

**1998 5.7L (LS1) F-car, Y-car**  
**4L60-E TRANSMISSION DIAGNOSTIC PARAMETERS**

98c57G\_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	<b>P0502</b>	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	<b>P0503</b>	0 RPM to 6000 RPM This DTC detects an unrealistic large drop in vehicle speed.	In <b>P/N</b> : Output Speed drop > 8000 RPM  Not <b>P/N</b> : 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	<b>P0740</b>	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 16 volts - Engine Speed > 450 rpm for 5 seconds and not in fuel cutoff	Continuous	DTC Type A
TCC System Stuck ON	<b>P0742</b>	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	<b>P0751</b>	This DTC detects abnormal shift patterns:  <b>Stuck OFF:</b> <b>2-2-3-3 pattern</b>  <b>Stuck ON:</b> <b>1-1-4-4 pattern</b>	Fail Counter >=3 . The fail counter is incremented when the following fail cases are true:  <b>Stuck OFF:</b> <b>1,2,3,&amp; 4</b>  <b>Stuck ON:</b> <b>1,2,3, &amp; 5</b>	<b>General</b> -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  <b>Fail Case 1</b> - 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 <b>Fail Case 2</b> - 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 <b>Fail Case 3</b> - 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 <b>Fail Case 4</b> - 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 <b>Fail Case 5</b> - 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	<b>P0753</b>	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 16 volts - Engine Speed > 450 rpm for 5 seconds and not in fuel cutoff	Continuous	DTC Type A

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Shift Solenoid B Performance	<b>P0756</b>	This DTC detects abnormal shift patterns:  <b>Stuck OFF:</b> <b>4-3-3-4 pattern</b>  <b>Stuck ON:</b> <b>1-2-2-1 pattern</b>	Fail Counter >=3 . The fail counter is incremented when the following fail cases are true:  <b>Stuck OFF:</b> <b>1 and 3, or 2 and 3</b>  <b>Stuck ON:</b> <b>3 and 4</b>	<ul style="list-style-type: none"> <li>- Engine Speed &gt; 450 rpm for 5 seconds and not in fuel cutoff</li> <li>- Gear Range is D4</li> <li>- No TPS DTC's</li> <li>- No VSS DTC's</li> <li>- No solenoid electrical DTC's</li> <li>- No TCC Stuck On DTC.</li> <li>- No PSA DTC set</li> <li>- Trans Temp: 20 C to 130 C</li> <li>- Vehicle Speed &gt; 5 MPH</li> </ul> <p><b>Fail Case 1</b></p> <ul style="list-style-type: none"> <li>- 1st gear commanded &gt; 1.5 sec.</li> <li>- Engine Torque: 40 to 400 ft lbs</li> <li>- Vacuum: 0 to 105 kpa</li> <li>- TCC Slip: -2000 to 0 rpm</li> <li>- Output Speed: 400 to 1500 rpm</li> <li>- Speed Ratio: 0.7 to 3.0</li> <li>- Throttle Position &gt; 25%</li> <li>- Fail Timer &gt; 1.5 sec</li> </ul> <p><b>Fail Case 2</b></p> <ul style="list-style-type: none"> <li>- 2nd gear command &gt; 409.5 sec</li> <li>- Engine Torque: 40 to 400 ft lbs</li> <li>- Vacuum: 0 to 105 kpa</li> <li>- TCC Slip: 8191 to 8191 rpm</li> <li>- Output speed: 8191 to 8191 rpm</li> <li>- Speed Ratio: 8 to 8</li> <li>- Throttle Position &gt; 99.9%</li> <li>- Fail Timer &gt; 409.5 sec</li> </ul> <p><b>Fail Case 3</b></p> <ul style="list-style-type: none"> <li>- Time with 3rd gear commanded: 2.05 to 6 seconds</li> <li>- TPS: 10% to 50%</li> <li>- TPS constant within +/- 7%</li> <li>- Engine Torque: 40 to 400 ft lbs</li> <li>- Vacuum: 0 to 105 kpa</li> <li>- Speed Ratio in Third gear does not drop more than 0.3 from the last Speed Ratio in Second gear</li> <li>- TCC Slip in Third gear remains &gt; 400 rpm higher than the last TCC Slip in Second gear</li> <li>- Fail Timer &gt; 1.5 sec</li> </ul> <p><b>Fail Case 4</b></p> <ul style="list-style-type: none"> <li>- 4th Gear commanded for &gt; 1.5 seconds</li> <li>- Engine Torque: 0 to 400 ft lbs</li> <li>- Vacuum: 0 to 105 kpa</li> <li>- TCC Slip: 1000 to 3000 rpm</li> <li>- Output Speed: 1000 to 3000 rpm</li> <li>- Speed Ratio: 1.68 to 3.0</li> <li>- Throttle Position &gt; 7%</li> <li>- Fail Timer &gt; 1.0 sec</li> </ul>	Continuous	DTC Type A

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Shift Solenoid B Electrical	<b>P0758</b>	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 16 volts - Engine Speed > 450 rpm for 5 seconds and not in fuel cutoff	Continuous	DTC Type A
3-2 Downshift Solenoid Electrical	<b>P0785</b>	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 16 volts - Engine Speed > 450 rpm for 5 seconds and not in fuel cutoff	Continuous	DTC Type A
PSA Circuit Malfunction	<b>P1810</b>	0V to 12V This DTC detects an invalid state of the PSA sensor or the PSA circuit by deciphering the PSA inputs.	<b>Fail Case 1</b> Illegal Trans Pressure Switch State (111) or (101)  <b>Fail Case 2</b> Gear range is D2, D4, or Reverse during engine startup.  <b>Fail Case 3</b> Gear range is Park or Neutral when operating in D4.	<b>Fail Case 1</b> - Engine Speed > 450 rpm for 5 seconds and not in fuel cutoff - System Voltage: 8 to 16 volts  <b>Fail Case 2</b> - System Voltage: 8 to 16 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  <b>Fail Case 3</b> - Engine Speed > 450 rpm for 5 seconds and not in fuel cutoff - System Voltage: 8 to 16 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%	<b>Fail Case 1</b> 60 seconds  <b>Fail Case 2</b> 5 Seconds  <b>Fail Case 3</b> 10 seconds  Continuous	DTC Type B
TCC PWM Solenoid Electrical	<b>P1860</b>	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 16 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 A

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Transmission Component Slipping	<b>P1870</b>	This DTC detects excessive TCC slip when the torque converter clutch should be engaged.	<p>If TCC slip is:</p> <p><b>80 to 800 rpm</b></p> <p>for 7 seconds,</p> <p>then increment the Trans Slip Counter by one.</p> <p>When the counter reaches 3, set the code.</p>	<ul style="list-style-type: none"> <li>- Engine Speed &gt; 450 rpm for 5 seconds and not in fuel cutoff</li> <li>- Gear is not 1st</li> <li>- Gear Range is D4</li> <li>- No TPS High or Low DTC's</li> <li>- No VSS DTC's</li> <li>- No solenoid electrical DTC's</li> <li>- Shift Solenoid Performance Diagnostic counters are all zero</li> <li>- TPS: 10.0% to 50%</li> <li>- Trans temp.: 20 C to 130C</li> <li>- Engine Torque: 40 to 400 ft-lbs</li> <li>- Speed ratio: 0.67 to 0.9</li> <li>- Engine Speed: 1200 to 3500 rpm</li> <li>- Vehicle Speed: 35 to 65 mph</li> </ul> <p><b>Fail Case 1</b></p> <ul style="list-style-type: none"> <li>- TCC at max apply for &gt; 0 sec</li> <li>- TCC commanded on for &gt; 5 sec</li> </ul> <p><b>Fail Case 2</b></p> <ul style="list-style-type: none"> <li>- Run fail case 2 immediately after fail case 1 increments the trans slip counter to either 1 or 2. Discontinue fail case 2 if the TCC is commanded OFF at any time.</li> <li>- TPS: 10% to 40%</li> </ul> <p><b>Criteria A</b></p> <p><b>If:</b> 80 rpm &lt; TCC slip &lt; 800 rpm for 7 seconds,</p> <p><b>then:</b> Go to max pressure freeze adapts go to criteria B</p> <p><b>Criteria B</b></p> <p><b>If:</b> 80 rpm &lt; TCC slip &lt; 800 rpm for 7 seconds,</p> <p><b>then:</b> Command TCC OFF for 1.5 seconds go to criteria C</p> <p><b>Criteria C</b></p> <p><b>If:</b> 80 rpm &lt; TCC slip &lt; 800 rpm for 7 seconds,</p> <p><b>then:</b> Set code p1870</p>	Continuous	DTC Type B