

2-3 Flare in the 5R55E

Okay, let's stop and look at what's going on in the transmission. The solenoid application chart (figures 1 and 2) shows that in 1st gear, only shift solenoid 1 is energized, which applies the forward clutch. To shift into 2nd, rather than energizing solenoid 2, the computer energizes solenoid 3, applying the OD band. This actually overdrives 1st gear.

Then, to shift into 3rd gear, the computer turns shift solenoid 3 off and solenoid 2 on. So to shift into 3rd gear, the unit releases the OD band and applies the intermediate band (figures 3 and 4).

With that in mind, what could happen that would create a flare on the 2-3 shift? Unlike the 4R44E and 4R55E, the 5R55E applies the *intermediate band* for 3rd gear; *not* the direct clutch. At the same time, it releases the overdrive band. So if the OD band releases before the intermediate applies, you get a 2-3 flare. The flare is a timing issue; the intermediate band is applying too slowly.

So let's recap on what we've done so far:

1. We went through the unit. The forward clutch, direct clutch and coast clutch all air check okay.
2. We've installed new servos, and new intermediate and overdrive bands. The bands are adjusted properly and air check fine.
3. Line pressure tests are within specs (figures 5 and 6). We even bumped the pressure up a little by adjusting the EPC solenoid.
4. All shift solenoids are well between 22–48 ohms of resistance (figure 7).

Let's do more than just look at the valve body; let's disassemble it completely. Take the time to flat sand the valve body, making sure it's nice and flat. This will help prevent crossleaks. Don't just check the valves for wear, inspect the bores too, and make sure the end plugs fit snug into the valve body.

An important point to remember is

4R44E; 4R55E Clutch & Band Appl.

Gear	Forward Clutch	Direct Clutch	Intermediate Band	Overdrive Band	Coast Clutch	Low/Reverse Band	Overdrive Spring	Low Spring	Gear Ratio
Park									
Neutral									2.10:1
1 st	Applied								
2 nd		Applied							
3 rd			Applied						
4 th				Applied					
Manual 2							FW	FW	1.75:1
Manual 1							FW	FW	1.80:1
2 nd								FW	1.91:1
1 st									2.47:1
Manual 2							FW	FW	1.80:1
Manual 1							FW	FW	1.87:1
2 nd									2.47:1
1 st									1.87:1
Manual 2							FW	FW	1.87:1
Manual 1							FW	FW	2.47:1

Applied = Applied FW = Free-wheeling

Figure 4

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Transmission	Gear Range	Mainline Pressure (PSI)		EPC Pressure (PSI)	
		Min	WOT	Min	WOT
4R44E 2.3L 2.3L	OD 2-L	75-100	220-280	25-30	110-130
	Rev	110-140	250-300	35-40	150-170
4R44E 3.0L	OD 2-L	100-120	220-280	30-40	110-130
	Rev	150-180	250-300	40-50	170-190
4R55E 4.0L	OD 2-L	85-100	220-280	25-30	110-130
	Rev	85-100	250-300	30-40	110-130
5R55E 4.0L DVV	OD 2-L	80-110	220-280	25-30	110-130
	Rev	130-160	250-300	30-40	110-130
5R55E 4.0L SC4C	OD 2-L	80-120	220-280	40-50	110-130
	Rev	130-150	250-300	30-40	110-130

Figure 5

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Mainline and EPC Pressure Testing 4R44E, 4R55E, 5R55E

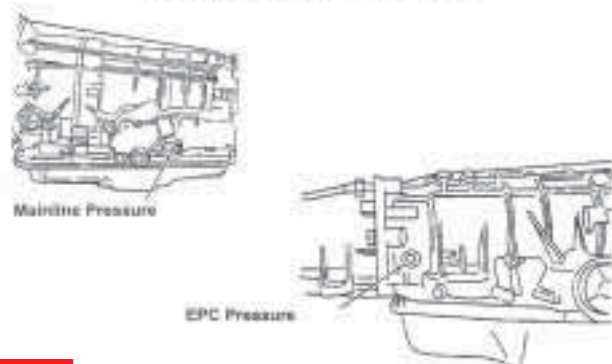


Figure 6

that even if a solenoid has good resistance, it can still fail a functional test or leak test. If you don't have the tools for testing solenoids, you're throwing money down the drain. With today's transmissions, not having a dynamic solenoid tester is like removing and installing a transmission using only hand tools, or without a lift.

We've had a lot of calls on 5R55E with a 2–3 flare and code P0733 (No 3rd Gear). Code P0733 takes you to pinpoint test A: Shift solenoid electrical circuit test. Remember, this unit has 3rd gear; the problem it has is a 2–3 flare.

Most of the time it turns out that shift solenoid 2 is leaking out the end, which delays the stroke of the 2–3 shift

valve (figures 8 and 9). When the computer doesn't see the RPM drop right after it energizes the solenoid, it assumes the unit didn't shift into 3rd gear, so it sets code P0733.

Replacing all the solenoids during a rebuild is one way to prevent this type of problem. But it's not really practical, due to the high price and lack of availability of most solenoids. And remember, just because a solenoid is new doesn't guarantee it'll function properly. The only way to be completely sure that all of the solenoids are working properly is to test them... electrically *and* mechanically.

Testing solenoids is a sure way to save time and money. It'll help you track down many problems that don't show up using a typical electrical diagnosis. And that'll help keep you from pulling units a second time. That's not just smart... that's *Street Smart!*

(See figures 8 and 9 on page 54.)

Solenoid I.D and Resistance

1. E P C	3.1-5.7 ohms	3. S S 4	22-48 ohms
2. S S 2	22-48 ohms	4. T C C	9-16 ohms
		5. S S 3	22-48 ohms
		6. S S 1	22-48 ohms

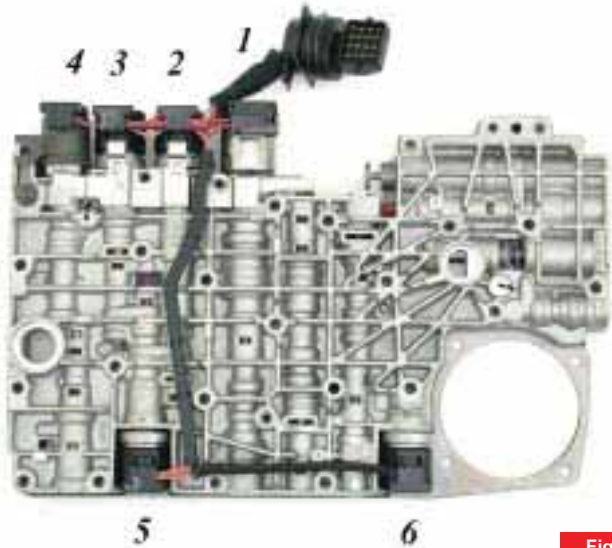
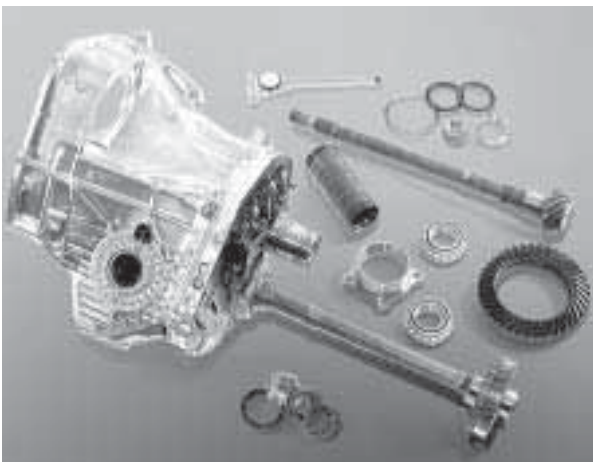


Figure 7



Subaru All Wheel Drive Differential:



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