

Service guide

## PAH pumps

PAH 50-100

Disassembling and assembling



## Service guide | Disassembling and assembling PAH 50-100

<b>Table of Contents</b>	1.	Disassembling the pump .....	3
	2.	Inspection.....	7
	2.1.	Port plate and thrust plate.....	7
	2.2.	Pistons.....	7
	2.3.	Cylinder barrel .....	8
	2.4.	Housing.....	8
	2.5.	Swash plate .....	8
	3.	Assembling .....	9
	4.	Service kit list for PAH 50-100.....	14
	5.	Exploded view PAH 50-100 .....	15

### Introduction

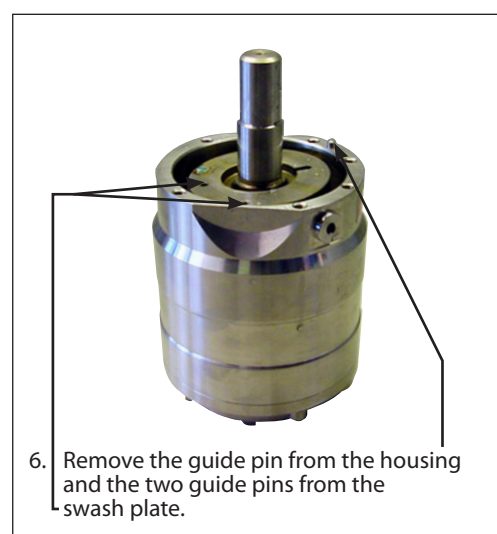
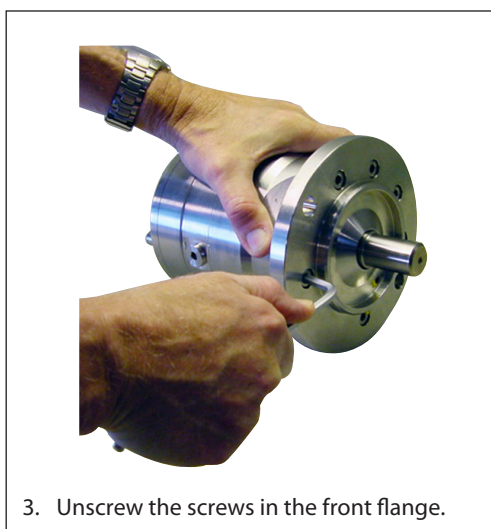
**NOTE: If the pump is disassembled within the warranty period, the pump is no longer covered by the warranty.**

This document covers the instructions for disassembling and assembling the axial piston pumps **PAH 50-100**



## Service guide | Disassembling and assembling PAH 50-100

### 1. Disassembling the pump

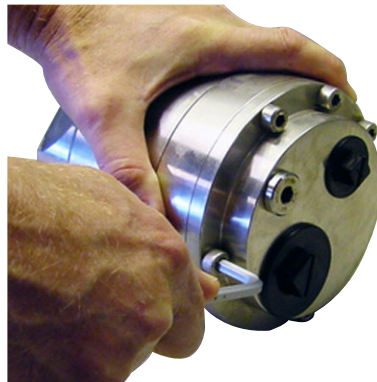




7. Remove the swash plate using the front screw.



8. Remove the cylinder barrel from the housing.



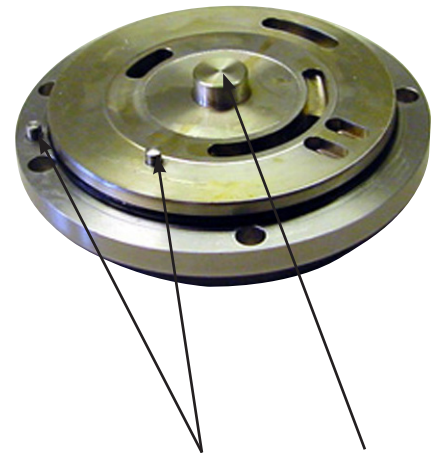
9. Unscrew the six screws in the end cover.



10. Separate the housing and the end cover.



11. Remove the valve plate from the end cover.



12. Remove the guide pins and the guide.



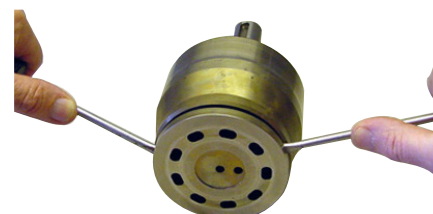
13 Remove the pistons.



14. Remove the retaining plate.



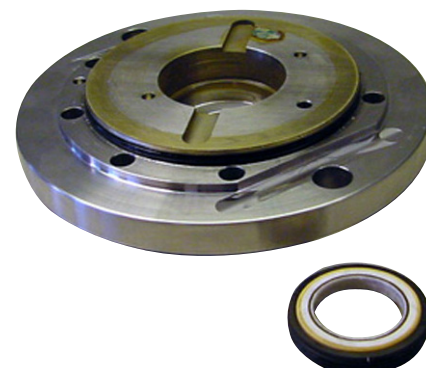
15.Remove the retaining ball.



16. Remove the the thrust plate using two screwdrivers.



17. Remove shaft sealing from front flange.



18. The ceramic ring removed from the front flange.



## Service guide | Disassembling and assembling PAH 50-100

19. Wash all parts and replace all seals (inclusive shaft seal).

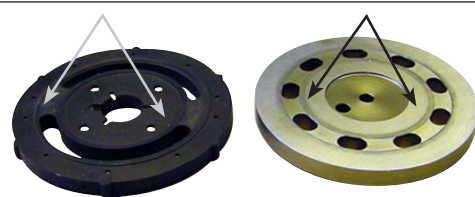
20. Inspect all parts carefully (see "Inspection") and replace any worn parts.

21. If the pump has failed, the reason for the failure must be found and fixed before the repaired pump is re-installed.

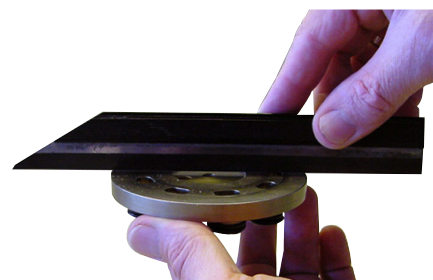


## 2. Inspection

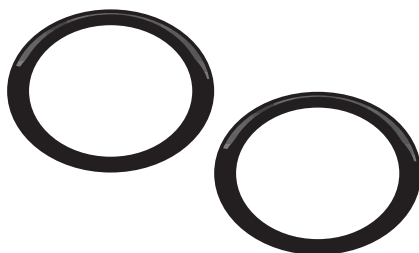
### 2.1. Port plate and thrust plate



1. Neither port plate nor thrust plate must show any sign of wear.



2. Hold a ruler against the surface of the plates and check the tightness against a light source.



3. Check that both O-rings and back-up rings are not broken and do not show severe wear.

### 2.2. Pistons

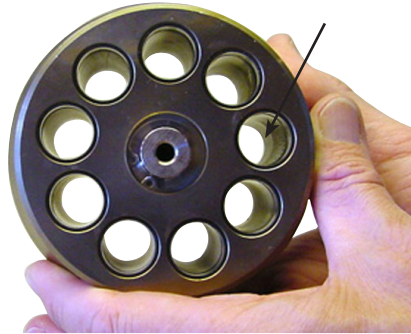


1. The play in the ball and socket joint must not exceed 0.1 mm.
2. The thickness of the piston shoes must be at least 4.3 mm.



3. Hold a ruler against the surfaces of the piston shoes to check that the surfaces are even and smooth and without any scratches.
4. It is acceptable that the (black) treated surfaces of the pistons are partly worn.

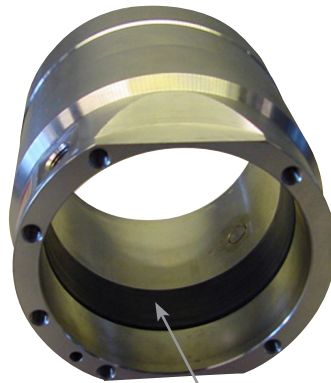
### 2.3. Cylinder barrel



1. Check the outer bearing surface for large wear grooves (not critical).

2. Check that the bushings are free from seizure and large scratches.
3. Ensure that the pistons can move freely in the bushings.

### 2.4. Housing



2. Check the bearing (the black part) for large wear grooves (not critical).

### 2.5. Swash plate



1. Check that the surface of the swash plate is smooth and without any large scratches (depth more than 0.1 mm).



### 3. Assembling

**WARNING:**

Do not use silicone when assembling the pump. 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 absolute clean before mounting.

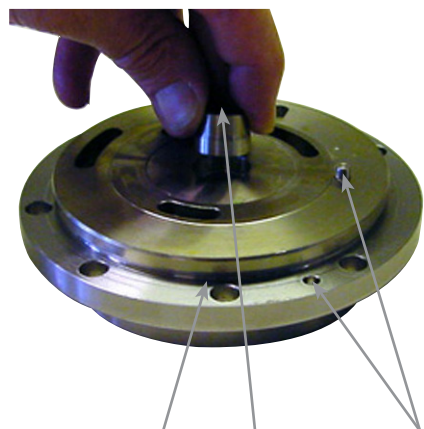


1. Lubrication:

- To prevent seizing-up, lubricate all threads with PTFE lubrication type.
- O-rings inside pump may be lubricated only with clean filtered water.
- O-rings for port flange, mounting flange and flushing valve must be lubricated.
- It is important to lubricate ALL parts to be assembled with clean filtered water (Especially all PEEK parts).



2. Parts and tools required for assembly. Check that all parts are OK. Replace all seals.



3. Mount the O-ring, the guide and the guide pins on the port flange.

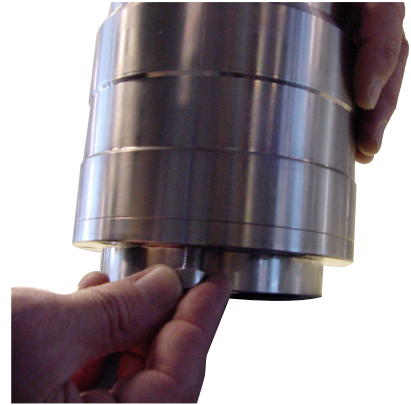


Guide pin

4. Mount the valve plate in its right position using the pin as guide.



5. Mount the housing using the pin as guide.



6. Place housing and port flange near table edge and mount screws from below.



7. Mount the thrust plate with sealings on the cylinder barrel.



8. Press the thrust plate into the cylinder barrel using a table or the like as support.



9. Mount the cylinder barrel in the housing.



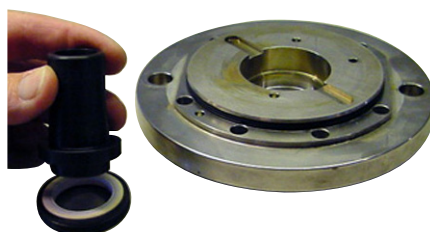
10. Slide the retaining ball (smallest diameter pointing upwards) down the shaft.



11. Mount the retaining plate (smallest centre diameter pointing upwards).



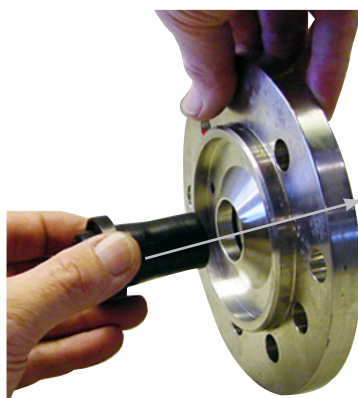
12. Mount the pistons.



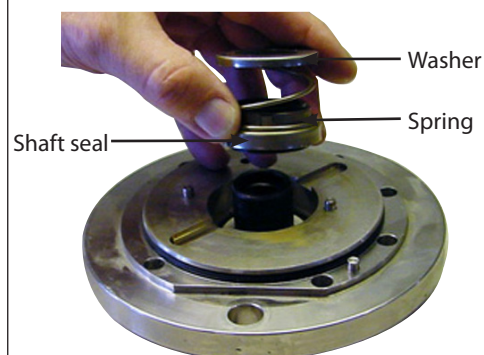
13. Mount the ceramic ring on the tool.



14. Mount the ceramic ring by pressing the tool as far down in the front flange as possible.



15. Push the tool through the front flange.



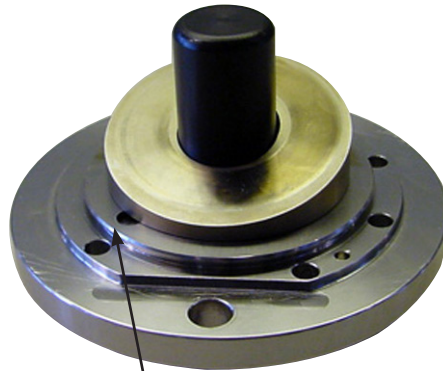
16. Mount the shaft seal (carbon surface pointing downwards), the spring, and the washer (edge pointing downwards) by sliding them over the tool.



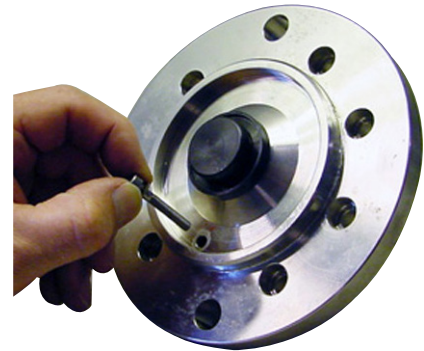
17. Mount the swash plate on the front flange using the pins as guide.



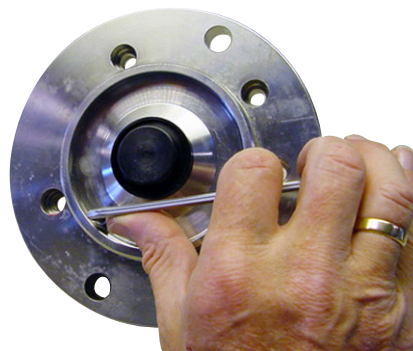
18. Press the swash plate against the flange and screw the tools together.



19. Mount the O-ring on the front flange.



20. Mount the washer and the screw in the front flange to fix the swash plate.



21. Tighten the screw to a torque of 8 Nm and remove the tool.



22. Mount the tool over the shaft.





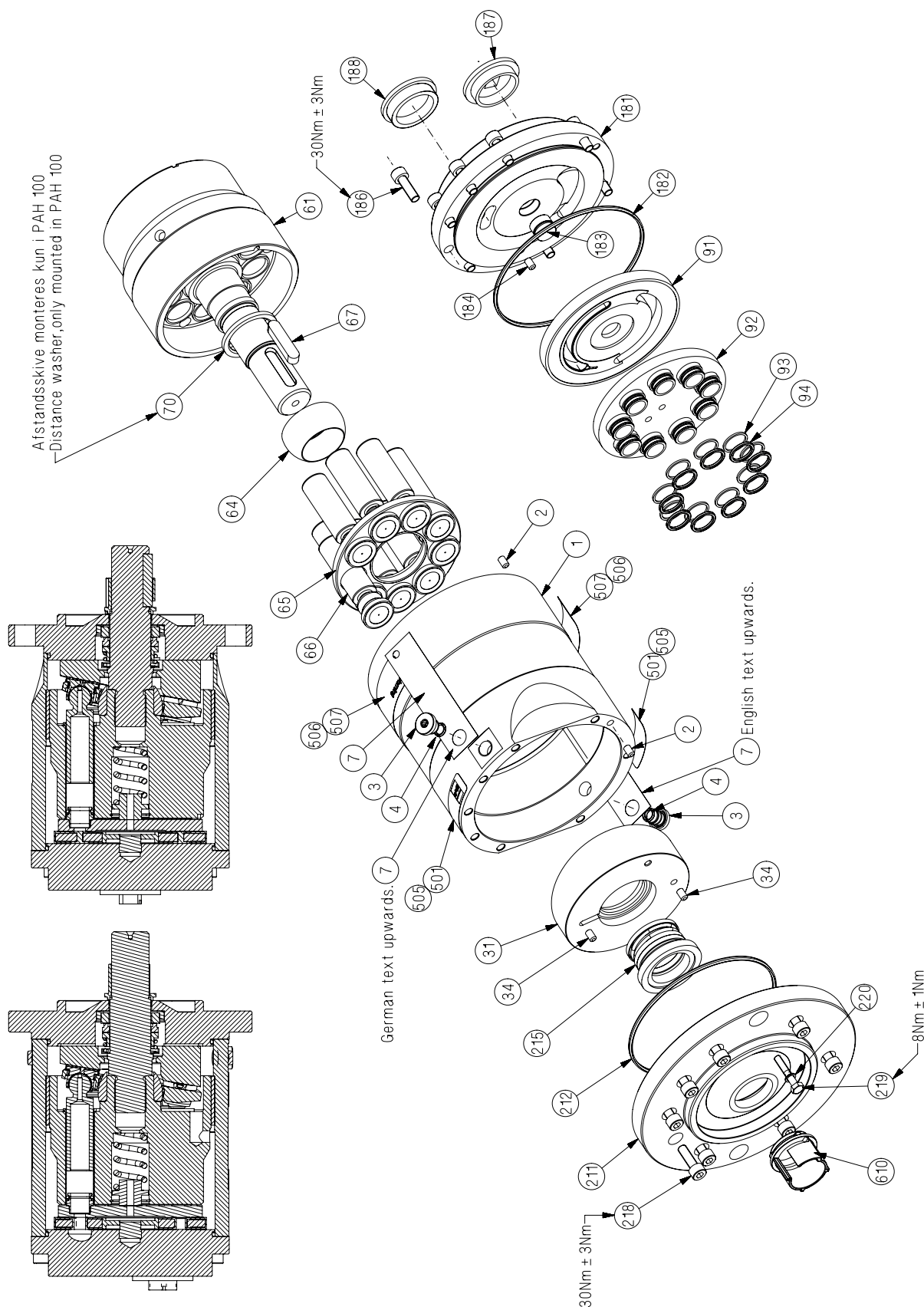


## Service guide | Disassembling and assembling PAH 50-100

### 4. Service kit list for PAH 50-100

Pos.	Qty.	Unit	Designation	Material	180B4121 - Screw & seal kit	180B4122 - Valve plate kit	180B4125 - Piston kit PAH 50-80 (Standard pump)	180B4493 - Piston kit PAH 100 (Standard pump)	180B4123 - Piston kit (Tech. Water pump)	180B4126 - Cylinder Barrel (Standard pump)	180B4124 - Cylinder Barrel (Tech. water pump)	180B4127 - Cylinder Barrel CCW (Standard pump)	180B4009 - Swash plate kit PAH 50	180B4010 - Swash plate kit PAH 63	180B4011 - Swash plate kit PAH 70	180B4012 - Swash plate kit PAH 80	180B4492 - Swash plate kit PAH 100	180Z0237 - Tool set
-	1	Pcs.	Shaft bush, torpedo	-														X
-	1	Pcs.	Press tool for 35 mm shaft	-														X
-	1	Pcs.	Mounting screw	-														X
1	1	Pcs.	Housing	AISI 304														
2	2	Pcs.	Pin	AISI 304	X													
3	2	Pcs.	Plug	AISI 304														
4	2	Pcs.	O-ring	NBR	X													
31	1	PC	Swash plate	Stainless steel (1.4057)									X	X	X	X	X	
34	2	PC	Pin	AISI 304	X													
61	1	PC	Cylinder barrel	Stainless steel (1.4057)						X	X	X						
64	1	PC	Retainer ball	Stainless steel (1.4057)			X	X	X									
65	1	PC	Retaining plate	Stainless steel (1.4057)			X	X	X									
66	9	PC	Piston	Stainless steel (1.4057)			X	X	X									
67	1	PC	Key	AISI 304	X													
91	1	PC	Port plate	AISI 304 / PEEK		X												
92	1	PC	Valve plate	Stainless steel (1.4057)		X												
93	9	PC	Back-up ring	PTFE	X	X												
94	9	PC	O-ring	NBR	X	X												
181	1	PC	Port flange	AISI 304														
182	1	PC	O-ring	NBR	X													
183	1	PC	Guide pin	AISI 304														
184	1	PC	Pin	AISI 304	X													
186	8	PC	Screw	AISI 304	X													
187	1	PC	Threaded plug	AISI 304														
188	1	PC	Threaded plug	AISI 304														
211	1	PC	Mounting flange	AISI 304														
212	1	PC	O-ring	NBR	X													
215	1	PC	Shaft seal	AISI 304 / NBR	X													
218	8	PC	Screw	AISI 304	X													
219	1	PC	Screw	AISI 304	X													
220	1	PC	Usit-ring	AISI 304 / NBR	X													
-	1	Pcs.	Service instruction (180R9098)		X	X	X	X	X	X	X	X	X	X	X	X	X	

**5. Exploded view**  
**PAH 50-100**



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