4T65E INTERNAL MODE SWITCH

PROPER ALIGNMENT

COMPLAINT: After overhaul and installation of the transmission back into the vehicle, the vehicle would not start in park or neutral. The transmission also would start in second gear and would make a 2-3 shift only. No codes were stored.
When the scan tool was connected and the IMS parameters were viewed, the range indication readings were erratic. The normal parameter readings for the IMS can be seen in the scan tool screen capture in figure 1 along with the IMS range chart in figure 2.
When the individual circuits were checked using the method that was shown in the ATSG 2001 seminar video in the white manual, checked good. Circuit identification for the IMS at the transmission case connector can be seen in figure 3. The IMS circuits at the PCM can be seen in figure 4.

CAUSE: When the detent spring was installed during the overhaul, it was not indexed in its proper location at the IMS which can be seen in figure 5. When this is done the IMS can move across the detent lever ¼" in either direction. therefore movement of the shift lever is not synchronized with the IMS causing the above complaints.

CORRECTION: Install the detent spring at the IMS as shown in figure 6. ***It is the detent spring roller that properly indexes the IMS.*** When the IMS and detent spring are indexed correctly, there will be no movement of the IMS across the detent lever.
NOTE: This type of IMS can also be found on the 4T80E and 5L40E.

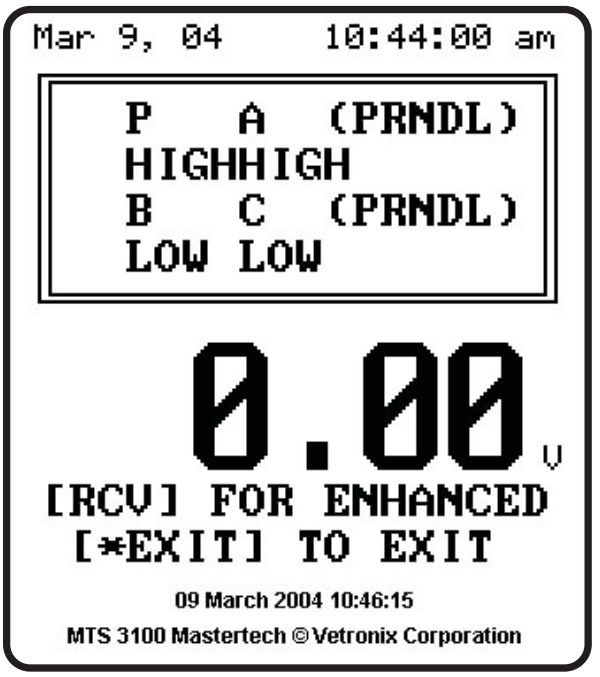


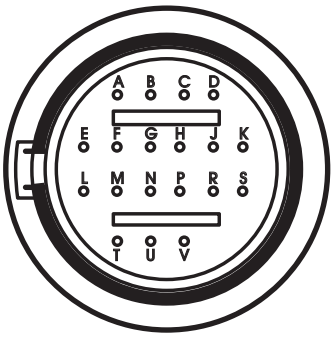
Figure 1

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*

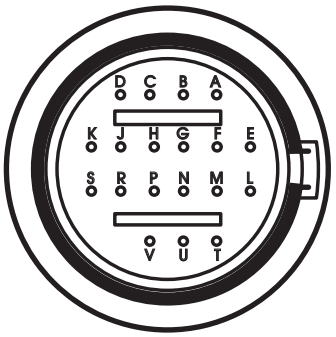
HI = Ignition Voltage
LOW = 0 Voltage

Figure 2

TRANSAXLE CASE CONNECTOR PIN IDENTIFICATION AND RESISTANCE CHART



View Looking Into Transaxle Case Connector



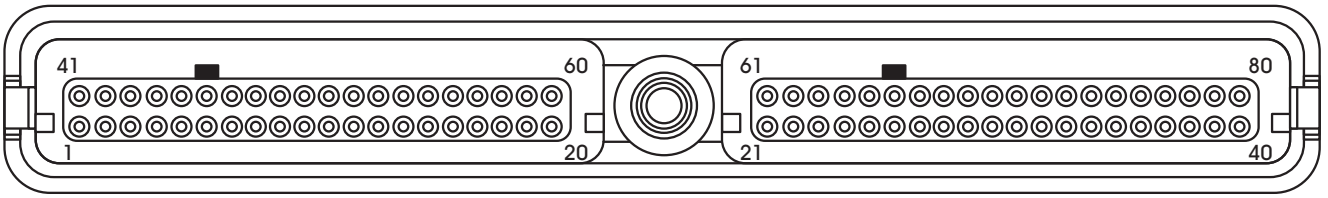
View Looking Into Vehicle Harness Connector

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

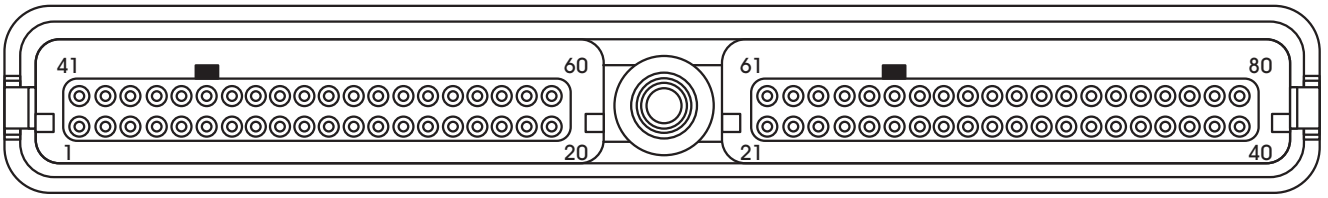
Figure 3

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 4

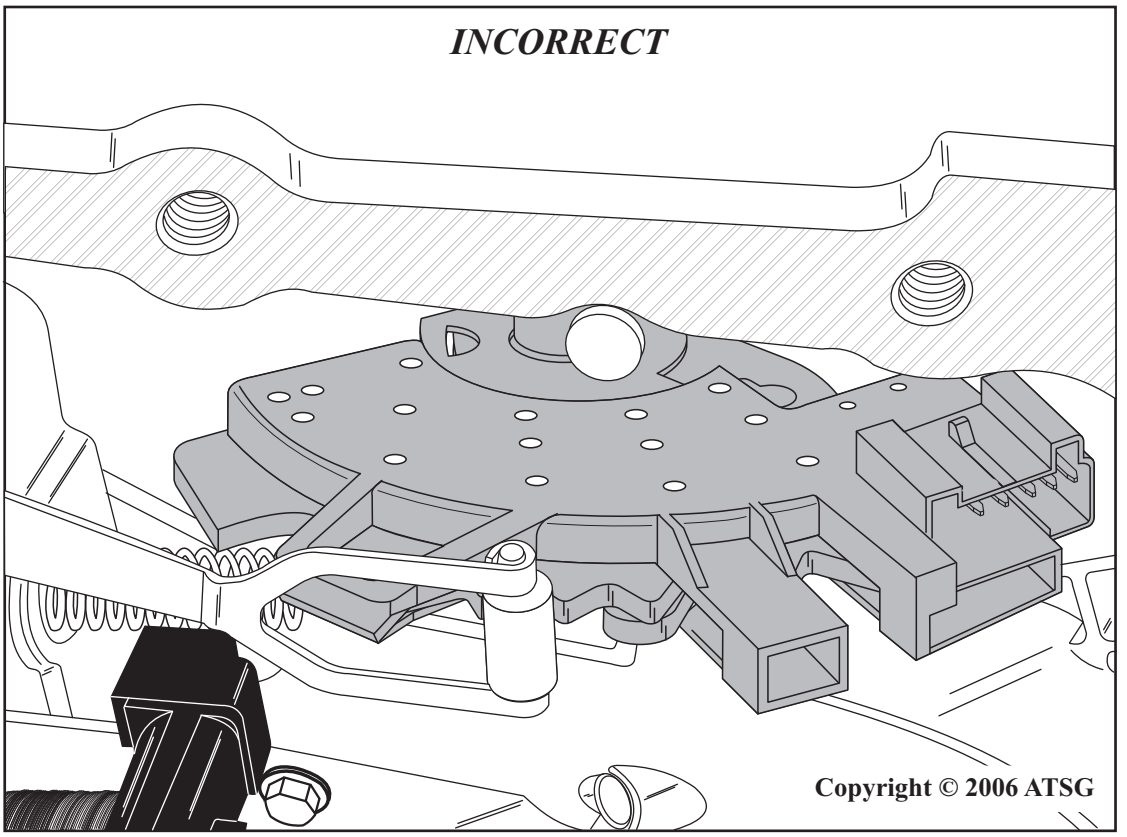


Figure 5

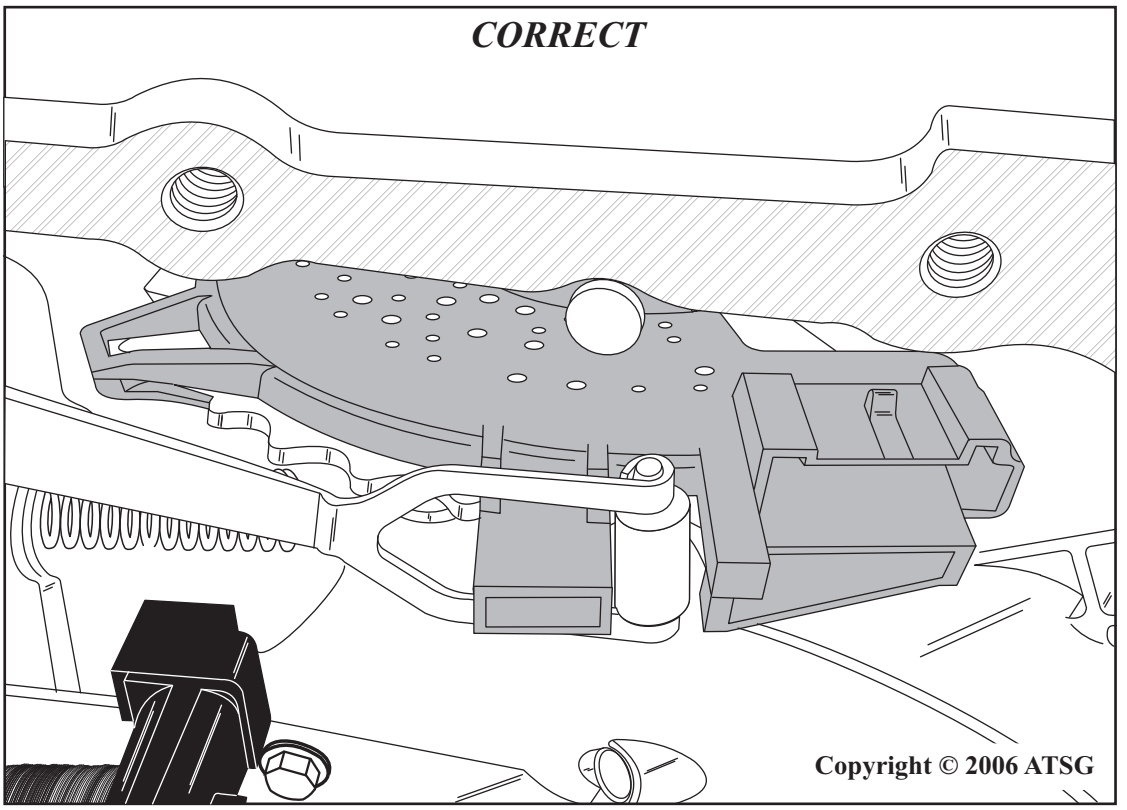


Figure 6