



Service Repair Manual

Models

966K Wheel Loader

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Product: WHEEL LOADER

Model: 966K WHEEL LOADER PBG

Configuration: 966K Wheel Loader PBG00001-UP (MACHINE) POWERED BY C9.3 Engine

Disassembly and Assembly 966K and 972K Wheel Loaders Power Train

Media Number -KENR6472-01

Publication Date -01/03/2013

Date Updated -04/03/2013

i03916671

Limited Slip Differential - Assemble

SMCS - 3263-016

Assembly Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	1U-9895	Crossblock	1
	1U-5477	Driver Ring	1
	1P-0526	Drive Plate ⁽¹⁾	1
	7X-2556	Bolt	1
	9X-8257	Washer	1
	8T-4132	Nut	1
	7X-2546	Bolt	2
	8T-4121	Hard Washer	2
	8T-4223	Hard Washer	2
	9X-8257	Washer	2
B	8T-5096	Dial Indicator Gp	1

⁽¹⁾ Part of **1P-0520** Driver Gp

1. Clean all parts of the differential and inspect the parts. Replace any parts that are worn or damaged.
-

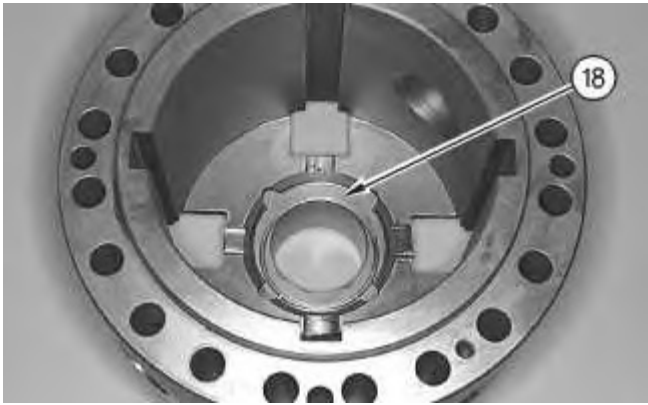


Illustration 1

g00333101

2. Install thrust washer (18). Apply clean axle oil to the face of the thrust washer.

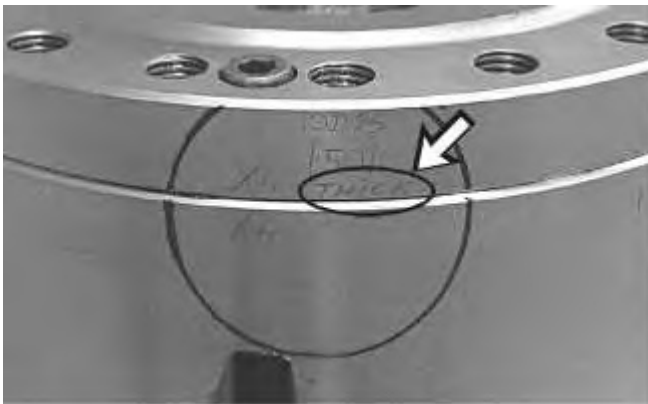


Illustration 2

g00333298

Note: Replace the disc pack if the stack heights of the two disc packs are not symmetrical within 0.10 mm (0.004 inch). Also replace the disc pack if the friction material is worn and areas of the friction discs are allowing steel to contact steel. Make sure that the correct disc packs are used for replacement according to the description on the differential case cover. If "THIN" is marked on the cover, use two thin disc packs. If "THICK" is marked on the cover, use two thick disc packs. **Do not use one disc of each size.**

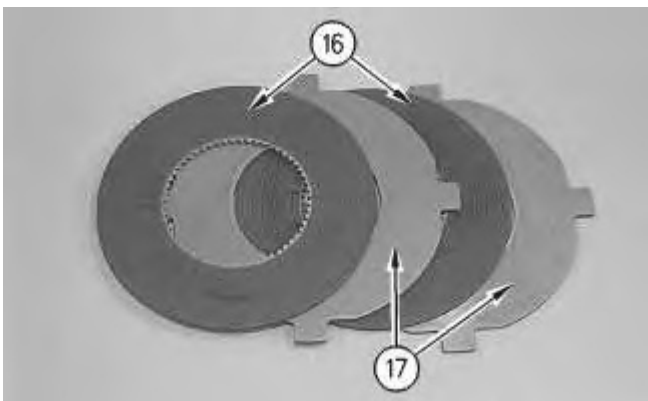


Illustration 3

g00342357

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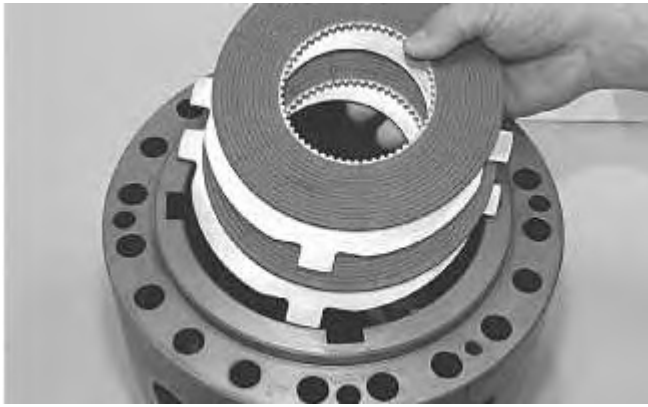


Illustration 4

g00333100

3. Thoroughly apply clean axle oil on the plates and on the friction discs. Install two friction discs (16) and two plates (17) in the case housing in alternating order. Start with a plate.



Illustration 5

g00342353



Illustration 6

g00342352

4. Align the tabs on actuator housing (15) with the slots in the case housing. Install actuator housing (15) in the case housing.
-

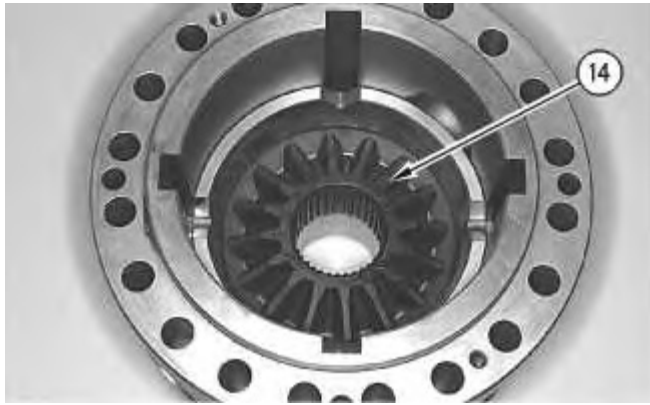


Illustration 7

g00333078

5. Install gear (14) in the case housing. Turn the gear slowly until the spline engages with the teeth of two friction discs (16). Make sure that the gear is seated.

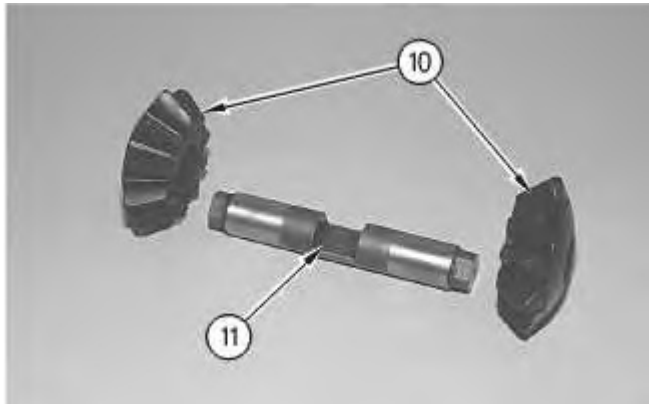


Illustration 8

g00333022

6. Install pinion gears (10) on pinion shaft (11). Repeat this step for pinion gears (12) on pinion shaft (13). Thoroughly apply clean axle oil on the pinion shafts and on the pinion gears.

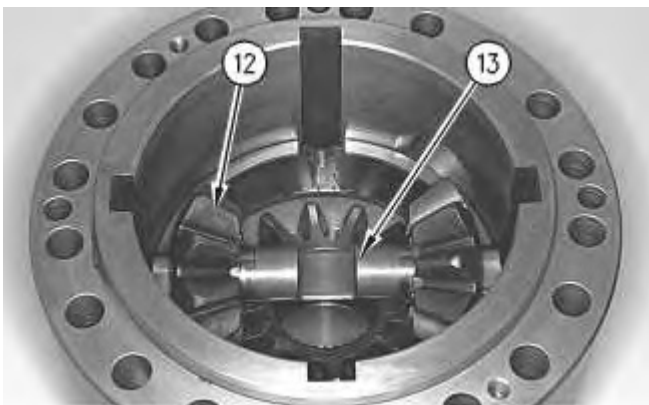


Illustration 9

g00333021

7. Install pinion shaft (13) and two pinion gears (12) as a unit. Rotate the pinion gears slightly until the pinion shaft is resting in the slots in the actuator housing.

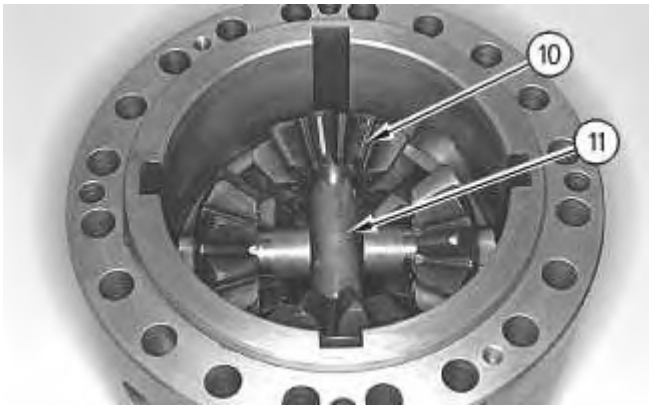


Illustration 10

g00333020

8. Install pinion shaft (11) and two pinion gears (10) as a unit.

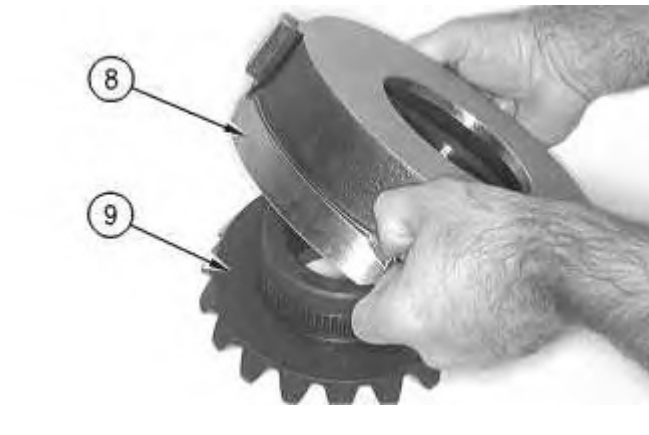


Illustration 11

g00333358

9. Assemble gear (9) and actuator housing (8), as shown.



Illustration 12

g00332965

10. Align the tabs on actuator housing (8) with the slots in the case housing. Install actuator housing (8) and gear (9) in the case housing.

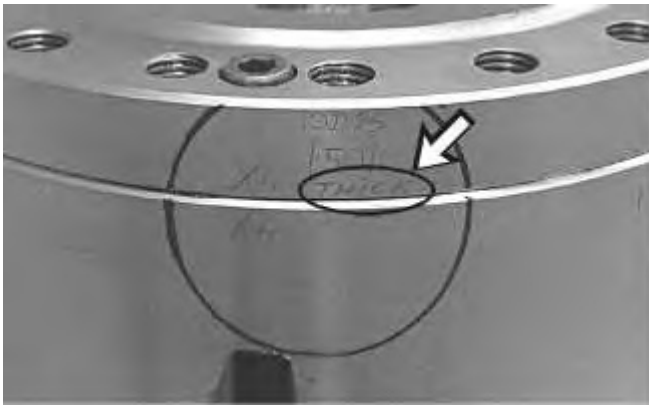


Illustration 13

g00333298

Note: Replace the disc pack if the stack heights of the two disc packs are not symmetrical within 0.10 mm (0.004 inch). Also replace the disc pack if the friction material is worn and areas of the friction discs are allowing steel to contact steel. Make sure that the correct disc packs are used for replacement according to the description on the differential case cover. If "THIN" is marked on the cover, use two thin disc packs. If "THICK" is marked on the cover, use two thick disc packs. **Do not use one disc of each size.**

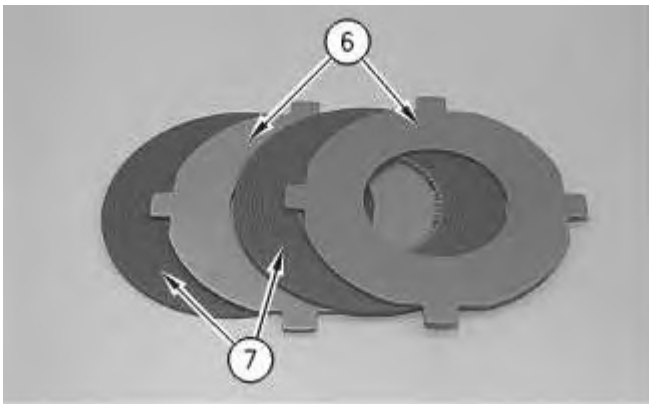


Illustration 14

g00342292



11. Thoroughly apply clean axle oil on the plates and on the friction discs. Install two friction discs (6) and two plates (7) in the case housing in alternating order. Start with a friction disc.
12. Use the following procedure to measure the end play gap:

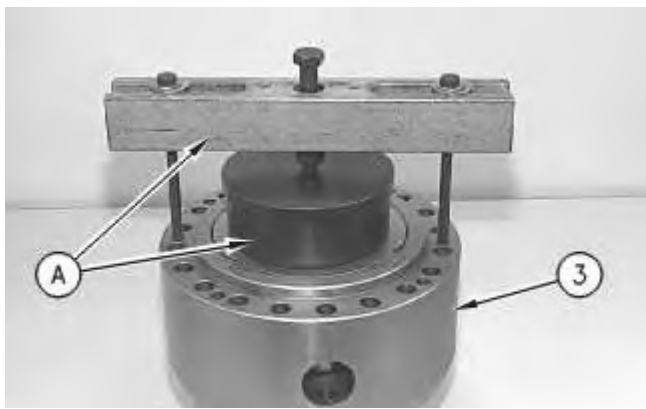


Illustration 16

g00332921

- a. Install Tooling (A) on case housing (3), as shown.

Note: The center bolt of Tooling (A) must have a $M16 \times 2.0$ thread in order to apply the proper preload on the disc packs.

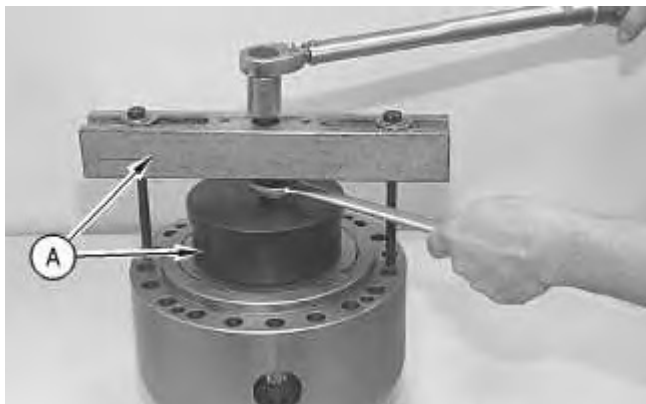


Illustration 17

g00332959

- b. Tighten the center bolt of Tooling (A) to a torque of $27 \text{ N}\cdot\text{m}$ (20 lb ft). This tooling will apply 900 kg (2000 lb) of preload on the disc packs.
-

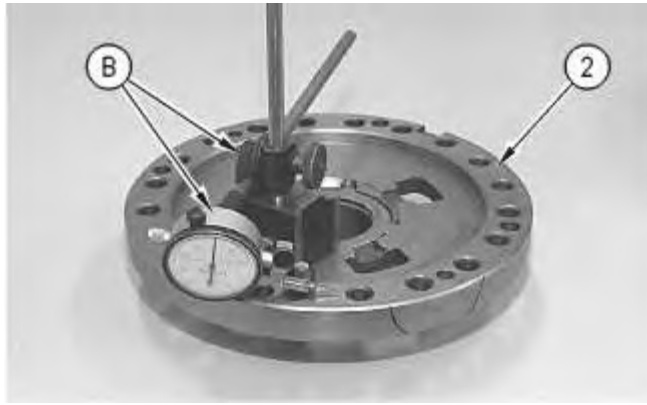


Illustration 18

g00332922

- c. Mount the magnetic base of Tooling (B) on the inner face of differential case cover (2), as shown.
- d. Zero the dial indicator on the outer face of differential case cover (2), as shown.
- e. Carefully remove Tooling (B) from differential case cover (2).

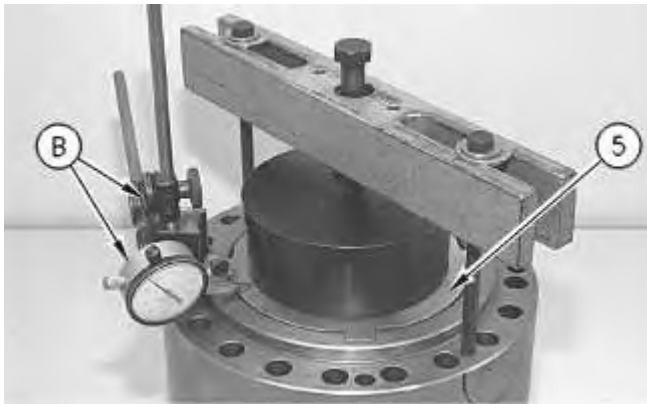


Illustration 19

g00332962

- f. Mount the magnetic base of Tooling (B) on the top of case housing (3), as shown.
- g. Place the dial indicator on disc pack (5), as shown. Record the reading.
- h. Record two additional readings from different areas of disc pack (5).
- i. Average the three readings. This average is the end play gap.
- j. If the end play gap for the existing disc packs is greater than 0.81 mm (0.032 inch), the disc packs must be replaced.

If the end play gap for the existing disc packs is correct, proceed to Step 14.

13. If new disc packs are installed, the end play gap must be between 0.203 mm (0.008 inch) and 0.508 mm (0.020 inch). Measure the end play gap again.

- a. If the end play gap is not between 0.203 mm (0.008 inch) and 0.508 mm (0.020 inch) and two thin disc packs were installed, replace the thin disc packs with thick disc packs and measure the end play gap again.
- b. If the end play gap is not yet between 0.203 mm (0.008 inch) and 0.508 mm (0.020 inch), replace the pinion shafts and/or both actuator housings. Use either two thin disc packs or two thick disc packs in order to achieve an end play gap that is between 0.203 mm (0.008 inch) and 0.508 mm (0.020 inch).

Note: If a different size of disc packs was installed, change the existing description on the differential case cover for future reference.



Illustration 20

g00332919

14. Apply a small amount of grease on the back side of thrust washer (4). This grease will retain the thrust washer during installation of the differential case cover. Turn differential case cover (2) upside-down and install thrust washer (4).

NOTICE

A new differential group or a new case assembly will be equipped with bolts that are used for shipping , assembly, and storage purposes only. Remove and discard these bolts after the bevel gear has been installed. These bolts should not be used for final assembly.



Illustration 21

g00332918



Illustration 22

g00333618

15. Install differential case cover (2) on case housing (3). Align the marks on the differential case cover with the marks on the case housing.
16. Install bolts (1). Tighten the bolts to a torque of $61 \pm 7 \text{ N}\cdot\text{m}$ ($45 \pm 5 \text{ lb ft}$). Bolts (1) are used to hold the differential case together until final assembly. Remove bolts (1) and discard bolts (1) after the bevel gear has been installed.

End By:

- a. Install the differential and the bevel gear.

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Disassembly and Assembly 966K and 972K Wheel Loaders Power Train

Media Number -KENR6472-01

Publication Date -01/03/2013

Date Updated -04/03/2013

i03917091

NoSPIN Differential - Disassemble

SMCS - 3265-015

Disassembly Procedure

Start By:

- a. Disassemble the differential and the bevel gear.
 1. Put alignment marks on both halves of the differential case.

NOTICE

A new differential group or a new case assembly will be equipped with four bolts and washers that are used for shipping, assembly, and storage purposes only. Remove and discard these four bolts and washers after the bevel gear has been installed. These four bolts and washers should not be used for final assembly.

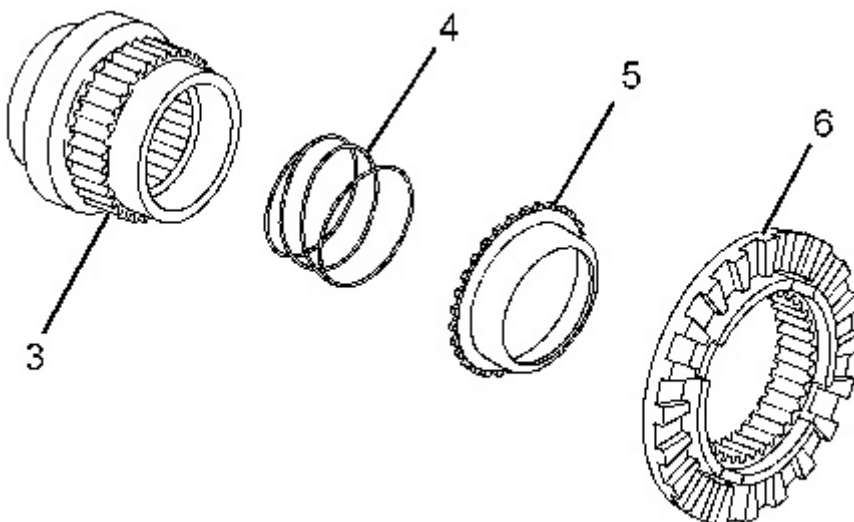


! WARNING

Parts under spring force can cause personal injury. When the bolts are removed, the spring force against the differential case will be released.

To avoid personal injury, put the differential in a press before the bolts are removed in order to retain the case half.

2. Put the differential in a suitable press and remove bolts (1) and the washers. Slowly release the spring compression.
 3. Remove top half (2) of the differential case.
-



4. Remove side gear (3), spring (4), retainer (5), and clutch assembly (6).
-

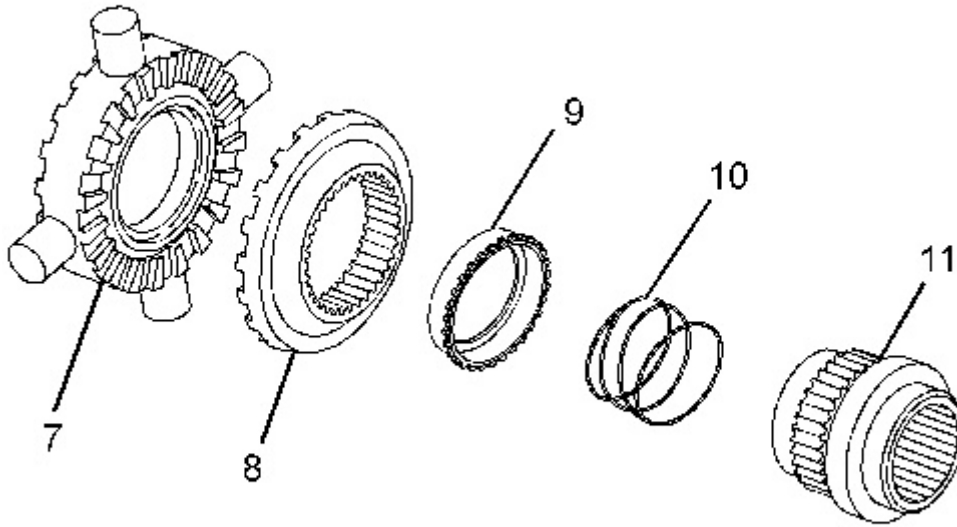


Illustration 3

g01365551

5. Remove spider assembly (7), clutch assembly (8), retainer (9), spring (10), and side gear (11).

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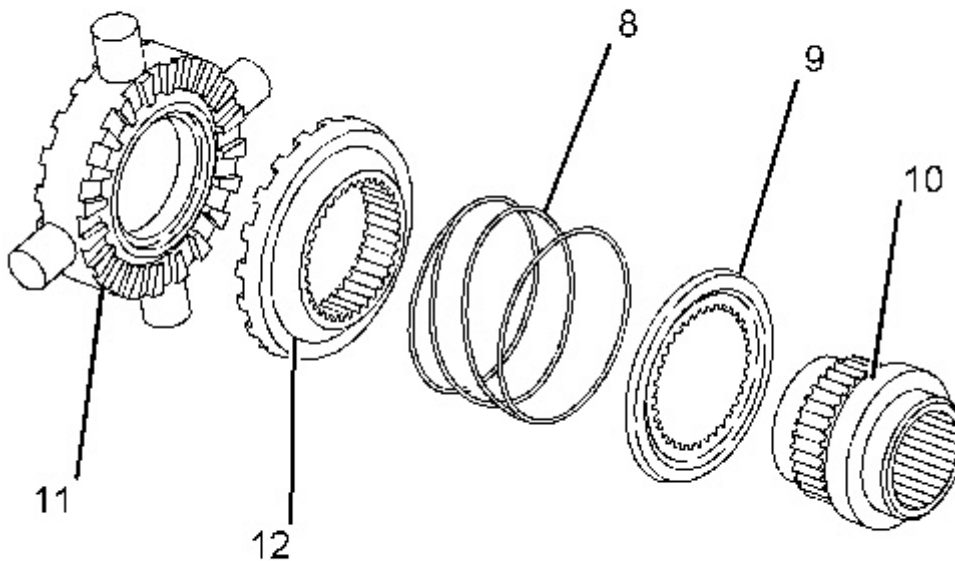
i03917100

NoSPIN Differential - Assemble

SMCS - 3265-016

Assembly Procedure

1. Put the bottom half of the differential case in a suitable press.



! 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.

-
2. Install side gear (10), retainer (9), spring (8), clutch assembly (12), and spider assembly (11).
-

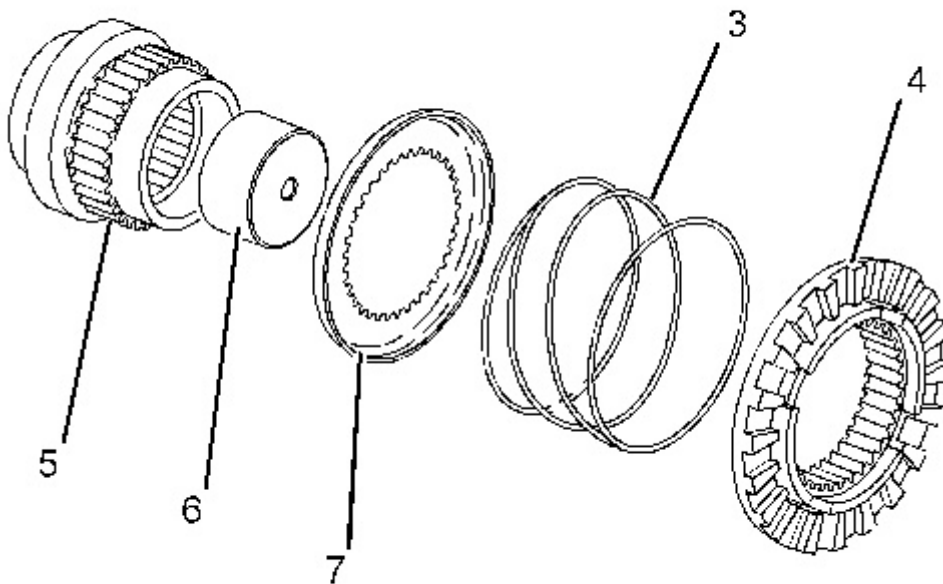


Illustration 2

g01111776

! 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.

3. Install clutch assembly (4), spring (3), retainer (7), spacer block (6), and side gear (5).

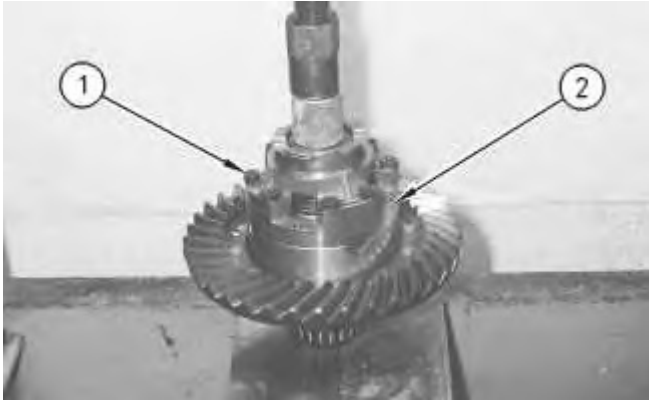


Illustration 3

g00333763



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. Install top half (2) of the differential case. Use the press to compress the spring in the differential.
5. Install bolts (1) that hold the two halves of the differential case together.

End By:

- a. Install the differential and the bevel gear.
-

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Disassembly and Assembly 966K and 972K Wheel Loaders C9.3 Engine Supplement

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Publication Date -01/04/2011

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i02303451

Steering Frame Lock - Separate and Connect

SMCS - 7506-029

Connection Procedure



Personal injury or death can result from machine articulation or movement.

Machine frames can move and a person can be crushed.

Connect the steering frame lock link between the front and rear frames before working on machine. Secure clevis pin with locking pin.

Before operating the machine, fasten the steering frame lock link into the stored position and secure the clevis pin with locking pin.

Failure to lock into the stored position before operating can result in loss of steering.

Note: The steering frame lock is located on the left side of the machine.

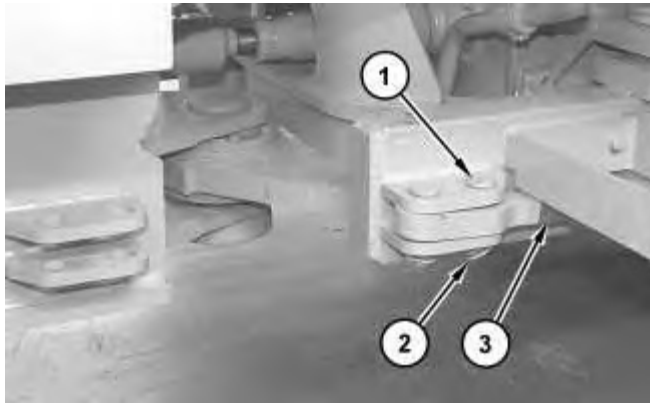


Illustration 1

g01153326

1. Remove locking pin (2) from clevis pin (1).

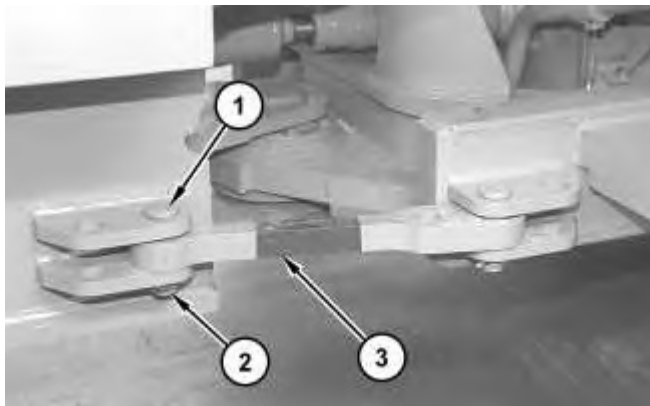


Illustration 2

g01153327

2. Move the steering frame lock link (3) in position to the front frame. Install clevis pin (1) and locking pin (2).

Note: To align the pin bores, move the front loader frame.

Separation Procedure



Personal injury or death can result from machine articulation or movement.

Machine frames can move and a person can be crushed.

Connect the steering frame lock link between the front and rear frames before working on machine. Secure clevis pin with locking pin.

Before operating the machine, fasten the steering frame lock link into the stored position and secure the clevis pin with locking pin.

Failure to lock into the stored position before operating can result in loss of steering.

Note: The steering frame lock is located on the left side of the machine.

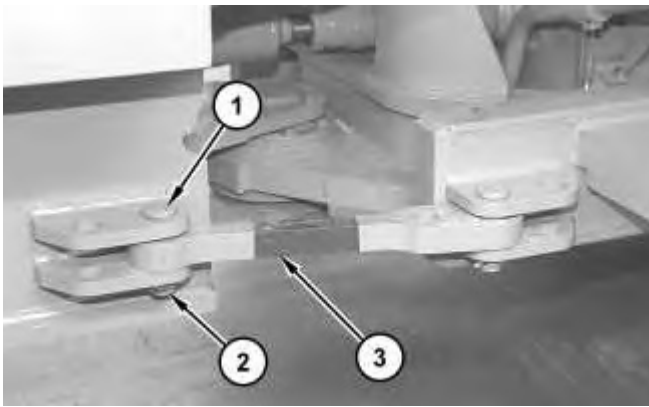


Illustration 3

g01153327

1. Remove locking pin (2) and clevis pin (1). Move steering frame lock link (3) to the storage position.

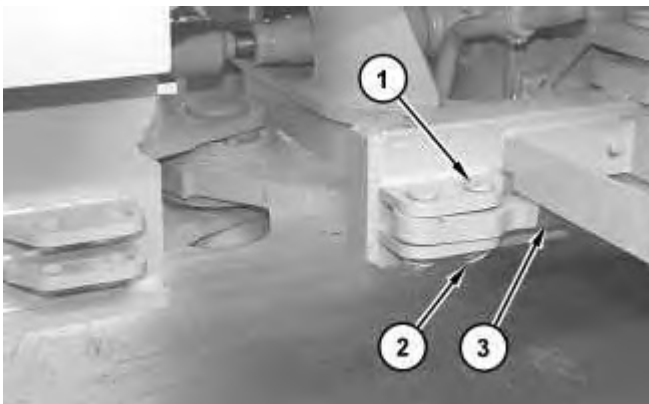


Illustration 4

g01153326

2. Install clevis pin (1) and locking pin (2).

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Disassembly and Assembly

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i04233099

System Pressure - Release

SMCS - 4250-553-PX; 4300-553-PX; 5050-553-PX

Release Procedure (Implement System)



Personal injury can result from hydraulic oil pressure and hot oil.

Hydraulic oil pressure can remain in the hydraulic system after the engine has been stopped. Serious injury can be caused if this pressure is not released before any service is done on the hydraulic system.

Make sure all of the work tools have been lowered to the ground, and the oil is cool before removing any components or lines. Remove the oil filler cap only when the engine is stopped, and the filler cap is cool enough to touch with your bare hand.



Escaping fluid under pressure, even a pinhole size leak, can penetrate body tissue, causing serious injury, and possible death. If fluid is injected into your skin, it must be treated immediately by a doctor familiar with this type of injury.

Always use a board or cardboard when checking for a leak.

1. If the machine is equipped with a ride control system, move the ride control switch to the ON position.

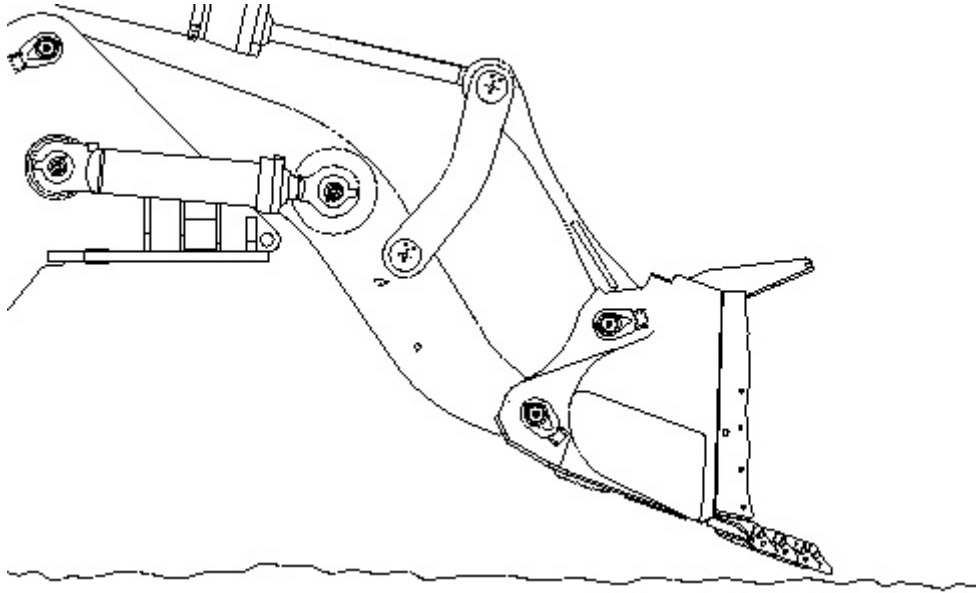


Illustration 1

g02009358

2. Position the bucket or the work tool just above the ground at a slight downward angle in order to ensure that the head end of the lift cylinders is pressurized.
3. Turn the engine start switch to the OFF position.
4. When the engine has stopped, turn the engine start switch back to the ON position so the pilot oil can reach the main valve.
5. Move the implement lockout switch to the UNLOCKED position.
6. Move the lift control lever to the FLOAT position and the tilt control lever to the TILT BACK position at the same time. This action allows the bucket or the work tool to tilt back while the boom is lowered.

The bottom of the bucket or the work tool should rest flat on the ground. The weight of the linkage should be supported by the ground. The pressure from the head end of the lift cylinders and from the ride control accumulator is now vented to the hydraulic tank.

7. When the bucket or the work tool has settled to the ground, move both control levers to the HOLD position. Then, cycle the control levers through all positions in order to purge any remaining pressure from the implement hydraulic system.
8. Turn the engine start switch to the OFF position.
9. Slowly loosen the hydraulic tank filler cap in order to release the pressure from the hydraulic tank.
10. After all of the pressure has been released, tighten the hydraulic tank filler cap. The hydraulic system pressure has now been released. Hydraulic lines and components can now be removed.

Release Procedure (Steering System and Braking System)



Personal injury can result from hydraulic oil pressure and hot oil.

Hydraulic oil pressure can remain in the hydraulic system after the engine has been stopped. Serious injury can be caused if this pressure is not released before any service is done on the hydraulic system.

Make sure all of the work tools have been lowered to the ground, and the oil is cool before removing any components or lines. Remove the oil filler cap only when the engine is stopped, and the filler cap is cool enough to touch with your bare hand.



Escaping fluid under pressure, even a pinhole size leak, can penetrate body tissue, causing serious injury, and possible death. If fluid is injected into your skin, it must be treated immediately by a doctor familiar with this type of injury.

Always use a board or cardboard when checking for a leak.

Note: Be sure that the machine is on flat level ground.

Note: Make sure that the parking brake is engaged.

1. Straighten the machine and install the steering link.
2. Lower the bucket to the ground and stop the engine.
3. Move the steering and transmission lock control to the LOCKED position.
4. In order to release the pressure from steering cylinders, the machine must not be operated for a minimum of 10 minutes. 10 minutes will allow sufficient time for the pressure in the steering system to dissipate.
5. Depress the brake pedal repeatedly in order to release any pressure in the braking system.
6. Slowly loosen the hydraulic tank filler cap in order to release the pressure from the hydraulic tank.

7. After all of the pressure has been released, tighten the hydraulic tank filler cap. The hydraulic system pressure has now been released. Hydraulic lines and components can now be removed.

Dead Electronics

1. If the electronics fail, it may not be possible to relieve all stored hydraulic oil pressure. The following precautions should be taken.
2. Turn the engine OFF.
3. The machine should be secured with a lockout.
4. Use the appropriate stand or blocks to prevent undesired drift of implements.
5. Barriers should be used in order to prevent personnel from entering areas that implement drift or movement could be hazardous.
6. To lower lift arms and the ripper onto the ground or onto the appropriate supports, open the **112-1817** Manual Valve Gp.
7. Do not open or disassemble any hydraulic circuits until the electronic controls are required to relieve stored hydraulic pressure.

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i04058430

Hydraulic Tank Oil - Retain

SMCS - 0768; 5050; 5056-OC; 5056; 5095

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	5H-4019	Cover	1
B	311-1362	Vacuum Gauge Gp	1

1. Release hydraulic system pressure.



Illustration 1

g02273693

2. Remove vent cap (1).

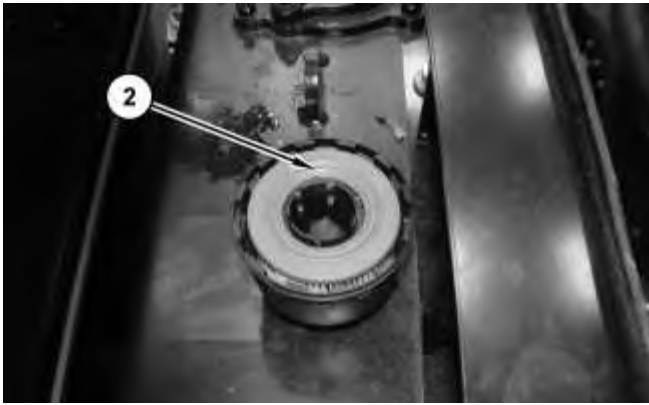


Illustration 2

g02273773

3. Remove filter (2).

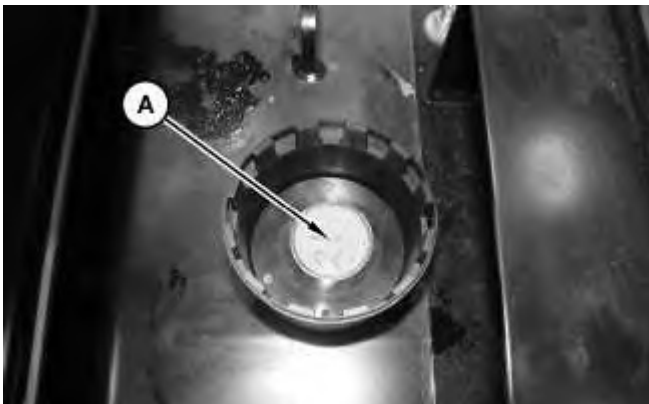


Illustration 3

g02273793

4. Place Tooling (A) over hydraulic tank vent.

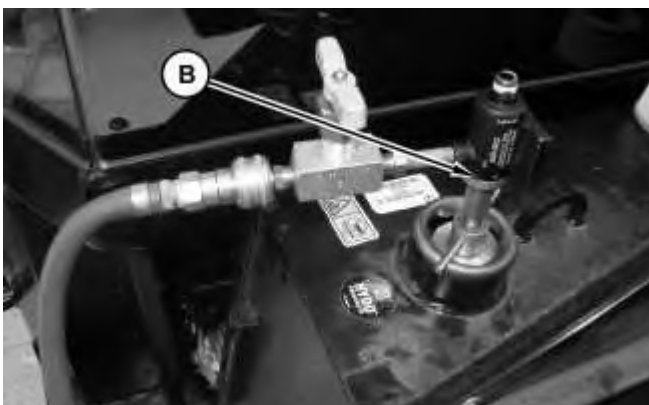


Illustration 4

g02273814

5. Install Tooling (B) and suitable air pressure in order to create a vacuum on the hydraulic system.

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i04005726

Hood - Remove and Install

SMCS - 7251-010

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	189-0408	Shackle	1
B	1U-8221	Strap	1
C	138-7575	Link Bracket	4

Note: Remove Hood fully before any hood panels are removed. Failure to do so may damage to the hood panels.

1. Open the rear enclosure.





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2. Remove panel (1) .



Illustration 2

3. Disconnect harness assemblies (2) and remove clip (3) .



Illustration 3

4. Remove pin (4) .
-

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