

Tool	Part Number	Part Description	Qty
A	1P-2420	Transmission Stand Group	1
B	138-7573	Link Bracket	2
C	1P-1863	Retaining Ring Pliers	1
D	138-7575	Link Bracket	3
E	138-7576	Link Bracket	3
F	138-7574	Link Bracket	2
G	1U-5933	Duo-Cone Seal Installer As	1
	169-0503	Installation Kit	1
H	4C-5599	Anti-Seize Compound	-
J	9S-3263	Thread Lock Compound	-
K	8C-8422	Sealant	-
L	FT-2770	Leak Down Test Tool	1

1. Make sure that all parts of the final drive are thoroughly clean and free of dirt and debris prior to assembly. Check the condition of all O-ring seals that are used in the final drive. If any of the seals are damaged, use new parts for replacement. Reassemble the final drive on Tooling (A) .



Illustration 1

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2. Apply Tooling (H) to the surfaces inside sprocket housing (35) that make contact with the bearing cups. Install a bearing cup that is in each side of the sprocket housing with a press. Make sure that the bearing cups are properly seated.
3. Apply Tooling (H) to the surfaces inside the motor housing that make contact with bearing cones (42) .
4. Install inner bearing cone (42) on the motor housing.



Illustration 2

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5. Attach Tooling (F) and a suitable lifting device to sprocket housing (35) . The weight of sprocket housing (35) is approximately 109 kg (240 lb). Install sprocket housing (35) on the motor housing. Carefully install outer bearing cone (42) on the sprocket housing.

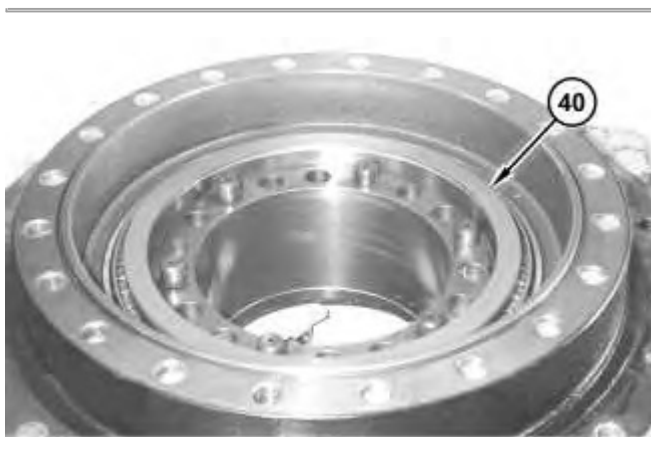


Illustration 3

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6. Adjust the bearing preload of the final drive. Determine the correct amount of shims (40) that are required for the proper bearing preload, as follows:



- a. Use a depth micrometer in order to measure the step height of coupling gear (38) at several locations around the gear. Find the average for the measured dimensions around the gear and record the dimension. Call this Dimension (X) .
- b. Apply a load of 4000 kg (8820 lb) to bearing cones (42) .
- c. Rotate sprocket housing (35) several times in order to seat the bearing cones.
- d. Reduce the load to 3000 ± 300 kg (6615 ± 660 lb).



- e. While the load is still on the bearing cones, measure the distance between the top face of the motor housing and the top face of bearing cone (42) . Take measurements in several locations around the motor housing. Find the average of the measured dimensions, and record the dimensions. Call this Dimension (Y) .
- f. Determine the correct thickness of shims (40) which are used between bearing cone (42) and coupling gear (38) . Use the following equation in order to determine the shim pack thickness.

Shim pack thickness ... $(Y) - (X) \pm 0.05$ mm (0.002 inch)

Note: If two shims (40) are required, install the thinnest shim next to coupling gear (38) during final assembly.



Illustration 6

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7. Attach Tooling (F) and a suitable lifting device to sprocket housing (35) . Separate sprocket housing (35) from the motor housing.

Reference Refer to Disassembly and Assembly, "Duo-Cone Conventional Seals - Install".

Note: The rubber seals and all surfaces that make contact with the seals must be clean and dry. After installation of the seals, put clean SAE 30 oil on the contact surfaces of the metal seals.



Illustration 7

g00631006



Illustration 8

g01208999

8. Use Tooling (G) to install Duo-Cone seal (43) in the sprocket housing.



Illustration 9

g00631014



Illustration 10

g01208626

9. Use Tooling (G) to install Duo-Cone seal (41) in the motor housing.
 10. Apply Tooling (H) in the bores for the locating pins that are in the motor housing. Reinstall the locating pins in the motor housing.
-



Illustration 11

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11. Make sure that inner bearing cone (42) is seated properly on the motor housing.

Note: Do not scratch Duo-Cone seal (41) or damage the Duo-Cone seal in the main housing, or the motor housing during assembly of the two components. After installation of the main housing on the motor housing, there will be a small gap between the components. The gap between the components is caused by the Duo-Cone seal. This will be eliminated during the installation of coupling gear (40) .

12. Fasten Tooling (F) and a suitable lifting device to sprocket housing (35) . Carefully install the sprocket housing on the motor housing.
13. Install outer bearing cone (42) on the sprocket housing. Make sure that the outer bearing cone is properly seated.



Illustration 12

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14. Install shims (40) that were determined in Steps 6.a through 6.f on the end of the sprocket housing. If shims were required, make sure that the thinnest shim is installed on top.
-



Illustration 13

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15. Put coupling gear (38) in the original position on the motor housing.
16. Apply Tooling (J) on the threads of bolts (37) that hold coupling gear (38) in position. Tighten bolts (37) evenly and tighten the bolts in diagonally opposite pairs.



Illustration 14

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17. Install O-ring seal (36) in sprocket housing (35) .



18. Thoroughly clean the mating surface of sprocket housing (35) that makes contact with ring gear (34) .
19. Apply a bead of Tooling (K) on the mating surface of ring gear (34) .
20. Attach Tooling (E) and a suitable lifting device to ring gear (34) . Put ring gear (34) in position on the sprocket housing. The weight of ring gear (34) is approximately 66 kg (146 lb). Make sure that the alignment mark on the sprocket housing and the ring gear line up with each other.

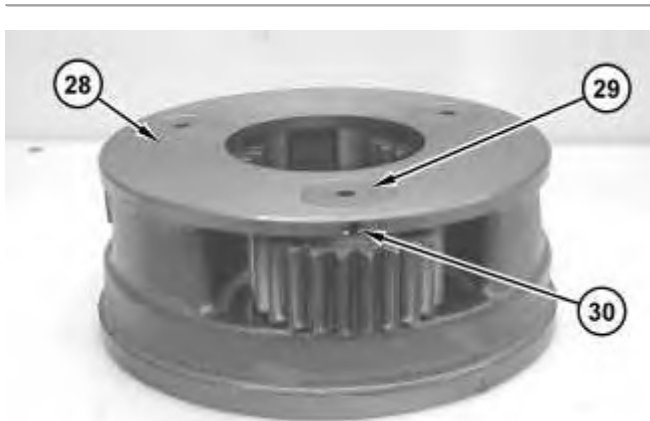


Illustration 16

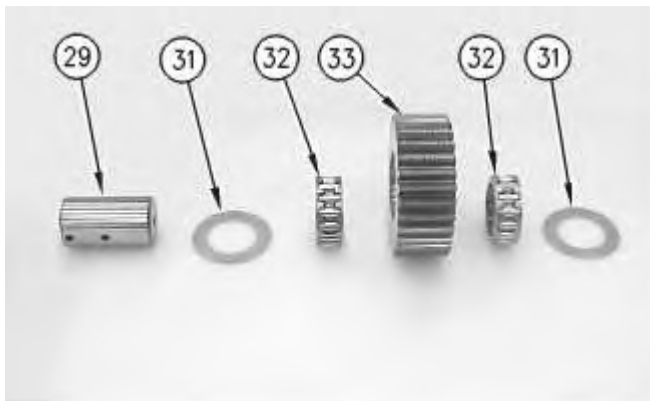


Illustration 17

21. Assemble carrier assembly (28) , as follows.
 - a. Install bearings (32) in planetary gear (33) .
 - b. Install thrust washers (31) and planetary gear (33) in the carrier assembly.
 - c. Use a deburring tool in order to remove the metal burr from the openings in the carrier. Install planetary shaft (29) in the carrier assembly.

- d. Drive spring pin (30) into planetary shaft (29) .

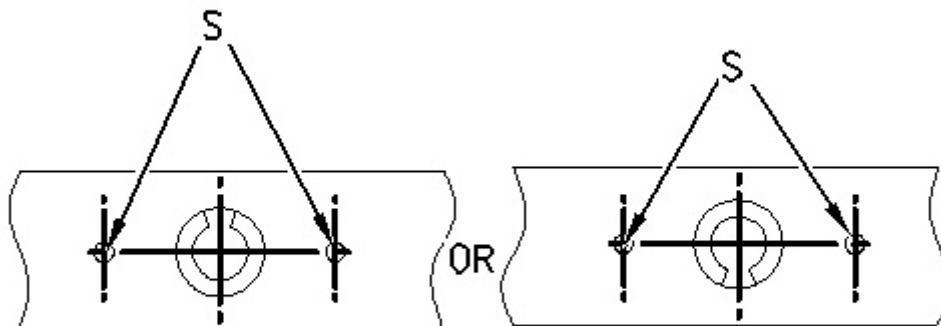


Illustration 18

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The stake mark is at position (S) .

- e. Orient the split in spring pin (30) vertically to the carrier. Align the split in the spring pin to the top or to the bottom. Make a stake mark on each side of the spring pin hole in the carrier. Each stake mark should be approximately 1.5 mm (0.06 inch) from the outside diameter of the spring pin hole.
22. Repeat Steps 21.a through 21.e in order to install the other two planetary gears in the carrier assembly.



Illustration 19

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23. Use two people to install carrier assembly (28) . The weight of carrier assembly (28) is approximately 38 kg (85 lb).

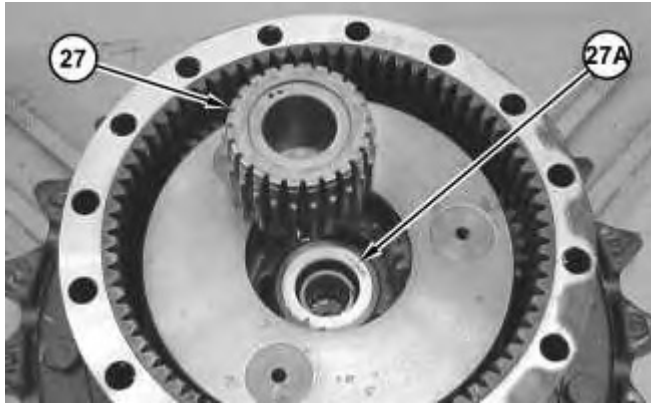


Illustration 20

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24. Install spacer (27A) . Install gear (27) .

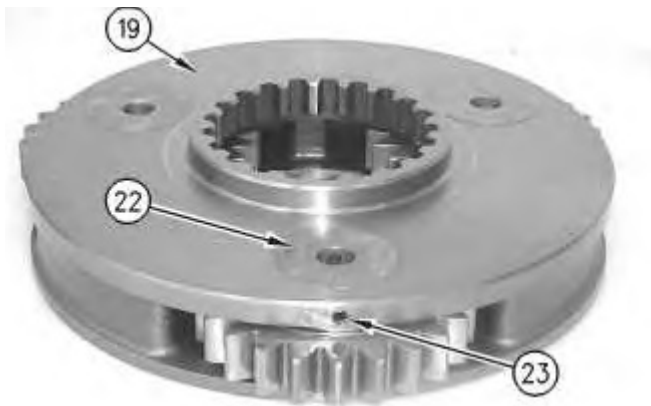


Illustration 21

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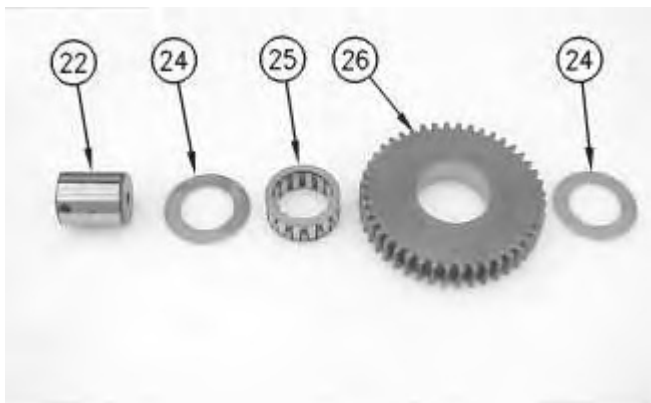


Illustration 22

g00896863

25. Assemble planetary carrier (19) , as follows.

- a. Install bearing (25) in planetary gear (26) .
 - b. Install thrust washers (24) and planetary gear (26) in the planetary carrier.
 - c. Use a deburring tool in order to remove the metal burr from the openings in the carrier. Install planetary shaft (22) in planetary carrier (19) .
 - d. Drive spring pin (23) into planetary shaft (22) .
-

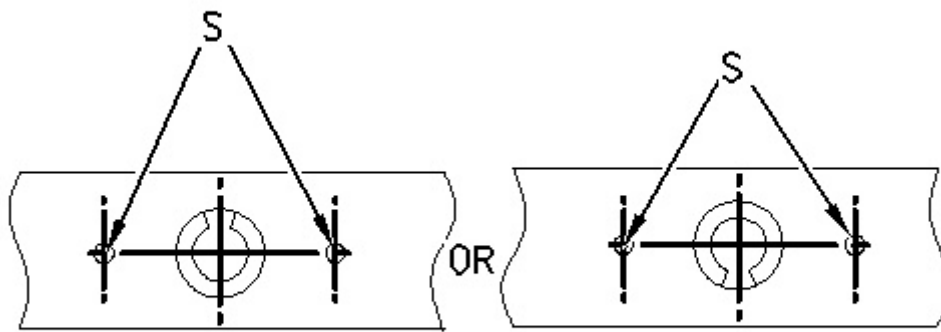


Illustration 23

g00941047

The stake mark is at position (S) .

- e. Orient the split in spring pin (23) vertically to the carrier. Align the split in the spring pin to the top or to the bottom. Make a stake mark on each side of the spring pin hole in the carrier. Each stake mark should be approximately 1.5 mm (0.06 inch) from the outside diameter of the spring pin hole.
 - f. Repeat Steps 25.a through 25.e in order to install the other two planetary gears in the carrier.
-

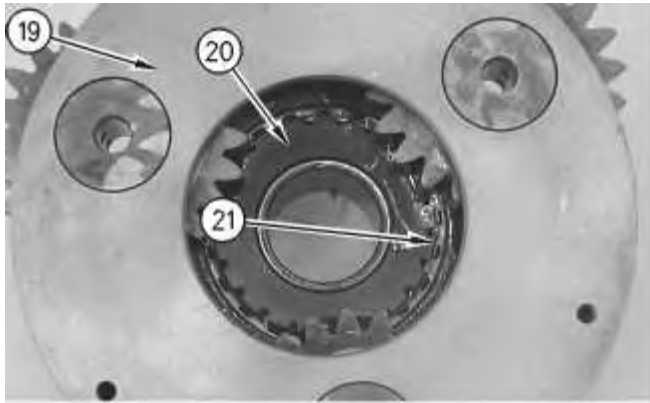


Illustration 24

g00893019

26. Position sun gear (20) in planetary carrier (19) and install retaining ring (21) .

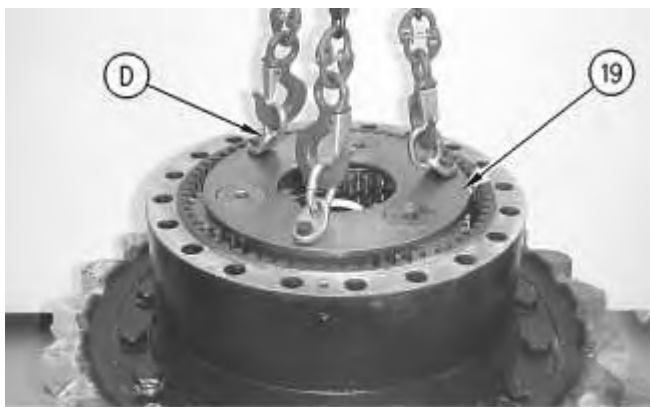


Illustration 25

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27. Use Tooling (D) and a suitable lifting device to install planetary carrier (19) into gear (34) . The weight of planetary carrier (19) is approximately 48 kg (105 lb).

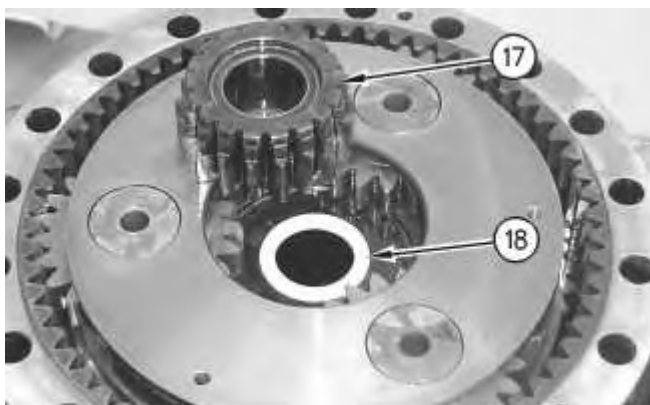


Illustration 26

g00892977

28. Install spacer (18) and gear (17).

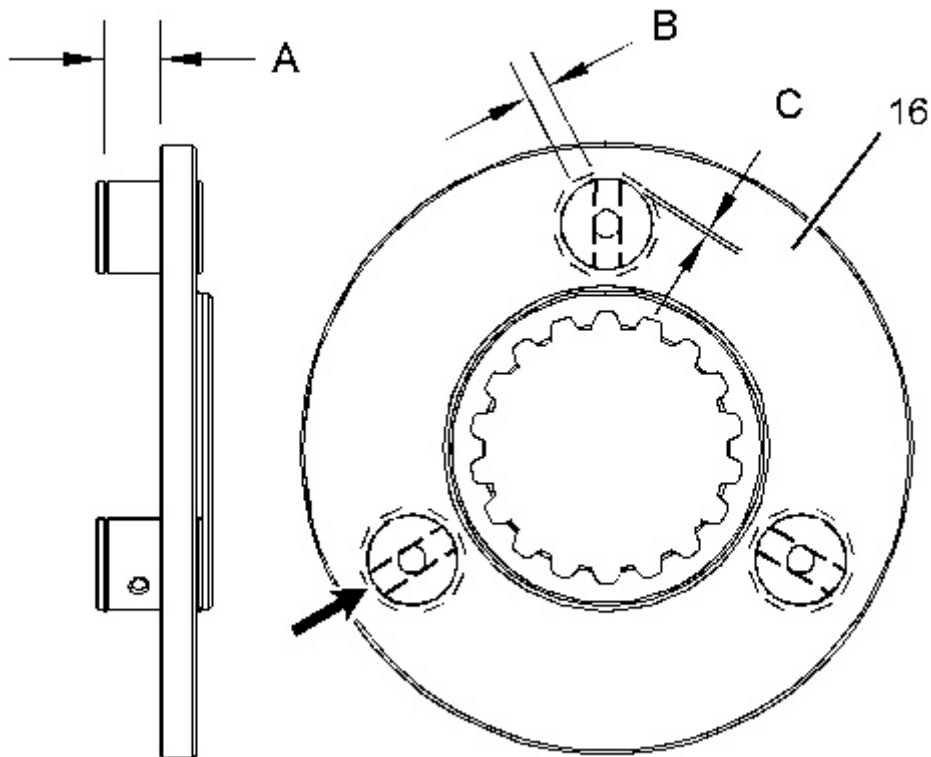


Illustration 27

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Note: Make sure that the oil passages in the shafts are oriented toward the center of carrier assembly (16) .

29. Raise the temperature of carrier assembly (16) . Lower the temperature of the shafts. Install the shafts into carrier assembly (16) until the groove of the shafts is at Dimension (A) . Dimension (A) equals 25.00 ± 0.10 mm (0.984 ± 0.004 inch).
 30. Make eight stake marks at distance of Dimension (C) from each shaft. Dimension (C) equals 2.0 ± 1.0 mm (0.08 ± 0.04 inch). The width of each stake mark should be equal to Dimension (B) . Dimension (B) equals 4.0 ± 1.0 mm (0.16 ± 0.04 inch).
-

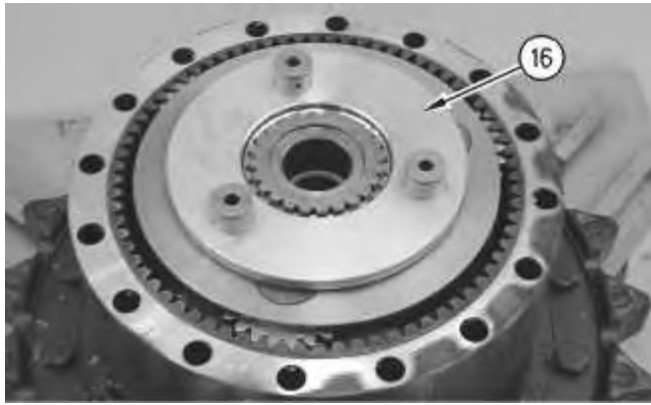


Illustration 28

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31. Install carrier assembly (16) .

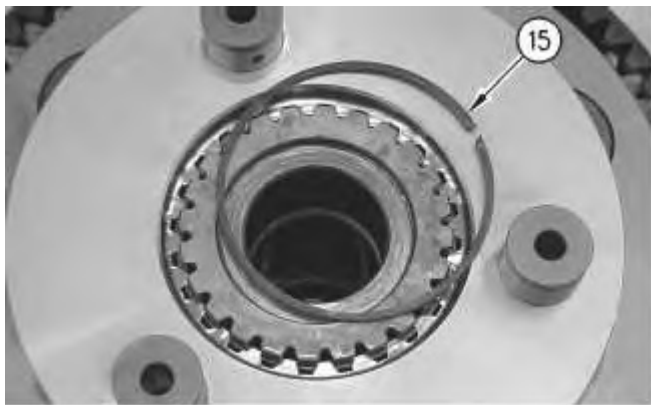


Illustration 29

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32. Install retaining ring (15) .



Illustration 30

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33. Install washer (14) and bearing assembly (13) . Install gear (12) and washer (11) . Use Tooling (C) to install retaining ring (10) .
34. Repeat Step 33 for the other two planetary gears.

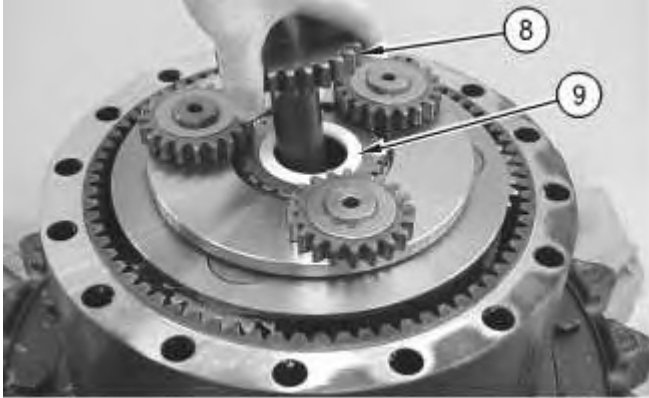


Illustration 31

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35. Install spacer (9) and gear (8) .



Illustration 32

g00892906

36. Install O-ring seals (7) on plugs (5) .
-



Illustration 33

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37. Install plugs (5) in cover (2) . Tighten plugs (5) to a torque of 80 ± 10 N·m (59 ± 7 lb ft). Install plate (6) in cover (2) . Position gear (4) and install bolts (3) .
38. Place a piece of solder in the center of gear (8) .

Note: You may need to apply some grease to the solder in order to keep the solder in position on gear (8) .

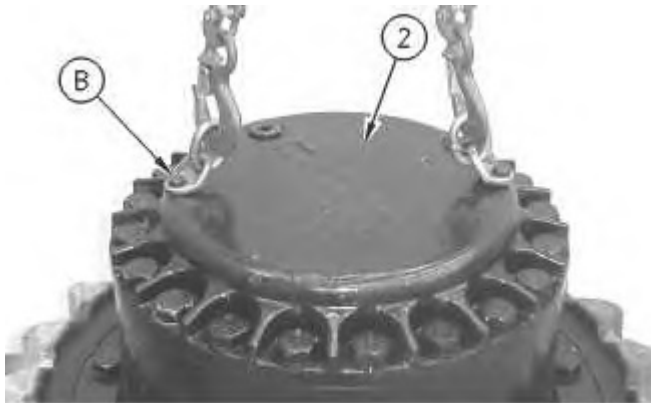


Illustration 34

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39. Use Tooling (B) and a suitable lifting device to Install cover (2) . The weight of cover (2) is approximately 32 kg (70 lb).
-



Illustration 35

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40. Install four bolts (1) at 90 degrees from each other.
41. Remove bolts (1) .
42. Use Tooling (B) and a suitable lifting device to remove cover (2) . The weight of cover (2) is approximately 32 kg (70 lb).
43. Use a micrometer to measure the thickness of the solder. Record this measurement in order to determine the thickness of the shims for plate (6) . Adjust the shims in order to obtain a clearance of $1.000 + 1.000$ mm ($0.0394 + 0.0394$ inch) between plate (6) and gear (8) .
44. Apply Tooling (S) to the mating surfaces of cover (2) and the housing.
45. Use Tooling (B) and a suitable lifting device to Install cover (2) . The weight of cover (2) is approximately 32 kg (70 lb).
46. Install bolts (1) . Tighten bolts (1) in a crisscross pattern to a torque of 420 ± 60 N·m (310 ± 44 lb ft). Turn the bolts for an additional 60 ± 5 degrees.

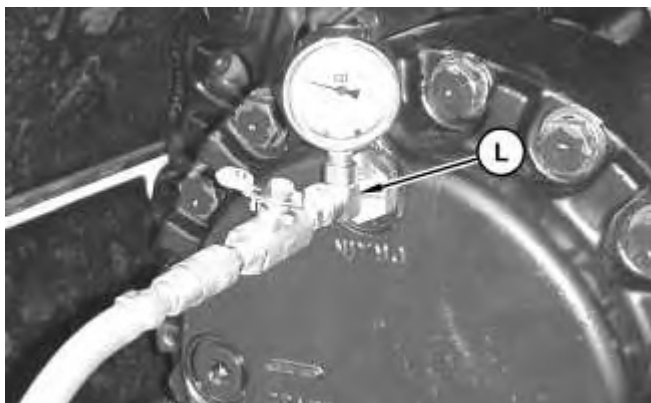


Illustration 36

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47. Remove plug (5) (not shown). Attach Tooling (L) to cover (2) . Reduce the air pressure at the source to 103 kPa (15 psi). Apply air pressure to Tooling (L) . This air will test the Duo-Cone seals.

48. Use the ball valve on Tooling (L) to eliminate the air pressure to the final drive. A pressure of 98 kPa (14.2 psi) must be maintained for 30 seconds.
49. Remove Tooling (L) . Install plug (5) . Torque plug (5) to 80 ± 10 N·m (59 ± 7 lb ft).
50. Use Tooling (E) and a suitable lifting device to remove the final drive assembly from Tooling (A) . The weight of the final drive assembly is approximately 550 kg (1200 lb).

End By: Install the final drive. Refer to Disassembly and Assembly, "Final Drive - Install".

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	FT-2674	Vacuum Cap	1
B	138-7573	Link Bracket	2

Start By:

- a. Release the hydraulic system pressure. Refer to Disassembly and Assembly, "Hydraulic System Pressure - Release".

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.



Illustration 1

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1. Remove the cap from the hydraulic tank. Install Tooling (A) onto the hydraulic tank. Attach an air supply hose to Tooling (A). Apply 276 to 414 kPa (40 to 60 psi) of air. This procedure will pull vacuum on the hydraulic system.

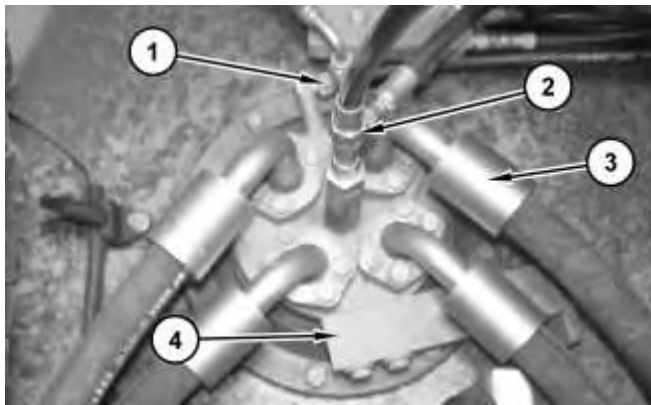


Illustration 2

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2. Disconnect hose assemblies (1), (2), and (3). Remove support (4).

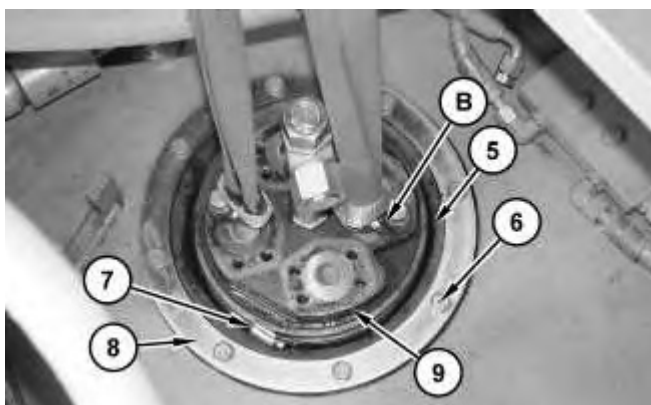


Illustration 3

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