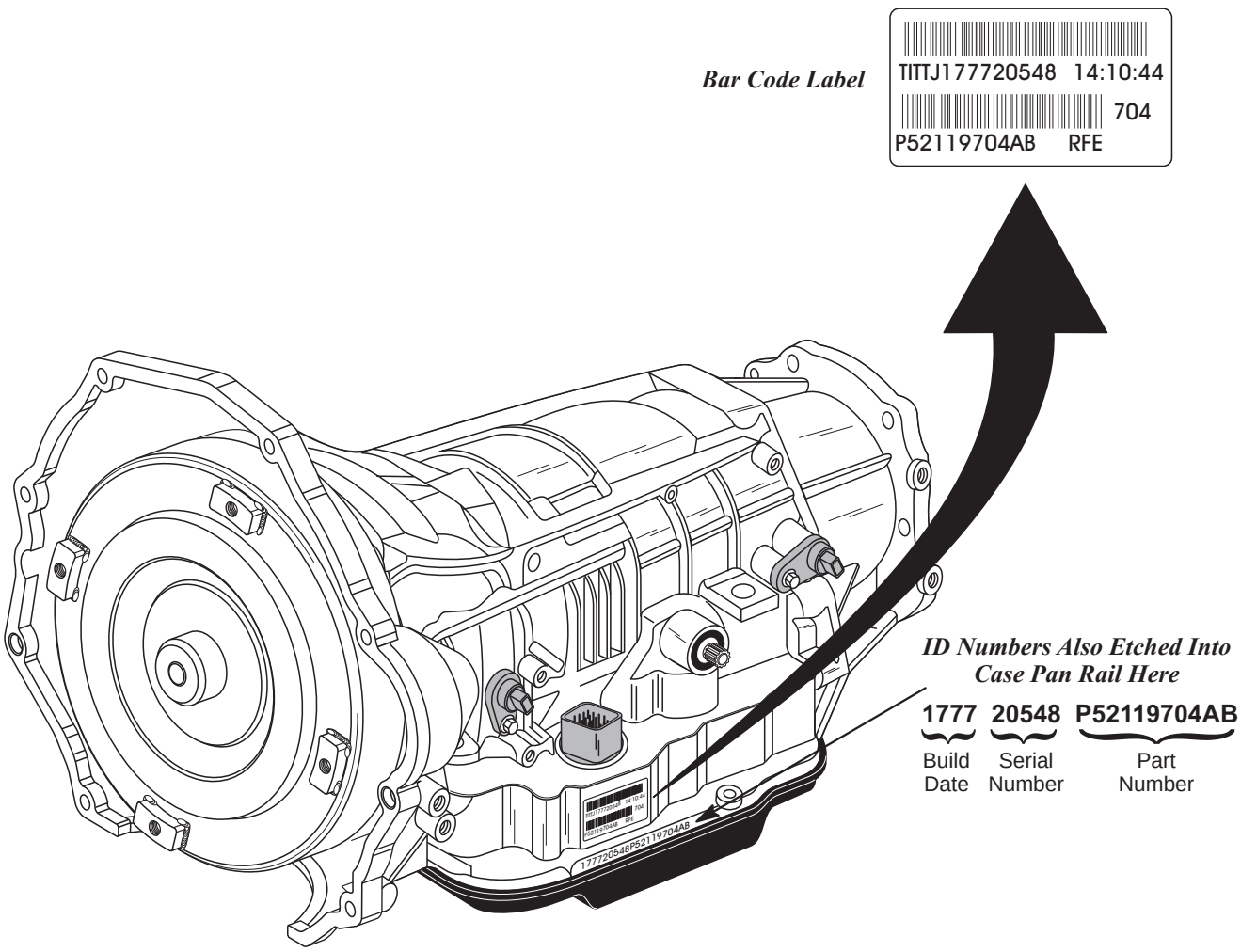
INDEX

DODGE RAM TRUCKS 68RFE TRANSMISSION

FOUND BEHIND 5.9L (L6) and 6.7L Diesel Engines



6 = *Six Forward Speeds*

8 = *Relative Torque Capacity*

R = *Rear Wheel Drive*

FE = *Fully Electronic*

Fluid Requirements
"Mopar® ATF+4"

Figure 1

OUTPUTS FROM THE TCM

Transmission Control Relay - is located in the Integrated Power Distribution Module (IPDM), as shown in Figure 8, and recieves a ground signal from terminal (C1) 18 at the TCM to close the relay. Refer to the wiring schematic in Figure 10.

Underdrive Solenoid - is ***normally applied*** and controls oil to the Underdrive Clutch in 1st, 2nd, 3rd, and 4th gears of the transmission.

Overdrive Solenoid - is ***normally vented*** and controls oil to the Overdrive Clutch in 4th, 5th, and 6th gears in the transmission.

4th Clutch Solenoid - is ***normally vented*** and controls oil to the 4th clutch in 3rd and 5th gears in the transmission.

2nd Clutch Solenoid - is ***normally vented*** and controls oil to the 2nd clutch in 2nd and 6th gears in the transmission.

Low/Reverse Solenoid - is ***normally vented*** and is used to apply the Low/Reverse clutch in 1st gear from Park or Neutral, or a coast down to 1st gear. This solenoid also controls oil pressure for the converter clutch engagement based on switch valve position.

Multi-Select Solenoid - is ***normally applied*** and controls the Overdrive Clutch in 4th gear Limp-in, and the Low/Reverse clutch for reverse block. This solenoid is Off below 8 MPH, On above 8 MPH.

Line Pressure Solenoid - is ***normally vented*** and is used to controll all oil pressures in the transmission.

Note: Refer to Page 20 for a solenoid resistance chart for all solenoids.

DIAGNOSIS AND SERVICE INFORMATION

You have been provided with the 23-way case connector pin cavity identification and pin function in Figure 11. The 38-way Diesel NGC/TCM connector pin cavity identification and pin function is shown in Figure 13 and 14. A complete transmission wiring schematic is provided in Figure 10, and transmission control relay location in the power distribution center is shown in Figure 9.

Special tools that might be needed are illustrated on Page 26 and 27, along with the identification of the pressure taps that are available on the main valve body. Air pressure test passage identification is provided for you in Figure 17.

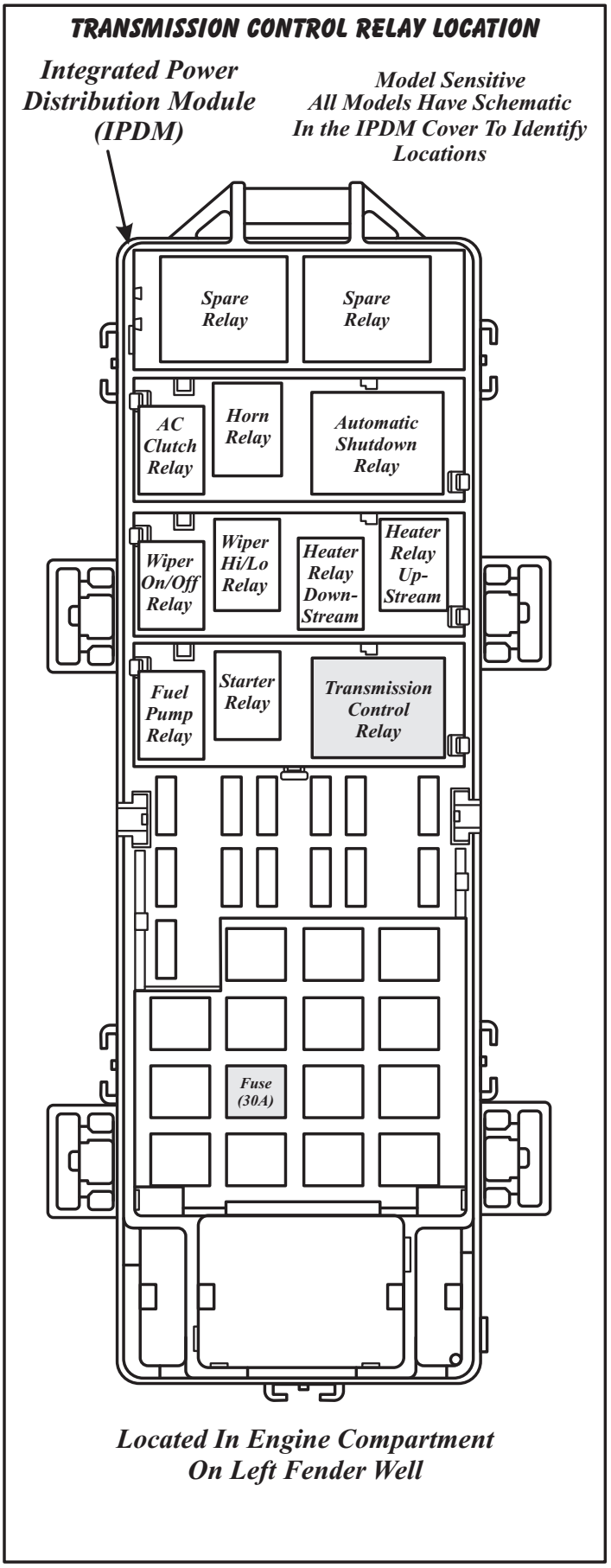


Figure 8

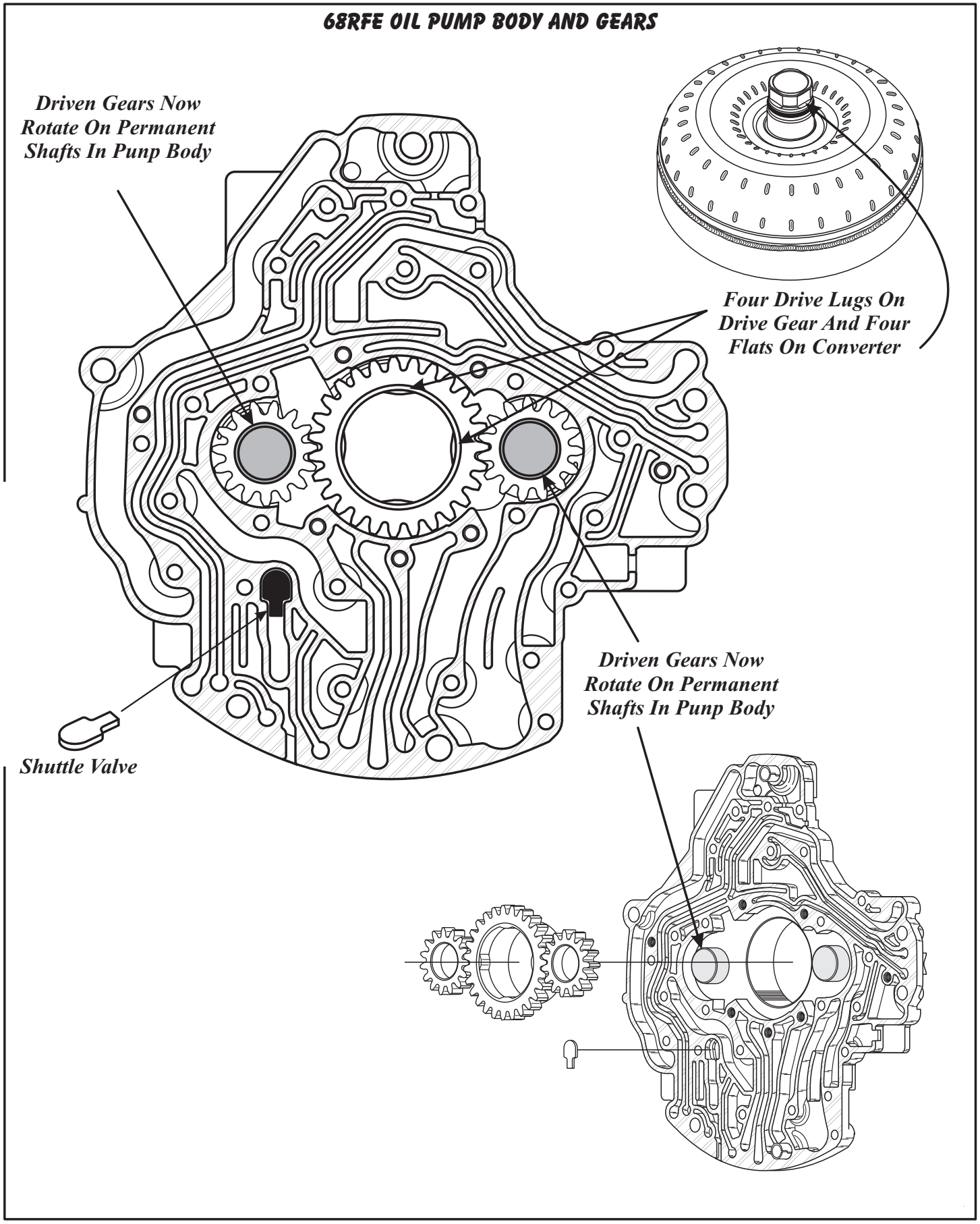
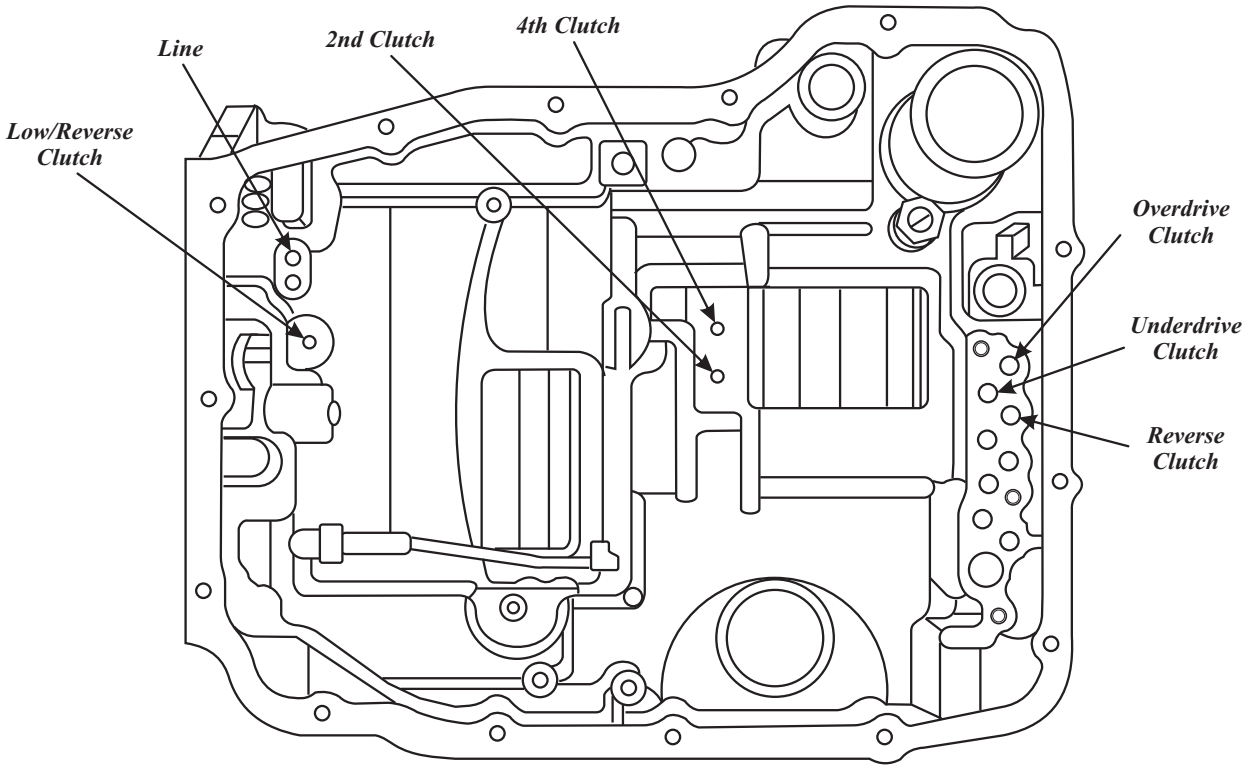

68RFE OIL PUMP BODY AND GEARS
Driven Gears Now Rotate On Permanent Shafts In Pump Body
Four Drive Lugs On Drive Gear And Four Flats On Converter
Shuttle Valve
Driven Gears Now Rotate On Permanent Shafts In Pump Body

Figure 16

68RFE DIAGNOSTIC TROUBLE CODES	
DTC	DESCRIPTION
P0987	Fourth Clutch Pressure, Pressure Test
P0988	Fourth Clutch Pressure Switch Rationallity
P1679	Calibration Not Learned
P1684	Battery Was Disconnected
P1715	Restricted Manual Valve In T3 Range
P1720	Input Speed Sensor, No Signal
P1775	Solenoid Switch Valve, Latched In TCC position
P1776	Solenoid Switch Valve, Latched In LowReverse position
P1794	Speed Sensor, Ground Error
P2700	Inadequate Element Volume In Low/Reverse Clutch
P2701	Inadequate Element Volume In Second Clutch
P2702	Inadequate Element Volume In Overdrive Clutch
P2703	Inadequate Element Volume In Underdrive Clutch
P2704	Inadequate Element Volume In Fourth Clutch
P2706	Multi-Select Solenoid Circuit Fault
P2741	Transmission Fluid Temperature Sensor Performance
P2742	Transmission Fluid Temperature Sensor Low
P2743	Transmission Fluid Temperature Sensor High
P2757	TCC Pressure Control Solenoid, Control Circuit Performance
P2806	Transmission Range Sensor Alignment

Figure 23

68RFE CASE PASSAGE IDENTIFICATION



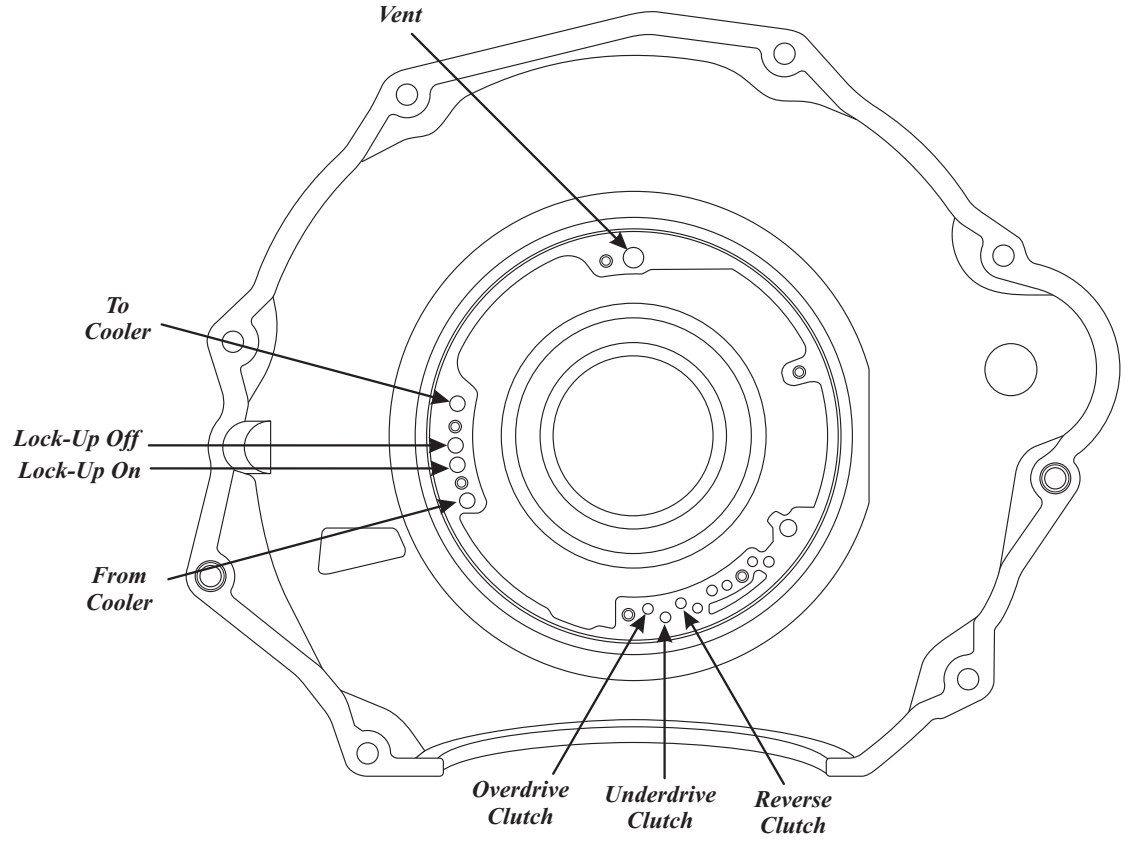


Figure 30

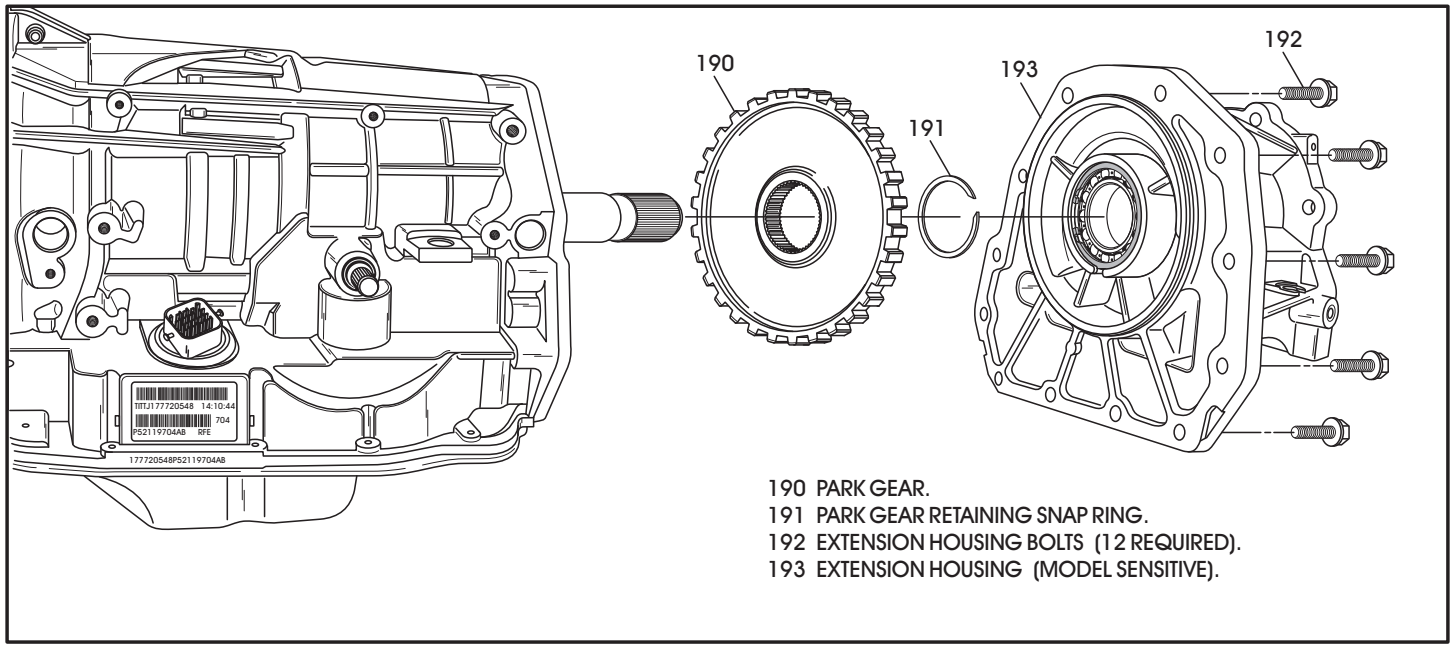


Figure 37

TRANSMISSION DISASSEMBLY (CONT'D)

9. Remove the 12 extension housing to case retaining bolts using a 15mm socket and then remove the extension housing, as shown in Figure 37.
10. Remove the park gear snap ring from the output shaft and remove the park gear, as shown in Figure 37.
11. Using a dial indicator, measure and record the output shaft end-play reading, as shown in Figure 38, to use as a reference for re-assembly. ***Note: Use screwdriver and small wood block to move gear train up and down, as shown in Figure 38.***

Continued on Page 35

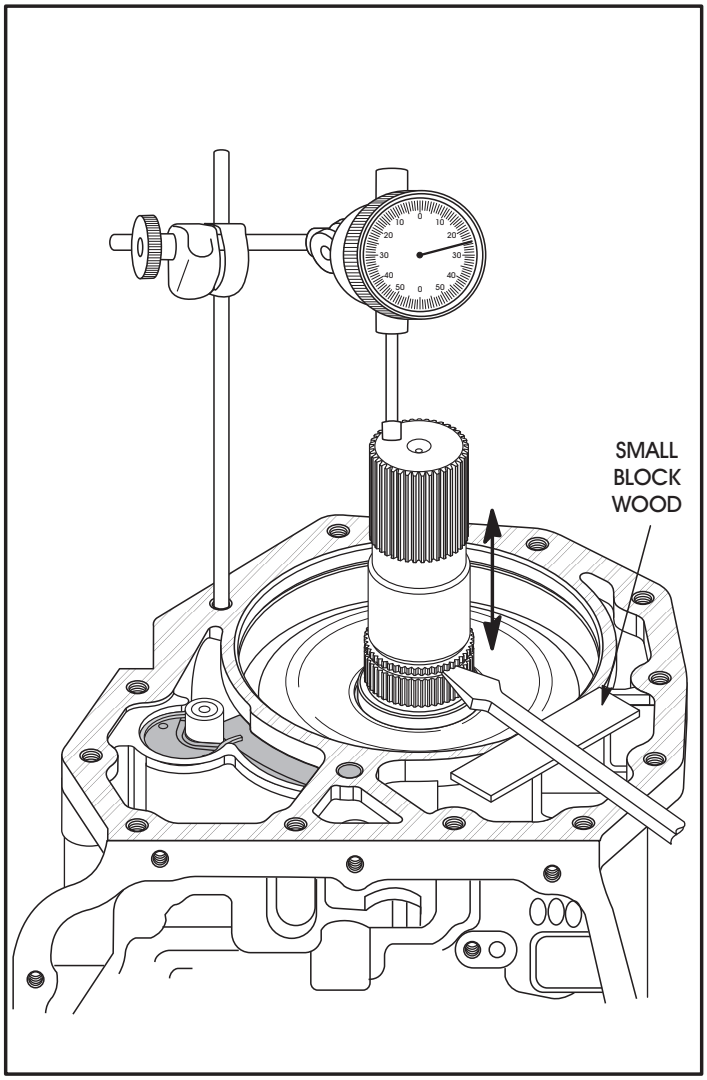
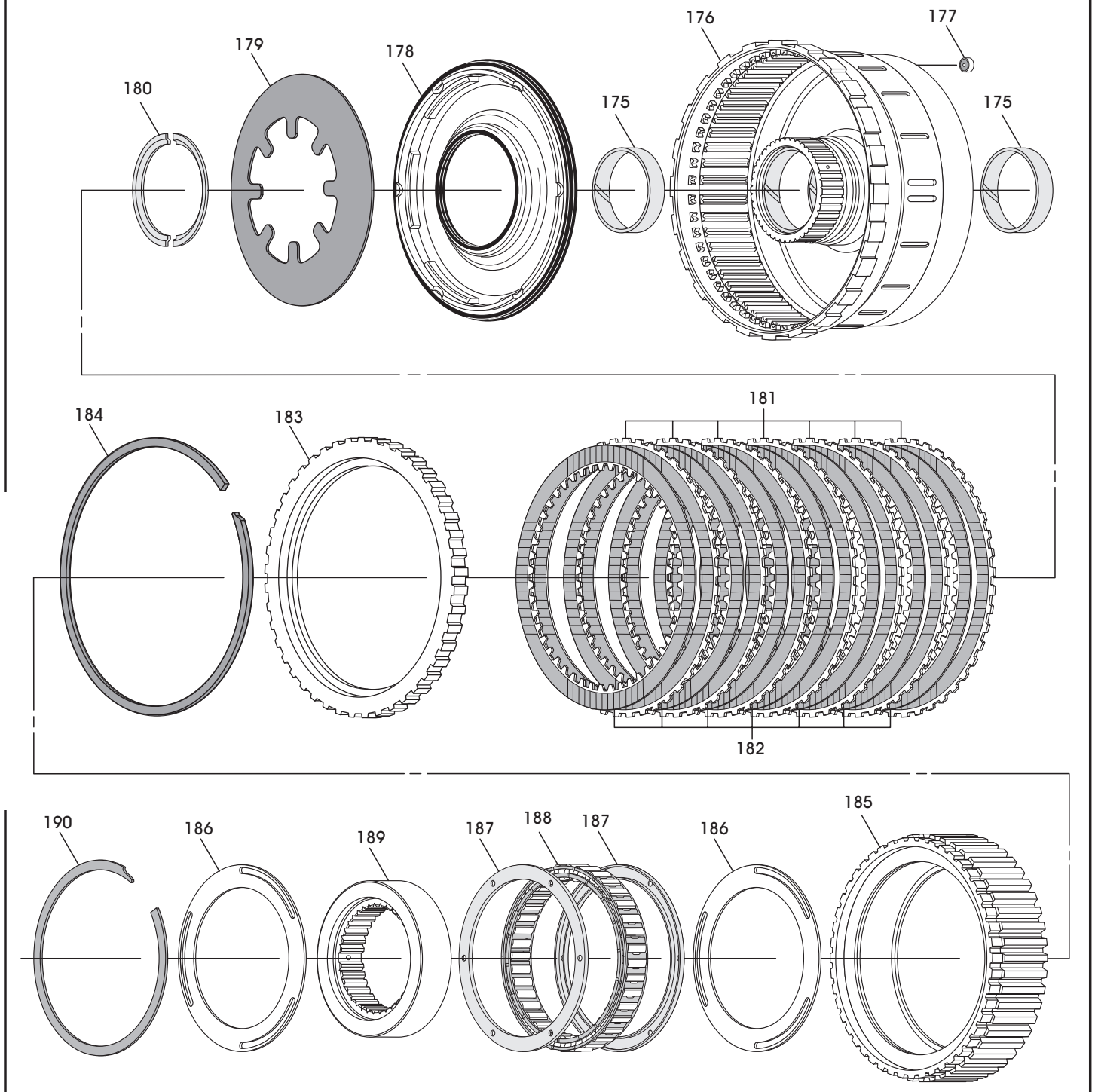


Figure 38

LOW/REVERSE CLUTCH HOUSING AND LOW SPRAG, EXPLODED VIEW



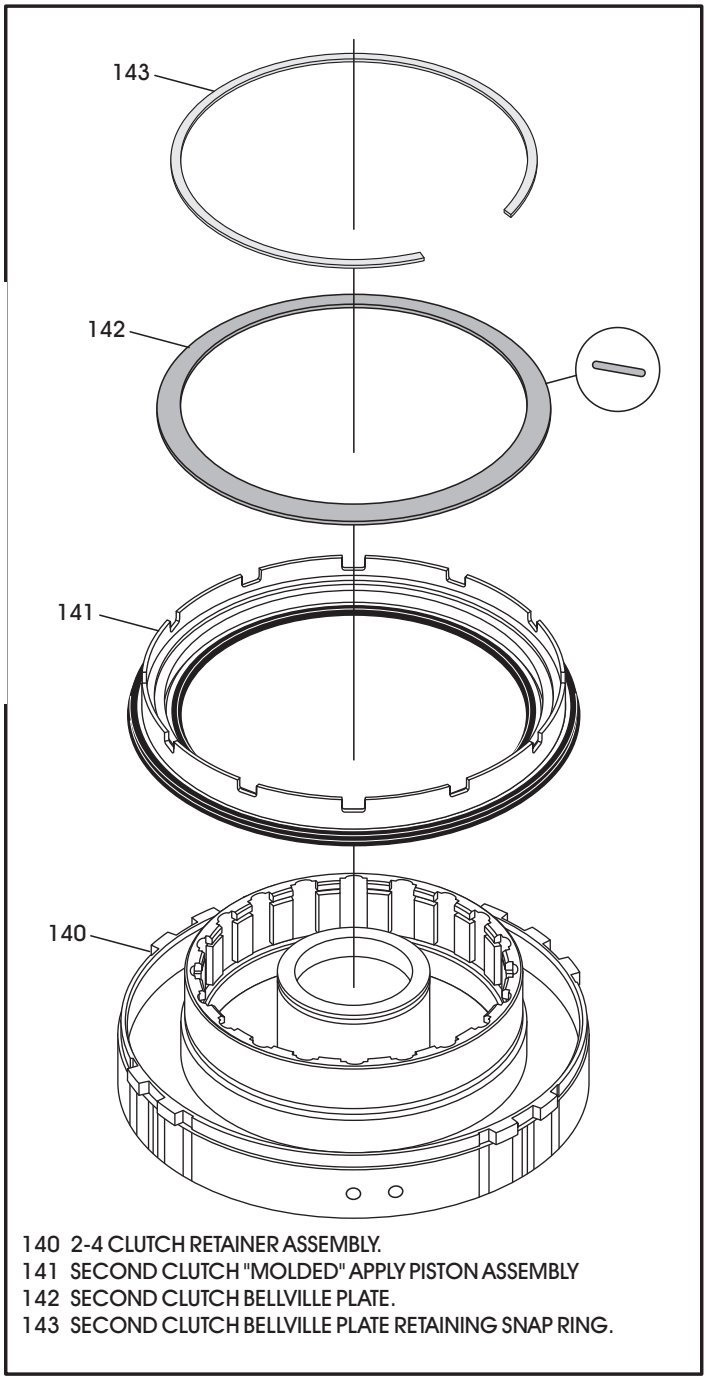
175 LOW/REVERSE CLUTCH HOUSING BUSHINGS (2 REQUIRED).
176 LOW/REVERSE CLUTCH HOUSING.
177 LOW/REVERSE CLUTCH HOUSING BLEED ORIFICE.
178 LOW/REVERSE CLUTCH "MOLDED" APPLY PISTON.
179 LOW/REVERSE CLUTCH BELLVILLE PLATE.
180 LOW/REVERSE CLUTCH BELLVILLE PLATE "SPLIT" RETAINER.
181 L/R CLUTCH SINGLE SIDED *EXTERNAL SPLINE* PLATES (7 REQ).
182 L/R CLUTCH SINGLE SIDED *INTERNAL* SPLINE PLATES (7 REQ.).
183 LOW/REVERSE CLUTCH BACKING PLATE.
184 LOW/REVERSE CLUTCH "*SELECTIVE*" SNAP RING.
185 LOW SPRAG OUTER RACE.
186 LOW SPRAG THRUST PLATES (2 REQUIRED).
187 LOW SPRAG END BREARINGS (2 REQUIRED).
188 LOW SPRAG ASSEMBLY (36 ELEMENTS).
189 LOW SPRAG INNER RACE.
190 LOW SPRAG RETAINING SNAP RING.

Figure 66

2-4 CLUTCH RETAINER ASSEMBLY (CONT'D)

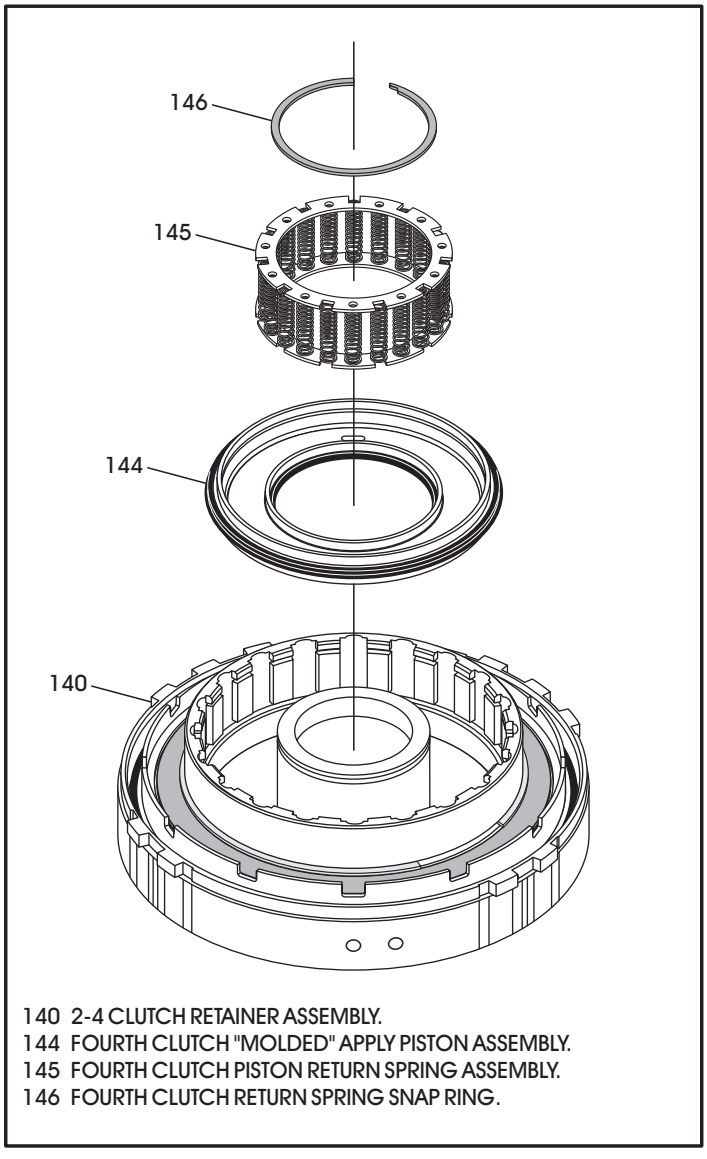
4. Lubricate seal surfaces of 2nd clutch piston and retainer with small amount of Trans-Jel®.
5. Install the "molded" 2nd clutch piston into the 2-4 clutch retainer, as shown in Figure 81.
6. Install the 2nd clutch piston bellville plate on top of the piston, as shown in Figure 80.
7. Using a suitable shop press, compress bellville spring until the snap ring is engaged into the snap ring groove in 2-4 retainer, and ensure that it is fully seated (See Figure 81).
8. Lubricate seal surfaces of 4th clutch piston and retainer with small amount of Trans-Jel®.
9. Install the "molded" 4th clutch piston into the 2-4 clutch retainer, as shown in Figure 82.
10. Install 4th clutch piston return spring assembly on top of piston, as shown in Figure 82.
11. Position the retaining snap ring on top of the return spring (See Figure 82).
12. Using a suitable shop press, compress the return spring and install the snap ring into the groove in the 2-4 retainer.
13. Ensure that the snap rings of 4th clutch and the 2nd clutch return springs are fully seated.

Continued on Page 55



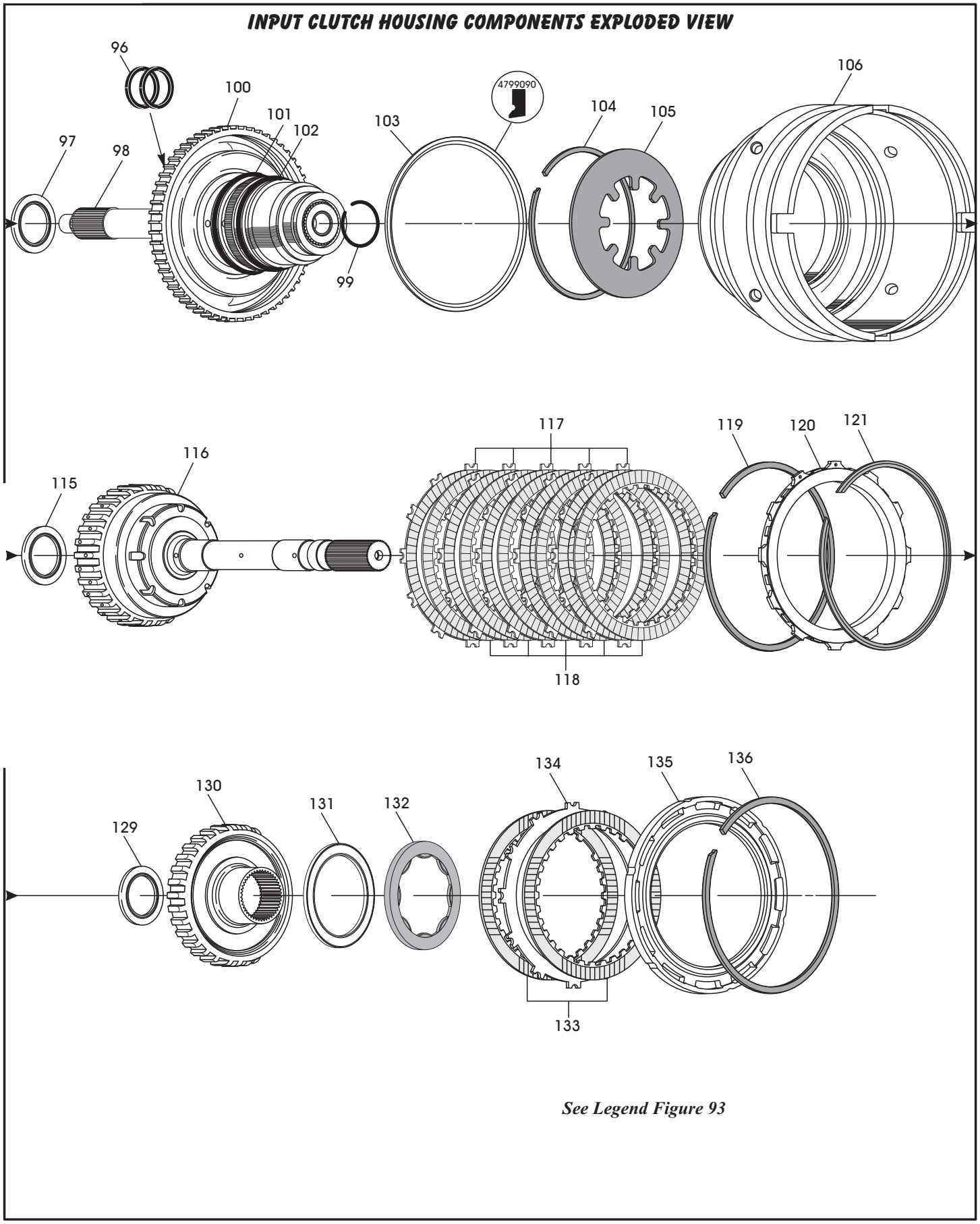
140 2-4 CLUTCH RETAINER ASSEMBLY.
141 SECOND CLUTCH "MOLDED" APPLY PISTON ASSEMBLY
142 SECOND CLUTCH BELLVILLE PLATE.
143 SECOND CLUTCH BELLVILLE PLATE RETAINING SNAP RING.

Figure 81



140 2-4 CLUTCH RETAINER ASSEMBLY.
144 FOURTH CLUTCH "MOLDED" APPLY PISTON ASSEMBLY.
145 FOURTH CLUTCH PISTON RETURN SPRING ASSEMBLY.
146 FOURTH CLUTCH RETURN SPRING SNAP RING.

Figure 82



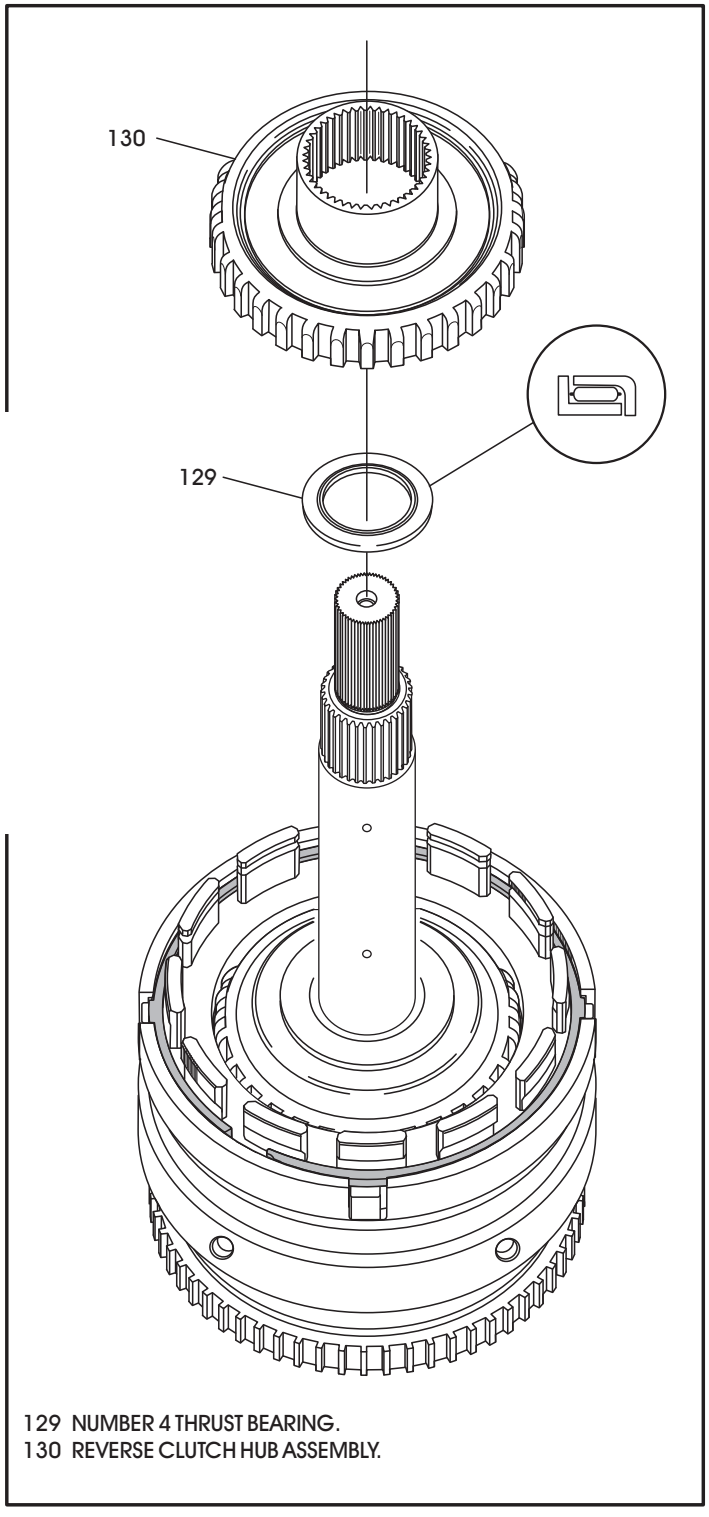
See Legend Figure 93

Figure 92

INPUT CLUTCH HOUSING ASSEMBLY (CONT'D)

46. Install the number 4 thrust bearing into reverse clutch hub, in the direction shown in Figure 106, and retain with small amount of TransJel®.
47. Install the reverse clutch hub assembly into the input housing over both shafts, as shown in Figure 106.
48. Re-install the reverse clutch pack completely, as described on Page 68, and illustrated in Figure 103.
    Note: Pry up on backing plate to allow reverse clutch hub to turn freely.
49. The number 5 thrust bearing is equipped with a selective spacer that snaps onto the bearing, as shown in Figure 107, and is used to adjust front transmission end-play.
    Note: Ensure that selective spacer is snapped onto number 5 thrust bearing properly.

Continued on Page 71



129 NUMBER 4 THRUST BEARING.
130 REVERSE CLUTCH HUB ASSEMBLY.

Figure 106

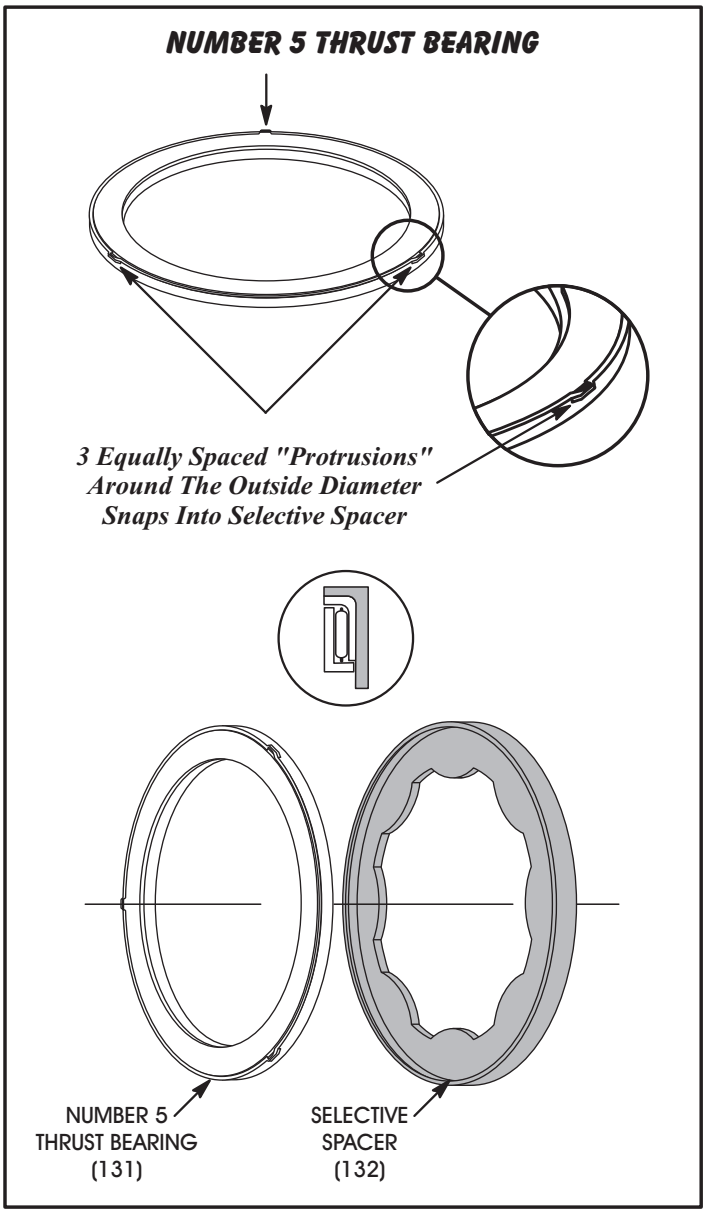


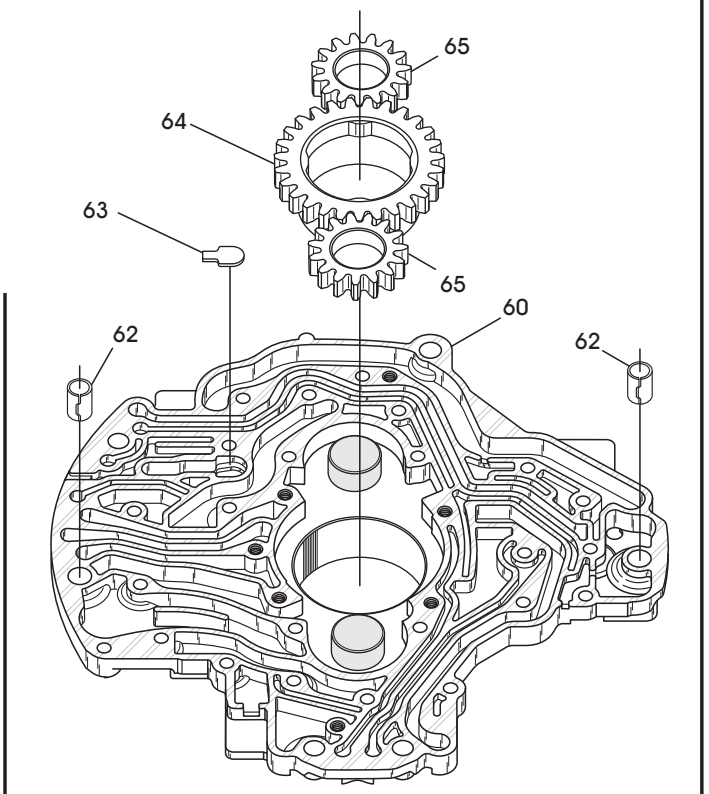
Figure 107

COMPONENT REBUILD (CONT'D)

OIL PUMP ASSEMBLY (CONT'D)

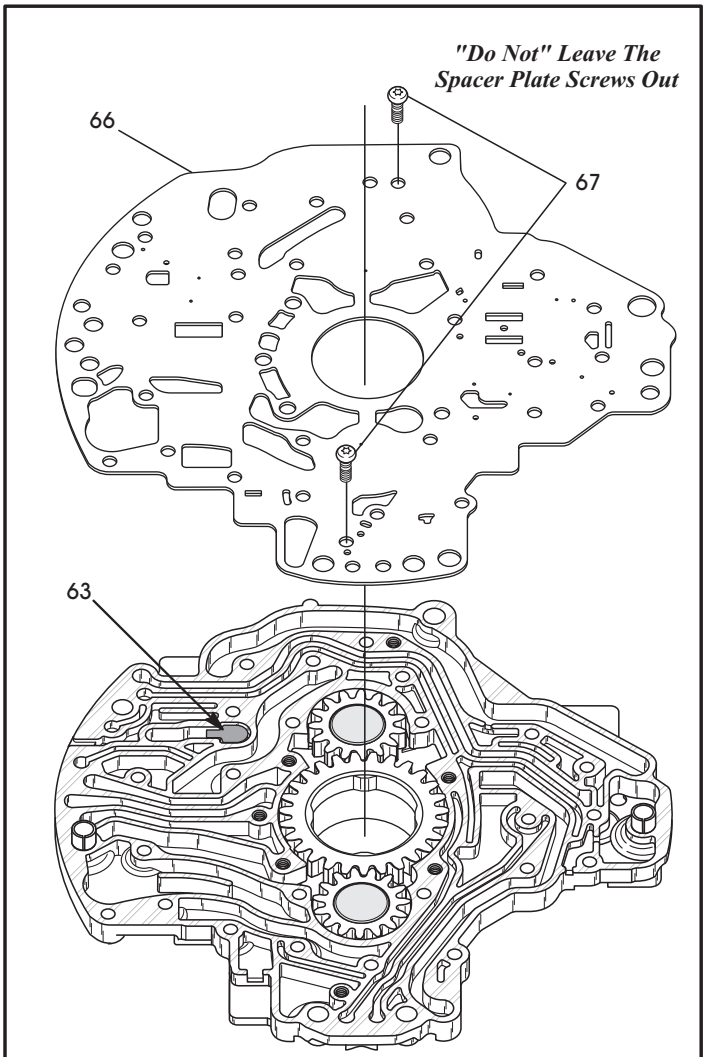
8. Install the alignment dowels into oil pump body, if they were removed, as shown in Figure 113.
9. Dip all 3 of the pump gears into Mopar® +4 fluid and install them in their ***original*** locations, shown in Figure 113.
10. Install the shuttle valve into the oil pump body in the location shown in Figure 113.
11. Ensure the shuttle valve is seated and install the oil pump spacer plate over the alignment dowels, as shown in Figure 114.
12. Install the two spacer plate retaining screws, as shown in Figure 114, and torque the screws to 4.5N·m (40 in.lb.).
    Note: Leaving these two screws out will create a "No Engagement" condition.

Continued on Page 76



60 OIL PUMP BODY.
62 PUMP BODY TO PUMP COVER "HOLLOW" DOWELS (2 REQ.).
63 OIL PUMP SHUTTLE VALVE.
64 OIL PUMP DRIVE GEAR.
65 OIL PUMP DRIVEN GEARS.

Figure 113



63 OIL PUMP SHUTTLE VALVE.
66 OIL PUMP BODY TO PUMP COVER SPACER PLATE.
67 OIL PUMP SPACER PLATE RETAINING SCREWS (2 REQUIRED).

Figure 114

VALVE BODY ASSEMBLY

1. Clean and inspect all components. Replace any parts that show evidence of wear or damage.
2. Lubricate the valves, springs and bore plugs with clean transmission fluid (Mopar® +4).
3. Install the solenoid switch valve and 3 plugs in the valve body, ***exactly*** as shown in Figure 123, and then install the plastic retainer.
   Note: Use small amount of Trans-Jel® to keep plastic retainer in place.
4. Install the low/reverse switch valve into valve body as shown in Figure 123, followed by the bore plug.
   Note: Some manuals illustrate a bore plug wire retainer for this location. Our unit did not have one, nor is it needed as the accumulator cover retains this valve train (See Figure 123).
5. Install the accumulator pistons and springs into the valve body in their proper locations, shown in Figure 123.
   Note: All accumulators have two springs, except the overdrive, which has only one.
6. Install the accumulator cover onto valve body using the 7 retaining screws (See Figure 123).
7. Torque the screws to 4.5 Nm (40 in lbs).
8. Ensure that the solenoid switch valve and the 3 plugs are free in the bore, and that solenoid switch valve plastic retainer is still in place, as shown in Figure 124.
   Note: This retainer can easily fall out while manuvering the valve body as it is not spring loaded.
9. Ensure that low/reverse switch valve is free in its bore.
10. Lay the valve body down on a flat surface and install the 7 checkballs into the proper pockets as shown in Figure 124.

Continued on Page 83

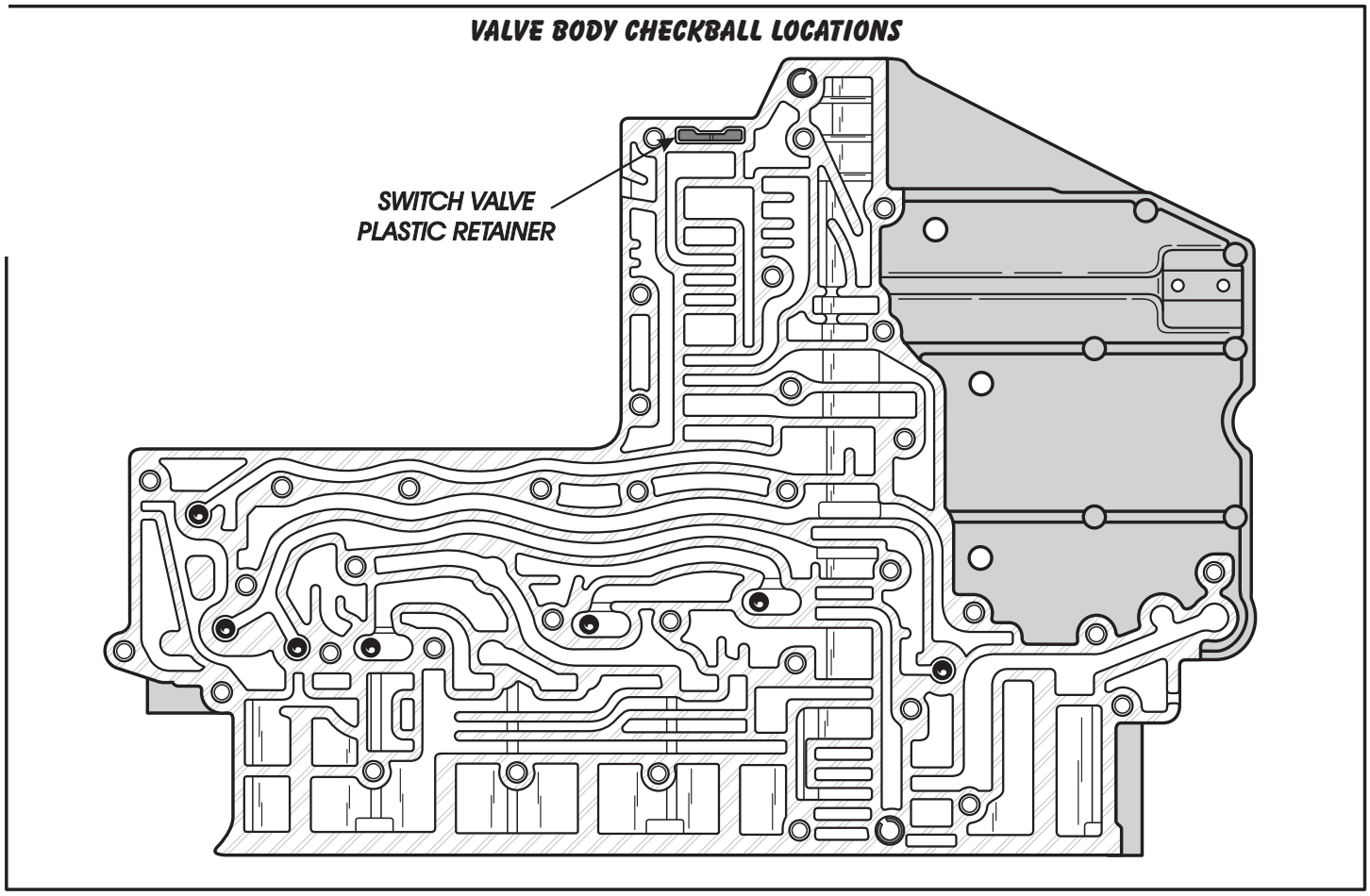


Figure 124

VALVE BODY ASSEMBLY (CONT'D)

27. Install the TRS/Solenoid Body onto the transfer plate using the remaining 14 valve body screws as shown in Figure 135.
28. Torque the TRS/Solenoid Body screws down to 5.7 Nm (50 in lbs).
    Note: Tighten the screws nearest the range sensor selector plate first, and work toward the other end. Refer to Figure 135.
29. Set the completed valve body assembly aside for the final assembly process.

TRS/SOLENOID BODY

1. The TRS/Solenoid Body is serviced ***only*** as a complete assembly, which is why we told you not to remove the 7 screws on top that retain the cover plate.
2. However, if someone has not listened, we have provided you with an exploded view of the TRS/Solenoid Body in Figure 136.

The illustrations in Figure 136 have been provided for reference only. We recommend that the TRS/Solenoid Body NOT be disassembled as none of the internal parts are serviced seperately.

Final Transmission Assembly
Begins on Page 90

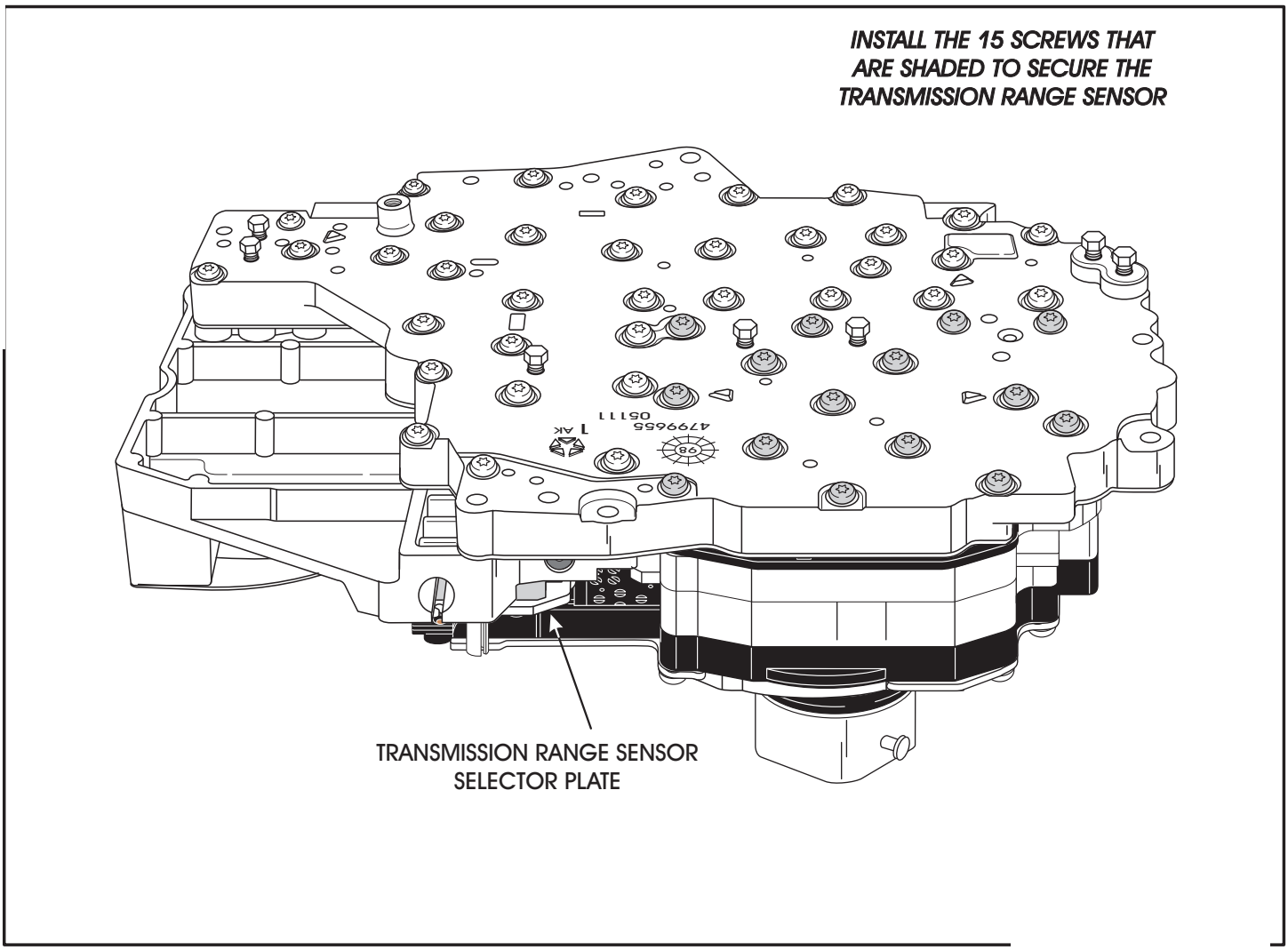


Figure 135

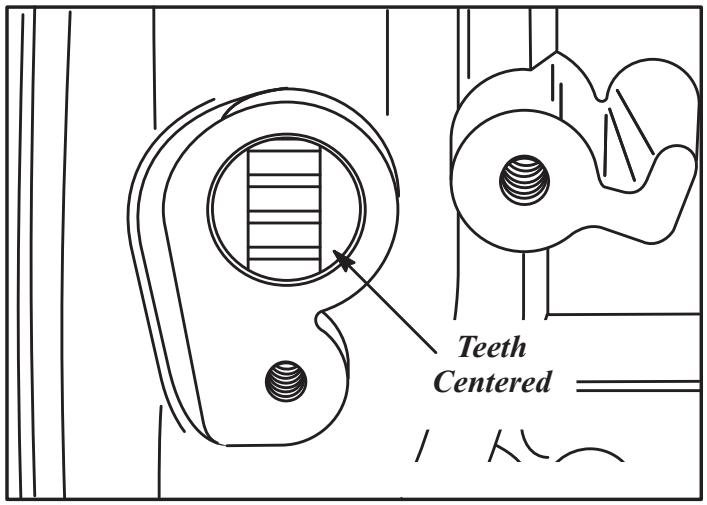
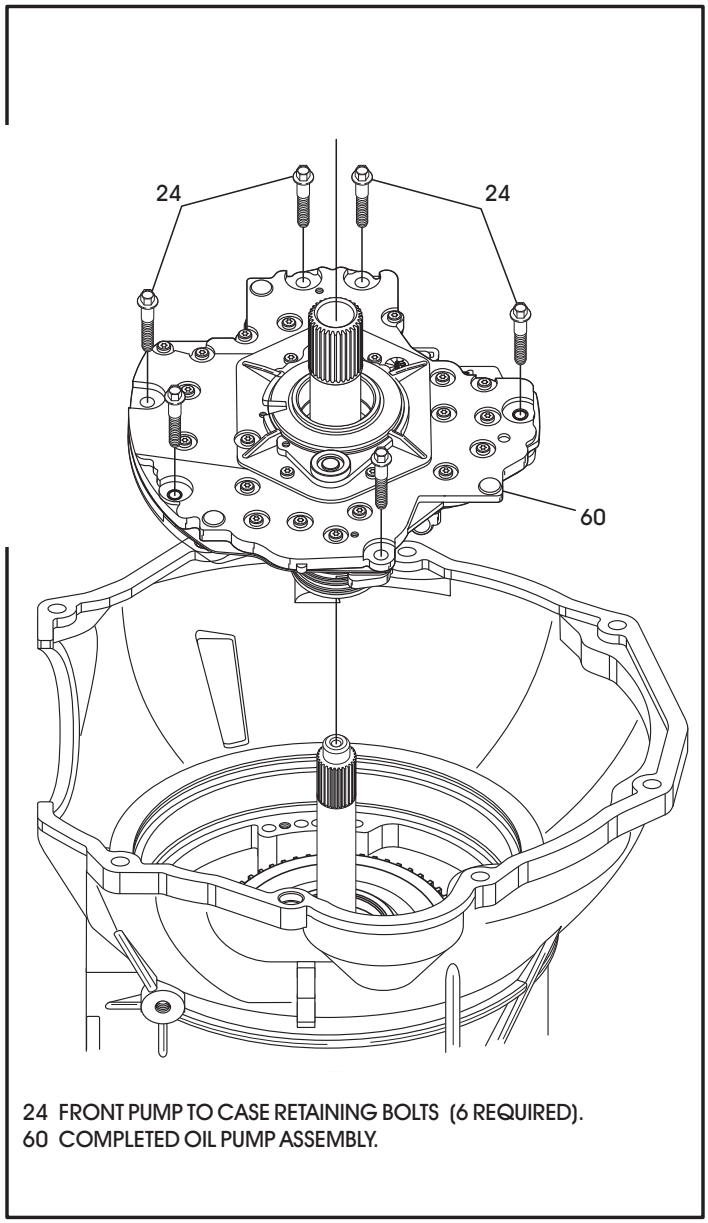


Figure 151



24 FRONT PUMP TO CASE RETAINING BOLTS (6 REQUIRED).
60 COMPLETED OIL PUMP ASSEMBLY.

Figure 152

TRANSMISSION ASSEMBLY (CONT'D)

26. Install the completed oil pump assembly into the transmission case, as shown in Figure 152.
27. Install the 6 retaining bolts and torque them to 28 N·m (20 ft.lb.).
28. Remove one pump bolt to install dial indicator, as shown in Figure 153, and zero dial indicator.
29. Front transmission end-play should be 0.52-0.74 mm (.020"-.029").
    Note: When measuring input shaft end-play, two "stops" will be felt. When input shaft is pushed inward and the dial indicator zeroed, the first stop felt when input shaft is pulled outward is the movement of the input shaft in the input clutch hub. This value should not be included in the end-play measurement and therefore must be recorded and subtracted from the total dial indicator reading.
30. Change the Number 5 thrust bearing selective spacer as necessary to obtain the correct front transmission end-play.
    Note: The number 5 thrust bearing selective spacer is identified by a number molded or stamped into spacer, as shown in Figure 154.
31. Remove the dial indicator, re-install the oil pump retaining bolt and torque to 28 N·m (20 ft.lb.).

Continued on Page 98

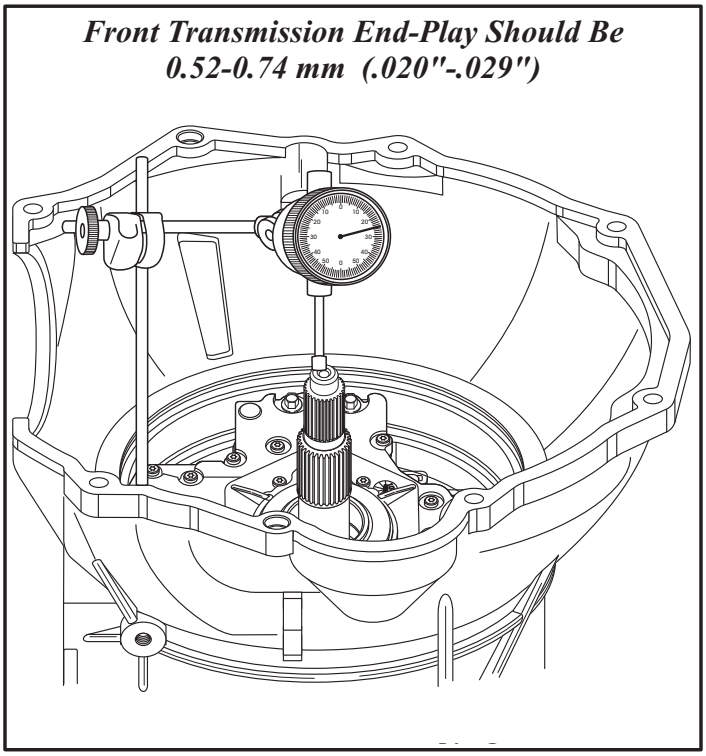


Figure 153