

Service guide

PAH, PAHT, PAHT C, PAHT G pumps

PAH 2-6.3/PAHT 2-6.3/PAHT C 2-6.3

and PAHT G 2-6.3

Disassembling and assembling



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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 / PAHT / PAHT C / PAHT G 2-6.3.

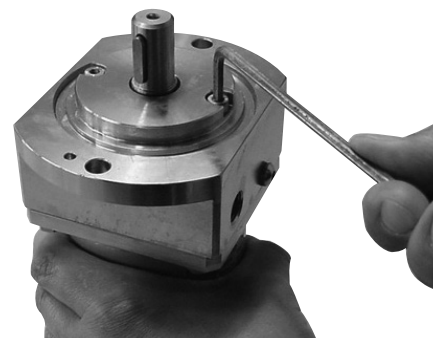
- Tools provided with tool set 180Z0235:
- Shaft bush, torpedo
 - Press bush Ø18 (Plastic)



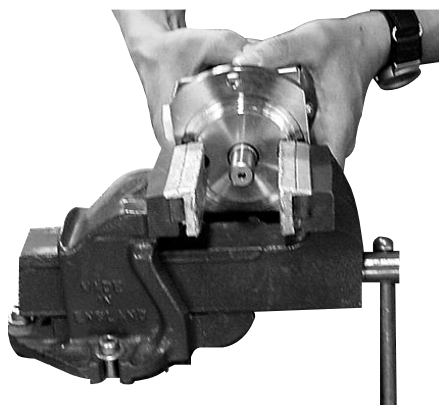
1. Disassembling the pump



1. Tools required for dismantling.
Caution: Avoid scratching the sealing surface on the shaft



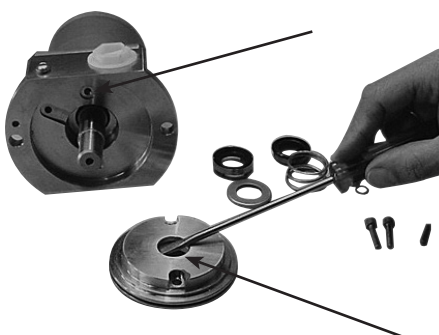
2. Remove the parallel key and unscrew the front cover.



3. Dismantle the front cover using a vice.



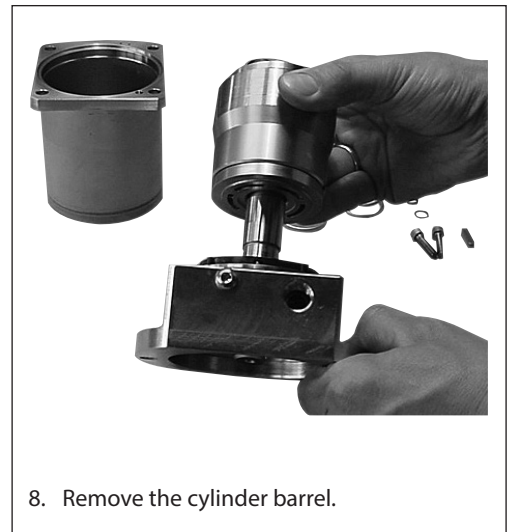
4. Remove the shaft seal using two screwdrivers.
Caution: Avoid scratching the sealing surface on the shaft.



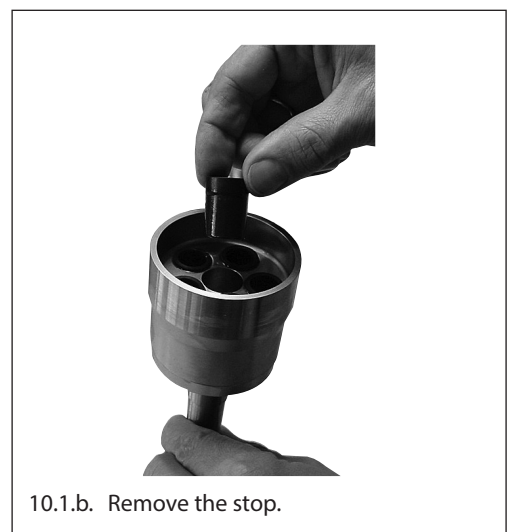
5. Remove the two small O-rings from the flange. Remove the seal from the front cover using a screwdriver.



6. Unscrew the four screws for the housing.



NB: Items 10.1.a. and 10.1.b. concern PAH 2, PAHT 2, PAHT C 2 and PAHT G 2 only



NB: Items 10.2.a. through 10.2.c. concern PAH 4-6.3, PAHT 3.2-6.3, PAHT C 3.2-6.3 and PAHT G 3.2-6.3 only



10.2.a. Remove the retainer guide.



10.2.b. Remove the spring guide.



10.2.c. Remove the spring.

NB: The following items concern PAH 2-6.3, PAHT 2-6.3, PAHT C 2-6.3 and PAHT G 2-6.3 only



11. Loosen the valve plate using two screwdrivers. Place one of the screwdrivers in the slot of the valve plate.



12. Remove the valve plate.



13. Remove the five O-rings and the five back-up O-rings.



14. Remove the port plate from the flange.

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

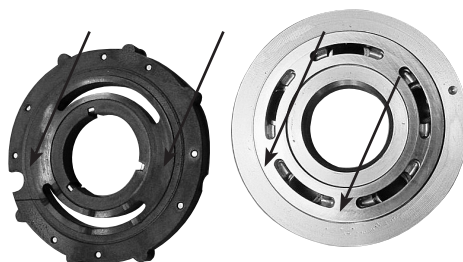
16. Inspect all parts carefully (see "Inspection") and replace any worn parts.

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



2. Inspection

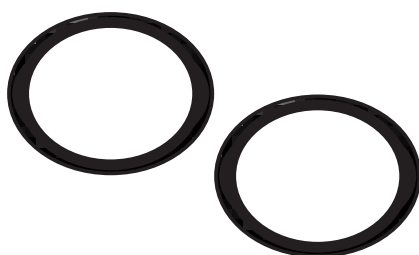
2.1. Port plate and valve plate



1. Neither port plate nor valve 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

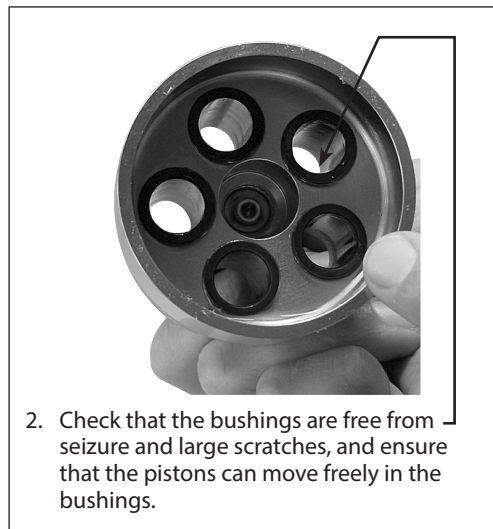
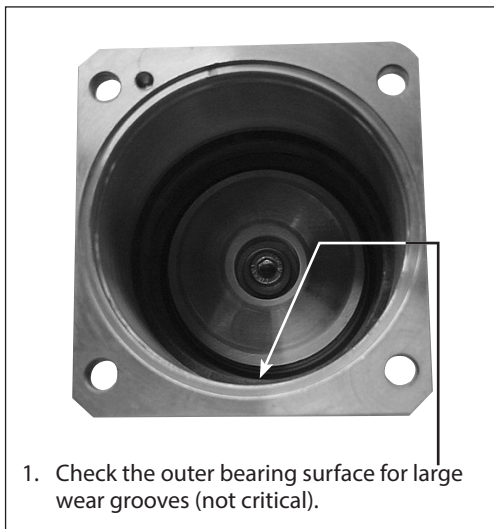


1. The play in the ball and socket joint must not exceed 0.1 mm.
2. The thickness of the piston shoes must be at least 2.85 mm.

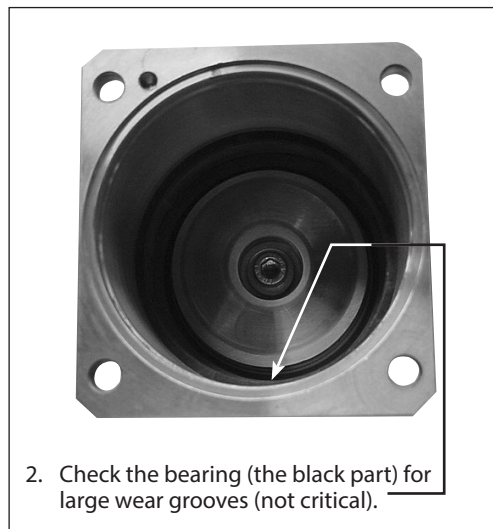
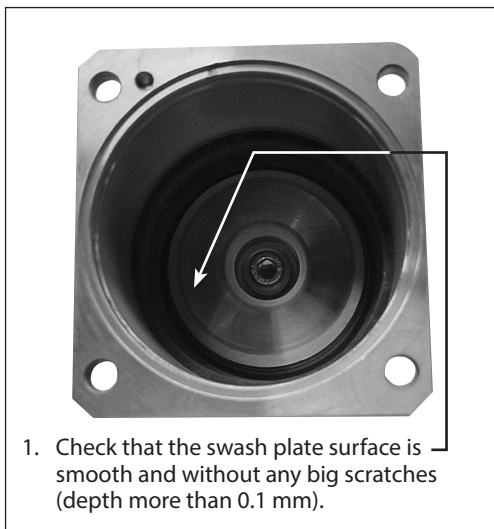


3. Hold a ruler against the surfaces of the piston shoes to check that the surfaces are even and smooth and without any scratches.
PAHT only:
It is acceptable that the (black) treated surfaces of the pistons are partly worn off.

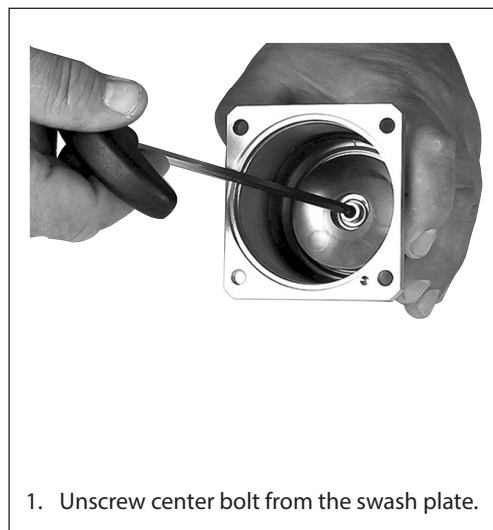
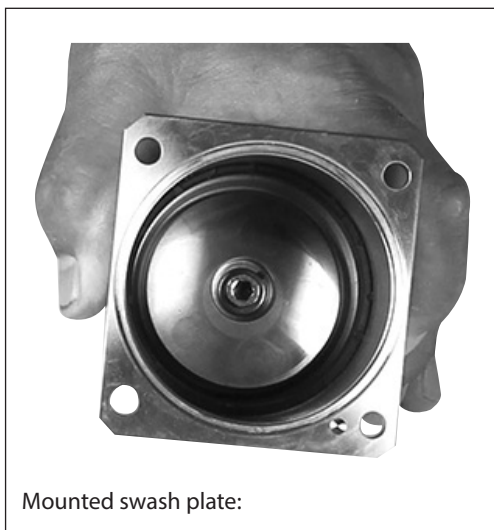
2.3. Cylinder barrel

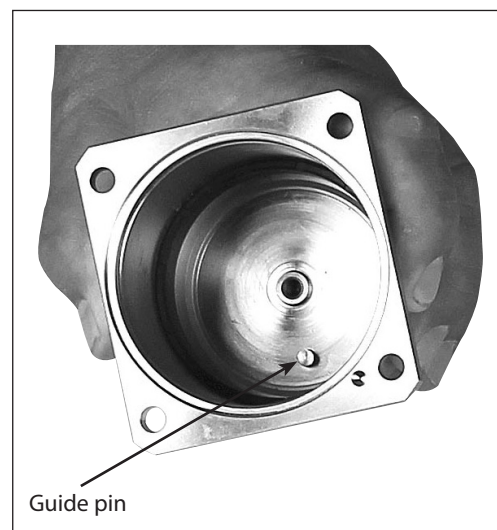


2.4. Housing



2.5. Swash plate

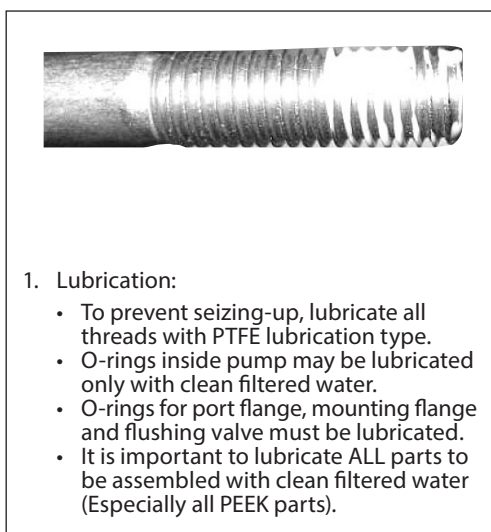




3. Assembling

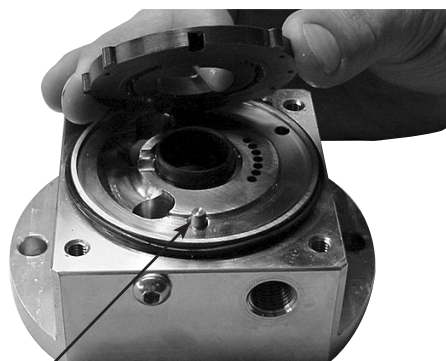
WARNING:
Do not use silicone when assembling the pump. Do not reuse disassembled O-rings; they might be damaged. Always use new O-rings.

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





3. Mount the O-ring on the flange.



Guide pin

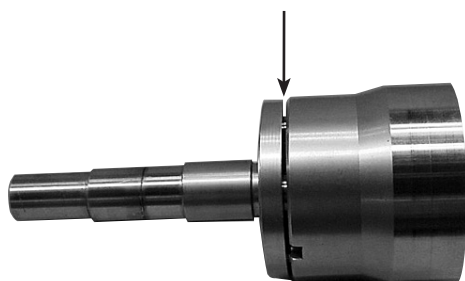
4. Mount the port plate in its right position using the pin as guide.



5. Mount the valve plate with seals on the cylinder barrel.



6. Press the valve plate into the cylinder barrel using a piece of plastic.



7. Check that the gap between the cylinder barrel and the valve plate is 1.5-2.5 mm.



8. Mount the cylinder barrel in the flange.

9.1 NB: Items 9.1.a through 9.1.c concern PAH 2, PAHT 2, PAHT C 2 and PAHT G 2 only



9.1.a. Mount the stop.



9.1.b. Mount the spring in the centre hole.



9.1.c. Mount the retainer plate.

9.2 NB: Items 9.2.a through 9.2.d concern PAH 4-6.3, PAHT 3.2-6.3, PAHT C 3.2-6.3 and PAHT G 3.2-6.3 only



9.2.a. Mount the spring in the centre hole.



9.2.b. Mount the spring guide.



9.2.c. Mount the retainer guide on the spring guide.



9.2.d. Mount the retainer plate on the retainer guide.

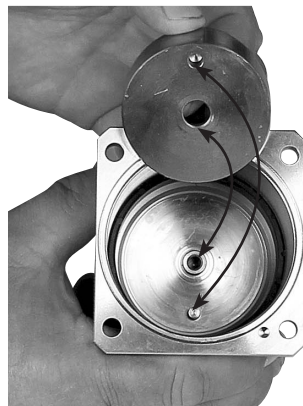
9.3 NB: The following items concern PAH 2-6.3, PAHT 2-6.3 and PAHT G 2-6.3 only



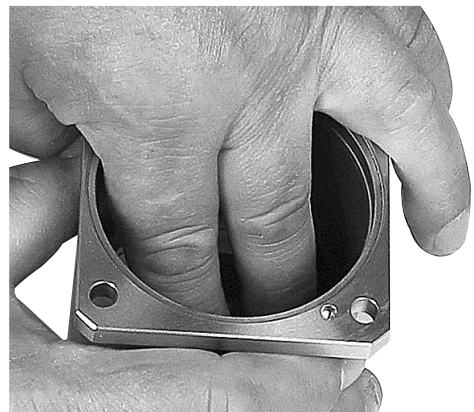
10. Insert the pistons.



11. All pistons inserted.

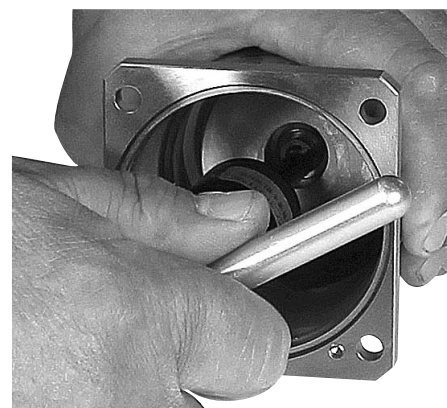


12. Place pin and place swash plate fitted on guide pin and center hole.

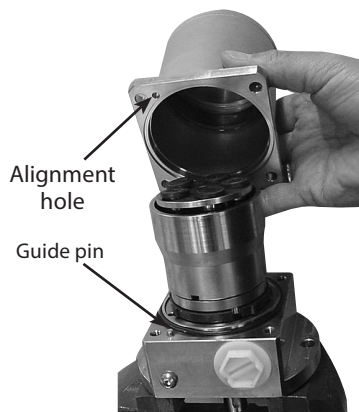




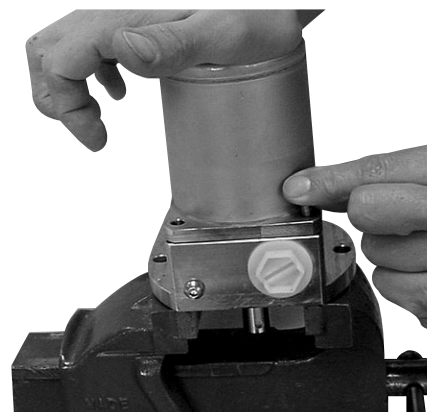
13. Place the screw in the center hole.



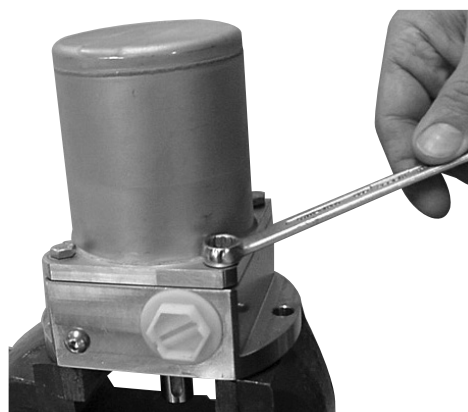
14. Tighten to a torque of 10 ± 1 Nm.



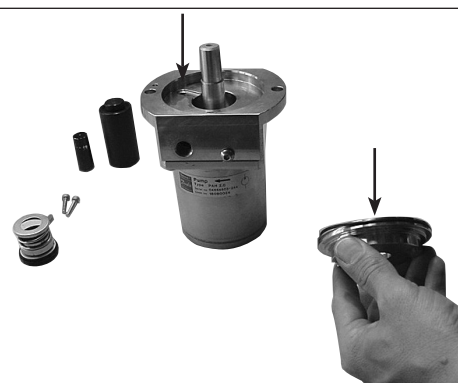
15. Mount the pump housing using the pin as guide.



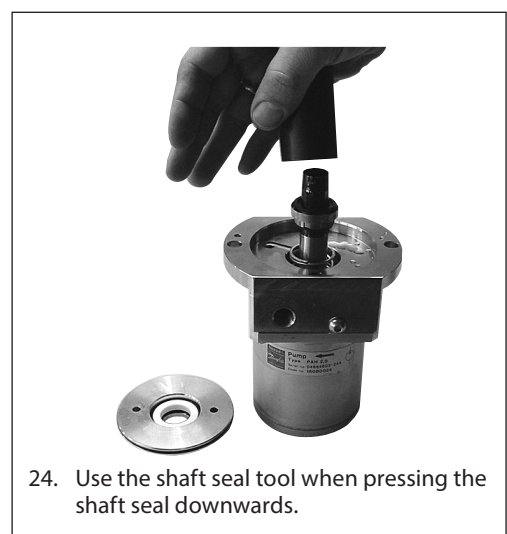
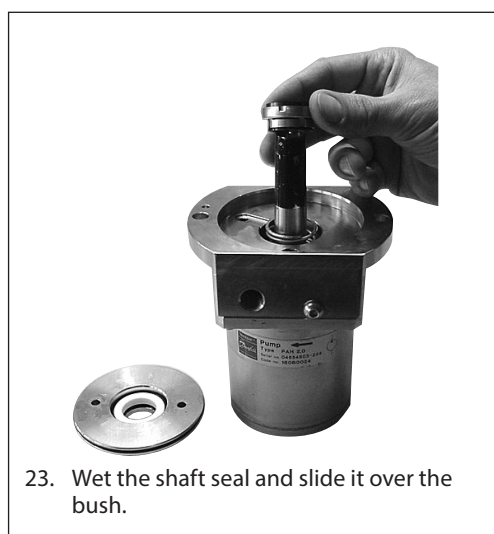
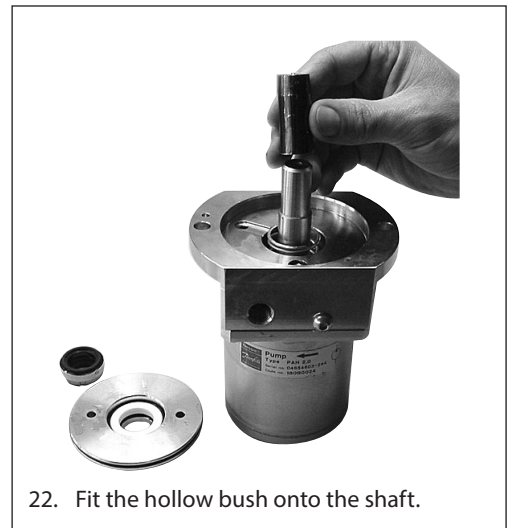
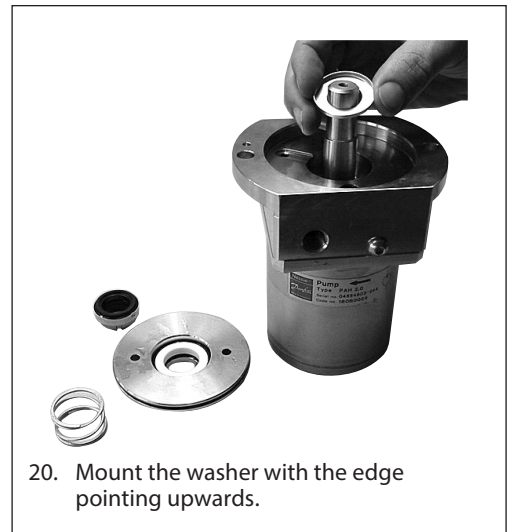
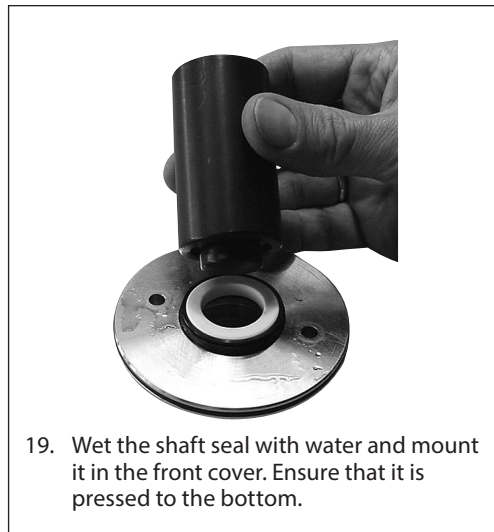
16. Press the housing down by hand and insert the screws.

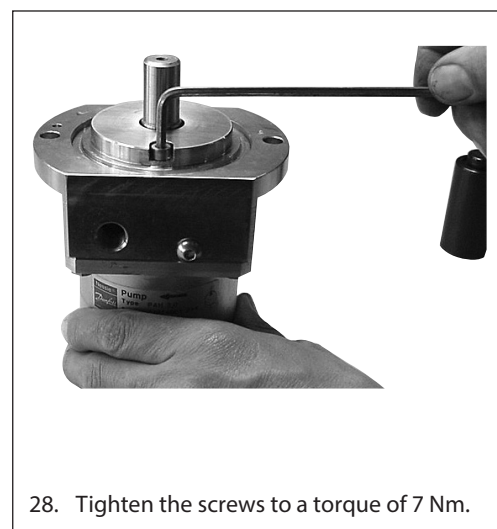
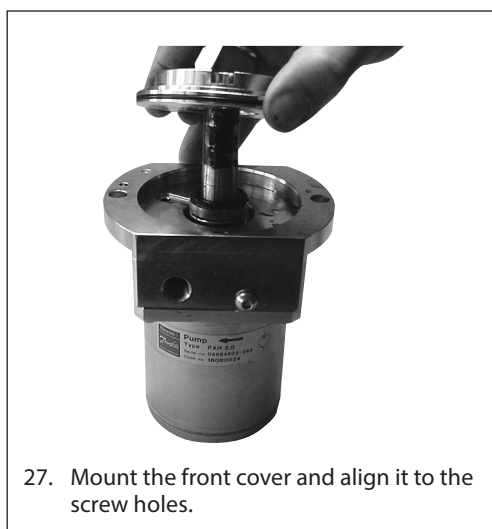
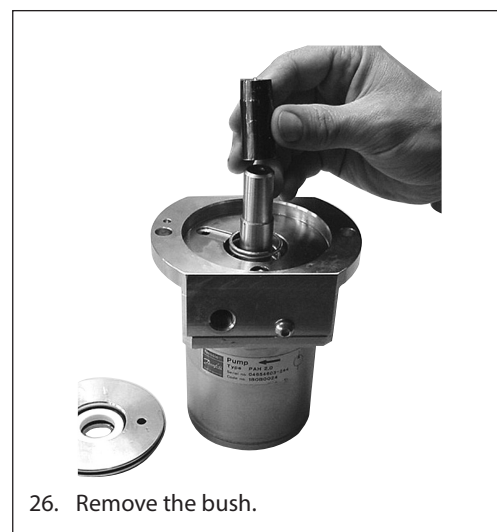
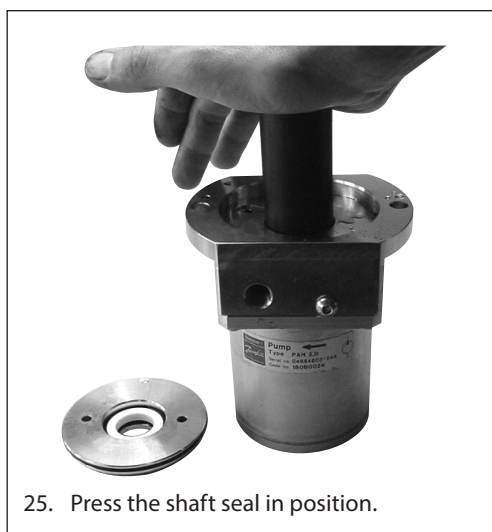


17. Tighten the screws to a torque of 13 Nm.



18. Mount the two O-rings in the flange and the O-ring on the front cover.





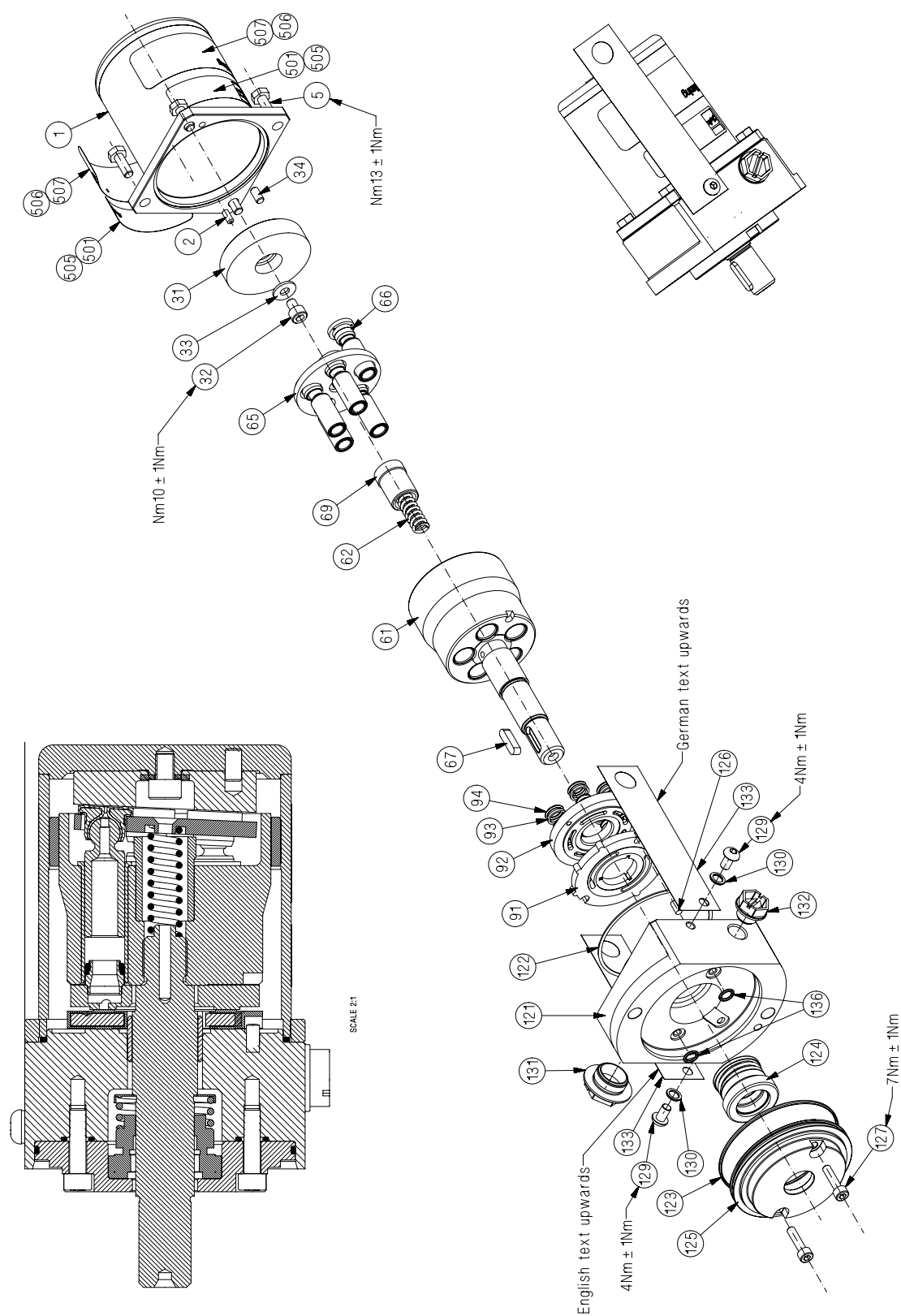
Service guide | Disassembling and assembling PAH 2-6.3, PAHT 2-6.3, PAHT C 2-6.3 and PAHT G 2-6.3

4. Spare parts list for PAH / PAHT / PAHT C 2

Pos.	Qnt.	Designation	Material	180B4100 - Seal set (PAH / PAHT 2-6.3)	180B4572 - Screw & Seal set FFKM (PAHT C 2-6.3)	180B4112 - Cylinder barrel set (PAHT 2-6.3)	180B4104 - Cylinder barrel set (PAHT / PAHT C 2-6.3)	180B4101 - Valve plate set (PAH / PAHT 2-6.3)	180B4571 - Valve plate set FFKM (PAHT C 2-6.3)	180B4110 - Piston set (PAH 2)	180B4102 - Piston set (PAHT PAHT C 2)	180B4301 - Swash plate set (PAH / PAHT / PAHT C 2))	180Z0235 - Tool set
-	1	Shaft bush, torpedo							x		x		x
-	1	Press bush											x
1	1	Housing	AISI 304 / PEEK										
2	1	Pin	AISI 316	x	x								
5	4	Screw	AISI 316	x	x								
31	1	Swash plate	AISI 431									x	
32	1	Screw	AISI 304									x	
33	1	Washer	AISI 304									x	
34	1	Pin	AISI 316									x	
61	1	Cylinder barrel	AISI 431 / PEEK			x	x						
62	1	Spring	AISI 304							x	x		
63	1	Spring guide	PEEK										
64	1	Retainer ball	PEEK										
65	1	Retainer plate	1.4301							x	x		
66	5	Piston	AISI 431/ PEEK							x	x		
67	1	Key	AISI 316Ti	x	x								
69	1	Stop	PEEK							x	x		
91	1	Port plate	AISI 304 / PEEK					x	x				
92	1	Valve plate	AISI 431					x	x				
93	5	Back up ring	PTFE	x	x			x	x				
94	5	O-ring	NBR	x	x*			x	x				
121	1	Port flange	AISI 304 / PEEK										
122	1	O-ring	NBR	x									
123	1	O-ring	NBR	x	x*								
124	1	Shaft seal	AISI 304 / NBR	x	x*								
125	1	End cover	AISI 304		x*								
126	1	Pin	AISI 316						x				
127	2	Screw M5 x 20	AISI 304	x	x								
130	1	Usit-ring		x	x								
136	2	O-ring Ø7 x Ø1,5	NBR	x	x*								
	1	Service instruction		x	x	x	x	x	x	x	x	x	

* FFKM Sealing material

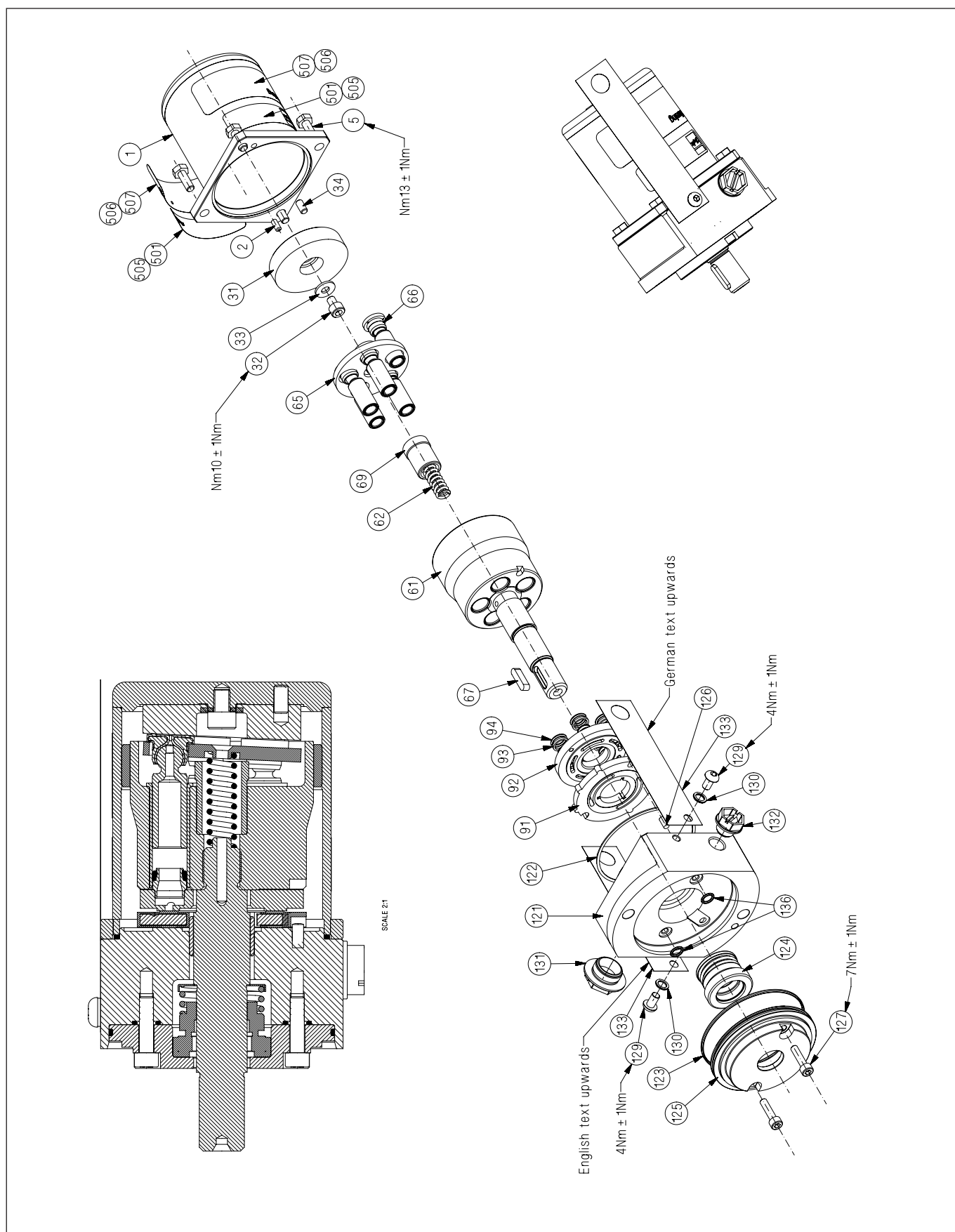
4.1 Exploded view for PAH / PAHT / PAHT C 2



5. Spare parts list for PAHT G 2

Pos.	Qnt.	Designation	Material	180B4307 - Seal set (PAHT G 2-6.3)	180B4311 - Cylinder barrel set (PAHT G 2-6.3)	180B4308 - Valve plate set (PAHT G 2-6.3)	180B4309 - Piston set (PAHT G 2)	180B4317 - Swash plate set (PAHT G 2)	180Z0235 - Tool set
-	1	Shaft bush, torpedo	-						x
-	1	Press bush	-						x
1	1	Housing	AISI 304 / PEEK						
2	1	Pin	AISI 316	x					
5	4	Screw	AISI 316	x					
31	1	Swash plate	AISI 431					x	
32	1	Screw	AISI 304					x	
33	1	Washer	AISI 304					x	
34	1	Pin	AISI 316					x	
61	1	Cylinder barrel	AISI 431 / PEEK		x				
62	1	Spring	AISI 304				x		
63	1	Spring guide	PEEK						
64	1	Retainer ball	PEEK						
65	1	Retainer plate	1.4301				x		
66	5	Piston	AISI 431/ PEEK				x		
67	1	Key	AISI 316Ti	x					
69	1	Stop	PEEK				x		
91	1	Port plate	AISI 304 / PEEK			x			
92	1	Valve plate	AISI 431			x			
93	5	Back up ring	PTFE			x			
94	5	O-ring	NBR			x			
121	1	Port flange	AISI 304 / PEEK						
122	1	O-ring	NBR	x					
123	1	O-ring	NBR	x					
124	1	Shaft seal	AISI 304 / NBR	x					
125	1	End cover	AISI 304						
126	1	Pin	AISI 316						
127	2	Screw	AISI 304	x					
136	2	O-ring	NBR	x					
	1	Service instruction		x	x	x	x	x	

5.1 Exploded view for PAHT G 2



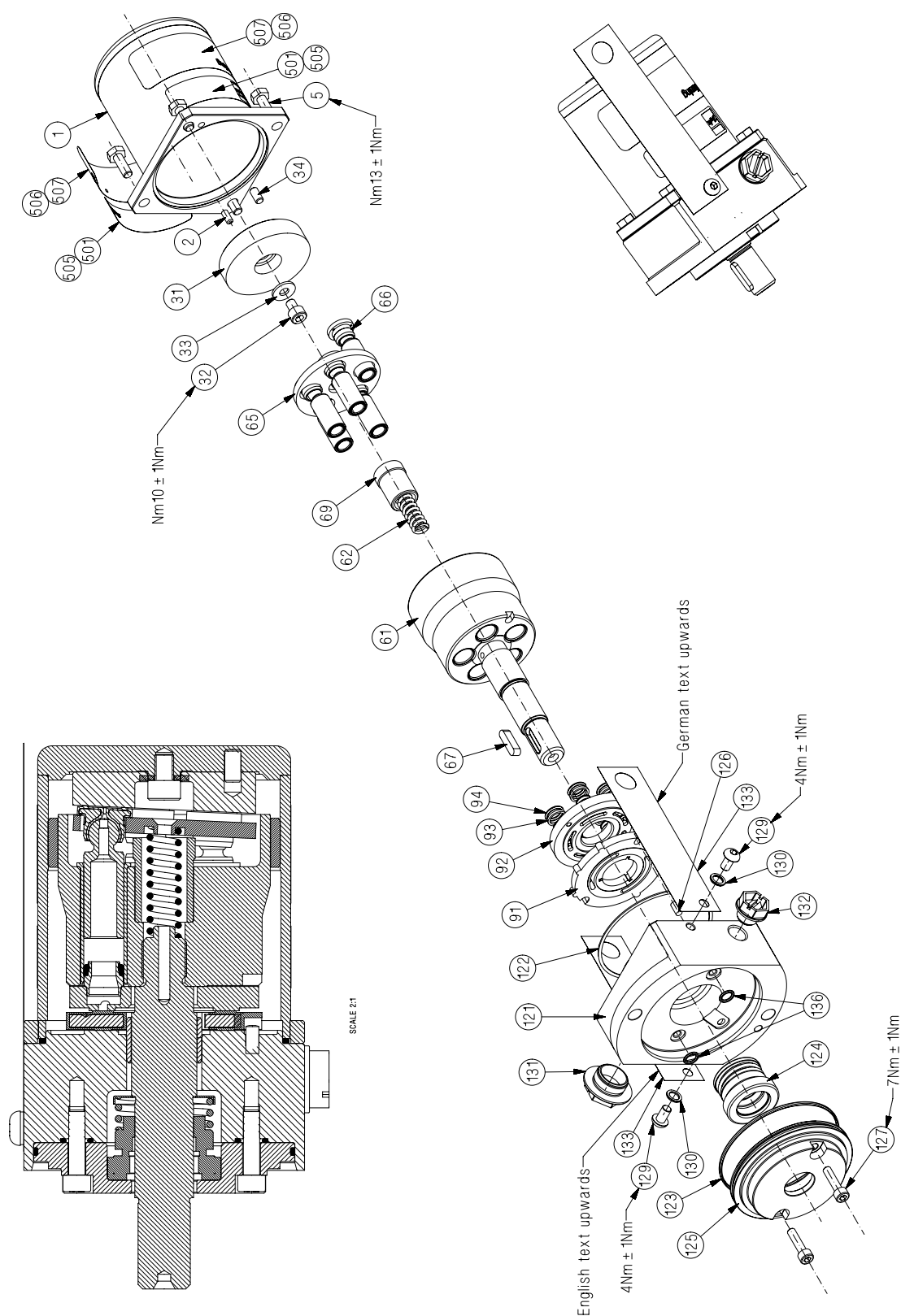
Service guide | Disassembling and assembling PAH 2-6.3, PAHT 2-6.3, PAHT C 2-6.3 and PAHT G 2-6.3

6. Spare parts list for PAH / PAHT / PAHT C 3.2-6.3

Pos.	Qty.	Designation	Material	180B4100 - Seal set (PAH / PAHT 2-6.3)	180B4572 - Screw & Seal set (PAHT C 2-6.3)	180B4112 - Cylinder barrel set (PAH 2-6.3)	180B4104 - Cylinder barrel set (PAHT / PAHT C 2-6.3)	180B4101 - Valve plate set (PAH 2-6.3 / PAHT 2-6.3)	180B4571 - Valve plate set (PAHT C 2-6.3)	180B4111 - Piston set (PAH 4-6.3)	180B4103 - Piston set (PAHT / PAHT C 3.2-6.3)	180B4302 - Swash plate set (PAHT / PAHT C 3.2)	180B4303 - Swash plate set (PAH / PAHT / PAHT C 4)	180B4304 - Swash plate set (PAH / PAHT PAHT C 6.3)	180Z0235 - Tool set
-	1	Shaft bush, torpedo	-												x
-	1	Press bush	-												x
1	1	Housing	AISI 304 / PEEK												
2	1	Pin	AISI 316	x	x										
5	4	Screw	AISI 316	x	x										
31	1	Swash plate	AISI 431									x	x	x	
32	1	Screw	AISI 304									x	x	x	
33	1	Washer	AISI 304									x	x	x	
34	1	Pin	AISI 316									x	x	x	
61	1	Cylinder barrel	AISI 431 / PEEK				x								
62	1	Spring	AISI 304							x	x				
63	1	Spring guide	PEEK							x	x				
64	1	Retainer ball	AISI 431							x	x				
65	1	Retainer plate	AISI 431							x	x				
66	5	Piston	AISI 431/ PEEK							x	x				
67	1	Key	AISI 316Ti	x	x										
69	1	Stop	PEEK												
91	1	Port plate	AISI 304 / PEEK					x	x						
92	1	Valve plate	AISI 431					x	x						
93	5	Back up ring	PTFE	x	x			x	x						
94	5	O-ring	NBR	x	x*			x	x						
121	1	Port flange	AISI 304 / PEEK												
122	1	O-ring	NBR	x	x*										
123	1	O-ring	NBR	x	x*										
124	1	Shaft seal	AISI 304 / NBR	x	x*										
125	1	End cover	AISI 304												
126	1	Pin	AISI 316					x	x						
127	2	Screw	AISI 304	x	x										
130	1	Usit-ring	AISI 304 / NBR	x	x										
136	2	O-ring	NBR	x	x*										
	1	Service instruction	-	x	x	x	x	x	x	x	x	x	x	x	

* FFKM seling material

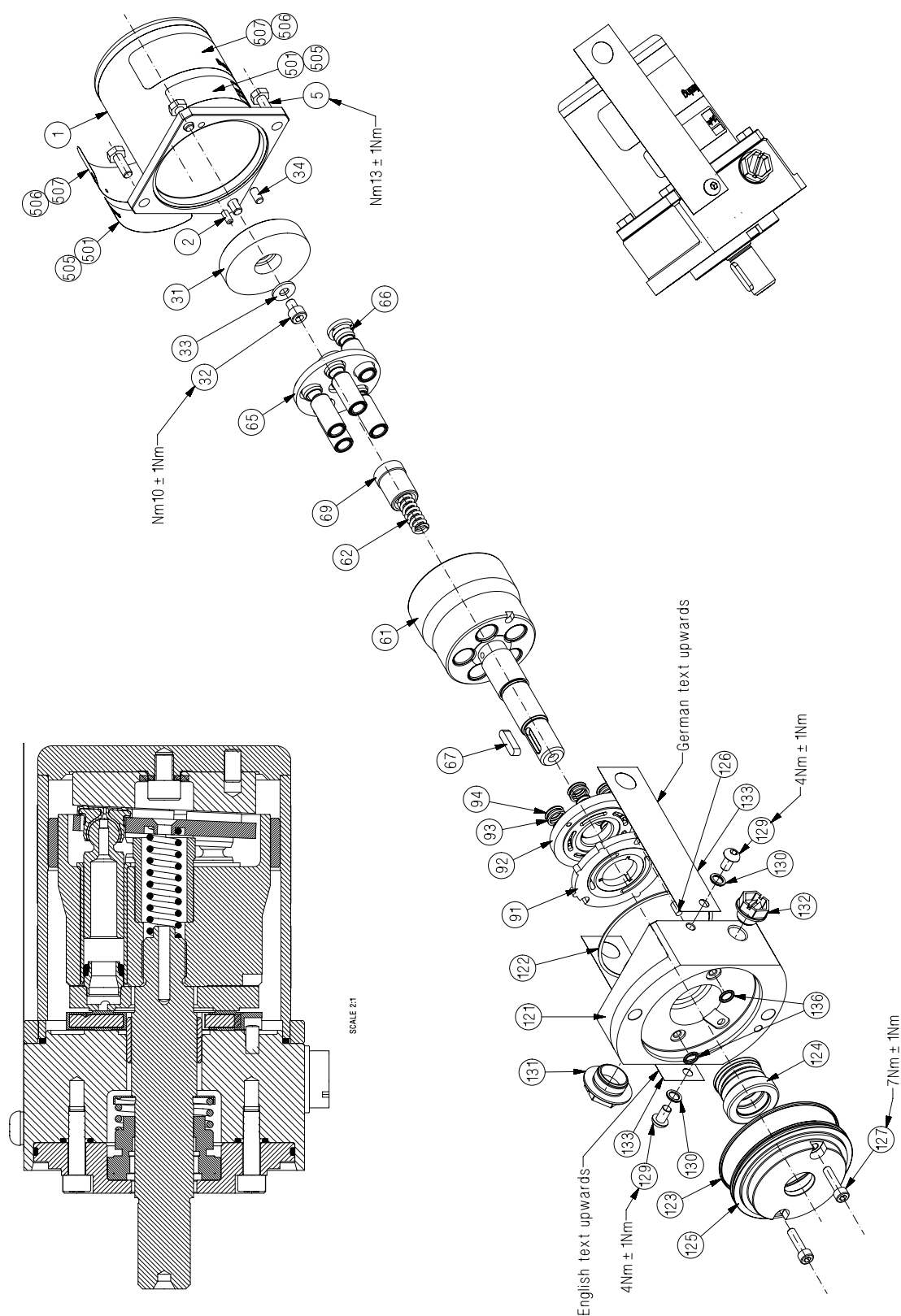
6.1 Exploded view for PAH / PAHT / PAHT C 3.2-6.3



**7. Spare parts list for
PAHT G 3.2-6.3**

Pos.	Qty.	Designation	Material	180B4307 - Seal set (PAHT G 2-6.3)	180B4311 - Cylinder barrel set (PAHT G 2-6.3)	180B4308 - Valve plate set (PAHT G 2-6.3)	180B4310 - Piston set (PAHT G 3.2-6.3)	180B4318 - Swash plate set (PAHT G 3.2)	180B4319 - Swash plate set (PAHT G 4)	180B4320 - Swash plate set (PAHT G 6.3)	180Z0235 - Tool set
-	1	Shaft bush, torpedo									x
-	1	Press bush									x
1	1	Housing	AISI 304 / PEEK								
2	1	Pin	AISI 316	x							
5	4	Screw	AISI 316	x							
31	1	Swash plate	AISI 431					x	x	x	
32	1	Screw	AISI 304					x	x	x	
33	1	Washer	AISI 304					x	x	x	
34	1	Pin	AISI 316					x	x	x	
61	1	Cylinder barrel	AISI 431 / PEEK		x						
62	1	Spring	AISI 304				x				
63	1	Spring guide	PEEK				x				
64	1	Retainer ball	PEEK				x				
65	1	Retainer plate	1.4301				x				
66	5	Piston	AISI 431/ PEEK				x				
67	1	Key	AISI 316Ti	x							
69	1	Stop	PEEK								
91	1	Port plate	AISI 304 / PEEK			x					
92	1	Valve plate	AISI 431			x					
93	5	Back up ring	PTFE			x					
94	5	O-ring	NBR			x					
121	1	Port flange	AISI 304 / PEEK								
122	1	O-ring	NBR	x							
123	1	O-ring	NBR	x							
124	1	Shaft seal	AISI 304 / NBR	x							
125	1	End cover	AISI 304								
126	1	Pin	AISI 316								
127	2	Screw	AISI 304	x							
130	1	Usit-ring	AISI 304 / NBR	x							
136	2	O-ring	NBR	x							
	1	Service instruction		x	x	x	x	x	x	x	

7.1 Exploded view for PAHT G 3.2-6.3



Danfoss A/S

High Pressure Pumps

Nordborgvej 81

DK-6430 Nordborg

Denmark

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