CATERPILLAR®

Service Repair Manual

Models

120K Motor Grader

Product: MOTOR GRADER
Model: 120K MOTOR GRADER SZN
Configuration: 120K Motor Grader SZN00001-UP (MACHINE) POWERED BY C7 Engine

Disassembly and Assembly
120K and 120K Series 2 Motor Graders Power Train
Media Number -KENR8438-04 **Publication Date -01/08/2018** **Date Updated -09/08/2018**

i05371526

Final Drive - Assemble

SMCS - 4050-016

Assembly Procedure

Table 1

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
A	439-3938	Link Bracket	2
B	5P-4204	Wrench Assembly	1
C	6V-4876	Lubricant	1
D	8T-5096	Dial Indicator Gp	1

Note: Use a suitable press to install the cones on the drive shafts and the cups. If necessary, only preheat the cones to 135 °C (275 °F) for no more than 1 hour. It is important to reseat the cone or the cup with a suitable driver after the bearing and adjacent parts have reached a uniform temperature.

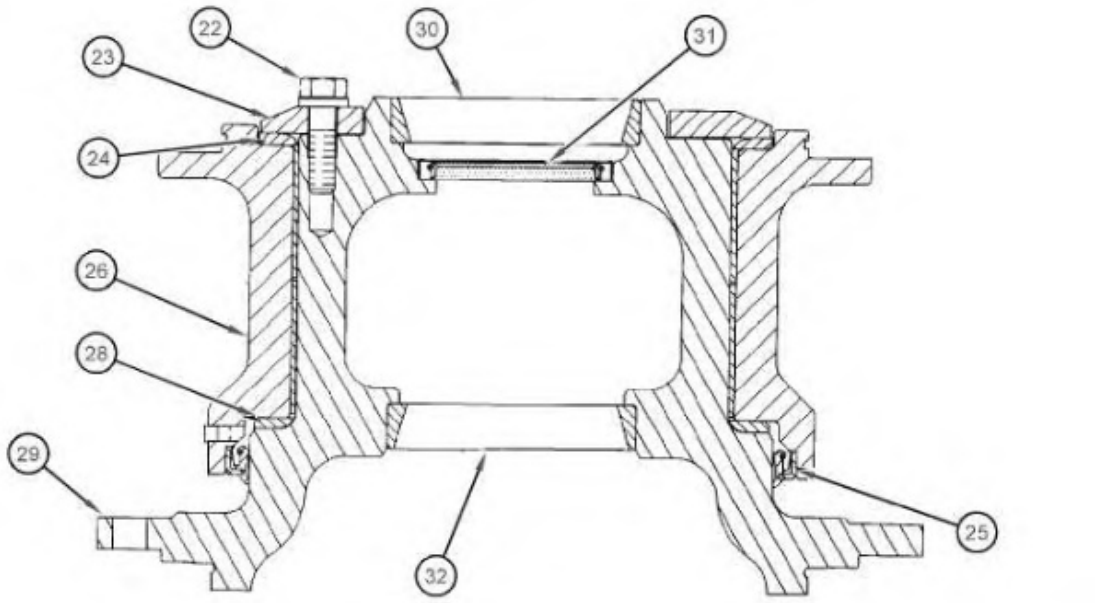

Illustration 1 g01060675

Illustration 2 g01060676

1. Lower the temperature of bearing cup (32) and install bearing cup (32) in housing (29). Check for full seating of the bearing cup with a Feeler Gauge.

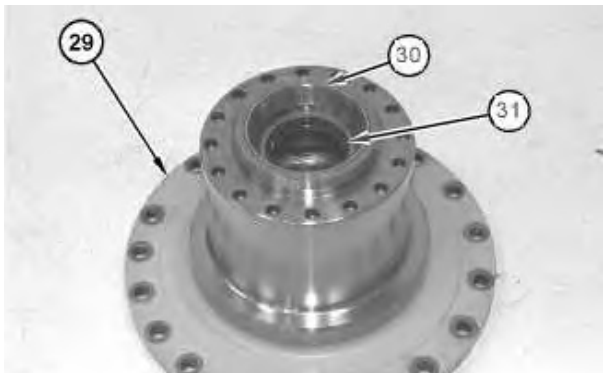

Illustration 3 g01060678

2. Place housing (29) in a vertical position with the flange downward.

3. Install lip seal (31) in housing (29). The lip of the seal must face outward. Lubricate the lip seal (31) with the lubricant which is being sealed.

4. Lower the temperature of bearing cup (30) and install bearing cup (30) in housing (29). Check for full seating of the bearing cup with a Feeler Gauge.

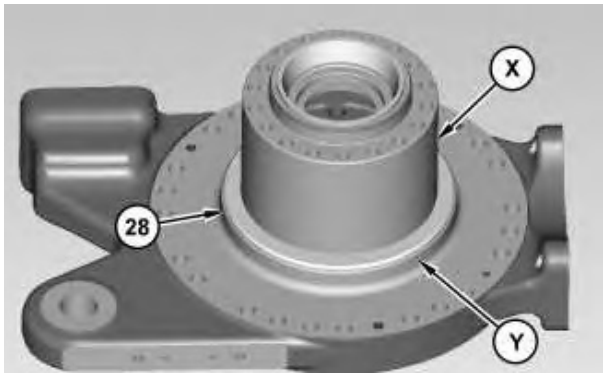

Illustration 4 g02782189

5. Apply Tooling (C) onto thrust washer (28). Apply Tooling (C) onto surface (X) and surface (Y). Install thrust washer (18).

Illustration 5 g02782206

6. Install lip seal (25) into housing (26).

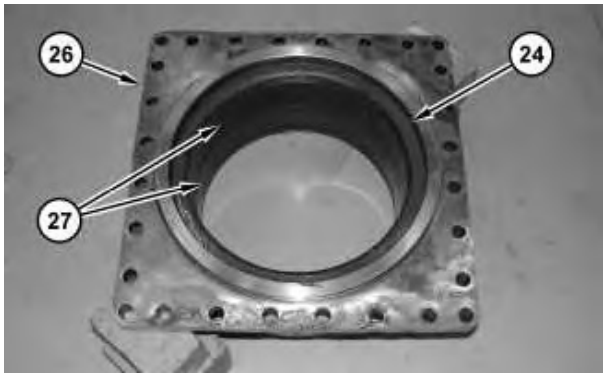

Illustration 6 g02783199

7. Turn over housing (26). Install wear sleeves (27). The diagonal cuts that are in wear sleeves (27) are separated by 90°. Apply Tooling (C) onto thrust washer (24). Install thrust washer (24).

Illustration 7 g02783245

8. Use Tooling (A) and a suitable lifting device to install housing (26). The weight of housing (26) is approximately 54 kg (120 lb). Install shims (23A). Use a suitable soft hammer to drive the wear sleeves into housing (26) until the sleeves are flush with the top of the bore surface. Do not install the shims at this time.

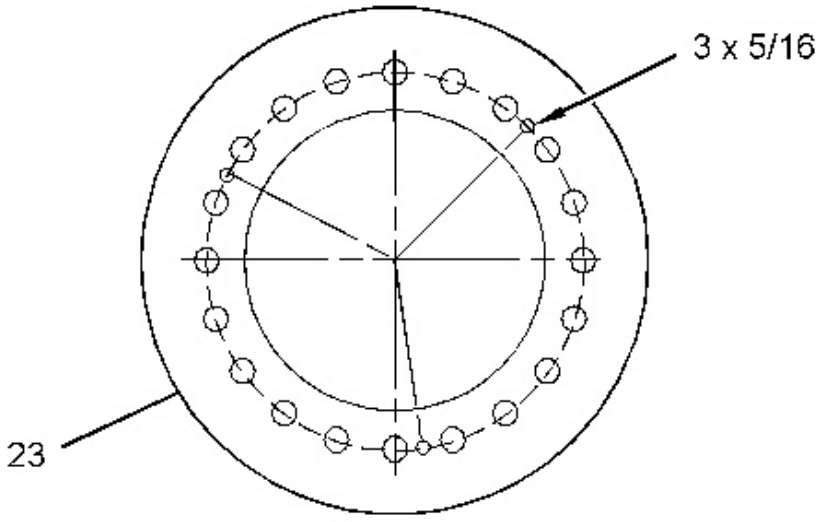

Illustration 8 g02783255

9. Drill three equally spaced 8 mm (5/16 inch) holes in retainer (23) if necessary. The holes must be centered on the existing bolt hole pattern and perpendicular to each surface.

10. Measure the thickness of retainer (23) at the three hole locations. Average the three measurements and record the result as Dimension (A).

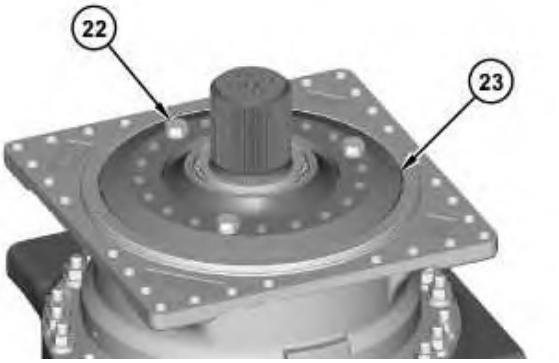

Illustration 9 g02783265

11. Install retainer (23). Install three of bolts (22). Tighten bolts (22) to a torque of 50 ± 7 N·m (37 ± 5 lb ft). Completely loosen bolts (22). Finger tighten bolts (22). Use Tooling (D) to measure the gap between the top surface of retainer (23) and the final drive housing at the three 8 mm (5/16 inch) hole locations. Record the measurement from each of the three locations as the nominal gap or Dimension (B).

12. Calculate the shim pack thickness for the three measurement locations by subtracting Dimension (A) from the Dimension (B) giving you Dimension (C). Remove bolts (22) and retainer (23).

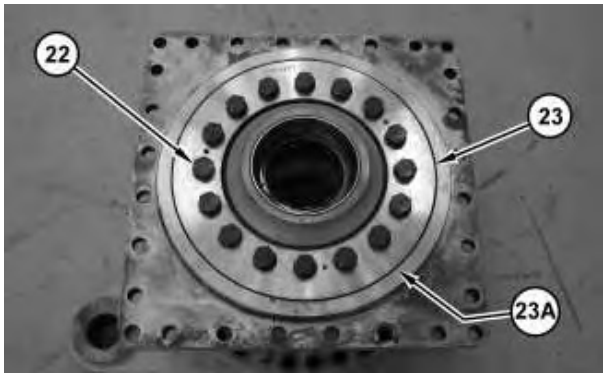

Illustration 10 g02783317

13. Install various shims (23A) that is equal to Dimension (C) plus + 0.075 - 0.025 mm (+ 0.003 - 0.001 inch). Install retainer (23). Install bolts (22). Tighten bolts (22) to a torque of 270 ± 40 N·m (199 ± 30 lb ft).

Illustration 11 g01060689

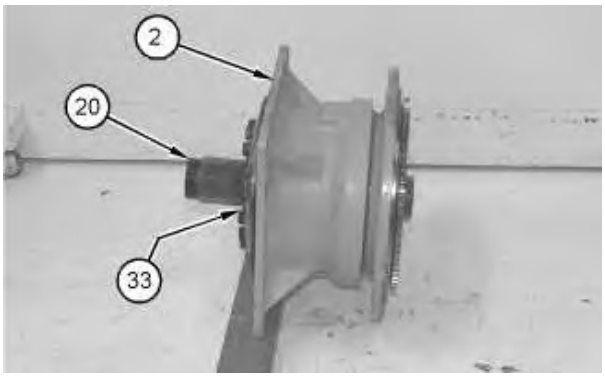

Illustration 12 g01060690

14. Preheat and install bearing cone (21) on drive shaft (20). Check for full seating of the cone with a Feeler Gauge. With the drive shaft in a vertical position, set the housing on bearing cone (21).

15. Start bearing cone (33) (not shown) on the top of drive shaft (20). Do not preheat this bearing cone. The bearing cone can be seated in position by using the sprocket during Step 17. Make sure that the bearing cone is seated in the cup.

16. Install drive shaft (20) in housing assembly (2).

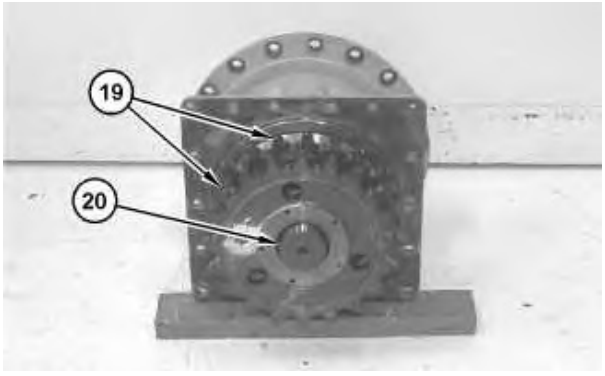

Illustration 13 g01060692

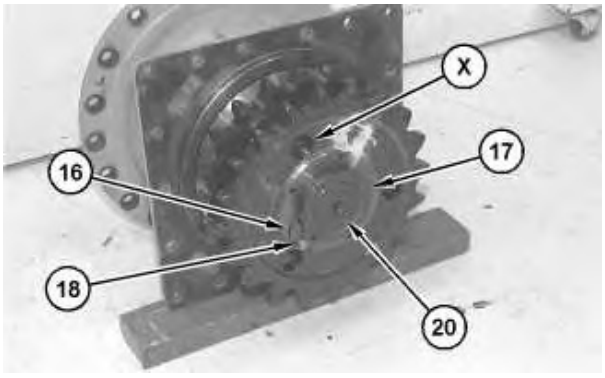

Illustration 14 g01060693

17. Place the first sprocket (19) on drive shaft (20). The large diameter must face downward.

18. Place the second sprocket (19) on drive shaft (20). The hub must face downward and the large diameter must face upward. Ensure that the lubrication holes (X) for the spline are aligned.

19. Install nut (17) to the drive shaft (20). Rotate drive shaft (20) and hit the hub of sprockets (19) while nut (17) is being tightened to a torque of 11 ± 1 N·m (100 ± 10 lb in) above seal drag.

20. Loosen nut (17) by one locking position. Hit the hub of sprockets (19) again.

21. The final torque that is needed to rotate shaft (20) should be 2 ± 1 N·m (20 ± 10 lb in) or 3.95 ± 1.13 N·m (35 ± 10 lb in)above the seal drag depending on machine model.

Table 2

Model	Rolling Torque
120H, 120K, 135H	2.95 ± 1.13 N·m (26 ± 10 lb in)
12H, 12K, 140H, 140K, 143H, 160H, 160K, 163H	3.95 ± 1.13 N·m (35 ± 10 lb in)

Note: Refer to Testing and Adjusting, "Final Drive Bearings - Adjust" for bearing adjustments when the final drive is in chassis.

22. Install bolt (18), the washer, and lock (16) which holds nut (17) to the drive shaft (20). Tighten bolt (18) to a torque of 50 ± 10 N·m (37 ± 7 lb ft).

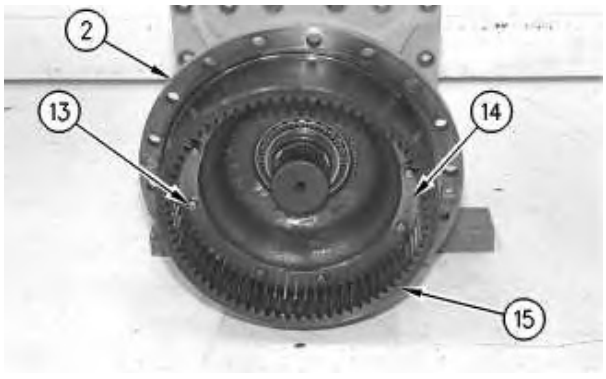

Illustration 15 g00621112

23. Position ring gear (15) to housing assembly (2).

24. Install bolts (13), the washers, and plates (14) to hold ring gear (15) to housing assembly (2). Tighten locking bolts (13) to a torque of 50 ± 10 N·m (37 ± 7 lb ft).

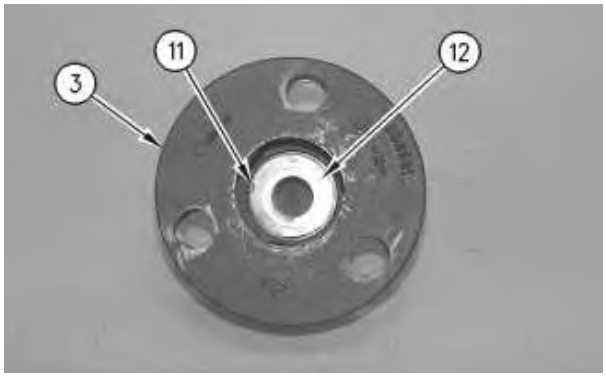

Illustration 16 g00621111

25. Install washer (12) and retaining ring (11) in planetary carrier (3).

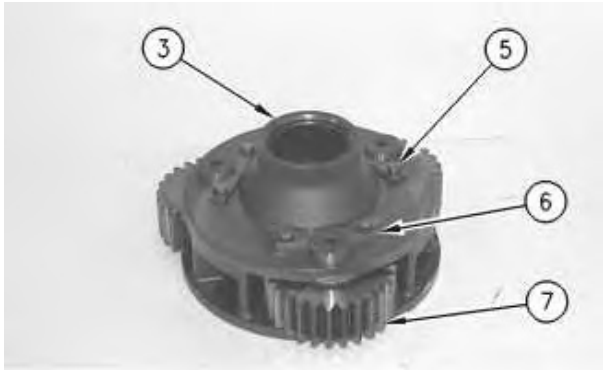

Illustration 17 g00621108

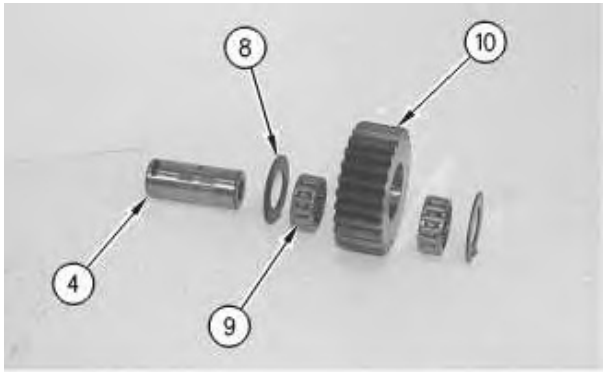

Illustration 18 g00621109

26. Install gear assemblies (7) and planetary shafts (4) in planetary carrier (3).

    Note: Each gear assembly (7) consists of two washers (8), two roller assemblies (9), planetary gear (10), and planetary shaft (4).

27. Install retainers (6), the washers, and locking bolts (5) to planetary carrier (3) to hold planetary shafts (4) and gear assemblies (7) in planetary carrier (3). Tighten locking bolts (5) to a torque of 50 ± 10 N·m (37 ± 7 lb ft).

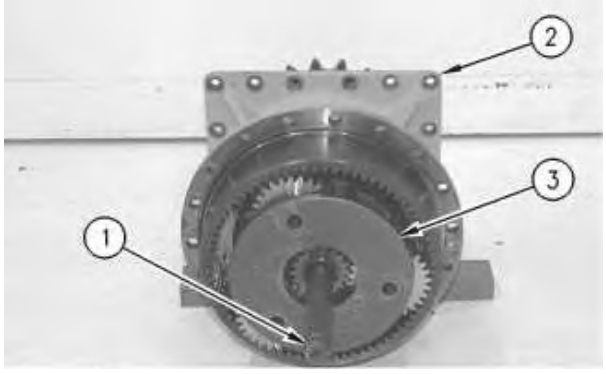

Illustration 19 g00621106

28. Install planetary carrier (3) in housing assembly (2).

29. Install sun gear shaft (1) in housing assembly (2).

30. Repeat Steps 21 through 29 to assemble the remaining final drive.

End By:

a. Install the final drives.

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Media Number -KENR8438-04 **Publication Date -01/08/2018** **Date Updated -09/08/2018**

i01981721

Final Drive - Install

SMCS - 4050-012

Installation Procedure

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.

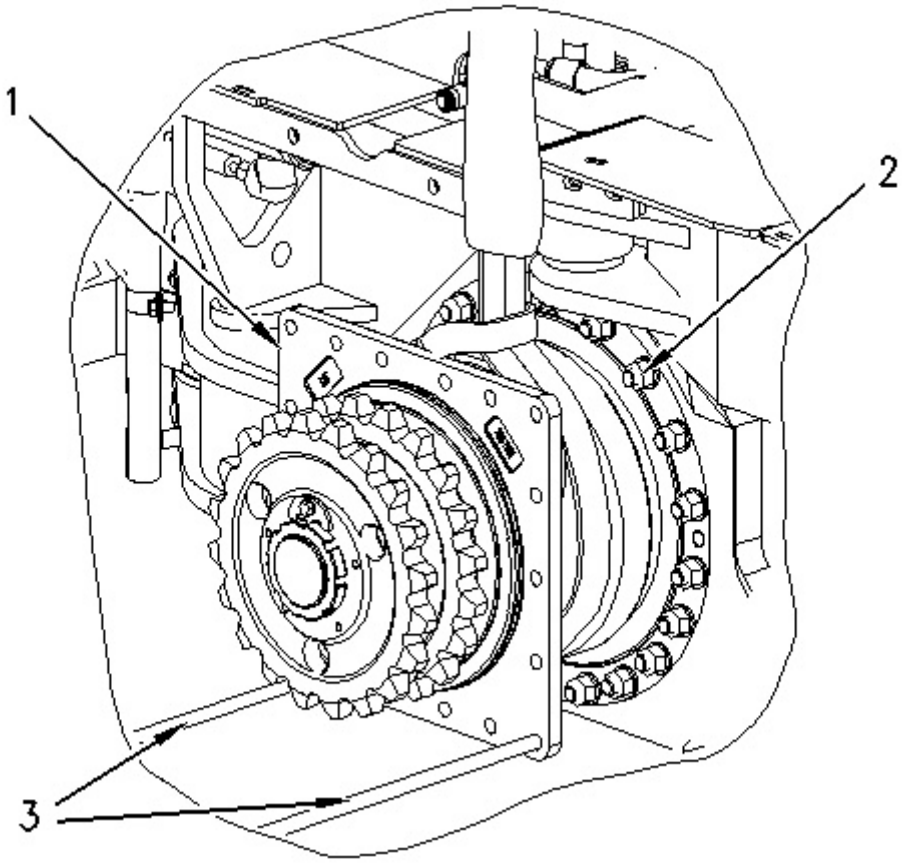

Illustration 1 g00999500

1. Attach a suitable lifting device to final drive (1). The weight of final drive (1) is approximately 272 kg (600 lb).
2. Use pry bars (3) in order to balance final drive (1). Install final drive (1). Install nuts (2). Tighten nuts (2) to a torque of 240 ± 40 N·m (177 ± 30 lb ft).
3. Fill the power train oil system. The capacity of the power train system is 47 L (12 US gal).

End By:

a. Install the tandem housing. Refer to Disassembly and Assembly, "Tandem Housing - Install".

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i03408354

Transmission Oil Filter Base - Remove

SMCS - 3068-011

Removal Procedure

Start By:

a. Remove the air tank. Refer to Disassembly and Assembly, "Air Tank - Remove and Install"

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

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 Dealer Service Tool Catalog" for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

Note: Put identification marks on all lines, on all hoses, on all wires, and on all tubes for installation purposes. Plug all lines, hoses, and tubes. This helps to prevent fluid loss and this helps to keep contaminants from entering the system.

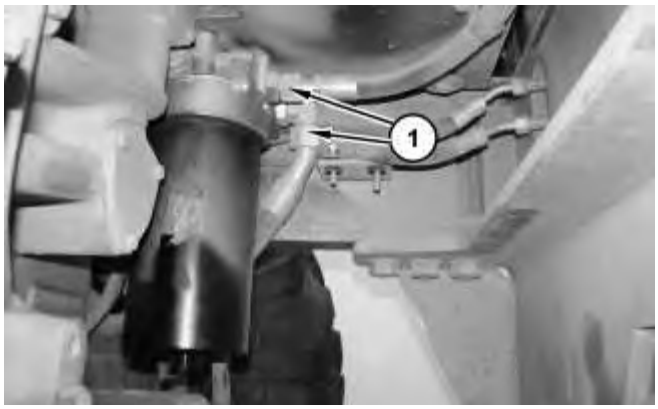

Illustration 1 g01765595

1. Disconnect hose assemblies (1).

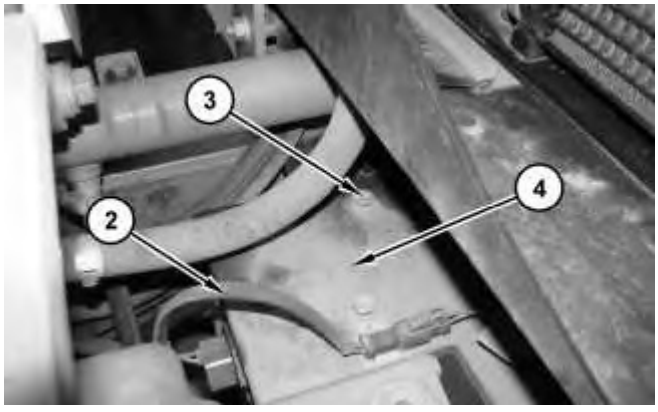

Illustration 2 g01765653

2. Disconnect harness assemblies (2). Remove bolts (3). Remove transmission oil filter base (4).

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Media Number -KENR8438-04 **Publication Date -01/08/2018** **Date Updated -09/08/2018**

i03404587

Transmission Oil Filter Base - Disassemble

SMCS - 3068-015

Disassembly Procedure

Start By:

a. Remove the transmission oil filter base. Refer to Disassembly and Assembly, "Transmission Oil Filter Base - Remove".

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

Note: Cleanliness is an important factor. Before you begin the disassembly procedure, the exterior of the components should be thoroughly cleaned. This will help to prevent dirt from entering the internal mechanism. Precision components can be damaged by contaminants or by dirt. Perform disassembly procedures on a clean work surface. Keep components covered and protected at all times.

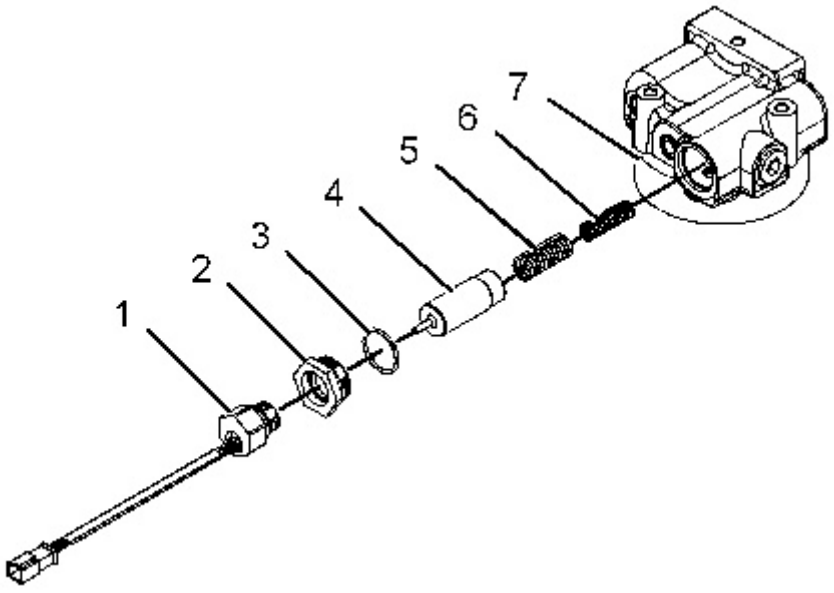

Illustration 1 g01818633

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.

1. Remove switch assembly (1) from transmission oil filter base (7).
2. Remove adapter (2) and O-ring seal (3) from transmission oil filter base (7).
3. Remove spool (4) from transmission oil filter base (7).
4. Remove spring (5) and spring (6) from transmission oil filter base (7).

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i03404720

Transmission Oil Filter Base - Assemble

SMCS - 3068-016

Assembly Procedure

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

Note: Cleanliness is an important factor. Before assembly, thoroughly clean all parts in cleaning fluid. Allow the parts to air dry. Do not use wiping cloths or rags to dry parts. Lint may be deposited on the parts which may cause trouble. Inspect all parts. If any parts are worn or damaged, use new parts for replacement. Dirt and other contaminants can damage the precision component. Perform assembly procedures on a clean work surface. Keep components covered and protected at all times.

Note: Check the O-ring seals for wear or for damage. Replace the components, if necessary.

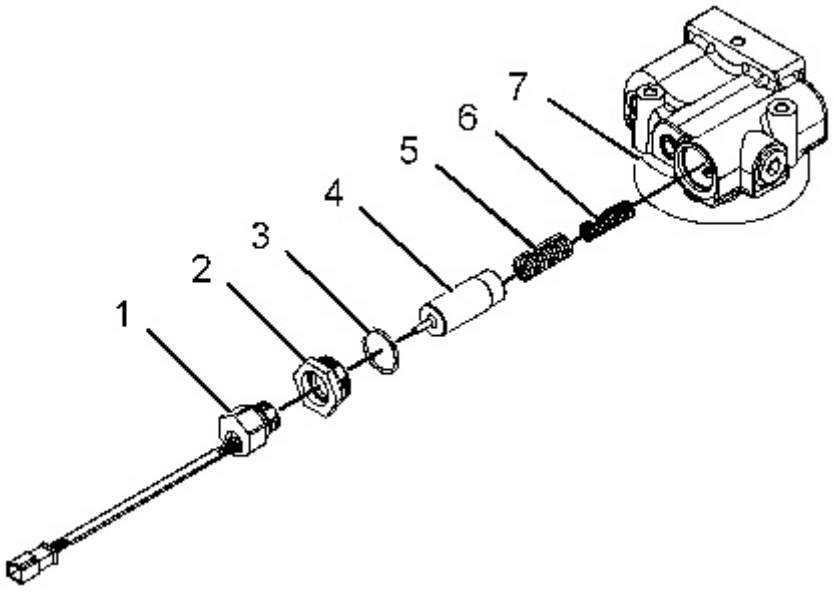

Illustration 1 g01818633

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.

1. Install spring (6) and spring (5) to transmission oil filter base (7).
2. Install spool (4) to transmission oil filter base (7).
3. Install O-ring seal (3) and adapter (2) to transmission oil filter base (7).
4. Install switch assembly (1) to transmission oil filter base (7). Tighten switch assembly (1) to a torque of 88 ± 10 N·m (65 ± 7 lb ft).

End By:

a. Install the transmission oil filter base. Refer to Disassembly and Assembly, "Transmission Oil Filter Base - Install".

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i03409672

Transmission Oil Filter Base - Install

SMCS - 3068-012

Installation Procedure

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.

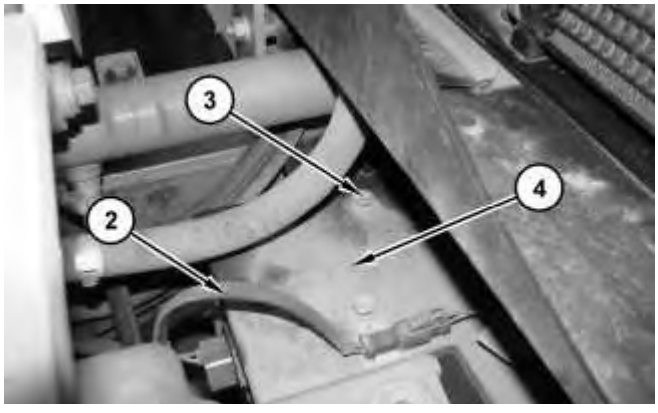

Illustration 1 g01766775

1. Install the transmission oil filter base (4). Install bolts (3). Connect harness assemblies (2).

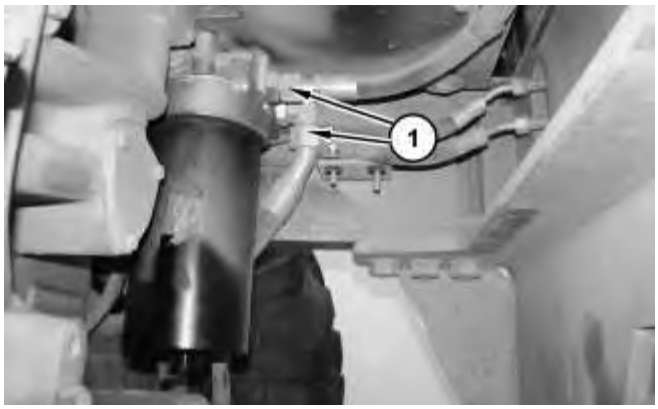

Illustration 2 g01766796

2. Connect hose assemblies (1).

End By:

a. Install the air tank. Refer to Disassembly and Assembly, "Air Tank - Remove and Install"

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i01920687

Gear Pump (Transmission Charging and Scavenge) - Remove

SMCS - 3066-011; 3115-011

Removal Procedure

Start By:

a. Remove the rear chassis support. Refer to Disassembly and Assembly, "Rear Chassis Support - Remove".

b. Remove the drive shaft. Refer to Disassembly and Assembly, "Drive Shaft - Remove and Install".

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

Note: Put identification marks on all lines, on all hoses, on all wires, and on all tubes for installation purposes. Plug all lines, hoses, and tubes. This helps to prevent fluid loss and this helps to keep contaminants from entering the system.

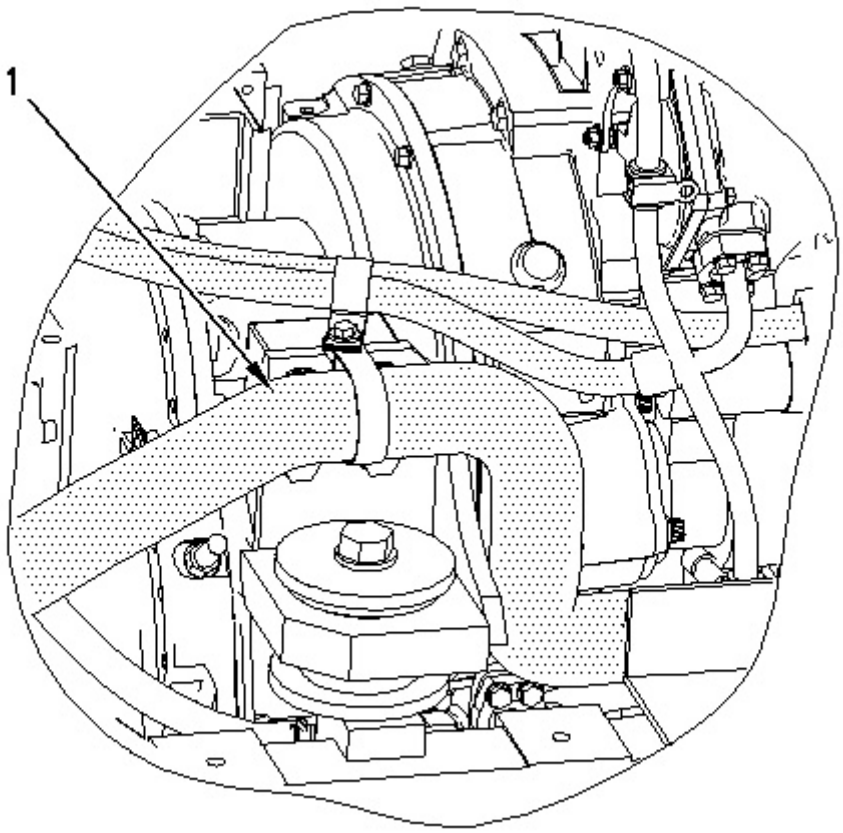

Illustration 1 g00999458

1. Remove hose (1).

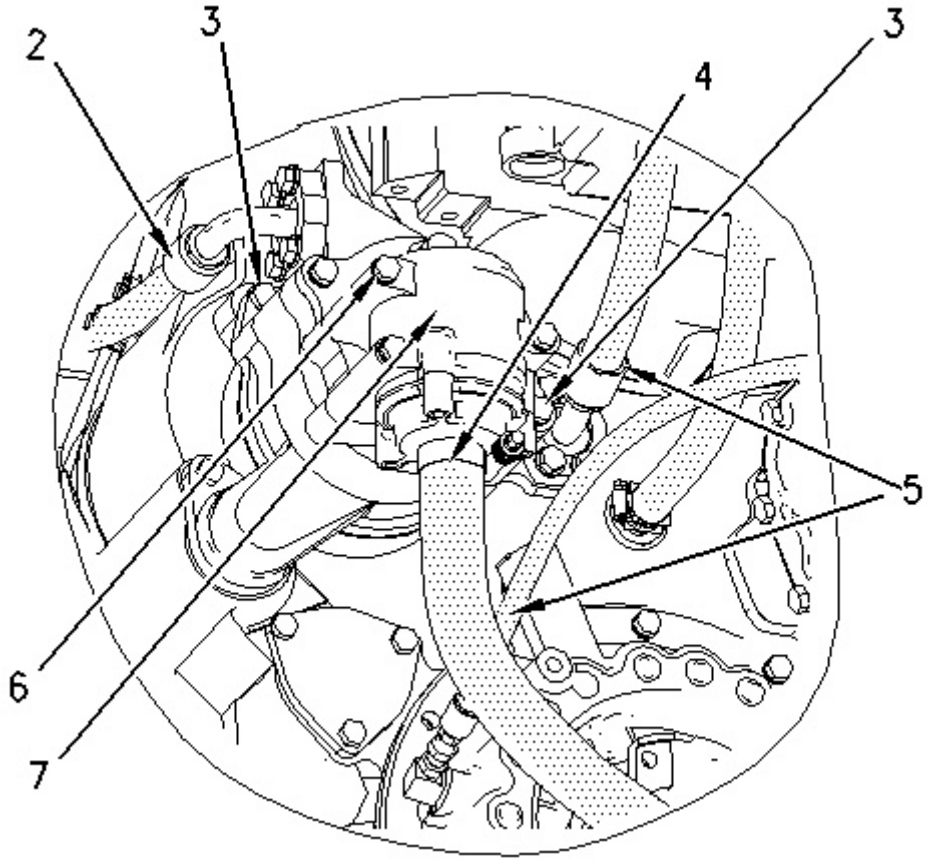

Illustration 2 g00999459

2. Disconnect hose assembly (2).
3. Remove two bolts (3).
4. Disconnect hose (4). Disconnect hose assemblies (5).
5. Remove bolts (6) and remove magnetic screen assembly (7).

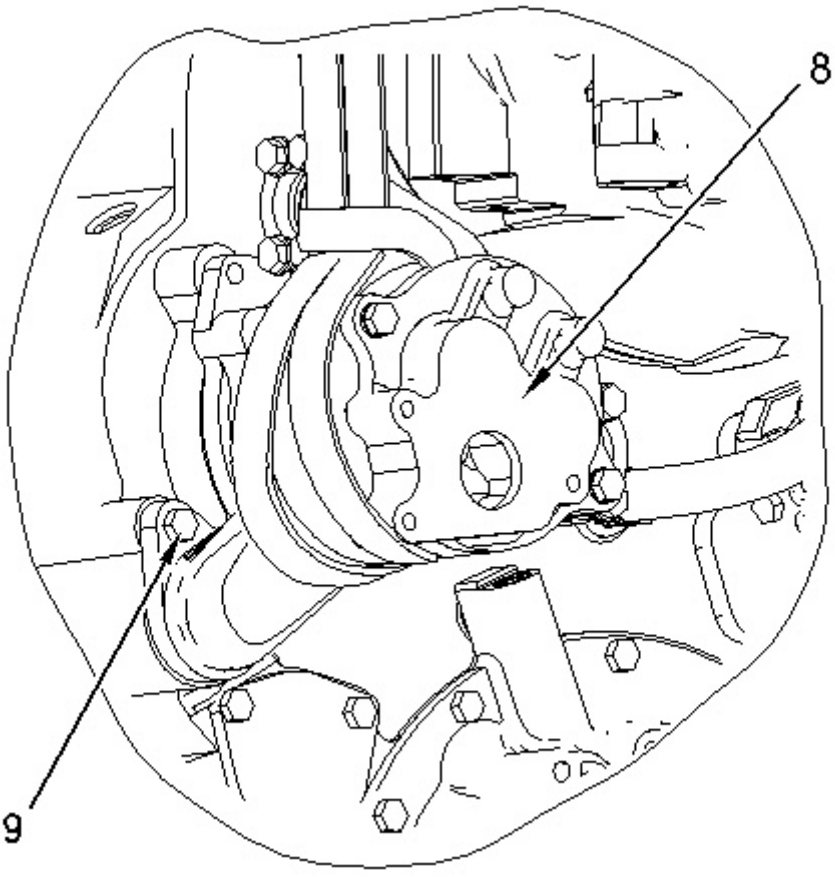

Illustration 3 g00999461

6. Attach a suitable lifting device to gear pump (8).
7. Remove bolt (9). Remove gear pump (8). The weight of gear pump (8) is approximately 25 kg (55 lb).

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first, and then click the above link

to download the complete manual.

Thank you so much for reading

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i04528236

Gear Pump (Transmission Charging and Scavenge) - Disassemble

SMCS - 3066-015; 3115-015

Disassembly Procedure

Table 1

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
A	1P-0510	Driver Group	1

Start By:

a. Remove the gear pump. Refer to Disassembly and Assembly, "Gear Pump (Transmission Charging and Scavenge) - Remove" for the correct procedure.

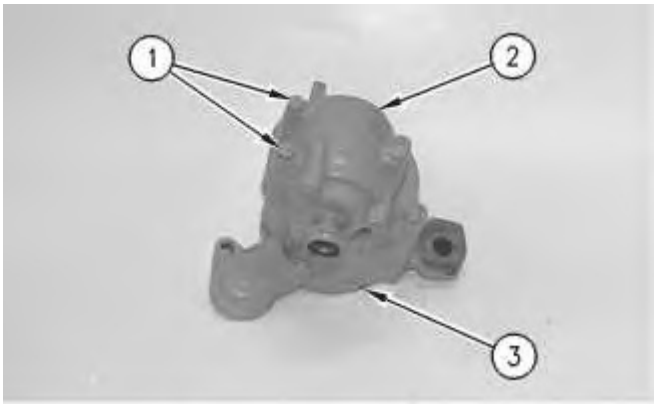

Illustration 1 g00621178