1996 3.1L (L82)N-Car Engine Diagnostic Parameters

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SENSED PARAMETER	FAULT CODE	SENSOR SIGNAL TYPE	ACCEPTABLE OPERATING RANGE AND RATIONALITY	PRIMARY MALF DETECTION PARAMETERS	SECONDARY MONITORING PARAMETERS AND CONDITIONS	MONITORING TIME LENGTH AND FREQUENCY OF CHECK	MONITORING METHOD	FAULT CODE STORAGE AND MIL ILLUMINATION
MAF Sensor Range/Perf	P0101	Frequency	0 to 240 gps 1000HZ to 12000HZ	Delta of 15-50 gps between the actual airflow and calculated airflow	Delta TPS < 2% EGR < 75% 9V > ign voltage < 16V Engine stable = 5 sec	45 test failures out of 50 tests	Hot wire airflow sensor	DTC Type A
MAF Sensor Circuit Low Input	P0102	Frequency	0 to 240 gps 1000HZ to 12000HZ	Frequency value < 1200HZ	RPM > 1 Ign voltage > 8V Conditions stable > 0.5 sec TPS < 75%	395 test failures out of 400 tests	Hot wire airflow sensor	DTC Type A
MAF Sensor Circuit High Input	P0103	Frequency	0 to 240gps 1000HZ to 12000HZ	Frequency value>11500HZ	RPM > 1 Ign voltage > 8V Conditions stable > 0.5 sec TPS < 75%	395 test failures out of 400 tests	Hot wire airflow sensor	DTC Type A
MAP Sensor Range/Rationality	P0106	Analog	0 to 5V A change in MAP must be preceeded by a significant change in throttle angle and RPM. If not, a faulty MAP condition such as a "skewed" sensor exists.	Raw MAP Δ > 5 counts	No TP sensor DTC's set Engine Running Engine Speed Δ < 100 RPM Throttle Position Δ < 3% Idle Air Δ < 3 motor steps EGR Flow Rate Δ < 10% Brake Switch State = no change Clutch Switch State = no change Power Steering State = no change AC Clutch State = no change Above stabilized for 5 seconds	160 test failures within a 200 test samples 12.5ms loop Continuous	Pressure Differential Sensor	DTC Type B
MAP Sensor Circuit - Low Input	P0107	Analog	0 to 5V This DTC detects a continuous short to low or open in either the signal circuit or the MAP sensor.	Raw MAP < 5 counts	No TP sensor DTC's set Engine Running Throttle Position ≥ 0% when Engine speed is ≤ 1000 RPM or Throttle Position is ≥ 5% when Engine speed is > 1000 RPM	175 test failures within a 200 test sample. 12.5ms loop Continuous	Pressure Differential Sensor	DTC Type B
MAP Sensor Circuit -High Input	P0108	Analog	0 to 5V This DTC detects a continuous short to high in either the signal circuit or the MAP sensor.	Raw MAP > 220 counts	No TP sensor DTC's set Engine Running Throttle Position ≤ 2% when Engine speed is ≤ 3000 RPM or Throttle Position is ≤ 30% when Engine speed is > 3000 RPM	175 test failures within a 200 test sample. 12.5ms loop Continuous	Pressure Differential Sensor	DTC Type B

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Intake Air Temp. Sensor Circuit - Low Input	P0112	Analog	0 to 5V The DTC detects a continuous short to ground in the IAT signal circuit or the IAT sensor	Low Resistance Pullup Raw IAT < 7 counts High Resistance Pullup Raw IAT < 7 counts	No VS sensor DTC's set. No ECT sensor DTC's set No airflow sensor DTCs set Vehicle speed ≥ 25mph Engine run time > 30 seconds	175 test failures within a 200 test sample Continuous	Thermistor	DTC Type B
Intake Air Temp. Sensor Circuit - High Input	P0113	Analog	0 to 5V The DTC detects a continuous open or short to high in the IAT signal circuit or the IAT sensor	Low Resistance pullup Raw IAT > 250 counts High Resistance pullup Raw IAT > 250 counts	No ECT sensor DTC's set No VS sensor DTC's set No airflow DTCs set Vehicle speed < 35mph Air flow < 12 g /second Coolant > 60°C Engine run time > 180 seconds	175 test failures within a 200 test sample Continuous	Thermistor	DTC Type B
Engine Coolant Temp. Sensor Circuit-Low Input	P0117	Analog	0 to 5V The DTC detects a continuous short to ground in the ECTsignal circuit or the ECT sensor	Low Resistance Pullup Raw ECT < 37 counts High Resistance Pullup Raw ECT < 37 counts	Engine run time > 15 seconds	45 test failures within a 50 test sample Continuous	Thermistor	DTC Type B
Engine Coolant Temp. Sensor Circuit-High Input	P0118	Analog	0 to 5V The DTC detects a continuous short to high or open in the ECT signal circuit or the ECT sensor	Low Resistance pullup Raw ECT > 247 counts High Resistance pullup Raw ECT > 247 counts	Engine run time > 3 seconds	45 test failures within a 50 test sample Continuous	Thermistor	DTC Type B

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Throttle Position Sensor Circuit Range/Rationality	P0121	Analog	0 to 99% The DTC detects a "skewed" or stuck TP sensor	The last throttle position value > predicted throttle position based on engine RPM.	No TP sensor DTC's set or failures flagged No MAP sensor DTC's set Engine Running MAP < 55 kpa TP sensor Δ < 1%	95 test failures within a 100 test sample Continuous	Potentiometer	DTC Type A
Throttle Position Sensor Circuit-Low Input	P0122	Analog	0 to 99% This DTC detects a continuous short to low or open in either the signal circuit or the TP sensor.	Raw TP sensor signal < 3.125 counts	Engine running	95 consecutive test failures within a 100 test sample Continuous	Potentiometer	DTC Type A
Throttle Position Sensor Circuit-High Input	P0123	Analog	0 to 99% This DTC detects a continuous short to high in either the signal circuit or the TP sensor.	Raw TP sensor signal > 95 counts	Engine running	95 consecutive test failures within a 100 test sample Continuous	Potentiometer	DTC Type A
Min. Cool.Temp. to Allow C.L. Op. Not Achieved Without Excess. Time	P0125	Analog	0 to 5V The DTC detects if a stabilized minimum closed-loop is reached and maintained after engine start-up.	Minimum stabilized ECT = 20°C	No ECT sensor tests failing or DTC's set No IAT sensor DTC's set Vehicle speed > 5 mph IAT> 10°C ECT >10°C Start-up ECT <30°C Closed loop timer ≥120 seconds	20 consecutive test failures Continuous	Thermistor	DTC Type B

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O2S Circuit-Low Voltage(Bank 1, Sensor 1)	P0131	Analog	.1V to 1.0V This DTC determines if the O2 sensor or circuit is shorted to low by checking for a lean condition during steady throttle and PE.	O2 sensor voltage <.300 volts or O2 sensor voltage < .300 volts in PE mode	No TP sensor DTC's No Evap/CCP DTC's No misfire DTC's No IAT sensor DTC's No MAP DTC's No Fuel trim DTC's No injector DTC's No EGR DTC's No ECT sensor DTC's No crank sensor DTC's No MAF DTC's Closed loop Air/Fuel ratio ≥ 14.4 but ≤ 14.9 Throttle position > 5% but < 40% Above met for 2 sec. or 5 sec. in PE	90 test failures in a 100 test sample Continuous	Exhaust Oxygen Sensor	DTC Type B
O2S Circuit-High Voltage(Bank 1, Sensor 1)	P0132	Analog	.1V to 1.0V This DTC determines if the O2 sensor or circuit is shorted to high by checking for a rich condition during steady throttle and DFCO	O2 sensor voltage >.950 volts or O2 sensor voltage > .800 volts in DFCO mode	No TP sensor DTC's No Evap/CCP DTC's No misfire DTC's No IAT sensor DTC's No MAP DTC's No Fuel trim DTC's No injector DTC's No EGR DTC's No ECT sensor DTC's No crank sensor DTC's No MAF DTC's Closed loop Air/Fuel ratio ≥ 14.4 but ≤ 14.9 Throttle position > 5% but < 40% Above met for 5 sec. or 1.8 sec. in DFCO	40 test failures in a 100 test sample Continuous	Exhaust Oxygen Sensor	DTC Type B

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O2S Circuit-Slow Response(Bank 1, Sensor 1)	P0133	Analog	.1V to 1.0V This DTC determines if the O2 sensor functioning properly by checking its response time.	O2 sensor average transition time: L/R > 153 msec R/L > 148 msec Diagnostic looks for O2 to toggle above and below the O2 limits in a calibrated engine run time.	No TP sensor DTC's No Evap/CCP DTC's No misfire DTC's No IAT sensor DTC's No MAP DTC's No Fuel trim DTC's No injector DTC's No EGR DTC's No ECT sensor DTC's No crank sensor DTC's No MAF DTC's DTC P0135 (O2 Heater) not set Closed loop for > 60 sec O2 voltage low threshold.300 and high threshold .600 V Coolant temp > 85C 1000 < RPM < 3000 15gps < MAF < 28gps	60 seconds after closed loop enable Once per key cycle	Exhaust Oxygen Sensor	DTC Type B
O2S Circuit-No Activity Detected (Bank 1,Sensor 1)	P0134	Analog	.1V to 1.0V This DTC determines if the O2 sensor or the O2 sensor circuit has developed an open.	O2 sensor > .400V but < .500V	No TP sensor DTC's No Evap/CCP DTC's No misfire DTC's No IAT sensor DTC's No MAP DTC's No Fuel trim DTC's No injector DTC's No EGR DTC's No ECT sensor DTC's No crank sensor DTC's No MAF DTC's Engine run time > 30 seconds ECT >65°C	140 test failures in a 150 test sample Continuous	Exhaust Oxygen Sensor	DTC Type B
O2S Heater Circuit Malfunction (Bank 1, Sensor 1)	P0135	Software	9V to 16V 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 ± .150V from the mean O2 bias voltage. *Time based on table: Time vs. Avg. MAF + Start up coolant offset.	No TP sensor DTC's No Evap/CCP DTC's No misfire DTC's No IAT sensor DTC's No MAP DTC's No Fuel trim DTC's No injector DTC's No EGR DTC's No ECT sensor DTC's No crank sensor DTC's No MAF DTC's Engine run time > 3 seconds .\ ECT vs. IAT < |5| °C ECT < 100°C IAT < 100°C Avg MAF < 28gps 9 < System Voltage < 16 for 3 seconds. .350 V < Avg. Bias < .500 V.	From cold start to a maximum time of 409 seconds. *Time determined by table.	Exhaust Oxygen Sensor	DTC Type B

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O2S Circuit-Low Voltage(Bank 1, Sensor 2)	P0137	Analog	.1V to 1.0V This DTC determines if the O2 sensor or circuit is shorted to low by checking for a lean condition during steady throttle and PE.	O2 sensor voltage <.010 volts or O2 sensor voltage < .010 volts in PE mode	No TP sensor DTC's No Evap/CCP DTC's No misfire DTC's No IAT sensor DTC's No MAP DTC's No Fuel trim DTC's No injector DTC's No EGR DTC's No ECT sensor DTC's No crank sensor DTC's No MAF DTC's ECT > 75C Closed loop Air/Fuel ratio ≥ 14.4 but ≤ 14.9 Throttle position > 5% but < 40% Above met for 3 sec. or 5 sec. in PE	1400 test failures in a 1500 test sample Continuous	Exhaust Oxygen Sensor	DTC Type B
O2S Circuit-High Voltage(Bank 1, Sensor 2)	P0138	Analog	.1V to 1.0V This DTC determines if the O2 sensor or circuit is shorted to high by checking for a rich condition during steady throttle and DFCO	O2 sensor voltage >.999 volts or O2 sensor voltage > .800 volts in DFCO mode	No TP sensor DTC's No Evap/CCP DTC's No misfire DTC's No IAT sensor DTC's No MAP DTC's No Fuel trim DTC's No injector DTC's No EGR DTC's No ECT sensor DTC's No crank sensor DTC's No MAF DTC's ECT > 75C Closed loop Air/Fuel ratio ≥ 14.4 but ≤ 14.9 Throttle position > 5% but < 40% Above met for 5 sec. or 1.8 sec. in DFCO	750 test failures in a 1000 test sample Continuous	Exhaust Oxygen Sensor	DTC Type B

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O2S Circuit-No Activity Detected (Bank 1,Sensor 2)	P0140	Analog	.1V to 1.0V This DTC determines if the O2 sensor or the O2 sensor circuit has developed an open.	O2 sensor > .400 V but < .500 V	No TP sensor DTC's No Evap/CCP DTC's No misfire DTC's No IAT sensor DTC's No MAP DTC's No Fuel trim DTC's No injector DTC's No EGR DTC's No ECT sensor DTC's No crank sensor DTC's No MAF DTC's Engine run time > 30 seconds ECT > 65°C	1400 test failures in a 1500 test sample Continuous	Exhaust Oxygen Sensor	DTC Type B
O2S Heater Circuit Malfunction (Bank 1, Sensor 2)	P0141	Software	9V to 16V 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 ± .150V from the mean O2 bias voltage. *Time based on table: Time vs. Avg. MAF + Start up coolant offset.	No TP sensor DTC's No Evap/CCP DTC's No misfire DTC's No IAT sensor DTC's No MAP DTC's No Fuel trim DTC's No injector DTC's No EGR DTC's No ECT sensor DTC's No crank sensor DTC's No MAF DTC's Engine run time > 3 seconds Δ ECT vs. IAT < |5| °C ECT < 100°C IAT < 100°C Avg MAF < 28gps 9 < System Voltage < 16 for 3 seconds. .350 V < Avg. Bias < .500 V.	From cold start to a maximum time of 409 seconds. *Time determined by table.	Exhaust Oxygen Sensor	DTC Type B

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System Too Lean (Bank 1)	P0171	Software	Determines if the system is in a lean condition.	The average of short term fuel trim samples ≥ 1.07 and The average of adaptive index multiplier samples ≥ 1.2	The following DTC's are not set: VSS DTC's EST DTC's Crank sensor DTC's Cam sensor DTC's 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 < 90% Engine speed > 650 rpm but < 5000 rpm Baro > 70 kpa ECT > 20°C but < 110°C MAP > 18 kpa but < 95 kpa IAT > -18 °C but < 65°C Air flow > 3.5 g/s < 175 g/s Vehicle speed < 70 mph	If lean counter is ≥5 counts Continuous	Short term fuel trim ,adaptive index multiplier and O2 sensor	DTC Type B

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System Too Rich (Bank 1)	P0172	Software	Determines if the system is in a rich condition.	The average of short term fuel trim samples ≤ .985 and The average of adaptive index multiplier samples < 0.78	The following DTC's are not set: VSS DTC's EST DTC's Crank sensor DTC's Cam sensor DTC's 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 < 90% Engine speed > 650 rpm but < 5000 rpm Baro > 70 kpa ECT > 20°C but < 110°C MAP > 18 kpa but < 95 kpa IAT > -18 °C but < 65°C Air flow > 3.5 g/s < 175 g/s Vehicle speed < 70 mph	If rich counter is ≥5 counts Continuous	Short term fuel trim ,adaptive index multiplier and O2 sensor	DTC Type B
O2 Sys. Fault - Too Few O2S R/L or L/R Switches, Insufficient Activity (Bank 1, Sensor 1)	P1133	Analog	.1V to 1.0V This DTC determines if the O2 sensor functioning properly by monitoring the number of L/R and R/L switches.	Number of switches in 100 seconds: L/R switches < 40 R/L switches < 40 O2 voltage between .300 and .600V	No Misfire DTC's No Crank sensor 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 Fuel trim DTC's No EGR DTC's No ECT sensor DTC's DTC P0135 (O2 Heater) not set Closed loop	100 seconds after closed loop enable Once per key cycle	Exhaust Oxygen Sensor	DTC Type B

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Crankshaft Position Sensor Circuit-Range/Perf	P0336	Digital	24X Signal This diagnostic will detect an incorrect signal from the crankshaft sensor.	If in one engine cycle 48 med. res. pulses are not seen	Engine run time > 3 sec 3X crank signal	450 ref pulse failures within a 500 sample limit. Continuous	Hall Effect Crankshaft Sensor	DTC Type B
Camshaft Position Sensor Circuit Range/Perf	P0341	Digital	1X Signal This diagnostic will detect if the Cam Sensor signal is present.	Engine Running Cam Sensor reference pulse is not seen once every Engine cycle.	———————————	If Cam signal is not detected 450 out of 500 test samples. Continuous	Hall Effect Cam Sensor	DTC Type B
EST Output High	P1350	Digital	0 V-5V This diagnostic will determine if a failure has occured due to an open circuit.	EST voltage >4.9 V	EST Enabled Engine speed < 450 RPM	EST circuit open ≥ 5 sec Once per igniton cycle	Software	DTC Type B
EST Not Toggling After Enable	P1361	Digital	0 V-1V This diagnostic will determine if a failure has occured due to a grounded circuit.	EST voltage <.04V	EST Enabled Engine speed > 600 RPM No P1350 DTC	>10 seconds Once per igniton cycle	Software	DTC Type B
Crank to Low Res Correlate	P1374	Digital	Pulsed 0V to 10V	3X signal 24X signal	Engine runtime > 3 sec Incorrect number of 3X signals per engine cycle	450 out of 500 test samples Continuous	Hall Effect Switch Software	DTC Type B

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Crankshaft Position Sensor Circuit- Range/Perf	P0336	Digital	24X Signal This diagnostic will detect an incorrect signal from the crankshaft sensor.	If in one engine cycle 48 med. res. pulses are not seen	Engine run time > 3 sec 3X crank signal	450 ref pulse failures within a 500 sample limit. Continuous	Hall Effect Crankshaft Sensor	DTC Type B
Camshaft Position Sensor Circuit Range/Perf	P0341	Digital	1X Signal This diagnostic will detect if the Cam Sensor signal is present.	Engine Running Cam Sensor reference pulse is not seen once every Engine cycle.	———————————	If Cam signal is not detected 450 out of 500 test samples. Continuous	Hall Effect Cam Sensor	DTC Type B
EST Output High	P1350	Digital	0 V-5V This diagnostic will determine if a failure has occured due to an open circuit.	EST voltage >4.9 V	EST Enabled Engine speed < 450 RPM	EST circuit open ≥ 5 sec Once per igniton cycle	Software	DTC Type B
EST Not Toggling After Enable	P1361	Digital	0 V-1V This diagnostic will determine if a failure has occured due to a grounded circuit.	EST voltage <.04V	EST Enabled Engine speed > 600 RPM No P1350 DTC	>10 seconds Once per igniton cycle	Software	DTC Type B
Crank to Low Res Correlate	P1374	Digital	Pulsed 0V to 10V	3X signal 24X signal	Engine runtime > 3 sec Incorrect number of 3X signals per engine cycle	450 out of 500 test samples Continuous	Hall Effect Switch Software	DTC Type B

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Exhaust Gas Recirculation - Insufficient Flow Detected	P0401	Analog	This diagnostic will determine if there is a reduction in EGR flow.	With EGR valve open,the peak + MAP Δ is monitored over a time of 2.5 seconds. 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 DTC's set No Crank Sensor DTC's 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 < .4 KPA RPM Δ < 200 MPH Δ < 5 ECT > 80° C Baro > 65 kpa (12000 ft) Vehicle Speed > 30 mph IAC Δ < 2 counts AC clutch status is unchanged Transmission status is unchanged ***Start Test*** Throttle Position < 1% EGR Position < 1% Engine Speed > 800 rpm but < 1500 rpm MAP Δ < 1.5 A/D count Compensated MAP > 20 kpa but < 50 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.	2.5 seconds Once per trip or 13 times after NVM Failure.	Manifold Absolute Pressure Δ and software	DTC Type A

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Catalyst System Efficiency Below Threshold	P0420	Analog	This diagnostic will determine the efficiency of the catalytic converter.	Deviation Difference Average = 14 mv from O2 sensor #2	No EST DTC's set No EGR DTC's set No MAT 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 No Air flow DTC's set No Evap DTC's set No Crank sensor DTC's set ***Converter Warm Up Status*** Engine in closed loop Commanded Air/Fuel ratio = 14.7:1 ECT > 75° C Air flow > 15 g/sec Above met for a time > 180 seconds ***Test Enable*** Air Flow ≤ 30 g/sec .\ engine load ≤ 70% / sec Vehicle Speed ≥ 40 mph but ≤ 75 mph Engine load ≤ 63% 1000 rpm < Engine speed ≤ 3000 rpm	50 tests per trip Continuous	O2 sensor #1 and O2 sensor #2	DTC Type A
EnHanced Evap. Emission Control System - Weak Vacuum Test	P0440	Digital	0V-5V This diagnostic will detect a missing gas cap or a "Gross" leak in the evap system.	Evap. Leak > .080"	No MAT DTC's set No MAP DTC's set No TP sensor DTC's set No Air flow DTC's set No VSS DTC's No Misfire DTC's No Fuel Trim \ Fuel Injector DTC's No EGR DTC's -2°C ≤ (ECT - IAT) ≤ 8°C Tank Vacuum < 7.9" H2O TPS > 0 < 100% 15% ≤ Fuel Level ≤ 85% Baro > 75.2 kPa	Test Pass = 30 sec Continuous	Evap - Vent Solenoid	DTC Type A

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EnHanced Evap. Emission Control System - Weak Vacuum Test	P0442	Digital	0V-5V This diagnostic will detect a tank vacuum sensor failure	Tank Sensor Signal vacuum > 0.5" H2O	No MAT DTC's set No MAP DTC's set No TP sensor DTC's set No Air flow DTC's set No VSS DTC's No Misfire DTC's No Fuel Trim DTC's No Fuel Injector DTC's No EGR DTC's Tank Vacuum > 0.5" H2O TPS > 0 < 100% Time > 35 seconds	Test Pass = 35 sec Continuous	Evap - Vent Solenoid	DTC Type A
EnHanced Evap. Emission Control System - Weak Vacuum Test	P0446	Digital	0V-5V This diagnostic will detect a plugged vent solenoid or vent lines	Tank Vacuum < 10" H2O	No MAT DTC's set No MAP DTC's set No TP sensor DTC's set No Air flow DTC's set No VSS DTC's No Misfire DTC's No Fuel Trim DTC's No Fuel Injector DTC's No EGR DTC's -2°C ≤ (ECT - IAT) ≤ 8°C Tank Vacuum < 10" H2O TPS > 0 < 100% Time > 30 sec	Test Pass = 30 sec Continuous	Evap - Tank Vent Solenoid	DTC Type A

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Exhaust Gas Recirculation System - Pintle Position Error	P1406	Analog	0V 0 5V This diagnostic will detect three conditions: 1. An open or short 2. Closed valve position too high 3. Position error too high	1. Pintle position < 7 A/D counts for 20 seconds 2. Pintle position > 20 A/D counts from learned closed valve position for 20 seconds 3. Deviation between actual position and desired position > 20% for 20 seconds	Ignition voltage > 9 volts 5 volt supply OK	All three tests must run before a failure is reported. Continuous	Potentiometer	DTC Type B
Evap. Emission Control System - Continuous Open Purge Flow	P1441	Digital	0V-5V This diagnostic will detect a purge solenoid stuck open by monitoring the Evap. Purge Vacuum switch state when the Evap. Purge solenoid duty cycle is < 3%. The vacuum switch state should change to low (closed) if there is no vacuum (solenoid closed) applied to the system.	Evap. purge vacuum switch state = High vacuum for a period > 4 seconds	No Air flow DTC's set No MAP DTC's set No IAT DTC's set No TP sensor DTC's set No EGR DTC's set No VSS DTC's No Misfire DTC's No Fuel Trim DTC's No Fuel Injector DTC's Baro > 75.2 kPa -2°C ≤ (ECT - IAT) ≤ 8°C Purge DC ≤ 3% Throttle Position ≥0% but ≤ 100% 15% < Fuel Level < 85% Tank Vacuum < 7.9" H2O	For 4 test failures Continuous	Evap. Purge vacuum switch	DTC Type B

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Idle Control System RPM Lc ∧er Than Expexcted	P0506	Software	This DTC will determine if a low idle condition exists. A low idle condition exists if the Actual RPM is below the desired RPM.	RPM < Desired RPM Δ RPM = table based on RPM vs. ECT. (-175 to -300 RPM)	***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 DTC's set No Fuel Trim DTC's set No Injector DTC's set No Crank Sensor DTC's set No Air Flow DTC's set ECT > 70°C System Voltage > 9V but < 16 V IAT > -18°C Engine run time > 120 seconds Baro > 65 kPa (12000 ft) TP < 1.5% VS < 3 MPH Above met for a time > 5 seconds to enable diagnostic.	15 seconds Continous after enable	Software	DTC Type B
Idle Control System RPM Higher Than Expected	P0507	Software	This DTC will determine if a high idle condition exists. A high idle condition exists if the Actual RPM is above the desired RPM.	RPM > Desired RPM. Δ RPM = table based on RPM vs. ECT. (+175 to +300 RPM)	***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 DTC's set No Fuel Trim DTC's set No Injector DTC's set No Crank Sensor DTC's set No Air Flow DTC's set ECT > 70°C System Voltage > 9V but < 16 V IAT > -18°C Engine run time > 120 seconds Baro > 65 kPa (12000 ft) TP < 1.5% VS < 3 MPH Above met for a time > 5 seconds to enable diagnostic.	15 seconds Continous after enable	Software	DTC Type B

SENSED PARAMETER	FAULT CODE	SENSOR SIGNAL TYPE	ACCEPTABLE OPERATING RANGE AND RATIONALITY	PRIMARY MALF DETECTION PARAMETERS	SECONDARY MONITORING PARAMETERS AND CONDITIONS	MONITORING TIME LENGTH AND FREQUENCY OF CHECK	MONITORING METHOD	FAULT CODE STORAGE AND MIL ILLUMINATION
V5BA Voltage Circuit Fault	P1635	Analog	5 Volts	Voltage state invalid	———————	10 sec Continuous	Software	DTC Type B
Fan 1 Relay Circuit Fault	P1651	Digital	0V to 12V	Output state invalid	PCM state = crank or run	20 sec Continuous	Software	DTC Type B
CCP Solenoid Circuit Malfunction	P1655	Digital	0V to 12V	Output state invalid	PCM state = crank or run	20 sec Continuous	Software	DTC Type B
CCP Vent Solenoid Circuit Malfunction	P1675	Digital	0V to 12V	Output state invalid	PCM state = crank or run	20 sec Continuous	Software	DTC Type B