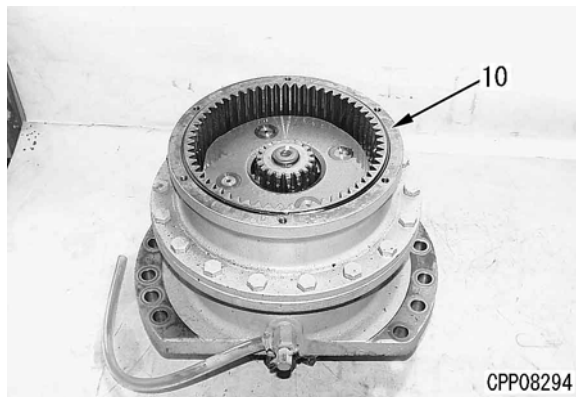
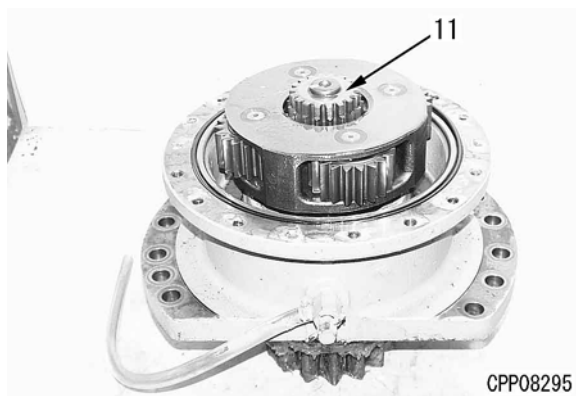


5. Ring gear

Remove the mounting bolts and ring gear (10).

**6. No. 2 sun gear**

Remove No. 2 sun gear (11).

**7. Bolt**

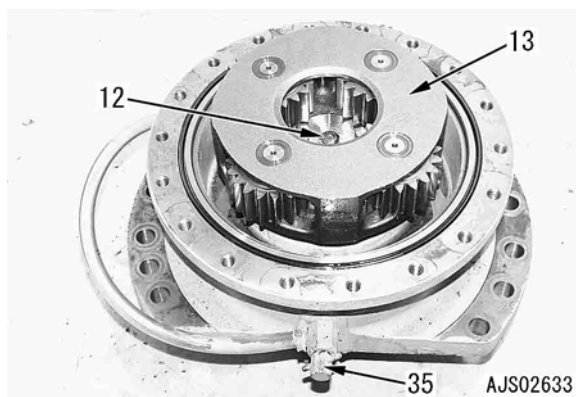
Remove holder mounting bolts (12).

8. No. 2 carrier assembly

1) Remove No. 2 carrier assembly (13).

2) Remove drain part (35) from the case.

★ When repairing, reuse the drain part.



3) Disassemble the No. 2 carrier assembly according to the following procedure.

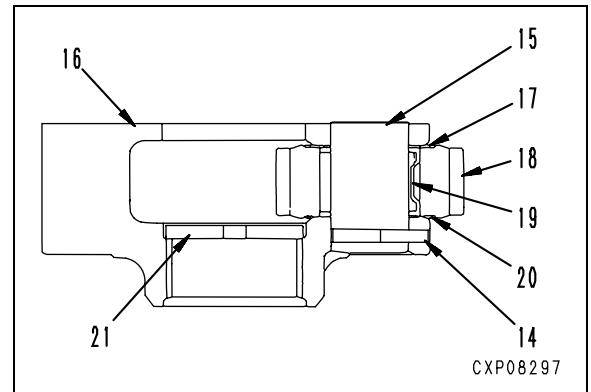
i) Push in pin (14) and drive shaft (15) out of carrier (16).

★ After removing the shaft, remove pin (14).

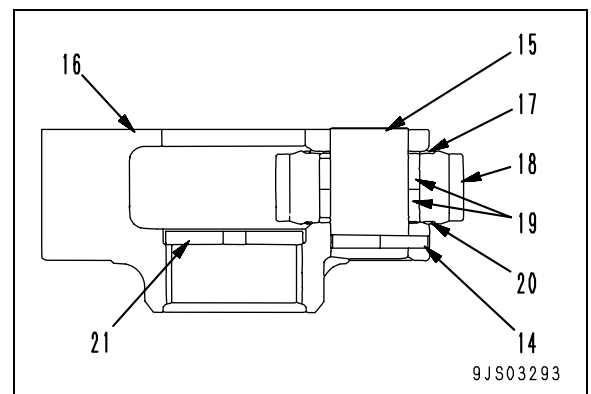
ii) Remove thrust washer (17), gear (18), bearing (19), and thrust washer (20).

iii) Remove plate (21).

★ PC200-7



★ PC220-7

**9. Bearing-shaft-case assembly**

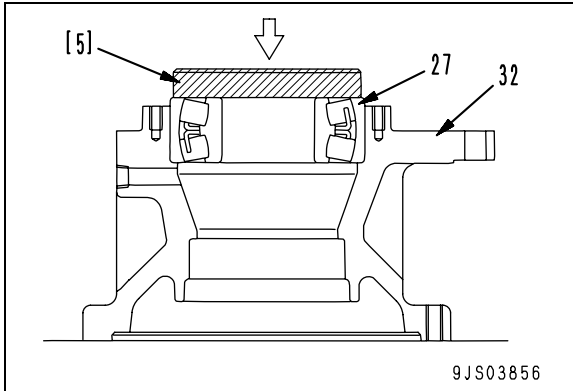
If the bearing-shaft-case assembly needs to be disassembled, do not disassemble it for repair but discard it. (Described before)

ASSEMBLY


- ★ Clean the all parts and check them for dirt or damage. Coat their sliding surfaces with engine oil before installing.
- ★ Steps 1 – 4 are procedures for assembling the repaired section. Use the prepared parts for those steps (described before).

1. Bearing

Using push tool [5], press fit bearing (27) to case (32).

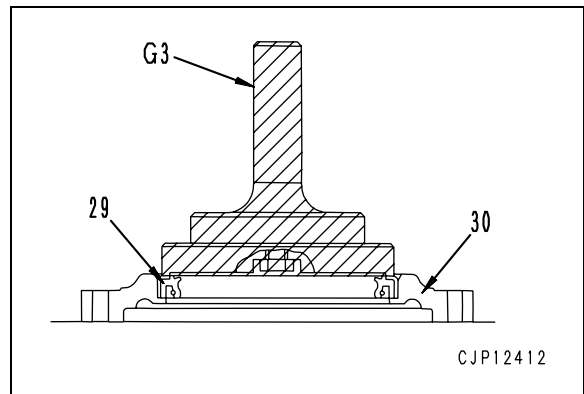
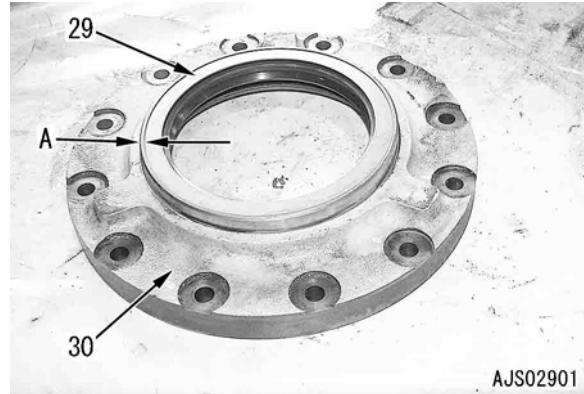
**2. Cover assembly**

- 1) Set oil seal (29) on cover (30) horizontally.
- 2) Using push tool **G3**, press fit oil seal (29) to cover (30).

 Periphery of oil seal:

Gasket sealant (LG-6)

- ★ Take care that the gasket sealant (LG-6) will not stick to the oil seal lip.
- ★ When not using push tool **G3**, use another push tool to push part **A** around the oil seal evenly.
- ★ Take care that oil seal (29) will not slant while press fitting it.



- 3) Install cover assembly (26) to case (32) and tighten mounting bolts (23).

- ★ Match the drain ports.

 Cover fitting face:

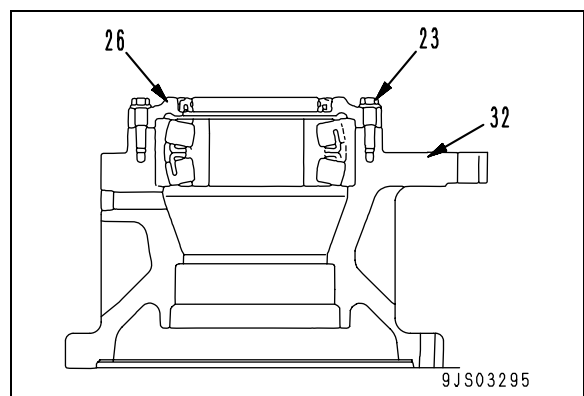
Gasket sealant (LG-6)

- ★ When applying the gasket sealant, take care not to project it into the drain port.

 Mounting bolt:

66.2 ± 7.4 Nm {6.75 ± 0.75 kgm}

 Oil seal lip: **Grease (G2-LI)**

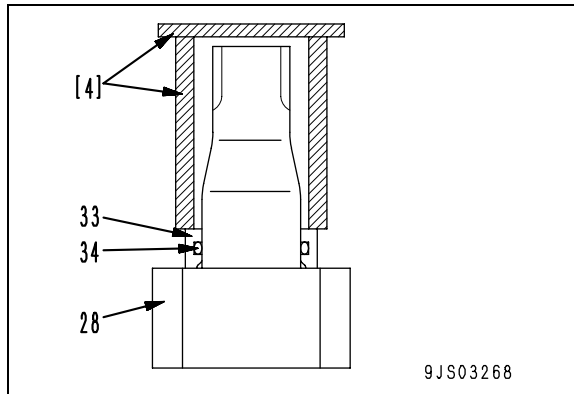


3. Shaft and case assembly

★ Perform steps 1) and 2) for only PC220-7.

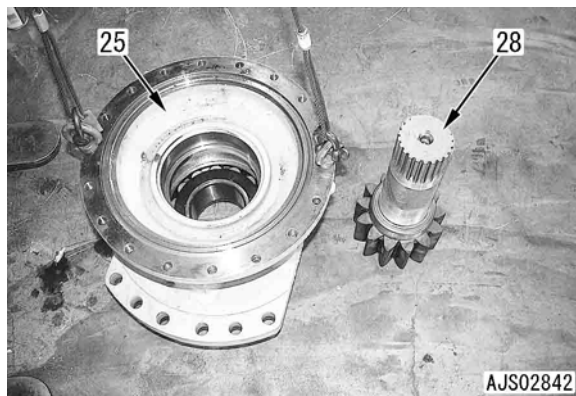
- 1) Install O-ring (34) to spacer (33).
- 2) Using push tool [4], press fit spacer (33) to shaft (28).

★ Take care that O-ring (34) will not be caught.



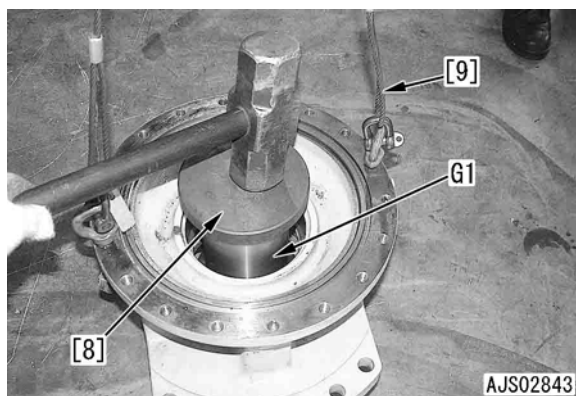
- 3) Set case assembly (25) to shaft (28).

★ Take care not to damage the oil seal.



- 4) Using push tools **G1** and [8], hit the shaft so that it will not fall down.

★ Loosen sling [9].



- 5) Set the assembly on the press.

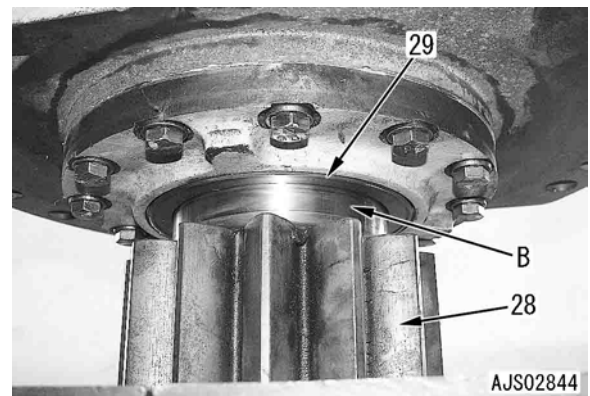
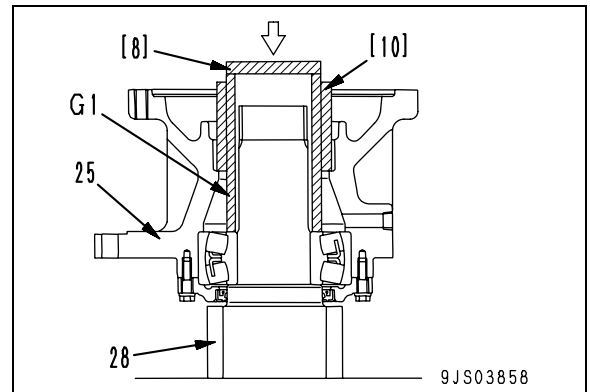
- 6) Using push tools **G1**, [8] and [10], press fit the bearing inner race.

★ Press fitting force: Several ton

★ Set push tool [10] so that case assembly (25) will not slant largely.

★ Hit the flange of case assembly (25) lightly and frequently to correct its slant.

★ Set case assembly (25) horizontally so that oil seal lip contact face **B** of shaft (28) will be at the center of oil seal (29).



4. Bearing

Using tool **G2**, press fit bearing (31).

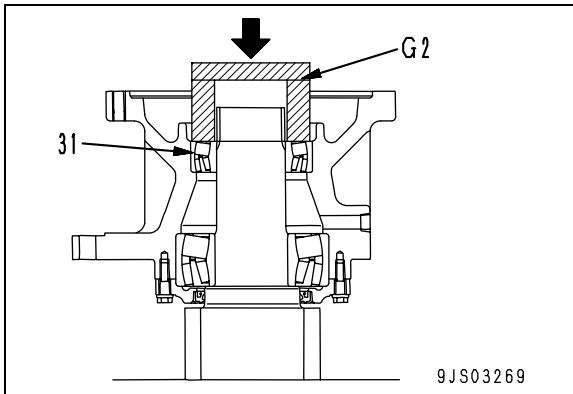
- ★ Press the bearing inner race and outer race simultaneously. Do not press only the inner race.

- ★ Press fitting force:

Inner race side: 9.4 – 26.6 kN {960 – 2,710 kg}

Outer race side: 0 – 8.9 kN {0 – 910 kg}

- ★ After press fitting the bearing, check that the case rotates smoothly.

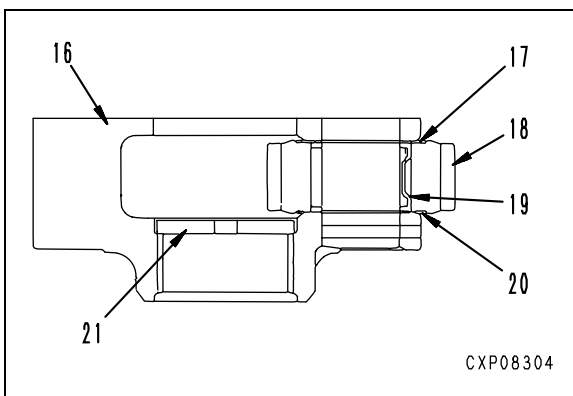
**5. No. 2 carrier assembly**

- 1) Assemble the No. 2 carrier assembly according to the following procedure.

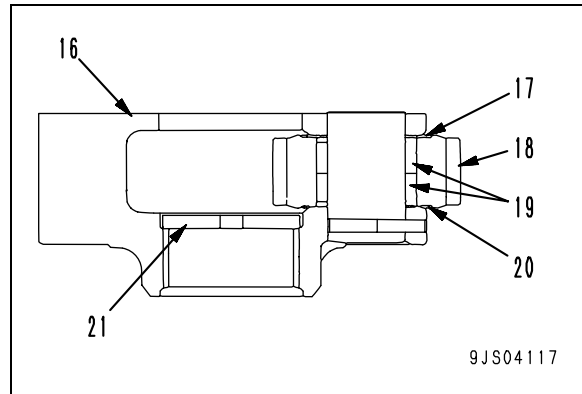
- ★ There is caulking mark (**h**) made when the pin was inserted around the side hole of carrier (16) (See v)) and the inside wall of the hole is swelled at that mark. Flatten the swelled part in advance.

- i) Install plate (21) to carrier (16).
- ii) Install bearing (19) to gear (18) and fit top and bottom thrust washers (17) and (20), and then set the gear assembly to carrier (16).

- ★ PC200-7



- ★ PC220-7



- iii) Aligning the pin holes of shaft (15) and carrier, lightly hit the shaft with a plastic hammer to install.

- ★ When installing the shaft, revolve the planetary gear and take care not to damage the thrust washers.

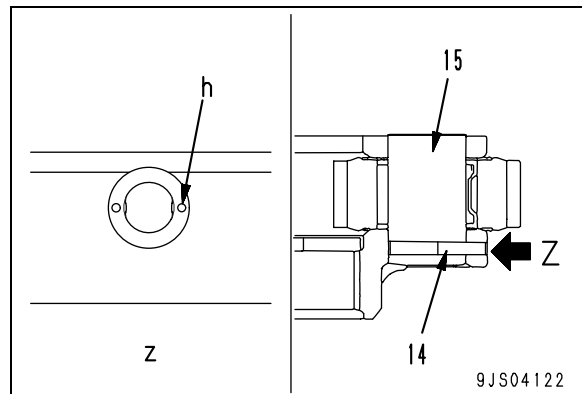
- iv) Insert pin (14).

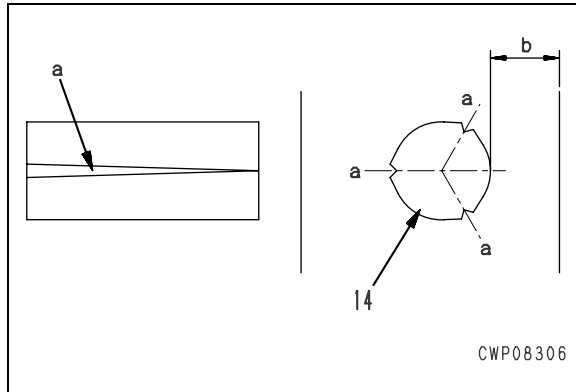
- ★ When inserting the pin, do not set the 3 claws (parts "**a**") on the periphery to the thin part of the carrier (part "**b**").

The thin part may be on the opposite side, however. Check the thin part and avoid setting the claws to it.

- v) After inserting the pin, caulk 2 parts (**h**) around the pin hole of the carrier.

- ★ Check that all the gears turn smoothly.







2) Install No. 2 carrier assembly (13).

6. Bolt

Tighten bolt (12).

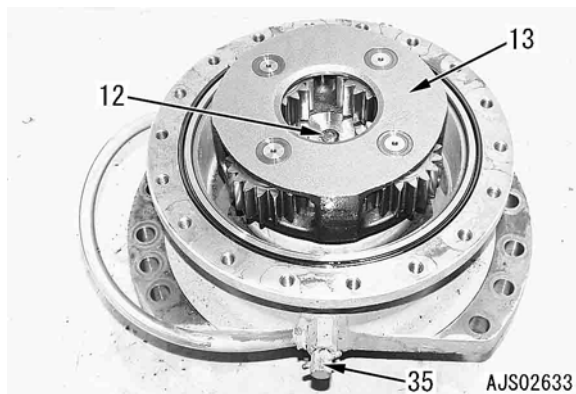
 Threads of mounting bolt:

Adhesive (LT-2)

 Mounting bolt:

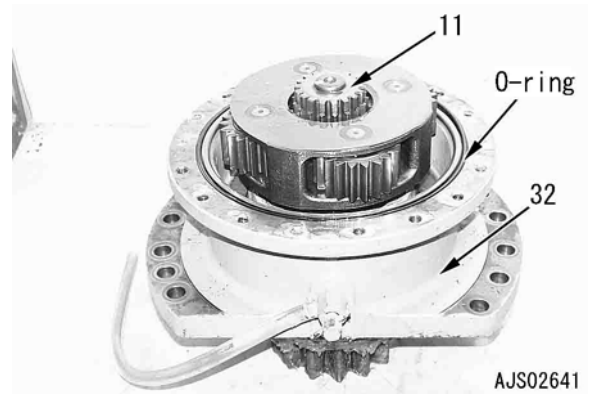
157 – 196 Nm {16 – 20 kgm}

★ If repair was made, install drain part (35).



7. No. 2 sun gear


- 1) Install No. 2 sun gear (11).
- 2) Install the O-ring to case (32).



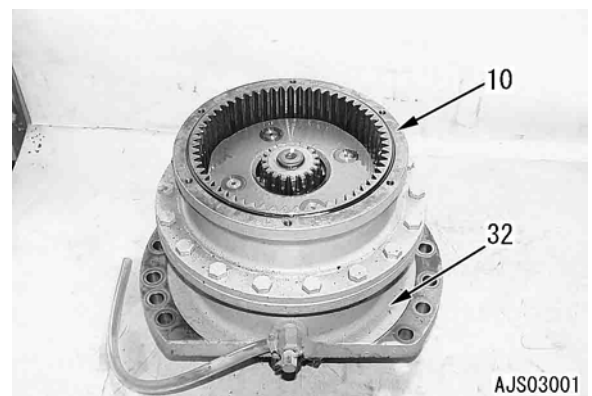
8. Ring gear

Using eyebolts (M10 x 1.5), install ring gear (10) as explained below.

- ★ Degrease the mating surfaces of ring gear (10) and case (32).
- ★ Do not stick gasket sealant to the mating surfaces of ring gear (10) and case (32).
- ★ Install the washer.

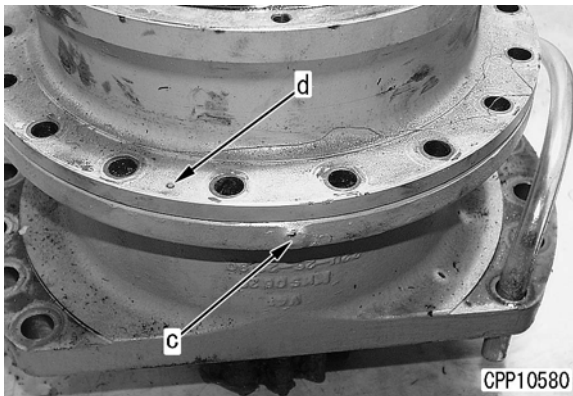
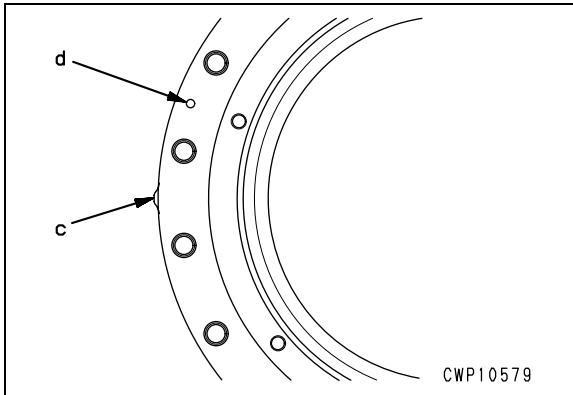
 Mounting bolt:

157 – 196 Nm {16 – 20 kgm}



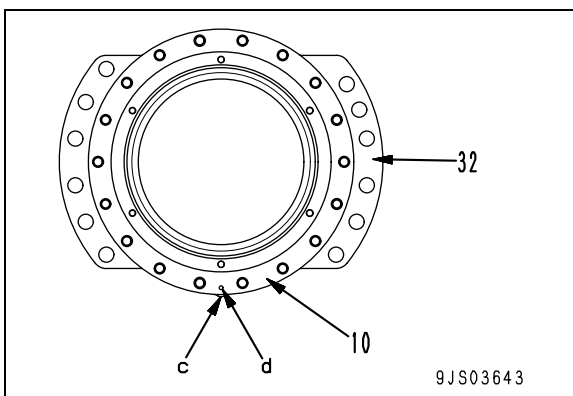
★ **For PC200-7**

When installing the ring gear, set its counter mark (part "d") and the projection (part "c") of the case flange as shown below.



★ **For PC220-7**

When installing the ring gear (10), match counter mark (part "d") on its top to the projection (part "c") on the periphery of case (32).



9. No. 1 carrier assembly

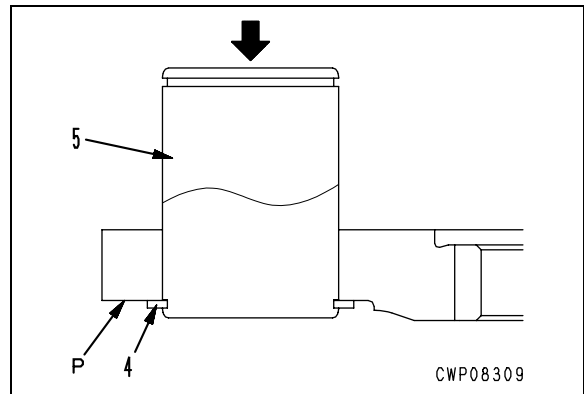
1) Assemble the No. 1 carrier assembly according to the following procedure.

- i) Press fit shaft (5) to the carrier in the direction of the arrow until the snap ring groove is seen.

★ Press fitting force (Reference value):

11.2 – 25.8 kN {1,140 – 2,630 kg}

- ii) Install snap ring (4), and then push it back until it is fitted to face **P** of the carrier. Take care not to push it back too much.



- iii) Install plate (9), and then install thrust washers (8), bearing (7), and gear (6).

- iv) Install snap rings (4) to shaft (5).

★ **PC200-7**

