

Critical Wear Areas & Vacuum Test Locations

ZIP Drop-In Zip Valve™ Parts Available

6L45-6L90-ZIP Zip Kit® 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.

Pump Body • 6L80 Shown

Converter Feed Limit Valve

- High TCC slip RPM • Overheated converter
 - Codes P0218/P0741 • Inadequate lubrication
 - Excess converter pressure
- NOTE:** Must test with actuator feed limit (AFL) valve instead of converter limit valve. Position AFL valve so spool face and port face are flush as indicated.

Replace with **Sonnax Part No. 104520-11**
Requires F-104520-TL11C & VB-FIX

Test using AFL Valve (#209)

Remove Converter Limit Valve

Flush

TCC Control Valve

- No lockup
- Falling out of lockup hot
- Lockup codes

NOTE: Test at valve port while plugging side port with thumb.

Plug Here

Pump Body 6L80 Shown

Pressure Regulator Valve

- Erratic/High/Low line pressure
 - Clutch slippage • Harsh shifts
 - Low/No cooler flow • Soft shifts
 - Overheated transmission • Converter concerns
- NOTE:** Block outboard as shown with .125" thick nut. Remove nut after testing.

Replace with **Sonnax Part Nos. 104520-14K or 104520-07K**
Requires F-104520-TL7C, VB-FIX & VB-06

Block with .125" nut

Boost Assembly

- Low line rise in Drive
- Soft shifts • Burnt clutches

NOTE: Test both ports simultaneously.

Replace with **Sonnax Part No. 104520-12K**

Clutch Select Valve #3

Shift complaints

Lower Valve Body 6L80 Shown

Clutch Select Valve #2

Shift complaints

TCC Regulator Apply Valve

- Code P0741/P0742 • Failsafe mode
- Overheated fluid • High TCC slip RPM
- Harsh shifts • Harsh TCC apply

NOTE: Test with .125" thick nut between shuttle valve and regulator valve.

Replace with **Sonnax Part Nos. 104740-46K or 104740-07K**
Requires F-104520-TL7 & VB-FIX

Compensator Feed Valve

- Harsh shifts • Downshift clunk
- Bump/Flare shifts • Bind-up
- Burnt clutches • Overheated fluid

Replace with **Sonnax Part No. 104740-09K**



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

Click on Sonnax part numbers to see more information.

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Parts Available

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Upper Valve Body • 6L80 Shown

*NOTE: Use Vacuum Test Plate 104740-VTP for this location.



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

Click on Sonnax part numbers to see more information.

1-2-3-4 Clutch Regulator & Shuttle Valve

- Burnt clutches
- Shift concerns in 1st, 2nd, 3rd & 4th Gear

Test with VTP* only.

1-2-3-4 Clutch Boost Valve

- Shift quality is not load sensitive
- Burnt clutches
- Clutch pressure solenoid codes
- Delayed engagement
- Harsh/Slide shifts
- Slip codes
- Slips & flares

Replace with Sonnax Part No.

104740-01 Requires F-104740-TL & VB-FIX

End Plugs ^{ZIP}

- Burnt clutches
 - Shift concerns
- NOTE:** Test end plugs at port between valve and end plug.

Replace with Sonnax Part No.

104740-23K

NOTE: Several Locations = ★

3-5 Reverse Clutch Regulator Valve

- Burnt 3-5 Reverse clutch
- Delayed/No Reverse
- 3rd & 5th Shift concerns

3-5 Clutch Boost Valve

- Shift quality is not load sensitive
- Clutch pressure solenoid codes
- Burnt clutches
- Slip codes
- Delayed engagement
- Harsh/Slide shifts
- Slips & flares

Replace with Sonnax Part No.

104740-01

Requires F-104740-TL & VB-FIX

4-5-6 Clutch Boost Valve

- Shift quality is not load sensitive
- Clutch pressure solenoid codes
- Burnt clutches
- Slip codes
- Delayed engagement
- Harsh/Slide shifts
- Slips & flares

Replace with Sonnax Part No.

104740-01

Requires F-104740-TL & VB-FIX

Actuator Feed Limit Valve ^{ZIP}

- Solenoid performance codes
- Clutch failure
- Wrong gear starts
- Harsh/Soft shifts

Replace with Sonnax Part Nos.

104740-47K or

104740-12 Requires F-104740-TL12 & VB-FIX

CBR 1/4-5-6 Clutch Regulator Valve

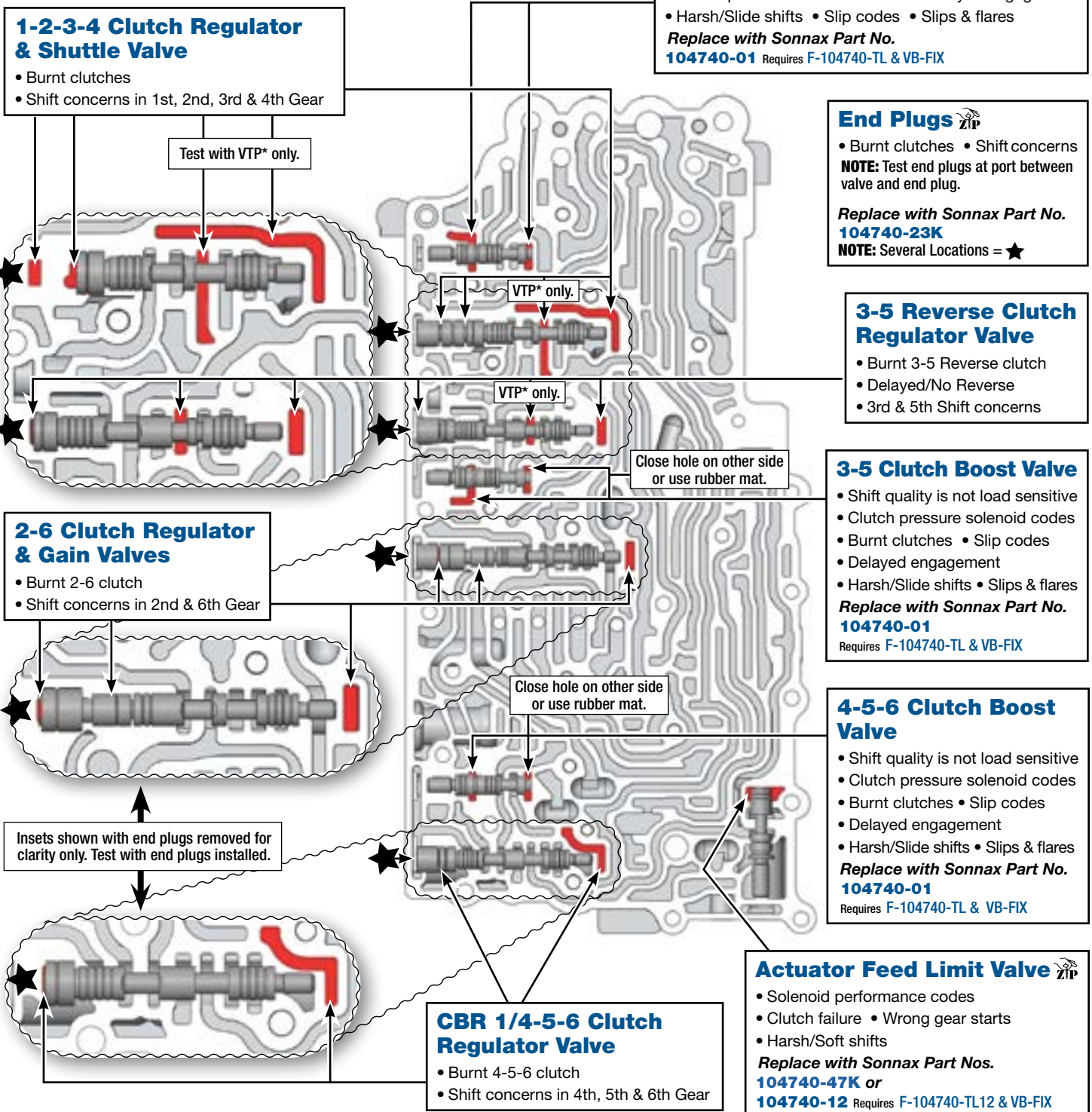
- Burnt 4-5-6 clutch
- Shift concerns in 4th, 5th & 6th Gear

2-6 Clutch Regulator & Gain Valves

- Burnt 2-6 clutch
- Shift concerns in 2nd & 6th Gear

Close hole on other side or use rubber mat.

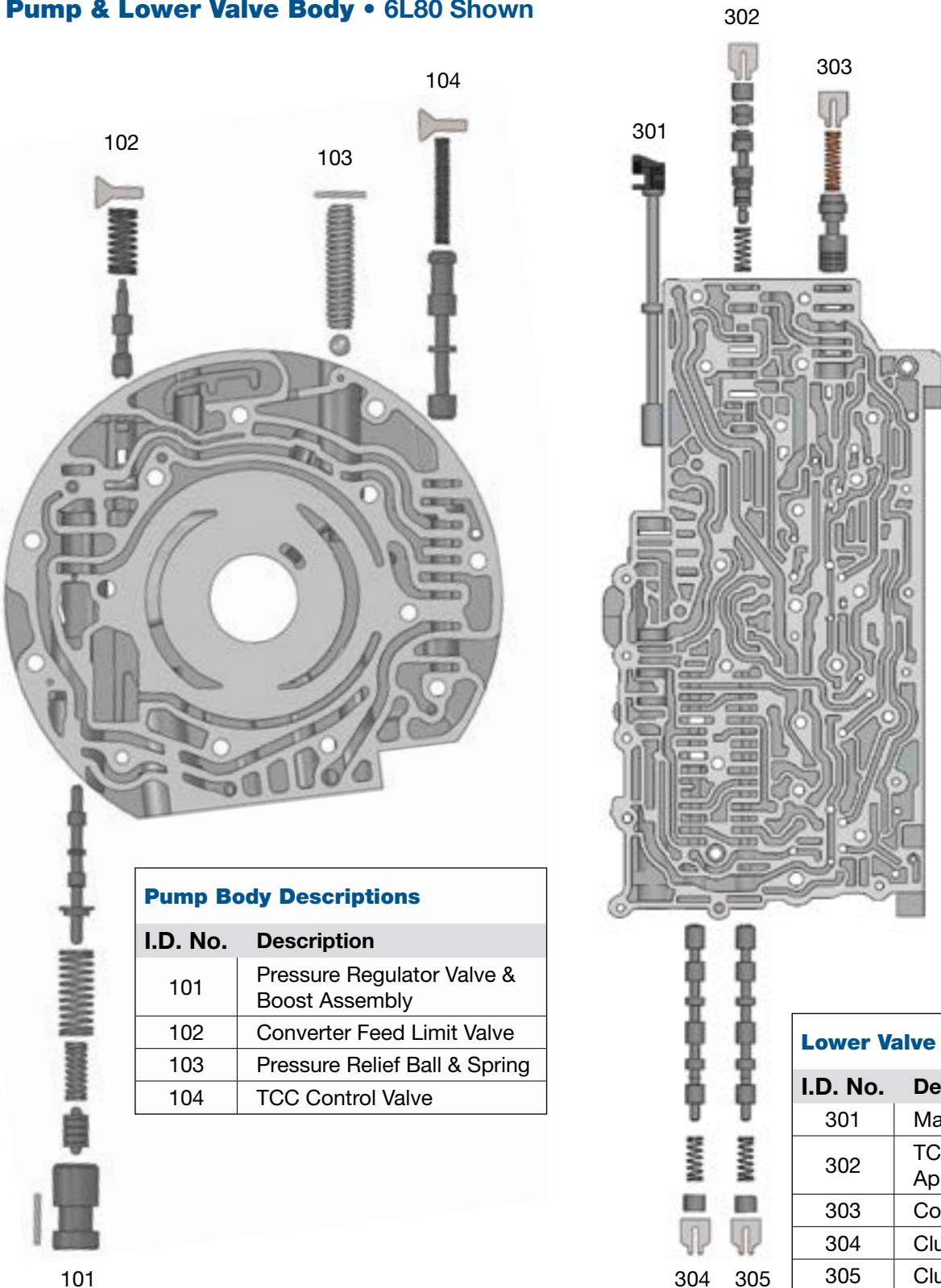
Insets shown with end plugs removed for clarity only. Test with end plugs installed.



OE Exploded View

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

Pump & Lower Valve Body • 6L80 Shown



| Pump Body Descriptions | |
|-------------------------------|---|
| I.D. No. | Description |
| 101 | Pressure Regulator Valve & Boost Assembly |
| 102 | Converter Feed Limit Valve |
| 103 | Pressure Relief Ball & Spring |
| 104 | TCC Control Valve |

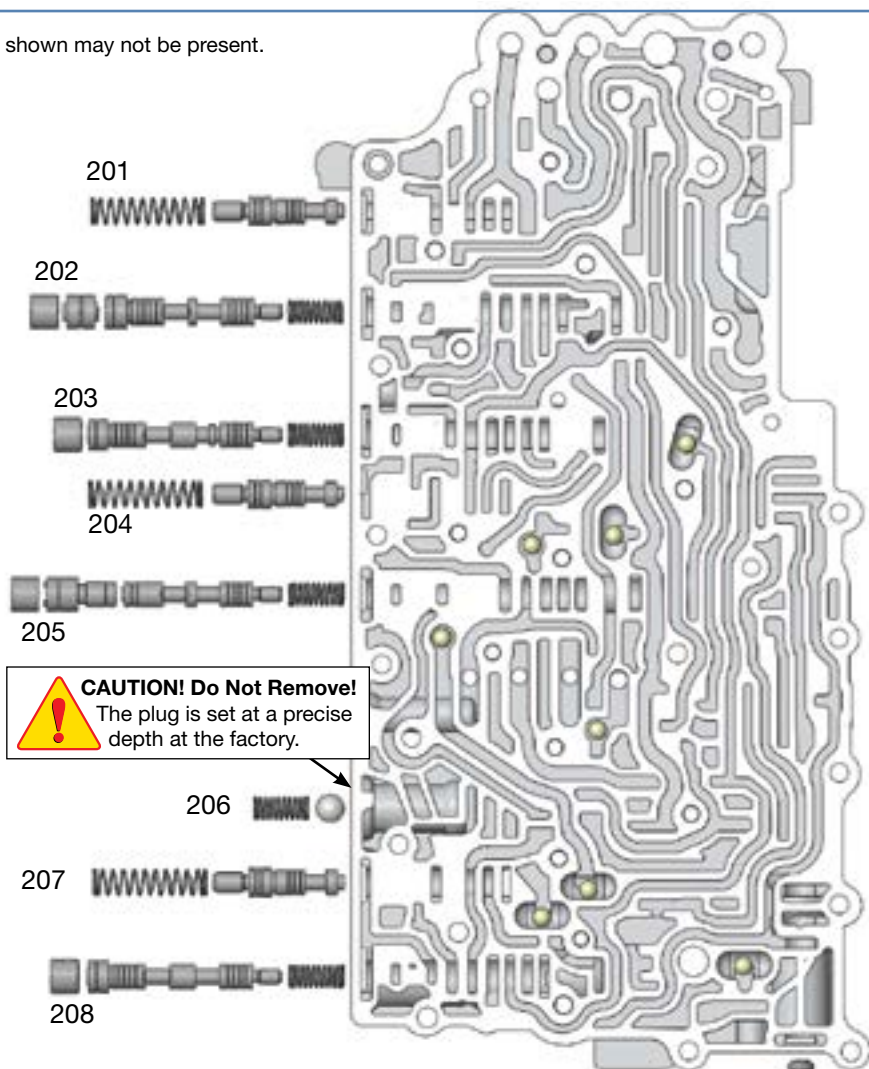
| Lower Valve Body Descriptions | |
|--------------------------------------|---------------------------|
| I.D. No. | Description |
| 301 | Manual Valve |
| 302 | TCC Regulator Apply Valve |
| 303 | Compensator Feed Valve |
| 304 | Clutch Select Valve #3 |
| 305 | Clutch Select Valve #2 |

OE Exploded View

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

Upper Valve Body • 6L80 Shown

| Upper Valve Body Descriptions | |
|-------------------------------|--|
| I.D. No. | Description |
| 201 | 1-2-3-4 Clutch Boost Valve |
| 202 | 1-2-3-4 Clutch Regulator & Shuttle Valve |
| 203 | 3-5 Reverse Clutch Regulator Valve |
| 204 | 3-5 Reverse Clutch Boost Valve |
| 205 | 2-6 Clutch Regulator & Gain Valves |
| 206 | Exhaust Backfill Pressure Relief Valve |
| 207 | 4-5-6 Clutch Boost Valve |
| 208 | CBR1/4-5-6 Clutch Regulator Valve |
| 209 | Actuator Feed Limit Valve |



GM 6L45-6L90 Clutch & Solenoid Application Chart

| Gear Range | Shift Sol 1 | Shift Sol 2 | 1-2-3-4 CL PC Sol 5 N.L. | 2-6 CL PC Sol 4 N.L. | 3-5 Rev. CL PC Sol 2 N.H. | Low Rev. 4-5-6 CL PC Sol 3 N.H. | 1-2-3-4 Clutch | 3-5 Rev. Clutch | 4-5-6 Clutch | 2-6 Clutch | Low & Rev. Clutch | Low Clutch Sprag |
|---------------|-------------|-------------|--------------------------|----------------------|---------------------------|---------------------------------|----------------|-----------------|--------------|------------|-------------------|------------------|
| Park | ON | ON | OFF | OFF | OFF | ON | | | | | Applied* | |
| Reverse | ON | OFF | OFF | OFF | ON | ON | | Applied | | | Applied | |
| Neutral | ON | ON | OFF | OFF | OFF | ON | | | | | Applied* | |
| D-1st Braking | ON | ON | ON | OFF | OFF | ON | Applied | | | | Applied | Holding |
| D-1st | OFF | ON | ON | OFF | OFF | OFF | Applied | | | | | Holding |
| D-2nd | OFF | ON | ON | ON | OFF | OFF | Applied | | | Applied | | |
| D-3rd | OFF | ON | ON | OFF | ON | OFF | Applied | Applied | | | | |
| D-4th | OFF | ON | ON | OFF | OFF | ON | Applied | | Applied | | | |
| D-5th | OFF | ON | OFF | OFF | ON | ON | | Applied | Applied | | | |
| D-6th | OFF | ON | OFF | ON | OFF | ON | | | Applied | Applied | | |

Notes:
 For shift solenoids 1 and 2, "ON" = Solenoid Energized (Pressurized), "OFF" = Solenoid De-energized (No Pressure).
 For pressure control (PC) solenoids, "ON" = Pressurized, "OFF" = No Pressure.
 * = Applied with No Load.