Automatic Trailer Coupling

Repair Manual

RO★57
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RO Trailer coupling✶57
Upgrade kit pneumatic remote control (ROE 71167)
Upgrade kit for pneumatic remote control
Reference gauge kit (ROE 71354)
Coupling pin and drawbar eyes
Supports, guide bushings, lock
Bearing
Validity and obligations

Contents of this manual

This repair manual refers exclusively to the Trailer Coupling RO•57. The manual is used to properly carry out all major maintenance work.

➔ Perform maintenance work according to the instructions in the manual.
➔ Exclusively use ROCKINGER replacement parts when replacing individual parts or components.

If lubricants are included in the contents of the shipment of a spare part:
➔ Use the lubricants included with the product in accordance with the information in this manual.
➔ When replacing the original lubricant, only use lubricants from the same manufacturer and of the same types.

If fastening elements are included in the contents of a spare part shipment, e.g. screws:
➔ Dispose of disassembled fastening elements.
➔ Install included fastening elements.

Technical state

The information contained in this manual is relevant to version C and above.
To determine the version of the trailer coupling, see type plate [1]: The 9th digit of the item number stands for the technical state.

ROCKINGER reserves the right:
– to make changes to design and components and to use equivalents instead of the indicated components which serve technical progress;
– to change the information in this manual. An obligation to extend these changes to previously supplied trailer couplings is excluded.

[1] Type plate for a trailer coupling RO•57
1 General information

Liability

ROCKINGER assumes no liability for the completion and correctness of the information. No claims can be derived from the content of the manual; in particular, no liability is assumed for damages which result from improper maintenance or service.

Copyright

All rights to this manual and its appendices belong to ROCKINGER.

Emphases in the text

Explanation of symbols

To facilitate legibility and easy-to-follow presentation, different information types are identified.

Sentences introduced with an arrow contain instructions on actions to take.

➔ Follow the action instructions consecutively and in the described order.

The following information is introduced with a dash:

– Numbered lists
– Requirements for the actions described below
– Descriptions of preceding steps
– Descriptions of states

Danger and risk notices

Important text passages which must absolutely be followed are particularly marked for special attention:

DANGER!
Warns of direct dangers which can result in serious injuries or death.
➔ Gives instructions on the defense against hazards or their prevention.

WARNING!
Warns of risks which can result in serious injuries or death.
➔ Requires safety measures for the protection of those people involved.

CAUTION!
Indicates risks which can result in material damages or personal injuries (lighter injuries).
➔ Gives instructions on damage prevention.

Figures

If necessary, all texts are illustrated with illustrations. The reference to an image is made through an image number placed in brackets. Capital letters after an image number, e.g. [12A], make reference to the corresponding assigned position in the figure.

Required information

LUBRICANTS:
– Lubricants for the previously described actions

TIGHTENING TORQUES:
– Tightening torques for the listed screw joints

Supplemental information

The info symbol indicates references and recommendations as well as additional information.

TOOLS:
– List of the tools which are required for the following activities.

TOOLS:
Tools
The following tools are required for work which is described in this manual:
- Mechanics pliers
- Circlip pliers size 40 (according to DIN 5254)
- Cable tie pliers
- Open-end wrench SW 13, 17
- Ring wrench – angled, SW 30
- Ratchet
- Torque wrench
- Hexagon socket screwdriver 6, 8, 10
- Socket wrench inserts (hexagon or bihexagonal) SW 10, 13, 14, 17
- Hexagonal socket wrench inserts SW 70 or Socket wrench, parts no. ROE 57 379
- Small slot screwdriver
- Pointed pliers
- Hammer (200 large)
- Tool set, parts no. ROE 71 275
- Locking plate for safety pin, parts no. ROE 65 632

Direction specifications
Direction specifications are used uniformly in the text. See the figure to determine the directions [3].

Function test
After every repair, before commissioning of the trailer coupling:
➔ Perform function test. See the Assembly and Operation Manual.
Safety instructions

WARNING!
Incorrectly executed repairs can result in serious accidents!
- Danger-free operation of the hanger coupling is only possible if all repair work is performed exclusively by qualified personnel.
- Repairs to the trailer coupling should only be performed according to the instructions in this manual.
- If indicated, use screw locks
- Only use ROCKINGER original spare parts.
- Only operate the trailer coupling if it is in technically perfect condition.
- Follow the instructions in the other documentation: trailer coupling assembly instructions and those regarding the existing accessories, operating manual of both the towing vehicle and the trailer.

WARNING!
Danger of accident if inappropriate add-on equipment is installed! Trailer couplings are vehicle parts on which the highest safety requirements are placed.
- ROCKINGER cannot accept any warranty if non-authorized add-ons or changes are made by the customer.
- Non-authorized add-ons or changes invalidate the series permit.
- Only install original ROCKINGER accessories which are appropriate for the trailer coupling in question.
- Never install add-ons or make changes to the trailer coupling.

WARNING!
Careless behavior can result in industrial accidents or industrial illnesses!
- Wear appropriate protective clothing, e.g. work gloves with work with high exertion of force or handling edges with sharp edges.
- Absolutely avoid open flame and flying sparks when working with flammable materials. Do not smoke in the area.
- Follow all relevant guidelines and regulations.
  e.g. Rules for safety and health protections for vehicle maintenance, GUV 17.1 (in Germany)
- Operating materials such as cleaning agents or lubricants can be hazardous to your health.
- Strictly observe work and safety regulations of the manufacturers!

WARNING!
Danger of Injury! The pneumatic system is under high pressure!
- Depressurize the part-turn actuator and control unit before starting any work on the trailer coupling.

Environmental protection
- Store fuels and cleaning agents only in appropriate tanks.
- When disposing of old cleaning agents, fuels and parts which came into contact with them (e.g. rags), please follow the statutory environmental regulations.
- Dispose of old cleaning agents and fuels at collection points. Do not let them come in contact with bodies of water, sewage systems or the soil surface!
- Dispose of replaced parts and packages of spare parts in an environmentally friendly manner.
### Malfunctions in coupling

For wear dimensions see chapter 5.3 *Limits of wear*.

<table>
<thead>
<tr>
<th>Malfunction</th>
<th>Possible Causes</th>
<th>Remedy</th>
<th>See chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coupling automatic does not engage.</td>
<td>Lower support worn out</td>
<td>Replace support.</td>
<td>4.2 Funnel - Supports</td>
</tr>
<tr>
<td></td>
<td>Drawbar eyes worn out</td>
<td>Replace drawbar eyes.</td>
<td></td>
</tr>
<tr>
<td>Too much longitudinal play in the connection device.</td>
<td>Guide bushings worn out</td>
<td>Replace guide bushings.</td>
<td>4.3 Guide bushings</td>
</tr>
<tr>
<td></td>
<td>Coupling pin worn out</td>
<td>Replace coupling pin.</td>
<td>4.1 Automatic-Unit - Coupling pin</td>
</tr>
<tr>
<td></td>
<td>Rubber buffers in the bearing worn out</td>
<td>Replace rubber buffers and bearing bushings</td>
<td>4.4 Bearings</td>
</tr>
<tr>
<td></td>
<td>Fastening segments of the drawbar bearing worn out</td>
<td>Check fastening segments for play.</td>
<td></td>
</tr>
<tr>
<td>Too much height or lateral play of the coupling jaw in the fastening bracket.</td>
<td>Bushings in the drawbar bearing worn out</td>
<td>Replace rubber buffers and bearing bushings</td>
<td>4.4 Bearings</td>
</tr>
<tr>
<td>Two much height play on the coupling pin.</td>
<td>Hand lever incorrectly installed.</td>
<td>Disassemble hand lever and install in the correct position.</td>
<td>4.1 Automatic-Unit - Hand lever</td>
</tr>
<tr>
<td></td>
<td>Locking pins worn out</td>
<td>Replace locking pins.</td>
<td>4.1 Automatic-Unit - Lock</td>
</tr>
<tr>
<td></td>
<td>Defect in the automatic unit.</td>
<td>Replace automatic unit.</td>
<td>4.1 Automatic-Unit - Automatic unit – assembled</td>
</tr>
<tr>
<td></td>
<td>Guide in seat area of the coupling pin worn out</td>
<td>Replace coupling pin and guide.</td>
<td>4.1 Automatic-Unit - Coupling pin</td>
</tr>
<tr>
<td></td>
<td>Wear in the locking pin and guide area.</td>
<td>Replace locking pins, coupling pin and guide.</td>
<td>4.1 Automatic-unit Lock and Coupling pin</td>
</tr>
<tr>
<td>Too much height play of the drawbar eyes.</td>
<td>Lower support worn out</td>
<td>Check retaining plate-thicknesses. If necessary, replace worn-out support.</td>
<td>4.2 Funnel - Supports</td>
</tr>
<tr>
<td></td>
<td>Upper support worn out</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Drawbar eye bushings worn out</td>
<td>Replace drawbar eye bushings.</td>
<td></td>
</tr>
<tr>
<td>Too much play between coupling and cross-member on lateral limit stop.</td>
<td>Distance pieces set incorrectly or worn out</td>
<td>Replace separators.</td>
<td>4.4 Bearings - Lateral stop and separators.</td>
</tr>
</tbody>
</table>
### Malfunctions of pneumatic remote operation

<table>
<thead>
<tr>
<th>Malfunction</th>
<th>Possible Causes</th>
<th>Remedy</th>
<th>See chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coupling does not open.</td>
<td>– No control pressure before the control unit</td>
<td>➔ Check compressed air-supply.</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>➔ No control pressure after the control unit</td>
<td>➔ Check in-going filter on the control unit. Replace dirty filter.</td>
<td>4.5 Pneumatic remote control - Filter</td>
</tr>
<tr>
<td></td>
<td>➔ Part-turn actuator contains no or too little pressure from the control valve</td>
<td>➔ Check compressed air lines between the control unit and part-turn actuator.</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>➔ Part-turn actuator blocked by frozen water.</td>
<td>➔ Disassemble part-turn actuator, carefully thaw and drain it. ➔ Replace dryer cartridge in the vehicle compressed air system.</td>
<td>4.5 Pneumatic remote control - Part-turn actuator unit</td>
</tr>
<tr>
<td>Coupling opens to slowly.</td>
<td>– Control pressure to low</td>
<td>➔ Check compressed air-supply.</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>➔ Piston seal in part-turn actuator worn out (compressed air loss via bellows when opening)</td>
<td>➔ Replace part-turn actuator.</td>
<td>4.5 Pneumatic remote control - Part-turn actuator unit</td>
</tr>
<tr>
<td>The closure process is not supported by compressed air.</td>
<td>– No control pressure after the control unit</td>
<td>➔ Check in-going filter on the control unit. Replace dirty filter.</td>
<td>4.5 Pneumatic remote control - Filter</td>
</tr>
<tr>
<td></td>
<td>➔ Part-turn actuator contains no or too little pressure from the control valve</td>
<td>➔ Check compressed air lines between the control unit and part-turn actuator.</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>➔ Return valve in the control unit defective.</td>
<td>➔ Replace control unit completely.</td>
<td>4.5 Pneumatic remote control - Control unit complete</td>
</tr>
<tr>
<td>Coupling remains open after opening and de-ventilating the control unit.</td>
<td>– Part-turn actuator incorrectly adjusted (installed slightly turned).</td>
<td>➔ Open coupling. ➔ Loosen fastening screws in part-turn actuator on the apron. ➔ Turn the part-turn actuator as long as the threaded joint permits this. ➔ Re-tighten fastening screws.</td>
<td>4.5 Pneumatic remote control - Part-turn actuator unit</td>
</tr>
<tr>
<td></td>
<td>➔ Locking device of the hand lever in the automatic unit is defective.</td>
<td>➔ Replace automatic unit.</td>
<td>4.1 Automatic unit - Automatic unit - assembled</td>
</tr>
<tr>
<td></td>
<td>➔ Guide in seat area of the coupling pin worn out.</td>
<td>➔ Replace coupling pin and guide.</td>
<td>4.1 Automatic unit - Coupling pin</td>
</tr>
</tbody>
</table>
## Malfunctions of pneumatic remote operation

<table>
<thead>
<tr>
<th>Malfunction</th>
<th>Possible Causes</th>
<th>Remedy</th>
<th>See chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coupling does not close completely (red locking pin projects).</td>
<td>➔ Lower guide dirty or covered with ice.</td>
<td>➔ Clean guide bushing.</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>➔ Burr on the lower guide bushing</td>
<td>➔ Replace guide bushings.</td>
<td>4.3 Guide bushings</td>
</tr>
<tr>
<td></td>
<td>➔ Part-turn actuator incorrectly adjusted (installed slightly turned).</td>
<td>➔ Open coupling. ➔ Loosen fastening screws in part-turn actuator on the apron. ➔ Turn the part-turn actuator as long as the threaded joint permits this. ➔ Re-tighten fastening screws.</td>
<td>4.5 Pneumatic remote control - Part-turn actuator unit</td>
</tr>
<tr>
<td>The control unit only operates sluggishly.</td>
<td>➔ Control unit dirty or iced.</td>
<td>➔ Clean control unit.</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>➔ Installation position of the control unit wrong.</td>
<td>➔ Disassemble control unit and install in the correct position (bellows downward).</td>
<td>4.5 Pneumatic remote control - Control unit complete</td>
</tr>
<tr>
<td></td>
<td>➔ Corrosion on the valve lever mechanism</td>
<td>➔ Replace control unit.</td>
<td>4.5 Pneumatic remote control - Control unit complete</td>
</tr>
<tr>
<td>Locking pin on the control unit does not engage.</td>
<td>➔ Wear of the lock device</td>
<td>➔ Replace control unit.</td>
<td>4.5 Pneumatic remote control - Control unit complete</td>
</tr>
</tbody>
</table>
Depressurize system  
(only in coupling with pneumatic remote control)

**WARNING!**
The pneumatic system is under high pressure!

➔ Depressurize the system before initiating any work on the trailer coupling.
➔ Depressurize the control unit.
➔ Loosen rapid action coupling [4A].
➔ Protect the compressed air lines from dirt.

![Diagram of rapid action coupling](image)

[4] A Rapid action coupling for pressurized air supply on the control unit
4.1 Automatic unit

Lock

Requirements

- Machine is depressurized (only in coupling with pneumatic remote control)

TOOLS:

- Mechanics pliers

Disassembly

➔ Remove splints [5A].
➔ Remove cover with display pin [5B].
➔ Remove locking pin [5C].

Installation

Installation is in opposite order. During this process, please do the following:

➔ Replace O-ring [6A].
➔ Lubricate locking pin and buffer before installation.

LUBRICANTS:

- Special lubricant (ROE 96 041), included in the contents of the lock spare part shipment.
➔ Only use the supplied lubricant (danger of gumming and safety failure).

➔ Check the correct installation position of the locking pin: Canted surface downward [6B, arrow]
➔ Install new splints [5A].
➔ Protect splints from falling out: Bend splint ends upward.
4.1 Automatic unit

Hand lever

Requirements
- Machine is depressurized (only in coupling with pneumatic remote control)

TOOLS:
- Torque wrench
- Socket wrench SW 13
- Open-end wrench SW 13

Disassembly
➔ Remove screw [7A].
➔ Remove the lever from the hexagonal shaft [7B].

Installation
Installation is in opposite order. During this process, please do the following:
➔ Check for the correct installation position of the lever:
- When the coupling is closed, the lever points approx. 45° upward.

TIGHTENING TORQUES:
- Screw [7A] M8–8.8: ............ 25 Nm
4.1 Automatic unit

Automatic unit – assembled

Requirements

- Machine is depressurized (only in coupling with pneumatic remote control)

TOOLS:

- Open-end wrench SW 13
- Torque wrench
- Hexagon socket screwdriver 10
- Hexagon socket screwdriver set 8 (only for pneumatic remote control)
- Locking plate for part no. ROE 65 632

Disassembly

➔ Remove earthing cable
➔ Open coupling with hand lever [8A].
➔ Slightly pull out control pin on the safety [8C] and immobilize with locking plate [8D]. Do not damage the rubber seal.
➔ Close coupling again. To do this, carefully press the hand lever slightly upward [8B] and release again.
➔ Remove the 4 fastening screws [9A].
➔ Completely lift automatic unit [9B].
4.1 Automatic unit

Automatic unit – assembled

The following additional tasks are to be performed when hitching with pneumatic remote control:
➔ Remove fastening screw [10A].
➔ Remove spacing bushing [10B].

Installation

Installation proceeds in the opposite order. When doing so, particularly note the following actions:
➔ Lubricate the automatic unit in the coupling pin receiver before installation.

LUBRICANTS:
– Special lubricant (ROE 96 017), included in contents of the Automatic unit spare part shipment.

The following tasks are to be performed when hitching with pneumatic remote control:
➔ Install distance bushing between the part-turn actuator and the automatic unit [10B].

Tightening torques:
– Automatic unit on coupling jaw: .......................... 85 + 10 Nm
– Apron (part-turn actuator) to coupling jaw: .......................... 45 + 10 Nm
4.1 Automatic unit

**Coupling pin**

**Requirements**

- Automatic unit disassembled

**Disassembly**

➔ Remove coupling pin from drawbar.

**Installation**

Installation proceeds in the opposite order. During this process, please do the following:

➔ Clean lubricated parts thoroughly:
  - Interior of automatic unit
  - Guide bushings [12B, C]
  - Coupling pin [12A], if no new part is installed

➔ Lubricate lubricating points before installation:
  - Automatic unit in the guide area
  - Coupling pin
  - Guide bushings

➔ Ensure the correct position of the guide bushing [11A].

**LUBRICANTS:**

- Special lubricant (ROE 96,017), included in contents of coupling pin spare part shipment.
4.2 Funnel

Requirements
- Machine is depressurized (only in coupling with pneumatic remote control)
- Coupling opened

WARNING!
Danger of injury due to automatically closing coupling pin!
⇒ Do not come in contact with the coupling pin when the coupling is open.

TOOLS:
- Torque wrench
- Hexagon socket screwdriver 6
- Open-end wrench SW 17

The force of the initial tension stress originates [13A] from the separators and acts against the upper and lower funnel. If both funnels are removed, the separators are released. When installing the funnels, the separators must be pushed together with the expenditure of force. If only one funnel is removed, the separators remain pre-tensioned through the other funnel.
⇒ If at all possible, do not disassemble both funnels at the same time.
⇒ First disassemble the upper funnel and pre-mount again. Then disassemble the lower funnel and install again.

B Upper funnel
C Lower funnel
4.2 Funnel

Funnel – upper

Disassembly

→ Remove 2 fastening screws [14A] on the top support [14B].
→ Remove support.

Coupling without pneumatic remote control [14]:
→ Remove lower fastening screws [14D].
→ Remove funnel [14C].

Coupling without pneumatic remote control [15]:
→ Remove fastening screw [15A] to part-turn actuator.
→ Remove spacing bushing [15B].
→ Remove fastening screw [15A] on funnel.
→ Remove funnel [15D].

Installation

→ Insert funnel.
→ Loosely pre-mount rear fastening screws [14D].
→ Install support [14B].

If the lower funnel is then disassembled:
→ Remove rear fastening screws again [14D].

If the rear funnel is not disassembled:
→ Tighten rear fastening screws [14D].

TIGHTENING TORQUES:
- Support on funnel [14A]: \(45 + 10\) Nm
- Rear attachment funnel [14D]: \(. . . . . . . . . . . . . \) \(45 + 10\) Nm
4.2 Funnel

Funnel lower
Disassembly
➔ Remove 2 fastening screws [16A] on the lower support [16C].
➔ Remove support.

Coupling without pneumatic remote control [16]:
➔ Remove lower fastening screws [16A].
➔ Remove funnel [16D].

Coupling without pneumatic remote control [17]:
➔ Remove fastening screw [17A] to part-turn actuator.
➔ Remove spacing bushing [17B].
➔ Remove fastening screw [17C] on funnel.
➔ Remove funnel [17D].

Installation
➔ Insert funnel.
➔ Loosely pre-mount back fastening screws [16A].
➔ Install support [16C].
➔ Tighten rear fastening screws [16A].

TIGHTENING TORQUES:
- Support on funnel [16B]: . . . 45 + 10 Nm
- Rear attachment funnel [16A]: . . . . . . . . . . 45 + 10 Nm

[16] A Rear fastening screw on funnel
   B Fastening screw for support on funnel
   C Lower support
   D Lower funnel

[17] A Fastening screw for part-turn actuator on funnel
    B Spacing bushing
    C Rear fastening screw on upper funnel
    D Lower funnel
4.2 Funnel

Supports

Disassembly

→ Remove 2 fastening screws [18A] on the lower support [18B].
→ Remove lower support.
→ Remove 2 fastening screws [19A] on the top support [19B].
→ Remove top support.

Installation

Installation proceeds in the opposite order.

TIGHTENING TORQUES:
- Support on funnel: . . . . . 45 + 10 Nm
4.3 Guide bushings

Upper bushing
Requirements
- Coupling pin disassembled
- Upper support disassembled

TOOLS:
- Insertion/extraction tool set, parts no. ROE 71 275, see Fig. [20]
- Ring wrench – angled, SW 30

Disassembly
➔ Assemble extraction tool set according to Figure [21].
➔ Lightly lubricate threaded rod [21F].
➔ Turn the upper flange nut in the clockwise direction in order to eject the bushing upward. Hold the lower flange nut in the correct position.

[20] Tool set for disassembly and installation of the bearing bushings:
- A Support bar
- B Separator pin - long (2 pieces)
- C Spacer for upper bearing bushing
- D Separator pin - short (2 pieces)
- E Spacer for upper bearing bushing
- F Threaded rod
- G Flange nut (2 pieces)

[21] Press out upper bearing bushing
4.3 Guide bushings

Upper bushing
Installation
➔ Assemble insertion tool set according to Figure [22]. During this process, please do the following:
➔ Lightly lubricate threaded rod [22F].
➔ Connect support bar [22A] and both short separator pins [22D] to the bottom of the lower funnel. Place both short separator pins onto the fastening screws of the lower support.

CAUTION!
The guide bushing can be destroyed if it cants during insertion.
➔ Place guide bushing at an exact axial position.
➔ During the first millimetres of the insertion process, constantly check the centring of the guide bushing.
➔ Turn the upper flange nut in the clockwise direction in order to insert the bushing. Held to lower flange nut.

[22] Inject lower bearing bushing
4.3 Guide bushings

Lower bushing

Requirements
– Coupling pin disassembled
– Lower support disassembled

TOOLS:
– Insertion/extraction tool set, parts no. ROE 71 275, see Fig. [20]
– Ring wrench – angled, SW 30

Disassembly
➔ Assemble extraction tool set according to Figure [23].
➔ Lightly lubricate threaded rod.
➔ Turn the lower flange nut in the clockwise direction in order to eject the bushing upward. Held to top flange nut.

Installation
➔ Assemble insertion tool set according to Figure [24]. During this process, please do the following:
➔ Lightly lubricate threaded rod.
➔ Connect support bar [24A] and long separator pins [24B] to the bottom of the lower funnel. Both long separator pins to the passage borings for the fastening screws of the lower support.

CAUTION!
The guide bushing can be destroyed if it cants during insertion.
➔ Place guide bushing at an exact axial position.
➔ During the first millimetres of the insertion process, constantly check the centring of the guide bushing.
➔ Turn the upper flange nut in the clockwise direction in order to insert the bushing. Hold the lower flange nut in the correct position.
4.4 Bearings

Disassembling the coupling

Requirements
- Machine is depressurized (only in coupling with pneumatic remote operation)

TOOLS:
- Open-end wrench SW 13
- Ratchet
- Hex head socket wrench SW 70 or Socket wrench, parts no. ROE 57 379
- Circlip pliers size 40 (according to DIN5254)

Disassembly
- Remove earthing cable
- Remove sealing cap [25A].
- Remove circlips [25B].
- Remove retaining ring [25C].
- Tighten turnbuckle [26A] until the segments are movable. Take out segments [26B].
- Loosen and remove turnbuckle.
- Remove ring fastener [27B], thrust washer [27C] and rubber buffer [27D].
- Remove front coupling from fastening-bracket.

WARNING!
Danger of Injury! Lateral stop [27E] is loose after removing the turnbuckle and can fall down when pulling out the coupling.
4.4 Bearings

Change rubber buffers

WARNING!
Danger of Injury! Lateral stop is loose after removing the turnbuckle and can fall down when pulling out the coupling.

➔ Thoroughly clean and lubricate rubber buffers and adjacent parts and surfaces before installation.

Front rubber buffer [28]:
A Support surface on the coupling jaw
B Rubber buffer
C Drawbar shaft (lubricate over the entire length)
D Buffer cap

Rear rubber buffer [29]:
A Support surface on the coupling jaw
B Rubber buffer
C Thrust washer

LUBRICANTS:
– Special lubricant (ROE 96,042), included in the contents of the Bearing replacement set shipment.

[28] A Support surface of the front rubber buffer on the coupling-jaw
B Front rubber buffer
C Drawbar shaft
D Buffer cap

[29] A Support surface on the back rubber buffer on the fastening-bracket
B Rubber buffer
C Thrust washer
4.4 Bearing

Change bearing bushings

Requirements
- Coupling disassembled

TOOLS:
- Insertion/extraction rod for the bearing-bushings, contained in the ROE tool set 71 275, part H
- Hammer (200 large)

Disassembly
➔ Remove the bearing bushings [30] from the housing with the appropriate tool, e.g. with insertion/extraction rod.

Installation
➔ Ensure the correct installation position of the new bearing bushings:
- Point notches to the front sides of the bearing bushings point inward [31 Arrows].
➔ In order to prevent damage to the faces of the bearing bushings, use the insertion/extraction rod or an appropriate insertion tool during installation [32].
➔ Insert both bearing bushings completely. The faces of the bearing bushings may not project from the housing.
4.4 Bearings

**Side stop and separators**
(only in model with side stop)

**Requirements**
- Coupling disassembled

**Disassembly**
- Remove coupling toward front
- Remove side stop [33A].
- Replace separators [33B] if:
  - there is longitudinal play on the side stop or
  - cracks or other damages to the separators are visible.

![Diagram of side stop and separators](image)
4.4 Bearings

Side stop and spacers
(only in model with side stop)

Installation

Installation is in opposite order. During this process, please do the following:

➔ Select separators [34A, B, C] and spacers [34D] according to the cross-member thickness [34T] of the vehicle.
➔ Follow the instructions in the trailer coupling mounting manual.
4.4 Bearing

Install coupling

Installation is in opposite order. During this process, please do the following:

➔ Spread copperpaste on the drawbar shaft [35A], segments [36C], pressure surface and threading of the turnbuckle [36B]

LUBRICANTS:
- Copper paste (ROE 96 039)

➔ Carefully insert the drawbar with the front rubber buffer [35C] and spring cap [35B] into the bearing. Do not damage face surfaces of the bearing bushings.

➔ Check the correct installation position of the ring fastener: recess for circlip downward [36A, arrow]

➔ Before installation of the segments:
  - Check the correct installation position of the turnbuckle: Undercut forward [36B]
  - Install lubricated segments. Ensure correct installation position: larger diameter forward [36C]

WARNING!
Risk of accident due to unsecured coupling!

➔ Before sliding on retaining ring [37A], check whether all 3 segments are in the ring fastener.

➔ Slide on retaining ring [37A], install circlips [37B].

➔ Turn back the turnbuckle [37C] to the stop on the rear circlip.

➔ Install the sealing cap [37D].

➔ Clean contact point of the earth cable before connecting and, if necessary, remove rust.
### 4.5 Pneumatic remote control

#### Part-turn actuator unit

**Requirements**
- Machine depressurized

**TOOLS:**
- Torque wrench
- Hexagon socket screwdriver 8
- Socket wrenches SW 13, 17

#### Completely disassemble part-turn actuator unit

- Loosen quick coupling [38A].
- Unscrew compressed air lines [38B and C].
- Remove vertical fastening screw [39A].
- Remove spacing bushing [39D].
- Remove 2 horizontal fastening screws [39E] and remove and spacing sleeves [39C].
- Completely remove part-turn actuator unit.
- Remove adapter [39B].
4.5 Pneumatic remote control

Disassemble part-turn actuator
➔ Remove 4 fastening screws [40A].
➔ Remove apron [40B].

Part-turn actuator unit
4.5 Pneumatic remote control

Installation

Installation proceeds in the opposite order. When doing so, please note the following actions:

Before installation of the part-turn actuator:
➔ Close coupling.
➔ Push adapter [41A] to hexagon shaft (hand lever axle) of the automatic unit.

Ensure correct installation position:
– Mark must point upward.

➔ On part-turn actuator: Adjust the square shaft with marking to meet the marking on the housing [42].

During installation of the part-turn actuator:
– Installation positions of screws, distance sleeves and distance bushing according to the figure [43]

TIGHTENING TORQUES:
– Part-turn actuator on apron: ................. 30 Nm
– Apron on coupling jaw: ................. 45 + 10 Nm
– Apron on automatic unit: ................. 45 +10 Nm

[41] A Adapter with mark pointing upward (arrow)

[42] A Square shaft with mark (arrow)

[43] A Screw M 10 x 80
   B Spacing sleeve 51 mm long
   C Screw M 10 x 110
   D Spacing sleeve 83 mm long
   E Screw M 10 x 160
   F Spacing bushing 25 mm long
4 Repair work

4.5 Pneumatic remote control

Control unit complete

Requirements

– System depressurized
  ➔ Loosen quick action coupling [44A].

TOOLS:

– Open-end wrench SW 13
– Wrench for fastening screws M8
  (customized selection of screws)

Disassembly

➔ Loosen screw fittings [44B und C], remove compressed air lines to the part-turn actuator.
➔ Protect the compressed air lines from contaminants.
➔ Remove the 4 fastening screws on the adapter [44D], remove the control unit with adapter.

Installation

Installation proceeds in the opposite order.
4.5 Pneumatic remote control

Filter

Requirements
– Machine depressurized

TOOLS:
– Torque wrench
– Socket wrench SW 14
– Small slot screwdriver
– Pointed pliers

Disassembly
➔ Loosen rapid action coupling.
➔ Unscrew sealing ring [45B] with coupling connector [45A].
➔ Remove old filter disc [45C]. Use a screwdriver and pointed pliers if necessary.
➔ Clean the coupling connector on the sealing surfaces of the casing.

Installation
➔ Replace the sealing ring and the filter washer.

CAUTION!
The new filter washer can be destroyed during installation! Filter washers made of sintering material are pressure sensitive.
➔ Carefully screw in threading. Do not screw the filter washer in at an angle.
   Note the installation order of the components.

TIGHTENING TORQUES:
– Threading [45A]: . . . . . . . . . . 8 + 1 Nm
4.6 Electrical in-cab status indicator

Disassembly
→ Remove 2 fastening screws [46B], remove limit switch [46A].
→ If necessary, remove connection cable [46C].

Installation
→ If necessary, connect connection cable [47].
→ Please take notice of contents of the mounting manual Upgrade kit for remote control electrical in-cab status display.
→ Insert limit switch into boring and tighten.
→ Check function of the in-cab status display.

TIGHTENING TORQUES:
– Grenztaster an Automatikeinheit: . . . . . . . . . . . . 5 Nm

Check function
Coupling is closed and secured [48]:
– Green indicator lamp in driver’s cab is illuminated.
– The safety pin on the automatic coupling is in its guide bushing.
→ Slowly open coupling with hand lever.
– Green indicator lamp in driver’s cab goes out.
– Safety pin pops out.

If the indicator lamp is not illuminated with a closed coupling:
→ set limit switch.

Setting limit switch
– Coupling is closed and locked.
→ Loosen lock nut [46 arrow] outside on limit switch.
→ Slowly screw in the limit switch until the indicator lamp is illuminated.
→ Tighten lock nut.
→ Check function again.
→ Attach lock nut with thread glue (Locktite).

TIGHTENING TORQUES:
– Lock nut: . . . . . . . . . . . . . . . . . . . 2.5 Nm

[46] A Limit switch
B Fastening screws
C Connecting cable

[47] Wiring diagram for connection of limit switch
A Limit switch
B Green control lamp in driver’s cab

[48] Function test from remote display and control pin:
A Coupling is closed and secured: indicator lamp illuminated, control pin is in its guide bushing.
B Coupling is not closed: indicator lamp is not illuminated, control pin is projecting.
## 5.1 Spare parts

**RO Trailer coupling*57**

<table>
<thead>
<tr>
<th>Art.</th>
<th>Designation</th>
<th>Articleno.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Automatic unit complete with short hand lever</td>
<td>ROE 71192</td>
</tr>
<tr>
<td>1</td>
<td>Automatic unit complete with long hand lever</td>
<td>ROE 71198</td>
</tr>
<tr>
<td>2</td>
<td>Short hand lever, pointing upward</td>
<td>ROE 50256</td>
</tr>
<tr>
<td>2</td>
<td>Long hand lever, lateral</td>
<td>ROE 50258</td>
</tr>
<tr>
<td>3</td>
<td>Screw set</td>
<td>ROE 30229</td>
</tr>
<tr>
<td>4</td>
<td>Coupling pin</td>
<td>ROE 47116</td>
</tr>
<tr>
<td>5</td>
<td>Lock</td>
<td>ROE 71153</td>
</tr>
<tr>
<td>6</td>
<td>Guide bushing bottom</td>
<td>ROE 53544</td>
</tr>
<tr>
<td>7</td>
<td>Guide bushing</td>
<td>ROE 53543</td>
</tr>
<tr>
<td>8</td>
<td>Support (upper or lower)</td>
<td>ROE 71154</td>
</tr>
<tr>
<td>9a</td>
<td>Jaw - standard (upper or lower)</td>
<td>ROE 71161</td>
</tr>
<tr>
<td>9b</td>
<td>Funnel - long (upper or lower)</td>
<td>ROE 71162</td>
</tr>
<tr>
<td>10</td>
<td>Repair kit for bearing</td>
<td>ROE 71156</td>
</tr>
<tr>
<td>11</td>
<td>Buffer cap - front</td>
<td>ROE 44177</td>
</tr>
<tr>
<td>12</td>
<td>Fastening kit</td>
<td>ROE 71156</td>
</tr>
<tr>
<td>13</td>
<td>Lateral stop</td>
<td>ROE 71157</td>
</tr>
<tr>
<td>14</td>
<td>Spacer kit</td>
<td>ROE 71158</td>
</tr>
<tr>
<td>15</td>
<td>Turnbuckle</td>
<td>ROE 56120</td>
</tr>
<tr>
<td>16</td>
<td>Sealing cap</td>
<td>ROE 25347</td>
</tr>
<tr>
<td>17</td>
<td>Separator set</td>
<td>ROE 71211</td>
</tr>
<tr>
<td>18</td>
<td>Buffer cap - rear</td>
<td>ROE 44176</td>
</tr>
</tbody>
</table>

[49] * No spare parts
5.1 Spare parts

Upgrade kit pneumatic remote control (ROE 71167)

<table>
<thead>
<tr>
<th>Art.</th>
<th>Designation</th>
<th>Article no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Part-turn actuator</td>
<td>ROE 71264</td>
</tr>
<tr>
<td>20</td>
<td>Apron</td>
<td>ROE 71254</td>
</tr>
<tr>
<td>21</td>
<td>Pneumatic connection kit</td>
<td>ROE 25514</td>
</tr>
<tr>
<td>22</td>
<td>Quick coupling</td>
<td>ROE 90378</td>
</tr>
<tr>
<td>23</td>
<td>Filter washer</td>
<td>ROE 90379</td>
</tr>
<tr>
<td>24</td>
<td>Control unit complete</td>
<td>ROE 71541</td>
</tr>
<tr>
<td>25</td>
<td>Adapter</td>
<td>ROE 65726</td>
</tr>
</tbody>
</table>
5.2 Tightening torques

RO Trailer coupling 57

---

Threaded joints with prescribed tightening torques

<table>
<thead>
<tr>
<th>Art.</th>
<th>Threaded joint</th>
<th>Tightening torque (Nm)</th>
<th>Tolerance (Nm)</th>
<th>Special features</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Hand lever on hexagonal shaft</td>
<td>25</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Automatic unit on coupling jaw</td>
<td>85</td>
<td>+10</td>
<td>–</td>
</tr>
<tr>
<td>C</td>
<td>Support on funnel</td>
<td>45</td>
<td>+10</td>
<td>–</td>
</tr>
<tr>
<td>D</td>
<td>Rear attachment funnel coupling jaw</td>
<td>45</td>
<td>+10</td>
<td>–</td>
</tr>
</tbody>
</table>
5.2 Tightening torques

Upgrade kit for pneumatic remote control

<table>
<thead>
<tr>
<th>Art.</th>
<th>Threaded joint</th>
<th>Tightening torque (Nm)</th>
<th>Tolerance (Nm)</th>
<th>Special features</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Apron on coupling jaw</td>
<td>45</td>
<td>+10</td>
<td>–</td>
</tr>
<tr>
<td>B</td>
<td>Apron on automatic unit</td>
<td>45</td>
<td>+10</td>
<td>–</td>
</tr>
<tr>
<td>C</td>
<td>Part-turn actuator on apron</td>
<td>30</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

[52] Threaded joints with prescribed tightening torques
5.3 Limits of wear

Reference gauge kit (ROE 71354)
- Reference gauge for drawbar eyes, coupling pin and guide, no. 58 243, Fig. [53]
- Reference gauge for drawbar, fastening bracket, segments and support, no. 58 244, Fig. [54]
- Reference gauge for guide bushings and fuse, no. 58 245, Fig. [55]

See the following pages for the dimensions A to T.

[53] Reference gauge no. 58 243

[54] Reference gauge no. 58 244

[55] Reference gauge no. 58 245
5.3 Limits of wear

Coupling pin and drawbar eyes

<table>
<thead>
<tr>
<th>Dim.</th>
<th>Reference gauge, parts no.</th>
<th>Explanation</th>
<th>Wear limit (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>58 243</td>
<td>Drawbar eyes</td>
<td>Ø 59.5</td>
</tr>
<tr>
<td>B</td>
<td>58 243</td>
<td>Coupling pin in the upper guide bushing</td>
<td>Ø 57</td>
</tr>
<tr>
<td>D</td>
<td>58 243</td>
<td>Coupling pin in the lower guide bushing</td>
<td>Ø 42.5</td>
</tr>
<tr>
<td>E</td>
<td>58 243</td>
<td>Coupling pin in drawbar eye</td>
<td>Ø 55</td>
</tr>
<tr>
<td>M</td>
<td>58 243</td>
<td>Guide for coupling pin</td>
<td>16.6</td>
</tr>
</tbody>
</table>

*[56] Wear dimensions in the coupling pin and drawbar eyes area*
## 5.3 Limits of wear

Supports, guide bushings, lock

![Diagram of supports and guide bushings]

> Wear dimensions in the supports, guide bushings, lock area

<table>
<thead>
<tr>
<th>Dim.</th>
<th>Reference gauge, parts no.</th>
<th>Explanation</th>
<th>Wear limit (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>–</td>
<td>Distance between coupling pin and support lower</td>
<td>19.5</td>
</tr>
<tr>
<td>K</td>
<td>58 245</td>
<td>Locking pin</td>
<td>19</td>
</tr>
<tr>
<td>A</td>
<td>58 245</td>
<td>Guide bushing in upper funnel</td>
<td>Ø 59.5</td>
</tr>
<tr>
<td>C</td>
<td>58 245</td>
<td>Guide bushing in lower funnel</td>
<td>Ø 45.7</td>
</tr>
<tr>
<td>N</td>
<td>–</td>
<td>Support top or bottom</td>
<td>15.3</td>
</tr>
</tbody>
</table>
5.3 Limits of wear

Bearing

[58] Wear dimensions in the bearing area

<table>
<thead>
<tr>
<th>Dim.</th>
<th>Reference gauge, parts no.</th>
<th>Explanation</th>
<th>Wear limit (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>58 244</td>
<td>Bearing bushings</td>
<td>Ø 63</td>
</tr>
<tr>
<td>G</td>
<td>58 244</td>
<td>Drawbar shaft</td>
<td>Ø 61.6</td>
</tr>
<tr>
<td>L</td>
<td>58 244</td>
<td>Fastening segments</td>
<td>16,4</td>
</tr>
<tr>
<td>S</td>
<td>58 244</td>
<td>Fastening segments</td>
<td>11,8</td>
</tr>
<tr>
<td>T</td>
<td>58 244</td>
<td>Groove for fastening segments</td>
<td>Ø 40</td>
</tr>
</tbody>
</table>