GM ALLISON 1000/2000
NO UP SHIFT, DTC P0708 STORED

COMPLAINT: Before or after overhaul, a GM vehicle equipped with the Allison 1000/2000 transmission may exhibit a no up shift condition. When scanning the truck code P0708 (Transmission Range Sensor Circuit Input High) is stored. Usually when this code is stored, replacing the "Neutral Start Backup Switch" cures the problem, however, when looking for the NSBU switch, the technician notices the switch is not bolted on the driver side of the transmission case.

CAUSE: Beginning in 2006, GM vehicles with the Allison 1000/2000 transmission eliminated the NSBU switch on the outside of the transmission, and instead used an Internal Mode Switch in its place. The Internal Mode Switch is located on the selector shaft inside the transmission and indicates gear selector position to the ECM. When this Internal Mode Switch was introduced, the internal harness in the transmission was also changed because internal harness pin assignments were changed as well.

The switch can be tested in the same way as the previous NSBU switch, and switch parity is identical. Refer to Figure 1 for Internal Mode Switch location. Refer to Figure 2 for Transmission Harness Connector Pin ID for Internal Mode Switch models and Figure 3 for NSBU models with Line Pressure EPC Solenoid.

CORRECTION: Verify wiring harness integrity, replace the Internal Mode Switch. Refer to Figure 4 for partial wiring diagram and Internal Mode Switch parity test chart.

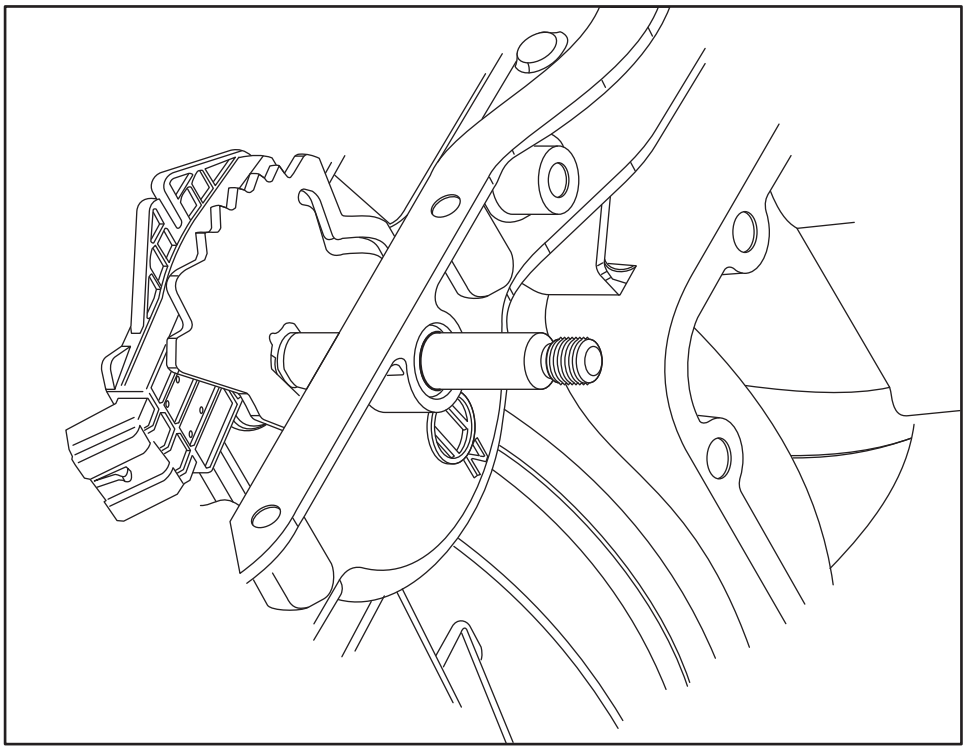
Note: These parts may not be available from GM, but, *are* available from an Allison Dealer.

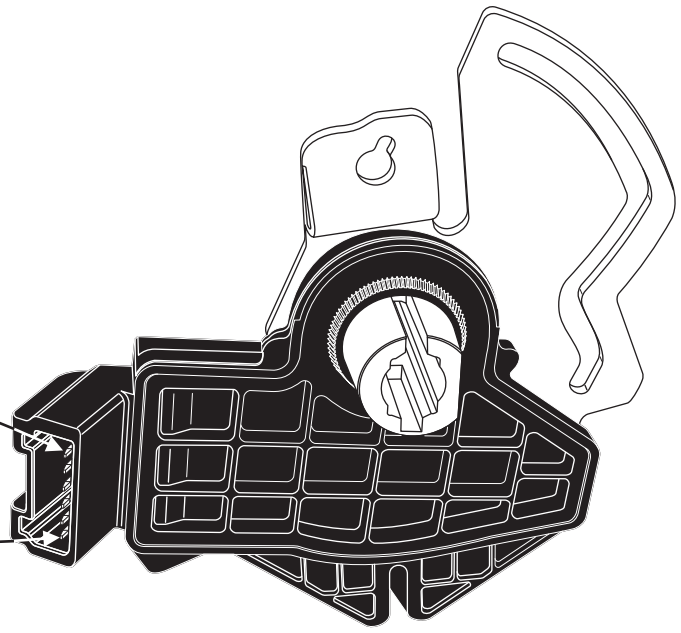
SERVICE INFORMATION:

Detent Lever (Allison Part Number).....29542692
Internal Wiring Harness (Allison Part Number).....29543334

Special thanks to Mitch Uptagraft from John's Transmission in Eightmile AL for supplying the Internal Mode Switch and helping us put this information together.

INTERNAL MODE SWITCH LOCATION



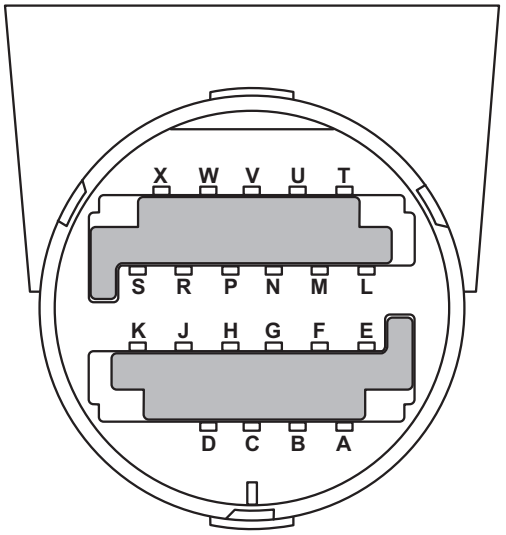


Pin A: Park/Neutral Signal
Pin B: Switch Signal P
Pin C: Switch Signal A
Pin D: Switch Signal B
Pin E: Switch Signal C
Pin F: Ground

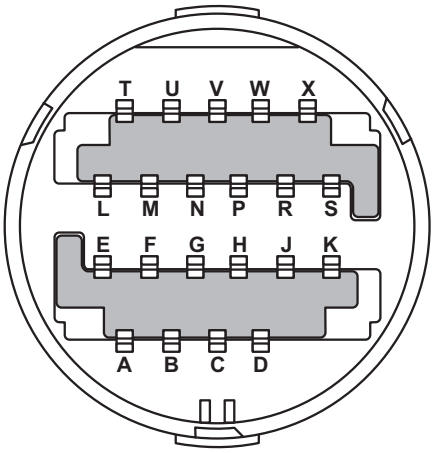
Note: Pins are labeled at bottom of switch.

Figure 1

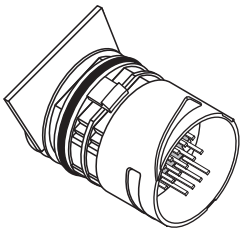
ALLISON "6 SPEED" CASE CONNECTOR TERMINAL IDENTIFICATION



View Looking Into Case Connector



View Looking Into Vehicle Harness Connector



PIN	WIRE COLOR	CIRCUIT	PIN DESIGNATION
A	Grn	1222	Solenoid 1Ground
B	Lt Grn	1223	Solenoid 2 Ground
C	Violet	2527	Solenoid 3 Ground
D	Org	1224	PSA Signal C
E	Grey	1226	PSA Signal E
F	Wht	1225	PSA Signal D
G	Tan	1227	TFT Sensor, 5 Volt Reference
H	Blk	2762	TFT/Internal Mode Switch, Gnd
J	Pink	418	TCC PCS Solenoid, Low
K	Brn	2529	PSA Signal Reverse
L	Red	1228	EPC/TCC/PCS 1 Solenoids, 12V
M	Dk Blue	1229	Pressure Control Solenoid 2 Low
N	Red/Blk	323	SS1, SS2, SS3, PCS 2, 12V
P	Blue	2469	Pressure Control Solenoid 1 Low
R	Violet/Blk	1786	Internal Mode Switch P/N Signal
S	Yellow	1530	EPC Solenoid, Low
T	Blk/White	773	Internal Mode Switch C Signal
U	Tan/White	772	Internal Mode Switch B Signal
V	Yellow/Blk	771	Internal Mode Switch A Signal
W	Pink/Blk	776	Internal Mode Switch P Signal
X	Red	1228	EPC/TCC/PCS 1 Solenoids, 12V

Note: Pin L and X both feed the same solenoids.

Resistance Chart @ 20 °C (68 °F)		
Pins	Solenoid	Resistance
L & P	PCS1	5.1 - 5.9 Ohms
N & M	PCS2	5.1 - 5.9 Ohms
L & J	TCC PCS	5.1 - 5.9 Ohms
N & A	SS1	21 - 23 Ohms
N & B	SS2	21 - 23 Ohms
N & C	SS3	21 - 23 Ohms
L & S	Main Mod	21 - 23 Ohms

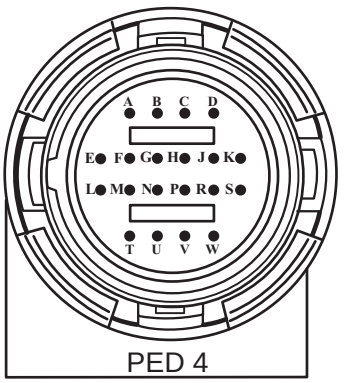
TFT Resistance Chart Pins G & H	
Fluid Temp	Resistance
0 °C (32 °F)	9045-9646
20 °C (68 °F)	3398-3542
40 °C (104 °F)	1424-1493
60 °C (140 °F)	654.7-683.9
80 °C (176 °F)	326.6-340.1
100 °C (212 °F)	173.8-182.0
120 °C (248 °F)	98.17-103.6

Figure 2

PREVIOUS DESIGN

PIN	WIRE COLOR	CIRCUIT	PIN DESIGNATION
A	Dk Grn	1222	Solenoid C Ground
B	Yel/Blk	1223	Solenoid D Ground
C	Pink	839	Shift Solenoid Power 12V
D	Lt Grn	1224	PSA Signal C
E	Red	1226	PSA Signal E
F	Dk Blue	1225	PSA Signal D
G	Yel	1227	TFT Sensor 5 Volt Ref
H	Blk	407	TFT Sensor Ground
J	Brn	418	TCC PWM Sol Signal Low
K	Tan	901	PSA Signal Reverse
L	Red/Blk	1228	Trim Sol A High
M	Lt Blue	1229	Trim Sol A Low
N	Gry	908	Trim Sol B High
P	Ppl	904	Trim Sol B Low
R	Orn	1530	Line Pressure EPC Low
S	Blk	902	TCC PWM/EPC Power 12V
T	Wht	900	TRANS ID
U	—	—	Not Used
V	—	—	Not Used
W	Blk/Wht	452	Solenoid E Ground

TRANSMISSION HARNESS CONNECTOR PIN ID WITH NSBU SWITCH AND EPC



TRANSMISSION EXTERNAL CONNECTOR FACE VIEW WITH EXTERNAL WIRE COLORS

Figure 3

INTERNAL MODE SWITCH PARITY CHART

RANGE	INTERNAL MODE SWITCH SIGNAL A	INTERNAL MODE SWITCH SIGNAL B	INTERNAL MODE SWITCH SIGNAL C	INTERNAL MODE SWITCH SIGNAL P
P	LOW/OFF	HIGH/ON	HIGH/ON	LOW/OFF
R	LOW/OFF	LOW/OFF	HIGH/ON	HIGH/ON
N	HIGH/ON	LOW/OFF	HIGH/ON	LOW/OFF
D	HIGH/ON	LOW/OFF	LOW/OFF	HIGH/ON
M	LOW/OFF	LOW/OFF	LOW/OFF	LOW/OFF
2	LOW/OFF	HIGH/ON	LOW/OFF	HIGH/ON
1	HIGH/ON	HIGH/ON	LOW/OFF	LOW/OFF

NOTE: HIGH/ON = APPROXIMATELY 5 VOLTS
LOW/OFF = APPROXIMATELY 0 VOLTS

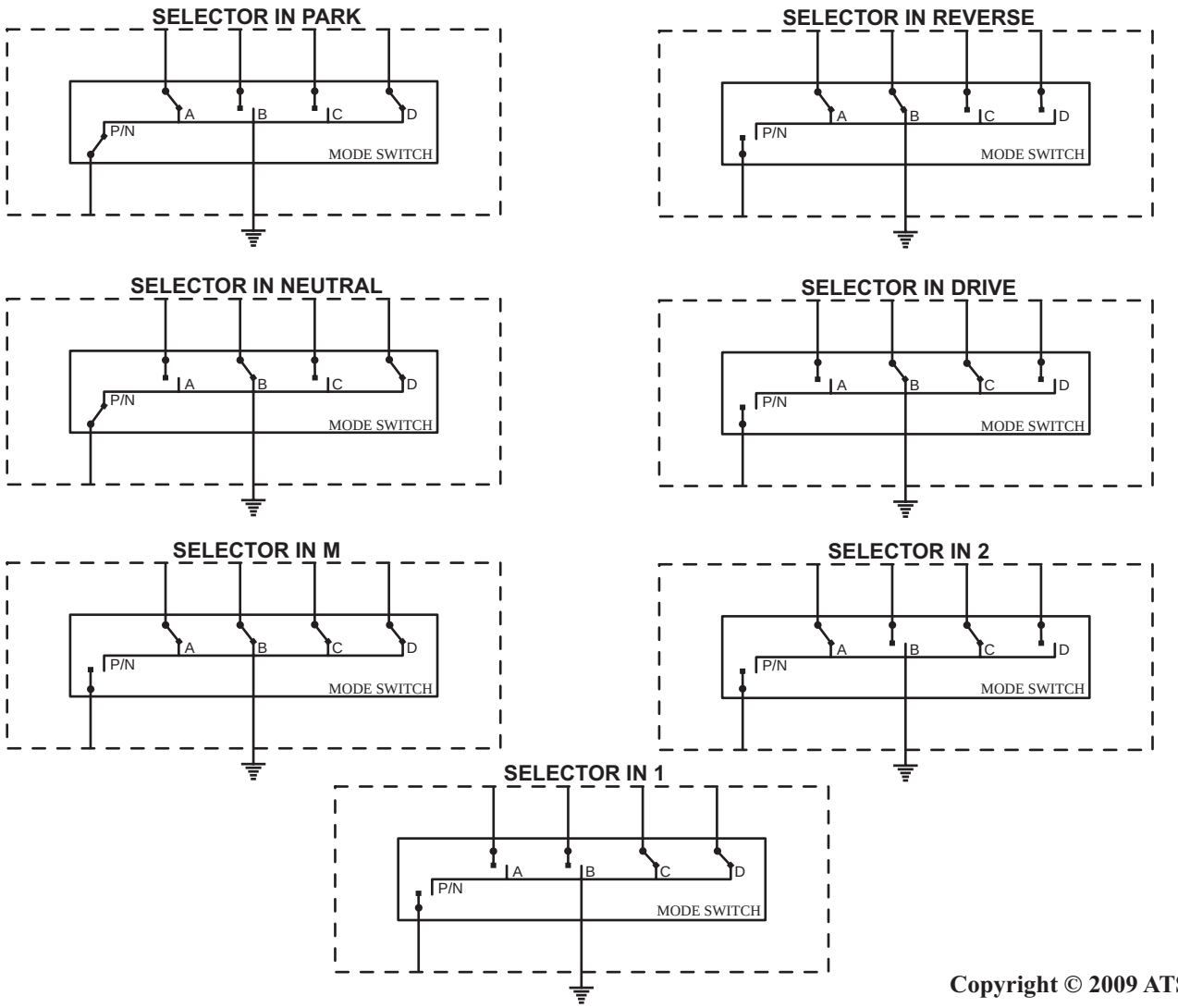


Figure 4