

Vacuum Test Plate Kit

Part No.

56947J-VTP



- Plate
- Seal
- Push Pins (15) 4 Extra
- Alignment Pins (2)
- Bolts (2)
- Washers (2)
- Wing Nuts (2)

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

- Ensure vacuum test plate and seal are both clean and free of debris.
- Install two alignment pins into plate at indicated threaded holes. Thread into non-engraved side of plate (**Figure 1**).
- 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.
- 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

- Place assembled vacuum test plate over casting, using engraved casting outline as guide. Alignment pins should enter casting bolt holes.
- Using **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 5. 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.

- 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.

Figure 1

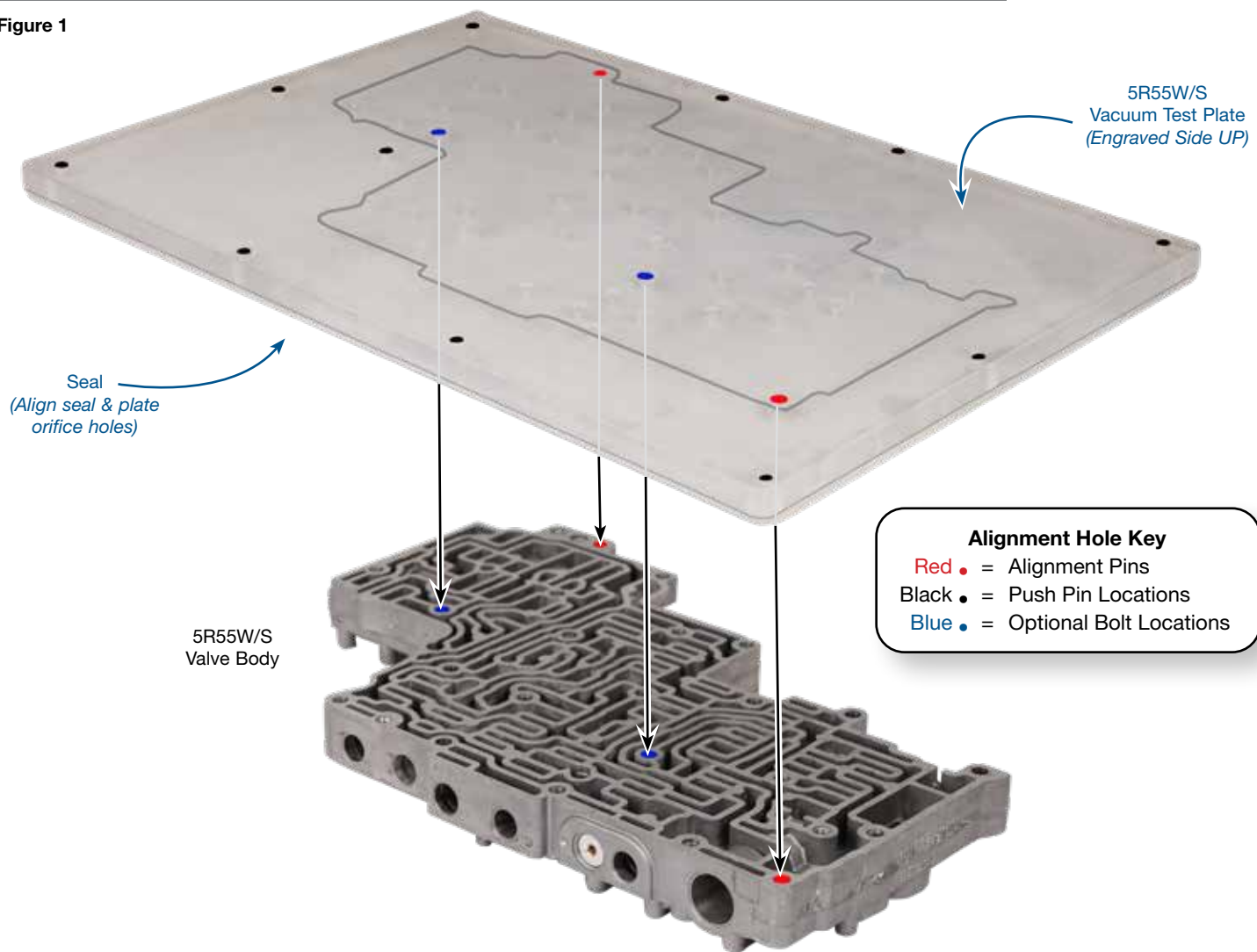
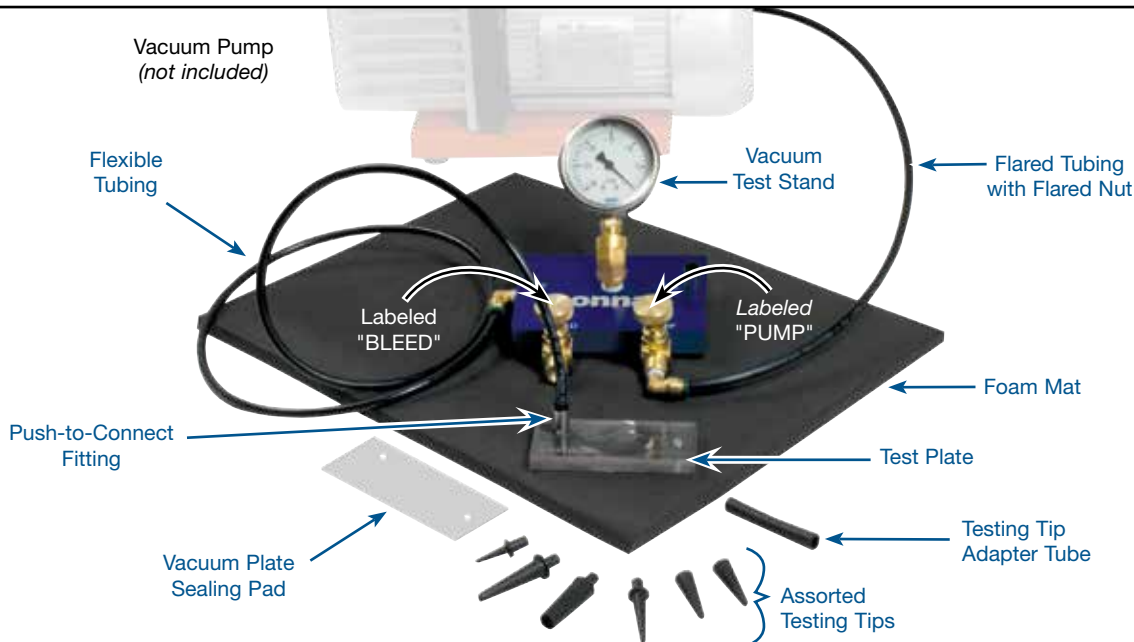


Figure 2



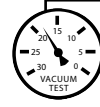
Critical Wear Areas & Vacuum Test Locations



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 are noted for replacement.

Plug casting valley with foam, putty or appropriately sized O-ring coated in assembly lube to isolate circuits.

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



VFS1 Modulator Control Valve

- Low line pressure
- Slipping upshifts
- Burned intermediate and/or low/reverse band

Replace with Sonnax Part No. 56947J-19K Requires F-56947J-TL19 & VB-FIX

Pressure Regulator Valve

- Delayed engagement • Soft shifts
- Insufficient line rise • Erratic buzz
- High/uncontrollable line pressure in reverse

Install Sonnax Part No. 56947J-09K Requires 56947J-TL9

Reverse Servo Control Valve

- No/delayed reverse
- Burned low/reverse band

Reverse Engagement Valve

- Slipping/no/delayed reverse
- Burned direct clutch

Replace with Sonnax Part No. 56947J-29K Requires F-27741-TL13 & VB-FIX

Reverse Modulator Valve

- Delayed reverse engagement
- Loss of 4th or 5th • Burned direct clutch

Replace with Sonnax Part No. 56947J-23K Requires F-27741-TL13 & VB-FIX

Direct Clutch Control Valve

- Delayed reverse engagement
- Loss of 4th or 5th • Burned direct clutch

Intermediate Servo Release Valve

- Burned intermediate band

VFS2 Modulator Control Valve

- Low line pressure • Burned Coast Clutch
- Burned overdrive band • Slipping Upshifts

Replace with Sonnax Part No. 56947J-19K Requires F-56947J-TL19 & VB-FIX

Coast Clutch Control Valve

- Burned coast clutch

Converter Clutch Back Pressure Valve

- Excessive TCC slip • Converter codes
- Burned converter lining

Boost Valve Assembly

- Poor line rise
- Slipping upshifts
- Burnt bands/clutches

Replace with Sonnax Part No. 56947J-74K

Converter Feed Limit Valve

- Front lube failure
- Increased stall RPM
- Overheat and/or delayed engagement

Replace with Sonnax Part No. 56947J-61K Requires F-56947J-TL61 & VB-FIX

Solenoid Feed Limit Valve

- Gear ratio codes 731 to 741
- No TCC apply
- Flooded solenoids

Replace with Sonnax Part No. 56947J-61K Requires F-56947J-TL61 & VB-FIX

VFS1 Port

- Low line pressure
- Slipping shifts

NOTE: Check for wear on end plugs.

Intermediate Servo Select Valve

- Burned intermediate band
- Burned direct clutch

Forward Engagement Valve

- Slipping/no/delayed forward
- Burned forward clutch

Overdrive Servo Control Valve

- Burned overdrive band

TCC Modulator Valve

- Codes 741 or 1783 • High line pressure
- Transmission overheat

Replace with Sonnax Part No. 56947J-15K Requires F-56947J-TL15 & VB-FIX

TCC Modulator Sleeve & Plunger Assembly

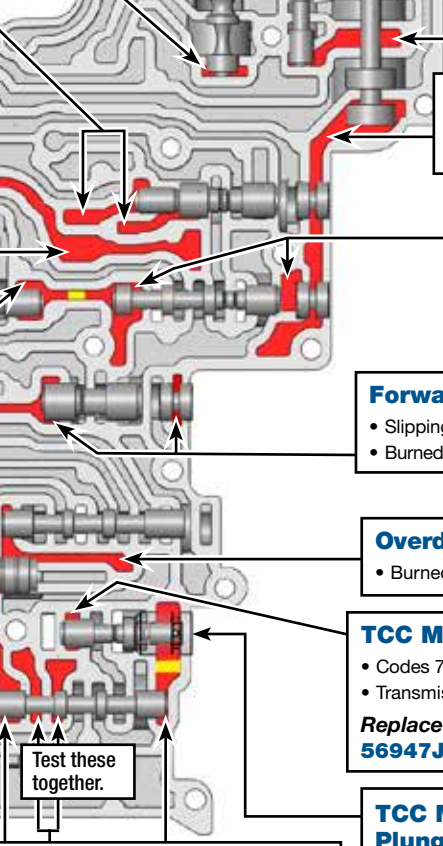
- High TCC slip RPM at increasing load
- Slip codes • Elevated fluid temperature

Replace with Sonnax Part No. 56947J-01K OE Ratio
56947J-03K Increased Ratio

TCC Control Valve

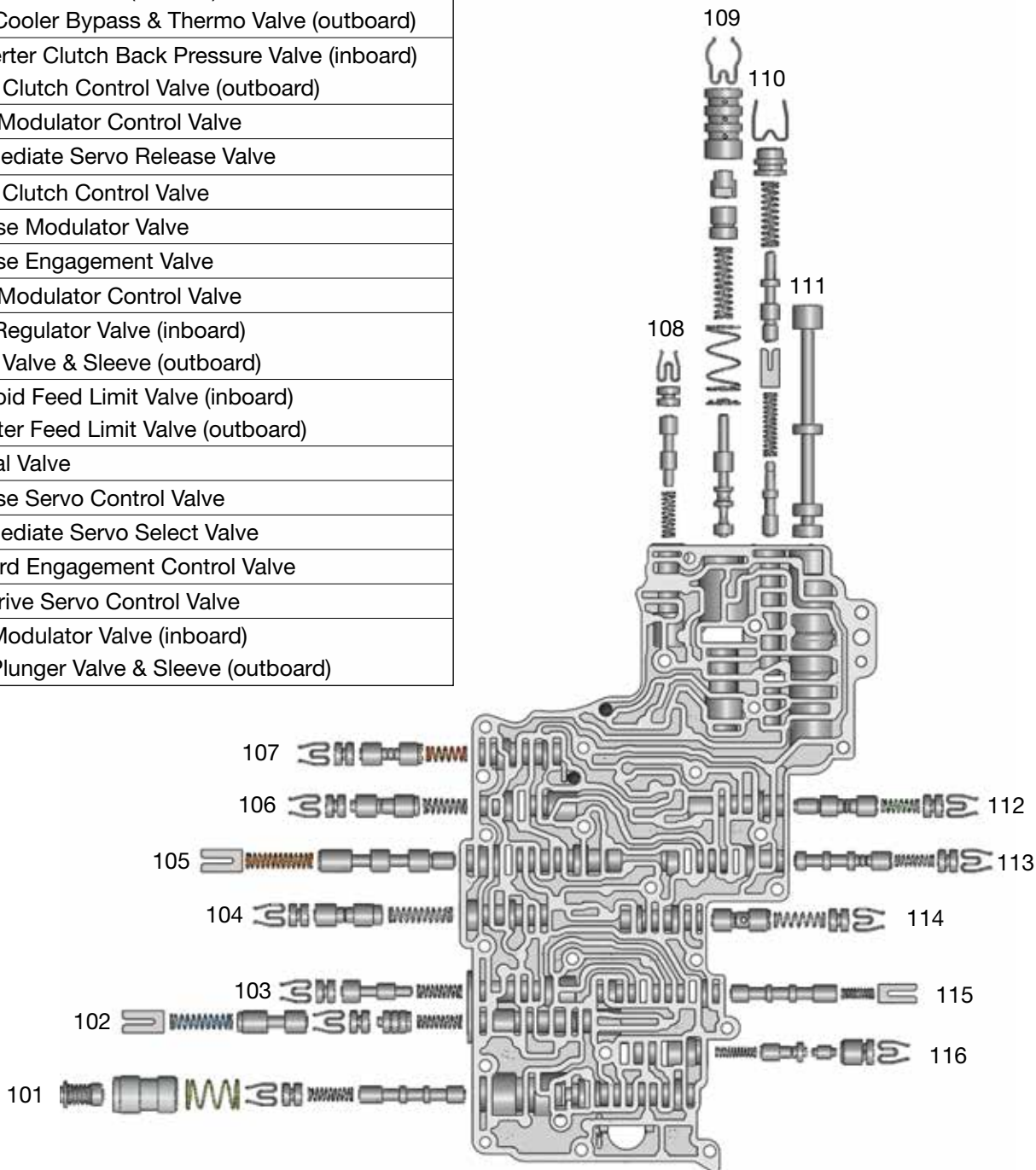
- Excess TCC slip
- TCC lining coming off
- Overheated converters
- Restricted cooler flow
- Code 741

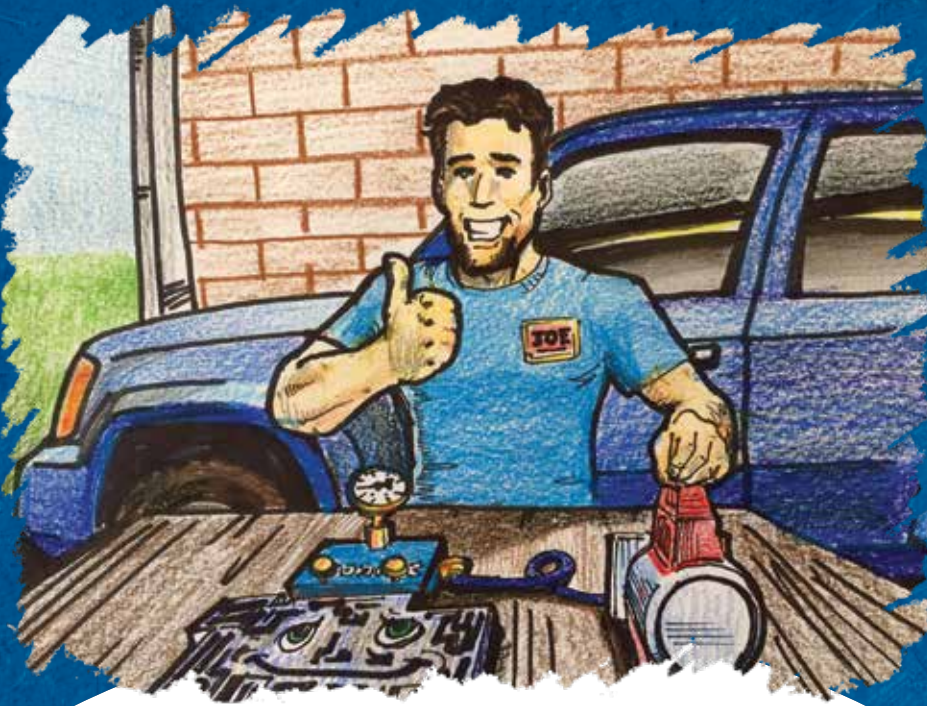
Replace with Sonnax Part No. 56947J-05K Requires F-56947J-TL2 & VB-FIX



OE Exploded View

Lower Valve Body Descriptions	
I.D. No.	Description
101	TCC Control Valve (inboard) Fluid Cooler Bypass & Thermo Valve (outboard)
102	Converter Clutch Back Pressure Valve (inboard) Coast Clutch Control Valve (outboard)
103	VFS2 Modulator Control Valve
104	Intermediate Servo Release Valve
105	Direct Clutch Control Valve
106	Reverse Modulator Valve
107	Reverse Engagement Valve
108	VFS1 Modulator Control Valve
109	Main Regulator Valve (inboard) Boost Valve & Sleeve (outboard)
110	Solenoid Feed Limit Valve (inboard) Coverter Feed Limit Valve (outboard)
111	Manual Valve
112	Reverse Servo Control Valve
113	Intermediate Servo Select Valve
114	Forward Engagement Control Valve
115	Overdrive Servo Control Valve
116	TCC Modulator Valve (inboard) TCC Plunger Valve & Sleeve (outboard)





Start your Rebuild **RIGHT** by Vacuum Testing

Properly diagnosing bore wear by vacuum testing valve bodies means no wasted time and money on repairs that aren't needed or aren't working. It's an ideal technique for preventing comebacks and improving the efficiency of your operations. Vacuum testing is...

Quick & Easy It doesn't take long to become skilled at rapidly testing valve body areas.

Quantitative Tests return a specific value that let you establish valve body pass/fail standards.

Reliable Test results are accurate and repeatable when routine procedures are followed.

Economical Vacuum test equipment has a low initial cost to set up and is low maintenance.

Get Started with Sonnax Vacuum Testing Videos

Learn how easy it is to put vacuum testing to work in your shop by watching these instructional videos presented by Sonnax Tech Specialist Jim Dial.

Watch the 3-Part Video Series at www.sonnax.com/vactest



All About Vacuum Testing

- How valve body wear leads to transmission problems
- What vacuum testing tells you about a valve body
- Vacuum testing tools and equipment

Setup & Calibration

- Assembling the Sonnax vacuum test stand kit
- Step-by-step stand calibration
- Proper usage of kit components for reliable test results

How to Vacuum Test

- Matching common transmission symptoms to problem areas in the valve body
- Using Sonnax vacuum test guides
- Establishing pass/fail standards

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			



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 identifica-

tion. 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.

Orifice Legend

 Unit Stock or Tag No.

Orifice Location	Valve/Circuit Checked	Sonnax Part Number	Actual Vacuum Reading	Minimum Vacuum Standard
101A	TCC Control Valve, Balance Spool	56947J-05K		
101B	TCC Control Valve, 3rd and 4th Spool	56947J-05K		
101C	TCC Control Valve, 4th Spool	56947J-05K		
102A	Converter Clutch Black Pressure Valve	n/a		
102B	Converter Clutch Black Pressure Valve Bore Plug	n/a		
102C	Coast Clutch Control Valve, Balance Spool	n/a		
103A	VFS2 Modulator Control Valve, Inboard Spool	56947J-19K		
103B SI*	VFS2 Modulator Control Valve, Outboard Spool	56947J-19K		
103C	VFS2 Modulator Control Valve Bore Plug	56947J-19K		
104B	Intermediate Servo Release Valve	n/a		
105A	Direct Clutch Control Valve	n/a		
106A	Reverse Modulator Valve, Inboard Spool	56947J-23K		
106B	Reverse Modulator Valve, Outboard Spool	56947J-23K		
107A	Reverse Engagement Valve, Inboard Spool	56947J-29K		
107B	Reverse Engagement Valve Bore Plug	56947J-29K		
108A	VFS1 Modulator Control Valve, Inboard Spool	56947J-19K		
108B	VFS1 Modulator Control Valve, Outboard Spool	56947J-19K		
108C	VFS1 Modulator Control Valve Bore Plug	56947J-19K		
109A	Pressure Regulator Valve, Balance Spool	56947J-09K		
109B	Boost Valve and Sleeve - VFS2 Circuit	56947J-74K		
109C	Boost Valve and Sleeve - VFS1 Circuit	56947J-74K		
110A	Solenoid Feed Limit Valve, Balance Spool	56947J-61K		
110B	Solenoid Feed Limit Valve, Balance 1st & 2nd Spools	56947J-61K		
110C	Converter Feed Limit Valve	56947J-61K		
112A/113A	VFS1 Port, Intermediate Servo Select and Reverse Servo Control Valve Bore Plugs	n/a		
112B	Reverse Servo Control Valve, Inboard Spool	n/a		
112C	Reverse Servo Control Valve, 2nd Spool	n/a		
112D	Reverse Servo Control Valve, Outboard Spool	n/a		
113B	Intermediate Servo Select Valve, Balance Spool	n/a		
113C	Intermediate Servo Select Valve, Outboard Spool	n/a		
114A	Forward Engagement Valve, Inboard Spool	56947J-26K		
114B	Forward Engagement Valve Bore Plug	56947J-26K		
115A	Overdrive Servo Control Valve, Balance Spool	n/a		
116A	TCC Plunger Valve and Sleeve	56947J-01K, 56947J-03K		
116B	TCC Modulator Valve, Inboard Spool	56947J-15K		

* **NOTE:** 2009–Later does not have a partician. Reverse modulator and intermediate servo release bore plugs will be checked.