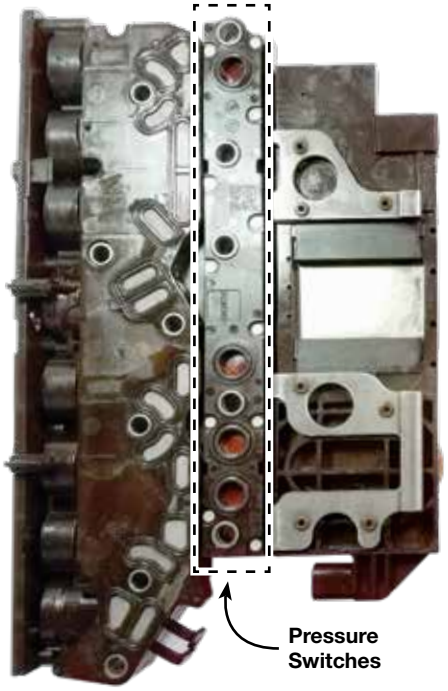
GM 6T70/75/80 (Gen. 2) ZIP KIT®

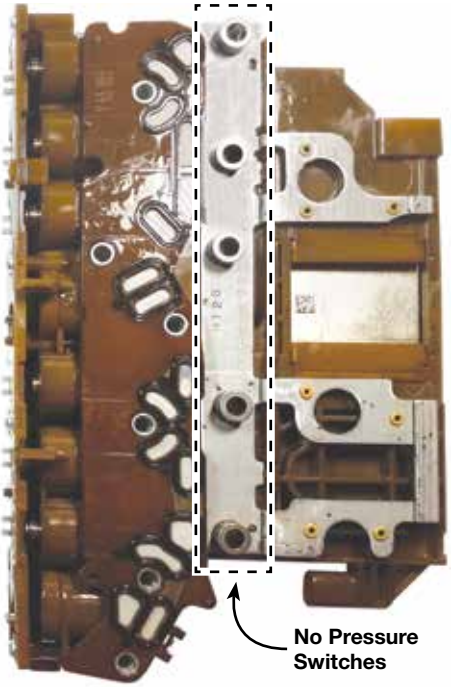
PART NUMBER 6T70-G2-ZIP **IDENTIFICATION GUIDE**

GM Gen. 1 6T70/75

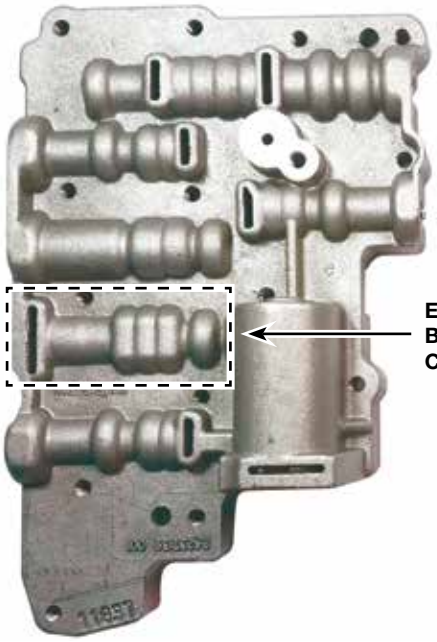
GM Gen. 2 6T70/75/80

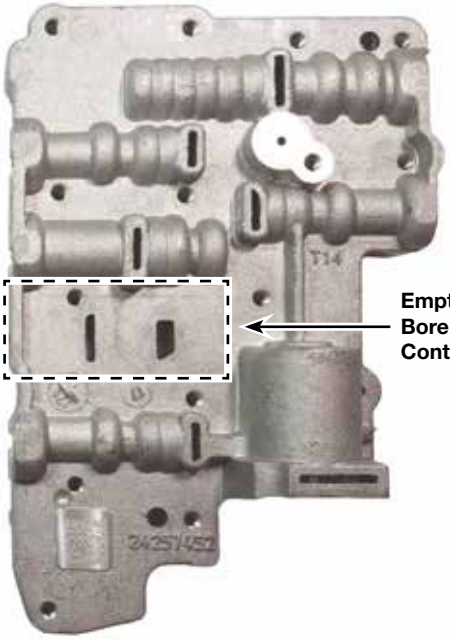
TEHCMs





LOWER VALVE BODIES





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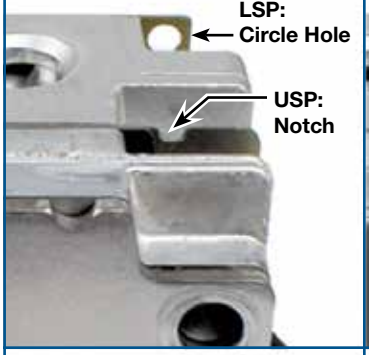
GM Gen. 1 6T70/75

GM Gen. 2 6T70/75/80

SEPARATOR PLATES

2012 & 2013 1.83



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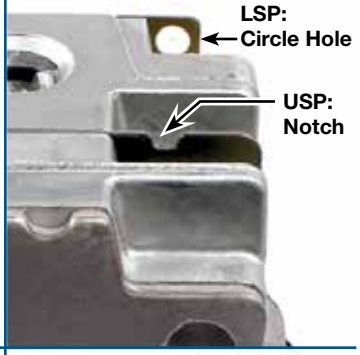

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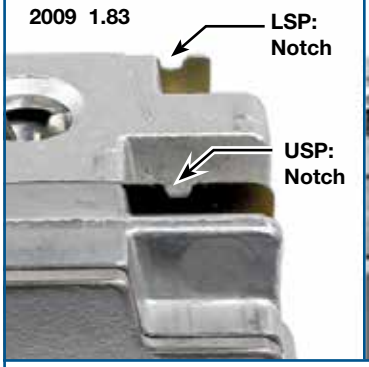

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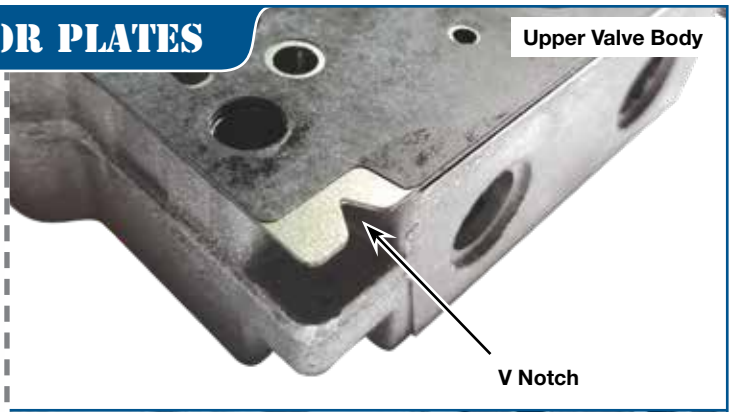
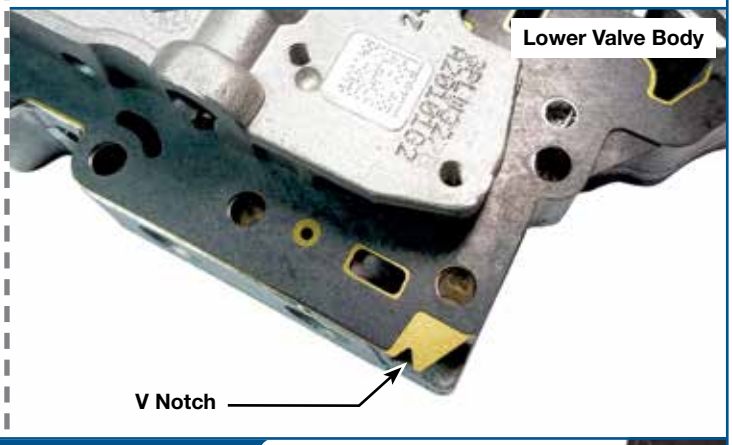
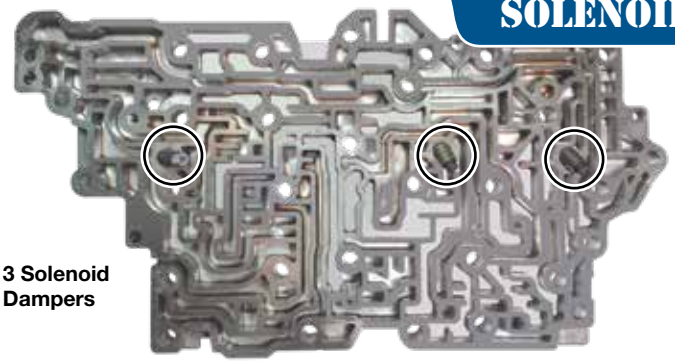
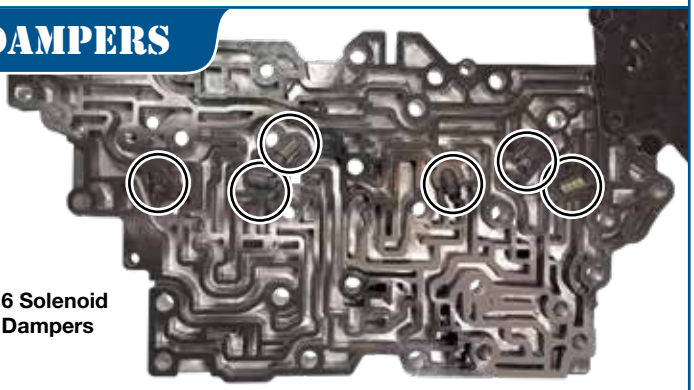




SOLENOID DAMPERS

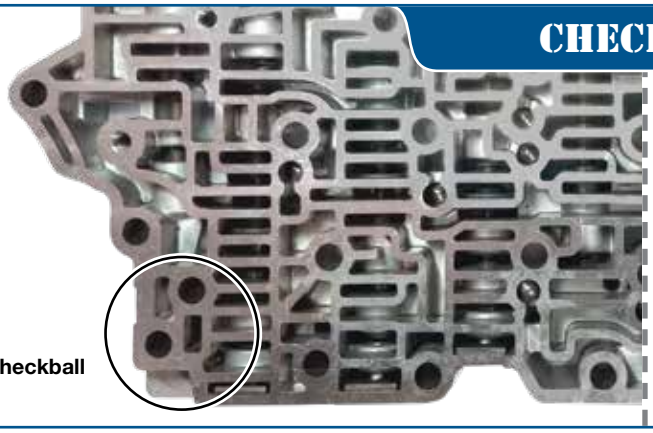


3 Solenoid Dampers

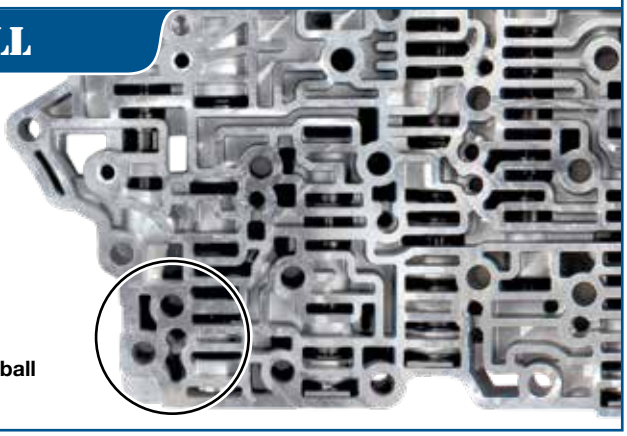


6 Solenoid Dampers

CHECKBALL



No Checkball



Added Checkball

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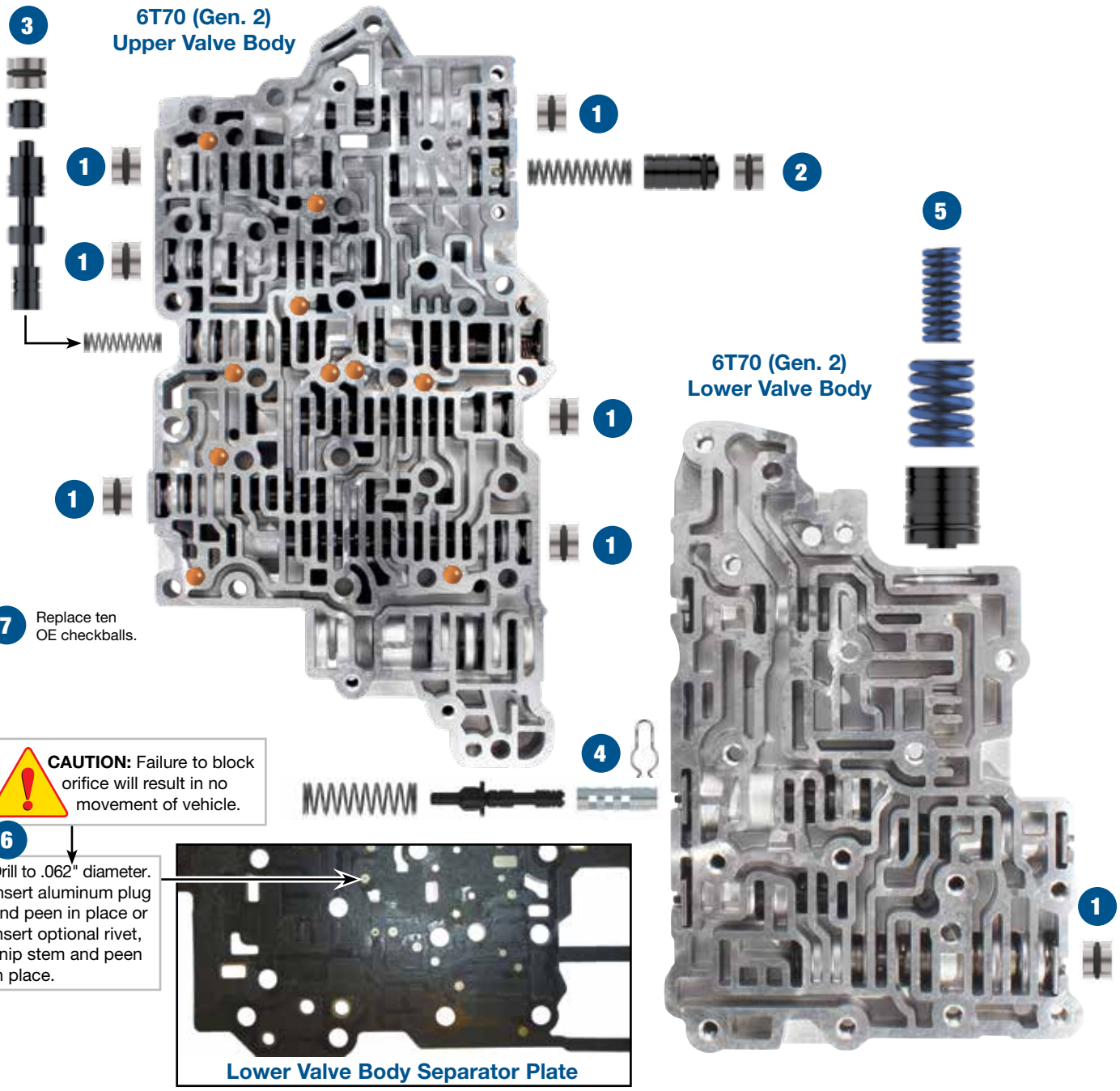
GM 6T70/75/80 (Gen. 2) ZIP KIT®

PART NUMBER 6T70-G2-ZIP **QUICK GUIDE**

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

INSTALLATION DIAGRAM

CAUTION!: Ensure shuttle valve is installed with blind bore facing inboard and rounded, closed end facing the end plug.



CAUTION: Failure to block orifice will result in no movement of vehicle.

6 Drill to .062" diameter. Insert aluminum plug and peen in place or insert optional rivet, snip stem and peen in place.

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.

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Step 1 Replace Seven OE End Plugs

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

Packaging Pocket 1

- End Plug (7)
- O-Rings (11) 4 Extra

Step 2 Replace OE Isolator Valve & Spring

Place one O-ring into plug groove and one O-ring into isolator valve goove. Lubricate with Sonnax Slippery Stick **O-LUBE** and roll on bench to size.

Packaging Pocket 2

- End Plug
- Valve
- Spring
- O-Rings (3) 1 Extra

Step 3 Replace OE TCC Regulator Apply Valve Bore Lineup

Remove and discard all OE components except the end clip. Save OE end clip for reuse.

CAUTION: Ensure shuttle valve is installed with blind bore facing inboard and rounded, closed end facing the end plug.

Packaging Pocket 3

- TCC Regulator Apply Valve
- Spring
- Shuttle Valve
- End Plug
- O-Rings (2) 1 Extra

Step 4 Replace OE Actuator Feed Limit (AFL) Valve Lineup

Remove and discard OE valve and spring. Keep outboard OE retainer for reuse. Install Sonnax sleeve and valve as illustrated. Secure sleeve into bore by installing Sonnax clip into sleeve groove at inboard port. Install Sonnax spring and secure all components into the bore with OE retainer.

Packaging Pocket 4

- Sleeve
- Valve
- Spring
- Clip

Step 5 Replace OE 4-5-6 Accumulator Piston & Springs

Remove and discard OE piston and springs. Keep OE retainer for reuse. Place O-ring into piston groove. Lubricate with Sonnax Slippery Stick **O-LUBE** and roll on bench to size.

Packaging Pocket 5

- Accumulator Piston
- Spring, Large
- Spring, Small
- O-Rings (2) 1 Extra

Step 6 Block AFL Balance Port

Drill indicated separator plate orifice with included .062" dia. drill bit. Remove any burrs. If using straight plug, insert into orifice and peen on both sides of plate. If using optional small rivet, insert into orifice and using wire cutters, snip the stem end of the rivet if/as necessary to provide for a small head once peened in place. Peen the rivet in place on head side of plate also. After peening on both sides of the plate, ensure plate will still fit flush on mating surfaces.

CAUTION: Ensure supplied retainer clip is fully seated in AFL sleeve groove after installation

Packaging Pocket 6

- Drill Bit (.062" dia.)
- Aluminum Plugs (2) 1 Extra
- Rivets (2) 1 Extra

Step 7 Replace OE Checkballs

Packaging Pocket 7

- Checkballs, .250" dia. (10)

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GM 6T70/75/80 (Gen. 2) ZIP KIT®

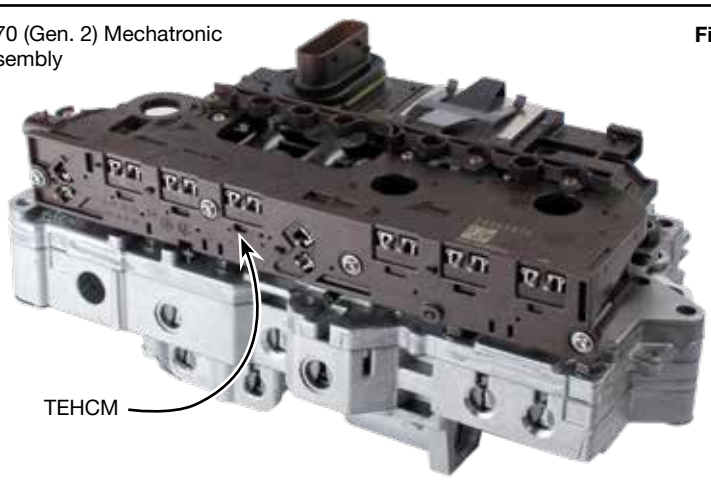
PART NUMBER 6T70-G2-ZIP **INSTALLATION & TESTING BOOKLET**

Valve Body ID & Tech Tips

Adaptive Learning

The 6T70, 6T75 and 6T80 is equipped with several adaptive learning strategies. After valve body service, the existing adaptive values will need to be erased. Then a "Fast Learn" process should be performed. Reference GM material for proper "Fast Learn" process.

6T70 (Gen. 2) Mechatronic Assembly **Figure 1**



Clutch Apply Chart

Figure 2

Gear		1-2-3-4 Clutch	3-5 Clutch	4-5-6 Clutch	2-6 Clutch	Low & Reverse Clutch	Low & Reverse One-Way Clutch
Park						X	
Reverse			X			X	
Neutral						X	
1st Breaking		X				X	Holding
Drive	1st	X					Holding
	2nd	X			X		
	3rd	X	X				
	4th	X		X			
	5th		X	X			
	6th			X	X		

Solenoid Apply Chart

Figure 3

Gear		Solenoid					
		Shift Solenoid 1	Shift Solenoid 2	1-2-3-4 PC Solenoid 5 NL	2-6 PC Solenoid 4 NL	3-5 Rev. PC Solenoid 2 NH	Low Reverse 4-5-6 PC Solenoid 3 NH
Park		X	X				X
Reverse		X				X	X
Neutral		X	X				X
1st Breaking		X	X	X			X
Drive	1st		X	X			
	2nd		X	X	X		
	3rd		X	X		X	
	4th		X	X			X
	5th		X			X	X
	6th		X		X		X

KEY: X = On/Applied

Zip Kit Instructions

1. Valve Body Removal from Case

a. Disconnect shift position switch.

b. Disconnect input speed sensor (ISS).

c. Disconnect output speed sensor (OSS).

d. Remove four control valve body 80mm bolts (yellow). Position TCU spring retainer to the side.

e. Remove the remaining seven control valve bolts (**Figure 4**).

f. Remove TEHCM assembly.

g. Remove solenoid filter plate (**Figure 6**) from the back of the TEHCM assembly. Discard and replace, as the seals take a set and will leak if reused.

h. Remove the ten control valve body bolts (**Figure 7**).

i. Remove manual shaft detent assembly.

j. Remove control valve body from transmission.

2. Disassembly (Figure 8)

Remove the eight control valve body assembly bolts.

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 5 & 6).

4. Reassembly

Reassemble valve body and reinstall the eight control valve body assembly bolts (**Figure 8**). Tighten to 106 in-lb (**Figure 5**).

5. Valve Body Reinstall to Case

a. When reinstalling the manual shaft detent assembly, ensure proper alignment with the lever. Contact with the valve body can cause improper engagement with the lever (**Figure 7**).

b. Reinstall the control valve body and manual shaft detent assembly into the transmission using 10 bolts (**Figure 7**). Hand tighten, then tighten in the indicated sequence to 106 in-lb (**Figure 5**).

c. Install new solenoid filter plate (**Figure 6**).

d. Reinstall TEHCM assembly and TCU spring retainer.

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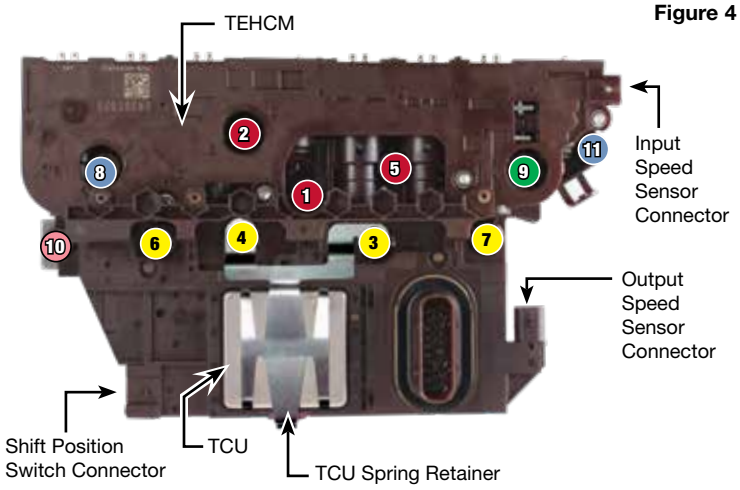
Figure 4

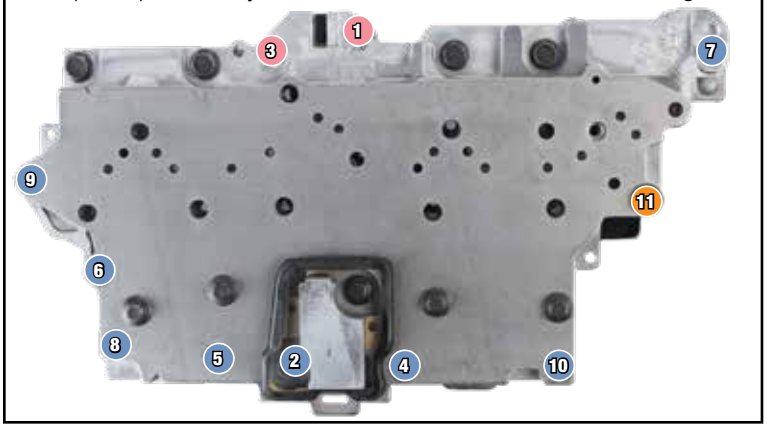


6T70 (Gen. 2) Filter Plate

Figure 6

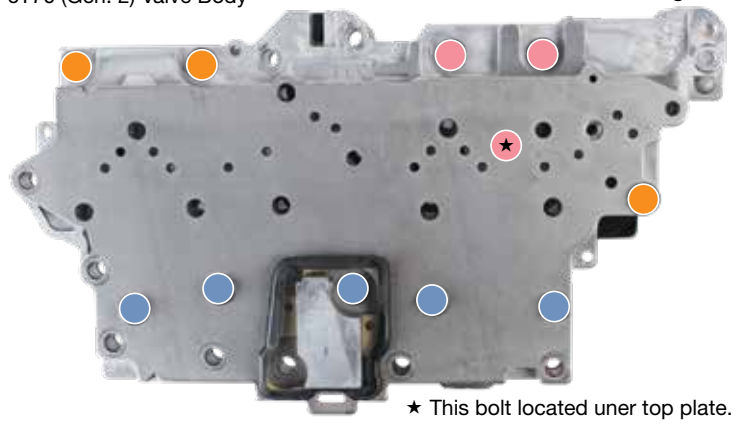
6T70 (Gen. 2) Valve Body

Figure 7



6T70 (Gen. 2) Valve Body

Figure 8



★ This bolt located uner top plate.

Figure 5

6T70 Disassembly & Reassembly Bolts

Bolt Color Code		Bolt Length	Torque
	Orange	35mm	106 in-lb
	Green	42mm	
	Pink	55mm	
	Blue	64mm	
	Red	95mm	
	Yellow	80mm	

5. Valve Body Reinstall to Case, continued

e. Reinstall and hand tighten the 11 bolts, then tighten in the indicated sequence to 106 in-lb (**Figure 4**).

f. Reconnect shift position switch.

g. Reconnect intput speed sensor (ISS).

h. Reconnect output speed sensor (OSS).

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Critical Wear Areas & Vacuum Test Locations

Drop-In Zip Valve™ Parts Available

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 are noted for replacement.

Upper Valve Body • 6T70 (Gen. 2)

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

3-5-Reverse Clutch Regulator Valve
- Burnt 3-5 Reverse clutch
- Delayed Reverse
- 3rd & 5th Shift concerns
- 2-3, 4-5 Flare

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

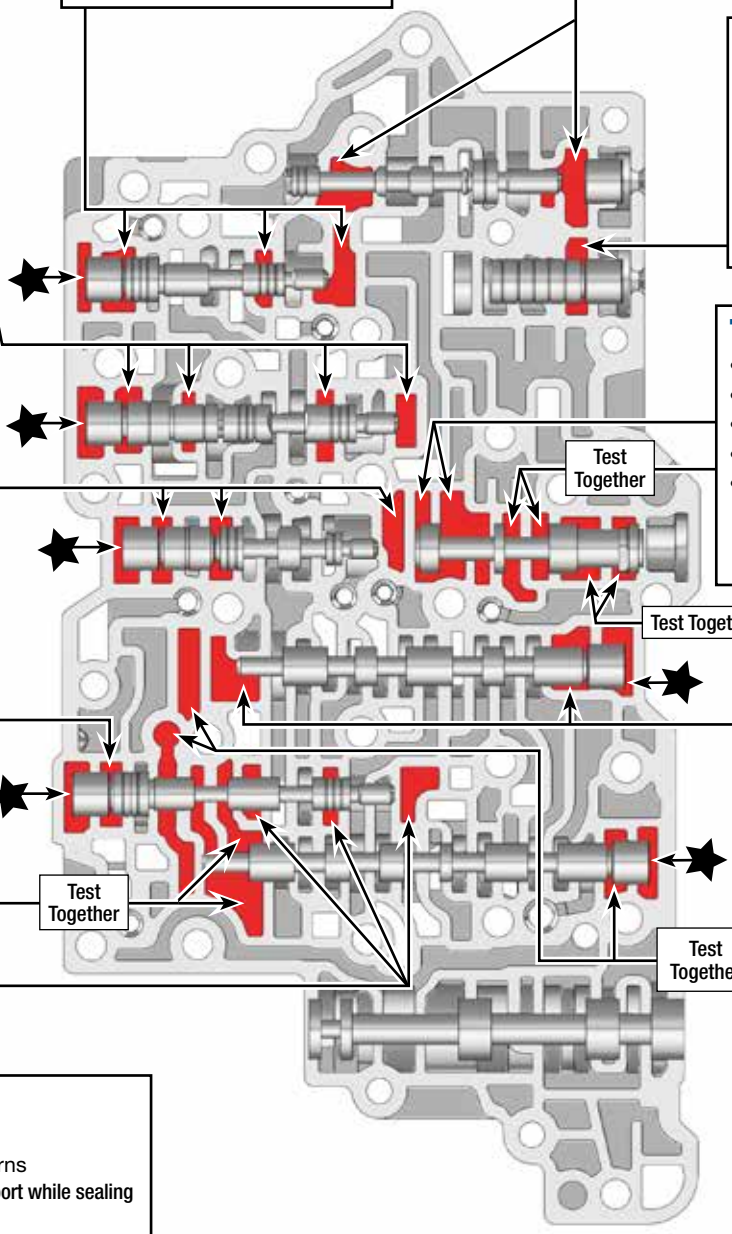
Replace with Sonnax Part No. **124740-60K**
Requires F-124740-TL60 & VB-FIX

2-6 Clutch Regulator & Gain Valve
- 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. **124740-66K** Requires F-124740-TL66 & VB-FIX

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

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



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

Replace with Sonnax Part Nos.
124740-31K ***or***
124740-24K Requires F-124740-TL24 & VB-FIX

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

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

Clutch Select Solenoid Valve #3
- Various shift concerns
- Shift codes

Low and Reverse and 4-5-6 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
- Various shift concerns
- Shift codes

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 = ★

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Critical Wear Areas & Vacuum Test Locations

Drop-In Zip Valve™ Parts Available

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 are noted for replacement.

Lower Valve Body • 6T70 (Gen. 2)

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

3-5-R Clutch Boost Valve

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

Replace with Sonnax Part No.
124740-56
Requires F-144740-TL22 & VB-FIX

Actuator Feed Limit Valve

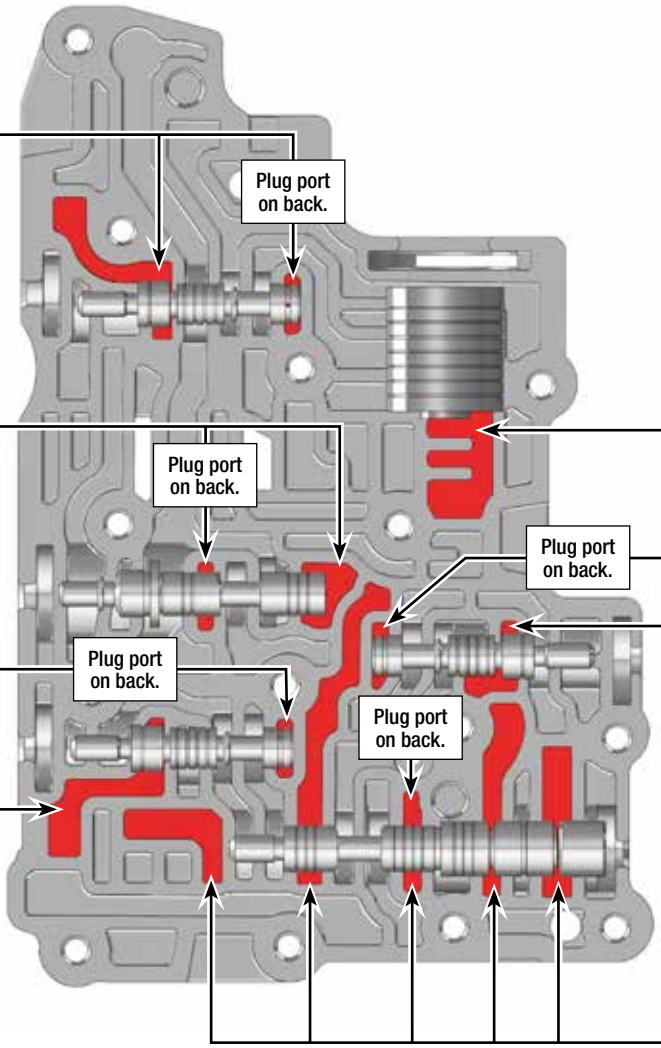
- Solenoid performance codes
- Wrong gear starts • Clutch failure

Replace with Sonnax Part Nos.
124740-33K ***or***
124740-48K Requires
F-124740-TL48 & VB-FIX

4-5-6 Clutch Boost Valve

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

Replace with Sonnax Part No.
124740-56
Requires F-144740-TL22 & VB-FIX



4-5-6 Clutch Accumulator Piston

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

Replace with Sonnax Part No.
124740-57K

1-2-3-4 Clutch Boost Valve

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

Replace with Sonnax Part No.
124740-56
Requires F-144740-TL22 & VB-FIX

1-2-3-4 Clutch Regulator Valve

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

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

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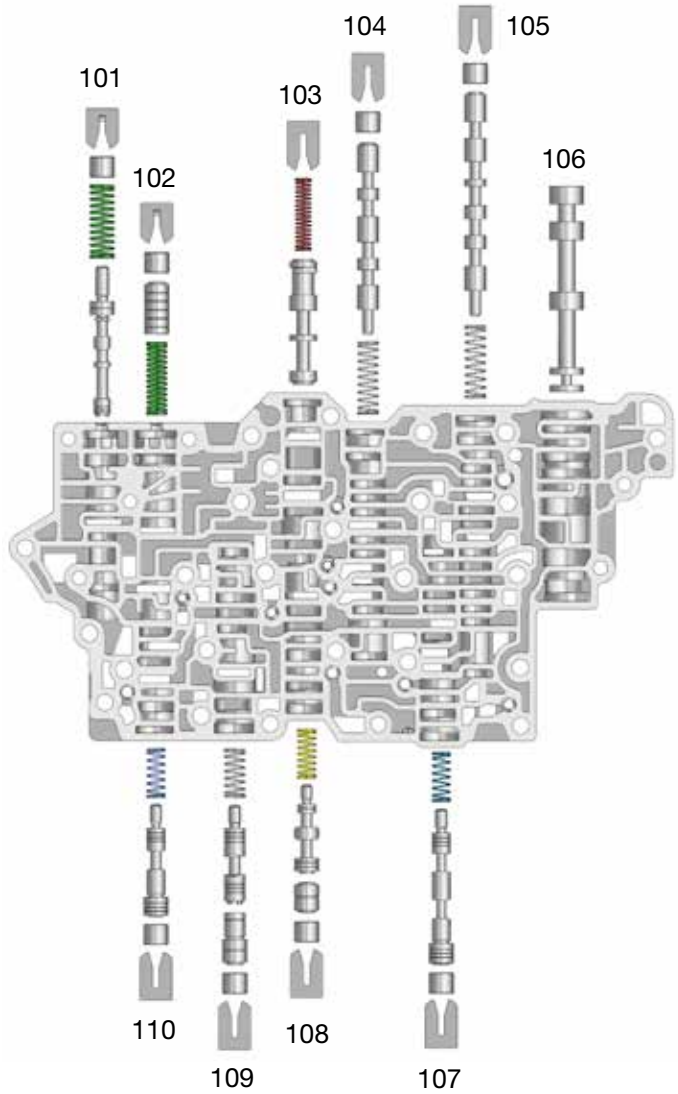
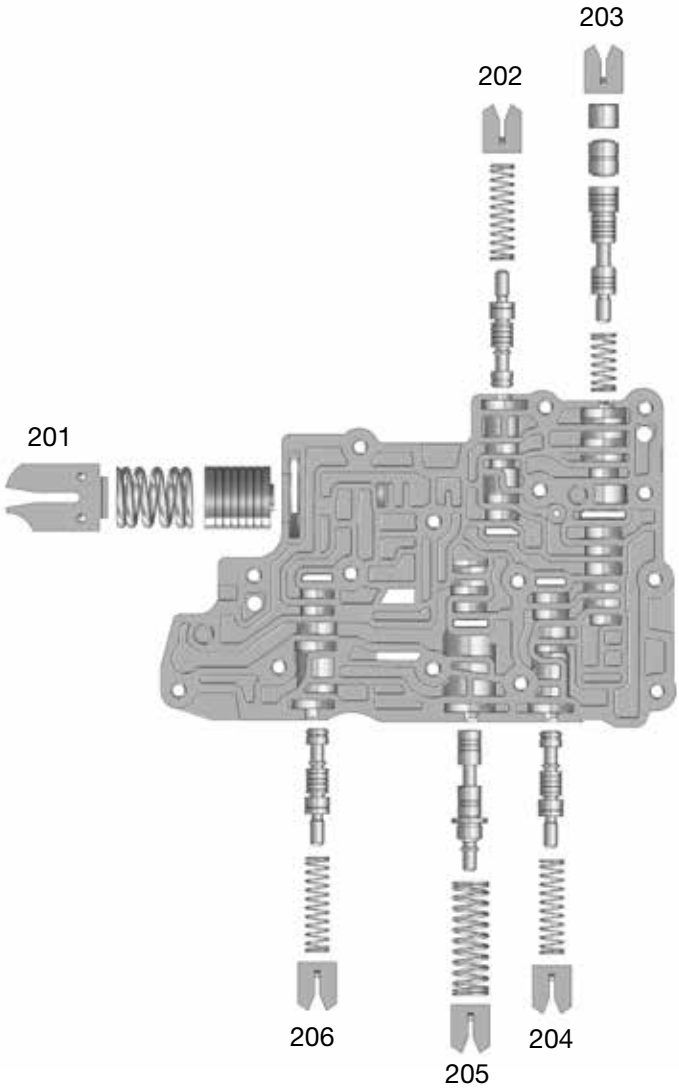
OE Exploded View

Upper Valve Body • 6T70 (Gen. 2)



Lower Valve Body • 6T70 (Gen. 2)



6T70 (Gen. 2) Upper Valve Body Descriptions

I.D. No.	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	Low & Reverse & 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

6T70 (Gen. 2) Lower Valve Body Descriptions

I.D. No.	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

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

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