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Lance Wiggins
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Lance Wiggins
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# 4F27E/FN4A-EL/FNR5

## Low Line Pressure

Late and soft 1-2 shifts, no movement in manual 1 and/or erratic shifts can all be caused by low line pressure. The majority of the time these symptoms may be caused by the solenoid regulator or pressure regulator valve wear.

However these symptoms can also be caused by a defective PWM solenoid “E” and/or the EPC solenoid. Knowing which direction to diagnose this concern will greatly improve your repair time.

To address these concerns clear any codes first, attach a gauge, and check the line pressure at a hot idle in Neutral and Drive. The minimum line pressure should be between 48-62 psi.

The transmission must not be in fail safe mode while checking minimum line pressure. Maximum line pressure in drive should be between 180-205 psi at a brief wide open stall. You can also check maximum line pressure with the solenoid connector disconnected in drive at 1200 RPM (do not check at idle).

**No Movement in Manual 1**

If pressure is low in manual 1, the clutch control valve can’t be shifted into the correct position because the solenoid regulator oil pressure is low.

With the clutch control valve in the wrong position, solenoid “B” oil will be misrouted to the TCC control valve. When the TCC control valve moves it will shut off the forward clutch apply pressure.

# 4F27E/FN4A-EL/FNR5

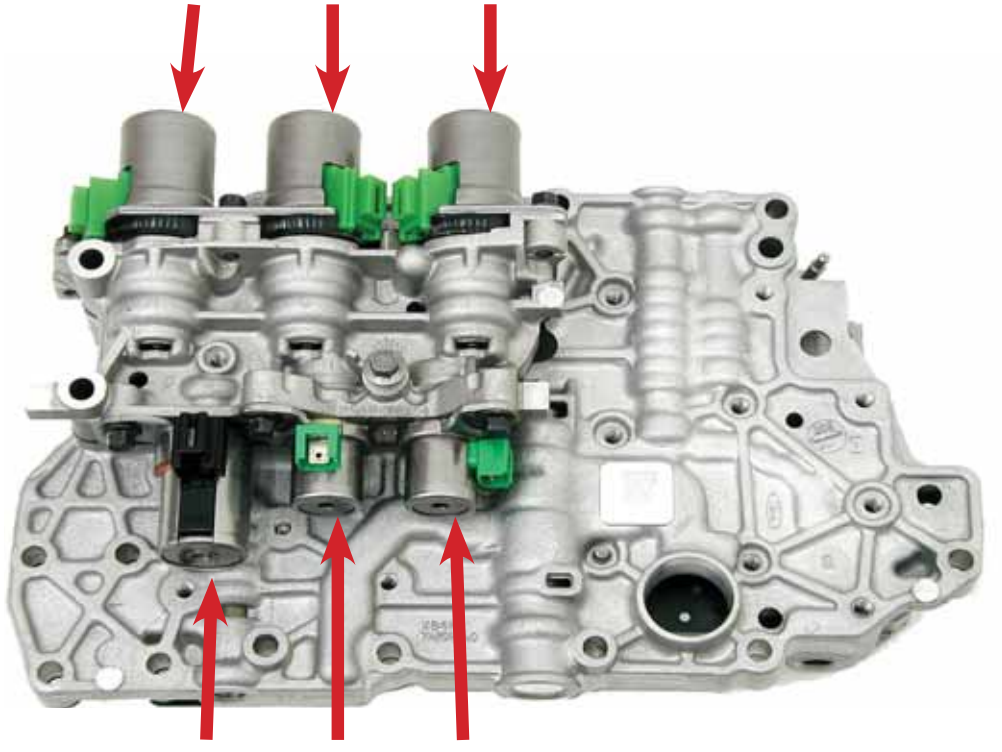
## Low Line Pressure (continued)

If solenoid “E” is not fully seated (leaking) when commanded “ON/Closed”, it will retain pressure on the release side of the 2-4 servo piston. This pressure will oppose the band apply pressure during the 1-2 shift causing a slow band apply. When selecting manual 1, if solenoid “E” produces more then 8 PSI, the pressure will stroke the solenoid shift valve. When the solenoid shift valve is upshifted, this will redirect solenoid “A” pressure to the 3-4 shift valve and shut off the forward clutch apply pressure.

If the line pressure is within specification, replace Solenoid “E” and retest. If the complaint(s) still persists, remove the valve body and inspect the pressure regulator and solenoid regulator bore for wear. Correct any wear problems in these areas. **Note: Refer to Ford solenoid ID for Solenoid “E”**

## Solenoid Identification

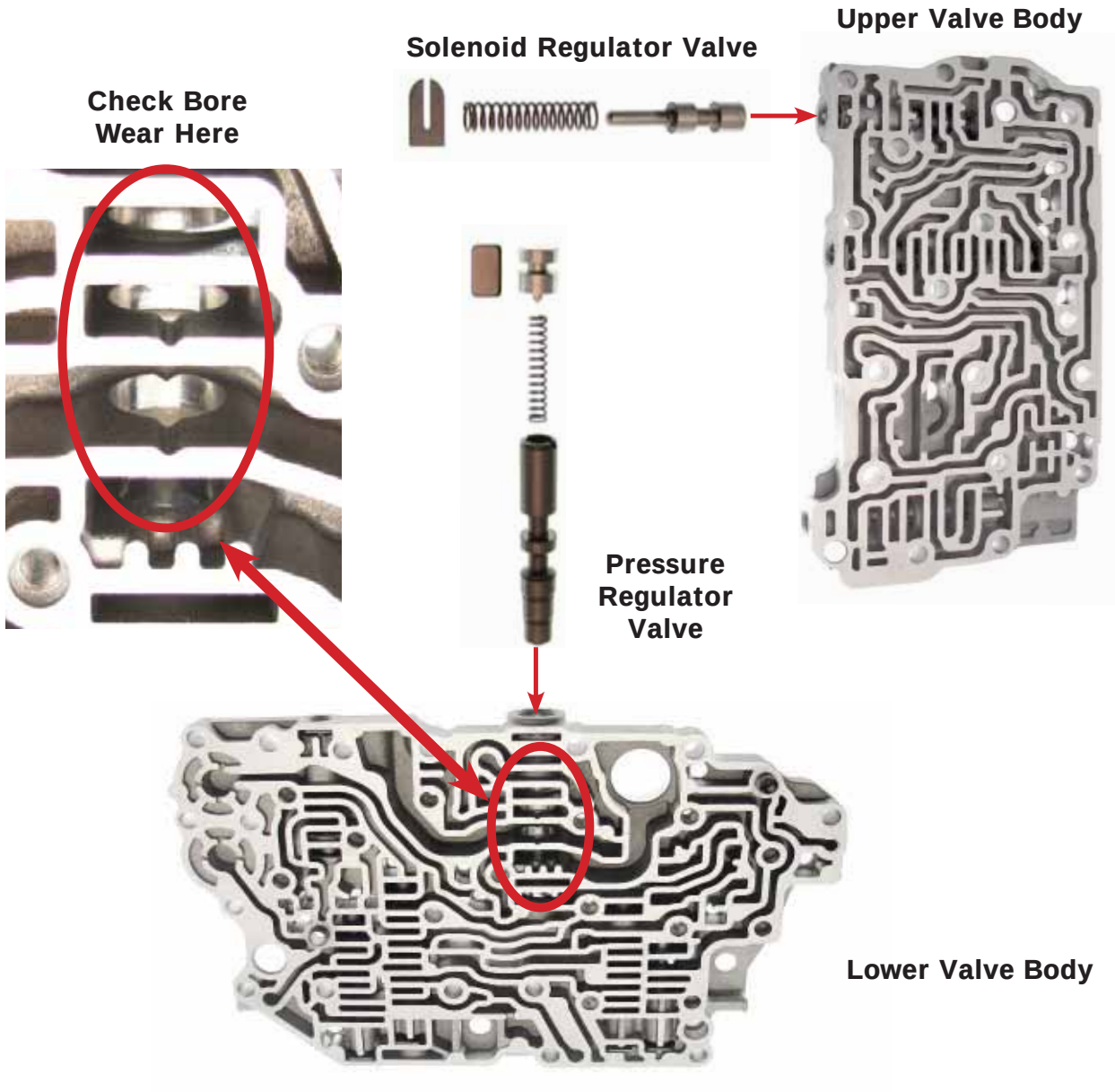
Mazda ID “SSA” “SSC” “SSB” PWM Solenoids
Ford ID “SSC” “SSE” “SSD” PWM Solenoids



Ford ID EPC SSA SSB
Mazda ID EPC SSD SSE

# 4F27E/FN4A-EL/FNR5
## Low Line Pressure (continued)

Remove the valves shown. Carefully inspect and test the valve bores. When you look closely, you can see the ridge that is formed from excessive bore wear. If the transmission is on the bench it's advisable to sleeve the servo pin bore. Be sure to check the FNR5 for similar wear problems.



# 4F27E/FN4A-EL/FNR5
## Low Line Pressure (continued)

The valve body contains six solenoid valves:
- three PWM solenoid valves (pulse width modulation solenoid valves
- two shift solenoid (on/off) valves
- one main regulating valve (variable force solenoid)

The individual clutches and bands are supplied pressure from the PWM solenoid valves and the shift solenoid (on/off) valves and thus the gears are shifted. The PWM solenoid valves allow direct actuation of the clutches and bands to ensure extremely smooth gear shifting through precise pressure regulation.

The shift solenoid (on/off) valves switch the hydraulic path to the clutches and bands, reducing the number of required modulating valves. The main regulating valve and EPC solenoid ensures that sufficient hydraulic pressure is available in all operating conditions.

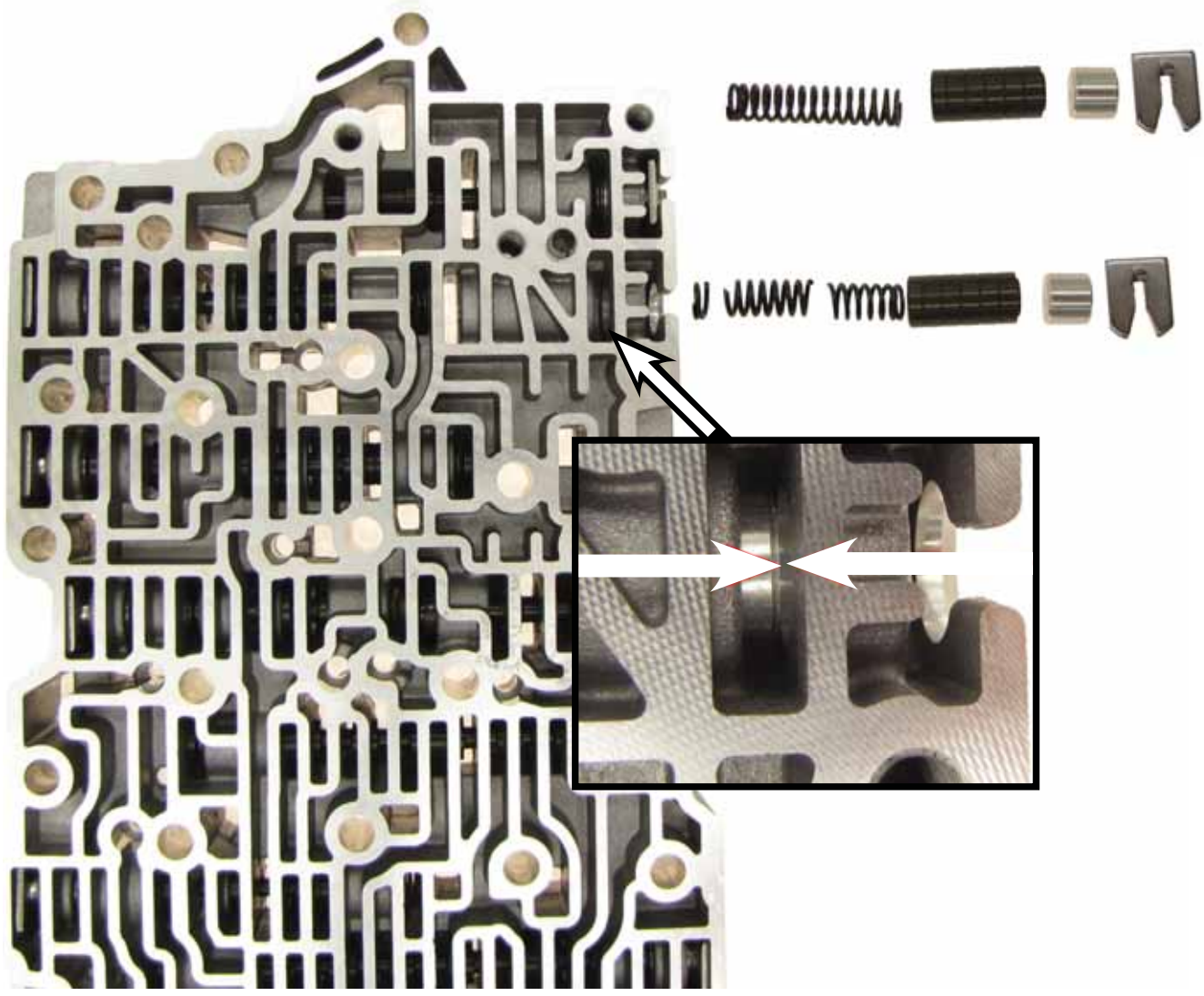
## 4F27E Solenoid Firing Order

| Ford | EPC | Sol A | Sol B | PWM C | PWM D | PWM E |
|---|---|---|---|---|---|---|
| Mazda | EPC | Sol D | Sol E | PWM A | PWM B | PWM C |
| Sol Status | N-APP | N-APP | N-APP | N-Vent | N-Vent | N-Vent |
| Park-Neut | Reg | On | Off | Off | Off | Off |
| Reverse | Reg | Off | Off | Off | Off | Off |
| D 1st | Reg | Off | Off | Off | On | On |
| D 2nd | Reg | Off | Off | Off | Off | On |
| D 2nd TCC | Reg | Off | On | On | Off | On |
| D 3rd | Reg | Off | Off | Off | Off | Off |
| D 3rd TCC | Reg | Off | On | On | Off | Off |
| D 4th | Reg | On | Off | On | Off | Off |
| D 4th TCC | Reg | On | On | On | Off | Off |
| Man 2nd | Reg | On | On | Off | Off | On |
| Man 1st | Reg | Off | Off | Off | Off | On |

# 6F50N
## No Line Rise

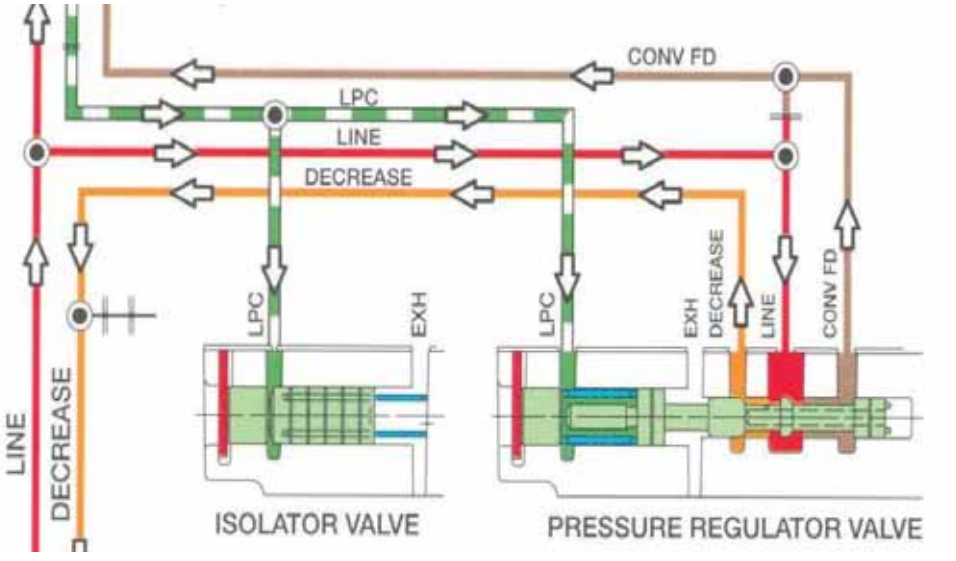
During the rebuild process it is very important to inspect the isolator valve and spring. If the valve spring breaks the end plug can move inboard and exhaust EPC pressure. This will result in no line pressure rise. The working height is 0.980” at a weight of 14 lbs.

**1.473” X .337” X .043”**
**Plain**

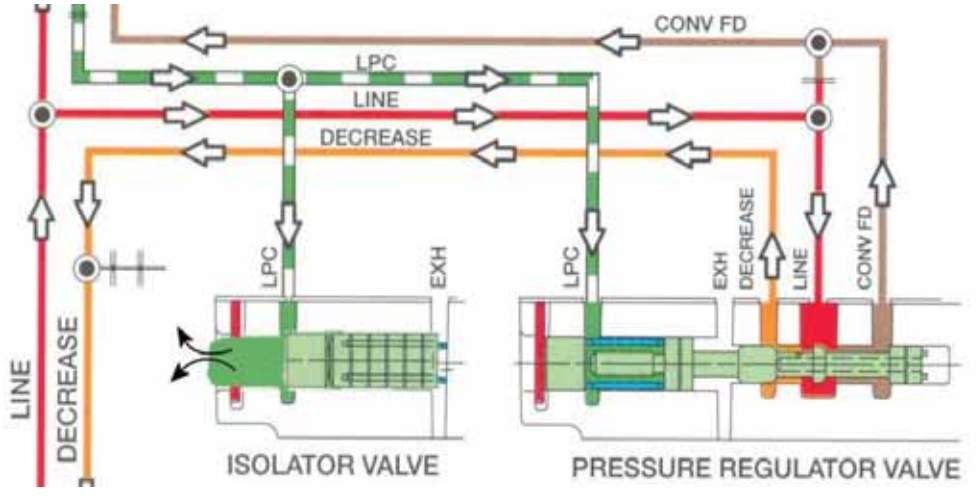


# 6F50N
## No Line Rise (continued)

The isolator valve is really an accumulator for the line pressure control (LPC) circuit. The isolator valve smooths out the pulses from the LPC solenoid.



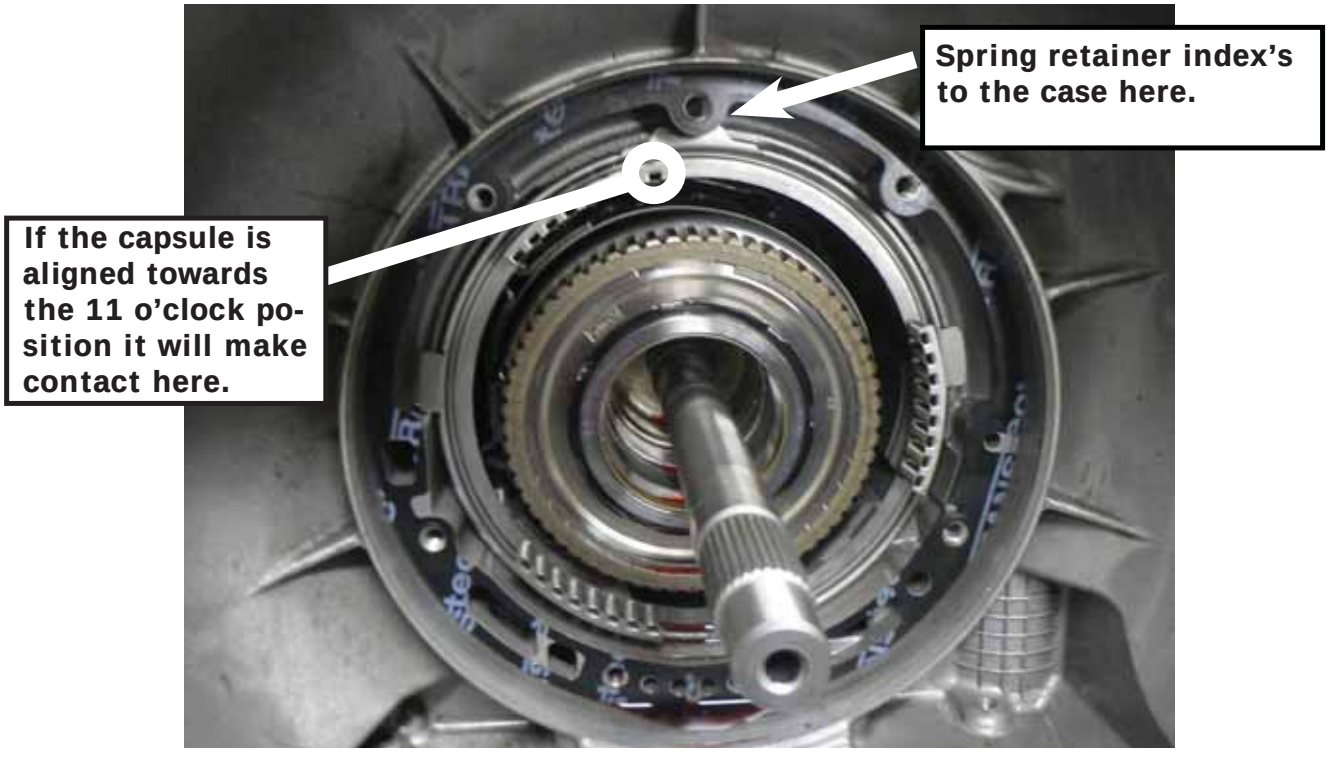

When the isolator valve spring breaks the end plug has room to move towards the middle of the valve body. This allows LPC oil to exhaust back into the sump and cause low line pressure.



# 4R70/75E
## Slips or No 2nd Gear After Rebuild

A slip into 2nd gear at medium to heavy throttle or no 2nd gear apply at all after rebuild may be caused by intermediate air bleed capsule misalignment.

The air bleed capsule in the intermediate piston must be properly aligned in relation to the spring retainer. If the bleed capsule is not at the 12 o'clock position it may come in contact with the spring retainer. This will push the capsule out of the piston and cause 2nd gear problems.




On earlier models the spring retainer and piston aligned into the pump. Instead of a air bleed capsule there is only a small orifice in the piston. This orifice could be positioned anywhere without hitting anything.

The only problem on these models, if the air bleed was placed at the 6 o'clock position it would trap air in the circuit. This mistake may cause a long 1-2 shift, during the first shift of the morning or after sitting several hours.

# 4R70/75E

## Slips or No 2nd Gear After Rebuild (continued)

**Air Bleed Check Ball Capsule Pushed Out Of Piston**

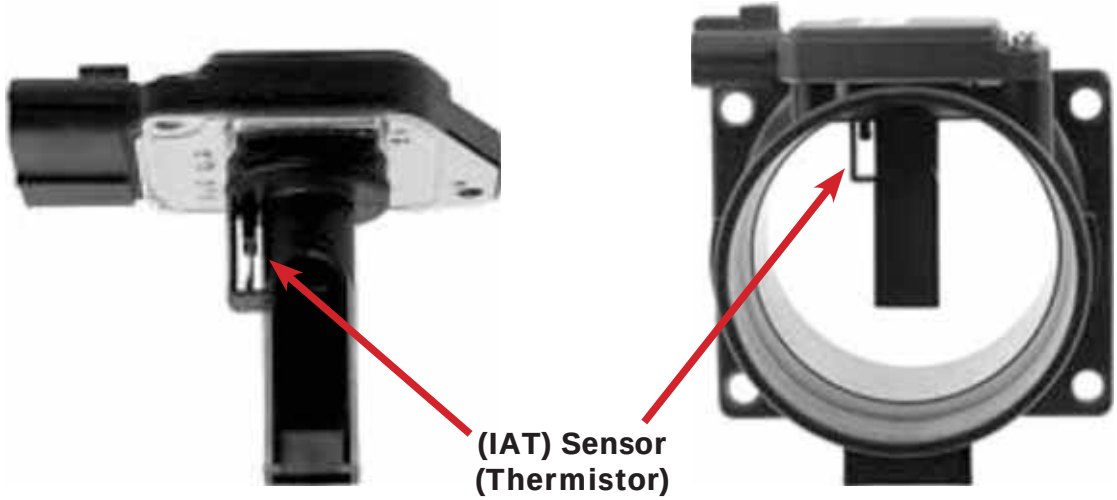
**Air Bleed Check Ball Capsule Falls Out Out When Piston Is Removed**

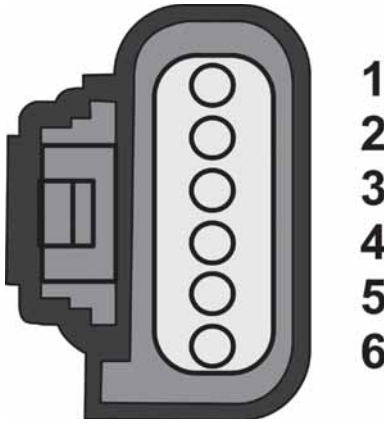
# 4R70/75E

## TCC Cycles With O/D Cancelled Only

A no lockup or cycling in and out of lockup when the overdrive is cancelled may be caused by the intake air temperature sensor signal. With the transmission in overdrive mode (not cancelled) the lockup would work fine. There may or may not be any codes associated with this concern. Replacement of the air intake sensor will likely fix the problem.

**Typical Integrated Intake Air Temperature (IAT) Sensor Incorporated Into A Drop-In Or Flange-Type MAF Sensor**




| PIN | Function |
|---|---|
| 1 | IAT Signal |
| 2 | IAT Return |
| 3 | MAF Signal |
| 4 | MAF Return |
| 5 | Ground |
| 6 | Voltage Supply |

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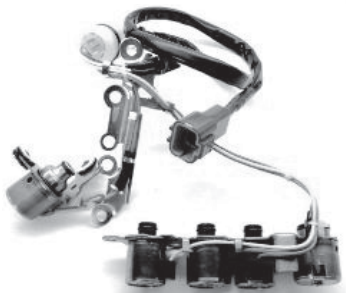

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# AODE/4R70W
## TCC Code P0740 After Rebuild

After rebuilding a 4R70W transmission a P0741 (TCC slip code) sets during the road test. This could be caused by replacing a damaged 4R70W planet assembly with a planet assembly from an AODE during the rebuild. There is a difference in ratio between the AODE and 4R70W planet assemblies. The information shown below will identify the different tooth counts for each component.

**Reverse Sun Gear / Sun Gear Shell**

| AODE | 4R70W |
|---|---|
| 36 Teeth | 38 Teeth |

**Planetary Carrier Assembly (Both Long & Short Pinions)**

| AODE | 4R70W |
|---|---|
| 18 Teeth | 25 Teeth |

**Forward Clutch Sun Gear**

| AODE | 4R70W |
|---|---|
| 30 Teeth | 31 Teeth |

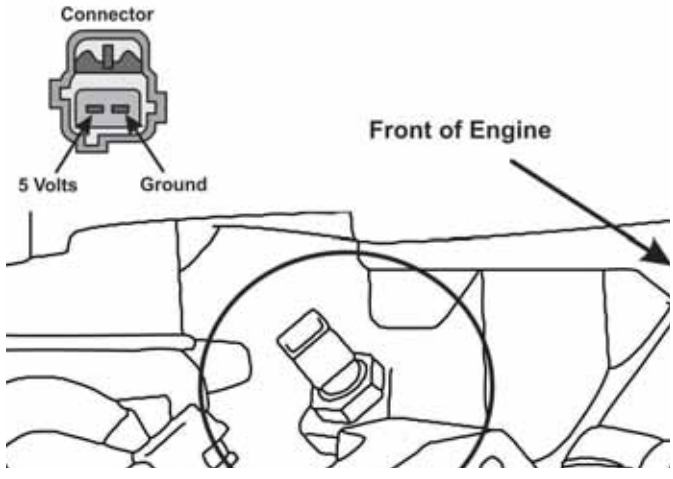
**Output Shaft Ring Gear**

| AODE | 4R70W |
|---|---|
| 72 Teeth | 88 Teeth |

# AODE/4R70W
## TCC Apply On Top of 2nd Gear

Ford vehicles equipped with an AODE or 4R70W transmission with a complaint of lockup apply on top of 2nd gear. This problem may be caused by a Cylinder Head Temperature (CHT) sensor malfunction on some models. Check the CHT sensor for a proper reading.

There may be no codes present for the cylinder head temp sensor stored in memory. Use the chart to verify if the cylinder head temp sensor is working correctly. Use a temperature probe to verify cylinder head temperature.




**(1) Value may vary by 15%.**

**(2) At this temperature, there is a voltage overlap zone where it is possible to have either a cold end (low voltage) or hot end (high voltage) reading at the same temperature. Either voltage specification listed is correct.**

| Temperature F (C) | (1) Volts | (1) Ohms |
|---|---|---|
| 32 (0) | 4.14 | 96,255 |
| 68 (20) | 3.26 | 37,387 |
| 104 (40) | 2.23 | 16,043 |
| 158 (70) | 1.04 | 5268 |
| 185 (85) (2) | .69 or 3.68 | 3215 |
| 194 (90) (2) | .60 or 3.71 | 2750 |
| 212 (100) (2) | .46 or 3.41 | 2034 |
| 248 (120) | 2.74 | 1155 |
| 284 (140) | 2.10 | 689 |
| 302 (150) | 1.80 | 542 |
| 320 (160) | 1.55 | 430 |

# 1995 To 2001 Ford 4X4 Trucks

## Misdiagnosed TCC Cycling

A complaint of engine surging between 35 to 45 mph, may be mistaken as a TCC cycling concern. This symptom may be caused by the vehicle having different size tires. All 4 tires must be the same brand, and have the same amount of air pressure and tire wear. This complaint may appear on a high mileage vehicle after a flat tire was replaced with a new spare that has no wear at all.

The wrong size tires will cause binding and the transfer case control module will constantly adjust the torque from the front and rear wheels. Giving the vehicle a surging sensation while driving on dry pavement.

Ford trucks equipped with a Borg Warner 44-05 transfer case with Torque On Demand (TOD) referred to as Control Trac. This is a constant all wheel drive system, there are no selection buttons or knobs on the dash for the driver to control 4 wheel drive.

**Borg Warner 44-05**

# 6R60

## Torque Converter Cycling

A complaint of a torque converter cycling or hanging in a lower gear after a forced kick down shift during cruise control operation at higher temperatures maybe caused by a calibration issue. There may also be an intermittent cold hesitation, surge, engine cooling fan noise and/or varying A/C discharge temperatures “only” during low speeds all caused by a calibration issues.

The vehicles affected are the 2006-2007 Ford Explorer 4 door/Mercury Mountaineer and 2007 Sport Trac vehicles equipped with a 4.0L engine and a 6R60 transmission.

There’s a new calibration released December, 2012 B43.16 or B44.8 and higher. This calibration can be obtained at www.motorcraft.com.

6R60

# 6R80

## Torque Converter Shudder Between 25-45 mph

Some 2010 Ford F150 equipped with a 4.6L engine and a 6R80 transmission built on or before 12/1/2009. May have a complaint of a torque converter shudder during low speed during light throttle acceleration between 25 to 45 mph (40-72 km/h).

The shudder and/or vibration may also be felt during downshifts and is followed by a light throttle tip in. Ford has released a new calibration to correct this concern. Refer to TSB # 10-25-13 for details.

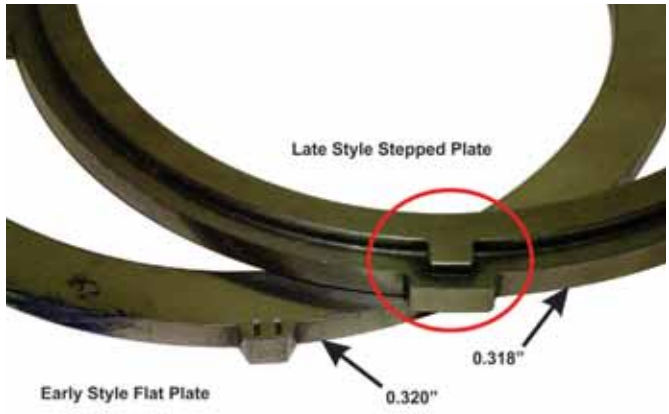

6R80

# 5R110W

## Bind In Revervse, D3 and Low, D2 Is Okay

The transmission may exhibit an unusual bind in Reverse, Drive 3, and Manual Low; Drive 2 is working fine. The transmission may feel like it's taking off in a higher gear than 1st in the O/D position.

In 2006-and-later model 5R110W, the O/D pressure plate has a raised, stepped area on one side with an extended tab toward one lug. These plates are found mostly in the 5R110W with the PTO setup. These plates are "NOT" interchangable!




After taking a close look at the transmission clutch apply chart, the one common denominator for a bind in all these ranges would be if the overdrive clutches were staying on all the time. The coast clutch is on in Reverse, Manual 3 and Manual 1, causing the bind. But it's not on in Manual 2 or the Drive range so it'll move, even though feels like it's in a higher gear.

**Component Apply Chart**

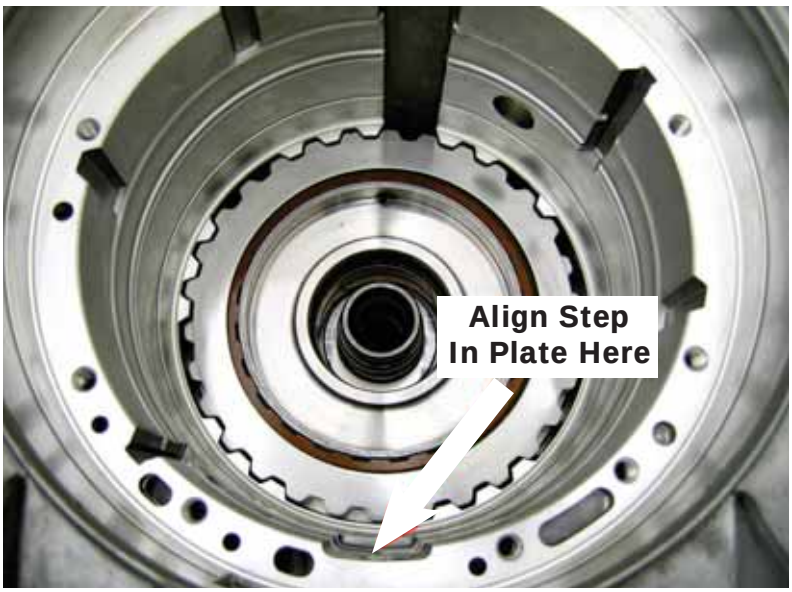
| Range | Engine Braking | Forward Clutch | Coast Clutch | Overdrive Clutch | Int. Clutch | Direct Clutch | Low/ Reverse | Ratio |
|---|---|---|---|---|---|---|---|---|
| P | | | | | | | A (a) (b) | |
| R | | | A | | | A (c) | A (a) | 2.88:1 |
| N | | | | | | | A (a) (b) | |
| O/D 1 | | A (c) | | | | | A (a) (b) | 3.09:1 |
| O/D 2 | | A (c) | | A | | | | 2.2:1 |
| O/D 3 | | A (c) | | | A | | | 1.538:1 |
| O/D 4 COLD | | A (c) | | A | A | | | 1.096:1 |
| O/D 5 | | A (c) | | | | A | | 1:1 |
| O/D 6 | | A (c) | | A | | A | | .0712:1 |
| MAN 3 | Yes | A (c) | A | | A | | | 1.538:1 |
| MAN 2 | Yes | A (c) | | A | | | | 2.2:1 |
| MAN 1 | Yes | A (c) | A | | | | | 3.09:1 |

**Cold -15°C (5°F)**
**( a ) Commanded pressures viewed on scanner**
**( b ) 30 psi until 3 mph**
**( c ) Clutch applied through the manual valve**

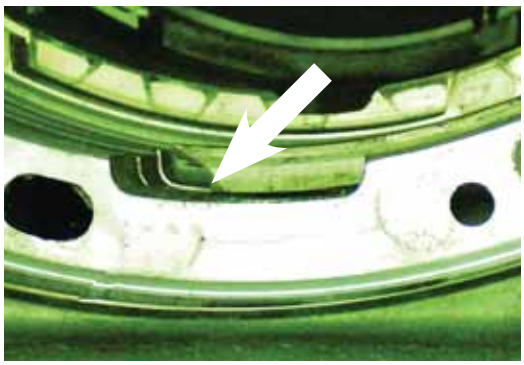
# 5R110W

## Bind In Revervse, D3 and Low, D2 Is Okay (continued)

When you install the plate in the case, the extended tab is supposed to face the valve body, or the 6 o'clock position with the flat side up. If you don't place the snap ring opening in the proper location during a rebuild (incorrect installation shown below), the O/D clutches will mechanically lock when you bolt the pump to the case. If you make this mistake, you'll have no choice but to remove the transmission from the vehicle and correct it.




**Incorrect Snap Ring Location**
**This Area Must Be Kept Open**



You can see the clutches through a small opening in the main case. You can check the clutches for free play through this opening with a scribe or thin screwdriver. You should feel noticeable movement in the clutches and steels to verify that they aren't clamped down.

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Due to the factory design of no cooler flow cold, it is extremely temperamental to fill and get a correct level, as well as running extremely hot compared to others without flow control systems. We finally broke thru with our patent pending Sure-Cool™ Full Time Cooler Flow Valve along with enhanced Lube system that nearly Triples the Flow thru the cooler and parts, especially the O.D. Planetary. These Flow Control Upgrades virtually eliminate front Planetary Burn-up due to lack of Poor / No lube. This new system also furnishes a built in cooler bypass system that if the unit is extremely cold (fluid starts to gel) or in the event the cooler is blocked/restricted, flow to the parts still occurs – protecting your investment.


Part # K5R55WNS

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Part # K0102

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# 5R55W/S

## Erratic Transmission Operation

After rebuilding a 5R55W/S model transmission, during the road test you may encounter a flare on the 2–3 shift.

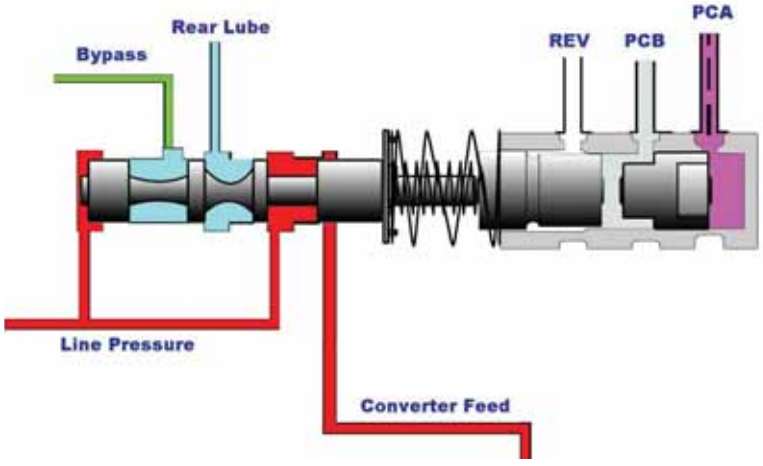
This concern can be caused by a new solenoid pack. Over the years, Ford has made a few changes to these solenoids; changes that can make a slight difference in the pressure they deliver to various systems in the transmission. And it doesn't take much of a pressure variation to alter transmission performance in a big way.

Here's how the application goes: 2002–03 Ford with 5R55W or S, and 2003 Lincoln with 5R55S, these are the early models, and they require the early design solenoid pack, Ford P/N 1L2Z-7G391-AG. 2004–on Ford with 5R55W or S, and 2004–06 Lincoln with 5R55S, these are the later models, and they require the later design solenoid pack:
- Original design #4L2Z-7G391-AA
- Updated design # 9L2Z-7G391-A

Ford recommends using only the updated design for these later transmissions. So it's one solenoid pack for the early units, and a newer, updated solenoid pack for the later ones. Replace the solenoid pack with the correct one for the vehicle you're working on. Use the part numbers to identify which one you have and which one you should be using.

Solenoid Operation: To get a handle on the problem with using the wrong solenoid pack, you need to understand how the system uses these solenoids to control the transmission operation. The pressure regulator setup in the valve body is typical.

Ford design: It has three boost passages in the boost sleeve. In the earlier units the three passages were TV, cutback, and reverse boost. In the later units the passages are TV1 (controlled by PCA), TV2 (controlled by PCB), and reverse boost (controlled by the manual valve).



# 5R55W/S

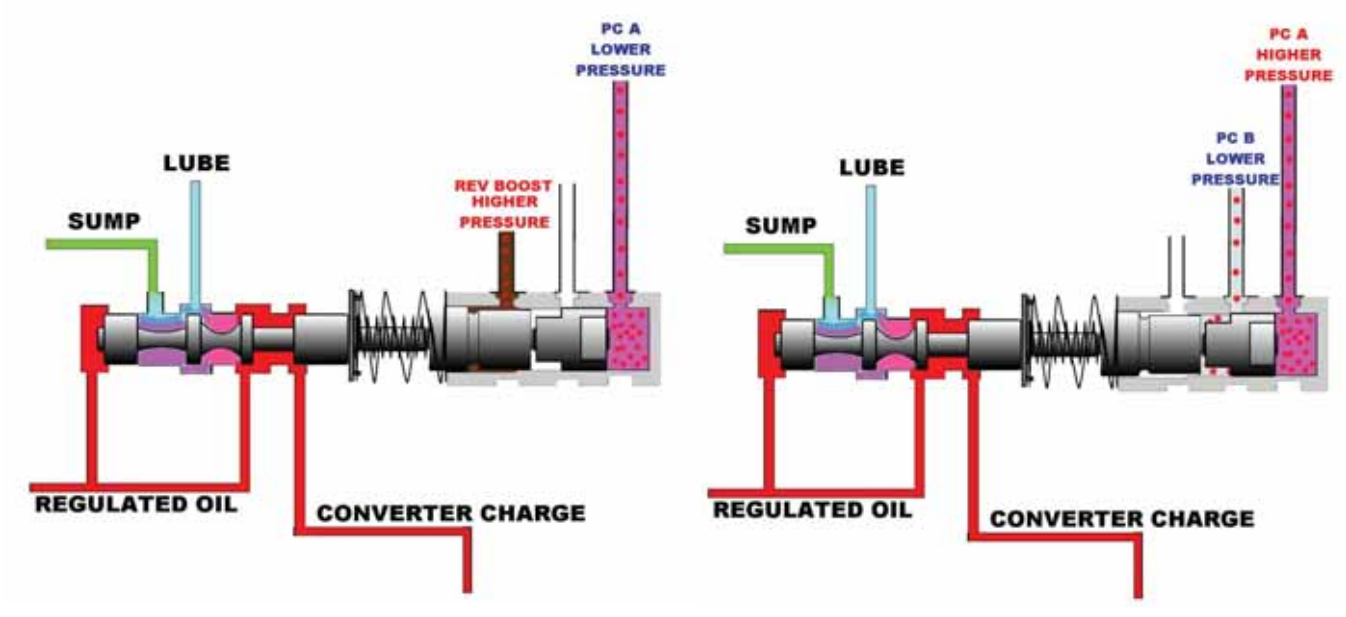
## Erratic Transmission Operation (continued)

In the boost setup, there are two boost valves: one rests against the regulator valve springs, the other is notched on both sides and is used by TV1 and TV2. When PCA applies pressure to the back of the notched boost valve, it works like all other boost valves: It pushes the pressure regulator valve to the high pressure side of the circuit.

The pressure control solenoids PCA, PCB, and PCC are variable force solenoids operated by PCM commands. PCA and PCB are the primary solenoids used to raise and lower mainline pressure, based on variations in throttle position. They control pressure boost in all gear ranges from Park to Manual 1.

PCC controls reverse engagement pressure, and is directly responsible for direct clutch application in overdrive 4th, 5th, and manual 4th gears. All of the other solenoids are on-off type shift solenoids.

The PCM uses PCA and PCB to adjust mainline pressure and move or modulate other valves. During normal operation the solenoids are pulse width modulated; these modulations have three basic ranges: lower pressure, variable pressure, and higher pressure.



# 5R55W/S

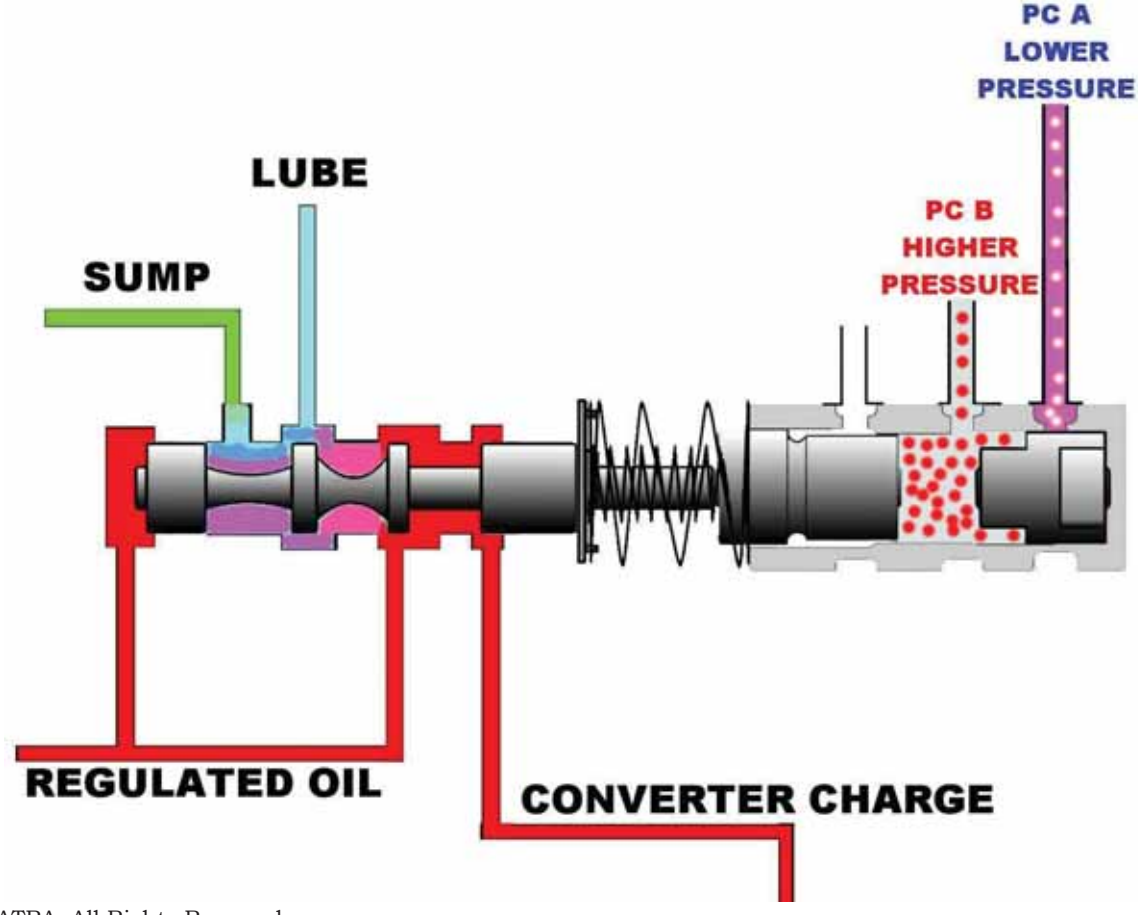
## Erratic Transmission Operation (continued)

Both solenoids can be on at the same time, but the PCM supplies opposite commands to them: Simply put, when PCA is at higher pressure, PCB is at lower pressure; when PCB is at higher pressure, PCA goes lower pressure. This causes the boost valves to split apart from one another.

The solenoids have a direct effect on shift timing and feel. The majority of the problems are either soft, flare shifts or harsh downshifts. Typically the flare shifts are on the 2-3 shift.

Other Checks: while a startling number of these calls involve solenoid application problems, there are a few other things you should look at if faced with these complaints:

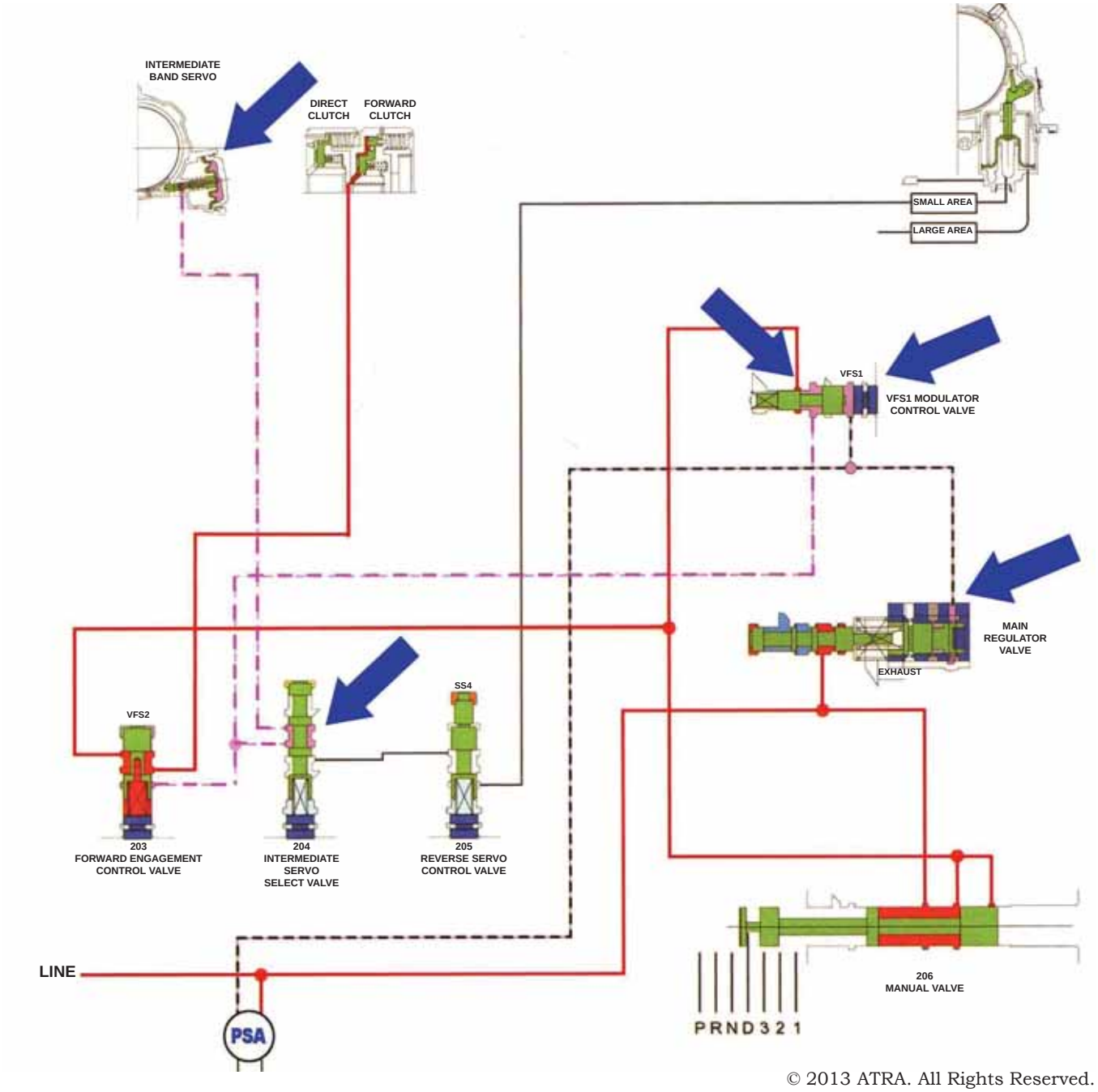
- Take a close look at the pressure regulator valve setup. Look for wear marks and replace the valve, sleeve, or the entire setup, depending on the wear you discover.
- Examine the overdrive and intermediate servo control valves and plugs. Worn plugs can leak, especially during engagements and shift timing sequences.



# 5R55W/S

## Erratic Transmission Operation (continued)

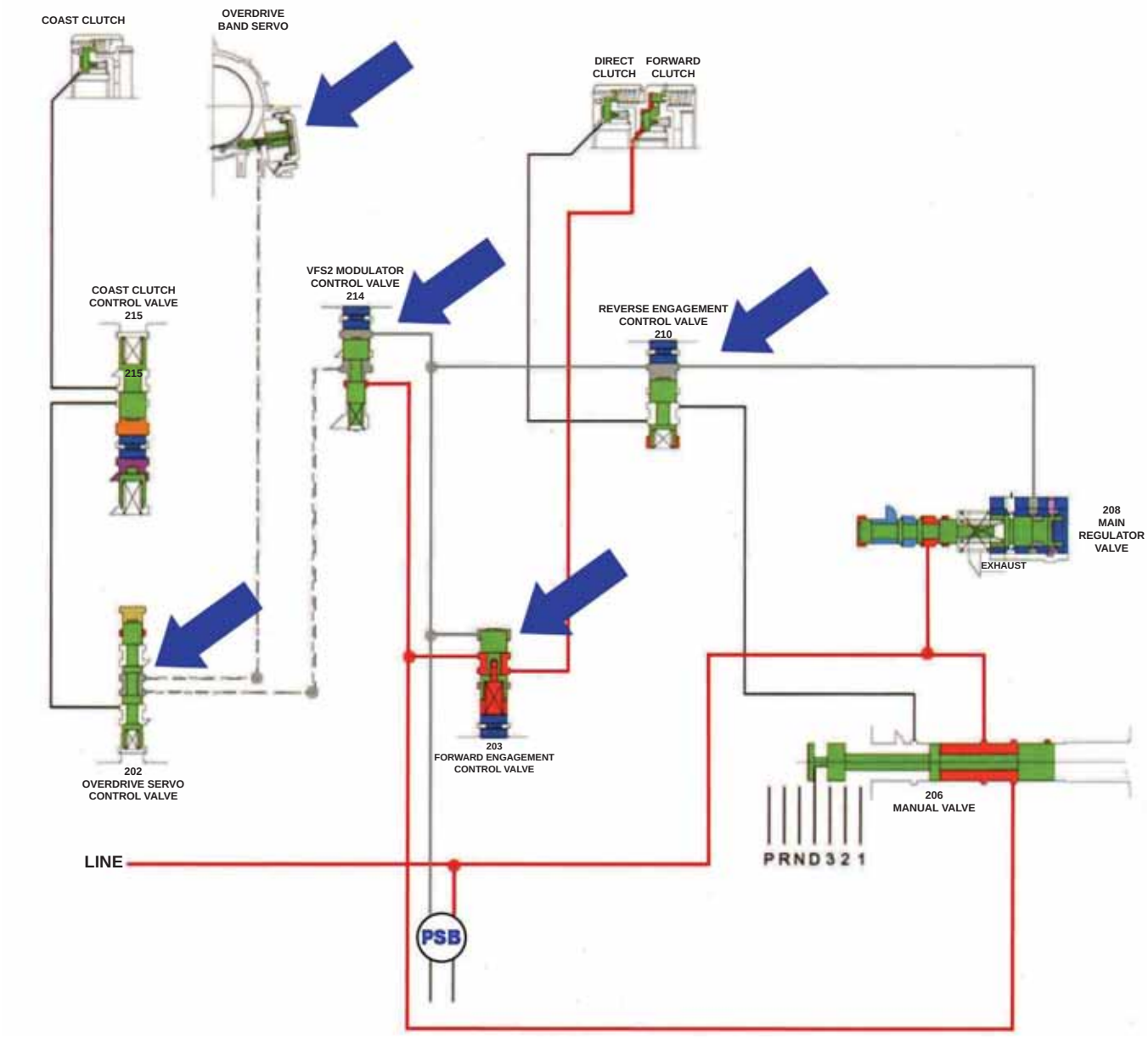
These solenoids are used for more than just controlling pressure. PCA is also used for the VFS1 modulator valve. VFS1 pressure applies the intermediate servo in 3rd gear, and applies the low/reverse servo in manual 1 and 2.



# 5R55W/S

## Erratic Transmission Operation (continued)

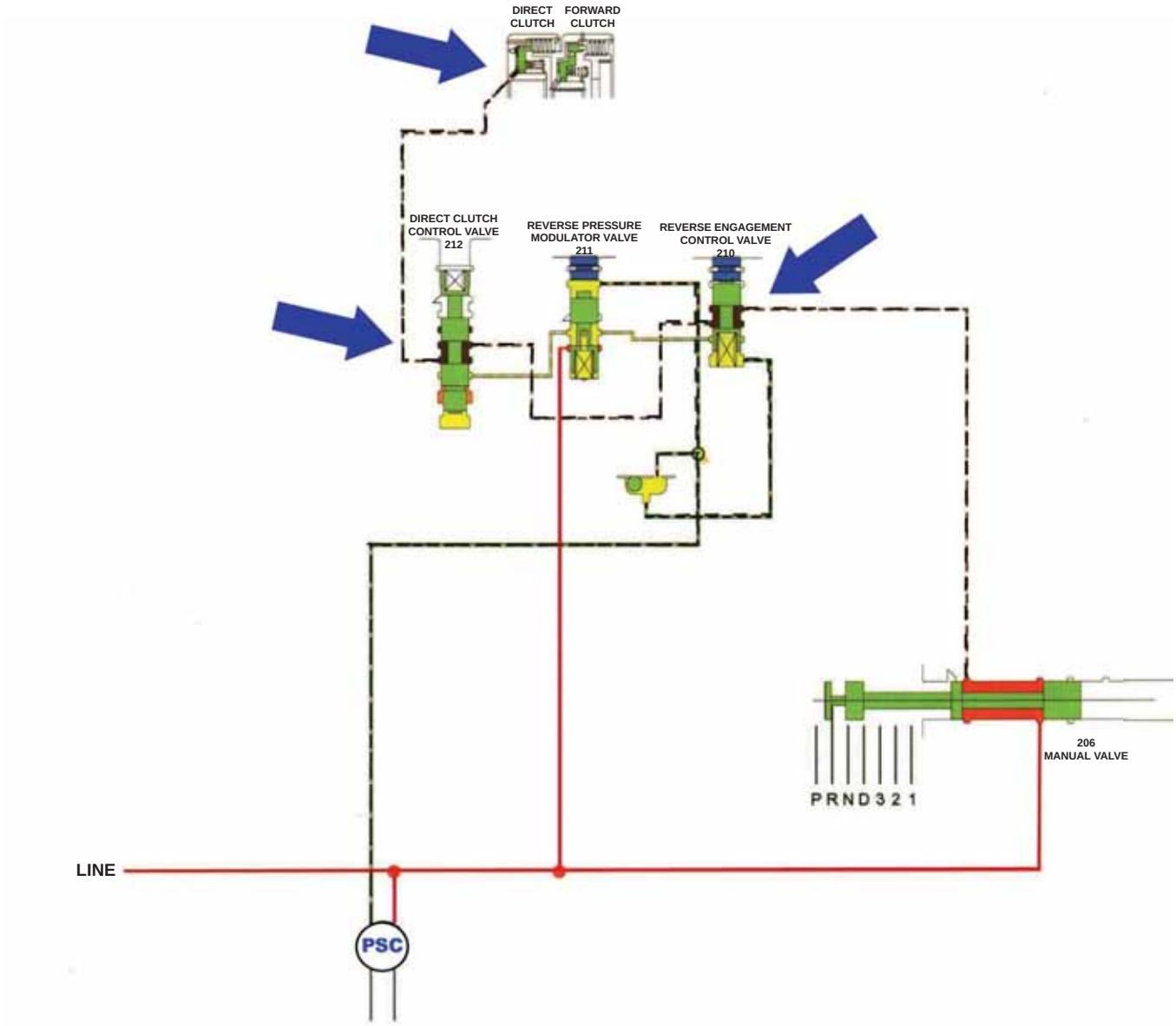
PCB also controls the VFS2 modulator valve, and forward and reverse engagement valves. The VFS2 pressure indirectly affects the feel of forward engagement and the direct clutch engagement in reverse, and it directly applies the overdrive servo and the coast clutch.



# 5R55W/S

## Erratic Transmission Operation (continued)

PCC regulates the reverse pressure modulator and reverse engagement control valves. The solenoid indirectly affects the feel of the direct clutch engagement in reverse, and directly applies the direct clutch in 4th and 5th gears.

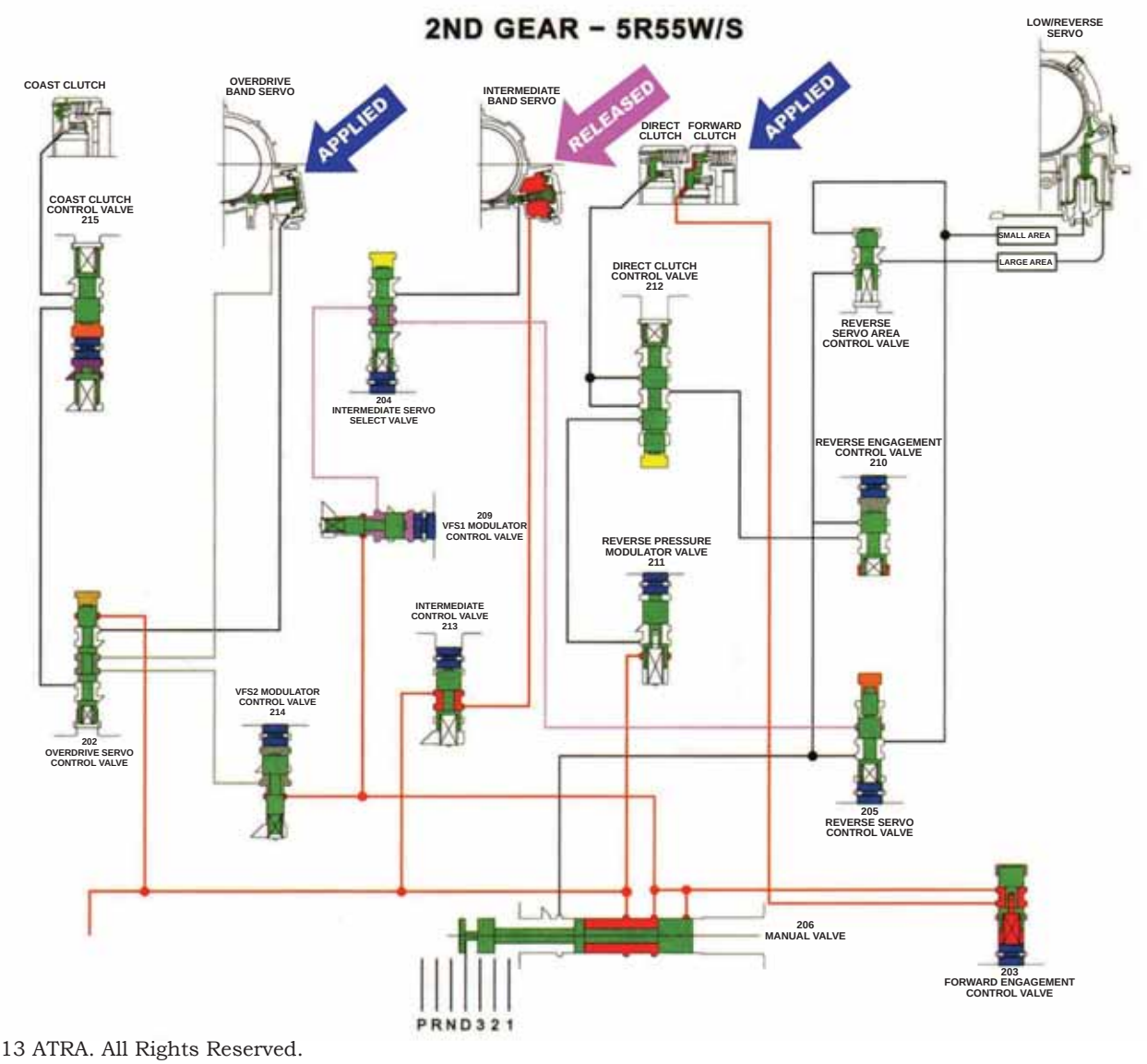


# 5R55W/S

## Erratic Transmission Operation (continued)

The forward clutch is applied in all forward gears. From 1st to 2nd gear the forward clutch and the overdrive servo are applied. This is just like the 5R55E-series transmissions; the forward clutch and overdrive band are applied for 2nd gear. From 2nd to 3rd gear, the overdrive band releases at the same time the intermediate band applies.

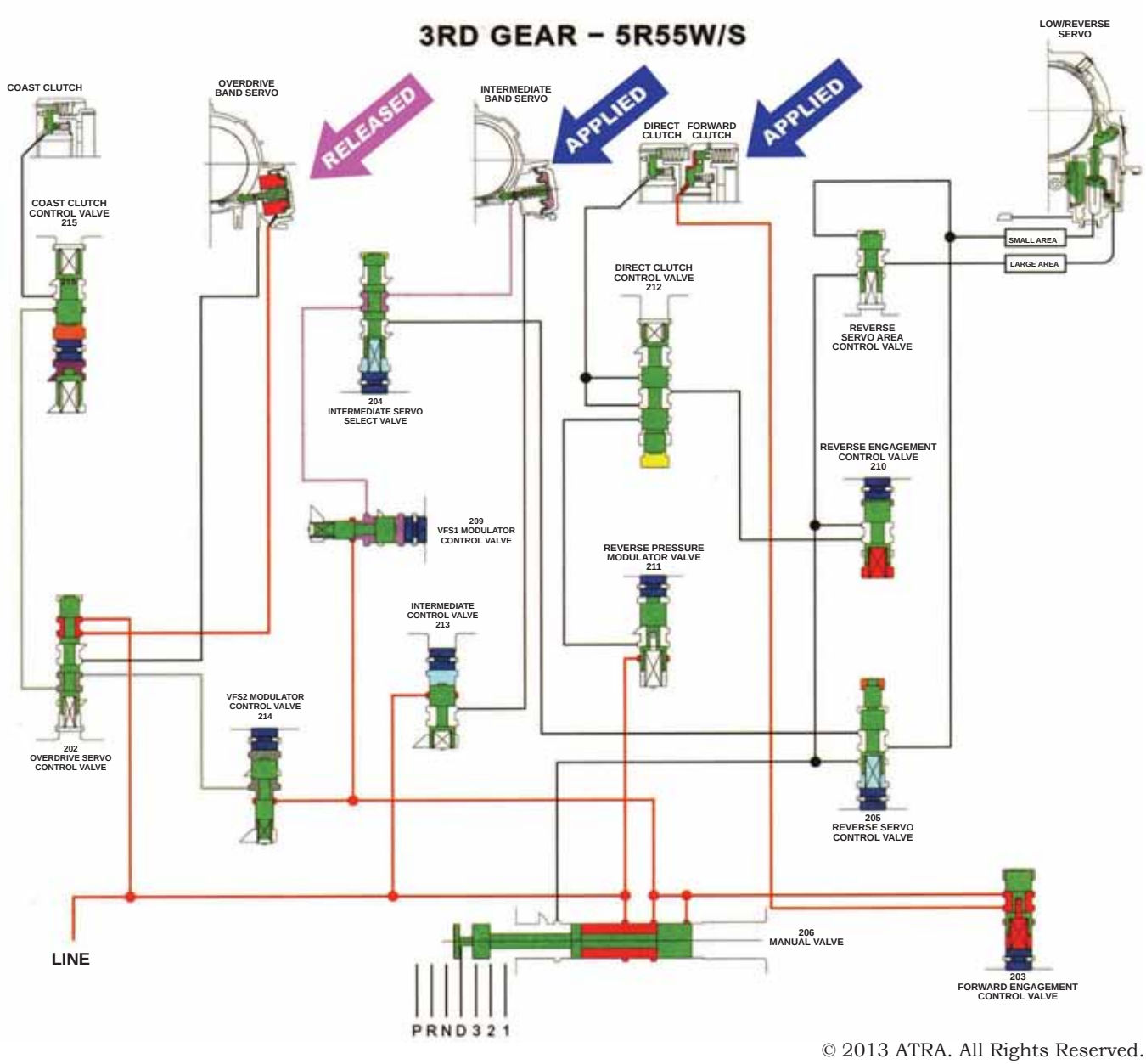
This release-and-apply process has to be precise to create a smooth, acceptable shift into 3rd gear. A slight timing variation and you can expect a flare or harsh shift.



# 5R55W/S

## Erratic Transmission Operation (continued)

Clutch apply timing has to be very precise for this transmission to shift properly and those clutches are being controlled by the solenoids. But what if one solenoid creates an entirely different pressure than another solenoid from the same computer signal? Turns out that's exactly what happens if you use the wrong solenoid pack.

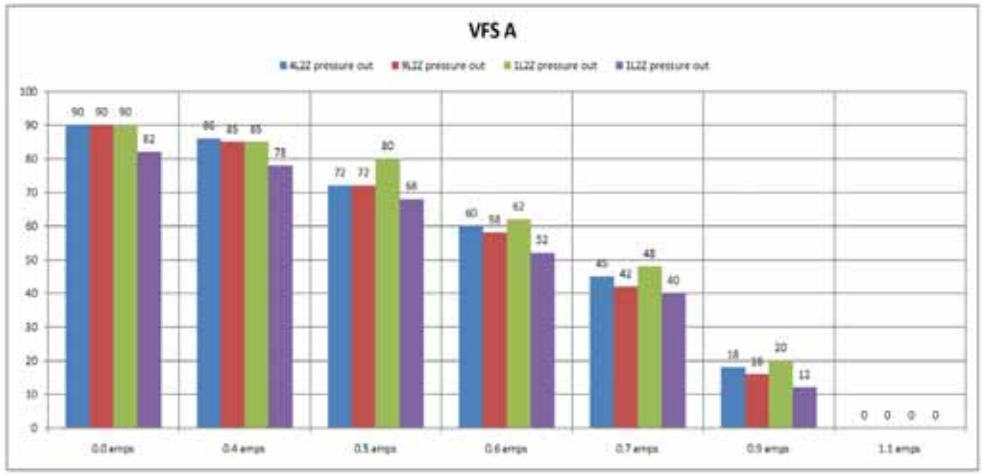


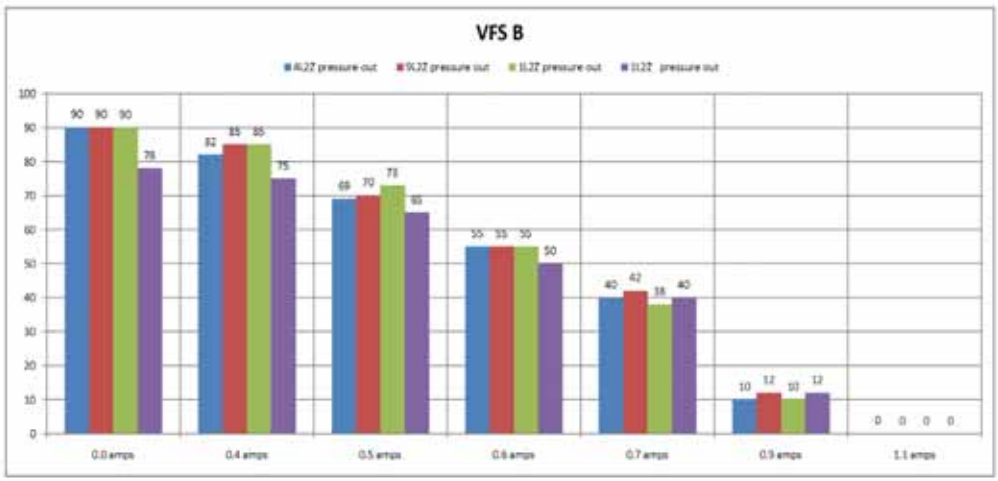
# 5R55W/S

## Erratic Transmission Operation (continued)

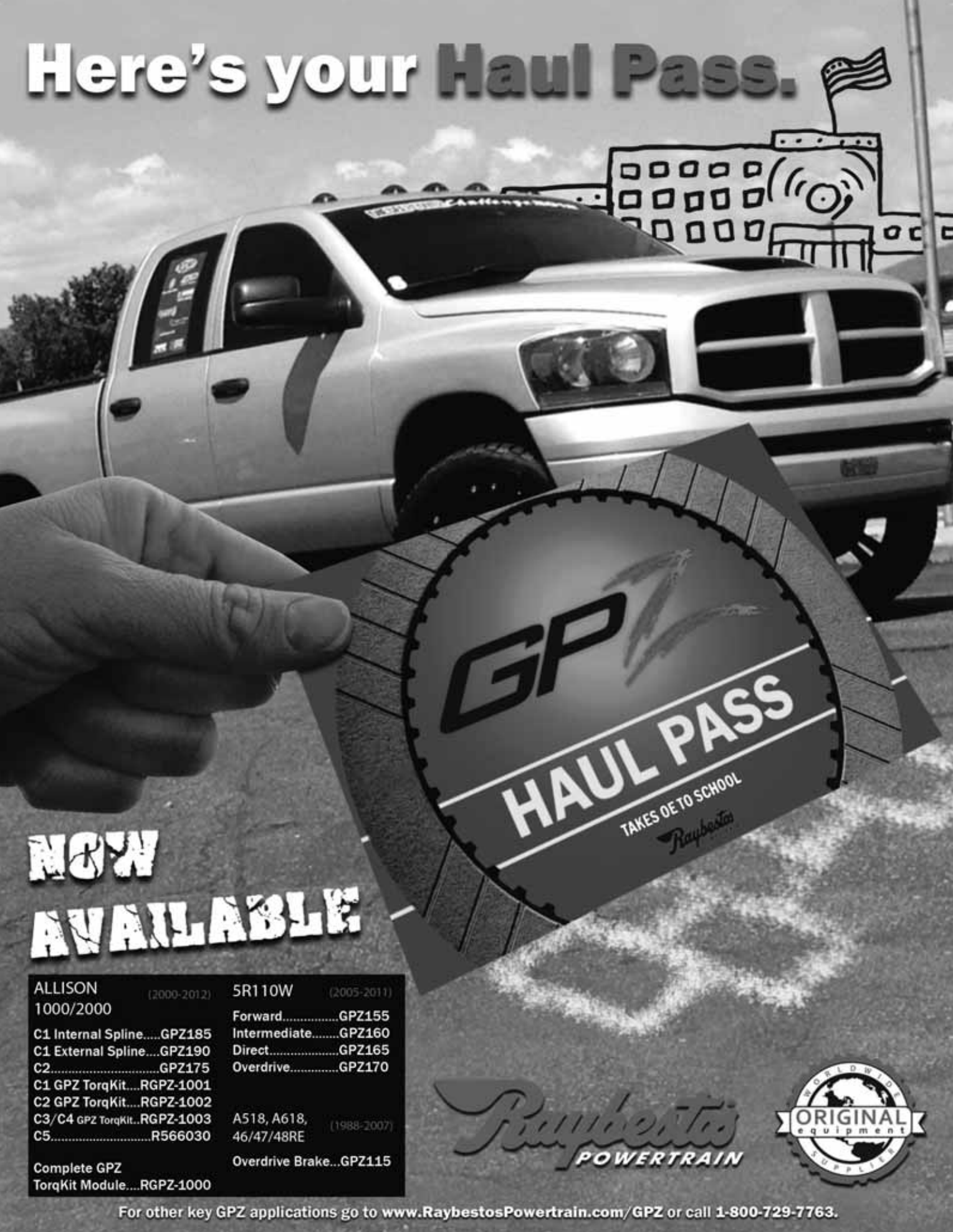
After many tests and countless hours reading hydraulic schematics, measuring valves, and applying the math. We discovered; there's a slight difference, but a difference nonetheless in solenoid output. When we tested the PCA solenoids from the different solenoid packs, we found that at 0.6 amps, there was a 4 psi difference.

That doesn't sound like much but it becomes a big deal when it comes to overall pressure in the system. The 4 psi difference equates to about 30 psi of mainline pressure, enough to cause the problems we've been encountering. In nearly every case, replacing the solenoid pack corrects the problem.



# Here's your Haul Pass.

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| 5R110W (2005-2011) | |
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# 5R55S

## Harsh Shifts, Engagements and/or Erratic Shuttle Shifts

Complaints of a harsh shifts, engagements and/or erratic shuttle shifts found on 2003-04 Lincoln LS and Aviators only. There may or may not be codes set, such as P1744.

The ECM's have been reflashed on several of these vehicles but it doesn't fix the problem. The module connections were inspected closely for corrosion and no problems were found. The valve bodies were also changed without any luck.

When line pressure was checked on the driver's side tap it was extremely high. In some cases the module was tapped with a large screw driver and pressure dropped and shifts were normal. At times the pressure may only drop and rise back up. In these cases only a new module corrected the problem.

# CFT 30
## Oil Pump Noise

The CFT 30 has a unique oil pump that uses eight pistons with springs, that are located radially around the circumference of the pump eccentric. The pistons are driven by the torque converter.

A noise concern that may be accompanied with low pressure and codes that sounds like a flexplate failure may be caused by the pump assembly. As with any noise, you need to verify the conditions.

Does the noise change with wheel speed? Does the noise happen all the time? Does the noise get louder or softer in different ranges? Obviously, if it's hard to tell or undetermined you have to start removing components.

In this case it sure sounded like a broken flexplate or flywheel. We removed the transmission and inspected the flexplate: There was no damage. So what could be causing the noise?

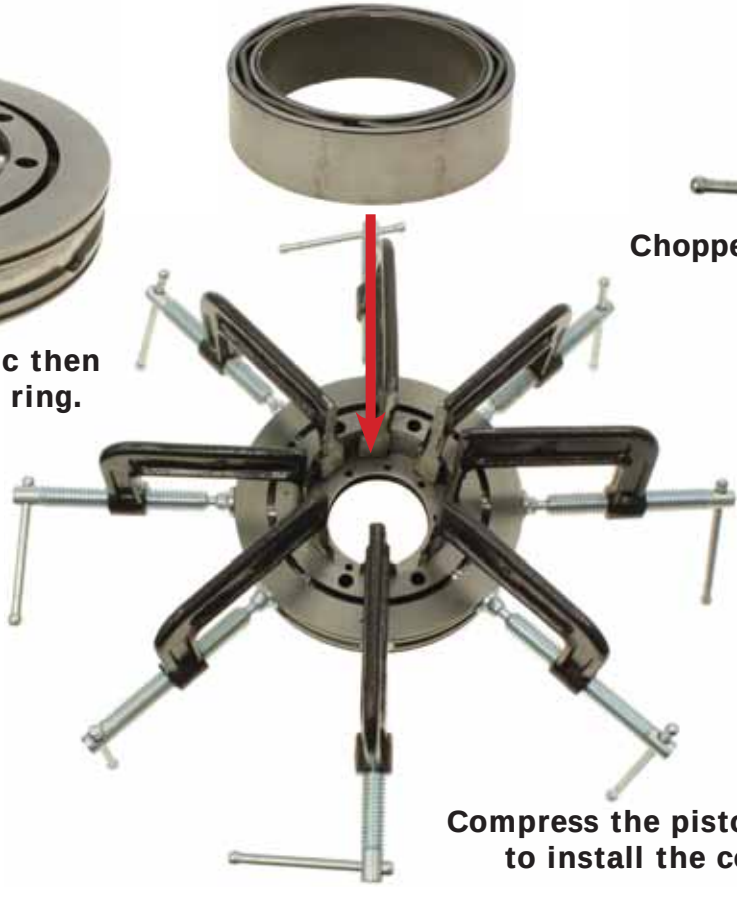
The CFT 30 has springs in the pump rotor area, so we decided to remove the pump and inspect them. We found a broken spring in the pump rotor. You have two options for repairing this: replace the pump assembly or replace the spring. The spring dimension free length is 1.715", the diameter is 0.553" and the coil diameter is 0.083". The working height is 1.312" at a weight of 40lbs.

# CFT 30
## Oil Pump Breakdown and Assembly Tools

This pump is different than anything we have seen in an automatic transmission. The technical name for this pump is “Outside impinged radial pump”. This design pump is very efficient and capable of producing several thousand pounds of pressure. Most CVT transmissions run anywhere from 250 to 1000 psi so this type of pump is a prefect fit for the CFT 30.
The pump can be taken apart to be cleaned and reassembled fairly easily with a hand built special tool. Use eight modified 3 inch C clamps to compress the pistons to install the ring and the eccentric.

**Remove the eccentric then pry out the contact ring.**

**Chopped C Clamp**

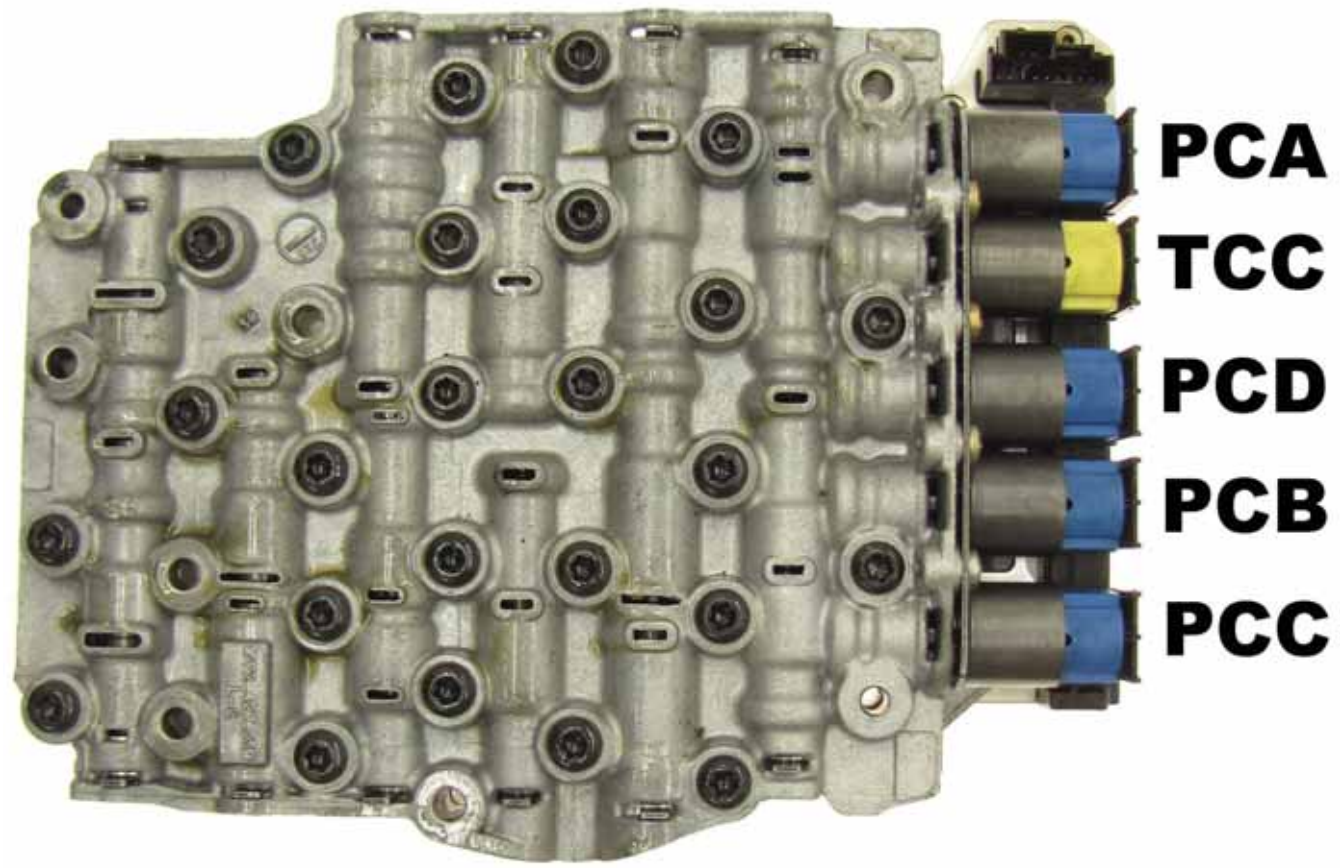


**Compress the pistons and springs to install the contact ring.**

# CFT 30
## Valve Body

The valve body has five solenoids: a main pressure control solenoid (PCA-A), torque converter clutch solenoid (TCC), primary pulley pressure solenoid (PCB), secondary pulley pressure solenoid (PCC), and forward and reverse clutch apply solenoid (PCD). All solenoids measure at 5.4 Ohms.

| | |
|---|---|
| 1. **PCA Mainline Pressure Solenoid** | **Varies according to Load** |
| 2. **PCB Primary Variator Pressure** | **Varies with Ratio Command** |
| 3. **PCC Secondary Variator Pressure** | **Varies with Ratio Command** |
| 4. **PCD Forward and Reverse Clutch Pressure** | **<10 mIA @ idle in D or Rev** |
| 5. **TCC Application Pressure TCC** | **Varies according to Load** |



# CFT 30
## Pressure Codes P0701, P0871 and P0961

This transmission has about 54 trouble codes associated with it, all of which end up with replacing the transmission, valve body, or Mechatronic unit.

Code P0701 indicates the TCM has a problem; simply put, there's something wrong with the transmission but the computer doesn't know what it is.

Code P0871 is a secondary fluid pressure sensor failure, and P0961 (PCA) pressure control solenoid A is out of range.

Code P0961 will set if mainline pressure is lower or higher than expected. This indicates a defective pressure sensor or a leak in the hydraulic system.

Code P0871 DTC will be set if the secondary variator (pulley) pressure is lower or higher than expected. This indicates a defective pressure sensor or a leak in the hydraulic system. During the initial diagnostics you need to check the pressures. Unfortunately this transmission doesn't have any external pressure ports.

To check the pressure readings on this unit use a scan tool. There are PIDS for pressure readings in the data stream. In fact, there are 45 PIDS to choose from: in this example we're going to monitor PCA-A, PCA-MES, PCC-C, and PCC-MES.

Normal pressures should be somewhere close to between 220-250 psi. If the PCC-MES PID pressures drop below the specified pressure, you have a leak in the system. Shortly after this happens the vehicle will go into limp mode.

Sometimes when the transmission is cold the unit will work pretty well, but as it gets hot it starts having issues. This isn't a Mechatronic unit problem because there is no command for low pressure. This is a valve body or sealing issue.

After disassembling the unit we found the forward clutch drum O-rings were cut and damaged. There are aftermarket companies offering seal kits and replacement parts for this unit. Replacing the seals fixed this unit, and resealing the transmission was simple with no hassles.

# CFT 30

## Pressure Codes P0701, P0871 and P0961 (continued)

Always inspect the forward clutch sealing rings for damage.

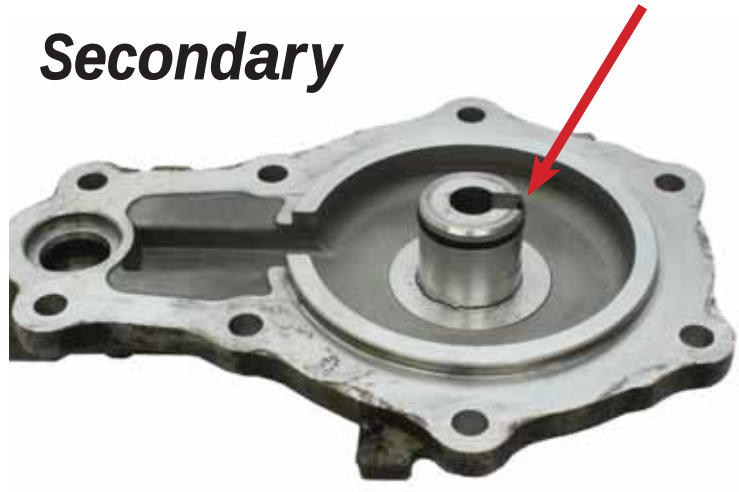
# CFT 30
## Variator Seals

There are other pressure issues that are associated with pressure codes. One common problem we're starting to see is variator tube failure.

We have two covers on the end of the unit: one is the primary variator cover; the other is the secondary variator cover. These feed tubes supply pressure to the variators.

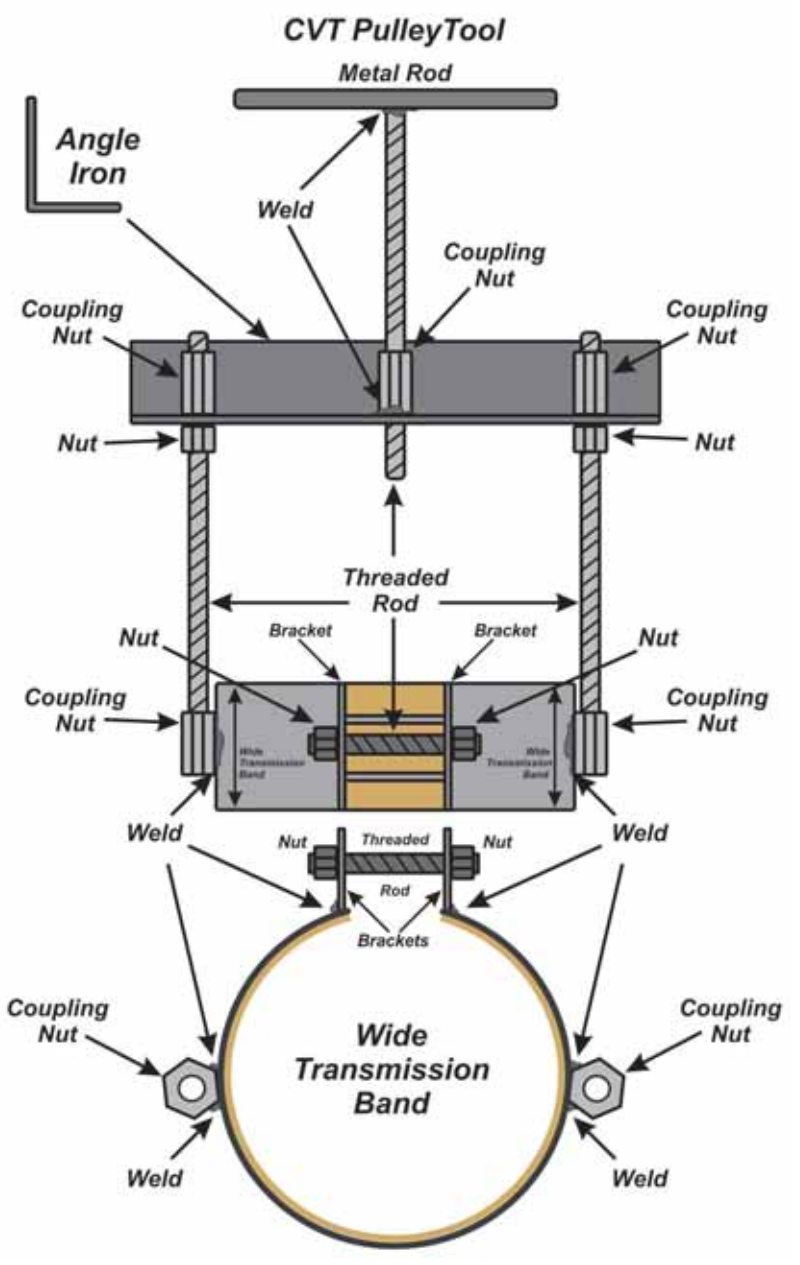
You can replace the feed tube seals and sealing rings without taking the variators and belt out of the case.

**Always replace the tube seals**




# CVT Pulley Tool
## Universal Tool

Some shops are making a universal CVT pulley tool. The diagram below is a general idea of how the tool should look. With some angle iron, threaded rods with bolts a general pulley tool can be made.



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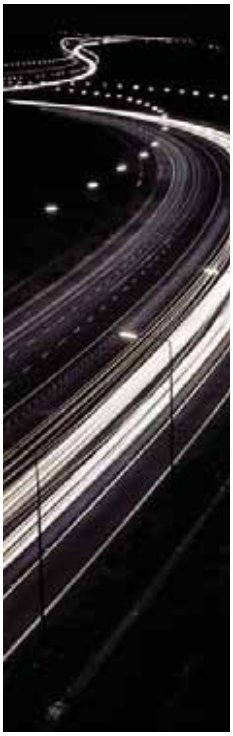

The SF-99 servo pin bore repair system is a set of tools that allow you to easily repair worn servo pin bores with no special machinery, all that is needed is a drill and a hammer.

The system is available for:

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- 180/4L30E
- 700/4L60E
- 375/400/4L80E
- 4T60/65E
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**5RW**: 5R55W/S/N. The 5RW kit repairs both the intermediate and overdrive servo pin bores, stopping the leak of both apply and release oil from both servos.

**4F27:** 4F27E & FNR-5 (FN4A-EL, FS5A-EL). The 4F27 sub-kit repairs the 2/4 servo pin bore, stopping the leak of direct clutch oil.


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