

LENNTECH

info@lennotech.com Tel. +31-152-610-900
www.lennotech.com Fax. +31-152-616-289

Danfoss

Instruction

Disassembling and assembling iSave 40



Instruction Disassembling and assembling iSave 40

Table of Contents	
1.	General information.....2
2.	Disconnect the iSave from electric motor3
3.	Disassembling the booster pump5
4.	Assembling the booster pump8
5.	Disassembling the pressure exchanger13
6.	Assembling the pressure exchanger15
7.	Assembling the cylinder drum in pressure exchanger19
8.	Changing spring in the rotor20
8.1	Disassembling20
9.	Exploded view vane pump21
10.	Exploded view pressure exchanger22
11.	Exploded view iSave23
12.	Exploded view iSave on baseplate, horizontal24
13.	Exploded view iSave on foot, vertical25

1. General information

This document illustrates instructions for disassembling and assembling the iSave 40.

To understand the design of the iSave, see exploded views starting on page 21.

Always use suitable lifting equipment.

Important!

It is essential that the iSave is serviced in conditions of absolute cleanliness.



- The weight of the iSave, including electric motor, is about 260 kg (573 lb).
- The weight of the pressure exchanger alone is about 75 kg (165 lb).
- The weight of the booster pump alone is about 50 kg (110 lb).

Tools needed to disassemble the iSave:

Parts included in tool set (180F4112):

- 6 mm and 8 mm allen key
- C-wrench 24 mm
- 1 M6 bolt and nut
- Handel for rotor assembly
- Tool for shaft seal assembly
- Tool for retainer assembly
- 3 press bolt-set for valve plate assembly

Parts not included in tool set:

- 2 screwdrivers
- Torque wrench 10-60 Nm

To prevent cold welding, lubricate threads of the screws with PTFE lubrication type and screw them into the component and tighten by hand.



2. Disconnect the iSave from electric motor

1. Apply a light lifting force on the pressure exchanger and disconnect the support bracket between the pressure exchanger and base plate.



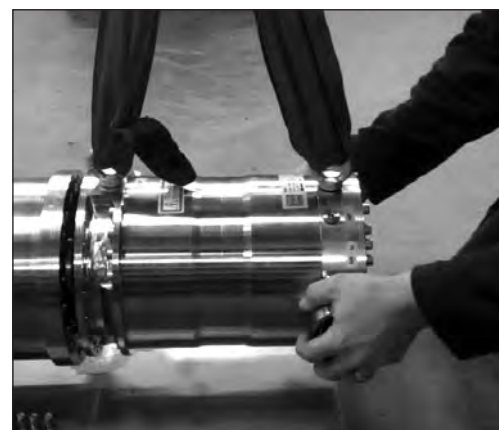
2. Unscrew 10 bolts in the adapter flange between booster pump and pressure exchanger. Leave the 2 upper bolts tighten.



3. Unscrew the 2 upper bolts.



4. Carefully pull and lift the pressure exchanger from the booster pump.



5. To disconnect the bell housing, unscrew the 4 bolts on the electric motor.



6. Carefully pull and lift the booster pump from the electric motor.

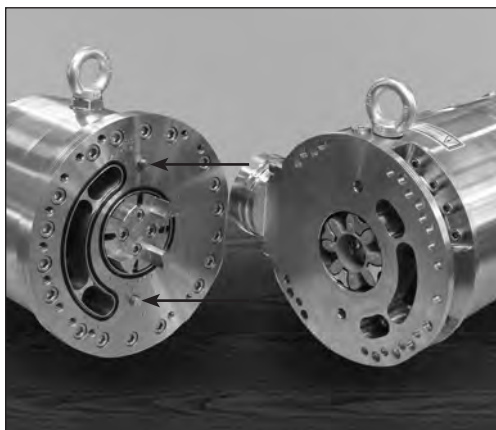


7. Disassemble the bell housing from the booster pump by unscrewing the 4 bolts in the bell housing.



8. It is also possible to disconnect the complete unit from the motor first. In this case, please follow step 1, 5, 6 and 7 afterwards.

9. After the pressure exchanger is released from the booster pump, remove the two guide pins.



3. Disassembling the booster pump

1. Disassemble the flange for shaft seal.

If flange cannot be removed easily, use two M8 bolts.



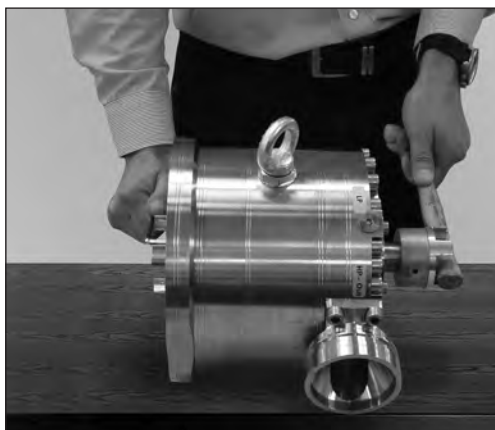
2. Wet the shaft seal first with clean filtered water. Carefully lift the shaft seal by using 2 screwdrivers.

3. If coupling has to be changed, follow the next two steps.

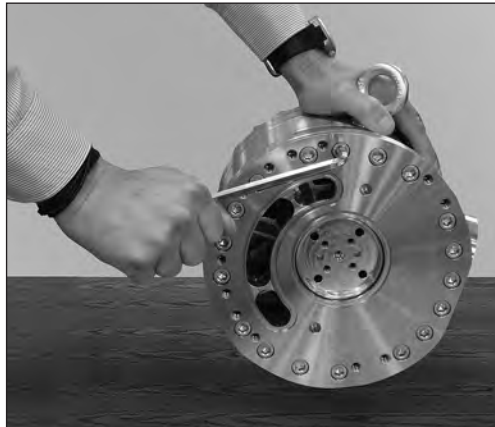
4. Unscrew the 4 coupling bolts. Use a hammer handle at the opposite end to prevent the shaft from turning.



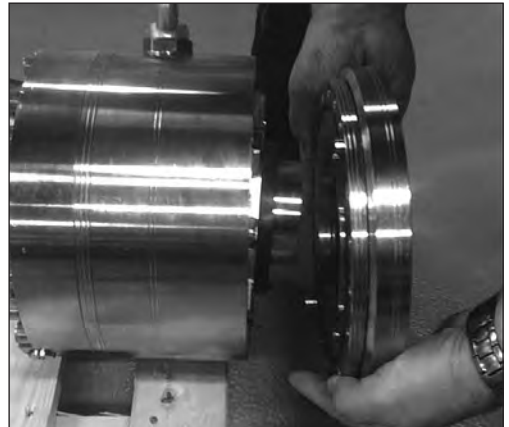
5. Remove coupling and the two pins.



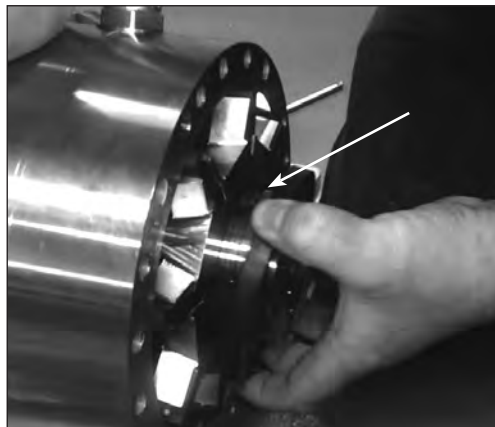
6. Loosen all the bolts in the adapter flange.



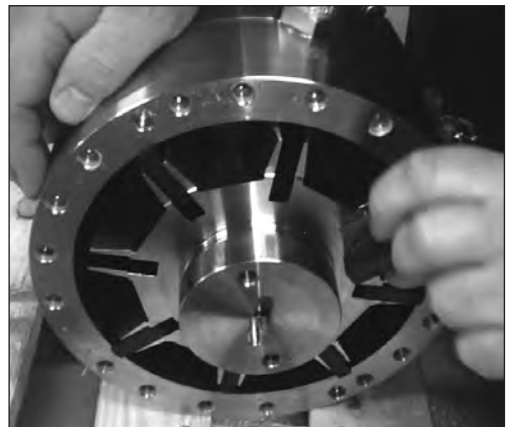
7. Carefully disassemble adapter flange and port plate from the stator ring.



8. Remove the sealing plate.



9. Remove the 8 vanes.



10. Carefully guide the rotor out of the stator.



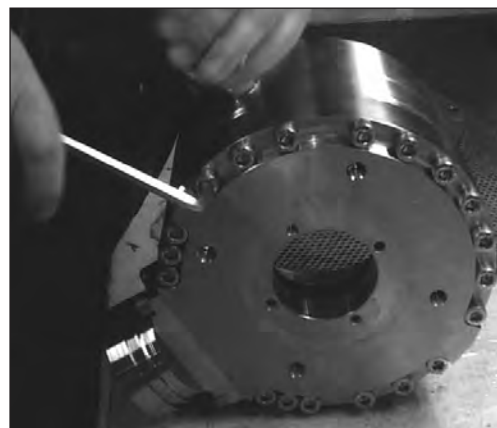
11. Remove the sealing plate and pin.



12. Remove the O-ring from the sealing plate.



13. Unscrew the bolts in the outlet flange.



14. Remove the HP outlet flange.



15. Remove the port flange.



4. Assembling the booster pump

WARNING:
Do not use silicone when assembling the iSave. Do not reuse disassembled O-rings; they might be damaged. Always use new O-rings.

Important:
It is essential that the pump is serviced in conditions of absolute cleanliness. All parts must be absolutely clean before mounting.

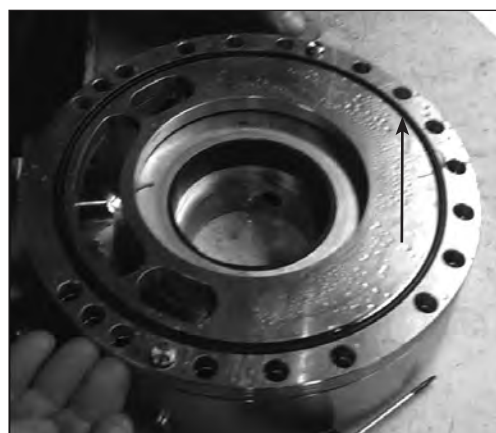
Lubrication:

- To prevent seizing-up, lubricate all threads with PTFE lubrication type.
- It is important to lubricate ALL parts to be assembled with clean filtered water (Especially all PEEK parts).

1. Place the HP outlet flange on the desk and mount the O-ring and 2 pins.



2. Align the port plate-out on the two pins and mount the O-ring on the port plate.



3. Turn the stator with the two identification rings closest to the port plate and position the stator on the 2 pins.



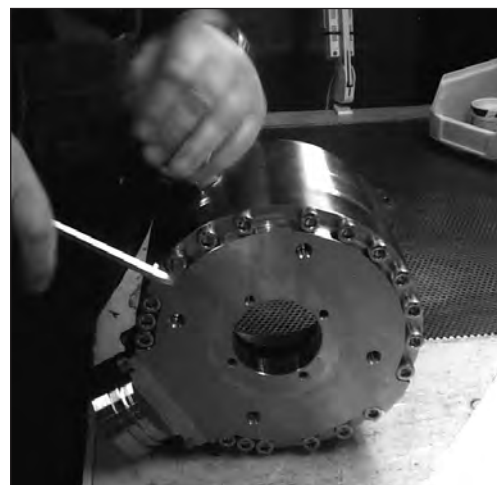
4. From down side up and by hand, screw in two bolts in the stator.



5. Tighten the bolts by using an allen key.



6. Tilt the flange and stator; assemble and screw in the rest of the bolts in the flange. Tighten bolts to a torque of 60 ± 6 Nm.



7. Assemble and position the two pins in the pin holes.



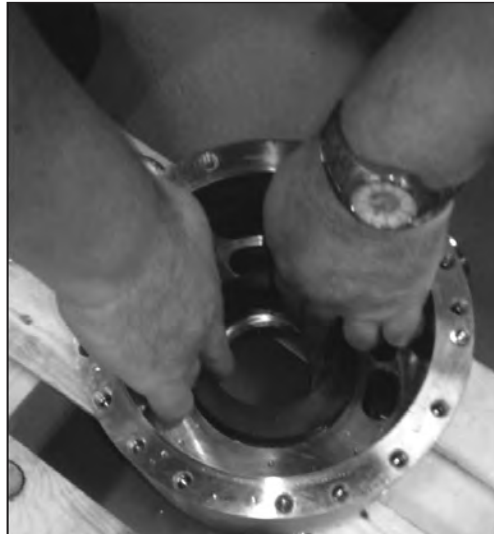
9. Mount the O-ring in the sealing plate and guide pin in flange.

It is important to lubricate to ensure the O-ring does not drop out.



10. Position the sealing plate on the guide pin.

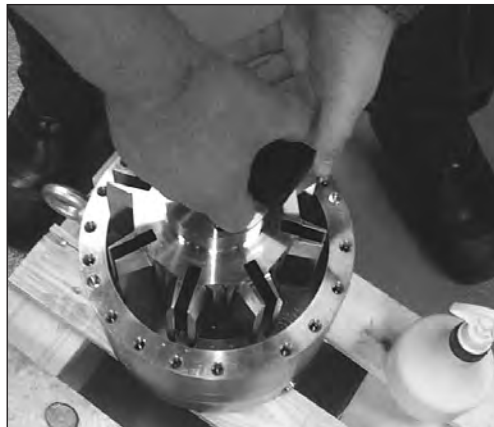
Ensure correct choice of sealing plate.
Only one sealing plate fits the guide pin.



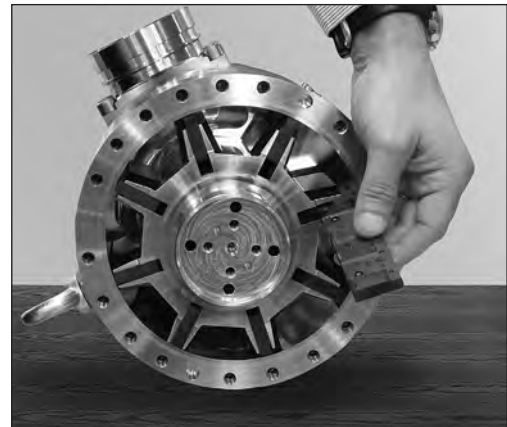
11. Position the 8 pins in the rotor. 2 pins in each hole.



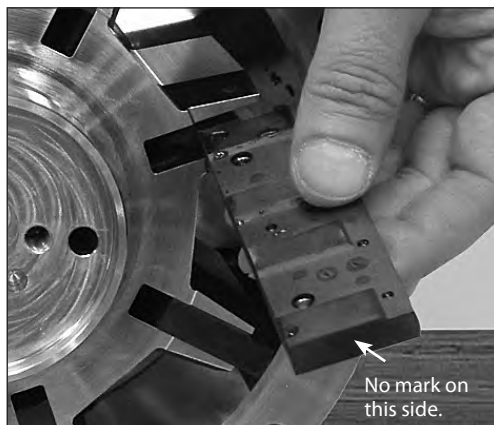
12. By using the handle tool provided, carefully lever the rotor into the stator.



13. Fit the 8 vanes into each slot. Notice vane position. Place the straight side of the vane onto the pin with the mark downward.



14. Orient the vanes with correct end into rotor. See the arrow below.



15. Assemble the new O-ring on the adapter flange.



16. Assemble the new O-ring on the port plate-in.



17. Position the port flange in on the adapter flange and position the two guide pins.



18. Assemble the new O-ring on the correct sealing plate.

It is important to lubricate to ensure the O-ring does not drop out.



19. Position the guide pin in the adapter flange.



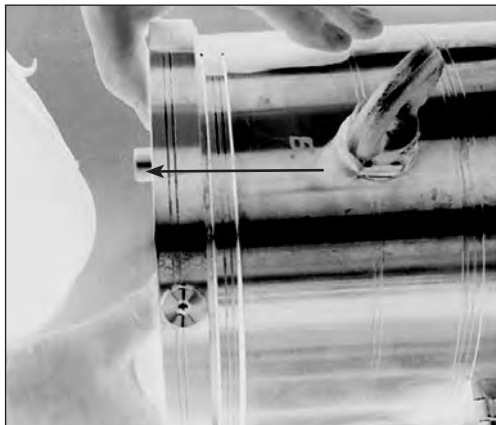
20. Position the sealing plate over the guide pin.



21. Carefully position the adapter flange assembly into the two guide pin holes.



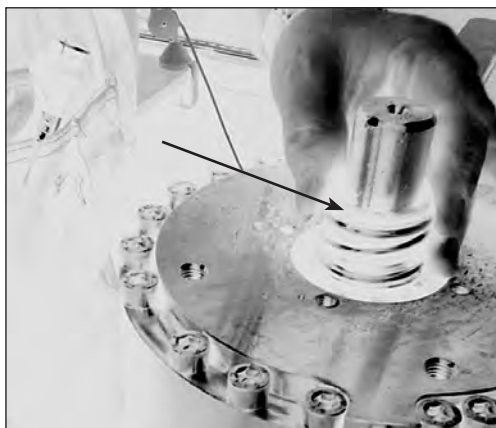
22. Mount two bolts in the adapter flange.



23. Mount all bolts in the adapter flange. Tighten the bolts to a torque of 30 ± 3 Nm.



24. Turn the pump with shaft upwards. Lubricate the shaft and shaft seal with clean filtered water. Mount the shaft seal with the carbon ring upwards.



25. Using the shaft tool provided, carefully press down the shaft seal to the shoulder of the shaft.

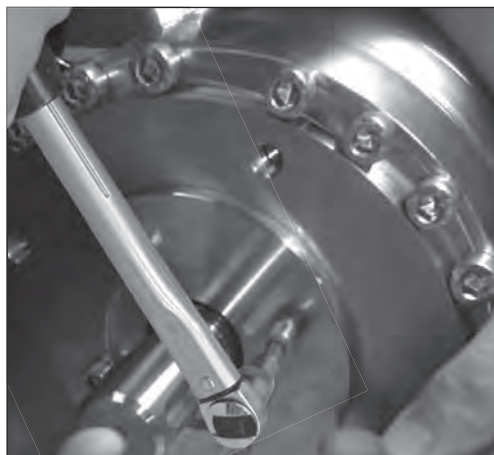


26. Lubricate and press new ceramic ring into the shaft seal cover by using the press bush tool.

WARNING:
Ensure that the face with rubber seal is positioned against shoulder in shaft seal flange.



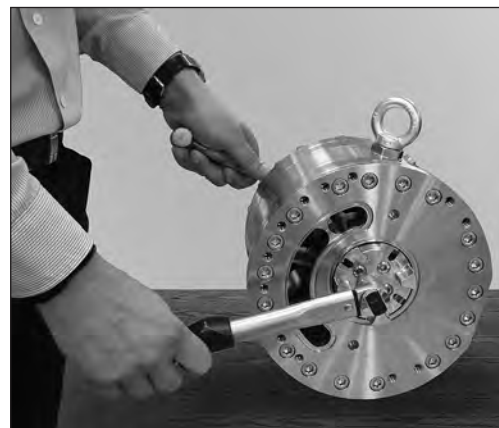
27. Mount a new O-ring on the flange for shaft seal and assemble the minor flange on top of the flange. Tighten bolts to a torque of 30 ± 3 Nm.



28. Mount the two pins and the coupling part.

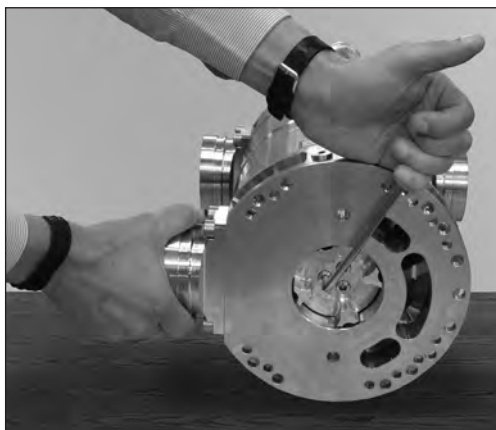


29. Mount the four bolts and tighten them to a torque of 30 ± 3 Nm.

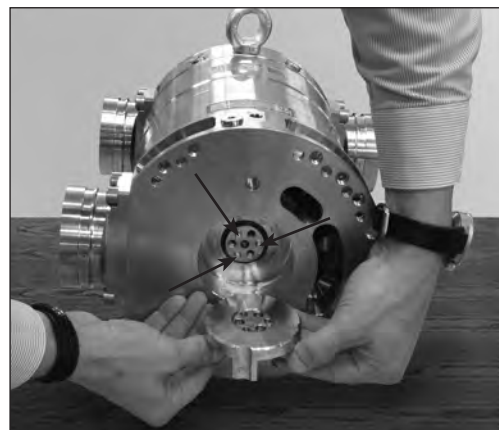


5. Disassembling the pressure exchanger

1. Unscrew the 3 coupling bolts.



2. Remove coupling and the 3 pins.



3. Unscrew all the bolts.



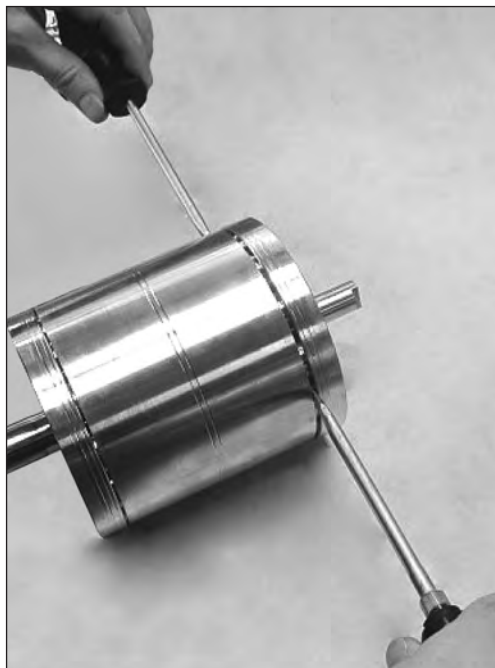
4. Carefully lever the flange and port plate from the casing.



5. Carefully take the cylinder barrel assembly out of the casing.
6. Remove port plate and the two pins.



7. Carefully lever the 2 valve plate assembly free with help from 2 screwdrivers.



6. Assembling the pressure exchanger

WARNING:
Do not use silicone when assembling the iSave. Do not reuse disassembled O-rings; they might be damaged. Always use new O-rings.

Important:
It is essential that the pump is serviced in conditions of absolute cleanliness. All parts must be absolutely clean before mounting.

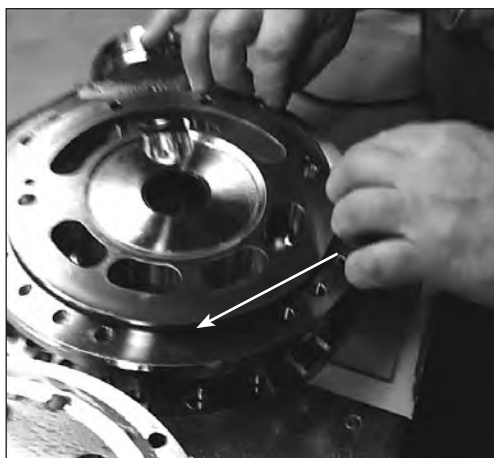
Lubrication:

- To prevent seizing-up, lubricate all threads with PTFE lubrication type.
- It is important to lubricate ALL parts to be assembled with clean filtered water (Especially all PEEK parts).

Assembling cylinder barrel in pressure exchanger, see page 19.

Follow step 1-3 if LP in flange has been disassembled from casing.

1. Assemble the O-ring on the LP in port flange.



2. Position the guide pin into the casing.



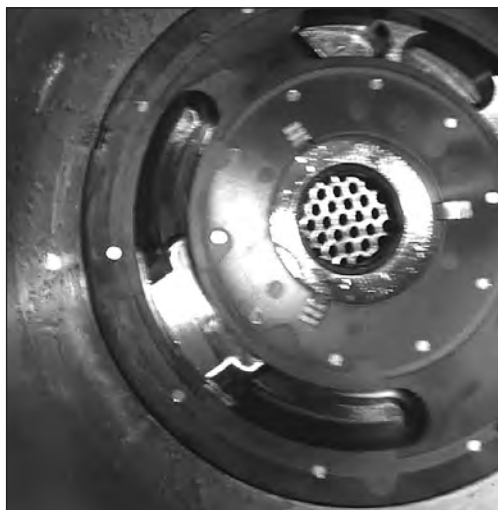
3. Position the LP in flange on the guide pin and assemble all the bolts into the casing. Tighten the bolts to a torque of 30 ± 3 Nm.



4. Turn the assembly and position the two guide pins in the flange inside the casing.



5. Position the port plate on the flange using the two guide pins as guide. Only one port plate fits.



6. Mount the provided M6 threaded rod into the shaft of the cylinder barrel.



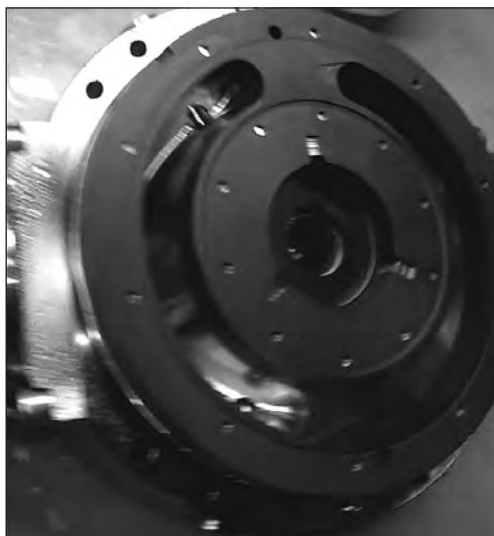
7. Carefully guide the cylinder barrel into the flange bearing.



8. Assemble the O-ring on the HP/LP flange and position the two guide pins into the flange.



9. Position the port plate on the HP/LP flange using the two guide pins as guide. Only one port plate fits.



10. Position the guide pin into the casing.



11. Carefully position the flange assembly onto the guide pin in the casing.



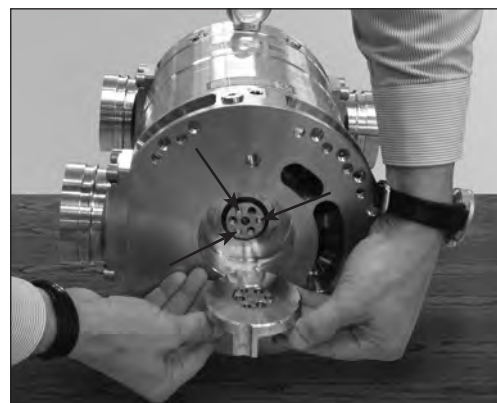
12. Carefully assemble a bolt into the casing to ensure that flange assembly stays in place.



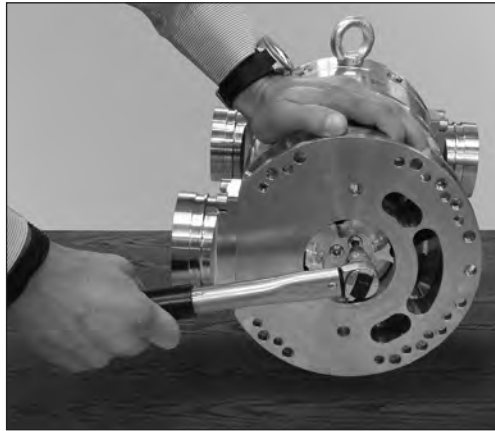
13. Assemble all the bolts and tighten them to a torque of 30 ± 3 Nm.



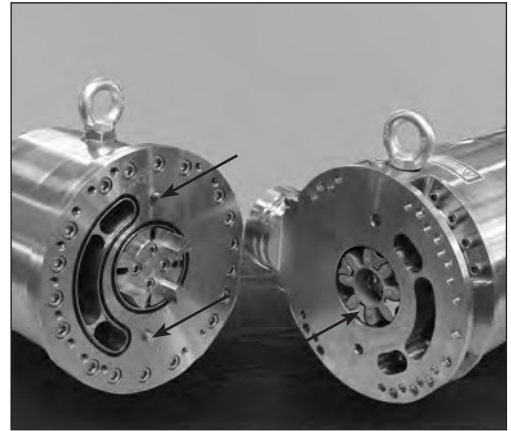
14. Mount the 3 pins in shaft and place the coupling part.



15. Tighten the bolts to a torque of 30 ± 3 Nm.



16. Assemble booster pump and pressure exchanger. Mount the two guide pins and coupling spacer.



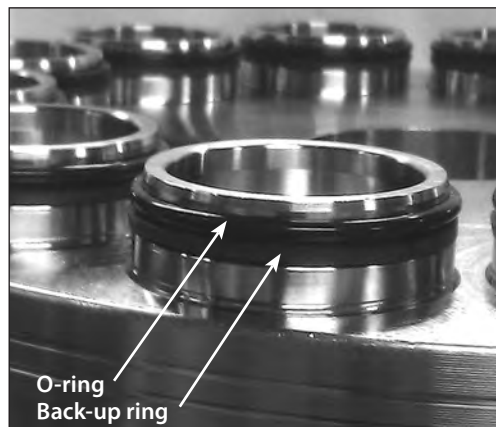
17. Tighten bolts to a torque of 60 ± 6 Nm.



7. Assembling the cylinder barrel in pressure exchanger

The shaft is normally not a wear part and can only be changed by Danfoss.

1. Assemble back-up rings and O-rings on the valve plates. Back-up rings first.



2. Lubricate the O-rings and back-up rings with clean filtered water and position the two valve plates into the rotor ends.



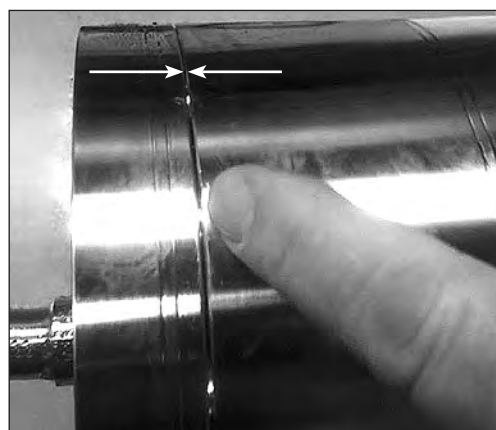
3. Using the tools provided gently screw in the valve plates.



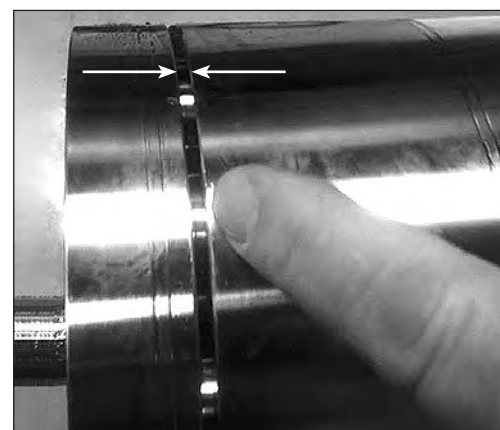
4. Check the distance between the two valve plates and the cylinder barrel. Adjust the distance if necessary.



Small shaft diameter: No distance.



Large shaft diameter: Distance 4-5 mm.



8. Changing springs in the pressure exchange rotor.

It is basically not necessary to change the springs in the rotor. If needed, follow the guidelines below:

8.1 Disassembling

Using the tool provided, press down the retainer and remove/cut the O-ring, and remove retainer.

1. Replace springs in the rotor.



2. Assemble the retainer over the springs.

3. Assemble the O-ring over the retainer.

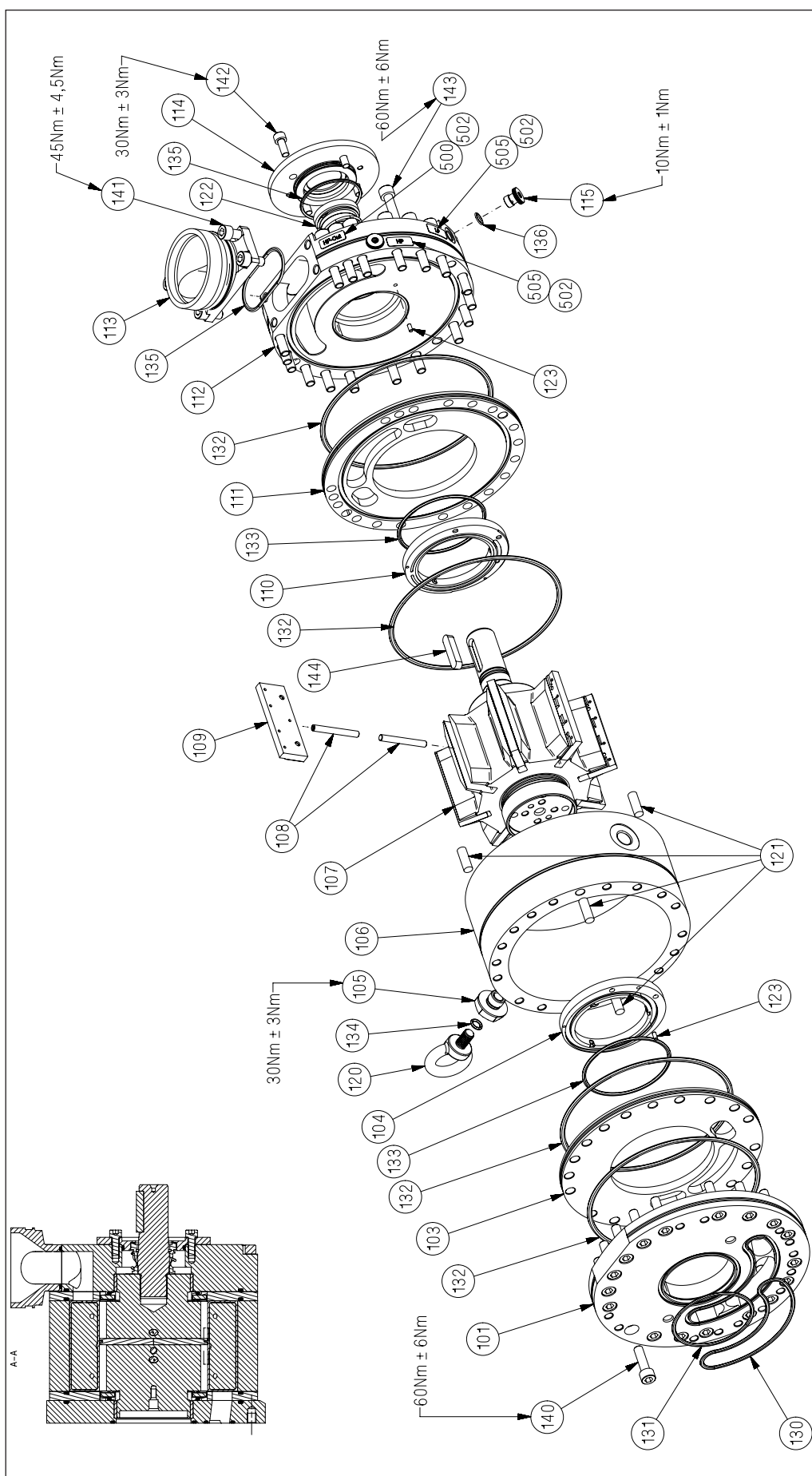


4. Using the tool provided, press down the retainer by tightening the nut until the O-ring is placed in the recess.

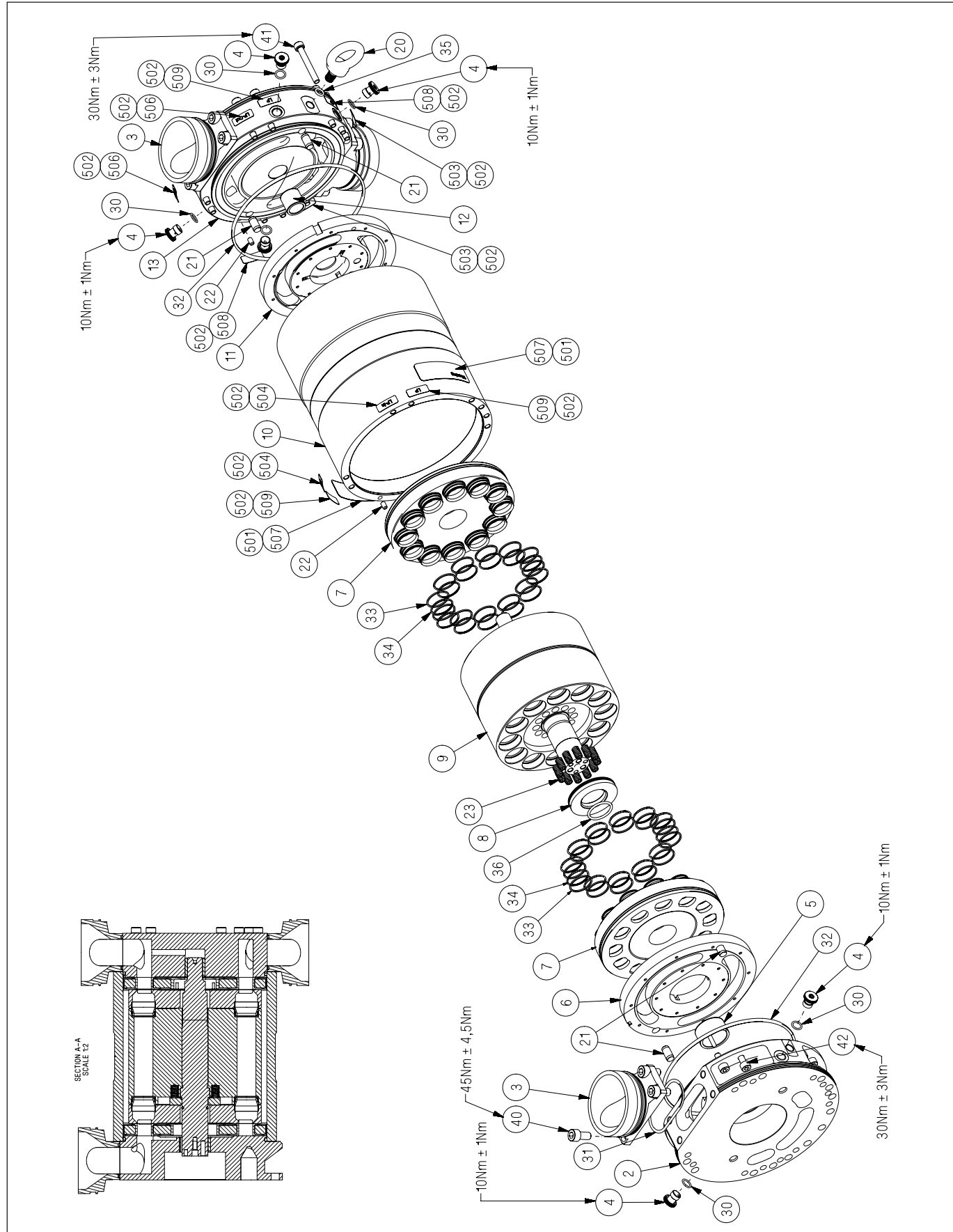
5. Carefully lever the bolt and tool assembly and check the O-ring assembly.



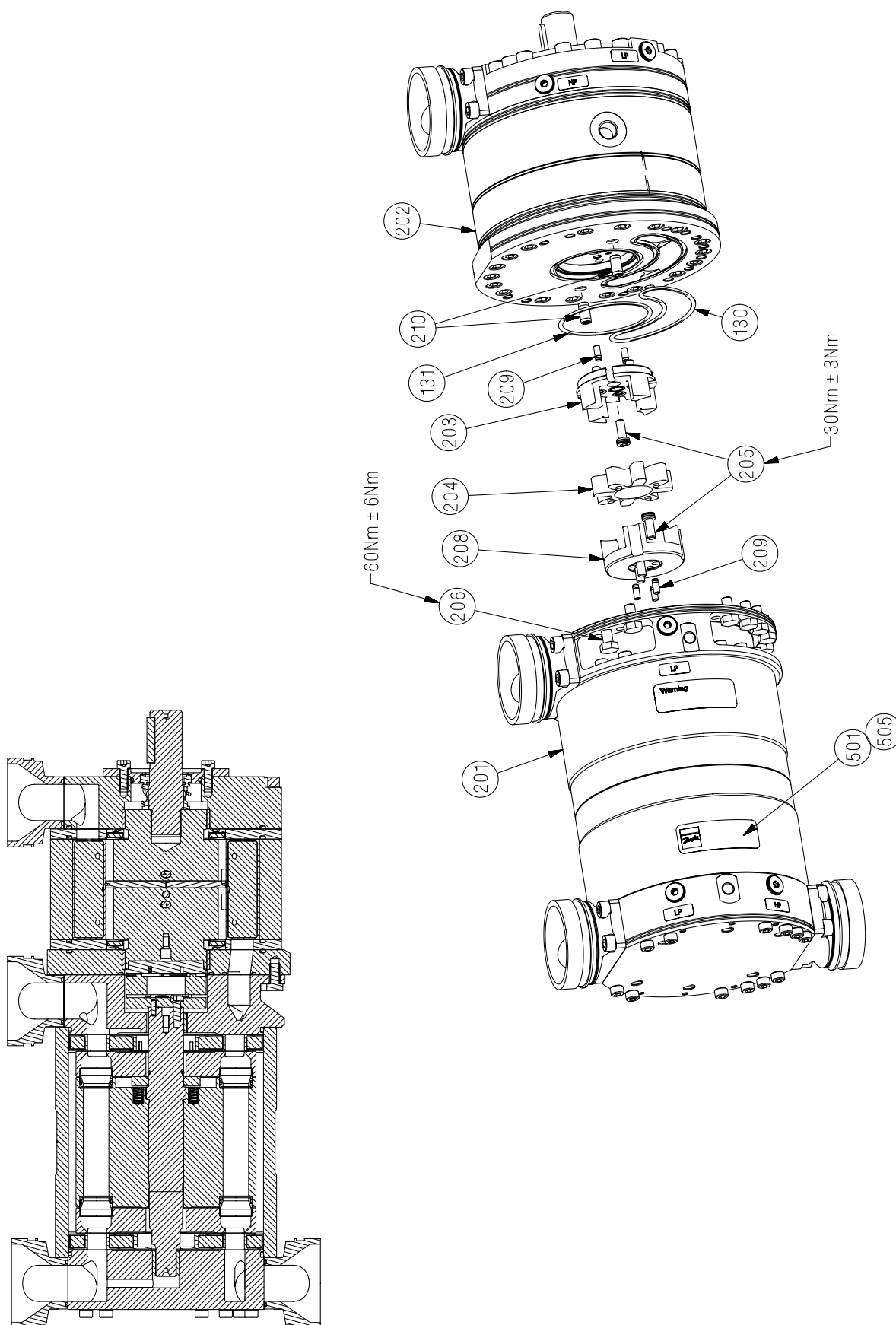
9. Exploded view
vane pump



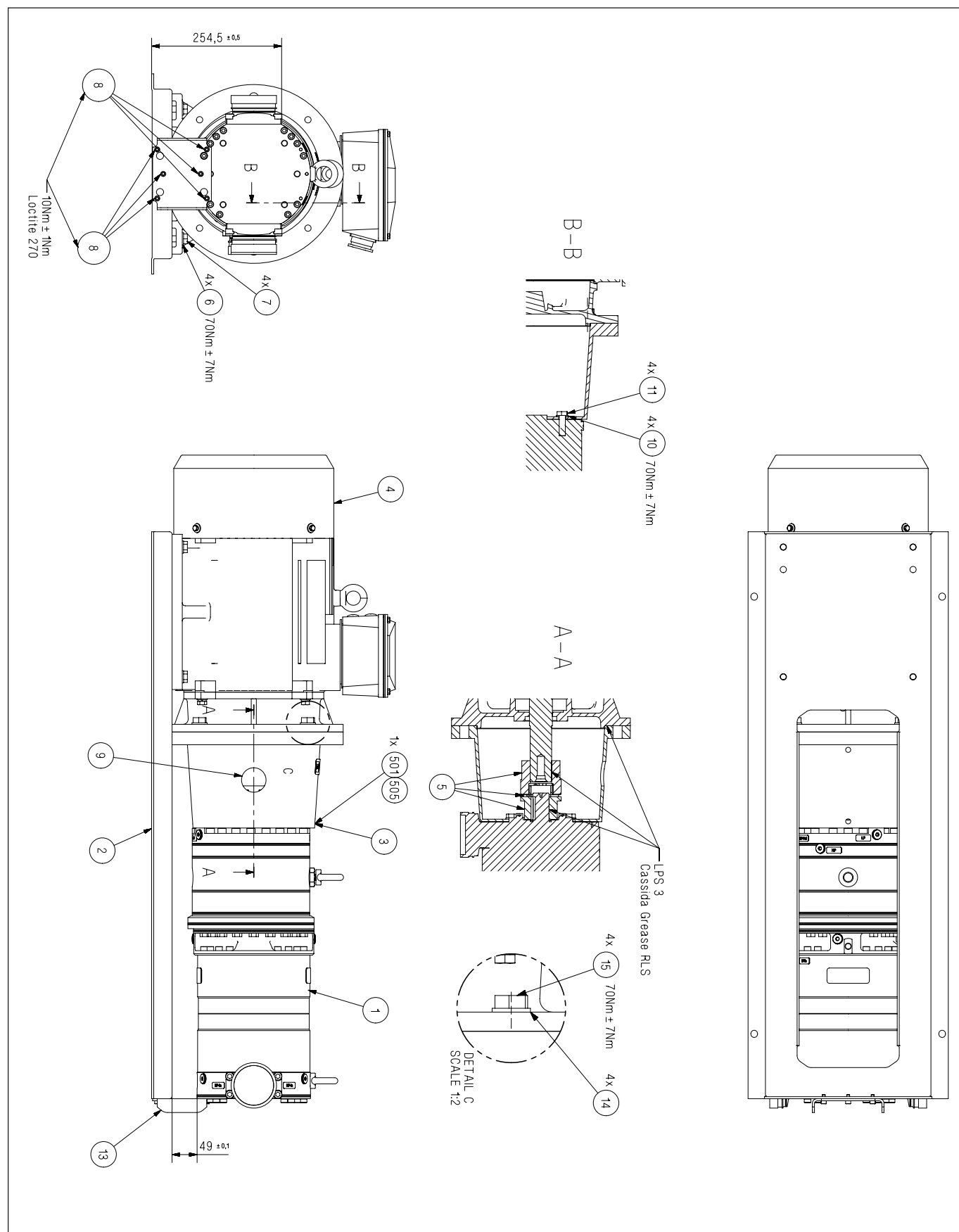
10. Exploded view
pressure exchanger



11. Exploded view iSave



12. Exploded view
iSave on base plate,
horizontal



LENNTECH

info@lennotech.com Tel. +31-152-610-900

www.lennotech.com Fax. +31-152-616-289