Swing Drive
SMCS - 5459-010; 5459-017
Remove And Install Swing Drive

Start By:

a. remove swing motor

1. Thoroughly clean around the mounting area of the swing drive prior to removal.

View From Under Swing Frame

2. Remove drain plug (1) to drain the oil from the swing drive. The capacity of the swing drive is 3 liters (0.8 U.S. gal).

3. Loosen tube assemblies (2) and (3). Tube assemblies (2) and (3) must be moved out of the way to provide clearance for removal of the swing drive.

4. Remove sixteen bolts (4) that hold the swing drive to the swing frame.
5. Fasten tool (A) and a hoist to swing drive (5) as shown. Use two swing motor mounting bolts to hold tool (A) to the swing drive. Remove the swing drive by raising it straight up. It may be necessary to pry the swing drive off of the front and rear locating pins in the swing frame as the swing drive is being raised with the hoist. Weight of the swing drive is 109 kg (240 lb).

NOTE: The front and rear locating pins used to position the swing drive on the swing frame may remain in the swing drive case when the unit is being removed.

6. Thoroughly clean the mating surfaces on the swing frame and the swing drive case.

7. If the front and rear locating pins were removed with the swing drive, reinstall them in the swing frame with a hammer.

8. Put a bead of 356252 RTV Silicone Adhesive/Sealant on the mating surface of the swing frame at the area in which the swing drive fits.

9. Fasten tool (A) and a hoist to the swing drive, and put it in position over the swing frame. Lower the unit down aligning the front and rear locating holes in the swing drive case with the front and rear locating pins in the swing frame.

10. Put 953263 Thread Lock on the threads of sixteen bolts (4) that hold the swing drive to the swing frame. Install the bolts, and tighten them to a torque of 245 ± 20 N·m (180 ± 15 lb ft).

11. After installation of the swing motor, fill the hydraulic oil tank, the swing drive and the swing motor with oil to the correct level. See the Operation And Maintenance Manual for the correct filling procedures.

End By:
   a. install swing motor

Disassemble And Assemble Swing Drive

Start By:
   a. remove swing drive
1. Drain the oil from the swing drive. The capacity of the swing drive is approximately **3 liters (0.8 U.S. gal)**. Be sure the swing drive is thoroughly clean prior to disassembly. Fasten the swing drive to tool (A). Weight of the swing drive is approximately **109 kg (240 lb)**.

2. Put an alignment mark across the cover, ring gear and the case of the swing drive for assembly purposes.

3. Remove drive gear (1) from the swing drive.

4. Remove twelve socket head bolts (2) that hold cover (3) to the ring gear. Remove cover (3) from the ring gear. Weight of the cover is **11 kg (25 lb)**.

5. Remove o-ring seal (4) from the ring gear.

6. Remove washer (5) from planetary holder (6).

7. Remove planetary holder (6).
8. Disassemble planetary holder (6) as follows:
   a. Drive spring pin (8) into planetary shaft (7) with a hammer and a punch. Remove planetary shaft (7) from the holder.
   b. Remove planetary gear (11) and two thrust washers (9) from the holder.
   c. Remove bearing (10) from planetary gear (11).
   d. Remove the other two planetary gears from the holder as in Steps 8a through 8c.

9. Remove washer (13) from sun gear (12). Remove sun gear (12) from the swing drive. Remove the snap ring from the sun gear.

10. Remove oil level gauge pipe (15) from the ring gear of the swing drive.
11. Remove ring gear (14) from the main case of the swing drive. Weight of the ring gear is **16 kg** (35 lb).

12. Remove o-ring seal (16) from the main case of the swing drive. If necessary, remove the locating dowel from the main case.
13. Bend lockwasher (18) off of bolt (17). Remove bolt (17) and lockwasher (18). Discard the lockwasher, and use a new part for replacement.

14. Install tooling (B) on planetary holder (19) as shown. Remove planetary holder (19) from the output pinion.
15. Disassemble planetary holder (19) as follows:

**NOTE:** End plate (20) can be removed from planetary holder (19) after the planetary gears have been removed from the holder.

- a. Remove inner race (21) from the holder.
- b. Drive spring pin (23) into planetary shaft (22) with a hammer and a punch. Remove planetary shaft (22) from the holder.
- c. Remove planetary gear (26) and two thrust washers (24) from the holder.
- d. Remove bearing (25) from the planetary gear.
- e. Remove the other two planetary gears from the holder as in Steps 15b through 15d.
- f. Remove end plate (20) from the holder.

View Image

17. Put the main case and output pinion in a press as shown. Weight of the unit is approximately 57 kg (125 lb). Remove output pinion (28) from the main case with a press. Weight of the output pinion is 16 kg (35 lb).

**NOTICE**

There is a spring pin in the end of the output pinion. This pin can be damaged when the output pinion is removed from the main case with a press. To prevent possible damage to the pin, it can be removed prior to removing the output pinion or, if desired, the 8T0070 Bolt from tool (8) can be installed in the end of the output pinion as shown. Installation of the bolt will provide the necessary clearance between the press and the spring pin.
pinion is **16 kg (35 lb)**.

18. If necessary, remove the spring pin from the end of the output pinion.

19. Remove distance collar (29) from the main case.

20. Remove cover (30) from the main case.

21. Remove oil seat (31) from the cover.

22. Remove roller bearings (32) and (33) from the main case.

**NOTE:** The following steps are for the assembly of the swing drive.

23. Be sure all parts of the swing drive are thoroughly clean and free of dirt and debris prior to assembly. Reassemble the swing drive on tool (A).
24. Using a press, install a new seal (31) in cover (30) as shown in Illustration C34215P1. Put a thin coat of 5P0960 Multipurpose Grease between the lips of the seal.

**NOTICE**

*Do not damage the sealing lips in oil seal (31) when cover (30) is installed on the output pinion.*

25. Install cover (30) on output pinion (28).

26. Install bearing (33) on output pinion (28). Install the bearing until it makes contact with the shoulder on the output pinion.

27. Be sure the mating surface of cover (30) and the main case are clean and free of dirt and debris. Put a bead of 9S6252 RTV Silicone Adhesive/Sealant on the mating surface of cover (30). Using a press, install the cover, output pinion and bearing in the main case. Be sure the bolt holes in cover (30) are in alignment with the bolt holes in the main case.

28. Install eight bolts (27) and the washers that hold cover (30) to the main case. Tighten the bolts to a torque of 34 ± 7 N·m (25 ± 5 lb ft).

29. Using a press, install bearing (32) over the output pinion and into the main case. Install the bearing until it makes contact with the counterbore in the main case.

30. If the spring pin was removed from the end of the output pinion, reinstall it with a hammer.
31. Assemble planetary holder (19) as follows:

a. Install end plate (20) in the holder as shown. Be sure the end plate stays in position when the planetary gears are being installed in the holder.

b. Put clean SAE 30 oil on bearing (25). Install the bearing in planetary gear (26). Install a thrust washer (24) on each side of the planetary gear.

c. Install the thrust washers and planetary gear in the holder. Install planetary shaft (22) in the holder and through planetary gear (26). Be sure the spring pin hole in the planetary shaft is in alignment with the spring pin hole in the holder.

d. Install spring pin (23) until it is 2 to 3 mm (0.78 to 1.18 in) below the outside surface of the
holder, and with the split in the spring pin facing in the direction shown in Illustration C34217P1. To prevent the spring pin from falling out, stake the open end of the spring pin hole in the holder with a hammer and a punch.

e. Install the other two planetary gears (26) in the holder as in Steps 31b through 31d.

32. Install inner race (21) on planetary holder (19).

33. Install distance collar (29) over the output pinion.

34. Put planetary holder (19) in position on the splines of the output pinion. Use a press and tool (C), install the planetary holder on the output pinion. As the planetary holder is being installed, be sure the spring pin hole in end plate (20) is in alignment with the spring pin in the end of the output pinion.

35. Install a new lockwasher (18) and bolt (17) in the end of the output pinion. Put the cutout in lockwasher (18) in alignment with the spring pin hole in end plate (20) as shown. Tighten bolt (17) to a torque of \( 170 \pm 25 \text{ N\cdotm} \) \( (125 \pm 18 \text{ lb ft}) \). Bend the lockwasher against one of the flats on the head of bolt (17).

36. Check the condition of o-ring seal (16). If the seal is worn or damaged, use new parts for replacement. Install the o-ring seal in the main case.

37. If the locating dowel pin was removed from the main case, reinstall it.
38. Install ring gear (14) in its original position on the main case. If necessary, use a soft faced hammer to seat the ring gear properly. Install oil level gauge pipe (15) in the ring gear.

39. Install the snap ring on sun gear (12). Install the sun gear in planetary holder (19). Install washer (13) in the sun gear.

40. Assemble planetary holder (6) as follows:
   a. Put clean SAE 30 oil on bearing (10). Install the bearing in planetary gear (11). Install a thrust washer (9) on each side of the planetary gear.
   b. Install the thrust washers and planetary gear in the holder. Install planetary shaft (7) in the holder and through the planetary gear. Be sure the spring pin hole in the planetary shaft is in alignment with the spring pin hole in the holder.
c. Install spring pin (8) until it is **2 to 3 mm (.078 to .118 in)** below the outside surface of the holder, and with the split in the spring pin facing to the direction shown in Illustration C34217P1. To prevent the spring pin from falling out, stake the open end of the spring pin hole in the holder with a hammer and a punch.

d. Install the other two planetary gears (11) in the holder as in Steps 40a through 40c.

41. Install planetary holder (6) in ring gear (14).

**NOTE:** Washer (5) is available in five different thicknesses which range between **2.3 mm (0.091 in) to 3.6 mm (0.142 in)**.

42. Determine the correct thickness of washer (5) to be used as follows:

a. As a starting point, install the original washer (5) on planetary holder (6) as shown.

b. Using a depth micrometer and gauge blocks, measure distance (X) in cover (2). Record this dimension.

c. Using a depth micrometer and gauge blocks, measure distance (Y). Record this dimension.

d. Find the difference between dimension (X) and dimension (Y). The difference must be within **0.3 to 0.7 mm (.01181 to .02756 in)**.

e. If the difference between dimension (X) and dimension (Y) is not within specification, use a washer of a different thickness. Repeat Steps 42b through 42d.

43. Check the condition of o-ring seal (4). If the seal is worn or damaged, use new parts for
replacement. Install o-ring seal (4) in ring gear (14).

44. Install drive gear (1) in planetary holder (6).
45. Install cover (3) in its original position on ring gear (14). Install twelve socket head bolts (2) that hold the cover in place. Tighten the bolts to a torque of $98 \pm 19 \text{ N}\cdot\text{m} (72 \pm 14 \text{ lb ft})$.
46. Check the clearance between the machined surface of cover (3) where the mounting holes for the swing motor are located and the upper surface of drive gear (1). The swing drive is correctly assembled if the clearance is $4.8 + 0.25 - 0.65 \text{ mm} (0.18898 + 0.0098 - 0.0256 \text{ in})$.
47. Fill the swing drive with oil prior to installation of the swing motor.

End By:

a. install swing drive