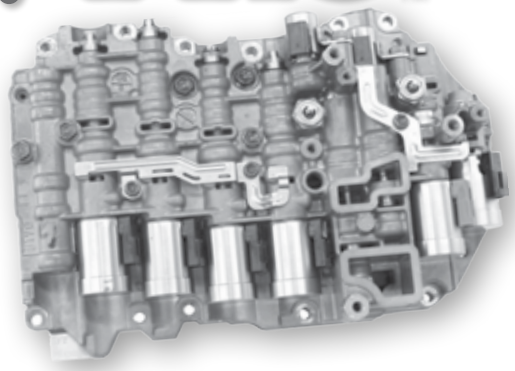
VALVE BODY PRO™

110% CUSTOMER SATISFACTION and Absolute BEST QUALITY!



That's a promise with a 1 Year Guarantee on our Reconstructed Valve Bodies.

Reconstructed with the Latest PROProven Industry Components.

Because Valve Body PRO is customer driven, we are constantly looking for ways to help our customers solve problems and increase their business. Please read on . . .

Tired of Cleaning Solenoids?

Instead of cleaning the bushings, why not change them!

Then it's time to try a PROProven Solenoid Repair Kit

- Engineered by Valve Body Pro and is PROProven
- Solves the most common drivability complaints caused by pressure control solenoids
- Includes bushings and solenoid housings
- Exclusive raised back to prevent solenoid electrical codes

We are your source for Remanufactured Solenoids

SOLPRO, is the first company dedicated to quality remanufactured pressure control solenoids.

- SOLPRO solenoids are re-engineered from the inside out.
- Behind each SOLPRO solenoid are months of research and testing which have resulted in designs and parts that have been engineered to exceed OEM quality.
- Each solenoid is completely stripped, remanufactured and tested before it becomes a proven SOLPRO solenoid.
- SOLPRO solenoids give you more options in serving your customer and your own in-house needs.

SOL PRO® BUILT BY THE PROS FOR THE PROS

www.SolenoidPro.com

Please contact your parts supplier or Valve Body Pro for price and availability

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All
Erratic Transmission Behavior

Chrysler vehicles with bad alternators can emit an AC signal. This AC voltage signal disrupts or bleeds into the speed sensor, speedometer and ABS circuits causing corrupt signals.

Here are some of the complaints that are associated with AC signal interference.

- 41TE or 45RFE double bump forward engagement, may only occur once per ignition cycle
- Output and input speed sensor signal is erratic while vehicle is stationary
- Speedometer shows MPH display while vehicle is stationary
- Turning on the air conditioning or other high current draw devices may create abnormal behavior in OSS, ISS and speedometer readings
- Shift or TCC cycling

If a vehicle has any of these symptoms listed follow this procedure:

- Disconnect the battery negative terminal
- Disconnect the 12 volt lead to the alternator and temporarily insulate terminal connection (wire end)
- Hook up the battery and perform another road test

If the problem(s) are gone with the 12 volt lead disconnected the alternator needs to be replaced.

Once the engine is running the alternator takes over and supplies the needed voltage to run the electrical system and to replenish the battery voltage loss during starting. If the battery cannot hold a charge the alternator output will be used to keep the battery voltage up.

This could compromise the required alternator output voltage needed to keep the electrical system running and may lead to trouble codes and driveability complaints. Open circuit voltage must be 12.6 volts, charging voltage should be 13.5-15 volts.

42/46RE
Overdrive Clutch Failure After Repair

Burnt overdrive clutches can be caused by a bad piston casting. Check the piston for proper machined area. If the area has not been machined follow these simple steps.

If the piston is not machined properly the piston will be wobbly when installed. You can replace the piston or if you choose to repair the piston follow these simple steps:

42/46RE

Overdrive Clutch Failure After Repair (continued)

Mark the head of the bolt with paint or a marker that will transfer to the piston surface.

After the mark has been identified use a 1/2” drill to drill the area out. Use caution doing this, making sure not to drill though the piston. The goal is to only drill enough out to clear the bolt head.

42/46RE

Overdrive Clutch Failure After Repair (continued)

The completed hole should look like this. Install the piston to make sure there is enough clearance.

68RFE

No Forward Movement, Reverse Ok

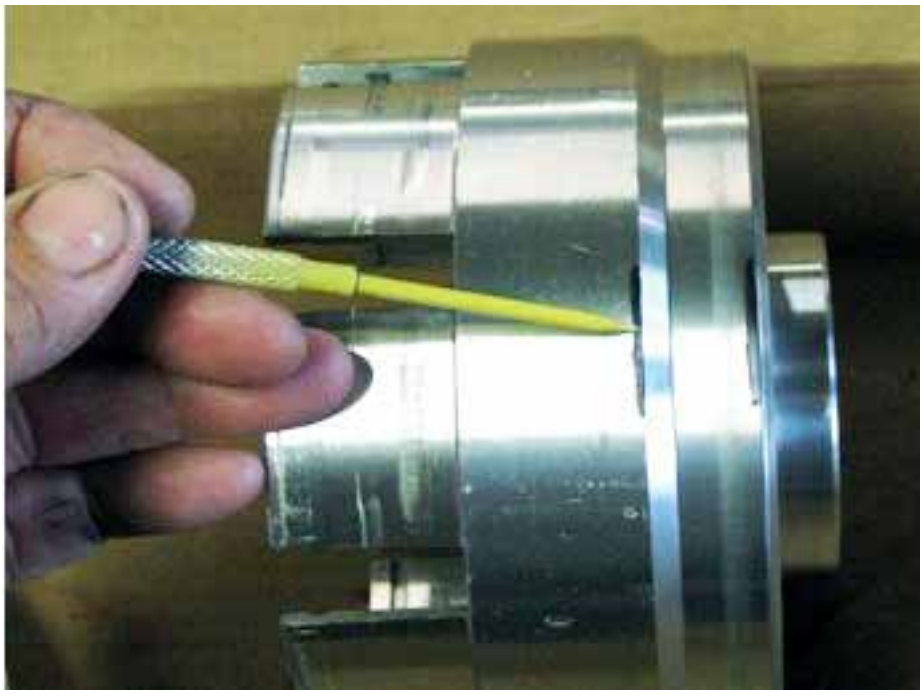
A no forward movement condition can be caused by the underdrive molded piston seal being ripped.You might even see the input drum full of burnt clutchs from the underdrive drum assembly. The underdrive piston assembly fits into the drum very tightly. There are cases of this piston being torn in brand new vehicles.

Check the clutch retainer drum for wear or internal issues that can cause the piston to fail. To correct this concern you need to replace the piston and the drum, to help you with the installation try following these simple steps.

68RFE

No Forward Movement, Reverse Ok (continued)

Make two marks on the old drum, the marks shown are approximate. Use a micrometer and depth gauge to accurately measure your cutting area. Cut the drum where the marks are located. This will leave you with the bottom half of the drum only.



After cutting the drum assembly you should be left with a inner chamfer edge.

68RFE

No Forward Movement, Reverse Ok (continued)

Apply a liberal amount of assembly lube to the piston lip. Assemble the piston inside the ring. Make sure the lip of the piston is compressed to the correct diameter by the drum ring.

Freeze the piston and drum ring assembly over night. For best results a minimum of eight hours of freeze time. When you remove the assembly from the freezer, make sure you have the new drum real close and the installation should be done as soon as possible.

545RFE
TCC Shutter after Rebuild

After overhaul on a 2006 or later Dodge truck with a Multi Displacement 5.7L Hemi engine may have a complaint of TCC shudder during lockup apply. This may be caused by installing the wrong converter.

There are three converters for the 545RFE transmission.
1: 3.7L & 4.7L Medium Stall smooth clutch lining outer style damper springs
2: 5.7L Hemi Low Stall grooved lining clutch outer style damper springs
3: 5.7L Hemi MD Low Stall grooved clutch lining inner style damper springs

The Multi Displacement engine is designed to drop from 8 cylinders down to 4 cylinders in approximately 40 milliseconds during highway driving with no load. Some rebuilders use either damper style with the grooved clutch lining on either 5.7L Hemi type engine with the correct stall. The smooth clutch lining will cause a shudder during partial lockup (shown on next page).

Medium Stall

Smooth Clutch Lining
Outer Damper Spring
Assembly

Low Stall

Grooved Clutch Lining
Outer Or Inner Damper Spring
Assembly

545RFE
TCC Shutter after Rebuild (continued)

Medium Or Early Type Low Stall

Late (MD) Type Low Stall

Medium Stall (Smooth)

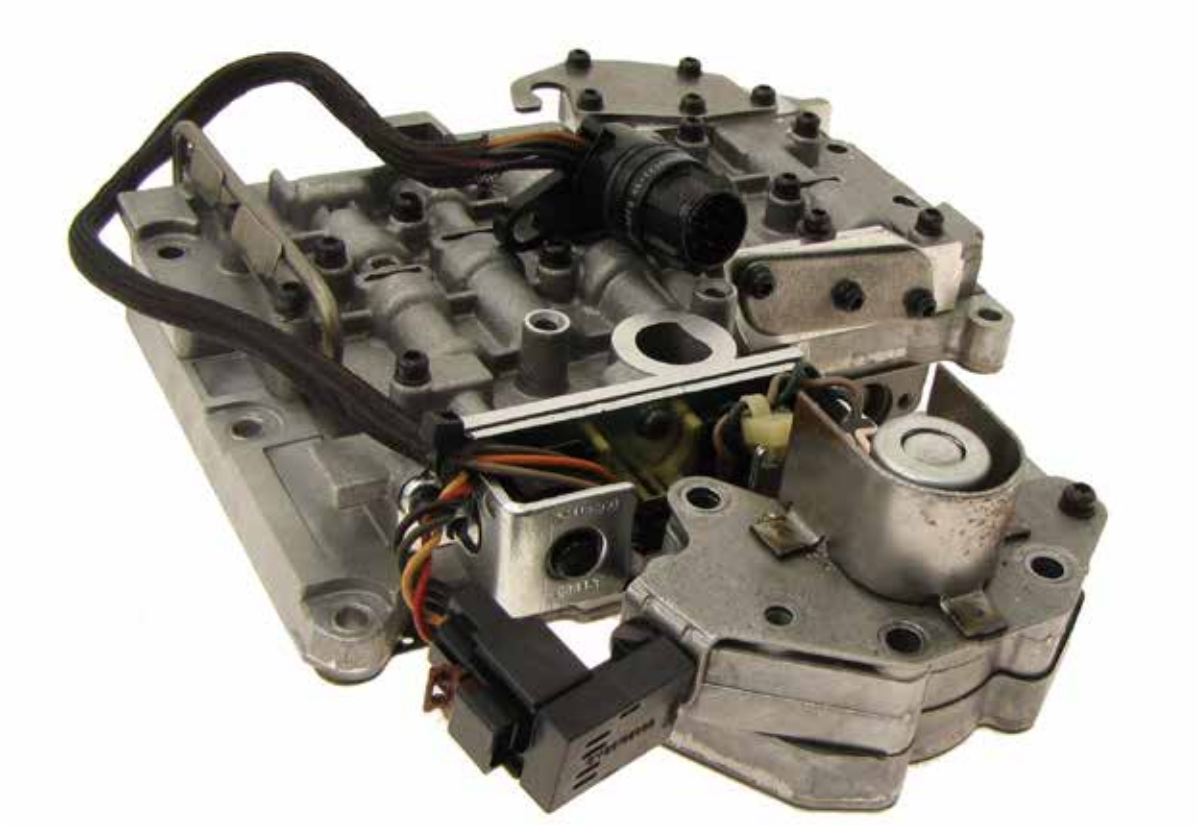
Early & Late (MD) Type Low Stall (Grooved)

RE Units
Governor Operation

One of the most common misconceptions is the operation of the governor solenoid and transducer. The problem stems from the idea that the computer sends a specific voltage to the governor solenoid to create a desired pressure. For example, if the computer wanted 20 PSI it will send 4.2 volts to the solenoid. If it wanted 40 PSI perhaps 2.9 volts, and if it wanted 0 PSI, like at a stop, it would deliver something like 4.6 volts, every time.

There are charts available with pressure and voltage specifications on them as well. And while these specifications may be generally correct, the implication is that the computer delivers a specified voltage for a desired pressure, it doesn't.

It sends whatever voltage is necessary to achieve the desired pressure, reported by the transducer. If you diagnose one of these transmissions based on the commonly-thought-of way these work, you're likely to misdiagnose it.

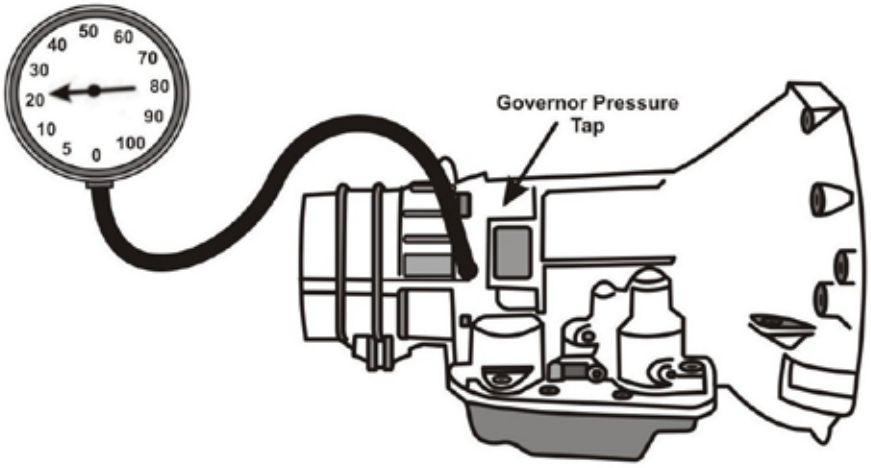


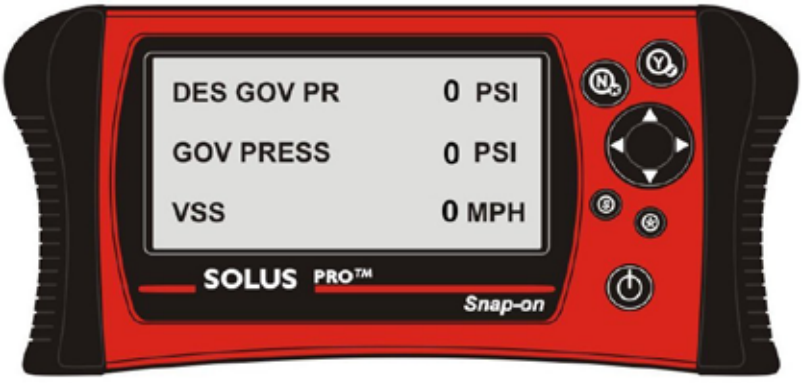
RE Units
Governor Operation (continued)

Here's an example: You have a unit with 2nd gear starts. You connect your scan tool and it shows a desired and actual governor pressure of zero. You check it with a pressure gauge and it has 22 PSI at the governor tap. Now your question is, did the computer send that 22 PSI signal? And why doesn't the measured pressure match the actual pressure shown on your scan tool?

So you measure the voltage at the governor solenoid and sure enough the computer is sending 4.2 volts to the governor solenoid when it should be closer to 4.6 or so. Since the computer is sending the erroneous signal, you might suspect the computer — or even replace it.

What really happened though? The computer knows the truck is stationary so it wants to deliver zero PSI of governor pressure. It even says so on the scan tool. It will increase voltage to the governor solenoid it until the transducer reports zero PSI. In this case the transducer reported zero PSI when it was actually at 22 PSI.

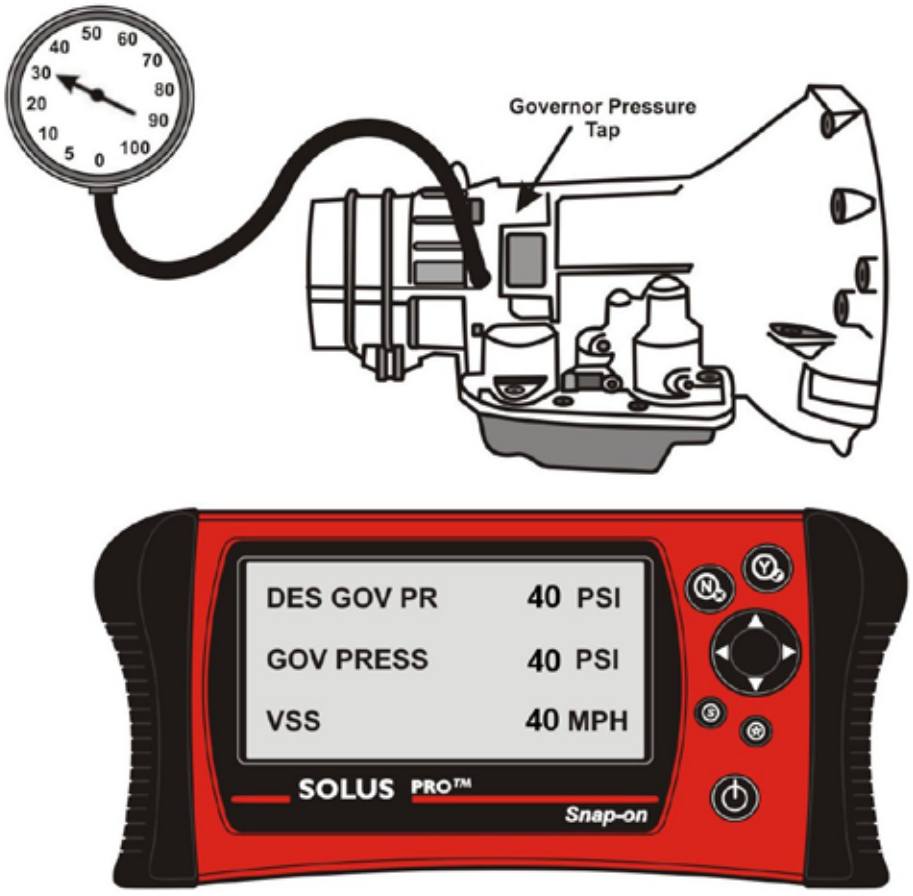




RE Units
Governor Operation (continued)

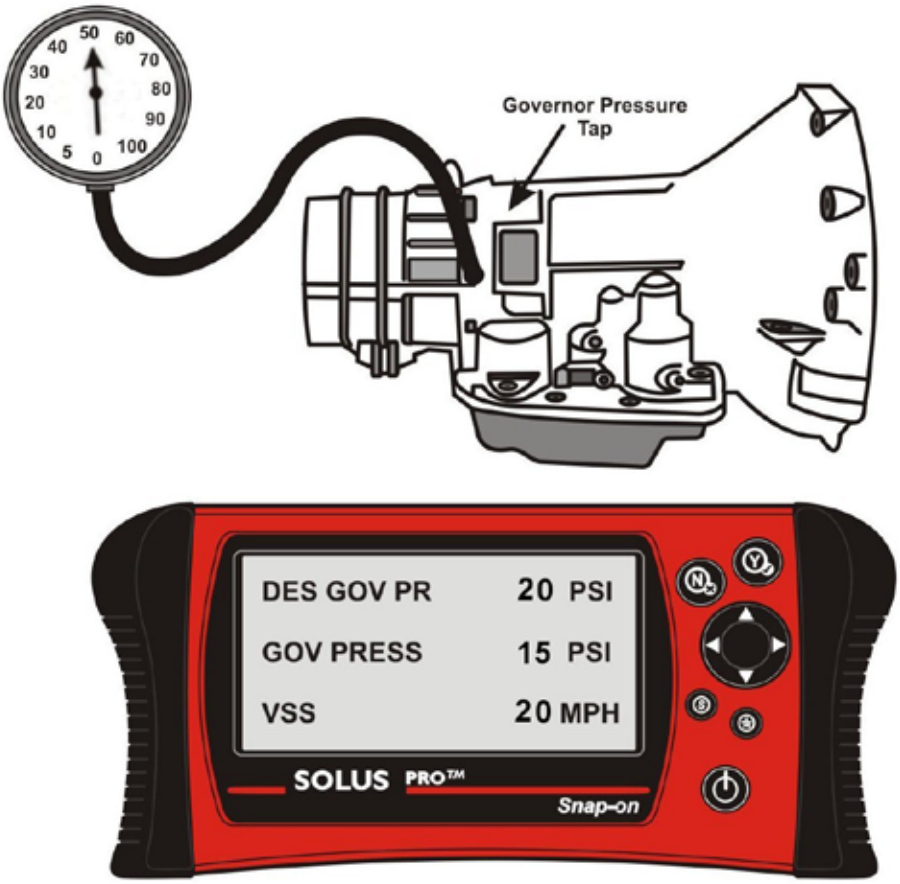
Scan tool data was correct: both desired and actual governor pressure moved with road speed and both were reporting the same value. But actual governor pressure, the reading on the gauge, was lower than the scan tool displayed. For example, when the scan tool readings showed 20 PSI, the gauge showed only 16 PSI. At 40 PSI on the scan tool it really had only 31 PSI on the gauge.

The transducer reported a higher pressure than actual. Remember, the computer will deliver whatever voltage to the governor solenoid necessary for the transducer to read correctly. If the computer wants 20 PSI and the transducer reports 20 PSI when it's only 16, so be it. Replacing the valve body fixed the problem because you replaced the transducer along with it.



RE Units
Governor Operations (continued)

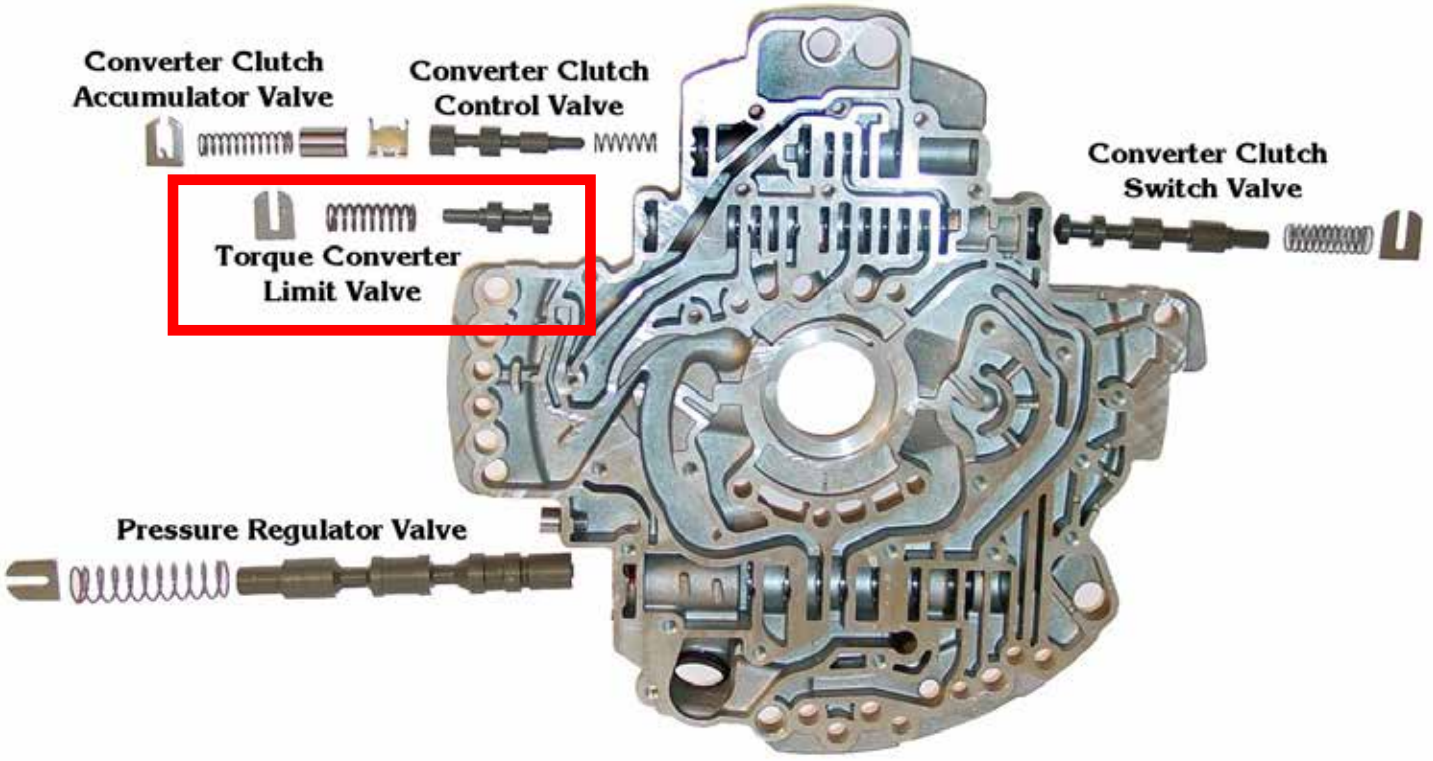
There are a few other scenarios caused by the transducer that might seem a bit odd. For example, the desired pressure is 20 PSI, the actual pressure (on the scan tool) is 15 PSI; meanwhile the gauge reveals something much higher, like 50 PSI. Here again, the computer doesn't see the transmission responding to its command to raise governor pressure, so it continues to lower governor solenoid voltage (it will finally just turn the solenoid off entirely, but you get the idea of how the feedback system works).



RFE Units
Pump Valve Failures

The torque converter limit valve and bore is subject to high wear problems, don't just pick this valve, remove clip and spring and move valve side to side to inspect! Some after market kits will address this problem. But only if the wear is not excessive.

The torque converter limit valve serves to limit the maximum pressure supplied to the front side of the torque converter clutch. A worn valve will cause converter drain back, TCC shudder, and low line pressure.



41TES/42RLES/62TE

P1745 Line Pressure Too High w/ VLP

This DTC is an informational DTC to inform the technician that the transmission has been operating in an open-loop line pressure control caused by a malfunction in the Variable Line Pressure (VLP) control circuit(s) indicating a VLP DTC is present.

This DTC is intended to protect the transmission due to the transmission is not designed to operate in open-loop line pressure control for an extended period of time. It takes 3220 kilometers (2000 miles) or 1000 2-3 upshifts of vehicle operation in open-loop line pressure control for this DTC to mature.

If the DTC sets, the transmission controller will place the transmission into limp-in mode and illuminate the MIL. The DTC must be cleared using a DRB and the counters reset on the engine side only.

Perform the following steps prior to any diagnostic procedure(s).

1. Many transmission symptoms can be caused by a low fluid level. If the fluid level is low, locate and repair any leaks and fill the transmission to the proper fluid level. Refer to 62TE - SERVICE INFORMATION for the proper repair and fluid fill procedures.
2. Testing should only be performed with the battery fully charged to avoid false diagnosis.
3. With the scan tool, read Engine (PCM) DTC's. If Engine DTC's are present, refer to the driveability category and perform to the appropriate diagnostic procedure(s) before proceeding.
4. With the scan tool, read Transmission (TCM) DTC's. Record all Stored, Active, and pending DTC information. Diagnose any pending DTC as a matured DTC.
5. With the scan tool, read DTC EVENT DATA. Use this data to identify the conditions in which the DTC was set.
6. With the scan tool, perform the Shift Lever Position Test. If the test does not pass, refer to P0706-TRANSMISSION RANGE SENSOR RATIONALITY.
7. For Gear Ratio Error DTC's, use the scan tool to read and record the Clutch Volume Index (CVI) information.
8. Use the wiring diagram as a guide, inspect the wiring and connectors related to this circuit and repair as necessary.
9. Refer to the when monitored and set conditions for this DTC. DTC's can set at ignition on, at start up, driving under specific conditions, and after controller diagnostic monitors have run.
10. Refer to applicable Technical Service Bulletins (TSB's) for controller software update information. Some conditions can be corrected by upgrading the Engine (PCM) or Transmission (TCM) controller software.
11. Check for any service information tune-ups or service bulletins for any possible causes that may apply.

41TES/42RLES/62TE

P1745 Line Pressure Too High w/ VLP (continued)

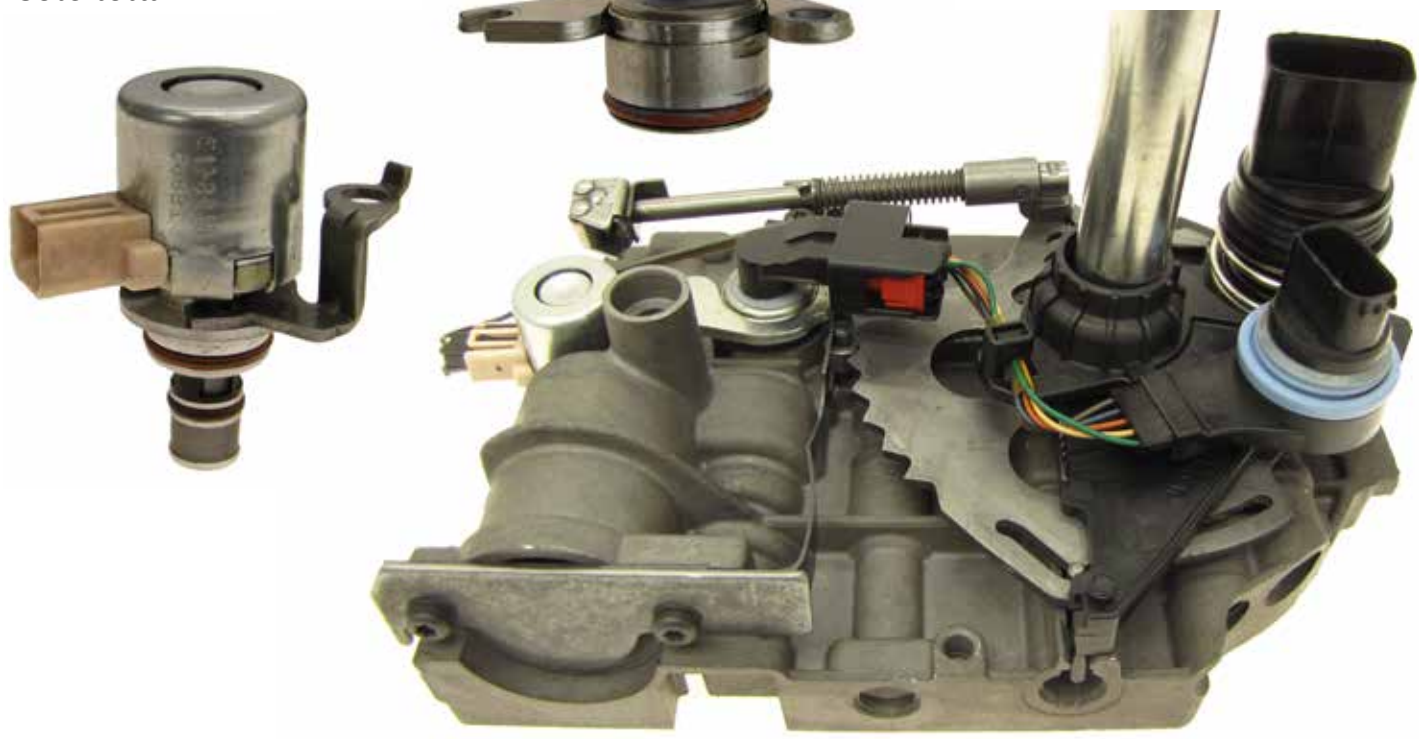
The pressure control solenoid is mounted on the top of the valve body, next to the line pressure transducer. The TCM utilizes a closed-loop system to control transmission line pressure.

The system contains a variable force style solenoid, the Pressure Control Solenoid. The solenoid is duty cycle controlled by the TCM to vent the unnecessary line pressure supplied by the oil pump back to the sump.

The system also contains a variable pressure style sensor, the Line Pressure Sensor, which is a direct input to the TCM. The line pressure solenoid monitors the transmission line pressure and completes the feed back loop to the TCM. The TCM uses this information to adjust its control of the pressure control solenoid to achieve the desired line pressure.

Line Pressure Transducer

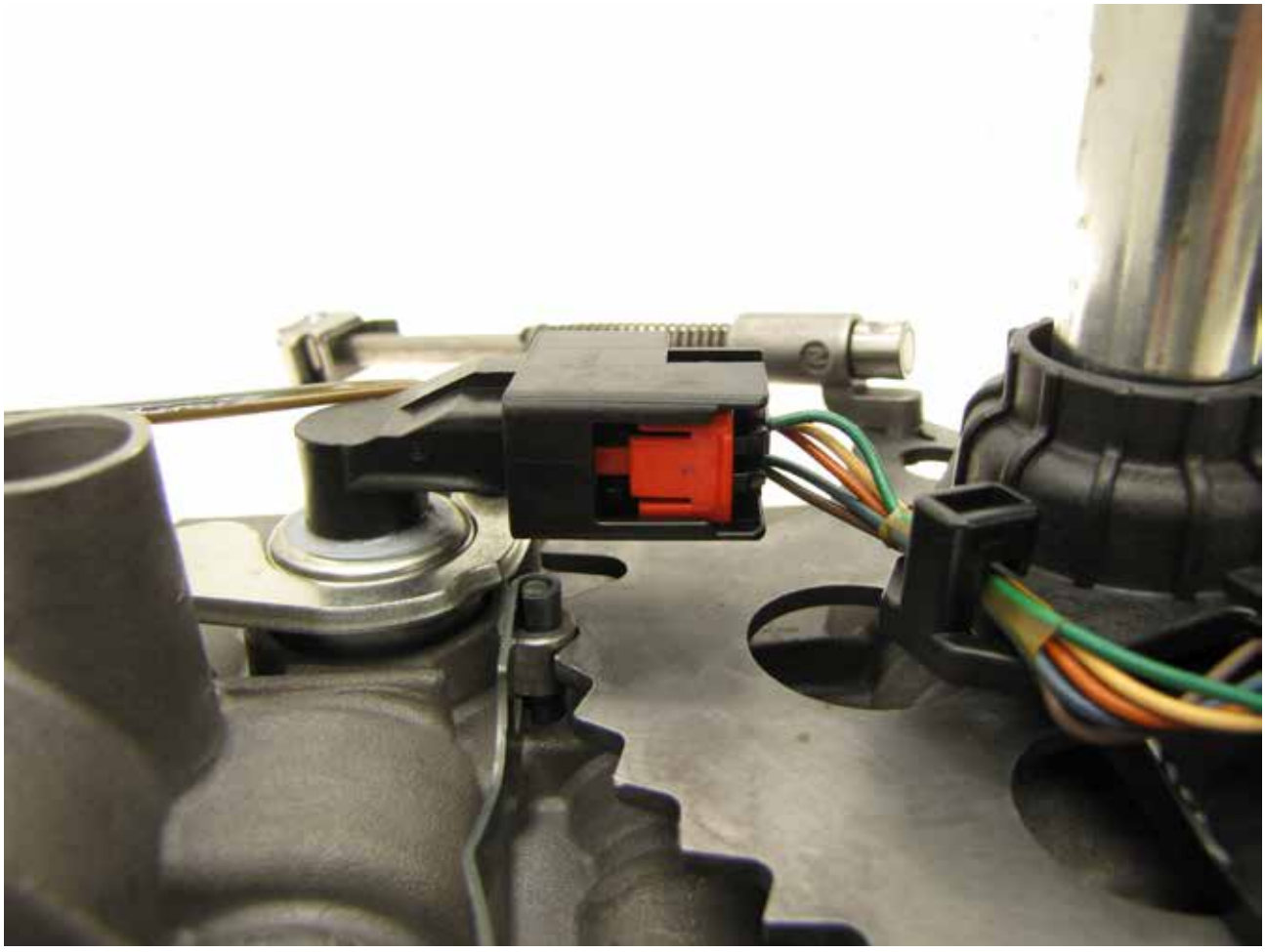
Pressure Control Solenoid



41TES/42RLES/62TE

P1745 Line Pressure Too High w/ VLP (continued)

The TCM varies the current for the PCS, which varies the pressure in the line pressure hydraulic circuit. When the current in the PCS is low, the pressure in the circuit is higher. At 0 current (0% duty cycle), the pressure is ay the maximum value. Conversely, when the current is maximum (100% duty cycle), the pressure in the circuit is at the lowest.

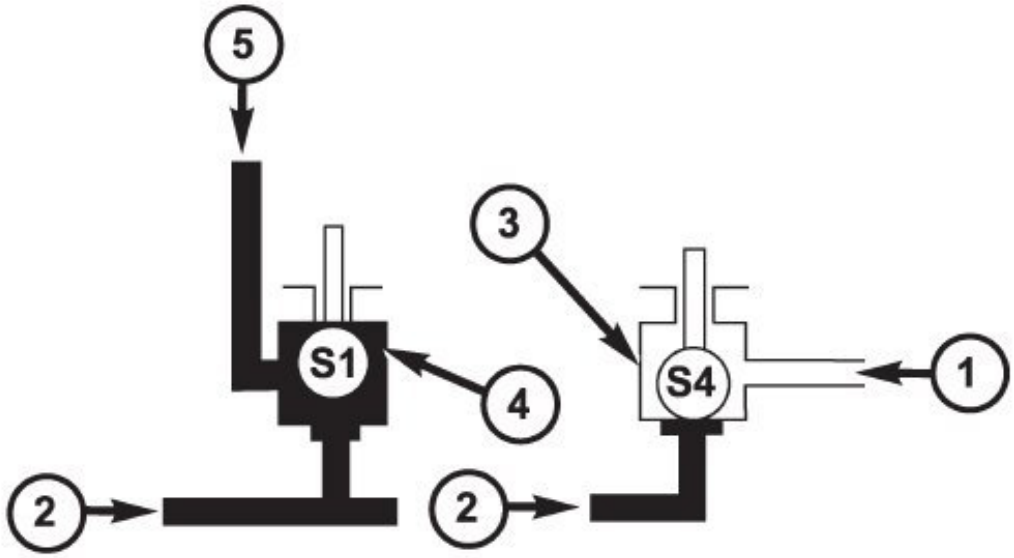


41TES/42RLES/62TE

P1745 Line Pressure Too High w/ VLP (continued)

The solenoids used in transmission applications are attached to valves which can be classified as normally open or normally closed. The normally open solenoid valve is defined as a valve which allows hydraulic flow when no current or voltage is applied to the solenoid. The normally closed solenoid valve is defined as a valve which does not allow hydraulic flow when no current or voltage is applied to the solenoid.

These valves perform hydraulic control functions for the transmission and must therefore be durable and tolerant of dirt particles. For these reasons, the valves have hardened steel poppets and ball valves. The solenoids operate the valves directly, which means that the solenoids must have very high outputs to close the valves against the sizable flow areas. Fast response time is also necessary to ensure accurate control of the transmission.

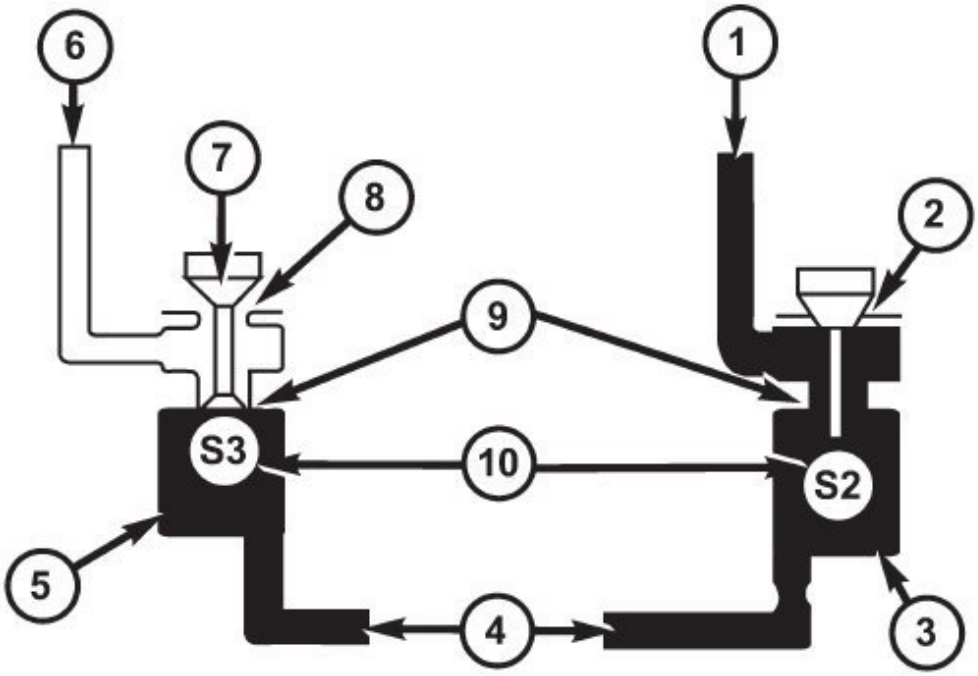


1 - MANUAL VALVE
2 - LINE PRESSURE
3 - 2/4 - LOW REVERSE SOLENOID ENERGIZED
4 - UNDERDRIVE SOLENOID DE-ENERGIZED
5 - UNDERDRIVE CLUTCH

41TES/42RLES/62TE

P1745 Line Pressure Too High w/ VLP (continued)

When an electrical current is applied to the solenoid coil, a magnetic field is created which produces an attraction to the plunger, causing the plunger to move and work against the spring pressure and the load applied by the fluid the valve is controlling. The plunger is normally directly attached to the valve which it is to operate. When the current is removed from the coil, the attraction is removed and the plunger will return to its original position due to spring pressure.



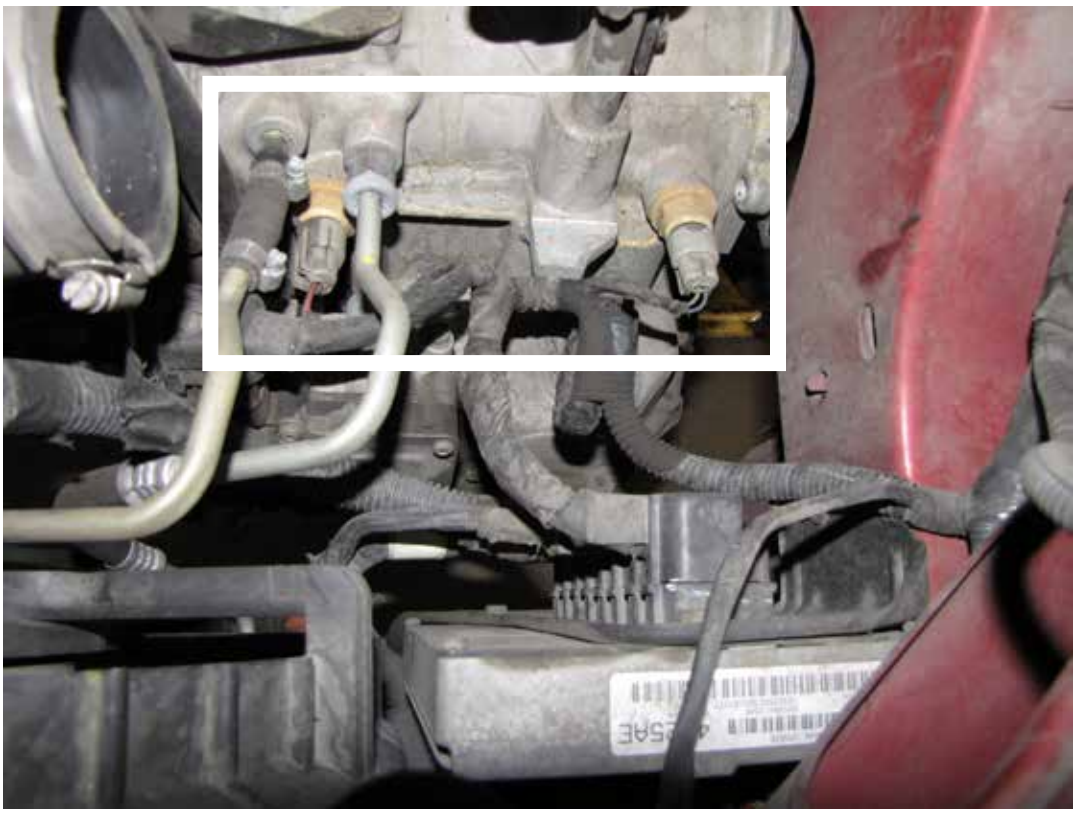
1 - OVERDRIVE CLUTCH
2 - NO VENT
3 - OVERDRIVE SOLENOID ENERGIZED
4 - MANUAL VALVE
5 - LOW REVERSE/CONVERTER CLUTCH SOLENOID DE-ENERGIZED
6 - SOLENOID SWITCH VALVE
7 - TAPER
8 - VENT TO SUMP
9 - ORIFICE
10 - CHECK BALL

41TE
No Upshift

Some Neon and Pacifica applications equipped with the 41TE may exhibit any or all of the following conditions:

- No upshifts or hard shifts at times
- Speedometer may not operate
- SES light is on
- Possible DTC's P0700 (Transmission Malfunction) P0731 (1st gear ratio error) P0736 (Reverse ratio error) P0720 (Output speed sensor malfunction) P0562 (System Voltage Low)

It's common for the speed sensor wires to break internally in the harness. Inspect the wiring harness for problems within a few inches of the speed sensor connectors and where the harness wraps down around the pan area near the drivers side tire. If the wiring is damaged at the sensor replace the connector with a pigtail assembly. If the harness is damaged in area of the case/pan, repair the damaged wiring using weather proof butt splices.



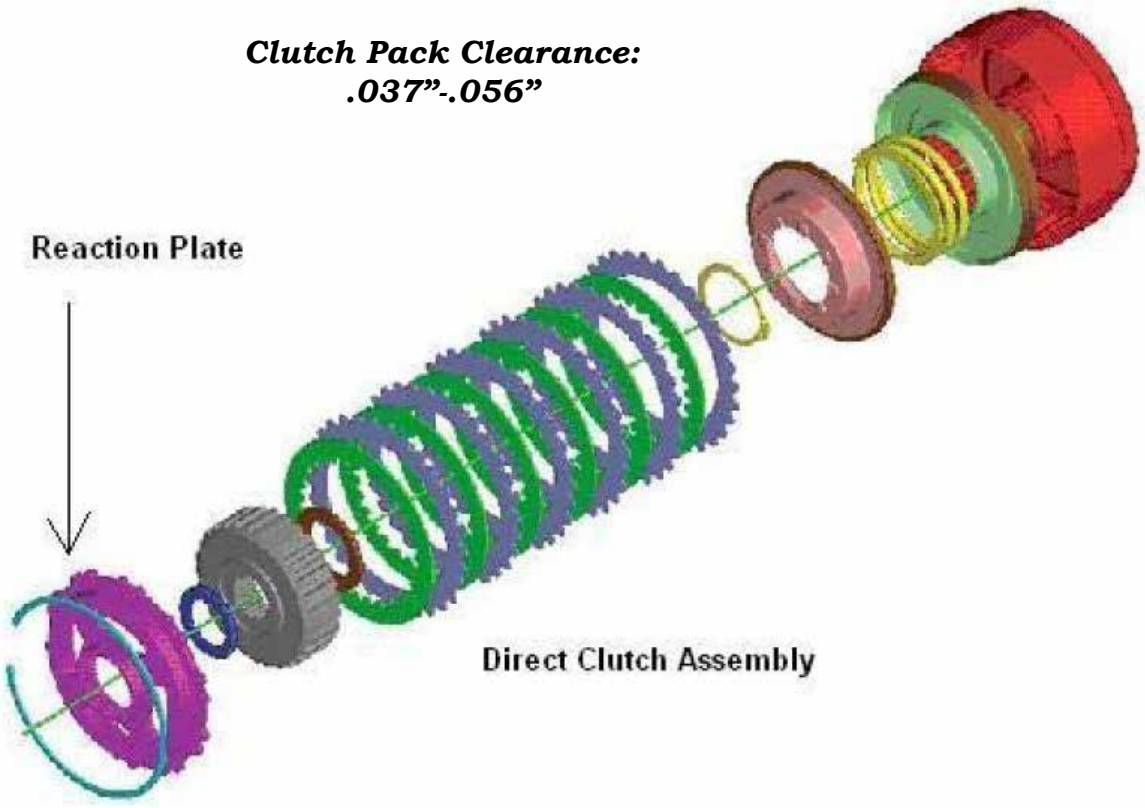
62TE
Direct Clutch Reaction Plate Package

The (68004116AA) direct clutch reaction plate package contains (6) select fit reaction plates that are used in the Direct Clutch assembly, located in the Underdrive Compounder. It is imperative that you do not discard the reaction plates that are not needed. The reaction plates were purposely put in a package to eliminate any car down situations that may occur if the wrong select fit reaction plate was either received in error or ordered in error.

Please keep ALL of the unused Reaction Plates in a safe and clean area. The package part number is 68004116AA, the selectable reaction plate part numbers are as follows (these plates cannot be ordered individually):

Part Number	***Thickness***
05078814AA	0.83mm - 0.94mm
05078818AA	1.19mm - 1.30mm
05078862AA	1.55mm - 1.66mm
05078863AA	1.91mm - 2.02mm
05078880AA	2.27mm - 2.38mm
04800381AA	2.63mm - 2.74mm

Clutch Pack Clearance:
.037”-.056”



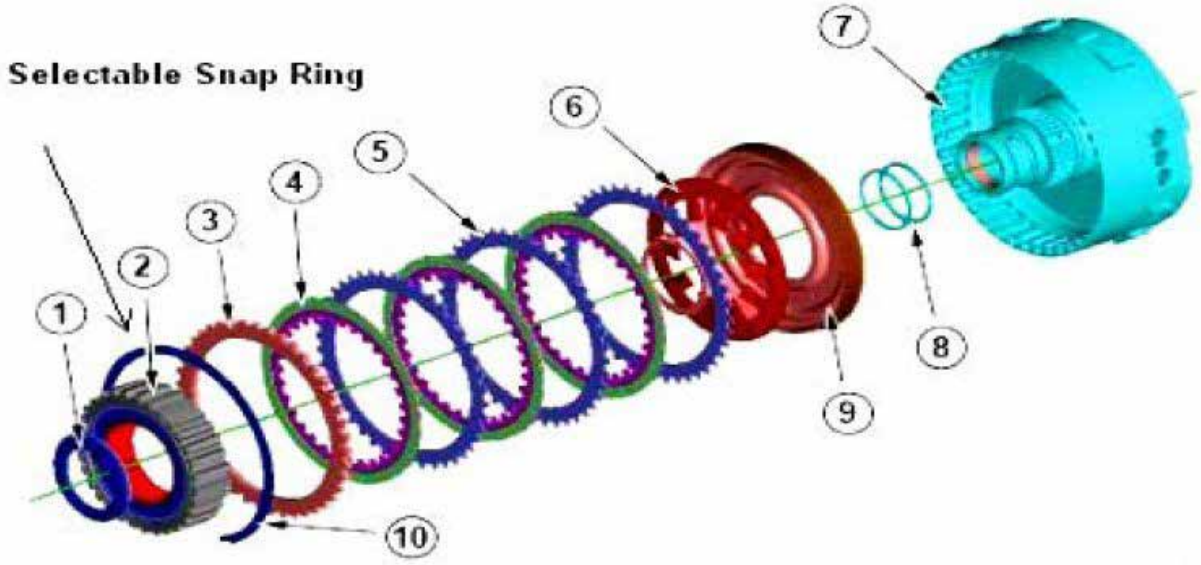
62TE
Low Clutch Selectable Snap Ring Package

The (68004116AA) low clutch selectable snap ring package contains (8) select fit snap rings that are used in the Low clutch assembly, located in the Underdrive Compounder. It's imperative that you do not discard the snap rings that are not needed. The snap rings were purposely put in a package to eliminate any car down situations that may occur if the wrong select snap ring was either received in error or ordered in error.

Please keep ALL of the unused Snap Rings in a safe and clean area. The package part number is 68004110AA, the selectable snap rings part numbers are as follows (these snap rings cannot be ordered individually):

Part Number	***Thickness***
05078611AA	2.78mm – 2.85mm
05078806AA	3.00mm – 3.07mm
05078807AA	3.22mm – 3.29mm
05078859AA	3.44mm – 3.51mm
05078860AA	3.66mm – 3.73mm
05078861AA	3.88mm – 3.95mm
04800382AA	4.10mm – 4.17mm
04800383AA	4.32mm – 4.39mm

Clutch Pack Clearance:
.019"-.030"



Low Clutch Assembly

Chrysler All
CVI (Clutch Volume Indexes)

An important function of the TCM is to monitor Clutch Volume Indexes (CVI). CVI's represent the volume of fluid needed to compress a clutch pack. The TCM monitors gear ratio changes by monitoring the Input and Output Speed Sensors. The Input or Turbine Speed Sensor sends an electrical signal to the TCM that represents input shaft rpm. The Output Speed Sensor provides the TCM with output shaft speed information. By comparing the two inputs, the TCM can determine transmission gear position.

This is important to the CVI calculation because the TCM determines CVIs by monitoring how long it takes for a gear change to occur. Gear ratios can be determined by using the Scan Tool and reading the Input/Output Speed Sensor values in the "Monitors" display. Gear ratio can be obtained by dividing the Input Speed Sensor value by the Output Speed Sensor value. For example, if the input shaft is rotating at 1000 rpm and the output shaft is rotating at 500 rpm, then the TCM can determine that the gear ratio is 2:1. In direct drive (3rd gear), the gear ratio changes to 1:1.

The gear ratio changes as clutches are applied and released. By monitoring the length of time it takes for the gear ratio to change following a shift request, the TCM can determine the volume of fluid used to apply or release a friction element.

TE/RLE

Clutch Volumes

Clutch	When Updated			Proper Clutch Volume
	Shift Sequence	Oil Temperature	Throttle Angle	
L/R	2-1 or 3-1 Coast Downshift	> 21° C (70° F)	< 5°	35 to 83
2/4	1-2 Shift	> 43° C (110° F)	5 - 54°	20 to 77
OD	2-3 Shift	> 43° C (110° F)	5 - 54°	48 to 150
UD	4-3 or 4-2 Shift	> 43° C (110° F)	> 5°	24 to 70

62TE Clutch Volumes	(Preliminary)
UD	26-74
2/4	16-54
OD	42-143
L/R	16-63
LC	16-25
DC	26-34

Chrysler All
CVI (Clutch Volume Indexes) (continued)

45RFE

Clutch	When Updated	Oil Temperature	Proper Clutch Volume
L/R	2-1 or 3-1 Manual Down Shift	> 110° F	82 to 134
2C	3-2 Kick Down Shift	> 110° F	25 to 64
OD	2-3 Upshift	> 110° F	30 to 64
4C	3-4 Upshift	> 110° F	30 to 64
UD	4-3 Port Throttle Kick Down	> 110° F	25 to 92
Alt 2C	4-5 Upshift	> 110° F	Greater than 2C
1st N-1 ND	10 Minutes After Engine Off	> 80° F	Greater than UD
Normal ND - UD	Repeated N-D Shift at a Stop	> 80° F	Approx. equal to UD
1st 2-3 OD	After First 2-3 Shift	> 65° F	Higher than OD

545RFE

Clutch Volumes		
Clutch	When Updated	Proper Clutch Volume
L/R	2-1 or 3-1 Downshift	45 to 134
2C	3-2 Kickdown Shift	25 to 85
2C Alternate	4-4 Prime Upshift	25 to 85
OD	2-3 Upshift	30 to 100
4C	3-4 Upshift	30 to 85
4C Alternate	2-2 Prime Upshift	30 to 85
UD	4-3 Kickdown Shift	30 to 100

Chrysler All
CVI (Clutch Volume Indexes) (continued)

545RFE

Clutch Volumes		
Clutch	When Updated	Proper Clutch Volume
L/R	2-1, 3-1 or 4-1 Downshift	45 to 134
2C	4-3 or 3-2 Downshift	25 to 85
2C Alternate	5-6 Upshift	25 to 85
OD	3-4 Upshift	30 to 100
4C	4-5 Upshift	30 to 85
4C Alternate	2-3 Upshift	30 to 85
UD	5-4 or 6-4 Kickdown Shift	30 to 100

Chrysler All
Powertrain Verification Test

After completion of the Transmission Verification Test, the Powertrain Verification Test must be performed. To do so follow these instructions.

1. Connect the scan tool to the Data Link Connector (DLC).
2. Reconnect any disconnected components.
3. With the scan tool, erase all Transmission and Engine DTC's ***NOTE:*** Erase DTC P0700 under engine to turn off the MIL light off after completion of transmission repairs.
4. Perform PRNDL fault clearing procedure after completion of repairs for DTC P0706.
5. If the powertrain control module or the Transmission has been repaired or replaced, it's necessary to perform the scan tool quick learn procedure.
6. If the torque converter has been replaced, with the scan tool perform TCC Break-in.
7. If the powertrain control module or front control module has been replaced you must reset the Pinion Factor in the Front Control Module.
8. With the scan tool, display Transmission Temperature. Start and run the engine until the Transmission Temperature is HOT, above 43°C or 110°F.
9. Check the transmission fluid and adjust if necessary.
10. Road test the vehicle. With the scan tool, monitor the engine RPM. Make 15-20 1-2, 2-3, 3-4 upshifts. Perform these shifts from a standing start to 45 mph with a constant throttle opening of 20° to 25°.
11. With speeds below 25 mph, make 5 to 8 wide open throttle kickdowns to 1st gear. Allow at least 5 seconds each in 2nd and 3rd gear between each kickdown.
12. For a specific DTC, drive the vehicle to the Symptom's When Monitored/When Set conditions to verify the DTC is repaired.
13. If equipped with AutoStick®, upshift and downshift several times using the AutoStick® feature during the road test. ***NOTE:*** Use the OBDII task manager to run a Good Trip in each gear, this will confirm the repair and to ensure that the DTC has not rematured.
14. Check for any Diagnostic Trouble Codes (DTC's) during and after the road test. Did any Diagnostic Trouble Codes set during the road test?
    Yes - Refer to the Transmission DTC Based Diagnostics and perform the appropriate diagnostic procedure(s).
    No - Repair is complete.

Chrysler RFE All
Drive Learn RFE

When a transmission is repaired and a Quick learn procedure has been performed on the Transmission Control Module (TCM), the following Drive Learn procedure can be performed to fine tune any shifts which are particularly objectionable.

NOTE: It is not necessary to perform the complete Drive Learn procedure every time the TCM is Quick Learned. Perform only the portions which target the objectionable shift.

Learn a Smooth 1st Neutral to Drive Shift
Perform this procedure only if the complaint is for a delayed or harsh shift the first time the transmission is put into gear after the vehicle is allowed to set with the engine not running for at least 10 minutes. Use the following steps to have the TCM learn the 1st N-D UD CVI.

NOTE: The transmission oil temperature must be between 80°-110°F (27°-43°C).

1. Start the engine only when the engine and ignition have been off for at least 10 (ten) minutes.
2. With the vehicle at a stop and the service brake applied, record the 1st N-D UD CVI while performing a neutral to drive shift. The 1st N-D UD CVI accounts for air entrapment in the UD clutch that may occur after the engine has been off for a period of time.
3. Repeat Step #1 and Step #2 until the recorded 1st N-D UD CVI value stabilizes.

NOTE: It is important that this procedure be performed when the transmission temperature is between 80°-110°F (27°-43°C). If this procedure takes too long to complete fully for the allowed transmission oil temperature, the vehicle may be returned to the customer with an explanation that the shift will improve daily during normal vehicle usage.

The TCM also learns at higher oil temperatures, but these values (line pressure correction values) are not available for viewing on the scan tool.

Chrysler RFE All
Drive Learn RFE (continued)

Learn a Smooth Garage Neutral to Drive Garage Shift
Perform this procedure if the complaint is for a delayed or harsh shift when the transmission is put into gear after the vehicle has had its first shift. Use the following steps to have the TCM learn the Norm N-D UD CVI.

NOTE: The transmission oil temperature must be between 80°-110°F (27°-43°C) to learn the UD CVI. Additional learning occurs at temperatures as low as 0°F and as high as 200°F. This procedure may be performed at any temperature that experiences poor shift quality. Although the UD CVI may not change, shift quality should improve.

1. Start the vehicle engine and shift to drive.
2. Move the vehicle forward to a speed of at least 16 km/h (10 mph) and come to a stop. This ensures no air is present in the UD hydraulic circuit.
3. Perform repeated N-D shift at a stop while pausing in Neutral for at least 2-3 seconds and monitor Norm N-D UD CVI volume until the value stabilizes. The value will change during the N-D shift. This is normal since the UD value is different for the N-D shift then the normal value shown which is used for 4-3 coastdown and kickdowns. Perform repeated shifts in this temperature range until the normal N-D UD CVI value stabilizes and the N-D shift become smooth.

Learn the 1st 2-3 Shift after a Restart or Shift to Reverse
Use the following steps to have the TCM learn the 1st 2-3 shift OD CVI.

NOTE: The transmission oil temperature must be above 80°F (27°C).

1. With the vehicle engine running, select reverse gear for over 2 seconds.
2. Shift the transmission to drive and accelerate the vehicle form a stop at a steady 15° throttle opening and perform a 2-3 shift while noting the 1st 2-3 OD CVI.
3. Repeat Step #1 and Step #2 until the 1st 2-3 upshift becomes smooth and the 1st 2-3 OD CVI stabilizes.

Chrysler RFE All
Drive Learn RFE (continued)

Learn a Smooth 2-3 and 3-4 Upshift
NOTE: The transmission oil temperature must be above 110°F (43°C).

Use the following steps to have the TCM learn the OD and 4C CVI's.
1. Accelerate the vehicle from a stop at a steady 15° throttle opening and perform multiple 1-2, 2-3 and 3-4 upshifts. The 2nd 2-3 shift following a restart or shift to reverse will be shown during the shift as a value between the 1st 2-3 OD CVI and the normal OD CVI. Updates to the normal OD CVI will occur after the 2nd shift into 3rd gear, following a restart or shift to reverse.
2. Repeat Step #1 until the 2-3 and 3-4 shifts become smooth and the OD and 4C CVI become stable.

Learn a Smooth 4-3 Coastdown and Part Throttle 4-3 Kickdown
NOTE: The transmission oil temperature must be above 110°F (43°C).

Use the following steps to have the TCM learn the UD shift volume.
1. At a vehicle speed between 64-97 km/h (40-60MPH), perform repeated 4-3 kickdown shifts.
2. Repeat Step #1 until the UD volume becomes somewhat stable and the shift becomes smooth.

Learn a Smooth 1-2 Upshift and 3-2 Kickdown
Use the following steps to have the TCM learn the 2C shift volume.
NOTE: The transmission oil temperature must be above 110°F (43°C).

1. With a vehicle speed below 48 km/h (30 MPH) and the transmission in 3rd gear, perform multiple 3-2 kickdowns.
2. Repeat Step #1 until the 3-2 kickdowns become smooth and the 2C CVI becomes stable.

Chrysler RFE All
Drive Learn RFE (continued)

Learn a Smooth Manual 2-1 Pulldown Shift/ Neutral to Reverse Shift
NOTE: The transmission oil temperature must be above 110°F (43°C).
Use the following steps to have the TCM learn the LR volume.
1. With the vehicle speed around 40-48 km/h (25-30 MPH) in Manual 2nd, perform manual pulldowns to Low or 1st gear at closed throttle.
2. Repeat Step #1 until the LR CVI becomes stable and the manual 2-1 becomes smooth.

Learn a Smooth Neutral to Reverse Shift
NOTE: The transmission oil temperature must be above 110°F (43°C).
1. With the vehicle at a stop, perform Neutral to Reverse shifts until the shift is smooth. An unlearned Neutral to Reverse shift may be harsh or exhibit a double bump.
2. If any of the shifts are still not smooth after the clutch volume stabilizes, an internal transmission problem may be present.

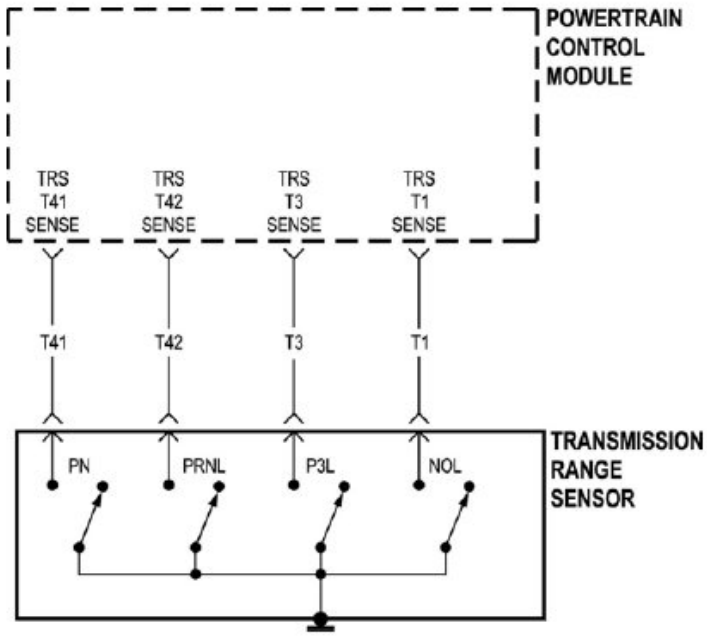
Learn a Smooth 4-5 Upshift
NOTE: The transmission oil temperature must be above 110°F (43°C).
Use the following steps to have the TCM learn the Alt 2C CVI.
1. Accelerate the vehicle through 88 km/h (55 MPH) at a steady 10-15 degree throttle opening and perform multiple 4-5 upshifts.
2. Repeat Step #1 until the 4-5 shift become smooth and the Alt 2C CVI become stable. There is a separate 2C volume used and learned for 4-5 shifts, 2CA. It is independent of the 2C CVI learned on 3-2 kickdowns.

TE/RLE/RFE

Transmission Range Sensor Specifications

The Transmission Range Sensor (TRS) communicates shift lever position to the TCM as a combination of open and closed switches. Each shift lever position has an assigned combination of switch states (open/closed) that the TCM receives from four sense circuits. The TCM interprets this information and determines the appropriate transmission gear position and shift schedule.

TE/RLE TRS Circuits



	P	TR1	R	TR2	N	TR2	OD	TR3	3 or A/S	TR3	L
C1 (T41)	CL	OP	OP	OP	CL	OP	OP	OP	OP	OP	OP
C2 (T42)	CL	CL	CL	CL	CL	CL	OP	OP	OP	OP	CL
C3 (T3)	CL	CL	OP	OP	OP	OP	OP	CL	CL	CL	CL
C4 (T1)	OP	OP	OP	CL	CL	CL	CL	CL	OP	CL	CL

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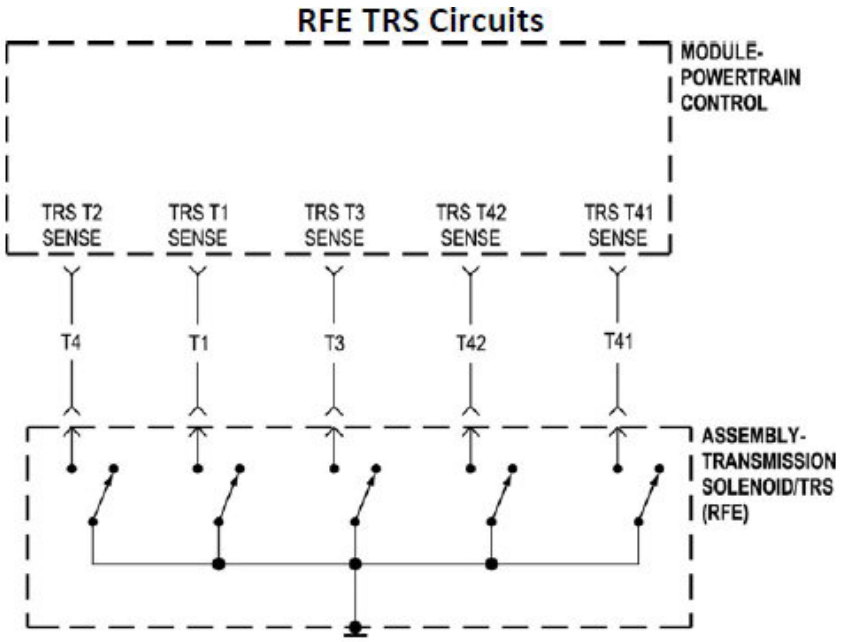
TE/RLE/RFE

Transmission Range Sensor Specifications (continued)

There are many possible combinations of open and closed switches (codes). Five of these possible codes correspond to valid gear position, there are two codes for the neutral position and three are recognized as “between gear” codes. This results in many codes which should never occur.



545RFE

	P	TR1	R	TR2	N 1	N 2	TR3	D	TR4	Man 2	TR5	Man 3
C1 (T41)	CL	OP	OP	OP	CL	CL	OP	OP	OP	OP	OP	OP
C2 (T42)	CL	CL	CL	CL	CL	CL	CL	OP	OP	OP	OP	OP
C3 (T3)	OP	OP	OP	CL	CL	CL	CL	CL	OP	OP	OP	CL
C4 (T1)	OP	OP	OP	OP	OP	CL	CL	CL	CL	CL	OP	OP
C5 (T2)	CL	CL	OP	OP	OP	OP	OP	OP	OP	CL	CL	CL

TE/RLE/RFE

Transmission Range Sensor Specifications (continued)

An invalid code will result in a DTC, and the TCM will then determine the shift lever position based on pressure switch data. This allows reasonably normal transmission operation with a TRS failure.

65/66/68 RFE

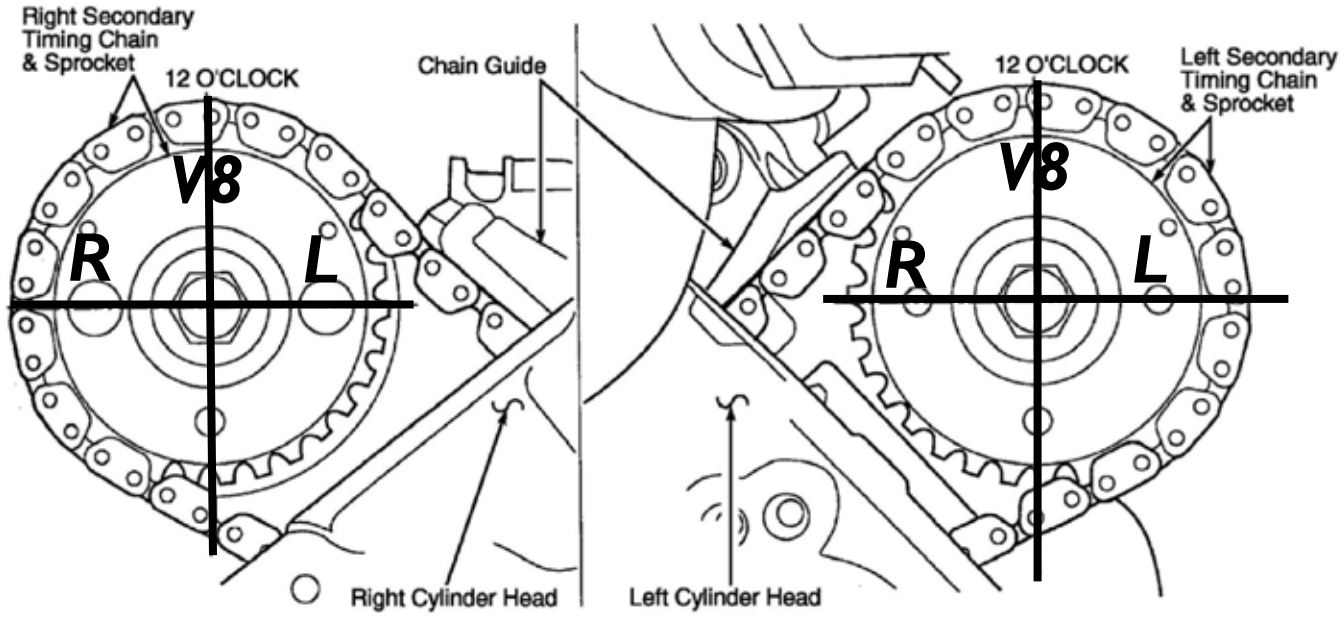
Gear	C5	C4	C3	C2	C1
Park	CL	OP	OP	CL	CL
Temp 1	CL	OP	OP	CL	OP
Reverse	OP	OP	OP	CL	OP
Temp 2	OP	OP	CL	CL	OP
Neutral 1	OP	OP	CL	CL	CL
Neutral 2	OP	CL	CL	CL	CL
Temp 3	OP	CL	CL	CL	OP
Drive	OP	CL	CL	OP	OP

545RFE
No/Late Shifts, Misfire Present

545RFE applications equipped with the 4.7L engine may experience any or all of the following conditions:

- No or late shifts (Common with heavy throttle opening)
- Random misfire DTC P0300 set
- Misfire codes set for a specific bank of cylinders (cylinder P1357 DTC's typical symptom) or P2468 may be set
- SES light flashing or on solid
- Engine lacks power
- Fuel trim values indicate the PCM is removing fuel (Minus numbers)

Inspect the cam bolt torque, if the bolt torque is correct inspect the cam dowel. The cam dowel is wearing on these engines leading to retarded cam timing. Inspect the cam dowel for wear and replace if a worn dowel is found.



48RE

P0868, P1750, P0713 Erratic T-Case/Transmission

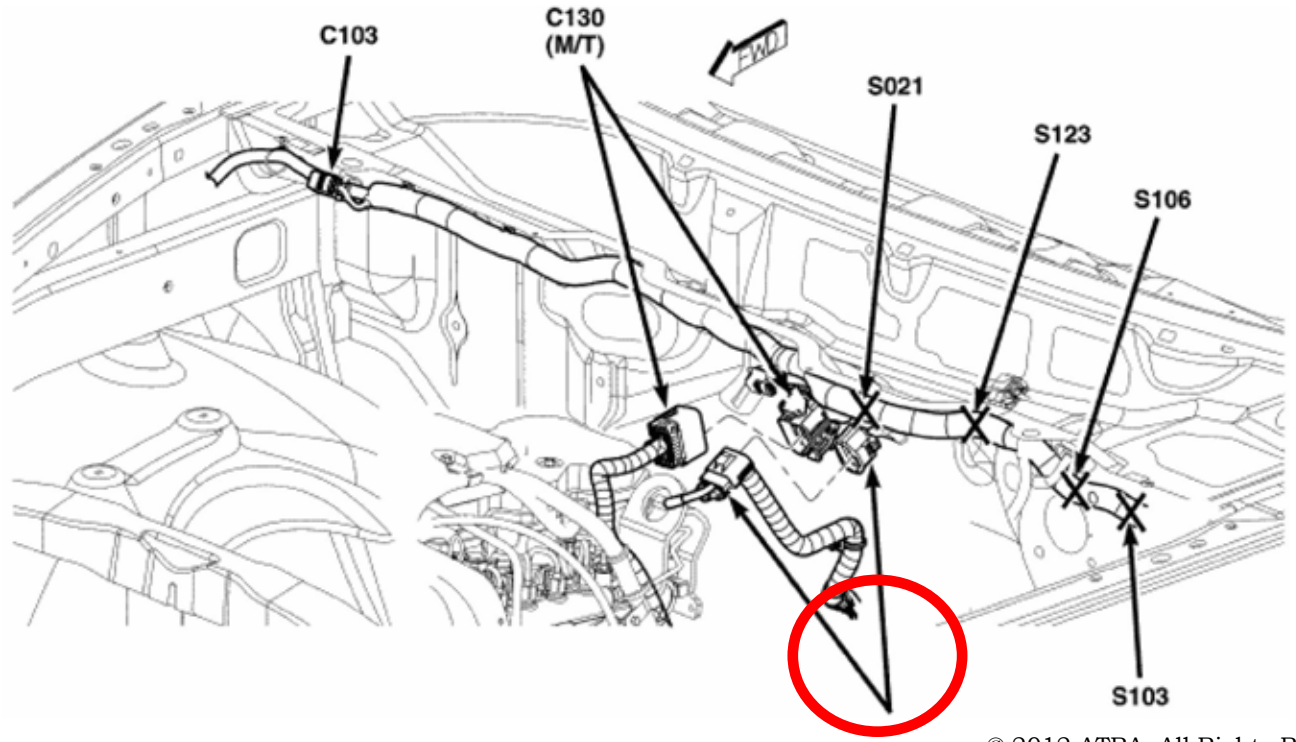
Operation

48RE applications in full size Dodge Truck applications may exhibit any or all of the following conditions:

- Lack of power
- Erratic transmission operation
- Erratic transfer case operation, actuator and 4x4 lights cycling
- Possible DTC's P0713 (Transmission Temp) P0868 (Governor Pressure Low) P1750 (Throttle Valve High) set
- Intermittent No Start

All of the above conditions can be related to problems with the K900 sensor ground. The K900 sensor ground is used for a multitude of sensors and can be accessed through the C132 connector. When inspecting the circuit for proper operation, note if reference voltage (5V) is available on the signal circuits for many of the vehicles sensors on vehicle that exhibit the concerns.

This indicates a ground problem exists in the vehicle related to those circuits. You can isolate the ground issue by measuring the voltage drop between circuit K900 and the battery negative terminal. If voltage drop exceeds .2 volts repair the ground issue. If a bad ground is indicated inspect connector C132 (located at the bulkhead) for corrosion and pin tension issues.



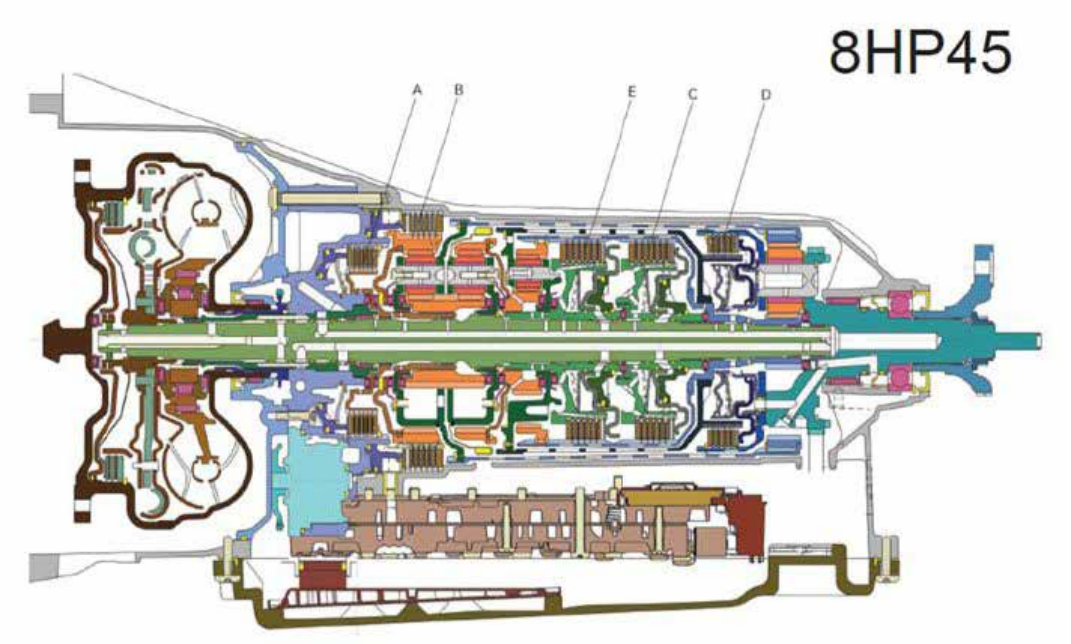
ZF8HP45

Introduction

ZF refers to this transmission as the 8HP45. Other versions and torque ratings of this transmission are also available — the 8HP30, 8HP70 and the 8HP90. A version of this transmission has been used in flagship Audi, Rolls Royce, BMW, and Bentley models since 2010.

845RE Technical Features

- Enhanced planetary gear meshing to reduce noise and friction
- Four planetary gear sets and five clutch elements
- Offset chain driven variable displacement pump
- Optional engine stop/start feature. Not used in Chryslers for 2012
- Hybrid technology capable
- Two and all wheel drive versions
- Non-sequential shifting
- Torque range capacity from 300-1000km, 8HP30-8HP90
- 200 millisecond shift times
- Fully electronic shift by wire, no shift cable or linkage
- NIC Neutral idle control allows clutch “B” slippage at stop to reduce load and vehicle creep
- Similar weight and physical dimensions to the ZF6HP26
- Adaptive Strategies: High Temperature, Warm Up, Cruise Control, Winter Mode, Drag Recognition and Neutral Idle Control
- Air cooled



ZF8HP45
Introduction (continued)

This 8-speed transmission has fewer moving parts than the 6HP26 6-speed. There are only three multi-disc clutch packs and two multi-disc brakes in the transmission geartrain (figure 3, labeled A, B, C, D and E). Only two of the five clutch elements are open (released) in each gear.

The fewer open shift elements there are, the fewer internal transmission components that'll be rotating relative to one another. This provides a significant reduction in friction loss and reduces the transmission's rotating mass. Both qualities will contribute to improving the overall fuel economy and acceleration. By comparison, the Lexus AA80E 8-speed uses four gear sets and seven multi-disc clutch packs.

Clutch Application Chart

Gear	Brake		Clutch			Ratio
	A	B	C	D	E	
1	●	●	●			4.69:1
2	●	●			●	3.13:1
3		●	●		●	2.10:1
4		●		●	●	1.67:1
5		●	●	●		1.29:1
6			●	●	●	1.00:1
7	●		●	●		0.84:1
8	●			●	●	0.67:1
Reverse	●	●		●		3.30:1

ZF8HP45
Introduction (continued)

Optional Engine Start/Stop Function
This feature is enabled by the development of the hydraulic impulse oil storage system (HIS). At idle, the engine automatically shuts off. The HIS system supplies the oil pressure needed to keep the transmission's clutch elements engaged while the engine is off. 350 milliseconds after starting, the vehicle is ready to drive. With the start/stop function, it's possible to reduce fuel consumption by another 5% and further reduce CO^2 output.
*This feature is not reported for use in Chryslers for 2012.

According to ZF, when comparing fuel economy to their 6-speed transmission, the newly developed 8-speed automatic transmission reduces fuel consumption by an additional 11%. The hybrid model will provide even better fuel economy and further reduced CO^2 output. The HIS system relies on a charged oil, accumulator-type reserve to maintain oil pressure with the engine off. There are no additional pumps that would load the system and counteract the fuel savings.

ZF8HP45
Introduction (continued)

Sporty models like the Chrysler 300S and the Charger Rally will receive a manual shift mode with shift paddles mounted on the steering wheel. Initial road test statements are, “It shifts so fast and smooth, if it didn’t have a tachometer you might not have known it shifted.” With 200 millisecond shift times, it’s hard to argue with that. Other lower-priced models won’t have the manual mode feature. Those cars will only have drive and low select options.

722.6 NAG 1
P2767

Some Chrysler applications using the 722.6 (NAG 1) transmission may experience a P2767 DTC related concern. P2767 is set if the TCM fails to see a signal from the turbine B sensor. This concern is likely to be intermittent and may be difficult to duplicate.

Replace the “Lead Frame Assembly”. The lead frame assembly houses the speed sensor and is now available as a separate part (Part number 68049181aa). Take care when tightening the screw as you can twist and damage the wires.

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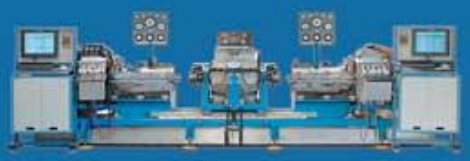

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