Automatic towing hitch

Repair instructions

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Validity and application

Contents of these instructions

These repair instructions refer exclusively to the towing hitch RO 50 BNA. The instructions serve as the basis for the correct execution of all the main maintenance work.

- Repair work must be carried out in accordance with these instructions.
- When replacing individual parts or assemblies, only use original spare parts from ROCKINGER.

If lubricant is supplied with a spare part:
- Only use the supplied lubricant in accordance with these instructions.
- If the original lubricant is lost, only use lubricants from the same manufacturer and of the same type.

If fastening elements, e.g. bolts, are supplied with a spare part:
- Dispose of the old fastening elements.
- Use the supplied fastening elements.

Technical status

The information in these instructions is valid as of technical status 1.
For the technical status of the towing hitch, see the type plate [1]: Die 9th digit of the article number designates the technical status (arrow).

ROCKINGER reserves the right:
- to make alterations to the design and the components and, instead of the stated components, to use other equivalent components in the interests of technical progress.
- to alter information in these instructions.
ROCKINGER is not obliged to extend these alterations to towing hitches supplied at an earlier date.
Liability
ROCKINGER assumes no guarantee for the completeness and correctness of the information. No claims can be derived from the contents of the instructions and, in particular, no liability is assumed for damages which result from incorrect repair or maintenance.

Copyright
All rights to these instructions and its annexes are held by ROCKINGER.

Emphasis in the text
Legend
In the interests of readability and clarity, different types of information are marked accordingly.

Sentences starting with an arrow contain instructions on how to proceed:
➤ Always carry out the instructions successively in the order given.

The following information is introduced by a dash:
– lists
– conditions for the subsequently described actions
– descriptions of preceding work steps
– descriptions of statuses

Warnings of hazards and risks
Important text passages which must always be observed are especially emphasised:

HAZARD!
Warns against direct hazards which could lead to serious injury or death.
➤ Provides instructions for the prevention or avoidance of hazards.

WARNING!
Indicates risks which could lead to serious injury or death.
➤ Requires safety measures to protect the persons concerned.

CAUTION!
Indicates risks which could lead to material damage or personal injury (minor injuries).
➤ Provides instructions for the prevention of damage.

Pictures
As necessary, texts are illustrated with pictures. The reference to a picture is given by a picture number in [square brackets]. Capital letters after a picture number, e.g. [12A], refer to the corresponding item in the picture.

Binding instructions
LUBRICANTS:
– Lubricants for the previously described activity.

TIGHTENING TORQUES:
– Tightening torques for the listed bolted connections.

Additional information
The information symbol refers to instructions and recommendations as well as additional information.

TOOLS:
– List of the tools required for the subsequently described activities.
Tools

For the work described in these instructions, the following tools are required:

- Ring or open-end spanner SW 8
- Ring or open-end spanner SW 10
- Ring or open-end spanner SW 13
- Ring or open-end spanner SW 14
- Ring or open-end spanner SW 15
- Ring or open-end spanner SW 17
- 2 x open-end spanner SW 24
- Ring or open-end spanner SW 27
- Ring or open-end spanner SW 30
- Socket spanner SW 14
- Allen key M5
- Allen key M6
- Allen key M10
- Small slotted screwdriver
- Large Philips screwdriver
- Screwdriver
- Long-nose pliers
- Pliers
- Spring hook
- Universal pliers
- Wire cutter
- Rubber mallet
- 2 x mounting iron
- Suitable tool for pressing bushes in and out
- Locking plate [2A] for indicator pin, Part no. ROE65632
- Assembly aid [2B] for hand lever, Part no. ROE25614
- Assembly plug [2C] for lock, Part no. ROE84001

Direction information

Direction information is standardised throughout the text. To establish the directions, see Fig. [3].

Function test

After every repair, before starting up the towing hitch:

⇒ Carry out a function test; Section 4.7
Safety instructions

WARNING!
Incorrectly executed repair work can lead to serious accidents!

- Safe operation of the towing hitch is only possible if all repair work is carried out exclusively by qualified personnel.
- Only carry out repairs to the towing hitch in accordance with these instructions.
- All screwed connections must be tightened with the specified tightening torque. Where specified, use locking washers.
- Only use original ROCKINGER spare parts.
- Only use the towing hitch in a technically perfect condition.
- Observe further documentation: Installation instructions for the towing hitch and the existing accessories, operating instructions for the traction vehicle and the trailer.

WARNING!
Risk of accident due to incorrect modification! Towing hitches are vehicle parts subject to the highest possible safety requirements.

- ROCKINGER cannot assume any guarantee for the towing hitch if the customer has allowed unauthorised modifications or changes.
- Unapproved modifications or changes will invalidate the type approval.
- Only use original ROCKINGER accessories which are suitable for the respective towing hitch.
- Never make any other modifications or changes to the towing hitch.

WARNING!
Careless behaviour can lead to work accidents or work-related illnesses!

- Wear the appropriate protective clothing, e.g. work gloves when doing work which requires a high exertion of strength or handling articles with sharp edges.
- When handling flammable materials, makes sure to avoid naked flame and sparks. Do not smoke.
- Observe all the relevant guidelines and regulations.
  E.g. Regulations for health and safety in vehicle maintenance, GUV 17.1 (in Germany)
- Operating materials such as cleaning agents or lubricants can endanger health.
- Always observe the instructions, work and safety regulations of the manufacturer.

Environmental protection

- Only store operating materials and cleaning agents in suitable containers.
- When disposing of old cleaning agents, operating materials and items which have come into contact with these (e.g. rags), always observe the statutory environmental protection regulations.
- Bring old cleaning agents and operating materials to collection points. Do not release them into rivers or lakes, the public sewage system or the soil.
- Dispose of replaced parts and packaging of spare parts in an environmentally friendly manner.
## Faults towing hitch

For wear dimensions, see annex, Section 5.3 Wear limits

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible causes</th>
<th>Remedy</th>
<th>see Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic hitch is not triggered</td>
<td>– Support ring worn</td>
<td>Replace support ring</td>
<td>4.2 Funnel – Support ring</td>
</tr>
<tr>
<td></td>
<td>– Drawbar eye worn</td>
<td>Replace drawbar eye</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>– Automatic unit overgreased</td>
<td>Remove grease</td>
<td>4.1 Automatic unit, complete</td>
</tr>
<tr>
<td></td>
<td>– Remote control is at position “open”</td>
<td>Switch remote control to position “close”</td>
<td>Installation and operation instructions</td>
</tr>
<tr>
<td>Automatic hitch will not open</td>
<td>– Automatic unit overgreased</td>
<td>Remove grease</td>
<td>4.1 Automatic unit, complete</td>
</tr>
<tr>
<td></td>
<td>– Stop prism will not release pressure</td>
<td>Back ventilation valve defective</td>
<td>4.4 Hydraulic unit – Valve</td>
</tr>
<tr>
<td></td>
<td>– Pneumatic remote control has no pressure</td>
<td>Check the air connections at the pneumatic remote control</td>
<td>4.6 Pneumatic remote control</td>
</tr>
<tr>
<td></td>
<td>– Mechanical remote control not correctly adjusted</td>
<td>Adjust mechanical remote control</td>
<td>4.5 Mechanical remote control</td>
</tr>
<tr>
<td></td>
<td>– Gas pull-spring defective</td>
<td>Replace complete Bowden cable</td>
<td>4.5 Mechanical remote control</td>
</tr>
<tr>
<td>Too much longitudinal clearance in the connection unit</td>
<td>– Coupling pin worn</td>
<td>Replace coupling pin</td>
<td>4.1 Automatic unit – Coupling pin</td>
</tr>
<tr>
<td></td>
<td>– Drawbar eye worn</td>
<td>Replace drawbar eye</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>– Stop prism worn</td>
<td>Replace stop prism</td>
<td>4.4 Hydraulic unit – Stop prism</td>
</tr>
<tr>
<td></td>
<td>– Hydraulic unit defective</td>
<td>Replace hydraulic unit</td>
<td>4.4 Hydraulic unit, complete</td>
</tr>
<tr>
<td>Too much vertical clearance at the coupling pin</td>
<td>– Locking pin worn</td>
<td>Replace locking pin</td>
<td>4.1 Automatic unit – Lock</td>
</tr>
<tr>
<td></td>
<td>– Lifting lever worn</td>
<td>Replace automatic unit</td>
<td>4.1 Automatic unit, complete</td>
</tr>
</tbody>
</table>
# Faults towing hitch

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible causes</th>
<th>Remedy</th>
<th>see Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Too much vertical clearance at the coupling pin</td>
<td>- Locking plate worn at the inlet for the coupling pin</td>
<td>➔ Replace coupling pin and locking plate</td>
<td>4.1 Automatic unit – Coupling pin</td>
</tr>
<tr>
<td></td>
<td>- Wear in the area of the locking pin and the locking plate</td>
<td>➔ Replace locking pin and coupling pin including locking plate</td>
<td>4.1 Automatic unit - Lock and coupling pin</td>
</tr>
</tbody>
</table>
## Faults pneumatic remote control

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible causes</th>
<th>Remedy</th>
<th>see Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Towing hitch will not open</td>
<td>- No control pressure before the control unit</td>
<td>➜ Check the compressed air supply</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>- No control pressure after the control unit</td>
<td>➜ Check the input filter at the control unit. Replace a blocked filter</td>
<td>4.6 Pneumatic remote control – Filter</td>
</tr>
<tr>
<td></td>
<td>- Rotary actuator has too little or no pressure from the control valve</td>
<td>➜ Check the compressed air lines between the control unit and the rotary actuator</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>- Rotary actuator blocked by ice</td>
<td>➜ Dismantle rotary actuator, allow to thaw gently and dry.</td>
<td>4.6 Pneumatic remote control – Rotary actuator</td>
</tr>
<tr>
<td></td>
<td></td>
<td>➜ Replace the dryer cartridge in the compressed air system of the vehicle</td>
<td></td>
</tr>
<tr>
<td>Towing hitch opens too slowly</td>
<td>- Control pressure too low</td>
<td>➜ Check the compressed air supply</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>- Piston gasket in the rotary operation worn</td>
<td>➜ Replace the rotary actuator</td>
<td>4.6 Pneumatic remote control – Rotary actuator</td>
</tr>
<tr>
<td>Closing operation is not supported by compressed air</td>
<td>- No control pressure after the control unit</td>
<td>➜ Check the input filter at the control unit. Replace a blocked filter</td>
<td>4.6 Pneumatic remote control – Filter</td>
</tr>
<tr>
<td></td>
<td>- Rotary actuator has too little or no pressure from the control valve</td>
<td>➜ Check the compressed air lines between the control unit and the rotary actuator</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>- Check valve in the control unit defective</td>
<td>➜ Replace the complete control unit</td>
<td>4.6 Pneumatic remote control – Complete control unit</td>
</tr>
<tr>
<td></td>
<td>- No pressure in the pressure reservoir</td>
<td>➜ Open the towing hitch briefly to fill the reservoir</td>
<td>Operating instructions</td>
</tr>
</tbody>
</table>
## Faults pneumatic remote control

<table>
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<tr>
<th>Fault</th>
<th>Possible causes</th>
<th>Remedy</th>
<th>see Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Towing hitch does not remain open after opening and ventilating control unit</td>
<td>- Rotary actuator incorrectly adjusted (installed slightly twisted)</td>
<td>➔ Open the hitch  ➔ Loosen the fastening bolts for the rotary actuator at the holder  ➔ Turn the rotary actuator slightly anti-clockwise as far as the bolting allows  ➔ Re-tighten the fastening bolts</td>
<td>4.6 Pneumatic remote control – Rotary actuator</td>
</tr>
<tr>
<td></td>
<td>- Stops for the hand lever in the automatic unit are defective</td>
<td>➔ Replace automatic unit</td>
<td>4.1 Automatic unit – Complete automatic unit</td>
</tr>
<tr>
<td></td>
<td>- Rotary actuator incorrectly adjusted (installed slightly twisted)</td>
<td>➔ Replace coupling pin and locking plate</td>
<td>4.1 Automatic unit – Coupling pin</td>
</tr>
<tr>
<td>Towing hitch does not close fully (orange indicator pin is projecting out)</td>
<td>- Lower guide bush dirty or iced up</td>
<td>➔ Clean guide bush</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>- Burr on the lower guide bush</td>
<td>➔ Replace guide bush</td>
<td>4.3 Bushes</td>
</tr>
<tr>
<td></td>
<td>- Rotary actuator incorrectly adjusted (installed slightly twisted)</td>
<td>➔ Open the hitch  ➔ Loosen the fastening bolts for the rotary actuator at the holder  ➔ Turn the rotary actuator slightly anti-clockwise as far as the bolting allows  ➔ Re-tighten the fastening bolts</td>
<td>4.6 Pneumatic remote control – Rotary actuator</td>
</tr>
</tbody>
</table>
## Faults pneumatic remote control

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<th>Fault</th>
<th>Possible causes</th>
<th>Remedy</th>
<th>see Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locking pin at the control unit does not engage</td>
<td>– Locking unit worn</td>
<td>Replace control unit</td>
<td>4.6 Pneumatic remote control – Complete control unit</td>
</tr>
</tbody>
</table>
# Faults mechanical remote control

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible causes</th>
<th>Remedy</th>
<th>see Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Towing hitch does not remain open after opening and sliding back to</td>
<td>– The Bowden cable is incorrectly adjusted</td>
<td>➔ Adjust the Bowden cable</td>
<td>4.5 Mechanical remote control – Adjustment</td>
</tr>
<tr>
<td>the position ‘ready for hitching’</td>
<td>– Bowden cable too tight</td>
<td>➔ Lay the Bowden cable in such a way that it can move freely without chafing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>– Gas pressure spring defective</td>
<td>➔ replace</td>
<td></td>
</tr>
<tr>
<td>Towing hitch remains “open”, drawbar eye is not triggered</td>
<td>– Remote control is still apt position “open”</td>
<td>➔ Switch the remote control to the direction “drive position”</td>
<td>Operating instructions</td>
</tr>
</tbody>
</table>

**Possible causes**
- The Bowden cable is incorrectly adjusted
- Bowden cable too tight
- Gas pressure spring defective
- Remote control is still apt position “open”
Releasing the system pressure

Only for towing hitches with pneumatic remote control

WARNING!
Risk of injury! The pneumatic system is under high pressure!

⇒ Release the pressure from the system before working on the towing hitch.
⇒ Release the pressure from the control unit
⇒ Release the quick coupling [4A]
⇒ Protect compressed air lines from the penetration of dirt

[4] A Quick coupling for connection of the compressed air feed line to the control unit
4.1 Automatic unit

**Locking device**

**Requirements**
- Towing hitch closed

**TOOLS:**
- Pliers
- Screwdriver
- Rubber mallet
- Assembly plug, Part no. ROE84001

**Dismantling**

- Press the hand lever [5A] slightly upwards and hold it there so that the indicator pin [5B] is protruding slightly.
- Grip the indicator pin with the pliers and lever it out with the locking cap [6A]

**NOTE**
Both the indicator pin and the locking cap [7A] are now necessarily destroyed. See Section 5.1, Spare parts

- Use the screwdriver to take out the indicator pin [7B]
4.1 Automatic unit

Locking device

Assembly

➤ Thoroughly clean and grease the exposed parts of the housing boring
  ➤ A complete new locking device set is required for assembly, see Section 5.1
  ➤ Insert the indicator pin [7C] through the spring [7D] and the locking cap [7A] and secure it in place with the O-ring [7E]
  ➤ Grease the locking pin [7B] and slide it into the boring with the bevelled surface downwards (arrow)
  ➤ Grease the assembled locking device [7F] in the area of the spring, and slide it into the boring to the stop, making sure that it is correctly centred
  ➤ Apply the assembly plug [8A] and hammer the lock [8B] in until it is flush with the edge of the housing [9]

NOTE
The locking cap must audibly engage
  ➤ Check the function of the towing hitch; Section 4.7

LUBRICANT:
  ➤ Special grease ROE96040
  ➤ Only use the supplied special grease (risk of resin formation and loss of the lock)
4.1 Automatic unit

Hand lever

Requirements
- Towing hitch closed

TOOLS:
- Wire cutter
- Universal pliers
- Assembling aid, Part no. ROE25614

Dismantling

→ Remove the split pin [10A]
→ Unhook the spring [10B] from the two spring caps [10C]

NOTE
Note the position of the hand lever and the spring caps

→ Remove the spring cap [10C]
→ Use the assembling aid [11A] (supplied with the spare parts set for the hand lever) to slide out the hand lever [11B] in such a way that there is no distance between the ends. Otherwise parts inside the automatic unit can slip out of place!
→ Remove the plastic guide sleeve [12A]

NOTE
Note the position of the spring

→ Remove the spring [12B]. To do this, slide the assembling aid [12C] as required without pulling it out completely.

Assembly

The assembly is carried out in the reverse order. The following points must be observed in particular:

→ Clean dirty parts
→ Grease the plastic guide sleeve
→ Make sure that the hand lever, spring caps, spring and guide sleeves are positioned correctly
→ Replace the split pin
→ Secure the split pin against falling out: bend the end of the split pin
→ Check the towing hitch function; Section 4.7

LUBRICANT:
- Special grease ROE96062
4.1 Automatic unit

Complete automatic unit

Requirements
- Towing hitch without pressure
- Towing hitch closed

TOOLS:
- Allen key M6
- Allen key M10
- Locking washer for the indicator pin

Dismantling
- Press the hand lever [13A] slightly upwards and hold it in this position
- Pull out the indicator pin [13B] further by hand and arrest it with the locking washer [13C]
- Remove the 2 bolts [14A]
- Remove the valve [14B] with the tubes

CAUTION!
Do not let any dirt get into the valve opening
- Close the opening [14C]
- Remove 4 bolts [14D]
- Pull the automatic unit up and out

Assembly
The assembly is carried out in the reverse order. The following points must be observed in particular:
- Clean the automatic unit thoroughly and grease it in the area of the hole for the coupling pin before assembly
- Note the position of the locking plate [14E]
- Observe the tightening torques
- Check the function of the towing hitch; Section 4.7

LUBRICANT:
- Special grease ROE96035

TIGHTENING TORQUES:
- pneumatic valve at the automatic unit: ........................................ 10 + 2 Nm
- Automatic unit at the hitch body: ........................................ 85 + 10 Nm
4 Repair work

4.1 Automatic unit

Coupling pin

Requirements
- Automatic unit removed

Dismantling
- Pull the coupling pin (15A) up and out

Assembly
- Thoroughly clean greased parts, unless new parts and grease them:
  - inside of the automatic unit
  - automatic unit in the area of the coupling pin
  - coupling pin
  - guide bush
- Check the coupling pin for wear before assembly unless it is a new part; Section 5.3
- Make sure the coupling pin and the locking plate (16A) are correctly positioned
- Assemble the complete automatic unit; Section 4.1

LUBRICANT:
- Special grease ROE96035
4.2 Funnel

Support ring

Requirements
- Release the system pressure
- Towing hitch closed

TOOLS:
- Allen key M5
- Ring or open-end spanner SW 13

Dismantling

→ Release the 2 Allen bolts [17A] and 2 nuts [17B]

WARNING!
Risk of injury, the coupling pin is under high spring tension. When the towing hitch is open, do not put your hand near the coupling pin!

→ Press the hand lever [18A] carefully upwards only as far as necessary to remove the support ring [18B]

Assembly

The assembly is carried out in the reverse order. The following points must be observed in particular:

→ Thoroughly clean the mounting surfaces
→ Check the support ring for wear before assembly unless it is a new part; Section 5.3
→ Grease the support ring
→ Observe the tightening torques
→ Check the function of the funnel arrest and return
→ Check that the hitch is working smoothly. As necessary, release the bolts, readjust the support ring and tighten the bolts again
→ Check the function of the towing hitch; Section 4.7

LUBRICANT:
- Special grease ROE96062

TIGHTENING TORQUES:
- Support ring to the funnel: 25 + 3 Nm
Funnel reset

Requirements
- Release the system pressure
- Towing hitch closed

TOOLS:
- Spring hook
- Ring or open-end spanner SW 15

CAUTION!
Risk of injury due to spring tension.
→ Wear gloves

Dismantling
→ Turn the funnel to the stop to the right/left and remove the respectively released spring [18A]
→ Remove the bolts [18B]
→ Remove base plate [18C]

Assembly

The assembly is carried out in the reverse order. The following points must be observed in particular:
→ Clean the mounting surfaces before assembly
→ Observe the tightening torques
→ When all parts are assembled: Check the function of the towing hitch; Section 4.7
→ Check the function of the funnel centring and arrest

TIGHTENING TORQUES:
- Funnel reset to the lower bush: 85 + 5 Nm
4.2 Funnel

Funnel

Requirements
- Automatic unit removed
- Coupling pin removed
- Funnel reset removed

Dismantling
- Remove the funnel [20]
- Remove the plastic sliding plate [21]

Assembly
- Clean the mounting surfaces thoroughly and grease them with special grease before assembly (supplied)
- Fit the plastic sliding plate [21]
- Fit the funnel [20]
- When all parts are assembled:
  - Check the function of the towing hitch; Section 4.7
- Check the function of the funnel centring and arrest

LUBRICANT:
- Special grease ROE96042
### 4.2 Funnel

#### Checking the funnel centring and arrest

**Procedure**

- ➔ Close the towing hitch
- ➔ Press the funnel to the side
- ➔ Release the funnel
- ➔ Open the towing hitch
  - Now the funnel should be arrested in the centre position!
- ➔ If not, the funnel reset must be readjusted at the lower guide bush;
  - Section 4.2 Funnel reset

---

**NOTE**

For hitching the funnel must be automatically arrested in the centre position!

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![Diagram of Funnel Centring](image-url)
4.3 Bushes

Upper bush

Requirements

- Automatic unit removed
- Coupling pin removed
- Funnel reset removed
- Funnel removed

TOOLS:

- A suitable tool for pressing in and out or assembly plug

Dismantling

⇒ Press the worn ‘upper bush’ [23A] out slowly

Assembly

Take note of the following points in particular:

⇒ Thoroughly clean the mounting surfaces before assembly

CAUTION!
The bush can be damaged if it is kinked while pressing in.

⇒ Place the bush in an exact axial position

⇒ Constantly check the centring of the bush for the first few millimetres when pressing it in

⇒ Press the bush in to the collar [23B]

⇒ Grease the bush when it is in place

⇒ When all parts are assembled:

  Check the function of the towing hitch; Section 4.7

LUBRICANT:

- Special grease ROE96042
4.3 Bushes

Lower bush

Requirements
- Automatic unit removed
- Coupling pin removed
- Funnel reset removed
- Funnel removed

TOOLS:
- A suitable tool for pressing in and out or assembly plug

Dismantling
➤ Press the worn 'lower bush' [24A] out slowly

Assembly
Take note of the following points in particular:
➤ Thoroughly clean the mounting surfaces before assembly
CAUTION!
The bush can be damaged if it is kinked while pressing in.
➤ Ensure that the guide bush is installed in the correct position. The borings [24B] must be perpendicular to the towing hitch axis. The ball [25A] is pointing in the direction Y and must run in the groove of the old ball
➤ Place the bush in an exact axial position
➤ Constantly check the centring of the bush for the first few millimetres when pressing it in
➤ Press the bush in to the collar [25B]
➤ Grease the bush when it is in place
➤ When all parts are assembled: Check the function of the towing hitch; Section 4.7

LUBRICANT:
- Special grease ROE96042
4.4 Hydraulic unit

Stop prism

Requirements
- The towing hitch is under pressure and closed, the stop prism [26A] is extended

TOOLS:
- 2 x mounting irons
- Fitting paste ROE95078

Dismantling
- Place the mounting irons [27A] in position behind the stop prism and support them at the towing hitch body [27B]
- Lever the stop prism as far as possible out of the guide bush
- Open the hitch with the hand lever so that the guide can be extended into the hydraulic unit

WARNING!
Risk of injury, the coupling pin is under high spring pressure. Do not place your hand near the coupling pin or the swivel range of the hand lever!
Unintentional closing of the towing hitch can cause serious injury.
- Carefully remove the stop prism
### 4.4 Hydraulic unit

**Stop prism**

**Assembly**

**Requirements**

- The towing hitch is under pressure and open

**WARNING!**

Risk of injury, the coupling pin is under high spring pressure. Do not place your hand near the coupling pin or the swivel range of the hand lever! Unintentional closing of the towing hitch can cause serious injury.

- Clean the guide sleeve with a clean cloth
- Remove all grease from the guide sleeve
- Check the stop prism for wear before assembly unless it is a new part; Section 5.3
- Smear a thin film of special fitting paste on the new O-ring [29A] and proceed briskly as the fitting paste dries quickly
- Check that the funnel [28A] is arrested in the centre position.
- Press the stop prism 28B] firmly into the guide sleeve
- Place the mounting iron [28C] at the funnel and press the stop prism axially into the guide sleeve until the stop
- The O-ring [29A] must engage in the groove of the guide sleeve
- Close the towing hitch, the stop prism must come out in the Y direction
- Open the towing hitch, the stop prism withdraws back into the guide of the hydraulic unit
- Check the function of the towing hitch; Section 4.7

**LUBRICANT:**

- Fitting paste ROE95078
4.4 Hydraulic unit

Complete hydraulic unit

Requirements
- System pressure released
- Towing hitch closed

TOOLS:
- Ring or open-end spanner SW 27
- Ring or open-end spanner SW 30
- Large Philips screwdriver

Dismantling
- Release the cap nut [30A] and remove it along with the plug and the tube
- Protect the opening and the plug against dirt. No dirt must get into the hydraulic unit
- Remove the 4 bolts [30B] and take the towing hitch out of the cross member
- Release the 2 bolts [31A]
- Take out the hydraulic unit [31B]

Assembly
The assembly is carried out in the reverse order. The following points must be observed in particular:
- Clean the mounting surface before assembly
- Replace the O-ring [31C]
- Place the hydraulic unit in the correct position and fix it with the bolts hand-tight
- The cross member must be in perfect condition
- Observe tightening torques; Section 5.2
- Check the function of the hydraulic unit; see Stop prism assembly
- Check the function of the towing hitch; Section 4.7

TIGHTENING TORQUES:
- Towing hitch body to the cross member: . . . . . . . 520 + 40 Nm
4.5 Mechanical remote control (upgrade kit)

**Bowden cable**

**Requirements**
- Towing hitch closed

**TOOLS:**
- Universal pliers
- Ring or open-end spanner SW 10
- Ring or open-end spanner SW 13
- Ring or open-end spanner SW 17
- 2 x open-end spanner SW 24

**Dismantling**

- Remove split pin and washer [33A]
- Unhook the gas pressure spring [33B]
- Remove nut M6 and washer [33C]
- Remove bearing journal [33D]
- Note the position of the bracket [34B]
- Remove the 2 bolts M8 and hole plate [33E]
- Take out the end of the Bowden cable
- Release the nut [34A] and take the Bowden cable out of the bracket [34B]
4.5 Mechanical remote control (upgrade kit)

Bowden cable
- Remove the bolt M8 [35A] and nut
- Remove the bearing bushes [35B]
  - Take note of the position of the shaft seal [35C] at the end of the pipe
- Pull out the guide pipe [35D]
- Release the bolt [36A]
- Remove the Bowden cable

Assembly
The assembly is carried out in the reverse order. The following points must be observed in particular:
- Clean the mounting surface before assembly
- Ensure the correct positioning of the [36B] and the washer [36C]

NOTE
It is easier to fit the bolt [35A] and the bearing bushes [35B] if the plastic cap [35E] is removed.
- Grease the bearing bushes [35B]
- Grease the ball joint at the Bowden cable
- Fit the plastic cap
- Lay the Bowden according to regulations without tension. See assembly and operating instructions for the mechanical remote control at www.jost-world.com
- Observe tightening torques; Section 5.2
- Check the function of the towing hitch; Section 4.7
- Check the function of the remote control

TIGHTENING TORQUES:
- Bolt [35A]: . . . . . . . . . . . . . 25 + 5 Nm
- M16 locked [36A]: . . . . . . . . 50 + 2 Nm
- M6 to bearing journal [33C]: . . . . . . . . . . 10 Nm
- Hole plate to bracket [33E]: . . . 45 Nm

LUBRICANT:
- Special grease ROE96042
4.5 Mechanical remote control (upgrade kit)

Setting

TOOLS:
- Ring or open-end spanner SW 13
- Screwdriver

Procedure

- Marked the desired position of the hole plate [37A]

TIP
Place a strip of adhesive tape parallel to the hole plate and mark the position
- Loosen the bolts [37B] slightly
- Slide the hole plate to the desired position in the longitudinal hole

TIP
If the hole plate [37A] has to be pushed against the tension, insert the screwdriver into the longitudinal hole and press and hold the hole plate in the desired position
- Tighten [37B] bolts
- Check that the remote control is functioning correctly, and repeat steps above as necessary

ATTENTION!
The hole plate must not be adjusted so far that when the towing hitch is closed the indicator pin [37C] is projecting. Do not drive in this condition! Risk of accident.

NOTE
If the towing hitch does not remain in the open position after adjustment:
- Check the cables for smooth operation and wide radii
If the laying and the radii of the cables are ok, but still no improvement:
- Replace the gas pressure spring [39A]

TIGHTENING TORQUES:
- Hole plate to the bracket: . . . . 45 Nm

[37] A Hole plate
B Bolts
C Indicator pin

[38] Indicator pin when the towing hitch is closed

[39] A Gas pressure spring
4.6 Pneumatic remote control (upgrade kit)

Rotary actuator

Requirements
- System pressure released
- Towing hitch closed

TOOLS:
- Ring or open-end spanner SW 15
- Ring or open-end spanner SW 8

Dismantling

- Release the quick coupling [40A] at the control unit
- Release the compressed air lines [40B and C] at the plug fittings of the rotary actuator [40D]
- Protect the compressed air lines against the penetration of dirt
- Remove the 3 bolts [41A]
- Remove the deflector plate [41B] and holder [41C] with the rotary actuator [41D]
- Remove the adapter socket [41E]
- Remove the 4 distance washers [41F]
- Remove the 6 bolts [41G]
4.6 Pneumatic remote control (upgrade kit)

Rotary actuator

Assembly

The assembly is carried out in the reverse order. The following points must be observed in particular:

- Close the towing hitch
- Clean mounting surfaces thoroughly
- Make sure that the rotary actuator is correctly positioned at the holder [41C]
- First plug the adapter socket [41E] onto the square shaft of the rotary actuator, and then on to the hexagonal hand lever axle without tension along with the rotary actuator and the holder
- Shorten the air tubes by approx. 10 mm before assembly
- Connect the quick coupling [43A] to the control unit
- Observe tightening torques; Section 5.2
- Check the function of the towing hitch; Section 4.7
- Check all air-carrying parts for leaks. If necessary, use leak detection spray
- Check the function of the remote control

TIGHTENING TORQUES:

- Rotary actuator to holder: . . . . 11 Nm
- Deflector plate with holder to hitch body: . . . . . . . . . . . . . . . . . . . . . . . . . 85 Nm

[42] Position of the rotary actuator on the holder

[43] A Quick coupling
4.6 Pneumatic remote control (upgrade kit)

Complete control unit

Requirements
- System pressure released

TOOLS:
- Ring or open-end spanner SW 13
- Wrench for fastening bolts m8 (customer selection of the bolts)

Dismantling
- Release the quick coupling [44A] at the control unit
- Screw off the compressed air lines [44B and C] in the control unit [44D]
- Protect the compressed air lines against the penetration of dirt
- Remove the four fastening bolts at the holding plate [44E] of the control unit

Assembly
The assembly is carried out in the reverse order. The following points must be observed in particular:
- Clean the mounting surfaces thoroughly
4.6 Pneumatic remote control (upgrade kit)

Filter

Requirements
- System pressure released

TOOLS:
- Ring or open-end spanner SW 13
- Ring or open-end spanner SW 14
- Small slotted screwdriver
- Long-nose pliers

Dismantling

- Open the control unit
- Release the bolts [45A] and remove with the tube
- Secure the compressed air line against the penetration of dirt
- Release the lock nut [45B]
- Remove the angle bolts [45C]
- Take out the filter plate [45D]; if necessary use a small slotted screwdriver and long-nose pliers

Assembly

The assembly is carried out in the reverse order. The following points must be observed in particular:

- Clean the angle bolts and the sealing surfaces at the control unit
- Replace the gasket [45E]

CAUTION!
The new filter plate can be damaged when installing. Filter plates made from sinter material are pressure-sensitive. The filter plate may not flap during operation. Otherwise it will not filter.
- Carefully screw the angle bolts hand tight. The filter plate must not kink.
- Tighten the lock nut [45B]
- Check all air-carrying parts for leaks. If necessary, use leak detection spray
- Check the function of the remote control
### 4.7 Function test

**Function test**

**Procedure**

- Press the hand lever [46A] upwards until it engages
  - The towing hitch is open. The indicator pin [46B] must now be clearly protruding (ca. 17mm)

**WARNING!**
Risk of injury! The coupling pin and the hand lever are now under spring tension!

- Do not put your hand anywhere near the coupling pin or the hand lever!
- Use a suitable tool to lift the coupling pin in order to trigger the closing mechanism
- The towing hitch is closed. The indicator pin [47A] must not be protruding

**WARNING!**
If the indicator pin is still protruding when the towing hitch is closed [48A] it is not permitted to drive with a trailer as there is a risk of accident.

- Clean the lower bush [47B]
- Replace the lock; Section 3.6
5.1 Spare parts

Towing hitch RO*50 BNA

<table>
<thead>
<tr>
<th>Item</th>
<th>Designation</th>
<th>Art. no. ROE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>complete automatic unit</td>
<td>71443</td>
</tr>
<tr>
<td>2</td>
<td>complete hand lever</td>
<td>71644</td>
</tr>
<tr>
<td>3</td>
<td>set of bolts for the automatic unit</td>
<td>30458</td>
</tr>
<tr>
<td>4</td>
<td>coupling pin</td>
<td>47127</td>
</tr>
<tr>
<td>5</td>
<td>complete lock</td>
<td>71697</td>
</tr>
<tr>
<td>6</td>
<td>control valve</td>
<td>71610</td>
</tr>
<tr>
<td>7</td>
<td>upper bush</td>
<td>53596</td>
</tr>
<tr>
<td>8</td>
<td>lower bush</td>
<td>53597</td>
</tr>
<tr>
<td>9</td>
<td>complete funnel</td>
<td>46143</td>
</tr>
<tr>
<td>10</td>
<td>support ring</td>
<td>12642</td>
</tr>
<tr>
<td>11</td>
<td>funnel springs</td>
<td>55008</td>
</tr>
<tr>
<td>12</td>
<td>complete funnel reset</td>
<td>59454</td>
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<tr>
<td>13</td>
<td>complete set of bolts M20</td>
<td>71589</td>
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<tr>
<td>14</td>
<td>stop prism</td>
<td>52568</td>
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<tr>
<td>15</td>
<td>complete hydraulic unit</td>
<td>71637</td>
</tr>
<tr>
<td>16</td>
<td>pneumatic set</td>
<td>71380</td>
</tr>
<tr>
<td>17</td>
<td>funnel arrest</td>
<td>52549</td>
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</tbody>
</table>
5.1 Spare parts

Pneumatic remote control upgrade kit (ROE 71645)

<table>
<thead>
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<th>Item</th>
<th>Designation</th>
<th>Art. no. ROE</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>rotary actuator</td>
<td>71653</td>
</tr>
<tr>
<td>2</td>
<td>holder for rotary actuator</td>
<td>15750</td>
</tr>
<tr>
<td>3</td>
<td>deflector plate</td>
<td>15749</td>
</tr>
<tr>
<td>4</td>
<td>fastening bolts</td>
<td>30479</td>
</tr>
<tr>
<td>5</td>
<td>adapter socket</td>
<td>65770</td>
</tr>
<tr>
<td>6</td>
<td>fastening bolts</td>
<td>30476</td>
</tr>
<tr>
<td>7</td>
<td>distance washers</td>
<td>53599</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Designation</th>
<th>Art. no. ROE</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>complete control unit</td>
<td>71576</td>
</tr>
<tr>
<td>9</td>
<td>plug nipple</td>
<td>90378</td>
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<tr>
<td>10</td>
<td>set of tubes</td>
<td>25514</td>
</tr>
<tr>
<td>11</td>
<td>filter plate</td>
<td>90379</td>
</tr>
<tr>
<td>12</td>
<td>pressure reservoir</td>
<td>90376</td>
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</tbody>
</table>
5.1 Spare parts

Mechanical remote control upgrade kit (ROE71599)

<table>
<thead>
<tr>
<th>Item</th>
<th>Designation</th>
<th>Art. no. ROE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>complete operating lever</td>
<td>71419</td>
</tr>
<tr>
<td>2</td>
<td>lever cap</td>
<td>25104</td>
</tr>
<tr>
<td>3</td>
<td>complete knee lever</td>
<td>51212</td>
</tr>
<tr>
<td>3a</td>
<td>plastic sleeve</td>
<td>-</td>
</tr>
<tr>
<td>3b</td>
<td>bolt M10, nut M10</td>
<td>-</td>
</tr>
<tr>
<td>3c</td>
<td>bolt M10, nut M10</td>
<td>-</td>
</tr>
<tr>
<td>3d</td>
<td>bolt M8, nut M8, sleeves</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>cap</td>
<td>25536</td>
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<tr>
<td>5</td>
<td>Bowden cable complete</td>
<td>71563</td>
</tr>
<tr>
<td>6</td>
<td>gas pressure spring</td>
<td>90401</td>
</tr>
<tr>
<td>7</td>
<td>complete axle SW 17</td>
<td>52567</td>
</tr>
<tr>
<td>8</td>
<td>complete catch</td>
<td>51218</td>
</tr>
<tr>
<td>9</td>
<td>complete axle SW 13</td>
<td>52573</td>
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<tr>
<td>10</td>
<td>complete bracket</td>
<td>59452</td>
</tr>
<tr>
<td>11</td>
<td>complete interface bracket</td>
<td>59451FA5</td>
</tr>
<tr>
<td>12</td>
<td>set of bolts for the holding plate</td>
<td>71609</td>
</tr>
</tbody>
</table>
5.2 Tightening torques

Towing hitch RO*50 BNA

<table>
<thead>
<tr>
<th>Item</th>
<th>Bolt</th>
<th>Tightening torque (Nm)</th>
<th>Tolerance</th>
<th>Special features</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Towing hitch body to the cross member</td>
<td>520</td>
<td>+40</td>
<td>Requiring documentation</td>
</tr>
<tr>
<td>B</td>
<td>automatic unit to the towing hitch body</td>
<td>85</td>
<td>+10</td>
<td>–</td>
</tr>
<tr>
<td>C</td>
<td>funnel reset to the lower bush</td>
<td>85</td>
<td>+5</td>
<td>–</td>
</tr>
<tr>
<td>D</td>
<td>support ring to the funnel</td>
<td>25</td>
<td>+3</td>
<td>–</td>
</tr>
<tr>
<td>E</td>
<td>control valve to the automatic unit</td>
<td>10</td>
<td>+2</td>
<td>–</td>
</tr>
<tr>
<td>F</td>
<td>SCHAEFER plug system</td>
<td>5</td>
<td>+1</td>
<td>–</td>
</tr>
</tbody>
</table>
5 Annexe

5.2 Tightening torques

Pneumatic remote control upgrade kit

[54] Bolts with prescribed tightening torques

<table>
<thead>
<tr>
<th>Item</th>
<th>Bolt</th>
<th>Tightening torque (Nm)</th>
<th>Tolerance</th>
<th>Special features</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>rotary actuator to the holder</td>
<td>11</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>deflector plate with holder plate to the towing hitch automatic unit</td>
<td>85</td>
<td>–</td>
<td></td>
</tr>
</tbody>
</table>
5.2 Tightening torques

Mechanical remote control upgrade kit

<table>
<thead>
<tr>
<th>Item</th>
<th>Bolt</th>
<th>Tightening torque (Nm)</th>
<th>Tolerance</th>
<th>Special features</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>catch to the operating lever</td>
<td>25</td>
<td>+5</td>
<td>–</td>
</tr>
<tr>
<td>B</td>
<td>knee lever to the front operating lever</td>
<td>45</td>
<td>+10</td>
<td>–</td>
</tr>
<tr>
<td>C</td>
<td>knee lever to the back operating lever</td>
<td>45</td>
<td>+10</td>
<td>–</td>
</tr>
<tr>
<td>D</td>
<td>M8 locked</td>
<td>25</td>
<td>+5</td>
<td>–</td>
</tr>
<tr>
<td>E</td>
<td>M16 locked</td>
<td>50</td>
<td>+2</td>
<td>–</td>
</tr>
<tr>
<td>F</td>
<td>M6 to the small bearing journal</td>
<td>10</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>G</td>
<td>M6 to the large bearing journal</td>
<td>10</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>H</td>
<td>hole plate to the bracket</td>
<td>45</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>I</td>
<td>holding bracket to the automatic unit</td>
<td>85</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>
5.3 Wear limits

Coupling pin, drawbar eye, stop prism

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Gauge Part no.</th>
<th>Designation</th>
<th>Wear limit (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>–</td>
<td>coupling pin</td>
<td>Ø 46,5</td>
</tr>
<tr>
<td>B</td>
<td>–</td>
<td>drawbar eye (NF R 41-102)</td>
<td>Ø 37</td>
</tr>
<tr>
<td>C</td>
<td>–</td>
<td>stop prism</td>
<td>10</td>
</tr>
<tr>
<td>D</td>
<td>–</td>
<td>coupling pin vertical clearance</td>
<td>2</td>
</tr>
</tbody>
</table>
5.3 Wear limits

Support ring, bushes

Dimension | Gauge Part no. | Designation | Wear limit (mm) |
---|---|---|---|
E | – | lower bush | Ø 36 |
F | – | support ring | 16 |
G | – | upper bush | Ø 51 |

[57] Wear dimensions in the area of the wearing part, bushes, lock
Technische Änderungen vorbehalten. Aktuelle Informationen finden Sie unter: www.jost-world.com

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