



## CHRYSLER AND DODGE VEHICLES

### 1776 SOLENOID SWITCH LATCHED IN THE LR POSITION

**COMPLAINT:** The on board computer system for the transmission may intermittently produce a code P1776 Solenoid Switch Valve Latched in the LR Position causing a default to limp.

**CAUSE:** There problem with diagnosing this code is that there are several possibilities to be considered.

1. For the 41TE, 42LE and 42RLE transmissions, one such cause was a defective solenoid block which Chrysler revealed in bulletin number 21-008-04 REV issued October 16<sup>th</sup>, 2004. For the LH vehicles, the solenoid block that are prone to this problem can be easily identified with Julian dates between that fall between 3001 and 0603. The first three characters are the day of the year while the 4th represents the year. So a 3001 would be the 300th day or 2001. These Julian dates are either dot-peened or printed on the solenoid block near the pass through connector.

For all other models affected refer to the following information:

2004 (AN) Dakota  
2004-2005 (CS) Pacifica  
2003-2004 (JR) Sebring Convertible/Sebring Sedan/Stratus Sedan  
2003-2004 (KJ) Liberty  
2003-2004 (KJ) Cherokee (International Markets)  
\*\*2002\*\*-2004 (LH) 300M/Concorde/Intrepid  
2003-2004 (PL) Neon/SX 2.0  
2003-2005 (PT) PT Cruiser  
2003-2005 (RG) Chrysler Voyager (International Markets)  
2003-2005 (RS) Town & Country/Voyager/Caravan  
2003-2004 (TJ) Wrangler

#### APPLICATION INFORMATION

AN	3.7L	42RLE
CS	3.5L	41TE
JR	2.4L or 2.7L	41TE
KJ	3.7L	42RLE
LH	2.7L or 3.5L	42LE
PL	2.0L	41TE
PT	2.0L or 2.4L	41TE
RS/RG	2.4L, 3.3L or 3.8L	41TE
TJ	4.0L	42RLE



## Technical Service Information

### CAUSE:

2. Chrysler's TSB on this subject also points out that if the manual valve was not fully placed into the OD position due to the shifter cable either being out of adjustment or defective, code 1776 will also set. This also means that a defective Transmission Range Sensor is malfunctioning it too could produce an erroneous P1776.
3. A compromised Low/Reverse Pressure Switch signal wire being shorted to ground intermittently is another possible cause and may be accompanied with either a code P1784 or P0841 indicating a fault with the LR Pressure Switch signal wire.
4. The Solenoid Switch Valve in the valve body is sticking in the Low/Reverse position.  
Refer to Figure 1 for the location of the Solenoid Switch Valve on 45RFE models.  
Refer to Figure 2 for a hydraulic schematic of 4th gear with TCC Off.  
Refer to Figure 3 for a hydraulic schematic of 4th gear with the TCC On.  
***Notice the position of the switch valve as it is held to the left blocking the passage to the Low Reverse Clutch and pressure switch.***  
Refer to Figure 4 for a hydraulic schematic of 4th gear with the Solenoid Switch valve stuck to the right, (Low Reverse Position).  
***In this position the Low Reverse Solenoid can apply the Low Reverse Clutch instead of the TCC. This also allows the Low Reverse Pressure switch to be contacted setting the DTC 1776.***

- CORRECTION:**
1. For LH vehicles verify the Julian dates dot-peened on the solenoid block as described under cause number 1 and replace as necessary. For all other affected models refer to the list under cause number 1 and replace the solenoid block as necessary.
  2. Inspect the shifter cable and all working parts for wear and play. Replace and/or adjust as necessary. Afterwards, use a scanner to verify that the Transmission Range Sensor (TRS) signal in all positions paying particular attention to the Overdrive position. If the shifter linkage is not loose and has been adjusted properly but the TRS signal is erratic or wrong, the associated wiring and/or the sensor will need to be replaced.
  3. Inspect the Low/Reverse Pressure Switch signal wire from the transmission to the computer for a short to ground and replace as necessary.
    - A) For the 41TE and 42LE transmissions with a TCM: wire 2 at the solenoid block to terminal 50 at the TCM (PCM Models - Terminal 29 in the C4 connector).
    - B) For the 42RLE transmission with a TCM: wire 10 at the solenoid block to terminal 50 at the TCM (PCM Models - Terminal 29 in the C4 connector).
    - C) For the 45RFE transmission with a TCM: wire 14 at the solenoid block to terminal 50 at the TCM (PCM Models - Terminal 29 in the C4 connector - See figures 5-8).

*Continued on next page*



## Technical Service Information

**CORRECTION:** 4. Clean the solenoid switch valve line up in the valve body and ensure that it has free movement. When the valve body is assembled, you should be able to shake the valve body and hear that it is moving.

**Diagnostic tip:**

*If code 1776 sets on top of a TCC command by the computer, the solenoid switch valve is most likely stuck or latched in the Low/Reverse position. This could be easily identified with a dual scope monitoring both the LR Solenoid and the LR Pressure Switch. When the LR Solenoid pulses to apply the converter clutch, the LR Pressure switch will be toggled to ground almost mirroring the pulse signal of the solenoid. As an example, the 45RFE applied the TCC after 4th gear. If the Solenoid Switch Valve was stuck, 1776 would occur soon after a shift into 4th took place. Figures 9 through 12 shows how this would appear using a scope. With several possibilities as to the cause of a 1776 being produced, this is one method in determining if the code is actually being produced by the switch valve or not.*

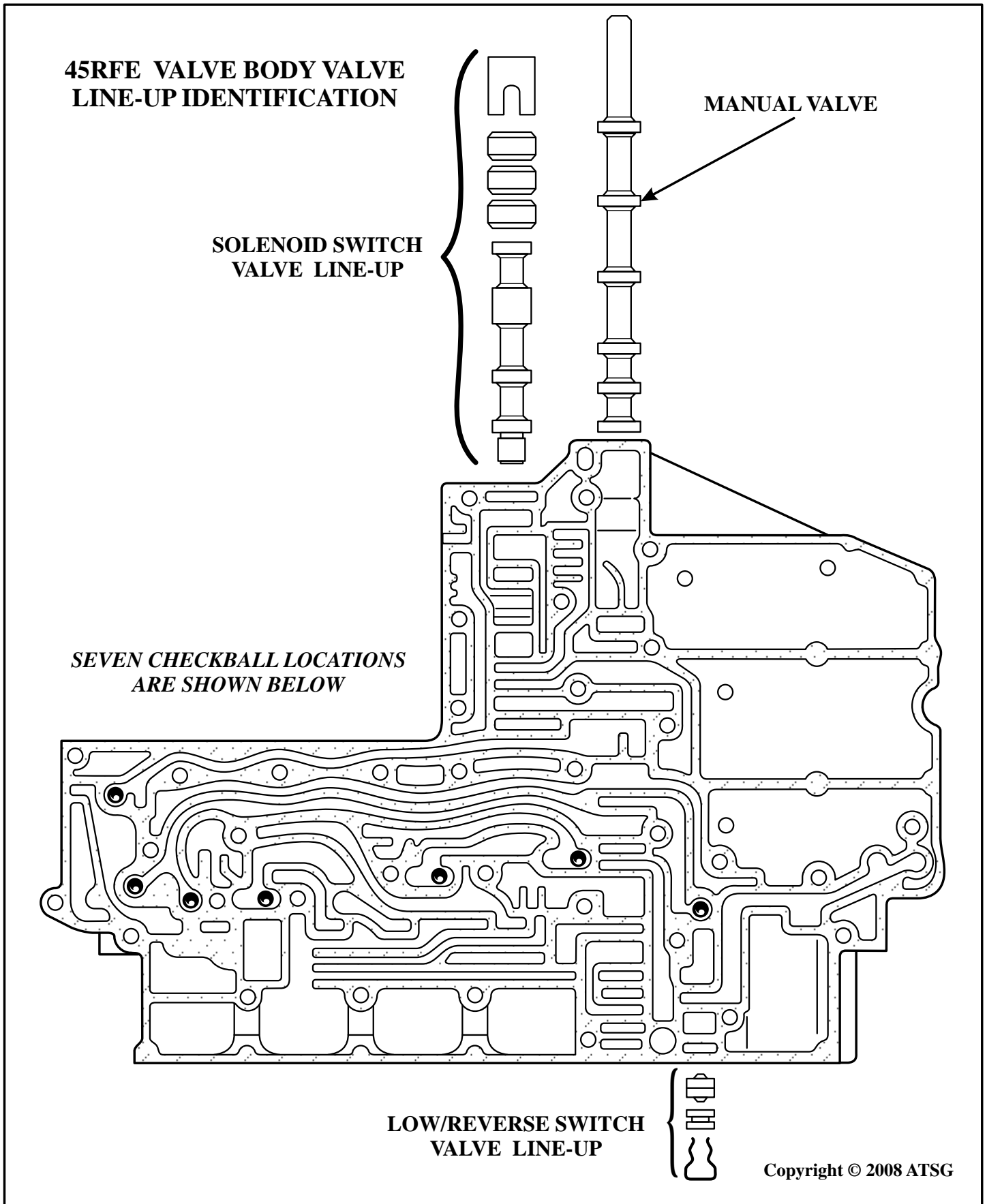


Figure 1

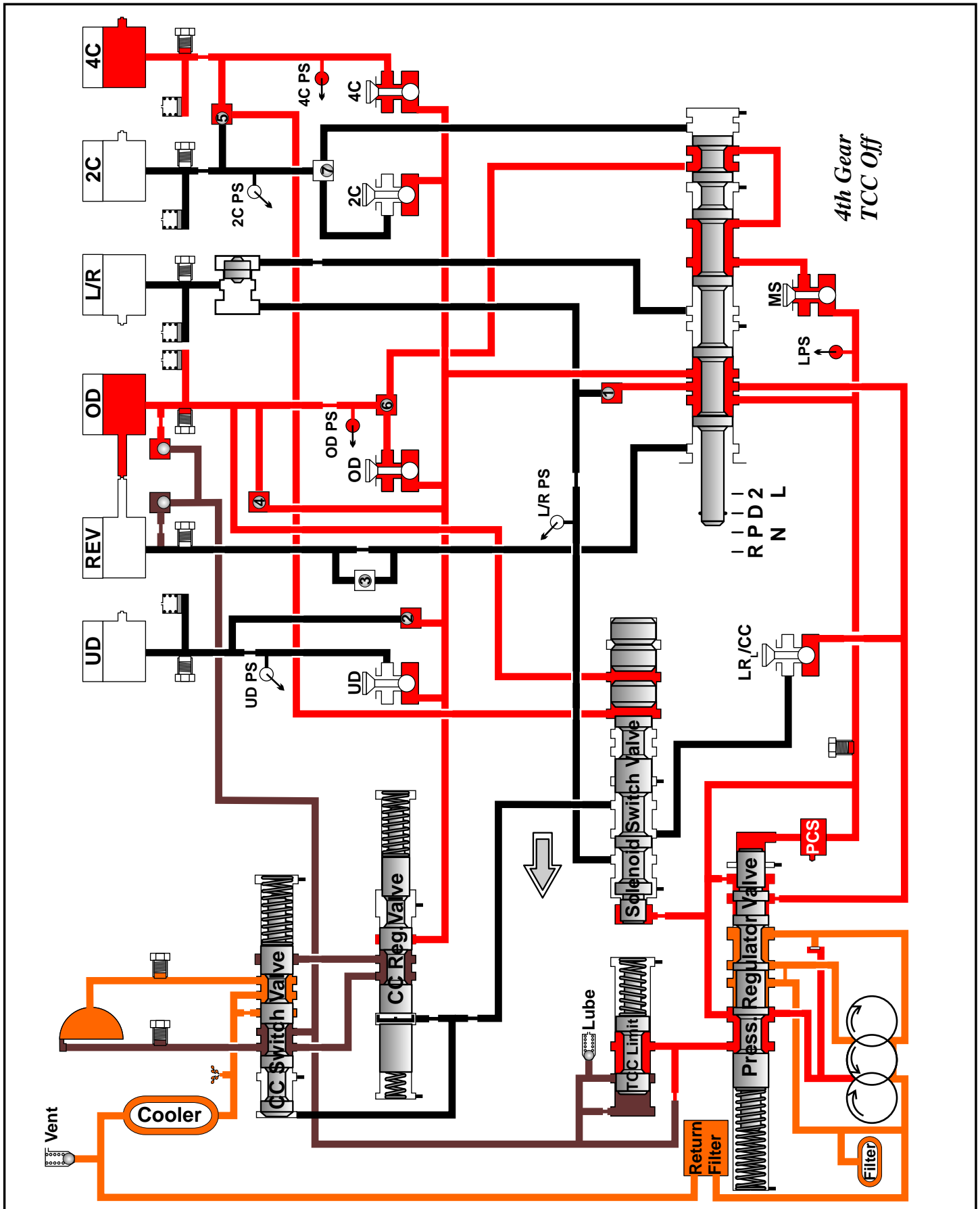


Figure 2

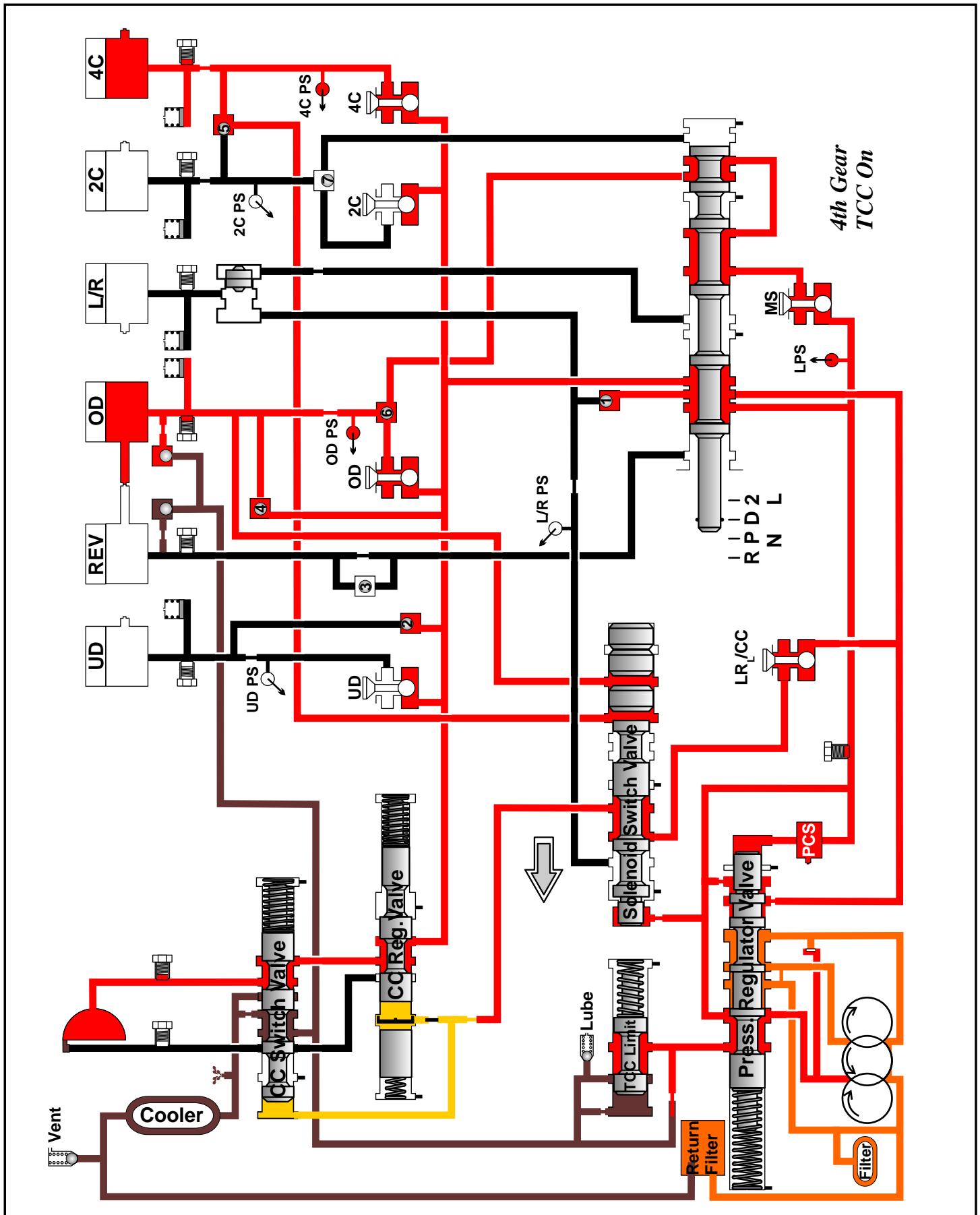
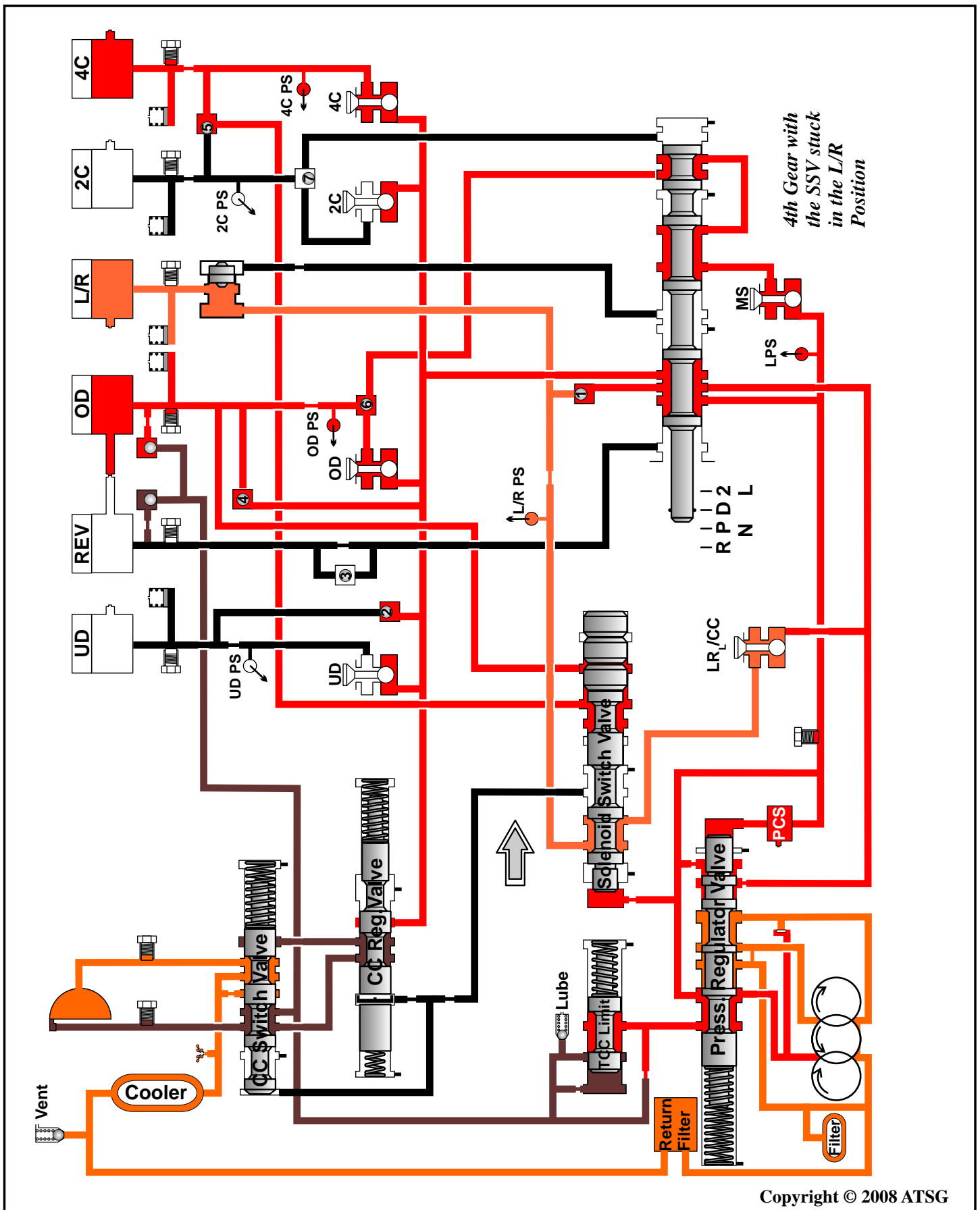
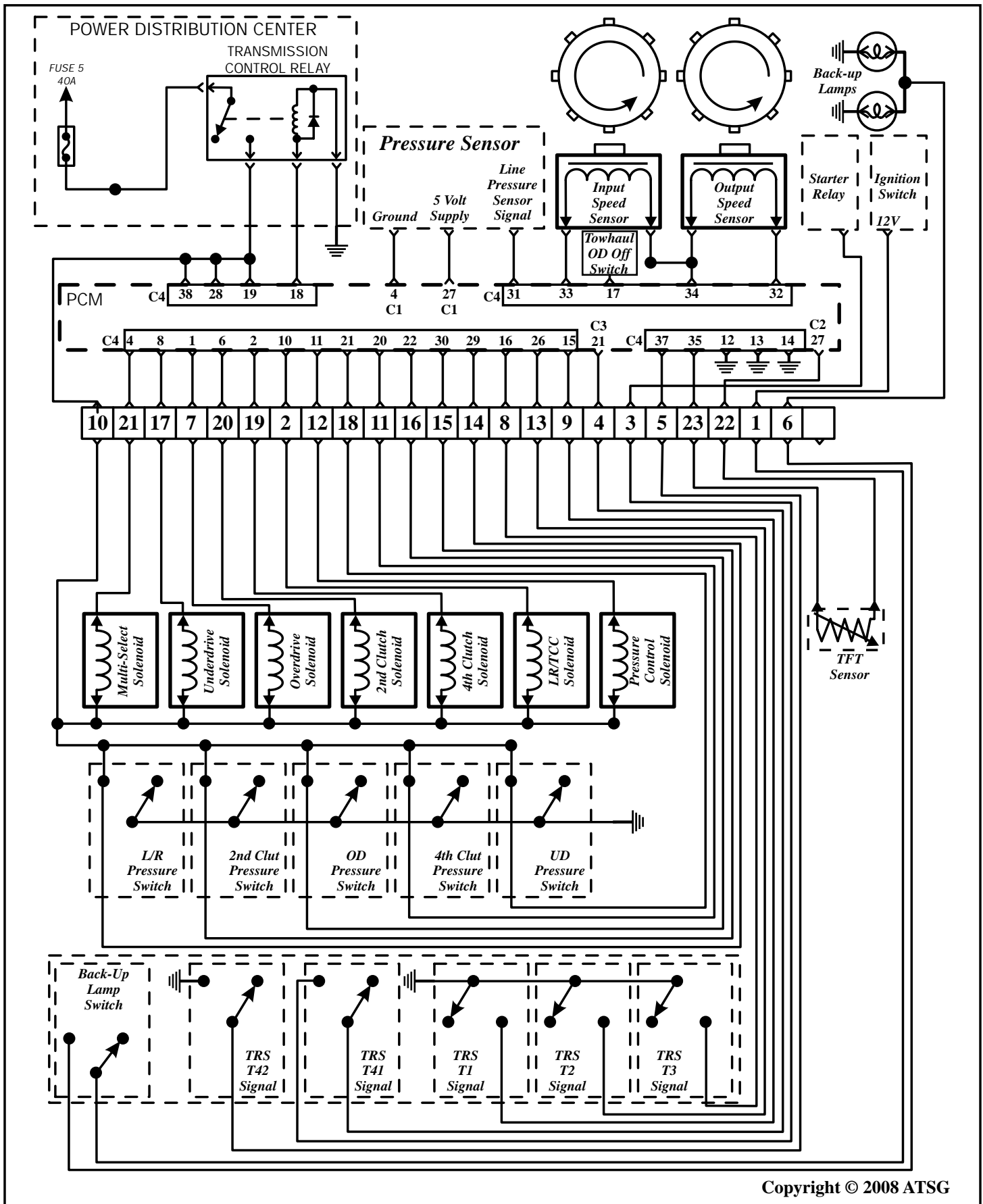


Figure 3



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Figure 4

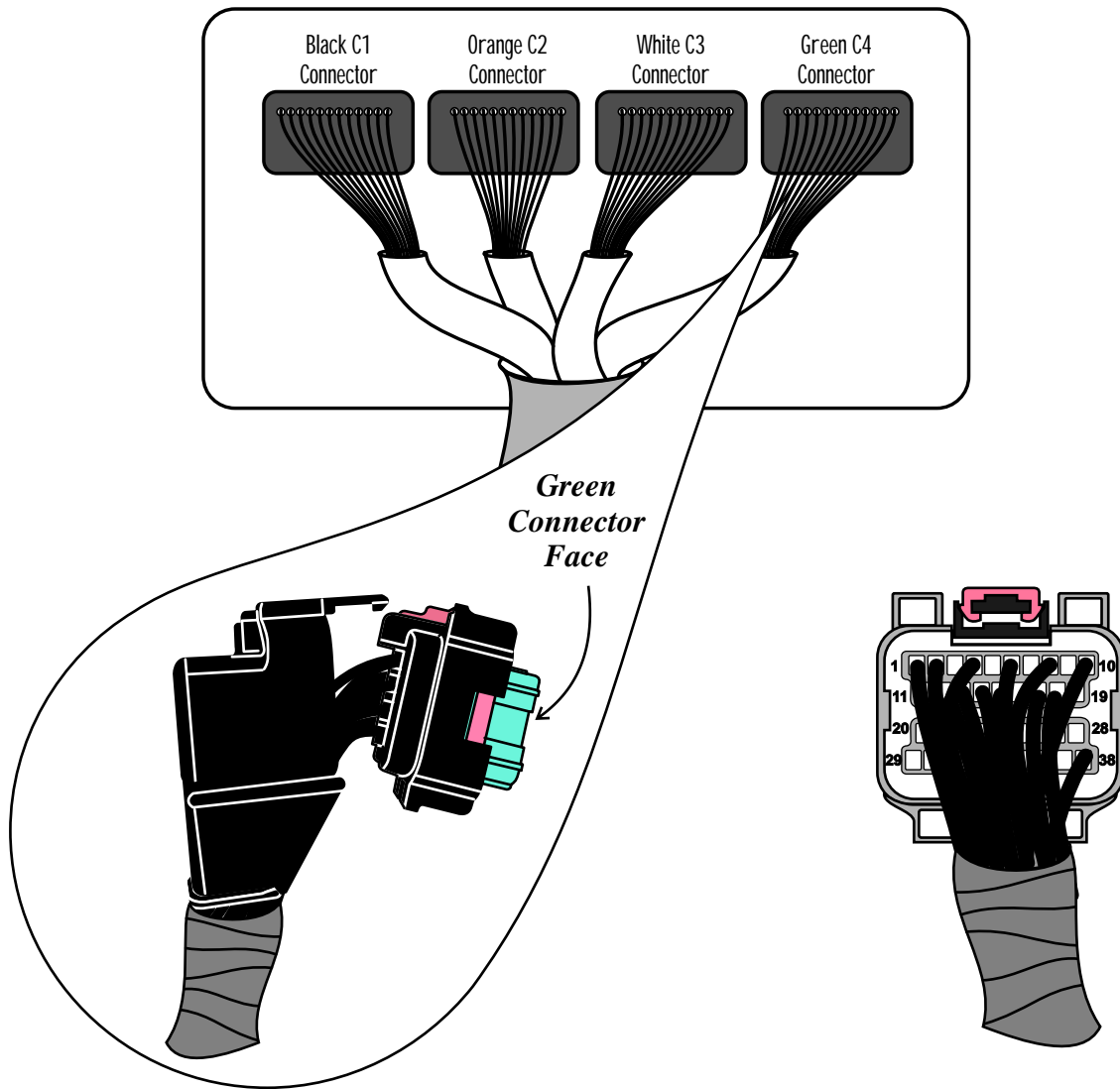


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Figure 5

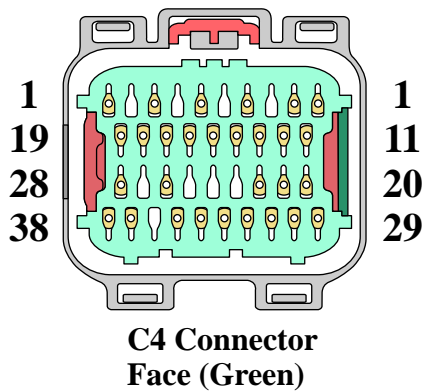


## CONNECTOR LOCATION



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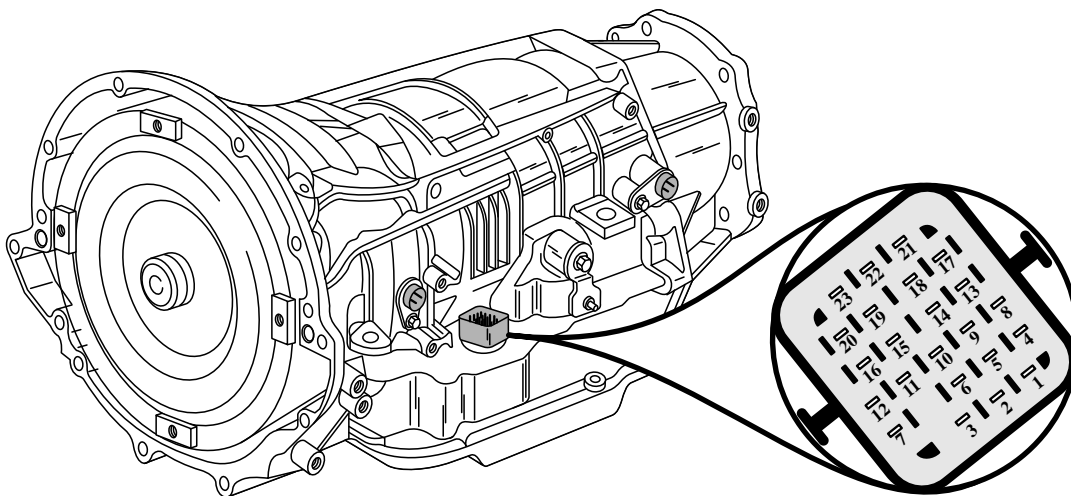
Figure 6



PIN CAVITY	WIRE COLOR	FUNCTION
1	YL/GY	Overdrive Clutch Solenoid Control
2	YL/DG	4th Clutch Solenoid Control
3		
4	DG	Multi-Select Solenoid Control
5		
6	YL/LG	2nd Clutch Solenoid Control
7		
8	YL/LB	Underdrive Clutch Solenoid Control
9		
10	DG/WH	LR/TC Clutch Solenoid Control
11	YL/GY	Line Pressure Control Solenoid Control
12	BK	Ground
13	BK	Ground
14	BK	Ground
15	DG/LB	Transmission Range Sensor (T1) Signal
16	DG/DB	Transmission Range Sensor (T3) Signal
17	DG	Towhaul Overdrive Off Switch Sense
18	YL/DB	Transmission Control Relay Control
19	YL/OR	Transmission Control Relay Output
20	BR/YL	4th Clutch Pressure Switch Signal
21	YL/WT	Underdrive Clutch Pressure Switch Signal
22	DG/TN	Overdrive Clutch Pressure Switch Signal
23		
24		
25		
26	DG/LB	Transmission Range Sensor (T2) Signal
27		
28	YL/OR	Transmission Control Relay Output
29	YL/TN	Low/Reverse Clutch Pressure Switch Signal
30	DG/YL	2nd Clutch Pressure Switch Signal
31	YL/BN	Line Pressure Sensor Signal
32	DG/BN	Output Speed Sensor Signal
33	DG/OR	Input Speed Sensor Signal
34	DG/VT	Speed Sensor Ground
35	DG/OR	Transmission Oil Temperature Sensor Signal
36		
37	DG/YL	Transmission Range Sensor (T42) Signal
38	YL/OR	Transmission Control Relay Output

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Figure 7



PIN CAVITY	WIRE COLOR	FUNCTION
1	WT/GY	Fused Ignition Switch Battery Voltage
2	DG/WT	LR/TC Clutch Solenoid Control
3	BN/YL	Park/Neutral Position Switch Signal
4	YL/LB	Transmission Range Sensor (T41) Signal
5	DG/YL	Transmission Range Sensor (T42) Signal
6	WT/LG	Back-Up Lamp Feed
7	YL/GY	Overdrive Clutch Solenoid Control
8	DG/DB	Transmission Range Sensor (T3) Signal
9	DG/LB	Transmission Range Sensor (T1) Signal
10	YL/OR	Transmission Control Relay Output
11	BR/YL	4th Clutch Pressure Switch Signal
12	YL/GY	Line Pressure Control Solenoid Control
13	DG/LB	Transmission Range Sensor (T2) Signal
14	YL/TN	Low/Reverse Clutch Pressure Switch Signal
15	DG/YL	2nd Clutch Pressure Switch Signal
16	DG/TN	Overdrive Clutch Pressure Switch Signal
17	YL/LB	Underdrive Clutch Solenoid Control
18	YL/WT	Underdrive Clutch Pressure Switch Signal
19	YL/DG	4th Clutch Solenoid Control
20	YL/LG	2nd Clutch Solenoid Control
21	DG	Multi-Select Solenoid Control
22	DB/DG	Speed Sensor Ground
23	DG/OR	Transmission Oil Temperature Sensor Signal

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Figure 8

## SCOPE CHANNEL I.D.

### 4th Gear

**Channel 1** = LR /CC Solenoid (NV) is energized for TCC Apply

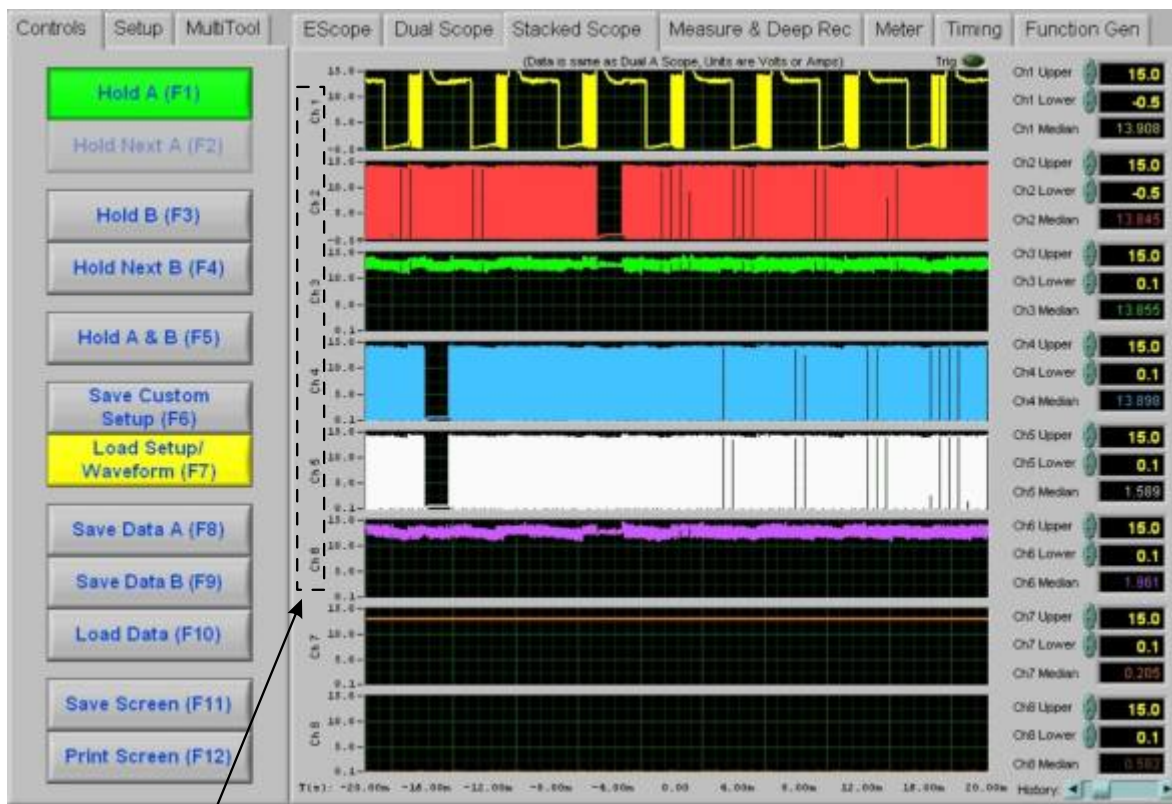
**Channel 2** = Underdrive Solenoid (NA) is energized - (UD) Underdrive Clutch Off

**Channel 3** = Second Clutch Solenoid (NV) is de-energized - (2C) Second Clutch Off

**Channel 4** = Overdrive Clutch Solenoid (NV) is energized - (OD) Overdrive Clutch On

**Channel 5** = Fourth Clutch Solenoid (NV) is energized - (4C) Fourth Clutch On

**Channel 6** = Multi Select Solenoid (NA) is de-energized - (OD) Clutch On (Limp-ready)



Channels

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Figure 9

## 4th Gear to Limp- (all channels indicate all solenoids OFF)

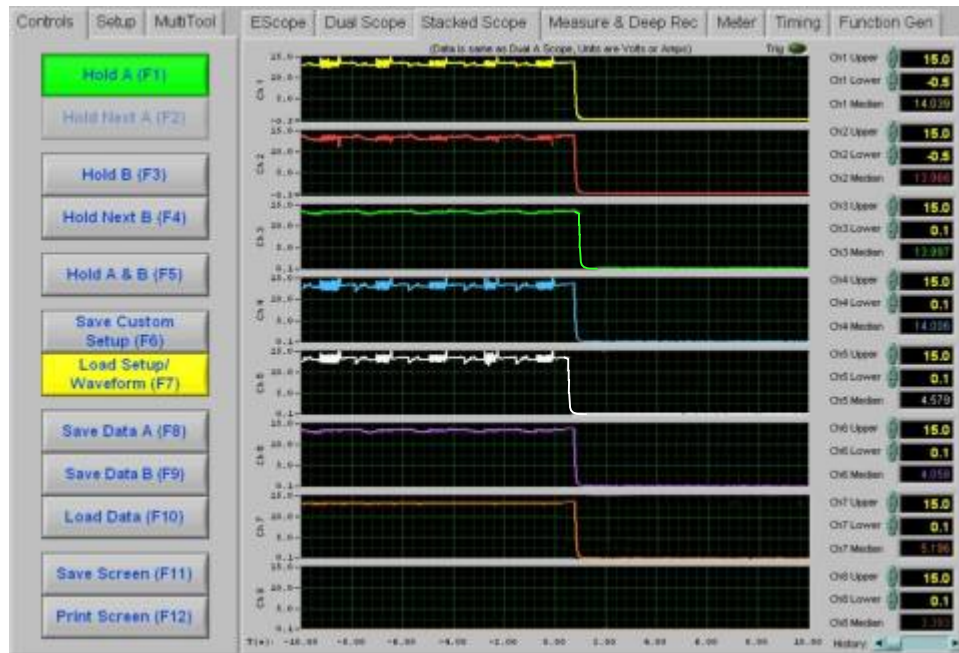


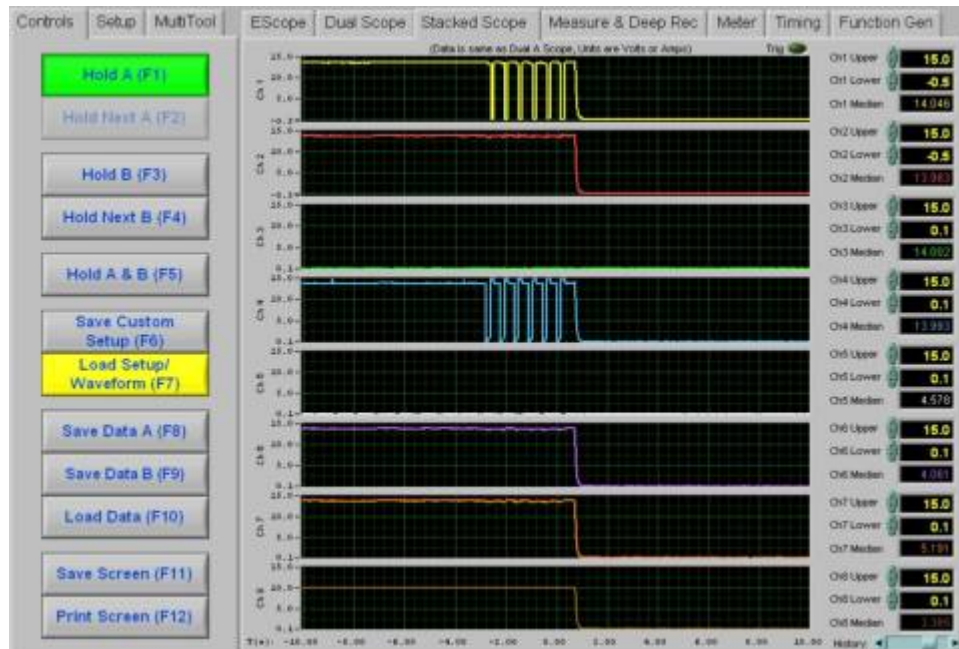
Figure 10

## LR Solenoid & LR Pressure Switch Comparison

**Channel 1** = LR Pressure Switch Signal during TCC Command

**Channel 4** = LR Solenoid Duty Cycle during TCC Command

As the computer was commanding the TCC to be applied the pressure switch was toggled to ground indicating that the solenoid switch valve was latched in the LR position. The computer went to failsafe cutting all power to the transmission.

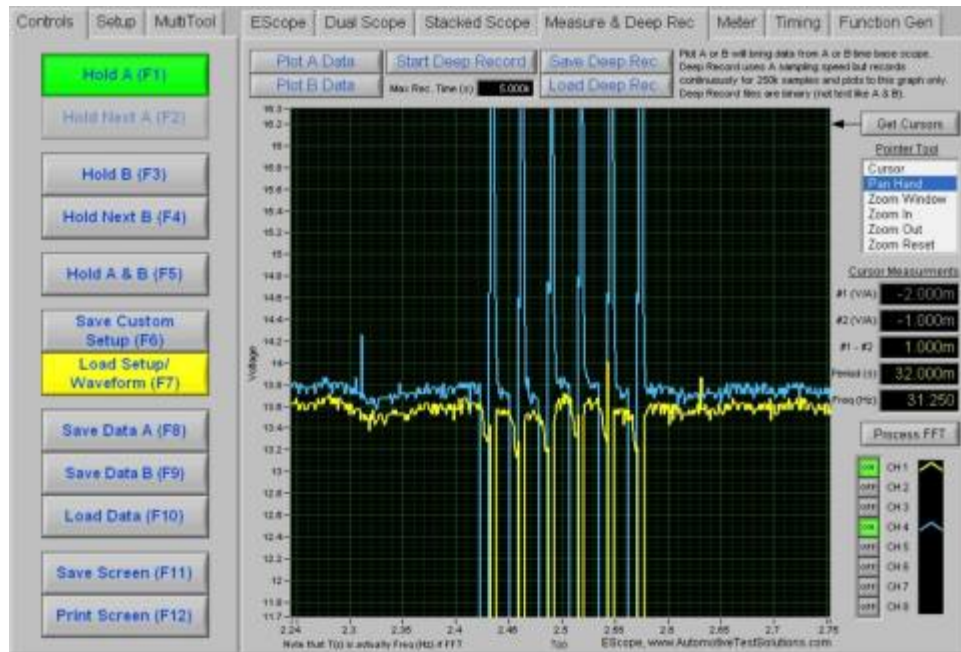


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Figure 11



## Closer view of LR Solenoid and LR Pressure Switch



Notice that as the Low Reverse Solenoid is pulsed the Low Reverse Pressure Switch is closing, indicating a stuck Solenoid Switch Valve.

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Figure 12