

Product: MOBILE HYD POWER UNIT

Model: 336D MOBILE HYD POWER UNIT M3N

Configuration: 336D & 336D L Mobile Hydraulic Power Units M3N00001-UP (MACHINE) POWERED BY C9 Engine

Disassembly and Assembly

330D, 336D, 336D2, 340D and 340D2 Excavators and 336D MHPU Mobile Hydraulic Power Unit Machine Systems

Media Number -REN8648-30

Publication Date -01/03/2015

Date Updated -15/08/2018

i06939513

Swing Drive - Assemble

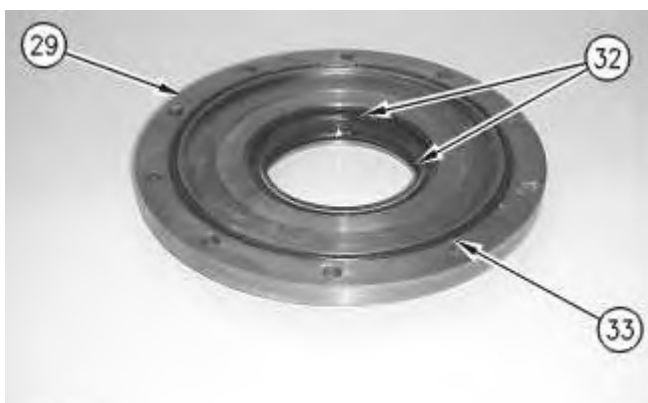
SMCS - 5459-016

Assembly Procedure

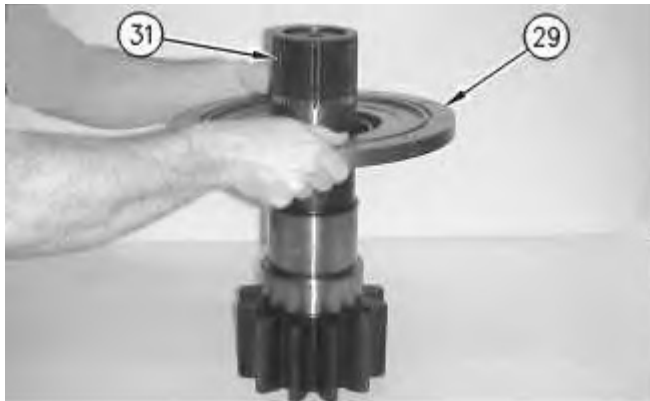
Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	5P-5197	Pliers	1
B	138-7574	Link Brackets	2
C	138-7575	Link Bracket	3

Note: Cleanliness is an important factor. Before assembly, all parts should be thoroughly cleaned in cleaning fluid. Allow the parts to air dry. Wiping cloths or rags should not be used to dry parts. Lint may be deposited on the parts which may cause later trouble. Inspect all parts. If any parts are worn or damaged, use new parts for replacement.

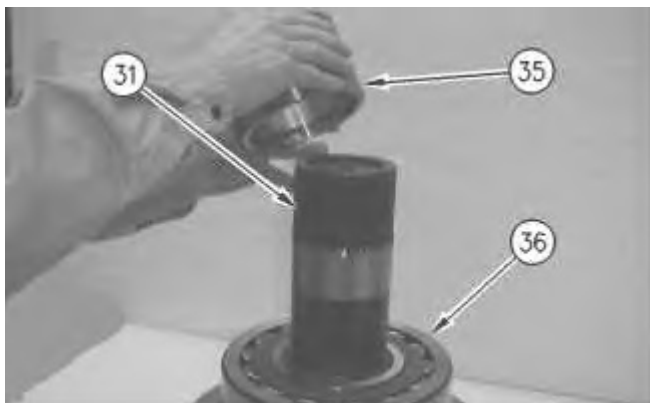


1. Install lip seals (32) and O-ring seal (33) in bearing cage (29).



Note: Lubricate the seals and the seal surface of the shaft before you install the cage assembly.

2. Carefully install cage (29) on shaft (31).



3. Raise the temperature of bearing (36) to 135 °C (275 °F) and use two people to install the bearing on shaft (31). The weight of bearing (36) is approximately 35 kg (77 lb).
 4. Install spacer (35) on shaft assembly (31). Install the spacer with relief against bearing (36).
-



Illustration 4

g00870160

5. Raise the temperature of bearing (34) to 135 °C (275 °F). Install the bearing on shaft (31) and against spacer (35).



Illustration 5

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6. Use Tooling (A) to install retaining ring (28) on shaft (31) and against bearing (34).

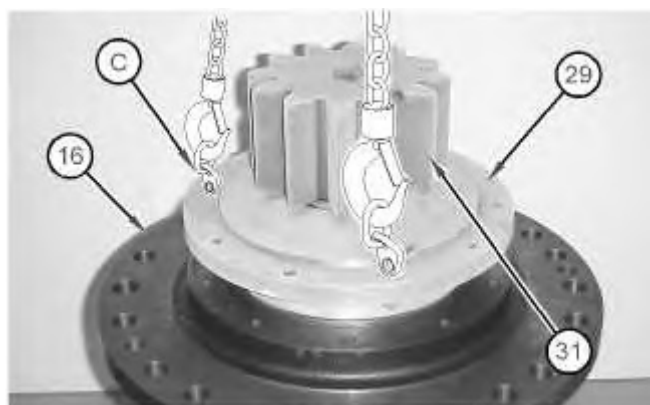


Illustration 6

g01041406

7. Install shaft assembly (31) in swing drive housing (16).

- a. Apply **5P-3931** Anti-Seize Compound on the inside diameter of swing drive housing (16).
- b. Lower the temperature of shaft assembly (31).
- c. Attach Tooling (C) and a suitable lifting device to the shaft assembly.
- d. Install the shaft assembly into swing drive housing (16). Bearing (34) must be within the bore of the swing drive housing.
- e. Remove Tooling (C) and the suitable lifting device from the shaft assembly. Attach Tooling (C) and the suitable lifting device to the swing drive housing.
- f. Lift the swing drive vertically. Use a hammer and a drift to align bearing (34) in the lower bore of the swing drive housing. When the bearing is properly aligned in the bore, shaft assembly (31) will drop into the proper position within the swing drive housing.

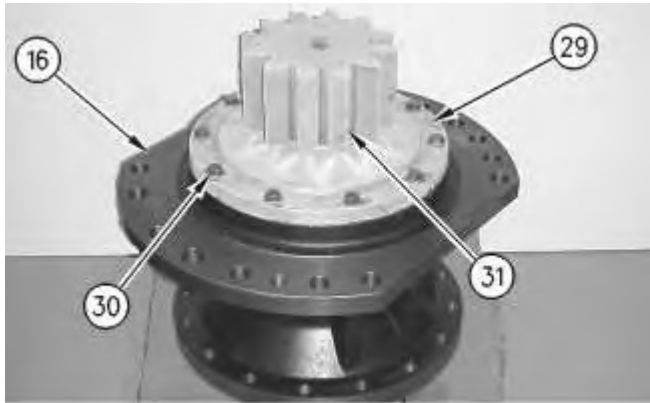


Illustration 7

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8. Apply **1U-8846** Sealant on the threads of bolts (30).
9. Install bolts (30) and washers in bearing cage (29) and swing drive housing (16).

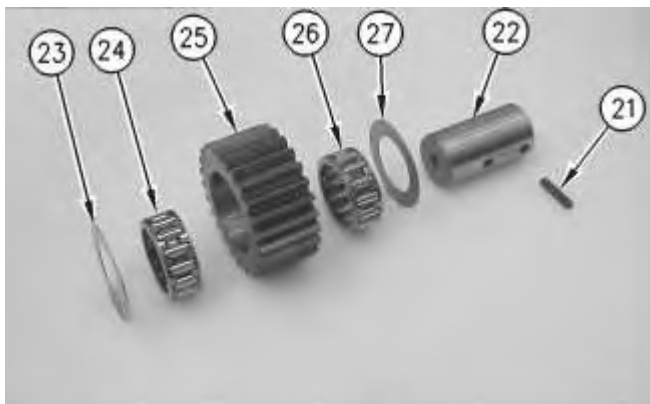


Illustration 8

g00869483



Illustration 9

g00870281

10. Install bearings (24) and (26) in gear (25).
11. Install gear (25) and washers (23) and (27) in carrier (20).
12. Lower the temperature of shaft (22). Install the shaft in carrier assembly (20).
13. Install pin (21) in the carrier assembly and the shaft.
14. Use a hammer and a center punch to stake the pin in the carrier housing.
15. Repeat Steps 10 through Steps 14 on the remaining gear assemblies.

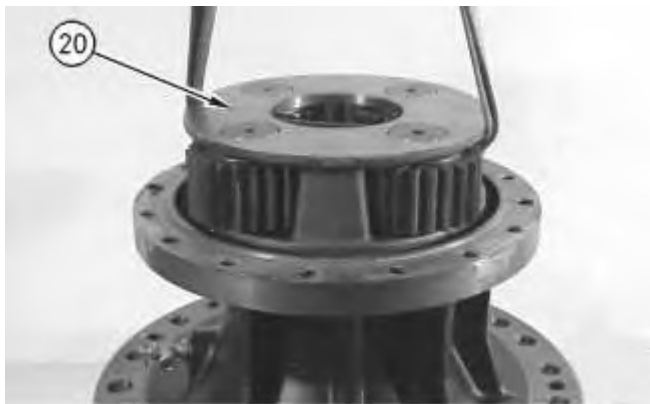


Illustration 10

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16. Use a suitable lifting device to install carrier assembly (20). The weight of carrier assembly (20) is approximately 68 kg (150 lb).
-



Illustration 11

g00869460

17. Install retaining ring (19).

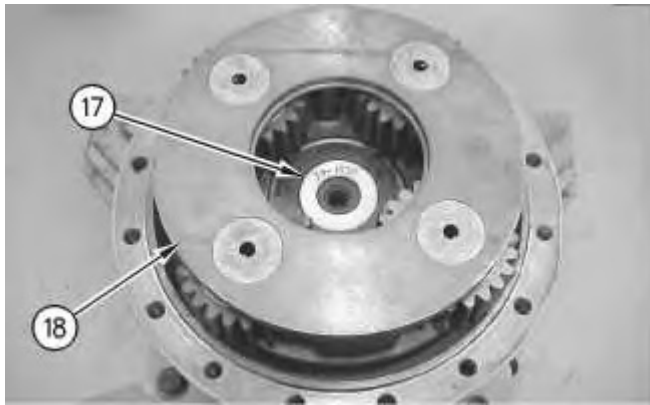


Illustration 12

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18. Install spacer (17) in carrier assembly (18).

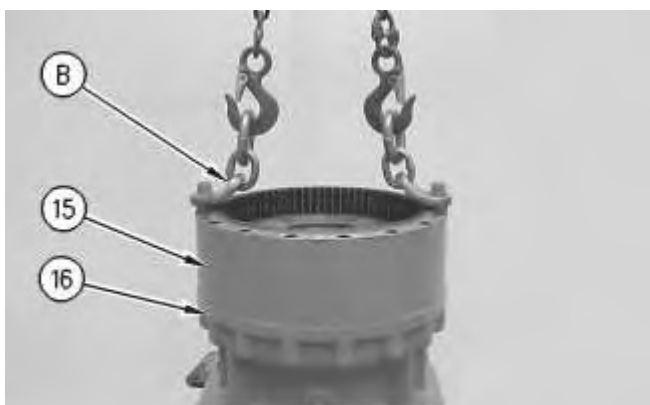


Illustration 13

g00869390

19. Make sure that the mating surfaces of ring gear (15) and swing drive housing (16) are thoroughly clean.

20. Apply **1U-8846** Gasket Sealant to the face of swing drive housing (16) and the face of ring gear (15).
21. Use Tooling (B) and a suitable lifting device to install ring gear (15) in swing drive housing (16). The weight of ring gear (15) is approximately 80 kg (175 lb).



Illustration 14

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22. Install retaining ring (14) into the sun gear.

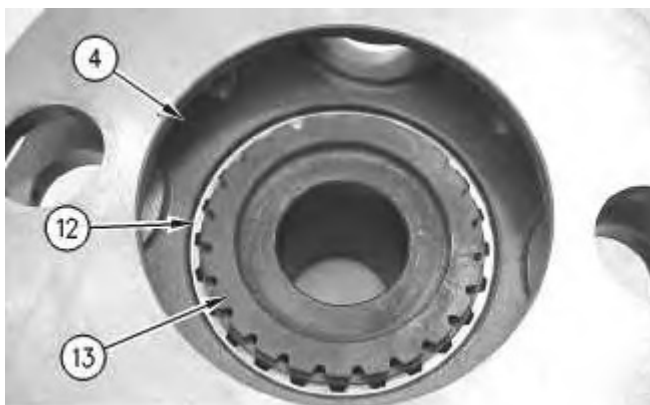
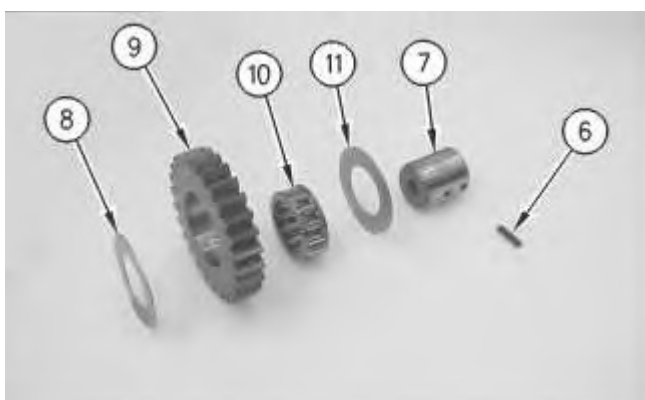


Illustration 15

g00869377

23. Install sun gear (13) in carrier assembly (4). Install upper retaining ring (12).
24. Assemble carrier assembly (4).



- a. Apply clean SAE 30W oil on bearing (10). Install bearing (10) in planetary gear (9).
- b. Install thrust washer (8) on one side of planetary gear (9).
- c. Install thrust washer (11) on the other side of planetary gear (9).
- d. Use a deburring tool to remove the metal burr from the openings in the carrier.
- e. Install planetary gear (9) and the thrust washers in carrier assembly (4).

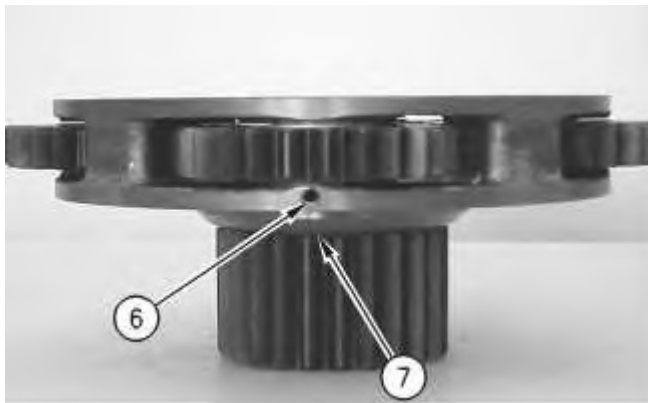
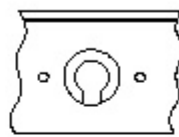


Illustration 17

- f. Install planetary shaft (7) through the gear assembly into the carrier assembly. Make sure that the spring pin hole in the planetary shaft is in alignment with the spring pin hole in the carrier.



OR

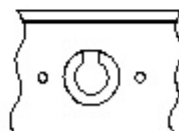


Illustration 18

g. Drive spring pin (6) into shaft (7). Orient the split in spring pin (6) vertically to the carrier. Align the split in the spring pin to the top or the bottom. Make a stake mark on each side of the spring pin hole in the carrier. Each stake mark should be approximately 2.25 ± 0.75 mm (0.09 ± 0.03 inch) from the outside diameter of the spring pin hole.

h. Repeat Steps 24.a through 24.g to install the other three planetary gears in the carrier.



Illustration 19

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25. Use two people to install carrier assembly (4) in the ring gear. The weight of the carrier assembly is approximately 36 kg (80 lb).

26. Install spacer (5) in carrier assembly (4).



Illustration 20

g00869281

27. Install sun gear (3) in carrier assembly (4).



Illustration 21

g00869266

28. Make sure that the mating surfaces of the ring gear and cover (2) are thoroughly clean.
29. Apply **1U-8846** Gasket Sealant on the flange surface of the ring gear and cover (5).
30. Install cover (2) and bolts (1).

End By:

- a. Install the swing drive. Refer to Disassembly and Assembly, "Swing Drive - Remove and Install".
-

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Disassembly and Assembly

330D, 336D, 336D2, 340D and 340D2 Excavators and 336D MHPU Mobile Hydraulic Power Unit Machine Systems

Media Number -REN8648-30

Publication Date -01/03/2015

Date Updated -15/08/2018

i07192381

Swing Drive - Install

SMCS - 5459-012

Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	132-8223	110 volt Power Pack	1
	1U-6221	Torque Wrench	1
	132-8143	36 mm Hex Link	1
B	439-3939	Link Bracket As	4
C	-	Forcing Bolt M24 x 3 by 5 inch	2
D	-	Loctite C5A Copper Anti-Seize	-
E	1U-8846	Gasket Sealant	1

1. Apply Tooling (D) on the locating pin and the pin bore in the main frame. Apply Tooling (E) on the mating surface of the main frame and the swing drive housing.
-

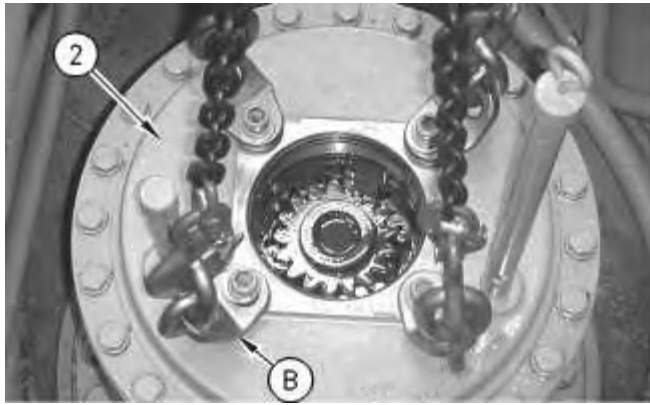


Illustration 1

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2. Attach Tooling (B) and a suitable lifting device to swing drive (2), as shown. The weight of swing drive (2) is approximately 510 kg (1125 lb). Install swing drive (2) into the original position. Be careful not to damage the pinion gear.

Note: During installation, the locating pin for the swing drive can come out of the swing drive housing. The locating pin can be installed with a hammer after the swing drive is in place.

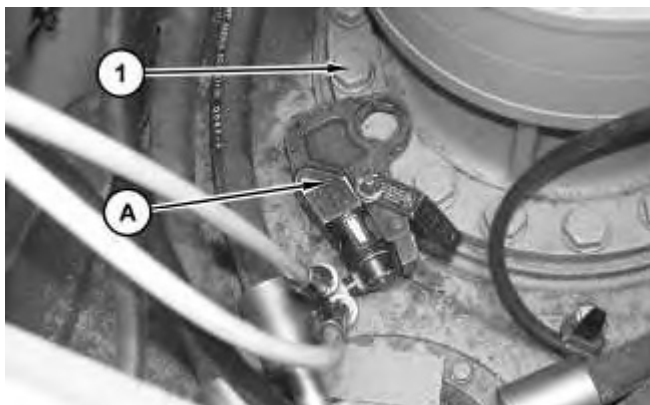


Illustration 2

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3. Use Tooling (A) to install bolts (1) that secure the swing drive to the main frame.
4. Before assembly, remove compound, oil, and dust from female threads, then apply Tooling (D) to the threads of bolts (1).
5. Tighten bolts (1) in an alternating sequence to a torque of 250 ± 25 N·m (184 ± 18 lb ft). Turn an additional angle of 45 ± 5 degrees. Refer to Service Magazine , M0083843 , "An Improved Bolt Tightening Procedure for the Critical Joints Is Now Used on all Excavators" for more detailed information.
6. Fill the swing drive with oil. Refer to Operation and Maintenance Manual, "Swing Drive Oil - Change".

End By:

a. Install the swing motor. Refer to Disassembly and Assembly, "Swing Motor - Install"

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Date Updated -15/08/2018

i02386587

Swing Gear and Bearing - Remove

SMCS - 7063-011

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	138-7576	Link Bracket	4
B	132-8223	Hydraulic Pump and Motor (115 V 50/60 Hz Single Phase) ⁽¹⁾	1
	1U-6221	Hydraulic Torque Wrench	1
	132-8143	36 mm Hex Link	1

⁽¹⁾ 132-8231 Hydraulic Pump and Motor (220 V 50/60 Hz Single Phase) is also available.

Start By:

- a. Remove the undercarriage frame. Refer to Disassembly and Assembly, "Upper Frame and Undercarriage Frame - Separate".
 1. Remove all of the grease from the swing gear and bearing. Put the grease in a suitable container for storage or disposal.
-



Illustration 1

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2. Put an alignment mark on swing gear and bearing (1) and on the undercarriage frame assembly for assembly purposes. Attach Tooling (A) and a suitable lifting device to swing gear and bearing (1), as shown. Apply slight lifting tension to the swing gear and bearing.

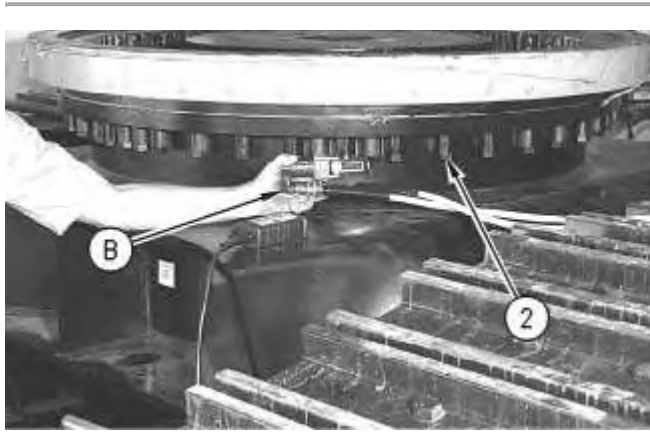


Illustration 2

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3. Use Tooling (B) in order to remove bolts (2) and the spacers that hold swing gear and bearing (1) to the undercarriage frame.
 4. Remove swing gear and bearing (1). The weight of the swing gear and bearing (1) is approximately 280 kg (615 lb).
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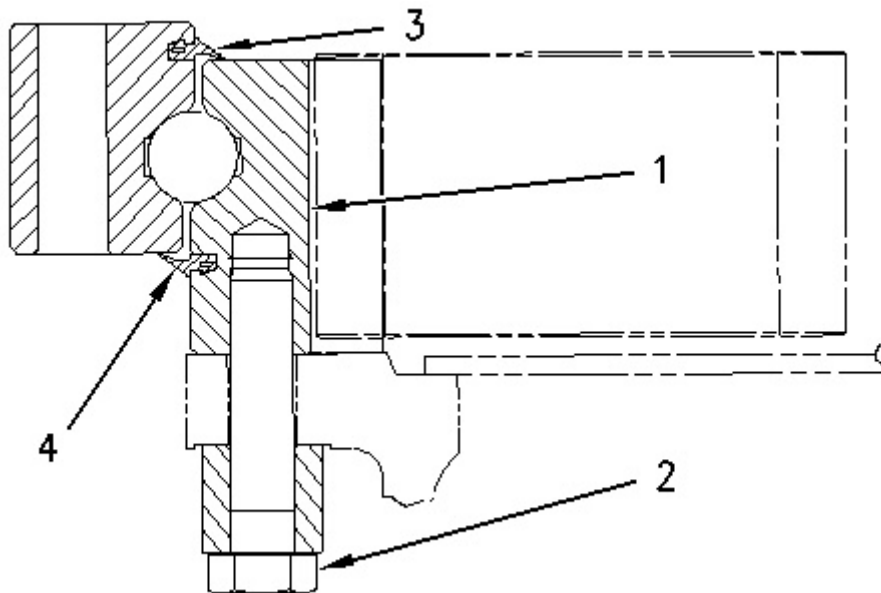


Illustration 3

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Note: Inner dust seal (3) and outer dust seal (4) may have been installed dry in the swing gear and bearing or inner dust seal (3) and outer dust seal (4) may have been bonded to the swing gear and bearing.

5. Remove inner dust seal (3) and outer dust seal (4) from the swing gear and bearing.
 6. Clean the seal grooves of the inner dust seal and the outer dust seal with a fine grit sandpaper. Use a cleaning solvent to clean the sealing grooves. Make sure that the seal grooves are thoroughly clean and dry prior to installing the new dust seals.
-

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Date Updated -15/08/2018

i07191587

Swing Gear and Bearing - Install

SMCS - 7063-012

Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	439-3941	Link Bracket As	4
B	132-8223	Hydraulic Pump and Motor (115 V 50/60 Hz Single Phase) ⁽¹⁾	1
	1U-6221	Hydraulic Torque Wrench	1
	132-8143	36 mm Hex Link	1
C	-	Loctite 435	-
D	2P-9066	Lubricant	1
E	1U-8846	Gasket Sealant	1
F	-	Loctite C5A Copper Anti-Seize	-

⁽¹⁾ 132-8231 Hydraulic Pump and Motor (220 V 50/60 Hz Single Phase) is also available.

Note: If the inner dust seal (3) and the outer dust seal (4) are installed dry, the new dust seals should be installed dry in the swing gear and bearing.

Note: If the inner dust seal and the outer dust seal are bonded to the swing gear and bearing, the new dust seals should be bonded to the swing gear and bearing.

Note: Perform Steps 1.a through 1.j to install the new dry dust seals.

Note: Perform Steps 2.a through 2.p to install the new dust seals that are bonded to the swing gear and bearing.

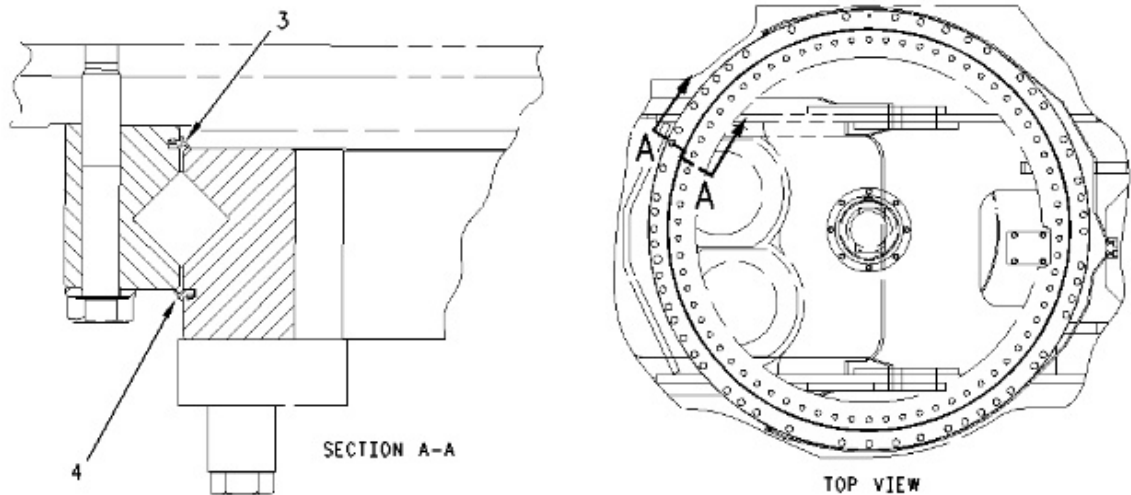


Illustration 1

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1. If inner dust seal (3) and outer dust seal (4) were installed dry, use the following procedure to install the new dust seals:
 - a. Use a wire brush to thoroughly clean the grooves for the dust seal of the swing gear and bearing. Make sure that all the dirt and foreign material has been removed.
 - b. Wash the grooves for the dust seal in a suitable solvent that will not leave an oily residue.
 - c. Make sure that the grooves for the dust seal in the swing gear and bearing are thoroughly clean and dry prior to installation of the dust seals.
 - d. Cut one end of inner dust seal (3) at a 90 degree angle. Use a blunt tool to install the inner dust seal in the seal groove of the swing gear and bearing.
 - e. Install the seal so that the lip of the seal is facing in the direction that is shown. Refer to Illustration 1.
 - f. After the inner dust seal is installed in the seal groove, measure the seal and cut the remaining end of the inner dust seal at a 90 degree angle. Install the remaining end of the inner dust seal in the seal groove.
 - g. Make sure that the inner dust seal is seated properly in the seal groove, all the way around the swing gear and bearing. Also, make sure that there is no gap between the ends of the inner dust seal.
 - h. Pull each end of the inner dust seal out of the seal groove of the swing gear and bearing approximately 50.8 mm (2.00 inch). Apply Tooling (C) to each end of the inner dust seal to bond the seals together.
 - i. Immediately reinstall the inner dust seal in the seal groove of the swing gear and bearing. Again, make sure that the entire inner dust seal is properly seated in the seal groove of the swing gear and bearing. No gap should exist between the ends of the inner dust seal.
 - j. To ensure that the lip of inner dust seal has not adhered to the top of the bearing at the seal joint, run a dull putty knife between the lip of the seal and the bearing at the seal joint.
 - k. Follow the procedure in Steps 1.a through 1.j to install outer dust seal (4) in the swing gear and bearing. Refer to Illustration 1 for proper seal orientation in the swing gear and bearing.

2. If inner dust seal (3) and outer dust seal (4) were bonded in the swing gear and bearing, use the following procedure to install the new dust seals:

- a. Thoroughly clean all the dirt and foreign material from the grooves for the dust seal in the swing gear and bearing with a wire brush.
- b. Wash the grooves for the dust seal in a suitable solvent that will not leave an oily residue.
- c. Make sure that the grooves for the dust seals in the swing gear and bearing are thoroughly clean and dry prior to installation of the dust seals.

Note: Install inner dust seal (3) and outer dust seal (4) in the swing gear and bearing in small increments, because Tooling (C) cures very quickly.

- d. Cut one end of inner dust seal (3) at a 90 degree angle.
- e. Start applying Tooling (C) 50.8 mm (2.00 inch) from the cut end of the seal. Apply Tooling (C) to the seal in 152.4 mm (6.00 inch) increments.
- f. Immediately use a blunt tool to install only the bonded portion of the inner dust seal in the seal groove of the swing gear and bearing. Make sure that the dust seal is seated properly in the seal groove.
- g. Install the seal so that the lip of the seal is facing in the direction that is shown. Refer to Illustration 1.
- h. To ensure that the inner dust seal has not adhered to the bearing, run a dull putty knife between the lip of the seal and the bearing.
- i. Apply Tooling (C) to the next 152.4 mm (6.00 inch) of the seal. Immediately use a blunt tool to install only the bonded portion of the inner dust seal in the seal groove of the swing gear and bearing.
- j. Make sure that the inner dust seal is seated properly in the seal groove. Ensure that the inner dust seal has not adhered to the bearing.

Note: Do not install the last 152.4 mm (6.00 inch) of the inner dust seal.

- k. Repeat Steps 2.i through 2.j until the dust seal is installed.
- l. Measure the inner dust seal and cut the remaining end of inner dust seal (3) at a 90 degree angle. Install the last 152.4 mm (6.00 inch) of seal in the seal groove dry.
- m. Make sure that the inner dust seal is properly seated in the seal groove and that there is no gap between the seal ends. Carefully remove both loose ends of the inner dust seal out of the seal groove.
- n. Apply Tooling (C) to the loose ends of the seal.
- o. Immediately use a blunt tool to reinstall the seal ends in the seal groove. Again, make sure that the inner dust seal is properly seated in the seal groove, and that no gap existed between the ends of the seal.
- p. To ensure that the inner dust seal has not adhered to the top of the bearing, run a dull putty knife around the seal.
- q. Follow the procedure in Steps 2.a through 2.p to install outer dust seal (4) in the swing gear and bearing. Refer to Illustration 1 for proper seal orientation in the swing gear and bearing.

3. Lubricate the swing gear and bearing with grease.



Illustration 2

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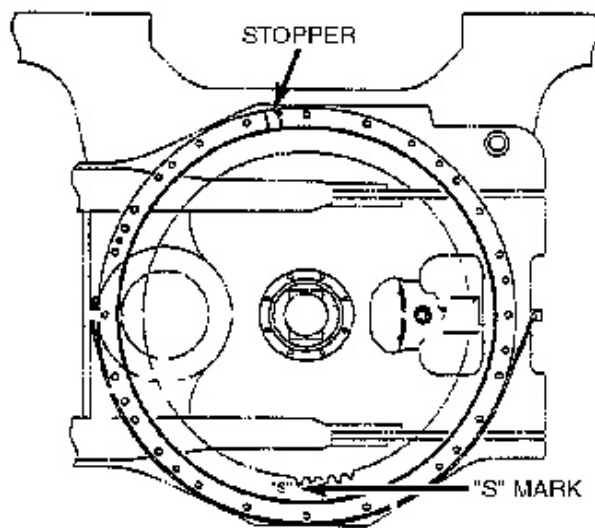


Illustration 3

g00520674

Note: Clean the mating surface for the swing gear and bearing on the undercarriage frame assembly.

4. Apply Tooling (E) on the mating surface for the swing gear and bearing of the undercarriage frame assembly.
 5. Fasten Tooling (A) and a suitable lifting device to swing gear and bearing (1), as shown. Refer to Illustration 2. The weight of swing gear and bearing (1) is approximately 660 kg (1455 lb).
 6. Place the swing gear and bearing in the swing gear and bearing's original position on the undercarriage frame assembly.
 7. Make sure that the stamp "S" on the inner race is in the position that is shown, relative to the undercarriage frame assembly and the stopper on the outer race. Refer to Illustration 3.
-

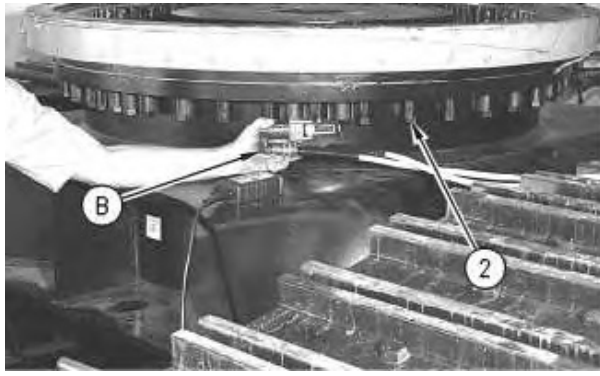


Illustration 4

g00520670

8. Apply a thin coat of Tooling (F) on the threads of bolts (2). Install the spacers and bolts (2) that secure the swing gear and bearing to the undercarriage frame assembly.

Note: Some machines use bolts that are plated with Dacromet. Dacromet bolts appear silver, gray in color. Do not apply Tooling (F) to the threads of Dacromet bolts. Make sure that the bolt holes are clean and dry when Dacromet bolts are used.

Note: Torque for bolts (2) is 1000 ± 125 N·m (738 ± 92 lb ft) on 345 excavators.

Note: Torque for bolts (2) is 250 ± 25 N·m (184 ± 18 lb ft) and turn an additional angle of 55 ± 5 degrees on 336 excavators.

9. Use Tooling (B) to tighten bolts (2) to a torque of 900 ± 100 N·m (665 ± 75 lb ft).
10. Refer to Service Magazine , M0083843 , "An Improved Bolt Tightening Procedure for the Critical Joints Is Now Used on all Excavators" for more detailed information.

NOTICE

Improper lubrication can cause damage to machine components.

To avoid damage, make sure that the proper amount of grease is applied to the swing drive.

When the amount of grease in the compartment becomes too large, the agitation loss becomes large, thereby accelerating grease deterioration.

Grease deterioration can cause damage to the pinion gear of the swing drive and swing internal gear.

Not enough grease will result in poor gear lubrication.

11. Add Tooling (D) to the swing gear and bearing after the installation.

Reference: Refer to Operation and Maintenance Manual, "Refill Capacities" for the capacity of the swing gear and bearing.

Reference: Refer to Operation and Maintenance Manual, "Swing Gear - Lubricate" for lubricating the swing gear and bearing.

Reference: Refer to Operation and Maintenance Manual, "Maintenance Interval Schedule" for the schedule for lubricating the swing gear and bearing.

End By:

- a. Install the undercarriage frame assembly. Refer to Disassembly and Assembly, "Undercarriage Frame - Install" in this manual.
-

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Media Number -REN8648-30

Publication Date -01/03/2015

Date Updated -15/08/2018

i02451315

Oil Filter (Hydraulic, Return) - Remove

SMCS - 5068-011

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	138-7575	Link Bracket	1

Start By:

- a. Release the hydraulic system pressure. Refer to Disassembly and Assembly, "Hydraulic System Pressure - Release".
1. Drain the hydraulic oil into a suitable container for storage or disposal. Refer to Operation and Maintenance Manual, "Hydraulic Oil - Change".

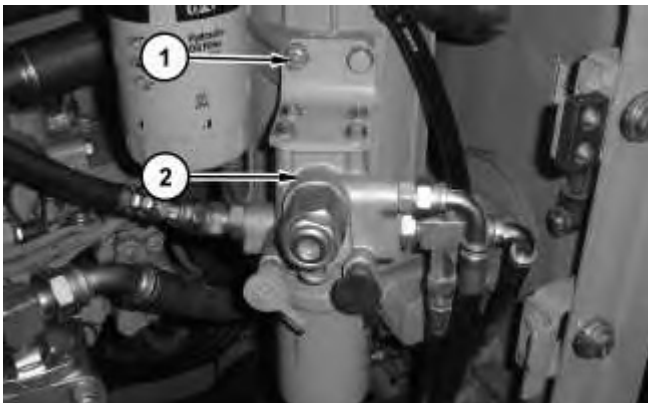


Illustration 1

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2. Remove bolts (1) and reposition filter assembly (2).

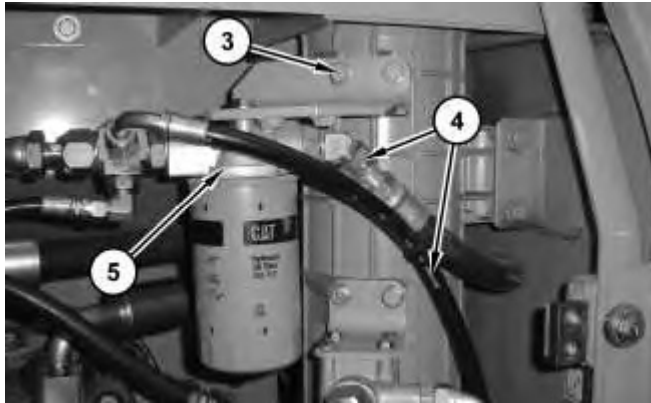


Illustration 2

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3. Disconnect hose assemblies (4). Remove bolts (3). Reposition filter assembly (5) out of the way.

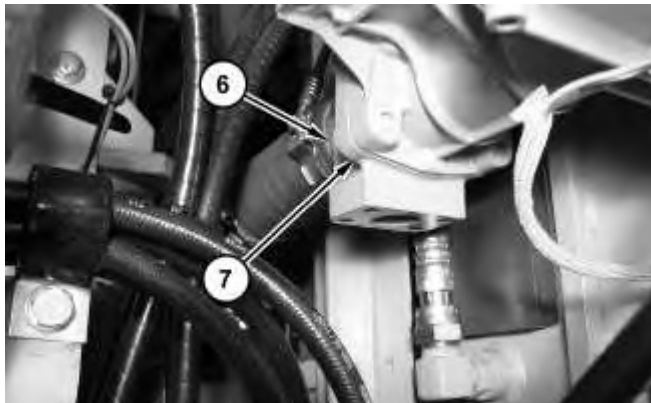


Illustration 3

g01223795

4. Remove bolts (6) from pipe assembly (7).

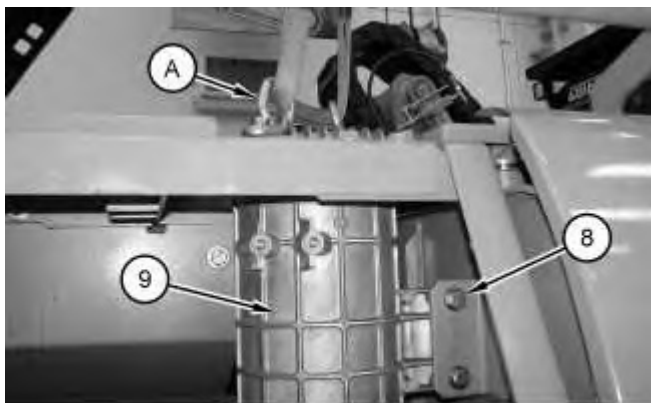


Illustration 4

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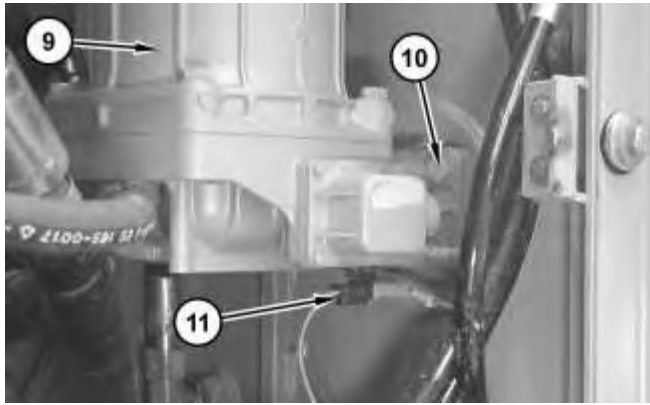


Illustration 5

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5. Attach Tooling (A) and a suitable lifting device to oil filter assembly (9). The weight of oil filter assembly (9) is approximately 20 kg (45 lb). Remove bolts (8). Disconnect harness assembly (11). Remove bolts (10). Remove oil filter assembly (9).
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