

**2000 2.2L (L43) (FFV) (Flexible Fuel Vehicle) S-pickup (includes Isuzu Hombre)**

**4L60-E TRANSMISSION DIAGNOSTIC PARAMETERS**

2000trans11.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 25 to 60 KPA - Throttle Position 20 to 50% - Engine Speed 3200 to 4800 RPM	3.0 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 - No Output Speed rise > 600 rpm within 6 seconds - No PSA DTC set	In park or neutral for 409 seconds.  Not in park or neutral for 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: 10 to 18 volts - Engine Speed > 450 rpm for 5 seconds and not in fuel cutoff	Continuous	DTC Type B
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  for > 5.0 seconds  Slip Counter >= 2	- 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: 15% to 60% - TCC is commanded off - Engine Speed: 1000 to 3000 rpm - Speed Ratio: 0.65 to 1.25 - Vehicle Speed: 20 to 70 mph	5.0 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> 2-2-3-3 pattern  <b>Stuck ON:</b> 1-1-4-4 pattern	Fail Counter >= 3. The fail counter is incremented when the following fail cases are true:  <b>Stuck OFF:</b> 1,2,3, & 4  <b>Stuck ON:</b> 1,2,3, & 5	<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 50% - TPS constant within +/- 6% - 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 50% - TPS constant within +/- 7% - Vehicle Speed: 15 to 60 mph - After 2 sec, engine speed in 3rd gear must be 100 rpm < last speed in 2nd gear <b>Fail Case 3</b> - Commanded 3-4 shift - TPS: 10% to 50% - TPS constant within +/- 7% - Vehicle speed: 30 to 65 mph - After 2.5 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: 10% to 50% - Speed Ratio: 0.95 to 1.25 - TCC Slip: 400 to 1200 rpm for > 4 sec <b>Fail Case 5</b> - Commanded 4th gear - TCC commanded ON - TPS: 10% to 50% - Speed Ratio: .65 to 0.80 - TCC Slip: -20 to +50 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: 10 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	<b>P0756</b>	This DTC detects abnormal shift patterns:  <b>Stuck OFF:</b> 4-3-3-4 pattern  <b>Stuck ON:</b> 1-2-2-1 pattern	Fail Counter >= 3. The fail counter is incremented when the following fail cases are true:  <b>Stuck OFF:</b> 1 and 3, or 2 and 3  <b>Stuck ON:</b> 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  <b>Fail Case 1</b> - 1st gear commanded > 2.0 sec. - Engine Torque: 40 to 400 ft lbs - Vacuum: 0 to 105 kpa - Output Speed: 400 to 1500 rpm - Speed Ratio: 0.70 to 3.0 - Throttle Position > 25% - TCC Slip: -3000 to -100 rpm for > 1.5 seconds <b>Fail Case 2</b> - 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 > 511.99 sec <b>Fail Case 3</b> - Time with 3rd gear commanded: 2.0 to 5.95 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 0.35 from the last Speed Ratio in Second gear - TCC Slip in Third gear remains > 300 rpm higher than the last TCC Slip in Second gear - Fail Timer > 1.5 sec <b>Fail Case 4</b> - 4th Gear commanded for > 1 sec - Engine Torque: 0 to 400 ft lbs - Vacuum: 0 to 105 kpa - Output Speed: 1400 to 3000 rpm - Speed Ratio: 1.68 to 3.5 - Throttle Position > 10% - TCC Slip: 1000 to 4000 rpm for > 1.0 sec	Continuous	DTC Type A
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: 10 to 18 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: 10 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	<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: 10 to 18 volts  <b>Fail Case 2</b> - System Voltage: 10 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 600 rpm for > 0.08 seconds, then, 3. Engine Speed > 600 rpm  <b>Fail Case 3</b> - Engine Speed > 450 rpm for 5 seconds and not in fuel cutoff - System Voltage: 10 to 18 volts - 4th gear commanded - Engine Torque: 40 to 400 ft-lbs - Vacuum: 0 to 105 kPa - TCC ON - No VSS DTC's - Speed Ratio: 0.65 to 0.75 - TPS: 10% to 50%	<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: 10 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.	<p>If TCC slip is:                      300 to 1000 rpm                      for 7 seconds,                      then increment the Trans Slip Counter by one.</p> <p>When the counter reaches 3                      OR                      when Fail Case 2 Criteria C are met, 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: 12% to 50%</li> <li>- Trans temp.: 20 C to 130C</li> <li>- Engine Torque: 40 to 400 ft-lbs</li> <li>- Speed ratio: 0.64 to 0.95</li> <li>- Engine Speed: 1500 to 3500 rpm</li> <li>- Vehicle Speed: 35 to 70 mph</li> </ul> <p><b>Fail Case 1</b>                      - TCC commanded on for &gt; 5 seconds, then :                      - TCC at max duty cycle for &gt; 8.5 seconds</p> <p><b>Fail Case 2</b>                      - 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.                      - TPS: 7% to 40%</p> <p><b>Criteria A</b>  <b>If :</b> 200 rpm &lt; TCC slip &lt; 1000 rpm for 7 seconds,  <b>then:</b> Go to max pressure freeze adapts                      go to criteria B</p> <p><b>Criteria B</b>  <b>If :</b> 200 rpm &lt; TCC slip &lt; 1000 rpm for 7 seconds,  <b>then:</b> Command TCC OFF for 1.5 seconds                      go to criteria C</p> <p><b>Criteria C</b>  <b>If :</b> 200 rpm &lt; TCC slip &lt; 1000 rpm for 7 seconds,  <b>then:</b> Set code p1870</p>	Continuous	DTC Type B