USER MANUAL

Reachforks®

Double Range - 32B TFQ
Slim Range - 27B, 37B TFF
Table of Contents

Definitions ................................................................. 2
Note .............................................................................. 2
Quality Standards/Norms and Directives .................. 2
Safety ........................................................................... 3
Identification .......................................................... 4
Assembly ....................................................................... 5
Working with Reachforks ........................................ 6
Maintenance Schedule .............................................. 6
Wear ........................................................................... 7
Instructions for Replacement of Sleeve ................. 8
Replacement of Hydraulic Parts ............................ 9
Troubleshooting ..................................................... 11
Definitions

**Warning:**
Text blocks marked by a “Warning” icon (as shown on the left) and starting with the text “**Warning:**” provide information on actions which may result in serious injury.

**Caution:**
Text blocks marked by a “Caution” icon (as shown on the left) and starting with the text “**Caution:**” provide information on actions which may result in damage to the Reachforks, parts of the Reachforks or goods.

“**Only applies to:**” texts (italics) indicate that a text only applies to a certain situation or certain type of Reachforks.

Note

© Copyright 2019, Cascade KOOI, All rights reserved.

Unless otherwise indicated, information provided in this manual, including but not limited to illustrations and text, may not be reproduced without the prior written permission of Cascade KOOI.

The information in this manual is provided without any form of guarantee. Under no circumstances shall Cascade KOOI be held liable for accidents or damages arising from the use of this manual.

Please note that information in this manual may be changed at any time without prior notice and that it may contain technical inaccuracies and typing errors. Cascade KOOI makes every effort to avoid errors in this manual, but cannot guarantee this. Please let us know if you encounter any typing errors or technical inaccuracies, or if you have any suggestions.

Other trade or product names used in this manual, but not mentioned here, are the trademarks of their respective holders.

Quality Standards/Norms and Directives

Cascade KOOI complies with the following quality standards: ISO 9001

Reachforks comply with the following norms/directives:

- ISO 13284 – Fork Arm Extensions and Telescopic Fork Arms;
- ISO 4406 – Hydraulic Fluid Power – Fluids – Method for Coding the Level of Contamination by Solid Particles
- ISO 2328 – Forklift Trucks – Hook-On Type Fork Arms and Fork Arm Carriages
- CE (2006/42/EC) – Machinery Directive
- ISO-FDIS-ISO 3834-2 – Quality Requirements for Fusion Welding of Metallic Materials – Part 2: Comprehensive Quality Requirements
- CE (2014/43/EG) – ATEX (only applies to forks with an ATEX name plate!)

Reachforks are randomly subjected to dynamic testing in accordance with ISO 2330.
**Warning:**
Do not ride on the Reachforks or on the load.

**Warning:**
Do no walk or stand under the Reachforks.

**Warning:**
Do not reach through the mast of the forklift truck.

**Warning:**
Do not load the Reachforks beyond the limits of the lifting capacities and load center stipulated by the manufacturer.

**Warning:**
Do not weld anything onto the Reachforks without the express permission of the supplier. Welding carried out without permission shall void any warranty.

**Warning:**
Do not use faulty Reachforks before they have been either professionally repaired or replaced.

**Warning:**
Do not carry out maintenance work on the Reachforks while there is pressure in the hydraulic system (remove key from forklift ignition switch).

**Warning:**
Do not place limbs between pallet stops and the inner fork (vertical section) of the Reachforks. If the load shifts, limbs can become trapped which can result in serious injury.

**Warning:**
Do not use the Reachforks in areas where the temperature is below -30°C (-22°F) unless otherwise agreed with the manufacturer.

**Caution:**
When leaving the forklift the engine must be switched off and the handbrake applied.

**Caution:**
Bear in mind the space above and beneath the Reachforks.

**Caution:**
The load must be distributed as evenly as possible on the Reachforks.

**Caution:**
Retract the (loaded) Reachforks as soon as possible.

**Caution:**
If possible, retract the Reachforks before driving.

**Caution:**
Always drive with the Reachforks in the lowest possible position.
Identification

Type plate legend:

- **Type Description**
- **Weight**
- **Serial Number**
- **Max. Capacity on Retracted Load Center**
- **Retracted Center of Gravity**
- **Max. Capacity on Extended Load Center**
- **Extended Center of Gravity**
- **Maximum Allowed Oil Pressure**
- **Retracted Load Center**
- **Production Year**
- **Extended Load Center**
- **Extra Information**

**Warning:** Never exceed the maximum truck capacity as seen on the truck type plate. Rated capacity of both truck and attachment is the responsibility of the original truck manufacturer and may be less then the capacity shown on the attachments type plate.

Mounting type description of Reachforks:

- **type**
- **no. of cylinders per set**
- **capacity X 100 kg**
- **retracted length (mm)**
- **stroke (mm)**
- **mounting**
## Assembly

1. The Reachforks type plates are stamped with an ‘L’ and an ‘R’. Mount the Reachforks on the left (L) and right (R) as viewed from the forklift operator’s seat.

2. Slide the Reachforks onto the carriage plate.

3. Make sure that each of the Reachfork locking pins (2) drops into one of the notches on the carriage plate. Use catch (1) before operating.

4. Connect the Reachforks to the hydraulic system via the flow divider (1).

### Reachforks

<table>
<thead>
<tr>
<th>Type</th>
<th>Recommended oil flow</th>
<th>Recommended hose diameter</th>
<th>Maximum operating pressure</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>All types</td>
<td>8-25 (L/ min)</td>
<td>1/4”</td>
<td>250 bar (3626 psi)</td>
<td>8L / 7/16” JIC (USA) / 9/16” (USA)</td>
</tr>
<tr>
<td></td>
<td>2.1-6.6 (gal/min)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. • Slide the Reachforks in and out 10x.
   • Tilt the forklift mast back and forth a few times.
   • Slide the Reachforks in and out 10x again.

Check that hydraulic hoses are unobstructed and that there are no oil leakages.
Working with Reachforks

The Reachforks are connected via flow divider that enables both forks to slide in and out simultaneously. The accuracy of the flow divider allows a maximum length discrepancy of 4% while sliding Reachforks in and out.

To minimize wear, avoid allowing the Reachforks to come in contact with the ground during operation. In order to reduce wear:

- The manufacturer can weld a wear-resistant plate under the sleeve which can be replaced when worn out.
- The chains in the forklift mast can be shortened so that the Reachforks cannot reach the ground.

Maintenance Schedule

<table>
<thead>
<tr>
<th>Nº</th>
<th>Description</th>
<th>Weekly</th>
<th>Monthly</th>
<th>6 months or every 1000 hours</th>
<th>Annually or every 2000 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Grease the underside and topside of the inner fork</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Check inner fork for leaks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Check wear strips for any sign of wear*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Check sleeve for signs of wear, especially the heel side (REE/REEN type also wear plate)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Check for and remove any dirt in the sleeve</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Check for any cylinder head leaks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Check inner forks in accordance with ISO 5057* standards</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*See chapter on ‘Wear’.

Notes on ‘Maintenance Schedule’

- Recommended lubricating grease: Novatex EP2 (point 1).
- In the event of leakage, immediately remove the forks from the forklift and contact your supplier (point 2).
- If defects are detected, solve the problem / replace parts before proceeding to work with the Reachforks.
- See chapter on ‘Instructions for Replacement of Sleeve’ and ‘Instructions for Replacement of Hydraulic Parts’ for further explanation about replacing parts and required tools.
Wear

The thickness of Wear Strips (1) may not be less than min. 1.5 mm / 1/16". When Wear Strips (1) have worn to this thickness, replace them or fill with spacers (2) (Art. N° RE0092002). See point 3 of the Maintenance Schedule.

The inner fork must be replaced when S1 is 5% thinner than S2. See point 7 of the Maintenance Schedule.

When surface A (dark grey, integrated wear plate) is worn to the extent that it is level with or below surface B (light grey), then the sleeve (1) must be replaced or fitted with a welded-on wear plate. For more information about welded-on wear plates, please contact your fork supplier. See point 4 of the Maintenance Schedule.

Applies only to: Reachforks type REE and REEN; When surface A (dark grey, integrated wear plate) is worn to the extent that it is level with or below surface B (light grey), then the sleeve (2) must be replaced. If there are signs of wear in the lower side of the sleeve (2) then it must be replaced. See point 4 of the Maintenance Schedule.

Caution:
The sleeves must be removed from the Reachforks before welding work can proceed. Pistons, piston rods and cylinder heads must be removed before welding is carried out in the inner fork.

Wear Plate Welding Data:
- Process: MAG (135), 210A, 28 VDC
- Weld type: fillet weld a4, 1 layer
- Cleaning: brush
- Wire: 1 mm, EN 12534 / Mn3Ni1CrMo
- Shielding gas: 80% Ar / 20% CO₂, 15-16 L/min
- Weld in wear-plate grooves
Instructions for Replacement of Sleeve

1. Position the Reachforks at hip height, tilt the mast of the forklift slightly forward and remover the key from the ignition switch of the forklift.

**Warning:** Do not carry out maintenance work on the Reachforks while there is pressure in the hydraulic system (remove key from forklift ignition switch).

2. Pull the sleeve (1) off the fork.

3. Tap the spring pins (2) out of the sleeve (1).

   **Tools required:** Hammer, punch Ø10

4. Slide the (new) sleeve (1) over the fork.

5. Tap the spring pin(s) (2) into the (new) sleeve (1).

   **Caution:** Ensure that the holes in the sleeve (1) are aligned with the opening in the bracket(s) that are welded onto the piston rod(s). DO NOT tap the spring pin onto the bracket or piston rod!

   **Tools required:** Hammer.
Replacement of Hydraulic Parts

1. Follow steps 1 to 3 in chapter on 'Instructions for Replacement of Sleeve'.

2. Loosen the hose connectors (3) slightly so that the pistons do not create a vacuum when removing the hydraulic parts.  
   **Tools required:** Open-ended spanner 17.

3. Place a drip tray below the fork. Unscrew the cylinder head(s) (5) using a cylinder head spanner (4) and a ratchet.  
   **Tools required:** Cylinder head spanner, 1/2” ratchet.  
   *Cylinder head spanners are only available from Cascade KOOI (Art. N° RE0058034).*

4. Pull the entire hydraulics set (6) consisting of the piston, cylinder head and piston rod out of the fork.  
   **Caution:** Take care with the surface of the piston rod. Even minor damage to surface can cause leaks.

5. Clamp the piston rod at the rod end (7), not on the piston rod itself to prevent damage (see step 4 in this chapter). Use a size 19 or 24 (8) open-ended spanner to loosen the piston (9). If the piston cannot be loosened, heat the piston with a burner.  
   **Tools required:** Open-ended spanner 19 or 24, clamp.  
   **Note:** When heating the piston with a burner, it must be replaced due to the damage to the seals caused by heating.  
   **Warning:** Do not use a burner in an area not equipped/intended for this purpose because of fire hazard.
When the piston section 1 (14) has been removed the piston seal (13) can be replaced if necessary. When piston section 2 (12) is also removed, the cylinder head (5) can be removed, should it need to be replaced.

Remove remaining adhesive residue from the piston rod thread (10), then clean the piston rod and thread (10) using Loctite 7063.

Tools required: Loctite 7063.

Slide the (new) cylinder head (5) onto the piston rod (10).

Caution:
Do not damage the cylinder head seals (5) during assembly as this can result in leakage. Pay particular attention when the sliding cylinder head (5) over the thread (10) of the piston rod.

Apply Loctite 270 to the thread (10) of the piston rod. Clamp the piston rod at the rod end (7), not on the piston rod itself to prevent damage (see step 4 in this chapter). Clean the piston thread with Loctite 7063. Use a torque wrench 19 or 24 (11) to tighten the piston (9) onto the piston rod (10) to a torque of 70 Nm.

Tools required: Loctite 270, Loctite 7063, torque wrench 19 or 24.
Follow steps 4 to 5 in chapter on ‘Instructions for Replacement of Sleeve’.

Tools required: Hammer, Copaslip®, cylinder head spanner*, 1/2” torque wrench.

Smear Copaslip® onto the thread of the cylinder head (5). Line up the hydraulic set (6) with the cylinder and use a hammer to tap it carefully into the bore. Screw the cylinder head tight using the cylinder head spanner (4) and a torque wrench. See table below for torque values.

Tools required: Hammer, Copaslip®, cylinder head spanner*, 1/2” torque wrench.

<table>
<thead>
<tr>
<th>Cylinder diameter (mm)</th>
<th>Torque (Nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>60</td>
</tr>
<tr>
<td>30</td>
<td>60</td>
</tr>
<tr>
<td>35</td>
<td>80</td>
</tr>
</tbody>
</table>

*Cylinder head spanners are only available from Cascade KOOI (Art. Nº RE0058034).

Caution:
Do not damage the piston or cylinder head seals during assembly as this can result in leakage.

Troubleshooting

<table>
<thead>
<tr>
<th>Observation</th>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Possible Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil leak</td>
<td>Oil leak between cylinder head and piston rod</td>
<td>Bent piston rod</td>
<td>Replace piston rod and cylinder head</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Scratched/damaged piston rod</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Leaking piston seal</td>
<td>Replace cylinder head</td>
</tr>
<tr>
<td></td>
<td>Oil leak between cylinder head and fork blade.</td>
<td>Leaking O-Ring</td>
<td>Replace cylinder head</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Leaking copper ring</td>
<td>Replace copper ring</td>
</tr>
<tr>
<td></td>
<td>Oil leak at connector</td>
<td>Loose connector</td>
<td>Tighten connector</td>
</tr>
<tr>
<td></td>
<td>Forks leaking oil</td>
<td>One or bothReachforks are cracked</td>
<td>Remove Reachforks from carriage immediately and contact supplier.</td>
</tr>
</tbody>
</table>

1 See www.loctite.com
2 See www.kroon-oil.com
<table>
<thead>
<tr>
<th>Issue</th>
<th>Possible Cause</th>
<th>Recommended Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forks not moving in unison</td>
<td>A piston seal is leaking</td>
<td>Replace the piston with the leaking seal</td>
</tr>
<tr>
<td></td>
<td>The hydraulic hoses have been wrongly connected</td>
<td>Connect the hoses as indicated in chapter on ‘Assembly’</td>
</tr>
<tr>
<td></td>
<td>The length of the piston rods is unequal</td>
<td>Install piston rods of equal length</td>
</tr>
<tr>
<td></td>
<td>Flow of hydraulic oil is not between 8-25 L/min</td>
<td>Please contact your supplier.</td>
</tr>
<tr>
<td></td>
<td>Dirt in the sleeve(s)</td>
<td>Dismantle sleeve and remove dirt</td>
</tr>
<tr>
<td></td>
<td>Flow divider is damaged</td>
<td>Replace flow divider</td>
</tr>
<tr>
<td></td>
<td>The control valve is leaking</td>
<td>Inform your forklift supplier.</td>
</tr>
<tr>
<td></td>
<td>There is air in the hydraulic system</td>
<td>Bleed the system</td>
</tr>
<tr>
<td></td>
<td>A piston seal is leaking</td>
<td>Replace the piston with the leaking seal</td>
</tr>
<tr>
<td></td>
<td>One or both sleeves move without being operated</td>
<td>Replace the clamping bush(es)</td>
</tr>
<tr>
<td></td>
<td>One sleeve remains stationary during retraction then suddenly retracts quickly</td>
<td>Replace the clamping bush(es)</td>
</tr>
<tr>
<td></td>
<td>One of the sleeves fails to retract</td>
<td>Replace the clamping bush(es)</td>
</tr>
<tr>
<td></td>
<td>Difference in length between the sleeves</td>
<td>Piston rods are not same length.</td>
</tr>
<tr>
<td></td>
<td>Stroke length difference</td>
<td>Loose piston</td>
</tr>
<tr>
<td></td>
<td>Loose piston</td>
<td>Dismantle outer fork, remove hydraulic set from fork and tighten piston (70 Nm).</td>
</tr>
<tr>
<td></td>
<td>Difference in height between forks</td>
<td>One of the Reachforks has been permanently deformed as a result of overloading.</td>
</tr>
<tr>
<td></td>
<td>One fork point hangs lower than the other</td>
<td>Carriage plate is not completely horizontal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The forks do not match (forks belong to different sets)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wear strips on one Reachforks are more worn than the other</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Excessive play between fork blade and sleeve</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wear strips worn out</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sleeves worn out</td>
</tr>
</tbody>
</table>
Do you have questions you need answered right now? Call your nearest Cascade KOOI Service Department. Visit us online at www.cascorp.com

**AMERICAS**

**Cascade KOOI**
**U.S. Headquarters**
2201 NE 201st
Fairview, OR 97024-9718
Tel: 800-CASCADE (227-2233)
Fax: 888-329-8207

**Cascade KOOI Canada Inc.**
5570 Timberlea Blvd.
Mississauga, Ontario Canada L4W-4M6
Tel: 905-629-7777
Fax: 905-629-7785

**Cascade KOOI do Brasil**
Praça Salvador Rosa,
131/141-Jordanópolis,
São Bernardo do Campo - SP
CEP 09891-430
Tel: 55-13-2105-8800
Fax: 55-13-2105-8899