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

6T70 (Gen. 1) Upper Valve Body

6T70 (Gen. 1) Lower Valve Body

Separator Plate

NOTE: Drill and aluminum plugs for this step not shown.

Replace nine OE checkballs.

NOTE: Reference pages 2, 3 and 4 in the technical booklet for installation details.

*Patent Pending

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

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 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 groove. 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
- Large Spring
- Small Spring
- O-Rings (2) 1 extra

**Step 6 Block AFL Balance Port**

Drill indicated separator plate orifice with included .062” dia. drill. Remove any burrs. Insert .062” dia. aluminum plug into drilled hole and peen in place on both sides of plate. Ensure plate will sit flush on both castings. Replace OE checkballs.

Packaging Pocket 6
- Drill (.062” dia.)
- Aluminum Plugs (2) 1 extra

**Step 7 Replace OE Checkballs**

Packaging Pocket 7
- Checkballs, .250” dia. (9)

**Step 8 Replace OE Pressure Switch Laminate Discs & Seals**

Reference pages 2, 3 and 4 in the technical booklet for installation details.

Packaging Pockets 8–10
- Seals (5) 1 Extra
- Laminate Discs (5) 1 Extra
- Seal Installer*
- Piston*
- Plunger*
- Laminate Installation Tool*

*NOTE: These components are patent pending.
Valve Body ID & Tech Tips

Adaptive Learning
The 6T70 and 6T75 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.

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 page 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 lb-in (Figure 5).
c. Install new solenoid filter plate (Figure 6).
d. Reinstall TEHCM assembly and TCU spring retainer.
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 input speed sensor (ISS).
h. Reconnect output speed sensor (OSS).

Installing Sonnax Pressure Switch Rebuild Kit

NOTE: Before installing kit, test switches to verify proper electrical operation. Kit repairs laminate disc and seal failures only; it will not rectify electrical breakdown.

1. Testing Switches

a. Locate 5-pin pressure switch terminals (Figure 9). Ground pin is all the way to the left; moving to the right, each pin is power supply for an individual switch (Figure 10). Place negative ohmmeter lead on ground pin and positive lead on a power supply pin. At rest, each switch should read between .5 and 10 ohms. Depressing switch with pencil eraser should result in O.L. reading.
b. If testing is successful, proceed with kit installation.
2. Remove OE Seals & Discs
   a. Using small screwdriver, remove OE switch seals and discard (Figure 11).
   b. Using small pick, gently remove OE laminate discs and discard (Figure 12).
   c. With laminate disc removed, OE plastic piston is exposed; piston is easily removed with pick for cleaning (Figure 13). Using low air pressure (30psi), blow any debris out of switch cavities. Clean and reinstall piston.

3. Installation & Assembly
   a. Gently form Sonnax laminate disc into inverted “U” shape and insert into bottom of switch cavity. Leading edge of laminate disc should slide into small groove at bottom of switch bore (Figures 14, 15 & 16).
   b. Insert Sonnax laminate installation tool over disc with “heel” toward top of switch bore and “toe” tucked under groove at bottom of bore (Figures 17 & 18).
   c. Gently press down on disc with tool ‘foot’ and rotate tool 360⁰ until all of laminate disc edge is secure under bore groove (Figure 19).
3. Installation & Assembly, continued

   d. Ensure laminate disc is centered, covering entire bore opening without gaps (Figures 20 & 21).

   e. Install Sonnax piston into Sonnax seal installer as indicated (Figures 22 & 23).

   f. Lubricate all sides of Sonnax seal. Insert seal flush into seal installer (Figure 24).

   g. Push seal into seal installer assembly using Sonnax seal plunger until plunger bottoms seal in tool (Figures 25 & 26).

   h. Insert piston/seal installer assembly into switch bore (Figure 27).

   i. While holding seal installer in place, push piston downward (Figures 28, 29 & 30). The seal installer will rise out of bore as seal sets into place.

   j. Inspect installed seal to ensure flush fit (Figures 31 & 32).
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. For specific vacuum test information, refer to individual part instructions included in kits and available at www.sonnax.com.

### Upper Valve Body • 6T70 (Gen. 1)

**3-5 Reverse Clutch Regulator Valve**
- Burnt 3-5 Reverse clutch
- Delayed Reverse
- 3rd & 5th Shift complaints
- 2-3 & 4-5 Shift flare
  
  **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

**2-6 Clutch Regulator & Gain Valve**
- Burnt 2-6 clutch
- 2nd & 6th Shift complaints
- 1-2 & 5-6 Shift flare
  
  **Replace with Sonnax Part No.**
  - 124740-17K Requires F-124740-TL17 & VB-FIX

**TCC Regulator Apply Valve**
- No TCC/slip, soft apply
- Harsh TCC apply
  
  **Replace with Sonnax Part No.**
  - 124740-24K Requires F-124740-TL24 & VB-FIX

**L/R Overdrive Clutch Regulator Valve**
- Burnt L/R and/or 4-5-6 clutch
- 4-5-6 Shift complaints
- Delayed Reverse
- 3-4 Shift flare
  
  **Plug port on back.**

**O-Ringed End Plug Kit**
- Burnt clutches/brakes
- Various shift complaints
  
  **NOTE:** Vacuum test end plugs at outboard port while sealing bore opening with thumb.
  
  **Replace with Sonnax Part No.**
  - 124740-02K*
  
  **NOTE:** Several Locations = ★

**Pressure Regulator Valve**
- High/Low line pressure
- Slipping/Burnt clutches
- Harsh/Soft shifts/apply
- Transmission overheat
- Low/No cooler/lube flow
  
  **Replace with Sonnax Part No.**
  - 124740-12K Requires F-124740-TL12 & VB-FIX

**Isolator Valve**
- Low line pressure
- Slipping/Burnt clutches
- Soft shifts/apply
  
  **Replace with Sonnax Part Nos.**
  - 124740-16 (Spring Only)
  - 124740-03K* (Isolator Valve Kit)

**TCC Control Valve**
- Incorrect TCC apply/release
- Transmission overheat
- Low/No cooler/lube flow
  
  **Replace with Sonnax Part No.**
  - 124740-14K Requires F-124740-TL14 & VB-FIX

**Clutch Select Solenoid Valve #3**
- Various shift complaints
- Shift related trouble codes

**Clutch Select Solenoid Valve #2**
- Various shift complaints
- Shift related trouble codes

*Part numbers with an asterisk (*) are included in this Zip Kit.*
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. For specific vacuum test information, refer to individual part instructions included in kits and available at www.sonnax.com.

Lower Valve Body • 6T70 (Gen. 1)

3-5 Reverse Clutch Boost Valve
- Burned 3-5 Reverse clutch
- Delayed Reverse
- 3rd & 5th Shift complaints
- 2-3 & 4-5 Shift flare
Replace with Sonnax Part No. 144740-23 Requires F-144740-TL22 & VB-FIX

4-5-6 Clutch Accumulator Piston
- Harsh 3-4
- 3-4 Flare
- Burned 4-5-6 clutch
Replace with Sonnax Part No. 124740-04K*

1-2-3-4 Clutch Boost Valve
- Burned 1-2-3-4 clutch
- Delayed Forward
- 1-2-3-4 Shift complaints
Replace with Sonnax Part No. 144740-23 Requires F-144740-TL22 & VB-FIX

1-2-3-4 Clutch Regulator Valve
- Burned 1-2-3-4 clutch
- Delayed Forward
- 1-2-3-4 Shift complaints

Actuator Feed Limit Valve
- Harsh shifts
- Low clutch pressure
- No/Slipping shifts
- Solenoid cores
Replace with Sonnax Part No. 124740-01 Requires F-104740-TL12 & VB-FIX

4-5-6 Clutch Boost Valve
- Burned 4-5-6 clutch
- 4-5-6 Shift complaints
- 3-4 Flare
Replace with Sonnax Part No. 144740-23 Requires F-144740-TL22 & VB-FIX

4-5-6 Reverse Clutch Boost Valve
- Burned 3-5 Reverse clutch
- Delayed Reverse
- 3rd & 5th Shift complaints
- 2-3 & 4-5 Shift flare
Replace with Sonnax Part No. 144740-23 Requires F-144740-TL22 & VB-FIX

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

Upper Valve Body • 6T70 (Gen. 1)

Upper Valve Body Descriptions

<table>
<thead>
<tr>
<th>I.D. No.</th>
<th>6T70 Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>Pressure Regulator Valve</td>
</tr>
<tr>
<td>102</td>
<td>Isolator Valve</td>
</tr>
<tr>
<td>103</td>
<td>TCC Control Valve</td>
</tr>
<tr>
<td>104</td>
<td>Clutch Select Solenoid Valve #3</td>
</tr>
<tr>
<td>105</td>
<td>Clutch Select Solenoid Valve #2</td>
</tr>
<tr>
<td>106</td>
<td>Manual Valve</td>
</tr>
<tr>
<td>107</td>
<td>L/R 4-5-6 Clutch Regulator Valve</td>
</tr>
<tr>
<td>108</td>
<td>TCC Regulator Apply Valve</td>
</tr>
<tr>
<td>109</td>
<td>2-6 Clutch Regulator &amp; Gain Valve</td>
</tr>
<tr>
<td>110</td>
<td>3-5 Reverse Clutch Regulator Valve</td>
</tr>
</tbody>
</table>
OE Exploded View

Lower Valve Body • 6T70 (Gen. 1)

<table>
<thead>
<tr>
<th>I.D. No.</th>
<th>6T70 Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>201</td>
<td>4-5-6 Clutch Accumulator Piston</td>
</tr>
<tr>
<td>202</td>
<td>1-2-3-4 Clutch Boost Valve</td>
</tr>
<tr>
<td>203</td>
<td>1-2-3-4 Clutch Regulator Valve</td>
</tr>
<tr>
<td>204</td>
<td>4-5-6 Clutch Boost Valve</td>
</tr>
<tr>
<td>205</td>
<td>Actuator Feed Limit Valve</td>
</tr>
<tr>
<td>206</td>
<td>3-5 Reverse Clutch Boost Valve</td>
</tr>
</tbody>
</table>