



4T65-E

P0742 TCC SYSTEM STUCK ON (*In depth Diagnosis*)

COMPLAINT: A GM vehicle equipped with a 4T65-E transaxle comes to the shop with complaints of harsh shifting, engine lugging or lack of power. The Service Engine Soon light (MIL) may or may not be illuminated at this time.

When the vehicle is scanned, a P0742 fault code defined as TCC system stuck on, is stored in memory. While this code is current, the PCM will command TCC on at maximum capacity and freeze shift adapts.

CAUSE: The PCM supplies 12 volts on CKT 657 to the TCC release switch with the ignition switch on or in the run position. (See figure 1) The TCC release switch is located inside the transaxle as part of the fluid pressure switch assembly. (See figure 2) This code is typically set when voltage on CKT 657 remains low, 6 times for 4 seconds, when TCC is commanded off during the current ignition cycle.

There are several possible causes for this problem such as follows;

A possible electrical issue could be a short to ground on the signal circuit (CKT 657) between the PCM and the TCC release switch.

A faulty TCC release switch.

The TCC/PWM solenoid is stuck.

Valve body concerns, such as a sticking TCC control valve, TCC regulator apply valve, torque signal regulator valve or pressure regulator valve.

The TCC feed limit/blow off ball valve in the case cover/channel plate is stuck closed.

A faulty PCM.

CORRECTION: *External electrical checks:*

Scan tool data may not display TCC release switch status.

To test CKT 657, unplug the harness connector at the transmission and identify terminal U. (See figure 3) With a DVOM set to DC volts, place the negative lead to a known good ground and the positive meter lead to terminal U in the harness connector. Turn the **key on** with the **engine off**. Battery voltage should be seen.

If battery voltage **is** seen at this time, proceed with **Scenario 1**.

If battery voltage **is not** seen at this time, proceed with **Scenario 2**.

(Scenario 1) If battery voltage IS seen:

Turn the key off. Plug in trans harness connector and then turn key on again. Recheck voltage on wire at terminal U from wire entry side of connector. No voltage should be seen.

Start the engine and recheck voltage while the engine is running. Battery voltage should be seen. If battery voltage is not seen at this time then either the internal harness is shorted to ground or the TCC release switch is defective.

This switch is normally closed to ground without oil pressure present. With the engine running in Park or Neutral, TCC release oil acting on the switch should open the contact.

Repair internal harness or replace fluid pressure switch assembly as necessary.



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CORRECTION: *External electrical checks continued:*

(Scenario 2) If battery voltage IS NOT seen:

For 98 and newer models, cut the wire at terminal 63 in the PCM C2 connector, approximately 2 inches from the connector. For 97 vehicles use terminal 75. (See figure 4) Recheck voltage on the piece of cut wire that is protruding from the PCM connector. If battery voltage is now present, then trace and repair short to ground in wire between PCM connector and trans connector terminal U. Or, run a new wire to the trans harness connector in place of the existing wire. Cut the old wire out of the harness at both ends and tape it back. Be sure to solder and shrink wrap the new wire and tape it into the existing harness for neatness. This is usually a yellow wire from the PCM to the trans harness connector.

If no voltage is present on the cut wire at PCM connector, then the PCM will require replacement as the circuit would be shorted to ground inside the PCM.

NOTE: *Electrically, this code can only be set by a short to ground on CKT 657. An intermittent or constant break or open in this circuit will not set a code P0742.*

Internal mechanical concerns:

If all external electrical checks test good at this time, then unplug the harness connector at the transmission. Start the engine, step firmly on the brake pedal and place the shift lever in Overdrive. If the engine stalls out or if it feels like the converter clutch is dragging, then replace the TCC/PWM solenoid. It is stuck right now.

(See figures 5 and 6 for correct solenoid usage and identification information)

With the trans connector unplugged and both shift solenoids off, the transmission will be forced to 3rd gear allowing 2nd clutch oil to feed the TCC/PWM solenoid. (See figure 7)

This does not necessarily mean that the solenoid is good if the engine does not stall out or drag at this time.

Valve body concerns such as a sticking TCC control valve may cause the vehicle to stall in a Drive range 1st gear or Reverse. The TCC regulator apply valve can cause a surge or harsh TCC engagement. Problems with the torque signal regulator or pressure regulator valve can result in harsh engagements and shifting. (See figure 8)

Disassemble and clean valve body. Free up sticking valves or replace control valve assembly as necessary if valves or bores are badly scored or damaged beyond repair.

Check to see if the TCC feed limit/blow off ball valve in the case cover/channel plate is stuck and repair as necessary. (See figure 9)

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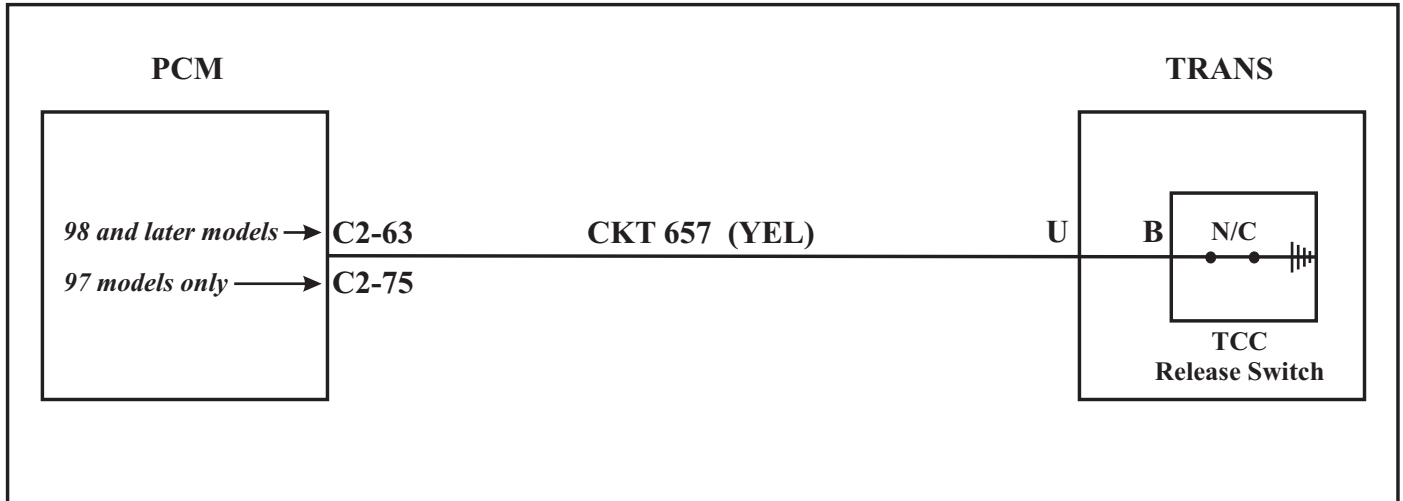


Figure 1

SERVICE INFORMATION: (See Figure 2)

At the time of this printing, the current OEM part numbers are as follows:

24223197 = 1st Design Fluid Pressure Switch Assembly

24216426 = 2nd Design Fluid Pressure Switch Assembly

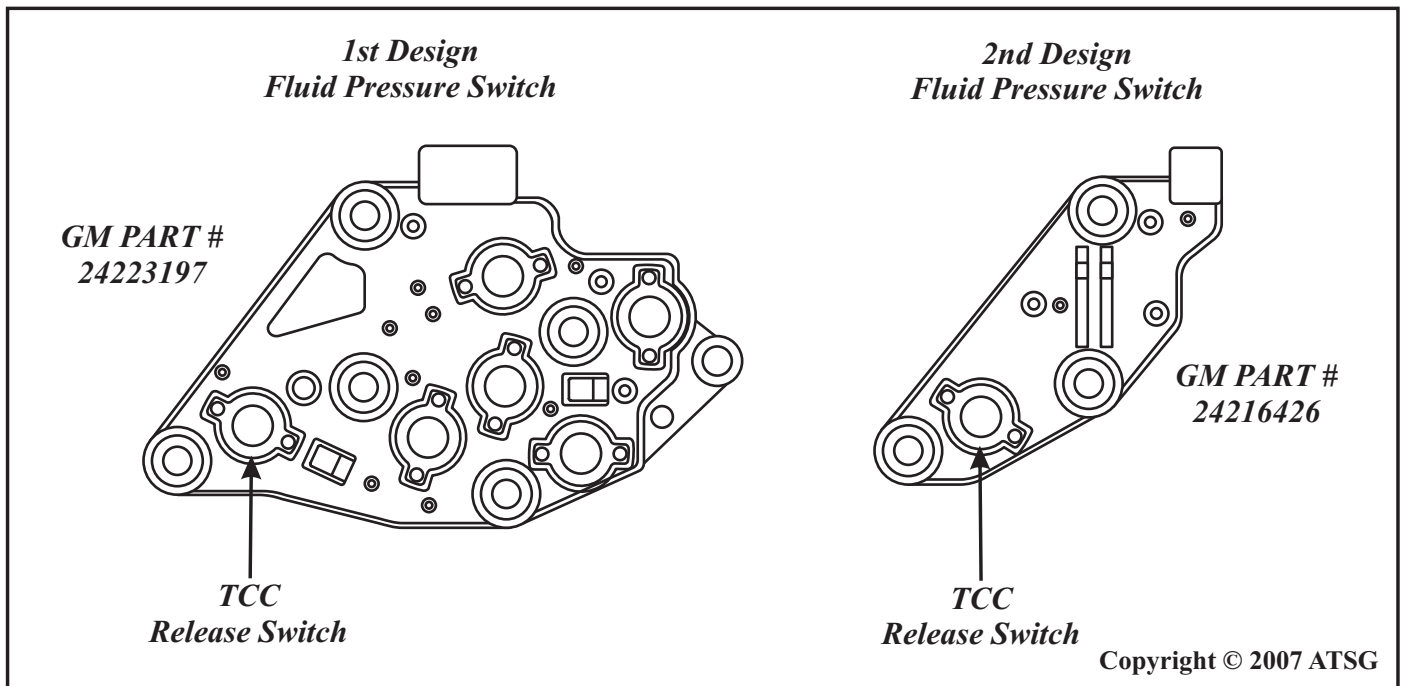


Figure 2

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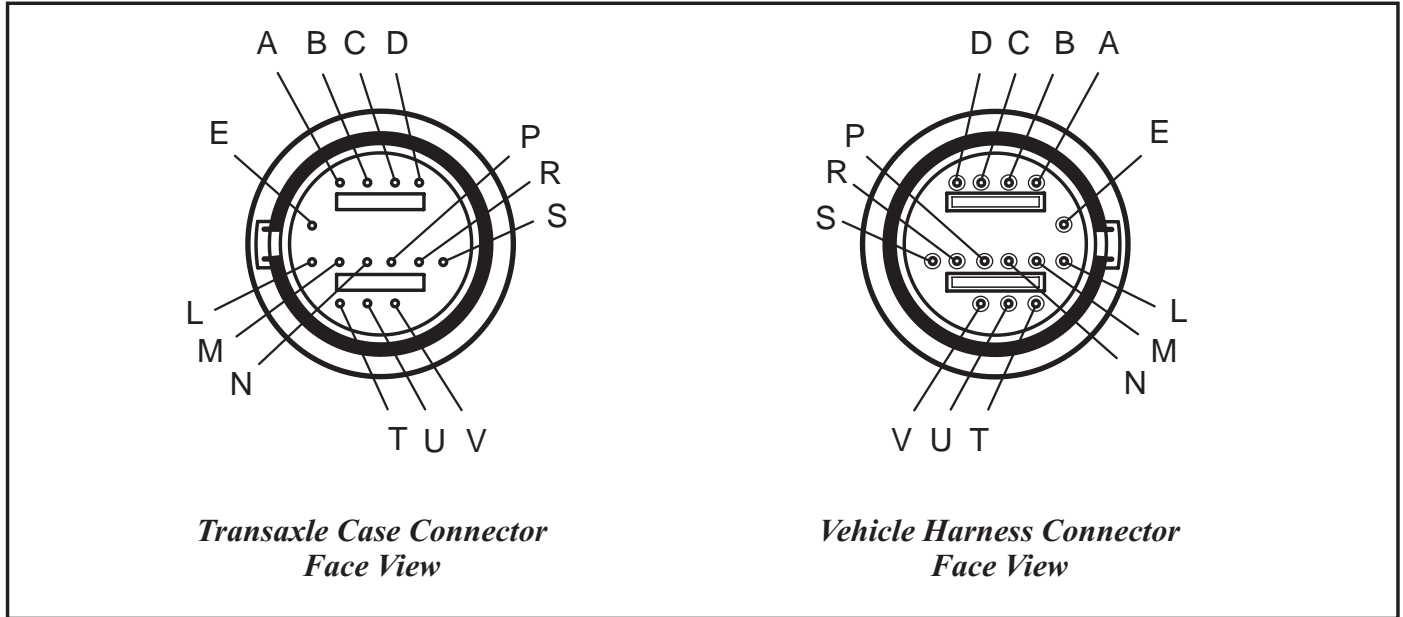


Figure 3

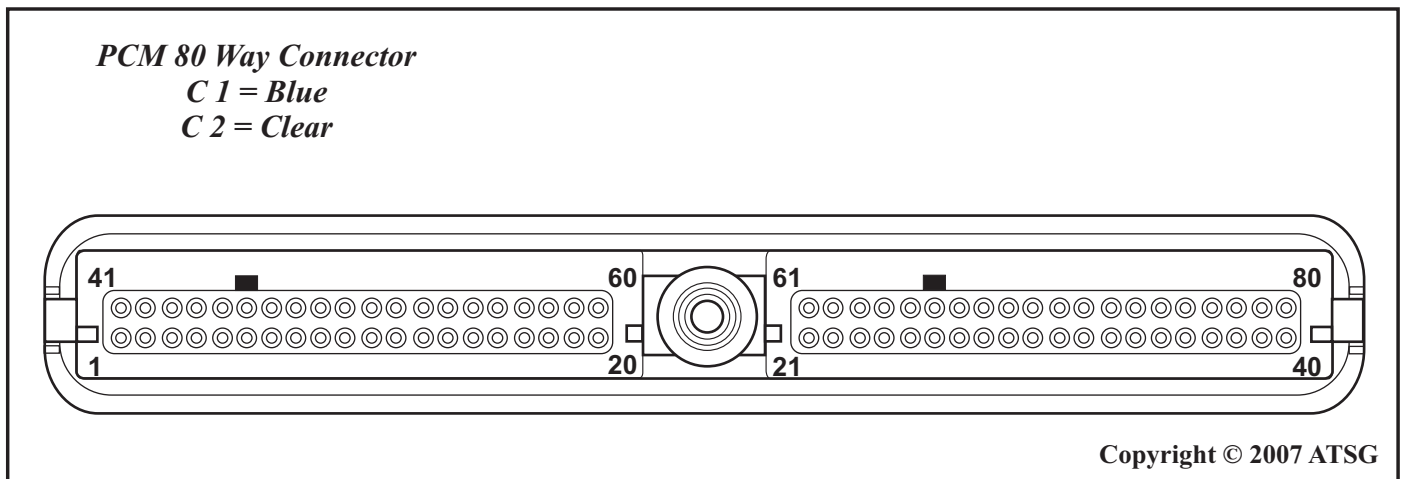


Figure 4

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SERVICE INFORMATION: (See Figures 5 and 6) Identify the correct TCC/PWM solenoid for your application. It is very easy to use the wrong solenoid as both solenoids have a gray plastic connector with the same configuration and appear to be identical. They are not. Both solenoids will have 2 groups of 4 numbers etched on the can surrounding the solenoid winding. The first group indicates the Julian Build Date and the second group are the last 4 digits of the part number. Refer to GM TSB 02-07-30-039A dated Dec/2002. At the time of this printing, the correct OEM part numbers are as follows:
 24227747 = TCC Solenoid Valve for 4T65-E ONLY. This number supercedes previous part number 24214974.
 24227792 = TCC Solenoid Valve for 4T40/45-E and 4T80-E. This number supercedes previous part number 24212690. Refer to GM TSB 02-07-30-039F dated Aug/2005.
 Part number 24227792 is currently listed for use in 4L60/65-E units as well.

SPECIAL THANKS: To the good folks in the Parts Dept. at AUTO CITY PONTIAC GMC in Miami Florida and FIDELIO MARTINEZ whose patience and assistance in researching much of this information was invaluable.

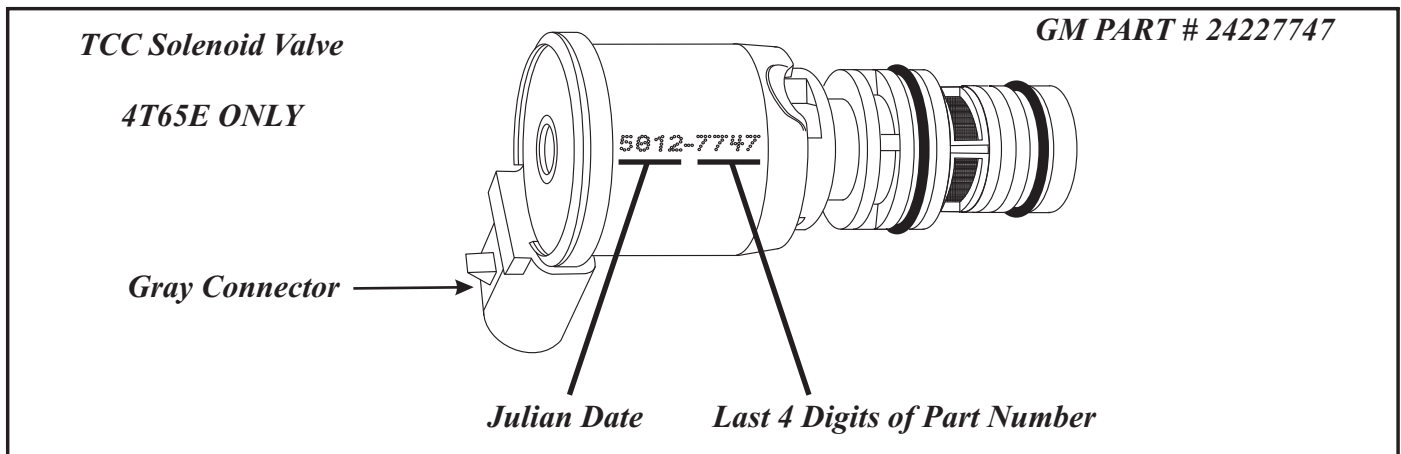


Figure 5

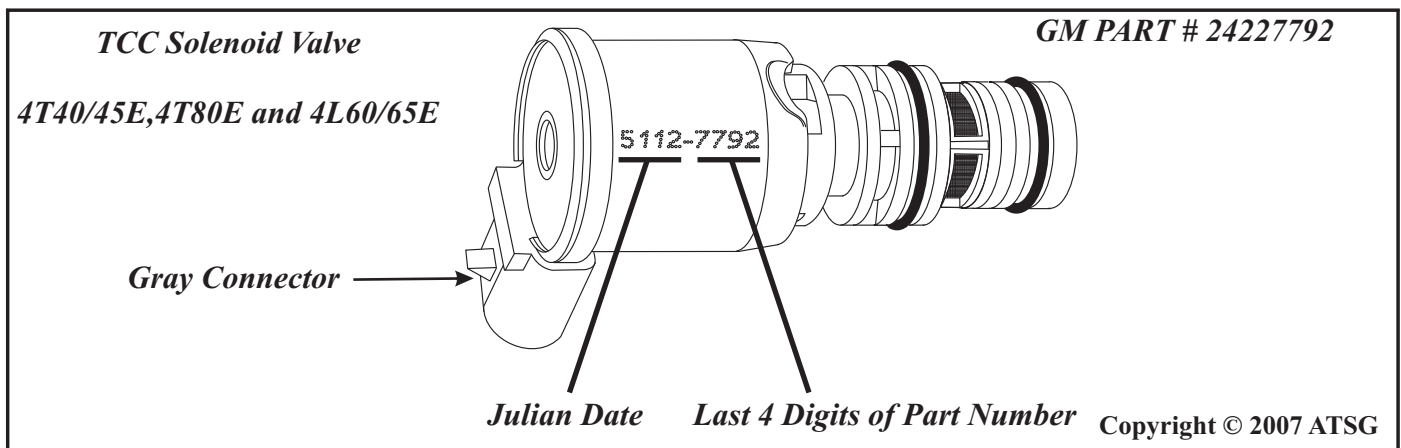


Figure 6

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TCC HYDRAULIC CIRCUIT IN DRIVE 2ND 3RD AND 4TH GEARS (Converter Clutch Released)

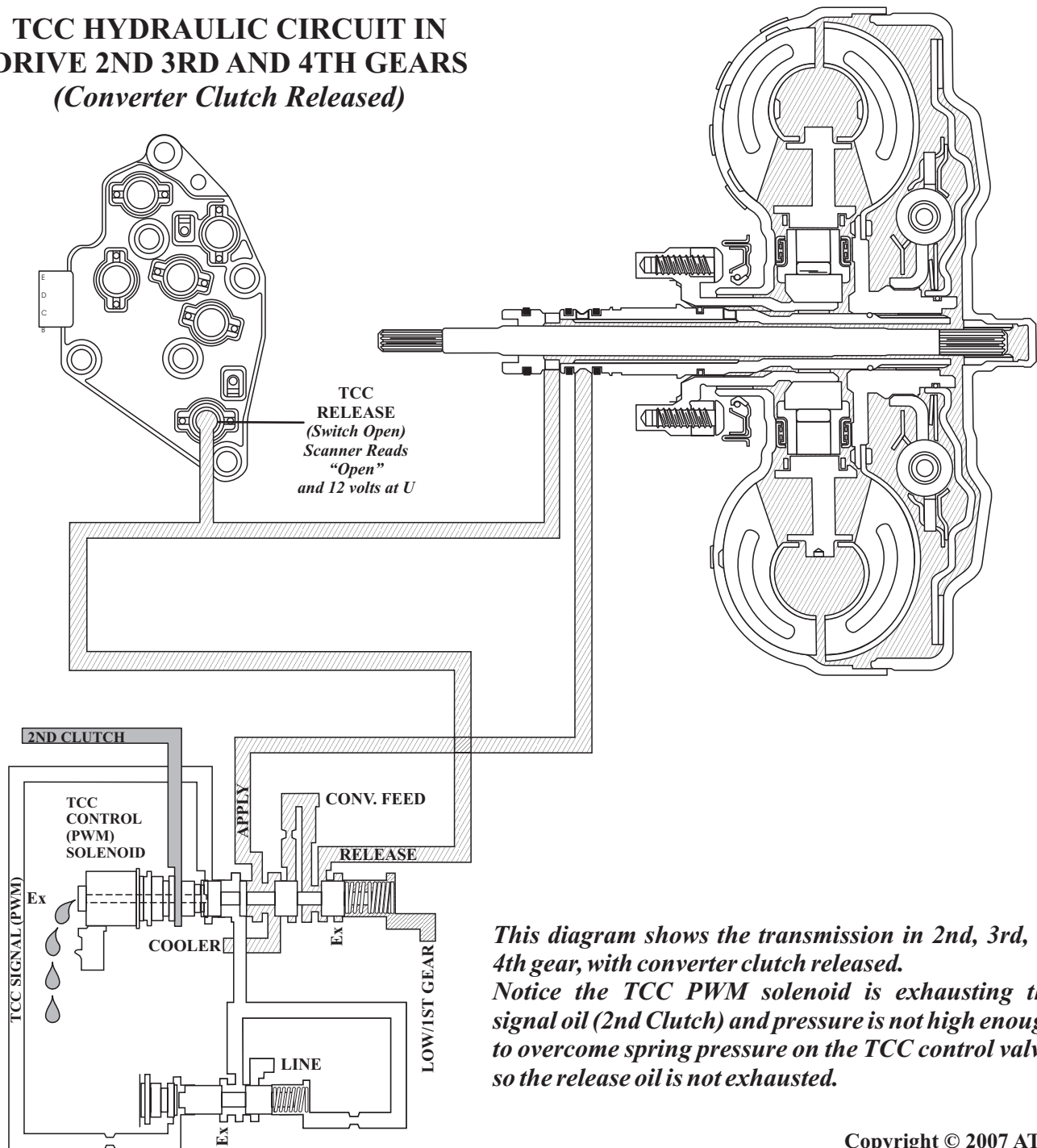
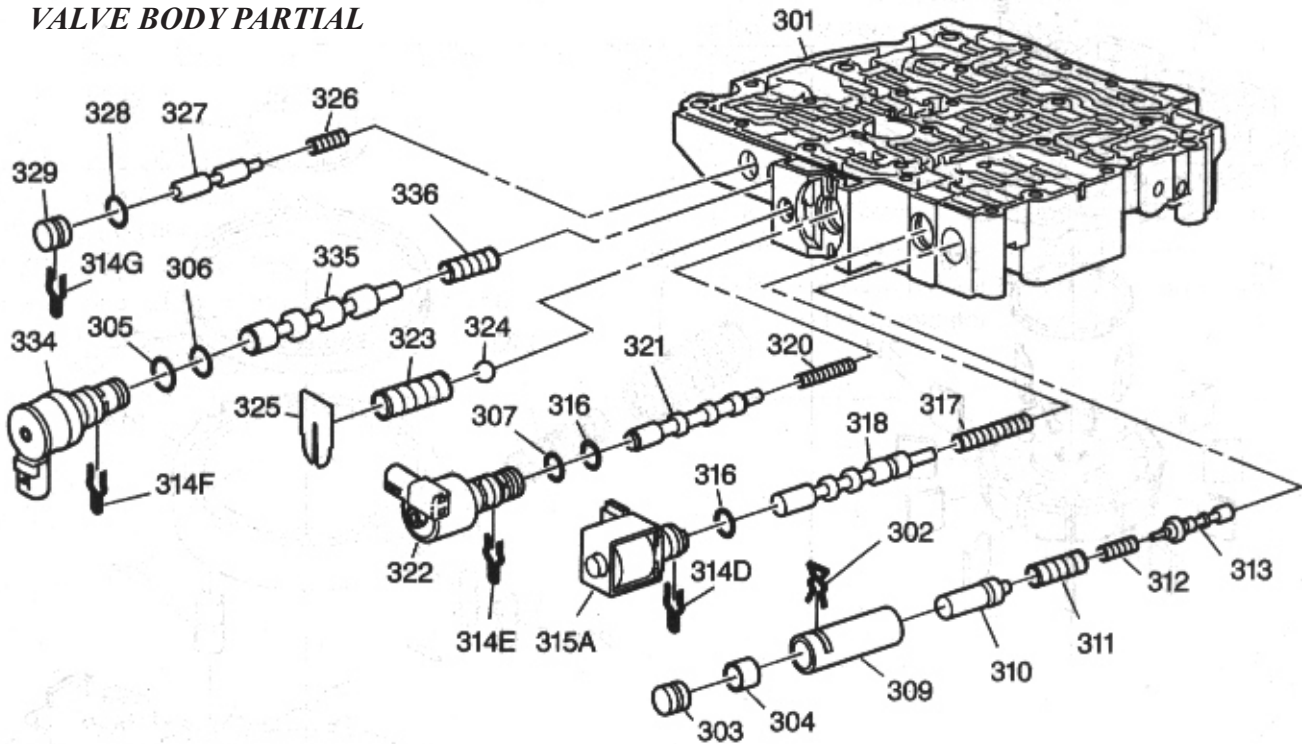


Figure 7

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EXPLODED VIEW VALVE BODY PARTIAL



Legend:

- | | |
|---|---|
| (301) Control Valve Body | (316 A) 1-2/3-4 Shift Solenoid O-Ring Seal |
| (302) Line Boost Valve/Bushing Retainer | (316 B) EPC Solenoid O-Ring Seal |
| (303) Line Boost Valve Bore Plug | (317) 1-2 Shift Valve Spring |
| (304) Line Boost Valve | (318) 1-2 Shift Valve |
| (305) TCC PWM Solenoid O-Ring Seal | (320) Torque Signal Regulator Valve Spring |
| (306) TCC PWM Solenoid O-Ring Seal | (321) Torque Signal Regulator Valve |
| (307) EPC Solenoid O-Ring Seal | (322) Pressure Control Solenoid (EPC) |
| (309) Reverse Boost Valve Bushing | (323) Line Pressure Relief Valve Spring |
| (310) Reverse Boost Valve | (324) Line Pressure Relief Valve |
| (311) Outer P.R. Valve Spring | (325) Line Pressure Relief Valve Spring Retainer |
| (312) Inner P.R. Valve Spring | (326) TCC Regulator Apply Valve Spring |
| (313) Pressure Regulator (P.R.) Valve | (327) TCC Regulator Apply Valve |
| (314 D) Shift Solenoid Retainer | (328) TCC Regulator Apply Valve Bore Plug O-Ring Seal |
| (314 E) EPC Solenoid Retainer | (329) TCC regulator Apply Valve Bore Plug |
| (314 F) TCC PWM Solenoid Retainer | (334) TCC PWM Solenoid |
| (314 G) Bore Plug Retainer | (335) TCC Control Valve |
| (315 A) 1-2/3-4 Shift Solenoid | (336) TCC Control Valve Spring |

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Figure 8

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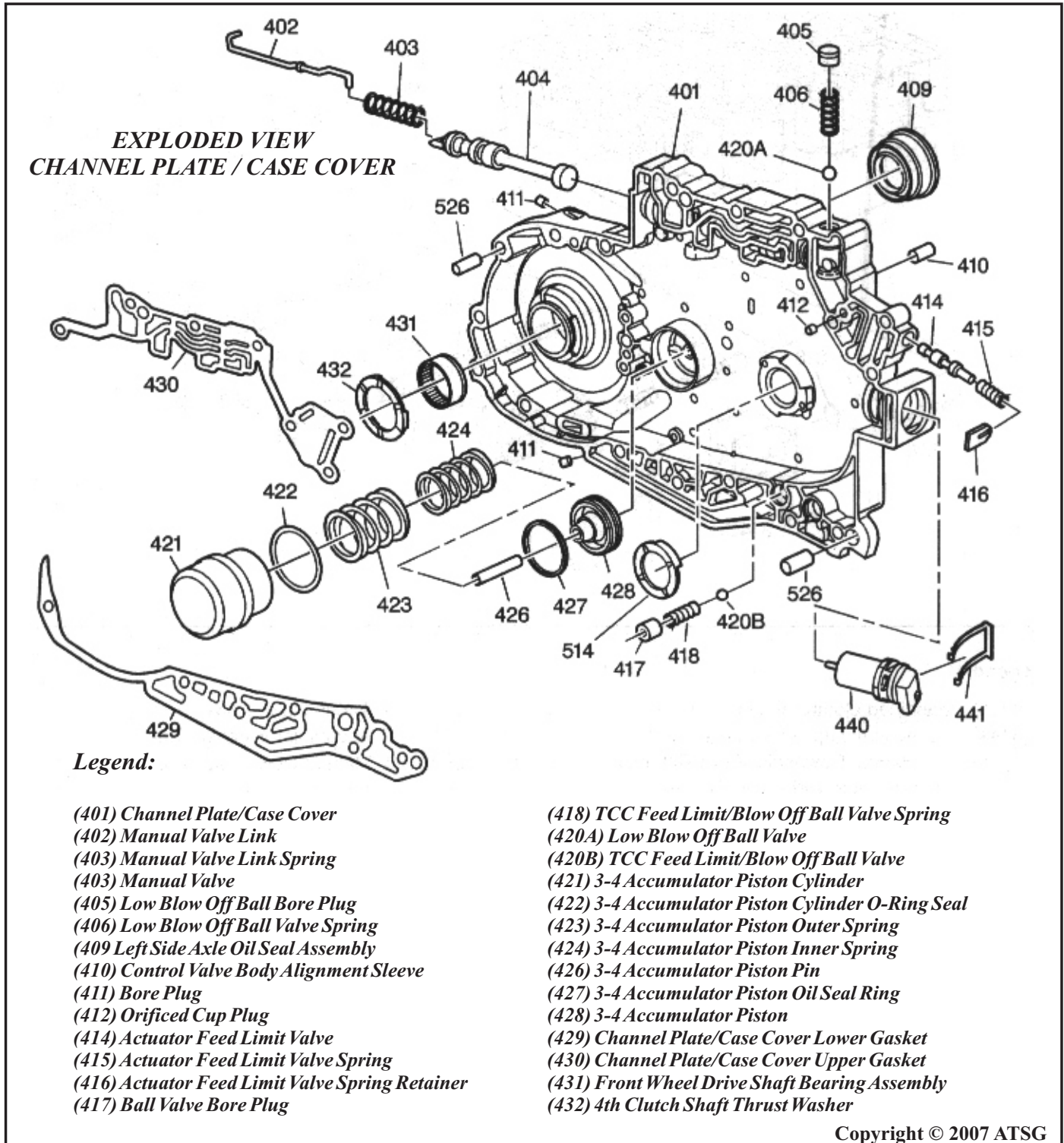


Figure 9