BODY CONTROL MODULE

1998 ACCESSORIES & EQUIPMENT General Motors Corp. - Body Control Module

DESCRIPTION

WARNING: Deactivate air bag system before performing any service operation. See AIR BAG RESTRAINT SYSTEM article. DO NOT apply electrical power to any component on steering column without first deactivating air bag system. Air bag may deploy.

The Body Control Module (BCM) communicates with various systems over the serial data line in order to control the following functions: Bulb over-voltage protection; door, hatch and hood ajar status; exterior and interior lighting control; hatch release control; heated mirror control; horn relay; key-in-ignition status; load shed control; monitored loads control; PASS-Key(R) system; power mode master; rear defogger control; steering column lock/unlock control; Traction Control System (TCS) activation control; Universal Theft Deterrent (UTD); and vehicle configuration (RPO codes).

Some vehicle systems share data over a serial data line to execute various vehicle functions. Communication between each system is accomplished by sending digitally coded messages, which consist of specific information the system module must follow. Each system module is assigned its own recognition code, so that it can respond to appropriate messages. The BCM acts as the power mode master, which can determine state of health of other systems.

Signals that activate the BCM are known as "wake-up" signals. BCM is asleep when it is not controlling or monitoring the following wake-up functions: Any activity on serial data line, hatch or door ajar switch, hatch release switch, key-in-ignition switch, monitored load relay, any exterior lighting function, battery disconnection and reconnection, or ignition is turned on. The BCM will enter a sleep state when all of the following conditions exist: No activity on serial data line, ignition is turned off, no outputs are commanded, no delay timers are actively counting and no wake-up inputs are present.

OPERATION

The BCM has 2 main power feeds (high and low current) and 2 main grounds. Low power feed (battery 1) is used to supply power for BCM's logic and internal driver operation. Operating current at low power feed should not exceed 3 amps. High power feed is used to supply power for systems that draw higher amounts of current. Operating current at high power feed should not exceed 7.5 amps for 2 seconds when BCM is awake, or 2.5 milliamps when BCM is asleep. For most functions, BCM system voltage should be 9-16 volts. If voltage exceeds 16 volts, BCM will disable functions that could be damaged.

The BCM can detect if certain electrical loads have been left on to minimize the possibility of battery rundown. When BCM detects that ignition has been turned off, BCM immediately checks status of load monitor input. If BCM detects that a load is present (ground on circuit No. 640), BCM will turn on load monitor relay for 15 minutes. If BCM detects load is still present after 15 minutes, BCM will turn off relay, removing battery voltage from loads. If a switch transition is then detected by BCM, BCM will turn on relay again for another 15-minute period.

BCM can turn off rear window defogger and heated outside mirror electrical loads when vehicle is experiencing conditions that will allow these loads to discharge the battery. BCM will also turn off these loads if engine demands are higher. BCM will disable interior light bulbs if system voltage exceeds 18 volts, in order to extend bulb life.

By using the ignition switch and door ajar inputs, BCM can detect if driver has left the vehicle. If ignition is turned off and no door ajar status is detected, BCM assumes that driver is in vehicle. As soon as BCM receives a door ajar signal, it will assume that driver has left vehicle. This information is used for Retained Accessory Power (RAP) functions.

If a BCM malfunction would result in unacceptable vehicle operation, BCM will take fail-soft action to minimize the condition (i.e., BCM will substitute a fixed input or output value if BCM is unable to interpret data).

COMPONENT LOCATIONS

COMPONENT LOCATIONS

Component	Location
Body Control Module (BCM) (1)	Behind Carpet In Right Footwell, Mounted To Toe Board
Data Link Connector (DLC)	Behind Left Side Of Instrument Panel, Below Steering Column
Brake Transmission Shift Interlock (BTSI) Solenoid	In Center Console, Integral With Gearshift Lever
Daytime Running Light (DRL) Control Module	Behind Instrument Cluster
Door Ajar Indicator Switch	Rear Of Door, Integral With Latch
Door Control Module (DCM)	Behind Bottom Center Of Door Trim Panel
Electronic Traction/Suspension Control System (TCS) Switch	In Center Console, Between Gearshift Lever Storage Box
Foglight/Rear Compartment Lid Release Switch	In Instrument Panel, To Left Of Steering Column
Hood Ajar Switch	Engine Compartment Support Bracket
HVAC Control Head	Center Of Instrument Panel, Under Radio
Ignition Switch	Left Side Of Instrument Panel, Between Radio & Steering Column
Instrument Panel Electrical Center	Behind Carpet In Right Footwell, Mounted To Toe Board
Powertrain Control Module (PCM)	Right Rear Corner Of Engine Compartment, Under Battery
Right Rear Compartment Lid Lock Release Solenoid	Right Side Of Rear Compartment, On Right Compartment Latch
Star Connectors No. 1 & 2	In DLC Instrument Panel Harness
Steering Wheel Lock	Right Side Of Steering Column, Behind Instrument Panel

Underhood Electrical Center	Right Rear Corner Of Engine Compartment, Between Battery & Coolant Reservoir
(1) See **Fig. 6** .	

BCM PROGRAMMING/RPO CONFIGURATION

NOTE: Following procedure is written specifically for General Motors' Tech 2 scan tool. A generic scan tool may not be capable of performing all necessary programming functions.

Description

BCM's Electronically Erasable Programmable Only Memory (EEPROM) chip must be programmed with proper RPO configurations. EEPROM stores information about vehicle options and point of sale. When BCM is replaced, new BCM must be programmed to identify the following information:

- Real Time Damping (RTD).
- Memory options.
- Daytime Running Lights (DRL).
- Front foglights.
- Tire Pressure Monitor (TPM).
- HVAC (manual or automatic).
- Country of sale (US, Canada, Europe, etc.).

If BCM is not properly configured, BCM will set default values for some systems, which may cause faults in other systems.

Since BCM sends a password to PCM, PCM must also be programmed to accept the new password. BCM programming procedure will enable learn password mode for BCM and PCM (this mode allows PCM to learn new password sent by BCM whenever BCM or PCM is replaced). If BCM is not properly programmed, vehicle will exhibit a no-crank condition.

When BCM is replaced, new BCM must be programmed to accept resistance value of existing vehicle keys so that it will allow PASS-Key(R) operation. The new BCM is programmed to accept the first PASS-Key(R) resistance value detected. If BCM is unable to detect a valid PASS-Key(R) resistance value, BCM will not end programming sequence and DTC 2735 will set.

NOTE: Maintain proper battery voltage during programming procedure and perform steps as specified, or programming procedure will have to be repeated.

NOTE: When programming procedure is performed, DTC P1630 will set (this is normal). When DTC P1630 sets, turn ignition off for 30 seconds, then turn ignition on. DTC P1630 should clear. If DTC P1630 does not clear, see TESTS W/CODES

article in ENGINE PERFORMANCE section.

Programming Procedure

1. Using scan tool, select NEW BCM SETUP. Program BCM with correct RPO code configuration. Go to next step.
2. Using scan tool, check for proper communication between BCM and PCM. If components cannot communicate, diagnose and repair problem as necessary. If BCM and PCM are communicating properly, go to next step.
3. Turn ignition on (engine off) for 11 minutes. Turn ignition off for 30 seconds. Turn ignition on (engine off) for 11 minutes. Turn ignition off for 30 seconds. Turn ignition on (engine off) for 11 minutes or until DTC P1630 sets. Turn ignition off for 30 seconds. Turn ignition on (engine off) for 30 seconds. Attempt to start engine. If engine starts and runs normally, go to next step. If engine does not start and run normally, go to step 5).
4. Using scan tool, check for DTCs. Clear PCM DTCs. Turn ignition off for 30 seconds. Attempt to start engine. If engine starts and runs normally, programming procedure is complete. If engine does not start and run normally, go to next step.
5. If DTC P1626, P1630 or P1631 is set, see **TESTS W/CODES** article in ENGINE PERFORMANCE section. If DTC P1626, P1630 or P1631 is not set, go to step 2).

SELF-DIAGNOSTIC SYSTEM

Body Control Module (BCM) is equipped with a self-diagnostic system, which detects system Diagnostic Trouble Codes (DTCs) or abnormalities. When a malfunction occurs, BCM will store a DTC. See **BCM DTC DEFINITIONS** table. Malfunctions are recorded as history/intermittent failures or as current failures. Current DTCs indicate BCM has detected a fault which is currently present. A history DTC indicates that BCM has previously detected a malfunction that is not currently present.

Instrument Panel Cluster (IPC) can be used to retrieve and clear DTCs. See **INSTRUMENT PANEL** article. A scan tool can be used to retrieve and clear DTCs. The scan tool also has several features that can be used to help locate an intermittent condition. When scan tool is used for system tests, it will display values actually seen or commanded by various systems (i.e., BCM, PCM). This will usually include the following types of information:

- Analog Data Input - Displays analog input seen by system.
- Inputs/Outputs - Displays digital values as seen by system, and provides indication of whether input or output has cycled.
- Special Functions (Output Controls) - Allows for outputs of system to be set at a desired value (ON or OFF). This will only indicate if BCM is sending the appropriate commands, not what action was actually taken.
- Clear Codes - Will erase DTCs for system currently selected (if problem still exists in system, DTC may immediately reset).

CLEARING DTCS

If conditions for malfunction no longer exist, history DTC will clear after 50 consecutive ignition cycles. To

manually clear DTCs, use scan tool or press RESET button on IPC's Driver Information Center (DIC).

BCM DTC DEFINITIONS

BCM DTC DEFINITIONS

Code No.	Circuit Affected
B0432	Rear Defogger Relay Circuit Open Or Short To Ground)
B0433	Rear Defogger Relay Circuit Short To Voltage Or BCM Open)
B0502	RH DRL Relay Circuit Open Or Short To Ground)
B0503	RH DRL Relay Circuit Short To Voltage Or BCM Open)
B0507	LH DRL Relay Circuit Open Or Short To Ground)
B0508	LH DRL Relay Circuit Short To Voltage Or BCM Open)
B0605	BCM Internal Memory Malfunction
B0844 (1)	BCM Temporarily Inhibit ABS
B2403	Front Foglight Switch Circuit Short To Voltage)
B2408	(2) Rear Foglight Switch Circuit Short To Voltage)
B2482	Back-Up Light Relay Circuit Open Or Short To Ground)
B2483	Back-Up Light Relay Circuit Short To Voltage Or BCM Open)
B2527	Horn Relay Circuit Open Or Short To Ground)
B2528	Horn Relay Circuit Short To Voltage Or BCM Open)
B2573	Hatch Release Switch Circuit Short To Voltage)
B2578	RF Turn Signal Monitor Circuit Short To Voltage)
B2583	LF Turn Signal Monitor Circuit Short To Voltage)
B2587	Column Lock/Unlock Drive "A" Open Or Short To Ground)
B2588	Column Lock/Unlock Drive "A" Open Or Short To Voltage)
B2592	Column Lock/Unlock Drive "B" Open Or Short To Ground)
B2593	Column Lock/Unlock Drive "B" Open Or Short To Voltage)
B2597	TCS Switch Circuit Short To Ground)
B2721	PASS-Key(R) Detection Circuit Out Of Range)
B2722	PASS-Key(R) Detection Circuit Short To Ground)
B2723	PASS-Key(R) Detection Circuit Short To Voltage Or Open)
B2735	PASS-Key(R) Programming Mode Active
U1016	(3) Loss Of Communication With PCM
U1096	(3) Loss Of Communication With IPC
U1255	Serial Data Line Malfunction

(1) Information not available at time of publication.

(2) Export only.

(3) No State Of Health (SOH) message received.

DIAGNOSTIC TESTS

NOTE: For wiring and connector terminal identification, see WIRING DIAGRAMS .

NOTE: When testing procedure indicates to probe or check a terminal, use adapters from Connector Test Adapter Kit (J-35616-A). This will ensure terminal will not be damaged, and that connection is okay.

SCAN TOOL DOES NOT COMMUNICATE WITH SERIAL DATA LINE

NOTE: To identify wire colors and modules on serial data line, see DATA LINK CONNECTORS and POWER DISTRIBUTION under WIRING DIAGRAMS .

Testing

1. Turn ignition off. Connect scan tool. Disconnect bus bars from Black 12-pin star connectors No. 1 and 2. See **COMPONENT LOCATIONS** . Connect Serial Data Link Tester (J-42236) to both star connectors. Ensure star connectors correctly correspond with serial data link testing connectors No. 1 and 2. Using serial data link tester, put switch in STAR CONNECTOR #1 position. Rotate rotary switch to "M" position. Turn ignition on. Using scan tool, attempt to establish communication with BCM. If scan tool communicates with BCM, go to next step. If scan tool does not communicate with BCM, go to step 4).
2. Ensure switch on serial data link tester is in STAR CONNECTOR #1 position. Using scan tool, attempt to establish communication with the following vehicle systems by rotating rotary switch on serial data link tester as specified:
   - "L" - Heating, Ventilation and A/C (HVAC) system.
   - "J" - Remote Function Actuator (RFA) system.
   - "H" - Real Time Damping (RTD) system (if equipped).
   - "G" - Instrument Panel Cluster (IPC).
   - "E" - Traction Control System (TCS).
   - "D" - Radio system.
   - "B" - Powertrain Control Module (PCM).

   If scan tool communicates with each system, go to next step. If scan tool does not communicate with each system, go to step 7).

3. Turn switch on serial data link tester to STAR CONNECTOR #2 position. Using scan tool, attempt to establish communication with the following vehicle systems by rotating rotary switch on serial data link tester as specified:
   - "C" - Left Door Control Module (DCM) system.
   - "D" - Right Door Control Module (DCM) system
   - "K" - Seat Control Module (SCM) system (if equipped).

   If scan tool communicates with each system, go to step 9). If scan tool does not communicate with each

system, go to step 7).

4. Turn ignition off. Disconnect serial data link tester. Ensure bus bars are still disconnected from star connectors No. 1 and 2. Using DVOM, check continuity of Purple wire between DLC connector terminal No. 2 and star connector No. 1 terminal "A". If continuity exists, go to next step. If continuity does not exist, go to step 10).
5. Check continuity between DLC connector terminal No. 2 (Purple wire) and ground. If continuity exists, go to step 10). If continuity does not exist, go to next step.
6. Turn ignition on. Using DVOM, check voltage between DLC connector terminal No. 2 (Purple wire) and ground. If any voltage exists, go to step 10). If no voltage exists, go to next step.
7. Turn ignition off. Disconnect appropriate system module for system that did not communicate with scan tool. Using DVOM, check for continuity between appropriate terminal on appropriate star connector and ground. If continuity exists, go to step 11). If continuity does not exist, go to next step.
8. Turn ignition on. Using test light connected to ground, probe appropriate terminal on appropriate star connector for system that is not communicating. If test light illuminates, go to step 12). If test light does not illuminate, go to step 13).
9. Check for intermittent short to ground, short to voltage or open in serial data line circuits. If no problem is found, system is operating properly. If problem is found, repair as necessary. Go to step 14).
10. Repair short to ground, short to voltage or open in Purple wire between DLC and star connector No. 1. Go to step 14).
11. Repair short to ground in appropriate wire between unresponsive module and appropriate star connector. Go to step 14).
12. Repair short to voltage in appropriate wire between unresponsive module and appropriate star connector. Go to step 14).
13. Replace appropriate module. Go to next step.
14. Turn ignition off. Reinstall all components or connectors. Clear DTCs. Ensure system is operating properly.

BCM DIAGNOSTIC SYSTEM CHECK

NOTE: Use this check as the starting point for any BCM complaint. BCM is a very reliable component, and is not likely the cause of malfunction. Most malfunctions are caused by faulty wiring, connectors or components.

Testing

1. Turn ignition off. Connect scan tool. Turn ignition on. Attempt to establish communication with BCM. If scan tool communicates with BCM, go to next step. If scan tool does not communicate with BCM, go to step 3).
2. Using scan tool, check for BCM DTCs. If any DTC exists, go to appropriate DTC test. If no DTCs exist, system is operating properly.
3. Attempt to establish communication with other systems connected to same serial data line (PCM, RFA, IPC, etc.). If scan tool communicates with other systems, go to next step. If scan tool does not communicate with other systems, go to **SCAN TOOL DOES NOT COMMUNICATE WITH SERIAL**

DATA LINE .

4. Ensure ignition is on. Using a test light connected to ground, probe each BCM fuse. See **WIRING DIAGRAMS** . If test light illuminates at all circuits, go to next step. If test light does not illuminate at all circuits, go to step 9).
5. Turn ignition off. Disconnect BCM 24-pin connector C1, 32-pin connector C2 and 16-pin connector C3. Turn ignition on. Using a test light connected to ground, probe each BCM power circuit. See **WIRING DIAGRAMS** . If test light illuminates at all circuits, go to next step. If test light does not illuminate at all circuits, go to step 11).
6. Using a test light connected to battery, probe each BCM ground circuit. See **WIRING DIAGRAMS** . If test light illuminates at all circuits, go to next step. If test light does not illuminate at all circuits, go to step 12).
7. Using DVOM, check for continuity between BCM harness connector C1, terminal B6 (Light Green wire) and Data Link Connector (DLC) terminal No. 2 (Purple wire). If continuity exists, go to next step. If continuity does not exist, go to step 10).
8. Replace BCM. See **REMOVAL & INSTALLATION** . Reprogram BCM. See **BCM PROGRAMMING/RPO CONFIGURATION** . Go to step 13).
9. Repair open in ignition or battery feed to BCM fuse. If any fuse is open, locate and repair short in associated circuit. See **WIRING DIAGRAMS** . Go to step 13).
10. Locate and repair open in Light Green or Purple wire between BCM connector C1 and DLC. Go to step 13).
11. Locate and repair open in BCM power circuit. Go to step 13).
12. Locate and repair open in BCM ground circuit. Go to next step.
13. Turn ignition off. Reinstall all components or connectors. Clear DTCs. Ensure system is operating properly.

Diagnostic Aids

1. The following conditions may result in intermittent operation of BCM with no DTC stored:
   - Any condition which results in interruption of power to BCM.
   - Out of range battery or ignition voltage (normal BCM operating voltage is 9-16 volts).
   - Loose or damaged ground(s).
   - Open or shorted serial data line.
2. BCM tests for different malfunctions during different vehicle conditions. A thorough test drive may be necessary to repeat malfunction. Most intermittent problems are caused by faulty electrical connections or wiring. Check for: poor connections, backed-out terminals, dirty or corroded terminals, chafed wires, or damaged connectors.

DTC B0432: REAR DEFOGGER RELAY CIRCUIT (OPEN OR SHORT TO GROUND)

Description

When BCM receives a defogger ON request from rear defogger switch when engine is running, BCM will ground circuit No. 193 (White wire) to energize rear defogger relay. BCM monitors voltage level on rear

defogger control circuit. When BCM activates rear defogger relay, voltage level in control circuit should be low. When relay is not activated, voltage level in control circuit should be high.

DTC B0432 will set when BCM detects a low voltage level in circuit No. 193 (White wire) for 2 seconds when it is not energizing rear defogger relay. No driver warning message will be displayed.

DTC B0432 requires an ignition cycle to change from current to his-tory. If conditions for malfunction no longer exist, history DTC will clear after 50 consecutive ignition cycles. DTC B0432 will also clear when conditions no longer exist, or when IPC or scan tool is used to clear codes.

NOTE: If DTC B0432 is a history code, problem may be intermittent. Wiggle wires while performing the following test.

Testing

1. If BCM diagnostic system check was performed, go to next step. If BCM diagnostic system check was not performed, see procedures in **BCM DIAGNOSTIC SYSTEM CHECK** .
2. Turn ignition off. Disconnect rear defogger relay from instrument panel electrical center. Turn ignition on. Using a test light connected to ground, probe rear defogger relay BATT terminals at instrument panel electrical center. See **Fig. 1** . If test light illuminates, go to next step. If test light does not illuminate, go to step 14).
3. Turn ignition off. Using a test light connected to battery, probe rear defogger relay CKT 193 terminal at instrument panel electrical center. See **Fig. 1** . If test light illuminates, go to step 11). If test light does not illuminate, go to next step.
4. Using DVOM, check resistance between rear defogger relay terminals No. 85 and 86. If resistance is 75-105 ohms, go to next step. If resistance is not 75-105 ohms, go to step 13).
5. Check for continuity between rear defogger relay terminals No. 85 and 87. If continuity exists, go to step 13). If continuity does not exist, go to next step.
6. Check for continuity between rear defogger relay terminals No. 85 and 30. If continuity exists, go to step 13). If continuity does not exist, go to next step.
7. Turn ignition on. Using a test light connected to battery, probe rear defogger relay CKT 193 terminal at instrument panel electrical center. See **Fig. 1** . Using scan tool, command rear defogger relay on and off. If test light toggles on and off as commanded, go to step 9). If test light does not toggle on and off as commanded, go to next step.
8. Check for an open in instrument panel electrical center or in circuit No. 193 (White wire) between BCM connector C2 and rear defogger relay. If no problem is found, go to step 10). If problem is found, repair as necessary. Go to step 16).
9. Check for intermittent malfunction in rear defogger circuit. See DIAGNOSTIC AIDS. If no problem is found, go to next step. If problem is found, repair as necessary. Go to step 16).
10. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Using scan tool, cycle rear defogger relay. If DTC B0432 is current, go to step 15). If DTC B0432 is not current, system is operating properly.
11. Ensure ignition is off. Disconnect BCM 32-pin connector C2. Using a test light connected to battery, probe rear defogger relay CKT 193 terminal at instrument panel electrical center. See **Fig. 1** . If test light

illuminates, go to next step. If test light does not illuminate, go to step 15).

12. Repair short to ground in instrument panel electrical center or in circuit No. 193 (White wire) between BCM connector C2 and rear defogger relay. Go to step 16).
13. Replace rear defogger relay. Go to step 16).
14. Repair open in ignition feed circuit to instrument panel electrical center. See POWER DISTRIBUTION under **WIRING DIAGRAMS** . If a fuse is open, repair short in appropriate circuit. Go to step 16).
15. Replace BCM. See **REMOVAL & INSTALLATION** . Reprogram BCM. See **BCM PROGRAMMING/RPO CONFIGURATION** . Go to next step.
16. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Perform **BCM DIAGNOSTIC SYSTEM CHECK** .

Diagnostic Aids

1. Rear defogger relay may be installed in instrument panel electrical center in 2 directions, and still function properly. The following conditions may cause an intermittent: Intermittent short to ground or open in circuit No. 193 (White wire) between BCM and rear defogger relay; poor connections at BCM, instrument panel electrical center or rear defogger relay; or internal open or short in rear defogger relay.
2. If circuit No. 193 (White wire) between BCM and rear defogger relay is shorted to ground, rear defogger will stay on at all times. If circuit No. 193 (White wire) between BCM and rear defogger relay is open, rear defogger will stay off at all times.

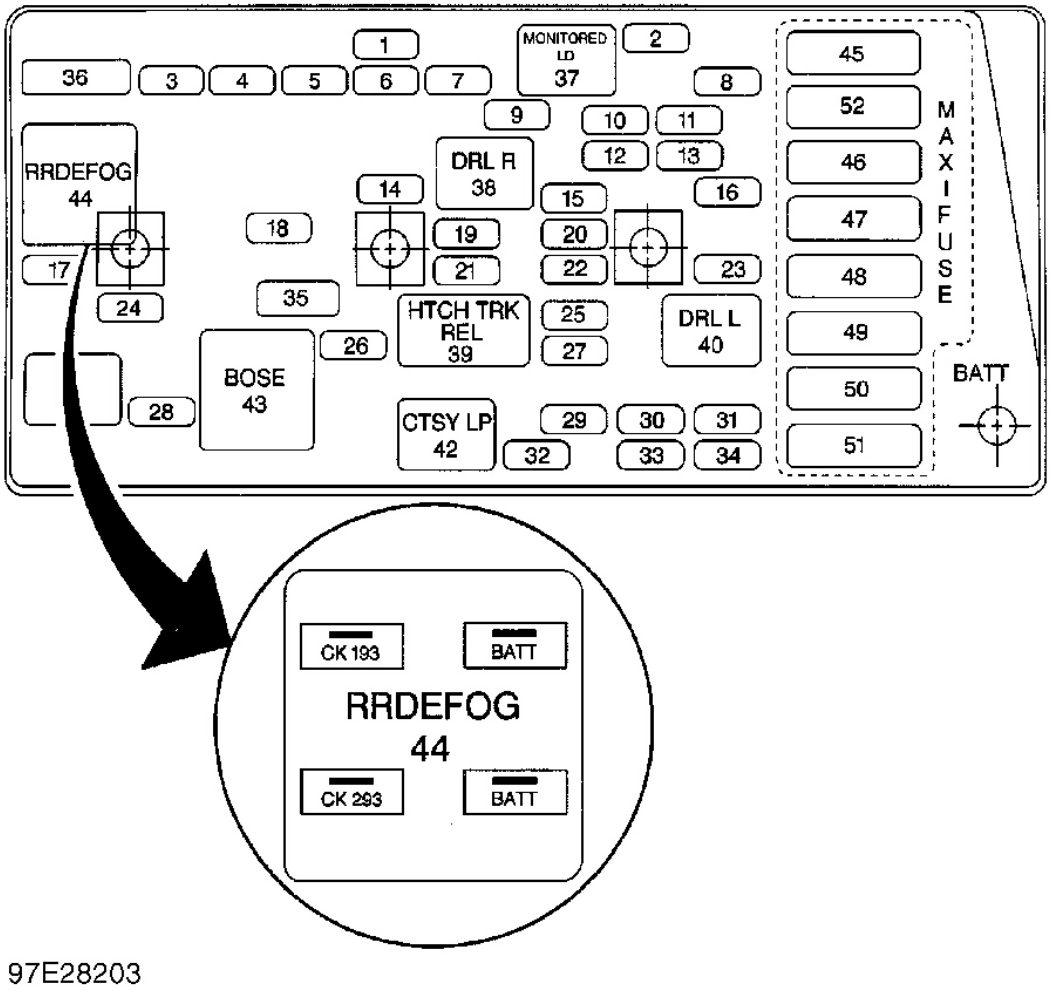


Fig. 1: Identifying Rear Defogger Relay Terminals At Instrument Panel Electrical Center
Courtesy of GENERAL MOTORS CORP.

DTC B0433: REAR DEFOGGER RELAY CIRCUIT (SHORT TO VOLTAGE OR BCM OPEN)

Description

When BCM receives a defogger ON request from rear defogger switch when engine is running, BCM will ground circuit No. 193 (White wire) to energize rear defogger relay. BCM monitors voltage level on rear defogger control circuit. When BCM activates rear defogger relay, voltage level in control circuit should be low. When relay is not activated, voltage level in control circuit should be high.

DTC B0433 will set when BCM detects a high voltage level in circuit No. 193 (White wire) for 2 seconds when it is energizing rear defogger relay. No driver warning message will be displayed.

DTC B0433 requires an ignition cycle to change from current to his-tory. If conditions for malfunction no longer exist, history DTC will clear after 50 consecutive ignition cycles. DTC B0433 will also clear when conditions no longer exist, or when IPC or scan tool is used to clear codes.

NOTE: If DTC B0433 is a history code, problem may be intermittent. Wiggle wires while performing the following test.

Testing

1. If BCM diagnostic system check was performed, go to next step. If BCM diagnostic system check was not performed, see procedures in **BCM DIAGNOSTIC SYSTEM CHECK** .
2. Turn ignition off. Disconnect rear defogger relay from instrument panel electrical center. Turn ignition on. Using a test light connected to ground, probe rear defogger relay CKT 193 terminal at instrument panel electrical center. See **Fig. 1** . If test light illuminates, go to step 10). If test light does not illuminate, go to next step.
3. Using DVOM, check resistance between rear defogger relay terminals No. 85 and 86. If resistance is 75-105 ohms, go to next step. If resistance is not 75-105 ohms, go to step 12).
4. Check for continuity between rear defogger relay terminals No. 85 and 87. If continuity exists, go to step 12). If continuity does not exist, go to next step.
5. Check for continuity between rear defogger relay terminals No. 85 and 30. If continuity exists, go to step 12). If continuity does not exist, go to next step.
6. Turn ignition on. Using a test light connected to battery, probe rear defogger relay CKT 193 terminal at instrument panel electrical center. See **Fig. 1** . Using scan tool, command rear defogger relay on and off. If test light toggles on and off as commanded, go to step 8). If test light does not toggle on and off as commanded, go to next step.
7. Check for an open in instrument panel electrical center or in circuit No. 193 (White wire) between BCM connector C2 and rear defogger relay. If no problem is found, go to step 9). If problem is found, repair as necessary. Go to step 14).
8. Check for intermittent malfunction in rear defogger circuit. See DIAGNOSTIC AIDS. If no problem is found, go to next step. If problem is found, repair as necessary. Go to step 14).
9. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Using scan tool, cycle rear defogger relay. If DTC B0433 is current, go to step 13). If DTC B0433 is not current, system is operating properly.
10. Turn ignition off. Disconnect BCM 32-pin connector C2. Turn ignition on. Using a test light connected to ground, probe rear defogger relay CKT 193 terminal at instrument panel electrical center. See **Fig. 1** . If test light illuminates, go to next step. If test light does not illuminate, go to step 13).
11. Repair short to voltage in instrument panel electrical center or in circuit No. 193 (White wire) between BCM connector C2 and rear defogger relay. Go to step 14).
12. Replace rear defogger relay. Go to step 14).
13. Replace BCM. See **REMOVAL & INSTALLATION** . Reprogram BCM. See **BCM PROGRAMMING/RPO CONFIGURATION** . Go to next step.
14. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Perform **BCM DIAGNOSTIC SYSTEM CHECK** .

Diagnostic Aids

1. Rear defogger relay may be installed in instrument panel electrical center in 2 directions, and still function properly. The following conditions may cause an intermittent: Intermittent short to voltage in circuit No. 193 (White wire) between BCM and rear defogger relay; poor connections at BCM, instrument panel electrical center or rear defogger relay; or internal short to voltage in rear defogger relay.
2. If circuit No. 193 (White wire) between BCM and rear defogger relay is shorted to voltage or if BCM is open internally, rear defogger will stay off at all times.

DTC B0502: RH DRL RELAY CIRCUIT (OPEN OR SHORT TO GROUND)

Description

BCM grounds circuit No. 1966 (Light Green wire) to energize RH DRL relay and turn right front turn signal on. This allows right front turn signal to be used in Daytime Running Lights (DRL), Underhood Theft Deterrent (UTD) and approach lighting functions.

BCM monitors voltage level on circuit No. 1966 (Light Green wire). When BCM activates RH DRL relay, voltage level in control circuit should be low. When relay is not activated, voltage level in control circuit should be high.

DTC B0502 will set when BCM detects a low voltage level in circuit No. 1966 (Light Green wire) for 2 seconds when it is not energizing RH DRL relay. No driver warning message will be displayed.

DTC B0502 requires an ignition cycle to change from current to his-tory. If conditions for malfunction no longer exist, history DTC will clear after 50 consecutive ignition cycles. DTC B0502 will also clear when conditions no longer exist, or when IPC or scan tool is used to clear codes.

NOTE: If DTC B0502 is a history code, problem may be intermittent. Wiggle wires while performing the following test.

Testing

1. If BCM diagnostic system check was performed, go to next step. If BCM diagnostic system check was not performed, see procedures in **BCM DIAGNOSTIC SYSTEM CHECK** .
2. Turn ignition off. Disconnect RH DRL relay from instrument panel electrical center. Turn ignition on. Using a test light connected to ground, probe RH DRL relay BATT terminals at instrument panel electrical center. See **Fig. 2** . If test light illuminates, go to next step. If test light does not illuminate, go to step 13).
3. Turn ignition off. Using a test light connected to battery, probe RH DRL relay CKT 1966 terminal at instrument panel electrical center. See **Fig. 2** . If test light illuminates, go to step 10). If test light does not illuminate, go to next step.
4. Using DVOM, check resistance between RH DRL relay terminals No. 85 and 86. If resistance is 75-105 ohms, go to next step. If resistance is not 75-105 ohms, go to step 12).
5. Check for continuity between RH DRL relay terminals No. 85 and 30. If continuity exists, go to step 12).

If continuity does not exist, go to next step.

6. Turn ignition on. Using a test light connected to battery, probe RH DRL relay CKT 1966 terminal at instrument panel electrical center. See **Fig. 2** . Using scan tool, command RH DRL relay on and off. If test light toggles on and off as commanded, go to step 8). If test light does not toggle on and off as commanded, go to next step.
7. Turn ignition off. Disconnect BCM 32-pin connector C2. Using DVOM, check for continuity between BCM harness connector C2, terminal D16 (Light Green wire) and RH DRL relay CKT 1966 terminal at instrument panel electrical center. See **Fig. 2** . If continuity exists, go to step 15). If continuity does not exist, go to step 14).
8. Check for intermittent malfunction in RH DRL circuit. See DIAGNOSTIC AIDS. If no problem is found, go to next step. If problem is found, repair as necessary. Go to step 16).
9. Ensure ignition is off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Using scan tool, cycle RH DRL relay. If DTC B0502 is current, go to step 15). If DTC B0502 is not current, system is operating properly.
10. Ensure ignition is off. Disconnect BCM 32-pin connector C2. Using a test light connected to battery, probe RH DRL relay CKT 1966 terminal at instrument panel electrical center. See **Fig. 2** . If test light illuminates, go to next step. If test light does not illuminate, go to step 15).
11. Repair short to ground in instrument panel electrical center or in circuit No. 1966 (Light Green wire) between BCM connector C2 and RH DRL relay. Go to step 16).
12. Replace RH DRL relay. Go to step 16).
13. Repair open in ignition feed circuit to instrument panel electrical center. See POWER DISTRIBUTION under **WIRING DIAGRAMS** . If a fuse is open, repair short in appropriate circuit. Go to step 16).
14. Repair open in instrument panel electrical center or in circuit No. 1966 (Light Green wire) between BCM connector C2 and RH DRL relay. Go to step 16).
15. Replace BCM. See **REMOVAL & INSTALLATION** . Reprogram BCM. See **BCM PROGRAMMING/RPO CONFIGURATION** . Go to next step.
16. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Perform **BCM DIAGNOSTIC SYSTEM CHECK** .

Diagnostic Aids

1. The following conditions may cause an intermittent: Intermittent short to ground or open in circuit No. 1966 (Light Green wire) between BCM and RH DRL relay; poor connections at BCM, instrument panel electrical center or RH DRL relay; or internal open or short in RH DRL relay.
2. If circuit No. 1966 (Light Green wire) between BCM and RH DRL relay is shorted to ground, RH DRL will stay on at all times. If circuit No. 1966 (Light Green wire) between BCM and RH DRL relay is open, RH DRL will stay off at all times.

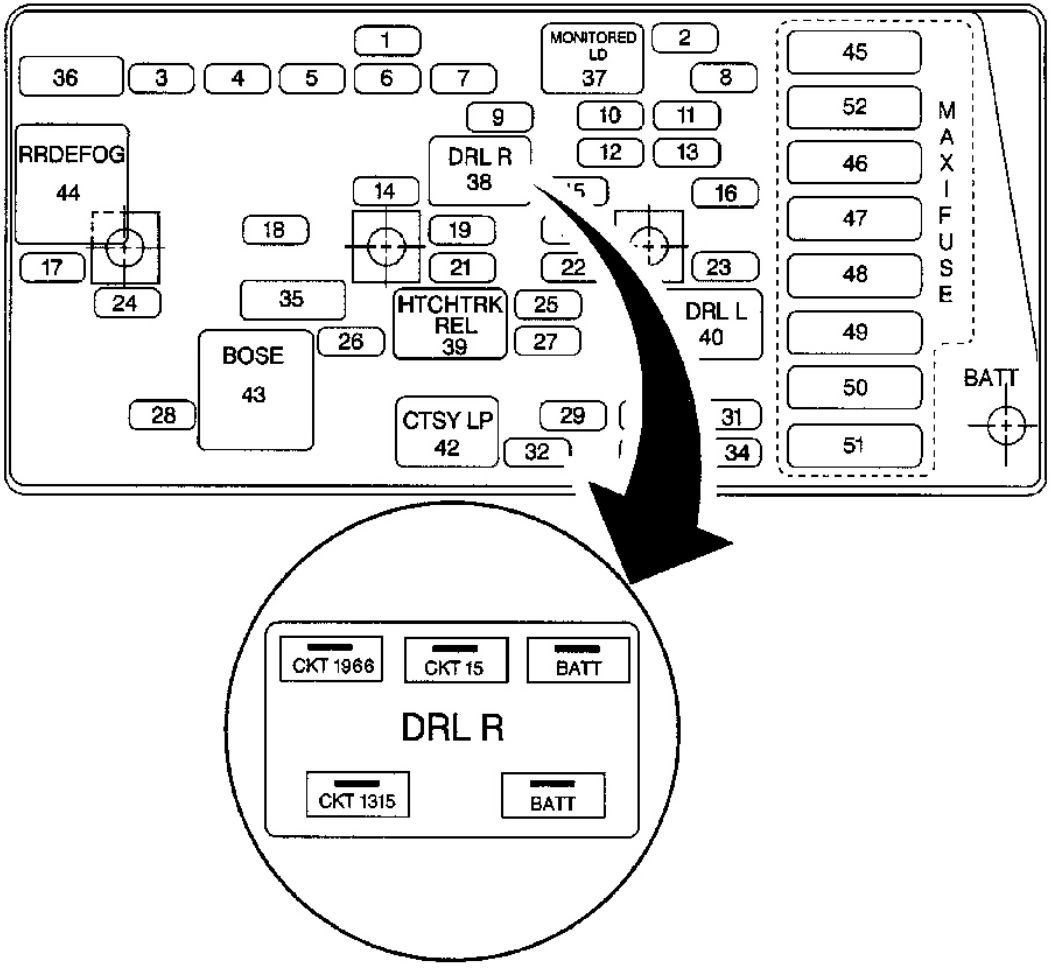


Fig. 2: Identifying RH DRL Relay Terminals At Instrument Panel Electrical Center
Courtesy of GENERAL MOTORS CORP.

DTC B0503: RH DRL RELAY CIRCUIT (SHORT TO VOLTAGE OR BCM OPEN)

Description

BCM grounds circuit No. 1966 (Light Green wire) to energize RH DRL relay and turn right front turn signal on. This allows right front turn signal to be used in Daytime Running Lights (DRL), Underhood Theft Deterrent (UTD) and approach lighting functions.

BCM monitors voltage level on circuit No. 1966 (Light Green wire). When BCM activates RH DRL relay, voltage level in control circuit should be low. When relay is not activated, voltage level in control circuit should be high.

DTC B0503 will set when BCM detects a high voltage level in circuit No. 1966 (Light Green wire) for 2 seconds when it is energizing RH DRL relay. No driver warning message will be displayed.

DTC B0503 requires an ignition cycle to change from current to his-tory. If conditions for malfunction no longer exist, history DTC will clear after 50 consecutive ignition cycles. DTC B0503 will also clear when conditions no longer exist, or when IPC or scan tool is used to clear codes.

NOTE: If DTC B0503 is a history code, problem may be intermittent. Wiggle wires while performing the following test.

Testing

1. If BCM diagnostic system check was performed, go to next step. If BCM diagnostic system check was not performed, see procedures in **BCM DIAGNOSTIC SYSTEM CHECK** .
2. Turn ignition off. Disconnect RH DRL relay from instrument panel electrical center. Turn ignition on. Using a test light connected to ground, probe RH DRL relay CKT 1966 terminal at instrument panel electrical center. See **Fig. 2** . If test light illuminates, go to step 8). If test light does not illuminate, go to next step.
3. Using DVOM, check resistance between RH DRL relay terminals No. 85 and 86. If resistance is 75-105 ohms, go to next step. If resistance is not 75-105 ohms, go to step 11).
4. Turn ignition on. Using a test light connected to battery, probe RH DRL relay CKT 1966 terminal at instrument panel electrical center. See **Fig. 2** . Using scan tool, command RH DRL relay on and off. If test light toggles on and off as commanded, go to step 6). If test light does not toggle on and off as commanded, go to next step.
5. Turn ignition off. Disconnect BCM 32-pin connector C2. Using DVOM, check for continuity between BCM harness connector C2, terminal D16 (Light Green wire) and RH DRL relay CKT 1966 terminal at instrument panel electrical center. See **Fig. 2** . If continuity exists, go to step 12). If continuity does not exist, go to step 9).
6. Check for intermittent malfunction in RH DRL circuit. See DIAGNOSTIC AIDS. If no problem is found, go to next step. If problem is found, repair as necessary. Go to step 13).
7. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Using scan tool, cycle RH DRL relay. If DTC B0503 is current, go to step 12). If DTC B0503 is not current, system is operating properly.
8. Turn ignition off. Disconnect BCM 32-pin connector C2. Turn ignition on. Using a test light connected to ground, probe RH DRL relay CKT 1966 terminal at instrument panel electrical center. See **Fig. 2** . If test light illuminates, go to step 10). If test light does not illuminate, go to step 12).
9. Repair open in instrument panel electrical center or in circuit No. 1966 (Light Green wire) between BCM connector C2 and RH DRL relay. Go to step 13).
10. Repair short to voltage in instrument panel electrical center or in circuit No. 1966 (Light Green wire) between BCM connector C2 and RH DRL relay. Go to step 13).
11. Replace RH DRL relay. Go to step 13).
12. Replace BCM. See **REMOVAL & INSTALLATION** . Reprogram BCM. See BCM PROGRAMMING/RPO CONFIGURATION. Go to next step.
13. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Perform **BCM**

DIAGNOSTIC SYSTEM CHECK .

Diagnostic Aids

1. The following conditions may cause an intermittent: Intermittent short to voltage in circuit No. 1966 (Light Green wire) between BCM and RH DRL relay; poor connections at BCM, instrument panel electrical center or RH DRL relay; or internal short to voltage in RH DRL relay.
2. If circuit No. 1966 (Light Green wire) between BCM and RH DRL relay is shorted to voltage or if BCM is open internally, RH DRL will stay off at all times.

DTC B0507: LH DRL RELAY CIRCUIT (OPEN OR SHORT TO GROUND)

Description

BCM grounds circuit No. 1976 (Orange/Black wire) to energize LH DRL relay and turn left front turn signal on. This allows left front turn signal to be used in Daytime Running Lights (DRL), Underhood Theft Deterrent (UTD) and approach lighting functions.

BCM monitors voltage level on circuit No. 1976 (Orange/Black wire). When BCM activates LH DRL relay, voltage level in control circuit should be low. When relay is not activated, voltage level in control circuit should be high.

DTC B0507 will set when BCM detects a low voltage level in circuit No. 1976 (Orange/Black wire) for 2 seconds when it is not energizing LH DRL relay. No driver warning message will be displayed.

DTC B0507 requires an ignition cycle to change from current to his-tory. If conditions for malfunction no longer exist, history DTC will clear after 50 consecutive ignition cycles. DTC B0507 will also clear when conditions no longer exist, or when IPC or scan tool is used to clear codes.

NOTE: If DTC B0507 is a history code, problem may be intermittent. Wiggle wires while performing the following test.

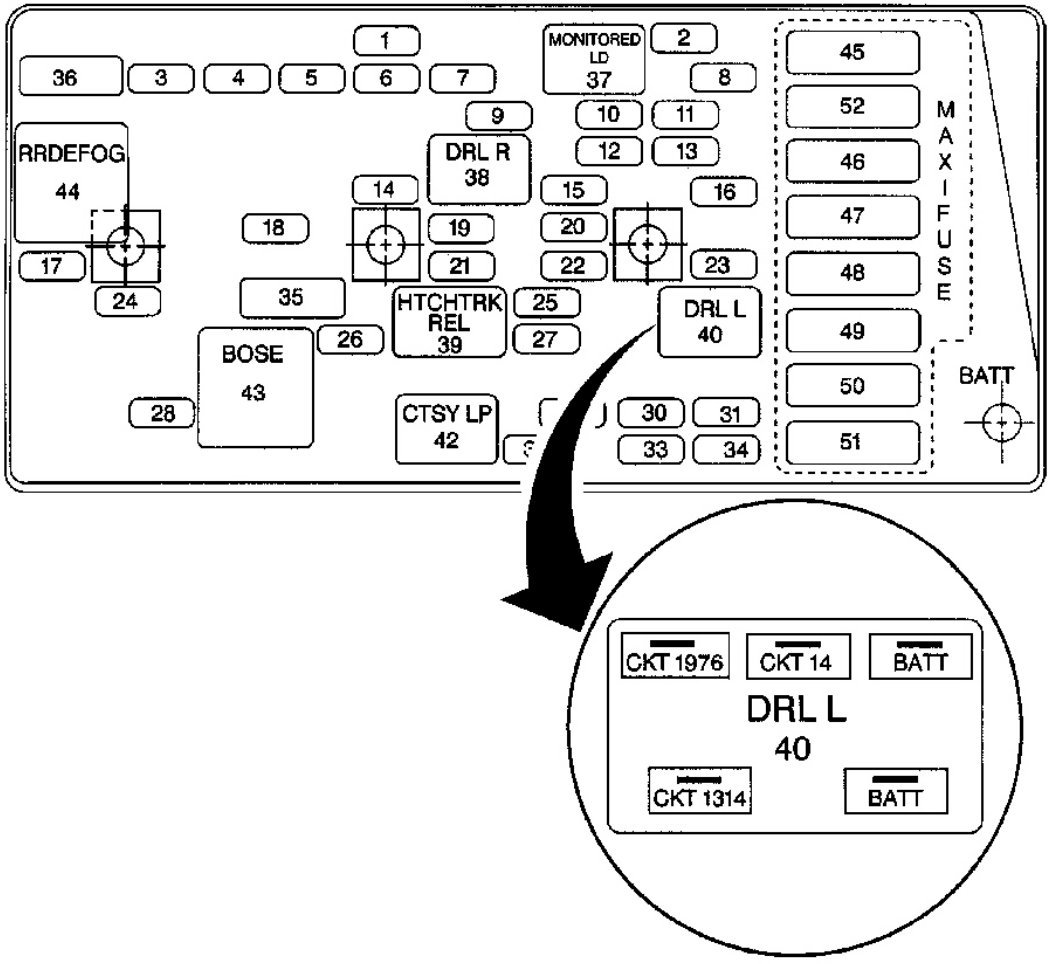
Testing

1. If BCM diagnostic system check was performed, go to next step. If BCM diagnostic system check was not performed, see procedures in **BCM DIAGNOSTIC SYSTEM CHECK** .
2. Turn ignition off. Disconnect LH DRL relay from instrument panel electrical center. Turn ignition on. Using a test light connected to ground, probe LH DRL relay BATT terminals at instrument panel electrical center. See **Fig. 3** . If test light illuminates, go to next step. If test light does not illuminate, go to step 13).
3. Turn ignition off. Using a test light connected to battery, probe LH DRL relay CKT 1976 terminal at instrument panel electrical center. See **Fig. 3** . If test light illuminates, go to step 10). If test light does not illuminate, go to next step.
4. Using DVOM, check resistance between LH DRL relay terminals No. 85 and 86. If resistance is 75-105 ohms, go to next step. If resistance is not 75-105 ohms, go to step 12).

5. Check for continuity between LH DRL relay terminals No. 85 and 30. If continuity exists, go to step 12). If continuity does not exist, go to next step.
6. Turn ignition on. Using a test light connected to battery, probe LH DRL relay CKT 1976 terminal at instrument panel electrical center. See **Fig. 3** . Using scan tool, command LH DRL relay on and off. If test light toggles on and off as commanded, go to step 8). If test light does not toggle on and off as commanded, go to next step.
7. Turn ignition off. Disconnect BCM Red 16-pin connector C3. Using DVOM, check for continuity between BCM harness connector C3, terminal A7 (Orange/Black wire) and LH DRL relay CKT 1976 terminal at instrument panel electrical center. See **Fig. 3** . If continuity exists, go to step 15). If continuity does not exist, go to step 14).
8. Check for intermittent malfunction in LH DRL circuit. See DIAGNOSTIC AIDS. If no problem is found, go to next step. If problem is found, repair as necessary. Go to step 16).
9. Ensure ignition is off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Using scan tool, cycle LH DRL relay. If DTC B0507 is current, go to step 15). If DTC B0507 is not current, system is operating properly.
10. Ensure ignition is off. Disconnect BCM Red 16-pin connector C3. Using a test light connected to battery, probe LH DRL relay CKT 1976 terminal at instrument panel electrical center. See **Fig. 3** . If test light illuminates, go to next step. If test light does not illuminate, go to step 15).
11. Repair short to ground in instrument panel electrical center or in circuit No. 1976 (Orange/Black wire) between BCM connector C3 and LH DRL relay. Go to step 16).
12. Replace LH DRL relay. Go to step 16).
13. Repair open in ignition feed circuit to instrument panel electrical center. See POWER DISTRIBUTION under **WIRING DIAGRAMS** . If a fuse is open, repair short in appropriate circuit. Go to step 16).
14. Repair open in instrument panel electrical center or in circuit No. 1976 (Orange/Black wire) between BCM connector C3 and LH DRL relay. Go to step 16).
15. Replace BCM. See **REMOVAL & INSTALLATION** . Reprogram BCM. See **BCM PROGRAMMING/RPO CONFIGURATION** . Go to next step.
16. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Perform **BCM DIAGNOSTIC SYSTEM CHECK** .

Diagnostic Aids

1. The following conditions may cause an intermittent: Intermittent short to ground or open in circuit No. 1976 (Orange/Black wire) between BCM and LH DRL relay; poor connections at BCM, instrument panel electrical center or LH DRL relay; or internal open or short in LH DRL relay.
2. If circuit No. 1976 (Orange/Black wire) between BCM and LH DRL relay is shorted to ground, LH DRL will stay on at all times. If circuit No. 1976 (Orange/Black wire) between BCM and LH DRL relay is open, LH DRL will stay off at all times.



G97G28205

Fig. 3: Identifying LH DRL Relay Terminals At Instrument Panel Electrical Center
Courtesy of GENERAL MOTORS CORP.

DTC B0508: LH DRL RELAY CIRCUIT (SHORT TO VOLTAGE OR BCM OPEN)

Description

BCM grounds circuit No. 1976 (Orange/Black wire) to energize LH DRL relay and turn left front turn signal on. This allows left front turn signal to be used in Daytime Running Lights (DRL), Underhood Theft Deterrent (UTD) and approach lighting functions.

BCM monitors voltage level on circuit No. 1976 (Orange/Black wire). When BCM activates LH DRL relay, voltage level in control circuit should be low. When relay is not activated, voltage level in control circuit should be high.

DTC B0508 will set when BCM detects a high voltage level in circuit No. 1976 (Orange/Black wire) for 2 seconds when it is energizing LH DRL relay. No driver warning message will be displayed.

DTC B0508 requires an ignition cycle to change from current to his-tory. If conditions for malfunction no longer exist, history DTC will clear after 50 consecutive ignition cycles. DTC B0508 will also clear when conditions no longer exist, or when IPC or scan tool is used to clear codes.

NOTE: If DTC B0508 is a history code, problem may be intermittent. Wiggle wires while performing the following test.

Testing

1. If BCM diagnostic system check was performed, go to next step. If BCM diagnostic system check was not performed, see procedures in **BCM DIAGNOSTIC SYSTEM CHECK** .
2. Turn ignition off. Disconnect LH DRL relay from instrument panel electrical center. Turn ignition on. Using a test light connected to ground, probe LH DRL relay CKT 1976 terminal at instrument panel electrical center. See **Fig. 3** . If test light illuminates, go to step 8). If test light does not illuminate, go to next step.
3. Using DVOM, check resistance between LH DRL relay terminals No. 85 and 86. If resistance is 75-105 ohms, go to next step. If resistance is not 75-105 ohms, go to step 11).
4. Turn ignition on. Using a test light connected to battery, probe LH DRL relay CKT 1976 terminal at instrument panel electrical center. See **Fig. 3** . Using scan tool, command LH DRL relay on and off. If test light toggles on and off as commanded, go to step 6). If test light does not toggle on and off as commanded, go to next step.
5. Turn ignition off. Disconnect BCM Red 16-pin connector C3. Using DVOM, check for continuity between BCM harness connector C3, terminal A7 (Orange/Black wire) and LH DRL relay CKT 1976 terminal at instrument panel electrical center. See **Fig. 3** . If continuity exists, go to step 12). If continuity does not exist, go to step 9).
6. Check for intermittent malfunction in LH DRL circuit. See DIAGNOSTIC AIDS. If no problem is found, go to next step. If problem is found, repair as necessary. Go to step 13).
7. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Using scan tool, cycle LH DRL relay. If DTC B0508 is current, go to step 12). If DTC B0508 is not current, system is operating properly.
8. Turn ignition off. Disconnect BCM Red 16-pin connector C3. Turn ignition on. Using a test light connected to ground, probe LH DRL relay CKT 1976 terminal at instrument panel electrical center. See **Fig. 3** . If test light illuminates, go to step 10). If test light does not illuminate, go to step 12).
9. Repair open in instrument panel electrical center or in circuit No. 1976 (Orange/Black wire) between BCM connector C3 and LH DRL relay. Go to step 13).
10. Repair short to voltage in instrument panel electrical center or in circuit No. 1976 (Orange/Black wire) between BCM connector C3 and LH DRL relay. Go to step 13).
11. Replace LH DRL relay. Go to step 13).
12. Replace BCM. See **REMOVAL & INSTALLATION** . Reprogram BCM. See **BCM PROGRAMMING/RPO CONFIGURATION** . Go to next step.
13. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Perform **BCM**

DIAGNOSTIC SYSTEM CHECK .

Diagnostic Aids

1. The following conditions may cause an intermittent: Intermittent short to voltage in circuit No. 1976 (Orange/Black wire) between BCM and LH DRL relay; poor connections at BCM, instrument panel electrical center or LH DRL relay; or internal short to voltage in LH DRL relay.
2. If circuit No. 1976 (Orange/Black wire) between BCM and LH DRL relay is shorted to voltage or if BCM is open internally, LH DRL will stay off at all times.

DTC B0605: BCM INTERNAL MEMORY MALFUNCTION

Description

BCM calibrations are stored in Electronically Erasable Programmable Read Only Memory (EEPROM). When ignition is first turned on, BCM performs internal tests on EEPROM and determines integrity of its non-volatile memory. BCM then compares this checksum with previously stored checksum. DTC B0605 will set when stored checksum does not match calculated checksum or BCM detects an internal memory malfunction (checksum error). This condition will only occur when ignition is first turned on. No driver warning message will be displayed.

DTC B0605 requires an ignition cycle to change from current to his-tory. If conditions for malfunction no longer exist, history DTC will clear after 50 consecutive ignition cycles. DTC B0605 will also clear when conditions no longer exist, or when IPC or scan tool is used to clear codes.

Testing

1. If BCM diagnostic system check was performed, go to next step. If BCM diagnostic system check was not performed, see procedures in **BCM DIAGNOSTIC SYSTEM CHECK** .
2. Replace BCM. See REMOVAL & INSTALLATION. Reprogram BCM. See **BCM PROGRAMMING/RPO CONFIGURATION** . Go to next step.
3. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Perform **BCM DIAGNOSTIC SYSTEM CHECK** .

Diagnostic Aids

Since EEPROM cannot be removed from BCM and DTC B0605 is an internal BCM malfunction, BCM must be replaced.

DTC B2403: FRONT FOGLIGHT SWITCH CIRCUIT (SHORT TO VOLTAGE)

Description

Front foglight switch supplies a direct battery input to BCM when switch is pressed. This input allows BCM to detect a front foglight switch ON or OFF request. If BCM detects battery voltage on front foglight circuit No. 192 (Orange wire) when foglights are off, BCM will energize front foglight relay to turn front foglights on. If BCM detects battery voltage after front foglights ON command, BCM will turn off front foglights. BCM

monitors circuit No. 192 to determine how long voltage is applied.

DTC B2403 will set when BCM detects battery voltage on circuit No. 192 (Orange wire) for longer than 60 seconds. No driver warning message will be displayed. If conditions for malfunction no longer exist, history DTC will clear after 50 consecutive ignition cycles. DTC B2403 will also clear when conditions no longer exist, or when IPC or scan tool is used to clear codes.

NOTE: If DTC B2403 is a history code, problem may be intermittent. Wiggle wires while performing the following test.

Testing

1. If BCM diagnostic system check was performed, go to next step. If BCM diagnostic system check was not performed, see procedures in **BCM DIAGNOSTIC SYSTEM CHECK** .
2. Turn ignition off. Disconnect BCM 32-pin connector C2. Turn ignition on. Using a test light connected to ground, probe BCM harness connector C2, terminal D4 (Orange wire). If test light illuminates, go to next step. If test light does not illuminate, go to step 5).
3. Turn ignition off. Disconnect foglight switch connector. Turn ignition on. Using a test light connected to ground, probe BCM harness connector C2, terminal D4 (Orange wire). If test light illuminates, go to step 6). If test light does not illuminate, go to step 7).
4. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Wait 60 seconds and check for DTCs. If DTC B2403 is current, go to step 9). If DTC B2403 is not current, system is operating properly.
5. Check for intermittent malfunction in front foglight switch circuit. See DIAGNOSTIC AIDS. If no problem is found, go to step 4). If problem is found, go to step 8).
6. Repair short to voltage in Orange wire between BCM 32-pin connector C2 and foglight switch. Go to step 10).
7. Replace foglight switch. Go to step 10).
8. Repair intermittent malfunction in front foglight switch circuit. Go to step 10).
9. Replace BCM. See REMOVAL & INSTALLATION. Reprogram BCM. See **BCM PROGRAMMING/RPO CONFIGURATION** . Go to next step.
10. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Perform **BCM DIAGNOSTIC SYSTEM CHECK** .

Diagnostic Aids

1. The following conditions may cause an intermittent: Intermittent short to voltage in circuit No. 192 (Orange wire) between BCM and foglight switch; foglight switch sticking or internally shorted to voltage; or front foglight switch is pressed for longer than 60 seconds.
2. If circuit No. 192 (Orange wire) between BCM and foglight switch is shorted to voltage, front foglights will stay on or off at all times depending on which state they were in when malfunction occurred. If short to voltage occurred when foglights were on, foglights will remain off at all times. If short to voltage occurred when foglights were off, foglights will remain on at all times. BCM will retain this information even if ignition is turned off.

DTC B2408: REAR FOGLIGHT SWITCH CIRCUIT (SHORT TO VOLTAGE)

NOTE: This DTC applies only to export vehicles.

Description

Rear foglight switch supplies a direct battery input to BCM when switch is pressed. This input allows BCM to detect a rear foglight switch ON or OFF request. If BCM detects battery voltage on rear foglight circuit No. 187 (Light Blue wire) when rear foglights are off, BCM will energize rear foglight relay to turn rear foglights on. If BCM detects battery voltage after rear foglights ON command, BCM will turn off rear foglights. BCM monitors circuit No. 187 to determine how long voltage is applied.

DTC B2408 will set when BCM detects battery voltage on circuit No. 187 (Light Blue wire) for longer than 60 seconds. No driver warning message will be displayed. If conditions for malfunction no longer exist, history DTC will clear after 50 consecutive ignition cycles. DTC B2408 will also clear when conditions no longer exist, or when IPC or scan tool is used to clear codes.

NOTE: If DTC B2408 is a history code, problem may be intermittent. Wiggle wires while performing the following test.

Testing

1. If BCM diagnostic system check was performed, go to next step. If BCM diagnostic system check was not performed, see procedures in **BCM DIAGNOSTIC SYSTEM CHECK** .
2. Turn ignition off. Disconnect BCM 32-pin connector C2. Turn ignition on. Using a test light connected to ground, probe BCM harness connector C2, terminal D5 (Light Blue wire). If test light illuminates, go to next step. If test light does not illuminate, go to step 5).
3. Turn ignition off. Disconnect foglight switch connector. Turn ignition on. Using a test light connected to ground, probe BCM harness connector C2, terminal D5 (Light Blue wire). If test light illuminates, go to step 6). If test light does not illuminate, go to step 7).
4. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Wait 60 seconds and check for DTCs. If DTC B2408 is current, go to step 9). If DTC B2408 is not current, system is operating properly.
5. Check for intermittent malfunction in rear foglight switch circuit. See DIAGNOSTIC AIDS. If no problem is found, go to step 4). If problem is found, go to step 8).
6. Repair short to voltage in Light Blue wire between BCM 32-pin connector C2 and foglight switch. Go to step 10).
7. Replace foglight switch. Go to step 10).
8. Repair intermittent malfunction in rear foglight switch circuit as necessary. Go to step 10).
9. Replace BCM. See REMOVAL & INSTALLATION. Reprogram BCM. See **BCM PROGRAMMING/RPO CONFIGURATION** . Go to next step.
10. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Perform **BCM DIAGNOSTIC SYSTEM CHECK** .

Diagnostic Aids

1. The following conditions may cause an intermittent: Intermittent short to voltage in circuit No. 187 (Light Blue wire) between BCM and rear foglight switch; rear foglight switch sticking or internally shorted to voltage; or rear foglight switch is pressed for longer than 60 seconds.
2. If circuit No. 187 (Light Blue wire) between BCM and foglight switch is shorted to voltage, rear foglights will stay on or off at all times depending on which state they were in when malfunction occurred. If short to voltage occurred when foglights were on, foglights will remain off at all times. If short to voltage occurred when foglights were off, foglights will remain on at all times. BCM will retain this information even if ignition is turned off.

DTC B2482: BACK-UP LIGHT RELAY CIRCUIT (OPEN OR SHORT TO GROUND)

Description

BCM grounds circuit No. 38 (Dark Blue wire) to energize back-up light relay, which will turn back-up lights on. This allows back-up lights to be used in Underhood Theft Deterrent (UTD) and approach lighting functions.

BCM monitors voltage level on circuit No. 38 (Dark Blue wire). When BCM activates back-up light relay, voltage level in control circuit should be low. When relay is not activated, voltage level in control circuit should be high.

DTC B2482 will set when BCM detects a low voltage level in circuit No. 38 (Dark Blue wire) for 2 seconds when it is not energizing back-up light relay. No driver warning message will be displayed.

DTC B2482 requires an ignition cycle to change from current to his-tory. If conditions for malfunction no longer exist, history DTC will clear after 50 consecutive ignition cycles. DTC B2482 will also clear when conditions no longer exist, or when IPC or scan tool is used to clear codes.

NOTE: If DTC B2482 is a history code, problem may be intermittent. Wiggle wires while performing the following test.

Testing

1. If BCM diagnostic system check was performed, go to next step. If BCM diagnostic system check was not performed, see procedures in **BCM DIAGNOSTIC SYSTEM CHECK** .
2. Turn ignition off. Disconnect back-up light relay from underhood electrical center. Turn ignition on. Using a test light connected to ground, probe back-up light relay BATT terminals at underhood electrical center. See **Fig. 4** . If test light illuminates, go to next step. If test light does not illuminate, go to step 14).
3. Turn ignition off. Using a test light connected to battery, probe back-up light relay CKT 38 terminal at underhood electrical center. See **Fig. 4** . If test light illuminates, go to step 11) . If test light does not illuminate, go to next step.
4. Using DVOM, check resistance between back-up light relay terminals No. 85 and 86. If resistance is 75-105 ohms, go to next step. If resistance is not 75-105 ohms, go to step 13).
5. Check for continuity between back-up light relay terminals No. 85 and 87. If continuity exists, go to step 13). If continuity does not exist, go to next step.

6. Check for continuity between back-up light relay terminals No. 85 and 30. If continuity exists, go to step 13). If continuity does not exist, go to next step.
7. Turn ignition on. Using a test light connected to battery, probe back-up light relay CKT 38 terminal at underhood electrical center. See **Fig. 4** . Using scan tool, command back-up light re lay on and off. If test light toggles on and off as commanded, go to step 9). If test light does not toggle on and off as commanded, go to next step.
8. Turn ignition off. Disconnect BCM 32-pin connector C2. Using DVOM, check for continuity between BCM harness connector C2, terminal C1 (Dark Blue wire) and back-up light relay CKT 38 terminal at underhood electrical center. See **Fig. 4** . If continuity exists, go to step 16). If continuity does not exist, go to step 15).
9. Check for intermittent malfunction in back-up light circuit. See DIAGNOSTIC AIDS. If no problem is found, go to next step. If problem is found, repair as necessary. Go to step 17).
10. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Using scan tool, cycle back-up light relay. If DTC B2482 is current, go to step 16). If DTC B2482 is not current, system is operating properly.
11. Ensure ignition is off. Disconnect BCM 32-pin connector C2. Using a test light connected to battery, probe back-up light relay CKT 38 terminal at underhood electrical center. See **Fig. 4** . If test light illuminates, go to next step. If test light does not illuminate, go to step 16).
12. Repair short to ground in underhood electrical center or in circuit No. 38 (Dark Blue wire) between BCM connector C2 and back-up light relay. Go to step 17).
13. Replace back-up light relay. Go to step 17).
14. Repair open in ignition feed circuit to underhood electrical center. See POWER DISTRIBUTION under **WIRING DIAGRAMS** . If a fuse is open, repair short in appropriate circuit. Go to step 17).
15. Repair open in underhood electrical center or in circuit No. 38 (Dark Blue wire) between BCM connector C2 and back-up light relay. Go to step 17).
16. Replace BCM. See **REMOVAL & INSTALLATION** . Reprogram BCM. See **BCM PROGRAMMING/RPO CONFIGURATION** . Go to next step.
17. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Perform **BCM DIAGNOSTIC SYSTEM CHECK** .

Diagnostic Aids

1. The following conditions may cause an intermittent: Intermittent short to ground or open in circuit No. 38 (Dark Blue wire) between BCM and back-up light relay; poor connections at BCM, underhood electrical center, or back-up light relay; or internal open or short in back-up light relay.
2. If circuit No. 38 (Dark Blue wire) between BCM and back-up light relay is shorted to ground, back-up lights will stay on at all times. If circuit No. 38 (Dark Blue wire) between BCM and back-up light relay is open, back-up lights will stay off at all times.

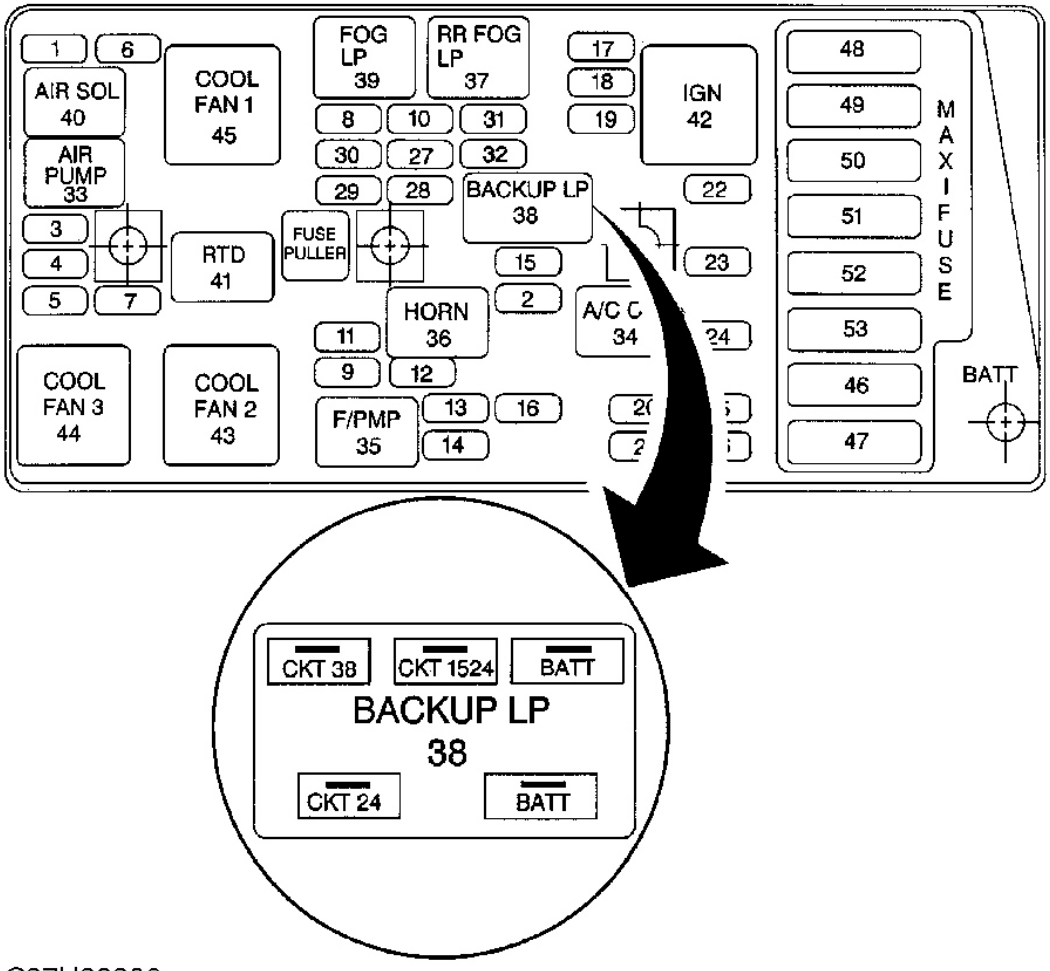


Fig. 4: Identifying Back-Up Light Relay Terminals At Underhood Electrical Center
Courtesy of GENERAL MOTORS CORP.

DTC B2483: BACK-UP LIGHT RELAY CIRCUIT (SHORT TO VOLTAGE OR BCM OPEN)

Description

BCM grounds circuit No. 38 (Dark Blue wire) to energize back-up light relay, which will turn back-up lights on. This allows back-up lights to be used in Underhood Theft Deterrent (UTD) and approach lighting functions.

BCM monitors voltage level on circuit No. 38 (Dark Blue wire). When BCM activates back-up light relay, voltage level in control circuit should be low. When relay is not activated, voltage level in control circuit should be high.

DTC B2483 will set when BCM detects a high voltage level in circuit No. 38 (Dark Blue wire) for 2 seconds when it is energizing back-up light relay. No driver warning message will be displayed.

DTC B2483 requires an ignition cycle to change from current to his-tory. If conditions for malfunction no longer exist, history DTC will clear after 50 consecutive ignition cycles. DTC B2483 will also clear when conditions no longer exist, or when IPC or scan tool is used to clear codes.

NOTE: If DTC B2483 is a history code, problem may be intermittent. Wiggle wires while performing the following test.

Testing

1. If BCM diagnostic system check was performed, go to next step. If BCM diagnostic system check was not performed, see procedures in **BCM DIAGNOSTIC SYSTEM CHECK** .
2. Turn ignition off. Disconnect back-up light relay from underhood electrical center. Turn ignition on. Using a test light connected to ground, probe back-up light relay CKT 38 terminal at underhood electrical center. See **Fig. 4** . If test light illuminates, go to step 10). If test light does not illuminate, go to next step.
3. Using DVOM, check resistance between back-up light relay terminals No. 85 and 86. If resistance is 75-105 ohms, go to next step. If resistance is not 75-105 ohms, go to step 13).
4. Check for continuity between back-up light relay terminals No. 85 and 87. If continuity exists, go to step 13). If continuity does not exist, go to next step.
5. Check for continuity between back-up light relay terminals No. 85 and 30. If continuity exists, go to step 13). If continuity does not exist, go to next step.
6. Turn ignition on. Using a test light connected to battery, probe back-up light relay CKT 38 terminal at underhood electrical center. See **Fig. 4** . Using scan tool, command back-up light re lay on and off. If test light toggles on and off as commanded, go to step 8). If test light does not toggle on and off as commanded, go to next step.
7. Turn ignition off. Disconnect BCM 32-pin connector C2. Using DVOM, check for continuity between BCM harness connector C2, terminal C1 (Dark Blue wire) and back-up light relay CKT 38 terminal at underhood electrical center. See **Fig. 4** . If continuity exists, go to step 14). If continuity does not exist, go to step 11).
8. Check for intermittent malfunction in back-up light circuit. See DIAGNOSTIC AIDS. If no problem is found, go to next step. If problem is found, repair as necessary. Go to step 15).
9. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Using scan tool, cycle back-up light relay. If DTC B2483 is current, go to step 14). If DTC B2483 is not current, system is operating properly.
10. Turn ignition off. Disconnect BCM 32-pin connector C2. Turn ignition on. Using a test light connected to ground, probe back-up light relay CKT 38 terminal at underhood electrical center. See **Fig. 4** . If test light illuminates, go to step 12). If test light does not illuminate, go to step 14).
11. Repair open in underhood electrical center or in circuit No. 38 (Dark Blue wire) between BCM connector C2 and back-up light relay. Go to step 15).
12. Repair short to voltage in underhood electrical center or in circuit No. 38 (Dark Blue wire) between BCM connector C2 and back-up light relay. Go to step 15).
13. Replace back-up light relay. Go to step 15).

14. Replace BCM. See **REMOVAL & INSTALLATION** . Reprogram BCM. See **BCM PROGRAMMING/RPO CONFIGURATION** . Go to next step.
15. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Perform **BCM DIAGNOSTIC SYSTEM CHECK** .

Diagnostic Aids

1. The following conditions may cause an intermittent: Intermittent short to voltage in circuit No. 38 (Dark Blue wire) between BCM and back-up light relay; poor connections at BCM, underhood electrical center, or back-up light relay; or internal short to voltage in back-up light relay.
2. If circuit No. 38 (Dark Blue wire) between BCM and back-up light relay is shorted to voltage or if BCM is open internally, back-up light will stay off at all times.

DTC B2527: HORN RELAY CIRCUIT (OPEN OR SHORT TO GROUND)

Description

BCM grounds circuit No. 28 (Black wire) to energize horn relay, which will turn horns on. This allows horns to be used in Underhood Theft Deterrent (UTD) functions.

BCM monitors voltage level on circuit No. 28 (Black wire). When BCM activates horn relay, voltage level in control circuit should be low. When relay is not activated, voltage level in control circuit should be high.

DTC B2527 will set when BCM detects a low voltage level in circuit No. 28 (Black wire) for 2 seconds when it is not energizing horn relay. No driver warning message will be displayed.

DTC B2527 requires an ignition cycle to change from current to his-tory. If conditions for malfunction no longer exist, history DTC will clear after 50 consecutive ignition cycles. DTC B2527 will also clear when conditions no longer exist, or when IPC or scan tool is used to clear codes.

NOTE: If DTC B2527 is a history code, problem may be intermittent. Wiggle wires while performing the following test.

Testing

1. If BCM diagnostic system check was performed, go to next step. If BCM diagnostic system check was not performed, see procedures in **BCM DIAGNOSTIC SYSTEM CHECK** .
2. Turn ignition off. Disconnect horn relay from underhood electrical center. Turn ignition on. Using a test light connected to ground, probe horn relay BATT terminals at underhood electrical center. See **Fig. 5** . If test light illuminates, go to next step. If test light does not illuminate, go to step 16).
3. Turn ignition off. Using a test light connected to battery, probe horn relay CKT 28 terminal at underhood electrical center. See **Fig. 5** . If test light illuminates, go to step 11). If test light does not illuminate, go to next step.
4. Using DVOM, check resistance between horn relay terminals No. 85 and 86. If resistance is 75-105 ohms, go to next step. If resistance is not 75-105 ohms, go to step 14).

5. Check for continuity between horn relay terminals No. 85 and 87. If continuity exists, go to step 14). If continuity does not exist, go to next step.
6. Check for continuity between horn relay terminals No. 85 and 30. If continuity exists, go to step 14). If continuity does not exist, go to next step.
7. Turn ignition on. Using a test light connected to battery, probe horn relay CKT 28 terminal at underhood electrical center. See **Fig. 5** . Using scan tool, command horn relay on and off. If test light toggles on and off as commanded, go to step 9). If test light does not toggle on and off as commanded, go to next step.
8. Turn ignition off. Disconnect BCM 24-pin connector C1. Using DVOM, check for continuity between BCM harness connector C1, terminal B10 (Black wire) and horn relay CKT 28 terminal at underhood electrical center. See **Fig. 5** . If continuity exists, go to step 18). If continuity does not exist, go to step 17).
9. Check for intermittent malfunction in horn circuit. See DIAGNOSTIC AIDS. If no problem is found, go to next step. If problem is found, repair as necessary. Go to step 19).
10. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Using scan tool, cycle horn relay. If DTC B2527 is current, go to step 18). If DTC B2527 is not current, system is operating properly.
11. Ensure ignition is off. Disconnect BCM 24-pin connector C1. Using a test light connected to battery, probe horn relay CKT 28 terminal at underhood electrical center. See **Fig. 5** . If test light illuminates, go to next step. If test light does not illuminate, go to step 18).
12. Disconnect steering column C221 connector. Using a test light connected to battery, probe horn relay CKT 28 terminal at underhood electrical center. See **Fig. 5** . If test light illuminates, go to next step. If test light does not illuminate, go to step 15).
13. Repair short to ground in underhood electrical center or in circuit No. 28 (Black wire) between BCM connector C1 and horn relay. Go to step 19).
14. Replace horn relay. Go to step 19).
15. Repair short to ground in steering column. Go to step 19).
16. Repair open in ignition feed circuit to underhood electrical center. See POWER DISTRIBUTION under **WIRING DIAGRAMS** . If a fuse is open, repair short in appropriate circuit. Go to step 19).
17. Repair open in underhood electrical center or in circuit No. 28 (Black wire) between BCM connector C1 and horn relay. Go to step 19).
18. Replace BCM. See **REMOVAL & INSTALLATION** . Reprogram BCM. See **BCM PROGRAMMING/RPO CONFIGURATION** . Go to next step.
19. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Perform **BCM DIAGNOSTIC SYSTEM CHECK** .

Diagnostic Aids

1. Horn relay may be installed in 2 directions in underhood electrical center, and still function properly. The following conditions may cause an intermittent: Intermittent short to ground or open in circuit No. 28 (Black wire) between BCM and horn relay; short to ground in horn pad; poor connections at BCM, underhood electrical center or horn relay; or internal open or short to ground in horn relay.
2. If circuit No. 28 (Black wire) between BCM and horn relay is shorted to ground, horn will stay on at all times. If circuit No. 28 (Black wire) between BCM and horn relay is open, horn will stay off at all times.

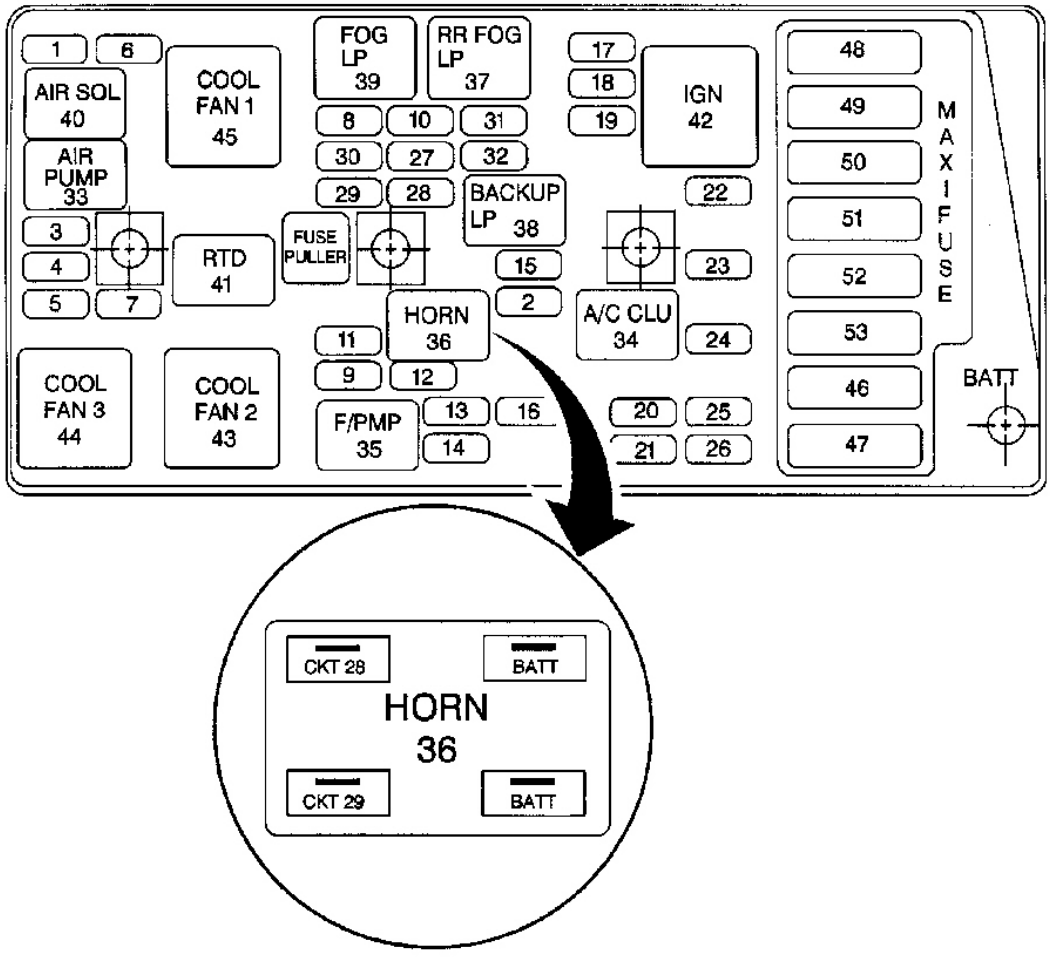


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Fig. 5: Horn Relay Terminals At Underhood Electrical Center
Courtesy of GENERAL MOTORS CORP.

DTC B2528: HORN RELAY CIRCUIT (SHORT TO VOLTAGE OR BCM OPEN)

Description

BCM grounds circuit No. 28 (Black wire) to energize horn relay, which will turn horns on. This allows horns to be used in Underhood Theft Deterrent (UTD) functions.

BCM monitors voltage level on circuit No. 28 (Black wire). When BCM activates horn relay, voltage level in control circuit should be low. When relay is not activated, voltage level in control circuit should be high.

DTC B2528 will set when BCM detects a high voltage level in circuit No. 28 (Black wire) for 2 seconds when

it is energizing horn relay. No driver warning message will be displayed.

DTC B2528 requires an ignition cycle to change from current to his-tory. If conditions for malfunction no longer exist, history DTC will clear after 50 consecutive ignition cycles. DTC B2528 will also clear when conditions no longer exist, or when IPC or scan tool is used to clear codes.

NOTE: If DTC B2528 is a history code, problem may be intermittent. Wiggle wires while performing the following test.

Testing

1. If BCM diagnostic system check was performed, go to next step. If BCM diagnostic system check was not performed, see procedures in **BCM DIAGNOSTIC SYSTEM CHECK** .
2. Turn ignition off. Disconnect horn relay from underhood electrical center. Turn ignition on. Using a test light connected to ground, probe horn relay CKT 28 terminal at underhood electrical center. See **Fig. 5** . If test light illuminates, go to step 10). If test light does not illuminate, go to next step.
3. Using DVOM, check resistance between horn relay terminals No. 85 and 86. If resistance is 75-105 ohms, go to next step. If resistance is not 75-105 ohms, go to step 15).
4. Check for continuity between horn relay terminals No. 85 and 87. If continuity exists, go to step 15). If continuity does not exist, go to next step.
5. Check for continuity between horn relay terminals No. 85 and 30. If continuity exists, go to step 15). If continuity does not exist, go to next step.
6. Turn ignition on. Using a test light connected to battery, probe horn relay CKT 28 terminal at underhood electrical center. See **Fig. 5** . Using scan tool, command horn relay on and off. If test light toggles on and off as commanded, go to step 8). If test light does not toggle on and off as commanded, go to next step.
7. Turn ignition off. Disconnect BCM 24-pin connector C1. Using DVOM, check for continuity between BCM harness connector C1, terminal B10 (Black wire) and horn relay CKT 28 terminal at underhood electrical center. See **Fig. 5** . If continuity exists, go to step 16). If continuity does not exist, go to step 12).
8. Check for intermittent malfunction in horn circuit. See DIAGNOSTIC AIDS. If no problem is found, go to next step. If problem is found, repair as necessary. Go to step 17).
9. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Using scan tool, cycle horn relay. If DTC B2528 is current, go to step 16). If DTC B2528 is not current, system is operating properly.
10. Turn ignition off. Disconnect BCM 24-pin connector C1. Turn ignition on. Using a test light connected to ground, probe horn relay CKT 28 terminal at underhood electrical center. See **Fig. 5** . If test light illuminates, go to next step. If test light does not illuminate, go to step 16).
11. Disconnect steering column C221 connector. Using a test light connected to ground, probe horn relay CKT 28 terminal at underhood electrical center. See **Fig. 5** . If test light illuminates, go to step 13). If test light does not illuminate, go to step 14).
12. Repair open in underhood electrical center or in circuit No. 28 (Black wire) between BCM connector C1 and horn relay. Go to step 17).
13. Repair short to voltage in underhood electrical center or in circuit No. 28 (Black wire) between BCM connector C1 and horn relay. Go to step 17).

14. Repair short to voltage in steering column. Go to step 17).
15. Replace horn relay. Go to step 17).
16. Replace BCM. See **REMOVAL & INSTALLATION** . Reprogram BCM. See **BCM PROGRAMMING/RPO CONFIGURATION** . Go to next step.
17. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Perform **BCM DIAGNOSTIC SYSTEM CHECK** .

Diagnostic Aids

1. Horn relay may be installed in 2 directions in underhood electrical center, and still function properly. The following conditions may cause an intermittent: Intermittent short to voltage in circuit No. 28 (Black wire) between BCM and horn relay; poor connections at BCM, underhood electrical center or horn relay; or internal short to voltage in horn relay.
2. If circuit No. 28 (Black wire) between BCM and horn relay is shorted to voltage or if BCM is open internally, horn will stay off at all times.

DTC B2573: HATCH RELEASE SWITCH CIRCUIT (SHORT TO VOLTAGE)

Description

Hatch release switch supplies a direct battery input to BCM when switch is pressed. This input allows BCM to detect a hatch release request. If BCM detects battery voltage on hatch release circuit No. 1576 (Black wire), BCM will energize hatch release relay. BCM monitors circuit No. 1576 to determine how long voltage is applied.

DTC B2573 will set when BCM detects battery voltage on circuit No. 1576 (Black wire) for longer than 60 seconds. No driver warning message will be displayed. If conditions for malfunction no longer exist, history DTC will clear after 50 consecutive ignition cycles. DTC B2573 will also clear when conditions no longer exist, or when IPC or scan tool is used to clear codes.

NOTE: If DTC B2573 is a history code, problem may be intermittent. Wiggle wires while performing the following test.

Testing

1. If BCM diagnostic system check was performed, go to next step. If BCM diagnostic system check was not performed, see procedures in **BCM DIAGNOSTIC SYSTEM CHECK** .
2. Turn ignition off. Disconnect BCM 32-pin connector C2. Turn ignition on. Using a test light connected to ground, probe BCM harness connector C2, terminal D9 (Black wire). If test light illuminates, go to next step. If test light does not illuminate, go to step 5).
3. Turn ignition off. Disconnect hatch release switch. Turn ignition on. Using a test light connected to ground, probe BCM harness connector C2, terminal D9 (Black wire). If test light illuminates, go to step 6). If test light does not illuminate, go to step 7).
4. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Wait 60 seconds and check for DTCs. If DTC B2573 is current, go to step 9). If DTC B2573 is not current, system

is operating properly.

5. Check for intermittent malfunction in hatch release switch circuit. See DIAGNOSTIC AIDS. If no problem is found, go to step 4). If problem is found, go to step 8).
6. Repair short to voltage in circuit No. 1576 (Black wire) between BCM connector C2 and hatch release switch. Go to step 10).
7. Replace hatch release switch. See POWER HATCH & FUEL DOOR RELEASE article. Go to step 10).
8. Repair intermittent malfunction in hatch release switch circuit. Go to step 10).
9. Replace BCM. See **REMOVAL & INSTALLATION** . Reprogram BCM. See **BCM PROGRAMMING/RPO CONFIGURATION** . Go to next step.
10. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Perform **BCM DIAGNOSTIC SYSTEM CHECK** .

Diagnostic Aids

1. The following conditions may cause an intermittent: Intermittent short to voltage in circuit No. 1576 (Black wire) between BCM and hatch release switch; hatch release switch sticking or internally shorted to voltage; or hatch release switch is pressed for longer than 60 seconds.
2. If short to voltage occurs in circuit No. 1576 (Black wire) between BCM and hatch release switch when ignition is on, rear hatch switch will release once and then remain inoperative. If short to voltage occurred when ignition is off, rear hatch switch will release when ignition is turned on and then remain inoperative. BCM will retain information of last transition, and will not release rear hatch again until it received a change from hatch release switch.

DTC B2578: RF TURN SIGNAL MONITOR CIRCUIT (SHORT TO VOLTAGE)

Description

BCM monitors RF turn signal circuit to determine status of turn signal switch. When BCM detects an oscillating voltage on circuit No. 15 (Dark Blue wire), BCM interprets this as a request from turn signal switch to turn RF turn signal on. The BCM then stops energizing RH DRL relay, which disables RF turn signal light from DRL circuit, so that RF turn signal light will now flash. The BCM monitors circuit No. 15 to determine how long voltage is applied.

DTC B2578 will set when BCM detects continuous battery voltage on circuit No. 15 (Dark Blue wire) for longer than 5 seconds. No driver warning message will be displayed.

DTC B2578 requires an ignition cycle to change from current to his-tory. If conditions for malfunction no longer exist, history DTC will clear after 50 consecutive ignition cycles. DTC B2578 will also clear when conditions no longer exist, or when IPC or scan tool is used to clear codes.

NOTE: If DTC B2578 is a history code, problem may be intermittent. Wiggle wires while performing the following test.

NOTE: To identify wire colors for lighting system, see WIRING DIAGRAMS .

Testing

1. If BCM diagnostic system check was performed, go to next step. If BCM diagnostic system check was not performed, see procedures in **BCM DIAGNOSTIC SYSTEM CHECK** .
2. Using scan tool, check for DTC B2583. If DTC B2583 exists, go to step 14). If DTC B2583 does not exist, go to next step.
3. Turn ignition off. Disconnect RH DRL relay from instrument panel electrical center. Turn ignition on. Turn turn signals off. Using a test light connected to ground, probe RH DRL relay CKT 15 at instrument panel electrical center. See **Fig. 2** . If test light illuminates, go to step 6). If test light does not illuminate, go to next step.
4. Using a test light connected to ground, probe RH DRL relay CKT 1315 at instrument panel electrical center. See **Fig. 2** . If test light illuminates, go to step 13). If test light does not illuminate, go to next step.
5. Using DVOM, check for continuity between RH DRL relay terminals No. 87 and 87A. If continuity exists, go to step 17). If continuity does not exist, go to step 9).
6. Turn ignition off. Disconnect hazard warning switch connector. Turn ignition on. Using a test light connected to ground, probe RH DRL relay CKT 15 at instrument panel electrical center. See **Fig. 2** . If test light illuminates, go to next step. If test light does not illuminate, go to step 16).
7. Turn ignition off. Disconnect turn signal switch connector C211. Turn ignition on. Using a test light connected to ground, probe RH DRL relay CKT 15 at instrument panel electrical center. See **Fig. 2** . If test light illuminates, go to next step. If test light does not illuminate, go to step 15).
8. Turn ignition off. Disconnect IPC connector. Turn ignition on. Using a test light connected to ground, probe RH DRL relay CKT 15 at instrument panel electrical center. See **Fig. 2** . If test light illuminates, go to step 11). If test light does not illuminate, go to step 12).
9. Check for the following intermittent faults:
   - A short to voltage in circuit No. 15 (Dark Blue wire), circuit No. 16 (Purple wire) or circuit No. 1315 (Dark Blue/White wire).
   - An internal short in RH DRL relay.
   - An internal short in turn signal switch.
   - An internal short in hazard warning switch.
   - A short at IPC terminal A16 (Dark Blue wire).

   If no problem was found, go to next step. If problem is found, repair as necessary. Go to step 19).
10. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Wait 5 seconds and check for DTCs. If DTC B2578 is current, go to step 18). If DTC B2578 is not current, system is operating properly.
11. Repair short to voltage in circuit No. 15 (Dark Blue wire) between BCM connector C2 and instrument panel electrical center connector C2. Go to step 19).
12. Repair short to voltage at IPC connector terminal A16 (Dark Blue wire). Go to step 19).
13. Repair short to voltage in circuit No. 1315 (Dark Blue/White wire) between instrument panel electrical center connector C2 and RF turn signal light. Go to step 19).
14. Check for short to voltage in circuit No. 16 (Purple wire) between hazard warning switch and turn signal switch. If no problem is found, go to step 16). If problem is found, repair as necessary. Go to step 19).

15. Replace turn signal switch. See **STEERING COLUMN SWITCHES** article. Go to step 19).
16. Replace hazard warning switch. Go to step 19).
17. Replace RH DRL relay. Go to step 19).
18. Replace BCM. See **REMOVAL & INSTALLATION** . Reprogram BCM. See **BCM PROGRAMMING/RPO CONFIGURATION** . Go to next step.
19. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Perform **BCM DIAGNOSTIC SYSTEM CHECK** .

Diagnostic Aids

1. The following conditions may cause an intermittent: Intermittent short to voltage in circuit No. 15 (Dark Blue wire), circuit No. 16 (Purple wire) or circuit No. 1315 (Dark Blue/White wire);or turn signal switch or hazard warning switch sticking or internally shorted.
2. BCM needs to detect voltage oscillation on circuit No. 15 (Dark Blue wire) in order to deactivate RF turn signal relay. If BCM detects continuous battery voltage, it is interpreted as a short to voltage. BCM will continue normal DRL operation, and RF turn signal will be inoperative.

DTC B2583: LF TURN SIGNAL MONITOR CIRCUIT (SHORT TO VOLTAGE)

Description

BCM monitors LF turn signal circuit to determine status of turn signal switch. When BCM detects an oscillating voltage on circuit No. 14 (Light Blue wire), BCM interprets this as a request from turn signal switch to turn LF turn signal on. The BCM then stops energizing LH DRL relay, which disables LF turn signal light from DRL circuit, so that LF turn signal light will now flash. The BCM monitors circuit No. 14 to determine how long voltage is applied.

DTC B2583 will set when BCM detects continuous battery voltage on circuit No. 14 (Light Blue wire) for longer than 5 seconds. No driver warning message will be displayed.

DTC B2583 requires an ignition cycle to change from current to his-tory. If conditions for malfunction no longer exist, history DTC will clear after 50 consecutive ignition cycles. DTC B2583 will also clear when conditions no longer exist, or when IPC or scan tool is used to clear codes.

NOTE: If DTC B2583 is a history code, problem may be intermittent. Wiggle wires while performing the following test.

NOTE: To identify wire colors for lighting system, see WIRING DIAGRAMS .

Testing

1. If BCM diagnostic system check was performed, go to next step. If BCM diagnostic system check was not performed, see procedures in **BCM DIAGNOSTIC SYSTEM CHECK** .
2. Using scan tool, check for DTC B2578. If DTC B2578 exists, go to step 14). If DTC B2578 does not exist, go to next step.

3. Turn ignition off. Disconnect LH DRL relay from instrument panel electrical center. Turn ignition on. Turn turn signals off. Using a test light connected to ground, probe LH DRL relay CKT 14 at instrument panel electrical center. See **Fig. 3** . If test light illuminates, go to step 6). If test light does not illuminate, go to next step.
4. Using a test light connected to ground, probe LH DRL relay CKT 1314 at instrument panel electrical center. See **Fig. 3** . If test light illuminates, go to step 13). If test light does not illuminate, go to next step.
5. Using DVOM, check for continuity between LH DRL relay terminals No. 87 and 87A. If continuity exists, go to step 17). If continuity does not exist, go to step 9).
6. Turn ignition off. Disconnect hazard warning switch connector. Turn ignition on. Using a test light connected to ground, probe LH DRL relay CKT 14 at instrument panel electrical center. See **Fig. 3** . If test light illuminates, go to next step. If test light does not illuminate, go to step 16).
7. Turn ignition off. Disconnect turn signal switch connector C211. Turn ignition on. Using a test light connected to ground, probe LH DRL relay CKT 14 at instrument panel electrical center. See **Fig. 3** . If test light illuminates, go to next step. If test light does not illuminate, go to step 15).
8. Turn ignition off. Disconnect IPC connector. Turn ignition on. Using a test light connected to ground, probe LH DRL relay CKT 14 at instrument panel electrical center. See **Fig. 3** . If test light illuminates, go to step 11). If test light does not illuminate, go to step 12).
9. Check for the following intermittent faults:
    - A short to voltage in circuit No. 14 (Light Blue wire), circuit No. 16 (Purple wire) or circuit No. 1314 (Light Blue/White wire).
    - An internal short in LH DRL relay.
    - An internal short in turn signal switch.
    - An internal short in hazard warning switch.
    - A short at IPC terminal A15 (Light Blue wire).

    If no problem was found, go to next step. If problem is found, repair as necessary. Go to step 19).

10. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Wait 5 seconds and check for DTCs. If DTC B2583 is current, go to step 18). If DTC B2583 is not current, system is operating properly.
11. Repair short to voltage in circuit No. 14 (Light Blue wire) between BCM connector C2 and instrument panel electrical center connector C1. Go to step 19).
12. Repair short to voltage at IPC connector terminal A15 (Light Blue wire). Go to step 19).
13. Repair short to voltage in circuit No. 1314 (Light Blue/White wire) between instrument panel electrical center connector C1 and LF turn signal light. Go to step 19).
14. Check for short to voltage in circuit No. 16 (Purple wire) between hazard warning switch and turn signal switch. If no problem is found, go to step 16). If problem is found, repair as necessary. Go to step 19).
15. Replace turn signal switch. See **STEERING COLUMN SWITCHES** article. Go to step 19).
16. Replace hazard warning switch. Go to step 19).
17. Replace LH DRL relay. Go to step 19).
18. Replace BCM. See **REMOVAL & INSTALLATION** . Reprogram BCM. See **BCM PROGRAMMING/RPO CONFIGURATION** . Go to next step.

19. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Perform **BCM DIAGNOSTIC SYSTEM CHECK** .

Diagnostic Aids

1. The following conditions may cause an intermittent: Intermittent short to voltage in circuit No. 14 (Light Blue wire), circuit No. 16 (Purple wire) or circuit No. 1314 (Light Blue/White wire);or turn signal switch or hazard warning switch sticking or internally shorted.
2. BCM needs to detect voltage oscillation on circuit No. 14 (Light Blue wire) in order to deactivate LF turn signal relay. If BCM detects continuous battery voltage, it is interpreted as a short to voltage. BCM will continue normal DRL operation, and LF turn signal will be inoperative.

DTC B2587: COLUMN LOCK/UNLOCK DRIVE "A" (OPEN OR SHORT TO GROUND)

Description

BCM provides steering column control function that allows steering column to be electronically locked or unlocked. BCM can supply a ground or battery output on column lock/unlock drive "A" circuit depending on desired steering column lock motor position. BCM controls motor position based on input information, which includes: Ignition position; key-in-ignition status; key-out-of-ignition status; system voltage; and information sent from steering column lock feedback switch, PASS-Key(R) system and PCM.

BCM uses steering column lock feedback switch to monitor motor position, and to determine if commanded position was accomplished. BCM continuously monitors column lock/unlock drive "A" circuit No. 1603 (Orange wire).

DTC B2587 will set when BCM detects an internal malfunction (short to ground or open) in column lock/unlock drive "A" circuit No. 1603 (Orange wire) or an open in BCM voltage supply circuit No. 2540 (Orange wire) for 100 milliseconds. IPC will display SERVICE COLUMN LOCK message. If conditions for malfunction no longer exist, history DTC will clear after 50 consecutive ignition cycles. DTC B2587 will also clear when conditions no longer exist, or when IPC or scan tool is used to clear codes.

NOTE: If DTC B2587 is a history code, problem may be intermittent. Wiggle wires while performing the following test.

Testing

1. If BCM diagnostic system check was performed, go to next step. If BCM diagnostic system check was not performed, see procedures in **BCM DIAGNOSTIC SYSTEM CHECK** .
2. Check BCM fuse No. 23 (10-amp), located in instrument panel electrical center. See **Fig. 1** . If fuse is open, go to next step. If fuse is okay, go to step 10).
3. Turn ignition off. Disconnect BCM Red 16-pin connector C3. Using a test light connected to battery, probe BCM harness connector C3, terminal A4 (Orange wire). If test light illuminates, go to step 11). If test light does not illuminate, go to next step.
4. Disconnect steering column C207 connector. Using a test light connected to battery, probe BCM harness connector C3, terminal A8 (Orange wire). If test light illuminates, go to step 12). If test light does not

illuminate, go to next step.

5. Using a test light connected to battery, probe BCM harness connector C3, terminal A6 (Purple wire). If test light illuminates, go to step 12). If test light does not illuminate, go to next step.
6. Using DVOM, check for continuity between BCM harness connector C3, terminals A6 (Purple wire) and A8 (Orange wire). If continuity exists, go to step 13). If continuity does not exist, go to next step.
7. Replace BCM fuse No. 23. Reconnect BCM connector C3. Remove key from ignition switch. Connect a test light between steering column connector C207 (harness side) terminals "C" (Purple wire) and "D" (Orange wire). Using scan tool, cycle steering column lock/unlock motor. If test light illuminates in both positions, go to step 14). If test light does not illuminate in both positions, go to step 15).
8. Check for intermittent malfunction in steering column circuit. See DIAGNOSTIC AIDS. If no problem is found, go to next step. If problem is found, repair as necessary. Go to step 16).
9. Turn ignition off. Remove BCM fuse No. 25 (10-amp) from instrument panel electrical center for 15 seconds to clear BCM steering column fail enable mode. See **Fig. 1** . Turn ignition on. Clear DTCs. Check for DTCs. If DTC B2587 is current, go to step 15). If DTC B2587 is not current, go to step 16).
10. Check for open in circuit No. 2540 (Orange wire) between BCM connector C3 and instrument panel electrical center connector C1. If no problem is found, go to step 8). If problem is found, repair as necessary. Go to step 16).
11. Repair short to ground in instrument panel electrical center or in circuit No. 2540 (Orange wire) between BCM connector C3 and instrument panel electrical center connector C1. Go to step 16).
12. Repair short to ground in circuit No. 1603 (Orange wire) or No. 1604 (Purple wire) between BCM connector C3 and steering wheel lock. Go to step 16).
13. Repair short between circuits No. 1603 (Orange wire) and No. 1604 (Purple wire) between BCM connector C3 and steering wheel lock. Go to step 16).
14. Replace steering wheel lock/unlock motor (located in steering wheel lock on instrument panel, right of steering column). Go to step 16).
15. Replace BCM. See **REMOVAL & INSTALLATION** . Reprogram BCM. See **BCM PROGRAMMING/RPO CONFIGURATION** . Go to next step.
16. Turn ignition off. Remove BCM fuse No. 25 (10-amp) from instrument panel electrical center for 15 seconds to clear BCM steering column fail enable mode. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Perform **BCM DIAGNOSTIC SYSTEM CHECK** .

Diagnostic Aids

1. The following conditions may cause an intermittent: Intermittent open in circuit No. 2540 (Orange wire), or circuits No. 1603 (Orange wire) and No. 1604 (Purple wire) are shorted together or to ground.
2. A short to ground in circuit No. 2540 (Orange wire) between BCM connector C3 and instrument panel electrical center connector C1 will cause BCM fuse No. 23 to open. If BCM is unable to supply voltage to steering column lock/unlock motor through circuit No. 2540 (Orange wire), DTC B2587 will set.
3. Disconnecting steering column connector C207 when ignition is on will cause BCM to enter a fail enable standby mode. Steering column will remain inoperative until fail enable standby mode is cleared. Remove BCM fuse No. 25 for 15 seconds to clear fail enable standby mode.

DTC B2588: COLUMN LOCK/UNLOCK DRIVE "A" (OPEN OR SHORT TO VOLTAGE)

Description

BCM provides steering column control function that allows steering column to be electronically locked or unlocked. BCM can supply a ground or battery output on column lock/unlock drive "A" circuit depending on desired steering column lock motor position. BCM controls motor position based on input information, which includes: Ignition position; key-in-ignition status; key-out-of-ignition status; system voltage; and information sent from steering column lock feedback switch, PASS-Key(R) system and PCM.

BCM uses steering column lock feedback switch to monitor motor position, and to determine if commanded position was accomplished. BCM continuously monitors column lock/unlock drive "A" circuit No. 1603 (Orange wire).

DTC B2588 will set when BCM detects an internal malfunction (short to voltage or open) in column lock/unlock drive "A" circuit No. 1603 (Orange wire) or an open in BCM ground circuit No. 150 (Black wire) for 100 milliseconds. IPC will display SERVICE COLUMN LOCK message. If conditions for malfunction no longer exist, history DTC will clear after 50 consecutive ignition cycles. DTC B2588 will also clear when conditions no longer exist, or when IPC or scan tool is used to clear codes.

NOTE: If DTC B2588 is a history code, problem may be intermittent. Wiggle wires while performing the following test.

Testing

1. If BCM diagnostic system check was performed, go to next step. If BCM diagnostic system check was not performed, see procedures in **BCM DIAGNOSTIC SYSTEM CHECK** .
2. Turn ignition off. Disconnect BCM Red 16-pin connector C3. Using a test light connected to battery, probe BCM harness connector C3, terminal A2 (Black wire). If test light illuminates, go to step 4). If test light does not illuminate, go to next step.
3. Repair open in Black wire between BCM connector C3 and splice pack No. 202 (instrument panel harness, at base of right "A" pillar). Go to step 7).
4. Check for intermittent malfunction at BCM connector C3, terminal A2 (Black wire). See DIAGNOSTIC AIDS. If no problem is found, go to next step. If problem is found, repair as necessary. Go to step 7).
5. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Check for DTCs. If DTC B2588 is current, go to next step. If DTC B2588 is not current, system is operating properly.
6. Replace BCM. See **REMOVAL & INSTALLATION** . Reprogram BCM. See **BCM PROGRAMMING/RPO CONFIGURATION** . Go to next step.
7. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Perform **BCM DIAGNOSTIC SYSTEM CHECK** .

Diagnostic Aids

If BCM is unable to ground steering column lock/unlock motor using circuit No. 150 (Black wire), it will set DTC B2588. Disconnecting steering column connector C207 when ignition is on will cause BCM to enter a fail enable mode. Steering column will remain inoperative until fail enable standby mode is cleared. Remove BCM

fuse No. 25 for 15 seconds to clear fail enable standby mode.

DTC B2592: COLUMN LOCK/UNLOCK DRIVE "B" (OPEN OR SHORT TO GROUND)

Description

BCM provides steering column control function that allows steering column to be electronically locked or unlocked. BCM can supply a ground or battery output on column lock/unlock drive "B" circuit depending on desired steering column lock motor position. BCM controls motor position based on input information, which includes: Ignition position; key-in-ignition status; key-out-of-ignition status; system voltage; and information sent from steering column lock feedback switch, PASS-Key(R) system and PCM.

BCM uses steering column lock feedback switch to monitor motor position, and to determine if commanded position was accomplished. BCM continuously monitors column lock/unlock drive "B" circuit No. 1604 (Purple wire).

DTC B2592 will set when BCM detects an internal malfunction (short to ground or open) in column lock/unlock drive "B" circuit No. 1604 (Purple wire) or an open in BCM voltage supply circuit No. 2540 (Orange wire) for 100 milliseconds. IPC will display SERVICE COLUMN LOCK message. If conditions for malfunction no longer exist, history DTC will clear after 50 consecutive ignition cycles. DTC B2592 will also clear when conditions no longer exist, or when IPC or scan tool is used to clear codes.

NOTE: If DTC B2592 is a history code, problem may be intermittent. Wiggle wires while performing the following test.

Testing

1. If BCM diagnostic system check was performed, go to next step. If BCM diagnostic system check was not performed, see procedures in **BCM DIAGNOSTIC SYSTEM CHECK** .
2. Check BCM fuse No. 23 (10-amp), located in instrument panel electrical center. See **Fig. 1** . If fuse is open, go to next step. If fuse is okay, go to step 10).
3. Turn ignition off. Disconnect BCM Red 16-pin connector C3. Using a test light connected to battery, probe BCM harness connector C3, terminal A4 (Orange wire). If test light illuminates, go to step 11). If test light does not illuminate, go to next step.
4. Disconnect steering column C207 connector. Using a test light connected to battery, probe BCM harness connector C3, terminal A8 (Orange wire). If test light illuminates, go to step 12). If test light does not illuminate, go to next step.
5. Using a test light connected to battery, probe BCM harness connector C3, terminal A6 (Purple wire). If test light illuminates, go to step 12). If test light does not illuminate, go to next step.
6. Using DVOM, check for continuity between BCM harness connector C3, terminals A6 (Purple wire) and A8 (Orange wire). If continuity exists, go to step 13). If continuity does not exist, go to next step.
7. Replace BCM fuse No. 23. Reconnect BCM connector C3. Remove key from ignition switch. Connect a test light between steering column connector C207 (harness side) terminals "C" (Purple wire) and "D" (Orange wire). Using scan tool, cycle steering column lock/unlock motor. If test light illuminates in both positions, go to step 14). If test light does not illuminate in both positions, go to step 15).

8. Check for intermittent malfunction in steering column circuit. See DIAGNOSTIC AIDS. If no problem is found, go to next step. If problem is found, repair as necessary. Go to step 16).
9. Turn ignition off. Remove BCM fuse No. 25 (10-amp) from instrument panel electrical center for 15 seconds to clear BCM steering column fail enable mode. Turn ignition on. Clear DTCs. Check for DTCs. If DTC B2592 is current, go to step 15). If DTC B2592 is not current, go to step 16).
10. Check for open in circuit No. 2540 (Orange wire) between BCM connector C3 and instrument panel electrical center connector C1. If no problem is found, go to step 8). If problem is found, repair as necessary. Go to step 16).
11. Repair short to ground in instrument panel electrical center or in circuit No. 2540 (Orange wire) between BCM connector C3 and instrument panel electrical center connector C1. Go to step 16).
12. Repair short to ground in circuit No. 1603 (Orange wire) or No. 1604 (Purple wire) between BCM connector C3 and steering wheel lock. Go to step 16).
13. Repair short between circuits No. 1603 (Orange wire) and No. 1604 (Purple wire) between BCM connector C3 and steering wheel lock. Go to step 16).
14. Replace steering wheel lock/unlock motor (located in steering wheel lock on instrument panel, right of steering column). Go to step 16).
15. Replace BCM. See **REMOVAL & INSTALLATION** . Reprogram BCM. See **BCM PROGRAMMING/RPO CONFIGURATION** . Go to next step.
16. Turn ignition off. Remove BCM fuse No. 25 (10-amp) from instrument panel electrical center for 15 seconds to clear BCM steering column fail enable mode. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Perform **BCM DIAGNOSTIC SYSTEM CHECK** .

Diagnostic Aids

1. The following conditions may cause an intermittent: Intermittent open in circuit No. 2540 (Orange wire), or circuits No. 1603 (Orange wire) and No. 1604 (Purple wire) are shorted together or to ground.
2. A short to ground in circuit No. 2540 (Orange wire) between BCM connector C3 and instrument panel electrical center connector C1 will cause BCM fuse No. 23 to open. If BCM is unable to supply voltage to steering column lock/unlock motor through circuit No. 2540 (Orange wire), DTC B2592 will set.
3. Disconnecting steering column connector C207 when ignition is on will cause BCM to enter a fail enable standby mode. Steering column will remain inoperative until fail enable standby mode is cleared. Remove BCM fuse No. 25 for 15 seconds to clear fail enable standby mode.

DTC B2593: COLUMN LOCK/UNLOCK DRIVE "B" (OPEN OR SHORT TO VOLTAGE)

Description

BCM provides steering column control function that allows steering column to be electronically locked or unlocked. BCM can supply a ground or battery output on column lock/unlock drive "B" circuit depending on desired steering column lock motor position. BCM controls motor position based on input information, which includes: Ignition position; key-in-ignition status; key-out-of-ignition status; system voltage; and information sent from steering column lock feedback switch, PASS-Key(R) system and PCM.

BCM uses steering column lock feedback switch to monitor motor position, and to determine if commanded

position was accomplished. BCM continuously monitors column lock/unlock drive "B" circuit No. 1604 (Orange wire).

DTC B2593 will set when BCM detects an internal malfunction (short to voltage or open) in column lock/unlock drive "B" circuit No. 1604 (Orange wire) or an open in BCM ground circuit No. 150 (Black wire) for 100 milliseconds. IPC will display SERVICE COLUMN LOCK message. If conditions for malfunction no longer exist, history DTC will clear after 50 consecutive ignition cycles. DTC B2593 will also clear when conditions no longer exist, or when IPC or scan tool is used to clear codes.

NOTE: If DTC B2593 is a history code, problem may be intermittent. Wiggle wires while performing the following test.

Testing

1. If BCM diagnostic system check was performed, go to next step. If BCM diagnostic system check was not performed, see procedures in **BCM DIAGNOSTIC SYSTEM CHECK** .
2. Turn ignition off. Disconnect BCM Red 16-pin connector C3. Using a test light connected to battery, probe BCM harness connector C3, terminal A2 (Black wire). If test light illuminates, go to step 4). If test light does not illuminate, go to next step.
3. Repair open in Black wire between BCM connector C3 and splice pack No. 202 (instrument panel harness, at base of right "A" pillar). Go to step 7).
4. Check for intermittent malfunction at BCM connector C3, terminal A2 (Black wire). See DIAGNOSTIC AIDS. If no problem is found, go to next step. If problem is found, repair as necessary. Go to step 7).
5. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Check for DTCs. If DTC B2588 is current, go to next step. If DTC B2588 is not current, system is operating properly.
6. Replace BCM. See **REMOVAL & INSTALLATION** . Reprogram BCM. See **BCM PROGRAMMING/RPO CONFIGURATION** . Go to next step.
7. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Perform **BCM DIAGNOSTIC SYSTEM CHECK** .

Diagnostic Aids

If BCM is unable to ground steering column lock/unlock motor using circuit No. 150 (Black wire), it will set DTC B2593. Disconnecting steering column connector C207 when ignition is on will cause BCM to enter a fail enable standby mode. Steering column will remain inoperative until fail enable standby mode is cleared. Remove BCM fuse No. 25 for 15 seconds to clear fail enable standby mode.

DTC B2597: TCS SWITCH CIRCUIT (SHORT TO GROUND)

Description

Traction Control System (TCS) switch circuit provides a ground input to BCM when switch is pressed. If BCM detects a ground on circuit No. 1571 (Brown/White wire) when TCS is off, BCM will send signal on serial data line to Electronic Brake Traction Control Module (EBTCM) to turn on TCS. If BCM detects a ground when

TCS is activated, BCM will send another signal to EBTCM to turn off TCS. BCM monitors TCS switch circuit to determine how long a ground has been applied. DTC B2597 will set when BCM detects a ground on circuit No. 1571 (Brown/White wire) for longer than 60 seconds. No driver warning message will be displayed. If conditions for malfunction no longer exist, history DTC will clear after 50 consecutive ignition cycles. DTC B2597 will also clear when conditions no longer exist, or when IPC or scan tool is used to clear codes.

NOTE: If DTC B2597 is a history code, problem may be intermittent. Wiggle wires while performing the following test.

Testing

1. If BCM diagnostic system check was performed, go to next step. If BCM diagnostic system check was not performed, see procedures in **BCM DIAGNOSTIC SYSTEM CHECK** .
2. Turn ignition off. Disconnect BCM 32-pin connector C2. Using a test light connected to battery, probe BCM harness connector C2, terminal D15 (Brown/White wire). If test light illuminates, go to next step. If test light does not illuminate, go to step 5).
3. Ensure ignition is off. Disconnect TCS switch. Using a test light connected to battery, probe BCM harness connector C2, terminal D15 (Brown/White wire). If test light illuminates, go to step 6). If test light does not illuminate, go to step 7).
4. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Wait 60 seconds and check for DTCs. If DTC B2597 is current, go to step 9). If DTC B2597 is not current, system is operating properly.
5. Check for intermittent malfunction in TCS switch circuit. See DIAGNOSTIC AIDS. If no problem is found, go to step 4). If problem is found, go to step 8).
6. Repair short to ground in Brown/White wire between BCM 32-pin connector C2 and TCS switch. Go to step 10).
7. Replace TCS switch. Go to step 10).
8. Repair intermittent malfunction in TCS switch circuit. Go to step 10).
9. Replace BCM. See **REMOVAL & INSTALLATION** . Reprogram BCM. See **BCM PROGRAMMING/RPO CONFIGURATION** . Go to next step.
10. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Perform **BCM DIAGNOSTIC SYSTEM CHECK** .

Diagnostic Aids

1. The following conditions may cause an intermittent: Intermittent short to ground in circuit No. 1571 (Brown/White wire) between BCM and TCS switch; TCS switch sticking or internally shorted to ground; or TCS switch is pressed for longer than 60 seconds.
2. If circuit No. 1571 (Brown/White wire) between BCM and TCS switch is shorted to ground, TCS will stay on or off at all times depending on which state it was in when malfunction occurred. If short to ground occurred when TCS was on, TCS will remain off at all times. If short to ground occurred when TCS was off, TCS will remain on at all times. BCM will retain this information even if ignition is turned off.

DTC B2721: PASS-KEY(R) DETECTION CIRCUIT (OUT OF RANGE)

Description

Insertion of PASS-Key(R) into ignition lock cylinder completes PASS-Key(R) circuit. Contacts in ignition lock cylinder mate with resistor pellet contacts in PASS-Key(R). BCM compares resistance value of key pellet to valid resistance programmed into BCM. When proper resistance value is read, BCM will allow theft deterrent relay to energize, steering column to unlock, and will send a message through serial data line to PCM to allow fuel enable processing to occur.

DTC B2721 will set when resistance level at BCM's PASS-Key(R) input circuit is one of 14 valid (but incorrect) resistance ranges for one second, signaling an invalid PASS-Key(R) detection. When DTC B2721 is set, the following will occur:

- BCM will send signal to IPC to turn on SECURITY warning indicator.
- BCM will disable theft deterrent relay.
- PCM will not allow fuel enable processing to occur.
- Sampling of PASS-Key(R) resistance will be disabled for a 3-minute time-out period.
- An armed Universal Theft Deterrent (UTD) system will not disarm.
- Steering column will remain in locked position.

DTC B2721 requires an ignition cycle to change from current to his-tory. If conditions for malfunction no longer exist, history DTC will clear after 50 consecutive ignition cycles. DTC B2721 will also clear when conditions no longer exist, or when IPC or scan tool is used to clear codes.

NOTE: If DTC B2721 is a history code, problem may be intermittent. Wiggle wires while performing the following test.

Testing

1. If BCM diagnostic system check was performed, go to next step. If BCM diagnostic system check was not performed, see procedures in **BCM DIAGNOSTIC SYSTEM CHECK** .
2. Try each key provided with vehicle in ignition lock cylinder. Wait 3 minutes between each attempt to allow PASS-Key(R) timer sequence to reset. If one of the keys works, go to step 7). If no keys work, go to next step.
3. Using scan tool, check for DTCs B2722, B2723 or B2735. If any of these DTCs exist, go to appropriate DTC test. If none of these DTCs exist, go to next step.
4. Using Interrogator Adapter Harness (J-35628-A), perform lock cylinder test. See manufacturer's instructions. If problem is found, go to step 9). If no problem is found, go to next step.
5. Turn ignition off. Disconnect ignition lock cylinder connector C3. Turn ignition on. At BCM side of ignition lock cylinder connector C3, use DVOM to check voltage between terminals "A" (Purple/White wire) and "B" (White/Black wire). If about 5 volts exists, go to next step. If about 5 volts does not exist, go to step 8).
6. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Wait 5 seconds

and check for DTCs. If DTC B2721 is current, go to step 10). If DTC B2721 is not current, system is operating properly.

7. Replace malfunctioning ignition key. Go to step 11).
8. Check for intermittent malfunction in circuits No. 1073 (White/Black wire) and No. 1074 (Purple/White wire) between BCM connector C1 and ignition switch connector C3. If no problem is found, go to step 10). If problem is found, repair as necessary. Go to step 11).
9. Replace ignition lock cylinder. See **INSTRUMENT PANEL** article. Go to step 11).
10. Replace BCM. See **REMOVAL & INSTALLATION** . Reprogram BCM. See **BCM PROGRAMMING/RPO CONFIGURATION** . Go to next step.
11. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Perform **BCM DIAGNOSTIC SYSTEM CHECK** .

Diagnostic Aids

1. The following conditions may cause an intermittent: Intermittent open or short to ground in circuit No. 1073 (White/Black wire) or No. 1074 (Purple/White wire) between BCM and ignition switch; poor connections at BCM or ignition switch; incorrect PASS-Key(R); or dirty or loose ignition lock cylinder key contacts or PASS-Key(R) resistor.
2. If key resistor pellet is incorrect, there will be no BCM outputs to theft deterrent relay or PCM for about 3 minutes. If a key (even a proper PASS-Key(R)) is inserted or ignition is turned on again, 3-minute time-out period will reset. If battery is disconnected, time-out period will be reset when battery is reconnected.
3. Though it is unlikely, DTC B2721 may set due to extremely hot or cold ambient temperatures. To eliminate this possibility, perform tests with vehicle and key at room temperature.
4. Clean key resistor contacts thoroughly. Check for poor connections at BCM and ignition lock cylinder. A poor connection may cause an open, an incorrect PASS-Key(R) resistance or an intermittent malfunction.

DTC B2722: PASS-KEY(R) DETECTION CIRCUIT (SHORT TO GROUND)

Insertion of PASS-Key(R) into ignition lock cylinder completes PASS-Key(R) circuit. Contacts in ignition lock cylinder mate with resistor pellet contacts in PASS-Key(R). BCM compares resistance value of key pellet to valid resistance programmed into BCM. When proper resistance value is read, BCM will allow theft deterrent relay to energize, steering column to unlock, and will send a message through serial data line to PCM to allow fuel enable processing to occur.

DTC B2722 will set when voltage level at BCM's PASS-Key(R) input circuit is low for one second, signaling an invalid PASS-Key(R) detection and a short to ground. When DTC B2722 is set, the following will occur:

- BCM will send signal to IPC to turn on SECURITY warning indicator.
- BCM will disable theft deterrent relay.
- PCM will not allow fuel enable processing to occur.
- Sampling of PASS-Key(R) resistance will be disabled for a 3-minute time-out period.
- An armed Universal Theft Deterrent (UTD) system will not disarm.
- Steering column will remain in locked position.

DTC B2722 requires an ignition cycle to change from current to his-tory. If conditions for malfunction no longer exist, history DTC will clear after 50 consecutive ignition cycles. DTC B2722 will also clear when conditions no longer exist, or when IPC or scan tool is used to clear codes.

NOTE: If DTC B2722 is a history code, problem may be intermittent. Wiggle wires while performing the following test.

Testing

1. If BCM diagnostic system check was performed, go to next step. If BCM diagnostic system check was not performed, see procedures in **BCM DIAGNOSTIC SYSTEM CHECK** .
2. Insert ignition key into Interrogator Adapter Harness (J-35628-A) to check vehicle key code number. If valid key code exists (No. 1-15), go to next step. If valid key code does not exist, go to step 9).
3. Using Interrogator Adapter Harness (J-35628-A), perform lock cylinder test. See manufacturer's instructions. If problem is found, go to step 8). If no problem is found, go to next step.
4. Turn ignition off. Disconnect ignition lock cylinder connector C3. Turn ignition on. At BCM side of ignition lock cylinder connector C3, use DVOM to check voltage between terminals "A" (Purple/White wire) and "B" (White/Black wire). If about 5 volts exists, go to step 6). If about 5 volts does not exist, go to next step.
5. Check for open or short in circuits No. 1073 (White/Black wire) and No. 1074 (Purple/White wire) between BCM connector C1 and ignition switch connector C3. If no problem is found, go to step 10). If problem is found, repair as necessary. Go to step 11).
6. Check for intermittent malfunction in ignition lock cylinder circuit. See DIAGNOSTIC AIDS. If no problem is found, go to next step. If problem is found, repair as necessary. Go to step 11).
7. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Wait 5 seconds and check for DTCs. If DTC B2722 is current, go to step 10). If DTC B2722 is not current, system is operating properly.
8. Replace ignition lock cylinder. See **INSTRUMENT PANEL** article. Go to step 11).
9. Replace ignition key. Go to step 11).
10. Replace BCM. See **REMOVAL & INSTALLATION** . Reprogram BCM. See **BCM PROGRAMMING/RPO CONFIGURATION** . Go to next step.
11. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Perform **BCM DIAGNOSTIC SYSTEM CHECK** .

Diagnostic Aids

1. The following conditions may cause an intermittent: Intermittent short to ground in circuit No. 1073 (White/Black wire) between BCM and ignition switch; intermittent short between circuits No. 1073 (White/Black wire) and No. 1074 (Purple/White wire); or PASS-Key(R) resistor is shorted.
2. If key resistor pellet is incorrect, there will be no BCM outputs to theft deterrent relay or PCM for about 3 minutes. If a key (even a proper PASS-Key(R)) is inserted or ignition is turned on again, 3-minute time-out period will reset. If battery is disconnected, time-out period will be reset when battery is reconnected.
3. If there is a short between circuit No. 1073 (White/Black wire) and No. 1074 (Purple/White wire) between BCM and ignition switch, a no-crank condition will exist.

DTC B2723: PASS-KEY(R) DETECTION CIRCUIT (SHORT TO VOLTAGE OR OPEN)

Description

Insertion of PASS-Key(R) into ignition lock cylinder completes PASS-Key(R) circuit. Contacts in ignition lock cylinder mate with resistor pellet contacts in PASS-Key(R). BCM compares resistance value of key pellet to valid resistance programmed into BCM. When proper resistance value is read, BCM will allow theft deterrent relay to energize, steering column to unlock, and will send a message through serial data line to PCM to allow fuel enable processing to occur.

DTC B2723 will set when voltage level at BCM's PASS-Key(R) input circuit is high for one second, signaling an invalid PASS-Key(R) detection and a short to voltage or open. When DTC B2723 is set, the following will occur:

- BCM will send signal to IPC to turn on SECURITY warning indicator.
- BCM will disable theft deterrent relay.
- PCM will not allow fuel enable processing to occur.
- Sampling of PASS-Key(R) resistance will be disabled for a 3-minute time-out period.
- An armed Universal Theft Deterrent (UTD) system will not disarm.
- Steering column will remain in locked position.

DTC B2723 requires an ignition cycle to change from current to his-tory. If conditions for malfunction no longer exist, history DTC will clear after 50 consecutive ignition cycles. DTC B2723 will also clear when conditions no longer exist, or when IPC or scan tool is used to clear codes.

NOTE: If DTC B2723 is a history code, problem may be intermittent. Wiggle wires while performing the following test.

Testing

1. If BCM diagnostic system check was performed, go to next step. If BCM diagnostic system check was not performed, see procedures in **BCM DIAGNOSTIC SYSTEM CHECK** .
2. Insert ignition key into Interrogator Adapter Harness (J-35628-A) to check vehicle key code number. If valid key code exists (#1-15), go to next step. If valid key code does not exist, go to step 12).
3. Using Interrogator Adapter Harness (J-35628-A), perform lock cylinder test. See manufacturer's instructions. If problem is found, go to step 8). If no problem is found, go to next step.
4. Turn ignition off. Disconnect BCM 24-pin connector C1. Turn ignition on. Using DVOM, check for continuity between BCM harness connector C1, terminal A3 (White/Black wire) and ground. If continuity exists, go to step 10). If continuity does not exist, go to next step.
5. Turn ignition off. Disconnect ignition lock cylinder connector C3. Turn ignition on. Using DVOM, check for continuity between BCM harness connector C1, terminals A3 (White/Black wire) and B2 (Purple/White wire). If continuity exists, go to step 11). If continuity does not exist, go to next step.
6. Check for intermittent malfunction in ignition lock cylinder circuit. See DIAGNOSTIC AIDS. If no problem is found, go to next step. If problem is found, repair as necessary. Go to step 13).

7. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Wait 5 seconds and check for DTCs. If DTC B2723 is current, go to step 9). If DTC B2723 is not current, system is operating properly.
8. Replace ignition lock cylinder. See **INSTRUMENT PANEL** article. Go to step 13).
9. Replace BCM. See **REMOVAL & INSTALLATION** . Reprogram BCM. See **BCM PROGRAMMING/RPO CONFIGURATION** . Go to step 13).
10. Repair short to ground in circuit No. 1073 (White/Black wire) between BCM connector C1 and ignition switch connector C3. Go to step 13).
11. Repair short between circuits No. 1073 (White/Black wire) and No. 1074 (Purple/White wire) between BCM connector C1 and ignition switch connector C3. Go to step 13).
12. Replace ignition key. Go to next step.
13. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Perform **BCM DIAGNOSTIC SYSTEM CHECK** .

Diagnostic Aids

1. The following conditions may cause an intermittent: Intermittent open or short to voltage in circuit No. 1073 (White/Black wire) or No. 1074 (Purple/White wire) between BCM and ignition switch; poor connections at BCM or ignition switch; open PASS-Key(R) resistor; or dirty or loose ignition lock cylinder key contacts or PASS-Key(R) resistor.
2. If key resistor pellet is incorrect, there will be no BCM outputs to theft deterrent relay or PCM for about 3 minutes. If a key (even a proper PASS-Key(R)) is inserted or ignition is turned on again, 3-minute time-out period will reset. If battery is disconnected, time-out period will be reset when battery is reconnected.
3. Clean key resistor contacts thoroughly. Check for poor connections at BCM and ignition lock cylinder. A poor connection may cause an open, a short, an incorrect PASS-Key(R) resistance or an intermittent malfunction.
4. If there is a short to voltage or open in circuit No. 1073 (White/Black wire) or No. 1074 (Purple/White wire) between BCM and ignition switch, a no-crank condition will exist.

DTC B2735: PASS-KEY(R) PROGRAMMING MODE ACTIVE

Description

Insertion of PASS-Key(R) into ignition lock cylinder completes PASS-Key(R) circuit. Contacts in ignition lock cylinder mate with resistor pellet contacts in PASS-Key(R). BCM compares resistance value of key pellet to valid resistance programmed into BCM. When proper resistance value is read, BCM will allow theft deterrent relay to energize, steering column to unlock, and will send a message through serial data line to PCM to allow fuel enable processing to occur.

When BCM is replaced, new BCM must be programmed to accept resistance value of existing vehicle keys so that it will allow PASS-Key(R) operation. The new BCM is programmed to accept the first PASS-Key(R) resistance value detected.

If BCM is unable to detect a valid PASS-Key(R) resistance value, BCM will not end programming sequence and DTC 2735 will set. DTC B2735 will set when BCM is unable to detect a valid PASS-Key(R) code during

BCM programming due to an open or short in PASS-Key(R) circuit. When DTC B2735 is set, the following will occur:

- BCM will send signal to IPC to turn on SECURITY warning indicator.
- BCM will disable theft deterrent relay.
- PCM will not allow fuel enable processing to occur.
- Sampling of PASS-Key(R) resistance will be disabled for a 3-minute time-out period.
- An armed Universal Theft Deterrent (UTD) system will not disarm.
- Steering column will remain in locked position.

If conditions for malfunction no longer exist, history DTC will clear after 50 consecutive ignition cycles. DTC B2735 will also clear when conditions no longer exist, or when IPC or scan tool is used to clear codes.

NOTE: If DTC B2735 is a history code, problem may be intermittent. Wiggle wires while performing the following test.

Testing

1. If BCM diagnostic system check was performed, go to next step. If BCM diagnostic system check was not performed, see procedures in **BCM DIAGNOSTIC SYSTEM CHECK** .
2. Program PASS-Key(R) system. See **BCM PROGRAMMING/RPO CONFIGURATION** . Go to step 4).
3. Using scan tool, check for DTCs B2722 or B2723. If either of these DTCs exist, go to appropriate DTC test. If neither of these DTCs exist, go to step 5).
4. Using scan tool, clear DTCs. Check for DTCs. If DTC B2735 is current, go to step 3). If DTC B2735 is not current, system is operating properly.
5. Replace BCM. See **REMOVAL & INSTALLATION** . Reprogram BCM. See **BCM PROGRAMMING/RPO CONFIGURATION** . Go to next step.
6. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Perform **BCM DIAGNOSTIC SYSTEM CHECK** .

Diagnostic Aids

1. If there is a short or open in circuit No. 1073 (White/Black wire) or No. 1074 (Purple/White wire) between BCM and ignition switch, BCM will not be able to accept a valid PASS-Key(R) code when program mode is activated. Vehicle will exhibit a no-crank condition.
2. If DTC B2722 or B2723 exists, diagnose this DTC first. These DTCs will affect BCM's ability to properly read a PASS-Key(R) resistance value.
3. If key resistor pellet is incorrect, there will be no BCM outputs to theft deterrent relay or PCM for about 3 minutes. If a key (even a proper PASS-Key(R)) is inserted or ignition is turned on again, 3 minutes time-out period will reset. If battery is disconnected, time-out period will be reset when battery is reconnected.
4. Clean key resistor contacts thoroughly. Check for poor connections at BCM and ignition lock cylinder. A poor connection may cause an open, an incorrect PASS-Key(R) resistance or an intermittent malfunction.

DTC U1016: LOSS OF COMMUNICATION WITH PCM

Description

Serial data circuit is used to communicate information between systems. Each system on the serial data line is assigned its own recognition code, which is used to identify which system is communicating. Systems periodically send a State of Health (SOH) message to other systems. If those systems fail to send an SOH message back, a corresponding DTC will be set. Also, any system that cannot communicate properly will set the corresponding DTC.

DTC U1016 will set when BCM has sent an SOH message to PCM, and no SOH message response was sent back for 5 seconds. PCM will not allow fuel enable processing to occur, which may cause vehicle to display an "engine cranks, but does not run" condition. No driver warning message will be displayed.

DTC U1016 requires an ignition cycle to change from current to his-tory. If conditions for malfunction no longer exist, history DTC will clear after 50 consecutive ignition cycles. DTC U1016 will also clear when conditions no longer exist, or when IPC or scan tool is used to clear codes.

NOTE: If DTC U1016 is a history code, problem may be intermittent. Wiggle wires while performing the following test.

Testing

1. If BCM diagnostic system check was performed, go to next step. If BCM diagnostic system check was not performed, see procedures in **BCM DIAGNOSTIC SYSTEM CHECK** .
2. Turn ignition off. Install scan tool. Turn ignition on. Using scan tool, attempt to establish communication with PCM. If communication can be established, go to next step. If communication cannot be established, see **TESTS W/CODES** article in ENGINE PERFORMANCE section.
3. Using scan tool, select BCM DTCs function. Check for DTC U1255. If DTC U1255 exists, go to DTC U1255: SERIAL DATA LINE MALFUNCTION. If DTC U1255 does not exist, go to next step.
4. Using scan tool, select IPC DTCs function. Check for DTC U1016. If DTC U1016 exists, see **TESTS W/CODES** article in ENGINE PERFORMANCE section. If DTC U1016 does not exist, go to next step.
5. Check serial data line for following intermittent conditions:
   - An open in serial data line between BCM and PCM.
   - Short to ground.
   - Short to voltage.
   - Check star connector No. 1 (ensure bus bar is properly inserted).
   - Loose or damaged terminals.

   If no problem is found, go to next step. If problem is found, repair as necessary. Go to step 8).

6. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Check for DTCs. If DTC U1016 is current, go to next step. If DTC U1016 is not current, system is operating properly.

7. Replace BCM. See **REMOVAL & INSTALLATION** . Reprogram BCM. See **BCM PROGRAMMING/RPO CONFIGURATION** . Go to next step.
8. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Perform **BCM DIAGNOSTIC SYSTEM CHECK** .

Diagnostic Aids

1. The following conditions may cause an intermittent: Intermittent open or short in serial data line, intermittent loss of communication with PCM, or damaged or loose star connector terminals.
2. If serial data line is shorted to ground or voltage, all systems connected to same serial data line will not be capable of communicating properly. Systems capable of storing loss of communication DTCs will store these codes in their memory. After DTC U1016 is repaired, clear all DTCs from each system capable of storing this DTC.
3. If DTC U1016 is set in BCM memory, check for the same DTC stored in IPC (which also monitors SOH messages from PCM). If DTC U1016 is stored in IPC, check for intermittent fault in PCM. If DTC U1016 is not stored in IPC, check for open in serial data line between BCM and PCM. Also check BCM for intermittent operation due to a loss of power or ground to BCM.

DTC U1096: LOSS OF COMMUNICATION WITH IPC

Description

Serial data circuit is used to communicate information between systems. Each system on the serial data line is assigned its own recognition code, which is used to identify which system is communicating. Systems periodically send a State of Health (SOH) message to other systems. If those systems fail to send an SOH message back, a corresponding DTC will be set. Also, any system that cannot communicate properly will set the corresponding DTC.

DTC U1096 will set when BCM has sent an SOH message to IPC, and no SOH message response was sent back for 5 seconds. No driver warning message will be displayed.

DTC U1096 requires an ignition cycle to change from current to his-tory. If conditions for malfunction no longer exist, history DTC will clear after 50 consecutive ignition cycles. DTC U1096 will also clear when conditions no longer exist, or when IPC or scan tool is used to clear codes.

NOTE: If DTC U1096 is a history code, problem may be intermittent. Wiggle wires while performing the following test.

Testing

1. If BCM diagnostic system check was performed, go to next step. If BCM diagnostic system check was not performed, see procedures in **BCM DIAGNOSTIC SYSTEM CHECK** .
2. Turn ignition off. Install scan tool. Turn ignition on. Using scan tool, attempt to establish communication with IPC. If communication can be established, go to next step. If communication cannot be established, see **INSTRUMENT PANEL** article.

3. Using scan tool, select BCM DTCs function. Check for DTC U1255. If DTC U1255 exists, go to **DTC U1255: SERIAL DATA LINE MALFUNCTION** . If DTC U1255 does not exist, go to next step.
4. Using scan tool, select RFA DTCs function. Check for DTC U1096. If DTC U1096 exists, diagnose and repair problem in IPC. See **INSTRUMENT PANEL** article. If DTC U1096 does not exist, go to next step.
5. Check serial data line for following intermittent conditions:
   - An open in serial data line between BCM and IPC.
   - Short to ground.
   - Short to voltage.
   - Check star connector No. 1 (ensure bus bar is properly inserted).
   - Loose or damaged terminals.

   If no problem is found, go to next step. If problem is found, repair as necessary. Go to step 8).

6. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Check for DTCs. If DTC U1096 is current, go to next step. If DTC U1096 is not current, system is operating properly.
7. Replace BCM. See **REMOVAL & INSTALLATION** . Reprogram BCM. See **BCM PROGRAMMING/RPO CONFIGURATION** . Go to next step.
8. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Perform **BCM DIAGNOSTIC SYSTEM CHECK** .

Diagnostic Aids

1. The following conditions may cause an intermittent: Intermittent open or short in serial data line, intermittent loss of communication with IPC, or damaged or loose star connector terminals.
2. If serial data line is shorted to ground or voltage, all systems connected to same serial data line will not be capable of communicating properly. Systems capable of storing loss of communication DTCs will store these codes in their memory. After DTC U1096 is repaired, clear all DTCs from each system capable of storing this DTC.
3. If DTC U1096 is set in BCM memory, check for the same DTC stored in Remote Function Actuation (RFA) system. RFA system also monitors SOH messages from IPC. If DTC U1096 is stored in RFA, check for intermittent fault in IPC. If DTC U1096 is not stored in RFA, check for open in serial data line between BCM and IPC. Also check BCM for intermittent operation due to a loss of power or ground to BCM.

DTC U1255: SERIAL DATA LINE MALFUNCTION

Description

Serial data circuit is used to communicate information between systems. Each system on the serial data line is assigned its own recognition code, which is used to identify which system is communicating. Systems periodically send a State of Health (SOH) message to other systems. If those systems fail to send an SOH message back, a corresponding DTC will be set. Also, any system that cannot communicate properly will set

the corresponding DTC.

DTC U1255 will set when BCM does not receive a SOH message response for one second from PCM or IPC when ignition is first turned on. DTC U1255 will also set when BCM detects an open or short in serial data line circuit for one second. PCM will not allow fuel enable processing to occur, which may cause vehicle to display an "engine cranks, but does not run" condition. No driver warning message will be displayed.

DTC U1255 requires an ignition cycle to change from current to his-tory. If conditions for malfunction no longer exist, history DTC will clear after 50 consecutive ignition cycles. DTC U1255 will also clear when conditions no longer exist, or when IPC or scan tool is used to clear codes.

NOTE: If DTC U1255 is a history code, problem may be intermittent. Wiggle wires while performing the following test.

Testing

1. If BCM diagnostic system check was performed, go to next step. If BCM diagnostic system check was not performed, see procedures in **BCM DIAGNOSTIC SYSTEM CHECK** .
2. Turn ignition off. Install scan tool. Turn ignition on. Using scan tool, attempt to establish communication with PCM. If communication can be established, go to next step. If communication cannot be established, see **TESTS W/CODES** article in ENGINE PERFORMANCE section.
3. Using scan tool, attempt to establish communication with IPC. If communication can be established, go to next step. If communication cannot be established, see **INSTRUMENT PANEL** article.
4. Check serial data line for following intermittent conditions:
   - An open in serial data line between BCM and PCM or IPC.
   - Short to ground.
   - Short to voltage.
   - Check star connector No. 1 (ensure bus bar is properly inserted).
   - Loose or damaged terminals.

   If no problem is found, go to next step. If problem is found, repair as necessary. Go to step 7).
5. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Check for DTCs. If DTC U1255 is current, go to next step. If DTC U1255 is not current, system is operating properly.
6. Replace BCM. See **REMOVAL & INSTALLATION** . Reprogram BCM. See **BCM PROGRAMMING/RPO CONFIGURATION** . Go to next step.
7. Turn ignition off. Reinstall all components and connectors. Turn ignition on. Clear DTCs. Perform **BCM DIAGNOSTIC SYSTEM CHECK** .

Diagnostic Aids

1. The following conditions may cause an intermittent: Intermittent open or short in serial data line; intermittent loss of communication with PCM or IPC; or damaged or loose star connector terminals.

2. If serial data line is shorted to ground or voltage, all systems connected to same serial data line will not be capable of communicating properly. Systems capable of storing loss of communication DTCs will store these codes in their memory. After DTC U1255 is repaired, clear all DTCs from each system capable of storing this DTC.
3. If DTC U1255 is set in BCM memory, check for the same DTC stored in other systems. If DTC U1255 is stored in other systems, check for short in serial data line circuit. If DTC U1255 is not stored in other systems, check for open in serial data line between BCM and PCM or IPC. If BCM is able to communicate with PCM or IPC when ignition is first turned on, BCM will set DTC U1255.

REMOVAL & INSTALLATION

BODY CONTROL MODULE (BCM)

CAUTION: DO NOT touch connector pins or soldered components on circuit board, or BCM may be damaged by electrostatic discharge. Turn ignition off when disconnecting or reconnecting power to BCM, or BCM may be internally damaged.

CAUTION: Electrical connectors are designed to fit in only one way, and have indexing tabs and slots on both halves of connector. DO NOT force connector into place. Installing connectors incorrectly will damage connector, BCM or other vehicle systems.

Removal

Turn ignition off. Disconnect negative battery cable. Disengage upper latches of kick-up panel. Open kick-up panel, and lift up to remove kick-up panel from bracket. To release BCM from bracket, pull up on BCM's lower mounting tab. Lift BCM out of slots in bracket to release upper mounting tabs. See **Fig. 6** . Disconnect electrical connectors. Remove BCM.

Installation

Ensure ignition is off. Reconnect harness connectors. Position upper mounting tabs of BCM into slots in bracket. Push lower mounting tab into bracket, and snap BCM into place. Reinstall kick-up panel. Reconnect negative battery cable. If a new BCM is being installed, reprogram BCM. See **BCM PROGRAMMING/RPO CONFIGURATION** .

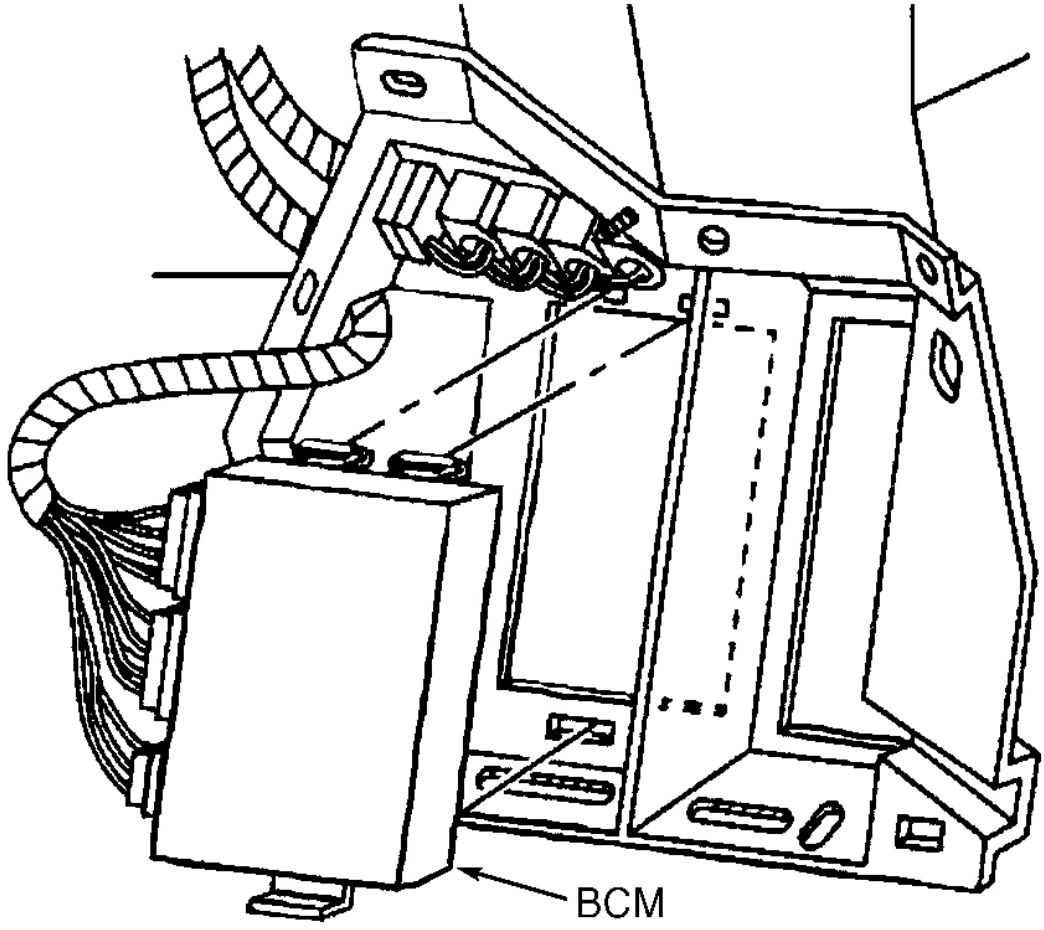

Fig. 6: Removing BCM
Courtesy of GENERAL MOTORS CORP.

WIRING DIAGRAMS

Fig. 7: Data Link Connector Wiring Diagram

Fig. 8: Power Distribution Wiring Diagram (1 Of 4)

Fig. 9: Power Distribution Wiring Diagram (2 Of 4)

Fig. 10: Power Distribution Wiring Diagram (3 Of 4)

Fig. 11: Power Distribution Wiring Diagram (4 Of 4)

Fig. 12: Body Control Module Wiring Diagram

Fig. 13: Exterior Lights Wiring Diagram