin.
- When the lock adjustment is worn out, the wear ring ⇒Page 33 and lock jaw ⇒Page 34 must be replaced.
- Check lock function ⇒Page 22.



Note:

If the lock continues to have an excessive play on the last (third) notch of the adjusting pin, the fifth wheel must be overhauled using the lock repair kit RS-91135 or the complete repair kit RS-91136.

1. To adjust the lock, loosen the hexagon socket screw ⇒Fig. 24,–item 1– until the head releases the bolt –item 2–. Turn the bolt –item 2– clockwise until the next notch –item 3– is flush with the hexagon socket screw–item 1–.
2. Adjust only one notch at a time. One notch equals an adjustment of 0.75 mm.

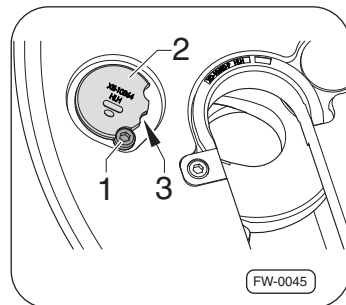


Fig. 24 · Adjusting the lock

3. Tighten the hexagon socket screw –item 1–⇒Page 30.
4. Check the play in the lock again. If the play is still greater than 1.5mm, repeat the procedure and adjust by one more notch.

**Danger!**

Risk of serious traffic accidents due to the loss of traffic safety and operational safety, which may lead to serious or fatal injuries!

The function of the locking mechanism must be tested using a semi-trailer that does not have forced steering, using a new kingpin.

There must be at least 0.5 mm play between the locking mechanism of the fifth wheel and the kingpin.

5. Coupling ⇒Page 17.
6. Check function of locking mechanism ⇒Page 22.

9 Repair

9.1 General repair instructions

**Danger!**

Risk of serious traffic accidents due to the loss of traffic safety and operational safety, which may lead to serious or fatal injuries!

- Repair work must only be carried out by authorised specialist workshops and by staff with the appropriate training.
- All components which are not in perfect condition must be replaced.
- Do not use any damaged tools. SAF-HOLLAND recommends the use of the tools described in the “tool list” chapter, which correspond to the legally valid standards and regulations.
- Do not use any pneumatic impact screwdrivers to tighten bolts and nuts.



Danger!

- Only use bolts and fasteners once.
- Do not weld any parts of the fifth wheel.
- Perform a function check of the fifth wheel after every repair.

9.2 Tool list

Tools required for maintenance

	Quantity	Bearing	Lock	Wear ring	Lube plates
Torque wrench	1	X	X	X	X
Insert hexagon allen key AF 7	1	-	-	X	-
Insert hexagon socket AF 13	1	-	-	-	X
Insert hexagon socket AF 18	2	X	X	-	-
Insert hexagon allen key AF 19	1	-	X	-	-
Insert hexagon socket AF 24	1	-	X	-	-
Hammer	1	-	X	-	-
Drift Ø 30 mm	1	-	X	-	-
Combination pliers	1	-	X	-	-
Round-nose pliers for outer safety ring Ø 2.3 mm	1	-	X	-	-
Spring hook	1	-	X	-	-
Middle size screwdriver	1	X	-	X	-

9.3 Tightening torque



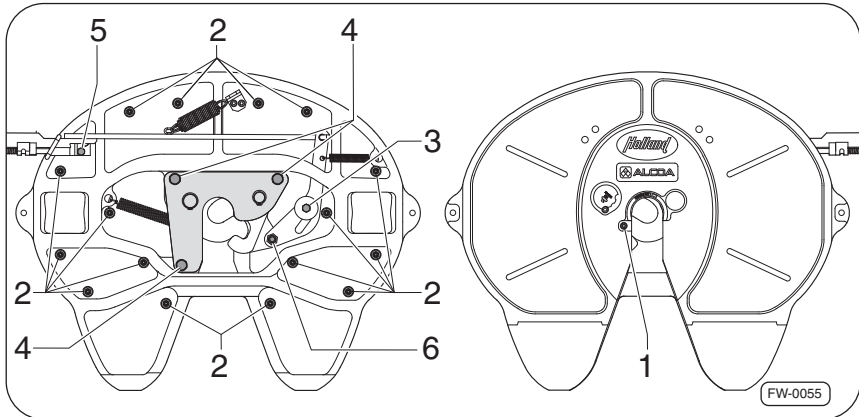
Danger!

Risk of accidents due to loose bolt connections.

- Threads must neither be oiled nor greased.
- Tighten bolts with the torque wrench.
- Only use original bolts with thread lock (micro-encapsulated).


Danger!

- Only use bolts once.


Fig. 25 · Tightening torque FWAL-E fifth wheel

⇒Fig. 25 Item	Bolt connection	Torque [Nm]	Width across flats (WAF)
-1-	Socket cap bolts with hexagon socket (4x)	15 -18	7
-2-	Nuts (16x)	15 -18	13
-3-	Hexagon bolt (1x)	54 - 68	18
-4-	Hexagon bolts (4x)	190 - 217	24
-5-	Hexagon boltss (2x)	15 -18	16
-6-	Nut (1x)	15 -18	24

9.4 Replace fifth wheel plate

Dismantling fifth wheel plate

1. Unscrew the bolts (2x) –item 2– and nuts (2x) –item 3– on both sides of the fifth wheel plate –item 1– and dispose of them.
2. Pull out the bearing pins (2x) –item 4– sideways on both sides with a screwdriver or pinch bar.

3. With a lifting device position the fifth wheel plate –item 1– on a suitable workbench. The mounting brackets remain on the tractor.

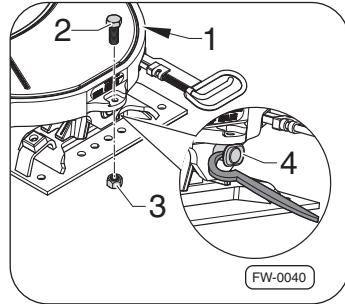


Fig. 26 · Demounting the fifth wheel plate

Mounting the fifth wheel plate



Danger!

Risk of serious traffic accidents due to the loss of traffic safety and operational safety, which may lead to serious or fatal injuries!

Improper mounting of the fifth wheel plate affects the vehicle stability or leads to the loss of the trailer.

1. Using a lifting device, position the fifth wheel plate ⇒Fig. 27, –item 1– on the mounting brackets fitted on the tractor (observe direction of travel).



Note:

Ensure correct position of the bearing inserts and rubber bushes.

2. Slide the bearing pins in ⇒Fig. 27, –item 4– sideways on both sides.
3. Tighten the bolts (2x) ⇒Fig. 27, –item 2– and nuts (2x) –item 3– by hand.

- Tighten the nuts (2x) ⇒Fig. 27, –item 3– to the specified tightening torque ⇒Page 30.

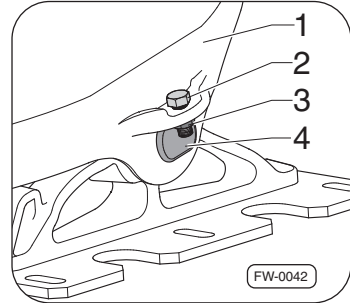


Fig. 27 · Mounting the fifth wheel plate

9.5 Replace wear ring

Dismantling wear ring

- Remove and dispose of the bolt –item 1–.
- Remove the stop –item 2–.
- Loosen the wear ring –item 3– with a screwdriver, turn it by 90° and remove.
- Clean the wear ring fifth wheel plate (location with alcohol).

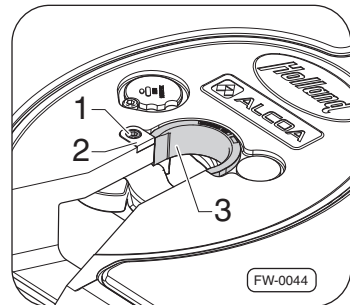


Fig. 28 · Dismantling the wear ring

Mounting wear ring



Danger!

Risk of serious traffic accidents due to the loss of traffic safety and operational safety, which may lead to serious or fatal injuries!

1. Insert the new wear ring and turn by 90°.
2. Fit the new wear ring –item 3– with the stop –item 2– and new bolt –item 1–. Tighten the bolt by hand.
3. Tighten the bolt –item 1– with the specified tightening torque ⇒Page 30.

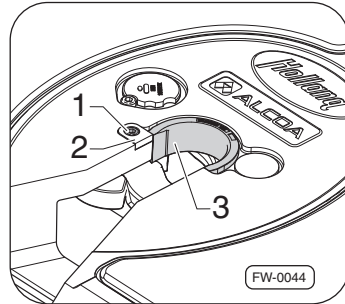


Fig. 29 · Mounting the wear ring

9.6 Replace lock part

Dismantling lock part



Note:

- For the dismantling of the tension spring SAF-HOLLAND recommends that gloves are worn.
- Cleaning materials can contain metal and paint. Observe the manufacturer's instructions on cleaning materials.

1. Dismantle the fifth wheel plate ⇒Page 31 and lie flat on a suitable workbench. The mounting brackets remain on the tractor.
2. Unhook the lock springs ⇒Fig. 30, -arrow 1- and handle -arrow 2-.
3. If necessary bring the lock jaw into the "OPEN" position.

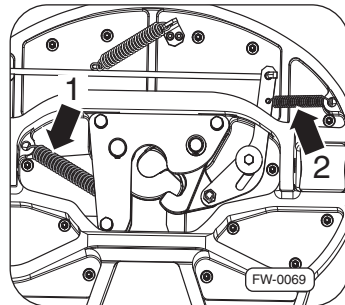


Fig. 30 · Unhook the spring

4. Remove the circlips ⇒ Fig. 31, -arrow 1- and -arrow 2-.

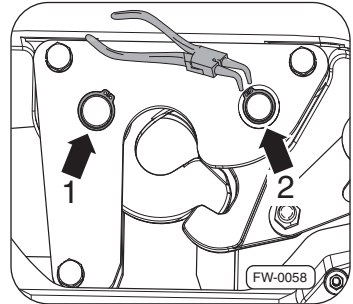


Fig. 31 · Removing the circlips

5. Dismantle the bolts ⇒ Fig. 32, -arrow 1- and -arrow 2- from the lock jaw and lock hook.

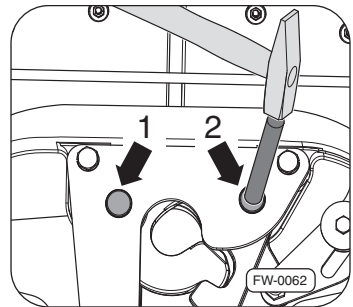


Fig. 32 · Dismantling the bolt

6. Loosen the bolts ⇒ Fig. 33, -item 1- and nuts -item 2- and dispose of them. Remove the cover from the lock.

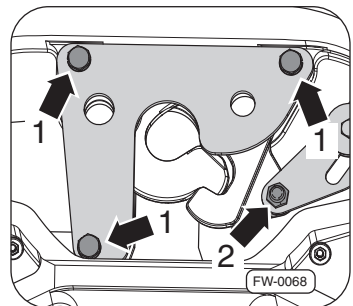


Fig. 33 · Removing the cover

7. Remove the lock jaw and the lock hook from the fifth wheel plate in the direction of the arrow ⇒Fig. 34.
8. Clean the bore in the fifth wheel plate (e.g. with alcohol) and apply long-lasting high pressure grease.

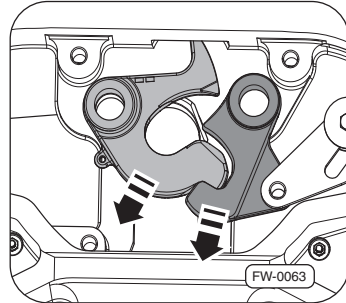


Fig. 34 · Dismantle the lock jaw and lock hook

Mounting lock part



Note:

For the assembly of the tension spring SAF-HOLLAND recommends that you wear protective gloves.

1. Fit the new lock jaw and lock hook ⇒Fig. 35.

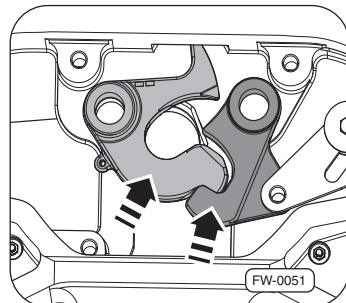


Fig. 35 · Fitting the lock jaw and lock hook

2. Fasten the lock hook with the new nut ⇒Fig. 36, –item 2– and fit the cover with the new bolts –item 1–. Tighten the nuts as per tightening torque ⇒Page 30.

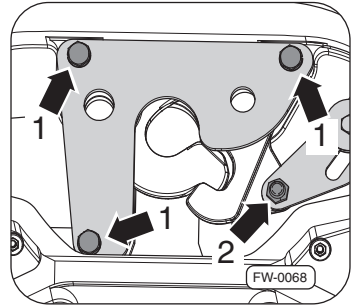


Fig. 36 · Fitting the cover

3. Fit and secure the circlips ⇒Fig. 37, –arrow 1– and –arrow 2–.

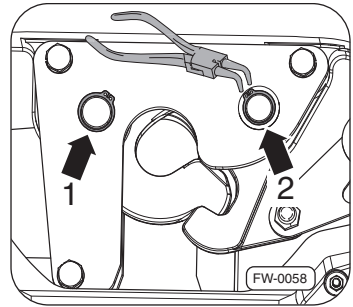


Fig. 37 · Fitting the circlips

4. Hook the tension spring back onto the lock –arrow 1– and handle –arrow 2– hook the spring to the lock in the bore, so that the loop opening is facing downwards in relation to the TOP plate.
5. Fit the fifth wheel plate ⇒Page 32.
6. Open the fifth wheel lock ⇒Page 16.

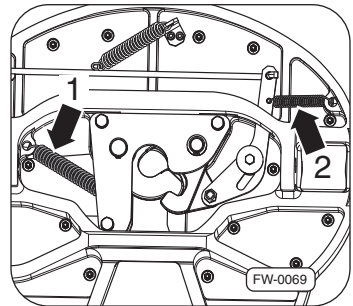


Fig. 38 · Hook in the tension spring

9.7 Replace lube plates

Dismantling lube plates

1. Disassemble the fifth wheel plate ⇒Page 31.
2. Remove the nuts –item 1– and dispose of them (16 x).
3. Remove the lube plates.

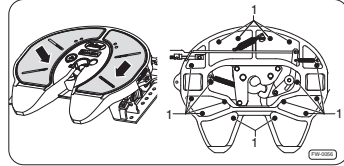


Fig. 39 · Dismantling the lube plates

Mounting lube plates

1. Insert the lube plates into the recess of the fifth wheel plate.
2. Insert the new self-locking nuts (16 x) –item 1– and tighten them by hand.
3. Tighten the nuts–item 1– with the specified tightening torque ⇒Page 30.
4. Lubricate the lube plates ⇒Page 27.

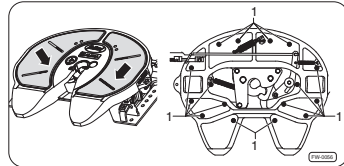


Fig. 40 · Mounting the lube plates

9.8 Replacing the bearing inserts

Dismantling the bearing inserts

1. Disassemble the fifth wheel plate ⇒Page 31.
2. Remove the bearing inserts –item 1–.

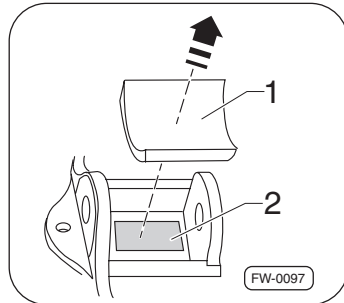


Fig. 41 · Removing the bearing inserts

Mounting the bearing inserts



Note:

Clean the bearing insert recesses before fitting the bearing inserts.

1. Apply a strip of double-sided tape on the base of the pocket recess –item 2–.
2. Push the bearing inserts –item 1– into the designated recess.
3. Assemble the fifth wheel plate
⇒Page 32.

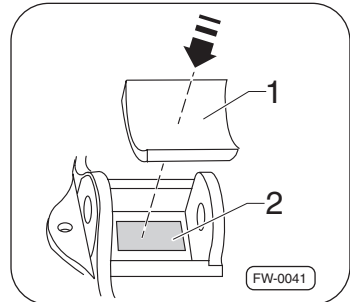


Fig. 42 · Fitting the bearing insert



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