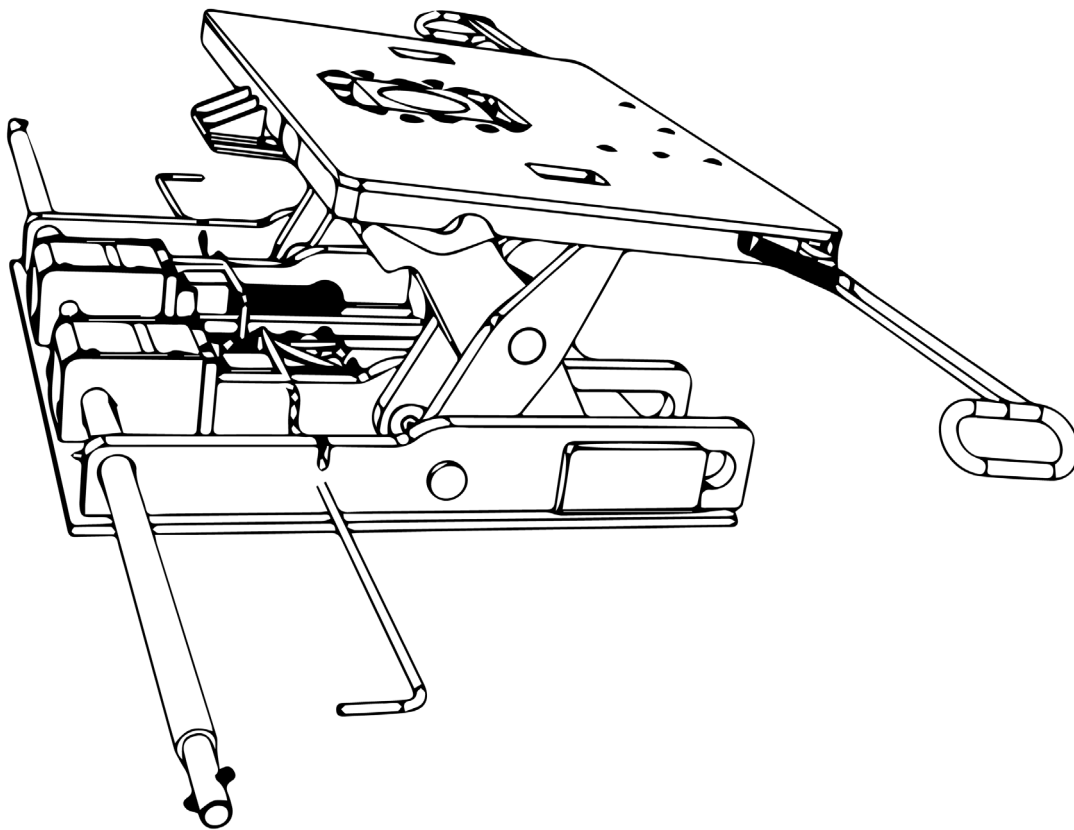


# Operating and Maintenance Instructions

## FW6170 Railcar Hitch



## Important note

These operating instructions are intended for the exclusive use by trained persons within the railway industry and related workshops.

The content of this manual is not all-inclusive and not legally binding. SAF-HOLLAND GmbH assumes no liability as a result of its use. All information contained in the manual neither represents ensured characteristics of the product nor represents a guarantee. SAF-HOLLAND GmbH reserves the right to make changes in the interest of technical progress without prior notice.

No liability is assumed as a result of incorrect or inappropriate parts being fitted to the product or the omission of appropriate tests after the servicing of the product. Use appropriate spare parts' documentation when obtaining spare parts. Use only genuine SAF-HOLLAND GmbH spare parts in repairs.

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## 1. Product data

### 1.1 Information on the railcar hitch

The FW6170 is a railcar hitch for the secure transport of semitrailers on a AAE/VTG Twin Pocket Wagon. Other use has to be clarified with SAF-HOLLAND.

#### Technical details on the railcar hitch

- Vertical Load: 15 tonnes
- Coupling Height (adjustable): 880, 980, 1130 mm
- Weight: 353 kg
- Suitable for trailers with 2" Kingpin

### 1.2 Identifying the railcar hitch

Please have the exact type designation of the product ready when ordering spare parts. „Fig. 1: Type plate“ on page 4.

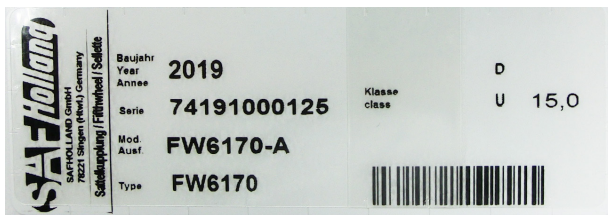


Fig. 1: Type plate

### 1.3 Location of type plate

The type plate -circles-, „Fig. 2: Possible type plate locations“ on page 4 is located on the front or side of the hitch.

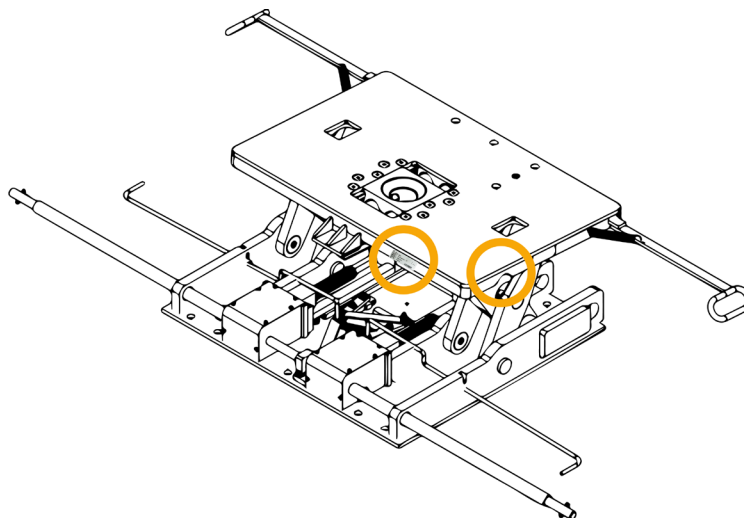


Fig. 2: Possible type plate locations

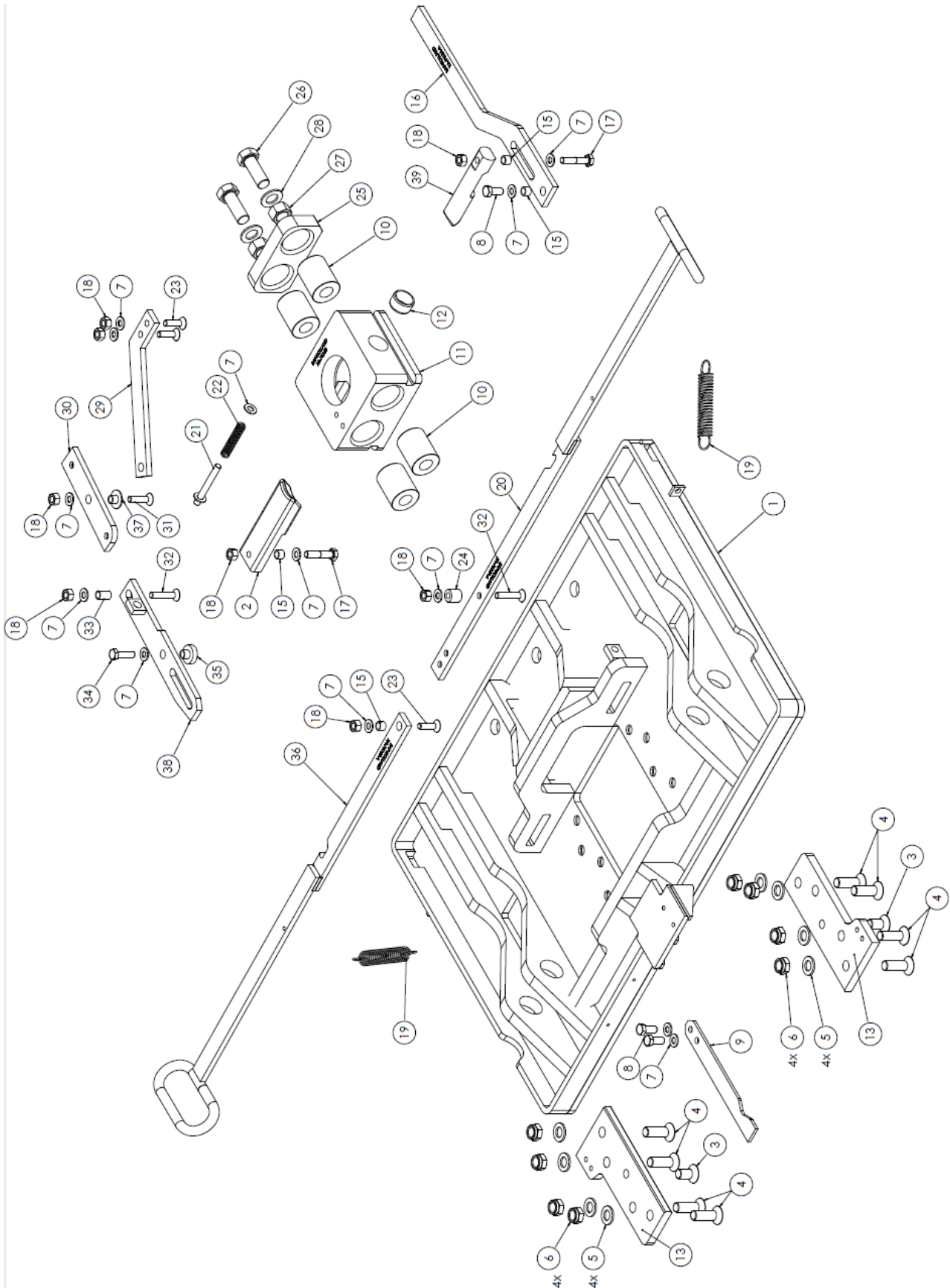
## 2. Ordering spare parts

When ordering original spare parts from SAF-HOLLAND, make sure you accurately identify the respective product. Copied parts have a negative effect on the function of the product, have a shorter lifetime and cause risks and hazards that SAF-HOLLAND cannot assess.

SAF-HOLLAND operates a tight service network of partner companies for technical support of SAF-HOLLAND products and supply of parts (see [www.safholland.com](http://www.safholland.com)).

### 3. Component overview

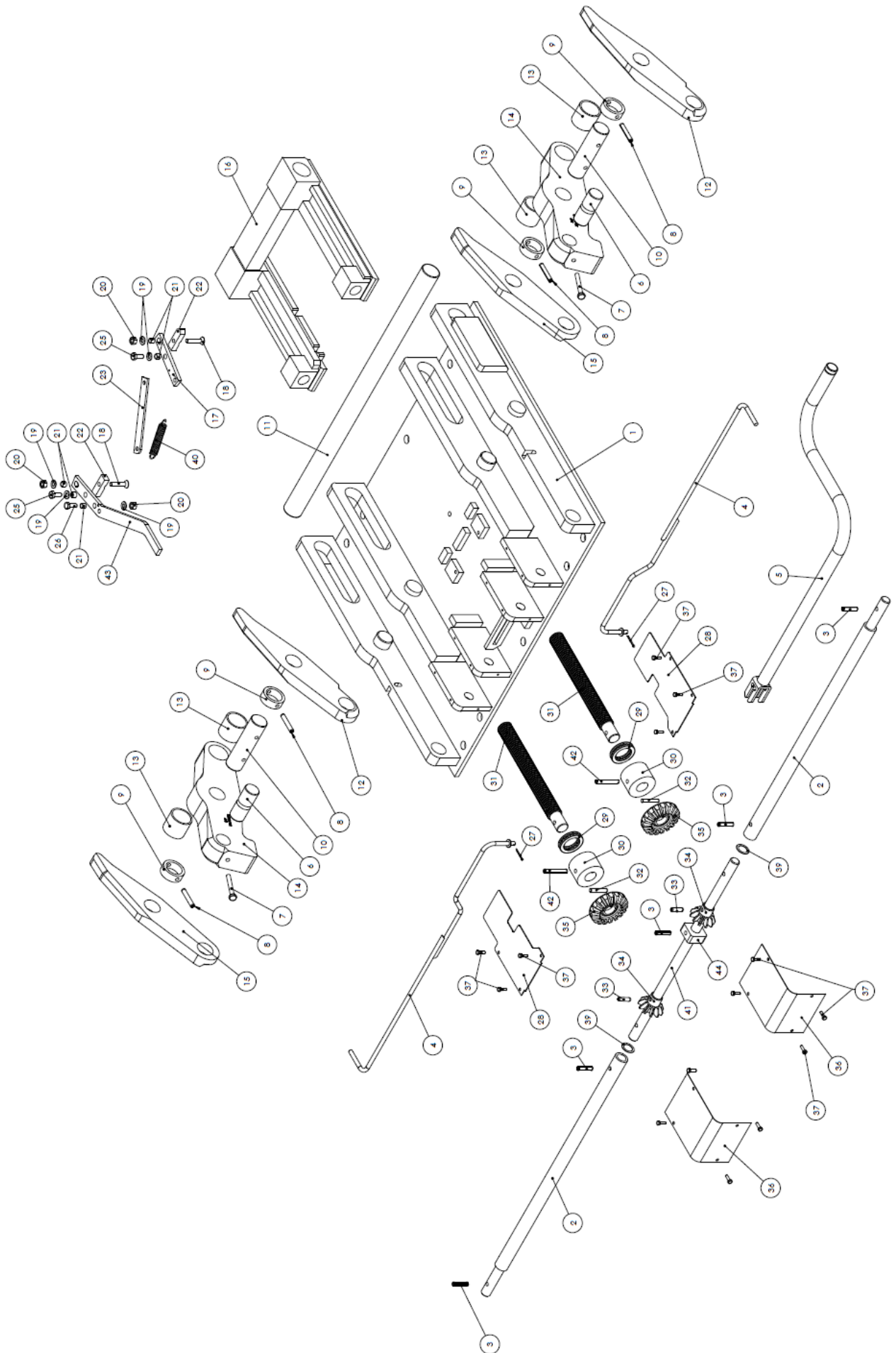
#### 3.1 Railcar hitch top plate assembly XA-76101-A



**Railcar hitch top plate assembly XA-76101**

Item	Part no.	Quantity	Part name
1	XA-77144	1	Top plate
2	XA-76156	1	Lock bolt
3	XB-76024-1	2	Countersunk bolt M16 x 30 - 8.8
4	XB-76023-1	8	Countersunk bolt M16 x 50 - 8.8
5	XB-76025	8	Washer 16 x 30 x s3
6	XB-76026-1	8	Locknut M16
7	33023	13	Washer 10 x 21 x s2
8	31008	3	Hex. bolt M10 x 25 - 8.8
9	XA-76176	1	Brake actuator
10	XB-76033	4	Crash Element
11	XA-76168	1	Guide Ring
12	XB-76104	1	Bushing DU®
13	XA-76152	2	Guide plate
14	-	-	-
15	XA-76166	4	Bushing 10 x 14 x L10.5
16	XA-76154-A	1	Release lever
17	31032	2	Hex. bolt, M20 x 50 - 8.8
18	32008	8	Locknut M10
19	XB-D-05843-1	2	Extension spring
20	XA-76159-A	1	Operating Handle
21	XA-76134	1	Spring guide
22	XB-76008	1	Compression spring
23	31038	3	Countersunk bolt M10 x 35 - 8.8
24	XA-76169	1	Spacer bushing 10 x 20 x L20
25	XA-76157	1	Pressure Plate
26	XB-76030	2	Hex. bolt, M20 x 55 - 8.8
27	XB-76031	2	Nut M20
28	XB-76032	2	Washer 20 x 37 x s3
29	XA-76158	1	Link lever
30	XA-76155	1	Control lever
31	XB-76028	1	Countersunk bolt M10 x 40 - 8.8
32	XB-76038	2	Countersunk bolt M10 x 50 - 8.8
33	XA-76166-1	1	Spacer bushing 10 x 14 x L21
34	XB-76034	1	Hex. bolt M10 x 35 - 8.8
35	XA-76167	1	Flange bushing 10 x 14 x L19
36	XA-76160-A	1	Operating Handle
37	XA-76162	1	Flange bushing 10 x 30 x L12.5
38	XA-76124	1	Release lever
39	XA-76163	1	Release bolt

### 3.2 Railcar hitch base assembly XA-76100



**Railcar hitch base assembly XA-76100**

Item	Part no.	Quantity	Part name
1	XA-76109-A	1	Baseplate, processed
2	XA-76179	2	Extension Shaft
3	XB-76107	5	Coiled spring pin 10 x 45
4	XA-76131	2	Operating handle, height setting
5	XA-76114	2	Crank for height adjustment
6	XA-76106-A	2	Top bolt
7	XB-76128	2	Hex bolt M10 x 80 - 10.9
8	XB-76119	4	Coiled spring pin 10 x 60
9	XA-76170	4	Spacer bushing 45 x 60 x L21.5
10	XA-76122	2	Centre Bolt
11	XA-76121	1	Axle
12	XA-76105-R	2	Lifting arm right
13	XA-76185	4	Spacer bushing 52 x 60 x L52
14	XA-76103-C	2	Lifting arm center
15	XA-76105-L	2	Lifting arm left
16	XA-76126	1	Sliding Frame
17	XA-76135	1	Lever
18	XB-76038	2	Hex bolt M10 x 50 - 8.8
19	33023	5	Washer 10 x 21 x s2
20	32008	3	Nut, Lock, M10
21	XA-76141	5	Bushing 10 x 13 x L10.5
22	XA-76137	2	Lock Pin
23	XA-76140	1	Link
24	-	-	-
25	31008	2	Hex bolt, M10 x 25 - 8.8
26	XB-60137	1	Hex bolt, M10 x 30 - 8.8
27	XB-76044-1	2	Split Pin, 3.2 x 32
28	XA-76173-B	2	Cover plate, spindle
29	XB-76041-1	2	Axial deep groove ball bearing
30	XA-76177	2	Spindle Nut
31	XA-76125	2	Spindle
32	XA-CRP-V-06635	2	Spring Pin, 3/8" x 2"
33	XB-76105	2	Coiled spring pin 10 x 35
34	XA-76174	2	Gear bevel pinion
35	XA-76232	2	Gear bevel processed
36	XA-76173-A	2	Cover plate, bevel gear
37	XB-76060	14	Hex bolt M6 x 20 - 8.8
38	-	-	-
39	XB-76103	2	Shim washer 25 x 35 x 0.5
40	XB-76040	1	Expansion spring
41	XA-76123	1	Drive Shaft
42	34011	2	Coiled spring pin 10 x 70
43	XA-76182	1	Control Lever
44	XA-76139	1	Square Block



## 4. General information

### 4.1 Liability

SAF-HOLLAND's „4.2 Warranty and general terms and conditions of business“ on page 9  
SAF-HOLLAND accepts no liability claims for personal injury or material damage with one or more of the following causes:

- Failure to observe the proper use, see „5.2 Proper use“ on page 9
- Arbitrary changes or modifications to the product.
- Insufficient maintenance, repair or lubrication of parts that are subject to wear, or improper functionality, see „8.1 Periodical checks“ on page 14 and „8.2 Lubrication“ on page 15
- The use of any spare parts other than original SAF-HOLLAND parts, see „2. Ordering spare parts“ on page 4
- Use of damaged parts.
- Disasters due to external influences or force majeure.

### 4.2 Warranty and general terms and conditions of business

Refer to the “Sales” section of our home page [www.safholland.com](http://www.safholland.com) for information on current warranties and general terms and conditions.

### 4.3 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, you must adhere to the disposal instructions for the respective consumables and the valid national and regional regulations.

## 5. Safety precautions

### 5.1 Target group

The operating and maintenance instructions of the product is restricted exclusively to use by trained personnel and authorised specialists.

### 5.2 Proper use

The product has been constructed using state-of-the-art technology and in accordance with recognized 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.

Proper use also includes:

- Observance of the operating and maintenance instructions.
- Adherence to all repair and care instructions, as well as additional inspections, see „8. Periodical maintenance procedure“ on page 14
- Use of the auxiliary and operating materials listed, as well as their environmentally-friendly disposal, see „4.3 Environmental protection“ on page 9

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

### 5.3 Safety instructions and symbols used

The following symbols are used to denote particularly important information and sections of the text. It must be ensured that they are always read and observed before working with the product.



#### Danger!

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



#### Attention!

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



#### Note:

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

### 5.4 Marking used for sections of text

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

## 6. General safety instructions



### Danger!

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

It is imperative to adhere to the following safety instructions for your SAF-HOLLAND railcar hitch in order to comply with operational safety and rail safety:

Failure to read, understand and follow the important information contained herein may result in a hazardous condition, or cause a hazardous condition to develop.

Relative to railcar hitch operations, there are other checks, inspections and procedures not listed here which are necessary, prudent and /or required by law. The following instructions are in addition to these and pertain to the railcar hitch only.

Perform these procedures with the area clear of obstacles and other personnel.

This product is designed and intended for use only with a „reach stacker“ or cranes that are suitable for loading and unloading of trailers.

## 7. Operating instructions

### 7.1 Coupling procedures (loading):

#### 7.1.1 Check of the railcar hitch before coupling



### Danger!

Inspect the railcar hitch for visible damage prior to each loading operation in particular:

- Bent handles and locking mechanism
- Missing springs, bolts and nuts
- Crash elements and sliding mechanism
- And any other damage
- If any of these points fail the rail car hitch has to be put out of operation !



### Danger!

- Ensure that periodical lubrication and maintenance has been completed in accordance with „8. Periodical maintenance procedure“ on page 14
- The railcar hitch must be properly lubricated as described in „8.2 Lubrication“ on page 15. If the proper lubrication is not given the hitch has to be put out of service.
- Check that the correct railcar hitch height has been selected. See „7.3 Setting up the railcar hitch height“ on page 13
- The railcar hitch is locked prior to loading and must not be opened.
- Pull and release the locking handle and check for free and easy movement of the locking mechanism as described below:

#### 1. Pull the handle.

- Perform the pull test on both sides of the railcar hitch before loading.
- Pull the handle out as far as possible „Fig. 3: Pull the handle“ on page 10.

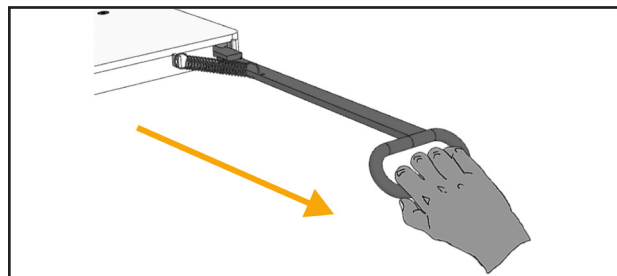


Fig. 3: Pull the handle

## 2. Release the handle.

Release the handle „Fig. 4: Release the handle“ on page 11. The handle must move freely and immediately spring back into the locked position. A metallic noise must be heard when the handle reaches the fully closed position.

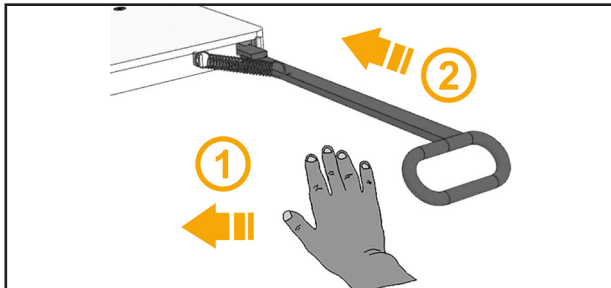


Fig. 4: Release the handle



### Danger!

If the handle does not move freely, or spring back into the locked position the railcar hitch has to be put out of operation and repaired by a specialized and trained workshop. See „Fig. 3: Pull the handle“ on page 10

## 3. Push the handle

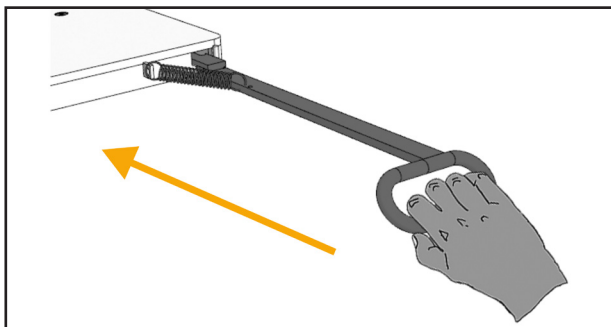


Fig. 5: Push the handle

### Handle push test

Push the handle inwards „Fig. 5: Push the handle“ on page 11 to ensure that it is in the fully closed position.



### Danger!

There must be no further movement of the handle. If the handle moves, the railcar hitch must be immediately taken out of service and repaired by a specialized and trained workshop.

## 7.1.2 Coupling operation

- Check that the hitch is in the locked and ready to couple position prior to loading.
- The trailer must be positioned over the railcar hitch, so that the kingpin is directly above the guide ring.
- The trailer must be lowered until the trailer plate is in contact with the railcar hitch top plate and the kingpin is correctly located in the guide ring.

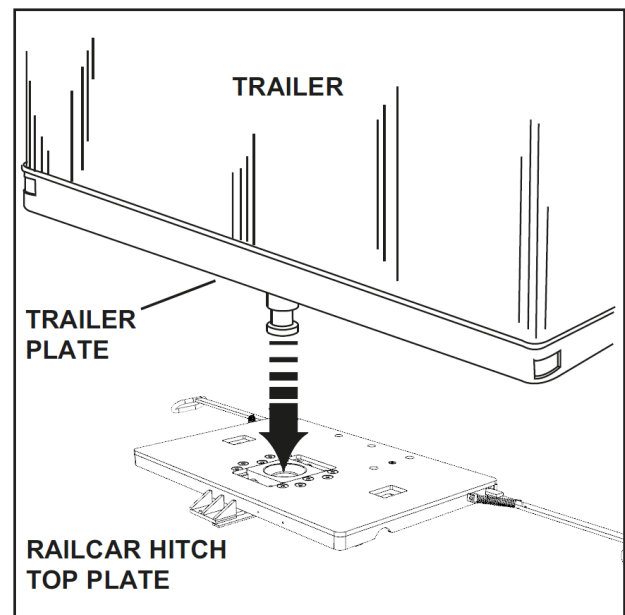


Fig. 6: Coupling procedure

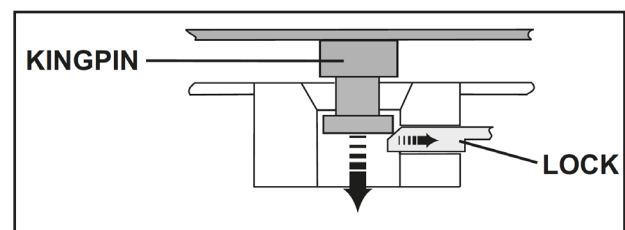


Fig. 7: Kingpin automatically retracts lock



### Note:

- Kingpin automatically retracts lock upon entering “lock guide ring”.
- Precondition: The hitch has to be closed and the handle must not be hooked.

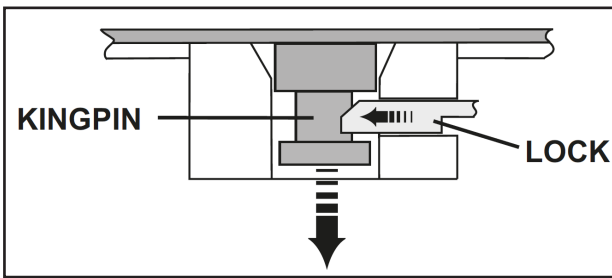


Fig. 8: Lock automatically engages

7.1.3 Inspection of the railcar hitch after loading



**Danger!**

The kingpin must be fully inserted into the guide ring and there must be no gaps between the trailer plate and the railcar hitch top plate.

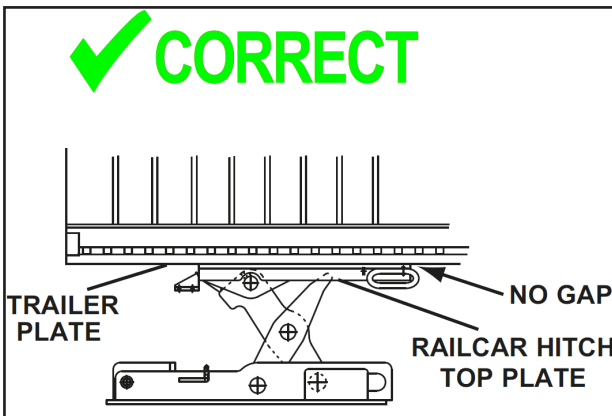


Fig. 9: Kingpin is properly engaged

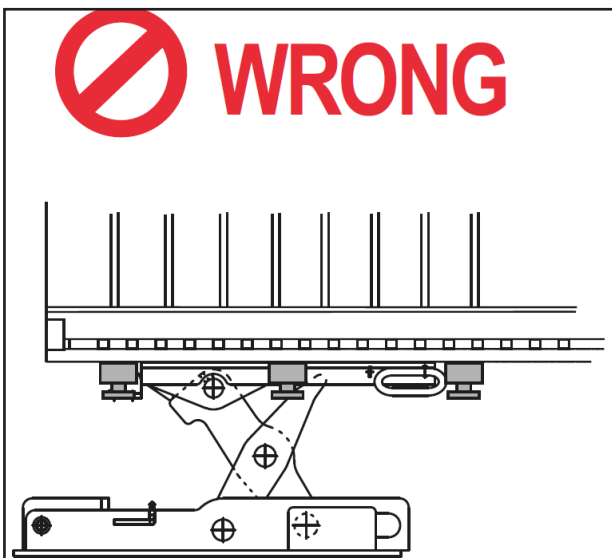


Fig. 10: Kingpin is in front of, behind, or to the side

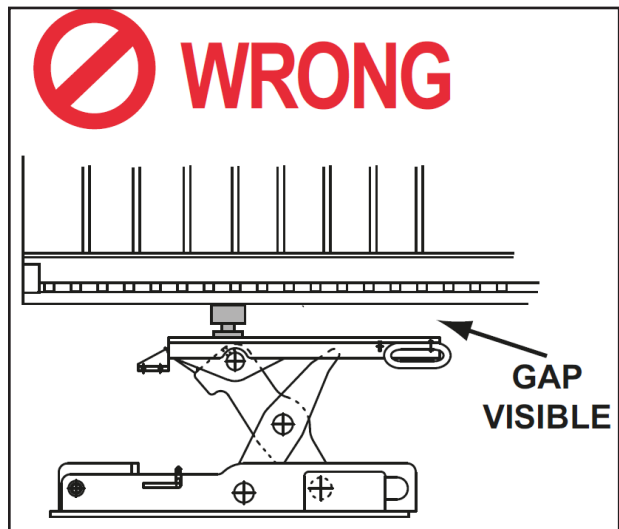


Fig. 11: Kingpin is on the top



**Danger!**

The operating handle is in the fully retracted position and the retaining notch no longer visible.

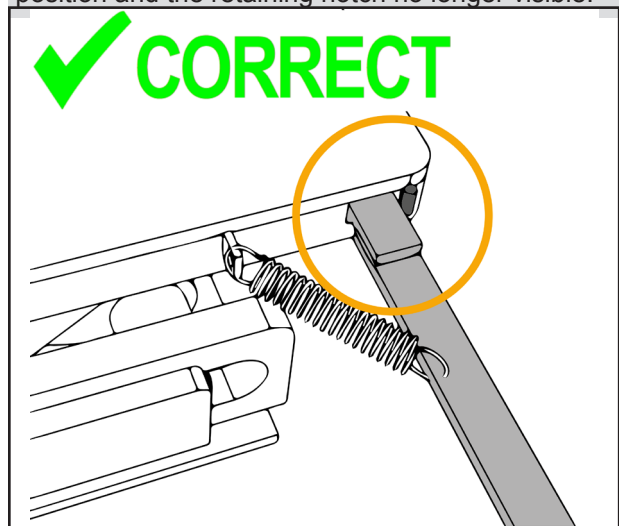
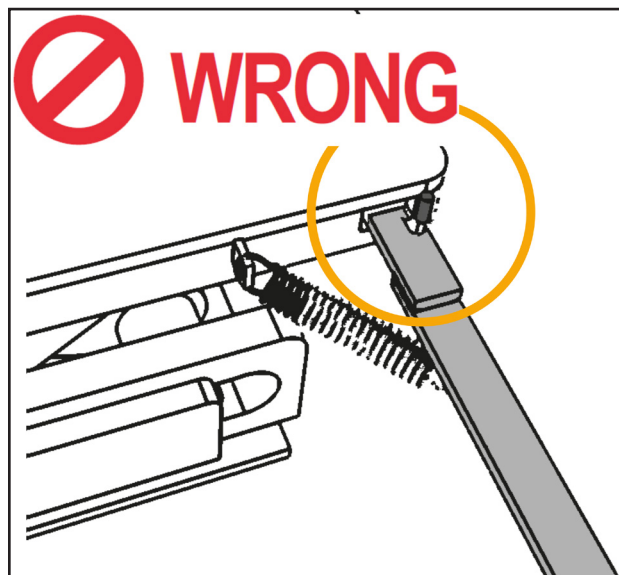
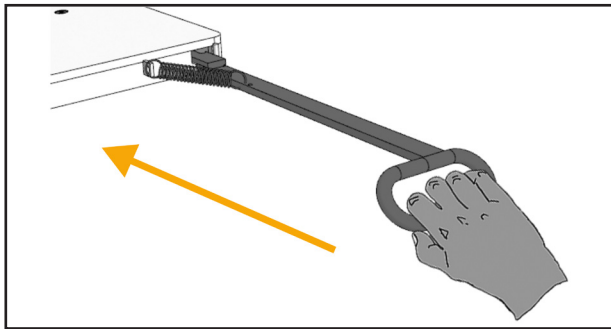


Fig. 12: Railcar hitch is locked



**Fig. 13: Railcar hitch is open**



**Fig. 14: Push the handle after coupling**

### Handle push test after coupling



#### Danger!

The „handle push test“ must be executed after the coupling procedure a second time.

Push the handle inwards „Fig. 14: Push the handle“ on page 13 to ensure that it is in the fully closed position.



#### Danger!

There must be no further movement of the handle. If the handle moves, the railcar hitch must be immediately taken out of service and repaired by a specialized and trained workshop.

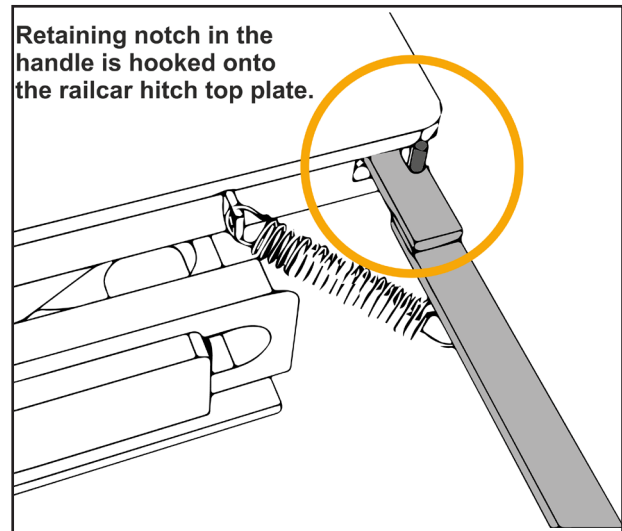


#### Danger!

If one of the items of „7.1.3 Inspection of the railcar hitch after loading“ on page 12 fail it is forbidden to operate the rail car on track.

### 7.2 Uncoupling procedures (unloading):

Pull the operating handle fully outwards and hook it on to the retaining notch at the edge of the opening in the coupler plate - The railcar hitch is now open and the trailer can be lifted off.



**Fig. 15: Uncoupling procedure**



#### Note:

Whilst the trailer is being lifted off the railcar hitch the locking mechanism automatically returns into the locked and ready to couple position.

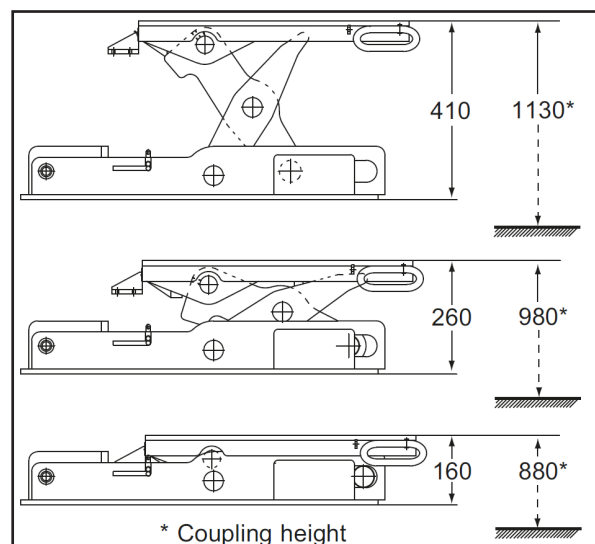
### 7.3 Setting up the railcar hitch height



#### Attention!

The height can only be adjusted with the wagon empty prior to loading. There must be no weight on the hitch..

The railcar hitch FW6170 can be set at three coupling heights in order to be loaded with different types of trailers. In the fully lowered position the railcar hitch allows the wagon to be loaded with standard containers.



**Fig. 16: Setting up hitch height**

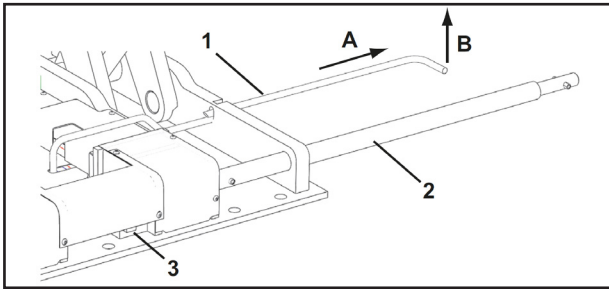


Fig. 17: Hitch height adjustment

**Item 1** „Fig. 17: Hitch height adjustment“ on page 14 - In order to adjust the height of the railcar hitch the operating handle (1) has to be pulled out (A) and then fixed in position by moving it upwards (B).

**Item 2** „Fig. 17: Hitch height adjustment“ on page 14 - Put the crank on the driveshaft (2) and set the required height by turning the crank set. Once the operation handle snaps back inwards the next height has been reached.

**Item 3** „Fig. 17: Hitch height adjustment“ on page 14 - In order to be correctly locked the control lever must be located completely under the square block.

See „Fig. 18: Height adjustment locked“ on page 14.

This is visible through the alignment of the markings on the locking lever (1) and the base plate (3). If the square block (2) is not parallel to the base plate, the crank must be turned further until the locking lever can pass under the square block. Ignoring this feature may lead to damage of the height lock (For a better understanding the control lever and the square block is shown in the pictures without the cover plate).

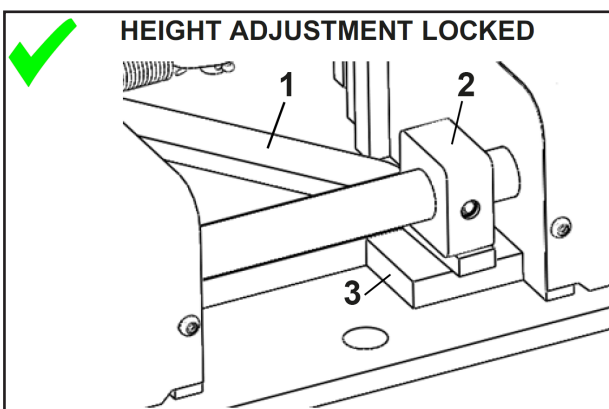


Fig. 18: Height adjustment locked

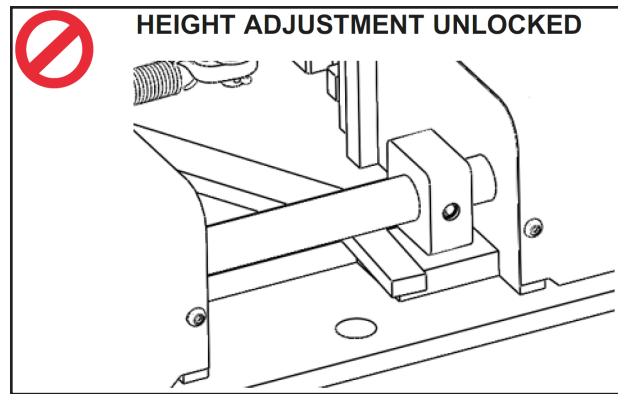


Fig. 19: Height adjustment unlocked - 1

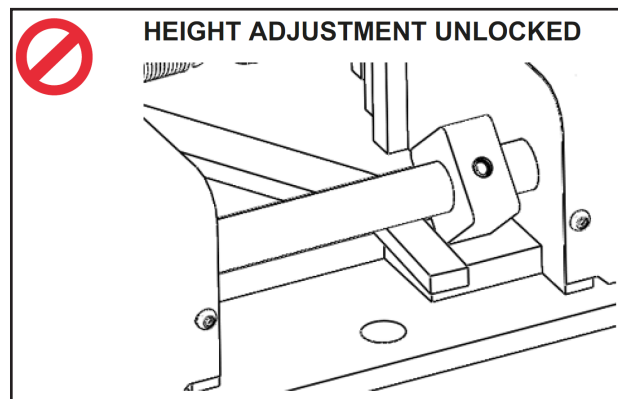


Fig. 20: Height adjustment unlocked - 2



### Danger!

Take the hitch out of service if during “Setting up the railcar hitch height” process any damage or abnormal function is detected.

## 8. Periodical maintenance procedure

### 8.1 Periodical checks

Maintenance and repair work on the railcar hitch may only be performed by qualified personnel at qualified specialist workshops. In this regard, special hazards must be taken into account if SAF-HOLLAND original parts are not used or nuts, bolts, fasteners, bushings or springs are used more than once.

The inspection and maintenance intervals are:

- Initially after the first month.
- Then every four month.
- At each service the railcar hitch has to be checked for proper operation, defects or damage and to be repaired accordingly.

1. Check the complete railcar hitch thoroughly.

- Replace any missing or damaged bolts and nuts.
- 2. Check the locking mechanism and the under side for damage and for proper operation.
- 3. Check the operation handles for damage. Make sure the handles are not bent.
- 4. Check the operation handle springs. Missing or damage springs must be replaced.

**Danger!**

**Important! Failure to follow these instructions can result in an accident:**  
Crash elements which are deformed, or which have fallen out of the top plate must be replaced immediately.

**Danger!**

**Important! Failure to follow these instructions can result in an accident:**  
The correct function of the railcar hitch has to be checked after every service, maintenance or repair..

### 8.1.1 Checking the torque of the crash elements

The torque of the screws for fixing the crash elements must be checked every 8 months:

The items in brackets refer to „Fig. 21: Check crash elements torque“ on page 15.

1. Release lock nuts (1)
2. Tighten screws (2) with a torque wrench SW30.  
Torque Md=115 Nm
3. Tighten the lock nuts Md=115 Nm

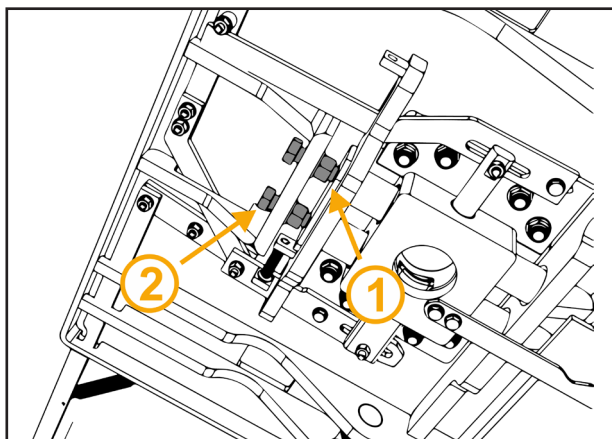


Fig. 21: Check crash elements torque

## 8.2 Lubrication

Periodic lubrication of the railcar hitch FW6170 is to be conducted **at least every four months** by using a water resistant, lithium based grease.

**Note:**

For lubrication NLGI class 2 water resistant Molybdenum Disulphide or lithium based grease (e.g. Molykote P40) must be used.

The lubrication intervals must be adapted to the respective operating conditions, shorter and longer intervals are possible if an adequate risk assessment is made. Make sure that all moving parts are clean and adequately lubricated. Attention should be paid especially to the following lubrication points.

**Danger!**

**Important! Failure to follow these instructions can result in an accident:**

No high pressure cleaner must be used..

All items refer to „Fig. 22: Lubrication points - 1“ on page 15.

#### Lubricate:

- Item 1 - All parts of the locking mechanism also pay attention to all parts of the locking mechanism on the underside of the hitch plate including the levers and linkages
- Item 2 - Bevel gear
- Item 3 - Spindle
- Item 4 - Outer surface of the lifting arms

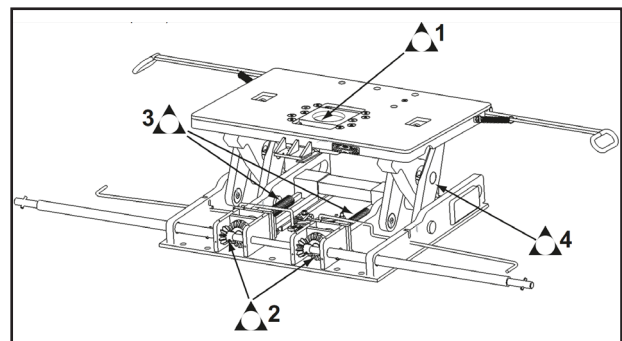


Fig. 22: Lubrication points - 1

Item 5 „Fig. 23: Lubrication points - 2“ on page 16 - Contact surface of sliding frame guide shaft

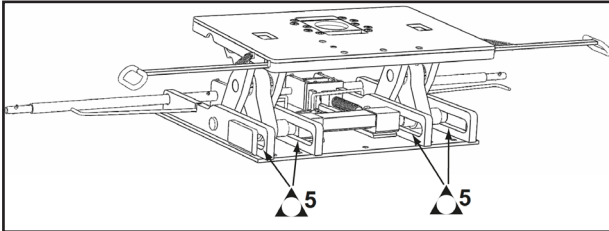


Fig. 23: Lubrication points - 2


**Note:**

- When cleaning the railcar hitch it is possible that potentially environmentally harmful substances may be used. We point out that the corresponding current waste regulations of each country must be observed when disposing of this waste.
- We recommend the wearing of protective gloves when working with harmful substances.

### 8.3 Periodical overhaul of hitch


**Danger!**

**Important! Failure to follow these instructions can result in an accident:**

- Repair and maintenance tasks must be only carried out by authorised specialist workshops and by staff with the appropriate training.
- The railcar hitch must be thoroughly cleaned, overhauled and lubricated every 6 years.
- Contact SAF-HOLLAND or the railcar manufacturer to ask for an appropriate specialist workshop.

## 9. Maintenance - Damage event


**Danger!**

**Important! Failure to follow these instructions can result in an accident:**

- Repair and maintenance tasks must be only carried out by authorised specialist workshops and by staff with the appropriate training.


**Danger!**

**Important! Failure to follow these instructions can result in an accident:**

All movable parts have to be lubricated before assembly of the railcar hitch.

### 9.1 Crash elements


**Danger!**

**Important! Failure to follow these instructions can result in an accident:**

After each service, repair and maintenance operation the complete hitch has to be subject of a complete function check.

In case of a shock in the longitudinal direction of the TWIN-wagon the crash elements can be damaged. In this case the wagon may continue only after appropriate securing of the semi-trailer and has to be transported under the conditions of the railway company.


**Danger!**

**Important! Failure to follow these instructions can result in an accident:**

When the crash elements are compressed after a collision, all parts of the railcar hitch, especially the locking mechanism and the king pin must be checked for damage. Damaged parts must be replaced immediately.

The crash elements and the lock bolt can be replaced with the railcar hitch in situ. In this case the railcar hitch must be in the upper position.



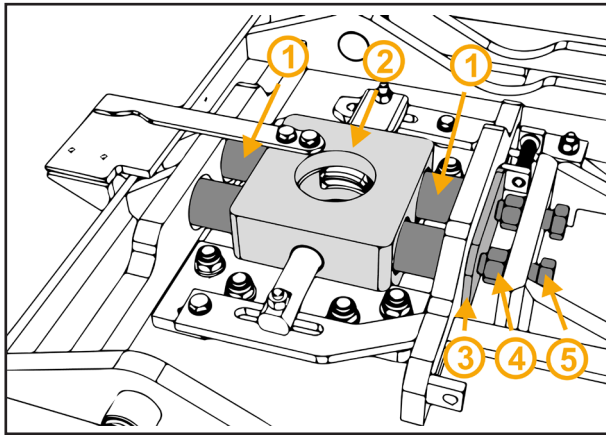


Fig. 24: Maintenance - damage event

### Tool list

- Torque Wrench
- Hexagon socket size 30
- Ring / open ended spanner size 30
- Fork torque wrench

### 9.2 Replacement of crash elements

The following repair procedure refers to „Fig. 24: Maintenance - damage event“ on page 17.

1. Loosen the lock nut (4) and the bolt (5)
2. Remove pressure plate (3)
3. Slide guide ring (2)
4. Remove old crash elements (1)
5. Insert new crash elements (1)
6. Insert pressure plate (3) and tighten the bolt (5).  
Torque Md = 115 Nm
7. Secure bolt with lock nut (4) Md = 115 Nm

Item	Description	Part No.	Quantity
1	Crash elements	XB-76033	4

### 9.3 Check the lock bolt



#### Danger!

**Important! Failure to follow these instructions can result in an accident:**

- The lock bolt must be checked after a damage event.
- The lock bolt must be checked during every visual inspection and service.
- The lock bolt has to be replaced immediately if damaged.

### 9.4 Replace operating handle

The operating handle can be replaced with the railcar hitch in situ. The railcar hitch must be in the upper position.

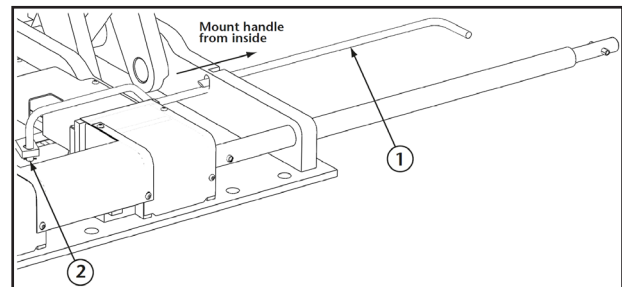


Fig. 25: Replace operating handle

1. Remove split pin (2)
2. Remove the old operating handle
3. Mount new operating handle (1) from inside
4. Fix operating handle with new split pin

Item	Description	Part No.	Quantity
1	Operating handle	XA-76131	1
2	Split pin	XA-76044-1	1



#### Danger!

After each repair the complete hitch has to be lubricated properly as described in „8.2 Lubrication“ on page 15.



## Danger!

**Important! Failure to follow these instructions can result in an accident:**

After each service, repair and maintenance operation the complete hitch has to be subject of a complete function check.



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