



Service Repair Manual

Models

M312 Excavator

[Previous Screen](#)

Product: EXCAVATOR

Model: M312 EXCAVATOR 6TL

Configuration: M312 Excavator 6TL00001-00409 (MACHINE) POWERED BY 3054 Engine

Disassembly and Assembly M312 and M315 Excavators Machine Systems Supplement

Media Number -REN4023-01

Publication Date -01/02/2009

Date Updated -17/02/2009

i03484220

Swing Drive - Disassemble

SMCS - 5459-015

Disassembly Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	138-7575	Link Bracket	2
B	1P-0510	Driver Gp	1
C	1U-8759	Retaining Ring Pliers	1
D	5P-4758	Retaining Ring Pliers	1
E	1P-1859	Retaining Ring Pliers	1
F	1P-1855	Retaining Ring Pliers	1
G	156-7100	Puller	1
H	1P-1863	Retaining Ring Pliers	1
J	305-4538	Spanner Socket ⁽¹⁾	1
	240-8274	Insert ⁽²⁾	1
	174-9465	Spanner Socket ⁽³⁾	1
K	1P-0520	Driver Gp	1

⁽¹⁾ Used on the part number **152-7372** Swing Drive Gp

⁽²⁾ Used on the part number **152-7372** Swing Drive Gp

⁽³⁾ Used on the part number **152-7375** Swing Drive Gp

Start By:

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

Note: Cleanliness is an important factor. Before the disassembly procedure, the exterior of the component should be thoroughly cleaned. This will help to prevent contaminants from entering the internal mechanism.



Illustration 1

g01027113

1. Attach Tooling (A) and a suitable lifting device to swing brake assembly (2). The weight of swing brake assembly (2) is approximately 75 kg (165 lb).
 2. Note the orientation of swing brake assembly (2) for assembly purposes.
 3. Remove bolts (1). Remove swing brake assembly (2).
-

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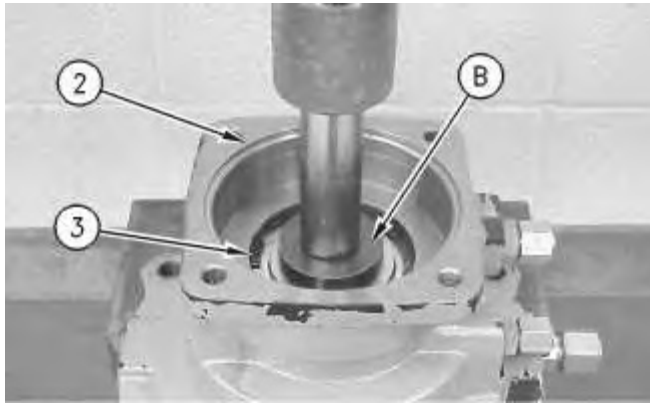


Illustration 2

g00906311

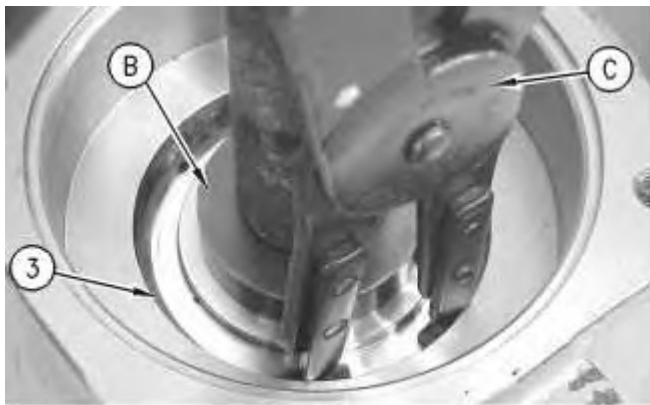


Illustration 3

g00909003

WARNING

Personal injury can result from being struck by parts propelled by a released spring force.

Make sure to wear all necessary protective equipment.

Follow the recommended procedure and use all recommended tooling to release the spring force.

-
4. Position swing brake assembly (2) in a suitable press.
 5. Use Tooling (B) and a suitable press to relieve tension on retaining ring (3). Use Tooling (C) to remove retaining ring (3).
-

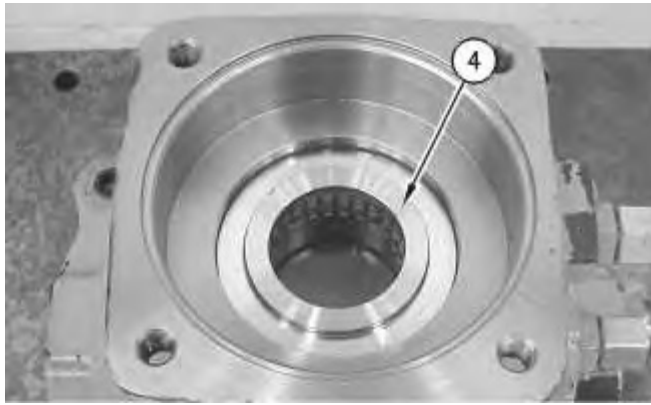


Illustration 4

g00906313

6. Remove plate (4).

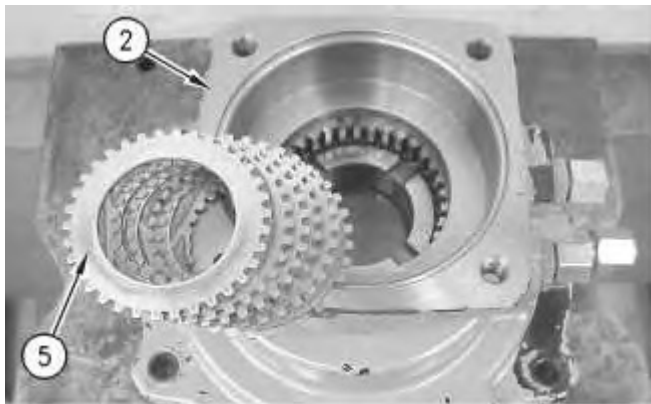


Illustration 5

g00906314

7. Remove the discs and plates (5) from swing brake assembly (2).



Illustration 6

g00909004

 **WARNING**

Personal injury can result from being struck by parts propelled by a released spring force.

Make sure to wear all necessary protective equipment.

Follow the recommended procedure and use all recommended tooling to release the spring force.

8. Reposition swing brake assembly (2), as shown.
9. Use Tooling (K) and a suitable press to relieve tension on retaining ring (6). Use Tooling (D) to remove retaining ring (6) and the shim. Remove spring (6A) from swing brake assembly (2).

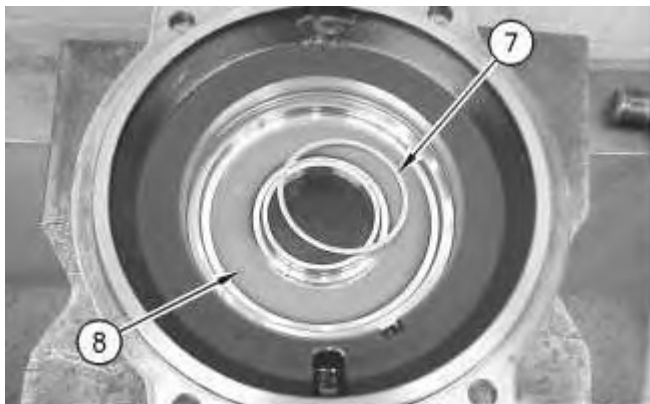


Illustration 7

g00909008

10. If equipped, remove ring (7) from piston (8).

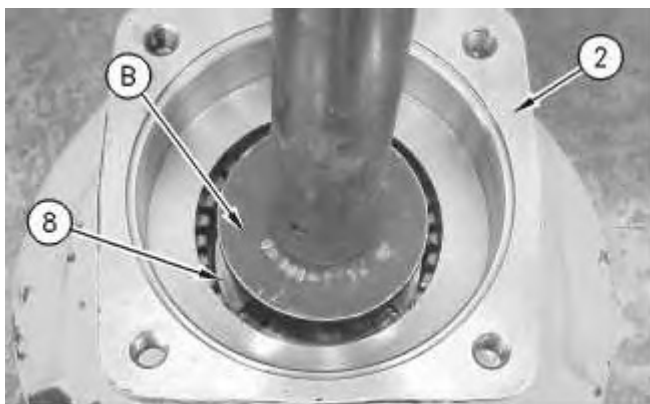


Illustration 8

g00906320

11. Use Tooling (B) and a suitable press to remove piston (8) from swing brake assembly (2).
-

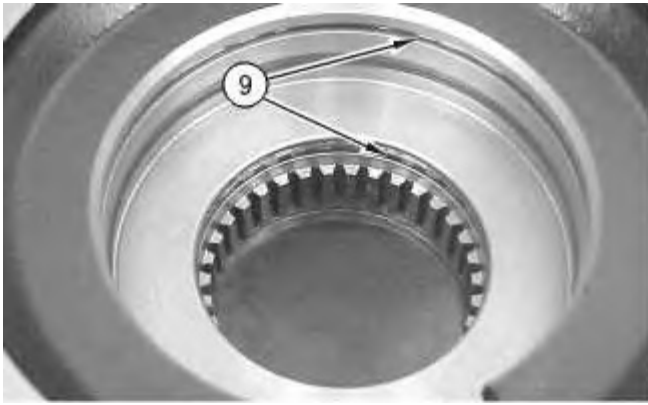


Illustration 9

g00906322

12. Remove seals (9) from the swing brake assembly.

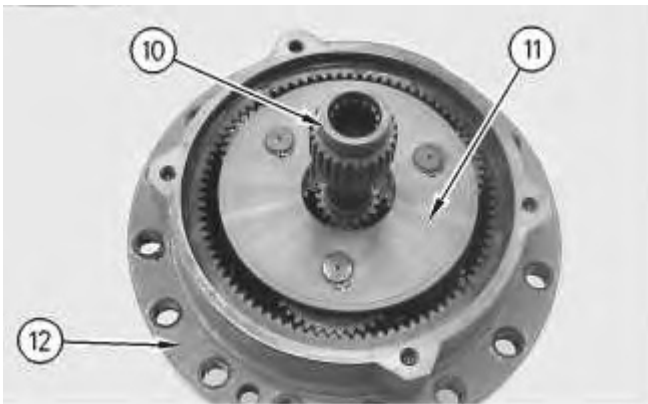


Illustration 10

g00906324

13. Remove shaft (10) and top carrier (11) from shaft drive (12).

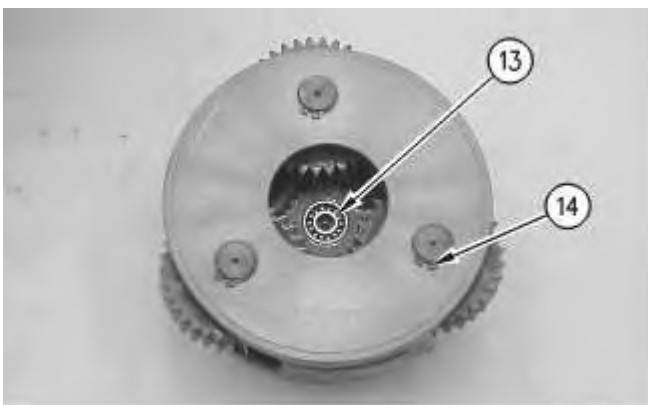


Illustration 11

g00906325

14. Remove bearing (13). Use Tooling (F) to remove retaining ring (14).

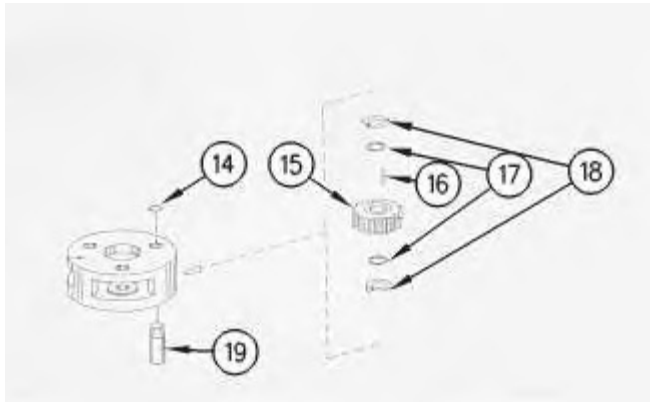


Illustration 12

g00906327

15. Remove pins (19), gears (15), washers (18) and (17), and needle bearings (16).

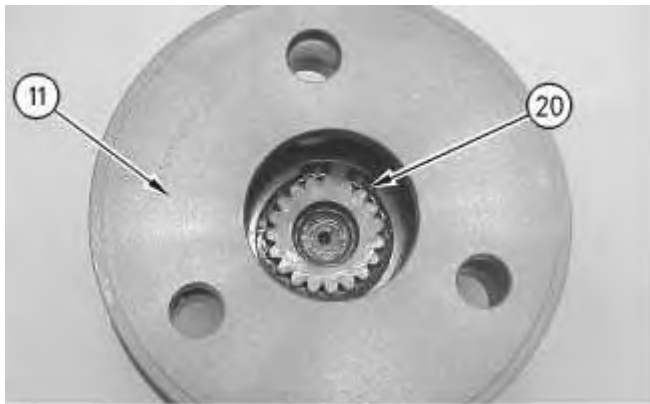


Illustration 13

g00906329

16. Use Tooling (E) to remove retaining ring (20) from top carrier (11).

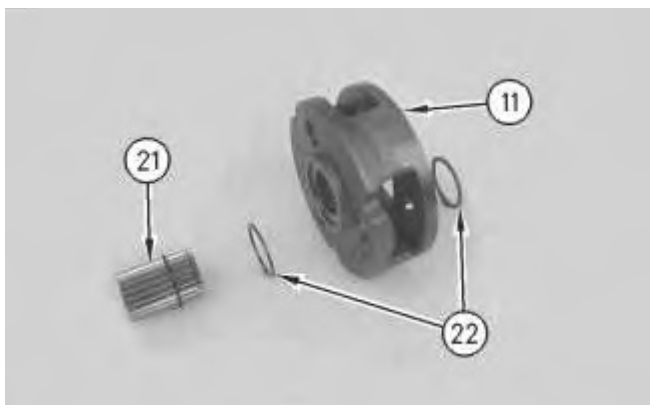


Illustration 14

g00906330

17. Remove sun gear (21) and washers (22) from top carrier (11).

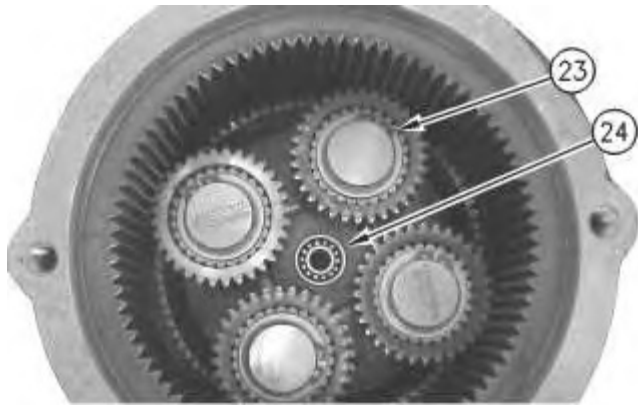


Illustration 15

g00906331

18. Use Tooling (E) to remove retaining rings (23) and bearings (24).

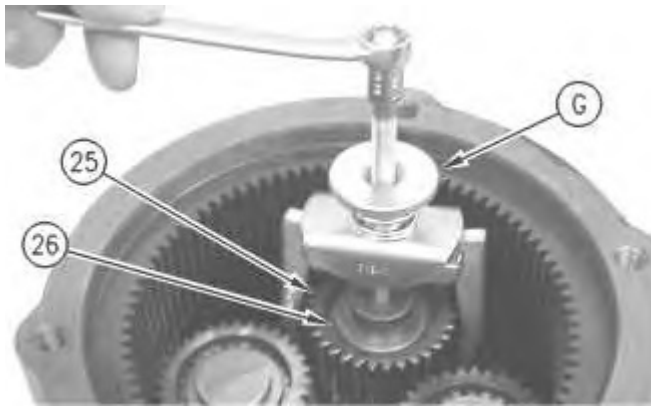


Illustration 16

g00909009

19. Use Tooling (G) to remove gear (25).
20. Remove needle bearings (26).

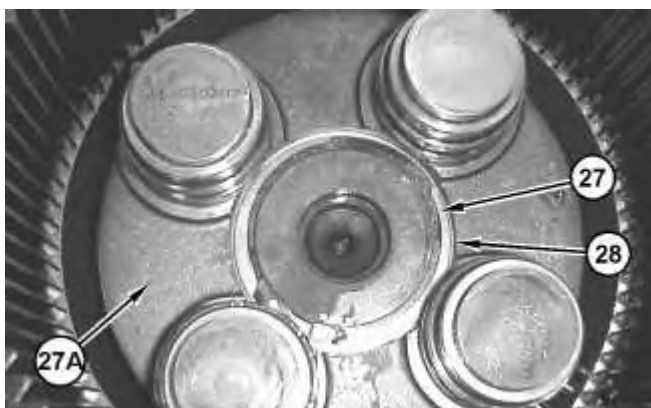


Illustration 17

g01026549

21. Use Tooling (H) to remove retaining ring (27). Remove shim (28) and carrier (27A).

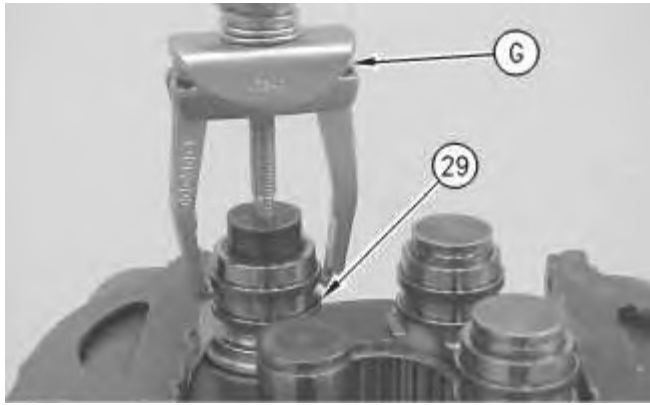


Illustration 18

g00909011

22. Use Tooling (G) to remove bearing race (29).

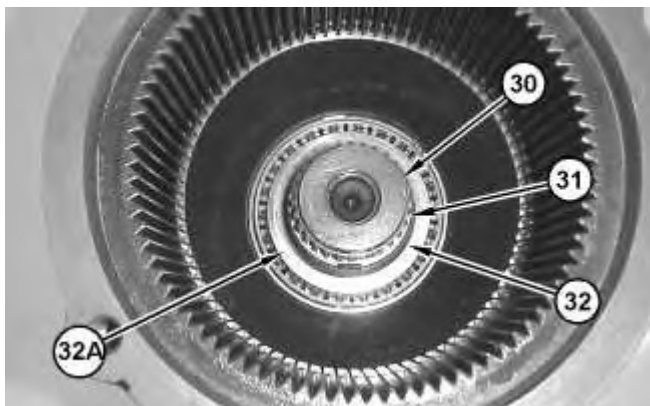


Illustration 19

g01026558

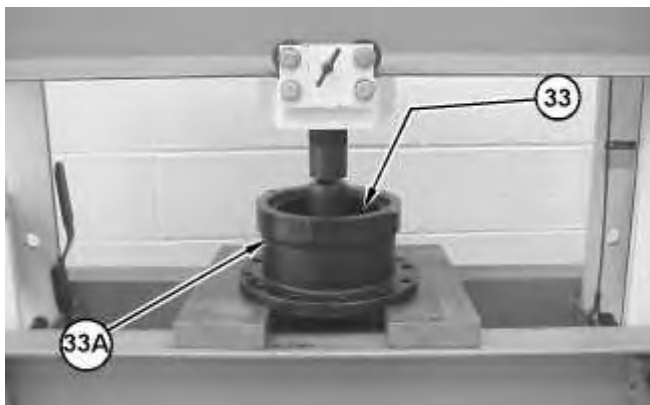


Illustration 20

g01026627

23. Position swing drive housing (33A) and pinion (33) on a suitable press.

24. Use Tooling (J) to remove nut (30). Remove ring (31) and nut (32).

Note: Support the underside of pinion (33) before the following Step is performed.

25. Use a suitable press to remove pinion (33) and bearing cone (32A).

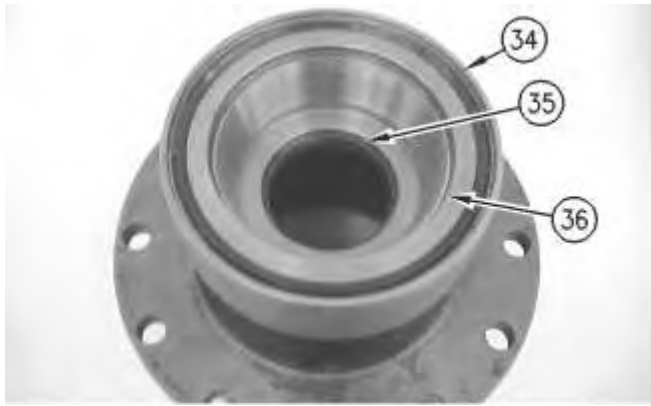


Illustration 21

g00906881

26. Remove seal (34) and lip seal (35). Use Tooling (K) to remove bearing cup (36).

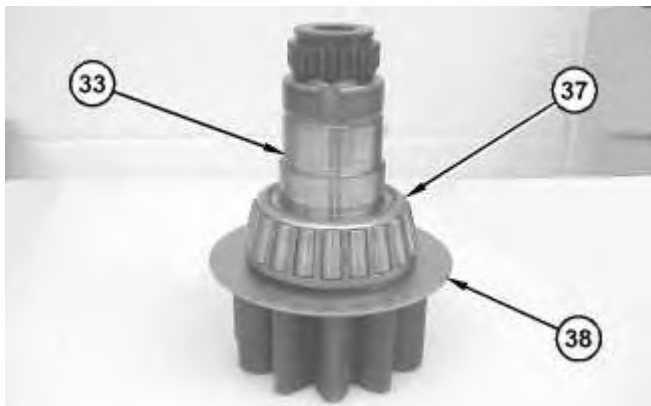


Illustration 22

g01026650

27. Remove bearing cone (37) and washer (38) from pinion (33).



Illustration 23

g00906883

28. Use Tooling (K) to remove bearing cup (39).
-

[Previous Screen](#)

Product: EXCAVATOR

Model: M312 EXCAVATOR 6TL

Configuration: M312 Excavator 6TL00001-00409 (MACHINE) POWERED BY 3054 Engine

Disassembly and Assembly M312 and M315 Excavators Machine Systems Supplement

Media Number -REN4023-01

Publication Date -01/02/2009

Date Updated -17/02/2009

i03484340

Swing Drive - Assemble

SMCS - 5459-016

Assembly Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	138-7575	Link Bracket	2
B	1P-0510	Driver Gp	1
C	1U-8759	Plier Tips	1
D	5P-4758	Retaining Ring Pliers	1
E	1P-1859	Retaining Ring Pliers	1
F	1P-1855	Retaining Ring Pliers	1
H	1P-1863	Retaining Ring Pliers	1
J	305-4538	Spanner Socket ⁽¹⁾	1
	240-8274	Insert ⁽²⁾	1
	174-9465	Spanner Socket ⁽³⁾	1
K	1P-0520	Driver Gp	1
L	2S-3230	Bearing Lubricant	1
M	8T-5096	Dial Indicator Gp	1
N	7H-1680	Lubrication Hand Pump	1

⁽¹⁾ Used on the part number **152-7372** Swing Drive Gp

⁽²⁾ Used on the part number **152-7372** Swing Drive Gp

⁽³⁾ Used on the part number **152-7375** Swing Drive Gp

Note: Replace all O-ring seals and all gaskets. Apply a light film of "10W" oil to all components before assembly.

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.

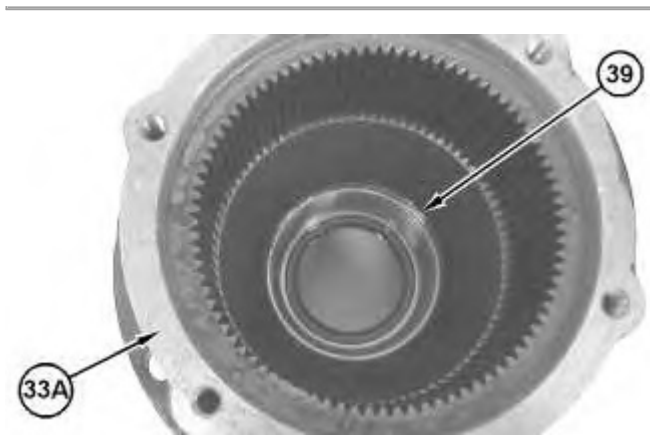


Illustration 1

g01027198

1. Lower the temperature of bearing cup (39). Use Tooling (K) to install bearing cup (39) in swing drive housing (33A).

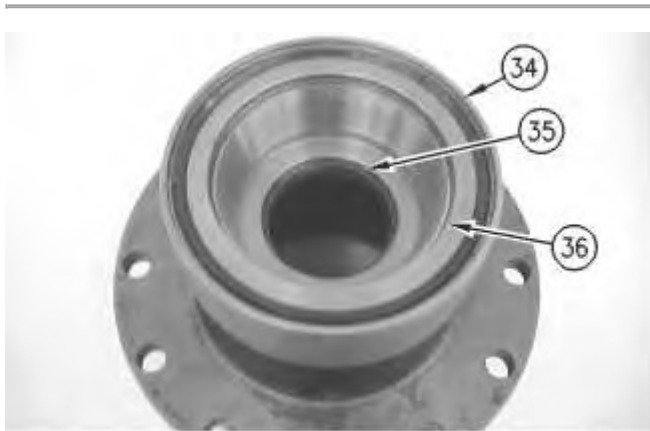


Illustration 2

g00906881

2. Lower the temperature of bearing cup (36). Use Tooling (K) to install bearing cup (36).
 3. Use Tooling (B) to install lip seal (35). Install seal (34). Install tooling (L) to seal (34).
-

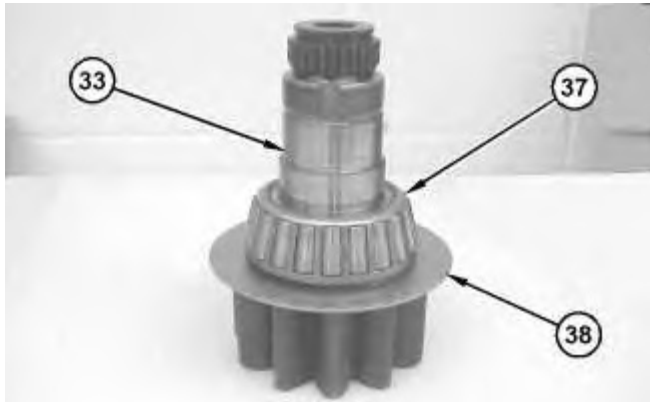


Illustration 3

g01026650

4. Raise the temperature of bearing cone (37). Install washer (38) and bearing cone (37) on pinion (33).



Illustration 4

g01027078

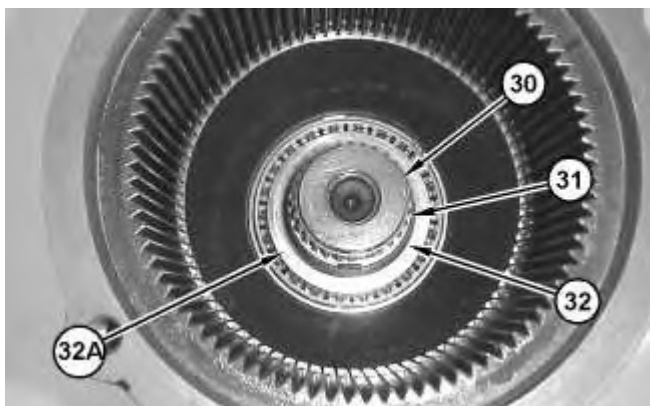


Illustration 5

g01026558

5. The following steps should be used on machines that are equipped with the part number **152-7372** Swing Drive Gp.
 - a. Apply 80 grams of Tooling (L) to the bearing cone on pinion (33). Install pinion (33) in swing drive housing (33A).

- b. Raise the temperature of bearing cone (32A). Install bearing cone (32A).
 - c. Install nut (32). Use Tooling (J) in order to tighten nut (32) until a slight increase in rolling torque is obtained. Loosen nut (32) by approximately 60 degrees. Strike pinion (33) with a soft hammer in order to release the bearing preload.
 - d. Determine the initial rolling torque of pinion (33). The specified rolling torque is 8 N·m (71 lb in) to 15 N·m (133 lb in). Record this value as Rolling Torque (Y).
 - e. As you tighten nut (32) rotate swing drive housing (33A) in order to ensure that the bearings are seated properly. Use Tooling (J) in order to tighten nut (32) to a torque of 300 N·m (221 lb ft). Loosen nut (32) by 30 degrees to 60 degrees.
 - f. Install ring (31).
 - g. Install nut (30). Use Tooling (J) in order to tighten nut (30) to a torque of 1000 ± 100 N·m (738 ± 74 lb ft).
 - h. Determine the rolling torque of pinion (33). The specified rolling torque is Rolling Torque (Y) plus 3 N·m (27 lb in) to 9 N·m (80 lb in).
6. The following steps should be used on machines that are equipped with the part number **152-7375** Swing Drive Gp.
- a. Apply 80 grams of Tooling (L) to the bearing cone on pinion (33). Install pinion (33) in swing drive housing (33A).
 - b. Raise the temperature of bearing cone (32A). Install bearing cone (32A).
 - c. Install nut (32). Use Tooling (J) in order to tighten nut (32) until a slight increase in rolling torque is obtained. Loosen nut (32) by approximately 60 degrees. Strike pinion (33) with a soft hammer in order to release the bearing preload.
 - d. Determine the initial rolling torque of pinion (33). The specified rolling torque is 6 N·m (53 lb in) to 8 N·m (71 lb in). Record this value as Rolling Torque (Y).
 - e. As you tighten nut (32) rotate swing drive housing (33A) in order to ensure that the bearings are seated properly. Use Tooling (J) in order to tighten nut (32) to a torque of 250 ± 50 N·m (184 ± 37 lb ft). Loosen nut (32) by 15 degrees to 30 degrees.
 - f. Install ring (31).
 - g. Install nut (30). Use Tooling (J) in order to tighten nut (30) to a torque of 700 ± 50 N·m (516 ± 37 lb ft).
 - h. Determine the rolling torque of pinion (33). The specified rolling torque is Rolling Torque (Y) plus 2 N·m (18 lb in) to 5 N·m (44 lb in).
-

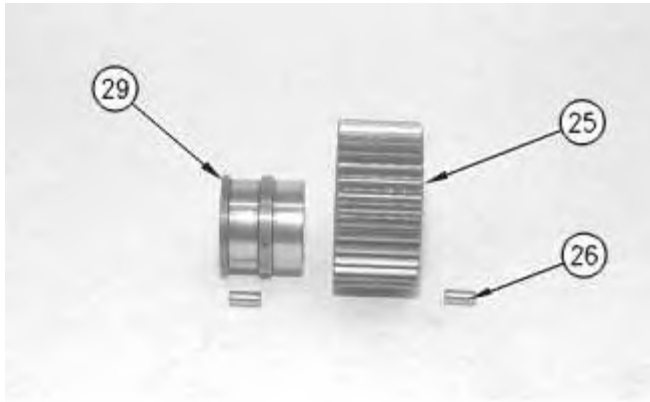


Illustration 6

g00907108



Illustration 7

g00907110

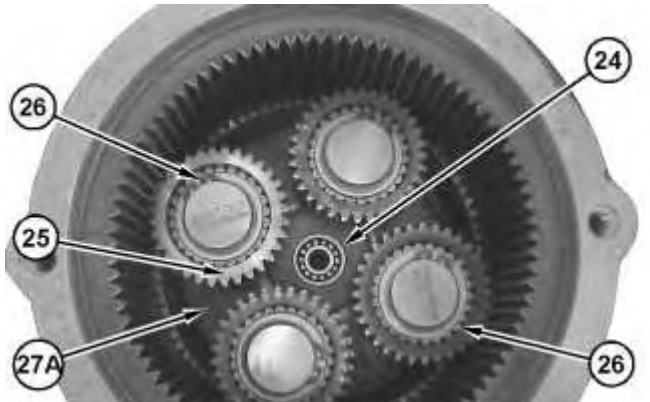


Illustration 8

g01027098

7. Install carrier (27A).
8. Install shim (28). Use Tooling (H) to install retaining ring (27).
9. Raise temperature of bearing race (29). Install bearing race (29) and needle bearings (26).
10. Apply Tooling (L) to the rollers. Install the rollers on bearing race (29). Install gears (25) over bearing race (29) and the rollers.

11. Install retaining ring (23) and bearing (24).

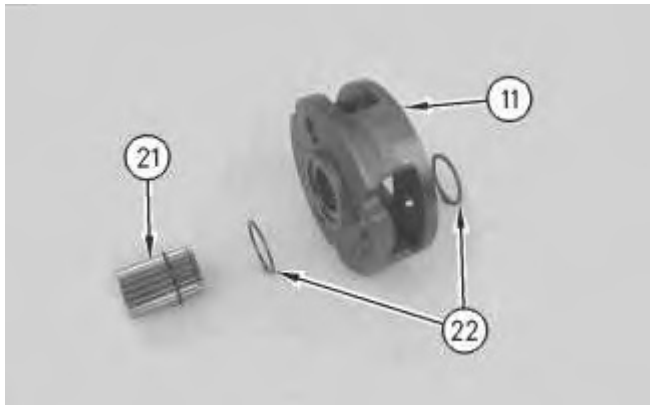


Illustration 9

g00906330

12. Install washers (22) and sun gear (21) onto top carrier (11).

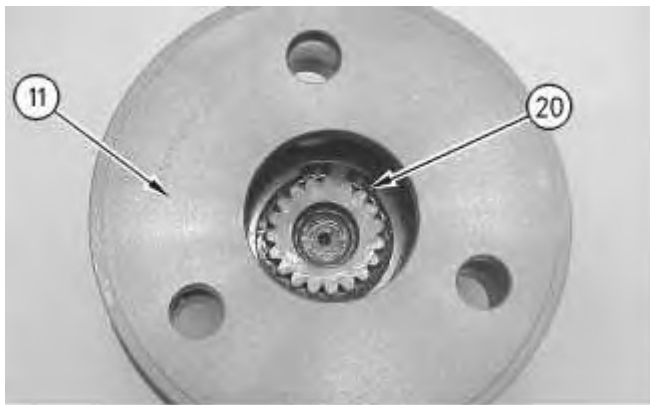


Illustration 10

g00906329

13. Use Tooling (E) to install retaining ring (20) onto top carrier (11).

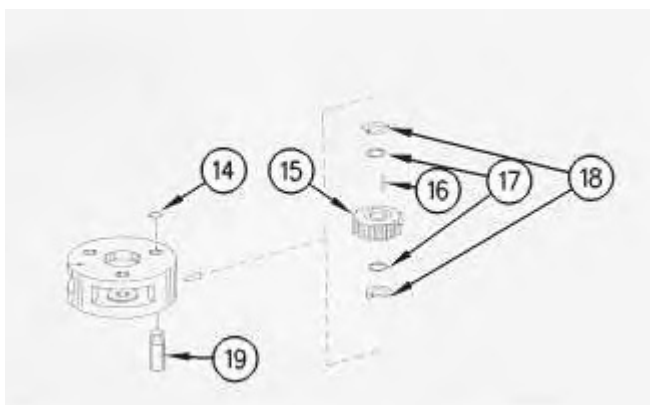


Illustration 11

g00906327

14. Install needle bearings (16), washers (17) and (18), gears (15), and pins (19).

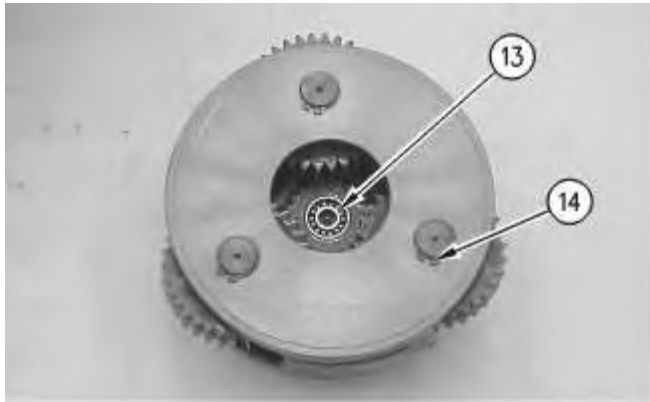


Illustration 12

g00906325

15. Use Tooling (F) to install retaining ring (14). Install bearing (13).

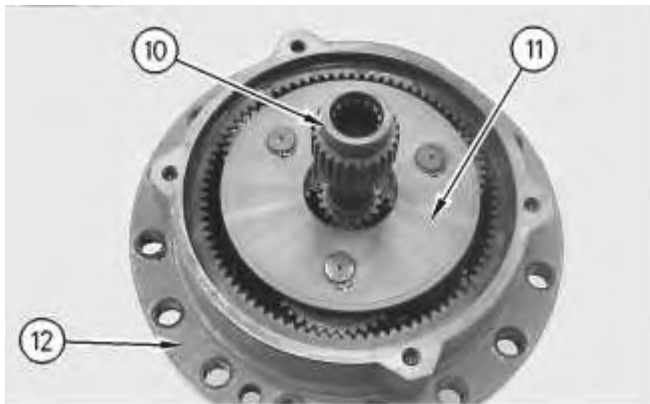


Illustration 13

g00906324

16. Install top carrier (11) and shaft (10) in shaft drive (12).

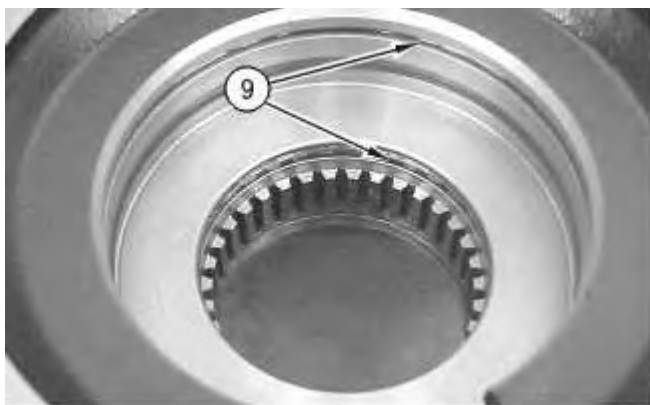


Illustration 14

g00906322

17. Install seals (9) in the swing brake assembly.

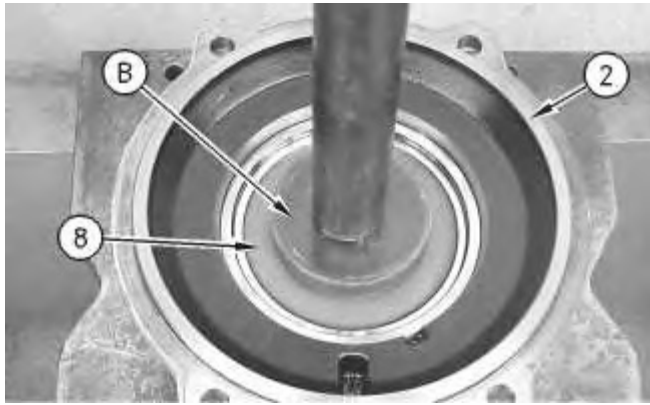


Illustration 15

g00909400

18. Use Tooling (B) to install piston (8) in swing brake assembly (2).

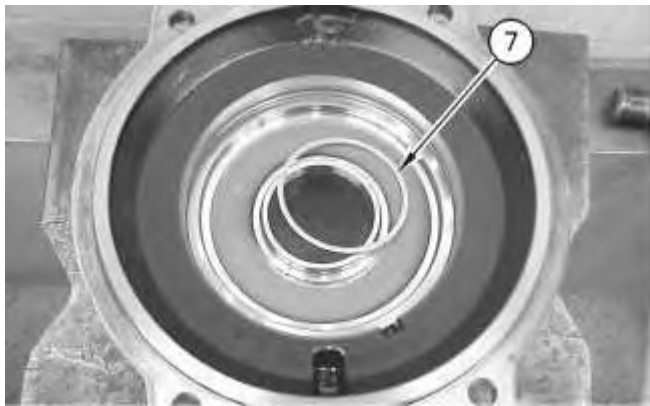


Illustration 16

g00906319

19. If equipped, install ring (7).



Illustration 17

g00909004



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.

20. Install spring (6A) and the shim.
21. Use Tooling (K) and a suitable press in order to compress spring (6A). Use Tooling (D) in order to install retaining ring (6). Rotate the opening in retaining ring (6) by approximately 180 degrees from the notch in swing brake assembly (2).

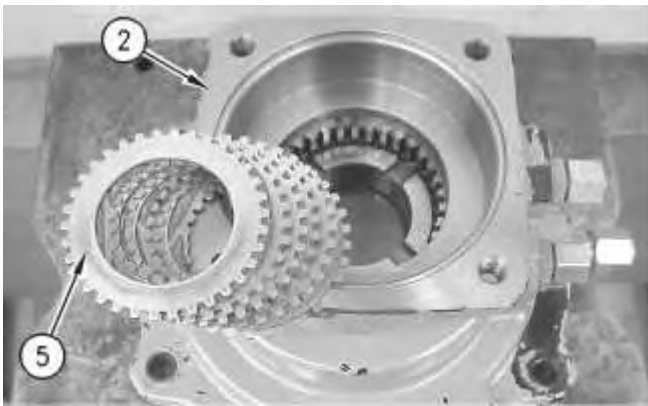


Illustration 18

g00906314

22. Install discs and plates (5) into swing brake assembly (2).

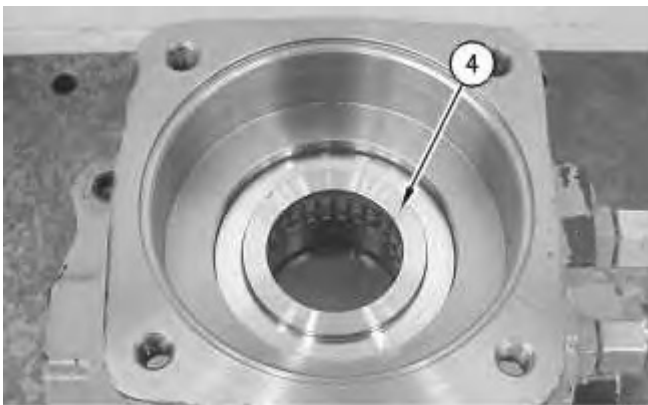


Illustration 19

g00906313

23. Install plate (4).
-

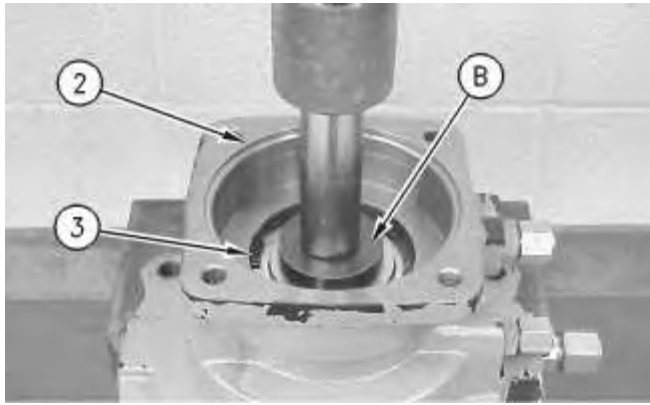


Illustration 20

g00906311

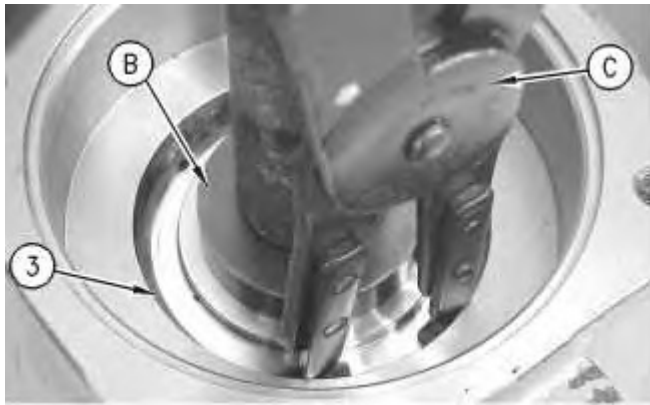


Illustration 21

g00909003

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.

-
24. Use Tooling (B) and a suitable press in order to compress the spring. Use Tooling (C) to install retaining ring (3).
-

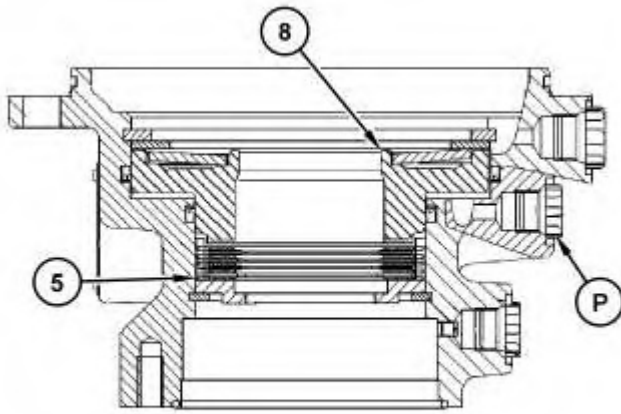


Illustration 22

g01822733

25. Position Tooling (M) in order to measure the travel of piston (8). Connect Tooling (N) to Port (P). Use Tooling (N) in order to apply 3000 kPa (435 psi) at Port (P). Record the measured travel of piston (8) as Dimension (X).

- a. The recorded Dimension (X) should be 1.2 mm (0.05 inch) to 1.4 mm (0.06 inch) on machines that are equipped with the part number **152-7372** Swing Drive Gp.
- b. The recorded Dimension (X) should be 1.1 mm (0.04 inch) to 1.3 mm (0.05 inch) on machines that are equipped with the part number **152-7375** Swing Drive Gp.

Note: Outer plate (5) is available in different thicknesses. Use the correct thickness of plate (5) in order to obtain the correct Dimension (X).



Illustration 23

g01027113

26. Install Tooling (A) and a suitable lifting device to swing brake assembly (2). The weight of swing brake assembly (2) is approximately 75 kg (165 lb).
27. Position swing brake assembly (2) in swing brake housing (2A).

28. Install bolts (1).

End By:

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

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Product: EXCAVATOR

Model: M312 EXCAVATOR 6TL

Configuration: M312 Excavator 6TL00001-00409 (MACHINE) POWERED BY 3054 Engine

Disassembly and Assembly M312 and M315 Excavators Machine Systems Supplement

Media Number -REN4023-01

Publication Date -01/02/2009

Date Updated -17/02/2009

i01323305

Swing Drive - Install

SMCS - 5459-012

Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
(A)	138-7574	Link Bracket	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, "Caterpillar Tools and Shop Products Guide" for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

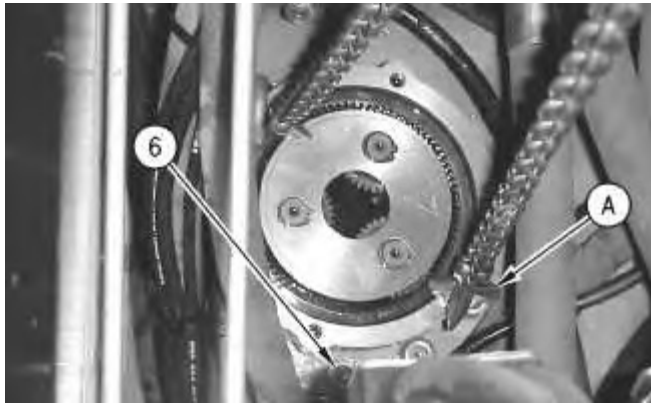


Illustration 1

g00699322

1. Install tooling (A). Attach an appropriate lifting device to tooling (A) and install the swing drive. The weight of the swing drive is approximately 52 kg (115 lb).
2. Install bolts (6) .

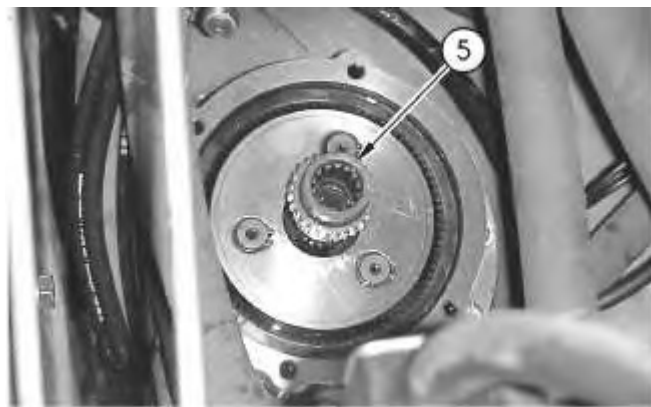


Illustration 2

g00699266

3. Install shaft (5) into the swing drive.





Suggest:

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first, and then click the above link

to download the complete manual.

Thank you so much for reading

4. Attach lifting strap (4) and a hoist to the swing motor.
5. Install the swing motor and swing brake valve as a unit. The weight of the swing motor and swing brake valve is approximately 25 kg (55 lb).

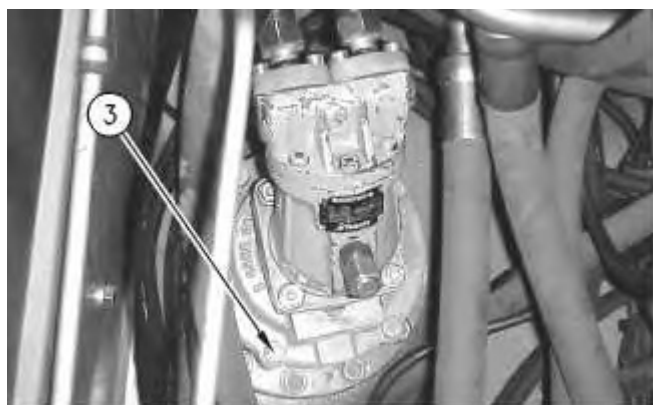


Illustration 4

g00698645

6. Install four bolts (3) into the swing brake valve.



Illustration 5

g00697670

7. Connect hose assemblies (2) to the swing motor.
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