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# Technical Service Information

## IDENTIFICATION CODE STAMPING LOCATION

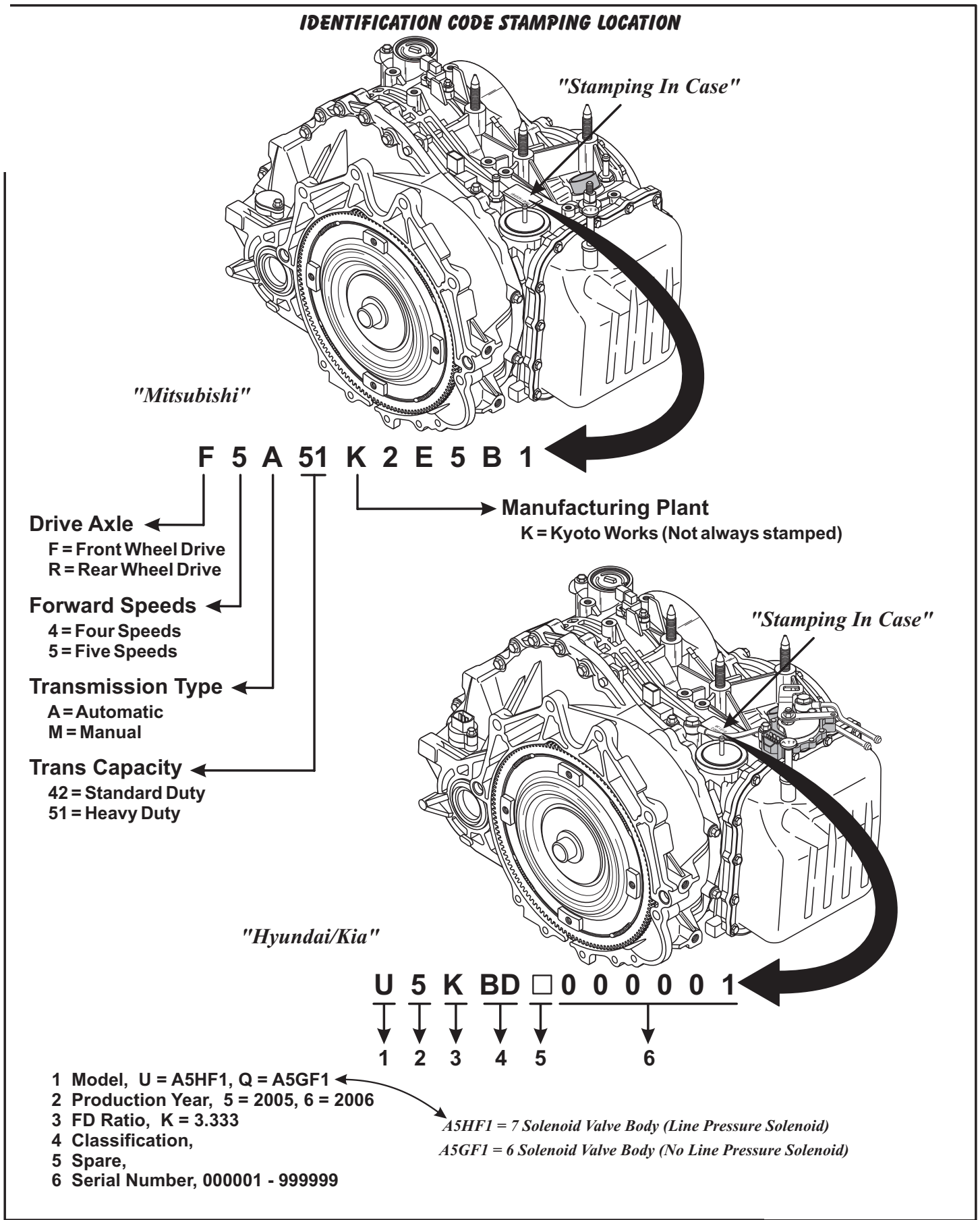


Figure 1

# Technical Service Information

## INTERNAL COMPONENT LOCATIONS

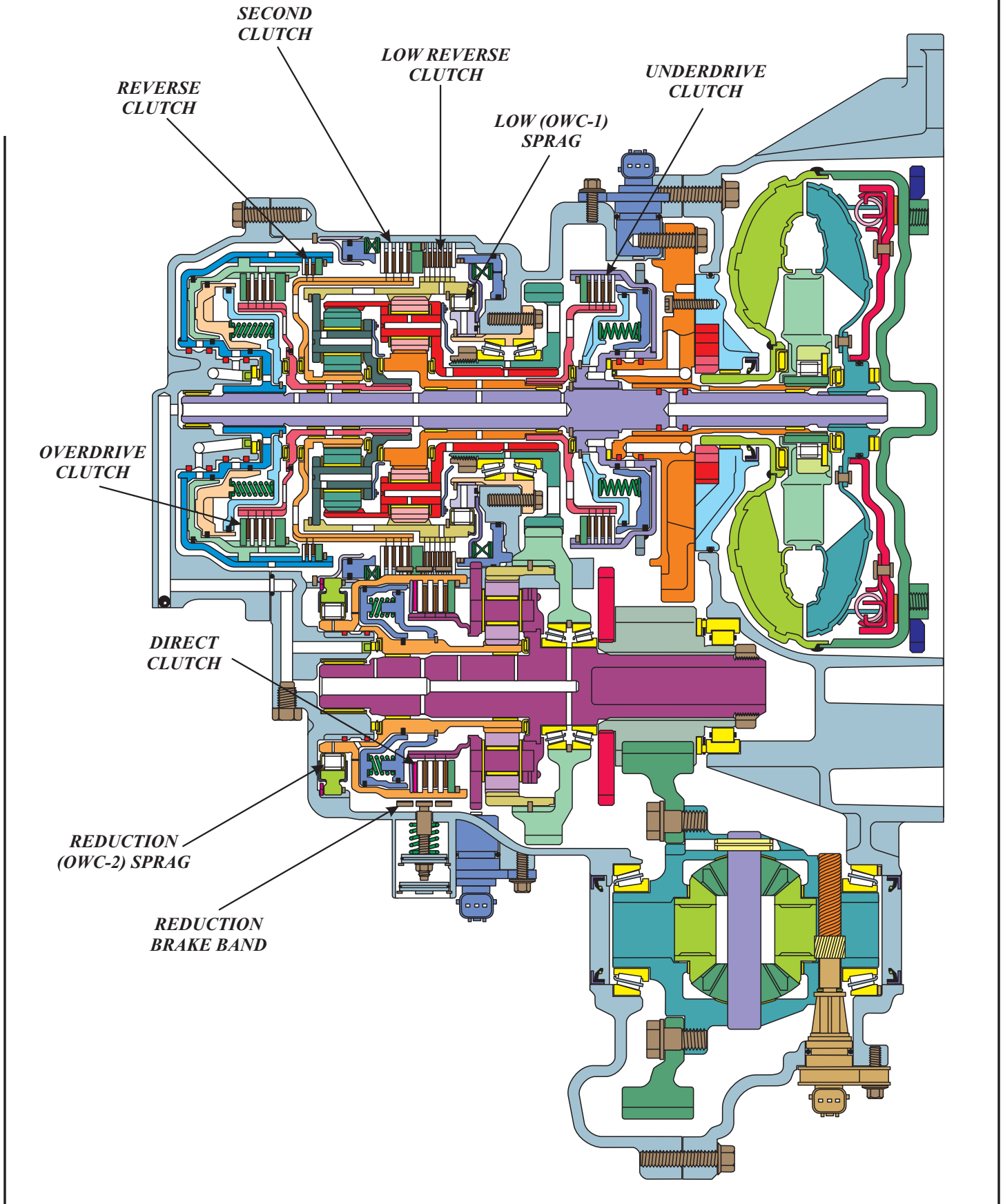


Figure 3

# Technical Service Information

## WIRE SCHEMATIC "2006-UP KIA SEDONA ONLY"

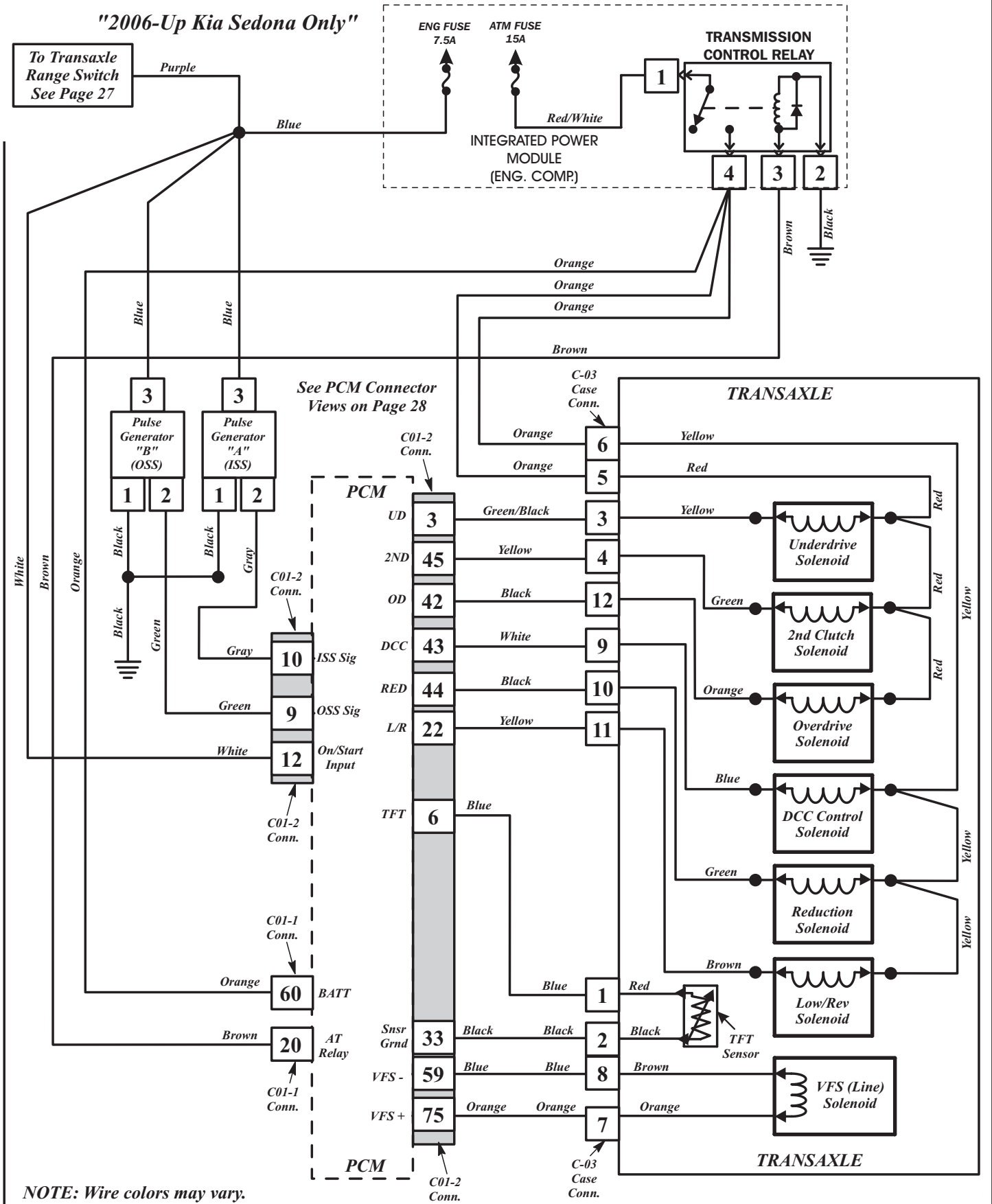


Figure 17

# Technical Service Information

## **ELECTRONIC COMPONENTS (CONT'D)**

### **"Hyundai Only" Transaxle Range Switch (TRS)**

The Transaxle Range Switch (TRS) is located on top of the transaxle, as shown in Figure 24. The TRS is a mechanical multi-position switch with four selector positions on the "Tiptronic" version, seven selector positions on "Non-Tiptronic" versions, one reverse switch and one switch for positions P/N, for starting control. Refer to Figure 25 for the two versions of the Shift Lever assembly and the TRS wire schematic is shown in Figure 26.

### **"Hyundai Only" Selector Lever Positions**

**P** When the "Park" position is selected, there is no powerflow through the transmission. The parking pawl is engaged which locks the output shaft to the case. The engine can be started and the ignition key can be removed.

**R** When the "Reverse" position is selected, the vehicle can be operated in a rearward direction at a reduced gear ratio.

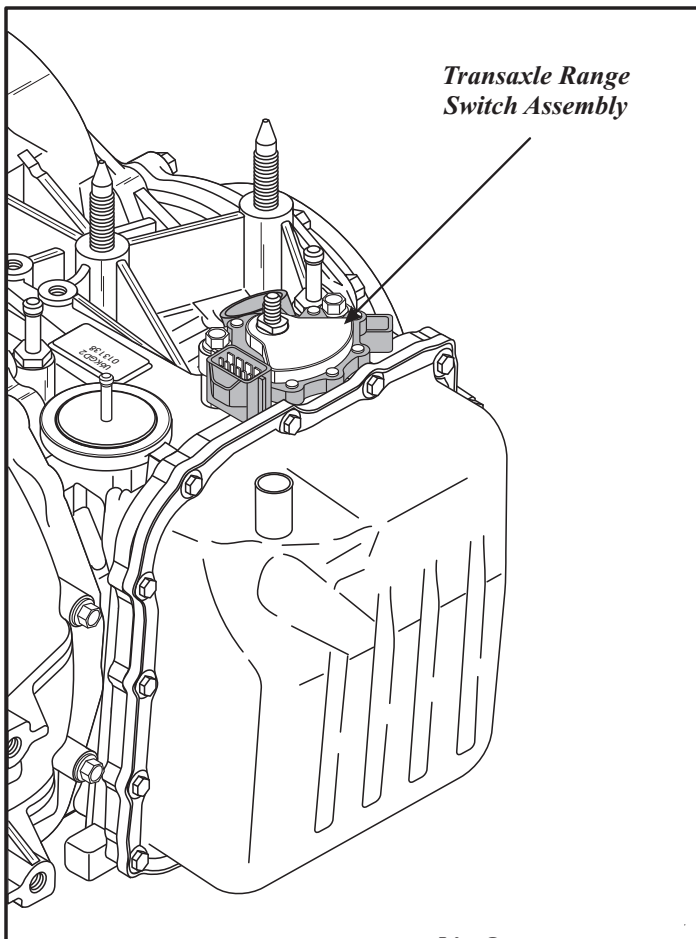


Figure 24

**N** When the "Neutral" position is selected, there is no powerflow through the transmission. The output shaft is not held and is free to rotate and the engine can be started. This position can also be selected while the vehicle is moving, to restart the engine if that becomes necessary.

**D** The "Drive" position is the normal position for most forward gear operations. The Drive position provides automatic upshifts and downshifts, apply and release of the converter clutch, and maximum fuel economy during normal operation. Drive range allows the transmission to operate in each of the five forward gear ratios. Downshifts are available for safe passing, by depressing the accelerator.

On "Tiptronic" models with the shift lever in "D" position and moved into the right hand selector gate, it enables the driver to select the range of gears by tapping the selector lever towards the "-" or "+" to cause the transaxle to downshift or upshift. Refer to Figure 25.

**3** When the "Third" position is selected, the transaxle will take off in first gear and not allow any shifts above third gear. This position can also be used for engine braking as necessary.

**2** When the "Second" position is selected, the transaxle will take off in first gear and not allow any shifts above second gear. This position can also be used for engine braking as necessary.

**L** When the "Low" position is selected, the transaxle will take off in first gear and not allow any shifts above first gear. This position can also be used for engine braking as necessary.

### **"Hyundai Only" Transaxle Range Switch Check**

The only voltage sent to the TRS goes in at terminal 8 and 10 as shown in Figure 26. In Reverse, voltage exits through terminal 7 with a signal to the BCM & PCM. The BCM illuminates the Reverse lamps. Ignition start voltage is sent to terminal 10 and out thru terminal 9 to the starter relay. Diagnosis here is easily done using the DVOM set to DC volts.

The TRS can also be checked with the connector removed and your DVOM set to Ohms. You should have continuity across the terminals shown in the charts in Figure 25 (Less than 2 ohms), related to the position of the gear selector lever. If these do not check properly, replace the transaxle range switch.

# Technical Service Information

## ELECTRONIC COMPONENTS (CONT'D)

### Input and Output Speed Sensors

The Input and Output Speed Sensors are located on top of the transaxle case, as shown in Figure 34, and retained with a bolt. Both speed sensors are equipped with an "O" ring seal the case bore, as shown in Figure 35 and 36.

Refer to Page 30 for speed sensor operation and diagnosis.

Continued on Page 30

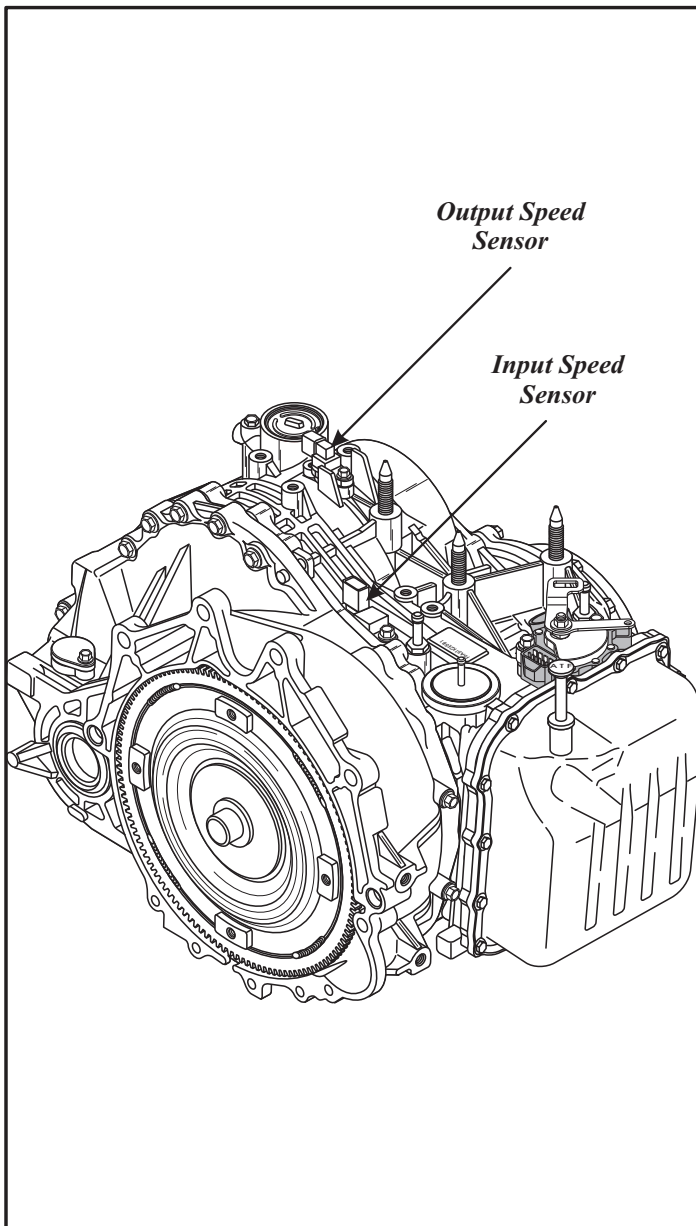


Figure 34

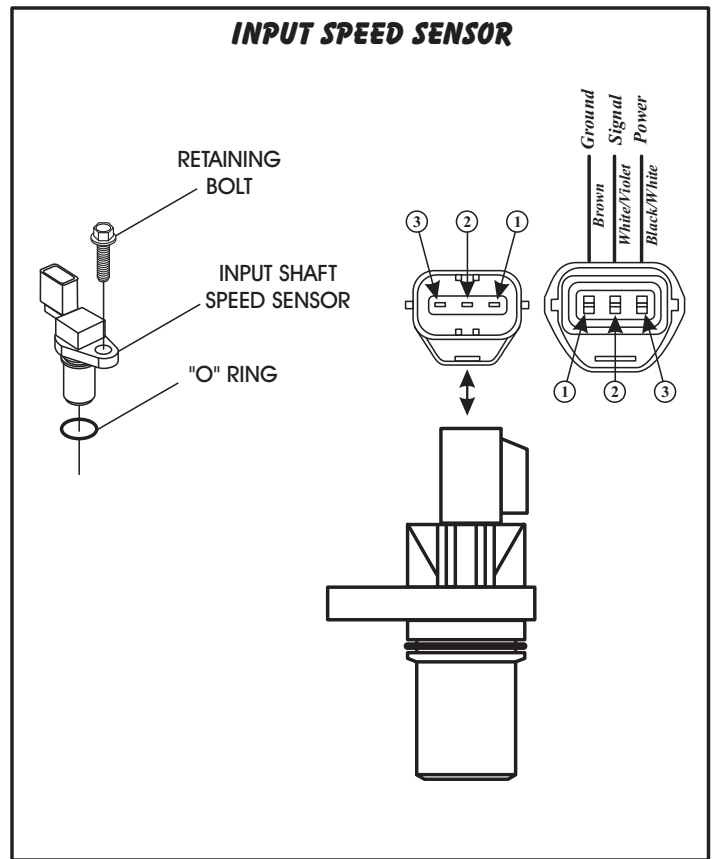


Figure 35

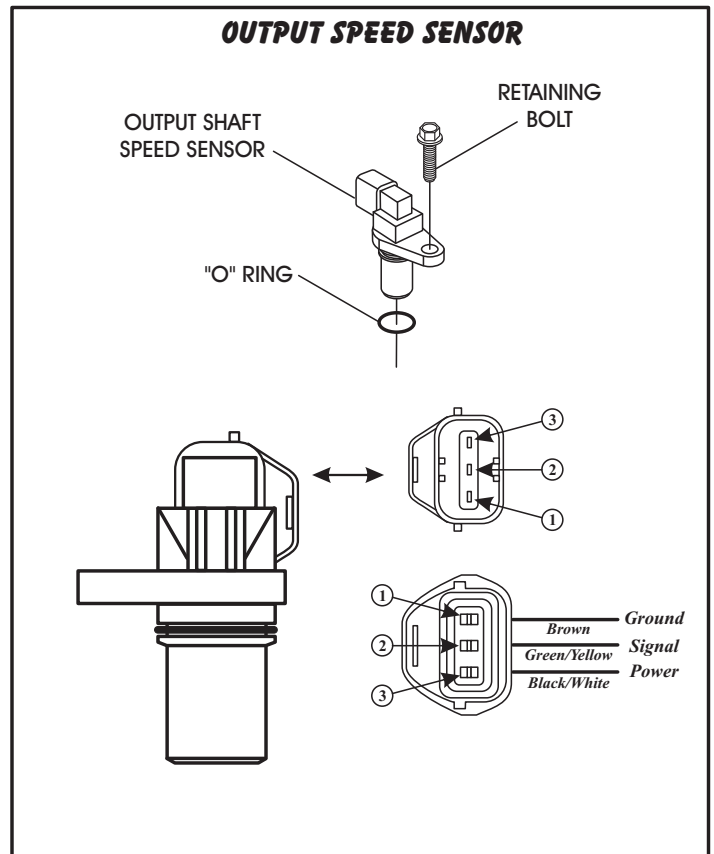


Figure 36

# Technical Service Information

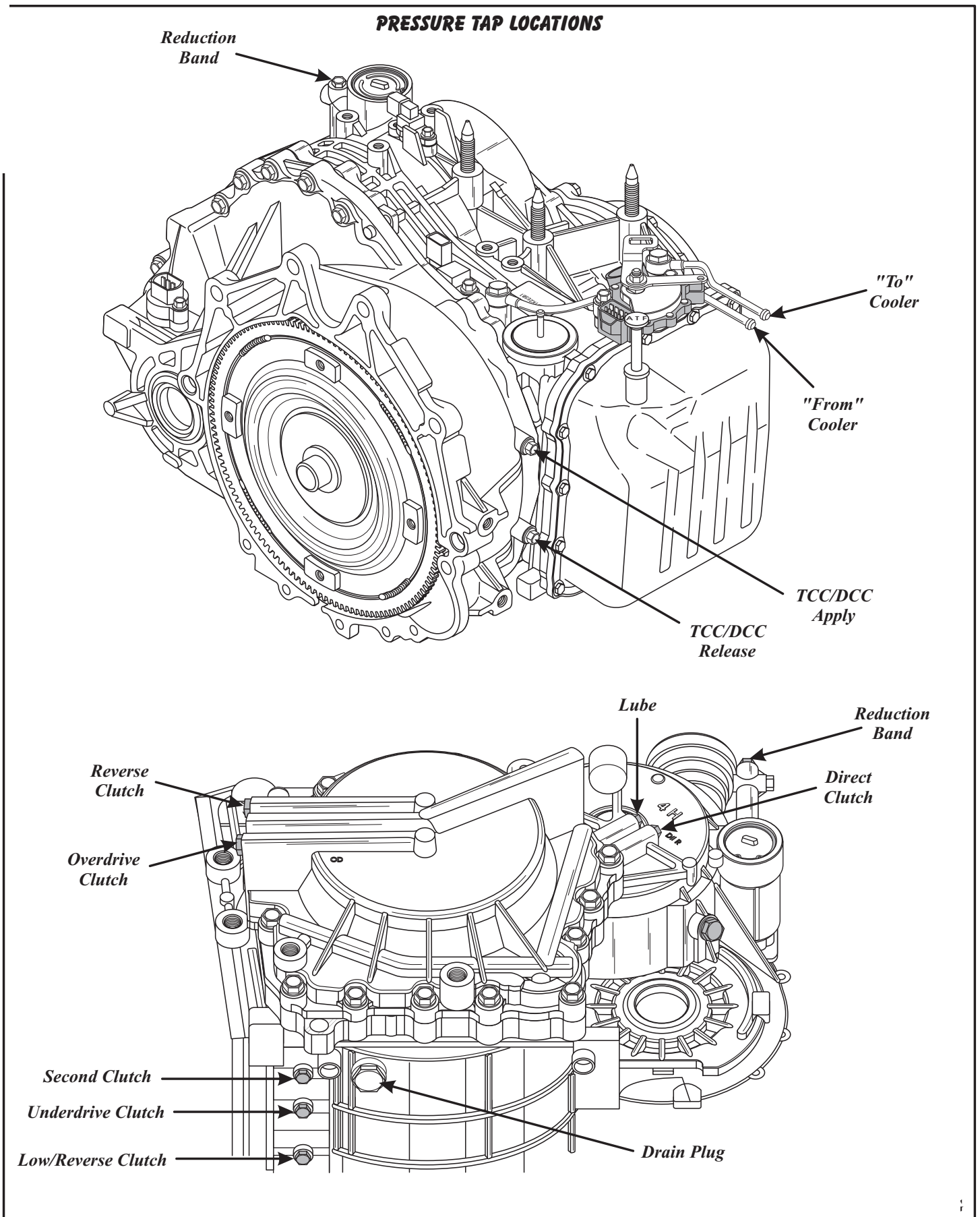


Figure 44

# Technical Service Information

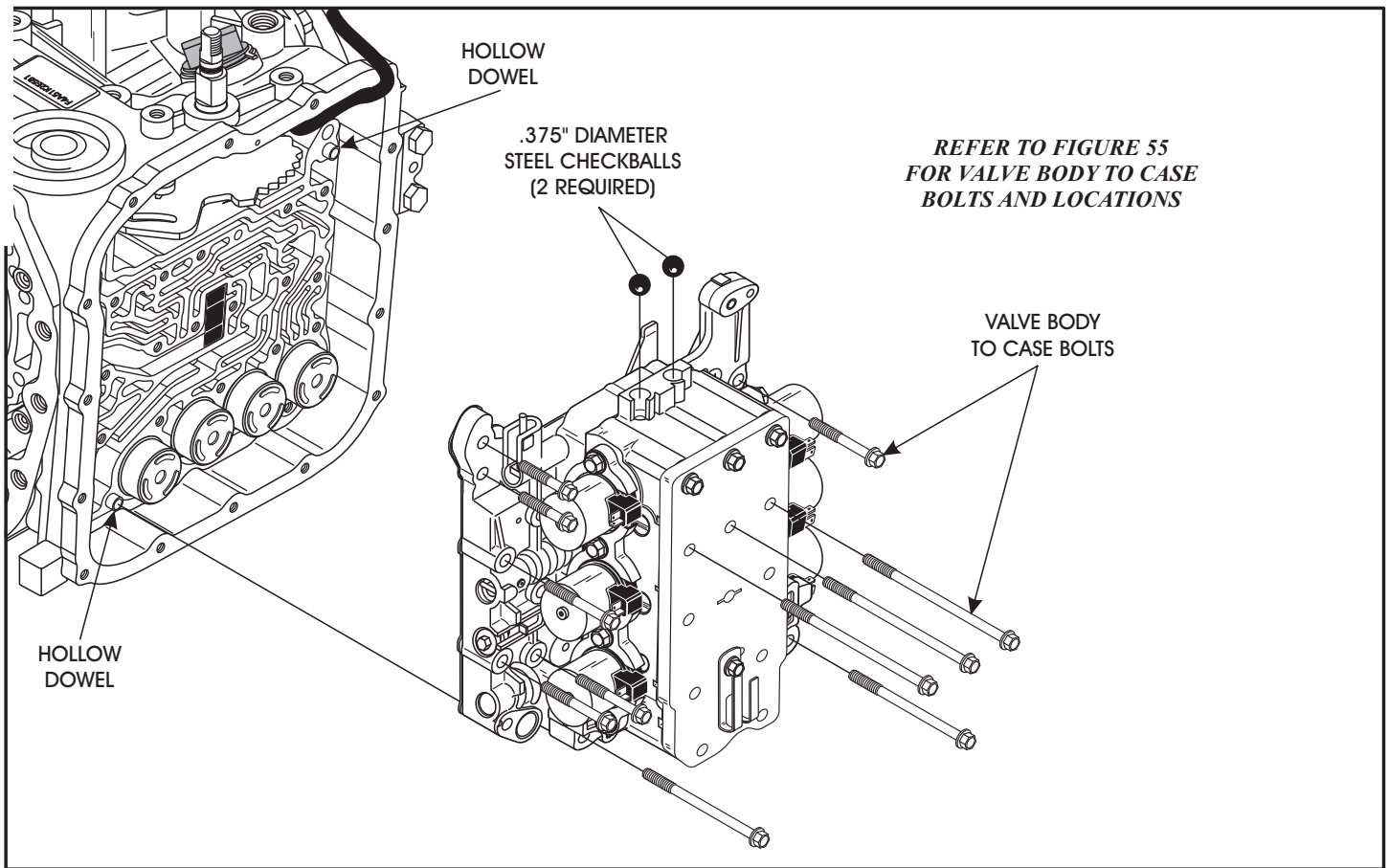


Figure 56

## **TRANSAXLE DISASSEMBLY INTERNAL COMPONENTS (CONT'D)**

8. Remove 28 valve body to case bolts and the valve body assembly, as shown in Figure 56.
9. Notice the two steel balls in the top of valve body, as shown in Figure 56.  
*Note: Place steel balls and hollow dowels in a safe location for reassembly.*
10. Set the valve body assembly aside for the component rebuild section.
11. Remove the manual shaft retaining pin from pan rail, as shown in Figure 57.
12. Remove and discard the 2nd clutch case seal, as shown in Figure 57.
13. Remove the case worm track oil screen, as shown in Figure 57.  
*Note: Replace case screen as necessary.*

Continued on Page 47

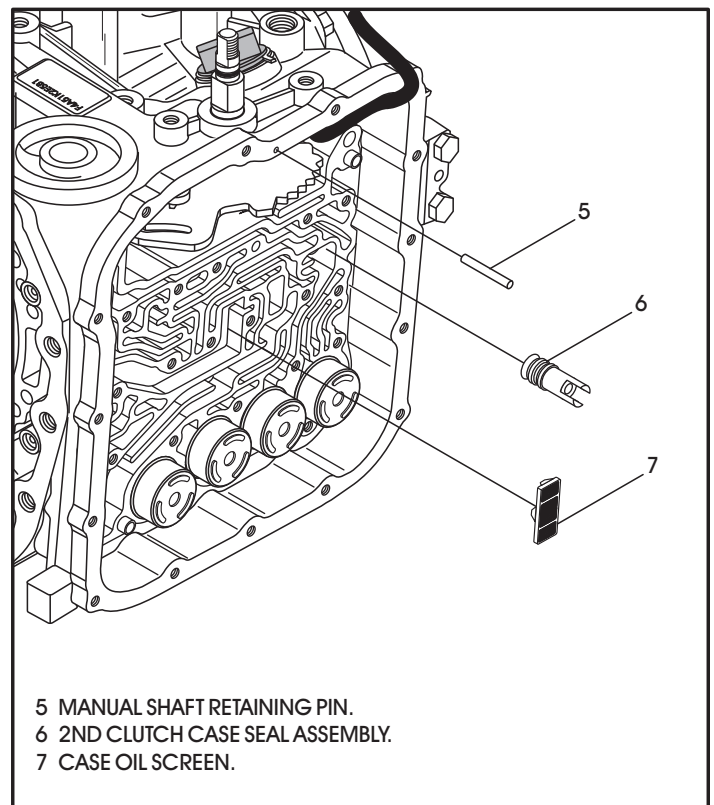


Figure 57



# Technical Service Information

## TRANSAXLE DISASSEMBLY

### INTERNAL COMPONENTS (CONT'D)

32. Remove underdrive clutch hub and number 2 thrust bearing, as shown in Figure 69.
33. Remove the reduction band servo cover snap ring and cover, as shown in Figure 70.
34. Remove and discard the servo cover "O" ring seal, as shown in Figure 70.
35. Remove reduction band servo piston snap ring and piston assembly, as shown in Figure 70.
36. Remove and discard the servo piston seal, as shown in Figure 70.
37. Remove the reduction band servo piston return spring, as shown in Figure 70.

Continued on Page 53

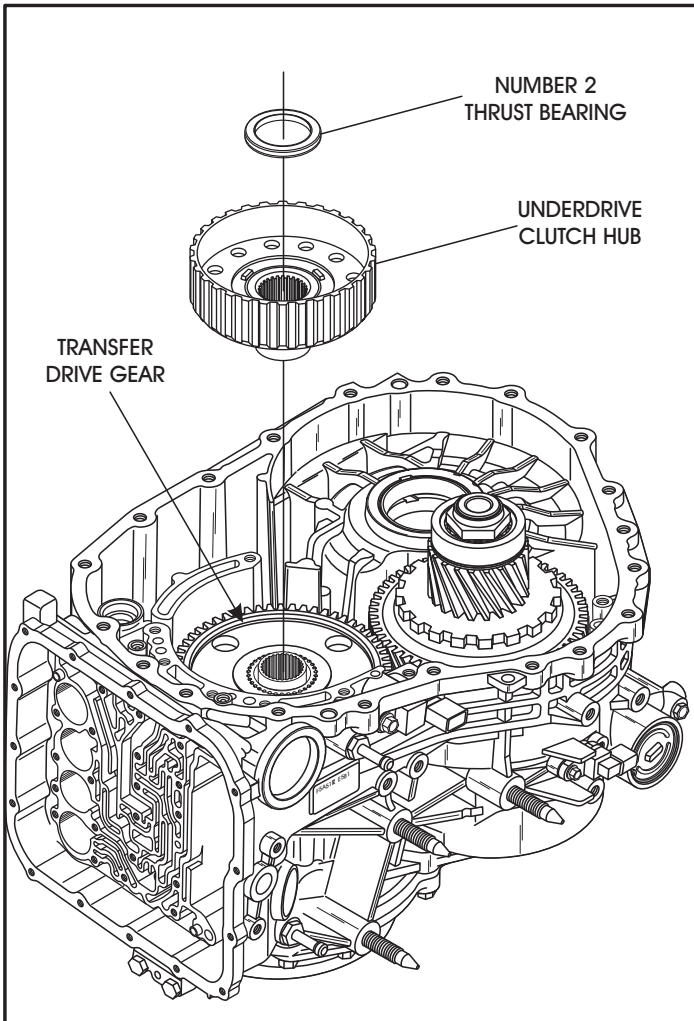
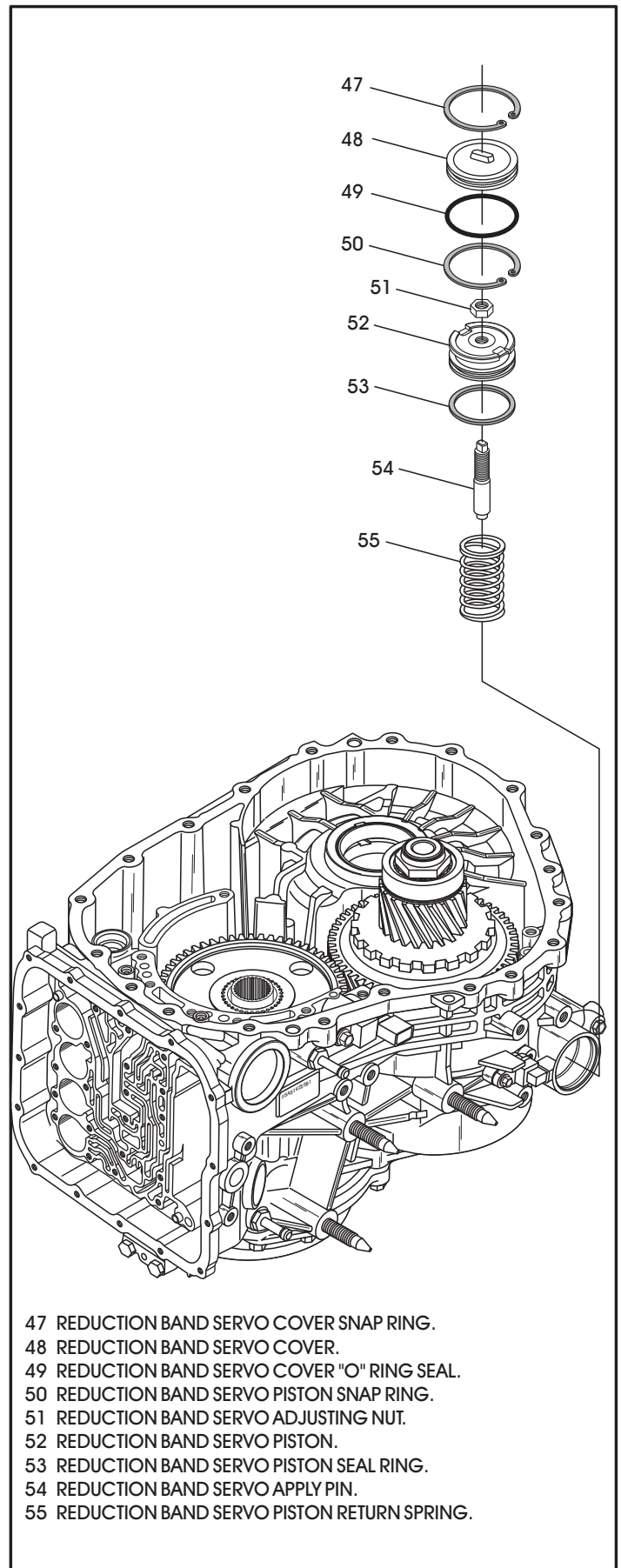


Figure 69

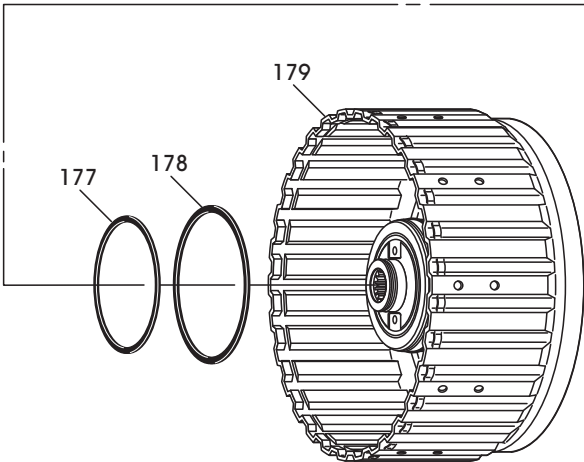
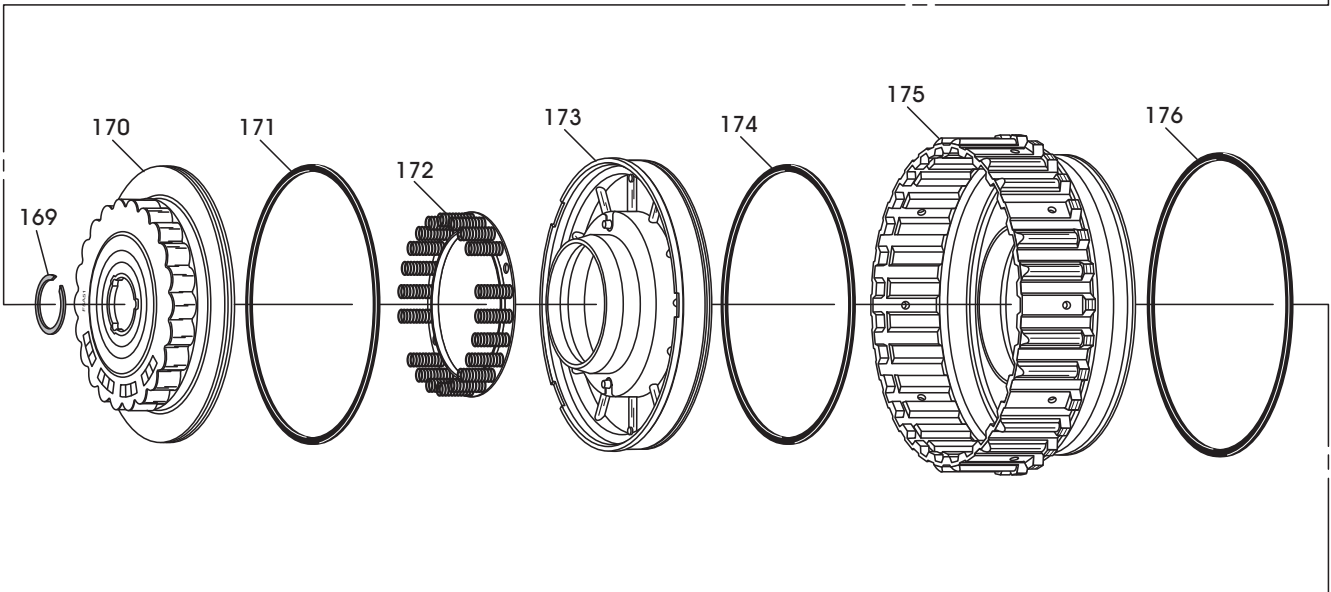
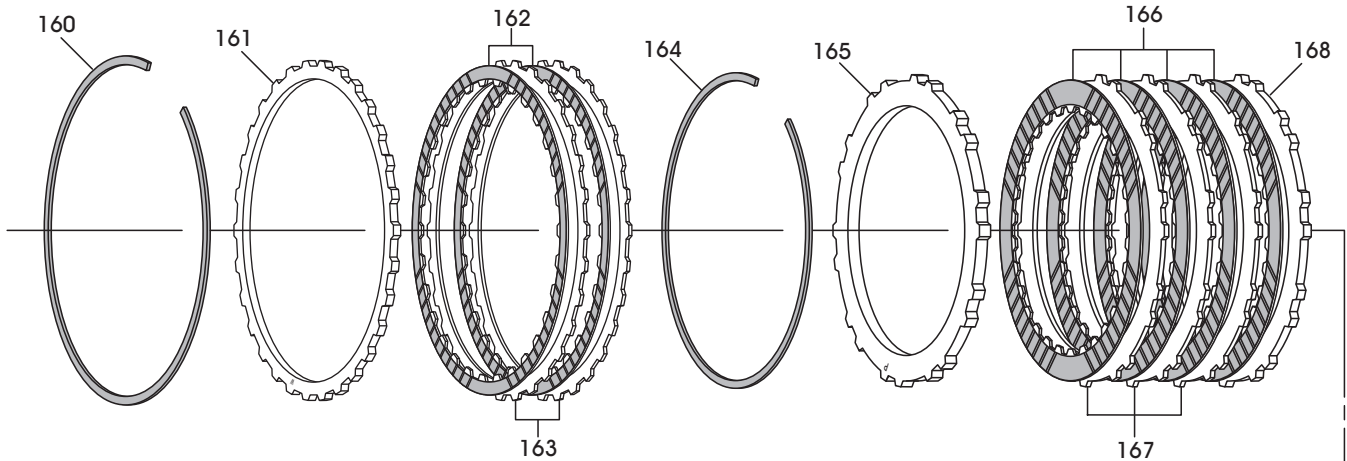


- 47 REDUCTION BAND SERVO COVER SNAP RING.
- 48 REDUCTION BAND SERVO COVER.
- 49 REDUCTION BAND SERVO COVER "O" RING SEAL.
- 50 REDUCTION BAND SERVO PISTON SNAP RING.
- 51 REDUCTION BAND SERVO ADJUSTING NUT.
- 52 REDUCTION BAND SERVO PISTON.
- 53 REDUCTION BAND SERVO PISTON SEAL RING.
- 54 REDUCTION BAND SERVO APPLY PIN.
- 55 REDUCTION BAND SERVO PISTON RETURN SPRING.

Figure 70

# Technical Service Information

## REVERSE/OVERDRIVE CLUTCH HOUSING EXPLODED VIEW, "MITSUBISHI" MODELS ONLY

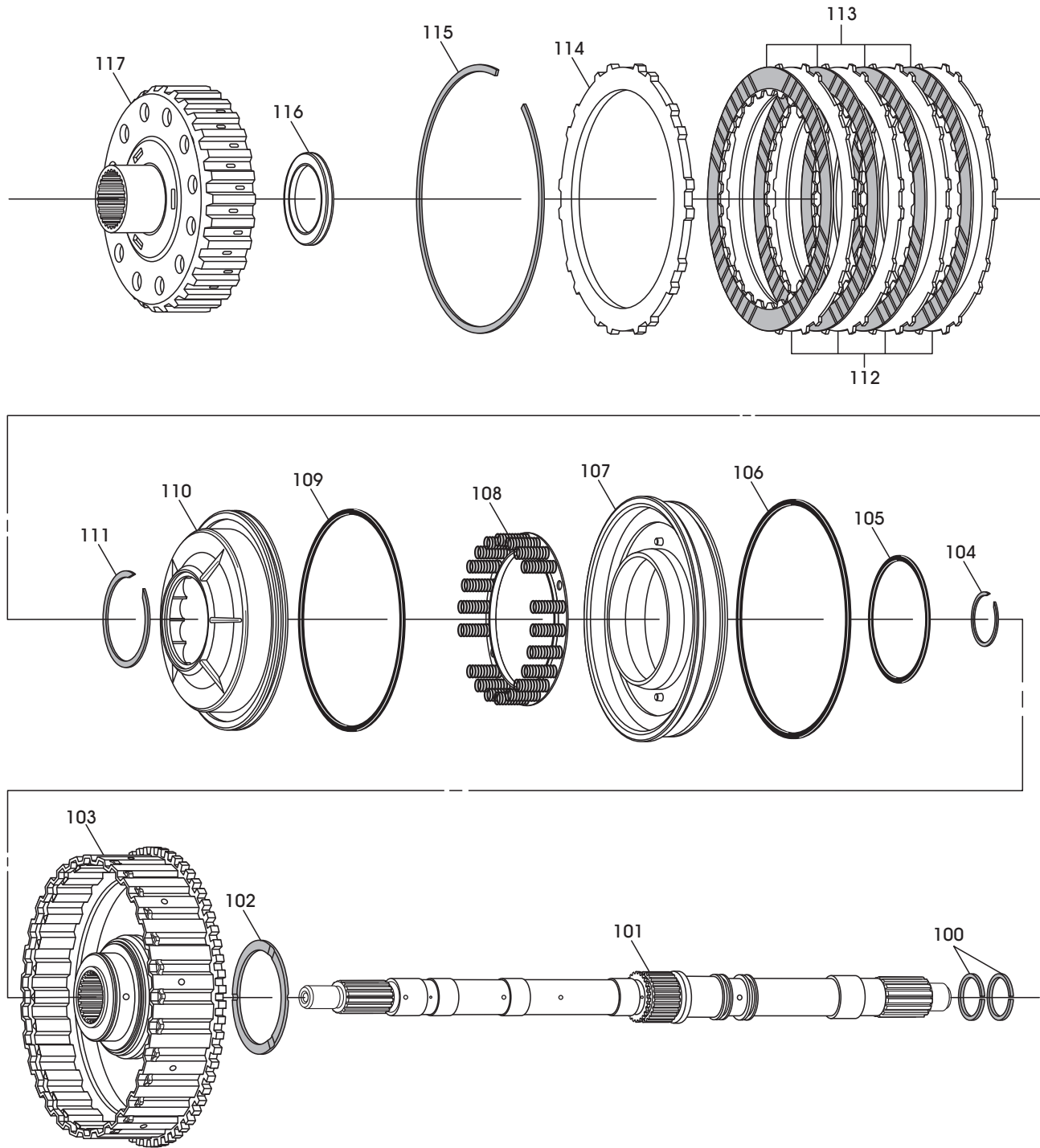


- 160 REVERSE CLUTCH BACKING PLATE SNAP RING (SELECTIVE).
- 161 REVERSE CLUTCH BACKING PLATE (.160" THICK).
- 162 REVERSE CLUTCH FRICTION PLATES (.070" THK) (QTY VARIES).
- 163 REVERSE CLUTCH STEEL PLATES (.070" THICK) (QTY VARIES).
- 164 OD CLUTCH BACKING PLATE SNAP RING (SELECTIVE).
- 165 OD CLUTCH BACKING PLATE (.158" THICK).
- 166 OD CLUTCH FRICTION PLATES (.072" THK) (QTY VARIES).
- 167 OD CLUTCH STEEL PLATES (.119" THICK) (QTY VARIES).
- 168 OD CLUTCH APPLY PLATE (.158" THICK).
- 169 OD BALANCE PISTON RETAINING SNAP RING.
- 170 OD CLUTCH BALANCE PISTON.
- 171 OD CLUTCH BALANCE PISTON "D" RING SEAL.
- 172 OD CLUTCH APPLY PISTON RETURN SPRING.
- 173 OD CLUTCH APPLY PISTON.
- 174 OD CLUTCH APPLY PISTON OUTER "D" RING SEAL.
- 175 REVERSE CLUTCH APPLY PISTON.
- 176 REVERSE CLUTCH APPLY PISTON OUTER "D" RING SEAL.
- 177 OVERDRIVE CLUTCH PISTON INNER "D" RING SEAL.
- 178 REVERSE CLUTCH APPLY PISTON INNER "D" RING SEAL.
- 179 REVERSE/OVERDRIVE CLUTCH RETAINER ASSEMBLY.

Figure 113

# Technical Service Information

## UNDERDRIVE CLUTCH HOUSING EXPLODED VIEW



- 100 TURBINE SHAFT SEALING RINGS.
- 101 TURBINE SHAFT.
- 102 NUMBER 1 *SELECTIVE* THRUST WASHER.
- 103 UNDERDRIVE CLUTCH HOUSING.
- 104 TURBINE SHAFT RETAINING SNAP RING.
- 105 UNDERDRIVE CLUTCH HOUSING INNER "D" RING SEAL.
- 106 UNDERDRIVE CLUTCH APPLY PISTON.
- 107 UNDERDRIVE CLUTCH PISTON RETURN SPRING ASSEMBLY.
- 108 UNDERDRIVE CLUTCH PISTON RETURN SPRING ASSEMBLY.

- 109 UNDERDRIVE CLUTCH BALANCE PISTON "D" RING SEAL.
- 110 UNDERDRIVE CLUTCH BALANCE PISTON.
- 111 UNDERDRIVE CLUTCH BALANCE PISTON SNAP RING.
- 112 UNDERDRIVE CLUTCH STEEL PLATES.
- 113 UNDERDRIVE CLUTCH FRICTION PLATES.
- 114 UNDERDRIVE CLUTCH BACKING PLATE.
- 115 UNDERDRIVE CLUTCH BACKING PLATE *SELECTIVE* SNAP RING.
- 116 NUMBER 2 THRUST BEARING.
- 117 UNDERDRIVE CLUTCH HUB.

Figure 144

# Technical Service Information

## COMPONENT REBUILD SECTION

### Direct Clutch Housing Assembly

1. Disassemble the direct clutch housing using Figure 183 as a guide.

**Note: It is "Mandatory" that you check the clutch pack as it is removed. The amount and thickness of plates will vary, as well as the diameter. The bottom apply plate is not used in all models. Refer to Page 103.**

2. Clean all direct clutch parts thoroughly and dry with compressed air.

3. Inspect all direct clutch parts thoroughly for any wear and/or damage. Install new bushings as necessary using the proper driver.

Continued on Page 101

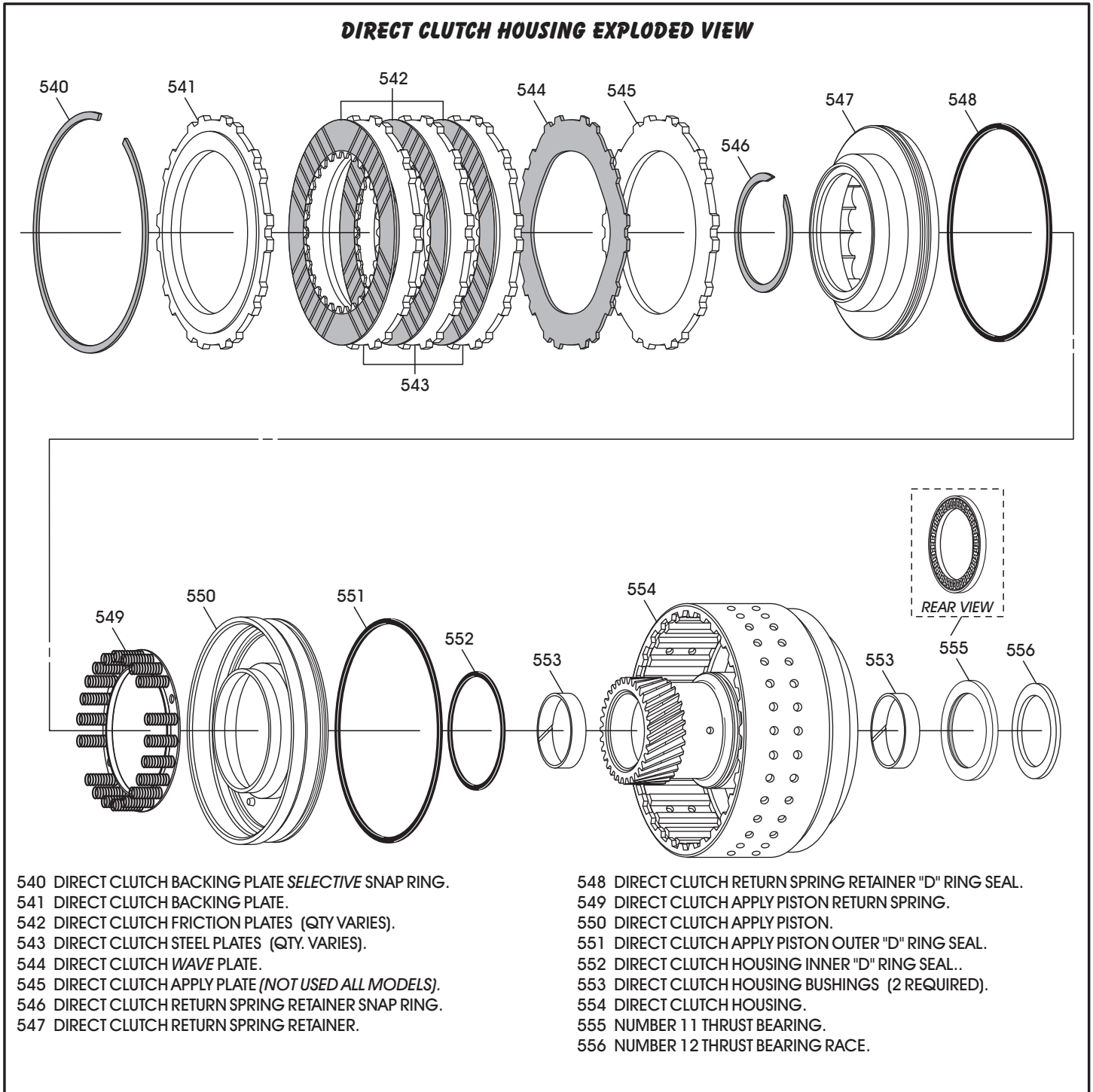


Figure 183

# Technical Service Information

## SONNAX® PUMP ALIGNMENT TOOL

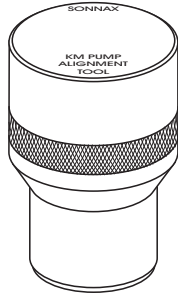


Figure 202

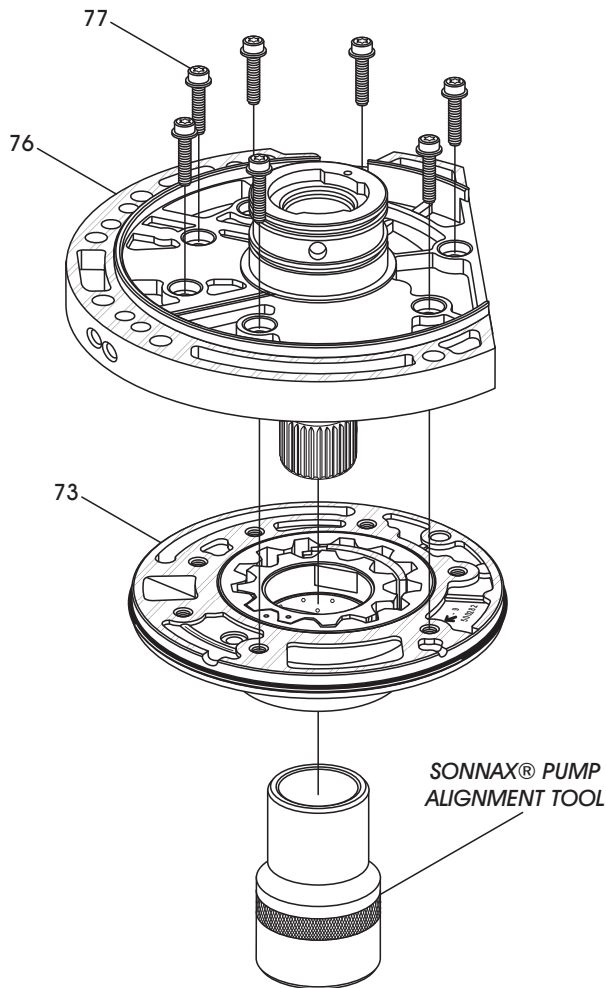
## COMPONENT REBUILD SECTION

### Oil Pump Assembly (Cont'd)

8. There is available from Sonnax®, an oil pump alignment tool, that is **mandatory** for proper oil pump to cover alignment (See Figure 202).
9. Install the pump alignment tool through the bushing, as shown in Figure 203, and set the completed oil pump body assembly on flat surface.
10. Install the oil pump cover through and into the pump alignment tool, as shown in Figure 203.
11. Install the oil pump to pump cover retaining bolts, as shown in Figure 203.
12. Torque oil pump to pump cover retaining bolts to 10 N·m (88 in.lb.), as shown in Figure 204, using a criss-cross pattern.

**Note: The oil pump alignment tool "Must" remain in place until the torque process is completed.**

Continued on Page 109



- 73 COMPLETED OIL PUMP BODY.  
76 OIL PUMP COVER/STATOR SHAFT ASSEMBLY.  
77 PUMP COVER TO PUMP BODY RETAINING BOLTS (7 REQUIRED).

Figure 203

**TORQUE COVER TO BODY BOLTS TO 10 NM (88 IN.LB.) WITH THE ALIGNMENT TOOL IN PLACE**

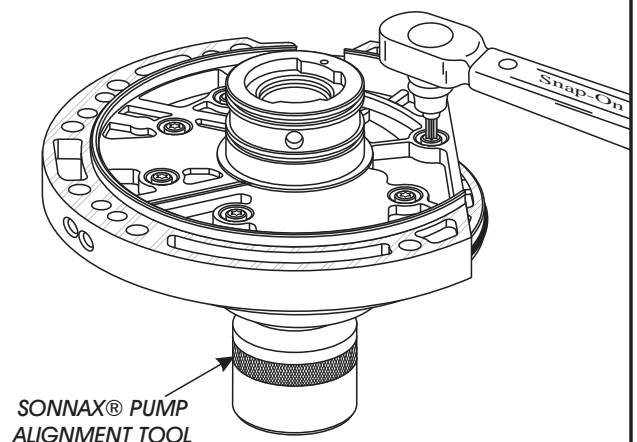


Figure 204

# Technical Service Information

## COMPONENT REBUILD SECTION

### VALVE BODY "SECTION ONE"

#### "MITSUBISHI", "PRE-06 KIA" & "PRE-07 HYUNDAI"

##### "Section One" Valve Body Assembly (Cont'd)

14. The overdrive, low/reverse, reduction band, 2nd clutch, underdrive and the TCC solenoids are all the same, and will interchange in any of their positions (See Figure 214).
15. The OEM part number for all solenoids, at time of this printing, is MD758981, and are also available from several aftermarket sources.
16. All solenoids can be air checked using the procedure shown in Figure 215.

17. Install new solenoid to solenoid body casting seal, as shown in Figure 215, on all solenoids.  
**Note: These solenoid seals are included in most gasket and seal packages.**
18. Install new "O" rings onto the solenoids, as shown in Figure 215, and lubricate with small amount of Trans-Jel®.
19. Install all of the solenoid assemblies into the locations shown in Figure 214.
20. Install both solenoid retainers and bolts, and torque the bolts to 6 N·m (55 in.lb.).

Continued on Page 116

#### "MITSUBISHI", "PRE-2006 KIA" & "PRE-2007 HYUNDAI" SOLENOID VALVE BODY EXPLODED VIEW

- 336 SOLENOID RETAINER BOLTS (8 REQUIRED).
- 337 SOLENOID RETAINER (2 REQUIRED).
- 338 SOLENOID VALVE BODY CASTING.
- 339 OVERDRIVE CLUTCH SOLENOID ASSEMBLY.
- 340 LOW/REVERSE CLUTCH SOLENOID ASSEMBLY.
- 341 REDUCTION BRAKE BAND SOLENOID ASSEMBLY.
- 342 UNDERDRIVE CLUTCH SOLENOID ASSEMBLY.
- 343 SECOND CLUTCH SOLENOID ASSEMBLY.
- 344 TORQUE CONVERTER CLUTCH SOLENOID ASSEMBLY.
- 345 SOLENOID VALVE BODY COVER BOLTS (4 REQUIRED).
- 346 INTERNAL WIRE HARNESS BRACKET.
- 347 SOLENOID VALVE BODY COVER.

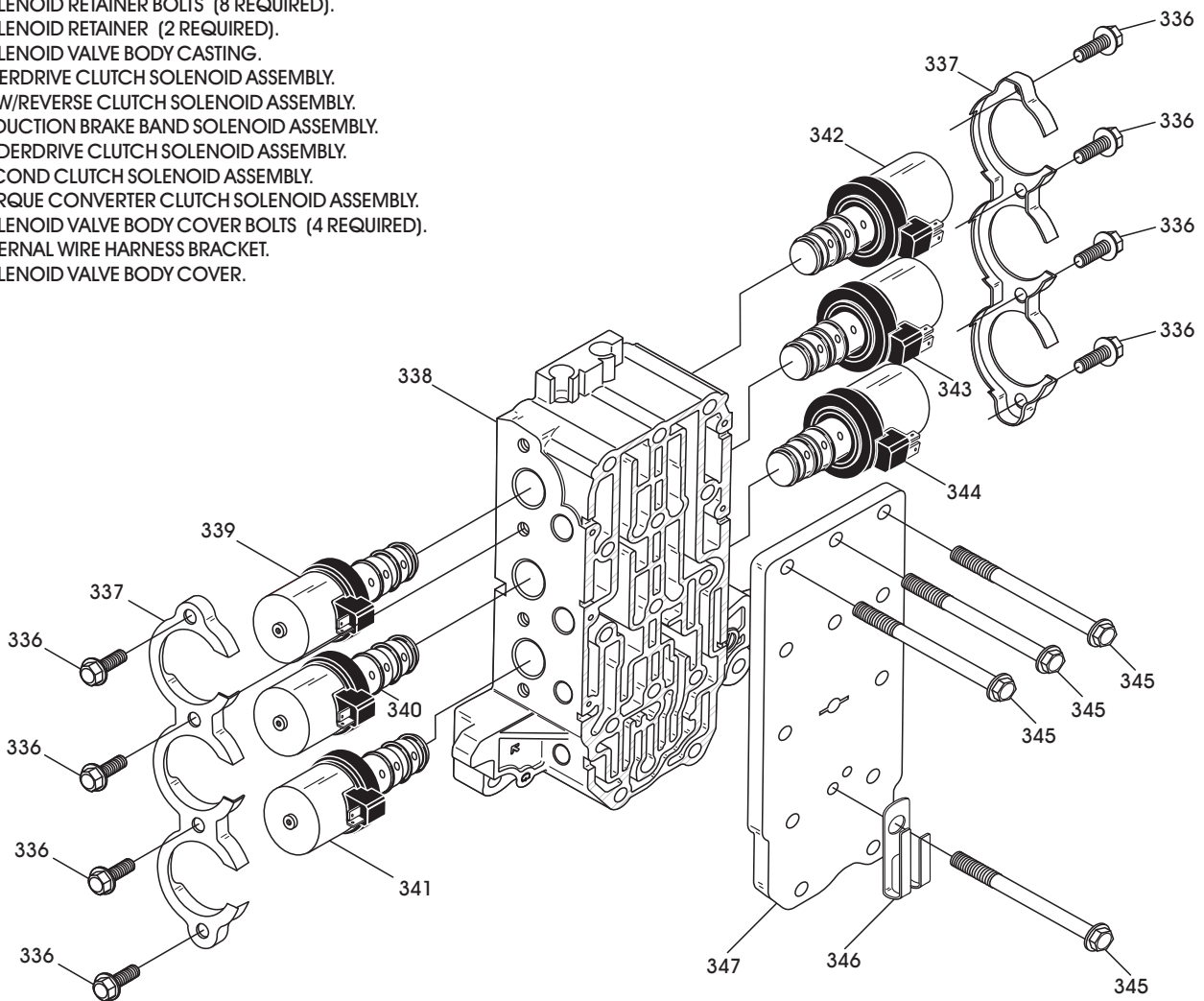


Figure 214

# Technical Service Information

## FINAL ASSEMBLY

### INTERNAL COMPONENTS (CONT'D)

13. Measure with a feeler gage between pressure plate and the selective snap ring, as shown in Figure 244.
14. Mitsubishi wants maximum of .006" at this location. Specification is 0" - .006".
15. Select a snap ring from the chart in Figure 245 to achieve the desired specification.
16. Now remove the pressure plate and snap rings from the transaxle case.

<b>LOW/REVERSE &amp; SECOND PRESSURE PLATE SELECTIVE SNAP RING CHART</b>		
<b>F5A51 MODELS</b>		
<i>Thickness</i>	<i>I.D. Color</i>	<i>Part Number</i>
2.2 mm (.087")	None	MD756784
2.3 mm (.091")	Blue	MD756785
2.4 mm (.094")	Brown	MD758552
2.5 mm (.098")	None	MD758553

Figure 245

Continued on Page 132

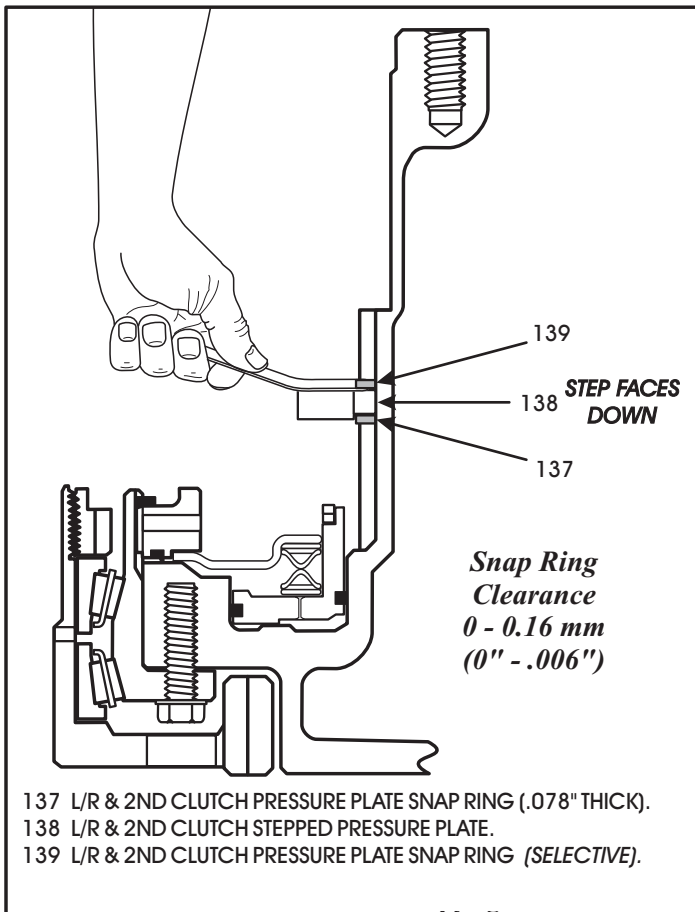


Figure 244

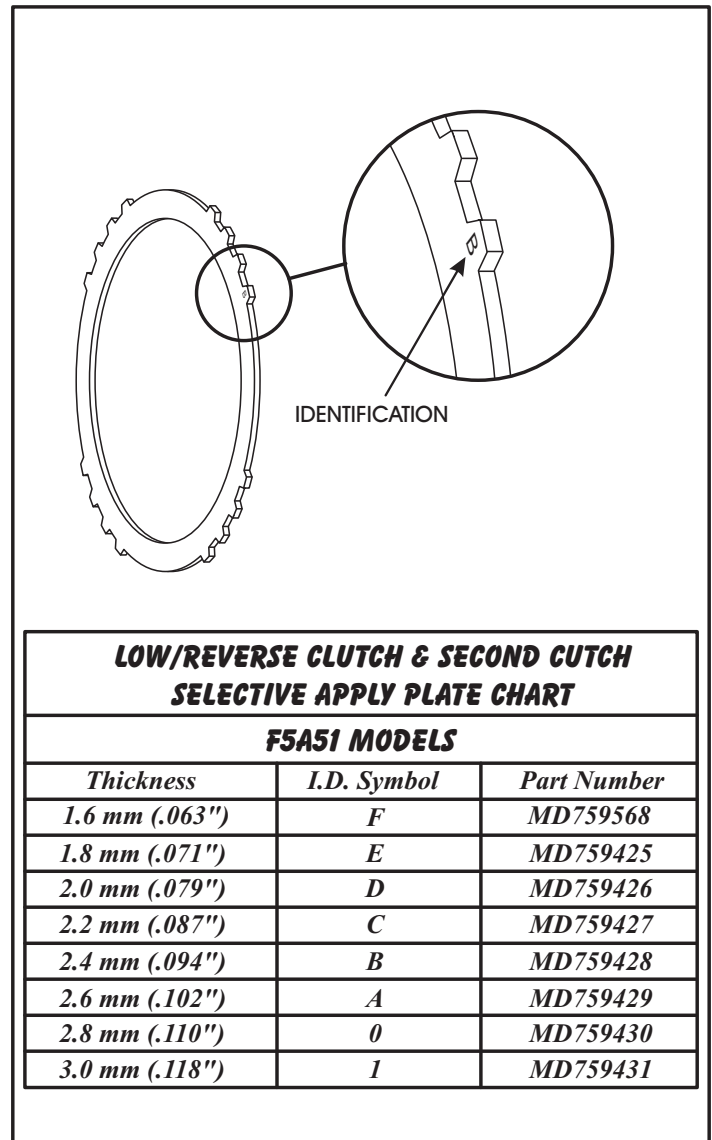


Figure 246