SCHEMATIC AND ROUTING DIAGRAMS

BODY CONTROL SYSTEM SCHEMATICS

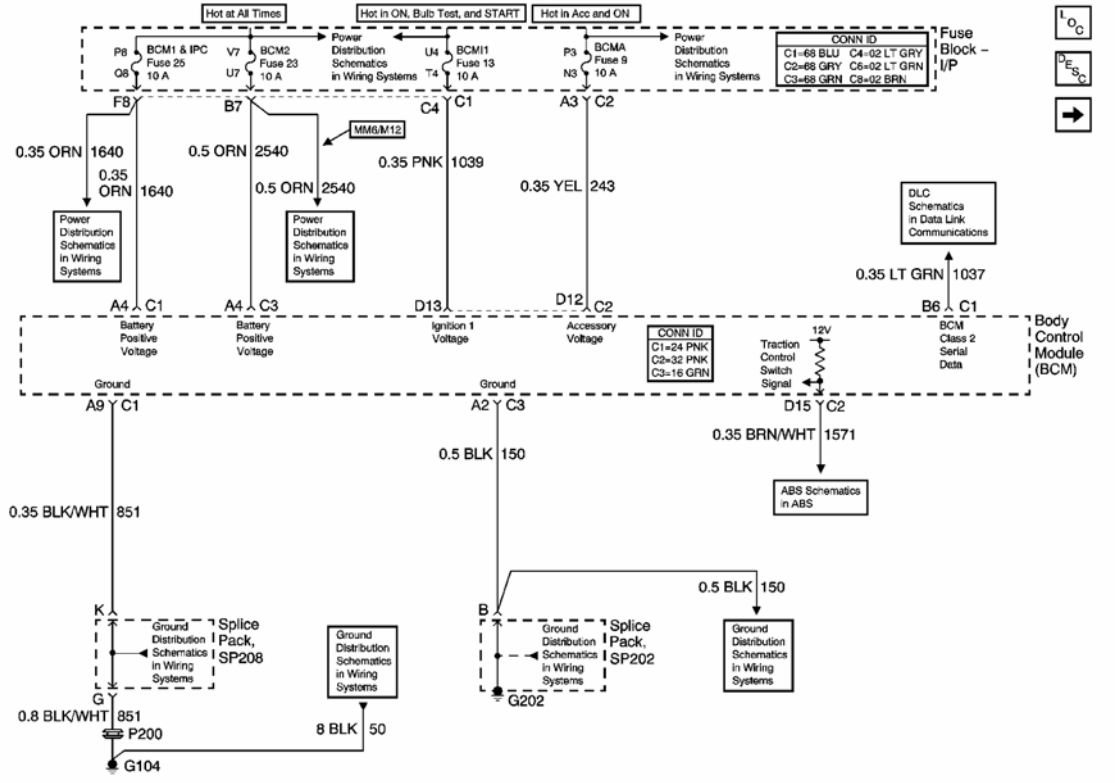


Fig. 1: Power, Ground, and DLC Schematic
Courtesy of GENERAL MOTORS CORP.

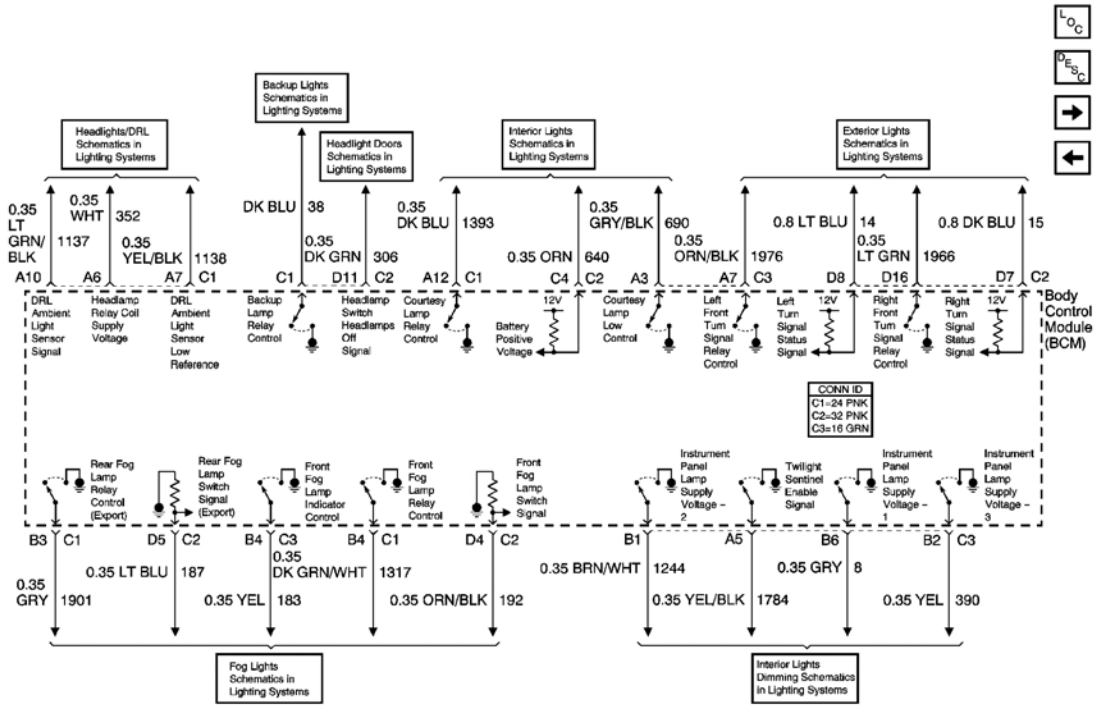


Fig. 2: Lighting References Schematic
Courtesy of GENERAL MOTORS CORP.

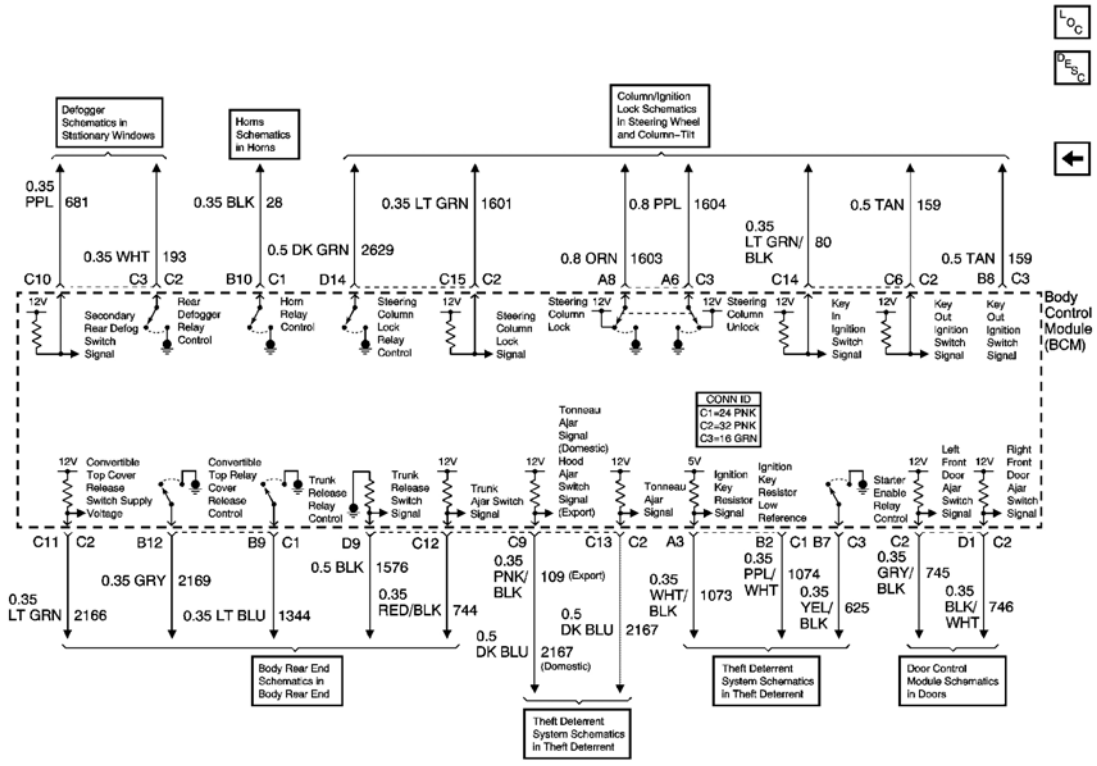


Fig. 3: Subsystem References Schematic
Courtesy of GENERAL MOTORS CORP.

COMPONENT LOCATOR

BODY CONTROL SYSTEM COMPONENT VIEWS

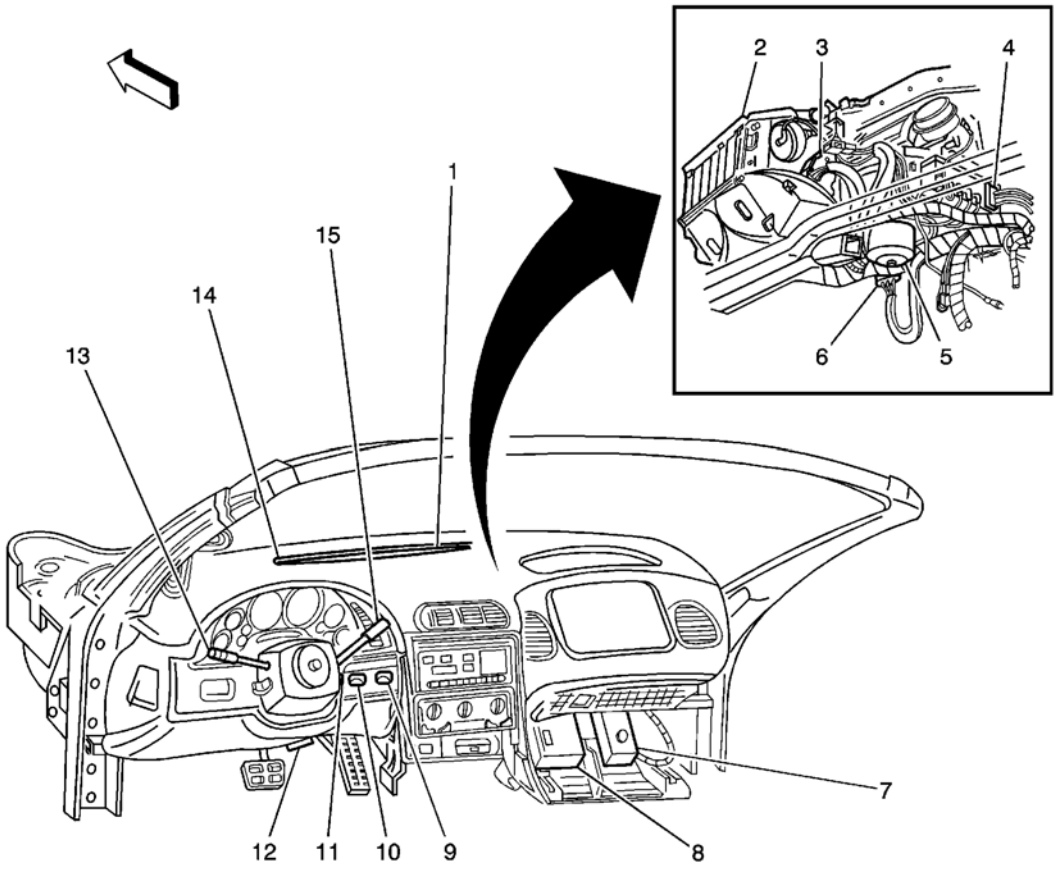


Fig. 4: Instrument Panel Component View
Courtesy of GENERAL MOTORS CORP.

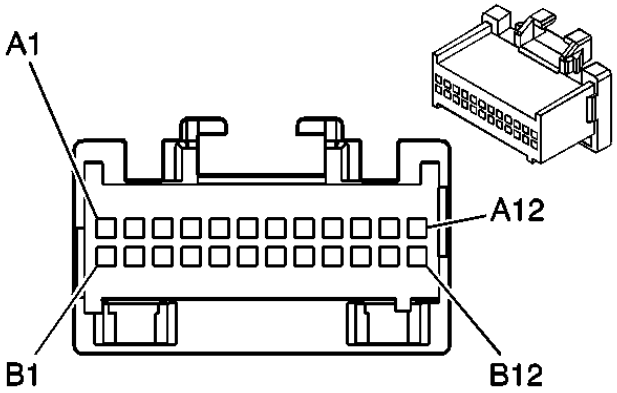
Callouts For Fig. 4

Callout	Component Name
1	Sunload Sensor
2	HVAC Module Assembly
3	Air Temperature Actuator (C60)
4	Vacuum Control Assembly (CJ2)
5	Blower Motor
6	Blower Motor Control Processor
7	Fuse Block-IP
8	Body Control Module (BCM)
9	Ignition Switch
10	Air Temperature Sensor - Inside
11	Telescoping Actuator Switch

12	Data Link Connector (DLC)
13	Multifunction Turn Signal Lever
14	Ambient Light Sensor
15	Windshield Wiper/Washer Switch

BODY CONTROL SYSTEM CONNECTOR END VIEWS

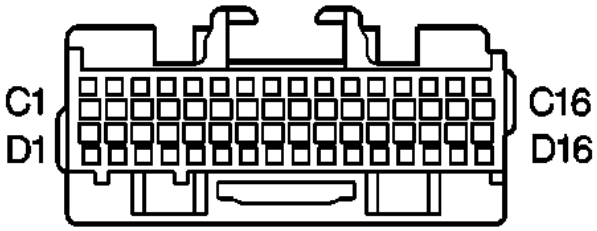
Body Control Module (BCM) C1 Connector End View



Connector Part Information		• **12110244** • **24-Way F Micro-Pack 100 Series (PNK)**	
Pin	**Wire Color**	**Circuit No.**	**Function**
A1-A2	-	-	Not Used
A3	WHT/BLK	1073	Ignition Key Resistor Signal
A4	ORN	1640	Battery Positive Voltage
A5	-	-	Not Used
A6	WHT	352	ALC HDLP Relay Control
A7	YEL/BLK	1138	DRL Ambient Light Sensor Low Reference
A8	-	-	Not Used
A9	BLK/WHT	851	Ground
A10	LT GRN/BLK	1137	DRL Ambient Light Sensor Signal
A11	-	-	Not Used
A12	DK BLU	1393	Courtesy Lamp Relay Control
B1	-	-	Not Used
B2	PPL/WHT	1074	Ignition Key Resistor Low Reference
B3	GRY	1901	Rear Fog Lamp Relay Control - Export
B4	DK GRN/WHT	1317	Fog Lamp Relay Control
B5	-	-	Not Used

B6	LT GRN	1037	BCM Class 2 Serial Data
B7-B8	-	-	Not Used
B9	LT BLU	1344	Trunk Release Relay Control
B10	BLK	28	Horn Relay Control
B11	-	-	Not Used
B12	GRY	2169	Convertible Top Relay Cover Release Control

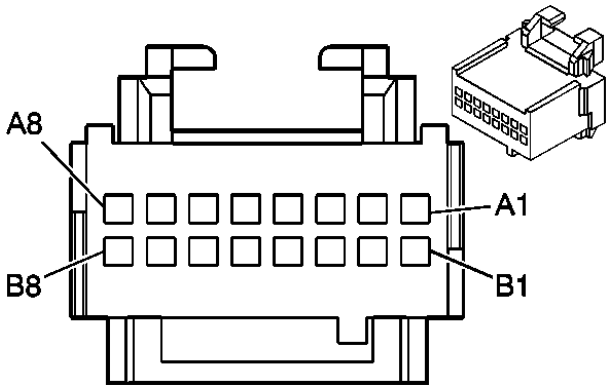
Body Control Module (BCM) C2 Connector End View



Connector Part Information		• **12110245** • **32-Way F Micro-Pack 100 Series (PNK)**	
Pin	**Wire Color**	**Circuit No.**	**Function**
C1	DK BLU	38	Backup Lamp Relay Control
C2	GRY/BLK	745	Left Front Door Ajar Switch Signal
C3	WHT	193	Rear Defog Relay Control
C4	ORN	640	Battery Positive Voltage
C5	-	-	Not Used
C6	TAN	159	Key Out Ignition Switch Signal
C7-C8	-	-	Not Used
C9	PNK/BLK	109	Hood Ajar Switch Signal
C9	DK BLU	2167	Convertible Top Cover Ajar Switch Supply Voltage
C10	PPL	681	Secondary Rear Defog Switch Signal
C11	LT GRN	2166	Convertible Top Cover Release Switch Supply Voltage
C12	RED/BLK	744	Trunk Ajar Switch Signal
C13	DK BLU	2167	Convertible Top Cover Ajar Switch Supply Voltage
C14	LT GRN/BLK	80	Key In Ignition Switch Signal
C15	LT GRN	1601	Steering Column Lock Signal
C16	-	-	Not Used
D1	BLK/WHT	746	Right Front Door Ajar Switch Signal
D2-D3	-	-	Not Used
D4	ORN/BLK	192	Fog Lamp Switch Output - FRT

D5	LT BLU	187	Rear Fog Lamp Switch Signal (Export)
D6	-	-	Not Used
D7	DK BLU	15	Right Turn Signal Status Signal
D8	LT BLU	14	Left Turn Signal Status Signal
D9	BLK	1576	Trunk Release Switch Signal
D10	-	-	Not Used
D11	DK GRN	306	Headlamp Switch Headlamps Off Signal
D12	YEL	243	Accessory Voltage
D13	PNK	1039	Ignition 1 Voltage
D14	DK GRN	2629	Steering Column Lock Relay Control
D15	BRN/WHT	1571	Traction Control Switch Signal
D16	LT GRN	1966	Right Front Turn Signal Relay Control

Body Control Module (BCM) C3 Connector End View



Connector Part Information		• **12110259** • **16-Way F Micro-Pack 100 Series (GRN)**	
Pin	**Wire Color**	**Circuit No.**	**Function**
A1	-	-	Not Used
A2	BLK	150	Ground
A3	GRY/BLK	690	Courtesy Lamp Low Control
A4	ORN	2540	Not Used
A5	YEL/BLK	1784	Twilight Sentinel Enable Signal
A6	PPL	1604	Steering Column Unlock
A7	ORN/BLK	1976	Left Front Turn Signal Relay Control
A8	ORN	1603	Steering Column Lock
B1	BRN/WHT	1244	Instrument Panel Lamp Supply Voltage - 2
B2	YEL	390	Instrument Panel Lamp Supply Voltage - 3

B3	-	-	Not Used
B4	YEL	183	Front Fog Lamp Indicator Control
B5	-	-	Not Used
B6	GRY	8	Instrument Panel Lamp Supply Voltage - 1
B7	YEL/BLK	625	Starter Enable Relay Control
B8	TAN	159	Key Out Ignition Switch Signal

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC STARTING POINT - BODY CONTROL SYSTEM

Begin the diagnosis of the body control system by performing the Diagnostic System Check for the system in which the customer concern is apparent. The Diagnostic System Check will direct you to the correct procedure for diagnosing the system and where the procedure is located.

SCAN TOOL DATA LIST

Scan Tool Data List

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
Ignition ON/Engine OFF/Doors, Hatch/Trunk and Hood CLOSED/No Switches Pressed/Vehicle in PARK or NEUTRAL			
Battery Volts	Data	Volts	12.6
Calibration Version	Module Information 2	8-digits	xxxxxxxx
Controller Part Number	Module Information 1	8-digits	xxxxxxxx
Current Power Mode	Input Data 1	Power Mode	Run
EEPROM Calibration ID	Module Information 1	4-digits	xxxx
Hardware Version	Module Information 2	2-digits	xx
Ignition 1	Input Data 1	On/Off	On
Ignition 2	Input Data 1	On/Off	On
Key In Ignition	Input Data 1	Active/Inactive	Active
Key Out of Ignition	Input Data 1	Active/Inactive	Inactive
Software Major Version	Module Information 2	1-digit	x
Software Minor Version	Module Information 2	1-digit	x

SCAN TOOL DATA DEFINITIONS

BCM Scan Tool Data Definitions

The BCM Scan Tool Data Definitions contains a brief description of all BCM related parameters available on the scan tool.

Battery Volts

The scan tool displays the battery voltage to the BCM.

Calibration Version

The scan tool displays the BCM calibration version number for service identification.

Controller Part Number

The scan tool displays the BCM part number for service identification.

Current Power Mode

The scan tool displays the current power mode. The BCM determines ignition switch position from it's ignition inputs. This ignition switch information is sent on the serial data line to systems that relay on this information to preform certain functions (RAP, wake-up, etc.).

EEPROM Calibration ID

The scan tool displays the BCM EEPROM calibration number for service identification.

Hardware Version

The scan tool displays the BCM hardware version number for service identification.

Ignition 1

The scan tool displays ON or OFF. When the BCM detects ignition 1 is present, the scan tool will display Yes. When the BCM does not detect ignition 1, the scan tool will display OFF. This ignition switch information is sent on the serial data line to systems that relay on this information to preform certain functions (RAP, wake-up, etc.).

Ignition 2

The scan tool displays ON or OFF. When the BCM detects ignition 2 is present, the scan tool will display Yes. When the BCM does not detect ignition 2, the scan tool will display OFF. This ignition switch information is sent on the serial data line to systems that relay on this information to preform certain functions (RAP, wake-up, etc.).

Key-In-Ignition

The scan tool displays Active or Inactive. When the BCM detects the key is IN the ignition switch, the scan tool will display Active. When the key is removed from the ignition switch, the scan tool will display Inactive.

Key Out Ignition

The scan tool displays Active or Inactive. When the BCM detects the key is OUT of the ignition switch, the scan tool will display Active. When the key is IN the ignition switch, the scan tool will display Inactive.

Software Major Version

The scan tool displays the BCM major software version number for service identification.

Software Minor Version

The scan tool displays the BCM minor software version number for service identification.

DIAGNOSTIC TROUBLE CODE (DTC) LIST

Diagnostic Trouble Code (DTC) List

DTC	Diagnostic Procedure	Module
B0605	**DTC B0605**	BCM
B1000	**DTC B1000**	BCM, DDM, EBCM, PDM, SCM

DTC B0605

Circuit Description

The control module calibrations are stored in the EEPROM when the ignition switch is turned OFF. When the ignition is first turned ON, the control module performs internal tests on the EEPROM to determine the integrity of this non-volatile memory. The control module compares its previously stored checksum with the checksum calculated when the ignition is first turned ON. If the two checksums do not match, the control module will indicate a calibration malfunction (checksum error) is current and set this DTC.

Conditions for Setting the DTC

- The stored checksum does not match the calculated checksum.
- The condition must occur when the ignition is first turned ON.

Action Taken When the DTC Sets

- Stores a DTC B0605 in the BCM memory.
- No driver warning message will be displayed for this DTC.
- The control module operates based on the last calibration set stored when the ignition switch was turned OFF.

Conditions for Clearing the DTC

- This DTC requires an ignition cycle in order to change from current to history.
- The control module no longer detects an internal memory malfunction (checksum error).

- A history DTC will clear after 50 consecutive ignition cycles if the condition for the malfunction is not repeated.

Diagnostic Aids

- This DTC may be stored as a history DTC without affecting the operation of the module. If stored only as a history DTC and not retrieved as a current DTC, do not replace the control module.
- If this DTC is retrieved as both a current and history DTC, replace the module.

DTC B0605

Step	Action	Yes	No
1	Perform the appropriate Diagnostic System Check for the system exhibiting symptoms. Did you perform the Diagnostic System Check?	Go to **Step 2**	Go to **Control Module References**
2	Is DTC received as a current DTC?	Go to **Step 3**	Go to Diagnostic Aids
3	**IMPORTANT:** **Perform the control module programming/configuration procedure if required.** Replace the module. Refer to **Control Module References** .Did you complete the replacement?	Go to **Step 4**	-
4	1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text. Does the DTC reset?	Go to **Step 2**	System OK

DTC B1000

Circuit Description

The internal fault detection is handled inside the control module. No external circuits are involved.

Conditions for Running the DTC

The microprocessor runs the program to detect an internal fault when power up is commanded. The only requirements are voltage and ground. This program runs even if the voltage is out of the valid operating range.

Conditions for Setting the DTC

- The control module detects an internal write malfunction.
- The control module detects an internal checksum malfunction.

Action Taken When the DTC Sets

The microprocessor refuses all additional inputs.

Conditions for Clearing the DTC

- A current DTC clears when the malfunction is no longer present.
- A history DTC clears when the module ignition cycle counter reaches the reset threshold, without a repeat of the malfunction.

Diagnostic Aids

- This DTC may be stored as a history DTC without affecting the operation of the module. If stored only as a history DTC and not retrieved as a current DTC, do not replace the module.
- If this DTC is retrieved as both a current and history DTC, replace the module.

DTC B1000

Step	Action	Yes	No
1	Did you perform the Diagnostic System Check for the system exhibiting the symptom?	Go to **Step 2**	Go to **Control Module References** for the applicable Diagnostic System Check
2	1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF. 3. Retrieve DTCs. Is the DTC retrieved as a current DTC?	Go to **Step 3**	Go to Diagnostic Aids
3	**IMPORTANT:** **Perform the programming or setup procedure for the module if required.** Replace the control module setting the DTC as current. Refer to **Control Module References** .Did you complete the replacement?	Go to **Step 4**	-
4	1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text. Does the DTC reset?	Go to **Step 2**	System OK

DTC C0550

Circuit Description

The internal fault detection is handled inside the control module. No external circuits are involved.

Conditions for Running the DTC

The microprocessor runs the program to detect an internal fault when power up is commanded. The only requirements are voltage and ground. This program runs even if the voltage is out of the valid operating range.

Conditions for Setting the DTC

- The control module detects an internal write malfunction.
- The control module detects an internal checksum malfunction.

Action Taken When the DTC Sets

If equipped, the following module specific actions may occur:

- The ABS indicator turns on.
- The BRAKE Warning indicator turns on.
- The SERVICE 4WD indicator turns on and the system will be disabled.
- The Service 4 Wheel Steering indicator turns on and the system will be disabled.
- The SERVICE RIDE SYS or SERVICE RIDE CONTROL message is displayed.
- The SERVICE SUSPENSION SYS message is displayed.
- The TCS indicator turns on.

Conditions for Clearing the DTC

- A current DTC clears when the malfunction is no longer present.
- A history DTC clears when the module ignition cycle counter reaches the reset threshold, without a repeat of the malfunction.

Diagnostic Aids

- This DTC may be stored as a history DTC without affecting the operation of the module. If stored only as a history DTC and not retrieved as a current DTC, do not replace the module.
- If this DTC is retrieved as both a current and history DTC, replace the module.

DTC C0550

Step	Action	Yes	No
1	Did you perform the Diagnostic System Check for the system exhibiting the symptom?	Go to **Step 2**	Go to **Control Module References** for the applicable Diagnostic System Check
2	1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF. 3. Retrieve DTCs.	Go to	

	Is the DTC retrieved as a current DTC?	**Step 3**	Go to Diagnostic Aids
3	**IMPORTANT:** **Perform the programming or setup procedure for the module if required.** Replace the control module setting the DTC as current. Refer to **Control Module References** .Did you complete the replacement?	Go to **Step 4**	-
4	1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text. Does the DTC reset?	Go to **Step 2**	System OK

POWER MODE MISMATCH

Circuit Description

Normal vehicle class 2 communications and module operations will not begin until the system power mode has been identified. Discrete wires from the ignition switch contacts are monitored by the power mode master (PMM) module in order to determine the correct power mode. The PMM communicates the system power mode to all class 2 modules on the class 2 serial data line. Refer to **Body Control System Description and Operation** to identify which module is the PMM and the applicable power mode look up table.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

6: This step tests for battery voltage on the signal circuits that are not required.

7: This step tests for no battery voltage on the required signal circuits.

8: If any ignition switch parameters that should be inactive in the present ignition switch position are active, 2 ignition switch signal circuits may be shorted together.

9: This step eliminates open circuits as the cause of the malfunction.

Power Mode Mismatch

Step	Action	Yes	No
Schematic Reference: Body Control System Schematics **IMPORTANT:** **Open the driver door and leave it open during this test. This will disable the RAP power mode and eliminate this power mode from the power mode parameter list.**			
	1. Install a scan tool.		

1	2. Turn OFF the ignition. 3. With a scan tool, under the Diagnostic Circuit Check menu observe the Class 2 Power Mode parameter. Does the displayed power mode parameter match the actual ignition switch position?	Go to **Step 2**	Go to **Step 6**
2	1. Turn the ignition switch to the UNLOCK position. 2. With a scan tool, under the Diagnostic Circuit Check menu observe the Class 2 Power Mode parameter. Does the displayed power mode parameter match the actual ignition switch position?	Go to **Step 3**	Go to **Step 6**
3	1. Turn ON the ignition, with the engine OFF. 2. With a scan tool, under the Diagnostic Circuit Check menu observe the Class 2 Power Mode parameter. Does the displayed power mode parameter match the actual ignition switch position?	Go to **Step 4**	Go to **Step 6**
4	**IMPORTANT:** **The engine may start during this procedure. Turn the ignition OFF after verifying this power mode.** 1. Turn the ignition switch to the CRANK position. 2. With a scan tool, under the Diagnostic Circuit Check menu observe the Class 2 Power Mode parameter. Does the displayed power mode parameter match the actual ignition switch position?	Go to **Step 5**	Go to **Step 6**
5	1. Turn the ignition switch to the ACCY position. 2. With a scan tool, under the Diagnostic Circuit Check menu observe the Class 2 Power Mode parameter. Does the displayed power mode parameter match the actual ignition switch position?	Go to **Testing for Intermittent Conditions and Poor Connections** in Wiring Systems	Go to **Step 6**
6	**IMPORTANT:** **The engine may start during this procedure. Turn the ignition OFF after verifying this power mode.** 1. Turn OFF the ignition. 2. Disconnect the PMM. 3. Hold the ignition switch in the position that indicated the incorrect power mode.		

	4. With a test lamp attached to a good ground, test the PMM ignition switch inputs for voltage. Refer to **Body Control System Description and Operation** . Is voltage present on only the inputs specified for the ignition switch position?	Go to **Step 7**	Go to **Step 8**
7	**IMPORTANT:** **The engine may start during this procedure. Turn the ignition OFF after verifying this power mode.** 1. Hold the ignition switch in the position that indicated the incorrect power mode. 2. With a test lamp attached to a good ground, test the PMM ignition switch inputs for voltage. Refer to **Body Control System Description and Operation** . Is voltage not present on any inputs specified for the ignition switch position?	Go to **Step 9**	Go to **Step 11**
8	1. Disconnect the ignition switch. 2. Test the PMM ignition switch input circuits for a short to voltage. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. 3. Test the PMM ignition switch circuits for a short between circuits. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 14**	Go to **Step 10**
9	1. Disconnect the ignition switch. 2. Test the PMM ignition switch input circuits for an open. Refer to **Circuit Testing** and **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 14**	Go to **Step 10**
10	Inspect for poor connections and terminal tension at the harness connector of the ignition switch. Refer to **Testing for Intermittent Conditions and Poor Connections** and **Connector Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 14**	Go to **Step 12**
11	Inspect for poor connections and terminal tension at the harness connector of the PMM. Refer to **Testing for Intermittent Conditions and Poor Connections** and **Connector Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 14**	Go to **Step 13**
	Replace the ignition switch. Refer to **Ignition Switch**		

12	**Replacement** in Instrument Panel, Gages and Console. Did you complete the replacement?	Go to **Step 14**	-
13	**IMPORTANT:** **After replacement of the PMM perform the set up procedure if required.** Replace the PMM. Refer to **Control Module References** .Did you complete the replacement?	Go to **Step 14**	-
14	1. Reconnect all disconnected components. 2. With a scan tool, under the Diagnostic Circuit Check menu observe the Class 2 Power Mode parameter. 3. Cycle the ignition switch through all possible positions one at a time. Does the displayed power mode parameter match the actual ignition switch position?	System OK	Go to **Step 1**

CONTROL MODULE REFERENCES

Control Module References

Control Module	Repair Instructions	Diagnostic System Check	Schematic
BCM	Refer to **Body Control Module Replacement**	-	Refer to **Body Control System Schematics**
EBCM	Refer to **Electronic Brake Control Module Replacement** in Anti-Lock Brake System	Refer to **Diagnostic System Check - ABS** in Anti-lock Brake System	Refer to **ABS Schematics** in Anti-lock Brake System
HVAC (with CJ2)	Refer to **HVAC Control Module Replacement** in HVAC Systems-Automatic	Refer to **Diagnostic System Check - HVAC Systems - Automatic** in HVAC Systems-Automatic	Refer to **HVAC Schematics** in HVAC Systems-Automatic
IPC	Refer to **Instrument Panel Cluster (IPC) Replacement** in Instrument Panel, Gages and Console	Refer to **Diagnostic System Check - Instrument Cluster** in Instrument Panel, Gages and Console	Refer to **Instrument Cluster Schematics** in Instrument Panel, Gages and Console
DDM	Refer to **Door Control Module Replacement** in Doors	Refer to **Diagnostic System Check - Door Systems** in Doors	Refer to **Door Control Module Schematics** in Doors
PCM	Refer to **Powertrain Control Module (PCM) Replacement** in Engine Controls	Refer to **Diagnostic System Check - Engine Controls** in Engine Controls	Refer to **Engine Controls Schematics** in Engine Controls
Radio	Refer to **Radio Replacement** in Entertainment	Refer to **Diagnostic System Check - Radio/Audio System**	Refer to **Radio/Audio System Schematics** in

		in Entertainment	Entertainment
PDM	Refer to **Door Control Module Replacement** in Doors	Refer to **Diagnostic System Check - Door Systems** in Doors	Refer to **Door Control Module Schematics** in Doors
RCDLR	Refer to **Remote Control Door Lock Receiver Replacement** in Keyless Entry	Refer to **Diagnostic System Check - Remote Keyless Entry** in Keyless Entry	Refer to **Keyless Entry Schematics** in Keyless Entry
ESC	Refer to **Electronic Suspension Control Module Replacement** in Electronic Suspension Control	Refer to **Diagnostic System Check - Electronic Suspension Control** in Electronic Suspension Control	Refer to **Suspension Controls Schematics** in Electronic Suspension Control
SCM (with AAB)	Refer to **Memory Seat Control Module Replacement** in Seats	Refer to **Diagnostic System Check - Power Seat Systems** in Seats	Refer to **Memory Seats Schematics** in Seats
SDM	Refer to **Inflatable Restraint Sensing and Diagnostic Module Replacement** in SIR	Refer to **Diagnostic System Check - SIR** in SIR	Refer to **SIR Schematics** in SIR

REPAIR INSTRUCTIONS

BODY CONTROL MODULE REPLACEMENT

Removal Procedure

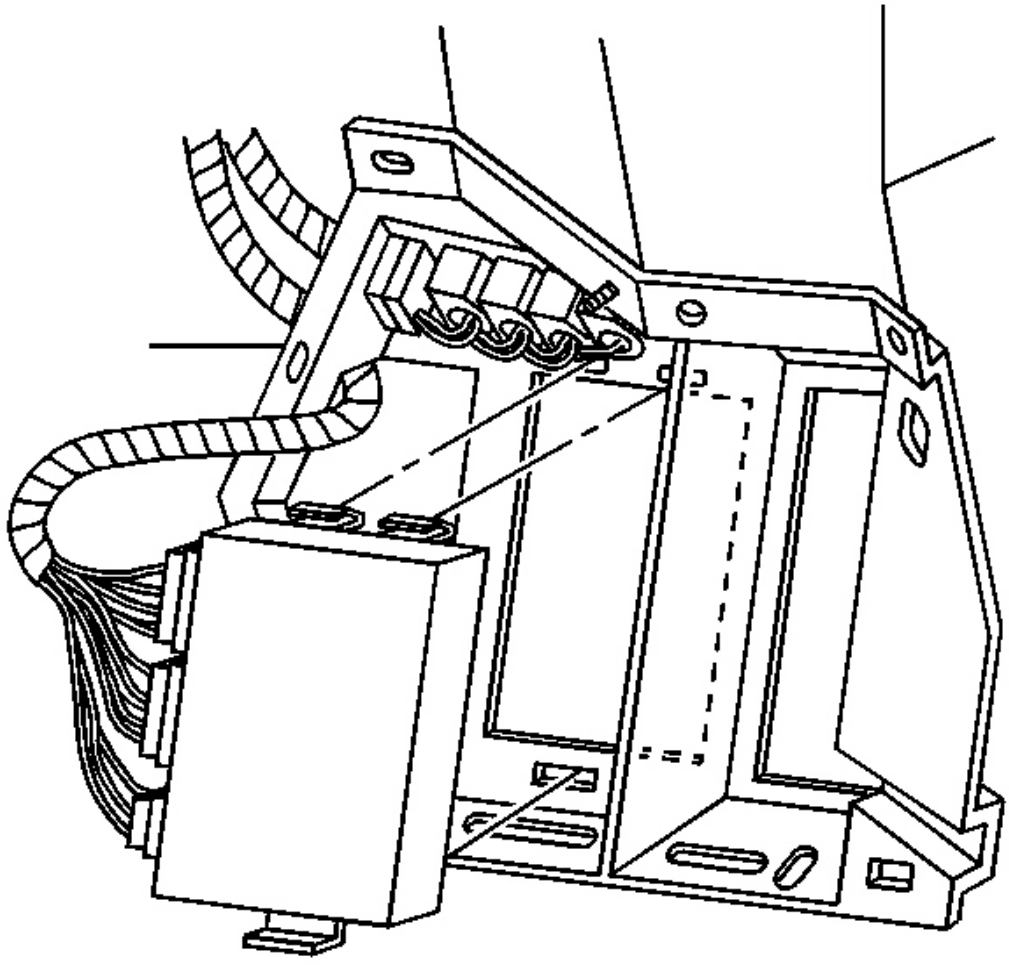


Fig. 5: BCM & Harness Connectors
Courtesy of GENERAL MOTORS CORP.

NOTE: **To prevent possible electrostatic discharge damage to the BCM, do not touch the connector pins or soldered components on the circuit board.**

NOTE: **To prevent internal BCM damage, the ignition must be OFF when disconnecting or reconnecting power to BCM (for example, battery cable, BCM connectors, BCM fuses, jumper cables, etc.).**

NOTE: **The BCM electrical connectors are designed with tabs and slots that allow the connectors to only fit one way. The connectors do not require**

excessive force if being installed correctly. Installing the connectors with the wrong mating half or upside down can cause damage to the connector, the BCM, or other vehicle components or systems.

1. Turn OFF the ignition switch.
2. Remove the front floor kick-up panel (RH). Refer to **Kick-Up Panel Replacement - Front Floor** in Interior Trim.
3. Pull up on the BCMs lower mounting tab to release the BCM from the bracket.
4. Release the BCMs upper mounting tabs by lifting the BCM out of the slots in the bracket.
5. Disconnect the harness connectors from the BCM.
6. Remove the BCM from the vehicle.

Installation Procedure

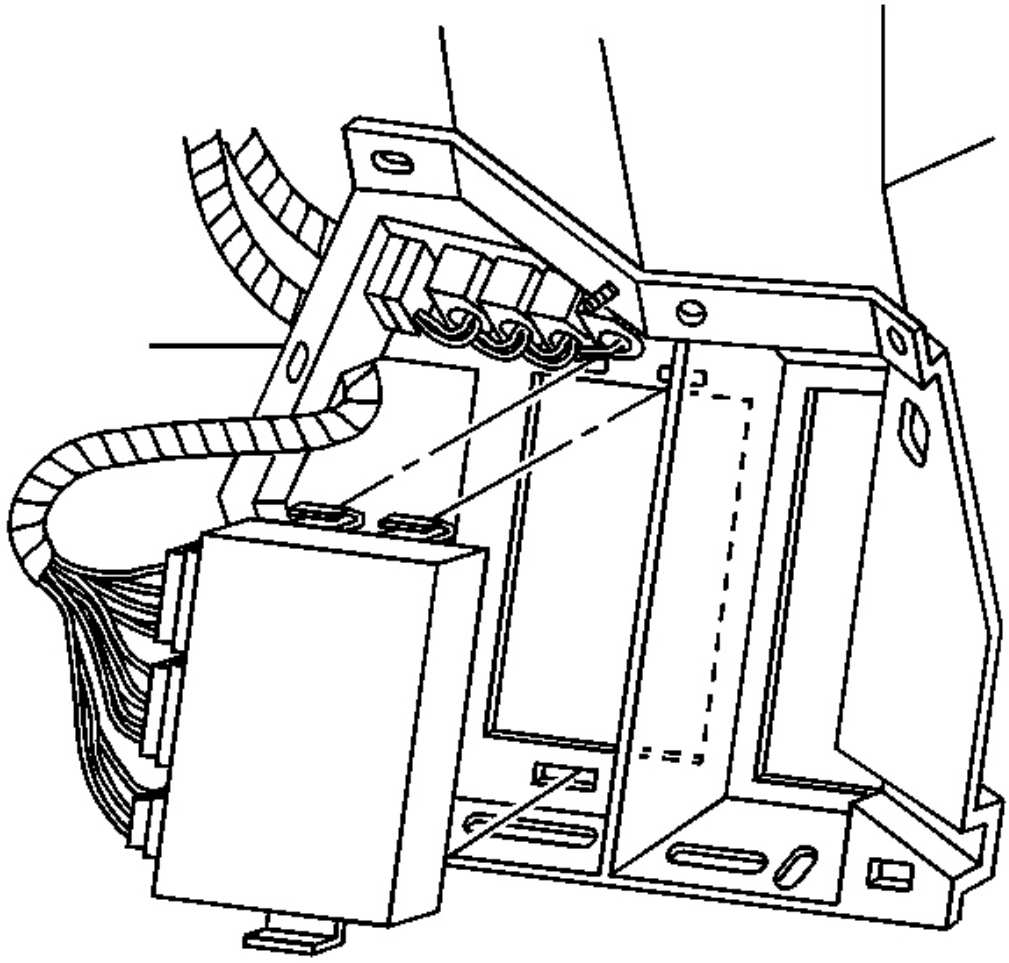


Fig. 6: BCM & Harness Connectors
Courtesy of GENERAL MOTORS CORP.

NOTE: **To prevent possible electrostatic discharge damage to the BCM, do not touch the connector pins or soldered components on the circuit board.**

NOTE: **To prevent internal BCM damage, the ignition must be OFF when disconnecting or reconnecting power to BCM (for example, battery cable, BCM connectors, BCM fuses, jumper cables, etc.).**

NOTE: **The BCM electrical connectors are designed with tabs and slots that allow the connectors to only fit one way. The connectors do not require**

excessive force if being installed correctly. Installing the connectors with the wrong mating half or upside down can cause damage to the connector, the BCM, or other vehicle components or systems.

1. Turn OFF the ignition switch.
2. Connect the harness connectors to the BCM.
3. Position the BCMs upper mounting tabs into the slots in the bracket.
4. Push the lower mounting tab into the bracket and snap the BCM into place.
5. Install the front floor kick-up panel (RH). Refer to **Kick-Up Panel Replacement - Front Floor** in Interior Trim.
6. If a new or replacement BCM is being installed into the vehicle, program the BCM to the current vehicle. Refer to **Body Control Module (BCM) Programming/RPO Configuration** .

BODY CONTROL MODULE (BCM) PROGRAMMING/RPO CONFIGURATION

The service BCMs EEPROM chip must be programmed with the proper RPO configurations by using a scan tool. The EEPROM stores information regarding the vehicle options and point of sale. If the BCM is not properly configured with the correct RPO codes, the BCM will set default values for some systems, which could cause malfunctions in other systems. When the BCM is replaced, the BCM must be programed to identify the following information:

- Country of Sale (US, Canada, Europe, Japan, etc.)
- Real Time Damping (RTD)
- Memory Options
- Front Fog Lamps
- HVAC (C60-Manual, CJ2-Automatic)
- Active Handling
- Auto Headlamp Control
- Power Tilt/Telescope Column

The BCM sends password information to the PCM on the serial data line to enable fuel for Vehicle Theft Deterrent (VTD) functions, therefore, the PCM must also be programmed to accept the new password sent by the BCM. The BCM programming procedure will enable the learn password mode for both the BCM and PCM. This mode allows the PCM to learn the new password sent by the BCM whenever the BCM or PCM is replaced. If the BCM and PCM are not properly programmed together, the vehicle will exhibit a no start condition and the PCM will store a DTC P1631.

When an ignition key or the BCM is replaced, the BCM must be programmed to accept the resistance value of the new or existing vehicle keys in order to allow PASS-Key(R) operation. Refer to **Programming Theft Deterrent System Components** in Theft Deterrents.

IMPORTANT: After programming, perform the following to avoid future misdiagnosis:

1. Turn the ignition OFF for 10 seconds.
2. Connect the scan tool to the data link connector.
3. Turn the ignition ON with the engine OFF.
4. Use the scan tool in order to retrieve history DTCs from all modules.
5. Clear all history DTCs.

DESCRIPTION AND OPERATION

BODY CONTROL SYSTEM DESCRIPTION AND OPERATION

This vehicle is equipped with a Body Control Module (BCM) capable of performing multiple body control functions. The BCM, which is the power mode master, is responsible for sending the power mode messages on the serial data line to other systems.

Serial Data Power Mode

On vehicles that have several control modules connected by serial data circuits, one module is the power mode master (PMM). On this vehicle the PMM is the Body Control Module (BCM). The PMM receives two signals/circuits from the ignition switch. These are the Ignition 1 and Ignition 2 ignition switch signals/circuits.

To determine the correct power mode the PMM uses:

- The state of these signals/circuits, either switch closed (B+ = 1) or switch open (B+ = 0)
- The sequence of switch closures received by the PMM
- The status of the engine run flag

The chart below indicates the modes detected and transmitted by the PMM:

Correct Ignition Switch Inputs

Power Mode Selected/Expected	Engine Run Flag Serial Data	Sampled Ignition Signal State		Power Mode State	Key-In Sense
		Ignition 1	Ignition 2		
OFF	0	0	0	OFF-AWAKE	NA
RAP	0	0	1-0	RAP	NA
UNLOCK	0	0	0-1	UNLOCK	NA
ACCESSORY	0	0	1	ACCESSORY	NA
RUN	1	1	1	RUN	NA
RUN	0	1	1	RUN	NA
CRANK	0	1	1-0	CRANK	NA

Fail-safe Operation

Since the operation of the vehicle systems depends on the power mode, there is a fail-safe plan in place should

the PMM fail to send a power mode message. The fail-safe plan covers those modules using exclusively serial data control of power mode as well as those modules with discrete ignition signal inputs.

Serial Data Messages

The modules that depend exclusively on serial data messages for power modes stay in the state dictated by the last valid PMM message until they can check for the engine run flag status on the serial data circuits. If the PMM fails, the modules monitor the serial data circuit for the engine run flag serial data. If the engine run flag serial data is True, indicating that the engine is running, the modules fail-safe to "RUN". In this state the modules and their subsystems can support all operator requirements. If the engine run flag serial data is False, indicating that the engine is not running, the modules fail-safe to "OFF-AWAKE". In this state the modules are constantly checking for a change status message on the serial data circuits and can respond to both local inputs and serial data inputs from other modules on the vehicle.

On this vehicle the following modules receive Serial Data Messages for power mode status:

- Driver Door Module (DDM)
- Passenger Door Module (PDM)
- Radio

Discrete Ignition Signals

Those modules that have discrete ignition signal inputs also remain in the state dictated by the last valid PMM message received on the serial data circuits. They then check the state of their discrete ignition input to determine the current valid state. If the discrete ignition input is active, B+, the modules will fail-safe to the "RUN" power mode. If the discrete ignition input is not active, open or 0 voltage, the modules will fail-safe to "OFF-AWAKE". In this state the modules are constantly checking for a change status message on the serial data circuits and can respond to both local inputs and serial data inputs from other modules on the vehicle.

BCM Wake-up/Sleep States

The BCM is able to control or perform all of the BCM functions in the wake-up state. The BCM enters the sleep state when active control or monitoring of system functions has stopped, and the BCM has become idle again. The BCM must detect certain wake-up inputs before entering the wake-up state. The BCM monitors for these inputs during the sleep state, where the BCM is able to detect switch transitions that cause the BCM to wake-up when activated or deactivated. Multiple switch inputs are needed in order to sense both the insertion of the ignition key and the power mode requested. This would allow the BCM to enter a sleep state when the key is IN or OUT of the ignition.

The BCM will enter a wake-up state if any of the following wake-up inputs are detected:

- Any activity on the serial data line
- Hatch ajar switch
- Hatch release switch
- Door ajar switch
- Key-in-ignition switch

- Monitored load relay
- Park/fog/headlamps are on
- The BCM experiences a battery disconnect and reconnect condition.
- The ignition is turned ON.

The BCM will enter a sleep state when all of the following conditions exist:

- No activity exists on the serial data line.
- The ignition switch is OFF.
- No outputs are commanded.
- No delay timers are actively counting.
- No wake-up inputs are present.

If all these conditions are met the BCM will enter a low power or sleep condition. This condition indicates that the BCM, which is the power mode master of the vehicle, has sent an OFF-ASLEEP message to the other systems on the serial data line.

Power Requirements

The BCM has two main power feeds (high and low current), and two main grounds. The low power feed (battery 1) is used to provide power for the BCMs logic and internal driver operation. The high power feed (battery 2) is used to provide power for systems that draw higher amounts of current (motors, lights, etc.). The BCM will operate properly with a system voltage of 9.0-16.0 volts. If system voltages exceed 16.0 volts the BCM will provide protection by disabling certain functions that may be damaged due to higher than normal system voltages.

Monitored Loads

In order to minimize any battery rundown, the BCM can detect if certain electrical loads have been left ON after the ignition is turned OFF and the driver has left the vehicle. When the BCM detects that the ignition has been cycled to the OFF position, the BCM immediately checks the status of the load monitor input. If the BCM detects that a load is present (grounded input), the BCM turns ON the load monitor relay for 15 minutes. If after 15 minutes the BCM still recognizes that a load is present, the BCM will turn OFF the relay, removing the battery voltage from the loads. The BCM continues to monitor this circuit for a switch transition. The BCM will again turn ON the relay for 15 minutes if a switch transition occurs.

Load Shed Control

The BCM can turn off the rear window defogger and heated outside mirror electrical loads when the vehicle is in a condition where these loads may discharge the battery. The BCM will also remove these loads when engine demands are greater.

Interior Lamp Over Voltage Protection

The BCM disables the interior lamp bulbs when the system voltage is above 18.0 volts in order to extend the

bulb life.

Driver in Vehicle Detection

Using the ignition switch/door ajar inputs, the BCM can detect whether or not the driver has left the vehicle. If the ignition is turned to OFF with no door ajar status detected, the BCM assumes that the driver is in the vehicle. As soon as the BCM detects a door ajar, the BCM will assume the driver has left the vehicle. The BCM uses this information to determine the RAP status, then sends the status to the other systems also responsible for RAP functions.

BCM Fail-Soft Condition

If a particular BCM malfunction would result in unacceptable system operation, the BCM takes a fail-soft action in order to minimize the condition. A typical fail-soft action would be the substitution of a fixed input or output value when the BCM is unable to interpret data correctly.