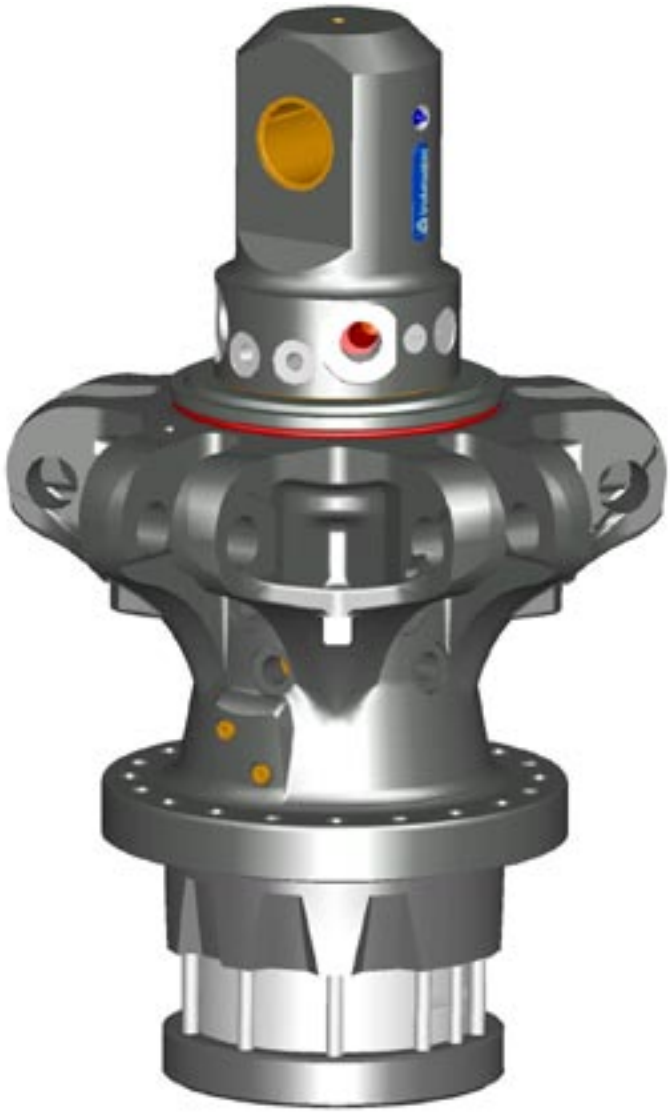
# Repair manual
# Rotator IR 25



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**Important!**
**Read through the manual carefully and understand the content before starting the repair work.**

# Contents

## General

This repair manual is intended for rotator model IR 25. Please disregard the sections that are not relevant to your equipment.

We are constantly striving to improve our products and reserve the right to make design changes without introducing them on products that have already been delivered.

We also reserve the right to change data and equipment without prior notice. The same applies to maintenance and other service operations.

This manual contains instructions for repairing and maintaining your rotator for long life and fault-less operation. Before starting repair work on the rotator, read the manual thoroughly in order to understand its content. Casual or incorrect actions may result in serious or even life-threatening injury.

### Replacement of all vital parts.

Servicing work may only be done by personnel who are familiar with Indexator products. For major renovation work, trained personnel should be contacted.

Always state the manufacturing and serial numbers when ordering spare parts and making service enquiries. These numbers are stamped on the upper part of the rotator.

### Safety

### National safety regulations

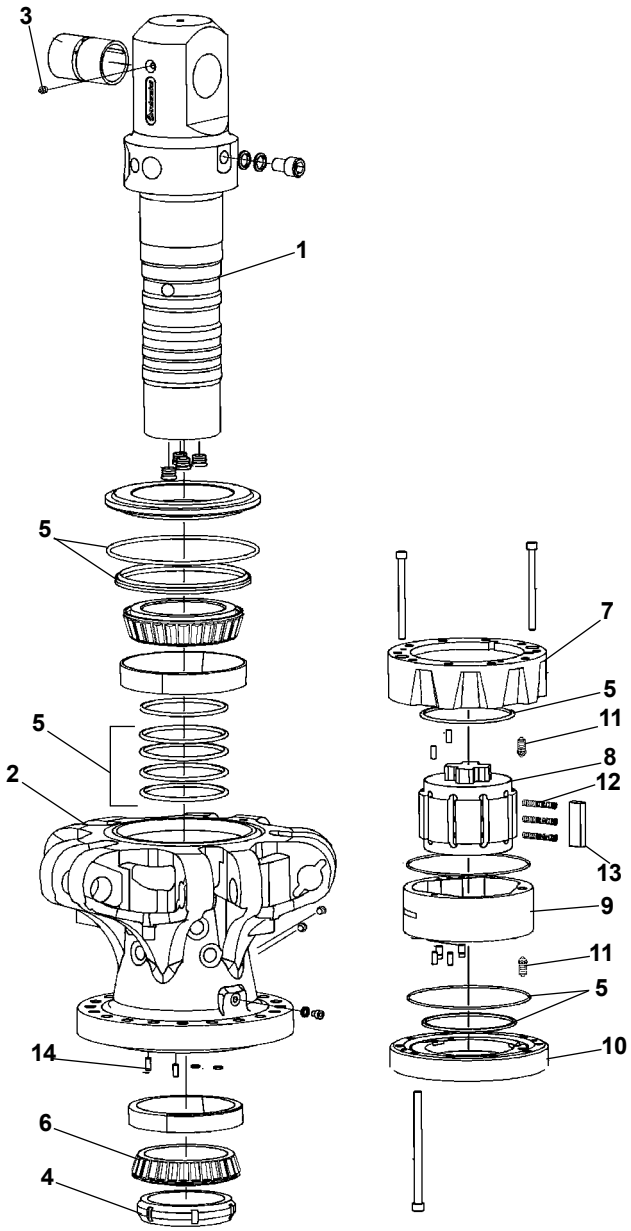
In addition to the recommendations in this manual, every country has its own safety regulations. If the recommendations in the manual differ from the regulations in your country, you must observe your national regulations.

### Personal safety equipment

Use the necessary safety equipment for the task (safety shoes, gloves, safety glasses, etc). Gloves is a good protection against oils, greases and other noxious substances.

## Rotator

The pictures in this manual show rotator model IR 25. On principle, the instructions also apply to the other IR models. It is an advantage to have a spare parts sheet at hand when repairing a rotator.




### Main components of the rotator

The rotator comprises the following main components. The components are referred to again later in this repair manual.

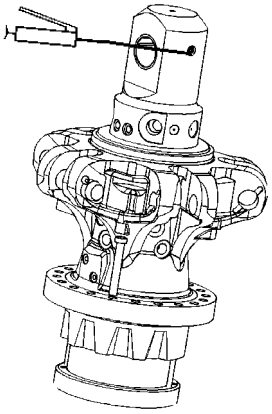
1. Shaft
2. Housing
3. Grease nipple
4. KMT nut
5. Seals
6. Seals (bearing)
7. Shaft end cover
8. Motor shaft
9. Stator ring
10. Motor end cover
11. Pressure valve
12. Spring
13. Vane
14. Locating pin

### Cleanliness/life

Recommended operating temperature -30 to +70 °C.

Maximum contaminant level:

| Pressure | Contaminant class | | |
|---|---|---|---|
| | CETOP RP70H / ISO 4406 | | NAS 1638 |
| | 5µm | 15µm | |
| < 21 MPa < 3000 psi | 16 | 13 | 6 |
| > 21 MPa < 3000 psi | 15 | 11 | 5 |



### To increase the life of the rotator

1. When servicing the machine, lubricate the rotator's bushing to the link; see figure.
2. Check that there are no cracks in the rotator or its fixing.
3. When replacing the bushing, the lubrication grooves of the bushing (on the inside of the bushing) must be turned upwards. The end of the bushing that has grooves for topping up the grease must face towards the centre of the shaft.

## Dismantling

**Figure 1**

1. Firmly secure the rotator (for an example, see the illustration).
2. The rotator must be dismantled upside-down.
3. To remove the motor, remove the ten M12x180 bolts with a 10 mm Allen key/socket.

Fig 1:1

Fig 1:2

**Figure 2**

1. Fit two M10 lifting eyes (or some other lifting aid) and use an overhead crane to lift the motor.

Fig 2

**Figure 3**

1. Clean the shaft by wiping the grease off with paper.
2. Using a 5 mm Allen key, fully unscrew the three small locking screws in the KMT nut. Carefully tap outside the holes where the screws were fitted, to release the brass locking of the threads.

Fig 3

**Figure 4**

1. Use a special tool (art. no. 8000545), to unscrew the KMT nut.
2. Clean the KMT nut for re-use. Using a screwdriver, carefully push back the brass locking devices inside the thread.

Fig 4

**Figure 5**

1. Fit two M12 lifting eyes (or some other lifting aid) and lift the housing with an overhead crane.

Fig 5

**Figure 6**

1. Thoroughly clean the shaft by wiping the grease off with paper. NOTE: Do not wash the centre, this might damage the bearing.

Fig 6

**Figure 7**

1. Remove the dust seal and clean it for re-use.

Fig 7

**Figure 8**

1. Remove the bearing and place it in a suitable vessel for heating. Heat the bearing slowly to +120 °C. Do not heat the bearing over an open flame, this might damage it.

Fig 8

**Figure 9**

1. Clean the housing well.

Fig 9

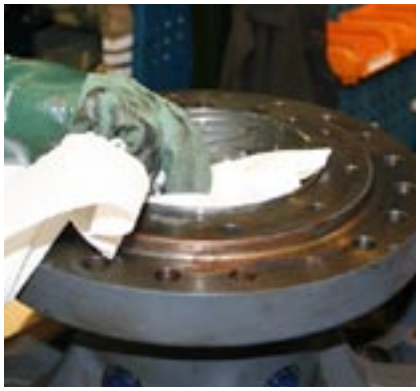


**Figure 10**

1. Use a suitable tool, remove the seals in the swivel housing. NOTE: Point the tool in the lengthwise direction of the seal and take care not to damage the seal seat or other surfaces. Do not re-use the seals.

Fig 10

**Figure 11**

1. Clean the seal seats thoroughly, using cotton buds and oil, for example, to remove grease and dirt.
2. Apply oil to the seals before fitting.

Fig 11

**Figure 12**

1. Fit the O-ring to the seal seat.
2. To make it easier to install the sliding sleeve, form it into the shape of a kidney.
3. Do the same with the five seals.

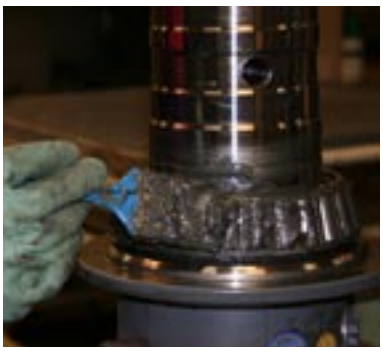
Bild 12

## Assembly

### Figure 13

1. Thoroughly grease the bearing on the shaft.

Fig 13



### Figure 14

1. To make it easier to install the housing, wipe off excess grease on top of the bearing.
2. Apply oil to the sealing surfaces of the shaft.

Fig 14

### Figure 15

1. Using an overhead crane, lift the housing back on to the shaft. Take care not to damage the seals in the swivel housing or the wiper.
2. Turn the housing to make sure that it is in the right position. It should “click” into place.

Fig 15

### Figure 16

1. Half-fill the bearing track in the housing with grease.

Fig 16

**Figure 17**

1. Using gloves or tools to avoid burns, place the heated bearing in the track. Carefully press down the bearing so that grease is forced up through it. Wipe off excess grease.

Fig 17

**Figure 18**

1. Refit the KMT nut to the shaft by using the special nut tool together with a suitable tool. Torque the nut to 1500 Nm.

Fig 18

**Figure 19**

1. Using an implement such as a pipe, turn the housing back and forth while tightening the KMT nut. Continue to do this until the correct torque is reached.

Fig 19

**Figure 20**

1. Using a 5 mm Allen key, torque the three locking screws on the KMT nut to 30 Nm.

Fig 20

**Figure 21**

Fig 21

1. Check that the two small O-rings for the rotation channels are correctly positioned.
2. Check that two locating pins have been fitted to the housing. The positions of the locating pins are shown in the exploded drawing on page 4.

**Figure 22**

Fig 22

3. Lift the motor back in. Align the motor part so that the rotation channels in the motor line up with the rotation channels in the housing. Turn the housing so that the cross in the motor shaft is correctly positioned to the cross on the shaft. When the motor is correctly positioned, it turns when the swivel housing is turned.

**Figure 23**

Fig 23

1. Secure the motor with ten M12x180 screws, gradually tightening the screws crosswise to a torque of 120 Nm.
2. Refit the dust seal to the groove between the housing and the shaft; see Figure 6a. Make sure that the seal is correctly positioned in the groove.

If you have access to a hydraulic test bench, test-run the rotator to check that the reconditioning has been done properly.

Remember to fill the rotator with grease via the nipple on the housing. There is enough grease in the rotator when you can see grease coming out between the shaft and housing.

## Dismantling and assembling the motor

**Figure 24**

1. Clean the motor at the cross on the motor shaft.
2. Unscrew two M10x130 screws.

Fig 24

**Figure 25**

1. Take care to keep the assembly together, carefully turn the motor over.
2. Remove the motor end cover, tapping it carefully to loosen it.

Fig 25

**Figure 26**

1. Remove the pressure valve from the stator ring.
2. Check whether the wedges in the stator ring are dirty.

Fig 26

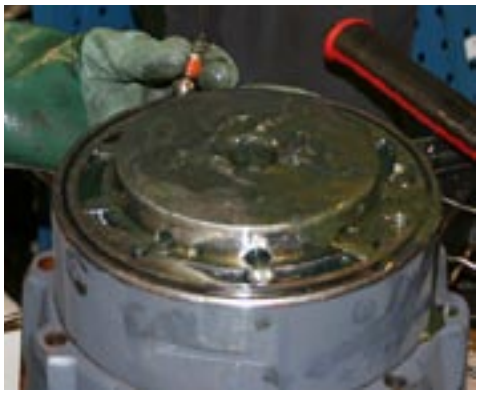


**Figure 27**

1. Clean the motor end cover and remove the seal.
2. Clean the seal seat thoroughly, using cotton buds and oil, for example, to remove grease and dirt.
3. Apply oil to the seal and refit the O-ring and sliding sleeve.

Fig 27

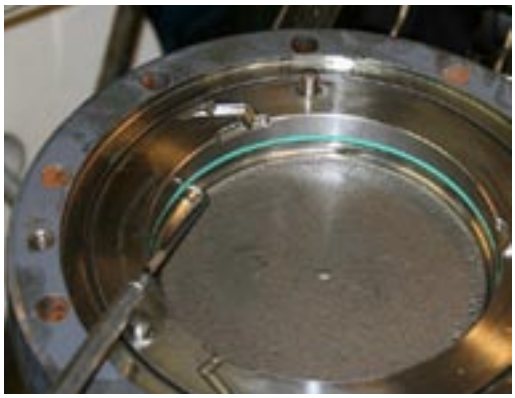


**Figure 28**

1. Use suitable tools and tap the stator ring halfway off.

Fig 28

**Figure 29**

1. Remove the pressure valve from the shaft end cover.

Fig 29

**Figure 30**

1. Use a vane compressor (art. no. 8000581) to hold the vanes together when the stator ring is lifted off. One of the nine vanes will come out anyway.

Fig 30

**Figure 31**

1. Carefully lift up the stator ring. Replace the O-ring in the groove in the stator ring.

Fig 31

**Figure 32**

1. While restraining the movement of the vanes, remove the vane compressor.
2. Replace the vane springs in the vanes.
3. Tap the motor shaft out of the shaft end cover.

Fig 32

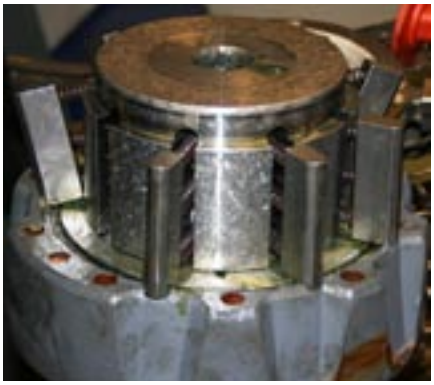


**Figure 33**

1. Remove the O-ring in the shaft end cover.
2. Grease the groove in order to install a new O-ring. The grease keeps the O-ring in its groove and prevents it getting crushed on re-assembly.

Fig 33

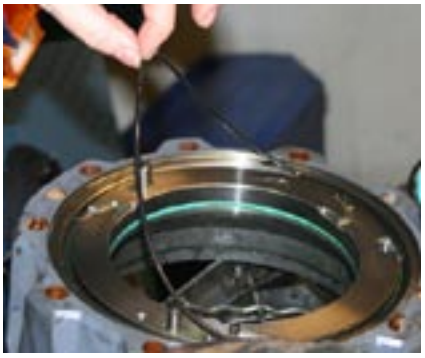
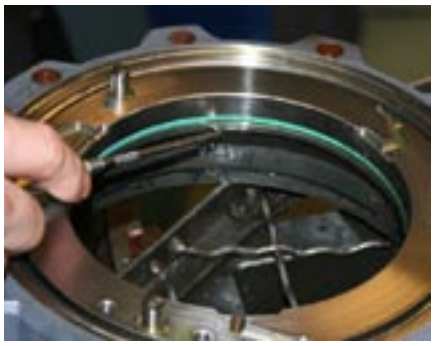


**Figure 34**

1. Remove the seal in the shaft end cover. Clean the seal seat and refit the O-ring and sliding sleeve.

Fig 34



## Assembly

### Figure 35

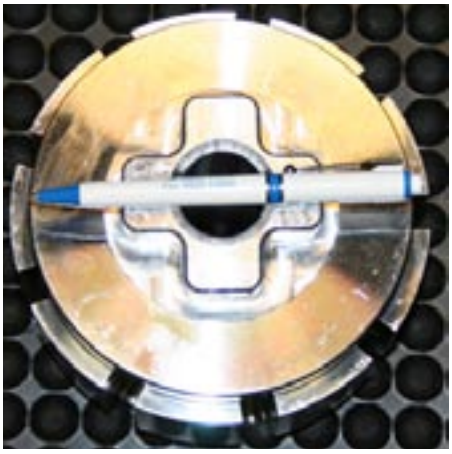
1. An assembly tool (art. no. 3100326) is needed to assemble the motor.
2. Place the shaft end cover on the assembly tool with the locating pins and the hole for the pressure valve facing upwards.

Fig 35

### Figure 36

1. Turn the motor shaft so that the cross (see the tip of the pen) points towards the hole for the locating pins and the rotation channels. Lower the motor shaft into the shaft end cover.

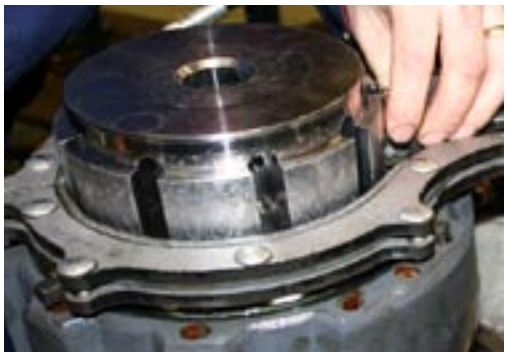
Fig 36



### Figure 37

1. Using the vane compressor, refit the vanes to the motor shaft, putting three vane springs in each vane.

Fig 37



### Figure 38

1. Begin by installing the first vane, which is located just behind the hole for the anti-shock valve, and continue anticlockwise. NOTE: Do not force the vane springs in towards the motor shaft; they must drop into their positions.

Fig 38

**Figure 39**

1. Put the pressure valve back in its position in the shaft end cover. The spring must be positioned downwards.

Fig 39

**Figure 40**

1. Refit the stator ring by holding the stator ring at an angle and pressing in the vane at “four o’clock”. In one movement, turn the stator ring and bring it to the horizontal position. All the vanes will then be correctly positioned.
2. Carefully tap the stator ring down into the vane compressor.
3. Refit the cones with the widest part downwards.
4. Use the stator ring assembly tool (art. no. 3100327) to line up the holes for the locating pins and the hole for the pressure valve (the pressure valve must be visible in the shaft end cover through the hole in the stator ring) so that they are correctly positioned.

Fig 40

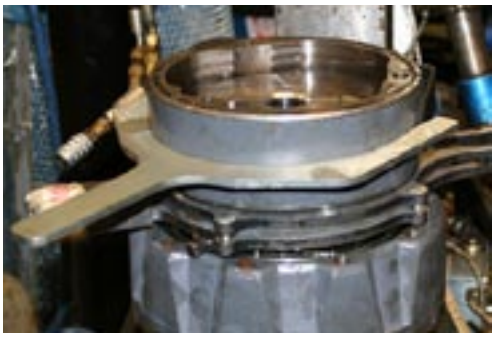


**Figure 41**

1. While pressing the stator ring downwards, release the vane compressor.

Fig 41

**Figure 42**

1. Before tapping down the stator ring, check that the O-ring in the shaft end cover is still in place. Check also that the pressure valve is correctly positioned. Tap the stator ring down to the shaft end cover.

Fig 42

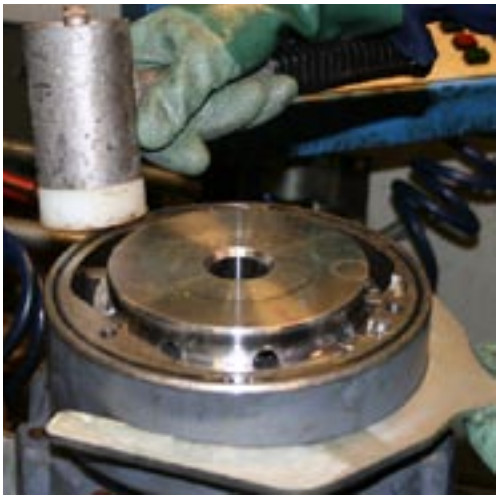


**Figure 43**

1. Check that the pressure valve in the shaft end cover is correctly positioned, with the spring downwards, by pressing the valve down with a screwdriver. It must spring back.

Fig 43

**Figure 44**

1. Position the pressure valve in the stator ring, with the spring upwards.

Fig 44

**Figure 45**

1. Refit the motor end cover to the motor shaft. Line up the hole for the pressure valve in the motor end cover in the stator ring.
2. Tap down the motor end cover.

Fig 45

**Figure 46**

1. Fit two M10x130 bolts to hold the motor together. Tighten them to a torque of 60 Nm. The motor is now ready to fit to the swivel housing and the swivel centre.

Fig46

**Note:**
The seals on the motor and shaft end covers can be replaced without dismantling the entire motor package. First remove the motor end cover, replace the seals and refit the cover. Then turn the motor over and remove the shaft end cover. Replace the seals and refit the cover. Before this method can be used, you must inspect the motor and shaft end covers and the stator ring for sharp-edged damage caused by contaminants, etc. If there is damage of this kind, the entire motor must be removed, dismantled and cleaned. Replace all parts that do not look good and re-assemble as described in this manual.