

Product: WHEEL LOADER

Model: 928G WHEEL LOADER 6XR

Configuration: 928G Wheel Loader 6XR00001-UP (MACHINE) POWERED BY 3116 Engine

Disassembly and Assembly

SUPPLEMENT FOR WHEEL LOADERS & INTEGRATED TOOLCARRIERS - LIM

Media Number -SEN5785-00

Publication Date -16/07/1997

Date Updated -11/02/2011

SEN57850003

Limited Slip Differential (918F, IT18F, 924F, IT24F, & 924G)

SMCS - 3263-015; 3263-016

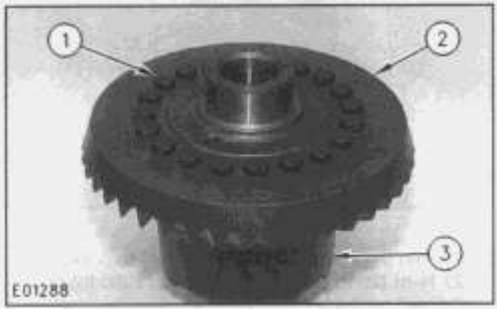
Disassemble Limited Slip Differential (918F, IT18F, 924F, IT24F, & 924G)

Tools Needed	A	B
126-7183 Cross Block	1	
6V-4011 Ring	1	
1P-0519 Plate (Part of 1P-0520 Driver Gp.)	1	
7X-2556 Bolt (M16 X 2.0 X 100)	1	
9X-8257 Washer (M16)	1	
8T-4132 Nut (M16 X 2.0)	1	
8T-5092 Bolt (M12 X 1.75 X 150)	2	
8T-4223 Washer (M12)	2	
8T-5096 Dial Indicator Group		1

Start By:

a. remove differential

NOTE: The following procedure is for the disassembly of TRACTECH INC. Limited Slip Differentials.



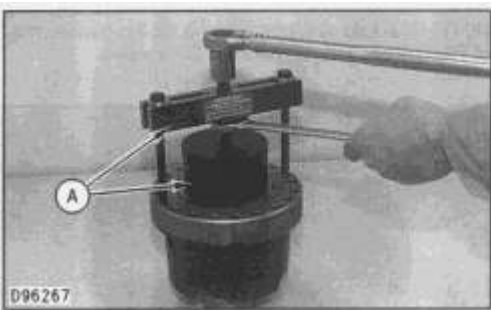
1. Remove twenty bolts (1).
2. Remove bevel gear (2) from case housing (3).



3. Invert bevel gear (2) and remove thrust washer (4).
4. Measure the end play gap, as follows:

- a. Install Tooling (A) on the differential assembly, as shown.

NOTE: The center pusher bolt of Tooling (A) must have **M16 × 2.0** thread to apply the proper preload on the disc packs.

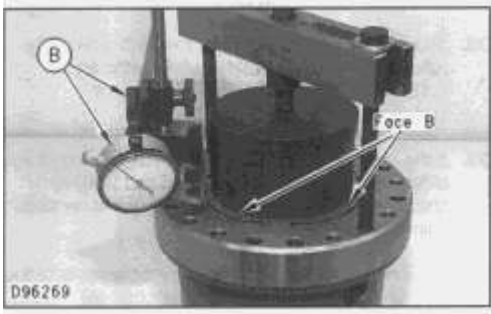


- b. Tighten the center bolt of Tooling (A) to a torque of **27 N·m (20 lb ft)** to apply **900 kg (2000 lb)** of preload on the disc packs.



c. Mount the magnetic base of Tooling (B) on **Face A** of the case housing.

d. Zero the dial indicator on **Face A**, as shown.



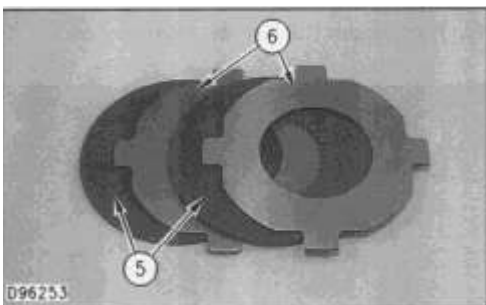
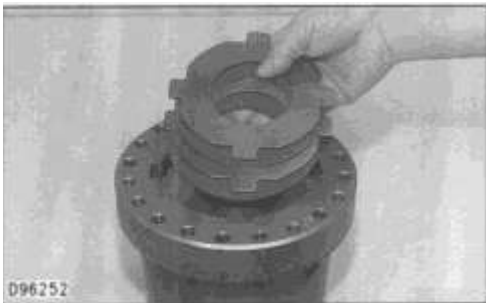
e. Carefully rotate the magnetic base of Tooling (B) until the dial indicator is touching **Face B** (the disc pack).

f. Record the indicator reading.

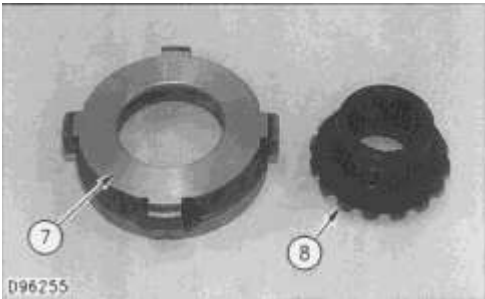
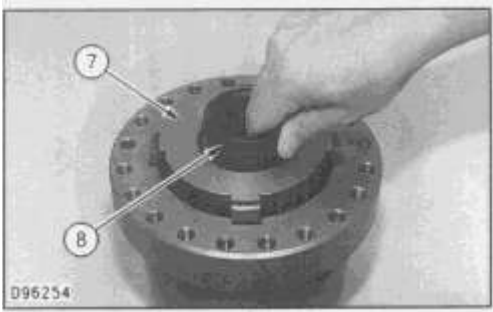
g. Record two additional indicator readings from different areas of **Face B**.

h. Average the three indicator readings. This is the measured end play gap.

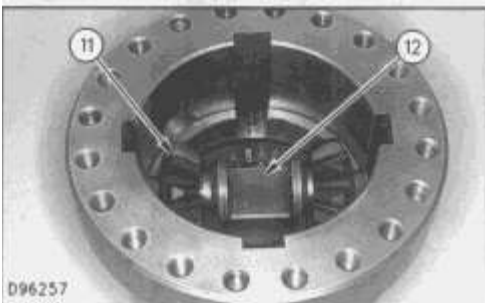
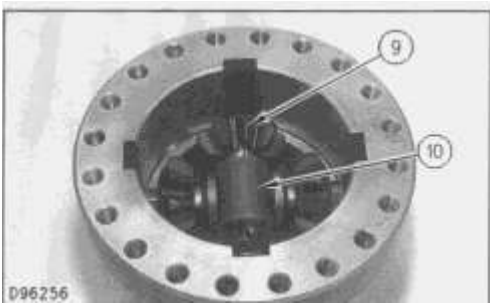
i. If the end play gap in Step 4h was greater than **0.81 mm (.032 in)**, replacement of the existing disc packs is necessary.



5. Remove the disc pack from the case housing. The disc pack consists of two friction discs (5) and two plates (6).

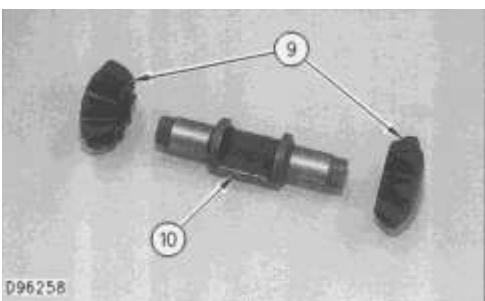


6. Remove actuator housing (7) and gear (8) from case housing as shown.

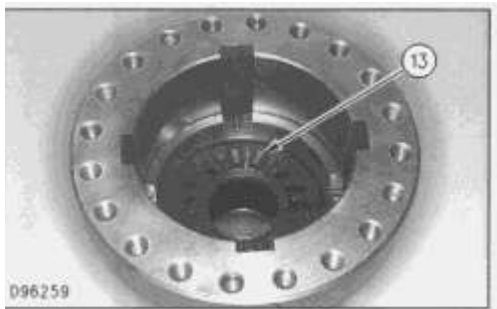


7. Remove pinion shaft (10) and two pinion gears (9).

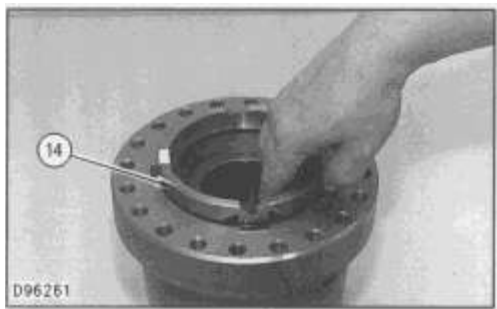
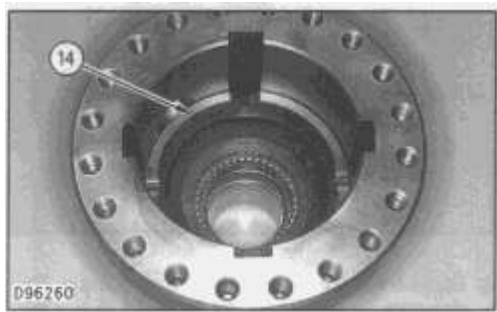
8. Remove remaining pinion shaft (12) and two pinion gears (11).



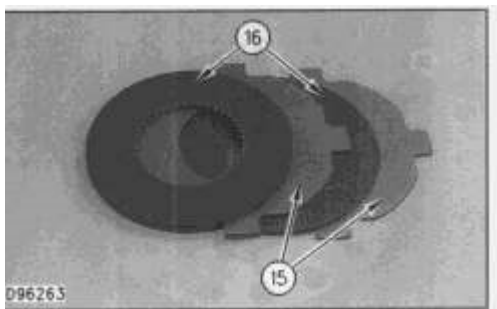
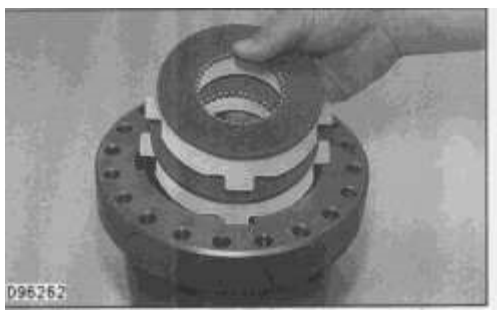
9. Remove two pinion gears (9) from pinion shaft (10). Repeat for the remaining pinion shaft (12) and pinion gears (11).



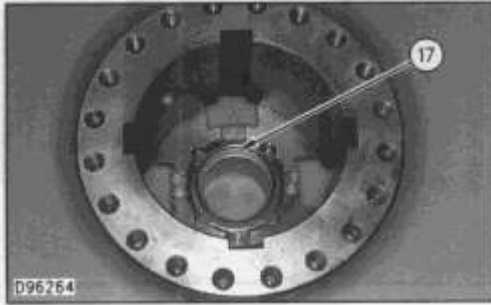
10. Remove gear (13) from the case housing.



11. Remove actuator housing (14) from the case housing by lifting straight upward, as shown.



12. Remove the disc pack from the case housing. The disc pack consists of two friction discs (16) and two plates (15).

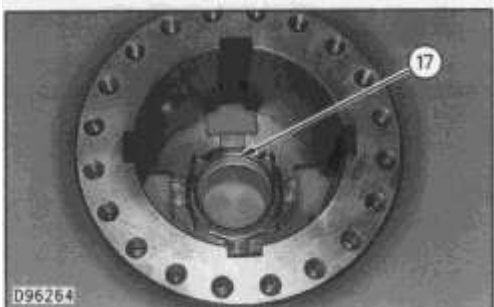


13. Remove thrust washer (17).

Assemble Limited Slip Differential (918F, IT18F, 924F, IT24F, & 924G)

Tools Needed		A	B
126-7183	Cross Block	1	
6V-4011	Ring	1	
1P-0519	Plate (Part of 1P-0520 Driver Gp.)	1	
7X-2556	Bolt (M16 X 2.0 X 100)	1	
9X-8257	Washer (M16)	1	
8T-4132	Nut (M16 X 2.0)	1	
8T-5092	Bolt (M12 X 1.75 X 150)	2	
8T-4223	Washer (M12)	2	
8T-5096	Dial Indicator Group		1

1. Clean and inspect all parts of the differential. If any of the parts are worn or damaged, use new parts for replacement.



2. Install thrust washer (17) in the case housing. Lubricate the thrust washer face with clean axle oil.

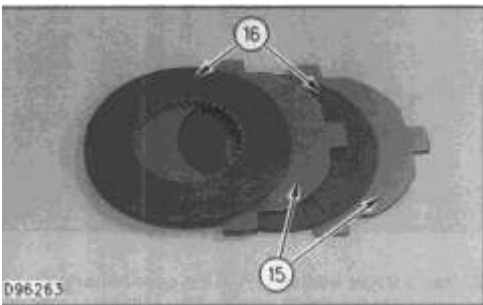
3. Replace the disc packs if:

- a. The stack heights of the disc packs are **NOT** symmetrical within **0.10 mm (.004 in)**.
- b. The disc friction material is worn such that the discs, or areas of the discs, are running steel on steel.



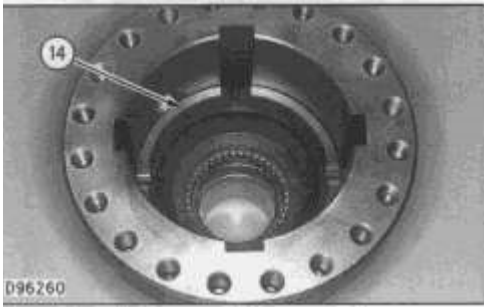
4. When replacement of the disc packs is required, replace with disc packs of the same type. If THIN is marked on the case housing, replace with two new THIN disc packs. If THICK is marked on the case housing, replace with two new THICK disc packs. **Do not** mix disc packs. Use two THIN or two THICK. **Do not** use one of each.

NOTE: Use clean axle oil to thoroughly lubricate plates and friction discs, prior to assembly.

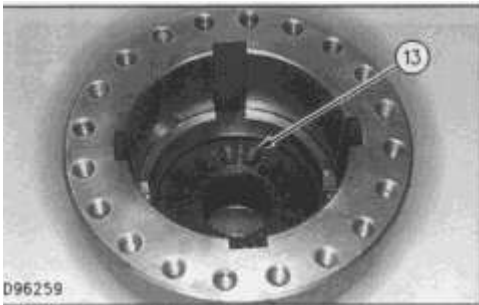


5. Install two friction discs (16) and two plates (15) in alternate order in the case housing starting with a plate and ending with a friction disc, as shown.



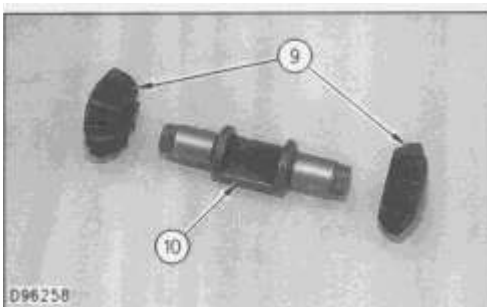


6. Align the keys of actuator housing (14) with the slots of the case housing and install as shown.

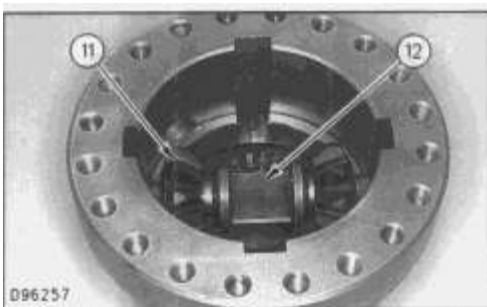


7. Install gear (13) in the case housing.

NOTE: Turn gear slowly until the spline engages with the two friction discs installed in Step 5. Make sure the gear is fully seated.

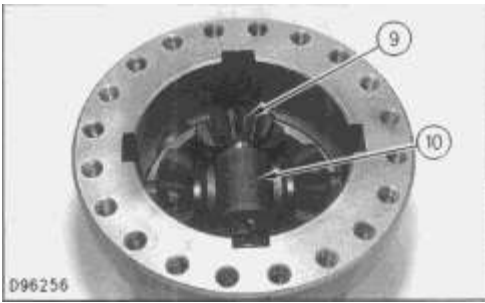


8. Install two pinion gears (9) on pinion shaft (10). Repeat for remaining pinion shaft (12) and two pinion gears (11). Lubricate with clean axle oil.

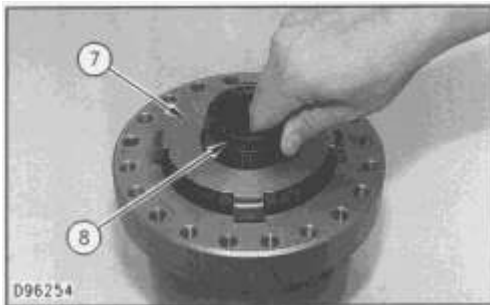
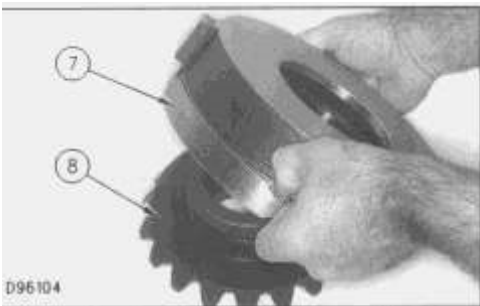


9. Install pinion shaft (12) and two pinion gears (11) in the case housing as shown.

10. Rotate pinion gears (11) slightly until the pinion shaft rests in the V-slots of the actuator housing.

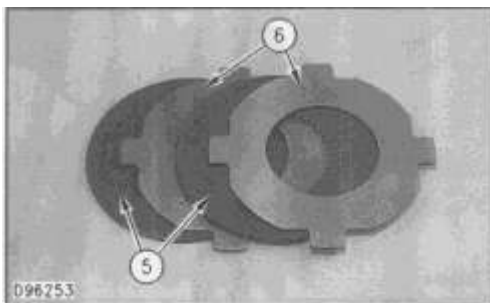


11. Install remaining pinion shaft (10) and two pinion gears (9) in the case housing, as shown.



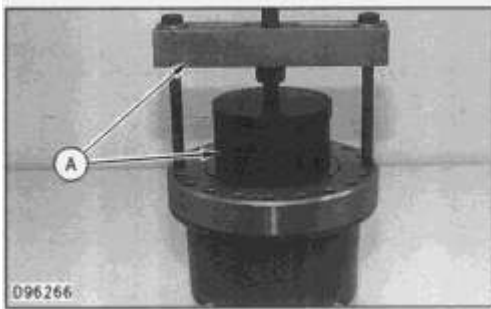
12. Assemble gear (8) and actuator housing (7) on bench, as shown. Align the keys of the actuator housing with the slots in the case and install, as shown.

NOTE: Use clean axle oil to thoroughly lubricate plates and friction discs, prior to assembly.



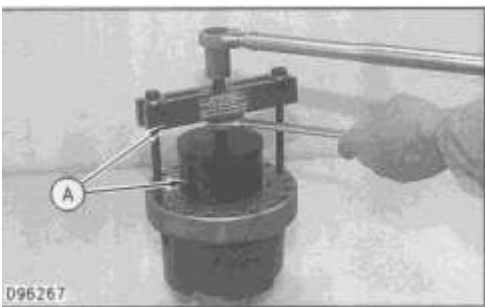
13. Install two friction discs (5) and two plates (6) in alternate order in the case housing starting with a friction disc and ending with a plate.

NOTE: Steps 14 through 21 describe the proper procedure for measuring end play gap.



14. Install Tooling (A) on the differential assembly, as shown.

NOTE: The center pusher bolt of Tooling (A) must have **M16 × 2.0** thread to apply the proper preload on the disc packs.



15. Tighten the center bolt of Tooling (A) to a torque of **27 N·m (20 lb ft)** to apply **900 kg (2000 lb)** of preload on the disc packs.



16. Mount the magnetic base of Tooling (B) on **Face A** of the case housing.

17. Zero the dial indicator on **Face A**, as shown.



18. Carefully rotate the magnetic base of Tooling (B) until the dial indicator is touching **Face B** (the disc pack).

19. Record the indicator reading.

20. Record two additional indicator readings from different areas of **Face B**.

21. Average the three indicator readings. This is the measured end play gap.

NOTE: If the existing disc packs were installed in Step 4, continue with Step 22. If new disc packs were installed in Step 4, continue with Step 23.

22. If the end play gap in Step 21 was greater than **0.81 mm (.032 in)**, replacement of the existing disc packs is necessary.

NOTE: Steps 23 through 28 are for new replacement disc packs.

23. When replacement of the disc packs is required, replace with disc packs of the same type. If THIN is marked on the case housing, replace with two new THIN disc packs. If THICK is marked on the case housing, replace with two new THICK disc packs. **Do not** mix disc packs. Use two THIN or two THICK. **Do not** use one of each.

24. With new disc packs installed in the limited slip differential, measure the end play gap as described in Steps 14 through 21. The measured end play gap must fall between **0.203 and 0.508 mm (.0080 and .0200 in)**.

25. If the measured end play gap is greater than **0.508 mm (.0200 in)** and two THIN disc packs were installed, remove two THIN disc packs and install two THICK disc packs. Measure the end play gap again to determine if it falls between **0.203 and 0.508 mm (.0080 and .0200 in)** to meet specifications.

26. If the measured end play gap still **does not** meet specifications, replace the pinion shafts and or both actuator housings. Install either two THIN or two THICK disc packs to obtain an end play gap that falls between **0.203 and 0.508 mm (.0080 and .0200 in)** to meet specifications.



27. If the disc packs were changed from the kind marked on the outside surface of the housing, replace the existing mark with either THICK or THIN for future reference.



28. Install thrust washer (4) in bevel gear (2). Lubricate the thrust washer face with clean axle oil.

NOTE: Apply a small amount of grease to the back side of the thrust washer prior to installing. This will retain the thrust washer in place while installing the bevel gear.



29. Invert bevel gear (2) and install on case housing (3).

NOTE: The bevel gear is a light press fit to the case housing. It is important to tighten bolts (1) evenly, to properly seat the bevel gear.

30. Install twenty bolts (1). Tighten bolts (1) to a torque of $120 \pm 20 \text{ N}\cdot\text{m}$ ($90 \pm 15 \text{ lb ft}$).

End By:

a. install differential

Product: WHEEL LOADER

Model: 928G WHEEL LOADER 6XR

Configuration: 928G Wheel Loader 6XR00001-UP (MACHINE) POWERED BY 3116 Engine

Disassembly and Assembly

SUPPLEMENT FOR WHEEL LOADERS & INTEGRATED TOOLCARRIERS - LIM

Media Number -SEN5785-00

Publication Date -16/07/1997

Date Updated -11/02/2011

SEN57850004

Limited Slip Differential (928F, IT28F, 928G & IT28G)

SMCS - 3263-015; 3263-016

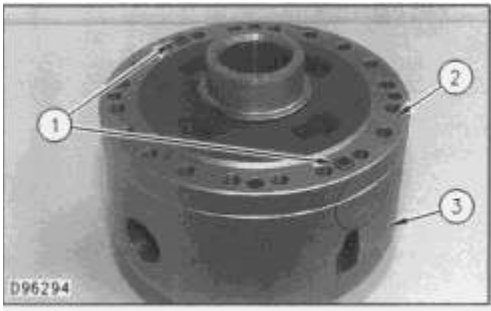
Disassemble Limited Slip Differential (928F, IT28F, 928G & IT28G)

Tools Needed		A	B
126-7183	Cross Block	1	
6V-4011	Ring	1	
1P-0519	Plate (Part of 1P-0520 Driver Gp.)	1	
7X-2556	Bolt (M16 X 2.0 X 100)	1	
9X-8257	Washer (M16)	1	
8T-4132	Nut (M16 X 2.0)	1	
8T-7352	Bolt (M8 X 1.25 X 160)	2	
8T-4224	Washer (M8)	2	
8T-4121	Washer (M10)	2	
8T-4223	Washer (M12)	2	
8T-5096	Dial Indicator Group		1

Start By:

a. remove differential

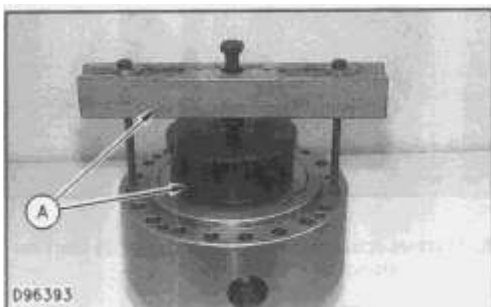
NOTE: The following procedure is for the disassembly of TRACTECH INC. Limited Slip Differentials.



1. Remove two bolts (1).
2. Remove case cover (2) from case housing (3).

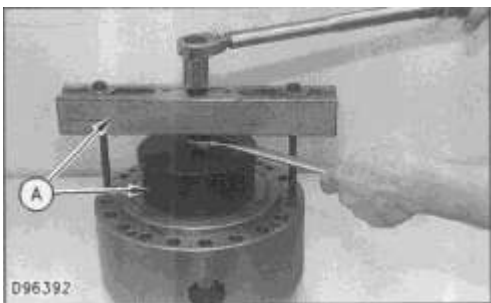


3. Invert case cover (2) and remove thrust washer (4).
4. Measure the end play gap, as follows:

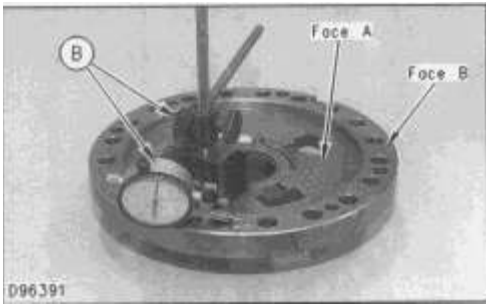


- a. Install Tooling (A) on the differential assembly, as shown.

NOTE: The center pusher bolt of Tooling (A) must have **M16 × 2.0** thread to apply the proper preload on the disc packs.



- b. Tighten the center bolt of Tooling (A) to a torque of **27 N·m (20 lb ft)** to apply **900 kg (2000 lb)** of preload on the disc packs.



c. Mount the magnetic base of Tooling (B) on **Face A** of case cover (2).

d. Zero the dial indicator on **Face B**, as shown.



e. Carefully remove Tooling (B) from the case cover.

f. Mount the magnetic base of Tooling (B) on **Face C** of the differential case housing. Touch the dial indicator on the disc pack **Face D**.

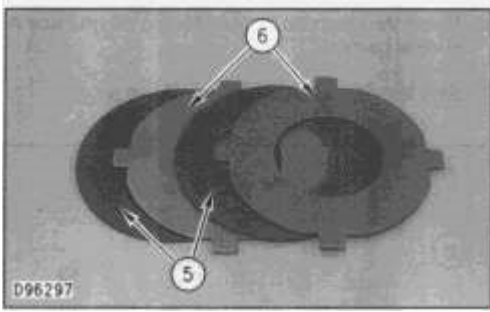
g. Record the indicator reading.

h. Record two additional indicator readings from different areas of **Face D**.

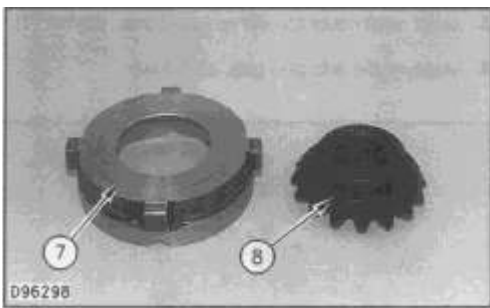
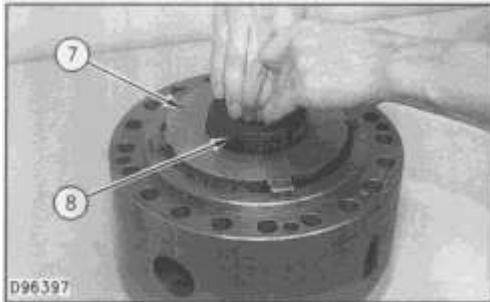
i. Average the three indicator readings. This is the measured end play gap.

j. If the end play gap in Step 4i was greater than **0.81 mm (.032 in)**, replacement of the existing disc packs is necessary.

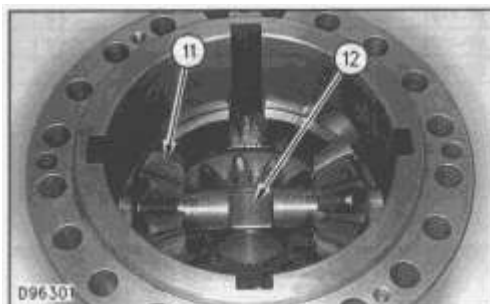
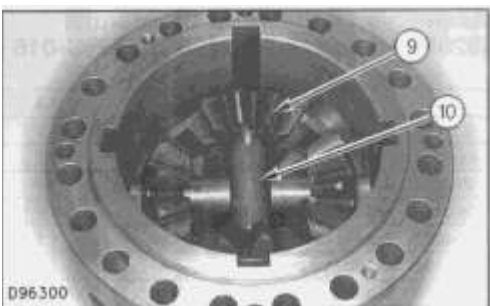




5. Remove the disc pack from the case housing. The disc pack consists of two friction discs (5) and two plates (6).

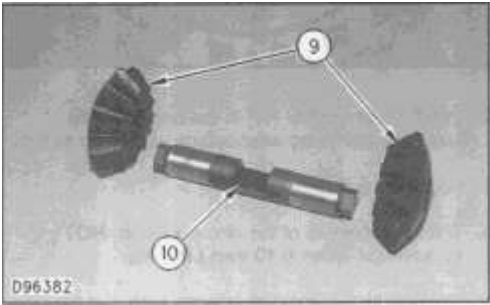


6. Remove actuator housing (7) and gear (8) from the case housing, as shown.

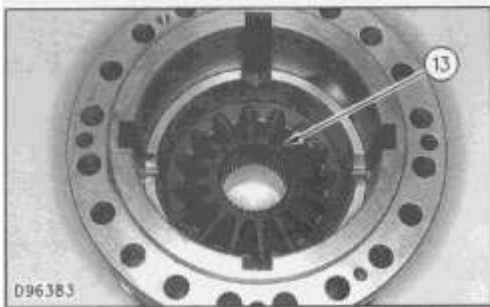


7. Remove pinion shaft (10) and two pinion gears (9).

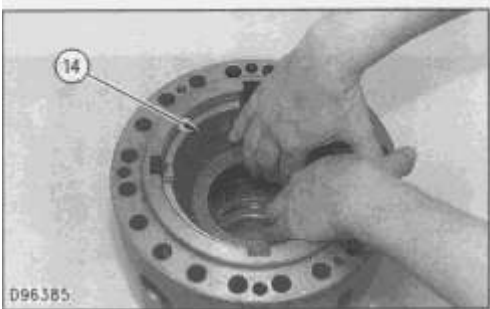
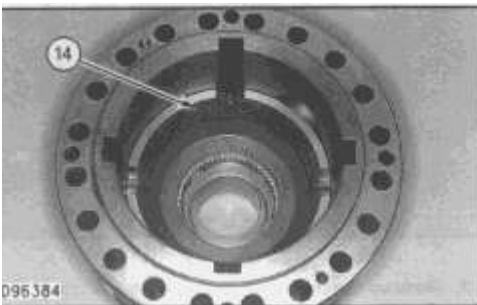
8. Remove the remaining pinion shaft (12) and two pinion gears (11).



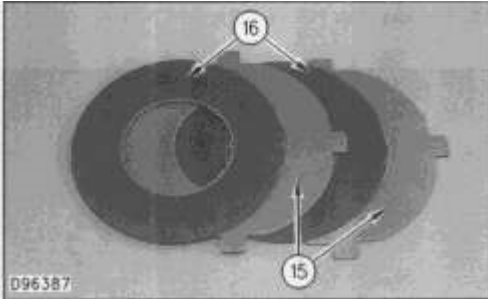
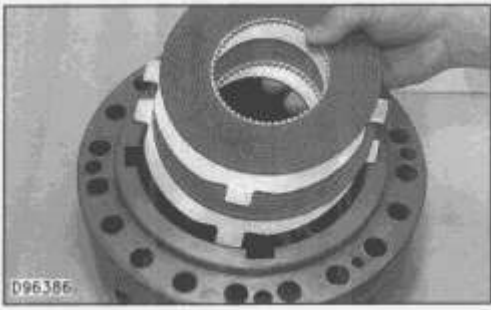
9. Remove two pinion gears (9) from pinion shaft (10). Repeat for the remaining pinion shaft (12) and pinion gears (11).



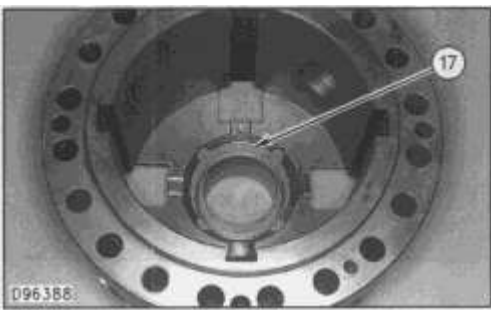
10. Remove gear (13) from the case housing.



11. Remove actuator housing (14) from the case housing by lifting straight upward, as shown.



12. Remove the disc pack from the case housing. The disc pack consists of two friction discs (16) and two plates (15).

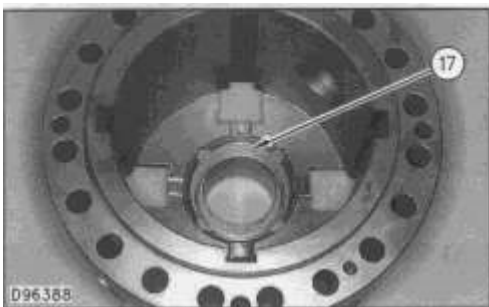


13. Remove thrust washer (17).

Assemble Limited Slip Differential (928F, IT28F, 928G & IT28G)

Tools Needed		A	B
126-7183	Cross Block	1	
6V-4011	Ring	1	
1P-0519	Plate (Part of 1P-0520 Driver Gp.)	1	
7X-2556	Bolt (M16 X 2.0 X 100)	1	
9X-8257	Washer (M16)	1	
8T-4132	Nut (M16 X 2.0)	1	
8T-7352	Bolt (M8 X 1.25 X 160)	2	
8T-4224	Washer (M8)	2	
8T-4121	Washer (M10)	2	
8T-4223	Washer (M12)	2	
8T-5096	Dial Indicator Group		1

1. Clean and inspect all parts of the differential. If any of the parts are worn or damaged, use new parts for replacement.



2. Install thrust washer (17) in the case housing. Lubricate the thrust washer face with clean axle oil.

3. Replace the disc packs if:

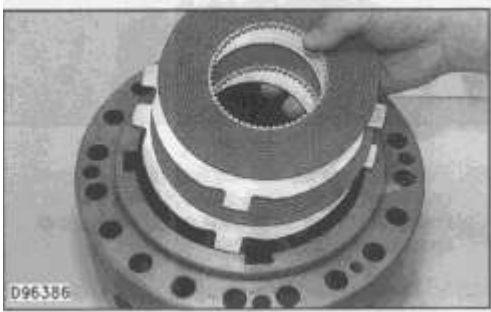
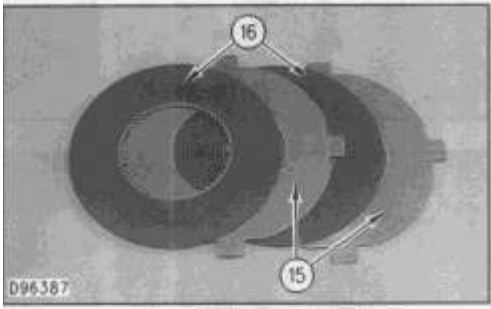
- a. The stack heights of the disc packs are **NOT** symmetrical within **0.10 mm (.004 in)**.
- b. The disc friction material is worn such that the discs, or areas of the discs, are running steel on steel.



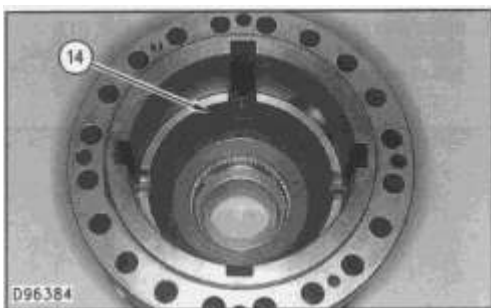
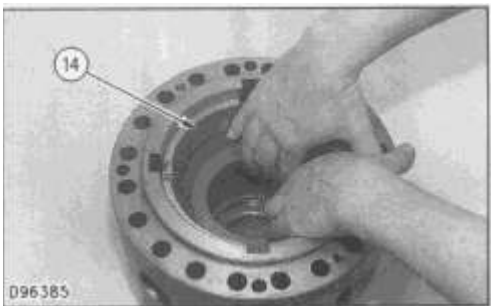
4. When replacement of the disc packs is required, replace with disc packs of the same type. If THIN is marked on the case cover, replace with two new THIN disc packs. If THICK is marked

on the case cover, replace with two new THICK disc packs. **Do not** mix disc packs. Use two THIN or two THICK. **Do not** use one of each.

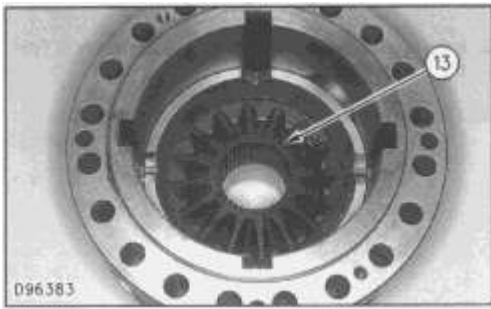
NOTE: Use clean axle oil to thoroughly lubricate plates and friction discs, prior to assembly.



5. Install two friction discs (16) and two plates (15) in alternate order in the case housing starting with a plate and ending with a friction disc, as shown.

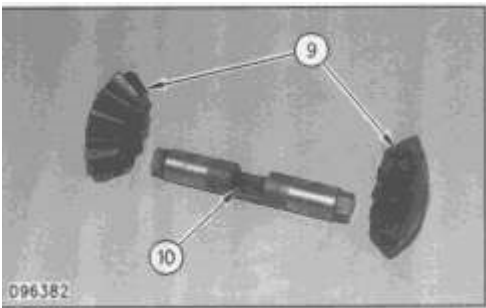


6. Align the keys of actuator housing (14) with the slots of the case housing and install as shown.



7. Install gear (13) in the case housing.

NOTE: Turn the gear slowly until the spline engages with the two friction discs installed in Step 5. Make sure the gear is fully seated.

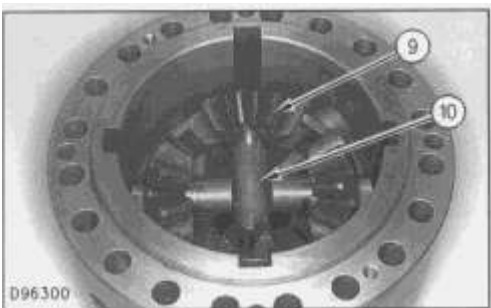


8. Install two pinion gears (9) on pinion shaft (10). Repeat for the remaining pinion shaft (12) and two pinion gears (11). Lubricate with clean axle oil.

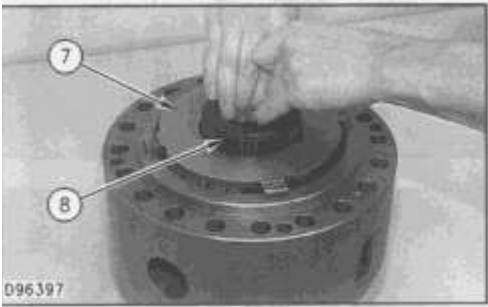
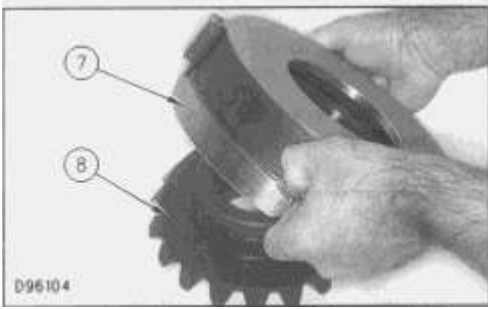


9. Install pinion shaft (12) and two pinion gears (11) in the case housing, as shown.

10. Rotate pinion gears (11) slightly until the pinion shaft rests in the V-slots of the actuator housing.

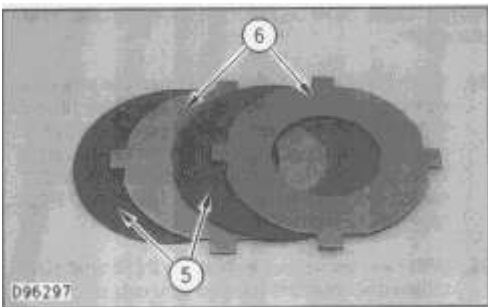


11. Install the remaining pinion shaft (10) and two pinion gears (9) in the case housing, as shown.



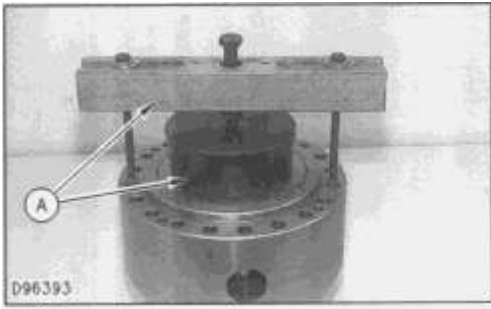
12. Assemble gear (8) and actuator housing (7) on bench, as shown. Align the keys of the actuator housing with the slots in the case housing and install, as shown.

NOTE: Use clean axle oil to thoroughly lubricate plates and friction discs, prior to assembly.



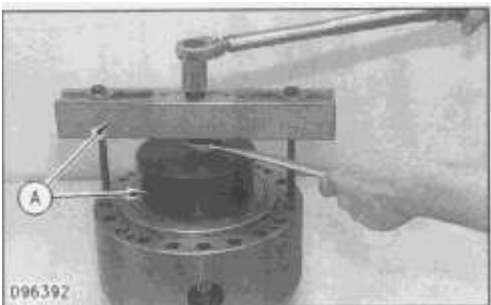
13. Install two friction discs (5) and two plates (6) in alternate order in the case housing starting with a friction disc and ending with a plate.

NOTE: Steps 14 through 22 describe the proper procedure for measuring end play gap.

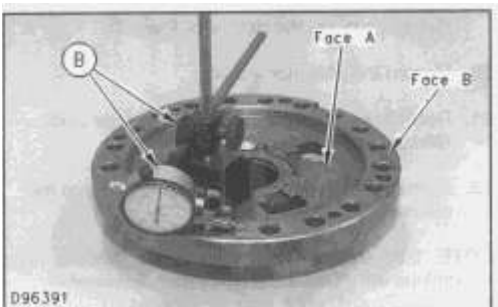


14. Install Tooling (A) on the differential assembly, as shown.

NOTE: The center pusher bolt of Tooling (A) must have **M16 X 2.0** thread to apply the proper preload on the disc packs.

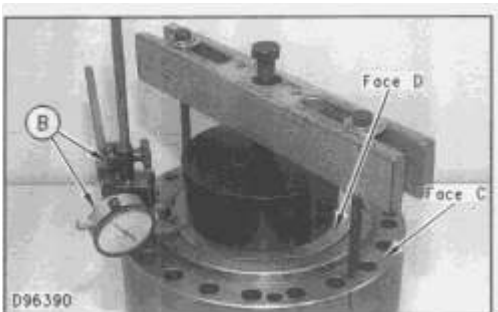


15. Tighten the center bolt of Tooling (A) to a torque of **27 N·m (20 lb ft)** to apply **900 kg (2000 lb)** of preload on the disc packs.



16. Mount the magnetic base of Tooling (B) on **Face A** of case cover (2).

17. Zero the dial indicator on **Face B**, as shown.



18. **Carefully** remove Tooling (B) from the case cover.

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