

DIAGNOSTIC AND FAULT CODES

GENERAL

MONITORING SYSTEM

This system monitors the electronic components of the EMS (engine management system), iBR, information center, iS and other components of the electrical system to detect if they are faulty or defective. The monitoring system becomes active when the START button is pressed.

NOTE: Some components need the engine to be running to be monitored (fuel injectors for example).

The following components or functions are monitored.

EMS MONITORING
Battery voltage
EMS sensors (TAS, TPS, CPS, CAPS, MAPS, MATS, CTS, OPS, EGTS, TOPS, knock sensor). Throttle actuator, ignition coils and fuel injectors
ECM
Engine RPM
CAN
D.E.S.S. system
START switch and starter solenoid
Fuel pump
O.T.A.S.
Information center
iBR module

iBR MONITORING
iBR module and motor
BRLS
Engine RPM
Vehicle speed
iBR gate position
CAN
Lake temperature sensor
Information center
ECM

INFORMATION CENTER MONITORING
Information center
VTS, Sport and ECO switch
MODE and SET switch
Cruise switch
CAN
GPS
Fuel level sensor
Depth sounder
ECM
iBR module
iS module

iS MONITORING
iS module and motor
Vehicle speed
Suspension position
CAN
TOPS
Information center
iBR module

When a malfunction is currently detected, the related electronic module:

- Sets an active fault code.
- Adapts the proper protection strategy according to the failure.
- Sends out warning signals to the information center/beeper codes to inform the rider of a particular condition.

When a minor or transient fault occurs, the fault message and beeper will cease automatically if the condition that caused the fault does not exist anymore.

If a minor fault is active, the engine will operate without a noticeable loss of performance.

Releasing the throttle and letting the engine return to idle speed may allow normal operation to resume. If this does not work, try the following:

- Remove tether cord from the engine cut-off switch.
- Wait 3 minutes to allow the ECM to shut down.
- Start engine.
- Check if the fault code is still active.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

The electronic system will react differently depending on the fault type. If a severe failure occurs, the engine may not be allowed to be started. In other cases, the engine may operate in limp home mode (reduced speed) or not be affected at all.

These strategies are used to protect the engine system from damage and to maintain safe operation of the vehicle.

Limp Home Mode

When a major component of the EMS or the iBR is not operating properly, limp home mode will be set. Engine speed will be limited and therefore vehicle speed.

This mode allows the rider to return home which would otherwise not be possible without this advanced system.

When this mode is active, LIMP HOME MODE will be displayed in the information center.

Major Fault and Vehicle Reaction

The following EMS conditions will trigger a limp home mode.

ENGINE PROBLEM	MAX ALLOWED RPM
High engine temperature (from 110°C (230°F))	3000
High exhaust temperature (from 110°C (230°F))	3000
Low oil pressure (below 180 - 220 kPa (26 - 32 PSI))	2500

The following conditions will trigger limp home mode.

iBR PROBLEM	SYSTEM BEHAVIOR
Any active fault code related to the iBR that prevents its proper operation	iBR gate will be moved and locked in forward position (if possible)
	Engine will be set in limp home mode (reduced speed)

The following conditions will stop the suspension.

iS PROBLEM	SYSTEM BEHAVIOR
Any active fault code related to the iS that prevents its proper operation	Suspension operation will be disabled
	It will remain at the position it was at when the fault code was set

Indicator Lights and Message Display Information

The fault indicators and messages displayed in the information center will inform you of a particular condition or if an anomaly occurs.

GTI/GTR/GTS Series and Wake

FAULT INDICATOR (ON)	MESSAGE DISPLAY	DESCRIPTION
	HIGH TEMPERATURE	Engine or exhaust system overheating
	CHECK ENGINE or LIMP HOME MODE	Check engine (minor fault req. maint.) or iBR system fault or LIMP HOME MODE (major eng. fault)
	LOW or HIGH BATTERY VOLTAGE	Low/high battery voltage
	LOW OIL PRESSURE	Low engine oil pressure detected
	iBR MODULE ERROR	iBR system fault

RXT/GTX/RXP Series and Wake Pro

PILOT LAMPS (ON)	MESSAGE DISPLAY	DESCRIPTION
	LOW or HIGH BATTERY VOLTAGE	Low/high battery voltage
	HIGH TEMPERATURE	Engine or exhaust system overheating
	CHECK ENGINE or LIMP HOME MODE	Check engine (minor fault req. maint.) or LIMP HOME MODE (major eng. fault)
	LOW OIL PRESSURE	Low oil pressure
	–	iBR system fault
	–	OTAS system fault

Subsection XX (DIAGNOSTIC AND FAULT CODES)

FAULT MESSAGES	
RIGHT KEYPAD ERROR	Gauge control button malfunction
LOW OIL PRESSURE	Engine low oil pressure detected
HIGH EXHAUST TEMPERATURE	High exhaust temperature detected
HIGH TEMPERATURE	High engine temperature detected
CHECK ENGINE	Engine management system malfunction or maintenance required
HIGH BATTERY VOLTAGE	High battery voltage detected
LOW BATTERY VOLTAGE	Low battery voltage detected
LIMP HOME MODE	Major fault detected, engine power limited
FUEL SENSOR DEFECTIVE	Fuel level sensor fault
WATER TEMP SENSOR DEFECTIVE	Problem in iBR, not sending water temperature info
CALIBRATION CHECKSUM ERROR	Information center programming corrupted
MAINTENANCE REQUIRED	Watercraft maintenance required
DEPTH SOUNDER MODULE COMMUNICATION PROBLEM	Error message if depth sounder is disconnected while riding
IS MODULE COMMUNICATION PROBLEM	Error message if communication with the suspension module is lost while riding
iBR MODULE ERROR	Error message if communication with the iBR module is lost while riding
FUNCTION CANNOT BE ACTIVATED	Message when a function is not or cannot be properly activated
WRONG KEY	Key not programmed for this watercraft
O.T.A.S. MAINTENANCE REQUIRED	Maintenance on O.T.A.S. required

Beeper Signals

When one of the below conditions occurs, the monitoring system emits the following beep signals.

BEEPER CODES	DESCRIPTION
A 1 second beep every 5 second interval (while installing D.E.S.S. key on engine cut-off switch if ECM is on)	Bad D.E.S.S. system connection. Reinstall tether cord correctly over engine cut-off switch.
	Wrong D.E.S.S. key. Use a tether cord with a D.E.S.S. key that has been programmed for the watercraft.
	Defective D.E.S.S. key. Use another programmed D.E.S.S. key.
	Dried salt water in D.E.S.S. key. Clean D.E.S.S. key with fresh water to remove salt water.
	Defective engine cut-off switch. Check. Refer to <i>IGNITION SYSTEM</i> subsection.
	Improper operation of ECM or defective wiring harness. Check. Refer to <i>ELECTRONIC FUEL INJECTION (EFI)</i> subsection.
A 2 second beep every 5 minute interval	Low fuel level. Refill fuel tank. If problem persists, check sensor and circuit. Refer to <i>FUEL TANK AND FUEL PUMP</i> subsection.
	Fuel tank level sensor or circuit malfunction. Check sensor and circuit. Refer to <i>FUEL TANK AND FUEL PUMP</i> subsection.
Continuously beeps	High engine coolant temperature. Refer to <i>COOLING SYSTEM</i> subsection.
	High exhaust temperature. Refer to <i>ELECTRONIC FUEL INJECTION (EFI)</i> subsection.
	Low oil pressure. Turn off engine as soon as possible. Check oil level and refill. Refer to <i>LUBRICATION</i> subsection.

FAULT CODES

A fault code is an indication that a malfunction is detected by the monitoring system of the vehicle.

Fault Code Categories

A fault code consists of an alphanumeric designator followed by a hexadecimal number of 3 digits. The alphanumeric designator defines the category of the fault code while the hexadecimal number refers to a unique fault.

FAULT CODE CATEGORIES		
ALPHANUMERIC DESIGNATOR	MODULE/ SYSTEM	EXAMPLE OF FAULT CODE
From B0 to B3	Body (include information center and switch faults)	B2211
From C0 to C3	iBR and iS	C007B
From P0 to P3	Power train and related system faults (includes ECM)	P062F
From U0 to U3	Communication between modules and sensors	U0179

RELATED MODULE AND FAULTS	
MODULE	FAULT CODE CATEGORY
ECM (engine control module)	Stores mainly "P" codes and some "U" codes
iBR (intelligent brake and reverse)	Stores mainly "C" codes and a few "U" codes
iS (intelligent suspension)	Stores mainly "C" codes and a few "U" codes
Cluster	Stores mainly "C" codes and a few "U" codes

Reading Fault Codes Using the Information Center

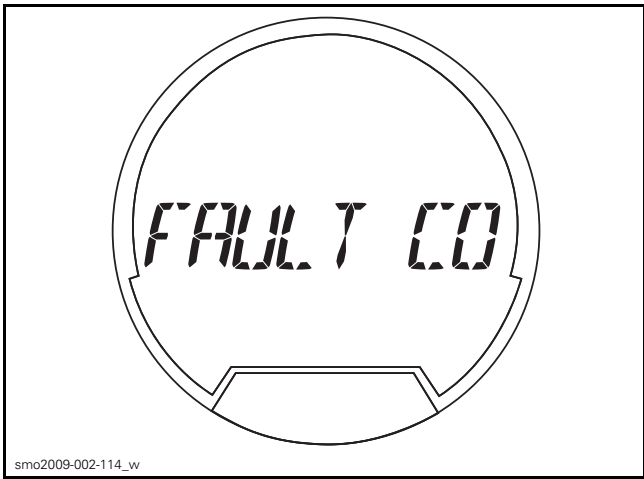
NOTE: A fault code must have the "Active" state to be displayed in the multifunction gauge.

1. Press the MODE button repeatedly until the FAULT CODE function is visible in the multifunction display.
2. Press the SET button or the UP or DOWN arrow button to enter the function and display the first fault code.

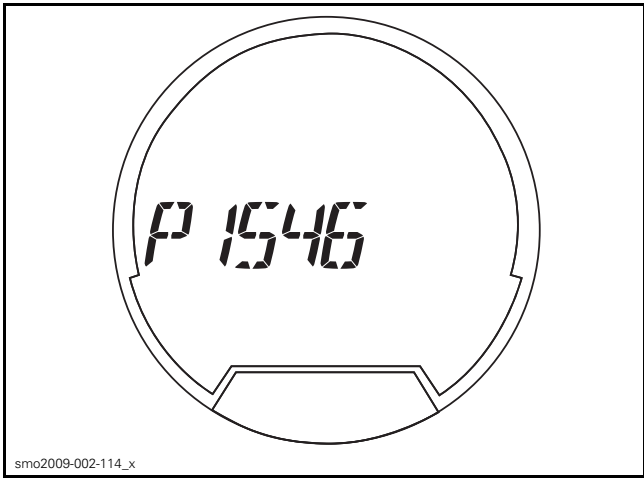
3. Press the UP or DOWN arrow button repeatedly to display each subsequent code.

NOTE: When the last fault code has been displayed and the button is pressed again, the system loops back to the first fault code displayed, and all fault codes can again be displayed. If there was one active fault code when entering FAULT CODE mode, and it becomes occurred (no longer active), a NO ACTIVE FAULT CODE message will scroll in the display.

4. To exit the FAULT CODE display function, the MODE or SET button must be pressed once. There is no time out on this function.



FAULT CODE DISPLAY FUNCTION



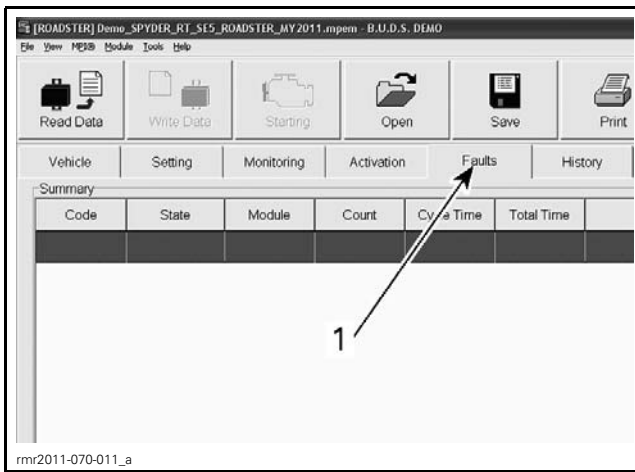
TYPICAL - ENGINE FAULT CODE EXAMPLE

Reading Fault Codes Using B.U.D.S. Software

NOTE: All fault code types can be read with B.U.D.S.

1. Connect vehicle to the latest applicable B.U.D.S. software. Refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection.

2. Click on the **Read Data** button.
3. Click on the **Faults** tab.

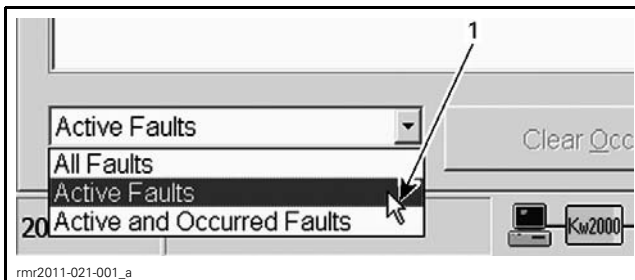


TYPICAL

1. Fault tab

4. Click on the drop-down list on the LH lower corner.

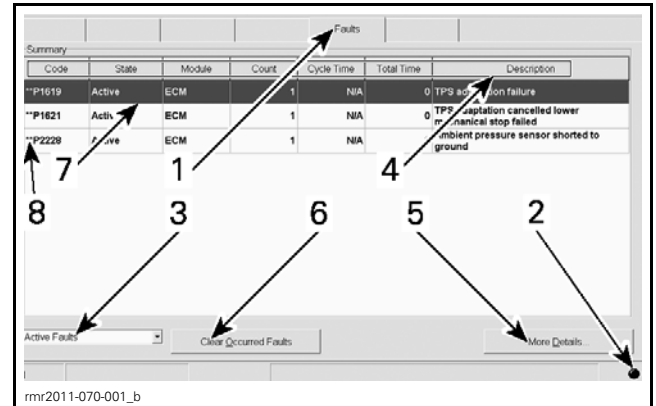
5. Choose the fault state to display.



TYPICAL

1. Drop down list

FAULT STATE	INFORMATION
All faults	Display all possible faults regardless of state
Active faults	Display only faults matching this state. Empty area if there is no active fault
Active and occurred faults	Display only faults that have either state. Empty area if there is neither active nor occurred fault



TYPICAL FAULT PAGE

1. Fault tab
2. Fault indicator light
3. Fault code state drop box
4. Fault nomenclature
5. More details button
6. Clear occurred faults button
7. Selected fault
8. More information indicator

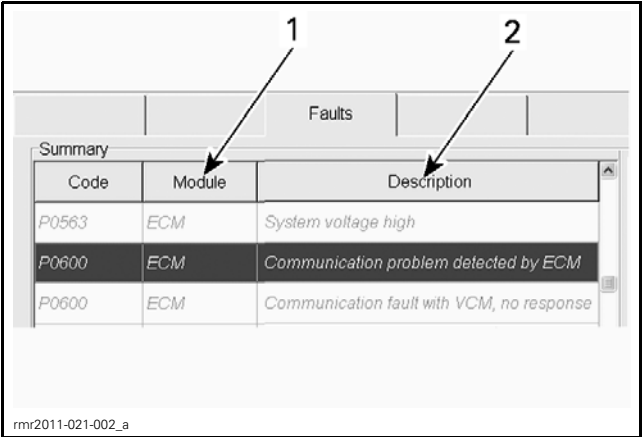
FAULT PAGE DESCRIPTION	
ITEM	INFORMATION
Fault tab	Click tab to display the fault page
Fault indicator light	When flashing, it indicates there is active fault(s)
Fault code state drop box	Click drop box to select the type of faults to display
Fault nomenclature	Display specific information and statistics related to the fault (see fault nomenclature table)
More details button	To display possible causes and service actions related to the selected fault
Clear occurred faults button	To clear all occurred faults in related ECU(s)
Selected fault	When a fault is selected, additional information pertaining to that fault will be displayed when clicking the "More details" button. To select a fault, click on the fault with the mouse or use the cursor up or down to scroll to the desired fault

Subsection XX (DIAGNOSTIC AND FAULT CODES)

FAULT NOMENCLATURE	
COLUMN	INFORMATION
Code	Fault code number. When 2 stars (**) precedes the code, detailed conditions when the fault occurred, can be displayed by clicking the "More details" button
State	Display the fault state (active, occurred, inactive)
Module	Displays the module that reports the fault code. This is the module that detects or has received a message of an anomaly and reports it. List of modules: Multifunction gauge ECM (engine control module) iBR (intelligent brake and reverse) iS (intelligent suspension)
Count	Number of times this fault occurred within the driving cycle Value: From 0 to 255
Cycle time	Not to be used Value: From 0 to 255 minutes
Total time	Not to be used Value: From 0 to 64 255 minutes
Description	Provides a short description of the fault

When reading a fault code in B.U.D.S., pay particular attention to which module reports a fault. It is indicated in the **Module** column.

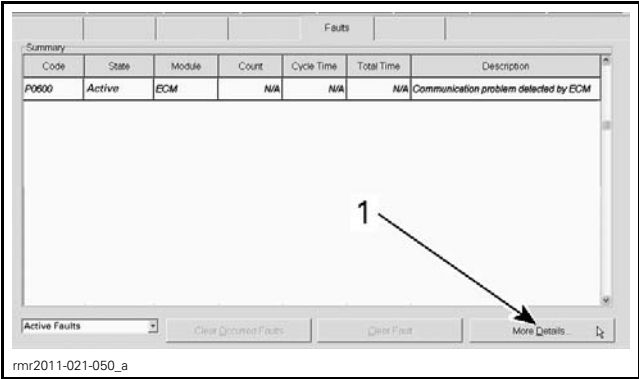
The **Description** column gives a short description of the fault.



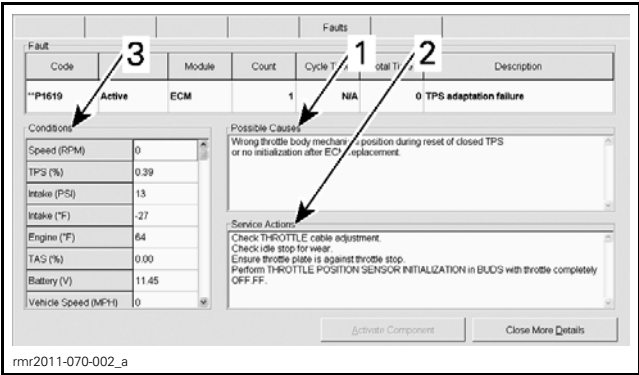
SOME COLUMNS REMOVED FOR CLARITY PURPOSE

- 1. Module that reports a fault
- 2. Fault description

Click on the **More Details** button, on the RH lower corner, to display the "Possible Causes" and the "Service Actions" to step further in the diagnosis.



TYPICAL
1. Click here



TYPICAL — MORE DETAILS PAGE
1. Possible causes related to the selected fault
2. Service actions
3. Operating conditions when fault occurred

MORE DETAILS PAGE DESCRIPTION	
ITEM	INFORMATION
Possible causes	List the possible causes that triggered the fault
Service actions	List the possible actions to perform to solve the fault
Conditions when fault occurred	List the operating conditions of the engine and/or vehicle when the fault was triggered

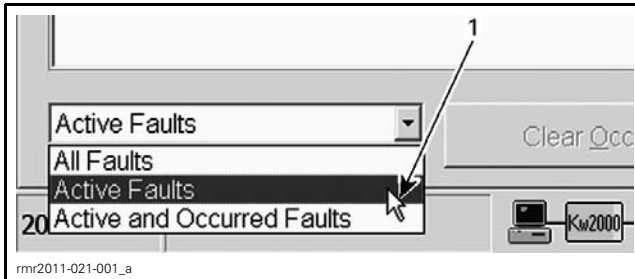
Fault Code States

The various electronic control units (ECUs) used in the vehicle can generate a variety of fault codes depending on the level of monitoring they are capable of. Fault codes have 3 possible states:

- Active
- Occurred
- Inactive.

Click the **Fault** tab then click on the drop-down list on the LH lower corner.

Choose the fault code state you want to display.



TYPICAL

1. Drop down list

FAULT STATE	INFORMATION
All faults	Display all possible faults regardless of state
Active faults	Display only faults matching this state. Empty area if there is no active fault
Active and occurred faults	Display only faults that have either state. Empty area if there is neither active nor occurred fault

Active Fault Codes

An active fault code is an indication of a fault that is **currently triggered**.

The active fault may or may not compromise normal operation of the related system(s). Service action in B.U.D.S. should be used to correct the problem that caused the fault code.

Once the fault condition(s) of the active fault is no longer present, its state will change to "occurred".

Occurred Fault Codes

An occurred fault code indicates a fault that was active, but **no longer** is.

The occurred fault does not presently affect system or component operation but is retained as a history of the faults that were detected.

Inactive Fault Codes

An inactive fault code represents a fault code that is neither active, nor occurred. It is simply part of a list of all possible faults which may be monitored by the various ECUs, which may become active or occurred if the monitoring system detects an applicable fault.

How to Clear Fault Codes Using B.U.D.S.

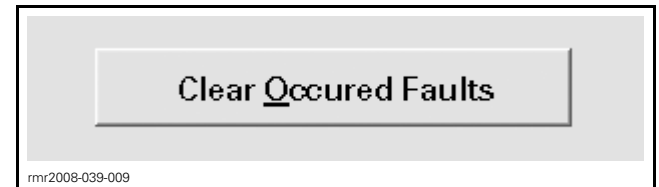
Connect vehicle to the latest applicable B.U.D.S. software. Refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection.

Click on the **Read Data** button.

Click on the **Faults** tab.

NOTE: Only the **Occurred** state faults can be cleared.

Click the "Clear Occurred Faults" button.



CLEAR OCCURED FAULTS

This will reset the appropriate counter(s) and will also record that the problem has been fixed in the related module memory.

Observe the "Occurred" fault(s). They should all disappear. Otherwise, follow this procedure.

- Remove tether cord cap from engine cut-off switch.
- Wait 3 minutes.
- Repeat procedure to clear faults again.

FAULT CODE DIAGNOSTIC

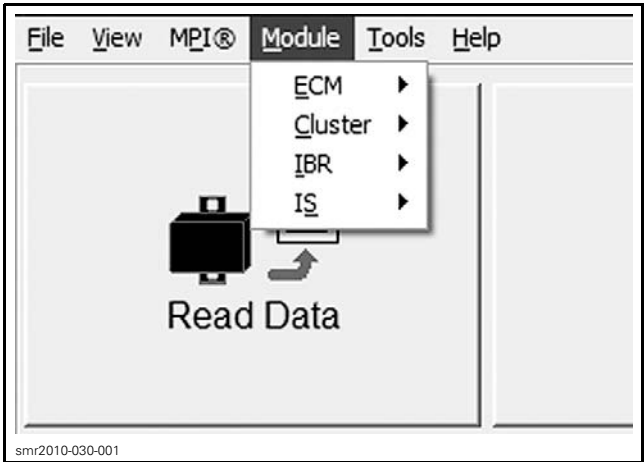
Missing Module

If a module is missing, several fault codes will appear.

To quickly find which module is missing, perform the following:

1. Connect vehicle to the latest applicable B.U.D.S. software. Refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection.
2. Click on the **Read Data** button.
3. Click **Module** in the menu bar.
4. Look at the list of modules.
5. If a module is not visible, then it is not communicating through the CAN bus (controller area network).

Subsection XX (DIAGNOSTIC AND FAULT CODES)



TYPICAL — MODULE SUBMENU LIST (MODELS WITH iBR AND iS)

6. Refer to the following table to find the appropriate subsection in this manual to diagnose the missing module.

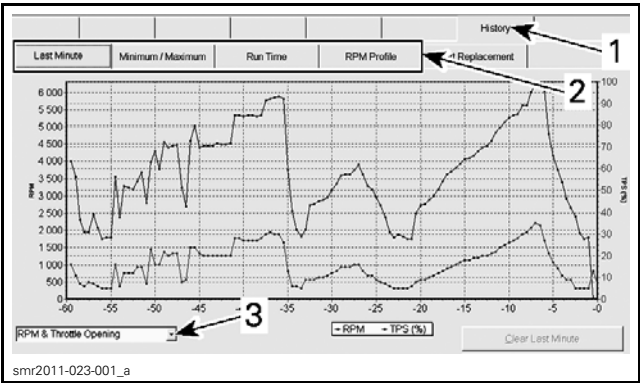
MISSING MODULE	SECTION TO REFER TO
ECM	ELECTRONIC FUEL INJECTION (EFI)
Cluster	GAUGE
iBR	iBR AND VTS
iS	SUSPENSION (iS)

Diagnostic Tips Using B.U.D.S.

History Page

HISTORY PAGE DESCRIPTION	
ITEM	INFORMATION
Last minute	Displays several parameters recorded in the last minute of engine operation
Minimum/Maximum	Display the minimum and maximum values encountered. Click "Clear Min/Max" to reset the values
Run time	Display the time proportion in what mode the engine was running in
RPM profile	Display the RPM range proportion in which the engine was running in

To see the last minute of operating conditions, click on the **History** tab in B.U.D.S.

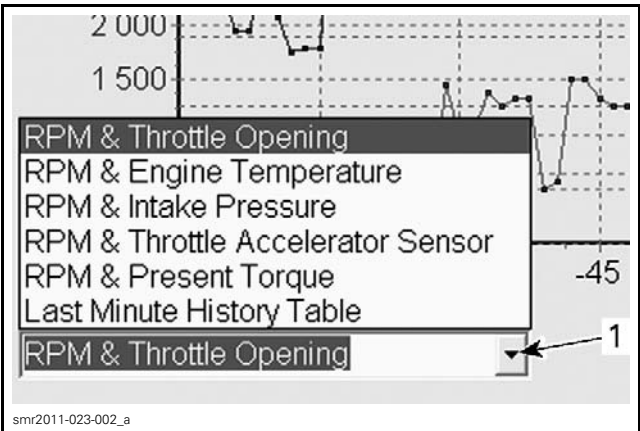


- 1. History tab
- 2. Additional history pages
- 3. Drop-down list in Last Minute page

Last Minute Drop-Down List:

From the **Last Minute** page, click on the drop-down list on the LH lower corner.

Choose the values to display.



- 1. Drop down list

Guidelines to Solve Fault Codes

CONDITION	ACTION
Troubleshooting vehicle	Use B.U.D.S. to: Read fault codes. Display "Active" faults to see components currently not operating normally. Display "Occurred" faults to troubleshoot intermittent problems. Monitor system(s), sensor(s), switches and actual conditions. Activate component(s) for troubleshooting. Set components etc. Know the last minute of operating conditions by using the "History" page. Know the operating conditions, if available, when a fault code occurred by using the "More details" button in the fault page.
New fault(s) appear after a vehicle maintenance or repair	Check sensor connections or mixed up connections. Before vehicle maintenance: Read the electronic modules with B.U.D.S. Save and print the B.U.D.S. file (keep faults option only). After vehicle maintenance: Read the electronic modules with B.U.D.S. Compare the fault code(s) before and after the maintenance using the printed copy and the current B.U.D.S. reading. Investigate only the newly fault codes. Clear all occurred faults in B.U.D.S.
Communication faults displayed as "Occurred" after module flashing	Normal behavior when flashing a module. Clear all occurred faults and check again.
Sensor "Active" fault	Read the fault description in B.U.D.S. Click on the "More Details" button. Look at the "Conditions" when available. Read the "Possible Causes". Apply the "Service Actions".
Several fault codes active at the same time	Likely to be caused by burnt fuse(s) or bad bus bar connection(s).
Low system voltage on one module Power problem on sensor(s)	Check related fuse(s) and relay. Check related power and ground wires. Check for common power supply to several sensors/modules (refer to <i>POWER DISTRIBUTION AND GROUNDS</i>). NOTE: Some sensors are supplied by the battery while others are supplied by a module.
Low system voltage on several modules (several communication faults will also appear)	Check battery condition and connections. Check related fuse(s) and relay. Check voltage regulator/rectifier.
High system voltage on several modules	A battery charger has likely been used to substitute the vehicle battery. Clear all occurred faults and check again. Check voltage regulator/rectifier.
When all modules report that a module is missing	Check the module that is reported as missing. Check related fuse(s) and relay. Check related power and ground wires.
When several modules are in fault	Search for a common problem such as a faulty sensor.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

CONDITION	ACTION
CAN bus failure, CAN buss OFF	When several modules and sensors report that a module is missing. The missing module may report CAN bus failure, CAN bus off. Check related CAN wires (continuity, short to ground, short between CAN low and high). Check module pins and wiring terminals. Then, the other modules should stop reporting that module is missing.
Occurred fault(s)	May have been generated due to a system or component that was momentarily operating outside normal parameters.
	May be generated when disconnecting and reconnecting a component, replacing a burnt fuse, or may be due to a momentary high or low voltage.
	Before being "Occurred", a fault has always been "Active" for a certain time, indicating that an unexpected condition or problem has been present during the driving cycle. A frequent momentarily fault or an intermittent fault may never be seen as "Active" in B.U.D.S. while there is still a pending problem. This type of malfunctions can be discovered by looking at the "Occurred" faults and then by evaluating the fault count. As long as a fault is present, it is displayed as "Active".
Fault count (0 - 255)	Low value: Suggests handling problems (connections, terminal contact/shape etc.). High value: Suggests a frequent and unsolved problem. The problem should be investigated.
Fault conditions (More details button)	Look for abnormal, excessive values.
Hard to find problems	When the basic troubleshooting has been done and the fault code(s) persists, often the problem is related to the wiring harness, connections or electromechanical components. Short to ground, to battery or between wires. Wire splices, chafing, terminal problems (pulled out, bent, out of shape, corroded etc.). Bad contacts in switch or relay.

GUIDELINES TO SOLVE SPECIFIC FAULT CODES

Several Fault Codes Are Active Simultaneously

If this occurs, check the following:

- Check the 30 A fuses in fuse box.
- Check the bus bar condition and connections in the fuse box(es).
- Check the diagnostic connector for the presence of water or corrosion.
- Check the CAN wires.

Fault Code C2100

iBR Sensors calibration is corrupted If the fault comes active when the iBR is activated and stays active, verify if a software update is available.

Fault Code C2120

iBR Application calibration is corrupted If the fault comes active when the iBR is activated and stays active, verify if a software update is available.

Fault Code C2121, C2221

iBR or iS application parameters corrupted (backup no. 1 or no. 2). This fault may occasionally appear as occurred. It happens when power to the module is shut off before the module has time to complete its shutdown. Normal operation is not affected. If it occurs often, check supply voltage to module.

Fault Code C2150, C2233, C2250

iBR or iS motor or system current software breaker. Motor or module current too high. This fault may occasionally appear as occurred. Normal operation is not affected. If the count is high, check the moving mechanism of the system if it is stiffer than normal to operate.

Fault Code C2232

Motor open. If suspension operates when using the iS Up/Down switches, the suspension will operate normally when riding even if this fault is active. In this case, the fault can be ignored. The fault will be set to "occurred" when the iS module will be shut down. If the suspension does not operate when using the iS Up/Down switches, refer to *SUSPENSION (iS)* subsection.

Fault Code P0122 and P0123

The TAS signal #1, the TOPS and MAPS sensors share the same 5 volt supply. If one of the sensor is using too much power, the voltage will drop which may result in the fault codes appearing on the other sensors. If the fault code becomes active verify power input in all 3 sensors.

Fault Code P0562

Battery voltage too low. It occurs when both battery voltage and engine RPM conditions are met. See following chart. Refer to *CHARGING SYSTEM* subsection.

BATTERY VOLTAGE	ENGINE SPEED
Lower than 6.5 Vdc	Lower than 1280 RPM
Lower than 11.8 Vdc	Greater than 1280 RPM

Fault Code P0563

Battery voltage too high. It occurs when battery voltage is above 16 Vdc when engine is running. Refer to *CHARGING SYSTEM*.

Fault Code P0171

Multiplicative mixture adaptation exceeds upper limit--> mixture too lean. An open signal on the engine coolant temperature (CTS) can trigger that fault. Refer to *ELECTRONIC FUEL INJECTION (EFI)* subsection.

Fault Code P0172

Multiplicative mixture adaptation below lower limit--> mixture too rich. An open signal on the engine coolant temperature (CTS) can trigger that fault. Refer to *ELECTRONIC FUEL INJECTION (EFI)* subsection.

Fault Code P1171

Additive mixture adaptation exceeds upper limit--> mixture too lean. An open signal on the engine coolant temperature (CTS) can trigger that fault. Refer to *ELECTRONIC FUEL INJECTION (EFI)* subsection.

Fault Code P1172

Additive mixture adaptation below lower limit --> mixture too rich. An open signal on the engine coolant temperature (CTS) can trigger that fault. Refer to *ELECTRONIC FUEL INJECTION (EFI)* subsection.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

Fault Code U016A

Loss of vehicle speed. This fault may occasionally appear as occurred. Normal operation is not affected. If the count is high, check the related components.

Fault Code U0129

CAN communication error between iS and iBR modules or iBR CAN message time-out or validity. This fault may occasionally appear as occurred. Normal operation is not affected. If the count is high, check the related components. Ensure connector is plugged.

Fault Code U0300

Incorrect ECM or information center for the engine. Installed part is not appropriate for the vehicle. Using BUDS, check if the security coding of the cluster is matched with the ECM security coding. **Engine will crank but will not start.** Refer to *PARTS CATALOGS* for proper part according to vehicle.

FAULT CODE TABLE

NOTE: Always refer to the fault code list available in the latest applicable version of B.U.D.S. software.

When using the service action suggested in the Fault section of B.U.D.S., the system circuits are referred as A-M4 for instance. It means ECM connector "A" and the circuit wire M4 as found in the *WIRING DIAGRAM*.

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
B2210	CLUSTER	Left keypad fault (Switch kept activated more than 60 seconds)	Problem with left keypad.	The switch may be defective, verify the functionality of the switch or the wires. Refer to the shop manual for switch diagnosis/testing procedure.
B2211	CLUSTER	Suspension UP/DOWN or SPORT / ECO switches shorted to ground fault	Problem with left keypad.	Look for pin B if shorted to ground or pin C.
B2212	CLUSTER	Suspension UP/DOWN or SPORT / ECO switches disconnected fault	Problem with left keypad.	Look for pin B if disconnected to pin 14 on the cluster. Look for pin C if disconnected to pin 15 on the cluster .
B2213	CLUSTER	VTS UP/DOWN switches shorted to ground fault	Problem with left keypad.	Look for pin A if shorted to ground or pin C.
B2214	CLUSTER	VTS UP/DOWN switches disconnected fault	Problem with left keypad.	Look for pin A if disconnected to pin 13 on the cluster. Look for pin C if disconnected to pin 15 on the cluster .
B2220	CLUSTER	Right keypad fault (Switch kept activated more than 60 seconds)	Problem with right keypad.	The switch may be defective, verify the functionality of the switch or the wires. Refer to the shop manual for switch diagnosis/testing procedure.
B2221	CLUSTER	MODE/SET switches shorted to ground fault	Problem with right keypad.	Look for pin B if shorted to ground or pin C.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
B2222	CLUSTER	MODE/SET switches disconnected fault	Problem with right keypad.	Look for pin B if disconnected to pin 17 on the cluster. Look for pin C if disconnected to pin 18 on the cluster.
B2223	CLUSTER	UP/DOWN switches shorted to ground fault	Problem with right keypad.	Look for pin A if shorted to ground or pin C.
B2224	CLUSTER	UP/DOWN switches disconnected fault	Problem with right keypad.	Look for pin A if disconnected to pin 16 on the cluster. Look for pin C if disconnected to pin 18 on the cluster.
C0042	IBR	Brake Lever Sensor (BRLS) signals A open/shorted to ground	Damaged sensor, damaged circuit wires, damaged connector or damaged iBR pins. Fault detected when the engine is running or stopped.	Check for 0,5 to 3V on pin F and 0,25 to 1.5 on pin C.
C0042	IBR 2013	Brake Lever Sensor (BRLS) signals A open/shorted to ground	Damaged sensor, damaged circuit wires, damaged connector or damaged iBR pins. Fault detected when the engine is running or stopped.	Check for 0,5 to 3V on pin F and 0,25 to 1.5 on pin C.
C0043	IBR	Brake Lever Sensor (BRLS) signals B open/shorted to ground	Damaged sensor, damaged circuit wires, damaged connector or damaged iBR pins. Fault detected when the engine is running or stopped.	Check for 0,5 to 3V on pin F and 0,25 to 1.5 on pin C.
C0043	IBR 2013	Brake Lever Sensor (BRLS) signals B open/shorted to ground	Damaged sensor, damaged circuit wires, damaged connector or damaged iBR pins. Fault detected when the engine is running or stopped.	Check for 0,5 to 3V on pin F and 0,25 to 1.5 on pin C.
C0073	IBR	Torque request failure	CPS wires shorted. Bad connection on the engine coolant temp sensor.	Perform ECM software update if available. Verify CPS connection. Verify engine temperature if it is plausible. A bad connection with the CTS can generate this fault when the iBR is used.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
C0073	IBR 2013	Torque request failure	CPS wires shorted. Bad connection on the engine coolant temp sensor.	Perform ECM software update if available. Verify CPS connection. Verify engine temperature if it is plausible. A bad connection with the CTS can generate this fault when the iBR is used.
C2100	IBR	Sensors calibration is corrupted	Incompatible firmware or memory failure.	If the fault comes active when the iBR is activated and stays active, verify if a software update is available. Refer to the service manual for more details.
C2100	IBR	Actuator movement	The reverse gate cannot move to the desired position. (stuck or motor open)	Clean and check for damage/wear parts in the reverse system and nozzle area. Check iBR electrical motor wiring. Isolate the iBR output shaft from the reverse system and activate the iBR, if the fault comes active, replace iBR. Refer to the service manual for more details.
C2100	IBR 2013	Sensors calibration is corrupted	Incompatible firmware or memory failure.	If the fault comes active when the iBR is activated and stays active, verify if a software update is available. Refer to the service manual for more details.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
C2101	IBR	Actuator movement warning	The reverse gate cannot move to the desired position within expected time.	Clean and check for damage/wear parts in the reverse system and nozzle area. Check iBR electrical motor wiring. Isolate the iBR output shaft from the reverse system and activate the iBR, if the fault comes active, replace iBR. Refer to the service manual for more details.
C2101	IBR 2013	Actuator movement warning	The reverse gate cannot move to the desired position within expected time.	Clean and check for damage/wear parts in the reverse system and nozzle area. Check iBR electrical motor wiring. Isolate the iBR output shaft from the reverse system and activate the iBR, if the fault comes active, replace iBR. Refer to the service manual for more details.
C2102	IBR 2013	Actuator movement	The reverse gate cannot move to the desired position. (stuck or motor open)	Clean and check for damage/wear parts in the reverse system and nozzle area. Check iBR electrical motor wiring. Isolate the iBR output shaft from the reverse system and activate the iBR, if the fault comes active, replace iBR. Refer to the service manual for more details.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
C2110	IBR	Reverse gate position sensor error	iBR malfunction.	If the fault comes active when the iBR is activated and stays active, verify if a software update is available. Refer to the service manual for more details.
C2110	IBR	Angle position sensor warning	iBR malfunction.	If the fault comes active when the iBR is activated and stays active, verify if a software update is available. Refer to the service manual for more details.
C2110	IBR	iBR overheat	iBR cooling system failure. iBR unit failure.	Check iBR cooling circuit. Refer to the service manual for more details.
C2110	IBR	Monitoring CPU message timeout or validity	iBR malfunction.	Perform an iBR software update if available and clear the fault. Replace the iBR unit if the fault remains active. Refer to the service manual for more details.
C2110	IBR	Monitoring CPU limp force	iBR malfunction.	Perform an iBR software update if available. Replace the iBR unit if the fault remains active. Refer to the service manual for more details.
C2110	IBR 2013	Reverse gate position sensor error	iBR malfunction.	If the fault comes active when the iBR is activated and stays active, verify if a software update is available. Refer to the service manual for more details.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
C2111	IBR	ECM erratic RPM signal	RPM signal received from engine ECM not plausible.	Check CPS sensor connection
C2112	IBR 2013	Angle position sensor warning	iBR malfunction.	If the fault comes active when the iBR is activated and stays active, verify if a software update is available. Refer to the service manual for more details.
C2113	IBR 2013	iBR overheat	iBR cooling system failure. iBR unit failure.	Check iBR cooling circuit. Refer to the service manual for more details.
C2114	IBR 2013	Monitoring CPU message timeout or validity	iBR malfunction.	Perform an iBR software update if available and clear the fault. Replace the iBR unit if the fault remains active. Refer to the service manual for more details.
C2115	IBR 2013	Monitoring CPU limp force	iBR malfunction.	Perform an iBR software update if available. Replace the iBR unit if the fault remains active. Refer to the service manual for more details.
C2120	IBR	Application calibration is corrupted	Incompatible firmware or memory failure.	If the fault comes active when the iBR is activated and stays active, verify if a software update is available. Refer to the service manual for more details.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
C2120	IBR 2013	Application calibration is corrupted	Incompatible firmware or memory failure.	If the fault comes active when the iBR is activated and stays active, verify if a software update is available. Refer to the service manual for more details.
C2121	IBR	Application parameters corrupted (backup #1 or #2)	Unexpected battery power lost or memory failure. Ignore fault if "occured"	Verify starting and charging system circuits. Clear fault Refer to the service manual for more details.
C2121	IBR 2013	Application parameters corrupted (backup #1 or #2)	Unexpected battery power lost or memory failure. Ignore fault if "occured"	Verify starting and charging system circuits. Clear fault Refer to the service manual for more details.
C2130	IBR	Motor current software breaker	iBR motor current too high. Battery power failure. iBR unit failure.	Clean and check for damage in the reverse gate and nozzle area. Refer to the service manual for more details.
C2130	IBR	Internal motor drive failure	Motor voltage feedback not fitting with the command.	
C2130	IBR 2013	Motor current software breaker	iBR motor current too high. Battery power failure. iBR unit failure.	Clean and check for damage in the reverse gate and nozzle area. Refer to the service manual for more details.
C2131	IBR	iBR DC motor shorted to ground or 12V	iBR motor failure. iBR motor wires damaged. Battery power failure. iBR unit failure.	Perform an iBR update with BUDS Check iBR battery power Check iBR Motor Wiring Refer to the service manual for more details.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
C2131	IBR 2013	iBR DC motor shorted to ground or 12V	iBR motor failure. iBR motor wires damaged. Battery power failure. iBR unit failure.	Perform an iBR update with BUDS Check iBR battery power Check iBR Motor Wiring Refer to the service manual for more details.
C2132	IBR	Motor Open	No current while activated.	Verify if the motor is properly connected to the iBR housing
C2132	IBR 2013	Motor Open	No current while activated.	Verify if the motor is properly connected to the iBR housing
C2133	IBR 2013	Internal motor drive failure	Motor voltage feedback not fitting with the command.	
C2142	IBR	Brake Lever Sensor (BRLS) signals A shorted to battery	Damaged sensor, damaged circuit wires, damaged connector or damaged iBR pins. Fault detected when the engine is running or stopped.	Check for 0,5 to 3V on pin F and 0,25 to 1.5 on pin C.
C2142	IBR 2013	Brake Lever Sensor (BRLS) signals A shorted to battery	Damaged sensor, damaged circuit wires, damaged connector or damaged iBR pins. Fault detected when the engine is running or stopped.	Check for 0,5 to 3V on pin F and 0,25 to 1.5 on pin C.
C2143	IBR	Brake Lever Sensor (BRLS) signals B shorted to battery	Damaged sensor, damaged circuit wires, damaged connector or damaged iBR pins. Fault detected when the engine is running or stopped.	Check for 0,5 to 3V on pin F and 0,25 to 1.5 on pin C.
C2143	IBR 2013	Brake Lever Sensor (BRLS) signals B shorted to battery	Damaged sensor, damaged circuit wires, damaged connector or damaged iBR pins. Fault detected when the engine is running or stopped.	Check for 0,5 to 3V on pin F and 0,25 to 1.5 on pin C.
C2144	IBR	Brake Lever Sensor (BRLS) power shorted to battery	Damaged sensor, damaged circuit wires, damaged connector or damaged iBR pins. Fault detected when the engine is running or stopped.	Check for 4.5 to 5 volts on sensor connector pin A & D. Refer to the service manual for more details.
C2144	IBR 2013	Brake Lever Sensor (BRLS) power shorted to battery	Damaged sensor, damaged circuit wires, damaged connector or damaged iBR pins. Fault detected when the engine is running or stopped.	Check for 4.5 to 5 volts on sensor connector pin A & D. Refer to the service manual for more details.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
C2145	IBR	Brake Lever Sensor (BRLS) power shorted to ground	Damaged sensor, damaged circuit wires, damaged connector or damaged iBR pins. Fault detected when the engine is running or stopped.	Check for 4.5 to 5 volts on sensor connector pin A & D. Refer to the service manual for more details.
C2145	IBR 2013	Brake Lever Sensor (BRLS) power shorted to ground	Damaged sensor, damaged circuit wires, damaged connector or damaged iBR pins. Fault detected when the engine is running or stopped.	Check for 4.5 to 5 volts on sensor connector pin A & D. Refer to the service manual for more details.
C2146	IBR	Brake Lever Sensor (BRLS) signals A/B reading difference	Damaged sensor, damaged circuit wires, damaged connector or damaged iBR pins. Fault detected when the engine is running or stopped.	Check for 0,5 to 3V on pin F and 0,25 to 1.5 on pin C.
C2146	IBR 2013	Brake Lever Sensor (BRLS) signals A/B reading difference	Damaged sensor, damaged circuit wires, damaged connector or damaged iBR pins. Fault detected when the engine is running or stopped.	Check for 0,5 to 3V on pin F and 0,25 to 1.5 on pin C.
C2150	IBR	System current software breaker	iBR input current too high.	Clean and check for damage in the reverse gate and nozzle area. Refer to the service manual for more details.
C2150	IBR 2013	System current software breaker	iBR input current too high.	Clean and check for damage in the reverse gate and nozzle area. Refer to the service manual for more details.
C2151	IBR	System disabled and need activation	System is locked. Need activation.	Use B.U.D.S. iBR unlock function. Refer to the service manual for more details.
C2151	IBR 2013	System disabled and need activation	System is locked. Need activation.	Use B.U.D.S. iBR unlock function. Refer to the service manual for more details.
C2155	IBR	Water temperature sensor overheat	iBR cooling system failure. iBR unit failure.	Check iBR cooling circuit. Replace iBR unit. Refer to the service manual for more details.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
C2155	IBR 2013	Water temperature sensor overheat	iBR cooling system failure. iBR unit failure.	Check iBR cooling circuit. Replace iBR unit. Refer to the service manual for more details.
C2161	IBR	Low voltage detected	Battery failure, rectifier failure, damaged circuit wires, battery terminal connection, damaged AC generator or damaged connectors. Ignore fault if "occured"	Check fuses #6 (REFER TO WIRING DIAGRAM). Check ground continuity to the engine block. Refer to the service manual for more details.
C2161	IBR 2013	Low voltage detected	Battery failure, rectifier failure, damaged circuit wires, battery terminal connection, damaged AC generator or damaged connectors. Ignore fault if "occured"	Check fuses #6 (REFER TO WIRING DIAGRAM). Check ground continuity to the engine block. Refer to the service manual for more details.
C2200	IS	Sensors calibration is corrupted	Incompatible firmware or memory failure.	If the fault comes active when the iS is activated and stays active, verify if a software update is available. Refer to the service manual for more details.
C2210	IS	Bridge/CPU temperature sensor overheat	Hardware failure or external heat source.	Check for over utilization / heat.
C2220	IS	Application calibration is corrupted	Incompatible firmware or memory failure.	If the fault comes active when the iS is activated and stays active, verify if a software update is available. Refer to the service manual for more details.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
C2221	IS	Application parameters corrupted (backup #1 or #2)	Unexpected battery power lost or memory failure. Ignore fault if "occured"	Verify starting and charging system circuits. Clear fault. Refer to the service manual for more details.
C2230	IS	Internal motor drive failure	Motor voltage feedback not fitting with the command.	If the fault comes active when the iS is activated and stays active, verify if a software update is available. Refer to the service manual for more details.
C2231	IS	Motor shorted to ground/battery	Current leak detected when the bridge is off.	Check suspension actuator pump wiring.
C2232	IS	Motor open	No current while activated.	Check suspension actuator pump and/or wiring.
C2233	IS	Motor current software breaker	Motor current too high.	Check suspension actuator pump.
C2240	IS	Seat position sensor error Open, Shorted to Gnd	Sensor not connected.	Check system circuit at iS module. (REFER TO WIRING DIAGRAM)
C2250	IS	System current software breaker	Battery input current too high.	Check suspension actuator pump.
C2251	IS	System disabled and need activation	System is locked for safety. Need activation.	Activate iS using B.U.D.S. activation function.
C2252	IS	TOPS active	Warning only: TOPS detected by the system, the suspension is disable while the TOPS is "ON".	Refer to the service manual for more details.
C2260	IS	System under voltage	System under voltage warning.	Check battery and charging system.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0106	ECM	Manifold Intake pressure sensor out of range	Sensing port dirty or blocked. Sensor failure or unexpected reading at idle. Sensor fallen out of housing or leaking inlet. For a leak of the Intake Manifold, the ECM will diagnose it only if the RPM is greater than 5000 RPM.	Check system circuits A-B4, A-G4, A-H2. Make sure that the sensor housing is correctly inserted into the manifold. Check sensor connector for: a) 5 volts supply from ECM on pin 1. b) Ground supply from ECM on pin 2. c) Analog voltage from sensor to ECM on pin 3. The 5 volt supply is shared between the TAS signal 1, TOPS and MAPS. Verify all three sensor if one is pulling too much current.
P0107	ECM	Manifold absolute pressure sensor shorted to ground or not connected.	Sensing port dirty or blocked. Sensor failure or unexpected reading at idle. Sensor fallen out of housing or leaking inlet. Connector disconnected.	Check system circuits A-B4, A-G4, A-H2. Make sure that the sensor housing is correctly inserted into the manifold. Check sensor connector for: a) 5 volts on pin 1. b) 0 volt on pin 2. c) 0 volt on pin 3. The 5 volt supply is shared between the TAS signal 1, TOPS and MAPS. Verify all three sensor if one is pulling too much current.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0108	ECM	Manifold absolute pressure sensor open circuit or shorted to battery	Sensing port dirty or blocked. Sensor failure or unexpected reading at idle. Sensor fallen out of housing or leaking inlet.	Check system circuits A-B4, A-G4, A-H2. Make sure that the sensor housing is correctly inserted into the manifold. Check sensor connector for: a) 5 volts on pin 1. b) 0 volt on pin 2. c) 0 volt on pin 3. The 5 volt supply is shared between the TAS signal 1, TOPS and MAPS. Verify all three sensor if one is pulling too much current.
P0112	ECM	Intake manifold temperature sensor shorted to ground	Damaged sensor, damaged circuit wires, damaged connector or damaged ECM pins.	Check the sensor for approximately 2280 to 2736 ohms at 19 to 21°C (66 to 70°F). Check for approximately 2280 to 2736 ohms at 19 to 21°C (66 to 70°F) between ECM connector pins A-H3 and A-J3. Refer to the service manual for more details.
P0113	ECM	Intake manifold temperature sensor open circuit or shorted to battery	Damaged sensor, damaged circuit wires, damaged connector or damaged ECM pins.	Check the sensor for approximately 2280 to 2736 ohms at 19 to 21°C (66 to 70°F). Check for approximately 2280 to 2736 ohms at 19 to 21°C (66 to 70°F) between ECM connector pins A-H3 and A-J3. Refer to the service manual for more details.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0116	ECM	Engine coolant temperature signal not plausible	Damaged sensor, damaged circuit wires, damaged connector or damaged ECM pins.	Check for debris or blockage in cooling system. Check the sensor for approximately 2280 to 2736 ohms at 19 to 21°C (66 to 70°F). Check for approximately 2280 to 2736 ohms at 19 to 21°C (66 to 70°F) between ECM connector pins A-A1 and A-J2. Refer to the service manual for more details.
P0117	ECM	Engine coolant temperature sensor fault - Short circuit to GND	Damaged sensor, damaged circuit wires, damaged connector or damaged ECM pins.	Check for debris or blockage in cooling system. Check the sensor for approximately 2280 to 2736 ohms at 19 to 21°C (66 to 70°F). Check for approximately 2280 to 2736 ohms at 19 to 21°C (66 to 70°F) between ECM connector pins A-A1 and A-J2. Refer to the service manual for more details.
P0118	ECM	Engine coolant temperature sensor fault - Short circuit to V+ or connector disconnected.	Engine overheated or damaged sensor. Connector disconnected.	Check for debris or blockage in cooling system. Check the sensor for approximately 2280 to 2736 ohms at 19 to 21°C (66 to 70°F). Check for approximately 2280 to 2736 ohms at 19 to 21°C (66 to 70°F) between ECM connector pins A-A1 and A-J2. Refer to the service manual for more details.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0122	ECM	TAS (Throttle Accelerator sensor) 1 fault (short circuit to GND)	Damaged sensor, damaged circuit wires, damaged connector or damaged ECM pins.	Check system circuits B-E1, B-K1, B-K3. Check for 0 volt on sensor connector pin E. Check for 5 volts on sensor connector pin D. The 5 volt supply is shared between the TAS signal 1, TOPS and MAPS. Verify all three sensor if one is pulling too much current. Check for 0.5 to 3 volts on sensor connector pin F. Refer to the service manual for more details.
P0123	ECM	TAS (Throttle Accelerator sensor) 1 fault (short circuit to battery)	Damaged sensor, damaged circuit wires, damaged connector or damaged ECM pins.	Check system circuits B-E1, B-K1, B-K3. Check for 0 volt on sensor connector pin E. Check for 5 volts on sensor connector pin D. The 5 volt supply is shared between the TLS signal 1, TOPS and MAPS. Verify all three sensor if one is pulling too much current. Check for 0.5 to 3 volts on sensor connector pin F. Refer to the service manual for more details.
P0127	ECM	Intercooler system fault	High air intake temperature detected. Fault detected when the engine is running and stopped. Blocked intercooler water circuit.	Clean intercooler water circuit system. Refer to the service manual for more details.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0171	ECM	Multiplicative mixture adaptation exceeds upper limit--> mixture too lean		An open signal on the Engine coolant temperature (CTS) can trigger that fault
P0172	ECM	Multiplicative mixture adaptation below lower limit--> mixture too rich		An open signal on the Engine coolant temperature (CTS) can trigger that fault
P0201	ECM	Injection Power Stage fault - open line / Cylinder 1	Damaged injector, damaged circuit wires, damaged connector or damaged ECM output pins.	Check for 11.4 to 12.6 ohms between engine connector pin 2 and ECM connector pin A-B3. Check for 12 volts on pin 2 of injector connector. Check FUSE#13 (REFER TO WIRING DIAGRAM) Check for damaged circuit wires. Refer to the service manual for more details.
P0202	ECM	Injection Power Stage fault - open line / Cylinder 2	Damaged injector, damaged circuit wires, damaged connector or damaged ECM output pins.	Check for 11.4 to 12.6 ohms between engine connector pin 2 and ECM connector pin A-K1. Check for 12 volts on pin 2 of injector connector. Check FUSE#14 (REFER TO WIRING DIAGRAM) Check for damaged circuit wires Refer to the service manual for more details.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0203	ECM	Injection Power Stage fault - open line / Cylinder 3	Damaged injector, damaged circuit wires, damaged connector or damaged ECM output pins.	Check for 11.4 to 12.6 ohms between engine connector pin 3 and ECM connector pin A-J1. Check for 12 volts on pin 2 of injector connector. Check FUSE#15 (REFER TO WIRING DIAGRAM) Check for damaged circuit wires. Refer to the service manual for more details.
P0217	ECM	High engine coolant temperature detected	High engine coolant temperature detected	Check for debris or blockage in cooling system. Check the sensor for approximately 2280 to 2736 ohms at 19 to 21°C (66 to 70°F). Check for approximately 2280 to 2736 ohms at 19 to 21°C (66 to 70°F) between ECM connector pins A-A1 and A-J2. Refer to the service manual for more details.
P0222	ECM	TAS (Throttle Accelerator sensor) 2 fault (short circuit to GND)	Damaged sensor, damaged circuit wires, damaged connector or damaged ECM pins.	Check system circuits B-A3, B-B3, B-J3. Check for 0 volt on sensor connector pin B. Check for 5 volts on sensor connector pin A. Check for 0.25 to 1.5 volts on sensor connector pin C. Refer to the service manual for more details.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0223	ECM	TAS (Throttle Accelerator sensor) 2 fault (short circuit to battery)	Damaged sensor, damaged circuit wires, damaged connector or damaged ECM pins.	Check system circuits B-A3, B-B3, B-J3. Check for 0 volt on sensor connector pin B. Check for 5 volts on sensor connector pin A. Check for 0.25 to 1.5 volts on sensor connector pin C. Refer to the service manual for more details.
P0231	ECM	Fuel pump open circuit or short to ground	Damaged pump, damaged circuit wires, damaged connector or damaged ECM output pins.	Check for approximately 1 ohm between pins A and B of the fuel pump connector. Check FUSE#18 (REFER TO WIRING DIAGRAM) Check for damaged circuit wires. Check for damaged connector, damaged ECM output pins or ECM failure. Refer to the service manual for more details.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0232	ECM	Fuel pump short circuit to battery	Damaged pump, damaged circuit wires, damaged connector or damaged ECM output pins.	Check for approximately 1 ohm between pins A and B of the fuel pump connector. Check FUSE#18 (REFER TO WIRING DIAGRAM) Check for damaged circuit wires. Check for damaged connector, damaged ECM output pins or ECM failure. Refer to the service manual for more details.
P0261	ECM	Injector 1 open circuit or shorted to ground	Damaged injector, damaged circuit wires, damaged connector or damaged ECM output pins.	Check for 11.4 to 12.6 ohms between engine connector pin 1 and ECM connector pin A-B3. Check for 12 volts on pin 2 of injector connector. Check FUSE#13 (REFER TO WIRING DIAGRAM) Check for damaged circuit wires. Refer to the service manual for more details.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0262	ECM	Injector 1 shorted to battery	Damaged injector, damaged circuit wires, damaged connector or damaged ECM output pins.	Check for 11.4 to 12.6 ohms between engine connector pin 1 and ECM connector pin A-B3. Check for 12 volts on pin 2 of injector connector. Check FUSE#13 (REFER TO WIRING DIAGRAM) Check for damaged circuit wires. Refer to the service manual for more details.
P0264	ECM	Injector 2 open circuit or shorted to ground	Damaged injector, damaged circuit wires, damaged connector or damaged ECM output pins.	Check for 11.4 to 12.6 ohms between engine connector pin 2 and ECM connector pin A-K1. Check for 12 volts on pin 2 of injector connector. Check FUSE#14 (REFER TO WIRING DIAGRAM) Check for damaged circuit wires. Refer to the service manual for more details.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0265	ECM	Injector 2 shorted to battery	Damaged injector, damaged circuit wires, damaged connector or damaged ECM output pins.	Check for 11.4 to 12.6 ohms between engine connector pin 2 and ECM connector pin A-K1. Check for 12 volts on pin 2 of injector connector. Check FUSE#14 (REFER TO WIRING DIAGRAM) Check for damaged circuit wires. Refer to the service manual for more details.
P0267	ECM	Injector 3 open circuit or shorted to ground	Damaged injector, damaged circuit wires, damaged connector or damaged ECM output pins.	Check for 11.4 to 12.6 ohms between engine connector pin 3 and ECM connector pin A-J1. Check for 12 volts on pin 2 of injector connector. Check FUSE#15 (REFER TO WIRING DIAGRAM) Check for damaged circuit wires. Refer to the service manual for more details.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0268	ECM	Injector 3 shorted to battery	Damaged injector, damaged circuit wires, damaged connector or damaged ECM output pins.	Check for 11.4 to 12.6 ohms between engine connector pin 3 and ECM connector pin A-J1. Check for 12 volts on pin 2 of injector connector. Check FUSE#15 (REFER TO WIRING DIAGRAM) Check for damaged circuit wires. Refer to the service manual for more details.
P0300	ECM	Multiple misfire detected		
P0301	ECM	Misfire cylinder 2 (physical cylinder 1)		
P0302	ECM	Misfire cylinder 0 (physical cylinder 2)		
P0303	ECM	Misfire cylinder 1 (physical cylinder 3)		
P0325	ECM	Knock sensor 1 fault	Damaged sensor, damaged circuit wires, damaged connector or damaged ECM output pins. Open circuit.	Bring engine to 5000 RPM. If fault code appears then check for approximately 5 Mohms between system circuits A-C3 and A-G2. Refer to the service manual for more details.
P0335	ECM	Crankshaft signal error	Damaged sensor, damaged circuit wires, damaged connector, damaged ECM pins or damaged tooth wheel. Connector disconnected.	For the CPS, check for 700 to 900 ohms between terminals A-H1 and A-K2 of ECM connector. Refer to the service manual for more details.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0340	ECM	Camshaft 1 signal error	Damaged sensor, damaged circuit wires, damaged connector, damaged ECM pins or damaged tooth wheel.Connector disconnected.	For the CAPS, check for 12 volts on sensor connector pin 3. Check continuity for circuits A-D4, A-E2 and terminal 4 on engine connector. Check FUSE#12 (REFER TO WIRING DIAGRAM) Engine must run to erase the corrected fault. Refer to the service manual for more details.
P0351	ECM	Ignition coil 1 open circuit or shorted to ground or to battery	Damaged coil, damaged circuit wires, damaged connector or damaged ECM output pins.	Check for 0.85 to 1.15 ohms between engine connector pin 1 and ECM connector pin A-M4. Check for 12 volts on pin 2 of coil connector. Check FUSE#13 (REFER TO WIRING DIAGRAM) Refer to the service manual for more details.
P0352	ECM	Ignition coil 2 open circuit or shorted to ground or to battery	Damaged coil, damaged circuit wires, damaged connector or damaged ECM output pins.	Check for 0.85 to 1.15 ohms between engine connector pin 1 and ECM connector pin A-M2. Check for 12 volts on pin 2 of coil connector. Check FUSE#14 (REFER TO WIRING DIAGRAM) Refer to the service manual for more details.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0353	ECM	Ignition coil 3 open circuit or shorted to ground or to battery	Damaged coil, damaged circuit wires, damaged connector or damaged ECM output pins.	Check for 0.85 to 1.15 ohms between engine connector pin 3 and ECM connector pin A-M1. Check for 12 volts on pin 2 of coil connector. Check FUSE#15 (REFER TO WIRING DIAGRAM) Refer to the service manual for more details.
P0354	ECM	Ignition Power Stage fault - short circuit to GND / Cylinder 1	Damaged coil, damaged circuit wires, damaged connector or damaged ECM output pins.	Check for 0.85 to 1.15 ohms between engine connector pin 1 and ECM connector pin A-M4. Check for 12 volts on pin 2 of coil connector. Check FUSE#13 (REFER TO WIRING DIAGRAM) Refer to the service manual for more details.
P0355	ECM	Ignition Power Stage fault - short circuit to GND / Cylinder 2	Damaged coil, damaged circuit wires, damaged connector or damaged ECM output pins.	Check for 0.85 to 1.15 ohms between engine connector pin 1 and ECM connector pin A-M2. Check for 12 volts on pin 2 of coil connector. Check FUSE#14 (REFER TO WIRING DIAGRAM) Refer to the service manual for more details.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0356	ECM	Ignition Power Stage fault - short circuit to GND / Cylinder 3	Damaged coil, damaged circuit wires, damaged connector or damaged ECM output pins.	Check for 0.85 to 1.15 ohms between engine connector pin 3 and ECM connector pin A-M1. Check for 12 volts on pin 2 of coil connector. Check FUSE#15 (REFER TO WIRING DIAGRAM) Refer to the service manual for more details.
P0357	ECM	Ignition Power Stage fault - short circuit to V+ / Cylinder 1	Damaged coil, damaged circuit wires, damaged connector or damaged ECM output pins.	Check for 0.85 to 1.15 ohms between engine connector pin 1 and ECM connector pin A-M4. Check for 12 volts on pin 2 of coil connector. Check FUSE#13 (REFER TO WIRING DIAGRAM) Refer to the service manual for more details.
P0358	ECM	Ignition Power Stage fault - short circuit to V+ / Cylinder 2	Damaged coil, damaged circuit wires, damaged connector or damaged ECM output pins.	Check for 0.85 to 1.15 ohms between engine connector pin 1 and ECM connector pin A-M2. Check for 12 volts on pin 2 of coil connector. Check FUSE#14 (REFER TO WIRING DIAGRAM) Refer to the service manual for more details.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0359	ECM	Ignition Power Stage fault - short circuit to V+ / Cylinder 3	Damaged coil, damaged circuit wires, damaged connector or damaged ECM output pins.	Check for 0.85 to 1.15 ohms between engine connector pin 3 and ECM connector pin A-M1. Check for 12 volts on pin 2 of coil connector. Check FUSE#15 (REFER TO WIRING DIAGRAM) Refer to the service manual for more details.
P0360	ECM	Ignition Power stage max error & false detection of low battery voltage / Cylinder 1	Signal not plausible, verify battery voltage too low during ignition.	Check for 0.85 to 1.15 ohms between engine connector pin 1 and ECM connector pin A-M4. Check for 12 volts on pin 2 of coil connector. Check FUSE#13 (REFER TO WIRING DIAGRAM) Refer to the service manual for more details.
P0361	ECM	Ignition Power stage max error & false detection of low battery voltage / Cylinder 2	Signal not plausible, verify battery voltage too low during ignition.	Check for 0.85 to 1.15 ohms between engine connector pin 1 and ECM connector pin A-M2. Check for 12 volts on pin 2 of coil connector. Check FUSE#14 (REFER TO WIRING DIAGRAM) Refer to the service manual for more details.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0362	ECM	Ignition Power stage max error & false detection of low battery voltage / Cylinder 3	Signal not plausible, verify battery voltage too low during ignition.	Check for 0.85 to 1.15 ohms between engine connector pin 3 and ECM connector pin A-M1. Check for 12 volts on pin 2 of coil connector. Check FUSE#15 (REFER TO WIRING DIAGRAM) Refer to the service manual for more details.
P0512	ECM	Starter power stage detects high current	Damaged solenoid, damaged circuit wires, damaged connector or damaged ECM.	Verify FUSE#16 (5AMP). Check for 12 volts on pin 2 of the starter relay. Refer to the service manual for more details.
P0513	ECM	Invalid D.E.S.S. Key detected	Key not programmed in ECU.	Program a good key
P0520	ECM	Oil pressure switch functional problem	Engine leak, oil pump failure, damaged sensor, damaged circuit wires, damaged connector or damaged ECM pins.	Check resistance at 0 RPM and above 3500 RPM. Switch is normally closed, ECM connector pin A-E3 Refer to the service manual for more details.
P0523	ECM	Oil pressure sensor fault	Engine leak, oil pump failure, damaged sensor, damaged circuit wires, damaged connector or damaged ECM pins. Fault detected when the engine is running or stopped.	Check resistance at 0 RPM and above 3500 RPM. Refer to the service manual for more details.
P0524	ECM	Low oil pressure condition	Low oil level, engine leak, oil pump fault.	Check oil level. Check impedance of sensor. Refer to the service manual for more details.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0544	ECM	Exhaust gas temperature sensor functional problem	Damaged sensor, damaged circuit wires, damaged connector or damaged ECM output pins.	Check for approximately 2280 to 2736 ohms at temperature of 19 to 21°C (66 to 70°F) between system circuits A-H4 and A-J4. Refer to the service manual for more details.
P0545	ECM	Exhaust gas temperature sensor shorted to ground	Damaged sensor, damaged circuit wires, damaged connector or damaged ECM output pins.	Check for approximately 2280 to 2736 ohms at temperature of 19 to 21°C (66 to 70°F) between system circuits A-H4 and A-J4. Refer to the service manual for more details.
P0546	ECM	Exhaust gas temperature sensor open circuit or shorted to battery	Damaged sensor, damaged circuit wires, damaged connector or damaged ECM output pins.	Check for approximately 2280 to 2736 ohms at temperature of 19 to 21°C (66 to 70°F) between system circuits A-H4 and A-J4. Refer to the service manual for more details.
P0560	ECM	Battery voltage not plausible	Battery failure, rectifier failure, damaged circuit wires, battery terminal connection, damaged AC generator or damaged connectors.	Check fuses #6 (REFER TO WIRING DIAGRAM). Check ground continuity to the engine block. Refer to the service manual for more details.
P0562	ECM	Battery voltage too low	Battery failure, rectifier failure, damaged circuit wires, battery terminal connection, damaged AC generator or damaged connectors.	Check fuses #6 (REFER TO WIRING DIAGRAM). Check ground continuity to the engine block. Refer to the service manual for more details.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0563	ECM	Battery voltage too high	Battery failure, rectifier failure or battery terminal connection.	Check for regulator-rectifier failure. Refer to the service manual for more details.
P0564	CLUSTER	Cruise switch fault	The cruise switch is shorted or activated more than 60 seconds.	Verify the cruise switch if it is normally open and close when activated.
P0606	ECM	ECM ADC fault	Damaged ECM.	Replace ECM
P060D	ECM	TAS (Throttle Accelerator sensor) synchronization error	Damaged sensor, damaged circuit wires, damaged connector or damaged ECM pins.	Check system circuits B-E1, B-K1, B-K3, B-A3, B-B3, B-J3 Check for 0 volt on sensor connector pin B & E. Check for 5 volts on sensor connector pin A & D. The 5 volt supply is shared between the TAS signal 1, TOPS and MAPS. Verify all three sensor if one is pulling too much current. Check for 0.5 to 3 volts on sensor connector pin F and 0.25 to 1.5 on C Refer to the service manual for more details.
P060E	ECM	Throttle Actuator - Controller Fault-digital position control exceeds limit		
P0610	ECM	Variant coding fault		

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0629	CLUSTER	Fuel sensor disconnected fault	Damaged sensor, damaged circuit wires, damaged connector or damaged ECM output pins.	Check for 2.6 ohms (full tank) to 93.6 ohms (empty tank) between pin C and pin D at the fuel pump connector. Check system circuit at the gauge Pin 19 and 20. (REFER TO WIRING DIAGRAM)
P062F	ECM	ECM EEPROM fault - exchange ECM	Damaged ECM.	Replace ECM.
P06B6	ECM	ECM Fast ADC fault (knock detection line)		
P1030	ECM	Heater Power Stage fault for lambda sensor upstreams of catalyst - open line		
P1106	ECM	Altitude correction factor (fho) not plausible - out of range		
P1120	ECM	Throttle positions calculated from TPS 1 and TPS 2 not corresponding	Damaged throttle actuator, damaged circuit wires, damaged connector or damaged ECM.	Check system circuit, perform closed throttle with B.U.D.S. Replace throttle actuator, replace ECM.
P1130	ECM	Lambda Sensor fault upstreams of catalyst - open line		
P1171	ECM	Additive mixture adaptation exceeds upper limit --> mixture too lean		An open signal on the Engine coolant temperature (CTS) can trigger that fault
P1172	ECM	Additive mixture adaptation below lower limit --> mixture too rich		An open signal on the Engine coolant temperature (CTS) can trigger that fault

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
P1502	ECM	T.O.P.S. functional problem	Boat or sensor upside down, damaged circuit wires, damaged connector or damaged ECM output pins.	Check continuity for circuits A-C4, A-G1, A-F4. The 5 volt supply is shared between the TAS signal 1, TOPS and MAPS. Verify all three sensor if one is pulling too much current. Refer to the service manual for more details.
P1503	ECM	T.O.P.S. switch short circuit to 12V	Boat or sensor upside down, damaged circuit wires, damaged connector or damaged ECM output pins.	Check continuity for circuits A-C4, A-G1, A-F4. The 5 volt supply is shared between the TAS signal 1, TOPS and MAPS. Verify all three sensor if one is pulling too much current. Refer to the service manual for more details.
P1504	ECM	T.O.P.S. switch short circuit ground	Boat or sensor upside down, damaged circuit wires, damaged connector or damaged ECM output pins.	Check continuity for circuits A-C4, A-G1, A-F4. The 5 volt supply is shared between the TAS signal 1, TOPS and MAPS. Verify all three sensor if one is pulling too much current. Refer to the service manual for more details.
P1505	ECM	T.O.P.S. switch fault non plausible state	Boat or sensor upside down, damaged circuit wires, damaged connector or damaged ECM output pins. Open circuit.	Check continuity for circuits A-C4, A-G1, A-F4. The 5 volt supply is shared between the TAS signal 1, TOPS and MAPS. Verify all three sensor if one is pulling too much current. Refer to the service manual for more details.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
P1506	ECM	T.O.P.S. switch open circuit	Boat or sensor upside down, damaged circuit wires, damaged connector or damaged ECM output pins. Open circuit.	Check continuity for circuits A-C4, A-G1, A-F4. The 5 volt supply is shared between the TAS signal 1, TOPS and MAPS. Verify all three sensor if one is pulling too much current. Refer to the service manual for more details.
P1550	ECM	Otas sensor voltage not plausible	Damaged sensor, damaged circuit wires, damaged connector or damaged ECM. Open circuit.	Check continuity for circuits B-H3, B-H1 and FUSE#12. Refer to the service manual for more details.
P1606	ECM	ECM ADC fault - exchange ECM	Damaged ECM.	No service action available for fault P1606.
P160E	ECM	Throttle Actuator - Controller Fault - digital position control below limit	Damaged throttle actuator, damaged circuit wires, damaged connector or damaged ECM.	Check system circuit, perform closed throttle with B.U.D.S. Replace throttle actuator, repalce ECM.
P1610	ECM	Throttle Actuator - Power Stage fault	Damaged throttle actuator, damaged circuit wires, damaged connector or damaged ECM.	Check system circuit, perform closed throttle with B.U.D.S. Replace throttle actuator, repalce ECM.
P1611	ECM	Throttle Actuator - Power Stage fault	Damaged throttle actuator, damaged circuit wires, damaged connector or damaged ECM.	Check system circuit, perform closed throttle with B.U.D.S. Replace throttle actuator, repalce ECM.
P1612	ECM	Throttle Actuator - Power Stage fault	Damaged throttle actuator, damaged circuit wires, damaged connector or damaged ECM.	Check system circuit, perform closed throttle with B.U.D.S. Replace throttle actuator, repalce ECM.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
P1613	ECM	Throttle Actuator - Power Stage fault	Damaged throttle actuator, damaged circuit wires, damaged connector or damaged ECM.	Check system circuit, perform closed throttle with B.U.D.S. Replace throttle actuator, repalce ECM.
P1614	ECM	Throttle Actuator - Return-Spring check not passed / Spring does not close	Damaged throttle actuator, damaged circuit wires, damaged connector or damaged ECM.	Check system circuit, perform closed throttle with B.U.D.S. Replace throttle actuator, repalce ECM.
P1615	ECM	Throttle Actuator - Position monitoring fault	Damaged throttle actuator, damaged circuit wires, damaged connector or damaged ECM.	Check system circuit, perform closed throttle with B.U.D.S. Replace throttle actuator, repalce ECM.
P1616	ECM	Throttle Actuator - Default position check or learning fault	Damaged throttle actuator, damaged circuit wires, damaged connector or damaged ECM.	Check system circuit, perform closed throttle with B.U.D.S. Replace throttle actuator, repalce ECM.
P1619	ECM	Throttle Actuator - Adaptation of upper mechanical limit failed	Damaged throttle actuator, damaged circuit wires, damaged connector or damaged ECM.	Check system circuit, perform closed throttle with B.U.D.S. Replace throttle actuator, repalce ECM.
P1620	ECM	Throttle Actuator - Adaptation of lower mechanical limit failed	Damaged throttle actuator, damaged circuit wires, damaged connector or damaged ECM.	Check system circuit, perform closed throttle with B.U.D.S. Replace throttle actuator, repalce ECM.
P1621	ECM	Throttle Actuator - Abortion of adaptation	Damaged throttle actuator, damaged circuit wires, damaged connector or damaged ECM.	Check system circuit, perform closed throttle with B.U.D.S. Replace throttle actuator, repalce ECM.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
P1622	ECM	Throttle Actuator - Repeated abortion of adaptation	Damaged throttle actuator, damaged circuit wires, damaged connector or damaged ECM.	Check system circuit, perform closed throttle with B.U.D.S. Replace throttle actuator, repalce ECM.
P1654	ECM	Voltage of D.E.S.S. key switch out of range	Damaged D.E.S.S. key switch, damaged circuit wires, damaged connector or damaged ECM output pins.	Remove D.E.S.S. key and check system circuit B-B2. Refer to the service manual for more details.
P1657	ECM	Electrical fault of D.E.S.S. key communication line	Damaged D.E.S.S. key switch, damaged circuit wires, damaged connector or damaged ECM output pins.	Remove D.E.S.S. key and check system circuit B-B2. Refer to the service manual for more details.
P1658	ECM	Faulty D.E.S.S. key communication	Damaged D.E.S.S. key switch, damaged circuit wires, damaged connector or damaged ECM output pins.	Remove D.E.S.S. key and check system circuit B-B2. Refer to the service manual for more details.
P1661	ECM	iBR malfunction	iBR fault detected by ECM.	Remove D.E.S.S. key Perform an electrical system shut down. Clear fault.
P1662	ECM	iBR torque request is not plausible	iBR fault detected by ECM.	Perform iBR software update if available or replace iBR.
P1679	ECM	Main Relay Sticking	Permanent 12V is present on ECM Pin B-M4.	ECU pin B-M4 is permanently supplied thru 15 amp fuse and it should be accessory 12 Vdc.
P16B6	ECM	ECU Fast ADC fault (knock detection line)		
P16B7	ECM	ECU Fast ADC fault (knock detection line)		
P16B8	ECM	ECU Fast ADC fault (knock detection line)		
P16C0	ECM	Fault of ECM ADC		
P16C1	ECM	Fault of ECM ADC		

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
P16C2	ECM	Fault of ECM monitoring module		
P16C3	ECM	Monitoring fault due to Accelerator Sensor check		
P16C4	ECM	Monitoring fault due to engine speed check		
P16C5	ECM	Safety fuel cut off activ - Monitoring level 1		
P16C6	ECM	Safety fuel cut off activ - Monitoring level 2		
P16C7	ECM	Monitoring fault due to throttle valve plausibility check	Damaged throttle actuator, damaged circuit wires, damaged connector or damaged ECM.	Check system circuit, perform closed throttle with B.U.D.S. Replace throttle actuator, repalce ECM.
P16C8	ECM	Monitoring fault due to exceeding permitted throttle valve position	Damaged throttle actuator, damaged circuit wires, damaged connector or damaged ECM.	Check system circuit, perform closed throttle with B.U.D.S. Replace throttle actuator, repalce ECM.
P16C9	ECM	Monitoring detected non plausible D.E.S.S. key state	Damaged D.E.S.S. key switch, damaged circuit wires, damaged connector or damaged ECM output pins.	Remove D.E.S.S. key and check system circuit B-B2. Refer to the service manual for more details.
P16CA	ECM	ECU detected faulty watch dog line ECU defect	Damaged ECM.	Replace ECM.
P16CB	ECM	ECU switch off through watch dog line (hardware fault) ECU defect	Damaged ECM.	Replace ECM.
P2080	ECM	Exhaust temperature not plausible	Damaged sensor, damaged circuit wires, damaged connector or damaged ECM output pins.	Check for approximately 2280 to 2736 ohms at temperature of 19 to 21°C (66 to 70°F) between system circuits A-H4 and A-J4. Refer to the service manual for more details.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
P2081	ECM	Exhaust temperature sensor fault	Intermittent connection. Damaged sensor, damaged circuit wires, damaged connector or damaged ECM output pins.	Check for approximately 2280 to 2736 ohms at temperature of 19 to 21°C (66 to 70°F) between system circuits A-H4 and A-J4. Refer to the service manual for more details.
P212C	ECM	Electrical lower-range violation TPS 2	Damaged throttle actuator, damaged circuit wires, damaged connector or damaged ECM.	Check system circuit, perform closed throttle with B.U.D.S. Replace throttle actuator, replace ECM
P212D	ECM	Electrical upper-range violation TPS 2	Damaged throttle actuator, damaged circuit wires, damaged connector or damaged ECM.	Check system circuit, perform closed throttle with B.U.D.S. Replace throttle actuator, replace ECM
P2159	ECM	TAS (Throttle Accelerator sensor) signal not plausible		
P2279	ECM	Air intake manifold leak downstream of throttle		
P2428	ECM	High exhaust temperature detected	Exhaust overheat, damaged sensor or damaged circuit wires.	Check cooling system for blockage. Check if the exhaust injection valve is properly calibrated. Refer to the service manual for more details.
P2620	ECM	TPS value not plausible	Damaged throttle actuator, damaged circuit wires, damaged connector or damaged ECM.	Check system circuit, perform closed throttle with B.U.D.S. Replace throttle actuator, replace ECM
P2621	ECM	Electrical lower-range violation TPS 1	Damaged throttle actuator, damaged circuit wires, damaged connector or damaged ECM.	Check system circuit, perform closed throttle with B.U.D.S. Replace throttle actuator, replace ECM

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
P2622	ECM	Electrical upper-range violation TPS 1	Damaged throttle actuator, damaged circuit wires, damaged connector or damaged ECM.	Check system circuit, perform closed throttle with B.U.D.S. Replace throttle actuator, repalce ECM
U0129	ECM	CAN communication error between ECM and iBR module	iBR fault detected by ECM. C.A.N. circuit failure, iBR or ECM failure. Disconnected connector.	Check C.A.N. circuits wires. Replace iBR. Refer to the service manual for more details.
U0129	IS	iBR CAN messages timeout or validity	Warning only: the iS module lost communication with the iBR.	If fault ACTIVE, verify CAN connection between iBR and iS
U0300	ECM	Exchange security - Wrong ECM	Incorrect ECM or cluster for engine.	Install proper recommended ECM or cluster for vehicle.
U0401	iBR	ECM CAN messages timeout or validity	C.A.N. circuit failure, ECM software failure.	Check C.A.N. circuits wires. Replace ECM. Refer to the service manual for more details.
U0401	IS	ECM CAN messages timeout or validity	Warning only: the iS module lost communication with the engine ECU.	If fault ACTIVE, verify CAN connection between ECM and iS
U0401	iBR 2013	ECM CAN messages timeout or validity	C.A.N. circuit failure, ECM software failure.	Check C.A.N. circuits wires. Replace ECM. Refer to the service manual for more details.
U0457	iBR	Cluster CAN messages timeout or validity	C.A.N. circuit failure, Cluster software failure.	Check C.A.N. circuits wires. Replace instrument Cluster. Refer to the service manual for more details.
U0457	IS	Cluster CAN messages timeout or validity	Warning only: the iS module lost communication with the Cluster.	If fault ACTIVE, verify CAN connection between Cluster and iS

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
U0457	IBR 2013	Cluster CAN messages timeout or validity	C.A.N. circuit failure, Cluster software failure.	Check C.A.N. circuits wires. Replace instrument Cluster. Refer to the service manual for more details.
U16A1	ECM	Cluster CAN Timeout error-Missing CAN ID 514h	Cluster fault detected by ECM. C.A.N. circuit failure, Instrument cluster or ECM failure.	Check C.A.N. circuits wires. Replace instrument Cluster. Refer to the service manual for more details.
U16A2	ECM	Cluster CAN Timeout error-Missing CAN ID 230h	Cluster fault detected by ECM. C.A.N. circuit failure, Instrument cluster or ECM failure.	Check C.A.N. circuits wires. Replace instrument Cluster. Refer to the service manual for more details.
U16A3	ECM	Cluster CAN Timeout error-Missing CAN ID 408h	Cluster fault detected by ECM. C.A.N. circuit failure, Instrument cluster or ECM failure.	Check C.A.N. circuits wires. Replace instrument Cluster. Refer to the service manual for more details.
U16A4	ECM	iBR CAN Timeout error-Missing CAN ID 010h	iBR fault detected by ECM. C.A.N. circuit failure, iBR or ECM failure. Disconnected connector.	Check C.A.N. circuits wires. Replace iBR. Refer to the service manual for more details.
U16A5	ECM	iBR CAN Timeout error-Missing CAN ID 012h	iBR fault detected by ECM. C.A.N. circuit failure, iBR or ECM failure. Disconnected connector.	Check C.A.N. circuits wires. Replace instrument iBR. Refer to the service manual for more details.
U16A6	ECM	Cluster check sum error - CAN ID230h	Cluster fault detected by ECM. C.A.N. circuit failure, Instrument cluster or ECM failure.	Check C.A.N. circuits wires. Replace instrument Cluster. Refer to the service manual for more details.

Subsection XX (DIAGNOSTIC AND FAULT CODES)

P-CODE	MODULE	DESCRIPTION	CAUSE	ACTION
U16A7	ECM	Cluster check sum error - CAN ID408h	Cluster fault detected by ECM. C.A.N. circuit failure, Instrument cluster or ECM failure.	Check C.A.N. circuits wires. Replace instrument Cluster. Refer to the service manual for more details.
U16A8	ECM	iBR check sum error - CAN ID010h	iBR fault detected by ECM. C.A.N. circuit failure, ECM software failure.	Check C.A.N. circuits wires. Replace iBR. Refer to the service manual for more details.
U16A9	ECM	iBR check sum error - CAN ID012h	iBR fault detected by ECM. C.A.N. circuit failure, ECM software failure.	Check C.A.N. circuits wires. Replace iBR. Refer to the service manual for more details.
U16AA	ECM	Cluster CAN Timeout error-Missing CAN ID 410h		
U16AB	ECM	Cluster check sum error - CAN ID410h		