



FORD 6R140 ZIP KIT®

PART NUMBER 6R140-ZIP

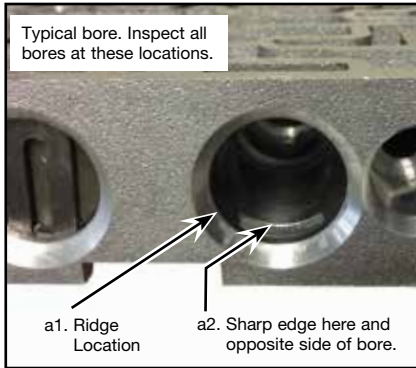
QUICK GUIDE

Parts are labeled here in order of installation. See other side of sheet for details on Zip Kit contents.

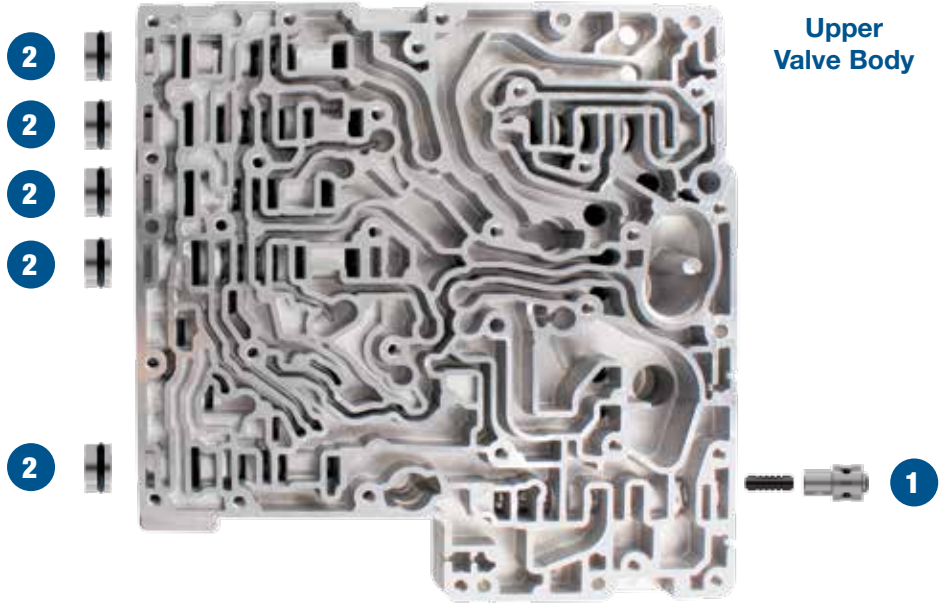
INSTALLATION DIAGRAM



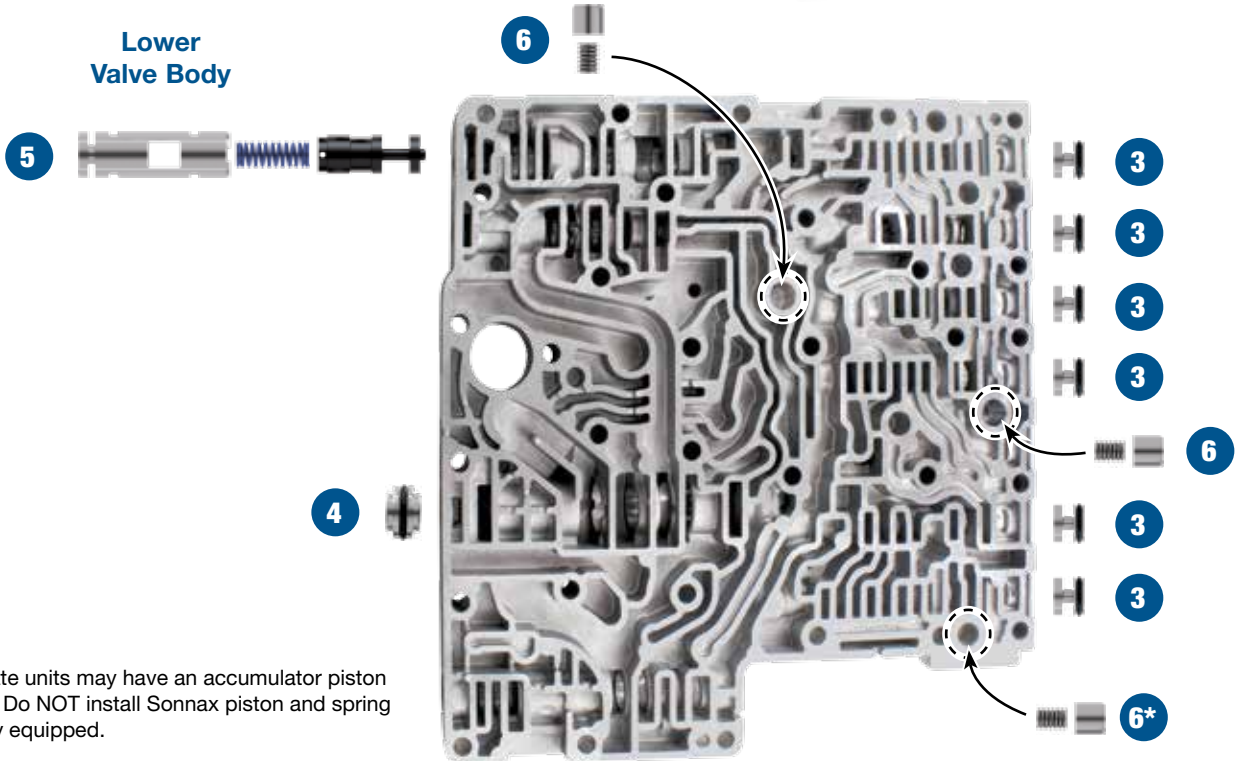
WARNING: If ridge and sharp edges are not eliminated, O-ring will be damaged upon insertion into bore.



Upper Valve Body



Lower Valve Body



*NOTE: Some late units may have an accumulator piston at this location. Do NOT install Sonnax piston and spring unless originally equipped.

In addition to general rebuilding tips and technical information, the technical booklet included in this kit contains vacuum testing and additional repair options for higher mileage units or for repairing specific complaints which are beyond the scope of this kit.

Zip Kit Contents & Installation Steps

Step 1 Replace OE TCC Apply Boost Valve Assembly

Packaging Pocket 1

- Boost Valve
- Sleeve

Step 2 Replace OE Regulator End Plugs

Place O-ring into end plug groove. Lubricate with Sonnax Slippery Stick O-LUBE and roll on bench to size.

- Inspect each bore that will receive an O-ringed end plug for sharp edges. There are three locations where an O-ring may be damaged during installation (Inset Page 1):
 - Many valve bodies will have a small sharp ridge at bore entry. The ridge is difficult to see but can be located by carefully dragging a pick down the chamfer into the entry.
 - The inboard edges of the two openings (top and bottom) just inside the bores where the end plug retainers install are often sharp.
- Remove valve train to facilitate bore cleaning after ridge removal and breaking of sharp edges.
- Recommend using 3/8" diameter flap wheel chucked in miniature die grinder, but any method that removes ridges and breaks sharp edges without damaging bore is acceptable.



WARNING: If ridge and sharp edges are not eliminated, O-ring will be damaged upon insertion into bore.

Packaging Pocket 2

- End Plugs (5)
- O-Rings (8) 3 extra

Step 3 Replace OE Internal End Plugs

Place O-rings into end plug grooves. Lubricate with Sonnax Slippery Stick O-LUBE and roll on bench to size.

Apply slight pressure and rotate end plug back and forth into bore in small, incremental steps. This action allows a well-lubed O-ring to compress into bore. Alternately, a small flat-bladed screwdriver inserted through the retainer port cavity may be used to help gently squeeze O-ring into bore.

Packaging Pocket 3

- Internal End Plugs (6)
- O-Rings (10) 4 extra

Step 4 Replace OE LPC End Plug

Place O-ring into end plug groove. Lubricate with Sonnax Slippery Stick O-LUBE and roll on bench to size.

Packaging Pocket 4

- End Plug
- O-Rings (2) 1 extra

Step 5 Replace OE Converter Limit Valve

- Remove OE outboard retaining clip, plug, cooler bypass valve, thermal valve, and spring. Set aside for reuse. Remove OE inboard retaining clip and set aside for reuse. Remove and discard OE inboard plug, spring, and converter limit valve.
- Remove Sonnax valve from sleeve. Install Sonnax spring into valve pocket then insert both components back into sleeve, spring end first. Install complete sleeve assembly (valve end first) into bore. Install inboard OE retaining clip into Sonnax sleeve groove.
- Return OE spring, thermal bypass valve, cooler bypass valve, end plug and retaining clip to bore.

Packaging Pocket 5

- Converter Limit Valve & Sleeve Assembly
- Spring

Step 6 Replace OE Accumulator Pistons

Packaging Pocket 6

- Accumulator Pistons (3)
- Matching Springs (3)

NOTE: 2015–2016 models have three accumulator pistons.



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INSTALLATION & TESTING BOOKLET

Torque Specifications

| | |
|---|---|
| Oil Pan to Case 9Nm/80 in-lb Note: Pan gasket is reusable | Valve Body Assembly to Case 11Nm/97 in-lb |
| Valve Body Halves 11Nm/97 in-lb | Sump Filter to Case 11Nm/97 in-lb |
| Solenoid Retaining Bracket 11Nm/97 in-lb | Feed Tube Bracket to Case 11Nm/97 in-lb |

Fluid

Ford Fluid Mercon LV **Check at** 170-190°

Note: Various pan configurations between Gas/Diesel and early/late configurations require different capacities.

Approximate Dry Fill 16-19 qts. See service manual.

Drive-Cycle Relearn

- Using a capable scan tool, clear the TCM KAM (Keep Alive Memory).
- Make certain transmission temperature is between 180°F and 200°F (82°C to 93°C).
- With engine running and brakes applied, move selector lever in the following sequence pausing between each position for 4 seconds beginning in neutral as follows: **N-R-N-D-R-D-N**. Repeat this sequence two more times, for a total of three.
- Accelerate at moderate throttle so each shift occurs around 2000 rpm for gas engines and 1500 rpm for diesel engines up to 6 mph (105k/mh). Brake moderately to a stop, repeat this sequence two more times, for a total of three.
- Accelerate at moderate throttle so each shift occurs around 3000 rpm for gas engines and 2250 rpm for diesel engines up to 65 mph (105 k/mh). Repeat this sequence two more times, for a total of three.
- Come to a complete stop.
- With the engine running and the brakes applied, move the selector lever in the following sequence pausing between each position for 4 seconds beginning in neutral as follows: **N-R-N-D-R-D-N**. Repeat this sequence two more times, for a total of three.

Valve Body ID & Tech Tips

Solenoid Strategy Tags

Both the valve body and the transmission case have a solenoid strategy number on a tag. The numbers (**Figures 1 & 2**) should match on both interior and exterior tags. It is possible to program the TCM with a new strategy number if components have been changed.

Solenoid Information

Solenoids are location specific and have a band number that is barely legible (**Figures 3 & 4**). It may be necessary to take solenoid outside and look at it at an angle in the location shown. Solenoid ohm value is approximately 5 to 5.5.

WARNING: Band number on solenoid (1-5) corresponds to solenoid calibration. Band number of replacement solenoid MUST match that of OE solenoid, or shift calibration concerns will result.

In addition, solenoid calibration (Normally High or Normally Low) must match.



Figure 1



Figure 2



Figure 3

Brown Shroud
Green & Red O-Rings =
Normally Low Solenoids

Black Shroud
Orange & Red O-Rings =
Normally High Solenoids

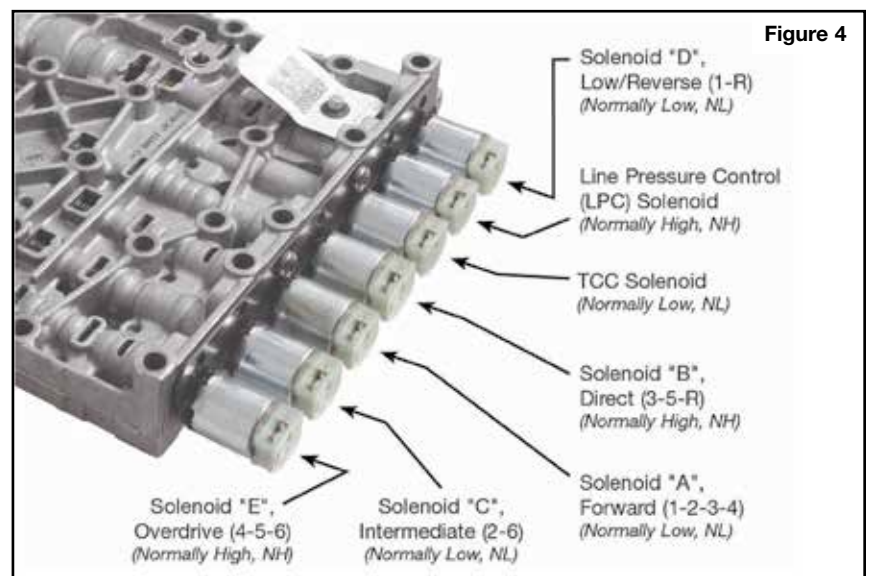


Figure 4

Solenoid "D",
Low/Reverse (1-R)
(Normally Low, NL)

Line Pressure Control
(LPC) Solenoid
(Normally High, NH)

TCC Solenoid
(Normally Low, NL)

Solenoid "B",
Direct (3-5-R)
(Normally High, NH)

Solenoid "A",
Forward (1-2-3-4)
(Normally Low, NL)

Solenoid "E",
Overdrive (4-5-6)
(Normally High, NH)

Solenoid "C",
Intermediate (2-6)
(Normally Low, NL)

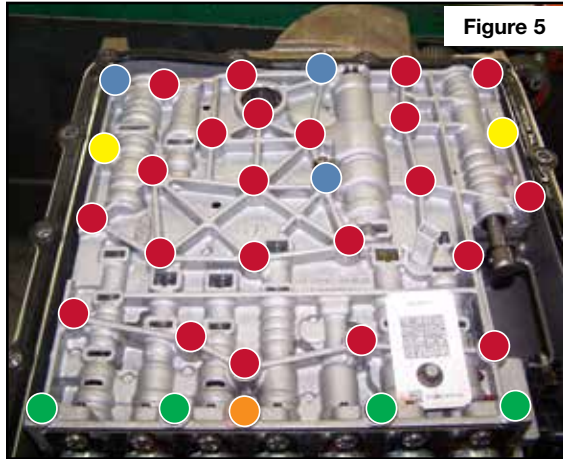


Figure 5

Zip Kit Instructions

1. Valve Body Removal from Case

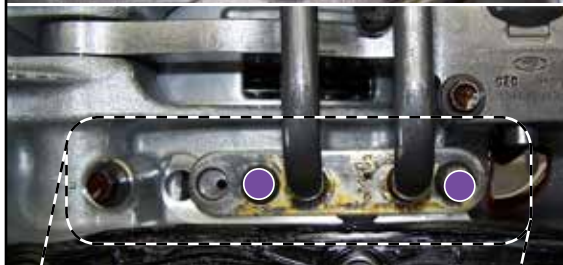
- Remove wiring harness connectors from the solenoids.
- Remove three bolts securing the filter to valve body (yellow & orange), then remove filter (**Figure 5**).
- Remove three valve body-to-case bolts (blue) (**Figure 5**).
- Remove four (green) valve body half retaining bolts (**Figure 5**).
- Remove three tube bracket-to-case bolts (purple) (**Figures 6 & 7**).
- Remove valve body from case. Keep track of case passage plugs, as these may stick to valve body (**Figure 7**).
- Remove tube assemblies from valve body and tube assembly plugs from case (**Figure 6 & 7**).

6R140 Disassembly & Reassembly Bolts

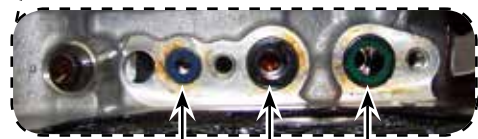
| Bolt Color Code | Bolt Length | Torque |
|---|-------------|----------|
|  | Purple | 97mm |
|  | Red | 48mm |
|  | Green | 63mm |
|  | Blue | 68mm |
|  | Yellow | 68.5mm |
|  | Orange | 90mm |
| | | 97 in-lb |



Figure 6



Once bracket-to-case bolts are removed.



Blue Plug Black Plug Green Plug

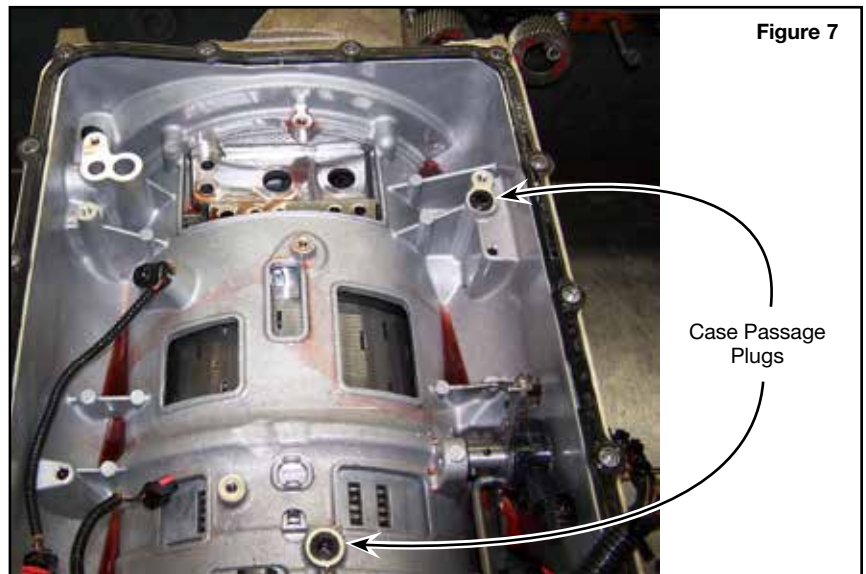


Figure 7

Case Passage Plugs

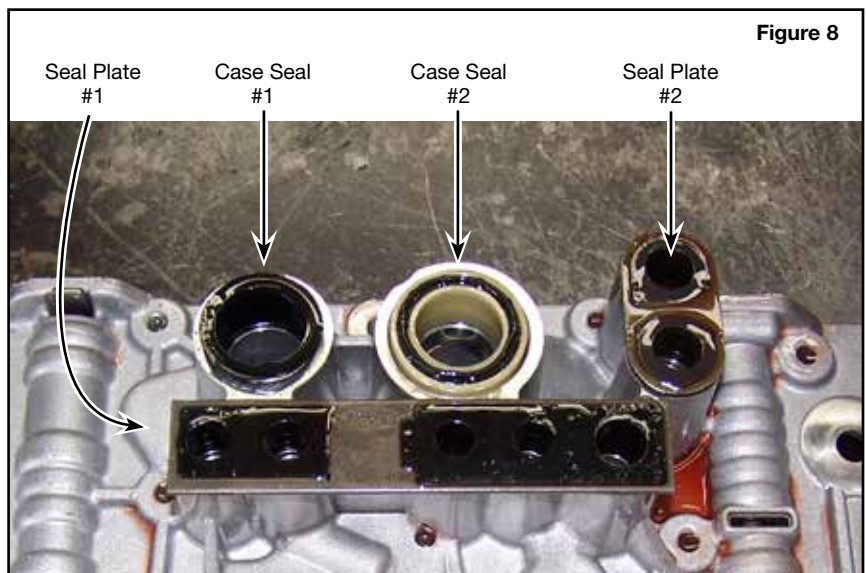


Figure 8

Seal Plate #1 Case Seal #1 Case Seal #2 Seal Plate #2

2. Valve Body Disassembly

- Remove valve body-to-case seals (Figure 8).
- Remove 22 red valve body bolts (Figure 5). The valve body halves may now be separated, using two pry points (Figures 9).
- Remove two separator plate bolts from upper valve body casting (Figure 10).
- Remove all valve body “small parts” (not valve retainers) and set aside (Figures 10 & 11).

NOTE: Pump inlet nozzle may stick to separator plate. Ensure installation back into valve body before reassembling the two valve body halves.
- Remove solenoids (see page 1, Figures 3 & 4). For more solenoid information see chart (page 8 Figure 12).

3. Installation

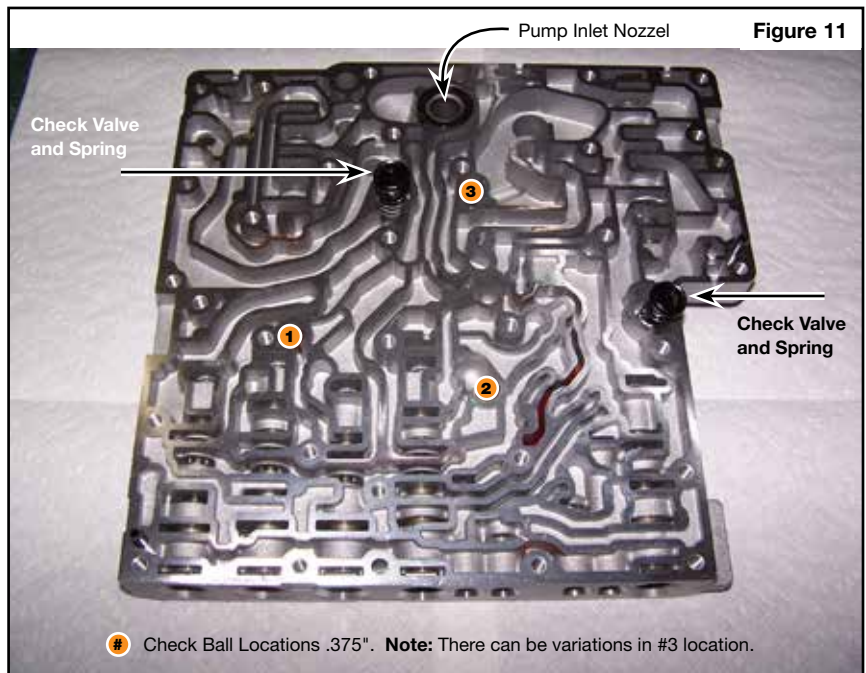
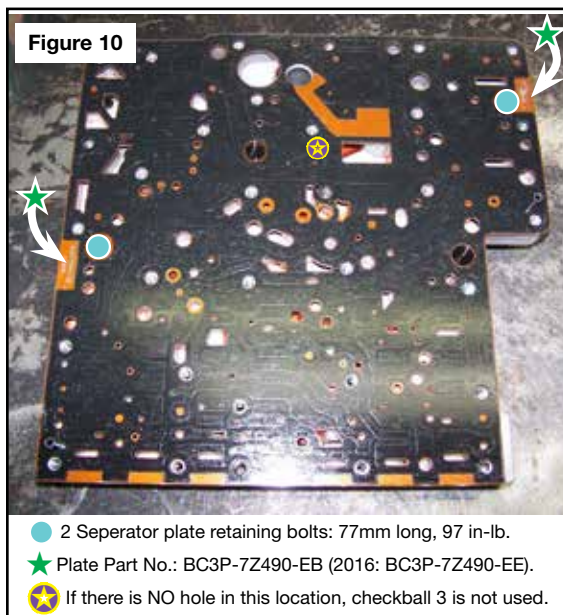
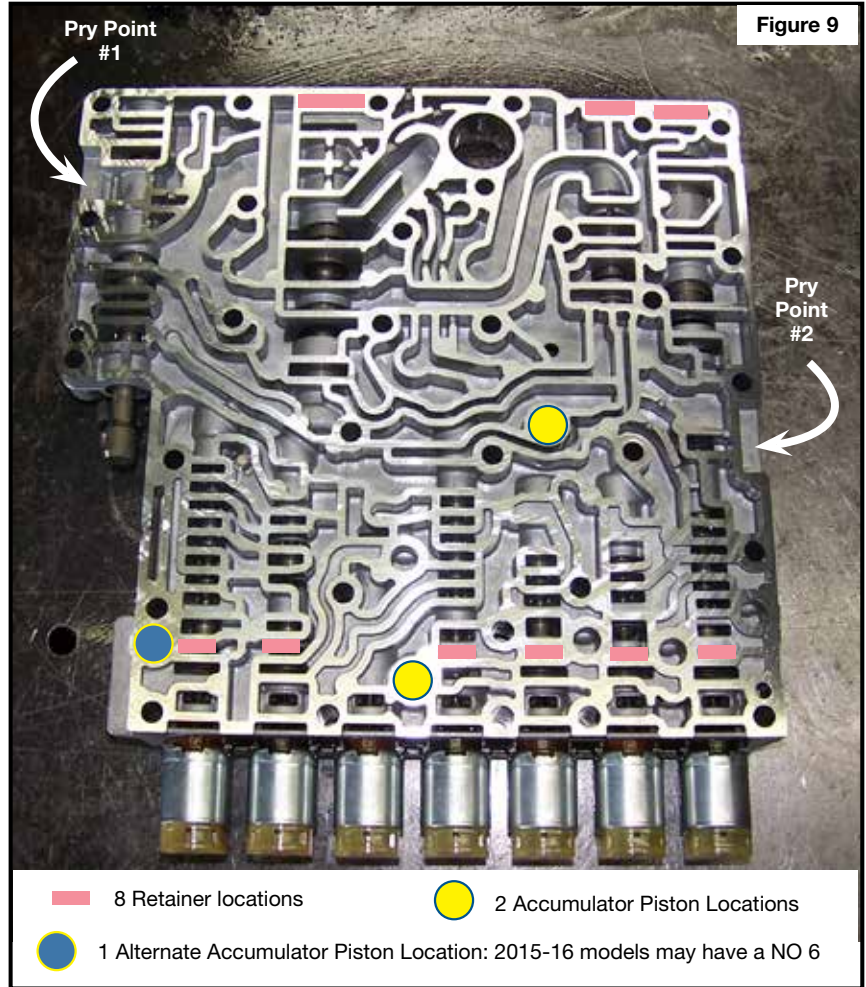
Install Zip Kit parts as shown on diagram of separate quick guide sheet included in this Zip Kit. Sonnax recommends vacuum testing critical wear areas not covered by this kit to determine whether additional Sonnax parts are required (see pages 4 & 5).

4. Valve Body Reassembly

- Reverse order of above directions.

5. Valve Body Reinstall to Case

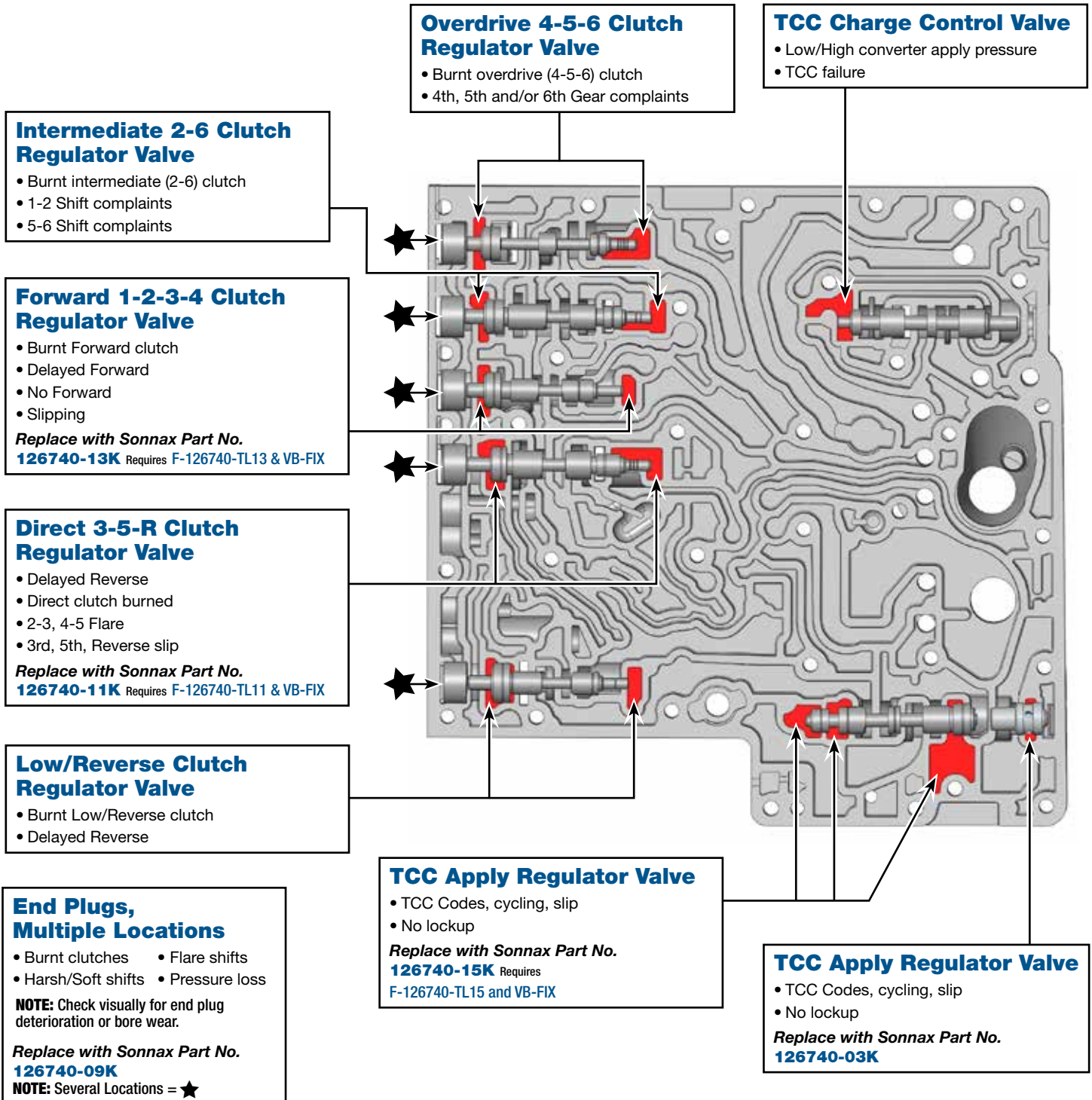
- Reverse order of above directions.



Critical Wear Areas & Vacuum Test Locations

NOTE: OE valves are shown in rest position and should be tested in rest position unless otherwise indicated. Test locations are pointed to with an arrow. Springs are not shown for visual clarity. Low vacuum reading indicates wear and Sonnax parts noted for replacement.

Upper Valve Body



Part numbers with an asterisk () are included in this Zip Kit.



For specific vacuum test information, refer to individual part instructions included in kits and available at www.sonnax.com.

Lower Valve Body

Converter Limit (Inboard) Valve

- Excess TCC slip • TCC Codes • Reduced clutch life
- TCC apply & release concerns

Replace with **Sonnax Part No. 126740-19K** Requires F-126740-TL19 & VB-FIX

TCC Charge Limit Valve

- Excessive converter pressure
 - Ballooning converter
- Replace with **Sonnax Part No. 126740-01K** Requires F-126740-TL & VB-FIX

Overdrive 4-5-6 Clutch Latch Valve

- Burnt overdrive (4-5-6) clutch
- 4th, 5th, 6th Gear complaints

Intermediate 2-6 Clutch Latch Valve

- Burnt intermediate (2-6) clutch
- 1-2, 5-6 Shift complaints

Forward 1-2-3-4 Clutch Latch Valve

- Burnt Forward clutch
- Delayed engagement
- Harsh shifts
- Gear ratio & solenoid codes

Replace with **Sonnax Part No. 126740-06K** Requires F-126740-TL6 & VB-FIX

Direct 3-5-R Clutch Latch Valve

- Burnt direct (3-5-R) clutch
- 3rd, 5th, Reverse shift complaints

Solenoid Feed Pressure Regulator Valve

- Solenoid codes
- Ratio codes
- Shift complaints

Low/Reverse Clutch Latch Valve

- Burnt Low/Reverse clutch
- Delayed Reverse

Line Pressure Control (LPC) Valve

- Burnt clutches
- Poor shift quality
- Erratic line pressure
- TCC apply & release concerns

Replace with **Sonnax Part No. 126740-08K** Requires F-126740-TL8 & VB-FIX

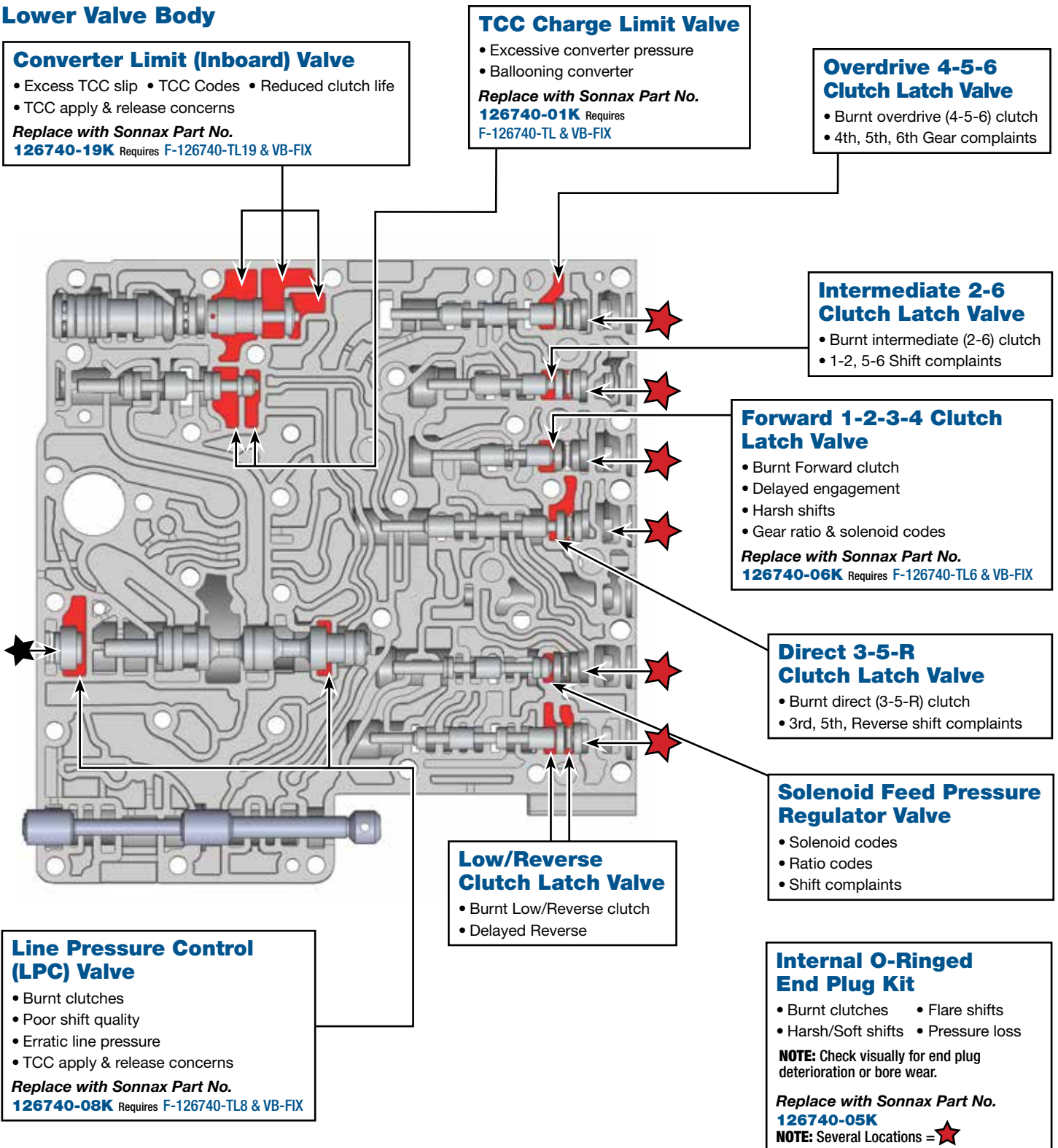
Internal O-Ringed End Plug Kit

- Burnt clutches • Flare shifts
- Harsh/Soft shifts • Pressure loss

NOTE: Check visually for end plug deterioration or bore wear.

Replace with **Sonnax Part No. 126740-05K**

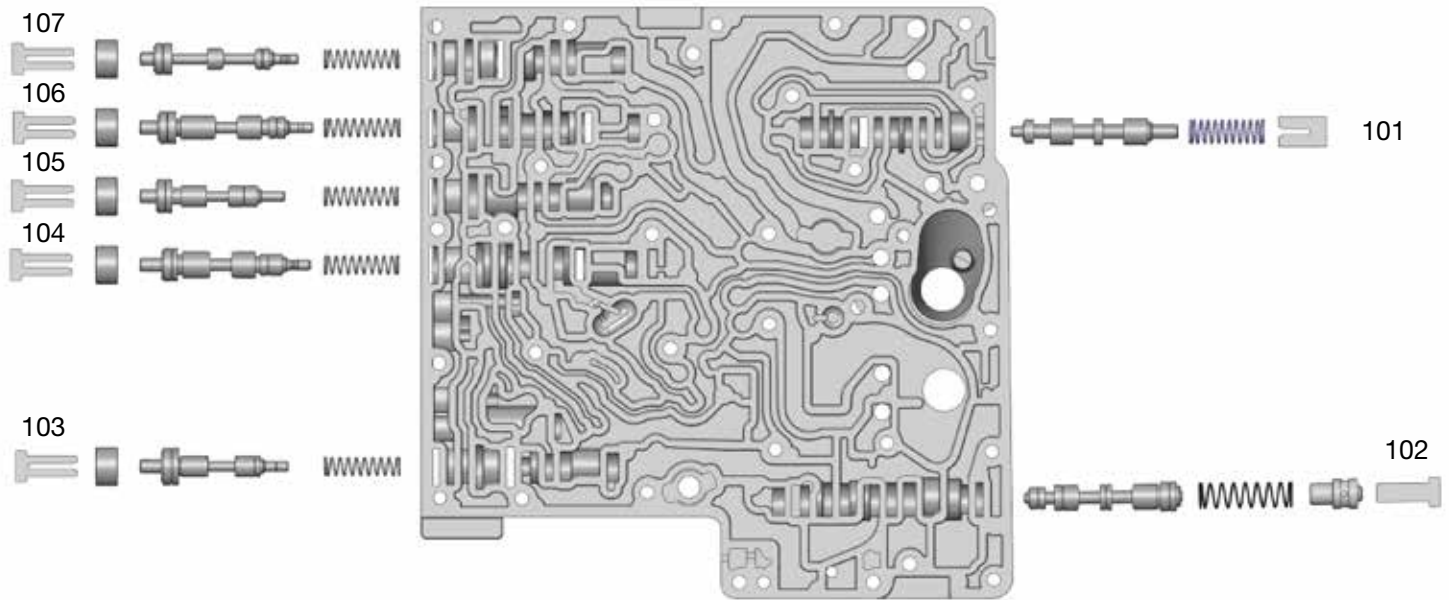
NOTE: Several Locations = ★



OE Exploded View

Upper Valve Body

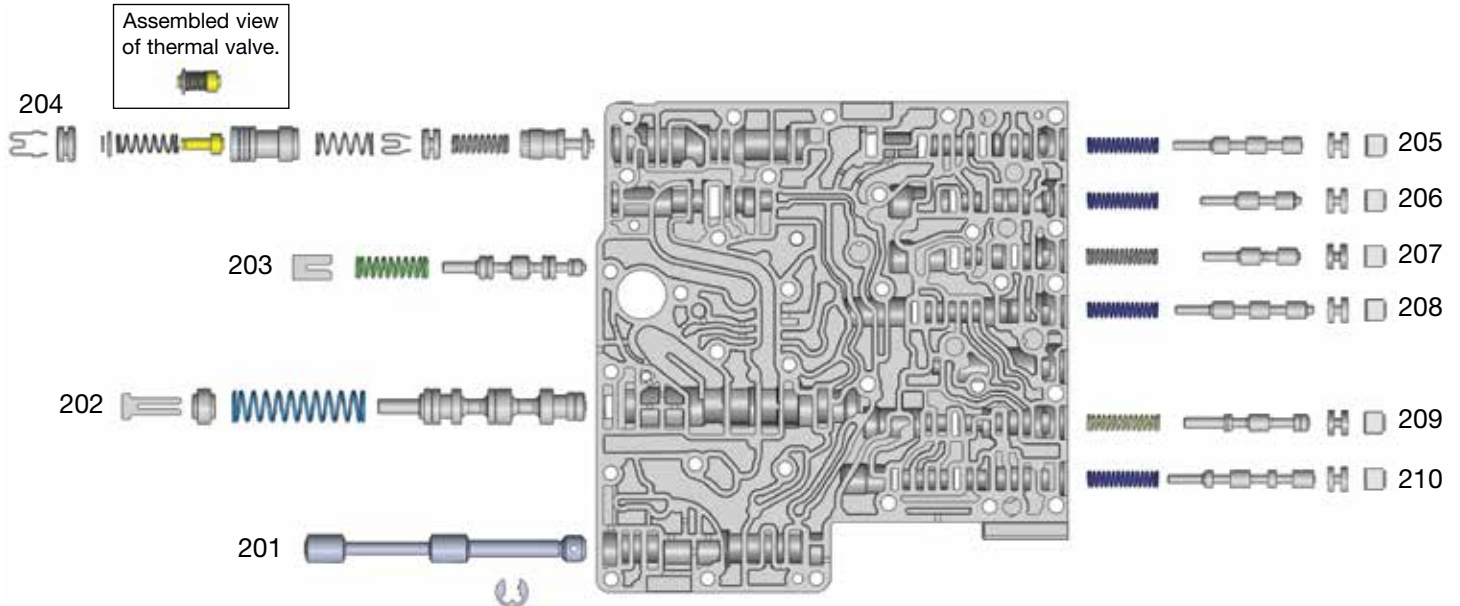
NOTE: Depending upon vehicle application, the OE springs shown may not be present.



Upper Valve Body Descriptions

| I.D. No. | Description |
|----------|---|
| 101 | TCC Charge Control Valve |
| 102 | TCC Apply Regulator Valve |
| 103 | Low/Reverse Clutch Regulator Valve |
| 104 | Direct 3-5-R Clutch Regulator Valve |
| 105 | Forward 1-2-3-4 Clutch Regulator Valve |
| 106 | Intermediate 2-6 Clutch Regulator Valve |
| 107 | Overdrive 4-5-6 Clutch Regulator Valve |

Lower Valve Body



Lower Valve Body Descriptions

| I.D. No. | Description |
|----------|---|
| 201 | Manual Valve |
| 202 | Line Pressure Control (LPC) Valve |
| 203 | TCC Charge Limit Valve |
| 204 | Converter Limit Valve (Inboard) Cooler Bypass and Thermal Valve (Outboard) |
| 205 | Overdrive 4-5-6 Clutch Latch Valve |
| 206 | Intermediate 2-6 Clutch Latch Valve |
| 207 | Forward 1-2-3-4 Clutch Latch Valve |
| 208 | Direct 3-5-R Clutch Latch Valve |
| 209 | Solenoid Feed Pressure Regulator Valve |
| 210 | Low/Reverse Clutch Latch Valve |

Solenoid Chart

Figure 12

| Band | OE Part Number | Sonnax Part Number |
|--------------------------------|----------------|--------------------|
| Normally Low Solenoids | | |
| Band Number 1 | BC3Z-7G383-R | 126421-NLR |
| Band Number 2 | BC3Z-7G383-S | |
| Band Number 3 | BC3Z-7G383-T | |
| Band Number 4 | BC3Z-7G383-U | |
| Band Number 5 | BC3Z-7G383-V | 126425-NLV |
| Normally High Solenoids | | |
| Band Number 1 | BC3Z-7G383-J | 126421-NHJ |
| Band Number 2 | BC3Z-7G383-K | 126422-NHK |
| Band Number 3 | BC3Z-7G383-L | |
| Band Number 4 | BC3Z-7G383-M | |
| Band Number 5 | BC3Z-7G383-N | 126425-NHN |