Toyota/Lexus U140/U240
Transmission Application by Vehicle

MAKE	MODEL	YEAR	ENGINE	TRANSMISSION
LEXUS	ES 300	1999 - 2001	V6 3.0L	U140E
LEXUS	RX 300	1998 - 2003	V6 3.0L	U140E
LEXUS	RX 300	1998 - 2003	V6 3.0L 4X4	U140F
TOYOTA	CAMRY	2002 - 2004	L4 2.0L	U240E
TOYOTA	CAMRY	2002 - 2003	V6 3.0L	U140E
TOYOTA	CELICA GTS	2000 - 2005	L4 1.8L	U240E
TOYOTA	HIGHLANDER	2001 - 2003	L4 2.4L - V6 3.0L 4X4	U140F
TOYOTA	HIGHLANDER	2001 - 2003	V6 3.0L	U140E
TOYOTA	HIGHLANDER	2004 - 2007	L4 2.4L	U240E
TOYOTA	HIGHLANDER	2004 - 2007	L4 2.4L - V6 3.0L 4X4	U140F
TOYOTA	MATRIX	2003 - 2006	L4 1.8L	U240E
TOYOTA	RAV4	2000 - 2007	L4 2.0L/2.4L 4X4	U140F
TOYOTA	RAV4	2000 - 2007	L4 2.0L/2.4L	U241E
TOYOTA	SCION tc	2004 - 2007	L4 2.4L	U241E
TOYOTA	SOLARA	2002 - 2005	L4 2.4L	U241E

Figure 1

IDENTIFICATION CODE STAMPING LOCATION

Identification code is cast into the case over the Underdrive Section.

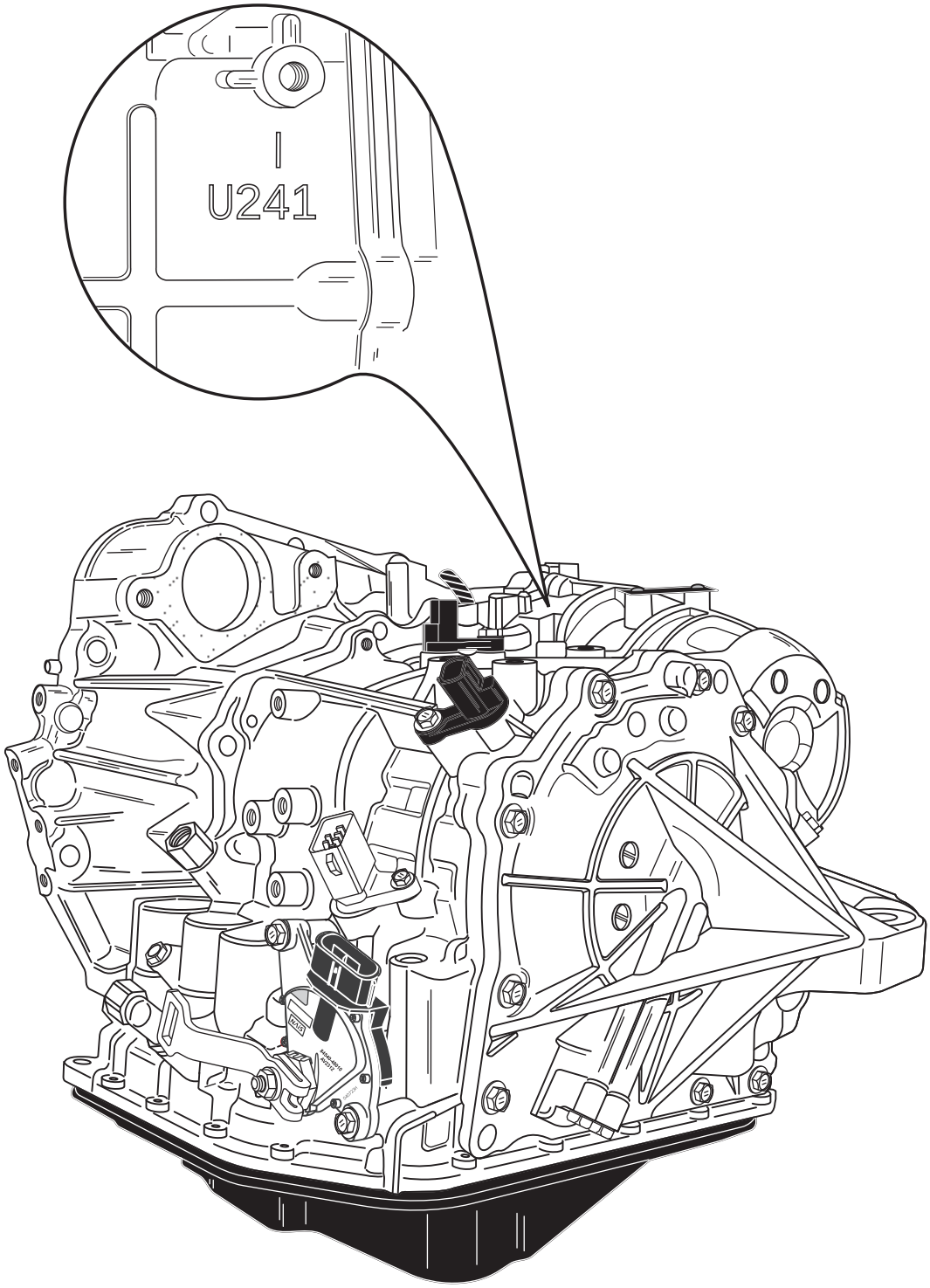
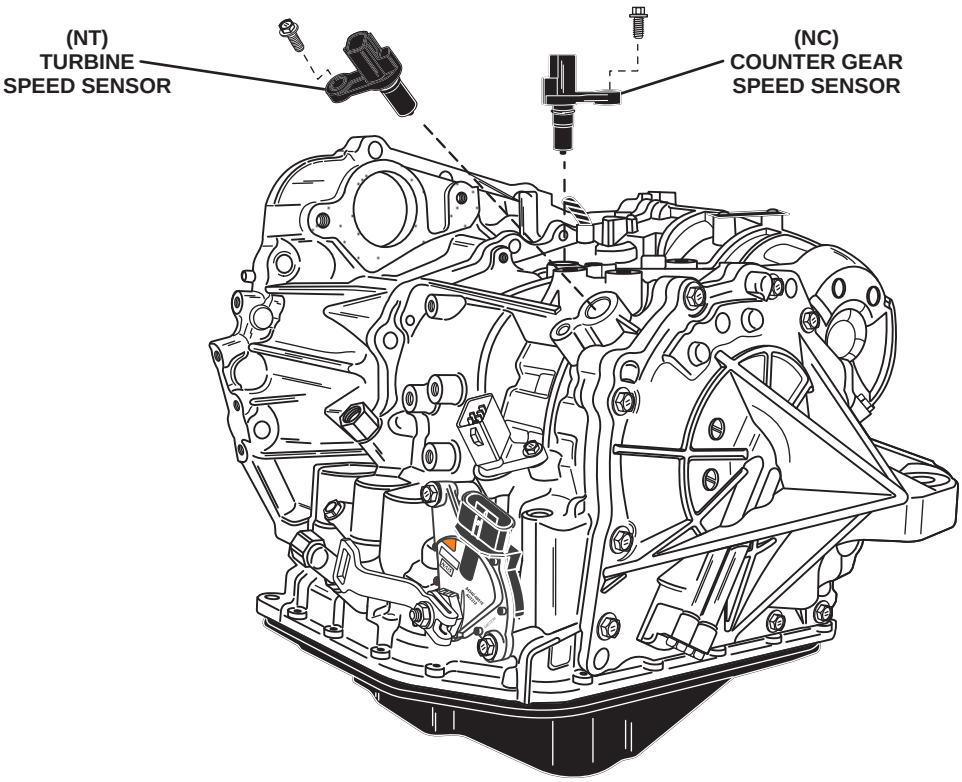
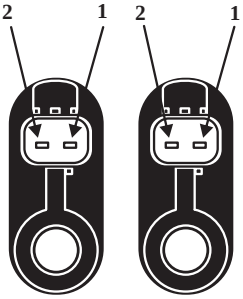


Figure 2

TOYOTA U240
NT AND NC SENSOR CHECK



NT
Turbine Speed
Sensor
(sensor connector view)



NC
Counter Gear Speed
Sensor
(sensor connector view)

Connect ohm meter between the terminals 1&2 on each sensor, the value should be 620 +/- 60 Ω

NT &NC Partial wire Schematic

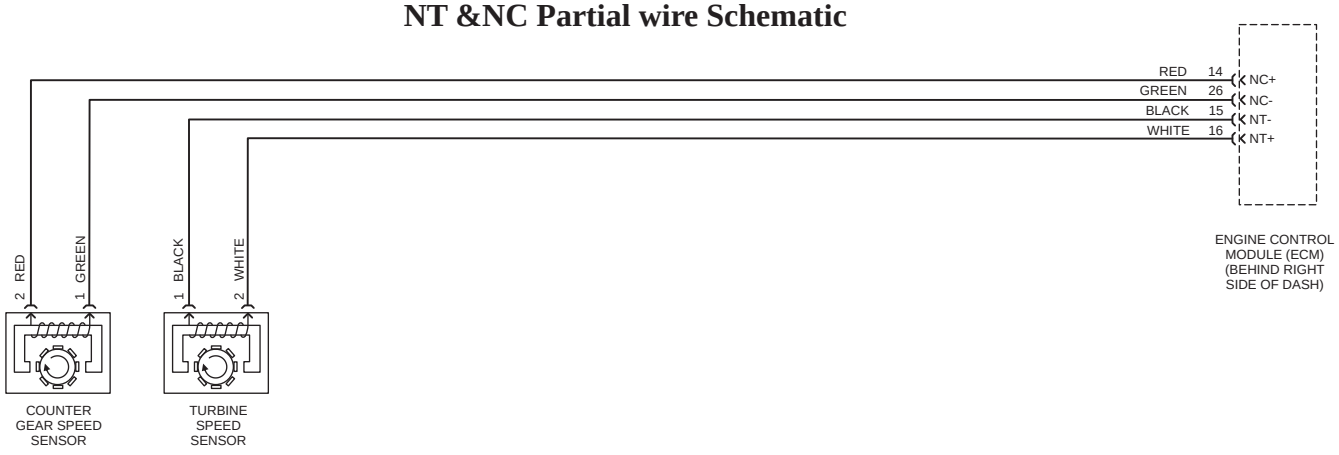
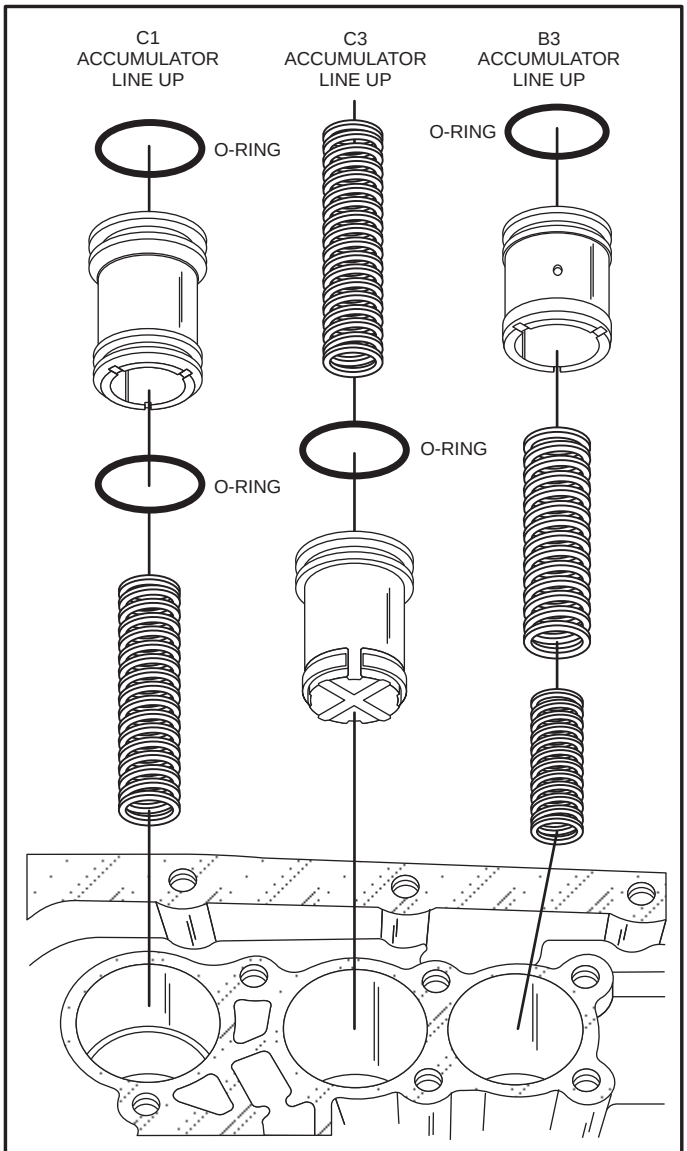


Figure 10

TRANSAXLE DISASSEMBLY (CONT'D)

14. Remove the C1, C3 and B3 accumulator pistons and springs as shown in Figure 20.
    Note: Spring colors and dimensions have been provided in Figure 20, however, there may be variations from model to model..
15. Remove and discard the accumulator piston o-rings.
16. Remove the anti-drain back check valve as shown in Figure 21.
17. Remove the B1 and B2 valvebody to case seals as shown in Figure 21.
18. Remove the B1 tube seal as shown in Figure 21.
19. Discard the B1 and B2 valvebody to case seals, and the B1 tube seal.

Continued on Page 21



ACCUMULATOR SPRING	OUTSIDE DIAMETER	FREE LENGTH	ID COLOR
C1	18.5 mm (.728 in.)	90.53 mm (3.564 in.)	RED
C3	19.2 mm (.756 in.)	86.66 mm (3.411 in.)	WHITE
B3 INNER	15.9 mm (.626 in.)	60.24 mm (2.371 in.)	GREEN
B3 OUTER	16.7 mm (.657 in.)	72.61 mm (2.858 in.)	BLUE

Figure 20

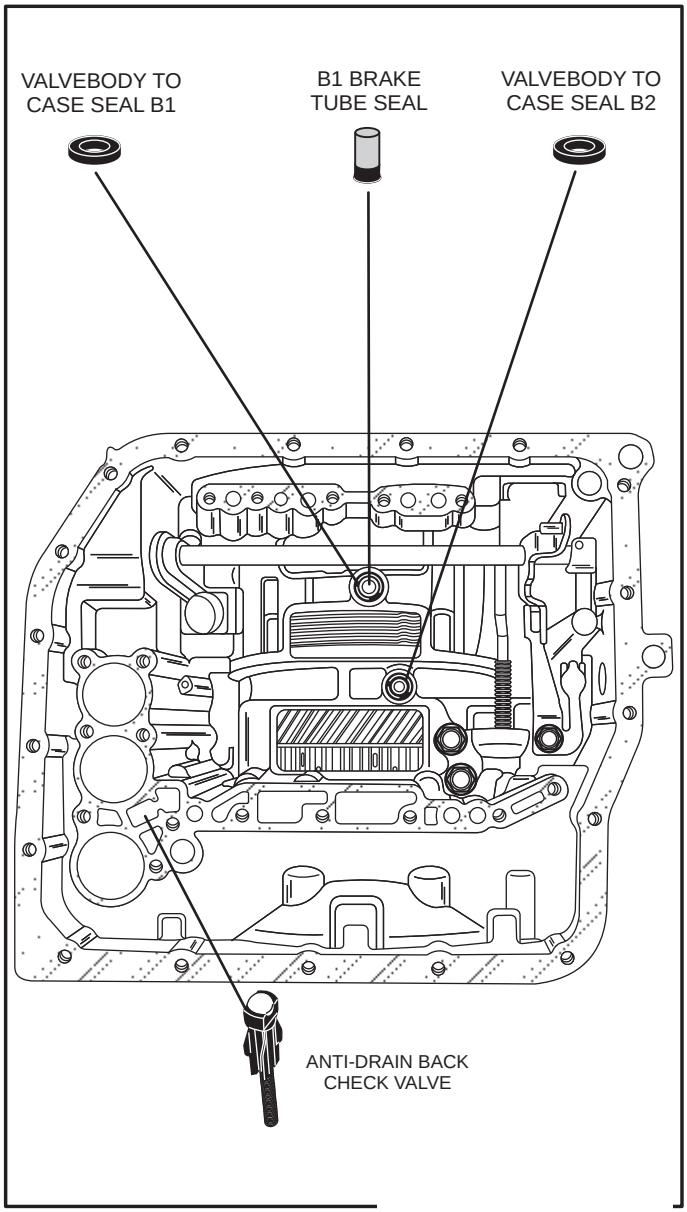


Figure 21

TRANSAXLE DISASSEMBLY (CONT'D)

92. Using a hammer and suitable chisel, carefully un-stake the folded tabs on the locking washer as shown in Figure 54.
93. Using SST 09387-00030, 09387-00080 or a suitable drift punch, loosen the retaining nut by turning counter-clockwise as shown in Figure 54.
94. Remove the retaining nut and the retaining nut lock washer as shown in Figure 54.
95. Place transaxle housing in a suitable press, then using SST 09950-60010 (09951-00450) or a suitable bushing driver, carefully press the front planetary assembly through the counter drive gear as shown in Figure 55.
96. Once the front planetary assembly splines are pressed down and through the counter drive gear, remove the counter drive gear by lifting straight up as shown in Figure 56.

Continued on Page 33.

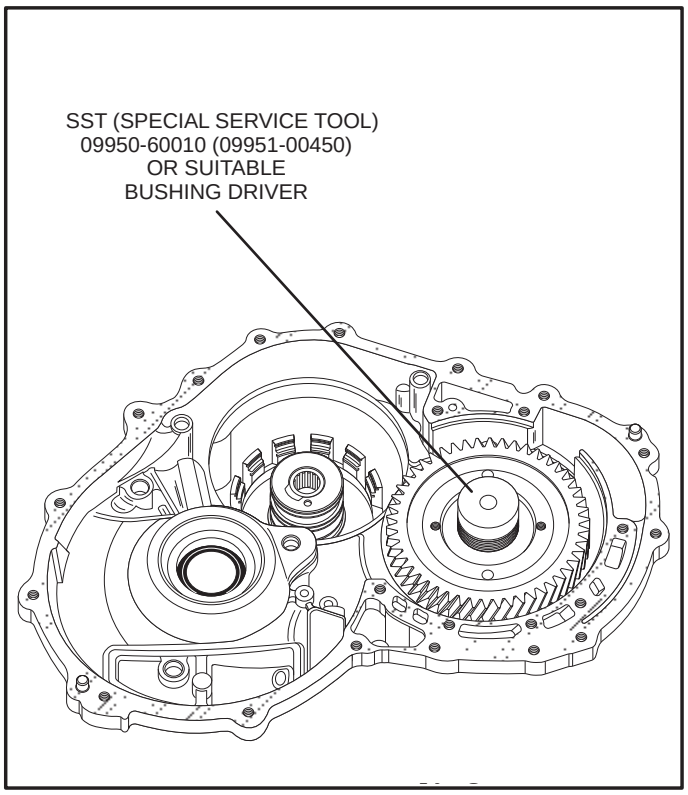


Figure 55

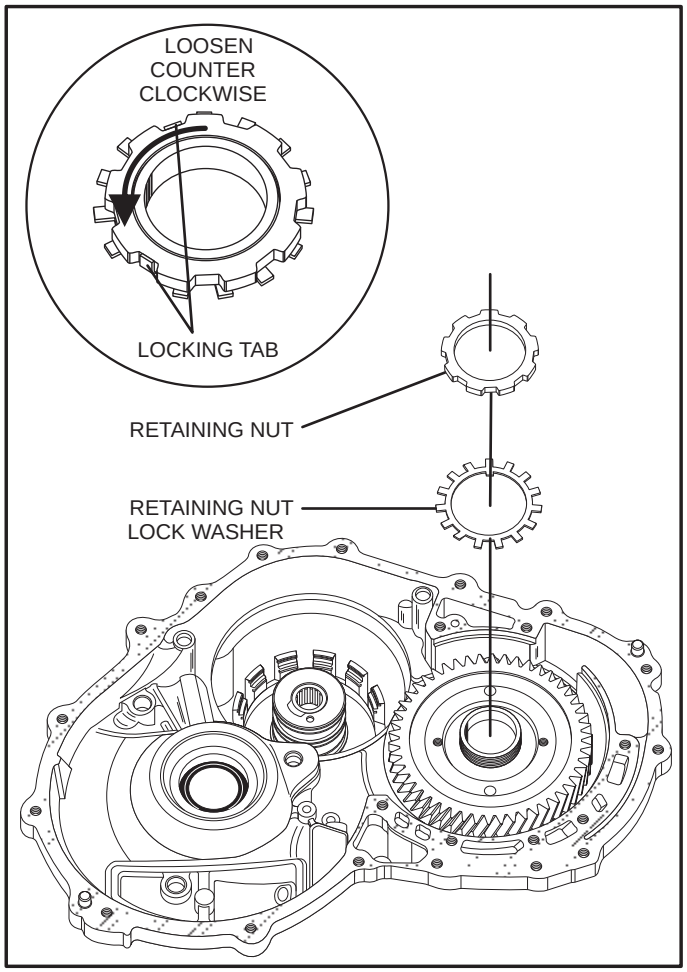


Figure 54

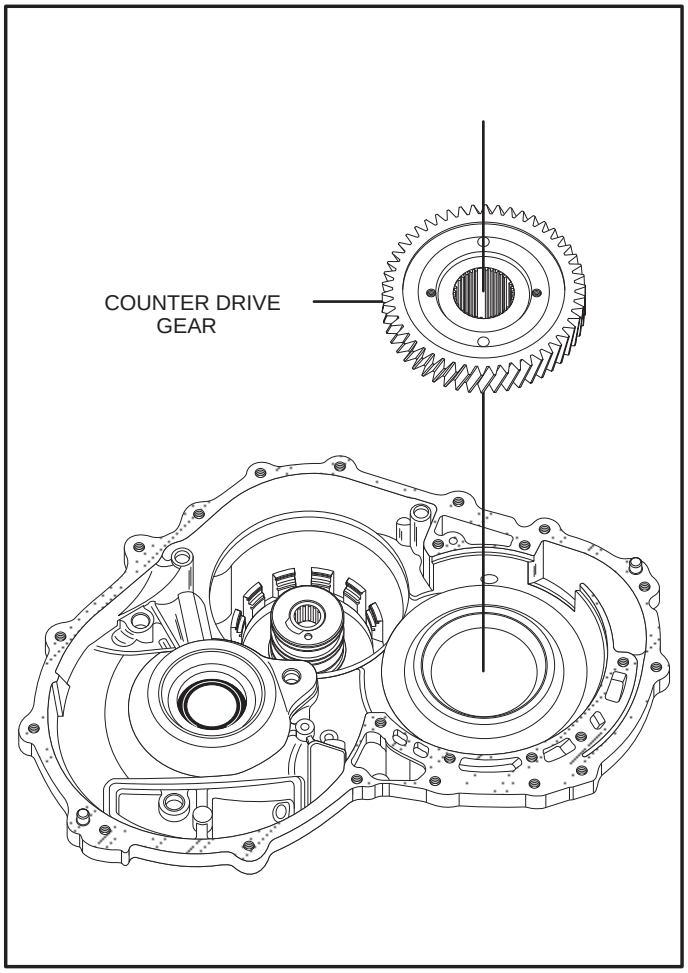


Figure 56

COMPONENT REBUILD (CONT'D)

Torque Converter Housing.

15. Using a plastic hammer, with even taps, carefully install the torque converter housing axle seal into the case as shown in Figure 66.
16. Coat inside of axle seal with a small amount of Trans-Jel®.
17. Set aside the completed torque converter housing shown in Figure 67 for final assembly.

Continued on Page 39.

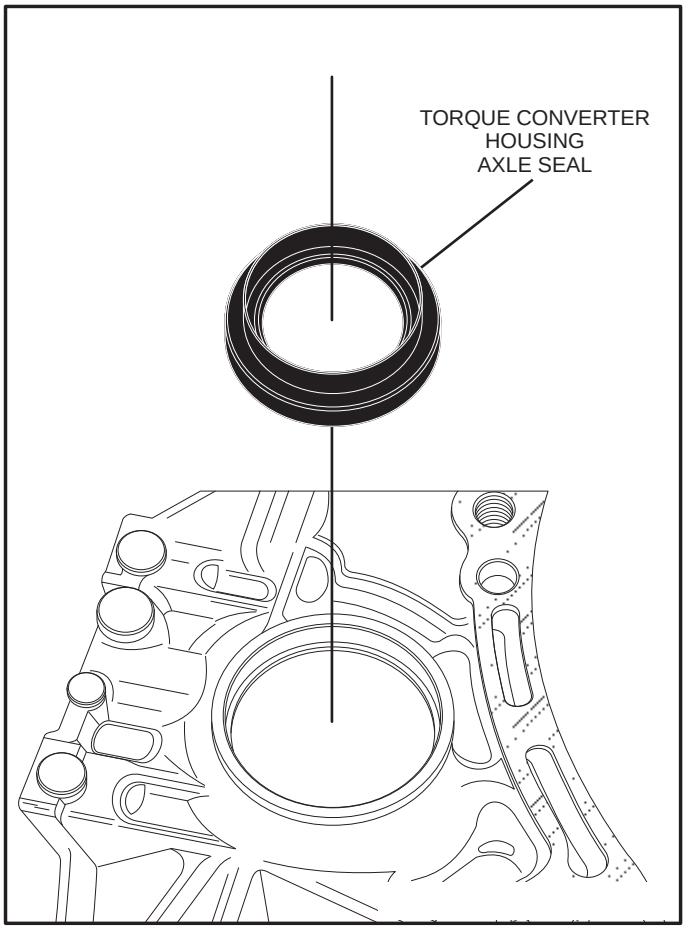


Figure 66

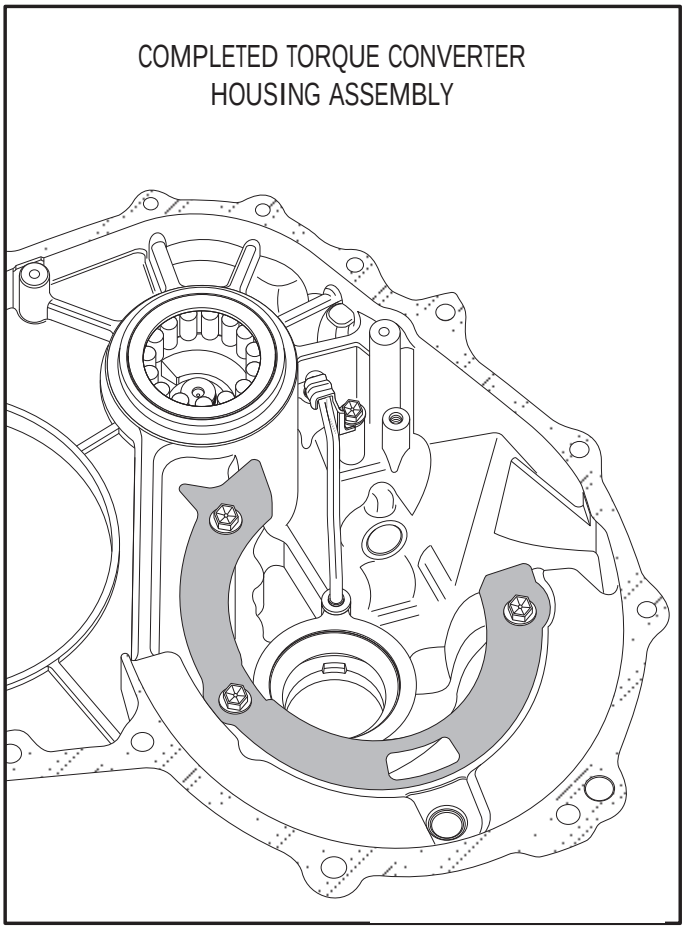


Figure 67

COMPONENT REBUILD (CONT'D)

Differential Assembly

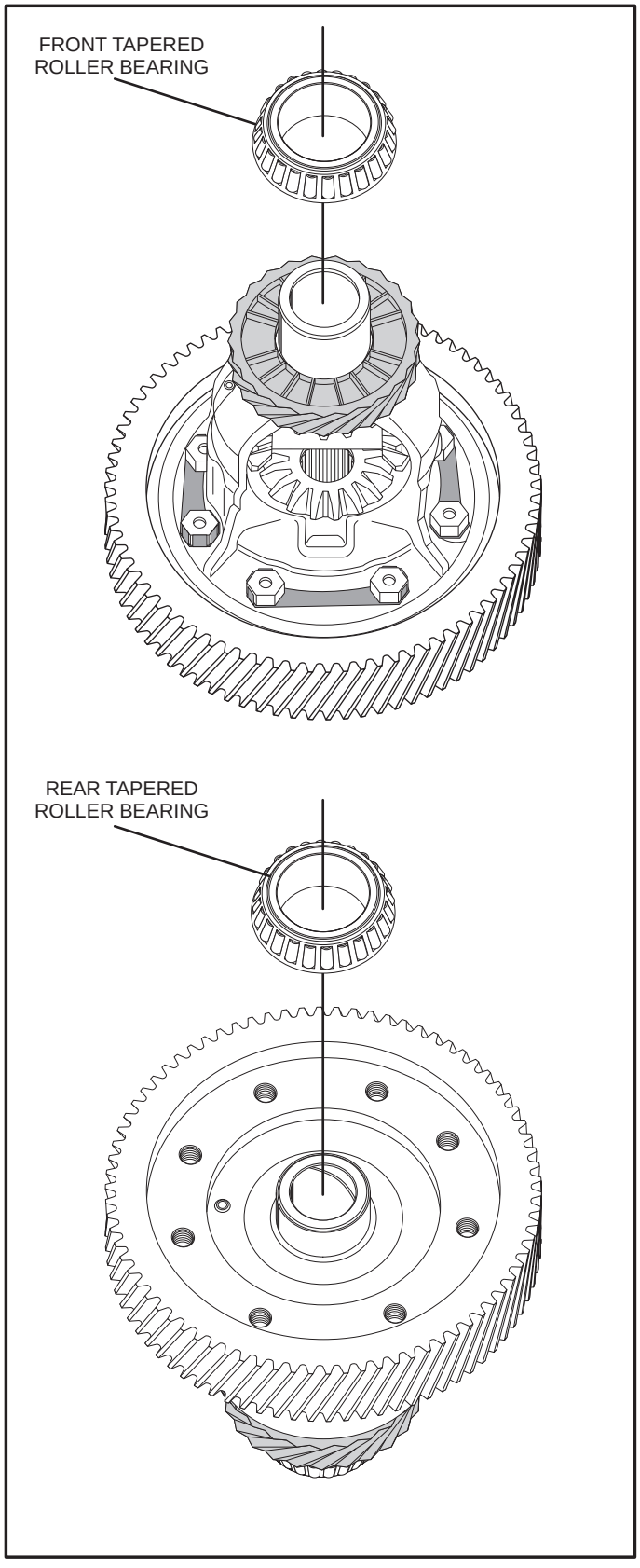


Figure 81

1. Remove the front and rear differential tapered roller bearings using SST 09950-04011 (09951-04010, 09952-04010, 09953-04030, 09954-04010, 09955-04061, 09957-04010, 09958-04011), 09950-60010 (09951-00440). Refer to Figure 81 for disassembly diagram.
2. Use a dial indicator and measure the backlash between the side gears and pinion gears as shown in Figure 82. *(Backlash is referred to as the amount of free-play between the gears)*.
3. If backlash is not within specification, remove the cross shaft retaining pin and dissassemble the differential carrier assembly using the diagram in Figure 80 as a reference, and refer to thrust washer thickness chart in Figure 82 and select an appropriate washer to bring backlash into proper tolerance. Adjust until backlash is equal at both side gears.
Note: If removing ring gear from carrier, both carrier and ring gear bolt holes must be marked and matched for proper alignment during reassembly.

Component Rebuild Continued on Page 47.

THRUST WASHER THICKNESS: mm. (in.)

0.95 (0.0373) 1.00 (0.0393)
1.05 (0.0413) 1.10 (0.0433)
1.15 (0.0453) 1.20 (0.0472)

NOMINAL SIDE GEAR BACKLASH
0.05 - 0.20 mm (0.002 - 0.0008 in.)

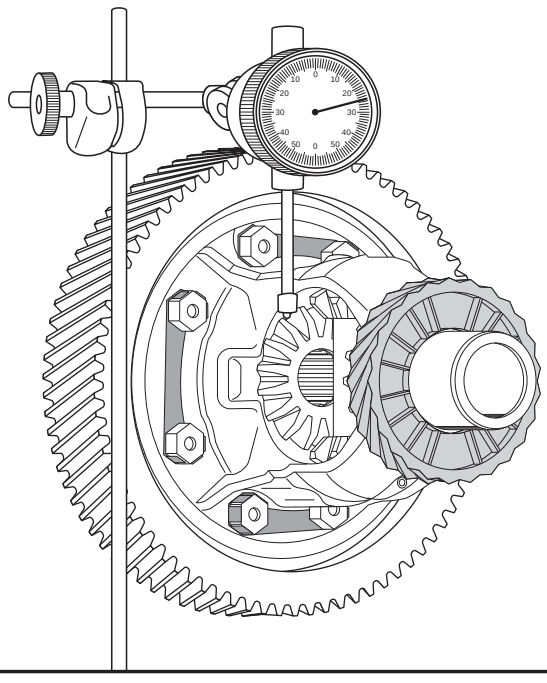


Figure 82

COMPONENT REBUILD (CONT'D)

Forward (C1) Clutch Drum Assembly

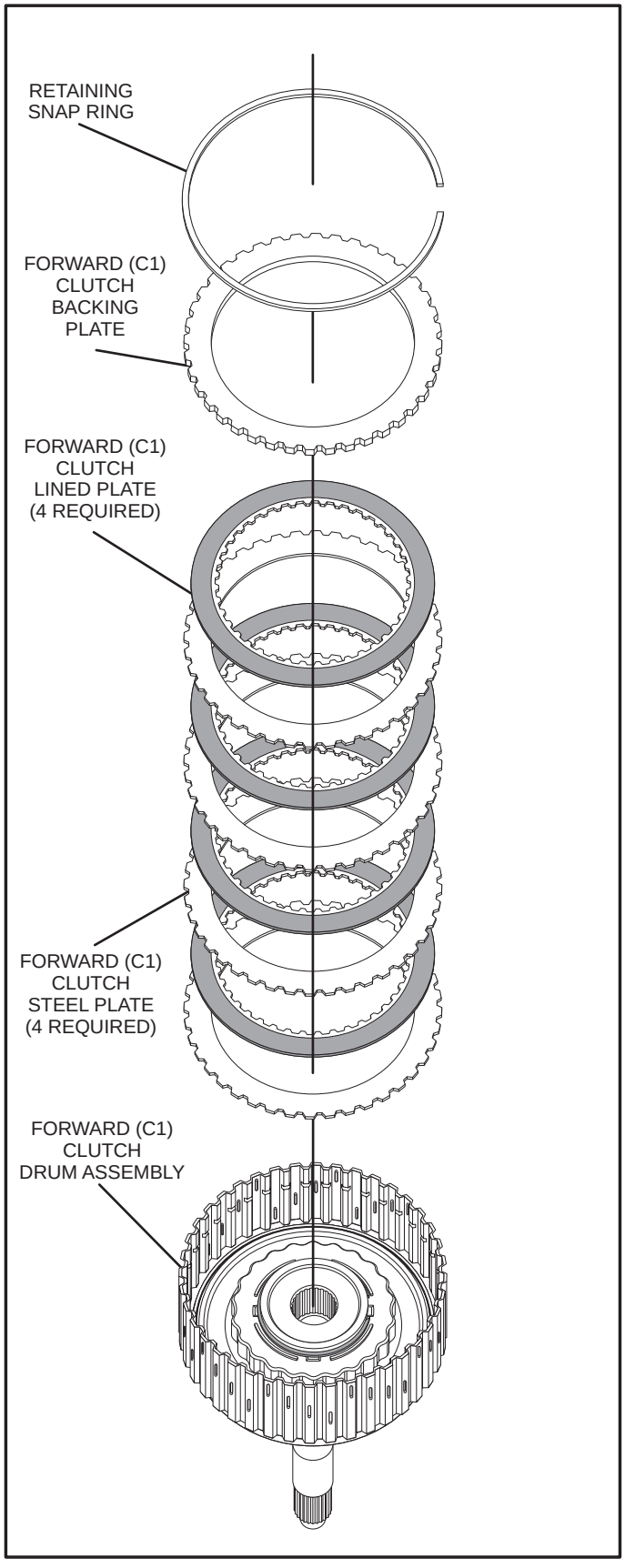
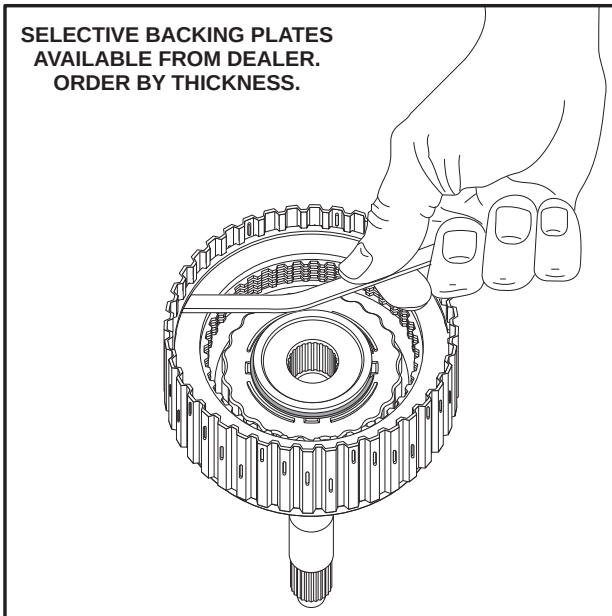


Figure 102

9. Install the forward (C1) clutch plates beginning with a steel plate, then alternating frictions and steels until there are four steel and four lined plates installed into the drum housing as shown in Figure 102.
   Note: All Friction Plates should be soaked in the appropriate ATF for the vehicle for 30 minutes prior to installation.
10. Install the forward (C1) clutch backing plate into the drum housing as shown in Figure 102.
11. Install the retaining snap ring into the drum housing as shown in Figure 102.
    Check the forward (C1) clutch clearance using a feeler gauge between the backing plate and snap ring as shown in Figure 103.
12. ***Note: Forward (C1) clutch clearance should be between 0.61mm - 1.041mm (.024" - .041")***
13. Change the "Selective" backing plate as necessary to attain proper clutch clearance using the chart in Figure 103.

Component Rebuild Continued on Page 58.



Forward (C1)Clutch Clearance Should Be 0.61mm - 1.041mm (.024" - .041")	
Selective Forward Clutch Backing Plates	
3.0mm (.118")	***3.45mm (.135")***
3.15mm (.124")	***3.6mm (.141")***
3.3mm (.130")	

Figure 103

COMPONENT REBUILD (CONT'D)

No. 1 One-Way Clutch (F1) Assembly

1. Disassemble the No. 1 one-way clutch (F1) assembly using the diagram in Figure 115 as a guide.
2. Clean all No. 1 one-way clutch (F1) assembly parts thoroughly with solvent and dry with compressed air.
3. Inspect all No. 1 one-way clutch (F1) assembly parts for wear and/or damage and replace as necessary.
4. Install the retaining plate (lower) to the No. 1 one-way clutch (F1) outer race and snap into place as shown in Figure 117.
5. Install the end bearing (lower) into the No. 1 one-way clutch (F1) outer race as shown in Figure 117.

Component Rebuild Continued on Page 67.

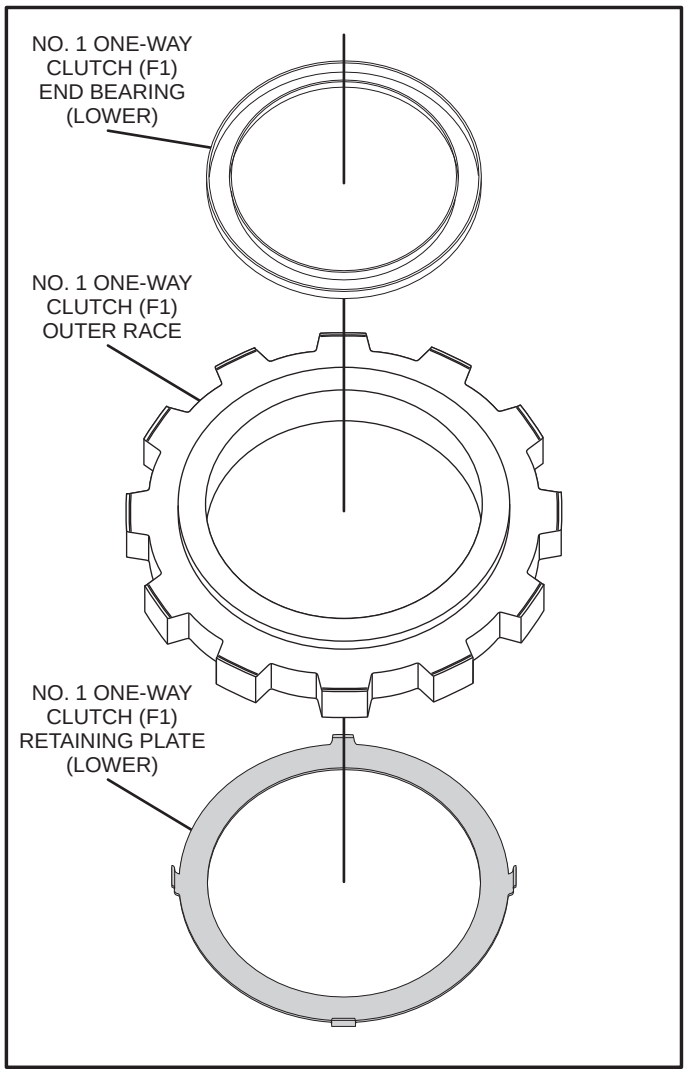


Figure 117

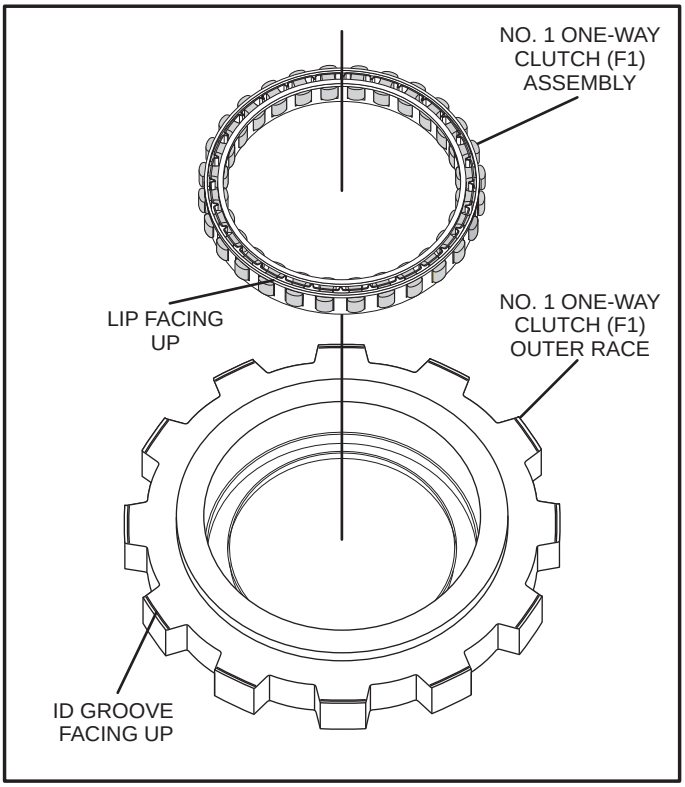


Figure 118

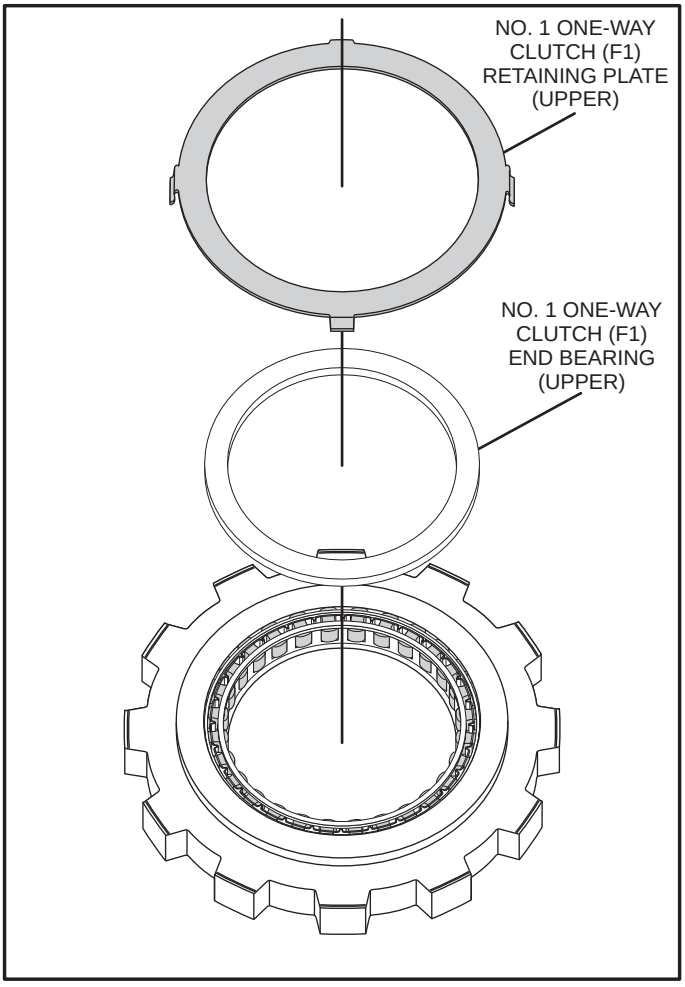
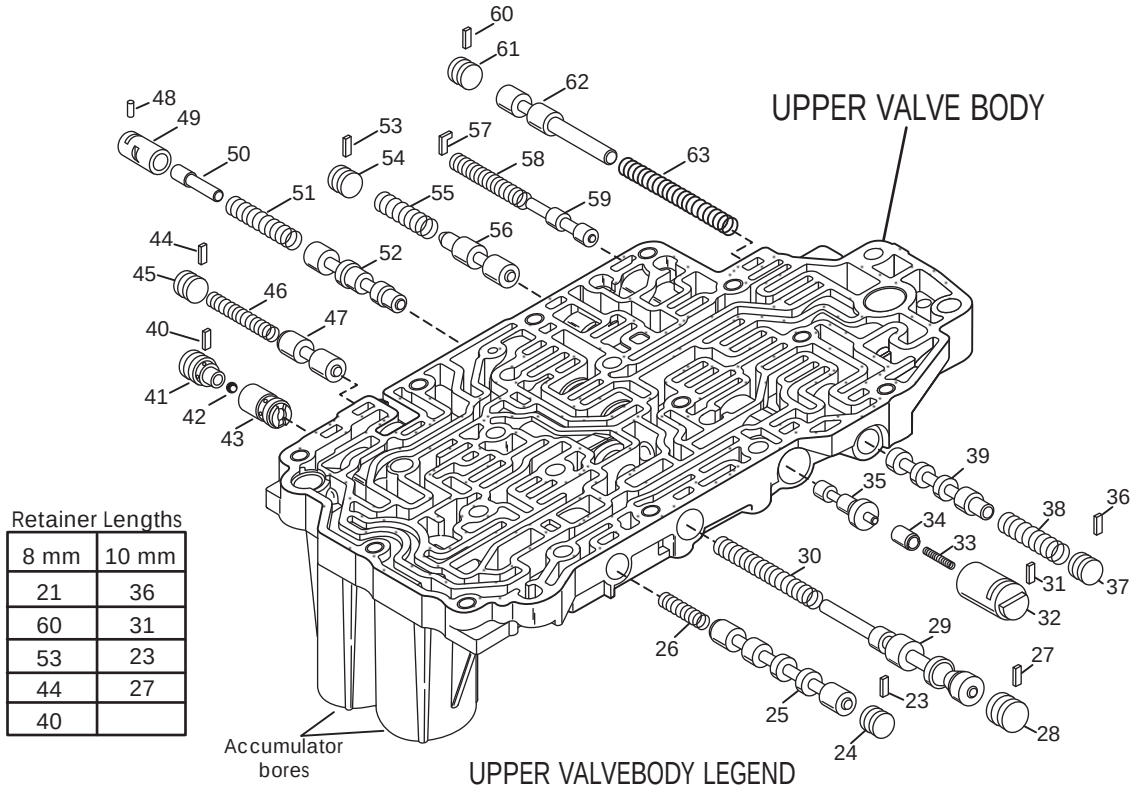


Figure 119

COMPONENT REBUILD SECTION
VALVE BODY ASSEMBLY (CONT'D)

25. Disassemble upper valve body and place valves, springs and retainers in appropriate trays exactly as they were removed as shown in Figure 131.
26. Clean all valve body parts thoroughly with solvent and dry with compressed air. Inspect the accumulator bores on top of the upper valve body for any wear and replace the valve body as necessary.
27. Assemble the upper valve body parts as shown in Figure 131, and lube the valves with a small amount of ATF as they are installed.
Note: Items 49 and 32 are commonly worn and may require replacement. Also note there are different lengths on some of the retainers listed below in Figure 131.

Valve body assembly continued on Page 75.



Retainer Lengths

8 mm	10 mm
21	36
60	31
53	23
44	27
40	

UPPER VALVEBODY LEGEND

23. C2 Lock Valve retainer
24. C2 Lock Valve bore plug
25. C2 Lock Valve
26. C2 Lock Valve Spring
27. Secondary Regulator Valve retainer
28. Secondary Regulator Valve bore plug
29. Secondary Regulator Valve
30. Secondary Spring
31. Lock-up Control Valve retainer
32. Lock-up Control Valve Sleeve
33. Lock-up Control Valve Spring
34. Lock-up Control Valve Plunger
35. Lock-up Control Valve
36. Lock-up Relay Valve retainer
37. Lock-up Relay Valve bore plug
38. Lock-up Relay Valve Spring
39. Lock-up Relay Valve
40. 3 Way Check Valve Retainer
41. 3 Way Check Valve outer ball seat
42. 3 Way Check Valve .250" steel ball
43. 3 Way Check Valve inner ball seat
44. C2 Exhaust Valve retainer
45. C2 Exhaust Valve bore plug
46. C2 Exhaust Valve Spring
47. C2 Exhaust Valve
48. Clutch Apply Control Valve retainer
49. Clutch Apply Control Valve Sleeve
50. Clutch Apply Control Valve plunger
51. Clutch Apply Control Valve Spring
52. Clutch Apply Control Valve
53. B-1 Lock Valve retainer
54. B-1 Lock Valve bore plug
55. B-1 Lock Valve Spring
56. B-1 Lock Valve
57. B-3 Orifice Control Valve retainer
58. B-3 Orifice Control Valve Spring
59. B-3 Orifice Control Valve
60. Solenoid Modulator Valve retainer
61. Solenoid Modulator Valve bore plug
62. Solenoid Modulator Valve
63. Solenoid Modulator Spring

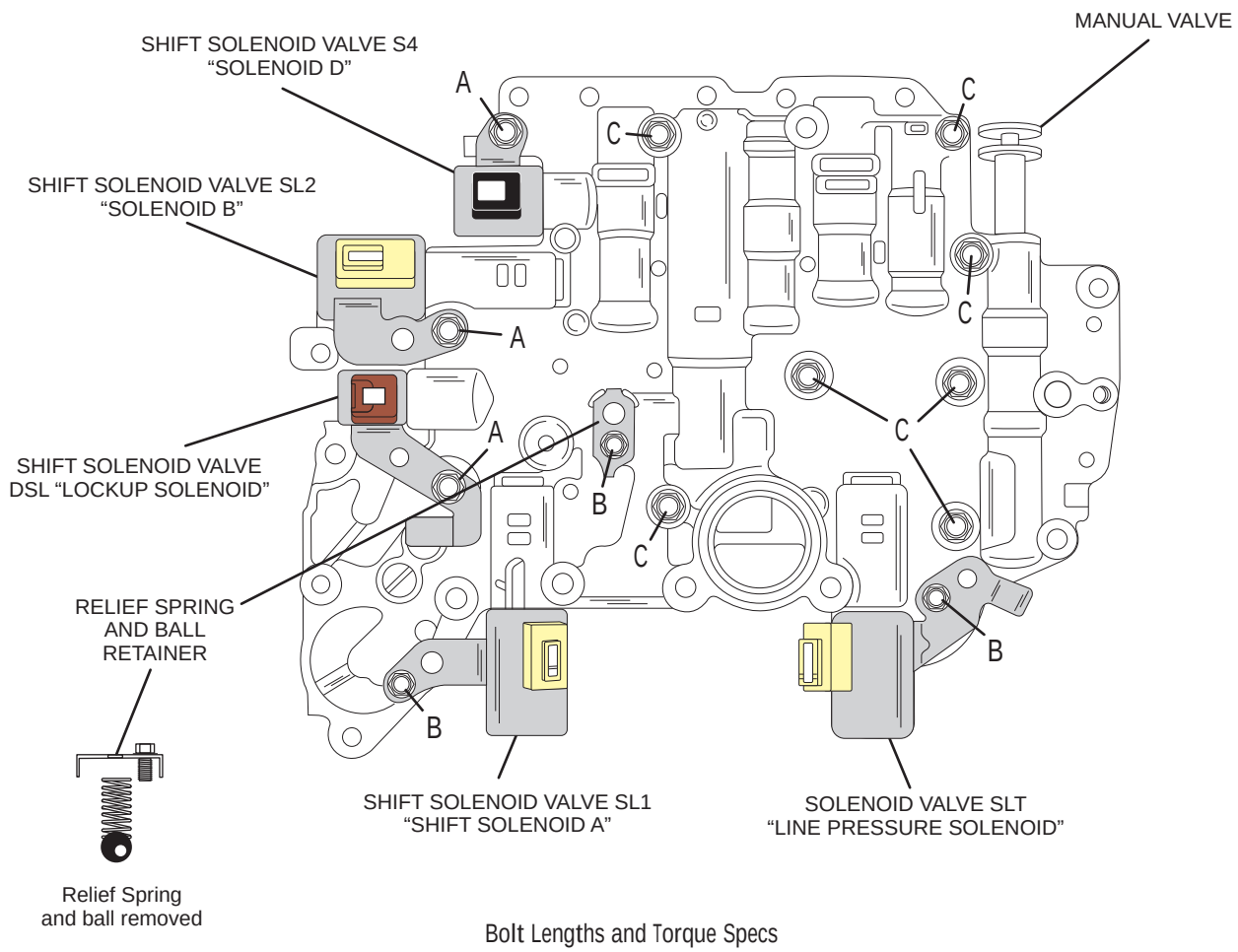
Figure 131

COMPONENT REBUILD SECTION
VALVE BODY ASSEMBLY (CONT'D)

49. Install the seven 10 mm bolts identified with the letter "C," and torque to ***11Nm, 8ft.lb.*** See Figure 142.
50. Install the S4, SL2 and DSL solenoids into their bores, and install the bolts identified with the letter"A," and torque to ***11Nm, 8ft.lb.*** as shown in Figure 142.
51. Install the SL1 and SLT solenoids into their bores, and the two, 8 mm bolts identified with
. the letter "B," and torque to ***6.6 Nm, 58 in.lb***. as shown in Figure 142.
52. Install relief ball into the valve body then install the spring, retainer and bolt identified with the letter "B" and torque to ***6.6 Nm, 8ft.lb.*** as shown in Figure 142.
    Note: Ball diameter is 10mm.
53. Install the Manual valve as shown in Figure 142.

Continued on Page 82.

SOLENOID AND VALVE BODY
BOLT INSTALLATION IDENTIFICATION



Bolt Lengths and Torque Specs
Bolt A = 45mm. (1.770 in.) Torque- 11 Nm, 8ft.lb
Bolt B = 12mm. (.450 in.)Torque- 6.6 Nm, 58in.lb
Bolt C = 41mm. (1.614 in.) Torque- 11 Nm, 8ft.lb

Figure 142

FINAL ASSEMBLY

Internal components

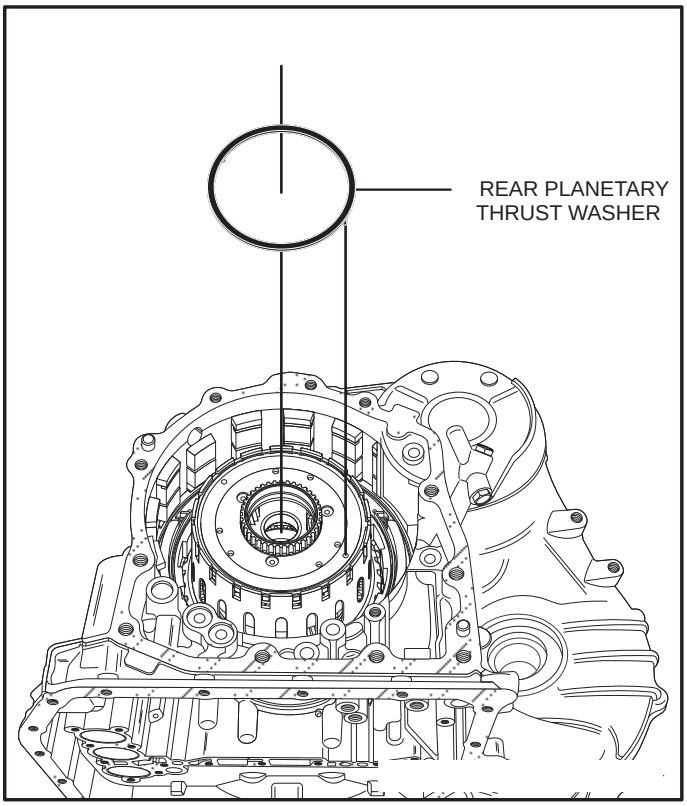


Figure 161

32. Coat the rear planetary thrust washer with a small amount of Trans-Jel® and install into the locating holes in the rear planetary as shown in Figure 161.
33. Install the No. 1 one way clutch (F1) outer sleeve so that the narrow lugs fit into the locating slots in the 2nd brake (B1) piston housing assembly as shown in Figure 162.
34. Install the No. 1 one way clutch (F1) assembly so it fits into the lugs in the outer shell as shown in Figure 163.
35. Make sure the id groove on the one way clutch assembly is facing up *(toward the back cover)* when installed as shown in Figure 163.

Final Assembly Continued on Page 89.

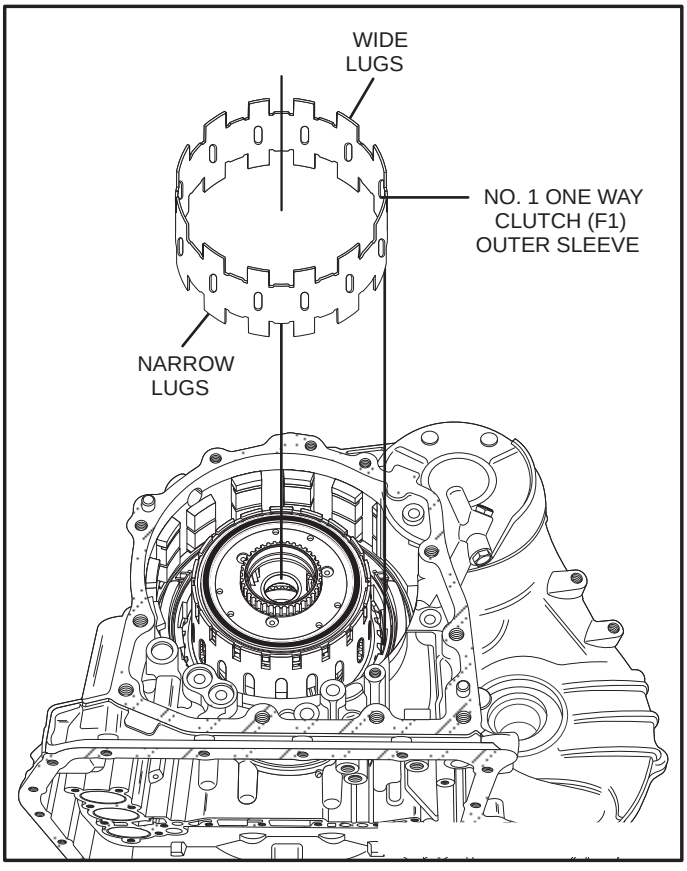


Figure 162

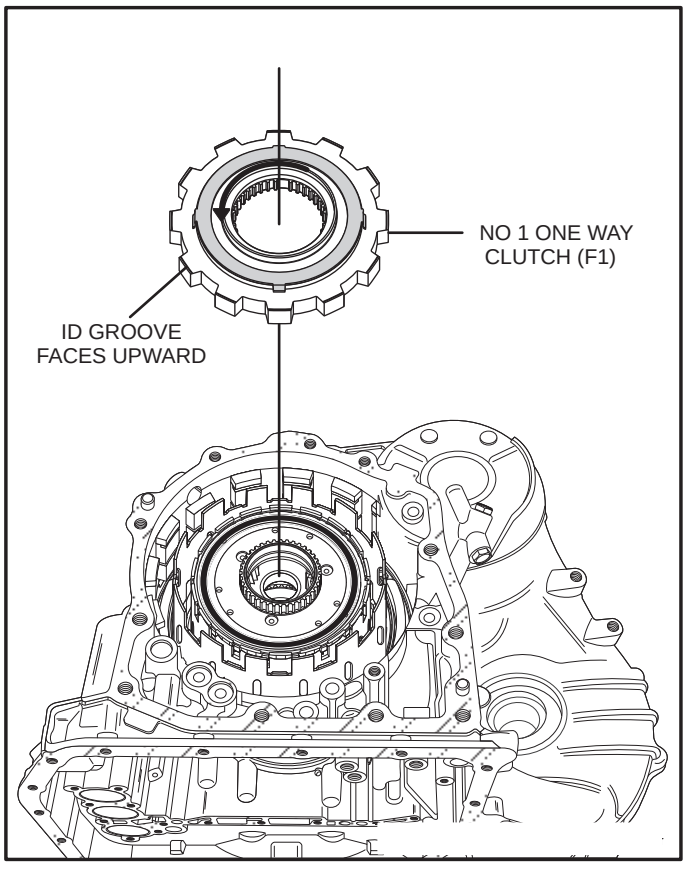


Figure 163

FINAL ASSEMBLY

Internal components

67. Using a plastic hammer, with even taps, carefully install the torque converter housing axle seal into the case as shown in Figure 178.
68. Coat inside of axle seal with a small amount of Trans-Jel®.
69. Flip the transaxle housing over then coat the differential tapered roller bearings with a small amount of ATF and place the differential carrier into the case as shown in Figure 179.
70. Install the sixteen differential housing to transaxle case attaching bolts and torque them as shown in Figure 180.

Final Assembly Continued on Page 95.

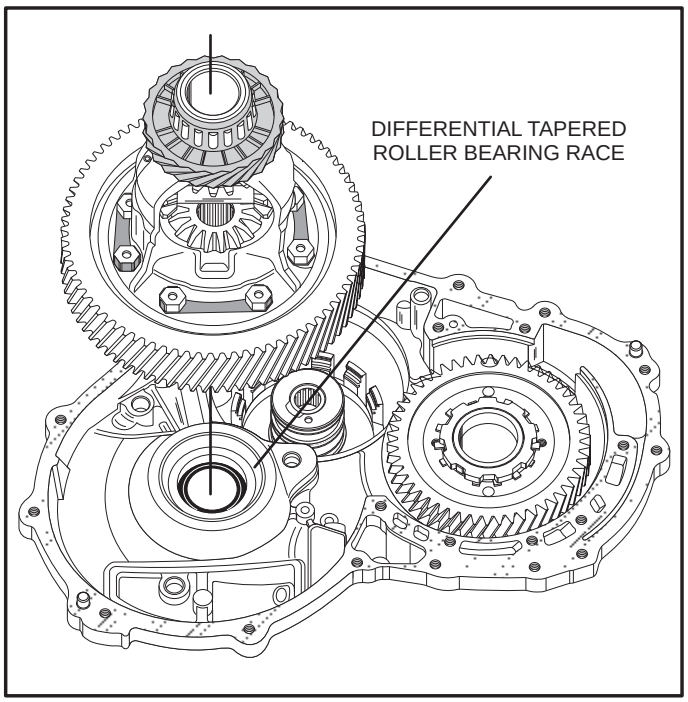


Figure 179

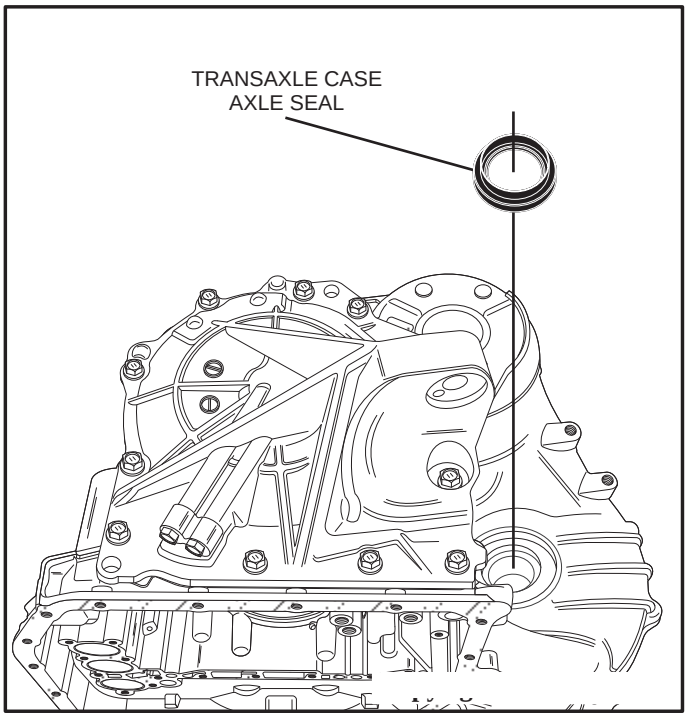
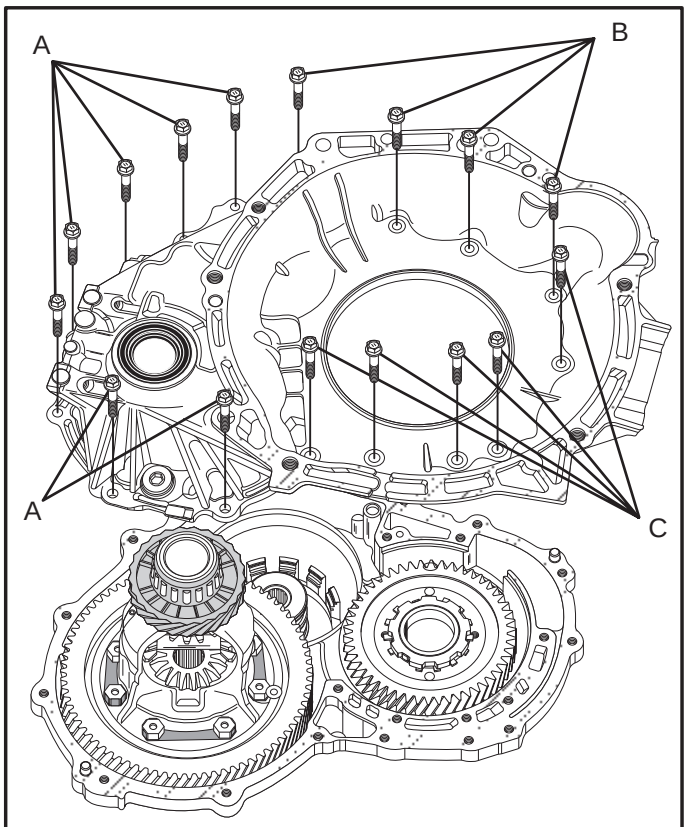


Figure 178



BOLT	LENGTH	TORQUE
BOLT A: (7 REQUIRED)	42 mm (1.654 in.)	29 N m (22 ft. lb.)
BOLT B: (4 REQUIRED)	50 mm (1.969 in.)	29 N m (22 ft. lb.)
BOLT C: (5 REQUIRED)	50 mm (1.969 in.)	22 N m (16 ft. lb.)

Figure 180

FINAL ASSEMBLY

Internal components

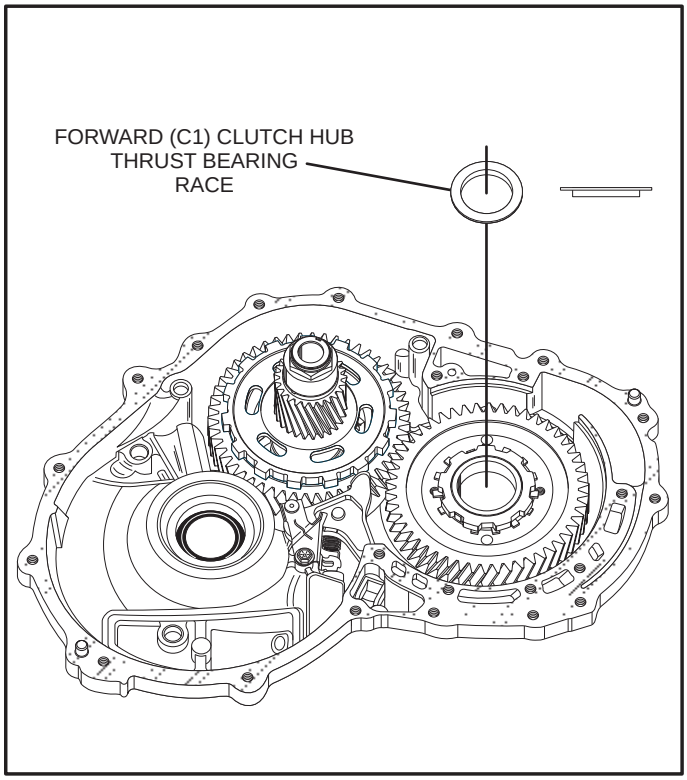


Figure 207

115. Coat the forward (C1) clutch hub thrust bearing race with a small amount of Trans-Jel® and install the race onto the transfer drive gear as shown Figure 207.
116. Coat the forward (C1) clutch hub thrust bearing with a small amount of Trans-Jel® and install the thrust bearing onto the splined side of the forward clutch hub as shown in Figure 208.
117. Install the forward (C1) clutch hub into the transmission while turning to engage the splines as shown in Figure 208.
118. Coat the forward (C1) clutch thrust bearing with a small amount of Trans-Jel® and install into the forward clutch hub with the lip facing down into the hub as shown in Figure 208.
119. Install the forward (C1) clutch drum assembly with a twisting motion so the lined plates spline with the hub as shown in Figure 209.

Final Assembly Continued on Page 104.

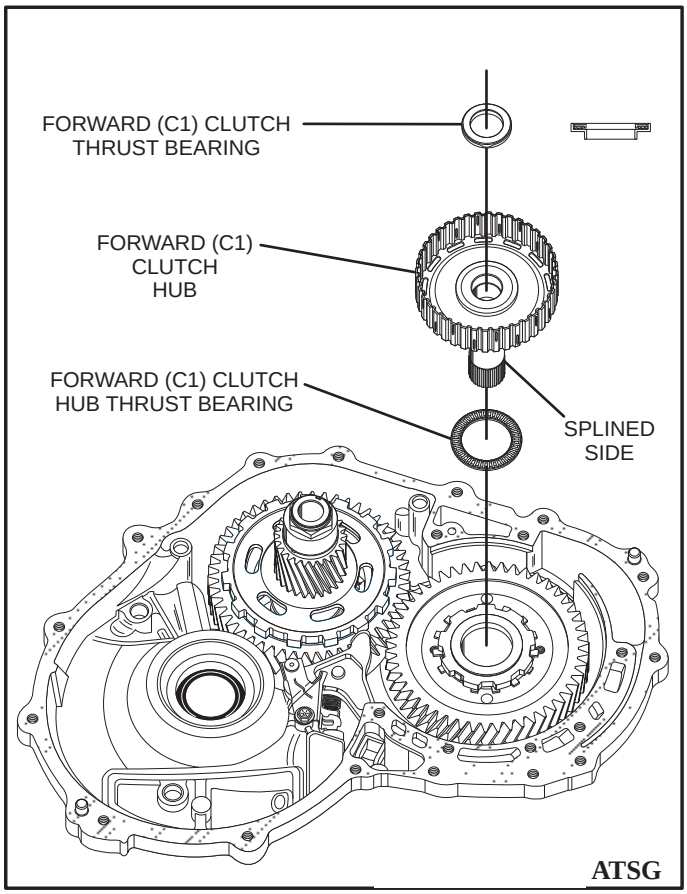


Figure 208

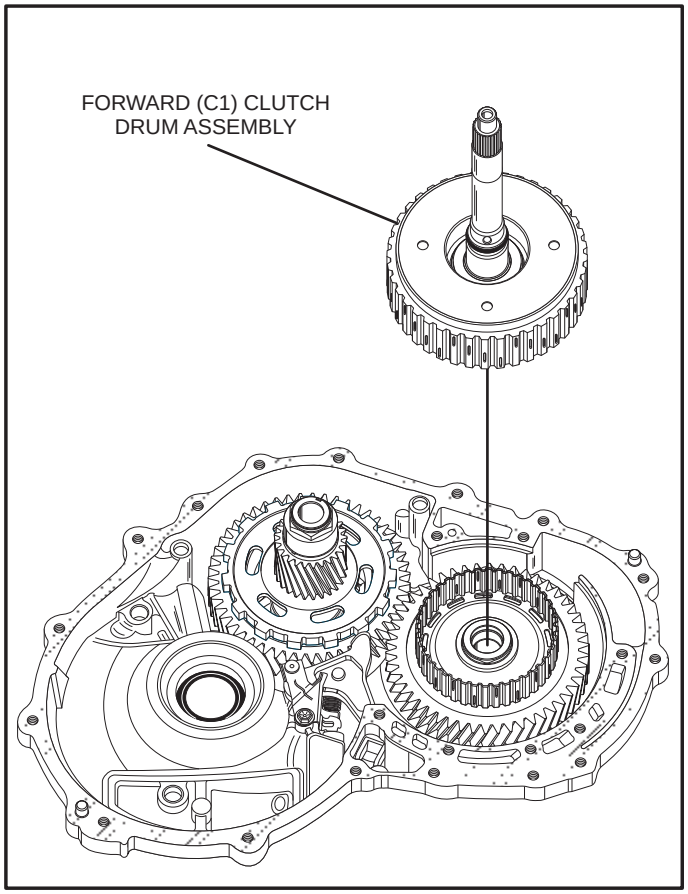


Figure 209

CASE PASSAGE I.D.
AIR TEST PORTS

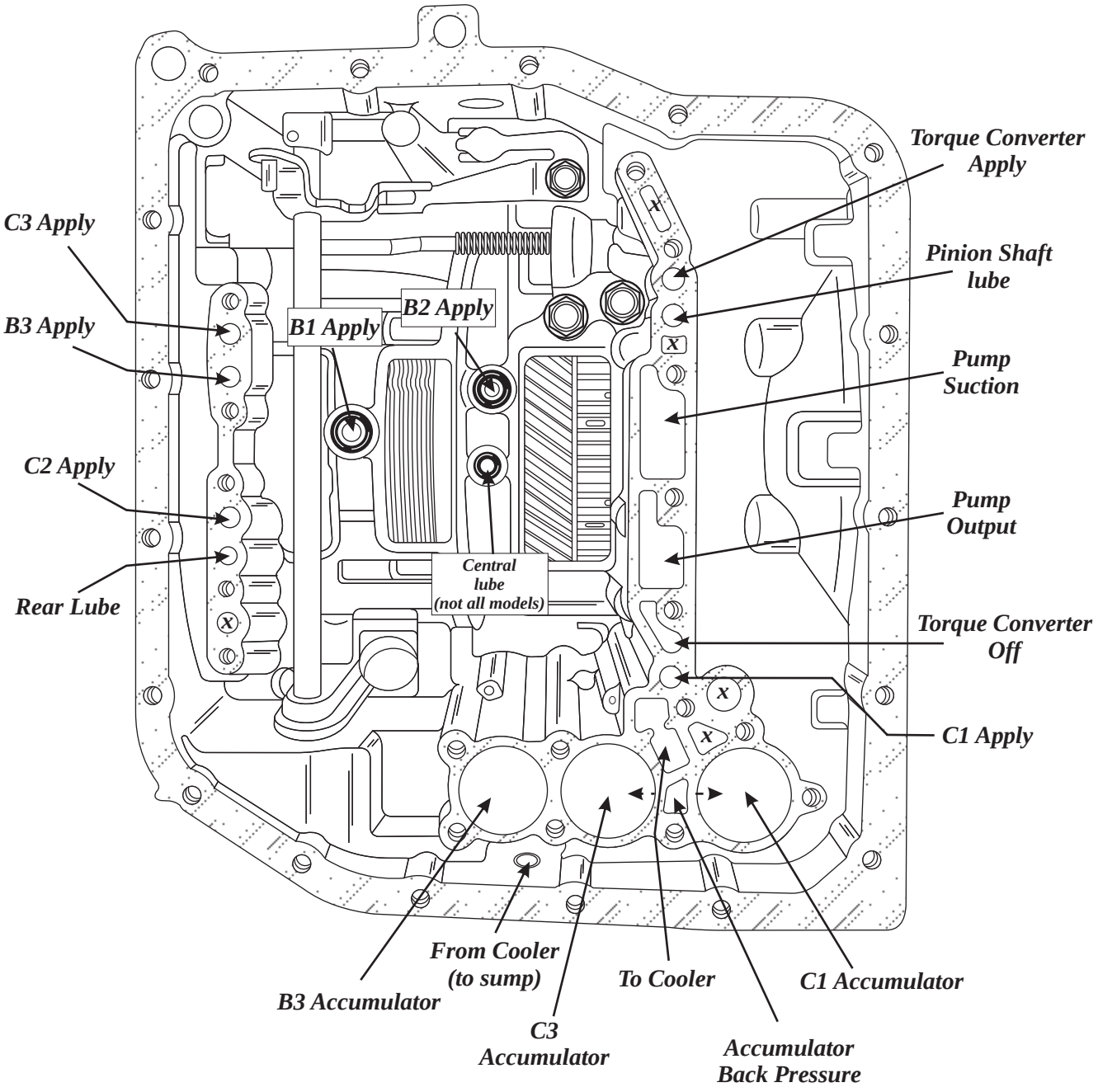


Figure 229