1999 5.7L (LS1) F-car *(Camaro, Firebird)*, Y-car *(Corvette)*
4L60-E TRANSMISSION DIAGNOSTIC PARAMETERS

99c57G_FY_aT.DOC

SENSED PARAMETER	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA AND THRESHOLD VALUE(S)	SECONDARY PARAMETERS AND ENABLE CONDITIONS	TIME LENGTH AND FREQUENCY	MIL ILLUMINATION TYPE
Vehicle Speed Sensor - Low input	**P0502**	0 RPM to 6000 RPM This DTC detects a low vehicle speed when the vehicle has a large engine speed in a drive gear range.	Output Speed < 150 rpm	- Gear Range is not Park/Neutral - No TPS high or low DTC's set - No Map Sensor DTC's set - No PSA DTC set - Vacuum: 0 to 105 KPA - Engine Torque: 30 to 400 ft-lbs - Throttle Position > 15% - Engine Speed > 3000 RPM	2.5 seconds Continuous	DTC Type B
Vehicle Speed Sensor - Intermittent	**P0503**	0 RPM to 6000 RPM This DTC detects an unrealistic large drop in vehicle speed.	In **P/N:** Output Speed drop > 8000 RPM **Not P/N:** Output Speed drop >1300 RPM	- Time since last Gear Range Change > 6 Seconds - Engine Speed > 300 rpm for 5 seconds and not in fuel cutoff - No Output Speed rise > 600 rpm within 6 seconds - No PSA DTC set	In park or neutral 409 seconds Not in park or neutral 3 seconds	DTC Type B
TCC Enable Solenoid Electrical	**P0740**	0V to 12V This DTC detects a continuous open or short to ground in the TCC circuit or the TCC solenoid	Fail Counter >43 Counts out of 50 Total Counts	- System Voltage: 8 to 18 volts - Engine Speed > 300 rpm for 5 seconds and not in fuel cutoff	Continuous	DTC Type B
TCC System Stuck ON	**P0742**	This DTC detects low torque converter slip when the TCC is commanded off.	TCC Slip: -20 to +30 RPM 3 occurrences for the duration of the fail timer.	- Engine Speed > 300 rpm for 5 seconds and not in fuel cutoff - No Range change within 6 sec. - No MAP low and high DTC set - No TP high or low sensor DTC's - No VSS DTC's - No TCC Enable Sol. DTC's - No TCC Control Sol. DTC's -No PSA DTC set - Eng Torque: 40 to 400 ft-lbs - Vacuum: 0 to 105 kPa - Commanded Gear is not 1st - Gear Range is D4 - Throttle Position: 10% to 45% - TCC is commanded off - Engine Speed: 1000 to 3500 rpm - Speed Ratio: 0.65 to 1.3 - Vehicle Speed: 20 to 55 mph	4 seconds Continuous	DTC Type B

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Shift Solenoid A Performance	**P0751**	This DTC detects abnormal shift patterns: **Stuck OFF:** **2-2-3-3 pattern** **Stuck ON:** **1-1-4-4 pattern**	Fail Counter >=3 . The fail counter is incremented when the following fail cases are true: **Stuck OFF:** **1,2,3,& 4** **Stuck ON:** **1,2,3, & 5**	**General** -Engine Speed > 300 rpm for 5 seconds and not in fuel cutoff -Gear range is D4 -No TP high or low DTC's -No VSS low or intermittent DTC's -No Solenoid electrical DTC's -No DTC 742 -No PSA DTC set -Time since last shift is >0 sec -Vehicle speed >5 mph -Trans Temp.: 20 C to 130 C **Fail Case 1** - Commanded 1-2 shift - TPS: 10% to 45% - TPS constant within +/- 5% - Vehicle Speed: 5 to 35 mph - After 2 seconds, engine speed in 2nd gear must be 80 rpm > last speed in 1st gear **Fail Case 2** - Commanded 2-3 shift - TPS: 10% to 45% - TPS constant within +/- 7% - Vehicle Speed: 10 to 50 mph - After 2 sec, engine speed in 3rd gear must be 50 rpm < last speed in 2nd gear **Fail Case 3** - Commanded 3-4 shift - TPS: 8% to 45% - TPS constant within +/- 7% - Vehicle speed: 20 to 65 mph - After 2 seconds, engine speed in 4th gear must be 10 rpm > last speed in 3rd gear **Fail Case 4** - Commanded 4th gear - TCC commanded ON - TPS: 7% to 35% - Speed Ratio: 0.95 to 1.2 - TCC Slip: 200 to 1000 rpm for > 4 sec **Fail Case 5** - Commanded 4th gear - TCC commanded ON - TPS: 7% to 35% - Speed Ratio: .65 to 0.80 - TCC Slip: -20 to +40 rpm for > 4 sec	Continuous	DTC Type A
Shift Solenoid A Electrical	**P0753**	0V to 12V This DTC detects a continuous open or short to ground in the SSA circuit or the SSA solenoid	Fail Counter >43 Counts out of 50 Total Counts	- System Voltage: 8 to 18 volts - Engine Speed > 300 rpm for 5 seconds and not in fuel cutoff	Continuous	DTC Type B

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Shift Solenoid B Performance	**P0756**	This DTC detects abnormal shift patterns: **Stuck OFF:** **4-3-3-4 pattern** **Stuck ON:** **1-2-2-1 pattern**	Fail Counter >=3 . The fail counter is incremented when the following fail cases are true: **Stuck OFF:** **1 and 3, or** **2 and 3** **Stuck ON:** **3 and 4**	- Engine Speed > 300 rpm for 5 sec and not in fuel cutoff - Gear Range is D4 - No TPS DTC's - No VSS DTC's - No solenoid electrical DTC's - No TCC Stuck On DTC. - No PSA DTC set - Trans Temp: 20 C to 130 C - Vehicle Speed > 5 MPH **Fail Case 1** - 1st gear commanded > 1.5 sec. - Engine Torque: 40 to 400 ft lbs - Vacuum: 0 to 105 kpa - TCC Slip: -2000 to 0 rpm - Output Speed: 400 to 1500 rpm - Speed Ratio: 0.7 to 3.0 - Throttle Position > 25% - Fail Timer > 1.5 sec **Fail Case 2** - 2nd gear command > 409.5 sec - Engine Torque: 40 to 400 ft lbs - Vacuum: 0 to 105 kpa - TCC Slip: 8191 to 8191 rpm - Output speed: 8191 to 8191 rpm - Speed Ratio: 8 to 8 - Throttle Position > 99.9% - Fail Timer > 409.5 sec **Fail Case 3** - Time with 3rd gear commanded: 2.05 to 6 seconds - TPS: 10% to 50% - TPS constant within +/- 7% - Engine Torque: 40 to 400 ft lbs - Vacuum: 0 to 105 kpa - Speed Ratio in Third gear does not drop more than 0.3 from the last Speed Ratio in Second gear - TCC Slip in Third gear remains > 400 rpm higher than the last TCC Slip in Second gear - Fail Timer > 1.5 sec **Fail Case 4** - 4th Gear commanded for > 1.5 seconds - Engine Torque: 0 to 400 ft lbs - Vacuum: 0 to 105 kpa - TCC Slip: 1000 to 3000 rpm - Output Speed: 1000 to 3000 rpm - Speed Ratio: 1.68 to 3.0 - Throttle Position > 7% - Fail Timer > 1.0 sec	Continuous	DTC Type A
Shift Solenoid B Electrical	**P0758**	0V to 12V This DTC detects a continuous open or short to ground in the SSB circuit or the SSB solenoid	Fail Counter >43 Counts out of 50 Total Counts	- System Voltage: 8 to 18 volts - Engine Speed > 300 rpm for 5 seconds and not in fuel cutoff	Continuous	DTC Type A

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3-2 Downshift Solenoid Electrical	**P0785**	0V to 12V This DTC detects a continuous open or short to ground in the SSB circuit or the SSB solenoid	Fail Counter >43 Counts out of 50 Total Counts	- System Voltage: 8 to 18 volts - Engine Speed > 300 rpm for 5 seconds and not in fuel cutoff	Continuous	DTC Type A
PSA Circuit Malfunction	**P1810**	0V to 12V This DTC detects an invalid state of the PSA sensor or the PSA circuit by deciphering the PSA inputs.	**Fail Case 1** Illegal Trans Pressure Switch State (111) or (101) **Fail Case 2** Gear range is D2, D4, or Reverse during engine startup. **Fail Case 3** Gear range is Park or Neutral when operating in D4.	**Fail Case 1** - Engine Speed > 300 rpm for 5 seconds and not in fuel cutoff - System Voltage: 8 to 18 volts **Fail Case 2** - System Voltage: 8 to 18 volts - No VSS DTC's - Vehicle Speed <2 mph 1. Engine Speed < 80 rpm for > 0.1 seconds, then, 2. Engine Speed: 80 to 550 rpm for > .07 seconds, then, 3. Engine Speed > 550 rpm **Fail Case 3** - Engine Speed > 300 rpm for 5 seconds and not in fuel cutoff - System Voltage: 8 to 18 volts - 4th gear commanded - Engine Torque: 40 to 400 ft-lbs - Vacuum: 0 to 105 kPa - TCC Locked On - No VSS DTC's - Speed Ratio: 0.65 to 0.8 - TPS: 8% to 45%	**Fail Case 1** 60 seconds **Fail Case 2** 5 Seconds **Fail Case 3** 10 seconds Continuous	DTC Type B
TCC PWM Solenoid Electrical	**P1860**	0V to 12V This DTC detects a continuous open or short to ground in the TCC PWM circuit or the TCC PWM sensor	Fail Counter >43 Counts out of 50 Total Counts	- System Voltage: 8 to 18 volts - Engine Speed > 300 rpm for 5 seconds and not in fuel cutoff - Commanded Gear is 1st - TCC Duty Cycle < 10% or > 90%	Continuous	DTC Type B

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Transmission Component Slipping	**P1870**	This DTC detects excessive TCC slip when the torque converter clutch should be engaged.	If TCC slip is: **80 to 800 rpm** for 7 seconds, then increment the Trans Slip Counter by one. When the counter reaches 3, set the code.	- Engine Speed > 300 rpm for 5 seconds and not in fuel cutoff - Gear is not 1st - Gear Range is D4 - No TPS High or Low DTC's - No VSS DTC's - No solenoid electrical DTC's - Shift Solenoid Performance Diagnostic counters are all zero - TPS: 10.0% to 50% - Trans temp.: 20 C to 130C - Engine Torque: 40 to 400 ft-lbs - Speed ratio: 0.67 to 0.9 - Engine Speed: 1200 to 3500 rpm - Vehicle Speed: 35 to 65 mph **Fail Case 1** - TCC at max apply for > 0 sec - TCC commanded on for > 5 sec **Fail Case 2** - Run fail case 2 immediately after fail case 1 increments the trans slip counter to either 1or 2. Discontinue fail case 2 if the TCC is commanded OFF at any time. - TPS: 10% to 40% **Criteria A** **If** : 80 rpm < TCC slip < 800 rpm for 7 seconds, **then:** Go to max pressure freeze adapts go to criteria B **Criteria B** **If** : 80 rpm < TCC slip < 800 rpm for 7 seconds, **then:** Command TCC OFF for 1.5 seconds go to criteria C **Criteria C** **If** : 80 rpm < TCC slip < 800 rpm for 7 seconds, **then:** Set code p1870	Continuous	DTC Type B