

Product: TRACK LOADER

Model: 931B TRACK LOADER 25Y

Configuration: 931B TRACK LOADER / POWER SHIFT / 25Y00001-UP (MACHINE) POWERED BY 3204 ENGINE

Disassembly and Assembly

D3B TRACTOR & 931B TRACTOR TYPE LOADER POWER TRAIN

Media Number -SEN7918-02

Publication Date -01/11/2004

Date Updated -15/02/2017

SEN79180029

Torque Converter And Transmission (3F/1R Power Shift)

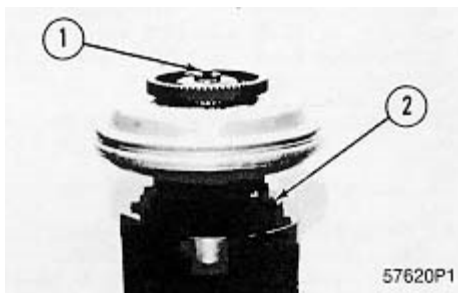
SMCS - 3001-015; 3001-016

Disassemble Torque Converter And Transmission (3F/1R Power Shift)

Tools Needed		A	B
8B7548	Puller Assembly	1	
8B7560	Step Plate	1	
8H684	Ratchet Box Wrench	1	
8H663	Bearing Puller Attachment	1	
1P510	Driver Group		1

Start By:

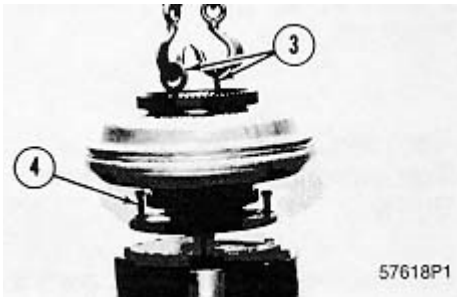
- a. remove torque converter and transmission



Typical Example

1. Remove bolt (1) and the washer from torque converter.

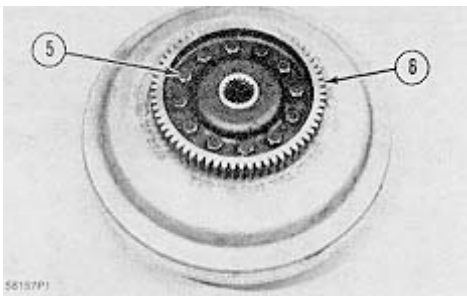
2. Remove bolts (2) that hold the flange to the manifold.



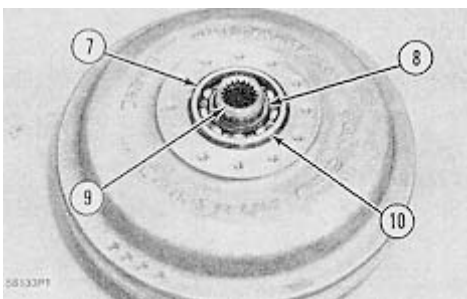
Typical Example

3. Install two 3/8 " - 16 NC forged eyebolts (3) in the torque converter and fasten a hoist.

4. Install two of the 3/8 " - 16 NC bolts (4) that were removed from torque converter as forcing screws in the flange. Remove the torque converter as a unit.



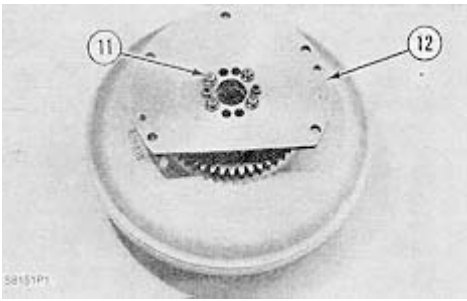
5. Remove bolts (5) that hold spider (6) on the torque converter.



6. Remove snap rings (7) and (8) and seal ring (9) from the hub.

7. Remove bearing (10) from the hub.

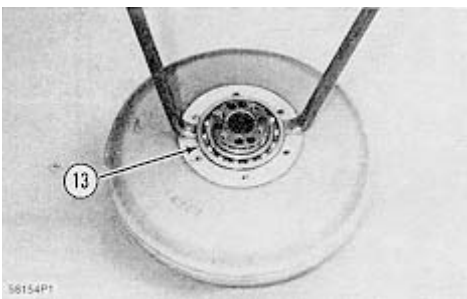
8. Turn the torque converter over.



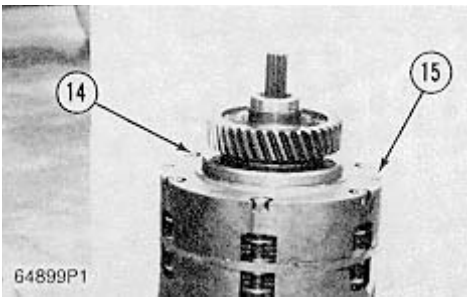
Typical Example

9. Remove bolts (11) that hold flange (12) on the hub. Remove flange (12). Remove the seal ring from the flange.

10. Remove the bolts that hold the gear on the torque converter. Remove the gear.



11. Remove bearing (13) from the hub with two bars.

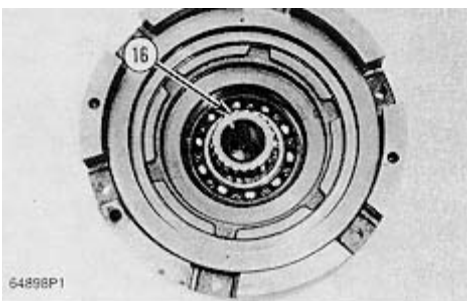


12. Turn the transmission assembly over with a hoist.

NOTE: Put a mark on each housing and plate for correct installation.

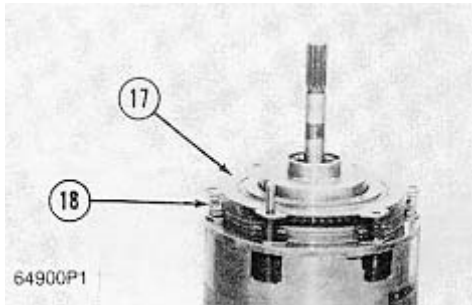
13. Remove nuts (14) from the bolts that hold the housing together.

14. Install two 3/8 " - 16 NC forged eyebolts. Fasten a hoist and No. 1 clutch housing (15) and gear as a unit.

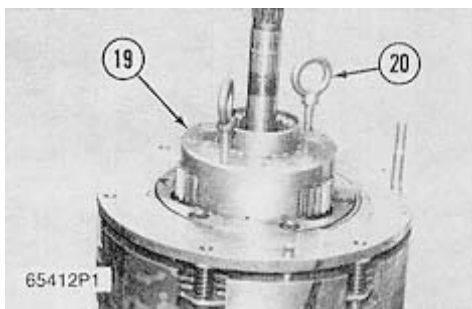


15. Remove the rings that hold gear (16) and bearing in the clutch housing. Remove the gear from the housing.

16. Remove the bearing race from gear (16) with tooling (A).

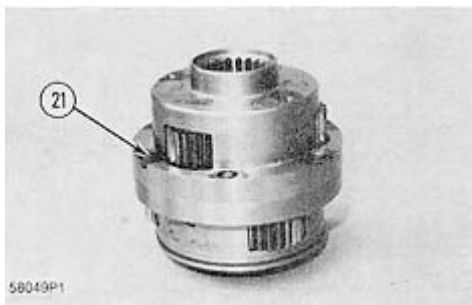


17. Remove No. 1 clutch plates (17), discs, springs (18) and ring gear. Remove the seal rings from the piston for No.1 clutch.



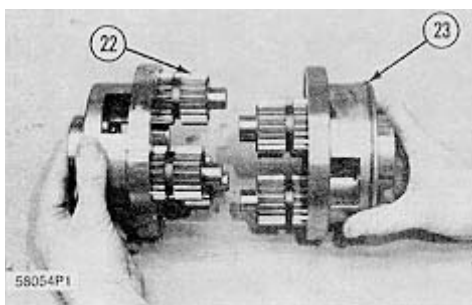
18. Install two 3/8 " - 16 NC forged eyebolts (20) in the carrier.

19. Remove No. 1 and reverse carrier (19) as a unit.

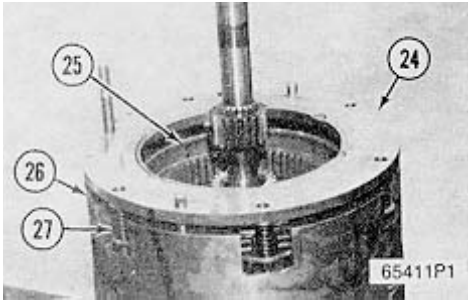


20. Remove bolts (21) and washers that hold No. 1 and reverse carrier together.

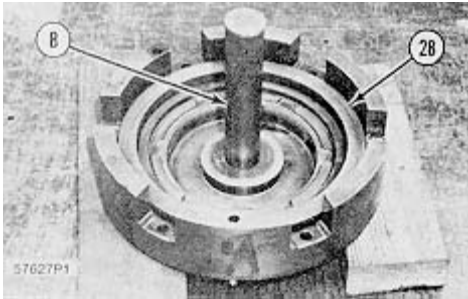
21. Make two separations of the carriers.



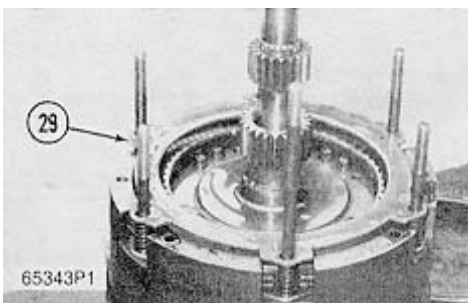
22. Remove six planetary gears (22) from the carriers.
23. Remove the washers from each side of the gears.
24. Remove the roller bearings from inside of each planetary gear.
25. Remove seal ring (23) from the carrier.



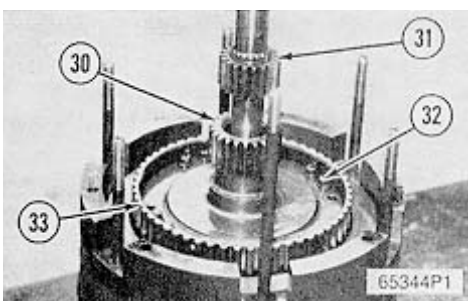
26. Remove plate (24), discs, plates, springs (27) and ring gear (25).
27. Remove reverse clutch housing.



28. Remove the bearing from the reverse clutch housing with tooling (B).
29. Remove piston (28) from the reverse clutch housing. Remove the seal rings from the piston.



30. Remove plates (29), discs and springs for the No. 2 clutch.



31. Remove snap rings and gear (31) from the shaft.

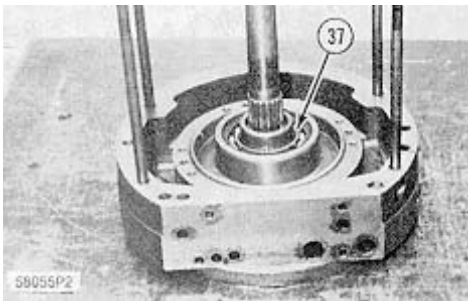
32. Remove bolts (32) evenly from sun gear (30). Remove the sun gear.

33. Remove ring gear (33), springs, discs and plates from the clutch housing. Remove the hub from the shaft.



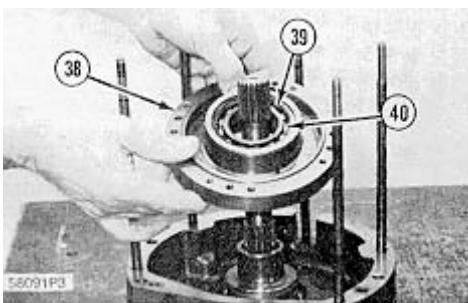
34. Remove the No. 2 clutch housing. Remove clutch piston (34). Remove seal rings (35) and (36) from the piston.

35. Remove the O-ring seal under seal ring (36).

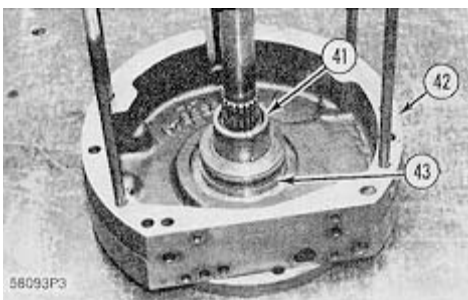


36. Remove the No. 3 clutch piston.

37. Remove snap ring (37) from the inside manifold.



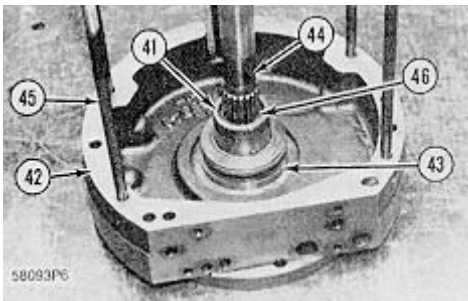
38. Remove piston housing (38). Remove snap ring (39) and bearing (40) from the piston housing.



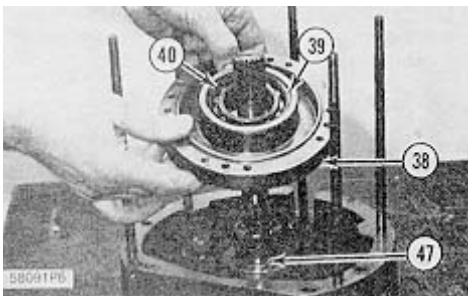
39. Remove seal rings (43) from the inside manifold.
40. Remove the shaft and inside manifold (41) from the outside manifold (42).
41. Remove the shaft from the inside manifold. Remove the snap ring from the shaft.
42. Remove the bolts that hold the clutch housings together.

Assemble Torque Converter And Transmission (3F/1R Power Shift)

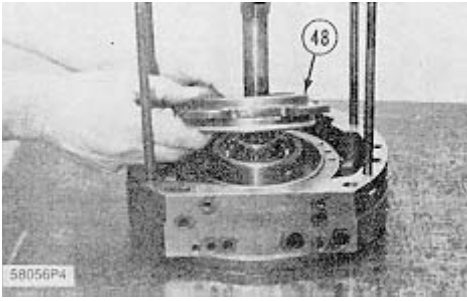
Tools Needed		B	C	D
1P510	Driver Group	1		
FT833	Clamp		1	
FT834	Clutch Testing Nozzle			1



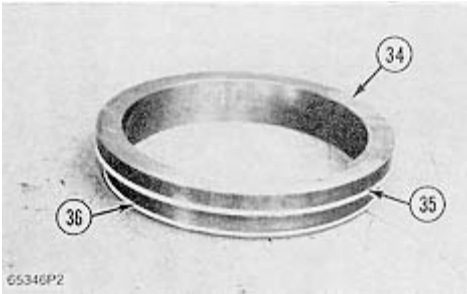
1. Install snap ring (46) on shaft (44). Install the shaft inside manifold (41).
2. Install the shaft and the inside manifold in outside manifold (42).
3. Install bolts (45) that hold the transmission housings together.
4. Install seal rings (43) on the inside manifold.



5. Install bearing (40) and snap ring (39) in piston housing.
6. Install piston housing (38) over the inside manifold with the notch in the bearing in alignment with ball (47) in the manifold.



7. Install the seal rings on the piston for the No. 3 clutch.
8. Install piston (48) for the No. 3 clutch in the piston housing.



NOTICE

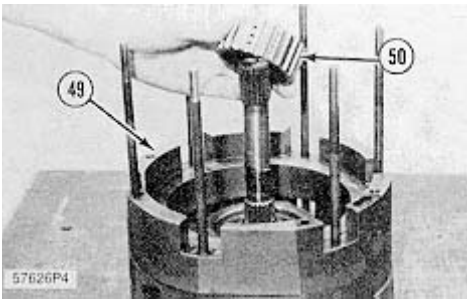
The seal ring (65) with the larger diameter must be installed with the lip of the seal ring toward the pressure oil.

9. Install an O-ring and seal ring (36) in the groove with the smallest diameter on the piston for No. 2 clutch. Install seal ring (35) on the piston in the groove with the larger diameter.

NOTICE

The piston must not be pushed down too far. The seal ring will come out on the bottom side of housing and cause damage to seal ring.

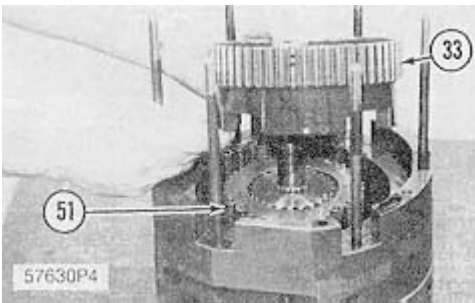
10. Carefully install piston (34) in the housing for the No. 2 clutch so the top of the piston is even with the bottom of the notch in the clutch housing.



11. Install housing (49) for the No. 2 clutch.

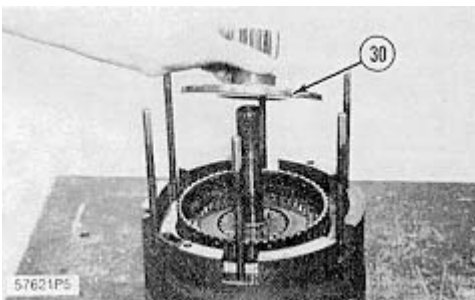
12. Install hub (50) on the shaft.

13. Install the snap ring that holds the hub in position.



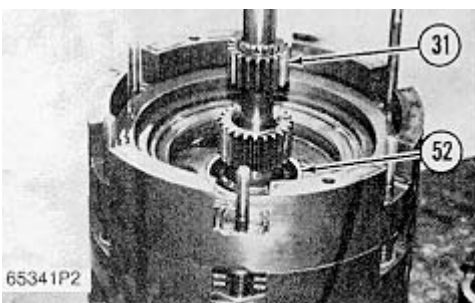
14. Install the plates, discs and springs (51).

15. Install ring gear (33) over the springs, discs and plates.



16. Install sun gear (30).

17. Install bolts that hold the sun gear on the ring gear.



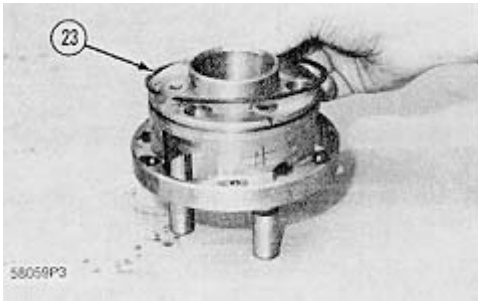
18. Install the snap rings and small sun gear (31) on the shaft.

19. Install the plates, discs and springs for the No. 2 clutch.

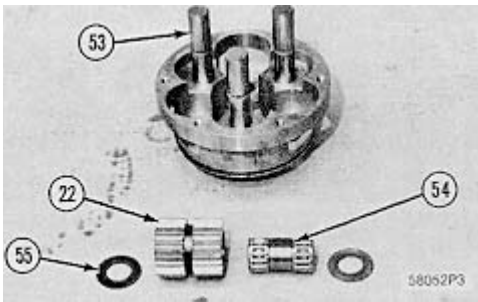
20. Install bearing (52) in the reverse clutch housing with tooling (B).

21. Install the seal rings on the reverse clutch piston with the lip of the seal rings toward the pressure oil. Install the reverse clutch housing.

22. Install the ring for the reverse clutch.

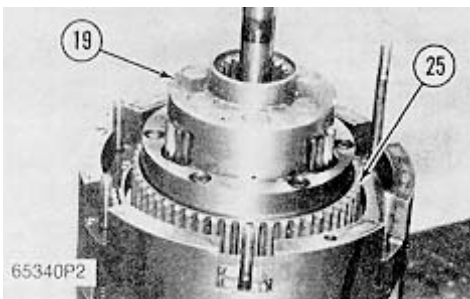


23. Install seal (23) on the carrier.

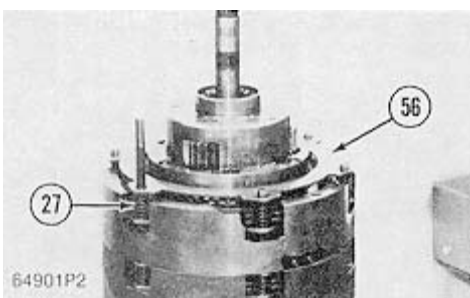


24. Install washers (55), gear (22), bearings (54) and the spacer on each of the three shafts (53) and the two carriers.

25. Put the carriers together and install the six bolts.



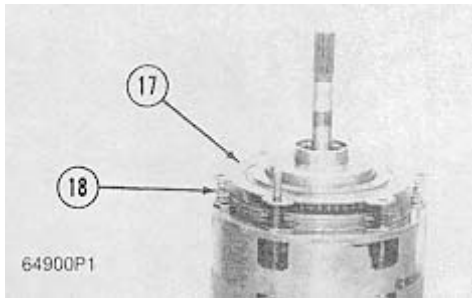
26. Install carrier assembly (19) in ring gear (25) for the reverse clutch.



27. Install the discs, plates (56) and springs (27) for the reverse clutch.

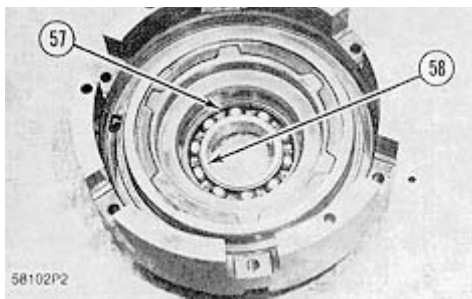
28. Install the plate assembly on reverse clutch housing.

NOTE: Be sure the oil hole in plate is in alignment with the oil hole in housing for reverse clutch.

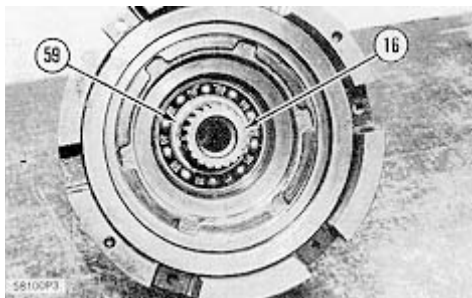


29. Install the ring gear for No. 1 clutch on the carrier.

30. Install plates (17), discs and springs (18) for No. 1 clutch.

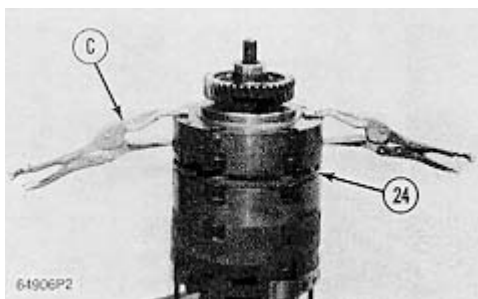


31. Install bearing (58) and snap ring (57) in housing for No. 1 clutch.



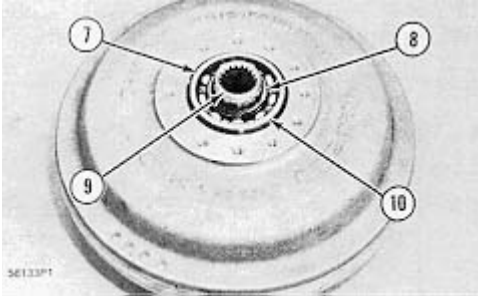
32. Install the bearing race on gear (16).

33. Install gear (16) through the bearing, and install snap ring (59).



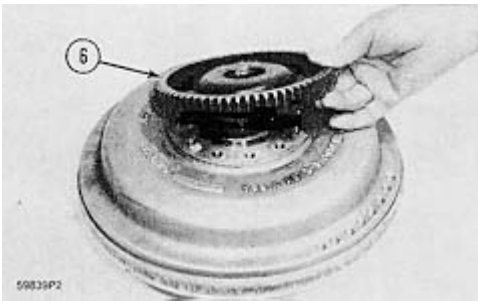
34. Install the seal rings on the No. 1 clutch, with the lip of the seal rings toward the pressure oil

35. Install the piston for the No. 1 clutch in the housing. Hold the piston in the housing with tools (C).
36. Install two 3/8 " - 16 NC forged eyebolts in clutch housing. Fasten a hoist and install the clutch housing.
37. Be sure the oil hole in housing is in alignment with the hole in plate (24). Put the splines of gear (16) in alignment with splines of the carrier assembly.
38. Install the washers and nuts on the bolts that hold the housings together.
39. Turn the transmission over with a hoist so the converter can be installed.

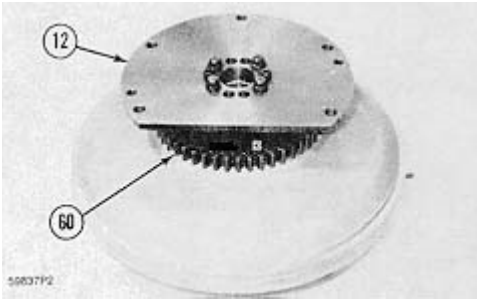


NOTE: Be sure the bearing next to spider (6) is installed with the groove toward the outside of the torque converter.

40. Install bearing (39) on each side of the torque converter.
41. Install seal ring (9), lockrings (7) and (8) that hold the bearing in position on the torque converter.



42. Install spider (6) on the torque converter.
43. Install all of the bolts except two, that hold the spider on the torque converter. Install two 3/8 " - 16 NC forged eyebolts in the two holes. Tighten the bolts to a torque of 50 ± 7 N·m (37 ± 5 lb ft).



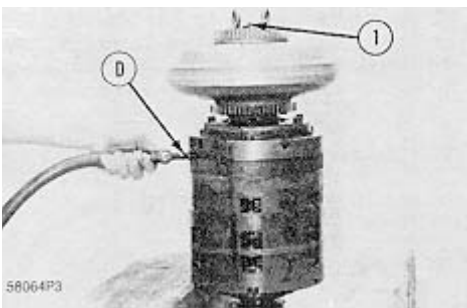
Typical Example

44. Position drive gear (60) for the transmission pump on the torque converter, and install eight bolts that hold it in place. Tighten the bolts to a torque of $50 \pm 7 \text{ N}\cdot\text{m}$ ($37 \pm 5 \text{ lb ft}$).

45. Install the seal ring on the flange.

46. Position flange (12) on the dowel pins of the torque converter, and install the four bolts that hold it in place. Tighten the bolts to a torque of $50 \pm 7 \text{ N}\cdot\text{m}$ ($37 \pm 5 \text{ lb ft}$).

47. Install torque converter assembly on the transmission. Install the bolts that hold the flange on the manifold. Remove the two eyebolts and install the two bolts in the spider.



48. Install bolt (1) and the washer on the torque converter.

49. Put oil in all the clutch ports. Use tool (D) and air with pressure of 690 to 1030 kPa (100 to 150 psi) to check the operation of the clutch pistons. There must be approximately 3.18 to 6.35 mm (.125 to .250 in) of movement in each piston. If a piston does not move, it can have a broken seal or assembled wrong. The transmission must be disassembled to find the cause.

End By:

a. install torque converter and transmission

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Configuration: 931B TRACK LOADER / POWER SHIFT / 25Y00001-UP (MACHINE) POWERED BY 3204 ENGINE

Disassembly and Assembly

D3B TRACTOR & 931B TRACTOR TYPE LOADER POWER TRAIN

Media Number -SEN7918-02

Publication Date -01/11/2004

Date Updated -15/02/2017

SEN79180030

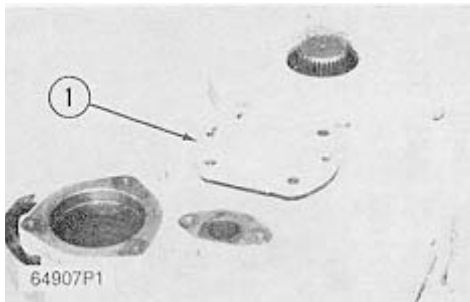
Transfer Gears (3F/1R Power Shift)

SMCS - 3159-010

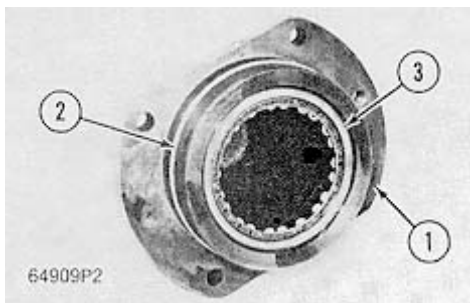
Remove And Install Transfer Gears (3F/1R Power Shift)

Start By:

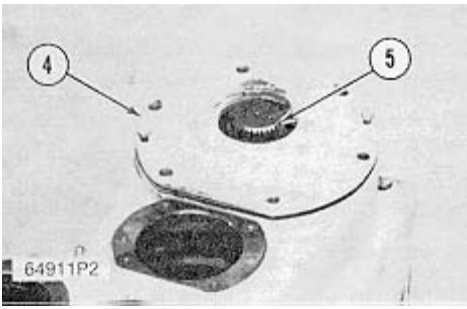
- a. remove torque converter and transmission from case



1. Remove the four bolts that fasten cage (1) to the transmission case. Install two 3/8" - 16 NC forcing screws in cage (1). Tighten the forcing screws evenly, and remove cage (1) for the transmission case.



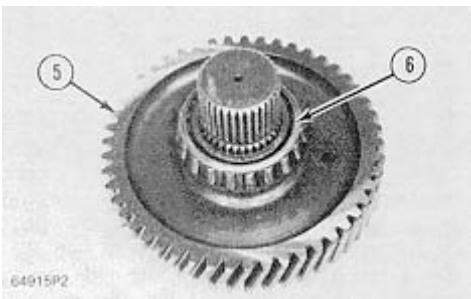
2. Remove O-ring seal (2) and roller bearing (3) from cage (1).



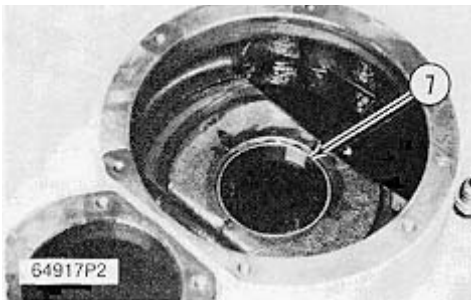
3. Remove the six bolts that fasten cage (4) to the transmission case. Install two 3/8" - 16 NC forcing screws in cage (4). Tighten the forcing screws evenly, and remove cage (4) and the shims from the transmission case.

4. Remove the bearing cup, O-ring seal and lip-type seal from cage (4).

5. Remove output gear (5).



6. Remove bearing cone (6) from each side of output gear (5).



7. Remove bearing cup (7) from the transmission case.

NOTE: The following steps are for installation of the transfer gears.

8. Lower the temperature of bearing cup (7), and install it in the transmission case.

9. Heat bearing cones (6) to a maximum temperature of 135°C (275°F), and install them on output gear (5).

10. Install output gear (5) in the transmission case.

11. Lower the temperature of the bearing cup, and install the bearing cup in cage (4).

12. Install the O-ring seal and lip-type seal in cage (4). Install the lip-type seal with the lip toward the inside of the cage. Put clean transmission oil on the seals.

13. Position the original shims and cage (4) on the transmission case, and install the six bolts that hold them in place. Add or subtract the shims as necessary to obtain an allowable end play of 0.10 ± 0.05 mm ($.004 \pm .002$ in) in bearing cones (6).

14. Install roller bearing (3) in cage (1).

15. Install O-ring seal (2) on cage (1). Put clean transmission oil on the O-ring seal.

16. Install cage (1) on the transmission case.

End By:

a. install torque converter and transmission in case

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Disassembly and Assembly

D3B TRACTOR & 931B TRACTOR TYPE LOADER POWER TRAIN

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Publication Date -01/11/2004

Date Updated -15/02/2017

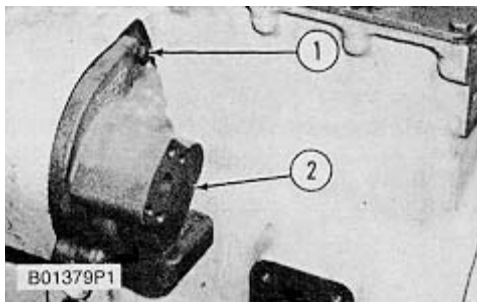
SEN79180031

Transmission Oil Pump And Pump Drive Gear (3F/3R Power Shift)

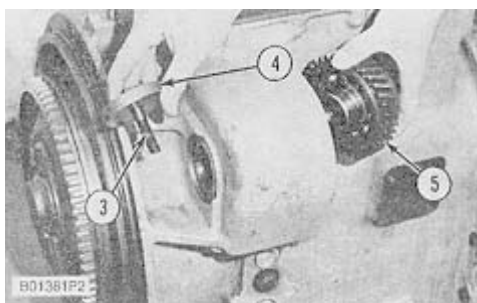
SMCS - 3153-010; 3153-017

Remove And Install Transmission Oil Pump And Pump Drive Gear (3F/3R Power Shift)

NOTE: This can be done in the machine. Transmission is removed for photo illustration.



1. Disconnect the two oil lines connected to the oil pump.
2. Remove two bolts (1) and remove transmission oil pump (2).



3. Remove bolt (3) and retainer (4) that hold pump drive gear (5) in place. Remove pump drive gear (5).

NOTE: The following steps are for installation of the transmission oil pump and drive gear.

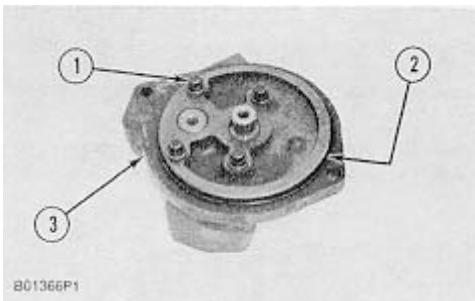
4. Put pump drive gear (5) in place in the transmission and install retainer (4) and bolt (3).
5. Make sure the O-ring seal is in position, and install transmission oil pump (2). Install bolts (1) that hold the pump to the transmission case.

Disassemble And Assemble Transmission Oil Pump And Pump Drive Gear (3F/3R Power Shift)

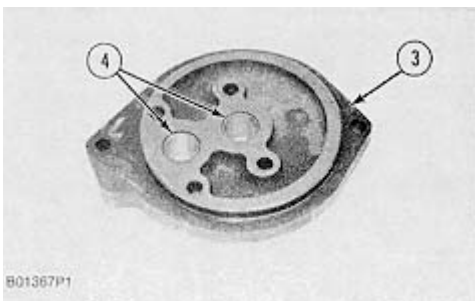
Tools Needed		A
1P510	Driver Group	1

Start By:

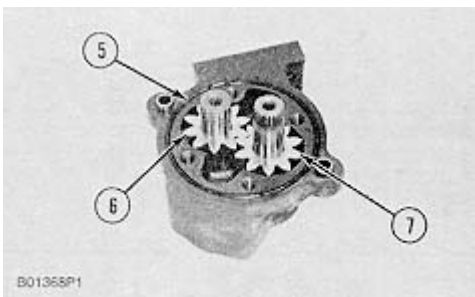
- a. remove transmission oil pump and pump drive gear



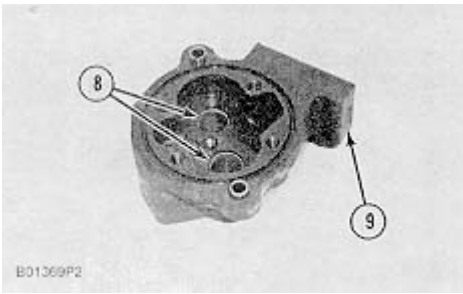
1. Remove O-ring seal (2) from cover (3), bolts (1) and cover (3) from the pump body.



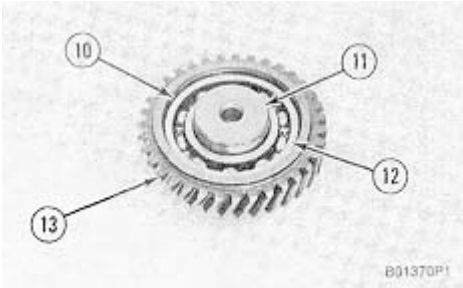
2. Remove bearings (4) from cover (3).



3. Remove drive gear (7), driven gear (6) and O-ring seal (5) from the pump body.



4. Remove bearings (8) from pump body (9).



5. Remove spiral locking ring (10), shaft (11) and bearing (12) from gear (13).

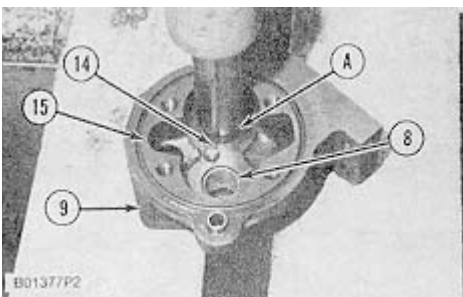
NOTE: The following are assembly steps of the transmission oil pump and drive gear.

6. Make sure all the parts of the transmission oil pump and pump drive gear are clean. Put clean oil on all parts of the pump and gear. Inspect all parts for damage and make replacements if needed.

7. Install bearing (12) and shaft (11) in gear (13) with spiral locking ring (10) to hold the bearing in place.

NOTICE

Make sure the joint in both bearings (8) are in correct location. The location of the joint is an angle of $30^\circ \pm 15^\circ$ from the center line of the two bearing bores in the direction of groove (14) on surface (15).

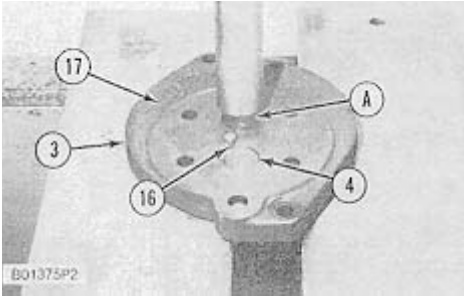


8. Install two bearings (8) into pump body (9) with tooling (A) and a press. The distance from the top of the bearing to surface (15) after assembly is 1.50 ± 0.25 mm ($.059 \pm .010$ in).

9. Install O-ring seal (5), driven gear (6) and drive gear (7) in pump body (9).

NOTICE

Make sure the joint in both bearings (4) are in the correct location. The location of the joint is an angle of $30^\circ \pm 15^\circ$ from the centerline of the two bearing bores in the direction of groove (16) on surface (17).



10. Install two bearings (4) in cover (3) with tooling (A). The distance from the top of the bearing to surface (17) after assembly is 1.50 ± 0.25 mm ($.059 \pm .010$ in).

11. Install O-ring seal (2) on cover (3). Install cover on pump body (9) with bolts (1).

NOTE: Pump must turn freely by hand after assembly.

End By:

a. install transmission oil pump and pump drive gear

Product: TRACK LOADER

Model: 931B TRACK LOADER 25Y

Configuration: 931B TRACK LOADER / POWER SHIFT / 25Y00001-UP (MACHINE) POWERED BY 3204 ENGINE

Disassembly and Assembly

D3B TRACTOR & 931B TRACTOR TYPE LOADER POWER TRAIN

Media Number -SEN7918-02

Publication Date -01/11/2004

Date Updated -15/02/2017

SEN79180032

Engine And Transmission (3F/3R Power Shift)

SMCS - 1004-010; 1004-029

Remove And Install Engine And Transmission (3F/3R Power Shift)

Tools Needed		A	B
5P9736	Link Bracket	1	
8S9906	Ratchet Pulier		1

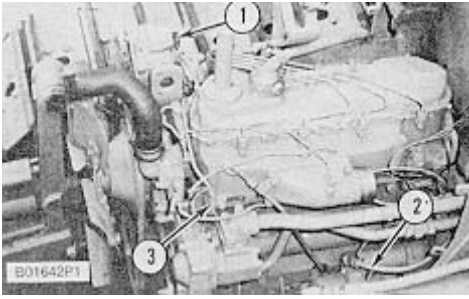
Start By:

- a. remove radiator and guard*
- b. remove air cleaner group*
- c. remove muffler*
- d. remove drive shaft

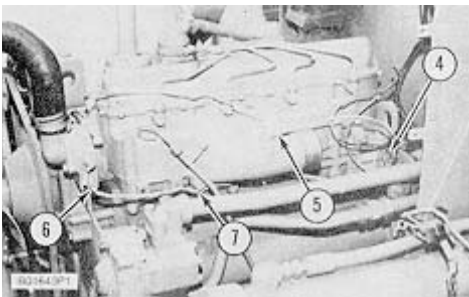
*These operations are in the Disassembly And Assembly Module, 3204 Vehicular Engine For D3B And 931B, Form No. SEN7914.

NOTE: This operation is done on a D3B with a 3F/3R power shift transmission and a cab.

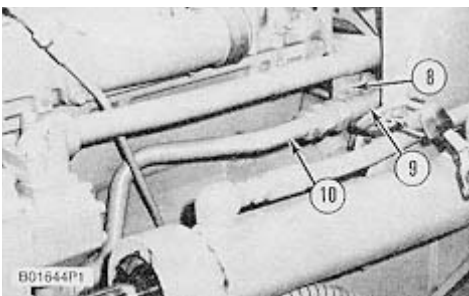
NOTE: Drain the oil from the hydraulic tank. Turn the valve on the bottom of the fuel tank to the "OFF" position.



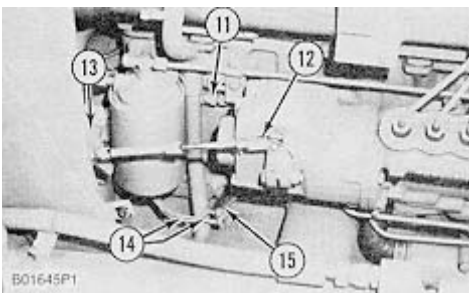
1. Disconnect wire (1) from the alternator and wires from the air conditioner compressor, if so equipped.
2. Disconnect battery cable (2) and wires from the starting motor.
3. Remove clip (3) from the cylinder head and the clip on the left side of the cylinder block. Pull the wire harnesses clear from the engine.



4. Disconnect oil pressure gauge oil line (4) from the fitting in the cylinder block. Disconnect air cleaner indicator line (5) from the fitting in the air inlet manifold.
5. Disconnect water temperature sensing unit (6) and remove clips (7) that hold the water temperature sensing line in place.



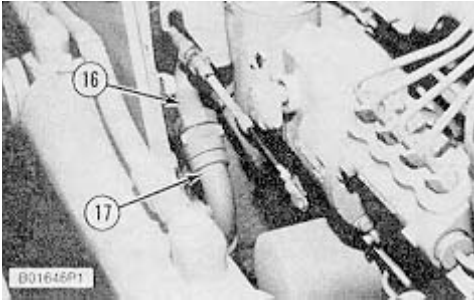
6. Remove bolt (8) that holds the clamps in place. Disconnect oil line (9) from oil line (10).



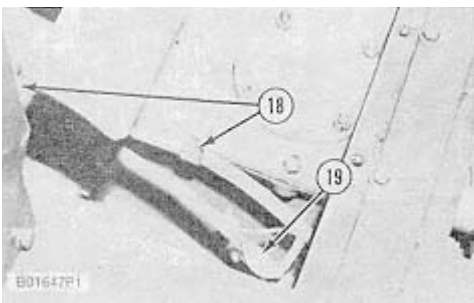
7. Disconnect fuel supply line (11). Put plugs in the openings.

8. Disconnect wires (14) from switch (15).

9. Disconnect governor linkage (12) from the governor lever. Remove governor linkage (12) from bracket (13).

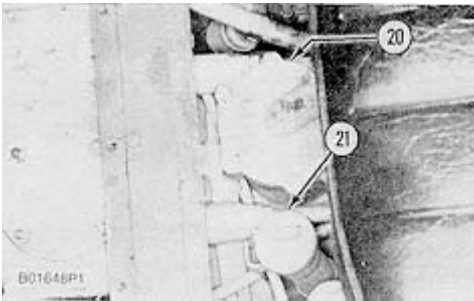


10. Disconnect oil line (17) from oil line (16).

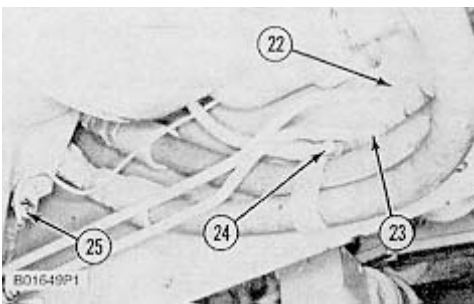


11. Remove the floor plates.

12. Remove clamps (18) that hold the battery cable to the transmission and disconnect wire harness (19).

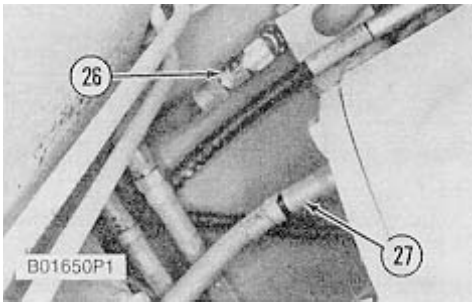


13. Disconnect transmission control cables (20) and (21) from the transmission.

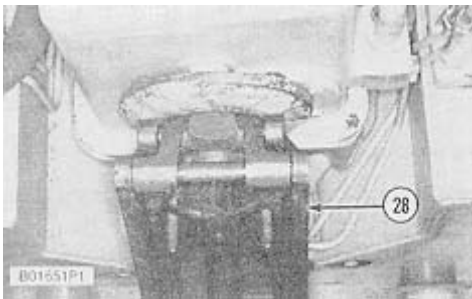


14. Disconnect oil lines (22) and (23). Remove bolt (24) that holds the clamp for the torque converter oil cooler lines and ground strap to the frame.

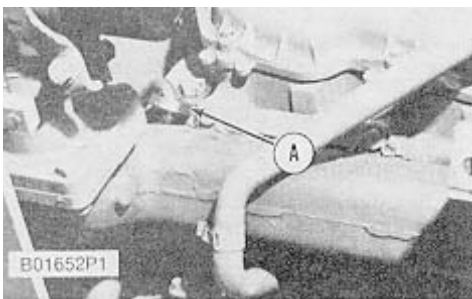
15. Disconnect torque converter oil temperature sensing unit (25) from the transmission.



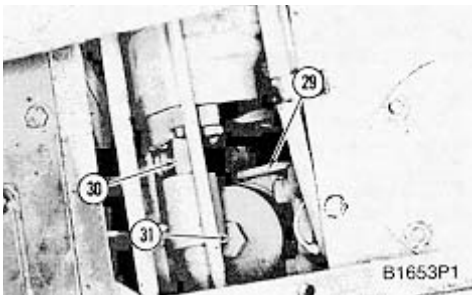
16. Disconnect oil line (26) from the transmission oil filter line and disconnect oil line (27) from the transmission.



17. Put a hydraulic floor jack (28) under the transmission as shown.



18. Remove the head bolt and install tool (A) on the right rear of the cylinder head. Fasten a hoist to the rear lifting bracket and tool (A). Fasten tool (B) to the front lifting bracket.



19. Disconnect oil line (30) from the transmission oil pump and transmission oil filter housing and remove it from the machine.

20. Remove the bolt (31), sleeve and mount assembly from each side of the transmission rear support group. Lift the transmission with the hydraulic floor jack (28). Remove rear support assembly (29) from each side of the transmission.

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