THM 4T65E

INTERNAL MODE SWITCH ADDED IN SOME MODELS

CHANGE: Beginning at the start of production for 1999 some models of the THM 4T65E were produced with an "Internal Mode Switch" (IMS). The transaxle Internal Mode Switch (IMS) is a sliding contact switch attached to the selector detent inside the transmission side cover, as shown in Figure 1. The four inputs to the PCM from the IMS indicate which position is selected by the transmission selector lever. This information is used for ignition timing, EVAP canister purge, EGR and IAC valve operation, as well as for starting functions when the selector lever is in P or N and proper ground is made. The state of each input is available for display on the scan tool. The four input parameters represented are Mode P, Mode A, Mode B and Mode C (Refer to Figure 2).

REASON: Mounted internally for increased protection from the elements and engine compartment heat, for increased durability and reliability. This also eliminates the need for adjustments at the vehicle assembly plants.

PARTS AFFECTED:

(1) MODE SWITCH - Now mounted internally instead of externally on the transaxle case, and applies to only ***some*** models (See Figure 1).

(2) INTERNAL WIRE HARNESS - Five wires added to the internal harness to accommodate the new mode switch that now run through the transaxle case connector (See Figure 2).

DIAGNOSIS PROCEDURES:

(1) ***The new Internal Mode Switch fault can generate the following Diagnostic Trouble Codes:***
P1819 - Internal Mode Switch, No Start/Wrong Range
P1820 - Internal Mode Switch, Circuit "A" Low
P1822 - Internal Mode Switch, Circuit "B" High
P1825 - Internal Mode Switch, Invalid Range
P1826 - Internal Mode Switch, Circuit "C" High

Note: None of the above DTC's will illuminate the Malfunction Indicator Lamp (MIL).

(2) ***Refer to Figure 2 for Internal Mode Switch (IMS) connector terminal identification, wire colors and circuit functions.***

(3) ***Refer to Figure 3 for a complete wiring schematic from the transaxle through the transaxle case connector and on to the Powertrain Control Module (PCM). This includes wire colors both inside and outside and terminal identification of transaxle components.***

Continued on next Page.

(4) ***Refer to Figure 4 for identification of the transaxle case connector terminals that were added to accommodate the new IMS, and the wire colors and functions. We have also included a resistance chart for the internal transaxle components.***

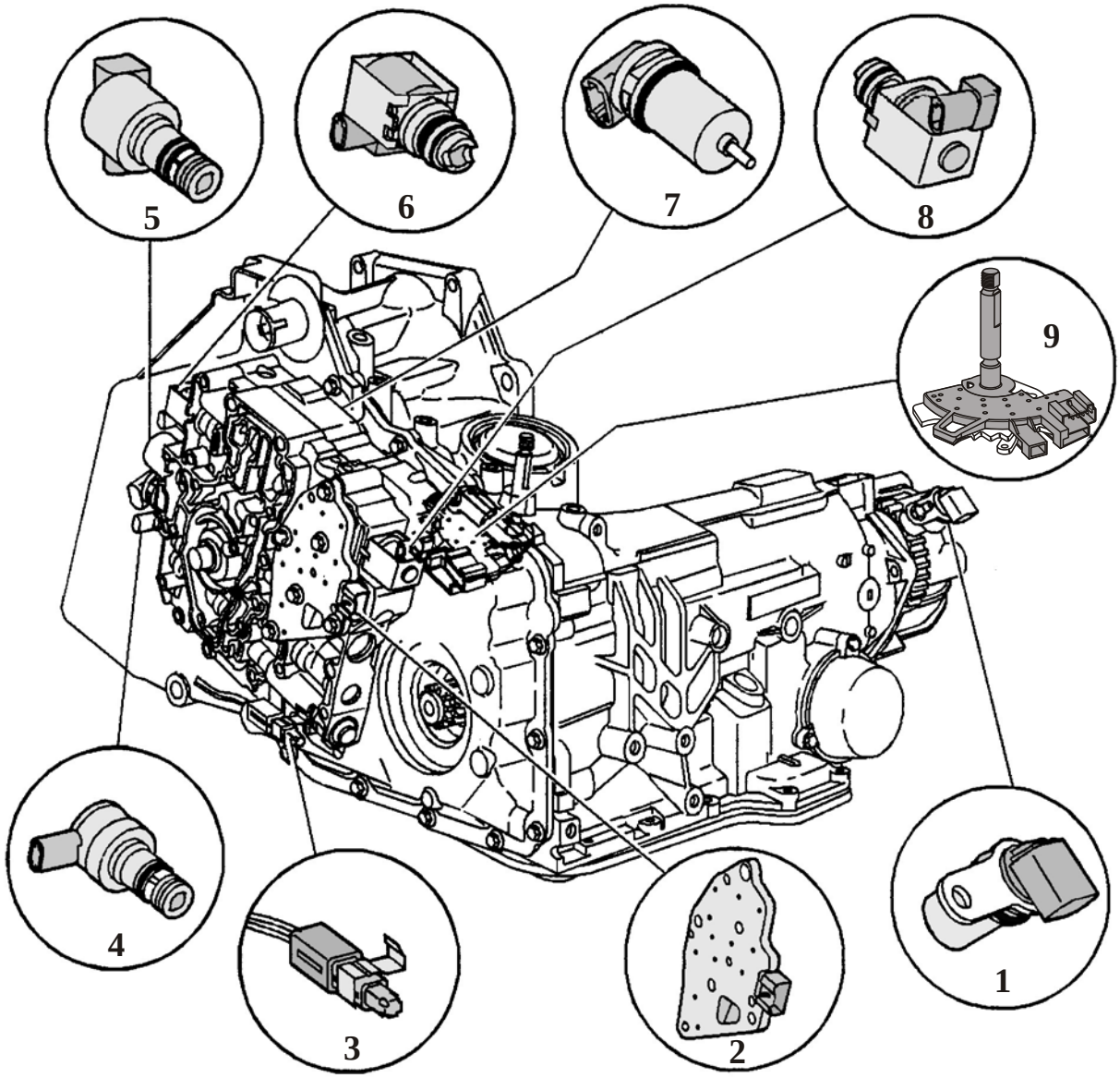
(5) ***Refer to Figure 5 for identification of the PCM connector terminals, both Blue and the Clear connectors for the transaxle related components.***

(6) ***Refer to Figure 6 for an Internal Mode Switch Logic chart that will provide you with the proper readings for all four input parameters for the IMS. These can be viewed from the appropriate scan tool.***

(7) ***Figure 7 provides you with the information to bench check the Internal Mode Switch for the proper continuity at the Internal Mode Switch connector, and Figure 8 provides you the same information to check the switch at the transaxle case connector terminals.***

THM 4T65E

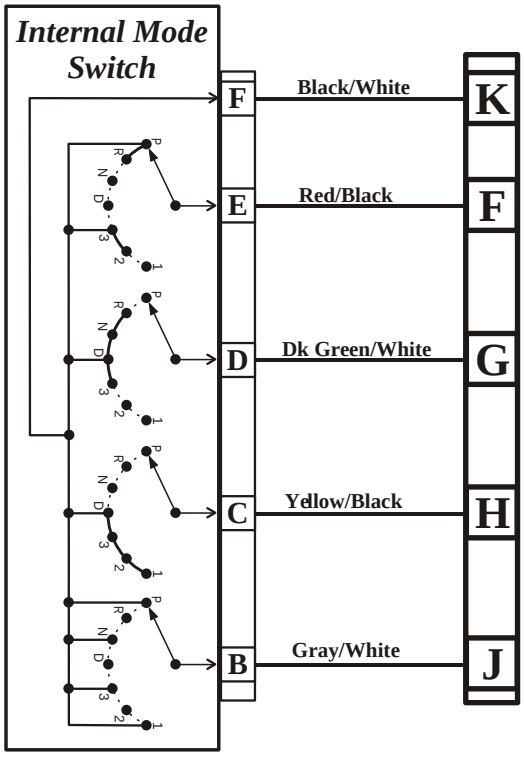
INTERNAL MODE SWITCH LOCATION



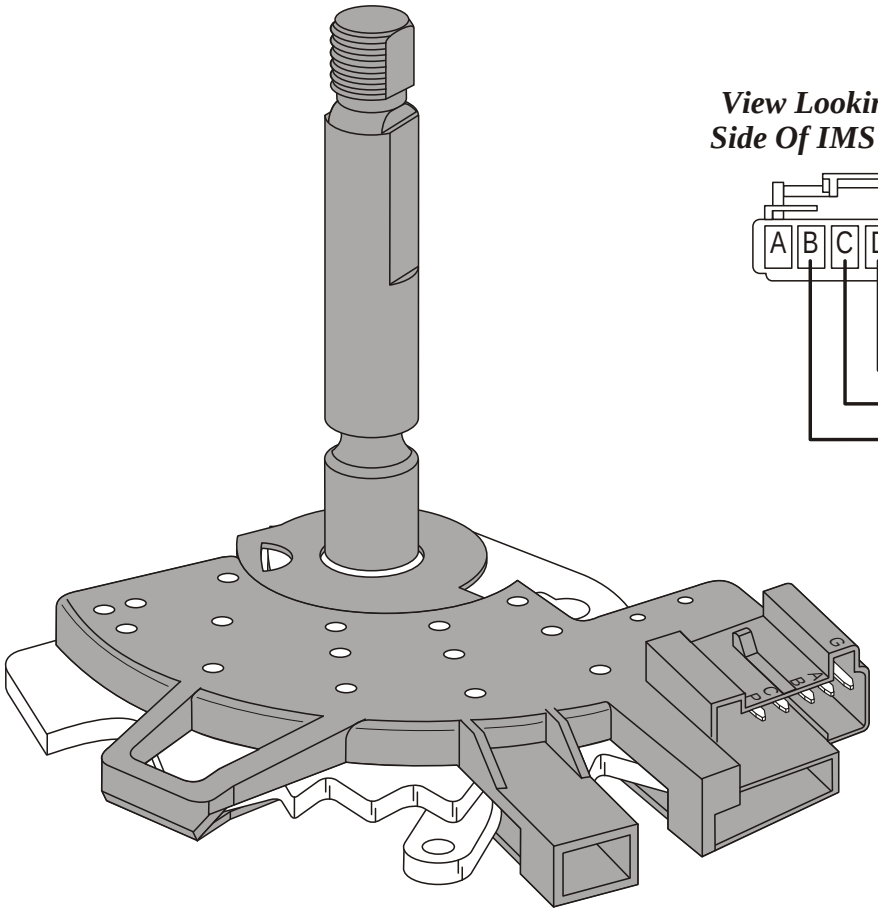
1. OUTPUT SPEED SENSOR
2. TRANSMISSION FLUID PRESSURE SWITCH ASSEMBLY
3. TRANSMISSION FLUID TEMPERATURE SENSOR
4. TCC PWM SOLENOID
5. PRESSURE CONTROL SOLENOID
6. 1-2/3-4 SHIFT SOLENOID
7. INPUT SPEED SENSOR
8. 2-3 SHIFT SOLENOID
9. INTERNAL MODE SWITCH

Figure 1

INTERNAL MODE SWITCH CONNECTOR TERMINAL IDENTIFICATION



INTERNAL MODE SWITCH (IMS) CONNECTOR			
PIN	**WIRE COLOR**	**CIRCUIT NO.**	**FUNCTION**
A	———	———	*NOT USED*
B	*GRAY/WHT*	*776*	*IMS MODE P*
C	*YEL/BLK*	*773*	*IMS MODE C*
D	*DK GRN/WHT*	*772*	*IMS MODE B*
E	*RED/BLK*	*771*	*IMS MODE A*
F	*BLK/WHT*	*1050*	*GROUND*



View Looking At Wire Side Of IMS Connector

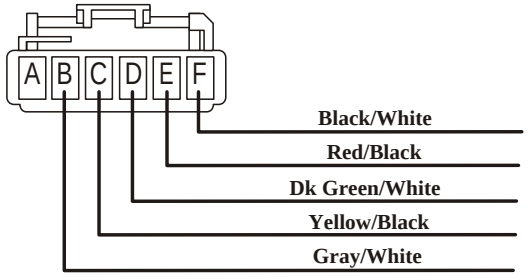


Figure 2

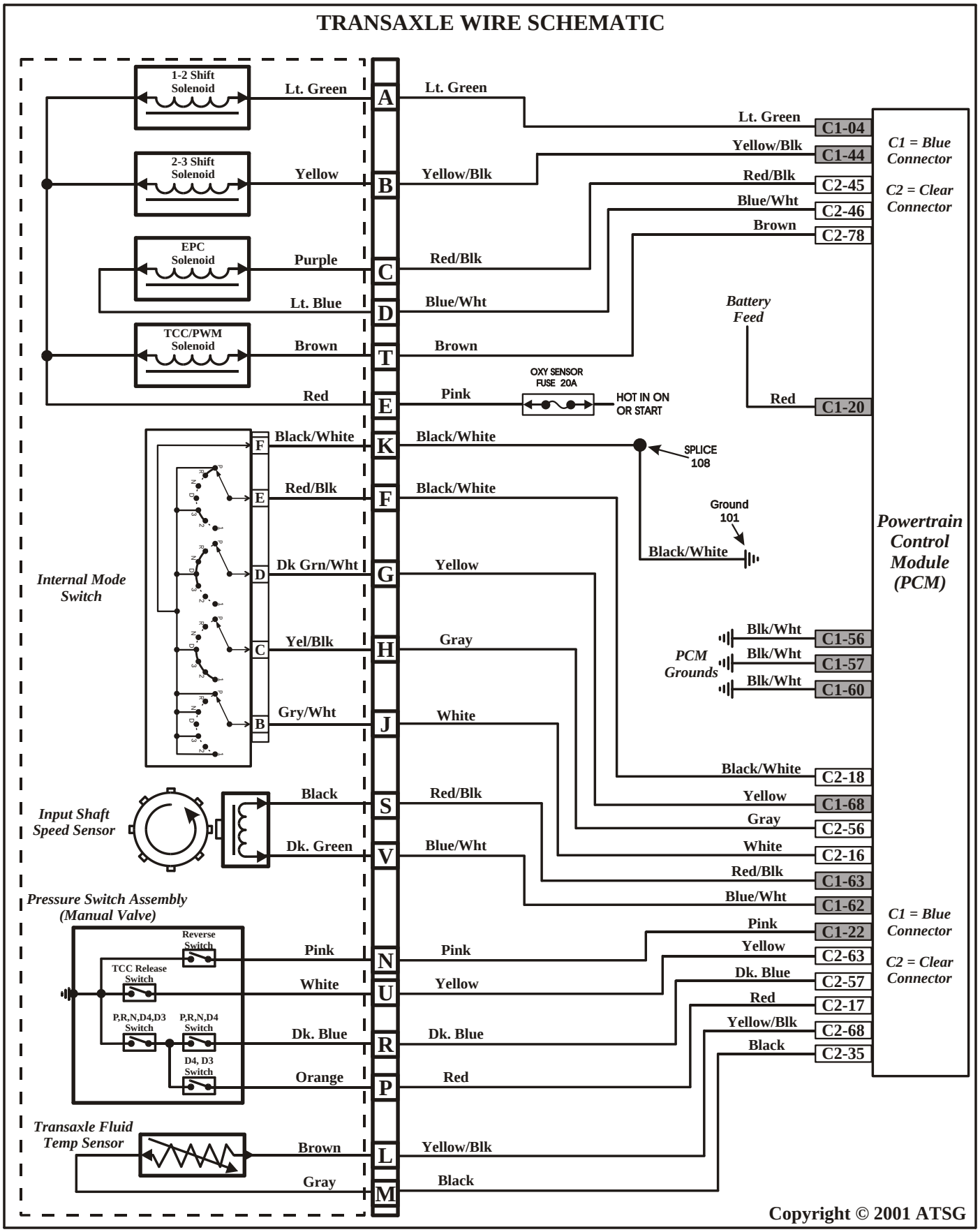

TRANSAXLE WIRE SCHEMATIC
1-2 Shift Solenoid
2-3 Shift Solenoid
EPC Solenoid
TCC/PWM Solenoid
Lt. Green
Yellow
Purple
Lt. Blue
Brown
Red
A
B
C
D
T
E
Lt. Green
Yellow/Blk
Red/Blk
Blue/Wht
Brown
Pink
OXY SENSOR FUSE 20A
HOT IN ON OR START
Battery Feed
Red
C1-20
Lt. Green
C1-04
Yellow/Blk
C1-44
Red/Blk
C2-45
Blue/Wht
C2-46
Brown
C2-78
C1 = Blue Connector
C2 = Clear Connector
Internal Mode Switch
F
E
D
C
B
Black/White
Red/Blk
Dk Grn/Wht
Yel/Blk
Gry/Wht
K
F
G
H
J
Black/White
Black/White
Yellow
Gray
White
SPLICE 108
Ground 101
Black/White
PCM Grounds
Blk/Wht
C1-56
Blk/Wht
C1-57
Blk/Wht
C1-60
Powertrain Control Module (PCM)
Input Shaft Speed Sensor
Black
Dk. Green
S
V
Red/Blk
Blue/Wht
Black/White
C2-18
Yellow
C1-68
Gray
C2-56
White
C2-16
Red/Blk
C1-63
Blue/Wht
C1-62
Pressure Switch Assembly (Manual Valve)
Reverse Switch
TCC Release Switch
P,R,N,D4,D3 Switch
P,R,N,D4 Switch
D4, D3 Switch
Pink
White
Dk. Blue
Orange
N
U
R
P
Pink
Yellow
Dk. Blue
Red
Pink
C1-22
Yellow
C2-63
Dk. Blue
C2-57
Red
C2-17
Yellow/Blk
C2-68
Black
C2-35
C1 = Blue Connector
C2 = Clear Connector
Transaxle Fluid Temp Sensor
Brown
Gray
L
M
Yellow/Blk
Black
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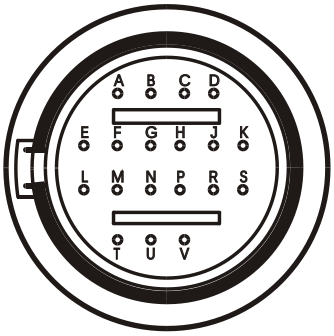
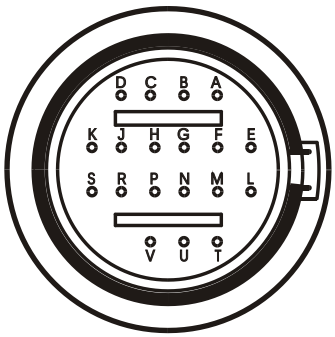
Figure 3

TRANSAXLE CASE CONNECTOR PIN IDENTIFICATION AND RESISTANCE CHART



View Looking Into Transaxle Case Connector

Ohms Resistance Chart			
Cavities	**Component**	**Resistance @ 68°F**	**Resistance @ 190°F**
A-E	1-2 Shift Solenoid	19-24W	24-31W
B-E	2-3 Shift Solenoid	19-24W	24-31W
T-E	TCC/PWM Solenoid	10-12W	13-15W
C-D	EPC Solenoid	3-5W	5-6W
S-V	Input Speed Sensor	893-1127W	1132-1428W
M-L	TFT Sensor	3164-3867W	225-285W
	Output Speed Sensor	981-1864W	



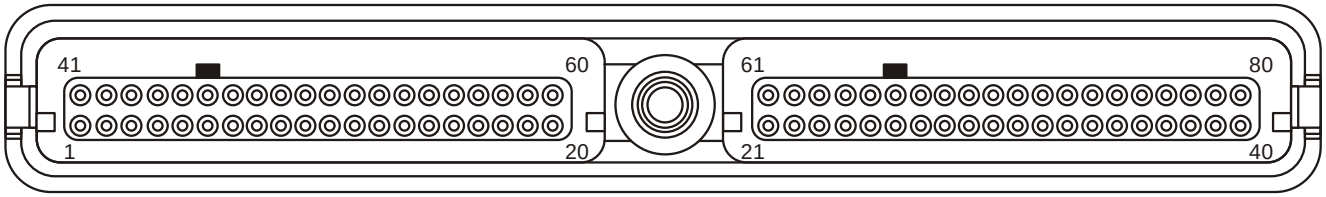
View Looking Into Vehicle Harness Connector

CASE CONNECTOR PIN FUNCTION

Pin	External Wire Color	Function
A	Light Green	Ground signal from PCM for the 1-2 Shift Solenoid (A)
B	Yellow/Black	Ground signal from PCM for the 2-3 Shift Solenoid (B)
C	Red/Black	Electronic Pressure Control Solenoid, HIGH Control
D	Blue/White	Electronic Pressure Control Solenoid, LOW Control
E	Pink	Transaxle Solenoid 12V Power In
F	Black/White	Internal Mode Switch Range Signal "A"
G	Yellow	Internal Mode Switch Range Signal "B"
H	Gray	Internal Mode Switch Range Signal "C"
J	White	Internal Mode Switch Range Signal "P"
K	Black/White	Internal Mode Switch ground
L	Yellow/Black	Transaxle Fluid Temperature (TFT) Sensor HIGH
M	Black	Transaxle Fluid Temperature (TFT) Sensor LOW
N	Pink	Pressure Switch Assembly, Range Signal "A"
P	Red	Pressure Switch Assembly, Range Signal "C"
R	Dark Blue	Pressure Switch Assembly, Range Signal "B"
S	Red/Black	Input Speed Sensor (ISS) signal HIGH
T	Brown	Ground signal from PCM for the TCC/PWM Converter Clutch Solenoid
U	Yellow	TCC Release Switch signal to the PCM
V	Blue/White	Input Speed Sensor (ISS) signal LOW

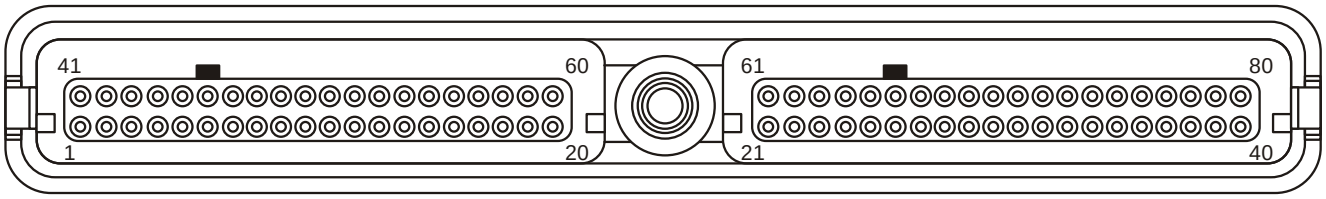
Figure 4

C1 "BLUE" PCM CONNECTOR



Pin No.	Wire Color	Circuit	Description
4	*Lt Green*	*1222*	*Shift Solenoid "A" Ground Signal*
20	*Red*	*1642*	*Battery Feed*
22	*Pink*	*1224*	*Transaxle Fluid Pressure Switch "A" Input*
44	*Yellow/Black*	*1223*	*Shift Solenoid "B" Ground Signal*
56	*Black/White*	*451*	*PCM Ground*
57	*Black/White*	*451*	*PCM Ground*
60	*Black/White*	*451*	*PCM Ground*
62	*Dk Blue/White*	*1231*	*Input Shaft Speed Sensor, Low*
63	*Red/Black*	*1230*	*Input Shaft Speed Sensor, High*
68	*Yellow*	*772*	*Internal Mode Switch Signal "B"*

C2 "WHITE" PCM CONNECTOR



Pin No.	Wire Color	Circuit	Description
16	*White*	*776*	*Internal Mode Switch Signal "P"*
17	*Red*	*1225*	*Transaxle Fluid Pressure Switch "C" Input*
18	*Black/White*	*771*	*Internal Mode Switch Signal "A"*
35	*Black*	*808*	*Transaxle Fluid Temperature Sensor Ground*
45	*Red/Black*	*1228*	*Pressure Control Solenoid, High*
46	*Lt Blue/White*	*1229*	*Pressure Control Solenoid, Low*
56	*Gray*	*773*	*Internal Mode Switch Signal "C"*
57	*Dk Blue*	*1225*	*Transaxle Fluid Pressure Switch "B" Input*
63	*Yellow*	*657*	*TCC Release Switch*
68	*Yellow/Black*	*1227*	*Transaxle Fluid Temperature Sensor*
78	*Brown*	*418*	*TCC PWM Solenoid Control*

Figure 5

INTERNAL MODE SWITCH LOGIC				
GEAR SELECTOR POSITION	SCAN TOOL IMS RANGE			
	A	B	C	P
PARK	*LOW*	*HI*	*HI*	*LOW*
PARK/REVERSE	*LOW*	*LOW*	*HI*	*LOW*
REVERSE	*LOW*	*LOW*	*HI*	*HI*
REVERSE/NEUTRAL	*HI*	*LOW*	*HI*	*HI*
NEUTRAL	*HI*	*LOW*	*HI*	*LOW*
NEUTRAL/DRIVE 4	*HI*	*LOW*	*LOW*	*LOW*
DRIVE 4	*HI*	*LOW*	*LOW*	*HI*
DRIVE 4/DRIVE 3	*LOW*	*LOW*	*LOW*	*HI*
DRIVE 3	*LOW*	*LOW*	*LOW*	*LOW*
DRIVE 3/DRIVE 2	*LOW*	*HI*	*LOW*	*LOW*
DRIVE 2	*LOW*	*HI*	*LOW*	*HI*
DRIVE 2/DRIVE 1	*HI*	*HI*	*LOW*	*HI*
DRIVE 1	*HI*	*HI*	*LOW*	*LOW*
ILLEGAL RANGES	*HI*	*HI*	*HI*	*HI*
	LOW	*HI*	*HI*	*HI*
	HI	*HI*	*HI*	*LOW*
HI = Ignition Voltage *LOW = 0 Voltage*				

Figure 6

INTERNAL MODE SWITCH CONTINUITY CHECKS AT IMS CONNECTOR													
IMS TERMINALS	**MANUAL SHIFT DETENT LEVER POSITION**												
	P	**P/R**	**R**	**R/N**	**N**	**N/D4**	**D4**	**D4/D3**	**D3**	**D3/D2**	**D2**	**D2/D1**	**D1**
F to B	*C*	*C*	*O*	*O*	*C*	*C*	*O*	*O*	*C*	*C*	*O*	*O*	*C*
F to C	*O*	*O*	*O*	*O*	*O*	*C*	*C*	*C*	*C*	*C*	*C*	*C*	*C*
F to D	*O*	*C*	*C*	*C*	*C*	*C*	*C*	*C*	*C*	*O*	*O*	*O*	*O*
F to E	*C*	*C*	*C*	*O*	*O*	*O*	*O*	*C*	*C*	*C*	*C*	*O*	*O*
E to B	*C*	*C*	*O*	*O*	*O*	*O*	*O*	*O*	*C*	*C*	*O*	*O*	*O*
E to C	*O*	*O*	*O*	*O*	*O*	*O*	*O*	*C*	*C*	*C*	*C*	*O*	*O*
E to D	*O*	*C*	*C*	*O*	*O*	*O*	*O*	*C*	*C*	*O*	*O*	*O*	*O*
D to B	*O*	*C*	*O*	*O*	*C*	*C*	*O*	*O*	*C*	*O*	*O*	*O*	*O*
D to C	*O*	*O*	*O*	*O*	*O*	*C*	*C*	*C*	*C*	*O*	*O*	*O*	*O*
C to B	*O*	*O*	*O*	*O*	*O*	*C*	*O*	*O*	*C*	*C*	*O*	*O*	*C*

C = CLOSED CIRCUIT
O = OPEN CIRCUIT

SPECIAL NOTE:

Terminals B, C, D, E, and F must indicate an "OPEN" circuit when checked against the Internal Mode Switch shaft, through all ranges.

Figure 7

INTERNAL MODE SWITCH CONTINUITY CHECKS AT CASE CONNECTOR													
CASE CONNECTOR TERMINALS	**MANUAL SHIFT DETENT LEVER POSITION**												
	P	**P/R**	**R**	**R/N**	**N**	**N/D4**	**D4**	**D4/D3**	**D3**	**D3/D2**	**D2**	**D2/D1**	**D1**
K to J	*C*	*C*	*O*	*O*	*C*	*C*	*O*	*O*	*C*	*C*	*O*	*O*	*C*
K to H	*O*	*O*	*O*	*O*	*O*	*C*	*C*	*C*	*C*	*C*	*C*	*C*	*C*
K to G	*O*	*C*	*C*	*C*	*C*	*C*	*C*	*C*	*C*	*O*	*O*	*O*	*O*
K to F	*C*	*C*	*C*	*O*	*O*	*O*	*O*	*C*	*C*	*C*	*C*	*O*	*O*
F to J	*C*	*C*	*O*	*O*	*O*	*O*	*O*	*O*	*C*	*C*	*O*	*O*	*O*
F to H	*O*	*O*	*O*	*O*	*O*	*O*	*O*	*C*	*C*	*C*	*C*	*O*	*O*
F to G	*O*	*C*	*C*	*O*	*O*	*O*	*O*	*C*	*C*	*O*	*O*	*O*	*O*
G to J	*O*	*C*	*O*	*O*	*C*	*C*	*O*	*O*	*C*	*O*	*O*	*O*	*O*
G to H	*O*	*O*	*O*	*O*	*O*	*C*	*C*	*C*	*C*	*O*	*O*	*O*	*O*
H to J	*O*	*O*	*O*	*O*	*O*	*C*	*O*	*O*	*C*	*C*	*O*	*O*	*C*

C = CLOSED CIRCUIT
O = OPEN CIRCUIT

SPECIAL NOTE:

Terminals B, C, D, E, and F must indicate an "OPEN" circuit when checked against the Internal Mode Switch shaft, through all ranges.

Figure 8