Diagnostic Trouble Code (DTC) Charts and Descriptions

Note: *Refer to the applicable Workshop Manual section to diagnose the body and chassis DTCs.*

P0010 - Intake Camshaft Position Actuator Circuit/Open (Bank 1)

Description:	The comprehensive component monitor (CCM) monitors the variable cam timing (VCT) circuit to the powertrain control module (PCM) for high and low voltage. If during testing the voltage falls below a calibrated limit for a calibrated amount of time the test fails.			
Possible Causes:	• Open or short in the VCT circuit • Open VPWR circuit • Open or short in the VCT solenoid valve			
Diagnostic Aids:	This DTC is a circuit check. Testing should include the harness and solenoid coil.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HK1.		

P0011 - Intake Camshaft Position Timing - Over-Advanced (Bank 1)

Description:	The comprehensive component monitor (CCM) monitors the variable cam timing (VCT) position for an over-advanced camshaft timing. The test fails when the camshaft timing exceeds a maximum calibrated value or remains in an advanced position.			
Possible Causes:	• Camshaft timing improperly set • Continuous oil flow to the VCT piston chamber • VCT solenoid valve stuck open • Camshaft advance mechanism binding (VCT unit)			
Diagnostic Aids:	This DTC is a functional check of the VCT unit. Diagnose any base engine concerns related to the engine oil pressure or engine timing. Refer to the Workshop Manual Section 303-00, Engine System.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to HK15.	GO to HK15.

P0012 - Intake Camshaft Position Timing - Over-Retarded (Bank 1)

Description:	The comprehensive component monitor (CCM) monitors the variable cam timing (VCT) position for over-retarded camshaft timing. The test fails when the camshaft timing exceeds a maximum calibrated value or remains in a retarded position.			
Possible Causes:	• Camshaft timing improperly set • Continuous oil flow to the VCT piston chamber • VCT solenoid valve stuck open • Camshaft advance mechanism binding (VCT unit)			
Diagnostic Aids:	This DTC is a functional check of the VCT unit. Diagnose any base engine concerns related to the engine oil pressure or engine timing. Refer to the Workshop Manual Section 303-00, Engine System.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to HK15.	GO to HK15.

P0020 - Intake Camshaft Position Actuator Circuit/Open (Bank 2)

Description:	See the description for DTC P0010.			
Possible Causes:	See the possible causes for DTC P0010.			
Diagnostic Aids:	See the diagnostic aids for DTC P0010.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HK1.		

P0021 - Intake Camshaft Position Timing - Over-Advanced (Bank 2)

Description:	See the description for DTC P0011.			
Possible Causes:	See the possible causes for DTC P0011.			
Diagnostic Aids:	See the diagnostic aids for DTC P0011.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to HK15.	GO to HK15.

P0022 - Intake Camshaft Position Timing - Over-Retarded (Bank 2)

Description:	See the description for DTC P0012.			
Possible Causes:	See the possible causes for DTC P0012.			
Diagnostic Aids:	See the diagnostic aids for DTC P0012.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to HK15.	GO to HK15.

P0040 - Upstream Oxygen Sensors Swapped from Bank to Bank (HO2S-11-21)

Description:	The heated oxygen sensor (HO2S) monitor determines if the HO2S signal response for a fuel shift corresponds to the correct engine bank. The test fails when a response from the HO2S being tested is not indicated.			
Possible Causes:	• Crossed HO2S harness connectors (upstream). • Crossed HO2S wiring at the harness connectors (upstream). • Crossed HO2S wiring at the PCM connectors (upstream)			
Diagnostic Aids:	Connect the HO2S connector to the correct bank.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to H66.	—

P0041 - Downstream Oxygen Sensors Swapped from Bank to Bank (HO2S-12-22)

Description:	The heated oxygen sensor (HO2S) monitor determines if the HO2S signal response for a fuel shift corresponds to the correct engine bank. The test fails when a response from the HO2S being tested is not indicated.			
Possible Causes:	• Crossed HO2S harness connectors (downstream). • Crossed HO2S wiring at the harness connectors (downstream). • Crossed HO2S wiring at the PCM connectors (downstream)			
Diagnostic Aids:	Connect the HO2S connector to the correct bank.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to H66.	—

P0053 - HO2S Heater Resistance (Bank 1, Sensor 1)

Description:	Heater current requirements too low or high in the heated oxygen sensor (HO2S) heater control circuit.			
Possible Causes:	• VPWR circuit open • HO2S heater circuit open • HO2S heater circuit short in the harness • Damaged HO2S heater			
Diagnostic Aids:	Inspect connectors for signs of damage, water ingress, corrosion, etc.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to H11.		

P0054 - HO2S Heater Resistance (Bank 1, Sensor 2)

Description:	See the description for DTC P0053.			
Possible Causes:	See the possible causes for DTC P0053.			
Diagnostic Aids:	See the diagnostic aids for DTC P0053.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to H11.		

P0055 - HO2S Heater Resistance (Bank 1, Sensor 3)

Description:	See the description for DTC P0053.			
Possible Causes:	See the possible causes for DTC P0053.			
Diagnostic Aids:	See the diagnostic aids for DTC P0053.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to H11.		

P0059 - HO2S Heater Resistance (Bank 2, Sensor 1)

Description:	See the description for DTC P0053.			
Possible Causes:	See the possible causes for DTC P0053.			
Diagnostic Aids:	See the diagnostic aids for DTC P0053.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to H11.		

P0060 - HO2S Heater Resistance (Bank 2, Sensor 2)

Description:	See the description for DTC P0053.			
Possible Causes:	See the possible causes for DTC P0053.			
Diagnostic Aids:	See the diagnostic aids for DTC P0053.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to H11.		

P0061 - HO2S Heater Resistance (Bank 2, Sensor 3)

Description:	See the description for DTC P0053.			
Possible Causes:	See the possible causes for DTC P0053.			
Diagnostic Aids:	See the diagnostic aids for DTC P0053.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to H11.		

P0068 - Throttle Position (TP) Sensor Inconsistent with Mass Air Flow (MAF) Sensor

Description:	The powertrain control module (PCM) monitors a vehicle operation rationality check by comparing sensed throttle position to mass air flow readings. If during a key on, engine running (KOER) self-test, the comparison of the TP sensor and MAF sensor readings are not consistent with the calibrated load values, the test fails and a DTC is stored in continuous memory.
Possible Causes:	• Air leak between MAF sensor and throttle body • TP sensor not seated properly

	• Damaged TP sensor • Damaged MAF sensor			
Diagnostic Aids:	Drive the vehicle and exercise the throttle and the TP sensor in all gears. A TP PID (TP V PID) less than 4.82% (0.24 volt) with a LOAD PID greater than 55%, or a TP PID (TP V PID) greater than 49.05% (2.44 volts) with a LOAD PID less than 30% indicates a hard fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Vehicles With Electronic Throttle Control (ETC)		—	GO to DV15.	GO to DV15.
All others		—	GO to DH16.	GO to DH16.

P0102 - Mass or Volume Air Flow A Circuit Low Input

Description:	The mass air flow (MAF) sensor circuit is monitored by the powertrain control module (PCM) for low air flow (or voltage) input through the comprehensive component monitor (CCM). If during key on, engine running (KOER) the air flow (or voltage) changes below a minimum calibrated limit, the test fails.			
Possible Causes:	• MAF sensor disconnected • MAF circuit open to PCM • VPWR open to MAF sensor • PWR GND open to the MAF sensor • MAF RTN circuit open to PCM • MAF circuit shorted to GND • Intake air leak (near the MAF sensor) • A closed throttle indication (throttle position [TP] sensor system) • Damaged MAF sensor			
Diagnostic Aids:	A MAF V PID reading less than 0.23 volt in continuous memory or KOER indicates a hard fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to DC4.	GO to DC4.

P0103 - Mass or Volume Air Flow A Circuit High Input

Description:	The mass air flow (MAF) sensor circuit is monitored by the powertrain control module (PCM) for high air flow (or voltage) input through the comprehensive component monitor (CCM). If during key on, engine off (KOEO), or key on, engine running (KOER), the air flow (or voltage) changes above a maximum calibrated limit, the test fails.
Possible Causes:	• MAF sensor screen is blocked • MAF circuit shorted to VPWR

	• Damaged MAF sensor			
Diagnostic Aids:	A MAF V PID (MAF PID) reading greater than 4.6 volts during KOER indicates a hard fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DC20.		

P0104 - Mass or Volume Air Flow Circuit Intermittent/Erratic

Description:	A fault exists in the mass air flow (MAF) sensor A circuit, or the air tube containing the sensor, causing an incorrect air flow reading.			
Possible Causes:	• Intermittent circuit A open or short. • Air leaks in the tube from the MAF to the throttle body			
Diagnostic Aids:	Verify the integrity of the MAF sensor circuit A, for intermittent fault. Check the MAF sensor tube for air leaks.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to DC4.	GO to DC1.

P0106 - Manifold Absolute Pressure (MAP/BARO) Sensor Range/Performance

Description:	MAP sensor input to the powertrain control module (PCM) is monitored and is not within the calibrated value.			
Possible Causes:	• Slow responding MAP sensor • Electrical circuit failure • Damaged MAP sensor			
Diagnostic Aids:	VREF voltage should be between 4.0 and 6.0 volts. The PID reading is in frequency.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Vehicles with an EGR system module (ESM)		GO to DM14.		
All others		GO to DM19.		

P0107 - Barometric Pressure/Manifold Absolute Pressure (BARO/MAP) Sensor Low Voltage Detected

Description:	Sensor operating voltage is less than 0.25 volt (VREF). As a result it failed below the minimum allowable calibrated parameter.			
Possible Causes:	• Open in the circuit, or short to ground • VREF circuit open, or short to ground • Damaged MAP sensor			
Diagnostic Aids:	VREF should be greater than 4.0 volts. The PID reading is in frequency/volts.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Vehicles with an EGR system module (ESM)		GO to DM1.	GO to DM1.	GO to DM13.
All others		GO to DM19.	GO to DM19.	GO to DM25.

P0108 - Barometric Pressure/Manifold Absolute Pressure (BARO/MAP) Sensor High Voltage Detected

Description:	Sensor operating voltage is greater than 5 volts (VREF). As a result it failed above the maximum allowable calibrated parameter.			
Possible Causes:	• VREF shorted to VPWR • MAP signal shorted to VPWR • VREF should be less than 6.0 volts. The PID reading is in frequency/volts • Open circuit			
Diagnostic Aids:	VREF should be greater than 4.0 volts. The PID reading is in frequency/volts.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Vehicles with an EGR system module (ESM)		GO to DM1.	GO to DM1.	GO to DM13.
All others		GO to DM19.	GO to DM19.	GO to DM25.

P0109 - Manifold Absolute Pressure (MAP/BARO) Sensor Intermittent

Description:	The sensor signal to the powertrain control module (PCM) is failing intermittently.
Possible Causes:	• Loose electrical connection • Damaged MAP sensor
Diagnostic Aids:	Check the harness and connection.

Application		Key On Engine Off	Key On Engine Running	Continuous Memory
Vehicles with an EGR system module (ESM)		GO to DM13.	—	—
All others		GO to DM25.	—	—

P0112 - Intake Air Temperature (IAT) Sensor 1 Circuit Low Input

Description:	Indicates the sensor signal is less than the self-test minimum. The IAT sensor minimum is 0.2 volt or 121°C (250°F).			
Possible Causes:	• Grounded circuit in the harness • Damaged sensor • Improper harness connection			
Diagnostic Aids:	An IAT V PID reading less than 0.2 volt with key on engine off (KOEO) or during any engine operating mode indicates a hard fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DA5.	GO to DA5.	GO to DA8.

P0113 - Intake Air Temperature (IAT) Sensor 1 Circuit High Input

Description:	Indicates the sensor signal is greater than the self-test maximum. The IAT sensor maximum is 4.6 volts or -50°C (-58°F).			
Possible Causes:	• Open circuit in the harness • Sensor signal short to voltage • Damaged sensor • Improper harness connection			
Diagnostic Aids:	An IAT V PID reading greater than 4.6 volts with the key on engine off (KOEO) or during any engine operating mode indicates a hard fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DA1.	GO to DA1.	GO to DA8.

P0114 - Intake Air Temperature (IAT) Sensor 1 Intermittent/Erratic

Description:	Indicates the sensor signal was intermittent during the comprehensive component monitor.

Possible Causes:	• Damaged harness • Damaged sensor • Damaged harness connector			
Diagnostic Aids:	Monitor the IAT on a diagnostic tool. Look for sudden changes in the reading when the harness is wiggled or the sensor is tapped.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DA8.		

P0116 - Engine Coolant Temperature (ECT) Sensor 1 Circuit Range/Performance Failure

Description:	Indicates the engine coolant temperature rationality test has failed. The powertrain control module (PCM) logic that sets this DTC indicates that ECT or cylinder head temperature (CHT) drifted higher than the nominal sensor calibration curve and could prevent 1 or more on-board diagnostic (OBD) monitors from executing. The PCM runs this logic after an engine off and a calibrated soak period (typically 6 hours). This soak period allows the intake air temperature (IAT) and engine coolant temperature (CHT or ECT) to stabilize and not differ by more than a calibrated value. DTC P0116 is set when all of the following conditions are met: • The engine coolant temperature at engine start exceeds the IAT at engine start by more than a calibrated value, typically 17°C (30°F). • The engine coolant temperature exceeds a calibrated value, typically 107°C (225°F). • The fuel system, heated oxygen and misfire monitors have not completed. • The calibrated timer to set DTC P0116 has expired.			
Possible Causes:	• Engine coolant temperature (ECT) or cylinder head temperature (CHT) sensor • Coolant system concern			
Diagnostic Aids:	Make sure the IAT and the engine coolant temperature are similar when the engine is cold. Also make sure the ECT or CHT sensor and the actual engine operating temperatures are the same.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Vehicles with only a cylinder head temperature (CHT) sensor		—	—	GO to DL23.
Vehicles with only an engine coolant temperature (ECT) sensor		—	—	GO to DX13.
Vehicles with both a CHT and an ECT sensor		—	—	GO to DX13.

P0117 - Engine Coolant Temperature (ECT) Sensor 1 Circuit Low Input

Description:	Indicates the sensor signal is less than the self-test minimum. The ECT sensor minimum is 0.2 volt or 121°C (250°F). Note: On some vehicles that are not equipped with an ECT sensor, a cylinder head temperature (CHT) sensor can be used and can set this DTC.			
Possible Causes:	• Grounded circuit in the harness • Damaged sensor • Improper harness connection			
Diagnostic Aids:	An ECT V PID reading less than 0.2 volt with key on engine off (KOEO) or during any engine operating mode indicates a hard fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Vehicles with only a cylinder head temperature (CHT) sensor		GO to DL7.	GO to DL7.	GO to DL14.
Vehicles with only an engine coolant temperature (ECT) sensor		GO to DX11.	GO to DX11.	GO to DX15.
Vehicles with both a CHT and an ECT sensor		GO to DX11.	GO to DX11.	GO to DX15.

P0118 - Engine Coolant Temperature (ECT) Sensor 1 Circuit High Input

Description:	Indicates the sensor signal is greater than the self-test maximum. The ECT sensor maximum is 4.6 volts or -50°C (-58°F). Note: On some vehicles that are not equipped with an ECT sensor, a cylinder head temperature (CHT) sensor can be used and can set this DTC.			
Possible Causes:	• Open circuit in the harness • Sensor signal short to voltage • Improper harness connection • Damaged sensor			
Diagnostic Aids:	An ECT V PID reading greater than 4.6 volts with the key on engine off (KOEO) or during any engine operating mode indicates a hard fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Vehicles with only a cylinder head temperature (CHT) sensor		GO to DL7.	GO to DL7.	GO to DL14.
Vehicles with only an engine coolant temperature (ECT) sensor		GO to DX7.	GO to DX7.	GO to DX15.
Vehicles with both a CHT and an ECT sensor		GO to DX7.	GO to DX7.	GO to DX15.

P0119 - Engine Coolant Temperature (ECT) Sensor 1 Circuit Intermittent/Erratic

Description:	Indicates the ECT circuit became intermittently open or shorted while the engine was running. Note: On vehicles that are not equipped with an ECT sensor, the cylinder head temperature (CHT) sensor can be used and can set this DTC.			
Possible Causes:	• Damaged harness • Damaged sensor • Damaged harness connector • Low engine coolant			
Diagnostic Aids:	Monitor the ECT or the CHT on a diagnostic tool. look for sudden changes in the reading when the harness is wiggled or the sensor is tapped.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Vehicles with only a cylinder head temperature (CHT) sensor		—	—	GO to DL14.
Vehicles with only an engine coolant temperature (ECT) sensor		—	—	GO to DX15.
Vehicles with both a CHT and an ECT sensor		—	—	GO to DX15.

P0121 - Throttle Position (TP1) Sensor Circuit Range/Performance

For Vehicles With Electronic Throttle Control (ETC)	
Description:	The electronic throttle control (ETC) TP1 sensor was flagged as fault status by the powertrain control module (PCM) indicating an out of range in either the closed or wide open throttle (WOT) modes.
Possible Causes:	• Obstruction in the throttle plate movement. • Damaged throttle body • TP circuit open to PCM • Damaged TP sensor • SIG RTN circuit open to the TP sensor
Diagnostic Aids:	This fault exhibits a symptom of limited power. A TP1 PID (TP V PID) reading less than 13% (0.65 volt), or greater than 93% (4.65 volts) in key on engine off (KOEO), continuous memory, or key on engine running (KOER) indicates a hard fault.
For All Others	
Description:	The TP sensor circuit is monitored by the powertrain control module (PCM) for a non-closed throttle position at idle. If the key on engine running (KOER) self-test terminates upon placing the transmission range selector in gear (DRIVE or REVERSE) or when closing the throttle (idle) after opening it (in PARK or NEUTRAL) the TP closed throttle position is not attained, and the test fails.

Possible Causes:	• Binding throttle linkage • Damaged throttle body • TP circuit open to PCM • Damaged TP sensor • SIG RTN circuit open to the TP sensor			
Diagnostic Aids:	Drive the vehicle, bring it to a stop, and turn the key to the OFF position. Start the vehicle, and run the key on engine running (KOER) self-test at idle.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Vehicles With Electronic Throttle Control (ETC)		GO to DV1.		
All others		GO to DH22.		

P0122 - Throttle Position (TP1) Sensor Circuit Low Input

For Vehicles With Electronic Throttle Control (ETC)				
Description:	The electronic throttle control (ETC) TP1 sensor was flagged as fault status by the powertrain control module (PCM) indicating a low voltage or open circuit.			
Possible Causes:	• Open ETC TP sensor harness • Short to ground in the ETC TP sensor harness • Damaged TP sensor • SIG RTN circuit open to the TP sensor			
Diagnostic Aids:	This fault exhibits a symptom of limited power. A TP1 PID (TP V PID) reading less than 3.42% (0.17 volt) in key on engine off (KOEO), continuous memory, or key on engine running (KOER) indicates a hard fault.			
For All Others				
Description:	The TP sensor circuit is monitored by the powertrain control module (PCM) for a high TP rotation angle (or voltage) input through the comprehensive component monitor (CCM). If during key on engine off (KOEO), or key on engine running (KOER) the TP rotation angle (or voltage) changes above the maximum calibrated limit, the test fails.			
Possible Causes:	• TP sensor not seated properly • TP circuit open to PCM • VREF open to TP sensor • TP circuit short to GND • Damaged TP sensor			
Diagnostic Aids:	This fault exhibits a symptom of limited power. A TP PID (TP V PID) reading less than 3.42% (0.17 volt) in key on engine off (KOEO), continuous memory or key on engine running (KOER) indicates a hard fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**

Vehicles With Electronic Throttle Control (ETC)		GO to DV1.		
All others		GO to DH12.	GO to DH12.	GO to DH11.

P0123 - Throttle Position (TP1) Sensor Circuit High Input

For Vehicles With Electronic Throttle Control (ETC)				
Description:	The electronic throttle control (ETC) TP1 sensor was flagged as fault status by the powertrain control module (PCM) indicating a high voltage.			
Possible Causes:	• ETC TP sensor harness shorted to VREF • ETC TP sensor harness shorted to PWR • Damaged TP sensor • VREF circuit shorted to TP sensor			
Diagnostic Aids:	Drive the vehicle, bring it to a stop, and turn the key to the OFF position. Start the vehicle, and run the key on, engine running (KOER) self-test at idle. Access KOER DTCs on the diagnostic tool. The TP1 signal is normally at a high voltage at closed throttle, and a lower voltage at wide open throttle (opposite of TP2).			
For All Others				
Description:	The TP sensor circuit is monitored by the powertrain control module (PCM) for a high TP rotation angle (or voltage) input through the comprehensive component monitor (CCM). If during the key on engine off (KOEO), or key on, engine running (KOER) the TP rotation angle (or voltage) changes above the maximum calibrated limit, the test fails.			
Possible Causes:	• TP sensor not seated properly • TP circuit short to PWR • TP circuit short to VREF • SIG RTN circuit open to the TP sensor • Damaged TP sensor			
Diagnostic Aids:	A TP PID (TP V PID) reading greater than 93% 4.65 volts in KOEO, continuous memory or KOER indicates a hard fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Vehicles With Electronic Throttle Control (ETC)		GO to DV1.		
All others		GO to DH8.		

P0125 - Insufficient Coolant Temperature For Closed Loop Fuel Control

Description:	Indicates the engine coolant temperature (ECT) or the cylinder heat temperature (CHT) sensor has not achieved the required temperature level to enter closed loop operating conditions within a specified amount of time after starting the engine.			
Possible Causes:	• Insufficient warm up time • Low engine coolant level • Leaking or stuck open thermostat • Malfunctioning ECT sensor • Malfunctioning CHT sensor			
Diagnostic Aids:	Compare the thermostat specification to the actual engine coolant temperature using the engine temperature PID (ECT or CHT). The temperature reading should be similar when the engine is at a normal operating temperature.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Vehicles with only a cylinder head temperature (CHT) sensor		—	—	GO to DL21.
Vehicles with only an engine coolant temperature (ECT) sensor		—	—	GO to DX18.
Vehicles with both a CHT and an ECT sensor		—	—	GO to DX18.

P0127 - Intake Air Temperature (IAT) Too High

Description:	Indicates that the IAT2 sensor has detected a potential abnormality in the intercooler system. This condition will cause the boost from the supercharger to be bypassed to avoid potential engine damage.			
Possible Causes:	• Blockage of heat exchangers • Low fluid level • Fluid leakage • Intercooler pump or relay failure • Crossed intercooler coolant lines			
Diagnostic Aids:	Monitor the IAT2 PID. A typical IAT2 temperature should be greater than the IAT1 temperature. Refer to Section 6 Reference Values for ranges.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DU7.		

P0128 - Coolant Thermostat (Coolant Temperature Below Thermostat Regulating Temperature)

Description:	Indicates that the thermostat monitor has not achieved the required engine operating temperature within a specified amount of time after starting the engine.			
Possible Causes:	• Insufficient warm up time • Low engine coolant level • Leaking or stuck open thermostat • Malfunctioning engine coolant temperature (ECT) sensor • Malfunctioning cylinder head temperature (CHT) sensor			
Diagnostic Aids:	Refer to Section 1 Thermostat Monitor for system information.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Vehicles with only a cylinder head temperature (CHT) sensor		—	—	GO to DL21.
Vehicles with only an engine coolant temperature (ECT) sensor		—	—	GO to DX18.
Vehicles with both a CHT and an ECT sensor		—	—	GO to DX18.

P0131 - HO2S Circuit Out of Range Low Voltage (HO2S-11)

Description:	The heated oxygen sensor (HO2S) is monitored for a negative voltage known as characteristic shift downward. If the sensor is switching from 0 to -1 volt during testing, the PCM uses this input and remains in fuel control.			
Possible Causes:	• Contaminated HO2S (water, fuel, oil, silicone) • Crossed HO2S signal/signal return wiring			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to H7.	GO to H7.

P0132 - HO2S Circuit High Voltage (HO2S-11)

Description:	The heated oxygen sensor (HO2S) signals are monitored for an over voltage fault. The code is set when the HO2S signal voltage is 1.5 volts or greater.
Possible Causes:	• HO2S signal circuit shorted to heater voltage inside of HO2S • HO2S signal circuit shorted to VPWR or VREF in harness

Diagnostic Aids:	An HO2S PID switching across 0.45 volt from 0.2 to 0.9 volt indicates a normal switching HO2S. An HO2S PID voltage of 1.5 volts or greater indicates a short to voltage.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to H57.		

P0133 - HO2S Circuit Slow Response (HO2S-11)

Description:	The heated oxygen sensor (HO2S) monitor checks the HO2S frequency and amplitude. If during testing the frequency and amplitude fall below a calibrated limit, the test fails.			
Possible Causes:	• Contaminated HO2S • Exhaust leaks • Shorted/open wiring • Incorrect fueling • MAF sensor • Deteriorating HO2S • Inlet air leaks			
Diagnostic Aids:	Access the HO2S test results from the generic OBD menu to verify the DTC.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to H2.

P0135 - HO2S Circuit Malfunction (HO2S-11)

Description:	During testing the heated oxygen sensor (HO2S) heaters are checked for opens/shorts and excessive current draw. The test fails when the current draw exceeds a calibrated limit and/or an open or short is detected.
Possible Causes:	• Vacuum hose disconnected on exhaust gas recirculation (EGR) system module (ESM) applications • Short to VPWR in the harness or HO2S • Water in the harness connector • Open VPWR circuit • Open GND circuit • Low battery voltage • Corrosion or incorrect harness connections • Damaged HO2S heater
Diagnostic Aids:	Wiring. Damaged HO2S heater.

Application		Key On Engine Off	Key On Engine Running	Continuous Memory
All		GO to H7.		

P0136 - HO2S Circuit Malfunction (HO2S-12)

Description:	The downstream heated oxygen sensors (HO2S) are continuously checked for maximum and minimum voltages. The test fails when the voltages fail to meet the calibrated limits.			
Possible Causes:	• Pinched, shorted, and corroded wiring and pins • Crossed sensor wires • Exhaust leaks • Contaminated or damaged sensor			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to H55.

P0138 - HO2S Circuit High Voltage (HO2S-12)

Description:	See the description for DTC P0132.			
Possible Causes:	See the possible causes for DTC P0132.			
Diagnostic Aids:	See the diagnostic aids for DTC P0132.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to H57.		

P0141 - HO2S Circuit Malfunction (HO2S-12)

Description:	See the description for DTC P0135.			
Possible Causes:	See the possible causes for DTC P0135.			
Diagnostic Aids:	See the diagnostic aids for DTC P0135.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**

All		GO to H7.

P0144 - HO2S Circuit High Voltage (HO2S-13)

Description:	See the description for DTC P0132.			
Possible Causes:	See the possible causes for DTC P0132.			
Diagnostic Aids:	See the diagnostic aids for DTC P0132.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to H57.		

P0147 - HO2S Circuit Malfunction (HO2S-13)

Description:	See the description for DTC P0135.			
Possible Causes:	See the possible causes for DTC P0135.			
Diagnostic Aids:	See the diagnostic aids for DTC P0135.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to H7.		

P0148 - Fuel Delivery Error

Description:	At least 1 bank is lean at wide open throttle.			
Possible Causes:	• Severely restricted fuel filter • Severely restricted fuel supply line • Damaged or worn fuel pump. • Damaged or contaminated mass air flow (MAF) sensor			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to HC1.

P0151 - HO2S Circuit Out of Range Low Voltage (HO2S-21)

Description:	See the description for DTC P0131.			
Possible Causes:	See the possible causes for DTC P0131.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to H7.	GO to H7.

P0152 - HO2S Circuit High Voltage (HO2S-21)

Description:	See the description for DTC P0132.			
Possible Causes:	See the possible causes for DTC P0132.			
Diagnostic Aids:	See the diagnostic aids for DTC P0132.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to H67.	GO to H67.

P0153 - HO2S Circuit Slow Response (HO2S-21)

Description:	See the description for DTC P0133.			
Possible Causes:	See the possible causes for DTC P0133.			
Diagnostic Aids:	See the diagnostic aids for DTC P0133.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to H2.

P0155 - HO2S Circuit Malfunction (HO2S-21)

Description:	See the description for DTC P0135.

Possible Causes:	See the possible causes for DTC P0135.			
Diagnostic Aids:	See the diagnostic aids for DTC P0135.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to H7.		

P0156 - HO2S Circuit High Voltage (HO2S-22)

Description:	The downstream heated oxygen sensors (HO2S) are continuously checked for maximum and minimum voltages. The test fails when the voltages fail to meet the calibrated limits.			
Possible Causes:	• Pinched, shorted, and corroded wiring and pins. • Crossed sensor wires • Exhaust leaks • Contaminated or damaged sensor			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to H55.

P0158 - HO2S Circuit High Voltage (HO2S-22)

Description:	See the description for DTC P0132.			
Possible Causes:	See the possible causes for DTC P0132.			
Diagnostic Aids:	See the diagnostic aids for DTC P0132.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to H67.	GO to H67.

P0161 - HO2S Circuit Malfunction (HO2S-22)

Description:	See the description for DTC P0135.
Possible Causes:	See the possible causes for DTC P0135.

Diagnostic Aids:	See the diagnostic aids for DTC P0135.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to H7.		

P0167 - HO2S Circuit Malfunction (HO2S-23)

Description:	See the description for DTC P0135.			
Possible Causes:	See the possible causes for DTC P0135.			
Diagnostic Aids:	See the diagnostic aids for DTC P0135.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to H7.		

P0171 - System Too Lean (Bank 1)

Description:	The adaptive fuel strategy continuously monitors the fuel delivery hardware. The test fails when the adaptive fuel tables reach a rich calibrated limit. Refer to Section 1, Powertrain Control Software Fuel Trim for more information.
Possible Causes:	Fuel System: • Ethanol content in the fuel • Fuel pressure regulator (leaking or damaged) • Fuel filter plugged, dirty • Fuel pump (weak, check valve leaking) • Leaking/contaminated fuel injectors • Low fuel pressure or running out of fuel • EVAP canister purge valve leaking (when the canister is clean) • Fuel supply line restricted • Fuel rail pressure sensor (incorrect reading) Air Induction System: • Air leaks after the mass air flow (MAF) sensor • Vacuum leaks • Positive crankcase ventilation (PCV) system is leaking or the valve is stuck open • Improperly seated engine oil dipstick • Air induction turbulence due to incorrect air filter Exhaust System: • Exhaust leaks before or near the HO2S (exhaust manifold gasket, mating gaskets)

	EGR System: • Vacuum hose disconnected on exhaust gas recirculation (EGR) system module (ESM) applications • EGR valve tube/gasket leak • EVR solenoid vacuum leak Secondary Air Injection: • Damaged/malfunctioning secondary air injection system (mechanically stuck valve) Air Measurement System: • MAF sensor damaged or contaminated
Diagnostic Aids:	View the Freeze Frame Data to determine the operating conditions when the DTC was set. Observe the LONGFT1 and LONGFT2 PIDs. Refer to Section 2, Adaptive Fuel DTC Diagnostic Techniques for more information and the appropriate pinpoint test for specific concern identification.

Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to H16.

P0172 - System Too Rich (Bank 1)

Description:	The adaptive fuel strategy continuously monitors the fuel delivery hardware. The test fails when the adaptive fuel tables reach a rich calibrated limit. Refer to Section 1, Powertrain Control Software Fuel Trim for more information.
Possible Causes:	Fuel System: • Fuel pressure regulator (vacuum hose off, diaphragm leak) • Leaking fuel injectors • Fuel return line restricted • Fuel rail pressure sensor (incorrect reading) • EVAP canister purge valve leak (when canister is full) Base engine. • Engine oil contamination Air Measurement System: • Mass air flow (MAF) sensor (contaminated, damaged, or corroded connector)
Diagnostic Aids:	View the Freeze Frame Data to determine the operating conditions when the DTC was set. Observe the LONGFT1 and LONGFT2 PIDs. Refer to Section 2, Adaptive Fuel DTC Diagnostic Techniques for more information and the appropriate pinpoint test for specific concern identification.

Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to H21.

P0174 - System Too Lean (Bank 2)

Description:	See the description for DTC P0171.			
Possible Causes:	See the possible causes for DTC P0171.			
Diagnostic Aids:	See the diagnostic aids for DTC P0171.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to H16.

P0175 - System Too Rich (Bank 2)

Description:	See the description for DTC P0172.			
Possible Causes:	See the possible causes for DTC P0172.			
Diagnostic Aids:	See the diagnostic aids for DTC P0172.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to H21.

P0180 - Fuel Temperature Sensor A Circuit

Description:	The comprehensive component monitor (CCM) monitors the fuel temperature sensor circuit to the powertrain control module (PCM) for low and high voltage. If voltage falls below or exceeds a calibrated limit and amount of time during testing, the test fails.			
Possible Causes:	• Open or short in the harness • Low ambient temperature operation • Improper harness connection • Damaged fuel temperature sensor			
Diagnostic Aids:	Verify the FRT PID value to determine an open or short.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Fuel rail pressure temperature (FRPT) sensor		GO to DD47.		

Fuel rail pressure (FRP) and fuel rail temperature (FRT) sensors		GO to DD22.

P0181 - Fuel Temperature Sensor A Circuit Range/Performance

Description:	The comprehensive component monitor (CCM) monitors the fuel temperature sensor for acceptable operating temperature. If voltage falls below or exceeds a calibrated limit, for a calibrated amount of time during testing, the test fails.			
Possible Causes:	• Open or short in the harness • Low ambient temperature operation • Improper harness connection • Damaged fuel temperature sensor • Damaged powertrain control module (PCM)			
Diagnostic Aids:	Verify the FRT PID value to determine an open or short.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Fuel rail pressure temperature (FRPT) sensor		GO to DD49.	GO to DD49.	—
Fuel rail pressure (FRP) and fuel rail temperature (FRT) sensors		GO to DD24.	GO to DD24.	—

P0182 - Fuel Temperature Sensor A Circuit Low Input

Description:	The comprehensive component monitor (CCM) monitors the fuel temperature sensor circuit to the powertrain control module (PCM) for low voltage. If voltage falls below a calibrated limit for a calibrated amount of time during testing, the test fails.			
Possible Causes:	• Short in the harness • VREF open or shorted • Low ambient temperature operation • Improper harness connection • Damaged fuel temperature sensor			
Diagnostic Aids:	Verify the EFT/FRT-PID and VREF values to determine an open or short.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Fuel rail pressure temperature (FRPT) sensor		GO to DD40.	GO to DD40.	GO to DD51.

Fuel rail pressure (FRP) and fuel rail temperature (FRT) sensors		GO to DD15.	GO to DD15.	GO to DD51.

P0183 - Fuel Temperature Sensor A Circuit High Input

Description:	The comprehensive component monitor (CCM) monitors the fuel temperature sensor circuit to the powertrain control module (PCM) for high voltage. If voltage exceeds a calibrated limit for a calibrated amount of time during testing, the test fails.			
Possible Causes:	• Open circuit • Open or short to PWR in the harness • Improper harness connection • Damaged fuel temperature sensor			
Diagnostic Aids:	Verify the FRT PID value to determine an open or short.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Fuel rail pressure temperature (FRPT) sensor		GO to DD40.	GO to DD40.	GO to DD51.
Fuel rail pressure (FRP) and fuel rail temperature (FRT) sensors		GO to DD15.	GO to DD15.	GO to DD51.

P0190 - Fuel Rail Pressure (FRP) Sensor Circuit Malfunction

Description:	The comprehensive component monitor (CCM) monitors the FRP sensor to the powertrain control module (PCM) for VREF voltage. The test fails when the VREF voltage from the PCM drops to a voltage less than a minimum calibrated value.			
Possible Causes:	• VREF open in harness • VREF open in sensor • Vacuum leaks			
Diagnostic Aids:	Verify a VREF voltage between 4 and 6 volts.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Fuel rail pressure temperature (FRPT) sensor		—	GO to DD26.	GO to DD26.
Fuel rail pressure (FRP) sensor only		—	—	GO to DD1.
Fuel rail pressure (FRP) and fuel rail temperature (FRT) sensors		—	—	GO to DD1.

P0191 - Fuel Rail Pressure (FRP) Sensor Circuit Performance

Description:	The comprehensive component monitor (CCM) checks the FRP for acceptable fuel pressure. The test fails when the fuel pressure falls below or exceeds a minimum/maximum calibrated value for a calibrated period of time.			
Possible Causes:	• High fuel pressure • Low fuel pressure • Damaged FRP sensor • Excessive resistance in the circuit • Vacuum leaks • Low or no fuel			
Diagnostic Aids:	A FRP PID value during key on engine running (KOER) of 138 kPa (20 psi) to 413 kPa (60 psi) is acceptable.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Fuel rail pressure temperature (FRPT) sensor		GO to DD34.		
Fuel rail pressure (FRP) sensor only		GO to DD9.		
Fuel rail pressure (FRP) and fuel rail temperature (FRT) sensors		GO to DD9.		

P0192 - Fuel Rail Pressure (FRP) Sensor Circuit Low Input

Description:	The comprehensive component monitor (CCM) monitors the FRP sensor circuit to the powertrain control module (PCM) for low voltage. If voltage falls below a calibrated limit for a calibrated amount of time during testing, the test fails.			
Possible Causes:	• FRP signal shorted to SIG RTN or PWR GND • Damaged FRP sensor			
Diagnostic Aids:	A FRP PID value during the key on engine off (KOEO) or key on engine running (KOER) less than 0.3 volt indicates a hard fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Fuel rail pressure temperature (FRPT) sensor		GO to DD26.	GO to DD26.	GO to DD39.
Fuel rail pressure (FRP) sensor only		GO to DD1.	GO to DD1.	GO to DD14.
Fuel rail pressure (FRP) and fuel rail temperature (FRT) sensors		GO to DD1.	GO to DD1.	GO to DD14.

P0193 - Fuel Rail Pressure (FRP) Sensor Circuit High Input

Description:	The comprehensive component monitor (CCM) monitors the FRP sensor circuit to the powertrain control module (PCM) for high voltage. If voltage exceeds a calibrated limit for a calibrated amount of time during testing, the test fails.			
Possible Causes:	• FRP signal shorted to VREF or VPWR • FRP signal open • Damaged FRP sensor			
Diagnostic Aids:	An FRP signal high condition can be caused by any number of conditions, including a short on FRP signal to VREF, a more positive voltage level, an open FRP signal or signal return. The FRP signal line is pulled up by the PCM and VREF at the sensor, and down by the sensor through SIGRTN.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Fuel rail pressure temperature (FRPT) sensor		GO to DD26.	GO to DD26.	GO to DD39.
Fuel rail pressure (FRP) sensor only		GO to DD1.	GO to DD1.	GO to DD14.
Fuel rail pressure (FRP) and fuel rail temperature (FRT) sensors		GO to DD1.	GO to DD1.	GO to DD14.

P0196 - Engine Oil Temperature (EOT) Sensor Circuit Range/Performance

Description:	Indicates the value from the EOT sensor is not within the powertrain control module (PCM) predicted engine oil temperature range, based on other PCM inputs.			
Possible Causes:	• Engine not at operating temperature • Cooling system problem or stuck thermostat • EOT circuit failure			
Diagnostic Aids:	The EOT rationality test looks for the EOT sensor value to be within a calibrated delta of the PCM predicted engine oil temperature. Make sure the EOT sensor reading is similar to engine temperature. If the EOT reading greatly differs from engine temperature, check the EOT circuitry for correct operation.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DY1.		

P0197 - Engine Oil Temperature (EOT) Sensor Circuit Low Input

Description:	Indicates EOT signal voltage is low (high temperature).			
Possible Causes:	• Damaged harness • Damaged sensor • Damaged harness connector			
Diagnostic Aids:	An EOT V PID reading less than 0.2 volt with the key on engine off (KOEO) or during any engine operating mode indicates a hard fault short to ground.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DY2.		

P0198 - Engine Oil Temperature (EOT) Sensor Circuit High Input

Description:	Indicates EOT signal voltage is high (low temperature).			
Possible Causes:	• Damaged harness • Damaged sensor • Damaged harness connector			
Diagnostic Aids:	An EOT V PID reading greater than 4.5 volts with the key on engine off (KOEO) or during any engine operating mode indicates an open circuit hard fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DY2.		

P020x - Cylinder Injector Circuits

Description:	The comprehensive component monitor (CCM) monitors the operation of the fuel injector drivers in the powertrain control module (PCM). The test fails when the fuel injector circuitry is inoperative. Note: x represents injector number 1 through 9.
Possible Causes:	• Faulty fuel injector driver within the PCM • Open circuit • Damaged fuel injector control module (FICM)
Diagnostic Aids:	PID Data Monitor INJxF fault flags equals YES. For the Ford GT, this DTC is set when a fault is detected in the circuit between the PCM and the FICM.

Application		Key On Engine Off	Key On Engine Running	Continuous Memory
Ford GT		GO to HL3.	GO to HL3.	GO to HL1.
All others		GO to H40.		

P0210 - Cylinder 10 Injector Circuits

Description:	See the description for DTC P020x.			
Possible Causes:	See the possible causes for DTC P020x.			
Diagnostic Aids:	See the diagnostic aids for DTC P020x.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to H40.		

P0217 - Engine Coolant Over-Temperature Condition

Description:	Indicates an engine overheat condition was detected by the engine temperature sensor (CHT or ECT depending how the vehicle is equipped). This condition causes the boost from the supercharger to be bypassed to avoid potential engine damage.			
Possible Causes:	• Engine cooling system concerns • Low engine coolant level • Base engine concerns			
Diagnostic Aids:	Monitor the engine temperature PID (CHT or ECT) for an overheat condition. Typical engine temperature should be close to cooling system thermostat specification.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DX20.		

P0218 - Transmission Fluid Temperature Over-Temperature Condition

Description:	Indicates a transmission overheat condition was sensed by the transmission fluid temperature (TFT) sensor.
Possible Causes:	• Low transmission fluid level

	• Transmission cooling system concerns			
Diagnostic Aids:	Monitor the transmission temperature PID TFT for an overheat condition.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 307-01, Automatic Transmission.		

P0219 - Engine Over Speed Condition

Description:	Indicates the vehicle has been operated in a manner which caused the engine speed to exceed a calibrated limit. The engine RPM is continuously monitored and evaluated by the powertrain control module (PCM). The DTC is set when the RPM exceeds the calibrated limit set within the PCM. For additional information on the engine RPM limiter, refer to Section 1, Powertrain Control Software.			
Possible Causes:	• Wheel slippage (water, ice, mud, and snow) • Excessive engine RPM in NEUTRAL or operated in the wrong transmission gear			
Diagnostic Aids:	The DTC indicates the vehicle has been operated in a manner which caused the engine speed to exceed a calibrated limit.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to ND1.

P0221 - Throttle Position (TP2) Sensor Circuit Range/Performance

Description:	The electronic throttle control (ETC) TP2 sensor was flagged as fault status by the powertrain control module (PCM) indicating an out of range in either the closed or wide open throttle (WOT) modes.			
Possible Causes:	• Binding throttle linkage • Damaged throttle body • TP circuit open to PCM • Damaged TP sensor • SIG RTN circuit open to the TP sensor • Self-test operator error (foot resting on the accelerator pedal during test)			
Diagnostic Aids:	The fault exhibits a symptom of limited power. A TP2 PID (TP V PID) reading greater than 96.42% (4.65 volts) during key on engine off (KOEO) or key on engine running (KOER) indicates a hard fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DV1.		

P0222 - Throttle Position (TP2) Sensor Circuit Low Input

Description:	The electronic throttle control (ETC) TP2 sensor was flagged as fault status by the powertrain control module (PCM) indicating a low voltage, or open circuit.			
Possible Causes:	• Open ETC TP sensor harness • Short to ground in the ETC TP sensor harness • Damaged TP sensor • SIG RTN circuit open to the TP sensor			
Diagnostic Aids:	The fault exhibits a symptom of limited power. A TP2 PID (TP V PID) reading less than 3.42% (0.17 volt) during key on engine off (KOEO) or key on engine running (KOER) indicates a hard fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DV1.		

P0223 - Throttle Position (TP2) Sensor Circuit High Input

Description:	The electronic throttle control (ETC) TP2 sensor was flagged as fault status by the powertrain control module (PCM) indicating a high voltage.			
Possible Causes:	• ETC TP sensor harness shorted to VREF • Damaged TP sensor • ETC TP2 circuit open • VREF circuit shorted to TP sensor			
Diagnostic Aids:	This fault exhibits a symptom of limited power. A TP2 PID (TP V PID) reading greater than 93% (4.65 volts) in key on engine off (KOEO), continuous memory, or key on engine running (KOER) indicates a hard fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DV1.		

P0230 - Fuel Pump Primary Circuit Malfunction

Description:	The powertrain control module (PCM) monitors the fuel pump (FP) circuit output from the PCM. The test fails if the FP output is commanded ON (grounded), excessive current draw is detected on the FP circuit, or with the FP output commanded OFF, voltage is not detected on the FP circuit and the PCM expects to detect VPWR voltage coming through the fuel pump relay coil to the FP circuit.

Possible Causes:	• Open or shorted (FP) circuit • Open VPWR circuit to the fuel pump relay • Damaged fuel pump relay • Damaged PCM
Diagnostic Aids:	When the FPF PID reads YES, a fault is currently present. An open circuit or short to ground can only be detected with the fuel pump commanded OFF. A short to voltage can only be detected with the fuel pump commanded on. During the key on engine off (KOEO) and key on engine running (KOER) self-test, the fuel pump output command is cycled on and off.

Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Excursion		GO to KA31.	GO to KA31.	GO to KA60.
All others		GO to KA1.	GO to KA1.	GO to KA30.

P0231 - Fuel Pump Secondary Circuit Low

Description:	The powertrain control module (PCM) monitors the fuel pump monitor (FPM) circuit. The test fails if the PCM commands the fuel pump ON and B+ voltage is not detected on the FPM circuit.
Possible Causes:	• Open B+ circuit to the fuel pump relay • Open FP PWR circuit between the fuel pump relay and its connection to the FPM circuit • Damaged fuel pump relay
Diagnostic Aids:	During the key on engine off (KOEO) self-test, the PCM commands the fuel pump on so this test can be carried out.

Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Excursion		GO to KA56.	GO to KA56.	GO to KA61.
All others		GO to KA22.	GO to KA22.	GO to KA29.

P0232 - Fuel Pump Secondary Circuit High

Description:	The powertrain control module (PCM) monitors the fuel pump monitor (FPM) circuit. This test fails when the PCM detects voltage on the FPM circuit while the fuel pump is commanded off. The FPM circuit is wired to a pull-up voltage inside the PCM. The FPM circuit goes high if, with the key on and the fuel pump commanded off, the FPM/FP PWR circuit loses its path to ground through the fuel pump. The FPM circuit also goes high if the FPM/FP PWR circuit is shorted to voltage.

Possible Causes:	• Inertia fuel shutoff (IFS) switch not reset or electrically open • Open circuit between the fuel pump and the FPM connection to the FP PWR circuit • Poor fuel pump ground • Fuel pump electrically open • Fuel pump secondary circuits short to voltage • Fuel pump relay contacts always closed • Open FPM circuit between the PCM and the connection to the FP PWR circuit • Damaged low speed fuel pump relay or concern with related circuits (if equipped)
Diagnostic Aids:	Continuous memory P0232 can be set if the IFS switch is tripped then reset, or if the fuel pump circuit is activated when the PCM expected the circuit to be off (fuel system test or prime procedure).

Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Excursion		GO to KA40.	GO to KA40.	GO to KA62.
All others		GO to KA10.	GO to KA10.	GO to KA27.

P0234 - Supercharger Overboost Condition

Description:	The powertrain control module (PCM) disables (bypasses) the supercharger boost and sets a DTC to prevent damaging the powertrain (engine or transmission) during potentially harmful operating conditions.
Possible Causes:	• Engine over temperature • Ignition misfire exceeds the calibrated threshold • Fuel or fuel system concern. • High or low IAT2 sensor reading. • Damaged IAT2 sensor
Diagnostic Aids:	Check for other DTCs accompanying the P0234, or check appropriate and available PIDs related to possible causes.

Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to KJ1.		

P0243 - Turbocharger/Supercharger Wastegate Solenoid A

Description:	The powertrain control module (PCM) monitors the SCB solenoid circuit for an electrical failure. The test fails when the signal moves outside the minimum or maximum allowable calibrated parameters for a specified SCB solenoid duty cycle (100% or 0%) by PCM command.
Possible Causes:	• VPWR circuit open to SCB solenoid

	• SCB solenoid circuit shorted to PWR GND or CHASSIS GND • Damaged SCB solenoid • SCB solenoid circuit open • SCB solenoid circuit shorted to VPWR			
Diagnostic Aids:	With the test lamp connected to the SCB solenoid harness connector, cycle the solenoid on and off using output state control (OSC). If the test lamp cycles on and off the SCB solenoid is a suspect. If the test lamp is always on suspect the SCB solenoid driver circuit for short to ground.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to KJ3.		

P0261 - Cylinder 1 Injector Circuit Low

Description:	This DTC is set when a fault is detected by the fuel injector control module (FICM) in the primary (forward) fuel injector circuit.			
Possible Causes:	• Injector circuit is open • Injector circuit is shorted to GND • Damaged fuel injector • Damaged FICM			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL8.		

P0262 - Cylinder 1 Injector Circuit High

Description:	See the description for DTC P0261.			
Possible Causes:	• Injector circuit is shorted to VPWR • Damaged fuel injector • Damaged FICM			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL8.		

P0264 - Cylinder 2 Injector Circuit Low

Description:	See the description for DTC P0261.			
Possible Causes:	See the possible causes for DTC P0261.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL8.		

P0265 - Cylinder 2 Injector Circuit High

Description:	See the description for DTC P0261.			
Possible Causes:	See the possible causes for DTC P0262.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL8.		

P0267 - Cylinder 3 Injector Circuit Low

Description:	See the description for DTC P0261.			
Possible Causes:	See the possible causes for DTC P0261.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL8.		

P0268 - Cylinder 3 Injector Circuit High

Description:	See the description for DTC P0261.
Possible Causes:	See the possible causes for DTC P0262.

Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL8.		

P0270 - Cylinder 4 Injector Circuit Low

Description:	See the description for DTC P0261.			
Possible Causes:	See the possible causes for DTC P0261.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL8.		

P0271 - Cylinder 4 Injector Circuit High

Description:	See the description for DTC P0261.			
Possible Causes:	See the possible causes for DTC P0262.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL8.		

P0273 - Cylinder 5 Injector Circuit Low

Description:	See the description for DTC P0261.			
Possible Causes:	See the possible causes for DTC P0261.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL8.		

P0274 - Cylinder 5 Injector Circuit High

Description:	See the description for DTC P0261.			
Possible Causes:	See the possible causes for DTC P0262.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL8.		

P0276 - Cylinder 6 Injector Circuit Low

Description:	See the description for DTC P0261.			
Possible Causes:	See the possible causes for DTC P0261.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL8.		

P0277 - Cylinder 6 Injector Circuit High

Description:	See the description for DTC P0261.			
Possible Causes:	See the possible causes for DTC P0262.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL8.		

P0279 - Cylinder 7 Injector Circuit Low

Description:	See the description for DTC P0261.
Possible Causes:	See the possible causes for DTC P0261.

Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL8.		

P0280 - Cylinder 7 Injector Circuit High

Description:	See the description for DTC P0261.			
Possible Causes:	See the possible causes for DTC P0262.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL8.		

P0282 - Cylinder 8 Injector Circuit Low

Description:	See the description for DTC P0261.			
Possible Causes:	See the possible causes for DTC P0261.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL8.		

P0283 - Cylinder 8 Injector Circuit High

Description:	See the description for DTC P0261.			
Possible Causes:	See the possible causes for DTC P0262.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL8.		

P0297 - Vehicle Over Speed Condition

Description:	Indicates the vehicle has been operated in a manner which caused the vehicle speed to exceed a calibration limit. The vehicle speed is continuously monitored and evaluated by the PCM. The DTC is set when the vehicle speed exceed the calibrated limit set within the PCM. For additional information on the vehicle speed limiter, refer to Section 1, Electronic Engine Control (EC) System, Powertrain Control Software.			
Possible Causes:	• Vehicle driven at a high rate of speed			
Diagnostic Aids:	The DTC indicates the vehicle has been operated in a manner which caused the engine speed to exceed a calibrated limit.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to ND1.

P0298 - Engine Oil Over Temperature Condition

Description:	Indicates the engine oil temperature protection strategy in the powertrain control module (PCM) has been activated. This temporarily prohibits high engine speed operation by disabling injectors, reducing the risk of engine damage from high engine oil temperature. Note: On engines which are equipped with an oil temperature sensor, the PCM reads oil temperature to determine if it is excessive. When an oil temperature sensor is not present, the PCM uses an oil algorithm to infer actual temperature. Engine shutdown strategy function is the same on vehicles with and without oil temperature sensors.			
Possible Causes:	• Very high engine RPM for an extended period of time • Overheating condition • Malfunctioning engine oil temperature (EOT) sensor or circuit (vehicles with an EOT sensor) • Base engine concerns			
Diagnostic Aids:	The engine is operating in high RPM range due to improper gear selection. This may cause a lack/loss of power or surge customer concern.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to DY13.

P0300 - Random Misfire

Description:	The random misfire DTC indicates multiple cylinders are misfiring or the powertrain control module (PCM) cannot identify which cylinder is misfiring.
Possible Causes:	• Camshaft position sensor (CMP)

	• Low fuel (less than 1/8 tank) • Stuck open EGR valve • Blocked EGR passages			
Diagnostic Aids:	One or more EGR passages may be blocked or partially blocked. If this is the case the misfire detection monitor indicates the EGR port to check for possible blockage.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to HD1.

P030x - Misfire Detection Monitor

Description:	The misfire detection monitor is designed to monitor engine misfire and identify the specific cylinder in which the misfire has occurred. Misfire is defined as lack of combustion in a cylinder due to absence of spark, poor fuel metering, poor compression, or any other cause. NOTE: x represents cylinder number 1 through 9.			
Possible Causes:	• Ignition system • Fuel injectors • Running out of fuel • EVAP canister purge valve • Fuel pressure • Evaporative emission system • EGR system • Base engine			
Diagnostic Aids:	The malfunction indicator lamp (MIL) blinks once per second when a misfire severe enough to cause catalyst damage is detected. If the MIL is on steady state due to a misfire, this indicates the threshold for emissions was exceeded and caused the vehicle to fail an inspection and maintenance tailpipe test.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to HD1.

P0310 - Misfire Detection Monitor

Description:	The misfire detection monitor is designed to monitor engine misfire and identify the specific cylinder in which the misfire has occurred. Misfire is defined as lack of combustion in a cylinder due to absence of spark, poor fuel metering, poor compression, or any other cause.
Possible Causes:	• Ignition system • Fuel injectors • Running out of fuel • EVAP canister purge valve

	• Fuel pressure • Evaporative emission system • EGR system • Base engine
Diagnostic Aids:	The malfunction indicator lamp (MIL) blinks once per second when a misfire severe enough to cause catalyst damage is detected. If the MIL is on steady state due to a misfire, this indicates the threshold for emissions was exceeded and caused the vehicle to fail an inspection and maintenance tailpipe test.

Application		Key On Engine Off	Key On Engine Running	Continuous Memory
All		—	—	GO to HD1.

P0315 - The PCM is Unable to Learn Crankshaft Pulse Wheel tooth Spacing (Exceeded the Allowable Correction Tolerances)

Description:	The powertrain control module (PCM) is unable to learn and correct for mechanical inaccuracies in crankshaft pulse wheel tooth spacing. This DTC disables the misfire monitor.
Possible Causes:	• Damaged crankshaft pulse wheel teeth. • Damaged crankshaft position (CKP) sensor
Diagnostic Aids:	Requires visual inspection of the CKP sensor and the crankshaft pulse wheel teeth for damage.

Application		Key On Engine Off	Key On Engine Running	Continuous Memory
All		—	—	GO to HD33.

P0316 - Misfire Occurred in the First 1,000 Engine Revolutions

Description:	P0316 code is set in addition to any type B misfire DTC which occurs in the first 1,000 revolution test interval following engine start.
Possible Causes:	• Damaged crankshaft position (CKP) sensor • Ignition system • Fuel injectors • Running out of fuel • Fuel quality • Base engine • Damaged powertrain control module (PCM)
Diagnostic Aids:	Freeze frame data and the DTC P03xx are also stored, indicating in which cylinder the misfire occurred.

Application		Key On Engine Off	Key On Engine Running	Continuous Memory
All		—	—	GO to HD1.

P0320 - Ignition Engine Speed Input Circuit Malfunction

Description:	The ignition engine speed sensor input signal to PCM is continuously monitored. The test fails when the signal indicates that 2 successive erratic profile ignition pickup (PIP) pulses occurred.			
Possible Causes:	• Loose wires/connectors • Arcing secondary ignition components (coil, wires and plugs) • On-board transmitter (2-way radio)			
Diagnostic Aids:	The DTC indicates that 2 successive erratic PIP pulses occurred.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to NC1.

P0325 - Knock Sensor 1 Circuit Malfunction (Bank 1)

Description:	The knock sensor detects vibrations upon increase and decrease in engine RPM. The knock sensor generates a voltage based on this vibration. If the voltage goes outside a calibrated level, a DTC is set.			
Possible Causes:	• Knock sensor circuit short to GND • Knock sensor circuit short to PWR • Knock sensor circuit open • Damaged knock sensor			
Diagnostic Aids:	A knock sensor voltage greater than 0.5 volt with the key on engine off (KOEO) indicates a hard fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DG1.		

P0326 - Knock Sensor 1 Circuit Range/Performance (Bank 1)

Description:	See the description for DTC P0325.
Possible Causes:	See the possible causes for DTC P0325.

Diagnostic Aids:	See the diagnostic aids for DTC P0325.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DG1.		

P0330 - Knock Sensor 2 Circuit Malfunction (Bank 2)

Description:	See the description for DTC P0325.			
Possible Causes:	See the possible causes for DTC P0325.			
Diagnostic Aids:	See the diagnostic aids for DTC P0325.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DG2.		

P0331 - Knock Sensor 2 Circuit Range/Performance (Bank 2)

Description:	See the description for DTC P0325.			
Possible Causes:	See the possible causes for DTC P0325.			
Diagnostic Aids:	See the diagnostic aids for DTC P0325.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DG2.		

P0340 - Camshaft Position (CMP) Sensor Circuit Malfunction (Bank 1)

Description:	The test fails when the powertrain control module (PCM) can no longer detect the signal from the CMP sensor on bank 1.
Possible Causes:	• CMP circuit open • CMP circuit short to GND • CMP circuit short to PWR • SIG RTN open (VR sensor) • CMP GND open (Hall-effect sensor) • CMP circuit short to CMP2 circuit (if equipped) • CMP incorrectly installed (Hall-effect sensor) • Damaged CMP sensor shielding

	• Damaged CMP sensor • Damaged PCM			
Diagnostic Aids:	Harness routing, harness alterations, improper shielding, or electrical interference from other improperly functioning systems may have an intermittent impact on the CMP signal.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DR1.		

P0344 - Camshaft Position Sensor A Circuit Intermittent (Bank 1 or single sensor)

Description:	The test fails when the powertrain control module (PCM) detects an intermittent signal from the camshaft position (CMP) sensor.			
Possible Causes:	• Intermittent open circuit • Intermittent short circuit • Damaged sensor shielding • Damaged sensor			
Diagnostic Aids:	Harness routing, harness alterations, improper shielding, or electrical interference from other improperly functioning systems may have an intermittent impact on the CMP signal.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to Pinpoint Test DR.

P0345 - Camshaft Position (CMP) Sensor Circuit Malfunction (Bank 2)

Description:	The test fails when the powertrain control module (PCM) can no longer detect the signal from the CMP sensor on bank 2.			
Possible Causes:	See the possible causes for DTC P0340.			
Diagnostic Aids:	See the diagnostic aids for DTC P0340.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DR1.		

P0349 - Camshaft Position Sensor A Circuit Intermittent (Bank 2)

Description:	See the description for DTC P0344.

Possible Causes:	See the possible causes for DTC P0344.			
Diagnostic Aids:	See the diagnostic aids for DTC P0344.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to Pinpoint Test DR.

P0350 - Ignition Coil (Undetermined) Primary/Secondary Circuit Malfunction

Description:	Each ignition primary circuit is continuously monitored. The test fails when the powertrain control module (PCM) does not receive a valid ignition diagnostic monitor (IDM) pulse signal from the ignition module (integrated in the PCM).			
Possible Causes:	• Open or short in the Ignition START/RUN circuit • Open coil driver circuit • Coil driver circuit shorted to ground • Damaged coil • Coil driver circuit shorted to VPWR			
Diagnostic Aids:	The PCM may disable the fuel injector for a cylinder that is misfiring to protect the exhaust system catalyst. Use the 12-volt non-powered test lamp to verify START/RUN voltage at the ignition coil harness connector. Check the coil driver circuit for open, short to VPWR, or short to ground.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to JB1.	GO to JB1.

P0351 - Ignition Coil A Primary/Secondary Circuit Malfunction

Description:	See the description for DTC P0350.			
Possible Causes:	See the possible causes for DTC P0350.			
Diagnostic Aids:	See the diagnostic aids for DTC P0350.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Coil-on-plug (COP) ignition testing		—	GO to JF1.	GO to JF1.
Coil pack ignition testing		—	GO to JE1.	GO to JE1.

P0352 - Ignition Coil B Primary/Secondary Circuit Malfunction

Description:	See the description for DTC P0350.			
Possible Causes:	See the possible causes for DTC P0350.			
Diagnostic Aids:	See the diagnostic aids for DTC P0350.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Coil-on-plug (COP) ignition testing		—	GO to JF1.	GO to JF1.
Coil pack ignition testing		—	GO to JE1.	GO to JE1.

P0353 - Ignition Coil C Primary/Secondary Circuit Malfunction

Description:	See the description for DTC P0350.			
Possible Causes:	See the possible causes for DTC P0350.			
Diagnostic Aids:	See the diagnostic aids for DTC P0350.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Coil-on-plug (COP) ignition testing		—	GO to JF1.	GO to JF1.
Coil pack ignition testing		—	GO to JE1.	GO to JE1.

P0354 - Ignition Coil D Primary/Secondary Circuit Malfunction

Description:	See the description for DTC P0350.			
Possible Causes:	See the possible causes for DTC P0350.			
Diagnostic Aids:	See the diagnostic aids for DTC P0350.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Coil-on-plug (COP) ignition testing		—	GO to JF1.	GO to JF1.
Coil pack ignition testing		—	GO to JE1.	GO to JE1.

P0355 - Ignition Coil E Primary/Secondary Circuit Malfunction

Description:	See the description for DTC P0350.

Possible Causes:	See the possible causes for DTC P0350.			
Diagnostic Aids:	See the diagnostic aids for DTC P0350.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to JF1.	GO to JF1.

P0356 - Ignition Coil F Primary/Secondary Circuit Malfunction

Description:	See the description for DTC P0350.			
Possible Causes:	See the possible causes for DTC P0350.			
Diagnostic Aids:	See the diagnostic aids for DTC P0350.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to JF1.	GO to JF1.

P0357 - Ignition Coil G Primary/Secondary Circuit Malfunction

Description:	See the description for DTC P0350.			
Possible Causes:	See the possible causes for DTC P0350.			
Diagnostic Aids:	See the diagnostic aids for DTC P0350.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to JF1.	GO to JF1.

P0358 - Ignition Coil H Primary/Secondary Circuit Malfunction

Description:	See the description for DTC P0350.			
Possible Causes:	See the possible causes for DTC P0350.			
Diagnostic Aids:	See the diagnostic aids for DTC P0350.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to JF1.	GO to JF1.

P0359 - Ignition Coil I Primary/Secondary Circuit Malfunction

Description:	See the description for DTC P0350.			
Possible Causes:	See the possible causes for DTC P0350.			
Diagnostic Aids:	See the diagnostic aids for DTC P0350.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to JF1.	GO to JF1.

P0360 - Ignition Coil J Primary/Secondary Circuit Malfunction

Description:	See the description for DTC P0350.			
Possible Causes:	See the possible causes for DTC P0350.			
Diagnostic Aids:	See the diagnostic aids for DTC P0350.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to JF1.	GO to JF1.

P0400 - Exhaust Gas Recirculation (EGR) Flow Failure (Outside the Minimum or Maximum Limits)

Description:	The electric EGR (EEGR) system is monitored once per drive cycle during steady state conditions above 77 km/h (48 mph). The test fails when a malfunction is detected by powertrain control module (PCM) calculations indicating the EGR flow is less or greater than expected.			
Possible Causes:	• EEGR valve stuck open or closed • Connector to EEGR not seated • EEGR motor winding circuits short or open • No voltage to the EEGR • Harness open or shorted to voltage or ground • Vacuum signal to manifold absolute pressure (MAP) restricted or leaking • Mass air flow (MAF) sensor signal erroneous • Carbon build up in the EEGR valve seat area • One or more sensors is not responding or is out of range			
Diagnostic Aids:	All of the following sensors input data to the PCM for proper operation of the EEGR system: engine coolant temperature (ECT, crankshaft position (CKP), intake air temperature (IAT), MAF, throttle position (TP), MAP. Any DTC relating to these sensors must be resolved prior to addressing code P0400.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**

All		GO to KD8.

P0401 - Exhaust Gas Recirculation (EGR) Flow Insufficient Detected

Description:	The EGR system is monitored during steady state driving conditions while the EGR is commanded on. The test fails when the signal from the differential pressure feedback EGR (DPFEGR) sensor indicates that EGR flow is less than the desired minimum.
Possible Causes:	• Vacuum supply • EGR valve stuck closed • EGR valve leaks vacuum • EGR flow path restricted • EGRVR circuit shorted to PWR • VREF open to DPFEGR sensor • DPFEGR sensor downstream hose is off or plugged • EGRVR circuit open to the PCM • VPWR open to EGRVR solenoid • DPFEGR sensor hoses are both off • DPFEGR sensor hoses are reversed • Damaged EGR orifice tube • Damaged EGRVR solenoid
Diagnostic Aids:	Carry out the key on engine running (KOER) self-test and look for DTC P1408 as an indication of a hard fault. If P1408 is not present, look for contamination, restrictions, leaks, and intermittent faults.

Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Vehicles with an EGR system module (ESM)		—	—	GO to HH15.
All others		—	—	GO to HE36.

P0402 - Exhaust Gas Recirculation (EGR) Flow Excessive Detected

Description:	The EGR system is monitored for undesired EGR flow during idle. The EGR monitor looks at the differential pressure feedback EGR (DPFEGR) signal at idle and compares it to the stored signal measured during key on engine off (KOEO). The test fails when the signal at idle is greater than at KOEO by a calibrated amount.
Possible Causes:	• EGR valve stuck open • Plugged EGR vacuum regulator solenoid vent • Plugged EGR tube • Slow responding DPFEGR sensor • Damaged DPFEGR sensor

	• Improper vacuum hose connection • Plugged vacuum hoses • EGRVR circuit shorted to ground • Damaged EGR vacuum regulator solenoid			
Diagnostic Aids:	A DPFEGR PID reading that is greater at idle than during KOEO by 0.5 volt or a rough engine idle may indicate a hard fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Vehicles with an EGR system module (ESM)		—	GO to HH11.	GO to HH11.
All others		—	GO to HE12.	GO to HE12.

P0403 - Exhaust Gas Recirculation (EGR) Control Circuit

For Vehicles With an Electric EGR (EEGR)				
Description:	The EEGR system is continuously monitored to check the 4 EEGR motor coils, circuits, and the powertrain control module (PCM) for opens, shorts to voltage and ground. If a malfunction is detected the EEGR system is disabled and additional monitoring is suspended for the remainder of the drive until the next drive cycle.			
Possible Causes:	• EEGR motor windings open • Connector to EEGR not seated • Open circuit in the harness from the PCM to the EEGR • Short circuit in the EEGR motor • Short circuit in the harness from the PCM to the EEGR • Damaged PCM			
Diagnostic Aids:				
For All Others				
Description:	This test checks the electrical function of the EGR vacuum regulator (EGRVR) solenoid. The test fails when the EGRVR circuit voltage is either too high or too low when compared to the expected voltage range. The EGR system must be enabled for the test to be completed.			
Possible Causes:	• EGRVR circuit open • VPWR open to EGRVR solenoid • EGRVR circuit short to VPWR or GND • Damaged EGRVR solenoid • Damaged powertrain control module (PCM)			
Diagnostic Aids:	The EGRVR solenoid resistance is between 26 and 40 ohms.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Vehicles with an EGR system module (ESM)		GO to HH21.		

Vehicles With an Electric EGR (EEGR)		GO to KD1.		
All others		GO to HE59.	GO to HE59.	GO to HE64.

P0405 - Differential Pressure Feedback Exhaust Gas Recirculation (DPFEGR) Sensor Circuit Low Voltage Detected

Description:	The exhaust gas recirculation (EGR) monitor checks the DPFEGR sensor signal to the PCM for low voltage. The test fails when the average voltage to the powertrain control module (PCM) drops to a voltage less than the minimum calibrated value.			
Possible Causes:	• DPFEGR circuit short to GND • Damaged DPFEGR sensor • VREF short to GND			
Diagnostic Aids:	A DPFEGR PID reading less than 0.2 volt with the key on engine off (KOEO) or running indicates a hard fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Vehicles with an EGR system module (ESM)		GO to HH1.		
All others		GO to HE1.		

P0406 - Differential Pressure Feedback Exhaust Gas Recirculation (DPFEGR) Sensor Circuit High Voltage Detected

Description:	The exhaust gas recirculation (EGR) monitor checks the EGR sensor signal to the powertrain control module (PCM) for high voltage. The test fails when the average voltage to the PCM exceeds the maximum calibrated value.			
Possible Causes:	• DPFEGR circuit open • VREF short to PWR • Damaged DPFEGR sensor • DPFEGR circuit short to PWR • SIG RTN circuit open			
Diagnostic Aids:	A DPFEGR PID reading greater than 4.5 volts with the key on engine off (KOEO) or running indicates a hard fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Vehicles with an EGR system module (ESM)		GO to HH4.		
All others		GO to HE5.		

P0411 - Secondary Air Injection (AIR) System - Incorrect Upstream Flow Detected

Description:	The AIR system does not detect the presence of air in the exhaust when introduced by the AIR system.			
Possible Causes:	• AIR bypass solenoid circuit open • AIR bypass solenoid leaking/blocked or stuck open/closed • Electric AIR pump with no or low air flow • AIR diverter valve leaking/blocked or stuck open/closed • AIR hoses restricted or leaking • AIR vacuum hoses restricted or leaking			
Diagnostic Aids:	In order to test the AIR pump, it must be capable of driving the heated oxygen sensor (HO2S) lean. A single electrical circuit open, such as an AIR bypass solenoid, in this multi-component circuit will not be detected by a powertrain control module (PCM) output driver circuit, yet it will create DTC P0411.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to HM17.	GO to HM17.

P0412 - Secondary Air Injection (AIR) System - Switching Valve A Circuit Malfunction

Description:	On the primary side of the AIR relay, open and short faults on the AIR command circuit are detected during normal operation by the powertrain control module (PCM) output driver.			
Possible Causes:	• Short to voltage or ground in the AIR command circuit • Open in the AIR command circuit • AIR bypass solenoid fault • AIR relay fault			
Diagnostic Aids:	A single open AIR component, solenoid, or relay on this multi-component circuit is not detected by a PCM output driver circuit, yet it generates DTC P0411 for a solenoid open or P2257 for a relay open. For intermittent faults use the AIR PCM output driver fault PID (AIRF) during a harness wiggle test with the AIR PCM output driver in OFF and ON states. The AIR PCM output driver fault PID AIRF instantly detects open circuits and shorts to ground with the PCM output driver off. The AIR PCM output driver fault PID AIRF instantly detects open circuits and shorts to ground with the PCM output driver off. The AIR PCM output driver fault PID AIRF instantly detects a short to voltage or low resistance load with the PCM output driver on. Use the OTM or OSC to toggle the PCM output driver from OFF to ON. Refer to Section 2, Output Test Mode (OTM).			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HM1.	GO to HM1.	GO to HM9.

P0420 - Catalyst System Efficiency Below Threshold (Bank 1)

Description:	Indicates the bank 1 catalyst system efficiency is below the acceptable threshold.
Possible Causes:	• Use of leaded fuel • Damaged heated oxygen sensor (HO2S) • Out of range engine coolant temperature (ECT) sensor • High fuel pressure • Damaged exhaust manifold • Damaged catalytic converter • Oil contamination • Cylinder misfiring • Downstream HO2S wires improperly connected • Damaged exhaust system pipe • Damaged muffler/tailpipe assembly • Retarded spark timing • Leaking fuel injector
Diagnostic Aids:	Compare HO2S upstream HO2S11 and downstream HO2S12 switch rate and amplitude. Under normal closed loop fuel conditions, high efficiency catalysts have oxygen storage which makes the switching frequency of the downstream HO2S very slow and reduces the amplitude of those switches as compared to the upstream HO2S. As catalyst efficiency deteriorates, its ability to store oxygen declines and the downstream HO2S signal begins to switch more rapidly with increase amplitude, approaching the switching rate and amplitude of the upstream HO2S. Once beyond an acceptable limit the DTC is set.

Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to HF1.

P0430 - Catalyst System Efficiency Below Threshold (Bank 2)

Description:	Indicates the bank 2 catalyst system efficiency is below the acceptable threshold.
Possible Causes:	See the possible causes for DTC P0420.
Diagnostic Aids:	See the diagnostic aids for DTC P0420.

Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to HF1.

P0442 - Evaporative Emission (EVAP) Control System Leak Detected (Small Leak)

Description:	The powertrain control module (PCM) monitors the complete EVAP control system for the presence of a small fuel vapor leak. System failure occurs when a fuel vapor leak from an opening as small as 1.016 mm (0.040 in) is detected by the EVAP running loss monitor test.
Possible Causes:	• After market EVAP hardware (such as the fuel filler cap) non-conforming to required specifications • Small holes or cuts in the fuel vapor hoses/tubes • Canister vent solenoid stays partially open on closed command • Damaged, missing or loosely installed fuel filler cap • Loose fuel vapor hose/tube connections to the EVAP system components • EVAP system component seals leaking (EVAP canister purge valve, fuel tank pressure sensor, canister vent solenoid, fuel vapor control valve tube assembly or fuel vapor vent valve assembly)
Diagnostic Aids:	Check for a missing fuel filler cap or the integrity of the cap. Check for loose or damaged vapor hoses. Visually inspect the EVAP canister inlet port, CV solenoid filter, and canister vent hose assembly for contamination or debris.

Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to HX55.

P0443 - Evaporative Emission (EVAP) Control System Canister Purge Valve Circuit Malfunction

Description:	The powertrain control module (PCM) monitors the state of the EVAP canister purge valve circuit output driver. The test fails when the signal moves outside the minimum or maximum limit for the commanded state.
Possible Causes:	• VPWR circuit open • EVAP canister purge valve circuit shorted to GND • Damaged EVAP canister purge valve • EVAP canister purge valve circuit open • EVAP canister purge valve circuit shorted to VPWR • Damaged PCM
Diagnostic Aids:	To verify normal function, monitor the EVAP canister purge valve signal PID EVAPPDC (or EVMV for electronic valve) and the signal voltage (PCM control side). With the valve closed, the EVAPPDC indicates a 0% duty cycle (0 mA for EVMV) and voltage approximately equal to battery voltage. When the valve is commanded fully open, EVAPPDC indicates 100% duty cycle (1000 mA for EVMV) and a voltage drop of 3 volts minimum is normal. Output test mode may be used to switch output on/off to verify function.

Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HX1.		

P0446 - Evaporative Emission (EVAP) Control System Canister Vent Solenoid Circuit Malfunction

Description:	Monitors the canister vent (CV) solenoid circuit for an electrical failure. The test fails when the signal moves outside the minimum or maximum allowable calibrated parameters for a specified canister vent duty cycle by powertrain control module (PCM) command.			
Possible Causes:	• VPWR circuit open • B+ circuit open (F-Super Duty) • CV solenoid circuit shorted to PWR GND or CHASSIS GND • Damaged CV solenoid • CV solenoid circuit open • CV solenoid circuit shorted to VPWR • CV solenoid circuit shorted to B+ (F-Super Duty) • Damaged PCM			
Diagnostic Aids:	To verify normal functioning, monitor the EVAP canister vent solenoid signal PID EVAPCV and the signal voltage (PCM control side). With the valve open, EVAPCV indicates 0% duty cycle and a voltage approximately equal to battery voltage. When the valve is commanded fully closed, EVAPCV indicates 100% duty cycle, and a minimum voltage drop of 4 volts is normal. Output test mode may be used to switch output on/off to verify function.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HX31.		

P0451 - Evaporative Emission (EVAP) System FTP Sensor Range / Performance / Intermittent

Description:	Note: For some 2005 applications, DTC P0451 will be set for a fuel tank pressure (FTP) sensor range (offset) fault. DTC P0454 will replace the original P0451 for intermittent (noisy) sensor faults. Until the phase in process is complete, noisy or offset FTP sensor faults may set a P0451. The fuel tank pressure changes greater than 14 inches of water in 0.10 seconds. FTP sensor output is offset by + /- 1.7 inches H2O.			
Possible Causes:	• Intermittent open or short in the FTP sensor or the FTP sensor signal • Contaminated or damaged sensor • Damaged powertrain control module (PCM)			
Diagnostic Aids:	Monitor the FTP PID and note if it changes from above 15 inches of water to below minus (-) 15 inches of water often in 1 minute. With the FTP sensor at atmospheric pressure, the FTP PID normally indicates 0 inches of H2O. Look for a minimum reading of +/- 1.7 inches of water as an indication of an offset condition.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HX48.		

P0452 - Fuel Tank Pressure (FTP) Sensor Circuit Low Voltage Detected

Description:	The powertrain control module (PCM) monitors the evaporative emission (EVAP) control system FTP sensor input signal to the PCM. The test fails when the signal average drops below a minimum allowable calibrated parameter.			
Possible Causes:	• Contamination internal to the FTP sensor connector • FTP circuit shorted to GND or SIG RTN • Damaged FTP sensor			
Diagnostic Aids:	An FTP V PID reading less than 0.22 volt with key on engine off (KOEO) or during any engine operating mode indicates a concern is present.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HX19.		

P0453 - Fuel Tank Pressure (FTP) Sensor Circuit High Voltage Detected

Description:	The powertrain control module (PCM) monitors the evaporative emission (EVAP) control system FTP sensor input signal to the PCM. The test fails when the signal average jumps above a minimum allowable calibrated parameter.			
Possible Causes:	• FTP circuit open • VREF shorted to VPWR • FTP circuit shorted to VREF or VPWR • SIG RTN circuit open • Damaged FTP sensor			
Diagnostic Aids:	An FTP V PID reading greater than 4.50 volts during key on engine off (KOEO) or any engine operating mode indicates a concern is present.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HX24.		

P0454 - Fuel Tank Pressure (FTP) Sensor Circuit Noisy

Description:	The fuel tank pressure changes greater than 14 inches of water in 0.10 seconds.			
Possible Causes:	• Intermittent open or short in the FTP sensor or the FTP sensor signal • Contaminated or damaged sensor			
Diagnostic Aids:	Monitor the FTP PID and note if it changes from above 15 inches of water to below minus (-) 15 inches of water often in 1 minute.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**

All		—	—	GO to Z1.

P0455 - Evaporative Emission (EVAP) Control System Leak Detected (No Purge Flow or Large Leak)

Description:	The powertrain control module (PCM) monitors the complete evaporative emission (EVAP) control system for no purge flow, the presence of a large fuel vapor leak, or multiple small fuel vapor leaks. System failure occurs when no purge flow, which is attributed to fuel vapor blockages or restrictions, a large fuel vapor leak, or multiple fuel vapor leaks are detected by the EVAP running loss monitor test with the engine running, but not at idle.			
Possible Causes:	• After market EVAP hardware (such as the fuel filler cap) non-conforming to required specifications • Disconnected or cracked fuel EVAP canister tube, EVAP canister purge outlet tube, or EVAP return tube • EVAP canister purge valve stuck closed • Damaged EVAP canister • Damaged or missing fuel filler cap • Insufficient fuel filler cap installation • Loose fuel vapor hose/tube connections to the EVAP system components • Blockages or restrictions in the fuel vapor hoses/tubes (items also listed under disconnections or cracks) • Fuel vapor control valve tube assembly or fuel vapor vent valve assembly blocked • Canister vent (CV) solenoid stuck open • Mechanically inoperative fuel tank pressure (FTP) sensor			
Diagnostic Aids:	Check for audible vacuum noise or significant fuel odor in the engine compartment or near the EVAP canister and fuel tank.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to HX49.

P0456 - Evaporative Emission (EVAP) Control System Leak Detected (Very Small Leak)

Description:	The powertrain control module (PCM) monitors the complete evaporative emission (EVAP) control system for the presence of a very small fuel vapor leak. The system failure occurs when a fuel vapor leak from an opening as small as 0.508 mm (0.020 inch) is detected by the EVAP running loss monitor test.			
Possible Causes:	• Very small holes or cuts in the fuel vapor hoses/tubes • Loose fuel vapor hose/tube connections to the EVAP system components • EVAP system component seals leaking (refer to Possible Causes under DTC P0442)			
Diagnostic Aids:	Check for a missing fuel filler cap or the integrity of the cap. Check for loose or damaged vapor hoses. Visually inspect the EVAP canister inlet port, CV solenoid filter, and canister vent hose assembly for contamination or debris.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**

All		—	—	GO to HX55.

P0457 - Evaporative Emission (EVAP) Control System Leak Detected (Fuel Filler Cap Loose/Off)

Description:	A fuel tank pressure change less than a minus (-) 7 inches of water in 30 seconds has occurred after refueling; or there is excessive purge (fuel vapor) flow greater than 0.06 pounds per minute. A fuel tank pressure change less than a minus (-) 7 inches of water in 30 seconds has occurred after refueling; or there is excessive purge (fuel vapor) flow greater than 0.06 pounds per minute.			
Possible Causes:	• Fuel filler cap not installed on refueling (storing continuous memory DTC) and the fuel cap indicator lamp (FCIL) may also be illuminated • Damaged, missing, or loosely installed fuel filler cap			
Diagnostic Aids:	Check for a missing fuel filler cap or the integrity of the cap. If OK, clear continuous memory DTCs and reinitiate the EVAP emission running loss monitor drive cycle.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to HX49.

P0460 - Fuel Level Sensor A Circuit

Description:	The powertrain control module (PCM) monitors the fuel level input (FLI) circuit or communications network message for a concern. The test fails when the PCM determines that the value of the FLI signal is stuck. The PCM calculates the amount of fuel used during operation. If the FLI signal does not change or does not correspond with the calculated fuel usage, the DTC is set.			
Possible Causes:	• Stuck float arm • Fuel level is always greater than 95% due to refueling patterns • Fuel level is always less than 5% due to refueling patterns • Fuel level is always at the same level between 3% and 97% full due to refueling patterns • Fuel pump (FP) module concern • Damaged instrument cluster			
Diagnostic Aids:	Check with the customer for driving and fueling habits that would keep the fuel level at approximately the same value. Monitor the FLI and FLI V PIDs while attempting to move the fuel level float by adding or removing fuel as necessary.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HX40.		

P0461 - Fuel Level Sensor Circuit Range/Performance

Description:	Excessive electrical noise.			
Possible Causes:	• Fuel level sensor circuit intermittent • FLI signal line open circuit			
Diagnostic Aids:	Verify after market equipment does not generate the radio frequency interference / electromagnetic interference (RFI/EMI) which may cause noisy FLI input signal.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HX37.		

P0462 - Fuel Level Sensor Circuit Low Input

Description:	The powertrain control module (PCM) monitors the fuel level input (FLI) circuit for electrical failure. The test fails when the signal moves below the minimum allowable calibrated parameter for a specified fuel fill percentage in the fuel tank.			
Possible Causes:	• Empty fuel tank • Fuel pump (FP) module concern • Incorrectly installed fuel gauge • Damaged instrument cluster • Damaged fuel gauge • FLI circuit shorted to CASE GND or PWR GND			
Diagnostic Aids:	Monitor the FLI and FLI V PIDs in key on, engine running (KOER). A concern is present if the FLI PID is at 25% fill and the FLI V PID is less than 0.90 volt with a non-matching fuel gauge or the FLI PID is at 75% fill and the FLI V PID is greater than 2.45 volts with a non-matching fuel gauge.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HX37.		

P0463 - Fuel Level Sensor Circuit High Input

Description:	The powertrain control module (PCM) monitors the fuel level input (FLI) circuit for electrical failure. The test fails when the signal moves above the maximum allowable calibrated parameter for a specified fuel fill percentage in the fuel tank.
Possible Causes:	• Fuel pump (FP) module concern • Incorrectly installed fuel gauge • Damaged instrument cluster • FLI circuit open • FLI shorted to VPWR

	• CASE GND circuit open • Overfilled fuel tank • Damaged fuel gauge			
Diagnostic Aids:	See the diagnostic aids for DTC P0462.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HX37.		

P0480 - Low Fan Control (LFC)/Fan Control 1 (FC1) Primary Circuit Malfunction

For Relay Controlled Electric Cooling Fan				
Description:	Monitors the LFC or fan control (FC) for 1 speed fan applications, primary circuit output from the powertrain control (PCM). The test fails when the PCM grounds the LFC/FC circuit and excessive current draw is detected on the LFC/FC circuit; or with the LFC/FC circuit not grounded by the PCM the voltage is not detected on the LFC/FC circuit (the PCM expects to detect VPWR voltage coming through the low speed FC relay coil to the LFC/FC circuit).			
Possible Causes:	• Open or shorted LFC/FC circuit • Open VPWR circuit to the low speed FC relay • Damaged low speed FC relay			
Diagnostic Aids:	When the LFCF PID reads YES, a fault is currently present. During the key on, engine off (KOEO) self-test, the cooling fan is cycled on and off. A short to voltage can only be detected when the PCM is grounding the LFC/FC circuit. During the KOEO and key on, engine running (KOER) self-test, the LFC/FC circuit is cycled on and off.			
For Variable Speed Electric Cooling Fan				
Description:	This test checks the fan control-variable (FCV) output circuit. The DTC sets if the powertrain control module (PCM) detects the voltage on the FCV circuit is not within the expected range.			
Possible Causes:	• FCV circuit open or shorted • B+ or ground circuit fault to cooling fan • VPWR open to cooling fan (if applicable) • Damaged cooling fan module • Damaged PCM			
Diagnostic Aids:	During the key on, engine off (KOEO) self-test, the cooling fan is cycled on and off.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Freestar/Monterey		GO to KF16.	GO to KF16.	GO to KF49.
Crown Victoria, Grand Marquis, Town Car, Five Hundred,		GO to KN1.	GO to KN1.	GO to KN7.

Freestyle, Montego				
LS, Thunderbird		GO to KN12.	GO to KN12.	GO to KN19.
All others		GO to KF1.	GO to KF1.	GO to KF43.

P0481 - High Fan Control (HFC)/Fan Control 3 (FC3) Primary Circuit Malfunction

Description:	Monitors the HFC primary circuit output from the powertrain control module (PCM). The test fails, when the HFC output is commanded on (grounded) and excessive current draw is detected on the HFC circuit; or when the HFC circuit is commanded off and voltage is not detected on the HFC circuit (the PCM expects to detect VPWR voltage through the high speed FC relay coil to the HFC circuit).			
Possible Causes:	• Open or shorted HFC circuit • Open VPWR circuit to the high speed FC relay • Damaged high speed FC relay			
Diagnostic Aids:	When the HFCF PID reads YES, a fault is currently present. An open circuit or short to ground can only be detected when the PCM is not grounding the HFC circuit. A short to voltage can only be detected when the PCM is grounding the HFC circuit. During the key on, engine off (KOEO) and key on, engine running (KOER) self-test, the HFC circuit is cycled on and off.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Taurus, Sable, Escape 3.0L, Mariner 3.0L, Ford GT		GO to KF34.	GO to KF34.	GO to KF53.
All others		GO to KF11.	GO to KF11.	GO to KF45.

P0482 - Medium Fan Control (MFC) Primary Circuit Failure

Description:	Monitors the MFC primary circuit output from the powertrain control module (PCM). The test fails, when the MFC output is commanded on (grounded) and excessive current draw is detected on the MFC circuit; or when the MFC circuit is commanded off and voltage is not detected on the MFC circuit (the PCM expects to detect IGN START/RUN voltage through the medium speed FC relay coil to the MFC circuit).
Possible Causes:	• Open or shorted MFC circuit • Open IGN START/RUN circuit to the medium speed FC relay • Damaged medium speed FC relay

Diagnostic Aids:	When the MFCF PID reads YES, a fault is currently present. An open circuit or short to ground can only be detected when the PCM is not grounding the MFC circuit. A short to voltage can only be detected when the PCM is grounding the MFC circuit. During the key on, engine off (KOEO) and key on, engine running (KOER) self-test, the MFC circuit is cycled on and off. Use output test mode to command the low speed fan on. The PCM also activates the medium speed fan output.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Freestar/Monterey, Focus		GO to KF25.	GO to KF25.	GO to KF51.
All others		GO to KF6.	GO to KF6.	GO to KF47.

P0500 - Vehicle Speed Sensor (VSS) Malfunction

Description:	Indicates the powertrain control module (PCM) detected an error in the vehicle speed information. Vehicle speed data is received from either the vehicle speed sensor (VSS), the transfer case speed sensor (TCSS) or the anti-lock brake system (ABS) control module. If the engine RPM is above the torque converter stall speed (automatic transmission) and the engine load is high, it can be inferred that the vehicle must be moving. If there is insufficient vehicle speed data input, a malfunction is indicated and a DTC is set. On most vehicle applications the malfunction indicator lamp (MIL) is triggered when this DTC is set.			
Possible Causes:	• Open in the VSS+/VSS- harness circuit • Open in the TCSS signal or the TCSS signal return harness circuit • Short to GND in the VSS harness circuit • Short to GND in the TCSS harness circuit • Short to PWR in the VSS harness circuit • Short to PWR in the TCSS harness circuit • Damaged drive mechanism for VSS or TCSS • Damaged VSS or TCSS • Damaged wheel speed sensors • Damaged wheel speed sensor harness circuits • Damage in the module(s) connected to the VSC/VSS circuit • Open or short in the vehicle speed circuit VSS signal between the ABS VSS signal output and the VSS signal inputs to the PCM and other models - Excursion and F-Super Duty only			
Diagnostic Aids:	Monitor the VSS PID while driving the vehicle. This DTC is set when the PCM detects a sudden loss of vehicle speed signal over a period of time. If vehicle speed data is lost, check the source of the vehicle speed input: VSS, TCSS or ABS. Note: On some manual shift-on-the-fly (MSOF) applications, VSS and TCSS PID can be monitored. However if no TCSS PID is available and VSS PID is zero, TCSS circuitry frequency must be checked for loss of sensor signal. If another vehicle electronic module has generated the P0500 and the vehicle does not receive its vehicle speed input from the VSS, TCSS or ABS, check the PCM for output shaft speed (OSS) sensor DTCs. On OSS applications the PCM uses the OSS to calculate the vehicle speed. If no OSS DTCs are found check for correct PCM configuration, tire size and axle ratio.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Excursion, F-Super Duty		GO to DF1.		

Vehicles with a manual transfer case		GO to DP15.
Vehicles with an automatic transmission and output shaft speed (OSS) sensor DTCs		Refer to the Workshop Manual Section 307-01, Automatic Transmission Output Shaft Speed (OSS) Sensor pinpoint test to diagnose the concern.
All others		GO to DP1.

P0503 - Vehicle Speed Sensor (VSS) Intermittent

Description:	Indicates poor or noisy VSS performance. Vehicle speed data is received from either the VSS, the transfer case speed sensor (TCSS), or the anti-lock brake system (ABS) control module.		
Possible Causes:	• Noisy VSS/TCSS input signal from the radio frequency interference / electromagnetic interference (RFI/EMI) external sources, such as ignition components or the charging circuit • Damaged VSS or driven gears • Damaged TCSS • Damaged wiring harness or connectors • Malfunction in the module(s) or circuit connected to the VSS/TCSS circuit • After market add-on		
Diagnostic Aids:	Monitor the VSS PID while driving the vehicle, and check for intermittent vehicle speed indication. Verify the ignition and charging systems are functioning correctly.		
Application	**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Excursion, F-Super Duty	GO to DF1.		
Five Hundred, Freestyle, Montego, Navigator	The powertrain control module (PCM) uses information from the anti-lock brake system (ABS) module and the transmission control module (TCM) to calculate vehicle speed. Check these modules for DTCs.		
Vehicles with a manual transfer case	GO to DP15.		
Vehicles with an automatic transmission and output shaft speed (OSS) sensor DTCs	Refer to the Workshop Manual Section 307-01, Automatic Transmission Output Shaft Speed (OSS) Sensor pinpoint test to diagnose the concern.		
All others	GO to DP12.		

P0505 - Idle Air Control (IAC) System Malfunction

For Vehicles With Electronic Throttle Control (ETC)				
Description:	The powertrain control module (PCM) attempts to control engine speed during the key on, engine running (KOER) self-test. The test fails when the desired RPM could not be reached or controlled during the self-test.			
Possible Causes:	• Failure mode effects management (FMEM) condition is present • Air inlet is plugged • Vacuum leaks • Sludged throttle body • Damaged electronic throttle body (ETB) • Damaged PCM			
Diagnostic Aids:	This DTC may be accompanied by other DTCs. Diagnose other DTCs first. If other DTCs are not present inspect the intake air system for air restrictions, vacuum leaks, and damage. If no concerns are present, clear the DTC and retest.			
For All Others				
Description:	The powertrain control module (PCM) attempts to control engine speed during the key on, engine running (KOER) self-test. The test fails when the desired RPM could not be reached or controlled during the self-test.			
Possible Causes:	• IAC circuit open • VPWR to IAC solenoid open • B+ or VPWR to IAC solenoid open • Air inlet is plugged • IAC circuit shorted to PWR • Damaged IAC valve			
Diagnostic Aids:	The IAC solenoid resistance is 6 to 13 ohms. Monitor the IAC PID duty cycle and/or voltage.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Vehicles With Electronic Throttle Control (ETC)		GO to HU66.		
All others		GO to KE1.		

P0506 - Idle Air Control (IAC) System RPM Lower Than Expected

For Vehicles With Electronic Throttle Control (ETC)	
Description:	This DTC is set when the powertrain control module (PCM) detects an engine idle speed that is less than the desired RPM.
Possible Causes:	• Air intake restriction • Exhaust restriction • Engine mechanical fault. • Sludged throttle body • Damaged electronic throttle body (ETB)

	• Damaged PCM
Diagnostic Aids:	This DTC may be accompanied by other DTCs. Diagnose other DTCs first. If other DTCs are not present inspect the intake air system for air restrictions and damage. If no concerns are present, clear the DTC and retest.
For All Others	
Description:	This DTC is set when the powertrain control module (PCM) detects an engine idle speed that is less than the desired RPM.
Possible Causes:	• IAC circuit open • Air inlet is plugged • B+ or VPWR to IAC solenoid open • Damaged or incorrect IAC valve • IAC valve stuck closed • VPWR to IAC solenoid open • IAC circuit shorted to PWR
Diagnostic Aids:	Disconnect the IAC valve and look for little or no change in engine RPM as an indication of a stuck or damaged valve.

Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Vehicles With Electronic Throttle Control (ETC)		GO to HU66.		
All others		GO to KE1.		

P0507 - Idle Air Control (IAC) System RPM Higher Than Expected

For Vehicles With Electronic Throttle Control (ETC)	
Description:	This DTC is set when the powertrain control module (PCM) detects an engine idle speed that is greater than the desired RPM.
Possible Causes:	• Air intake leak after throttle body • Vacuum leaks • Failed EVAP system • EGR valve leaks vacuum • Damaged electronic throttle body (ETB) • Damaged PCM
Diagnostic Aids:	This DTC is informational only and it may be accompanied by other DTCs. Diagnose other DTCs first. If other DTCs are not present inspect the intake air system for air or vacuum leaks and damage. If no concerns are present, clear the DTC and retest.
For All Others	
Description:	This DTC is set when the powertrain control module (PCM) detects an engine idle speed that is greater than the desired RPM.
Possible Causes:	• IAC circuit shorted to ground • Damaged or incorrect IAC valve

	• IAC valve stuck open • Air intake leak after throttle body • Vacuum leaks • Failed EVAP system • EGR valve leaks vacuum			
Diagnostic Aids:	Disconnect the IAC valve and look for little or no change in engine RPM as an indication of a stuck or damaged valve.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Vehicles With Electronic Throttle Control (ETC)		Refer to the Description, Possible Causes and Diagnostic Aids for the DTC.		
All others		GO to KE14.		

P0511 - Idle Air Control (IAC) Circuit Malfunction

Description:	This DTC is set when the powertrain control module (PCM) detects an electrical load failure on the IAC output circuit.			
Possible Causes:	• IAC circuit open • VPWR to IAC solenoid open • B+ or VPWR to IAC solenoid open • IAC circuit shorted to PWR • Damaged IAC valve • IAC circuit short to GND			
Diagnostic Aids:	The IAC solenoid resistance is 6 to 13 ohms. Monitor the IAC PID duty cycle and/or voltage.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to KE1.		

P0532 - Air Conditioning Pressure (ACP) Sensor Low Voltage Detected

Description:	The ACP sensor inputs a voltage to the powertrain control module (PCM). If the voltage is below the calibrated level the DTC sets.
Possible Causes:	• ACP circuit short to GND or SIGRTN • VREF circuit open • Open ACP circuit • Damaged ACP sensor
Diagnostic Aids:	Verify the VREF voltage is between 4 and 6 volts.

Application		Key On Engine Off	Key On Engine Running	Continuous Memory
All		GO to DS7.		

P0533 - Air Conditioning Pressure (ACP) Sensor High Voltage Detected

Description:	The ACP sensor inputs a voltage to the powertrain control module (PCM). If the voltage is above a calibrated level the DTC sets.			
Possible Causes:	• ACP sensor circuit short to PWR • ACP circuit open • ACP circuit short to VREF • Damaged ACP sensor			
Diagnostic Aids:	Verify the VREF voltage is between 4 and 6 volts.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DS1.		

P0534 - Low A/C Cycling Period

Description:	Indicates frequent A/C compressor clutch cycling.			
Possible Causes:	• Mechanical A/C system concern (such as low refrigerant charge, damaged A/C cycling switch) • Intermittent open between the cycling pressure switch and the powertrain control module (PCM) • Intermittent open in the IGN RUN circuit to cycling pressure switch (if applicable)			
Diagnostic Aids:	An intermittent open circuit, although possible, is unlikely. This test is designed to protect the transmission. In some strategies, the PCM unlocks the torque converter during A/C clutch engagement. If a concern is present that results in frequent A/C clutch cycling, damage could occur if the torque converter is cycled at these intervals. This test detects this condition, sets the DTC and prevents the torque converter from excessive cycling.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to KM11.

P0537 - A/C Evaporator Temperature (ACET) Circuit Low Input

Description:	Indicates the ACET signal input was less than the self-test minimum. The self-test minimum is 0.13 volts.			
Possible Causes:	• ACET circuit short to ground or SIG RTN • Damaged ACET sensor			
Diagnostic Aids:	The powertrain control module (PCM) sources a low current 5 volts on the ACET circuit (this voltage can be measured with the sensor disconnected). As the A/C evaporator air temperature changes, the ACET circuit resistance to SIG RTN (ground) changes (which changes the voltage the PCM detects). When the ACET signal is detected below the self-test minimum, check for shorts to the SIG RTN or ground, which would pull the voltage low.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DJ6.	GO to DJ6.	GO to DJ9.

P0538 - A/C Evaporator Temperature (ACET) Circuit High Input

Description:	Indicates the ACET signal input was greater than the self-test maximum. The self-test maximum is 4.5 volts.			
Possible Causes:	• ACET circuit open • SIG RTN circuit open to the ACET sensor • ACET circuit short to voltage (VREF) • Damaged ACET sensor			
Diagnostic Aids:	The powertrain control module (PCM) sources a low current 5 volts on the ACET circuit (this voltage can be measured with the sensor disconnected). As the A/C evaporator air temperature changes, the ACET circuit resistance to SIG RTN (ground) changes (which changes the voltage the PCM detects). When the ACET signal is detected above the self-test maximum, check for open circuits (ACET or SIG RTN), which would cause the voltage to remain high. Although not as probable, also check for a short to voltage (VREF).			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DJ1.	GO to DJ1.	GO to DJ9.

P0552 - Power Steering Pressure (PSP) Sensor Circuit Low Input

Description:	Indicates the PSP sensor input signal was less than the self-test minimum.
Possible Causes:	• PSP sensor damaged • SIG RTN circuit open • VREF circuit open or shorted • PSP sensor signal circuit open or shorted
Diagnostic Aids:	View the PSP PID to monitor the PSP input.

Application		Key On Engine Off	Key On Engine Running	Continuous Memory
All		GO to DT2.	GO to DT2.	GO to DT7.

P0553 - Power Steering Pressure (PSP) Sensor Circuit High Input

Description:	Indicates the PSP sensor input signal was greater than the self-test maximum.			
Possible Causes:	• PSP sensor damaged • VREF circuit shorted to voltage • PSP sensor signal circuit open • PSP sensor signal circuit shorted to voltage			
Diagnostic Aids:	View the PSP PID to monitor the PSP input.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DT2.	GO to DT2.	GO to DT7.

P0579 - Cruise Control Multifunction Input A Circuit Range / Performance

Description:				
Possible Causes:				
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 310-03, Speed Control.		

P0581 - Cruise Control Multifunction Input A Circuit High

Description:				
Possible Causes:				
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 310-03, Speed Control.		

P0600 - Serial Communication Link

Description:	Indicates an error occurred in the powertrain control module (PCM). This DTC may be set alone or in combination with P2105.			
Possible Causes:	• Damaged PCM			
Diagnostic Aids:	Install a new PCM. Refer to Section 2, Flash Electrically Erasable Programmable Read Only Memory (EEPROM).			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Description, Possible Causes and Diagnostic Aids for the DTC.		

P0602 - Control Module Programming Error

Description:	This DTC indicates a programming error within the vehicle ID (VID) block.			
Possible Causes:	• VID data corrupted by the diagnostic tool during VID reprogramming			
Diagnostic Aids:	Using the diagnostic tool, reprogram the VID block. If the powertrain control module (PCM) does not allow reprogramming of the VID block, reprogram the PCM.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		The vehicle identification (VID) block must programmed. For instructions, refer to the Flash VID Block Procedure.		

P0603 - Internal Control Module Keep Alive Memory (KAM) Error

Description:	Indicates the PCM has experienced an internal memory fault. However, there are external items that can cause this DTC.			
Possible Causes:	• Reprogramming • Battery terminal corrosion • KAPWR to PCM interrupt/open • Loose battery connection			
Diagnostic Aids:	If KAPWR is interrupted to the PCM because of a battery or PCM disconnect, this DTC can be generated on the first power-up.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**

All		GO to QB1.	—	GO to QB1.

P0605 - Powertrain Control Module (PCM) Read Only Memory (ROM) Error

Description:	The PCM ROM has been corrupted.			
Possible Causes:	• An attempt was made to change the calibration • Module programming error • Damaged PCM			
Diagnostic Aids:	Reprogram or update the calibration. Reprogram the VID block (use as built data). Check for other DTCs or drive symptoms for further action.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Make sure to check for aftermarket performance products before installing a new powertrain control module (PCM). If it is necessary to install a new PCM, refer to Section 2, Flash Electrically Erasable Programmable Read Only Memory (EEPROM).		

P0606 - Powertrain Control Module (PCM) Internal Communication Error

Description:	P0606 indicates a register readback (PCM internal communications) error.			
Possible Causes:	• Damaged PCM			
Diagnostic Aids:	For Electronic Throttle Control applications, an internal PCM failure, or an ETC system FMEM condition exists. Repairing the other DTCs can fix the P0606. For all others, an internal PCM concern may be present. For both applications if only DTC P0606 is present, clear the DTCs. Repeat the self-test. Repair as necessary. If DTC P0606 is retrieved again, install a new PCM. Refer to Section 2, Flash Electrically Erasable Programmable Read Only Memory (EEPROM).			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Vehicles With Electronic Throttle Control (ETC)		The DTC is an indication of a failure mode in the electronic throttle control system, which includes the accelerator pedal position (APP) sensor, electronic throttle body (ETB), and PCM. It is accompanied by other DTCs which provide repair direction. Diagnose and repair those DTCs, and the DTC P0606 will not be reset. If only DTC P0606 is present, clear the DTCs. Repeat the self-test. If DTC P0606 is retrieved again, install a new PCM. Refer to Section 2, Flash Electrically Erasable Programmable Read Only Memory (EEPROM).		
All others		Check for aftermarket performance products. Clear the DTCs. Repeat the self-test. Repair as necessary. If it is necessary to install a new PCM, refer to Section 2, Flash Electrically Erasable Programmable Read Only Memory (EEPROM).		

P060A - Internal Control Module Monitoring Processor Performance

Description:	Indicates an error occurred in the powertrain control module (PCM). This DTC is set in combination with P2105.			
Possible Causes:	• Software incompatibility issue • Damaged PCM			
Diagnostic Aids:	Program the PCM to the latest calibration. Cycle the key off and on. Check for self-test DTCs. If the concern or DTC is still present, install a new PCM. Refer to Section 2, Flash Electrically Erasable Programmable Read Only Memory (EEPROM).			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Description, Possible Causes and Diagnostic Aids for the DTC.		

P060B - Internal Control Module A/D Processing Performance

Description:	Indicates an error occurred in the powertrain control module (PCM). This DTC is set in combination with P2104 or P2110.			
Possible Causes:	• Damaged PCM			
Diagnostic Aids:	Do not install a new PCM until the following steps are completed. Inspect the harness for damage. Verify correct operation of the sensors using VREF and related circuits. GO to Pinpoint Test C. If the concern or DTC is still present, install a new PCM. Refer to Section 2, Flash Electrically Erasable Programmable Read Only Memory (EEPROM).			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Description, Possible Causes and Diagnostic Aids for the DTC.		

P060C - Internal Control Module Main Processor Performance

Description:	Indicates an error occurred in the powertrain control module (PCM). This DTC is set in combination with P2106.
Possible Causes:	• Software incompatibility issue • Damaged PCM
Diagnostic Aids:	Program the PCM to the latest calibration. Cycle the key off and on. Check for self-test DTCs.

	If the concern or DTC is still present, install a new PCM. Refer to Section 2, Flash Electrically Erasable Programmable Read Only Memory (EEPROM).			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Description, Possible Causes and Diagnostic Aids for the DTC.		

P0611 - Fuel Injector Control Module (FICM) Performance

Description:	This DTC is set when the powertrain control module (PCM) fails to receive a status message from the FICM within a defined amount of time.			
Possible Causes:	• PWR GND circuit open • VPWR circuit open • SCP communication link • Damaged FICM			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL15.		

P061B - Internal Control Module Torque Calculation Performance

Description:	Indicates a calculation error occurred in the powertrain control module (PCM). This DTC is set in combination with P2106.			
Possible Causes:	See the possible causes for DTC P2106.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to QE1.		

P061C - Internal Control Module Engine RPM Performance

Description:	Indicates a calculation error occurred in the powertrain control module (PCM). This DTC is set in combination with P2106.
Possible Causes:	Crankshaft position (CKP) sensor. • CKP sensor circuit is open or shorted • CKP sensor circuit intermittent

	• Damaged CKP sensor Camshaft position (CMP) sensor. • CMP sensor circuit is open or shorted • CMP sensor circuit intermittent • Damaged CMP sensor Damaged PCM.
Diagnostic Aids:	After each step return to this diagnostic aid for direction. Do not install a new PCM until the following steps are completed. • Verify correct operation of the CKP sensor and related circuits GO to Pinpoint Test JD. • Verify correct operation of the CMP sensor and related circuits GO to Pinpoint Test DR. • Clear the PCM DTCs • Road test the vehicle. Use the customer information to recreate the concern. • If the concern or DTC is still present, install a new PCM Refer to Section 2, Flash Electrically Erasable Programmable Read Only Memory (EEPROM).

Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Description, Possible Causes and Diagnostic Aids for the DTC.		

P061D - Internal Control Module Engine Air Mass Performance

Description:	Indicates an error occurred in the powertrain control module (PCM). This DTC is set in combination with P2106.
Possible Causes:	• Software incompatibility issue • Damaged PCM
Diagnostic Aids:	Program the PCM to the latest calibration. Cycle the key off and on. Road test the vehicle. Use the customer information to recreate the concern. If the concern or DTC is still present, install a new PCM. Refer to Section 2, Flash Electrically Erasable Programmable Read Only Memory (EEPROM).

Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Description, Possible Causes and Diagnostic Aids for the DTC.		

P061F - Internal Control Module Throttle Actuator Controller Performance

Description:	Indicates an error occurred in the powertrain control module (PCM). This DTC is set in combination with P2106.
Possible Causes:	See the possible causes for DTC P2106.
Diagnostic Aids:	Disregard the current DTC at this time. Refer to the DTC charts to diagnose the DTC P2106.

	Verify correct operation of the ETC components and related circuits. Do not install a new PCM until the following steps are completed. Clear the PCM DTCs and road test the vehicle. Use the customer information to recreate the concern. If the concern or DTC is still present, install a new PCM. Refer to Section 2, Flash Electrically Erasable Programmable Read Only Memory (EEPROM).			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Description, Possible Causes and Diagnostic Aids for the DTC.		

P0620 - Generator Control Circuit Failure

Description:	The powertrain control module (PCM) reads the GENLI and sends a DTC through the network when the GENLI indicates a fault.			
Possible Causes:	• I-line control (ILC) circuit short to GND • ILC circuit short to B+ • ILC circuit open • GENLI circuit shorted to PWR or GND • GENLI circuit open • B+ circuit open • Generator drive mechanism • Damaged generator/regulator assembly • Damaged PCM			
Diagnostic Aids:	Verify the battery voltage is 14.5 volts. Verify the generator/regulator has the correct part number.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HY1.		

P0622 - Generator Field Terminal Circuit Failure

Description:	The powertrain control module (PCM) monitors the generator load from the generator/regulator in the form of frequency. The frequency range is determined by the temperature of the voltage regulator, where 97% indicates a full load, and less than 6% indicates no load.
Possible Causes:	• GENLI circuit shorted to PWR or GND • GENLI circuit open • GENRC circuit shorted to PWR or GND • GENRC circuit open • ILC circuit shorted to PWR or GND • ILC circuit open • Battery-sense circuit open • Generator drive mechanism

	• Damaged generator/regulator assembly • Damaged PCM			
Diagnostic Aids:	Verify the battery voltage is 14.5 volts. Verify the generator/regulator has the correct part number.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HY1.		

P0645 - Air Conditioning Clutch Relay (A/CCR) Primary Circuit Malfunction (Also Referred to as WAC Circuit)

Description:	Monitors the wide open throttle A/C cutoff (WAC) circuit output from the powertrain control module (PCM). The test fails when the PCM grounds the WAC circuit, excessive current draw is detected on the WAC circuit; or, with the WAC circuit not grounded by the PCM, voltage is not detected on the WAC circuit (the PCM expects to detect VPWR voltage coming through the WAC relay coil to the WAC circuit).			
Possible Causes:	• Open or shorted WAC circuit • Damaged WAC relay • Open VPWR circuit to the WAC relay			
Diagnostic Aids:	The A/CCR control circuit can be monitored using the WACF and WAC PID. When the WACF PID reads YES, a fault is present. An open circuit or short to ground can only be detected when the PCM is not grounding the circuit. A short to voltage can only be detected when the PCM is grounding the circuit. During the key on, engine off (KOEO) and key on, engine running (KOER) self-test, the WAC circuit is cycled on and off. Verify the A/C and the defrost were OFF during the KOEO and KOER self-tests. Check ACCS the PID to verify. If the vehicle is not equipped with A/C, DTC P0645 can be ignored.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to KM1.	GO to KM1.	GO to KM9.

P0657 - Actuator Supply Voltage A Circuit/Open

Description:	Voltage to all transmission solenoids has been interrupted.			
Possible Causes:				
Diagnostic Aids:	Refer to the Workshop Manual Section 307-01, Automatic Transmission.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**

All		Refer to the Workshop Manual Section 307-01, Automatic Transmission.

P0660 - Intake Manifold Tuning Valve (IMTV) Control Circuit Open - Bank 1

Description:	The IMTV system is monitored for failure during continuous, key on, engine off (KOEO), or key on, engine running (KOER) self-tests. The test fails when the signal is more or less than an expected calibrated range.			
Possible Causes:	• IMTV signal circuit open, shorted to PWR GND or SIG RTN • Damaged IMTV actuator			
Diagnostic Aids:	An IMTVM PID reading may indicate a fault if available.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HU41.		

P0663 - Intake Manifold Tuning Valve (IMTV) Control Circuit Open - Bank 2

Description:	The IMTV system is monitored for failure during continuous, key on, engine off (KOEO), or key on, engine running (KOER) self-tests. The test fails when the signal is more or less than an expected calibrated range.			
Possible Causes:	• IMTV signal circuit open, shorted to PWR GND or SIG RTN • Damaged IMTV actuator			
Diagnostic Aids:	An IMTVM PID reading may indicate a fault if available.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HU57.		

P0703 - Brake Switch Circuit Input Malfunction

Description:	Indicates the powertrain control module (PCM) did not receive a brake pedal position (BPP) input.
Possible Causes:	• Open or short in the BPP circuit • Open or short in the stoplamp circuits

	• Damage in module(s) connected to the BPP circuit (rear electronic module [REM] for Freestar/Monterey, LS, and Thunderbird or lighting control module [LCM] for Town Car). • Damaged brake switch • Misadjusted brake switch			
Diagnostic Aids:	Check for proper function of the stoplamps. Using a diagnostic tool, check the BPP PID. The stoplamps and PID should toggle on and off with brake pedal activation.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Freestar/Monterey, Town Car		Verify the brake pedal was applied and released during the key on engine running (KOER) self-test. For additional concerns, refer to the Workshop Manual Section 417-01, Exterior Lighting.		
Expedition, Navigator		Verify the brake pedal was applied and released during the key on engine running (KOER) self-test. For additional concerns, refer to the Workshop Manual Section 206-09, Anti-Lock Control.		
All others		GO to FD2.	GO to FD1.	GO to FD2.

P0704 - Clutch Pedal Position (CPP) Switch Malfunction

Description:	When the clutch pedal is applied the voltage goes to low. If the powertrain control module (PCM) does not see this change from high to low the DTC is set.			
Possible Causes:	• CPP circuit short to PWR • Damaged CPP switch • CPP circuit open in the SIGRTN			
Diagnostic Aids:	When the clutch pedal is applied and then released, the CPP switch voltage should cycle.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to TA1.	—	GO to TA1.

P0705 -

Description:				
Possible Causes:				
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 307-01, Automatic Transmission.		

P0707 -

Description:				
Possible Causes:				
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 307-01, Automatic Transmission.		

P0708 -

Description:				
Possible Causes:				
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 307-01, Automatic Transmission.		

P071x -

Description:				
Possible Causes:				
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 307-01, Automatic Transmission.		

P0720 - Output Shaft Speed (OSS) Sensor Circuit

Description:	The OSS sensor inputs a signal to the powertrain control module (PCM) based on the speed of the output shaft of the transmission. The PCM compares this signal with the signal of the vehicle speed sensor (VSS) or transfer case speed sensor (TCSS) and determines the correct tire size and axle gear ratio.			
Possible Causes:	• OSS sensor circuit short to GND • OSS sensor circuit short to PWR • OSS sensor circuit open • Damaged OSS sensor			
Diagnostic Aids:	Verify the sensor signal output varies with the vehicle speed.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Manual transmission		—	—	GO to TJ1.
All others		Refer to the Workshop Manual Section 307-01, Automatic Transmission.		

P0721 - Output Shaft Speed (OSS) Sensor Circuit Range/Performance

Description:	The OSS sensor signal is very sensitive to noise. This noise distorts the input to the powertrain control module (PCM).			
Possible Causes:	• Wiring misrouted • Aftermarket add-on • Wiring damaged • Wiring insulation wear			
Diagnostic Aids:	Check the routing of the harness. Check the wiring and the connector for damage.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Manual transmission		—	—	GO to TJ1.
All others		Refer to the Workshop Manual Section 307-01, Automatic Transmission.		

P0722 - Output Shaft Speed (OSS) Sensor Circuit No Signal

Description:	The OSS sensor failed to provide a signal to the PCM upon initial movement of vehicle.
Possible Causes:	• Damaged OSS connector • Damaged OSS sensor, or not installed properly • Harness intermittently shorted or open

Diagnostic Aids:	Check the wiring, connector, and sensor for damage.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Manual transmission		—	—	GO to TJ1.
All others		Refer to the Workshop Manual Section 307-01, Automatic Transmission.		

P0723 - Output Shaft Speed (OSS) Sensor Circuit Intermittent

Description:	The OSS sensor signal to the PCM is irregular or interrupted.			
Possible Causes:	• Harness connector not properly seated • Harness intermittently shorted or open • Harness connector damaged • OSS sensor damaged, or not installed properly			
Diagnostic Aids:	Verify harness and connector integrity. Verify proper installation of the OSS sensor.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Manual transmission		—	—	GO to TJ1.
All others		Refer to the Workshop Manual Section 307-01, Automatic Transmission.		

P073x -

Description:				
Possible Causes:				
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 307-01, Automatic Transmission.		

P074x -

Description:				
Possible Causes:				
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 307-01, Automatic Transmission.		

P075x -

Description:				
Possible Causes:				
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 307-01, Automatic Transmission.		

P076x -

Description:				
Possible Causes:				
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 307-01, Automatic Transmission.		

P077x -

Description:				
Possible Causes:				
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 307-01, Automatic Transmission.		

P078x -

Description:				
Possible Causes:				
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 307-01, Automatic Transmission.		

P079x -

Description:				
Possible Causes:				
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 307-01, Automatic Transmission.		

P0815 -

Description:				
Possible Causes:				
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 307-01, Automatic Transmission.		

P0830 - Clutch Pedal Switch A Circuit

Description:	The powertrain control module (PCM) monitors the clutch pedal position bottom of travel (CPP-BT) switch only during the calibrated engine speed range (cranking speed range). This DTC is set when the CPP-BT switch does not indicate that the clutch is disengaged (clutch pedal pressed) when the engine is cranked.			
Possible Causes:	• Damaged CPP-BT switch. • Damaged CPP-BT harness. • Open PWRGND circuit to the CPP-BT switch. • Vehicle push-started with the clutch engaged (clutch pedal released) • Aftermarket remote starting device			
Diagnostic Aids:	Verify that the vehicle was not push-started with the clutch engaged. Check for aftermarket equipment such as remote starting devices which may bypass the clutch pedal position switch when cranking the engine.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
F-150 4.2L		—	—	GO to TA1.
All others		Refer to the Workshop Manual Section 303-06, Starting System to diagnose the symptom no start, no crank.		

P0833 - Clutch Pedal Switch B Circuit

Description:	The powertrain control module (PCM) monitors the clutch pedal position top of travel (CPP-TT) switch only during the calibrated engine speed range (cranking speed range). This DTC is set when the CPP-TT does not indicate that the clutch is disengaged (clutch pedal pressed) when the engine is cranked.			
Possible Causes:	• Damaged CPP-TT switch. • Damaged CPP-TT harness. • Open PWRGND circuit to the CPP-TT switch. • Vehicle push-started with the clutch engaged (clutch pedal released) • Aftermarket remote starting device			
Diagnostic Aids:	Verify that the vehicle was not push-started with the clutch engaged. Check for aftermarket equipment such as remote starting devices which may bypass the clutch pedal position switch when cranking the engine.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 310-03, Speed Control.		

P0840 -

Description:	
Possible Causes:	
Diagnostic Aids:	

Application		Key On Engine Off	Key On Engine Running	Continuous Memory
All		Refer to the Workshop Manual Section 307-01, Automatic Transmission.		

P09xx -

Description:				
Possible Causes:				
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 307-01, Automatic Transmission.		

P1000 - On Board Diagnostic (OBD) System Readiness Test Not Complete

Description:	The OBD monitors are carried out during the OBD drive cycle. P1000 is stored in continuous memory if any of the OBD monitors do not carry out their full diagnostic check.
Possible Causes:	• The vehicle is new from the factory • Battery or powertrain control module (PCM) had recently been disconnected • An OBD monitor failure occurred before completion of an OBD drive cycle • PCM DTCs have recently been cleared with a diagnostic tool • PTO circuit is shorted to VPWR or B+ or PTO is on during testing
Diagnostic Aids:	The P1000, inspection/maintenance (I/M) readiness function is part of the PCM strategy. A battery disconnection or clearing codes using a diagnostic tool results in the various I/M readiness bits being set to a not-ready condition. As each non-continuous OBD monitor completes a full diagnostic check, the I/M readiness bit associated with that monitor is set to a ready condition. This may take 1 or 2 drive cycles based on whether malfunctions are detected or not. The readiness bits for comprehensive component monitoring, misfire, and fuel system monitoring are considered complete once all the non-continuous monitors have been evaluated. Because the EVAP system monitor requires certain ambient conditions to run, special logic can bypass the monitor for the purpose of clearing the EVAP system I/M readiness bit, due to continued presence of these extreme conditions. Note: P1000 does not need to be cleared from the PCM except to pass an I/M test.

Application		Key On Engine Off	Key On Engine Running	Continuous Memory
All		See Note 1	See Note 1	GO to QC1.

P1001 - KOER Not Able To Complete, KOER Aborted

Description:	This non-malfunction indicator lamp (MIL) code is set when the key on/engine running (KOER) self-test does not complete in the time intended.			
Possible Causes:	• Incorrect self-test procedure • Unexpected response from the self-test monitors • RPM out of specification			
Diagnostic Aids:	Run the self-test following QT1 in Section 3, Symptom Charts, STEP 1: PCM Quick Test.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Description, Possible Causes and Diagnostic Aids for the DTC.		

P1100 - Mass Air Flow (MAF) Sensor Circuit Intermittent

Description:	The MAF sensor circuit is monitored by the powertrain control module (PCM) for sudden voltage (or air flow) input change through the comprehensive component monitor (CCM). If during the last 40 warm-up cycles in key on, engine running (KOER) the PCM detects a voltage (or air flow) change beyond the minimum or maximum calibrated limit, a continuous memory DTC is stored.			
Possible Causes:	• Poor continuity through the MAF sensor connectors • Poor continuity through the MAF sensor harness • Intermittent open or short inside the MAF sensor.			
Diagnostic Aids:	While accessing the MAF V PID on the diagnostic tool, lightly tap on the MAF sensor or wiggle the MAF sensor connector and harness. If the MAF V PID suddenly changes below 0.23 volt or above 4.60 volts, an intermittent fault is indicated.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DC18.		

P1101 - Mass Air Flow (MAF) Sensor Out of Self-Test Range

Description:	The MAF sensor circuit is monitored by the powertrain control module (PCM) for an out of range air flow (or voltage) input. If, during key on engine off (KOEO), the air flow voltage signal is greater than 0.27 volt the test fails. Likewise, if, during key on, engine running (KOER), the air flow voltage signal is not within 0.46 volt to 2.44 volts, the test fails.
Possible Causes:	• Low battery charge • MAF sensor partially connected • MAF sensor contamination • PWR GND open to the MAF sensor • MAF RTN circuit open to PCM • Damaged MAF sensor

Diagnostic Aids:	A MAF V PID reading greater than 0.27 volt (KOEO) or a MAF V PID reading outside the 0.46 volt to 2.44 volts range (KOER) indicates a hard fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DC6.	GO to DC1.	—

P1112 - Intake Air Temperature (IAT) Circuit Intermittent

Description:	Indicates the IAT sensor signal was intermittent during the comprehensive component monitor.			
Possible Causes:	• Damaged harness • Damaged sensor • Damaged harness connector			
Diagnostic Aids:	Monitor the IAT on a diagnostic tool. Look for sudden changes in the reading when the harness is wiggled or the sensor is tapped.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to DA8.

P1114 - Intake Air Temperature 2 (IAT2) Circuit Low Input

Description:	Indicates the sensor signal is less than the self-test minimum. The IAT2 sensor minimum is 0.2 volt.			
Possible Causes:	• Grounded circuit in the harness • Improper harness connection • Damaged sensor			
Diagnostic Aids:	Monitor the IAT2 PID. A typical IAT2 temperature should be greater than the IAT1 temperature. Refer to Section 6 Reference Values for ranges.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DU5.		

P1115 - Intake Air Temperature 2 (IAT2) Circuit High Input

Description:	Indicates the sensor signal is greater than the self-test maximum. The IAT2 sensor maximum is 4.6 volts.

Possible Causes:	• Open circuit in the harness • Sensor signal short to voltage • Improper harness connection • Damaged sensor			
Diagnostic Aids:	Monitor the IAT2 PID. A typical IAT2 temperature should be greater than the IAT1 temperature. Refer to Section 6 Reference Values for ranges.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DU1.		

P1116 - Engine Coolant Temperature (ECT) Sensor Out of Self-Test Range

Description:	Indicates the ECT sensor is out of self-test range. The correct range is 0.3 to 3.7 volts.			
Possible Causes:	• Overheating condition • Malfunctioning thermostat • Damaged ECT sensor • Low engine coolant • Damaged harness connector			
Diagnostic Aids:	The ECT must be greater than 10°C (50°F) to pass the key on, engine off (KOEO) self-test and greater than 82°C (180°F) to pass the key on engine running (KOER) self-test.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Vehicles with only a cylinder head temperature (CHT) sensor		GO to DL1.	GO to DL1.	—
Vehicles with only an engine coolant temperature (ECT) sensor		GO to DX1.	GO to DX1.	—
Vehicles with both a CHT and an ECT sensor		GO to DX1.	GO to DX1.	—

P1117 - Engine Coolant Temperature (ECT) Sensor Intermittent

Description:	Indicates the ECT circuit became intermittently open or shorted while the engine was running. Note: On vehicles that are not equipped with an ECT sensor, the cylinder head temperature (CHT) sensor can set this DTC.
Possible Causes:	• Damaged harness • Damaged sensor • Damaged harness connector • Low engine coolant

Diagnostic Aids:	Monitor the ECT on a diagnostic tool. Look for sudden changes in the reading when the harness is wiggled or the sensor is tapped.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Vehicles with only a cylinder head temperature (CHT) sensor		—	—	GO to DL14.
Vehicles with only an engine coolant temperature (ECT) sensor		—	—	GO to DX15.
Vehicles with both a CHT and an ECT sensor		—	—	GO to DX15.

P1120 - Throttle Position (TP) Sensor Out of Range Low (RATCH Too Low)

Description:	The TP sensor circuit is monitored by the powertrain control module (PCM) for a low TP rotation angle (or voltage) input below the closed throttle position through the comprehensive component monitor (CCM). If during key on, engine off (KOEO) or key on, engine running (KOER), the TP rotation angle (or voltage) remains within the calibrated self-test range but falls between 3.42 and 9.85% (0.17 and 0.49 volt), the test fails.			
Possible Causes:	• TP circuit with frayed wires • Corrosion on the TP circuit connectors • VREF open to TP sensor • VREF short to SIG RTN • TP sensor loose pins			
Diagnostic Aids:	A TP PID (TP V PID) between 3.42 and 9.85% (0.17 and 0.49 volt) in KOEO, continuous memory, or KOER indicates a concern is present.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DH3.		

P1121 - Throttle Position (TP) Sensor Inconsistent with the Mass Air Flow (MAF) Sensor

Description:	The powertrain control module (PCM) monitors a vehicle operation rationality check by comparing sensed throttle position to mass air flow readings. If, during a key on engine running (KOER) self-test, the comparison of the TP sensor and MAF sensor readings are not consistent with the calibrated load values, the test fails and a DTC is stored in continuous memory.
Possible Causes:	• Air leak between the MAF sensor and throttle body • TP sensor not seated properly • Damaged TP sensor • Damaged MAF sensor

Diagnostic Aids:	Drive the vehicle and exercise the throttle and the TP sensor in all gears. A TP PID (TP V PID) less than 4.82% (0.24 volt) with a LOAD PID greater than 55%, or a TP PID (TP V PID) greater than 49.05% (2.44 volts) with a LOAD PID less than 30%, indicates a hard fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to DH16.	GO to DH16.

P1124 - Throttle Position (TP) Sensor Out of Self-Test Range

Description:	The TP sensor circuit is monitored by the powertrain control module (PCM) for an out of range TP rotation angle (or voltage) input. If during key on, engine off (KOEO) or key on, engine running (KOER) the TP rotation angle (or voltage) reading is less than 13.27% (0.66 volt) or greater than 23.52% (1.17 volts), the test fails.			
Possible Causes:	• Binding or bent throttle linkage • TP sensor not seated properly • Throttle plate below closed throttle position • Throttle plate/screw misadjusted • Damaged TP sensor • Damaged PCM			
Diagnostic Aids:	The TP PID (TP V PID) reading not between 13.27 and 23.52% (0.66 and 1.17 volts) in KOEO or KOER indicates a hard fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DH1.	GO to DH1.	—

P1125 - Throttle Position (TP) Sensor Intermittent

Description:	The TP sensor circuit is monitored by the powertrain control module (PCM) for sudden TP rotation angle (or voltage) input change through the comprehensive component monitor (CCM). If during the last 80 warm-up cycles in key on, engine running (KOER) the PCM detects TP rotation angle (or voltage) changes beyond the minimum or maximum calibrated limit, a continuous DTC is stored.			
Possible Causes:	• Poor continuity through the TP sensor connectors • Poor continuity through the TP harness • Intermittent open or short inside the TP sensor			
Diagnostic Aids:	While accessing the TP V PID on the diagnostic tool, lightly tap on the TP sensor or wiggle the TP sensor connector and harness. If the TP V PID suddenly changes below 0.49 volt or above 4.65 volts, an intermittent fault is indicated.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to DH20.

P1127 - Exhaust Not Warm Enough, Downstream Sensor Not Tested

Description:	The heated oxygen sensor (HO2S) monitor uses an exhaust temperature model to determine when the HO2S heaters are cycled ON. The test fails when the inferred exhaust temperature is below a minimum calibrated value.			
Possible Causes:	• Engine not operating long enough prior to carrying out the key on, engine running (KOER) self-test • Exhaust system too cool			
Diagnostic Aids:	Monitor the HO2S heater PIDs to determine their ON/OFF state. DTC P1127 is present if the exhaust is not hot.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to H65.	—

P1128 - Upstream Oxygen Sensors Swapped from Bank to Bank (HO2S-11-21)

Description:	The heated oxygen sensor (HO2S) monitor determines if the HO2S signal response for a fuel shift corresponds to the correct engine bank. The test fails when a response from the HO2S being tested is not indicated.			
Possible Causes:	• Crossed HO2S harness connectors (upstream) • Crossed HO2S wiring at the harness connectors (upstream) • Crossed HO2S wiring at the PCM harness connectors (upstream)			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to H66.	—

P1129 - Downstream Oxygen Sensors Swapped from Bank to Bank (HO2S-12-22)

Description:	The heated oxygen sensor (HO2S) monitor determines if the HO2S signal response for a fuel shift corresponds to the correct engine bank. The test fails when a response from the HO2S being tested is not indicated.
Possible Causes:	• Crossed HO2S harness connectors (downstream)

	• Crossed HO2S wiring at the harness connectors (downstream) • Crossed HO2S wiring at the PCM harness connectors (downstream)
Diagnostic Aids:	

Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to H66.	—

P1130 - Lack of HO2S-11 Switch, Fuel Trim at Limit

Description:	The heated oxygen sensor (HO2S) is monitored for switching. The test fails when the HO2S does not switch due to circuit or fuel at or exceeding a calibrated limit.
Possible Causes:	Electrical: • Short to VPWR in the harness or HO2S • Water in the harness connector • Open/shorted HO2S circuit • Corrosion or poor mating terminals and wiring • Damaged HO2S • Damaged powertrain control module (PCM) Fuel System: • Excessive fuel pressure • Leaking/contaminated fuel injectors • Leaking fuel pressure regulator • Low fuel pressure or running out of fuel • Vapor recovery system Induction System: • Air leaks after the mass air flow (MAF) sensor • Vacuum leaks • PCV system • Improperly seated engine oil dipstick EGR System: • Leaking gasket • Stuck EGR valve • Leaking diaphragm or EVR Base Engine: • Oil overfill • Camshaft timing

	• Cylinder compression • Exhaust leaks before or near the HO2S			
Diagnostic Aids:	A fuel control HO2S PID switching across 0.45 volt from 0.2 to 0.9 volt indicates a normal switching HO2S.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to H16.

P1131 - Lack of HO2S-11 Switch, Sensor Indicates Lean

Description:	A heated oxygen sensor (HO2S) indicating lean at the end of a test is trying to correct for an over-rich condition. The test fails when the fuel control system no longer detects switching for a calibrated amount of time.			
Possible Causes:	See the possible causes for DTC P1130.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to H16.	GO to H16.

P1132 - Lack of HO2S-11 Switch, Sensor Indicates Rich

Description:	A heated oxygen sensor (HO2S) indicating rich at the end of a test is trying to correct for an over-lean condition. The test fails when the fuel control system no longer detects switching for a calibrated amount of time.			
Possible Causes:	See the possible causes for DTC P1130.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to H21.		

P1137 - Lack of HO2S-12 Switch, Sensor Indicates Lean

Description:	The downstream heated oxygen sensor (HO2S) is forced rich and lean and monitored by the powertrain control module (PCM). The test fails if the PCM does not detect the output of the HO2S in a calibrated amount of time.			
Possible Causes:	• Pinched, shorted, and corroded wiring and pins • Crossed sensor wires • Exhaust leaks • Contaminated or damaged sensor			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to H55.	—

P1138 - Lack of HO2S-12 Switch, Sensor Indicates Rich

Description:	The downstream heated oxygen sensor (HO2S) is forced rich and lean and monitored by the powertrain control module (PCM). The test fails if the PCM does not detect the output of the HO2S in a calibrated amount of time.			
Possible Causes:	• Pinched, shorted, and corroded wiring and pins • Crossed sensor wires • Exhaust leaks • Contaminated or damaged sensor			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to H55.	—

P1150 - Lack of HO2S-21 Switch, Fuel Trim at Limit

Description:	See the description for DTC P1130.			
Possible Causes:	See the possible causes for DTC P1130.			
Diagnostic Aids:	See the diagnostic aids for DTC P1130.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to H16.

P1151 - Lack of HO2S-21 Switch, Sensor Indicates Lean

Description:	See the description for DTC P1131.			
Possible Causes:	See the possible causes for DTC P1130.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to H16.	GO to H16.

P1152 - Lack of HO2S-21 Switch, Sensor Indicates Rich

Description:	See the description for DTC P1132.			
Possible Causes:	See the possible causes for DTC P1130.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to H21.		

P1156 - Fuel Select Switch Circuit

Description:	This DTC is set when the operating mode reported by the fuel injector control module (FICM) does not agree with the operating mode requested by the powertrain control module (PCM).			
Possible Causes:	• Open or shorted fuel select switch (FSSW) circuit • Damaged FICM			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to HL19.

P1157 - Lack of HO2S-22 Switch, Sensor Indicates Lean

Description:	The downstream heated oxygen sensor (HO2S) is forced rich and lean and monitored by the powertrain control module (PCM). The test fails if the PCM does not detect the output of the HO2S in a calibrated amount of time.			
Possible Causes:	• Pinched, shorted, and corroded wiring and pins • Crossed sensor wires • Exhaust leaks • Contaminated or damaged sensor			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to H55.	—

P1158 - Lack of HO2S-22 Switch, Sensor Indicates Rich

Description:	The downstream heated oxygen sensor (HO2S) is forced rich and lean and monitored by the powertrain control module (PCM). The test fails if the PCM does not detect the output of the HO2S in a calibrated amount of time.			
Possible Causes:	• Pinched, shorted, and corroded wiring and pins • Crossed sensor wires • Exhaust leaks • Contaminated or damaged sensor			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to H55.	—

P115E - Throttle Actuator Control (TAC) Throttle Body Air Flow Trim at Max Limit

Description:	During idle, the powertrain control module (PCM) monitors the throttle angle and air flow. If the air flow is determined to be less than expected, the PCM adjusts the throttle angle to compensate. The air flow reduction is typically the result of engine deposit buildup around the throttle plate. This DTC indicates the PCM has reached the maximum allowed compensation and is no longer able to compensate for the buildup.

Possible Causes:	• Engine deposits around the throttle plate			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Install a new ETB.		

P1184 - Engine Oil Temperature (EOT) Sensor Out of Self-Test Range

Description:	Indicates the EOT signal was out of self-test range.			
Possible Causes:	• Damaged harness • Damaged sensor • Damaged harness connector			
Diagnostic Aids:	The engine should be at operating temperature before running the self-test.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DY1.		

P1229 - Supercharger Intercooler Pump (ICP) Not Operating

Description:	The ICP DTC sets when the powertrain control module (PCM) calls for the pump to operate but no current is detected.			
Possible Causes:	• Pump motor open circuit. • Pump relay coil open • Open circuit between the relay and pump • Pump motor shorted • Open circuit between the PCM and the relay • Poor pump ground connection			
Diagnostic Aids:	Check for voltage at the relay. Check the fuse in the voltage circuit. Check the ground connection of the pump motor. The PID reading is on/off.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to KP1.		

P1233 - Fuel Pump Driver Module Disabled or Off Line

Description:	LS and Thunderbird: • This DTC indicates the powertrain control module (PCM) is not receiving the fuel pump information on the communication link from the rear electronics module (REM). Refer to the Workshop Manual Section 419-10, Multifunction Electronic Modules for REM self-test/diagnostics. All Others: • The PCM monitors the fuel pump monitor (FPM) circuit from the fuel pump driver module (FPDM). With the key on, the FPDM continuously sends a duty cycle signal to the PCM through the FPM circuit. The test fails if the PCM stops receiving the duty cycle signal.
Possible Causes:	• Inertia fuel shutoff (IFS) switch needs to be reset • Open FPDM ground circuit • Open circuit to FPDM PWR RLY • Open FPDM PWR circuit • Open or shorted FPM circuit (engine should start) • Damaged IFS switch • Damaged FPDM PWR RLY • Damaged FPDM
Diagnostic Aids:	The PCM expects to see one of the following duty cycle signals from the FPDM on the FPM circuit: 1) 50% (500 ms on, 500 ms off), all OK. 2) 25% (250 ms on, 750 ms off), FPDM did not receive a fuel pump (FP) duty cycle command from the PCM, or the duty cycle that was received was invalid. 3) 75% (750 ms ON, 250 OFF), the FPDM has detected a fault in the circuits between the FPDM and the fuel pump.

Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
LS, Thunderbird		Refer to the Workshop Manual Section 419-10, Multifunction Electronic Modules for rear electronics module (REM) diagnostics.		
All others		GO to KB1.		

P1234 - Fuel Pump Driver Module Disabled or Off Line

Description:	The powertrain control module (PCM) monitors the fuel pump monitor 2 (FPM2) circuit from the fuel pump driver module 2 (FPDM2). With the key on, the FPDM2 continuously sends a duty cycle signal to the PCM through the FPM2 circuit. The test fails if the PCM stops receiving the duty cycle signal.
Possible Causes:	• Inertia fuel shutoff (IFS) switch needs to be reset • Open FPDM2 ground circuit • Open circuit to FPDM2 PWR RLY • Open FPDM2 PWR circuit • Open or shorted FPM2 circuit (engine should start) • Damaged IFS switch

	• Damaged FPDM2 PWR RLY • Damaged FPDM2
Diagnostic Aids:	The PCM expects to see one of the following duty cycle signals from the FPDM2 on the FPM2 circuit: 1) 50% (500 ms on, 500 ms off), all OK. 2) 25% (250 ms on, 750 ms off), the FPDM2 did not receive a fuel pump (FP) duty cycle command from the PCM, or the duty cycle that was received was invalid. 3) 75% (750 ms on, 250 off), the FPDM2 has detected a concern in the circuits between the FPDM2 and the fuel pump.

Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to KB55.		

P1235 - Fuel Pump Control Out Of Range

Description:	Note: For LS and Thunderbird, the FPDM functions are incorporated in the rear electronics module (REM). Also, the REM does not use an FPM circuit. Diagnostic information is sent on the communication link. This DTC indicates the fuel pump driver module (FPDM) detected an invalid or missing fuel pump (FP) command signal from the powertrain control module (PCM). The FPDM sends a message to the PCM through the fuel pump monitor (FPM) circuit, indicating this failure was detected. The PCM sets the DTC when the message is received.
Possible Causes:	• FP circuit open or shorted • Electronic throttle control (ETC) system concern. Check for ETC DTCs • Damaged FPDM • Damaged PCM
Diagnostic Aids:	The FPDM sends a 25% duty cycle (250 ms on, 750 ms off) through the FPM circuit to the PCM while the concern is being detected by the FPDM. If the concern is no longer detected, the FPDM returns to sending an all OK (50% duty cycle) message to the PCM. For ETC applications, check if ETC DTC P2105 is present. An ETC system concern could cause P1235, and should be diagnosed first.

Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to KB19.		

P1236 - Fuel Pump Control Out Of Range

Description:	This DTC indicates the fuel pump driver module 2 (FPDM2) detected an invalid or missing fuel pump (FP) circuit signal from the powertrain control module (PCM). The FPDM2 sends a message to the PCM through the fuel pump monitor (FPM2) circuit, indicating this concern is detected. The PCM sets the DTC when the message is received.
Possible Causes:	• FP circuit open or shorted • Damaged FPDM2 • Damaged PCM

Diagnostic Aids:	The FPDM2 sends a 25% duty cycle (250 ms on, 750 ms off) through the FPM2 circuit to the PCM while the concern is being detected by the FPDM2. If the concern is no longer detected, the FPDM2 returns to sending an all OK (50% duty cycle) message to the PCM.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to KB67.		

P1237 - Fuel Pump Secondary Circuit Malfunction

Description:	Note: For LS and Thunderbird, the FPDM functions are incorporated in the rear electronics module (REM). Also, the REM does not use an FPM circuit. Diagnostic information is sent on the communication link. This DTC indicates that the fuel pump driver module (FPDM) detected a fuel pump secondary circuit concern. The FPDM sends a message to the powertrain control module (PCM) through the fuel pump monitor (FPM) circuit indicating this concern was detected. The PCM sets the DTC when the message is received.			
Possible Causes:	• Open or shorted FP PWR circuit • Open FP RTN circuit to FPDM • Open or shorted circuit in the fuel pump • Locked fuel pump rotor • Damaged FPDM • For LS and Thunderbird, circuits associated with the fuel pump relay			
Diagnostic Aids:	The FPDM sends a 75% duty cycle (750 ms on, 250 ms off) through the FPM circuit to the PCM while the concern is being detected by the FPDM. If the concern is no longer detected, the PCM returns to sending an all OK (50% duty cycle) message to the PCM. The FPDM controls pump speed by supplying a variable ground on the FP RTN circuit.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to KB31.		

P1238 - Fuel Pump Secondary Circuit Malfunction

Description:	This DTC indicates the fuel pump driver module (FPDM2) detected a fuel pump secondary circuit concern. The FPDM2 sends a message to the powertrain control module (PCM) through the fuel pump monitor (FPM2) circuit, indicating this concern was detected. The PCM sets the DTC when the message is received.
Possible Causes:	• Open or shorted FP2PWR circuit • Open FP2RTN circuit to FPDM2 • Open or shorted circuit in the fuel pump • Locked fuel pump rotor • Damaged FPDM2

Diagnostic Aids:	The FPDM2 sends a 75% duty cycle (750 ms on, 250 ms off) through the FPM2 circuit to the PCM while the concern is being detected by the FPDM2. If the concern is no longer detected, the PCM returns to sending an all OK (50% duty cycle) message to the PCM. The FPDM2 controls pump speed by supplying a variable ground on the FP2RTN circuit.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to KB73.		

P1244 - Generator Load Input High

Description:	The powertrain control module (PCM) monitors generator load from the generator/regulator in the form of frequency. The fault indicates the input is lower than the load should be in normal operation. The load input could be high when a battery short to ground exists.			
Possible Causes:	• GENLI circuit short to B+ • GENRC circuit short to B+ • B+ open prior to start-up • Open GENRC prior to start-up • Open ILC prior to start-up • Damaged PCM			
Diagnostic Aids:	Verify the battery voltage is 14.5 volts. Verify the generator/regulator has the correct part number.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HY1.		

P1245 - Generator Load Input Low

Description:	The powertrain control module (PCM) monitors generator load from the generator/regulator in the form of frequency. The fault indicates the input is lower than the load should be in normal operation. The load input could be low when no generator output exists.
Possible Causes:	• GENRC circuit short to GND • GENLI circuit short to GND • Open B+ wire during operation • Low system voltage • Broken generator belt • Damaged generator/regulator assembly • Damaged PCM
Diagnostic Aids:	Verify the battery voltage is 14.5 volts.

	Verify the generator/regulator has the correct part number.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HY1.		

P1246 - Generator Load Input Failed

Description:	The powertrain control module (PCM) monitors the generator load from the generator/regulator in the form of frequency. The frequency range is determined by the temperature of the voltage regulator, where 97% indicates a full load, and less than 6% indicates no load.			
Possible Causes:	• GENLI circuit shorted to PWR or GND • GENLI circuit open • GENRC circuit shorted to PWR or GND • GENRC circuit open • ILC circuit shorted to PWR or GND • ILC circuit open • Battery-sense circuit open • Generator drive mechanism • Damaged generator/regulator assembly • Damaged PCM			
Diagnostic Aids:	Verify the battery voltage is 14.5 volts. Verify the generator/regulator has the correct part number.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HY1.		

P1260 - Theft Detected - Vehicle Immobilized

Description:	Indicates the passive anti-theft system (PATS) determined a theft condition existed and the engine is disabled. This DTC is a good indicator to check the PATS for DTCs.			
Possible Causes:	• Previous theft condition • Anti-theft system failure			
Diagnostic Aids:	Theft indicator flashing rapidly or on solid when ignition switch is in the ON position. Check anti-theft system for DTCs. Typical vehicle symptoms are: start/stall or crank/no start. Note: No crank symptom only on vehicles equipped with PATS starter disable feature.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to QD1.

P1261 - Cylinder 1 High to Low Side Short

Description:	This DTC is set when a fault is detected by the fuel injector control module (FICM) in the secondary (rearward) fuel injector circuit.			
Possible Causes:	• Injector circuit is open • Injector circuit is shorted to GND • Damaged fuel injector • Damaged FICM			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL8.		

P1262 - Cylinder 2 High to Low Side Short

Description:	See the description for DTC P1261.			
Possible Causes:	See the possible causes for DTC P1261.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL8.		

P1263 - Cylinder 3 High to Low Side Short

Description:	See the description for DTC P1261.			
Possible Causes:	See the possible causes for DTC P1261.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL8.		

P1264 - Cylinder 4 High to Low Side Short

Description:	See the description for DTC P1261.			
Possible Causes:	See the possible causes for DTC P1261.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL8.		

P1265 - Cylinder 5 High to Low Side Short

Description:	See the description for DTC P1261.			
Possible Causes:	See the possible causes for DTC P1261.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL8.		

P1266 - Cylinder 6 High to Low Side Short

Description:	See the description for DTC P1261.			
Possible Causes:	See the possible causes for DTC P1261.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL8.		

P1267 - Cylinder 7 High to Low Side Short

Description:	See the description for DTC P1261.
Possible Causes:	See the possible causes for DTC P1261.

Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL8.		

P1268 - Cylinder 8 High to Low Side Short

Description:	See the description for DTC P1261.			
Possible Causes:	See the possible causes for DTC P1261.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL8.		

P1270 - Engine RPM or Vehicle Speed Limiter

Description:	Indicates the vehicle has been operated in a manner which caused the engine or vehicle to exceed a calibration limit. The engine RPM and vehicle speed are continuously monitored and evaluated by the powertrain control module (PCM). The DTC is set when the RPM or vehicle speed falls out of a calibrated range. For additional information on the engine RPM/vehicle speed limiter, refer to Section 1, Powertrain Control Software.			
Possible Causes:	• Wheel slippage (water, ice, mud, and snow) • Excessive engine RPM in NEUTRAL or operated in the wrong transmission gear • Vehicle driven at a high rate of speed			
Diagnostic Aids:	The DTC indicates the vehicle was operated in a manner which caused the engine RPM or vehicle speed to exceed a calibrated limit.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to ND1.

P1271 - Cylinder 1 High to Low Side Open

Description:	This DTC is set when a fault is detected by the fuel injector control module (FICM) in the secondary (rearward) fuel injector circuit.
Possible Causes:	• Injector circuit is shorted to VPWR

	• Damaged fuel injector • Damaged FICM			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL8.		

P1272 - Cylinder 2 High to Low Side Open

Description:	See the description for DTC P1271.			
Possible Causes:	See the possible causes for DTC P1271.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL8.		

P1273 - Cylinder 3 High to Low Side Open

Description:	See the description for DTC P1271.			
Possible Causes:	See the possible causes for DTC P1271.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL8.		

P1274 - Cylinder 4 High to Low Side Open

Description:	See the description for DTC P1271.			
Possible Causes:	See the possible causes for DTC P1271.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL8.		

P1275 - Cylinder 5 High to Low Side Open

Description:	See the description for DTC P1271.			
Possible Causes:	See the possible causes for DTC P1271.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL8.		

P1276 - Cylinder 6 High to Low Side Open

Description:	See the description for DTC P1271.			
Possible Causes:	See the possible causes for DTC P1271.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL8.		

P1277 - Cylinder 7 High to Low Side Open

Description:	See the description for DTC P1271.			
Possible Causes:	See the possible causes for DTC P1271.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL8.		

P1278 - Cylinder 8 High to Low Side Open

Description:	See the description for DTC P1271.

Possible Causes:	See the possible causes for DTC P1271.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HL8.		

P1285 - Cylinder Head Over Temperature

Description:	Indicates an engine overheat condition was sensed by the cylinder head temperature (CHT) sensor.			
Possible Causes:	• Low engine coolant level • Base engine concerns • Engine cooling system concerns • CHT sensor concern			
Diagnostic Aids:	On some applications when this fault occurs the engine temperature warning indicator will illuminate or force the temperature gauge to the full H (hot) zone. The warning indicator can be triggered by either grounding the engine temperature warning circuit when wired to the powertrain control module (PCM), or by sending a PCM network message to the instrument cluster.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DL17.		

P1288 - Cylinder Head Temperature (CHT) Sensor Out of Self-Test Range

Description:	Indicates the CHT sensor is out of self-test range. The engine is not at a normal operating temperature.			
Possible Causes:	• Cold engine • Engine overheating • Damaged harness connector • Damaged powertrain control module (PCM) • Low engine coolant level • Damaged CHT sensor			
Diagnostic Aids:	Bring the engine to operating temperature. If cold, repeat the self-test. If the engine overheats, check the cooling system.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DL1.		

P1289 - Cylinder Head Temperature (CHT) Sensor Circuit High Input

Description:	Indicates a CHT sensor circuit malfunction (open).			
Possible Causes:	• Open CHT sensor circuit • CHT sensor circuit short to PWR • Damaged CHT sensor • Improper harness connection • Damaged PCM			
Diagnostic Aids:	A CHT V PID reading of greater than 4.6 volts with key on engine off (KOEO), or during any engine operating mode, indicates a hard fault. Note: DTC P0118 may also be reported when this DTC is set. Either of these DTCs activate the MIL.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DL7.	GO to DL7.	GO to DL14.

P128A - Cylinder Head Temperature (CHT) Sensor Circuit Intermittent/Erratic

Description:	Indicates the CHT circuit became intermittently open or shorted while the engine was running.			
Possible Causes:	• Damaged harness • Damaged sensor • Damaged PCM • Damaged harness connector			
Diagnostic Aids:	Monitor the CHT on a diagnostic tool. Look for sudden changes in the reading when the harness is wiggled or the sensor is tapped.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to DL14.

P1290 - Cylinder Head Temperature (CHT) Sensor Circuit Low Input

Description:	Indicates a CHT sensor circuit malfunction (shorted).
Possible Causes:	• Grounded circuit in CHT harness • Damaged CHT sensor • Improper harness connection

Diagnostic Aids:	A CHT V PID reading of less than 0.2 volt with key on engine off (KOEO), or during any engine operating mode, indicates a hard fault. Note: DTC P0117 may also be reported when this DTC is set. Either of these DTCs activate the MIL.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DL7.	GO to DL7.	GO to DL14.

P1299 - Cylinder Head Over Temperature Protection Active

Description:	Indicates an engine overheat condition was detected by the cylinder head temperature (CHT) sensor. An FMEM strategy called fail-safe cooling was activated to cool the engine.			
Possible Causes:	• Engine cooling system concerns • Low engine coolant level • Base engine concerns			
Diagnostic Aids:	Refer to Section 1, Powertrain Control Software, for more information on the fail-safe cooling strategy and cylinder head temperature sensor.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DL20.		

P1309 - Misfire Monitor Disabled

Description:	When the misfire monitor is disabled, usually due to the input signal generated by the camshaft position (CMP) sensor, by sensing the passage of teeth from the CMP wheel.			
Possible Causes:	• CMP sensor • Damaged powertrain control module (PCM) • Damaged engine coolant temperature (ECT) sensor • Damaged mass air flow (MAF) sensor • Damaged crankshaft position sensor (CKP) sensor			
Diagnostic Aids:	Verify the CMP sensor is installed correctly and is not out of synchronization.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to HD30.

P1336 - Crankshaft Position (CKP) and/or Camshaft Position (CMP) Input Signal to the PCM Concerns

Description:	The input signal to the powertrain control module (PCM) from the CKP sensor and/or the CMP sensor is erratic.			
Possible Causes:	• Damaged PCM • Damaged CKP sensor • Damaged CMP sensor • Base engine concerns • Harness concerns			
Diagnostic Aids:	Check the harness for routing, alterations, improper shielding, or electrical interference from other improperly functioning systems.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to JD1.

P1380 - Variable Camshaft Timing (VCT) Solenoid A Circuit Malfunction (Bank 1)

Description:	The comprehensive component monitor (CCM) monitors the VCT circuit to the powertrain control module (PCM) for high and low voltage. If the voltage falls below a calibrated limit a calibrated amount of time during testing, the test fails.			
Possible Causes:	• Open or short in the VCT circuit • Open VPWR circuit • Open or short in the VCT solenoid valve			
Diagnostic Aids:	This DTC is a circuit check. Testing should include the harness and solenoid coil.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HK1.		

P1381 - Variable Camshaft Timing (VCT) Over-Advanced (Bank 1)

Description:	The comprehensive component monitor (CCM) monitors the VCT position for an over-advanced camshaft timing. The test fails when the camshaft timing exceeds a maximum calibrated value or remains in an advanced position.
Possible Causes:	• Camshaft timing improperly set • No oil flow to the VCT piston chamber • Low oil pressure • VCT solenoid valve stuck closed • Camshaft advance mechanism binding (VCT unit)

Diagnostic Aids:	This DTC is a functional check of the VCT unit. Diagnose any base engine concerns related to the engine oil pressure or engine timing. Refer to the Workshop Manual Section 303-00, Engine System.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to HK15.	GO to HK15.

P1383 - Variable Camshaft Timing (VCT) Over-Retarded (Bank 1)

Description:	The comprehensive component monitor (CCM) monitors the VCT position for over-retarded camshaft timing. The test fails when the camshaft timing exceeds a maximum calibrated value or remains in a retarded position.			
Possible Causes:	• Camshaft timing improperly set • Continuous oil flow to the VCT piston chamber • VCT solenoid valve stuck open • Camshaft advance mechanism binding (VCT unit)			
Diagnostic Aids:	This DTC is a functional check of the VCT unit. Diagnose any base engine concerns related to the engine oil pressure or engine timing. Refer to the Workshop Manual Section 303-00, Engine System.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to HK15.	GO to HK15.

P1385 - Variable Camshaft Timing (VCT) Solenoid A Circuit Malfunction (Bank 2)

Description:	The comprehensive component monitor (CCM) monitors the VCT circuit to the powertrain control module (PCM) for high and low voltage. If the voltage falls below a calibrated limit a calibrated amount of time during testing, the test fails.			
Possible Causes:	• Open or short in the VCT circuit • Open VPWR circuit • Open or short in the VCT solenoid valve			
Diagnostic Aids:	This DTC is a circuit check. Testing should include the harness and solenoid coil.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HK1.		

P1386 - Variable Camshaft Timing (VCT) Over-Advanced (Bank 2)

Description:	The comprehensive component monitor (CCM) monitors the VCT position for an over-advanced camshaft timing. The test fails when the camshaft timing exceeds a maximum calibrated value or remains in an advanced position.			
Possible Causes:	• Camshaft timing improperly set • No oil flow to the VCT piston chamber • Low oil pressure • VCT solenoid valve stuck closed • Camshaft advance mechanism binding (VCT unit)			
Diagnostic Aids:	This DTC is a functional check of the VCT unit. Diagnose any base engine concerns related to the engine oil pressure or engine timing. Refer to the Workshop Manual Section 303-00, Engine System.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to HK15.	GO to HK15.

P1388 - Variable Camshaft Timing (VCT) Over-Retarded (Bank 2)

Description:	The comprehensive component monitor (CCM) monitors the VCT position for over-retarded camshaft timing. The test fails when the camshaft timing exceeds a maximum calibrated value or remains in a retarded position.			
Possible Causes:	• Camshaft timing improperly set • Continuous oil flow to the VCT piston chamber • VCT solenoid valve stuck open • Camshaft advance mechanism binding (VCT unit)			
Diagnostic Aids:	This DTC is a functional check of the VCT unit. Diagnose any base engine concerns related to the engine oil pressure or engine timing. Refer to the Workshop Manual Section 303-00, Engine System.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to HK15.	GO to HK15.

P1397 - System Voltage Out Of Self -Test Range

Description:	This diagnostic trouble code (DTC) indicates that the 12-volt system voltage is too high or too low during the key on engine off (KOEO) or key on engine running (KOER) self-test. It sets if the system voltage falls below or exceeds the calibrated threshold at any time during the KOEO or KOER self-test.

Possible Causes:	• Battery or charging system concern.			
Diagnostic Aids:	Make sure the battery voltage is between 11 and 18 volts (10 and 18 volts for Ford GT) before running a KOEO or KOER self-test.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 414-00, Charging System — General Information and diagnose the charging system concern.		

P1400 - Differential Pressure Feedback (DPF) EGR Sensor Circuit Low Voltage Detected

Description:	The EGR monitor checks the DPF EGR sensor signal to the powertrain control module (PCM) for low voltage. The test fails when the average voltage to the PCM drops to a voltage less than the minimum calibrated value.			
Possible Causes:	• DPFEGR circuit short to GND • Damaged DPF EGR sensor • VREF short to GND			
Diagnostic Aids:	A DPF EGR PID reading less than 0.2 volt with the key on engine off (KOEO) or key on engine running (KOER) indicates a hard fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Vehicles with an EGR system module (ESM)		GO to HH1.		
All others		GO to HE1.		

P1401 - Differential Pressure Feedback (DPF) EGR Sensor Circuit High Voltage Detected

Description:	The EGR monitor checks the DPF EGR sensor signal to the powertrain control module (PCM) for high voltage. The test fails when the average voltage to the PCM goes to a voltage greater than the maximum calibrated value.			
Possible Causes:	• DPF EGR circuit open • VREF short to PWR • Damaged DPF EGR sensor • DPFEGR circuit short to PWR • SIG RTN circuit open			
Diagnostic Aids:	A DPF EGR PID reading greater than 4.5 volts with the key on engine off (KOEO) or key on engine running (KOER) indicates a hard fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**

Vehicles with an EGR system module (ESM)		GO to HH4.
All others		GO to HE5.

P1405 - Differential Pressure Feedback (DPF) EGR Sensor Upstream Hose Off or Plugged

Description:	While driving, the EGR monitor commands the EGR valve closed and checks the differential pressure across the EGR orifice. The test fails when the signal from the DPF EGR sensor indicates EGR flow is in the negative direction.			
Possible Causes:	• The upstream hose is disconnected • The upstream hose is plugged (ice) • Plugged or damaged EGR tube			
Diagnostic Aids:	Look for signs of water or icing in the hose. Verify the hose connection and routing (no excessive dips). Verify the DPF EGR sensor for proper mounting and function. View the DPF EGR PID while applying and releasing vacuum directly to the sensor with a hand pump.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to HE27.	GO to HE27.

P1406 - Differential Pressure Feedback (DPF) EGR Sensor Downstream Hose Off or Plugged

Description:	While driving, the EGR monitor commands the EGR valve closed and checks the differential pressure across the EGR orifice. The test fails when the signal from the DPF EGR sensor continues to indicate EGR flow even after the EGR valve is commanded closed.			
Possible Causes:	• Downstream hose is disconnected • Downstream hose is plugged (ice) • Plugged or damaged EGR tube			
Diagnostic Aids:	Look for signs of water or icing in the hose. Verify the hose connection and routing (no excessive dips). Verify the DPF EGR sensor for proper mounting and function. View the DPF EGR PID while applying and releasing vacuum directly to the sensor with a hand pump.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HE31.		

P1408 - EGR Flow Out of Self-Test Range (Non-MIL)

Description:	This test is carried out during the key on engine running (KOER) on-demand self-test only. The EGR system is commanded on at a fixed engine speed. The test fails and the DTC is output when the measured EGR flow falls above or below the required calibration.			
Possible Causes:	• For electric EGR system, see possible causes for DTC P0400. • For vacuum activated systems, see the possible causes for DTC P0401.			
Diagnostic Aids:	For electric EGR, use the output state control function of the diagnostic tool and monitor the MAP PID (MAP) and the EEGR PID (EGRMDSD) while commanding the EEGR on. If EGR is introduced into the engine at idle, the RPM will drop or stall out. For vacuum systems see diagnostic aids for P0401.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Vehicles With an Electric EGR (EEGR)		—	GO to KD8.	—
Vehicles with an EGR system module (ESM)		—	GO to HH16.	—
All others		—	GO to HE36.	—

P1409 - EGR Vacuum Regulator (EGRVR) Solenoid Circuit Malfunction

Description:	This test checks the electrical function of the EGRVR solenoid. The test fails when the EGRVR circuit voltage is either too high or too low when compared to the expected voltage range. The EGR system must be enabled for the test to be completed.			
Possible Causes:	• EGRVR circuit open • VPWR open to EGRVR solenoid • EGRVR circuit short to VPWR or GND • Damaged EGRVR solenoid			
Diagnostic Aids:	The EGR vacuum regulator solenoid resistance is between 26 and 40 ohms.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Vehicles with an EGR system module (ESM)		GO to HH21.		
All others		GO to HE59.	GO to HE59.	GO to HE64.

P1436 - A/C Evaporator Temperature (A/CET) Circuit Low Input

Description:	Indicates the A/CET signal input was less than the self-test minimum. The self-test minimum is 0.13 volts.			
Possible Causes:	• A/CET circuit short to ground or SIG RTN • Damaged A/CET sensor			
Diagnostic Aids:	The powertrain control module (PCM) sources a low current 5 volt reference on the A/CET circuit (this voltage can be measured with the sensor disconnected). As the A/C evaporator air temperature changes, the A/CET circuit resistance to SIG RTN (ground) changes (which changes the voltage the PCM detects). When the A/CET signal is detected below the self-test minimum, check for shorts to SIG RTN or ground which would pull the voltage low.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DJ6.	GO to DJ6.	GO to DJ9.

P1437 - A/C Evaporator Temperature (A/CET) Circuit High Input

Description:	Indicates the A/CET signal input was greater than the self-test minimum. The self-test maximum is 4.5 volts.			
Possible Causes:	• A/CET circuit open • SIG RTN circuit open to A/CET sensor • A/CET circuit short to power (VREF) • Damaged A/CET sensor			
Diagnostic Aids:	The powertrain control module (PCM) sources a low current 5 volt reference on the A/CET circuit (this voltage can be measured with the sensor disconnected). As the A/C evaporator air temperature changes, the A/CET circuit resistance to SIG RTN (ground) changes (which changes the voltage the PCM detects). When the A/CET signal is detected above the self-test maximum, check for open circuits (A/CET or SIG RTN), which would cause the voltage to remain high. Although not as probable, also check for a short to voltage (VREF).			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DJ1.	GO to DJ1.	GO to DJ9.

P1443 - Very Small or No Purge Flow Condition

Description:	A fuel tank pressure change greater than minus (-) 7 inches of water in 30 seconds occurred with a purge (fuel vapor) flow at less than 0.02 pounds per minute.
Possible Causes:	• Blocked fuel vapor hose between the EVAP canister purge valve and the fuel tank pressure (FTP) sensor

	• Blocked fuel vapor hose between the EVAP canister purge valve and the engine intake manifold • Blocked vacuum hose between the EVAP canister purge valve solenoid and the engine intake manifold • EVAP canister purge valve stuck closed (mechanically)			
Diagnostic Aids:	Check for blockages between the fuel tank, the EVAP canister purge valve, and the engine intake manifold. Check for obstructions in the EVAP canister purge valve diaphragm and ports.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to HX52.

P1450 - Unable to Bleed Up Fuel Tank Vacuum

Description:	Monitors the fuel vapor vacuum and pressure in the fuel tank. System failure occurs when the EVAP running loss monitor detects excessive fuel tank vacuum with the engine running (but not at idle).			
Possible Causes:	• Blockages or kinks in the EVAP canister tube or EVAP canister purge outlet tube (between the fuel tank, EVAP the canister purge valve and the EVAP canister) • Fuel filler cap stuck closed (no vacuum relief) • Contaminated fuel vapor elbow on the EVAP canister • Restricted EVAP canister • CV solenoid stuck open (partially or fully) • Plugged CV solenoid filter • EVAP canister purge valve stuck open • VREF circuit open (harness near the fuel tank pressure [FTP] sensor, the FTP sensor or the powertrain control module [PCM]) • Damaged FTP sensor			
Diagnostic Aids:	Visually inspect the EVAP canister inlet port, CV solenoid filter, and canister vent hose assembly for contamination or debris. Check EVAP canister purge valve for vacuum leak.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to HX9.

P1451 - EVAP Control System Canister Vent Solenoid Circuit Malfunction

Description:	Monitors the canister vent (CV) solenoid circuit for an electrical failure. The test fails when the signal moves outside the minimum or maximum allowable calibrated parameters for a specified canister vent duty cycle by powertrain control module (PCM) command.
Possible Causes:	• VPWR circuit open • CV solenoid circuit shorted to PWR GND or CHASSIS GND • Damaged CV solenoid

	• CV solenoid circuit open • CV solenoid circuit shorted to VPWR • Damaged PCM			
Diagnostic Aids:	To verify normal functioning, monitor the EVAP canister vent solenoid signal PID EVAPCV and the signal voltage (PCM control side). With the valve open, EVAPCV indicates 0% duty cycle and a voltage approximately equal to battery voltage. When the valve is commanded fully closed, EVAPCV indicates 100% duty cycle, and a minimum voltage drop of 4 volts is normal. Output test mode may be used to switch output on/off to verify function.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HX31.		

P1460 - A/C Clutch Relay (A/CCR) Primary Circuit Malfunction (also referred to as WAC circuit)

Description:	Monitors the wide open throttle A/C cutoff (WAC) circuit output from the powertrain control module (PCM). The test fails when the PCM grounds the WAC circuit, excessive current draw is detected on the WAC circuit; or, with the WAC circuit not grounded by the PCM, voltage is not detected on the WAC circuit (the PCM expects to detect VPWR voltage coming through the WAC relay coil to the WAC circuit).			
Possible Causes:	• Open or shorted WAC circuit • Damaged WAC relay • Open VPWR circuit to the WAC relay			
Diagnostic Aids:	The A/CCR control circuit can be monitored using the WACF and WAC PID. When the WACF PID reads YES, a fault is present. An open circuit or short to ground can only be detected when the PCM is not grounding the circuit. A short to voltage can only be detected when the PCM is grounding the circuit. During the KOEO and KOER self-test, the WAC circuit is cycled on and off. Verify the A/C and the defrost were off during key on engine off (KOEO) and key on engine running (KOER) self-test (Check A/CCS the PID to verify). If the vehicle is not equipped with A/C, DTC P1460 can be ignored.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to KM1.	GO to KM1.	GO to KM9.

P1461 - Air Conditioning Pressure (A/CP) Sensor High Voltage Detected

Description:	The A/CP sensor inputs a voltage to the PCM. If the voltage is above a calibrated level the DTC sets.
Possible Causes:	• A/CP sensor circuit short to PWR • A/CP circuit open • A/CP circuit short to VREF

	• Damaged A/CP sensor			
Diagnostic Aids:	Verify a VREF voltage between 4 and 6 volts.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DS1.		

P1462 - Air Conditioning Pressure (A/CP) Sensor Low Voltage Detected

Description:	The A/CP sensor inputs a voltage to the powertrain control module (PCM). If the voltage is below the calibrated level the DTC will set. The A/CP sensor inputs a voltage to the PCM. If the voltage is below the calibrated level the DTC sets.			
Possible Causes:	• A/CP circuit short to GND or SIGRTN • VREF circuit open • Open A/CP circuit • Damaged A/CP sensor			
Diagnostic Aids:	Verify a VREF voltage between 4 and 6 volts.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DS7.		

P1463 - Air Conditioning Pressure Sensor (A/CP) Insufficient Pressure Change

Description:	Each time the A/C clutch engages, the powertrain control module (PCM) is looking for a pressure change in the refrigerant. If the change in pressure is outside of the calibration the DTC sets.			
Possible Causes:	• A/C system mechanical failure • Open ACP or VREF circuit • A/C sensor damaged • A/C system electrical failure • A/C clutch always engaged			
Diagnostic Aids:	Verify the A/C system function, including refrigerant charge.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to DS16.

P1464 - A/C Demand Out Of Self-Test Range

Description:	The DTC is set when the powertrain control module (PCM) receives a request for A/C during the self-test.			
Possible Causes:	• A/C or defrost on during self-test • A/CCS circuit short to voltage • Damaged A/C demand switch • Damaged WAC relay			
Diagnostic Aids:	If the A/C or defrost was on during self-test, turn them off and rerun the self-test. An A/C request to the PCM may come through the communication link or on a dedicated hardwire circuit from the A/C switch.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to KM7.	GO to KM7.	—

P1469 - Low A/C Cycling Period

Description:	Indicates frequent A/C compressor clutch cycling.			
Possible Causes:	• Mechanical A/C system concern (such as low refrigerant charge, damaged A/C cycling switch) • Intermittent open between the cycling pressure switch and the PCM • Intermittent open in the IGN RUN circuit to cycling pressure switch (if applicable)			
Diagnostic Aids:	An intermittent open circuit, although possible, is unlikely. This test is designed to protect the transmission. In some strategies, the PCM unlocks the torque converter during A/C clutch engagement. If a concern is present that results in frequent A/C clutch cycling, damage could occur if the torque converter is cycled at these intervals. This test detects this condition, sets the DTC and prevents the torque converter from excessive cycling.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to KM11.

P1474 - Low Fan Control (LFC)/Fan Control 1 (FC1) Primary Circuit Malfunction

Description:	Monitors the LFC or fan control (FC) for one speed fan application, primary circuit output from the powertrain control module (PCM). The test fails if the PCM grounds the LFC/FC circuit, excessive current draw is detected on the LFC/FC circuit, or with the LFC/FC circuit not grounded by the PCM, voltage is

	not detected on the LFC/FC circuit (the PCM expects to detect VPWR voltage coming through the low speed FC relay coil to the LFC/FC circuit).
Possible Causes:	• Open or shorted LFC/FC circuit • Open VPWR circuit to the low speed FC relay • Damaged low speed FC relay
Diagnostic Aids:	When the LFCF PID reads YES, a fault is currently present. An open circuit or short to ground can only be detected when the PCM is not grounding the LFC/FC circuit. A short to voltage can only be detected when the PCM is grounding the LFC/FC circuit. During the key on engine off (KOEO) and key on engine running (KOER) self-test, the LFC/FC circuit is cycled on and off.

Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Freestar/Monterey		GO to KF16.	GO to KF16.	GO to KF49.
All others		GO to KF1.	GO to KF1.	GO to KF43.

P1477 - Medium Fan Control (MFC) Primary Circuit Failure

Description:	Monitors the MFC primary circuit output from the powertrain control module (PCM). The test fails if the MFC output commanded on (grounded), excessive current draw is detected on the MFC circuit or, with the MFC circuit commanded off, voltage is not detected on the MFC circuit (the PCM expects to detect IGN START/RUN voltage through the medium speed FC relay coil to the MFC circuit).
Possible Causes:	• Open or shorted MFC circuit • Open IGN START/RUN circuit to the medium speed FC relay • Damaged medium speed FC relay • Damaged PCM
Diagnostic Aids:	When the MFCF PID reads YES, a fault is present. An open circuit or short to ground can only be detected when the PCM is not grounding the MFC circuit. A short to voltage can only be detected when the PCM is grounding the MFC circuit. During the key on engine off (KOEO) and key on engine running (KOER) self-test, the MFC circuit is cycled on and off. When using output test mode on a diagnostic tool, and commanding the low speed fan on, the PCM also activates the medium speed fan output.

Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Freestar/Monterey, Focus		GO to KF25.	GO to KF25.	GO to KF51.
All others		GO to KF6.	GO to KF6.	GO to KF47.

P1479 - High Fan Control (HFC)/Fan Control 3 (FC3) Primary Circuit Malfunction

Description:	Monitors the HFC primary circuit output from the powertrain control module (PCM). The test fails if the HFC output commanded on (grounded), excessive current draw is detected on the HFC circuit or, with the HFC circuit commanded off, voltage is not detected on the HFC circuit (the PCM expects to detect VPWR voltage through the high speed FC relay coil to the HFC circuit).			
Possible Causes:	• Open or shorted HFC circuit • Open VPWR circuit to the high speed FC relay • Damaged high speed FC relay			
Diagnostic Aids:	When the HFCF PID reads YES, a fault is present. An open circuit or short to ground can only be detected when the PCM is not grounding the HFC circuit. A short to voltage can only be detected when the PCM is grounding the HFC circuit. During the key on engine off (KOEO) and key on engine running (KOER) self-test, the HFC circuit is cycled on and off.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Taurus, Sable, Escape 3.0L, Mariner 3.0L, Ford GT		GO to KF34.	GO to KF34.	GO to KF53.
All others		GO to KF11.	GO to KF11.	GO to KF45.

P1489 - PCV Heater Control Circuit

Description:	This DTC sets when the powertrain control module (PCM) detects a positive crankcase ventilation (PCV) heater circuit failure.			
Possible Causes:	• Open or shorted PCV circuit • Damaged PCV heater assembly			
Diagnostic Aids:	Make sure the PCV valve is correct for the engine application and the PCV heater circuit is properly connected.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HG4.		

P1500 - Vehicle Speed Sensor (VSS) Intermittent

Description:	Indicates the VSS input signal was intermittent. This DTC is set when a VSS fault interferes with other OBD tests, such as the catalyst efficiency monitor, the EVAP monitor or the HO2S monitor.			
Possible Causes:	• Intermittent VSS connections • Intermittent open in the VSS harness circuit(s) • Intermittent short in VSS harness circuit(s) • Damaged VSS			
Diagnostic Aids:	Check the wiring, connector, and sensor for damage.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Excursion, F-Super Duty		GO to DF1.		
Five Hundred, Freestyle, Montego, Navigator		The powertrain control module (PCM) uses information from the anti-lock brake system (ABS) module and the transmission control module (TCM) to calculate vehicle speed. Check these modules for DTCs.		
Vehicles with a manual transfer case		GO to DP15.		
Vehicles with an automatic transmission and output shaft speed (OSS) sensor DTCs		Refer to the Workshop Manual Section 307-01, Automatic Transmission Output Shaft Speed (OSS) Sensor pinpoint test to diagnose the concern.		
All others		GO to DP12.		

P1501 - Vehicle Speed Sensor (VSS) Out of Self-Test Range

Description:	Indicates the VSS input signal is out of self-test range. If the powertrain control module (PCM) detects a VSS input signal any time during the self-test, DTC P1501 is set and the test aborts.			
Possible Causes:	• Noisy VSS input signal from the radio frequency interference / electromagnetic interference (RFI/EMI) external sources, such as ignition wires, the charging circuit or after market equipment.			
Diagnostic Aids:	Verify the VSS input is 0 km/h (0 mph) when the vehicle transmission is in PARK.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Excursion, F-Super Duty		GO to DF1.	GO to DF1.	—
Five Hundred, Freestyle, Montego,		The powertrain control module (PCM) uses information from the anti-lock brake system (ABS) module and the transmission control module (TCM) to calculate vehicle speed. Check these modules for DTCs.		

Navigator				
Vehicles with a manual transfer case		GO to DP15.	GO to DP15.	—
Vehicles with an automatic transmission and output shaft speed (OSS) sensor DTCs		Refer to the Workshop Manual Section 307-01, Automatic Transmission Output Shaft Speed (OSS) Sensor pinpoint test to diagnose the concern.		
All others		GO to DP11.	GO to DP11.	—

P1502 - Vehicle Speed Sensor (VSS) Intermittent

Description:	Indicates the powertrain control module (PCM) detected an error in the vehicle speed information. Vehicle speed data is received from either the VSS, transfer case speed sensor (TCSS) or anti-lock brake system (ABS) control module. This DTC is set the same way as P0500. However, it is intended to flash the transmission control indicator lamp (TCIL) for first time VSS circuit error/malfunctions.			
Possible Causes:	See the possible causes for DTC P0500.			
Diagnostic Aids:	See the diagnostic aids for DTC P0500.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Excursion, F-Super Duty		GO to DF1.		
Vehicles with a manual transfer case		GO to DP15.		
Vehicles with an automatic transmission and output shaft speed (OSS) sensor DTCs		Refer to the Workshop Manual Section 307-01, Automatic Transmission Output Shaft Speed (OSS) Sensor pinpoint test to diagnose the concern.		
All others		GO to DP1.		

P1504 - Idle Air Control (IAC) Circuit Malfunction

Description:	This DTC is set when the powertrain control module (PCM) detects an electrical load failure on the IAC output circuit.
Possible Causes:	• IAC circuit open • VPWR to IAC solenoid open • IAC circuit short to PWR • IAC circuit short to GND • Damaged IAC valve
Diagnostic Aids:	The IAC solenoid resistance is 6 to 13 ohms. Monitor the IAC PID duty cycle and/or voltage.

Application		Key On Engine Off	Key On Engine Running	Continuous Memory
All		GO to KE1.		

P1506 - Idle Air Control (IAC) Overspeed Error

Description:	This DTC is set when the powertrain control module (PCM) detects an engine idle speed that is greater than the desired RPM.			
Possible Causes:	• IAC circuit short to GND • Damaged IAC valve • IAC valve stuck open • Air intake leak after throttle body • Vacuum leaks • Failed EVAP system			
Diagnostic Aids:	Disconnect the IAC valve and look for little or no change in engine RPM as an indication of a stuck or damaged valve.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to KE14.		

P1507 - Idle Air Control (IAC) Underspeed Error

Description:	This DTC is set when the powertrain control module (PCM) detects an engine idle speed that is less than the desired RPM.			
Possible Causes:	• IAC circuit open • Air inlet is plugged • Damaged or incorrect IAC valve • IAC valve stuck closed • VPWR to IAC solenoid open • IAC circuit short to PWR			
Diagnostic Aids:	The IAC solenoid resistance is 6 to 13 ohms. Disconnect the IAC valve and look for little or no change in engine RPM as an indication of a stuck or damaged valve.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to KE1.		

P1512 - Intake Manifold Runner Control (IMRC) Stuck Closed (Bank 1)

Description:	This DTC is set when the vacuum actuated IMRC is commanded open, but the IMRC monitor indicates closed.			
Possible Causes:	• IMRC monitor circuit open • Suspect IMRC solenoid • Mechanical concern - bind, seize, damage, or obstruction of IMRC hardware			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to HU14.

P1513 - Intake Manifold Runner Control (IMRC) Stuck Closed (Bank 2)

Description:	This DTC is set when the vacuum actuated IMRC is commanded open, but the intake manifold runner control monitor (IMRCM) indicates closed.			
Possible Causes:	• IMRC monitor circuit open • Suspect IMRC solenoid • Mechanical concern - bind, seize, damage, or obstruction of IMRC hardware			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to HU14.

P1516 - Intake Manifold Runner Control (IMRC) Input Error (Bank 1)

Description:	The IMRC system is monitored for failure during continuous or key on engine off (KOEO) self-test. Each DTC distinguishes the corresponding failed bank for IMRC actuator assemblies with dual monitor switches. The test fails when the signal on the monitor pin is outside an expected calibrated range.			
Possible Causes:	• Mechanical concern - bind, seize, damage, or obstruction of IMRC hardware			
Diagnostic Aids:	An IMRCM PID reading at closed throttle that is less than VREF may indicate a fault. An IMRCM PID reading near 1 volt or greater with an engine speed of at least 3,000 RPM may indicate a fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HU14.	—	GO to HU14.

P1517 - Intake Manifold Runner Control (IMRC) Input Error (Bank 2)

Description:	The IMRC system is monitored for failure during continuous or key on engine off (KOEO) self-test. Each DTC distinguishes the corresponding failed bank for IMRC actuator assemblies with dual monitor switches. The test fails when the signal on the monitor pin is outside an expected calibrated range.			
Possible Causes:	• Mechanical concern - bind, seize, damage, or obstruction of IMRC hardware			
Diagnostic Aids:	An intake manifold runner control monitor (IMRCM) PID reading at closed throttle that is less than VREF may indicate a fault. An IMRCM PID reading near 1 volt or greater with an engine speed of at least 3,000 RPM may indicate a fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HU14.	—	GO to HU14.

P1518 - Intake Manifold Runner Control (IMRC) Malfunction (Stuck Open)

Description:	This DTC is set when the electrically actuated IMRC is commanded closed, but the IMRC monitor indicates open.			
Possible Causes:	• IMRC monitor signal circuit shorted to PWR GND or SIG RTN • Damaged IMRC actuator			
Diagnostic Aids:	An intake manifold runner control monitor (IMRCM) PID reading near approximately 1 volt at closed throttle may indicate a fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HU14.		

P1519 - Inlet Manifold Runner Control (IMRC) Malfunction (Stuck Closed)

Description:	This DTC is set when the electrically actuated IMRC is commanded open, but the IMRC monitor indicates closed.
Possible Causes:	• IMRC monitor circuit open • IMRC control circuit open • IMRC monitor circuit short to VREF • IMRC monitor return circuit open • Damaged IMRC actuator • IMRC VPWR circuit open

Diagnostic Aids:	An intake manifold runner control monitor (IMRC) PID reading at VREF with an engine speed of at least 3,000 RPM may indicate a fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HU14.		

P151A - Intake Manifold Runner Controller Performance

Description:	The intake manifold runner control (IMRC) system is monitored for failures. The test fails when the system detects a loss of bidirectional communication or signal(s) between the PCM and the IMRC solenoid.			
Possible Causes:	• IMRC control circuit open • Mechanical concern - bind, seize, damage, or obstruction of IMRC hardware • IMRC control circuit short to voltage • IMRC VPWR circuit open • IMRC GND circuit open • Damaged IMRC actuator			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HU16.		

P1520 - Intake Manifold Runner Control (IMRC) Circuit

Description:	This DTC indicates a failure in the IMRC primary control circuit.			
Possible Causes:	• IMRC control circuit open			
Diagnostic Aids:	An intake manifold runner control monitor (IMRCM) PID reading near 1 volt or greater with an engine speed of at least 3,000 RPM may indicate a fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HU14.		

P1537 - Intake Manifold Runner Control (IMRC) Stuck Open (Bank 1)

Description:	This DTC is set when the vacuum actuated IMRC is commanded closed, but the IMRC monitor indicates open.			
Possible Causes:	• IMRC monitor signal circuit shorted to PWR GND or SIG RTN • Damaged IMRC solenoid • Blocked vacuum hoses			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HU14.		

P1538 - Intake Manifold Runner Control (IMRC) Stuck Open (Bank 2)

Description:	This DTC is set when the vacuum actuated IMRC is commanded closed, but the IMRC monitor indicates open.			
Possible Causes:	• IMRC monitor signal circuit shorted to PWR GND or SIG RTN • Damaged IMRC solenoid • Blocked vacuum hoses			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HU14.		

P1549 - Intake Manifold Communication Control (IMCC) Circuit Malfunction

Description:	The IMCC or intake manifold tuning (IMT) valve system is monitored for failure during continuous or key on engine off (KOEO) self-test. The test fails when the powertrain control module (PCM) detects a concern with the IMT valve output circuit.			
Possible Causes:	• Open IMT valve circuit • Open VPWR circuit • Shorted IMT valve circuit • Damaged IMT valve			
Diagnostic Aids:	An IMT valve fault PID (IMTVF) displaying YES may indicate a fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HU41.	—	GO to HU41.

P1550 - Power Steering Pressure (PSP) Sensor Malfunction

Description:	The PSP sensor input signal to the powertrain control module (PCM) is continuously monitored. The test fails when the signal falls out of a maximum or minimum calibrated range.			
Possible Causes:	• Steering wheel not turned during self-test. • PSP sensor or circuit damaged • Power steering concern			
Diagnostic Aids:	The DTC indicates the PSP sensor is out of self-test range.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DT1.	GO to DT1.	—

P1565 - Speed Control Command Switch Out Of Range High

Description:				
Possible Causes:				
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 310-03, Speed Control.		

P1566 - Speed Control Command Switch Out Of Range Low

Description:				
Possible Causes:				
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 310-03, Speed Control.		

P1567 - Speed Control Output Circuit

Description:				
Possible Causes:				
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 310-03, Speed Control.		

P1568 - Speed Control Unable to Hold Speed

Description:				
Possible Causes:				
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 310-03, Speed Control.		

P1572 - Brake Pedal Switch Circuit

Description:	Indicates the brake input rationality test for brake pedal position (BPP) and brake pressure applied (BPA) switches has failed. One or both inputs to the powertrain control module (PCM) did not change state when expected. Note: On vehicles with stability assist, the BPP switch is connected to the anti-lock brake system (ABS) module and the ABS generates a driver brake application (DBA) signal, which is then sent to the PCM.			
Possible Causes:	• Misadjusted brake switches, BPP or BPA • Blown fuse • Damaged BPP switch • Damaged BPA switch • Open or short in the BPP circuit • Open or short in the DBA circuit • Open or short in the BPA circuit			
Diagnostic Aids:	DTC P1572 is set when the PCM does not sense the proper sequence of the brake pedal input signal from both the BPP and BPA switches when the brake pedal is pressed and released.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**

All		—	—	GO to FD2.

P1576 - Pedal Position Not Available

Description:				
Possible Causes:				
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 307-01, Automatic Transmission.		

P1582 - Electronic Throttle Monitor Data Available

Description:	Indicates the actuation of restraint deployment, and the availability of electronic throttle monitor data.			
Possible Causes:				
Diagnostic Aids:	The DTC only indicates the actuation of the restraint deployment system. Do not install a new powertrain control module (PCM), because there is no fault indicated.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Description, Possible Causes and Diagnostic Aids for the DTC.		

P1633 - Keep Alive Power Voltage Too Low

Description:	Indicates the keep alive power (KAPWR) circuit has experienced a voltage interrupt.			
Possible Causes:	• Open KAPWR circuit • Intermittent KAPWR			
Diagnostic Aids:	Loss of KAPWR to the PCM results in immediate malfunction indicator lamp (MIL) illumination and DTC P1633.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to QB1.		

P1635 - Tire/Axle Ratio Out of Acceptable Range

Description:	This DTC indicates the tire and axle information contained in the vehicle ID block (VID) does not match the vehicle hardware.			
Possible Causes:	• Incorrect tire size • Incorrect axle ratio • Incorrect VID configuration parameters			
Diagnostic Aids:	Using the diagnostic tool, view the tire and axle parameters within the VID. They must match the vehicle hardware.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Description, Possible Causes and Diagnostic Aids for the DTC.		

P1636 - Inductive Signature Chip Communication Error

Description:	Indicates the powertrain control module (PCM) has lost communication with the inductive signature chip.			
Possible Causes:	• Damaged powertrain control module (PCM)			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		DTC P1636 indicates the powertrain control module (PCM) has lost communication with the inductive signature chip. Install a new PCM. Refer to Section 2, Flash Electrically Erasable Programmable Read Only Memory (EEPROM).		

P1639 - Vehicle ID Block Not Programmed or is Corrupt

Description:	This DTC indicates the vehicle ID (VID) block is not programmed or the information within is corrupt.
Possible Causes:	• New powertrain control module (PCM) • Incorrect PCM • Incorrect VID configuration

Diagnostic Aids:	Program the PCM to the most recent calibration available.		
Application	**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All	The vehicle identification (VID) block must programmed. For instructions, refer to the Flash VID Block Procedure.		

P1640 - Powertrain DTCs Available in Another Module

Description:	Vehicles using a secondary engine control module can request that the powertrain control module (PCM) illuminates the malfunction indicator lamp (MIL) when a failure occurs which affects emissions.		
Possible Causes:	• DTCs stored in a secondary module, which requested the MIL to be turned on		
Diagnostic Aids:			
Application	**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All	Refer to the Description, Possible Causes and Diagnostic Aids for the DTC.		

P1641 - Fuel Pump Primary Circuit Malfunction.

For Vehicles Equipped With a FPDM				
Description:	See the description for DTC P1235/P1236.			
Possible Causes:	See the possible causes for DTC P1235/P1236.			
Diagnostic Aids:	See the diagnostic aids for DTC P1235/P1236.			
For All Others				
Description:	See the description for DTC P0230.			
Possible Causes:	See the possible causes for DTC P0230.			
Diagnostic Aids:	See the diagnostic aids for DTC P0230.			
Application	**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**	
Vehicles Equipped With a FPDM	GO to KB19.			
Excursion	GO to KA31.	GO to KA31.	GO to KA60.	
All others	GO to KA1.	GO to KA1.	GO to KA30.	

P1650 - Power Steering Pressure (PSP) Switch Malfunction

Description:	In the key on engine off (KOEO) self-test, this DTC indicates the PSP input to the PCM is high. In the key on engine running (KOER) self-test, this DTC indicates the PSP input did not change state.			
Possible Causes:	• The steering wheel must be turned during KOER self-test • PSP switch/shorting bar damaged • SIG RTN circuit open • PSP circuit open or shorted to SIGRTN			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to FF2.	GO to FF1.	—

P1651 - Power Steering Pressure (PSP) Switch Signal Malfunction

Description:	The powertrain control module (PCM) counts the number of vehicle speed transitions from 0 to a calibrated speed. After a calibrated number of speed transitions, the PCM expects the PSP input to change. This DTC is set if the transition is not detected.			
Possible Causes:	• Vehicle towed with the engine running • The power steering hydraulic concern was repaired but the DTC was not erased • PSP switch/shorting bar damaged • SIG RTN circuit open • PSP circuit open or shorted to SIGRTN			
Diagnostic Aids:	Check if the vehicle was towed or a power steering repair was carried out. Observe the PSP V PID while checking the wires for intermittent concerns.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	—	GO to FF6.

P1674 - Control Module Software Corrupted

Description:	Indicates an error occurred in the powertrain control module (PCM). This DTC is set in combination with P2105.

Possible Causes:	• Software incompatibility issue • Damaged PCM			
Diagnostic Aids:	Program the PCM to the latest calibration. Road test the vehicle. Use the customer information to recreate the concern. If the concern or DTC is still present, install a new PCM. Refer to Section 2, Flash Electrically Erasable Programmable Read Only Memory (EEPROM).			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Description, Possible Causes and Diagnostic Aids for the DTC.		

P1703 - Brake Switch Out of Self-Test Range

Description:	Indicates that during key on engine off (KOEO) self-test, the brake pedal position BPP signal was high, or during key on engine running (KOER) self-test, the BPP signal did not cycle high and low.			
Possible Causes:	• Open or short in the BPP circuit • Open or short in the stoplamp circuits • Malfunction in module(s) connected to the BPP circuit (rear electronic module [REM] for Freestar/Monterey, LS, and Thunderbird or lighting control module [LCM] for Town Car). • Damaged brake switch • Misadjusted brake switch			
Diagnostic Aids:	Check for proper function of the stoplamps. Using diagnostic tool, check the BPP PID. The stoplamps and PID should toggle on and off with brake pedal activation.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Town Car		Verify the brake pedal was applied and released during the key on engine running (KOER) self-test. For additional concerns, refer to the Workshop Manual Section 417-01, Exterior Lighting.		
Freestar/Monterey		Verify the brake pedal was applied and released during the key on engine running (KOER) self-test. For additional concerns, refer to the Workshop Manual Section 417-01, Exterior Lighting.		
Expedition, Navigator		Verify the brake pedal was applied and released during the key on engine running (KOER) self-test. For additional concerns, refer to the Workshop Manual Section 206-09, Anti-Lock Control.		
All others		GO to FD2.	GO to FD1.	GO to FD2.

P1705 - Transmission Range Sensor Out of Self-Test Range

Description:	The transmission range circuit is not indicating PARK/NEUTRAL during self-test.			
Possible Causes:	• Gear selector not in PARK/NEUTRAL			
Diagnostic Aids:	Verify the gear selector is in PARK/NEUTRAL.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 307-01, Automatic Transmission.		

P1709 - Park/Neutral Position (PNP) Switch Out of Self-Test Range

Description:	This DTC indicates that the voltage is high when it should be low.			
Possible Causes:	• PNP/CPP circuit short to PWR • Damaged PNP or CPP switch • PNP/CPP circuit open in the SIGRTN			
Diagnostic Aids:	When activating either the PNP or CPP switch, the voltage should cycle from 5 volts to low.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 307-01, Automatic Transmission.		

P1729 - 4x4L Switch Circuit Malfunction

Description:	The 4x4L switch is an on/off switch. If the powertrain control module (PCM) does not sense appropriate voltage when the switch is cycled on and off, a DTC sets for mechanical shift on the fly systems.			
Possible Causes:	• The 4x4L harness between the PCM and the 4x4L switch is open or shorted. • Damaged 4x4L switch			
Diagnostic Aids:	Verify the 4x4L switch cycles on/off.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Aviator, Excursion, Expedition,		Refer to the Workshop Manual Section 308-07A, Four-Wheel Drive Systems.		

F-Super Duty, Navigator				
All others		—	—	GO to TG1.

P1780 - Transmission Control Switch (TCS) Out of Self-Test Range

Description:	During key on engine running (KOER) self-test the TCS must be cycled, or a DTC is set.			
Possible Causes:	• TCS not cycled during the self-test. • TCS circuit short or open • Damaged TCS switch			
Diagnostic Aids:	Verify the TCS switch cycles on/off.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to TB1.		

P1781 - 4x4L Switch Out of Self-Test Range

Description:	The 4x4L switch is an on/off switch. If the powertrain control module (PCM) does not sense low voltage when the switch is on, the DTC sets.			
Possible Causes:	• 4x4L harness open or shorted • Damaged electronic shift module			
Diagnostic Aids:	Verify the 4x4L switch cycles on/off.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Aviator, Expedition, Navigator, F-Super Duty, Excursion		Refer to the Workshop Manual Section 308-07A, Four-Wheel Drive Systems.		
All others		GO to TG1.	—	—

P17xx -

Description:				
Possible Causes:				
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 307-01, Automatic Transmission.		

P18xx -

Description:				
Possible Causes:				
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 308-07A, Four-Wheel Drive Systems.		

P1900 - Output Shaft Speed (OSS) Sensor Circuit Intermittent

Description:	The OSS sensor signal to the powertrain control module (PCM) is irregular or interrupted.			
Possible Causes:	• Harness connector not properly seated • Harness intermittently shorted or open • Harness connector damaged • OSS sensor damaged, or not installed properly			
Diagnostic Aids:	Verify harness and connector integrity. Verify proper installation of the OSS sensor.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
Manual transmission, Focus, Freestar/Monterey, LS, Sable, Taurus,		GO to TJ1.		

Thunderbird, Town Car		
All others		Refer to the Workshop Manual Section 307-01, Automatic Transmission.

P1901 - Turbine Shaft Speed (TSS) Sensor Circuit Intermittent

Description:	The TSS sensor signal to the powertrain control module (PCM) is irregular or interrupted.			
Possible Causes:	• Harness connector not properly seated • Harness intermittently shorted or open • Harness connector damaged • TSS sensor damaged or not installed properly			
Diagnostic Aids:	Verify harness and connector integrity. Verify proper installation of the TSS sensor.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 307-01, Automatic Transmission.		

P1910 -

Description:				
Possible Causes:				
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 417-01, Exterior Lighting.		

P2004 - Intake Manifold Runner Control (IMRC) Stuck Open (Bank 1)

Description:	This DTC is set when the IMRC is commanded closed, but the IMRC monitor indicates open. This DTC replaces P1518 and P1537.
Possible Causes:	• IMRC monitor signal circuit shorted to PWR GND or SIG RTN • Damaged IMRC actuator or solenoid

	• Blocked vacuum hoses			
Diagnostic Aids:	An IMRCM PID reading near 1 volt at closed throttle may indicate a fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HU14.		

P2005 - Intake Manifold Runner Control (IMRC) Stuck Open (Bank 2)

Description:	This DTC is set when the IMRC is commanded closed, but the IMRC monitor indicates open. This DTC replaces P1538.			
Possible Causes:	• IMRC monitor signal circuit shorted to PWR GND or SIG RTN • Damaged IMRC actuator or solenoid • Damaged PCM • Blocked vacuum hoses			
Diagnostic Aids:	An IMRCM PID reading near approximately 1 volt at closed throttle may indicate a fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HU14.		

P2006 - Intake Manifold Runner Control (IMRC) Stuck Closed (Bank 1)

Description:	This DTC is set when the IMRC is commanded open, but the IMRC monitor indicates closed. This DTC replaces P1512 and P1519.			
Possible Causes:	• IMRC monitor circuit open • IMRC control circuit open • IMRC monitor circuit short to VREF • Damaged IMRC actuator or solenoid			
Diagnostic Aids:	An IMRCM PID reading at VREF with an engine speed of at least 3,000 RPM may indicate a fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HU14.		

P2007 - Intake Manifold Runner Control (IMRC) Stuck Closed (Bank 2)

Description:	This DTC is set when the IMRC is commanded open, but the IMRC monitor indicates closed. This DTC replaces P1513.			
Possible Causes:	• IMRC monitor circuit open • IMRC control circuit open • IMRC monitor circuit short to VREF • Damaged IMRC actuator or solenoid			
Diagnostic Aids:	An IMRCM PID reading at VREF with an engine speed of at least 3,000 RPM may indicate a fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HU14.		

P2008 - Intake Manifold Runner Control (IMRC) Circuit Open (Bank 1)

Description:	This DTC indicates a failure in the IMRC primary control circuit. This DTC replaces P1520.			
Possible Causes:	• IMRC control circuit open			
Diagnostic Aids:	An IMRCM PID reading near 1 volt or greater with an engine speed of at least 3,000 RPM may indicate a fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HU14.		

P2014 - Intake Manifold Runner Position Sensor/Switch Circuit (Bank 1)

Description:	The intake manifold runner control (IMRC) system is monitored for failure during continuous or key on engine off (KOEO) self-test. Each DTC distinguishes the corresponding failed bank for IMRC actuator assemblies with dual monitor switches. The test fails when the signal on the monitor pin is outside an expected calibrated range. This DTC replaces P1516.			
Possible Causes:	• IMRC monitor circuit open • Mechanical concern - bind, seize, damage or obstruction of IMRC hardware			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HU14.		

P2015 - Intake Manifold Runner Position Sensor/Switch Circuit Range/Performance (Bank 1)

Description:	The intake manifold runner control (IMRC) system is monitored for failures. Each DTC distinguishes the corresponding failed bank. The test fails when the system detects the presence of a broken or persistently out of range linkage.			
Possible Causes:	• Mechanical concern - bind, seize, damage, or obstruction of IMRC hardware			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HU14.		

P2019 - Intake Manifold Runner Position Sensor/Switch Circuit (Bank 2)

Description:	The intake manifold runner control (IMRC) system is monitored for failure during continuous or key on engine off (KOEO) self-test. Each DTC distinguishes the corresponding failed bank for IMRC actuator assemblies with dual monitor switches. The test fails when the signal on the monitor pin is outside an expected calibrated range. This DTC replaces P1517.			
Possible Causes:	• IMRC monitor circuit open • Mechanical concern - bind, seize, damage or obstruction of IMRC hardware			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HU14.		

P2020 - Intake Manifold Runner Position Sensor/Switch Circuit Range/Performance (Bank 2)

Description:	See the description for DTC P2015.			
Possible Causes:	See the possible causes for DTC P2015.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**

All		GO to HU14.

P2065 - Fuel Level Sensor B Circuit

Description:	Fuel level information is sent to the powertrain control module (PCM) on the communication link.			
Possible Causes:	• Communication link malfunction • Damaged PCM			
Diagnostic Aids:	Refer to the Workshop Manual Section 413-01, Instrument Cluster for fuel level indicator diagnosis.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 413-01, Instrument Cluster for fuel level indicator diagnosis.		

P2066 - Fuel Level Sensor B Circuit Range/Performance

Description:	See the description for DTC P2065.			
Possible Causes:	See the possible causes for DTC P2065.			
Diagnostic Aids:	See the diagnostic aids for DTC P2065.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 413-01, Instrument Cluster for fuel level indicator diagnosis.		

P2067 - Fuel Level Sensor B Circuit Low

Description:	See the description for DTC P2065.			
Possible Causes:	See the possible causes for DTC P2065.			
Diagnostic Aids:	See the diagnostic aids for DTC P2065.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 413-01, Instrument Cluster for fuel level indicator diagnosis.		

P2068 - Fuel Level Sensor B Circuit Concern

Description:	See the description for DTC P2065.			
Possible Causes:	See the possible causes for DTC P2065.			
Diagnostic Aids:	See the diagnostic aids for DTC P2065.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 413-01, Instrument Cluster for fuel level indicator diagnosis.		

P2070 - Intake Manifold Tuning Valve (IMTV) Stuck Open Bank 1

Description:	The IMTV system is monitored for failure during continuous, key on, engine off (KOEO), or key on, engine running (KOER) self-tests. The test fails when the signal is more or less than an expected calibrated range.			
Possible Causes:	• IMTV signal circuit shorted to PWR GND or SIG RTN • Damaged IMRC actuator			
Diagnostic Aids:	An IMTVM PID reading may indicate a fault if available.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to HU41.	GO to HU41.

P2071 - Intake Manifold Tuning Valve (IMTV) Stuck Closed Bank 1

Description:	The IMTV system is monitored for failure during continuous, key on, engine off (KOEO), or key on, engine running (KOER) self-tests. The test fails when the signal is more or less than an expected calibrated range.			
Possible Causes:	• IMTV signal circuit shorted to PWR GND or SIG RTN • Damaged IMRC actuator • Damaged PCM • IMTV circuit open			
Diagnostic Aids:	An IMTVM PID reading may indicate a fault if available.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**

All		—	GO to HU41.	GO to HU41.

P2072 - Throttle Activator Control System - Ice Blockage

Description:	This DTC only identifies that the strategy has carried out several open and close cycles to remove potential ice build up. The DTC does not imply any system concerns, only that the mode has occurred, and that mode may be causing a long start time.			
Possible Causes:	• Ice or oil in the induction system could be the result of a fault in the PCV system			
Diagnostic Aids:	Check the PCV system for evidence of water or ice. Disconnect the air induction fresh air plenum from the throttle body. Check for water or oily residue at the PCV fresh air port. Disconnect the tube at the valve cover and check the tube for ice obstruction/ice. Start the engine and, to check the PCV system, place a piece of cardboard on the crankcase vent in the rocker cover. If the cardboard is held on the crankcase vent and fumes are not exiting, reconnect the tube to the valve cover and the air induction port. If the test passes, no further diagnosis of the PCV system is required. If the cardboard is not held in place, turn off the engine and check the PCV valve side of the system for ice or obstruction and repair as necessary. If no obstruction is found there, isolate and repair any obstruction in the intake manifold connection. If no obstruction is found there, make sure the PCV coolant heater is functional and repair as necessary. If no concern is present, make sure the PCV valve is allowing the proper vacuum flow and repair as necessary.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Description, Possible Causes and Diagnostic Aids for the DTC.		

P2100 - Throttle Actuator Control (TAC) Motor Circuit/Open

Description:	A powertrain control module (PCM) fault flag is set indicating the motor circuit is open. May require cycling the key.			
Possible Causes:	• TAC motor has an open winding • TAC motor is damaged • TAC motor harness is open • TAC motor harness is shorted to PWR • TAC motor harness circuits are shorted together • TAC motor harness connector is unplugged			
Diagnostic Aids:	A TAC motor circuit PID reading may indicate a fault, if available.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**

All		GO to DV20.

P2101 - Throttle Actuator Control (TAC) Motor Range/Performance

Description:	A powertrain control module (PCM) fault flag is set indicating the motor circuit is open, and may require cycling the key.			
Possible Causes:	• TAC motor circuits are cross-wired			
Diagnostic Aids:	A TAC motor circuit PID reading may indicate a fault, if available.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DV27.		

P2104 - Throttle Actuator Control (TAC) System - Forced Idle

Description:	The TAC system is in the failure mode effects management (FMEM) mode of forced idle.			
Possible Causes:				
Diagnostic Aids:	This DTC is an informational DTC and may be set in combination with a number of other DTCs which are causing the FMEM. Diagnose other DTCs first.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to QE1.		

P2105 - Throttle Actuator Control (TAC) System - Forced Engine Shutdown

Description:	The TAC system is in the failure mode effects management (FMEM) mode of forced engine shutdown.			
Possible Causes:				
Diagnostic Aids:	This DTC is an informational DTC and may be set in combination with a number of other DTCs which are causing the FMEM. Diagnose other DTCs first.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to QE1.		

P2106 - Throttle Actuator Control (TAC) System - Forced Limited Power

Description:	The TAC system is in the failure mode effects management (FMEM) mode of forced limited power. This DTC indicates the FMEM action is in effect due to a failure in an electronic throttle control (ETC) related component or module.			
Possible Causes:				
Diagnostic Aids:	This DTC is an informational DTC and may be set in combination with a number of other DTCs which are causing the FMEM. Diagnose other DTCs first.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to QE1.		

P2107 - Throttle Actuator Control (TAC) Motor Processor

Description:	The electronic throttle control (ETC) area of the powertrain control module (PCM) failed the self-test. The fault could be the result of an incorrect throttle position (TP) command, or TAC motor wires shorted together.			
Possible Causes:	• TAC motor wire shorted together • TAC motor circuit wires shorted to PWR • Damaged electronic throttle body (ETB) • Damaged PCM			
Diagnostic Aids:	A TAC motor circuit PID reading may indicate a fault, if available.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DV20.		

P2110 - Throttle Actuator Control (TAC) System - Forced Limited RPM

Description:	The TAC system is in the failure mode effects management (FMEM) mode of forced limited RPM.			
Possible Causes:				
Diagnostic Aids:	This DTC is an informational DTC and may be set in combination with a number of other DTCs which are causing the FMEM. Diagnose other DTCs first.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to QE1.		

P2111 - Throttle Actuator Control (TAC) System - Stuck Open

Description:	This powertrain control module (PCM) fault status indicates the throttle plate is at a greater angle than commanded.			
Possible Causes:	• Binding throttle body, stuck open • TAC motor circuits are cross-wired • TAC motor harness circuits are shorted together • Damaged PCM			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DV1.		

P2112 - Throttle Actuator Control (TAC) System - Stuck Closed.

Description:	This powertrain control module (PCM) fault status indicates the throttle plate is at a lower angle than commanded.			
Possible Causes:	• Binding throttle body, stuck closed • Damaged PCM			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DV1.		

P2121 - Accelerator Pedal Position (APP) Sensor Circuit 1 Range/Performance

Description:	The APP sensor fault flag is set for sensor 1 by the powertrain control module (PCM), indicating the signal is out of the normal self-test operating range.
Possible Causes:	• APP sensor 1 is open, or shorted to ground or voltage • APP sensor signal circuits are shorted together • Damaged APP sensor • Damaged PCM
Diagnostic Aids:	An APP1 sensor PID reading may indicate a fault.

Application		Key On Engine Off	Key On Engine Running	Continuous Memory
All		GO to DK1.		

P2122 - Accelerator Pedal Position (APP) Sensor Circuit 1 Low Input.

Description:	The APP sensor 1 is out of self-test range low.			
Possible Causes:	• APP sensor harness open • APP sensor harness shorted to ground • Damaged APP sensor			
Diagnostic Aids:	An APP1 sensor PID reading may indicate a fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DK1.		

P2123 - Accelerator Pedal Position (APP) Sensor Circuit 1 High Input

Description:	The APP sensor 1 is out of self-test range high.			
Possible Causes:	• APP sensor harness is shorted to VREF • Damaged APP sensor			
Diagnostic Aids:	An APP1 sensor PID reading may indicate a fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DK1.		

P2126 - Accelerator Pedal Position (APP) Sensor Circuit 2 Range/Performance

Description:	The APP sensor 2 has flagged a fault by the powertrain control module (PCM), indicating the signal is not within the normal self-test operating range.
Possible Causes:	• APP sensor assembly is binding • Damaged APP sensor • Damaged PCM

Diagnostic Aids:	An APP2 sensor PID reading may indicate a fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DK1.		

P2127 - Accelerator Pedal Position (APP) Sensor Circuit 2 Low Input

Description:	The APP sensor 2 is out of range low, open circuit.			
Possible Causes:	• APP sensor circuit is shorted to ground • APP sensor circuit is open • Damaged APP sensor			
Diagnostic Aids:	An APP2 sensor PID reading may indicate a fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DK1.		

P2128 - Accelerator Pedal Position (APP) Sensor Circuit 2 High Input

Description:	The APP sensor 2 is out of range high input.			
Possible Causes:	• APP sensor assembly is binding • APP sensor harness is shorted to voltage • Damaged APP sensor			
Diagnostic Aids:	An APP2 sensor PID reading may indicate a fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DK1.		

P2131 - Accelerator Pedal Position (APP) Sensor Circuit 3 Range/Performance

Description:	The APP sensor 3 has flagged a fault by the powertrain control module (PCM), indicating the signal is not within the normal self-test operating range.

Possible Causes:	• APP sensor assembly is binding • Damaged APP sensor • Damaged PCM			
Diagnostic Aids:	An APP3 sensor PID reading may indicate a fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DK1.		

P2132 - Accelerator Pedal Position (APP) Sensor Circuit 3 Low Input

Description:	The APP sensor 3 is out of range low, open circuit.			
Possible Causes:	• APP sensor assembly is binding • Damaged APP sensor			
Diagnostic Aids:	An APP3 sensor PID reading may indicate a fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DK1.		

P2133 - Accelerator Pedal Position (APP) Sensor Circuit 3 High Input

Description:	The APP sensor 3 is out of range high input.			
Possible Causes:	• APP sensor assembly is binding • APP sensor harness is shorted to voltage • Damaged APP sensor			
Diagnostic Aids:	An APP3 sensor PID reading may indicate a fault.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DK1.		

P2135 - ETC Throttle Position (TP) Sensor A/B Voltage Correlation

Description:	The powertrain control module (PCM) flagged a concern indicating that throttle position (TP) 1 and TP2 disagree by more than a calibrated limit.			
Possible Causes:	• TP sensor shorted internally to VREF • TP sensor harness is shorted to voltage • TP sensor signal wires are shorted together • Damaged TP sensor			
Diagnostic Aids:	Compare the TP1 and TP2 PID values for a full sweep and correlation. Refer to the chart in pinpoint test DV. GO to Pinpoint Test DV. Check the wiring harness for an open or a short circuit. Check the TP sensor for an internal open or short circuit. If no circuit concerns are present, install a new TP sensor.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to DV4.		

P2195 - Lack of HO2S-11 Switch, Sensor Indicates Lean

Description:	A heated oxygen sensor (HO2S) indicating lean at the end of a test is trying to correct for an over-rich condition. The test fails when the fuel control system no longer detects switching for a calibrated amount of time.
Possible Causes:	Electrical: • Short to VPWR in the harness or HO2S • Water in the harness connector • Open/shorted HO2S circuit • Corrosion or poor mating terminals and wiring • Damaged HO2S • Damaged powertrain control module (PCM) Fuel System: • Excessive fuel pressure • Leaking/contaminated fuel injectors • Leaking fuel pressure regulator • Low fuel pressure or running out of fuel • Vapor recovery system Induction System: • Air leaks after the mass air flow (MAF) sensor • Vacuum leaks • Positive crankcase ventilation (PCV) system is leaking or the valve is stuck open • Improperly seated engine oil dipstick EGR System: • Leaking gasket

	• Stuck EGR valve • Leaking diaphragm or EVR Base Engine: • Oil overfill • Camshaft timing • Cylinder compression • Exhaust leaks before or near the HO2S(s)			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to H16.	GO to H16.

P2196 - Lack of HO2S-11 Switch, Sensor Indicates Rich

Description:	A heated oxygen sensor (HO2S) indicating rich at the end of a test is trying to correct for an over-lean condition. The test fails when the fuel control system no longer detects switching for a calibrated amount of time.			
Possible Causes:	See the possible causes for DTC P2195.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to H21.		

P2197 - Lack of HO2S-21 Switch, Sensor Indicates Lean

Description:	See the description for DTC P2195.			
Possible Causes:	See the possible causes for DTC P2195.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to H16.	GO to H16.

P2198 - Lack of HO2S-21 Switch, Sensor Indicates Rich

Description:	See the description for DTC P2196.			
Possible Causes:	See the possible causes for DTC P2195.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to H21.		

P2257 - Secondary Air Injection (AIR) System Control A Circuit Low

Description:	The AIR system monitor circuit is low, indicating the electrical AIR pump is off although the electrical AIR pump was commanded on by the powertrain control module (PCM).			
Possible Causes:	• Open B+ circuit • Open VPWR circuit • Open voltage circuit between the AIR relay and the AIR pump • Damaged AIR relay			
Diagnostic Aids:	The AIR monitor circuit PCM input contains a pull up voltage through a resistance internal to the PCM. This voltage is normally held low by the resistance path through the AIR pump when the pump is off. A single electrical open circuit component such as an AIR relay coil in this multi-component circuit will not be detected by the PCM output driver, yet it will create DTC P2257.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HM37.		

P2258 - Secondary Air Injection (AIR) System Control A Circuit High

Description:	The AIR system monitor circuit is high, indicating the electrical AIR pump is on although the electrical AIR pump was commanded off by the powertrain control module (PCM).
Possible Causes:	• AIR relay fault - stuck closed • AIR pump fault - circuit open in motor • Open ground to AIR pump • Open AIR monitor circuit between the AIR pump and the PCM • Short to voltage in the AIR relay to AIR pump voltage circuit

Diagnostic Aids:	The AIR monitor circuit PCM input contains a pull up voltage through a resistance internal to the PCM. This voltage is normally held low by the resistance path through the AIR pump when the pump is off.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HM49.		

P2270 - Lack of HO2S-12 Switch, Sensor Indicates Lean

Description:	The downstream heated oxygen sensor (HO2S) is forced rich and lean and monitored by the powertrain control module (PCM). The test fails if the PCM does not detect the output of the HO2S in a calibrated amount of time.			
Possible Causes:	• Pinched, shorted, and corroded wiring and pins • Crossed sensor wires • Exhaust leaks • Contaminated or damaged sensor			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to H55.	GO to H55.

P2271 - Lack of HO2S-12 Switch, Sensor Indicates Rich

Description:	See the description for DTC P2270.			
Possible Causes:	See the possible causes for DTC P2270.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to H55.	GO to H55.

P2272 - Lack of HO2S-22 Switch, Sensor Indicates Lean

Description:	See the description for DTC P2270.
Possible Causes:	See the possible causes for DTC P2270.

Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to H55.	GO to H55.

P2273 - Lack of HO2S-22 Switch, Sensor Indicates Rich

Description:	See the description for DTC P2270.			
Possible Causes:	See the possible causes for DTC P2270.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to H55.	GO to H55.

P2274 - O2 Sensor Signal Stuck Lean - Bank 1, Sensor 3

Description:	See the description for DTC P2270.			
Possible Causes:	See the possible causes for DTC P2270.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to H55.	GO to H55.

P2275 - O2 Sensor Signal Stuck Rich - Bank 1, Sensor 3

Description:	See the description for DTC P2270.			
Possible Causes:	See the possible causes for DTC P2270.			
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to H55.	GO to H55.

P2278 - Oxygen Sensor Signals Swapped - Bank 1, Sensor 3/Bank 2, Sensor 3

Description:	The heated oxygen sensor (HO2S) monitor determines if the HO2S signal response for a fuel shift corresponds to the correct engine bank. The test fails when a response from the HO2S being tested is not indicated.			
Possible Causes:	• Crossed HO2S harness connectors (downstream) • Crossed HO2S wiring at the harness connectors (downstream) • Crossed HO2S wiring at the PCM connectors (downstream)			
Diagnostic Aids:	Connect the HO2S connector to the correct bank.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—	GO to H66.	—

P260F - Evaporative System Monitoring Processor Performance

Description:	This DTC is set when a concern is detected internal to the powertrain control module (PCM). The microprocessor that controls the engine off natural vacuum (EONV) leak check monitor is separate from the main processor within the PCM.			
Possible Causes:	• Module communications network concerns • PCM calibration level • Damaged PCM			
Diagnostic Aids:	Verify the PCM is at the latest calibration level. Reprogram if necessary.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		GO to HX58.		

Pxxxx -

Description:				
Possible Causes:				
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**

All		For Pxxxx DTCs not listed in this chart, refer to the customer's symptom to determine the applicable Workshop Manual section for diagnosis.

U0101 - Lost Communication With Transaxle Control Module (TCM)

Description:				
Possible Causes:	Network DTC(s) occur during module to module communication failures. Two types of network faults can be categorized: • Invalid data network faults - data is transferred within the normal inter-module message, but contains known invalid data. The transmitting module logs a DTC related to the invalid data fault. • Missing message network faults - missing message faults are logged by module upon failure to receive a message from another module within a defined retry period.			
Diagnostic Aids:	Carry out the on-board diagnostics for the associated network module. For additional information concerning the description and operation of the vehicle communication network, refer to the Workshop Manual Section 418-00, Module Communications Network.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		—		

U0300 - Internal Control Module Software Incompatibility

Description:	This DTC indicates that there are incompatible software levels within the powertrain control module (PCM) that control the electronic throttle control (ETC) system. The ETC system utilizes three different chips (Power PC, TPPC and E-quizzer) within the PCM, each having its own software level and function. The three chips must have the proper level of software in order to communicate and function together.			
Possible Causes:				
Diagnostic Aids:	DTC U0300 can be set in combination with P2105. Check and confirm the correct, latest version of software is present on the PCM, and reflash the PCM if required.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the module programming feature on your diagnostic tool and program the powertrain control module (PCM) to the latest level.		

U1021 - SCP Invalid or Missing Data for Air Conditioning Clutch

Description:	

Possible Causes:	Network DTC(s) occur during module to module communication failures. Two types of network faults can be categorized: • Invalid data network faults - data is transferred within the normal inter-module message, but contains known invalid data. The transmitting module logs a DTC related to the invalid data fault. • Missing message network faults - missing message faults are logged by module upon failure to receive a message from another module within a defined retry period.			
Diagnostic Aids:	Carry out the on-board diagnostics for the associated network module. For additional information concerning the description and operation of the vehicle communication network, refer to the Workshop Manual Section 418-00, Module Communications Network.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 412-00, Climate Control System.		

U1039 - SCP Invalid or Missing Data for Vehicle Speed

Description:				
Possible Causes:	See the possible causes for DTC U1021.			
Diagnostic Aids:	See the diagnostic aids for DTC U1021.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 206-09, Anti-Lock Control.		

U1051 - SCP Invalid or Missing Data for Brakes

Description:				
Possible Causes:	See the possible causes for DTC U1021.			
Diagnostic Aids:	See the diagnostic aids for DTC U1021.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 417-01, Exterior Lighting.		

U1131 - SCP Invalid or Missing Data for Fuel System

Description:	
Possible Causes:	See the possible causes for DTC U1021.

Diagnostic Aids:	See the diagnostic aids for DTC U1021.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 413-01, Instrument Cluster.		

U1147 - SCP Invalid or Missing Data for Vehicle Security

Description:				
Possible Causes:	See the possible causes for DTC U1021.			
Diagnostic Aids:	See the diagnostic aids for DTC U1021.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 419-01, Anti-Theft.		

U1262 - SCP Communication Bus Fault - Perform Network Communication Test

Description:				
Possible Causes:	See the possible causes for DTC U1021.			
Diagnostic Aids:	Refer to the Workshop Manual Section 418-00, Module Communications Network for further diagnosis.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 418-00, Module Communications Network.		

U1451 - SCP Invalid or Missing Data for Anti-Theft module

Description:				
Possible Causes:	See the possible causes for DTC U1021.			
Diagnostic Aids:	See the diagnostic aids for DTC U1021.			
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		Refer to the Workshop Manual Section 419-01, Anti-Theft.		

Uxxxx -

Description:				
Possible Causes:				
Diagnostic Aids:				
Application		**Key On Engine Off**	**Key On Engine Running**	**Continuous Memory**
All		For U DTC(s) received during self-test of a module other than the powertrain control module (PCM), refer to Section 3, QT1 PCM Quick Test.		

Note: 'x' equals any number 0 through 9 or letter A through F.

Note 1: DTC P1000 is ignored in the key on engine off (KOEO) and key on engine running (KOER) self-tests. Disregard DTC P1000 and continue as directed.