

**Alignment Hole Key**

- Red ● = Alignment Pins
- Black ● = Push Pin Locations
- Blue ● = Dowel Pin Locations

**Vacuum Test  
Plate Kit**



**Part No.  
124740-VTP**

- Lower Plate
- Upper Plate
- Lower Seal
- Upper Seal
- Push Pins (12) 2 Extra
- Alignment Pins (2)

**Vacuum Test  
Stand Kit**

**Part No.  
VACTEST-01K**

- Vacuum Test Stand
- Test Plate
- Vacuum Plate Sealing Pad
- Vacuum Test Foam Pad
- Push-to-Connect Fitting
- Assorted Testing Tips (6)
- Testing Tip Adapter Tube
- Flexible Tubing
- Flared Tubing with Flared Nut

**Instructions**

**1. Assembly**

- a. Ensure vacuum test plate and seal are both clean and free of debris.
- b. Install two alignment pins into upper plate at indicated threaded holes. Thread into non-engraved side of plate (**Figure 1**).
- c. Place seal onto non-engraved side of plate, aligning orifice holes. Remove any entrapped air between plate edge. Gradually place seal back on plate from center toward edge.
- d. Push plastic push pins into seal and plate from seal side, just far enough for head to lightly contact seal.

**2. Testing**

- a. Place assembled vacuum test plate over casting, using engraved casting outline as guide. Alignment pins should enter casting bolt holes.
- b. Testing of the upper and lower castings must be performed while the casting is laid flat against the Vacuum Test Foam Pad. This will ensure passages on the back of the casting are adequately sealed during testing.
- c. Using **VACTEST-01K** (sold separately, **Figure 2**) and small vacuum tip, vacuum test at numbered orifices on plate. These numbers correspond to the bore numbers

called out in the exploded view of the valve body on page 6. The chart on page 8 provides descriptions of individual circuit checked and space to document actual vacuum readings and minimum vacuum standards.

*Note:* Vacuum test data sheet on page 11 can be used to establish minimum vacuum standards at individual bore locations.

- d. Firm finger-tip pressure should be applied on plate during testing.

**3. Cleaning**

Seal and plate can be cleaned as needed with mild soap and water to remove debris.

**4. What should my vacuum test results be?**

While a properly calibrated and maintained test stand will give consistent vacuum reading results for a specific circuit and amount of wear, evaluating these results requires establishing your own pass/fail criteria. Variables which influence vacuum readings are the number of spools tested in a captive circuit, spool diameter size and contact length of the spool within the bore.

Pass/Fail standards are specific to your setup and process, but they also must be based on your experience, quality sensitivity, warranty concerns and cost/pricing structure. Sonnax recommends that you keep a record of vacuum results for each valve body at each tested circuit/port location. This lets you compare results over time to help determine for your shop what an acceptable vacuum reading is for each circuit/port location.

A chart specific to this application is provided in this booklet indicating valve and circuit checked at each orifice location. Room is provided to record results and compare to your minimum vacuum standard. A generic vacuum test data sheet also is provided that can be used to evaluate multiple cores to establish your minimum vacuum standard. If you need fresh documents, you can print or download these pages from this instruction booklet by visiting this vacuum test plate kit product page at [www.sonnax.com](http://www.sonnax.com).

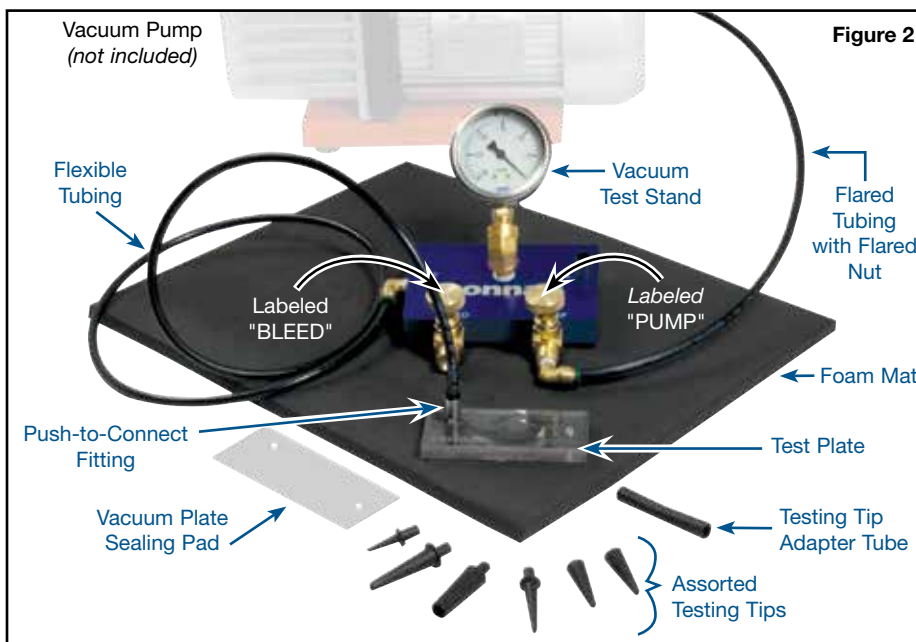
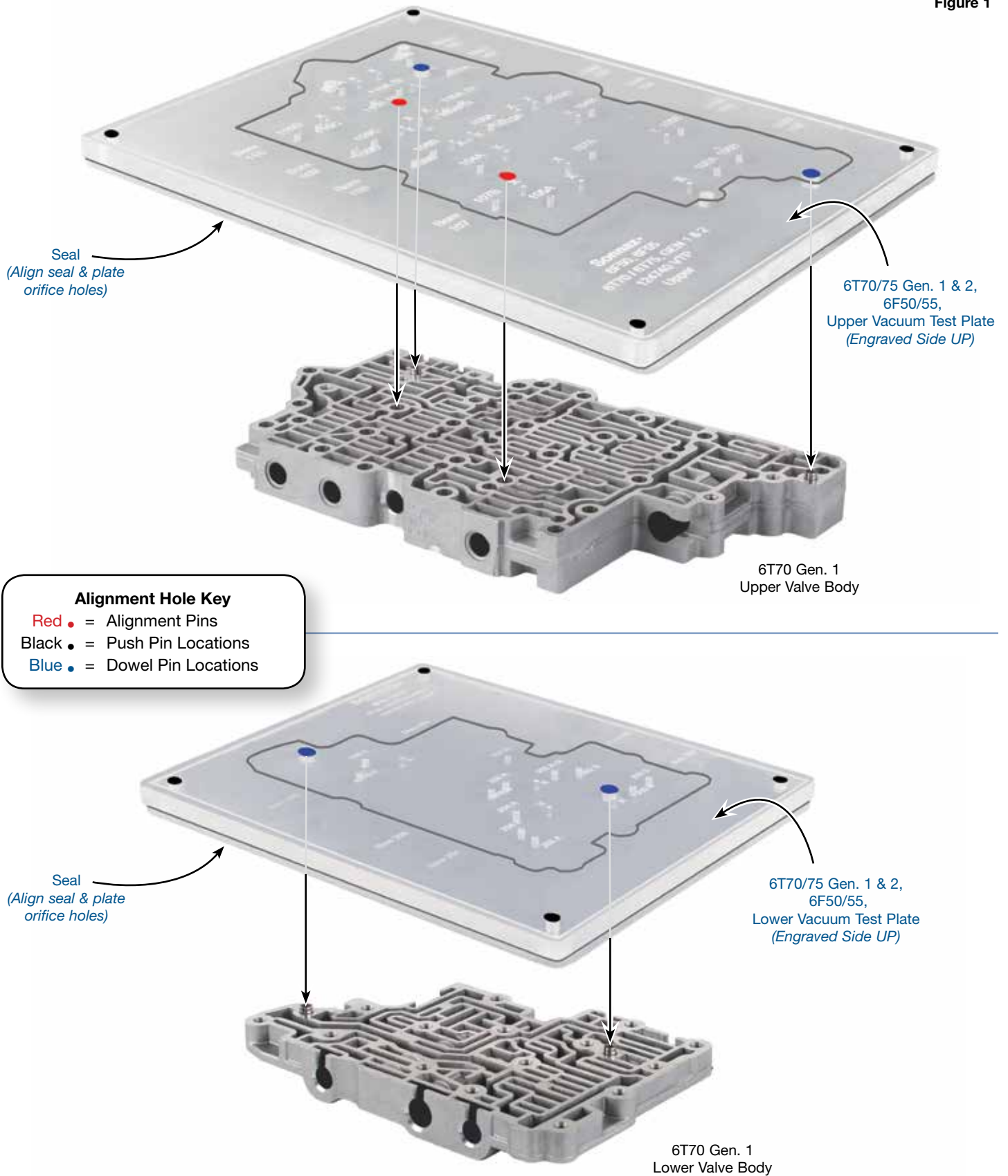


Figure 1



# Critical Wear Areas & Vacuum Test Locations



**NOTE:** Some test locations will vary when using Vacuum Test Plate Kit versus the small test plate included in the VACTEST-01K.

## Upper Valve Body • 6T70 (Gen. 1) Shown

### 3-5 Reverse Clutch Regulator Valve (GM); Direct Clutch Regulator Valve (Ford)

- 2-3, 4-5 Flare • Delayed Reverse • Reverse slip
- 3-5 Reverse clutch burned • Ratio codes • Bind-up

**Replace with Sonnax Part No.**  
**124740-26K** (1.35 Ratio) Requires F-124740-TL26 & VB-FIX  
**124740-21K** (1.83 Ratio) Requires F-124740-TL21 & VB-FIX

### Pressure Regulator Valve

- Erratic line pressure • Poor shift quality
- Burnt clutches • Low converter & lube flow
- Overheating • TCC apply & release concerns

**Replace with Sonnax Part No. 124740-12K**  
Requires F-124740-TL12 & VB-FIX

### 2-6 Clutch Regulator & Gain Valve (GM); Intermediate Clutch Regulator & Gain Valve (Ford)

- 1-2, 5-6 Flare • 2nd, 6th Slip
- No 2nd, 6th • Ratio codes
- 2-6 Clutch burned
- Erratic shift timing

**Replace with Sonnax Part No.**  
**124740-17K**  
Requires F-124740-TL17 & VB-FIX

### Isolator Valve

- Low line pressure • No line rise
- Line pressure instability
- Burnt clutches • Harsh shifts
- Shift concerns

**Replace with Sonnax Part Nos.**  
**124740-16** (Spring Only)  
**124740-03K** (Isolator Valve Kit)

### TCC Control Valve

- Excess TCC slip • Low cooler flow
- Overheating • TCC lining failure
- TCC apply & release concerns
- Low converter & lube flow
- TCC apply codes

**Replace with Sonnax Part No.**  
**124740-14K**  
Requires F-124740-TL14 & VB-FIX

### TCC Regulator Apply Valve

- Code P0741, 742 • Harsh TCC apply
- TCC slip • Loss of fuel economy
- Low TCC apply pressure
- Overheated fluid & TCC lining

**Replace with Sonnax Part No.**  
**124740-24K**  
Requires F-124740-TL24 & VB-FIX

### Clutch Select Solenoid Valve #3 (GM); Multiplex Manual Valve (Ford)

- Various shift concerns • Shift codes

### L/R Overdrive Clutch Regulator Valve

- Burnt L/R and/or 4-5-6 clutch
- 4-5-6 Shift concerns
- Delayed Reverse
- 3-4 Flare

### Clutch Select Solenoid Valve #2 (GM); Multiplex Shift Valve (Ford)

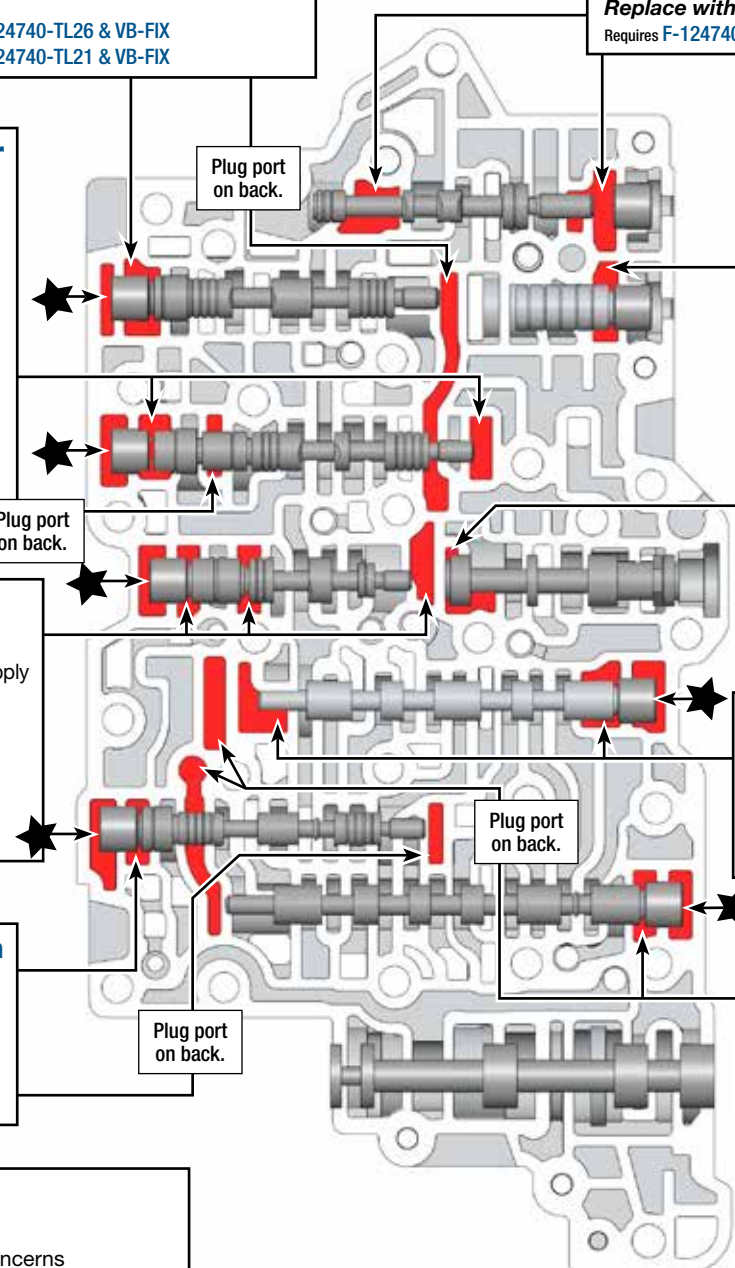
- Various shift concerns • Shift codes

### O-Ringed End Plugs

- Pressure loss • Shift concerns
- Burnt clutches • TCC apply concerns

**NOTE:** Vacuum test end plugs at outboard port while sealing bore opening with thumb.

**Replace with Sonnax Part No. 124740-02K**  
**NOTE:** Several Locations = ★



## Critical Wear Areas & Vacuum Test Locations



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

### Lower Valve Body • 6T70 (Gen. 1) Shown

#### 3-5 Reverse Clutch Boost Valve (GM); Direct Clutch Latch Valve (Ford)

#### Direct Clutch Latch Valve (Ford)

- Shift quality is not load sensitive
- Harsh shifts • Slips & flares
- Delayed engagement • Slide shifts
- Burnt clutches • Shift codes

Replace with Sonnax Part No. **144740-23**

Requires F-144740-TL22 & VB-FIX

#### 4-5-6 Clutch Accumulator Piston (GM ONLY); Not Applicable (Ford)

- 3-4 Flare • Ratio Codes
- 4-5-6 Clutch burned
- Slipping gears • 3-4 Harsh

Replace with Sonnax Part No. **124740-04K\***

#### Actuator Feed Limit Valve

- Solenoid performance codes
- Wrong gear starts
- Clutch failure

Replace with Sonnax Part No. **124740-01**

Requires F-104740-TL12 & VB-FIX

#### 1-2-3-4 Clutch Boost Valve (GM); Forward Clutch Latch Valve (Ford)

- Shift quality is not load sensitive
- Harsh shifts • Slips & flares
- Delayed engagement • Slide shifts
- Burnt clutches • Slip codes

Replace with Sonnax Part No. **144740-23**

Requires F-144740-TL22 & VB-FIX

#### 4-5-6 Clutch Boost Valve (GM); L/R Overdrive Clutch Latch Valve (Ford)

- Shift quality is not load sensitive
- Harsh shifts • Slips & flares
- Delayed engagement • Slide shifts
- Burnt clutches • Slip codes

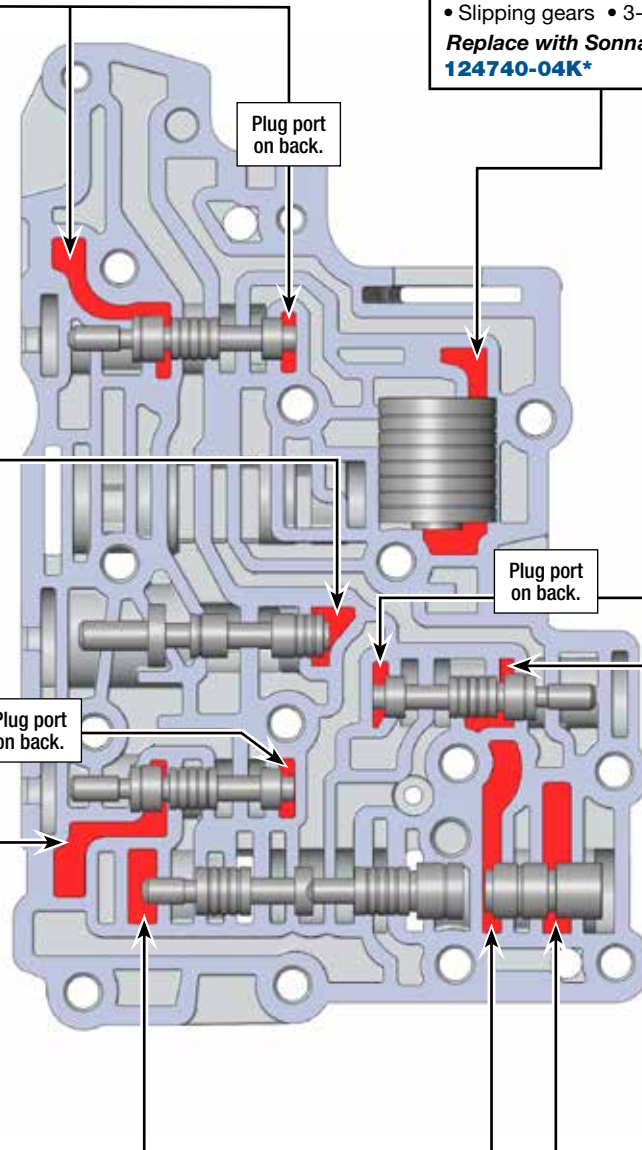
Replace with Sonnax Part No. **144740-23**

Requires F-144740-TL22 & VB-FIX

#### 1-2-3-4 Clutch Regulator Valve (GM); Forward Clutch Regulator Valve (Ford)

- Burnt 1-2-3-4 clutch
- Delayed Forward
- 1-2-3-4 Shift concerns

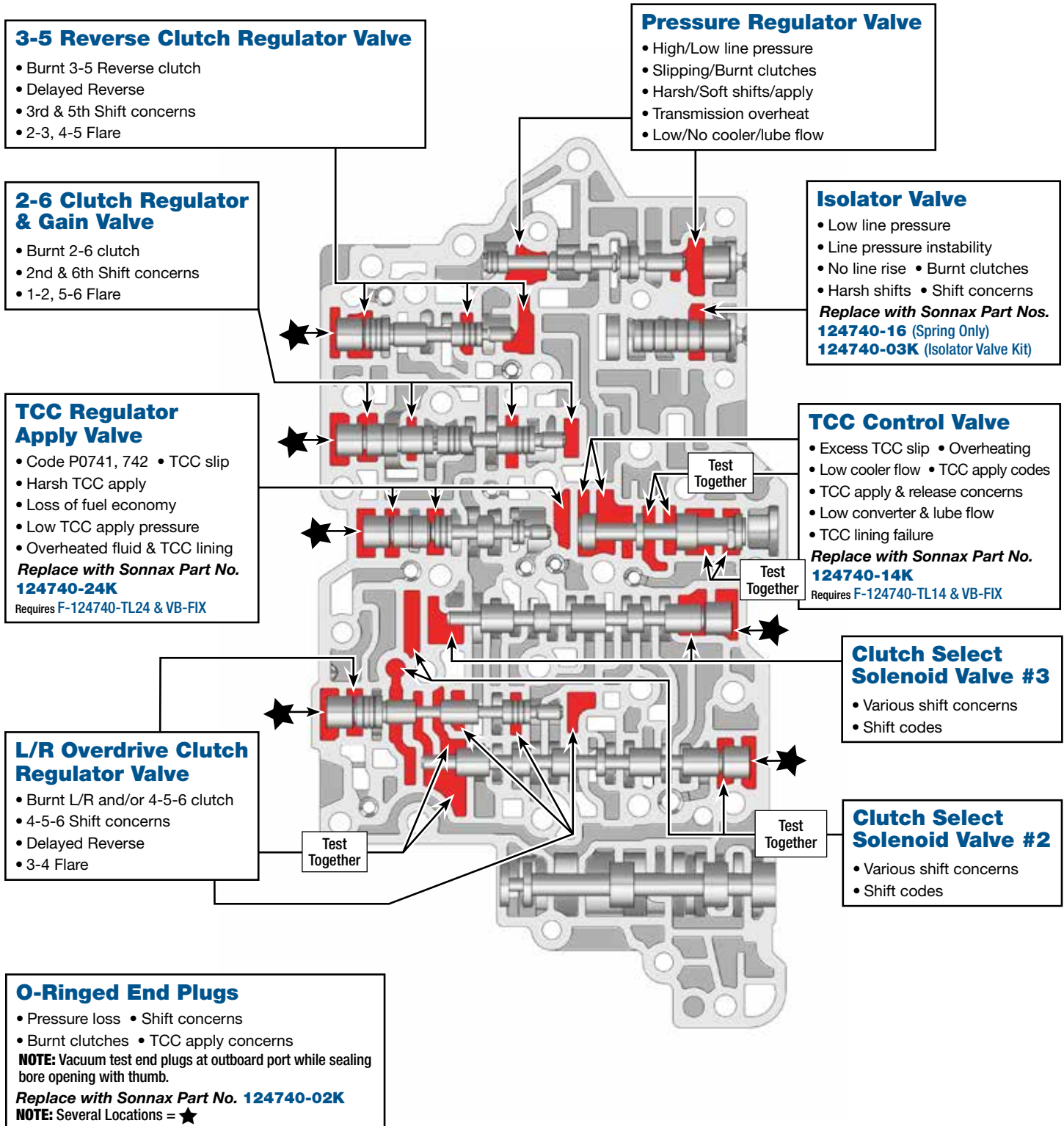
**NOTE:** Vacuum locations are the same regardless of OE end plug design and inclusion of short shuttle valve.



# Critical Wear Areas & Vacuum Test Locations

**NOTE:** Some test locations will vary when using Vacuum Test Plate Kit versus the small test plate included in the VACTEST-01K.

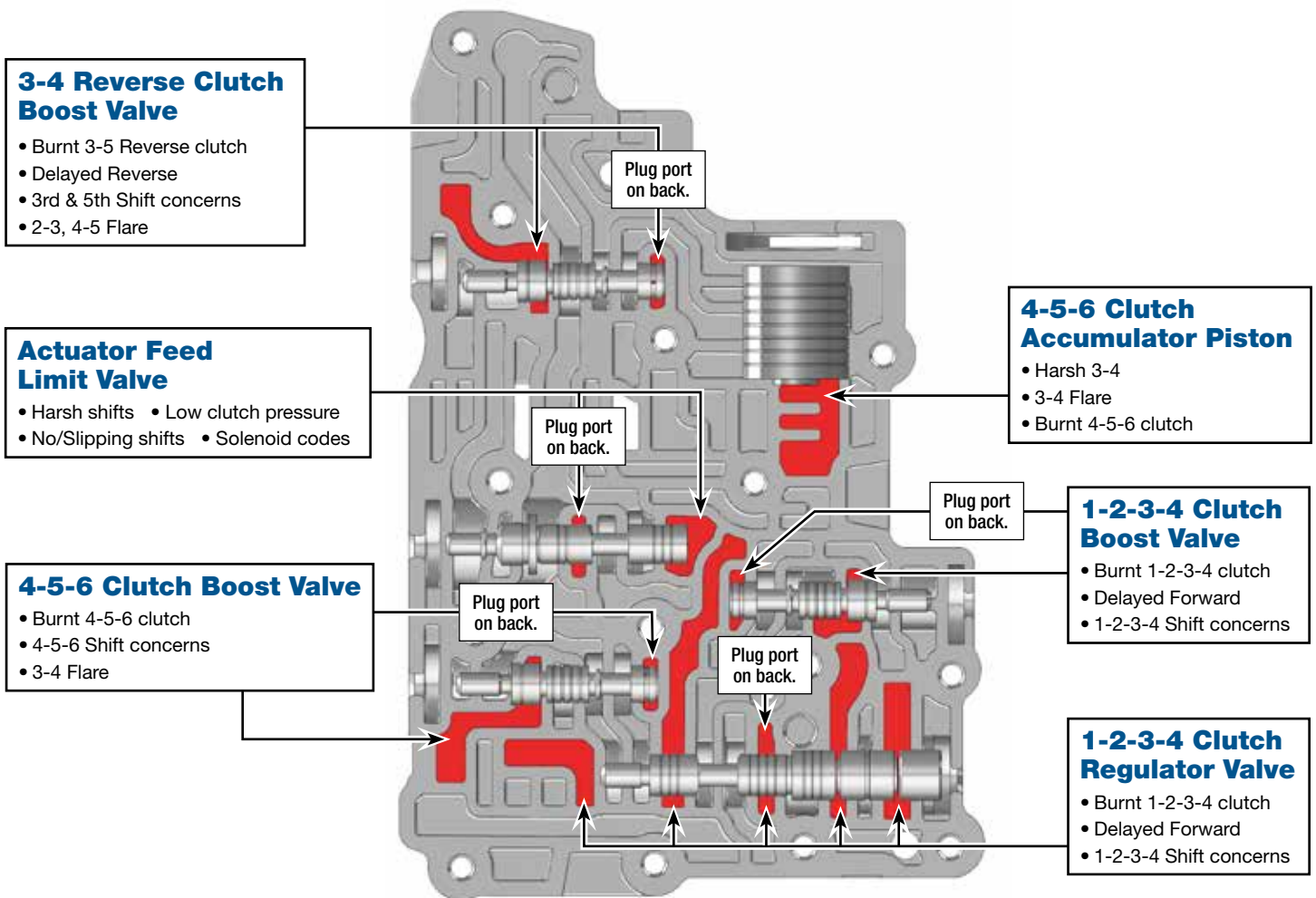
## Upper Valve Body • 6T70 (Gen. 2) Shown



## Critical Wear Areas & Vacuum Test Locations

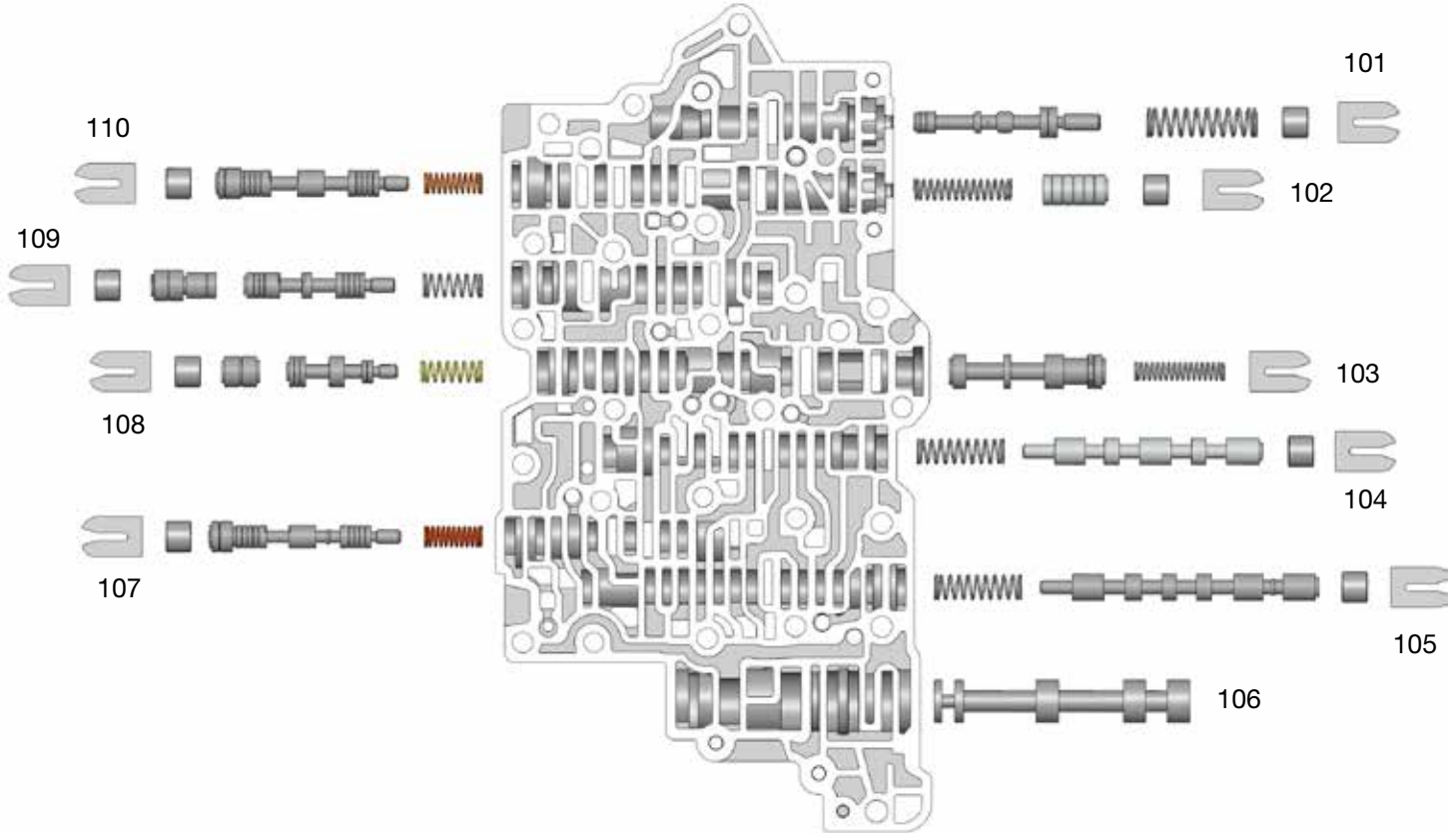
**NOTE:** Depending upon vehicle application, the OE springs shown may not be present.

### Lower Valve Body • 6T70 (Gen. 2) Shown



## OE Exploded View

### Upper Valve Body • 6T70 (Gen. 1) Shown



#### Upper Valve Body 6T70 (Gen. 1) Descriptions

I.D. No.	6T70 Description
101	Pressure Regulator Valve
102	Isolator Valve
103	TCC Control Valve
104	Clutch Select Solenoid Valve #3
105	Clutch Select Solenoid Valve #2
106	Manual Valve
107	L/R 4-5-6 Clutch Regulator Valve
108	TCC Regulator Apply Valve
109	2-6 Clutch Regulator & Gain Valve
110	3-5 Reverse Clutch Regulator Valve

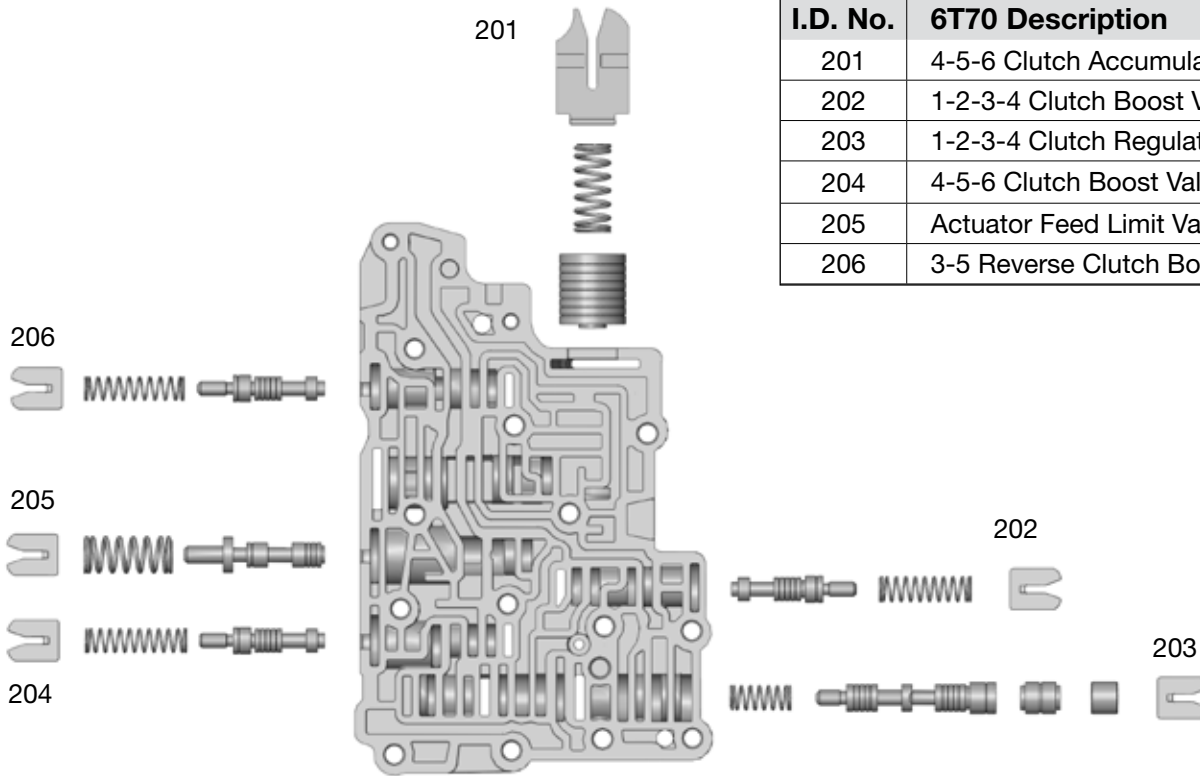
#### Upper Valve Body 6F50 Descriptions

I.D. No.	6F50 Description
101	Pressure Regulator Valve
102	Isolator Valve
103	TCC Control Valve
104	Multiplex Manual Valve
105	Multiplex Shift Valve
106	Manual Valve
107	L/R Overdrive Clutch Regulator Valve
108	TCC Regulator Apply Valve
109	Intermediate Clutch Regulator & Gain Valve
110	Direct Clutch Regulator Valve



## OE Exploded View

### Lower Valve Body • 6T70 (Gen. 1) Shown

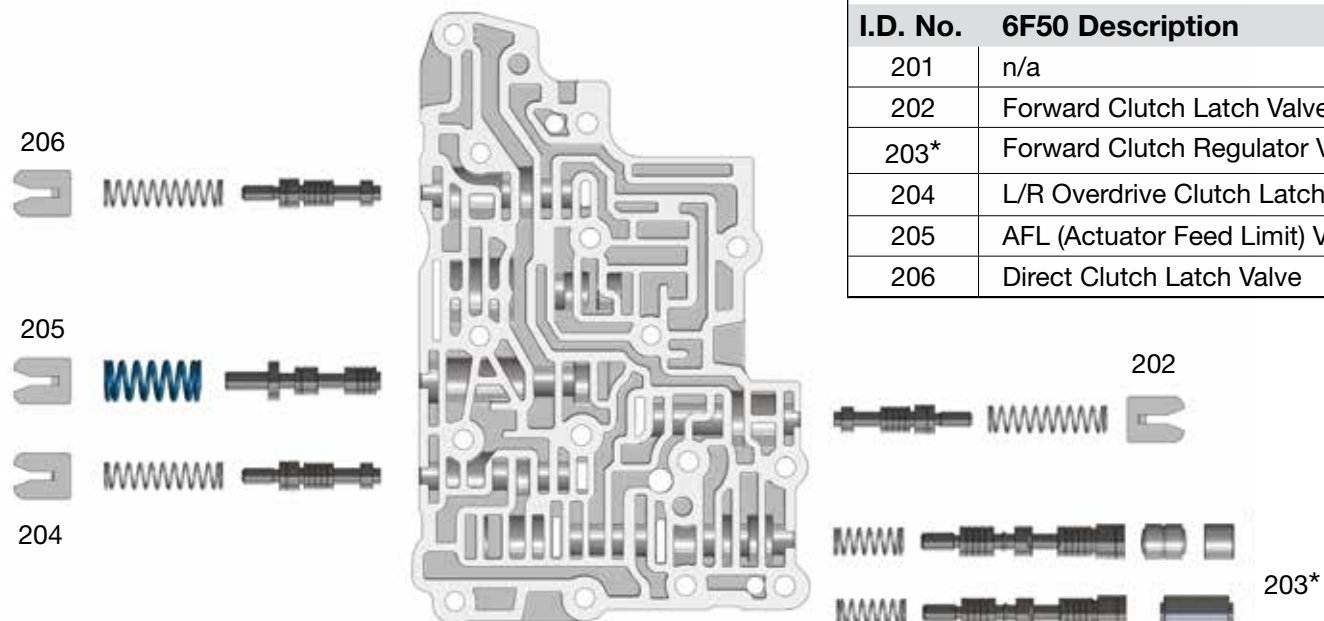


### Lower Valve Body 6T70 (Gen. 1) Descriptions

I.D. No.	6T70 Description
201	4-5-6 Clutch Accumulator Piston
202	1-2-3-4 Clutch Boost Valve
203	1-2-3-4 Clutch Regulator Valve
204	4-5-6 Clutch Boost Valve
205	Actuator Feed Limit Valve
206	3-5 Reverse Clutch Boost Valve

## OE Exploded View

### Lower Valve Body • 6F50 (Gen. 1) Shown



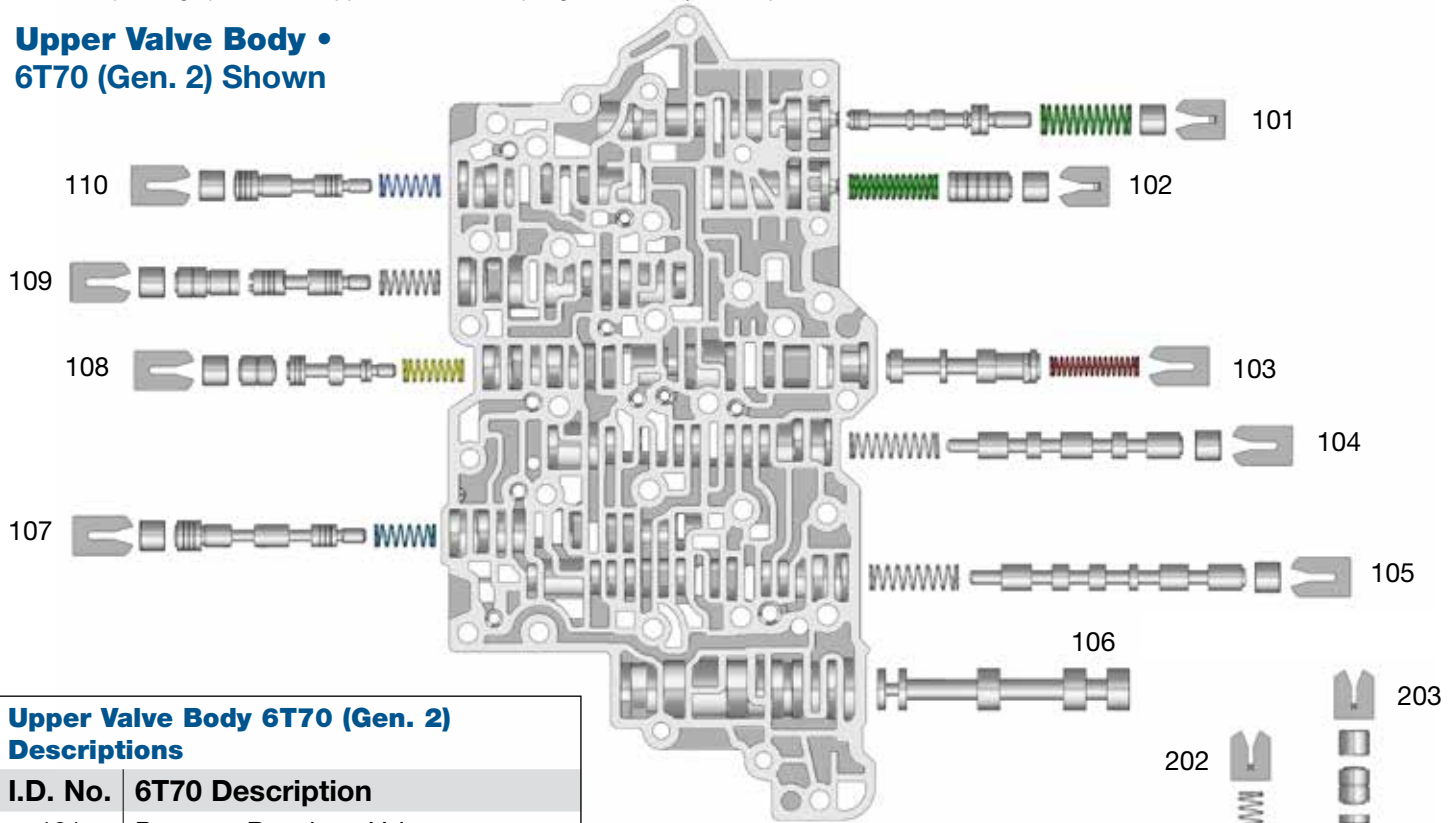
### Lower Valve Body 6F50 Descriptions

I.D. No.	6F50 Description
201	n/a
202	Forward Clutch Latch Valve
203*	Forward Clutch Regulator Valve
204	L/R Overdrive Clutch Latch Valve
205	AFL (Actuator Feed Limit) Valve
206	Direct Clutch Latch Valve

## OE Exploded View

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

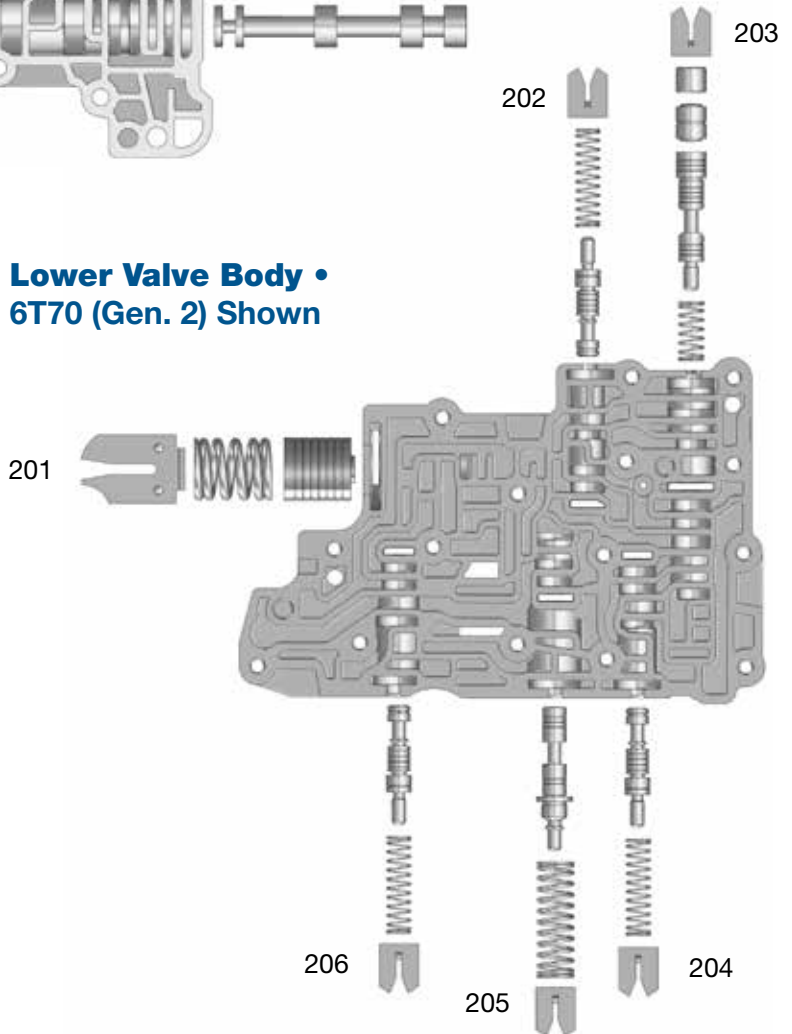
### Upper Valve Body • 6T70 (Gen. 2) Shown



#### Upper Valve Body 6T70 (Gen. 2) Descriptions

I.D. No.	6T70 Description
101	Pressure Regulator Valve
102	Isolator Valve
103	TCC Control Valve
104	Clutch Select Solenoid Valve #3
105	Clutch Select Solenoid Valve #2
106	Manual Valve
107	L/R 4-5-6 Clutch Regulator Valve
108	TCC Regulator Apply Valve
109	2-6 Clutch Regulator & Gain Valve
110	3-5 Reverse Clutch Regulator Valve

### Lower Valve Body • 6T70 (Gen. 2) Shown



#### Lower Valve Body 6T70 (Gen. 2) Descriptions

I.D. No.	6T70 Description
201	4-5-6 Clutch Accumulator Piston
202	1-2-3-4 Clutch Boost Valve
203	1-2-3-4 Clutch Regulator Valve
204	4-5-6 Clutch Boost Valve
205	Actuator Feed Limit Valve
206	3-5 Reverse Clutch Boost Valve



# Orifice Legend

Unit Stock or Tag No.

Orifice Location	Valve / Circuit Checked	Special Instruction	Sonnax Part No.	Actual Vacuum Reading	Minimum Vacuum Standard
101A	Pressure Regulator Valve		124740-12K		
101B	Pressure Regulator Valve		124740-12K		
102A	Isolator Valve		124740-03K 124740-16		
103A	TCC Control Valve		124740-14K		
103B	TCC Control Valve		124740-14K		
104A	6T70: Clutch Select Solenoid Valve #3 6F50: Multiplex Manual Valve				
104B	6T70: Clutch Select Solenoid Valve #3 6F50: Multiplex Manual Valve				
105A	6T70: Clutch Select Solenoid Valve #2 6F50: Multiplex Shift Valve				
105B	6T70: Clutch Select Solenoid Valve #2 6F50: Multiplex Shift Valve				
106A SI	Manual Valve				
106B SI	Manual Valve				
107A	6T70: L/R 4-5-6 Clutch Regulator Valve 6F50: L/R OD Clutch Regulator Valve				
107B	6T70: L/R 4-5-6 Clutch Regulator Valve 6F50: L/R OD Clutch Regulator Valve				
108A	TCC Regulator Apply Valve		124740-24K		
108B	TCC Regulator Apply Valve		124740-24K		
108C	TCC Regulator Apply Valve		124740-24K		
109A SI	6T70: 2-6 Clutch Regulator & Gain Valve 6F50: Interm. Clutch Regulator & Gain Valve	6T70 G1 & 6F50 only	124740-17K		
109B SI	6T70: 2-6 Clutch Regulator & Gain Valve 6F50: Interm. Clutch Regulator & Gain Valve	6T70 G2 only	124740-17K		
109C	6T70: 2-6 Clutch Regulator & Gain Valve 6F50: Interm. Clutch Regulator & Gain Valve		124740-17K		
109D	6T70: 2-6 Clutch Regulator & Gain Valve 6F50: Interm. Clutch Regulator & Gain Valve		124740-17K		
110A SI	6T70: 3-5 Reverse Clutch Regulator Valve 6F50: Direct Clutch Regulator Valve	6T70 G1 & 6F50 only. Seal 109B with finger.	124740-26K 124740-21K		
110B SI	6T70: 3-5 Reverse Clutch Regulator Valve 6F50: Direct Clutch Regulator Valve	6T70 G2 only	124740-26K 124740-21K		
110C	6T70: 3-5 Reverse Clutch Regulator Valve 6F50: Direct Clutch Regulator Valve		124740-26K 124740-21K		
110D	6T70: 3-5 Reverse Clutch Regulator Valve 6F50: Direct Clutch Regulator Valve		124740-26K 124740-21K		
201A SI	4-5-6 Clutch Accumulator Piston	6T70 only	124740-04K		
202A SI	6T70: 1-2-3-4 Clutch Boost Valve 6F50: Forward Clutch Latch Valve	Seal hole on back side of casting with finger	144740-23		
202B	6T70: 1-2-3-4 Clutch Boost Valve 6F50: Forward Clutch Latch Valve		144740-23		
203A	6T70: 1-2-3-4 Clutch Regulator Valve 6F50: Forward Clutch Regulator Valve				
203B	6T70: 1-2-3-4 Clutch Regulator Valve 6F50: Forward Clutch Regulator Valve				
203C	6T70: 1-2-3-4 Clutch Regulator Valve 6F50: Forward Clutch Regulator Valve				
204A	6T70: 4-5-6 Clutch Boost Valve 6F50: L/R OD Clutch Latch Valve		144740-23		
204B	6T70: 4-5-6 Clutch Boost Valve 6F50: L/R OD Clutch Latch Valve		144740-23		
205A	6T70, 6F50: Actuator Feed Limit Valve		124740-01		
205B	6T70, 6F50: Actuator Feed Limit Valve		124740-01		
206A	6T70: 3-5 Reverse Clutch Boost Valve 6F50: Direct Clutch Latch Valve		144740-23		
206B	6T70: 3-5 Reverse Clutch Boost Valve 6F50: Direct Clutch Latch Valve		144740-23		