CATERPILLAR®

Service Repair Manual

Models

313F L Excavator

Product: EXCAVATOR
Model: 313F L EXCAVATOR DJE
Configuration: 313F L Excavator DJE00001-UP (MACHINE) POWERED BY C4.4 Engine

Disassembly and Assembly
312F, 313F, 313F L Excavator Machine Systems
Media Number -M0064712-03 **Publication Date -01/08/2015** **Date Updated -27/06/2018**

i04629357

Travel Motor

SMCS - 5111; 5811-KV

Specifications

Note: Callouts in the Specifications section do not match the callouts in the Remove and Install sections.

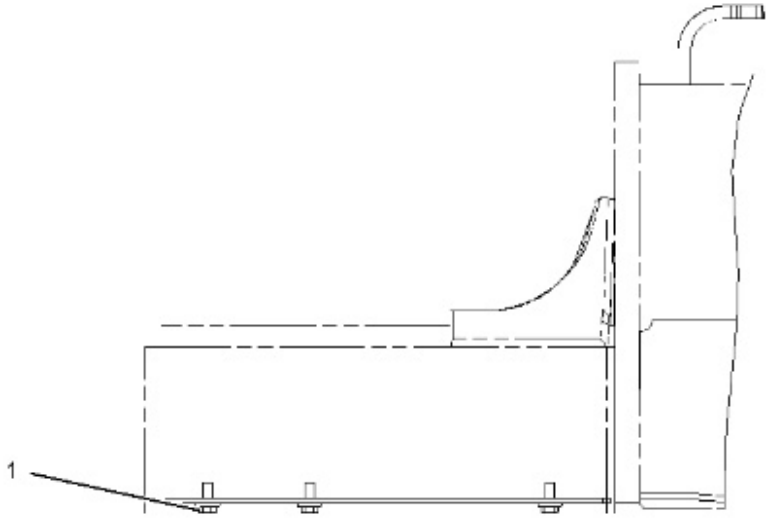

Illustration 1 g02727178

Table 1

Specification for 163-3754 Travel Motor Guard Gp			
Item	**Qty**	**Part**	**Specification Description**
1	8	**135-8576** Locking Bolt As	Torque to 130 ± 10 N·m (96 ± 7 lb ft).

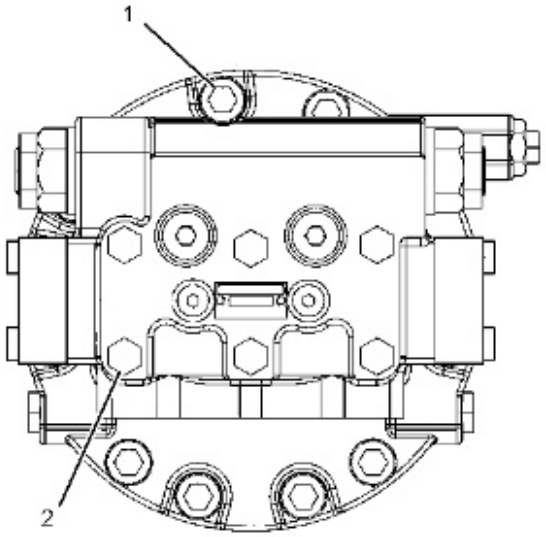

Illustration 2 g02727176

Table 2

Specification for 185-6952 Travel Motor and Mounting Gp			
Item	**Qty**	**Part**	**Specification Description**
1	3	**095-0707** Bolt	Torque to 240 ± 40 N·m (177 ± 30 lb ft).
2	6	**8T-4176** Bolt	Torque to 80 ± 8 N·m (59 ± 6 lb ft).

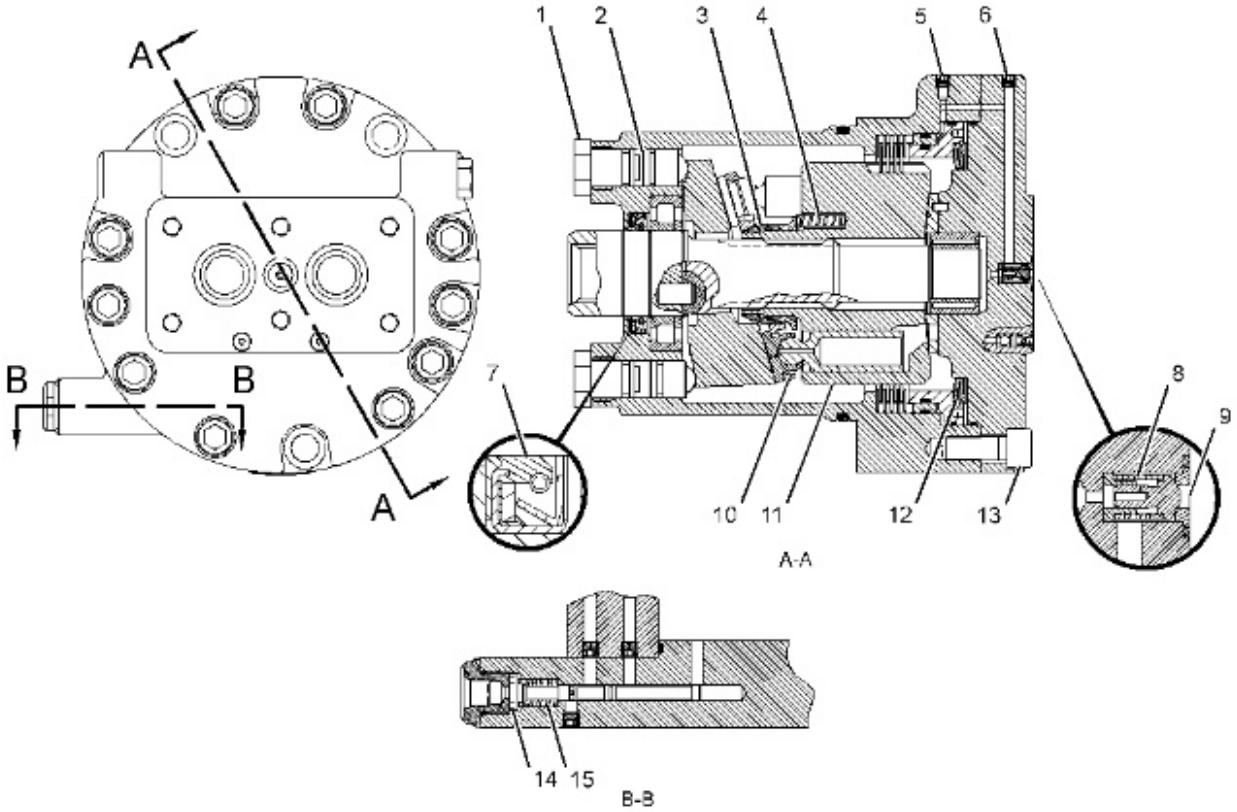

Illustration 3 g02744857

NOTICE

To prevent damage to the motor, the case must be filled with clean hydraulic oil at least to the fill port before operation.

Table 3

Specification for 185-6953 Travel Motor Gp			
Item	**Qty**	**Part**	**Specification Description**
1	2	**087-4743** Stop	Torque to 140 ± 14 N·m (103 ± 10 lb ft).
2	1	**147-5860** Piston	Lubricate the sliding surfaces lightly with **309-6932** Hydraulic Oil.
3	1	**122-5114** Ball Guide	Lubricate the sliding surfaces lightly with **309-6932** Hydraulic Oil.
4	9	**118-4057** Spring	Length under test force is 31.0 mm (1.22 inch). Test force is 360 ± 36 N (81 ± 8 lb). Free length after test is 35.900 mm (1.4134 inch).
5	1	**094-1882** Plug	Not required for the optional design for the body.
6	10	**094-1882** Plug	Apply blue Loctite high flex GM to the threads of the plug. Torque to 13 ± 2 N·m (115 ± 18 lb in).
7	-	-	Apply blue Loctite high flex GM or white Loctite Low Breakloose between the mating surfaces of the **096-4376** Lip Type Seal and the body.
8	1	**095-7380** Spring	Length under test force is 13.0 mm (0.51 inch). Test force is 14.3 ± 1.5 N (3.2 ± 0.3 lb). Free length after test is 15.000 mm (0.5905 inch).
10	2	**346-1340** Piston	Lubricate the sliding surfaces lightly with **309-6932** Hydraulic Oil.
11	1	**133-6777** Barrel	Lubricate the sliding surfaces lightly with **309-6932** Hydraulic Oil.
12	Ensure that the following conditions are fulfilled during shims installation. When parking brake release port (9) is vented to the air, the motor output shaft does not rotate with a torque of 407 N·m (300 lb ft) or less. When pressure at parking brake release port (9) is 780 kPa (113 psi), the motor output shaft rotates with a torque of 49 N·m (36 lb ft) or less. Both the inlet port and the outlet port must be open to the hydraulic tank. As required, use the following shims in order to adjust the height of springs for parking brake torque:		

	1	**096-1521** Shim	Thickness is 1.0 mm (0.04 inch).
	1	**096-3785** Shim	Thickness is 1.2 mm (0.05 inch).
	1	**096-3786** Shim	Thickness is 1.4 mm (0.06 inch).
	1	**096-3787** Shim	Thickness is 1.6 mm (0.06 inch).
	1	**096-3788** Shim	Thickness is 1.8 mm (0.07 inch).
		096-1522 Shim	Thickness is 2.0 mm (0.08 inch).
13	10	**8T-4944** Bolt	Torque to 177 ± 18 N·m (131 ± 13 lb ft).
14	1	**7Y-4216** Spool	Lubricate the sliding surfaces lightly with **309-6932** Hydraulic Oil.
15	1	**096-3978** Spring	Length under test force is 24.0 mm (0.94 inch). Test force is 74 ± 8 N (17 ± 2 lb). Free length after test is 34.700 mm (1.3661 inch).

Removal Procedure

Table 4

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
A	9U-7692	Threaded Rod	2

Start By:

a. Remove the travel brake valve. Refer to Disassembly and Assembly, "Counterbalance Balance (Travel) - Remove".

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting, and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Refer to Special Publication, NENG2500, "Dealer Service Tool Catalog" for tools and supplies suitable to collect and contain fluids on Cat products.

Dispose of all fluids according to local regulations and mandates.

NOTICE

Keep all parts clean from contaminants.

Contamination of the hydraulic system with foreign material will reduce the service life of the hydraulic system components.

To prevent contaminants from entering the hydraulic system, always plug or cap the lines, fittings, or hoses as they are disconnected. Cover any disassembled components and clean them properly before assembly.

Clean the hydraulic system properly after any major component exchange or especially after a component failure, to remove any contamination.

1. Drain the oil from the final drive into a suitable container for storage or disposal.

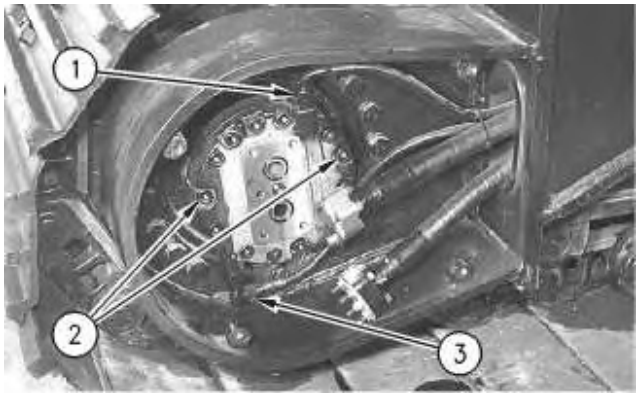

Illustration 4 g00707275

2. Disconnect hose assemblies (1) and (3).
3. Remove two of four bolts (2) that secure the travel motor to the final drive.

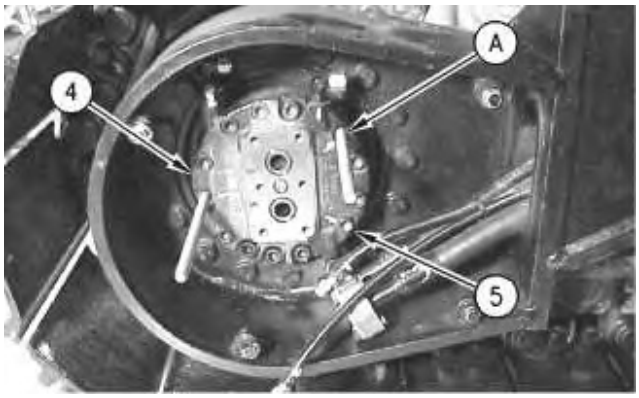

Illustration 5 g00878121

4. Install Tooling (A) in the place of the two bolts (2) that were removed.
5. Remove remaining bolts (5) that secure travel motor (4) to the final drive.

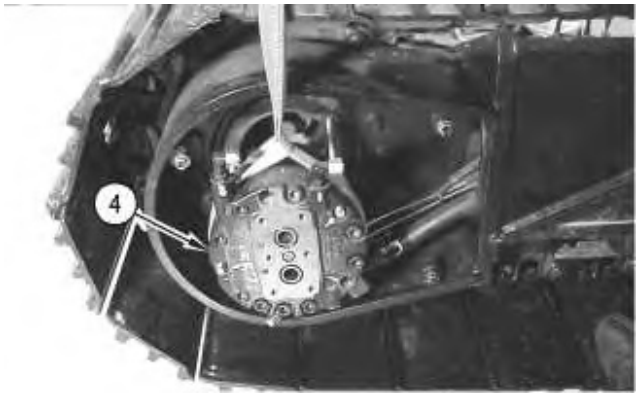

Illustration 6 g00707267

6. Attach a suitable lifting device to travel motor (4).
7. Carefully pull travel motor (4) out of the final drive. The weight of travel motor (4) is approximately 57 kg (125 lb).

Illustration 7 g00878123

8. Remove O-ring seal (6) from the travel motor.

Disassembly Procedure

Table 5

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
A	1U-7506	Adapter	1
	8T-4244	Nut	6
	8T-4223	Hard Washer	6
	-	Threaded RodM12 x 1.75 by 250 mm (10 in) long	1
B	8T-0651	Bolt	1
	8T-4167	Hard Washer	1
C	3E-3882	Eyebolt	1
D	1P-1859	Retaining Ring Pliers	1
E	1P-0510	Driver Gp	1
	9S-9152	Bearing Puller Gp	1
F	1P-1861	Retaining Ring Pliers	1

Start By:

a. Remove the travel motor. Refer to Disassembly and Assembly, "Travel Motor - Remove".

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting, and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Refer to Special Publication, NENG2500, "Dealer Service Tool Catalog" for tools and supplies suitable to collect and contain fluids on Cat products.

Dispose of all fluids according to local regulations and mandates.

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1. Thoroughly clean the outside of the travel motor prior to disassembly.
2. Fasten the travel motor in Tooling (A) in a vertical position. The weight of the travel motor is approximately 60 kg (132 lb).

3. Put an alignment mark across the head and the body of the travel motor for assembly purposes. The head must be reinstalled in the head's original position on the body of the travel motor.

Illustration 8 g00887295

Note: During the removal of head (2) from the travel motor, be careful not to damage the mating surfaces of the components.

WARNING

Spring force can cause personal injury or death.

Do not repair until you have read the Operation and Maintenance Manual.

4. Remove bolts (1).
5. Remove head (2) from the body of the travel motor.

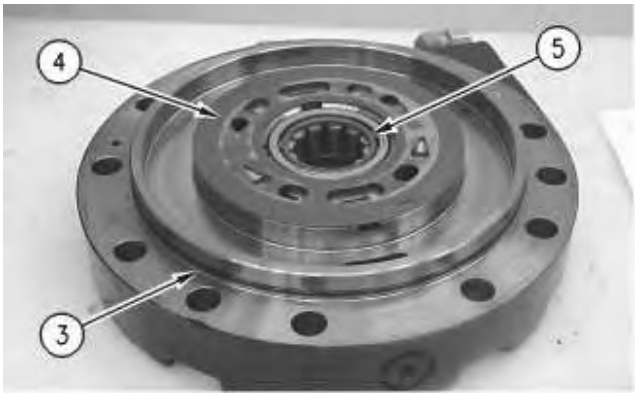

Illustration 9 g00887302

6. Remove O-ring seal (3), port plate (4), and bearing (5).

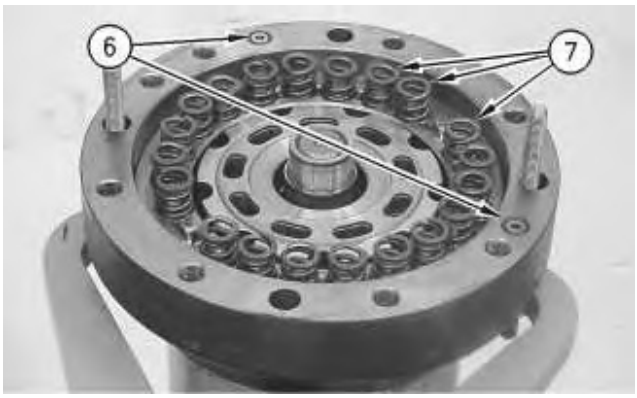

Illustration 10 g00887311

7. Remove O-ring seals (6). Remove springs (7).

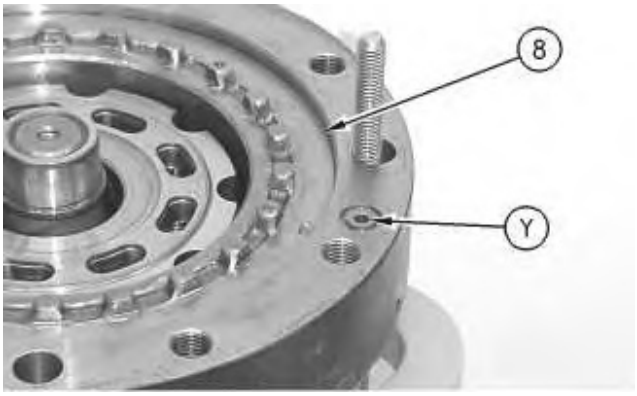

Illustration 11 g00887331

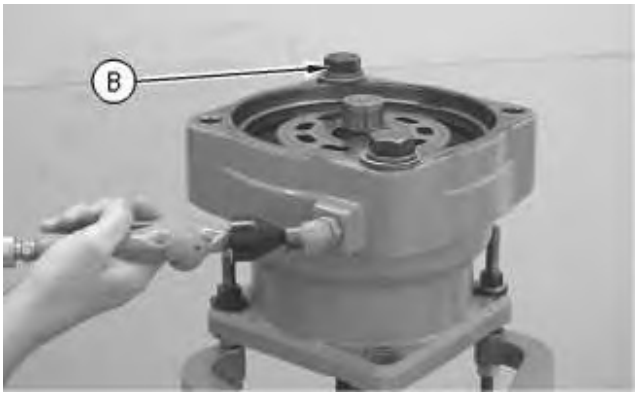

Illustration 12 g00890074

This is an example of the use of Tooling (B).

8. Place a shop towel over brake piston (8). Retain brake piston (8) with Tooling (B). Apply approximately 525 kPa (75 psi) of shop air pressure to brake release Port (Y). Make sure that the shop air pressure is free of water. Brake piston (8) will move up the piston guide, and out of the piston guide. Remove brake piston (8) from the body of the travel motor.

Illustration 13 g00887336

9. Remove seal (9) and backup ring (10) from the brake piston.
10. Remove seal (11) and backup ring (12) from the brake piston.

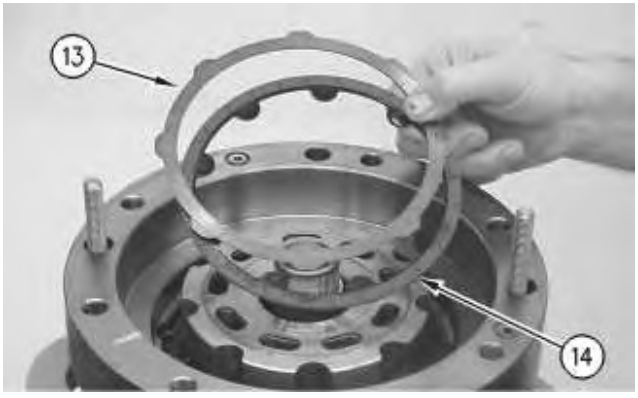

Illustration 14 g00887355

11. Remove plates (13) and friction discs (14).

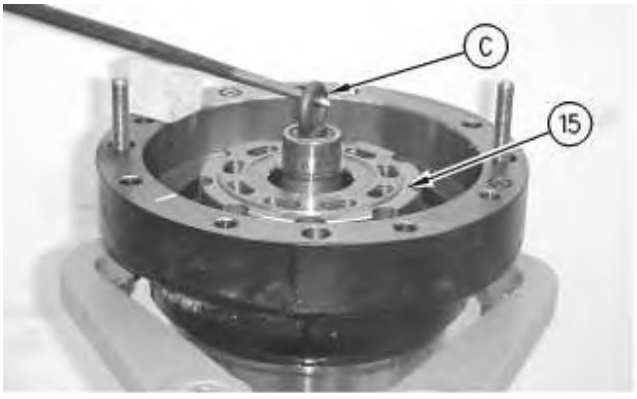

Illustration 15 g00887401

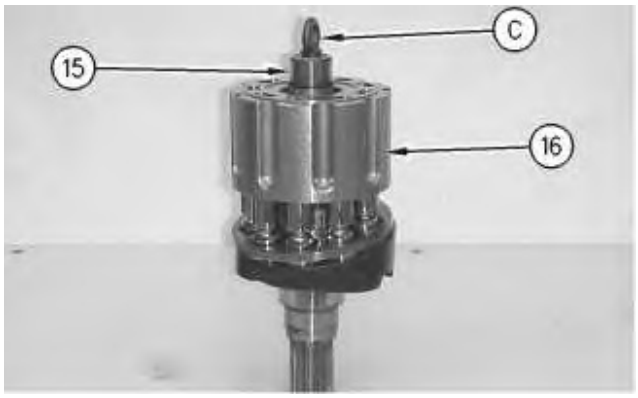

Illustration 16 g00887405

12. Install Tooling (C) into shaft (15). Use a prybar to remove the rotating assembly (16) from the housing.
13. Remove Tooling (C) from shaft (15).

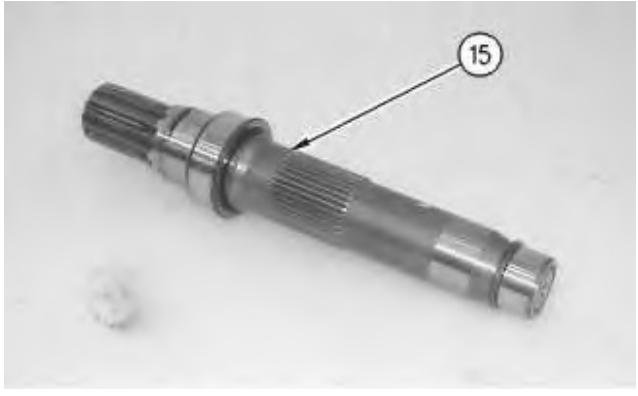

Illustration 17 g00887424

14. Remove shaft (15) from rotating assembly (16).

Illustration 18 g00887426

15. Use Tooling (D) in order to remove retaining ring (17) from shaft (15).

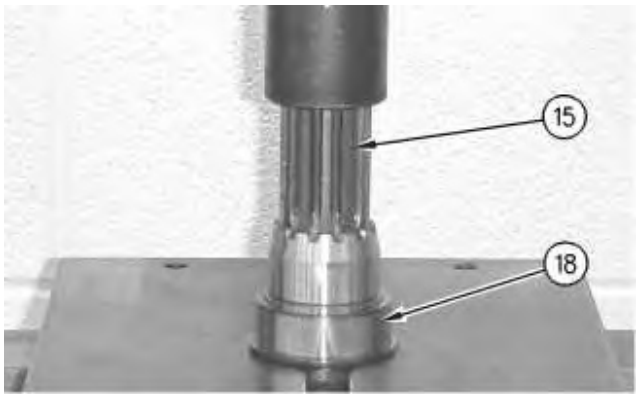

Illustration 19 g00887445

16. Install shaft (15) into a suitable press. Remove bearing race (18) from the shaft.

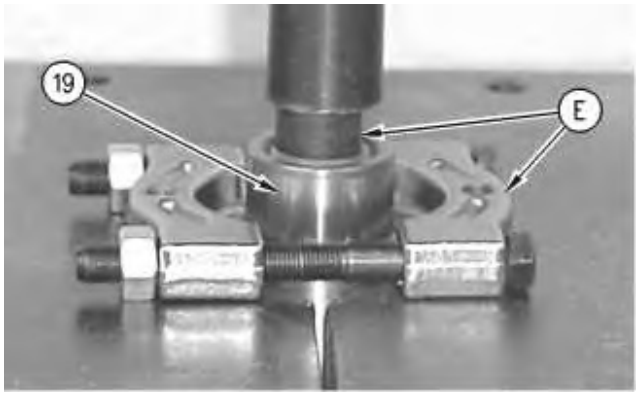

Illustration 20 g00887463

17. Rotate shaft (15). Install shaft (15) into a suitable press. Install Tooling (E). Remove bearing race (19) from shaft (15).

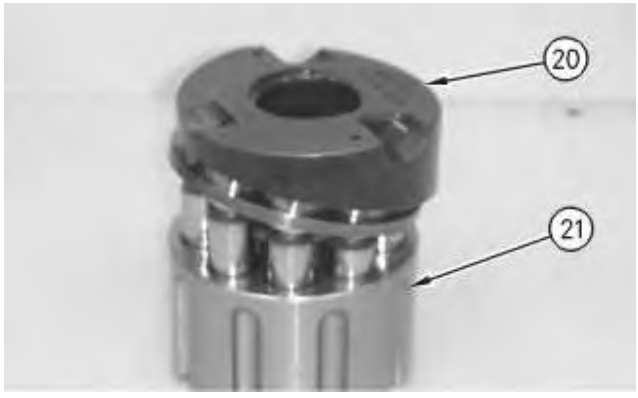

Illustration 21 g00887501

18. Remove cam plate (20) from barrel assembly (21).

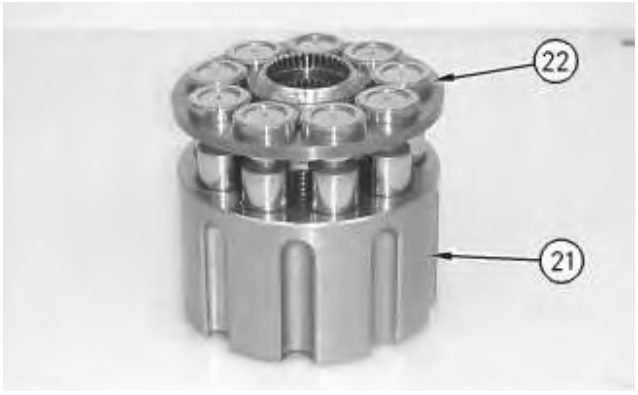

Illustration 22 g00887520

19. Remove piston assemblies and retainer plate (22) from barrel assembly (21).

    Note: Place marks on the pistons and the barrel assembly. The pistons must be returned to the original position.

Illustration 23 g00887558

20. Remove ball (23) and springs (24).

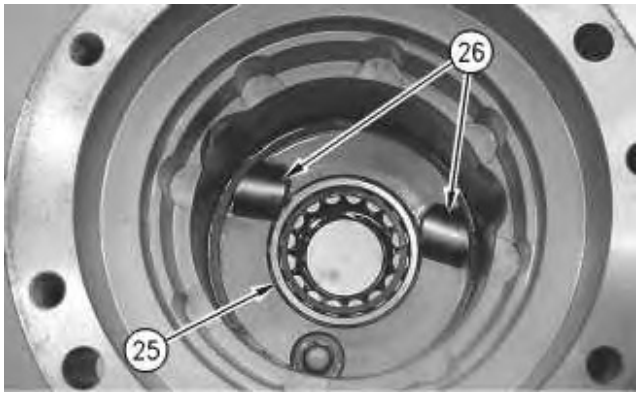

Illustration 24 g00887578

21. Remove bearing (25).

22. Remove keys (26) and locating pins (not shown) from the body of the travel motor.

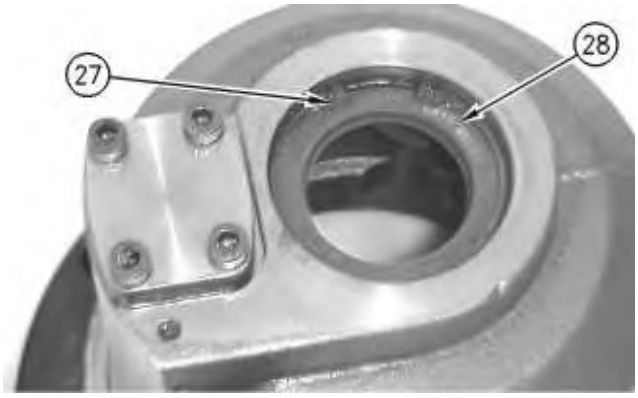

Illustration 25 g00887589

23. Rotate the housing. Use Tooling (F) in order to remove retaining ring (27).
24. Remove seal (28).

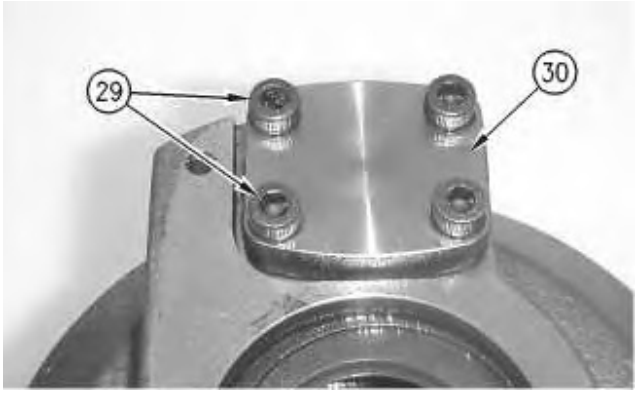

Illustration 26 g00887619

25. Remove bolts (29) and cover (30).

Illustration 27 g00887729

26. Remove seal (31) and backup ring (32).

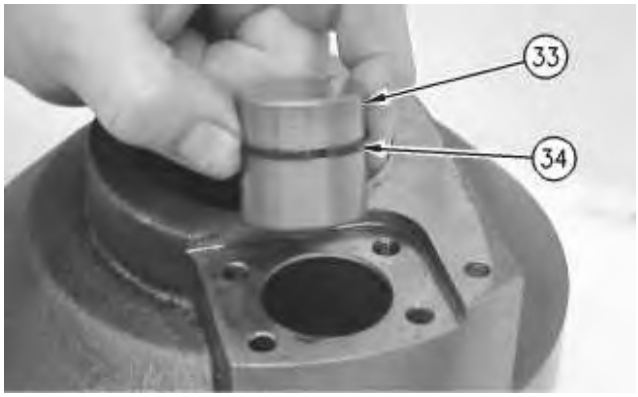

Illustration 28 g00887754

27. Remove piston actuator (33) and seal (34).

Illustration 29 g00887762

28. Remove O-ring seal (35) from the housing of the travel motor.

Assembly Procedure

Table 6

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
A	1U-7506	Adapter	1
	8T-4244	Nut	6
	8T-4223	Hard Washer	6
	-	M12 x 1.75 X 250 mm (10 inch) Threaded Rod	1
C	3E-3882	Eyebolt	1
D	1P-1859	Retaining Ring Pliers	1
E	1P-0510	Driver Gp	1
	9S-9152	Bearing Puller Gp	1

F	1P-1861	Retaining Ring Pliers	1
G	-	Loctite 242	-

Illustration 30 g00887762

1. Install O-ring seal (35) onto the housing of the travel motor.

Illustration 31 g00887754

2. Install seal (34) and piston actuator (33). Lubricate the surfaces of piston actuator (33) with lubricant that is being sealed.

Illustration 32 g00887729

3. Install backup ring (32) and seal (31).

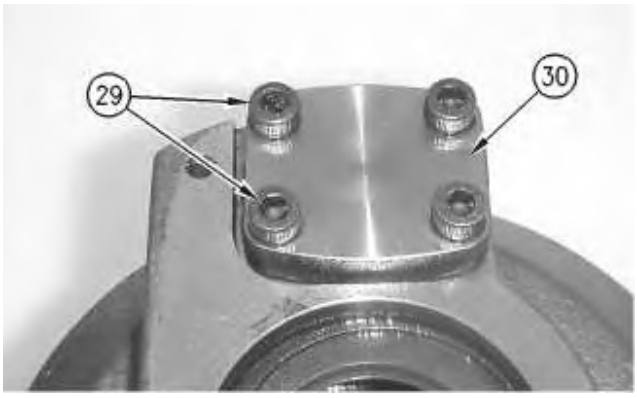

Illustration 33 g00887619

4. Install cover (30) and bolts (29). Tighten bolts (29) to a torque of 28 ± 7 N·m (21 ± 5 lb ft).

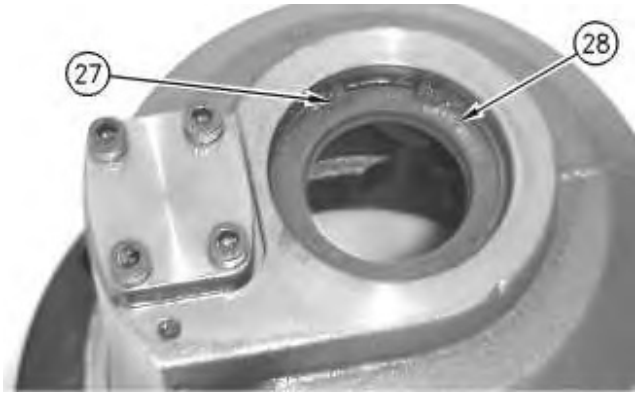

Illustration 34 g00887589

5. Apply Tooling (G) to the mating surface of lip seal (28). Use Tooling (E) in order to install lip seal (28). Lubricate the sealing lip of lip seal (28) with lubricant that is being sealed.

6. Use Tooling (F) in order to install retaining ring (27).

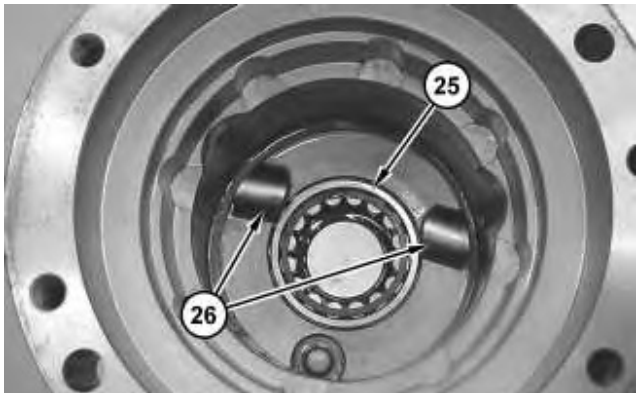

Illustration 35 g02107975

7. Rotate the housing.

8. Install keys (26) and locating pins (not shown) into the body of the travel motor.
9. Install bearing (25).

Illustration 36 g00887558

WARNING

Improper assembly of parts that are spring loaded can cause bodily injury.

To prevent possible injury, follow the established assembly procedure and wear protective equipment.

10. Install springs (24) into the barrel assembly. Install ball (23) onto springs (24). Lubricate ball (23) with lubricant that is being sealed.

Illustration 37 g00887520

11. Lubricate the piston assemblies with lubricant that is being sealed. Install piston assemblies and retainer plate (22) into barrel assembly (21).

    Note: Take note of the mark on the piston assembly and the barrel assembly. The pistons must be returned to the same position.

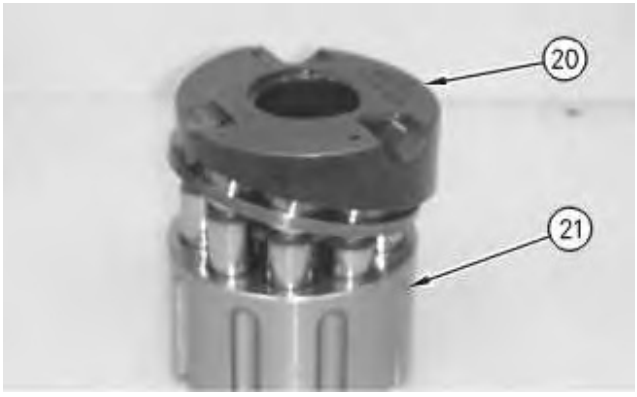

Illustration 38 g00887501

12. Lubricate cam plate (20) with lubricant that is being sealed. Install cam plate (20) onto barrel assembly (21).

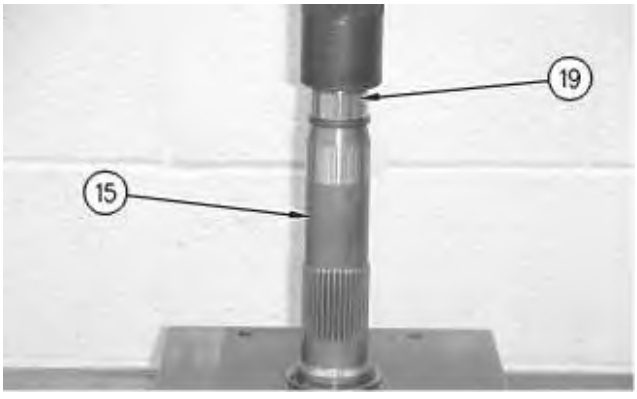

Illustration 39 g00888697

13. Install shaft (15) into a suitable press. Install bearing race (19) onto shaft (15).

Illustration 40 g00887426

14. Rotate shaft (15) in the suitable press. Use Tooling (D) to install retaining ring (17) onto shaft (15).

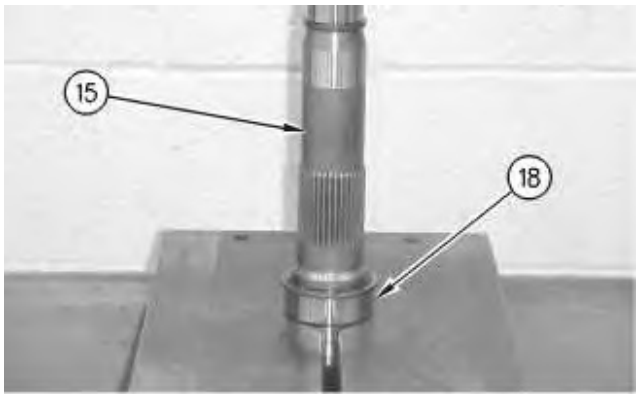

Illustration 41 g00888710

15. Install bearing race (18) onto shaft (15).

    Note: Bearing race (18) must contact retaining ring (17).

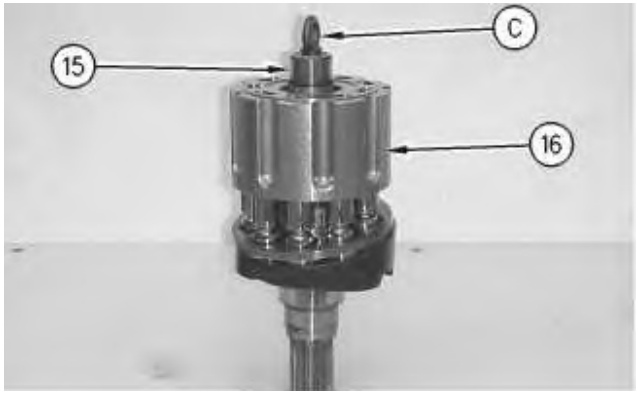

Illustration 42 g00887405

16. Install Tooling (C) into shaft (15). Install shaft (15) into rotating assembly (16).
17. Place the pump housing into Tooling (A).

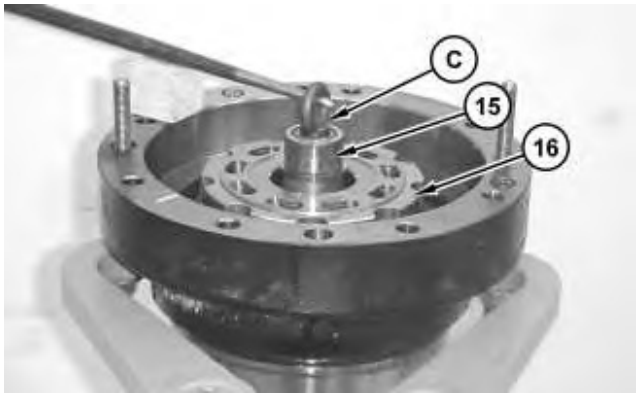

Illustration 43 g02107957

18. Use Tooling (C) in order to install rotating assembly (16) into the housing.

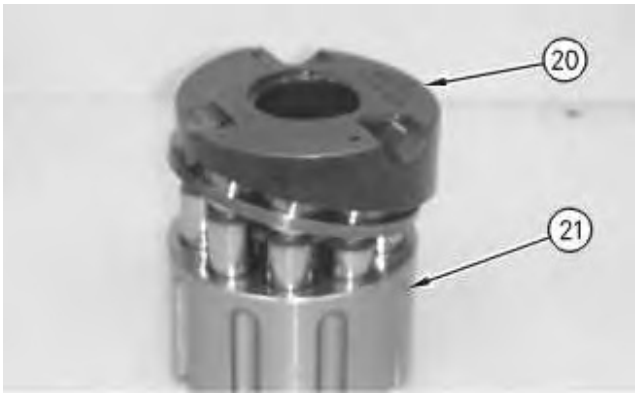

Illustration 44 g00887501

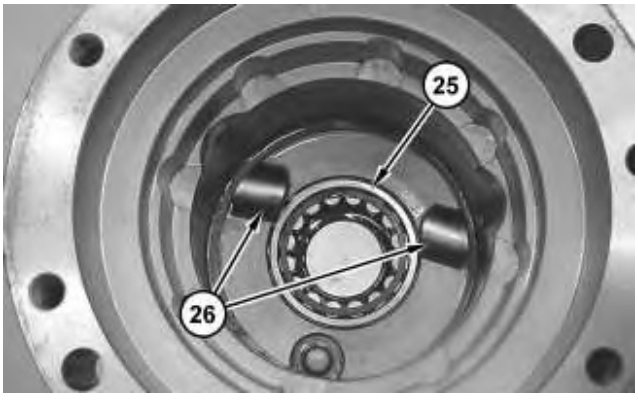

Illustration 45 g02107975

19. The notches in cam plate (20) must align with keys (26). The keys are located in the bottom of the housing of the travel motor.

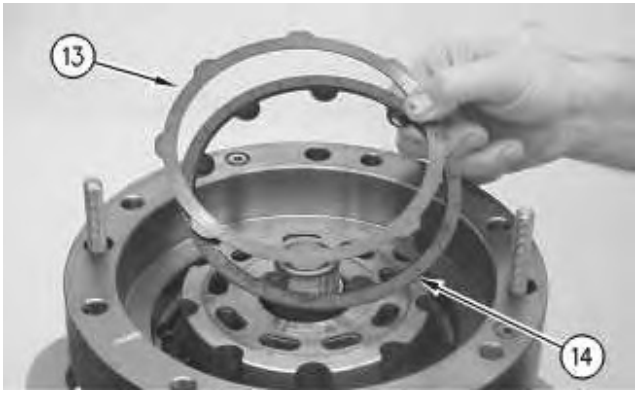

Illustration 46 g00887355

20. Install plates (13) and friction discs (14) into the housing.

    Note: Install the plates and the discs alternately.

Illustration 47 g00887336

21. Install backup ring (12) and seal (11) onto the brake piston.
22. Install backup ring (10) and seal (9) onto the brake piston.

Illustration 48 g00888967

23. Rotate brake piston (8).
24. Install brake piston (8) into the housing.

    Note: Brake piston (8) must be level upon installation. The brake piston must be level in order to prevent damage to the O-ring seals.

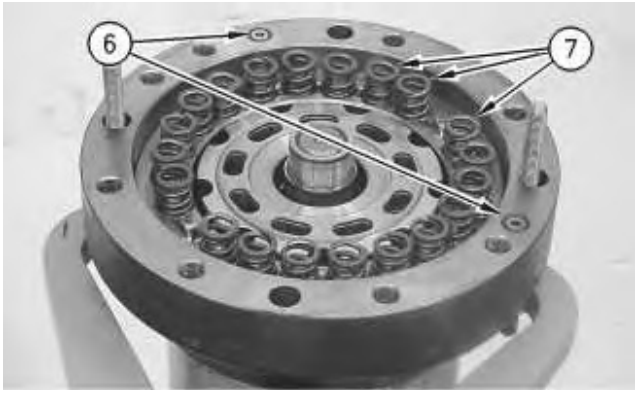

Illustration 49 g00887311

25. Install springs (7) and O-ring seals (6).

Illustration 50 g00887302

26. Lubricate port plate (4) with lubricant that is being sealed. Install O-ring seal (3), port plate (4), and bearing (5).

Illustration 51 g00887295

WARNING

Improper assembly of parts that are spring loaded can cause bodily injury.

To prevent possible injury, follow the established assembly procedure and wear protective equipment.

27. Install head (2) onto the body of the travel motor.

    Note: During the installation of head (2) onto the travel motor, be careful not to damage the mating surfaces of the components.

28. Install bolts (1). Tighten bolts (1) to a torque of 177 ± 18 N·m (130.5 ± 13.27 lb ft).

End By:

a. Install the travel motor.

Installation Procedure

Table 7

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
A	9U-7692	Threaded Rod	2

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting, and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Refer to Special Publication, NENG2500, "Dealer Service Tool Catalog" for tools and supplies suitable to collect and contain fluids on Cat products.

Dispose of all fluids according to local regulations and mandates.

1. Thoroughly clean the mating surfaces of the travel motor and the final drive.

Illustration 52 g00878123

2. Install new O-ring seal (6). Apply clean hydraulic oil on the O-ring seal.

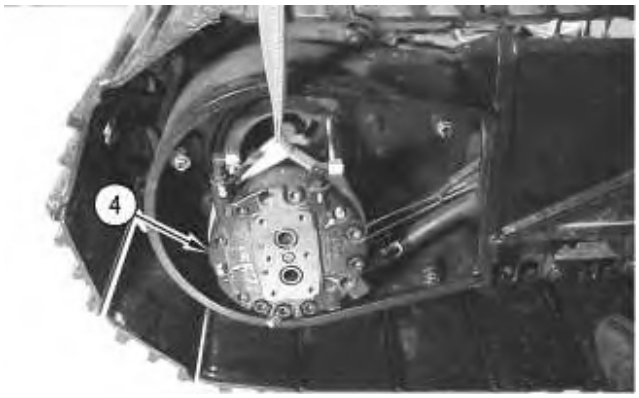

Illustration 53 g00707267

3. Attach a suitable lifting device to travel motor (4), as shown.
4. The weight of the travel motor is approximately 57 kg (125 lb).

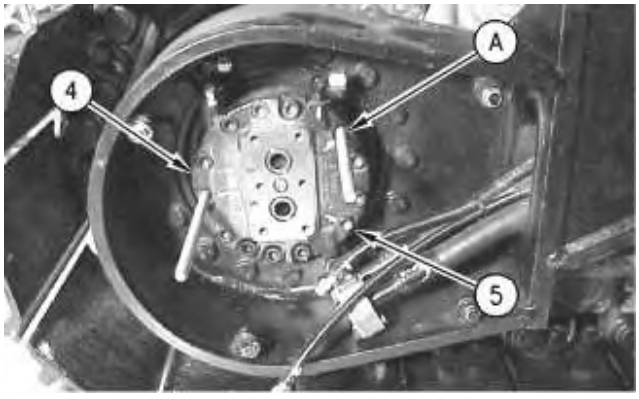

Illustration 54 g00878121

5. Carefully install travel motor (4) onto Tooling (A). Slide the travel motor into the final drive.
6. Install one of three bolts (5) that secures the travel motor to the final drive.
7. Remove Tooling (A).

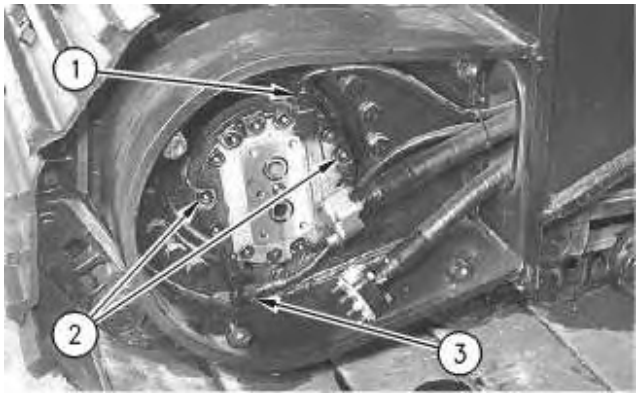

Illustration 55 g00707275

Typical example

Suggest:

If the above button click is invalid.

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first, and then click the above link

to download the complete manual.

Thank you so much for reading

8. Install remaining bolts (2).
9. Connect hose assembly (3). Connect hose assembly (1).
10. Fill the final drive with oil.

    Reference: Refer to Operation and Maintenance Manual, "Lubricant Viscosities" for the proper oil viscosity.

    Reference: Refer to Operation and Maintenance Manual, "Final Drive Oil Level - Check" for the correct filling procedure.
11. Install high efficiency filters in place of the pilot filter, the case drain filter, and the return filter.

    Note: High efficiency filters should not be run for more than 250 hours before you change back to the standard filters.
12. Obtain a hydraulic oil sample from the main S·O·S port.

    Reference: Refer to Operation and Maintenance Manual, "Sampling Interval and Location of Sampling Valve" for the correct location.
13. If the S·O·S sample exceeds ISO 18/15, flush the hydraulic system.

    Reference: Refer to Contamination Control Guidelines, SEBF8436, "Hydraulic System Flushing Procedure for 322C Hydraulic Excavators" for further information.

End By:

a. Install the travel brake valve. Refer to Disassembly and Assembly, "Travel Brake Valve - Install".
