Tightening Torque Specifications

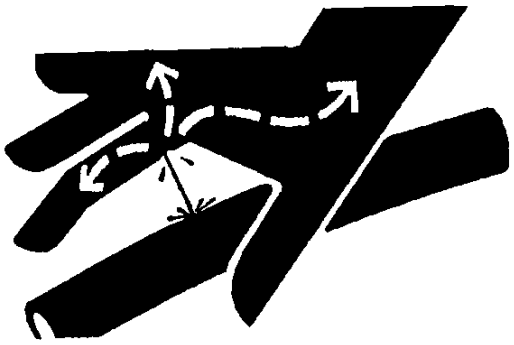
No.	Descriptions	Bolt Dia mm	Qty	Wrench Size in (mm)	Torque N·m (kgf·m, lbf·ft)
1	Engine cushion rubber mounting bolt	18	4	1.06 (27)	392.28 (40.0, 289.32)
2	Engine bracket mounting bolt	12	8	0.75 (19)	88.26 (9.0, 65.10)
3	Hydraulic oil tank mounting bolt	16	4	0.94 (24)	205.95 (21.0, 151.89)
4	Fuel tank mounting bolt	16	4	0.94 (24)	205.95 (21.0, 151.89)
5	ORS fittings for hydraulic hoses and piping			0.75 (19)	29.42 (3.0, 21.70)
				0.87 (22)	39.23 (4.0, 28.93)
				1.06 (27)	93.17 (9.5, 68.71)
				1.26 (32)	137.30 (14.0, 101.26)
		* 1-3/16"-12		1.42 (36)	176.53 (18.0, 130.19)
		* 1-7/16"-12		1.61 (41)	205.95 (21.0, 151.89)
6	Pump mounting bolt	10	8	0.67 (17)	49.04 (5.0, 36.17)
7	Control valve mounting bolt	14	4	0.87 (22)	137.30 (14.0, 101.26)
8	Swing device mounting bolt	22	12	1.26 (32)	735.53 (75.0, 542.48)
9	Swing motor mounting bolt	12	8	0.39 (10)	88.26 (9.0, 65.10)
10	Battery mounting bolt	10	2	0.67 (17)	49.04 (5.0, 36.17)
11	Cab mounting bolt	16	4	0.94 (24)	205.95 (21.0, 151.89)
12	Swing bearing mounting bolt to upperstructure	22	30	1.26 (32)	637.46 (65.0, 470.15)
	Swing bearing mounting bolt to undercarriage	22	36	1.26 (32)	735.53 (75.0, 542.48)
13	Travel device mounting bolt	20	28	1.18 (30)	617.84 (63.0, 455.68)
14	Travel reduction device cover mounting bolt	12	32	0.75 (19)	107.88 (11.0, 79.56)
15	Sprocket mounting bolt	20	16	1.18 (30)	470.74 (48.0, 347.18)
16	Track guard mounting bolt	18	8	1.06 (27)	451.12 (46.0, 332.72)
17	Upper roller mounting bolt	16	16	0.94 (24)	264.79 (27.0, 195.29)
18	Lower roller mounting bolt	18	64	1.06 (27)	451.12 (46.0, 332.72)
19	Track shoe mounting bolt	20	376	1.18 (30)	794.37 (81.0, 585.87)
20	Cover mounting bolt	10		0.67 (17)	49.04 (5.0, 36.17)
		12		0.75 (19)	88.26 (9.0, 65.10)
21	Counterweight mounting bolt	36	4	2.17 (55)	1912.37 (195.0, 1410.44)
22	Front pin holding nut	20	12	1.18 (30)	539.39 (55.0, 397.82)

* : UNF thread

Note: (1) Apply lubricant (e.g. white zinc B solved into spindle oil) to bolts and nuts to stabilize friction coefficient of them.
(2) Make sure bolt and nut threads are clean before installing.
(3) Apply Loctite to threads before installing and tightening swing bearing mounting bolts.

REMOVE AND INSTALL MAIN FRAME

1. Release air from the hydraulic oil tank by pushing down the button on the air breather cap.



SA-031

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury.

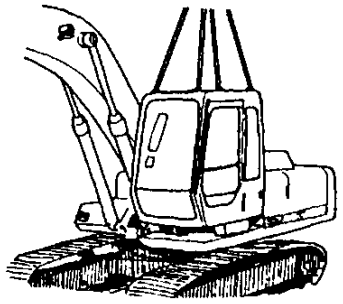
Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result.

Remove Main Frame

1. Remove cab assembly.
   (See Remove Cab in this section.)

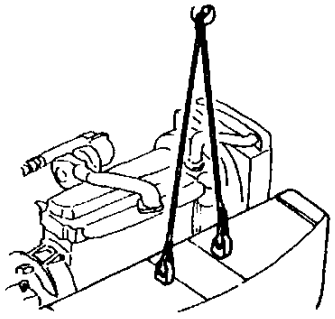
CAUTION :The approximate weight of cab is 230 kg (507 lb).



W105-02-03-001

2. Remove counterweight
   (See Remove Counterweight in this section.)

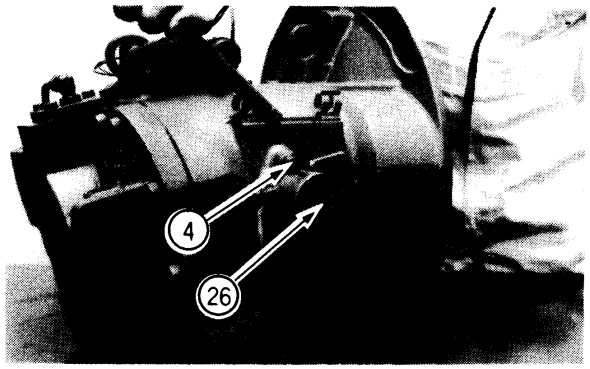
CAUTION :The approximate weight of counterweight is 3900 kg (8598 lb).



W105-02-02-002

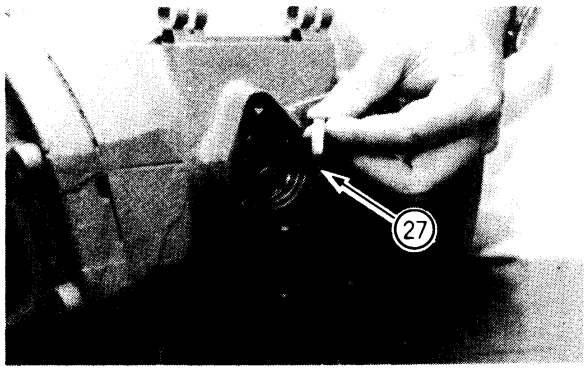
10. Remove mounting bolts (4) and spring washer (5) to remove A-sensor (26), and then remove O-ring (29).

    ⌐ : 5 mm



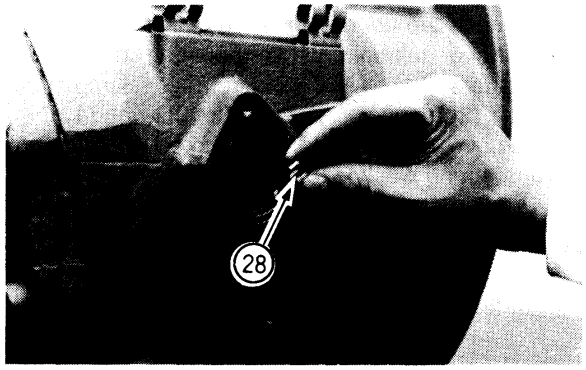
W107-02-04-014

11. Remove spacer (27) from casing (41).



W107-02-04-015

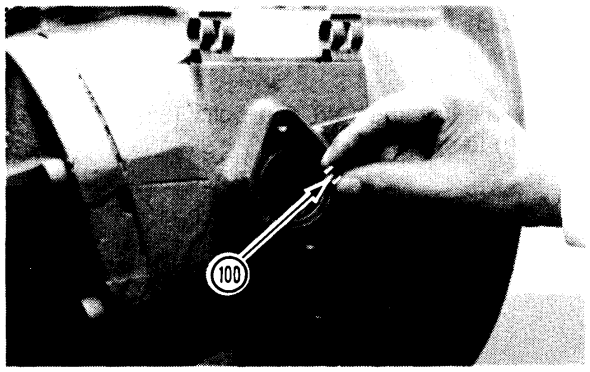
12. Remove spring plate (28) from shaft (22).



W107-02-04-016

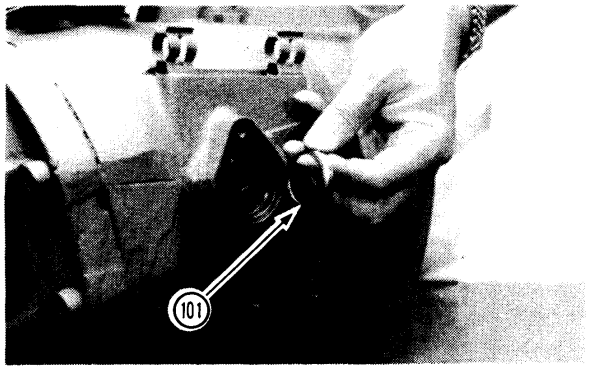
≪Install Sensor≫

28. Apply grease on spring plate (100) and install spring plate (100) in to shaft (107).



W107-02-04-081

29. Install spacer (101) in to casing (77).



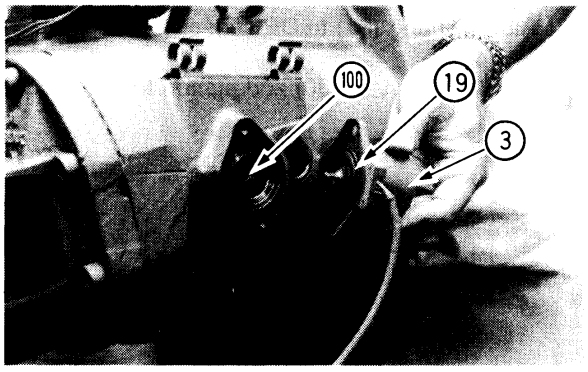
W107-02-04-082

30. Attach O-ring (99) to A-sensor (3).
Install A-sensor (3) on casing (77) with the shaft punch mark facing towards N-sensor and the shaft flat top inserted in spring plate. (with this position, sensor lead cable is positioned on the opposite side, as shown)

Install washers (2) and bolts (11), and tighten to specification.

: 5mm

: 2.5 kgf·m (24.5 N·m)
(18.0 lbf·ft)



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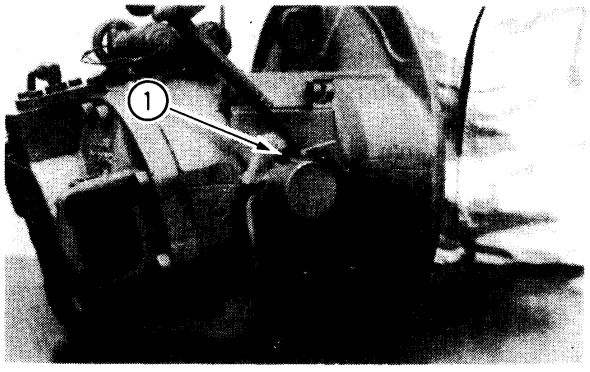

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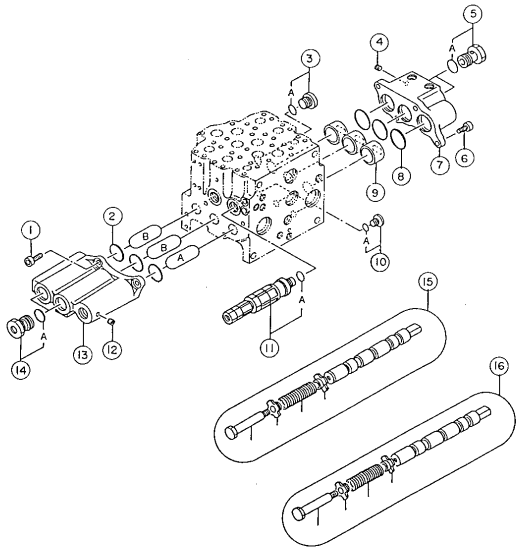
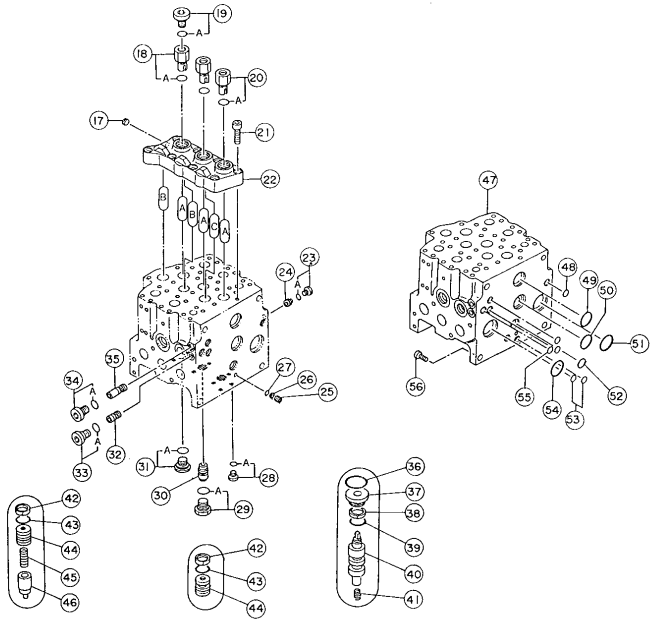
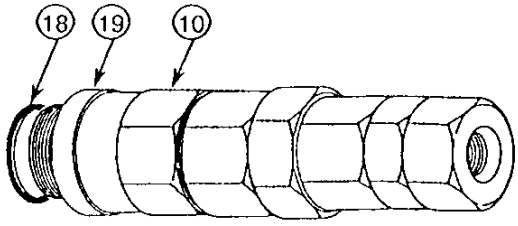




1— Bolt
2— O-ring
3— Plug and O-ring
4— O-ring
5— Plug and O-ring
6— Bolt
7— Under cover
8— O-ring
9— Spacer
10— Plug and O-ring
11— Main relief valve
12— Plug
13— Upper cover
14— Plug and O-ring
15— Spool
16— Spool
17— Plug
18— Plug and O-ring
19— Plug and O-ring
20— Plug and O-ring
21— Bolt
22— Flange
23— Plug and O-ring
24— Plug
25— Plug
26— Filter
27— O-ring
28— Plug and O-ring
29— Plug and O-ring
30— Shuttle
31— Plug and O-ring
32— Filter
33— Plug and O-ring
34— Plug and O-ring
35— Filter
36— O-ring
37— Coller
38— Buck-up ring
39— O-ring
40— Spool
41— Spring
42— Back-up ring
43— O-ring
44— Plug
45— Spring
46— Poppet
47— Control valve
48— O-ring
49— O-ring
50— O-ring
51— O-ring
52— O-ring
53— O-ring
54— Back-up ring
55— O-ring
56— Bolt

4. Install O-ring (18) to cap (19).



W107-02-05-123

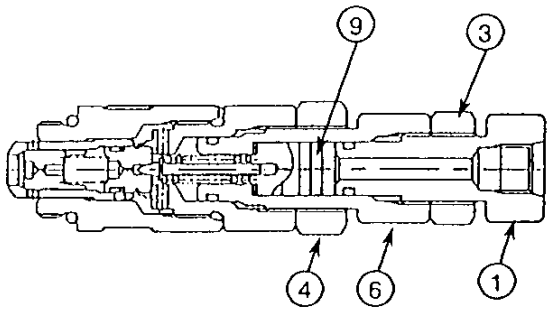
≪Pressure adjustment of main relief system (Adjustment of high pressure side)≫

1. Loosen lock nut (3), carefully tighten plug (1) until piston (9) touches the bottom of plug (6).
   Tighten lock nut (3).

: 27 mm

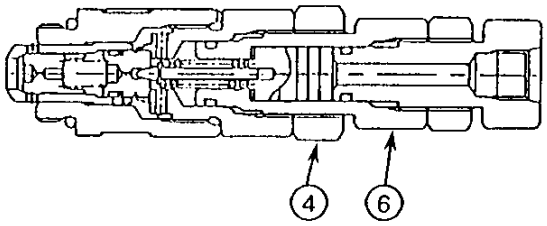
: 2 kgf·m (19 N·m, 14 lbf·ft)

: 7~8 kgf·m (78 N·m, 57 lbf·ft)



W107-02-05-124

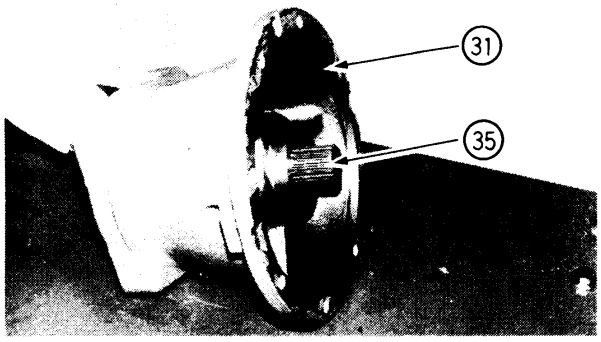
2. Loosen lock nut (4).
   By rotating plug (3), adjust the pressure until the desired pressure is obtained.



W107-02-05-125

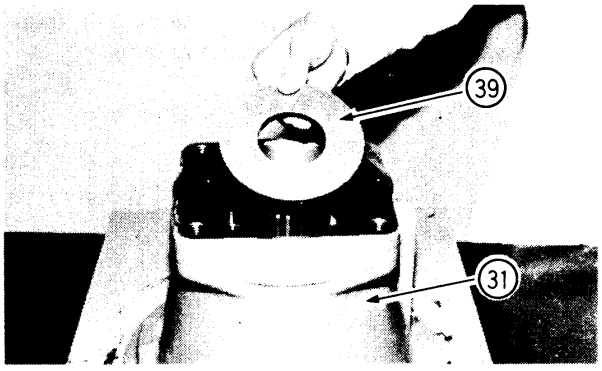
3. Tighten lock nut (4).

5. Place the casing on its side and insert shaft (35) in it.



W107-02-06-104

6. Install plate (39) in casing (31).

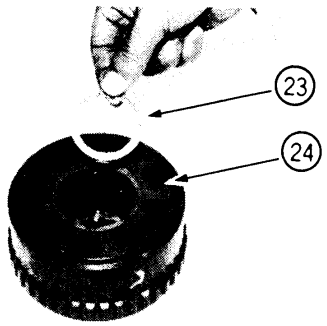


W107-02-06-105

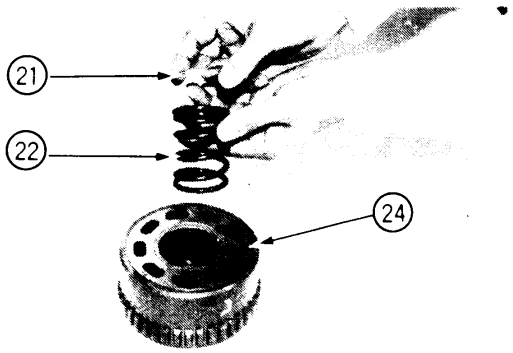
≪Assembly of cylinder block≫

7. Install spacer (23), spring (22), and spacer (21) in order into cylinder block (24).

NOTE: The thicker spacer (21) is on retaining ring (20) side.



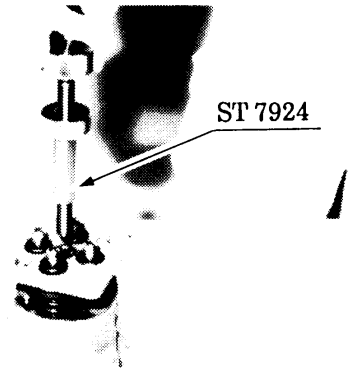
W107-02-06-106



W107-02-06-107

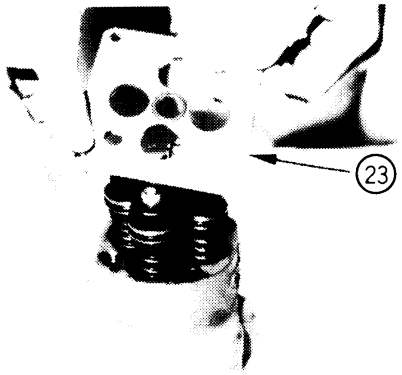
15. Remove the jig from the casing.

    Jig No: ST 7924



W105-02-07-018

16. Remove plate (23).

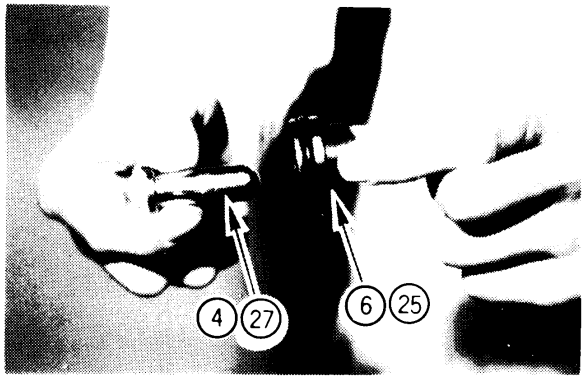


W105-02-07-019

17. Remove the pusher assembly.

W105-02-07-020

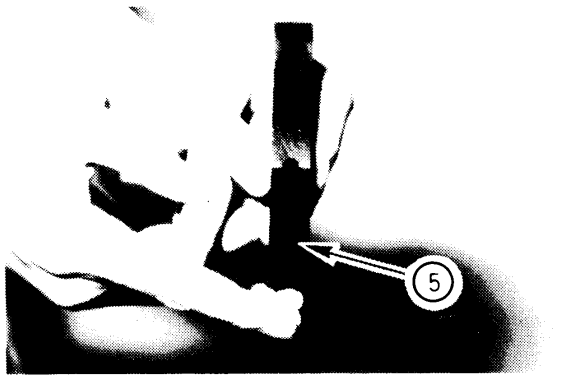
18. Remove pushers (4) and (27) from bushings (6) and (25).



W105-02-07-021

≪Assembling cam≫

24. Turn over the casing and place it on the stand. Apply grease to cam (5) and install it to holder (9).

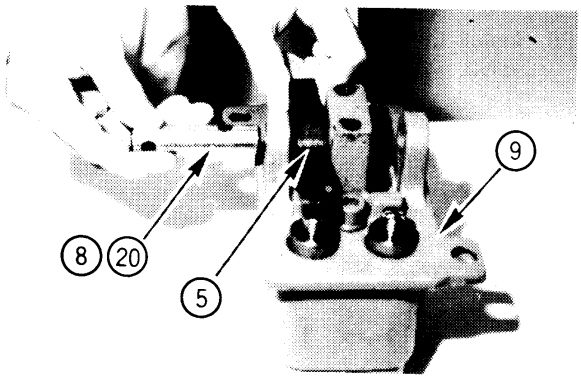


W105-02-07-118

25. Align the pin holes of holder (9) and (5), and insert pin (8) and (20) into them.

    NOTE: Pins (8) and (20) be facing the correct direction in order to be installed. Inset each of them with the closer to the spring pin hole outside.

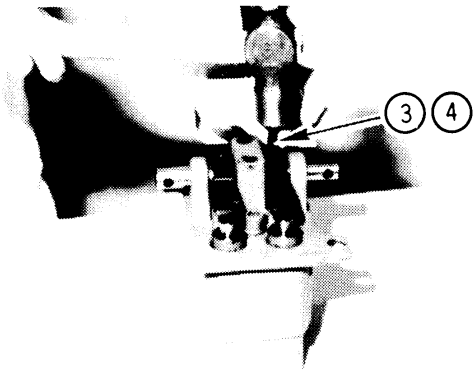
    Position the pin so that the end with the spring pin hole nearest the tip is toward the outside.



W105-02-07-119

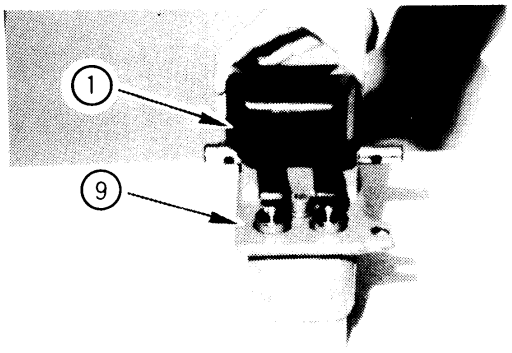
26. Drive in spring pins (3) and (4).

    NOTE: Tap in spring pin (3) and (4) till they extrude down from the end of cam (5) about 3 mm. Caulk the head of the cam to prevent them from coming out.



W105-02-07-120

27. Install cover (1) to holder (9).



W105-02-07-121

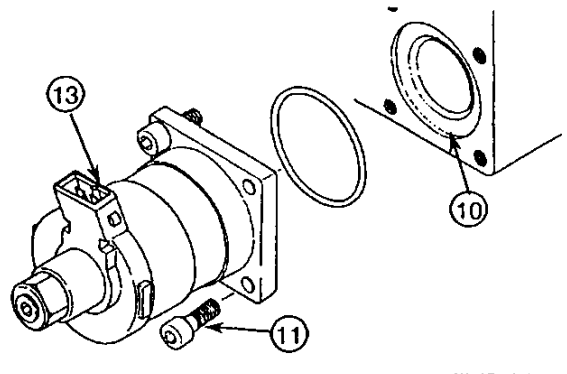
REMOVAL OF SOLENOID VALVE

NOTE: Do not tear down the solenoid valve as it is not a type to be repaired by reassembly.

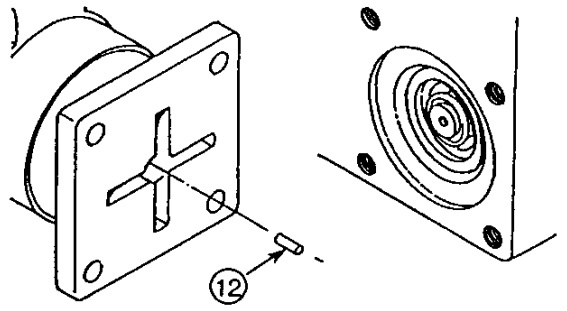
1. Loosen bolt (11) and remove solenoid (13) and O-ring (10)

   ⌐ : 3 mm

   NOTE: When removing solenoid (13),take care not to lose rod (12) provided in the solenoid



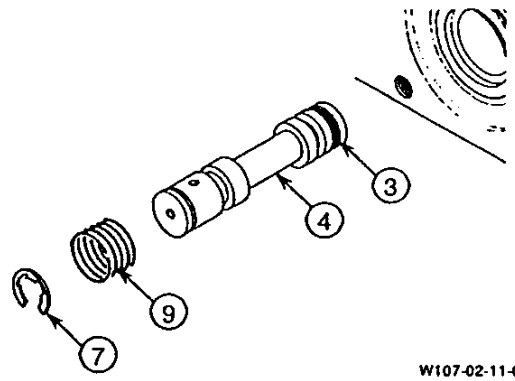
W107-02-11-005



W107-02-11-076

2. Pull spool (4) out of the sleeve and remove snap ring (7), spring (9) and O-ring (3) from the spool.

   NOTE: Be sure to pull out the spool slowly.



W107-02-11-006

Removal and Installation of Travel Shuttle Valve

Removal

1. Release air from the hydraulic oil tank by pushing down the button on the air breather cap.

CAUTION : Escaping fluid under pressure can penetrate the skin causing serious injury.

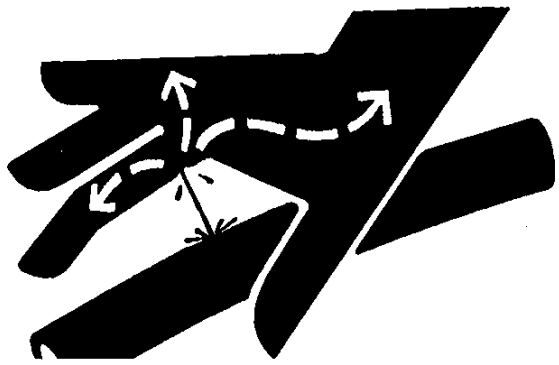
Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result.

2. Disconnect travel pressure switch harness (1).
3. Disconnect pipes (2) to (5) and (7) to (10).
4. Remove bolt (6).

Installation

1. Install bolt (6).
2. Install pipes (2) to (5) and (7) to (10).
3. Connect the travel pressure switch harness (1).



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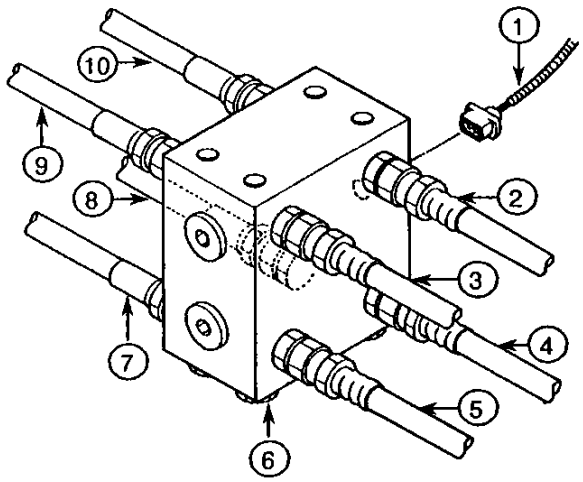


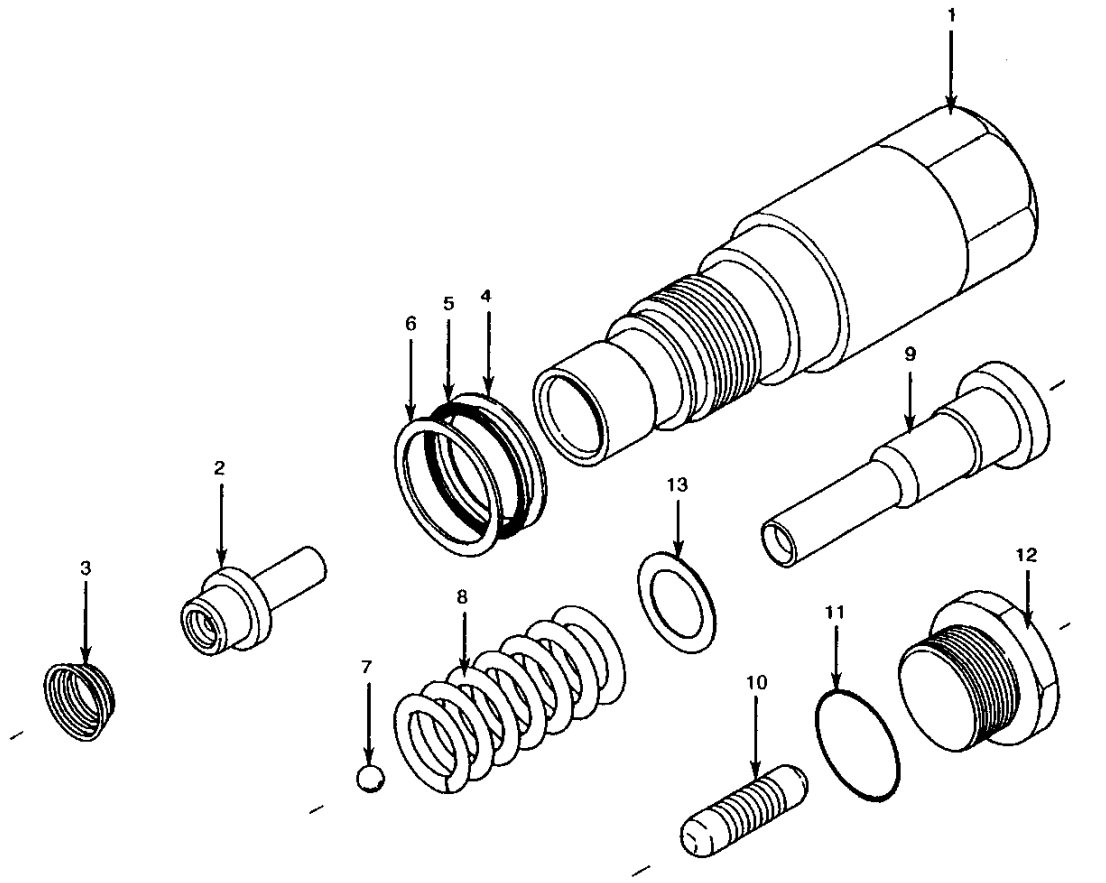
W105-02-12-001

Tightening torque

Pilot hose Tightening torque	. . . . .	4 kgf-m	(39.2 N·m) (36.9 lbf·ft)
Shuttle valve mounting bolt Tightening torque	. . . . .	5 kgf-m	(49.0 N·m) (36.1 lbf·ft)

1- Travel pressure switch harness for traveling to PVC (Pump Valve Controller)
2- Left forward travel pilot hose to Control valve
3- Right forward travel pilot hose to Control valve
4- Left backward travel pilot hose to Control valve
5- Right backward travel pilot hose to Control valve
6- Shuttle valve mounting bolt
7- Right backward travel pilot hose to Pilot valve
8- Left backward travel pilot hose to Pilot valve
9- Right forward travel pilot hose to Pilot valve
10- Left forward travel pilot hose to Pilot valve

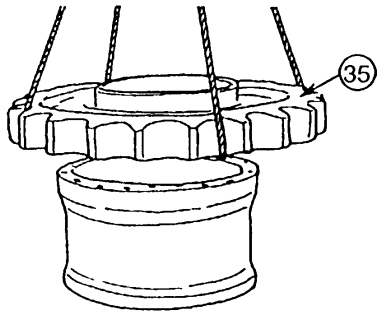
ASSEMBLE VALVE



W105-02-13-036

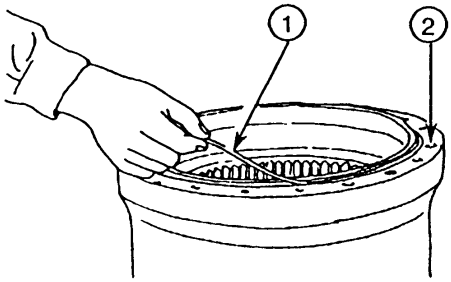
1— Body
2— Backup ring
3— O-ring
4— Backup ring
5— Seat
6— Spring
7— Ball
8— Spring
9— Shim
10— Plunger
11— Plug
12— O-ring
13— Piston

18. Remove sprocket (35) using a hoist.



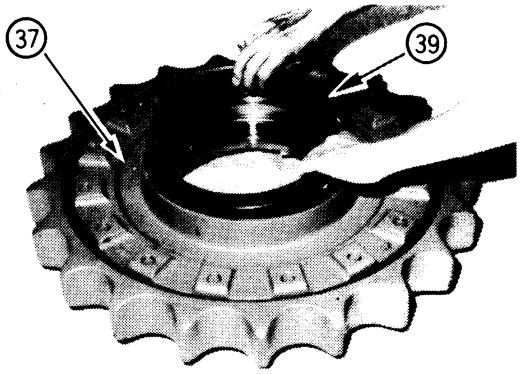
W107-03-02-023

19. Remove O-ring (1) from ring gear (2).



W107-03-02-024

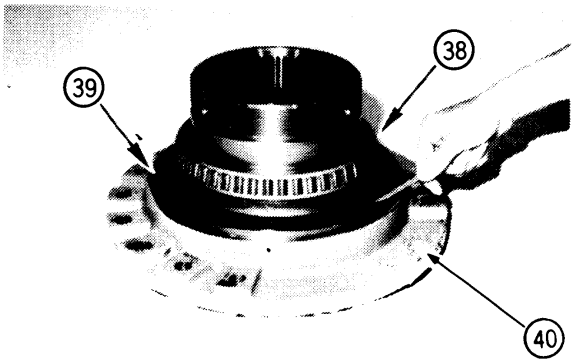
20. Remove floating seal (39) from motor (37).



W107-03-02-025

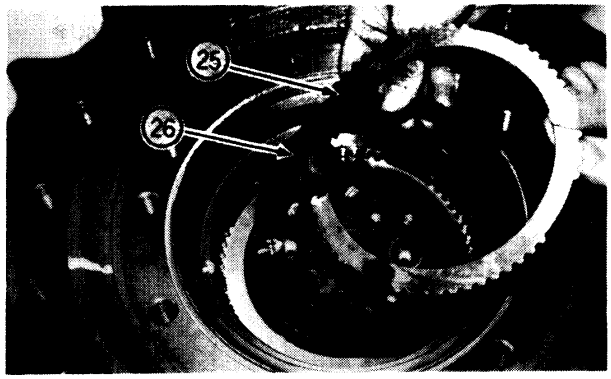
21. Remove floating seal (39) from motor (40).

Note: Remove inner race of roller bearing (38) from motor (40) if replacement is necessary.



W107-03-02-026

14. .Remove plates (25) and friction plates (26) from housing.



W107-03-02-111

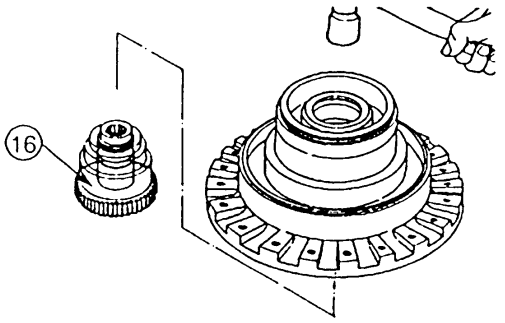
15. Remove Spacer (24).

W107-03-02-113

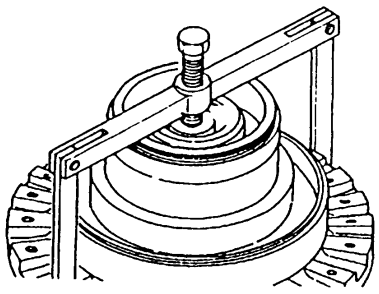
≪When the travel gear box is disassembled ≫

16. Turn housing over, remove drive disk (16) using a plastic hammer.

Note: If the desk is not removed, press drive disk (16) out using puller.



W107-03-02-114

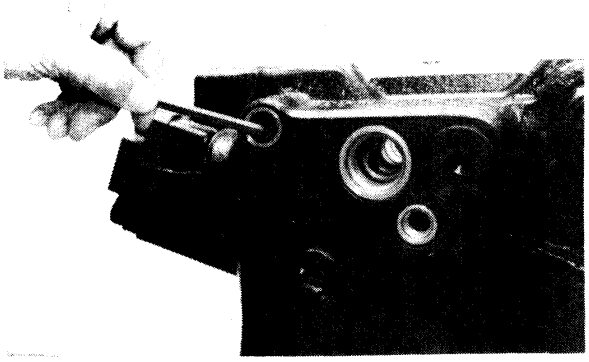


W107-03-02-115

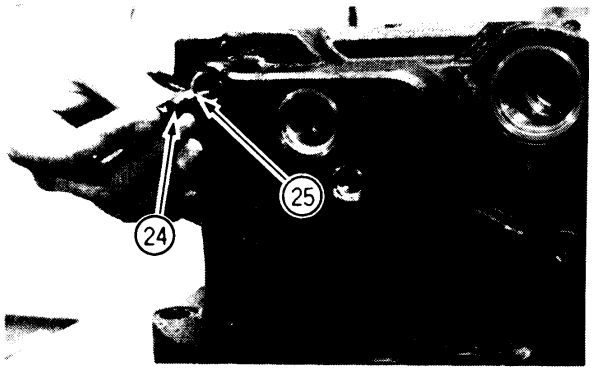
8. Remove seat (24) from the brake valve.

   Tilt brake valve and remove ball (25)

   ⌐ : 5 mm



W107-03-02-196

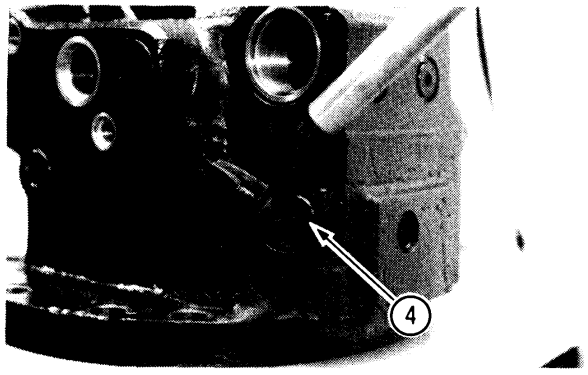


W107-03-02-197

≪Disassemble reducing valve≫

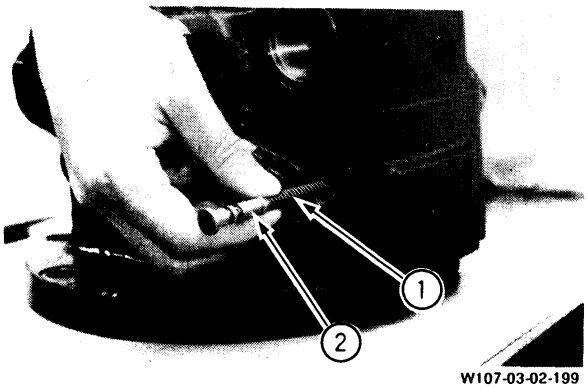
9. Remove plug (4) from the brake valve.

   ⌐ : 8 mm



W107-03-02-1981

10. Remove spool (2) and spring (1) from the brake valve



W107-03-02-199