

Service instruction

# Disassembling and assembling iSave 21



**Service instruction      Disassembling and assembling iSave 21**

|                          |     |                                            |    |
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**1. General Introduction**

This document covers the instructions for disassembling and assembling the iSave 21.

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

For a better understanding of the iSave, please see the exploded view in item 8, 9 and 10.

**The weight of the iSave is 65 kg / 143 lb and it must be lifted with suitable lifting equipment.  
The weight of the pressure exchanger alone is 28 kg / 62 lb.**



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

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

Tools needed for disassembling the iSave:

- 6 mm and 8 mm allen key
- 2 screwdrivers
- 2 M8 bolts
- Plastic tube
- Plastic tool for shaft seal assembly
- Loctite 270



Torque wrench with special socket  
Code no. 180Z0610



**2. Disassembling  
the iSave**

1. Place the iSave on a clean table.



2. Unscrew the bolts in the flange.

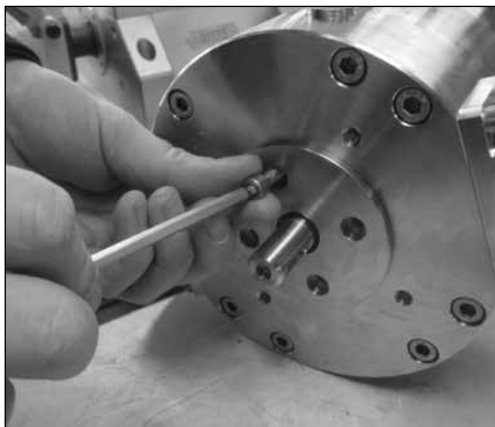


3. Remove the vane pump.

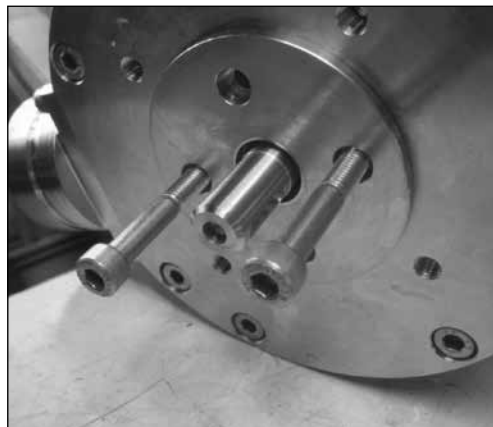


3. **Disassembling the pressure exchanger**

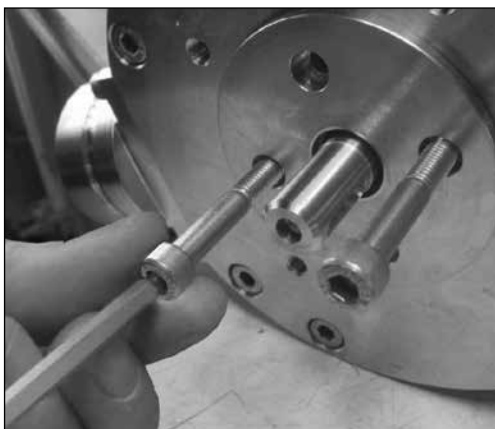
1. Unscrew the bolts in the flange.



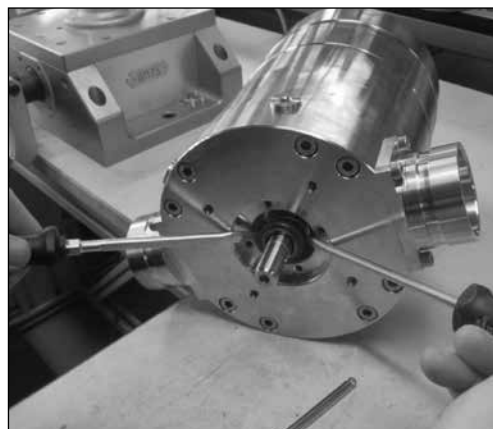
2. Screw in the two M8 bolts.



3. Gently push out the flange.



4. Wet the shaft and shaft seal with clean filtered water. Gently lever the shaft assembly free using 2 screwdrivers.



5. Unscrew the bolts in the flange.



6. Gently remove the flange.



**Note: Loose parts on the inside of the flange.**

7. Gently remove the cylinder barrel.



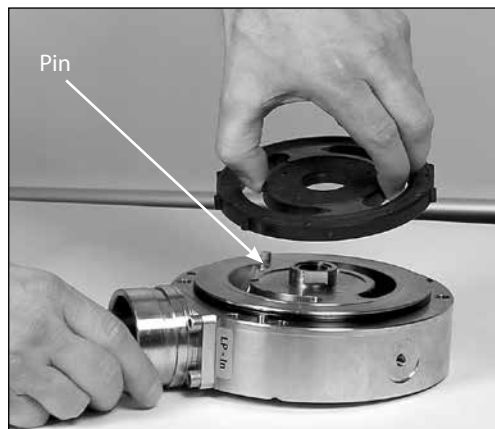
8. Unscrew the bolts in the flange.



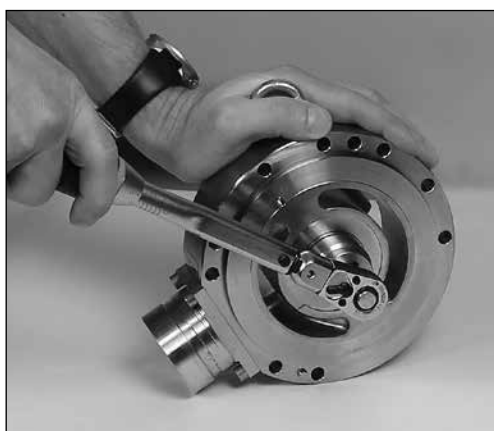
9. Gently remove the housing.

10. Remove port plate and pin.

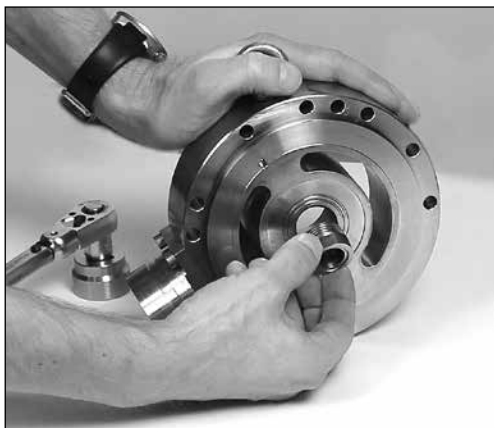
**Note: Loose parts on the inside of the flange.**



11. Unscrew high-pressure bearing using a special socket.



13. Remove the high-pressure bearing.



14. Gently lift the valve plate assembly free with the aid of the screwdrivers.



15. Gently remove both valve plates.



16. Replace the O-rings and the back-up rings on the valve plate.



#### 4. Assembling the pressure exchanger

1. Mount the new back-up rings on the valve plate first and then the new O-rings.



2. Lubricate all the bores in the cylinder barrel with grease and clean filtered water.



3. Gently press, by hand, the first valve plate onto the cylinder barrel.

Note: don't scratch the valve plate when placing it on the plastic tube.



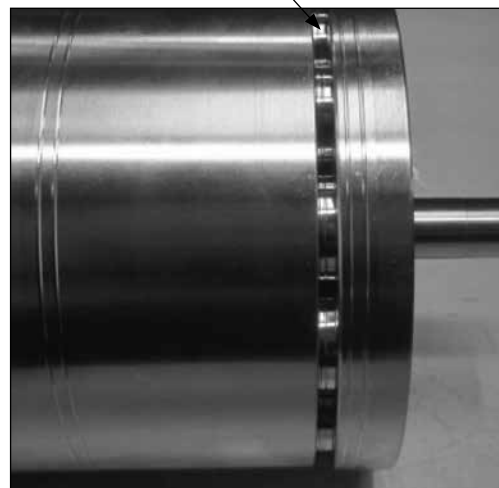
4. Gently press, by hand, the second valve plate onto the cylinder barrel by placing it on the plastic tube.

Note: don't scratch the valve plate when placing it on the plastic tube.



5. Adjust the distance between the cylinder barrel and the **second** valve plate (short shaft end).

The distance must be about 4-6 mm. This is not critical.



6. Mount the high-pressure bearing



7. Tighten the high-pressure bearing using special socket and torque wrench with  $70\text{Nm} \pm 7$



8. Remove old O-ring with a new one



9. Position the housing over the guide pin



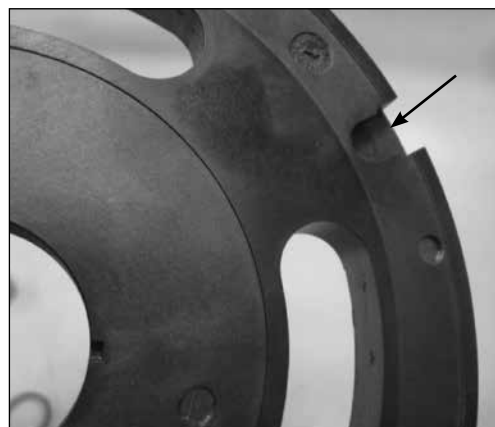
10. Mount all bolts in the flange and tighten them all with  $30\text{Nm} \pm 3$



11. Fit the guide pin in the flange.



12. Location hole in port plate.



There are two different port plates in the iSave. One of them can be mounted on both flanges in the pressure exchanger. Make sure that they are assembled on the right flange.

13. Position the port plate over the guide pin.

**Note: Make sure that the guide pin is located in the locating hole in the port plate.**



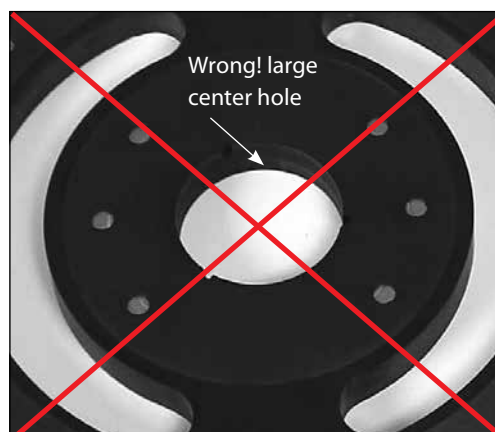
14. Gently guide the cylinder barrel into the bearing in the flange.



15. Check the next port plate is correct.



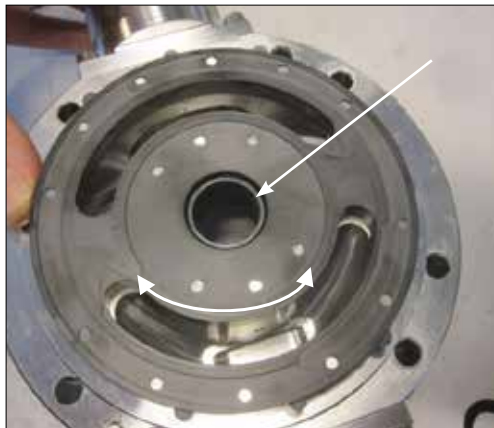
16. **Wrong!** large center hole.



17. Position the port plate over the guide pin.



18. Check that the port plate fits the center bearing and the guide pin.



19. Change the O-ring in the flange and position the guide pin.



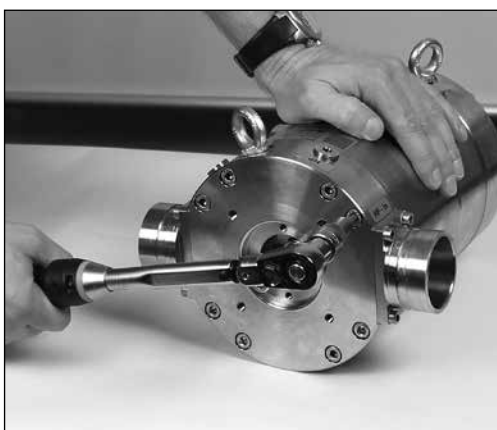
O-ring

Guide pin

20. Position the port flange over the guide pin.



21. Mount all bolts in the flange and tighten them to a torque of  $30 \text{ Nm} \pm 3 \text{ Nm}$ .



22. Wet the shaft seal with clean filtered water.

**Do not use silicone grease.**

Fit the shaft seal with the carbon surface upward.



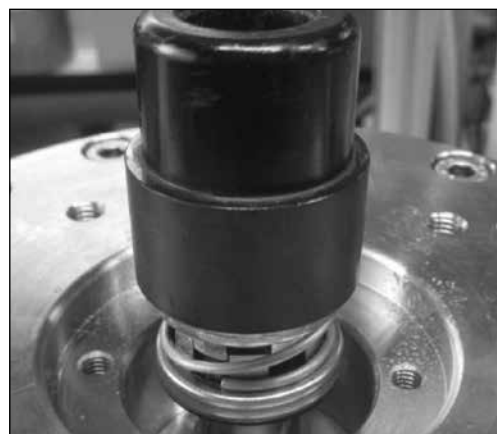
23. Shaft seal **NOT** mounted correct.

The rubber seal face must turn into the flange.



24. Using the plastic assembly tool provided, **large diameter first**, press the seal home against the shoulder, by hand.

Be careful not to damage the carbon seal face on the shaft seal.



25. Shaft seal in right position:



26. Remove the old ceramic ring from the flange. Position the O-ring on the seal flange.

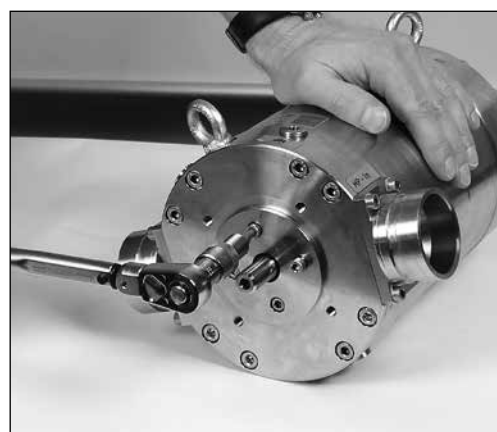


27. Push the new ceramic ring into the flange using plastic tool provided. Make sure the face with the rubber seal is positioned against the shoulder in the flange.

Before assembly wet the parts with clean filtered water.



28. Position the flange and the bolts. Tighten the 4 bolts with 12 Nm  $\pm$  1.2 Nm.



**5. Disassembling the vane pump**

1. Gently adjust the spanner wrench around the coupling and use it as back stop.



2. Unscrew the bolt in the middle of the coupling and remove the coupling.



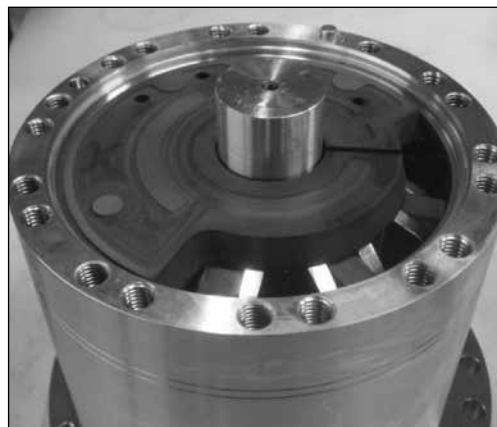
3. Remove all bolts in the HP out connection flange.



4. Remove the flange.



5. Remove side plate and pin

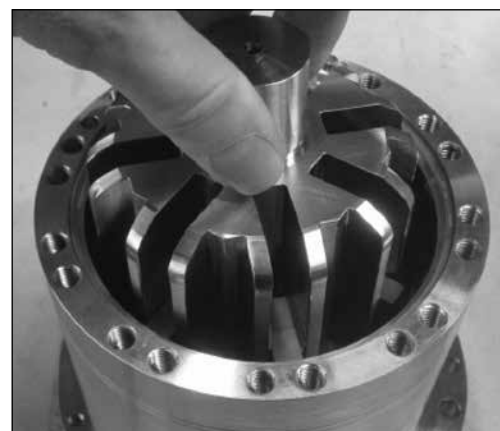


6. Side plate removed.

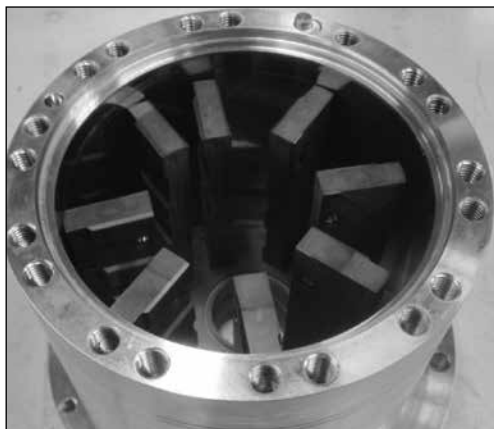


7. Gently remove the rotor.

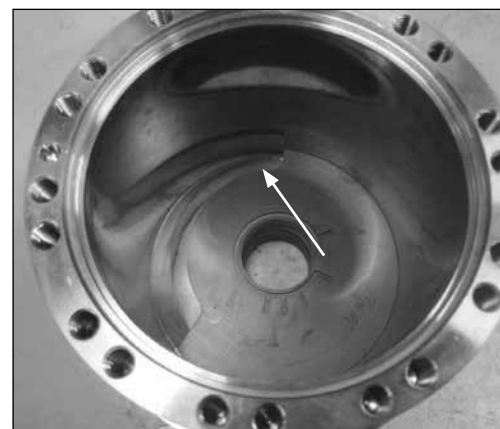
Note: Loose parts inside the rotor.



8. Remove vanes.



9. Gently remove side plate.

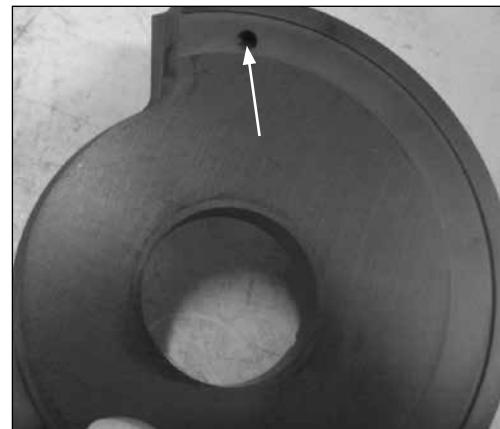


## 6. Assembling the vane pump

1. Position the guide pin.



2. Location hole in the side plate:

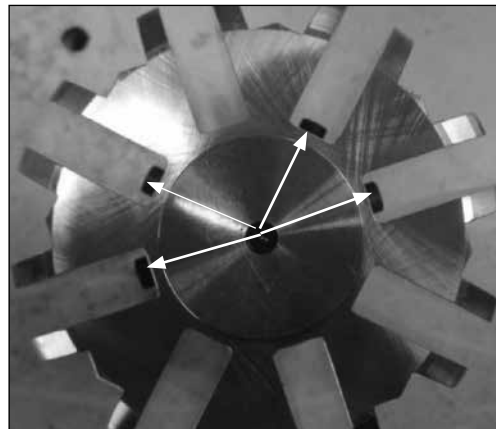


3. Position the side plate over the guide pin.

**Note:** Make sure that the guide pin is located in the locating hole in the port plate. See #2



4. Place the 4 pins in the rotor.



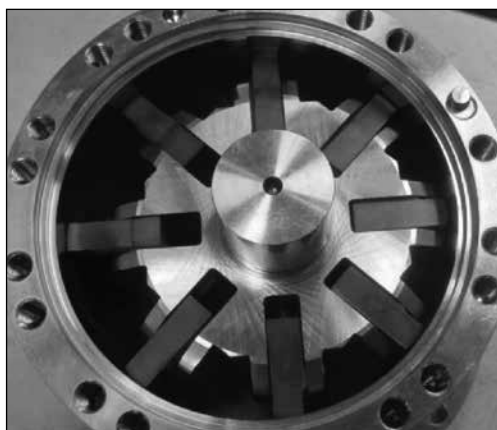
5. Gently place the rotor in the bearing.



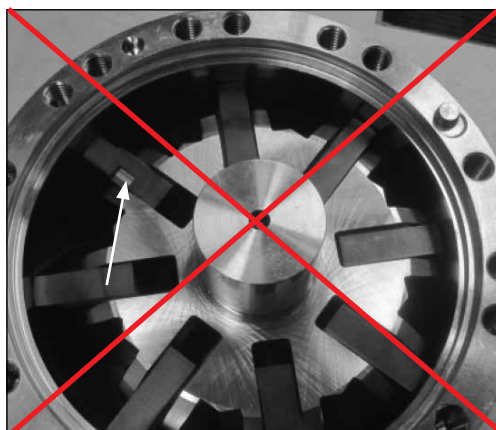
6. Position the 8 vanes in the rotor. The pins may be moved by using a screwdriver.



7. Check that all vanes are positioned correctly.



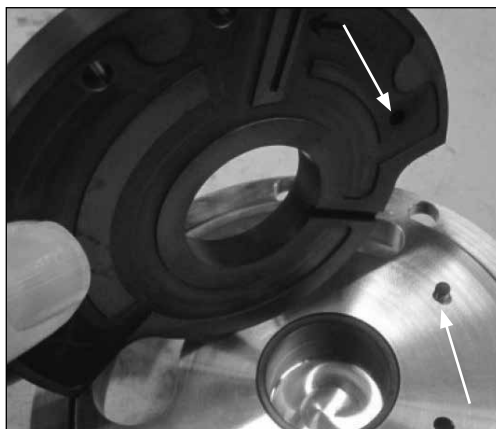
8. One vane is **NOT** positioned correctly.



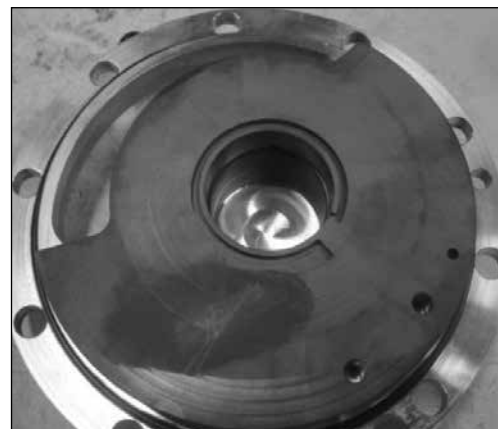
9. Replace the O-ring on the flange and wet the flange properly with clean filtered water.



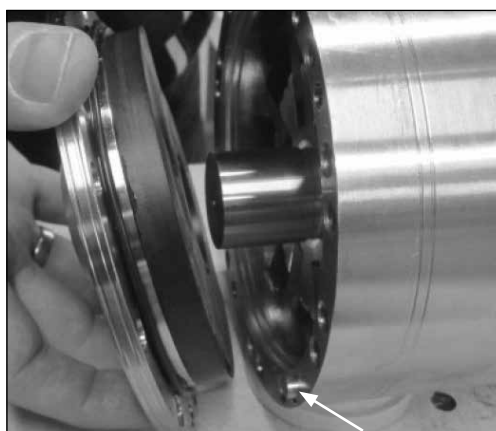
10. Position the side plate over the guide pin.



11. Make sure that the guide pin is located in the locating hole in the side plate. See #10.



12. Fit the flange into both the bearing in the flange and the location pin in the stator.



13. Make sure that the guide pin is located in the location hole.



14. Change the O-ring in the HP out connection flange.



15. Bolt the flange onto the vane pump. Tighten the bolt with 30 Nm  $\pm$  3 Nm.



16. Fit the coupling into the pump. Glue the thread on the bolt with "Loctite 270" and tighten the bolt with 10 Nm  $\pm$  1 Nm.



17. Change the two O-rings in the flange.



**7. Assembling the iSave**

1. Fit the steel coupling onto the shaft of the pressure exchanger.



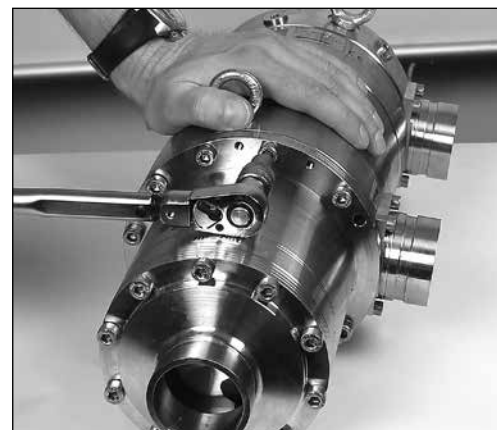
2. Fit the polymer coupling on the steel coupling.



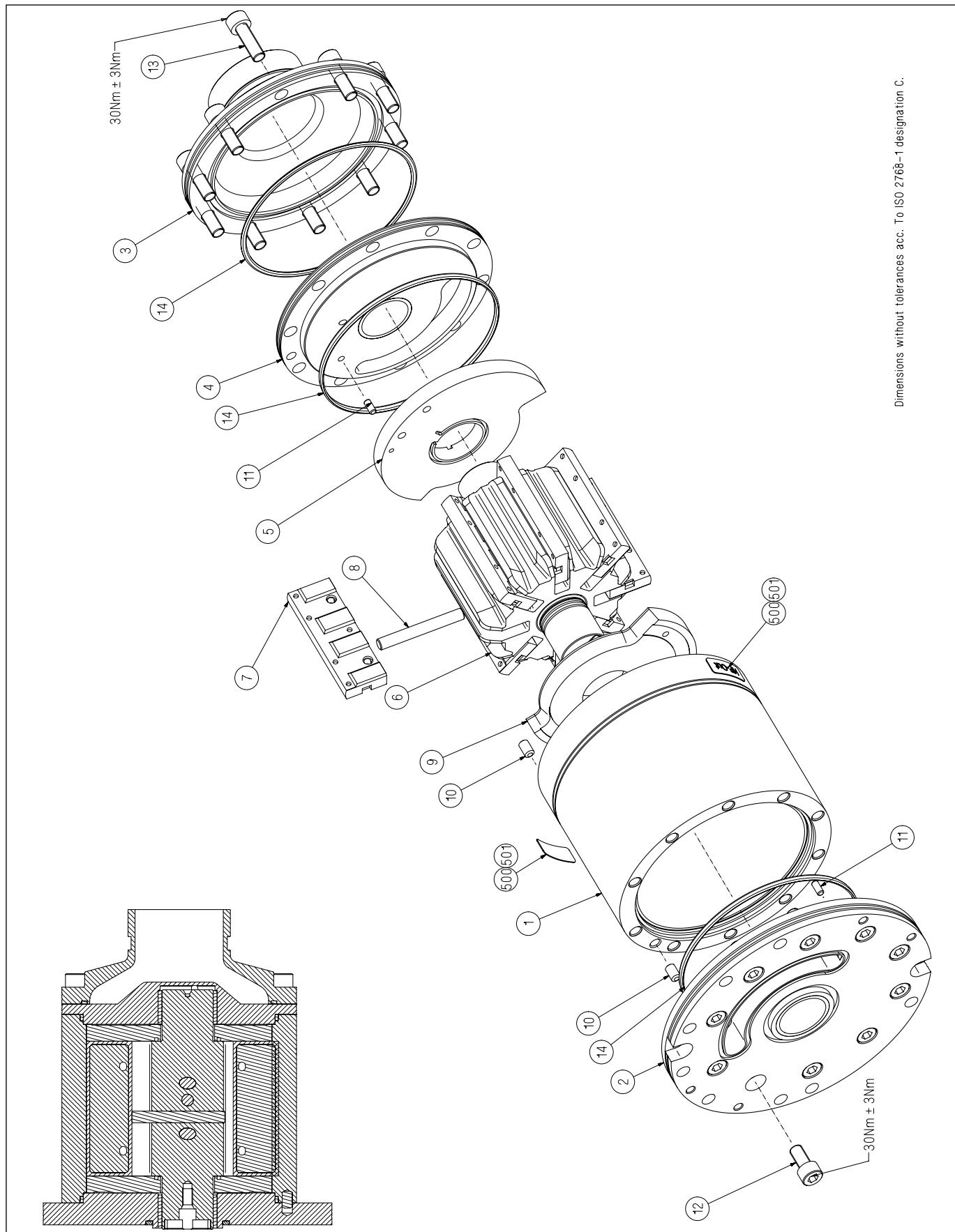
3. Orient both the steel coupling and the 2 guide holes on the vane pump to fit into the pressure exchanger.



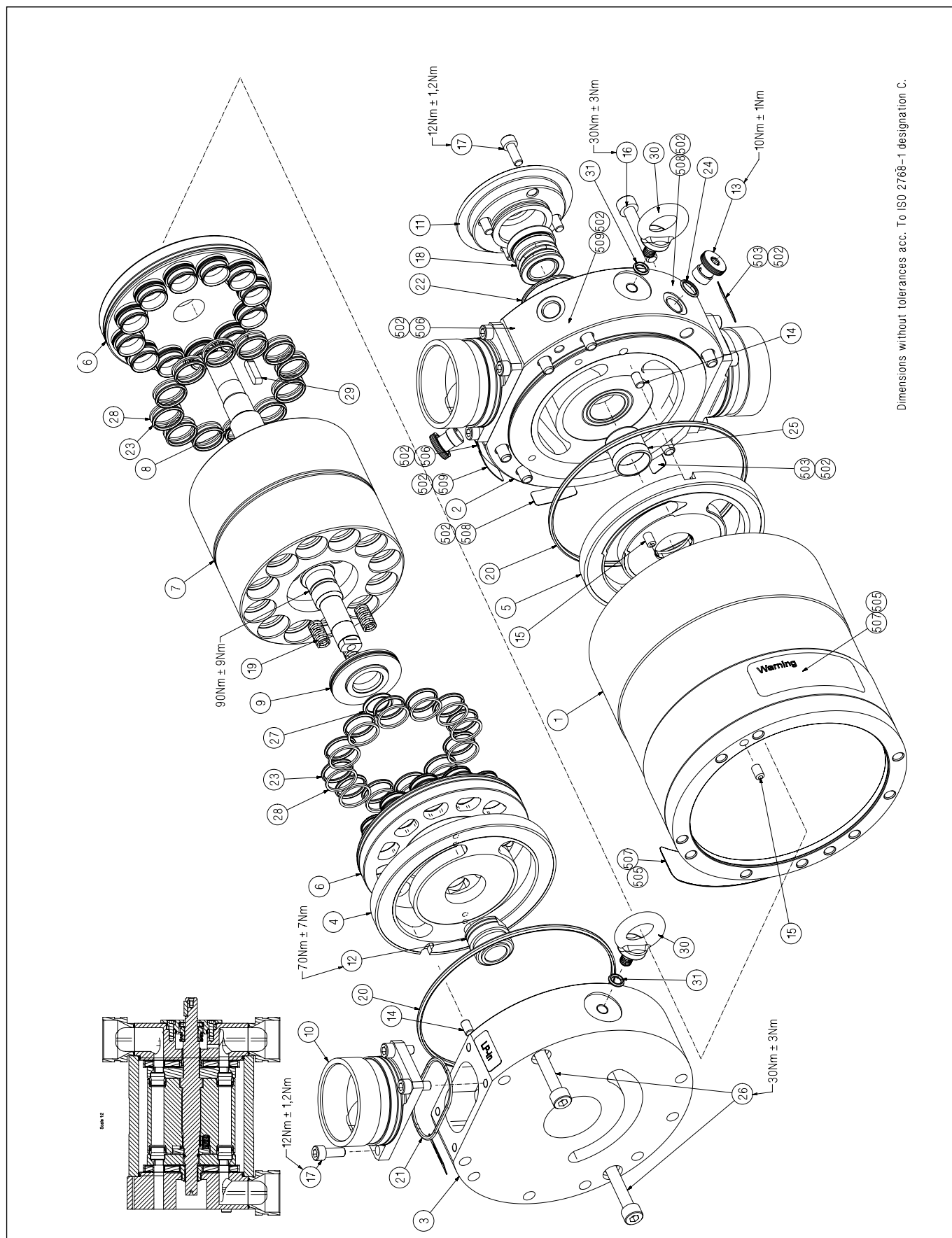
4. Mount the bolts into the flange and tighten them with 30 Nm  $\pm$  3 Nm.



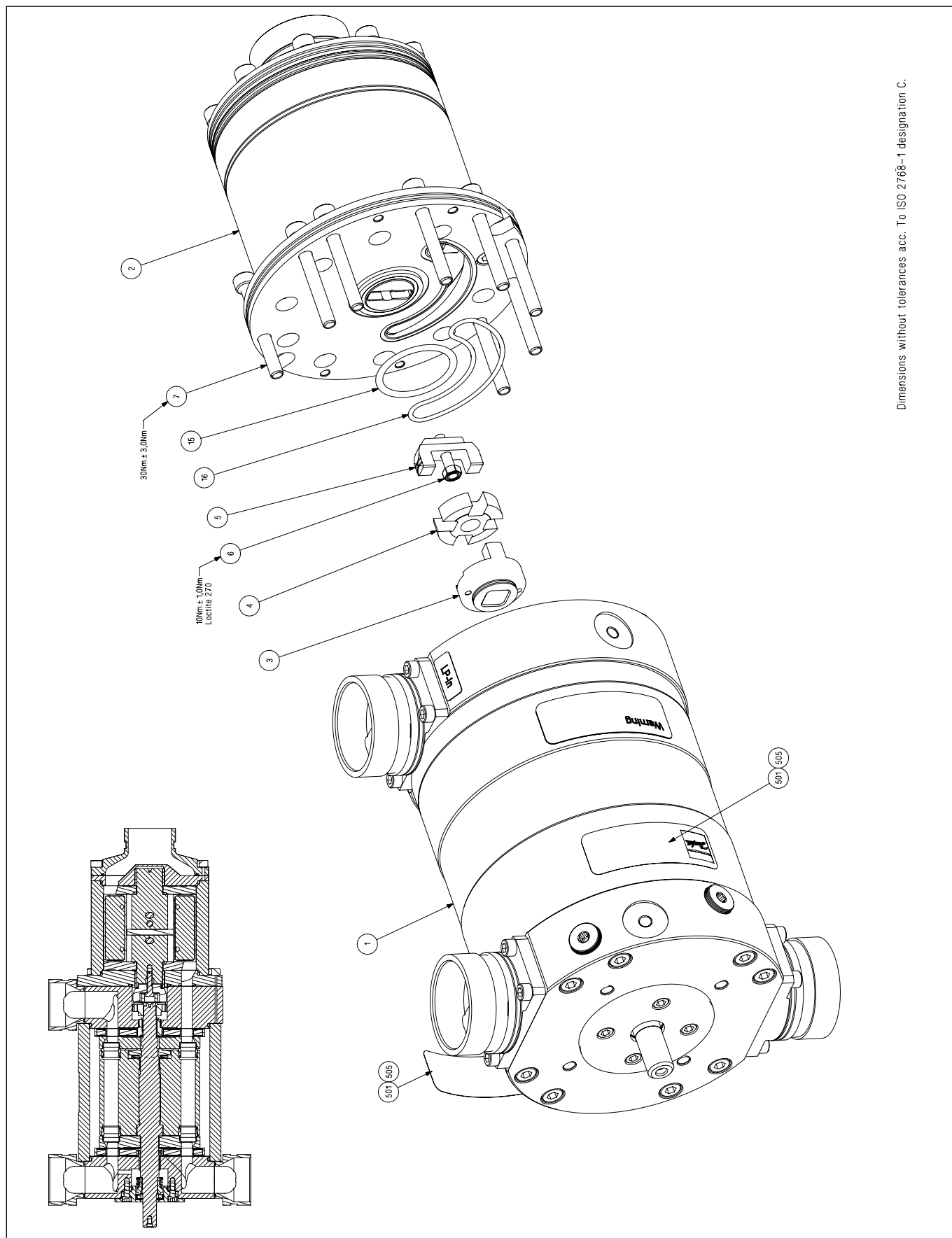
8. Exploded view  
vane pump



9. Exploded view  
pressure exchanger



# 10. Exploded view iSave





**LENNTECH**

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

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