

2018 GENERAL INFORMATION**Vehicle Diagnostic Information - Specifications - Traverse****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.
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.

Parameter	System State	Expected Value	Description
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.
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.

Parameter	System State	Expected Value	Description
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.
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).

Parameter	System State	Expected Value	Description
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).
Alternative Fuel Rail Temperature	Ignition ON	°C (°F)	This parameter displays the undefaulted alternative fuel rail temperature measured by a sensor. Range is -40 to 215°C.

Parameter	System State	Expected Value	Description
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	N.m	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	N.m (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	Engine Idling	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	N.m	This parameter displays a (desired) output value after comparing engine load as an input to the hybrid control processor and engine control module.
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	0:00:00 Seconds - Varies	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	N.m	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 non-continuous 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 non-continuous 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	N.m/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	N.m (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.
Bi-Fuel 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.

Heating Ventilation and Air Conditioning Control Module Scan Tool Data Parameters

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Vehicle in Service Mode			
A/C Button/Switch	A/C Button released	Inactive	The scan tool displays Active or Inactive depending on the state of the A/C switch.
	A/C Button pressed	Active	
A/C Compressor Refrigerant Solenoid Valve Command	-	0 - 100%	The scan tool displays % depending on the command for compressor displacement. The value increases stepwise from 0 - 100% depending on the command/request.
A/C Indicator	A/C Off	Off	The scan tool displays On or Off depending on the state of the A/C mode.
	A/C On	On	
A/C Evaporator Temperature Sensor	-	-40 to +80Â°C (-40 to +176Â°F)	The scan tool displays Â°C (Â°F). This is the current temperature at the A/C evaporator temperature sensor.
A/C Request Signal	A/C Off	Inactive	The scan tool displays Active or Inactive depending on the state of the A/C mode.
	A/C On	Active	
Air Inlet Door Actuator Command	-	Varies	The scan tool displays Counts. This is the desired position of the actuator.
Air Inlet Door Actuator Direction	-	Stop	The scan toll displays Stop, Outside Air, Increase, Recirculation, Decrease or Not Used depending on the state of the recirculation door. During the movement of the door, the scan tool shows Increase or Decrease depending on the movement direction.
Air Inlet Door Actuator Learn Status	-	Complete	The scan tool displays Not Running, In Progress, Complete, or Failed depending on the actuator calibration status.
Air Inlet Door Actuator Position	-	Varies	The scan tool displays Counts. This is the actual position of the actuator.
Air Quality Sensor / Odor (AQS) Button/Switch	Button released	Inactive	The scan tool displays Active or Inactive depending on the state of the A/C switch.
	Button pressed	Active	
Air Quality / Odor (AQS) Sensor	-	Varies	The scan tool displays counts. The value increases with the increasing of the pollution of the ambient air.
Air Quality Sensor / Odor (AQS) Indicator	AQS Off	Off	The scan tool displays On or Off depending on the state of the AQS indicator command
	AQS On	On	
Air Recirculation Button/Switch	Button released	Inactive	The scan tool displays Active or Inactive depending on the state of the air recirculation mode switch.
	Button pressed	Active	
Air Recirculation Door Actuator Command	-	Varies	The scan tool displays Counts. This is the desired position of the actuator.

Parameter	System State	Expected Value	Description
Air Recirculation Door Actuator Direction	-	Stop	The scan tool displays Stop, Outside Air, Increase, Recirculation, Decrease or Not Used depending on the state of the recirculation door. During the movement of the door, the scan tool shows Increase or Decrease depending on the movement direction.
Air Recirculation Door Actuator Learn Status	-	Complete	The scan tool displays Not Running, In Progress, Complete, or Failed depending on the actuator calibration status.
Air Recirculation Door Actuator Position	-	Varies	The scan tool displays Counts. This is the actual position of the actuator.
Air Recirculation Indicator	Recirculation Off	Off	The scan tool displays On or Off depending on the state of the indicator command.
	Recirculation On	On	
Air Recirculation LED	Recirculation Off	Off	The scan tool displays On or Off depending on the state of the indicator command.
	Recirculation On	On	
Air Recirculation Mode Switch	Air recirculation switch released	Inactive	The scan tool displays Active or Inactive depending on the state of the air recirculation mode switch.
	Air recirculation switch pressed	Active	
Auto HVAC Button/Switch	Auto HVAC button released	Inactive	The scan tool displays On or Off depending on the state of the Auto HVAC button.
	Auto HVAC button pressed	Active	
Auto HVAC Indicator	Auto mode is deactivated	Off	The scan tool displays On or Off depending on the state of the Auto mode command.
	Auto mode is activated	On	
Auto HVAC Switch	Auto HVAC switch released	Inactive	The scan tool displays On or Off depending on the state of the Auto HVAC switch.
	Auto HVAC switch pressed	Active	
Auto Recirculation Button/Switch	-	Inactive	The scan tool displays Up, Down, or Inactive depending on the state of the switch.
Auto Recirculation Indicator	Auto Recirculation is deactivated	Off	The scan tool displays On or Off depending on the state of the Auto Recirculation indicator command.
	Auto Recirculation is activated	On	
Auxiliary Blower Motor Button/Switch	-	Varies	The scan tool displays AUTO, OFF, 1, 2, 3, 4, or 5 depending on the position of the auxiliary blower motor switch.
Auxiliary Blower Motor Speed	-	0 - 100%	The scan tool displays % depending on the feedback. The value increases stepwise from 0 - 100% depending on the feedback.
Auxiliary Blower Motor Speed Command	-	0 - 100%	The scan tool displays % depending on the command. The value increases stepwise from 0 - 100% depending on the command/request.

Parameter	System State	Expected Value	Description
Auxiliary Blower Motor Speed Indicator	-	Varies	The scan tool displays On or Off depending on the state of the indicator command.
Auxiliary Blower Motor Switch - Rotary	-	Varies	The scan tool displays AUTO, OFF, 1, 2, 3, 4, or 5 depending on the position of the auxiliary blower motor switch.
Auxiliary Coolant Pump	-	Varies	The scan tool displays Active or Inactive depending on the requested state of the coolant pump.
Auxiliary Coolant Pump Relay Command	-	Varies	The scan tool displays Active or Inactive depending on the requested state of the relay.
Auxiliary Coolant Pump Speed Command Duty Cycle	-	0 - 100%	The scan tool displays % depending on the command. The value increases stepwise from 0 - 100% depending on the command/request.
Auxiliary Coolant Pump Speed Feedback Duty Cycle	-	0 - 100%	The scan tool displays % depending on the feedback. The value increases stepwise from 0 - 100% depending on the feedback.
Auxiliary Heater Coolant Pump Fault Status	-	Normal	The scan tool displays Normal, High/Low Current, Flow Restricted, Overvoltage, Over temperature, or Circuit Open/Shorted indicating the status of the coolant pump.
Auxiliary Heater Output Status	-	OK	The scan tool displays OK, or Malfunction indicating the status of the auxiliary heater.
Auxiliary Mode Door Actuator Command	-	Varies	The scan tool displays Counts. This is the desired position of the rear mode actuator.
Auxiliary Mode Door Actuator Direction	-	Stop	The scan toll displays Stop, Increase, or Decrease depending on the state of the rear mode actuator. During the movement of the door, the scan tool shows Increase or Decrease depending on the movement direction.
Auxiliary Mode Door Actuator Learn Status	-	Complete	The scan tool displays Not Running, In Progress, Complete, or Failed depending on the actuator calibration status.
Auxiliary Mode Door Actuator Position	-	Varies	The scan tool displays Counts. This is the actual position of the rear mode actuator.
Auxiliary Mode Switch Indicator	Auxiliary Mode Switch inactive	Off	The scan tool displays On or Off depending on the state of the indicator command.
	Auxiliary Mode Switch active	On	
Auxiliary Mode Switch Position - Knob	-	Varies	The scan tool displays Auto, Floor, Bi-level or Panel depending on the position of the switch.
Auxiliary Mode Switch Position - Toggle	-	Varies	The scan tool displays Auto, Floor, Bi-level or Panel depending on the position of the switch.

Parameter	System State	Expected Value	Description
Base Model Part Number	-	Varies	Displays the currently installed part number of module.
Battery Voltage	-	Varies	The scan tool displays V. This is the current battery voltage.
Bi-Level Button/Switch	Bi-Level Switch released	Inactive	The scan tool displays Active or Inactive depending on the state of the switch.
	Bi-Level Switch pressed	Active	
Bi-Level Indicator	Bi-Level mode selected	Off	The scan tool displays On or Off depending on the state of the indicator command.
	Bi-Level mode deselected	On	
Blower Motor Speed	-	0 - 100%	The scan tool displays % depending on the state of the selected blower motor speed. The value increases stepwise from 0 - 100% depending on the selected speed.
Blower Motor Speed 1 Indicator	-	Varies	The scan tool displays On or Off depending on the state of the indicator command.
Blower Motor Speed 2 Indicator	-	Varies	The scan tool displays On or Off depending on the state of the indicator command.
Blower Motor Speed 3 Indicator	-	Varies	The scan tool displays On or Off depending on the state of the indicator command.
Blower Motor Speed 4 Indicator	-	Varies	The scan tool displays On or Off depending on the state of the indicator command.
Blower Motor Speed 5 Indicator	-	Varies	The scan tool displays On or Off depending on the state of the indicator command.
Blower Motor Speed 6 Indicator	-	Varies	The scan tool displays On or Off depending on the state of the indicator command.
Blower Motor Speed Command	-	0 - 100%	The scan tool displays % depending on the state of the selected blower motor speed. The value increases stepwise from 0 - 100% depending on the selected speed.
Blower Motor Switch - Toggle	-	Inactive	The scan tool displays Up, Down or Inactive depending on the state of the blower motor switch.
Date Programmed	-	Varies	The scan tool displays the date the module was last programmed.
Desired Left Temperature	-	Varies	The scan tool displays $\hat{\text{A}}^{\circ}\text{C}$ ($\hat{\text{A}}^{\circ}\text{F}$). This is the currently selected temperature setting.
Desired Rear Temperature	-	Varies	The scan tool displays $\hat{\text{A}}^{\circ}\text{C}$ ($\hat{\text{A}}^{\circ}\text{F}$). This is the currently selected temperature setting.
Desired Right Temperature	-	Varies	The scan tool displays $\hat{\text{A}}^{\circ}\text{C}$ ($\hat{\text{A}}^{\circ}\text{F}$). This is the currently selected temperature setting.
Diagnostic Data Identifier	-	Varies	The scan tool displays the 4 character alphanumeric device ID.

Parameter	System State	Expected Value	Description
End Model Part Number	-	Varies	The scan tool displays the end software module part number.
Enhanced Defrost Button/Switch	Enhanced defrost switch released	Inactive	The scan tool displays On or Off depending on the state of the switch.
	Enhanced defrost switch pressed	Active	
Enhanced Defrost Indicator	Enhanced defrost mode is deactivated	Off	The scan tool displays On or Off depending on the state of the enhanced defrost mode.
	Enhanced defrost mode is activated	On	
Floor Mode Button/Switch	Floor mode switch released	Inactive	The scan tool displays Active or Inactive depending on the state of the switch.
	Floor mode switch pressed	Active	
Floor Mode Indicator	Floor mode Not selected	Off	The scan tool displays On or Off depending on the state of the indicator command.
	Floor mode selected	On	
Fresh Air Button/Switch	Fresh air switch released	Inactive	The scan tool displays Active or Inactive depending on the state of the switch.
	Fresh air switch pressed	Active	
Fresh Air Indicator	Fresh air not selected	Off	The scan tool displays On or Off depending on the state of the indicator command.
	Fresh air selected	On	
Front Defog Button/Switch	Front defog switch released	Inactive	The scan tool displays Active or Inactive depending on the state of the switch.
	Front defog switch pressed	Active	
Front Defog Indicator	Front defog not selected	Off	The scan tool displays On or Off depending on the state of the indicator command.
	Front defog selected	On	
Front Defrost Button/Switch	Defrost switch released	Inactive	The scan tool displays Active or Inactive depending on the state of the switch.
	Defrost switch pressed	Active	
Front Defrost Indicator	Front defrost not selected	Off	The scan tool displays On or Off depending on the state of the indicator command.
	Front defrost selected	On	
Front HVAC System Status	-	Varies	The scan tool displays Comfort, ECO, or Fan Only depending on the selected operating mode of the HVAC system.

Parameter	System State	Expected Value	Description
Front HVAC System Status Indicator	-	Varies	The scan tool displays: Link Active, AQS Active, Front Off Active, Fan Blower Minus Active, Fan Blower Plus Active, Knob Fan Active, Knob Temp Active, FR Fahrenheit Active, FR Celsius Active, FL Fahrenheit Active, FL Celsius Active, Front Fan 6 Active, Front Fan 5 Active, Front Fan 4 Active, Front Fan 3 Active, Front Fan 2 Active, Front Fan 1 Active, FL Active, Rear Enable Active, Extended Defrost Active, Heat Mode Active, Bi-level Active, Floor Active, Vent Active, Defog Active, Rear Defrost Active, Automatic Active, Fresh Active, Recirculation Active, or A/C Active depending on the current operating mode of the HVAC system.
Heat Mode Button/Switch	Heat switch released	Inactive	The scan tool displays Active or Inactive depending on the state of the switch.
	Heat switch pressed	Active	
Heat Mode Indicator	Heat not selected	Off	The scan tool displays On or Off depending on the state of the indicator command.
	Heat selected	On	
Heater Core Coolant Temperature Sensor	-	-40 to +215Â°C (-40 to +419Â°F)	The scan tool displays Â°C (Â°F). This is the temperature of the coolant at the inlet of the coolant heater
Heating Element 1 Duty Cycle Command	-	Varies	The scan tool displays % from 0 - 100, depending on the state of the command.
High Voltage Heater Pump Status	-	Varies	The scan tool displays % from 0 - 100, depending on the feedback.
HVAC Indicator Commanded Status	-	Varies	The scan tool displays On or Off depending on the state of the indicator command.
HVAC Actuators Supply Voltage	-	Active	The scan tool displays Active or Inactive. Inactive is displayed if there is a malfunction at the actuators supply voltage circuit.
HVAC Control Switch Activations - Extended	-	Inactive	The scan tool displays Active or Inactive. Active is displayed when a switch is pressed.
HVAC Heater Coolant Pump Speed Command Duty Cycle	-	Varies	The scan tool displays % from 0 - 100, depending on the state of the command.
HVAC Heater Coolant Pump Speed Feedback Duty Cycle	-	Varies	The scan tool displays % from 0 - 100, depending on the feedback.
HVAC Mode Status	-	Varies	The scan tool displays: Peak Performance Mode, Normal, Economy Mode, Blower Only Mode, or Heater Economy Mode indicating the currently selected mode.

Parameter	System State	Expected Value	Description
Hybrid/EV Battery Pack Coolant Pump Command	-	Varies	The scan tool displays % from 0 - 100, depending on the state of the command.
Hybrid/EV Battery Pack Coolant Pump Speed	-	Varies	The scan tool displays % from 0 - 100, depending on the feedback.
Hydrocarbon Air Quality Sensor	-	Varies	The scan tool displays counts. The value increases with the increasing of the pollution of the ambient air.
Ignition Voltage	-	11 - 14 V	The scan tool displays the current Ignition voltage.
Instrument Panel Vents Button/Switch	Instrument Panel Vent switch released	Inactive	The scan tool displays Active or Inactive depending on the state of the switch.
	Instrument Panel Vent switch pressed	Active	
Instrument Panel Vents Indicator	Panel Vents not selected	Off	The scan tool displays On or Off depending on the state of the indicator command.
	Panel Vents selected	On	
Left / Single Solar Sensor	-	Varies	The scan tool displays W/m^2 . This is the current sun heat intensity.
Left Temperature Button/Switch	-	Inactive	The scan tool displays Up, Down, or Inactive depending on the state of the temperature switch.
Left Temperature Door Actuator Command	-	Varies	The scan tool displays Counts. This is the desired position of the actuator.
Left Temperature Door Actuator Direction	-	Varies	The scan tool displays stop, increase, or decrease. This is the current direction of the actuator.
Left Temperature Door Actuator Learn Status	-	Complete	The scan tool displays Not Running, In Progress, Complete, or Failed depending on the actuator calibration status.
Left Temperature Door Actuator Position	-	Varies	The scan tool displays Counts. This is the actual position of the actuator.
Left Temperature Knob Position	-	Varies	The scan tool displays Increase or Decrease when the left temperature knob is rotated.
Lower Left Duct Air Temperature Sensor	-	-40 to +80Â°C (-40 to +176Â°F)	The scan tool displays Â°C (Â°F). This is the current temperature at the duct temperature sensor.
Lower Rear Duct Air Temperature Sensor	-	-40 to +80Â°C (-40 to +176Â°F)	The scan tool displays Â°C (Â°F). This is the current temperature at the duct temperature sensor.
Lower Right Duct Air Temperature Sensor	-	-40 to +80Â°C (-40 to +176Â°F)	The scan tool displays Â°C (Â°F). This is the current temperature at the duct temperature sensor.
Manufacturing Enable Counter	-	0	The scan toll displays 0 - 255 counts. This counter typically decrements 1 count per ignition cycle. 0 indicates a locked ECU.

Parameter	System State	Expected Value	Description
Manufacturing Traceability Data	-	Varies	This parameter displays the diagnostic module traceability number, which may be up to 16 digits long. This information may be used in certain situations to identify the manufacturer of the component.
Mode Door Actuator Command	-	Varies	The scan tool displays Counts. This is the desired position of the actuator.
Mode Door Actuator Direction	-	Stop	The scan tool displays stop, increase, or decrease. This is the current direction of the actuator.
Mode Door Actuator Learn Status	-	Complete	The scan tool displays Not Running, In Progress, Complete, or Failed depending on the actuator calibration status.
Mode Door Actuator Position	-	Varies	The scan tool displays Counts. This is the actual position of the actuator.
Mode Switch - Toggle	-	Inactive	The scan tool displays Up, Down, or Inactive depending on the state of the mode switch.
Mode Switch Knob Position	-	Varies	The scan tool displays: Rear, Sync, Floor/Vent/Defrost (Tri-Level), Vent/Defrost, Front Defrost, Foot/Defrost 3 (Blend+), Foot/Defrost 2 (Blend), Foot/Defrost 1 (Floor +), Foot (Floor), Bi-level 3 (Bi-level +), Bi-level 2 (Bi-level), Bi-level 1 (Panel +), Face (Panel), or AUTO depending on the position of the switch.
MULTI-ZONE Button/Switch	MULTI-ZONE switch released	Inactive	The scan tool displays Active or Inactive depending on the state of the switch.
	MULTI-ZONE switch pressed	Active	
MULTI-ZONE Indicator	MULTI-ZONE not selected	Off	The scan tool displays On or Off depending on the state of the indicator command.
	MULTI-ZONE selected	On	
Outside Air Temperature Sensor Voltage	-	-40 to +80Â°C (-40 to +176Â°F)	The scan tool displays Â°C (Â°F). This is the current temperature at the outside air temperature sensor.
Passenger Compartment Air Temperature (Filtered)	-	-40 to +80Â°C (-40 to +176Â°F)	The scan tool displays Â°C (Â°F). This is the stored temperature of the passenger compartment air temperature sensor.
Passenger Compartment Air Temperature (Unfiltered)	-	-40 to +80Â°C (-40 to +176Â°F)	The scan tool displays Â°C (Â°F). This is the current temperature at the passenger compartment air temperature sensor.
Passenger Compartment Humidity	-	3 - 100%	The scan tool displays %. This is the current relative humidity level at the windshield temperature and inside moisture sensor.
Passenger Compartment Humidity Sensor Temperature	-	-40 to +80Â°C (-40 to +176Â°F)	The scan tool displays Â°C (Â°F). This is the current temperature at the humidity sensing element temperature sensor.

Parameter	System State	Expected Value	Description
Rear Defogger Button/Switch	Rear Defogger switch released	Inactive	The scan tool displays Active or Inactive depending on the state of the switch.
	Rear Defogger switch pressed	Active	
Rear Defogger Deactivation Reason	-	Varies	The scan tool displays: Auto Start Active, Rear Defrost Inhibited, Load Shed Active, Convertible Top Down, or Battery State of Charge Low. This is the reason the defogger has been disabled.
Rear Defogger Indicator	Rear defogger is deactivated	Off	The scan tool displays On or Off depending on the state of the rear defogger.
	Rear defogger is activated	On	
Rear Defogger Status	Rear defogger is deactivated	Off	The scan tool displays On or Off depending on the state of the rear defogger command.
	Vehicle ON/Rear defogger is activated	On	
Rear In Vehicle Temperature Sensor (Filtered)	-	-40 to +80Â°C (-40 to +176Â°F)	The scan tool displays Â°C (Â°F). This is the stored temperature of the rear passenger compartment air temperature sensor.
Rear In Vehicle Temperature Sensor (Unfiltered)	-	-40 to +80Â°C (-40 to +176Â°F)	The scan tool displays Â°C (Â°F). This is the current temperature at the rear passenger compartment air temperature sensor.
Rear Temperature Button/Switch	-	Inactive	The scan tool displays Up, Down or Inactive depending on the state of the temperature switch.
Rear Temperature Door Actuator Command	-	Varies	The scan tool displays Counts. This is the desired position of the mode actuator.
Rear Temperature Door Actuator Direction	-	Stop	The scan tool displays stop, increase, or decrease. This is the current direction of the actuator.
Rear Temperature Door Actuator Learn Status	-	Complete	The scan tool displays Not Running, In Progress, Complete, or Failed depending on the actuator calibration status.
Rear Temperature Door Actuator Position	-	Varies	The scan tool displays Counts. This is the actual position of the actuator.
Rear Temperature Knob Position	-	Varies	The scan tool displays Increase or Decrease when the rear temperature knob is rotated.
Repair Shop Code or Tester Serial Number	-	Varies	This number may be used in certain situations to identify the supplier, control module and diagnostic capability of the component.
Right Solar Load	-	Varies	The scan tool displays W/m ² . This is the current sun heat intensity.
Right Solar Sensor	-	Varies	The scan tool displays W/m ² . This is the current sun heat intensity.
Right Temperature Button/Switch	-	Inactive	The scan tool displays Up, Down or Inactive depending on the state of the temperature switch.

Parameter	System State	Expected Value	Description
Right Temperature Door Actuator Command	-	Varies	The scan tool displays Counts. This is the desired position of the mode actuator.
Right Temperature Door Actuator Direction	-	Stop	The scan tool displays stop, increase, or decrease. This is the current direction of the actuator.
Right Temperature Door Actuator Learn Status	-	Complete	The scan tool displays Not Running, In Progress, Complete, or Failed depending on the actuator calibration status.
Right Temperature Door Actuator Position	-	Varies	The scan tool displays Counts. This is the actual position of the actuator.
Right Temperature Knob Position	-	Varies	The scan tool displays Increase or Decrease when the right temperature knob is rotated.
Security Code Accepted	-	Yes	The scan tool displays Yes or No depending on the current security code status.
Security Code Lockout	-	Security Code Accepted	The scan tool displays Tool Learn Delay Active, Vehicle Assembly Mode Flag, Security Code Lockout Active, Security Code Programmed, Security Code Accepted depending on the current security code status.
Security Code Lockout Active	-	Inactive	When active, the scan tool displays a timer which prohibits programming the security code when a certain number of attempts have been exceeded. The security code is a method of verifying that the module has not been swapped with a module from another vehicle
Security Code Programmed	-	Yes	The scan tool displays Yes or No depending on the current security code status.
Security Code Programming Counter	-	Varies	This parameter indicates the number of times the security code has been programmed. The security code is a method of verifying that the module has not been swapped with a module from another vehicle.
Security Code Reset Counter	-	Varies	This parameter indicates the number of times the security code has been reset. The security code is a method of verifying that the module has not been swapped with a module from another vehicle.
Software Module 1 Identifier	-	Varies	The scan tool displays the software calibration part number 1.
Software Module 2 Identifier	-	Varies	The scan tool displays the software calibration part number 2.
Software Module 3 Identifier	-	Varies	The scan tool displays the software calibration part number 3.
Sun Azimuth	-	0 - 90°	The scan tool displays degrees. This is the current angle in the horizontal plane between the sun and the vehicle driving direction.

Parameter	System State	Expected Value	Description
Sun Elevation	-	0 - 360°	The scan tool displays degrees. This is the current angle in the vertical sun height.
Sunload / Sun Intensity	-	0 - 1200 W/m ²	The scan tool displays W/m ² . This is the current sun heat intensity.
Upper Left Duct Air Temperature Sensor	-	-40 to +80°C (-40 to +176°F)	The scan tool displays °C (°F). This is the current temperature at the upper left duct temperature sensor.
Upper Rear Duct Air Temperature Sensor	-	-40 to +80°C (-40 to +176°F)	The scan tool displays °C (°F). This is the current temperature at the rear upper duct temperature sensor.
Upper Right Duct Air Temperature Sensor	-	-40 to +80°C (-40 to +176°F)	The scan tool displays °C (°F). This is the current temperature at the upper right duct temperature sensor.
Vehicle Identification Number (VIN)	-	Varies	The scan tool displays the learned vehicle identification number.
Windshield Temperature	-	-40 to +80°C (-40 to +176°F)	The scan tool displays °C (°F). This is the current temperature at the windshield temperature sensor.

Heating Ventilation and Air Conditioning Control Module Scan Tool Output Controls

Output Control	Description
A/C Compressor Clutch Enable	This control function enables or disables the A/C Compressor Clutch. The scan tool displays Engaged or Disengaged depending on the state of the A/C compressor clutch.
A/C Compressor Valve Control	This control function increases or decreases the command to the A/C Compressor Solenoid in %. The scan tool displays amperage in % depending on the state of the command for increased/decreased compressor displacement.
Aero Shutter Enable	This control function commands the state of the Aero Shutter between Active and Not Active.
Air Inlet Door Actuator Control	This control function commands the door position to increase or decrease. During the movement of the door, the scan tool shows Increase or Decrease dependant on the movement direction. When the position of the door is reached, the scan tool displays Stop.
Air Recirculation Door Actuator Direction	This control function commands the door position to increase or decrease. During the movement of the door, the scan tool shows Increase or Decrease dependant on the movement direction. When the position of the door is reached, the scan tool displays Stop.
Auxiliary Blower Motor Speed	This control function commands the auxiliary blower motor speed from 0 to 100% and back again.
Auxiliary Coolant Pump Speed	The HVAC control module enables or disables the coolant pump, and varies the pump speed when commanded from the scan tool.
Auxiliary Heater Output Enable	This control function increases or decreases the command to the Auxiliary Heater in %. The scan tool displays amperage in % depending on the state of the command.
Auxiliary Mode Door Actuator Control	This control function commands the door position to increase or decrease. During the movement of the door, the scan tool shows Increase or Decrease dependant on the movement direction. When the position of the door is reached, the scan tool displays Stop.

Output Control	Description
Blower Motor Speed/Command	This control function commands the blower motor speed from 0 to 100% and back again.
Heater Core Pump Relay Control Circuit	This control function commands the heater core pump relay On and Off.
Illuminate All Indicators	The HVAC control module illuminates all the indicators when commanded from the scan tool.
Left Temperature Door Actuator Control	This control function commands the door position to increase or decrease. During the movement of the door, the scan tool shows Increase or Decrease dependant on the movement direction. When the position of the door is reached, the scan tool displays Stop.
Mode Door Position Control	This control function commands the door position to increase or decrease. During the movement of the door, the scan tool shows Increase or Decrease dependant on the movement direction. When the position of the door is reached, the scan tool displays Stop.
Rear Defogger	This control function enables or disables the Rear Defogger. The scan tool displays Active or Not Active depending on the state of the rear defogger command.
Rear Temperature Door Actuator Control	This control function commands the door position to increase or decrease. During the movement of the door, the scan tool shows Increase or Decrease dependant on the movement direction. When the position of the door is reached, the scan tool displays Stop.
Right Temperature Door Actuator Control	This control function commands the door position to increase or decrease. During the movement of the door, the scan tool shows Increase or Decrease dependant on the movement direction. When the position of the door is reached, the scan tool displays Stop.
Single Zone Temperature Actuator Direction	This control function commands the door position to increase or decrease. During the movement of the door, the scan tool shows Increase or Decrease dependant on the movement direction. When the position of the door is reached, the scan tool displays Stop.

Heating Ventilation and Air Conditioning Control Module Configuration/Reset Functions

Output Control	Description
HVAC Afterblow Configuration	This control function enables or disables the afterblow configuration. When enabled, the Afterblow mode operates the blower motor after the engine has been turned off and the air conditioning has been used. This operation of the blower motor aids in drying the evaporator core
HVAC Actuators Learn	The HVAC control module executes the Motor Learn Routine when commanded. The actuators are commanded to their extreme travel available at both ends. These values are then used for future reference when determining door position.
Reset Source ID	Resets the communication IDs between modules

K36 INFLATABLE RESTRAINT SENSING AND DIAGNOSTIC MODULE: SCAN TOOL INFORMATION

NOTE: Some parameters and values in the table below may not apply to every vehicle.

Sensing and Diagnostic Module Scan Tool Data Parameters

Parameter	Expected Value	Definition
Operating Conditions: Ignition ON		

Parameter	Expected Value	Definition
2nd Row Left Seat Belt Reminder Sensor Pad Enable Status	Disabled/Enabled	The scan tool displays if the left rear seat belt reminder sensor pad is enabled to the SDM.
2nd Row Left Seat Belt Reminder Sensor Pad Learn Status	Learned/Not Learned	The scan tool displays Learned or Not Learned. Learned is displayed if the left rear seat belt reminder sensor pad has been learned by the SDM.
2nd Row Left Seat Belt Status	Buckled/Unbuckled	The scan tool displays Buckled or Unbuckled. This is the state of the left rear seat belt switch when the seat belt is buckled or unbuckled.
2nd Row Middle Seat Belt Reminder Sensor Pad Enable Status	Disabled/Enabled	The scan tool displays if the rear middle seat belt reminder sensor pad is enabled to the SDM.
2nd Row Middle Seat Belt Reminder Sensor Pad Learn Status	Learned/Not Learned	The scan tool displays Learned or Not Learned. Learned is displayed if the rear middle seat belt reminder sensor pad has been learned by the SDM.
2nd Row Middle Seat Belt Status	Buckled/Unbuckled	The scan tool displays Buckled or Unbuckled. This is the state of the middle rear seat belt switch when the seat belt is buckled or unbuckled.
2nd Row Middle Seat Belt Reminder Sensor Pad Enable Status	Disabled/Enabled	The scan tool displays if the rear right seat belt reminder sensor pad is enabled to the SDM.
2nd Row Middle Seat Belt Reminder Sensor Pad Learn Status	Learned/Not Learned	The scan tool displays Learned or Not Learned. Learned is displayed if the rear right seat belt reminder sensor pad has been learned by the SDM.
2nd Row Right Seat Belt Status	Buckled/Unbuckled	The scan tool displays Buckled or Unbuckled. This is the state of the right rear seat belt switch when the seat belt is buckled or unbuckled.
Air Bag Malfunction Indicator	On/Off/Flashes	The scan tool will display On or Flashes if there is a problem with the SIR system. Any problems within the SIR system will illuminate the air bag indicator. The indicator will either flash or stay on.
Base Model Part Number	Varies, 8 Digit Number	The scan tool displays the part number of the SDM which is stored in non volatile memory.
Calibration Part Number	Varies, 8 Digit Number	The scan tool displays the part number of the calibration file in the SDM.
Deployment Loop 1-18 Enable Status	Enabled/Disabled	The scan tool displays Enabled or Disabled. This is the status of the air bag or pretensioner.
Deployment Loop 1-18 Learn Status	Learned/Not Learned	The scan tool displays Learned or Not learned. Learned is displayed if the SDM has defined the number loop programmed from an air bag or pretensioner.
Deployment Loop 1-18 Resistance	1.44 - 4.25 Ohms	The scan tool displays the resistance of the learned loop of the air bag or pretensioner when connected to the SDM.

Parameter	Expected Value	Definition
Deployment Loop 1-18 Type	Varies	The scan tool displays the name of the air bag or pretensioner associated with the loop type 1 - 18.
Driver Seat Belt Reminder Indicator	On/Off	The scan tool displays On if this indicator is on. If the indicator is on it means the seat belt has not been buckled.
Driver Seat Belt Sensor Enable Status	Enabled/Disabled	The scan tool displays if the seat belt sensor in the seat belt buckle is enabled to the SDM.
Driver Seat Belt Sensor Learn Status	Learned/Not learned	The scan tool displays Learned or Not Learned. Learned is displayed if the driver seat belt sensor has been learned by the SDM.
Driver Seat Belt Status	Buckled/Unbuckled	The scan tool displays Buckled or Unbuckled. This is the state of the driver seat belt switch when the seat belt is buckled or unbuckled.
Driver Seat Position Sensor	Rearward/Forward	The scan tool will display if the driver seat is forward or rearward of the sensor set position.
Driver Seat Position Sensor Enable Status	Enabled/Disabled	The scan tool displays if the seat position sensor is enabled to the SDM.
Driver Seat Position Sensor Learn Status	Learned/Not Learned	The scan tool displays Learned or Not Learned. Learned is displayed if the driver seat position sensor has been learned by the SDM.
End Model Part Number	Varies, 8 Digit Number	The scan tool displays the part number of the SDM in production.
Impact Sensor 1-8 Enable Status	Enabled/Disabled	The scan tool displays Enabled or Disabled This is the status of the impact sensor.
Impact Sensor 1-8 Learn Status	Learned/Not Learned	The scan tool displays Learned or Not learned. Learned is displayed if the SDM has learned and has assigned a number to that impact sensor.
Impact Sensor 1-8 Type	Equipped/Not Equipped	The scan tool displays the name of the impact sensor associated with the type 1 - 8.
Inflatable Restraint Sensing and Diagnostic Module Primary Key	Hex Value	The scan tool indicates the primary key Hex value.
Manufacturer's Traceability Number	Varies, 16 Digit Number	The scan tool displays the 16 digit traceability number in the SDM.
Module Setup	Incomplete/Complete	The scan tool indicates if the SDM is set up.
Passenger Air Bag Disabled Switch	On/Off	The scan tool displays Off when the customer manually turns the passenger airbag off with this switch.
Passenger Air Bag Off Indicator	On/Off	The scan tool displays Off when the passenger indicator is not illuminated. This indicator is off when the disable switch is in the off position or no one is sitting in the passenger seat.

Parameter	Expected Value	Definition
Passenger Air Bag On Indicator	On/Off	The scan tool displays On when the passenger indicator is illuminated. This indicator is on when the disable switch is in the on position and someone is sitting in the passenger seat.
Passenger Air Bag Status	Enabled/Disabled	The scan tool displays if the passenger air bag is enabled to the SDM.
Passenger Air Bag Disable Indicator Enable Status	Enabled/Disabled	The scan tool displays if the passenger air bag disable indicator is enabled to the SDM.
Passenger Air Bag Disable Indicator Learn Status	Learned/Not Learned	The scan tool displays Learned or Not Learned. Learned is displayed if the SDM has learned the status of the passenger air bag disable indicator.
Passenger Air Bag Disable Switch Enable Status	Enabled/Disabled	The scan tool displays if the passenger air bag disable switch is enabled to the SDM.
Passenger Air Bag Disable Switch Learn Status	Learned/Not Learned	The scan tool displays Learned or Not Learned. Learned is displayed if the SDM has learned the status of the passenger air bag disable switch.
Passenger Air Bag Enable Indicator Enable Status	Enabled/Disabled	The scan tool displays if the passenger air bag enable indicator is enabled to the SDM.
Passenger Air Bag Enable Indicator Learn Status	Learned/Not Learned	The scan tool displays Learned or Not Learned. Learned is displayed if the SDM has learned the status of the passenger air bag enable indicator.
Passenger Classification	00 - 07	The scan tool will display what type of individual is sitting in the passenger seat.
Passenger Presence Detection System Enable Status	Enabled/Disabled	The scan tool displays if the passenger presence system is enabled to the SDM.
Passenger Presence Detection System Learn Status	Learned/Not Learned	The scan tool displays Learned or Not Learned. Learned is displayed if the SDM has learned the passenger presence system.
Passenger Presence Detection System Reporting DTC(s)	Yes/No	The SDM will report if there are DTCs set in the passenger presence module.
Passenger Seat Belt Reminder Indicator	On/Off	The scan tool displays On if this indicator is on. If the indicator is on it means the seat belt has not been buckled.
Passenger Seat Belt Reminder Indicator Enable Status	Disabled/Enabled	The scan tool displays if the passenger seat belt reminder indicator is enabled to the SDM.
Passenger Seat Belt Reminder Indicator Learn Status	Learned/Not Learned	The scan tool displays Learned or Not Learned. Learned is displayed if the passenger seat belt reminder indicator has been learned by the SDM.
Passenger Seat Belt Reminder Sensor Pad Enable Status	Disabled/Enabled	The scan tool displays if the passenger seat belt reminder sensor pad is enabled to the SDM.

Parameter	Expected Value	Definition
Passenger Seat Belt Reminder Sensor Pad Learn Status	Learned/Not Learned	The scan tool displays Learned or Not Learned. Learned is displayed if the passenger seat belt reminder sensor pad has been learned by the SDM.
Passenger Seat Belt Sensor Enable Status	Enabled/Disabled	The scan tool displays if the seat position sensor is enabled to the SDM.
Passenger Seat Belt Sensor Learn Status	Learned/Not learned	The scan tool displays Learned or Not Learned. Learned is displayed if the passenger seat belt sensor has been learned by the SDM.
Passenger Seat Belt Status	Buckled/Unbuckled	The scan tool displays Buckled or Unbuckled. This is the state of the passenger seat belt switch when the seat belt is buckled or unbuckled.
Passenger Seat Occupancy Status	Empty Seat/Occupied	The scan tool displays Occupied if someone is sitting in the passenger seat.
Passenger Seat Position Sensor	Rearward/Forward	The scan tool will display if the passenger seat is forward or rearward of the sensor set position.
Passenger Seat Position Sensor Enable Status	Disabled/Enabled	The scan tool displays if the passenger seat position sensor pad is enabled to the SDM.
Passenger Seat Position Sensor Learn Status	Learned/Not Learned	The scan tool displays Learned or Not Learned. Learned is displayed if the passenger seat position sensor has been learned by the SDM.
Power Mode	Off/Accessory/Run/Crank Request	The scan tool will display the power mode of the vehicle.
Primary Key Status	Valid/Invalid	The scan tool displays Valid if the primary key matches what is stored to memory in the SDM.
Primary Key Status Last Ignition Cycle	Invalid/Valid	The SDM checks to see if the primary key data received is valid.
Received Primary Key	Hex Value	The scan tool displays a Hex value indicating the SDM received primary key data.
Rollover Sensor Enable Status	Disabled/Enabled	The scan tool displays if the rollover sensor is enabled to the SDM.
Rollover Sensor Learn Status	Learn/Unlearn	The scan tool displays Learned or Not Learned. Learned is displayed if the rollover sensor has been learned by the SDM.
Security Code Accepted	Yes/No	The SDM either accepts the security code or it does not. The scan tool displays Yes if the security code has been accepted by the SDM.
Security Code Lockout	Yes/No	The scan tool displays Yes if the SDM has been locked out because of the security code not being accepted.
Security Code Lockout Active Timer	Random Value	The SDM uses a timer before the security code is locked in the SDM.
Security Code Programmed	Yes/No	The scan tool displays Yes if the SDM has been programmed with the security code.
Security Code Programming Counter	Random Value	The SDM uses a counter for the value of the security code programming.

Parameter	Expected Value	Definition
Security Code Reset Counter	Random Value	The SDM uses a counter to reset the value of the security code.
Software Part Number	Varies, 8 Digit Number	The scan tool displays the software part number in the SDM.
Vehicle Identification Number	Varies, 17 Digit Number	The VIN number of the vehicle programmed into the SDM.
VIN Programmed	Yes/No	The scan tool displays Yes if the VIN has been programmed into the SDM.
VIN Programming Counter	Random Value	The SDM uses this counter while programming the VIN.

K39 LIFTGATE CONTROL MODULE: SCAN TOOL INFORMATION

Liftgate Module Scan Tool Data Parameters

Parameter	Expected Value	Description
Operating Conditions: Ignition ON		
Liftgate Supply Voltage 1	11.5 - 13.0 V	The scan tool displays the battery system 1 voltage input to the liftgate module.
Liftgate Supply Voltage 2	11.5 - 13.0 V	The scan tool displays the battery system 2 voltage input to the liftgate module.
Liftgate Secondary Obstacle Detection	3 - 3.5 V	The scan tool displays the actual voltage on the liftgate object sensors circuit as measured by the liftgate control module.
Liftgate Latch Pawl Switch	Closed/Open	The scan tool displays Closed or Open. This is the state of the latch pawl switch depending upon if the liftgate is in the open position or closed position
Liftgate Latch Ratchet Switch	Closed/Open	The scan tool displays Closed or Open. This is the state of the latch ratchet switch depending upon if the liftgate is in the open position or closed position.
Liftgate Latch Sector Switch	Inactive	The scan tool displays Inactive and will briefly display Activate as the liftgate latch releases or cinches.
Liftgate Open/Closed Position Learned	Yes	The scan tool displays Yes or No. This is the state of the liftgate module open/close position programming.
Liftgate Front Control Switch	Active/Inactive	The scan tool displays Active or Inactive as the interior liftgate control switch is pressed and released.
Liftgate Handle Switch	Active/Inactive	The scan tool displays Active or Inactive as the liftgate handle switch is pressed and released
Liftgate Rear Close Switch	Active/Inactive	The scan tool displays Active or Inactive as the liftgate close switch is pressed and released.
Liftgate Mode Switch	Varies	The scan tool displays Off, 3/4, or Maximum which is the operation mode of the liftgate and varies when the rotary switch of the interior liftgate control switch is selected to the Off, 3/4 or Max position
Liftgate Mode Switch	Varies	The scan tool displays 123, 337, or 238 counts. when the rotary switch of the interior liftgate control switch is selected to the Off, 3/4 or Max position.
Liftgate Object Detection Sensor Supply	Active	This is the state of the liftgate object detection sensor supply

Parameter	Expected Value	Description
Liftgate Angle Sensor Supply	Inactive	This is the state of the liftgate angle sensor supply
Liftgate Latch Motor Cinch Command	Inactive	This is the state of the liftgate latch motor cinch command
Liftgate Open/Close	Inactive	Changes from Inactive to Closed to Inactive as the liftgate control module commands the liftgate latch when liftgate is pushed closed
Liftgate Latch Centering Commanded	Inactive	Changes from Inactive to Closed to Inactive as the liftgate control module commands the liftgate latch when liftgate is pushed closed

Liftgate Module Scan Tool Command Functions

Scan Tool Output Control	Description
Open/Close	This will command the liftgate to open and close.

Liftgate Module Scan Tool Configuration/Reset Functions

Scan Tool Output Control	Description
Liftgate Maximum Open Learn Position	This will command the liftgate to open and close and to relearn the liftgate travel limits.

K40D SEAT MEMORY CONTROL MODULE - DRIVER: SCAN TOOL INFORMATION

Seat Position Scan Tool Data Parameters

Parameter	Expected Value	Definition
Operating Conditions: Ignition ON		
Driver Seat Back Switch	Inactive	The scan tool displays Inactive, Forward, or Rearward. When the seat recline switch is pressed, the scan tool displays the direction for which the switch is pressed.
Driver Seat Back Direction Command	Inactive	The scan tool displays Inactive, Forward, or Rearward. When the seat recline switch is pressed or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the seat recline motor.
Driver Seat Back Position	Varies	The scan tool displays 0 - 65, 535 counts. The hall effect sensor provides a determined number of pulse signals with each rotation of the motor that the scan tool displays as counts. High count values indicate that the seat back is in the forward position, while low count values indicate that the seat back is in the rearward position.
Driver Seat Cushion Front Vertical Direction Command	Inactive	The scan tool displays Inactive, Up or Down. When the seat front vertical switch is pressed or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the seat front vertical motor.

Parameter	Expected Value	Definition
Driver Seat Cushion Front Vertical Position	Varies	The scan tool displays 0 - 65, 535 counts. The hall effect sensor provides a determined number of pulse signals with each rotation of the motor that the scan tool displays as counts. High count values indicate that the seat front vertical is in the up position, while low count values indicate that the seat front vertical is in the down position.
Driver Seat Cushion Front Vertical Switch	Inactive	The scan tool displays Inactive, Up or Down. When the seat front vertical switch is pressed, the scan tool should display the direction for which the switch is pressed.
Driver Seat Cushion Rear Vertical Direction Command	Inactive	The scan tool displays Inactive, Up or Down. When the seat rear vertical switch is pressed or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the seat rear vertical motor.
Driver Seat Cushion Rear Vertical Position	Varies	The scan tool displays 0 - 65, 535 counts. The hall effect sensor provides a determined number of pulse signals with each rotation of the motor that the scan tool displays as counts. High count values indicate that the seat rear vertical is in the up position, while low count values indicate that the seat rear vertical is in the down position.
Driver Seat Cushion Rear Vertical Switch	Inactive	The scan tool displays Inactive, Up or Down. When the seat rear vertical switch is pressed, the scan tool should display the direction for which the switch is pressed.
Driver Seat Horizontal Direction Command	Inactive	The scan tool displays Inactive, Forward, or Rearward. When the seat horizontal switch is pressed or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the seat horizontal motor.
Driver Seat Horizontal Position	Varies	The scan tool displays 0 - 65, 535 counts. The hall effect sensor provides a determined number of pulse signals with each rotation of the motor that the scan tool displays as counts. High count values indicate that the seat horizontal position is forward, while low count values indicate that the seat horizontal position is rearward.
Driver Seat Horizontal Switch	Inactive	The scan tool displays Inactive, Forward, or Rearward. When the seat horizontal switch is pressed, the scan tool should display the direction for which the switch is pressed.
Driver Seat Lumbar Support Horizontal Switch	Inactive	The scan tool displays Inactive, Forward, or Rearward. When the seat lumbar horizontal switch is pressed, the scan tool should display the direction for which the switch is pressed.
Driver Seat Lumbar Support Horizontal Direction Command	Inactive	The scan tool displays Inactive, Forward, or Rearward. When the seat lumbar horizontal switch is pressed, the scan tool displays the direction the memory control module is commanding the seat lumbar horizontal motor.

Parameter	Expected Value	Definition
Driver Seat Lumbar Support Vertical Switch	Inactive	The scan tool displays Inactive, Up, or Down. When the seat lumbar vertical switch is pressed, the scan tool should display the direction for which the switch is pressed.
Driver Seat Lumbar Support Vertical Direction Command	Inactive	The scan tool displays Inactive, Up, or Down. When the seat lumbar vertical switch is pressed, the scan tool displays the direction the memory control module is commanding the seat lumbar vertical motor.
Driver Seat Memory Recall Switches	Inactive	The scan tool displays Inactive, Memory 1, Memory 2, or Exit. When a memory function switch is pressed, the scan tool should momentarily display the function selected.
Driver Seat Memory Set Switch	Inactive	The scan tool displays Inactive/Active. When the memory SET switch is pressed, the scan tool should display Active.
Driver Seat Bulkhead Limit Switch	Inactive	The scan tool displays Inactive/Active. When the seat is moved rearward and the seat back comes in contact with the bulkhead limit switch, the scan tool should display Active.
Driver Seat Back Unlock Switch	Inactive	The scan tool displays Inactive/Active. When the seat back is folded forward, the seat back unlock switch is closed to voltage and the scan tool should display Active.
Driver Seat Back Side Bolster Direction	Inactive	The scan tool displays Inactive, Inflate, or Deflate. When the seat back side bolster switch is pressed, the scan tool displays the function the memory control module is commanding the seat lumbar/bolster pump.
Driver Seat Back Side Bolster Switch	Inactive	The scan tool displays Inactive, Inflate, or Deflate. When the seat back side bolster switch is pressed, the scan tool should display the function for which the switch is pressed.
Seat Massage Switch	Inactive	The scan tool displays Inactive/Active. When the seat massage switch is pressed, the scan tool should display Active.

Mirror Memory Scan Tool Data Parameters

Parameter	Expected Value	Definition
Operating Conditions: Ignition ON		
Mirror Select Switch	None	The scan tool displays None, Driver Door, or Passenger Door. The scan tool displays the current state of the mirror select switch.
Mirror Direction Switch	Inactive	The scan tool displays Inactive/Up/Down/Left/Right/Folding/Extending. The scan tool displays the current state of the power mirror switch as pressed.
Driver Mirror Direction Command	Inactive	The scan tool displays Inactive/Up/Down/Left/Right. When the power mirror switch is being used or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the driver mirror motors.
Driver Mirror Vertical Position	Varies	The scan tool displays 0 - 5 V. The voltage displayed represents the position of the driver vertical motor. High voltage values indicate the mirror position is up, while low count values indicate the mirror position is down.

Parameter	Expected Value	Definition
Driver Mirror Horizontal Position	Varies	The scan tool displays 0 - 5 V. The voltage displayed represents the position of the driver horizontal motor. High voltage values indicate the mirror position is to the right or in, while low count values indicate the mirror position is to the left or out.
Passenger Mirror Direction Command	Inactive	The scan tool displays Inactive/Up/Down/Left/Right. When the power mirror switch is being used or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the passenger mirror motors.
Passenger Mirror Vertical Position	Varies	The scan tool displays 0 - 5 V. The voltage displayed represents the position of the passenger vertical motor. High voltage values indicate the mirror position is up, while low count values indicate the mirror position is down.
Passenger Mirror Horizontal Position	Varies	The scan tool displays 0 - 5 V. The voltage displayed represents the position of the passenger horizontal motor. High voltage values indicate the mirror position is to the right or in, while low count values indicate the mirror position is to the left or out.

Steering Column Scan Tool Data Parameters

Parameter	Expected Value	Definition
Operating Conditions: Ignition ON		
Steering Column Direction Switch	Varies	The scan tool displays Inactive, Forward, Rearward, Up, or Down. When the steering column switch is pressed, the scan tool should display the direction for which the switch is pressed.
Steering Column Vertical Position	Varies	The scan tool displays 0 - 5 V. The voltage displayed is an input to the seat memory control module from the steering column vertical position sensor. Higher voltage readings indicates the steering wheel position is up while lower voltage readings indicate the steering wheel position is down.
Steering Column Horizontal Position	Off	The scan tool displays 0 - 5 V. The voltage displayed is an input to the seat memory control module from the steering column vertical position sensor. Higher voltage readings indicates the steering wheel position is forward toward the front of the vehicle or away from the driver while lower voltage readings indicate the steering wheel position is rearward toward the driver.

Adjustable Pedals Scan Tool Data Parameters

Parameter	Expected Value	Definition
Operating Conditions: Ignition ON		
Adjustable Pedal Control Switch	Inactive	The scan tool displays Inactive, Forward, or Rearward. When the adjustable pedal switch is pressed, the scan tool should display the direction for which the switch is pressed.
Adjustable Pedals Direction Command	Inactive	The scan tool displays Inactive, Forward, or Rearward. When the adjustable pedal switch is pressed or when a memory recall occurs, the scan tool displays the direction the seat memory control module is commanding the adjustable pedal motor.

Parameter	Expected Value	Definition
Adjustable Pedals Horizontal Position	Varies	The scan tool displays 0 - 5 V. The voltage displayed is an input to the seat memory control module from the adjustable pedal position sensor. Higher voltage readings indicates the pedals are forward toward the front of the vehicle or away from the driver while lower voltage readings indicate the pedals are rearward toward the driver.

Seat Memory Scan Tool Control Functions

Control Functions	Description
Driver Seat Back Horizontal Movement	This output control is used to command the driver seat back recline position Forward and Rearward.
Driver Seat Cushion Front Vertical Movement	This output control is used to command the driver seat cushion front vertical position Up and Down.
Driver Seat Cushion Rear Vertical Movement	This output control is used to command the driver seat cushion rear vertical position Up and Down.
Driver Seat Horizontal Movement	This output control is used to command the driver seat horizontal position Forward and Rearward.
Driver Seat Back Side Bolster Movement	This output control is used to command the driver seat back side bolster support to Inflate or Deflate.
Driver Seat Lumbar Support Horizontal Movement	This output control is used to command the driver seat lumbar horizontal position Forward and Rearward.
Driver Seat Lumbar Support Vertical Movement	This output control is used to command the lumbar vertical position Up and Down.

Mirror Memory Scan Tool Control Functions

Control Functions	Description
Driver Mirror Fold	This output control is used to command the driver mirror to fold and unfold.
Driver Mirror Movement	This output control is used to command the driver mirror up and down or left and right.
Passenger Mirror Fold	This output control is used to command the passenger mirror to fold and unfold.
Passenger Mirror Movement	This output control is used to command the passenger mirror up and down or left and right.

Adjustable Steering Column Scan Tool Control Functions

Control Functions	Description
Steering Column Tilt Up Command	This output control is used to command the steering column to the up position.
Steering Column Tilt Down Command	This output control is used to command the steering column to the down position.
Steering Column Telescope Forward Command	This output control is used to command the steering column to the forward position.
Steering Column Telescope Rearward Command	This output control is used to command the steering column to the rearward position.

Adjustable Pedals Scan Tool Control Functions

Control Functions	Description
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Control Functions	Description
Adjustable Pedals Forward/Rearward	This output control is used to command the adjustable pedal position forward and rearward.

Seat Cushion Haptic Motors Scan Tool Control Functions

Control Functions	Description
Driver Seat Cushion Left Rear Haptic Movement	This output control is used to Enable and Disable the driver seat cushion left rear haptic motor function.
Driver Seat Cushion Right Rear Haptic Movement	This output control is used to Enable and Disable the driver seat cushion right rear haptic motor function.

K43 POWER STEERING CONTROL MODULE: SCAN TOOL INFORMATION

Power Steering Control Module Scan Tool Data Parameters

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON			
Ignition Cycle Counter	-	Varies	This displays the number of ignition cycles.
Calculated System Temperature	-	Varies	This displays $^{\circ}\text{C}$. This is the current system temperature.
Steering Wheel Angle	-	Varies	This displays Degrees. This displays the current steering wheel angle in degrees.
Steering Wheel Input Torque	-	Varies	This displays N.m. This displays the current steering input torque in N.m.
Power Steering Motor Overload Protection Counter	-	Varies	This displays counts. This displays the Electric Power Steering Motor Overload Protection Incidents counter.
Power Steering Control Module SPS Calibration Status	-	True/False	Indicates the completion status of the Electric Power Steering calibration.
Power Steering Control Module Center Procedure	-	True/False	Indicates the completion status of the Electric Power Steering centering procedure.
Engine Speed	-	0 RPM	This displays RPM. This is the current engine speed from the ECM.
Vehicle Speed	-	0 Km/h (0 MPH)	This displays km/h (mph). This is the current vehicle speed.

Parameter	System State	Expected Value	Description
Motor Feedback Current	-	Varies	This displays amps (A). This displays the Electric Power Steering Motor Current Feedback.
Delivered Torque	-	Varies	This displays N.m. This displays the current value of the Output Torque of the Electric Power Steering.
Power Mode	-	OFF/Accessory/Run/Crank Request	This displays system power mode.
Battery Voltage	-	Varies	This displays Volts. This is the current battery voltage.

Power Steering Control Module Scan Tool Output Controls

Output Control	Description
Clear Driver-Specific Steering Angles	Command to reset the steering rack end of travel limit position as determined by software.
Clear Softstops	Command to reset the steering gear soft end stops as determined by software.
Temporarily Turn Off Active Pull Compensation Function	Command to disable the Active Pull Compensation feature during the key cycle. The power steering control module will return to normal operation with the feature enabled upon exiting the procedure.
Clear Active Pull Compensation Learned Limits	Command to reset the Active Pull Compensation learned values.
Temporarily Turn Off Smooth Road Shake Compensation Function	Command to disable the Smooth Road Shake Compensation feature during the key cycle. The power steering control module will return to normal operation with the feature enabled upon exiting the procedure.
Disable All System Outputs	Command to disable all system outputs of the power steering control module.

K47 REAR DIFFERENTIAL CLUTCH CONTROL MODULE: SCAN TOOL INFORMATION

Rear Differential Clutch Control Module Scan Tool Data Parameters

Parameter	System State	Expected Value	Definition
Operating Conditions: Ignition is ON, engine OFF, vehicle stationary			
Actual Power Transfer Unit Engagement Status	Disengaged, Engaged, Moving, Synchronizing, Error	Varies	The scan tool displays The Actual Power Transfer Unit Engagement Status.
Actual Power Transfer Unit Shift Cam Position	Â°	Varies	The scan tool displays Actual Power Transfer Unit Shift Cam Position.
Ambient Air Temperature	Â°C (Â°F)	Varies	The scan tool displays the Ambient Air Temperature.
AWD Disabled by Malfunction Counter	-	Varies	The scan tool displays the AWD Disabled by Malfunction Counter.
Base Model Part Number	-	Varies	The scan tool displays the base model part number of the module.
Base Model Part Number Alpha Code	-	Varies	The scan tool displays the Base Model Part Number Alpha Code.

Parameter	System State	Expected Value	Definition
Battery Voltage	-	Varies	The scan tool displays volts. The scan tool displays the battery voltage monitored by the module.
Calculated Vehicle Speed	KPH/MPH	0.0 KPH/MPH	The scan tool displays km/h (MPH). The scan tool displays 0 km/h (0 MPH) when the vehicle is not moving or is moving at speeds less than or equal to 0 km/h (0 MPH).
Commanded Power Transfer Unit Engagement Mode	Disengaged, Fast Engagement, Slow Engagement	Varies	The scan tool displays Commanded Power Transfer Unit Engagement Mode.
Commanded Power Transfer Unit Shift Cam Position	°	Varies	The scan tool displays Commanded Power Transfer Unit Shift Cam Position.
Compressed Vehicle Partitioning and Product Structure	-	-	The scan tool displays the Compressed Vehicle Partitioning and Product Structure.
Data Universal Numbering System Number	-	-	The scan tool displays the Data Universal Numbering System Number.
Date Programmed	Julian Date	Varies	The scan tool displays the date the module was programmed.
Diagnostic Data Identifier	-	-	The scan tool displays XXXX.
Drive Mode Select Switch	2WD/4WD	Varies	The scan tool displays the either 2WD or 4WD.
End Model Part Number	-	Varies	The scan tool displays the End Model Part Number.
End Model Part Number Alpha Code	-	Varies	The scan tool displays the End Model Part Number Alpha Code.
GMLAN Identification Data - Bus 1 Type	-	Varies	The scan tool displays the GMLAN Identification Data - Bus 1 Type.
GMLAN Identification Data - Data Dictionary 1 Version	-	Varies	The scan tool displays the GMLAN Identification Data - Data Dictionary 1 Version.
GMLAN Identification Data - GMLAN Kernel Version	-	Varies	The scan tool displays the GMLAN Identification Data - GMLAN Kernel Version.
Left Front Wheel Speed Sensor	KPH/MPH	0.0 KPH/MPH	The scan tool displays 0-160 km/h (0-99.5 mph).
Left Rear Differential Clutch Calculated Pressure	bar	Varies	The scan tool displays the Left Rear Differential Clutch Calculated Pressure.
Left Rear Differential Clutch Calculated Temperature	°C (°F)	Varies	The scan tool displays the Left Rear Differential Clutch Calculated Temperature.
Left Rear Differential Clutch Calculated Torque	Nm	Varies	The scan tool displays the Left Rear Differential Clutch Calculated Torque.
Left Rear Differential Clutch Requested Pressure	bar	Varies	The scan tool displays the Left Rear Differential Clutch Requested Pressure.
Left Rear Differential Clutch Requested Torque	Nm	Varies	The scan tool displays the Left Rear Differential Clutch Requested Torque.

Parameter	System State	Expected Value	Definition
Left Rear Differential Clutch Solenoid Valve Actual Current	Ampere	Varies	The scan tool displays the Left Rear Differential Clutch Solenoid Valve Actual Current.
Left Rear Differential Clutch Solenoid Valve Calculated Current	Ampere	Varies	The scan tool displays the Left Rear Differential Clutch Solenoid Valve Calculated Current.
Left Rear Wheel Speed Sensor	KPH/MPH	0.0 KPH/MPH	The scan tool displays 0-160 km/h (0-99.5 mph).
Manufacturer Enable Counter	-	Varies	The scan tool displays the Manufacturer Enable Counter.
Manufacturer's Traceability Number	-	Varies	The scan tool displays the Manufacturer's Traceability Character.
Module Diagnostic Address	-	Varies	The scan tool displays the Module Diagnostic Address.
Number of Power Transfer Unit Clutch Activations to Lubricate the Moving Parts	Counts	Varies	The scan tool displays the Number of Power Transfer Unit Clutch Activations to Lubricate the Moving Parts.
Number of Rear Drive Clutch Activations to Lubricate the Moving Parts	Counts	Varies	The scan tool displays the Number of Rear Drive Clutch Activations to Lubricate the Moving Parts.
Odometer at Last Rear Drive Clutch Activation to Lubricate the Moving Parts	Km / Miles	Varies	The scan tool displays the Odometer at Last Rear Drive Clutch Activation to Lubricate the Moving Parts.
Power Transfer Unit Clutch Motor Circuit 1 Feedback	V	Varies	The scan tool displays the Power Transfer Unit Clutch Motor Circuit A Feedback.
Power Transfer Unit Clutch Motor Circuit 2 Feedback	V	Varies	The scan tool displays the Power Transfer Unit Clutch Motor Circuit B Feedback.
Power Transfer Unit Clutch Motor Current	A	Varies	The scan tool displays the Power Transfer Unit Clutch Motor Current Feedback.
Power Transfer Unit Clutch Position Sensor Duty Cycle	%	Varies	The scan tool displays the Power Transfer Unit Hall Sensor Duty Cycle Feedback.
Power Transfer Unit Clutch Position Sensor Supply	V	Varies	The scan tool displays the Power Transfer Unit Hall Sensor Supply Feedback.
Rear Differential Clutch Control Module Temperature	Â°C (Â°F)	Varies	The scan tool displays the Rear Differential Clutch Control Module Temperature.
Rear Differential Clutch Control Module Temperature Sensor	Volts	Varies	The scan tool displays the Rear Differential Clutch Control Module Temperature Sensor.
Rear Differential Clutch Calibration Factory Value	-	Varies	The scan tool displays the Rear Differential Clutch Calibration Factory Value.
Rear Differential Clutch Pump Motor	RPM	Varies	The scan tool displays the Rear Differential Clutch Pump Motor.
Rear Differential Clutch Pump Motor Current	Milliampere	Varies	The scan tool displays the Rear Differential Clutch Pump Motor Current.

Parameter	System State	Expected Value	Definition
Rear Differential Clutch Solenoid Valve Current	Ampere	Varies	The scan tool displays the Rear Differential Clutch Solenoid Valve Current.
Rear Differential Clutch Status	Normal, Temporarily Disabled, Temporarily Limited, Malfunctioned	Temporarily Limited	The scan tool displays Normal/Temporarily Disabled/Temporarily Limited/Malfunctioned.
Rear Differential Hydraulic System Bleed Performed	No/Yes	Yes	The scan tool displays the status if the rear differential hydraulic system bleed was performed or not.
Rear Differential Oil Temperature	Â°C (Â°F)	Varies	The scan tool displays the Rear Differential Oil Temperature.
Rear Differential Oil Temperature Sensor Supply Voltage	Volts	Varies	The scan tool displays the Rear Differential Oil Temperature Sensor Supply Voltage.
Rear Drive Clutch Estimated Torque	Nm	Varies	The scan tool displays the Rear Drive Clutch Estimated Torque.
Rear Drive Clutch Oil Temperature	Â°C (Â°F)	Varies	The scan tool displays the Rear Drive Clutch Oil Temperature.
Rear Drive Clutch Plate Temperature	Â°C (Â°F)	Varies	The scan tool displays the Rear Drive Clutch Plate Temperature.
Rear Drive Clutch Torque Command	Nm	Varies	The scan tool displays the Rear Drive Clutch Torque Command.
Right Front Wheel Speed Sensor	KPH/MPH	0.0 KPH/MPH	The scan tool displays 0-160 km/h (0-99.5 mph).
Right Rear Differential Clutch Calculated Pressure	bar	Varies	The scan tool displays the Right Rear Differential Clutch Calculated Pressure.
Right Rear Differential Clutch Calculated Temperature	Â°C (Â°F)	Varies	The scan tool displays the Right Rear Differential Clutch Calculated Temperature.
Right Rear Differential Clutch Calculated Torque	Nm	Varies	The scan tool displays the Right Rear Differential Clutch Calculated Torque.
Right Rear Differential Clutch Requested Pressure	bar	Varies	The scan tool displays the Right Rear Differential Clutch Requested Pressure.
Right Rear Differential Clutch Requested Torque	Nm	Varies	The scan tool displays the Right Rear Differential Clutch Requested Torque.
Right Rear Differential Clutch Solenoid Valve Actual Current	Ampere	Varies	The scan tool displays the Right Rear Differential Clutch Solenoid Valve Actual Current.
Right Rear Differential Clutch Solenoid Valve Calculated Current	Ampere	Varies	The scan tool displays the Right Rear Differential Clutch Solenoid Valve Calculated Current.
Right Rear Wheel Speed Sensor	KPH/MPH	0.0 KPH/MPH	The scan tool displays 0-160 km/h (0-99.5 mph).
Software Module 1 Identifier	-	Varies	The scan tool displays the Software Module 1 Identifier.
Software Module 1 Identifier Alpha Code	-	Varies	The scan tool displays the Software Module 1 Identifier Alpha Code.
Software Module 2 Identifier	-	Varies	The scan tool displays the Software Module 2 Identifier.

Parameter	System State	Expected Value	Definition
Software Module 2 Identifier Alpha Code	-	Varies	The scan tool displays the Software Module 2 Identifier Alpha Code.
Subscriber ID	-	Varies	The scan tool displays the Subscriber ID.
Vehicle Identification Number	-	Varies	The scan tool displays the Vehicle Identification Number.

Rear Differential Clutch Control Module Scan Tool Configuration and Setup

Scan Tool Configuration	Description
AWD Disable-by-Malfunction Counter Reset	This function allows the technician to reset the temporary inhibit and ignition cycle counter.

Rear Differential Clutch Control Module Scan Tool Output Controls

Output Control	Description
Pump Motor	This function allows the technician to command the pump motor ON and OFF.
Rear Drive Clutch Solenoid Valve	This function allows the technician to enable the AWD solenoid control ON and OFF.
Rear Differential Clutch Solenoid Valve	This function allows the technician to enable the rear eLSD solenoid control ON and OFF.
Rear Differential Hydraulic System Service Bleed	This function allows the technician to perform the Rear Differential Hydraulic System Service Bleed. Refer to Rear Differential Hydraulic System Service Fill/Bleed .

K60 STEERING COLUMN LOCK MODULE: SCAN TOOL INFORMATION

Scan Tool Data Parameters

Parameter	Expected Value	Description
Operating Conditions: Ignition ON		
Column Lock Status	Varies	The scan tool displays Failed, Unknown, Locked and Unlocked. The scan tool displays the current state of the column lock.
Turn Steering Wheel, Start Vehicle Again Display Message	On/Off	The scan tool displays On/Off. If the wheels are against a curb, the lock pin may not be able to pull out. A message for the driver that is displayed on the Driver Information Center. The scan tool displays the need to turn the steering wheel, turn off the vehicle and then restart the vehicle.
Steering Column Lock Indicator	On/Off	The scan tool displays On/Off. The scan tool displays the current state of the column lock.
Steering Column Lock Pin Position	counts	The scan tool displays the current counts of the column lock pin position.

Power Steering Control Module Scan Tool Output Controls

Output Control	Description
Enter Security Code	Triggers the programming for the immobilizer security code.

K71 TRANSMISSION CONTROL MODULE: SCAN TOOL INFORMATION

The Transmission Control Module Scan Tool Data List contains all transmission related parameters that are available on the scan tool. A given parameter may appear in any one of the data lists, and in some cases may appear more than once, or in more than one data list in order to group certain related parameters together.

The values below represent a typical display recorded from a properly functioning system.

Only the parameters listed below are used/referenced in this service information for diagnosis. If a scan tool displays other parameters, those values are not recommended by General Motors for use in diagnosis.

If all values are within the expected value described below, refer to [Symptoms - Automatic Transmission](#) . If A DTC is set refer to [Diagnostic Trouble Code \(DTC\) List - Vehicle](#) .

The scan tool values from a properly functioning transmission may be used for comparison with the transmission you are diagnosing. The values below represent a typical display recorded from a properly functioning system.

Scan Tool Data Parameters

Parameter	System State	Expected Value	Description
Operating Conditions: Engine at idle with the upper radiator hose hot and in closed loop operation, closed throttle, transmission in park, accessories OFF, brake pedal not applied.			
5V Reference 1	Varies	Volts	Indicates the voltage on the reference circuit.
5V Reference 2	Varies	Volts	Indicates the voltage on the reference circuit.
9V Reference 1 Circuit Status	Varies	Not Run/OK/Malfunction	Indicates if the transmission control module has run a diagnostic circuit test and/or displays the present electrical condition of the circuit.
9V Reference 2 Circuit Status	Varies	Not Run/OK/Malfunction	Indicates if the transmission control module has run a diagnostic circuit test and/or displays the present electrical condition of the circuit.
Calculated Line Pressure	Varies	kPa/PSI	Indicates a calculated line pressure value based on various engine and transmission input data.
Calculated Throttle Position	Varies	%	Indicates a calculated value based on accelerator pedal position and throttle position. Zero percent indicates idle position and 100 percent indicates wide open throttle.
Control Module Voltage Signal	Varies	Voltage	Indicates the voltage value on the signal circuit to the Transmission Control Module.
Current Gear	Varies	1 - 10, Varies from transmission model	Indicates the current gear range the transmission has obtained.

Parameter	System State	Expected Value	Description
Driver Shift Control	Varies	Active/Inactive	Indicates the driver has taken control of shifting the transmission.
Driver Shift Control Mode	Varies	Inactive/Upshift/Downshift	Indicates to the transmission control module the driver has taken control of transmission shifting by placing the gear shift lever in manual mode. Transmission control module will allow manual shifting within limits.
Engine Coolant Temperature	Varies	Â°C (Â°F)	Indicates to the transmission control module the temperature of the engine coolant temperature, sent from the engine control module.
Engine Speed	Varies	RPM	Indicates the rotational speed of the engine crankshaft in revolutions per minute.
Engine Torque	Varies	N.m	Indicates a calculated value based on various engine input and output data values.
Gear Command	Varies	1 - 10, Varies from transmission model	Indicates the current gear range the transmission control module has commanded.
Gear Ratio	Varies	9 Speed FWD Transmission 1st = 4.689 2nd = 3.306 3rd = 3.012 4th = 2.446 5th = 1.923 6th = 1.446 7th = 1.000 8th = 0.747 9th = 0.617 Rev. = -2.960	Indicates a calculated value based on the RPM values of the ISS, Intermediate SS and OSS.
High Side Driver 1 or 2 Circuit High Voltage Test Status	Varies	Not Run/OK/Malfunction	Indicates if the transmission control module has run a diagnostic circuit test and/or displays the present electrical condition of the circuit.

Parameter	System State	Expected Value	Description
High Side Driver 1 or 2 Circuit Low Voltage Test Status	Varies	Not Run/OK/Malfunction	Indicates if the transmission control module has run a diagnostic circuit test and/or displays the present electrical condition of the circuit.
High Side Driver 1 or 2 Circuit Open Test Status	Varies	Not Run/OK/Malfunction	Indicates if the transmission control module has run a diagnostic circuit test and/or displays the present electrical condition of the circuit.
High Side Driver 1 or 2	Varies	ON/OFF	Indicates the commanded state of the transmission control module high side drivers.
Ignition 1 Signal	ON	ON/OFF	Indicates the transmission control module has received the ignition 1 signal.
Ignition Accessory Signal	ON	ON/OFF	Indicates the transmission control module has received the ignition accessory voltage signal.
Ignition Voltage	Varies	Volts	Indicates the available ignition voltage to the transmission control module.
Power Mode	Varies	OFF/Accessory/Run/Crank Request	Indicates to the transmission control module the present position of the ignition switch.
TCC Slip Speed	Varies	RPM	Indicates the RPM difference between the torque converter impeller and the torque converter turbine when the converter clutch is applied.
Transmission Accumulator Solenoid Valve	Varies	ON/OFF	Indicates if the transmission control module has commanded a transmission control solenoid either ON or OFF.
Transmission Accumulator Solenoid Valve Control Circuit High Voltage Test Status	OK	Not Run/OK/Malfunction	Indicates if the transmission control module has run a diagnostic circuit test and/or displays the present electrical condition of the circuit.

Parameter	System State	Expected Value	Description
Transmission Accumulator Solenoid Valve Control Circuit Low Voltage Test Status	OK	Not Run/OK/Malfunction	Indicates if the transmission control module has run a diagnostic circuit test and/or displays the present electrical condition of the circuit.
Transmission Accumulator Solenoid Valve Control Circuit Open Test Status	OK	Not Run/OK/Malfunction	Indicates if the transmission control module has run a diagnostic circuit test and/or displays the present electrical condition of the circuit.
Transmission Control Solenoid Valve 1 - 8 Calibration Data	Valid	Valid/Invalid/Not Programmed	Indicates if the calibration data for the programmable solenoid is programmed or programmed correctly.
Transmission Control Solenoid Valve 1 - 8 Calibration Data	Valid	Valid/Invalid/Not Programmed	Indicates if the solenoids are programmed with the correct calibration data.
Transmission Control Solenoid Valve 1 - 8 Current Command	Varies	Amperage	Indicates the commanded amperage flowing through the solenoid at any given time.
Transmission Control Solenoid Valve 1 - 9	Varies	OFF/ON	Indicates if the transmission control module has commanded a transmission control solenoid either ON or OFF.
Transmission Control Solenoid Valve 1 - 10 Control Circuit High Voltage Test Status	Varies	Not Run/OK/Malfunction	Indicates if the transmission control module has run a diagnostic circuit test and/or displays the present electrical condition of the circuit.
Transmission Control Solenoid Valve 1 - 10 Control Circuit Low Voltage Test Status	Varies	Not Run/OK/Malfunction	Indicates if the transmission control module has run a diagnostic circuit test and/or displays the present electrical condition of the circuit.
Transmission Control Solenoid Valve 1 - 10 Control Circuit Open Test Status	Varies	Not Run/OK/Malfunction	Indicates if the transmission control module has run a diagnostic circuit test and/or displays the present electrical condition of the circuit.

Parameter	System State	Expected Value	Description
Transmission Fluid Temperature	Varies	Â°C (Â°F)	Indicates the temperature of the transmission fluid in the transmission oil pan.
Transmission Hot Mode	NO	No/Yes	Indicates if the transmission control module has commanded hot mode operation.
Transmission Input Speed Sensor	Varies	RPM	Indicates the rotational speed of the transmission input shaft in revolutions per minute.
Transmission Intermediate Speed Sensor	Varies	RPM	Indicates the rotational speed of the transmission 3-8 and 5-7-R clutch hub assembly.
Transmission Output Speed Sensor	Varies	RPM	Indicates the rotational speed of the transmission output shaft in revolutions per minute.
Transmission Range Sensor 1	Varies	%	Indicates the percentage of duty cycle of the PWM signal from the transmission range switch to the transmission control module.
Transmission Range Sensor 2	Varies	%	Indicates the percentage of duty cycle of the PWM signal from the transmission range switch to the engine control module.
Up and Downshift Switch	Varies	Invalid/Upshift/Downshift/None	Indicates to the transmission control module the driver has requested an upshift or downshift from the Up or Down shift switch, on the shift lever.
Up and Downshift Switch 1	Varies	Invalid/Upshift/Downshift/None	Indicates to the transmission control module the driver has requested an upshift or downshift from the Up or Down shift switch, on the shift lever.
Up and Downshift Switch 2	Varies	Inactive/Upshift/Downshift/None	Indicates to the transmission control module the driver has requested an upshift or downshift from the second additional set of switches, if equipped.

Parameter	System State	Expected Value	Description
Upshift/Downshift	Varies	Inactive/Upshift/Downshift	Indicates to the transmission control module the driver has requested an upshift or downshift.
Vehicle Speed	Varies	km/h (MPH)	Indicates the rotational speed of the drive wheels in km/h (MPH).

Scan Tool Output Control Functions

Parameter	System State	Expected Value	Description
High Side Driver 1 Command	Varies	ON/OFF	Allows you to command the high side driver 1 ON or OFF.
High Side Driver 2 Command	Varies	ON/OFF	Allows you to command the high side driver 2 ON or OFF.
Shift Transmission Gear	Varies	1 - 10	Allows you to upshift the transmission from 1st gear to 8th gear and downshift from 8th to 1st gear. Be aware the transmission control module has limits to the gear selection, protect the engine and transmission.
Transmission Accumulator Pressure Charging	Varies	ON/OFF	Allows you to charge the accumulator with line pressure with the engine running.
Transmission Accumulator Solenoid Valve	Varies	OFF/ON	Allows you to command solenoid OFF or ON.
Transmission Service Fast Learn	-	-	A service fast learn procedure to be perform for any internal component repair/replacement, solenoid/valve body replacement, complete transmission replacement or transmission control module replacement.
Transmission Control Solenoid Valve 1 - 10	Varies	OFF/ON	Allows you to command solenoid valve 1 - 10 OFF or ON.
Transmission Control Solenoid Valve 1 - 10 Current	Varies	0 - 1.2 Amps	Allow you to command the transmission solenoids 1 - 10 electrical current from 0 - 1.2 amps.

K73 TELEMATICS COMMUNICATION INTERFACE CONTROL MODULE: SCAN TOOL INFORMATION

Telematics Communication Interface Control Module Scan Tool Data Parameters

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON			
GPS Data			
Dead Reckoning Calibration Status	-	Calibrated or Not Calibrated	Indicates the dead reckoning calibration status.

Parameter	System State	Expected Value	Description
Position Calibration Method	-	Varies	Indicates the method used to determine current location. (0) GPS, (1) Wheel Speed Dead Reckoning only, (2) Combined Wheel Speed and GPS, (3) Gyro only, (4) Combined Gyro and GPS, (5) No Fix
Month	-	MM	This displays the current month.
Day	-	DD	This displays the current day of the month.
Year	-	YY	This displays the current year.
Hour	-	HH	This displays the GPS current hour (24 hour format - GMT).
Minute	-	MM	This displays the GPS current minute.
Second	-	SS	This displays the GPS current second.
Number of Satellites Tracked	-	Varies	The scan tool displays the number of satellites being tracked by the telematics communication interface control module.
Signal Strength Data			
GSM Signal Strength	-	Varies	The scan tool displays 0 - 127. This is the telematics communication interface control module signal strength.
Current Public Land Mobile Network	-	Varies	Identifies the cellular communications network currently in use by the telematics communication interface control module. Each network has a unique decimal number assigned to it for identification.
Bluetooth Data			
Bluetooth	-	Enabled	Indicates if the Bluetooth system is enabled or disabled.
Bluetooth Link Status	-	Varies	Indicates the current link status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active
Bluetooth Link Quality	-	Varies	The scan tool displays a decimal value between 0 and 255.

Parameter	System State	Expected Value	Description
Bluetooth Phone to Telematics Communication Interface Control Module Authentication Status	-	Active or Inactive	Displays the bluetooth phone to telematics communication interface control module authentication status.
Bluetooth Phone to Telematics Communication Interface Control Module Communication Status	-	Active or Inactive	Displays the bluetooth phone to telematics communication interface control module status.
Bluetooth Phone Voice Recognition Status	-	Active or Inactive	Displays the bluetooth phone to voice recognition status.
WLAN Device Data			
Off-Board Navigation	-	Enabled or Disabled	Indicates if Off-Board Navigation is enabled or disabled
Wireless LAN	-	Enabled or Disabled	Indicates the capability of the wireless communication of the Telematics Communication Interface Control Module
Number of WLAN Devices	-	Varies	Indicates the number of Wireless devices present
Active WLAN 2.4 GHz Channel	-	Varies	Indicates the active Wireless channel being used on the 2.4 GHz frequency
WLAN Link Status	-	Radio System - Never, Remembered but Not Associated or Associated	Indicates the link status of the Telematics Communication Interface Control Module and Infotainment system
GSM Signal Strength	-	Varies	State for Received Signal Strength Indicator
Mobile Communication Standard	-	2G, 3G, 4G or 4G LTE	State for Cellular Data Connection. Indicates the currently used data rate speed
WLAN Password	-	Varies	Indicates the Telematics Communication Interface Control Module Wireless Password
WLAN SSID (Service Set Identifier)	-	Varies	Indicates the Telematics Communication Interface Control Module Wireless Service Name
WLAN Encryption - WPA (Wi - Fi Protected Access)	-	Active or Inactive	Indicates if the WLAN Encryption - WPA (Wi - Fi Protected Access) is Active or Inactive
WLAN Encryption - WPA2 (Wi - Fi Protected Access II)	-	Active or Inactive	Indicates if the WLAN Encryption - WPA2 (Wi - Fi Protected Access II) is Active or Inactive
WLAN Encryption - AES (Advanced Encryption Standard)	-	Active or Inactive	Indicates if the WLAN Encryption - AES (Advanced Encryption Standard) is Active or Inactive

Parameter	System State	Expected Value	Description
WLAN Encryption - TKIP (Temporal Key Integrity Protocol)	-	Active or Inactive	Indicates if the WLAN Encryption - TKIP (Temporal Key Integrity Protocol) is Active or Inactive

Telematics Communication Interface Control Module Scan Tool Output Controls

Output Control	Description
B1000 Information	This shows the data recorded when DTC B1000 was set in the telematics communication interface control module.
Green Indicator	The telematics communication interface control module illuminates the green LED when ON is selected.
Phone Call Test	When ON is selected, telematics communication interface control module commands OnStar to connect to the OnStar Center.
Red Indicator	The telematics communication interface control module illuminates the red LED when ON is selected.
Preferred Roaming List Update	The telematics communication interface control module performs a preferred roaming list (PRL) update when this is selected.
Remote Vehicle Speed Limiting Reset	This function resets the speed limiting feature.

K74 HUMAN MACHINE INTERFACE CONTROL MODULE: SCAN TOOL INFORMATION

Human Machine Interface Control Module Scan Tool Data Parameters

Parameter	Expected Value	Definition
Operating Conditions: Ignition ON		
Battery Voltage	Varies	The scan tool displays volts. This is the voltage at the input to the human machine interface control module.
System Power Mode	Run	The scan tool displays Off, Accessory, Run or Crank Request. This is the vehicle power mode status as received by the human machine interface control module via high speed GMLAN.
Date From GPS	Varies	The scan tool displays the current date (Month, Day, and Year) acquired from the GPS satellites.
Time From GPS	Varies	The scan tool displays the current time acquired from the GPS satellites in 24 hour format HHMMSS
Human Machine Interface Control Module Microphone 1	Not Present	The scan tool displays Present or Not Present. Calibration indication that a primary microphone is present and connected to the human machine interface control module. The microphone input is ported to the MOST buss to the amplifier (for volume compensation, when required) instead of directly wired microphone to the amplifier.
Human Machine Interface Control Module Microphone 2	Not Present	The scan tool displays Present or Not Present. Calibration indication that a secondary microphone is present and connected to the human machine interface control module. The microphone input is ported to the MOST buss to the amplifier (for volume compensation, when required) instead of directly wired microphone to the amplifier.
Human Machine Interface Control Module Powers GPS	Not Present	The scan tool displays Present or Not Present. Calibration Indication that a GPS antenna input is primary to the human machine interface control module and powered by the human machine interface control module instead of shared with another vehicle location module.

Parameter	Expected Value	Definition
Rearview Camera	Varies based on vehicle equipment	The scan tool displays Present or Not Present. Calibration indication that the system is calibrated for rear view camera operation.
Rearview Camera Display	Inactive	The scan tool displays Active or Inactive. Indication that rear camera views are actively being displayed.
Front Touch Screen	Varies based on vehicle equipment	The scan tool displays Present or Not Present. Calibration indication that the system is calibrated for front touch screen operation.
USB Receptacle 1	Varies based on vehicle equipment	The scan tool displays Present or Not Present. Calibration indication that a USB receptacle is connected to the human machine interface control module USB port 1. Does not indicate if a device is connected to the USB receptacle.
USB Receptacle 2	Varies based on vehicle equipment	The scan tool displays Present or Not Present. Calibration indication that a USB receptacle is connected to the human machine interface control module USB port 2. Does not indicate if a device is connected to the USB receptacle.
Memory Card Receptacle	Varies based on vehicle equipment	The scan tool displays Present or Not Present. Calibration indication that a SD Card receptacle input is present. Does not indicate the receptacle is occupied with digital media.
USB Hub 1	Varies based on vehicle equipment	The scan tool displays Present or Not Present. Calibration indication that a hub device is connected to the human machine interface control module USB port 1.
USB Hub 2	Varies based on vehicle equipment	The scan tool displays Present or Not Present. Calibration indication that a hub device is connected to the human machine interface control module USB port 2.
USB Hub 1 Number of Ports	Varies based on vehicle equipment	The scan tool displays the number of receptacles (USB and/or memory card receptacles) present in the hub device connected to the human machine interface control module USB port 1.
USB Hub 2 Number of Ports	Varies based on vehicle equipment	The scan tool displays the number of receptacles (USB and/or memory card receptacles) present in the hub device connected to the human machine interface control module USB port 1.
Valet Mode	Inactive	The scan tool displays Active or Inactive. Actual indication that Valet Parking Mode which limits vehicle features (speed limiting, no disc eject, trunk lock, etc.), is active or inactive.
Human Machine Interface Control Module Theft Protection Armed	VIN Learned	The scan tool displays VIN Learned or No VIN Learned. Actual indication if the human machine interface control module has learned a VIN.
Human Machine Interface Control Module Theft Protection Locked	Inactive	The scan tool displays Active or Inactive. Actual indication the human machine interface control module is in theft protection (limited functionality) mode.
Cooling Fan Speed	Varies	The scan tool displays OFF, or displays the current cooling fan speed expressed in stages from 1 to 6. Higher stages indicate increased speed of the cooling fan.
Control Module Temperature Sensor 1	Varies	The scan tool displays the actual value of the human machine interface control module circuit board temperature sensor 1.

Parameter	Expected Value	Definition
Control Module Temperature Sensor 2	Varies	The scan tool displays the actual value of the human machine interface control module circuit board temperature sensor 2.
End Model Part Number	Varies	The scan tool displays the end software module part number.
Boot Software Part Number	Varies	The scan tool displays the boot software ID number.
Calibration Part Number 1	Varies	The scan tool displays the software calibration part number 1.
Calibration Part Number 2	Varies	The scan tool displays the software calibration part number 2.
Calibration Part Number 3	Varies	The scan tool displays the software calibration part number 3.
Calibration Part Number 4	Varies	The scan tool displays the software calibration part number 4.
Calibration Part Number 5	Varies	The scan tool displays the software calibration part number 5.
Calibration Part Number 6	Varies	The scan tool displays the software calibration part number 6.
Calibration Part Number 7	Varies	The scan tool displays the software calibration part number 7.
Calibration Part Number 8	Varies	The scan tool displays the software calibration part number 8.
Calibration Part Number 9	Varies	The scan tool displays the software calibration part number 9.
Calibration Part Number 10	Varies	The scan tool displays the software calibration part number 10.
Calibration Part Number 11	Varies	The scan tool displays the software calibration part number 11.
Software Module 11 Identifier Alpha Code	Varies	The scan tool displays a two character software identifier.
Calibration Part Number 12	Varies	The scan tool displays the software calibration part number 12.
Software Module 12 Identifier Alpha Code	Varies	The scan tool displays a two character software identifier.
Calibration Part Number 13	Varies	The scan tool displays the software calibration part number 13.
Calibration Part Number 14	Varies	The scan tool displays the software calibration part number 14.
Software Module 14 Identifier Alpha Code	Varies	The scan tool displays a two character software identifier.
Calibration Part Number 15	Varies	The scan tool displays the software calibration part number 15.
Calibration Part Number 16	Varies	The scan tool displays the software calibration part number 16.
Calibration Part Number 17	Varies	The scan tool displays the software calibration part number 17.
Calibration Part Number 18	Varies	The scan tool displays the software calibration part number 18.
Calibration Part Number 19	Varies	The scan tool displays the software calibration part number 19.
Software Freeze Date	Varies	The scan tool displays the software date in DD.MM.YYYY format.
Hardware Production Date	Varies	The scan tool displays the ECU hardware production date in DD.MM.YYYY format.

Parameter	Expected Value	Definition
Manufacturer Enable Counter	0	The scan tool displays the counter value. This counter is used for manufacturing purposes only.
VIN Digits 2-17	Varies	The scan tool displays the learned VIN digits 2-17.
Diagnostic Data Identifier	Varies	The scan tool displays the 4 character alphanumeric device ID.

Wireless Access Data Scan Tool Data Parameters

Parameter	Expected Value	Definition
Operating Conditions: Ignition ON		
Number of Paired Bluetooth Devices Present	Varies	Number of paired (authenticated) devices detected and present but may or may not be connected.
Bluetooth Device Connection Status	Varies	The scan tool displays Connected or Not Connected. The parameter indicates if a Bluetooth device is currently connected to the system.
Bluetooth Device Hands Free Call Status	Varies	The scan tool displays Call Active or Inactive. Indicates if the currently connected Bluetooth device is actively in a hands free phone call.
Bluetooth Device Audio Streaming Status	Varies	The scan tool displays Active or Inactive. Indicates if the currently connected Bluetooth device is actively streaming audio.
Bluetooth Device Internet Connection Status	Varies	The scan tool displays Active or Inactive. Indicates if the currently connected Bluetooth device is actively connected to the Internet via the device's internet connection.
Bluetooth Device Supports Hands Free	Varies	The scan tool displays Yes or No. Indicates if the currently connected Bluetooth device supports the Bluetooth Hands Free profile.
Bluetooth Device Supports Phone Book Access	Varies	The scan tool displays Yes or No. Indicates if the currently connected Bluetooth device supports the Bluetooth Phone Book Access profile.
Bluetooth Device Supports Text Message Access	Varies	The scan tool displays Yes or No. Indicates if the currently connected Bluetooth device supports the Bluetooth Text Message Access profile.
Bluetooth Device Supports Serial Port	Varies	The scan tool displays Yes or No. Indicates if the currently connected Bluetooth device supports the Bluetooth Serial Port profile.
Bluetooth Device Supports Navigation	Varies	The scan tool displays Yes or No. Indicates if the currently connected Bluetooth device supports the Bluetooth Portable Navigation profile.
Bluetooth Device Supports Audio Streaming using Audio Video Remote Control Profile 1.0	Varies	The scan tool displays Yes or No. Indicates if the currently connected Bluetooth device supports the Bluetooth Audio Streaming AVRCP (Audio/Video Remote Control Profile) 1.0. The Audio/Video Remote Control Profile is a Bluetooth profile that allows Bluetooth devices to control media playback on remote devices. It is typically used with A2DP devices for next/previous track selection and pause/play functions.
Bluetooth Device Supports Audio Streaming using Audio Video Remote Control Profile 1.3	Varies	The scan tool displays Yes or No. Indicates if the currently connected Bluetooth device supports the Bluetooth Audio Streaming AVRCP (Audio/Video Remote Control Profile) 1.3. The Audio/Video Remote Control Profile is a Bluetooth profile that allows Bluetooth devices to control media playback on remote devices. It is typically used with A2DP devices for next/previous track selection and pause/play functions.

Parameter	Expected Value	Definition
Bluetooth Device Supports Internet Access - Dial-Up Network	Varies	The scan tool displays Yes or No. Indicates if the currently connected Bluetooth device supports internet access only though the device's dial-up network.
Bluetooth Device Supports Internet Access - Personal Area Network	Varies	The scan tool displays Yes or No. Indicates if the currently connected Bluetooth device supports internet access only though the device's personal area network.
Bluetooth Device Supports Internet Access - Dial-Up/Personal Area Network	Varies	The scan tool displays Yes or No. Indicates if the currently connected Bluetooth device supports internet access though the device's dial-up or personal area network.
Bluetooth Device Class - Phone	Varies	The scan tool displays Yes or No. Indicates if the currently connected Bluetooth device class is identified as a phone.
Bluetooth Device Class - Audio/Video	Varies	The scan tool displays Yes or No. Indicates if the currently connected Bluetooth device class is identified as an audio and/or video device.
Bluetooth Device Class - Computer	Varies	The scan tool displays Yes or No. Indicates if the currently connected Bluetooth device class is identified as a computing device.
Bluetooth Device Class - LAN or Network Access Point	Varies	The scan tool displays Yes or No. Indicates if the currently connected Bluetooth device class is identified as a Local Area Network (LAN) or Network Access Point (NAP) device.
WLAN Link Quality	Counts	The scan tool displays the connection quality in counts, with higher numbers indicating a better connection.
App 1 Identifier	Varies	The scan tool displays the numeric identifier for the installed internet application number 1
App 1 Version	Varies	The scan tool displays the version number for the installed internet application number 1
App 2 Identifier	Varies	The scan tool displays the numeric identifier for the installed internet application number 2
App 2 Version	Varies	The scan tool displays the version number for the installed internet application number 2
App 3 Identifier	Varies	The scan tool displays the numeric identifier for the installed internet application number 3
App 3 Version	Varies	The scan tool displays the version number for the installed internet application number 3
App 4 Identifier	Varies	The scan tool displays the numeric identifier for the installed internet application number 4
App 4 Version	Varies	The scan tool displays the version number for the installed internet application number 4
App 5 Identifier	Varies	The scan tool displays the numeric identifier for the installed internet application number 5
App 5 Version	Varies	The scan tool displays the version number for the installed internet application number 5
App 6 Identifier	Varies	The scan tool displays the numeric identifier for the installed internet application number 6
App 6 Version	Varies	The scan tool displays the version number for the installed internet application number 6
App 7 Identifier	Varies	The scan tool displays the numeric identifier for the installed internet application number 7
App 7 Version	Varies	The scan tool displays the version number for the installed internet application number 7

Parameter	Expected Value	Definition
App 8 Identifier	Varies	The scan tool displays the numeric identifier for the installed internet application number 8
App 8 Version	Varies	The scan tool displays the version number for the installed internet application number 8

Human Machine Interface Scan Tool Output Controls

Scan Tool Output Control	Description
Info Display Test	This output control will command the test of the Info Display.
Speech Recognition	This output control will command the various Speech Recognition prompts.
Cooling Fan	This output control will command the speed of the Cooling Fan.
Control Module Reset	This output control will command the reset of the Control Module.

K84 KEYLESS ENTRY CONTROL MODULE: SCAN TOOL INFORMATION

Keyless Entry Control Module Scan Tool Data Parameters

Parameter	Expected Value	Definition
Operating Conditions: Ignition ON		
Battery Voltage	V	This parameter indicates the battery voltage as measured at the module
Driver Door Ajar Switch	Active/Inactive	This parameter indicates that the driver door is ajar; it is open, but the safety latch is engaged.
Driver Door Open Switch	Active/Inactive	This parameter indicates that the driver door is more than just ajar, it is open.
Driver Door Unlock Switch	Active/Inactive	This parameter indicates if the driver door is locked or unlocked.
Exterior Driver Door Handle Switch	Active/Inactive	This switch begins the challenge and response to determine if the door should be unlocked. If the vehicle responds correctly to the challenge, the door will be unlocked or unlatched.
Exterior Driver Door Handle Proximity Sensor	Active, Inactive, Fault	This is a capacitive proximity sensor on the exterior of the driver door handle. It allows the user to lock the door by pressing a small rectangle on the outside of the door handle if a key is detected leaving the vehicle.
Passenger Door Open Switch	Active/Inactive	This parameter indicates that the passenger door is more than just ajar, it is open.
Passenger Door Ajar Switch	Active/Inactive	This parameter indicates that the passenger door is ajar; it is open, but the safety latch is engaged.
Exterior Passenger Door Handle Switch	Active/Inactive	This switch begins the challenge and response to determine if the door should be unlocked. If the vehicle responds correctly to the challenge, the door will be unlocked or unlatched.
Exterior Passenger Door Handle Proximity Sensor	Active, Inactive, Fault	This is a capacitive proximity sensor on the exterior of the driver door handle. It allows the user to lock the door by pressing a small rectangle on the outside of the door handle if a key is detected leaving the vehicle.
Left Rear Door Ajar Switch	Active/Inactive	This parameter indicates that the driver's side rear door is ajar; it is open, yet the safety latch is engaged.
Exterior Left Rear Door Handle Switch	Active/Inactive	This switch begins the challenge and response to determine if the door should be unlocked. If the vehicle responds correctly to the challenge, the door will be unlocked or unlatched.

Parameter	Expected Value	Definition
Right Rear Door Ajar Switch	Active/Inactive	This parameter indicates that the passenger's side rear door is ajar; it is open, yet the safety latch is engaged.
Exterior Right Rear Door Handle Switch	Active/Inactive	This switch begins the challenge and response to determine if the door should be unlocked. If the vehicle responds correctly to the challenge, the door will be unlocked or unlatched.
Liftgate Ajar Switch	Active/Not Active	This switch indicates if the rear closure of the vehicle is ajar.
Liftgate Handle Switch	Active/Inactive	This switch begins the challenge and response to determine if the rear closure should be unlatched. If the vehicle responds correctly to the challenge, the rear liftgate will be unlatched.

K85 PASSENGER PRESENCE MODULE: SCAN TOOL INFORMATION

Passenger Presence Module Scan Tool Data Parameters

Parameter	Expected Value	Definition
Operating Conditions: Ignition ON		
Base Model Part Number	Varies, 8 Digit Number	The scan tool displays the part number of the PPS module which is stored in non volatile memory.
Battery Voltage	Volts	The scan tool will display battery voltage.
Calibration Part Number	Varies, 8 Digit Number	The scan tool displays the part number of the calibration file in the PPS module.
End Model Part Number	Varies, 8 Digit Number	The scan tool displays the part number of the PPS module in production.
Manufacturer's Traceability Number	Varies, 16 Digit Number	The scan tool displays the 16 digit traceability number in the PPS module.
Passenger Air Bag Enable/Disable Request by Passenger Presence Module	Disable	The scan tool displays the Passenger Air Bag Enable/Disable Request by Passenger Presence Module.
Passenger Presence Module Primary Key	Hex Value	The scan tool indicates the primary key Hex value.
Passenger Presence System Reporting DTC(s)	Yes/No	The PPS module will report if there are DTCs set in the passenger presence module.
Passenger Seat Occupancy Status	Empty Seat	The scan tool displays Undefined, Empty Seat, Occupied, or Invalid. This is the state of the passenger seat if it is occupied or empty and monitored by the passenger presence system.
Power Mode	Off / Accessory / Run / Crank Request	The scan tool will display the power mode of the vehicle.
Primary Key Status	Valid/Invalid	The scan tool displays Valid if the primary key matches what is stored to memory in the PPS module.
Received Primary Key	Hex Value	The scan tool displays a Hex value indicating the PPS module received primary key data.
Software Part Number	Varies, 8 Digit Number	The scan tool displays the software part number in the PPS module.

K124 ACTIVE SAFETY CONTROL MODULE: SCAN TOOL INFORMATION

Active Safety Control Module Scan Tool Data Parameters

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Parameter	System State	Expected Value	Description
Operating Conditions: Vehicle in Run power mode, engine off.			
Battery Voltage	-	B+	Voltage of vehicle battery.
System Power Mode	-	Run	Vehicle Power Mode
Frontview Camera Mode	-	Inactive	Current state of the Frontview Camera Module
Long Range Radar Mode	-	Inactive	Current state of the Long Range Radar Module
Lane Departure Warning Status Indicator	-	Active	Lane Departure Warning Status
Lane Departure Warning Switch Status	-	Inactive	Current state of Lane Departure Warning Switch
Left Front Short Range Radar Mode	-	Inactive	Current state of the Left Front Short Range Radar Module
Right Front Short Range Radar Mode	-	Inactive	Current state of the Right Front Short Range Radar Module
Rear Short Range Radar Mode	-	Inactive	Current state of the Rear Short Range Radar Module

Adaptive Cruise Control Inhibit History

Parameter	System State	Expected Value	Description
ABS Active	-	No	ABS activation has occurred while braking on a slippery road surface.
Automatic Braking Not Available	-	No	Automatic braking is not available. Verify no communication DTCs are set against the EBCM or Active Safety Control Module. Also verify no DTCs are set in the EBCM.
Automatic Braking Time Exceeded	-	No	The EBCM has detected a problem with the electronic parking brake. Verify no DTCs are set in the EBCM
Automatic Transmission in Reverse or Neutral	-	No	The transmission is in R or N. Transmission must remain in D to activate cruise.
Brake Pedal Applied	-	No	Verify the brakes are not applied while attempting to activate the cruise control.
Chime Not Available	-	No	The infotainment system is not able to produce chime. Verify no DTCs are set in any of the infotainment control modules and verify no communication DTCs are set against any infotainment control modules
Clutch Pedal Applied	-	No	Verify the clutch is not pressed while attempting to activate the cruise control.
Cruise Control Switch Invalid	-	No	Cruise control switch malfunction. Check for DTCs. An intermittent open, short to ground, short to voltage, or an incorrect switch will also cause this concern.
Electric Park Brake Not Available	-	No	Electric park brake malfunction. Verify no DTCs are set in the EBCM or parking brake control module.

Parameter	System State	Expected Value	Description
Frontview Camera Not Available	-	No	The frontview camera module is temporarily unavailable due to environmental conditions. Check for camera blockage such as water splash, temperature, voltage, or fogging between inner glass and camera.
Instrument Cluster Not Available	-	No	Verify no DTCs are set in the instrument cluster.
Long Range Radar Not Available	-	No	The long range radar module is temporarily unavailable due to environmental conditions. Check for radar blockage such as water splash, temperature, voltage, or RF disturbance.
Manual Transmission in Reverse or Neutral	-	No	The transmission is in R or N. Ensure the vehicle is moving in a forward gear before attempting to set adaptive cruise control.
Torque Command Denied	-	No	An active safety control module torque command has been denied. Refer to disable reasons in the ECM for cause.
Traction Control Active	-	No	The traction control system has been activated due to poor driving conditions or aggressive driving.
Vehicle Speed Too High	-	No	The vehicle speed is too fast to activate cruise control. Refer to the vehicle owner's manual.
Vehicle Speed Too Low	-	No	The vehicle speed is too slow to activate cruise control. Refer to the vehicle owner's manual.
Vehicle Stability System Active	-	No	The electronic stability control has been activated due to poor driving conditions or aggressive driving.
Odometer	-	-	Odometer reading in km when inhibit condition was set.

Adaptive Cruise Control Disengage History

Parameter	System State	Normal Value	Description
ABS Active	-	No	ABS activation has occurred while braking on a slippery road surface.
Accelerator Pedal Position Signal Invalid	-	No	The accelerator pedal position signal is intermittent, has a short to ground, short to voltage, or open, or an incorrect sensor is installed. Check for DTCs.
Advanced Parking Assist Active	-	No	Advanced parking assist guidance mode was activated. Once a parking spot is found and vehicle is stopped, vehicle goes into guidance mode to complete the parking maneuver.
Air Bag Deployed	-	No	Cruise control will not function if the active safety control module has detected that an air bag has been deployed.

Parameter	System State	Normal Value	Description
Automatic Braking Limited Functionality	-	No	The EBCM will not provide auto braking. Check for DTCs in the EBCM and verify the EBCM software is correct.
Automatic Braking Malfunction	-	No	The EBCM will not provide auto braking. If a stability control system exists, diagnose this malfunction first. If the stability control system is functioning normally, check for DTCs in active safety control module. Check for a possible communication concern between active safety control module and EBCM.
Automatic Braking Not Available	-	No	Automatic braking is not available. If this is accompanied by an inoperative stability control system, make sure to diagnose the stability control system first. Verify no communication DTCs are set against the EBCM or active safety control module. Also verify no DTCs are set in the EBCM or active safety control module. Verify there are no software calibration mismatch.
Automatic Braking Time Exceeded	-	No	The EBCM has detected an issue with the electronic parking brake. Verify no DTCs are set in the EBCM or electronic parking brake control module.
Brake Pedal Position Signal Invalid	-	No	The brake pedal position signal not valid. Check for DTCs in the BCM, ECM, and active safety control module. Check for an intermittent signal, a short to ground, short to voltage, or open, or an incorrect sensor. Verify the software and calibrations for all involved control modules is correct and verify the brake pedal position has been successfully learned.
Brake Pedal Pressure Signal Invalid	-	No	Check the EBCM and active safety control module for DTCs. Check for a communication malfunction between EBCM and active safety control module.
Brake Request Denied	-	No	Check for DTCs in the EBCM and verify the EBCM software is correct.
Cancel Switch Pressed While Vehicle Stopped	-	No	Cruise control turned off. Ensure cruise control switch remains switched on while using adaptive cruise control.
Cancel Switch Pressed While Vehicle Was Stopped with Automatic Brake	-	No	Cruise control turned off. Ensure cruise control switch remains switched on while using adaptive cruise control.
Cruise Control Switched Off	-	No	Cruise control was turned off. Ensure the cruise control switch remains switched on while using adaptive cruise control.

Parameter	System State	Normal Value	Description
Desired Speed Cannot Be Maintained - Too Fast	-	No	Verify the vehicle was not operated in hilly terrain. The vehicle speed too fast to allow cruise control operation. Make sure vehicle speed is less than 177 km/h (110 mph).
Desired Speed Cannot Be Maintained - Too Slow	-	No	Verify the vehicle was not operated in hilly terrain. The vehicle speed too slow to allow cruise control operation. Make sure vehicle speed is greater than 40 km/h (25 mph) when attempting to activate cruise control.
Distance Sensing Cruise Control Not Available	-	No	Check for DTCs and software and hardware part numbers.
Door Ajar	-	No	While at an auto stop, the driver door was opened and the seatbelt was unbuckled. The system will respond by applying the electric parking brake and disengaging the cruise control.
Electric Park Brake Not Available	-	No	Verify proper operation of electric park brake. Verify communications between the electric park brake control module and active safety control module.
Engine Stopped Running	-	No	Ensure the engine remains running while using adaptive cruise control.
Excessive Latitudinal Acceleration Detected	-	No	Poor driving conditions or aggressive driving. Check sensor multi-axis sensor installation, configuration, software and hardware part numbers.
Excessive Longitudinal Acceleration Detected	-	No	Poor driving conditions or aggressive driving. Check sensor multi-axis sensor installation, configuration, software and hardware part numbers.
Excessive Yaw Detected	-	No	Poor driving conditions or aggressive driving. Check sensor multi-axis sensor installation, configuration, software and hardware part numbers.
Frontview Camera Not Available	-	No	Verify properly alignment of the frontview camera module, that there are no DTCs set, and that the software and hardware part numbers are correct. Frontview camera module temporarily unavailable due to environmental condition. Check for camera blockage such as water splash, temperature, voltage, or fogging between inner glass and camera.
Left Non-Driven Wheel Speed Sensor Signal Invalid	-	No	Invalid signal from the wheel speed sensor. Check for DTCs, an intermittent signal caused by a short to ground, short to voltage, or an open, or an incorrect sensor.

Parameter	System State	Normal Value	Description
Long Range Radar Not Available	-	No	Verify properly alignment of the long range radar, that there are no DTCs set, and that the software and hardware part numbers are correct. Long range radar temporarily unavailable due to environmental conditions. Check for radar blockage such as water splash, temperature, voltage, or an RF disturbance.
Manual Transmission in Reverse or Neutral	-	No	The transmission is in R or N. Ensure the vehicle is moving in a forward gear before attempting to set adaptive cruise control.
Park Brake Active	-	No	Ensure the parking brake is not applied while using adaptive cruise control.
Park Brake Signal Invalid	-	No	The electric park brake malfunction. Check for DTCs, intermittent open, short to ground, short to voltage.
Parking Lot Driving Detected	-	No	The active safety control module has determined that the vehicle is in a parking lot. Refrain from driving in a parking lot with adaptive cruise control engaged.
Power Mode Set to Accessory	-	No	Verify the power mode is not changed while cruise control is engaged.
Power Mode Set to Crank	-	No	Verify the power mode is not changed while cruise control is engaged.
Power Mode Set to Off	-	No	Verify the power mode is not changed while cruise control is engaged.
Right Non-Driven Wheel Speed Sensor Signal Invalid	-	No	Invalid signal from the wheel speed sensor. Check for DTCs, an intermittent signal caused by a short to ground, short to voltage, or an open, or an incorrect sensor.
Set/Resume Pressed Simultaneously	-	No	Verify set and resume switches were not pressed at the same time.
Steering Wheel Angle Sensor Signal Invalid	-	No	The steering wheel angle sensor is not calibrated or is otherwise unavailable. Check for DTCs in the EBCM and steering wheel angle sensor. Verify there is not an intermittent open, short to ground, or short to voltage on the steering wheel angle sensor power, ground, or signal circuits. Verify the sensor is the correct part and is properly installed. Check sensor configuration, calibration, software, and hardware part numbers.
Traction Control Active	-	No	The traction control system has been activated due to poor driving conditions or aggressive driving.
Traction Control Set to Off	-	No	Cruise control will not function if traction control is turned off.
Traction Control Set to Off-Road	-	No	Cruise control will not function if traction control is in off-road mode.
Traction Control System Malfunction	-	No	Verify there are no DTCs set in the EBCM.

Parameter	System State	Normal Value	Description
Transfer Case in 4WD	-	No	Ensure the transfer case is not shifted into 4WD high or 4WD low.
Transfer Case Range Invalid	-	No	The transfer case range could not be determined. Verify communication with the transfer case shift control module and that there are no DTCs set in the transfer case shift control module, ECM, transmission control module, and active safety control module.
Vehicle Direction Sensors Data Not Plausible	-	No	Check for DTCs, software and hardware part numbers.
Vehicle Speed Too High	-	No	The vehicle speed too fast to allow cruise control operation. Make sure vehicle speed is less than 177 km/h (110 mph).
Vehicle Speed Too Low	-	No	The vehicle speed too slow to allow cruise control operation. Make sure vehicle speed is greater than 40 km/h (25 mph) when attempting to activate cruise control.
Vehicle Stability System Active	-	No	The electronic stability control has been activated due to poor driving conditions or aggressive driving.
Vehicle Stability System Malfunction	-	No	Verify there are no DTCs set in the EBCM.
Wheel Speed Sensor Signal Invalid	-	No	Invalid signal from the wheel speed sensor. Check for DTCs, an intermittent signal caused by a short to ground, short to voltage, or an open, or an incorrect sensor.
Odometer	-	-	Odometer reading in km when disengage condition was set.

Active Safety Control Module Output Controls

Output Control	Description
Lane Departure Warning Switch Indicator	The active safety control module illuminates the LED in the lane departure warning switch.
Parking Assist Switch LED	The active safety control module illuminates the LED in the parking assist switch.

K157 VIDEO PROCESSING CONTROL MODULE: SCAN TOOL INFORMATION

Video Processing Control Module Scan Tool Parameters

Parameter	System State	Expected Value	Definition
Operating Conditions: Ignition ON			
Display Mode	-	Varies	The scan tool displays Camera View Mode, Camera Learn Mode, or Triggered Video Recorder Mode
Rear Camera Malfunction	-	Varies	The scan tool displays True or False
Right Camera Malfunction	-	Varies	The scan tool displays True or False
Left Camera Malfunction	-	Varies	The scan tool displays True or False
Front Camera Malfunction	-	Varies	The scan tool displays True or False

Parameter	System State	Expected Value	Definition
Next Learn Position	-	Varies	The scan tool displays Mat Position A, Mat Position B, Mat Position C, Mat Position D, Mat Position E, Mat Position F
Learn Status	-	Learn Successful	The scan tool displays Not in Learn Mode, Vertex Passed, Vertex Failed, Learn Successful, Learn Failed.
Current Learn Error Status	-	Varies	The scan tool displays Front Camera Lost Target Board, Right Camera Lost Target Board, Rear Camera Lost Target Board, Left Camera Lost Target Board, Front Camera Detected Vertex is Wrong, Right Camera Detected Vertex is Wrong, Rear Camera Detected Vertex is Wrong, Left Camera Detected Vertex is Wrong, Front Camera Detected Shape is Wrong, Right Camera Detected Shape is Wrong, Rear Camera Detected Shape is Wrong, Left Camera Detected Shape is Wrong, Front Camera Installed out of Tolerance, Right Camera Installed out of Tolerance, Rear Camera Installed out of Tolerance, Left Camera Installed out of Tolerance
Battery Voltage	-	Varies	The scan tool displays the battery voltage
Dealer Alignment Status	-	Varies	The scan tool displays the Dealer Alignment Status
Factory Alignment Status	-	Varies	The scan tool displays the Factory Alignment Status
Vehicle Identification Number (VIN)	-	Varies	The scan tool displays the learned VIN
Repair Shop Code Or Tester Serial Number	-	Varies	The scan tool displays Repair Shop Code Or Tester Serial Number
Programming Date	-	Varies	The scan tool displays Programming Date
Diagnostic Data Identifier	-	Varies	The scan tool displays the Diagnostic Data Identifier
Manufacturer Enable Counter	-	Varies	The scan tool displays the Manufacturer Enable Counter
Module Diagnostic Address	-	Varies	The scan tool displays the Software Module 1 Identifier
Manufacturer's Traceability Number	-	Varies	The scan tool displays the Manufacturer's Traceability Number
Boot Software Part Number	-	Varies	The scan tool displays the Boot Software Part Number
Software Module 1 Identifier	-	Varies	The scan tool displays the Software Module 1 Identifier
Software Module 2 Identifier	-	Varies	The scan tool displays the Software Module 2 Identifier
Software Module 3 Identifier	-	Varies	The scan tool displays the Software Module 3 Identifier
Software Module 4 Identifier	-	Varies	The scan tool displays the Software Module 4 Identifier

Parameter	System State	Expected Value	Definition
Software Module 5 Identifier	-	Varies	The scan tool displays the Software Module 5 Identifier
Software Module 6 Identifier	-	Varies	The scan tool displays the Software Module 6 Identifier
Software Module 7 Identifier	-	Varies	The scan tool displays the Software Module 7 Identifier
End Model Part Number	-	Varies	The scan tool displays the End Model Part Number
Base Model Part Number	-	Varies	The scan tool displays the Base Model Part Number
Software Module 1 Identifier Alpha Code	-	Varies	The scan tool displays the Software Module 1 Identifier Alpha Code
Software Module 2 Identifier Alpha Code	-	Varies	The scan tool displays the Software Module 2 Identifier Alpha Code
End Model Part Number Alpha Code	-	Varies	The scan tool displays the End Model Part Number Alpha Code
Base Model Part Number Alpha Code	-	Varies	The scan tool displays the Base Model Part Number Alpha Code

K182 PARKING ASSIST CONTROL MODULE: SCAN TOOL INFORMATION

NOTE: Due to software and hardware variations, not all information may be applicable.

Parking Assist Control Module Scan Tool Data Parameters - Identification Information

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Engine OFF/Parking Assist ON			
Vehicle Identification Number (VIN)	-	Varies	The scan tool displays the Vehicle Identification Number
Diagnostic Data Identifier	-	Varies	The scan tool displays the Diagnostic Data Identifier
XML Configuration Compatibility Identifier	-	Varies	The scan tool displays the XML Configuration Compatibility Identifier
XML Data File Part Number	-	Varies	The scan tool displays the XML Data File Part Number
XML Data File Alpha Code	-	Varies	The scan tool displays the XML Data File Alpha Code
Module Diagnostic Address	-	Varies	The scan tool displays the Module Diagnostic Address
Manufacturer's Traceability Number	-	Varies	The scan tool displays the Manufacturer's Traceability Number
Software Part Number	-	Varies	The scan tool displays the Software Part Number
Calibration Part Number 2	-	Varies	The scan tool displays the Calibration Part Number 2
End Model Part Number	-	Varies	The scan tool displays the End Model Part Number
Base Model Part Number	-	Varies	The scan tool displays the Base Model Part Number
Software Module 1 Identifier Alpha Code	-	Varies	The scan tool displays the Software Module 1 Identifier Alpha Code
End Model Part Number Alpha Code	-	Varies	The scan tool displays the End Model Part Number Alpha Code

Parameter	System State	Expected Value	Description
Base Model Part Number Alpha Code	-	Varies	The scan tool displays the Base Model Part Number Alpha Code
GMLAN Identification Data - Bus 1 Type	-	Varies	The scan tool displays the GMLAN Identification Data - Bus 1 Type
GMLAN Identification Data - Data Dictionary 1 Version	-	Varies	The scan tool displays the GMLAN Identification Data - Data Dictionary 1 Version
GMLAN Identification Data - GMLAN Kernel 1 Version	-	Varies	The scan tool displays the GMLAN Identification Data - GMLAN Kernel 1 Version
Date Programmed	-	Varies	The scan tool displays the date the module was programmed

Parking Assist Control Module Scan Tool Data Parameters - Park Assist System Data

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Engine OFF/Parking Assist ON			
Power Mode	-	Run	The scan tool displays Off, Accessory, Run or Crank. This is the state of the ignition switch.
Battery Voltage	-	11 - 14 V	The scan tool displays V. This is the current battery voltage.
Parking Assist System Status	-	Enable	The scan tool displays Disable, Enable, Inhibited or Failed. This is the state of the parking assist system.
Parking Assist Chime	-	Varies	The scan tool displays On or Off. On is displayed if there is an object within the measuring range of the object sensors.
Parking Assist Sensors	-	ON	The scan tool displays On or Off.
Calculated Transmission Range	Transmission in reverse	Park	The scan tool displays Park, Reverse, Neutral, Drive or Unknown depending on the state of the commanded gear.
Parking Assist Switch	-	Active/Inactive	The scan tool displays Active or Inactive depending on the state of the parking assist switch.
Advanced Parking Assist Switch	-	Active/Inactive	The scan tool displays Active or Inactive depending on the state of the advanced parking assist switch.
Parking Assist Sensors Reference Voltage	-	7.3 - 12.1 V	The scan tool displays V. This is the amount of voltage being sent to the object sensors.
Parking Assist Switch LED	-	Varies	The scan tool displays On or Off depending on the state of the parking assist switch LED.
Right Side Object Detection Indicator	-	Varies	The scan tool displays a blank, On or Off depending on the state of the right side object detection indicator command status.
Left Side Object Detection Indicator	-	Varies	The scan tool displays a blank, On or Off depending on the state of the left side object detection indicator command status.

Parameter	System State	Expected Value	Description
Advanced Parking Assist Status	-	Standby	The scan tool displays Standby, Active, or Inactive depending on the state of the advanced parking assist.

Parking Assist Control Module Scan Tool Data Parameters - Parking Assist Sensor Data

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Engine OFF/Parking Assist ON			
Parking Assist Sensors	-	ON	The scan tool displays On or Off.
Parking Assist Sensors Reference Voltage	-	7.3 - 12.1 V	The scan tool displays V. This is the voltage being sent to the object sensors.
Left Front Advanced Parking Assist Side Object Sensor	-	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.
Left Front Outer Object Sensor Distance to Object	-	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.
Left Front Inner Object Sensor Distance to Object	-	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.
Right Front Advanced Parking Assist Side Object Sensor	-	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.
Right Front Outer Object Sensor Distance to Object	-	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.
Right Front Inner Object Sensor Distance to Object	-	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.
Left Rear Advanced Parking Assist Side Object Sensor	-	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.
Left Rear Outer Object Sensor Distance to Object	-	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.
Left Rear Inner Object Sensor Distance to Object	-	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.
Right Rear Advanced Parking Assist Side Object Sensor	-	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.
Right Rear Outer Object Sensor Distance to Object	-	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.
Right Rear Inner Object Sensor Distance to Object	-	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.

Parking Assist Control Module Scan Tool Data Parameters - Parking Assist Disable History 1 - 4 Data

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Engine OFF/Parking Assist ON			

Parameter	System State	Expected Value	Description
Parking Assist Disable History 1	-	Varies	The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history.
Parking Assist Disable History 2	-	Varies	The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history.
Parking Assist Disable History 3	-	Varies	The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history.
Parking Assist Disable History 4	-	Varies	The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history.

Parking Assist Control Module Scan Tool Data Parameters - Parking Assist Disable History 5 - 7 Data

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Engine OFF/Parking Assist ON			
Parking Assist Disable History 5	-	Varies	The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history.
Parking Assist Disable History 6	-	Varies	The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history.

Parameter	System State	Expected Value	Description
Parking Assist Disable History 7	-	Varies	The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history.

Parking Assist Control Module Scan Tool Output Controls

Output Control	Description
Park Assist Switch LED	The parking assist control module illuminates the advanced park assist LED of the when commanded from the scan tool.
Clear Disable History Data	The parking assist control module clears the Parking Assist Disable History data when commanded from the scan tool.
Clear Side Object Detection Disable History	The parking assist control module clears the Side Object Detection Disable History data when commanded from the scan tool.
CAN Bus Configuration Learn	The parking assist control module learns the CAN Bus configuration when commanded from the scan tool.
Parking Assist Sensor Learn	The parking assist control module learns the Parking Assist Sensor configuration when commanded from the scan tool.

P16 INSTRUMENT CLUSTER: SCAN TOOL INFORMATION

Instrument Cluster Scan Tool Data Parameters

Parameter	Expected Value	Description
Operating Conditions: Ignition ON		
Battery Voltage	12 - 14 V	The scan tool displays Volts. This is the current battery voltage signal.
Key in Ignition Status	Active/Inactive	The scan tool displays Active or Inactive. This is the state of the key in ignition switch.
Driver Information Center Switch	Varies	The scan tool displays Volts. This is the current driver information center switch input voltage.
Driver Information Center Switch	Inactive	The scan tool displays either Inactive, Up, Down, or Menu. This is the state of the driver information center switch.
Reset Switch	Active/Inactive	The scan tool displays Active or Inactive. This is the state of the reset switch.
Ambient Air Temperature	15Â°C	The scan tool displays outside temperature in Â°C.
Washer Fluid Level Switch	Open	The scan tool displays either Open, Closed, or Not Available.
Odometer Lock Status	Active/Inactive	The scan tool displays Active or Inactive depending on the state of the odometer.
Engine Speed	0 RPM	The scan tool displays the filtered value of engine speed.
Vehicle Speed	0 km/h	The scan tool displays the filtered vehicle speed value.
Fuel Level Sensor	-	The scan tool displays the filtered value of the fuel level.
Engine Coolant Temperature	-	The scan tool displays the filtered value of the engine coolant temperature.
Engine Oil Pressure	-	The scan tool displays the filtered value of the engine oil pressure.

Parameter	Expected Value	Description
Head-Up Display Dimming Level	percentage	The scan tool displays the current dimming intensity level.
Head-Up Display Switch	Head-Up Display Movement, Head Up Page Switch, Head-Up Display Dimming Level	The scan tool displays the current HUD button being pushed.
Steering Wheel Control Switches	Left, Select, Right, Volume UP, Volume Down	The scan tool displays the current steering wheel controls button being pushed.

Instrument Cluster Scan Tool Output Controls

Output Control	Description
Instrument Cluster Gauge Sweep	This function is used to command the gauges to sweep from minimum to maximum.
Driver Information Center Dimming	This function is used to command the dimming of the driver information display to Increase or Decrease by 10%.
Instrument Panel Dimmer Switch	This function is used to command the dimming of the instrument cluster to Increase or Decrease by 10%.
Driver Information Center Segments	This function is used to command the driver information center segments ON and OFF.
All Indicators	This function is used to command all the indicators ON or OFF.
Driver Information Center Options	This function is used to command the driver information center buttons using the scan tool.
CAN Bus Configuration Learn	This function is used to Reset the source ID for low speed CAN Bus communications.
Head Up Display Dimming Level	This function is used to command the dimming of the head up display to Increase or Decrease.
Head Up Display Pattern Check	This function is used to command the head up display to display a striped test pattern.

T3 AUDIO AMPLIFIER: SCAN TOOL INFORMATION

Amplifier Scan Tool Data Parameters

Parameter	Expected Value	Definition
Operating Conditions: Ignition ON		
Power Mode	Run	The scan tool displays Off, Accessory, Run or Crank Request. This is the vehicle power mode status as received via serial data.
Active Noise Cancellation	On	The scan tool displays On or Off. This indicates if the Active Noise Cancellation feature is available and capable of operating.
Engine Speed Signal	Normal	The scan tool displays Normal or Malfunction. This is the status of the dedicated engine speed signal circuit.
Battery Voltage	Varies	The scan tool displays volts. This is the voltage at the input to the amplifier.
Vehicle Speed	0 km/h	The scan tool displays the vehicle speed received by the amplifier in km/h or mph.
Engine Speed	0 RPM	The scan tool displays the current engine speed received by the amplifier in RPM.
Calculated System Temperature	Varies	The scan tool displays the calculated temperature of the amplifier in Â°C or Â°F.
Active Noise Cancellation Speaker Output	OK	The scan tool displays OK or Malfunction. This is the status of the amplifier speaker outputs.

Parameter	Expected Value	Definition
Cylinder Deactivation System Command	Varies	The scan tool displays 8 Cylinder Active, Transitioning from 8 to 4, 4 Cylinder Active, Transitioning from 4 to 8, or Malfunction. This is the status of the cylinder deactivation mode as received via serial data. Malfunction is displayed when this data is not being received, or when the engine is not running.
Microphone Status	Normal	The scan tool displays Normal, Clipped, or Malfunction.
Microphone 1 Input Level	Varies	The scan tool displays counts from 0 to 65, 535. This is the sound level currently being received by the microphone 1, with higher numbers indicating louder sounds.
Microphone 2 Input Level	Varies	The scan tool displays counts from 0 to 65, 535. This is the sound level currently being received by the microphone 2, with higher numbers indicating louder sounds.
Microphone 3 Input Level	Varies	The scan tool displays counts from 0 to 65, 535. This is the sound level currently being received by the microphone 3, with higher numbers indicating louder sounds.
Door Status	Varies	The scan tool displays All Closed or One or More Open. This is the current status of the vehicle access door latches as received via serial data.
Folding Top Status	Varies	The scan tool displays Closed, Open, Malfunction, or Normal. This is the current position of the vehicle folding top (if equipped) as received via serial data.
Calibration Part Number 1	Varies	The scan tool displays the software calibration part number 1.
Calibration Part Number 2	Varies	The scan tool displays the software calibration part number 2.
Calibration Part Number 3	Varies	The scan tool displays the software calibration part number 3.
Calibration Part Number 4	Varies	The scan tool displays the software calibration part number 4.
Calibration Part Number 5	Varies	The scan tool displays the software calibration part number 5.
Calibration Part Number 6	Varies	The scan tool displays the software calibration part number 6.
Calibration Part Number 7	Varies	The scan tool displays the software calibration part number 7.
Calibration Part Number 8	Varies	The scan tool displays the software calibration part number 8.
Calibration Part Number 9	Varies	The scan tool displays the software calibration part number 9.
Calibration Part Number 10	Varies	The scan tool displays the software calibration part number 10.
End Model Part Number	Varies	The scan tool displays the end software module part number.
Diagnostic Data Identifier	Varies	Identifies a supplier and system specific data stream used by diagnostic testers to interpret a diagnostic data stream.

FUEL PUMP POWER CONTROL MODULE SCAN TOOL INFORMATION

Refer to: **K20 Engine Control Module: Scan Tool Information.**

K71 TRANSMISSION CONTROL MODULE: SCAN TOOL INFORMATION

The Transmission Control Module Scan Tool Data List contains all transmission related parameters that are available on the scan tool. A given parameter may appear in any one of the data lists, and in some cases may appear more than once, or in more than one data list in order to group certain related parameters together.

The values below represent a typical display recorded from a properly functioning system.

Only the parameters listed below are used/referenced in this service information for diagnosis. If a scan tool displays other parameters, those values are not recommended by General Motors for use in diagnosis.

If all values are within the expected value described below, refer to [Symptoms - Automatic Transmission](#) . If A DTC is set refer to [Diagnostic Trouble Code \(DTC\) List - Vehicle](#) .

The scan tool values from a properly functioning transmission may be used for comparison with the transmission you are diagnosing. The values below represent a typical display recorded from a properly functioning system.

Scan Tool Data Parameters

Parameter	System State	Expected Value	Description
Operating Conditions: Engine at idle with the upper radiator hose hot and in closed loop operation, closed throttle, transmission in park, accessories OFF, brake pedal not applied.			
5V Reference 1	Varies	Volts	Indicates the voltage on the reference circuit.
5V Reference 2	Varies	Volts	Indicates the voltage on the reference circuit.
9V Reference 1 Circuit Status	Varies	Not Run/OK/Malfunction	Indicates if the transmission control module has run a diagnostic circuit test and/or displays the present electrical condition of the circuit.
9V Reference 2 Circuit Status	Varies	Not Run/OK/Malfunction	Indicates if the transmission control module has run a diagnostic circuit test and/or displays the present electrical condition of the circuit.
Calculated Line Pressure	Varies	kPa/PSI	Indicates a calculated line pressure value based on various engine and transmission input data.
Calculated Throttle Position	Varies	%	Indicates a calculated value based on accelerator pedal position and throttle position. Zero percent indicates idle position and 100 percent indicates wide open throttle.

Parameter	System State	Expected Value	Description
Control Module Voltage Signal	Varies	Voltage	Indicates the voltage value on the signal circuit to the Transmission Control Module.
Current Gear	Varies	1 - 10, Varies from transmission model	Indicates the current gear range the transmission has obtained.
Driver Shift Control	Varies	Active/Inactive	Indicates the driver has taken control of shifting the transmission.
Driver Shift Control Mode	Varies	Inactive/Upshift/Downshift	Indicates to the transmission control module the driver has taken control of transmission shifting by placing the gear shift lever in manual mode. Transmission control module will allow manual shifting within limits.
Engine Coolant Temperature	Varies	°C (°F)	Indicates to the transmission control module the temperature of the engine coolant temperature, sent from the engine control module.
Engine Speed	Varies	RPM	Indicates the rotational speed of the engine crankshaft in revolutions per minute.
Engine Torque	Varies	N.m	Indicates a calculated value based on various engine input and output data values.
Gear Command	Varies	1 - 10, Varies from transmission model	Indicates the current gear range the transmission control module has commanded.
Gear Ratio	Varies	9 Speed FWD Transmission 1st = 4.689 2nd = 3.306 3rd = 3.012 4th = 2.446 5th = 1.923 6th = 1.446 7th = 1.000 8th = 0.747 9th = 0.617 Rev. = -2.960	Indicates a calculated value based on the RPM values of the ISS, Intermediate SS and OSS.

Parameter	System State	Expected Value	Description
High Side Driver 1 or 2 Circuit High Voltage Test Status	Varies	Not Run/OK/Malfunction	Indicates if the transmission control module has run a diagnostic circuit test and/or displays the present electrical condition of the circuit.
High Side Driver 1 or 2 Circuit Low Voltage Test Status	Varies	Not Run/OK/Malfunction	Indicates if the transmission control module has run a diagnostic circuit test and/or displays the present electrical condition of the circuit.
High Side Driver 1 or 2 Circuit Open Test Status	Varies	Not Run/OK/Malfunction	Indicates if the transmission control module has run a diagnostic circuit test and/or displays the present electrical condition of the circuit.
High Side Driver 1 or 2	Varies	ON/OFF	Indicates the commanded state of the transmission control module high side drivers.
Ignition 1 Signal	ON	ON/OFF	Indicates the transmission control module has received the ignition 1 signal.
Ignition Accessory Signal	ON	ON/OFF	Indicates the transmission control module has received the ignition accessory voltage signal.
Ignition Voltage	Varies	Volts	Indicates the available ignition voltage to the transmission control module.
Power Mode	Varies	OFF/Accessory/Run/Crank Request	Indicates to the transmission control module the present position of the ignition switch.
TCC Slip Speed	Varies	RPM	Indicates the RPM difference between the torque converter impeller and the torque converter turbine when the converter clutch is applied.
Transmission Accumulator Solenoid Valve	Varies	ON/OFF	Indicates if the transmission control module has commanded a transmission control solenoid either ON or OFF.

Parameter	System State	Expected Value	Description
Transmission Accumulator Solenoid Valve Control Circuit High Voltage Test Status	OK	Not Run/OK/Malfunction	Indicates if the transmission control module has run a diagnostic circuit test and/or displays the present electrical condition of the circuit.
Transmission Accumulator Solenoid Valve Control Circuit Low Voltage Test Status	OK	Not Run/OK/Malfunction	Indicates if the transmission control module has run a diagnostic circuit test and/or displays the present electrical condition of the circuit.
Transmission Accumulator Solenoid Valve Control Circuit Open Test Status	OK	Not Run/OK/Malfunction	Indicates if the transmission control module has run a diagnostic circuit test and/or displays the present electrical condition of the circuit.
Transmission Control Solenoid Valve 1 - 8 Calibration Data	Valid	Valid/Invalid/Not Programmed	Indicates if the calibration data for the programmable solenoid is programmed or programmed correctly.
Transmission Control Solenoid Valve 1 - 8 Calibration Data	Valid	Valid/Invalid/Not Programmed	Indicates if the solenoids are programmed with the correct calibration data.
Transmission Control Solenoid Valve 1 - 8 Current Command	Varies	Amperage	Indicates the commanded amperage flowing through the solenoid at any given time.
Transmission Control Solenoid Valve 1 - 9	Varies	OFF/ON	Indicates if the transmission control module has commanded a transmission control solenoid either ON or OFF.
Transmission Control Solenoid Valve 1 - 10 Control Circuit High Voltage Test Status	Varies	Not Run/OK/Malfunction	Indicates if the transmission control module has run a diagnostic circuit test and/or displays the present electrical condition of the circuit.
Transmission Control Solenoid Valve 1 - 10 Control Circuit Low Voltage Test Status	Varies	Not Run/OK/Malfunction	Indicates if the transmission control module has run a diagnostic circuit test and/or displays the present electrical condition of the circuit.

Parameter	System State	Expected Value	Description
Transmission Control Solenoid Valve 1 - 10 Control Circuit Open Test Status	Varies	Not Run/OK/Malfunction	Indicates if the transmission control module has run a diagnostic circuit test and/or displays the present electrical condition of the circuit.
Transmission Fluid Temperature	Varies	Â°C (Â°F)	Indicates the temperature of the transmission fluid in the transmission oil pan.
Transmission Hot Mode	NO	No/Yes	Indicates if the transmission control module has commanded hot mode operation.
Transmission Input Speed Sensor	Varies	RPM	Indicates the rotational speed of the transmission input shaft in revolutions per minute.
Transmission Intermediate Speed Sensor	Varies	RPM	Indicates the rotational speed of the transmission 3-8 and 5-7-R clutch hub assembly.
Transmission Output Speed Sensor	Varies	RPM	Indicates the rotational speed of the transmission output shaft in revolutions per minute.
Transmission Range Sensor 1	Varies	%	Indicates the percentage of duty cycle of the PWM signal from the transmission range switch to the transmission control module.
Transmission Range Sensor 2	Varies	%	Indicates the percentage of duty cycle of the PWM signal from the transmission range switch to the engine control module.
Up and Downshift Switch	Varies	Invalid/Upshift/Downshift/None	Indicates to the transmission control module the driver has requested an upshift or downshift from the Up or Down shift switch, on the shift lever.
Up and Downshift Switch 1	Varies	Invalid/Upshift/Downshift/None	Indicates to the transmission control module the driver has requested an upshift or downshift from the Up or Down shift switch, on the shift lever.

Parameter	System State	Expected Value	Description
Up and Downshift Switch 2	Varies	Inactive/Upshift/Downshift/None	Indicates to the transmission control module the driver has requested an upshift or downshift from the second additional set of switches, if equipped.
Upshift/Downshift	Varies	Inactive/Upshift/Downshift	Indicates to the transmission control module the driver has requested an upshift or downshift.
Vehicle Speed	Varies	km/h (MPH)	Indicates the rotational speed of the drive wheels in km/h (MPH).

Scan Tool Output Control Functions

Parameter	System State	Expected Value	Description
High Side Driver 1 Command	Varies	ON/OFF	Allows you to command the high side driver 1 ON or OFF.
High Side Driver 2 Command	Varies	ON/OFF	Allows you to command the high side driver 2 ON or OFF.
Shift Transmission Gear	Varies	1 - 10	Allows you to upshift the transmission from 1st gear to 8th gear and downshift from 8th to 1st gear. Be aware the transmission control module has limits to the gear selection, protect the engine and transmission.
Transmission Accumulator Pressure Charging	Varies	ON/OFF	Allows you to charge the accumulator with line pressure with the engine running.
Transmission Accumulator Solenoid Valve	Varies	OFF/ON	Allows you to command solenoid OFF or ON.
Transmission Service Fast Learn	-	-	A service fast learn procedure to be perform for any internal component repair/replacement, solenoid/valve body replacement, complete transmission replacement or transmission control module replacement.
Transmission Control Solenoid Valve 1 - 10	Varies	OFF/ON	Allows you to command solenoid valve 1 - 10 OFF or ON.
Transmission Control Solenoid Valve 1 - 10 Current	Varies	0 - 1.2 Amps	Allow you to command the transmission solenoids 1 - 10 electrical current from 0 - 1.2 amps.