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

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

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

1. **Upper Valve Body**
2. **Lower Valve Body**
3. Replace nine OE checkballs.
4. Block AFL balance port by drilling and plugging separator plate where indicated using drill bit and aluminum plug provided (not shown).
5. CAUTION: Failure to block orifice will result in no movement of vehicle.
6. **Separator Plate**
7. 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.

©2019 Sonnax Transmission Company, Inc. • A Marmon / Berkshire Hathaway Company
800-843-2600 • 802-463-9722 • F: 802-463-4059 • www.sonnax.com
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 bit. 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.

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

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: Some parts listed here may be protected by patent number D784,101.
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 360° 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
- 2-3 & 4-5 Flare
- Reverse slip
- Ratio codes
- Erratic shift timing
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
- 1-2 or 5-6 Flare
- No 2nd or 6th
- Ratio codes
- 2-6 Clutch burned
- Erratic shift timing
Replace with Sonnax Part No.
124740-17K Requires F-124740-TL17 & VB-FIX

TCC Regulator Apply Valve
- Code P0741, 742
- Harsh TCC apply
- TCC slip
- Low TCC apply pressure
- Overheated fluid & TCC lining
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 concerns
- Delayed Reverse
- 3-4 Flare

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 = ★

Pressure Regulator Valve
- Erratic line pressure
- Low converter & lube flow
- TCC apply & release concerns
- Overheating
Replace with Sonnax Part No.
124740-12K Requires F-124740-TL12 & 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)
124740-03K* (Isolator Valve Kit)

TCC Control Valve
- Excess TCC slip
- Low cooler flow
- Overheating
- Low convert & lube flow
- TCC apply & release concerns
- TCC apply codes
- 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

Clutch Select Solenoid Valve #2
- Various shift concerns
- Shift 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
- Shift quality is not load sensitive
- Harsh shifts
- Slips & flares
- Delayed engagement
- Burnt clutches
- Slide shifts
- Slip codes
Replace with Sonnax Part No. 144740-23 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. 124740-04K*

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. 144740-23 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

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. 144740-23 Requires F-144740-TL22 & VB-FIX

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

*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>