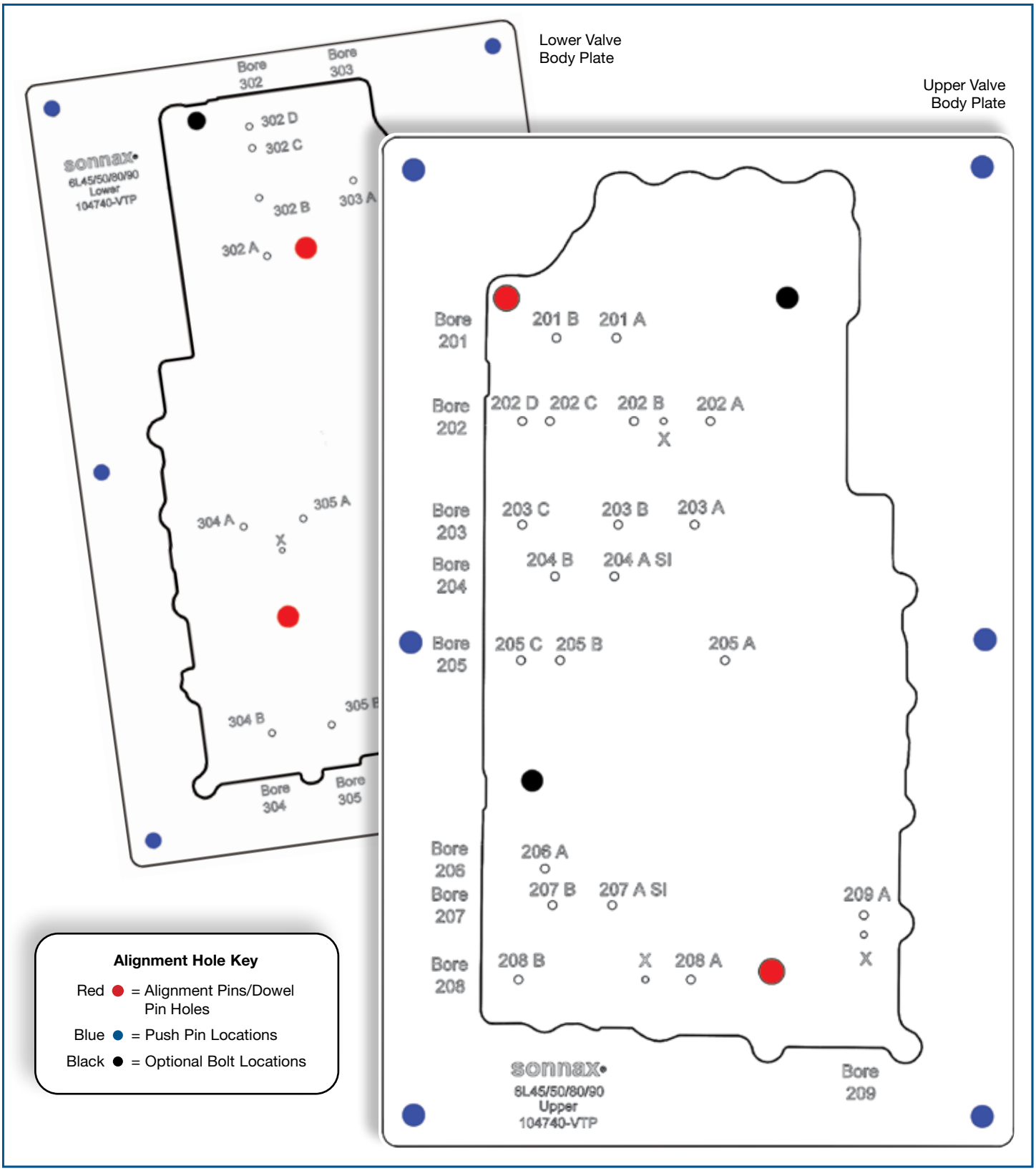
GM 6L45, 6L50, 6L80, 6L90 Vacuum Test Plate Kit

PART NUMBER 104740-VTP **INSTRUCTIONS**



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Vacuum Test Plate Kit

Part No. 104740-VTP

TOOL REQUIRED

- Upper Plate
- Lower Plate
- Seals (2)
- Push Pins (14) 2 Extra
- Alignment Pins (2)
- Bolts (4)
- Washers (4)
- Wing Nuts (4)

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 lower valve body plate at indicated threaded holes. Thread into non-engraved side of plate (**Figure 1**). The upper valve body plate has two holes that align with the OE dowel pins in the casting.

c. Place seal onto non-engraved side of plate, aligning orifice holes. Remove any entrapped air between plate and seal by peeling seal up at 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.

NOTE: Sonnax recommends starting with only four corner locations. If seal sags away from plate, other push pin locations should also be used.

2. Testing

a. Place assembled vacuum test plate over casting, using engraved casting outline as guide. Alignment pins should enter casting bolt holes.

b. Using Sonnax vacuum test stand kit **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 7 can be used to establish minimum vacuum standards at individual bore locations.

c. Light finger-tip pressure may need to be applied on plate during testing. Included bolts, washers and wing nuts can be used at indicated bolt locations for firmer seal, but are not required. If used, place bolts through casting, seal and plate from the back of casting. Tighten wing-nut against plate, finger-tight only.

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. These documents can be printed or downloaded and stored on your computer.

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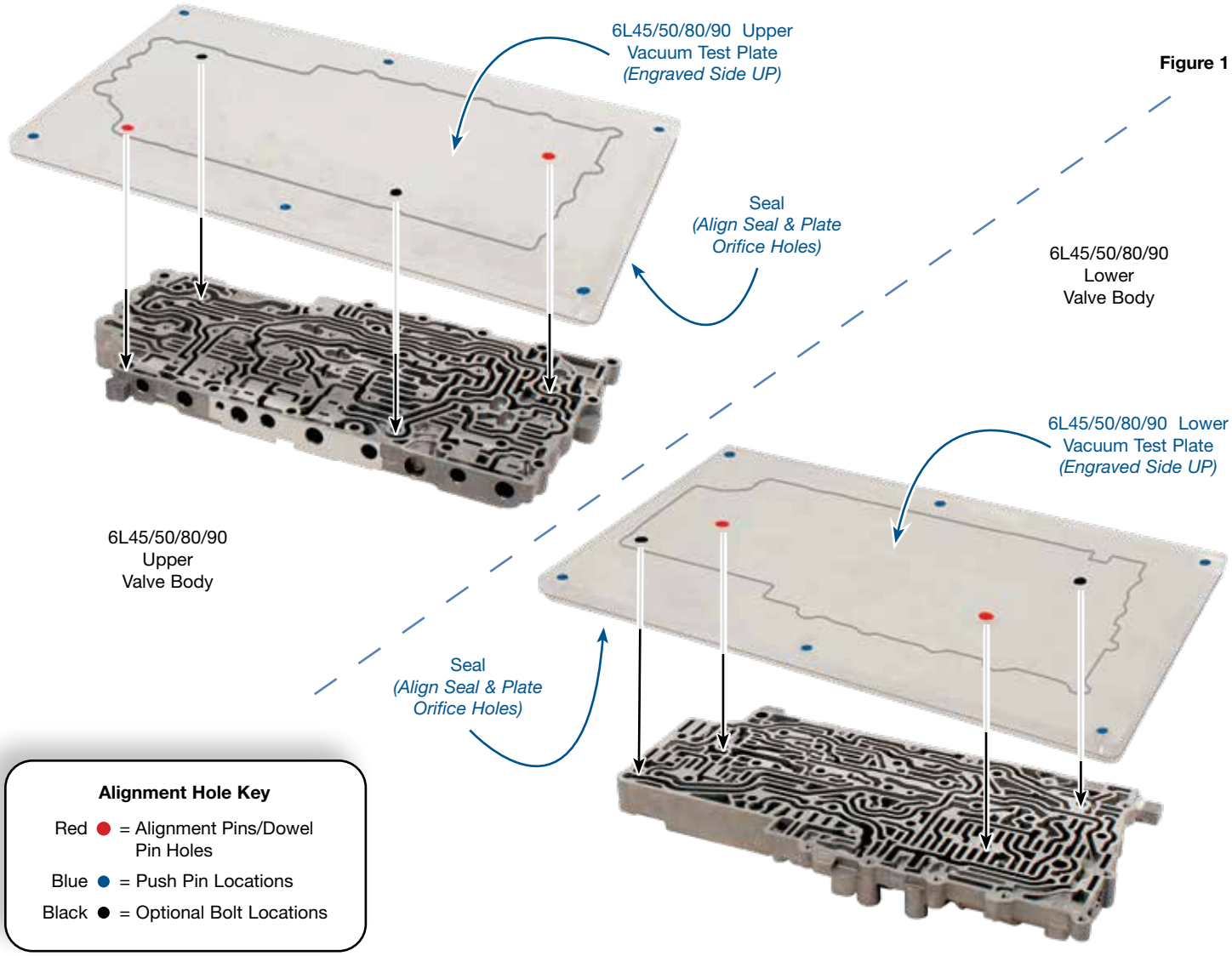
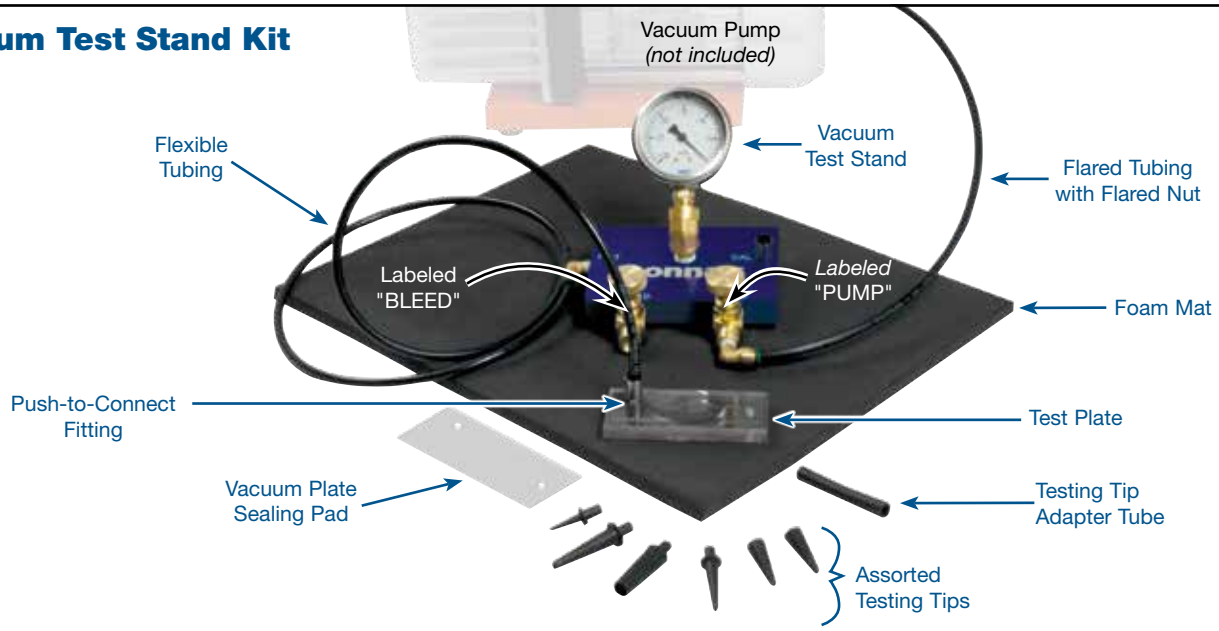
Figure 1



Vacuum Test Stand Kit

Figure 2



Critical Wear Areas & Vacuum Test Locations

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.

NOTE: These plates do not check for wear in the pump body. Check these locations using the small test plate and sealing pad included in the VACTEST-01K.

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

TCC Control Valve

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

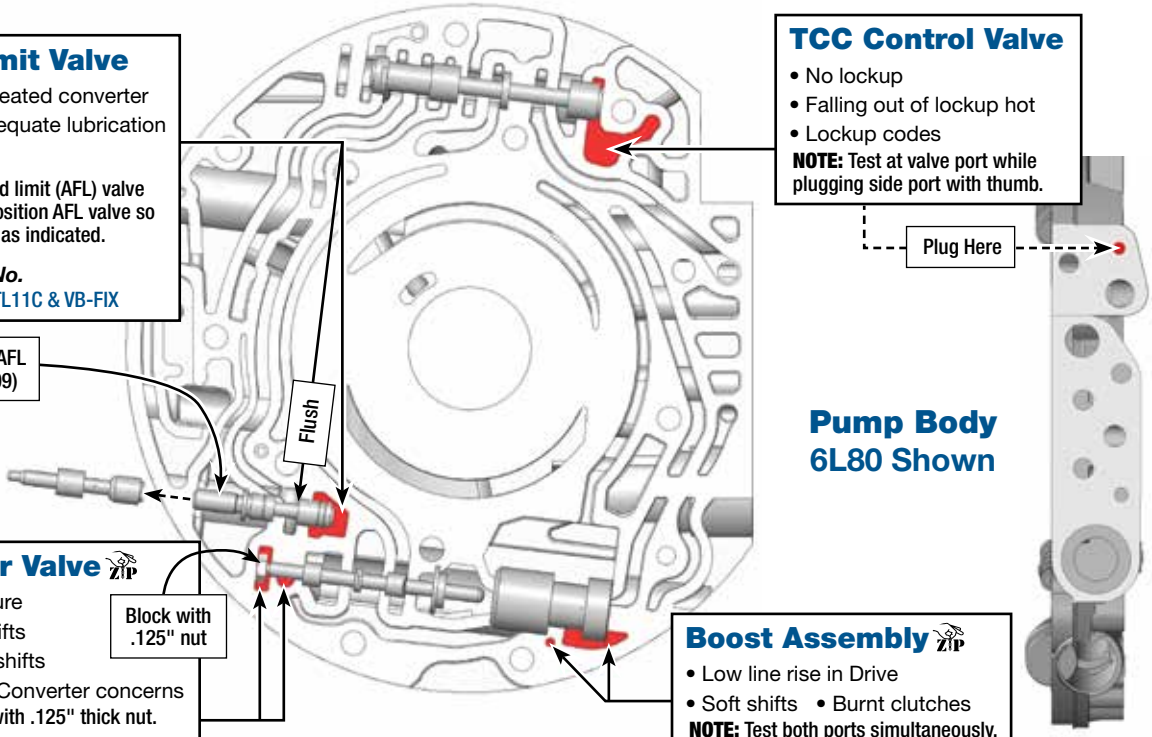
NOTE: Test at valve port while plugging side port with thumb.

Plug Here

Test using AFL Valve (#209)

Flush

Remove Converter Limit Valve



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

Lower Valve Body
6L80 Shown

Clutch Select Valve #3

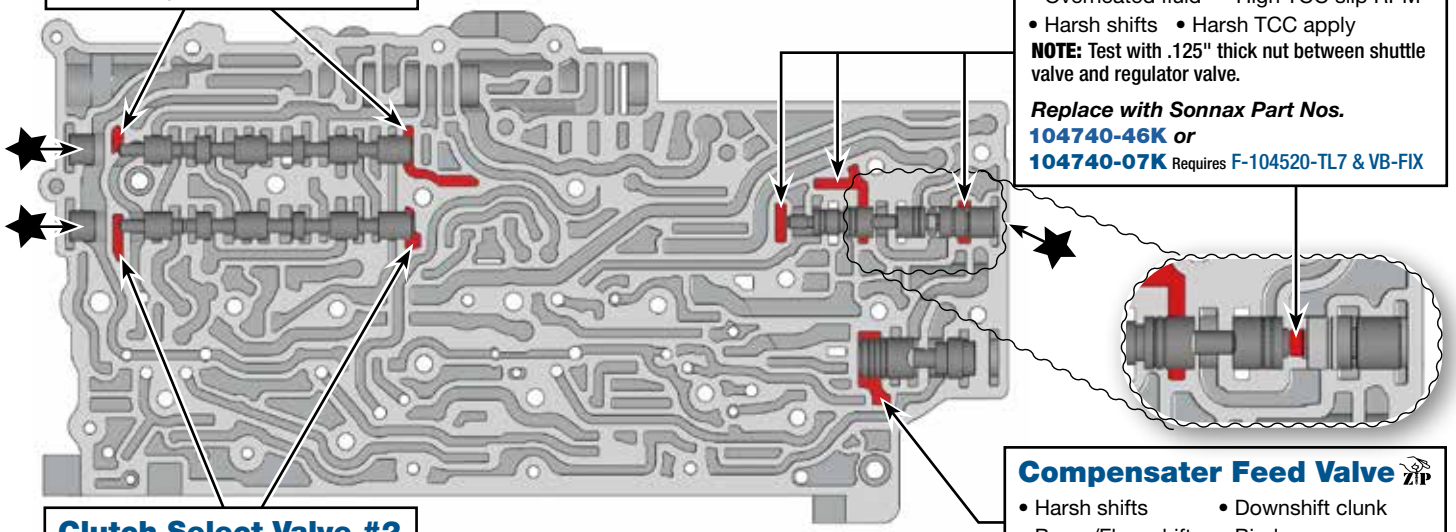
- Shift complaints

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



Compensater Feed Valve

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

Replace with Sonnax Part No.
104740-09K

Clutch Select Valve #2

- Shift complaints

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

Upper Valve Body • 6L80 Shown

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

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

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

Test with VTP* only.

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 = ★

VTP* only.

VTP* only.

3-5 Reverse Clutch Regulator Valve

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

Close hole on other side or use rubber mat.

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

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.

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

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

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

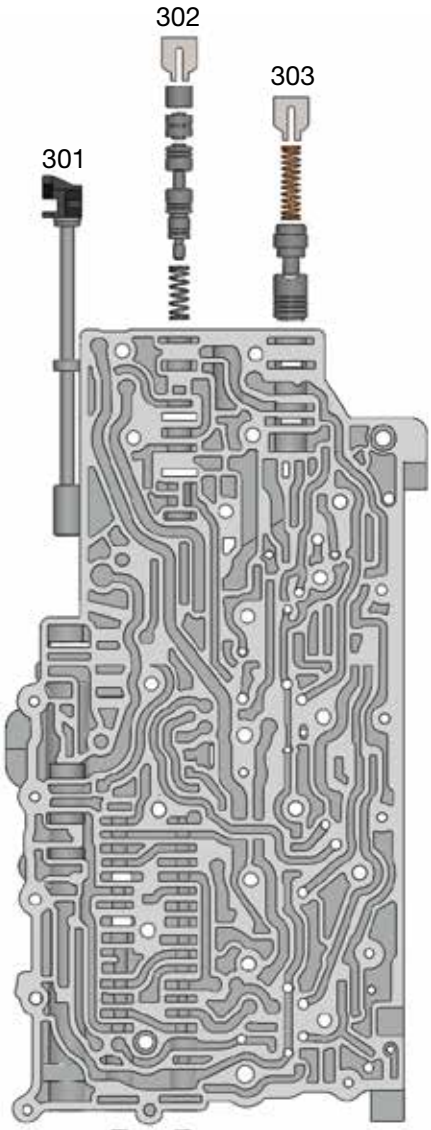
CBR1/4-5-6 Clutch Regulator Valve

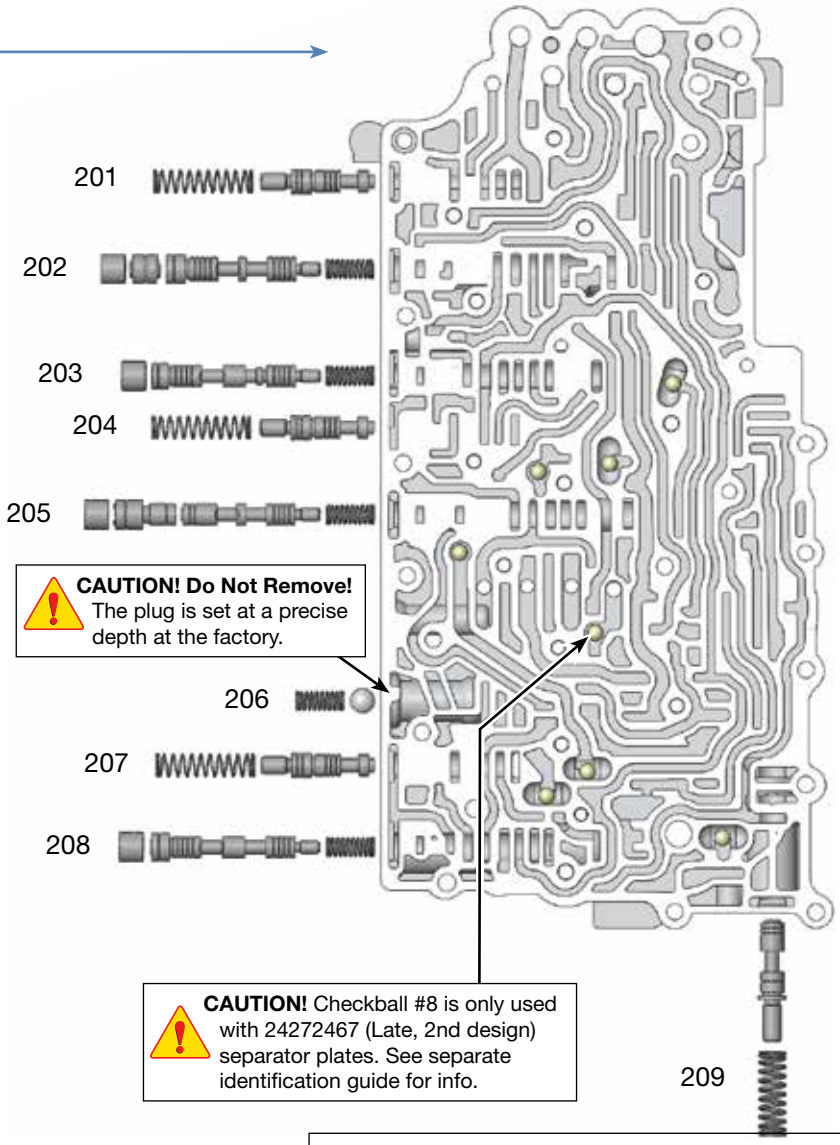
- Burnt 4-5-6 clutch
- Shift concerns in 4th, 5th & 6th Gear

OE Exploded View

Upper Valve Body • 6L80 Shown

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





CAUTION! Do Not Remove! The plug is set at a precise depth at the factory.

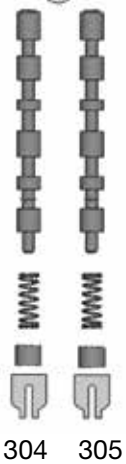
CAUTION! Checkball #8 is only used with 24272467 (Late, 2nd design) separator plates. See separate identification guide for info.

Upper Valve Body Descriptions

I.D. No.	Description
201	1234 Clutch Boost Valve
202	1234 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	456 Clutch Boost Valve
208	CBR1/C456 Clutch Regulator Valve
209	Actuator Feed Limit Valve

Lower Valve Body • 6L80 Shown

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



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

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Application:

Vacuum Test Data Sheet

Bore Locations	Vacuum Readings, in-HG										Calculated Average Vacuum	Minimum Vacuum Standard
	Core 1	Core 2	Core 3	Core 4	Core 5	Core 6	Core 7	Core 8	Core 9	Core 10		

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The Sonnax vacuum test data sheet is a document that can be printed or downloaded and stored on your computer. This test data sheet helps to track vacuum readings in critical wear areas from up to 10 cores of the same type. Comparing results from 10 cores aids in wear pattern identification.

Recording results allows an average vacuum reading for each bore to be calculated. Your minimum vacuum standard for each bore can be established from this data. These standards should reflect your warranty requirements and customer needs.

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Orifice Legend

Unit Stock or Tag No. _____

Orifice Location	Valve/Circuit Checked	Sonnax Part Number	Special Instructions	Actual Vacuum Reading	Minimum Vacuum Standard
201A	1234 Clutch Boost Valve Balance End	**104740-01**			
201B	1234 Clutch Boost Outboard Spool	**104740-01**			
202A	1234 Clutch Regulator & Shuttle Valve Inboard Spool				
202B	1234 Clutch Regulator & Shuttle Valve Center Spool				
202C	1234 Clutch Regulator & Shuttle Valve Outboard Spool				
202D	1234 Clutch Regulator & Shuttle Valve Shuttle Valve & Bore Plug	**104740-23K**			
203A	3-5-R Clutch Regulator Valve Inboard Spool				
203B	3-5-R Clutch Regulator Valve Between 2nd & 3rd Spool				
203C	3-5-R Clutch Regulator Valve Bore Plug	**104740-23K**			
204A SI	3-5-R Clutch Boost Valve Inboard Spool	**104740-01**	Close open casting on other side		
204B	3-5-R Clutch Boost Valve Outboard Spool	**104740-01**			
205A	2-6 Clutch Regulator Valve Inboard Spool				
205B	2-6 Clutch Regulator Valve Outboard Spool				
205C	2-6 Clutch Regulator Valve Bore Plug	**104740-23K**			
206A	Exhaust Backfill Pressure Relief Ball				
207A SI	4-5-6 Clutch Boost Valve Inboard Spool	**104740-01**	Close open casting on other side		
207B	4-5-6 Clutch Boost Valve Outboard Spool	**104740-01**			
208A	CBR1/C4-5-6 Clutch Regulator Valve Inboard Spool				
208B	CBR1/C4-5-6 Clutch Regulator Valve Outboard Spool/ Bore Plug				
209A	Actuator Feed Limit Valve	**104740-12**			
302A	TCC Regulator Apply Valve Inboard Spool/Spring End	**104740-07K**			
302B	TCC Regulator Apply Valve 2nd Inboard Spool	**104740-07K**			
302C	TCC Regulator Apply Valve Between Outboard Spool and Plug	**104740-07K**			
302D	TCC Regulator Apply Valve Bore Plug	**104740-07K**			
303A	Compensator Feed Balance End	**104740-09K**			
304A	Clutch Select Valve #3 Inboard Spool/Spring End				
304B	Clutch Select Valve #3 Outboard Spool/Bore Plug	**104740-23K**			
305A	Clutch Select Valve #2 Inboard Spool/Spring End				
305B	Clutch Select Valve #2 Outboard Spool/Bore Plug	**104740-23K**			

NOTE: The TCC Control Valve, Converter Feed Limit Valve, Pressure Regulator Valve, and Boost Assembly reside in the pump body. These vacuum test plates do not check for wear in the pump body. Please reference the vacuum test locations on page 4 of this guide, and test using the small test plate and sealing pad included in the **VACTEST-01K**.

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