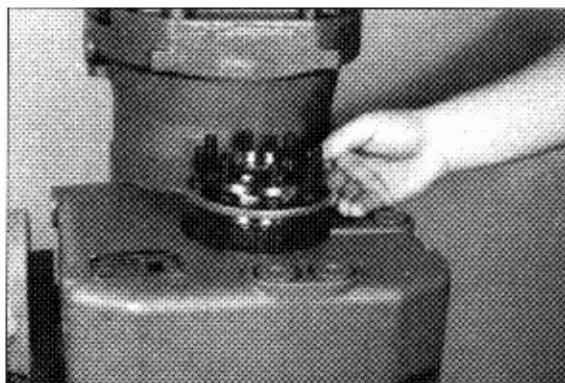
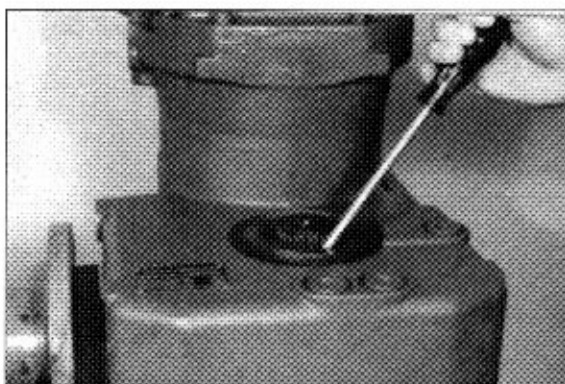


**4) DISASSEMBLE FINAL DRIVE**(Separate gearbox installation)

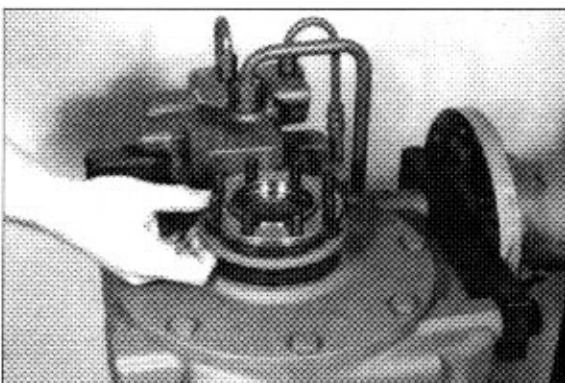
- (1) Unlock and loosen hex head screws and remove output flange.



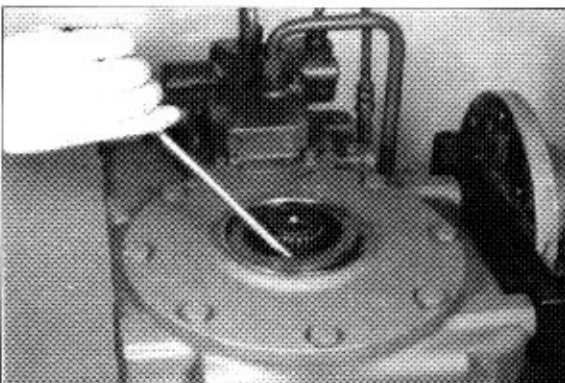
- (2) Pry shaft out of the housing bore.



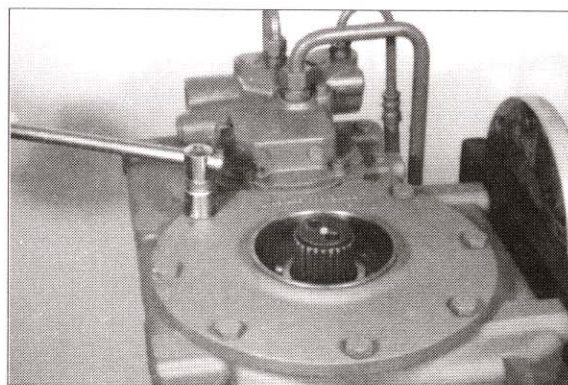
- (3) Tilt housing 180°. Unlock and loosen hex head screws and remove output flange.



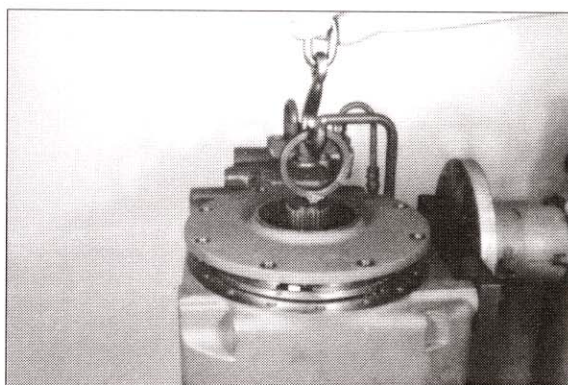
- (4) Remove shaft seal.



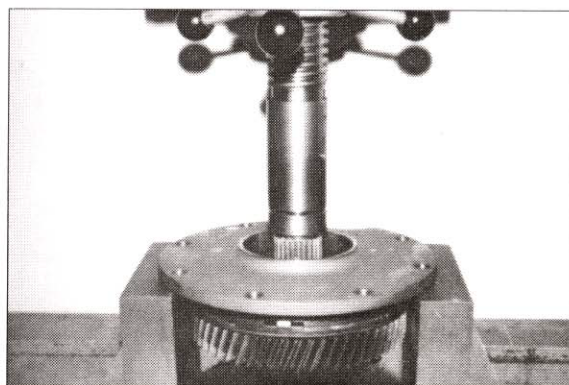
(5) Loosen hex head screws.



(6) Separate output gear along with cover from the gear case, using hoist.



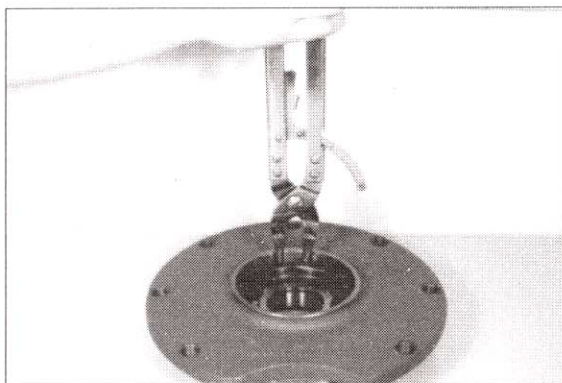
(7) Press output gear out of the bearing cap, reps. out of the ball bearing.



(8) Remove oil baffle plate.



(9) Squeeze out circlip.



(10) Press ball bearing out of the bearing bore.



(11) Remove oil baffle plate.



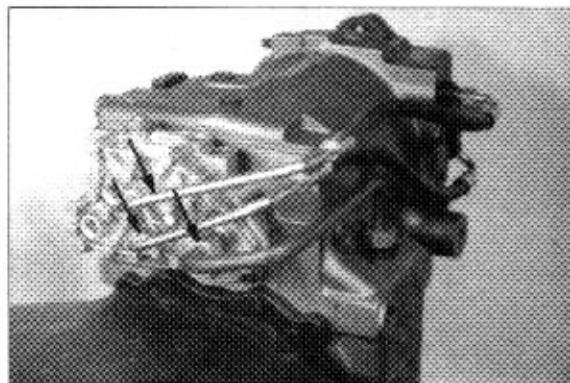
(12) Drive ball bearing out of the bearing bore.



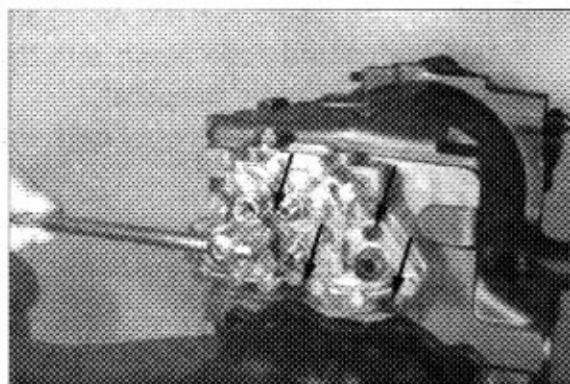


## 5) DISASSEMBLE ALUMINUM DIE-CAST GEAR BOX CONTROL

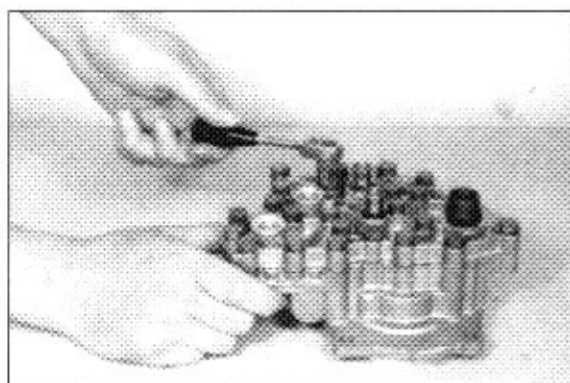
- (1) Separate oil pipe as well as hose lines from the cover.



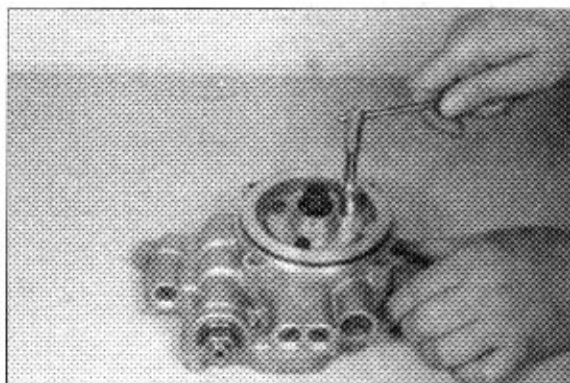
- (2) Loosen socket head screws(4EA, see Arrows) and separate shift lock from transmission case.



- (3) Loosen all hex head screws and separate cover as well as gasket from the case.

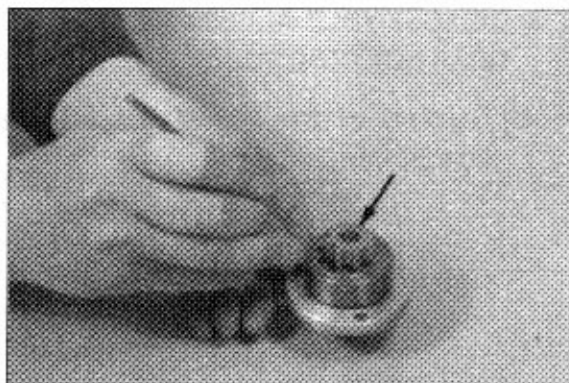


- (4) Loosen hex head screws and separate pump cover from the case.

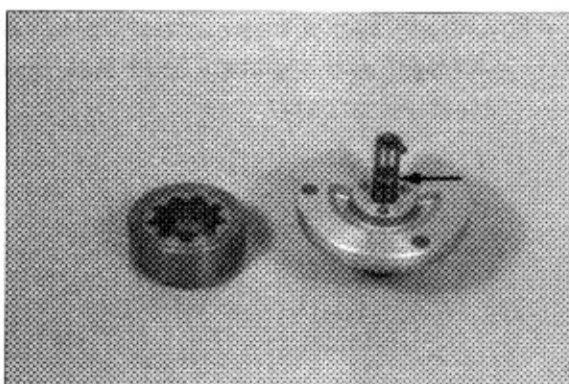




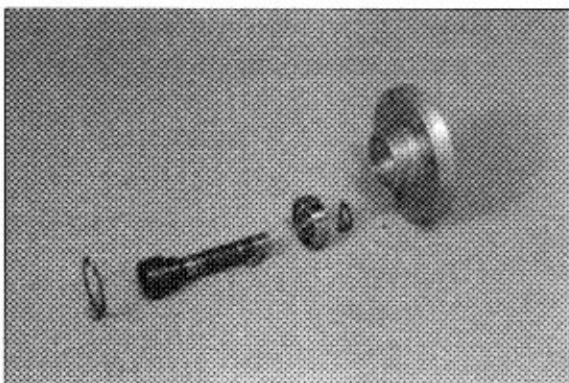
- (5) Pull internal rotor(Arrow) from the pump shaft.



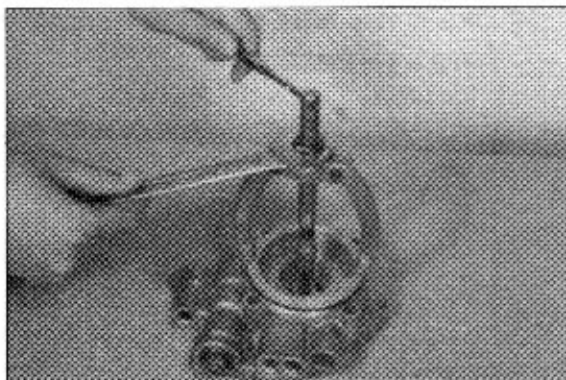
- (6) Remove the ball(position see Arrow) and pull the control case along with the external rotor from the pump shaft.  
\* Pay attention to the released balls and compression springs.



- (7) Remove the pump shaft.

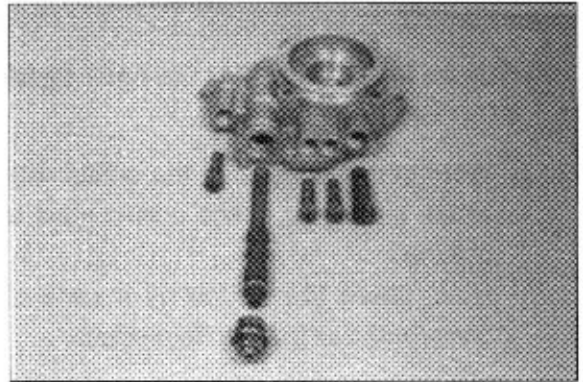


- (8) Pull needle cage out of the case bore.



(9) Remove check valves and spool.

- ※ Mark the installation position of the single check valves.

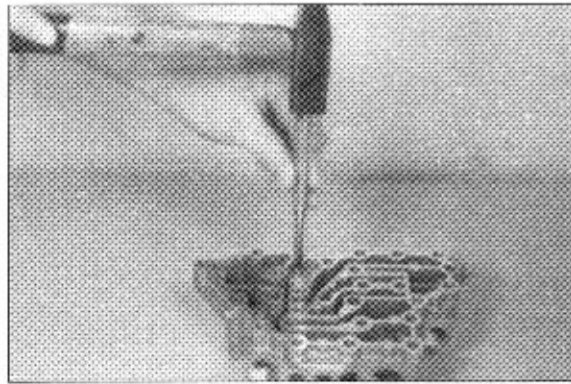


#### 4. ASSEMBLY

##### 1) REASSEMBLE ALUMINUM DIE-CAST GEAR BOX CONTROL

- (1) Wet contact surface of the orifice with loctite and insert orifice until contact is obtained.

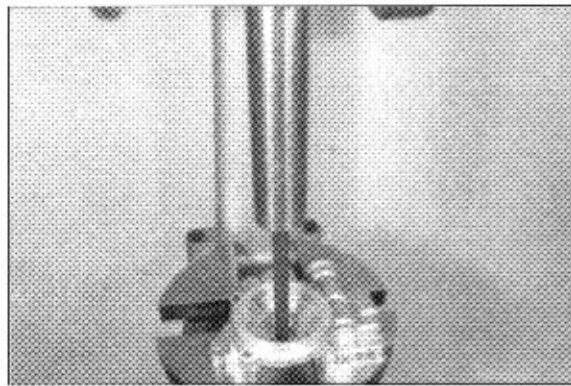
Now, clean the orifice by means of compressed air from loctite residues.



- (2) Install needle cage.

※ By application of the prescribed drift, the required installation depth of  $0.2 + 0.5\text{mm}$  is obtained.

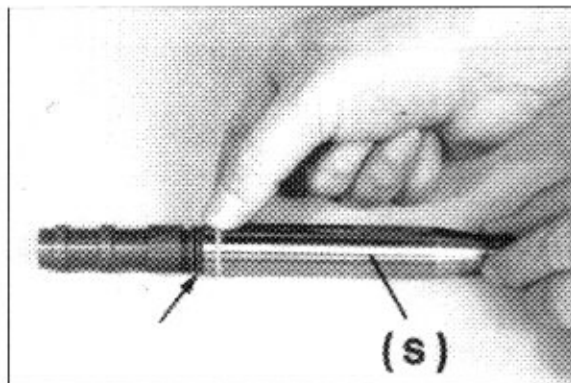
install the needle cage with the reinforced shell facing the pressing tool.



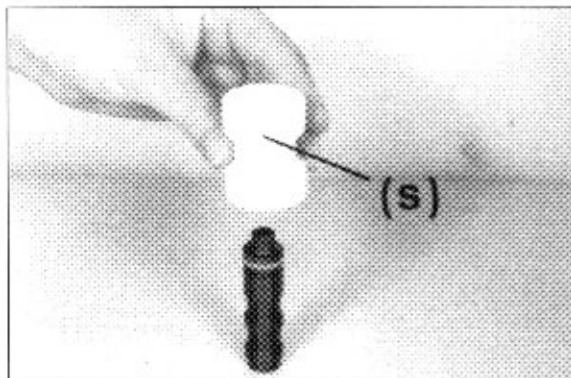
- (3) Install gasket (composed of plastic ring and O-ring).

Insert O-ring (Arrow) into the annular groove of the spool.

Guide the plastic ring by means of installer (S) over the spool and position it on the O-ring.



- (4) Calibrate plastic ring by means of bush (S).



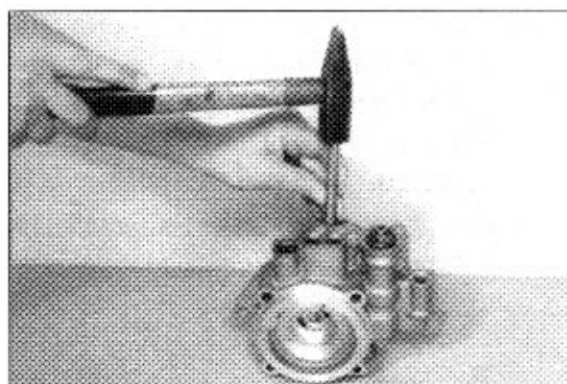
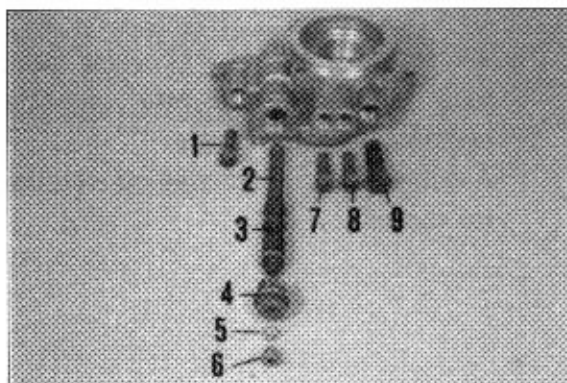


(5) Install components according to the illustration.

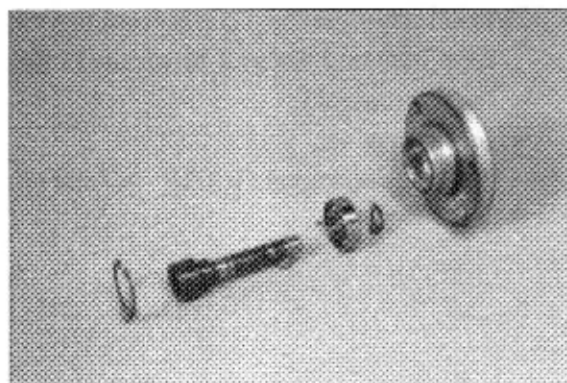
※ Pay attention to the installation position of the different check valves.

Oil components.

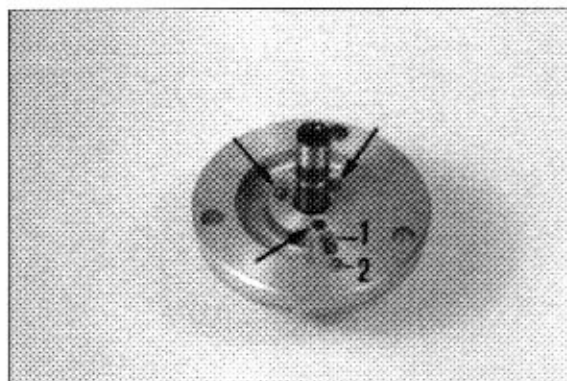
1	Check valve	1.0kg · m
2	Compression spring	
3	Spool	
4	Screw plug	5.1kg · m
5	Seal ring	
6	Screw plug	2.0kg · m
7	Check valve	1.0kg · m
8	Check valve	1.0kg · m
9	Pressure limiting valve	1.0kg · m



※ Equip all check valves as well as pressure limiting valves with new O-rings. Secure check valves and pressure limiting valves(items 1, 7, 8 and 9) by centerpunching each of them twice. Pre-assemble pump cover according to the illustration.

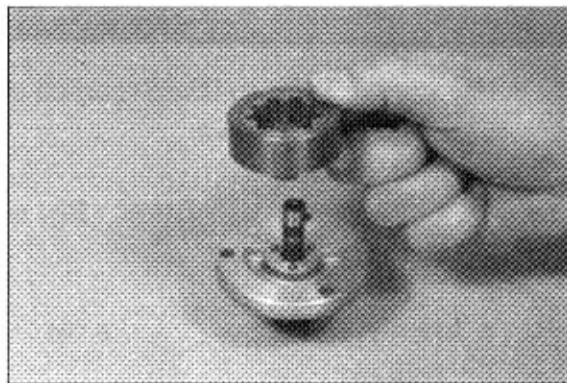


(6) Insert compression spring(1) and balls(2) with grease into the bores(Arrows) of the pump cover.



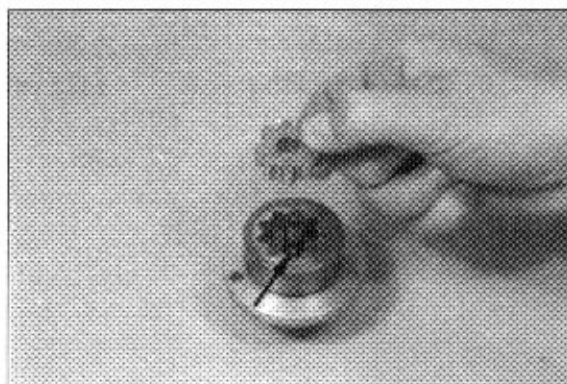
(7) Oil pump.

- ※ The rotor set (composed of control case, external and internal rotor) may be exchanged only completely. Assemble control case along with the external rotor.



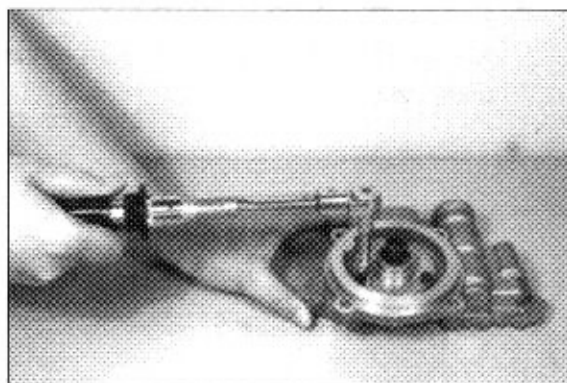
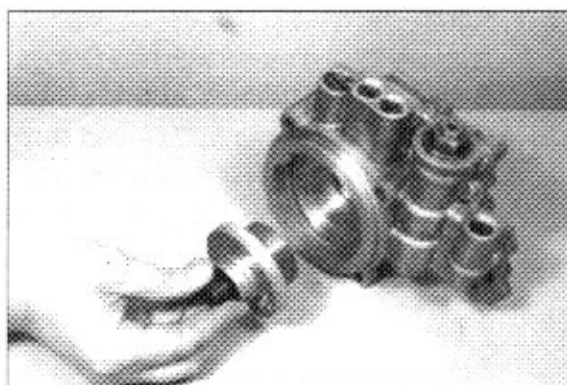
(8) Insert ball with grease into the countersinking of the pump shaft (Arrow) and assemble the internal rotor.

- ※ The drive of the internal rotor is realized by the ball.
- Pay attention to the exact installation position.

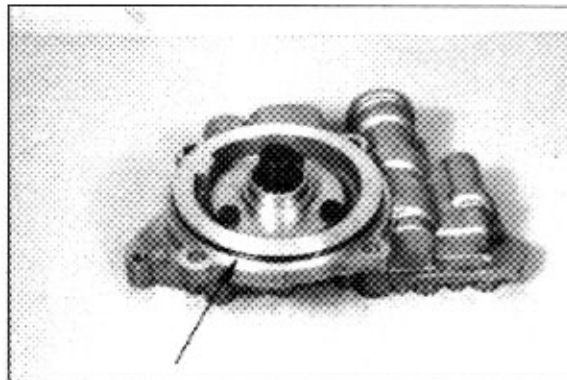


(9) Insert pre-assembled pump cover into the case bore and fasten it by means of hex head screws (M6).

- ※ Oil the rotor set.
- Tightening torque :  $0.97 \text{ kgf} \cdot \text{m}$  ( $7.0 \text{ lbf} \cdot \text{ft}$ )



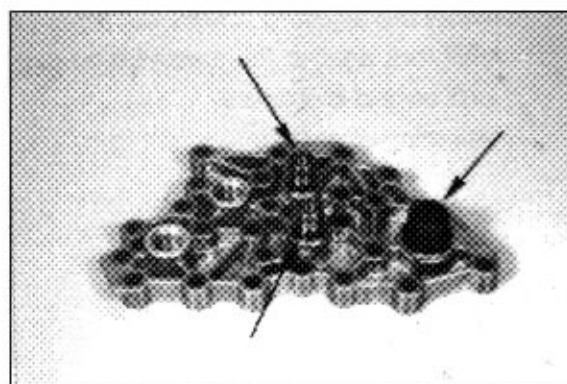
- (10) Insert O-ring into the annular groove (Arrow) and grease it.



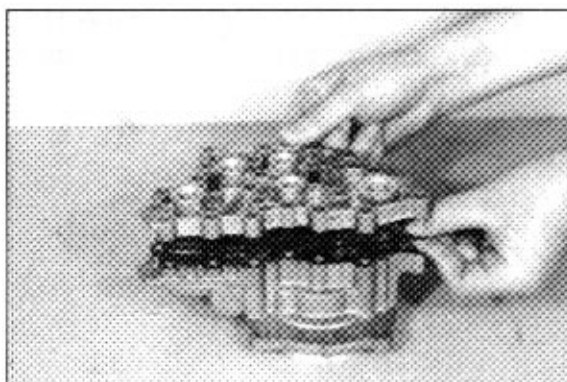
- (11) Install both adapters as well as the threaded socket.

※ Install new O-rings.

- Tightening torque(Adapter) : 2.5kgf · m (18lbf · ft)
- Tightening torque(Threaded socket) : 3.6kgf · m(26.0lbf · ft)

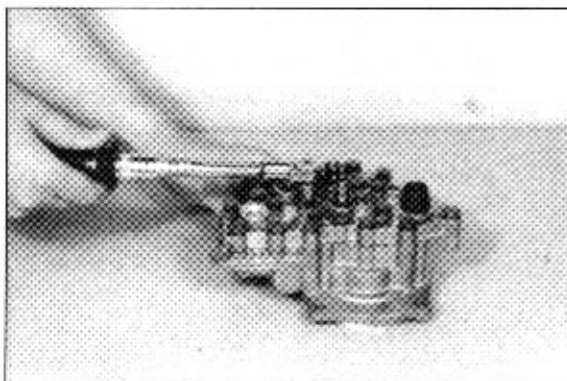


- (12) Install two adjusting screws(M8).  
Assemble gasket and cover.



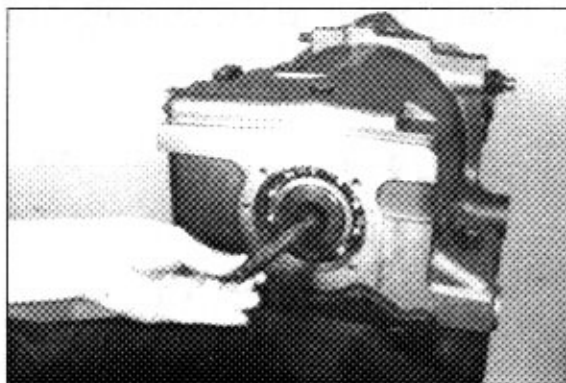
- (13) Fasten cover by means of hex head screws(Mount flat washers).

- Tightening torque : 2.0kgf · m(14.7lb · ft)

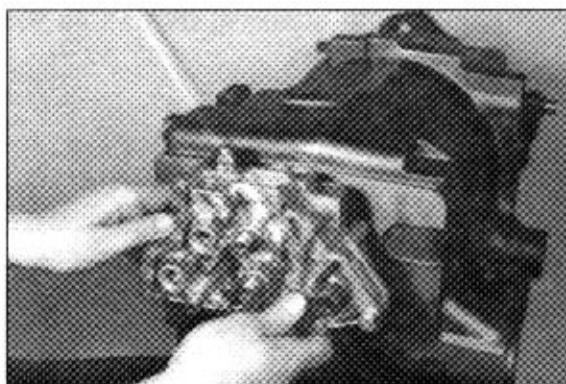




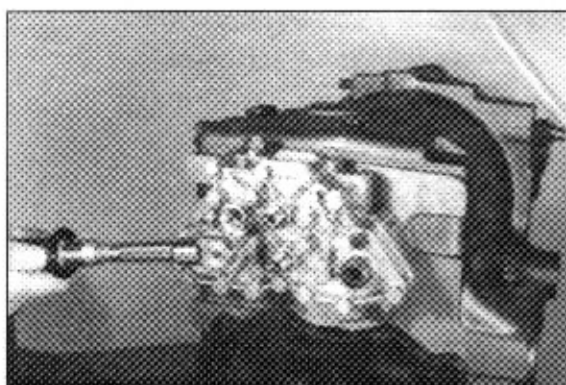
- (14) Introduce pump shaft until the splines are engaged.



- (15) Install two adjusting screws and place the shift lock against the transmission case until contact is obtained.  
Adjusting screw(M8).

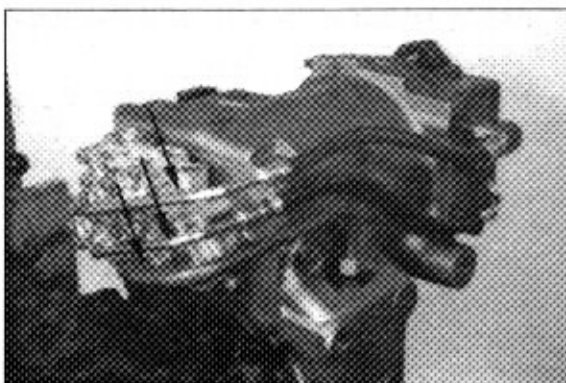


- (16) Fasten the shift lock on the transmission case, using socket head screws(mount flat washers).  
• Tighten torque : 2.3kgf · m(17.0lb · ft)



- (17) Install oil pipe as well as hose lines (Arrows) according to the figure.

※ Before the unit is put into service, pay attention to the instructions for operation and maintenance.

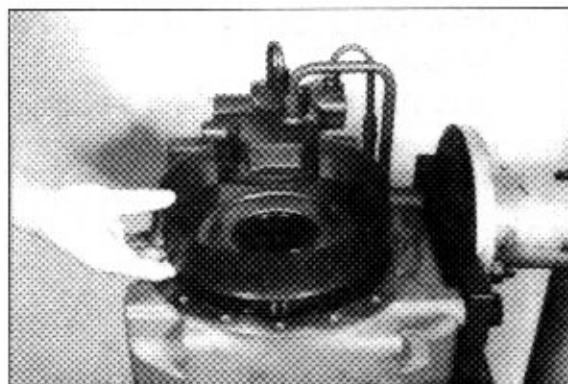


## 2) REASSEMBLE FINAL DRIVE

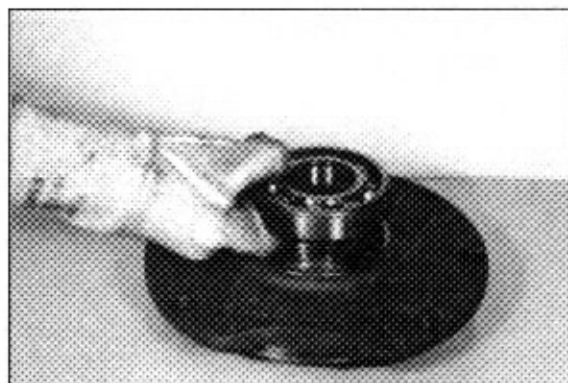
- (1) Undercool ball bearing and insert it firmly against shoulder.



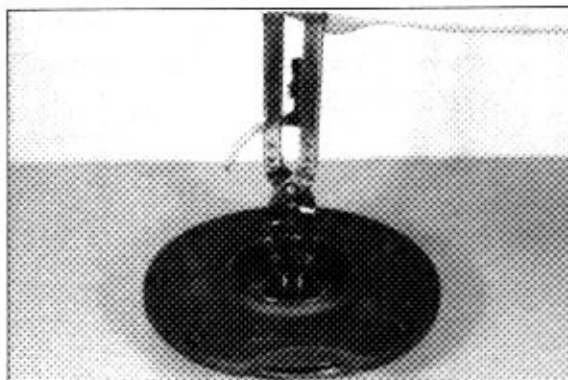
- (2) Insert baffle plate firmly against shoulder.  
※ Pay attention to the radial installation position.



- (3) Undercool ball bearing and insert it in the bore of the bearing cap until contact is obtained.

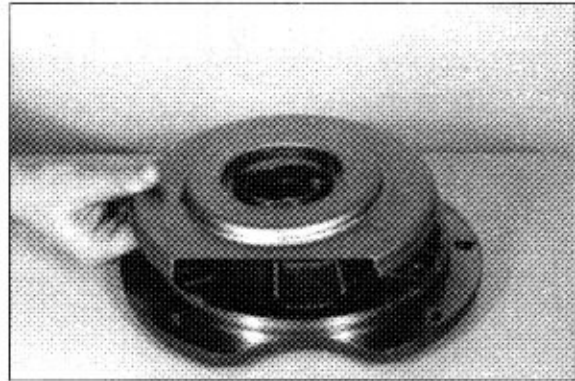


- (4) Fix ball bearing by means of circlip.



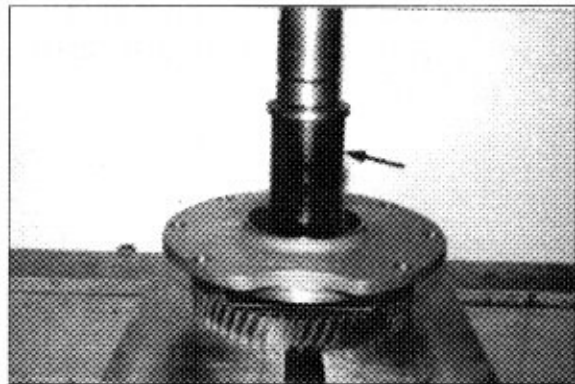
(5) Install oil baffle plate.

※ Pay attention to the radial installation position.

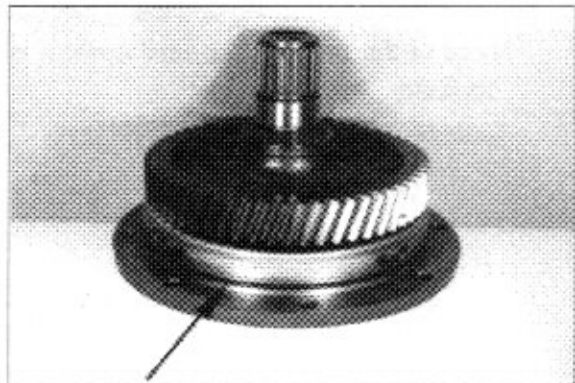


(6) Press bearing cap upon the short side of the output gear.

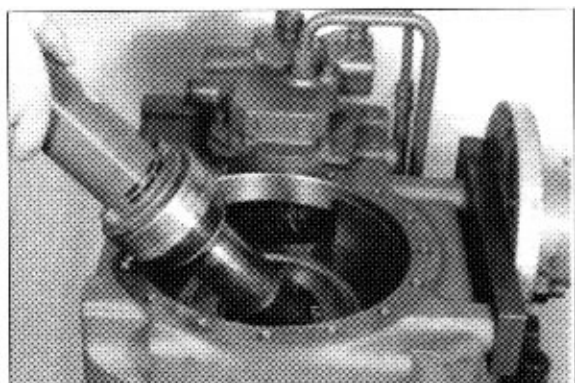
※ To avoid a damage to the ball bearing, apply pressing sleeve(Arrow) on the bearing inner race.



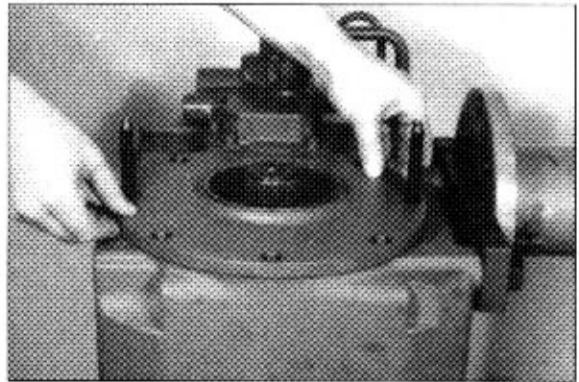
(7) Insert O-ring(Arrow) in the ring groove and grease it.



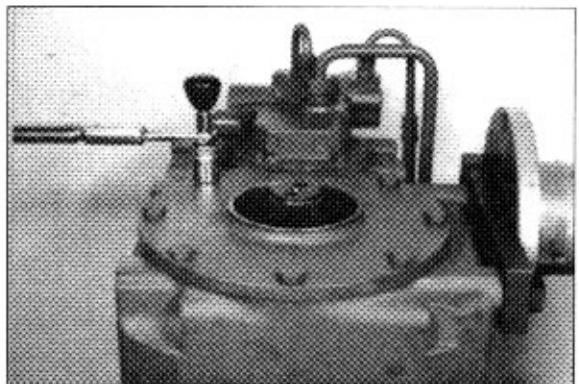
(8) Heat ball bearing, install two adjusting screws and assemble bearing cap until contact is obtained.





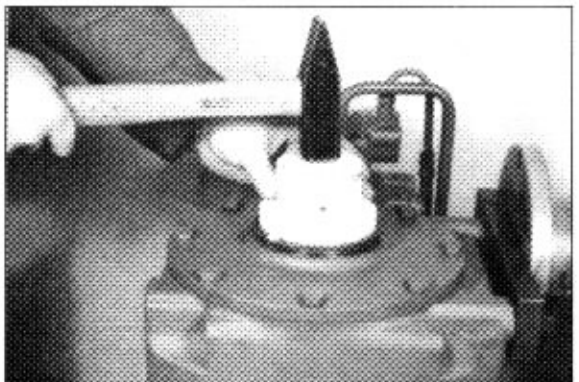


- (9) Fasten bearing cap by means of hex head screws(M12).  
 • Tightening torque : 8.0kgf · m(58.3lb · ft)

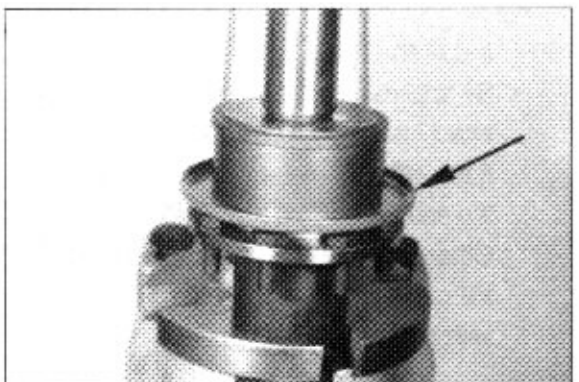


- (10) Install shaft seal.

※ By application of the prescribed driver, the exact installation position is obtained.  
 If the outer diameter is rubber-coated, wet the sealing surface with spirit.  
 Otherwise, use sealing compound(Curil T).  
 Fill cavity between sealing lip and dust lip with grease.

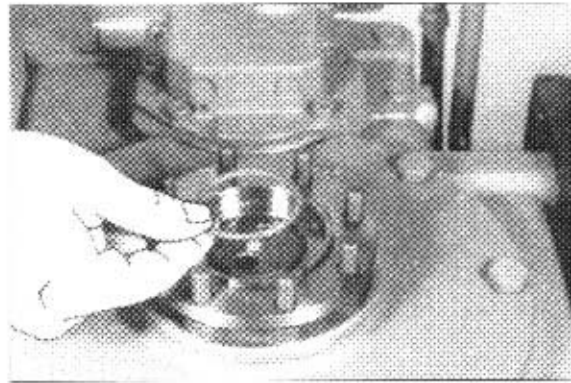


- (11) Insert hex head screws in the bores of the output flange and press dust plate (Arrow) against shoulder.  
 Pre-assemble the opposite output flange accordingly.



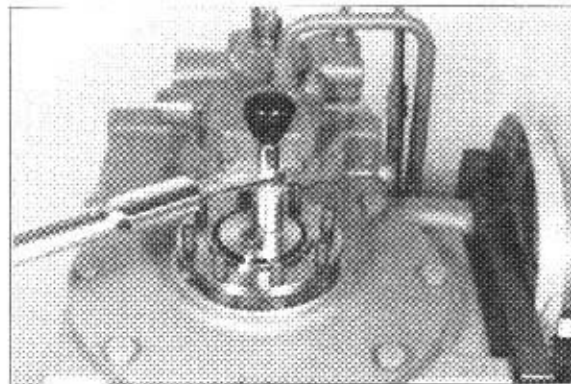
(12) Assemble output flange.

Grease O-ring and insert it in the gap of output flange/output gear.



(13) Mount washer and fix output flange by means of hex head screws(M10).

• Tightening torque : 4.7kgf · m(33.9lb · ft)



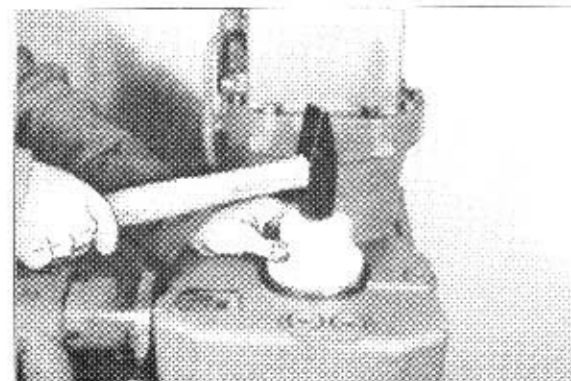
(14) Fix hex head screws by means of lock plate.



(15) Tilt gear case 180°.

Install shaft seal.

- ※ By application of the prescribed driver, the exact installation position is obtained.
- If the outer diameter is rubber-coated, wet the sealing surface with spirit.
- Otherwise, use sealing compound(Curl T).
- Fill cavity between sealing lip and dust lip with grease.



(16) Assemble output flange.

Grease O-ring and insert it in the gap of output flange/output gear.



(17) Mount washer and fasten output flange by means of hex head screws.

Now, fix hex head screws(M10) by means of lock plate(Arrow).

• Tightening torque : 4.7kgf · m(33.9lb · ft)

