



FORD 6F50, 6F55 ZIP KIT®

PART NUMBER 6F50-ZIP

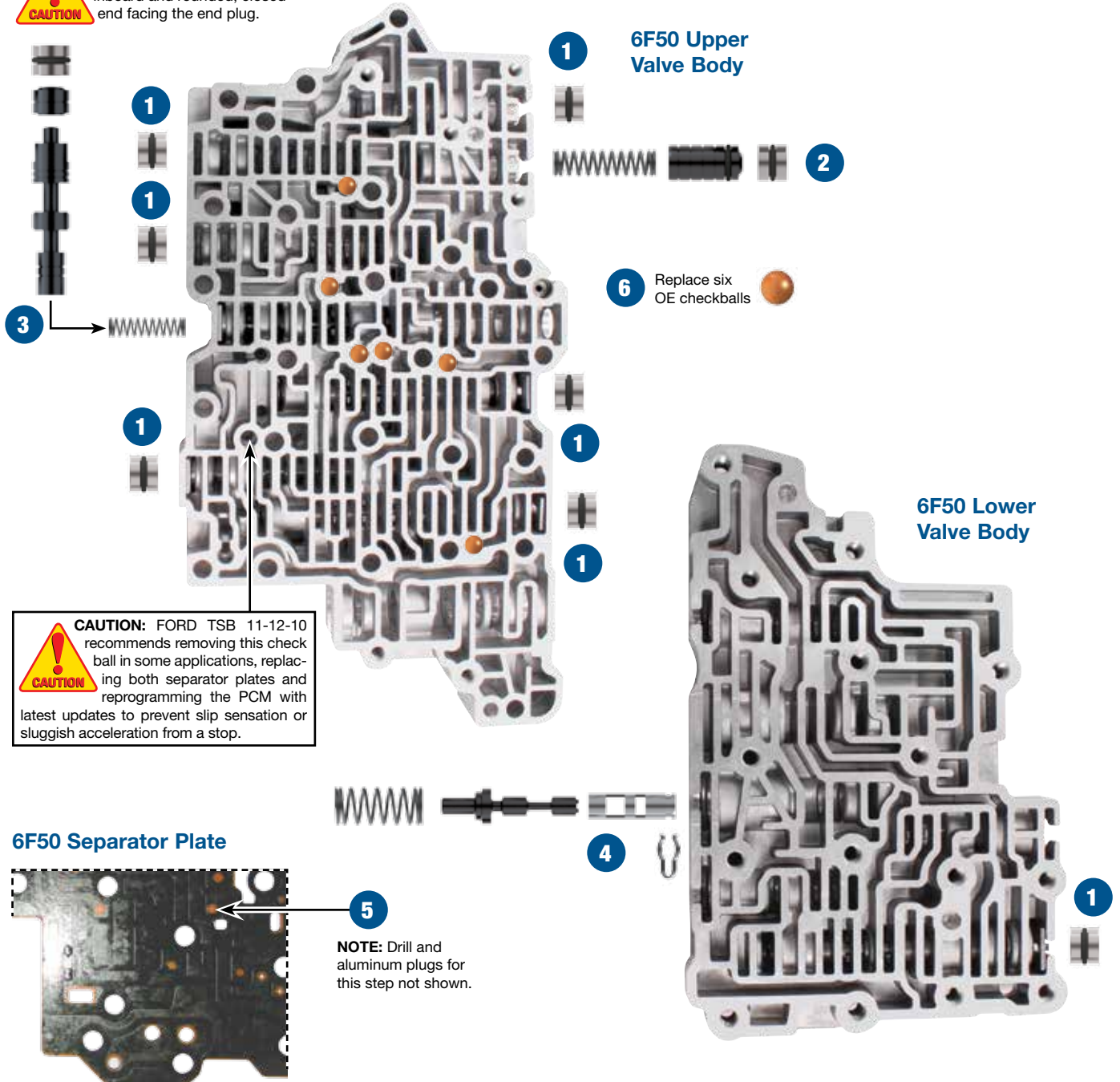
QUICK GUIDE

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

INSTALLATION DIAGRAM



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



CAUTION: FORD TSB 11-12-10 recommends removing this check ball in some applications, replacing both separator plates and reprogramming the PCM with latest updates to prevent slip sensation or sluggish acceleration from a stop.

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 Plugs (7)
- O-Rings (11) 4 extra

Step 2 Replace OE Isolator Valve & Spring

Remove and discard all OE components except the end clip. Save OE end clip for reuse. 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 Valve
- Spring
- Shuttle Valve
- End Plug
- O-Rings (2) 1 extra

Step 4 Replace OE Solenoid Pressure Regulator 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 Block Solenoid Pressure Regulator Balance Port

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

Packaging Pocket 5

- Drill (.062" dia.)
- Aluminum Plugs (2) 1 extra

Step 6 Replace OE Checkballs



CAUTION: OE valve body may contain 7 checkballs. Reference Ford TSB 11-12-10 for recommended removal of one check ball and replacement of separator plates for some vehicles.

Packaging Pocket 6

- Checkballs (7) 1 extra



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INSTALLATION & TESTING BOOKLET

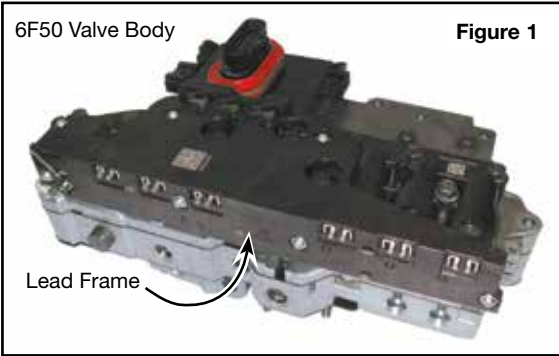


Figure 1

6F50 Valve Body ID & Tech Tips

Reprogramming

Many transmission performance concerns both prior to and after an overhaul can be addressed by reflashing or reprogramming the PCM. Refer to OE reflashing procedures.

Part Updates

Ford has made numerous part updates to deal with drivability complaints, including changes to the range sensor, TSS and OSS. Ensure the latest updates are made.

Solenoid Body Identification & Strategy

The solenoid body strategy is a file programmed into the PCM to control the various solenoids to prevent shift concerns. The original solenoid body tag on the transmission case indicates the solenoid strategy and solenoid body I.D. (Figure 2). These must match the numbers on the lead frame attached to the valve body (Figure 3).

Anytime a new solenoid body is installed, a new strategy file is downloaded into the PCM with a scan tool. A replacement tag (Figure 4) must be placed on the case as well.

NOTE: The solenoid strategy is always 13 numeric digit. The solenoid body I.D. is a combination of numeric digits and any letters A–F.

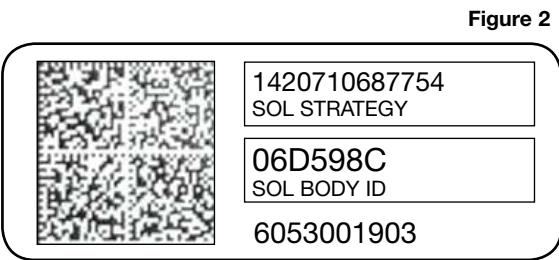


Figure 2

Identification: The original solenoid body tag on transmission case will look like this.

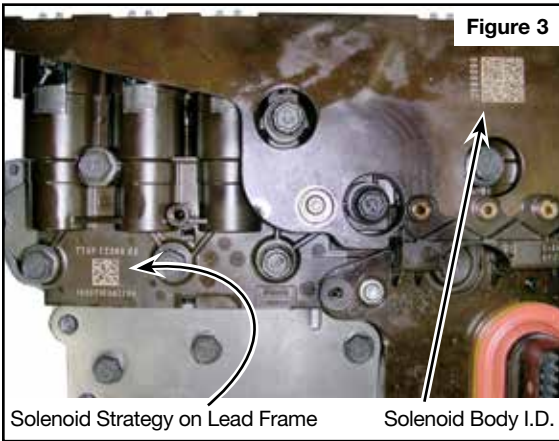


Figure 3

Clutch Apply Chart

Figure 5

Gear	Direct Clutch	Overdrive Clutch	Forward Clutch (Brakes)	Low/Reverse Clutch (Brake)	Intermediate Clutch (Brake)	One-Way
Drive	1st		X	X		X
	2nd		X		X	Overrunning
	3rd	X		X		Overrunning
	4th		X	X		Overrunning
	5th	X	X			Overrunning
	6th		X			X
Reverse	X			X		

Solenoid Apply Chart

Figure 6

PCM Commanded Gear	Shift Solenoid					TCC (VFS) NL	
	SSA (VFS) NL	SSB (VFS) NH	SSC (VFS) NL	SSD (VFS) NH	SSE (on/off) NC		
Park		X			X		
Reverse					X		
Neutral		X		*	X*		
Drive	1st	X	X		X*		
	2nd	X	X	X	X		
	3rd	X			X		
	4th	X	X				on/off
	5th						on/off
	6th		X	X			on/off
Low	X	X		*	X*		

KEY: X = On/Applied * = Modulating

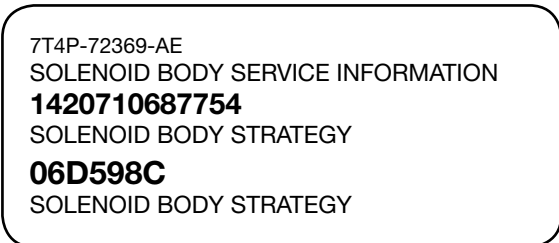


Figure 4

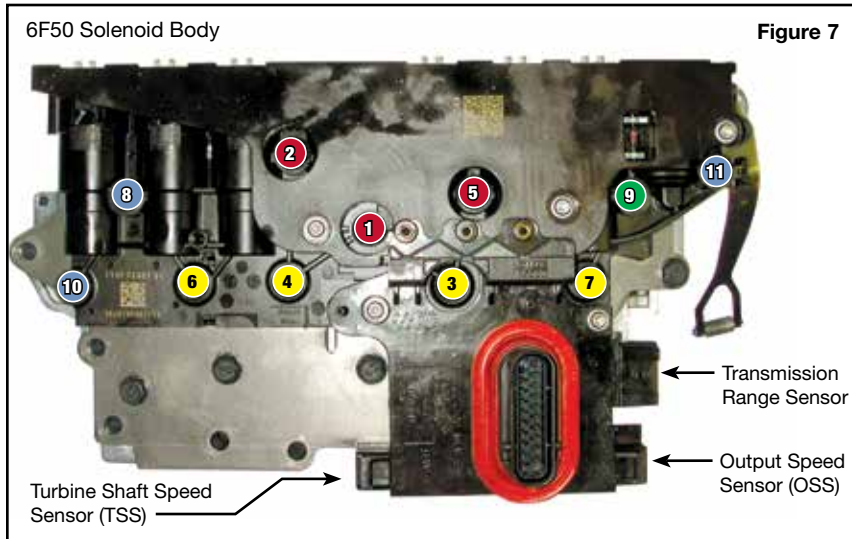


Figure 7

1. Valve Body Removal from Case (Figure 7)

- a. Disconnect transmission range sensor.
- b. Disconnect output speed sensor (OSS).
- c. Disconnect turbine shaft speed sensor (TSS).
- d. Remove 11 bolts and solenoid body. Handle solenoid body with care to prevent damage.

2. Disassembly (Figures 9 & 10)

- a. Remove the solenoid filter plate (Figure 9) from the back of the solenoid body. Discard and replace as the seals will leak if re-used.
- b. Remove the 10 (blue) 62mm bolts, transmission range sensor detent spring and main control valve body (Figure 10).
- c. Remove the three (orange) 35mm bolts and seven (purple) 62mm bolts to disassemble the valve body (Figure 10).

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 3 and 4).

4. Separator Plate Update

Reference Ford TSB 11-9-11. Some vehicles 2009–2011 using MERCON LV (indicated on dipstick) require a separator plate and checkball update to eliminate driveability issues.

5. Reassembly

Install the three (orange) 35mm bolts and seven (purple) 62mm bolts (Figures 8 and 10). Torque to 106 in-lb.

6. Valve Body Reinstall to Case

- a. Install valve body into transmission using 10 (blue) 62mm bolts. Hand tighten first, then tighten in indicated sequence to 106 lb-in (Figure 10).
- b. Install a new solenoid filter plate (Figure 9).
- c. Install solenoid body and secure with 11 bolts (Figure 7). Hand tighten, then tighten in the sequence shown to 106 lb-in.
- d. Reconnect transmission range sensor.
- e. Reconnect output speed sensor (OSS).
- f. Reconnect turbine shaft speed sensor (TSS).

6F50 Disassembly & Reassembly Bolts

Figure 8

Bolt Color Code	Bolt Length	Torque
Purple	62mm	106 in-lb
Orange	35mm	
Green	42mm	
Blue	62mm	
Red	95mm	
Yellow	80mm	



Figure 9

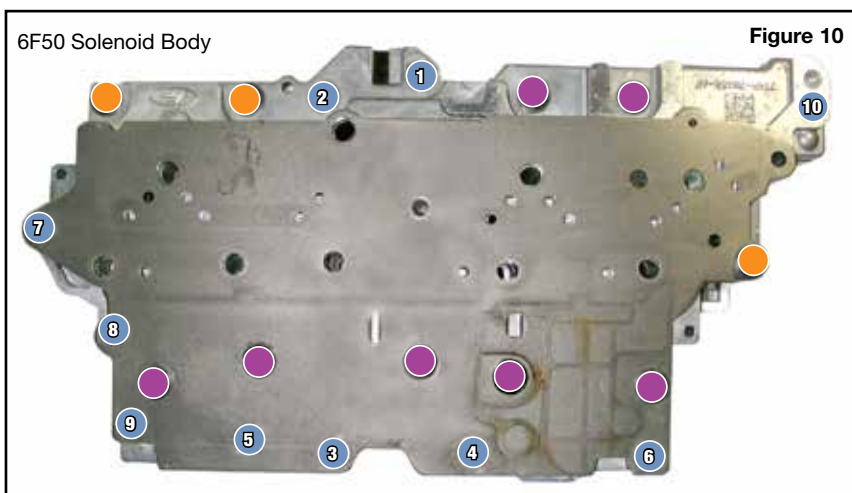


Figure 10

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 • 6F50 Shown

Direct Clutch Regulator Valve

- Burnt direct clutch
- 3rd & 5th Shift complaints
- Delayed Reverse
- 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

Pressure Regulator Valve

- High/Low line pressure
- Slipping/Burnt clutches
- Harsh/Soft shifts/apply
- Transmission overhear
- Low/No cooler/lube flow

Replace with Sonnax Part No.

124740-12K Requires F-124740-TL12 & VB-FIX

Intermediate Clutch Regulator & Gain Valve

- Burnt intermediate clutch
- 2nd & 6th Shift complaints
- 1-2 & 5-6 Shift flare

Replace with Sonnax Part No.

124740-17K Requires

F-124740-TL17 & 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 Regulator Apply Valve

- No TCC/slip, soft apply
- Harsh TCC apply

Replace with Sonnax Part No.

124740-24K Requires

F-124740-TL24 & VB-FIX

TCC Control Valve

- Incorrect TCC apply/release
- Transmission overhear
- Low/No cooler/lube flow

Replace with Sonnax Part No.

124740-14K Requires

F-124740-TL14 & VB-FIX

L/R Overdrive Clutch Regulator Valve

- Burnt L/R and/or overdrive clutch
- 4-5-6 Shift complaints
- Delayed Reverse
- 3-4 Shift flare

Multiplex Manual Valve

- Various shift complaints
- Shift related trouble codes

O-Ringed End Plug Kit

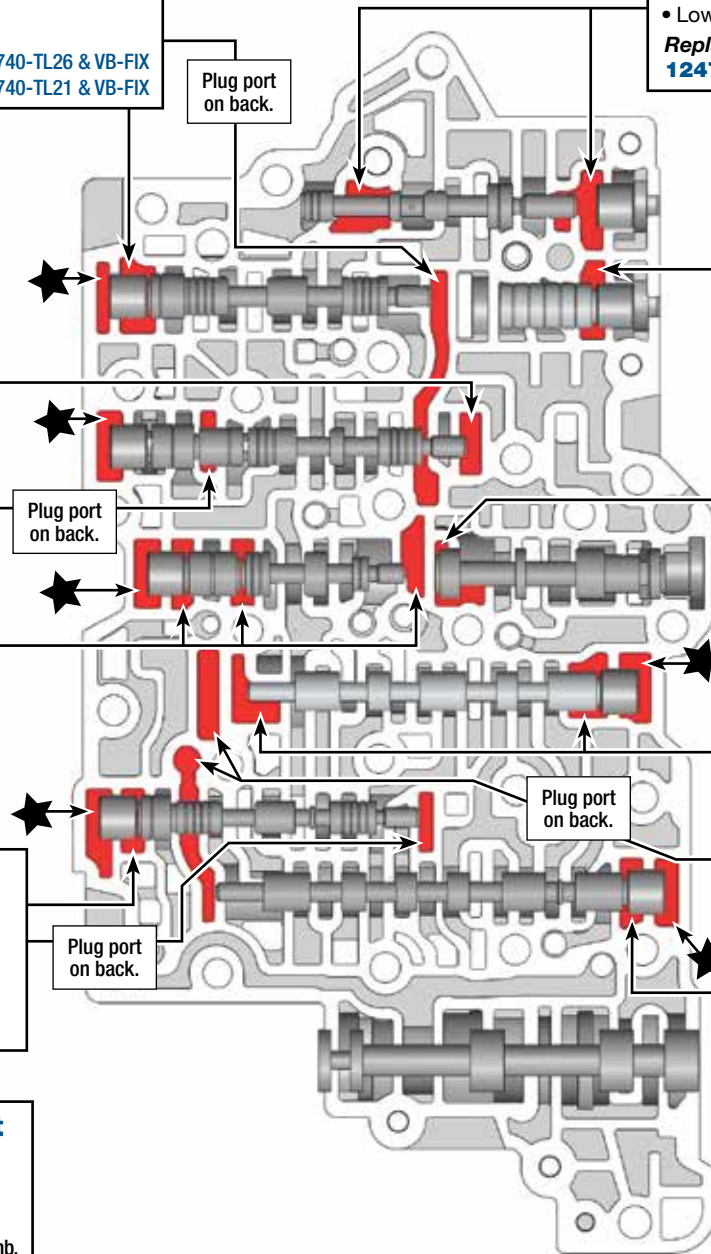
- Burnt clutches/brakes
- Various shift complaints

NOTE: Vacuum test end plugs at outboard port while sealing bore opening with thumb.

Replace with Sonnax Part No.

124740-02K*

NOTE: Several Locations = ★



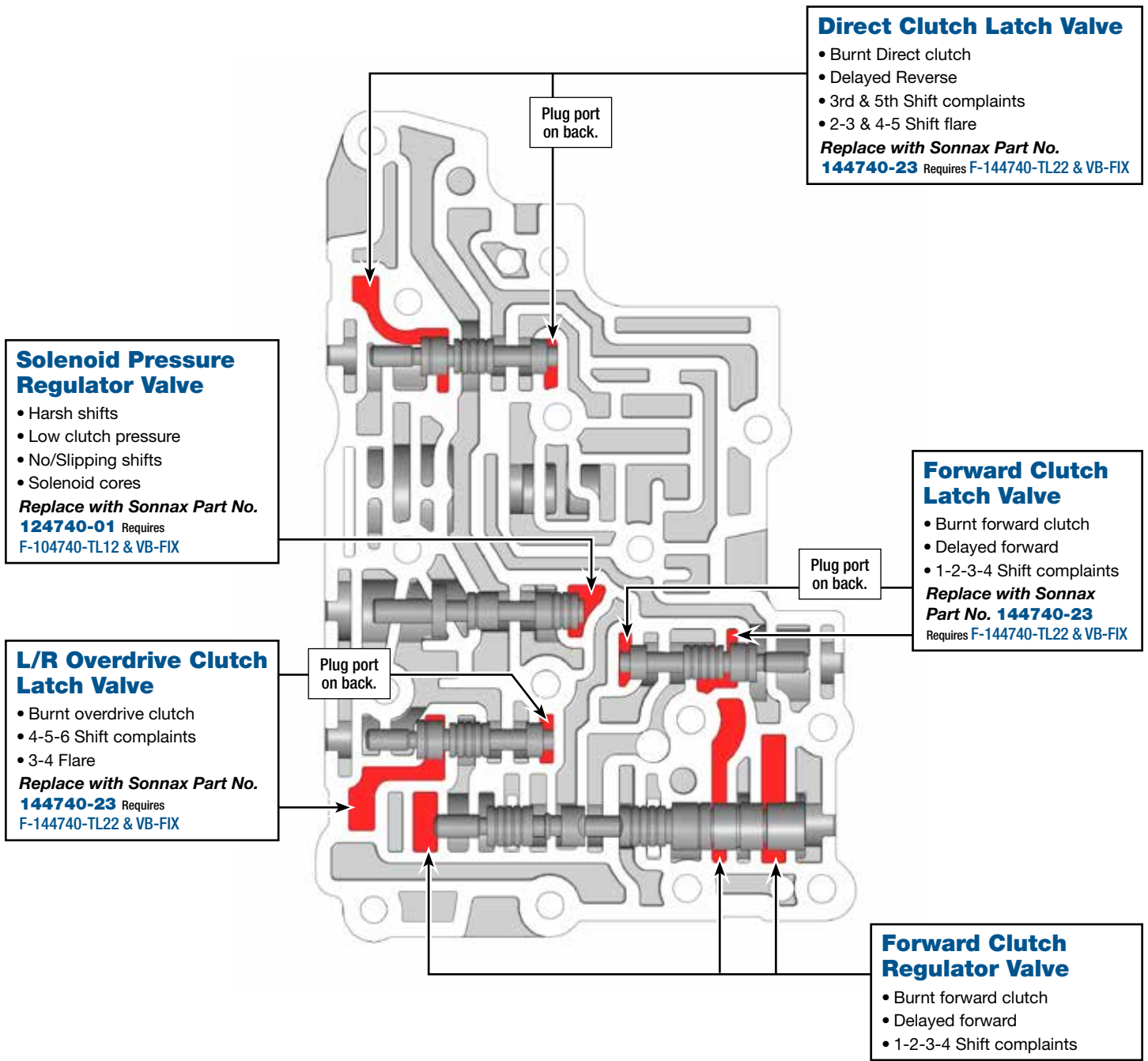
Part numbers with an asterisk () are included in this Zip Kit.

Critical Wear Areas & Vacuum Test Locations



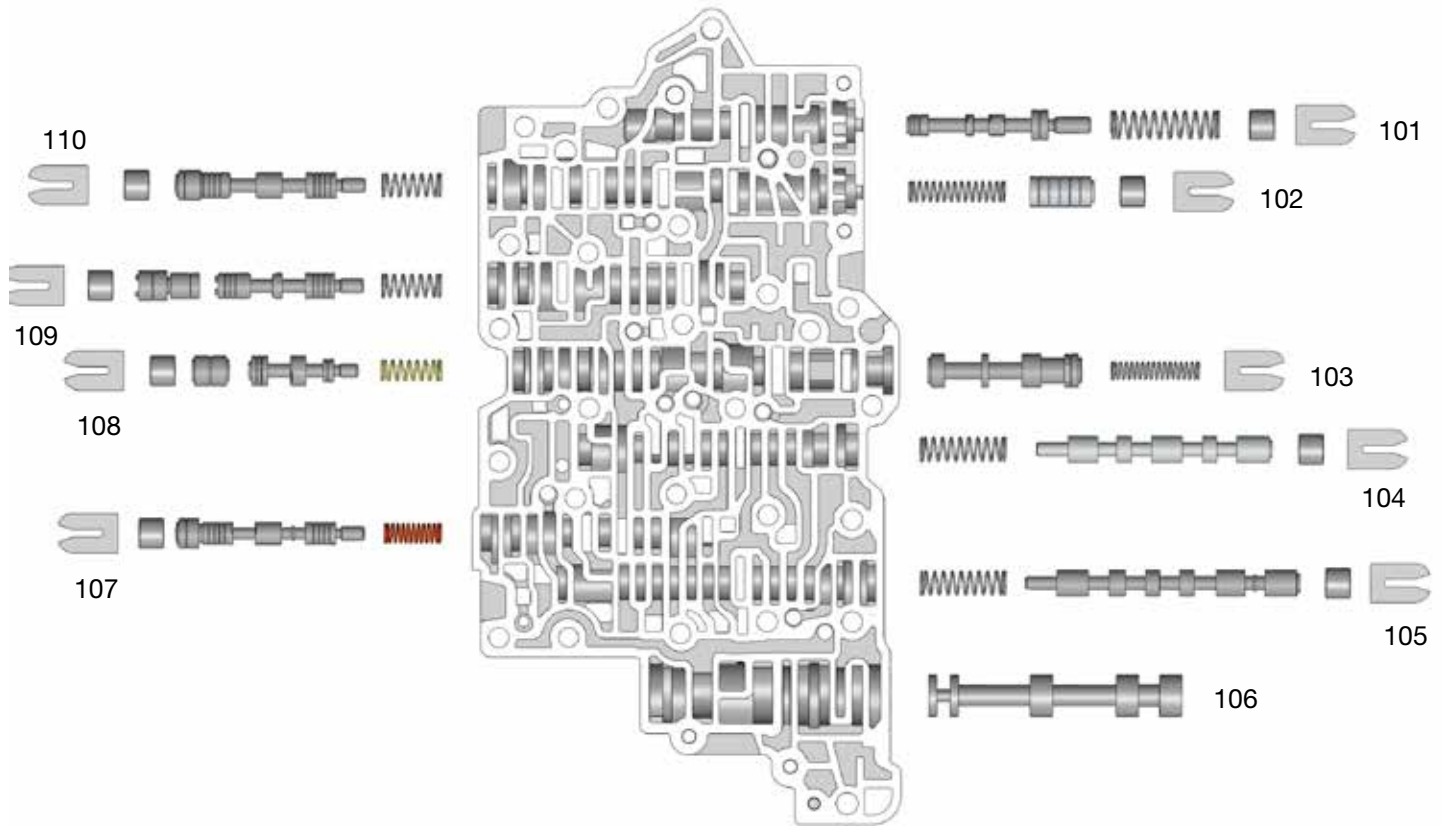
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Lower Valve Body • 6F50 Shown



OE Exploded View

Upper Valve Body • 6F50 Shown

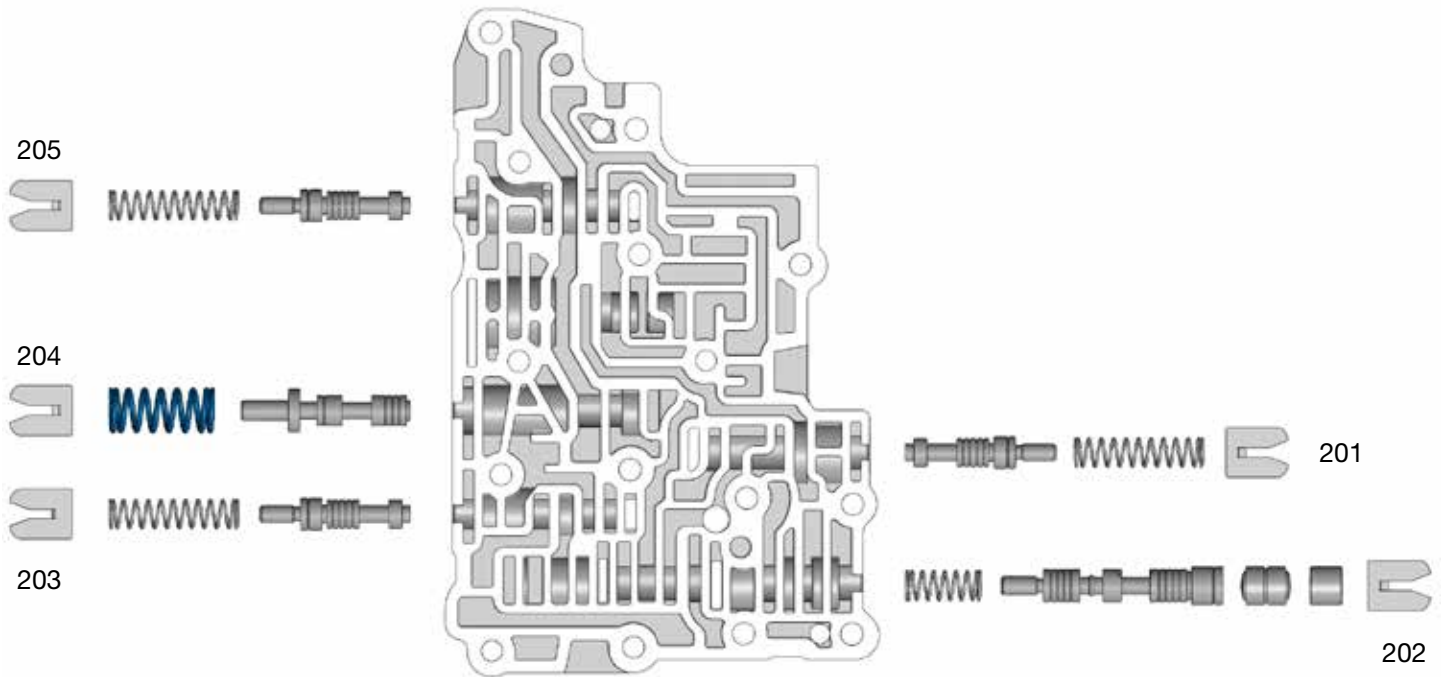


Upper Valve Body Descriptions

I.D. No.	6F50 Description
101	Pressure Regulator Valve
102	Isolator Valve
103	TCC Control Valve
104	Multiplex Manual Valve
105	Multiplex Shift Valve
106	Manual Valve
107	L/R Overdrive Clutch Regulator Valve
108	TCC Regulator Apply Valve
109	Intermediate Clutch Regulator & Gain Valve
110	Direct Clutch Regulator Valve

OE Exploded View

Lower Valve Body • 6F50 Shown



Lower Valve Body Descriptions	
I.D. No.	6F50 Description
201	Forward Clutch Latch Valve
202	Forward Clutch Regulator Valve
203	L/R Overdrive Clutch Latch Valve
204	Solenoid Pressure Regulator Valve
205	Direct Clutch Latch Valve

START A REBUILD RIGHT BY VACUUM TESTING

Vacuum testing is...

Economical A vacuum testing station has a low initial cost to set up and requires minimal maintenance.

Quick & Easy Vacuum testing is easy to learn. It doesn't take long to become skilled at rapidly testing multiple areas.

Quantitative Vacuum testing returns a specific value (inches of mercury) which, with experience, allows rebuilders to establish pass/fail standards for proper valve body function.

Reliable Test results are accurate and repeatable when routine calibration and basic test procedures are performed.

Nobody knows transmissions like
sonnax[®]

Better Diagnostics = Better Rebuilds & Fewer Comebacks

A properly diagnosed valve body means no wasted time and money on repairs which aren't needed or aren't working.

Sonnax pioneered the use of vacuum testing by recognizing that a worn valve or valve body bore can result in incorrect hydraulic pressures, leading to poor performance or failure of the transmission.

The same tools and techniques used for years in Sonnax engineering and tech labs are available to shops seeking a fast, easy and reliable method of evaluating bore wear and the effectiveness of transmission repairs.

THE TOOLS

Part No. VACTEST-01K

- Test Stand with Gauge
- Clear Test Plate
- Foam Mat
- Push-to-Connect Fitting
- Assorted Testing Tips (6)
- Testing Tip Adapter Tube
- Flexible Tubing & Flared Tubing with Flared Nut

NOTE: A vacuum pump is not included in this kit. Sonnax recommends a 3cfm vacuum pump when vacuum testing valve bodies.



Vacuum Test Stand Kit

Proper equipment and calibration is essential for accurate vacuum testing! The Sonnax vacuum test stand kit is a great alternative to building a custom testing rig.

- Brass needle valves and a built-in test orifice for easy calibration.
- Clear test plate and various test tips for tackling a variety of valve/pump body locations.
- Comprehensive assembly and calibration instructions included with each kit.

THE KNOWLEDGE

Sonnax's growing collection of guides for domestic and import applications is a valuable resource for any shop. In addition to valve/pump body diagnostics, these guides contain complete OE exploded views for handy reference.



FREE Vacuum Test Guides

- **Learn** Locations to Vacuum Test
- **Identify** Common Transmission Problems
- **Select** Recommended Parts for Repairs

All test guides are **FREE** to view,
print and download from
www.sonnax.com.

sonnax ZIP KIT



These Aren't Your Average Shift Kits®

Installing gimmicky parts or tinkering with shortcuts which ruin the integrity of the valve body will never truly repair a transmission. That means an unhappy customer might be back, asking you to fix something you've already spent time and money on.

Fast, safe and effective shift repairs are easy with Zip Kits.

Just like other Sonnax products, these kits are soundly engineered and extensively tested to ensure they solve the root cause of valve body problems.

It never pays to compromise a rebuild when your shop's reputation is on the line. Trust Sonnax Zip Kits for the easiest and most effective repairs for common shift problems.

Make	Unit	Zip Kit Part No.
Aisin AW	55-50SN, 55-51SN <i>Also fits AF 23/33 & RE5F22A units.</i>	AW55-50SN-ZIP
	60-40LE	AW60-40LE-ZIP
	60-41SN	AW60-41SN-ZIP
Ford	4R44E, 4R55E, 5R44E, 5R55E	4R44E-5R55E-ZIP
	6F35	6F35-ZIP
	6F50, 6F55	6F50-ZIP
GM	6L45, 6L50, 6L80, 6L90	6L45-6L90-ZIP
	6T40 (Gen. 1), 6T45 (Gen. 1), 6T50 (Gen. 1)	6T40-ZIP
	6T70 (Gen. 1), 6T75 (Gen. 1)	6T70-ZIP
Toyota/ Lexus	A340E/F V6 & V8 '00-Later	A340-LATE-ZIP
	A750E/F, A760E/F/H, A761E & A960E/F	A750E-A761E-ZIP
	U140E/F, U240E, U241E	U140E-U241E-ZIP
	U151E/F, U250E	U151E-U250E-ZIP
	U660E/F	U660E-ZIP
	U760E/F	U760E-ZIP
ZF	ZF6HP19/26/32, Ford 6R60, 6R80	ZF6-6R60-ZIP
	ZF6HP21/28/34	ZF6-GEN2-ZIP

Which sonnax® kit is Right for a Rebuild?

All these kits are *Transmission Digest* Top 10 Shop Products!



Line Pressure Booster Kit

Zip Kit®

The Sure Cure®

Performance Pack

Affordable kit for big performance without a big price tag.

- Simple, effective parts with no special tools required
- Increases torque capacity
- Improves shift feel without low-speed harshness

The first step in correcting common shift problems.

- No reaming or special tools required to install simple parts
- Stops leaks so the valve body works the way it's supposed to
- In-depth tech booklet for installation, plus diagnostics & repair

Comprehensive kit for big problems you don't want back.

- Restores OE shift quality
- Repairs biggest trouble areas to reduce comebacks
- Step-by-step instructions for comprehensive valve/pump body restoration

The best parts for performance & heavy duty recalibration.

- Firmer shifts under load without low-speed harshness
- Consistent recalibration results with tuning options
- Improved durability
- No special tools required