

## 2017 ACCESSORIES & EQUIPMENT

### Theft Deterrent - CT6

## SPECIFICATIONS

### FASTENER SPECIFICATIONS

#### Reusable Threaded Fastener Tightening Specifications

**NOTE:**

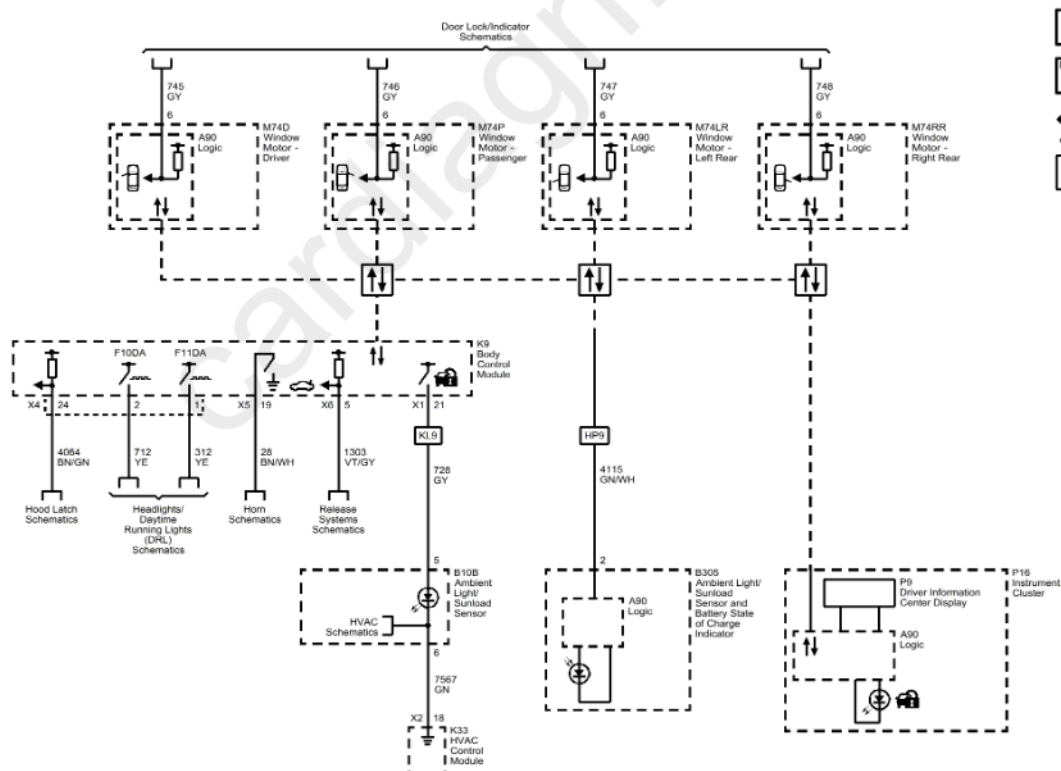
*All fasteners listed in this table can be reused after removal.*

| Application                            | Specification    |
|----------------------------------------|------------------|
|                                        | Metric (English) |
| Theft Deterrent Alarm Fastener         | 9 N.m (80 lb in) |
| Theft Deterrent Alarm Bracket Fastener | 6 N.m (53 lb in) |

## SCHEMATIC WIRING DIAGRAMS

### THEFT DETERRENT SYSTEM WIRING SCHEMATICS

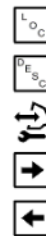
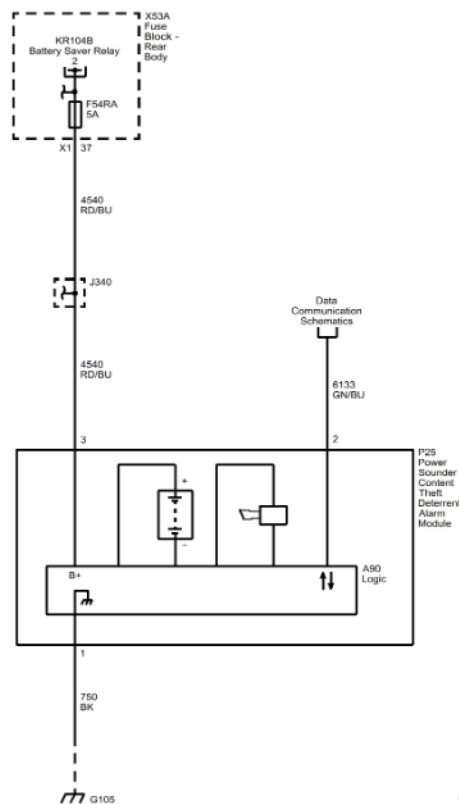
#### Content Theft Deterrent



**Fig. 1: Content Theft Deterrent**

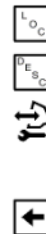
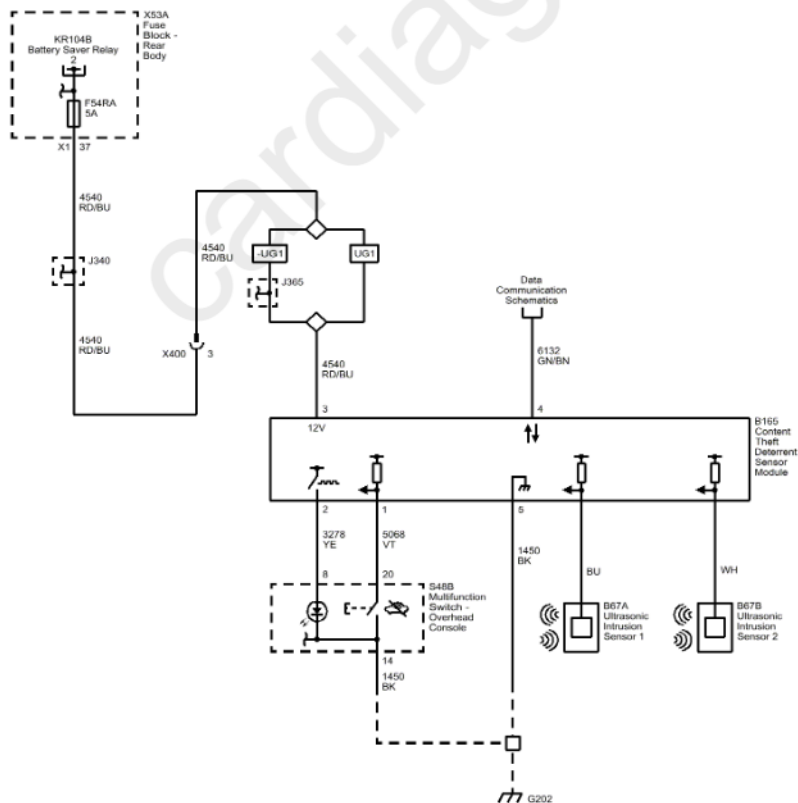
Courtesy of GENERAL MOTORS COMPANY

#### Theft Deterrent Alarm (UTR)



**Fig. 2: Theft Deterrent Alarm (UTR)**  
Courtesy of GENERAL MOTORS COMPANY

### Inclination and Intrusion Sensing (UTU/UTV)



**Fig. 3: Inclination and Intrusion Sensing (UTU/UTV)**  
Courtesy of GENERAL MOTORS COMPANY

## DIAGNOSTIC INFORMATION AND PROCEDURES

## **DTC B291A: CONTENT THEFT DETERRENT ASSEMBLY**

### **Diagnostic Instructions**

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

### **DTC Descriptor**

#### **DTC B291A**

Content Theft Deterrent Assembly

For symptom byte information, refer to [Symptom Byte List](#) .

### **Circuit/System Description**

The body control module performs various internal fault detection test to determine if a software or hardware concern exists within the power sounder content theft deterrent alarm module. No external circuits are involved.

### **Conditions for Running the DTC**

- The ignition is OFF.
- The vehicle is in Park.

### **Conditions for Setting the DTC**

The body control module has detected an internal failure within the power sounder content theft deterrent alarm module.

### **Action Taken When the DTC Sets**

The intrusion and inclination functionality is disabled.

### **Conditions for Clearing the DTC**

- A current DTC is cleared when the conditions for setting the DTC are no longer present.
- A history DTC will clear after 40 malfunction free ignition cycles.

### **Reference Information**

Schematic Reference

### **Theft Deterrent System Schematics**

Connector End View Reference

### **COMPONENT CONNECTOR END VIEWS - INDEX**

Description and Operation

### **Theft Systems Description and Operation**

Electrical Information Reference

- [Circuit Testing](#)
- [Connector Repairs](#)
- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information.

### Circuit/System Testing

1. Ignition ON.
2. Verify DTC B291A is not set.
  - **If the DTC is set**

Test or replace the P25 Power Sounder Content Theft Deterrent Alarm Module.

- **If the DTC is not set**
3. All OK.

### Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

### Theft Deterrent Alarm Replacement

#### DTC B291B: CONTENT THEFT DETERRENT SENSOR

##### Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

##### DTC Descriptors

#### DTC B291B

Content Theft Deterrent Sensor

For symptom byte information, refer to [Symptom Byte List](#) .

##### Diagnostic Fault Information

| Circuit     | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|-------------|-----------------|----------------------|------------------|--------------------|
| B+          | B291B 3B        | B291B 3B             | -                | -                  |
| Serial Data | U1515, B291B 3B | B291B 3B             | U1515, B291B 3B  | B291B 00           |
| Ground      | -               | B291B 3B             | -                | -                  |

##### Circuit/System Description

The body control module performs various communication fault detection tests to determine if a software, hardware or communication concern exists with the ultrasonic intrusion sensor. The sensor being disconnected, a poor connection at the connector or the vehicle battery being discharged could all cause the communication to be interrupted. This interruption stops the self test from completing which causes DTC B291B 3B. This is not because of the sensor failing, it is because of a previous or existing open connection between the sensor and the BCM. Restoring this connection and then arming the theft system will complete the test and allow the DTC to be cleared.

##### Conditions for Running the DTC

- The ignition is OFF.
- The vehicle is in Park.

##### Conditions for Setting the DTC

The body control module cannot establish communications with the ultrasonic intrusion sensor.

## Action Taken When the DTC Sets

The intrusion and inclination alarm output is disabled.

## Conditions for Clearing the DTC

- A current DTC is cleared when the conditions for setting the DTC are no longer present and the system has been armed.
- A history DTC will clear after 40 malfunction-free ignition cycles.

## Diagnostic Aids

Before performing any diagnostic procedures, ensure the sensor is properly connected and arm the theft system. After the system has been armed long enough to have performed the tests within the system, disarm the theft system and attempt to clear the DTC.

## Reference Information

Schematic Reference

## Theft Deterrent System Schematics

Connector End View Reference

## COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

## Theft Systems Description and Operation

Electrical Information Reference

- [Circuit Testing](#)
- [Connector Repairs](#)
- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

## Circuit/System Verification

1. Vehicle OFF, close and lock the doors using the keyless entry transmitter.
2. Arm the theft system and wait 5 min.
3. Disarm the system.
4. Attempt to clear the DTC.

- **If the DTC will not clear or transition to a history DTC**

Perform Circuit/System Testing.

- **If the DTC clears or transitions to a history DTC**

5. All OK.

## Circuit/System Testing

1. Ignition OFF and vehicle systems OFF, disconnect the harness connector at the B165 Content Theft Deterrent Sensor Module. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10  $\Omega$  between the ground circuit terminal 5 and ground.
  - **If 10  $\Omega$  or greater**
    1. Ignition OFF.

2. Test for less than 2  $\Omega$  in the ground circuit end to end.

- If 2  $\Omega$  or greater, repair the open/high resistance in the circuit.
- If less than 2  $\Omega$ , repair the open/high resistance in the ground connection.

- **If less than 10  $\Omega$**

3. Ignition ON.

4. Verify a test lamp illuminates between the B+ circuit terminal 3 and ground.

- **If the test lamp does not illuminate and the circuit fuse is good**

1. Ignition OFF.

2. Test for less than 2  $\Omega$  in the B+ circuit end to end.

- If 2  $\Omega$  or greater, repair the open/high resistance in the circuit.
- If less than 2  $\Omega$ , verify the fuse is OK and there is voltage at the fuse.

- **If the test lamp does not illuminate and the circuit fuse is open**

1. Ignition OFF.

2. Test for infinite resistance between the B+ circuit and ground.

- If less than infinite resistance, repair the short to ground on the circuit.
- If infinite resistance, replace the B165 Content Theft Deterrent Sensor Module.

- **If the test lamp illuminates**

5. Ignition OFF, arm the content theft deterrent system.

6. Test for greater than 4.5 V between the serial data circuit terminal 4 and ground.

- **If 4.5 V or less**

1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module.

2. Test for infinite resistance between the serial data circuit and ground.

- If less than infinite resistance, repair the short to ground on the circuit.
- If infinite resistance

3. Test for less than 2  $\Omega$  in the serial data circuit end to end.

- If 2  $\Omega$  or greater, repair the open/high resistance in the circuit.
- If less than 2  $\Omega$ , replace the K9 Body Control Module.

- **If greater than 4.5 V**

7. Ignition OFF, disconnect the harness connector at the K9 Body Control Module and any other components or control modules sharing the serial data circuit with the B165 Content Theft Deterrent Sensor Module, ignition ON.

8. Test for less than 1 V between the B165 Content Theft Deterrent Sensor Module serial data circuit terminal 4 and ground.

- **If 1 V or greater**

Repair the short to voltage on the circuit.

- **If less than 1 V**

9. Test or replace the B165 Content Theft Deterrent Sensor Module.

10. Fully arm then disarm the content theft deterrent system and verify no DTCs are set.

## Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

- [Control Module References](#) for replacement, programming and setup.

## SYMPTOMS - THEFT DETERRENT

**NOTE:** The following steps must be completed before using the symptom tables.

1. Perform [Diagnostic System Check - Vehicle](#) in order to verify that all of the following are true:

- There are no DTCs set.

- The control modules can communicate via the serial data link.
2. Review the system operation in order to familiarize yourself with the system functions. Refer to the following [Theft Systems Description and Operation](#).

### Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the Theft Deterrent System. Refer to [Checking Aftermarket Accessories](#).
- Inspect the easily accessible or visible system components for obvious damage or conditions which could cause the symptom.

### Intermittent

Faulty electrical connections or wiring may be the cause of intermittent conditions. Refer to [Testing for Intermittent Conditions and Poor Connections](#).

### Symptom List

Refer to a symptom diagnostic procedure from the following list in order to diagnose the symptom:

- [Content Theft Deterrent Malfunction \(without UTT\)](#)[Content Theft Deterrent Malfunction \(with UTT\)](#)
- [Inclination/Intrusion Sensor Malfunction](#)
- [Security Indicator Malfunction](#)
- [Theft Deterrent Alarm Malfunction](#)

## CONTENT THEFT DETERRENT MALFUNCTION (WITHOUT UTT)

### Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

### Circuit/System Description

The content theft deterrent system is a software based system in which the body control module (BCM) actively monitors certain inputs to determine if unauthorized vehicle access is being attempted. Based on inputs such as the door ajar switches, the rear compartment ajar switch and the hood ajar switch, the BCM determines whether a content theft deterrent alarm is warranted. If unauthorized access is being detected, the BCM will pulse the vehicle horn and flash the exterior lamps as a means of theft deterrence. If equipped, the BCM will also activate a siren as an additional theft deterrence.

### Diagnostic Aids

The scan tool Content Theft Deterrent Trigger History 1, 2 and 3 parameters can be used to help isolate an intermittent unwanted content theft deterrent alarm. These parameters are a rolling history of the previous three causes of a theft deterrent alarm. If all three parameters are indicating the same alarm trigger, the indicated input should be the starting point when diagnosing an intermittent concern.

### Reference Information

Schematic Reference

### [Theft Deterrent System Schematics](#)

Connector End View Reference

## [COMPONENT CONNECTOR END VIEWS - INDEX](#)

Description and Operation

### [Theft Systems Description and Operation](#)

- [Circuit Testing](#)
- [Connector Repairs](#)
- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

### Circuit/System Verification

1. Ignition ON.
2. Verify each indicator/message transitions between the ajar and closed state while opening and closing each vehicle door, hood and rear compartment.

- **If any indicator/message does not change**

Refer to [Hood Ajar Indicator/Message Malfunction](#) , [Door Ajar Indicator Malfunction](#) , [Trunk Ajar Indicator Malfunction \(Without TC2, TL9\)](#) or [Trunk Ajar Indicator Malfunction \(With TC2, TL9\)](#) .

- **If each indicator/message changes**

3. Completely lower the driver door window and close all vehicle doors, ignition OFF.
4. Arm the content theft deterrent system by locking the doors with the keyless entry transmitter.
5. Verify the scan tool Content Theft Deterrent Alarm Status parameter is Armed.

- **If not Armed**

Refer to [Keyless Entry System Malfunction \(Active\)](#) and/or [Keyless Entry System Malfunction \(Passive\)](#) .

- **If Armed**

6. Without disarming the system, reach in through the open driver window and open the driver door.
7. Verify the scan tool Content Theft Deterrent Alarm Status parameter is Alarm.

- **If not Alarm**

Replace the K9 Body Control Module.

- **If Alarm**

8. All OK.

### Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

[Control Module References](#) for body control module replacement, programming and setup.

## CONTENT THEFT DETERRENT MALFUNCTION (WITH UTT)

### Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

### Circuit/System Description

The content theft deterrent system is a software based system in which the body control module (BCM) actively monitors certain inputs to determine if unauthorized vehicle access is being attempted. Based on inputs such as the door ajar switches, the rear compartment ajar switch, the intrusion/inclination sensor

and the hood ajar switch, the BCM determines whether a content theft deterrent alarm is warranted. If unauthorized access is being detected, the BCM will sound the power sounder and flash the exterior lamps as a means of theft deterrence.

### **Diagnostic Aids**

The scan tool Content Theft Deterrent Trigger History 1, 2 and 3 parameters can be used to help isolate an intermittent unwanted content theft deterrent alarm. These parameters are a rolling history of the previous three causes of a theft deterrent alarm. If all three parameters are indicating the same alarm trigger, the indicated input should be the starting point when diagnosing an intermittent concern.

### **Reference Information**

Schematic Reference

### **Theft Deterrent System Schematics**

Connector End View Reference

### **COMPONENT CONNECTOR END VIEWS - INDEX**

Description and Operation

### **Theft Systems Description and Operation**

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

**Control Module References** for scan tool information

### **Circuit/System Verification**

1. Ignition OFF.
2. Verify each indicator/message transitions between the ajar and closed state while opening and closing each vehicle door, hood and rear compartment.
  - **If the indicator/message does not change**  
  
Refer to **Door Ajar Indicator Malfunction** , **Hood Ajar Indicator/Message Malfunction** , **Trunk Ajar Indicator Malfunction (Without TC2, TL9)** or **Trunk Ajar Indicator Malfunction (With TC2, TL9)** .
  - **If each indicator/message changes**
3. Ignition ON..
4. Verify the intrusion/inclination sensor disable LED turns ON and OFF as the intrusion/inclination sensor disable switch is cycled.
  - **If the LED does not turn ON and OFF**  
  
Refer to **Inclination/Intrusion Sensor Malfunction**.
  - **If the LED turns ON and OFF**
5. Completely lower the driver door window and close all vehicle doors, ignition OFF.
6. Arm the content theft deterrent system by locking the door with the keyless entry transmitter.
7. Verify the scan tool Content Theft Deterrent Alarm Status parameter is Armed.
  - **If not Armed**

Refer to [Keyless Entry System Malfunction \(Active\)](#) and/or [Keyless Entry System Malfunction \(Passive\)](#).

- **If Armed**

8. Without disarming the system, reach in through the open driver window and open the driver door.

9. Verify the scan tool Content Theft Deterrent Alarm Status parameter is Alarm.

- **If not Alarm**

Replace the K9 Body Control Module.

- **If Alarm**

10. Verify the P25 Power Sounder Content Theft Deterrent Alarm Module is sounding.

- **If the P25 Power Sounder Content Theft Deterrent Alarm Module is not sounding**

Refer to [Theft Deterrent Alarm Malfunction](#).

- **If the P25 Power Sounder Content Theft Deterrent Alarm Module is sounding**

11. All OK.

### Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

[Control Module References](#) for body control module replacement, programming and setup.

## INCLINATION/INTRUSION SENSOR MALFUNCTION

### Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

### Diagnostic Fault Information

| Circuit                                               | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|-------------------------------------------------------|-----------------|----------------------|------------------|--------------------|
| B+                                                    | B291B 3B        | B291B 3B             | -                | -                  |
| Control                                               | 1               | 1                    | 1                | -                  |
| Signal                                                | 2               | 2                    | 2                | -                  |
| Serial Data                                           | U1515, B291B 3B | B291B 3B             | U1515, B291B 3B  | B291B 00           |
| Ground                                                | -               | B291B 3B             | -                | -                  |
| 1. Intrusion/inclination sensor cannot be disabled    |                 |                      |                  |                    |
| 2. Intrusion/inclination sensor indicator malfunction |                 |                      |                  |                    |

### Circuit/System Description

The ultrasonic intrusion sensor is used to determine if someone has gain unauthorized access to the vehicle while the content theft deterrent system is armed by detecting any movement within the vehicle interior. The ultrasonic intrusion sensor also senses the vehicle angle while the content theft deterrent system to monitor for tow-away vehicle theft.

B+ and ground are applied at all time to the ultrasonic intrusion sensor. The ultrasonic intrusion sensor communicates with the body control module via serial data. The theft deterrent sensor disable switch is used to enable and disable ultrasonic intrusion sensor. The ultrasonic intrusion sensor monitors the theft deterrent sensor disable switch signal circuit. When the switch is pressed, the signal circuit is pulled low and the ultrasonic intrusion sensor is enabled or disabled. The ultrasonic intrusion sensor applies voltage to the theft deterrent sensor disable switch indicator control circuit to illuminate the theft deterrent sensor disable switch indicator.

Schematic Reference

### **Theft Deterrent System Schematics**

Connector End View Reference

### **COMPONENT CONNECTOR END VIEWS - INDEX**

Description and Operation

### **Theft Systems Description and Operation**

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

**Control Module References** for scan tool information.

### **Circuit/System Testing**

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the B165 Content Theft Deterrent Sensor Module. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10  $\Omega$  between the ground circuit terminal 5 and ground.
  - **If 10  $\Omega$  or greater**
    1. Ignition OFF.
    2. Test for less than 2  $\Omega$  in the ground circuit end to end.
      - If 2  $\Omega$  or greater, repair the open/high resistance in the circuit.
      - If less than 2  $\Omega$ , repair the open/high resistance in the ground connection.
  - **If less than 10  $\Omega$**
3. Ignition ON.
4. Verify a test lamp illuminates between the B+ circuit terminal 3 and ground.
  - **If the test lamp does not illuminate and the circuit fuse is good**
    1. Ignition OFF.
    2. Test for less than 2  $\Omega$  in the B+ circuit end to end.
      - If 2  $\Omega$  or greater, repair the open/high resistance in the circuit.
      - If less than 2  $\Omega$ , verify the fuse is OK and there is voltage at the fuse.
  - **If the test lamp does not illuminate and the circuit fuse is open**
    1. Ignition OFF.
    2. Test for infinite resistance between the B+ circuit and ground.
      - If less than infinite resistance, repair the short to ground on the circuit.
      - If infinite resistance, replace the B165 Content Theft Deterrent Sensor Module.
  - **If the test lamp illuminates**
5. Ignition OFF, arm the content theft deterrent system.
6. Test for greater than 4.5 V between the serial data circuit terminal 4 and ground.
  - **If 4.5 V or less**
    1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module.
    2. Test for infinite resistance between the serial data circuit and ground.
      - If less than infinite resistance, repair the short to ground on the circuit.

- If infinite resistance
3. Test for less than 2  $\Omega$  in the serial data circuit end to end.
    - If 2  $\Omega$  or greater, repair the open/high resistance in the circuit.
    - If less than 2  $\Omega$ , replace the K9 Body Control Module.
  - **If greater than 4.5 V**
7. Ignition OFF, disconnect the harness connector at the K9 Body Control Module, ignition ON.
  8. Test for less than 1 V between the B165 Content Theft Deterrent Sensor Module serial data circuit terminal 4 and ground.
    - **If 1 V or greater**  
  
Repair the short to voltage on the circuit.
    - **If less than 1 V**
  9. Ignition OFF, connect the harness connector at the B165 Content Theft Deterrent Sensor Module. Disconnect the harness connector at the S43 Theft Deterrent Sensor Disable Switch. It may take up to 2 min for all vehicle systems to power down.
  10. Test for less than 10  $\Omega$  between the ground circuit terminal 3 and ground.
    - **If 10  $\Omega$  or greater**
      1. Ignition OFF.
      2. Test for less than 2  $\Omega$  in the ground circuit end to end.
        - If 2  $\Omega$  or greater, repair the open/high resistance in the circuit.
        - If less than 2  $\Omega$ , repair the open/high resistance in the ground connection.
    - **If less than 10  $\Omega$**
  11. Ignition OFF, connect the harness connector at the S43 Theft Deterrent Sensor Disable Switch. Disconnect the harness connector at the B165 Content Theft Deterrent Sensor Module, ignition ON.
  12. Test for less than 1 V between the circuit terminal listed below and ground:
    - Control circuit terminal 2
    - Signal circuit terminal 1
    - **If 1 V or greater**  
  
Repair the short to voltage on the circuit.
    - **If less than 1 V**
  13. Connect a 3 A fused jumper wire between the control circuit terminal 2 and B+.
  14. Verify the intrusion/inclination sensor disable LED is illuminated.
    - **If the indicator is not illuminated**
      1. Ignition OFF, remove the jumper wire, disconnect the harness connector at the S43 Theft Deterrent Sensor Disable Switch.
      2. Test for infinite resistance between the control circuit and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
        - If infinite resistance
      3. Test for less than 2  $\Omega$  in the control circuit end to end.
        - If 2  $\Omega$  or greater, replace the open/high resistance in the circuit.
        - If less than 2  $\Omega$ , test or replace the S43 Theft Deterrent Sensor Disable Switch.
    - **If the indicator is illuminated**
  15. Test for infinite resistance between the signal circuit terminal 1 and ground.
    - **If less than infinite resistance**
      1. Ignition OFF, disconnect the harness connector at the S43 Theft Deterrent Sensor Disable Switch.
      2. Test for infinite resistance between the signal circuit and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.

- If infinite resistance, test or replace the S43 Theft Deterrent Sensor Disable Switch.

- **If infinite resistance**

16. Test for less than 10  $\Omega$  between the signal circuit terminal 1 and ground with the intrusion/inclination sensor disable switch pressed.

- **If 10  $\Omega$  or greater**

1. Ignition OFF, disconnect the harness connector at the S43 Theft Deterrent Sensor Disable Switch.

2. Test for less than 2  $\Omega$  in the signal circuit end to end.

- If 2  $\Omega$  or greater, replace the open/high resistance in the circuit.
- If less than 2  $\Omega$ , test or replace the S43 Theft Deterrent Sensor Disable Switch.

- **If less than 10  $\Omega$**

17. Test or replace the B165 Content Theft Deterrent Sensor Module.

## Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

- [Theft Deterrent Sensor Replacement](#)
- [Control Module References](#) for body control module replacement, programming and setup.

## SECURITY INDICATOR MALFUNCTION

### Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

### Diagnostic Fault Information

| Circuit                                                  | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|----------------------------------------------------------|-----------------|----------------------|------------------|--------------------|
| Control                                                  | 2               | 2                    | 1                | -                  |
| Low Reference                                            | -               | 2                    | -                | -                  |
| 1. Security LED always ON<br>2. Security LED inoperative |                 |                      |                  |                    |

### Circuit/System Description

The security LED is controlled by the body control module (BCM) based on commands from the content theft deterrent system. The security LED is located in the instrument panel as part of the ambient light sensor and is supplied ground at all times. When the content theft deterrent system requests the LED be illuminated, the BCM applies voltage to the control circuit, illuminating the LED.

### Reference Information

Schematic Reference

### [Theft Deterrent System Schematics](#)

Connector End View Reference

## [COMPONENT CONNECTOR END VIEWS - INDEX](#)

Description and Operation

### [Theft Systems Description and Operation](#)

Electrical Information Reference

- [Circuit Testing](#)
- [Connector Repairs](#)
- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

### Circuit/System Verification

1. Arm the content theft deterrent system.
2. Verify the security LED illuminates or flashes during the arming sequence.
  - **If the security LED does not illuminate or flash**  
Refer to Circuit/System Testing.
  - **If the security LED illuminates or flashes**
3. All OK.

### Circuit/System Testing

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the B10B Ambient Light/Sunload Sensor. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 30  $\Omega$  between the low reference circuit terminal 6 and ground.
  - **If 30  $\Omega$  or greater**
    1. Ignition OFF, disconnect the harness connector at the K33 HVAC Control Module.
    2. Test for less than 2  $\Omega$  in the low reference circuit end to end.
      - If 2  $\Omega$  or greater, repair the open/high resistance in the circuit.
      - If less than 2  $\Omega$ , replace the K33 HVAC Control Module.
  - **If less than 10  $\Omega$**
3. Ignition ON, connect a test lamp between the control circuit terminal 1 and the low reference circuit terminal 6.
4. Verify the test lamp turns ON and OFF when commanding the Security Indicator On and Off with a scan tool.
  - **If the test lamp is always OFF**
    1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module.
    2. Test for infinite resistance between the control circuit and ground.
      - If less than infinite resistance, repair the short to ground on the circuit.
      - If infinite resistance
    3. Test for less than 2  $\Omega$  in the control circuit end to end.
      - If 2  $\Omega$  or greater, repair the open/high resistance in the circuit.
      - If less than 2  $\Omega$ , replace the K9 Body Control Module.
  - **If the test lamp is always ON**
    1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module, ignition ON.
    2. Test for less than 1 V between the control circuit and ground.
      - If 1 V or greater, repair the short to voltage on the circuit.
      - If less than 1 V, replace the K9 Body Control Module.
  - **If the test lamp turns ON and OFF**
5. Test or replace the B10B Ambient Light/Sunload Sensor.

### Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

- [Sun Load, Ambient Light and Charge Indicator Sensor Replacement](#)
- [Control Module References](#) for module replacement, programming and setup.

## THEFT DETERRENT ALARM MALFUNCTION

### Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

### Diagnostic Fault Information

| Circuit                                              | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|------------------------------------------------------|-----------------|----------------------|------------------|--------------------|
| B+                                                   | 1               | 1                    | 1                | -                  |
| Serial Data                                          | U1522           | 1                    | U1522            | -                  |
| Ground                                               | -               | 1                    | -                | -                  |
| 1. Content theft deterrent power sounder inoperative |                 |                      |                  |                    |

### Circuit/System Description

The content theft deterrent system uses the power sounder to provide an audible alert when in the alarm mode. The power sounder receives a constant B+ and ground. The body control module commands the power sounder via serial data. The power sounder is also equipped with a battery backup. If the power sounder is disconnected while the ignition is OFF, the battery backup will allow the power sounder to sound the audible content theft deterrent alert.

### Reference Information

Schematic Reference

### [Theft Deterrent System Schematics](#)

Connector End View Reference

## [COMPONENT CONNECTOR END VIEWS - INDEX](#)

Description and Operation

### [Theft Systems Description and Operation](#)

Electrical Information Reference

- [Circuit Testing](#)
- [Connector Repairs](#)
- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

### Circuit/System Testing

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the P25 Power Sounder Content Theft Deterrent Alarm Module. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10  $\Omega$  between the ground circuit terminal 4 and ground.
  - **If 10  $\Omega$  or greater**
    1. Ignition OFF.

2. Test for less than 2  $\Omega$  in the ground circuit end to end.
  - If 2  $\Omega$  or greater, repair the open/high resistance in the circuit.
  - If less than 2  $\Omega$ , repair the open/high resistance in the ground connection.
- **If less than 10  $\Omega$**
3. Ignition ON.
4. Verify a test lamp illuminates between the B+ circuit terminal 2 and ground.
  - **If the test lamp does not illuminate and the circuit fuse is good**
    1. Ignition OFF.
    2. Test for less than 2  $\Omega$  in the B+ circuit end to end.
      - If 2  $\Omega$  or greater, repair the open/high resistance in the circuit.
      - If less than 2  $\Omega$ , verify the fuse is OK and there is voltage at the fuse.
  - **If the test lamp does not illuminate and the circuit fuse is open**
    1. Ignition OFF.
    2. Test for infinite resistance between the B+ circuit and ground.
      - If less than infinite resistance, repair the short to ground on the circuit.
      - If infinite resistance, replace the P25 Power Sounder Content Theft Deterrent Alarm Module.
  - **If the test lamp illuminates**
5. Ignition OFF, arm the content theft deterrent system.
6. Test for greater than 4.5 V between the serial data circuit terminal 3 and ground.
  - **If 4.5 V or less**
    1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module.
    2. Test for infinite resistance between the serial data circuit and ground.
      - If less than infinite resistance, repair the short to ground on the circuit.
      - If infinite resistance
    3. Test for less than 2  $\Omega$  in the serial data circuit end to end.
      - If 2  $\Omega$  or greater, repair the open/high resistance in the circuit.
      - If less than 2  $\Omega$ , replace the K9 Body Control Module.
  - **If greater than 4.5 V**
7. Ignition OFF, disconnect the harness connector at the K9 Body Control Module.
8. Test for less than 1 V between the P25 Power Sounder Content Theft Deterrent Alarm Module serial data circuit terminal 3 and ground.
  - **If 1 V or greater**

Repair the short to voltage on the circuit.
  - **If less than 1 V**
9. Test or replace the P25 Power Sounder Content Theft Deterrent Alarm Module.

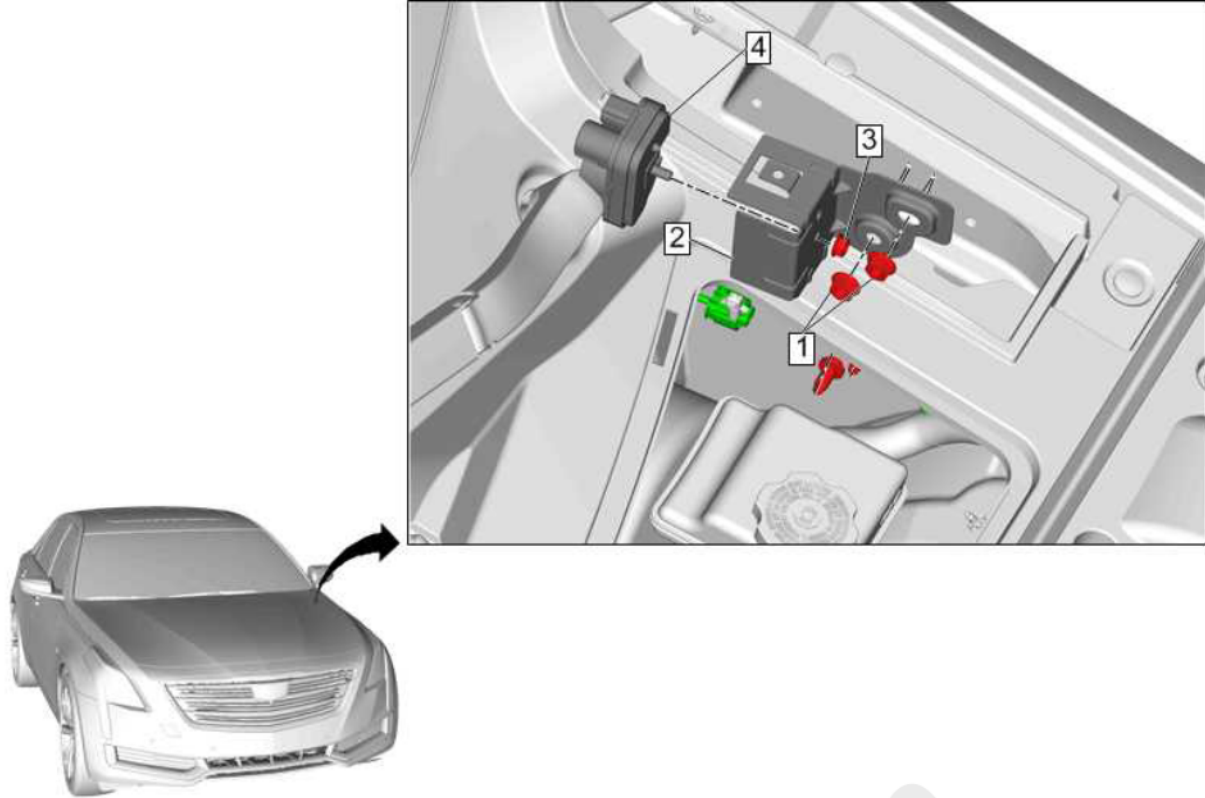
### Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

- [Theft Deterrent Alarm Replacement](#)
- [Control Module References](#) for body control module replacement, programming and setup.

## REPAIR INSTRUCTIONS

### THEFT DETERRENT ALARM REPLACEMENT

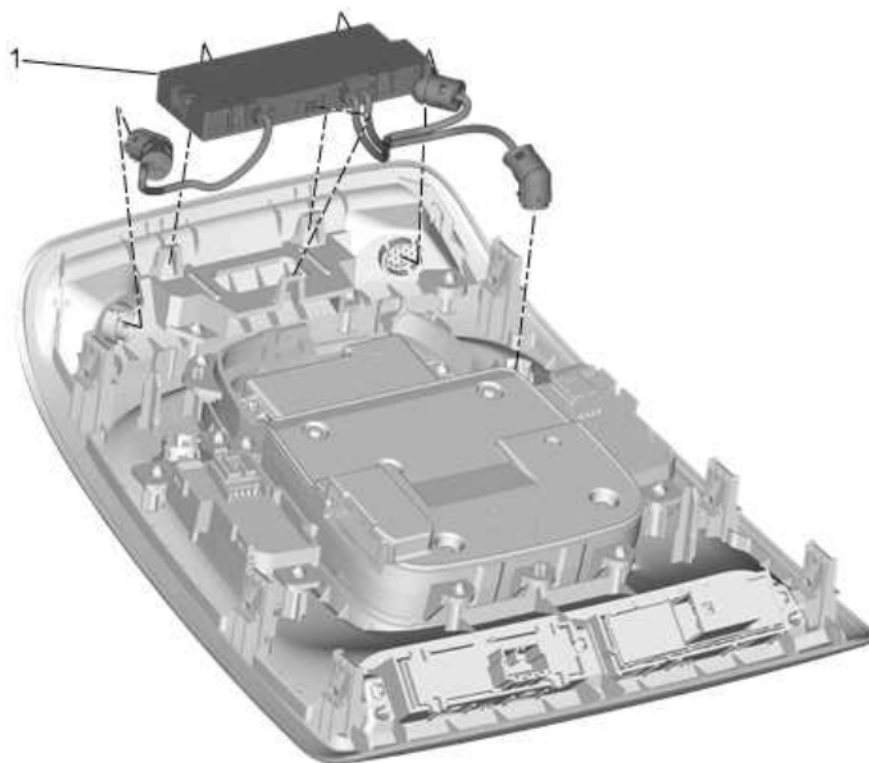


**Fig. 4: Theft Deterrent Alarm**

Courtesy of GENERAL MOTORS COMPANY

| Callout                                                                                            | Component Name                                                                                                                                                                                            |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Preliminary Procedure</b><br><b><u>Air Inlet Grille Panel Access Hole Cover Replacement</u></b> |                                                                                                                                                                                                           |
| 1                                                                                                  | Theft Deterrent Alarm Fastener [2x]<br><br><b>CAUTION:</b><br>Refer to <b><u>Fastener Caution</u></b> .<br><br><b>Tighten</b><br>9 N.m (80 lb in)                                                         |
| 2                                                                                                  | Theft Deterrent Alarm Bracket<br><br><b>Procedure</b> <ol style="list-style-type: none"> <li>1. Disconnect the electrical connector.</li> <li>2. Remove the theft deterrent alarm and bracket.</li> </ol> |
| 3                                                                                                  | Theft Deterrent Alarm Bracket Fastener<br><b>Tighten</b><br>6 N.m (53 lb in)                                                                                                                              |
| 4                                                                                                  | Theft Deterrent Alarm<br><b>Procedure</b><br>Remove the theft deterrent alarm from the bracket.                                                                                                           |

## THEFT DETERRENT SENSOR REPLACEMENT



**Fig. 5: Theft Deterrent Sensor**

Courtesy of GENERAL MOTORS COMPANY

| Callout                                                                | Component Name                                                                                                                                 |
|------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Preliminary Procedure</b><br><u><b>Roof Console Replacement</b></u> |                                                                                                                                                |
| 1                                                                      | Theft Deterrent Sensor<br><b>Procedure</b><br>Release the tabs and disconnect the three sensors to remove the theft deterrent sensor assembly. |

## DESCRIPTION AND OPERATION

### THEFT SYSTEMS DESCRIPTION AND OPERATION

When armed, the content theft deterrent system is designed to deter vehicle content theft by pulsing the horns and exterior lamps for approximately 30 seconds when an unauthorized vehicle entry is detected. However, the content theft deterrent system does not affect engine starting.

An unauthorized entry can be any of the following with the content theft deterrent system armed:

- Unauthorized entry into the underhood area
- Unauthorized entry into the rear compartment
- When any door is opened without using the UNLOCK command from a keyless entry transmitter
- After a battery reconnect, if the battery was disconnected with the content theft deterrent system armed

The components of the content theft deterrent system are:

- Body Control Module (BCM)
- Keyless entry control module (RPO ATH)
- Remote control door lock receiver
- Security indicator
- Door ajar switches
- Liftgate ajar switch
- Hood ajar switch

- Intrusion sensor (RPO UA2 or UTC)
- Intrusion sensor disable switch (RPO UA2 or UTC)
- Glass breakage sensor (RPO UA2 or UTC)
- Alarm siren (RPO UA2 or UTC)

### Arming the Content Theft Deterrent System

Use the following procedure in order to arm the system:

1. Place the shift lever in P (park).
2. Turn OFF the ignition.
3. Open any door.
4. Lock the doors with the power door lock switch or by pressing the LOCK button on the transmitter. The system is in standby mode and will not start the arming timer until all doors are closed.

**NOTE:** The system is not armed if the doors are locked manually; the power door lock switch or remote keyless entry transmitter must be used to arm the content theft deterrent system.

5. The system will begin the arm sequence immediately after the last door is closed. If the keyless entry transmitter is used to arm the system after the vehicle doors are closed, the arm sequence will begin as soon as the LOCK command is received from the transmitter.
6. Pressing the LOCK button on the keyless entry transmitter a second time will bypass the delayed arming function and force the system to arm.

### Locking the Vehicle Without Arming the Content Theft Deterrent System

Locking the vehicle may be accomplished without arming the content theft deterrent system. Use of the manual door locks will lock the vehicle, but will not arm the content theft deterrent system.

### Disarming an Armed System/Silencing an Alarm

If system arming has been requested by the power door lock switch or the keyless entry transmitter, it must be disarmed.

**NOTE:** Disconnecting the battery or removing fuses does not disable the arm or alarm modes, since the BCM stores the content theft deterrent mode status in memory.

- To disarm the content theft deterrent system in standby mode, perform one of the following:
  - Press the UNLOCK button on the keyless entry transmitter.
  - Approach the vehicle with a valid keyless entry transmitter and pull the vehicle door handle (RPO ATH).
  - Insert a valid key into the ignition and switch to the ON position.
- To disarm the content theft deterrent system in the armed mode (non-event) or when activated (during an alarm event):
  - Press the UNLOCK button on the keyless entry transmitter.
  - Insert a valid key into the ignition and switch to the ON position.

### Content Theft Deterrent Circuit Description

The following is a description of each component used in the content theft deterrent system:

#### Body Control Module

The content theft deterrent system is an internal function of the BCM which utilizes serial data and various switch inputs information to perform content theft deterrent functions. When the BCM detects an unauthorized entry, it activates the horns and exterior lamps. The BCM has 4 basic modes (disarmed,

standby, armed and alarm) for operating the content theft deterrent system. The different modes are described below.

1. The BCM has the content theft deterrent system in a disarmed mode until the following conditions are detected:
  - Ignition key turned to the OFF position.
  - Doors locked by either the power door lock switch or the LOCK button on the transmitter.
2. The BCM enters the standby mode when the above conditions are detected. If a door was already opened when the arm mode was requested, the standby mode does not start the timer until the last door is closed.
3. When the last door is closed, a 15 second timer is activated. Once the timer has expired, the BCM enters the armed mode. After this delay, any unauthorized entry will activate the alarm mode.
4. When the BCM detects an unauthorized entry, the BCM enters the alarm mode. The BCM activates the horns and exterior lamps for 30 seconds. This is followed by a three minute time-out with the horn no longer active. If no new intrusions are detected after the time-out, the horn is not active. The system must be disarmed or the intrusion condition removed after the time-out for the system to exit alarm mode.

### **Keyless Entry Control Module (RPO ATH)**

The passive keyless entry system can arm and disarm the content theft deterrent system. When a valid keyless entry transmitter is detected while attempting to passively access the vehicle, the keyless entry module will send a message via serial data to disarm the content theft deterrent system.

### **Remote Control Door Lock Receiver**

The keyless entry system can arm and disarm the content theft deterrent system. When the remote control door lock receiver receives a door lock or unlock signal from the transmitter, the remote control door lock receiver sends a message to the BCM via serial data to perform the appropriate arm/disarm functions.

### **Security Indicator**

The security LED is illuminated on the upper I/P by the BCM. The content theft deterrent system uses the security LED to inform the driver of system status prior to arming.

### **Door Ajar Switches**

The content theft deterrent system uses the door ajar switches as a status indicator to activate the alarm. The door ajar switches are monitored by the body control module via a discrete input from each door ajar switch. If the BCM receives a signal indicating a door is opened when the content theft deterrent system is armed, the BCM activates the alarm.

### **Hood Ajar Switch**

The content theft deterrent system uses the hood ajar switch as a status indicator to activate the alarm. The BCM monitors the hood ajar switch via a discrete input from the switch. If the BCM receives a signal indicating the hood has been opened when the content theft deterrent system is armed, the BCM activates the alarm.

### **Liftgate Ajar Switch**

The content theft deterrent system uses the liftgate ajar switch as a status indicator to activate the alarm. The BCM monitors the liftgate ajar switch via a discrete input from the switch. If the BCM receives a signal indicating the liftgate has been opened when content theft deterrent system is armed, the BCM activates the alarm.

### **Intrusion Sensor (RPO UA2 and UTC)**

The intrusion sensor is located in the overhead console and uses two ultrasonic sensors to detect any motion inside the vehicle. If motion is detected inside the vehicle while the content theft deterrent system is armed, the system will transition to the alarm mode. The intrusion sensor also acts as an inclination sensor. The inclination sensor determines the vehicles level when the content theft deterrent

system is armed. If the vehicle level is changed while the system is armed, such as being lifted by a tow truck or raised with a jack, the alarm will be activated. The intrusion sensor can be disabled using the intrusion sensor disable switch. The intrusion sensor disable switch also shows the intrusion sensor status using a status LED.

#### **Glass Breakage Sensor (RPO UA2 and UTC)**

The glass breakage sensors are located on the rear side windows and are supplied B+ at all times. The BCM monitors the glass breakage sensor signal circuit. If the rear side glass is broken, the glass breakage sensor signal circuit will open and the BCM will enter the alarm mode.

#### **Alarm Siren (RPO UA2 and UTC)**

The content theft deterrent system uses the alarm siren as an audible alert device to alert individuals near the vehicle that a vehicle intrusion is occurring. The siren is supplied power and ground for operation and communicates with the body control module (BCM) via a dedicated LAN circuit.

#### **Inputs**

The BCM monitors the following inputs for content theft deterrent:

- Door ajar switches
- Keyless entry transmitter LOCK/UNLOCK buttons; a message from the remote control door lock receiver
- Immobilizer status-The BCM uses the immobilizer status for disarming the system or silencing an alarm when the correct vehicle key is used to start the vehicle
- Liftgate ajar switch
- Hood ajar switch
- Intrusion sensor (RPO UA2 and UTC)
- Glass breakage sensor (RPO UA2 and UTC)

#### **Outputs**

The BCM controls the following for content theft deterrent:

- Horn relay
  - Exterior lamps
  - Alarm siren (RPO UA2 and UTC)
-