GROUP 6 TRAVEL MOTOR

1. REMOVAL AND INSTALL

1) REMOVAL

(1) Lower the work equipment to the ground and stop the engine.

(2) Operate the control levers and pedals several times to release the remaining pressure in the hydraulic piping.

(3) Loosen the breather slowly to release the pressure inside the hydraulic tank.

⚠ Escaping fluid under pressure can penetrate the skin causing serious injury.

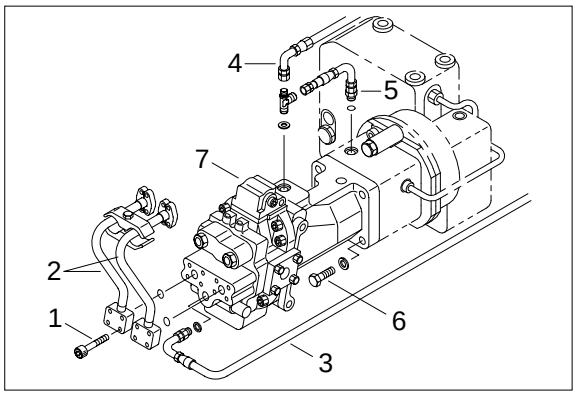
(4) Loosen the socket bolt(1) and remove the pipe assy(2).

(5) Disconnect hoses(3,4,5).

(6) Loosen the hex bolt(6) and remove travel motor(7).

・Weight : 105kg(230lb)

※ When removing the travel motor assembly, check that all the hoses have been disconnected.

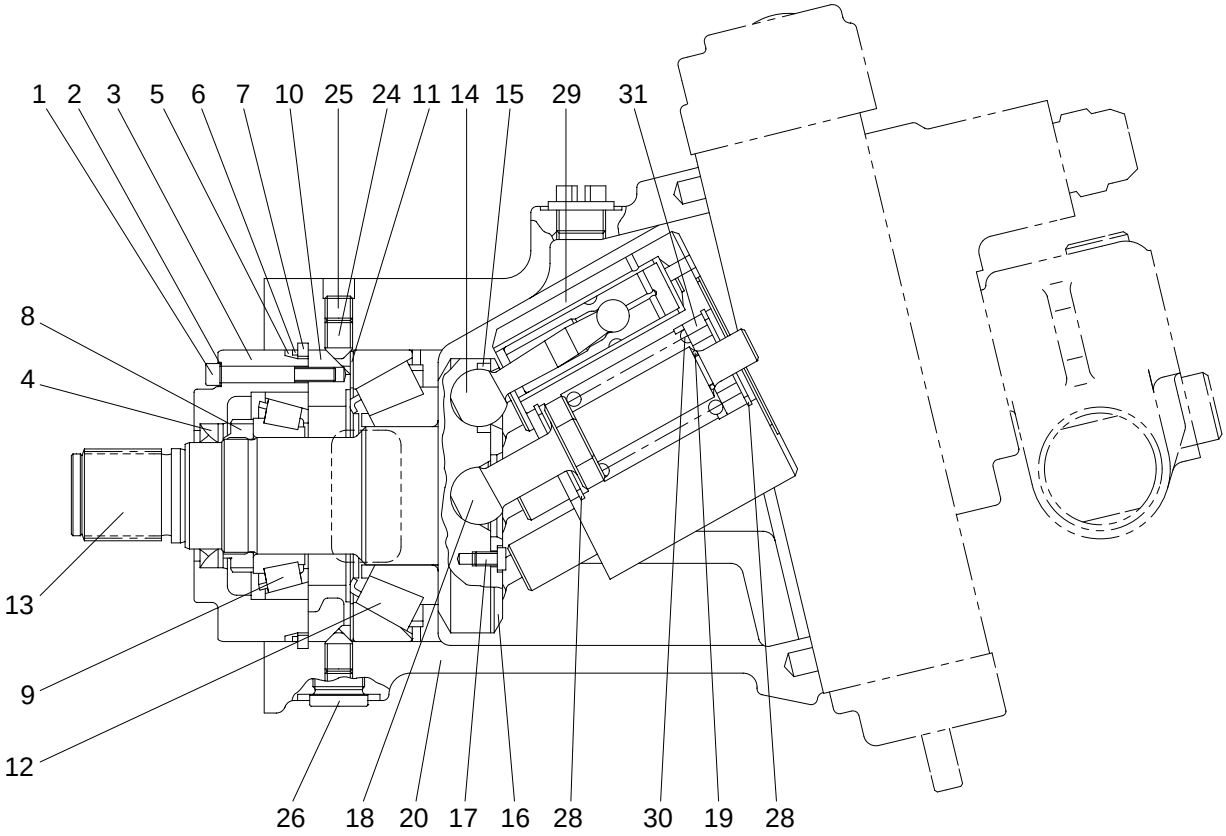


2) INSTALL

(1) Carry out installation in the reverse order to removal.

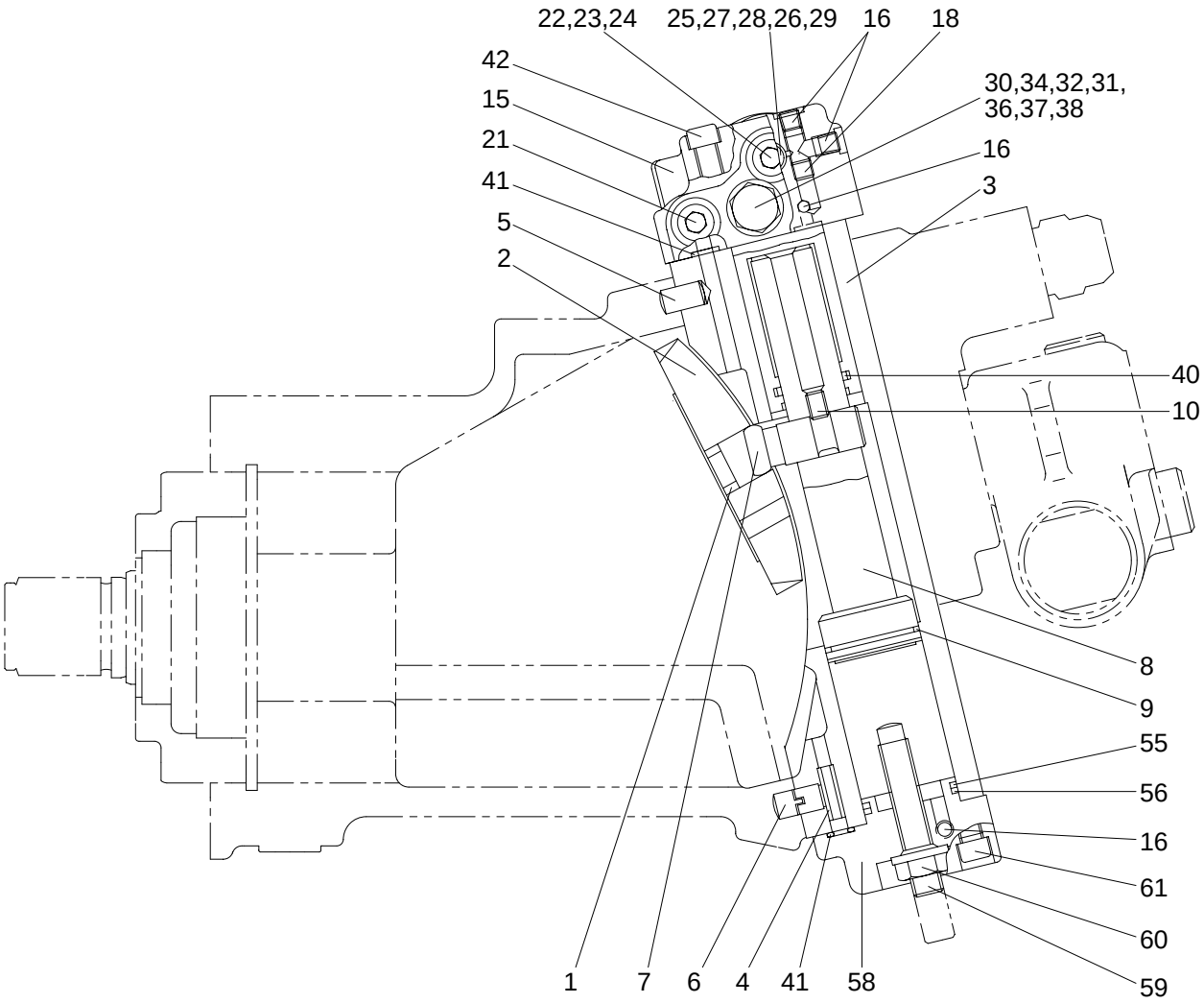
(2) Confirm the hydraulic oil level and check the hydraulic oil leak or not.

2. MOTOR UNIT



1	Socket head screw	10	Ring	19	Shim
2	Seal ring	11	Spacer	20	Housing
3	Flange	12	Taper roller bearing	24	Threaded pin
4	Seal ring	13	Drive shaft	25	Threaded pin
5	O-ring	14	Piston	26	Screw plug
6	Shim	15	Retainer ring	28	Retainer ring
7	Retainer ring	16	Thrust washer	29	Cylinder block
8	Nut	17	Socket head screw	30	Pressure spring
9	Taper roller bearing	18	Center pivot	31	Ring

REGULATOR



1	Bushing	21	Screw plug	36	O-ring
2	Port plate	22	Pilot	37	Support ring
3	Housing	23	Valve piston	38	Screw plug
4	Pipe	24	Screw plug	40	Seal ring
5	Cylinder pin	25	Shim	41	O-ring
6	Cylinder pin	26	Pressure spring	42	Socket head screw
7	Finger	27	Spring plate	55	O-ring
8	Piston	28	Shim	56	Support ring
9	Ring	29	Screw plug	58	Cover
10	Threaded pin	30	O-ring	59	Threaded pin
15	Housing	31	Valve seat	60	Nut
16	Screw plug	32	Valve sleeve	61	Socket head screw
18	Nozzle	34	Valve seat		

3. TIGHTENING TORQUE

The torques given are standard figures. Any figures specifically described in the procedure has priority.

1) METERIC BOLT - Coarse thread

Size	8.8		10.9		12.9	
	kg · m	lb · ft	kg · m	lb · ft	kg · m	lb · ft
M 5	0.6	4.3	0.8	5.8	1.0	7.2
M 6	1.0	7.2	1.4	10.1	1.7	73.1
M 8	2.5	18.1	3.5	25.3	4.1	29.7
M10	4.9	35.4	6.9	49.9	8.3	60.0
M12	8.6	62.2	12.0	86.8	14.5	104.9
M14	13.5	97.6	19.0	137.4	23.0	166.4
M16	21.0	151.9	29.5	213.3	35.5	256.8
M18	29.0	209.8	40.5	292.9	48.5	350.8
M20	41.0	396.6	58.0	419.5	69.0	499.1
M22	55.0	397.8	78.0	564.2	93.0	672.7
M24	71.0	513.5	100.0	723.3	120.0	868.0

2) METRIC BOLT - Fine thread

Size	8.8		10.9		12.9	
	kg · m	lb · ft	kg · m	lb · ft	kg · m	lb · ft
M 8 × 1	2.7	19.5	3.8	27.5	4.5	32.5
M10 × 1	4.8	34.7	7.0	50.6	8.3	60.0
M12 × 1.5	9.0	65.1	12.5	90.4	15.0	108.5
M14 × 1.5	15.0	108.5	21.0	151.9	25.0	180.8
M16 × 1.5	22.5	162.7	31.5	227.8	38.0	274.9
M18 × 1.5	32.5	235.1	46.0	332.7	55.0	297.8
M20 × 1.5	46.0	332.7	64.0	462.9	77.0	556.9
M22 × 1.5	61.0	441.2	86.0	622.0	105.0	759.5
M24 × 2	78.0	564.2	110.0	795.6	130.0	940.0
M27 × 2	115.0	831.8	160.0	1157.3	195.0	1410.4

4. DISASSEMBLY AND ASSEMBLY

1) GENERAL PRECAUTIONS

(1) Disassembly

① Before disassembling the motor, check the items to be inspected and, for remedy against trouble, closely examine the nature of the trouble, so that the motor can be disassembled effectively.

② To disassemble the motor, use the disassembling procedures described in section 2) and select a clean place.

③ Place a rubber or vinyl sheet or other such protective materials on your working bench to protect the surface of the motor to be serviced.

④ During disassembly, give a match mark to the mating surfaces of each part.

⑤ Arrange removed parts in order so that they will not become damaged or missing during disassembly.

⑥ Once seals have been disassembled, they should be replaced even if damage is not observed. Have replacement seals ready on hand before starting your disassembling job.

(2) Assembly

① Reassemble in a work area that is clean and free from dust and grit.

② Handle parts with bare hands to keep them free of linty contanminats.

③ Repair or replace the damaged parts.
Each parts must be free of burrs its corners.

④ Do not reuse O-ring oil seal and floating seal that were removed in disassembly.
Provide the new parts.

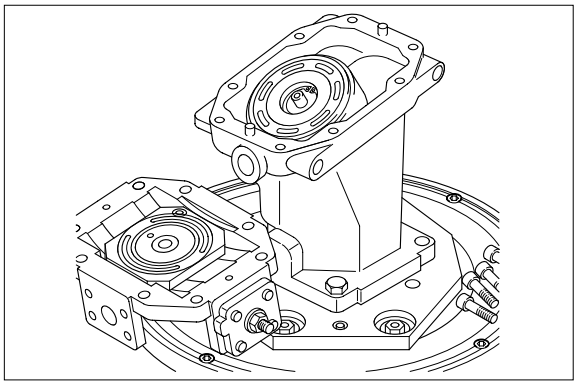
⑤ Wash all parts thoroughly in a suitable solvent.
Dry thououghly with compressed air.
Do not use the cloths.

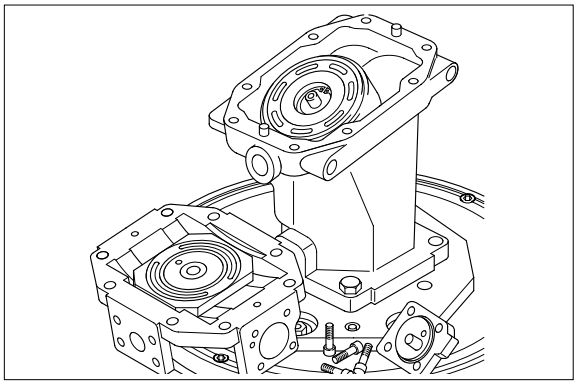
⑥ When reassembling oil motor components of motor, be sure to coat the sliding parts of the motor and valve with fresh hydraulic oil.(NAS class 9 or above)

⑦ Use a torque wrench to tighten bolts and plugs, to the torque specified as follows.

2) INSPECTION

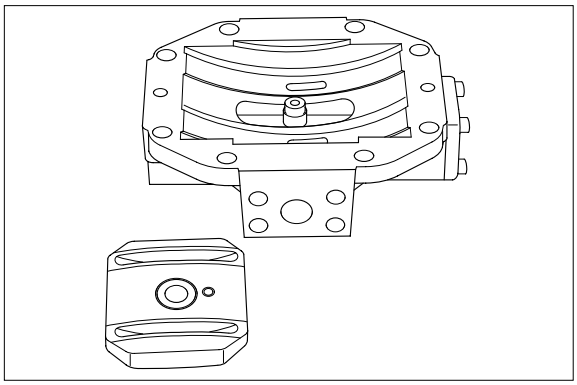
Examination of valve plate and cylinder barrel.





3) ASSEMBLY

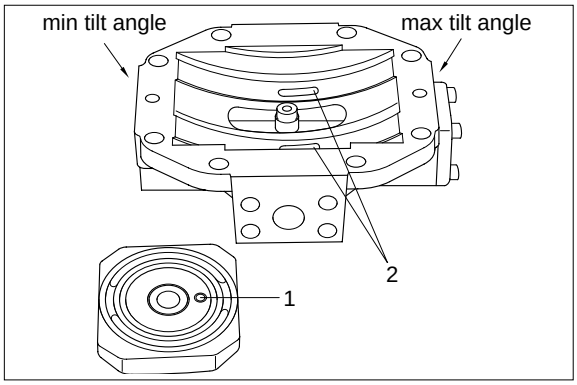
(1) Valve plate and cylinder barrel.

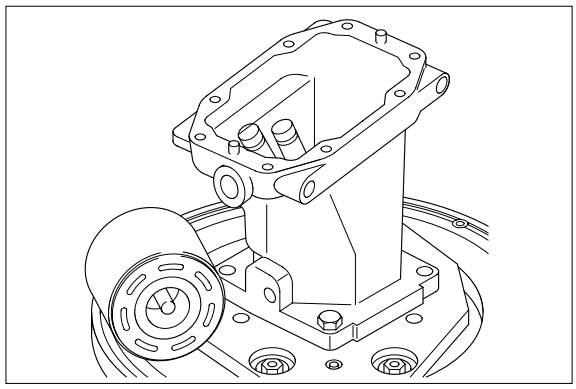


※ Bore 1 in the valve plate must be assembled toward the maximum tilt angle position.

Oil Ports 2 in the valve plate housing must be off-set toward the maximum tilt angle position.

Cleansed sealing faces of valve plate housing before assembly(apply sealant thinly to both sides).

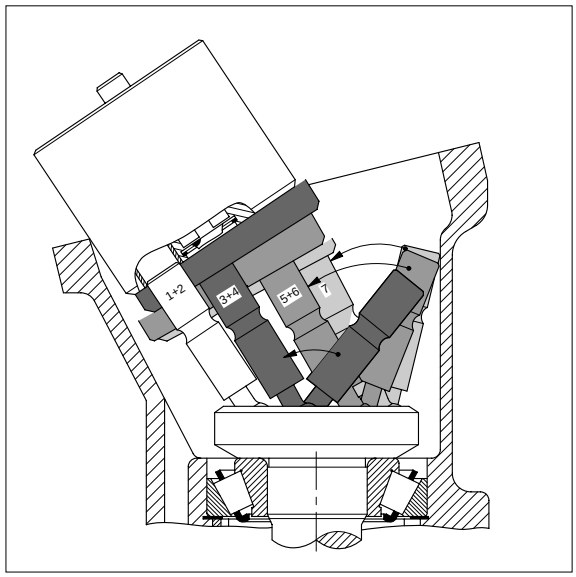




(2) Inserting pistons into cylinder barrel

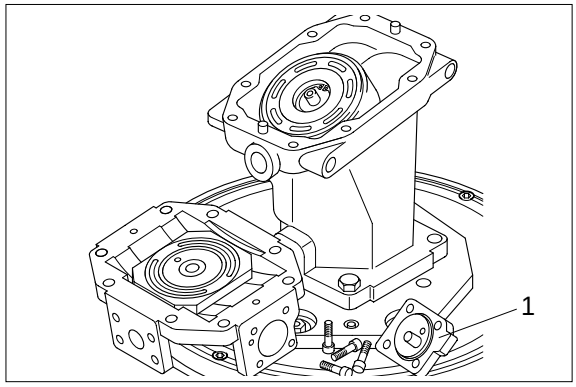
- Pistons 1+2 are inserted to the left while pistons 3+4, 5+6 and 7 are laying to the right of the housing.
- When pistons 1+2 are entered into the cylinder barrel follow the same procedure with pistons 3+4, 5+6 and 7 while gradually lowering the barrel.

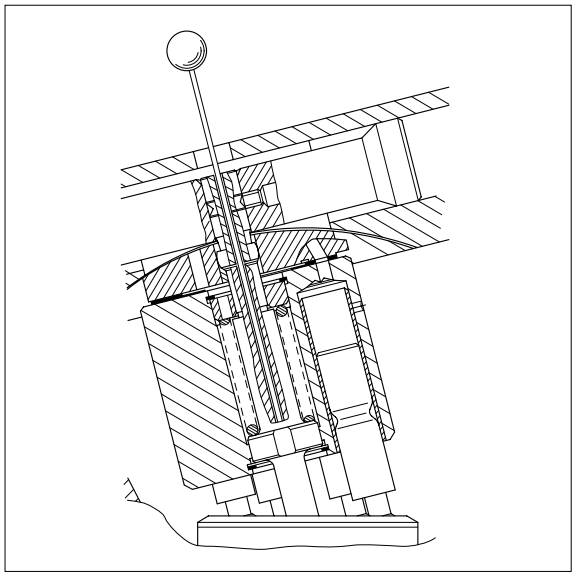
※ The pistons are shown in the drawing shaded according to numbers.



(3) Assembly the valve plate and valve plate housing to the cylinder barrel, using a 3㎜ steelrod to centralize the assembly. Cover 1 (with the adjustment for minimum tilt angle) should not be fitted at this stage.

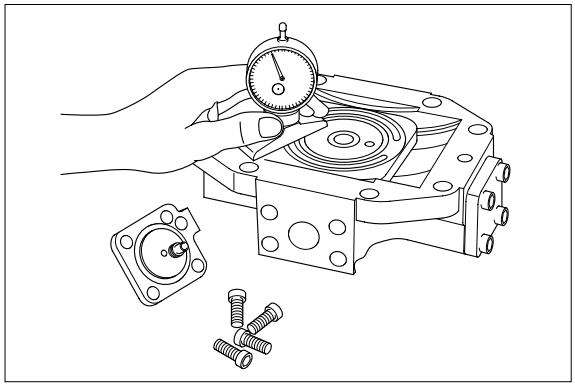
※ The grub screw is assembled with Loctite CVV. It may be removed cold, but in cases of difficulty, gently apply local heat to assist the removal.



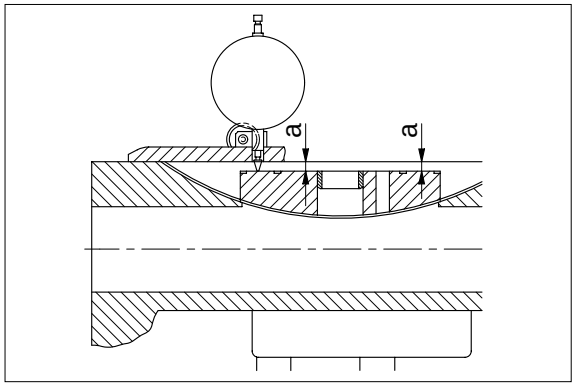


4) CORRECT ASSEMBLY

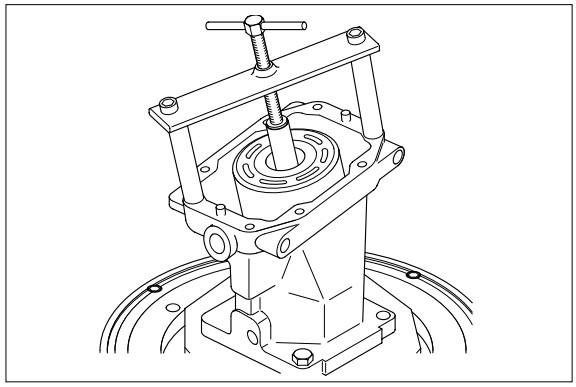
(1) Centralise valve plate.



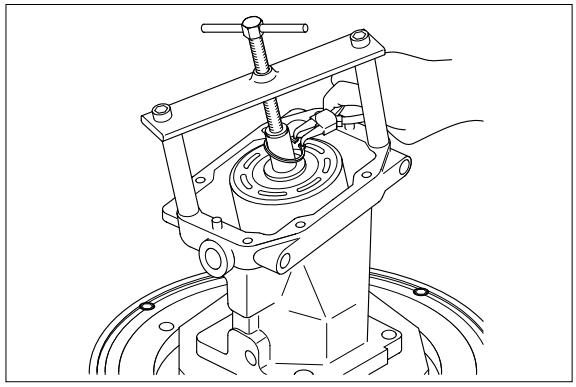
(2) Measure depth "a".



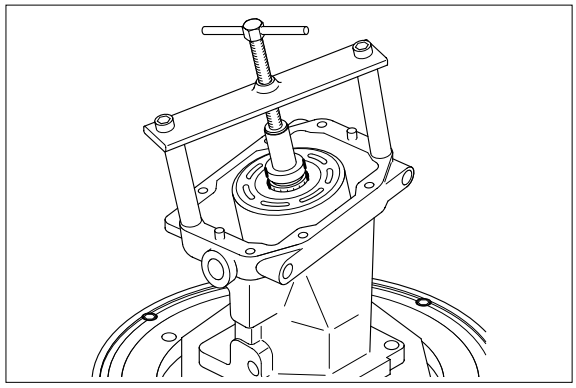
(3) Compress the spring.



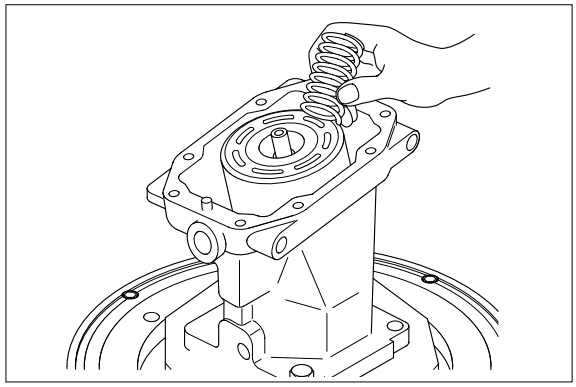
(4) Remove the circlip.



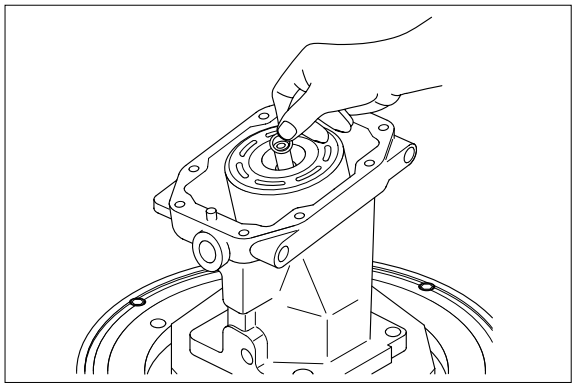
(5) Release the spring.



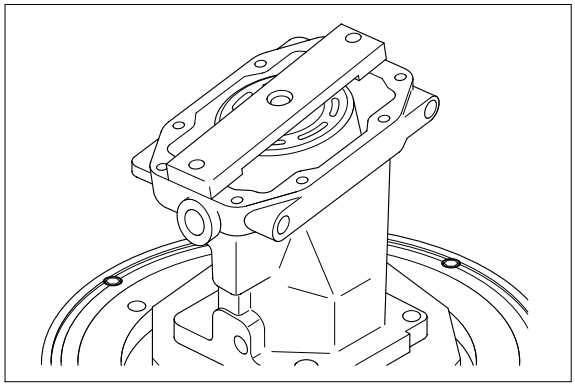
(6) Remove the spring.



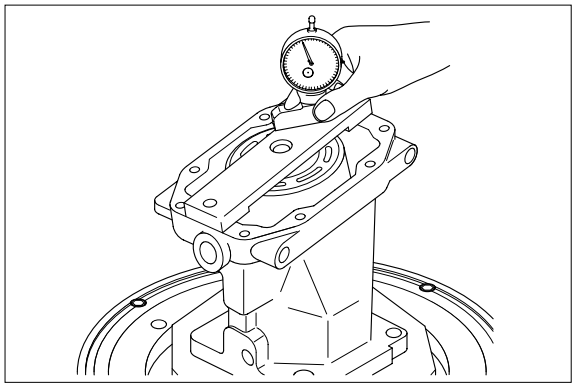
(7) Reassemble the ring and circlip(without the spring).



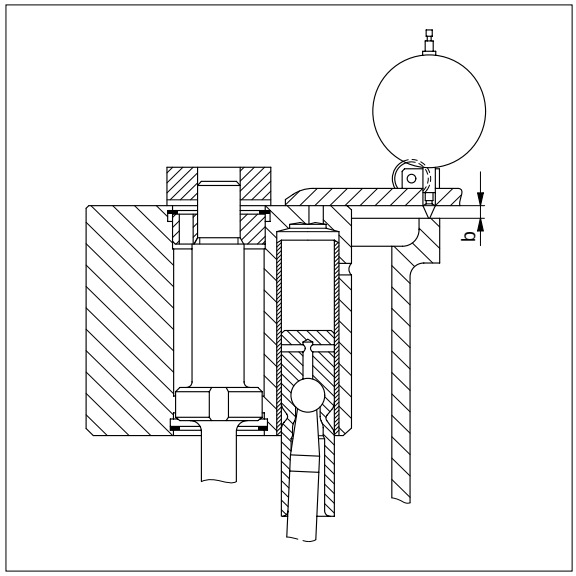
(8) Centralise the barrel with jig.

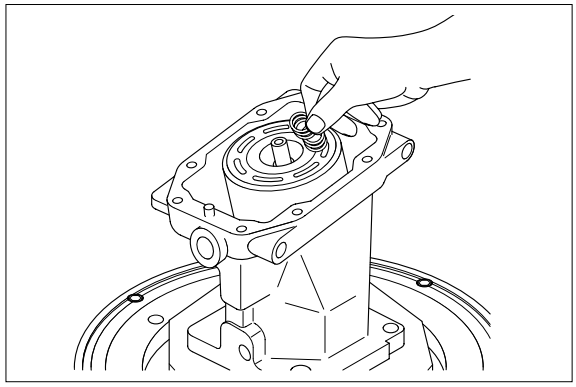


(9) Set zero on the clock gauge.

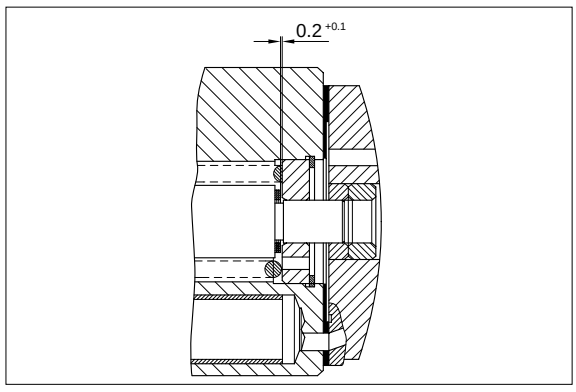


(10) Measure dimension "b" between the cylinder barrel and casing.

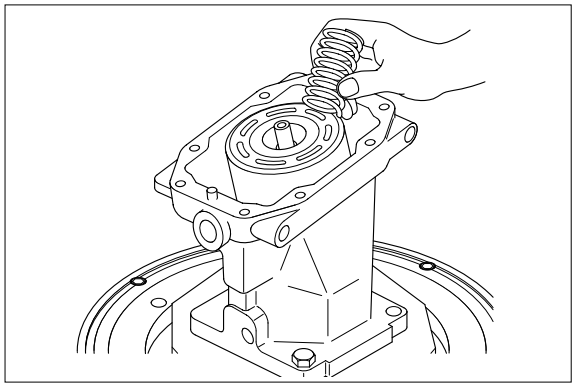


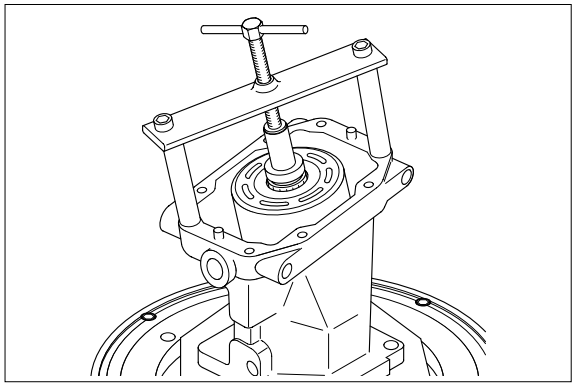


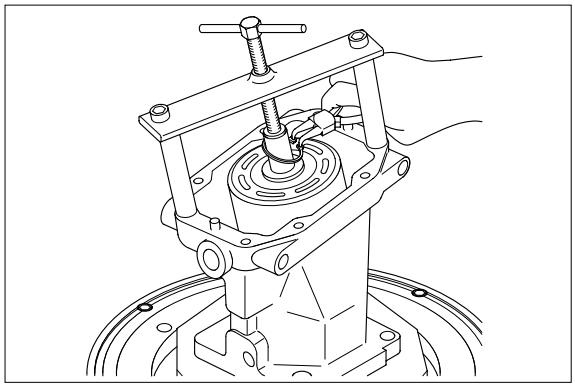
(11) Shim to give correct preload dimension.
Depth "a" - Dimension "b"
= Clearance + Shim thickness
it is necessary to add or subtract shims(to achieve a clearance of $0.2^{+0.1}_{-0}$mm).



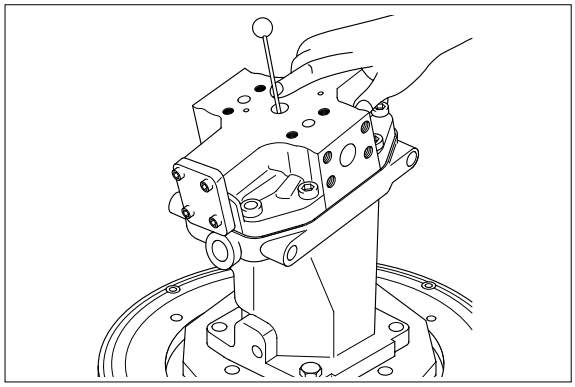
(12) Replace spring.







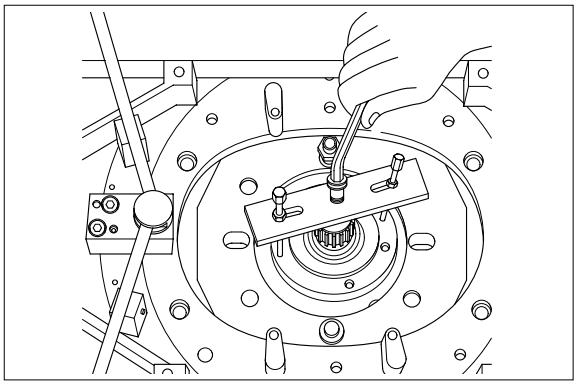
(13) Finalise assembly.

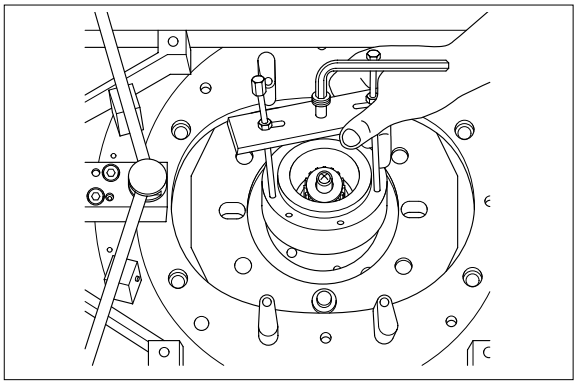


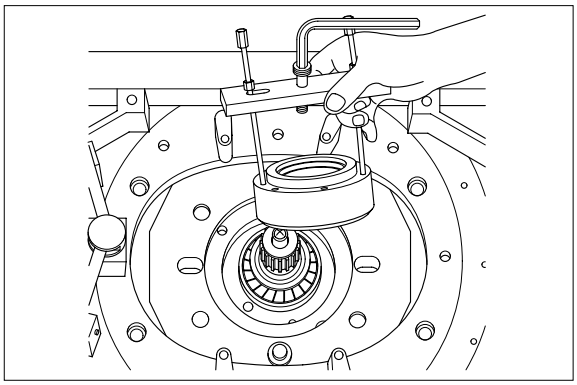
5) DRIVE SHAFT

(1) Disassembly

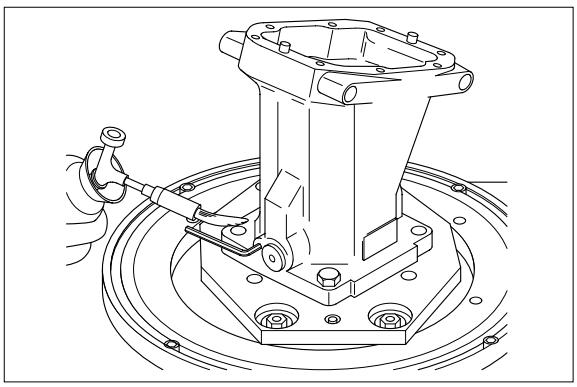
① Extract the shaft seal housing(including the shaft seal).

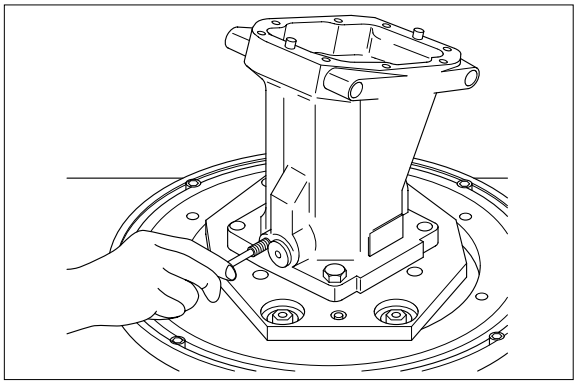


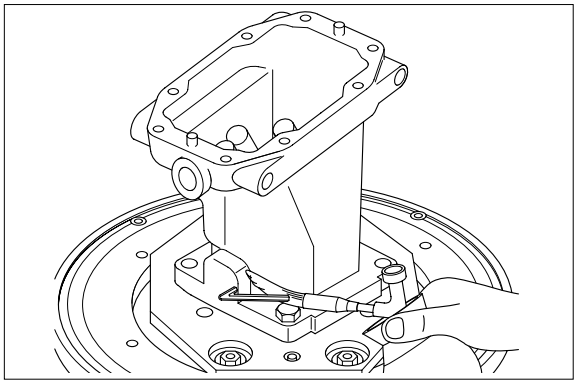


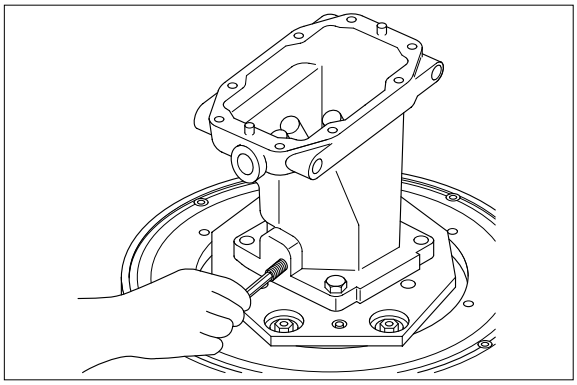


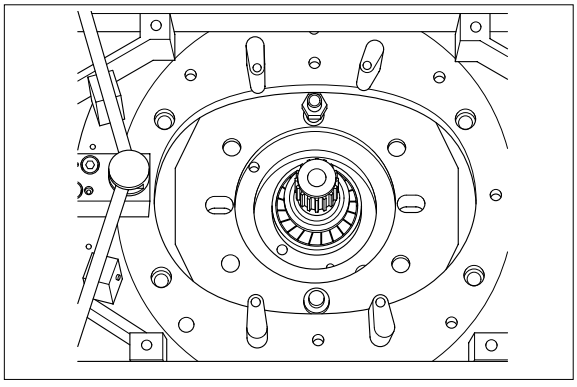
② Remove the grub screws at the top and bottom of the housing flange(to facilitate removal of the retainer ring).
When removing the grub screws, first heat to 150° C.



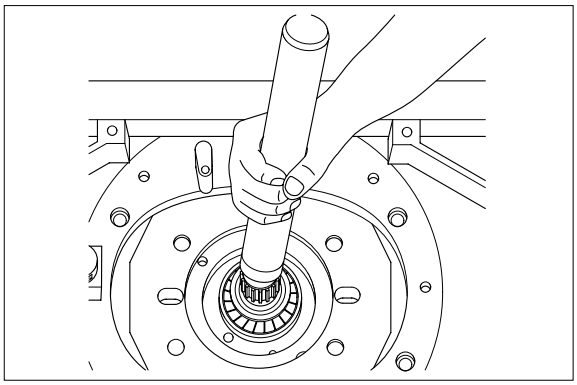




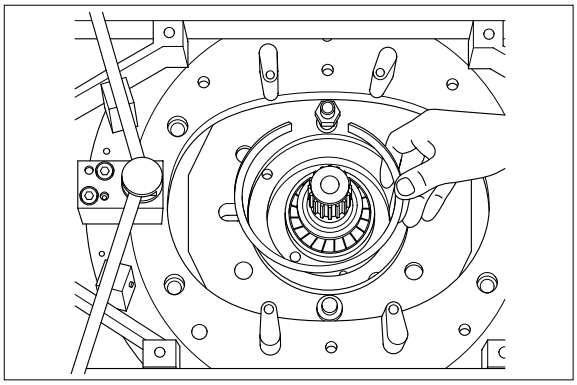


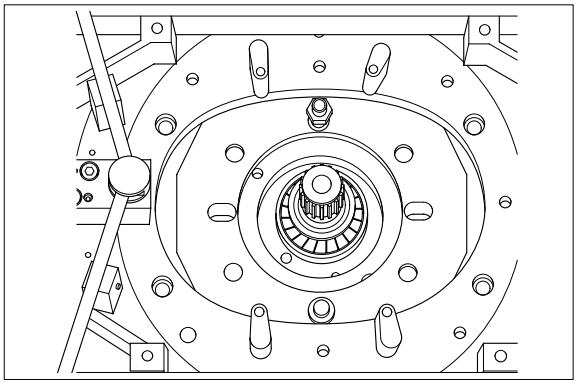


③ Tap the drive shaft slightly inward.
(1㎜ approximately)

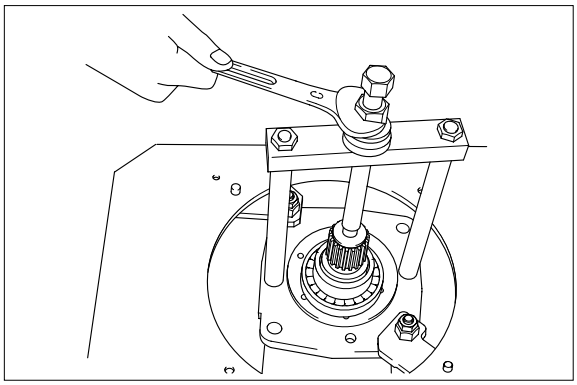


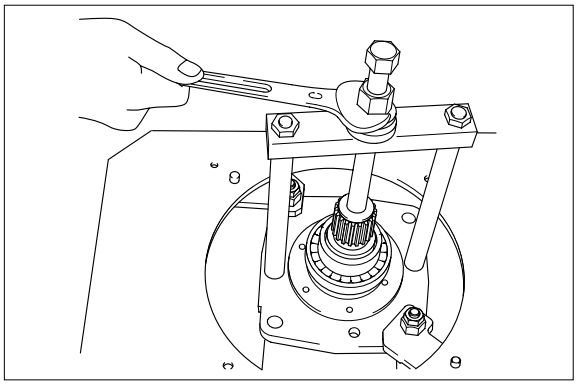
④ Remove the retainer ring.

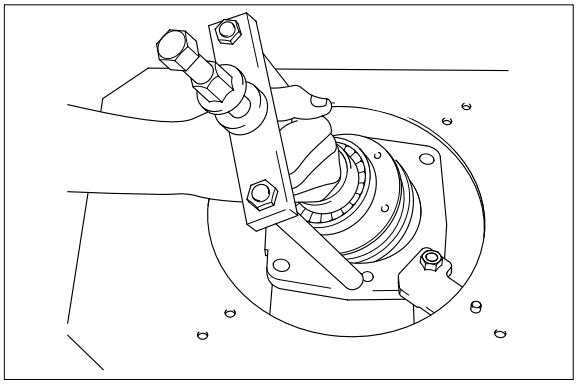




⑤ Extract the drive shaft.





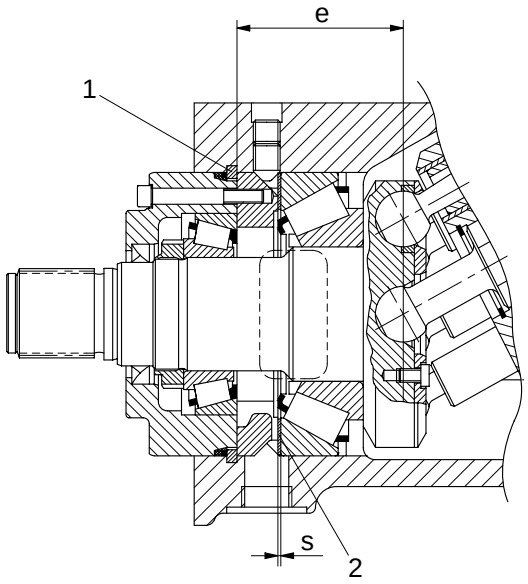


(2) Measurement

① Mounting dimension "e" and spacer shim thickness "s".

② In case of changing the radial axial roller bearings of motor, the dimension "e" has to be measured without spacer shim in order to find the right setting of articulation point.

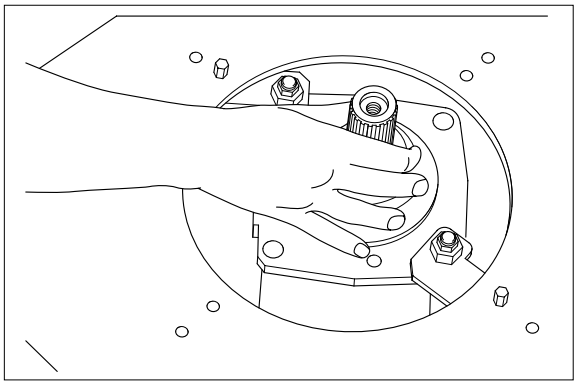
③ For the type "retainer ring" the setting of articulation point is obtained for the housing by using a suitable retainer ring and for the drive shaft assembly by using a spacer shim. In case of repairing the retainer ring has to be left with the housing.

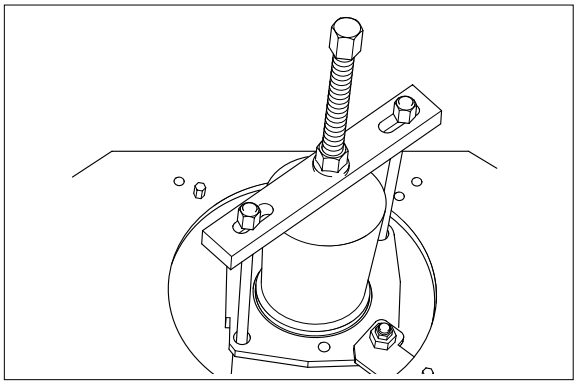


1 Retainer ring
2 Spacer shim

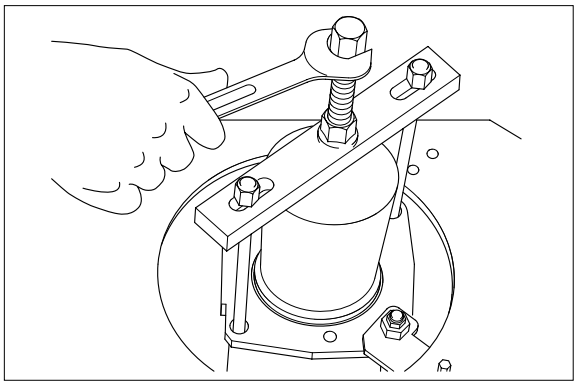
Measuring dimension(e)	Spacer shim	
	Thickness "s"	Spare parts no.
74.75-74.80	0.5mm	206.327.20.00
74.65-74.69	0.62mm	206.327.20.02
74.60-74.64	0.68mm	206.327.20.03

(3) Reassembly

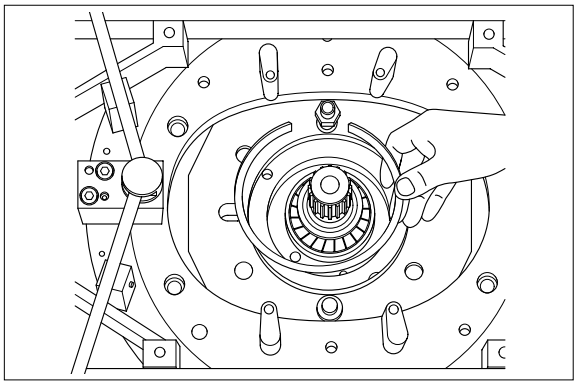


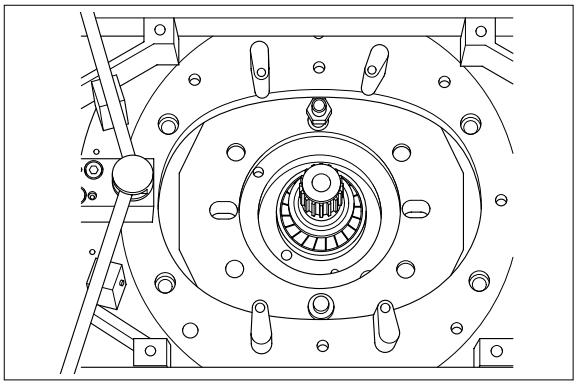


① The drive shaft must not be pushed inward more than is necessary for the assembly of the retainer ring.



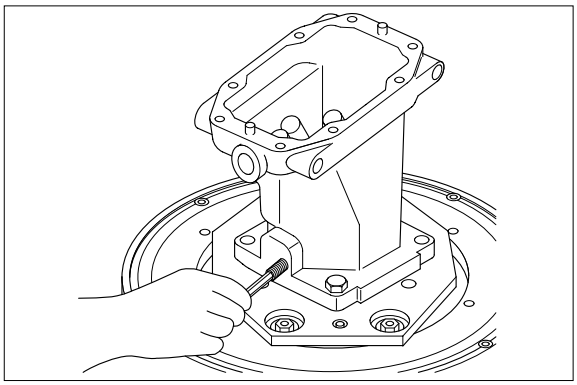
② **Retainer ring set**
Mount on top of drive shaft.



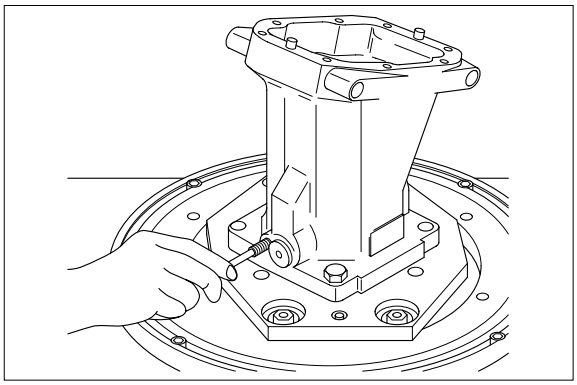


③ Assemble the grub screws with Loctite CVV.

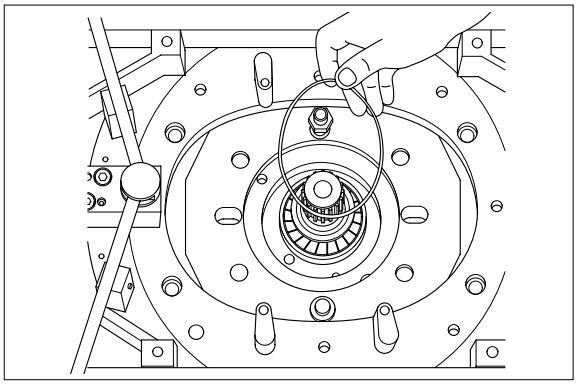
· Tightening torque : $1^{+0}_{-0.2}$ kg · m
($7.2^{+0}_{-1.4}$ lb · ft)



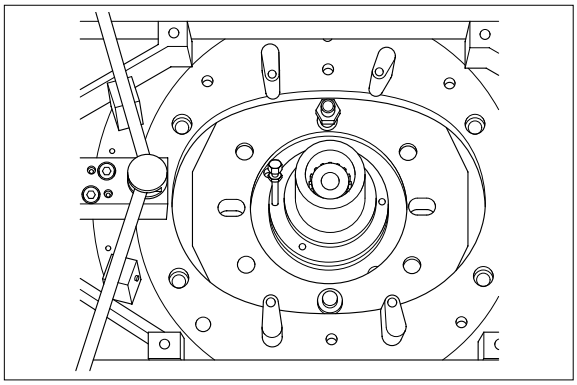
· Tightening torque : $1^{+0}_{-0.2}$ kg · m
($7.2^{+0}_{-1.4}$ lb · ft)

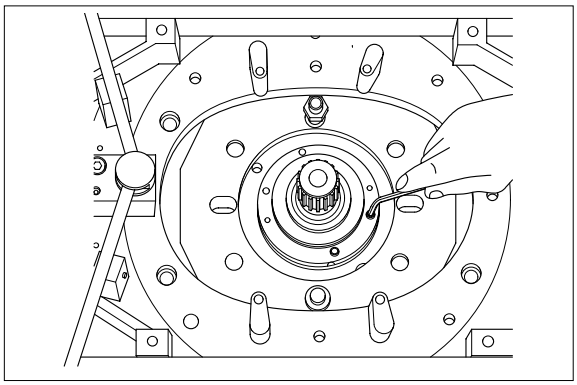


※ Before assembling the shaft seal housing first fit the O-ring.



Use the special guide tool for the assembly of the shaft seal and seal housing over the shaft. Align the securing bolt holes during assembly with an extended stud.

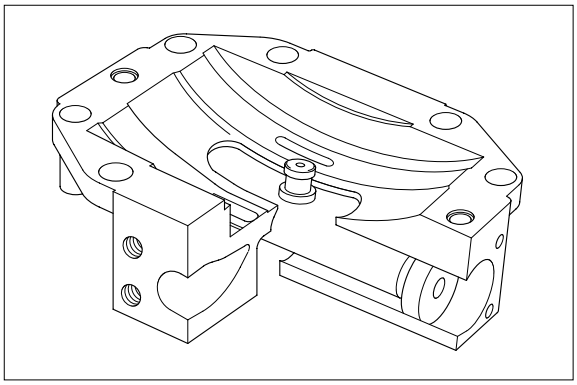




6) DISPLACEMENT CONTROLLER

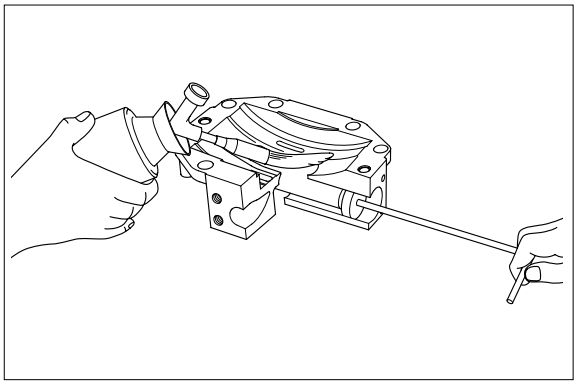
(1) Disassembly the piston

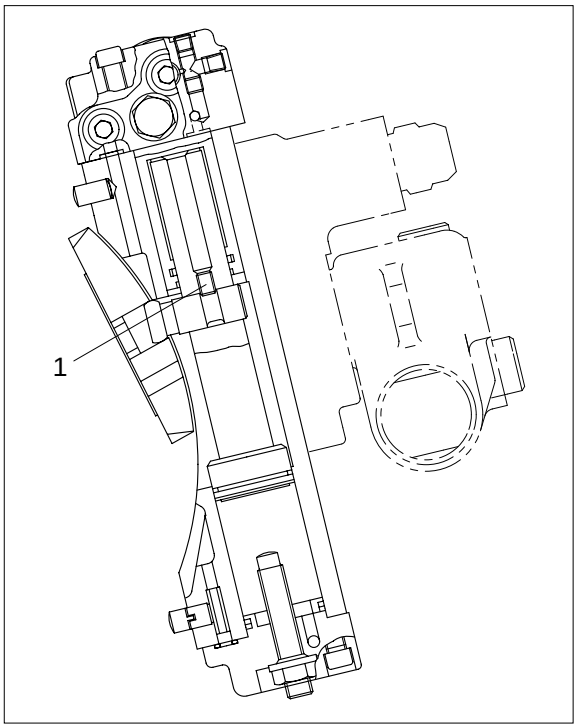
① Shown as a sectioned model with control piston.



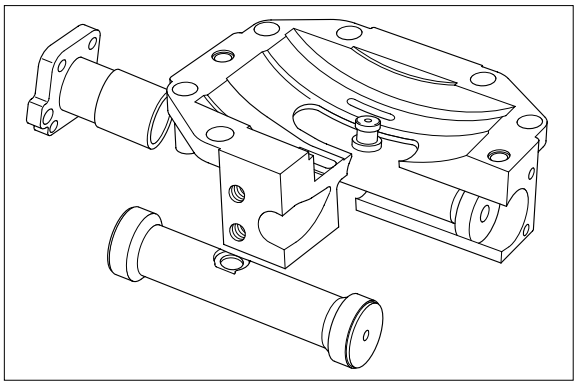
② Remove the grub screw(1) with an extended hexagon key.

※ The grub screw is assembled with Loctite CVV. It may be removed cold but if this proves difficult, apply local heat.





③ Control and regulator pistons.



(2) Limiting the minimum tilt angle

① Adjust in bottom cover.