

GEARS

■ FOR THE TRANSMISSION REBUILDING INDUSTRY ■

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PHONE (805) 604-2000 FAX (805) 604-2006

Chief Executive Officer
Managing Editor
Technical Director
Advertising
Senior Designer
Circulation

Dennis Madden
Rodger Bland
Lance Wiggins
Frank Pasley
Jeanette Troub
Richard Hurley

Contributing Editors

Steve Bodofsky
Thom Tschetter
Jeff Yarbrough

ATRA Technical Staff

Mike Brown
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Randall Schroeder

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Steve Garrett
Jon Rodriguez
Mike Souza

Director of Membership & IT Svc
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Kelly Hilmer
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Editorial and Business Offices

2400 Latigo Avenue,
Oxnard CA 93030
Phone (805) 604-2000
Fax (805) 604-2006

www.gearsmagazine.com
www.atra.com

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Email: gears@atra.com

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FROM THE CEO

What If It Doesn't Work?



by Dennis Madden
members.atra.com

Things don't always work out the way you'd like them to, especially with transmission repair. You rebuild a unit — a type you've built a hundred times before — but this one bounces... it doesn't even make it off the rack. Maybe you tried a new procedure or component and it didn't work the way it was supposed to.

So what do you do? You try something else. You ask for advice. You read up on the topic, looking for fixes for similar problems. Maybe you go to a tech seminar to look for the answer.

You know it can work; you've rebuilt these units before without any problem, so why won't it work right this time? In most cases it's something you missed or failed to do properly, or a modification that backfired.

It doesn't really matter what the specific problem is: The fact is you're *going* to find it, and you're *going* to fix it; giving up isn't an option.

But when it comes to *business* problems, shop owners don't always exhibit that same determination. Too often they explain away a poor month or a bad quarter as something outside their control: "The economy has just killed business in this town," they say. And because they accept that premise, they don't take the steps necessary to invigorate their businesses.

The problem with that is it isn't true: During my shop visits I'll often stop in at shops that are just a few blocks from one another. In one shop they'll be sweeping the floor and emptying trash, while the next one is packed. How could the difference have anything to do with the economy or regional issues

when the shops are so close to each other? It can't.

So if the problem isn't regional or economic, what is it? And why is it so hard for shop owners to identify what's wrong, and what it'll take to fix it?

That's because there's a difference between identifying a problem on the bench and one in your business model: time.

Everything you do has a cause-and-effect relationship. You flip the switch on the wall and the light comes on. Cause, effect. Usually, as with the light switch, the cause and effect are right next to one another, so it's easy to recognize the relationship.

The same is true with transmission repair. You replace a rolled seal or a cracked ring, and now the clutch applies. You know you found the cause of your problem because it goes away as soon as you install the new parts.

But in business there's a huge time delay between the cause and effect. Changes you make today can take months — even years — to realize their full effect. That delay can make it all but impossible to identify whether you're getting the desired effect from the changes you made.

So at ATRA, we started to examine the most successful — and not so successful — businesses in the industry. We compared what they were doing, and looked for what they had in common. From that, we were able to identify practices and procedures that provide the greatest rewards for transmission repair shops.

That led to the creation of ATRA's *What's Working* program; a targeted

approach for discovering the differences between shops that are doing well and those that are barely surviving. Over the past five years we've learned what works... and what doesn't. There are clear examples of this, regardless of how big the shop is, how long it's been in business, or where it's located.

That's a critical consideration: It's far too easy to pour time and money into additional marketing. But, because of the delay between the cause and effect, you may never know for sure whether your investment worked or not.

That's why the *What's Working* program is so valuable: Through our industrywide sampling, we've been able to identify the procedures that provide the biggest bang for your buck, and which ones are more likely to drain your wallet, without ever producing the results you were hoping for.

This year, the *What's Working* program is going on-site to successful shops across the country to see first-hand what they're doing and how. We'll share their stories at this year's ATRA Powertrain Expo. And we'll have some of those successful shop owners on hand to tell their stories and answer your questions.

There are still some great opportunities in this industry. The trick to success is no different than at the bench. You need to dig in and discover the causes that provide the effects you're looking for. What if it doesn't work? You can learn what will... at Expo!



A Closer Look at the Toyota A750E Valve Body



by Mike Brown
members.atra.com



A750E (2WD)/A750F (4WD) Gear Ratios	
1st	3.52
2nd	2.042
3rd	1.4
4th	1
5th	0.716
Reverse	3.224

Figure 1

The Toyota A750E was first introduced in the 2003 4-Runner and Land Cruiser, and the Lexus LX400 and GX470. Since then it's become quite popular, showing up in the Tacoma, Sequoia and Tundra in 2005 and the FJ Cruiser in 2007.

These transmissions have been on the road for up to seven years and are getting a lot of miles on them. With all the cars using this transmission, there's no doubt you'll be seeing it in the years to come (figure 1).

A common complaint is the transmission falling out of gear when coming to a stop, sometimes so harsh that it feels like someone has rear-ended you. This happens because the trans has fallen out of gear due to low pressure, caused by a faulty SLT pressure solenoid. The ECM then ramps up the pressure to max and it slams back into gear. Replace the SLT solenoid is the fix for this concern. But before we get into fixes let's learn a little about this unit

Line Pressure Specifications

Line pressure tap location and

A750E/F Line Pressure Specifications

Condition	D Position	R Position
Idling	53-59 psi	73-84 psi
Stall	196-212 psi	188-205 psi

Line Pressure Tap



Figure 2

specifications (figure 2).

ATF Temperature Sensor

This transmission uses two temperature sensors, each with a different function. The ECM uses ATF temperature sensor 1 to modify pressure control

for the clutches and brakes. If this sensor fails, the ECM will prevent upshifts into fifth gear and lockup. The ECM uses ATF temperature sensor 2 for shift timing control when ATF temperatures are high.

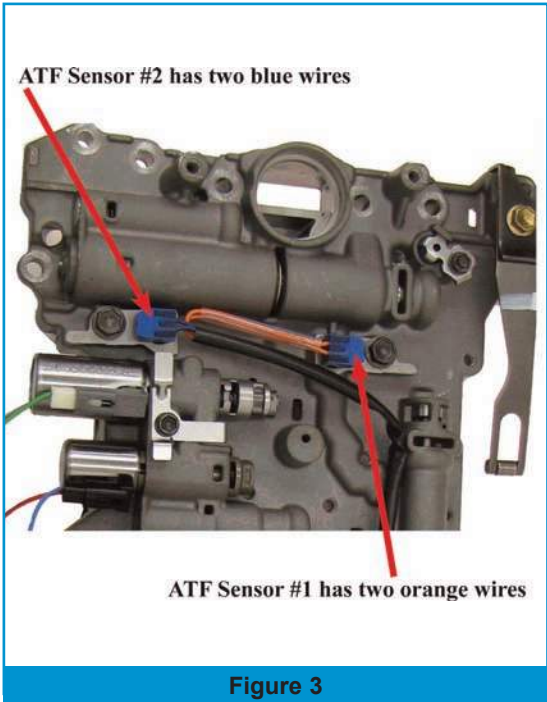


Figure 3

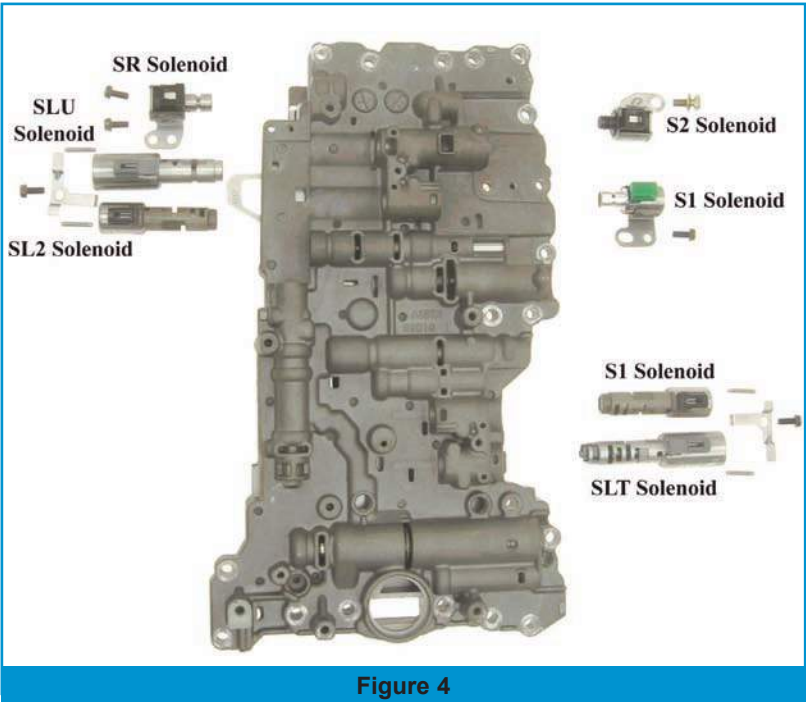


Figure 4

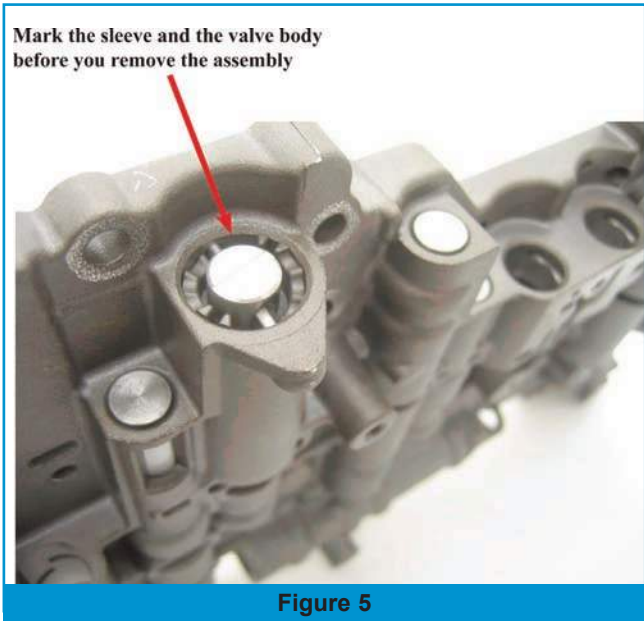


Figure 5

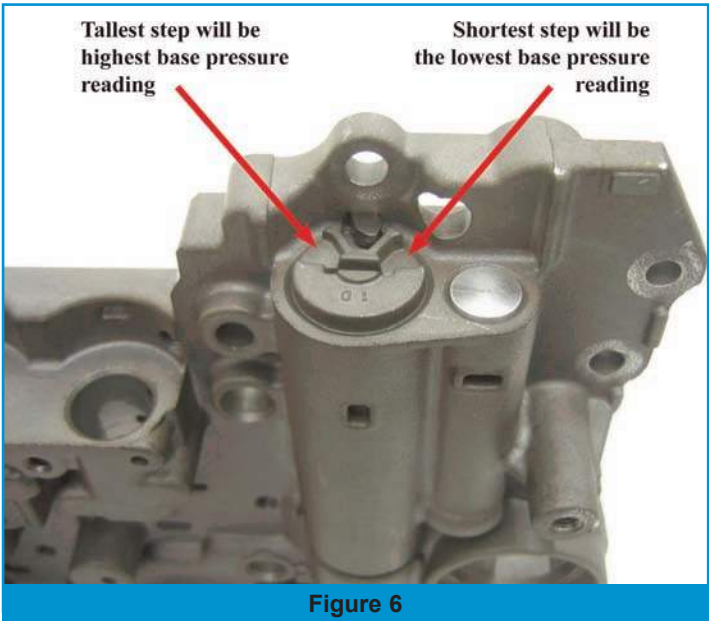


Figure 6

In some vehicles equipped with the A750E, the MIL may light intermittently, and the computer may store DTC P2742 in memory (Transmission fluid temperature sensor 2 circuit low).

To diagnose this, monitor ATF temperature sensor 2 and watch for it to short to ground intermittently. When the sensor shorts, ATF temperature sensor 2 will indicate 302°F (150°C). This is usually due to a faulty internal wiring harness; replacing the harness will correct the problem.

ATF temperature sensor 2 has two blue wires; ATF temperature sensor 1 has two orange wires (figure 3).

Solenoid ID and Location

This chart provides the repair manual ID for each solenoid in the A750E transmission, and the part name and description provided in the electronic parts catalog.

ID	Solenoid Name	Parts Catalog Description
S1	Shift Solenoid A	3-Way Transmission Solenoid
S2	Shift Solenoid B	Transmission Solenoid 3
SR	Shift Solenoid E	3-Way Transmission Solenoid 2
SL1	Pressure Control Solenoid A	Clutch Control Solenoid 1
SL2	Pressure Control Solenoid B	Clutch Control Solenoid 2
SLT	Pressure Control Solenoid D	Line Pressure Control Solenoid
SLU	TCC Pressure Control Solenoid	Lockup Control Solenoid

Figure 4 shows the solenoid ID and location.

Valve Body Disassembly

There are a few procedures you should always keep in mind when

working the A750E valve body. Two things that you need to do are:

1. Make sure you record the accumulator control pressure setting prior to removing the accumulator control valve (figure 5).

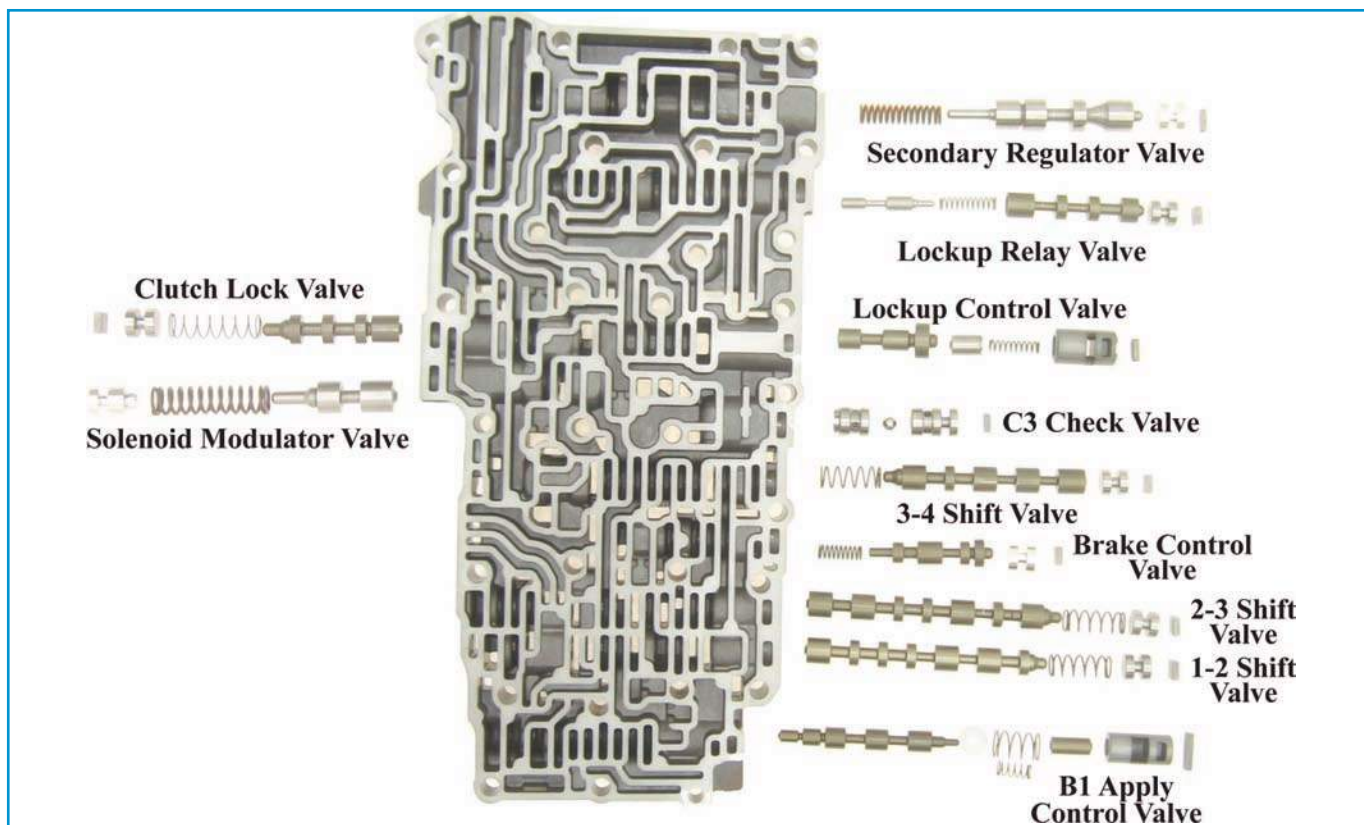


Figure 7

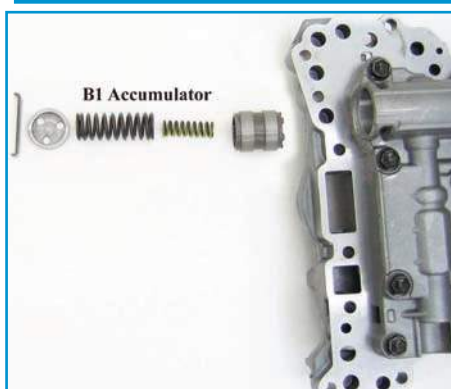


Figure 8

There's no factory preset specification. From the factory setting, you can turn the stepper in to provide a firmer shift feel. Backing the stepper out will offer a softer shift feel.

2. Make sure you record the primary regulator valve setting before removing primary regulator valve from the valve body. The tallest step will provide the highest base pressure reading; the shortest step will provide the lowest base pressure reading (figure 6).

Always inspect the valves and springs thoroughly during disassembly. Check the valves for scoring and make sure the valve bore is clean. Pay close attention to the valve layout, and make sure you put them back in the way they came out.

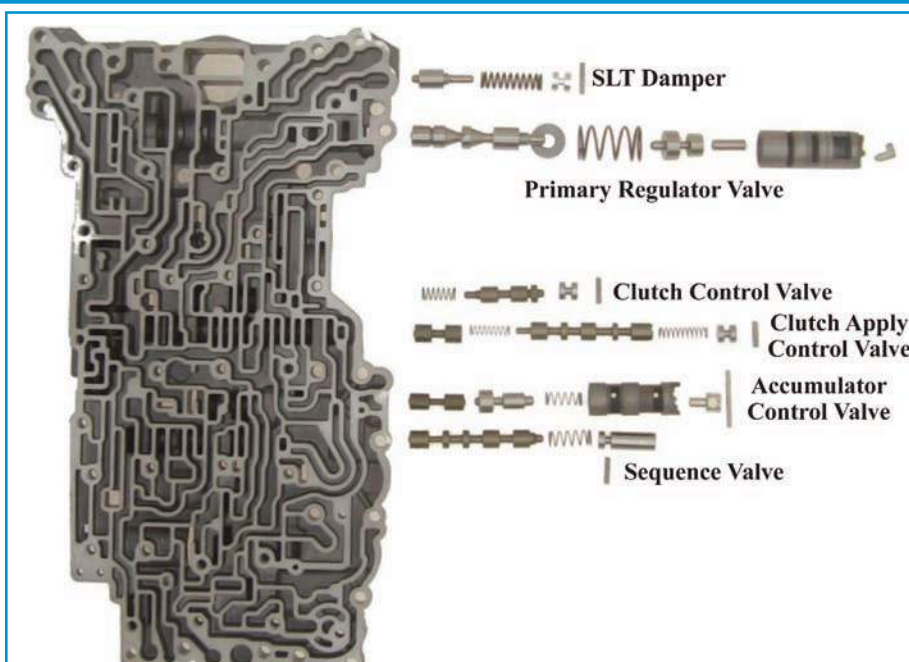


Figure 9

Exploded View Upper Valve Body I

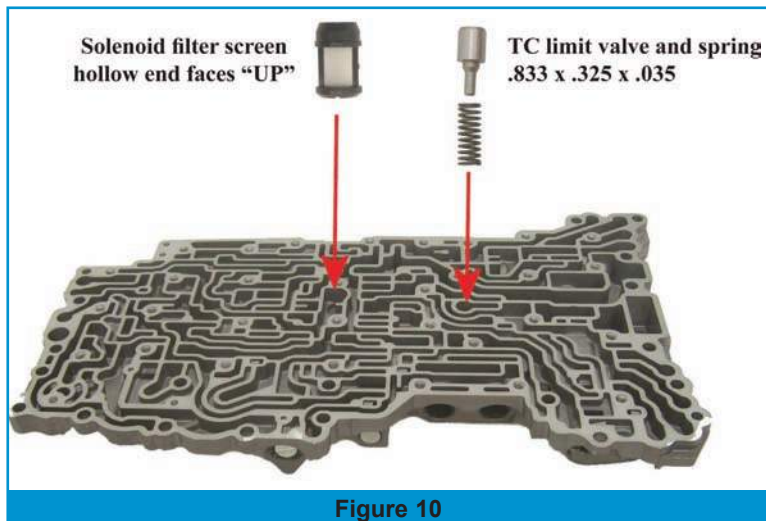
Install the checkball in the C3 check valve lineup (figure 7). If you leave this checkball out, the transmission won't go into reverse.

Always check the B1 accumulator in the upper valve body (figure 8). This is where debris will build up. It can be difficult to remove, but it's important

to take it out and clean the bore thoroughly.

Exploded View Lower Valve Body I

The primary regulator valve and the accumulator control valve are located in the lower valve body (figure 9). Record the settings for these valves.



Once you've recorded the settings, disassemble the lower valve body, check the valves for scoring, and make sure the valve bore is clean.

Always install the solenoid filter screen (figure 10) with the open end up. The screen will snap into the separator plate when properly installed. Install the torque converter check valve as shown.

Upper Valve Body 1 and 2 Checkballs

There are three sections to the A750E/F valve body. Upper valve bodies 1 and 2 are the only valve bodies with checkballs (figures 11 and 12).

All of the checkballs are composite. Make sure the checkballs are in good shape; replace any that are damaged or have decomposed. All of the checkballs are the same size: 0.217" (5.5mm).

The coast brake relay valve is located in upper valve body 2 (figure 12). Be sure to remove, clean and inspect this valve body.

Lower Valve Body 1

The purpose of the pressure limit checkball is to exhaust pressure if it becomes too high (figure 13). The limit valve will blow off at about 300 PSI.

Now that we've covered all solenoids, control valves and checkballs in the valve body, reassembling the valve body should be a snap.

The A750E valve body isn't difficult to work with. But without the proper information and understanding, you could easily cause yourself problems later on. That's why it's so important to have all the information close at hand. It's not just smart... it's *Street Smart!*

