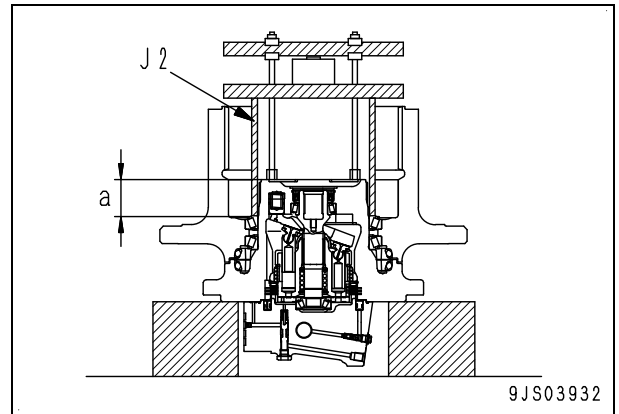


5. Install bearing (26) by tapping it lightly with the push tool.

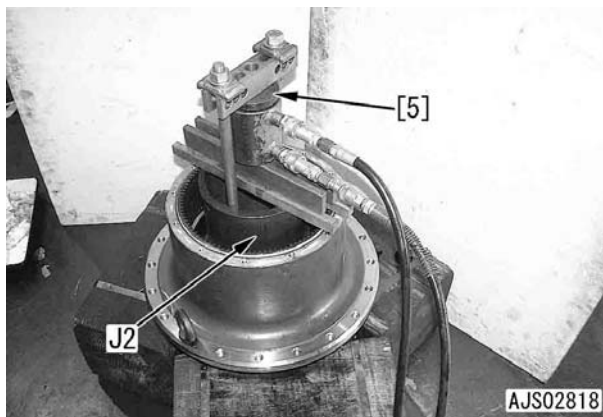


- 7] Measure the size (a) under the condition described in 6] above.



6. Nut

- 1) Install nut as follows.
 - 1] Rotate the hub 2 - 3 times.
 - 2] Use tool **J2** and the push tool [5] to press the inner race of bearing (26).
 - ★ Pressing force:
29.4 – 38.2 kN {3.0 – 3.9 ton}
 - 3] Rotate the hub to the both directions at least 5 times in total with the bearing inner race pressed.
 - 4] Release the pressing force.
 - 5] Press the bearing again.
 - ★ Pressing force:
17.7 – 21.6 kN {1.8 – 2.2 ton}
 - 6] Rotate the hub 2 - 3 times.

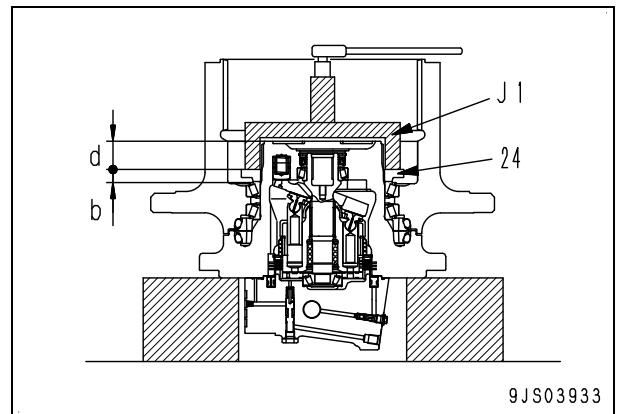


- 8] Measure thickness (b) of independent nut (24).

- 9] $(a) - (b) = (c)$

- 10] Use tool **J1** to tighten nut (24) until the following condition is met:

Dimension (d): $(c) + 0.06/-0.04$



- 2) Measure the tangential force of the hub against the motor case in the rotation direction using the push scale [6].

★ Tangential force: **Max. 490 N {50 kg}**

★ The tangential force denotes the maximum force at start of the rotation.



3) Install lock plate (23).

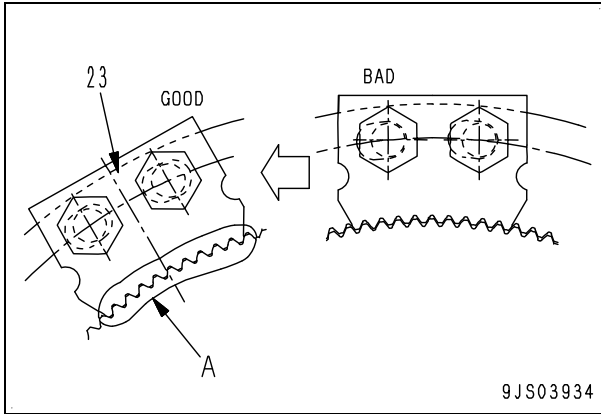
- ★ Install the lock plate so that the splines (A) of the motor and the lock plate are in full contact.



Mounting bolt thread:

Adhesive (LT-2)

- ★ Do not apply the adhesive (LT-2) to the thread portion of the nut.



7. No. 2 carrier assembly

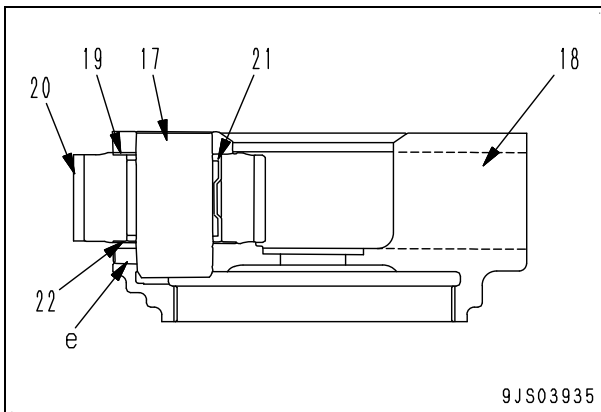
1) Assemble No. 2 carrier assembly as follows.

- ★ Replace thrust washers (19) and (22) as well as pin (16) with new ones.
- ★ There is trace of punching on the end face of carrier side hole (e) which was caused when the pin was inserted and caulked. Before pin installation, remove the protrusion in the pin hole as a result of punching.

1] Assemble bearing (21) to gear (20), fit top and bottom thrust washers (19) and (22) and then set the gear assembly on carrier (18).

2] Align the pin holes on shaft (17) and the carrier, and install shaft (17) by tapping it lightly with a plastic hammer.

- ★ Install the shaft, rotating planetary gear (20). Take care so the thrust washer is not damaged.

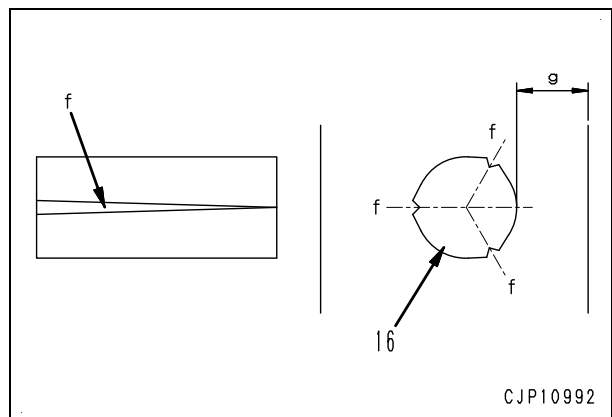
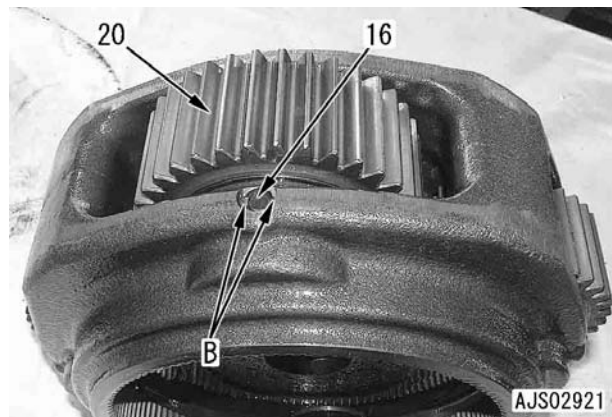


3] Insert pin (16).

- ★ When inserting the pin, take care that the 3 claws (parts f) on the periphery of the pin will not be placed on the thin parts of the carrier (parts g). The thin wall part may be on the opposite side depending on carriers, however. Check each carrier and avoid setting any claw of the pin to the thin wall part. If there is a groove, avoid the groove.

- ★ After assembling the carrier assembly, check that gear (20) rotates smoothly.

- ★ After the pin is inserted, punch the pin (B) on the carrier.

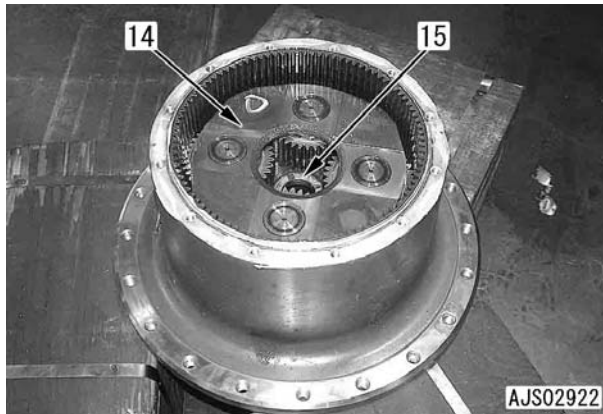


2) Install No. 2 carrier assembly (14).

- ★ Align the 4 gear shaft ends of the carrier assembly (14) with the 4 dimples on the motor case end surface to install.

8. Thrust washer

Install thrust washer (15).



9. No. 2 sun gear

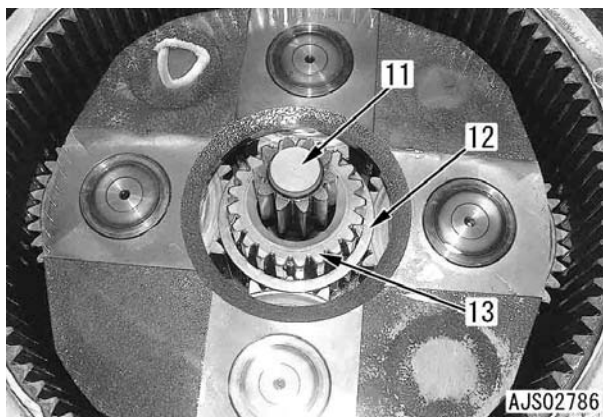
Install No. 2 sun gear (13).

10. No. 1 sun gear

Install No. 1 sun gear (11).

11. Thrust washer

Install thrust washer (12).



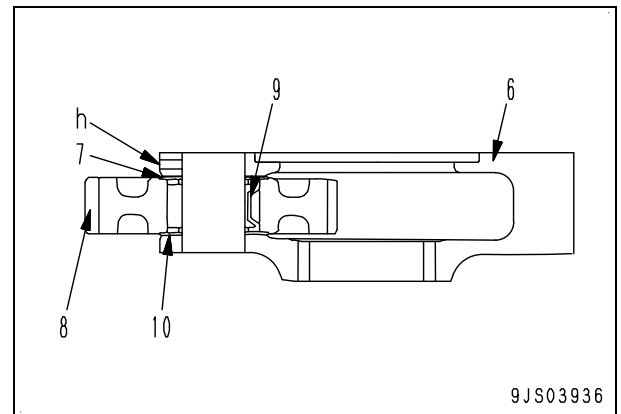
12. No. 1 carrier assembly

1) Assemble No. 1 carrier assembly as follows.

★ Replace thrust washers (7) and (10) as well as pin (4) with new ones. (See Pin (4): 3].)

★ There is trace of staking on the end surface of carrier side hole (h), which was performed by using a punch for locking of the inserted pin. Remove the protrusion due to the staking in the pin hole beforehand.

1] Assemble bearings (8) and (9), fit top and bottom thrust washers (7) and (10) and then set the gear assembly on carrier (6).



- 2] Align the pin holes on shaft (5) and the carrier, and install shaft (5) by tapping it lightly with a plastic hammer.

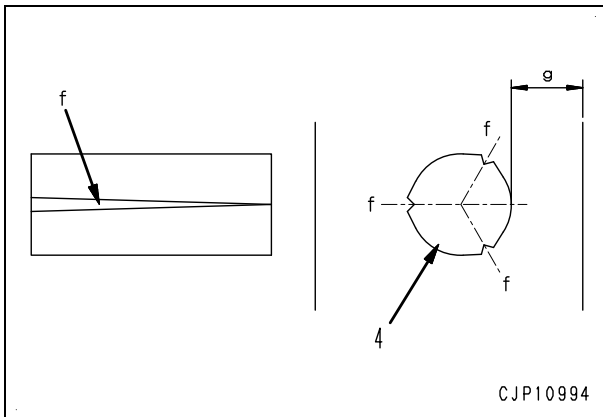
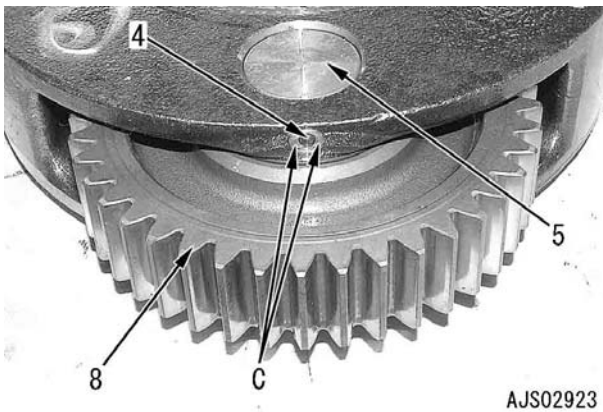
★ Install the shaft, rotating the planetary gear (8). Take care so the thrust washer is not damaged.

- 3] Insert pin (4).

★ When inserting the pin, take care that the 3 claws (parts **f**) on the periphery of the pin will not be placed on the thin parts of the carrier (parts **g**). The thin wall part may be on the opposite side depending on carriers, however. Check each carrier and avoid setting any claw of the pin to the thin wall part. If there is a groove, avoid the groove.

★ After assembling the carrier assembly, check that gear (8) rotates smoothly.

★ After the pin is inserted, punch the pin (**C**) on the carrier at 2 locations.



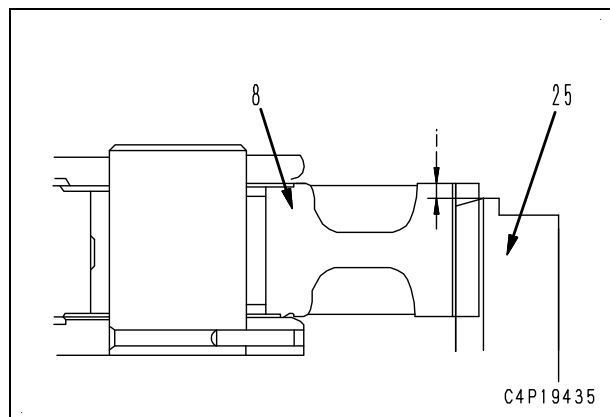
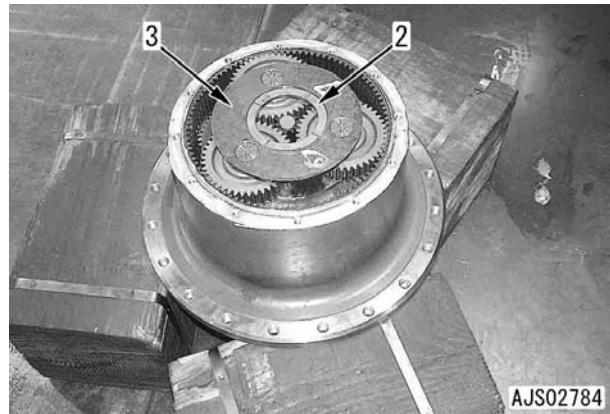
- 2) Install No. 1 carrier assembly (3).

13. Thrust washer

Install thrust washer (2).

★ After installing washer (2), measure dimension (i) from the upper end face of planetary gear (8) to that of ring gear assembly (25) to check for the correct assembly condition.

★ If dimension (i) is **0.6 mm** or larger, it is not assembled correctly. Check the assembling condition.

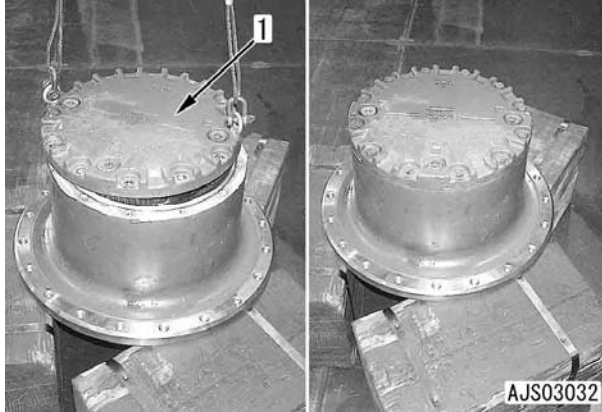


14. Cover

Install cover (1).

 **Cover mounting face:**
Liquid gasket (LG-6)

 **Mounting bolt:**
98 – 123 Nm {10.0 – 12.5 kgm}



15. Refilling of oil

Tighten the drain plug and supply power train oil (TO30) from the oil filler port.

 **Final drive case:**

3.5 ℓ

- ★ Do a final check of the oil level at the determined position after installing the final drive assembly to the chassis.

Removal and installation of sprocket

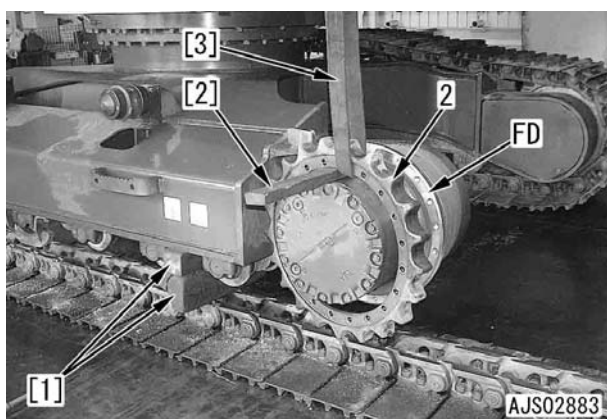
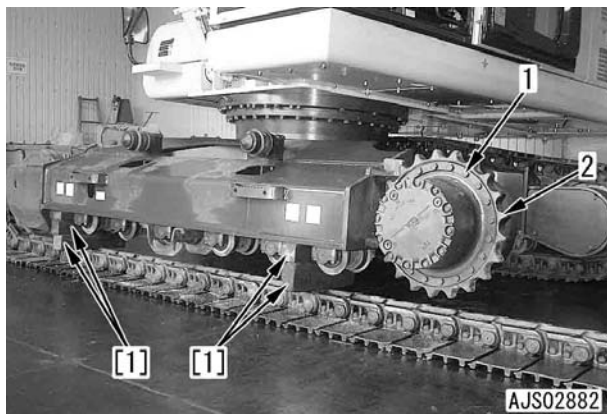
Removal

1. Separate track shoe assembly. For details, see "Separation and connection of track shoe assembly".
2. Swing work equipment 90°, push up chassis with work equipment and place block (1) between track frame and track shoe.
3. Remove sprocket (2), hanging as follows.
 - 1) Remove mounting bolts (1). [*1]
 - ★ Before removing the final fixing bolt, place block [2] under sprocket (2).
 - 2) Put sprocket (2) on block [2], make a clearance from final drive (FD), and lead sling [3] in between.



Sprocket:

40 kg



Installation

- Perform installation in the reverse order to removal.

[*1]



Threads of sprocket mounting bolt:

Adhesive (LT-2)



Sprocket mounting bolt:

441 – 490 Nm {45 – 50 kgm}

Removal and installation of swing motor and swing machinery assembly



Serial No.: 1001 – 2634

- ⚠ Removal (and installation) procedures in this section must be carried out by a person who has finished a special training course for handling low voltage electrical appliances. Understand the contents of 00 Introduction, safety, and basic information, "Safety precautions 1. Precautions peculiar to hybrid machine" and "Handling of hybrid devices and high-voltage wirings" before starting work.**

Removal



- ⚠ Discharge the capacitor. For details, see 00 Introduction, safety, and basic information, "Handling of hybrid devices and high-voltage wirings", "Discharge procedure for capacitor".**
- ⚠ Disconnect two one-touch connectors (cable terminals of (+) and (-)) from the capacitor (See step 3).**
- ⚠ Park the machine on a level place, lower the work equipment to the ground completely, and stop the engine.**
- ⚠ Referring to Testing and adjusting, "Releasing remaining pressure in hydraulic circuit", release the pressure inside the hydraulic circuit and then set the lock lever to the LOCK position.**
- ⚠ Disconnect the cable from the negative (-) terminal of the battery.**

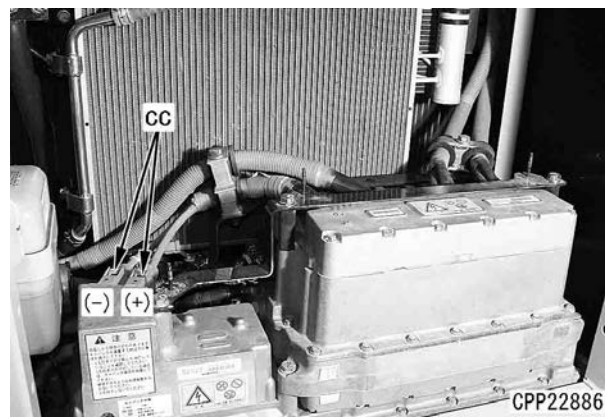
1. Open left inspection cover (1).



2. Remove three nuts (2) from the top of inverter and remove cover (3).



3. Disconnect two one-touch wiring connectors HB01 (cc) (cable terminals of (+) and (-)) from the capacitor.
- ★ While pressing the lock portion of the connector with your thumb to unlock the connector, pull out the connectors.



4. Remove lower cover (4). [*1]



5. Loosen oil drain plug (6a) to drain the oil. [*2]
 In swing electric motor case:

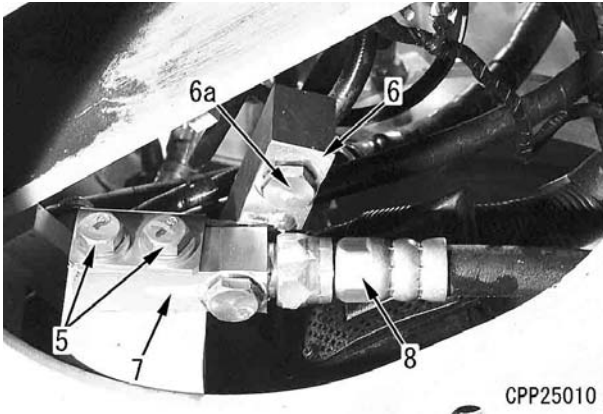
1.6 – 1.8 ℓ

Drained amount:

1.6 ℓ

6. Remove drain block mounting bolts (5) and disconnect swing electric motor drain block (6) and swing machinery drain block (7).

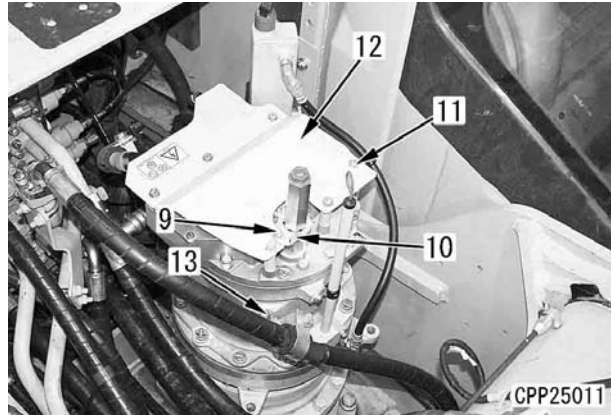
7. Pull out swing machinery drain block (7) and drain hose (8) from the hole of the revolving frame.



8. Remove mounting bolt (9) to remove plate (10). [*3]

9. Remove six mounting bolts (11) and cover (12). [*4]

10. Disconnect travel hose mounting bracket (13) from the swing electric motor. [*5]



11. Disconnect clip (14) and disconnect wiring connector CN-P01 (15).

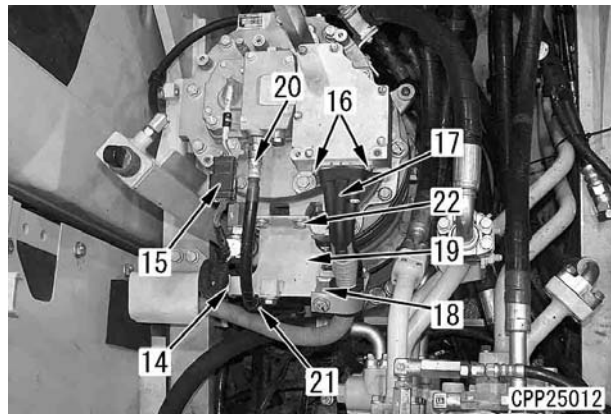
12. Remove mounting bolt (16) to disconnect power cable connector (17). [*6]

13. Disconnect power cable fixing clamp (18) from bracket (19).

14. Disconnect delivery hose (lubricating oil inlet) (20). [*7]

15. Disconnect delivery hose clamp (21) from bracket (19).

16. Remove two mounting bolts (22) and bracket (19). [*8]



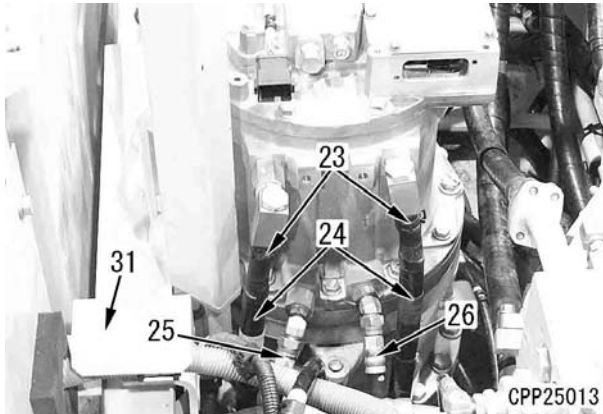
17. Loosen clamp (23) and disconnect two coolant hoses (24). [*9]

★ Make marks on the hoses so that you do not mistake them for each other.

18. Disconnect lubricating oil outlet hose (25). [*10]

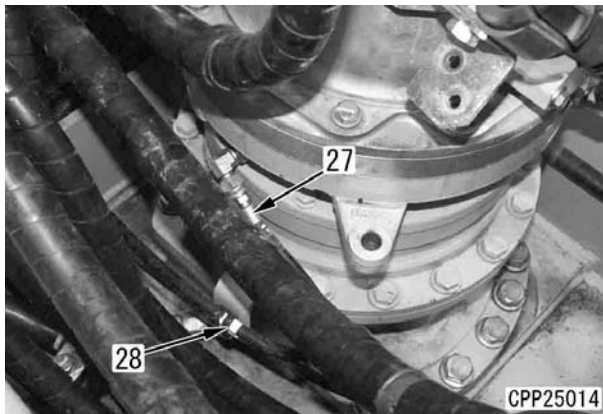
19. Disconnect lubricating oil drain hose (26). [*11]

20. Remove cover (31).

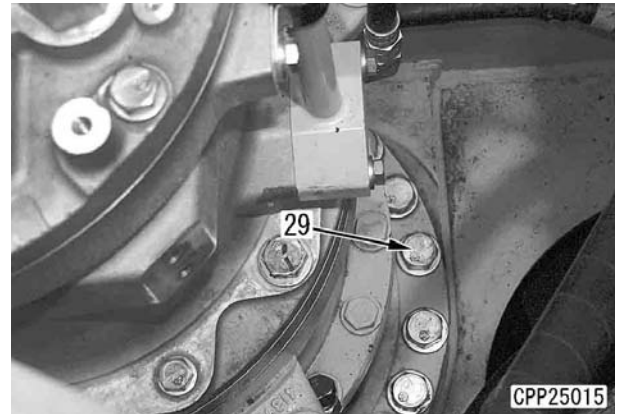


21. Disconnect swing holding brake hose (27) from the swing machinery.

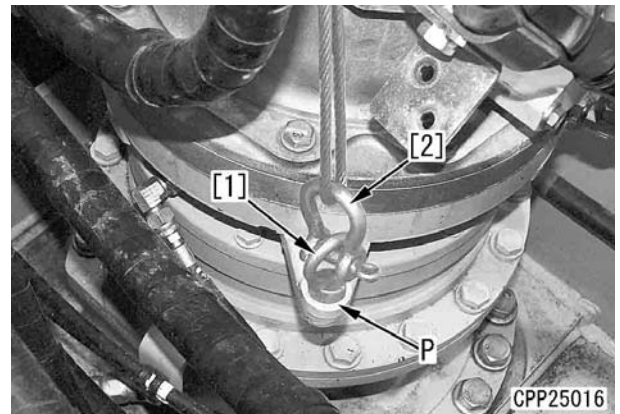
22. Disconnect hose clamp (28) from the swing machinery.



23. Remove twelve mounting bolts (29). [*12]



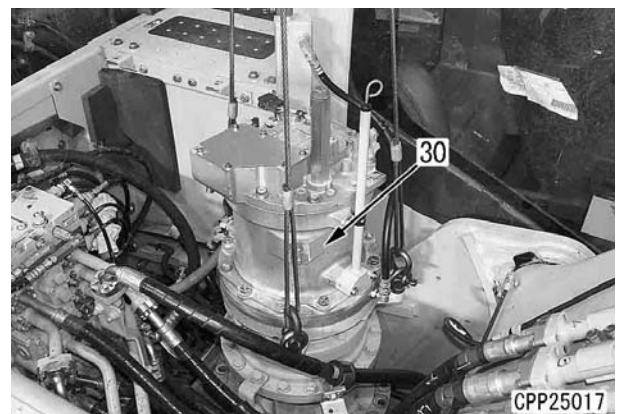
24. Install eyebolt [1] and sling [2] to three places (P) on the periphery.



25. Sling and remove the swing motor and swing machinery assembly (30).

 **Swing motor and swing machinery assembly:**

310 kg



Installation

- Perform installation in the reverse order to removal.

[*1]

🔧 **Cover mounting bolt:**
98 – 123 Nm {10.0 – 12.5 kgm}

[*2]

🔧 **Oil drain plug:**
19.6 – 24.5 Nm {2.0 – 2.5 kgm}

[*3]

🔧 **Plate fixing bolt:**
27 – 34 Nm {2.8 – 3.5 kgm}

[*4]

🔧 **Cover mounting bolt:**
27 – 34 Nm {2.8 – 3.5 kgm}

[*5]

🔧 **Mounting bolt of travel hose bracket:**
27 – 34 Nm {2.8 – 3.5 kgm}

[*6]

- Install the connector of the high-voltage wiring (power cable) according to the following procedure.
 - 1) Check plug (P) on the cable side for dirt and flaw.
 - 2) Thinly apply grease (G2-LI) to insertion sealing portion (R) of the flange.
(For protection of the seal from the inserted flange)
 - 3) Insert plug (P) on the cable side straight into power feed terminal socket (S) on the motor side.
 - ★ Direct the black mark up.
 - ★ When inserting the plug, set disconnection detection contact (Q) of the power cable under the cable.

🔧 **Mounting bolt of high-voltage wiring (power cable) plug:**
8.8 – 10.8 Nm {0.9 – 1.1 kgm}

[*7]

🔧 **Delivery hose sleeve nut:**
54 – 93 Nm {5.5 – 9.5 kgm}

[*8]

🔧 **Bracket mounting bolt:**
59.7 – 74 Nm {6.0 – 7.5 kgm}

[*9]

- ★ When connecting the coolant hoses, check their marks made when they were removed.
(Left side): Outlet hose from swing electric motor
(Right side): Inlet hose to swing electric motor

[*10]

🔧 **Sleeve nut of lubricating oil outlet hose:**
84 – 132 Nm {8.5 – 13.5 kgm}

[*11]

🔧 **Sleeve nut of lubricating oil drain hose:**
84 – 132 Nm {8.5 – 13.5 kgm}

[*12]

🔧 **Swing machinery assembly mounting bolt:**
490 – 608 Nm {50 – 62 kgm}

• Refilling of oil

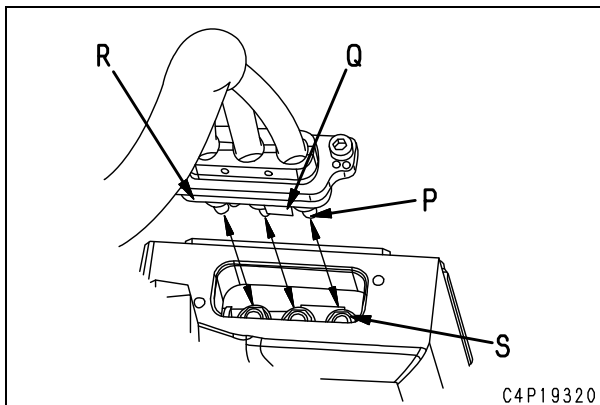
Add oil through the oil filler of the swing electric motor to the specified level. Run the engine to circulate the oil through the piping. Then, check the oil level again.



Swing electric motor case:
1.6 – 1.8 ℓ (TO10)

• Refilling coolant and bleeding air

- ★ Add coolant and bleed air. For details, see "Draining adding coolant and bleeding air for hybrid system".



Serial No.: 2635 and up

Special tool

Symbol	Part No.	Part name	Necessity	Q'ty
F 11	7875-35-2910	Cap	■	1

⚠ The removal and installation in this section must be performed by people who completed the special training for low-voltage electric work.

Before performing work, understand 00 Foreword, Safety, Basic information, "Safety notice 1. Precautions Specific to Hybrid Equipment" and "Handling Hybrid Equipment and High-Voltage Wires".

Removal



⚠ Discharge the capacitors. For details, refer to "Capacitor discharge procedure" in 00 Foreword, Safety, Basic information, "Handling Hybrid Equipment and High-Voltage Wires".

⚠ Disconnect the one-touch connectors ((+) and (-) cable terminals) (2 pieces) (see step 3).

⚠ Place the machine on a level ground, lower the work equipment to the ground, and stop the engine.

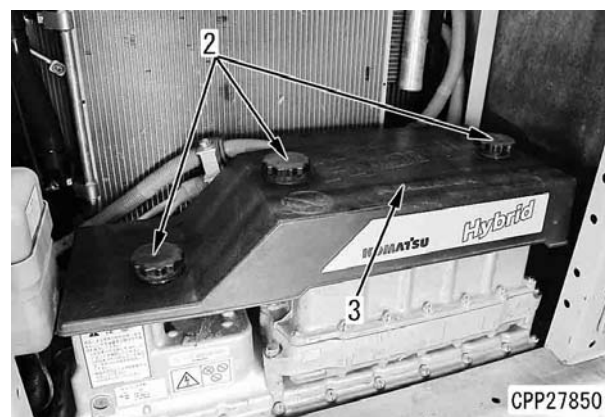
⚠ Release the remaining pressure in the hydraulic circuit and set the lock lever to LOCK position. For details, see "Releasing remaining pressure in hydraulic circuit" in Testing and adjusting.

⚠ Disconnect the cable from the negative (-) terminal of the battery.

1. Open left side inspection cover (1).

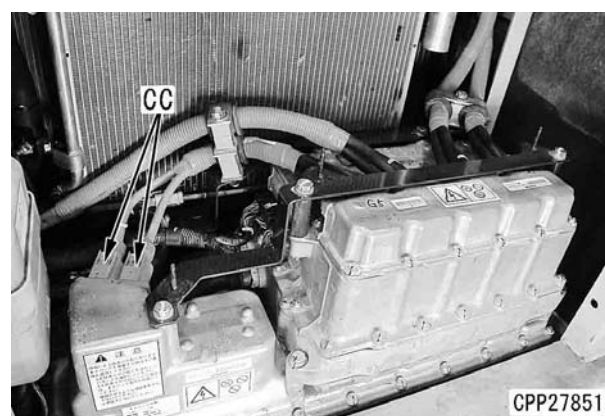


2. Remove nuts (2) (3 pieces) at the top of the inverter, and remove cover (3).

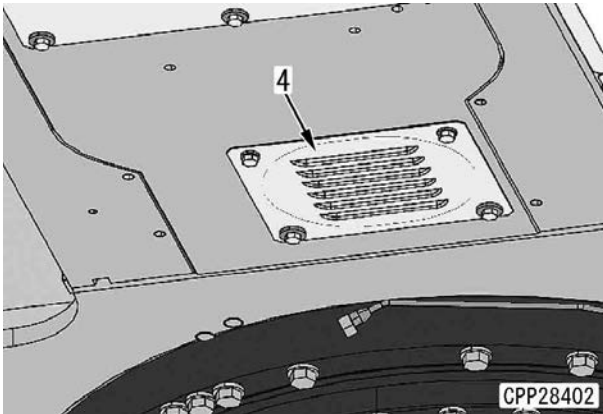


3. Disconnect one-touch wiring connectors HB01 (CC) ((+) and (-) cable terminals) (2 pieces) of the capacitor.

★ Pull out the connector while pressing the lock part of the connector with your thumb to release the lock.



4. Remove lower cover (4). [*1]



5. Loosen oil drain plug (6a) to drain the oil. [*2]

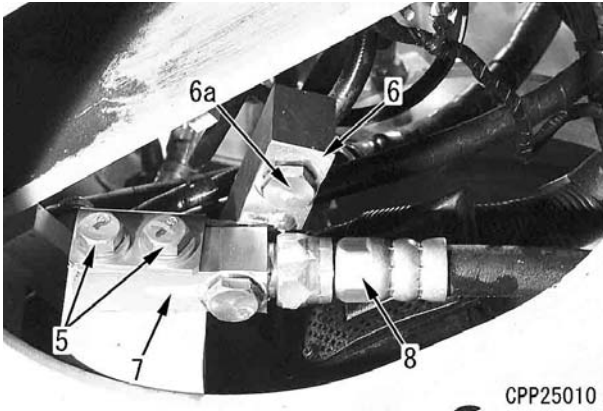
 **Swing electric motor (inside case):**
1.6 to 1.8 ℓ

Drain amount:

1.6 ℓ

6. Remove drain block mounting bolt (5) and disconnect swing electric motor drain block (6) and swing machinery drain block (7).

7. Pull out swing machinery drain block (7) and drain hose (8) through the hole of the revolving frame.



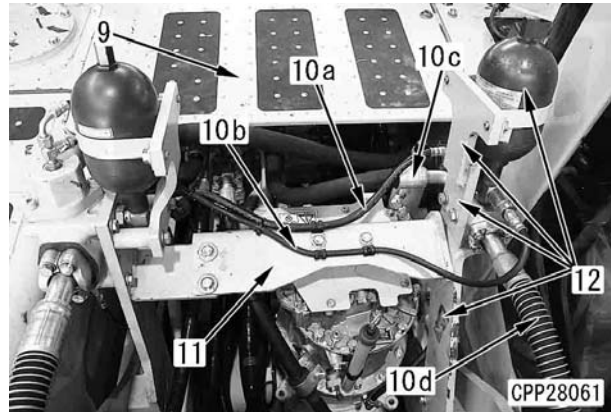
8. Remove cover (9).

9. Remove accumulator and bracket assembly according to the following procedure. (if equipped)

- 1) Disconnect hoses (10a) to (10d).
- 2) Remove bracket (11).
- 3) Sling accumulator and bracket assembly (12) to remove it.

 **Accumulator and bracket assembly (9):**

35 kg



10. Remove cover (13). [*3]

11. Disconnect travel hose mounting bracket (14) from the swing electric motor. [*4]

