

2017 GENERAL INFORMATION**Vehicle Diagnostic Information - Specifications - K20 Engine Control Module: Scan Tool Information - Encore, Trax****SPECIFICATIONS****K20 ENGINE CONTROL MODULE: SCAN TOOL INFORMATION****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			
5 V Reference 1, 2, 3, 4 or 5	Engine Idling	5 Volts	This parameter displays the voltage sensed on the 5 V reference circuits 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, 2, 3, 4 or 5 Circuit Status	Engine Idling	OK	This parameter will display OK if the circuit is good or Malfunction if a short to ground, short to B+ is present.
A/C Compressor Clutch Inhibit Reason History 1 or 2	Ignition ON	None	This parameter displays one of the following if an A/C Compressor Clutch Inhibit reasons is detected. High Side Fluid Pressure, Engine Speed, Battery Voltage, Engine Stall, Engine Speed Stabilization, Wide Open Throttle, Vehicle Launch Performance, High Coolant Temperature, AC Relay Fault, Hybrid Request, AutoStop Request, High Power Electronics Coolant Temperature, High Transmission Fluid Temperature, Full Pedal Power Limit Applied, Airbag deployed, Battery Power Limit Exceeded, Powertrain Diagnostics, AC Compressor Fault, Serial Communication Fault, or Low Brake Vacuum.
A/C Compressor Clutch Relay Command	Engine Idling	Off	This parameter displays when the A/C Compressor Clutch relay is commanded ON or OFF.

Parameter	System State	Expected Value	Description
A/C Compressor Clutch Relay Control Circuit High Voltage Test Status	Engine Idling	OK	This parameter displays the status of the relay control circuit. It can display OK, Malfunction or Not Run.
A/C Compressor Clutch Relay Control Circuit Low Voltage Test Status	Engine Idling	OK	This parameter displays the status of the relay control circuit. It can display OK, Malfunction or Not Run.
A/C Compressor Clutch Relay Control Circuit Open Test Status	Engine Idling	OK	This parameter displays the status of the relay control circuit. It can display OK, Malfunction or Not Run.
A/C Disabled - A/C Pressure Out of Range	A/C ON	No	This parameter displays whether the A/C pressure is out of range for normal operation as determined by the control module.
A/C Disengage 1-8 History	A/C ON	Reason for A/C Disengagement	The parameter displays reason for the last 8 air conditioning (A/C) compressor disengagements in order from 1 to 8 with 8 being the most recent. There are 8 possible causes for the A/C compressor to disengage.
A/C High Side Pressure Sensor	A/C OFF	0.75-1.5 Volts*	This parameter displays the voltage signal from the A/C high side pressure sensor input to the control module. * Varies with temperature, humidity, and altitude.
	A/C ON	1.3-2.5 Volts*	
A/C High Side Pressure Sensor	A/C OFF	450-827 kPa (65-120 psi)*	This parameter displays the pressure from the A/C high side pressure sensor signal circuit to the control module. * Varies with temperature, humidity, and altitude.
	A/C ON	827-2, 350 kPa (120-341 psi)*	
A/C OFF for WOT	A/C ON	No	This parameter displays whether the control module is commanding the A/C compressor clutch relay OFF for wide open throttle (WOT).
A/C Request Signal	A/C ON	No	This parameter displays the state of the A/C request input to the control module from the heating, ventilation, and air conditioning (HVAC) controls.
Accelerator Pedal Position	Engine Idling	0-100 %	This parameter displays the angle of the accelerator pedal position (APP) as calculated by the control module using the signals from the APP sensors.

Parameter	System State	Expected Value	Description
Accelerator Pedal Position When Engine Overspeed Detected	Engine Idling	%	This parameter displays the accelerator pedal position (APP) observed upon initial detection of an overspeed condition. This value will be updated upon each overspeed condition.
Active Grille Air Shutter Ambient Air Temperature	Ignition ON	Â°C (Â°F)	This parameter displays the temperature detected and used by the Active Air Shutter system.
Active Grille Air Shutter Control	Ignition ON	Active / Inactive	This parameter indicates if the Active Grille Air Shutter Control is Active or Inactive.
Active Grille Air Shutter Control Status	Ignition ON	ON/OFF	This parameter displays the control status of the active air shutter.
Active Grille Air Shutter Desired Position Achieved	Ignition ON	Yes / No	This parameter indicates if the Active Grille Air Shutter Desired Position is Achieved.
Active Grille Air Shutter Diagnostic Control	Ignition ON	Active / Inactive	This parameter indicates if the control system is attempting to move the Active Grille Air Shutter for diagnostic purposes. Displays Active or Inactive.
Active Grille Air Shutter Ice Protection Mode	Ignition ON	Active / Inactive	This parameter indicates whether or not the Shutter control algorithm is in Ice Mode, which attempts to park the shutter and prohibit further operation. Displays Active or Inactive.
Active Grille Air Shutter Initialization Status	Ignition ON	Complete / Incomplete	This parameter displays the initialization status of the Active Grille Air Shutter.
Active Grille Air Shutter Position	Ignition ON	%	This parameter displays the position of the active grill air shutter. 0% = fully closed, 100% = fully open.
Active Grille Air Shutter Status	Ignition ON	Moving / Stationary	This parameter indicates if the Active Grille Air Shutter is Moving or Stationary.
Active Grille Air Shutter Supply Voltage	Ignition ON	Volts	This parameter indicates the Active Grille Air Shutter Supply Voltage.
Active Grille Air Shutter Torque Command	Ignition ON	Counts	This parameter displays the commanded torque level for the active air shutter. 0 = Nominal Torque.
Air/Fuel Equivalence Ratio Command	Engine Idling	Varies: 1	This parameter should display 1.0 when in Closed Loop fuel control.

Parameter	System State	Expected Value	Description
Alternative Fuel Injector 1, 2, 3, 4, 5, 6, 7 or 8 Command	Ignition ON	On / Off	This parameter contains the commanded state of the alternative fuel injector 1 output (the output is considered to be commanded on if the injector is enabled while the engine is running or cranking).
Alternative Fuel Injector 1 Control Circuit High Voltage Test Status	Ignition ON	OK, Malfunction, Not Run	This parameter displays the state of the Alternative Fuel Injector 1 control circuit. The parameter displays Malfunction if the Alternative Fuel Injector 1 control circuit is shorted to voltage.
Alternative Fuel Injector 1 Control Circuit Low Voltage Test Status	Ignition ON	OK, Malfunction, Not Run	This parameter displays the state of the Alternative Fuel Injector 1 control circuit. The parameter displays Malfunction if the Alternative Fuel Injector 1 control circuit is shorted to ground.
Alternative Fuel Injector Pulse Width Bank 1	Ignition ON	ms	This parameter displays the alternative fuel injector pulse width (on time) commanded to each cylinder on bank 1.
Alternative Fuel Injector Pulse Width Bank 2	Ignition ON	ms	This parameter displays the alternative fuel injector pulse width (on time) commanded to each cylinder on bank 2.
Alternative Fuel Rail Pressure	Ignition ON	kPa / PSI	This parameter displays the fuel rail pressure calculated as the difference between alternative fuel rail absolute pressure and ambient air pressure (barometric pressure). This measurement is a "gauge pressure." (Gauge = Absolute - Ambient) Range 0 to 2048 kPa.
Alternative Fuel Rail Pressure	Ignition ON	Volts	This parameter displays the alternative fuel rail pressure sensor analog input as a percentage of its reference voltage.
Alternative Fuel Rail Pressure Sensor	Ignition ON	kPa	This parameter displays an 'undefaulted' fuel rail pressure relative to manifold vacuum. This is intended for gaseous fuel injection alternative fuel applications (CNG/LPG Mono-Fuel and Bi-Fuel).

Parameter	System State	Expected Value	Description
Alternative Fuel Rail Temperature	Ignition ON	Â°C (Â°F)	This parameter displays the undefaulted alternative fuel rail temperature measured by a sensor. Range is -40 to 215Â°C.
Alternative Fuel Shutoff Valve 1 or 2 Control Circuit Command	Ignition ON	On / Off	This parameter displays the commanded state of the alternative fuel shutoff valve 1 output (the output is considered to be commanded on if the shutoff valve is enabled while the engine is running or cranking).
Alternative Fuel Shutoff Valve 1 or 2 Control Circuit High Voltage Test Status	Ignition ON	OK, Malfunction, Not Run	This parameter displays the state of the Alternative Fuel Shutoff Valve 1 or 2 control circuit. The parameter displays Malfunction if the Alternative Fuel Shutoff Valve is shorted to voltage.
Alternative Fuel Tank Pressure	Ignition ON	Volts	This parameter displays the alternative fuel tank pressure sensor analog input as a percentage of its reference voltage.
Ambient Air Temperature	Engine Idling	Varies	This parameter displays temperature from the input of the Intake Air Temperature Sensor.
Ambient Air Temperature	Ignition ON	Â°C (Â°F) Varies	This parameter displays the outside air temperature as calculated by the control module.
Ambient Air Temperature When Recommended Maximum Fuel Alcohol Content Exceeded	-	Â°C (Â°F)	This parameter displays the ambient air temperature when the recommended maximum fuel alcohol content was exceeded.
Ambient Humidity	Ignition ON	%	This parameter displays the current ambient humidity level.
APP Sensor 1	Accelerator pedal not actuated	0.98 Volts	This parameter displays the actual voltage on the accelerator pedal position (APP) sensor 1 signal circuit as measured by the control module.
	Accelerator pedal fully actuated	4.25 Volts	
APP Sensor 1 and 2	Ignition ON	Agree	This parameter displays Disagree if the control module detects the signal voltage from APP sensor 1 is not in correct relationship to APP sensor 2. The scan tool displays Agree under the normal operating conditions.

Parameter	System State	Expected Value	Description
APP Sensor 1 Circuit Status	Engine Idling	OK	APP Sensor 1 Out of Range indicates that the sensed accelerator pedal position 1 sensor value is currently out of range or that a Malfunction has been detected based upon the sensed accelerator pedal position 1 sensor value being out of range
APP Sensor 1 Learned Applied Position	Ignition ON	78 %	This parameter contains the learned maximum (fully applied) accelerator pedal position relating to absolute accelerator pedal position (no correction or normalization based upon learned minimum or maximum positions) from accelerator pedal position sensor 1.
APP Sensor 1 Learned Released Position	Ignition ON	0.98 Volts	This parameter indicates the accelerator pedal sensor 1 signal at its minimum learned position (pedal released) as a percentage of its reference voltage. (The minimum learned position is automatically updated periodically as determined by the calibration.
APP Sensor 1 Position	Pedal Released	0 %	This parameter contains the displacement determined from accelerator pedal position sensor 1 (corrected and normalized based upon its learned minimum and maximum positions).
	Pedal Fully Applied	99 %	
APP Sensor 2	Ignition ON	Volts	This parameter contains the accelerator pedal position sensor 2 analog input as a percentage of its reference voltage
APP Sensor 2	Accelerator pedal not actuated	0.49 Volts	This parameter displays the actual voltage on the accelerator pedal position (APP) sensor 2 signal circuit as measured by the control module.
	Accelerator pedal fully actuated	2.14 Volts	
APP Sensor 2 Circuit Status	Ignition ON	OK	APP Sensor 2 Out of Range indicates that the sensed accelerator pedal position 2 sensor value is currently out of range or that a malfunction has been detected (and latched) based upon the sensed accelerator pedal position 2 sensor value being out of range

Parameter	System State	Expected Value	Description
APP Sensor 2 Learned Applied Position	Ignition ON	78 %	This parameter contains the learned maximum (fully applied) accelerator pedal position relating to absolute accelerator pedal position (no correction or normalization based upon learned minimum or maximum positions) from accelerator pedal position sensor 2.
APP Sensor 2 Learned Released Position	Ignition ON	0.49 Volts	This parameter indicates the accelerator pedal sensor 2 signal at its minimum learned position (pedal released) as a percentage of its reference voltage. (The minimum learned position is automatically updated periodically as determined by the engine control module.
APP Sensor 2 Position	Pedal Released	0 %	This parameter contains the displacement determined from accelerator pedal position sensor 2 (corrected and normalized based upon its learned minimum and maximum positions).
	Pedal Fully Applied	100 %	
APP Sensors	Pedal Released	0 %	This parameter contains the accelerator pedal position resulting directly from the settling of differences of the accelerator pedal position sensors (prior to any compensation to determine driver intent).
	Pedal Fully Applied	99 %	
Autostop/Autostart Disable Mode	-	Active	This parameter displays "Active" when all conditions for allowing the autostop/autostart mode are present (no inhibit conditions exist), this parameter displays "Inactive" when all conditions for allowing the autostop/autostart mode are not present.
Autostart Inhibit Reason Autostop/Autostart Malfunction	Engine Idling	No	This parameter displays that a immediate stop was commanded due to a Autostop/Autostart malfunction.

Parameter	System State	Expected Value	Description
Autostart Inhibit Reason	Engine Idling	No	The scan tool displays Yes if one of the following Autostart Inhibit Reason is detected. Control Function Active, Crank Abort, Driver Exited Vehicle, ECM Malfunction, ECM Request, Engine Coolant Temperature Out of Range, Hood Ajar, Hybrid/EV Power Conditions, Hybrid/EV Battery Pack Contactor Open, Hybrid/EV Battery Pack Power Low, Hybrid/EV Battery Pack State of Charge Low, Hybrid/EV Battery Pack Voltage Low, Hybrid/EV Propulsion System Inactive, Not Commanded, Run/Crank Not Active, System Malfunction, Transmission Range.

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Parameter	System State	Expected Value	Description
Autostart Reason	Engine Idling	No	This parameter displays Yes if one of the following Autostart Reason is detected. A/C Request, Acceleration Request, Accelerator Pedal Pressed, Auxiliary Transmission Fluid Pump Not Available, Brake Booster Weak Vacuum, Brake Pedal Released, Clutch Pedal Applied, Control Function Active, Drive Motor Inverter Temperature High, Drive Motor Temperature High, Driver Exited Vehicle, ECM Request, Engine Coolant Temperature Out of Range, Hood Ajar, Hybrid/EV Battery Module Voltage Low, Hybrid/EV Battery Pack Power Low, Hybrid/EV Battery Pack State of Charge Low, Hybrid/EV Battery Pack Temperature, Hybrid/EV Battery Pack Voltage Low, Hybrid/EV Propulsion System Inactive, Ignition Switch Start, Inclination, Invalid Data Received, Low Voltage Battery Discharge Current High, Low Voltage Battery State of Function Low, Low Voltage Battery State of Health Low, Low Voltage Battery Voltage Low, Maximum Autostop Time Exceeded, Minimum Engine Run Time Not met, Reduced Engine Power Active, Remote Vehicle Start Request, Stop/Start Select Switch, System Malfunction, System Optimization, System Voltage Low, TCM Demand, Tow/Haul Mode Switch ON, Transmission Fluid Temperature Out of Range, Transmission In Reverse, Transmission Range, Vehicle Speed Too High.
Autostop Disable Reason	Engine Idling	No	The scan tool displays Yes if one of the following Autostop Disable Reason is detected. 12 V Start Counter Exceeded, A/C Request, Acceleration Request, Accelerator Pedal Pressed,

Parameter	System State	Expected Value	Description
			Auxiliary Transmission Fluid Pump Not Available, Brake Booster Weak Vacuum, Brake Pedal Released, Clutch Pedal Applied, Control Function Active, Drive Motor Inverter Temperature High, Drive Motor Temperature High, ECM Request, Engine Coolant Temperature Out of range, Engine Speed High, Generator Load High, Hood Ajar Hybrid/EV Battery Module Voltage Low, Hybrid/EV Battery Pack Power Low, Hybrid/EV Battery Pack State of Charge Low, Hybrid/EV Battery Pack Temperature, Hybrid/EV Battery Pack Voltage Low, Hybrid/EV Propulsion System Inactive, Idle Boost Mode Active, Ignition Switch Start, Intake Manifold Weak Vacuum, Invalid Data Received, Low Voltage Battery Discharge Current High, Low Voltage Battery State of Charge Low, Low Voltage Battery State of Function Low, Low Voltage Battery State of Health Low, Low Voltage Battery Temperature Out of Range, Low Voltage Battery Voltage Low, Maximum Vehicle Stop Time Exceeded, Minimum Engine Run Time Not Met, Reduced Engine Power Active, Remote Vehicle Start Request, Run/Crank Not Active, Stop/Start Select Switch, System Optimization, System Voltage Low, TCM Request, Tow/Haul Mode Switch ON, Transmission Fluid Temperature Out of Range, Transmission in Reverse, Transmission Range, Vehicle Inclination, Vehicle Speed Threshold Not Reached, Vehicle Speed Too High, Wheel Slip Detected.
Auxiliary Coolant Pump Relay Command	Ignition ON	On / Off	This parameter displays the command status of the Auxiliary Coolant Pump Relay.

Parameter	System State	Expected Value	Description
Auxiliary Coolant Pump Relay Control Circuit High Voltage Test Status	Ignition ON	OK, Malfunction, Not Run	This parameter displays the status of the Auxiliary Coolant Pump Relay Control Circuit High Voltage Test. Can display OK, Malfunction, or Not Run.
Auxiliary Coolant Pump Relay Control Circuit Low Voltage Test Status	Ignition ON	OK, Malfunction, Not Run	This parameter displays the status of the Auxiliary Coolant Pump Relay Control Circuit Low Voltage Test. Can display OK, Malfunction, or Not Run.
Auxiliary Coolant Pump Relay Control Circuit Open Test Status	Ignition ON	OK, Malfunction, Not Run	This parameter displays the status of the Auxiliary Coolant Pump Relay Control Circuit Open Circuit Test. Can display OK, Malfunction, or Not Run.
Average Fuel Age	Ignition ON	Days	This parameter displays the average fuel age in days.
Axle Torque	Engine Idling	Â	This parameter displays the Axle Torque value sent from the hybrid control processor (HCP) to the ECM and anti-lock brake system (ABS) module.
Axle Torque Command	Ignition ON	Nm (lb ft)	This parameter displays the commanded Axle Torque value.
BARO	Engine Idling	65-104 kPa (8-16 psi)	This parameter displays the barometric pressure. The control module uses the barometric pressure sensor input for fuel control to compensate for altitude differences.
BARO Sensor	Engine Idling	2.5-4.0 Volts	This parameter displays the barometric pressure sensor voltage.
Barometric Pressure Sensor Bank 1	Ignition ON	kPa (PSI)	This parameter displays the ambient air pressure.
Barometric Pressure Sensor Bank 2	Ignition ON	Volts	This parameter displays the signal voltage of the barometric pressure sensor
Base Model Part Number	Ignition ON	#	This parameter displays information which is used during programming to identify unique combinations of hardware and software.
Battery Capacity	Ignition ON	Ah	This parameter displays the capacity of the battery in Amp-hours.
Battery Sensor Module Battery State Information	Ignition ON	Available / Not Available	This parameter indicates if Battery State Information is Available or Not Available.

Parameter	System State	Expected Value	Description
Battery Sensor Module Reset Occurred - Using Estimated State of Charge	Ignition ON	Yes / No	This parameter indicates if the current battery State of Charge is estimated. This occurs when the BSM has been reset.
Battery State of Charge	Ignition ON	%	This parameter displays the Battery State of Charge (SOC). SOC is a calculated value provided by an intelligent battery sensor (IBS).
Battery State of Health	Ignition ON	%	This parameter displays the Battery State of Health (SOH). SOH is a calculated value provided by an intelligent battery sensor (IBS).
Battery Type	Ignition ON	N/A	This parameter displays the battery type.
Battery Voltage	Ignition ON	Volts	This parameter displays the battery voltage.
Battery Voltage High Resolution	Ignition ON	Volts	This parameter displays the high resolution battery voltage value.
Boost Pressure	Engine Idling	kPa	This parameter shows the Turbocharger boost pressure in kPa.
Boost Pressure Sensor	Engine Idling	kPa	This parameter shows the Turbocharger boost pressure in kPa.
Boost Pressure Sensor	-	Volts	This parameter displays the turbocharger boost pressure sensor in voltage.
Brake Booster Pressure Sensor	Engine Idling	Volts	This parameter displays the brake booster vacuum pressure analog input as a percentage of its reference voltage.
Brake Booster Pressure Sensor	Engine Idling	kPa	This parameter displays the undefaulted, unfiltered brake booster vacuum pressure measured by a sensor.
Brake Pedal Position Circuit Signal	Ignition ON	Closed	This parameter displays the serial data message of the brake signal from the electronic brake and traction control module (EBTCM).
Brake Pedal Position Circuit Signal	-	Released	This parameter displays the displacement of the brake pedal.
Brake Pedal Position Sensor	Ignition ON	%	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.

Parameter	System State	Expected Value	Description
Brake Pedal Position Sensor	Ignition ON	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 Fully Released Learn Status	Ignition ON	Complete	This parameter displays the brake pedal fully released learn position status.
Brake Pedal Position Sensor Learned Released Position	Ignition ON	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	Ignition ON	Released	This parameter displays the serial data message of the brake position sensor signal from the electronic brake and traction control module (EBTCM).
Calculated Air Flow	Engine Idling	G/S	This parameter contains the mass airflow determined from the speed density (MAP based) calculation of air mass per cylinder.
Calculated BARO	Engine Idling	kPa/psi 97.2 kPa/14.1 psi at idle	This parameter contains an estimate of barometric pressure, used to correlate with sensed ambient air pressure in the Barometric Pressure Correlation Diagnostic.
Calculated Catalyst Temperature or Calculated Catalyst Temperature Bank 1 or Bank 2	Engine Idling	Approximately 552Â°C (1026Â°F)	This parameter contains the estimated catalyst temperature (as a function of engine speed, engine airflow, and fuel ethanol percentage) for use in the oxygen sensor and catalyst monitor diagnostic algorithms.
Calculated Engine Oil Pressure	Â	kPa (PSI)	This parameter displays the filtered value for the engine oil pressure.
Calculated Engine Oil Temperature	Engine Idling	105Â°C (221Â°F)	This parameter displays the estimated engine oil temperature (as a function of engine coolant temperature and other parameters).
Calibration History Buffer	Ignition ON	Unlocked	This parameter displays locked when the buffer has been locked against further updates due to detection of a non-production calibration.
Calibration Verification Number History 1-10	Ignition ON	#	This parameter displays the history entries for the primary calibration part in the controller.

Parameter	System State	Expected Value	Description
Camshaft Position Active Counter	Ignition ON	Counts	This parameter displays a rolling count of the number of primary cam position sensor pulses.
Camshaft Position Sensor	Engine Idling	0 RPM	This parameter displays the speed of the engine as calculated by the signal from a camshaft position (CMP) sensor. This parameter will always display 0 unless a condition with the CKP sensor or CKP reluctor exists. If a CKP condition exists the control module will use a valid CMP sensor signal to determine engine speed and crank/camshaft position.
Camshaft Position Signal Output Circuit High Voltage Test Status	Engine Idling	OK	This parameter displays the state of the Camshaft Position Signal Output Circuit. The parameter displays Malfunction if the Camshaft Position Signal Output Circuit is shorted to voltage.
Camshaft Position Signal Output Circuit Low Voltage Test Status	Engine Idling	OK	This parameter displays the state of the Camshaft Position Signal Output Circuit. The parameter displays Malfunction if the Camshaft Position Signal Output Circuit is shorted to ground.
Camshaft Position Signal Output Circuit Open Test Status	Engine Idling	OK	This parameter displays the state of the Camshaft Position Signal Output Circuit. The parameter displays Malfunction if the Camshaft Position Signal Output Circuit is open.
Catalyst Monitor Complete	Engine Idling	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 run, or a malfunction is detected in the catalyst.
Catalyst Monitor Complete This Ignition Cycle	Engine Idling	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.

Parameter	System State	Expected Value	Description
Catalyst Monitor Enabled	Engine Idling	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	Engine Idling	Yes-No	This parameter displays the monitor enable status during the current driving/monitoring cycle.
Catalyst Monitor Not At Idle Test Conditions Met	Engine Idling	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 Test Counter or Catalyst Monitor Test Counter Bank 1 or 2	Engine Idling	Counts	This parameter contains the number of repeated results of the catalyst monitor diagnostic test that have been performed since a code clear (used to determine if a sufficient number of tests have run to report a passing condition).
Catalyst Monitor Test Result or Catalyst Monitor Test Result Bank 1 or 2	Engine Idling	No Decision/Failed/Passed	This parameter indicates the status of the catalyst monitor diagnostic. Multiple tests may run before the diagnostic reports a "Pass" or "Fail" and will be tracked by Catalyst Monitor Diagnostic Test Counter. When this Parameter reports a "Pass" or "Fail", the diagnostic is complete for the current trip and will not attempt any further tests.
Catalyst Monitor Test State	Engine Idling	Active/Inactive	This parameter indicates the status of the catalyst monitor diagnostic by displaying active or inactive. This test will only run with the engine at idle.
Change Engine Oil Indicator Command	Ignition ON	Off	This parameter sends a signal through the serial communication to inform the driver to change the engine oil. It is based on a calibrated amount of time.
Charge Air Cooler Coolant Pump Relay Command	Ignition ON	Off	This parameter displays the commanded state of the intercooler pump relay command.

Parameter	System State	Expected Value	Description
Charge Air Cooler Coolant Pump Relay Control Circuit High Voltage Test Status	Ignition ON	OK	This parameter displays the state of the charge air cooler coolant pump control circuit. The parameter displays Malfunction if the charge air cooler coolant pump control circuit is shorted to voltage.
Charge Air Cooler Coolant Pump Relay Control Circuit Low Voltage Test Status	Ignition ON	OK	This parameter displays the state of the charge air cooler coolant pump control circuit. The parameter displays Malfunction if the charge air cooler coolant pump control circuit is shorted to ground.
Charge Air Cooler Coolant Pump Relay Control Circuit Open Test Status	Ignition ON	OK	This parameter displays the state of the charge air cooler coolant pump control circuit. The parameter displays Malfunction if the charge air cooler coolant pump control circuit is open.
Clutch Pedal Starter Inhibit Switch (If Equipped)	Engine Idling	On	This parameter displays ON when the clutch pedal is released.
Clutch Pedal Switch (If Equipped)	Engine Idling	Released	This parameter displays the state of the clutch pedal as determined by the control module from the clutch pedal switch.
Cold Startup	Ignition ON	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 the 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.

Parameter	System State	Expected Value	Description
Component Monitor Complete	Ignition ON	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 Enabled	Ignition ON	Yes/No	This parameter displays Yes when Component Monitor is Enabled. And No when it is not Enabled.
Component Monitor - This Ignition Cycle	Ignition ON	Disabled, Enabled, Complete	This parameter displays the status of the Component Monitor during this ignition cycle. Can display Disabled, Enabled, or Complete.
Cooling Fan Command	-	%	This parameter displays the amount of fan power commanded as a percentage of the total fan power available.
Cooling Fan Motor Command	-	%	This parameter displays the commanded duty cycle for the cooling fan.
Cooling Fan Control Circuit High Voltage Test Status	Ignition ON	OK, Malfunction, Not Run	This parameter displays the status of the Cooling Fan Control Circuit High Voltage Test. Can display OK, Malfunction, or Not Run.
Cooling Fan Control Circuit Low Voltage Test Status	Ignition ON	OK, Malfunction, Not Run	This parameter displays the status of the Cooling Fan Control Circuit Low Voltage Test. Can display OK, Malfunction, or Not Run.
Cooling Fan Control Circuit Open Test Status	Ignition ON	OK, Malfunction, Not Run	This parameter displays the status of the Cooling Fan Control Circuit Open Circuit Test. Can display OK, Malfunction, or Not Run.
Cooling Fan Relay 1 Command	Ignition ON	On	This parameter displays the commanded state of the fan relay 1 control circuit. The cooling fan relay 1 should be ON when the scan tool indicates the FC Relay 1 Command is ON. The cooling fan relay 1 should be OFF when the scan tool indicates the FC Relay 1` Command is OFF.
Cooling Fan Relays 2 and 3 Command	Ignition ON	On	This parameter displays the commanded state of the fan relay 2 output.

Parameter	System State	Expected Value	Description
Cooling Fan Relay 1 Control Circuit Open Test Status	Ignition ON	OK	This parameter displays the state of the cooling fan relay control circuit. The parameter displays Malfunction if the cooling fan relay control circuit is open.
Cooling Fan Relay 1, or 2 and 3 Control Circuit High Voltage Test Status	Ignition ON	OK	This parameter displays the state of the cooling fan relay control circuit. The parameter displays Malfunction if the cooling fan relay control circuit is shorted to voltage.
Cooling Fan Relay 1, or 2 and 3 Control Circuit Low Voltage Test Status	Ignition ON	OK	This parameter displays the state of the cooling fan relay control circuit. The parameter displays Malfunction if the cooling fan relay control circuit is shorted to ground.
Cooling Fan Solenoid Valve Command	Ignition ON	%	This parameter displays the commanded duty cycle for the PWM fan system.
Cooling Fan Speed	Ignition ON	Varies	This parameter displays the current state of the cooling fan speed. (For example OFF, Low, Medium, or High) rather than rotational speed.
CPP Learn Status	Ignition ON	Learned	This parameter displays the status of the procedure used to learn the clutch pedal fully applied position.
CPP Learned Apply Position	Ignition ON	Volts	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	Ignition ON	Volts	This parameter displays the position learned for the clutch pedal position sensor when the clutch pedal is released.
CPP Sensor	Ignition ON	Volts	This parameter displays the clutch pedal position sensor analog input as a percentage of its reference voltage.
CPP Sensor	Ignition ON	%	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	Ignition switch not in the crank position	No	This parameter displays whether the ignition switch has been cycled to the crank position requesting the

Parameter	System State	Expected Value	Description
	Ignition switch in the crank position	Yes	control module deactivate the starter relay.
Crankshaft Position Active Counter	Engine Idling	0-255 Counts	This parameter displays an incrementing counter when the control module receives a signal from the crankshaft position sensor (CKP).
Crankshaft Position Learned Apply Position	Ignition ON	Volts	This parameter displays the position learned for the clutch pedal position (CPP) sensor when the clutch pedal is fully applied during the associated learn procedure.
Crankshaft Position Learned Release Position	Ignition ON	Volts	This parameter displays the position learned for the clutch pedal position sensor when the clutch pedal is released.
Crankshaft Position Resync Counter	Engine Idling	0 Counts	This parameter displays the number of times the control module has to resynchronize with the CKP sensor. The parameter will begin to increment if the control module does not detect a CKP reference pulse. The parameter will reset to 0 after the ignition is switched OFF.
Crankshaft Position Sensor	Engine Idling	RPM	This parameter displays engine speed.
Crankshaft Position Sensor	Ignition ON	Volts	This parameter displays the displacement of the clutch pedal (corrected and normalized based upon its learned released and fully applied positions), where 0% corresponds to the clutch pedal being released and 100% corresponds to the clutch pedal being fully applied.
Crankshaft Position Sensor	Ignition ON	%	This parameter displays the clutch pedal position sensor analog input as a percentage of its reference voltage.
Crankshaft Position Signal Output Circuit High Voltage Test Status	Ignition ON	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.

Parameter	System State	Expected Value	Description
Crankshaft Position Signal Output Circuit Low Voltage Test Status	Ignition ON	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	Ignition ON	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	Ignition ON	Not Learned	This parameter displays if the crank angle learned this key cycle.
Crankshaft Position Variation Learn Attempts	Ignition ON	Counts	This parameter displays the number of attempts to learn the crank angle sensing error (CASE) during current key cycle.
Crankshaft Position Variation Learn Crank Pulse to Cylinder Count	Ignition ON	Counts	This parameter displays the number of attempts to learn the crank angle sensing error (CASE) during the current key cycle.
Crankshaft Position Variation Learn Crank Pulse to Cylinder Count	Ignition ON	Agree	This parameters displays the number of crank pulses observed over an engine cycle did not equal the number of cylinders for the engine at some point during the CASE learn cycle.
Crankshaft Position Variation Learn Cylinder Compensation Factors	Engine Running	In Range / Out Of Range	This parameter indicates if one or more compensation factors calculated for individual cylinders is out of range.
Crankshaft Position Variation Learn Data Collected	Ignition ON	Sufficient / Insufficient	This parameter indicates if the CASE learn algorithm has collected sufficient data.
Crankshaft Position Variation Learn Opposing Cylinder Compensation Factors	Ignition ON	In Range / Out Of Range	This parameter indicates if the difference in the compensation factors calculated for one or more pairs of opposing cylinders is out of range.
Crankshaft Position Variation Learn Reluctor Ring Tooth Spacing Factors	Ignition ON	In Range / Out Of Range	This parameter indicates if one or more of the compensation factors calculated for the individual tooth spacing is out of range.
Crankshaft Position Variation Learn Required Engine Speed	Ignition ON	In Range	This parameter displays that the engine speed required to complete the CASE learn process has not been achieved.

Parameter	System State	Expected Value	Description
Crankshaft Position Variation Learn Status	Ignition ON	Complete	This parameter displays the status of the crank angle sensing error (CASE) learn algorithm.
Crankshaft Position Variation Learn Sum of Cylinder Compensation Factors	Ignition ON	In Range / Out Of Range	This parameter indicates if the sum of the compensation factors calculated for the individual cylinders is too large.
Cruise Control	Cruise ON	Active	This parameter displays the status of the cruise control system as determined by the control module.
Cruise Control Acceleration Switch	Ignition ON	Active, Inactive, Invalid	This parameter Indicates the state of the cruise control speed ACCEL switch. This signal is based upon the state of the cruise control speed ACCEL switch received over serial communication from the platform electronics.
Cruise Control Cancel Switch	Cruise ON	Inactive	This parameter displays the status of the cruise control cancel switch.
Cruise Control Switch 2	Cruise ON	N/A	This parameter indicates the state of the secondary Cruise Control Switch.
Cruise Control Disengage 1-8 History	Cruise ON	Reason for Cruise Disengagement	The parameter displays the last 8 cruise control disengages in order from 1 to 8, with 8 being the most recent. There are approximately 30 possible causes for the cruise control to disengage.
Cruise Control Inhibit Reason	Cruise OFF	Off	The parameter displays the reason the cruise control system cannot engage.
	Cruise ON	Park/Neutral	
Cruise Control ON/OFF Switch	Cruise ON	On	The engine control module (ECM) monitors the signal circuit of the cruise control switch. A closed switch is displayed as ON.
Cruise Control Resume/Accelerator Switch	Cruise ON	On	The scan tool displays ON, when the cruise ON/OFF switch is ON and the resume/accel (+) button is pressed, the ECM detects a predetermined voltage value for the resume/accel. switch.
Cruise Control Set/Coast Switch	Cruise ON	On	The scan tool displays ON, when the cruise ON/OFF switch is ON and the ECM detects a predetermined voltage value for the set/coast (-) switch.

Parameter	System State	Expected Value	Description
Cruise Control Switch	Cruise ON	Inactive	The engine control module (ECM) monitors the signal circuit of the cruise control switch. A closed switch is displayed as Active.
Current Fuel Type	Ignition ON	Varies	This parameter displays the current fuel type such as Not available, Gasoline/petrol, Methanol, Ethanol, Diesel, Liquefied Petroleum Gas, Compressed Natural Gas, Propane, Battery/electric, Bi-fuel, or Hybrid.
Current Gear	Transmission in Park/Neutral	P/N	This parameter displays the transmission gear commanded by the transmission control module.
	Transmission not in Park/Neutral	Reverse/1st-5th	
Current Gear When Engine Overspeed Detected	Engine Idling	Varies	This parameter displays the transmission actual gear observed upon initial detection of an overspeed condition.
Cycles of Misfire Data	Engine Running	0-3, 000 counts	This parameter displays the number of cylinder firing events recorded by the control module.
Cylinder Deactivation Disable History 1-8	Engine Running	—	This parameter displays one of the last eight reasons for the reactivation of all engine cylinders.

Parameter	System State	Expected Value	Description
Cylinder Deactivation Inhibit	Engine Running	Yes / No	A/C Compressor Clutch On, Acceleration Request, APP High, APP Rate High, Axle Torque Limiting, Brake Booster Pressure Sensor DTC, Brake Booster Weak Vacuum, Calculated Torque, Camshaft Position Actuator DTC, Camshaft Position Sensor DTC, Catalyst Overtemperature Protection, Catalyst Temperature Low, Crankshaft Position Sensor DTC, Cylinder Deactivation Solenoid Valve DTC, Cylinder Deactivation System DTC, Deceleration Fuel Cut-Off, ECT, ECT Sensor DTC, Engine Controls Ignition Relay DTC, Engine Oil Pressure, Engine Oil Pressure Control Solenoid Valve Stuck Off, Engine Oil Pressure Control Test Active, Engine Oil Pressure Sensor DTC, Engine Oil Temperature, Engine Overtemperature Protection, Engine Speed, Engine Stall Prevention, Exiting Deceleration Fuel Cut-Off, Fuel Trim Cylinder Balance DTC, Heater Performance, HO2S 2 Test, Hot Coolant Mode, IAT Sensor DTC, Ignition Voltage, Injector Stable Time, Insufficient Torque Capacity, Intake Manifold Weak Vacuum, MAP Sensor DTC, Maximum Deactivation Time Exceeded, Maximum Throttle Exceeded, Minimum Time After TAC DTC, Minimum Time On All Cylinders, Misfire DTC, Oil Aeration, Panic Brake Assist Active, Piston Protection, RPM Limit, Scan Tool Override, TAC System DTC, Torque Reduction, Transmission Gear, Transmission Range, Transmission Shifting, Vehicle Speed Too Low, VSS DTC

Parameter	System State	Expected Value	Description
Cylinder Deactivation Performance Test	Engine Running	OK / Malfunction	This parameter indicates if one or more cylinders failed to deactivate when commanded.
Cylinder Deactivation System Command	Engine Running	All Cylinder / Cylinder Deactivation	This parameter indicates the status of the Cylinder Deactivation System Command.
Cylinder 1, 2, 3, 4, 5, 6, 7, 8 Current Misfire Counter	Engine Idling	Counts	The scan tool displays a range of 0-255 counts. This parameter displays the number of misfires that have been detected during the last 255 cylinder firing events. The counters may normally display some activity, but the activity should be nearly equal for all of the cylinders, and in low numbers.
Cylinder 1, 2, 3, 4, 5, 6, 7, or 8 History Misfire Counter	Engine Running	Counts	The scan tool displays a range of 0-65, 535 counts. The misfire history counters display the total level of misfire that has been detected on each cylinder. The misfire history counters will not update or show any activity until a misfire DTC P0300 has become active. The misfire history counters will update every 255 cylinder firing events.
Cylinder 1, 2, 3, 4, 5, 6, 7 or 8 Injector Control Circuit High Voltage Test Status	Ignition ON	OK	This parameter displays the state of the injector control circuit. The parameter displays Malfunction if the injector control circuit is shorted to voltage.
Cylinder 1, 2, 3, 4, 5, 6, 7 or 8 Injector Control Circuit Low Voltage Test Status	Ignition ON	OK	This parameter displays the state of the injector control circuit. The parameter displays Malfunction if the injector control circuit is shorted to ground.
Cylinder 1, 2, 3, 4, 5, 6, 7 or 8 Injector Control Circuit Open Test Status	Ignition ON	OK	This parameter displays the state of the injector control circuit. The parameter displays Malfunction if the injector control circuit is open.
Cylinder 1, 2, 3, 4, 5, 6, 7 or 8 Injector Flow Identifier	Ignition ON	OK	This parameter displays the End of Line Injector Adjustment (EIA) for the fuel injector. This value shall be used by the ECM for adjustment to actual fuel injected quantity compared to nominal for the injector.

Parameter	System State	Expected Value	Description
Cylinder 1-6 Injector Control Circuit Status	Engine Idling	OK	This parameter displays the state of the fuel injector control circuit.
Cylinder 1-6 Injector Disabled Misfire Detected	Engine Idling	No	This parameter displays the injector that has been disabled by the misfire catalyst converter protection calibration.
Cylinder 1-6 Knock Detected	Engine Idling	No	This parameter displays yes if a knock has been detected in an individual cylinder.
DC/DC Converter Ignition 1 Signal	Engine Running	On / Off	This parameter indicates if the DC/DC Converter Ignition 1 Signal is On or Off.
DC/DC Converter Output Voltage 1 Variance - Engine Cranking	Engine Cranking	Volts	This parameter indicates the DC/DC Converter Output Voltage 1 Variance with the engine cranking.
DC/DC Converter Output Voltage 1 Variance - Engine Running / Off	Engine Running/Off	Volts	This parameter indicates the DC/DC Converter Output Voltage 1 Variance with the engine running or Off.
DC/DC Converter Output Voltage 2 Variance - Engine Cranking	Engine Cranking	Volts	This parameter indicates the DC/DC Converter Output Voltage 2 Variance with the engine cranking.
DC/DC Converter Output Voltage 2 Variance - Engine Running / Off	Engine Running/Off	Volts	This parameter indicates the DC/DC Converter Output Voltage 2 Variance with the engine running or Off.
DC/DC Converter Output Voltage Sensor Circuit 1	Engine Running	Volts	This parameter measures voltage at the DC/DC Converter Output Voltage Sensor Circuit 1.
DC/DC Converter Output Voltage Sensor Circuit 2	Engine Running	Volts	This parameter measures voltage at the DC/DC Converter Output Voltage Sensor Circuit 2.
Deceleration Fuel Cut-Off	Engine Running	Inactive	This parameter displays the status of the operating mode of the control module used to turn OFF the fuel injectors and the EVAP canister purge valve during certain deceleration conditions.
Desired Active Grille Air Shutter Position	Ignition ON	%	This parameter displays the commanded position for the active grille air shutter. 0%=fully closed, 100%=fully open.
Desired Boost Pressure	Engine Running	kPa	This parameter displays the desired turbocharger boost pressure.
Desired Cooling Fan Speed	Ignition ON	RPM	This parameter displays the desired fan speed.

Parameter	System State	Expected Value	Description
Desired ECT	Ignition ON	Â°C (Â°F)	This parameter displays the desired engine coolant temperature in degrees.
Desired Exhaust Camshaft Position or Desired Exhaust Camshaft Position Bank 1 or 2	Engine Idling	0 Degrees	This parameter displays the desired exhaust camshaft angle as commanded by the control module.
	Engine speed at 2000 RPM	10 Degrees	
Desired Fuel Pressure	Ignition ON	kPa (PSI)	This parameter displays the desired fuel supply pressure.
Desired Fuel Rail Pressure	Engine Idling	Varies 3.4 mPa to 5.5 mPa (500 to 800 psi)	This parameter displays the desired Fuel Rail Pressure commanded by the control module.
Desired Idle Speed	Engine Idling	Approximately 650 RPM	This parameter displays the desired engine idle speed as commanded by the control module. The desired idle speed varies depending on engine load.
Desired Intake Camshaft Position or Desired Intake Camshaft Position Bank 1 or 2	Engine Idling	0 Degrees	This parameter displays the desired intake camshaft angle as commanded by the control module.
	Engine speed at 2000 RPM	10 Degrees	
Desired Throttle Position	Engine Idling	%	Commanded Throttle Actuator Control.
Distance Since DTC Cleared	Engine Idling	0 Km/mi	This parameter displays in kilometers or miles the distance traveled since a DTC was cleared.
Distance Since First Malfunction	Engine Idling	0 Km/mi	This parameter displays in kilometers or miles the distance traveled since a Malfunction occurred.
Distance Since Last Malfunction	Engine Idling	0 Km/mi	This parameter displays the distance accumulated since last malfunction was captured. This parameter is only meaningful within the context of a failure record or freeze frame.
Distance Since Last Oil Level Warning	Engine Idling	0 Km/mi	This parameter displays in kilometers or miles the distance traveled since the last oil level warning Malfunction occurred.
Distance Since Last Oil Pressure Warning	Engine Idling	0 Km/mi	This parameter displays in kilometers or miles the distance traveled since the last oil pressure warning Malfunction occurred.

Parameter	System State	Expected Value	Description
Distance Since Recommended Maximum Fuel Alcohol Content Exceeded	Engine Idling	0 Km/mi	This parameter displays in kilometers or miles the distance Since Recommended Maximum Fuel Alcohol Content Exceeded.
Distance This Driving Cycle	Ignition ON	km / miles	This parameter displays the distance a vehicle has traveled in the current driving cycle.
Distance with MIL On	Ignition ON	km / miles	This parameter displays the accumulated distance driven with the malfunction indicator lamp (MIL) on.
Drag Control Status	Vehicle Moving	Active/Inactive	EDC Active (Drag Active) control mode is indicated when the requested torque signal is above the driver requested value while the traction control system signal input is active.
Driver Requested Axle Torque	Engine Idling	Â	This parameter displays a (desired) output value after comparing engine load as an input to the hybrid control processor and engine control module.
Drop-Throttle Detected while Traction Control Active	Engine Idling	No	This parameter displays if the Drop Throttle Control Mode is active while the Traction Control System Data Control Signal input is active.
Drop-Throttle Status	Engine Idling	Inactive	This parameter displays the Drop Throttle Control Mode is active when the Requested Torque Signal indicates greater than 90 percent duty cycle while the Traction Control System Data Control Signal input is active.
ECM Authentication Status	Ignition ON	Valid	ECM Authentication Status indicates the result of the comparison between the last received immobilizer response and the expected response calculated into the ECM.
ECM Challenge Status	Ignition ON	Valid	This parameter displays the immobilizer system status of the ECM challenge. This indicates whether the currently calculated ECM challenge is valid.
ECM in Immobilizer Fail Enable Mode	Ignition ON	Yes / No	This parameter displays that a serial communication failure has been detected after the receipt of the correct VTD password.

Parameter	System State	Expected Value	Description
ECM Odometer	Ignition ON	km (miles)	This parameter displays the odometer reading of the vehicle.
ECM Response Source	Ignition ON	Ignition Switch Start	ECM Response Source indicates the source used to calculate the ECM response.
Economy Mode Indicator Command	Ignition ON	Off	This parameter indicates the status of the serial data signal used to illuminate the economy mode indicator lamp.
ECT Sensor	Ignition ON	88 to 105Â°C (190 to 221Â°F)	This parameter displays the temperature of the engine coolant based on input to the control module from the engine coolant temperature (ECT) sensor.
ECT vs. IAT Sensor Temperature at Last ECT vs. RCT Malfunction Detection	Ignition ON	Agree	This parameter displays that the temperature values of the ECT and IAT sensors did not agree at the time of the most recent failure of the ECT/RCT rationality diagnostic.
EGR/Camshaft Position Monitor Complete	Ignition ON	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	Engine Idling	Yes/No	This parameter displays Yes or No of the completion status during the current driving/monitoring cycle of emission related monitors.
EGR/Camshaft Position Monitor Enabled	Ignition ON	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	Engine Idling	Yes/No	This parameter displays Yes or No of the completion status during the current driving/monitoring cycle of emission related monitors.

Parameter	System State	Expected Value	Description
Electric Power Management Inhibit Reason	Engine Idling	None	This parameter displays the reason for the source of the Regulated Voltage Control (RVC) override command. RVC lowers system operating voltage to reduce system electrical load and improve fuel economy performance. The following is a list of possible reasons: • None • Control Function • Active/Fuel System • On-board Diagnostic System • Air Flow Measurement System • Cylinder Deactivation System • System Transmission Control Module
End Model Part Number	-	#	This parameter identifies the part number that represents the combination of hardware, software, and calibrations present in the ECU.
Engine Autostopped	-	No	This parameter displays the status of the internal combustion engine (ICE) in vehicles incorporating ICE autostart/stop functionality.
Engine Calibration Part Number History 1-10	Ignition ON	#	This parameter displays the engine calibration part number history.
Engine Calibration Part Number History 1-10 Counter	Ignition ON	#	This parameter displays the number of times the engine controller had been calibrated.
Engine Controls Ignition Relay Command	Ignition ON	Off	This parameter displays the state of the control circuit for control module power relay as commanded by the control module.
Engine Controls Ignition Relay Control Circuit High Voltage Test Status	Ignition ON	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.

Parameter	System State	Expected Value	Description
Engine Controls Ignition Relay Controls Circuit Low Voltage Test Status	Ignition ON	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 ground.
Engine Controls Ignition Relay Controls Circuit Open Test Status	Ignition ON	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 2 Signal	Ignition ON	Volts	This parameter indicates the signal voltage from the second input to the controller from the powertrain relay.
Engine Controls Ignition Relay Feedback 3 Signal	Ignition ON	Volts	This parameter indicates the signal voltage from the third input to the controller from the powertrain relay.
Engine Controls Ignition Relay Feedback Signal	Ignition ON	12.0-14.9 Volts	This parameter displays the voltage available at the engine controls ignition relay terminal of the engine control module.
Engine Coolant Pump Clutch Relay Command	Ignition ON	Flow / No Flow	This parameter displays the commanded state of the engine coolant pump clutch.
Engine Coolant Thermostat Heater Command	Ignition ON	%	This parameter displays the commanded duty cycle for the engine coolant thermostat.
Engine Coolant Thermostat Heater Control Circuit High Voltage Test Status	Ignition ON	OK	This parameter displays the state of the engine coolant thermostat heater control circuit. The parameter displays Malfunction if the engine coolant thermostat heater control circuit is shorted to voltage.
Engine Coolant Thermostat Heater Control Circuit Low Voltage Test Status	Ignition ON	OK	This parameter displays the state of the engine coolant thermostat heater control circuit. The parameter displays Malfunction if the engine coolant thermostat heater control circuit is shorted to ground.
Engine Coolant Thermostat Heater Control Circuit Open Test Status	Ignition ON	OK	This parameter displays the state of the engine coolant thermostat heater control circuit. The parameter displays Malfunction if the engine coolant thermostat heater control circuit is open.

Parameter	System State	Expected Value	Description
Engine Crank Command	Ignition ON	Yes / No	This parameter indicates if the engine is being commanded to crank or not.
Engine Crank Time	Ignition ON	s	This parameter indicates the time between the start of engine cranking to when the engine reaches an operating RPM.
Engine Load	Engine Idling	25-45 %	This parameter displays the calculated engine load in percent based on inputs to the control module from various engine sensors.
	Engine speed at 2, 500 RPM	40-60 %	
Engine Load During Misfire History 1-10	Ignition ON	%	This parameter displays the engine load during the last misfire event.
Engine Off	-	No	This parameter displays the status of the internal combustion engine (ICE) in vehicles incorporating ICE autostop/autostart functionality.
Engine OFF Time	Engine Idling	0:00:00 Seconds - Varies	This parameter displays the amount of time that has elapsed since the engine was last cycled OFF.
Engine Oil Absolute Pressure Sensor	Engine Idling	kPa/PSI	This parameter displays the undefaulted, unfiltered measured engine oil pressure read by an oil absolute pressure sensor.
Engine Oil Level Switch	Engine Idling	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	Engine Idling	0-100 %	This parameter displays the percent of engine oil life remaining. The controller calculates the engine oil life by monitoring engine load, coolant temperature, and engine speed.
Engine Oil Pressure	Engine Idling	kPa/PSI	This parameter displays the actual engine oil pressure measured by a sensor.

Parameter	System State	Expected Value	Description
Engine Oil Pressure Control Disable History 1 or 2	Ignition ON	-	This parameter indicates one of the last two reasons that powertrain has disengaged oil control.
Engine Oil Pressure Control Solenoid Valve Command	Ignition ON	High Pressure/Low Pressure	This parameter displays the commanded state of the variable displacement oil pump output.
Engine Oil Pressure Control Solenoid Valve Control Circuit High Voltage Test Status	Ignition ON	OK	This parameter displays the state of the engine oil pressure control solenoid valve control circuit. The parameter displays Malfunction if the engine oil pressure control solenoid valve control circuit is shorted to voltage.
Engine Oil Pressure Control Solenoid Valve Control Circuit Low Voltage Test Status	Ignition ON	OK	This parameter displays the state of the engine oil pressure control solenoid valve control circuit. The parameter displays Malfunction if the engine oil pressure control solenoid valve control circuit is shorted to ground.
Engine Oil Pressure Control Solenoid Valve Control Circuit Open Test Status	Ignition ON	OK	This parameter displays the state of the engine oil pressure control solenoid valve control circuit. The parameter displays Malfunction if the engine oil pressure control solenoid valve control circuit is open.
Engine Oil Pressure Control Test Counter	Ignition ON	Counts	This parameter displays the number of times that the Engine Oil Pressure Control test has been activated during the current key cycle.
Engine Oil Pressure Control Test Inhibit History 1 or 2	Ignition ON	-	This parameter indicates one of the last two reasons that powertrain has inhibited oil pressure intrusive diagnostic test.
Engine Oil Pressure Sensor	Engine Idling	OK	This parameter displays the engine oil pressure as determined by engine oil pressure sensor.
Engine Oil Pressure Switch	Engine Idling	OK / Low	This parameter displays the status of the engine oil pressure sensor.
Engine Oil Temperature Sensor	Ignition ON	CÂ° (Â°F)	This parameter displays engine oil temperature as measured by a sensor connected to the ECM.
Engine Oil Temperature When Engine Overspeed Detected	Engine Idling	Temperature	This parameter displays the temperature of the engine oil as determined by the control module.

Parameter	System State	Expected Value	Description
Engine Oil Type	Ignition ON	Conventional / Synthetic	This parameter indicates whether the engine oil type is conventional or synthetic oil.
Engine Overspeed	Engine Idling	Not Present	This parameter displays if an Engine Overspeed is Present or Not Present.
Engine Overspeed Counter	Ignition ON	Counts	This parameter displays the accumulated number of engine overspeed detection events.
Engine Run Time	Engine Idling	0:00:00 Increments when the engine is operating	This parameter displays the time elapsed since the engine was started.
Engine Running	-	No	This parameter displays the status of the internal combustion engine (ICE) in vehicles incorporating ICE autostop/autostart functionality.
Engine Serial Number	Ignition ON	#	This parameter displays the engine serial number.
Engine Shutdown Counter - Excessive Idle Time	Ignition ON	Counts	This parameter displays the count of engine shutdowns due to excessive idle time.
Engine Shutdown Counter - High Coolant Temperature	Ignition ON	Counts	This parameter displays the count of engine shutdowns due to high coolant temperature.
Engine Shutdown Counter - Low Coolant Level	Ignition ON	Counts	This parameter displays the count of engine shutdowns due to low coolant level.
Engine Shutdown Counter - Low Oil Level	Ignition ON	Counts	This parameter displays the count of engine shutdowns due to low oil level.
Engine Speed	Engine Cranking	Greater than 60 RPM	This parameter displays the speed of the engine crankshaft rotation from information received from the crankshaft position (CKP) sensor. If there is a CKP sensor DTC, the ECM calculates the engine speed from one of the camshaft position (CMP) sensors.
	Engine Idling	550-700 RPM	
Engine Speed During Misfire History 1-5	Ignition ON	RPM	This parameter displays the last 5 engine speeds during misfire events.
Engine Speed When Engine Overspeed Detected	Engine Idling	RPM	This parameter displays the engine speed observed upon initial detection of an overspeed condition. This value will be updated after each overspeed condition.
Engine Stalled	Ignition ON	No	This parameter displays that the internal combustion engine has stopped running unintentionally.

Parameter	System State	Expected Value	Description
Engine Starting	Ignition ON	No	This parameter displays that the internal combustion engine is being started (in transition from engine OFF to engine running).
Engine Stopping	Ignition ON	No	Engine Stopping indicates that the internal combustion engine is stopping (in transition from engine running to engine off, OR in transition from engine running to engine failed).
Engine Torque	Engine Running	%	This parameter indicates the current indicated torque as a percent of engine reference torque.
Engine Torque Command	Engine Idling	Â	This parameter displays the commanded predicted engine torque value, which is the torque request for the slow response air path (control of the throttle).
EVAP Malfunction History	Engine Running	None	This parameter displays the result of the evaporative emission (EVAP) system as determined by the control module. The scan tool will display the following: • None • Excess Vacuum • Purge Valve Leak • Small Leak • Weak Vacuum • No Test Result
EVAP Monitor Complete	Engine Running	Yes/No	This parameter displays if the most recent evaporative emissions diagnostic test is complete.
EVAP Monitor Complete This Ignition Cycle	Engine Running	Yes/No	This parameter displays the diagnostic monitor completion status during the current driving/monitoring cycle.
EVAP Monitor Enabled	Engine Running	Yes/No	This parameter displays if the evaporative emissions diagnostic test is enabled.
EVAP Monitor Enabled This Ignition Cycle	Engine Running	Yes/No	This parameter displays the diagnostic monitor enable status during the current driving/monitoring cycle.
EVAP Purge Solenoid Valve Command	Engine Idling	%	This parameter displays the commanded duty cycle for the canister purge output.

Parameter	System State	Expected Value	Description
EVAP Purge Solenoid Valve Control Circuit High Voltage Test Status	Ignition ON	OK	This parameter displays the state of the evaporative emission (EVAP) purge solenoid control circuit. The parameter displays Malfunction if the EVAP purge solenoid control circuit is shorted to voltage.
EVAP Purge Solenoid Valve Control Circuit Low Voltage Test Status	Ignition ON	OK	This parameter displays the state of the evaporative emission (EVAP) purge solenoid control circuit. The parameter displays Malfunction if the EVAP purge solenoid control circuit is shorted to ground.
EVAP Purge Solenoid Valve Control Circuit Open Test Status	Ignition ON	OK	This parameter displays the state of the evaporative emission (EVAP) purge solenoid control circuit. The parameter displays Malfunction if the EVAP purge solenoid control circuit is open.
EVAP System Fuel Tank Pressure Sensor to Fuel Tank Restriction Detected	Ignition ON	Yes / No	This parameter indicates if the Fuel Tank Pressure Sensor detects a blockage in the fuel system.
EVAP Vent Solenoid Command	Engine Idling	Not Venting	This parameter displays the state of the control circuit for evaporative emission (EVAP) vent solenoid as commanded by the control module.
EVAP Vent Solenoid Valve Control Circuit High Voltage Test Status	Ignition ON	OK	This parameter displays the state of the EVAP vent solenoid control circuit. The parameter displays Malfunction if the EVAP vent solenoid control circuit is shorted to voltage. This parameter may not change if the scan tool is used to command the EVAP vent solenoid ON.
EVAP Vent Solenoid Valve Control Circuit Low Voltage Test Status	Ignition ON	OK	This parameter displays the state of the EVAP vent solenoid control circuit. The parameter displays Malfunction if the EVAP vent solenoid control circuit is shorted to ground. This parameter may not change if the scan tool is used to command the EVAP vent solenoid ON.

Parameter	System State	Expected Value	Description
EVAP Vent Solenoid Valve Control Circuit Open Test Status	Ignition ON	OK	This parameter displays the state of the EVAP vent solenoid control circuit. The parameter displays Malfunction if the EVAP vent solenoid control circuit is open. This parameter may not change if the scan tool is used to command the EVAP vent solenoid ON.
Exhaust Camshaft Position	Engine Idling	Â°	This parameter displays the position of the exhaust camshaft in terms of degrees of camshaft rotation (retard) from the park position (a value of zero represents the park position).
Exhaust Camshaft Position Active Counter or Exhaust Camshaft Position Active Counter Bank 1 or 2	Engine Idling	0-255	This parameter displays an incrementing counter when the control module receives a signal from the exhaust camshaft position (CMP) sensor.
Exhaust Camshaft Position Actuator Solenoid Valve Control Circuit High Voltage Test Status or Exhaust Camshaft Position Actuator Solenoid Valve Control Circuit High Voltage Test Status Bank 1 or 2	Engine Idling	OK	This parameter displays the state of the exhaust camshaft actuator solenoid control circuit. The parameter displays Malfunction if the camshaft actuator solenoid control circuit is shorted to voltage.
Exhaust Camshaft Position Actuator Solenoid Valve Control Circuit Low Voltage Test Status or Exhaust Camshaft Position Actuator Solenoid Valve Control Circuit Low Voltage Test Status Bank 1 or 2	Engine Idling	OK	This parameter displays the state of the exhaust camshaft actuator solenoid control circuit. The parameter displays Malfunction if the camshaft actuator solenoid control circuit is shorted to ground.
Exhaust Camshaft Position Actuator Solenoid Valve Control Circuit Open Test Status or Exhaust Camshaft Position Actuator Solenoid Valve Control Circuit Open Test Status Bank 1 or 2	Engine Idling	OK	This parameter displays the state of the exhaust camshaft actuator solenoid control circuit. The parameter displays Malfunction if the camshaft actuator solenoid control circuit is open.
Exhaust Camshaft Position or Exhaust Camshaft Position Bank 1 or 2	Engine Idling	0 Degrees	This parameter displays the actual exhaust camshaft position in degrees.

Parameter	System State	Expected Value	Description
	Engine speed at 2000 RPM	10 Degrees	
Exhaust Camshaft Position Command or Exhaust Camshaft Position Command Bank 1 or 2	Engine Idling	20 %	This parameter displays the on-time or duty cycle of the exhaust camshaft position (CMP) actuator solenoid valve as commanded by the control module.
	Engine speed at 2000 RPM	50 %	
Exhaust Camshaft Position Variance or Exhaust Camshaft Position Variance Bank 1 or 2	Engine Idling	0 Degrees	This parameter displays in degrees, the difference between the desired exhaust camshaft position and the actual exhaust camshaft position.
	Engine speed at 2000 RPM	0 Degrees	
Extended Travel Brake Pedal Position Signal	Engine Idling	Released	This parameter displays the status of the Extended Travel Brake Pedal Position sensor.
Extended Travel Brake Pedal Switch	Ignition ON	Released	This parameter displays the undebounced / undefaulted state of the extended travel brake switch input to the ECM
Filtered System Voltage	Ignition ON	Volts	This parameter indicates the filtered voltage of the system.
Filtered System Voltage Prior to Engine Crank	Ignition ON	Volts	This parameter displays the filtered system voltage just before an engine cranking event.
Freeze Frame DTC	Ignition ON	#	This parameter displays the diagnostic trouble code (DTC) that caused the freeze frame to be stored.
Fuel Alcohol Content	Engine Idling	%	This parameter displays the percentage of alcohol in the fuel. The value is calculated by the ECM using the fuel composition sensor input.
Fuel Alcohol Content When Recommended Maximum Fuel Alcohol Content Exceeded	Engine Idling	%	This parameter displays a percentage of Fuel Alcohol Content When Recommended Maximum Fuel Alcohol Content Exceeded.
Fuel Composition Learn	Engine Idling	Inactive	This parameter displays Active or Inactive. Active will be displayed if the ECM is learning the alcohol content of the fuel.
Fuel Composition Sensor	Engine Idling	Hz	This parameter displays the frequency of the fuel composition sensor input. This value can be used to determine fuel composition or sensor malfunction.

Parameter	System State	Expected Value	Description
Fuel Consumed Since Recommended Maximum Fuel Alcohol Content Exceeded	Engine Idling	Liters	This parameter displays in Liters the Fuel Consumed Since Recommended Maximum Fuel Alcohol Content Exceeded.
Fuel Control Loop Status	Engine Idling	Closed	Fuel Closed Loop Active indicates that oxygen sensor 1 of each bank is being used as feedback to adjust the amount of fuel delivered to the engine.
Fuel Economy	Engine Idling	Liters per Hour	This parameter displays the instant fuel consumption rate of the engine in liters per hour.
Fuel Economy Mode	Ignition ON	Inactive	This parameter indicates if the economy mode algorithm has activated economy mode.
Fuel Economy Mode Request	Ignition ON	Off	This parameter indicates if the driver of the vehicle has requested economy mode by pressing the economy mode switch.
Fuel Economy Mode Switch	Ignition ON	OK	This parameter displays the state of the fuel economy mode switch circuit. The parameter displays Malfunction if the fuel economy mode switch circuit is shorted to voltage.
Fuel Economy Mode Switch	Ignition ON	OK	This parameter displays the state of the fuel economy mode switch circuit. The parameter displays Malfunction if the fuel economy mode switch circuit is shorted to ground.
Fuel Economy Mode Switch	Ignition ON	OK	This parameter displays the state of the fuel economy mode switch circuit. The parameter displays Malfunction if the fuel economy mode switch circuit is open.
Fuel Economy Mode Switch	Ignition ON	Volts	This parameter displays the economy mode switch reference voltage.
Fuel Enrichment-Hot Catalyst	Engine Running	Inactive	Fuel Enrichment Catalyst Protection Active indicates fuel is being added to cool the catalytic converter.

Parameter	System State	Expected Value	Description
Fuel Enrichment-Hot Coolant	Engine Running	Inactive	Hot Coolant Enrichment Active indicates that 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 Injector Driver Supply Voltage	Ignition ON	Volts	This parameter displays the injector driver circuit boost supply voltage.
Fuel Level Sensor	Ignition ON	Volts	This parameter displays the unfiltered fuel level sensor analog input for the primary fuel tank as a percentage of its reference voltage.
Fuel Level Sensor Left Tank (If Equipped)	Ignition ON	0-5 Volts	This parameter displays the voltage signal received by the control module from the secondary fuel level sensor in the left side of the fuel tank.
Fuel Level Sensor Reference Command	Engine Idling	%	This parameter displays the percentage of time that the power supply for the fuel level sensor is on. This percentage is minimized when the fuel has high ethanol content and is maximized when the fuel has low ethanol content.
Fuel Level Sensor Right Tank (If Equipped)	Ignition ON	0-5 Volts	This parameter displays the voltage signal received by the control module from the primary fuel level sensor in the right side of the fuel tank.
Fuel Maintenance Mode	Ignition ON	Active / Inactive	This parameter displays if the Fuel Maintenance Mode is currently active.
Fuel Maintenance Mode Counter	Ignition ON	Counts	This parameter displays the cumulative number of fuel maintenance mode events over the life of the controller.
Fuel Mode Active	Ignition ON	Gaseous, Gasoline	This parameter displays if the fuel mode algorithm has activated the alternative fuel mode.
Fuel Mode Driver Request	Ignition ON	Gaseous, Gasoline	This parameter displays if the driver of the vehicle has selected one of the two specific fuel modes (alternative fuel, or petrol fuel)

Parameter	System State	Expected Value	Description
Fuel Mode Indication On	Ignition ON	Gaseous, Gasoline	This parameter displays the status of the signal used to illuminate the fuel mode indicator lamp.
Fuel Mode Indicator Lamp Command	Ignition ON	On / Off	This parameter displays the commanded state of the fuel mode indicator lamp.
Fuel Mode Indicator Lamp Control Circuit High Voltage Test Status	Ignition ON	OK, Malfunction, Not Run	This parameter displays the state of the Fuel Mode Indicator Lamp control circuit. The parameter displays Malfunction if the Fuel Mode Indicator Lamp control circuit is shorted to voltage.
Fuel Mode Indicator Lamp Control Circuit Low Voltage Test Status	Ignition ON	OK, Malfunction, Not Run	This parameter displays the state of the Fuel Mode Indicator Lamp control circuit. The parameter displays Malfunction if the Fuel Mode Indicator Lamp control circuit is shorted to ground.
Fuel Mode Indicator Lamp Control Circuit Open Test Status	Ignition ON	OK, Malfunction, Not Run	This parameter displays the state of the Alternative Fuel Injector 1 control circuit. The parameter displays Malfunction if the Alternative Fuel Injector 1 control circuit is open.
Fuel Mode Switch	Ignition ON	mV	This parameter displays the Fuel Mode Switch circuit in voltage.
Fuel Mode Switch Both States Latched	Ignition ON	True, False	This parameter displays true once both the on and off switch states are observed and will remain latched for the current ignition cycle.
Fuel Mode Switch State	Ignition ON	Fault Low, On, Indeterminate, Off, Fault High	This parameter displays the raw fuel mode switch state information.
Fuel Pressure Drop - Cylinder 1-8 Injector	Engine Running	-	This parameter contains the result of the Fuel Injector Flow Device Control (Direct and Gaseous Fuel Injected Engines). The fuel or alternative fuel rail pressure sensor value after the injection event is subtracted from the fuel rail or alternative fuel pressure sensor value before the injection event and reported as the pressure drop for the appropriate injector.

Parameter	System State	Expected Value	Description
Fuel Pressure Regulator Control Circuit Command	Engine Cranking or Running	On	This parameter displays the commanded state of the fuel pressure regulator 1 low side output (the output is considered to be commanded ON if the regulator is enabled while the engine is running or cranking).
Fuel Pressure Regulator Control Circuit High Voltage Test	Ignition ON	OK	This parameter displays the status of the output driver for the fuel pressure regulator control circuit. The scan tool will display OK if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is an short to voltage in the circuit.
Fuel Pressure Regulator Control Circuit Low Voltage Test	Ignition ON	OK	This parameter displays the status of the output driver for the fuel pressure regulator control circuit. The scan tool will display OK if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is an short to ground in the circuit.
Fuel Pressure Regulator Control Circuit Open Test Status	Ignition ON	OK	This parameter displays the status of the output driver for the fuel pressure regulator control circuit. The scan tool will display OK if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is an open in the circuit.
Fuel Pressure Regulator High Control Circuit Command	Engine Idling	%	This parameter displays the commanded duty cycle for the fuel pressure regulator 1 solenoid output.
Fuel Pressure Regulator High Control Circuit High Voltage Test Status	Ignition ON	OK	This parameter displays the status of the output driver for the fuel pressure regulator high control circuit. The scan tool will display OK if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is an short to voltage in the circuit.

Parameter	System State	Expected Value	Description
Fuel Pressure Regulator High Control Circuit Low Voltage Test Status	Ignition ON	OK	This parameter displays the status of the output driver for the fuel pressure regulator high control circuit. The scan tool will display OK if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is an short to ground in the circuit.
Fuel Pressure Regulator High Control Circuit Open Test Status	Ignition ON	OK	This parameter displays the status of the output driver for the fuel pressure regulator high control circuit. The scan tool will display OK if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is an open in the circuit.
Fuel Pressure Sensor	Engine Idling	kPa/PSI	For Port Fuel Injected (PFI) systems, this Parameter displays fuel rail pressure at the engine. For high pressure fuel systems, this Parameter indicates the low side fuel pressure before the high pressure pump.
Fuel Pressure Sensor	Ignition ON	Volts	This parameter displays the fuel supply pressure sensor analog input as a percentage of its reference voltage.
Fuel Pump Enable Command	Ignition ON	On	This parameter displays the commanded state of the fuel pump output (the output is considered to be commanded ON if its duty cycle is not zero).
Fuel Pump Enable Circuit High Voltage Test Status	Ignition ON	OK	This parameter displays the status of the output driver for the fuel pump control circuit. The scan tool will display OK if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is an short to voltage in the circuit.

Parameter	System State	Expected Value	Description
Fuel Pump Enable Circuit Low Voltage Test Status	Ignition ON	OK	This parameter displays the status of the output driver for the fuel pump control circuit. The scan tool will display OK if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is an short to ground in the circuit.
Fuel Pump Enable Circuit Open Test Status	Ignition ON	OK	This parameter displays the status of the output driver for the fuel pump control circuit. The scan tool will display OK if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is an open in the circuit.
Fuel Pump Relay Control Circuit High Voltage Test Status	Ignition ON	OK	This parameter displays the state of the fuel pump relay control circuit. The parameter displays Malfunction if the fuel pump relay control circuit is shorted to voltage.
Fuel Pump Relay Control Circuit Low Voltage Test Status	Ignition ON	OK	This parameter displays the state of the fuel pump relay control circuit. The parameter displays Malfunction if the fuel pump relay control circuit is shorted to ground.
Fuel Pump Relay Control Circuit Open Test Status	Ignition ON	OK	This parameter displays the state of the fuel pump relay control circuit. The parameter displays Malfunction if the fuel pump relay control circuit is open.
Fuel Pump Speed Output Circuit High Voltage Test Status	Engine Running	OK, Malfunction, Not Run	This parameter displays the Fuel Pump Speed Output Circuit High Voltage Test Status. Can display OK, Malfunction, or Not Run.
Fuel Pump Speed Output Circuit Low Voltage Test Status	Engine Running	OK, Malfunction, Not Run	This parameter displays the Fuel Pump Speed Output Circuit Low Voltage Test Status. Can display OK, Malfunction, or Not Run.
Fuel Pump Speed Output Circuit Open Test Status	Engine Running	OK, Malfunction, Not Run	This parameter displays the Fuel Pump Speed Output Circuit Open Circuit Test Status. Can display OK, Malfunction, or Not Run.

Parameter	System State	Expected Value	Description
Fuel Rail Pressure Regulator Command (If Equipped)	Engine idling	36 Degrees	The scan tool displays in degrees, the Fuel Rail Pressure Regulator ON time as commanded by the control module.
Fuel Rail Pressure Sensor	Engine Idling	1.9-5.0 MPa/279-725 PSI	This parameter displays the high side fuel pressure after the high pressure pump.
Fuel Rail Pressure Sensor	Engine Idling	0 to 5 Volts	This parameter displays the voltage signal received by the control module from the fuel rail pressure (FRP) sensor.
Fuel Rail Pressure Sensor Initial Learn	-	Complete	This parameter displays the if the Fuel Rail Pressure Sensor First Time Adaptation is Complete
Fuel Rail Pressure Sensor Learn	-	Active	This parameter displays the current state of the fuel rail pressure sensor learn condition.

Parameter	System State	Expected Value	Description
Fuel Rail Pressure Sensor Learn Inhibit	-	No	This parameter displays the reason for the fuel rail pressure sensor learn to be inhibited. These include: Assembly Plant Mode Counter Not Programmed, Assembly Plant Suspension, Barometric Pressure Sensor DTC, Barometric Pressure Too Low, Clutch Pedal Applied, Clutch Pedal Position Sensor DTC, Desired Fuel Rail Pressure Too Low, DTC Present, Engine in Catalyst Warm-Up Mode, Engine Not Synchronized, Engine Stopped, Fuel Pressure Spike, Fuel Level Too Low, Fuel Pressure Regulator Control Circuit DTC, Fuel Pump Control Function Active, Fuel Pump is Off, Fuel Rail Pressure Control Function Active, Fuel Rail Pressure Sensor DTC, Fuel System in Open Loop Operation, Fuel Temperature Out of Range, Idle Test Failed, Injector Flow Test in Progress, Intake Air Temperature Too Low, Low Pressure Fuel System Malfunction, Low Pressure Fuel System Pressure Too Low, Minimum Engine Run Time Not Met, Minimum Normal Fuel Pressure Control Time Not Met, Minimum Run Time, Time After New Engine Mode Not Met, Minimum Time After Drive Not Met, Minimum Time for Released Accelerator Pedal Not Met, New Engine Mode, Not in Control of Idle Speed, Other Diagnostics Active, Sensor Reading Too High Test Failed, Some Cylinders Are Turned Off, Stuck Sensor Test Failed, Vehicle Speed Too High
Fuel Rail Pressure Sensor Learn Status	-	Complete	This parameter displays several signals associated with the status of the power mode and starter systems.

Parameter	System State	Expected Value	Description
Fuel Rail Pressure Sensor Learned Value	-	kPa	This parameter displays the fuel rail pressure learned value at the fuel rail pressure sensor.
Fuel Rail Temperature Sensor 1	Ignition ON	Â°C (Â°F)	This parameter indicates the fuel rail temperature measured by the first sensor on the rail.
Fuel Rail Temperature Sensor 2	Ignition ON	Â°C (Â°F)	This parameter indicates the fuel rail temperature measured by the second sensor on the rail.
Fuel System Monitor Complete	Engine Idling	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	Ignition ON	No	This parameter displays the completion status of the fuel system monitor during the current driving / monitoring cycle.
Fuel System Monitor Enabled	Engine Idling	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	Ignition ON	No	This parameter displays the enable status of the fuel system monitor during the current driving / monitoring cycle.
Fuel Tank Pressure Sensor	Ignition ON, engine OFF	kPa/psi	This parameter displays the pressure/vacuum inside the fuel tank. A negative value indicates a vacuum, while a positive value indicates a pressure.
Fuel Tank Pressure Sensor	-	mmHg / in H2O	This parameter displays the fuel tank pressure in mmHg/in H2O at the fuel tank pressure sensor.
Fuel Tank Pressure Sensor	Ignition ON, engine OFF	0-5 Volts	This parameter displays the voltage signal received by the control module from the fuel tank pressure (FTP) sensor.
Fuel Tank Rated Capacity	Ignition ON	Varies	This parameter displays the capacity of the fuel tank in liters or gallons. The rated capacity displayed by the scan tool will varies with vehicle type.

Parameter	System State	Expected Value	Description
Fuel Trim Cylinder Balance Test or Fuel Trim Cylinder Balance Test Bank 1-2	Ignition ON	Inactive	This parameter indicates the current state of the fuel trim cylinder balance test.
Fuel Trim Cylinder Balance Test Counter or Fuel Trim Cylinder Balance Test Counter Bank 1-2	Ignition ON	Counts	This parameter displays the number of Air Fuel Imbalance Monitor tests that have been performed since a code clear or non volatile memory (NVM) reset.
Fuel Trim Cylinder Balance Test Status Bank 1-2	Ignition ON	No Result	This parameter indicates the current state of the fuel trim cylinder balance test.
Fuel Trim Learn	Engine Idling	Enabled	This parameter displays Enabled when conditions are appropriate for enabling long term fuel trim corrections. This indicates that the long term fuel trim is adapting continuing amounts of short term fuel trim. If the scan tool displays Disabled, then long term fuel trim will not respond to changes in short term fuel trim.
Fuel Trim Learn	-	Enabled	This parameter displays if the fuel trim learn is enabled.
Fuel Trim Memory Cell	Engine Idling	Counts 0 250	This parameter displays 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 Memory Cell	-	#	This parameter displays the intake air temperature (measured by a sensor located near the throttle body) recorded at power-up (Run/Crank transition from low to high).
Fuel Trim System Test State	Engine Idling	Complete	This parameter displays the current state of the fuel adjustment system diagnostic.
Fuel Trim System Test State	-	Complete	This parameter displays the state of the fuel trim system test.
Fuel Volatility	Engine Idling	Varies	This parameter indicates the rate the fuel can be vaporized in the cylinder as calculated by the control module. The scan tool will display HIGH when the fuel volatility is high. The scan tool will display LOW when the fuel volatility is low.

Parameter	System State	Expected Value	Description
Generator F Terminal Signal	Engine Idling	0-100 %	This parameter displays the amount of generator ON-time as commanded by the control module. The higher the percentage the greater the generator output.
Generator Indicator Command	Engine Idling	On	This parameter displays On or Off associated with the status of the generator.
Generator L Terminal Circuit High Voltage Test Status	Engine Idling	OK	This parameter displays the state of the generator L circuit terminal. The parameter displays Malfunction if the generator L circuit is shorted to voltage.
Generator L Terminal Circuit Low Voltage Test Status	Engine Idling	OK	This parameter displays the state of the generator L circuit terminal. The parameter displays Malfunction if the generator L circuit is shorted to ground.
Generator L Terminal Circuit Open Test Status	Engine Idling	OK	This parameter displays the state of the generator L circuit terminal. The parameter displays Malfunction if the generator L circuit is open.
Generator L-Terminal Command	Engine Idling	0-100 %	This parameter displays the control modules commanded state of the voltage regulator on the generator.
Generator L-Terminal Signal Command	Ignition ON	On / Off	This parameter displays the commanded state of the generator L-terminal output.
Heated Catalyst Monitor Complete	Engine Idling	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	Engine Idling	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.
Heater Coolant Pump Relay Command	Ignition ON	On / Off	This parameter indicates if the heater core pump relay is commanded On or Off.

Parameter	System State	Expected Value	Description
Heater Coolant Pump Relay Control Circuit High Voltage Test Status	Ignition ON	OK, Malfunction, Not Run	This parameter displays the Heater Coolant Pump Relay Control Circuit High Voltage Test Status. Can display OK, Malfunction, or Not Run.
Heater Coolant Pump Relay Control Circuit Low Voltage Test Status	Ignition ON	OK, Malfunction, Not Run	This parameter displays the Heater Coolant Pump Relay Control Circuit Low Voltage Test Status. Can display OK, Malfunction, or Not Run.
Heater Coolant Pump Relay Control Circuit Open Test Status	Ignition ON	OK, Malfunction, Not Run	This parameter displays the Heater Coolant Pump Relay Control Circuit Open Circuit Test Status. Can display OK, Malfunction, or Not Run.
High Side Driver 1 Circuit High Voltage Test Status	Ignition ON	OK, Malfunction, Not Run	This parameter displays the High Side Driver 1 Circuit High Voltage Test Status. Can display OK, Malfunction, or Not Run.
High Side Driver 1 Circuit Low Voltage Test Status	Ignition ON	OK, Malfunction, Not Run	This parameter displays the High Side Driver 1 Circuit Low Voltage Test Status. Can display OK, Malfunction, or Not Run.
High Side Driver 1 Circuit Open Test Status	Ignition ON	OK, Malfunction, Not Run	This parameter displays the High Side Driver 1 Circuit Open Circuit Test Status. Can display OK, Malfunction, or Not Run.
High Side Driver 1 Command	Ignition ON	On / Off	This parameter indicates if the High Side Driver 1 is being commanded On or Off.
High Side Driver 2 Circuit High Voltage Test Status	Ignition ON	OK, Malfunction, Not Run	This parameter displays the High Side Driver 2 Circuit High Voltage Test Status. Can display OK, Malfunction, or Not Run.
High Side Driver 2 Circuit Low Voltage Test Status	Ignition ON	OK, Malfunction, Not Run	This parameter displays the High Side Driver 2 Circuit Low Voltage Test Status. Can display OK, Malfunction, or Not Run.
High Side Driver 2 Circuit Open Test Status	Ignition ON	OK, Malfunction, Not Run	This parameter displays the High Side Driver 2 Circuit Open Circuit Test Status. Can display OK, Malfunction, or Not Run.
High Side Driver 2 Command	Ignition ON	On / Off	This parameter indicates if the High Side Driver 2 is being commanded On or Off.
Hood Position	Ignition ON	Closed, Ajar, Open, Invalid	This parameter indicates the Position of the Hood.
Hood Position Switch	Ignition ON	Closed	This parameter displays the current position of the hood.

Parameter	System State	Expected Value	Description
HO2S Sensor 1 or HO2S Bank 1 Sensor 1 or Bank 2 Sensor 1	Engine Idling	0.00-1.00 Volts	This parameter displays the voltage output from the HO2S to the control module. A lower voltage indicates a lean exhaust, while a higher voltage indicates a rich exhaust.
HO2S Sensor 2 or HO2S Bank 1 Sensor 2 or Bank 2 Sensor 2	Engine Idling	0.00-1.00 Volts	This parameter displays the voltage output from the HO2S to the control module. A lower voltage indicates a lean exhaust, while a higher voltage indicates a rich exhaust.
HO2S Heater Sensor 1 or HO2S Heater Bank 1 Sensor 1 or Bank 2 Sensor 1	Engine Idling	mA	This parameter display the current feedback for the oxygen sensor heater output for sensor 1.
HO2S Heater Sensor 2 or HO2S Heater Bank 1 Sensor 2 or Bank 2 Sensor 2	Engine Idling	mA	This parameter display the current feedback for the oxygen sensor heater output for sensor 2.
HO2S Heater Command or HO2S Heater Command Bank 1 or 2 Sensor 1 or 2	Engine Idling	Off	This parameter display the state of the HO2S heater control circuit as commanded by the control module.
HO2S Heater Command Bank 1 or 2 Sensor 1 or 2 Heater Command	Engine Idling	0-100 %	This parameter displays the HO2S heater ON time in percentage, as commanded by the control module.
HO2S Heater Control Circuit High Voltage Test Status or HO2S Heater Control Circuit High Voltage Test Status Bank 1 Sensor 1 or Bank 2 Sensor 1	Engine Idling	OK	This parameter displays the state of the oxygen sensor heater control circuit. The parameter displays Malfunction if the oxygen sensor heater control circuit is shorted to voltage.
HO2S Heater Control Circuit High Voltage Test Status or HO2S Heater Control Circuit High Voltage Test Status Bank 1 Sensor 2 or Bank 2 Sensor 2	Engine Idling	OK	This parameter displays the state of the oxygen sensor heater control circuit. The parameter displays Malfunction if the oxygen sensor heater control circuit is shorted to voltage.
HO2S Heater Control Circuit Low Voltage Test Status or HO2S Heater Control Circuit Low Voltage Test Status Bank 1 Sensor 1 or Bank 2 Sensor 1	Engine Idling	OK	This parameter displays the state of the oxygen sensor heater control circuit. The parameter displays Malfunction if the oxygen sensor heater control circuit is shorted to ground.

Parameter	System State	Expected Value	Description
HO2S Heater Control Circuit Low Voltage Test Status or HO2S Heater Control Circuit Low Voltage Test Status Bank 1 Sensor 2 or Bank 2 Sensor 2	Engine Idling	OK	This parameter displays the state of the oxygen sensor heater control circuit. The parameter displays Malfunction if the oxygen sensor heater control circuit is shorted to ground.
HO2S Heater Control Circuit Open Test Status or HO2S Heater Control Circuit Open Test Status Bank 1 Sensor 1 or Bank 2 Sensor 1	Engine Idling	OK	This parameter displays the state of the oxygen sensor heater control circuit. The parameter displays Malfunction if the oxygen sensor heater control circuit is open.
HO2S Heater Control Circuit Open Test Status or HO2S Heater Control Circuit Open Test Status Bank 1 Sensor 2 or Bank 2 Sensor 2	Engine Idling	OK	This parameter displays the state of the oxygen sensor heater control circuit. The parameter displays Malfunction if the oxygen sensor heater control circuit is open.
HO2S/Heater Monitor Complete This Ignition Cycle	Engine Idling	Yes/No	This parameter displays the diagnostic monitor completion status during the current driving/monitoring cycle.
HO2S Heater Monitor Enabled	Ignition ON	No	This parameter displays the current state of the H02S heater monitor.
HO2S/Heater Monitor Enabled This Ignition Cycle	Engine Idling	Yes/No	This parameter displays the diagnostic monitor enable status during the current driving/monitoring cycle.
Humidity Sensor Intake Air Temperature Signal	Ignition ON	Hz	This parameter displays the frequency of the humidity sensor's intake air temperature (IAT) sensor input.
IAT Sensor 1	Ignition ON	-39Â° to +140Â°C (-38Â° to +284Â°F)	This parameter displays the temperature of the air entering the air induction system based on input to the control module from the intake air temperature (IAT) sensor.
IAT Sensor 2	Engine Idling	Hz	This parameter displays the frequency of the humidity sensor's intake air temperature (IAT) sensor input to the engine control module.

Parameter	System State	Expected Value	Description
IAT Sensor 2	-	Â°C (Â°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 2. The scan tool will display a low value when the air temperature is low, and a high value when the air temperature is high.
IAT Sensor 3	-	Â°C (Â°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 3. The scan tool will display a low value when the air temperature is low, and a high value when the air temperature is high.
Idle Speed Correction	Ignition ON	RPM	This parameter displays the engine idle speed correction within a restricted range to address complaints of vehicle vibration.
Ignition 1 Signal	Ignition ON	B+	This parameter displays B+ when the control module detects a voltage at the ignition 1 input terminal.
Ignition Accessory Signal	Ignition ON	On	This parameter displays On when the control module detects a voltage at the ignition accessory input terminal.
Ignition Coil 1, 2, 3, 4, 5, 6, 7, or 8 Control Circuit High Voltage Test Status	Engine Running	OK	This parameter displays the state of the Ignition control circuit. The parameter displays Malfunction if the Ignition control circuit is shorted to voltage.
Ignition Coil 1, 2, 3, 4, 5, 6, 7, or 8 Control Circuit Low Voltage Test Status	Engine Idling	OK	This parameter displays the state of the Ignition control circuit. The parameter display Malfunctions if the Ignition control circuit is shorted to ground.
Ignition Coil 1, 2, 3, 4, 5, 6, 7, or 8 Control Circuit Open Test Status	Engine Idling	OK	This parameter displays the state of the Ignition control circuit. The parameter displays if Malfunction the Ignition control circuit is open.

Parameter	System State	Expected Value	Description
Ignition Coil Supply Voltage or Ignition Coil Supply Voltage Bank 1 or 2	Engine Idling	On	This parameter displays ON when voltage is supplied to the Ignition coil.
Ignition Cycles Since Recommended Maximum Fuel Alcohol Content Exceeded	Engine Idling	Counts	This parameter displays the number of Ignition Cycles since Recommended Maximum Fuel Alcohol Content Exceeded.
Ignition Cycles with Malfunction Since 1st Malfunction	Ignition ON	Counts	This parameter contains 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	Engine Idling	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	Engine Idling	Counts	This parameter displays the number of ignition cycles with a pass reported and no malfunctions reported since the first ignition cycle with a malfunction reported.
Ignition Cycles without Malfunction Since Last Malfunction	Ignition ON	Counts	This parameter contains the number of ignition cycles with a pass reported and no failures reported since the first ignition cycle with a failure reported.
Ignition Off Time	Ignition ON	hh:mm:ss	This parameter displays the time that the ignition has been OFF.
Ignition Timing	Engine Idling	Degrees	This parameter displays the final spark advance in terms of a crankshaft angle.
Immobilizer Auto Learn Counter	Ignition ON	Counts	This parameter displays the number of auto-learn cycles that have been successfully completed within the immobilizer system.
Immobilizer Automatic Learn Timer	Ignition ON	h/m/s	This parameter displays the time elapsed within the current auto-learn cycle within the immobilizer system.
Immobilizer ECM Identifier	Ignition ON	OK	This parameter displays that the immobilizer control module (ICM) has received the correct powertrain identifier.

Parameter	System State	Expected Value	Description
Immobilizer Environment Device 1-4	Ignition ON	OK	This parameter displays that the associated device is OK or unknown or its identification is pending to the immobilizer control module (ICM).
Immobilizer Fuel Disable	Ignition ON	Inactive	This parameter displays if the vehicle is immobilized by the ECM.
Immobilizer Module Environment Identification	Ignition ON	Inactive	This parameter displays that the ICM has not received the powertrain identifier or has received the wrong powertrain identifier.
Immobilizer Module Fuel Disable	Ignition ON	Inactive	This parameter displays if the vehicle is immobilized by the ICM.
Immobilizer Module Identification	Ignition ON	Complete	This parameter indicates that the ICM has not received the powertrain identifier or has received the wrong powertrain identifier.
Immobilizer Module Security Code Programmed	Ignition ON	Yes	This parameter indicates that the ICM security code has been programmed (i.e., the immobilizer device is locked).
Immobilizer Password Learn	Ignition ON	Active/Inactive	Learning Enabled indicates that learning of immobilizer code information is enabled.
Immobilizer Password Learn Scan Tool Delay	Engine Idling	Active/Inactive	Scan tool Learn Delay Active indicates that the security code has been accepted but the scan tool learn delay is active and will not allow learning enabled, programming security code, or resetting security code.
Immobilizer Password Programmed	Ignition ON	Yes	This parameter indicates that the ICM password has been programmed.
Immobilizer Post-Release Passive State	Ignition ON	Active / Inactive	This parameter displays that the immobilizer algorithm is in the post release passive state.
Immobilizer Post-Release State	Ignition ON	Active / Inactive	This parameter displays that the immobilizer algorithm is in the post release passive state.
Immobilizer Pre-Release State	Ignition ON	Active / Inactive	This parameter displays that the immobilizer algorithm is in the pre release active state.
Immobilizer Release State	Ignition ON	Active / Inactive	This parameter displays that the immobilizer algorithm is in the release active state.

Parameter	System State	Expected Value	Description
Immobilizer Security Code Accepted	Engine Idling	Yes/No	Security Code Accepted displaying Yes indicates' that the received security code is correct.
Immobilizer Security Code Function	Engine Idling	Present/Not Present	This parameter indicates if the ECU supports the immobilizer security code strategy.
Immobilizer Security Code Lockout	Engine Idling	Yes/No	Security Code Lockout Active indicates that the security code has not passed and lockout is active.
Immobilizer Security Code Lockout Active Timer	Engine Idling	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	Ignition ON	Yes/No	Security Code Programmed indicates that the security code has been programmed.
Immobilizer Security Code Programming Counter	Ignition ON	Counts	This parameter displays the number of times a new immobilizer security code has been programmed through secure access. This counter can only be incremented.
Immobilizer Security Code Reset Counter	Ignition ON	Counts	This parameter displays the number of times the immobilizer security code has been reset to the default value through secure access. This counter can only be incremented.
Immobilizer Security Information Programmed	Ignition ON	Yes/No	This parameter displays the status of the immobilizer system.
Immobilizer Security Level	Ignition ON	#	This parameter displays the current immobilizer security level. If the correct security code is entered, the security level will remain at or be reset to a level of 10. If an incorrect security code is entered, the security level will be set to a level of 9.
Immobilizer Transponder Identification	Ignition ON	Active / Inactive	This parameter displays that the transponder identification process is active within the ICM.
Immobilizer Transponder Key	Ignition ON	OK	This parameter displays that the transponder key is correct for the ICM.

Parameter	System State	Expected Value	Description
Immobilizer Transponder Key Identification	Ignition ON	OK	This parameter displays that the transponder key identification process is active within the ICM.
Immobilizer System Status	Ignition ON	Varies	This parameter displays the status of the immobilizer system, the following maybe displayed. Standby, Immobilized at Startup, Immobilized, No Response, Immobilized Negative Response, Immobilized, Incorrect Response, Post-Release State, Pre-Release State, Release State.
Immobilizer Valid Response Received Time	Ignition ON	ms	This parameter displays the actual time observed for a valid immobilizer response.
Initialized Fuel Alcohol Content	Ignition ON	%	This parameter displays the initialized fuel composition to be used as a starting point for the fuel composition algorithm.
Injector Duty Cycle or Injector Duty Cycle Bank 1 or 2	Engine idling	0.82-1.50 ms	This parameter displays the amount of fuel injector ON time or pulse width as commanded by the control module.
Inspection/Maintenance Drive Cycle Complete	Engine Idling	Yes/No	Inspection/Maintenance Drive Cycle Complete means that all required components of the standard drive cycle have completed.
Inspection/Maintenance Drive Cycle Idle Time Complete	Engine Idling	Yes/No	Inspection/Maintenance Drive Cycle Idle Time Complete indicates that the engine idle time requirement is complete.
Inspection/Maintenance Drive Cycle Idle Timer	Engine Idling	hh:mm:ss	This parameter displays the Inspection/Maintenance Drive Cycle Idle Timer.
Inspection/Maintenance Drive Cycle Propulsion System Active Time Complete	Engine Idling	Yes/No	This parameter displays the Inspection/Maintenance Drive Cycle Propulsion System Active Time Complete. The parameter displays Yes when the Inspection/Maintenance Drive Cycle Propulsion System Active Time is Complete.
Inspection/Maintenance Drive Cycle Propulsion System Active Timer	Engine Idling	hh:mm:ss	This parameter displays the total accumulated time in which the propulsion system has been active after the 1st time the engine is started.

Parameter	System State	Expected Value	Description
Inspection/Maintenance Drive Cycle Vehicle Speed Time Complete	Engine Idling	Yes/No	This parameter displays Yes when the Vehicle Speed Time Complete indicates that the vehicle has been above 25 mph for five minutes.
Inspection/Maintenance Drive Cycle Vehicle Speed Timer	Engine Idling	hh:mm:ss	This parameter displays the total accumulated time in which the vehicle speed has been greater than 25 mph after the 1st time the engine is started.
Intake Air Humidity Sensor	Engine Idling	%	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	Engine Idling	Â°	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 or Intake Camshaft Position Active Counter Bank 1 or 2	Engine Idling	0-255	This parameter displays an incrementing counter when the control module receives a signal from the intake camshaft position (CMP) sensor.
Intake Camshaft Position Actuator Oil Pressure	Engine Idling	kPa	This parameter displays the oil pressure at the intake camshaft position actuator.
Intake Camshaft Position Actuator Oil Pressure Sensor	Engine Idling	Volts	This parameter displays the intake camshaft position actuator pressure sensor in voltage.
Intake Camshaft Position Actuator Park Lock Solenoid Valve Command Bank 1	Ignition ON	Locked / Unlocked	This parameter indicates if the Intake Camshaft Position Actuator Park Lock Solenoid Valve for Bank 1 is Locked or Unlocked.
Intake Camshaft Position Actuator Park Lock Solenoid Valve Command Bank 2	Ignition ON	Locked / Unlocked	This parameter indicates if the Intake Camshaft Position Actuator Park Lock Solenoid Valve for Bank 2 is Locked or Unlocked.
Intake Camshaft Position Actuator Park Lock Solenoid Valve Control Circuit High Voltage Test Status Bank 1	Ignition ON	OK, Malfunction, Not Run	This parameter displays the Intake Camshaft Position Actuator Park Lock Solenoid Valve Control Circuit High Voltage Test Status Bank 1. Can display OK, Malfunction, or Not Run.

Parameter	System State	Expected Value	Description
Intake Camshaft Position Actuator Park Lock Solenoid Valve Control Circuit High Voltage Test Status Bank 2	Ignition ON	OK, Malfunction, Not Run	This parameter displays the Intake Camshaft Position Actuator Park Lock Solenoid Valve Control Circuit High Voltage Test Status Bank 2. Can display OK, Malfunction, or Not Run.
Intake Camshaft Position Actuator Park Lock Solenoid Valve Control Circuit Low Voltage Test Status Bank 1	Ignition ON	OK, Malfunction, Not Run	This parameter displays the Intake Camshaft Position Actuator Park Lock Solenoid Valve Control Circuit Low Voltage Test Status Bank 1. Can display OK, Malfunction, or Not Run.
Intake Camshaft Position Actuator Park Lock Solenoid Valve Control Circuit Low Voltage Test Status Bank 2	Ignition ON	OK, Malfunction, Not Run	This parameter displays the Intake Camshaft Position Actuator Park Lock Solenoid Valve Control Circuit Low Voltage Test Status Bank 2. Can display OK, Malfunction, or Not Run.
Intake Camshaft Position Actuator Park Lock Solenoid Valve Control Circuit Open Test Status Bank 1	Ignition ON	OK, Malfunction, Not Run	This parameter displays the Intake Camshaft Position Actuator Park Lock Solenoid Valve Control Circuit Open Circuit Test Status Bank 1. Can display OK, Malfunction, or Not Run.
Intake Camshaft Position Actuator Park Lock Solenoid Valve Control Circuit Open Test Status Bank 2	Ignition ON	OK, Malfunction, Not Run	This parameter displays the Intake Camshaft Position Actuator Park Lock Solenoid Valve Control Circuit Open Circuit Test Status Bank 2. Can display OK, Malfunction, or Not Run.
Intake Camshaft Position Actuator Park Lock Test Abort Reason Bank 1	Ignition ON	N/A	This parameter indicates the reason why the Intake Camshaft Actuator Park Lock Pin Test for Bank 1 was aborted.
Intake Camshaft Position Actuator Park Lock Test Abort Reason Bank 2	Ignition ON	N/A	This parameter indicates the reason why the Intake Camshaft Actuator Park Lock Pin Test for Bank 2 was aborted.
Intake Camshaft Position Actuator Park Lock Test Status Bank 1	Ignition ON	N/A	This parameter indicates the status of the intake camshaft actuator park lock pin test for bank 1.
Intake Camshaft Position Actuator Park Lock Test Status Bank 2	Ignition ON	N/A	This parameter indicates the status of the intake camshaft actuator park lock pin test for Bank 2.

Parameter	System State	Expected Value	Description
Intake Camshaft Position Actuator Solenoid Valve Control Circuit High Voltage Test Status or Intake Camshaft Position Actuator Solenoid Valve Control Circuit High Voltage Test Status Bank 1 or 2	Engine Idling	OK	This parameter displays the state of the intake camshaft actuator solenoid control circuit. The parameter displays Malfunction if the camshaft actuator solenoid control circuit is shorted to voltage.
Intake Camshaft Position Actuator Solenoid Valve Control Circuit Low Voltage Test Status or Intake Camshaft Position Actuator Solenoid Valve Control Circuit Low Voltage Test Status Bank 1 or 2	Engine Idling	OK	This parameter displays the state of the intake camshaft actuator solenoid control circuit. The parameter displays Malfunction if the camshaft actuator solenoid control circuit is shorted to ground.
Intake Camshaft Position Actuator Solenoid Valve Control Circuit Open Test Status or Intake Camshaft Position Actuator Solenoid Valve Control Circuit Open Test Status Bank 1 or 2	Engine Idling	OK	This parameter displays the state of the intake camshaft actuator solenoid control circuit. The parameter displays Malfunction if the camshaft actuator solenoid control circuit is open.
Intake Camshaft Position or Intake Camshaft Position Bank 1 or 2	Engine Idling	0 Degrees	This parameter displays the actual intake camshaft position in degrees.
	Engine speed at 2000 RPM	10 Degrees	
Intake Camshaft Position Commanded or Intake Camshaft Position Commanded Bank 1 or 2	Engine Idling	20 %	This parameter displays the ON-time or duty cycle of the intake camshaft position (CMP) actuator solenoid valve as commanded by the control module.
	Engine speed at 2000 RPM	50 %	
Intake Camshaft Position Variance or Intake Camshaft Position Variance Bank 1 or 2	Engine Idling	0 Degrees	This parameter displays in degrees, the difference between the desired intake camshaft position and the actual intake camshaft position.
	Engine speed at 2000 RPM	0 Degrees	
Intake Manifold Pressure	Engine Idling	kPa/psi	This parameter displays the engine intake manifold vacuum pressure calculated as the difference between ambient air pressure (barometric pressure) and intake manifold absolute pressure (MAP).
Intake Manifold Tuning Control Valve Control Circuit Command	Ignition ON	On	This parameter displays the commanded state of the intake manifold tuning valve output.

Parameter	System State	Expected Value	Description
Intake Manifold Tuning Control Valve Control Circuit High Voltage Test Status	Ignition ON	OK	This parameter displays the state of the intake manifold tuning control valve control circuit. The parameter displays Malfunction if the intake manifold tuning control valve control circuit is shorted to voltage.
Intake Manifold Tuning Control Valve Control Circuit Low Voltage Test Status	Ignition ON	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.
Intake Manifold Tuning Control Valve Control Circuit Open Test Status	Ignition ON	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.
Intake Manifold Tuning Control Valve Feedback Signal	Ignition ON	%	This parameter displays the duty cycle of the PWM feedback from the intake manifold tuning electronics, which represents the position of the intake manifold tuning valve.
Intake Manifold Tuning Control Valve Learn	Ignition ON	Inactive	This parameter displays that the intake manifold tuning electronics are currently learning the hard stop position for the intake manifold tuning valve.
Intake Manifold Tuning Control Valve Position	Ignition ON	Closed	This parameter displays whether the intake manifold tuning valve is in an open, closed, or intermediate position based upon the PWM feedback from the intake manifold tuning electronics.
Intake Rocker Arm Solenoid Valve 1-2 Command	Engine Idling	Off	This parameter displays the intake rocker arm solenoid valve command ON/OFF status.
Intake Rocker Arm Solenoid Valve 1-2 Command	Engine Idling	High Lift/Low Lift	This parameter displays the intake rocker arm solenoid valve command status.
Intake Rocker Arm Solenoid Valve 1-2 Control Circuit High Voltage Test Status	Engine Idling	OK	This parameter displays the state of the intake rocker arm solenoid valve control circuit. The parameter displays Malfunction if the intake rocker arm solenoid valve circuit is shorted to voltage.

Parameter	System State	Expected Value	Description
Intake Rocker Arm Solenoid Valve 1-2 Control Circuit Low Voltage Test Status	Engine Idling	OK	This parameter displays the state of the intake rocker arm solenoid valve control circuit. The parameter displays Malfunction if the intake rocker arm solenoid valve control circuit is shorted to ground.
Intake Rocker Arm Solenoid Valve 1-2 Control Circuit Open Test Status	Engine Idling	OK	This parameter displays the state of the intake rocker arm solenoid valve control circuit. The parameter displays Malfunction if the intake rocker arm solenoid valve control circuit is open.
ISS/OSS Supply Voltage	Engine Idling	OK	This parameter displays the state of the ISS/OSS Supply Voltage circuit.
Knock Retard	Engine Idling	0 Degrees	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.
Long Fuel Pump Trim	-	#	This parameter displays a numeric value. This is the long term (LT) fuel pump trim.
Long Term Fuel Trim or Long Term Fuel Trim Bank 1 or 2	Engine Idling	0 %	This parameter displays the commanded Long Term Fuel Trim correction by the control module for cruise and acceleration conditions.
Long Term Fuel Trim Test Average or Long Term Fuel Trim Test Average Bank 1 or 2	Engine Idling	0 %	This parameter displays the filtered long term closed loop fuel correction. 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 or Long Term Fuel Trim Test Average without Purge Bank 1 or 2	Engine Idling	0 %	This parameter displays the filtered non purge long term closed loop fuel correction. 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.

Parameter	System State	Expected Value	Description
Long Term Secondary O2 Sensor Fuel Trim Bank 1 or 2	Ignition ON	%	This parameter displays the Long Term Secondary O2 Sensor Fuel Trim for Bank 1 or 2.
Lost Communication with Active Grille Air Shutter Actuator Test Status	Ignition ON	OK, Malfunction, Not Run	This parameter indicates the status of the Active Grille Air Shutter actuator diagnostic test.
Low Engine Oil Level Indicator Command	Engine Idling	Off	The scan tool displays On or Off. This is the state of the low engine oil level indicator as monitored by the ECM.
Low Engine Oil Pressure Indicator Command	Engine Idling	Off	This parameter displays the commanded state of the low EOP lamp control circuit by the control module.
Low-Voltage Battery Current	Ignition ON	Amps	This parameter displays the battery current.
Low-Voltage Battery State of Charge	Ignition ON	Volts	This parameter indicates the percentage of the battery charge remaining.
Low-Voltage Battery State of Function	Ignition ON	Volts	This parameter displays the predicted minimum voltage of the next crank event.
Low-Voltage Battery State of Health	Ignition ON	Volts	This parameter indicates the available capacity of the battery if it were fully charged, relative to the capacity when the battery was new.
Low-Voltage Battery Temperature	Ignition ON	Â°C (Â°F)	This parameter indicates the temperature of the battery.
MAF Performance Test	Engine Idling	OK	This parameter displays the status of the MAF performance test by the engine control module. The scan tool will display OK if no malfunction is found. The scan tool will display malfunction if the engine control module detects a malfunction during the test.
MAF Sensor	Engine Idling	3.0-8.3 g/s	This parameter displays in grams per second, the measured quantity of air flowing into the engine during all operating conditions.
	Engine speed at 2, 500 RPM	11.88 g/s	
MAF Sensor	Engine Idling	2, 000-2, 500 Hz	The scan tool displays a range of 0-65, 555 hertz. This parameter displays the frequency signal input to the control module, and represents measured quantity of air flowing into the engine during all operating conditions.

Parameter	System State	Expected Value	Description
MAF Sensor Supply Voltage Command	Ignition ON	On / Off	This parameter indicates if the mass air flow sensor supply voltage is commanded On or Off.
MAF Sensor Supply Voltage Control Circuit High Voltage Test Status	Ignition ON	OK, Malfunction, Not Run	This parameter displays the mass air flow sensor supply voltage Control Circuit High Voltage Test Status. Can display OK, Malfunction, or Not Run.
MAF Sensor Supply Voltage Control Circuit Low Voltage Test Status	Ignition ON	OK, Malfunction, Not Run	This parameter displays the mass air flow sensor supply voltage Control Circuit Low Voltage Test Status. Can display OK, Malfunction, or Not Run.
MAF Sensor Supply Voltage Control Circuit Open Test Status	Ignition ON	OK, Malfunction, Not Run	This parameter displays the mass air flow sensor supply voltage Control Circuit Open Circuit Test Status. Can display OK, Malfunction, or Not Run.
MAF When Engine Overspeed Detected	Engine Idling	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	Engine Idling	OK	MAP Test 1 Residual Out of Tolerance indicates that the filtered MAP Test 1 residual (the difference between the measured intake manifold pressure and the intake manifold pressure predicted from the intake manifold model using the mass airflow predicted from the throttle model) exceeds a failure threshold.
MAP Performance Test 2	Engine Idling	OK	MAP Test 2 Residual Out of Tolerance indicates that the filtered MAP Test 2 residual (the difference between the measured intake manifold pressure and the intake manifold pressure predicted from the intake manifold model using the measured mass airflow) exceeds a failure threshold.
MAP Sensor	Engine Idling	kPa/psi	This parameter displays the actual engine intake manifold absolute pressure (MAP).

Parameter	System State	Expected Value	Description
MAP Sensor	Engine Idling	0.4-2.0 Volts	The parameter displays The MAP sensor voltage as it measures the change in the intake manifold pressure which results from engine load and speed changes. As the intake manifold pressure increases, the air density in the intake also increases and additional fuel is required.
Maximum Engine Speed When Engine Overspeed Detected	Engine Idling	RPM	This parameter displays the Maximum Engine Speed When Engine Overspeed Detected.
MIL Command	Engine Idling	Off	This parameter displays the commanded state of the malfunction indicator lamp (MIL) control circuit by the control module.
MIL Control Circuit High Voltage Test Status	Ignition ON	OK	This parameter displays the state of the MIL control circuit. The parameter displays Malfunction if the MIL control circuit is shorted to voltage.
MIL Control Circuit Low Voltage Test Status	Ignition ON	OK	This parameter displays the state of the MIL control circuit. The parameter displays Malfunction if the MIL control circuit is shorted to ground.
MIL Control Circuit Open Test Status	Ignition ON	OK	This parameter displays the state of the MIL control circuit. The parameter displays Malfunction if the MIL control circuit is open.
MIL Requested	Engine Idling	No	This parameter displays the reason the engine 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.
MIL Requested by DTC	Engine Idling	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.

Parameter	System State	Expected Value	Description
Minimum DC/DC Converter Output Voltage on Circuit 1 - Last Engine Crank	Ignition ON	Volts	This parameter indicates the minimum DC/DC Converter Output Voltage on Circuit 1 on the last engine crank.
Minimum DC/DC Converter Output Voltage on Circuit 2 - Last Engine Crank	Ignition ON	Volts	This parameter indicates the minimum DC/DC Converter Output Voltage on Circuit 2 on the last engine crank.
Misfire Diagnostic Engine Load	Engine Idling	%	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	Engine Idling	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 Engine Load History 1-5	Engine Idling	%	This parameter displays the specific engine load when the engine was operating for one of the last five misfire events.
Misfire Engine Speed History 1-5	Engine Idling	RPM	This parameter displays the specific engine speed when the engine was operating for one of the last five misfire events.
Misfire Monitor Complete	Engine Idling	Yes/No	This parameter displays the status of the Misfire Monitor. The parameter will display Yes when the Misfire Monitor is Complete.
Misfire Monitor Complete This Ignition Cycle	Ignition ON	No	This parameter displays the completion status of the misfire monitor during the current driving / monitoring cycle.
Misfire Monitor Enabled	Engine Idling	Yes/No	This parameter displays the status of the Misfire Monitor. The parameter will display Yes when the Misfire Monitor is Enabled.
Misfire Monitor Enabled This Ignition Cycle	Ignition ON	No	This parameter displays the enable status of the misfire monitor during the current driving / monitoring cycle.
Neutral Position Sensor	-	%	This parameter displays the current state of the neutral position sensor in degrees.

Parameter	System State	Expected Value	Description
Number of Calibration History Events Stored	Ignition ON	Counts	This parameter displays the history entries for the primary calibration in the controller.
Number of DTC(s)	Engine Idling	0	This parameter indicates the number of diagnostic trouble codes (DTCs).
O2S/HO2S Monitor Complete	Engine Idling	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.
O2S/HO2S Monitor Complete This Ignition Cycle	Engine Idling	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.
O2S/HO2S Monitor Enabled	Engine Idling	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.
O2S/HO2S Monitor Enabled This Ignition Cycle	Engine Idling	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.
Odometer at Engine Shutdown - Excessive Idle Time	Ignition ON	km / miles	This parameter displays the odometer reading at an engine shutdown due to excessive idle time.
Odometer at Engine Shutdown - High Coolant Temperature	Ignition ON	km / miles	This parameter displays the odometer reading at an engine shutdown due to high coolant temperature.
Odometer at Engine Shutdown - Low Coolant Level	Ignition ON	km / miles	This parameter displays the odometer reading at an engine shutdown due to low coolant level.
Odometer at Engine Shutdown - Low Oil Level	Ignition ON	km / miles	This parameter displays the odometer reading at an engine shutdown due to low oil level.
Odometer When Engine Overspeed Detected	Engine Idling	km/miles	This parameter displays the kilometers or miles of the Odometer When Engine Overspeed Detected.

Parameter	System State	Expected Value	Description
Oil Level Warning Counter City	Ignition ON	Counts	This parameter displays a rolling count of oil level debounce events for the city calibration.
Oil Level Warning Counter Country Road	Ignition ON	Counts	This parameter displays a rolling count of oil level debounce events for the country road calibration
Oil Level Warning Counter Highway	Ignition ON	Counts	This parameter displays a rolling count of oil level debounce events for the highway calibration.
Output Shaft Speed Sensor	Engine Idling	RPM	This parameter displays the transmission output speed.
Park/Neutral Position Switch (If Equipped)	Engine Idling	Park/Neutral	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.
Park/Neutral Position Switch (RPO=MO5)	Engine Idling	Active/Inactive	This parameter indicates the status of the Park/Neutral Position (PNP) Switch. When in Park, the PNP Switch is closed and the scan tool will display active. When in Reverse, Neutral, or Drive, the PNP Switch is open and the scan tool will display inactive.
Power Enrichment	Engine Idling	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	Engine Idling	Run	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 vehicle electronics. If the serial data signal not received, the Parameter will display Off.

Parameter	System State	Expected Value	Description
Radiator Coolant Temperature Sensor	-	Varies CÂ° (FÂ°)	This parameter displays the undefaulted radiator coolant temperature measured by a sensor located in the coolant outlet of the radiator.
RCT vs. IAT Sensor Temperature at Last ECT vs. RCT Malfunction Detection	Engine Idling	Agree	This parameter displays that the temperature values of the RCT and IAT sensors did not agree at the time of the most recent failure of the ECT/RCT rationality diagnostic.
Recommended Maximum Fuel Alcohol Content	Engine Idling	%	This parameter displays the percentage of the Recommended Maximum Fuel Alcohol Content.
Recommended Maximum Fuel Alcohol Content Exceeded	Engine Idling	No	This parameter displays Yes or No if the Recommended Maximum Fuel Alcohol Content Exceeded.
Recommended Maximum Fuel Alcohol Content When Recommended Maximum Fuel Alcohol Content Exceeded	Engine Idling	%	This parameter displays the percentage of the Recommended Maximum Fuel Alcohol Content When Recommended Maximum Fuel Alcohol Content Exceeded.
Reduced Engine Power	Engine Idling	Inactive	This parameter displays Active if the control module is commanding reduced engine power due to a throttle actuator control (TAC) system condition.
Reduced Engine Power History	Engine Idling	Throttle Malfunction, Cooling Fan Malfunction, Engine Over-temperature Protection Active, Engine Oil Temperature Too High, Remote Vehicle Speed Limiting, Engine Calibration Malfunction, Engine Oil Life, High Pressure Fuel System Malfunction	This parameter displays the last reason that Powertrain has illuminated the Reduced Engine Power (REP) indication.
Redundant Odometer Memory	Engine Idling	Present	ECU Odometer Programmed indicates if the ECU odometer value has been programmed.
Refueling Events Since Recommended Maximum Fuel Alcohol Content Exceeded	Engine Idling	Counts	This parameter displays the number Refueling Events Since Recommended Maximum Fuel Alcohol Content Exceeded.
Remaining Fuel in Tank	Engine Idling	%	This parameter displays the total fuel level as a percentage of the rated capacity of the fuel tank.

Parameter	System State	Expected Value	Description
Remaining Fuel in Tank	Engine Idling	Liters/Gallons	This parameter displays the actual total fuel volume contained in the fuel tank.
Remote Vehicle Start Disable History 1-8	Engine Cranking	Reason for RVS Disable	These parameters displays the last eight reasons the control module disabled remote vehicle start (RVS).
Remote Vehicle Start Request Signal	Ignition ON	Off	Remote Vehicle Start Request indicates the state of the request received over serial communication from the remote vehicle start (RVS) system to start the vehicle in remote mode.
Replicated Transmission OSS Signal	Ignition ON	RPM	This parameter displays the Replicated Transmission Output Speed (Replicated TOS) received from the Transmission Control Module.
Reverse Inhibit Solenoid Actuator Command	Ignition ON	Allowed	This parameter displays that the driver is inhibited from shifting into reverse.
Reverse Inhibit Solenoid Actuator Control Circuit High Voltage Test Status	Ignition ON	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	Ignition ON	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	Ignition ON	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.
Reverse Position Switch	Engine Idling	Off	This parameter displays if the manual transmission shifter is in reverse.
Secondary Air Injection Monitor Enabled	Engine Idling	Yes	This parameter displays the status of the secondary air injection monitor.
Secondary Air Injection Pressure	Engine Idling	kPa	This parameter displays the normalized secondary air injection system pressure.
Secondary Air Injection Pressure Sensor	Engine Idling	kPa	This parameter displays the unfiltered secondary air injection system pressure.

Parameter	System State	Expected Value	Description
Secondary Air Injection Pressure Sensor	Engine Idling	Volts	This parameter displays the secondary air injection system pressure analog input as a percentage of its reference voltage.
Secondary Air Injection Pressure Sensor Variance	Engine Idling	kPa	This parameter displays the weighted average pressure error (difference between the predicted and actual secondary air injection system pressure) during the secondary air injection on test (phase 1).
Secondary Air Injection Pump Relay Command	Engine Idling	Off	This parameter displays the commanded state of the secondary air injection pump output.
Secondary Air Injection Pump Relay Control Circuit High Voltage Test Status	Engine Idling	OK	This parameter displays the state of the secondary air injection pump relay control circuit. The parameter displays Malfunction if the secondary air injection pump relay control circuit is shorted to voltage.
Secondary Air Injection Pump Relay Control Circuit Low Voltage Test Status	Engine Idling	OK	This parameter displays the state of the secondary air injection pump relay control circuit. The parameter displays Malfunction if the secondary air injection pump relay control circuit is shorted to ground.
Secondary Air Injection Pump Relay Control Circuit Open Test Status	Engine Idling	OK	This parameter displays the state of the secondary air injection pump relay control circuit. The parameter displays Malfunction if the secondary air injection pump relay control circuit is open.
Secondary Air Injection Solenoid Valve Command	Engine Idling	Off	This parameter displays the commanded state of the secondary air injection valve output.
Secondary Air Injection Solenoid Valve Control Circuit High Voltage Test Status	Engine Idling	OK	This parameter displays the state of the secondary air injection solenoid valve control circuit. The parameter displays Malfunction if the secondary air injection solenoid valve control circuit is shorted to voltage.

Parameter	System State	Expected Value	Description
Secondary Air Injection Solenoid Valve Control Circuit Low Voltage Test Status	Engine Idling	OK	This parameter displays the state of the secondary air injection solenoid valve control circuit. The parameter displays Malfunction if the secondary air injection solenoid valve control circuit is shorted to ground.
Secondary Air Injection Solenoid Valve Control Circuit Open Test Status	Engine Idling	OK	This parameter displays the state of the secondary air injection solenoid valve control circuit. The parameter displays Malfunction if the secondary air injection solenoid valve control circuit is open.
Short Term Fuel Pump Trim	-	#	This parameter displays a numeric value. This is the short term (ST) fuel pump trim.
Short Term Fuel Trim or Short Term Fuel Trim Bank 1 or Bank 2	Engine Idling	-5 % to +5 %	This parameter displays the short-term correction to the fuel delivery by the control module in response to oxygen sensor 1 or 2. If the oxygen sensor indicates a lean air/fuel mixture, the control module will add fuel increasing the short term fuel trim above 0. If the oxygen sensor indicates a rich air/fuel mixture, the control module will reduce fuel decreasing the short term fuel trim below 0.
Short Term Fuel Trim Test Average or Short Term Fuel Trim Test Average Bank 1 or Bank 2	Engine Idling	%	This parameter displays the filtered short term closed loop fuel correction. 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.
Short Term Secondary O2 Sensor Fuel Trim Bank 1 or 2	Ignition ON	%	This parameter displays the Short Term Secondary O2 Sensor Fuel Trim for Bank 1 or 2.
Skip Shift Solenoid Actuator Command	Ignition ON	No Skip	This parameter indicates that the skip shift solenoid is commanded on, inhibiting the driver from shifting up to one of the next highest gears.

Parameter	System State	Expected Value	Description
Skip Shift Solenoid Actuator Control Circuit High Voltage Test Status	Ignition ON	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	Ignition ON	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	Ignition ON	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	Ignition ON	%	This parameter shows the current specific humidity level.
Starter Pinion Solenoid Actuator Relay Command	Engine Cranking	On / Off	This parameter indicates the commanded state of the Starter Pinion Solenoid Actuator relay.
Starter Pinion Solenoid Actuator Relay Control Circuit High Voltage Test Status	Engine Cranking	OK, Malfunction, Not Run	This parameter displays the Starter Pinion Solenoid Actuator Relay Control Circuit High Voltage Test Status. Can display OK, Malfunction, or Not Run.
Starter Pinion Solenoid Actuator Relay Control Circuit Low Voltage Test Status	Engine Cranking	OK, Malfunction, Not Run	This parameter displays the Starter Pinion Solenoid Actuator Relay Control Circuit Low Voltage Test Status. Can display OK, Malfunction, or Not Run.
Starter Pinion Solenoid Actuator Relay Control Circuit Open Test Status	Engine Cranking	OK, Malfunction, Not Run	This parameter displays the Starter Pinion Solenoid Actuator Relay Control Circuit Open Circuit Test Status. Can display OK, Malfunction, or Not Run.
Starter Relay Command	Ignition switch not in the crank position	Off	This parameter indicates whether the control module is commanding the starter relay to go On or Off.
	Ignition switch in the crank position	On	

Parameter	System State	Expected Value	Description
Starter Relay Control Circuit High Voltage Test Status	Ignition ON	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. This parameter may not change if the scan tool is used to command the relay control circuit On.
Starter Relay Control Circuit Low Voltage Test Status	Ignition ON	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. This parameter may not change if the scan tool is used to command the relay control circuit On.
Starter Relay Control Circuit Open Test Status	Ignition ON	OK	This parameter displays the state of the starter relay control circuit. The parameter displays Malfunction if the starter relay control circuit is open. This parameter may not change if the scan tool is used to command the relay control circuit On.
Start-Up ECT	Ignition ON	-39Â° to +140Â°C (-38Â° to +284Â°F)	This parameter displays the temperature of the engine coolant on start-up based on input to the control module from the ECT sensor.
Start-Up Fuel Rail Temperature	Engine Idling	Â°C (Â°F)	This parameter indicates the fuel rail temperature when the engine was started from the first sensor located on the fuel rail.
Start-Up Fuel Rail Temperature 1	Engine Idling	Â°C (Â°F)	This parameter indicates the fuel rail temperature when the engine was started from the first sensor located on the fuel rail.
Start-Up Fuel Rail Temperature 2	Engine Idling	Â°C (Â°F)	This parameter indicates the fuel rail temperature when the engine was started from the second sensor located on the fuel rail.
Start-Up IAT Sensor or Start-Up IAT Sensor 1 or 2	Ignition ON	-39Â° to +140Â°C (-38Â° to +284Â°F)	This parameter displays the temperature of the intake air at start in the air induction system based on input to the control module from the IAT sensor.

Parameter	System State	Expected Value	Description
Start-Up IAT Sensor 3	Engine Idling	Â°C (Â°F)	This parameter indicates the intake air temperature when the engine was started.
Stop/Start Disable Mode	Ignition ON	Active / Inactive / Not Available	This parameter indicates the status of the Stop/Start Disable Mode.
Supercharger Bypass Solenoid Valve Command	Ignition ON	%	This parameter displays the commanded duty cycle for the supercharger boost solenoid output.
Supercharger Bypass Solenoid Valve Control Circuit High Voltage Test Status	Ignition ON	OK	This parameter displays the state of the supercharger bypass solenoid valve control circuit. The parameter displays Malfunction if the supercharger bypass solenoid valve control circuit is shorted to voltage.
Supercharger Bypass Solenoid Valve Control Circuit Low Voltage Test Status	Ignition ON	OK	This parameter displays the state of the supercharger bypass solenoid valve control circuit. The parameter displays Malfunction if the supercharger bypass solenoid valve control circuit is shorted to ground.
Supercharger Bypass Solenoid Valve Control Circuit Open Test Status	Ignition ON	OK	This parameter displays the state of the supercharger bypass solenoid valve control circuit. The parameter displays Malfunction if the supercharger bypass solenoid valve control circuit is open.
Supercharger Inlet Pressure	Engine Idling	kPa	This parameter displays the supercharger inlet vacuum pressure calculated as the difference between ambient air pressure (barometric pressure) and supercharger inlet absolute pressure (SCIAP).
Supercharger Inlet Pressure Sensor	Engine Idling	kPa	This parameter displays the unfiltered supercharger inlet absolute pressure (SCIAP).
Supercharger Inlet Pressure Sensor	Engine Idling	Volts	This parameter displays the supercharger inlet absolute pressure (SCIAP) analog input as a percentage of its reference voltage.
SVS Indicator Command	Ignition ON	Off	This parameter displays that the Service Vehicle Soon lamp is being commanded on due to the failure of a non emission related diagnostic test.

Parameter	System State	Expected Value	Description
System Off	Ignition ON	No	This parameter displays that the vehicle is waiting for a key crank to happen (key crank not done yet).
TAC Forced Engine Shutdown	Ignition ON	No	This parameter indicates the status of the TAC motor by the control module. The scan tool will display Yes if the engine has been shut down due to a throttle control fault.
TAC Motor	Ignition ON	Enabled	This parameter indicates the status of the throttle actuator control (TAC) motor driver in the control module. The scan tool will display Enabled if TAC motor operation is allowed. The scan tool will display Disabled if the control module detects a condition that affects TAC motor operation.
TAC Motor Command	Ignition ON	%	This parameter displays the commanded duty cycle for the throttle actuator output.
TCC/Cruise Control Brake Pedal Switch	Ignition ON	Applied / Released	This parameter indicates the state of the TCC/Cruise Control Brake Pedal Switch.
Throttle Body Idle Air Flow Compensation	Engine Idling	%	This parameter displays the percent compensation of the Learned Airflow Variation Calibration. This value indicates the current amount of airflow compensation in response to engine intake airflow restrictions. It can also be used as feedback for the Learned Airflow Adapts Reset Trigger Device Control.
Throttle Position	Ignition ON	0-100 %	This parameter displays the desired throttle position angle commanded by the control module.
Throttle Position Performance Test	Engine Idling	OK	Throttle Position Residual Out of Tolerance indicates that the filtered throttle position residual (the product of the MAF residual and the MAP Test 1 residual) exceeds a failure threshold.
Throttle Position Sensor 1	Ignition ON	3.7-4.3 Volts	This parameter displays the actual voltage on the TP sensor 1 signal circuit as measured by the control module.

Parameter	System State	Expected Value	Description
Throttle Position Sensor 1 Learned Minimum	Ignition ON	0.51 Volts	This parameter displays the learned minimum value of throttle position (TP) sensor 1 as recorded by the control module during the last learn procedure.
Throttle Position Sensor 1 or 2 Position	Ignition ON	%	This parameter displays the actual voltage on the TP sensor 2 signal circuit as measured by the control module.
Throttle Position Sensor 2	Ignition ON	0.5-0.8 Volts	This parameter displays the voltage signal sent to the control module from TP sensor 2 of the throttle assembly. The TP 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 Learned Minimum	Ignition ON	0.51 Volts	This parameter displays the learned minimum value of TP sensor 2 as recorded by the control module during the last learn procedure.
Throttle Position Sensors 1 and 2	Ignition ON	Agree	This parameter displays Disagree when the control module detects that TP sensor 1 voltage signal is not within the correct relationship to TP sensor 2. The scan tool displays Agree under the normal operating conditions.
Tire Size	Ignition ON	Rev/km	This parameter displays the vehicle tire circumference in centimeters.
Torque Delivered Signal	Vehicle Moving	/Lb/Ft	This parameter displays the engine torque based upon the airflow through the engine and the torque losses due to spark retard and fuel shutoff. Since this is a steady state engine torque, it does not include the inertial component of engine torque.
Torque Management Ignition Timing Retard	Engine Idling	Degrees	This parameter displays the total spark retard (in terms of a crankshaft angle).
Torque Request Inhibit - Fuel	Engine Idling	No	This parameter displays the existing condition in the ECM causing the transmission torque request to be limited.

Parameter	System State	Expected Value	Description
Torque Request Inhibit - Ignition Timing	Engine Idling	No	This parameter displays the existing condition in the ECM causing the transmission torque request to be limited.
Torque Request Inhibit - Ignition Timing Advance	Engine Idling	No	This parameter displays the existing condition in the ECM causing the transmission torque request to be limited.
Torque Request Inhibit - Minimum Idle	Engine Idling	No	This parameter displays the existing condition in the ECM causing the transmission torque request to be limited.
Torque Request Inhibit - Minimum Torque	Engine Idling	No	This parameter displays the existing condition in the ECM causing the transmission torque request to be limited.
Torque Request Inhibit - TAC	Engine Idling	No	This parameter displays the existing condition in the ECM causing the transmission torque request to be limited.
Torque Request Inhibit - TAC Limit	Engine Idling	No	This parameter displays the existing condition in the ECM causing the transmission torque request to be limited.
Total Alternative Fuel Level Percentage	Ignition ON	%	This parameter displays the undefaulted, total alternative fuel level as a percentage of the rated (advertised) capacity of the alternative fuel tank(s).
Total Engine Mass Air Flow	Engine Idling	g/s	This parameter indicates the engine mass airflow.
Total Engine Overspeed Time	Engine Idling	ms	This parameter displays the Total Engine Overspeed Time.
Total Knock Retard	Engine Idling	0°	This parameter displays how much ignition spark timing is being retarded due to all control systems monitored by the control module.
Total Misfire	Engine Idling	0	This parameter displays the total number of cylinder firing events that the control module detected as misfires for the last 200 crankshaft revolution sample period.
Traction Control Axle Torque Request Signal	Vehicle Moving	Nm (lb ft)	This parameter indicates the axle torque requested by the traction control module.

Parameter	System State	Expected Value	Description
Traction Control Status	Vehicle Moving	Inactive	This parameter displays Active if the electronic brake and traction control module (EBTCM) is commanding traction control.
Transmission Fluid Pressure Accumulator Solenoid Valve Command	Ignition ON	On/Off	This parameter displays the position of the Transmission Fluid Pressure Accumulator Solenoid Valve Control.
Transmission Fluid Pressure Accumulator Solenoid Valve Control Circuit High Voltage Test Status	Ignition ON	OK, Malfunction, Not Run	This parameter displays the state of the Transmission Fluid Pressure Accumulator Solenoid Valve Control Circuit. The parameter displays Malfunction if the Transmission Fluid Pressure Accumulator Solenoid Valve Control Circuit is shorted to voltage.
Transmission Fluid Pressure Accumulator Solenoid Valve Control Circuit Low Voltage Test Status	Ignition ON	OK, Malfunction, Not Run	This parameter displays the state of the Transmission Fluid Pressure Accumulator Solenoid Valve Control Circuit. The parameter displays Malfunction if the Transmission Fluid Pressure Accumulator Solenoid Valve Control Circuit is shorted to ground.
Transmission Fluid Pressure Accumulator Solenoid Valve Control Circuit Open Test Status	Ignition ON	OK, Malfunction, Not Run	This parameter displays the state of the Transmission Fluid Pressure Accumulator Solenoid Valve Control Circuit. The parameter displays Malfunction if the Transmission Fluid Pressure Accumulator Solenoid Valve Control Circuit is open.
Transmission Fluid Temperature Sensor	Ignition ON	Â°C (Â°F)	This parameter displays the undefaulted, unfiltered transmission oil / fluid temperature measured by a sensor.
Turbocharger 1 Turbine Inlet Valve Control Circuit High Voltage Test Status	Ignition ON	OK	This parameter displays the state of the turbocharger 1 turbine inlet valve control circuit. The parameter displays Malfunction if the turbocharger 1 turbine inlet valve control circuit is shorted to voltage.
Turbocharger 1 Turbine Inlet Valve Control Circuit Open Test Status	Ignition ON	OK	This parameter displays the state of the turbocharger 1 turbine inlet valve control circuit. The parameter displays Malfunction if the turbocharger 1 turbine inlet valve control circuit is open.

Parameter	System State	Expected Value	Description
Turbocharger 1 Turbine Inlet Valve Duty Cycle	Ignition ON	%	This parameter displays the commanded duty cycle for the turbocharger 1 turbine inlet valve in a percentage.
Turbocharger Bypass Solenoid Valve Command	Ignition ON	%	This parameter displays the commanded duty cycle for the turbocharger bypass solenoid valve in a percentage.
Turbocharger Bypass Solenoid Valve Control Circuit High Voltage Test Status	Ignition ON	OK	This parameter displays the state of the turbocharger bypass solenoid valve control circuit. The parameter displays Malfunction if the turbocharger bypass solenoid valve control circuit is shorted to voltage.
Turbocharger Bypass Solenoid Valve Control Circuit Low Voltage Test Status	Ignition ON	OK	This parameter displays the state of the turbocharger bypass solenoid valve control circuit. The parameter displays Malfunction if the turbocharger bypass solenoid valve control circuit is shorted to ground.
Turbocharger Bypass Solenoid Valve Control Circuit Open Test Status	Ignition ON	OK	This parameter displays the state of the turbocharger bypass solenoid valve control circuit. The parameter displays Malfunction if the turbocharger bypass solenoid valve control circuit is open.
Turbocharger Wastegate Solenoid Valve Command	Ignition ON	%	This parameter displays the commanded duty cycle for the turbocharger wastegate solenoid valve in a percentage.
Turbocharger Wastegate Solenoid Valve Control Circuit High Voltage Test Status	Ignition ON	OK	This parameter displays the state of the turbocharger wastegate solenoid valve control circuit. The parameter displays Malfunction if the turbocharger wastegate solenoid valve control circuit is shorted to voltage.
Turbocharger Wastegate Solenoid Valve Control Circuit Low Voltage Test Status	Ignition ON	OK	This parameter displays the state of the turbocharger wastegate solenoid valve control circuit. The parameter displays Malfunction if the turbocharger wastegate solenoid valve control circuit is shorted to ground.

Parameter	System State	Expected Value	Description
Turbocharger Wastegate Solenoid Valve Control Circuit Open Test Status	Ignition ON	OK	This parameter displays the state of the turbocharger wastegate solenoid valve control circuit. The parameter displays Malfunction if the turbocharger wastegate solenoid valve control circuit is open.
Upshift Indicator Command	Vehicle Moving	Off	This parameter displays On when commanded by the engine control module.
Variable Valve Lift Low Lift Disable History 1-8	Engine Idling	Varies	This parameter displays the reason for the last 8 variable valve lift disable history reasons.

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Parameter	System State	Expected Value	Description
Variable Valve Lift Low Lift Inhibit - Reason	Engine Idling	Varies	This parameter lists the reason the variable valve lift low lift may be inhibited. These include; 4WD Low State Invalid, A/C Compressor Clutch On, Acceleration Request, Brake Booster Pressure Sensor DTC, Brake Booster Weak Vacuum, Calculated Torque, Camshaft Position Sensor DTC, Control Function Active, Crankshaft Position Sensor DTC, ECT, ECT Sensor DTC, Engine Controls Ignition Relay DTC, Engine Not Synchronized, Engine Off, Engine Oil Pressure, Engine Oil Pressure Control Solenoid Valve Stuck Off, Engine Oil Pressure Control Test Active, Engine Oil Pressure Sensor DTC, Engine Oil Temperature, Engine Overtemperature Protection, Engine Power Not Requested, Engine Speed, Engine Torque Capacity, Fuel Alcohol Content Learn In Progress, Fuel Alcohol Content Too High, Fuel System Disabled, Green Engine Mode, HO2S 2 Test, Hot Coolant Mode, Hybrid/EV Powertrain Control Module Request, IAT Sensor DTC, Ignition Voltage, MAP Sensor DTC, Maximum Throttle Exceeded, Minimum Time After TAC DTC, Misfire DTC, Oil Aeration. On-Board Diagnostic System, Rocker Arm Solenoid Valve DTC, RPM Limit, TAC System DTC, Transmission Gear, Transmission Range, Transmission Shifting, Vehicle Speed Too Low, VSS DTC.
Variable Valve Lift System Command	-	Low Lift	This parameter displays the current state of the variable valve lift system command.

Parameter	System State	Expected Value	Description
Vehicle Speed Sensor	Vehicle Moving	Km/h mph	This parameter displays the speed of the vehicle as calculated by the transmission control module (TCM) from information received from the vehicle speed sensor (VSS).
Vehicle Speed When Engine Overspeed Detected	Engine Idling	Km/h mph	This parameter displays the Vehicle Speed When Engine Overspeed Detected.
VIN Programming Counter	Ignition ON	Counts	This parameter displays the number of times the VIN has been programmed. This counter can only be incremented.
Warm Ups Since DTC Cleared	Engine Idling	Counts	This parameter indicates the number of warm up cycles that have occurred Since DTCs were cleared. The scan tool will display a higher counts as more warm up cycles have occurred since the DTCs were cleared.
Warm Ups without Emission Malfunctions	Engine Idling	Counts	This parameter displays the number of OBD defined warm up cycles since the last emissions related (fault type A or B) fail report or MIL request. Emissions related DTCs are cleared from memory when this counter reaches 40.
Warm Ups without Non Emission Malfunctions	Engine Idling	Counts	This parameter displays the number of OBD defined warm up cycles since the last non emissions related (fault type C) fail report. Non emissions related DTCs are cleared from memory when this counter reaches 40.
Weight Percent Water in Air	Engine Idling	%	This parameter displays the calculated value of weight per cent water (specific humidity) in the intake air.
Wide Open Throttle	Engine Idling	No	This parameter displays the throttle status commanded by the control module. The scan tool will display Yes if the vehicle throttle is commanded to 100 percent.
Wide Open Throttle	Ignition ON	No	This parameter displays the desired throttle position exceeds a WOT threshold (selected specifically for service).

Engine Control Module (ECM) Scan Tool Output Controls

Output Control	Description
This is a comprehensive list. Not all output controls listed are available for all applications.	

Output Control	Description
A/C Compressor Clutch Relay	This device control is used to override the state of the air conditioning compressor output.
Active Grill Air Shutter 1 or 2 Commanded Position	This device control is used to command the position of the active grill air shutter 1 or 2 output. 0% equals fully closed, 100% equals fully open.
Alternative Fuel High Pressure Shutoff Valve Control	This device control is used to override the state of the alternative fuel shutoff valve 1 output.
Alternative Fuel Injector Disable Control	This device control is used with the engine running to override the state of the alternative fuel injector outputs. This device control is used to disable alternative fuel injectors in order to cut off alternative fuel to the associated cylinders.
Alternative Fuel Injector Flow Control	This device control is used to trigger a single Alternative fuel injector to be commanded on for a calibrated number of pulses (e.g. 25) in order to test the flow of the Alternative fuel injector.
Alternative Fuel Low Pressure Shutoff Valve Control	This device control is used to verify functionality of the Alternative Fuel Low Pressure Fuel Shutoff Valve system by allowing the Alternative Fuel Low Pressure Fuel Shutoff Valve output to be commanded to a specific Alternative Fuel Rail Pressure.
Alternative Fuel System Leak Test - Service Bay Test	This device control will signal the ECM to begin the Alternative Fuel System Leak Test.
Autostop/Autostart	This device control is used to override the internal combustion engine (ICE) running state.
BiFuel System - Fuel Mode Selection	When this CPID is active, the fuel mode is commanded to the selection made in "Fuel Mode Selection."
Brake Pedal Position Learn	This device control is used to reset the brake pedal fully released learned position to its initialized value after a brake system repair.
Compression Test	This device control is used to set up the internal combustion engine for a compression test. The fuel pump, fuel injectors, and spark are all disabled. The throttle is opened to a Wide Open Throttle (WOT) position. For conventional engine vehicles, the extended crank feature is not active, and for strong hybrid vehicles, the Hybrid Powertrain Control Module is configured to crank at the speed specified in the device control command. Engine cranking is completely controlled by the technician either through the ignition key or through a remote starter switch as applicable. The device control limits and rejects will apply normally upon entry to the device control. Once the device control is active, the limits will be monitored (to prevent unwanted starter operation, for example), but in the case of a limit exceeded or a tester disconnect, device control of the fuel and spark will not be released until the Power Mode switches to Accessory or OFF. This will prevent unexpected fuel and spark operation in the case of a device control abort.
Cooling Fan Relay 1	This function activates the cooling fan relay 1. The normal commanded state of the fan relay is NONE. The relay command status can also be monitored on the scan tool data parameter Cooling Fan Relay 1 Command. The control module allows cooling fan relay control when the following conditions are met: • The Ignition is ON or the engine is running. • A/C compressor operation is not requested. • The engine coolant temperature is less than 106Â°C (224Â°F).

Output Control	Description
Cooling Fan Relay 1, 2 and 3	This function activates the cooling fan relay 1, 2 and 3. The normal commanded state of the fan relays is NONE. The relay command status can also be monitored on the scan tool data parameters Cooling Fan Relay 1 Command and Cooling Fan Relays 2 and 3 Command. The control module allows cooling fan relay control when the following conditions are met: • The Ignition is ON or the engine is running. • A/C compressor operation is not requested. • The engine coolant temperature is less than 106Â°C (224Â°F).
Cooling Fan 2 and 3	This function activates the cooling fan relay 2 and relay 3. The normal commanded state of the fan relays is NONE. The relay command status can also be monitored on the scan tool data parameter 2 and 3 Command. The control module allows cooling fan relay control when the following conditions are met: • The Ignition is ON or the engine is running. • A/C compressor operation is not requested. • The engine coolant temperature is less than 106Â°C (224Â°F).
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 Power Balance	NOTE: The Misfire Current and Misfire History parameters may not increment when using this function. This function disables the selected fuel injector. The normal commanded state is None. The scan tool initiates the test when the following conditions are met: • The engine is operating and the engine idle is stable. • The vehicle speed is 0 km/h (0 mph). • There are no DTCs set for the vehicle speed sensor. If the fuel injector was disabled for 30 seconds, fuel injector control is not allowed again on the same fuel injector for 60 seconds.
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. The high fuel pressure control shall monitor the low pressure "Fuel Pump Device Control with Engine Running" such that when the low pressure pump is commanded OFF the high pressure pump will be controlled to a low pressure value. This combination shall be held until either the FPMR device control is released, or the engine stalls.
Engine Controls Ignition Relay	This device control is used to override the state of the Powertrain Relay.
Engine Coolant Thermostat Heater	This device control is used to override the state of the Engine Coolant Thermostat Heater.
Engine Oil Life Reset	This DID contains the engine oil remaining life determined from an algorithm based upon the effective engine revolutions and the distance driven since the last oil change. This DID 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.

Output Control	Description
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 Speed	This function controls the idle speed override in 25 RPM, 100 RPM, and 500 RPM increments, from the base idle speed to 1, 400 RPM. The scan tool initiates the test when the following conditions are met: • The transmission is in park or neutral. • The engine speed is less than 1, 000 RPM. The engine speed will remain in the commanded state until cancelled by the scan tool.
EVAP Purge/Seal	NOTE: The EVAP Purge and Vent Solenoid Command parameters may not change states when using this output control. This function activates both the EVAP purge solenoid valve and EVAP vent solenoid to seal the EVAP system. When activated, the purge valve is commanded to 0 percent and the vent valve is commanded ON, Not-venting. The normal commanded state for both solenoids is None. Both of the solenoids remain in the commanded state until cancelled by the scan tool or the FTP sensor exceeds -24 mm Hg (-12 inch H20).
EVAP Purge Solenoid Valve	NOTE: The EVAP Purge Solenoid Command parameter may not change states when using this output control. This function controls the evaporative emission (EVAP) purge solenoid valve. The normal commanded state is NONE. The system will increase or decrease the amount of purge by changing the duty cycle of the purge valve in 10 percent increments within a range of 0-100 percent. The system remains in the commanded state until cancelled by the scan tool or the fuel tank pressure (FTP) sensor exceeds -24 mm Hg (-12 inch H20).
EVAP Test	This device control is used to activate the evaporative emissions service bay test.
EVAP Vent Solenoid Valve	NOTE: The EVAP Vent Solenoid Command parameter may not change states when using this output control. This function controls the EVAP vent solenoid. The normal commanded state is NONE. When commanded ON, the vent valve switches to Not-venting. The system remains in the commanded state unless one of the following conditions occur: • Cancelled by the scan tool • The EVAP canister purge solenoid is more than 0 percent, and the FTP sensor exceeds -24 mm Hg (-12 inch H20).
Excessive Clutch Slip Data Reset	This device control is used to reset all clutch slip detection values.

Output Control	Description
Exhaust Camshaft Position Actuator or Exhaust Camshaft Position Actuator Bank 1	This device control is used to override the state of the exhaust cam phase output. The commanded camshaft position is expressed in terms of degrees of camshaft rotation (retard for exhaust camshaft) from the park position (a camshaft position of zero represents the park position).
Exhaust Camshaft Position Actuator or Exhaust Camshaft Position Actuator Bank 2	This device control is used to override the state of the exhaust cam phase output. The commanded camshaft position is expressed in terms of degrees of camshaft rotation (retard for exhaust camshaft) from the park position (a camshaft position of zero represents the park position).
Exhaust Camshaft Position Actuator Solenoid Valve or Exhaust Camshaft Position Actuator Solenoid Valve Bank 1	This device control is used to override the state of the exhaust cam phase solenoid output.
Exhaust Camshaft Position Actuator Solenoid Valve or Exhaust Camshaft Position Actuator Solenoid Valve Bank 2	This device control is used to override the state of the exhaust cam phase solenoid output.
Fuel Composition Reset	NOTE: Do not use this output control unless the actual alcohol content of the fuel in the tank is 10 percent or less. This will reset the learned alcohol composition to 0 percent in the engine control module (ECM).
Fuel Control Loop Status	This function controls the heated oxygen sensor (HO2S) loop status. The commanded states include NONE, OPEN, and CLOSED. The normal commanded state is NONE. The loop status changes as commanded, OPEN or CLOSED. The system remains in the commanded state until cancelled by the scan tool.
Fuel Injector Balance Test (If Available)	This function enables the fuel injector in order to verify the correct fuel injector flow. The ECM will pulse the selected fuel injector when the following conditions are met: • All instruction on the scan tool is complete. • A fuel injector is selected. • The ignition is ON with the engine OFF. The selected fuel injector can only be flowed/pulsed once per ignition cycle.
Fuel Mode Indicator Lamp System	This device control is used to verify the functionality of the Fuel Mode Indicator Lamp.

Output Control	Description
Fuel Pressure	This function allows control of the fuel rail pressure (FRP) regulator which is integral to the high pressure fuel pump. The system will Increase or Decrease the fuel rail pressure in increments, as commanded within an approximate range of 1862-17, 237 kPa (270-2500 psi). The scan tool initiates the test when the following conditions are met: • The engine is operating • The ignition voltage is 10-18 V • The vehicle speed is 0 mph • DTC P0700 is not set The system remains in the commanded state for about 30 seconds or until cancelled by the scan tool or the ECM detects a vehicle speed.
Fuel Pressure Regulator	NOTE: As this is an electrical circuit test, a regulator solenoid commanded to ON does not necessarily equate to the regulator state at maximum fuel pressure. This device control is intended for use on a Direct Injection (DI) high pressure fuel supply system to activate the fuel pressure regulator at ignition ON, engine OFF. Both the low side and high side of the regulator are controlled together. Commanding the regulator to ON will modulate the high side driver to a calibratable Maximum Duty Cycle.
Fuel Pump Enable	This function controls the fuel pump. The normal commanded state is NONE. The scan tool initiates the test when the following conditions are met: • There are no vehicle speed sensor DTCs set. • The vehicle speed is 0 km/h (0 mph). When commanded ON/OFF, the engine control module (ECM) 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 for about 2 seconds or until cancelled by the scan tool or the ECM detects a vehicle speed.
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. Different limit checks are used when the engine is and is not running for the operation of the fuel pump.
Fuel Rail Pressure	This device control is intended for use on a Direct Injection (DI) high pressure fuel supply system to override the commanded fuel high pressure output from the powertrain controller.
Fuel Trim Enable	This function disables the control modules ability to learn new fuel trim parameters. The commanded states are NONE, ENABLED, DISABLED. The normal commanded state is NONE. The system remains in the commanded state until cancelled by the scan tool.
Fuel Trim Reset	This function is used to reset the learned fuel trim values to their initial values.
Generator L-Terminal	Commands the generator L terminal ON and OFF.
Heater Coolant Pump	This device control is used to override the state of the heater core pump relay output.

Output Control	Description
HO2S Heater Sensor 1 or HO2S Heater Bank 1 Sensor 1	This device control is used to override the duty cycle of the oxygen sensor heaters. With the engine OFF, this device control is intended to be used as a discrete control for circuit diagnosis. With the engine OFF, none of the oxygen sensor heaters can be commanded ON for more than 3.0 seconds, after which the selected oxygen sensor heater must be disabled for a limited duration (typically 60 seconds) before it may be enabled again. With the engine running, this device control is used to operate the oxygen sensor heaters at the various duty cycles available to the engine controller.
HO2S Heater Sensor 2 or HO2S Heater Bank 1 Sensor 2	This device control is used to override the duty cycle of the oxygen sensor heaters. With the engine OFF, this device control is intended to be used as a discrete control for circuit diagnosis. With the engine OFF, none of the oxygen sensor heaters can be commanded ON for more than 3.0 seconds, after which the selected oxygen sensor heater must be disabled for a limited duration (typically 60 seconds) before it may be enabled again. With the engine running, this device control is used to operate the oxygen sensor heaters at the various duty cycles available to the engine controller.
HO2S Heater Bank 2 Sensor 1	This device control is used to override the duty cycle of the oxygen sensor heaters. With the engine OFF, this device control is intended to be used as a discrete control for circuit diagnosis. With the engine OFF, none of the oxygen sensor heaters can be commanded ON for more than 3.0 seconds, after which the selected oxygen sensor heater must be disabled for a limited duration (typically 60 seconds) before it may be enabled again. With the engine running, this device control is used to operate the oxygen sensor heaters at the various duty cycles available to the engine controller.
HO2S Heater Bank 2 Sensor 2	This device control is used to override the duty cycle of the oxygen sensor heaters. With the engine OFF, this device control is intended to be used as a discrete control for circuit diagnosis. With the engine OFF, none of the oxygen sensor heaters can be commanded ON for more than 3.0 seconds, after which the selected oxygen sensor heater must be disabled for a limited duration (typically 60 seconds) before it may be enabled again. With the engine running, this device control is used to operate the oxygen sensor heaters at the various duty cycles available to the engine controller.
HO2S Heater Learn	This device control is used to trigger the reset of the learned resistances for the oxygen sensor heaters following a replacement in service. The learned resistances are reset to a calibration used to prevent overheating of the sensors until more accurate resistances may be learned following an extended engine OFF time (typically 12 or more hours).
Idle Ignition Timing	Disables and enables idle spark advance with the engine running.
Idle Learn	This function allows the throttle position and the idle speed to be relearned by the ECM, once the following conditions have been met. • The ignition is ON with the engine OFF. • The ECT is between 5-85Â°C (41-185Â°F). • No throttle actuator control (TAC) system DTCs are set.
Ignition Timing Retard	This device control is used to retard the spark angle from the software calculated spark angle. 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 Air Heater	This device control is used to override the state of the intake air heater.

Output Control	Description
Intake Camshaft Position Actuator or Intake Camshaft Position Actuator Bank 1	This device control is used to override the state of the intake cam phase output. 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 or Intake Camshaft Position Actuator Bank 2	This device control is used to override the state of the intake cam phase output. 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 or Intake Camshaft Position Actuator Solenoid Valve Bank 1	This device control is used to override the state of the intake cam phase solenoid output.
Intake Camshaft Position Actuator Solenoid Valve or Intake Camshaft Position Actuator Solenoid Valve Bank 2	This device control is used to override the state of the intake cam phase solenoid output.
Intake Rocker Arm Solenoid Valve 1-2 or 1 and 2	When the engine is running, this device control may be used to command intake valve opening to low or high (high being default when the solenoid is not energized) valve lift mode either in cylinder pairs or as a system.
Malfunction Indicator Lamp (MIL)	This function controls the malfunction indicator lamp (MIL). The normal commanded state is NONE. When commanded ON/OFF, the ECM turns the MIL ON/OFF. The system remains in the commanded state until cancelled by the scan tool.
Mass Air Flow Sensor Supply Voltage	This device control is used to override the state of the mass air flow sensor supply voltage output.
Misfire Graphic	This function clears the misfire graphics from the scan tool.
Oil Life Reset	This output control is used to reset the engine oil life monitor from 0 to 100 %.
Remote Vehicle Start Disable History Reset	This function clears the remote vehicle start (RVS) disable history. When RESET is selected the reason the control module did not allow RVS in the last 8 attempts is cleared.
Secondary Air Injection Pump Relay	This device control is used to turn the AIR Pump ON or OFF.
Secondary Air Injection Solenoid Valve	This device control is used to turn the AIR Valve ON or OFF.
Secondary Air Injection Test	This device control is used to trigger the secondary air injection (SAI) diagnostic service bay test, which causes the on board SAI diagnostic to execute until it is completed or aborted.
Starter Relay (If Available)	Commands the starter relay ON and OFF.
Throttle Position	This device control is used to override the commanded throttle position.
Throttle Sweep	This function moves the Throttle plate slowly from a closed position to wide open position, aiding diagnosis of TAC motor.
Transmission Fluid Pressure Accumulator Solenoid Valve	This device control is used to override the state of the Transmission Fluid Pressure Accumulator Solenoid Valve.
Turbocharger Bypass Solenoid Valve	This device control is used to control the duty cycle for the turbocharger A compressor bypass.
Turbocharger Wastegate Solenoid Valve	This device control is used to control the duty cycle for the turbocharger A wastegate.

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