

# REPAIRS MANUAL

## GV 3, GV 4 and GV 6



Part no 1030 923

English

1999 04 08

This series of figures shows how to change all the seals, the thrust bearing and how to secure that correct shim thickness is installed. If major service is necessary, contact well-informed personal.

#### Cleanliness:

We recommend that rotators mounted on harvesters, are object to service inspection every 2000 hours. Thrust bearings should be replaced.

To increase a rotators lifetime:

- 1) Inspect magnetic plug every 1000 hours. (See fig. 19).
- 2) Every 40 hours of operation, at end of shift.
  - a) For rotators with unlimited rotation. Run the rotator at least 10 turns clockwise.
  - b) For rotators with limited rotation. Run the rotator against the rotation stop, or grab an object and run the clockwise function of the rotator for at least 3 minutes.

We also recommend that the locking screws retighten after about 100 hours of operation.

Check the following if the rotator tends to bind in one direction or if it's action is not smooth.

- 1) Throttle valves; see fig 16 and 36.
- 2) Correct pressure and flow.

This series of figures shows rotator model GV 4. These instructions apply also in principle for rotator model GV 3 and GV 6.

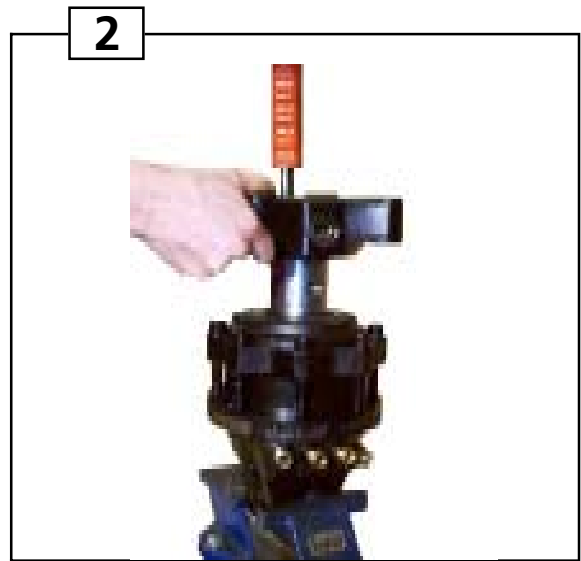
During service , part list with explosion view could be of hand.

There is another manual to rotator models GV 10/104, GV 11, GV 12, GV 14, GV 15 and GV 17.



**Fig. 1**

Turn the rotator upside down before starting to disassemble it. Start by unscrewing and removing the nipple guard, etc.



**Fig. 2**

(Not applicable to rotator models with no lower link)

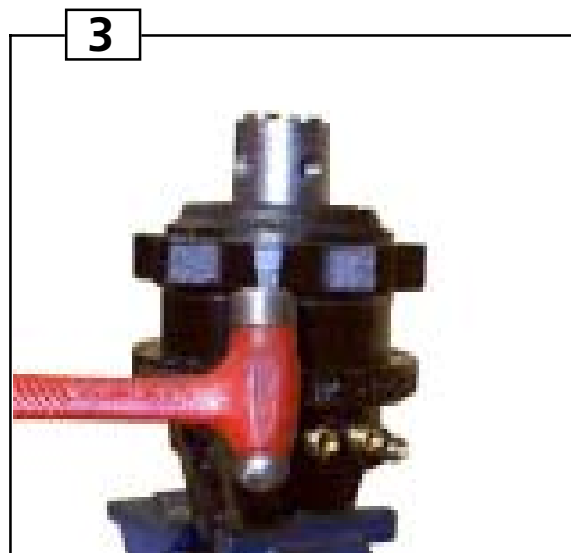
a) GV 3 FI, FK: Remove the M10x90 locking screw.

GV 4 FI, FK: Remove the M16x60 locking screw.

GV 6F: Start by removing the two locking screws R3/4". Lift out the cup springs assemblies and then tap out the wedges using tool part no. 5010 132. Make sure that the tool faces the right way, so that the shaft is not damaged when tapping.

GV 6RF: Remove the M20x65 locking screw.

b) Remove the radial connections or the plugs and then remove the mechanical joint by unscrewing the two screws M20. Lift off the lower link.



**Fig. 3**

Lift off the wiper/dust seal. (Does not apply to GV 4 or GV 6). Unscrew the bolted joint for the lower stator plate. Using a suitable tool, lift the lower plate from its guides.



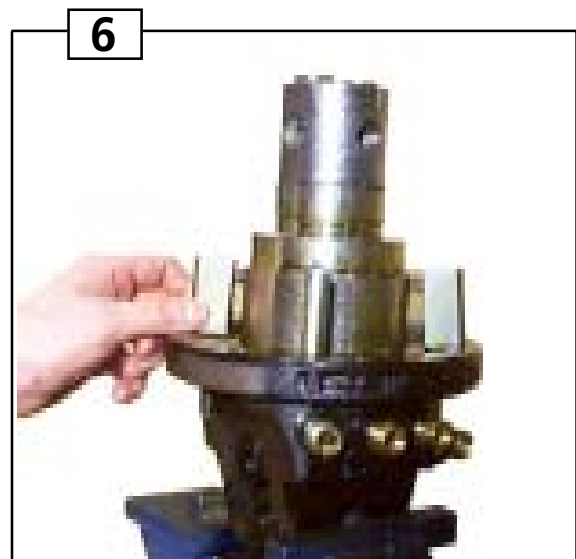
**Fig. 4**

Remove the shims and the thrust bearing. Use a suitable tool to lift the stator frame from its guides.



**Fig. 5**

Carefully lift the stator frame a little so that the vane mounting tool can be applied. Lock the tool so that the spring-loaded vanes are retained in their inner position. Lift off the stator frame.  
Note: Rotator model GV 4 have two restrictors placed in the stator frame.



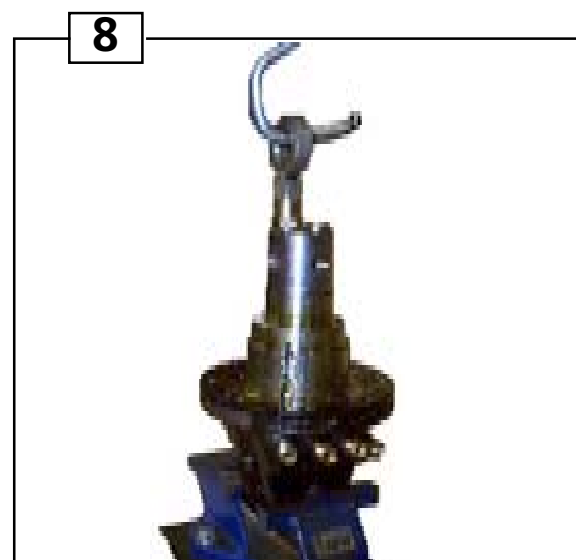
**Fig. 6**

Carefully loosen the mounting tool. Lift out the vanes and the vane springs.



**Fig. 7**

Rotator model GV 4 (only). Unscrew the plug.



**Fig. 8**

Lift up the shaft out of the upper stator plate.



**Fig. 9**

Remove the sliding O-rings. If a screwdriver or similar tool must be used to cut the sliding sleeves, very great care must be taken not to damage the sealing surfaces.

*Important: Clean all the parts from oil and other dirt carefully. If possible use a washer machine and air to clean all the parts, in the oil channel and other places where dirt can remain.*



**Fig. 10**

Fit the O-rings.



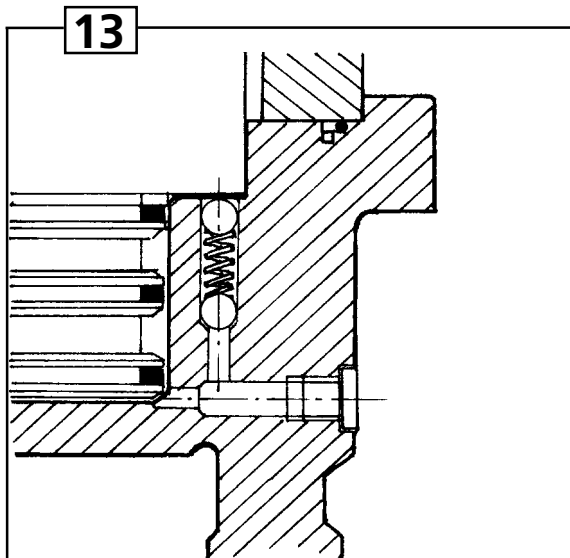
**Fig. 11**

Expand the sliding sleeves using the mounting tool.



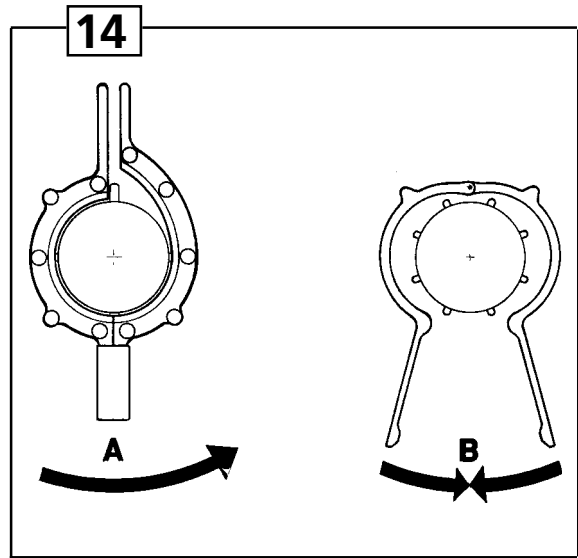
**Fig. 12**

The sliding sleeves must be compressed after having been mounted. This is also accomplished using the mounting tool.



**Fig. 13**

Fit the check valve (ball, spring, ball) (Only rotator model GV 4).  
Lubricate the swivel chamber with oil, and then fit the shaft and a new O-ring in the upper stator plate.



**Fig. 14**

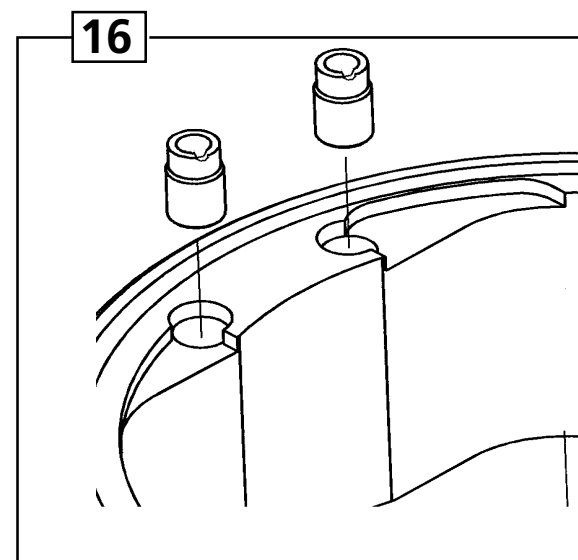
When fitting the vanes, ensure that the vane springs engage properly in their spring seats. Use the correct vane mounting tool to compress the vane assembly.

- (GV 4 and GV 6). Push the vanes into the grooves in the rotator shaft as the tool is rotated.
- (Only GV 3). Push the vanes into the grooves in the rotator shaft with the tool clamped together.



**Fig. 15**

Lubricate the inside of the stator frame with oil before installing it. Ensure that the O-ring in the upper stator plate is in its proper groove and that the guide pin in the upper stator plate engages in the appropriate hole in the stator frame. Then tap down the stator frame carefully using a rubber mallet.



**Fig. 16**

(Rotator model GV 4 only).  
Clean the restrictors from dirt. Mount the restrictors as shown in above illustration.



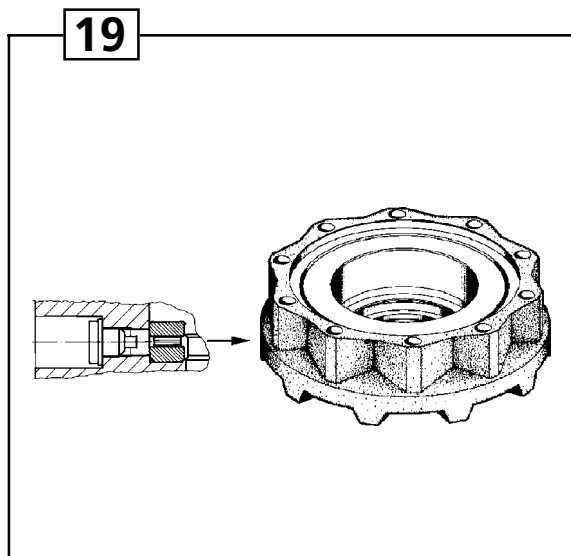
**Fig. 17**

Carefully inspect the thrust bearing. At even the smallest damaged of these parts a complete new set of thrust bearing has to be assembled. Place the thrust bearing on the rotator shaft, put some oil on a new o-ring and mount it on the stator frame. Mount the shim.



**Fig. 18**

Install the axial seal (black seal and yellow support ring).  
 GV 4 and GV 6: Install a new wiper/dust seal in the lower stator plate.



**Fig. 19**

If the rotator has an magnetic plug, disassembled it and clean the plug from contamination. Reinstall the plug with a torque of about 40-60 Nm (29-44 lbf-ft).



**Fig. 20**

Take care to ensure that the shim and thrust bearing are not displaced when installing the lower stator plate. Tighten the bolts in a criss-cross pattern.  
 Torque GV 3: 60 Nm (44 lbf-ft)  
 Torque GV 4 and GV 6: 120 Nm (89 lbf-ft)



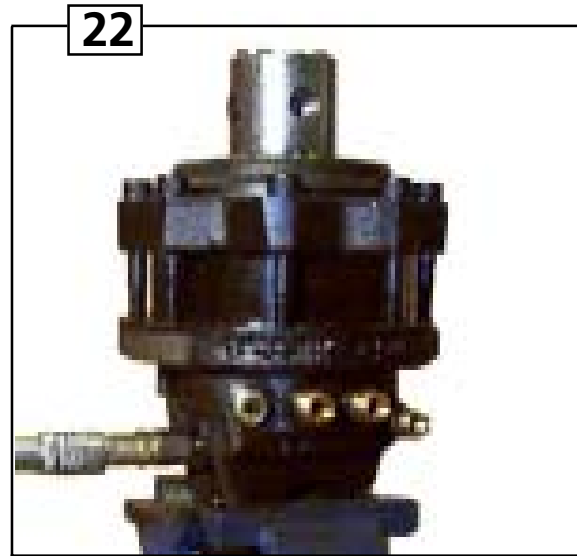
**Fig. 21**

*It is essential to check the shimming effect very carefully if the shaft, stator frame, lower/upper stator plate or thrust bearing has been replaced.*

(If you don't have the proper equipment to test the right thickness of the shim by hydraulic pressure, see fig. 27-28).

GV 4: Start by mounting test nipple part no. 5011 137 instead of the plug shown as of fig. 7.

GV 3 and GV 6: See fig. 23.



**Fig. 22**

Connect oil to the test nipple. Use a hand pump or a hydraulic system. Pump up the pressure to 230 Bar (3340 psi).



**Fig. 23**

On GV3 and GV 6 models, use the "GO" (grapple open function). Connect the oil to the "GO" function. Remember to plug the shaft at the top, before pressurising the "GO" function. Pump up the pressure to:

GV 3: 350 Bar (5075 psi)

GV 6: 480 Bar (6960 psi)



**Fig. 24**

When enough pressure reached, try to rotate the shaft with a suitable tool. You must be able to rotate the shaft at stated pressure as well as at no pressure.





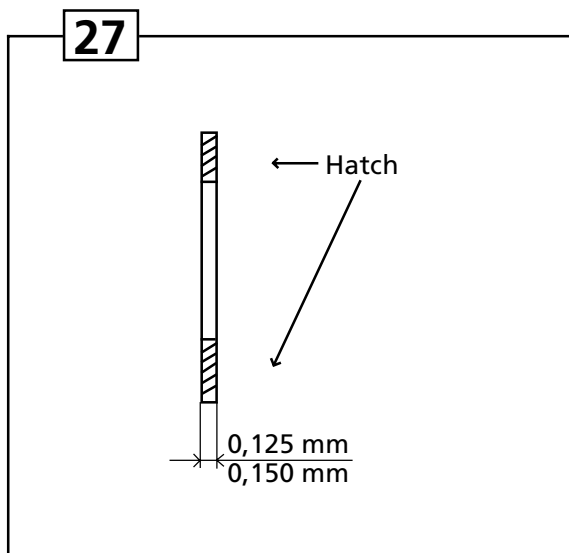
**Fig. 25**

If the shaft is stuck or refuses to rotate, the size of the shim has to be changed as below:  
 You can't move the shaft at recommended pressure: Change to a thicker shim.  
 You can't move the shaft at no pressure: Change to a thinner shim.



**Fig. 26**

Try to rotate the shaft again. When correct shim size has been installed, continue the assembly with fig. 29.



**Fig. 27**

How to test the correct shim size without hydraulic pressure. Install a shim 0,125 or 0,150 mm. Tighten the lower stator plate as shown in fig. 20. Try to rotate the shaft with a suitable tool.



**Fig. 28**

If you feel that the shaft is too easily moved, a thicker shim should be installed, and in the opposite way, if the shaft is stuck, you should switch to a thinner shim. As this test is completed and the correct size of shim installed, continue to fig. 29.



**Fig. 29**

Protect the lower stator plate against corrosion using Dinitrol, grease or similar medium.



**Fig. 30**

(Rotator model GV 3 only)  
Fit the wiper/dust seal.



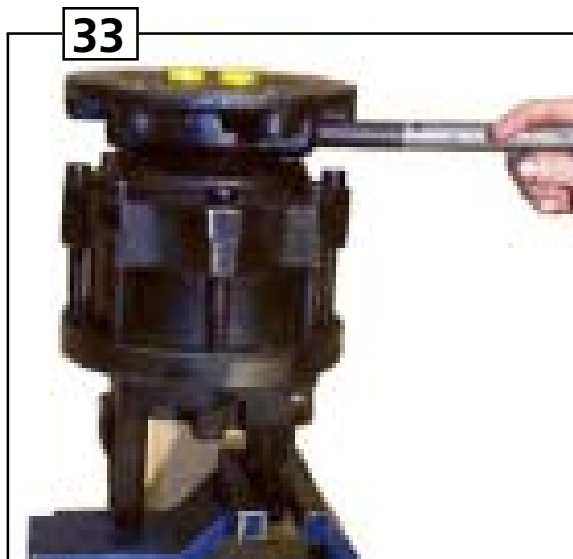
**Fig. 31**

(Rotator model GV 3FI/FK only)  
Install the lower link on the shaft. Start by installing radial connections or plugs. Install the locking screw M10x90 with approximately 60 Nm (44 lbf-ft). Then tighten the mechanical joint, the 2 screws M20x100 with 600 Nm (443 lbf-ft). Then retighten the screw M10x90 once again with 60 Nm (44 lbf-ft).



**Fig. 32**

(Rotator model GV 4FI/FK and GV 6RF only)  
Start by installing new o-rings on the shaft and carefully install the lower link on the shaft. Install respective locking screw (M16/M20) to locate the lower link to its "home" position.  
GV 4FI/FK: Tighten the screw M16 with 300 Nm (221 lbf-ft).  
GV 6RF: Tighten the screw M20 with 600 Nm (443 lbf-ft). Then tighten the mechanical joint, the 2 screws M20x100 with 600 Nm (443 lbf-ft). Fit any connections or plugs in the radial outlets.



**Fig. 33**

(Rotator model GV 6F only)  
Install the lower link so that the wedge slots in the shaft aligns with corresponding slots in the lower link. Install the wedges by using the wedge tool part no. 5010 132.



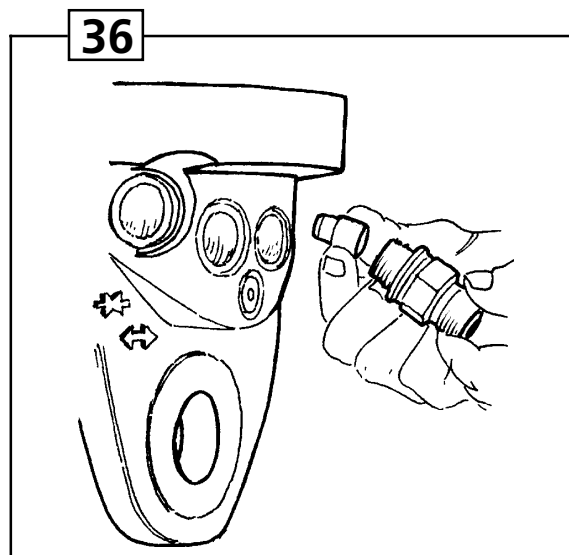
**Fig. 34**

(Rotator model GV 6F only)  
Fit the spring washers (cone to cone/cup to cup) and tighten the locking screws behind the wedges with 200 Nm (148 lbf-ft).



**Fig. 35**

(Rotator model GV 4 only)  
Reinstall the plug which was disassembled at fig. 7.



**Fig. 36**

(Rotator model GV 3 and GV 6 only)  
Check that the valves (orifices) for the rotator function are free from contamination and that they slide freely in their installed position.