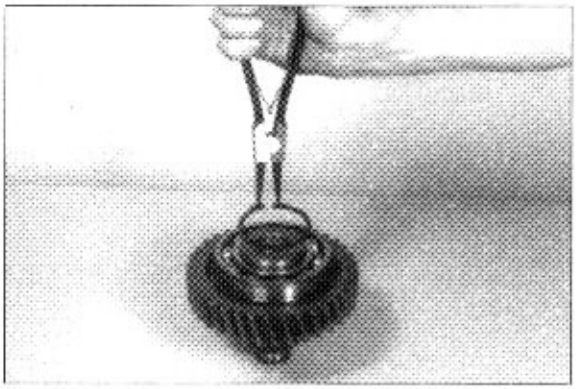
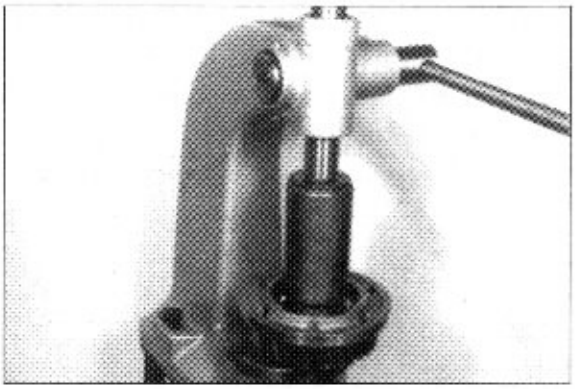
3) REASSEMBLE HELICAL GEAR AND DECLUTCH UNIT

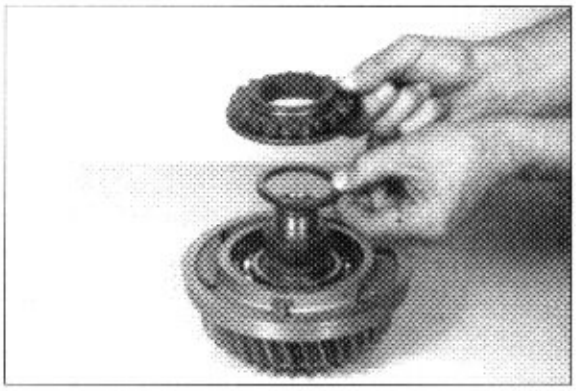
(1) Insert ball bearing into the bearing cover until contact is obtained and fix with circlip.



(2) Press ball bearing over the collar of the helical gear until contact is obtained and fix by means of circlip.

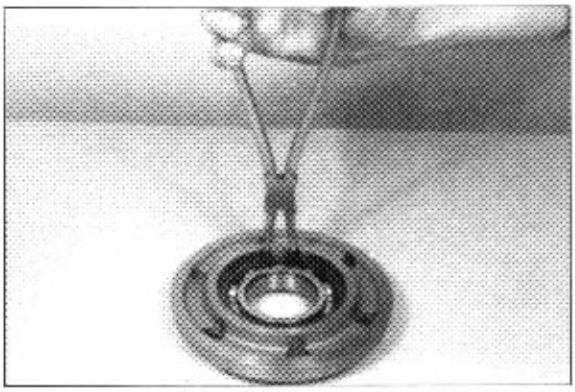


(3) Press bearing cover(Ball bearing) firmly against shoulder with the circlip showing toward above.



(4) Install spacer and shift dog.

※ According to the design with or without spacer, see corresponding Parts manual.

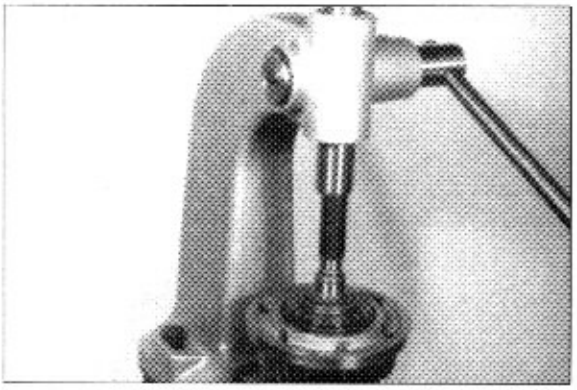


(5) Fix shift dog by means of shim and circlip.

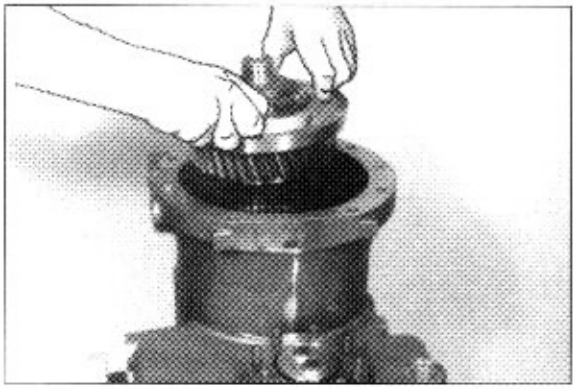
※ Pay attention to the permissible end play max. 0.1mm.

(6) Press needle bearing firmly against shoulder.

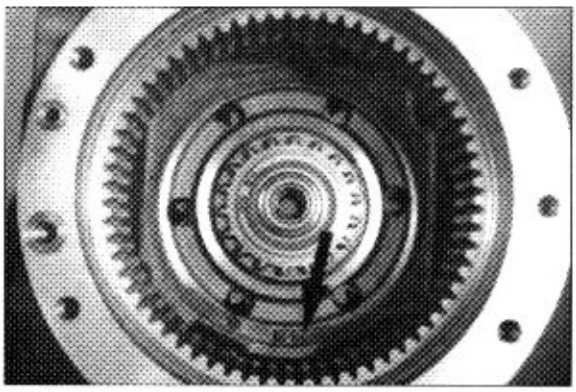
※ Pay attention to the installation position-designation showing upward.



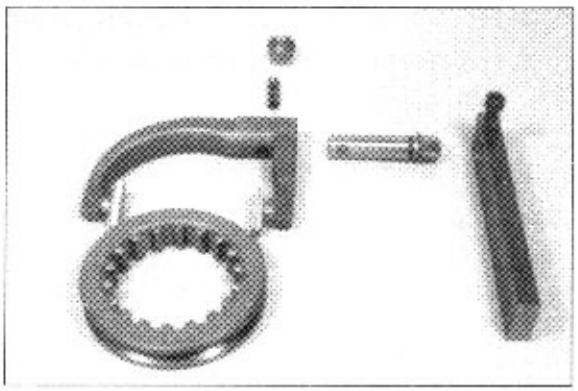
(7) Insert pre-assembled helical gear into the housing bore.



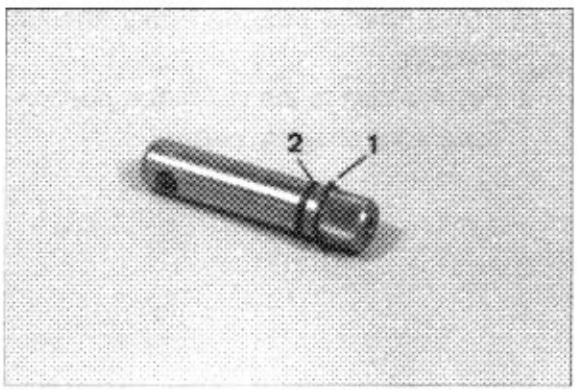
(8) Fix bearing cover by means of circlip, see Arrow.



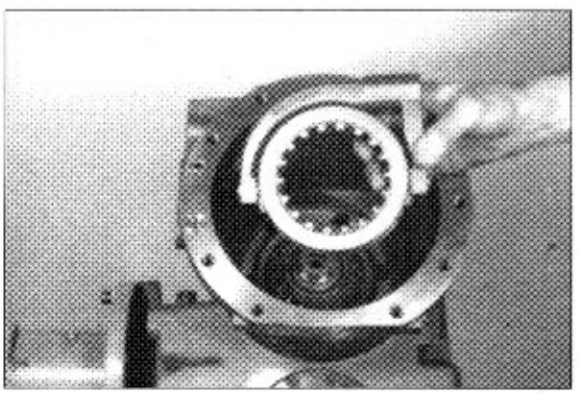
(9) Figure on the left shows the components of the shift dog assembly.



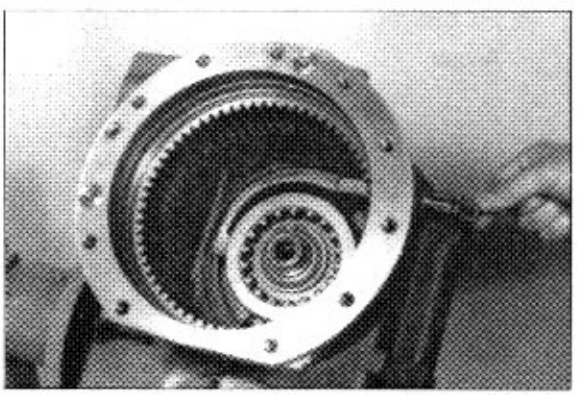
(10) Squeeze in circlip(1) and install O-ring(2).



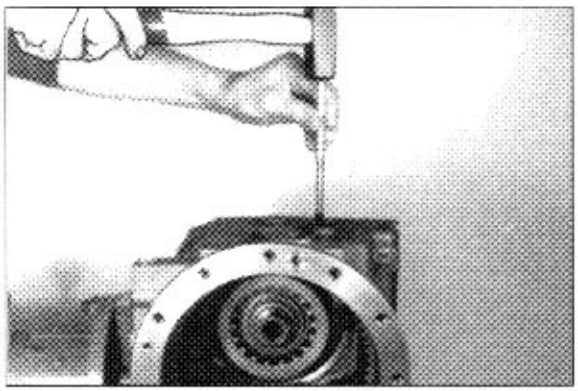
(11) Insert shift fork and sliding collar.



(12) Introduce shift shaft until contact is obtained.



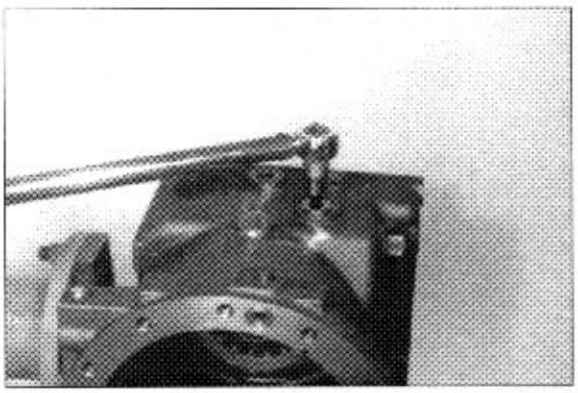
(13) Align shift shaft radially and fix it by driving the roll pin in until it is flush.



(14) Install screw plug(M22 × 1.5).

· Tightening torque : 6.1kgf · m(44.2lb · ft)

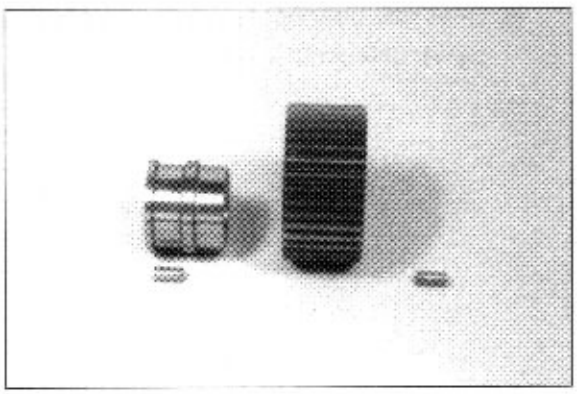
※ Mount new O-ring.



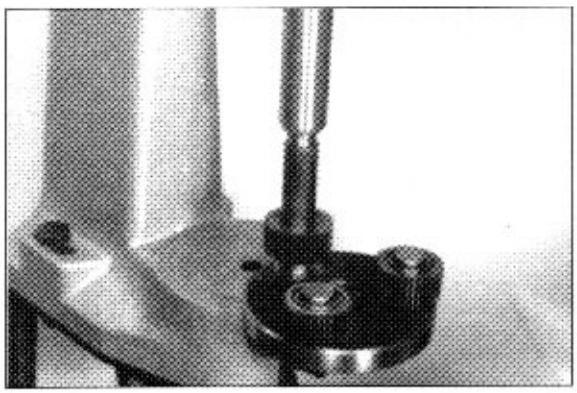
4) COMPLETE AND INSTALL PLANETARY CARRIER

(1) Pre-assemble planetary gear.

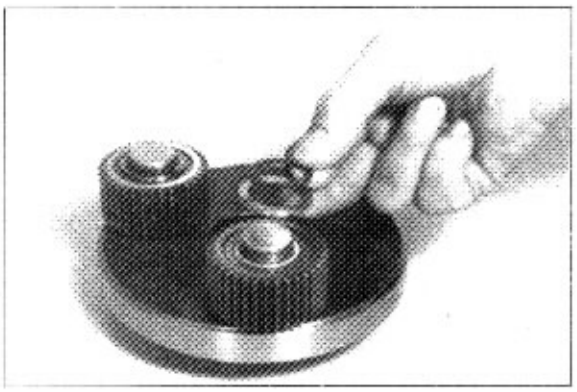
※ Install cylindrical rollers with grease.



(2) Press pre-assembled planetary gears firmly against shoulder.

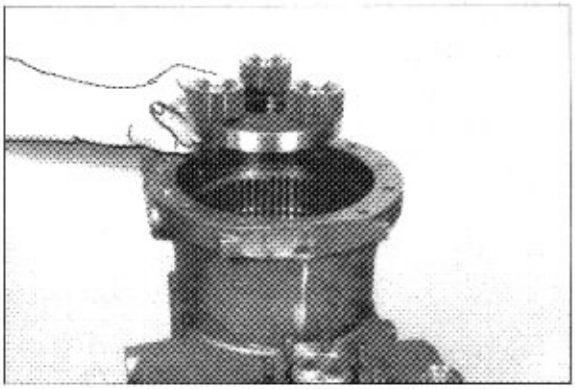


(3) Install collar shim and circlip.

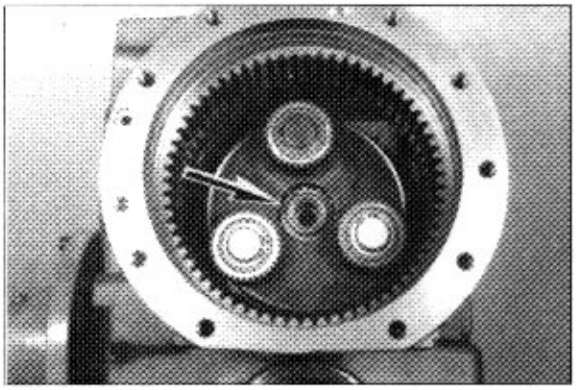


(4) Insert ball bearing firmly against shoulder and fix with circlip.

(5) Heat ball bearing and mount planetary carrier until contact is obtained.

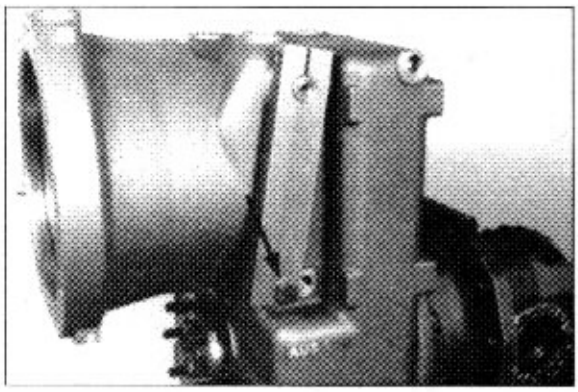


(6) Fix planetary carrier with circlip(Arrow).



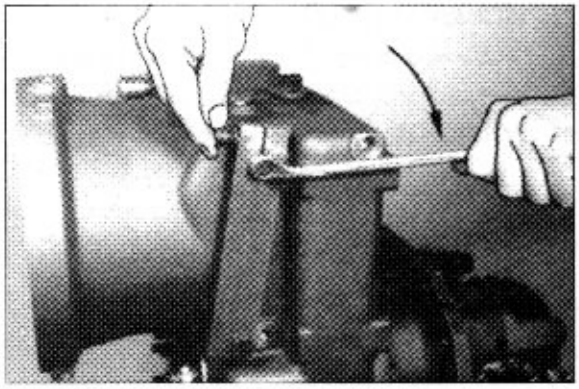
Adjust declutch unit

(7) Assemble shift lever and fix it provisionally in the "OFF-Position" by means of hex head screw(Arrow).



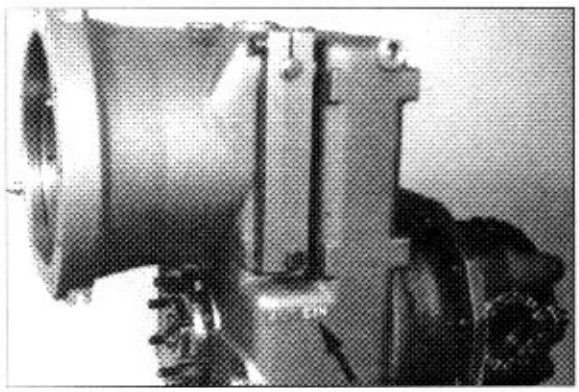
(8) Bring shift shaft by clockwise rotation to the stop, using auxiliary screw(M8) and jam shift lever by means of socket head screw(M10) and flat washer.

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



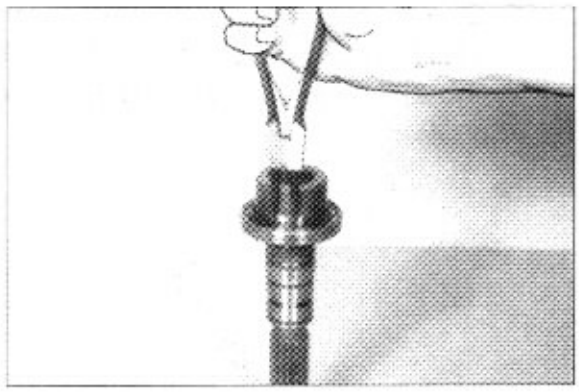
(9) Now, bring shift lever in "ON-Position" (Arrow) and fasten by means of hex head screw(M10).

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

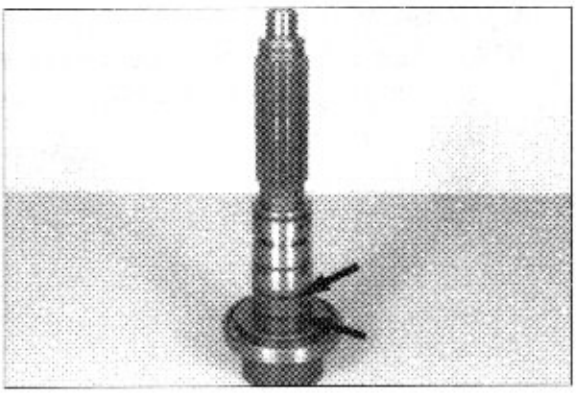


5) PREASSEMBLE AND INSTALL CLUTCH (road gear)

(1) Press ball bearing firmly against shoulder and fix it by means of circlip.

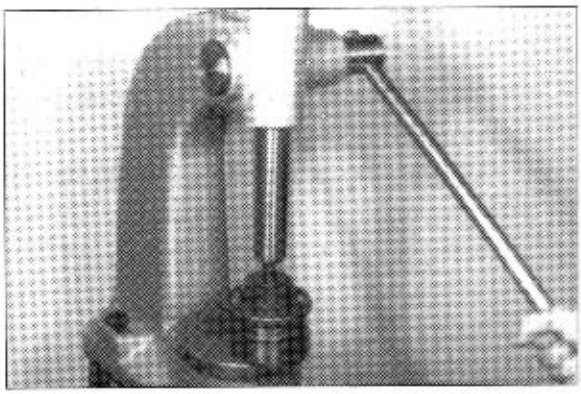


(2) Squeeze in the two rectangular rings (Arrows) and engage them.

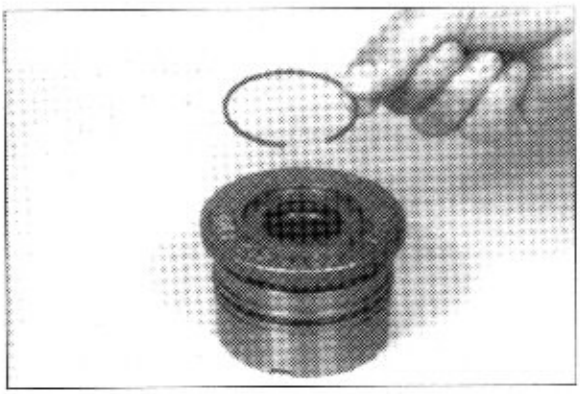


(3) Install shaft seal.

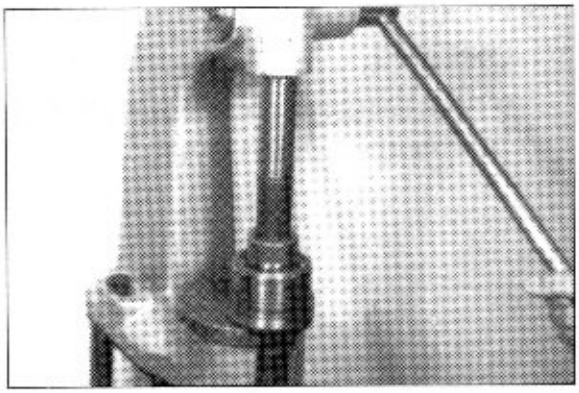
※ By application of the prescribed driver, the exact installation depth is given. Wet outer diameter of shaft seal with spirit. Grease the sealing lip.



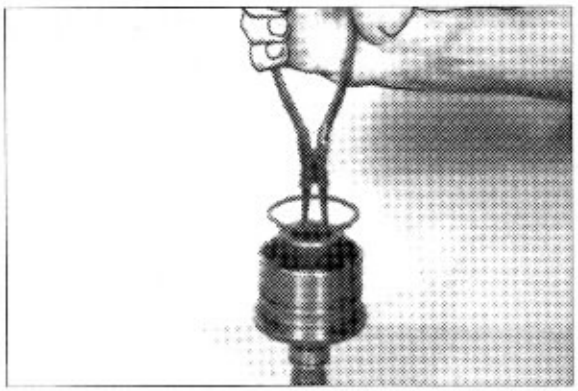
(4) Fix shaft seal by means of snap ring.



(5) Grease the two rectangular rings, align them centrically and press the drive shaft into the guide sleeve until contact is obtained.

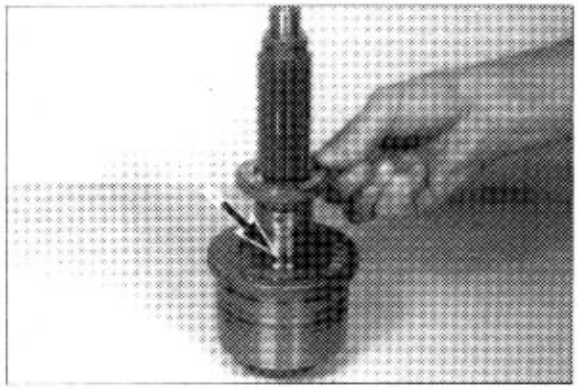


(6) Fix sleeve by means of circlip.



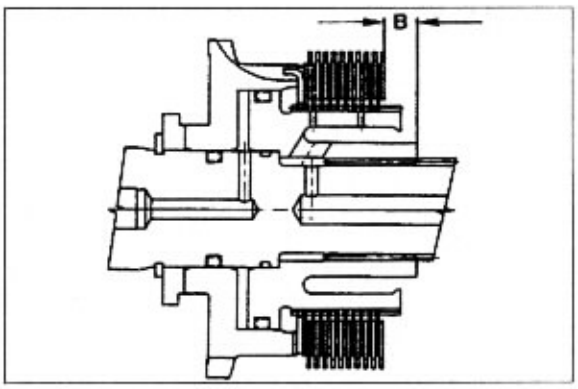
(7) Squeeze in circlip(Arrow) and replace back-up plate, with the offset plane surface showing upwards.

※ Only installation of one new circlip admitted.

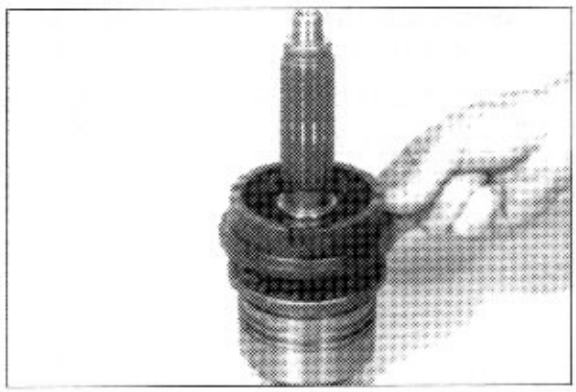


(8) Determine adjustment value "B", follow (9) to (13).

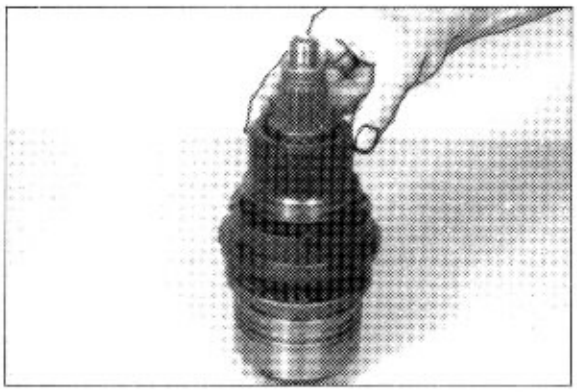
- Adjustment value B with 11 plate pairs = 7.8+0.2mm

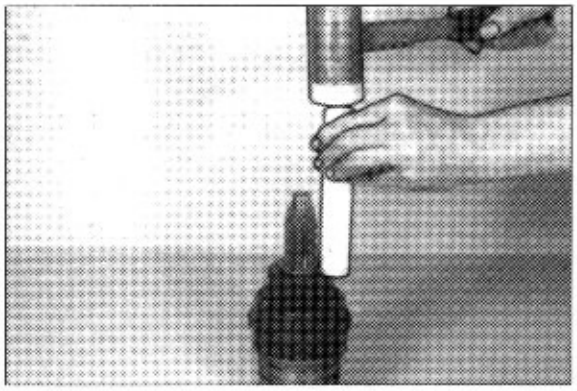


(9) Replace piston.

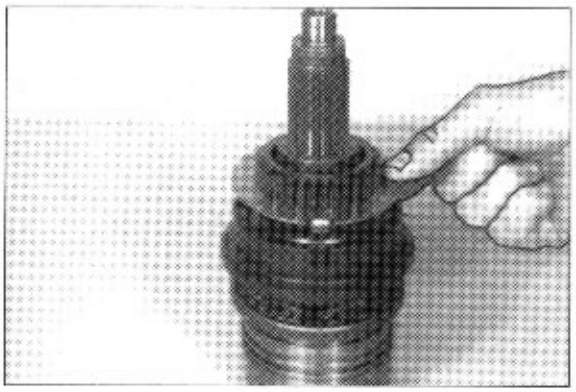


(10) Assemble plate carrier and tap it against shoulder until contact is obtained.



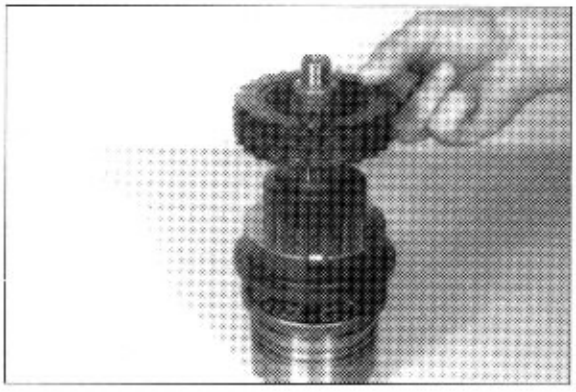


(11) Mount plate.



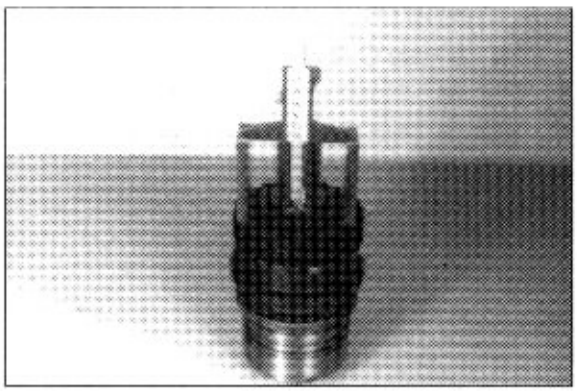
(12) Assemble alternating plate pack, starting with one inner plate.

※ Number of inner and outer plates, see corresponding list of parts manual.
For the moment, install the plate pack without oil.



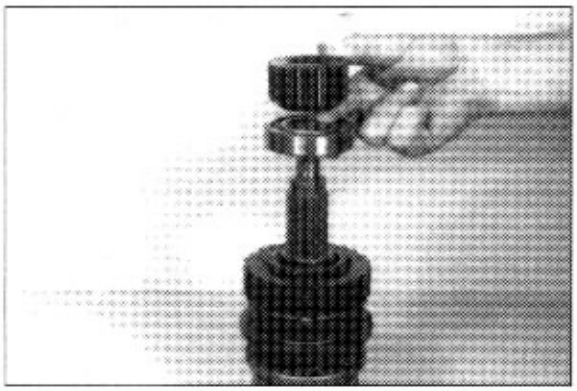
(13) Determine dimension B from the end face of the inner plate carrier to the outer plate.
- Dimension B e.g. : 7.5mm

※ Carry out any corrections by means of the corresponding outer plates(s = 1.0, 1.2, 1.4 or 1.8mm).

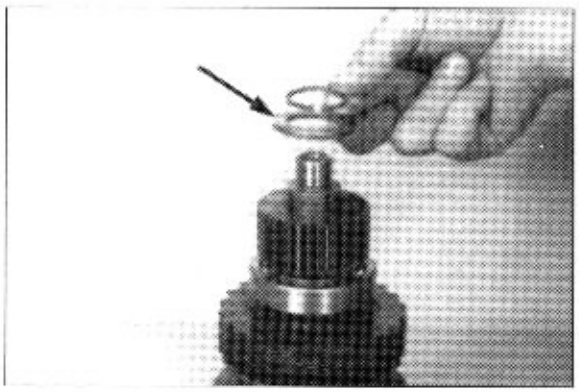


(14) Determine adjustment value "D".

※ The end play of plate carrier, ball bearing and sun gear is determined by means of the shim.
Max end play admitted 0.1mm.
Install ball bearing and sun gear.

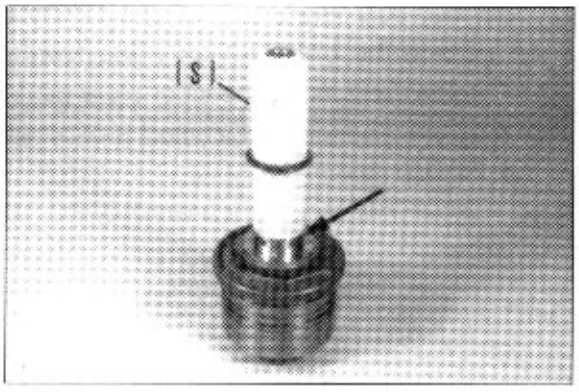


(15) Assemble shim(s = 3.0~3.9mm, see Arrow), fix it by means of circlip and check end play.
Now, squeeze out circlip again and remove the components again, up to the piston included.



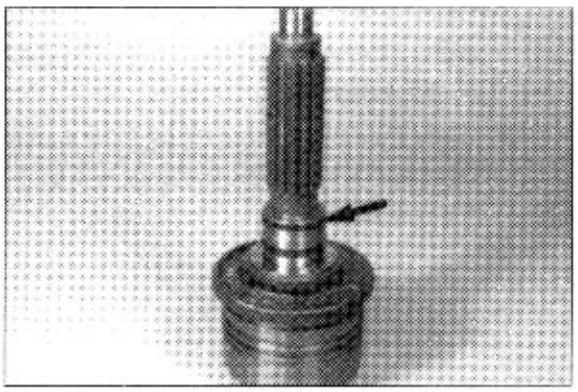
(16) Squeeze circlip into the ring groove (Arrow) with the sealing lip facing the pressure chamber(toward above).

※ Use installer.
Grease sealing lip.

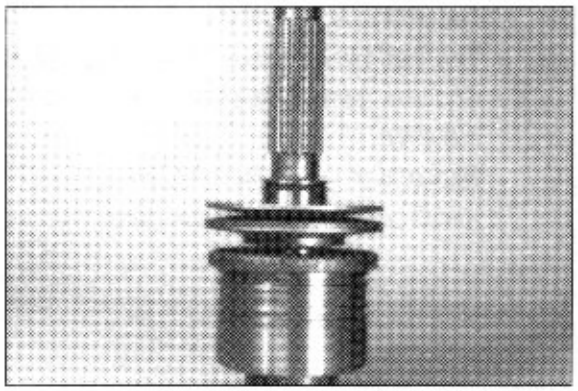


(17) Install O-ring, see Arrow.

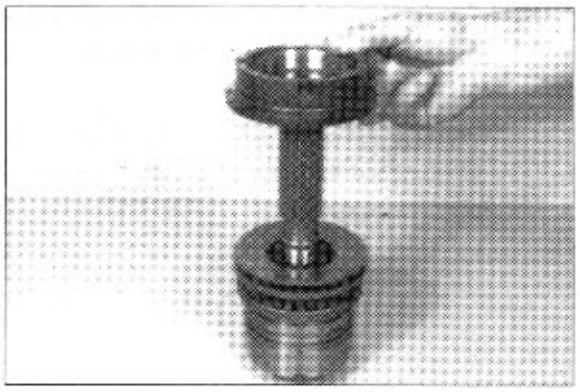
※ Grease O-ring.



(18) Pile cup springs according to the figure.

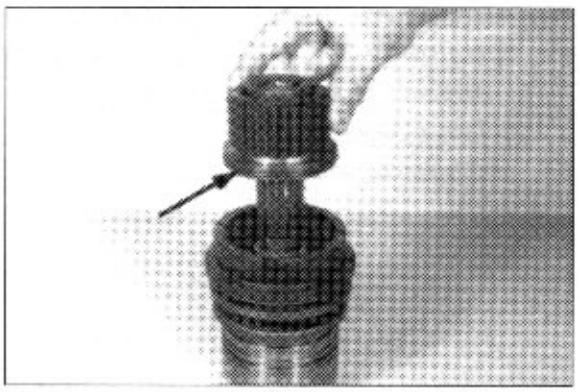


(19) Assemble piston.

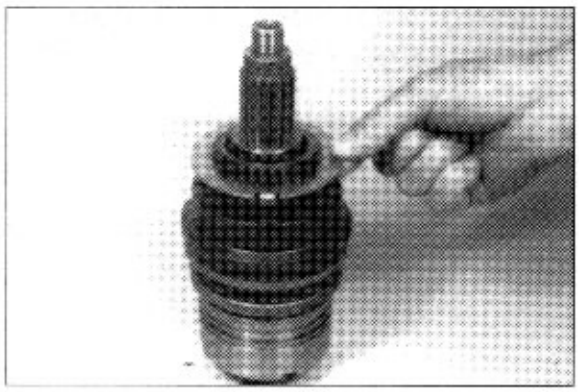


(20) Install seal ring(Arrow) with the sealing lip facing the pressure chamber(toward below) and insert the inner plate carrier against shoulder, until contact is obtained.

※ Grease seal ring.

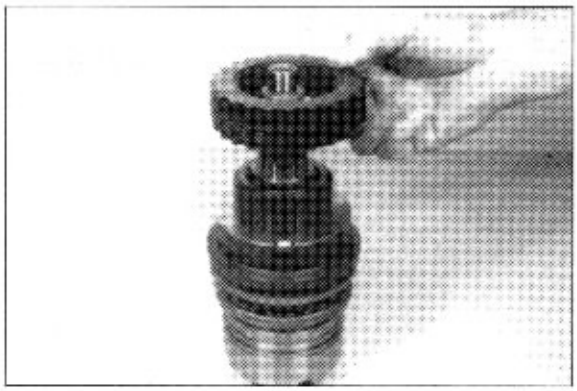


(21) Mount plate.

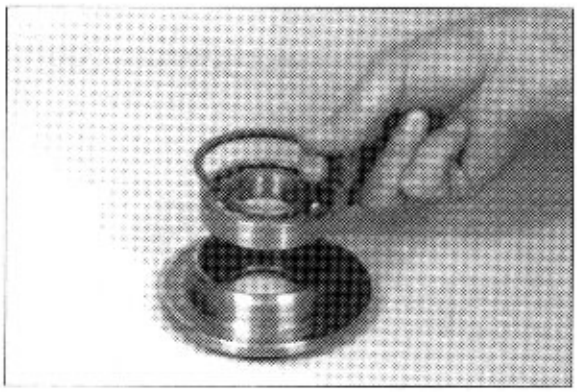


(22) Assemble plate pack alternating, starting with one inner plate.

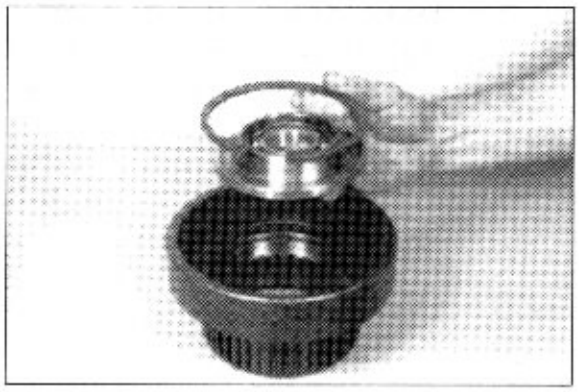
※ Number of inner and outer plates see corresponding parts manual.
Oil plates prior to the installation.



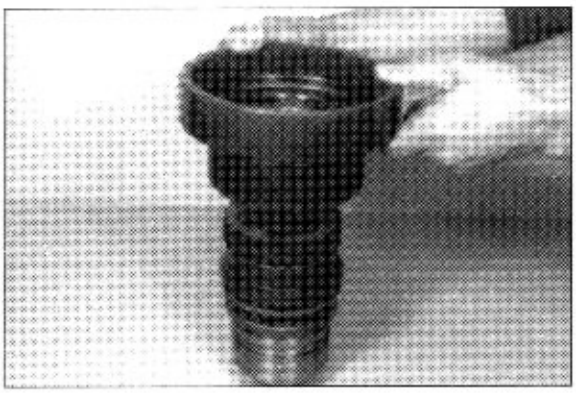
(23) Insert ball bearing into the centering disk and fix by means of circlip.



(24) Insert centering disk into the internal gear bore and fix by means of circlip.

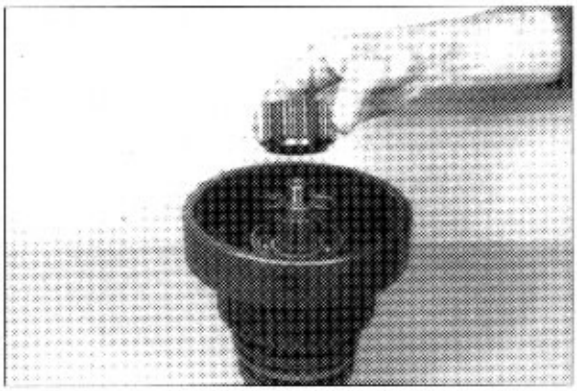


(25) Align outer plates radially and assemble internal gear until all plates are located.

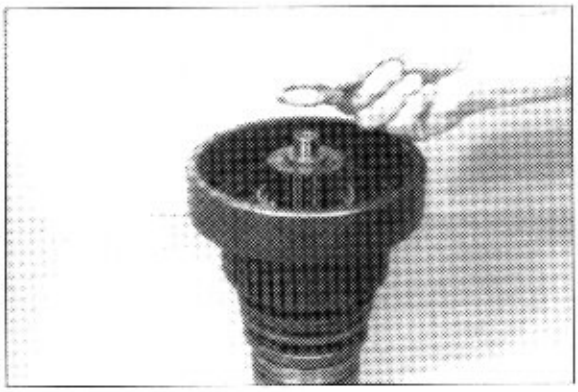


(26) Assemble sun gear.

※ Pay attention to the installation position, see figure.

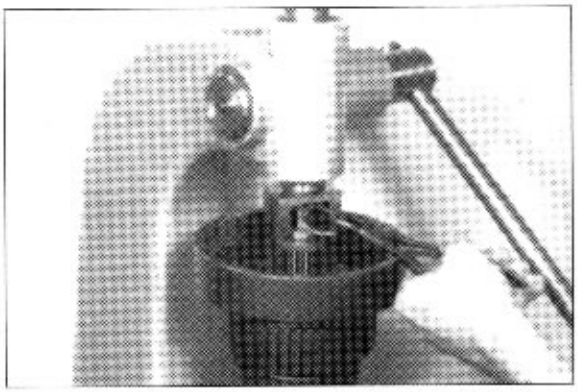


(27) Mount determined shim.



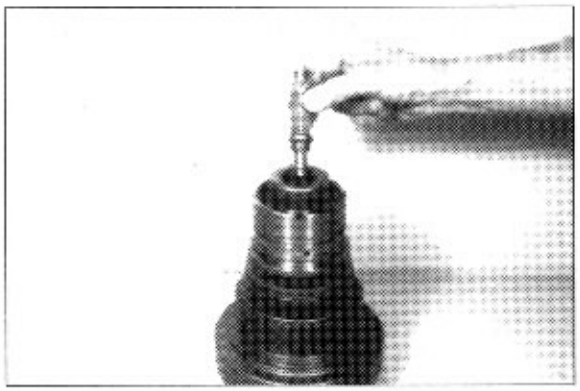
(28) Preload cup spring pack by means of assembly jig and squeeze in circlip.

※ Installation of a new circlip admitted only.

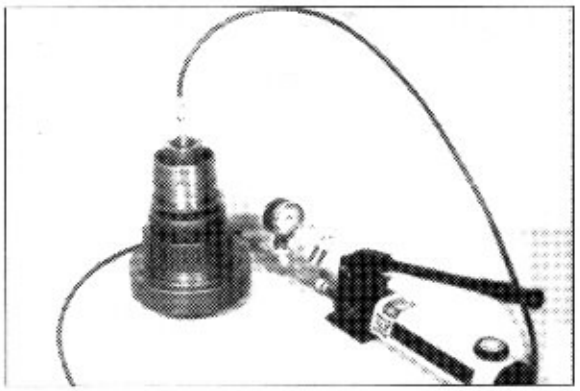


Check tightness and function of the clutch

(29) Install hydraulic connection.

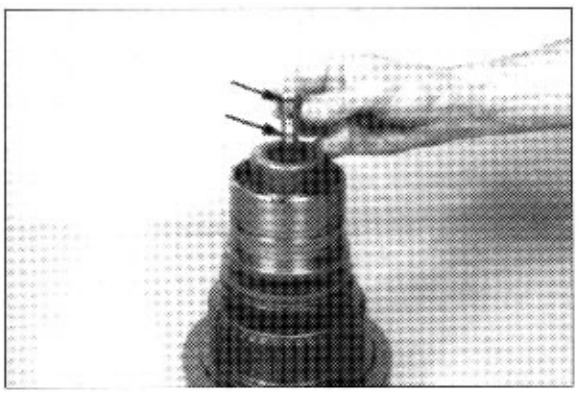


(30) Ventilate the piston area by repeated filling. Build up test pressure p=35bar and close connection to HP-Pump by means of shutoff valve.
During a test period of 3 minutes no pressure drop is admitted.

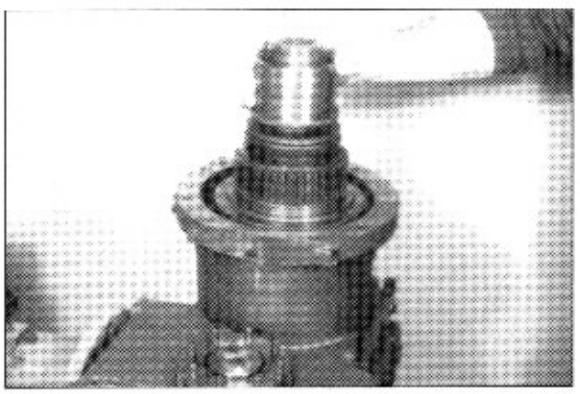


(31) Remove pressure connection and install throttle valve.

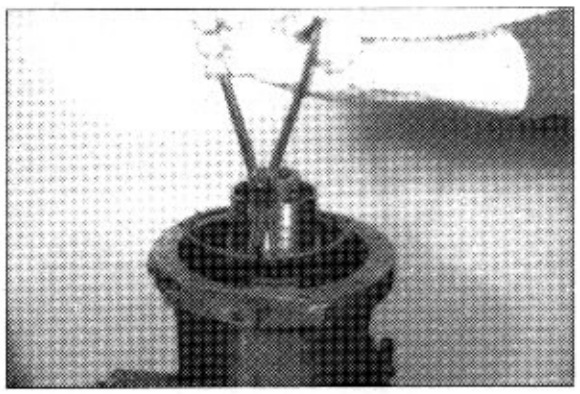
※ Install new O-rings, see Arrows.



(32) Introduce pre-assembled clutch.

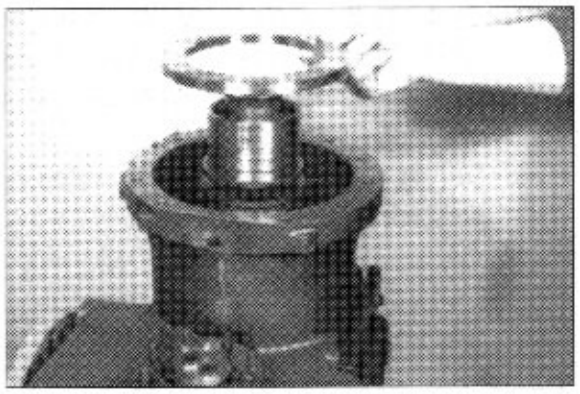


(33) Squeeze in circlip(190 × 4).



6) INSTALL BRAKE(Cross-country gear)

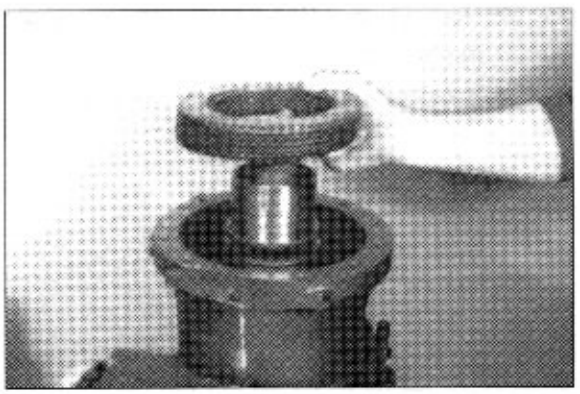
(1) Insert backing plate.



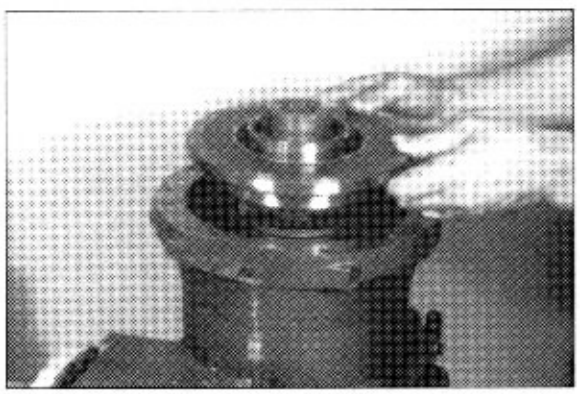
Determine adjustment dimension "A = 1.4 +0.2mm" following (2) to Example "E".

(2) Assemble alternating plate pack, starting with one outer plate.

※ Number of outer and inner plates, see corresponding parts manual.
Oil the plates.

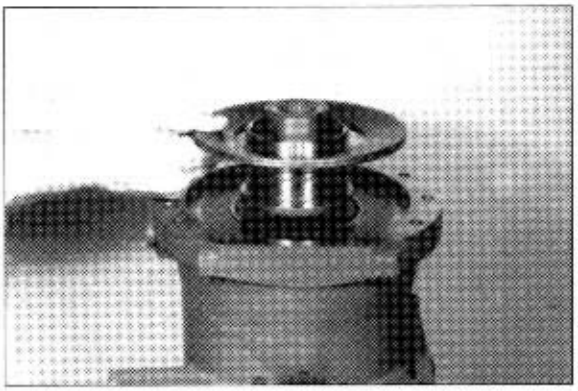


(3) Insert piston firmly against shoulder.



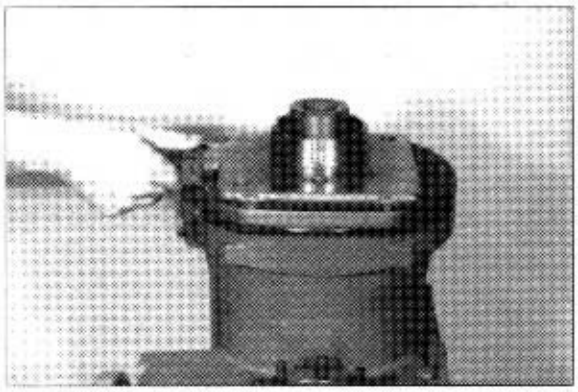
(4) Insert the two cup springs and align them centrically.

※ Pay attention to the installation position, see figure.



(5) Assemble measuring cover and pull it evenly against shoulder, using 4 socket head screws(M12).

· Tightening torque : 8.0kgf · m(58.2lb · ft)



(6) Determine dimension I form the plane surface of the measuring cover to the plane surface/piston.

· Dimension I e.g. : 32.60mm

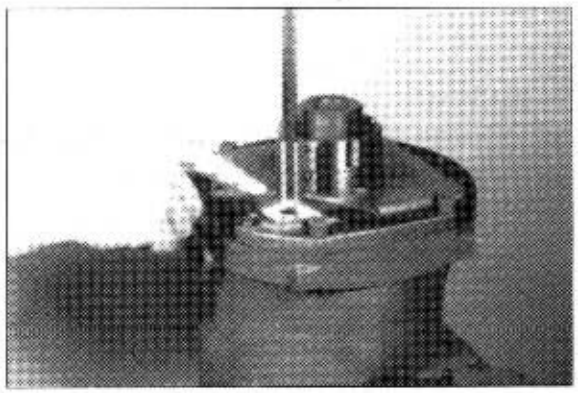
Example D

· Dimension 32.60mm

· Manufacturing dimension measuring cover -20.00mm

· Difference = Dimension X 12.60mm

※ The manufacturing dimension is stamped on the measuring cover and is principally 20.00mm.



(7) Measure dimension Y from the locating face of the drive casing to the flange-mounted surface.

· Dimension Y e.g. : 11.10mm

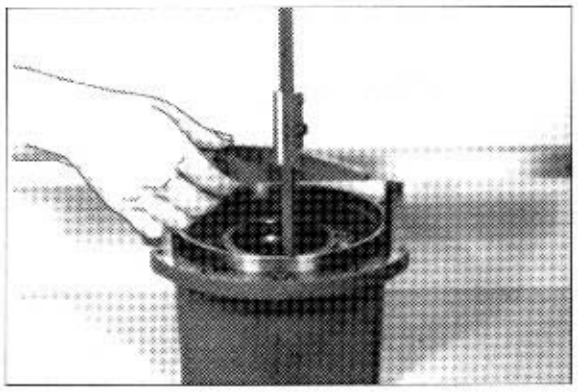
Example E

· Dimension X 12.60mm

· Dimension Y -11.10mm

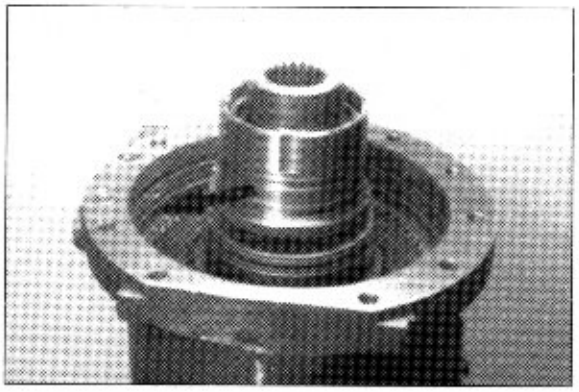
· Difference ≒ adjustment value =1.50mm

※ Carry out possible corrections with corresponding outer plates(s=3.0, 3.2, 3.5). Now, take off the measuring cover and remove the piston again.



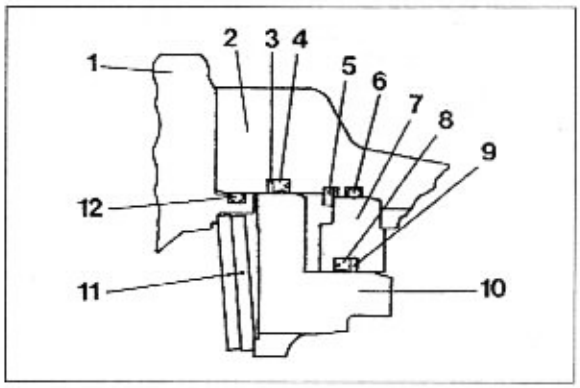
(8) Insert O-ring in the ring groove of the housing, see Arrow.

※ Expand O-ring slightly prior to the reassembly to ensure a perfect contact in the recess.



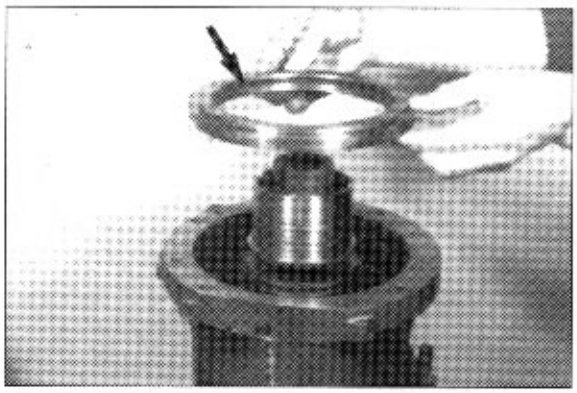
(9) The Draft on the right shows the installation position of the disk, the piston and its sealing components.

1 Drive casing
2 Clutch disk housing
3,4 Gasket(Back up and U-section ring)
5 Circlip
6 O-ring
7 Disk
8,9 Gasket(U section and back up ring)
10 Piston
11 Cup springs
12 O-ring

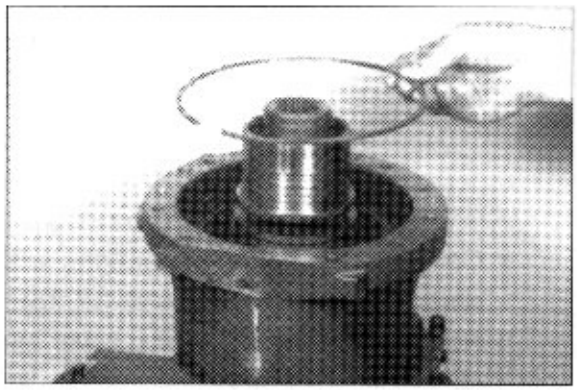


(10) Insert back-up and U-section ring in the ring groove(Arrow) and oil them
Insert disk until contact is obtained.

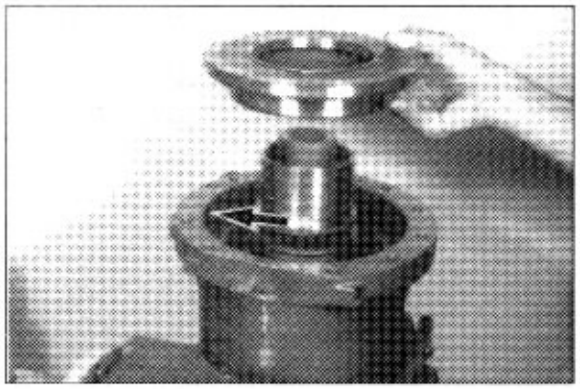
※ Pay attention to the installation position.

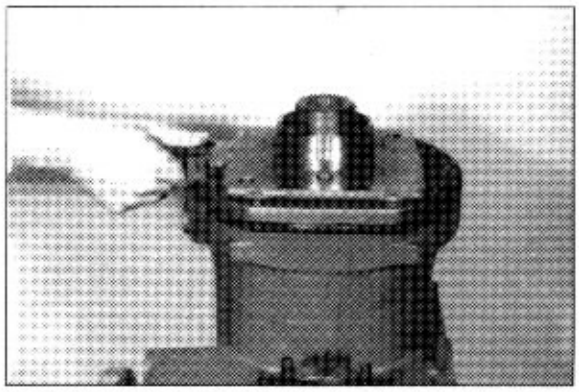


(11) Fix disk by means of snap ring.



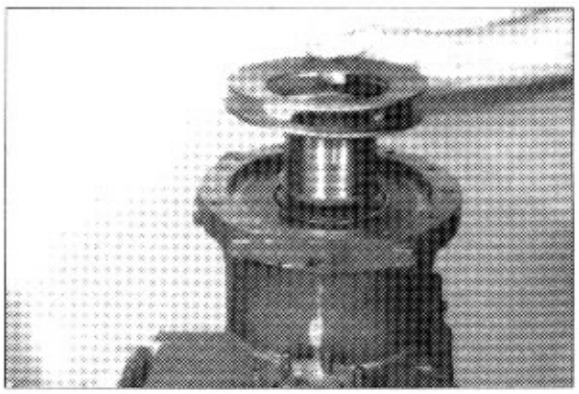
(12) Insert back-up ring and seal ring in the ring groove of the housing(Arrow) and oil them.
Assemble piston and place it evenly against shoulder, using measuring cover as well as socket head screws. Now, remove measuring cover again.





(13) Insert the two cup springs and align them centrically.

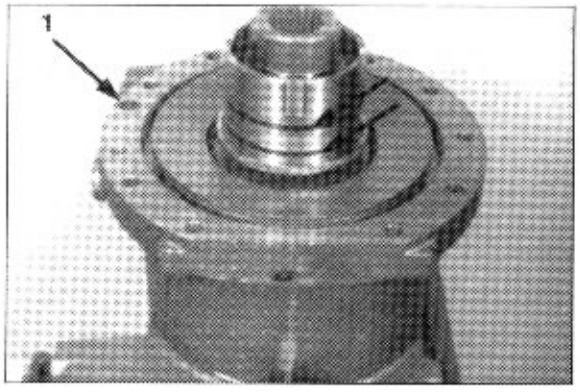
※ Pay attention to the installation position.



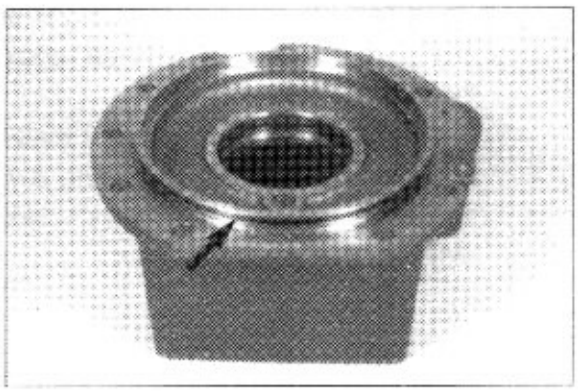
7) INSTALL DRIVE CASING

(1) Insert O-ring(Arrow 1) in the countersinking.
Insert the two O-rings in the ring grooves of the guide sleeve, see Arrows.

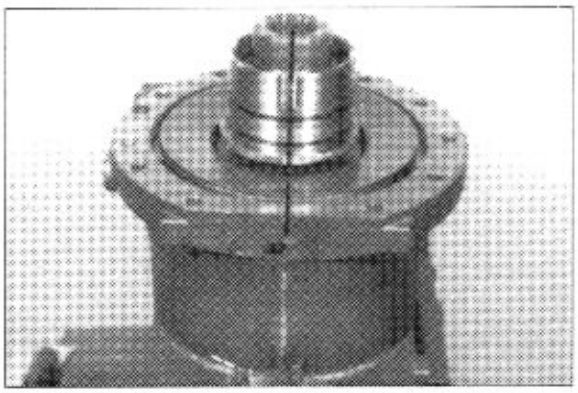
※ Grease O-rings.



(2) Insert O-ring into the ring groove of the drive casing and grease.

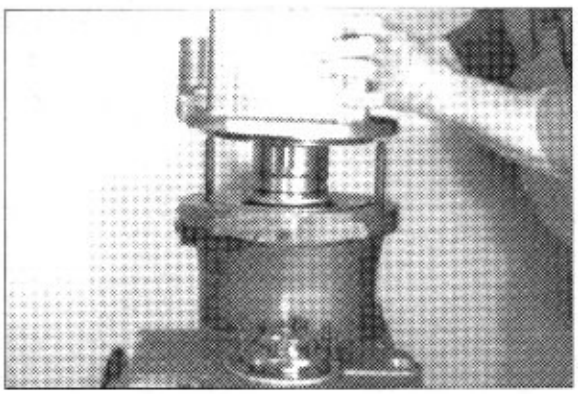


(3) Align guide bush radially.



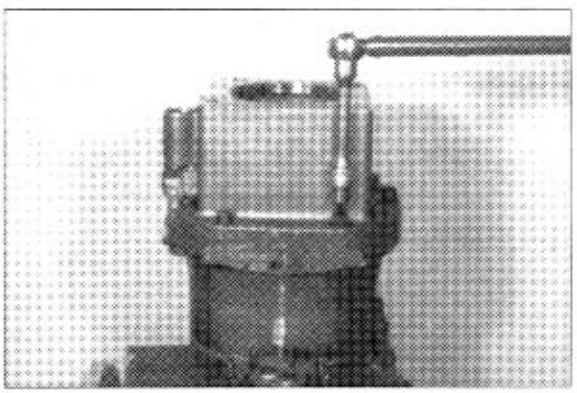
(4) Assemble drive casing.

※ Pay attention to a radial installation position.

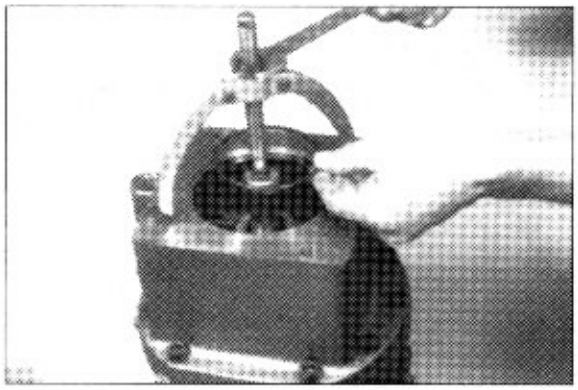


(5) Pull drive casing evenly against shoulder, using socket head screws(M12).

· Tightening torque : 8.0kgf · m(58.2lb · ft)

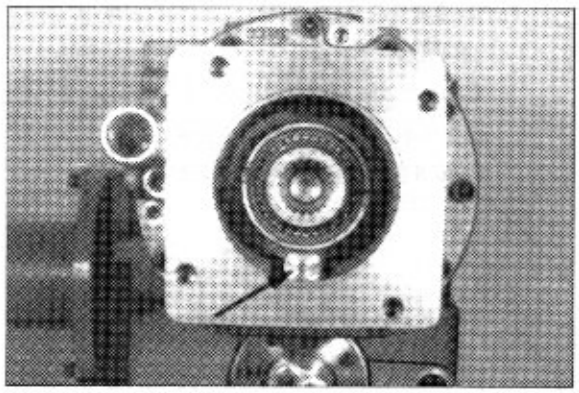


(6) Pull drive shaft, resp. guide bush out of the housing bore, using internal puller, until snap ring(Nominal width = 95mm) can be engaged.



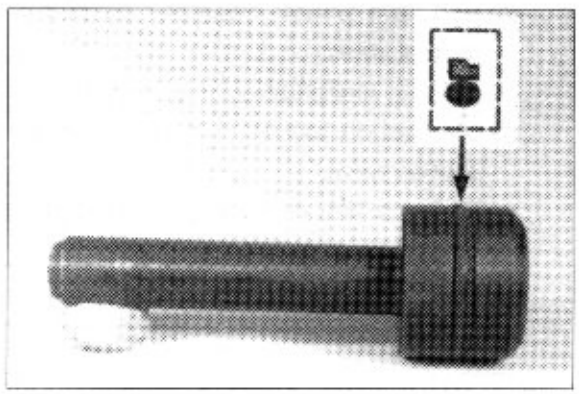
(7) Fix guide bush radially by means of screw plug, see Arrow.

※ Install new CU-ring.



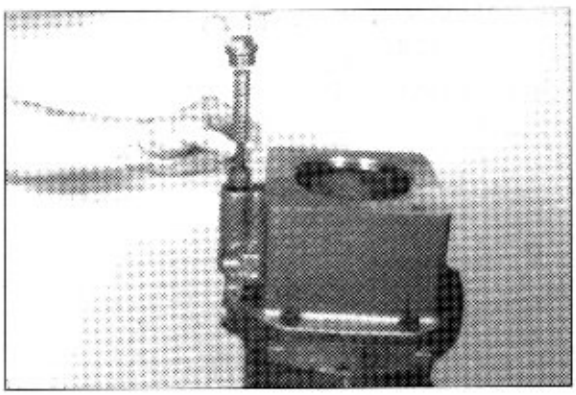
(8) Insert gasket, composed of O-ring and Turcon-ring into the ring groove of the piston and grease.

※ Heat Turcon-ring in an oil bath prior to the installation.
Use installer.
Pay attention to the installation position, see figure.



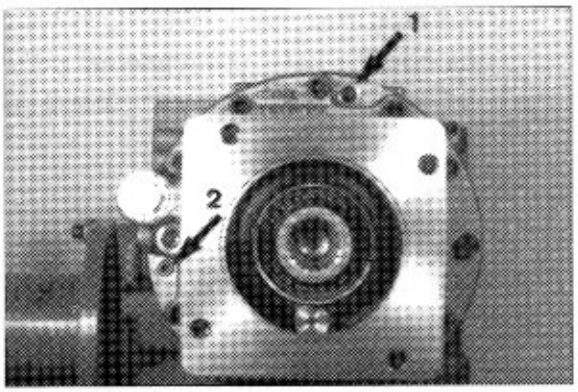
(9) Insert pre-assembled piston and spring into the housing bore and fix with screw plug.

※ Employ new O-ring for screw plug.



(10) install breather(Arrow 1) and screw plug (Arrow 2).

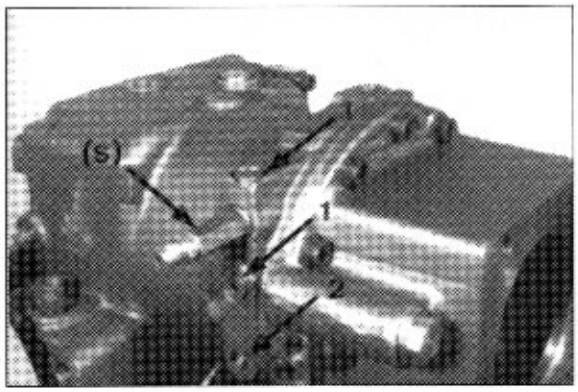
※ Employ new O-ring for screw plug.



(11) Install the two screw plugs(1) and shear-off plugs(2).

Check tightness and function of the brake(Cross-country gear).

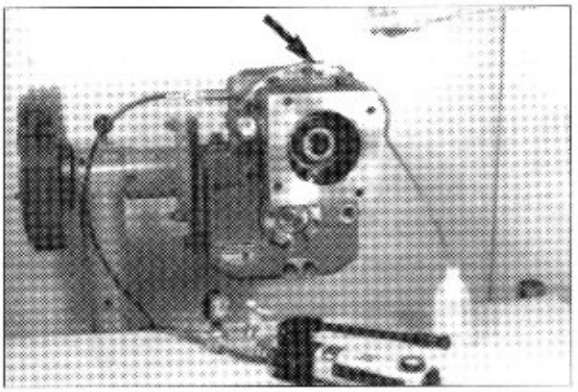
Install hydraulic connection.



(12) Ventilate piston chamber by filling it several times.

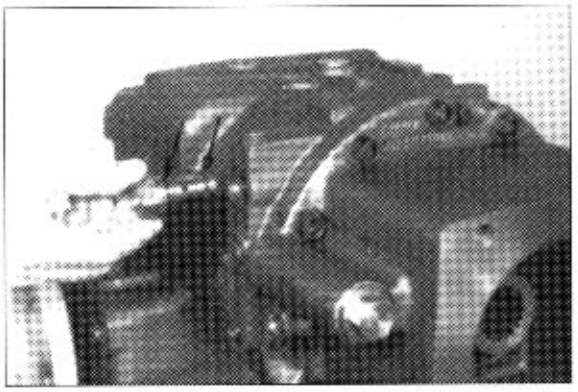
Build up test pressure p=35bar and close connection to HP-Pump by means of shut-off valve.

During a Test of 3 minutes, no pressure drop is admitted.



(13) Remove the hydraulic connection and install the throttle valve.

※ Install new O-rings(Arrows).

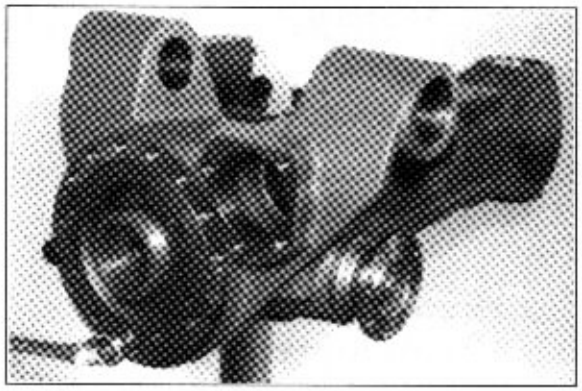


8) MOUNT SCREW PLUGS AND OIL LINES

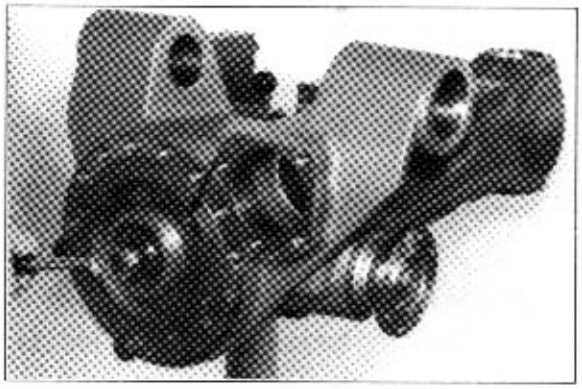
(1) Install connecting plug(Arrow 1, M10) and screw plug(Arrow 2, M14).

· Tightening torque : 1 - 2.5kgf · m
(18.4lb · ft)
2 - 3.6kgf · m
(25.8lb · ft)

※ Install new O-rings.
Different position of connecting piece and screw plug according to the Version.



(2) Install delivery lines.



(3) Install screw plugs(M26 × 1.5), see Arrows.

· Tightening torque : 8.1kgf · m(59.0lb · ft)

※ Before the transmission is put into service, pay attention to the lubrication and maintenance instructions.