

2022 CHEVROLET CORVETTE SERVICE MANUAL

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K20 Engine Control Module: Scan Tool Information (LV3, L83 or L86)

Engine Control Module Scan Tool Data

Parameter	System State	Expected Value	Description
This is a comprehensive list. Not all parameters listed are available for all applications.			
Base Operating Conditions: Engine Idling/Radiator Hose Hot/Park or Neutral/Closed Loop/Accessories OFF			
4WD Low Signal	⌘	Enabled/Disabled/Invalid	This parameter displays the status of the four wheel drive system.
5-V Reference 1	⌘	5 Volts	This parameter displays the voltage sensed on the 5-volt reference 1 circuit at the control module. The scan tool will display a higher value at higher voltage. The scan tool will display a lower value at lower voltage.
5-V Reference 1 ⌘4	⌘	5 Volts	This parameter displays the voltage sensed on the 5-volt reference circuit at the control module. The scan tool will display a higher value at higher voltage. The scan tool will display a lower value at lower voltage.
5-V Reference 1 ⌘4 Circuit Status	⌘	OK	This parameter will display OK if the circuit is good or Malfunction if a short to ground, short to B+ or open circuit is present.
A/C Compressor Clutch Relay Command	⌘	Off	This parameter displays the current command of the A/C compressor clutch relay.
A/C Compressor Clutch Relay Control Circuit High Voltage Test Status	⌘	OK	This parameter displays the state of the A/C compressor clutch relay control circuit. The parameter displays Malfunction if the A/C compressor clutch relay control circuit is shorted to voltage.
A/C Compressor Clutch Relay Control Circuit Low Voltage Test Status	⌘	OK	This parameter displays the state of the A/C compressor clutch relay control circuit. The parameter displays Malfunction if the A/C compressor clutch relay control circuit is shorted to ground.
A/C Compressor Clutch Relay Control Circuit Open Test Status	⌘	OK	This parameter displays the state of the A/C compressor clutch relay control circuit. The parameter displays Malfunction if the A/C compressor clutch relay control circuit is open.
A/C Disable - A/C Pressure Out of Range	⌘	No	This parameter displays YES if the A/C is disabled due to A/C pressure out of range.
A/C Disengage History 1 ⌘8	⌘	Varies	This parameter displays one of the last eight reasons that powertrain has disengaged the air conditioning compressor. ⌘, ⌘, ⌘
A/C High side Pressure Sensor	A/C OFF	1.43 Volts	This parameter displays 0 ⌘5 volts. The voltage applied to the ECM input for the A/C refrigerant pressure sensor.
	A/C ON	2.39 Volts	
A/C High side Pressure Sensor	A/C OFF	500 ⌘2,220 kPa (72 ⌘319 psi)	This parameter displays 0 ⌘3450 kPa (0 ⌘500 psi). The voltage applied to the ECM input from the A/C refrigerant pressure sensor is converted to a pressure value.
	A/C ON	300 ⌘1,220 kPa (43 ⌘174 psi)	
A/C Off for WOT	⌘	No	This parameter displays if the A/C compressor is disabled due to a wide open throttle.
A/C Request Signal	⌘	Yes	This parameter displays YES if the A/C is requested on. ⌘, ⌘
Accelerator Pedal Position	⌘	0%	This parameter displays the accelerator pedal position in percentage.
Accelerator Pedal Position When Engine Overspeed Detected	⌘	%	This parameter displays the accelerator pedal position in percentage when the engine overspeed was detected.

Parameter	System State	Expected Value	Description
Air/Fuel Equivalence Ratio Command	Ï€Ï€Ï€”	1.0	This parameter contains the commanded equivalence ratio.Ï€,Ï€ The equivalence ratio should be reported as 1.0 when the vehicle is in closed loop.
Ambient Air Temperature	Ï€Ï€Ï€”	Varies Ï€,Ï€°C/Ï€,Ï€°F	This parameter displays the outside temperature at any given altitude expressed in degrees.
Ambient Air Temperature When Recommended Maximum Fuel Alcohol Content Exceeded	Ï€Ï€Ï€”	Ï€,Ï€°C (Ï€,Ï€°F)	This parameter displays the estimated ambient air temperature at the most recent time that the recommended ethanol concentration was exceeded.
Ambient Humidity	Ï€Ï€Ï€”	Varies	This parameter displays the current ambient humidity in percentage.
APP Sensors	Ï€Ï€Ï€”	Varies	This parameter displays the average of the APP sensors as calculated by the throttle actuator control (TAC) module. The APP average is a range of values indicating a low number when the accelerator pedal is not depressed to a high number when the accelerator pedal is fully depressed. This value is listed in counts.
APP Sensor 1 and 2	Accelerator pedal not actuated	0.7Ï€Ï€Ï€”1.2 Volts	This parameter displays the voltage signal sent to the control module from APP sensor 1 of the APP sensor assembly. APP sensor 1 is a range of values indicating a low voltage when the accelerator pedal is not depressed to a high voltage when the accelerator pedal is fully depressed.
	Accelerator pedal fully actuated	4.2Ï€Ï€Ï€”4.5 Volts	
APP Sensor 1 and 2	Ï€Ï€Ï€”	Agree	This parameter displays the results of a control module test that compares the signals from the APP sensors 1 and 2 . The scan tool will display Agree or Disagree. Agree indicates that APP sensor 1 and APP sensor 2 voltages correspond to the same accelerator pedal position. Disagree indicates that APP sensor 1 and APP sensor 2 voltages correspond to different accelerator pedal positions.
APP Sensor 1-2 Circuit Status	Ï€Ï€Ï€”	OK	This parameter displays that the sensed accelerator pedal position 1 or 2 sensor value is currently out of range or that a Malfunction has been detected based upon the sensed accelerator pedal position 1 or 2 sensor value being out of range
APP Sensor 1-2 Learned Applied Position	Ï€Ï€Ï€”	%	This parameter displays the learned maximum (fully applied) accelerator pedal position.
APP Sensor 1-2 Learned Released Position	Ï€Ï€Ï€”	Volts	This parameter displays the accelerator pedal sensor 1 or 2 signal at its minimum learned position (pedal released) as a percentage of its reference voltage.Ï€,Ï€ Ï€,Ï€
APP Sensor 1-2 Position	Accelerator pedal not actuated	0%	This parameter displays the angle of the APP sensor 1 as calculated by the control module using the signal from the APP sensor 1. APP sensor 1 is a range of values indicating a low percentage when the accelerator pedal is not depressed to a high percentage when the accelerator pedal is fully depressed.
APP Sensor 1-3	Accelerator pedal not actuated	0.7Ï€Ï€Ï€”0.2 Volts	This parameter displays the voltage signal sent to the control module from APP sensor 1 of the APP sensor assembly. APP sensor 1 is a range of values indicating a low voltage when the accelerator pedal is not depressed to a high voltage when the accelerator pedal is fully depressed.
APP Sensor 1 Indicated Position	Accelerator pedal not actuated	0%	This parameter displays the angle of the APP sensor 1 as calculated by the control module using the signal from the APP sensor 1. APP sensor 1 is a range of values indicating a low percentage when the accelerator pedal is not depressed to a high percentage when the accelerator pedal is fully depressed.
	Accelerator pedal fully actuated	100%	
APP Sensor 2	Accelerator pedal not actuated	0.3Ï€Ï€Ï€”0.5 Volts	This parameter displays the voltage signal sent to the control module from APP sensor 2 of the APP sensor assembly. APP sensor 2 is a range of values indicating a low voltage when the accelerator pedal is not depressed to a high voltage when the accelerator pedal is fully depressed.
	Accelerator pedal fully actuated	2.2Ï€Ï€Ï€”2.5 Volts	
	Accelerator pedal not actuated	0%	This parameter displays the angle of the APP sensor 2 as calculated by the

APP Sensor 2 Position Parameter	System State	Expected Value	Description
	Accelerator pedal fully actuated	100%	control module using the signal from the APP sensor 2. APP sensor 2 is a range of values indicating a low percentage when the accelerator pedal is not depressed to a high percentage when the accelerator pedal is fully depressed.
APP Sensor 1 and 2	Yes	Agree	This parameter displays the results of a control module test that compares the signals from the APP sensors 1 and 2. The scan tool will display Agree or Disagree. Agree indicates that APP sensor 1 and APP sensor 2 voltages correspond to the same accelerator pedal position. Disagree indicates that APP sensor 1 and APP sensor 2 voltages correspond to different accelerator pedal positions.
BARO	Yes	Varies with altitude	This parameter displays the barometric pressure as calculated by the control module using the signal from the MAP sensor measured when the ignition is turned ON with the engine not running. The control module will update the barometric pressure during wide-open throttle (WOT) conditions.
BARO Sensor	Yes	Volts	This parameter displays the barometric pressure sensor in volts.
Battery Sensor Module Battery State Information	Ignition ON	Available / Not Available	This parameter indicates if Battery State Information is Available or Not Available. Battery State Information is Not Available when there is a battery drain such as a parasitic draw.
Brake Pedal Position Circuit Signal	Yes	Closed	This parameter displays the state of the brake pedal position switch as determined by the brake pedal switch. The scan tool will display Open when the brake pedal is depressed, and Closed when the brake pedal is not depressed.
Brake Pedal Position Sensor	Yes	Volts	This parameter displays the brake pedal position as indicated by the analog sensor as a percentage of its reference voltage.
Brake Pedal Position Sensor	Yes	%	This parameter displays the displacement of the brake pedal, where 0% corresponds to the brake pedal being released and 100% corresponds to the brake pedal being fully applied.
Brake Pedal Position Sensor Fully Released Learn Status	Yes	Complete	This parameter displays the brake pedal fully released learn position status.
Brake Pedal Position Sensor Learned Released Position	Yes	Volts	This parameter displays the position learned for the brake pedal position sensor when the brake pedal is fully released.
Brake Pedal Position Sensor Signal	Yes	Released	This parameter displays the status of the brake pedal as determined by the ECM.
Brake Pedal Position Signal	Yes	Released	This parameter displays the state of the brake pedal position switch as determined by the brake pedal switch. The scan tool will display Applied when the brake pedal is depressed, and Released when the brake pedal is not depressed.
Calculated Air Flow	Yes	Varies g/s	This parameter displays the air flow as calculated by the control module.
Calculated BARO	Yes	Varies kPa	This parameter displays the barometric pressure as calculated by the control module.
Calculated Catalyst Temperature Bank 1 or 2	Yes	Varies °C/°F	This parameter displays the catalyst temperature in bank 1 or 2 as calculated by the control module.
Calculated Engine Oil Temperature	Yes	Varies °C/°F	This parameter displays the estimated (modeled) engine oil temperature (as a function of engine coolant temperature and other parameters).
Camshaft Position	Yes	Varies °	This parameter displays the position of the intake camshaft for bank 1 in terms of degrees of camshaft rotation (advance) from the park position (a value of zero represents the park position).
Camshaft Position Active Counter	Yes	Counts	This parameter displays a rolling count of the number of primary cam position sensor pulses. A change in the value of this parameter indicates primary camshaft position sensor activity
Camshaft Position Actuator Solenoid Control Circuit High Voltage Test Status	Yes	OK	This parameter displays the state of the camshaft position actuator solenoid control circuit. The parameter displays Malfunction if the camshaft position signal circuit is shorted to voltage.
Camshaft Position Actuator Solenoid Control Circuit Low Voltage Test Status	Yes	OK	This parameter displays the state of the camshaft position actuator solenoid control circuit. The parameter displays Malfunction if the camshaft position signal circuit is shorted to ground.

Parameter	System State	Expected Value	Description
Camshaft Position Actuator Solenoid Control Circuit Open Test Status	Yes/No	OK	This parameter displays the state of the camshaft position actuator solenoid control signal circuit. The parameter displays Malfunction if the camshaft position signal circuit is open.
Camshaft Position Command	Yes/No	Percentage	This parameter displays the commanded duty cycle from the engine control module for the intake camshaft phase of the Throttle Position for bank 1.
Camshaft Position Sensor	Yes/No	Engine Idle Speed	This parameter displays the engine speed as calculated by the control module using the signal from the CMP sensor.
Camshaft Position Variance	Yes/No	degrees	This parameter displays the absolute difference between the desired and actual positions of the intake camshaft for bank 1 in terms of degrees of camshaft rotation.
Catalyst Monitor Complete	Yes/No	Yes/No	This parameter indicates the status of the Catalyst. The scan tool displays YES when the diagnostic is complete. And NO if the diagnostic has Not ran or a malfunction is detected in the Catalyst.
Catalyst Monitor Complete This Ignition Cycle	Yes/No	Yes/No	This parameter indicates the status of the catalyst monitor diagnostic. Catalyst Monitor Test Running indicates YES or NO when the catalyst monitor diagnostic is actively running a test.
Catalyst Monitor Enabled	Yes/No	Yes/No	The scan tool displays YES when the Catalyst Monitor is Enabled. If the scan tool displays NO this could indicate a malfunction in the Catalyst Monitor circuit.
Catalyst Monitor Enabled This Ignition Cycle	Yes/No	Yes/No	This parameter indicates the status of the catalyst monitor diagnostic. Catalyst Monitor Test Running indicates YES or NO when the catalyst monitor diagnostic is actively running a test.
Catalyst Monitor Not At Idle Test Conditions Met	Yes/No	Yes/No	This parameter indicates if the off idle conditions for the catalyst monitor diagnostic have been met.
Catalyst Monitor Test Counter Bank 1 or 2	Yes/No	Counts	This parameter contains the number of iterations of the catalyst monitor diagnostic test that have been performed since a code clear for bank 1 or 2.
Catalyst Monitor Test Result Bank 1 or 2	Yes/No	No Decision	This parameter indicates the status of the catalyst monitor diagnostic for bank 1 or 2. Multiple tests may run before the diagnostic reports a Passed or Failed result.
Catalyst Monitor Test State	Yes/No	Inactive	This parameter indicates the current state of the catalyst monitor test.
Change Engine Oil Indicator Command	Yes/No	No	This parameter displays the state of the change engine oil lamp control circuit as commanded by the control module.
Clutch Pedal Starter Inhibit Switch	Yes/No	Off	This parameter displays the current state of the clutch pedal starter inhibit switch.
Clutch Pedal Switch	Yes/No	Applied	This parameter displays the current state of the clutch pedal.
Cold Startup	Yes/No	Yes/No	This parameter displays whether the engine meets the conditions for a cold startup during the present ignition cycle. The scan tool displays YES when the conditions for a cold startup are met during this ignition cycle. The scan tool displays NO when the conditions for a cold startup are not met during the present ignition cycle. Conditions for a cold startup require the coolant temperature and the intake air temperature to be below a predetermined temperature and within a certain range of each other. These conditions must occur after the engine was warmed up to a specific temperature during the previous ignition cycle.
Component Monitor Complete	Yes/No	Yes/No	This parameter displays Yes when the Component Monitor is Complete. The engine control module looks at many input and output components to make this determination. If a malfunction is detected the scan tool will display NO.
Component Monitor Complete This Ignition Cycle	Yes/No	Yes/No	This parameter displays Yes when the Component Monitor has completed this ignition cycle. The engine control module looks at many input and output components to make this determination. If a malfunction is detected the scan tool will display NO.
Component Monitor Enabled	Yes/No	Yes/No	This parameter displays Yes when Component Monitor is Enabled. And No when it is not Enabled.
Component Monitor Enabled This Ignition Cycle	Yes/No	Yes/No	This parameter displays Yes when Component Monitor is Enabled this ignition cycle. And No when it is not Enabled this ignition cycle.
Cooling Fan Command	Yes/No	%	This parameter displays the cooling fan duty cycle.

Parameter	System State	Expected Value	Description
Cooling Fan Relay 1, Relay 2, or Relay 2 and 3 Control Circuit High Voltage Test Status	OK	OK	This parameter displays the state of the cooling fan control circuit. The parameter displays Malfunction if the cooling fan control circuit is shorted to voltage.
Cooling Fan Relay 1, Relay 2, or Relay 2 and 3 Control Circuit Low Voltage Test Status	OK	OK	This parameter displays the state of the cooling fan control circuit. The parameter displays Malfunction if the cooling fan control circuit is shorted to ground.
Cooling Fan Relay 1, Relay 2, or Relay 2 and 3 Control Circuit Open Test Status	OK	OK	This parameter displays the state of the cooling fan control circuit. The parameter displays Malfunction if the cooling fan control circuit is open.
Cooling Fan Relay 1, Relay 2, or Relay 2 and 3 Command	On/Off	On/Off	This parameter displays the current cooling fan relay 1 command.
Cooling Fan Speed	RPM	RPM	This parameter displays the current fan speed in RPMs.
CPP Learned Apply Position	V	V	This parameter displays the position learned for the clutch pedal position sensor when the clutch pedal is fully applied during the associated learn procedure.
CPP Learned Release Position	V	V	This parameter displays the position learned for the clutch pedal position sensor when the clutch pedal is released.
CPP Sensor	V	V	This parameter displays the clutch pedal position sensor analog input as a percentage of its reference voltage.
CPP Sensor	%	%	This parameter displays the position learned for the clutch pedal position sensor when the clutch pedal is fully applied during the associated learn procedure.
Crank Request Signal	No	No	This parameter displays the state of the crank request input to the control module from the ignition switch. The scan tool will display Yes when the ignition switch is in the Crank position. The scan tool will display No when the ignition switch is in any other position.
Crankshaft Position Active Counter	Incrementing	Incrementing	This parameter displays an incrementing counter when the control module receives a signal from the crankshaft position (CKP) sensor.
Crankshaft Position Signal Output Circuit High Voltage Test Status	OK	OK	This parameter displays the state of the crankshaft position signal output circuit. The parameter displays Malfunction if the crankshaft position signal output circuit is shorted to voltage.
Crankshaft Position Signal Output Circuit Low Voltage Test Status	OK	OK	This parameter displays the state of the crankshaft position signal output circuit. The parameter displays Malfunction if the crankshaft position signal output circuit is shorted to ground.
Crankshaft Position Signal Output Circuit Open Test Status	OK	OK	This parameter displays the state of the crankshaft position signal output circuit. The parameter displays Malfunction if the crankshaft position signal output circuit is open.
Crankshaft Position Variation Learn	Learn in Progress / Learning Not Enabled	Learn in Progress / Learning Not Enabled	This parameter displays the crankshaft position variation learn status. The scan tool shows Learn in Progress until the learn is completed. The ECM learns the new variation values at each ignition cycle.
Crankshaft Position Variation Learn Attempts	Counts	Counts	This parameter displays the crankshaft position variation learn attempts. The ECM learns the new variation values at each ignition cycle.
Crankshaft Position Variation Learn Required Engine Speed	In Range / Out Of Range	In Range / Out Of Range	This parameter displays if the crankshaft position variation learn has reached the required engine speed.
Crankshaft Position Variation Learn Status	Complete / Not Complete	Complete / Not Complete	This parameter displays the status of the crank angle sensing error learn algorithm.
Crankshaft Position Resync Counter	Varies	Varies	This parameter displays the number of times the control module has to synchronize the CKP sensor.
Crankshaft Position Sensor	Engine Idle Speed	Engine Idle Speed	This parameter displays the engine speed as calculated by the control module using the signal from the CKP sensor.

Parameter	System State	Expected Value	Description
Cruise Control	Yes/No	Inactive	This parameter displays the status of the cruise control system as determined by the control module. The scan tool will display Yes when the cruise control system is in control of vehicle speed. The scan tool will display No when the cruise control system is not operating.
Cruise Control Cancel Switch	Yes/No	Active	This parameter displays the status of the cruise control cancel switch as determined by the control module. The scan tool will display Active when the cruise control cancel switch is on. The scan tool will display Inactive when the cruise control cancel switch is off.
Cruise Control Inhibit Reason	Yes/No	Varies	The parameter displays the reason the cruise control system cannot engage.
Cruise Control On/Off Switch	Yes/No	Off	This parameter displays the state of the On/Off switch input to the control module. The scan tool will display On when the cruise On/Off switch is On. The scan tool will display Off when the cruise On/Off switch is Off.
Cruise Control Resume/Acceleration Switch	Yes/No	Inactive	This parameter displays the state of the Resume/Accel switch input to the control module. When the cruise control switch is in the On position and the Resume/Accel switch is activated, the scan tool displays Active. When the Resume/Accel switch is released the scan tool displays Inactive.
Cruise Control Set/Coast Switch	Yes/No	Inactive	This parameter displays the state of the Set/Coast switch input to the control module from the cruise control system. When the cruise control switch is in the on position and the Set/Coast switch is activated, the scan tool displays Active. When the Set/Coast switch is released the scan tool displays Inactive.
Cruise Disengage 1-8 History	Cruise ON	None	The Scan tool displays the last 8 cruise control disengages in order from 1 to 8. There are 20 possible causes for the cruise control to disengage.
Cruise Resume/Acceleration Switch	Yes/No	Invalid	This parameter displays the state of the Resume/Accel switch input to the control module. When the cruise control switch is in the ON position and the Resume/Accel switch is activated, the scan tool displays ON. When the Resume/Accel switch is released the scan tool displays OFF.
Current Gear	Yes/No	#	This parameter contains the current measured, or active™ forward gear in the transmission as interpreted or determined in the Engine Control Module.
Current Gear When Engine Overspeed Detected	Yes/No	#	This parameter contains the transmission actual gear observed upon initial detection of an overspeed condition. This value will be updated upon each subsequent overspeed condition.
Cycles of Misfire Data	Yes/No	Incrementing 0-100	This parameter displays the number of cylinder firing events recorded by the control module.
Cyl. 1,4,6,7 Deactivation Solenoid Valve Command	Yes/No	Off	This parameter displays On when V4 mode is commanded or Off when V8 mode is commanded.
Cyl. 1 - 8 Deactivation Solenoid Command	Yes/No	Cyl. On/Cyl. Off	This parameter displays Cyl. On when V4 mode is commanded or Cyl. Off when V8 mode is commanded.
			This parameter shows the reason the Active Fuel Management system changed from V4 mode to V8 mode, for the last 8 occurrences. • Ignition Voltage • Engine Oil Pressure • Engine Oil Temperature • ECT • Engine Speed • Transmission Gear • Transmission Range • Transmission Shifting • Control Function Active • Minimum Time On All Cylinders

Parameter	System State	Expected Value	Maximum Deactivation Time Exceeded Description
Cyl. Deactivation Disable - Disable 18 History	"	Varies	- Oil Aeration - Deceleration Fuel Cut-Off - Injector Stable Time - Heater Performance - MAP Sensor DTC - Brake Booster Pressure Sensor DTC - TAC System DTC - Engine Oil Pressure Sensor DTC - ECT Sensor DTC - IAT Sensor DTC - VSS DTC - Cylinder Deactivation Solenoid Valve DTC - Misfire DTC - Crankshaft Position Sensor DTC - Camshaft Position Sensor DTC - Engine Controls Ignition Relay DTC - Torque Reduction - Axle Torque Limiting - Engine Overtemperature Protection Active - Catalyst Overtemperature Protection - Piston Protection - Hot Coolant Mode - Engine Overspeed Protection Active - A/C Compressor Clutch On - HO2S 2 Test 4WD Low Engaged - Vehicle Speed Too Low - Acceleration Request - Catalyst Temperature Low - Cylinder Deactivation System DTC - Calculated Torque 4WD Low State Invalid - Minimum Time After TAC DTC - Hybrid/EV Powertrain Control Module Request - Fuel Alcohol Content Learn In Progress

Parameter	System State	Expected Value	- Fuel Alcohol Content Too High - Maximum Throttle Exceeded Description
Cylinder Deactivation Performance Test	OK	OK	This parameter displays OK if all the Active Fuel Management enabling conditions are met. The parameter displays Fault if one or more enabling conditions are out of range.
Cylinder Deactivation System Command	All Cylinder	All Cylinder	This parameter displays several signals associated with the status of the Active Fuel Management system.
Cylinder Deactivation Cycles	Counts	Counts	This parameter displays the number of times the engine switches between V8 mode, and V4 mode during each ignition cycle. The counter will reset to zero and increment again, if the count reaches 255 during the current ignition cycle.
Cylinder 1, 4, 6, 7 Current Misfire Counter	Counts	Counts	This parameter displays the number of misfires detected for cylinder's 1 within the current 100 engine cycle test interval. The set of misfire counters for the individual cylinders are maintained such that if a single misfire is detected over an engine cycle.
Cylinder 1, 4, 6, 7 Deactivation Solenoid Valve Control Circuit High Voltage Test Status	OK	OK	This parameter displays the state of the deactivation solenoid valve control circuit. The parameter displays Malfunction if the deactivation solenoid valve control circuit is shorted to voltage.
Cylinder 1, 4, 6, 7 Deactivation Solenoid Valve Control Circuit Low Voltage Test Status	OK	OK	This parameter displays the state of the deactivation solenoid valve control circuit. The parameter displays Malfunction if the deactivation solenoid valve control circuit is shorted to ground.
Cylinder 1 History Misfire Counter	Counts	Counts	This parameter displays the number of misfires detected for cylinder's 1 since a misfire failure has been reported.
Cylinder 1 Injector Control Circuit Status	OK	OK	This parameter displays the status of the fuel injector's 1 output malfunction for Short circuit from injector high side to ground or system voltage, Short circuit from injector low side to injector low side, Short circuit from injector low side to ground or system voltage, Short circuit from injector high side to low side and Injector open circuit.
Cylinder 1 Injector Disabled - Misfire Detected	No	No	This parameter displays when an injector is disabled in a specific engine cylinder due to a misfire being detected.
Cylinder 1 Knock Detected	No	No	This parameter indicates if a knock has been detected over a calibratable sample period.
Cylinder Deactivation Cycles	Counts	Counts	This parameter displays the number of times the engine switches between V8 mode, and V4 mode during each ignition cycle.
			This parameter displays Yes if one of the following Deactivation Inhibit Reasons is detected. - Engine Coolant - Temperature Out of Range - Engine Oil Temperature Out of Range - Engine Oil Pressure Out of Range - Ignition Voltage Out of Range - Accelerator Pedal Position High - Accelerator Pedal Position Increase High - Brake Vacuum Pressure Low - Engine Manifold Vacuum Pressure Low - Engine Oil Aeration Present - Maximum Deactivation Time Exceeded

Parameter	System State	Expected Value	Description
Cylinder Deactivation Inhibit Reason	Yes/No	Yes/No	- Minimum Time with All Cylinders Activated Not Met - All Cylinders Activated via Device Control - Transmission Gear Shift in Progress - Transmission Range Incorrect - Transmission Gear Incorrect - Engine Speed Out of Range - Tip In Bump Active - Vehicle Speed Too Low - In 4WD Low State - POSD Intrusive Active - AC Clutch Being Engaged - Heater Performance - Fuel Shut-Off Stability Timer Active - Decel Fuel Cutoff Active - Maximum Throttle Exceeded - Ethanol Concentration Too High - Ethanol Learn In Progress - ETC Disable Time - Catalyst Temperature Low - Displacement on Demand Solenoid Driver Fault - Vehicle Speed Fault - Intake Air Temperature Sensor Fault - Engine Coolant Temperature Sensor Fault - Engine Oil Pressure Sensor Fault - Electronic Throttle Control Reduced Engine Power Active - Brake Vacuum Pressure Sensor Fault - Manifold Absolute Pressure Sensor Fault - Catalyst Converter Overtemperature Protection Active - Engine Metal Overtemperature Protection Active - Axle Torque Limiting Active (Obsolete) - Brake Torque Management Active (Obsolete) - Powertrain Relay Fault - Cam Sensor Fault - Crank Sensor Fault - Engine Misfire Detected - Invalid 4WD Low State

Parameter	System State	Expected Value	Description
			- Torque Model Inaccurate Fault - Cylinder Deactivation System Fault - Engine Overspeed Protection Active - Hot Coolant Mode Active
Cylinder Deactivation Performance Test	Active	OK	This parameter displays if all the Active Fuel Management enabling conditions are met. The parameter displays Malfunction if one or more enabling conditions are out of range.
Cylinder Deactivation Performance Test	Active	OK	This parameter displays if the commanded cylinder deactivation failed. This indicates that one or more cylinders failed to deactivate when commanded to do so by displacement by demand.
Cylinder Deactivation System Command	Active	All Cylinder	This parameter displays several signals associated with the status of the Active Fuel Management system.
Deceleration Fuel Cut-Off	Active	Inactive	This parameter displays the status of the operating mode used to turn OFF the fuel injectors during certain deceleration conditions. When the scan tool displays Active, the control module has turned OFF the fuel injectors. When the scan tool displays Inactive, the fuel system is operating normally.
Desired Camshaft Position	Active	0 degrees	This parameter displays the set point for the position of the intake camshaft for bank 1 in terms of degrees of camshaft rotation (advance) from the park position.
Desired Fuel Rail Pressure	Active	MPa / PSI	This parameter displays the desired fuel rail pressure at the engine.
Desired Idle Speed	Active	RPM	This parameter displays the desired idle engine speed after the application of all limits and corrections.
Desired Intake Camshaft Position	Active	°, Å	This parameter displays the set point for the position of the intake camshaft for bank 1 in terms of degrees of camshaft rotation (advance) from the park position.
Desired Throttle Position	Active	%	This parameter displays the desired throttle position used to control the throttle motor, which is determined from the arbitration of the various requests for the authority to control the throttle, including remedial actions.
Distance Since DTC Cleared	Active	km / miles	This parameter displays the distance accumulated since an emission diagnostic trouble code was cleared. The scan tool will display increasing distance as the vehicle is driven.
Distance Since First Malfunction	Active	Varies	This parameter displays the distance accumulated when the emission diagnostic trouble code first failed.
Distance Since Last Malfunction	Active	km / miles	The parameter displays the distance driven since the last engine controls malfunction.
Distance Since Last Oil Level Warning	Active	km / miles	This parameter displays the distance driven since the last oil level warning.
Distance Since Last Oil Pressure Warning	Active	km / miles	This parameter displays the distance driven since the last oil pressure warning.
Distance Since Recommended Maximum Fuel Alcohol Content Exceeded	Active	km / miles	This parameter displays the accumulated distance driven since the most recent time that the recommended ethanol concentration was exceeded.
Distance with Cylinder Activated	Active	km/miles	This parameter displays the accumulated distance driven with all of the engine's cylinders activated during the current Ignition key cycle.
Distance with Cylinder Deactivated	Active	km/miles	This parameter displays the accumulated distance driven with the engine's cylinders deactivated during the current Ignition key cycle.
Drag Control Status	Active	Active / Inactive	This parameter displays Active when the requested torque signal is above the driver requested value while the traction control system signal input is active.
Driver Requested Axle Torque	Active	N-m	This parameter displays a (desired) output value after comparing engine load as an input to the hybrid control processor and engine control module. Note: Comparing this parameter to the Engine Torque Actual parameter can be useful in diagnosing a concern. The values between these 2 parameter should be similar.

Parameter	System State	Expected Value	Description
Drop-Throttle Detected while Traction Control Active	Yes/No	No	This parameter displays if a drop-throttle was detected while the traction control was active.
Drop-Throttle Status	Yes/No	Inactive	This parameter displays the status of a drop-throttle.
Engine Controls Ignition Relay Feedback Signal	Yes/No	Battery Voltage	This parameter displays the voltage signal sent to the control module from the engine control ignition relay. The scan tool will display battery voltage when the engine is running. The scan tool will display no voltage when the relay is OFF.
ECM Challenge Status	Yes/No	Valid	This parameter shows the immobilizer system status of the ECM challenge. This indicates whether the currently calculated ECM challenge is valid.
ECM in Immobilizer Fail Enable	Yes/No	No	This parameter displays whether or not the engine control module (ECM) is in failure enable mode for the vehicle theft deterrent (VTD) system.
ECT Sensor	Yes/No	Varies $\sim$, $\hat{\sim}$ °C/ $\sim$, $\hat{\sim}$ °F	This parameter displays the temperature of the engine coolant based on the input from the engine coolant temperature (ECT) sensor. When the coolant temperature is low, the scan tool will display a low temperature. When the coolant temperature is high, the scan tool will display a high temperature.
EGR/Camshaft Position Monitor Complete	Yes/No	Yes/No	This parameter displays the status of the EGR/Camshaft Position Monitor. The parameter will display Yes when the EGR/Camshaft Position Monitor is complete.
EGR/Camshaft Position Monitor Complete This Ignition Cycle	Yes/No	Yes/No	This parameter displays the status of the EGR/Camshaft Position Monitor for this Ignition Cycle. The parameter will display Yes when the EGR/Camshaft Position Monitor is complete this Ignition Cycle.
EGR/Camshaft Position Monitor Enabled	Yes/No	Yes/No	This parameter displays the status of the EGR/Camshaft Position Monitor. The parameter will display Yes when the EGR/Camshaft Position Monitor is Enabled.
EGR/Camshaft Position Monitor Enabled This Ignition Cycle	Yes/No	Yes/No	This parameter displays the status of the EGR/Camshaft Position Monitor for this Ignition Cycle. The parameter will display Yes when the EGR/Camshaft Position Monitor is Enabled this Ignition Cycle.
Electric Power Management Inhibit Reason	Yes/No	None	This parameter displays the reason of the Regulated Voltage Control (RVC) override command. RVC lowers system operating voltage to reduce system electrical load and improve fuel economy performance.
Engine Controls Ignition Relay Command	Yes/No	On/Off	This parameter displays the state of the control circuit for the engine control module power relay as commanded by the engine control module.
Engine Controls Ignition Relay Control Circuit High Voltage Test Status	Yes/No	OK	This parameter displays the state of the engine controls ignition relay control circuit. The parameter displays Malfunction if the engine controls ignition relay control circuit is shorted to voltage.
Engine Controls Ignition Relay Control Circuit Low Voltage Test Status	Yes/No	OK	This parameter displays the state of the engine controls ignition relay control circuit. The parameter displays Malfunction if the engine controls ignition relay control circuit is shorted to grounded.
Engine Controls Ignition Relay Control Circuit Open Test Status	Yes/No	OK	This parameter displays the state of the engine controls ignition relay control circuit. The parameter displays Malfunction if the engine controls ignition relay control circuit is open.
Engine Controls Ignition Relay Feedback Signal	Yes/No	Battery Voltage	This parameter displays the voltage of the powertrain relay feedback to the controller.
Engine Load	Yes/No	25 $\sim$, $\hat{\sim}$ °C/ $\sim$, $\hat{\sim}$ °F	This parameter displays the engine load in percent based on inputs to the control module from various engine sensors. The scan tool will display a low percentage when the engine is at idle with little or no load. The scan tool will display a high percentage when the engine is running at a high RPM under a heavy load.
Engine Load During Misfire History 1 - 5	Yes/No	%	This parameter displays the specific engine speed and load in which the engine was operating for one of the last five misfire events immediately prior to Misfire Test Failed This Key On (TFTKO) = True. $\sim$, $\hat{\sim}$ $\sim$, $\hat{\sim}$
Engine Off Time	Yes/No	hhmmss	This parameter displays the time elapsed since the engine turned OFF. The scan tool will display the time in hours, minutes and seconds. The engine OFF time will reset to zero when the engine starts.

Parameter	System State	Expected Value	Description
Engine Oil Level Switch	Yes/No	OK	This parameter displays the status of the engine oil level switch as determined by the control module. The control module uses this information to turn on the low engine oil lamp if the engine oil level remains approximately 1 quart low for a sufficient amount of time. The scan tool will display Low when the engine oil level is low. The scan tool will display OK when the engine oil level is correct.
Engine Oil Life Remaining	Yes/No	%	This parameter displays the amount engine oil life remaining before requiring an oil change based on calculations by the control module. The scan tool will display lower values as the engine oil life approaches 0 miles.
Engine Oil Pressure Sensor	Yes/No	kPa/PSI	This parameter displays the actual engine oil pressure measured by a sensor.
Engine Oil Pressure Switch	Yes/No	OK	This parameter displays the state of the engine oil pressure (EOP) as determined by the control module. The control module monitors the EOP switch to determine if the EOP is sufficient. The scan tool will display low when the EOP is below a predetermined value.
Engine Oil Temperature Sensor	Yes/No	Varies Yes/No °C/Yes/No °F	This parameter displays the engine oil temperature.
Engine Oil Temperature When Engine Overspeed Detected	Yes/No	Varies Yes/No °C/Yes/No °F	This parameter displays the engine oil temperature when the engine overspeed was detected.
Engine Overspeed	Yes/No	Not Present	This parameter displays if an engine overspeed is detected. The scan tool will display Present when an engine overspeed is detected.
Engine Run Time	Yes/No	hh:mm:ss	This parameter displays the time elapsed since the engine was started. The scan tool will display the time in hours, minutes and seconds. The engine run time will reset to zero when the engine stops running.
Engine Serial Number	Yes/No	#	This parameter displays the engine serial number.
Engine Shutdown Counter	Yes/No	Counts	This parameter displays the engine shutdown counts for specific reasons including excessive idle, high coolant temperature, low coolant level, or low oil level.
Engine Speed	Yes/No	600 RPM	This parameter displays the speed of the crankshaft as determined by the control module using an input from the CKP sensor. The scan tool will display a high value at high engine speeds and a low value at low engine speeds.
Engine Speed During Misfire History 1 - 5	Yes/No	RPM	This parameter displays the speed of the crankshaft as determined by the control module using an input from the CKP sensor at the time of engine misfire.
Engine Speed When Engine Overspeed Detected	Yes/No	RPM	This parameter displays the speed of the crankshaft as determined by the control module using an input from the CKP sensor at the time of engine overspeed.
EVAP Malfunction History	Yes/No	Varies	This parameter contains the result of the most recently completed evaporative emissions diagnostic test.
EVAP Monitor Complete	Yes/No	Yes/No	This parameter displays if the most recent evaporative emissions diagnostic test is complete.
EVAP Monitor Complete This Ignition Cycle	Yes/No	Yes/No	This parameter displays if the most recent evaporative emissions diagnostic test has completed this ignition cycle.
EVAP Monitor Enabled	Yes/No	Yes/No	This parameter displays if the evaporative emissions diagnostic test is enabled.
EVAP Monitor Enabled This Ignition Cycle	Yes/No	Yes/No	This parameter displays if the evaporative emissions diagnostic test is enabled this ignition cycle.
EVAP Purge Solenoid Valve Command	Yes/No	%	This parameter displays the on-time or duty cycle of the EVAP purge solenoid commanded by the control module expressed as a percent. The scan tool will display a high percentage when the control module is commanding the EVAP purge solenoid to be open a large amount. The scan tool will display a low percentage when the control module is commanding the EVAP purge solenoid to be open a small amount. The scan tool will display 0 when the control module is commanding the EVAP purge solenoid closed.
EVAP Purge Solenoid Valve Control Circuit High Voltage Test Status	Yes/No	OK	This parameter displays the EVAP purge solenoid valve control circuit. The parameter displays Malfunction if the EVAP purge solenoid valve circuit is shorted to voltage.

Parameter	System State	Expected Value	Description
EVAP Purge Solenoid Valve Control Circuit Low Voltage Test Status	Ï€Ï€Ï€	OK	This parameter displays the EVAP purge solenoid valve control circuit. The parameter displays Malfunction if the EVAP purge solenoid valve circuit is shorted to ground.
EVAP Purge Solenoid Valve Control Circuit Open Test Status	Ï€Ï€Ï€	OK	This parameter displays the EVAP purge solenoid valve control circuit. The parameter displays Malfunction if the EVAP purge solenoid valve circuit is open.
EVAP Vent Solenoid Valve Command	Ï€Ï€Ï€	Venting	This parameter displays the state of the EVAP vent solenoid commanded by the control module. The scan tool will display venting when the control module is commanding the EVAP vent solenoid to be open. The scan tool will display a not venting when the control module is commanding the EVAP vent solenoid to be closed.
EVAP Vent Solenoid Valve Control Circuit High Voltage Test Status	Ï€Ï€Ï€	OK	This parameter displays the EVAP vent solenoid valve control circuit. The parameter displays Malfunction if the EVAP vent solenoid valve circuit is shorted to voltage.
EVAP Vent Solenoid Valve Control Circuit Low Voltage Test Status	Ï€Ï€Ï€	OK	This parameter displays the EVAP vent solenoid valve control circuit. The parameter displays Malfunction if the EVAP vent solenoid valve circuit is shorted to ground.
EVAP Vent Solenoid Valve Control Circuit Open Test Status	Ï€Ï€Ï€	OK	This parameter displays the EVAP vent solenoid valve control circuit. The parameter displays Malfunction if the EVAP vent solenoid valve circuit is open.
Extended Travel Brake Pedal Position Circuit Signal	Ï€Ï€Ï€	Applied / Released	This parameter displays that no failures have been detected in the determination of the Brake Pedal Moderate Travel Achieved signal within the platform brake sensing module as received over serial communication.
Extended Travel Brake Pedal Position Signal	Ï€Ï€Ï€	Applied, Released, Invalid	This parameter displays the undefaulted determination of brake pedal travel beyond a moderate/extended travel threshold by the platform brake sensing module and is received over serial communication.Ï€,Ï€ Ï€,Ï€
Extended Travel Brake Pedal Switch	Ï€Ï€Ï€	Applied / Released	This parameter displays that no failures have been detected in the determination of the Brake Pedal Moderate Travel Achieved signal within the platform brake sensing module as received over serial communication.
Freeze Frame DTC	Ï€Ï€Ï€	#	This parameter displays the diagnostic trouble code (DTC) that caused the freeze frame to be stored.
Fuel Alcohol Content	Ï€Ï€Ï€	%	This parameter indicates the percentage of alcohol contained in ethanol or methanol fuels.
Fuel Alcohol Content When Recommended Maximum Fuel Alcohol Content Exceeded	Ï€Ï€Ï€	%	This parameter displays the actual fuel alcohol percentage at the most recent time that the recommended ethanol concentration was exceeded.
Fuel Composition Learn	Ï€Ï€Ï€	Active / Inactive	This parameter indicates if the fuel composition learn status is active.Ï€,Ï€ Ï€,Ï€
Fuel Composition Sensor	Ï€Ï€Ï€	Hz	This parameter displays the frequency of the fuel composition sensor.
Fuel Composition Sensor	Ï€Ï€Ï€	Ms	This parameter displays the fuel composition sensor on time.
Fuel Consumed Since Recommended Maximum Fuel Alcohol Content Exceeded	Ï€Ï€Ï€	Liters	This parameter displays the amount of fuel consumed since the most recent time that the recommended ethanol concentration was exceeded.
Fuel Control Loop Status	Ï€Ï€Ï€	Closed	This parameter displays the fuel system loop status.
Fuel Economy	Ï€Ï€Ï€	L/h	This parameter displays the instantaneous fuel consumption rate of the engine in liters per hour.
Fuel Enrichment - Hot Catalyst	Ï€Ï€Ï€	Yes/No	This parameter displays Yes when fuel is being added to cool the catalytic converter.

Parameter	System State	Expected Value	Description
Fuel Enrichment - Hot Coolant	0	Active / Inactive	This parameter displays Active when the conditions to enable hot coolant enrichment are active and that a richer than stoichiometric air/fuel ratio is being commanded in order to help cool the engine when a system malfunction is causing the engine to run at extreme temperatures.
Fuel Level Sensor	0	0-5 Volts	This parameter displays the voltage signal received by the control module from the fuel level sensor.
Fuel Level Sensor Left Tank	0	0-5 Volts	This parameter displays the voltage signal received by the control module from the fuel level sensor for the left tank.
Fuel Level Sensor Right Tank	0	0-5 Volts	This parameter displays the voltage signal received by the control module from the fuel level sensor for the right tank.
Fuel Pressure Regulator 1 Control Circuit Command	0	On/Off	This parameter displays the commanded state of the fuel pressure regulator 1 low side output.
Fuel Pressure Regulator 1 Control Circuit High Voltage Test Status	0	OK	This parameter displays the diagnostic state of the fuel pressure regulator control circuit as determined by the control module. The scan tool will display OK, Malfunction or Not Run. The scan tool will display OK if the circuit is operating correctly.
Fuel Pressure Regulator 1 Control Circuit Low Voltage Test Status	0	OK	This parameter displays the diagnostic state of the fuel pressure regulator control circuit as determined by the control module. The scan tool will display OK, Malfunction or Not Run. The scan tool will display OK if the circuit is operating correctly.
Fuel Pressure Regulator 1 Control Circuit Open Test Status	0	OK	This parameter displays the diagnostic state of the fuel pressure regulator control circuit as determined by the control module. The scan tool will display OK, Malfunction or Not Run. The scan tool will display OK if the circuit is operating correctly.
Fuel Pressure Regulator 1 High Control Circuit Command	0	%	This parameter displays the commanded duty cycle for the fuel pressure regulator 1 solenoid output.
Fuel Pressure Regulator 1 High Control Circuit Command	0	On/Off	This parameter displays the commanded state of the fuel pressure regulator 1 high side output.
Fuel Pressure Regulator 1 High Control Circuit High Voltage Test Status	0	OK, Malfunction, Not Run	This parameter displays the state of the fuel pressure regulator circuit voltage. The parameter displays Malfunction if the fuel pressure regulator circuit voltage is shorted to voltage.
Fuel Pressure Regulator 1 High Control Circuit Low Voltage Test Status	0	OK, Malfunction, Not Run	This parameter displays the state of the fuel pressure regulator circuit voltage. The parameter displays Malfunction if the fuel pressure regulator circuit voltage is shorted to ground.
Fuel Pressure Regulator 1 High Control Circuit Open Test Status	0	OK, Malfunction, Not Run	This parameter displays the state of the fuel pressure regulator circuit voltage. The parameter displays Malfunction if the fuel pressure regulator circuit voltage is open.
Fuel Pressure Sensor	0	kPa / PSI	This parameter displays fuel rail pressure at the engine when the reading is referenced to atmosphere (gauge pressure).
Fuel Pump Enable Circuit High Voltage Test Status	0	OK	This parameter displays the state of the fuel pump enable circuit voltage. The parameter displays Malfunction if the fuel pump enable circuit voltage is shorted to voltage.
Fuel Pump Enable Circuit Low Voltage Test Status	0	OK	This parameter displays the state of the fuel pump enable circuit voltage. The parameter displays Malfunction if the fuel pump enable circuit voltage is shorted to grounded.
Fuel Pump Enable Circuit Open Test Status	0	OK	This parameter displays the state of the fuel pump enable circuit voltage. The parameter displays Malfunction if the fuel pump enable circuit voltage is open.

Parameter	System State	Expected Value	Description
Fuel Pump Enabled Command	On/Off	On	This parameter displays the commanded state of the Fuel Pump control circuit. The fuel pump should be On when the scan tool indicates the Fuel Pump Enable command is On. The fuel pump should be OFF when the scan tool indicates the Fuel Pump Enable +-*+Command is Off.
Fuel Pump Trim	Engine Running	0 to +4 %	This parameter displays the adjustments for the fuel pump duty cycle control. This is calculated by comparing the estimated fuel rail pressure to the desired fuel rail pressure. If the short term fuel pump trim consistently deviates from 0, the long term fuel pump trim is adjusted accordingly.
Fuel Rail Pressure Sensor	On/Off	Volts	This parameter displays the fuel rail pressure analog input as a percentage of its reference voltage.
Fuel System Monitor Complete	On/Off	Yes/No	This parameter displays the enable and completion status during the current driving / monitoring cycle of each continuous legislated emission related monitor and noncontinuous legislated emission related monitor.
Fuel System Monitor Complete This Ignition Cycle	On/Off	Yes/No	This parameter displays the enable and completion status during the current driving / monitoring cycle of each continuous legislated emission related monitor and noncontinuous legislated emission related monitor.
Fuel System Monitor Enabled	On/Off	Yes/No	This parameter displays the enable and completion status during the current driving / monitoring cycle of each continuous legislated emission related monitor and noncontinuous legislated emission related monitor.
Fuel System Monitor Enabled This Ignition Cycle	On/Off	Yes/No	This parameter displays the enable and completion status during the current driving / monitoring cycle of each continuous legislated emission related monitor and noncontinuous legislated emission related monitor.
Fuel Tank Pressure Sensor	On/Off	1.5 Volts	This parameter displays the voltage signal sent to the control module from the sensor used to monitor the pressure inside the fuel tank. The scan tool will display a low voltage when the pressure in the fuel tank is high. The scan tool will display a high voltage when the pressure in the fuel tank is low or in a vacuum.
Fuel Tank Pressure Sensor	On/Off	0 inches H2O (0 mm Hg)	This parameter displays the fuel tank pressure as calculated based on a signal sent to the control module from the fuel tank pressure (FTP) sensor. The scan tool will display a low value when the pressure in the fuel tank is low or a vacuum. The scan tool will display a high value when the pressure in the fuel tank is high.
Fuel Tank Rated Capacity	On/Off	Varies	This parameter displays the rated maximum quantity of fuel the fuel tank will hold. This is calibrated in the control module to match the vehicle. See Owner's Manual-Capacities and Specifications.
Fuel Trim Cylinder Balance Test Bank 1 or 2	On/Off	Active/Inactive	This parameter displays the current state of the AFIM. A value of Active indicates that the monitor is currently performing an evaluation of the specified bank. A value of Inactive indicates that the monitor is NOT currently performing an evaluation of the specified bank.
Fuel Trim Cylinder Balance Test Counter Bank 1 or 2	On/Off	Counts	This parameter displays the number of Air Fuel Imbalance Monitor tests that have been performed since a code clear or NVM reset for bank 1 or 2.
Fuel Trim Learn	On/Off	Enabled	This parameter indicates if the control module is adjusting long term fuel trim in response to the short term fuel trim. The scan tool displays Enabled or Disabled. When conditions are appropriate for enabling long term fuel trim corrections, the scan tool displays Enabled.
Fuel Trim Memory Cell	On/Off	#	This parameter displays the index of the entry within the array of long term fuel corrections that is active based upon the current operating conditions (MAP, engine speed, purge duty cycle, A/C compressor state, and transmission range).
Fuel Trim System Test State	On/Off	Monitoring	This parameter indicates the status of the Fuel Trim System Test. The scan tool will display Disabled, Enabled, Monitoring, or Run Purge Test.
Fuel Volatility	On/Off	Varies	This parameter indicates the rate the fuel can be vaporized in the cylinder as calculated by the control module. The scan tool displays Low, Moderate, or High. The scan tool will display High when the fuel volatility is high. The scan tool will display Low when the fuel volatility is low.
Generator F-Terminal Signal	On/Off	%	This parameter displays the filtered generator F-terminal duty cycle.
Generator Indicator Command	On/Off	On/Off	This parameter displays signals associated with the status of the generator. A, A, A

Parameter	System State	Expected Value	Description
Generator L-Terminal Circuit High Voltage Test Status	OK	OK	This parameter displays the state of the generator l-terminal circuit voltage. The parameter displays Malfunction if the generator l-terminal circuit voltage is shorted to voltage.
Generator L-Terminal Circuit Low Voltage Test Status	OK	OK	This parameter displays the state of the generator l-terminal circuit voltage. The parameter displays Malfunction if the generator l-terminal circuit voltage is shorted to ground.
Generator L-Terminal Circuit Open Test Status	OK	OK	This parameter displays the state of the generator l-terminal circuit voltage. The parameter displays Malfunction if the generator l-terminal circuit voltage is open.
Generator L-Terminal Command	%	%	This parameter displays the commanded state of generator L-terminal duty cycle in percentage.
Generator L-Terminal Signal Command	On/Off	On/Off	This parameter displays the commanded state of the generator L-terminal output.
Heated Catalyst Monitor Complete	Yes	Yes	This parameter indicates the status of the heated catalyst. The scan tool displays Yes when the diagnostic is complete. And No if the diagnostic has not ran or a malfunction is detected in the heated catalyst.
Heated Catalyst Monitor Enabled	Yes	Yes	This parameter indicates the status of the heated catalyst monitor diagnostic. Catalyst Monitor Test Running indicates Yes or No when the heated catalyst monitor diagnostic is actively running a test.
HO2S Bank 1 or 2 Sensor 1 or Sensor 2	Volts	Volts	This parameter indicates the heated oxygen sensor (HO2S) bank 1 or bank 2, sensor 1 output voltage as measured by the control module. The scan tool value fluctuates constantly while operating in Closed Loop. The scan tool will display a higher value during rich running conditions, and a lower value during leaner running conditions.
HO2S Heater Bank 1 or 2 Sensor 1 or 2	mA	mA	This parameter displays the current through the control module when the bank 1 or bank 2, sensor 1 HO2S heater is commanded ON by the control module. HO2S Heater Bank 1 Sen. 1 is a range of values indicating a low current when the heater circuit resistance is high to a high current when the heater circuit resistance is low.
HO2S Heater Command Bank 1 - 2 Sensor 1 - 2	0-99%	0-99%	This parameter displays the commanded state of the Bank 1 Sensor 2 heater by the control module. The scan tool will display a higher value as the heater command is increased, and a lower value if the heater is not commanded ON.
HO2S Heater Command Bank 1 - 2 Sensor 1 - 2	On/Off	On/Off	This parameter displays the commanded state of the Bank 1 Sensor 2 heater by the control module. The scan tool will display ON if the heater is commanded on.
HO2S Heater Control Circuit High Voltage Test Status Bank 1 - 2 Sensor 1 - 2	OK	OK	This parameter displays the state of the HO2S heater control circuit. The parameter displays Malfunction if the HO2S heater control circuit is shorted to voltage.
HO2S Heater Control Circuit Low Voltage Test Status Bank 1 - 2 Sensor 1 - 2	OK	OK	This parameter displays the state of the HO2S heater control circuit. The parameter displays Malfunction if the HO2S heater control circuit is shorted to ground.
HO2S Heater Control Circuit Open Test Status Bank 1 - 2 Sensor 1 - 2	OK	OK	This parameter displays the state of the HO2S heater control circuit. The parameter displays Malfunction if the HO2S heater control circuit is shorted to open.
HO2S Heater Monitor Complete	Yes/No	Yes/No	This parameter displays the enable and completion status during the current driving / monitoring cycle of each continuous legislated emission related monitor and non-continuous legislated emission related monitor.
HO2S Heater Monitor Complete This Ignition Cycle	Yes/No	Yes/No	This parameter displays the enable and completion status during the current driving / monitoring cycle of each continuous legislated emission related monitor and non-continuous legislated emission related monitor.
HO2S Heater Monitor Enabled	Yes/No	Yes/No	This parameter displays the enable and completion status during the current driving / monitoring cycle of each continuous legislated emission related monitor and non-continuous legislated emission related monitor.

Parameter	System State	Expected Value	Description
HO2S Heater Monitor Enabled This Ignition Cycle	Yes/No	Yes/No	This parameter displays the enable and completion status during the current driving / monitoring cycle of each continuous legislated emission related monitor and non-continuous legislated emission related monitor.
IAT Sensor	Varies	Varies °C/°F	This parameter displays the temperature of the air entering the engine as calculated by the control module based on the input from the intake air temperature (IAT) sensor. The scan tool will display a low value when the air temperature is low, and a high value when the air temperature is high.
Ignition Accessory Signal	On	On	This parameter displays the state of the ignition 0 input to the control module from the ignition switch. The scan tool will display ON when the ignition switch is in the ignition accessory position. The scan tool will display OFF when the ignition switch is in any other position.
Ignition Coil 1 - 8 Control Circuit High Voltage Test Status	OK	OK	This parameter displays the state of the ignition coil control circuit voltage. The parameter displays Malfunction if the ignition coil control circuit voltage is shorted to voltage.
Ignition Coil 1 - 8 Control Circuit Low Voltage Test Status	OK	OK	This parameter displays the state of the ignition coil control circuit voltage. The parameter displays Malfunction if the ignition coil control circuit voltage is shorted to ground.
Ignition Coil 1 - 8 Control Circuit Open Test Status	OK	OK	This parameter displays the state of the ignition coil control circuit voltage. The parameter displays Malfunction if the ignition coil control circuit voltage is open.
Ignition Coil Supply Voltage Bank 1 - 2	On/Off	On/Off	This parameter displays indicates that the feedback hardwire input to the controller for the ignition module power supply is active on the bank containing cylinder 1 or 2.
Ignition Cycles Since Recommended Maximum Fuel Alcohol Content Exceeded	Counts	Counts	This parameter displays the number of ignitions cycles since the most recent time that the recommended ethanol concentration was exceeded.
Ignition Cycles with Malfunction Since 1st Malfunction	Counts	Counts	This parameter displays the number of ignition cycles with a failure reported since the first ignition cycle with a failure reported.
Ignition Cycles without Completed Test Since 1st Malfunction	Counts	Counts	This parameter displays the number of ignition cycles without a pass or a failure reported since the first ignition cycle with a failure reported.
Ignition Cycles without Malfunction Since Last Malfunction	Counts	Counts	This parameter displays the number of ignition cycles with a pass reported and no failures reported since the first ignition cycle with a failure reported.
Ignition Timing	°	°	This parameter displays the final spark advance in terms of crankshaft angle.
Ignition 1 Signal	Battery Voltage	Battery Voltage	This parameter displays the voltage measured at the ignition 1 circuit of the control module. Voltage is applied to the control module when the ignition switch is in the ignition 1 position. The scan tool will display a low value when the voltage is low. The scan tool will display a high value, such as battery voltage, when the voltage is higher.
Immobilizer Auto Learn Counter	Counts	Counts	The scan tool displays the count value when using the 30-minute reprogramming procedure. Three 10-minute cycles, or three counts, are required to complete the 30-minute auto learn reprogramming procedure.
Immobilizer Automatic Learn Timer	hh:mm:ss	hh:mm:ss	This parameter indicates that either the auto learn timer (used in the auto learn procedure to enable VTD password learning) or the seed and key timer (used in the seed and key procedure to enable VTD password learning) is active.
Immobilizer Automatic Learn Timer	Inactive	Inactive	This parameter indicates that either the auto learn timer (used in the auto learn procedure to enable immobilizer password learning) or the seed and key timer (used in the seed and key procedure to enable immobilizer password learning) is active.
Immobilizer Fuel Disable	Inactive	Inactive	This parameter indicates the immobilizer system has disabled fuel.
Immobilizer Fuel Disable Until Ignition Off	Inactive	Inactive	The parameter indicates the immobilizer system has disabled fuel for the remainder of the ignition cycle.
Immobilizer Fuel Enable	Yes	Yes	This parameter indicates the immobilizer system has enabled fuel.

Parameter	System State	Expected Value	Description
Immobilizer Password Learn	Yes/No	Yes/No	This parameter indicates that the security password has been learned.
Immobilizer Password Learn Scan Tool Delay	Active / Inactive	Active / Inactive	This parameter indicates that the security code has been accepted but the scan tool delay is active.
Immobilizer Security Code Accepted	Yes/No	Yes/No	This parameter indicates that the received immobilizer system security code is correct.
Immobilizer Security Code Function	Present / Not Present	Present / Not Present	This parameter indicates if the ECU supports the immobilizer security code strategy
Immobilizer Security Code Lockout	Active / Inactive	Active / Inactive	This parameter displays Active or Inactive. Security Code Lockout Active indicates that the security code has not passed and lockout is active.
Immobilizer Security Code Lockout Active Timer	ms	ms	This parameter displays the time elapsed since the immobilizer security code lockout has been activated either due to a battery disconnect or an incorrect immobilizer security code being entered.
Immobilizer Security Code Programmed	Yes/No	Yes/No	This parameter indicates if the immobilizer system security code has been programmed.
Immobilizer Security Code Programming Counter	Counts	Counts	This parameter displays the number of times a new immobilizer security code has been programmed through secure access.
Immobilizer Security Code Reset Counter	Counts	Counts	This parameter displays the number of times the immobilizer security code has been reset to the default value through secure access.
Immobilizer System Status	Varies	Varies	This parameter displays the current state of the immobilizer algorithm.
Immobilizer Valid Response Received Time	ms	ms	This parameter displays the actual time observed for a valid immobilizer response.
Initialized Fuel Alcohol Content	%	%	This parameter displays the initialized fuel composition to be used as a starting point for the fuel composition algorithm.
Injector Duty Cycle Bank 1 or 2	ms	ms	This parameter displays the fuel injector pulse width (on time) commanded to each cylinder on bank 1 or 2.
Inspection/Maintenance Drive Cycle Complete	Yes/No	Yes/No	This parameter displays that all required components of the standard drive cycle have completed.
Inspection/Maintenance Drive Cycle Idle Time Complete	Yes/No	Yes/No	This parameter displays that the internal combustion engine (ICE) idle time requirement is complete.
Inspection/Maintenance Drive Cycle Idle Timer	hh:mm:ss	hh:mm:ss	This parameter displays the accumulated amount of contiguous time after the first internal combustion engine (ICE) start in which both pedal position and vehicle speed are zero.
Inspection/Maintenance Drive Cycle Propulsion System Active Time Complete	Yes/No	Yes/No	This parameter displays that the vehicle propulsion system has been active for the required amount of time.
Inspection/Maintenance Drive Cycle Vehicle Speed Time Complete	Yes/No	Yes/No	This parameter displays that the vehicle speed or load has been above a calibratable threshold for five minutes.
Inspection/Maintenance Drive Cycle Vehicle Speed Timer	hh:mm:ss	hh:mm:ss	This parameter displays the total accumulated time in which the vehicle speed has been > 25 mph or the load has been above a calibratable threshold after the 1st time the internal combustion engine (ICE) is started each key on.
Intake Air Humidity Sensor	%	%	This parameter displays the raw duty cycle signal from the relative humidity sensor electronics, which represents the relative humidity of the intake air.
Intake Camshaft Position	°	°,°	This parameter displays the position of the intake camshaft for bank 1 in terms of degrees of camshaft rotation (advance) from the park position (a value of zero represents the park position).
Intake Camshaft Position Active Counter	Counts	Counts	This parameter displays a rolling count of the number of intake cam position sensor pulses for bank 1.

Parameter	System State	Expected Value	Description
Intake Camshaft Position Actuator Solenoid Valve Control Circuit High Voltage Test Status	OK	OK	This parameter displays the state of the camshaft position actuator solenoid control circuit voltage. The parameter displays Malfunction if the camshaft position actuator solenoid control circuit voltage is shorted to voltage.
Intake Camshaft Position Actuator Solenoid Valve Control Circuit Low Voltage Test Status	OK	OK	This parameter displays the state of the camshaft position actuator solenoid control circuit voltage. The parameter displays Malfunction if the camshaft position actuator solenoid control circuit voltage is shorted to ground.
Intake Camshaft Position Actuator Solenoid Valve Control Circuit Open Test Status	OK	OK	This parameter displays the state of the camshaft position actuator solenoid control circuit voltage. The parameter displays Malfunction if the camshaft position actuator solenoid control circuit voltage is open.
Intake Camshaft Position Command	%	%	This parameter displays the commanded duty cycle for the intake cam phase output for bank 1.
Intake Camshaft Position Variance	°	°, °	This parameter displays the absolute difference between the desired and actual positions of the intake camshaft for bank 1 in terms of degrees of camshaft rotation.
Intake Manifold Pressure	kPa / PSI	70 kPa / 10 PSI	This parameter displays the pressure difference between the MAP and the barometric pressure (BARO) as calculated by the control module. The scan tool will display a higher value during high vacuum conditions, such as idle or deceleration. The scan tool will display a lower value during low vacuum conditions, such as wide open throttle or low load cruising.
Knock Retard	°	°, °	This parameter indicates the amount of spark advance the control module removes from the ignition control (IC) spark advance in response to the signal from the knock sensors. The scan tool displays a high value for a large amount of spark retard, and a low value for a small amount of spark retard.
Long Term Fuel Trim Bank 1 or Bank 2	%	0%, ± 10%	This parameter is calculated by the control module based on the Short Term FT value. The Long Term FT bank 1 is used for the long term correction of the fuel delivery in bank or bank 2. The scan tool will a high value for a large amount of long term fuel correction, and 0 percent for no long term fuel trim correction. The scan tool will display a negative value when fuel system is running too rich and fuel is being removed from the combustion event. The scan tool will display a positive value if the fuel system is running lean and fuel is being added to the combustion event.
Long Term Fuel Trim Average Bank 1 or Bank 2	%	1%	This parameter is calculated by the control module based on an intrusive test by the control module. The Long Term FT test average used for the long term correction of the fuel delivery in each bank. The scan tool will a high value for a large amount of long term fuel correction, and 0 percent for no long term fuel trim correction. The scan tool will display a negative value when fuel system is running too rich and fuel is being removed from the combustion event. The scan tool will display a positive value if the fuel system is running lean and fuel is being added to the combustion event.
Long Term Fuel Trim Average Bank 1 or Bank 2 without Purge	%	%	This parameter is calculated by the control module based on the Short Term FT value. The Long Term FT bank 1 is used for the long term correction of the fuel delivery in bank 1. The scan tool will display a high value for a large amount of long term fuel correction, and 0 percent for no long term fuel trim correction. The scan tool will display a negative value when fuel system is running too rich and fuel is being removed from the combustion event. The scan tool will display a positive value if the fuel system is running lean and fuel is being added to the combustion event.
Long Term Fuel Trim Test Average Bank 1	%	%	This parameter displays the filtered long term closed loop fuel correction for bank 1 (accumulated while the excess purge vapor test is inhibited), which is filtered using a first-order lag filter, also known as an exponentially weighted moving average (EWMA). This value is compared to thresholds to determine if the fuel adjustment system diagnostic is passing or failing or if an excess purge vapor test should be executed.

Parameter	System State	Expected Value	Description
Long Term Fuel Trim Test Average Bank 2	Pass	%	This parameter displays the filtered long term closed loop fuel correction for bank 2 (accumulated while the excess purge vapor test is inhibited), which is filtered using a first-order lag filter, also known as an exponentially weighted moving average (EWMA). This value is compared to thresholds to determine if the fuel adjustment system diagnostic is passing or failing or if an excess purge vapor test should be executed.
Long Term Fuel Trim Test Average without Purge Bank 1	Pass	%	This parameter displays the filtered non purge long term closed loop fuel correction for bank 1 (accumulated while purge is off), which is filtered using a first-order lag filter, also known as an exponentially weighted moving average (EWMA). This value is compared to thresholds to determine if the fuel adjustment system diagnostic is passing, failing, or indeterminate during normal purge-off operation as well as during the intrusive excess purge vapor test.
Long Term Fuel Trim Test Average without Purge Bank 2	Pass	%	This parameter displays the filtered non purge long term closed loop fuel correction for bank 2 (accumulated while purge is off), which is filtered using a first-order lag filter, also known as an exponentially weighted moving average (EWMA). This value is compared to thresholds to determine if the fuel adjustment system diagnostic is passing, failing, or indeterminate during normal purge-off operation as well as during the intrusive excess purge vapor test.
Low Engine Oil Level Indicator Command	Pass	On/Off	This parameter displays that the low engine oil level indication is being requested on over serial communication in order to inform the driver of a low engine oil level condition.
Low Engine Oil Pressure Indicator Command	Pass	On/Off	This parameter displays that the change engine oil indication is being requested on over serial communication in order to inform the driver that the engine oil needs to be changed. This signal is based upon either the engine oil life algorithm or the engine oil condition sensor.
MAF Performance Test	Pass	OK	This parameter displays the status of the mass air flow (MAF) performance test by the control module. The scan tool will display OK if no Malfunction is found. The scan tool will display Malfunction if the control module detects a Malfunction during the test.
MAF Sensor	Engine Idling	3.4-6.5 g/s	This parameter indicates the quantity calculated by the control module based on a signal from the MAF sensor. The scan tool will display a high value at high engine speeds, and a low value at low engine speeds.
MAF Sensor	Pass	1510-3224 Hz	This parameter indicates the frequency signal received from the MAF sensor by the control module. The scan tool will display a high value at high engine speeds, and a low value at low engine speeds.
MAF Sensor Supply Voltage Command	Pass	On/Off	This parameter displays the commanded state of the mass air flow sensor supply voltage output.
MAF Sensor Supply Voltage Control Circuit High Voltage Test Status	Pass	OK	This parameter displays the state of the mass air flow supply voltage control circuit. The parameter displays Malfunction if the mass air flow supply voltage control circuit is shorted to voltage.
MAF Sensor Supply Voltage Control Circuit Low Voltage Test Status	Pass	OK	This parameter displays the state of the mass air flow supply voltage control circuit. The parameter displays Malfunction if the mass air flow supply voltage control circuit is shorted to ground.
MAF Sensor Supply Voltage Control Circuit Open Test Status	Pass	OK	This parameter displays the state of the mass air flow supply voltage control circuit. The parameter displays Malfunction if the mass air flow supply voltage control circuit is open.
MAF When Engine Overspeed Detected	Pass	g/s	This parameter indicates the quantity calculated by the control module based on a signal from the MAF sensor at the time an overspeed was detected.
MAP Performance Test 1	Pass	OK	This parameter displays the status of the MAP performance test 1 by the control module. The scan tool will display OK if no Malfunction is found. The scan tool will display Malfunction if the control module detects a Malfunction during the test.
MAP Performance Test 2	Pass	OK	This parameter displays the status of the MAP performance test 2 by the control module. The scan tool will display OK if no Malfunction is found. The scan tool will display Malfunction if the control module detects a Malfunction during the test.

Parameter	System State	Expected Value	Description
MAP Sensor	Yes	30-46 kPa / 4-6 PSI	This parameter indicates the manifold absolute pressure inside the engine as calculated by the control module based on the signal from the MAP sensor. The scan tool will display a higher value wide open throttle, and a lower value at idle.
MAP Sensor	Yes	0.75-1.40 Volts	This parameter indicates the voltage signal received by the control module from the MAP sensor. The scan tool displays a low voltage at idle, and a high voltage at wide open throttle. Barometric pressure and altitude can effect these values.
Maximum Engine Speed When Engine Overspeed Detected	Yes	RPM	This parameter displays the engine peak speed when the overspeed condition was observed.
Malfunction Indicator Lamp (MIL) Command	Yes	Off	This parameter displays the commanded state of the MIL control circuit. The MIL should be ON when the scan tool indicates the MIL Command is ON. The malfunction indicator lamp should be OFF when the scan tool indicates the MIL Command is OFF. The control module will command the MIL ON when the ignition is ON with the engine OFF in order to perform a bulb check.
MIL Control Circuit High Voltage Test Status	Yes	OK	This parameter displays the state of the malfunction indicator lamp voltage control circuit. The parameter displays Malfunction if the malfunction indicator lamp voltage control circuit is shorted to voltage.
MIL Control Circuit Low Voltage Test Status	Yes	OK	This parameter displays the state of the malfunction indicator lamp voltage control circuit. The parameter displays Malfunction if the malfunction indicator lamp voltage control circuit is shorted to ground.
MIL Control Circuit Open Test Status	Yes	OK	This parameter displays the state of the malfunction indicator lamp voltage control circuit. The parameter displays Malfunction if the malfunction indicator lamp voltage control circuit is open.
MIL Requested	Yes	Yes/No	This parameter displays the commanded state of the malfunction indicator lamp (MIL) output.
MIL Requested by DTC	Yes	No	This parameter indicates the reason the control module illuminated the MIL. The scan tool will display YES when the MIL is requested as a result of an A or B type DTC. The scan tool will display NO if the MIL is illuminated for another reason, such as transmission DTCs.
Misfire Diagnostic Engine Load	Yes	%	This parameter displays the engine load used within the misfire diagnostic (calculated as the ratio of the mass of air predicted to be in the cylinder two firing events into the future to the maximum possible mass of air in the cylinder based on the current ambient air pressure and charge temperature).
Misfire Diagnostic Engine Speed	Yes	RPM	This parameter displays the engine speed used within the misfire diagnostic. This engine speed is the maximum engine speed observed over the previous engine cycle.
Misfire Monitor Complete	Yes	Yes/No	This parameter displays the status of the catalyst monitor diagnostic. Multiple tests may run before the diagnostic reports a Pass or Fail. When a determination has been made, the diagnostic is complete for the current trip and will not attempt any further tests.
Misfire Monitor Complete This Ignition Cycle	Yes	Yes/No	This parameter displays the status of the catalyst monitor diagnostic. Multiple tests may run before the diagnostic reports a Pass or Fail. When a determination has been made, the diagnostic is complete for the current trip and will not attempt any further tests.
Misfire Monitor Enabled	Yes	Yes/No	This parameter displays the status of the catalyst monitor diagnostic. Multiple tests may run before the diagnostic reports a Pass or Fail. When a determination has been made, the diagnostic is complete for the current trip and will not attempt any further tests.
Misfire Monitor Enabled This Ignition Cycle	Yes	Yes/No	This parameter displays the status of the catalyst monitor diagnostic. Multiple tests may run before the diagnostic reports a Pass or Fail. When a determination has been made, the diagnostic is complete for the current trip and will not attempt any further tests.
O2S/HO2S Monitor Complete	Yes	Yes/No	This parameter displays the status of the catalyst monitor diagnostic. Multiple tests may run before the diagnostic reports a Pass or Fail. When a determination has been made, the diagnostic is complete for the current trip and will not attempt any further tests.

Parameter	System State	Expected Value	Description
O2S/HO2S Monitor Complete This Ignition Cycle	Yes/No	Yes/No	This parameter displays the status of the catalyst monitor diagnostic. Multiple tests may run before the diagnostic reports a Pass or Fail. When a determination has been made, the diagnostic is complete for the current trip and will not attempt any further tests.
O2S/HO2S Monitor Enabled	Yes/No	Yes/No	This parameter displays the status of the catalyst monitor diagnostic. Multiple tests may run before the diagnostic reports a Pass or Fail. When a determination has been made, the diagnostic is complete for the current trip and will not attempt any further tests.
O2S/HO2S Monitor Enabled This Ignition Cycle	Yes/No	Yes/No	This parameter displays the status of the catalyst monitor diagnostic. Multiple tests may run before the diagnostic reports a Pass or Fail. When a determination has been made, the diagnostic is complete for the current trip and will not attempt any further tests.
Oil Level Warning Counter City	Counts	Counts	This parameter displays a rolling count of oil level debounce events for the city calibration.
Oil Level Warning Counter Country Road	Counts	Counts	This parameter displays a rolling count of oil level debounce events for the country road calibration.
Oil Level Warning Counter Highway	Counts	Counts	This parameter displays a rolling count of oil level debounce events for the highway calibration.
Output Shaft Speed Sensor	0.00 RPM	0.00 RPM	This parameter displays the transmission output speed measured by the transmission output speed (TOS) sensor.
Park/Neutral Position Switch	Park	Park	This parameter indicates the range selection of the automatic transmission as calculated by the control module based on input from the PNP switch. The scan tool will display, In Gear, Park, or Neutral depending on the PNP switch position.
Power Enrichment	Inactive	Inactive	This parameter indicates if the control module has detected conditions appropriate to operate in Power Enrichment mode. The scan tool will display Active if the mode is in operation, and Inactive if the mode is not in operation. The control module enters Open Loop operation and increases injector pulse width when in power enrichment mode.
Power Mode	Off/Accessory/Run/Crank	Off/Accessory/Run/Crank	This parameter displays the state of the system power mode. This signal is based upon the state of the system power mode received over serial communication from the platform electronics.
Recommended Maximum Fuel Alcohol Content Exceeded	No	No	This parameter displays that the fuel alcohol percentage has exceeded the recommended value for vehicle conditions.
Recommended Maximum Fuel Alcohol Content When Recommended Maximum Fuel Alcohol Content Exceeded	%	%	This parameter displays the recommended fuel alcohol percentage for vehicle conditions at the most recent time that the recommended ethanol concentration was exceeded.
Reduced Engine Power	Inactive	Inactive	This parameter indicates if the control module has detected that a TAC system Malfunction has occurred. The scan tool will display Active if the mode is in operation, and Inactive if the mode is not in operation. The control module limits engine power when this mode is Active.
Reduced Engine Power History	Varies	Varies	This parameter displays the last reason that powertrain has illuminated the Reduced Engine Power (REP) indication.
Refueling Events Since Recommended Maximum Fuel Alcohol Content Exceeded	Counts	Counts	This parameter displays the number of times the vehicle has been refueled since the most recent time that the recommended ethanol concentration was exceeded.
Remaining Fuel in Tank	%	%	This parameter displays the total fuel level as a percentage of the rated capacity of the fuel tank(s).
Remaining Fuel in Tank	Liters	Liters	This parameter displays the total fuel volume contained in the fuel tank(s).
Remote Vehicle Start Disable History 1-8	Varies	Varies	This parameter displays one of the last eight reasons that powertrain has disabled remote vehicle start (RVS).
Remote Vehicle Start Request Signal	Off	Off	This parameter displays the state of the remote vehicle start request signal. The scan tool displays ON when a remote start signal is requested.

Parameter	System State	Expected Value	Description
Reverse Inhibit Solenoid Actuator Command	Yes	Allowed/Inhibit	Reverse Inhibit Active indicates that the driver is inhibited from shifting into reverse.
Reverse Inhibit Solenoid Actuator Control Circuit High Voltage Test Status	Yes	OK	This parameter displays the state of the reverse inhibit solenoid actuator control circuit. The parameter displays Malfunction if the reverse inhibit solenoid actuator control circuit is shorted to voltage.
Reverse Inhibit Solenoid Actuator Control Circuit Low Voltage Test Status	Yes	OK	This parameter displays the state of the reverse inhibit solenoid actuator control circuit. The parameter displays Malfunction if the reverse inhibit solenoid actuator control circuit is shorted to ground.
Reverse Inhibit Solenoid Actuator Control Circuit Open Test Status	Yes	OK	This parameter displays the state of the reverse inhibit solenoid actuator control circuit. The parameter displays Malfunction if the reverse inhibit solenoid actuator control circuit is open.
Secondary Air Injection Monitor Complete	Yes	Yes	This parameter displays the status of the secondary air injection monitor. The parameter will display Yes when the secondary air injection monitor is complete.
Secondary Air Injection Monitor Enabled	Yes	Yes	The scan tool displays Yes when the secondary air injection monitor is enabled. If the scan tool displays No, this could indicate a malfunction in the secondary air injection monitor circuit.
Short Term Fuel Trim Bank 1 or Bank 2	Yes	0% $\pm$ 10%	This parameter displays the short term correction to fuel delivery for bank 1 or bank 2 by the control module in response to the amount of time the oxygen sensor voltage spends above or below the 450 mV threshold. The scan tool will display 0 percent if no adjustments are required. The scan tool will display a higher positive value if fuel has to be added, and a higher negative value if fuel has to be removed.
Skip Shift Indicator Command	Yes	Off	This parameter indicates that the transmission skip shift indicator is being requested On over serial communication in order to inform the driver that shifting up to one of the next highest gears is inhibited.
Skip Shift Solenoid Actuator Command	Yes	Disabled	This parameter indicates that the skip shift solenoid is commanded On, inhibiting the driver from shifting up to one of the next highest gears.
Skip Shift Solenoid Actuator Control Circuit High Voltage Test Status	Yes	OK	This parameter displays the state of the skip shift solenoid actuator control circuit. The parameter displays Malfunction if the skip shift solenoid actuator control circuit is shorted to voltage.
Skip Shift Solenoid Actuator Control Circuit Low Voltage Test Status	Yes	OK	This parameter displays the state of the skip shift solenoid actuator control circuit. The parameter displays Malfunction if the skip shift solenoid actuator control circuit is shorted to ground.
Skip Shift Solenoid Actuator Control Circuit Open Test Status	Yes	OK	This parameter displays the state of the skip shift solenoid actuator control circuit. The parameter displays Malfunction if the skip shift solenoid actuator control circuit is open.
Specific Humidity	Yes	%	This parameter displays the ratio of water vapor to dry air shown in a percentage.
Short Term Fuel Trim Test Average Bank 1 or Bank 2	Yes	3%	This parameter is calculated by the control module based on an intrusive test by the control module. The Short Term FT Test Average used for the short term correction of the fuel delivery in each bank. The scan tool will display a high value for a large amount of short term fuel correction, and 0% for no short term fuel trim correction. The scan tool will display a negative value when fuel system is running too rich and fuel is being removed from the combustion event. The scan tool will display a positive value if the fuel system is running lean and fuel is being added to the combustion event.
Start Up ECT	Yes	Varies $^{\circ}\text{C}/^{\circ}\text{F}$	This parameter Indicates the engine coolant temperature at engine start up as calculated by the control module based on the signal from the ECT sensor. The scan tool will display a higher value on a warmer engine, and a lower value on a colder engine.

Parameter	System State	Expected Value	Description
Start Up IAT	Yes	Varies $\sim$ $^{\circ}\text{C}/^{\circ}\text{F}$	This parameter Indicates the intake air temperature at engine start up as calculated by the control module based on the signal from the IAT sensor. The scan tool will display a higher value during warmer under hood temperatures, and a lower value during colder under hood temperatures.
Starter Relay Command	Yes	Off	This parameter displays the current starter relay command. Yes The scan tool displays ON when the starter relay is commanded on. No
Starter Relay Control Circuit High Voltage Test Status	Yes	OK	This parameter displays the state of the starter relay control circuit. The parameter displays Malfunction if the starter relay control circuit is shorted to voltage.
Starter Relay Control Circuit Low Voltage Test Status	Yes	OK	This parameter displays the state of the starter relay control circuit. The parameter displays Malfunction if the starter relay control circuit is shorted to ground.
Starter Relay Control Circuit Open Test Status	Yes	OK	This parameter displays the state of the starter relay control circuit. The parameter displays Malfunction if the starter relay control circuit is shorted to open.
TAC Forced Engine Shutdown	Yes	No	This parameter indicates the status of TAC control by the control module. The scan tool will display YES if the engine has been shut down due to a throttle control Malfunction. The scan tool will display NO if the engine has not been shut down by a throttle control Malfunction.
TAC Motor	Yes	Enabled	This parameter indicates the status of the TAC motor driver by the ECM. The scan tool will display Enabled if TAC motor operation is allowed. The scan tool will display disabled if the TAC motor is disabled.
TAC Motor Command	Yes	15% $\sim$ 25%	This parameter indicates the required duty cycle to maintain a desired throttle position. The scan tool will display a higher value if more effort is required to move the throttle to the desired position, such as physical resistance. The scan tool will display a lower value if less effort is required to move the throttle to the desired position.
TCC/Cruise Control Brake Pedal Switch	Yes	Applied / Released	This parameter displays the status of the brake pedal system
Throttle Body Idle Air Flow Compensation	Yes	%	This parameter displays the percent compensation of the learned airflow variation algorithm. Yes This value indicates the current amount of airflow compensation in response to engine intake airflow restrictions.
Throttle Position	Yes	%	This displays the throttle position resulting directly from the arbitration of the (corrected) throttle position sensors.
Throttle Position Performance Test	Yes	OK	This parameter displays the status of the Throttle Position performance test by the control module. The scan tool will display OK if no Malfunction is found. The scan tool will display Malfunction if the control module detects a Malfunction during the test.
Throttle Position Sensor 1	Yes	4.1 $\sim$ 4.5 Volts	This parameter displays the voltage signal sent to the control module from Throttle Position sensor 1 of the throttle assembly. The Throttle Position sensor 1 is a range of values indicating a high voltage when the throttle is closed to a low voltage when the throttle plate is fully open.
Throttle Position Sensor 1 Position	Yes	8%	This parameter displays the angle of the throttle position (Throttle Position) sensor 1 as calculated by the control module using the signal from the Throttle Position sensor 1. The Throttle Position sensor 1 is a range of values indicating a low percentage when the throttle is closed to a high percentage when the throttle is fully open.
Throttle Position Sensor 1 Learned Minimum	Yes	0-0.6 Volts	This parameter displays the learned minimum value of throttle position (Throttle Position) sensor 1 as recorded by the control module during the last learn procedure.
Throttle Position Sensor 2	Yes	0.5 $\sim$ 0.8 Volts	This parameter displays the voltage signal sent to the control module from Throttle Position sensor 2 of the throttle assembly. The Throttle Position sensor 2 is a range of values indicating a low voltage when the throttle is closed to a high voltage when the throttle plate is fully open.
Throttle Position Sensor 2 Position	Yes	4%	This parameter displays the angle of the Throttle Position sensor 2 as calculated by the control module using the signal from the Throttle Position sensor 2. The Throttle Position sensor 2 is a range of values indicating a low percentage when the throttle is closed to a high percentage when the throttle is fully open.

Parameter	System State	Expected Value	Description
Throttle Position Sensor 2 Learned Minimum	Yes	5.0-3.7 Volts	This parameter displays the learned minimum value of throttle position (Throttle Position) sensor 2 as recorded by the control module during the last learn procedure.
Throttle Position Sensors 1 and 2	Yes	Agree	This parameter displays the results of a control module test that compares the signals from the Throttle Position sensors 1 and 2. The scan tool will display Agree or Disagree. Agree indicates that Throttle Position sensor 1 and Throttle Position sensor 2 voltages correspond to the same throttle position. Disagree indicates that Throttle Position sensor 1 and Throttle Position sensor 2 voltages correspond to different throttle positions.
Tire Size	Yes	Rev/km	This parameter displays the vehicle tire circumference in centimeters.
Torque Delivered Signal	Yes	Varies lbs ft N-m	This parameter displays the PWM signal which indicates the percent of available torque the engine is delivering to the drive wheels. The EBTTCM monitors the Traction Control Torque signal to ensure that the PCM is responding properly to the Traction Control Desired Torque signal.
Torque Management Ignition Timing Retard	Yes	0°, 180°	This parameter indicates how much the ignition spark timing is being retarded to control torque by the control module. The scan tool will display a higher value under extreme torque control conditions such as spinning wheels. The scan tool will display a lower value under low torque control conditions such as light driving.
Torque Management Spark Retard	Yes	0°, 180°	This parameter indicates how much the ignition spark timing is being retarded to control torque by the control module. The scan tool will display a higher value under extreme torque control conditions such as spinning wheels. The scan tool will display a lower value under low torque control conditions such as light driving.
Torque Request Inhibit Fuel	Yes	No	This parameter displays the reason the ECM would be causing the transmission torque request to be limited, and if the condition is currently present.
Torque Request Inhibit - Ignition Timing	Yes	No	This parameter indicates if the transmission torque request is limited due to ignition timing.
Torque Request Inhibit Minimum Idle Inhibit	Yes	No	This parameter displays the reason the ECM would be causing the transmission torque request to be limited, and if the condition is currently present.
Torque Request Inhibit Minimum Torque	Yes	No	This parameter displays the reason the ECM would be causing the transmission torque request to be limited, and if the condition is currently present.
Torque Request Inhibit Spark	Yes	No	This parameter displays the reason the ECM would be causing the transmission torque request to be limited, and if the condition is currently present.
Torque Request Inhibit Spark Advance	Yes	No	This parameter displays the reason the ECM would be causing the transmission torque request to be limited, and if the condition is currently present.
Torque Request Inhibit TAC	Yes	No	This parameter displays the reason the ECM would be causing the transmission torque request to be limited, and if the condition is currently present.
Torque Request Inhibit TAC Limit	Yes	No	This parameter displays the reason the ECM would be causing the transmission torque request to be limited, and if the condition is currently present.
Total Engine Overspeed Time	Yes	ms	This parameter displays the total duration of the engine overspeed time in milliseconds.
Total Knock Retard	Yes	0°, 180°	This parameter indicates how much ignition spark timing is being retarded due to all control systems monitored by the control module. The scan tool will display a high value during extreme conditions such as high temperatures and antilock braking. The scan tool will display a lower value during lighter driving conditions.
Total Misfire	Yes	0	This parameter displays the number of possible misfires during the last 200 cylinder firing events detected on all cylinders as calculated by the control module. The misfires are calculated based on engine crankshaft rotation speed variations. The scan tool displays an incrementing counter.
Traction Control Status	Yes	Inactive	This parameter displays when the traction control system (TCS) is activated. Yes, No
Transfer Case Gear Ratio (If Equipped)	Yes	1	This parameter displays the estimated transfer case ratio for applications that are equipped with a transfer case capable of providing range selection (e.g., four wheel drive low).
Transfer Case OSS	Yes	RPM	This parameter displays the transfer case output speed (the speed at the output of the transfer case) determined from the speed measured by the transfer case speed sensor (TCSS).

Parameter	Description
Cooling Fan Relay 1, Relays 2 and 3, Relays 1, 2 and 3	This device control is used to override the state of the cooling fan control output.
Crankshaft Position Reluctor Wheel Learn	This device control is used to reset the crank wheel adaptation values in case of an ECM or crank wheel replacement.
Crankshaft Position Variation Learn	This device control is used to activate the crankshaft position variation learn algorithm which calculates the reference pulse correction factors for the misfire diagnostic.
Cylinder 1, 3, 4, 6, 7	This device control is used to deactivate one of the engine's cylinders with the engine running by commanding the appropriate displacement on demand solenoid output on.
Cylinder Deactivation System	This device control is used to deactivate half of the engine's cylinders by commanding all of the displacement on demand solenoid outputs on.
Cylinder Power Balance	This device control is used to override the state of the fuel injector outputs. This device control is used to disable injectors in order to cut off fuel to the associated cylinders.
Depressurize Fuel System	When the low pressure fuel pump is used in conjunction with a separate high pressure fuel pump for direct injection (DI) engines, this device control can be used to reduce the high fuel pressure to a low working level.
Engine Controls Ignition Relay	This device control is used to override the state of the powertrain relay.
Engine Oil Life Reset	This device control may be used to reset the engine oil remaining life to 100% after an oil change or to any other value when replacing a control module.
Engine Oil Pressure Control Solenoid Valve	This device control is used to override the state of the variable displacement oil pump. When the variable displacement oil pump is turned on, the oil pump will be commanded to a low pressure state.
Engine Serial Number	This device control displays the engine serial number.
Engine Speed	This device control is used to override the idle engine speed.
Engine Speed Control	Activates the idle air control (IAC) valve to change engine RPM. The normal commanded state is NONE. To enable the RPM control, all instruction on the scan tool must be completed. The system will Increase or Decrease the engine speed. The SET STEP VALUE changes the engine speed by increments of 25 RPM, 100 RPM, and 500 RPM. The system remains in the commanded state until cancelled by the tool.
EVAP Purge/Seal	This control enables 2 functions. One function increases or decreases the amount of purge by changing the duty cycle of the purge valve and commanding the vent ON (non-venting). The normal commanded state of both valves is NONE. The system will Increase or Decrease the amount of EVAP purge valve opening by 10 percent increments within a range of 0% to 100 percent. The second function seals the system after using the purge function to obtain a specific amount of fuel tank pressure (FTP). When activated the purge valve is commanded to 0 percent and the vent valve is commanded ON (non-venting). Both functions remain in the commanded state until cancelled by the tool or the FTP exceeds 24 mm Hg (12 in H2O).
EVAP Purge Solenoid	Activates the EVAP Purge Valve. The normal commanded state is OFF. The system will Increase or Decrease the amount of EVAP purge valve opening by 10 percent increments within a range of 0% to 100 percent. The system remains in the commanded state until cancelled by the tool or the fuel tank pressure exceeds 24 mm Hg (12 in H2O).
EVAP Purge Solenoid Valve	This device control is used to verify functionality of the fuel vapor purge system by allowing the canister purge output to be commanded to a specific duty cycle.
EVAP Service Test	Activates the on-board EVAP diagnostic test.
EVAP Test	This device control is used to activate the evaporative emissions service bay test.

Parameter	Description
EVAP Vent Solenoid	Activates the EVAP vent solenoid. The normal commanded state is OFF. When commanded ON, the vent valve switches to non-venting. The system remains in the commanded state unless one of the following conditions occurs: - Cancelled by the tool - Purge is greater than 0 percent, and the fuel tank pressure exceeds 24 mm Hg (12 in H₂O).
EVAP Vent Solenoid Valve	This device control is used to either open or close the canister vent.
Fuel Composition Reset	This device control is used to reset the learned ethanol content of the fuel to a default calibration value.
Fuel Control Loop Status	This device control is used to enable or disable closed loop fuel.
Fuel Injector Balance	This device control is used to override the state of the fuel injector outputs. This device control is used to trigger a single injector to be commanded on for a short duration in order to test the flow of the injector to the associated cylinders.
Fuel Pump Enable	This device control is used to override the state of the fuel pump output discrete hardwire between the ECM and the fuel pump control module (FPCM) or the fuel pump driver module.
Fuel Pump Relay	Controls the fuel pump relay. The normal commanded state is NONE. When commanded ON/OFF, the PCM turns the fuel pump ON/OFF. If the engine is running, and the fuel pump is commanded OFF, the engine will stall. The system remains in the commanded state until cancelled by the scan tool.
Fuel Pump Speed	This device control is used to override the normal control of the fuel pump output. The device control is a service diagnostic aid that is used to determine if the fuel pump system is functioning properly.
Fuel Rail Pressure Relief Valve Reset	This device control is used to trigger a reset of the learned offset value for the high pressure fuel pump relief valve.
Fuel System Pressure Test	This device control is used to charge the fuel rail on a high pressure direct injection system before completing the assembly of the engine in order to check for fuel leaks. This feature will allow the technician to inspect the fuel system for leaks after servicing the fuel system or after any other service procedure that required disconnection or removal of fuel system components. The starter relay is commanded on to crank the engine. Spark (SIDI) and fuel injection are inhibited to prevent the engine from starting. The high pressure fuel pump/regulator(s) are controlled to ensure maximum fuel system pressure is achieved while the engine is cranking and fuel pressure maintained after the engine stops rotating.
Fuel System Reset	This device control is used to trigger a reset of the fuel set-point adaptation (FSA) learning adaptive map.
Fuel Trim Enable	This device control is used to enable or disable fuel trim learning.
Fuel Trim Reset	This device control is used to reset the learned fuel trim values to their initial values.
Generator L-Terminal	This device control is used to override the state of the generator L terminal output.
High Pressure Fuel Pump Learn	This device control is used to start (trigger) and run the high fuel pressure learn process in order to fine tune the high pressure fuel pump after a high pressure component replacement.
HO ₂ S Heater Bank 1 or 2 Sensor 1 or 2	This device control is used to override the duty cycle of the oxygen sensor heaters.
HO ₂ S Heater Bank 1 Sensor 1 Command	Activates the HO ₂ S bank 1 sensor 1 heater. The commanded states include ON and OFF. The normal commanded state is OFF. Commanding the HO ₂ S bank 1 sensor 1 heater ON turns on the heater driver. The system remains in the commanded state until cancelled by the tool.
HO ₂ S Heater Bank 1 Sensor 2 Command	Activates the HO ₂ S bank 1 sensor 2 heater. The commanded states include ON and OFF. The normal commanded state is OFF. Commanding the HO ₂ S bank 1 sensor 2 heater ON turns on the heater driver. The system remains in the commanded state until cancelled by the tool.

Parameter	Description
HO2S Heater Bank 2 Sensor 1 Command	Activates the HO2S bank 2 sensor 1 heater. The commanded states include ON and OFF. The normal commanded state is OFF. Commanding the HO2S bank 2 sensor 1 heater ON turns on the heater driver. The system remains in the commanded state until cancelled by the tool.
HO2S Heater Learn	This device control is used to trigger a service bay procedure to learn the oxygen sensor heater resistance following a sensor replacement in service.Ã,Ã Ã,Ã
HO2S Reset	This device control is used to trigger a reset of the oxygen sensor drift compensation value, in case of an oxygen sensor replacement.
HO2S Test	This device control is used to trigger a service bay procedure to execute the oxygen sensor response test following a sensor replacement in service.Ã,Ã
Idle Ignition Timing	This device control is used to disable the portion of the spark control algorithm that adjusts spark angle to correct the difference between commanded idle engine speed and actual idle engine speed.
Idle Learn	This device control is used to reset the learned airflow adaptive values to their initial values.
Ignition Timing Retard	This device control is used to retard the spark angle from the software calculated spark angle.Ã,Ã For example, if the software calculated spark angle was 15 degrees advanced and this device control requested a 3 degree retard, the commanded spark angle that would be delivered would be 12 degrees advanced.
Intake Camshaft Position Actuator	This device control is used to override the state of the intake cam phase output.Ã,Ã The commanded camshaft position is expressed in terms of degrees of camshaft rotation (advance for intake camshafts) from the park position (a camshaft position of zero represents the park position).
Intake Camshaft Position Actuator Solenoid Valve	This device control is used to override the state of the intake cam phase solenoid output.
MAF Sensor Supply VoltageÃ,Ã	This device control is used to override the state of the mass air flow sensor supply voltage output.
Malfunction Indicator Lamp (MIL)	This device control is used to either turn the malfunction indicator lamp (MIL) on or off.
Misfire Graphic	Graphs the accumulated misfires occurring in each cylinder. The scan tool allows for a reset of the misfire graph.
Remote Vehicle Start Disable History Reset	This device control is used to trigger the reset of the last eight reasons that powertrain has disabled remote vehicle start (RVS).
Reverse Inhibit	This device control is used to override the state of the Reverse Inhibit output.
RVS Disable History Reset	This output control is used to trigger the reset of the last 8 reasons the ECM has disabled remote vehicle start (RVS).
Skip Shift Solenoid	Activates the Skip Shift Solenoid
Starter Relay	This device control is used to override the state of the starter relay output.Ã,Ã Fuel and spark are disabled to prevent the engine from starting if the starter relay output is commanded on.
Throttle Position	This device control is used to override the commanded throttle position.
Throttle Sweep	This device control is used to automatically command the throttle blade from 0% to 100% and then back to 0%
Tire Size Selection	This function is used for correcting vehicle speed and odometer calculations when tire size is changed.