2007 ENGINE

Engine Controls and Fuel - 4.8L, 5.3L, 6.0L and 6.2L - Avalanche, Escalade, Suburban, Tahoe & Yukon

DIAGNOSTIC STARTING POINT - ENGINE CONTROLS

Begin the system diagnosis with **Diagnostic System Check - Vehicle** . The Diagnostic System Check - Vehicle will provide the following information:

- The identification of the control modules which command the system
- The ability of the control modules to communicate through the serial data circuit
- The identification of any stored DTCs and the codes status

The use of the Diagnostic System Check - Vehicle will identify the correct procedure for diagnosing the system and where the procedure is located.

SCAN TOOL DATA LIST

The Engine Scan Tool Data List contains all engine related parameters that are available on the scan tool. The list is arranged in alphabetical order. 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.

Use the Engine Scan Tool Data List only after the following is determined:

- The Diagnostic System Check - Vehicle is completed.
- No diagnostic trouble codes (DTCs)
- On-board diagnostics are functioning properly.

Scan tool values from a properly running engine may be used for comparison with the engine you are diagnosing. The Engine Scan Tool Data List represents values that would be seen on a normal running engine at idle.

IMPORTANT: A scan tool that displays faulty data should not be used. The scan tool problem should be reported to the manufacturer. Use of a faulty scan tool can result in misdiagnosis and unnecessary parts replacement.

Only the parameters listed below are referenced in this service manual for use in diagnosis. If all values are within the typical range described below, refer to **Symptoms - Engine Controls** for diagnosis.

The column labeled Data List indicates where a parameter can be located on the scan tool. Refer to the scan tool operating manual for the exact locations of the data lists. The following is a description of each term listed:

All

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The Parameter is in all of the data lists indicated below.

CD

Cylinder Deactivation Data List

EE

Enhanced Evaporative Emission (EVAP) Data List

Eng

Engine Data List

FT

Fuel Trim Data List

HO2S

Heated Oxygen Sensor (HO2S) Data List

Ign

Ignition System Data List

MF

Misfire Data List

OD

Output Driver Data List

TAC

Throttle Actuator Control (TAC) Data List

Scan Tool Data List

Scan Tool Parameter	Data List	Parameter Range/Units	Typical Data Values
Engine Idling/Radiator Hose Hot/Closed Throttle/Park/Closed Loop/Accessories OFF			
5-Volt Reference 1 Circuit Status	EE, Eng, Ign, TAC	OK/Fault	OK
5-Volt Reference 2 Circuit Status	EE, Eng, Ign, TAC	OK/Fault	OK
5-Volt Reference 1	EE, Eng, Ign, TAC	Volts	4.5 V
5-Volt Reference 2	EE, Eng, Ign, TAC	Volts	4.5 V

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A/C Relay Circuit Status	OD	OK, Incomplete, Short B+, Short Gnd/Open	OK/Incomplete
A/C Relay Command	Eng, MF, TAC	On/Off	Varies
Air Flow Calculated	EE, Eng, FT, HO2S, MF, TAC	Grams Per Seconds (g/s)	1-9 g/s @ idle
Air Fuel Ratio	Eng, FT, HO2S	X:1	14.7:1
Ambient Air Temperature	Eng	°C/°F	Varies
APP Indicated Angle	CD, EE, Eng, FT, HO2S, Ign, MF, TAC	0-100%	0
APP Sensor 1	TAC	0-5.0 Volts	0.4-1.0 Volt
APP Sensor 2	TAC	5.0-0 Volts	4.5-4.1 Volts
APP Sensor 1	TAC	0-100%	0%
APP Sensor 2	TAC	0-100%	0%
APP Sensor 1 and 2	TAC	Agree/Disagree	Agree
APP Sensor 1 Indicated Position	TAC	%	0%
APP Sensor 2 Indicated Position	TAC	%	-
APP Sensors	TAC	%	0%
BARO	CD, EE, Eng, FT, HO2S, Ign	kPa	50-104 kPa/ Varies w/Altitude
BPP Circuit Signal	TAC	Applied/Released	-
Brake Booster Pressure	CD, Eng	kPa/in Hg	54-81 kPa (16-24 in Hg)
Brake Booster Pressure	CD	Volts	8.9-3.4 V
Calculated TWC Temp Bank 1	FT, MF	Degrees C/F	315-427°C (600-800°F)
Calculated TWC Temp Bank 2	FT, MF	Degrees C/F	315-427°C (600-800°F)
Catalytic Converter Protection Active	CD, FT, HO2S	Yes/No	No
CKP Active Counter	Ign	0-250 Counts	Varies
CKP Resync Counter	Ign	Counts	0
CKP Sensor	Eng, Ign	RPM	500-700 RPM
CMP Active Counter	Ign	0-250 Counts	Varies
CMP Sensor	Eng, Ign, MF	RPM	1,000-1,400 RPM
Cold Start-Up	Eng, EE	Yes/No	Varies
Cruise Control Active	Eng, TAC	Active/Inactive	Inactive
Cycles of Misfire Data	MF	0-100 Counts	Varies
Cylinder 1-8 IC Circuit Status	OD	OK, Incomplete, Short B+, Short Gnd/Open	OK
Cylinder 1-8 Injector Circuit Status	OD	OK, Incomplete, Short B+, Short Gnd/Open	OK

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Cyl Deactivation Cycles	CD	Counts	Varies
Cyl Deact Performance Test	CD, FT	OK/Fault	OK
Cyl Deact System Command	CD	V4/V8	V8
Cyl 1 Deact Sol Command	CD	Cyl On/Cyl Off	Cyl Off
Cyl 4 Deact Sol Command	CD	Cyl On/Cyl Off	Cyl Off
Cyl 6 Deact Sol Command	CD	Cyl On/Cyl Off	Cyl Off
Cyl 7 Deact Sol Command	CD	Cyl On/Cyl Off	Cyl Off
Cyl 1 Deact Sol CKT Status	CD	OK, Incomplete, Short B+, Short Gnd/Open	OK/Incomplete
Cyl 4 Deact Sol CKT Status	CD	OK, Incomplete, Short B+, Short Gnd/Open	OK/Incomplete
Cyl 6 Deact Sol CKT Status	CD	OK, Incomplete, Short B+, Short Gnd/Open	OK/Incomplete
Cyl 7 Deact Sol CKT Status	CD	OK, Incomplete, Short B+, Short Gnd/Open	OK/Incomplete
Deact Inhibit APP High	CD	Yes/No	No
Deact Inhibit APP Rate High	CD	Yes/No	No
Deact Inhibit Axle Torque Limiting	CD	Yes/No	No
Deact Inhibit Brake Booster Pressure Sensor DTC	CD	Yes/No	No
Deact Inhibit Cyl Deactivation Solenoid DTC	CD	Yes/No	No
Deact Inhibit DCC Override	CD	Yes/No	No
Deact Inhibit ECT Low	CD	Yes/No	No
Deact Inhibit ECT Sensor DTC	CD	Yes/No	No
Deact Inhibit Eng Oil Temperature	CD	Yes/No	No
Deact Inhibit Eng Overtemperature Protection	CD	Yes/No	No
Deact Inhibit Eng RPM	CD	Yes/No	No
Deact Inhibit EOP	CD	Yes/No	Yes
Deact Inhibit EOP Sensor DTC	CD	Yes/No	No
Deact Inhibit Hot Coolant Mode	CD	Yes/No	No
Deact Inhibit Ignition Voltage	CD	Yes/No	No
Deact Inhibit Low Brake Booster Vac	CD	Yes/No	No
Deact Inhibit Manifold Vacuum Low	CD	Yes/No	Yes
Deact Inhibit MAP Sensor DTC	CD	Yes/No	No
Deact Inhibit Maximum Deactivation Time Exceeded	CD	Yes/No	No
Deact Inhibit Minimum Time On All Cylinders	CD	Yes/No	No

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Deact Inhibit Oil Aeration	CD	Yes/No	No
Deact Inhibit Piston Protection	CD	Yes/No	No
Deact Inhibit TAC System DTC	CD	Yes/No	No
Deact Inhibit Torque Reduction	CD	Yes/No	No
Deact Inhibit Trans Gear	CD	Yes/No	No
Deact Inhibit Trans Range	CD	Yes/No	No
Deact Inhibit Trans Shifting	CD	Yes/No	No
Deact Inhibit TWC Overtemperature Protection	CD	Yes/No	No
Deact Inhibit VSS DTC	CD	Yes/No	No
Deact Inhibit VSS Low w/TCC On	CD	Yes/No	No
Decel Fuel Cutoff	CD, Eng, FT, HO2S	Active/Inactive	Inactive
Desired Idle Speed	EE, Eng, TAC	RPM	ECM Controlled
Distance Since DTC Cleared	Eng	km/miles	Varies
Distance with Cyl Activated	CD	km/miles	Varies
Distance with Cyl Deactivated	CD	km/miles	Varies
EC Ignition Relay Circuit Status	OD	OK, Incomplete, Short B+, Short Gnd/Open	OK/Incomplete
EC Ignition Relay Command	Eng, TAC	On/Off	On
EC Ignition Relay Feedback	Eng, TAC	Volts	2.25-2.95 Volts
ECM Reset	CD, EE, Eng, Ign	Yes/No	No
ECT Sensor	All	-39 to +140°C (-38 to +284°F)	88-105°C (190-221° F)
Engine Load	All	0-100%	18% @ Idle 21% @ 2500 RPM
Engine Off EVAP Test Connections Met	EE	Yes/No	Yes
Engine Oil Level Switch	CD, Eng	OK/Low	OK
Engine Oil Life Remaining	CD	0-100%	Varies
Engine Oil Pressure Sensor	CD, Eng, MF	PSI	30
Engine Oil Pressure Sensor	CD, EVAP	Volts	1.5
Engine Oil Pressure Switch	CD	OK/Low	OK
Engine Oil Temperature Calculated	CD	Degrees C/F	85-105°C (185-220° F)
Engine Run Time	All	Hrs, Min, Sec	Varies
Engine Speed	All	0-10,000 RPM	500-700 RPM
Engine Speed Circuit Status	OD	OK, Incomplete, Short B+, Short Gnd/Open	OK
EVAP Purge Solenoid Circuit Status	OD	OK, Incomplete, Short B+, Short Gnd/Open	OK/Incomplete
EVAP Purge Solenoid Command	EE, Eng, FT, HO2S	0-100%	10-25%
		OK, Incomplete, Short	

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EVAP Vent Solenoid Circuit Status	OD	B+, Short Gnd/Open	OK/Incomplete
EVAP Vent Solenoid Command	EE, Eng, FT	Not Venting/Venting	Venting
FC Circuit Status	OD	OK, Incomplete, Short B+, Short Gnd/Open	OK/Incomplete
Fuel Level Sensor	EE	0-5 Volts	0.7-2.5 Volts
Fuel Pump Relay Circuit Status	OD	OK, Incomplete, Short B+, Short Gnd/Open	OK/Incomplete
Fuel Pump Relay Command	Eng, FT	On/Off	ON
Fuel Tank Level Remaining	Eng, MF	0-100%	Varies
Fuel Tank Pressure Sensor	EE, Eng	-32.7 to +14.0 mm/Hg (-17.5 to +7.5 in/H2O)	Varies
Fuel Tank Pressure Sensor	EE, Eng	0-5.0 Volts	Varies
Fuel Tank Rated Capacity	EE	98 Liters (25.9 Gallons) or 96.2 Liters (25 Gallons)	Varies with Fuel Tank Option
Fuel Trim Cell	EE, Eng, FT	0-23	19
Fuel Trim Learn	EE, Eng, FT	Enabled/Disabled	Enabled, May Toggle
Fuel Volatility	EE, FT, HO2S	Low/Moderate/High	Varies
HO2S Bank 1 Sensor 1	EE, Eng, FT, HO2S	Millivolts	10-1,000 mV and Varying
HO2S Bank 1 Sensor 2	Eng, FT, HO2S	Millivolts	10-1,000 mV and Varying
HO2S Bank 2 Sensor 1	EE, Eng, FT, HO2S	Millivolts	10-1,000 mV and Varying
HO2S Bank 2 Sensor 2	Eng, FT, HO2S	Millivolts	10-1,000 mV and Varying
HO2S BN 1 Sensor 1 Heater	HO2S	Amps	0.7-0.9 Amps
HO2S BN 1 Sensor 2 Heater	HO2S	Amps	0.4-0.6 Amps
HO2S BN 2 Sensor 1 Heater	HO2S	Amps	0.7-0.9 Amps
HO2S BN 2 Sensor 2 Heater	HO2S	Amps	0.4-0.6 Amps
HO2S BNK 1 Sen 1 Heater Circuit Status	OD	OK, Incomplete, Short B+, Short Gnd/Open	OK/Incomplete
HO2S BNK 1 Sen 2 Heater Circuit Status	OD	OK, Incomplete, Short B+, Short Gnd/Open	OK/Incomplete
HO2S BNK 2 Sen 1 Heater Circuit Status	OD	OK, Incomplete, Short B+, Short Gnd/Open	OK/Incomplete
HO2S BNK 2 Sen 2 Heater Circuit Status	OD	OK, Incomplete, Short B+, Short Gnd/Open	OK/Incomplete
HO2S Bnk 1 Sensor 1 Heater Command	HO2S	On/Off	ON
HO2S Bnk 1 Sensor 1 Heater Command	HO2S	%	100%

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HO2S Bnk 1 Sensor 2 Heater Command	HO2S	On/Off	ON
HO2S Bnk 1 Sensor 2 Heater Command	HO2S	%	100%
HO2S Bnk 2 Sensor 1 Heater Command	HO2S	On/Off	ON
HO2S Bnk 2 Sensor 1 Heater Command	HO2S	%	100%
HO2S Bnk 2 Sensor 2 Heater Command	HO2S	On/Off	ON
HO2S Bnk 2 Sensor 2 Heater Command	HO2S	%	100%
Hot Open Loop	CD, FT, HO2S	Active/Inactive	Inactive
IAT Sensor	All	-39 to +140°C (-38 to +284°F)	35°C (91°F) Depends on Ambient Temperature
Ignition Accessory Signal	Eng, TAC	On/Off	ON
Ignition 1 Signal	All	0-25 Volts	11.5-14.5 Volts
Ignition Off Timer	Eng	Seconds, Minutes, Hours	Varies
Inj. PWM Bank 1	Eng, FT, HO2S	Milliseconds	2-6
Inj. PWM Bank 2	Eng, FT, HO2S	Milliseconds	2-6
Knock Retard	Ign	0.0-16°	0°
KS Active Counter	Ign	Counts	Varies
KS Bank 1 Circuit Status	Ign	OK/Fault/Incomplete	OK/Incomplete
KS Bank 2 Circuit Status	Ign	OK/Fault/Incomplete	OK/Incomplete
KS Module Status	Ign	OK/Fault/Incomplete	OK/Incomplete
Long Term FT Bank 1	EE, Eng, FT, HO2S	Percentage	Near 0%
Long Term FT Bank 2	EE, Eng, FT, HO2S	Percentage	Near 0%
Loop Status	EE, Eng, FT, HO2S	Open/Closed	Closed
MAF Sensor	CD, EE, Eng, FT, HO2S, Ign, MF, TAC,	Grams Per Seconds (g/s)	1-9 g/s @ Idle, Depends on Altitude 15-26 g/s @ 2,500 RPM, Depends on Altitude
MAF Sensor	EE, Eng, FT, HO2S, MF	0-31,999 Hz	1,150-1,350 Hz
MAP Sensor	CD, EE, Eng, FT, HO2S, Ign, MF, TAC,	kPa	20-48 kPa
MAP Sensor	CD, Eng, FT, HO2S, MF, TAC	Volts	1.0-2.0 Volts Varies with Altitude
MIL Circuit Status	OD	OK, Incomplete, Short	OK/Incomplete

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		B+, Short Gnd/Open	
MIL Command	EE, Eng, Ign	Off/On	Off
MIL Requested by DTC	CD, EE, Eng, Ign	Yes/No	No
Misfire Current Cyl. 1-8	MF	0-200 Counts	0
Misfire History Cyl. 1-8	MF	0-65,535 Counts	0
PNP Switch	CD, Eng	P/N Yes/No in gear	P/N
Power Enrichment	Eng, FT, HO2S, MF	Active/Inactive	Inactive
Reduced Engine Power	CD, TAC	Active/Inactive	Inactive
Short Term FT Bank 1	EE, Eng, FT, HO2S	Percentage	Near 0%
Short Term FT Bank 2	EE, Eng, FT, HO2S	Percentage	Near 0%
Spark	Eng, FT, HO2S, Ign, MF	Degrees	10-17°
Starter Relay Circuit Status	OD	OK, Incomplete, Short B+, Short Gnd/Open	OK/Incomplete
Start-Up ECT	EE, FT	°C/°F	Varies
Start-Up IAT	EE, HO2S	°C/°F	Varies
TAC Forced Engine Shutdown	TAC	Yes/No	No
TAC Motor	TAC	Enabled/Disabled	Enabled
TAC Motor Command	TAC	0-100%	15-35%
TCC/Cruise Brake Pedal	Eng	Applied/Released/Invalid	Released
TCC/Cruise Brake Pedal Switch	TAC	Applied/Released/Invalid	Released
TCS Circuit Status	OD	OK, Incomplete, Short B+, Short Gnd/Open	OK/Incomplete
TCS Torque Request Signal	CD, TAC	0-100%	100%
Torque Delivered Signal	TAC	0-100%	5-15%
Torque Management Spark Retard	Ign	Degrees	0°
Total Knock Retard	Ign	Degrees	0°
Total Misfire	MF	Counts	Varies
TP Desired Angle	TAC	0-100%	5.5%
TP Indicated Angle	CD, EE, Eng, FT, HO2S, Ign, MF, TAC	0-100%	5.5%
TP Sensor 1	TAC	0-5.0 Volts	4.1-4.95 Volts
TP Sensor 1	TAC	0-100%	Varies near 5%
TP Sensor 1 Learned Minimum	TAC	Volts	.55
TP Sensor 2	TAC	5.0-0 Volts	0.4-0.85 V
TP Sensor 2	TAC	100-0%	Varies near 5%
TP Sensor 2 Learned minimum	TAC	Volts	.55
TP Sensors 1 and 2	TAC	Agree/Disagree	Agree
TP Sensor 1 Indicated Position	TAC	%	5%

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TP Sensor 2 Indicated Position	TAC	%	5%
TWC Temperature Calculated	FT, MF	Degrees C/F	-570°C (1,075°F)
Vacuum Calculated	CD, EE, Eng, FT, HO2S	kPa/in Hg	59 kPa/16 in Hg
Vehicle Speed Circuit Status	OD	OK, Incomplete, Short B+, Short Gnd/Open	OK/Incomplete
Vehicle Speed Circuit 2 Status	OD	OK, Incomplete, Short B+, Short Gnd/Open	OK/Incomplete
Vehicle Speed Sensor	CD, EE, Eng, FT, HO2S, Ign, MF, TAC	km/h mph	0
Warm-Ups w/o Emission Faults	Eng	0-255 Counts	Varies
Warm-Ups w/o Non-Emission Faults	Eng	0-255 Counts	Varies
Warm-Ups Since DTC Cleared	Eng	Counts	Varies
Wide Open Throttle	TAC	Yes/No	No

SCAN TOOL DATA DEFINITIONS

The Engine Scan Tool Data Definitions contains a brief description of all engine related parameters available on the scan tool. The list is in alphabetical order. A given parameter may appear in any one of the data lists. In some cases, the parameter may appear more than once or in more than one data list in order to group certain related parameters together.

5-Volt Reference 1

This parameter displays the voltage sensed on the 5-volt reference 1 circuit at the control module.

5-Volt Reference 2

This parameter displays the voltage sensed on the 5-volt reference 2 circuit at the control module.

4WD Low Signal

This parameter displays the state of the transfer case based on the signal from the four wheel drive (4WD) low switch. The scan tool will display Enabled or Disabled. Enabled indicates the transfer case is in 4WD low gear and the 4WD low switch is closed, completing the low signal circuit. Disabled indicates the transfer case is not in 4WD low gear and the 4WD low switch is open.

4WD Signal

This parameter displays the state of the transfer case based on the signal from the front axle indicator switch. The scan tool will display Enabled or Disabled. Enabled indicates the front axle is locked in four wheel drive and the front axle indicator switch is closed, supplying voltage to the controller on the axle switch signal circuit. Disabled indicates the transfer case is not in four wheel drive and the front axle

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indicator switch is open.

A/C Compressor Cycling Switch

This parameter displays the state of the air conditioning (A/C) compressor cycling switch as determined by the control module. The scan tool will display Normal or Low Pressure. Normal indicates the A/C system has enough refrigerant to close the A/C compressor cycling switch, allowing the A/C compressor to engage. Low Pressure indicates the A/C refrigerant system has low pressure and the A/C compressor cycling switch is open.

A/C Relay Circuit Status

This parameter displays the status of the output driver for the A/C clutch relay control circuit. The scan tool will display OK, Incomplete, Short B+, Short Gnd/Open. OK indicates that no circuit faults are detected during the current test. Fault indicates that a short or open circuit/component exists, electronically disconnecting the circuit/component from the control module.

A/C Relay Command

This parameter displays the commanded state of the air conditioning (A/C) clutch relay control circuit. The scan tool will display ON or OFF. ON indicates the A/C clutch relay control circuit is being grounded by the control module, allowing voltage to the A/C compressor clutch. OFF indicates the A/C clutch relay is not being commanded on by the control module.

A/C Request Signal

This parameter displays the state of the air conditioning (A/C) request input to the control module from the heating, ventilation, and air conditioning (HVAC) controls. The scan tool will display Yes or No. Yes indicates the control module is receiving a request from the HVAC system to ground the A/C clutch relay control circuit, engaging the A/C compressor clutch. No indicates the control module is not receiving a request from the HVAC system to ground the A/C clutch relay control circuit.

Air Flow Calculated

This parameter displays the air flow of the engine as calculated by the control module using information from the manifold absolute pressure (MAP) sensor. The scan tool will display a range of values indicating a high air flow when MAP pressure is high and a low air flow when MAP pressure is low. This value is listed in g/s.

Air Fuel Ratio

This parameter displays the ratio of air to fuel as calculated by the control module based on various sensor inputs. The scan tool will display a lower air fuel ratio when a richer air to fuel mixture is commanded. The scan tool will display a higher air fuel ratio when a leaner air to fuel mixture is commanded. In closed loop operation the air fuel ratio should normally be around 14.2-14.7 to 1.

AIR Pump Relay Command

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This parameter displays the commanded state of the secondary air injection (AIR) pump relay control circuit. The scan tool will display ON or OFF. ON indicates the AIR pump relay control circuit is being grounded by the control module, allowing voltage to the AIR pump. OFF indicates the AIR pump relay is not being commanded on by the control module.

Ambient Air Temperature

This parameter displays the ambient, outside, air temperature as calculated by the control module.

APP Indicated Angle

This parameter displays the angle of the accelerator pedal as calculated by the control module using the signals from the accelerator pedal position sensors. The APP indicated angle is a range of values indicating a low percentage when the accelerator pedal is not pressed to a high percentage when the accelerator pedal is fully pressed.

APP Sensor 1

This parameter displays the voltage signal sent to the control module from accelerator pedal position (APP) sensor 1 of the APP sensor assembly. APP sensor 1 is a range of values indicating a low voltage when the accelerator pedal is not pressed to a high voltage when the accelerator pedal is fully pressed.

APP Sensor 1

This parameter displays the angle of the accelerator pedal position (APP) sensor 1 as calculated by the control module using the signal from the APP sensor 1. APP sensor 1 is a range of values indicating a low percentage when the accelerator pedal is not pressed to a high percentage when the accelerator pedal is fully pressed.

APP Sensor 1 and 2

This parameter displays the results of a control module test that compares the signals from the accelerator pedal position (APP) sensors 1 and 2. The scan tool will display Agree or Disagree. Agree indicates that APP sensor 1 and APP sensor 2 voltages correspond to the same accelerator pedal position. Disagree indicates that APP sensor 1 and APP sensor 2 voltages correspond to different accelerator pedal positions.

APP Sensor 1 Indicated Position/APP Sensor 2 Indicated Position

This parameter displays the angle of the accelerator pedal as calculated by the control module using the signals from the accelerator pedal position sensors. The APP indicated angle is a range of values indicating a low percentage when the accelerator pedal is not depressed to a high percentage when the accelerator pedal is fully depressed.

APP Sensor 2

This parameter displays the voltage signal sent to the control module from accelerator pedal position (APP) sensor 2 of the APP sensor assembly. APP sensor 2 is a range of values indicating a low voltage

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when the accelerator pedal is not pressed to a high voltage when the accelerator pedal is fully pressed.

APP Sensor 2

This parameter displays the angle of the accelerator pedal position (APP) sensor 2 as calculated by the control module using the signal form the APP sensor 2. APP sensor 2 is a range of values indicating a low percentage when the accelerator pedal is not pressed to a high percentage when the accelerator pedal is fully pressed.

BARO (Gasoline)

This parameter displays the barometric pressure as calculated by the control module using the signal from the manifold absolute pressure (MAP) sensor measured when the ignition is turned on with the engine not running. The control module will update the barometric pressure during wide-open throttle (WOT) conditions. The scan tool will display a low value when the barometric pressure is low, and a high value when the barometric pressure is high.

BARO (Gasoline)

This parameter displays the voltage signal received by the control module from the manifold absolute pressure (MAP) sensor measured when the ignition is turned on with the engine not running. The control module will update the barometric pressure during wide-open throttle (WOT) conditions. The scan tool will display a low value when the barometric pressure is low, and a high value when the barometric pressure is high.

BPP Circuit Signal

This parameter displays the state of the brake pedal position switch as determined by the brake pedal switch. The scan tool will display Applied when the brake pedal is depressed, and Released when the brake pedal is not depressed.

Brake Booster Pressure

This parameter displays the negative pressure, vacuum, internal to the brake booster assembly in kPa or inches of mercury, Hg.

Brake Booster Pressure

This parameter displays the negative pressure, vacuum, internal to the brake booster assembly in a voltage range of 0-5 volts.

Calc. TWC Temp. Bank 1/Calc. TWC Temp. Bank 2

This parameter displays the catalytic converter temperature as calculated by the control module.

Catalytic Converter Protection Active

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This parameter displays the state of the Catalytic Converter Protection mode.

CKP Active Counter

This parameter displays an incrementing counter when the control module receives a signal from the crankshaft position (CKP) sensor.

CKP Resync Counter

This parameter displays the number of times the control module re-syncs with the crankshaft position (CKP) sensor.

CKP Sensor

This parameter displays the engine speed as calculated by the control module using the signal form the crankshaft position (CKP) sensor.

Clutch Pedal Switch

This parameter displays the current state of the clutch pedal as determined by the control module.

CMP Active Counter

This parameter displays an incrementing counter when the control module receives a signal form the camshaft position (CMP) sensor.

CMP Sensor

This parameter displays the speed of the engine as calculated by the signal from the camshaft position (CMP) sensor.

CMP Sensor - High To Low

This parameter displays the number of times the signal voltage from the camshaft position (CMP) sensor changes from high to low. The scan tool will display these transitions as counts.

CMP Sensor - Low To High

This parameter displays the number of times the signal voltage from the camshaft position (CMP) sensor changes from low to high. The scan tool will display these transitions as counts.

Cold Start-Up

This parameter indicates whether the engine meets the conditions for a cold start-up during the present ignition cycle. The scan tool displays Yes when the conditions for a cold start-up are met during this ignition cycle. The scan tool displays No when the conditions for a cold start-up are not met during the present ignition cycle. Conditions for a cold start-up require the coolant temperature and the intake air

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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.

Coolant Level Switch

This parameter displays the level of engine coolant as determined by the control module. The control module determines the level of the coolant using the signal from a switch used to monitor the engine coolant level. The scan tool will display low when the engine coolant level is low. The scan tool will display OK when the coolant level is correct.

Cruise Control Active

This parameter displays the status of the cruise control system as determined by the control module. The scan tool will display Yes when the cruise control system is in control of vehicle speed. The scan tool will display No when the cruise control system is not operating.

Cruise Inhibit Signal Command

This parameter displays the commanded state of the cruise inhibit signal circuit. The scan tool will display On when the control module is inhibiting cruise control operation. The scan tool will display Off when the control module is allowing cruise control operation.

Current Gear

This parameter displays the transmission gear commanded by the control module. The scan tool will display 1 when the control module has commanded first gear regardless of the gear selector position. The scan tool will display up to 6 depending upon which gear is commanded and what transmission is in the vehicle. The scan tool will display 9 if the transmission gear is not known.

Cycles Of Misfire Data

This parameter displays the number of cylinder firing events that were recorded as misfires as determined by the control module.

Cylinder 1-8 IC Circuit Status

This parameter displays the status of the output driver for the ignition control circuits. The scan tool will display OK, Incomplete, Short B+, Short Gnd/Open. The scan tool will display OK if the circuit is operating correctly. The scan tool will display a fault if there is an open, short to ground, or a short to voltage on the circuit.

Cylinder 1-8 Injector Circuit Status

This parameter displays the status of the output driver for the injector control circuit. The scan tool will display OK, Incomplete, Short B+, Short Gnd/Open. The scan tool will display OK if the circuit is operating correctly. The scan tool will display a fault if there is an open, short to ground, or a short to

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voltage on the circuit.

Cylinder 1 Deact Sol CKT Status

This parameter displays Incomplete during V8 mode. When the solenoid is commanded ON, the parameter will briefly display OK, and then display Incomplete again. This parameter will also display Short to B+ or Short to Gnd/Open when either fault is present. The engine control module (ECM) will disable the Displacement on Demand system when either fault is active.

Cylinder 1 Deact Sol Command

This parameter displays ON when V4 mode is commanded or OFF when V8 mode is commanded.

Cylinder 4 Deact Sol CKT Status

This parameter displays Incomplete during V8 mode. When the solenoid is commanded ON, the parameter will briefly display OK, and then display Incomplete again. This parameter will display Short to B+ or Short to Gnd/Open when either fault is present. The engine control module (ECM) will disable the Displacement on Demand system when either fault is active.

Cylinder 4 Deact Sol Command

This parameter displays ON when V4 mode is commanded or OFF when V8 mode is commanded.

Cylinder 6 Deact Sol CKT Status

This parameter displays Incomplete during V8 mode. When the solenoid is commanded ON, the parameter will briefly display OK, and then display Incomplete again. This parameter will display Short to B+ or Short to Gnd/Open when either fault is present. The engine control module (ECM) will disable the Displacement on Demand system when either fault is active.

Cylinder 6 Deact Sol Command

This parameter displays ON when V4 mode is commanded or OFF when V8 mode is commanded.

Cylinder 7 Deact Sol CKT Status

This parameter displays Incomplete during V8 mode. When the solenoid is commanded ON, the parameter will briefly display OK, and then display Incomplete again. This parameter will display Short to B+ or Short to Gnd/Open when either fault is present. The engine control module (ECM) will disable the Displacement on Demand system when either fault is active.

Cylinder 7 Deact Sol Command

This parameter displays ON when V4 mode is commanded or OFF when V8 mode is commanded.

Cylinder Deactivation System Command

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This parameter displays V8 when all four Displacement on Demand (DoD) cylinder solenoids are deactivated or V4 when the DoD cylinder solenoids are activated.

Cylinder Deactivation Cycles

This parameter displays the number of times the engine switches between V8 mode, and V4 mode during each ignition cycle. The counter will reset to zero and increment again, if the count reaches 255 during the current ignition cycle

Cylinder Deactivation Performance Test

This parameter displays OK if all the Displacement on Demand (DoD) enabling conditions are met. The parameter displays Fault if one or more enabling conditions are out of range.

Cylinder Deactivation System Command

This parameter displays V8 when all four Displacement on Demand (DoD) cylinder solenoids are deactivated or V4 when the DoD cylinder solenoids are activated.

Decel Fuel Cutoff

This parameter displays the status of the operating mode used to turn OFF the fuel injectors during certain deceleration conditions. When the scan tool displays Active, the control module has turned OFF the fuel injectors. When the scan tool displays Inactive, the fuel system is operating normally.

Deact Inhibit APP High

This parameter displays YES if the accelerator pedal position is above the calibrated value for V4 mode. A YES indication will disable the Displacement on Demand system.

Deact Inhibit APP Rate High

This parameter displays YES if the rate of increase of the accelerator pedal position is above the calibrated value for V4 mode. A YES indication will disable the Displacement on Demand system.

Deact Inhibit Axle Torque Limiting

This parameter displays YES, if the engine control module (ECM) determines that the axle torque is above a calibrated value. The axle torque is calculated from several different control module parameters. A Yes indication will disable the Displacement on Demand system.

Deact Inhibit Brake Booster Pressure Sensor DTC

This parameter displays YES if DTC P0556, P0557, or P0558 is set. A YES indication will disable the Displacement on Demand system.

Deact Inhibit DLC Override

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This parameter displays YES if a condition exist that prohibits V4 mode when using the scan tool Output Control function. A YES indication will disable the Displacement on Demand system.

Deact Inhibit ECT Low

This parameter displays YES if the engine coolant temperature is below the calibrated value. A YES indication will disable the Displacement on Demand system.

Deact Inhibit Engine Metal Temperature

This parameter displays YES if the engine metal temperature is above a calibrated value. Engine metal temperature is calculated from several different engine control module (ECM) parameters. A YES indication will disable the Displacement on Demand system.

Deact Inhibit Engine Oil Temperature

This parameter displays YES if the engine oil temperature is not within the calibrated range. Engine oil temperature is calculated from several different engine parameters. A YES indication will disable the Displacement on Demand system.

Deact Inhibit Engine Over Temperature Protection

This parameter displays YES if the engine coolant is above the calibrated value. A YES indication will disable the Displacement on Demand system.

Deact Inhibit Engine RPM

This parameter displays YES if the engine RPM is not within the calibrated range. A YES indication will disable the Displacement on Demand system.

Deact Inhibit EOP

This parameter displays YES if the engine oil pressure is not within the calibrated range. A YES indication will disable the Displacement on Demand system.

Deact Inhibit EOP Sensor DTC

This parameter will display YES if DTC P0520, P0522, or P0523 is set. A YES indication will disable the Displacement on Demand system.

Deact Inhibit ETC Sensor DTC

This parameter displays YES if DTC P0116, P0117, or P0118 is set. A YES indication will disable the Displacement on Demand system.

Deact Inhibit Hot Coolant Mode

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This parameter displays YES if the engine control module defaults to the hot coolant mode. The hot coolant mode is calibrated from several different engine control module (ECM) parameters. A YES indication will disable the Displacement on Demand system.

Deact Inhibit Ignition Voltage

This parameter displays YES if the ignition 1 voltage signal to the engine control module (ECM) is not within the calibrated range. A YES indication will disable the Displacement on Demand system.

Deact Inhibit Low Brake Booster Vacuum

This parameter displays YES if the brake booster vacuum is below the calibrated value. A YES indication will disable the Displacement on Demand system.

Deact Inhibit Manifold Vacuum Low

This parameter displays YES if the engine intake manifold vacuum is below a calibrated value. A YES indication will disable the Displacement on Demand system.

Deact Inhibit Map Sensor DTC

This parameter displays YES if DTC P0106, P0107, or P0108 is set. A YES indication will disable the Displacement on Demand system.

Deact Inhibit Maximum Deactivation Time Exceeded

This parameter displays YES if the engine has been in V4 mode for 10 minutes. A YES indication will disable the Displacement on Demand system.

Deact Inhibit Minimum Time on All Cylinders

This parameter displays YES if the minimum engine run time in V8 mode is below a calibrated value. A YES indication will disable the Displacement on Demand system.

Deact Inhibit Oil Aeration

This parameter displays YES if engine oil aeration is detected. Engine oil aeration is calculated from several different engine parameters. A YES indication will disable the Displacement on Demand system.

Deact Inhibit Piston Protection

This parameter displays YES if excessive engine knock is detected. A YES indication will disable the Displacement on Demand system.

Deact Inhibit TAC System DTC

This parameter displays YES if DTC P0068, P0120, P0121, P0122, P0123, P0220, P0223, P0506, P0507,

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P1516, P2101, P2119, p2120, P2122, P2123, P2125, P2127, P2128, P2135, P2138, or P2176 is set. A YES indication will disable the Displacement on Demand system.

Deact Inhibit Cyl. Deactivation Solenoid DTC

This parameter displays YES if DTC P3401, P3425, P3441, or P3449 is set. A YES indication will disable the Displacement on Demand system.

Deact Inhibit Torque Reduction

This parameter displays YES if the engine control module (ECM) determines the delivered torque signal is below the calibrated value. The delivered torque signal is calculated from several different ECM parameters. A YES indication will disable the Displacement on Demand system.

Deact Inhibit Trans Gear

This parameter displays YES if the transmission is not in the correct gear. A YES indication will disable the Displacement on Demand system.

Deact Inhibit Trans Range

This parameter displays YES if the transmission gear shift lever is not in the correct position. A YES indication will disable the Displacement on Demand system.

Deact Inhibit Trans Shifting

This parameter displays YES if a transmission gear change is in progress. A YES indication will disable the Displacement on Demand system.

Deact Inhibit TWC Over Temperature Protection

This parameter displays YES if catalytic converter overheating is detected. Catalytic converter overheating is calculated from several different engine control module (ECM) parameters. A YES indication will disable the Displacement on Demand system.

Deact Inhibit VSS DTC

This parameter displays YES if DTC P0608 is set. A YES indication will disable the Displacement on Demand system.

Deact Inhibit VSS Low w/TCC ON

This parameter displays YES if the vehicle speed sensor signal is below the calibrated value with the torque converter clutch ON. A YES indication will disable the Displacement on Demand system.

Desired EGR Position

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This parameter displays the position of the exhaust gas recirculation (EGR) valve commanded by the control module. The scan tool will display 0 percent when the control module is commanding the EGR valve closed.

Desired IAC Airflow

This parameter displays the desired airflow in the idle air control (IAC) passage as calculated by the control module.

Desired Idle Speed

This parameter displays the engine idle speed in RPM commanded by the control module. The control module compensates for various engine loads in order to maintain the desired engine RPM at idle. This parameter is not valid unless the engine is running.

Distance Since DTC Cleared

This parameter displays the distance accumulated since an emission diagnostic trouble code was cleared. The scan tool will display increasing distance as the vehicle is driven.

Distance with CYL. Activated

This parameter displays the total distance the vehicle traveled in V8 mode for the current ignition cycle.

Distance with CYL. Deactivated

This parameter displays the total distance the vehicle traveled in V4 mode for the current ignition cycle.

DTC Set This Ignition

This parameter displays if a diagnostic trouble code (DTC) set during the current ignition cycle. The scan tool will display YES if a DTC is stored this ignition cycle.

EC Ignition Relay Circuit Status

This parameter displays the status of the output driver for the EC Ignition Relay control circuit. The scan tool will display OK, Incomplete, Short B+, Short Gnd/Open. The scan tool will display OK if the circuit is operating correctly. The scan tool will display a fault if there is an open, short to ground, or a short to voltage on the circuit.

EC Ignition Relay Command

This parameter displays the state of the control circuit control module power relay as commanded by the control module. The scan tool displays ON with the engine running.

EC Ignition Relay Feedback

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This parameter displays the voltage available at the EC ignition relay pin of the control module.

ECM Reset

The scan tool displays Yes or No. This parameter indicates when the internal PCM resets. The scan tool displays YES when an internal PCM reset occurred. The scan tool displays NO under the normal operating conditions.

ECM Reset

This parameter displays Yes when an internal control module reset occurs. The scan tool displays No under normal operating conditions.

ECM/VCM in VTD Fail Enable

The scan tool displays Yes or No. The scan tool displays Yes if the body control module (BCM) and the control module lose communications with each other after the BCM sends the correct password. The scan tool displays No if the BCM is communicating the correct password to the PCM.

ECT Sensor

This parameter displays the temperature of the engine coolant based on a voltage input from the engine coolant temperature (ECT) sensor to the control module. The scan tool will display a low value when the coolant temperature is low, and a high value when the coolant temperature is high.

EGR Learned Minimum Position

This parameter displays the voltage from the EGR valve that the control module uses to determine that the EGR valve is closed. The voltage displayed will be the closed position of the EGR pintle learned by the control module.

Engine Load

This parameter displays the engine load in percent based on inputs to the control module from various engine sensors. The scan tool will display a low percentage when the engine is at idle with little or no load. The scan tool will display a high percentage when the engine is running at a high RPM under a heavy load.

Engine Load

This parameter displays the engine load in percent based on inputs to the control module from various engine sensors. The scan tool will display a low percentage when the engine is at idle with little or no load. The scan tool will display a high percentage when the engine is running at a high RPM under a heavy load.

Engine OFF EVAP Test Conditions Met

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This parameter displays Yes if the conditions for running the engine OFF EVAP diagnostic are met.

Engine Oil Level Switch

This parameter displays the state of the engine oil level switch as determined by the control module. The scan tool will display OK or Low. OK indicates that the engine oil level is not too low for safe operation of the engine. Low indicates the engine oil level is abnormally low and has closed the engine oil level switch.

Engine Oil Level Switch

This parameter displays the state of the engine oil level switch as determined by the control module. The scan tool will display OK or Low. OK indicates that the engine oil level is not too low for safe operation of the engine. Low indicates the engine oil level is abnormally low and has closed the engine oil level switch.

Engine Oil Life Remaining

This parameter displays the amount of engine oil life remaining before requiring an oil change. This number is calculated by the control module based on many inputs and is displayed as a percent. The lower the percentage, the sooner the next oil change will be required.

Engine Oil Pressure Sensor

This parameter displays the engine oil pressure.

Engine Oil Temperature

This parameter displays the temperature of the engine oil.

Engine Run Time

This parameter displays the time elapsed since the engine was started. The scan tool will display the time in hours, minutes and seconds. The engine run time will reset to zero as soon as the engine stops running.

Engine Speed

This parameter displays the speed of the crankshaft as calculated by the control module based on inputs from the Crankshaft Position (CKP) Sensor. The scan tool will display the engine speed in revolutions per minute (RPM).

Engine Speed Circuit Status

This parameter displays the status of the engine speed circuit. The scan tool will display OK, Incomplete, Short B+, Short Gnd/Open. The scan tool will display OK/Incomplete if the circuit is operating correctly.

EVAP Purge Solenoid Circuit Status

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This parameter displays the status of the output driver for the evaporative emission purge solenoid control circuit. The scan tool will display OK, Incomplete, Short B+, Short Gnd/Open. The scan tool will display OK/Incomplete if the circuit is operating correctly. The scan tool will display a fault if there is an open, short to ground, or a short to voltage on the circuit.

EVAP Purge Solenoid Command

This parameter displays the commanded state of the EVAP purge solenoid control circuit. The scan tool will display 0-100%. A high value indicates the purge solenoid control circuit is being commanded more by the control module, opening the EVAP purge solenoid. A low value indicates the purge solenoid is being commanded on less by the control module.

EVAP Test Result

The scan tool displays No Result, Passed, Aborted, Fail-DTC P0440, Fail-DTC P0442, Fail-DTC P0446, or Fail-DTC P1441. The scan tool displays PASS if the control module determines that the EVAP test has passed.

EVAP Test State

The scan tool displays Waiting For Purge, Test Running, or Test Completed. This parameter indicates the state of the EVAP service bay test.

EVAP Vent Solenoid Circuit Status

This parameter displays the status of the output driver for the evaporative emission vent solenoid control circuit. The scan tool will display OK, Incomplete, Short B+, Short Gnd/Open. The scan tool will display OK/Incomplete if the circuit is operating correctly. The scan tool will display a fault if there is an open, short to ground, or a short to voltage on the circuit.

EVAP Vent Solenoid Command

This parameter displays the commanded state of the EVAP vent solenoid control circuit. The scan tool will display venting or not venting. Not venting indicates the purge solenoid control circuit is being commanded ON by the control module, closing the EVAP vent solenoid. Venting indicates the vent solenoid is not being commanded by the control module, allowing the solenoid to remain open.

Fail Counter

The scan tool displays the number of times that a diagnostic has failed.

FC Circuit Status

This parameter displays the status of the output driver for the cooling fan relay control circuit. The scan tool will display OK, Incomplete, Short B+, Short Gnd/Open. The scan tool will display OK if the circuit is operating correctly. The scan tool will display a fault if there is an open, short to ground, or a short to voltage on the circuit.

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Fuel Alcohol Content

This parameter displays the percentage of alcohol in the fuel. This value is calculated by the control module using the frequency signal from the fuel composition sensor. The scan tool will display a low percentage when there is very little alcohol in the fuel. The scan tool will display a high percentage when the alcohol content of the fuel is high.

Fuel Composition Sensor Frequency

This parameter displays the frequency from the sensor used to monitor the concentration of alcohol in the fuel. The fuel composition sensor measures the fuel capacitance, temperature, and fuel conductance to determine the amount of alcohol contained in the fuel. The scan tool will display a low frequency reading when the alcohol concentration of the fuel is low. The scan tool will display a high frequency reading when the alcohol concentration of the fuel is high.

Fuel Composition Sensor On Time

This parameter displays the pulse width signal of the fuel composition sensor as received by the control module. The scan tool will display a lower value at colder fuel temperatures. The scan tool will display a higher value at higher fuel temperatures.

Fuel Level Sensor

This parameter displays the voltage from the signal produced by the sensor used to monitor the fuel level inside the fuel tank. The scan tool will display a low voltage reading when the fuel level in the tank is low or near empty. The scan tool will display a high voltage reading when the fuel level in the tank is high or near full.

Fuel Level Sensor Rear Tank

This parameter displays the voltage from the signal produced by the sensor used to monitor the fuel level inside the rear fuel tank. The scan tool will display a low voltage reading when the fuel level in the rear tank is low or near empty. The scan tool will display a high voltage reading when the fuel level in the tank is high or near full.

Fuel Pump Relay Circuit Status

This parameter displays the status of the output driver for the fuel pump relay control circuit. The scan tool will display OK, Incomplete, Short B+, Short Gnd/Open. The scan tool will display OK if the circuit is operating correctly. The scan tool will display a fault if there is an open, short to ground, or a short to voltage on the circuit.

Fuel Pump Relay Command

This parameter displays the commanded state of the fuel pump relay control circuit. The fuel pump relay should be ON when the scan tool indicates the fuel pump relay command is ON. The fuel pump relay should be OFF when the scan tool indicates the fuel pump relay command is OFF.

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Fuel Tank Level Remaining

This parameter displays the amount of fuel remaining in all fuel tanks of the vehicle as measured in liters or gallons. The control module calculates the amount of fuel remaining in the tank by using information from the fuel level sensors.

Fuel Tank Level Remaining

This parameter displays the amount of fuel remaining in tall of the fuel tanks of the vehicle as a percentage. The control module calculates this level using the signals from the sensors used to monitor the fuel level in the fuel tanks. The scan tool will display a low reading when the total fuel level in the vehicle is low or near empty. The scan tool will display a high reading when the fuel level in the tank is high or near full.

Fuel Tank Rated Capacity

The scan tool displays Liters or gallons. This parameter displays the fuel tank capacity as determined by the calibrations of the vehicle.

Fuel Tank Pressure Sensor

This parameter indicates the pressure or vacuum in the fuel tanks as determined by the control module based on inputs from the fuel tank pressure sensor. The scan tool displays in mm/Hg or in H2O. The scan tool indicates a negative value if there is a vacuum in the fuel tank, and a positive value if there is pressure in the fuel tank.

Fuel Tank Pressure Sensor

This parameter displays the voltage signal sent to the control module from the sensor used to monitor the pressure inside the fuel tank. The scan tool will display a low voltage when the pressure in the fuel tank is high. The scan tool will display a high voltage when the pressure in the fuel tank is low or in a vacuum.

Fuel Temperature

This parameter displays the current fuel temperature as calculated by the control module based on input from the fuel composition sensor. The scan tool will display a higher value at higher fuel temperatures. The scan tool will display a lower value at lower fuel temperatures.

Fuel Trim Cell

This parameter displays the fuel trim cell as calculated by the control module based on many sensor inputs. The fuel trim cell indicates which cell is currently active.

Fuel Trim Learn

The scan tool displays Enabled or Disabled. When conditions are appropriate for enabling long term fuel trim corrections, the scan tool displays Enabled. If the scan tool displays Disabled, then long term fuel

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trim will not respond to changes in short term fuel trim.

Fuel Volatility

This parameter indicates the rate the fuel can be vaporized in the cylinder as calculated by the control module. The scan tool displays Low, Moderate, or High. The scan tool will display HIGH when the fuel volatility is high. The scan tool will display LOW when the fuel volatility is low.

Generator F-Terminal Signal

This parameter displays the commanded state of the generator by the control module. A High value indicates a high charging command, and a low value indicates a low charging command.

Generator L-Terminal Signal Command

This parameter displays if the control module is allowing the generator to operate. The scan tool displays ON if the generator is allowed to operate. The scan tool displays OFF if the control module is disabling the generator.

HO2S Bank 1 Sensor 1

This parameter displays the voltage from the signal produced by the heated oxygen sensor used to monitor fuel trim for cylinder bank 1. The scan tool will display a low voltage reading when that cylinder bank is running lean. The scan tool will display a high voltage reading when that cylinder bank is running rich.

HO2S Bank 1 Sensor 1 Heater Command

This parameter displays the commanded state of the bank 1 sensor 1 heater by the control module. The scan tool will display a higher value as the heater command is increased, and a lower value if the heater is not commanded ON.

HO2S Bank 1 Sensor 1 Heater Command

This parameter displays the commanded state of the bank 1 sensor 1 heater by the control module. The scan tool will display ON when the heater is commanded ON. The scan tool will display OFF when the heater is commanded OFF.

HO2S Bank 1 Sensor 2

This parameter displays the voltage from the signal produced by the heated oxygen sensor used to monitor catalyst efficiency for cylinder bank 1. The scan tool will display a low voltage reading when that cylinder bank is running lean. The scan tool will display a high voltage reading when that cylinder bank is running rich.

HO2S Bank 1 Sensor 2 Heater Command

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This parameter displays the commanded state of the bank 1 sensor 2 heater by the control module. The scan tool will display a higher value as the heater command is increased, and a lower value if the heater is not commanded ON.

HO2S Bank 1 Sensor 2 Heater Command

This parameter displays the commanded state of the bank 1 sensor 2 heater by the control module. The scan tool will display ON when the heater is commanded ON. The scan tool will display OFF when the heater is commanded OFF.

HO2S Bank 2 Sensor 1

This parameter displays the voltage from the signal produced by the heated oxygen sensor used to monitor fuel trim for cylinder bank 2. The scan tool will display a low voltage reading when that cylinder bank is running lean. The scan tool will display a high voltage reading when that cylinder bank is running rich.

HO2S Bank 2 Sensor 1 Heater Command

This parameter displays the commanded state of the bank 2 sensor 1 heater by the control module. The scan tool will display a higher value as the heater command is increased, and a lower value if the heater is not commanded ON.

HO2S Bank 2 Sensor 1 Heater Command

This parameter displays the commanded state of the bank 2 sensor 1 heater by the control module. The scan tool will display ON when the heater is commanded ON. The scan tool will display OFF when the heater is commanded OFF.

HO2S Bank 2 Sensor 2

This parameter displays the voltage from the signal produced by the heated oxygen sensor used to catalyst efficiency for cylinder bank 2. The scan tool will display a low voltage reading when that cylinder bank is running lean. The scan tool will display a high voltage reading when that cylinder bank is running rich.

HO2S Bank 2 Sensor 2 Heater Command

This parameter displays the commanded state of the bank 2 sensor 2 heater by the control module. The scan tool will display a higher value as the heater command is increased, and a lower value if the heater is not commanded ON.

HO2S Bank 2 Sensor 2 Heater Command

This parameter displays the commanded state of the bank 2 sensor 2 heater by the control module. The scan tool will display ON when the heater is commanded ON. The scan tool will display OFF when the heater is commanded OFF.

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HO2S Heater Bn 1 Sen. 1

This parameter displays the current through the control module when the bank 1 sensor 1 HO2S heater is commanded ON by the control module. HO2S Heater Bn 1 Sen. 1 is a range of values indicating a low current when the heater circuit resistance is high to a high current when the heater circuit resistance is low.

HO2S Heater Bn 1 Sen. 1 Circuit Status

This parameter displays the status of the output driver for the HO2S Heater Bn 1 Sen 1. The scan tool will display OK, Incomplete, Short B+, Short Gnd/Open. The scan tool will display OK/Incomplete if the circuit is operating correctly. The scan tool will display a fault if there is an open, short to ground, or a short to voltage on the circuit.

HO2S Heater Bn 1 Sen. 2

This parameter displays the current through the control module when the bank 1 sensor 2 HO2S heater is commanded ON by the control module. HO2S Heater Bn 1 Sen. 2 is a range of values indicating a low current when the heater circuit resistance is high to a high current when the heater circuit resistance is low.

HO2S Heater Bn 1 Sen. 2 Circuit Status

This parameter displays the status of the output driver for the HO2S Heater Bn 1 Sen 2. The scan tool will display OK, Incomplete, Short B+, Short Gnd/Open. The scan tool will display OK/Incomplete if the circuit is operating correctly. The scan tool will display a fault if there is an open, short to ground, or a short to voltage on the circuit.

HO2S Heater Bn 2 Sen. 1

This parameter displays the current through the control module when the bank 2 sensor 1 HO2S heater is commanded ON by the control module. HO2S Heater Bn 2 Sen. 1 is a range of values indicating a low current when the heater circuit resistance is high to a high current when the heater circuit resistance is low.

HO2S Heater Bn 2 Sen. 1 Circuit Status

This parameter displays the status of the output driver for the HO2S Heater Bn 2 Sen 1. The scan tool will display OK, Incomplete, Short B+, Short Gnd/Open. The scan tool will display OK/Incomplete if the circuit is operating correctly. The scan tool will display a fault if there is an open, short to ground, or a short to voltage on the circuit.

HO2S Heater Bn 2 Sen. 2

This parameter displays the current through the control module when the bank 2 sensor 2 HO2S heater is commanded ON by the control module. HO2S Heater Bn 2 Sen. 2 is a range of values indicating a low current when the heater circuit resistance is high to a high current when the heater circuit resistance is

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low.

HO2S Heater Bn 2 Sen. 2 Circuit Status

This parameter displays the status of the output driver for the HO2S Heater Bn 2 Sen 2. The scan tool will display OK, Incomplete, Short B+, Short Gnd/Open. The scan tool will display OK/Incomplete if the circuit is operating correctly. The scan tool will display a fault if there is an open, short to ground, or a short to voltage on the circuit.

Hot Open Loop

This parameter indicates the status of the fuel delivery system. The scan tool will display Active if the fuel system is running in Open Loop due to a temperature concern. The scan tool will display Inactive if the fuel system is operating normally.

IAC Position

This parameter displays the position of the Idle Air Control (IAC) motor pintle as commanded by the control module. The scan tool will display a high count for a higher idle speed command, and a low count for a lower idle speed command.

IAT Sensor

This parameter displays the temperature of the intake air calculated by the control module based on the input from the intake air temperature (IAT). The scan tool will display a low value for a low intake air temperature, and a high value for a high intake air temperature.

Ignition Accessory Signal

This parameter displays the state of the ignition input to the control module from the ignition switch. The scan tool will display ON when the ignition switch is in the ignition accessory position. The scan tool will display OFF when the ignition switch is in any other position.

Ignition 1 Signal

This parameter displays the voltage measured at the ignition 1 circuit of the control module. Voltage is applied to the control module when the ignition switch is in the ignition 1 position. The scan tool will display a higher value with a higher system voltage, and a lower value with a lower system voltage.

Injector PWM Bank 1 Average

The scan tool displays in milliseconds. This parameter is the average time the control module turns on each fuel injector on that bank. The scan tool will display a higher value with a longer pulse width, or a lower value with a shorter pulse width.

Injector PWM Bank 2 Average

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The scan tool displays in milliseconds. This parameter is the average time the control module turns on each fuel injector on that bank. The scan tool will display a higher value with a longer pulse width, or a lower value with a shorter pulse width.

Knock Retard

The scan tool displays in °. This parameter indicates the amount of timing retard commanded by the control module. The scan tool will display a lower value if no knock is detected, and a higher value as more knock is detected and the control module retards the ignition timing.

KS Active Counter

This parameter displays the number of times the control module detects activity from the knock sensor.

KS Bank 1 Circuit Status

This parameter displays the diagnostic state of the output driver for the knock sensor circuit. The scan tool displays OK, Fault, or Incomplete. The scan tool will display OK if the circuit is operating correctly. The scan tool will display a fault if there is an open, short to ground, or a short to voltage on the circuit. The scan tool will display Incomplete if the circuit test has not run.

KS Bank 2 Circuit Status

This parameter displays the diagnostic state of the output driver for the knock sensor circuit. The scan tool displays OK, Fault, or Incomplete. The scan tool will display OK if the circuit is operating correctly. The scan tool will display a fault if there is an open, short to ground, or a short to voltage on the circuit. The scan tool will display Incomplete if the circuit test has not run.

KS Module Status

The parameter displays the status of the internal module tests on the knock sensor module. The scan tool displays OK, Fault, or Incomplete. The scan tool will display OK if there is no fault detected. The scan tool will display Incomplete if the diagnostics have not been completed.

Long Term FT Avg. Bn 1

The scan tool displays in %. This parameter is the average long term fuel trim for this bank as calculated by the control module. The scan tool will display of more than 0 percent indicating that time is being added to the injector pulse width, increasing the amount of fuel to this bank of the engine. The scan tool will display a value of less than 0 indicating time is being subtracted from the injector pulse width, reducing the amount fuel to this bank of the engine. A value of 0 percent indicates no compensation is required to operate the engine at the desired air/fuel ratio.

Long Term FT Avg. Bn 2

The scan tool displays in %. This parameter is the average long term fuel trim for this bank as calculated by the control module. The scan tool will display of more than 0 percent indicating that time is being

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added to the injector pulse width, increasing the amount of fuel to this bank of the engine. The scan tool will display a value of less than 0 indicating time is being subtracted from the injector pulse width, reducing the amount fuel to this bank of the engine. A value of 0 percent indicates no compensation is required to operate the engine at the desired air/fuel ratio.

Long Term FT Bank 1

The scan tool displays in %. This parameter is the long term fuel trim for this bank as calculated by the control module. The scan tool will display of more than 0 percent indicating that time is being added to the injector pulse width, increasing the amount of fuel to this bank of the engine. The scan tool will display a value of less than 0 indicating time is being subtracted from the injector pulse width, reducing the amount fuel to this bank of the engine. A value of 0 percent indicates no compensation is required to operate the engine at the desired air/fuel ratio.

Long Term FT Bank 2

The scan tool displays in %. This parameter is the long term fuel trim for this bank as calculated by the control module. The scan tool will display of more than 0 percent indicating that time is being added to the injector pulse width, increasing the amount of fuel to this bank of the engine. The scan tool will display a value of less than 0 indicating time is being subtracted from the injector pulse width, reducing the amount fuel to this bank of the engine. A value of 0 percent indicates no compensation is required to operate the engine at the desired air/fuel ratio.

Loop Status

The scan tool displays Open Loop or Closed Loop. The scan tool displays Closed Loop if the control module is controlling the fuel delivery according to the heated oxygen sensor (HO2S) voltages. The scan tool displays open loop if the control module is not adjusting for HO2S inputs. In open loop the control module bases fuel deliver on throttle position, engine coolant temperature, and mass airflow sensor inputs.

Low Oil Lamp Command

This parameter displays the commanded state of the low oil lamp control circuit by the control module. The scan tool will display ON if the lamp is commanded ON by the control module. The scan tool will display OFF if the lamp is not being commanded by the control module.

MAF Sensor

The scan tool displays g/s. This parameter indicates the airflow into the engine as calculated by the control module based on mass airflow (MAF) sensor inputs. The scan tool will display a high value at higher engine speeds, and a low value at idle.

MAF Sensor

The scan tool displays in Hz. This parameter indicates the frequency signal sent from the MAF sensor to the control module. the scan tool will display a high value indicates a higher engine speed. The scan tool

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will display a low value at idle.

MAP Sensor

The scan tool displays kPa. This parameter displays the pressure inside of the intake manifold as calculated by the control module based on the input from the MAP sensor. The scan tool will display a high value at cruising speed or wide open throttle (WOT). The scan tool will display a low value at idle speed.

MAP Sensor

This parameter displays the voltage signal from the MAP sensor to the control module. The scan tool will display a high value at cruising speed or wide open throttle (WOT). The scan tool will display a low vale at idle speed.

MIL Circuit Status

This parameter displays the status of the output driver for the malfunction indicator lamp control circuit. The scan tool will display OK, Incomplete, Short B+, Short Gnd/Open. The scan tool will display OK/Incomplete if the circuit is operating correctly. The scan tool will display a fault if there is an open, short to ground, or a short to voltage on the circuit.

MIL Command

This parameter displays the commanded state of the malfunction indicator lamp (MIL) control circuit. The malfunction indicator lamp should be on when the scan tool indicates the MIL Command is On. The malfunction indicator lamp should be off when the scan tool indicates the MIL Command is Off. The control module will command the MIL On when the ignition is ON with the engine OFF in order to perform a bulb check.

MIL Requested by DTC

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.

Mileage Since DTC Cleared

The scan tool displays km or miles. This parameter indicates the mileage accumulated since an emission diagnostic trouble code cleared.

Misfire Current Cyl. #1-8

The scan tool will display in counts. This parameter indicates the number of cylinder firing events detected as possible misfires on each cylinder during the last 200 crankshaft revolutions as calculated by the control module. The scan tool will display a low number for a low number of cylinder misfire events. The scan tool will display a high number for a high number of cylinder misfire events.

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Misfire History Cyl. #1-8

The scan tool displays in counts. This parameter displays the total level of cylinder misfires that have been calculated for each cylinder by the control module. This parameter will not update or show activity until a misfire DTC has become active. The misfire history counters will update every 200 cylinder firing events.

Not Run Counter

The scan tool displays the number of times a DTC diagnostic has not reached the predetermined criteria in order to run since the first DTC run failure.

Pass Counter

The scan tool displays the number of times a DTC has run and passed.

PNP Switch

This parameter displays whether the transmission range selector is in Park or Neutral.

Power Enrichment

Scan tool displays ACTIVE or INACTIVE. ACTIVE displayed indicates that the control module has detected conditions appropriate to operate in Power Enrichment mode. The control module commands Power Enrichment mode when a large increase in throttle position and load is detected. While in Power Enrichment, the control module will increase the amount of fuel delivered by entering Open Loop and increasing the injector pulse width.

Reduced Engine Power

The scan tool displays Active or Inactive. The scan tool displays Active when the control module receives a signal from the throttle actuator control (TAC) module that a TAC system fault is occurring. The scan tool displays inactive when the engine is operating normally.

Short Term FT Avg. Bn 1

The scan tool displays %. This parameter indicates the average short term fuel trim for this bank. The scan tool will display a value higher than 0 if the time is being added to the injector pulse width, increasing the amount of fuel to that bank of the engine to compensate for a lean condition sensed by the oxygen sensors on that bank. The scan tool will display a value lower than 0 if time is being subtracted from the injector pulse width, reducing the amount of fuel to the engine to compensate for a rich condition sensed by the oxygen sensors on that bank. A value of 0 percent indicates no compensation is required to operate the engine at the desired air/fuel ratio.

Short Term FT Avg. Bn 2

The scan tool displays %. This parameter indicates the average short term fuel trim for this bank. The

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scan tool will display a value higher than 0 if the time is being added to the injector pulse width, increasing the amount of fuel to that bank of the engine to compensate for a lean condition sensed by the oxygen sensors on that bank. The scan tool will display a value lower than 0 if time is being subtracted from the injector pulse width, reducing the amount of fuel to the engine to compensate for a rich condition sensed by the oxygen sensors on that bank. A value of 0 percent indicates no compensation is required to operate the engine at the desired air/fuel ratio.

Short Term FT Bank 1

The scan tool displays %. This parameter indicates the current short term fuel trim for this bank. The scan tool will display a value higher than 0 if the time is being added to the injector pulse width, increasing the amount of fuel to that bank of the engine to compensate for a lean condition sensed by the oxygen sensors on that bank. The scan tool will display a value lower than 0 if time is being subtracted from the injector pulse width, reducing the amount of fuel to the engine to compensate for a rich condition sensed by the oxygen sensors on that bank. A value of 0 percent indicates no compensation is required to operate the engine at the desired air/fuel ratio.

Short Term FT Bank 2

The scan tool displays %. This parameter indicates the current short term fuel trim for this bank. The scan tool will display a value higher than 0 if the time is being added to the injector pulse width, increasing the amount of fuel to that bank of the engine to compensate for a lean condition sensed by the oxygen sensors on that bank. The scan tool will display a value lower than 0 if time is being subtracted from the injector pulse width, reducing the amount of fuel to the engine to compensate for a rich condition sensed by the oxygen sensors on that bank. A value of 0 percent indicates no compensation is required to operate the engine at the desired air/fuel ratio.

Spark

This parameter is the desired spark advance calculated by the control module based on many sensor inputs. The scan tool will display a lower value at idle speed, and a higher value under heavy acceleration and load conditions.

Starter Relay Circuit Status

This parameter displays the status of the output driver for the starter relay control circuit. The scan tool will display OK, Incomplete, Short B+, Short Gnd/Open. The scan tool will display OK/Incomplete if the circuit is operating correctly. The scan tool will display a fault if there is an open, short to ground, or a short to voltage on the circuit.

Start-Up ECT

This parameter indicates the engine coolant temperature at start-up, as calculated by the control module based on the input from the engine coolant temperature sensor. The scan tool will display a higher value at higher engine start-up temperatures, and a lower value at lower start-up temperatures.

Start-UP IAT

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Indicates the intake air temperature (IAT) at the time that the vehicle was started. Used to determine if the last start-up was a cold start. The scan tool range is -39 to +140°C (-38 to +284°F). This parameter indicates the ambient air temperature at start-up.

Stop Lamp Pedal Switch

This parameter displays the state of the brake pedal as determined by the control module based on an input from the stop lamp pedal switch. This switch turns on the stop lamps when the brake pedal is depressed. The scan tool will display Applied when the brake pedal is depressed.

TAC Forced Engine Shutdown

This parameter indicates the status of TAC control by the control module. The scan tool will display YES if the engine has been shut down due to a throttle control fault. The scan tool will display NO if the engine has not been shut down by a throttle control fault.

TAC Motor

This parameter indicates the status of the TAC motor driver. The scan tool will display Enabled if TAC motor operation is allowed. The scan tool will display disabled if the TAC motor is disabled.

TAC Motor Command

This parameter indicates the required duty cycle to maintain a desired throttle position. The scan tool will display a higher value if more effort is required to move the throttle to the desired position, such as physical resistance. The scan tool will display a lower value if less effort is required to move the throttle to the desired position.

TCC/Cruise Brake Pedal Switch

This parameter displays the position of the torque converter clutch (TCC) brake pedal switch input to the control module. The scan tool displays Applied, Released, or Invalid.

TCC Enable Solenoid Command

This parameter displays the commanded state of the torque converter clutch (TCC) solenoid control circuit. The scan tool will display Enabled or disabled. Enabled indicates the TCC solenoid control circuit is being grounded by the control module, operating the torque converter. Disabled indicates the TCC solenoid is not being commanded on by the control module.

TCC PWM Solenoid Command

This parameter indicates the commanded state of the TCC PWM Solenoid by the control module. The scan tool displays ON or OFF. The scan tool displays ON when the commanded state of the solenoid is ON. The scan tool displays OFF when the solenoid is OFF.

TCS Circuit Status

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This parameter indicates the diagnostic state of the output driver for the traction control system (TCS) circuit. The scan tool will display OK, Incomplete, Short B+, Short Gnd/Open. The scan tool will display OK/Incomplete if the circuit is operating correctly. The scan tool will display a fault if there is an open, short to ground, or a short to voltage on the circuit.

TCS Torque Request Signal

This parameter indicates the percentage of available torque requested from the engine to the transmission as calculated by the control module. The scan tool will display a higher value for higher torque, and a lower value for lower torque.

TFP Switch

This parameter displays the state of the Transmission Internal Mode Switch based on the signal from the IMS inside the transmission. The scan tool will display Drive 1, Drive 2, Drive 3, Drive 4, Park, Reverse, or Neutral. Drive 1 indicates the Transmission Range switches C and P are closed, connecting these circuits to ground. Drive 2 indicates the Transmission Range switches A and C are closed, connecting these circuits to ground. Drive 3 indicates that all of the Transmission Range switches are closed, connecting all four circuits to ground. Drive 4 indicates the Transmission Range switches B and C are closed, connecting these circuits to ground. Park indicates the Transmission Range A switch is closed, connecting the circuit to ground. Reverse indicates the Transmission Range switches A, B, and P are closed, connecting these circuits to ground. Neutral indicates the Transmission Range switches B and P are closed, connecting these circuits to ground.

Torque Management Spark Retard

This parameter indicates how much the ignition spark timing is being retarded to control torque by the control module. The scan tool will display a higher value under extreme torque control conditions such as spinning wheels. The scan tool will display a lower value under low torque control conditions such as light driving.

Torque Delivered Signal

The scan tool displays ft-lbs or N*m. This parameter represents the pulse width modulation (PWM) signal which indicates the percent of available torque the engine is delivering to the drive wheels. The electronic brake/traction control module (EBCM) monitors the Traction Control Torque signal to ensure that the powertrain control module (PCM) is responding properly to the Traction Control Desired Torque signal.

Total Knock Retard

This parameter indicates how much ignition spark timing is being retarded due to all control systems monitored by the control module. The scan tool will display a high value during extreme conditions such as high temperatures and antilock braking. The scan tool will display a lower value during lighter driving conditions.

Total Misfire

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The scan tool range is 0-255 counts. This parameter indicates 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 or DTC P0300 has become active. The misfire history counter will update every 200 cylinder firing events.

TP Desired Angle

This parameter indicates the TP angle commanded by the control module. The scan tool will display a low value at idle, and a high value at wide open throttle (WOT).

TP Indicated Angle

This parameter displays the angle of the throttle position (TP) in percent. This information is calculated by the control module using the signals from the throttle position sensors. The scan tool will display a low percentage when the throttle plates are closed. The scan tool will display a high percentage when the throttle plates are fully open.

TP Sensor

This parameter displays the voltage signal sent to the control module from the sensor used to monitor the position of the throttle plates. The scan tool will display a low voltage when the throttle plates are at rest. The scan tool will display a high voltage when the throttle plates are fully open.

TP Sensor

This parameter displays the angle of the throttle position (TP) sensor in percent. This information is calculated by the control module using the signal from the throttle position sensor. The scan tool will display a low percentage when the throttle plates are closed. The scan tool will display a high percentage when the throttle plates are fully open.

TP Sensor 1

This parameter displays the voltage signal sent to the control module from the sensor used to monitor the position of the throttle plates. This parameter is for sensor 1 of the throttle position (TP) sensor assembly. The scan tool will display a low voltage when the throttle plates are at rest. The scan tool will display a high voltage when the throttle plates are fully open.

TP Sensor 1

This parameter displays the angle of the throttle position (TP) sensor 1 in percent. This information is calculated by the control module using the signal from the throttle position sensor 1. The scan tool will display a low percentage when the throttle plates are closed. The scan tool will display a high percentage when the throttle plates are fully open.

TP Sensors 1 and 2

This parameter displays the results of a control module test that compares signals from the throttle

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position (TP) sensors 1 and 2. The scan tool will display Agree when the signal from TP sensor 1 corresponds with the signal from TP sensor 2. The scan tool will display Disagree when the signal from TP sensor 1 conflicts with the signal from TP sensor 2.

TP Sensor 1 Indicated Position

This parameter displays the angle of the throttle position (TP) sensor 1 as calculated by the control module using the signal from the TP sensor 1. The TP sensor 1 is a range of values indicating a low percentage when the throttle is closed to a high percentage when the throttle is fully open.

TP Sensor 2

This parameter displays the voltage signal sent to the control module from the sensor used to monitor the position of the throttle plates. This parameter is for sensor 2 of the throttle position (TP) sensor assembly. The scan tool will display a high voltage when the throttle plates are at rest. The scan tool will display a low voltage when the throttle plates are fully open.

TP Sensor 2

This parameter displays the angle of the throttle position (TP) sensor 2 in percent. This information is calculated by the control module using the signal from the throttle position sensor 2. The scan tool will display a low percentage when the throttle plates are closed. The scan tool will display a high percentage when the throttle plates are fully open.

TP Sensor 2 Indicated Position

This parameter displays the angle of the throttle position (TP) sensor 2 as calculated by the control module using the signal from the TP sensor 2. The TP sensor 2 is a range of values indicating a low percentage when the throttle is closed to a high percentage when the throttle is fully open.

TR Switch

This parameter indicates the current state of the gear select switch on the transmission/transaxle as calculated by the control module based on the TR switch. The scan tool status will switch from High to Low as different combinations are met. On the scan tool in Park, the PRNDL would read P and A will be Low, and B and C will be High.

TWC Temperature Calculated

This parameter displays the catalytic converter temperature as calculated by the control module.

Vacuum Calculated

This parameter displays the actual intake manifold vacuum of the engine. Intake manifold vacuum is calculated within the engine control module (ECM) by subtracting the manifold absolute pressure (MAP) sensor input reading from the barometric input reading.

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Vehicle Speed Circuit Status

This parameter displays the status of the Vehicle Speed Circuit. The scan tool will display OK, Incomplete, Short B+, Short Gnd/Open. The scan tool will display OK/Incomplete if the circuit is operating correctly.

Vehicle Speed Sensor

This parameter indicates the vehicle speed calculated by the control module based on an input from the vehicle speed sensor (VSS). the scan tool will display a high value at higher vehicle speeds, and a low value at lower vehicle speeds.

VTD Auto Learn Timer

The scan tool displays Active/Inactive. This parameter indicates if the control module is ready to learn the theft deterrent password. The scan tool will display active if the system is ready to learn. The scan tool will display inactive if the system has timed out or is not ready to learn the password.

VTD Fuel Disable

This parameter Indicates if the VTD system has received proper information to enable or disable fuel. The scan tool will display Active or Inactive. The scan tool will display Active if the control module does not receive the correct password from the BCM. The scan tool will display Inactive if the control module receives the correct password from the BCM. If the system is Active, the engine will not start.

VTD Fuel Disable Until Ign. Off

The scan tool will display Yes or No. This parameter indicates if the VTD is disabled until the ignition is turned OFF. The scan tool will display Yes if the ignition is ON and a theft deterrent DTC is present. The scan tool will display off if the system is OK and the theft deterrent system is inactive.

Warm-ups Since DTC Cleared

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 w/o Emission Faults

The scan tool displays in counts. This parameter counts the number of warm-up cycles without an emission fault present. The parameter increments until a fault occurs. If a fault occurs, the counter reverts to 0 until the fault is corrected. Clearing information with a scan tool or a loss of power to the PCM also resets the counter to 0.

Warm-ups w/o Non-Emission Faults

The scan tool displays in counts. This parameter counts the number of warm-up cycles without a non-

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emission fault present. The parameter increments until a fault occurs. If a fault occurs, the counter reverts to 0 until the fault is corrected. Clearing information with a scan tool or a loss of power to the PCM also resets the counter to 0.

Wide Open Throttle

This parameter indicates the throttle status commanded by the control module. The scan tool will display YES is the vehicle throttle is commanded to wide open. The scan tool will display NO if the vehicle throttle is commanded to an amount less than 100 percent.

SCAN TOOL OUTPUT CONTROLS

Scan Tool Output Controls

Scan Tool Output Control	Additional Menu Selection(s)	Description
Crankshaft Position Variation Learn	-	Enables the powertrain control module (ECM) to learn the variations in the crankshaft position (CKP) system. The ECM will learn the variations once the following conditions are met: • Engine coolant temperature (ECT) is more than a specified value. • All instructions on the scan tool have been completed. • The accelerator pedal is smoothly applied until the fuel cut-OFF, as specified on the scan tool, is achieved, and then immediately released. The ECM learns the variation values on the deceleration from fuel cut-OFF.
Cylinder 1, Cylinder 4, Cylinder 6, Cylinder 7	DoD System	This function will enable or disable V8 mode, by energizing or de-energizing each individual, VLOM solenoid either ON or OFF. The normal commanded state is OFF.
Cylinder Deactivation System	DoD System	This function will enable or disable V4 mode, by energizing or de-energizing all 4 VLOM solenoids, either ON or OFF. The normal commanded state is OFF.
Cylinder Power Balance	Fuel System	Enables/Disables a cylinder by turning OFF the fuel injector to the cylinder. The fuel injector is normally enabled. The ECM disables the fuel injector when the following conditions are met: • All instruction on the scan tool are completed • Stabilized engine speed

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		• The fuel injector is selected When Disable is selected the ECM turns the injector OFF for 30 seconds. During this period, the engine operates with a misfire.
Engine Controls Ignition Relay	Engine Output Controls	This function will enable or disable the Engine Controls Ignition Relay. The scan tool will command the engine controller to turn the relay ON or OFF. The normal commanded state is ON.
Engine Speed Control	TAC System	Activates the throttle activation control (TAC) system to change engine RPM. The normal commanded state is None. To enable the RPM control, all instruction on the scan tool must be completed. The system will increase or decrease the RPM within a range of 350-2000 RPM. The set step value changes the RPM by increments of 25 RPM, 100 RPM, and 500 RPM. The system remains in the commanded state until cancelled by the scan tool.
EVAP Purge Solenoid	Engine Output Controls/EVAP System	Activates the evaporative emission (EVAP) purge valve. The normal commanded state is None. The system will increase or decrease the amount of EVAP purge valve opening by 10 percent increments within a range of 0-100 percent. The system remains in the commanded state until cancelled by the tool or the fuel tank pressure (FTP) exceeds 32 mm Hg (17 in H2O).
EVAP Purge/Seal	Engine Output Controls/EVAP System	This control enables two functions. One function increases or decreases the amount of purge by changing the duty cycle of the purge valve and commanding the vent ON, non-venting. The normal commanded state of both valves is None. The system will increase or decrease the amount of EVAP purge valve opening by 10 percent increments within a range of 0-100 percent. The second function seals the system after using the purge function to obtain a specific amount of FTP. When activated the purge valve is commanded to 0 percent and the vent valve is commanded ON, non-venting. Both functions remain in the commanded state until one of the following conditions occurs: • Cancelled by the tool • The FTP exceeds 32 mm Hg (17 in H2O)
EVAP Service Bay Test	Engine Output Controls/EVAP System	Activates the On-board EVAP Diagnostic test.
		Activates the EVAP vent solenoid. The normal commanded state is None. When commanded ON, the vent valve switches to non-venting. The system remains in the

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EVAP Vent Solenoid	Engine Output Controls/EVAP System	commanded state until one of the following conditions occurs: • Cancelled by the tool • Purge is greater than 0 percent, and the fuel tank pressure exceeds 32 mm Hg (17 in H2O)
Fuel Composition Reset	Fuel System	**IMPORTANT:** **Do not use this output control unless the actual alcohol content in the fuel tank is 10% or less. False DTCs may set as a result.** **IMPORTANT:** **This output control does not initiate an ECM fuel composition learn event.** This output control will reset the control module learned alcohol content percentage to 3.
Fuel Injector Balance	Fuel System	Enables the fuel injector in order to verify proper fuel injector flow. The ECM will pulse the selected injector when the following conditions are met: • All instruction on the scan tool completed • Fuel injector selected • Key ON, engine OFF The selected fuel injector can only be flowed/pulsed once per ignition cycle.
Fuel Pump	Engine Output Controls	Controls the fuel pump relay. The normal commanded state is None. When commanded ON/OFF, the 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 until cancelled by the scan tool.
Fuel Trim Enable	Fuel System	Disables the ECM ability to learn new fuel trim parameters. The system remains in the commanded state until cancelled by the scan tool.
Fuel Trim Reset	Fuel System	Activates the reset of fuel trim data in all of the fuel trim cells.
HO2S Heater Command	Heated Oxygen Sensors	Commands HO2S Heater ON, 0-100% in 10% increments while the engine is running.
Idle Spark	Engine Output Controls/Spark Control	Enables or disables idle spark command. When commanded ON, the idle spark will be controlled to 13 degrees before top dead center. The normal commanded state is OFF.

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Loop Status	Engine Output Controls	Controls the system loop status. The commanded states include None, Open, or Closed. The normal commanded state is None. When commanded Open or Closed, the system remains in the commanded state until cancelled by the scan tool.
Malfunction Indicator Lamp	Engine Output Controls	Controls the malfunction indicator lamp (MIL). The commanded states include None, ON, and OFF. When commanded ON or OFF, the system remains in the commanded state until cancelled by the scan tool.
Misfire Graphic	-	Graphs the accumulated misfires occurring in each cylinder. The scan tool allows for a reset of the misfire graph.
Spark Retard	Engine Output Controls	This function controls the amount of spark retard. The scan tool will command an increase or decrease in the amount of spark retard in 1-degree increments, within a range of 1-10 degrees. The degrees of spark retard will remain in the commanded state until cancelled by the scan tool. The normal commanded state is NONE.
Throttle Position	TAC System / Throttle Blade Control	Operates TAC motor in 10 percent increments to open or close the throttle blade. The test operates during key ON, engine OFF.

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