2000 Car V6 group 3 3.5L (LX5) G-Aurora, W-Intrigue
ENGINE and TRANSMISSION DIAGNOSTIC PARAMETERS

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
HO2S Heater Control Circuit - Bank 1 Sensor 1	P0030	This DTC checks the output driver for electrical integrity	Output state invalid	PCM state = crank or run 9 volts < Ignition Voltage < 18 volts	5 sec. Continuous	DTC Type B
HO2S Heater Control Circuit - Bank 1 Sensor 2	P0036	This DTC checks the output driver for electrical integrity	Output state invalid	PCM state = crank or run 9 volts < Ignition Voltage < 18 volts	30 sec. Continuous	DTC Type B
MAF Sensor Range/Perf	P0101	0 to 231gps 1500HZ to 10500HZ	Delta of 2 to 10 gps between the actual airflow and calculated airflow	Engine Vacuum ≤ 55 kpa Delta Map < 3 kpa TPS < 50% Delta TPS < 1.50 % EGR < 50.00 % 9.00 V < ign voltage < 18 V Engine stable = 5.0 sec	395.00 test failures out of 400.00 tests	DTC Type B
MAF Sensor Circuit Low Input	P0102	0 to 231gps 1500HZ to 10500HZ	Frequency value < 1200 HZ	RPM > 1.00 Ign voltage > 8.00 V Conditions stable > 0.50 sec TPS < 50.00 % IAC Steps > 2	395.00 test failures out of 400.00 tests	DTC Type B
MAF Sensor Circuit High Input	P0103	0 to 231gps 1500HZ to 10500HZ	Frequency value> 11500.00 HZ	RPM > 50.00 Ign voltage > 8.00 V Conditions stable > 0.50 sec TPS < 50.00 % IAC Steps > 2	395.00 test failures out of 400.00 tests	DTC Type B
MAP Sensor Circuit - Low Input	P0107	This DTC detects a continuous short to low or open in either the signal circuit or the MAP sensor.	MAP < 1.95%	No TP sensor DTC's set Engine Running Throttle Position ≥ 0.00 % when Engine speed is ≤ 1000.00 RPM **or** Throttle Position is ≥ 10.00 % when Engine speed is > 1000.00 RPM	175.00 test failures within a 200.00 test sample. 80 samples/sec. Continuous	DTC Type B
MAP Sensor Circuit - High Input	P0108	This DTC detects a continuous short to high in either the signal circuit or the MAP sensor.	MAP > 86%	No TP sensor DTC's set Engine Running Throttle Position ≤ 1.99 % when Engine speed is ≤ 3000 RPM	175.00 test failures within a 200.00 test sample. 80 samples/sec. Continuous	DTC Type B
Intake Air Temp. Sensor Circuit -Low Input	P0112	The DTC detects a continuous short to ground in the IAT signal circuit or the IAT sensor	**Low Resistance Pull-up** Raw IAT < 7.00 counts (135 °C) **High Resistance Pull-up** Raw IAT < 7.00 counts (135 °C)	No VS sensor DTCs set. No ECT sensor DTCs set Vehicle speed ≥ 25.00 mph Engine run time > 10.00 seconds	175.00 test failures within a 200.00 test sample Continuous	DTC Type B

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Intake Air Temp. Sensor Circuit - High Input	P0113	The DTC detects a continuous open or short to high in the IAT signal circuit or the IAT sensor	**Low Resistance pull-up** Raw IAT > 253 counts (-37 °C) **High Resistance pull-up** Raw IAT > 253 counts (-37 °C)	No ECT sensor DTC's set No VS sensor DTC's set Vehicle speed < 35.00 mph Air flow < 12.00 g /second Coolant > 60.00 °C Engine run time> 180.00 seconds	175.00 test failures within a 200.00 test sample Continuous	DTC Type B
Engine Coolant Temperature Circuit Low Input	P0117	Thermister Analog Voltage This DTC detects if the engine coolant sensor's analog voltage falls below a minimum expected value	**Low Resistance Pull-up** Raw ECT < 37.00 counts (140 °C) **High Resistance Pull-up** Raw ECT < 37.00 counts (140 °C)	Engine run time > 3.00 seconds	240.00 test failures within a 250.00 test sample Continuous	DTC Type B
Engine Coolant Temperature Circuit High Input	P0118	Thermister Analog Voltage The DTC detects if the engine coolant sensor's analog voltage exceeds a maximum expected value	**Low Resistance pull-up** Raw ECT > 247.00 counts (-40 °C) **High Resistance pull-up** Raw ECT > 247.00 counts (-40 °C)	Engine run time > 15.00 seconds	240.00 test failures within a 250.00 test sample Continuous	DTC Type B
Throttle Position Sensor Circuit Range/Rationality	P0121	The DTC determines if the TP sensor is stuck within the normal operating range.	The last throttle position value > or < predicted throttle position. Lookup table for stuck high or low based on engine RPM.	No TP sensor DTC's set or failures flagged No MAP sensor DTC's set Engine Running MAP < 50.00 kpa (stuck high) MAP > 70.00 kpa (stuck low) ECT >75.00 °C Engine Run Time > 180 seconds Delta MAP < 5kpa Engine Stable for > 5 seconds 0 < IAC Steps < 130 steps	95 test failures within 100 test sample 80 samples/sec Continuous	DTC Type B
Throttle Position Sensor Circuit-Low Input	P0122	This DTC detects a continuous short to low or open in either the signal circuit or the TP sensor.	TP signal < 2%	Engine running	95.00 consecutive test failures within a 100.00 test sample 80 samples/sec Continuous	DTC Type B

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Throttle Position Sensor Circuit-High Input	P0123	This DTC detects a continuous short to high in either the signal circuit or the TP sensor.	TP signal > 97%	Engine running	95.00 consecutive test failures within a 100.00 test sample 80 samples/sec. Continuous	DTC Type B
Insufficient Coolant Temperature for Closed Loop Fuel Control	P0125	Thermistor Analog Voltage This DTC detects if a stabilized minimum closed-loop coolant temperature is reached and maintained after engine start-up	If closed-loop timer is exceeded: 100 sec @ 50 °F 150 sec @ 20 °F 439 sec @ region 3 ECT < 10.00 °C	ECT sensor shorts test not failing ECT DTCs not active IAT sensor DTCs not active Start up ECT ≤ 50 °C IAT ≥ -6.99 °C ECT ≥ -40.00 °C Max Idle Time ≤ : 95.00 sec @ 50 °F 210.00 sec @ 20 °F 329.00 sec @ Reg 3 Min Total Engine Air ≥ : 1000 grams @ 50 °F 1500 grams @ 20 °F 4669 grams @ Reg 3	100 consecutive test failures (i.e. test failures * loop rate = sec) 100ms loop Continuous	DTC Type B
O2S Circuit - Closed Loop Rationality (Bank 1 Sensor 1)	P0130	This DTC determines if the O2 sensor voltage is not meeting the voltage criteria to enable closed loop fueling.	Closed loop fuel control O2 sensor Ready flag set to “Not Ready.” O2 sensor voltage must be > 650 millivolts or < 250 millivolts to set closed loop fuel O2 Ready flag. Once set to “Ready,” the O2 sensor voltage cannot be > 250 millivolts and < 650 millivolts for > 10 seconds or the O2 Ready flag will be reset to “Not Ready.”	No MAF DTC's No TP sensor DTC's No MAP DTC's No ECT sensor DTC's No Bank 1 Sensor 1 Voltage DTC’s Engine Run Time > 120 sec. Coolant temp > 75 C 10 volts < Ignition Voltage < 18 volts Traction control not active. Catalyst Protection mode not active. 500 ≤ RPM ≤ 5000 3.0 gps ≤ MAF ≤ 60.0 gps Throttle position ≥ 0 % but ≤ 100 % Decel Fuel Cut Off not active. Power Enrichment not active. Above conditions must be met for 5.0 seconds.	160 test failures in a 200 test sample. 100 millisecond execution rate. Continuous	DTC Type B

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O2S Circuit-Low Voltage (Bank 1, Sensor 1)	P0131	This DTC determines if the O2 sensor or circuit is shorted to low by checking for a lean condition during steady throttle and power enrichment (PE).	O2 sensor voltage < 173 millivolts or O2 sensor voltage < 577 millivolts in PE mode	No injector DTC's No MAF DTC's No TP sensor DTC's No Evap. DTC's No IAT sensor DTC's No MAP DTC's No AIR DTC's No ECT sensor DTC's EGR Flow diag. test not active AIR diag. test not active Catalyst diag. test not active Closed Loop Fuel Enabled No injectors are disabled 9 volts < Ignition Voltage < 18 volts Air/Fuel ratio ≥ 14.4 but ≤ 14.9 Throttle position ≥ 3 % but ≤ 40 % Above conditions must be met for 5.0 seconds. <u>PE Test:</u> No injectors are disabled PE mode active Above conditions must be met for 2.0 seconds.	90 test failures in a 100 test sample for 5 sets of samples 76 failures in a 80 test sample for PE mode. 100 millisecond execution rate. Continuous	DTC Type B
O2S Circuit-High Voltage (Bank 1, Sensor 1)	P0132	This DTC determines if the O2 sensor or circuit is shorted to high by checking for a rich condition during steady throttle and decel fuel cut off (DFCO)	O2 sensor voltage > 975 millivolts or O2 sensor voltage > 200 millivolts in DFCO mode	No injector DTC's No MAF DTC's No TP sensor DTC's No Evap. DTC's No IAT sensor DTC's No MAP DTC's No AIR DTC's No ECT sensor DTC's EGR Flow diag. test not active AIR diag. test not active Catalyst diag. test not active Closed Loop Fuel Enabled 9 volts < Ignition Voltage < 18 volts Air/Fuel ratio ≥ 14.40 but ≤ 14.90 Throttle position ≥ 3 % but ≤ 40 % Above conditions must be met for 5.0 seconds. <u>DFCO Test:</u> DFCO mode must be met for 3.0 seconds. Time not in PE with Air/Fuel ratio ≤ 12.5 must exceed time in PE with Air/Fuel ≤ 12.5	40 test failures in a 100 test sample for 5 sets of samples. 110 failures in a 120 test sample for DFCO mode 100 millisecond execution rate. Continuous	DTC Type B

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O2S Circuit-Slow Response(Bank 1, Sensor 1)	P0133	This DTC determines if the O2 sensor functioning properly by checking its response time.	O2 sensor average transition time: L/R > 175.0 msec R/L > 175.0 msec O2 voltage between 325 mv and 625 mv.	No misfire DTC's No injector DTC's No MAF DTC's No TP sensor DTC's No Evap. DTC's No IAT sensor DTC's No MAP DTC's No ECT sensor DTC's No AIR DTC's No Bank 1 Sensor 1 Voltage DTC's DTC P0135 (O2 Heater) not set DTC P1133 (Too Few Switches) not set EGR Flow diag. test not active AIR diag. test not active Catalyst diag. test not active Closed Loop Fuel Enabled 9 volts < Ignition Voltage < 18 volts Engine Run Time > 202 sec. Coolant temp > 75 C 1200 < RPM < 2300 15.0 gps < MAF < 35.0 gps Throttle position ≥ 3 % Transmission not in Park, Reverse or Neutral Above conditions met for 3.0 seconds.	90.00 seconds Once per key cycle	DTC Type B

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O2S Circuit-No Activity Detected (Bank 1,Sensor 1)	P0134	This DTC determines if the O2 sensor or the O2 sensor circuit has developed an open.	O2 sensor > 399 millivolts but < 499 millivolts	No injector DTC's No MAF DTC's No TP sensor DTC's No Evap. DTC's No IAT sensor DTC's No MAP DTC's No AIR DTC's No ECT sensor DTC's EGR Flow diag. test not active AIR diag. test not active Catalyst diag. test not active 9 volts < Ignition Voltage < 18 volts Engine run time > 200 seconds Minimum of 4 occurrences of a delta TP sensor > 5 % during diagnostic test.	290 test failures in a 300 test sample 100 millisecond execution rate. Continuous	DTC Type B
O2S Heater Circuit Malfunction (Bank 1, Sensor 1)	P0135	This DTC determines if the O2 sensor heater is functioning properly by monitoring the current through the heater circuit.	The heater current is > 0.04 amps but < 0.800 amps.	No injector DTC's No MAF DTC's No TP sensor DTC's No Evap. DTC's No IAT sensor DTC's No MAP DTC's No AIR DTC's No ECT sensor DTC's EGR Flow diag. test not active AIR diag. test not active Catalyst diag. test not active 9 volts < Ignition Voltage < 18 volts Engine Run Time > 180 seconds ECT > 75 °C 1000 < RPM < 2500 12 gps < MAF < 35 gps O2 heater overtemp control not active. Above conditions must be met for 3.0 seconds.	23 test failures in a 25 sample test. 5 tests per key cycle, 120 second delay between tests. 1 second execution rate.	DTC Type B

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O2S Circuit-Low Voltage(Bank 1, Sensor 2)	P0137	This DTC determines if the O2 sensor or circuit is shorted to low by checking for a lean condition during steady throttle and power enrichment (PE).	O2 sensor voltage < 9 millivolts or O2 sensor voltage < 577 millivolts in PE mode	No injector DTC's No MAF DTC's No TP sensor DTC's No Evap. DTC's No IAT sensor DTC's No MAP DTC's No AIR DTC's No ECT sensor DTC's EGR Flow diag. test not active AIR diag. test not active Catalyst diag. test not active Closed Loop Fuel Enabled No injectors are disabled 9 volts < Ignition Voltage < 18 volts Air/Fuel ratio ≥ 14.4 but ≤ 14.9 Throttle position ≥ 3 % but ≤ 40 % Above conditions must be met for 5.0 seconds. PE Test: No injectors are disabled PE mode active Above conditions must be met for 2.0 seconds.	560 test failures in a 600 test sample for 5 sets of samples 76 failures in a 80 test sample for PE mode. 100 millisecond execution rate. Continuous	DTC Type B
O2S Circuit-High Voltage(Bank 1, Sensor 2)	P0138	This DTC determines if the O2 sensor or circuit is shorted to high by checking for a rich condition during steady throttle and decel fuel cut off (DFCO)	O2 sensor voltage > 998 millivolts or O2 sensor voltage > 200 millivolts in DFCO mode	No injector DTC's No MAF DTC's No TP sensor DTC's No Evap. DTC's No IAT sensor DTC's No MAP DTC's No AIR DTC's No ECT sensor DTC's EGR Flow diag. test not active AIR diag. test not active Catalyst diag. test not active Closed Loop Fuel Enabled 9 volts < Ignition Voltage < 18 volts Air/Fuel ratio ≥ 14.40 but ≤ 14.90 Throttle position ≥ 3 % but ≤ 40 % Above conditions must be met for 5.0 seconds. DFCO Test: DFCO mode must be met for 3.0 seconds. Time not in PE with Air/Fuel ratio ≤ 12.5 must exceed time in PE with Air/Fuel ≤ 12.5	560 test failures in a 600 test sample for 5 sets of samples. 110 failures in a 120 test sample for DFCO mode 100 millisecond execution rate. Continuous	DTC Type B

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O2S Circuit-No Activity Detected (Bank 1,Sensor 2)	P0140	This DTC determines if the O2 sensor or the O2 sensor circuit has developed an open.	O2 sensor > 425 millivolts but < 473 millivolts	No injector DTC's No MAF DTC's No TP sensor DTC's No Evap. DTC's No IAT sensor DTC's No MAP DTC's No AIR DTC's No ECT sensor DTC's DTC P0141 (O2 Heater) not set Closed Loop Fuel Enabled EGR Flow diag. test not active AIR diag. test not active Catalyst diag. test not active 9 volts < Ignition Voltage < 18 volts Engine run time > 200.00 seconds Minimum 7 occurrences of a delta TP sensor > 5 % during diagnostic test.	1400 test failures in a 1500 test sample 100 millisecond execution rate. Once per key cycle.	DTC Type B
O2S Heater Circuit Malfunction (Bank 1, Sensor 2)	P0141	This DTC determines if the O2 sensor heater is functioning properly by monitoring the amount of time necessary for the O2 sensor to become active after start - up.	The elapsed time to obtain ± 150 millivolts from the average O2 bias voltage. *Time based on table: Time vs average engine airflow during warm-up period. Offset to maximum time based on start-up coolant temperature.	No Bank 1 Sensor 2 voltage DTC's ECT < 40 °C IAT < 45 °C Δ ECT-IAT ≤ 10 °C Avg MAF < 25 gps 10.0 < System Voltage < 18.0 399 mvolts < Avg Bias Voltage < 499 mvolts	From cold start to a maximum time of 200 seconds. *Time determined by table.	DTC Type B

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System Too Lean (Bank 1)	P0171	Determines if the system is in a lean condition.	The average of short term fuel trim samples ≥ 1.05 and The average of adaptive index multiplier samples ≥ 1.18	The following DTC's are not set: VSS DTCs EST DTCs Crank sensor DTCs CAM sensor DTCs TPS DTC's Misfire DTC's IAC DTC's Injector DTC's MAF DTC's O2 sensor DTC's MAP DTC's EGR DTC's Evap. DTC's ECT DTC's IAT DTC's Throttle position < 50.00 % Engine speed > 600.00 rpm but < 4000.00 rpm Baro > 70.00 kpa (8500 ft) ECT > 20.00 °C but < 110.00 °C MAP > 30.00 kpa but < 85.00 kpa IAT > -18.01 °C but < 70.00 °C Air flow > 3.00 g/s < 150.00 g/s Vehicle speed < 83.00 mph	If lean counter is ≥5.00 tests Continuous	DTC Type B
System Too Rich (Bank 1)	P0172	Determines if the system is in a rich condition.	The average of short term fuel trim samples ≤ 1.00 and The average of adaptive index multiplier samples ≤ 0.86	The following DTC's are not set: VSS DTCs EST DTCs Crank sensor DTCs CAM sensor DTCs TPS DTC's Misfire DTC's IAC DTC's Injector DTC's MAF DTC's O2 sensor DTC's MAP DTC's EGR DTC's Evap. DTC's ECT DTC's IAT DTC's Throttle position < 50.00 % Engine speed > 600.00 rpm but < 4000.00 rpm Baro > 70.00 kpa (8500 ft) ECT > 20.00 °C but < 110.00 °C MAP > 30.00 kpa but < 85.00 kpa IAT > -18.01 °C but < 70.00 °C Air flow > 3.00 g/s < 150.00 g/s Vehicle speed < 83.00 mph	If rich counter is ≥5.00 tests Continuous	DTC Type B

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Injector Circuit Fault - Cylinder 1	P0201	This DTC checks the injectors for electrical integrity	Output state is invalid	PCM state = run	30 seconds 1 second loop Continuous	DTC Type B
Injector Circuit Fault - Cylinder 2	P0202	This DTC checks the injectors for electrical integrity	Output state is invalid	PCM state = run	30 seconds 1 second loop Continuous	DTC Type B
Injector Circuit Fault - Cylinder 3	P0203	This DTC checks the injectors for electrical integrity	Output state is invalid	PCM state = run	30 seconds 1 second loop Continuous	DTC Type B
Injector Circuit Fault - Cylinder 4	P0204	This DTC checks the injectors for electrical integrity	Output state is invalid	PCM state = run	30 seconds 1 second loop Continuous	DTC Type B
Injector Circuit Fault - Cylinder 5	P0205	This DTC checks the injectors for electrical integrity	Output state is invalid	PCM state = run	30 seconds 1 second loop Continuous	DTC Type B
Injector Circuit Fault - Cylinder 6	P0206	This DTC checks the injectors for electrical integrity	Output state is invalid	PCM state = run	30 seconds 1 second loop Continuous	DTC Type B

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Random Misfire Detected	P0300	This DTC will determine if a misfire is occurring by monitoring crankshaft velocity.	Deceleration index vs Engine Speed vs Load and Camshaft Position FTP Threshold 2.0% Catalyst Damage 0.64% to 15.8%	Engine run time > 0 No VSS DTC's No crank sensor DTC's No TP sensor DTC's No EST sensor DTC's No ECT sensor DTC's No CAM sensor DTC's No transmission DTC's No MAF DTCs Fuel cutoff not active Brake torque management not active Fuel level > 10% (Does not disable if a Fuel system DTC is active) Fuel Delay when below minimum level = 200 cycles ECT > -7 °C but < 131.00 ^{o} C If start up ECT below -7°C, then delayed until ECT above 21°C Engine speed > 400.00 RPM but < 6500.00 RPM System voltage > 9.00 volts but < 18.00 volts + Throttle position Δ < 0.566 % / 100ms - Throttle position Δ < 0.566 %/100ms No ABS - Rough Road No ABS or TCS active No abnormal engine speed Engine speed not changing rapidly - Ratio of consecutive positive peak delta ref times to nonconsecutive peaks < 20 A/C compressor has not just engaged or disengaged AIR / EGR intrusive test not active Automatic transmission is not shifting	10 failed 200 revolution blocks out of 16 Emission Level 4 failed 200 revolution blocks out of 16 Catalyst damaging Level Continuous	DTC Type B *EMISSION* DTC Type A CATALYST DAMAGING
Knock Sensor Circuit Fault	P0325	This diagnostic is based on normal variation in the knock sensor output. If the output stays relatively constant then there is a problem. If the output is a high voltage the problem is within the knock sensor integrated circuit.	Knock sensor average voltage $\geq$ 4.8 volts and variation of the output signal from the average voltage is within $\pm$ .023 volts.	No VSS DTC's set No TP sensor DTC's set No ECT sensor DTC's set No Crank DTC's set No CAM DTC's set No AIR flow DTC's set Engine Run time > 30 sec. System Voltage $\geq$ 9 V TPS $\geq$ 15% Coolant $\geq$ 65°C 1000 RPM $\leq$ Engine Speed $\leq$ 3000 RPM Engine Load $\geq$ 45% Spark Retard $\leq$ 15 deg.	475 fails in 500 samples. Continuous	DTC Type B

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Knock Sensor Input Fault	P0327	This diagnostic is based on normal variation in the knock sensor output. If the output stays relatively constant then there is a problem. If the output is a low voltage the problem is within the knock sensor or wiring.	Knock sensor average voltage < 4.8 volts and variation of the output signal from the average voltage is within ± .023 volts.	No VSS DTC's set No TP sensor DTC's set No ECT sensor DTC's set No Crank DTC's set No CAM DTC's set No AIR flow DTC's set Engine Run time > 30 sec. System Voltage ≥ 9 V TPS ≥ 15% Coolant ≥ 65°C 1000 RPM ≤ Engine Speed ≤ 3000 RPM Engine Load ≥ 45% Spark Retard ≤ 15 deg.	475 fails in 500 samples. Continuous	DTC Type B
Crankshaft Position Sensor A Circuit Fault	P0335	24X Signal This diagnostic determines whether a fault exists with crank position sensor circuit A signal	The number of medium resolution reference pulses with or without CAM present ≤ 46 or ≥ 50.	PCM state = crank or run MAF > 2.29 gps 20 RPM ≤ CAM RPM Cranking ≤ 400 RPM 20 RPM ≤ CAM RPM Cranking ≤ 6000 RPM 20 RPM ≤ Med. Res. RPM Crank ≤ 400 RPM 20 RPM ≤ Med. Res. RPM Crank ≤ 6000 RPM	No CAM faults present: Crank > 1 fail count Run > 1 fail count CAM fault present: Crank > .7 sec. Run > .1 sec. 12.5 msec Continuous	DTC Type B
Camshaft Position Sensor Circuit Fault	P0340	1X Signal This diagnostic will detect if a fault exists on the camshaft position sensor signal.	Checks for correct number of low res. pulses per cam, checks for correct CAM position and CAM signal present.	PCM state = crank or run A: Low Res. pulse in falling CAM region = 6 B: CAM sequence in falling region ≥ 3 or ≤ 6 CAM sequence RPM ≤ 3000 RPM	A: 1.5 seconds without CAM signal detected. B: 5 CAM failures out of 100 sample limit 12.5 msec Continuous	DTC Type B
Crankshaft Position Sensor B Circuit Fault	P0385	24X Signal This diagnostic determines whether a fault exists with crank position sensor circuit B signal	The number of medium resolution reference pulses with or without CAM present ≤ 46 or ≥50.	PCM state = crank or run MAF > 2.29 gps 20 RPM ≤ CAM RPM Cranking ≤ 400 RPM 20 RPM ≤ CAM RPM Cranking ≤ 6000 RPM 20 RPM ≤ Med. Res. RPM Crank ≤ 400 RPM 20 RPM ≤ Med. Res. RPM Crank ≤ 6000 RPM	No CAM faults present: Crank > 1 fail count Run > 1 fail count CAM fault present: Crank > .7 sec. Run > .1 sec. 12.5 msec Continuous	DTC Type B

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Exhaust Gas Recirculation - Insufficient Flow Detected	P0401	This diagnostic will determine if there is a reduction in EGR flow.	With EGR valve open, the peak + MAP Δ is monitored over a period of time. This value is compared with a threshold from Engine Speed vs Baro table and the difference computed. The result is statistically filtered (EWMA) and compared to a decision limit. DTC is set when the filtered result exceeds the decision limit.	***Test Enable*** No injector DTCs set No crank DTCs set No TP sensor DTC's set No MAP DTC's set No VS sensor DTC's set No IAT sensor DTC's set No ECT sensor DTC's set No IAC DTC's set No Linear EGR Pintle Position DTC set No Misfire DTC's set No MAF DTC's set MAP Δ < 1.00 kpa - RPM Δ < 400 + RPM Δ < 200 MPH Δ < 4.00 ECT >80.00 ° C Baro > 77.00 kpa Vehicle Speed > 22.5 mph IAC Δ < 8.00 counts AC clutch status is unchanged Transmission status is unchanged ***Start Test*** Throttle Position < 1.3% EGR Position < 1% Engine Speed > 900.00 rpm but < 1200.00 rpm MAP Δ < 1.00 kPa Compensated MAP > 20.00 kpa but < 40.00 kpa ***Run Test*** Stabilized MAP (valve closed) recorded and EGR valve "ramped" open over a time interval and peak MAP value recorded and MAP Δ computed. EGR valve "ramped" closed over a time interval.	1 second Once per trip	DTC Type A
Exhaust Gas Recirculation - Insufficient Flow Detected	P0401 (cont.)			***Rapid Step Response Test*** IF the difference between the current EWMA and the current map diff > 3 kpa AND current map diff > 2 kpa THEN 5 tests will be run per trip until 25 tests have been met		
Linear EGR Circuit Fault	P0403	This DTC checks the Linear EGR circuit for electrical integrity	Output state invalid	PCM state = crank or run 9 V ≤ Ignition Voltage ≤ 18V	20.00 seconds 100ms loop Continuous	DTC Type B

2000 Car V6 group 3 3.5L (LX5) G-Aurora, W-Intrigue
ENGINE and TRANSMISSION DIAGNOSTIC PARAMETERS

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
EGR Valve Circuit Performance	P0404	This diagnostic detects if the pintle position error is too large	Pintle position error [absolute value of (desired position - actual position)] > 20.00 %	Desired EGR position > 0% Code P0401 status = not in progress EGR valve icing or over temperature not occurring Δ Desired EGR position < 30.00 % Ignition voltage $\geq$ 10.00 volts	100.00 loops 100ms loop Continuous	DTC Type B
EGR Valve Position Sensor Circuit Low Voltage	P0405	This diagnostic detects if the pintle position feedback circuit is open or shorted to ground	EGR feedback sensor signal < 6.00 counts	EGR valve icing or over temperature not occurring Ignition voltage $\geq$ 10.00 volts	2.00 seconds 100ms loop Continuous	DTC Type B
AIR Injection System Malfunction	P0410	***Passive***: HO2S sensors indicate lean condition present during open loop operation. Verifies proper operation of AIR pump. ***Active:*** HO2S sensors indicate lean condition present when AIR pump is turned on during closed loop operation	***Passive:*** HO2S sensor > approx. 600 mv during open loop operation at idle. ***Active:*** HO2S sensor > 350 mv for > 2.5 seconds or fuel integrator delta of.09 when pump turned on during closed loop operation and CCP commanded at idle.	***Passive:*** No MAF DTC's set No MAP DTC's set No IAT DTC's set No ECT DTC's set No TP sensor DTC's set No HO2S DTC's set No Injector DTC's set No Misfire DTC's set No CKP DTC's set No EGR DTC's set No Fuel Trim DTC's set No IAC DTC's set No AIR pump relay DTC's set No AIR Solenoid DTC's set No EVAP DTC's set HO2S mid bias volt test passed Engine run > 1 second Air Flow < 35 gps ECT < 110 °C A/F ratio > 11.5:1 Engine load < 80% Ignition Voltage > 9 volts Engine Speed > 1200 RPM Engine at idle IAT > 10 °C delta TPS from start of test < 5% PE, DFCO, COT not active ***Active*** Same as above and Engine run $\geq$ 40 sec. after closed loop operation Fuel integrator > 0.95 & < 1.05 ECT $\geq$ 75 °C In BLM cell 2	***Passive:*** During open loop operation. Once per trip. ***Active:*** 5 seconds Up to 4 times per trip if passive test fails or is inconclusive.	DTC Type B
AIR Solenoid Circuit Fault	P0412	This DTC checks the output driver for electrical integrity	Output state invalid	PCM state = crank or run 9 V < Ignition Voltage < 18 V	30 sec Continuous	DTC Type B

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ENGINE and TRANSMISSION DIAGNOSTIC PARAMETERS

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
AIR Pump Relay Circuit Fault	P0418	This DTC checks the output driver for electrical integrity	Output state invalid	PCM state = crank or run 9 V < Ignition Voltage < 18 V	30 sec Continuous	DTC Type B
Catalyst Low Efficiency Bank 1	P0420	Oxygen Storage	OSC time difference ≥ 0.0762 seconds (0.106 seconds for Federal) OSC time difference = OSC worst pass threshold - OSC compensation factor * (post cat O2 resp time - pre cat O2 resp time) OSC worst pass thresh = 0.975 seconds (1.1 seconds for Federal)	No EST DTC's set No EGR DTC's set No MAT DTC's set No IAC DTC's set No injector DTC's set No VS sensor DTC's set No TP sensor DTC's set No O2 sensor DTC's set No Misfire DTC's set No MAP sensor DTC's set No Fuel Trim DTC's set No ECT sensor DTC's set Ignition Voltage > 9 volts ***Valid Idle Period Criteria*** Engine speed ≥ 1000 RPM for a minimum of 37 sec. Min engine run time of 450 sec for stabilized BLM ***Test Enable Conditions*** Predicted catalyst temperature ≥ 472.00 (452 for Federal) Closed loop fuel control Barometric pressure ≥ 75.00 kpa -18.00 ≤ IAT ≤ 80 °C 75.00 ≤ ECT ≤ 120.00 °C 0 < Idle period ≤ 180.00 seconds Tests attempted this trip ≤ 12.00 Delta engine speed ≤ 80 RPM ***Rapid Step Response Enable Criteria*** OSC time difference step ≥ 0.25 sec (0.35 seconds for Federal) OSC time difference ≥ 0.00 sec	1 test attempted per valid idle period Minimum of 1 test per trip Maximum of 6 tests per trip Maximum of 6 trips to detect failure when Rapid Step Response is enabled. Frequency: 12.5 ms continuous	Type A

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ENGINE and TRANSMISSION DIAGNOSTIC PARAMETERS

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
Evap. Emission Control System - Malfunction	P0440	This DTC will detect a weak vacuum condition (large leak or purge blockage) in the Evap. system.	Purge Volume > 4 liters BEFORE Tank Vacuum > 6.0 "H2O	General Test Enable: No IAT DTC's active No MAP DTC's active No TP sensor DTC's active No O2 sensor DTC's active No VS sensor DTC's active No ECT sensor DTC's active DTC P0125 not active 15.00 % < Fuel Level < 85.10 % 10 V < System Voltage < 18 V 4.41 °C < IAT < 30 °C Baro > 75.20 kPa (8000 ft) Cold Temperature Δ (ECT - IAT): < 2 °C if IAT > ECT < 8 °C if ECT > IAT	Once per cold start. Time is dependent on driving conditions.	DTC Type B
Evap. Emission System Leak Detection	P0442	This DTC will detect a small leak in the evap system between the fuel fill cap and up to the purge solenoid.	.040 EWMA Value > .0289917 in. dia. OR .020 EWMA Value > .01397705 in. dia.	General Test Enable: No IAT DTC's active No MAP DTC's active No TP sensor DTC's active No O2 sensor DTC's active No VS sensor DTC's active No ECT sensor DTC's active DTC P0125 not active 30.00% < Fuel Level < 85.10% (for .020 leak) 15.00% < Fuel Level < 85.10% (for .040 leak) 10 V < System Voltage < 18 V Vehicle speed < 3 mph (for .020 leak only) 4.41 °C < IAT < 140 °C Engine Coolant Temp < 140 °C Baro > 75.20 kPa (8000 ft) Cold Start Test: IAT < 30 °C Cold Temperature Δ (ECT - IAT): < 2 °C if IAT > ECT < 8 °C if ECT > IAT	Once per cold start. Time is dependent on driving conditions. Maximum of 6 trips to detect failure with EWMA.	DTC Type A
Canister Purge Circuit Fault	P0443	This DTC checks the output driver for electrical integrity	Output state invalid	PCM state = crank or run 9 V < Ignition Voltage < 18 V	30 sec Continuous	DTC Type B

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ENGINE and TRANSMISSION DIAGNOSTIC PARAMETERS

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
Evap. Emission Control System - Air Vent Circuit Fault	P0446	This DTC will determine if a restriction is present in the vent solenoid, vent filter, vent hose or canister.	Tank Vacuum > 10" H2O for 4 seconds BEFORE Purge Volume > 4.83 liters	No IAT DTC's active No MAP DTC's active No TP sensor DTC's active No O2 sensor DTC's active No VS sensor DTC's active No ECT sensor DTC's active DTC P0125 not active 15.00 % < Fuel Level < 85.10 % 10 V < System Voltage < 18 V 4.41 °C < IAT < 140 °C Engine Coolant Temp < 140 °C Baro > 75.20 kPa (8000 ft)	Once per trip. Time is dependent on driving conditions.	DTC Type B
Fuel Tank Vent Circuit Fault	P0449	This DTC checks the output driver for electrical integrity	Output state invalid	PCM state = crank or run 9 V < Ignition Voltage < 18 V	30 sec Continuous	DTC Type B
Evap. Emission Control System - Fuel Tank Pressure Sensor Circuit Low	P0452	This DTC will detect a vacuum sensor signal that is too low out of range.	Fuel tank Pressure sensor circuit voltage < 0.06 volts for 5seconds.	5 second delay after sensor power-up for sensor warm-up	Fails if tank pressure sensor signal fails low for 5 consecutive seconds. Runs continuously after the delay period for sensor warm-up.	DTC Type B
Evap. Emission Control System - Fuel Tank Pressure Sensor Circuit High	P0453	This diagnostic will detect a fuel tank pressure sensor open circuit.	Fuel tank Pressure sensor circuit voltage > 4.9 volts for 5 seconds.	5 second delay after sensor power-up for sensor warm-up.	Fails if tank pressure sensor signal fails high for 5 consecutive seconds. Continuous	DTC Type B
Fuel Level Sensor Circuit Low Input	P0462	This diagnostic will detect a fuel sender failed to a low voltage level.	Output voltage amplitude is low and stays constant	Discrete: Fuel level input < 10.5 % OR ClassII/UART: Communication between the cluster and PCM is lost Default to gauge: 0 % Default to evap and misfire: 40%	12.5 ms Continuous Failed for 10 consecutive seconds	DTC Type C

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ENGINE and TRANSMISSION DIAGNOSTIC PARAMETERS

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
Fuel Level Sensor Circuit High Input	P0463	This diagnostic will detect a fuel sender failed to a high voltage level.	Output voltage amplitude is high and stays constant	Discrete: Fuel level input > 70.3 % OR ClassII/UART: Communication between the cluster and PCM is lost Default to gauge: 0% Default to evap and misfire: 40%	12.5 ms Continuous Failed for 60 consecutive seconds	DTC Type C
Fan 1 Relay Circuit Fault	P0480	This DTC checks the output driver for electrical integrity	Output state invalid	PCM state = crank or run 9 V < Ignition Voltage < 18 V	30 sec Continuous	DTC Type B
Fan 2 Relay Circuit Fault	P0481	This DTC checks the output driver for electrical integrity	Output state invalid	PCM state = crank or run 9 V < Ignition Voltage < 18 V	30 sec Continuous	DTC Type B
Vehicle Speed Sensor - Low input	P0502	This DTC detects a low vehicle speed when the vehicle has a large engine speed in a drive gear range.	Output Speed < 150 rpm	No Input Speed Sensor Codes No PSA Codes No MAP Codes No TPS Codes Trans Range Not P/N MAP 0 psi < MAP < 105 psi Eng Torque 40 < Eng Torque < 300 No Engine_Torque_Malfunction Input Speed >= 1500 TPS >= 12%	2.5 seconds Continuous	DTC Type B
Vehicle Speed Sensor - Intermittent	P0503	This DTC detects an unrealistic large drop in vehicle speed.	Output Speed drop >1500 RPM	Time since last Gear Range Change > 6 Sec Engine Speed > 500 rpm for 5 sec and not in fuel cutoff No Output Speed rise > 250 rpm within 2 sec. Transmission not in P/N No PSA Codes No DTC 502 codes	3 sec	DTC Type B

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ENGINE and TRANSMISSION DIAGNOSTIC PARAMETERS

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
Idle Control System RPM Lower Than Expected	P0506	This DTC will determine if a low idle is the result of a IAC valve or circuit. A low idle is defined as 175 RPM below the desired idle. (Desired RPM range 725 to 800)	Engine speed < (Desired RPM -100)	***Test Enable:*** No CCP DTC's set No misfire DTC's set No EGR DTC's set No TP sensor DTC's set No VS sensor DTC's set No ECT DTC's set No MAP DTC's set No IAT DTCs set No Fuel Trim DTC's set No Injector DTCs set No Crank sensor DTCs set No MAF DTC's set ECT > 70.00 °C System Voltage > 9.00 V but < 18.00 V IAT > -18.01 °C Engine run time > 120.00 seconds Baro > 65.00 kPa (12000 ft) TP < 1.5 % VS < 3.00 MPH Above met for a time > 15.00 seconds to enable diagnostic.	15.00 seconds Continuos after enable	DTC Type B
Idle Control System RPM Higher Than Expected	P0507	This DTC will determine if a high idle is the result of a IAC valve or circuit. A high idle is defined as 275 RPM above the desired idle. (Desired RPM range 725 to 800)	Engine speed > (Desired RPM + 175)	***Test Enable:*** No CCP DTC's set No misfire DTC's set No EGR DTC's set No TP sensor DTC's set No VS sensor DTC's set No ECT DTC's set No MAP DTC's set No IAT DTCs set No Fuel Trim DTC's set No Injector DTCs set No Crank sensor DTCs set No MAF DTC's set ECT > 70.00 °C System Voltage > 9.00 V but < 18.00 V IAT > -18.01 °C Engine run time > 120.00 seconds Baro > 65.00 kPa (12000 ft) TP < 1.5% VS < 3.00 MPH Above met for a time > 15.00 seconds to enable diagnostic.	15.00 seconds Continuos after enable	DTC Type B

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ENGINE and TRANSMISSION DIAGNOSTIC PARAMETERS

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
Check Sum Error	P0601	This DTC will be stored if the calibration check sum is incorrect	Output state invalid	PCM state = crank or run	Within 2 seconds at Powerup; background checksum after power up 50 ms loop Continuous	DTC Type B
PCM Programming Error	P0602	This DTC will be stored if the PCM has been replaced and has not been programmed	Output state invalid	PCM state = crank	Test is run at Powerup 100ms loop Continuous	DTC Type B
SES Light Circuit Fault	P0650	This DTC checks the output driver for electrical integrity	Output state invalid	PCM state = crank or run 9 V < Ignition Voltage < 18 V	30 sec Continuous	DTC Type A
Trans Fluid Temp Sensor Circuit - Range / Performance	P0711	This 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) Trans Temp has not changed ≥ 1.5 deg C (absolute value) since startup. 2) Trans Temp changes ≥ 20 deg. C (absolute value) in 200 msec. & this happens ≥ 14 times in 7 sec.	System Voltage between 9 and 18 volts No VSS DTC's .2 volts < Raw TTS < 4.92 volts Engine Running ≥ 300 sec. Vehicle Speed ≥ 5 mph for ≥ 409 sec. cumulative this ignition cycle. Torque Converter Slip ≥ 80 rpm for ≥ 409 sec. cumulative this ignition cycle. Trans Temp at startup between -40 and 21 deg. C Coolant Temp ≥ 70 deg. C Coolant Temp. has changed by ≥ 50 deg. C since startup. No Input Speed Sensor Codes No Engine Coolant Sensor Codes	1) 409 seconds continuous. 2) 7 seconds continuous	DTC Type C
Trans Fluid Temp SensorCircuit- Low input	P0712	This DTC detects a continuous short to ground in the TTS signal circuit or the TTS sensor	Raw TTS <.2 volts	System Voltage between 9 and 18 volts Ignition “on”	10 sec Continuos	DTC Type C
Trans Fluid Temp. Sensor Circuit - High Input	P0713	This DTC detects a continuous open or short to high in the TTS signal circuit or the TTS sensor	Raw TTS > 4.92 Volts	System Voltage between 9 and 18 volts Ignition “on”	400 second Continuos	DTC Type C
Input/Turbine Speed Sensor Range /Performance	P0716	This DTC detects an unrealistically large change in input speed in a short period of time.	Input Speed change > 1300 RPM	No Input Speed Sensor Codes No DTC 751, 752, or 753 Codes No Output Speed Sensor Codes Tps >= 14% MPH >= 5 MPH Engine Running And Not In Fuel Cut Off P0717 Has Passed Is Key Cycle	0.8 sec. Continuous	DTC Type B

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ENGINE and TRANSMISSION DIAGNOSTIC PARAMETERS

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
Input/Turbine Speed Sensor No Input	P0717	This DTC detects a low input speed when the vehicle has at least a minimum vehicle speed.	Input Speed < 50 RPM	Engine Speed > 500 rpm for 5 sec and not in fuel cutoff No VSS Low or Performance DTC's set No PSA DTC's set PSA indicating not in P/N VSS > 5 MPH	5 seconds Continuous	DTC Type B
TCC System Stuck Off	P0741	This DTC detects high TCC Slip when the Clutch is commanded on	Fail Counter >=2 . The fail counter is incremented when TCC Slip > 180 rpm for the length of the fail timer.	Engine Speed > 500 rpm for 5 sec and not in fuel cutoff TPS between 4% and 35% -20 C < Trans Temp<130 time since last range change > 6 sec TCC is commanded locked for > 0.5 sec. TCC Pressure > Locked capacity or Max Allowed Pressure Transmission in D4, D3 or D2 No ISS DTC's No TPS DTC's No PSA DTC No VSS DTC's No TCC solenoid electrical DTC No TCC Stuck On DTC No TCC Release Switch DTC If In 2nd Gear Then 1.5<ratio<1.6 or If In 3rd Gear The n 1<ratio<1.1 or If In 4th Gear Then .7<ratio<.8	7 sec Continuous	DTC Type B
TCC System Stuck On	P0742	This DTC detects Torque Converter release oil pressure (Switch is Closed) when the TCC is commanded off.	The TCC Release Switch being closed (indicating TCC applied) for the length of the fail timer increments the fail counter; the diagnostic is set when this fail counter is ≥ 6.	Engine Speed > 500 rpm for 5 sec and not in fuel cutoff Throttle Position between 5% and 45% TCC is commanded off No TPS DTC's No VSS Low or Intermittent DTC's No TCC Control Sol. DTC's No TCC Release Switch DTC's time since last range change > 6 sec	4 seconds Continuous	DTC Type A

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ENGINE and TRANSMISSION DIAGNOSTIC PARAMETERS

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
Shift Solenoid A Performance Stuck Off	P0751	This DTC detects 2-2-3-3 shift pattern	Fail Counter >=2 . The fail counter is incremented if fail cases 1 and 2 are true	General No TPS DTC's No VSS low or intermittent DTC's No Shift or TCC Solenoid electrical DTC's No PSA DTC's No ISS DTC's Engine Speed > 500 rpm for 5 sec and & not in fuel cutoff Vehicle speed >5 mph Trans. Temp. > 20 C Transmission not in P/N No Torque DTC No Trans Slipping DTC No Pressure Switch DTC No Torque DTC No Trans Slipping DTC No Pressure Switch DTC Fail Case 1 Commanded Gear is 1 Ratio is 2nd gear Tps >5% 20 ftlbs < Eng Torque < 200 ftlbs Gear Change Timer > 1 sec Fail Fail Case 2 Commanded gear is 4 Ratio is 3rd gear (.95 - 1.05) TPS> 10% 30 ftlbs < Eng Torque < 200 ftlbs Gear Change Timer > 1 sec	Fail Case 1 1sec Fail Case 2 1sec Continuous	DTC Type B

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ENGINE and TRANSMISSION DIAGNOSTIC PARAMETERS

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
Shift Solenoid A Performance Stuck ON	P0752	This DTC detects 1-1-4-4 shift pattern	Fail Counter >=2 . The fail counter is incremented if fail cases 3 and 4 are true	General No TPS DTC's No VSS low or intermittent DTC's No Shift or TCC Solenoid electrical DTC's No PSA DTC's No ISS DTC's Engine Speed > 500 rpm for 5 sec and & not in fuel cutoff Vehicle speed >5 mph Trans. Temp. > 20 C Transmission not in P/N 150 rpm < Input Speed < 8000 rpm Output Speed >300 rpm No Torque DTC No Trans Slipping DTC No Pressure Switch DTC Fail Case 3 Commanded Gear is 2 Ratio is 1st gear (2.87-2.97) Tps >10% 20 ftlbs < Eng Torque < 200 ftlbs Gear Change Timer > 1 sec Fail Fail Case 4 Commanded gear is 3 Ratio is 4th gear (0.65 - 0.75) TPS> 10% 30 ftlbs < Eng Torque < 200 ftlbs Gear Change Timer > 1 sec FC4 Enabled	Fail Case 3 1sec Fail Case 4 1sec Continuous	DTC Type B
Shift Solenoid A Electrical	P0753	This DTC detects a continuous open or short to ground in the SSA circuit or the SSA solenoid	Every 100msec the circuit is checked and a fail counter is incremented if an open or short is detected.	System Voltage between 9 and 18 volts Ign On Engine Speed > 500 rpm for 5 sec & not in fuel cutoff	Fail Counter >43 Counts out of 50 Total Counts 100 ms/count Continuous	DTC Type B

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ENGINE and TRANSMISSION DIAGNOSTIC PARAMETERS

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
Shift Solenoid B Performance Stuck Off	P0756	This DTC detects a 4-3-3-4 shift pattern	The diagnostic code is set when fail cases (5&6) are true 2 times	General No TPS DTC's No VSS low or intermittent DTC's No Shift or TCC Solenoid electrical DTC's No PSA DTC's No ISS DTC's Engine Speed > 500 rpm for 5 sec and & not in fuel cutoff Vehicle speed >5 mph Trans. Temp. > 20 C Transmission not in P/N or Reverse 150 rpm , Input Speed < 8000 rpm Output Speed > 300 rpm No Torque DTC No Trans Slipping DTC No Pressure Switch DTC Fail Case 5 Commanded Gear is 1 Ratio is 4th gear (0.65 - 0.75) Tps >10% 60 ftlbs < Eng Torque < 200 ftlbs Gear Change Timer > 1 sec Fail Fail Case 6 Commanded gear is 2 Ratio is 3rd gear (.95 - 1.05) TPS> 10% 60 ftlbs < Eng Torque < 200 ftlbs Gear Change Timer > 1 sec	Fail Case 5 1 sec Fail Case 6 1 sec Continuous	DTC Type A

2000 Car V6 group 3 3.5L (LX5) G-Aurora, W-Intrigue
ENGINE and TRANSMISSION DIAGNOSTIC PARAMETERS

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
Shift Solenoid B Performance Stuck ON	P0757	This DTC detects a 1-2-2-1 shift pattern	The fail counter is incremented if fail cases 7&8 are true 1 count	General No TPS DTC's No VSS low or intermittent DTC's No Shift or TCC Solenoid electrical DTC's No PSA DTC's No ISS DTC's Engine Speed > 500 rpm for 5 sec and & not in fuel cutoff Vehicle speed >5 mph Trans. Temp. > 20 C Transmission not in P/N 150 rpm < Input Speed < 8000 rpm Output Speed >300 rpm No Torque DTC No Trans Slipping DTC No Pressure Switch DTC Fail Case 7 Commanded Gear is 3 Ratio is 2nd gear (1.52-1.62) Tps >10% 20 ftlbs < Eng Torque < 200 ftlbs Gear Change Timer > 1 sec Fail Fail Case 8 Commanded gear is 4 Ratio is 1 st gear (1.80 - 2.97) TPS> 5% 0 ftlbs < Eng Torque < 1300 ftlbs Gear Change Timer > 1 sec	Fail Case 7 1 sec Fail Case 8 1 sec Continuous	DTC Type A
Shift Solenoid B Electrical	P0758	This DTC detects a continuous open or short to ground in the SSB circuit or the SSB solenoid	Every 100msec the circuit is checked and a fail counter is incremented if an open or short is detected.	System Voltage between 9 and 18 volts Ign On Engine Speed > 500 rpm for 5 sec & not in fuel cutoff	Fail Counter >43 Counts out of 50 Total Counts 100 ms/count Continuous	DTC Type A

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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
O2 Sys. Fault - Too Few O2S R/L or L/R Switches, Insufficient Activity (Bank 1, Sensor 1)	P1133	This DTC determines if the O2 sensor functioning properly by monitoring the number of L/R and R/L switches.	Number of switches in 90.00 seconds: L/R switches < 5 R/L switches < 5 O2 voltage between 325 millivolts and 625 millivolts	No misfire DTC's No injector DTC's No MAF DTC's No TP sensor DTC's No Evap. DTC's No IAT sensor DTC's No MAP DTC's No ECT sensor DTC's No AIR DTC's No Bank 1 Sensor 1 Voltage DTC's DTC P0135 (O2 Heater) not set EGR Flow diag. test not active AIR diag. test not active Catalyst diag. test not active Closed Loop Fuel Enabled 9 volts < Ignition Voltage < 18 volts Engine Run Time > 202 sec. Coolant temp > 75 C 1200 < RPM < 2300 15.0 gps < MAF < 35.0 gps Throttle position $\geq$ 3 % Transmission not in Park, Reverse or Neutral Above conditions met for 3.0 seconds.	90 seconds after closed loop enable Once per key cycle	DTC Type B

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ENGINE and TRANSMISSION DIAGNOSTIC PARAMETERS

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
O2S Incorrect Ratio (Bank 1, Sensor 1)	P1134	This DTC diagnoses degraded slow rich to lean or lean to rich response times.	Ratio of average response times. Ratio > 3.31 or < 0.34 O2 voltage between 350 millivolts and 650 millivolts	No misfire DTC's No injector DTC's No MAF DTC's No TP sensor DTC's No Evap. DTC's No IAT sensor DTC's No MAP DTC's No ECT sensor DTC's No AIR DTC's No Bank 1 Sensor 1 Voltage DTC's DTC P0135 (O2 Heater) not set DTC P1133 (Too Few Switches) not set EGR Flow diag. test not active AIR diag. test not active Catalyst diag. test not active Closed Loop Fuel Enabled 9 volts < Ignition Voltage < 18 volts Engine Run Time > 202 sec. Coolant temp > 75 C 1200 < RPM < 2300 15.0 gps < MAF < 35.0 gps Throttle position ≥ 3 % Transmission not in Park, Reverse or Neutral Above conditions met for 3.0 seconds.	90 seconds after closed loop enable Once per key cycle	DTC Type B
Crank Angle Sensor Learned Error	P1336	The DTC will determine if the matching tolerance in the crankshaft system has been learned by the vehicle	Sum of compensation factors not within range	PCM state = run	0.50 sec 100ms loop continuous	DTC type A
EST A Open Circuit Fault	P1351	This DTC checks the EST A circuit for electrical integrity	Voltage state invalid	PCM state = crank or run	50 failures within 100 Every engine cycle Continuous	DTC Type B
EST B Open Circuit Fault	P1352	This DTC checks the EST B circuit for electrical integrity	Voltage state invalid	PCM state = crank or run	50 failures within 100 Every engine cycle Continuous	DTC Type B
EST C Open Circuit Fault	P1353	This DTC checks the EST C circuit for electrical integrity	Voltage state invalid	PCM state = crank or run	50 failures within 100 Every engine cycle Continuous	DTC Type B
EST D Open Circuit Fault	P1354	This DTC checks the EST D circuit for electrical integrity	Voltage state invalid	PCM state = crank or run	50 failures within 100 Every engine cycle Continuous	DTC Type B

2000 Car V6 group 3 3.5L (LX5) G-Aurora, W-Intrigue
ENGINE and TRANSMISSION DIAGNOSTIC PARAMETERS

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
EST E Open Circuit Fault	P1355	This DTC checks the EST E circuit for electrical integrity	Voltage state invalid	PCM state = crank or run	50 failures within 100 Every engine cycle Continuous	DTC Type B
EST F Open Circuit Fault	P1356	This DTC checks the EST F circuit for electrical integrity	Voltage state invalid	PCM state = crank or run	50 failures within 100 Every engine cycle Continuous	DTC Type B
EST A Short Circuit Fault	P1361	This DTC checks the EST A circuit for electrical integrity	Voltage state invalid	PCM state = crank or run	50 failures within 100 Every engine cycle Continuous	DTC Type B
EST B Short Circuit Fault	P1362	This DTC checks the EST B circuit for electrical integrity	Voltage state invalid	PCM state = crank or run	50 failures within 100 Every engine cycle Continuous	DTC Type B
EST C Short Circuit Fault	P1363	This DTC checks the EST C circuit for electrical integrity	Voltage state invalid	PCM state = crank or run	50 failures within 100 Every engine cycle Continuous	DTC Type B
EST D Short Circuit Fault	P1364	This DTC checks the EST D circuit for electrical integrity	Voltage state invalid	PCM state = crank or run	50 failures within 100 Every engine cycle Continuous	DTC Type B
EST E Short Circuit Fault	P1365	This DTC checks the EST E circuit for electrical integrity	Voltage state invalid	PCM state = crank or run	50 failures within 100 Every engine cycle Continuous	DTC Type B
EST F Short Circuit Fault	P1366	This DTC checks the EST F circuit for electrical integrity	Voltage state invalid	PCM state = crank or run	50 failures within 100 Every engine cycle Continuous	DTC Type B
Occasional Resync	P1372	This DTC determines when an occasional loss of synch over a period of time has occurred.	Loss of synch.	20 RPM $\leq$ Med. Res RPM Crank $\leq$ 400 RPM Med. Res. RPM Running > 20 RPM	Crank: 3 failures within 15 seconds. Running: 3 failures within 300 seconds. 100 msec Continuous	DTC Type B
ABS Rough Road Malfunction	P1380	This diagnostic detects if the ABS controller is indicating a fault. When this occurs, misfire will STILL run.	ABS controller sends a message to PCM indicating that a failure has occurred in the ABS module	none	16 failures out of 20 samples	DTC Type C (DTC sets when a P0300 is active)

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ENGINE and TRANSMISSION DIAGNOSTIC PARAMETERS

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
ABS System Rough Road Detection Communication Fault	P1381	This diagnostic detects if the rough road information is no longer being received from the ABS module. When this occurs, misfire will STILL run.	Serial data messages are lost for 5 seconds	none	16 failures out of 20 samples	DTC Type C (DTC sets when a P0300 is active)
EGR Valve Circuit Performance - Actual Position > Commanded Position	P1404	This diagnostic detects if the valve is stuck open when commanded closed.	Actual pintle position > 25.00 counts from closed position	EGR valve icing or over temperature not occurring Ignition voltage ≥ 10.00 volts	4.00 separate failures for 20.00 seconds (with pintle movement > 40.00 % for 1.00 seconds opening time between tests) 100ms loop Continuous	DTC Type B
Evap. Emission Control System Open Purge Flow	P1441	This DTC will determine if the purge solenoid is leaking to engine manifold vacuum.	Tank Vacuum > 2.5" H2O for 5 seconds before purge time > 50 sec	No IAT DTC's active No MAP DTC's active No TP sensor DTC's active No O2 sensor DTC's active No VS sensor DTC's active No ECT sensor DTC's active DTC P0125 not active 15.00 % < Fuel Level < 85.10 % 10 V < System Voltage < 18 V 4.41 °C < IAT < 140 °C Engine Coolant Temp < 140 °C Baro > 75.20 kPa (8000 ft)	Once per trip. Cold start: max time is 50 seconds Hot start: max time is 50 seconds	DTC Type B
V5BA Voltage Circuit Fault	P1635	5 Volts	Voltage state invalid	PCM state = run	10.00 sec 100ms loop Continuous	DTC Type B
V5BB Voltage Circuit Fault	P1639	5 Volts	Voltage state invalid	PCM state = run	10.00 sec 100ms loop Continuous	DTC Type B

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ENGINE and TRANSMISSION DIAGNOSTIC PARAMETERS

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
Pressure Switch Assembly Malfunction	P1810	This DTC detects an invalid state of the PSA circuit by deciphering the PSA inputs	Fail Case 1 The PSA inputs indicate an Illegal combination Fail Case 2 PSA indicates D2, D4 or Reverse continuously through start up without indicating P/N Fail Case 3 A) PSA indicates P/N B) PSA indicates Reverse C) PSA indicates D4, D3, D2 or D1	Fail Case 1 Engine Speed > 500 rpm for 5 sec and not in fuel cutoff System Voltage between 9 and 18 volts Fail Case 2 System Voltage between 9 and 18 volts No VSS DTC's Vehicle Speed < 10 mph Engine Speed Transitions from < 50 to > 700 rpm (start up) Fail Case 3 Engine Speed > 500 rpm for 5 sec and not in fuel cutoff No Shift solenoid electrical or performance DTC's No ISS DTC's No VSS DTC's Vehicle Speed > 5 mph No TPS DTC's TPS > 9 % 50 ftlbs < Eng Torque < 170 ftlbs A) Ratio indicates gear 1,2,3,4 or Reverse B) Ratio indicates gear 1,2,3 or 4 C) Ratio indicates Reverse	Fail Case 1 60 sec Fail Case 2 7 sec only at Engine start up Fail Case 3 A) 5 sec B) 7 sec C) 5 sec Continuous	DTC Type B
TCC PWM Solenoid Electrical	P1860	This DTC detects a continuous open or short to ground in the TCC PWM circuit or the TCC PWM sensor	Every 100msec the circuit is checked and a fail counter is incremented if an open or short is detected.	System Voltage between 9 and 18 volts Ign On Engine Speed > 500 rpm for 5 sec & not in fuel cutoff TCC Duty Cycle < 10% or > 90%	Fail Counter >43 Counts out of 50 Total Counts 100 ms/count Continuous	DTC Type B
TCC Release Switch Circuit Fault	P1887	This DTC detects the Release switch being open (indicating TCC is not applied) when the PCM and slip speed indicate the TCC is locked.	Fail Counter >=2 . The fail counter is incremented if TCC Release Switch Status indicates released (switch open) for 8 seconds.	Engine Speed > 500 rpm for 5 sec and not in fuel cutoff TCC commanded on TCC Slip between -20 and 60 rpm Transmission is in D4 No TCC solenoid DTC No ISS DTC's No PSA DTC 30 ftlbs < Eng Torque < 250 ftlbs 20 psi < TCC Pressure < 120 psi	8 sec Continuous	DTC Type B