2000 3.8L (L36) F-car, 5.7L (LS1) F-car, Y-car *(Camaro / Firebird, Corvette)*
4L60-E TRANSMISSION DIAGNOSTIC PARAMETERS

2000trans9.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 > 450 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 > 450 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 > 450 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 > 450 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 > 450 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 > 450 rpm for 5 seconds 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 - Engine Torque: 0 to 400 fl. lbs. - Vacuum : 0 to 105 kpa **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 > 450 rpm for 5 seconds and not in fuel cutoff	Continuous	DTC Type A
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 > 450 rpm for 5 seconds and not in fuel cutoff	Continuous	DTC Type A

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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 > 450 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 > 450 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 > 450 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 > 450 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 150C - Engine Torque: 40 to 400 ft-lbs - Speed ratio: 0.67 to 0.9 - Engine Speed: 1200 to 3500 rpm - Vehicle Speed: 35 to 82 mph **Fail Case 1** - TCC at max apply for > 8 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 50% **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

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Trans Fluid Temp Sensor Circuit - Performance Test	**P0711**	.24V to 5.0V The DTC detects an unrealistically large change in transmission temperature or a value which remains constant for a period of time in which a measurable amount of change is expected.	**1)** Failure 1 is true for ≥ 409 seconds **2)** Failure 2 happens ≥ 14 times in 7 sec.	- System Voltage: 8 and 18 volts - No VSS DTC's - Raw TTS counts: 10 to 250 - No DTC 1870 - Trans Temp at startup: -40 C to 21 C - Engine Running ≥ 409 sec. - Vehicle Speed ≥ 5 mph for ≥ 409 sec. cumulative this ignition cycle. - Torque Converter Slip ≥ 120 rpm for ≥ 409 sec. cumulative this ignition cycle. - Coolant Temp ≥ 70 C and has changed by ≥ 50 C since startup. **1)** Trans Temp has not changed ≥ 1.5 C (absolute value) since startup **2)** Trans Temp changes ≥ 20 C (absolute value) in 200 msec.	11 seconds	DTC Type C
Trans Fluid Temp Sensor Circuit - Low input (high temp)	**P0712**	.24V to 5.0V The DTC detects a continuous short to ground in the TTS signal circuit or the TTS sensor	Raw TTS count < 10	- System Voltage: 8 to 18 volts - Ignition “on”	10 seconds Continuous	DTC Type C
Trans Fluid Temp. Sensor Circuit - High Input (Low temp)	**P0713**	.24V to 5.0V The DTC detects a continuous open or short to high in the TTS signal circuit or the TTS sensor	Raw TTS counts > 251	- System Voltage: 8 to 18 volts - Ignition “on”	409 seconds Continuous	DTC Type C