

Short Heel Contact Setting

- d. If the pinion shaft is too near to the center of the bevel gear, short heel contact will be the result as shown. The teeth of the pinion shaft will be in contact with the toe ends of concave faces (part that makes a curve toward the inside) and the heel end of convex faces (part that makes a curve toward the outside). To correct this, move the pinion shaft away from the bevel gear. To do this, add shims between pinion bearing cage and bevel gear case. Check gear clearance (backlash) and tooth contact again.

NOTE: Several adjustments must be made for the correct tooth contact setting. If the gear clearance (backlash) is changed, the tooth contact setting will change.

- e. Remove all of the Prussian blue, red lead or paint from the bevel gear and pinion.

End By:

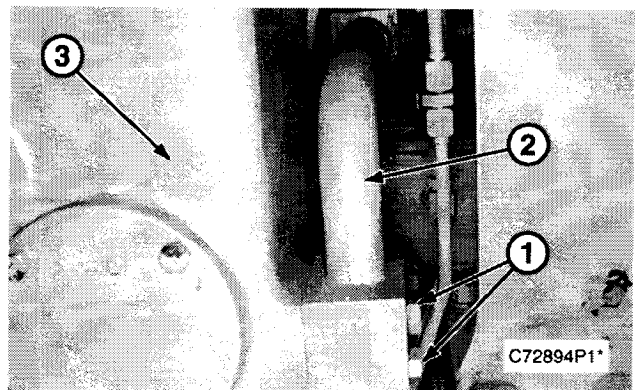
- a. install drive shaft
- b. install pinion flanges
- c. install steering clutch hub couplings

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

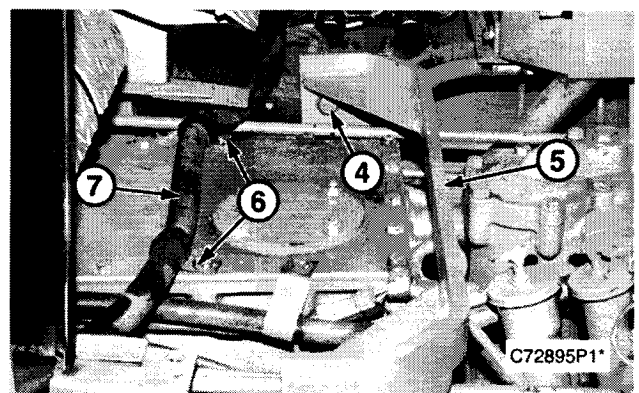
Remove & Install Transmission Oil Pump & Pump Drive Gear (3F/3R Power Shift) 3153-010

Start By:

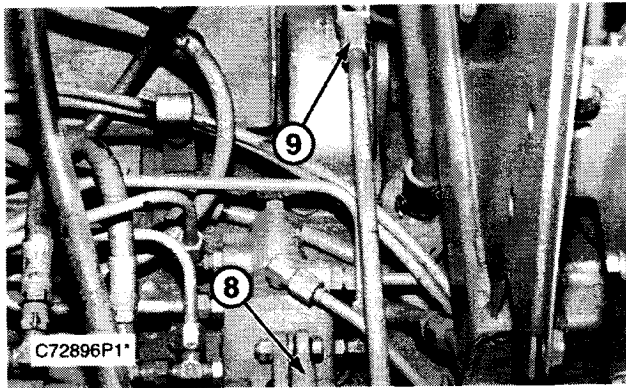
- a. remove rear guard assembly
- b. remove cab (See Disassembly And Assembly D3C, D4C, D5C Machine Systems)
- c. remove left engine panel assembly (See Disassembly And Assembly D3C, D4C, D5C Engine Supplement)



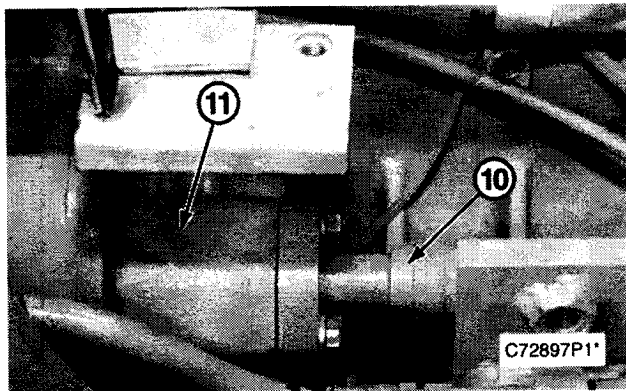
1. Drain transmission case (3) of oil. Remove four bolts (1) securing tube assembly (2) to transmission case (3) and remove tube assembly (2).



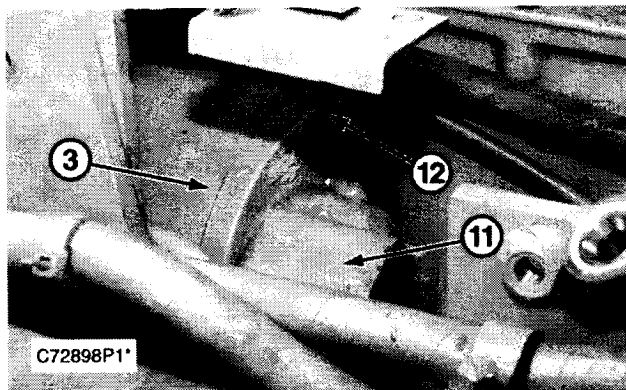
2. Remove four bolts and washers (4) and remove plate and shims (5).
3. Remove two bolts (6) and set air conditioning hose assembly (7) aside.



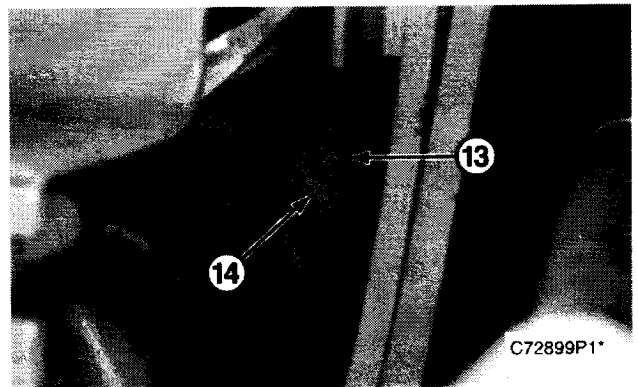
4. Disconnect two rods (8), (9) and position them in a vertical position secured to the dash.



5. Disconnect hose assembly (10) from transmission oil pump (11).

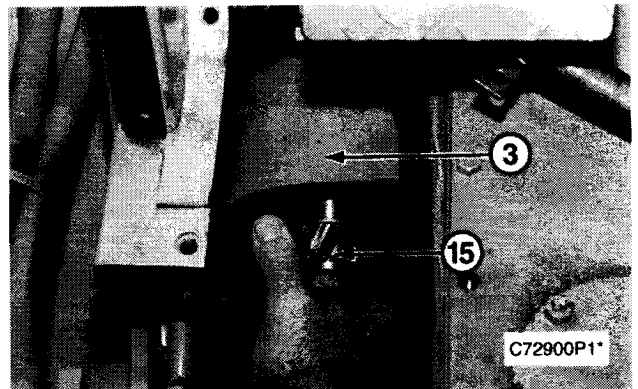


6. Remove two bolts and washers (12) and remove transmission oil pump (11) from transmission case (3).



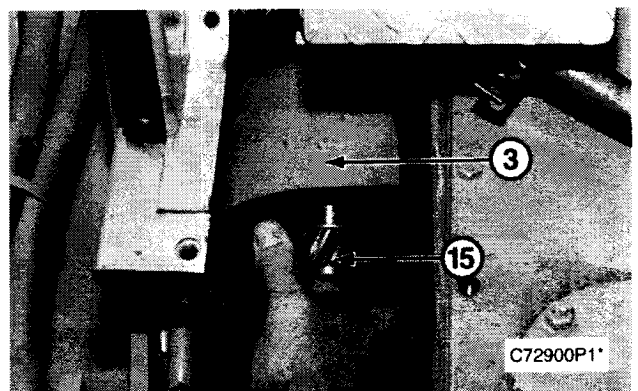
Engine side of transmission case

7. Remove bolt (13) and retainer (14).

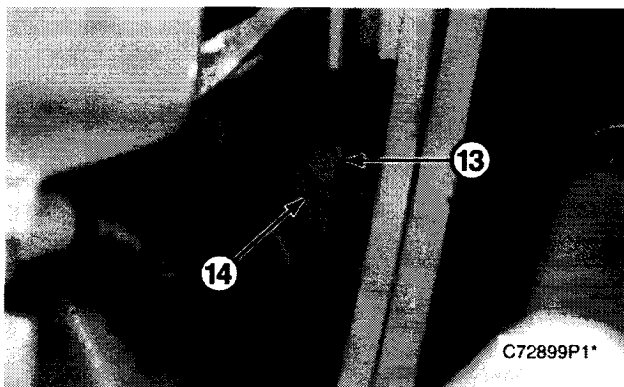


8. Remove drive pump gear (15) from transmission case (3).

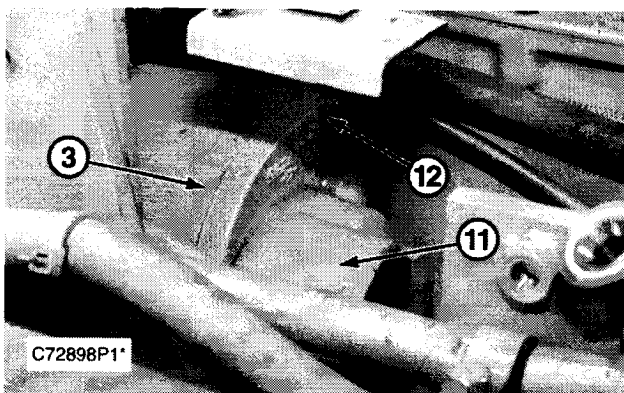
NOTE: The following steps are for the installation of the transmission oil pump and pump drive gear.



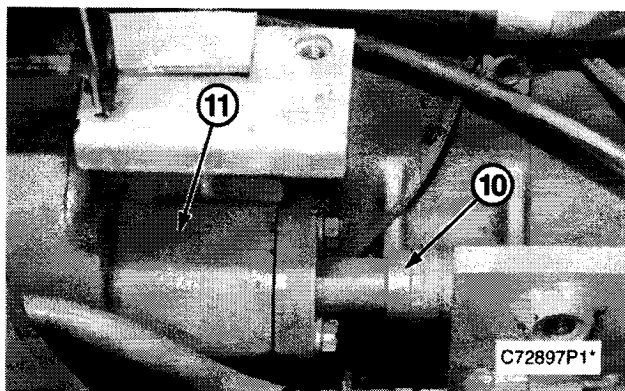
9. Put pump drive gear (15) in the transmission case.



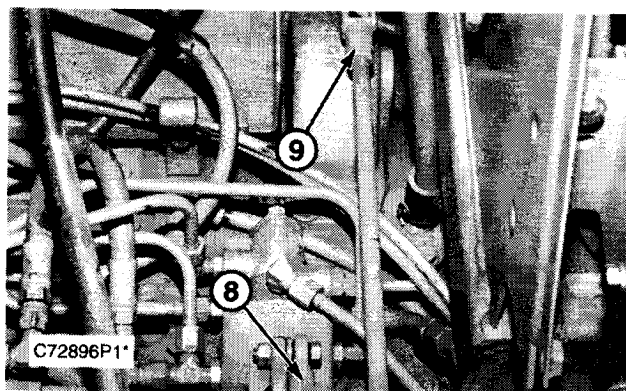
10. Install retainer (14) and bolt (13).



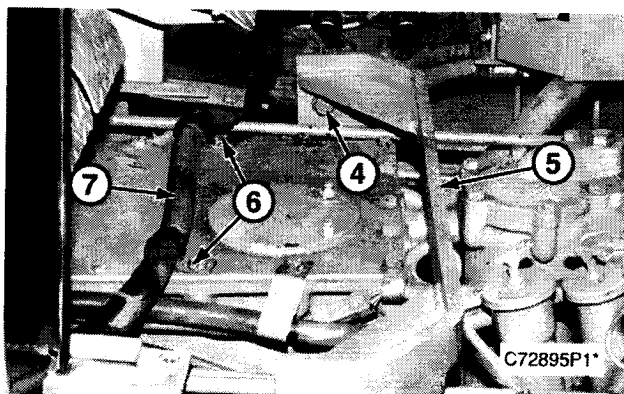
11. Position transmission oil pump (11) into transmission case (3) making sure O-ring seal is in the correct position and install two bolts (12).



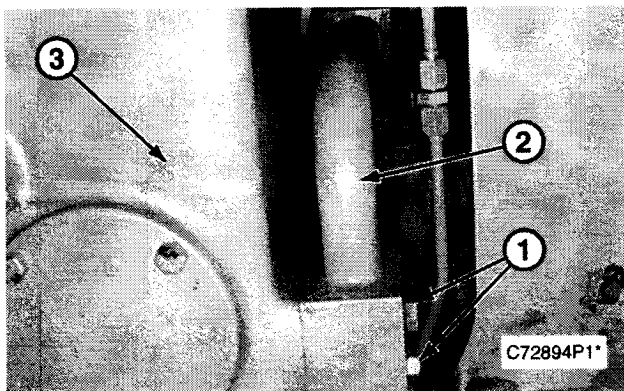
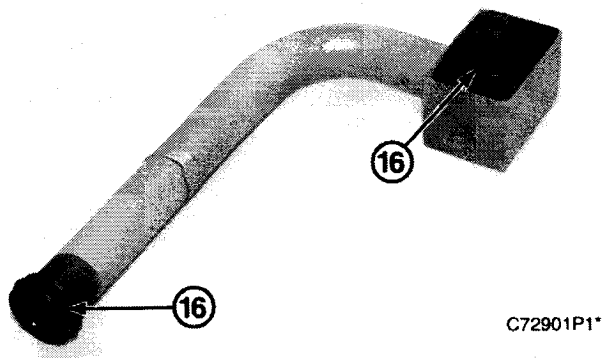
12. Install hose assembly (10) to transmission oil pump (11).



13. Connect two rods (8) and (9).



14. Position air conditioning hose assembly (7) in place and install two bolts (6). Position plate (5) with shims and install four bolts (4).



- 15.** Check O-ring seals (16) and (17) for wear or damage and install tube assembly (2) into transmission case (3) with four bolts (1). Fill transmission with transmission oil.

End By:

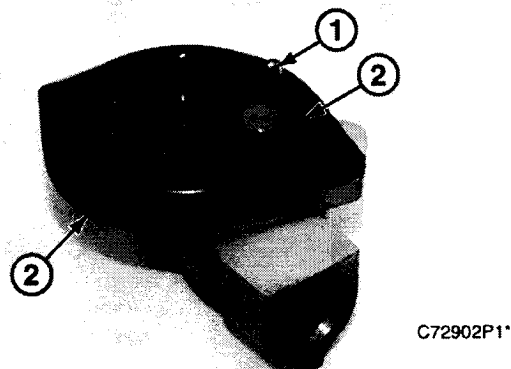
- a. install rear guard assembly
- b. install cab (See Disassembly And Assembly D3C, D4C, D5C Machine Systems)
- c. install left engine panel assembly (See Disassembly And Assembly D3C, D4C, D5C Engine Supplement)

Disassemble & Assemble Transmission Oil Pump & Pump Drive Gear (3F/3R Power Shift) 3153-017

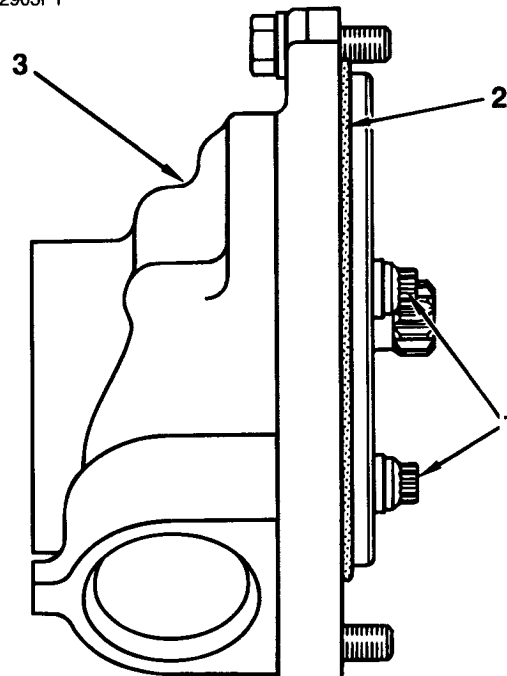
Tools Needed		A
1P510	Driver Group	1

Start By:

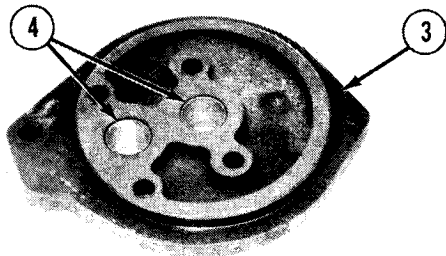
- a. remove transmission oil pump and pump drive gear



C72903P1*

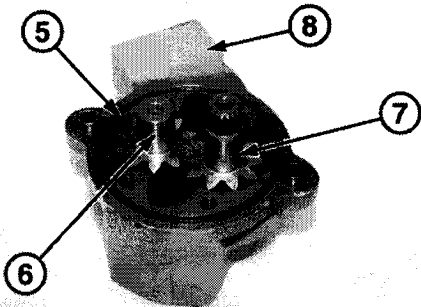


1. Remove O-ring seal (2) from cover (3), four bolts (1) and washers and cover (3) from the pump body.



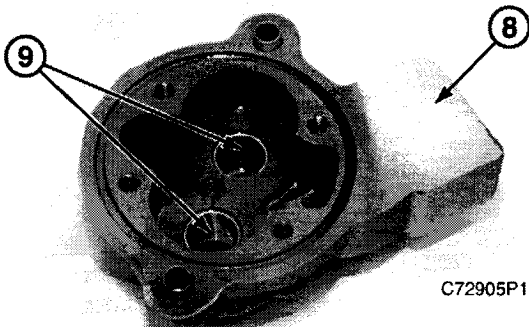
B01367P1

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



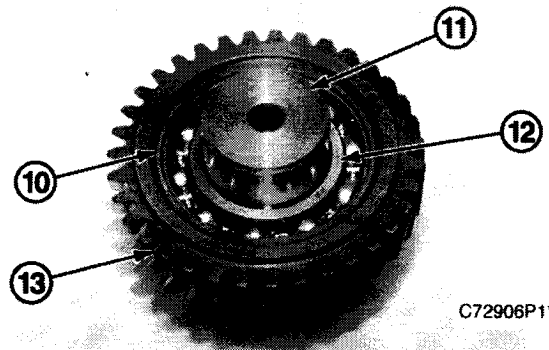
C72904P1*

3. Remove drive gear (7), driven gear (6) and O-ring seal (5) from the pump body (8).



C72905P1*

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



C72906P1*

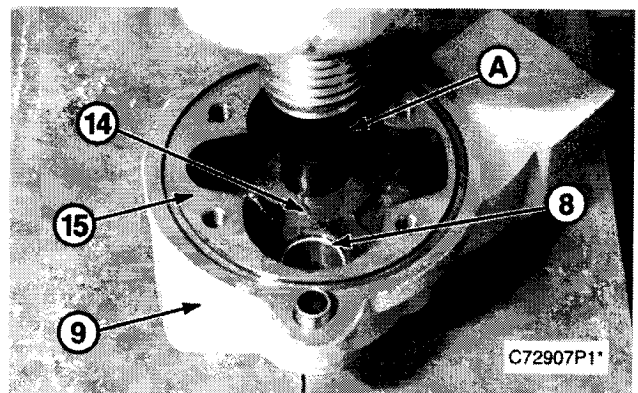
5. Remove spiral locking (10), shaft (11) and bearing (12) from gear (13).

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

6. Make sure all of the parts of the transmission oil pump and pump drive gear are clean. Put clean oil on all the 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 (10) to hold the bearing in place.

NOTICE

Make sure the joint in both bearings (9) are in the 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).

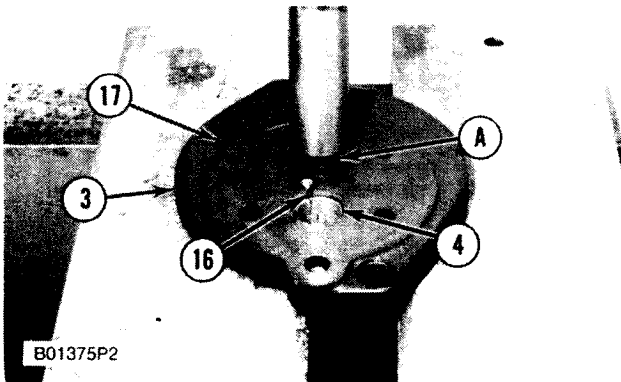


C72907P1*

8. Install two bearings (9) into pump body (8) with tooling (A) and a press. The distance from the top of the bearing to surface (15) after assembly is $1.50 \pm 0.25 \text{ mm } (.059 \pm .010 \text{ in})$.
9. Install O-ring seal (5), driven gear (6) and drive gear (7) in pump body (8).

NOTICE

Make sure the joint in both bearings (4) are in the correct location. The location of the joint is an angle $30^\circ \pm 15^\circ$ 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 (8) with four bolts and washers (1).

NOTE: Pump must turn freely by hand after assembly.

End By:

- a. install transmission oil pump and pump drive gear

Transmission Hydraulic Control Valves (3F/3R Power Shift)

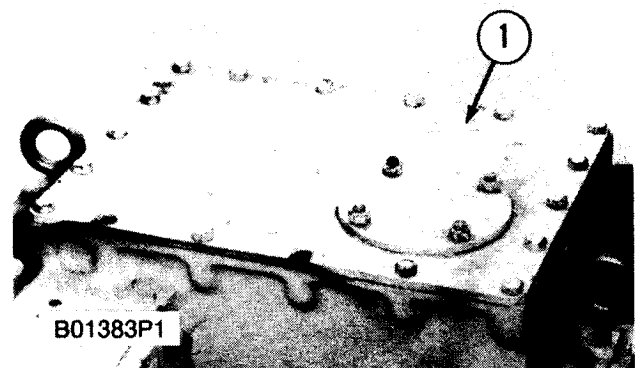
Remove & Install Transmission Hydraulic Control Valves (3F/3R Power Shift) 3152-010

Tools Needed		A
5P9736	Link Bracket	2

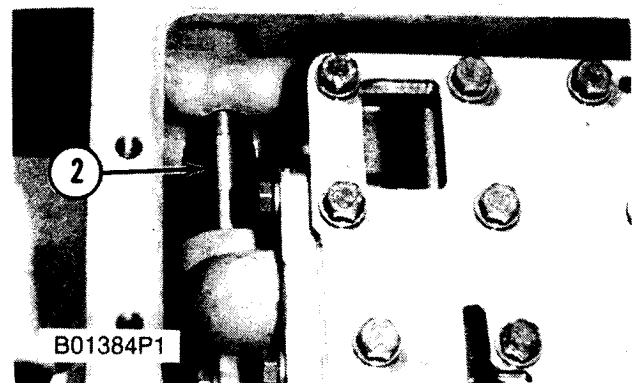
Start By:

- a. remove engine and transmission

NOTE: It is not necessary to make a separation of the transmission and engine as shown in the illustrations.



1. Remove cover (1) from the transmission.

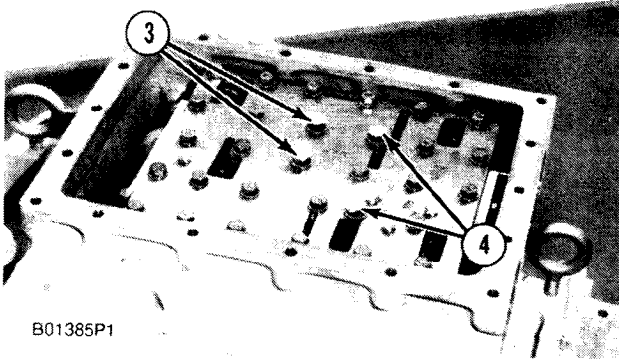


2. Remove sleeve (2) from the manifold and transmission case. Remove the O-ring seals from the sleeve.

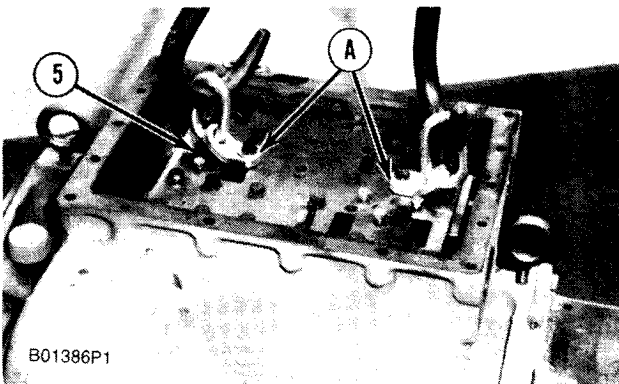
Disassemble Transmission Hydraulic Control Valves (3F/3R Power Shift) 3152-015

Start By:

- a. remove transmission hydraulic control valves



3. Remove bolts (3) and (4) that hold the transmission hydraulic control valves to the clutch housing.



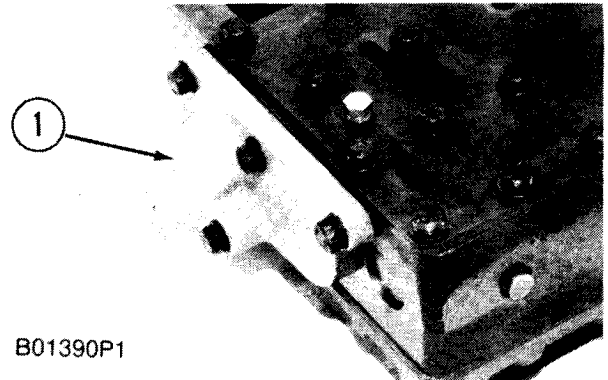
4. Install tooling (A) as shown and fasten a hoist. Remove transmission hydraulic control valves (5). The weight is **34 kg (75 lb)**.

NOTE: The following steps are for installation of the transmission hydraulic control valves.

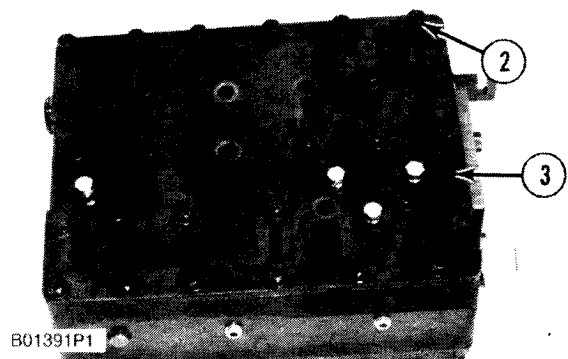
5. Install tooling (A) and a hoist to the transmission hydraulic control valves. Put transmission hydraulic control valves (5) in position in the transmission, on the clutch housing.
6. Install bolts (3) and (4) that hold the transmission hydraulic control valves to the clutch housing. Tighten the bolts to a torque of **$48 \pm 4 \text{ N}\cdot\text{m}$ ($35 \pm 3 \text{ lb ft}$)**.
7. Inspect O-ring seals for damage and make a replacement if needed. Install O-ring seals on sleeve (2). Install sleeve (2).
8. Put the gasket in position and install cover (1) on the transmission.

End By:

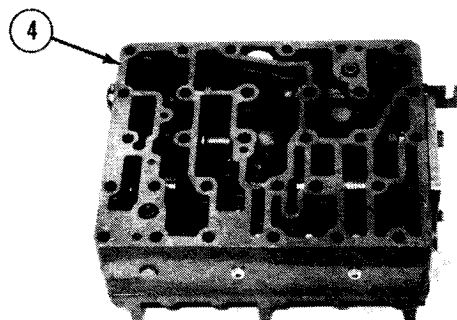
- a. install engine and transmission.



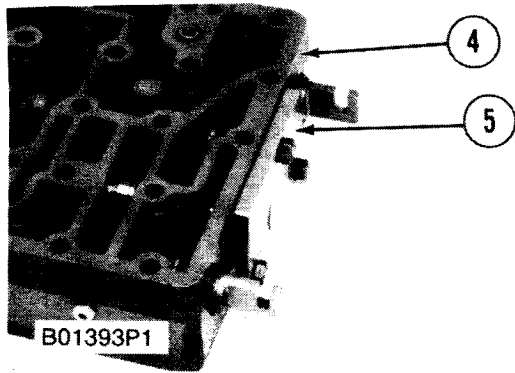
1. Remove manifold (1) from the selector and pressure control valve body. Remove the two O-ring seals.



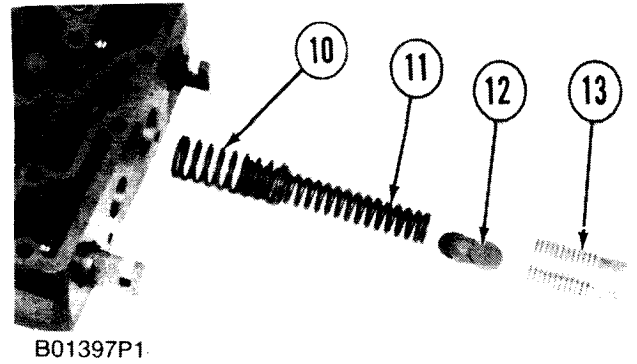
2. Remove bolts (2) and remove upper manifold (3).



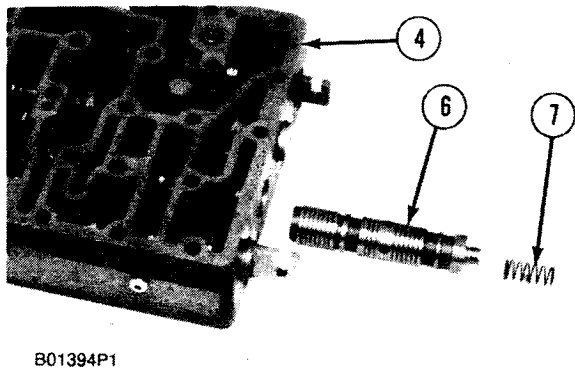
3. Remove selector and pressure control valve body (4) from the bottom plate.



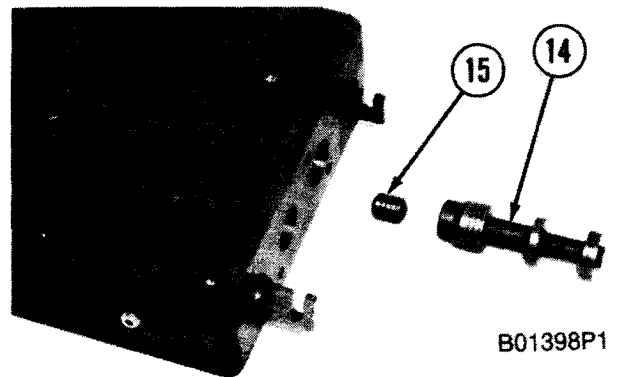
4. Remove cover (5) from valve body (4). Remove the O-ring seals from cover (5).



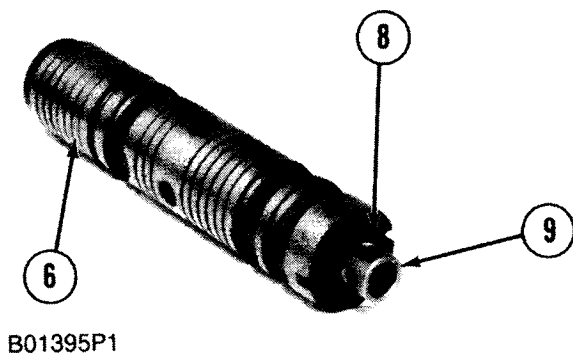
7. Remove piston (13), shims (12), spring (11) and spring (10) from the valve body.



5. Remove spring (7) and valve spool (6) from valve body (4).

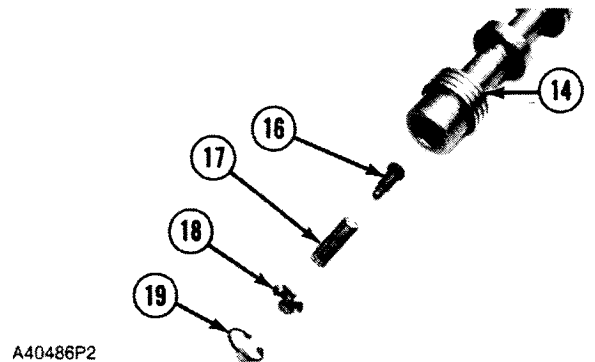


8. Remove valve spool (14) and slug (15) from the valve body.

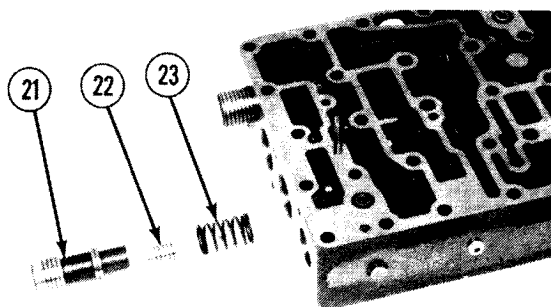


NOTICE
Ring (8) holds the springs under compression.

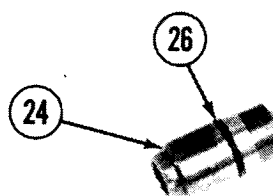
6. Remove ring (8), retainer (9) and two springs from valve spool (6).



9. Remove snap ring (19), washer (18), spring (17) and valve (16) from valve spool (14).



B01396P1

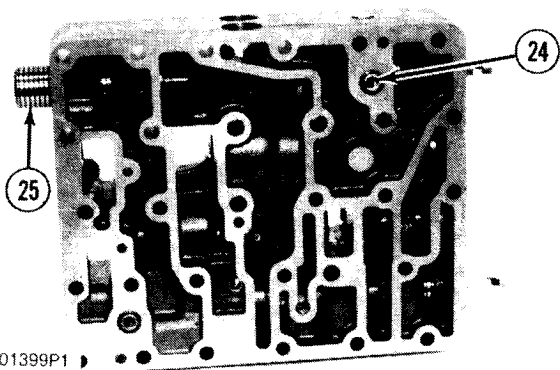


B01400P1

WARNING

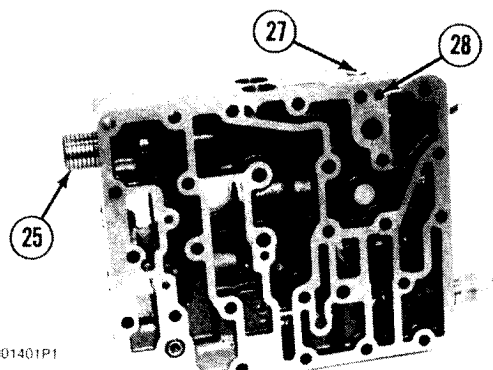
Pin (20) holds spring (23) under compression.

10. Remove pin (20) with a punch and a hammer, and remove valve spool (21), slug (22) and spring (23) from the valve body.



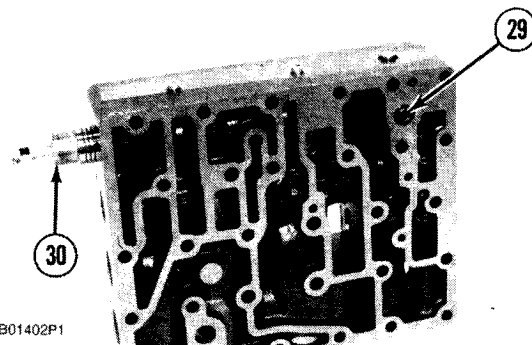
B01399P1

11. Remove detent assemblies (24) from the top and bottom of the valve body for valve spool (25).



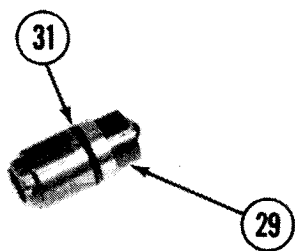
B01401P1

13. Use a hammer and punch to remove pin (28) that holds stop (27) in place. Remove stop (27) and valve spool (25) from the valve body.



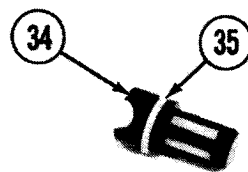
B01402P1

14. Remove detent assemblies (29) from the top and bottom of the valve body for valve spool (30).



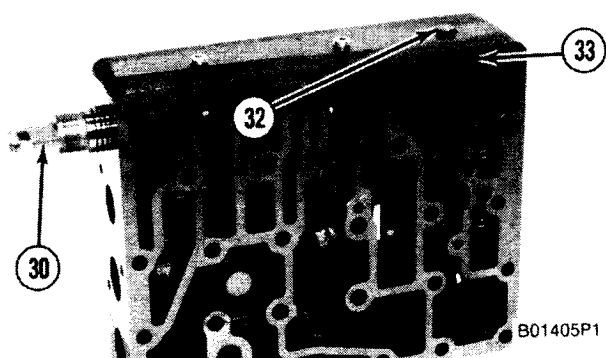
B01404P1

15. Remove O-ring seals (31) from detent assemblies (29).

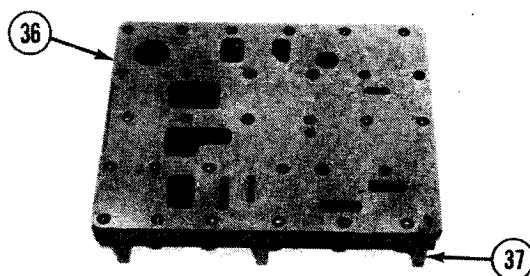


B01407P1

18. Remove O-ring seal (35) from orifice screen (34).

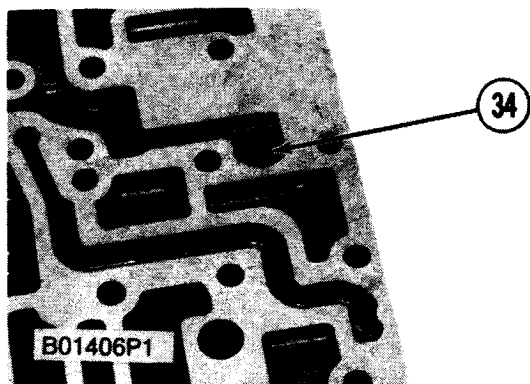


16. Use a hammer and punch to remove pin (33) that holds stop (32) in place. Remove stop (32) and valve spool (30) from the valve body.



B01408P1

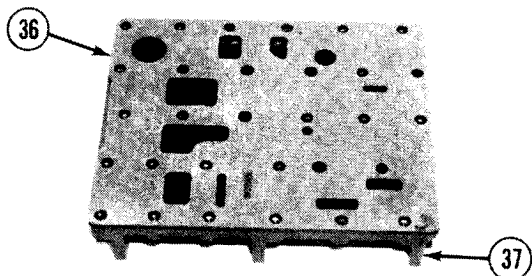
19. Remove plate (36) from bottom manifold (37).



17. Remove orifice screen (34) from the valve body.

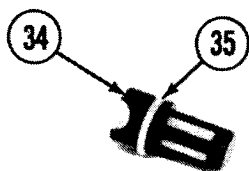
Assemble Transmission Hydraulic Control Valves (3F/3R Power Shift) 3152-016

NOTE: Make sure all of the parts of the transmission hydraulic control valves are clean. Put clean oil on all of the parts of the valve. Inspect all O-ring seals for damage and make replacements if needed.



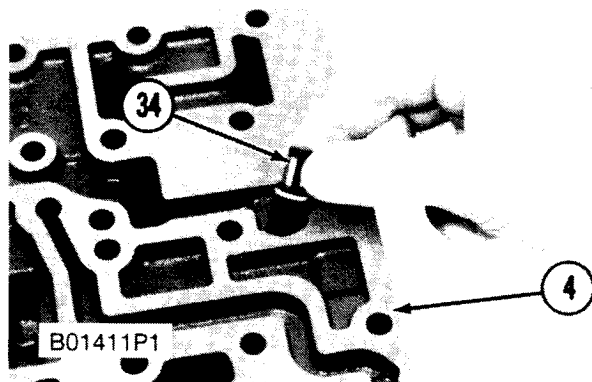
B01408P1

1. Put plate (36) in position on bottom manifold (37).

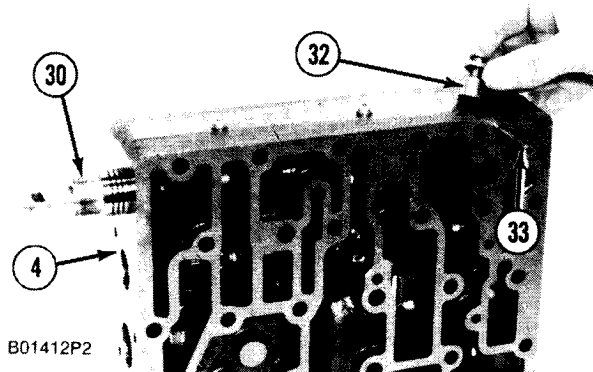


B01407P1

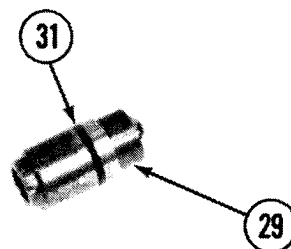
2. Install O-ring seal (35) on orifice screen (34).



3. Install orifice screen (34) in selector and pressure control valve body (4).

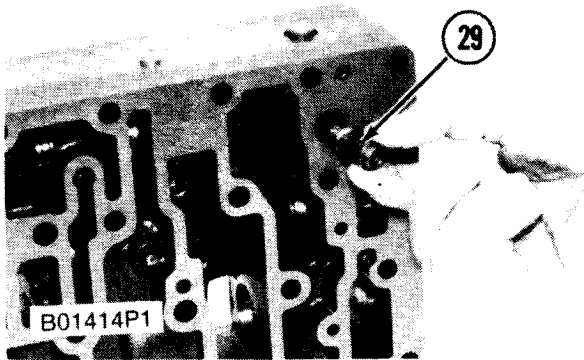


4. Install valve spool (30), stop (32) and pin (33) that holds the stop in place in valve body (4).

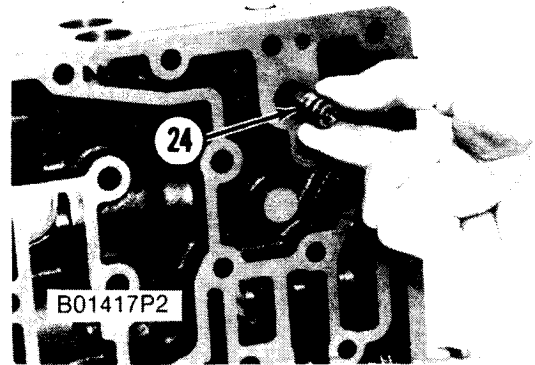


B01404P1

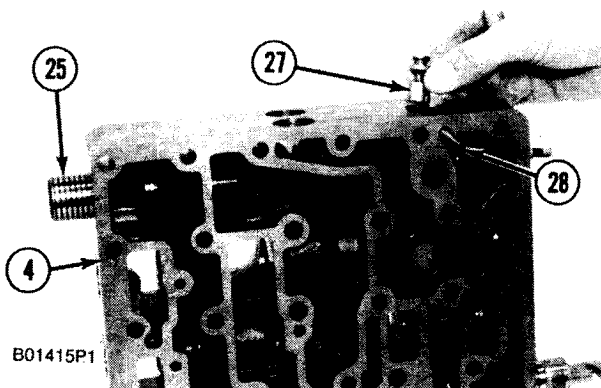
5. Install O-ring seals (31) on detent assemblies (29).



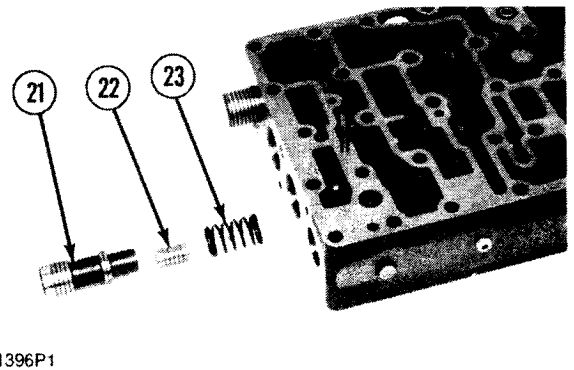
6. Install detent assemblies (29) in the valve body to hold the valve spool in position.



9. Install detent assemblies (24) in the valve body to hold the valve spool in position.

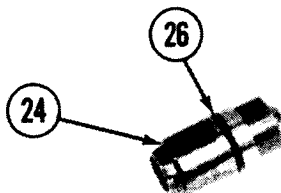


7. Install valve spool (25), stop (27) and pin (28) that holds the stop in place in valve body (4).



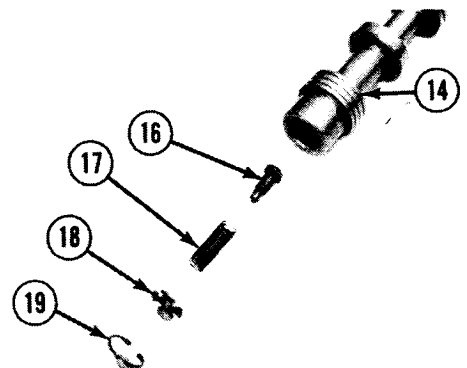
10. Install spring (23), slug (22) and valve spool (21) in the valve body.

11. Put spring (23) under compression and install pin (20) that holds the spring and valve spool in place.



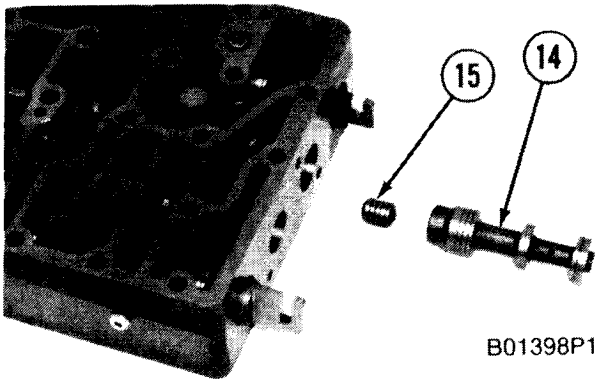
B01400P1

8. Install O-ring seals (26) on detent assemblies (24).



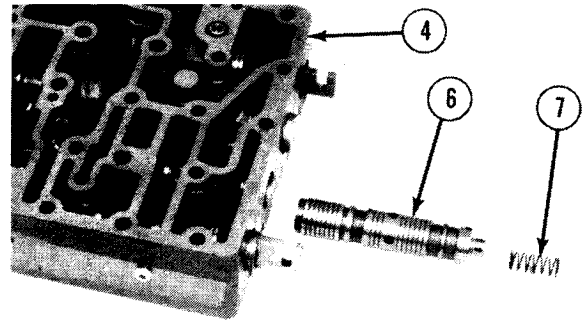
A40486P2

12. Install valve (16), spring (17), washer (18) and snap ring (19) in valve spool (14).



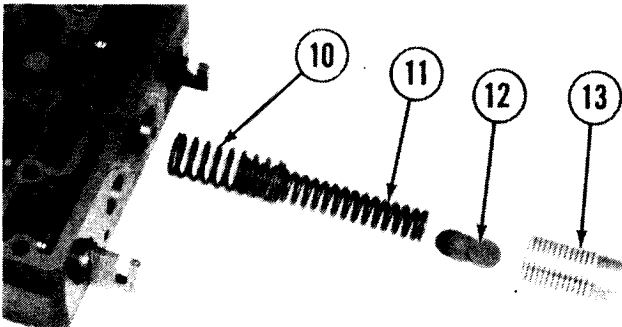
B01398P1

13. Install slug (15) and valve spool (14) in the valve body.



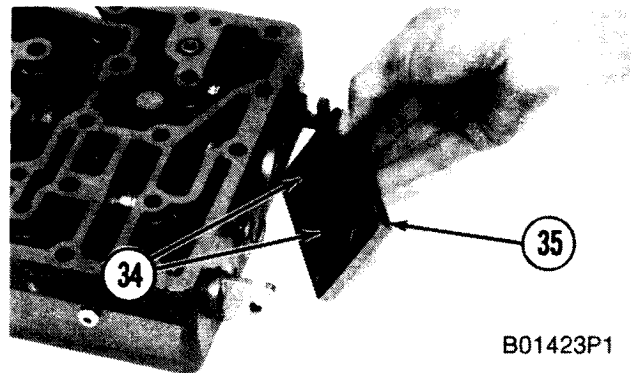
B01394P1

16. Install valve spool (6) and spring (7) in valve body (4).



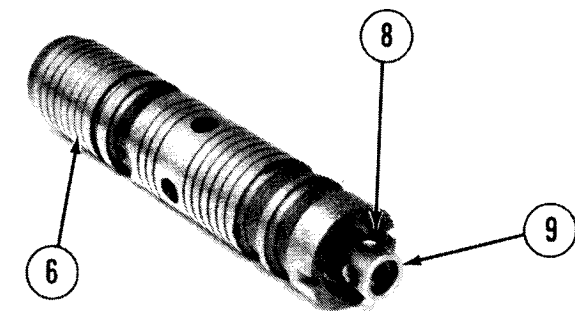
B01397P1

14. Install springs (10) and (11), shims (12) and piston (13) in the valve body.



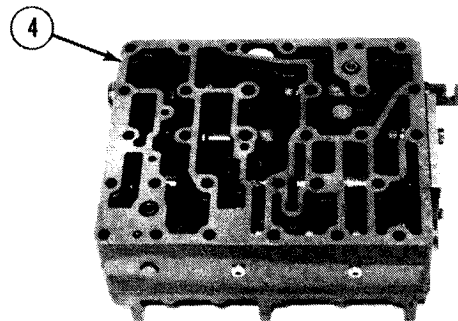
B01423P1

17. Put O-ring seals (38) in position on the cover. Install cover (5) on the valve body. Tighten the bolts to a torque of $30 \pm 4 \text{ N}\cdot\text{m}$ ($22 \pm 3 \text{ lb ft}$).



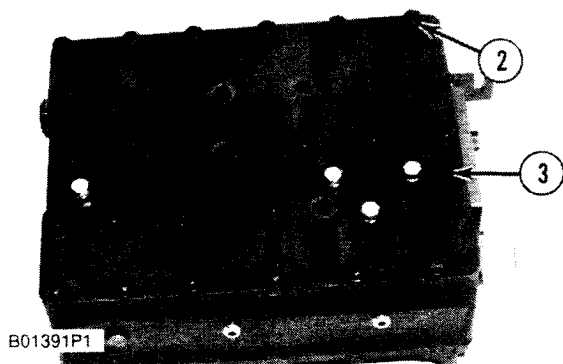
B01395P1

15. Install two springs, retainer (9) and ring (8) in valve spool (6).

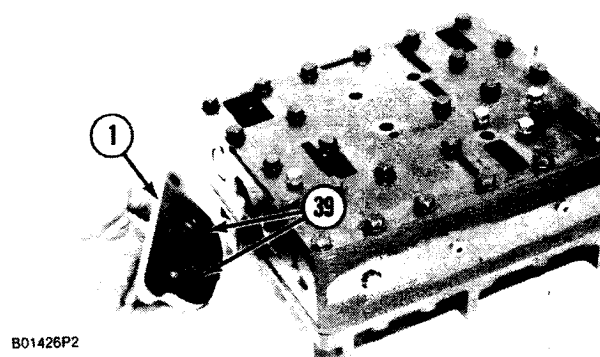


B01392P1

18. Put selector and pressure control valve (4) in position on plate.



19. Install upper manifold (3). Install bolts (2) that hold the upper manifold in place and tighten them to a torque of **$30 \pm 4 \text{ N}\cdot\text{m}$ ($22 \pm 3 \text{ lb ft}$)**.



20. Put O-ring seals (39) in place on manifold (1). Put manifold (1) in place and install the bolts. Tighten the bolts to a torque of **$30 \pm 4 \text{ N}\cdot\text{m}$ ($22 \pm 3 \text{ lb ft}$)**.

End By:

- a. install transmission hydraulic control valves

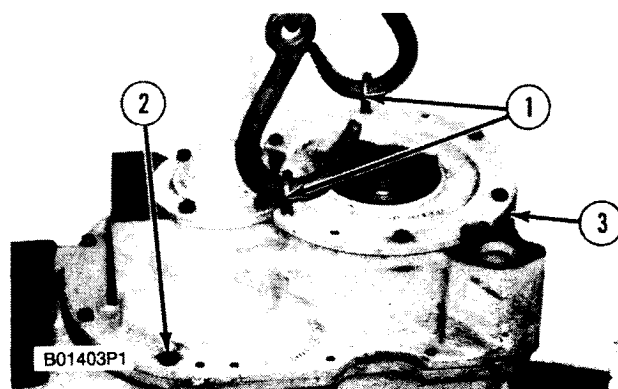
Transfer Gears (3F/3R Power Shift)

Remove & Install Transfer Gears (3F/3R Power Shift) 3159-010

Tools Needed		A
1P2420	Transmission Stand	1

Start By:

- a. separation of engine and transmission



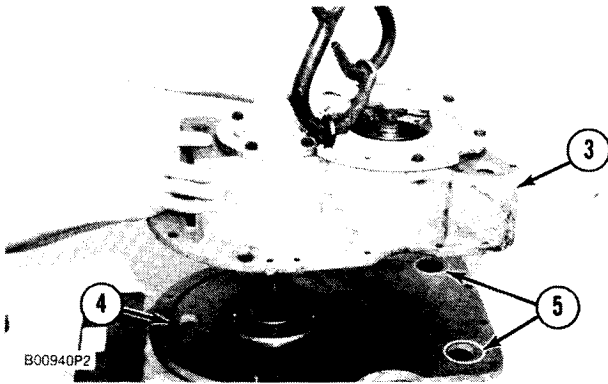
1. Remove two bolts and install two **$3/8"$ -16 NC forged eyebolts (1)** as shown. Fasten a hoist.
2. Remove bolts (2) that hold the transfer gears to the transmission case. Remove transfer gears (3). The weight is **56 kg (125 lb)**.

Disassemble & Assemble Transfer Gears (3F/3R Power Shift) 3159-017

Tools Needed		A	B
1P520	Driver Group	1	
1P1863	Pliers		1

Start By:

- a. remove transfer gears



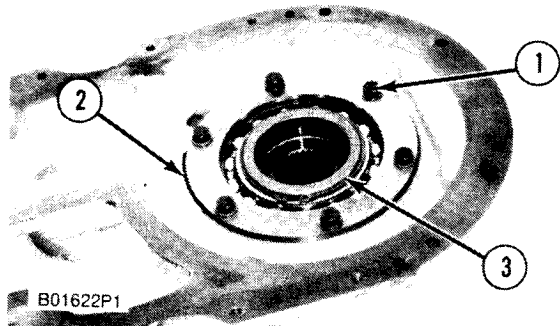
3. Remove O-ring seals (4) and (5) from the transmission case.

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

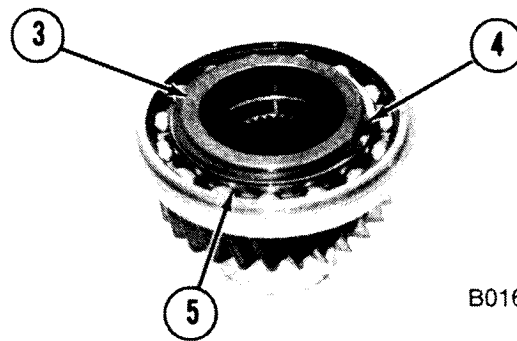
4. Make sure O-ring seals (4) and (5) are in position on the transmission case.
5. Install two **3/8" - 16 NC forged eyebolts** as shown and fasten a hoist. Put transfer gears (3) in position on the transmission and install the bolts that hold the transfer gears to the transmission case.

End By:

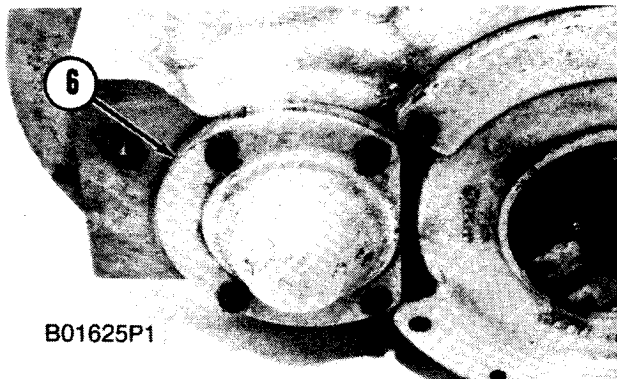
- a. connection of engine and transmission



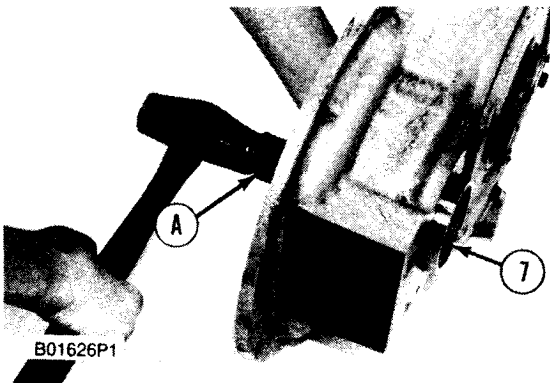
1. Remove bolts (1), plate (2), and gear (3) from the transfer gear case.



2. Remove snap ring (4) with tool (B). Remove bearing (5) from gear (3).



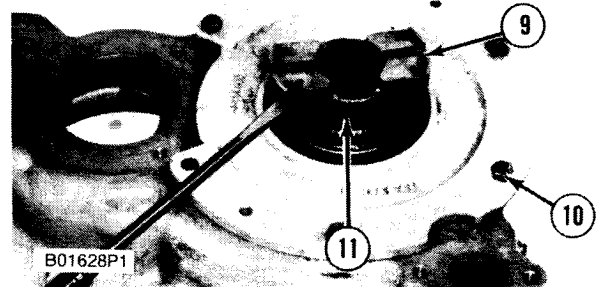
3. Remove cage (6) from the transfer gear case, and O-ring seal from cage.



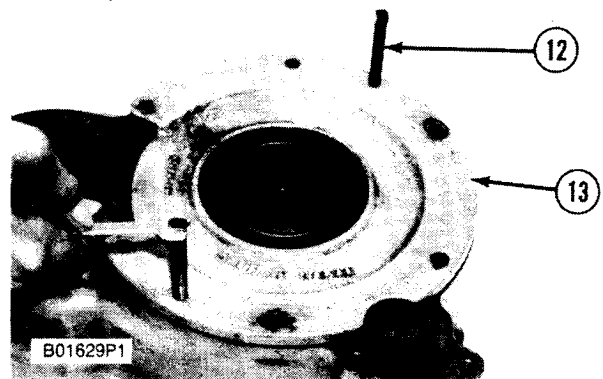
4. Remove bearing (7) from the transfer gear case with tooling (A).



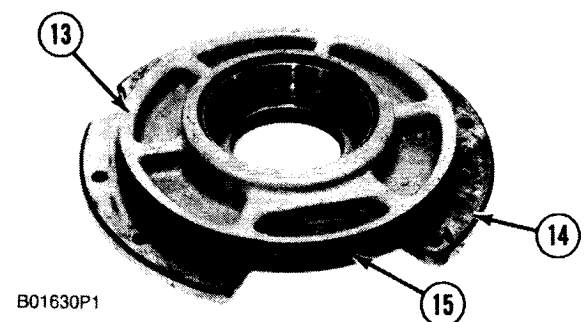
5. Remove retaining ring (8) from the transfer gear case.



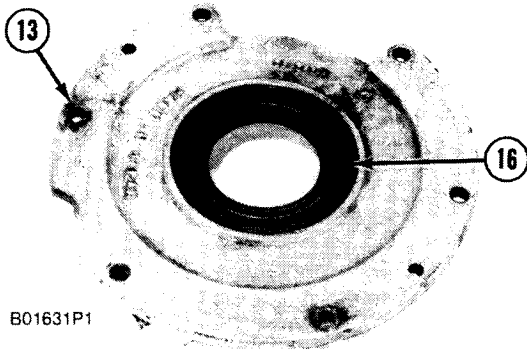
6. Remove yoke (9), O-ring seal (11) and bolts (10) that hold the bearing cage to the transfer gear case.



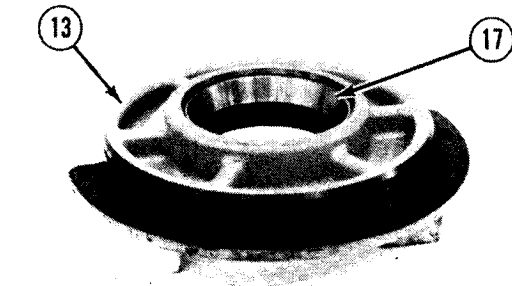
7. Install two $\frac{3}{8}$ " - 16 NC forcing screws (12) in the bearing cage. Tighten the forcing screws evenly and remove bearing cage (13).



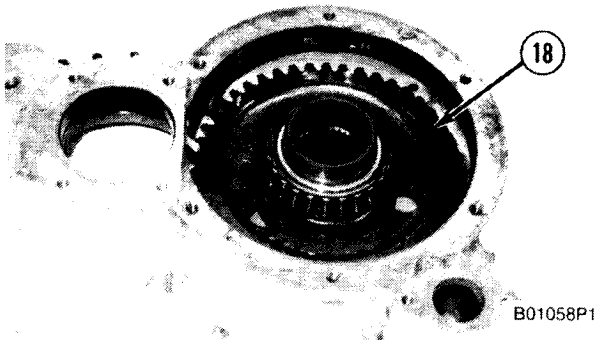
8. Remove shims (14) and O-ring seal (15) from bearing cage (13).



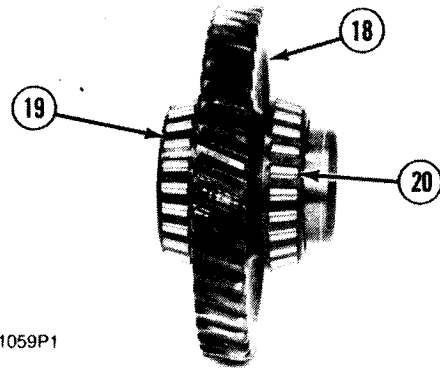
9. Remove lip-type seal (16) from bearing cage (13).



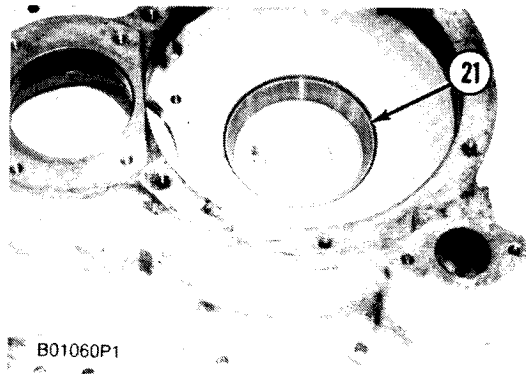
10. Remove bearing cup (17) from bearing cage (13).



11. Remove gear (18) from the transfer gear case.



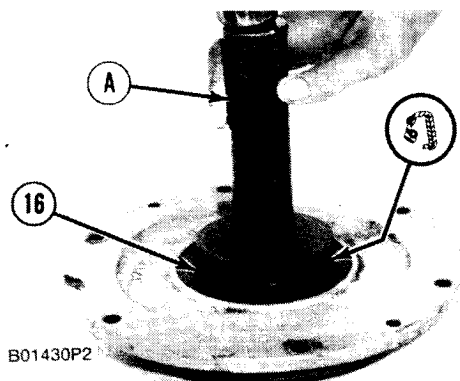
12. Remove bearing cones (19) and (20) from gear (18).



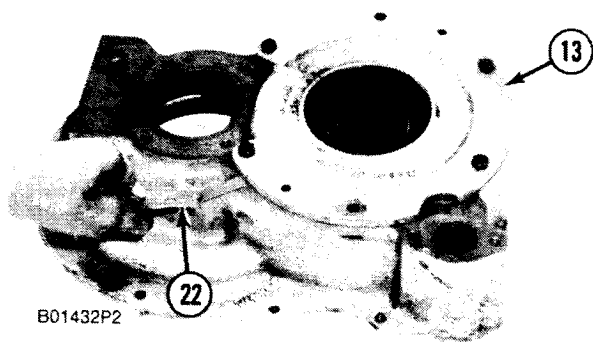
13. Remove bearing cup (21) from the transfer gear case.

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

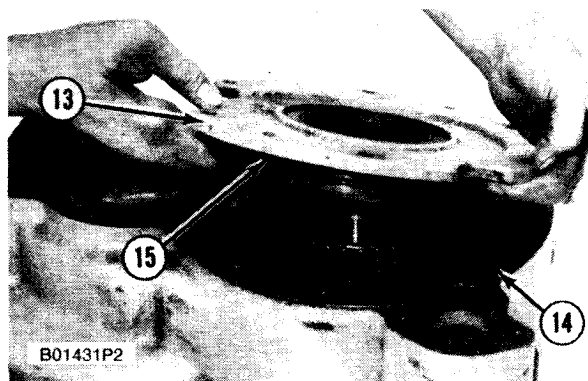
14. Inspect all parts for damage and make replacements if needed.
15. Lower the temperature of bearing cup (21). Install bearing cup in the transfer gear case.
16. Heat bearing cones (19) and (20) to a maximum temperature of **135° C (275° F)**. Install bearing cones on gear (18).
17. Install gear (18) in the transfer gear case.
18. Lower the temperature of bearing cup (17). Install bearing cup in bearing cage (13).



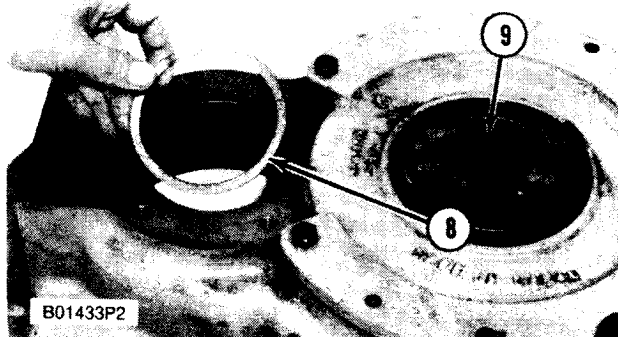
19. Use tooling (A) and install lip-type seal (16) with the lip of the seal toward the inside of the transfer gear case. Put clean oil on the lip of the seal.



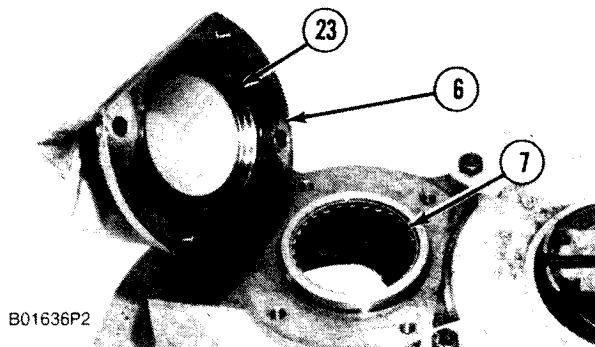
20. Put bearing cage (13) in position on the transfer gear case without the O-ring seal and shims. Install four bolts across from each other as shown. Turn the gear while the bolts are tightened to a torque of **1.1 N·m (10 lb in)**. Measure the gap at the bolt location with feeler gauge (22).



21. Install shims (14) that are the same thickness as the average gap measured plus **0.10 ± 0.05 mm (.004 ± .002 in)**.
22. Install O-ring seal (15) on the bearing cage. Put bearing cage (13) in position on the transfer gear case and install the bolts (10).



23. Install the O-ring seal, yoke (9) and retaining ring (8) in the transfer gear case.



24. Install bearing (7), O-ring seal (23) on cage and install cage (6).
25. Heat bearing (5) to a maximum temperature of **135° C (275° F)**. Install bearing on gear (3).
26. Install snap ring (4) with tool (B). Install gear (3) and bearing (5) in the transfer gear case.
27. Install plate (2) and bolts (1) to the transfer gear case.

End By:

- a. install transfer gears

Torque Converter (3F/3R Power Shift)

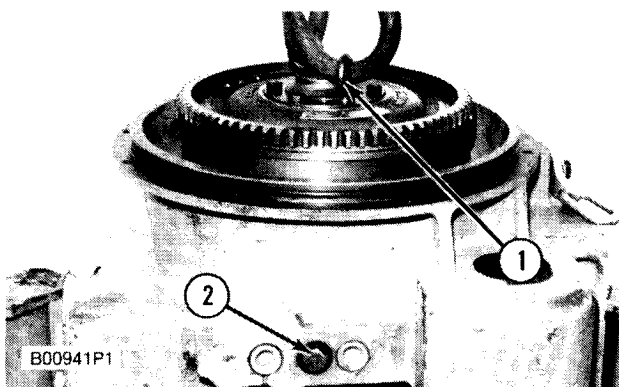
Remove & Install Torque Converter (3F/3R Power Shift) 3101-010

Tools Needed		A
1P2420	Transmission Stand	1

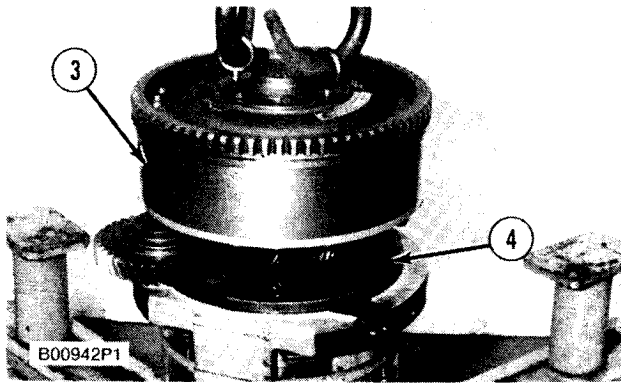
Start By:

- a. remove transfer gears
- b. remove transmission hydraulic control valves
- c. remove transmission oil pump and pump drive

NOTE: If problems are experienced when removing or installing the planetary group and torque converter using the procedure described below, use the alternate method that follows this procedure.



1. Remove two bolts and install two **3/8" - 16 NC** forged eyebolts (1) in the torque converter. Fasten a hoist.
2. Remove bolt (2) from each side of the transmission case that holds the planetary group in place.
3. Remove the torque converter and planetary group from the transmission case. The weight is **158 kg (350 lb)**. Remove the transmission case from tool (A).



Remove & Install Torque Converter (3F/3R Power Shift) (Alternate Method) 3101-010

Tools Needed		A
1P2420	Transmission Stand	1

Start By:

- a. remove transfer gears
- b. remove transmission hydraulic control valves
- c. remove transmission oil pump and pump drive

4. Put the planetary group and torque converter in place on tool (A).
5. Remove bolts (4) that hold the torque converter to the planetary group. Remove torque converter (3). The weight is **36 kg (80 lb)**.

NOTE: The following steps are for installation of the torque converter.

6. Fasten a hoist to eyebolts (1) and put torque converter (3) in position on the planetary group.
7. Install bolts (4) that hold the torque converter to the planetary group.
8. Remove the planetary group and torque converter from tool (A). Fasten a hoist and put the transmission case in place on tool (A). Fasten a hoist and put the planetary group and torque converter in position in the transmission case.
9. Install bolt (2) on each side of the transmission case that holds the planetary group and torque converter in place. Tighten the bolts to a torque of **115 ± 7 N·m (85 ± 5 lb ft)**.
10. Remove the eyebolts and install the two bolts.

End By:

- a. install transmission oil pump and pump drive
- b. install transmission hydraulic control valves
- c. install transfer gears

1. Make sure the planetary group and torque converter are positioned correctly in the transmission case. Install the bolt on each side of the transmission case that holds the planetary group and torque converter in the transmission case.
2. Place the transmission on tooling (A) with the torque converter down.
3. Remove the bolt from each side of the transmission case that holds the planetary group in place.

NOTE: As the transmission case is being removed, it must be rotated to a position where the case does not interfere with the idler gear

4. Fasten a hoist to the transmission case and remove the case from the planetary group and torque converter. The weight of the transmission case is **100 Kg (220 lb)**.
5. Fasten a hoist to the planetary group. Remove the eight bolts that fasten the planetary group to the torque converter and remove the planetary group. The weight of the planetary group is **122 Kg (270 lb)**.

NOTE: The following steps are for installation of the torque converter.

6. Put the planetary group in position on the torque converter and install the eight bolts that fasten them together.
7. Place the assembled planetary group and torque converter on tooling (A) with the torque converter down.

NOTE: As the transmission case is being lowered over the planetary group and torque converter, the case must be rotated and possibly tilted so it does not interfere with the idler gear.

8. Fasten a hoist to the transmission case and put the case in position on the planetary group and torque converter.
9. Install the bolt on each side of the transmission case that holds the planetary group and torque converter in the transmission case. Tighten the two bolts to a torque of **115 ± 7 N·m (85 ± 5 lb ft)**.

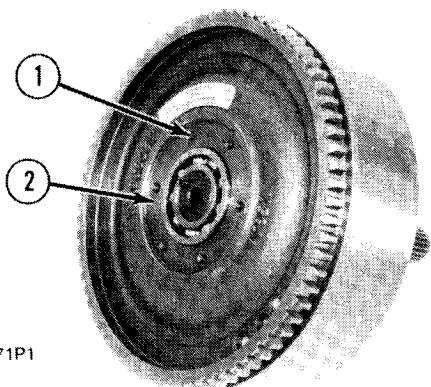
End By:

- a. install transmission oil pump and pump drive
- b. install transmission hydraulic control valves
- c. install transfer gears

Disassemble & Assemble Torque Converter (3F/3R Power Shift) 3101-017

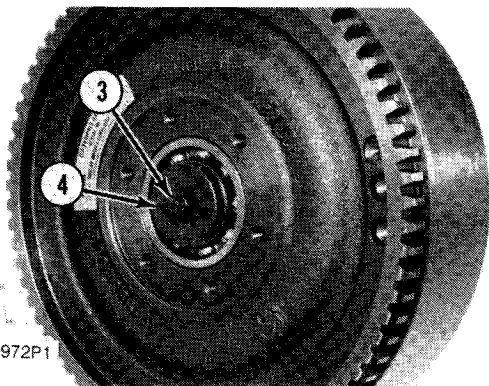
Start By:

- a. remove torque converter



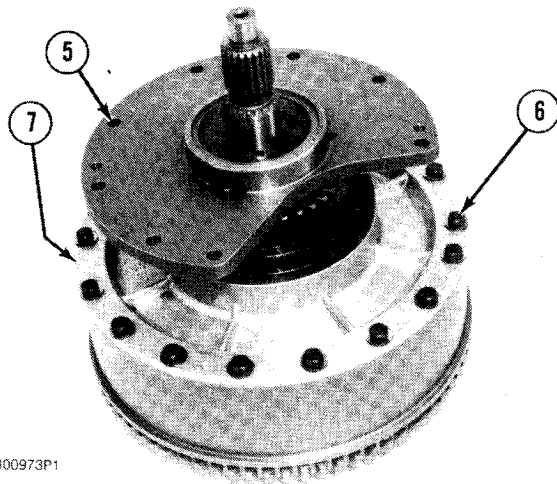
B00971P1

1. Remove bolts (1) and cover (2) from the torque converter housing.



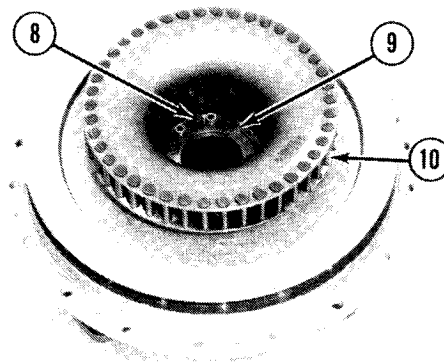
B00972P1

2. Remove bolt (3) and retainer (4) from the shaft.



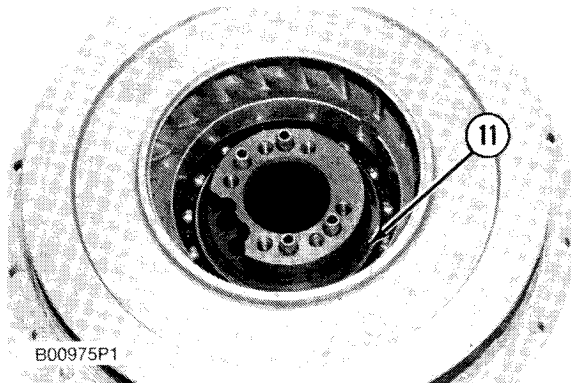
B00973P1

3. Remove bolts (6), impeller (7) and carrier (5) as a unit from the torque converter housing.



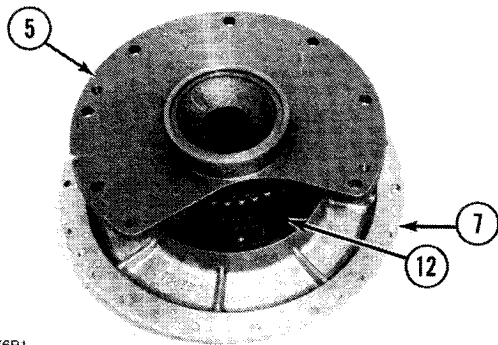
B00974P1

4. Remove six bolts (8) and plates (9) that hold the guide assembly (stator) to the carrier. Remove guide assembly (stator) (10).



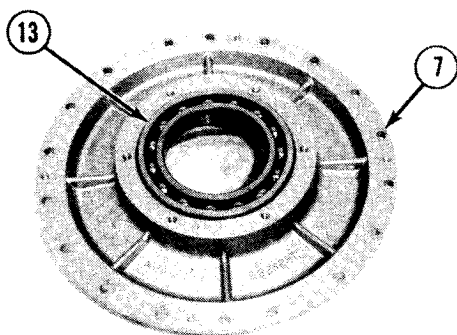
B00975P1

5. Remove retaining ring (11) from the carrier.



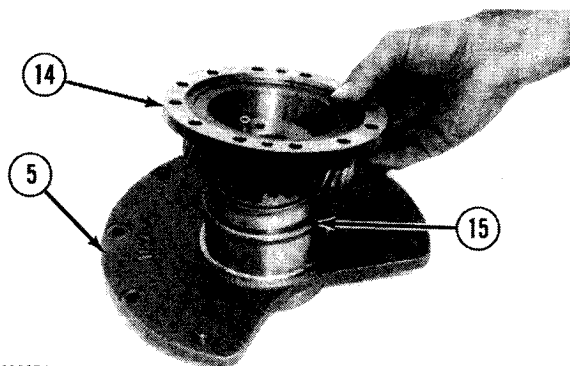
B00976P1

6. Turn the impeller and carrier over. Remove bolts (12) that hold carrier (5) to impeller (7). Remove carrier (5).



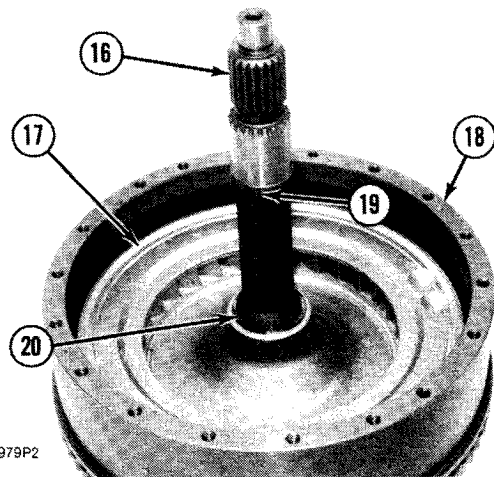
B00977P1

7. Remove bearing (13) from impeller (7).



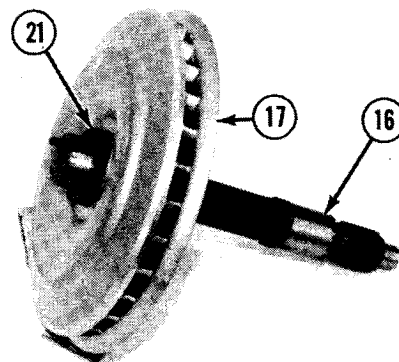
B00986P1

8. Remove gear (14) from carrier (5). Remove ring (15) from the carrier.



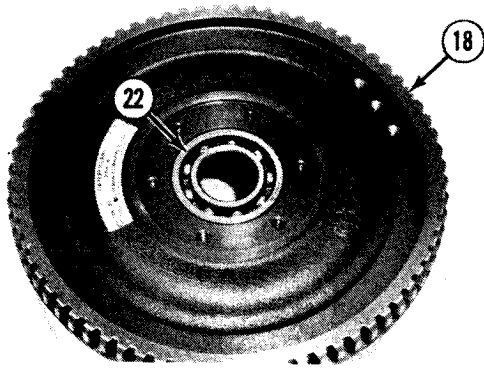
B00979P2

9. Remove shaft (16) and wheel (turbine) (17) from torque converter housing (18). Remove seal ring (19) and retaining ring (20) from the shaft.



B00980P2

10. Remove spacer (21) and wheel (turbine) (17) from shaft (16).



11. Remove bearing (22) from torque converter housing (18).

NOTE: The following steps are for assembly of the torque converter

NOTE: See the topic, Torque Converter Clearance Checks, before assembly of torque converter. These clearances must be correct for the torque converter to operate with efficiency.

12. Lower the temperature of bearing (22). Install bearing (22) in the torque converter housing.
13. Install retaining ring (20) on shaft (16) that puts the wheel (turbine) in the correct position on shaft (16).
14. Install wheel (turbine) (17) and spacer (21) on shaft (16).
15. Install shaft (16), wheel (turbine) (17) and spacer as a unit in torque converter housing (18). Install seal ring (19) on the shaft.
16. Install seal ring (15) and gear (14) on carrier (5).
17. Install bearing (13) in impeller (7).
18. Put carrier (5) and gear in position on impeller (7). Install bolts (12) that hold them together. Tighten the bolts to a torque of **27 ± 3 N·m (20 ± 2 lb ft)**.

NOTICE

Be careful not to let carrier (5) drop from the gear when the unit is turned over.

19. Turn the carrier, gear and impeller over. Install retainer ring (11) that holds the carrier in place.
20. Put guide assembly (stator) (10) in position on the carrier.
21. Install plates (9) and bolts (8) that hold guide assembly (stator) (10) to the carrier. Tighten the bolts to a torque of **27 ± 3 N·m (20 ± 2 lb ft)**.
22. Put impeller (7), carrier (5), gear and guide assembly (stator) in position on the torque converter housing as a unit. Install bolts (6) that hold the impeller to the torque converter housing. Tighten the bolts to a torque of **27 ± 3 N·m (20 ± 2 lb ft)**.
23. Install retainer (4) and bolt (3) in the shaft. Tighten the bolt to a torque of **110 ± 5 N·m (80 ± 4 lb ft)**.
24. Put cover (2) in position on the torque converter housing. Install all the bolts except two **180 degrees apart** that hold the cover in place. The two bolt holes will be used to install eyebolts to install the torque converter.

End By:

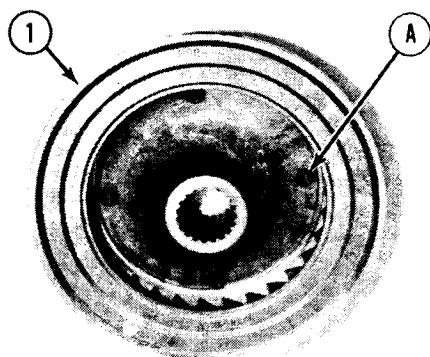
- a. install torque converter

Torque Converter Clearance Checks (3F/3R Power Shift)

Torque Converter Clearance Checks (3F/3R Power Shift)

Tools Needed		A	B
5B9079	Nut	4	
8S2328	Dial Test Indicator Group		1

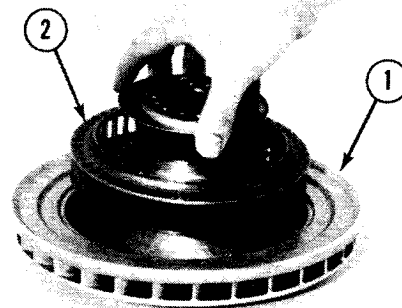
1. There must be a minimum radial (running) clearance between the wheel (turbine) and guide assembly (stator). Check the clearance between the wheel (turbine) and guide assembly (stator) as follows:



A53954P2

Typical Example

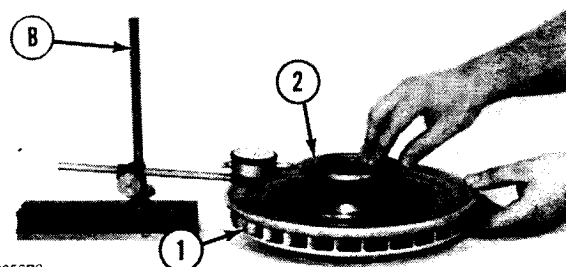
- a. Put wheel (turbine) (1) on a smooth, flat surface. Install tooling (A) at four positions around the wheel (turbine) as shown.



A53955P2

Typical Example

- b. Put guide assembly (stator) (2) in position in the wheel (turbine). Make sure the welded fins in the guide assembly (stator) are not in contact with tooling (A).



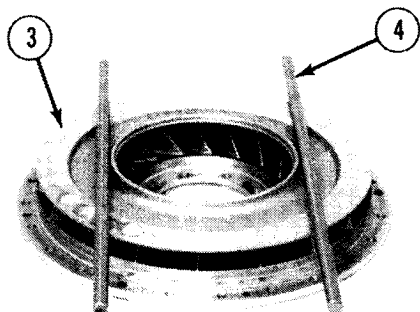
A53956P2

Typical Example

- c. Put tooling (B) against the guide assembly (stator) as shown. Move the guide assembly (stator) toward tooling (B) until it makes contact with the inside diameter in the wheel (turbine). Adjust the dial indicator until it is on zero. Slide guide assembly (stator) (2) **180 degrees away** from tooling (B) until it makes contact with the other side of the wheel (turbine) (1). Make a record of the dimension measured.

- d. Make this check at several locations around the wheel (turbine). Make a record of each dimension measured. The largest dimension measured is used for the clearance between the wheel (turbine) and guide assembly (stator). The total clearance measured across the diameter must be **0.30 to 0.46 mm (.012 to .018 in)** with a maximum permissible clearance of **0.76 mm (.030 in)**. The radial (running) clearance is half of the dimensions measured.

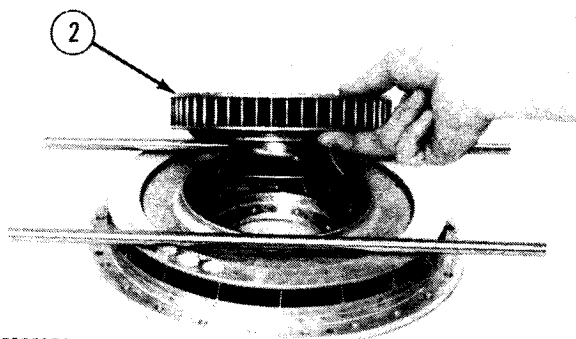
2. There must be a minimum radial (running) clearance between the guide assembly (stator) and impeller.



A53957P2

3. Check the clearance between the outside diameter of the inner flange for the guide assembly (stator) and the inside diameter of the impeller flange as follows:

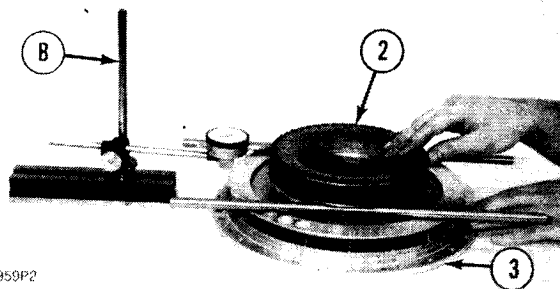
- a. Put impeller (3) on a flat smooth surface as shown. Install two **12.7 mm (.5 in) diameter rods (4)** **45.7 cm (18 in) long**, across the impeller as shown.



A53958P2

Typical Example

- b. Put guide assembly (stator) (2) in position on the rods.



A53959P2

Typical Example

- c. Put tooling (B) in position as shown. Slide the guide assembly (stator) toward tooling (B) until it makes contact with the inside diameter of the impeller. Adjust the dial indicator until it is on zero. Keep an even pressure on the guide assembly (stator) when it is moved. Move the guide assembly (stator) away from tooling (B) **180 degrees** until it makes contact with the other side of the impeller. Make a record of the dimension measured. Make this check at several locations around the impeller and guide assembly (stator). Make a record of each dimension measured.

NOTE: Turn the impeller around tool (B) and the guide assembly (stator) when different locations are measured.

- d. The largest dimension measured is used for the clearance between the guide assembly (stator) and impeller. The total clearance measured across the diameters must be **.030 to 0.46 mm (.012 to .018 in)** with a maximum permissible clearance of **0.76 mm (.030 in)**. The radial (running) clearance is one half of the dimensions measured.

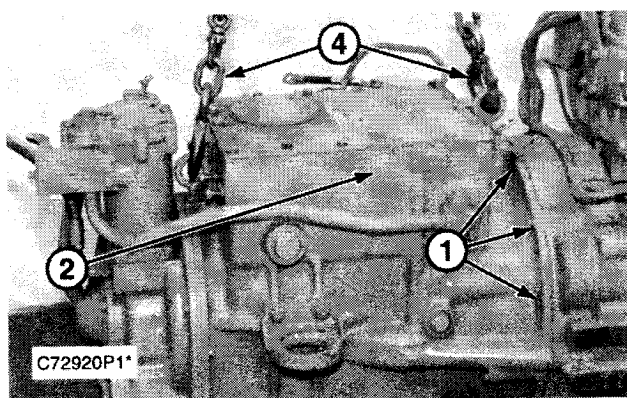
Transmission

Separation & Connection Of Engine And Transmission 1001-010

Tools Needed		A
9S9101	Sling Assembly	1

Start By:

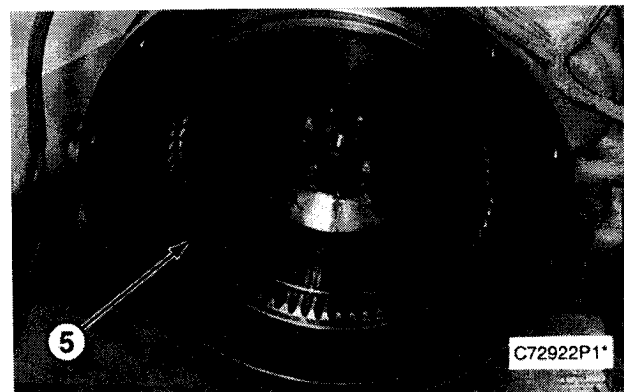
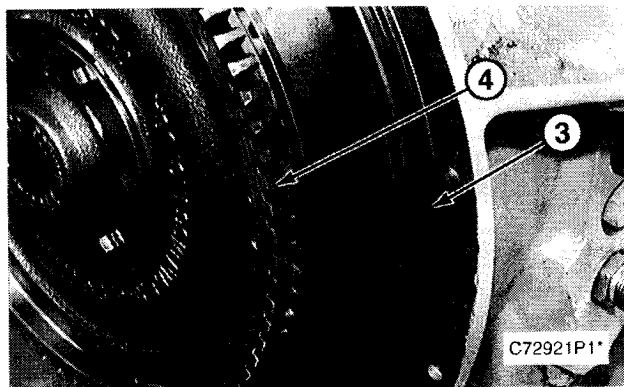
- a. remove engine and transmission (see 3046 Engine Supplement SENR5343)



1. Attach tool (A) to transmission eyebolts as shown.

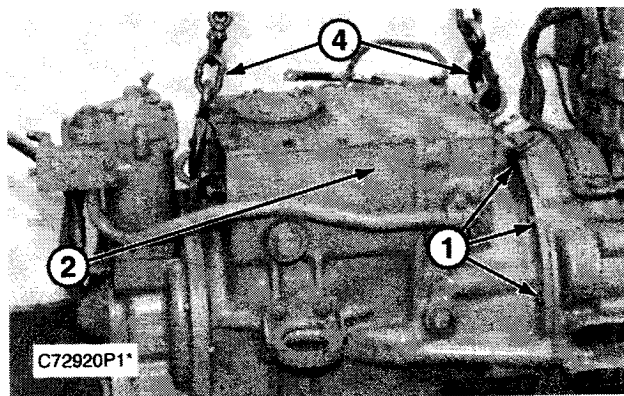
NOTE: Two eyebolts are attached to the transmission at assembly.

2. Remove twelve bolts and washers(1) that hold the transmission case (2) to the flywheel housing. Carefully remove the transmission case (2) from the flywheel housing. Weight of the transmission is **295 kg (650 lb)**.



3. Remove O-ring seal (3) from the front of the transmission case (2). Check for wear or damage.

NOTE: For installation, make sure the teeth on torque converter engage the teeth on the flywheel properly. Insure that there is no damage to O-ring seal (3).



4. Install twelve bolts and washers (1) that secure transmission case (2) to the flywheel housing. Tighten bolts (1) to a torque of **28 ± 7 N·m (21 ± 5 lb ft)**.

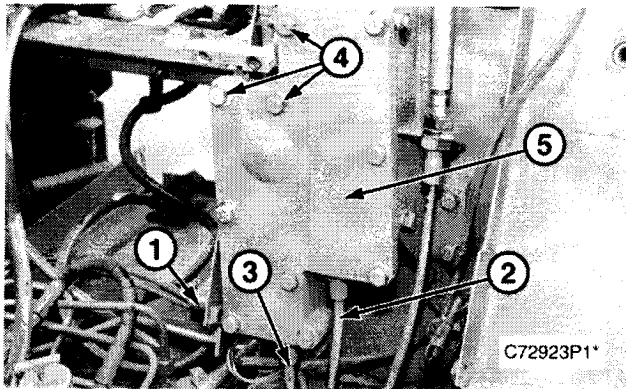
End By:

- a. install engine and transmission (see 3046 Engine Supplement SENR5343)

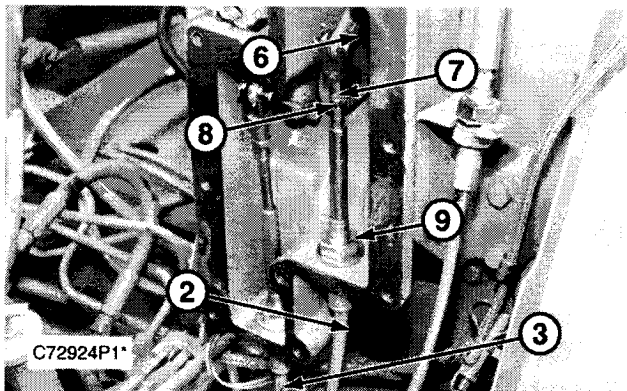
Transmission Control Linkage

Start By:

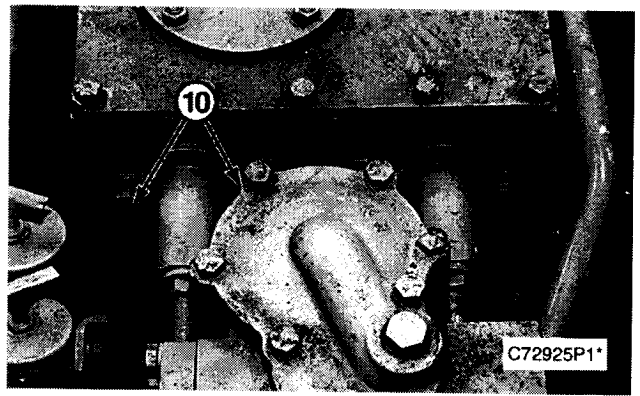
- a. remove cab (See D3C, D4C, D5C Machine Systems SENR5341)



1. Remove clip (1) holding cable assembly (2) and cable assembly (3) in place. Cable assembly (2) controls speed and cable assembly (3) controls direction.
2. Remove ten bolts and washers (4) and remove cover (5).

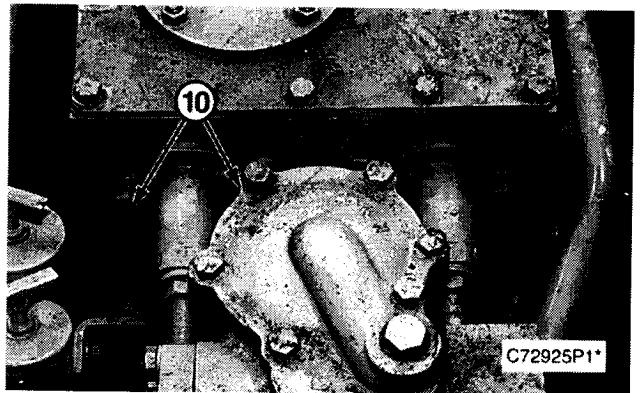


3. Remove cotter and pin (6) from each cable assembly
4. Mark location of rod ends (7) on each cable assembly and loosen nut (8) and remove rod end (7) on each cable assembly.
5. Remove nut and washer (9) from each cable assembly and pull cable assembly (2) and (3) out of the transmission control housing.

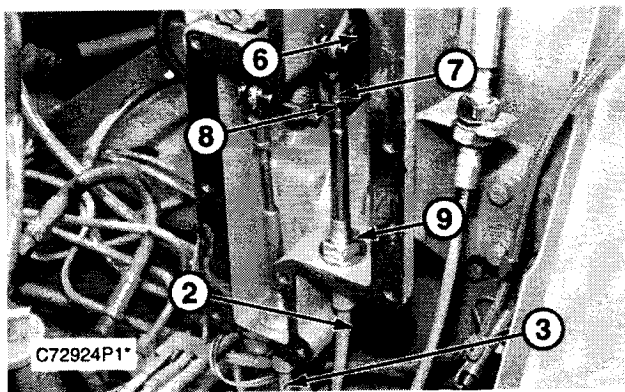


6. Remove two bolts and washers (10) from each cable assembly and remove cable assembly (2) and (3) from the machine.

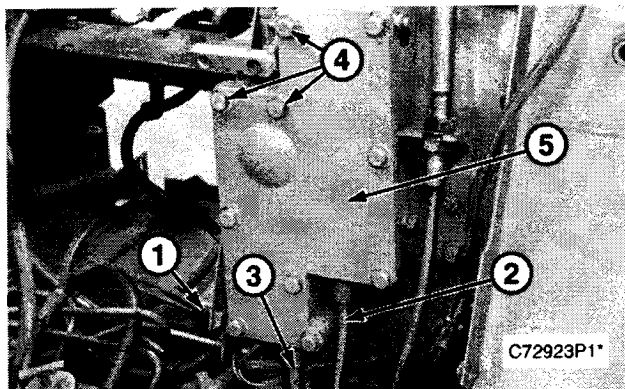
NOTE: The following procedure should be used to install the transmission control linkage.



7. Check seals (not shown) for wear or damage and install two bolts on each cable assembly that holds the cable assembly to the transmission.



8. Install cable assembly (2) and (3) into transmission control housing with nut and washer (9). Tighten nut to a torque of **38 ± 7N·m (28 ± 5 lb ft)**.
9. Install rod ends (7) and tighten nut (8) on each cable assembly. Tighten nut to a torque of **8 ± 3 N·m (6 ± 2 lb ft)**.
10. Install cotter pin (6) on each cable assembly.



11. Clean surface of cover (5) and mating surface on transmission control housing and apply **7M7260 Liquid Gasket** to cover (5) and install cover (5) using bolts (4).

Install clip (1) that holds cable assembly (2) and (3) in place.

NOTE: It may be necessary in some applications to adjust one or both of the cables if replacement was necessary. For the proper adjustment procedure for these cables see D3C, D4C, D5C System Operation Test And Adjust.

End By:

install cab (See D3C, D4C, D5C Machine Systems SENR5341)

Transmission (3F/3R Power Shift)

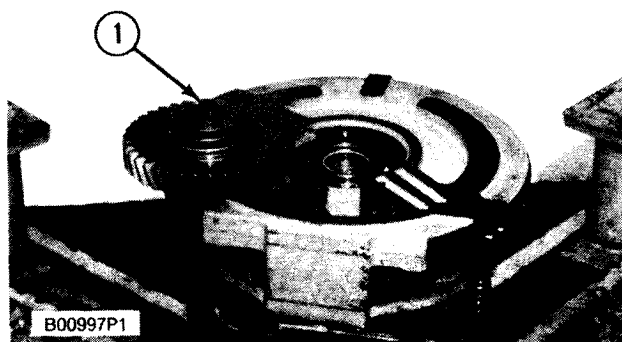
Disassemble Transmission (3F/3R Power Shift) 3150-015

Tools Needed		A	B	C	D	E	F	G
1P2420	Transmission Repair Stand	1						
1P1864	Pliers		1					
FT833	Clamp			2				
5P1720	Seal Pick				2			
5P3512	Spring Compressor					1		
1P1863	Pliers						1	
1P510	Driver Group							1

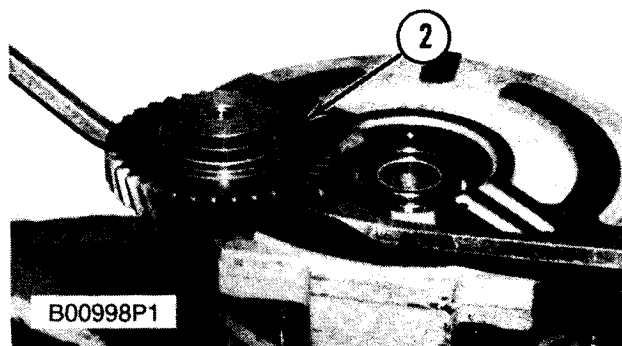
Start By:

- a. remove torque converter

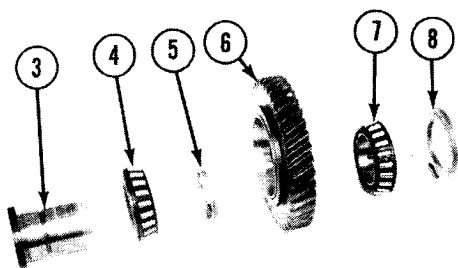
NOTE: Put a mark on the outside of the clutch housings for correct assembly.



1. Remove bolt (1) that holds the pump drive gear assembly to the transmission.

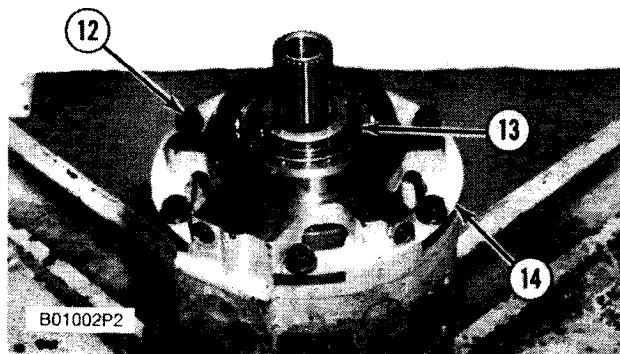


2. Use two pry bars as shown and remove pump drive gear assembly (2).



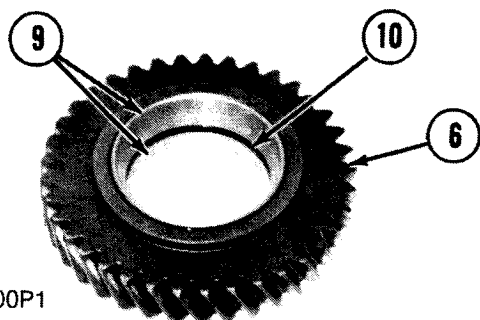
B00999P1

3. Remove shaft (3), bearing cone (4), spacer (5), bearing cone (7) and spacer (8) from pump drive gear (6).



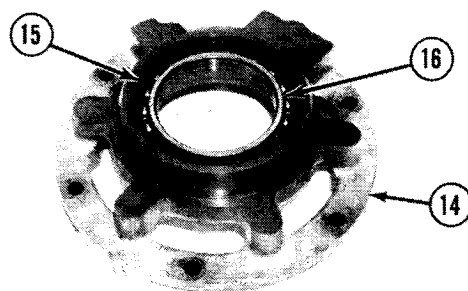
B01002P2

6. Remove retaining ring (13) with tool (B). Remove bolts (12) and rear manifold (14).



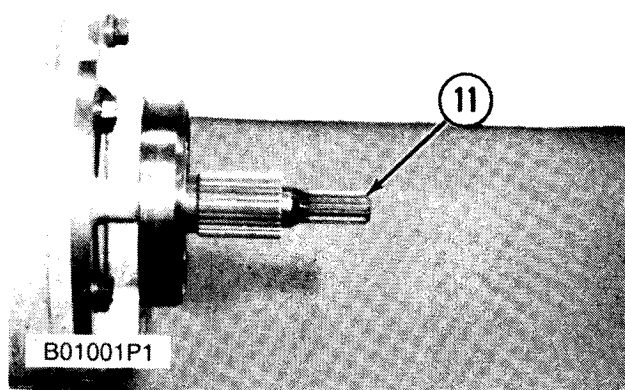
B01000P1

4. Remove bearing cups (9) and ring (10) from pump drive gear (6).



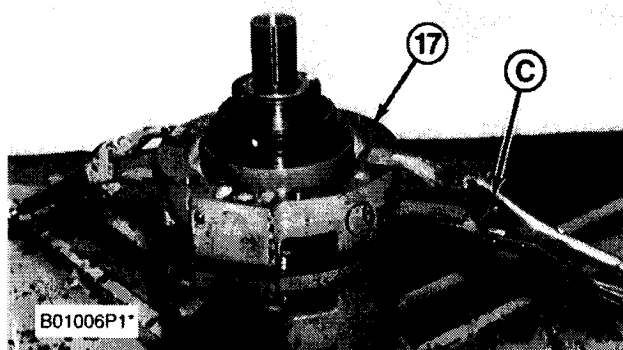
B01004P1

7. Remove retaining ring (15) and bearing (16) from rear manifold (14).



B01001P1

5. Remove shaft (11) from the torque converter end of the transmission.

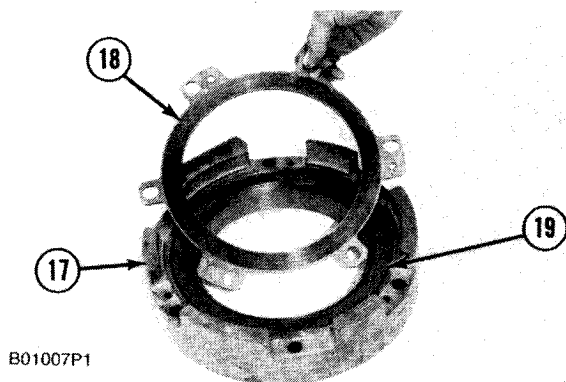


B01006P1*

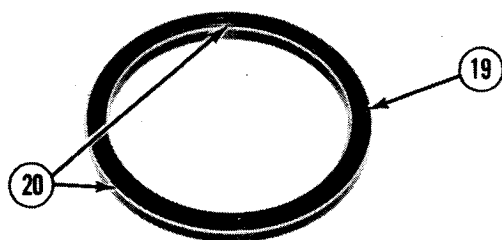
8. Use tooling (C) to hold the piston and top plate in the No. 4 clutch housing. Remove No. 4 clutch housing (17).

NOTICE

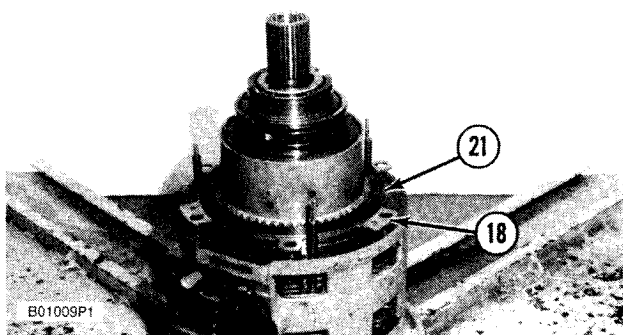
Keep the pistons, clutch disc and plates for the individual clutch in their original sequence and with their respective clutch housings.



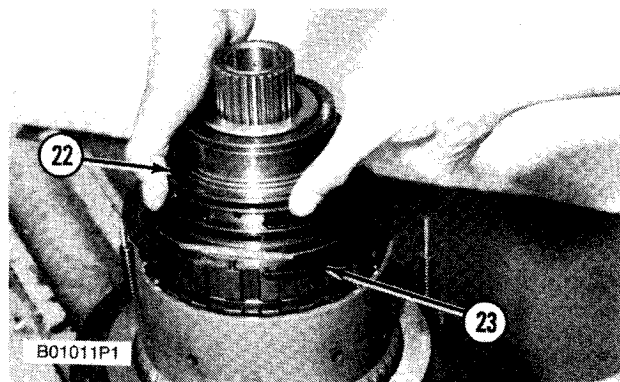
9. Remove top plate (18) and piston (19) from No. 4 clutch housing (17).



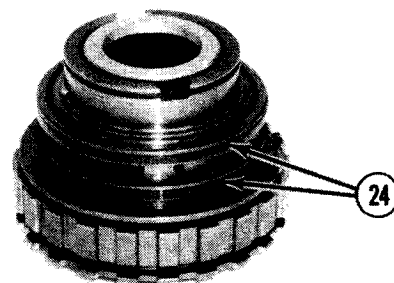
10. Remove teflon rings (20) from piston (19).



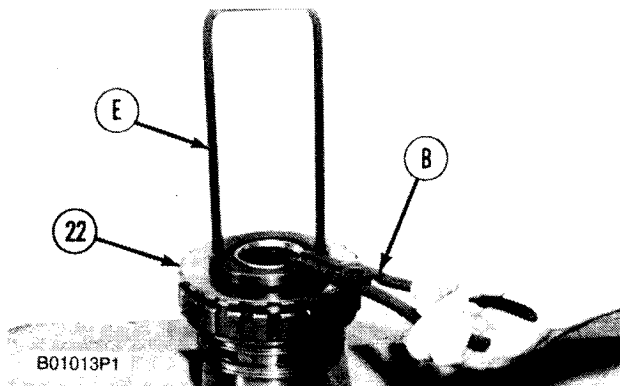
11. Remove discs (21) and remainder of plates (18) for the No. 4 clutch.



12. Use tool (D) and push the ends of retaining ring (23) together. Remove housing assembly (22) from the ring gear.



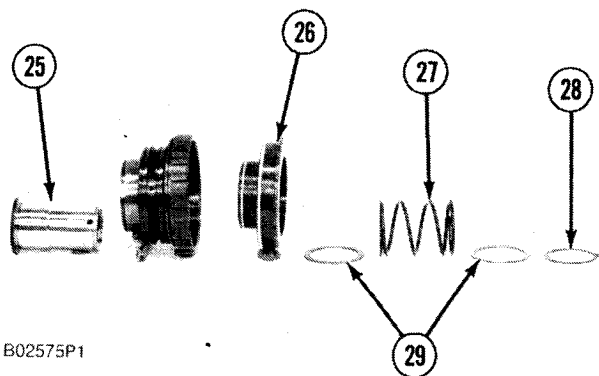
13. Remove seal rings (24) from the seal carrier.



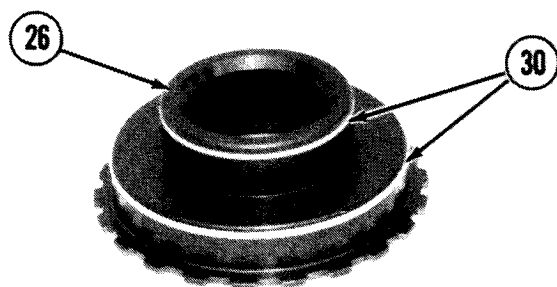
NOTICE

Retaining ring (28) holds spring (27) under compression.

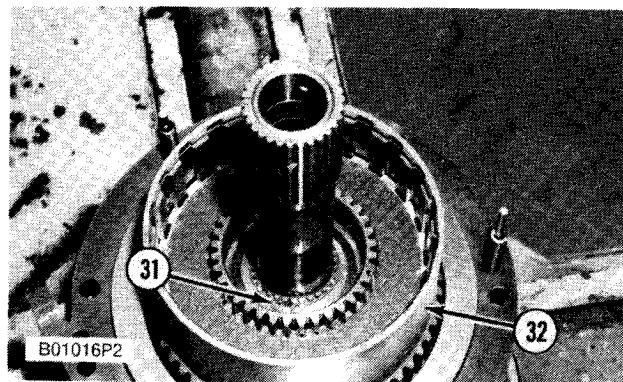
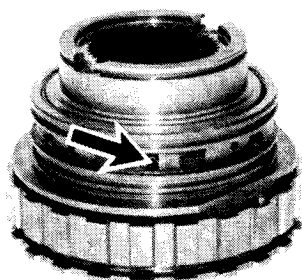
14. Put housing assembly (22) in position in a press. Put spring (27) under compression with tool (E) and the press until retaining ring (28) can be removed with tool (B).



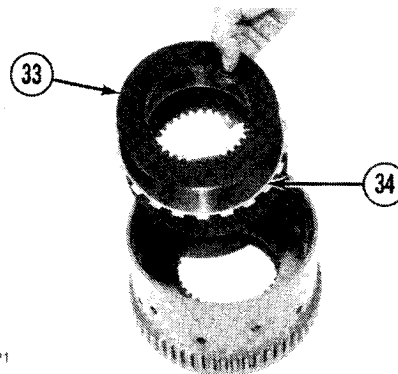
15. Remove one spacer (29), spring (27), other spacer (29) and shaft (25) from the housing assembly.



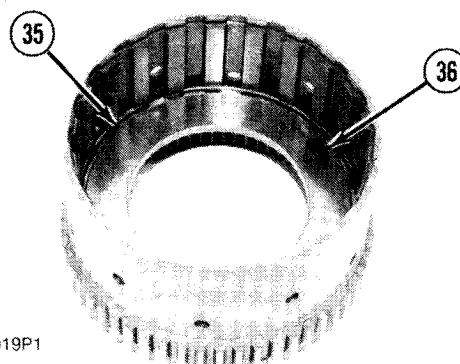
16. Remove piston (26) from the housing assembly. Remove teflon rings (30) and O-ring seal from piston (26).



17. Remove retaining ring (31) with tool (F). Remove ring gear (32).



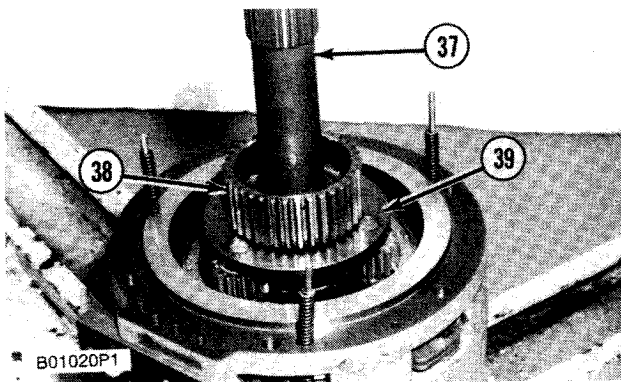
18. Remove discs (33) and plates (34) for the No. 5 clutch from the ring gear.



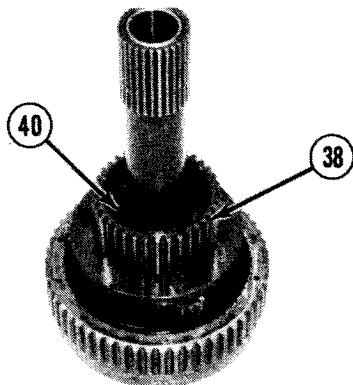
19. Remove ring (35) and plate (36) from the ring gear.

NOTICE

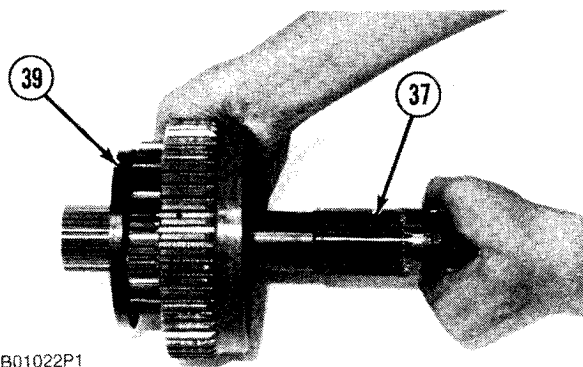
It will be necessary to break the seal carrier if it is to be removed from the housing. Remove the pin shown from the housing.



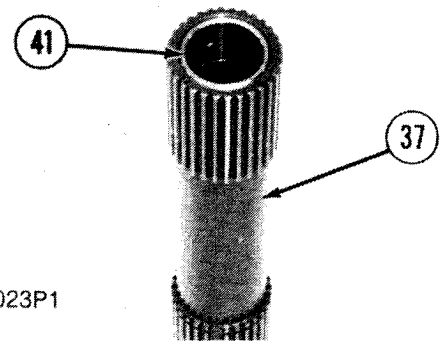
- 20.** Remove output shaft (37), hub (38) and planetary carrier (39) as a unit.



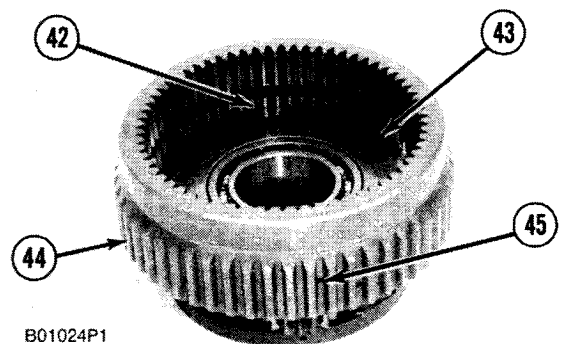
- 21.** Remove retaining ring (40) with tool (F) that holds hub (38) on the output shaft. Remove hub (38) from the output shaft.



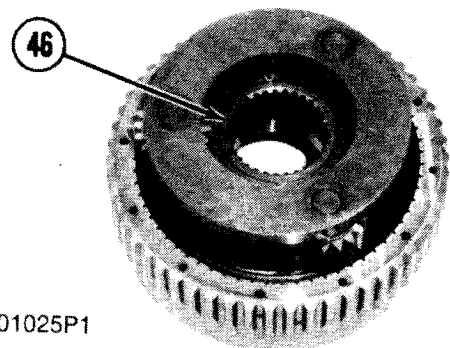
- 22.** Remove output shaft (37) from the planetary carrier (39).



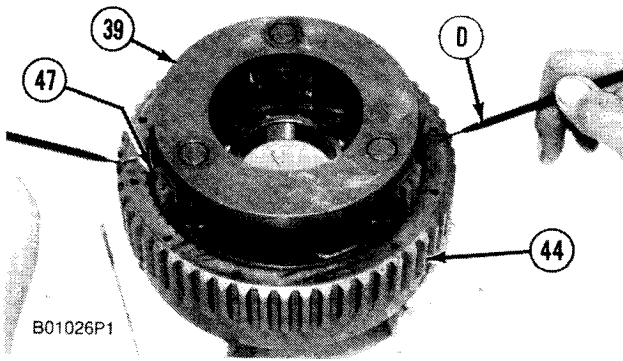
- 23.** Remove bearings (41) from each end of output shaft (37).



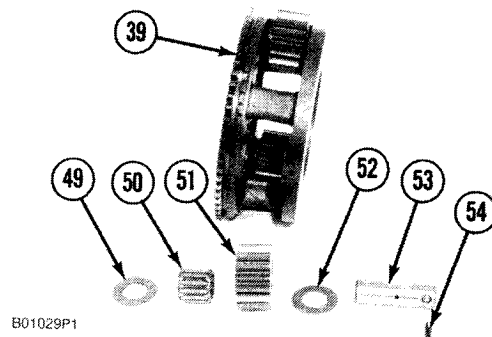
- 24.** Push pins (42) and (45) even with the inside surface of gear (44). Remove plate (43).



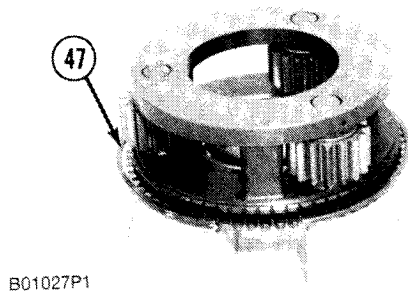
- 25.** Turn the planetary carrier over. Remove sun gear (46) from the planetary carrier.



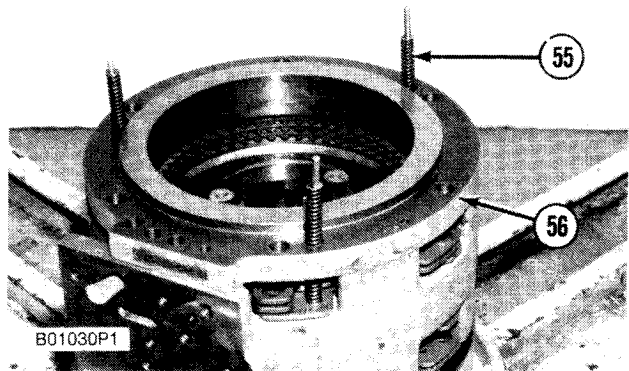
- 26.** Use tooling (D) to push ring (47) toward the inside of the groove in the planetary carrier. Remove planetary carrier (39) from ring gear (44).



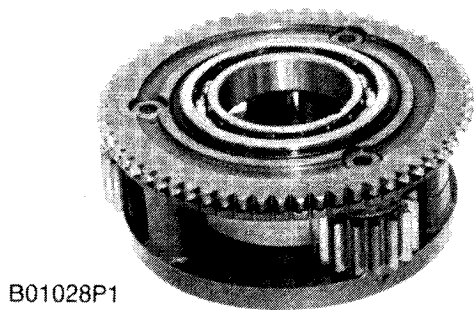
- 29.** Use a hammer and punch and push pins (54) into shafts (53).
- 30.** Remove shafts (53) from planetary carrier (39). Remove gears (51), thrust washers (49 and 52) and bearings (50) in the gears. After the shafts are removed, remove the pins from the shafts.



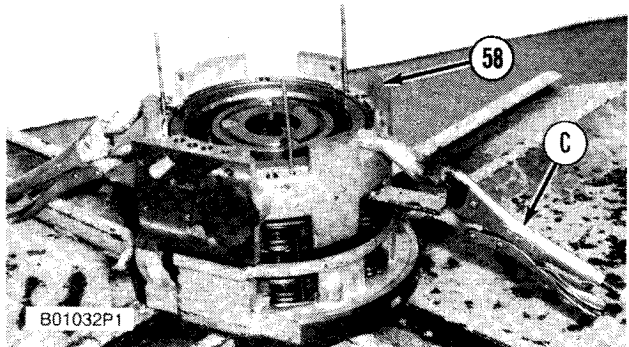
- 27.** Remove ring (47) from the planetary carrier.



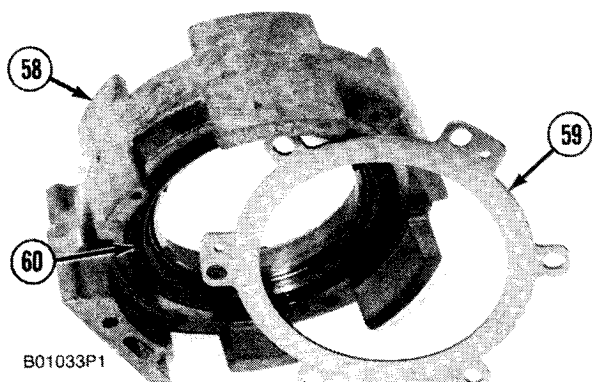
- 31.** Remove springs (55) and plate (56).
- 32.** Remove four disc (57) and the four plates for the No. 3 clutch.



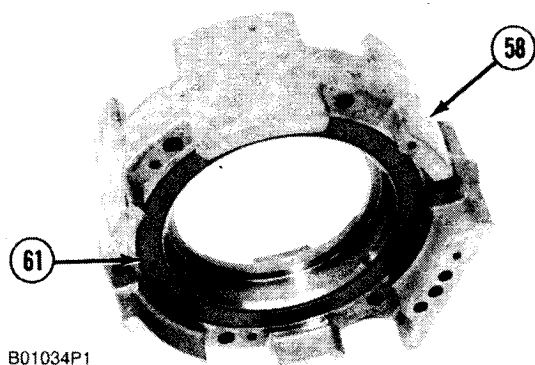
- 28.** Remove bearing (48) from the planetary carrier.



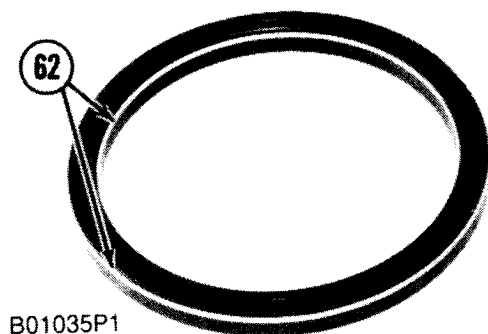
- 33.** Use tooling (C) to hold the piston and top plate. Remove No. 2 and 3 clutch housing (58).



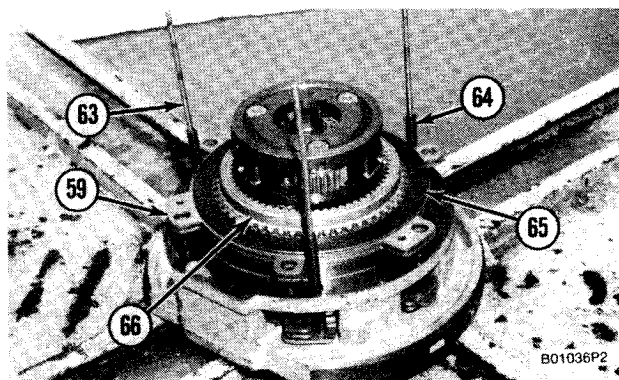
- 34.** Remove top plate (59) and piston (60) for the No. 2 clutch.



- 35.** Turn No. 2 and 3 clutch housing (58) around and remove piston (61) for the No. 3 clutch.

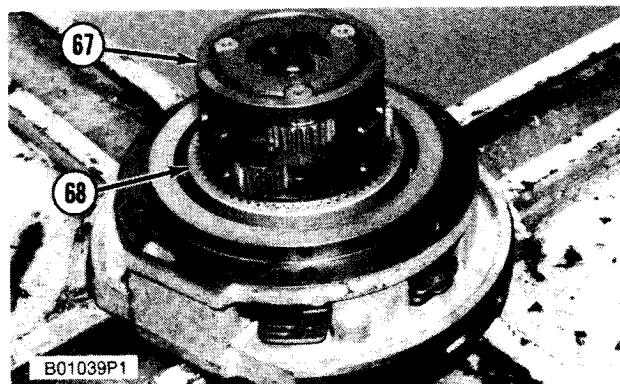


- 36.** Remove teflon rings (62) from the pistons for the No. 2 and 3 clutches.

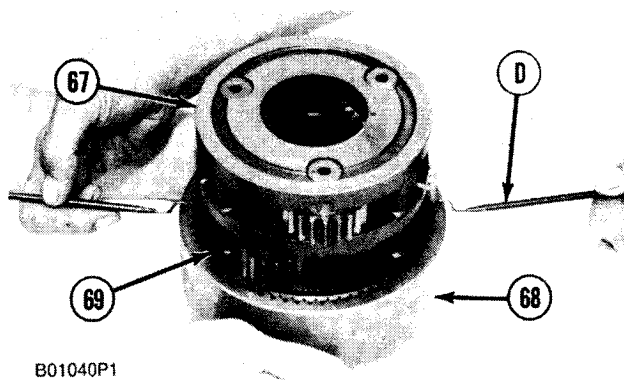


- 37.** Remove discs (65) and remainder of plates (59) for the No. 2 clutch.

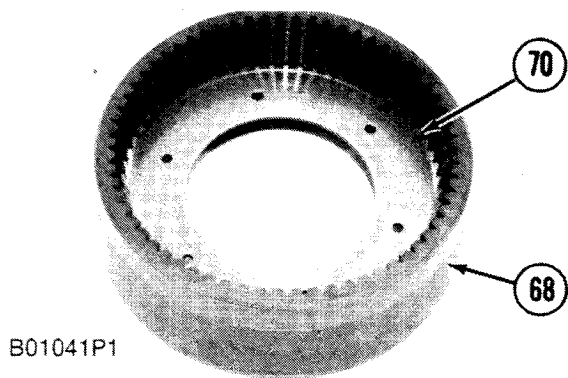
- 38.** Remove springs (64), guide rods (63) and ring gear (66).



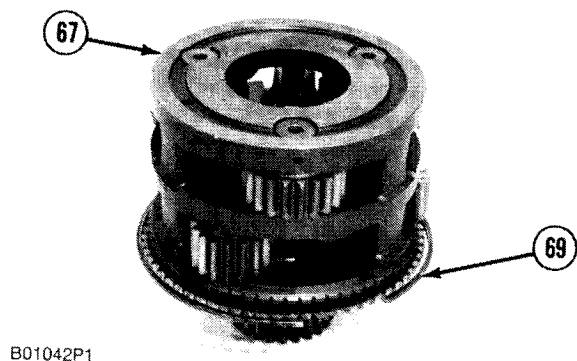
- 39.** Remove planetary carrier (67) and ring gear (68) as a unit.



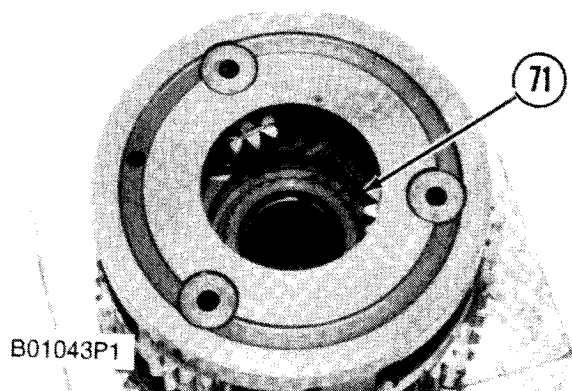
- 40.** Use tooling (D) to push ring (69) toward the inside of the groove in the planetary carrier. Remove ring gear (68) from planetary carrier (67).



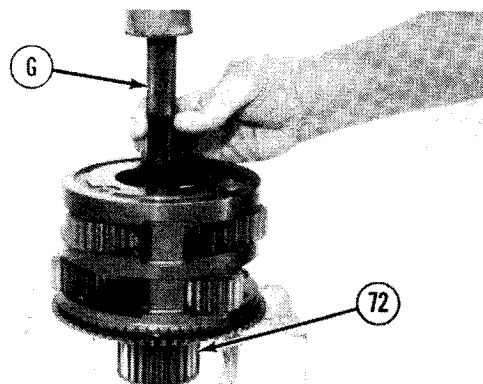
41. Remove plate (70) from ring gear (68).



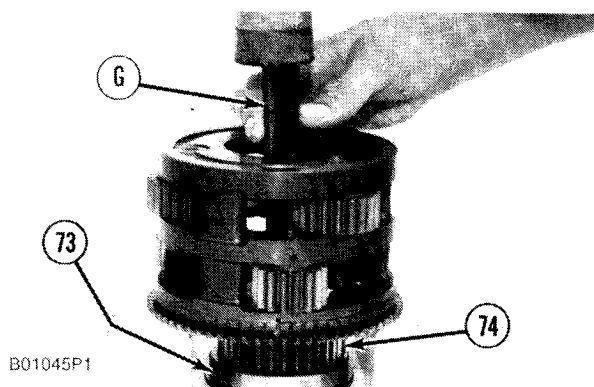
42. Remove ring (69) from planetary carrier (67).



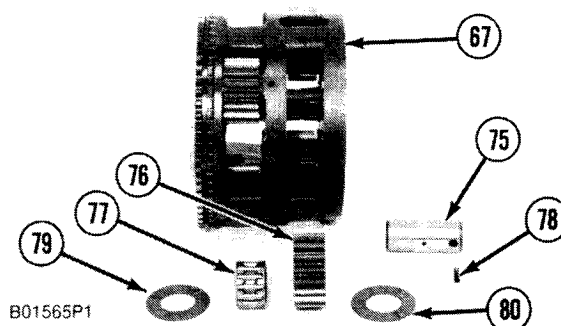
43. Remove retaining ring (71) that holds the sun gears together with tool (F).



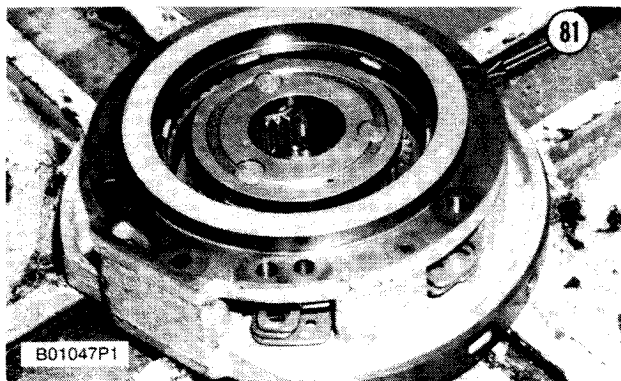
44. Use tooling (G) and remove sun gear (72) from the planetary carrier.



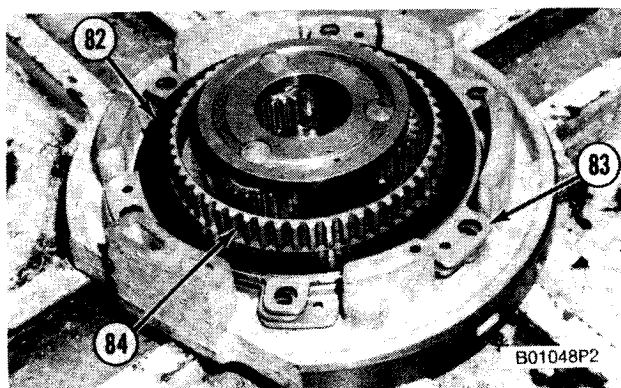
45. Use tooling (G) and remove bearing (73) and sun gear (74) from the planetary carrier.



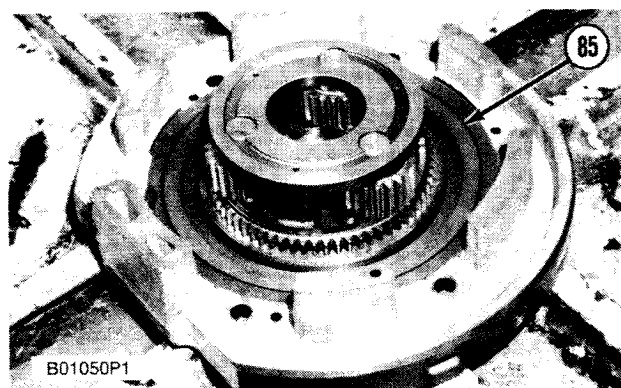
46. Use a hammer and a punch to push pins (78) into shafts (75).
47. Remove shafts (75) from planetary carrier (67). Remove gears (76), thrust washers (79 and 80) and bearings (77) in the gears. After the shafts are removed, remove the pins from the shafts.



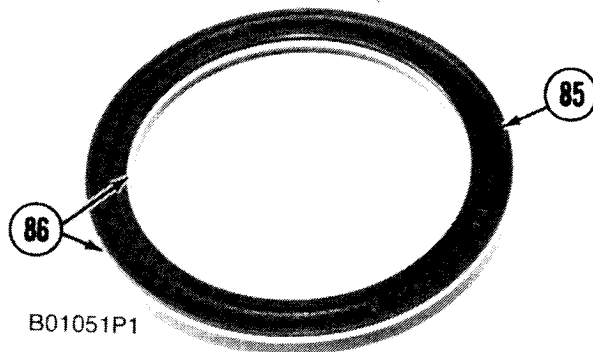
48. Remove plate (81) from the No. 1 clutch housing.



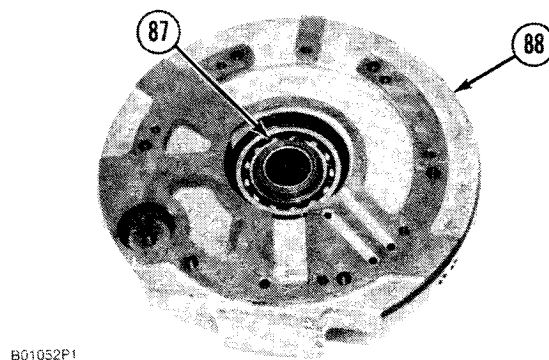
49. Remove disc (82), plates (83) and ring gear (84).



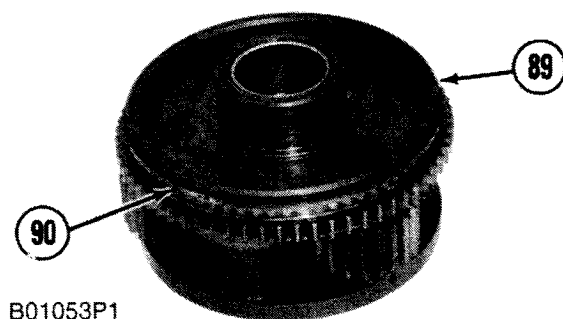
50. Remove piston (85) from the No. 1 clutch housing.



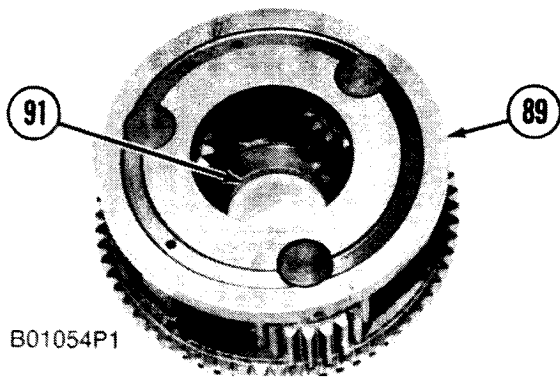
51. Remove teflon rings (86) from piston (85).



52. Turn the No. 1 clutch housing and planetary carrier over. Remove retaining ring (87) with tool (F). Remove No. 1 clutch housing (88) from the planetary carrier.

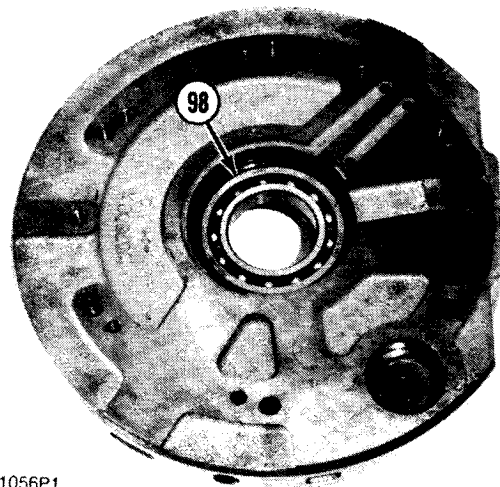


53. Remove seal ring (90) from planetary carrier (89).



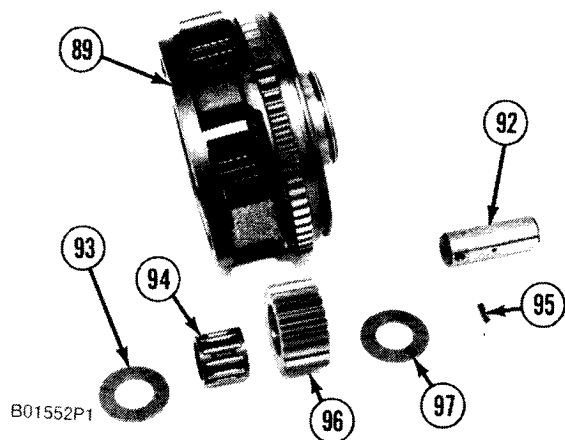
B01054P1

54. If a replacement is needed, remove bearing (91) from planetary carrier (89).



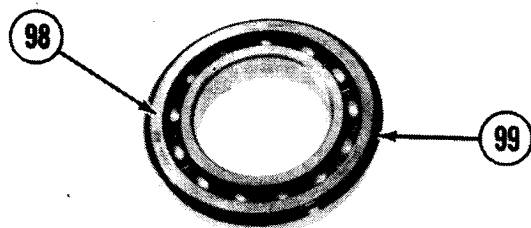
B01056P1

57. Remove bearing (98) from the No. 1 clutch housing.



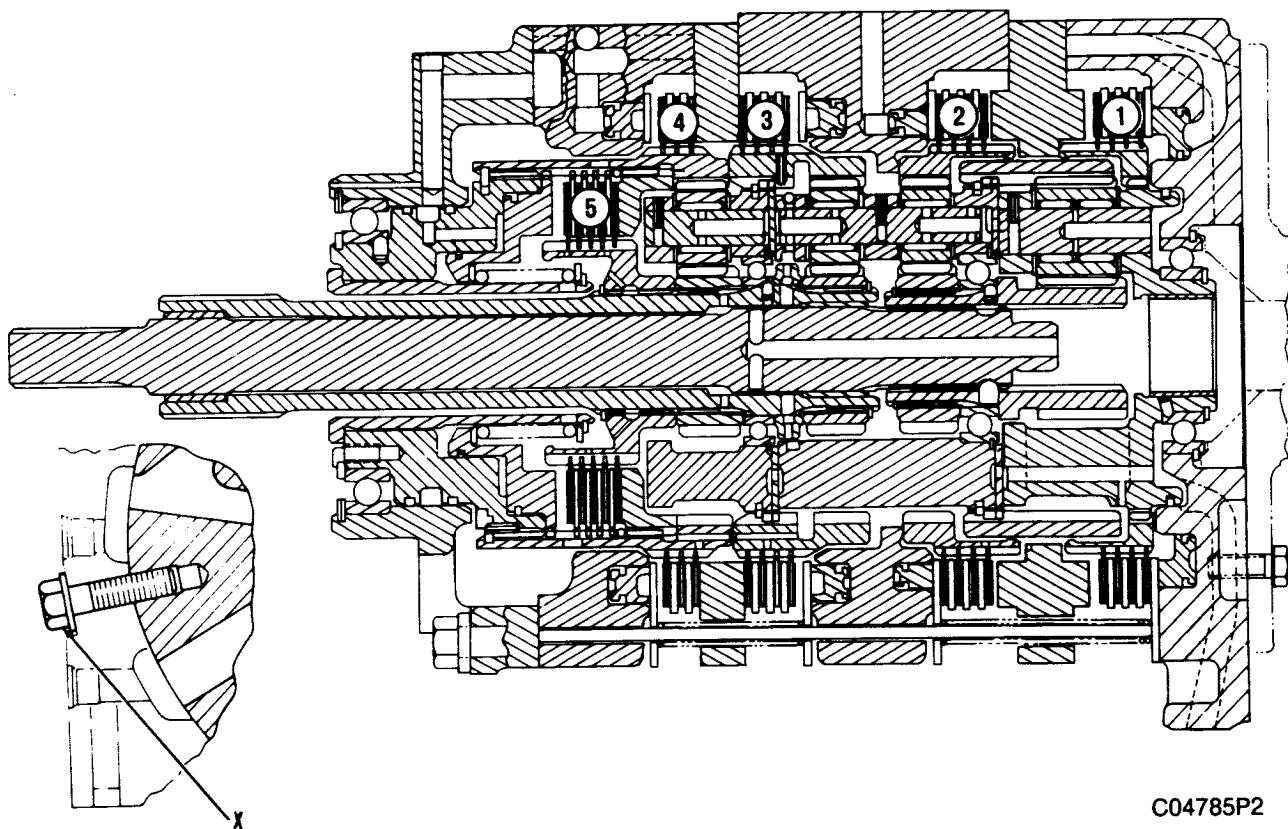
B01552P1

55. Use a hammer and punch to push pins (95) into shafts (92).
56. Remove shafts (92) from planetary carrier (89). Remove gears (96), thrust washers (93 and 97) and bearings (94) in the gears. After the shafts are removed, remove the pins from the shafts.



B01057P1

58. Remove ring (99) from bearing (98).



C04785P2

Assemble Transmission (3F/3R Power Shift) 3150-016

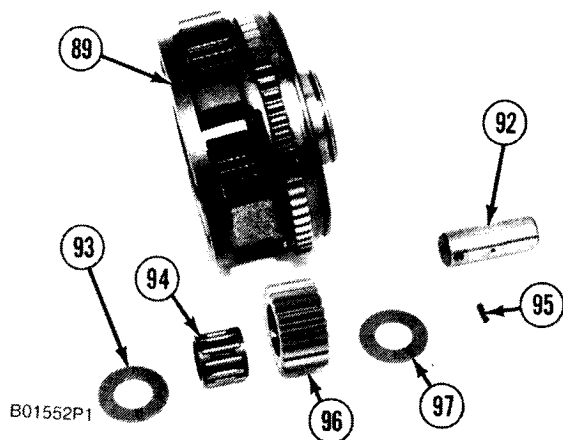
Tools Needed		A	B	C	D	E	F	G
1P2420	Transmission Repair Stand	1						
1P1864	Pliers		1					
FT833	Clamp			2				
5P1720	Seal Pick				2			
5P3512	Spring Compressor					1		
1P1863	Pliers						1	
1P510	Driver Group							1

Tools Needed		H
FT834	Clutch Testing Nozzle	1

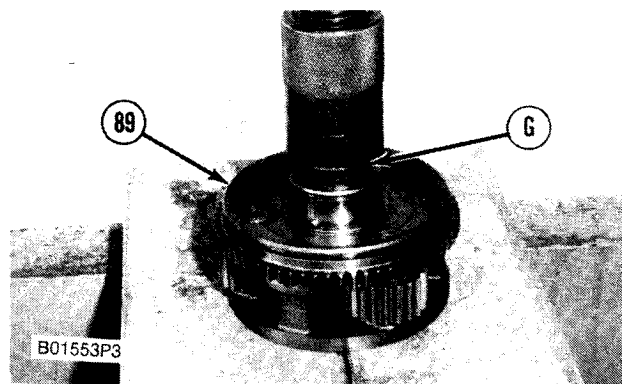
NOTE: Torque for two bolts (X) (one each side) **270 ± 40 N·m (200 ± 30 lb ft)**

NOTE: Tighten planetary retaining bolt (X) on side of case containing oil cooler line connections first to insure positive seal between case and manifold.

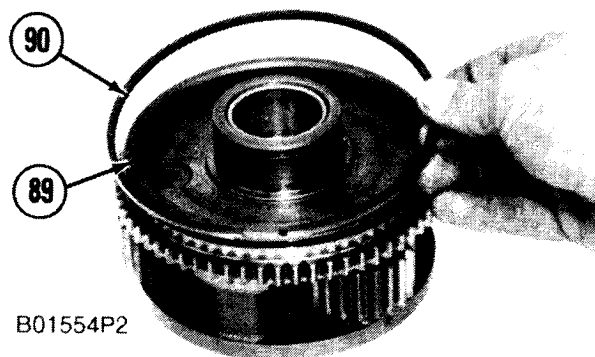
1. Inspect all parts for damage and make replacements if needed.



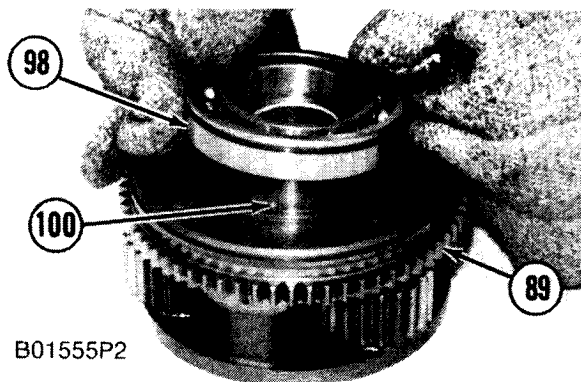
2. Install bearings (94) in gears (96) for planetary carrier (89). Install gears (96) in the planetary carrier with thrust washers (93) and (97) on both sides of the gears. Install shaft (92). Make an alignment of the hole in the shaft with the hole in the planetary carrier.
3. Install pins (95) that hold shafts (92) in planetary carrier (89).



4. Use tooling (G) and a press to install the bearing in planetary carrier (89) if it was removed.



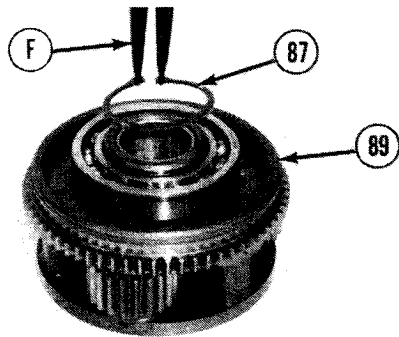
5. Install seal ring (90) on planetary carrier (89).



NOTICE

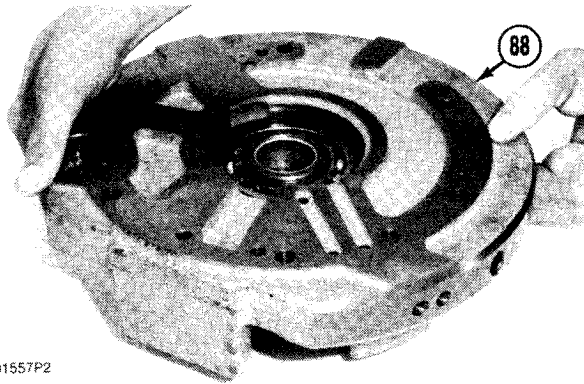
Make sure the notch in bearing (98) is in alignment with dowel (100) in the planetary carrier.

6. Heat bearing (98) to a maximum temperature of **135° C (275° F)**. Install bearing (98) on planetary carrier (89).



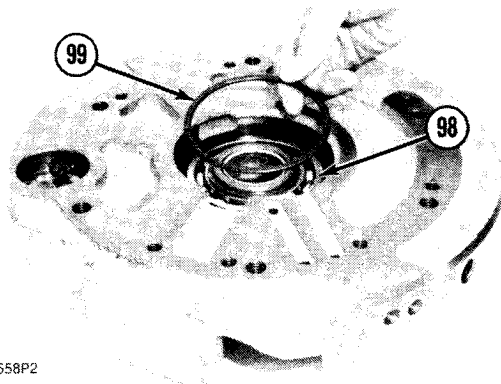
B01556P3

7. Install retaining ring (87) with tool (F).



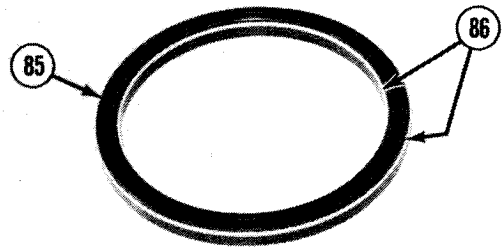
B01557P2

8. Install No. 1 clutch housing (88) on planetary carrier (89).



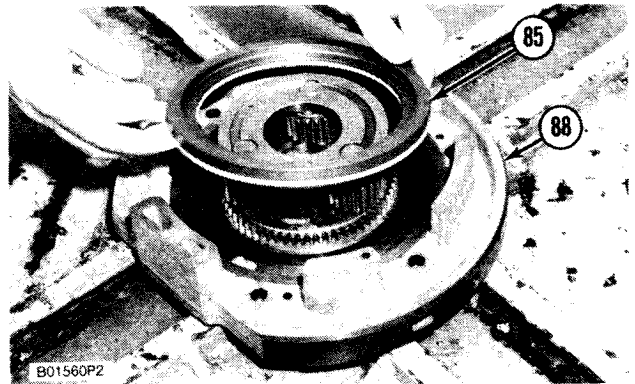
B01558P2

9. Install ring (99) on the outside diameter of bearing (98). Put No. 1 clutch housing and planetary carrier on tool (A).



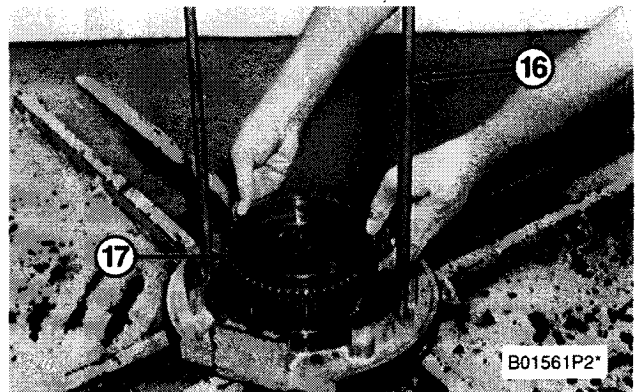
B01559P2

10. Install teflon rings (86) on piston (85) for the No. 1 clutch. Make sure the lip of the teflon rings are toward the clutch housing. Put clean transmission oil on the rings.



B01560P2

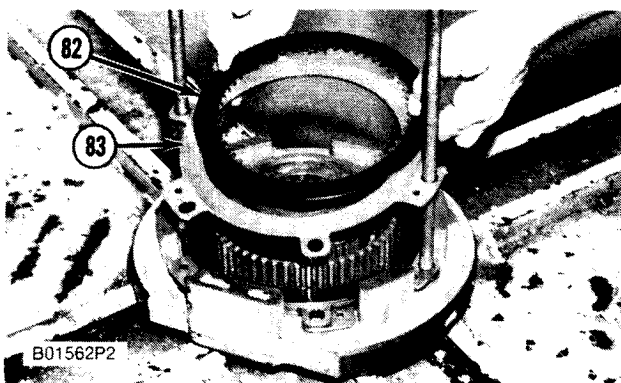
11. Install piston (85) in No. 1 clutch housing (88).



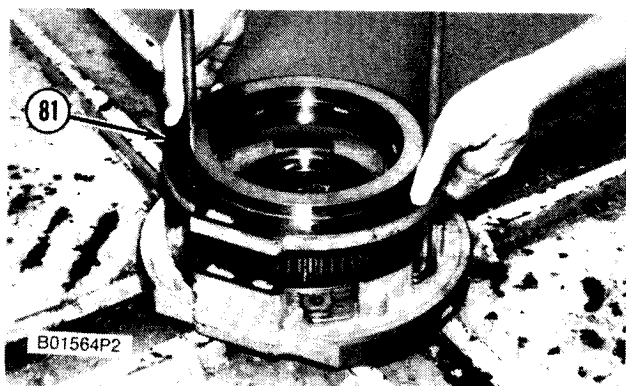
B01561P2

12. Install two $\frac{1}{2}$ " -13 NC guide bolts (101) 355 mm (14 in) long and ring gear (84) in the No. 1 clutch housing.

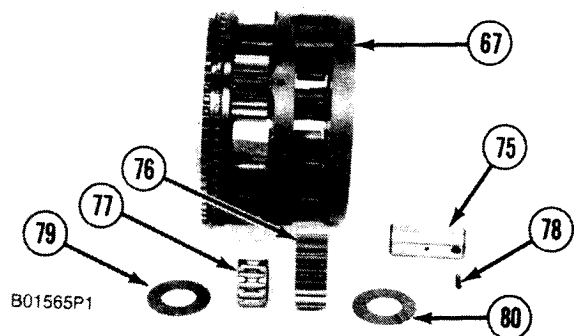
NOTE: A disc has friction material on both sides. A plate is a smooth steel plate and does not have friction material on either side. Put clean transmission oil on all discs and plates before assembly.



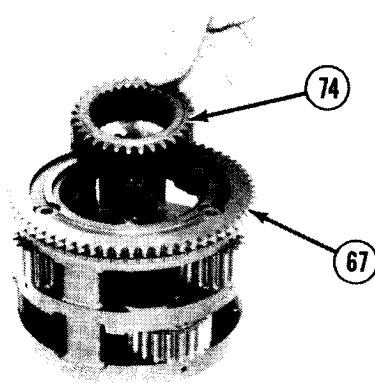
14. Install four plates (83) and four discs (82) in the No. 1 clutch housing. Start with a plate and stop with a disc. Alternate the plates and discs. The tangs on plates (83) must be positioned as shown.



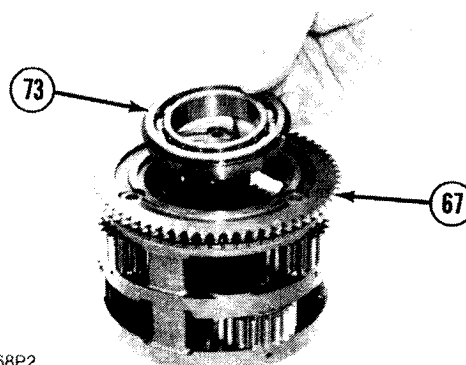
15. Install plate (81) on the No. 1 clutch housing.



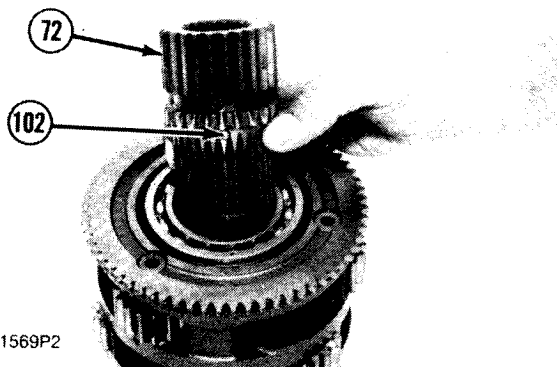
16. Install bearings (77) in gears (76) for planetary carrier (67). Install gears (76) in the planetary carrier with thrust washers (79 and 80) on both sides of the gears. Install shafts (75). Make an alignment of the hole in the shaft with the hole in the planetary carrier and install pins (78).



17. Install sun gear (74) in planetary carrier (67).



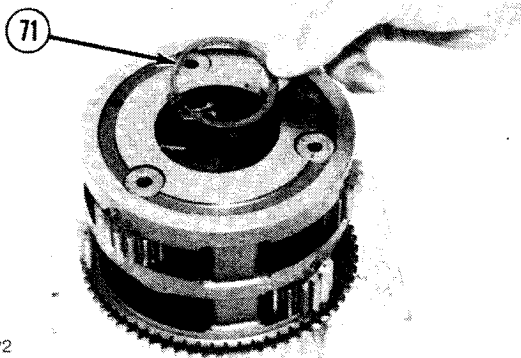
18. Install bearing (73) in planetary carrier (67) with a soft hammer.



NOTICE

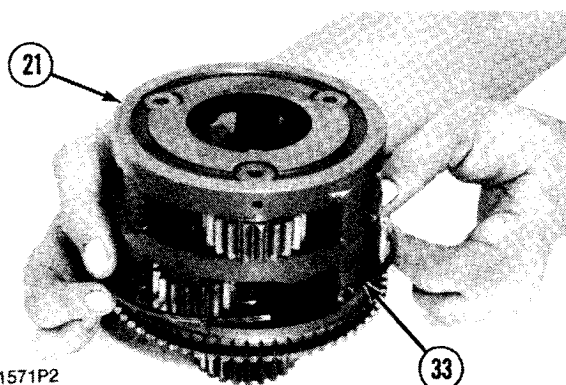
Make sure the notch in bearing (73) is in alignment with dowel (102) in sun gear (72).

19. Install sun gear (72).



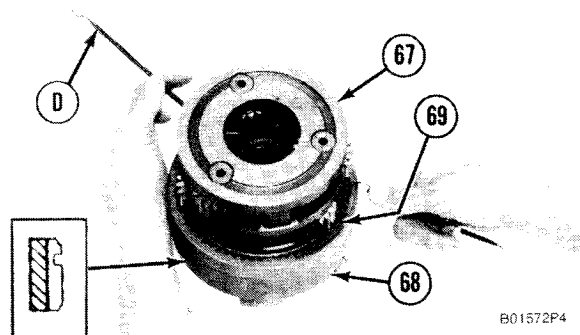
B01570P2

- 20.** Turn the planetary carrier over and put it on wooden blocks. Use tool (F) and install retaining ring (71) that holds the sun gear in place.



B01571P2

- 21.** Install ring (69) on planetary carrier (67).

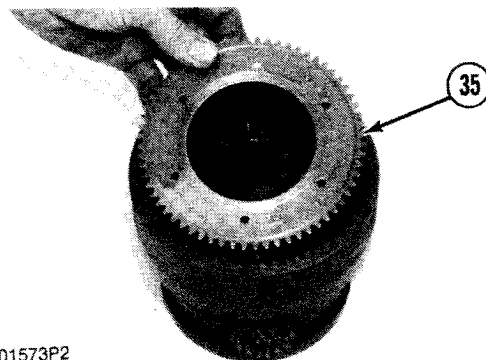


B01572P4

NOTICE

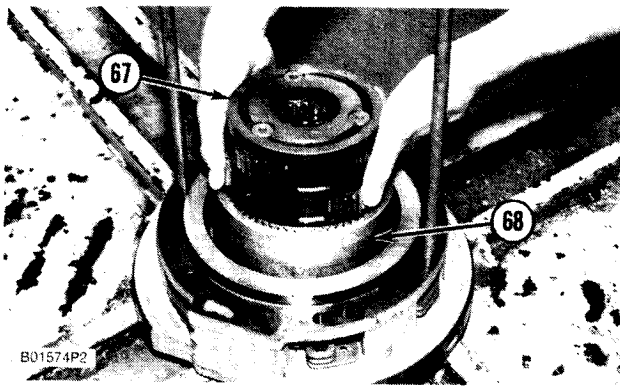
Ring gear (68) can be installed incorrectly. Make sure the groove in ring gear (68) is toward the top as shown in illustration B01572P4

- 22.** Put ring gear (68) in position on wooden blocks. Put planetary carrier (67) in position in ring gear (68). Use tooling (D) to push the ring in the groove in the planetary carrier. Push the planetary carrier into the ring gear until ring (69) moves into place in the groove in the ring gear.

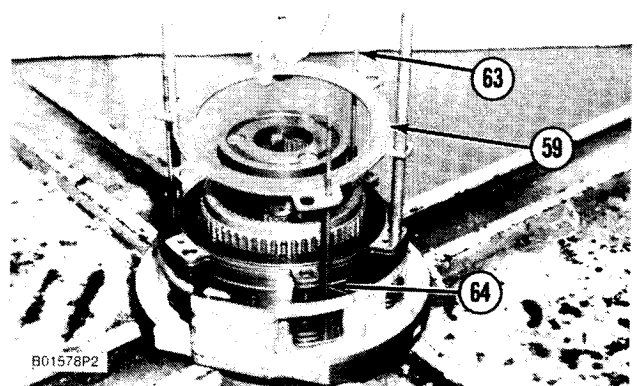


B01573P2

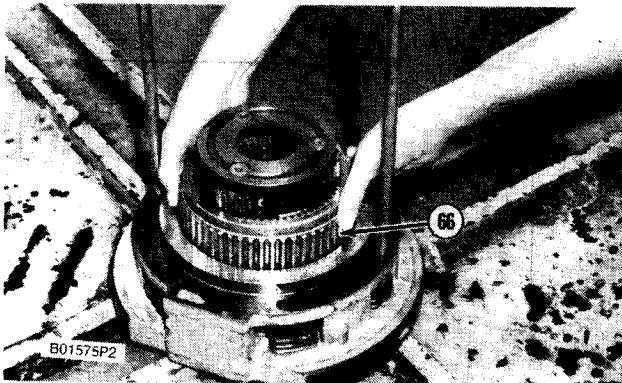
- 23.** Turn the planetary carrier over. Put clean grease on plate (70) to hold it in place. Install plate (70).



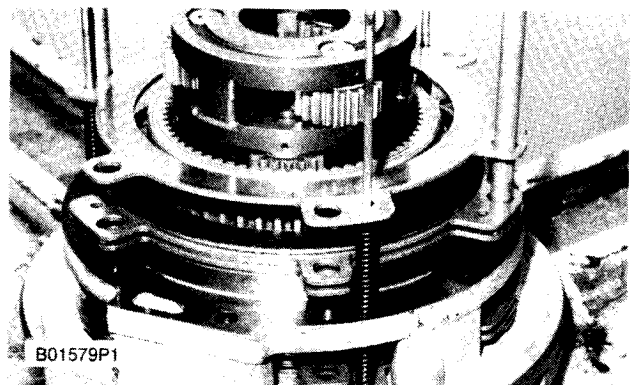
24. Install planetary carrier (67) and ring gear (68) as a unit.



27. Install three guide rods (63), three springs (64) and top plate (59).

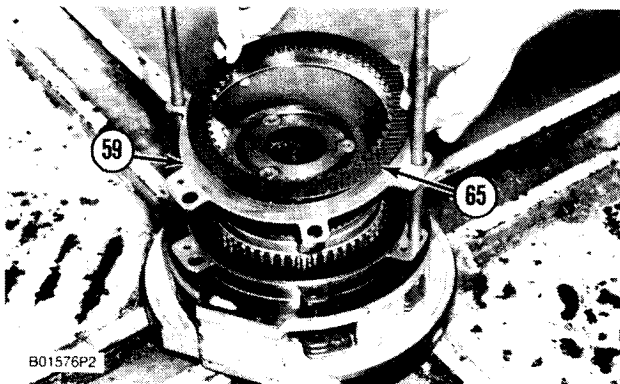


25. Install ring gear (66) on the planetary carrier.



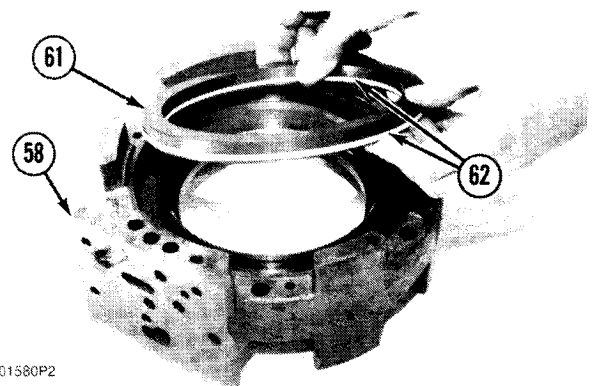
28. See illustration B1579P1 for correct position of the tangs on plates (59).

29. Remove top plate (59).

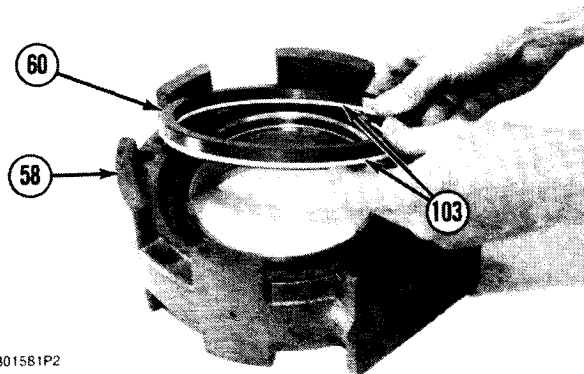


NOTE: Do not install the top plate at this time.

26. Install four discs (65) and three plates (59). Start and stop with a disc.



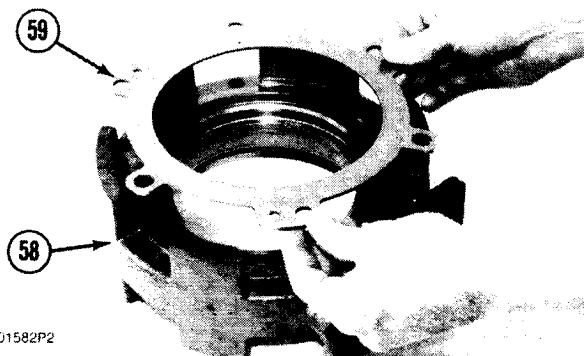
30. Install teflon rings (62) on piston (61) for the No. 3 clutch. Make sure the lip of the teflon rings are toward the clutch housing. Put clean transmission oil on the rings. Install piston (61) in No. 2 and 3 clutch housing (58).



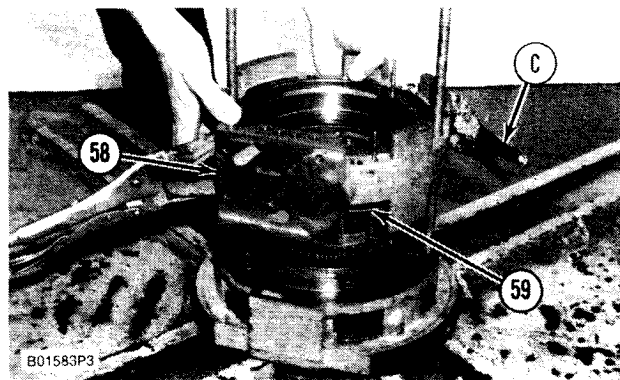
NOTICE

Do not let piston (61) fall when the clutch housing is turned over.

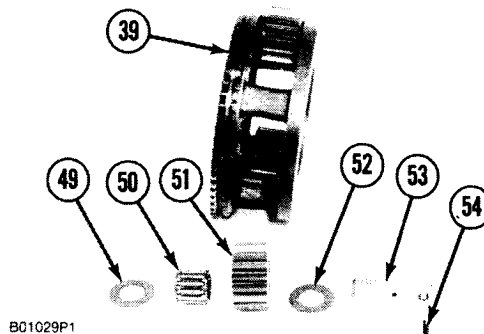
31. Turn the clutch housing over. Install teflon rings (103) on piston (60) for the No. 2 clutch. Make sure the lip of the teflon rings is toward the clutch housing. Put clean transmission oil on the rings. Install piston (60) in No. 2 and 3 clutch housing (58).



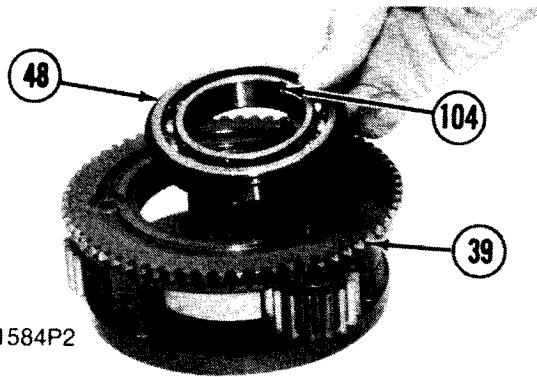
32. Install top plate (59) in No. 2 and 3 clutch housing (58).



33. Install tooling (C) to hold piston (60) and plate (59) in the clutch housing. Turn the clutch housing over.
34. Install No. 2 and 3 clutch housing (58). Remove tooling (C). Make sure the tangs on the plates are in the correct position.

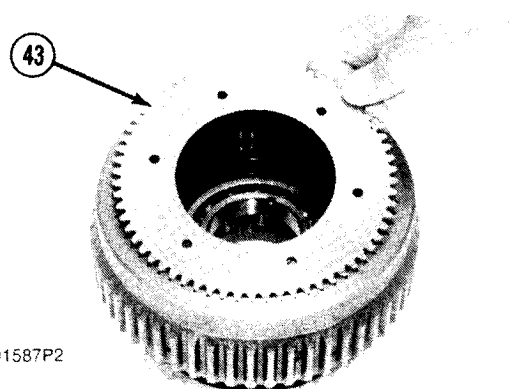


35. Install bearings (50) in gears (51) for planetary carrier (39). Install gears (51) in the planetary carrier with thrust washers (49) and (52) on both sides of the gears. Install shafts (53). Make an alignment of the hole in the shaft with the hole in the planetary carrier.
36. Install pins (54) that hold shafts (53) in planetary carrier (39).



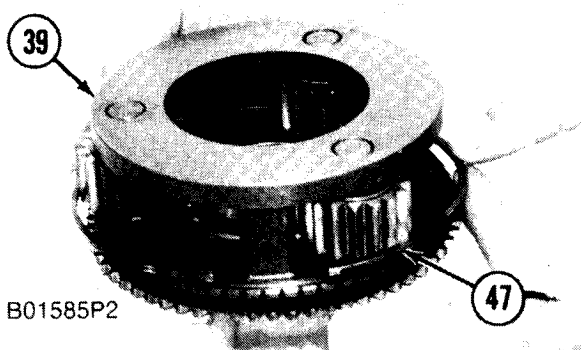
B01584P2

37. Install bearing (48) in planetary carrier (39) with a soft hammer. Make sure notch (104) is up as shown.



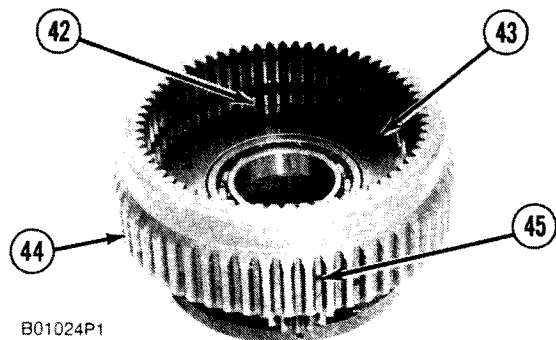
B01587P2

40. Put plate (43) in position in the ring gear.



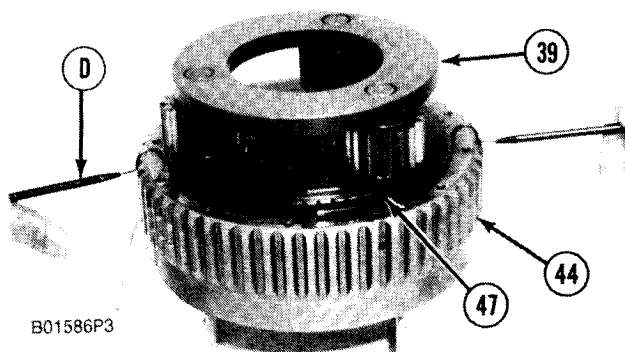
B01585P2

38. Install ring (47) on planetary carrier (39).



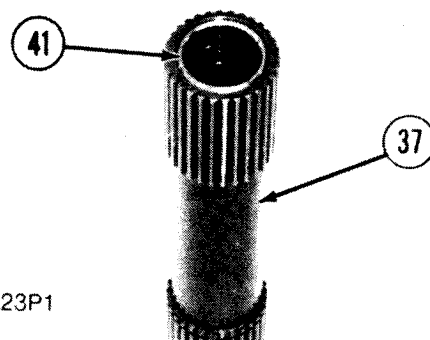
B01024P1

41. Use a punch and a hammer and install pins (42) and (45) that hold plate (43) in ring gear (44).



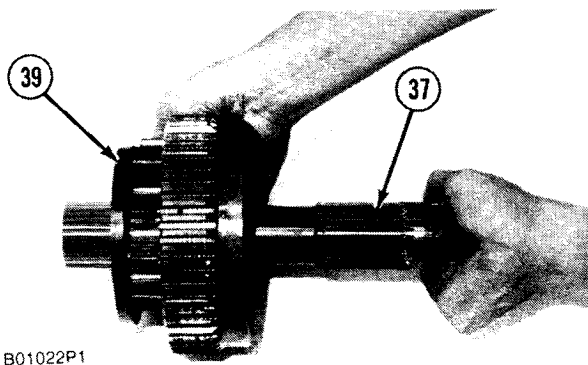
B01586P3

39. Put ring gear in position as shown. Put planetary carrier (39) in position in ring gear (44). Use tooling (D) to push the ring in the groove in the planetary carrier. Push the planetary carrier into the ring gear until ring (47) moves into place in the groove in the ring gear.



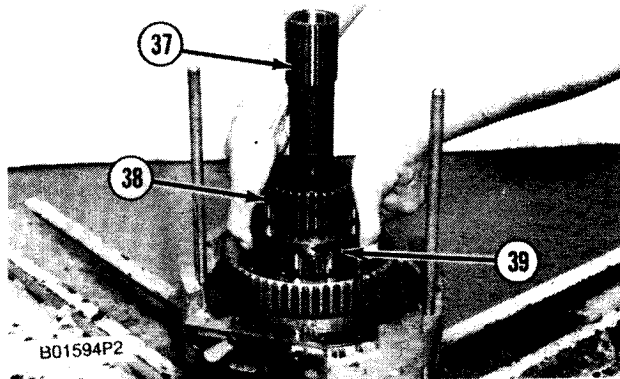
B01023P1

42. Install bearings (41) in output shaft (37) with tooling (G). Install the bearings to a depth of **2.26 ± 0.25 mm (.089 ± .010 in)** below the outside surface.



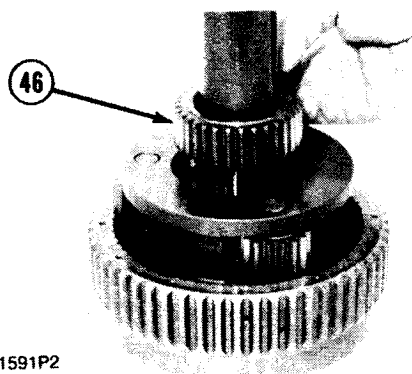
B01022P1

- 43.** Slide planetary carrier (39) into position on output shaft (37).



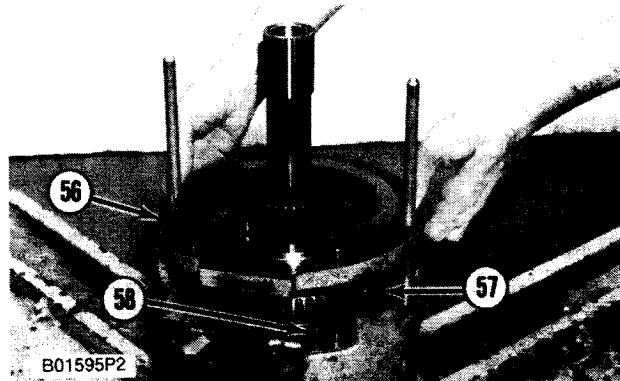
B01594P2

- 46.** Install output shaft (37) planetary carrier (39) and hub (38) as a unit.



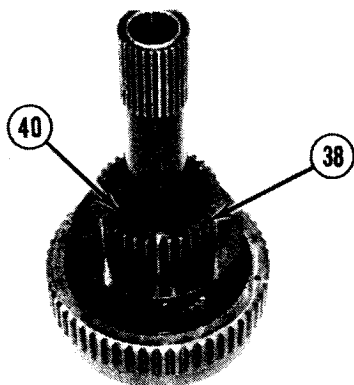
B01591P2

- 44.** Install sun gear (46) in the planetary carrier.



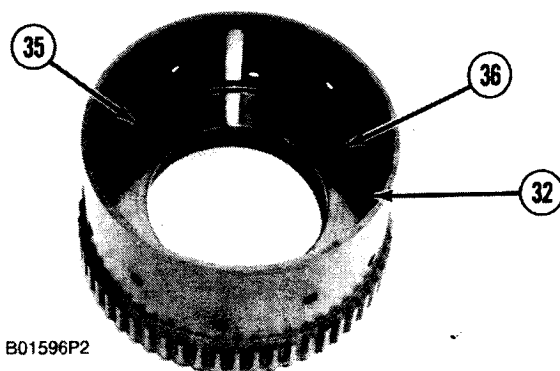
B01595P2

- 47.** Install the four plates and four discs (57) for the No. 3 clutch. Start with a plate and stop with a disc. Note the correct position of the tangs on the plates. Install plate (56) on the No. 2 and 3 clutch housing.



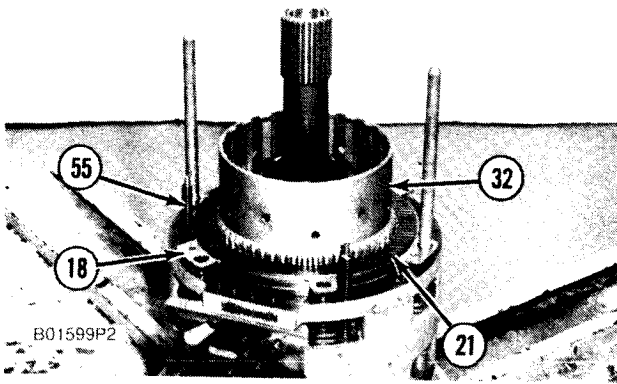
B01021P1

- 45.** Install hub (38) on the output shaft and use tool (F) to install retaining ring (40) that holds the hub on the output shaft.



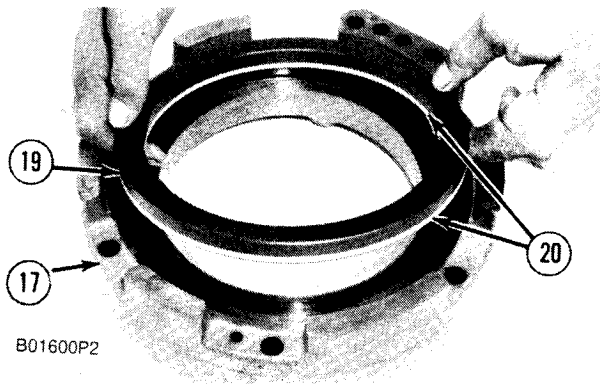
B01596P2

- 48.** Put plate (36) in position in ring gear (32). Install ring (35) that holds the plate in the ring gear.

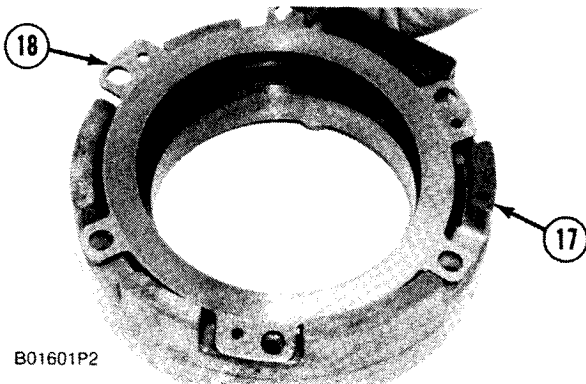


NOTE: Do not install the top plate at this time.

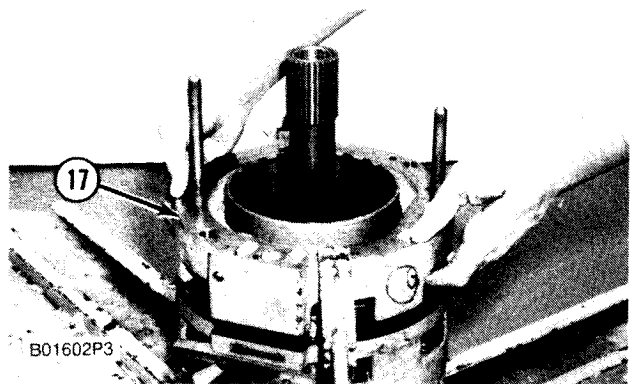
49. Install ring gear (32), three discs (21), two plates (18) and three springs (55), for the No. 4 clutch. Start and stop with a disc.



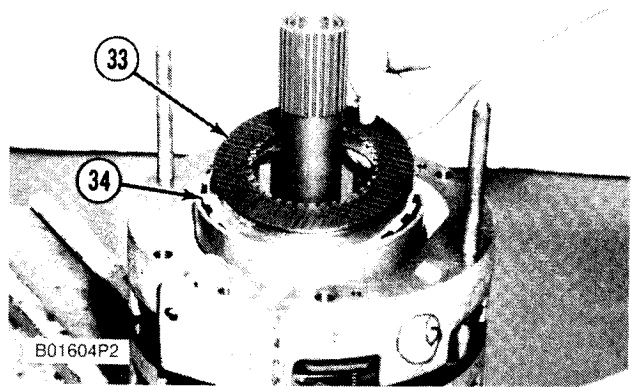
50. Install teflon rings (20) on piston (19) and make sure the lip of the teflon rings are toward the clutch housing. Put clean transmission oil on the rings and install piston (19) in No. 4 clutch housing (17).



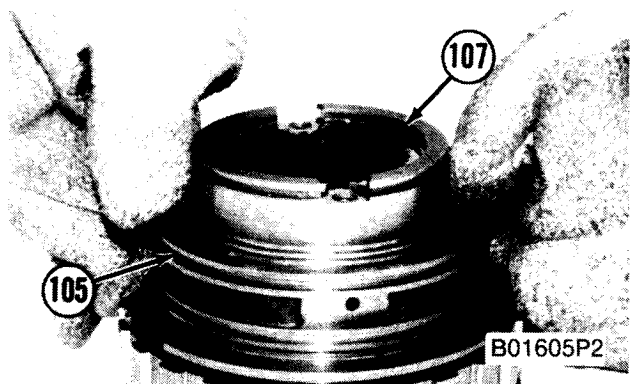
51. Install top plate (18) in No. 4 clutch housing (17).



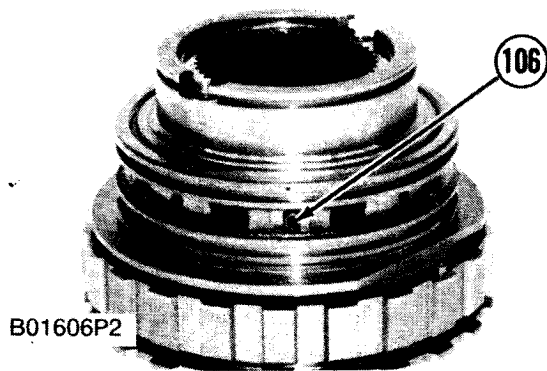
52. Install tooling (C) to hold piston (19) and top plate (18), install No. 4 clutch housing (17). Remove tooling (C).



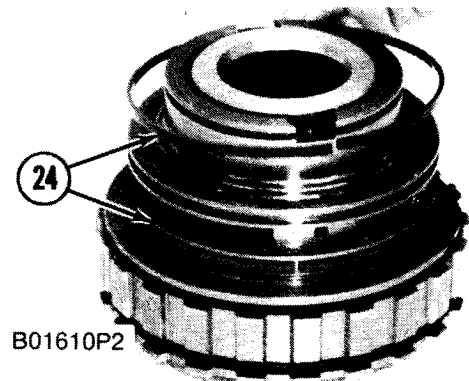
53. Install five discs (33) and four plates (34) for the No. 5 clutch.



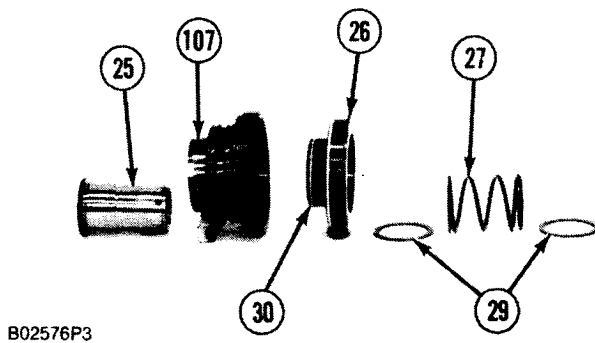
54. Heat seal carrier (105) to a temperature of **138° to 165° C (280° to 330° F)** for ten minutes. Install seal carrier (105) on housing (107). Make sure the groove (slot) in the seal carrier is in alignment with the hole in the housing.



55. Install pin (106) that holds the seal carrier in place.

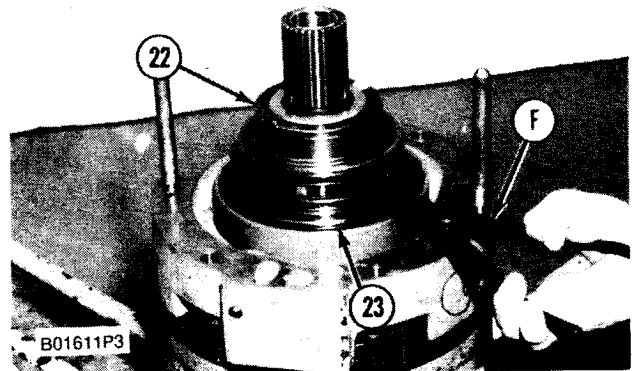


60. Install seal rings (24) on the seal carrier.

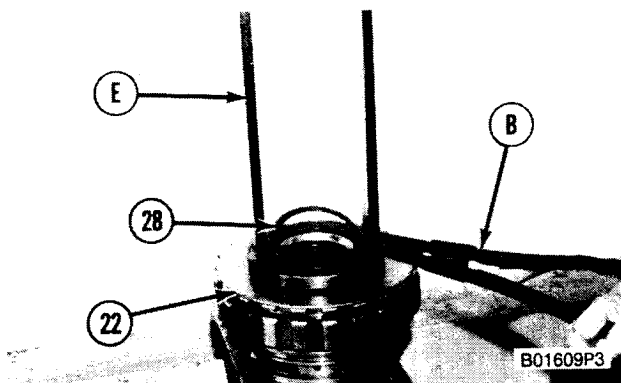


56. Install the O-ring and smaller teflon ring (30) on the piston. Install larger teflon ring (30) on the piston. The larger teflon ring has a lip on the ring and the lip must be toward the housing. Install piston (26) in housing (107).

57. Install shaft (25) into housing (107). Install one spacer (29), spring (27) and other spacer (29).

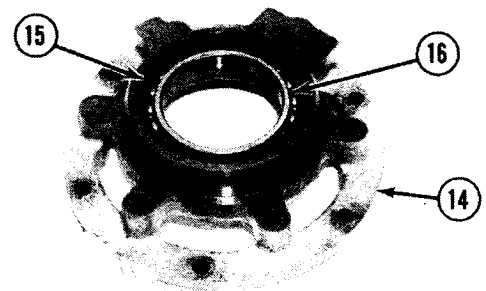


61. Install housing assembly (22) and use tooling (F) to install retaining ring (23) that holds the housing assembly in the ring gear.

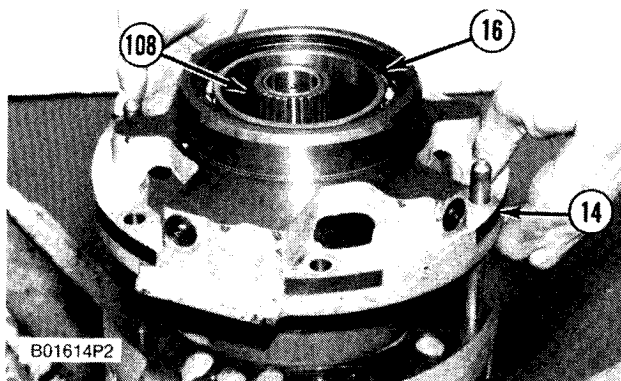


58. Put housing assembly (22) in a press. Use tooling (E) and the press and put spring (27) under compression until the groove for the retaining ring is above spacer (29).

59. Install retaining ring (28) with tool (B).



62. Heat bearing (16) to a maximum temperature of **135° C (275° F)**. Install bearing (16) in rear manifold (14). Make sure the notch in the bearing is down. Install retaining ring (15).



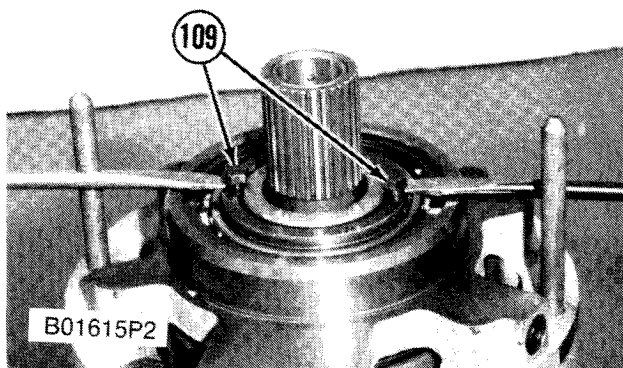
NOTICE

Make sure notch (108) in bearing (16) is in alignment with the dowel in the housing.

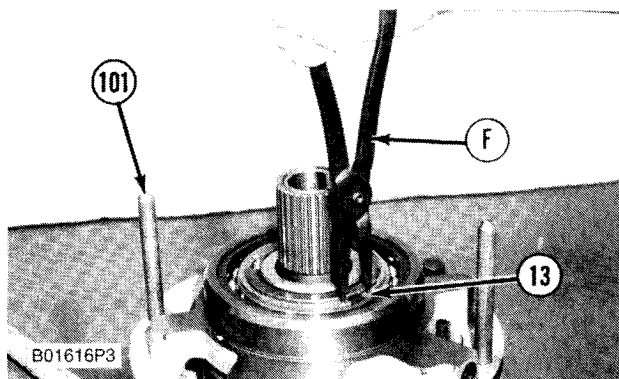
NOTICE

Be extra careful not to cause damage to the seal rings.

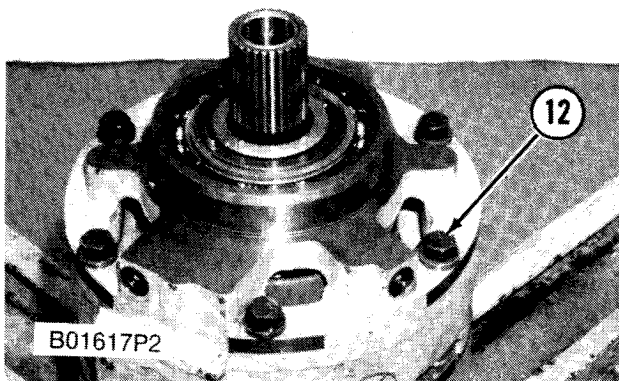
63. Install rear manifold (14) and bolts (12) that hold No. 4 clutch housing together, except for the two that the guide bolts are installed.



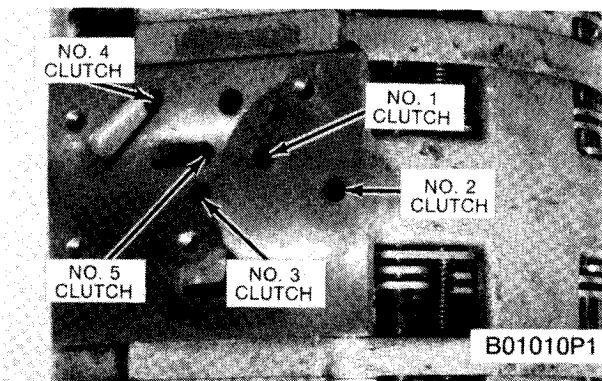
64. Install two **5/16" - 18 NC bolts** (109) into the housing assembly. Use two screwdrivers to lift up the housing assembly.



65. Use tooling (F) and install retaining ring (13) on the housing assembly.

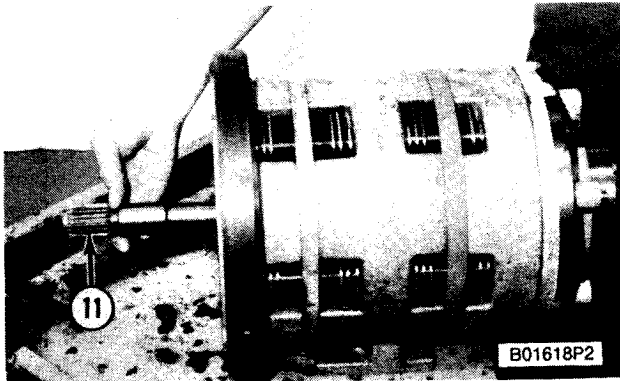


66. Remove guide bolts (101) and install bolts (12).

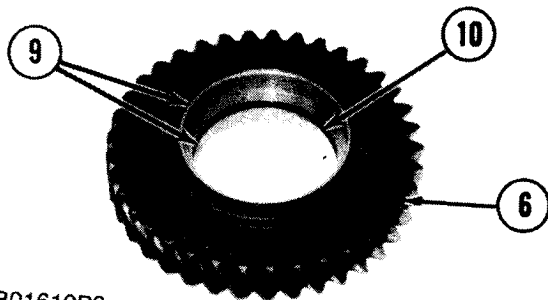


67. Check, to make sure the pistons are free in their clutch housings, [except for the number five clutch], with tool (H) as follows:
- Put air (free of water) under a pressure of **690 to 1030 kPa (100 to 150 psi)** into each of the oil passages.

- b. If the pistons do not move, put a small amount of clean **SAE 30** oil in each passage. Check for movement again. If the pistons still do not move, the transmission must be disassembled and the pistons and seals checked.

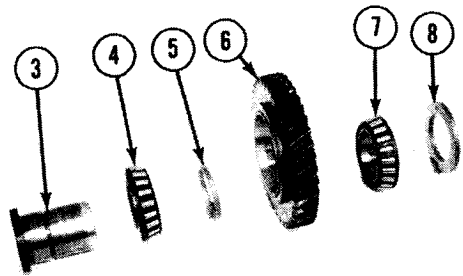


68. Install shaft (11) in the input shaft as shown. Turn the transmission so the rear manifold is against tool (A).



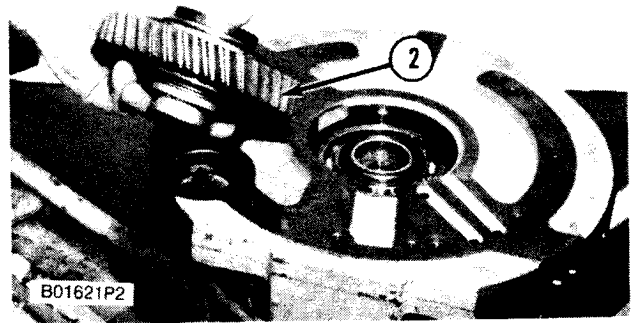
B01619P2

69. Lower the temperature of bearing cups (9). Install ring (10) and bearing cups (9) in pump drive gear (6).

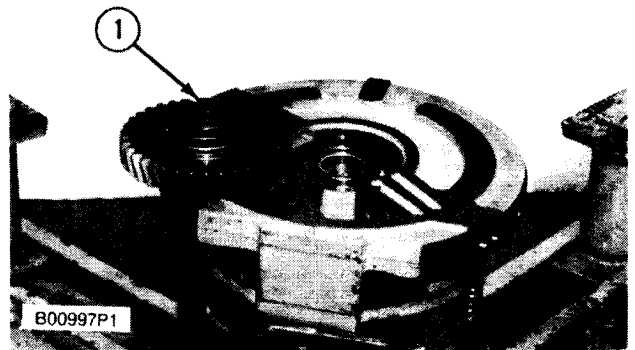


B00999P1

70. Install spacer (5) and bearing cone (4) on shaft (3). Install shaft (3), bearing cone (7) and spacer (8) into gear (6).



71. Install pump drive gear assembly (2).



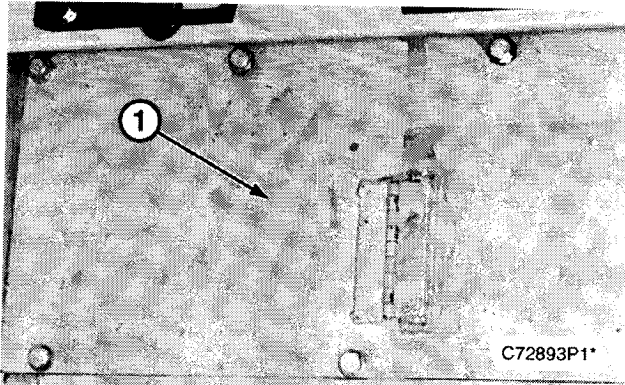
72. Install bolt (1) that holds the pump drive gear assembly in place.

End By:

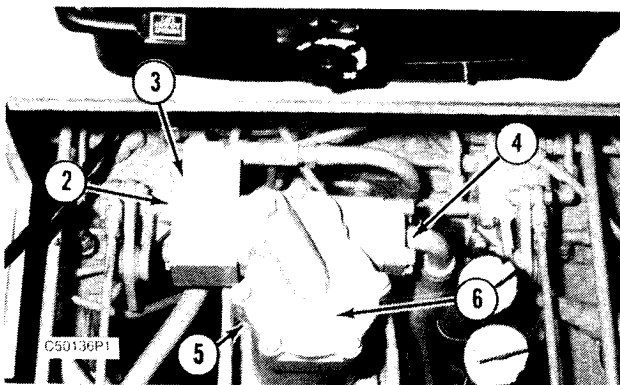
- a. install torque converter

Transmission Oil Filter (3F/3R Power Shift)

Remove & Install Transmission Oil Filter (3F/3R Power Shift) 3179-010



1. Remove the floor mat and floor plate (1) in front of seat.



2. Remove four bolts (2) to disconnect manifold (3) from transmission oil filter housing.
3. Disconnect oil line (4) from transmission oil filter housing.
4. Remove four bolts (5) that hold transmission oil filter housing to the transmission. Remove transmission oil filter housing (6).

NOTE: Install in the reverse order.

Disassemble & Assemble Transmission Oil Filter (3F/3R Power Shift) 3179-017

Start By:

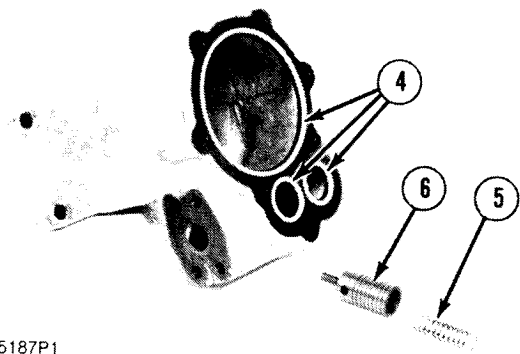
- a. remove transmission oil filter

NOTE: If only the filter bypass valve is to be removed, remove plug (2) from the cover. Remove spring (5) and valve spool (6) from the housing.

1. Drain the oil from the oil filter housing.



2. Remove bolts (1) that hold cover (3) to the housing. Remove cover (3) and the oil filter element from the housing.
3. Remove the oil filter element and the O-ring seal for the oil filter element from the cover.



4. Remove O-ring seals (4) from the housing.
5. Remove spring (5) and valve spool (6) for the filter bypass valve from the housing.

NOTE: The following steps are for assembly of the transmission oil filter.

6. Make sure all of the parts of the transmission oil filter are clean. Inspect the O-ring seals for damage and make replacements if needed. Put clean oil on the parts.
7. Install O-ring seals (4) in the housing.
8. Install valve spool (6) and spring (5) for the filter bypass valve in the housing.
9. Install the O-ring seal and filter element on cover (3).
10. Install cover (3) on the housing.

End By:

- a. install transmission oil filter

