

## GROUP 4 DISASSEMBLY AND ASSEMBLY

### 1. TRANSMISSION

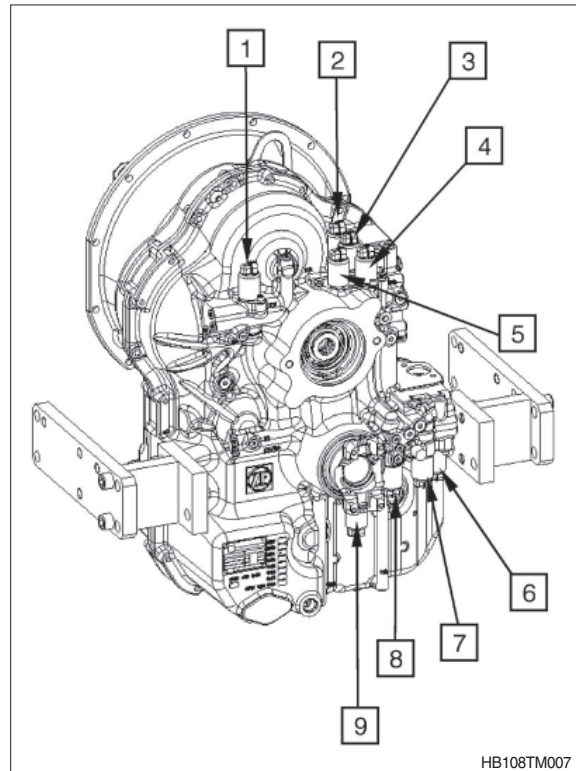
#### 1) DISASSEMBLY

**Solenoid valves, inductive sensor, screw plugs and nozzles (orifices)**

(1) Loosen cylindrical screws, remove bracket and pull solenoid valves off the holes.

※ Mark solenoid valves (different versions).

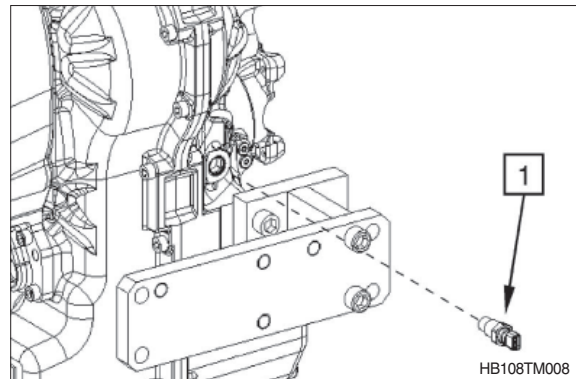
- 1 = Y1 (control valve)
- 2 = YPB (parking brake - rear axle)
- 3 = YDL (differential lock - rear axle)
- 4 = Y3 (control valve)
- 5 = Y2 (control valve)
- 6 = Y5 (control valve)
- 7 = Y4 (control valve)
- 8 = Y6 (control valve)
- 9 = YWD (front wheel drive)



※ Version with inductive sensor (option).

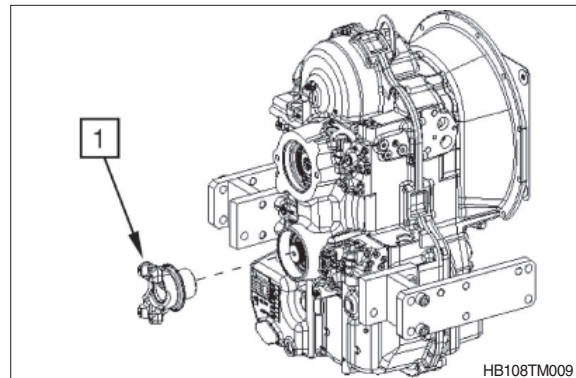
(2) Loosen inductive sensor (1).

※ Remove O-ring.



(3) Pull output flange (1) off the output shaft.

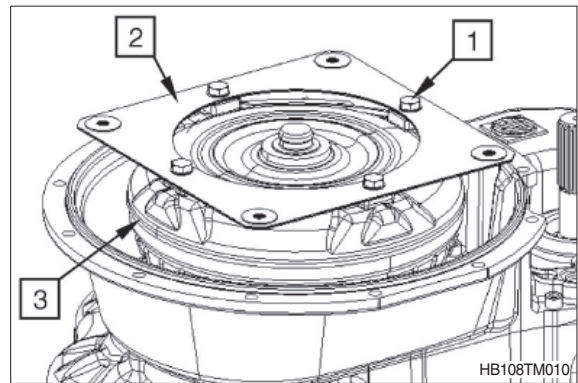
※ Remove all screw plugs and nozzles (orifices).



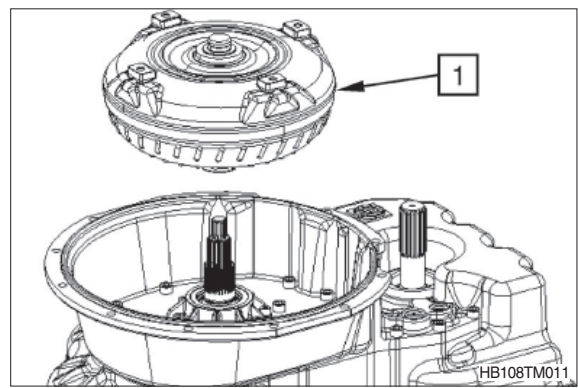
## 2) DISASSEMBLY OF ENGINE CONNECTION, MAIN PRESSURE VALVE AND CONVERTER SAFETY VALVE

### (1) Engine connection

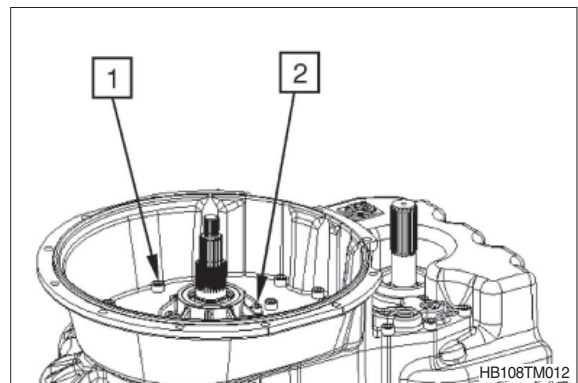
- ① Loosen hexagon screws (1) and separate flexplate (2) from converter (3).



- ② Pull off converter (1) by hand.

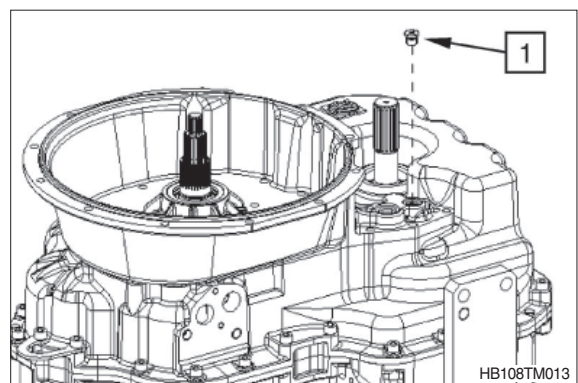


- ③ Loosen bolted connection between converter bellhousing/housing (1) and transmission pump/housing (2).

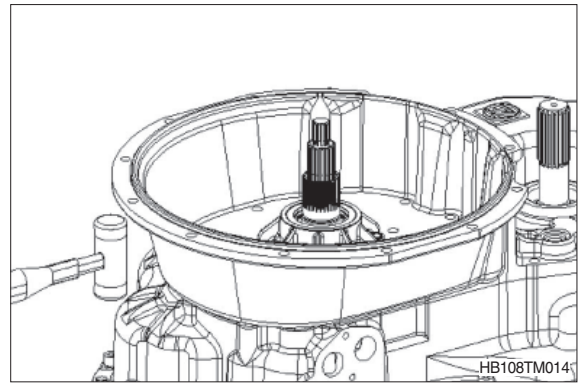


- ④ Loosen screw plug "measuring point 63" (1).

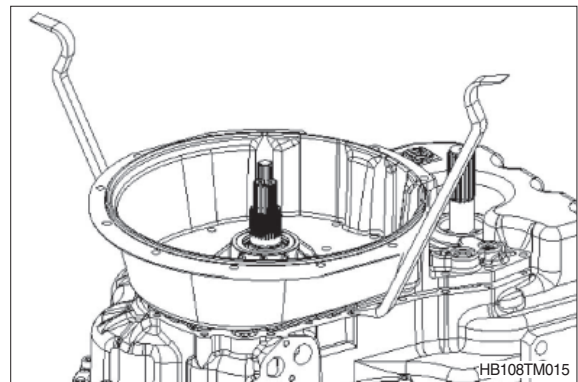
※ Remove O-ring.



- ⑤ Separate converter bellhousing from the mounting face of the transmission housing by means of slight hits with a plastic hammer.



- ⑥ Remove converter bellhousing by means of assembly lever.
- ※ Difficult disassembly due to fixing by cylindrical pins.

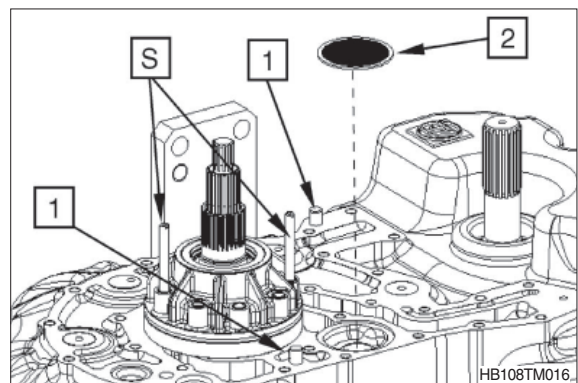


- ⑦ If required, remove both cylindrical pins (1).
- ⑧ Remove filter (2).

- ※ Transmission pump cannot be separated from the housing until the 4 cylindrical screws of the housing inner side have been loosened.

**Fit adjusting screws to ensure that the transmission pump is centered at the housing after the 4 cylindrical screws have been loosened.**

(S) Adjusting screws (M10) 5870 204 007

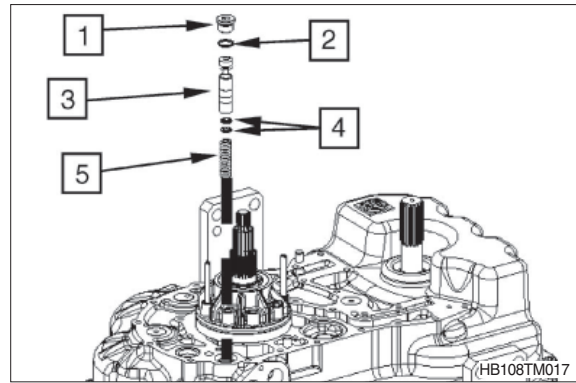


## (2) Main pressure valve and converter safety valve

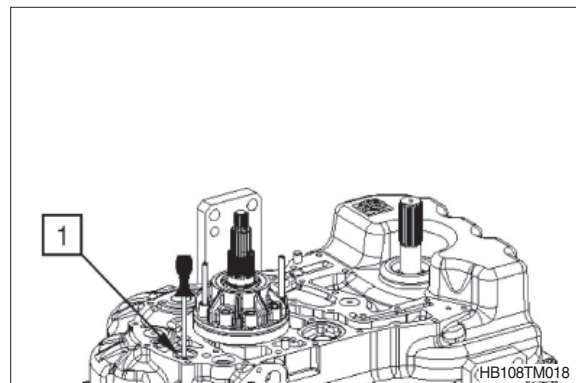
- ① Loosen screw plug (1) and remove main pressure valve (control pressure valve) :

Main pressure valve consists of:

- 1 = Screw plug
- 2 = O-ring
- 3 = Piston
- 4 = Spacer ring
- 5 = Compression spring



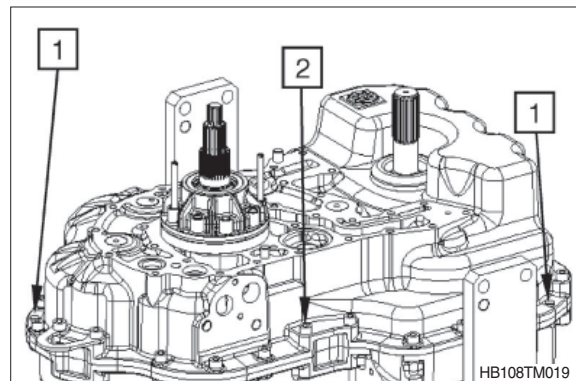
- ※ Functional check of converter safety valve (1).  
Use a screwdriver to check the movability of the ball in the valve.
- ※ If the valve is o.k., it does not need to be removed.
- ※ Valve assy is installed in the housing-not visible.



## 3) REMOVAL OF CLUTCHES, CENTRAL SHAFT AND DISASSEMBLY OF TRANSMISSION PUMP

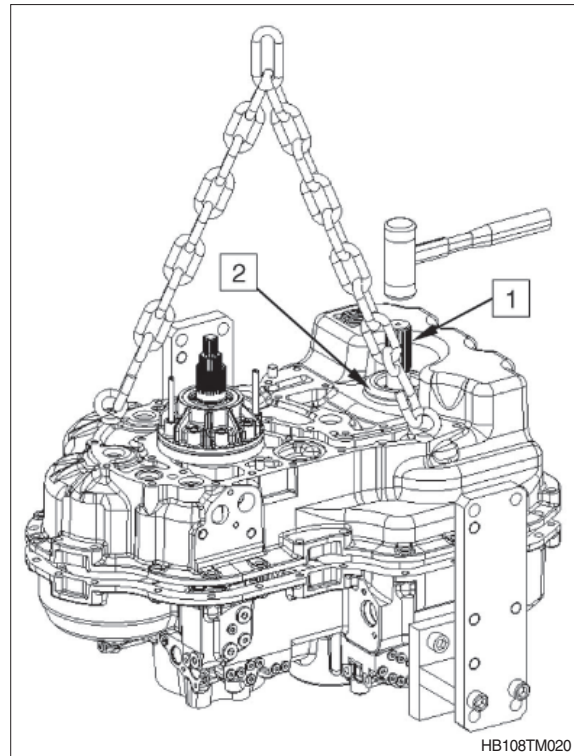
### (1) Removal of clutches

- ① Force out cylindrical pins (1).  
Loosen bolted connection (2) of housing front and rear part.

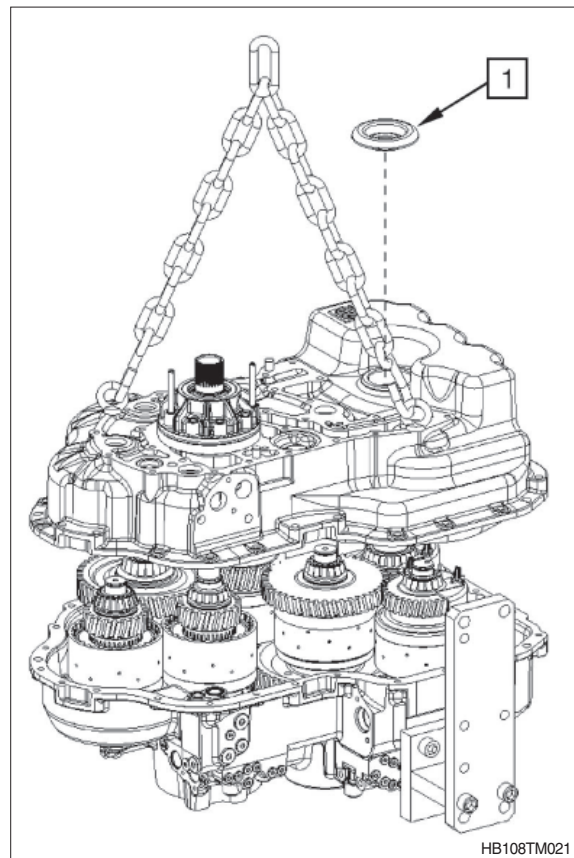


- ② Separate housing front part from transmission housing rear part by means of lifting device (approx. 1 cm).
- ③ Use the plastic hammer to reset the output shaft (1) of the front wheel drive to its initial position, thus separating the screen sheet (2) from the shaft of the clutch.

(S) Eye bolts assortment 5870 204 002

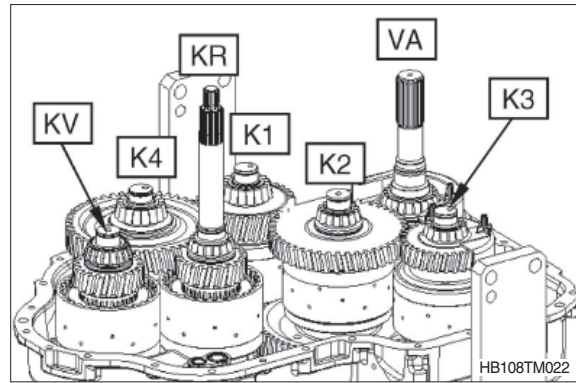


- ④ Remove screen sheet (1) and separate transmission housing front part by means of lifting device.

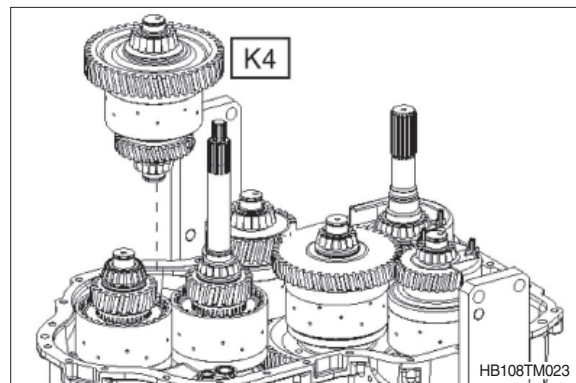




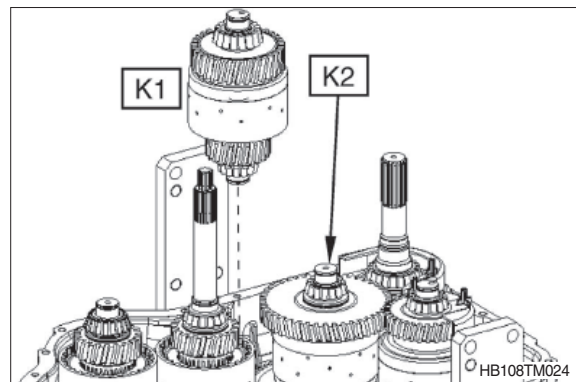
- ⑤ Designation of clutches:  
 KV = Forward clutch (directional clutch)  
 KR = Reverse clutch (directional clutch)  
 K1 = K1 clutch (gear clutch)  
 K2 = K2 clutch (gear clutch)  
 K3 = K3 clutch (gear clutch)  
 K4 = K4 clutch (directional clutch)  
 VA = Front wheel drive clutch



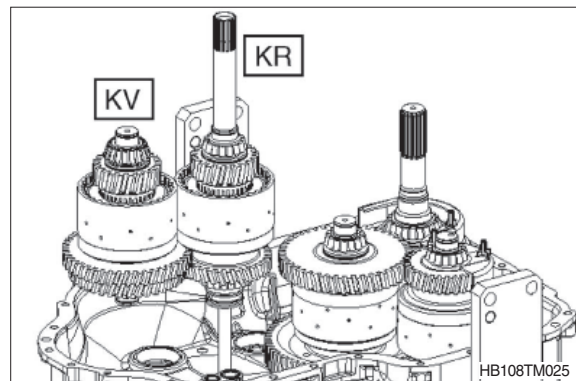
- ⑥ Remove K4 clutch.



- ⑦ Slightly lift clutch (K2) and remove clutch (K1).



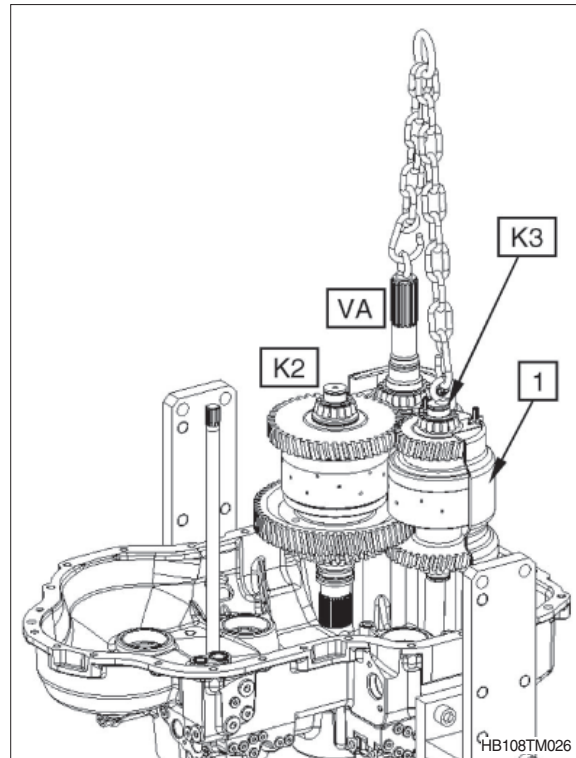
- ⑧ Lift KV and KR clutch off the bearing outer rings and then remove them one after the other.



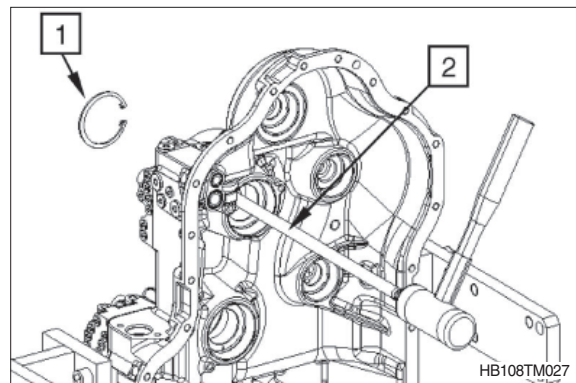
- ⑨ Jointly remove VA, K2 and K3 clutch together with screen sheet (1).
- ⑩ Use the lifting device to jointly lift VA and K3 clutch together with K2 clutch, and then remove the components one after the other.

(S) Eyebolts

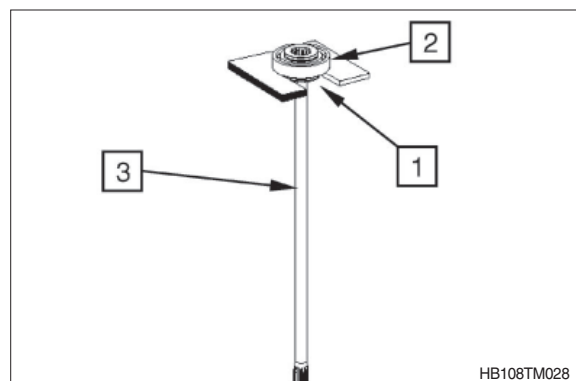
5870 204 080



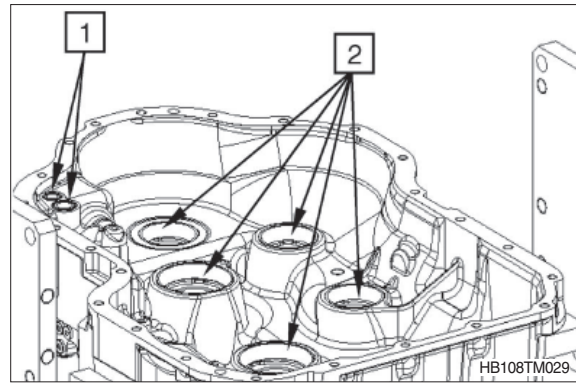
- ⑪ Snap out retaining ring (1) and remove central shaft (2).



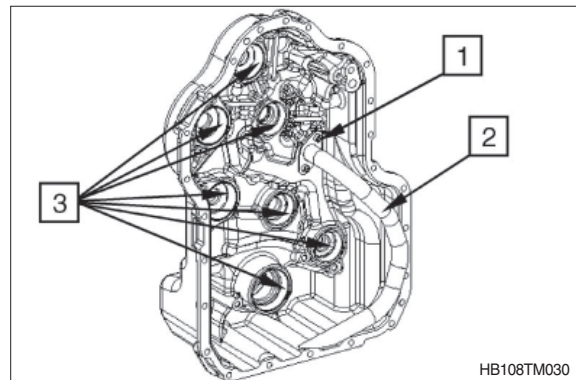
- ⑫ Snap out rectangular ring (1).
- ⑬ Press ball bearing (2) off the central shaft (3).



- ⑭ Remove O-rings (1).
- ⑮ Remove all bearing outer rings (2) from the housing rear part.
- ※ If the tapered roller bearings of clutches are not replaced, it is imperative to ensure the previous pairing (bearing outer ring / bearing inner ring).
- ※ Bearing outer ring and bearing inner ring must be marked.



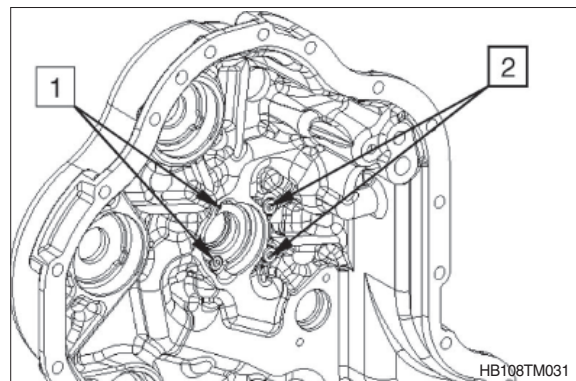
- ⑯ Loosen the cylindrical screws (1) and remove suction tube (2).
- ⑰ Remove all bearing outer rings (3) from the housing front part.
- ※ If the tapered roller bearings of clutches and input are not replaced, it is imperative to ensure the previous pairing (bearing outer ring / bearing inner ring).
- ※ Bearing outer ring and bearing inner ring must be marked.



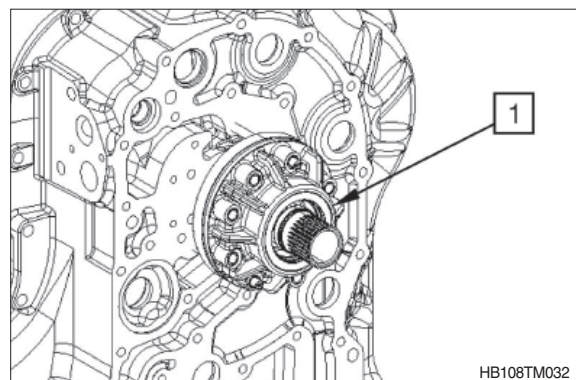
**(2) Disassembly of transmission pump**

- ① Loosen cylindrical screws (3 and 4) and remove transmission pump.

**Pay attention so that the transmission pump does not drop.**

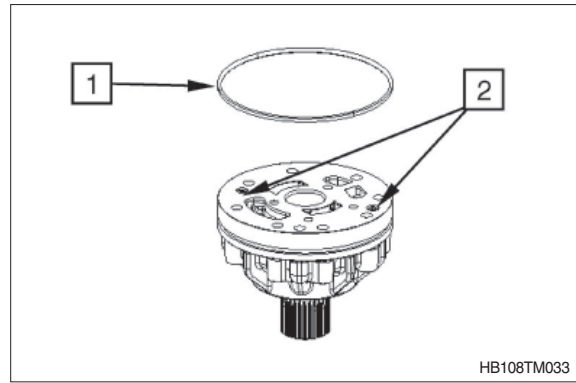


- ② Remove transmission pump (1).





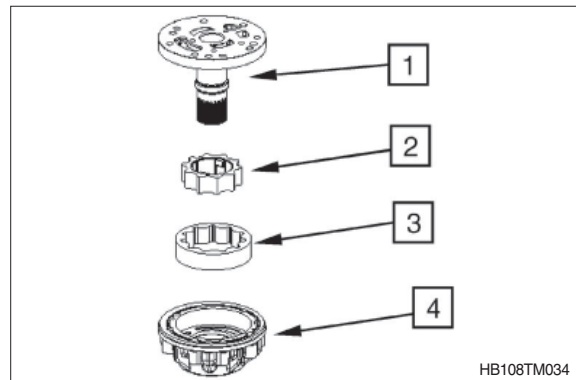
- ③ Remove O-ring (1).
- ④ Loosen cylindrical screws (2).



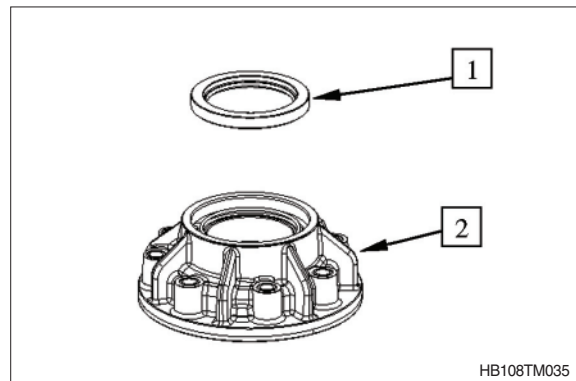
※ **Check transmission pump:**

In case of wear marks in the pump housing, stator hollow shaft or on the inner and outer rotor, the complete transmission pump must be replaced.

- 1 = Stator hollow shaft
- 2 = Inner rotor
- 3 = Outer rotor
- 4 = Pump housing



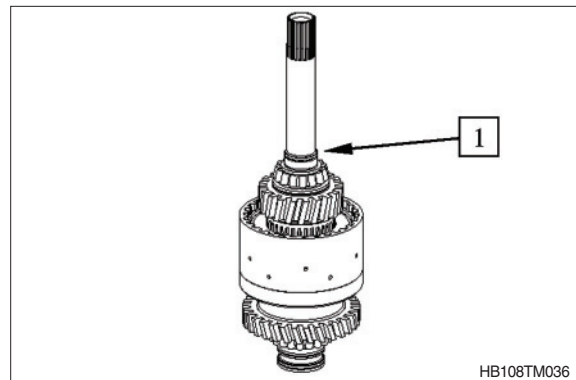
- ⑤ Remove shaft seal ring (1) from the pump housing (2).



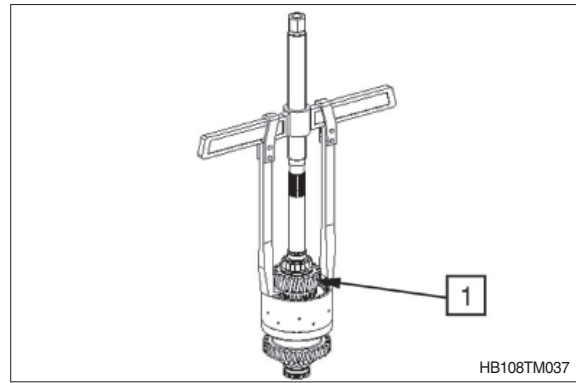
**4) DISASSEMBLY CLUTCHES**

**(1) KR clutch / input**

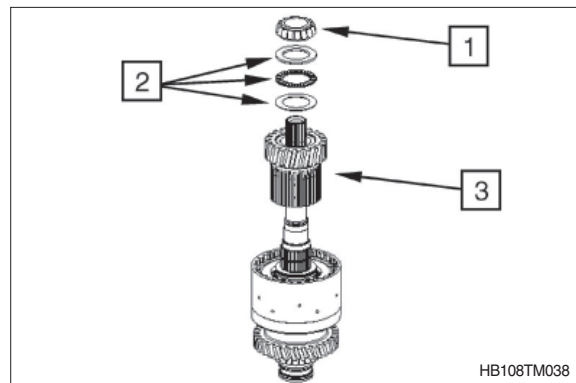
- ① Snap out rectangular ring (1).



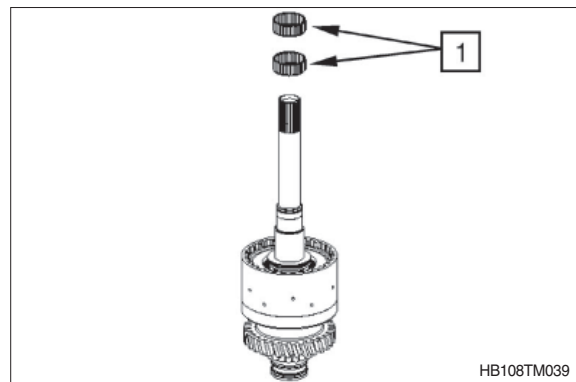
- ② Pull off bearing inner ring with inner disk carrier (1).



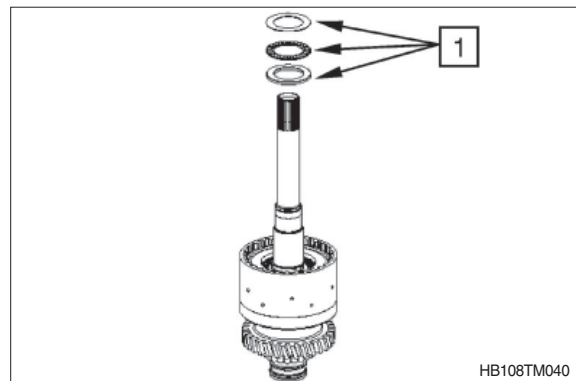
- ③ Remove bearing inner ring (1), axial bearing assembly (2) and inner disk carrier (3).



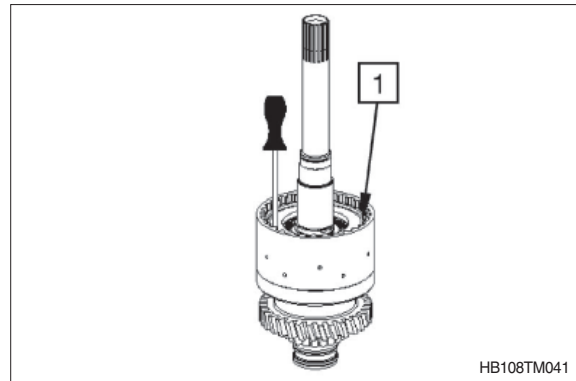
- ④ Remove needle cage (1).



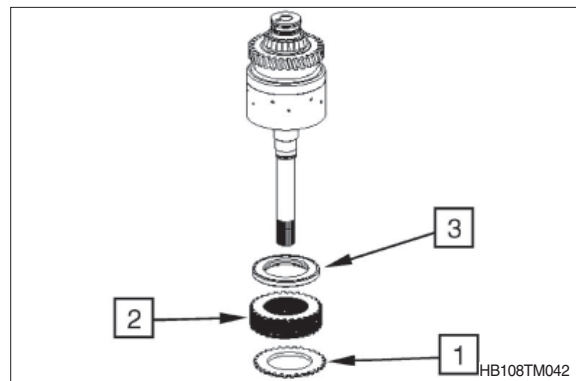
- ⑤ Remove axial bearing assembly (1).



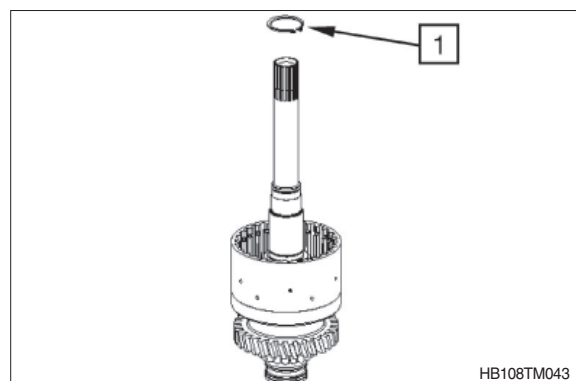
⑥ Remove snap ring (1).



⑦ Remove end plate (1), disk package (2) and plate assy with cup springs (3) from the disk carrier.



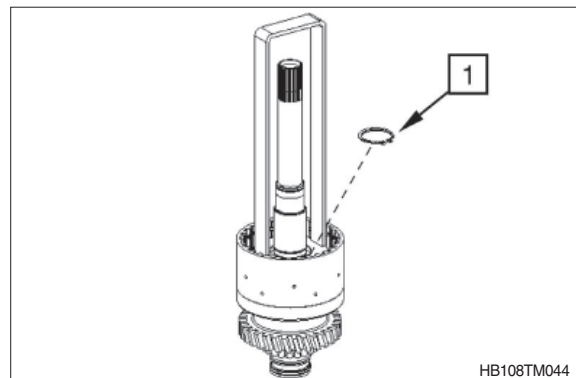
⑧ Remove retaining ring (1) at axial bearing contact.



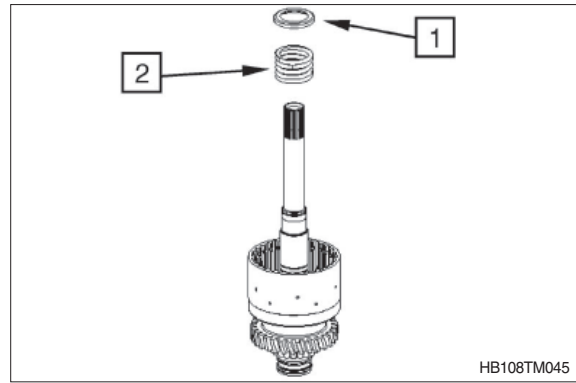
⑨ Preload compression spring and remove snap ring (1).

(S) Assembly aid

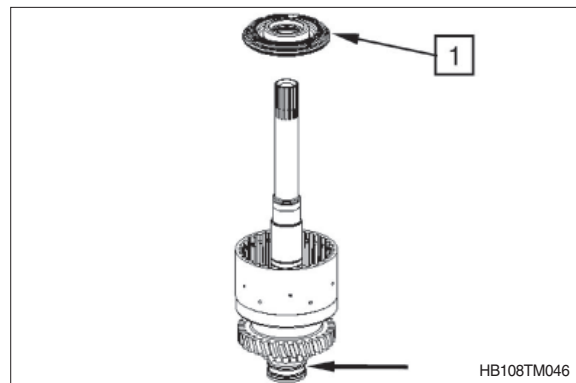
5870 345 114



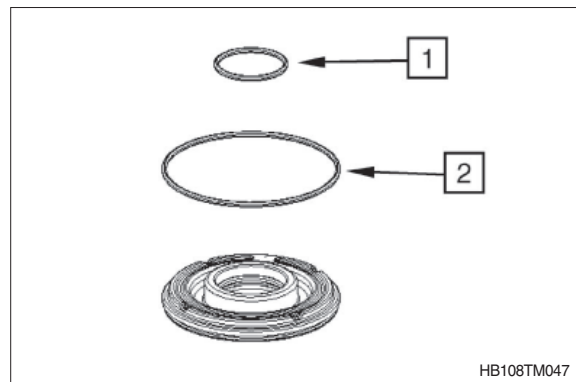
- ⑩ Remove spring cup (1) and compression spring (2).



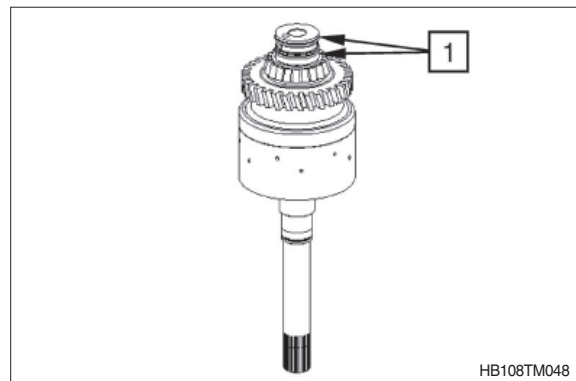
- ⑪ By means of compressed air (see arrow), press piston (1) off the shaft/disk carrier and remove it.



- ⑫ Remove both O-rings (1 and 2).



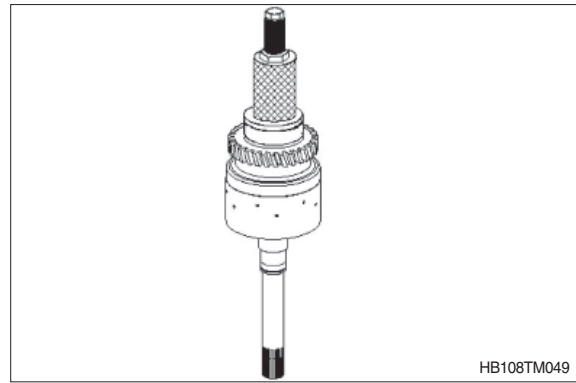
- ⑬ Snap out rectangular rings (1).



- ⑭ Pull tapered roller bearing (inner ring) off the shaft.

(S) Grab sleeve 5873 001 026

(S) Basic tool 5873 001 000



- ※ The input shaft (1) cannot be disassembled.

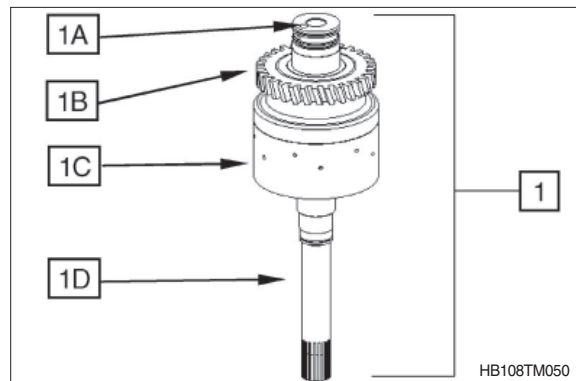
It is supplied by the spare parts service only as a complete assy which consists of:

1A = Ball

1B = Helical gear

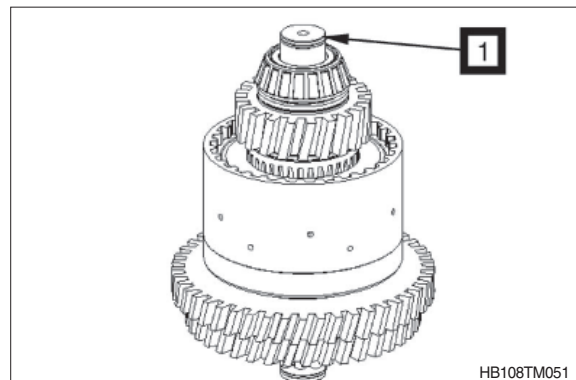
1C = Disk carrier

1D = Input shaft

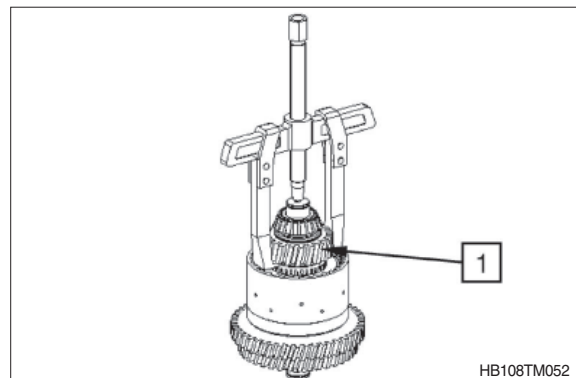


## (2) KV clutch

- ① Snap out rectangular ring (1).

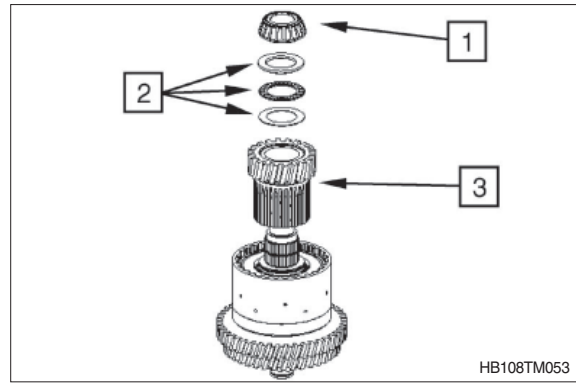


- ② Pull off bearing inner ring with inner disk carrier (1).

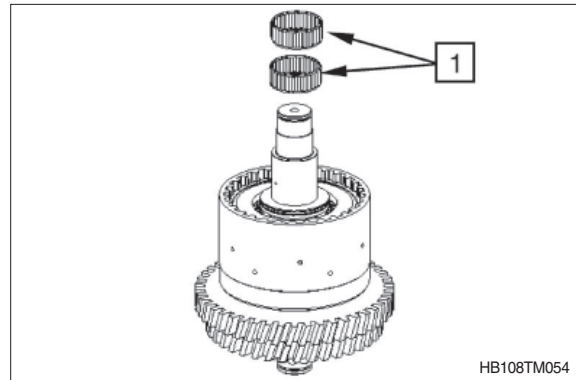




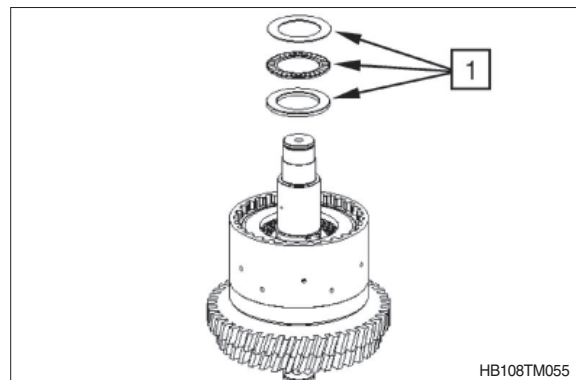
- ③ Remove bearing inner ring (1), axial bearing assy (2) and inner disk carrier (3).



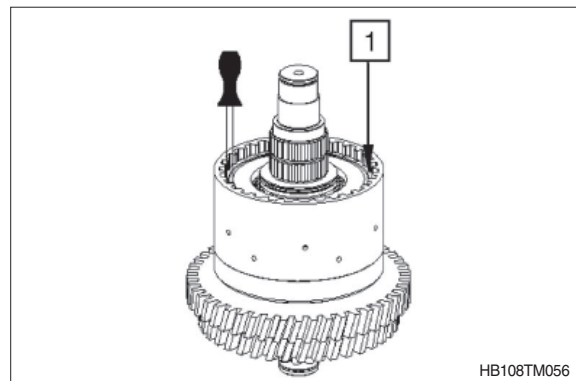
- ④ Remove needle cage (1).



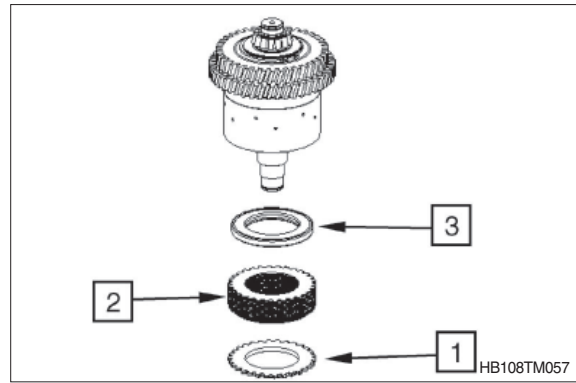
- ⑤ Remove axial bearing assy (1).



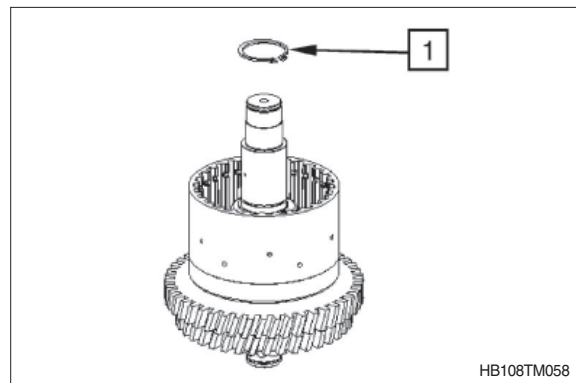
- ⑥ Remove snap ring (1).



- ⑦ Remove end plate (1), disk package (2) and plate assy with cup springs (3) from the disk carrier.

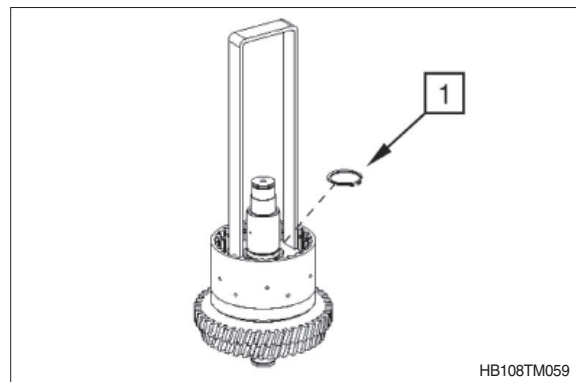


- ⑧ Remove retaining ring (1) at axial bearing contact.

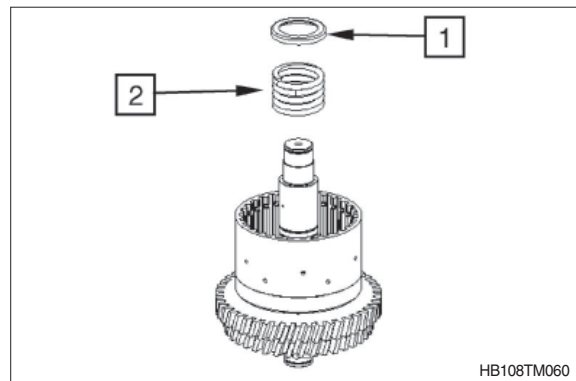


- ⑨ Preload compression spring and remove snap ring (1).

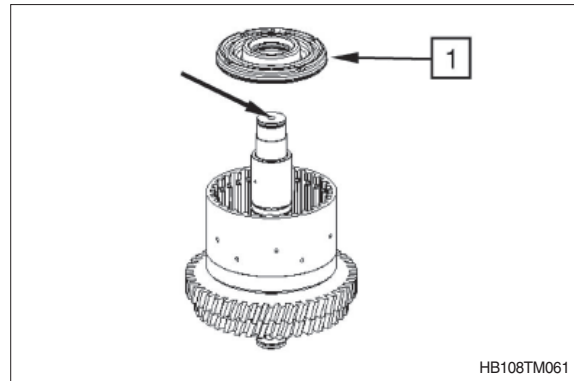
(S) Assembly aid 5870 345 114



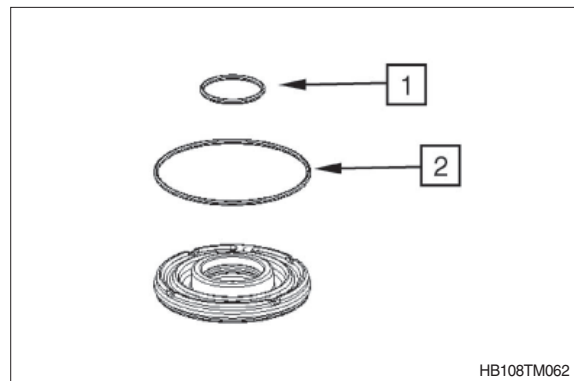
- ⑩ Remove spring cup (1) and compression spring (2).



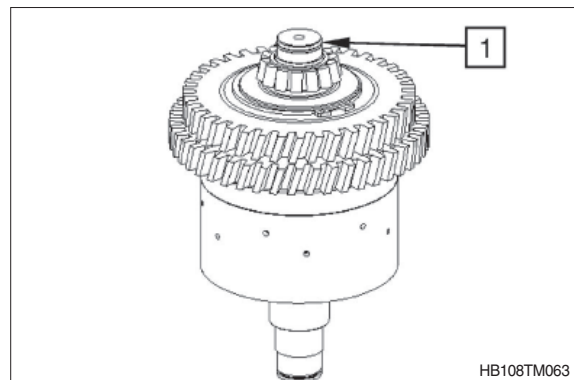
- ⑪ By means of compressed air (see arrow), press piston (1) off the shaft/disk carrier and remove it.



- ⑫ Remove both O-rings (1 and 2).

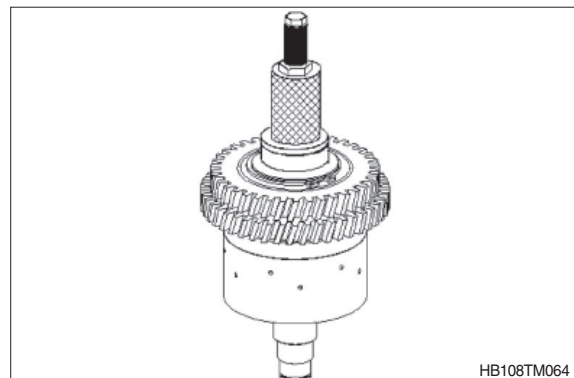


- ⑬ Snap out rectangular ring (1).



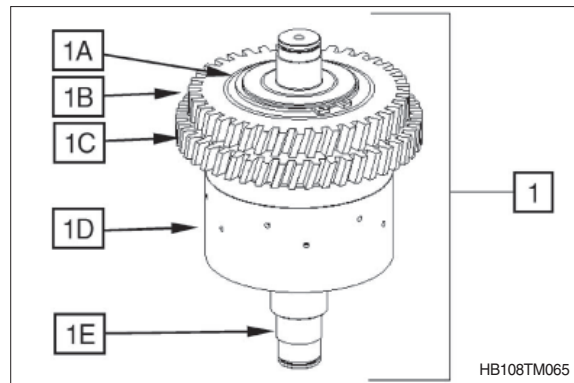
- ⑭ Pull tapered roller bearing (inner ring) off the shaft.

(S) Grab sleeve 5873 000 029  
(S) Basic tool 5873 000 001



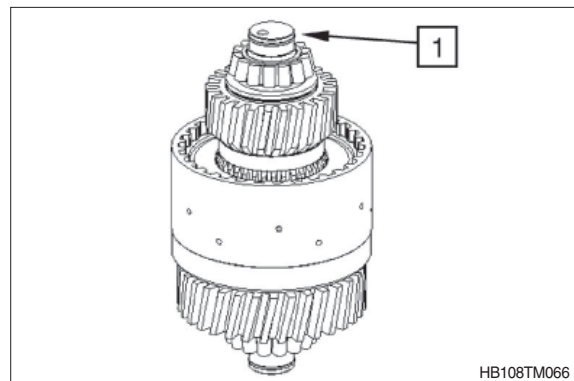
※ The clutch (1) cannot be disassembled.  
It is supplied by the spare parts service only as a complete assy which consists of:

- 1A = Retaining ring
- 1B = Helical gear
- 1C = Helical gear
- 1D = Disk carrier
- 1E = Shaft

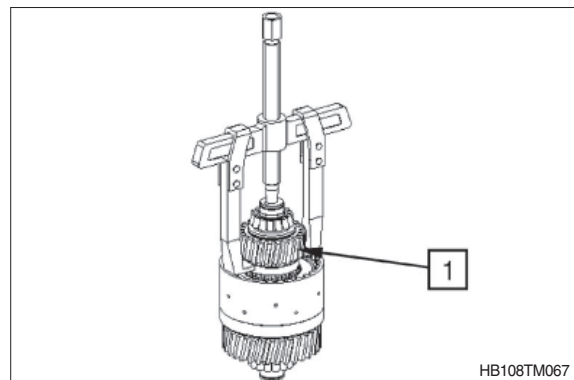


### (3) K1 clutch

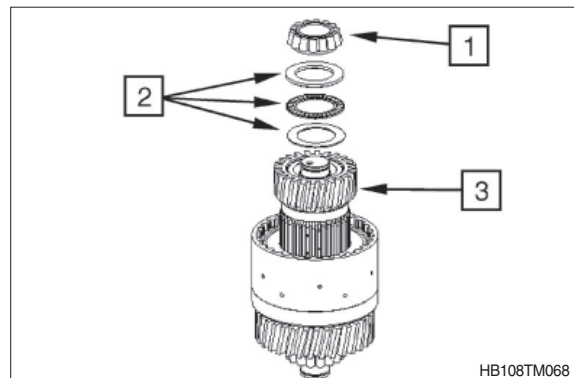
① Snap out rectangular ring (1).



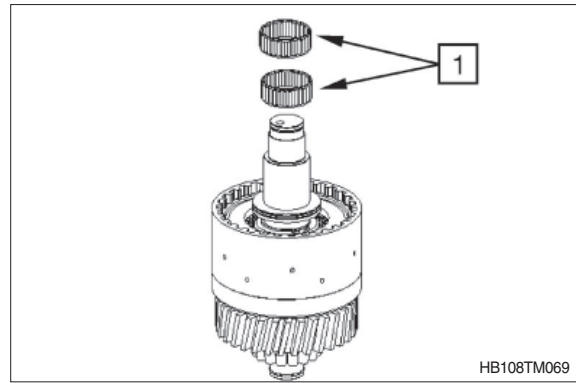
② Pull off bearing inner ring with inner disk carrier (1).



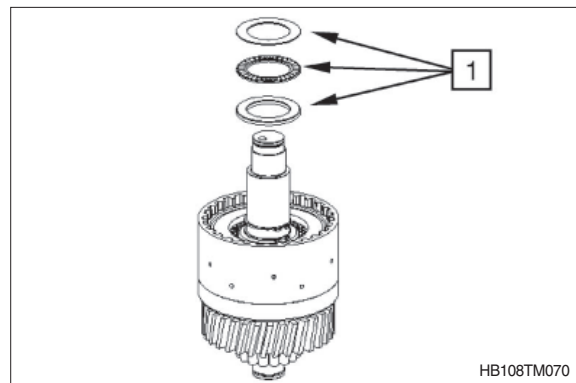
③ Remove bearing inner ring (1), axial bearing assy (2) and inner disk carrier (3).



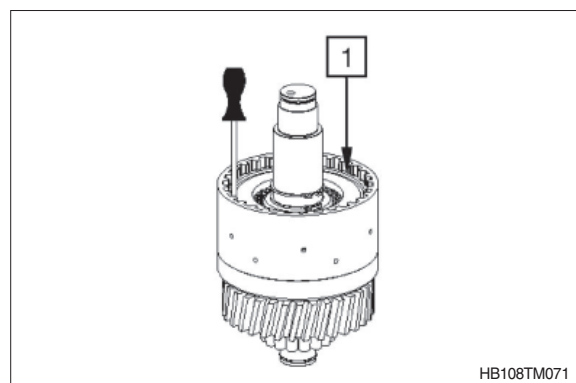
④ Remove needle cage (1).



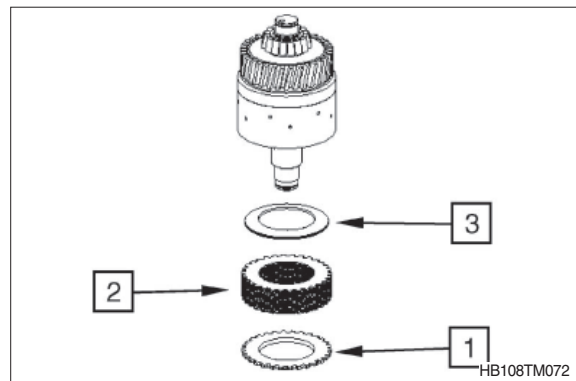
⑤ Remove axial bearing assy (1).



⑥ Remove snap ring (1).

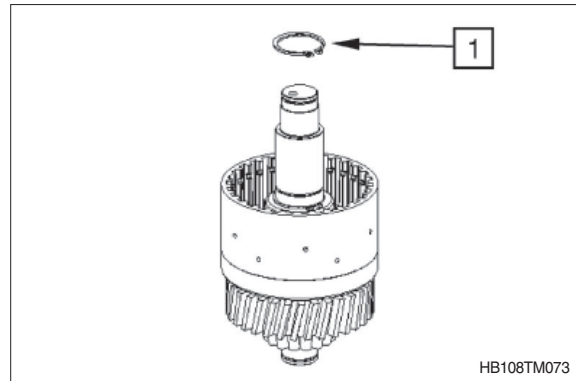


⑦ Remove end plate (1), disk package (2) and cup springs (3) from the disk carrier.



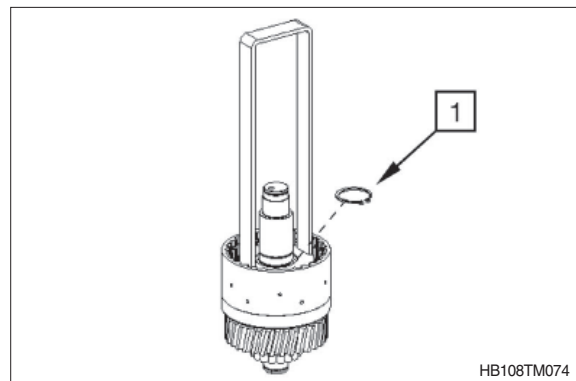


- ⑧ Remove retaining ring (1) at axial bearing contact.

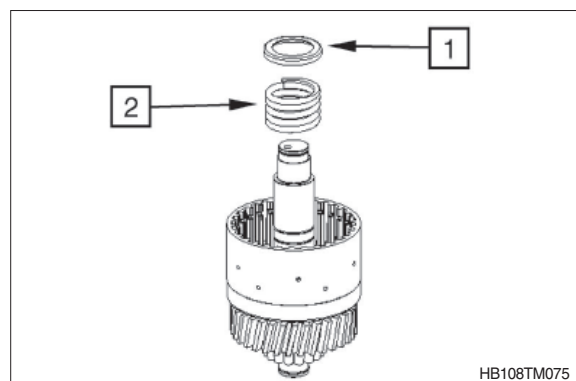


- ⑨ Preload compression spring and remove snap ring (1).

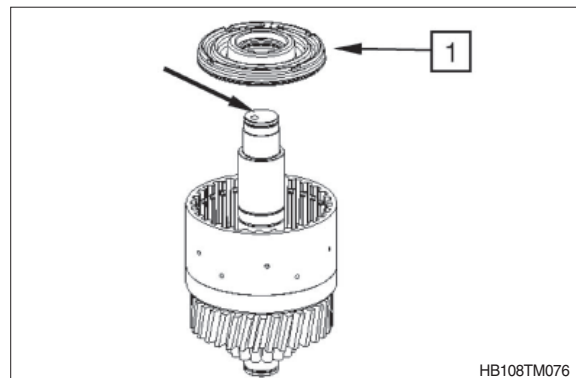
(S) Assembly aid 5870 345 114



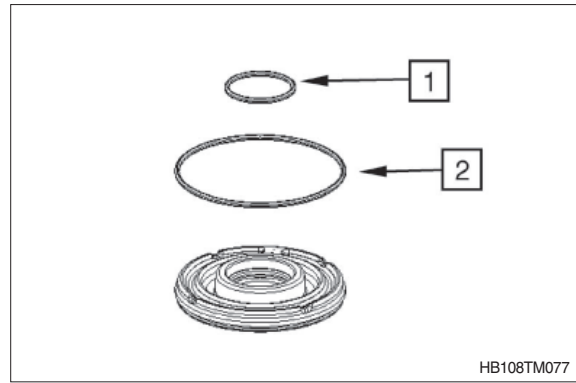
- ⑩ Remove spring cup (1) and compression spring (2).



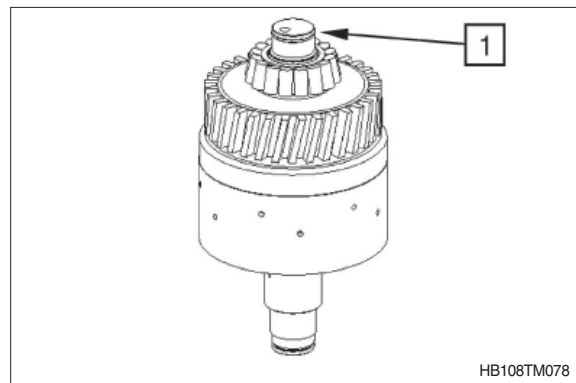
- ⑪ By means of compressed air (see arrow), press piston (1) off the shaft/disk carrier and remove it.



⑫ Remove both O-rings (1 and 2).

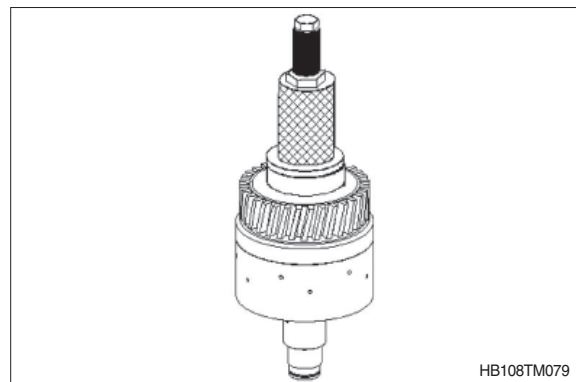


⑬ Snap out rectangular ring (1).



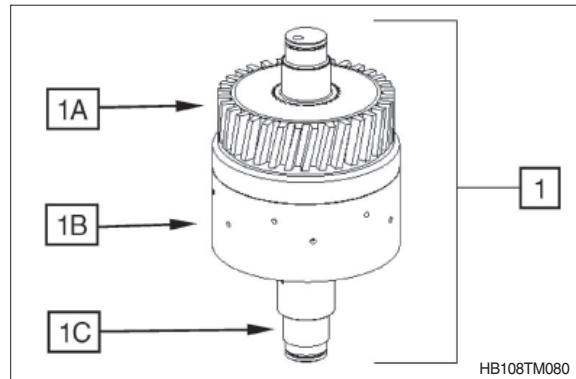
⑭ Pull tapered roller bearing (inner ring) off the shaft.

(S) Grab sleeve            5873 011 011  
(S) Basic tool            5873 001 000



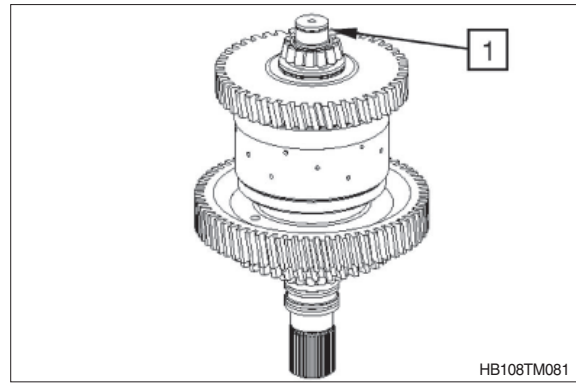
※ The clutch (1) cannot be disassembled.  
It is supplied by the spare parts service  
only as a complete assy which consists  
of:

1A = Helical gear  
1B = Disk carrier  
1C = Shaft

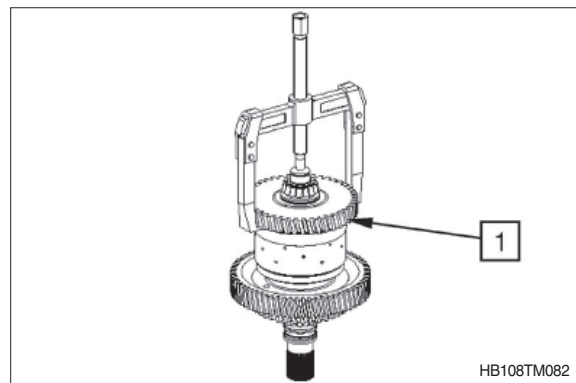


**(4) K2 clutch**

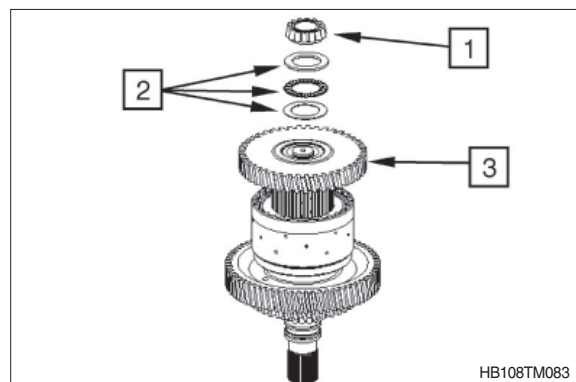
- ① Snap out rectangular ring (1).



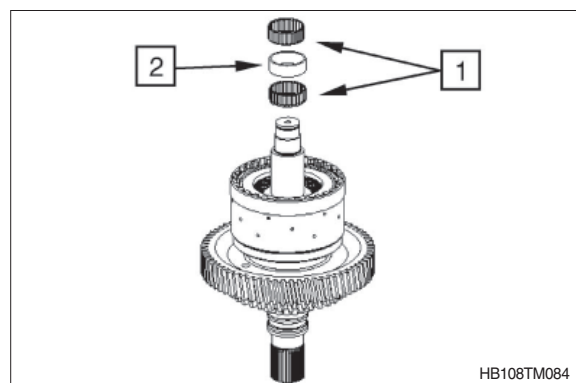
- ② Pull off bearing inner ring with inner disk carrier (1).



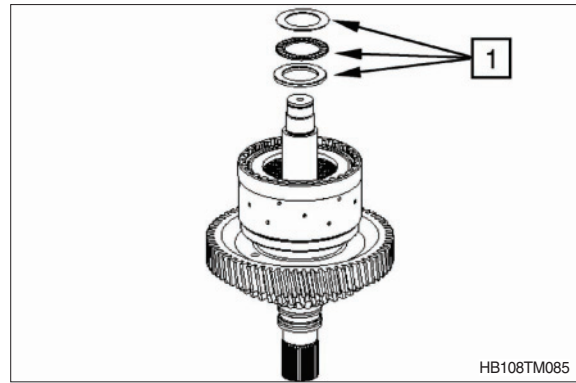
- ③ Remove bearing inner ring (1), axial bearing assy (2) and inner disk carrier (3).



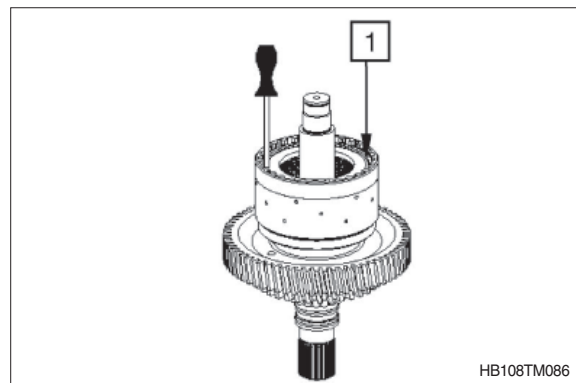
- ④ Remove needle cage (1) and bushing (2).



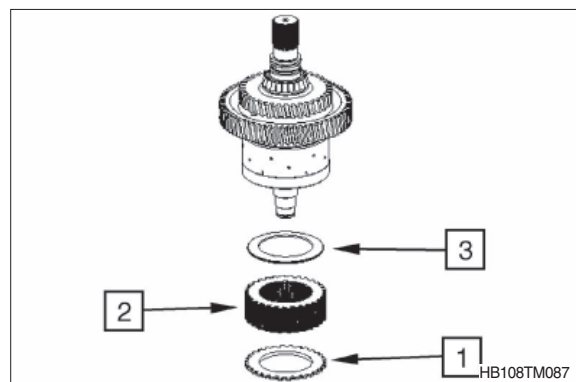
⑤ Remove axial bearing assy (1).



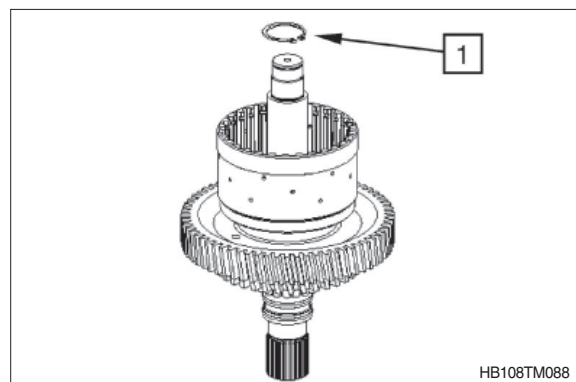
⑥ Remove snap ring (1).



⑦ Remove end plate (1), disk package (2) and cup springs (3) from the disk carrier.

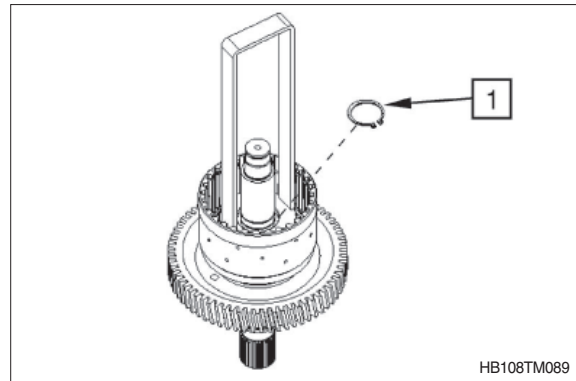


⑧ Remove retaining ring (1) at axial bearing contact.

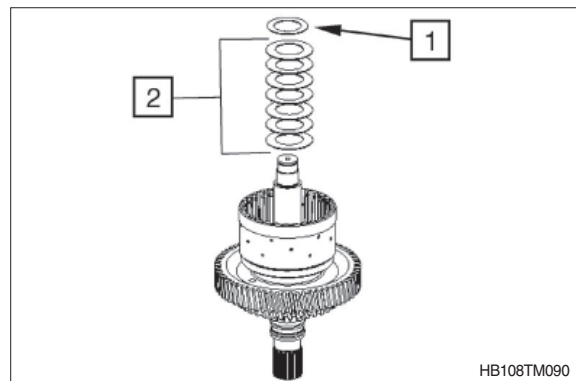


- ⑨ Preload cup springs and remove snap ring (1).

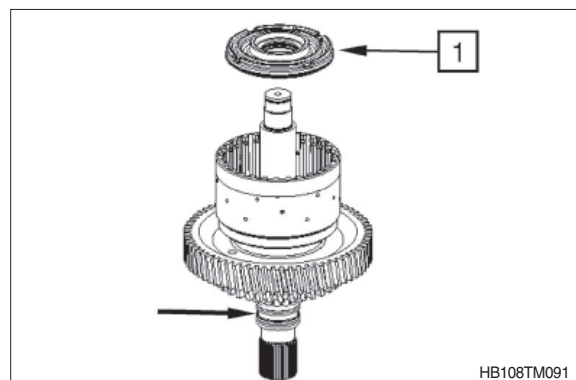
(S) Assembly aid 5870 345 114



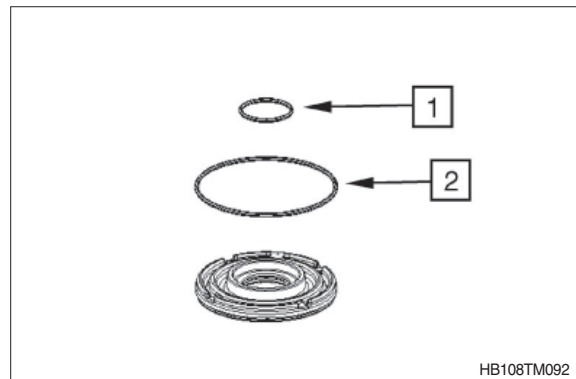
- ⑩ Remove axial washer (1) and cup springs (2).



- ⑪ By means of compressed air (see arrow), press piston (1) off the shaft/disk carrier and remove it.

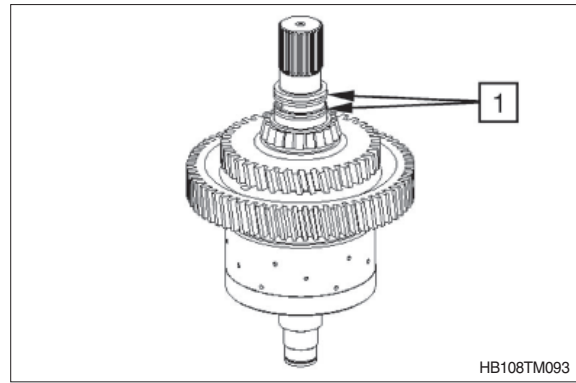


- ⑫ Remove both O-rings (1 and 2).



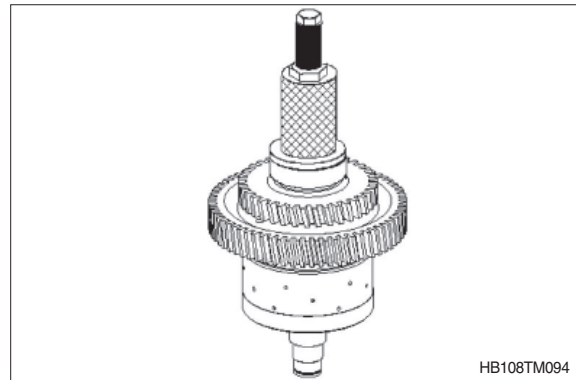


⑬ Snap out rectangular rings (1).



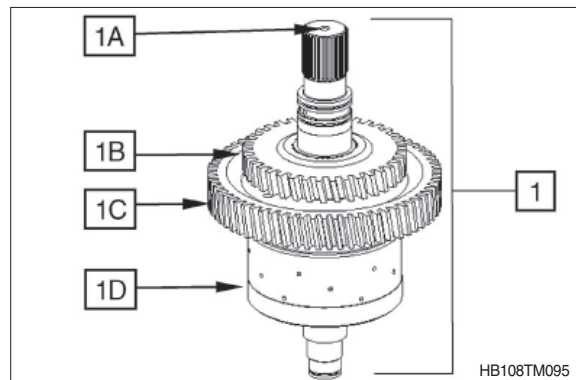
⑭ Pull tapered roller bearing (inner ring) off the shaft.

- (S) Grab sleeve 5873 001 026
- (S) Basic tool 5873 001 000



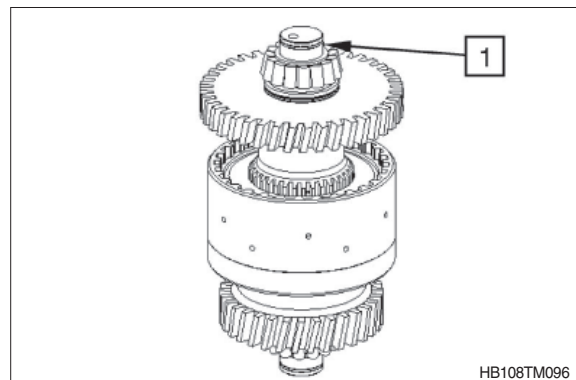
※ The clutch (1) cannot be disassembled.  
It is supplied by the spare parts service  
only as a complete assy which consists  
of:

- 1A = Ball
- 1B = Helical gear
- 1C = Shaft
- 1D = Disk carrier

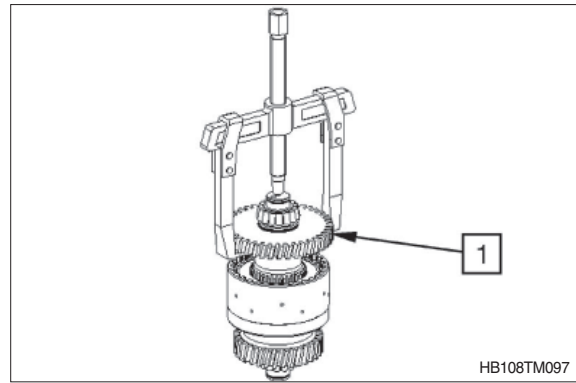


### (5) K3 clutch

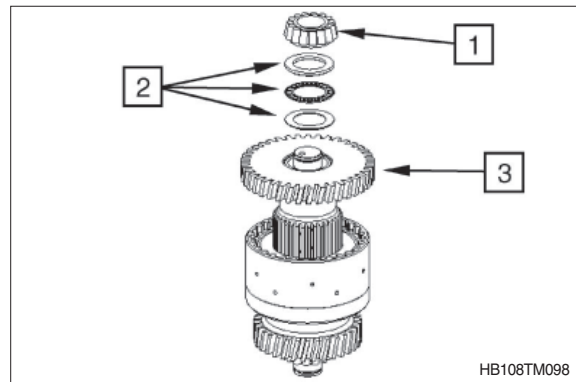
① Snap out rectangular ring (1).



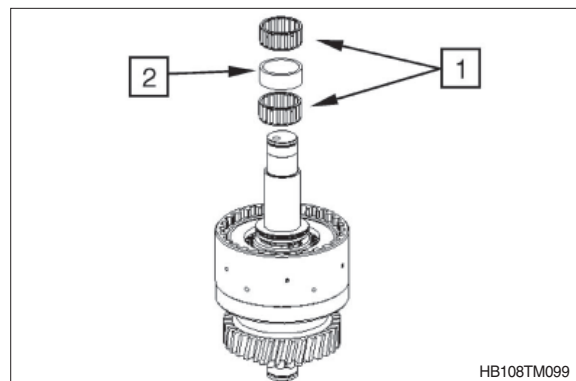
- ② Pull off bearing inner ring with inner disk carrier (1).



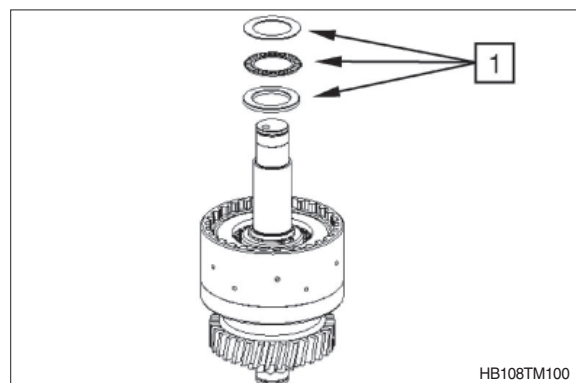
- ③ Remove bearing inner ring (1), axial bearing assy (2) and inner disk carrier (3).



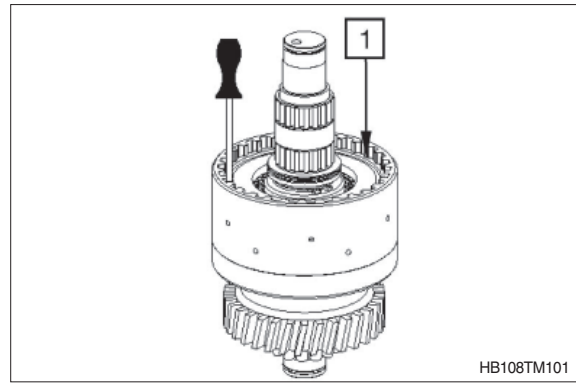
- ④ Remove needle cage (1) and bushing (2).



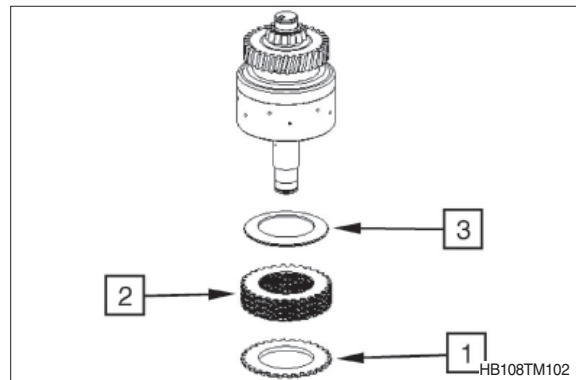
- ⑤ Remove axial bearing assy (1).



⑥ Remove snap ring (1).

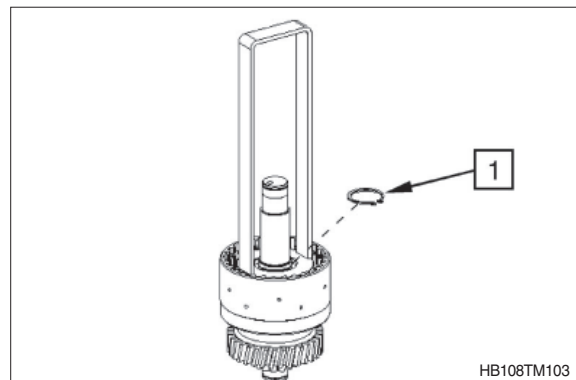


⑦ Remove end plate (1), disk package (2) and cup springs (3) from the disk carrier.

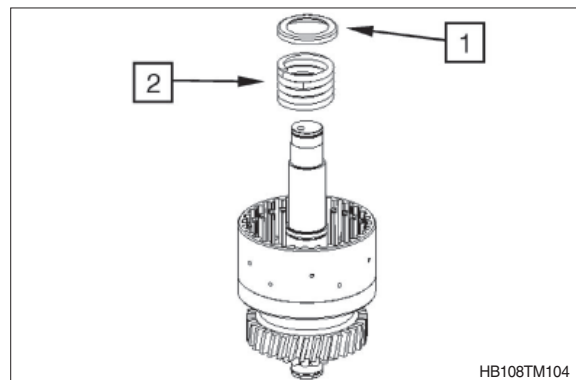


⑧ Preload compression spring and remove snap ring (1).

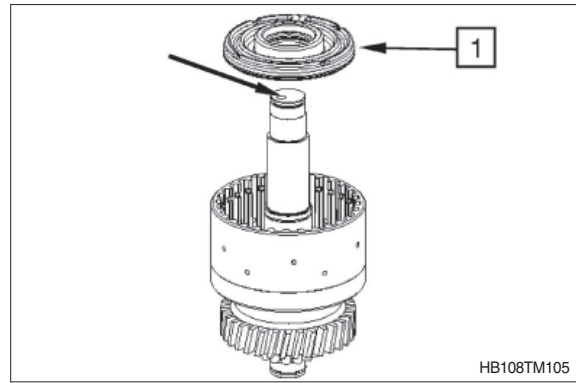
(S) Assembly aid 5870 345 114



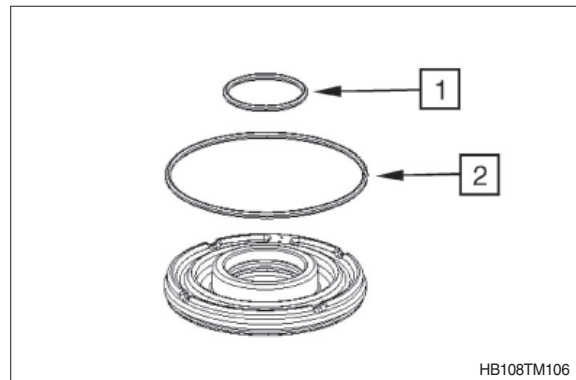
⑨ Remove spring cup (1) and compression spring (2).



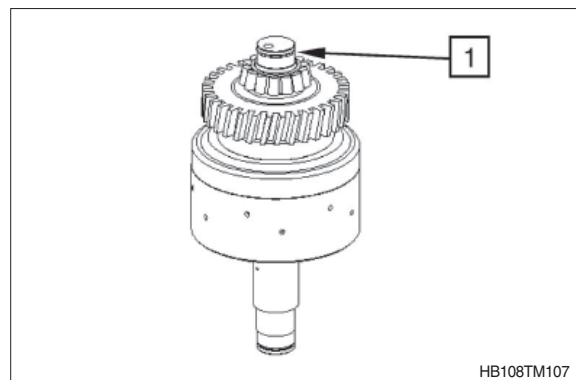
- ⑩ By means of compressed air (see arrow), press piston (1) off the shaft/disk carrier and remove it.



- ⑪ Remove both O-rings (1 and 2).

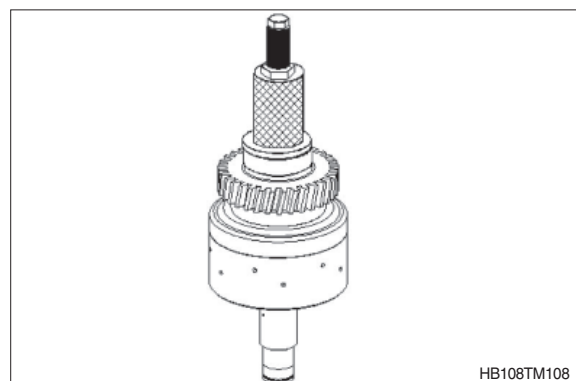


- ⑫ Snap out rectangular ring (1).



- ⑬ Pull tapered roller bearing (inner ring) off the shaft.

(S) Grab sleeve 5873 000 029  
(S) Basic tool 5873 000 001

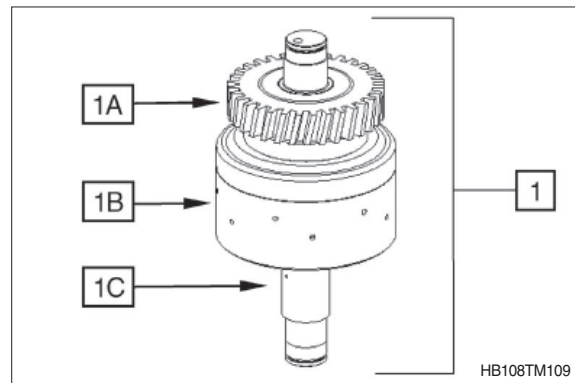


※ The clutch (1) cannot be disassembled.  
It is supplied by the spare parts service  
only as a complete assy which consists  
of:

1A = Helical gear

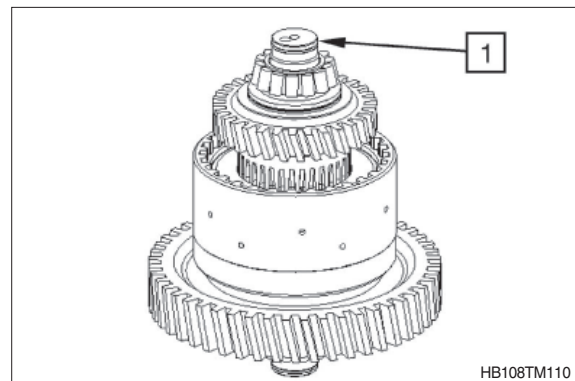
1B = Shaft

1C = Disk carrier

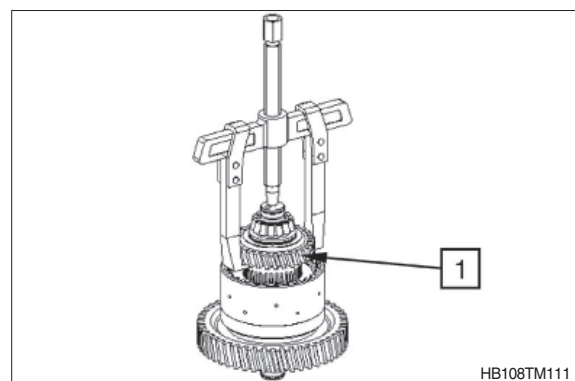


### (6) K4 clutch

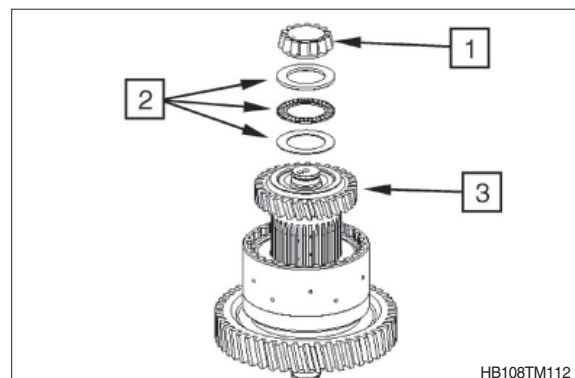
① Snap out rectangular ring (1).



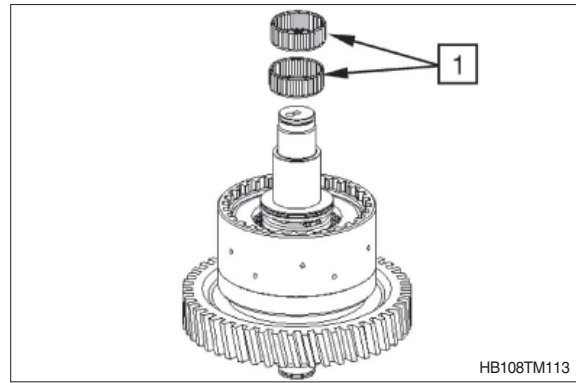
② Pull off bearing inner ring with inner  
disk carrier (1).



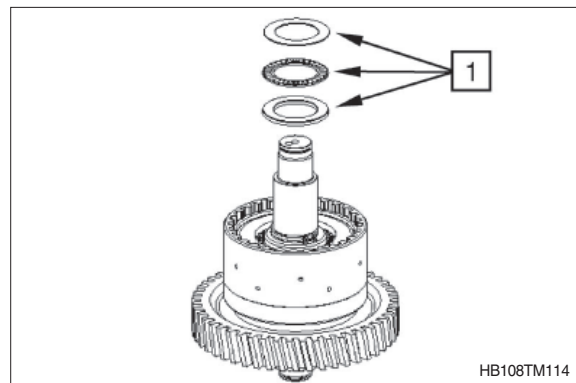
③ Remove bearing inner ring (1), axial  
bearing assy (2) and inner disk carrier  
(3).



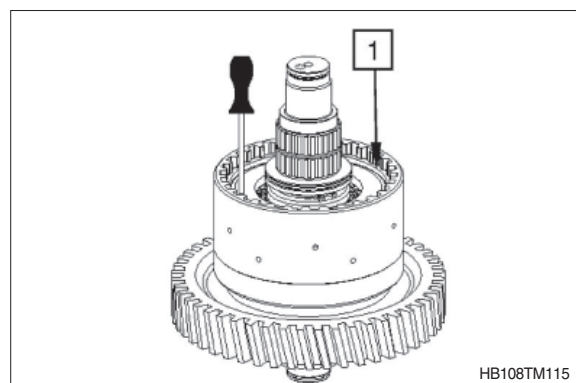
④ Remove needle cage (1).



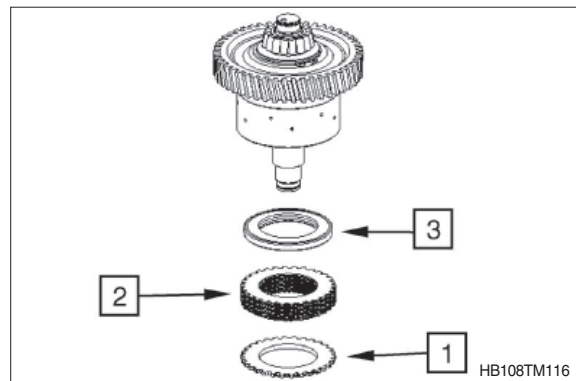
⑤ Remove axial bearing assy (1).



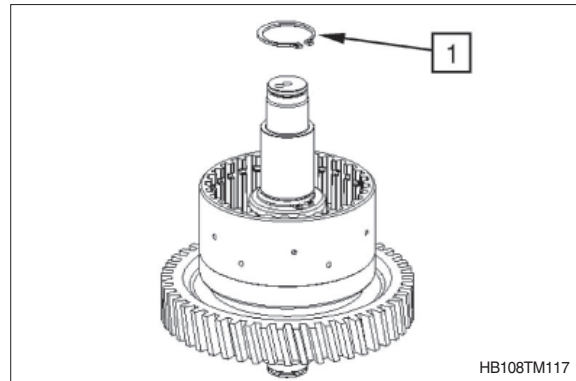
⑥ Remove snap ring (1).



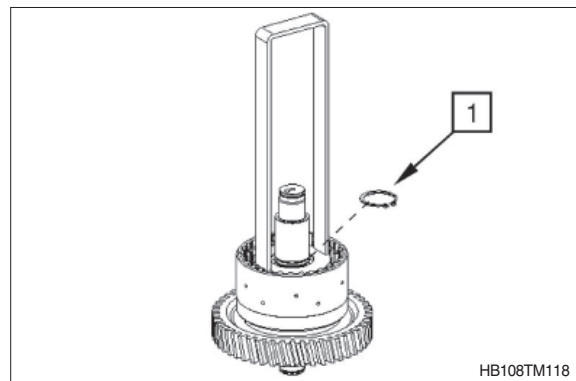
⑦ Remove end plate (1), disk package (2) and plate assy with cup springs (3) from the disk carrier.



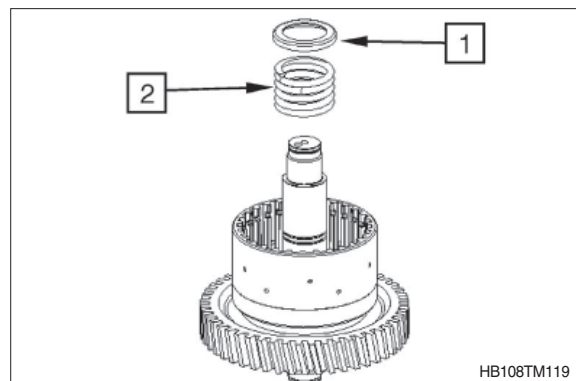
- ⑧ Remove retaining ring (1) at axial bearing contact.



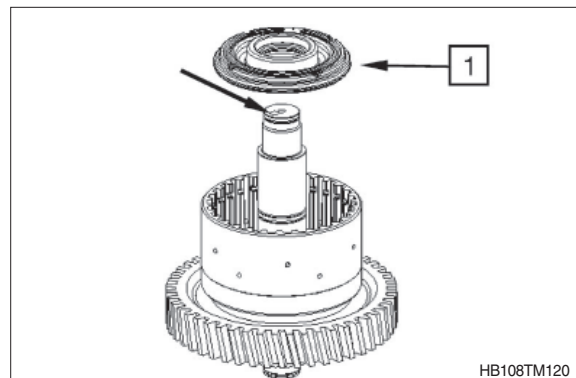
- ⑨ Preload compression spring and remove snap ring (1).  
(S) Assembly aid 5870 345 114



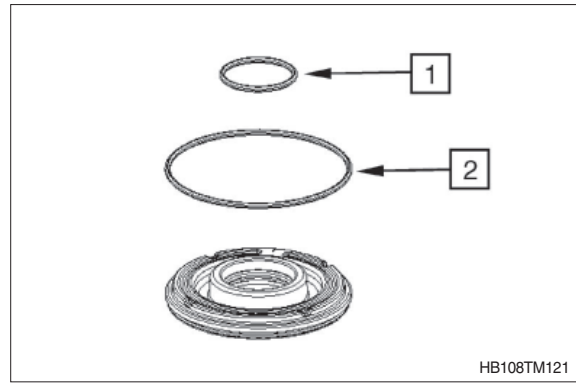
- ⑩ Remove spring cup (1) and compression spring (2).



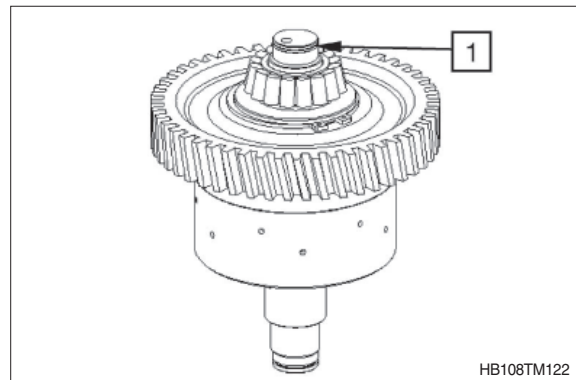
- ⑪ By means of compressed air (see arrow), press piston (1) off the shaft/disk carrier and remove it.



⑫ Remove both O-rings (1 and 2).

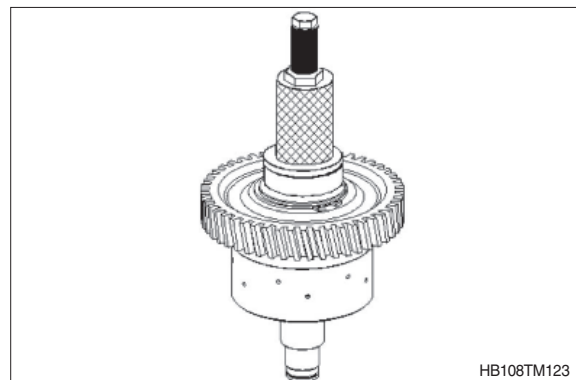


⑬ Snap out rectangular ring (1).



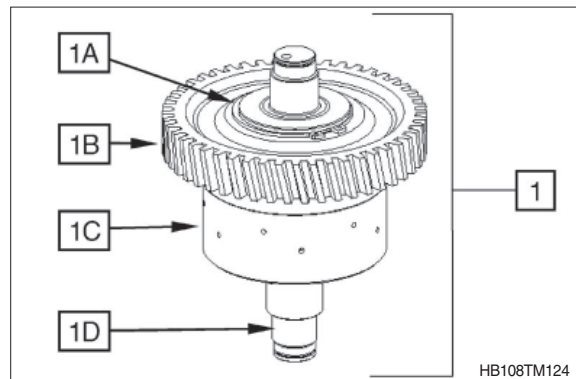
⑭ Pull tapered roller bearing (inner ring) off the shaft.

(S) Grab sleeve 5873 011 011  
(S) Basic tool 5873 001 000



※ The clutch (1) cannot be disassembled.  
It is supplied by the spare parts service only as a complete assy which consists of:

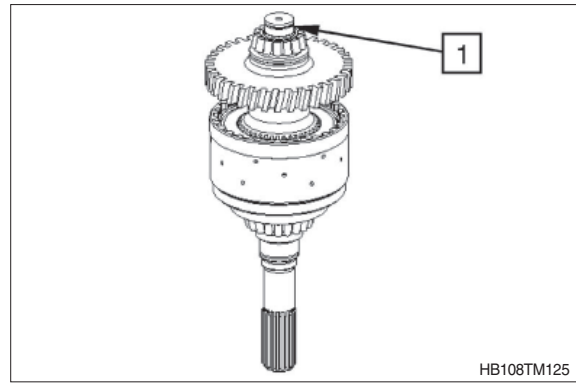
1A = Retaining ring  
1B = Helical gear  
1C = Disk carrier  
1D = Shaft





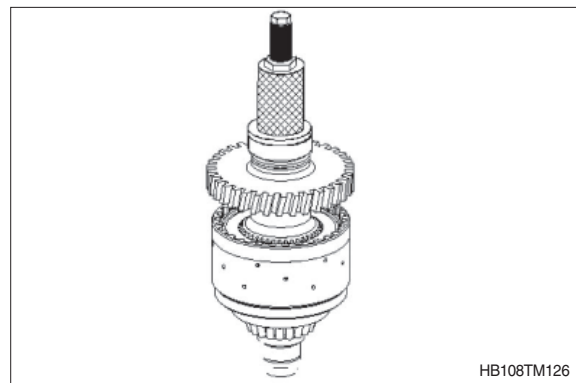
**(7) Front wheel drive (VA)**

- ① Snap out rectangular ring (1).

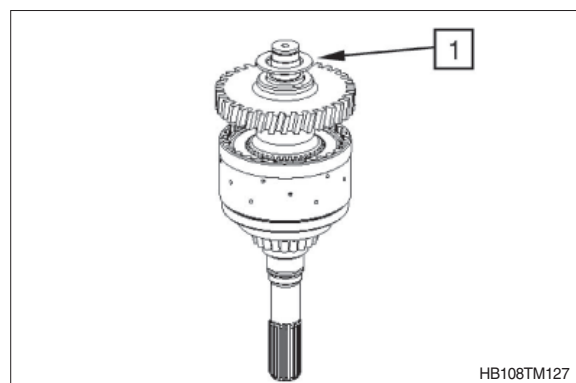


- ② Pull tapered roller bearing (inner ring) off the shaft.

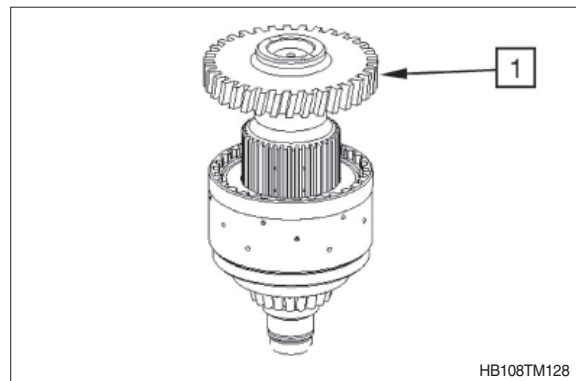
(S) Grab sleeve 5873 000 029  
(S) Basic tool 5873 000 001



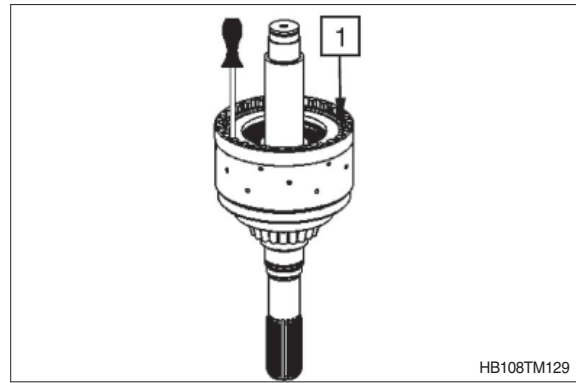
- ③ Remove running disk (1).



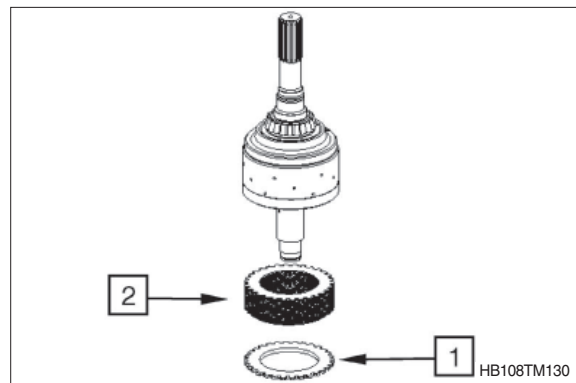
- ④ Pull off inner disk carrier (1).



⑤ Remove snap ring (1).

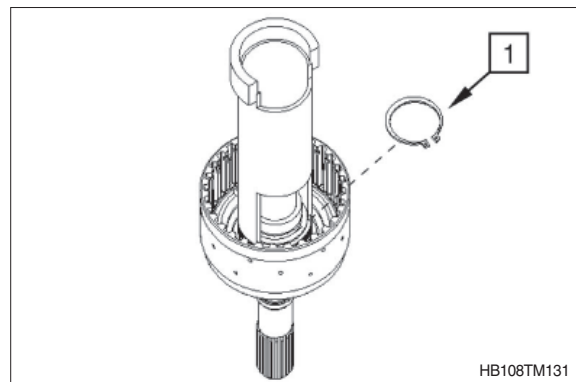


⑥ Remove end plate (1) and disk package (2) from the disk carrier.

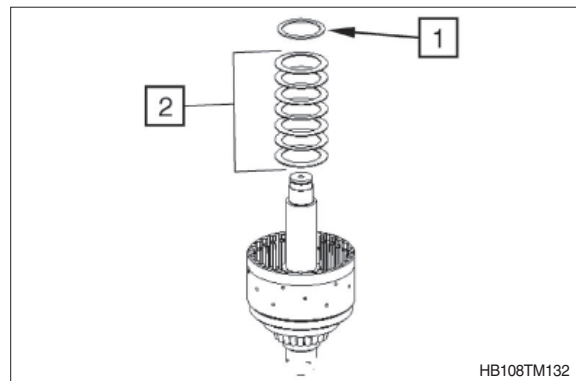


⑦ Preload cup springs and remove snap ring (1).

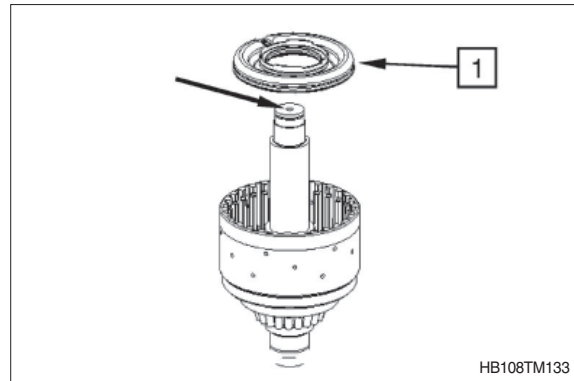
(S) Assembly aid 5870 506 128



⑧ Remove washer (1) and cup springs (2).

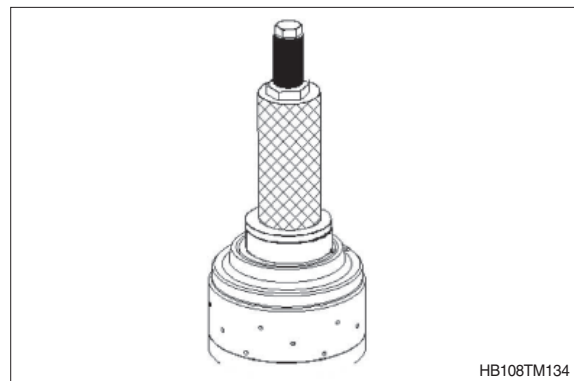


- ⑨ By means of compressed air (see arrow), press piston (1) off the shaft/disk carrier and remove it.



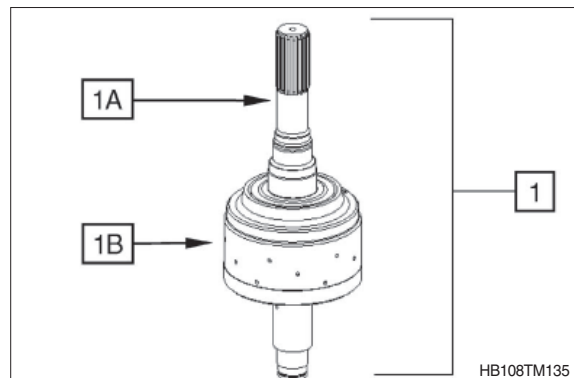
- ⑩ Pull tapered roller bearing (inner ring) off the shaft.

(S) Grab sleeve 5873 001 026  
 (S) Basic tool 5873 001 000



- ※ The clutch (1) cannot be disassembled.  
 It is supplied by the spare parts service only as a complete assy which consists of:

1A = Shaft  
 1B = Disk carrier



## 5) REASSEMBLY OF CLUTCHES

### (1) KR clutch / input

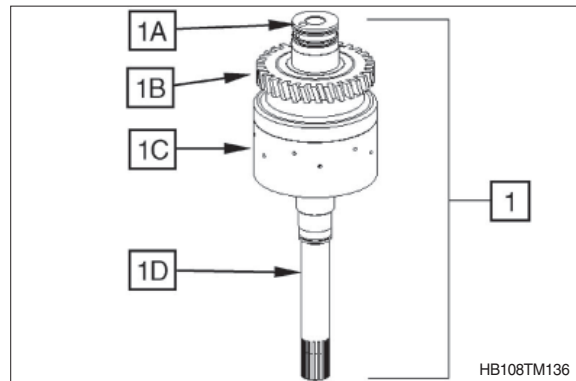
※ The input shaft (1) is supplied by the spare parts service only as a complete assy which consists of:

1A = Ball

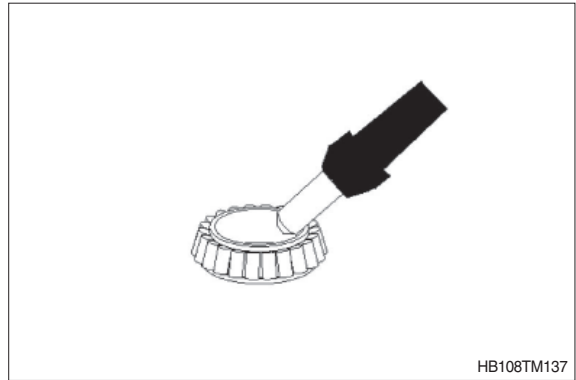
1B = Helical gear

1C = Disk carrier

1D = Input shaft



① Heat up bearing inner ring (approx. 120°C).

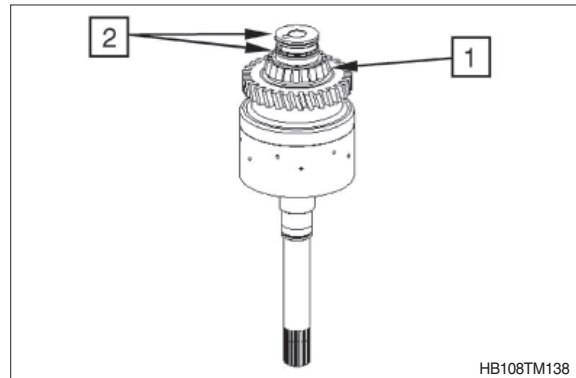


② Mount bearing inner ring (1) until contact is obtained.

Fit rectangular rings 50×2.5 (2).

**Wear protective gloves.**

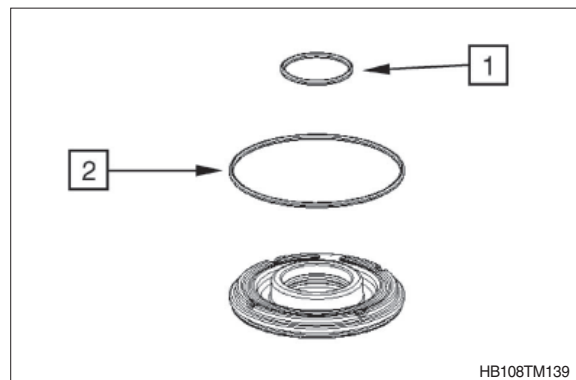
※ Adjust bearing inner ring after cooling-down.



③ Insert both O-rings (1 and 2) into the piston grooves and oil them.

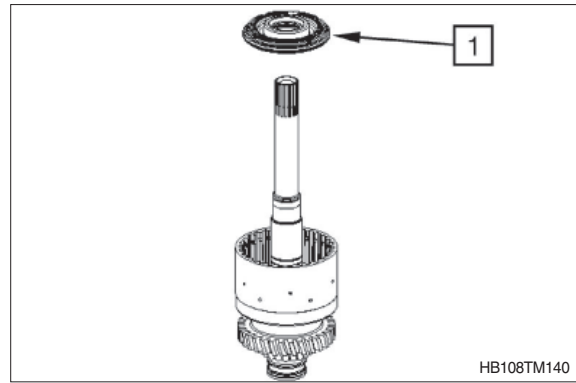
1 = 40×3

2 = 104.5×3



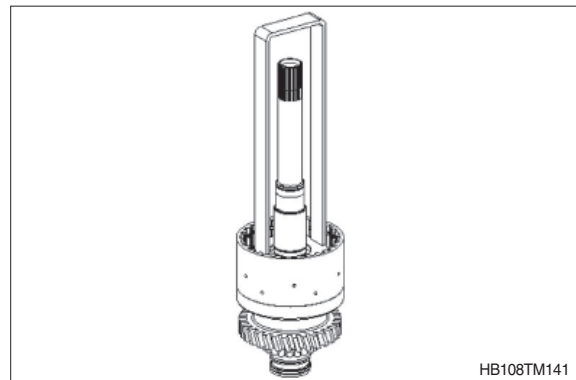
④ Insert piston (1) into the disk carrier.

※ Pay attention to the installation position, see figure.

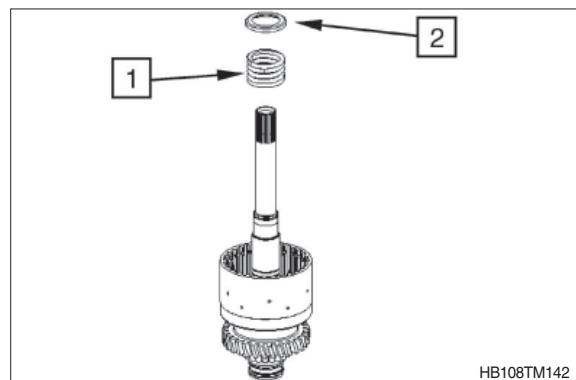


⑤ Use a hand-operated press to place piston into the disk carrier by means of the assembly aid.

(S) Assembly aid 5870 345 114

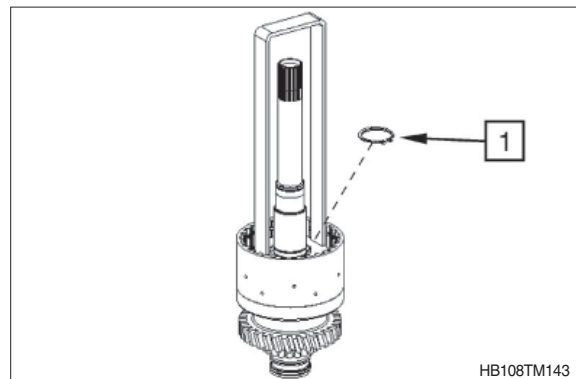


⑥ Mount compression spring (1) and spring cup (2).



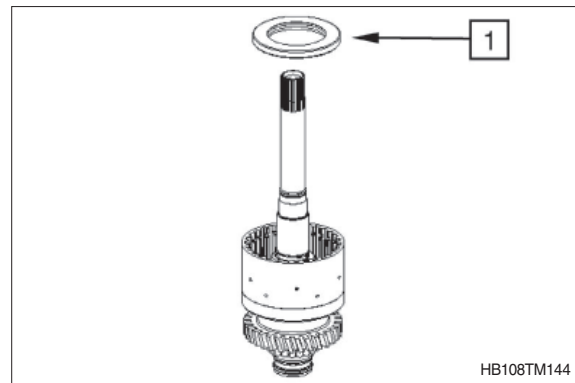
⑦ By means of the assembly aid, preload compression spring under a hand-operated press until the retaining ring  $40 \times 1.75$  (1) can be snapped in.

(S) Assembly aid 5870 345 114



- ⑧ Mount plate assy with cup springs (1), with the open side showing towards the piston.

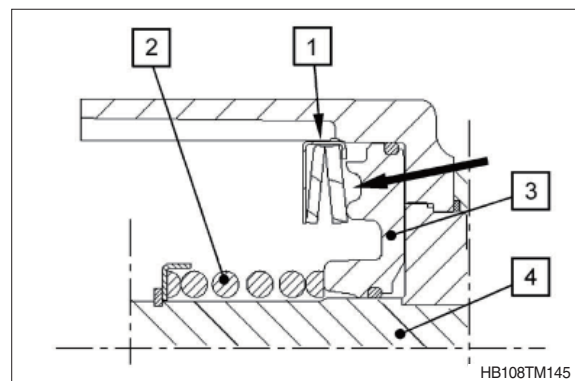
※ Installation position of plate see also the next figure ⑨.



- ⑨ Fit plate (1) according to sketch (see arrow).

Legend:

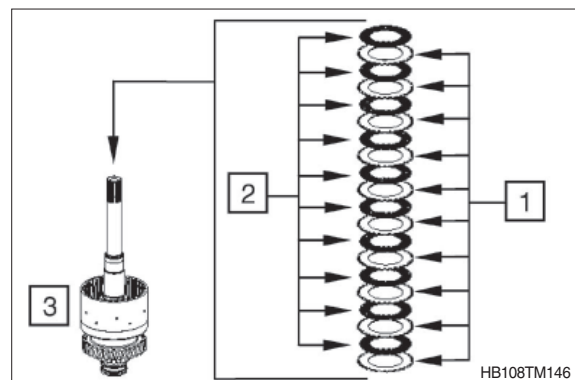
- 1 = Plate assy with cup springs  
 2 = Compression spring with spring cup and retaining ring  
 3 = Piston with O-rings  
 4 = Input shaft assy



- ⑩ Install outer and inner disks alternately into the disk carrier (3) as shown in the next figure, starting with an outer disk and ending with an inner disk.

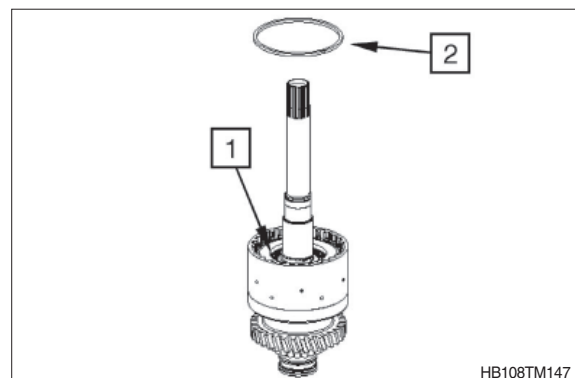
Legend:

- 1 = Outer disks (10 pcs)  
 2 = Inner disks (10 pcs)  
 3 = Input shaft assy

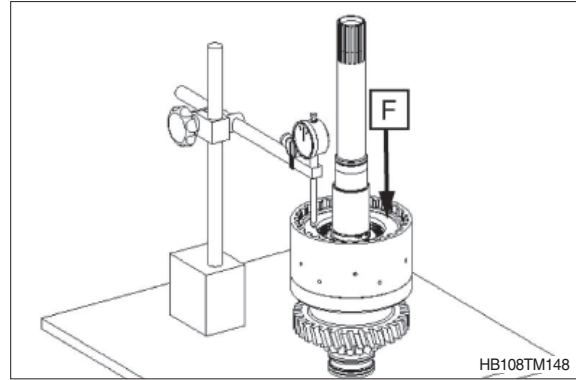


- ⑪ Mount end plate (1) with the flat side showing towards the disk package and fix it by means of snap ring (2) (e.g. thickness = 2.5 mm / recommended value).

※ Pay attention to the installation position of the end plate.

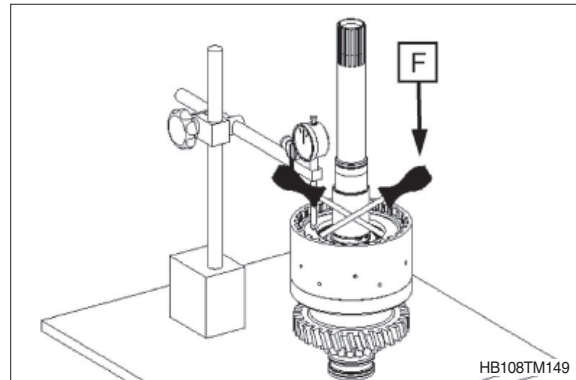


- ⑫ Equally press on end plate with F (approx 1.8 kg to 2.0 kg) and set dial indicator to "zero".



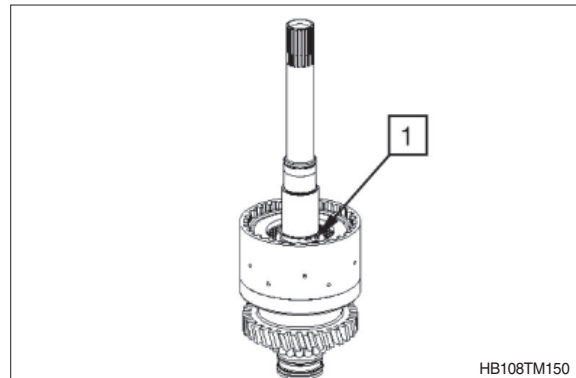
- ⑬ Then press end plate against the snap ring (upwards) and read the disk clearance.

- ※ Disk clearance: 2.0 to 2.3 mm
- ※ In case of deviations, the disk clearance must be corrected with an appropriate snap ring (optional thickness = 2.0 ~ 3.5 mm / available in steps of 0.25 mm)



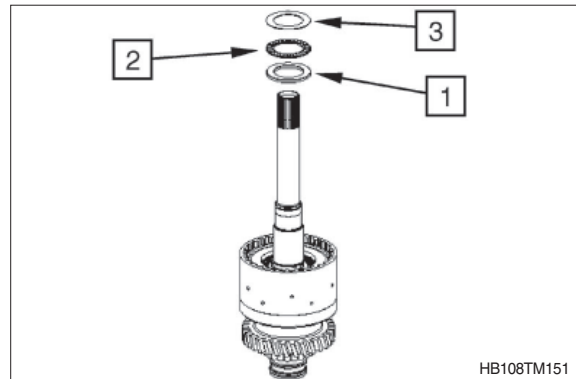
- ⑭ Snap retaining ring  $40 \times 1.75$  (1) into the groove.

- ※ Contact for axial bearing - see figure ⑮.

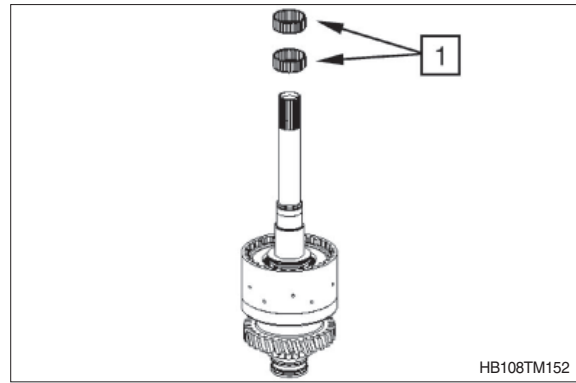


- ⑮ Mount running disk  $40 \times 60 \times 3.5$  (1), axial needle cage  $40 \times 60 \times 3$  (2) and axial washer  $40 \times 60 \times 1$  (3) and oil them.

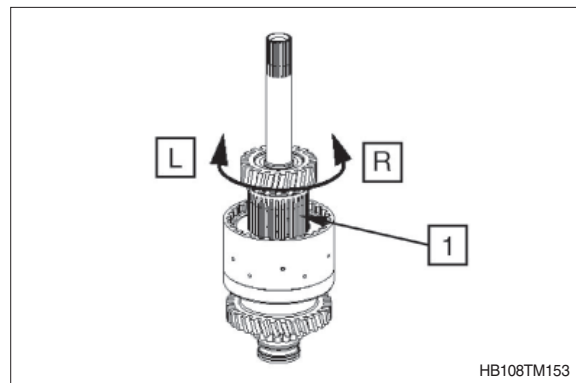
- ※ Mount running disk (1), with the chamfer showing towards the retaining ring.



- ⑩ Mount needle cage  $40 \times 45 \times 17$  (1) and oil it.

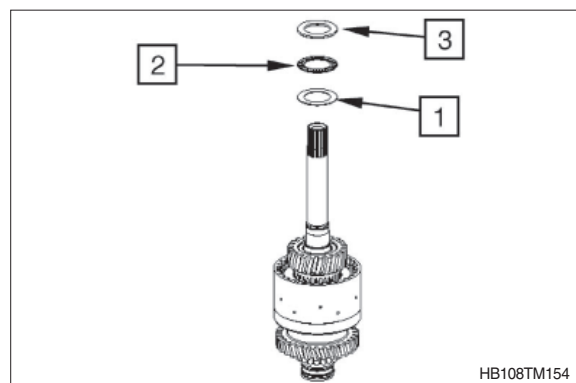


- ⑪ Mount inner disk carrier until contact is obtained.  
⑫ Install inner disks by short ccw/cw rotations of the inner disk carrier (1).

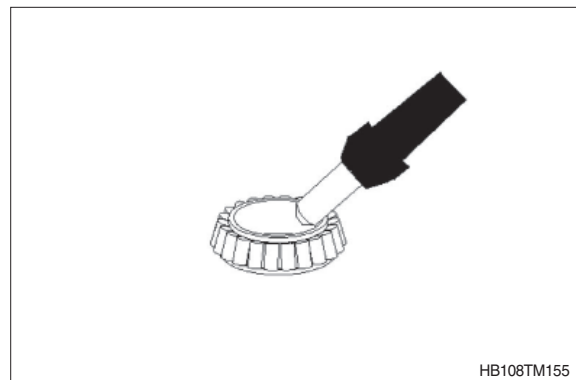


- ⑬ Mount axial washer  $40 \times 60 \times 1$  (1), axial needle cage  $40 \times 60 \times 3$  (2) and running disk (3)  $40 \times 60 \times 3.5$  and oil them.

- ※ Mount running disk (3), with the chamfer showing towards the tapered roller bearing.



- ⑭ Heat up bearing inner ring (approx.  $120^{\circ}\text{C}$ ).

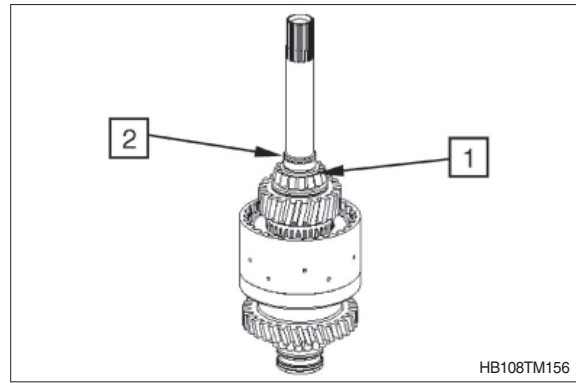




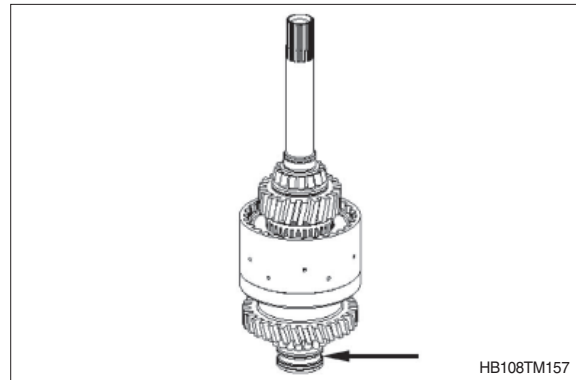
- ① Mount bearing inner ring (1) until contact is obtained.
- ② Fit rectangular ring 30 × 2 (2).

**Wear protective gloves.**

- ※ Adjust bearing inner ring after cooling-down.



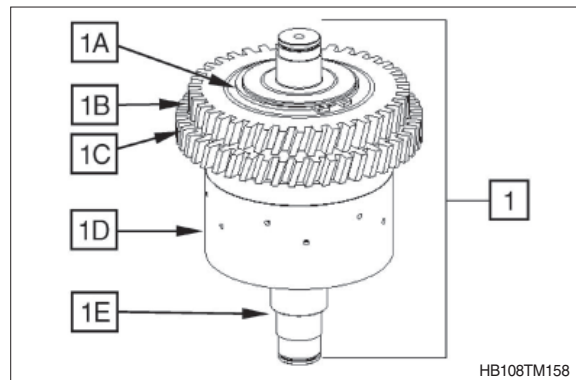
- ※ Check closing and opening of the clutch by means of compressed air at the hole (see arrow). Closing and opening of the clutch must be clearly audible.



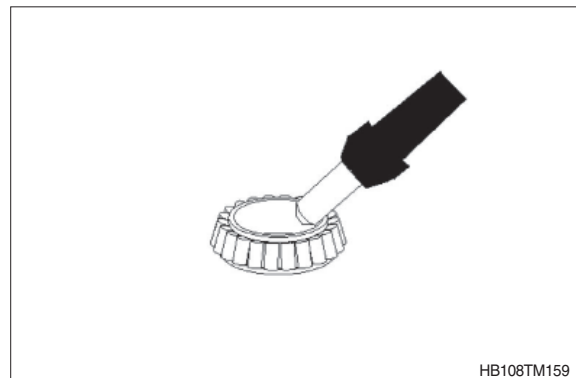
## (2) KV clutch

- ※ The clutch (1) is supplied by the spare parts service only as a complete assy which consists of:

- 1A = Retaining ring
- 1B = Helical gear
- 1C = Helical gear
- 1D = Disk carrier
- 1E = Shaft



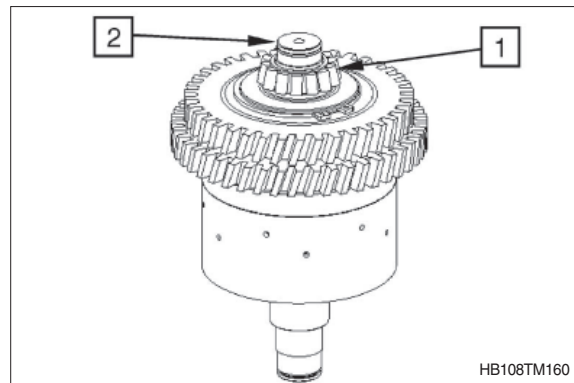
- ① Heat up bearing inner ring (approx. 120°C).



- ② Mount bearing inner ring (1) until contact is obtained.
- ③ Fit rectangular ring 30 × 2 (2).

**Wear protective gloves.**

- ※ Adjust bearing inner ring after cooling-down.

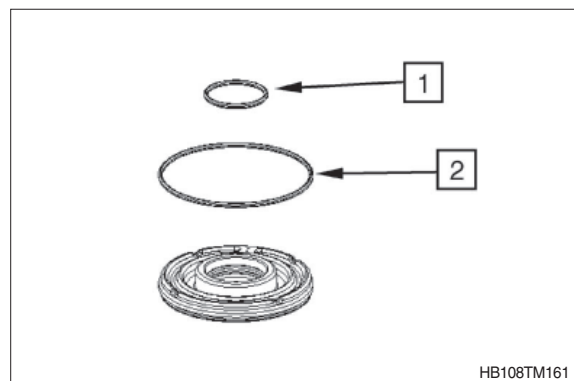


HB108TM160

- ④ Insert both O-rings (1 and 2) into the piston grooves and oil them.

1 = 40 × 3

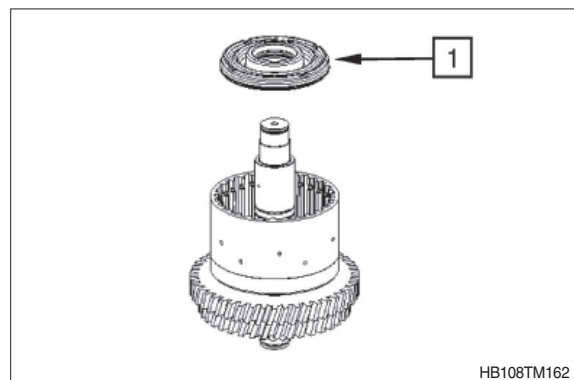
2 = 104.5 × 3



HB108TM161

- ⑤ Insert piston (1) into the disk carrier.

- ※ Pay attention to the installation position, see figure.

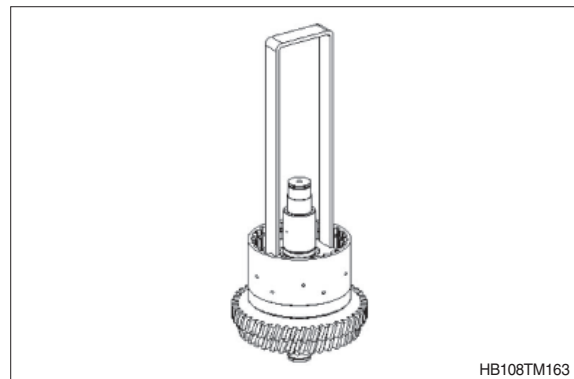


HB108TM162

- ⑥ Use a hand-operated press to place piston into the disk carrier by means of the assembly aid.

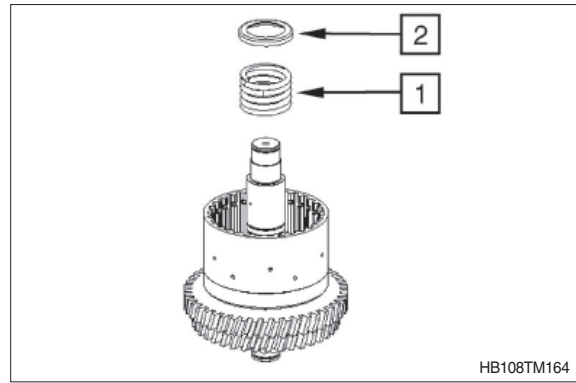
(S) Assembly aid

5870 345 114



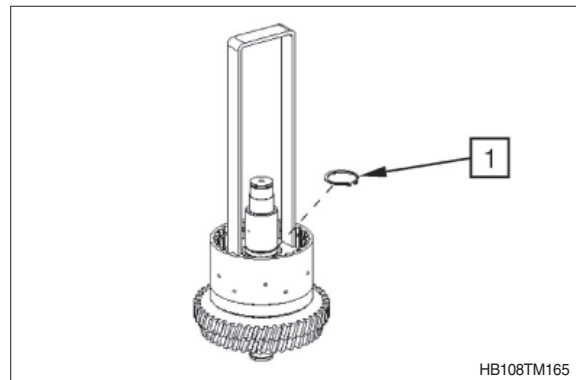
HB108TM163

- ⑦ Mount compression spring (1) and spring cup (2).



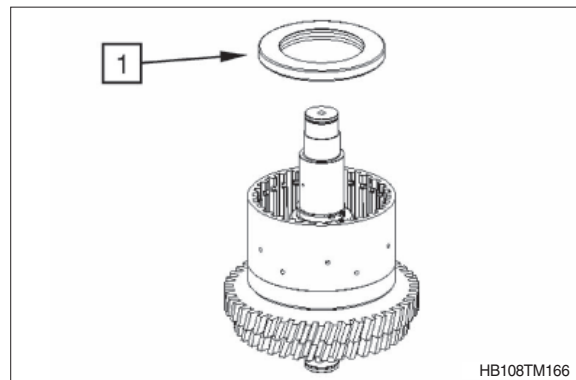
- ⑧ By means of the assembly aid, preload compression spring under a hand-operated press until the retaining ring  $40 \times 1.75$  (1) can be snapped in.

(S) Assembly aid 5870 345 114



- ⑨ Mount plate assy with cup springs (1), with the open side showing towards the piston.

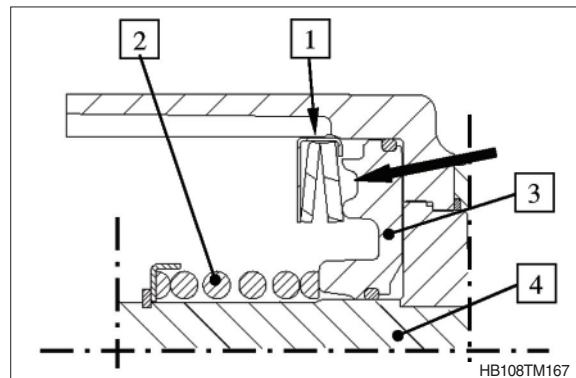
※ Installation position of plate see also figure ⑩.



- ⑩ Fit plate (1) according to sketch (see arrow).

Legend:

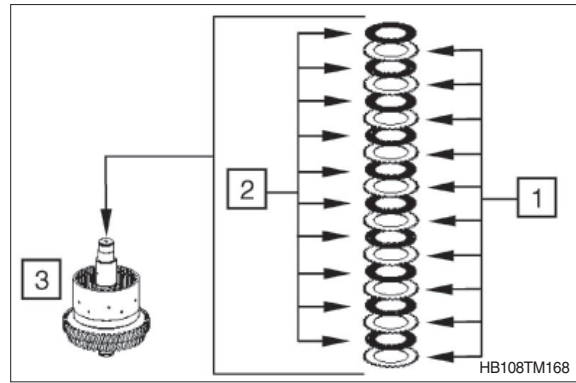
- 1 = Plate assy with cup springs
- 2 = Compression spring with spring cup and retaining ring
- 3 = Piston with O-rings
- 4 = Input shaft assy



- ⑪ Install outer and inner disks alternately into the disk carrier (3) as shown in figure, starting with an outer disk and ending with an inner disk.

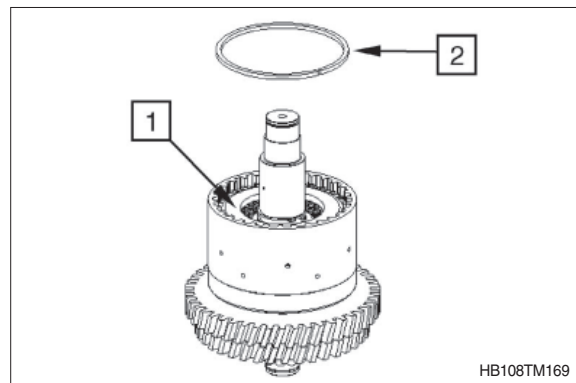
Legend:

- 1 = Outer disks (10 pcs)
- 2 = Inner disks (10 pcs)
- 3 = Clutch assy

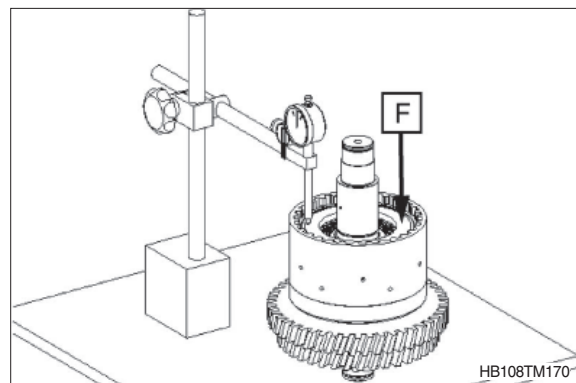


- ⑫ Mount end plate (1) with the flat side showing towards the disk package and fix it by means of snap ring (2) (e.g. thickness = 2.5 mm / recommended value).

- ※ Pay attention to the installation position of the end plate.

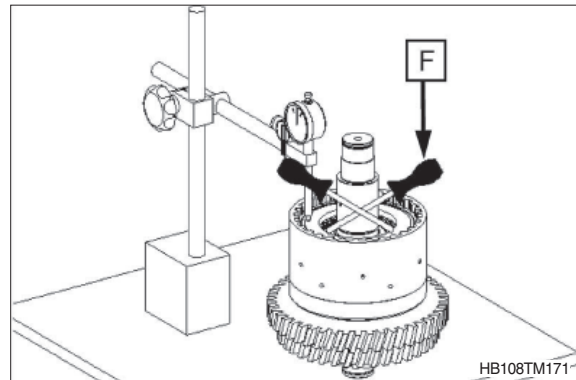


- ⑬ Equally press on end plate with F (approx. 1.8 kg to 2.0 kg) and set dial indicator to "zero".



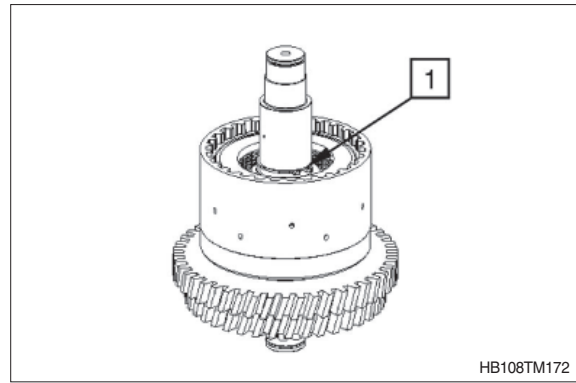
- ⑭ Then press end plate against the snap ring (upwards) and read the disk clearance.

- ※ Disk clearance: 2.0 to 2.3 mm
- ※ In case of deviations, the disk clearance must be corrected with an appropriate snap ring (optional thickness = 2.0 ~ 3.5 mm / available in steps of 0.25 mm)



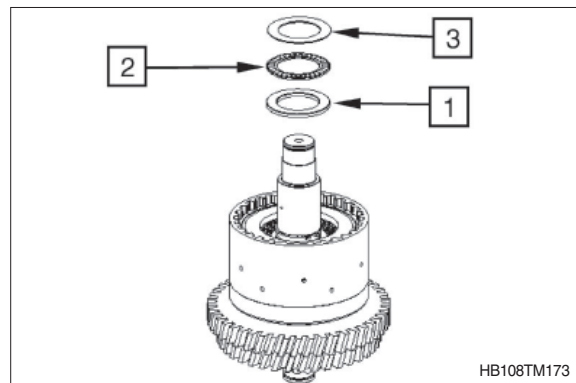
⑮ Snap retaining ring  $40 \times 1.75$  (1) into the groove.

※ Contact for axial bearing - see the next figure ⑯.

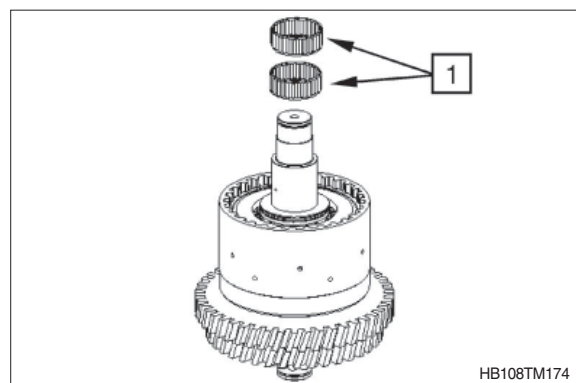


⑯ Mount running disk  $40 \times 60 \times 3.5$  (1), axial needle cage  $40 \times 60 \times 3$  (2) and axial washer  $40 \times 60 \times 1$  (3) and oil them.

※ Mount running disk (1), with the chamfer showing towards the retaining ring.

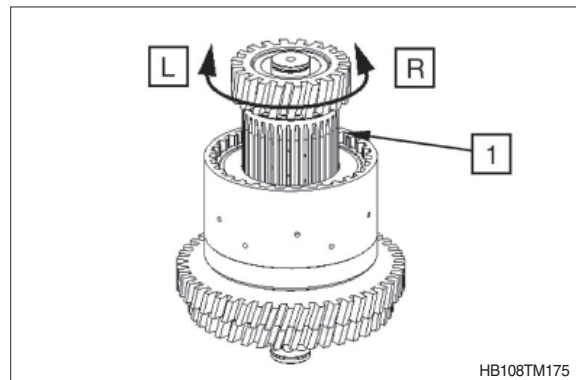


⑰ Mount needle cage  $40 \times 45 \times 17$  (1) and oil it.



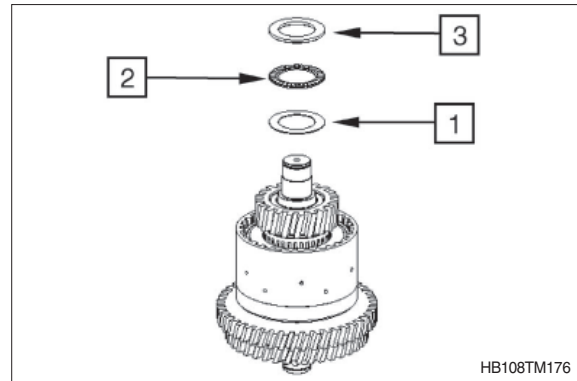
⑱ Mount inner disk carrier until contact is obtained.

⑲ Install inner disks by short ccw/cw rotations of the inner disk carrier (1).

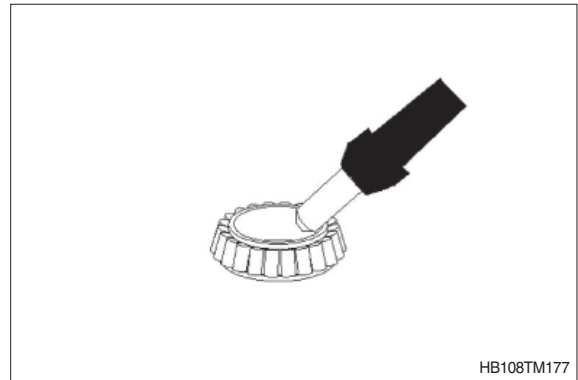


⑳ Mount axial washer  $40 \times 60 \times 1$  (1), axial needle cage  $40 \times 60 \times 3$  (2) and running disk (3)  $40 \times 60 \times 3.5$  and oil them.

※ Mount running disk (3), with the chamfer showing towards the tapered roller bearing.



㉑ Heat up bearing inner ring (approx.  $120^{\circ}\text{C}$ ).

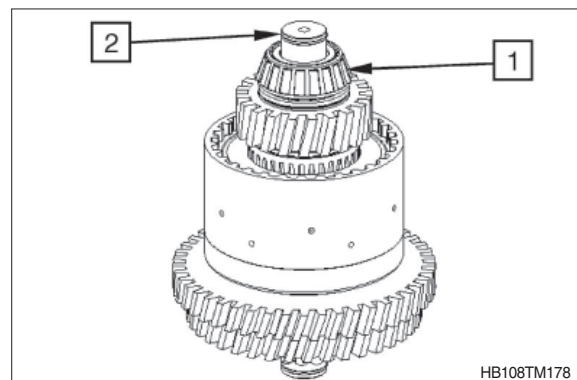


㉒ Mount bearing inner ring (1) until contact is obtained.

㉓ Fit rectangular ring  $30 \times 2$  (2).

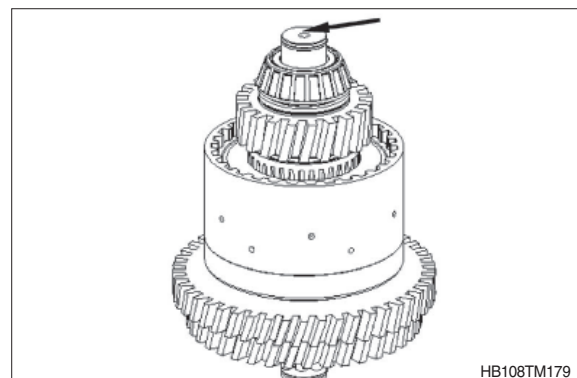
**Wear protective gloves.**

※ Adjust bearing inner ring after cooling-down.



※ Check closing and opening of the clutch by means of compressed air at the hole (see arrow).

Closing and opening of the clutch must be clearly audible.



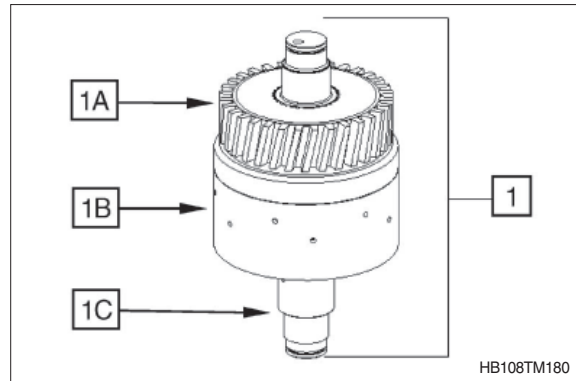
### (3) K1 clutch

※ The clutch (1) is supplied by the spare parts service only as a complete assy which consists of:

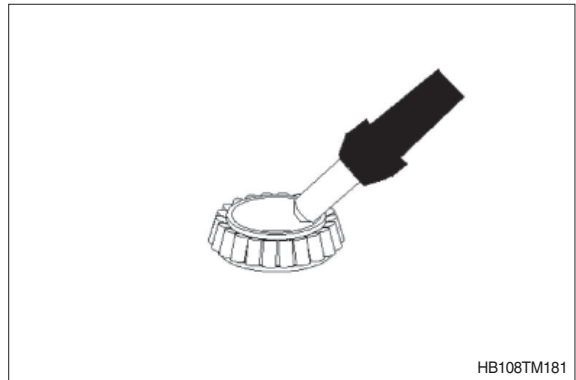
1A = Helical gear

1B = Disk carrier

1C = Shaft



① Heat up bearing inner ring (approx. 120°C).

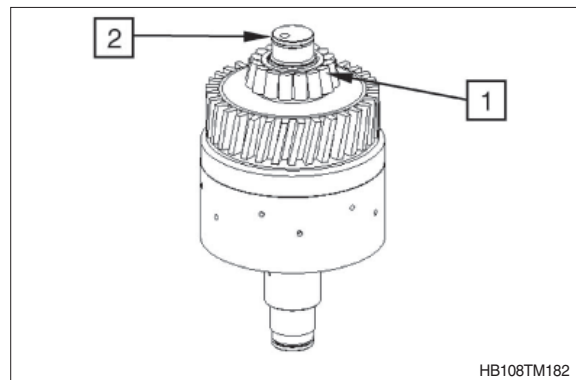


② Mount bearing inner ring (1) until contact is obtained.

③ Fit rectangular ring 30 × 2 (2).

**Wear protective gloves.**

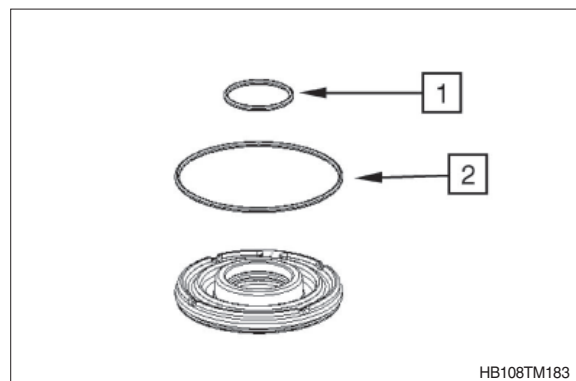
※ Adjust bearing inner ring after cooling-down.



④ Insert both O-rings (1 and 2) into the piston grooves and oil them.

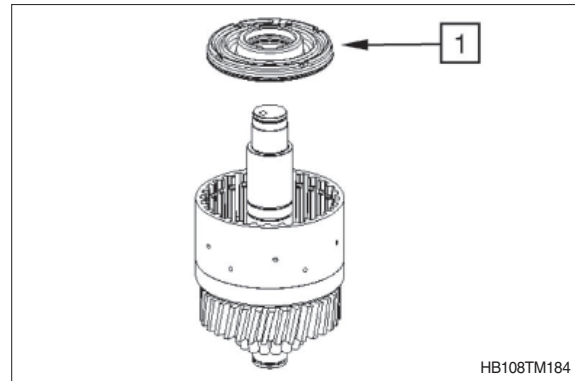
1 = 40 × 3

2 = 104.5 × 3



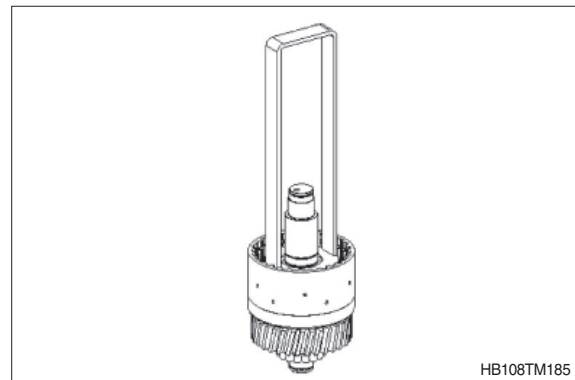
⑤ Insert piston (1) into the disk carrier.

※ Pay attention to the installation position, see figure.

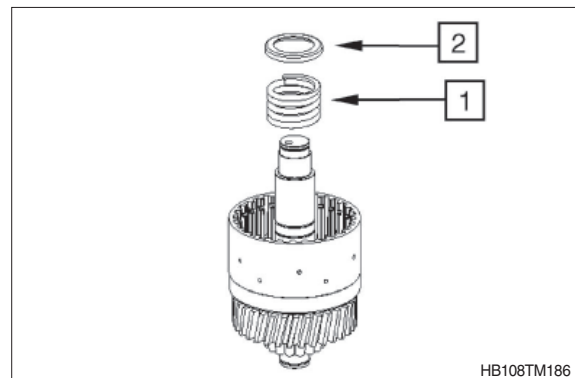


⑥ Use a hand-operated press to place piston into the disk carrier by means of the assembly aid.

(S) Assembly aid 5870 345 114

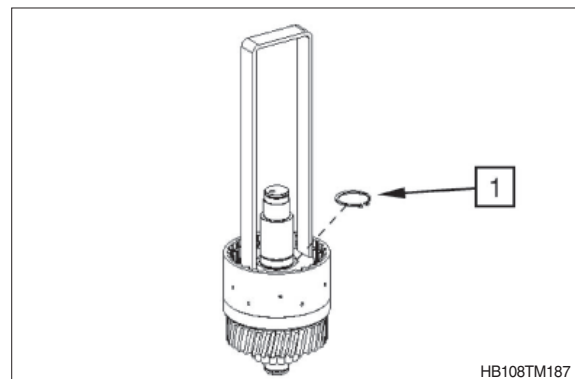


⑦ Mount compression spring (1) and spring cup (2).



⑧ By means of the assembly aid, preload compression spring under a hand-operated press until the retaining ring  $40 \times 1.75$  (1) can be snapped in.

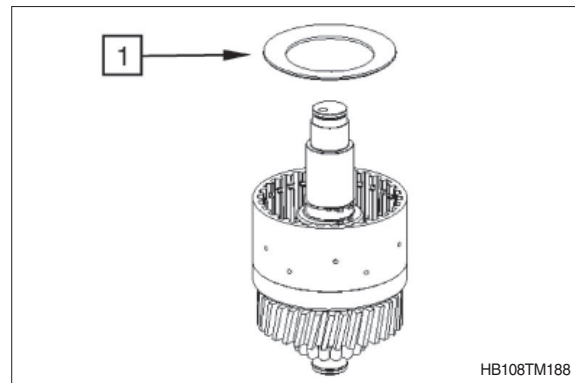
(S) Assembly aid 5870 345 114





- ⑨ Mount cup spring 112×75×2.55 (1) with the convex side showing towards the piston.

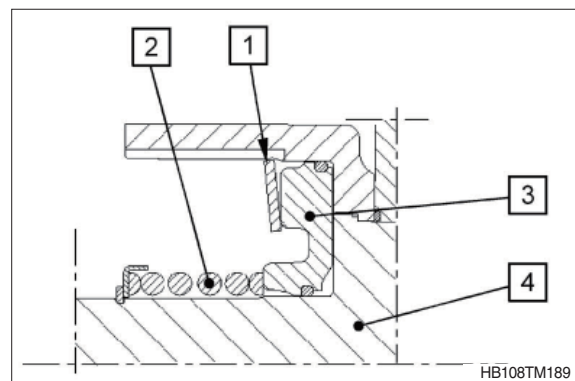
※ Installation position of cup spring see also the next figure ⑩.



- ⑩ Install cup spring (1) according to the sketch.

Legend:

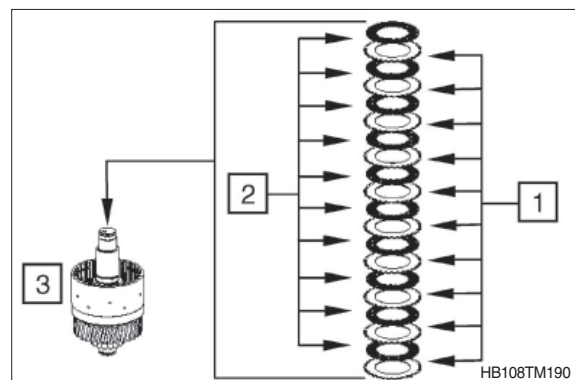
- 1 = Cup spring 112×75×2.55 (convex side towards the piston)  
 2 = Compression spring with spring cup and retaining ring  
 3 = Piston with O-rings  
 4 = Clutch assy



- ⑪ Install outer and inner disks alternately into the disk carrier (3) as shown in figure, starting with an outer disk and ending with an inner disk.

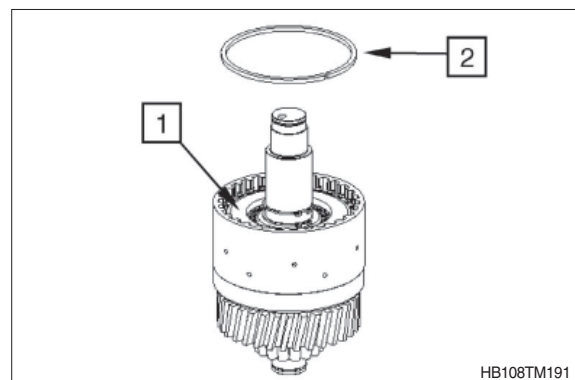
Legend:

- 1 = Outer disks (10 pcs)  
 2 = Inner disks (10 pcs)  
 3 = Clutch assy

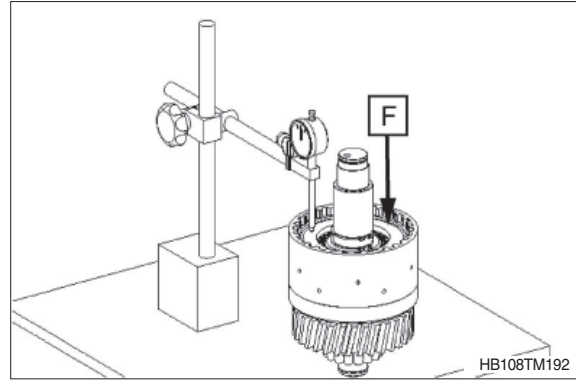


- ⑫ Mount end plate (1) with the flat side showing towards the disk package and fix it by means of snap ring (2) (e.g. thickness = 2.5 mm / recommended value).

※ Pay attention to the installation position of the end plate.

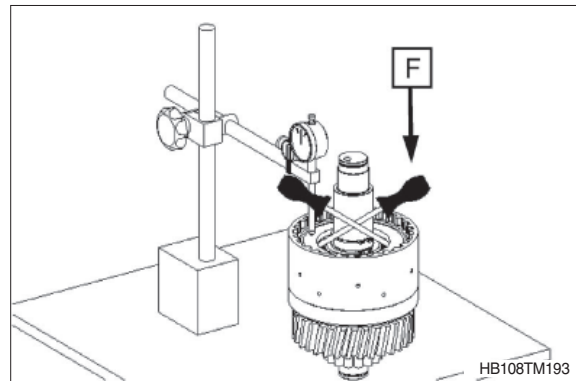


- ⑬ Equally press on end plate with F (approx. 1.8 kg to 2.0 kg) and set dial indicator to "zero".



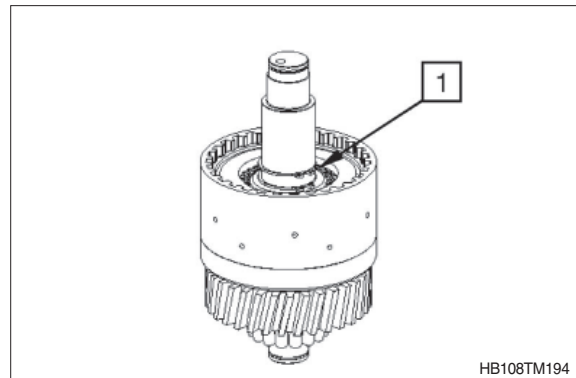
- ⑭ Then press end plate against the snap ring (upwards) and read the disk clearance.

- ※ Disk clearance : 2.0 to 2.3 mm
- ※ In case of deviations, the disk clearance must be corrected with an appropriate snap ring (optional thickness = 2.0 ~ 3.5 mm / available in steps of 0.25 mm)



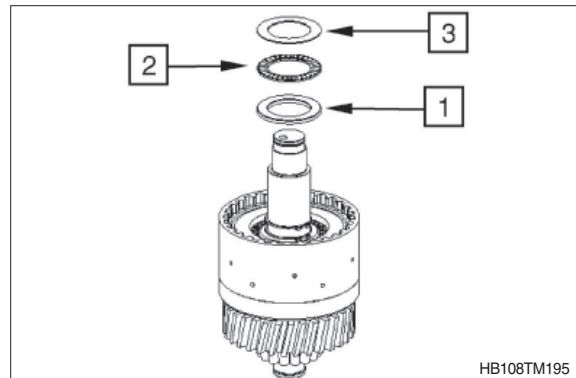
- ⑮ Snap retaining ring 40×1.75 (1) into the groove.

- ※ Contact for axial bearing - see the next figure ⑯.

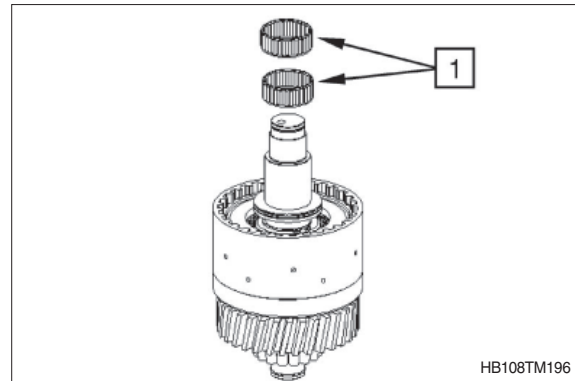


- ⑯ Mount running disk 40×60×3.5 (1), axial needle cage 40×60×3 (2) and axial washer 40×60×1 (3) and oil them.

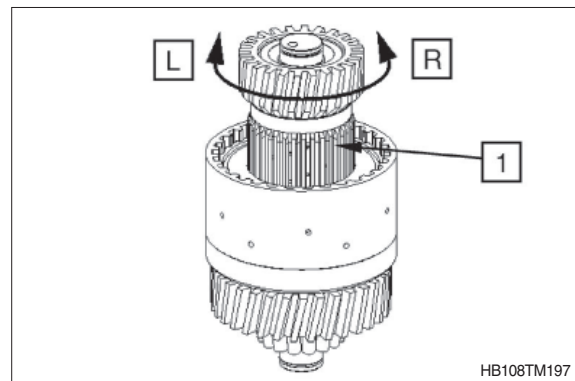
- ※ Mount running disk (1), with the chamfer showing towards the retaining ring.



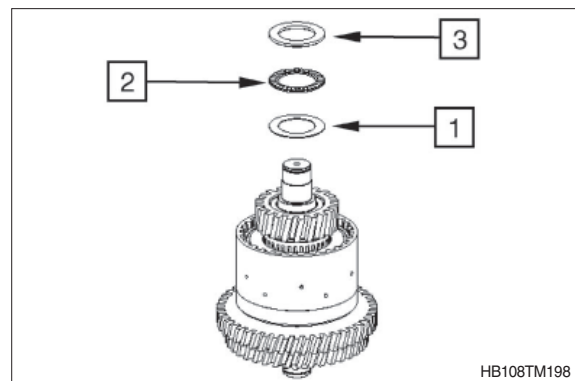
- ⑰ Mount needle cage  $40 \times 45 \times 17$  (1) and oil it.



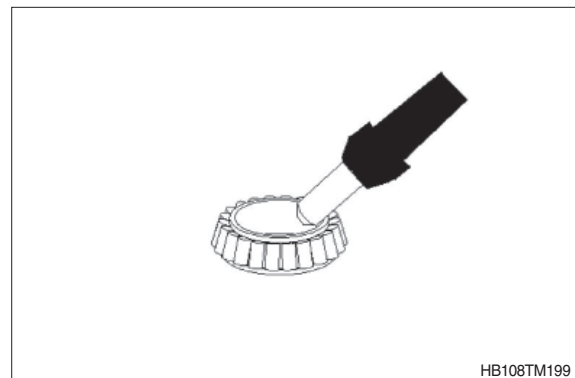
- ⑱ Mount inner disk carrier until contact is obtained.  
⑲ Install inner disks by short ccw/cw rotations of the inner disk carrier (1).



- ⑳ Mount axial washer  $40 \times 60 \times 1$  (1), axial needle cage  $40 \times 60 \times 3$  (2) and running disk (3)  $40 \times 60 \times 3.5$  and oil them.  
※ Mount running disk (3), with the chamfer showing towards the tapered roller bearing.



- ㉑ Heat up bearing inner ring (approx.  $120^{\circ}\text{C}$ ).

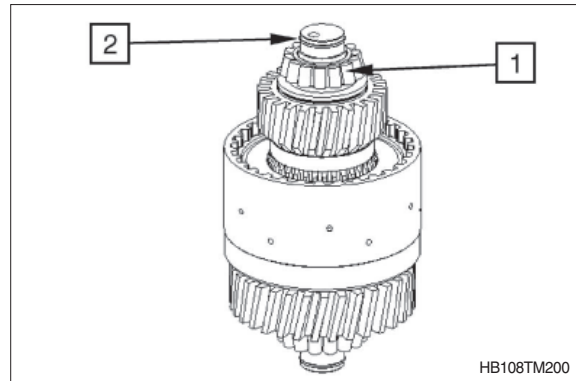


⑳ Mount bearing inner ring (1) until contact is obtained.

㉑ Fit rectangular ring 30 × 2 (2).

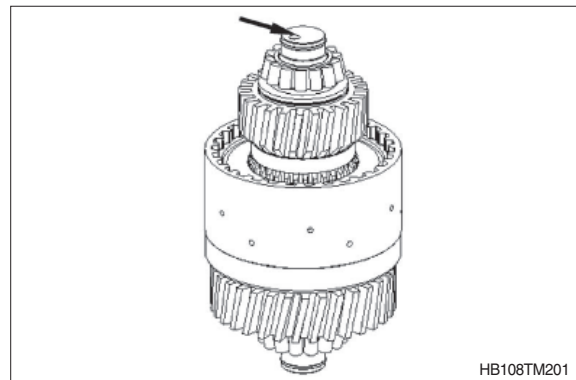
**Wear protective gloves.**

※ Adjust bearing inner ring after cooling-down.



※ Check closing and opening of the clutch by means of compressed air at the hole (see arrow).

Closing and opening of the clutch must be clearly audible.



#### (4) K2 clutch

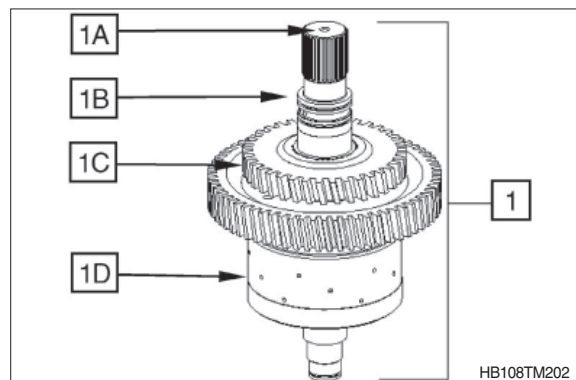
※ The clutch (1) is supplied by the spare parts service only as a complete assy which consists of:

1A = Ball

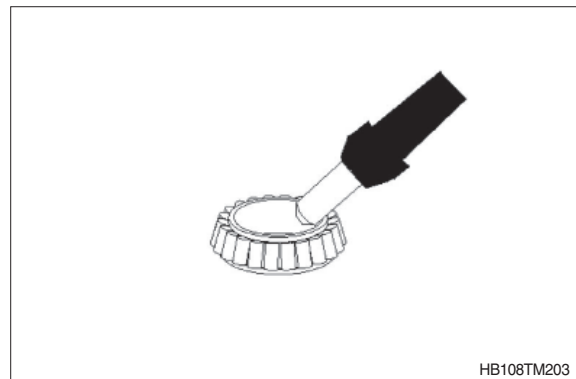
1B = Shaft

1C = Helical gear

1D = Disk carrier



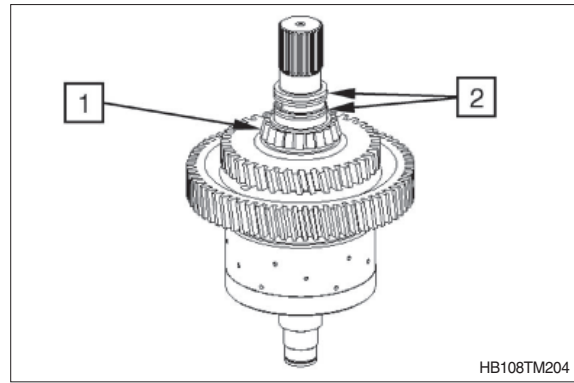
㉒ Heat up bearing inner ring (approx. 120°C).



- ② Mount bearing inner ring (1) until contact is obtained.
- ③ Fit rectangular rings 50×2.5 (2).

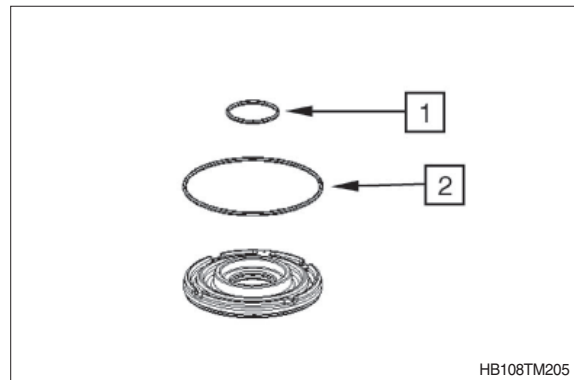
**Wear protective gloves.**

- ※ Adjust bearing inner ring after cooling-down.



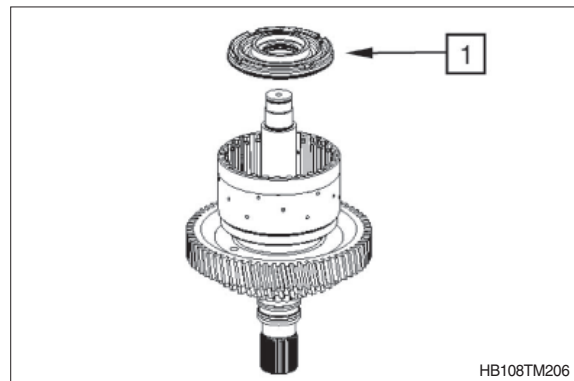
- ④ Insert both O-rings (1 and 2) into the piston grooves and oil them.

1 = 40×3  
2 = 115×3



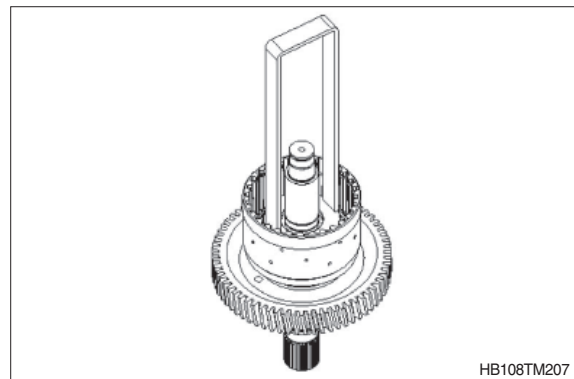
- ⑤ Insert piston (1) into the disk carrier.

- ※ Pay attention to the installation position, see figure.



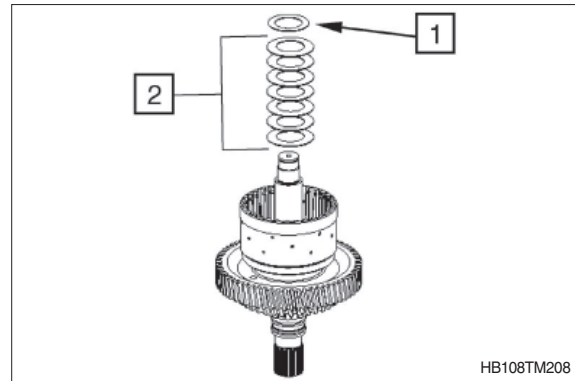
- ⑥ Use a hand-operated press to place piston into the disk carrier by means of the assembly aid.

(S) Assembly aid                    5870 345 114



⑦ Mount cup spring package (1) and axial washer (2).

※ Installation position of cup springs see the next figure ⑧.



⑧ Fit cup springs according to the sketch.

Legend:

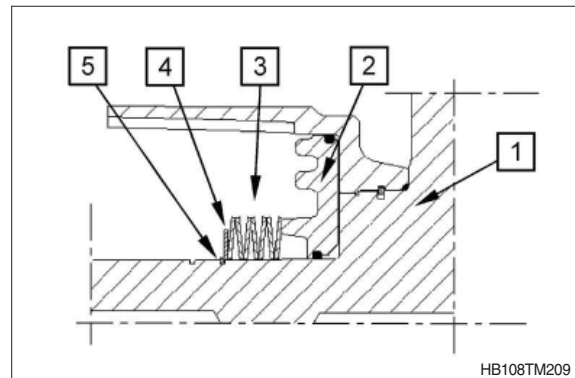
1 = Clutch

2 = Piston with O-rings

3 = Cup springs (7 pcs)

4 = Axial washer (40×60×1)

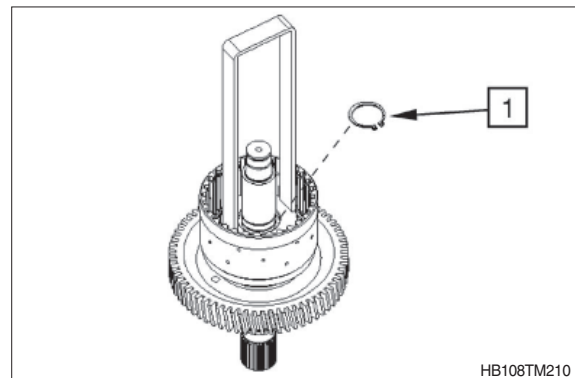
5 = Retaining ring (40×1.75)



⑨ By means of the assembly aid, preload cup springs under a hand-operated press until the retaining ring 40×1.75 (1) can be snapped in.

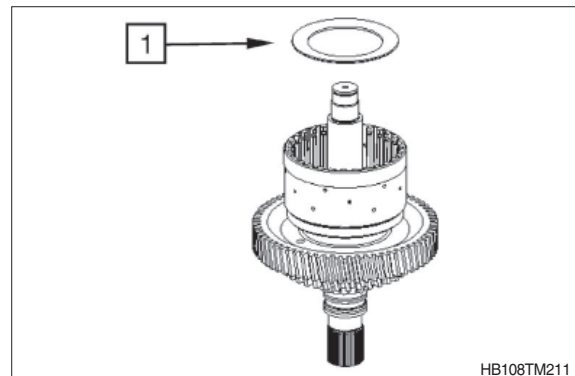
(S) Assembly aid

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⑩ Mount cup spring 122.7×87×2.55 (1) with the convex side showing towards the piston.

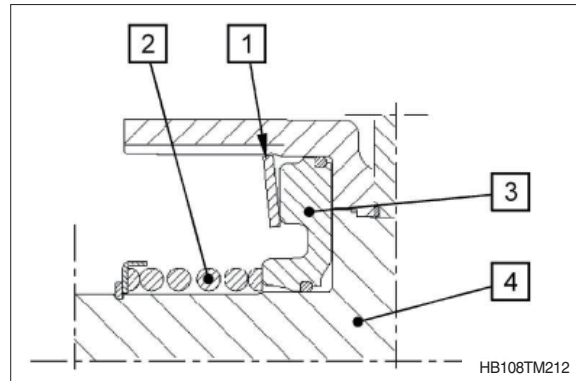
※ Installation position of cup spring see also the next figure ⑪.



- ⑪ Install cup spring (1) according to the sketch.

Legend:

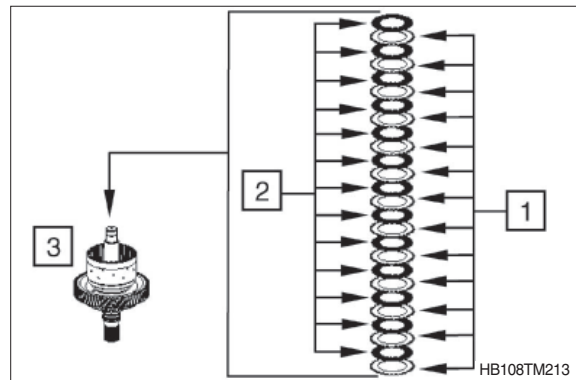
- 1 = Cup spring  $122.7 \times 87 \times 2.55$  (convex side showing towards the piston)  
 2 = Compression spring with spring cup and retaining ring  
 3 = Piston with O-rings  
 4 = Clutch assy



- ⑫ Install outer and inner disks alternately into the disk carrier (3) as shown in figure, starting with an outer disk and ending with an inner disk.

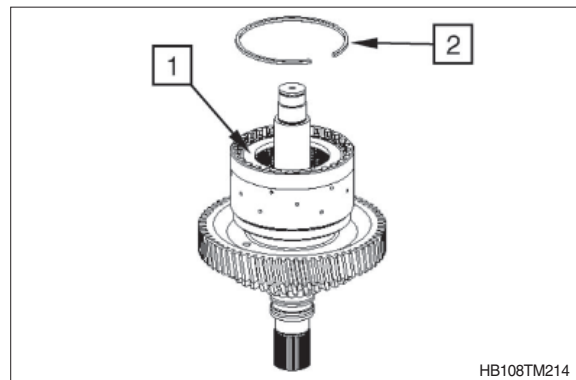
Legend:

- 1 = Outer disks (13 pcs)  
 2 = Inner disks (13 pcs)  
 3 = Clutch assy

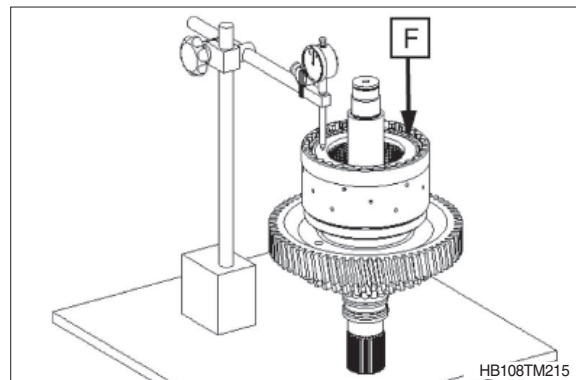


- ⑬ Mount end plate (1) with the flat side showing towards the disk package and fix it by means of snap ring (2) (e.g. thickness = 2.5 mm / recommended value).

※ Pay attention to the installation position of the end plate.



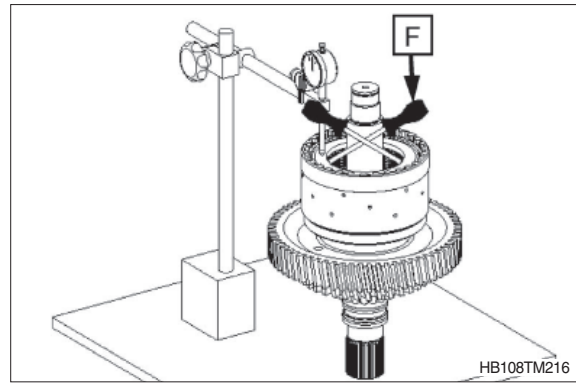
- ⑭ Equally press on end plate with F (approx. 1.8 kg to 2.0 kg) and set dial indicator to "zero".



⑮ Then press end plate against the snap ring (upwards) and read the disk clearance.

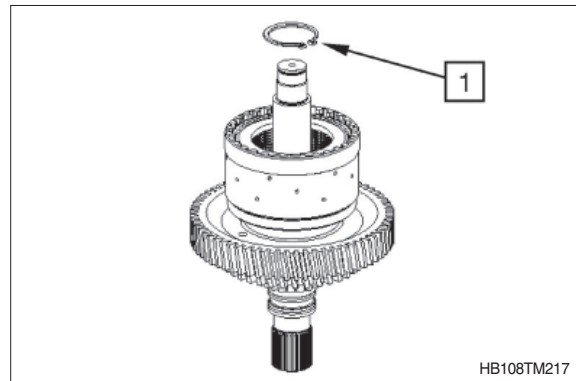
※ Disk clearance : 2.2 to 2.5 mm

※ In case of deviations, the disk clearance must be corrected with an appropriate snap ring (optional thickness = 2.0 ~ 3.5 mm / available in steps of 0.25 mm)



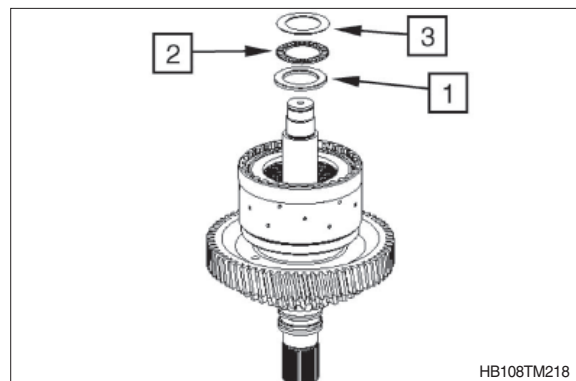
⑯ Snap retaining ring 40×1.75 (1) into the groove.

※ Contact for axial bearing - see figure ⑰.

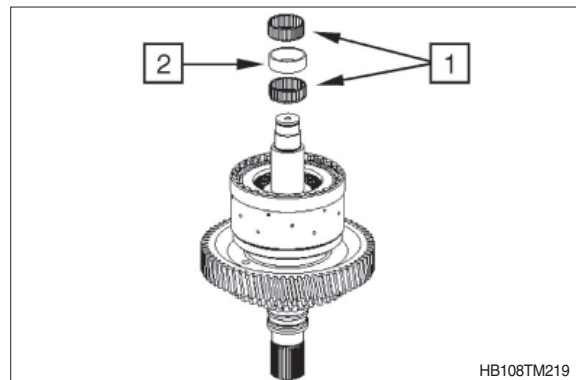


⑰ Mount running disk 40×60×3.5 (1), axial needle cage 40×60×3 (2) and axial washer 40×60×1 (3) and oil them.

※ Mount running disk (1), with the chamfer showing towards the retaining ring.

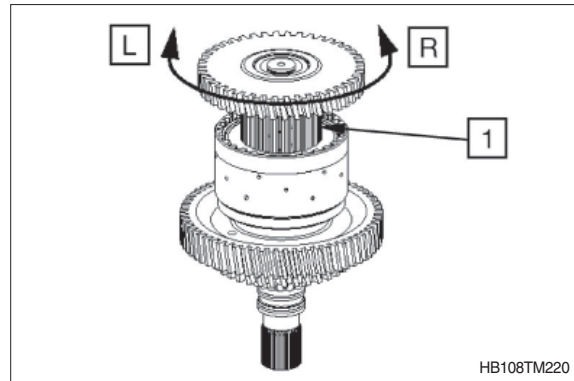


⑱ Mount needle cage 40×45×17 (1) and bushing (2) and oil them.

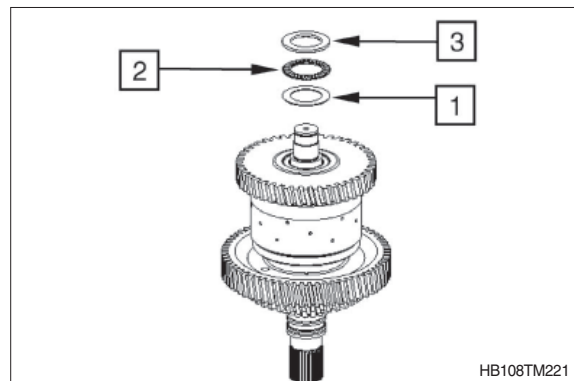




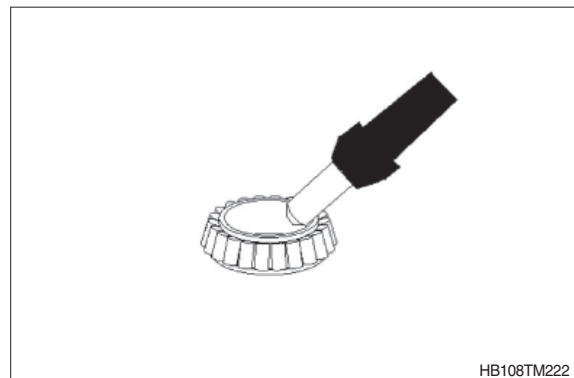
- ⑲ Mount inner disk carrier until contact is obtained.
- ⑳ Install inner disks by short ccw/cw rotations of the inner disk carrier (1).



- ㉑ Mount axial washer  $40 \times 60 \times 1$  (1), axial needle cage  $40 \times 60 \times 3$  (2) and running disk (3)  $40 \times 60 \times 3.5$  and oil them.
- ※ Mount running disk (3), with the chamfer showing towards the tapered roller bearing.



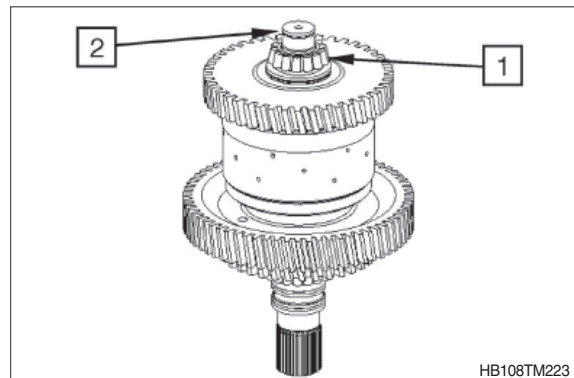
- ㉒ Heat up bearing inner ring (approx.  $120^{\circ}\text{C}$ ).



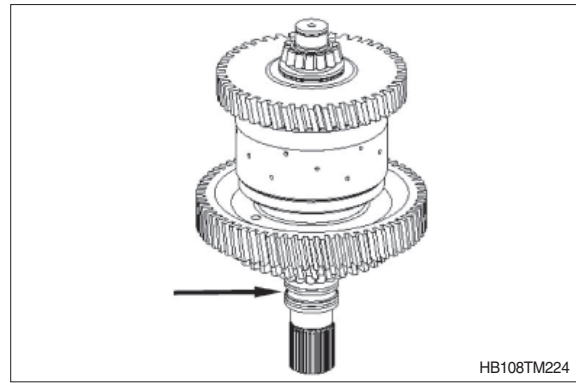
- ㉓ Mount bearing inner ring (1) until contact is obtained.
- ㉔ Fit rectangular ring  $30 \times 2$  (2).

**Wear protective gloves.**

- ※ Adjust bearing inner ring after cooling-down.



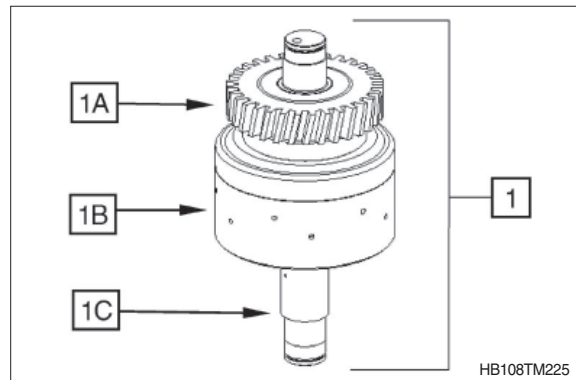
- ※ Check closing and opening of the clutch by means of compressed air at the hole (see arrow).
- Closing and opening of the clutch must be clearly audible.



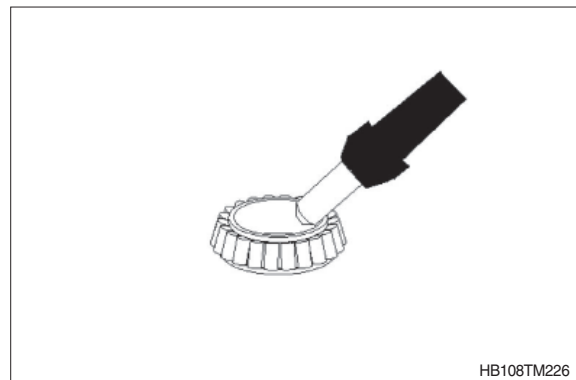
### (5) K3 clutch

- ※ The clutch (1) is supplied by the spare parts service only as a complete assy which consists of:

- 1A = Helical gear
- 1B = Disk carrier
- 1C = Shaft



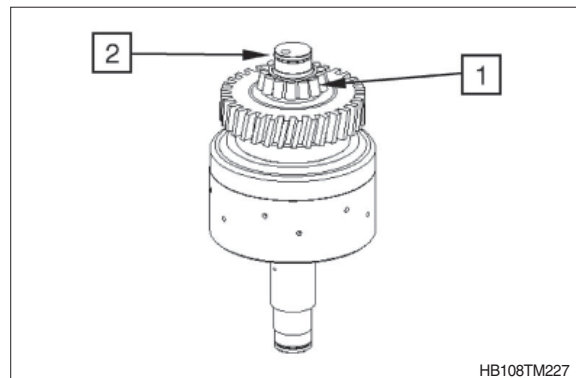
- ① Heat up bearing inner ring (approx. 120°C).



- ② Mount bearing inner ring (1) until contact is obtained.
- ③ Fit rectangular rings 30×2 (2).

**Wear protective gloves.**

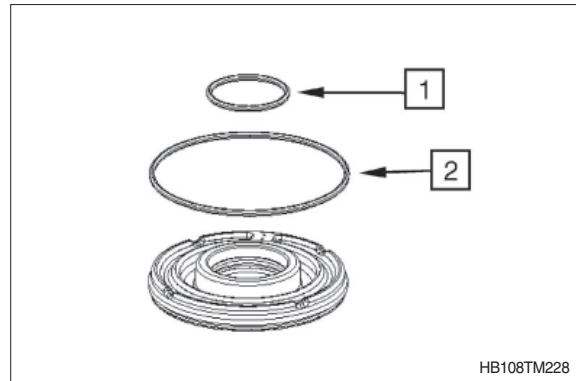
- ※ Adjust bearing inner ring after cooling-down.



- ④ Insert both O-rings (1 and 2) into the piston grooves and oil them.

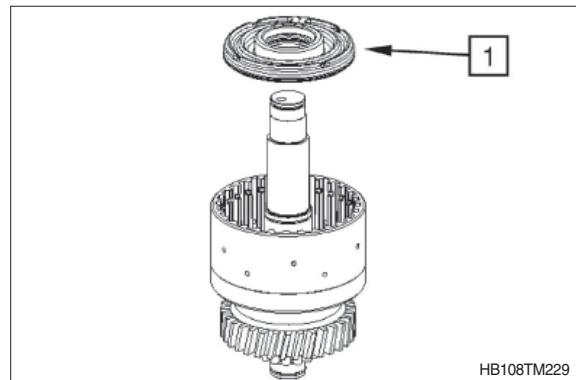
1 = 40×3

2 = 104.5×3



- ⑤ Insert piston (1) into the disk carrier.

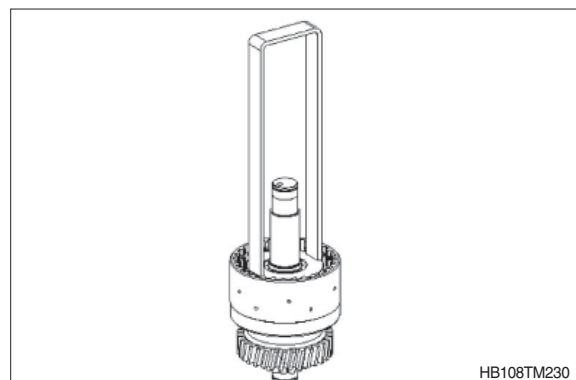
※ Pay attention to the installation position, see figure.



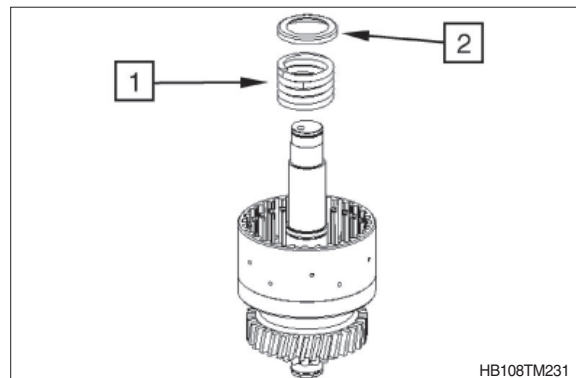
- ⑥ Use a hand-operated press to place piston into the disk carrier by means of the assembly aid.

(S) Assembly aid

5870 345 114

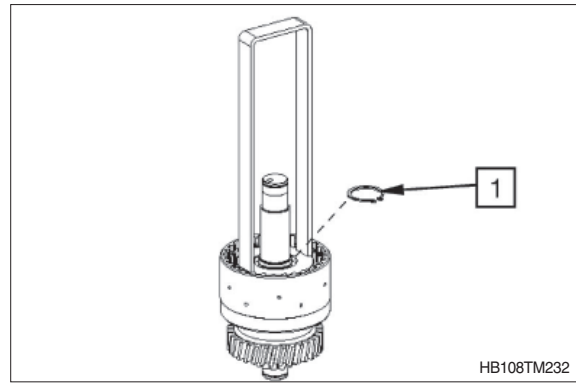


- ⑦ Mount compression spring (1) and spring cup (2).



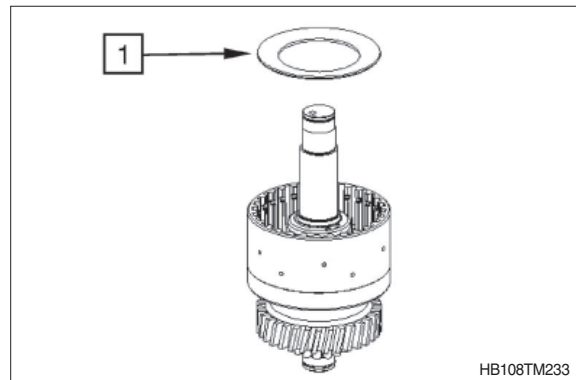
- ⑧ By means of the assembly aid, preload compression spring under a hand-operated press until the retaining ring  $40 \times 1.75$  (1) can be snapped in.

(S) Assembly aid 5870 345 114



- ⑨ Mount cup spring  $112 \times 75 \times 2.55$  (1) with the convex side showing towards the piston.

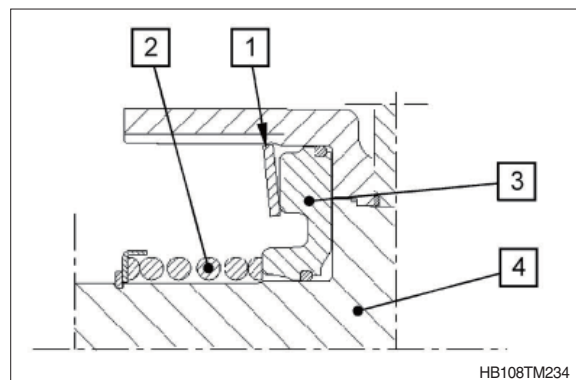
※ Installation position of cup spring see also the next figure ⑩.



- ⑩ Install cup spring (1) according to the sketch.

Legend:

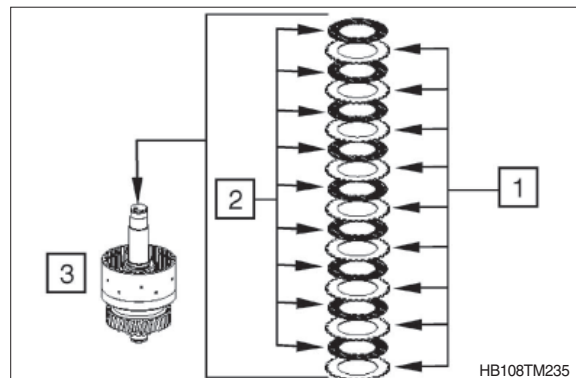
- 1 = Cup spring  $112 \times 75 \times 2.55$  (convex side showing towards the piston)
- 2 = Compression spring with spring cup and retaining ring
- 3 = Piston with O-rings
- 4 = Clutch assy



- ⑪ Install outer and inner disks alternately into the disk carrier (3) as shown in figure, starting with an outer disk and ending with an inner disk.

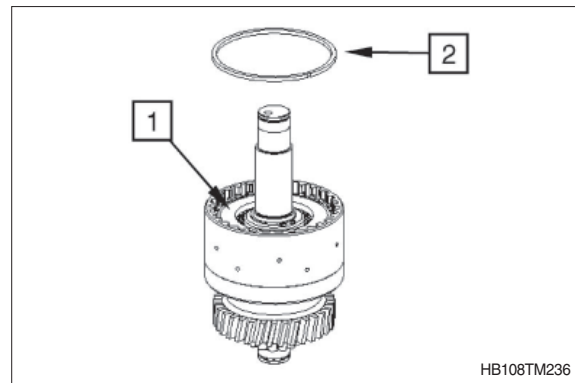
Legend:

- 1 = Outer disks (9 pcs)
- 2 = Inner disks (9 pcs)
- 3 = Clutch assy



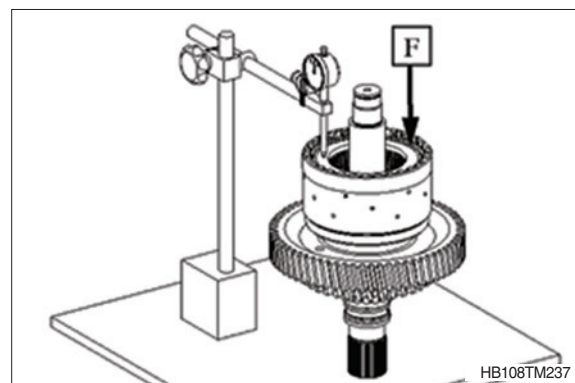
- ⑫ Mount end plate (1) with the flat side showing towards the disk package and fix it by means of snap ring (2) (e.g. thickness = 2.5 mm / recommended value).

※ Pay attention to the installation position of the end plate.



HB108TM236

- ⑬ Equally press on end plate with F (approx. 1.8 kg to 2.0 kg) and set dial indicator to "zero".

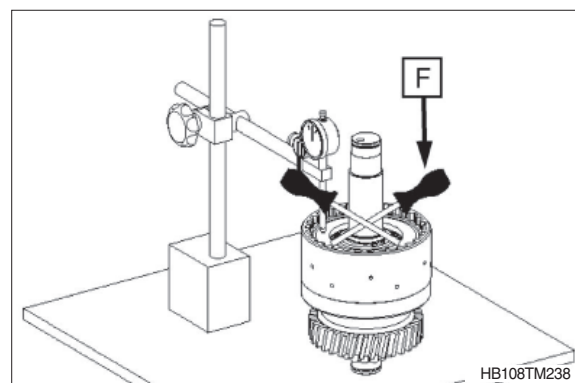


HB108TM237

- ⑭ Then press end plate against the snap ring (upwards) and read the disk clearance.

※ Disk clearance : 1.8 to 2.1 mm

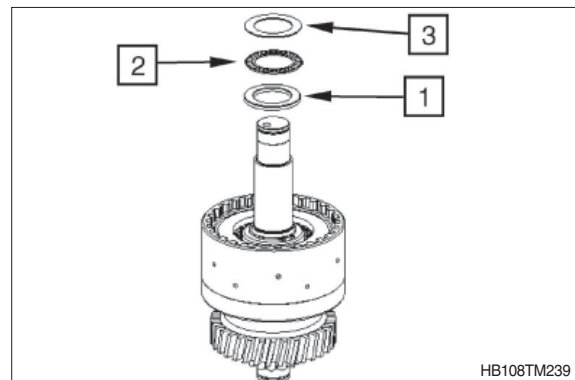
※ In case of deviations, the disk clearance must be corrected with an appropriate snap ring (optional thickness = 2.0 ~ 3.5 mm / available in steps of 0.25 mm)



HB108TM238

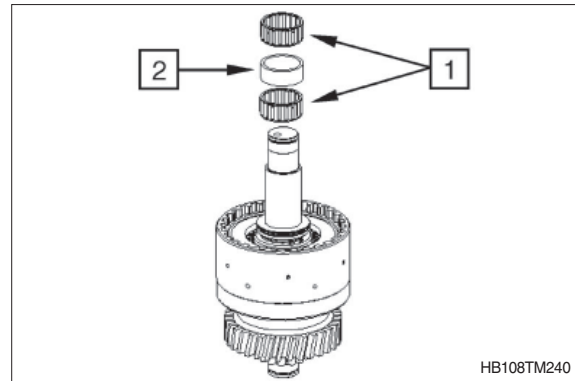
- ⑮ Mount running disk  $35 \times 52 \times 3.5$  (1), axial needle cage  $35 \times 52 \times 2$  (2) and axial washer  $35 \times 52 \times 1$  (3) and oil them.

※ Mount running disk (1), with the chamfer showing towards the retaining ring.

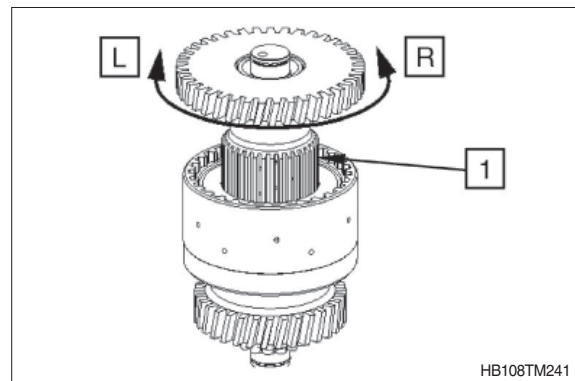


HB108TM239

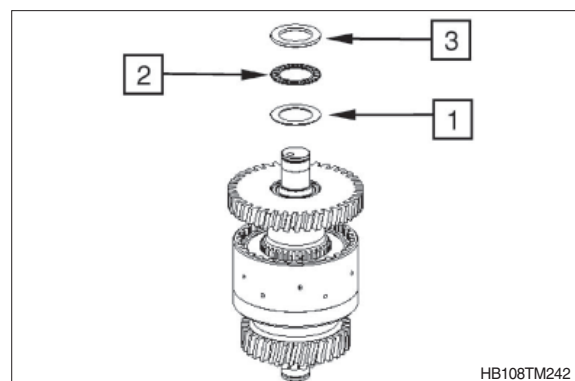
- ⑩ Mount needle cage  $35 \times 42 \times 18$  (1) and bushing (2) and oil them.



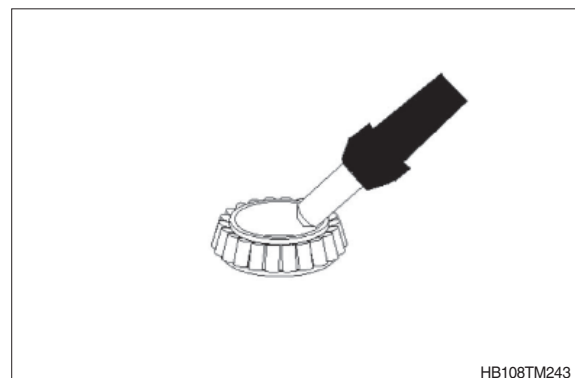
- ⑪ Mount inner disk carrier until contact is obtained.  
⑫ Install inner disks by short ccw/cw rotations of the inner disk carrier (1).



- ⑬ Mount axial washer  $35 \times 52 \times 1$  (1), axial needle cage  $35 \times 52 \times 2$  (2) and running disk (3)  $35 \times 52 \times 3.5$  and oil them.  
※ Mount running disk (3), with the chamfer showing towards the tapered roller bearing.



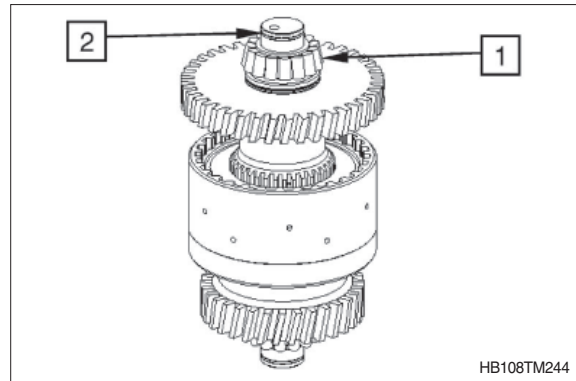
- ⑭ Heat up bearing inner ring (approx.  $120^{\circ}\text{C}$ ).



- ① Mount bearing inner ring (1) until contact is obtained.
- ② Fit rectangular ring 30 × 2 (2).

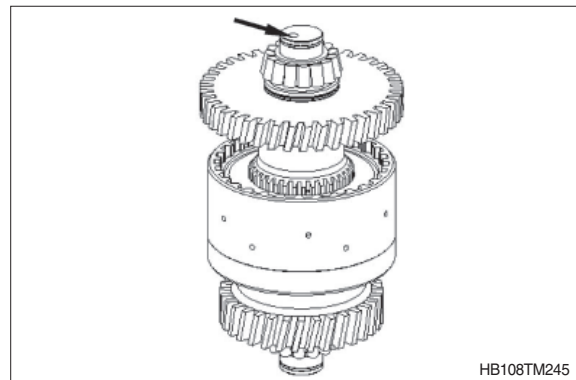
**Wear protective gloves.**

- ※ Adjust bearing inner ring after cooling-down.



HB108TM244

- ※ Check closing and opening of the clutch by means of compressed air at the hole (see arrow).
- Closing and opening of the clutch must be clearly audible.

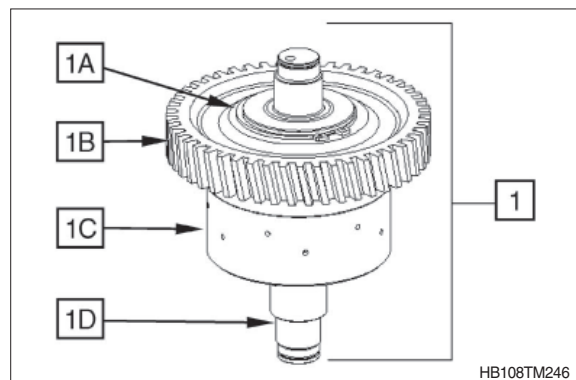


HB108TM245

#### (6) K4 clutch

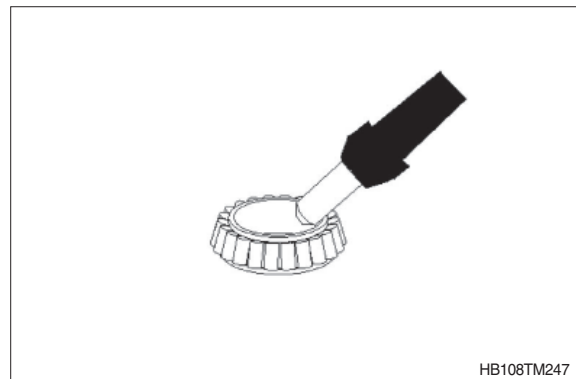
- ※ The clutch (1) is supplied by the spare parts service only as a complete assy which consists of:

- 1A = Retaining ring
- 1B = Helical gear
- 1C = Disk carrier
- 1D = Shaft



HB108TM246

- ① Heat up bearing inner ring (approx. 120°C).

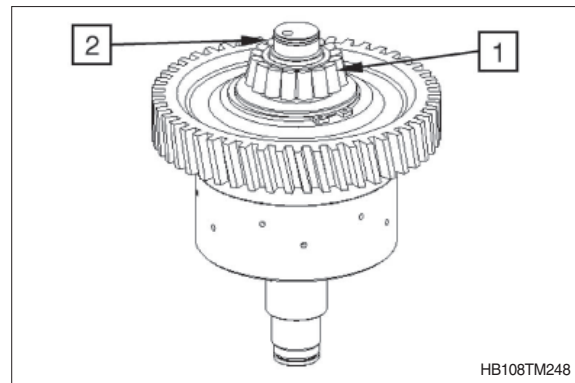


HB108TM247

- ② Mount bearing inner ring (1) until contact is obtained.
- ③ Fit rectangular rings 30×2 (2).

**Wear protective gloves.**

- ※ Adjust bearing inner ring after cooling-down.

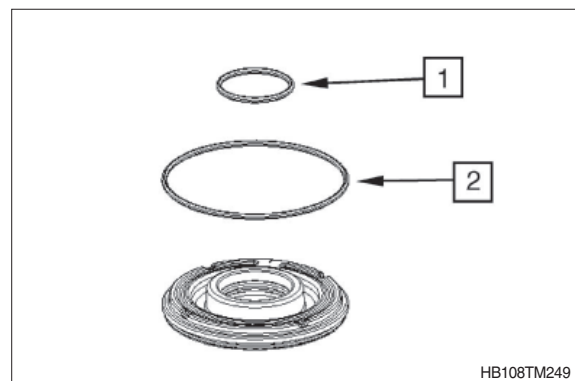


HB108TM248

- ④ Insert both O-rings (1 and 2) into the piston grooves and oil them.

1 = 40×3

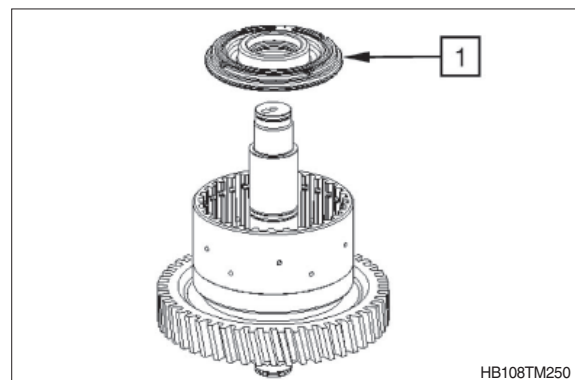
2 = 104.5×3



HB108TM249

- ⑤ Insert piston (1) into the disk carrier.

- ※ Pay attention to the installation position, see figure.

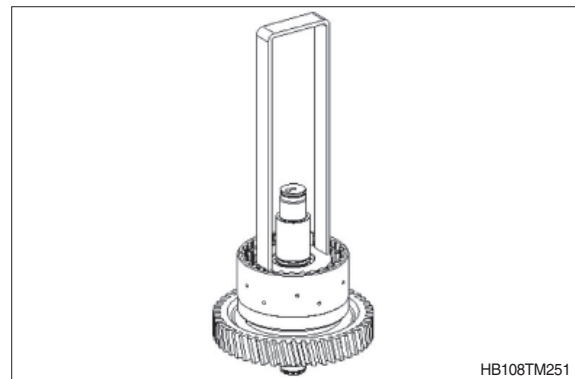


HB108TM250

- ⑥ Use a hand-operated press to place piston into the disk carrier by means of the assembly aid.

(S) Assembly aid

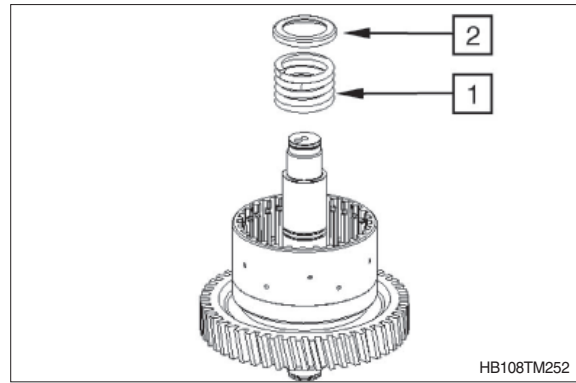
5870 345 114



HB108TM251

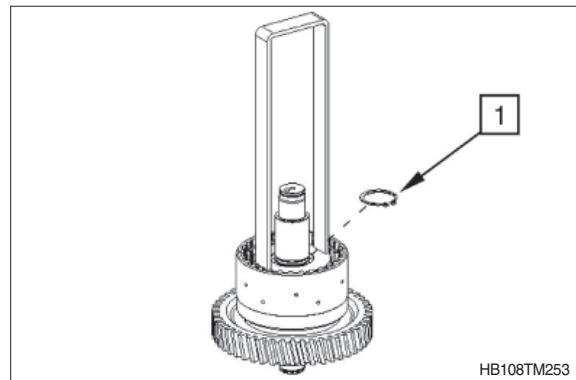


- ⑦ Mount compression spring (1) and spring cup (2).



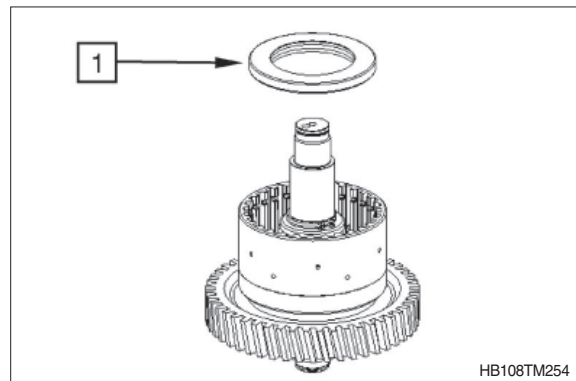
- ⑧ By means of the assembly aid, preload compression spring under a hand-operated press until the retaining ring 40×1.75 (1) can be snapped in.

(S) Assembly aid 5870 345 114



- ⑨ Mount plate assy with cup springs (1), with the open side showing towards the piston.

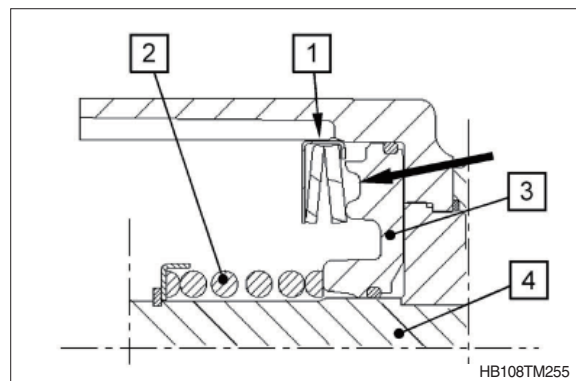
※ Installation position of plate see also the next figure ⑩.



- ⑩ Fit plate (1) according to sketch (see arrow).

Legend:

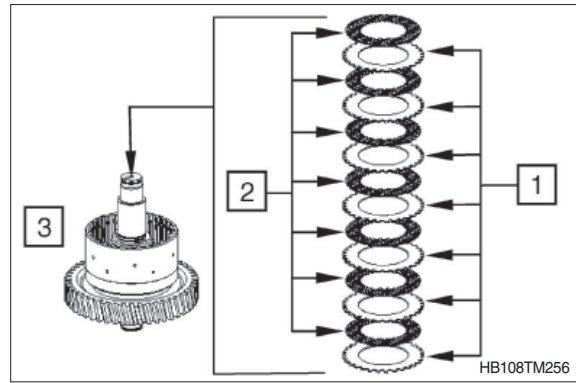
- 1 = Plate assy with cup springs
- 2 = Compression spring with spring cup and retaining ring
- 3 = Piston with O-rings
- 4 = Input shaft assy



- ⑪ Install outer and inner disks alternately into the disk carrier (3) as shown in figure, starting with an outer disk and ending with an inner disk.

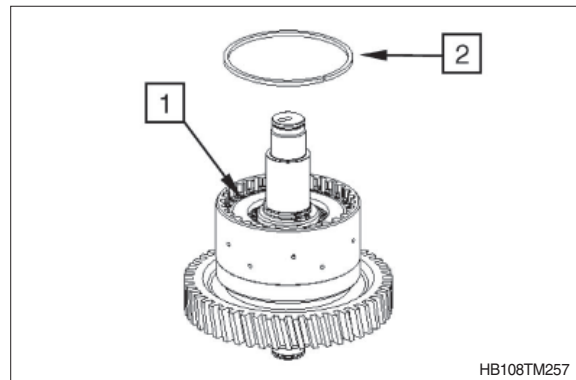
Legend:

- 1 = Outer disks (7 pcs)
- 2 = Inner disks (7 pcs)
- 3 = Clutch assy

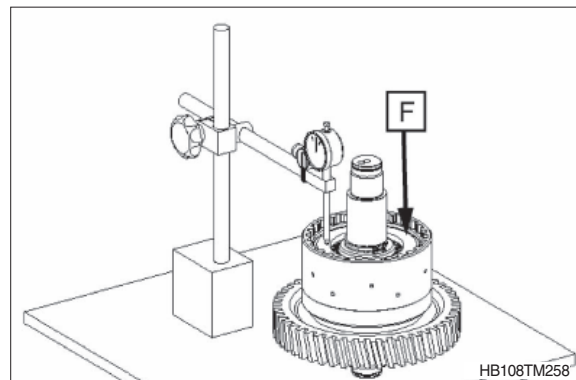


- ⑫ Mount end plate (1) with the flat side showing towards the disk package and fix it by means of snap ring (2) (e.g. thickness = 2.5 mm / recommended value).

- ※ Pay attention to the installation position of the end plate.

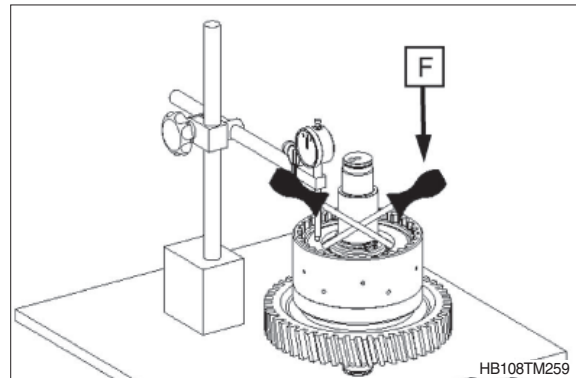


- ⑬ Equally press on end plate with F (approx. 1.8 kg to 2.0 kg) and set dial indicator to "zero".



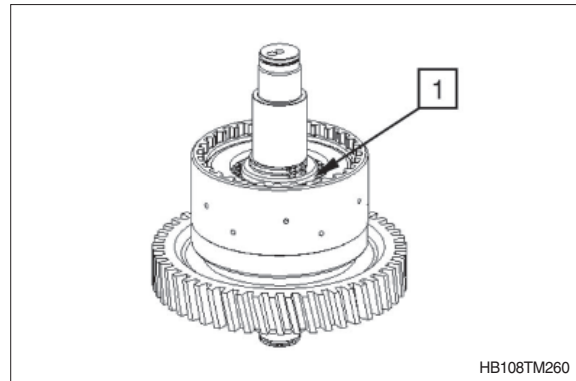
- ⑭ Then press end plate against the snap ring (upwards) and read the disk clearance.

- ※ Disk clearance : 1.4 to 1.7 mm
- ※ In case of deviations, the disk clearance must be corrected with an appropriate snap ring (optional thickness = 2.0 ~ 3.5 mm / available in steps of 0.25 mm)



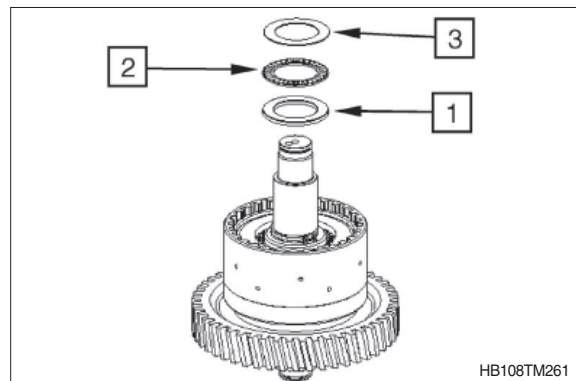
⑮ Snap retaining ring  $40 \times 1.75$  (1) into the groove.

※ Contact for axial bearing - see the next figure ⑯.

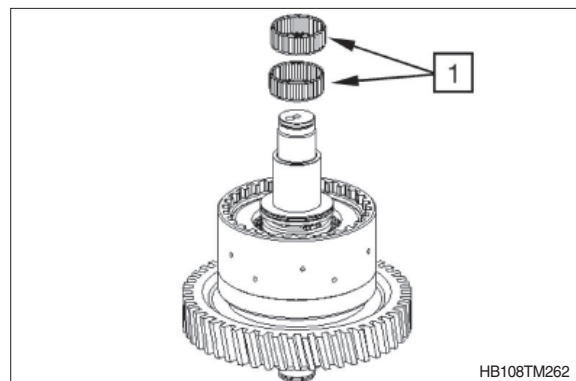


⑯ Mount running disk  $40 \times 60 \times 3.5$  (1), axial needle cage  $40 \times 60 \times 3$  (2) and axial washer  $40 \times 60 \times 1$  (3) and oil them.

※ Mount running disk (1) with the chamfer showing towards the retaining ring.

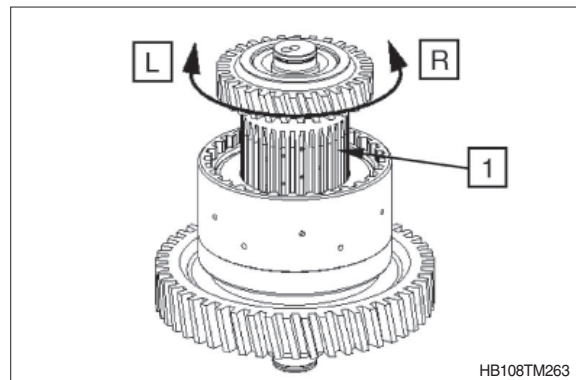


⑰ Mount needle cage  $40 \times 45 \times 17$  (1) and oil it.



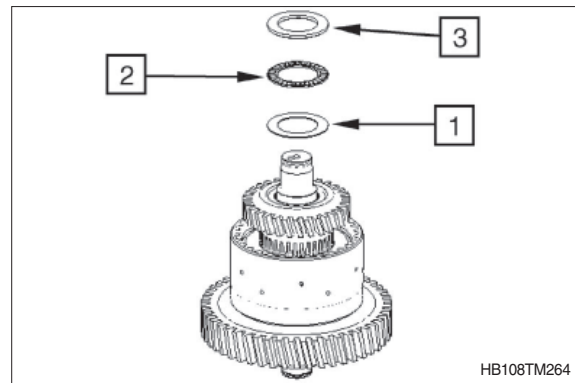
⑱ Mount inner disk carrier until contact is obtained.

⑲ Install inner disks by short ccw/cw rotations of the inner disk carrier (1).

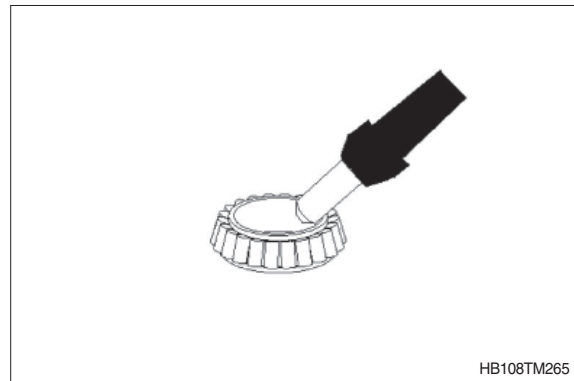


⑳ Mount axial washer 40×60×1 (1), axial needle cage 40×60×3 (2) and running disk (3) 40×60×3.5 and oil them.

※ Mount running disk (3), with the chamfer showing towards the tapered roller bearing.



㉑ Heat up bearing inner ring (approx. 120°C).

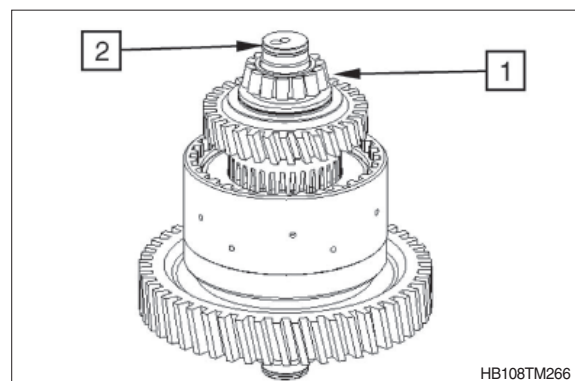


㉒ Mount bearing inner ring (1) until contact is obtained.

㉓ Fit rectangular ring 30×2 (2).

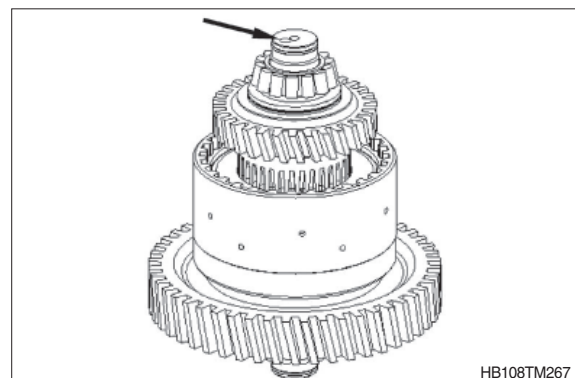
**Wear protective gloves.**

※ Adjust bearing inner ring after cooling-down.



※ Check closing and opening of the clutch by means of compressed air at the hole (see arrow).

Closing and opening of the clutch must be clearly audible.

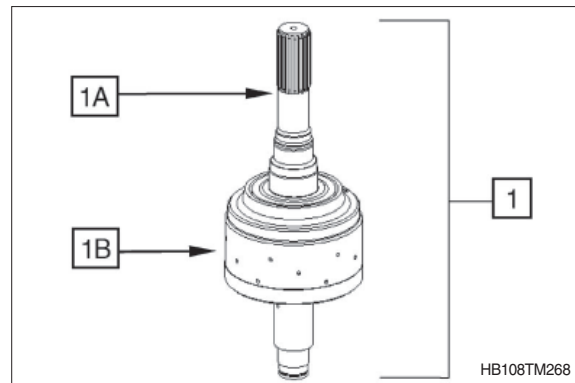


### (7) Front wheel drive (VA)

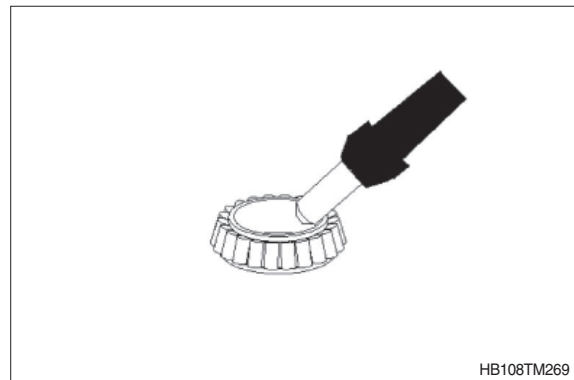
※ The clutch (1) is supplied by the spare parts service only as a complete assy which consists of:

1A = Shaft

1B = Disk carrier



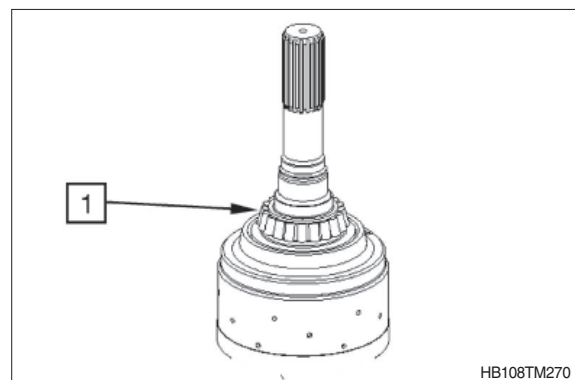
① Heat up bearing inner ring (approx. 120°C).



② Mount bearing inner ring (1) until contact is obtained.

**Wear protective gloves.**

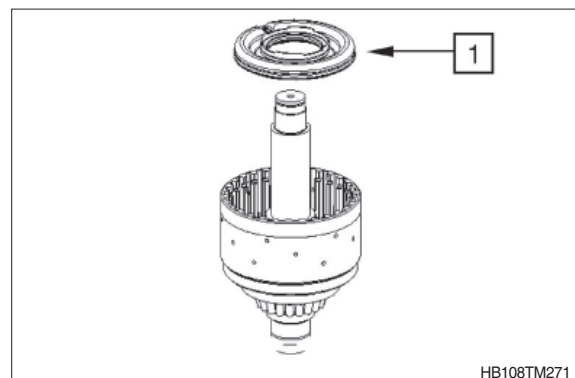
※ Adjust bearing inner ring after cooling-down.



③ Insert piston (1) into the disk carrier.

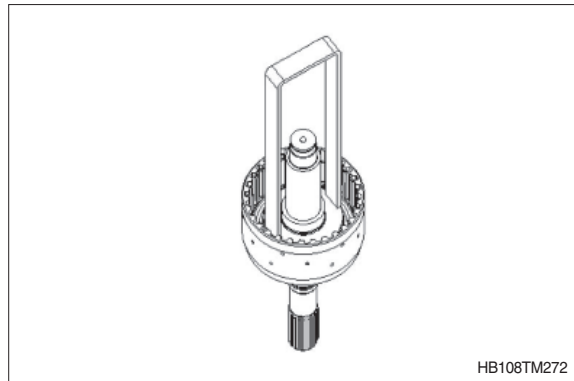
※ Oil both sealing lips.

※ Pay attention to the installation position, see figure.



- ④ Use a hand-operated press to place piston into the disk carrier by means of the assembly aid.

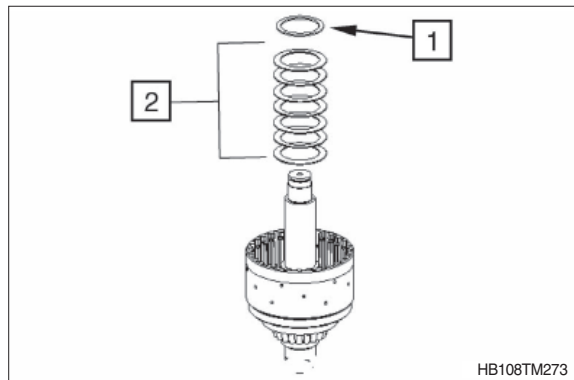
(S) Assembly aid 5870 345 114



HB108TM272

- ⑤ Mount cup spring package (1) and washer (2).

※ Installation position of cup springs see the next figure ⑥.



HB108TM273

- ⑥ Fit cup springs according to the sketch.

Legend:

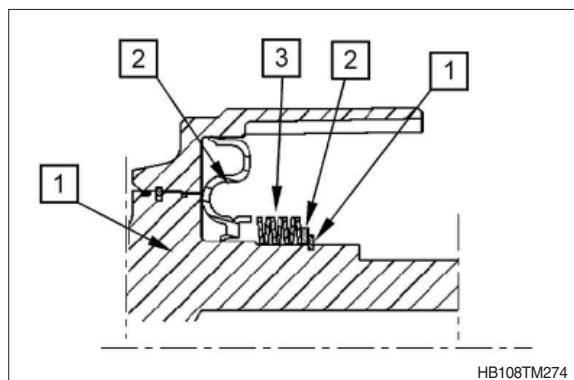
1 = Clutch

2 = Piston

3 = Cup springs (7 pcs)

4 = Washer

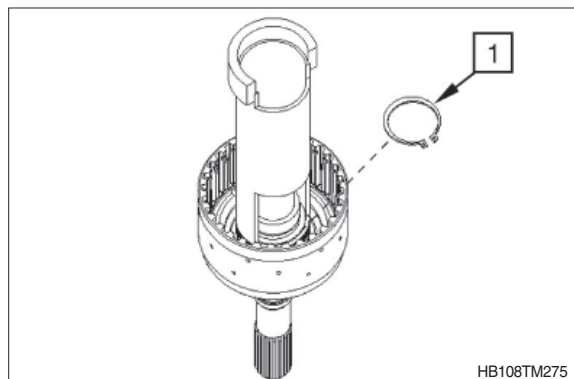
5 = Retaining ring (50×2)



HB108TM274

- ⑦ By means of the assembly aid, preload cup springs under a handoperated press until the retaining ring 50×2 (1) can be snapped in.

(S) Assembly aid 5870 506 128

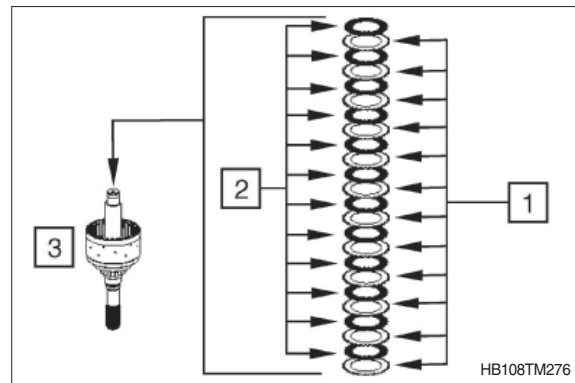


HB108TM275

- ⑧ Install outer and inner disks alternately into the disk carrier (3) as shown in figure, starting with an outer disk and ending with an inner disk.

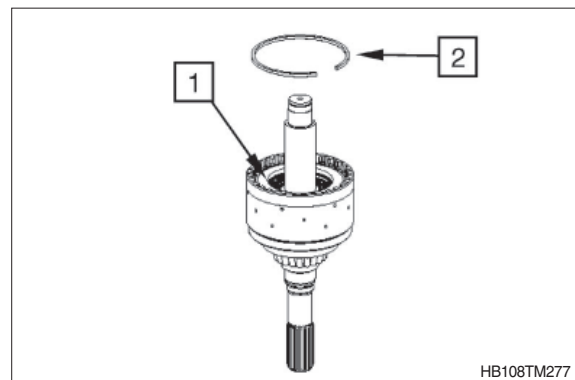
Legend:

- 1 = Outer disks (12 pcs)  
 2 = Inner disks (12 pcs)  
 3 = Clutch assy

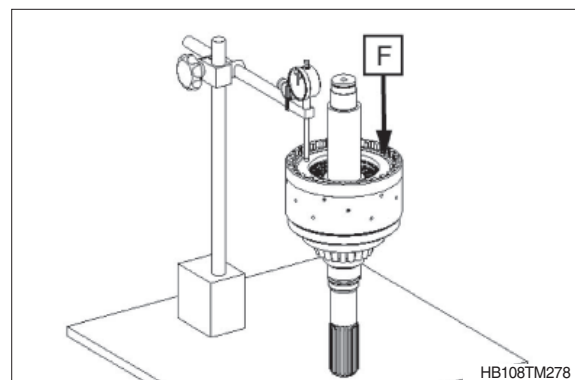


- ⑨ Mount end plate (1) with the flat side showing towards the disk package and fix it by means of snap ring (2) (e.g. thickness = 2.5 mm / recommended value).

- ※ Pay attention to the installation position of the end plate.



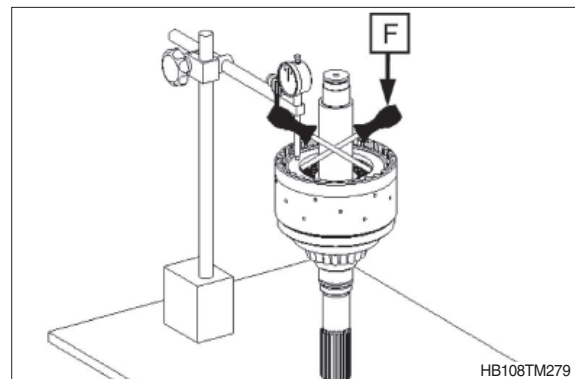
- ⑩ Equally press on end plate with F (approx. 1.8 kg to 2.0 kg) and set dial indicator to "zero".



- ⑪ Then press end plate against the snap ring (upwards) and read the disk clearance.

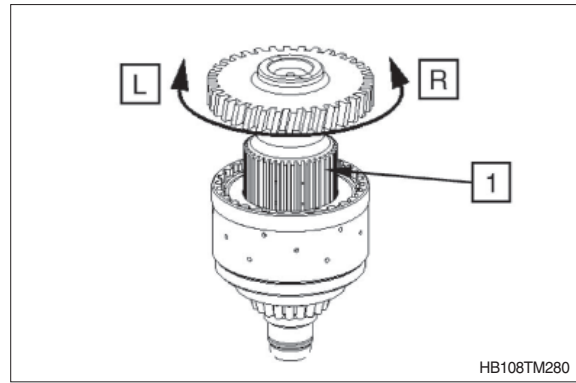
Disk clearance : 2.3 to 2.8 mm

- ※ In case of deviations, the disk clearance must be corrected with an appropriate snap ring (optional thickness = 2.0 ~ 4.0 mm / available in steps of 0.25 mm)

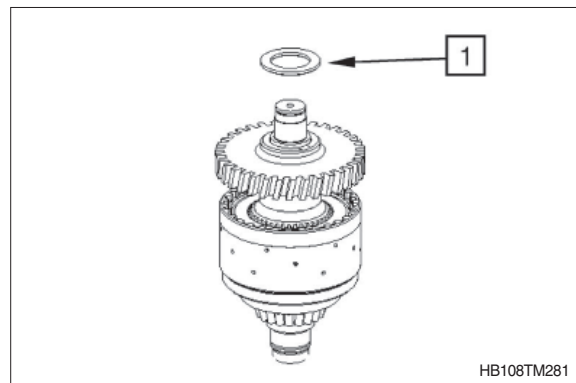


- ⑫ Mount inner disk carrier until contact is obtained.

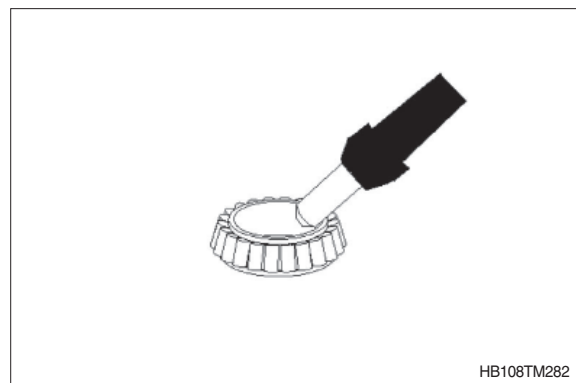
Install inner disks by short ccw/cw rotations of the inner disk carrier (1).



- ⑬ Mount running disk 40 × 60 × 3.5 (1).



- ⑭ Heat up bearing inner ring (approx. 120°C).

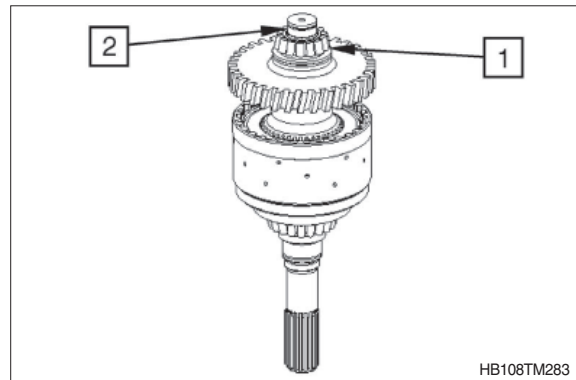


- ⑮ Mount bearing inner ring (1) until contact is obtained.

Fit rectangular ring 30 × 2 (2).

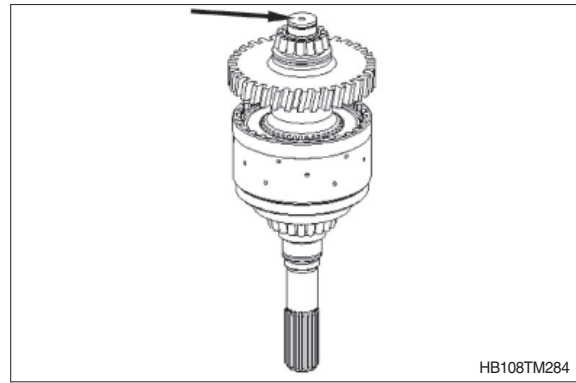
**Wear protective gloves.**

- ※ Adjust bearing inner ring after cooling-down.





- ※ Check closing and opening of the clutch by means of compressed air at the hole (see arrow).  
Closing and opening of the clutch must be clearly audible.



## 6) REINSTALLATION AND REASSEMBLY OF TRANSMISSION PUMP, OIL SUCTION TUBE AND OIL FILLER TUBE, CONTROL PRESSURE AND CONVERTER SAFETY VALVE, COARSE FILTER AND CLUTCHES

### (1) Reassembly of transmission pump

※ In case of wear marks in the pump housing, stator hollow shaft, inner rotor, outer rotor and on the sliding bearing, the pump assy must be replaced.

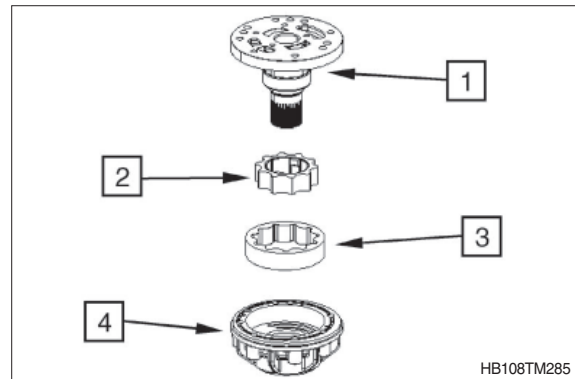
Legend:

1 = Stator hollow shaft

2 = Inner rotor

3 = Outer rotor

4 = Pump housing with sliding bearing



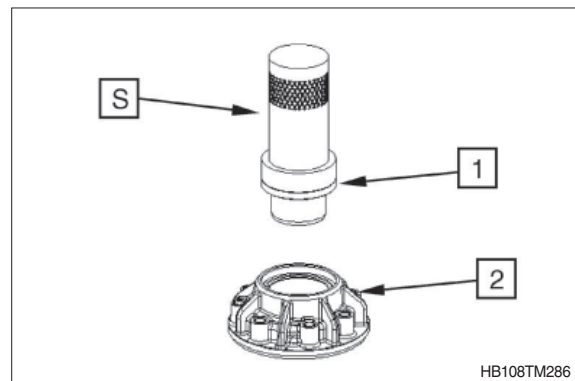
② With the sealing lip showing downwards, carefully insert the shaft seal  $55 \times 75 \times 8$  (1) into the pump housing (2) until contact is obtained.

※ Fill space between sealing lip and dust lip with grease.

※ **Outer diameter :**

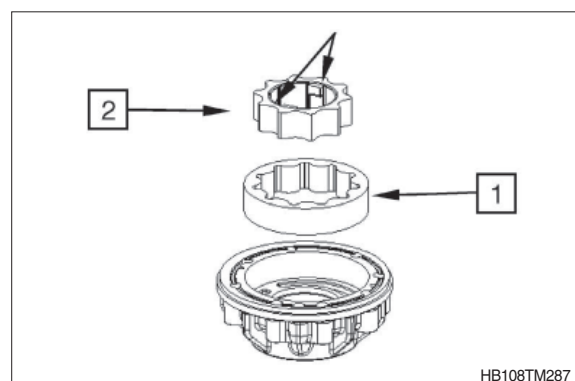
- If rubber-coated : wet with spirit
- If made of metal : apply sealing agent loctite No. 574.

(S) Driver tool                      5870 048 219

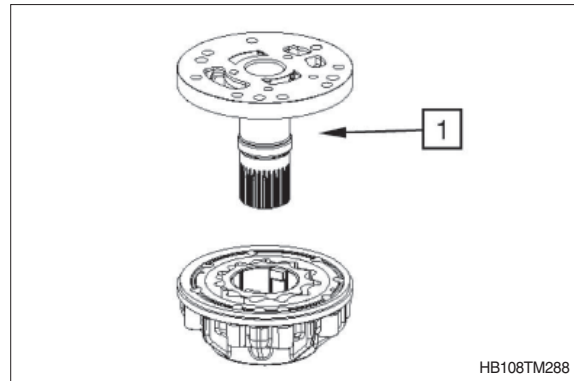


③ Fit outer rotor (1) and inner rotor (2).

※ The driver pins of the inner rotor (see arrows) are to be fitted in upward direction.



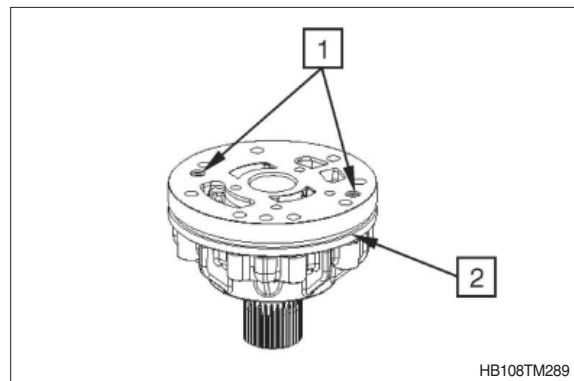
- ④ Fit stator hollow shaft (1).



- ⑤ Fix stator hollow shaft radially with two cylindrical screws (1).

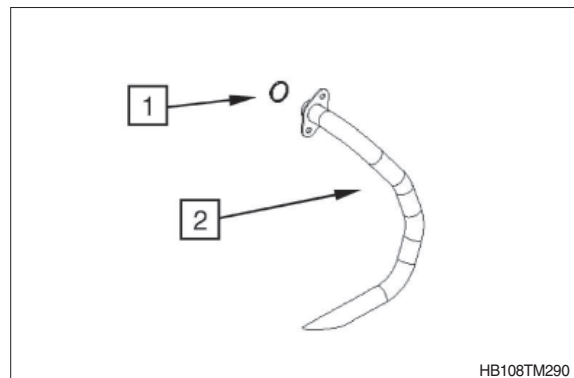
※ Do not tighten the cylindrical screws – just turn them in until contact is obtained and then turn them back by approx. 1/2 rotation.

Place O-ring (2) 135×3 into the annular groove and grease it.



## (2) Oil suction tube and oil filter tube

- ① Mount O-ring 30×3 (1) onto the suction tube (2) and grease it.

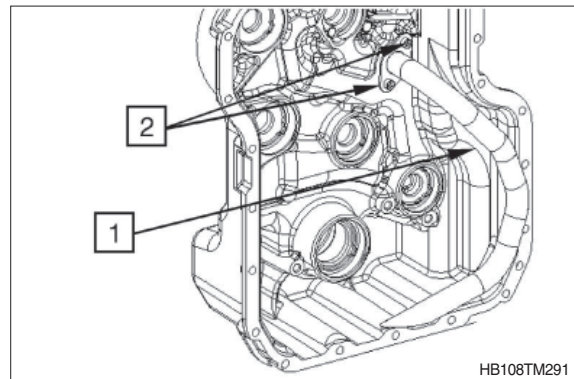


- ② Fix suction tube (1) with cylindrical screws M8×16 (2).

· Tightening torque M8/8.8×16 ;  
2.35 kgf · m (17.0 lbf · ft)

※ When reusing the cylindrical screws these must be secured with loctite #243.

※ New cylindrical screws are already provided with adhesive (microcapsule). The microcapsule bursts when the screw is turned in, wets screw and nut thread and hardens.

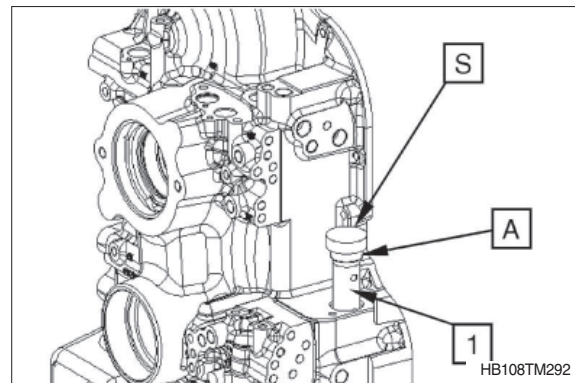


- ③ Insert tube (1) into the transmission housing by means of driver tool (S).

(S) Driver tool 5870 048 309

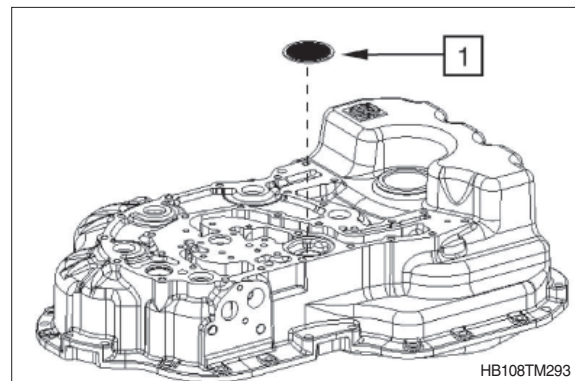
- ※ Use the driver tool to obtain the correct offset.

- ※ Apply loctite #574 onto the surface (A).



### (3) Coarse filter

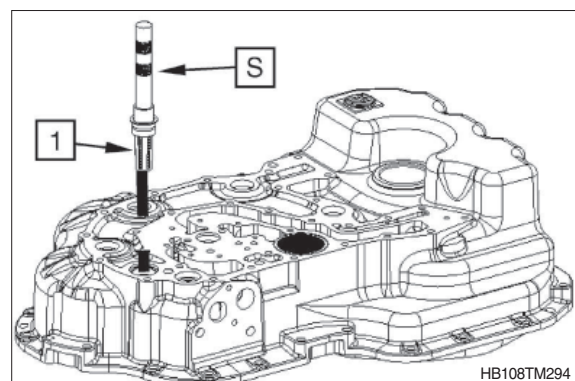
- ① Insert filter (1).



### (4) Reinstallation of converter safety valve

- ① Insert valve (1) with drift (S) into the housing until contact is obtained.

(S) Drift 5870 705 012

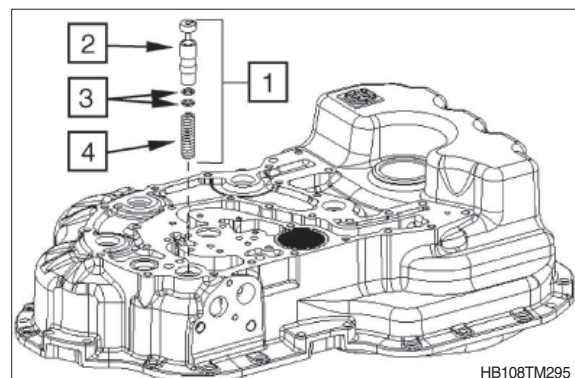


### (5) Reassembly of main pressure valve (control pressure)

- ① Insert main pressure valve (1).  
Main pressure valve consists of:  
2 = Piston  
3 = Spacer ring (2 pcs)  
recommended value 5 mm  
4 = Compression spring

- ※ The main pressure 16+3 bar is determined by means of the spacer rings.

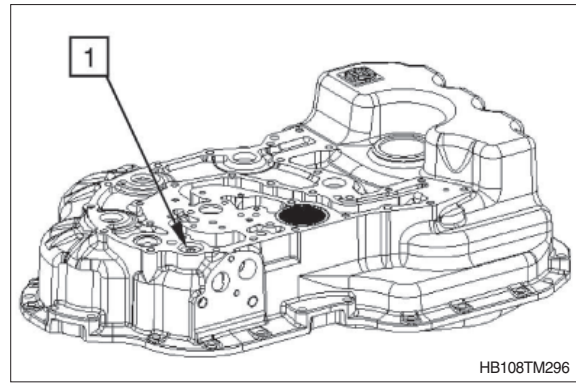
- ※ Gradation of available spacer rings see spare parts list.



- ② Fit screw plug M22×1.5 (1) with O-ring 19×2.

· Tightening torque :

5.1 kgf · m (36.9 lbf · ft)



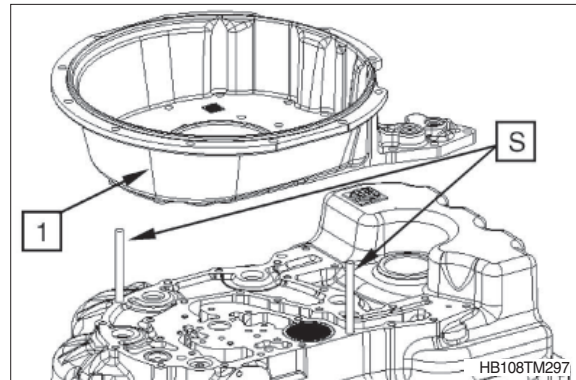
### (6) Reinstallation of transmission pump

- ① Fit two adjusting screws (S) and position converter bellhousing (1) equally until contact is obtained.

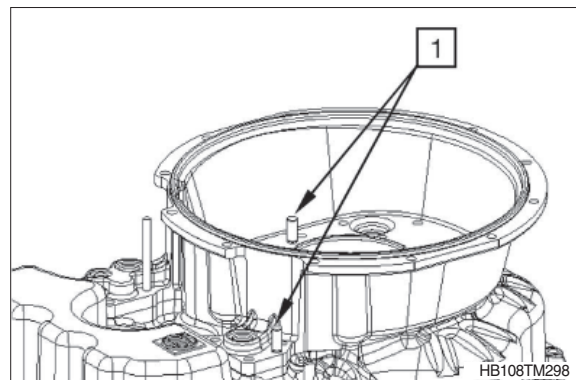
※ Pay attention to the hole pattern.

※ Wet mounting face with loctite #574.

(S) Adjusting screws (M10)5870 204 007



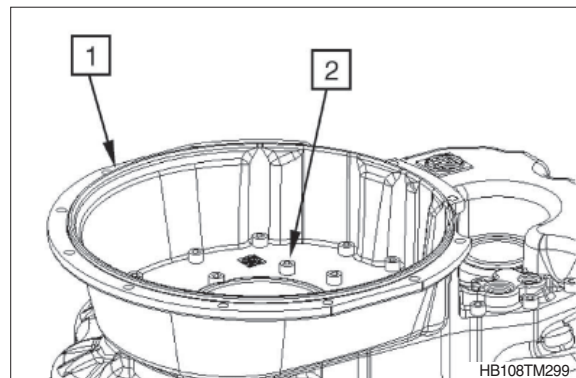
- ② Force the cylindrical pins 12×24 (1) into the holes (blind holes) until contact is obtained.



- ③ Fix converter bellhousing (1) with cylindrical screws M10×30 (2).

· Tightening torque (M10/8.8×30) ;

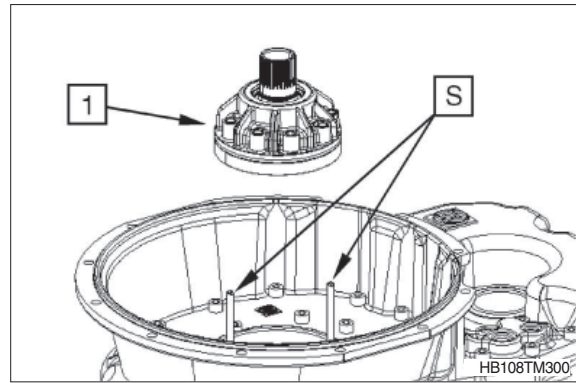
4.69 kgf · m (33.9 lbf · ft)



- ④ Fit two adjusting screws (S) and mount preassembled pump (1).

※ Pay attention to the hole pattern.

(S) Adjusting screws (M8) 5870 204 011

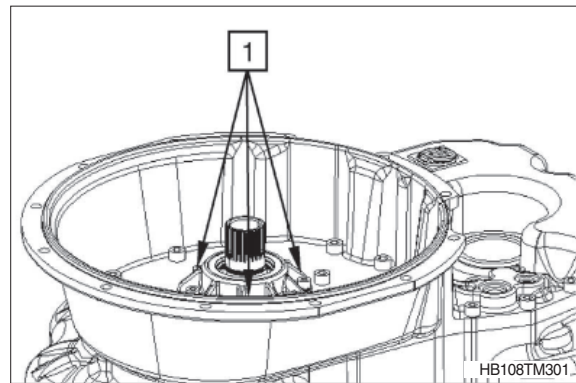


- ⑤ Position transmission pump with 3 cylindrical screws (1) M8×60 (3×120° offset position) equally until contact is obtained.

※ Do not damage (shear off) the O-ring.

- ⑥ Fix transmission pump with cylindrical screws M8x60 (1).

· Tightening torque (M8/8.8×60) ;  
2.35 kgf · m (17.0 lbf · ft)



- ⑦ Fix pump with cylindrical screws (1 and 2).

1 = M8×16

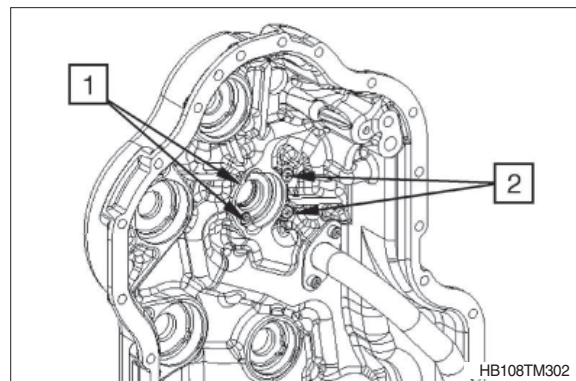
2 = M8×35

· Tightening torque (M8/8.8×16) ;  
2.35 kgf · m (17.0 lbf · ft)

· Tightening torque (M8/8.8×35) ;  
2.35 kgf · m (17.0 lbf · ft)

※ New cylindrical screws are to be fitted on a general basis.

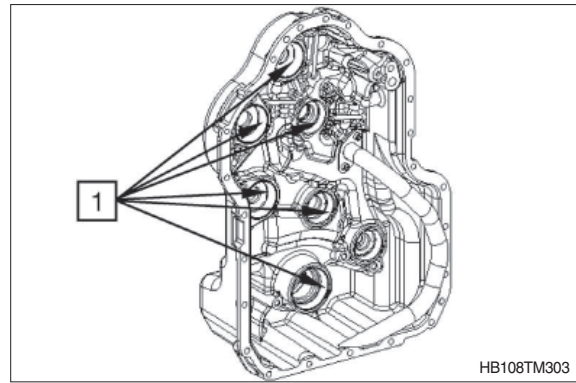
※ These cylindrical screws are already provided with adhesive (microcapsule). The microcapsule bursts when the screw is turned in, wets screw and nut thread and hardens.



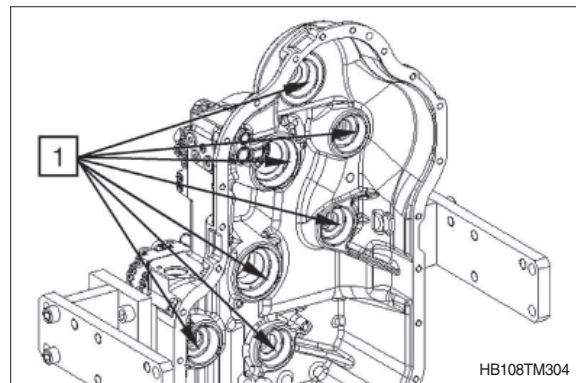


## (7) Reinstallation of clutches

- ① Insert all bearing outer rings (1) into the bearing holes of both housing parts (see figures).
- ※ Place bearing outer rings into the bearing holes using assembly grease.



- ※ If the tapered roller bearings of clutches and input are not replaced, it is imperative to ensure the previous pairing (bearing inner ring/bearing outer ring) - see figures TM029, 030 at page 3-32.

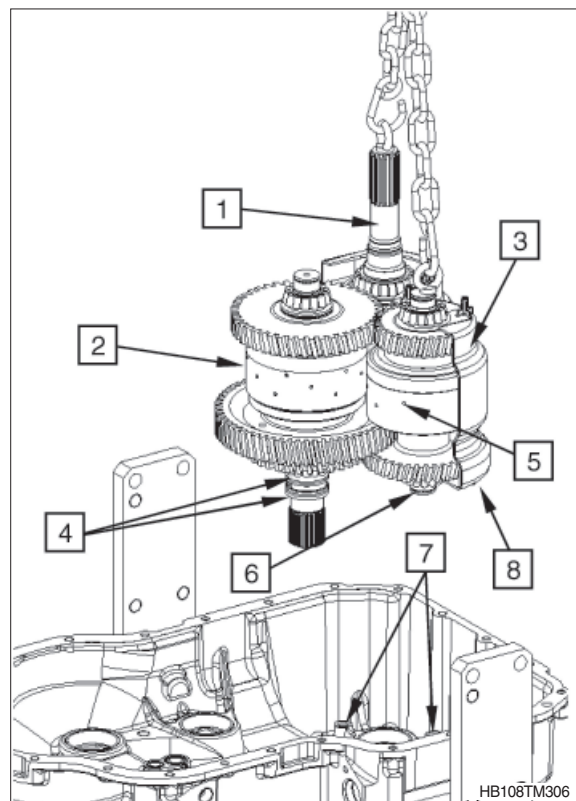


## Reinstallation of K2, K3 and front wheel drive

- ② Align and grease rectangular rings  $50 \times 2.5$  (4) and rectangular rings  $30 \times 2$  (6), as well as those of the front wheel drive.
- ③ Hold K3 clutch (5) and front wheel drive (1) by means of the lifting device, position K2 clutch (2) and screen sheet (3) at K3 clutch (5), and then jointly insert the assembly.

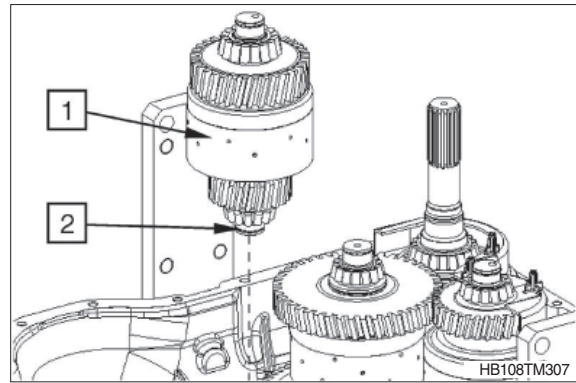
(S) Eyebolts 5870 204 080

- ※ Bolts (8) of the screen sheet must be fixed into the pilot holes (7).



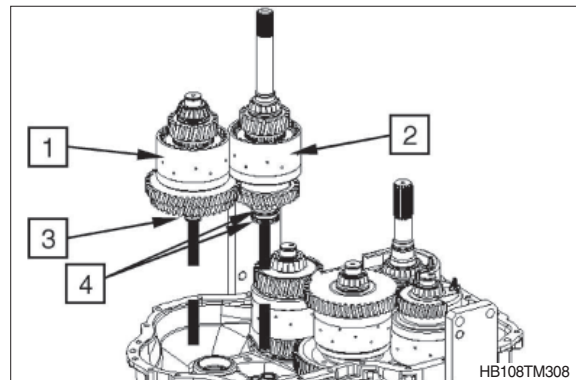
### Reinstallation of K1

- ④ Align and grease rectangular ring 30×2 (2).
- ⑤ Position K1 clutch (1).



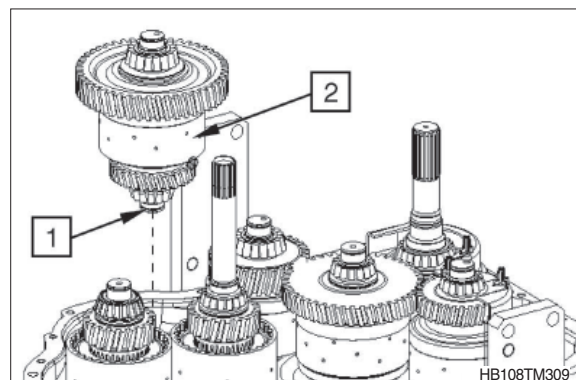
### Reinstallation of KV and KR

- ⑥ Align and grease rectangular rings 50×2 (4) and rectangular ring 30×2 (3).
- ⑦ Jointly position KV clutch (1) and KR clutch (2).



### Reinstallation of K4

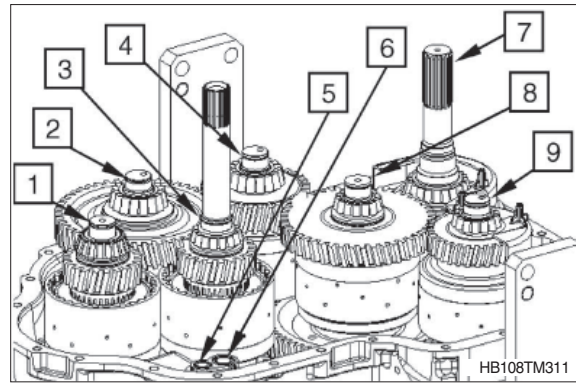
- ⑧ Align and grease rectangular ring 30×2 (1).
- ⑨ Position K4 clutch (2).





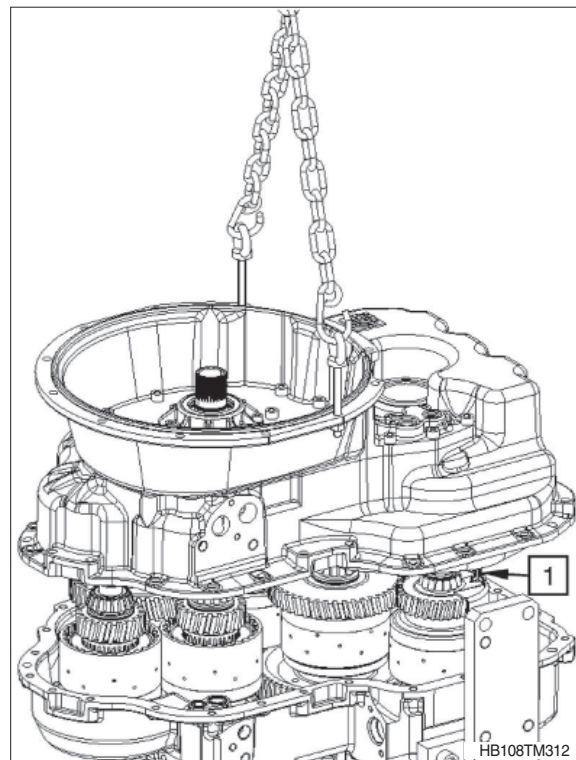
- ⑩ Place O-rings (5 and 6) into the hole and grease them. Align and grease rectangular rings (1, 2, 3, 4, 8 and 9).

- 1 = Rectangular ring 30×2 (KV clutch)
- 2 = Rectangular ring 30×2 (K4 clutch)
- 3 = Rectangular ring 35×2 (KR clutch)
- 4 = Rectangular ring 30×2 (K1 clutch)
- 5 = O-ring 15×2
- 6 = O-ring 21.89×2.62
- 7 = ..... (front wheel drives)
- 8 = Rectangular ring 30×2 (K2 clutch)
- 9 = Rectangular ring 30×2 (K3 clutch)



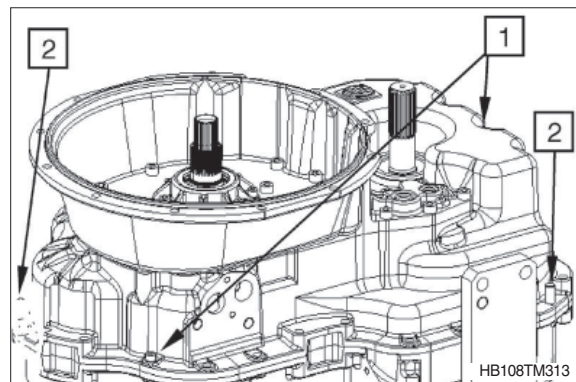
- ⑪ Use the lifting device to carefully bring the transmission housing front part into contact position.

- ※ Bolts (1) of the screen sheet must be fixed into the pilot holes.
- ※ Wet mounting face with loctite # 574.



- ⑫ Hand-tighten the transmission housings crosswise with 2 cylindrical screws (1).

- ⑬ Fit cylindrical pins 12×24 (2) centrally to the mounting face.



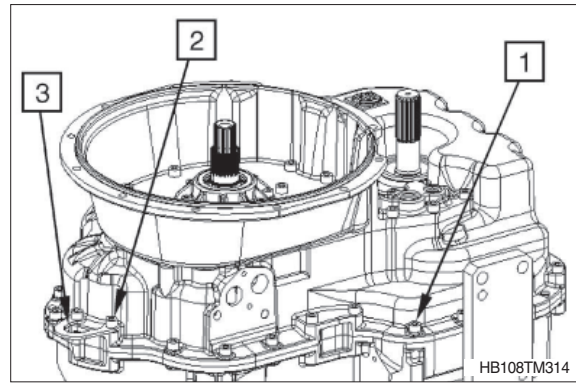
⑭ Fix transmission housing front and rear part by means of cylindrical screws (1 and 2).

⑮ Fit bracket (3).

Cylindrical screw (1) M10×30 (14 EA)

Cylindrical screw (2) M10×50 (10 EA)

- Tightening torque M10/8.8×30 ;  
4.69 kgf · m (33.9 lbf · ft)
- Tightening torque M10/8.8×50 ;  
4.69 kgf · m (33.9 lbf · ft)



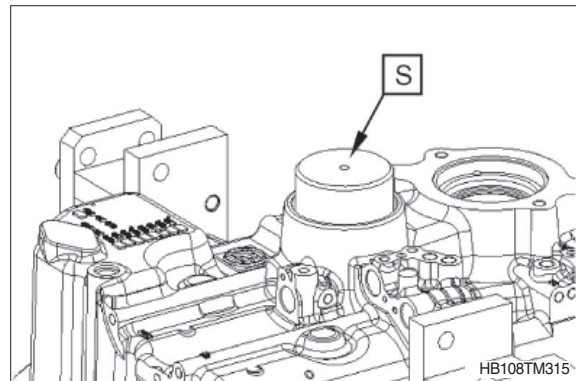
**7) REASSEMBLY OF REAR AXLE OUTPUT FLANGE AND SCREW PLUG AT MEASURING POINT "63" AFTER THE CONVERTER, AND SEALING OF VERSION WITH AND WITHOUT FRONT WHEEL DRIVE**

**(1) Reassembly of rear axle output flange**

- ① Use driver tool (S) to fit the shaft seal 60×90×8 (1) until contact position, with the sealing lip showing towards the oil sump (see figure below).

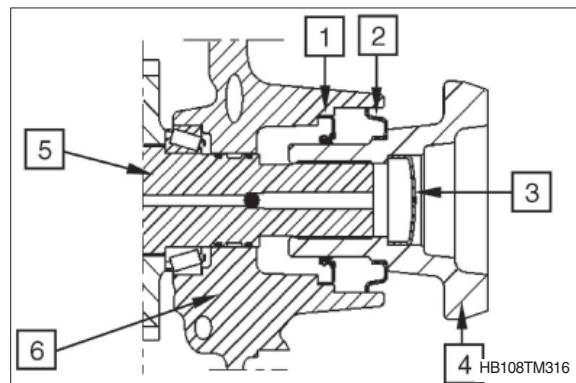
(S) Driver tool 5870 048 200

- ※ Fill space between sealing lip and dust lip with grease.
- ※ Wet rubber-coated outer diameter with spirit.
- ※ Use the driver tool to obtain the correct offset.



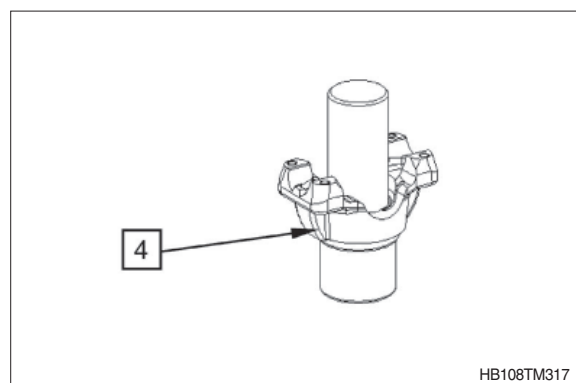
**※ Installation situation - rear axle output**

- 1 = Shaft seal 60×90×8
- 2 = Screen sheet
- 3 = Closing cover
- 4 = Output flange
- 5 = K2 clutch shaft
- 6 = Transmission housing



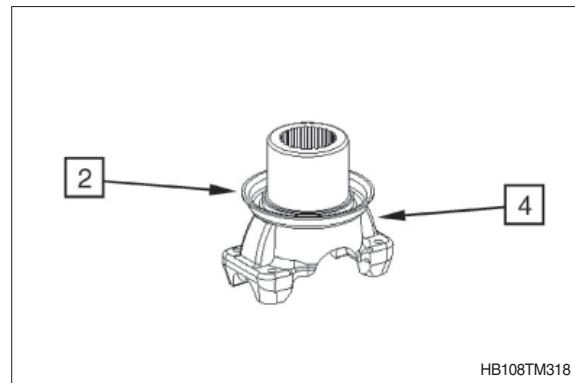
- ② Press closing cover (3) into the flange (4) until contact is obtained (see figure above).

- ※ Apply loctite #518 to the closing cover.
- ※ Use suitable pressure piece; closing cover must not be deformed.



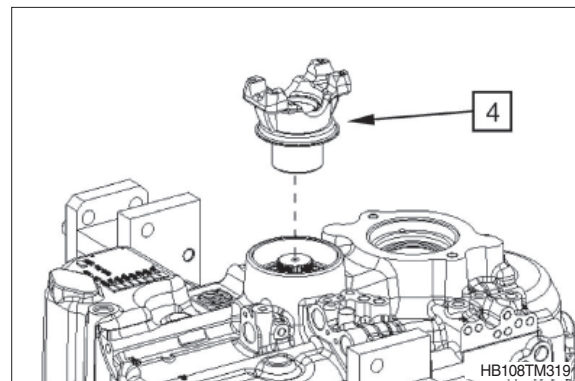
- ③ Press screen sheet (2) onto the flange (4) until contact is obtained.

※ Use suitable pressure piece; screen sheet must not be deformed.



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- ④ Mount output flange (4) until contact position.



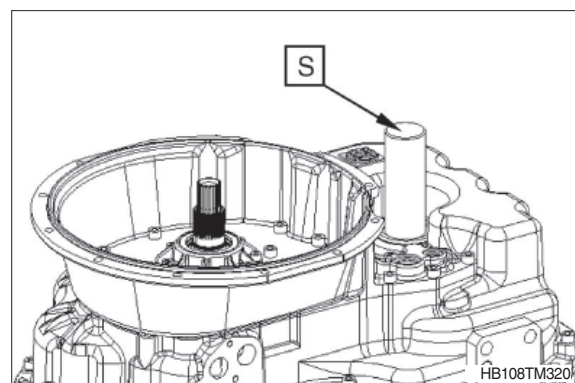
HB108TM319

## (2) Sealing of front-wheel-drive

- ① Use driver tool (S) to fit the shaft seal (1) until contact position, with the sealing lip showing towards the oil sump (see figure below).

(S) Driver tool 5870 048 310

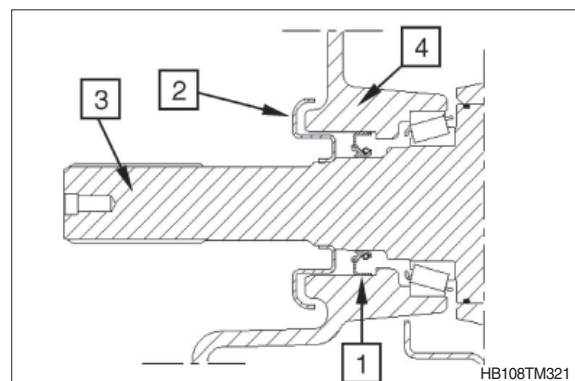
- ※ Fill space between sealing lip and dust lip with grease.  
 ※ Wet rubber-coated outer diameter with spirit.  
 ※ Use the driver tool to obtain the correct offset.



HB108TM320

### Installation situation

- 1 = Shaft seal 40 × 62 × 7  
 2 = Screen sheet  
 3 = VA clutch shaft  
 4 = Transmission housing



HB108TM321

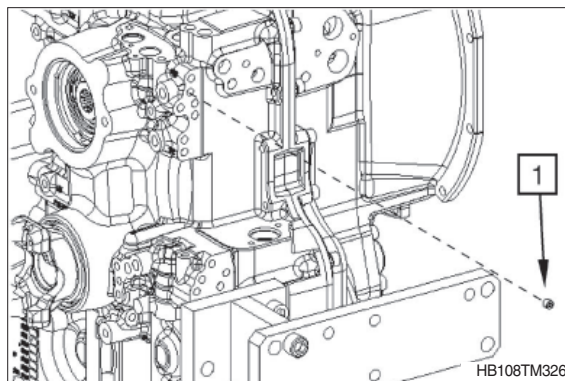


## 8) REINSTALLATION OF NOZZLES (ORIFICES), SCREW PLUGS, SOLENOID VALVES, INDUCTIVE SENSOR AND MOUNTING PROVISION FOR OIL FILLER TUBE

### (1) Reinstallation of nozzles (orifices)

- ① Fit nozzle M10×1  $\phi$  1.55 (1) for the directional clutches KV, KR and K4.

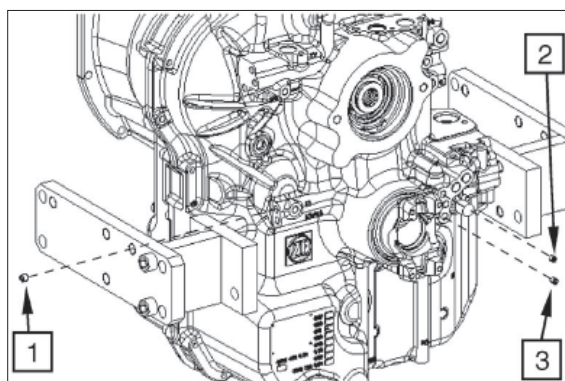
· Tightening torque ;  
1.02 kgf · m (7.38 lbf · ft)



- ② Fit nozzles for the gear clutches K1, K2 and K3.

1 = Nozzle (K1)	M10×1 $\phi$ 1.4
2 = Nozzle (K2)	M 8 $\phi$ 1.7
3 = Nozzle (K3)	M 8 $\phi$ 1.4

· Tightening torque M8, M10×1 ;  
1.02 kgf · m (7.38 lbf · ft)



### (2) Reinstallation of screw plugs

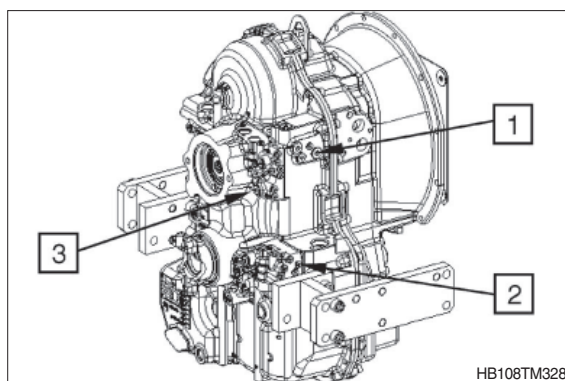
- ① Install all screw plugs with O-rings.

1 = Screw plug 3/4 -16 UNF;	
O-ring 16.36×2.21 (2 EA)	
2 = Screw plug M10×1;	
O-ring 8×1.5 (36 EA)	
3 = Screw plug 9/16 -18 UNF;	
O-ring 11.89×1.98 (3 EA)	

· Tightening torque 3/4 -16 UNF ;  
2.86 kgf · m (20.7 lbf · ft)

· Tightening torque M10×1 ;  
0.61 kgf · m (4.43 lbf · ft)

· Tightening torque 9/16 -18 UNF ;  
1.53 kgf · m (11.1 lbf · ft)





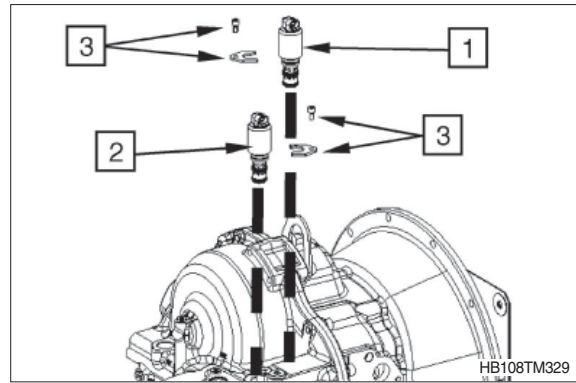
### (3) Reinstallation of solenoid valves

- ① Insert solenoid valves (1 and 2) into the transmission housing and fix them by means of bracket and cylindrical screw M6×12 (3).

1 = Solenoid valve - parking brake - rear axle

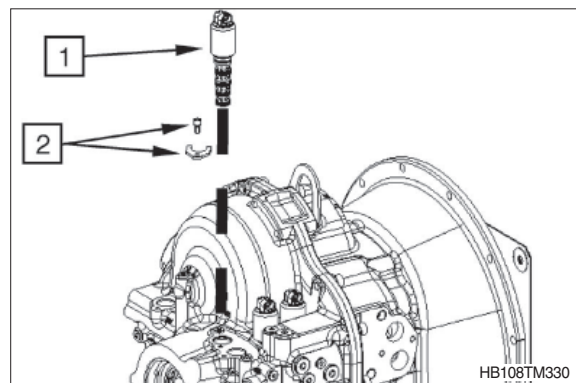
2 = Solenoid valve - differential lock – rear axle

- Tightening torque M6/8.8 ;  
0.97 kgf · m (7.01 lbf · ft)



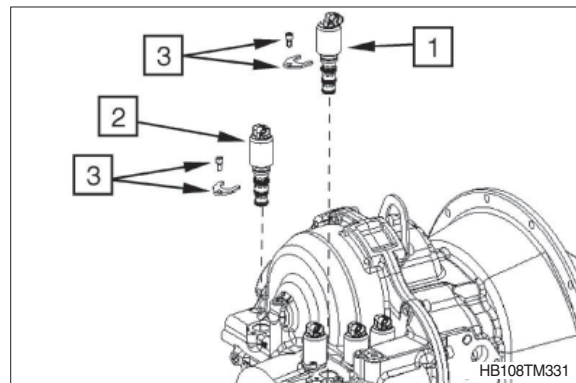
- ② Insert solenoid valve Y2 (1) into the transmission housing and fix it by means of bracket and cylindrical screw M6×12 (2).

- Tightening torque M6/8.8 ;  
0.97 kgf · m (7.01 lbf · ft)



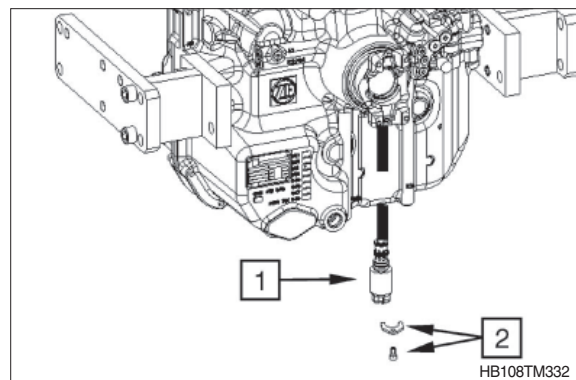
- ③ Insert solenoid valves Y1 (1) and Y3 (2) into the transmission housing and fix them by means of bracket and cylindrical screw M6×12 (3).

- Tightening torque M6/8.8 ;  
0.97 kgf · m (7.01 lbf · ft)



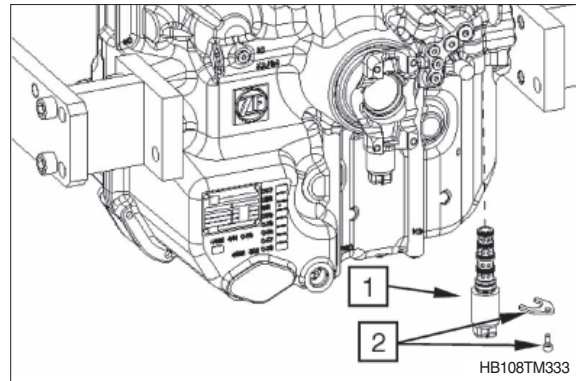
- ④ Insert solenoid valve YWD (1) into the transmission housing and fix it by means of bracket and cylindrical screw M6×12 (2).

- Tightening torque M6/8.8 ;  
0.97 kgf · m (7.01 lbf · ft)



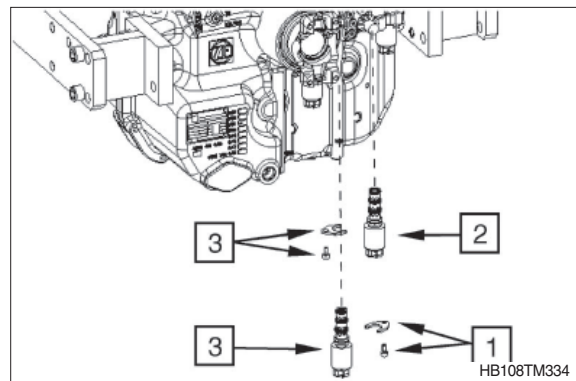
- ⑤ Insert solenoid valve Y5 (1) into the transmission housing and fix it by means of bracket and cylindrical screw M6×12 (2).

· Tightening torque M6/8.8 ;  
0.97 kgf · m (7.01 lbf · ft)



- ⑥ Insert solenoid valves Y6 (1) and Y4 (2) into the transmission housing and fix them by means of bracket and cylindrical screw M6×12 (3).

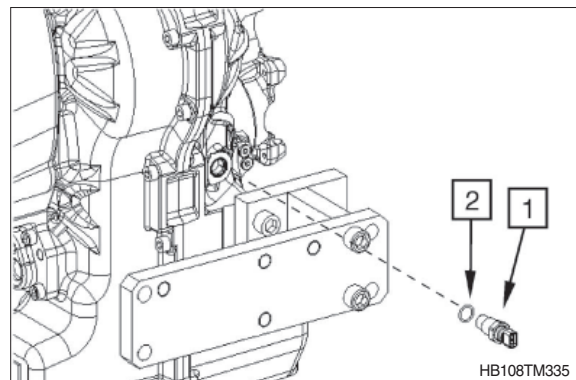
· Tightening torque M6/8.8 ;  
0.97 kgf · m (7.01 lbf · ft)



#### (4) Reinstallation of inductive sensor (option)

- ① Install inductive sensor (1) with O-ring 15×2 (2).

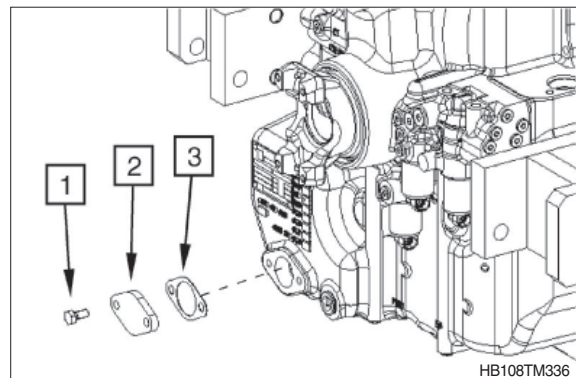
· Tightening torque ;  
3.06 kgf · m (22.1 lbf · ft)



#### (5) Mounting provision for oil filler tube (option)

- ① Fix closing cover (2) and seal (3) with hexagon screws (1).

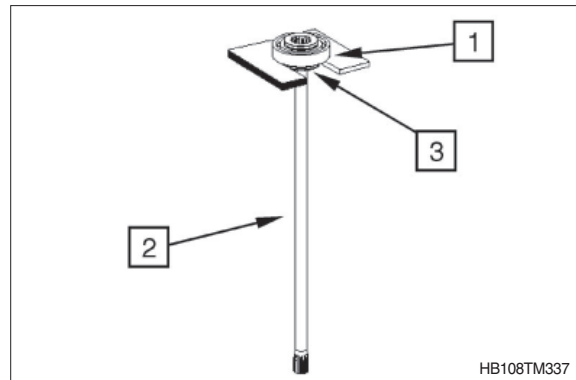
· Tightening torque (M8/8.8×18) ;  
3.47 kgf · m (25.1 lbf · ft)



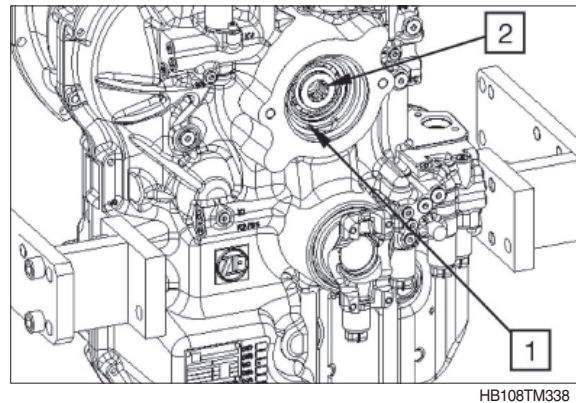


## 9) REASSEMBLY OF PTO

- (1) Press ball bearing  $45 \times 75 \times 16$  (1) onto the pump shaft (2) until contact is obtained.
- (2) Fit rectangular ring  $50 \times 2.5$  (3).
- (3) Grease and centrally align rectangular ring.

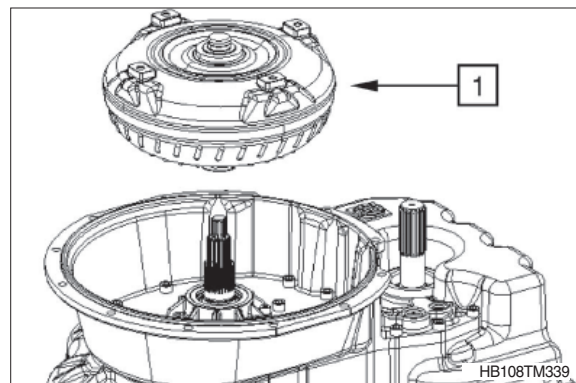


- (4) Mount pump shaft (2) until contact is obtained and fix it by means of retaining ring  $75 \times 2.5$  (1).



## 10) REASSEMBLY OF ENGINE CONNECTION

- (1) Mount converter (1) until contact is obtained.

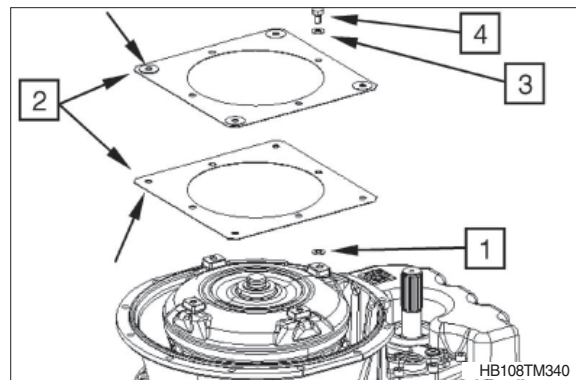


- (2) Position 1 washer/each / thickness=1.0 mm (4 EA) (1) onto the flexplate mounting webs (4 EA).

- (3) Place flexplates (2).

※ Pay attention to the installation position! Spot-welded reinforcing disks of the flexplate to be arranged towards the outside - see arrows.

- (4) Mount washer (3) onto the hexagon screw  $M10 \times 16$  (4) and fix flexplates.



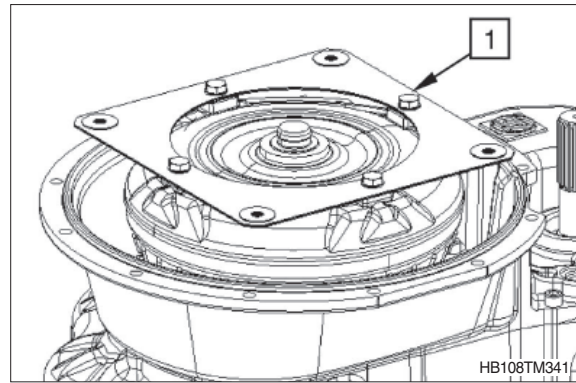
(5) Tighten hexagon screws (1).

- Tightening torque (M10/8.8×16) ;  
4.69 kgf · m (33.9 lbf · ft)

- ※ When reusing the hexagon screws these must be secured with loctite 243.
- ※ New hexagon screws are already provided with adhesive (microcapsule). The microcapsule bursts when the screw is turned in , wets screw and nut thread and hardens.

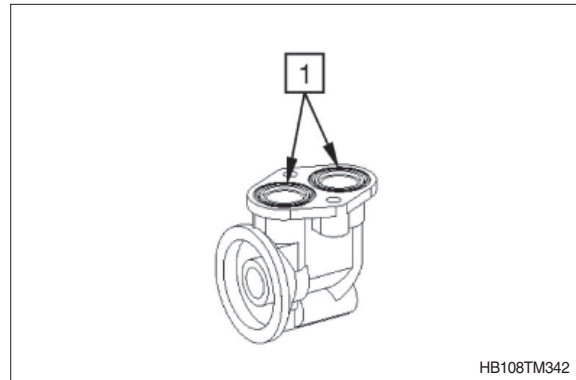
**Fix converter axially.**

**Risk of injury.**



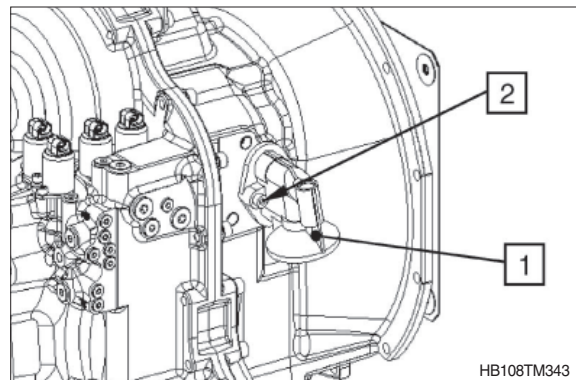
## 11) REASSEMBLY OF FILTER AND OIL DRAIN PLUG

(1) Place O-rings 34.2×3 (1) into the holes and grease them.



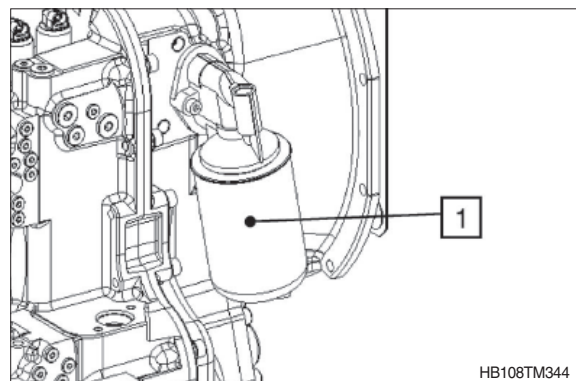
(2) Attach filter head (1) with cylindrical screws M8×30 (2).

- Tightening torque (M8/8.8×30) ;  
2.35 kgf · m (17.0 lbf · ft)



※ The filter (1) has to be fitted as follows:

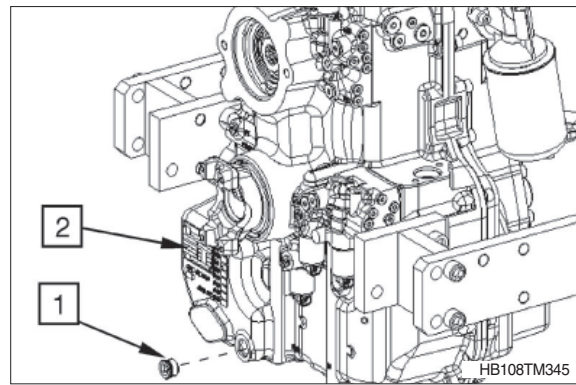
- Slightly oil the seal
- Turn in the filter until contact with the sealing surface is obtained, and then tighten it by hand with approx. 1/3 to 1/2 rotation.



(3) Fit oil drain plug 7/8-14 UN 2A (1).

- Tightening torque (7/8-14 UN 2A) ;  
3.06 kgf · m (22.1 lbf · ft)

(4) Fix identification plate (2) by means of 4 grooved pins 3 × 5.



※ Before putting the transmission into operation, fill it with specified oil (SAE 15W-40).

