Body Control System Circuit Description

This vehicle is equipped with a body control module (BCM). The BCM performs multiple body control functions. The following vehicle systems are directly connected to the BCM:

- The audible warnings system
- The interior lighting system
- The door locks system
- The keyless entry system
- The content theft deterrent system

These systems are controlled by the BCMs outputs. The BCM controls its outputs based upon the input information obtained from the sensors and switches that are directly connected to the BCM. The BCM evaluates the input information and controls the body systems by commanding an output on or off.

This vehicle is equipped with 1 of 4 types of BCMs. The BCM type installed on this vehicle is based on the vehicle equipment content and options. The following are the 4 types:

- BCM type 2
- BCM type 2E (export vehicles)
- BCM type 3
- BCM type 4

Refer to Entering The Feature Customization Mode for more information on how to identify the BCM type installed.

**BCM Type 2**

The BCM type 2 provides audible warnings, interior lighting and automatic power door locks.

**BCM Type 2E**

The BCM type 2E provides all of the features of the BCM Type 2 plus an overspeed warning. The BCM type 2E is installed on export vehicles only.

**BCM Type 3**

The BCM type 3 provides all of the features of the BCM type 2,2E plus keyless entry. Vehicles with RPO AU0 are equipped with a BCM type 3.

**BCM Type 4**

The BCM type provides all of the features of the BCM type 2,2E and BCM type 3 plus content theft deterrent. The vehicle with RPO AU0 and UA6 are equipped with a BCM type 4.
Based on the vehicle equipment/options, the body control module (BCM) controls these vehicle systems:

- The audible warnings
- The interior lighting
- The automatic door locks
- The keyless entry (BCM type 3 and BCM type 4)
- The content theft deterrent (BCM type 4)

**Audible Warnings**

The following are components with audible warnings:

- The key in the ignition reminder
- The fasten seat belt reminder
- The fasten belts indicator control
- The turn signal reminder
- The driver information display reminder
- The trip calculator reminder
- The headlamps ON reminder
- The last door closed locking confirmation
- The overspeed warning (export vehicles)
- The feature customization and diagnostics feedback

Refer to [Audible Warnings Circuit Description](#) for more information.

**Interior Lighting**

The following are the areas of interior lighting:

- The interior illumination control
- The delayed illumination
- The exit illumination
- The theatre dimming
- The door key unlock illumination (BCM type 4 only)
- The keyless entry unlock illumination (BCM type 3 and BCM type 4 only)
- The inadvertent load (battery rundown) protection
- The feature customization of interior lighting modes, delayed illumination and exit lighting

Refer to [Interior Lights Circuit Description](#) for more information.

**Automatic Door Locks**

The BCM type 2,2E have the following automatic door lock features:

- The all door unlock
- The all door lock
- The last door closed locking
- The lockout prevention
- The lockout prevention override
- The ignition OFF unlock
- The shift into PARK unlock
- The shift out of PARK lock
- The sliding door delayed locking
The BCM type 3 has the following automatic door lock features in addition to the BCM type 2,2E features:

- The remote driver door unlock
- The remote all door unlock
- The remote all door lock

The BCM type 4 has the key cylinder unlock/lock automatic door lock feature in addition to the BCM type 2,2E and BCM type 3 features.

The BCM provides the feature customization of the following door lock functions:

- The shift out of PARK lock
- The ignition OFF unlock
- The shift into PARK unlock
- The last door closed locking
- The lockout prevention
- Refer to Automatic Door Locks for further information.

**Keyless Entry**

The BCM type 3 provides the following keyless entry features:

- The remote driver door unlock
- The remote all door unlock
- The remote all door lock
- The remote activation verification (BCM type 4)
- The remote alarm (BCM type 4)
- The feature customization of the remote unlock control and remote activation verification
- Refer to Keyless Entry System Circuit Description for more information.

**Content Theft Deterrent**

The BCM type 4 features a content theft deterrent system which is designed to deter vehicle vandalism and theft. The content theft deterrent system perform the following functions:

- Flashes the exterior lights
- Sounds the horn

The BCM monitors the status of the following components:

- The doors
- The lock cylinders
- The liftgate
- The sliding doors
- The shock sensor
- The power door locks
- The keyless entry system

The BCM operates the following components according to the mode of system operation:

- The exterior lights
- The horn
- The security indicator lamp
The BCM also provides feature customization of the following modes. Refer to **Content Theft Deterrent (CTD)** Circuit Description for more information:

- The theft deterrent mode
- The shock sensor mode
- The arm/disarm mode

The body control module (BCM) provides diagnostics to assist service technicians during troubleshooting. The BCM has the following diagnostic capabilities when entering the diagnostics mode:

- Diagnostic trouble codes (DTCs)
- Input/Output tests

**Entering The Feature Customization Mode**

When performing the BCM diagnostics, enter the feature customization mode. During this mode the BCM identifies itself. This ensures that both of the vehicles option content match with the BCM capabilities. In order to enter the feature customization mode perform the following steps:

1. Turn the ignition switch to the LOCK position.
2. Remove the BCM PRGRM fuse.
3. Turn the ignition switch to the ACC position.

Upon entering the feature customization mode, the BCM flashes the fasten belts indicator and sounds the chime 2, 3 or 4 times which is equal to the BCM type used on the vehicle. Ensure that the BCM installed on the vehicle is compatible with all of the features on the vehicle. If not, then replace the BCM with the proper type.

The following vehicle systems have features that can be customized:

- Interior Lighting
- Automatic Door Lock
- Keyless Entry
- Content Theft Deterrent

**Entering The Diagnostics Mode**

Complete the following steps in order to enter the diagnostics mode:

1. Ensure the BCM is in the feature customization mode.
2. Turn the ignition switch from the ACC position to the LOCK position, then back to the ACC position within 1 second.

Complete the following procedure in order to confirm the BCM has entered the diagnostics mode:

1. Ensure that all of the vehicle doors are closed.
2. Open and close any vehicle door.
3. Fasten and release the driver seat belt.

The BCM sounds the chime when receiving an input signal such as opening a door or fastening the driver seat belt when the BCM is in the diagnostics mode.

If the BCM does not sound the chime upon opening a door or fastening the driver seat belt, repeat Step 1 of Entering the Feature Customization Mode. If the BCM does not enter the diagnostics mode, then refer to
Diagnostic System Check - Body Control System

Upon entering the diagnostics mode, the BCM flashes the fasten belts indicator and sounds the chime a number of times equal to the DTCs stored in the memory. If no DTCs are stored, the BCM does not flash the fasten belts indicator or sound the chime.

The BCM flashes and sounds the first DTC with the lowest number, pauses, then continues with the next DTC with a higher number until all the DTCs are read. Once all the DTCs are read, the BCM repeats this sequence 3 times.

If there are DTCs in the memory, record the DTCs and refer to Identifying Diagnostic Trouble Codes.

Identifying The Diagnostic Trouble Codes

<table>
<thead>
<tr>
<th>DTC</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fasten belt indicator lamp control circuit shorted to B+ or ground</td>
</tr>
<tr>
<td>2</td>
<td>Power output circuit to courtesy lamps shorted to B+ or ground</td>
</tr>
<tr>
<td>3</td>
<td>Courtesy lamps ground control circuit shorted to B+</td>
</tr>
<tr>
<td>6</td>
<td>Theft deterrent relay control circuit shorted to B+ or ground</td>
</tr>
<tr>
<td>7</td>
<td>Horn relay control circuit shorted to B+ or ground</td>
</tr>
<tr>
<td>8</td>
<td>RFA link circuit open or shorted to B+ or ground</td>
</tr>
</tbody>
</table>

In order to erase the DTCs stored in the BCM press and hold the UNLOCK button on either power door lock switch for 4 seconds while the BCM is in the Diagnostics Mode.

Entering The Input/Output Test

After the BCM reads all the DTCs in the memory, the BCM enters the Input/Output test.

The BCM flashes the fasten belts indicator and sounds the chime once when operating one of the following inputs:

- All the reading courtesy lamp switches
- The door lock cylinders
- The driver door lock ajar switch
- The driver fasten seat belt switch
- The driver information display (DID)
- The headlamps OFF switch
- The IP compartment lamp switch
- The keyless entry requests for door lock/unlock
- The keyless entry requests for the alarm (RPO UA6)
- The passenger door lock ajar switch
- The power door lock switches
- The liftgate ajar switch
- The sliding doors jamb switch(es)
- The shock sensor
- The sunshade illuminated mirrors
- The turn signal switch

If the BCM does not provide a chime feedback then there is an open or short in the circuit or a faulty component.
Perform the following procedure in order to test the BCM outputs:

1. Ensure that the BCM is in the diagnostics mode
2. Turn the IP dimmer switch to the DOME position
   The BCM enters the output test. The output test includes the following tests:
   o Test 1-- De-energizes CKT 1993. Turn off all of the interior lamps.
   o Test 2-- Energizes CKT 1393. Provides power to all of the interior lamps.
   o Test 3-- Grounds CKT 690. Turns on all of the courtesy lamps.
   o Test 4-- Energizes the theft deterrent relay for 1 second by grounding CKT 352. Turns on all of the headlamps (BCM type 4 only).
   o Test 5-- Energizes the horn relay for 25 ms by grounding CKT 28. Sounds the horn (BCM type 4 only).
   o Test 6-- Turns on the theft deterrent indicator lamp by grounding CKT 749 (BCM type 4 only).
   o Test 7-- Turns off the theft deterrent indicator lamp by opening CKT 749 (BCM type 4 only).

The BCM operates the output test in numerical order.

In order to move to the next test, cycle the IP dimmer switch from the dome position, to OFF then back to DOME. The BCM sounds the chime a number of times equivalent to the output test number above.

Exiting Diagnostics

Perform the following procedure in order to exit the BCM diagnostics mode and return to normal BCM operation:

1. Turn the ignition switch to the LOCK position.
2. Reinstall the BCM PRGRM fuse.
3. Turn the ignition switch to the RUN position.