

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 (CTD) Does Not Disarm with Key Lock**
- **Content Theft Deterrent Malfunction**
- **Security Indicator Malfunction**

CONTENT THEFT DETERRENT (CTD) DOES NOT DISARM WITH KEY LOCK**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
Door Lock Key Switch Unlock Signal	1	1	1	-
Ground	-	1	1	-
1. Content theft deterrent will not disarm using door key				

Circuit/System Description

The content theft deterrent (CTD) 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. The driver door lock cylinder switch is used as an input to disarm the CTD system. The BCM monitors the door lock key switch unlock signal circuit to determine if the driver door cylinder is being rotated, indicating a vehicle key is being used to unlock the vehicle and the CTD system should be disarmed. The door key cylinder switch, located in the driver door latch assembly, provides a switched ground for the signal circuit.

Reference Information**Schematic Reference****Theft Deterrent System Schematics****Connector End View Reference****Component Connector End Views**

Description and Operation

Content Theft Deterrent (CTD) 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

Ignition ON, verify the scan tool LF Key Cylinder Lock Switch parameter cycles between Idle and Unlock while turning the driver door lock cylinder to the unlock position with the vehicle key.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the driver door latch assembly.
2. Ignition OFF, test for less than 10 ohms of resistance between the ground circuit terminal 8 and ground.
 - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, verify the scan tool LF Key Cylinder Lock Switch parameter is Idle.
 - If not the specified value, test the signal circuit terminal 9 for a short to ground. If the circuit tests normal, replace the BCM.
4. Install a 3A fused jumper wire between the signal circuit terminal 9 and ground. Verify the scan tool LF Key Cylinder Lock Switch parameter is Unlock.
 - If not the specified value, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
5. If all circuits test normal, test or replace the door latch assembly.

Component Testing

1. Ignition OFF, disconnect the harness connector at the driver door latch assembly.
2. Test for infinite resistance between the signal terminal 9 and the ground terminal 8 with the switch in the open position.
 - If not the specified value, replace the door latch assembly.
3. Test for less than 2.0 ohms of resistance between the signal terminal 9 and the ground terminal 8 with the switch in the closed position.
 - If greater than the specified range, replace the door latch assembly.

Repair Procedures

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

- Front Side Door Lock Replacement
- Control Module References for BCM replacement, setup, and programming

CONTENT THEFT DETERRENT MALFUNCTION

Diagnostic Instructions

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

Circuit/System Description

The content theft deterrent (CTD) 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 trunk ajar switch, and the drivers door key cylinder switch, the BCM determines whether a CTD alarm is warranted. If unauthorized access is being detected, the BCM will pulse the vehicle horn and flash the exterior lights as a means of theft deterrent.

Reference Information

Schematic Reference

Theft Deterrent System Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Content Theft Deterrent (CTD) 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. Individually open and close each vehicle door while observing the door ajar indicator/message. The indicator/message should accurately transition between the door ajar and door closed state when each door is opened and closed.
 - If the door ajar indicator/message does not properly transition when each door is opened and closed, refer to **Door Ajar Indicator Malfunction**.
2. Open and close the trunk while observing the trunk ajar indicator/message. The indicator/message should accurately transition between the trunk ajar and trunk closed state when the trunk is opened and closed.
 - If the trunk ajar indicator/message does not properly transition when the trunk is opened and closed, refer to **Trunk Ajar Indicator Malfunction**.
3. Insert the vehicle key into the driver door key cylinder and rotate the cylinder between the idle and unlock positions. Verify the scan tool LF Key Cylinder Lock Switch parameter cycles between Idle and Unlock.
 - If the scan tool parameter does not cycle between the specified parameters, refer to **Content Theft**

Deterrent (CTD) Does Not Disarm with Key Lock.

4. Completely lower the driver door window and close all vehicle doors.
5. Ignition OFF, arm the CTD system using the keyless entry system by pressing the keyless entry transmitter LOCK button twice.
6. With the door open, verify the vehicle horn is pulsing and the exterior lamps are flashing.
 - o If the horn is not pulsing, refer to **Horns Malfunction** .
 - o If the exterior lights are not flashing, refer to **Turn Signal Lamps and/or Indicators Malfunction** .

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** provide an overview of each diagnostic category.

Circuit/System Description

The security indicator acts as a status indicator for the content theft deterrent (CTD) system when the ignition is OFF and as a fault indicator for the immobilizer system when the ignition is ON. When either the body control module (BCM) or theft deterrent module (TDM) requires the security indicator to be illuminated, a serial data message is sent to the instrument panel cluster (IPC), which will illuminate the indicator.

Reference Information**Schematic Reference****Theft Deterrent System Schematics****Connector End View Reference****Component Connector End Views****Description and Operation****Content Theft Deterrent (CTD) 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**

Ignition ON, verify the security indicator illuminates when performing the scan tool IPC Display Test.

- If the security indicator does not illuminate, replace the IPC.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

Control Module References for IPC replacement, setup and programming

DESCRIPTION AND OPERATION

CONTENT THEFT DETERRENT (CTD) DESCRIPTION AND OPERATION

When armed, the content theft deterrent (CTD) 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 CTD system does not affect engine starting.

An unauthorized entry can be any of the following with the CTD system armed:

- Unauthorized entry into the underhood area if equipped with remote vehicle start.
- Unauthorized entry into the rear compartment.
- When any door is opened without first being unlocked using the vehicle key or using the UNLOCK command from a keyless entry transmitter.

The components of the system are:

- Keyless entry module (remote control door lock receiver)
- Door ajar switches
- Body control module (BCM)
- Driver door lock cylinder switch
- Power door lock switches
- Rear compartment lid ajar switch
- Hood ajar switch (if equipped)

Arming the CTD 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.

IMPORTANT: 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 (CTD) system.

4. Lock the doors with the power door lock switch or the LOCK button on the transmitter. The system is in standby mode and will not start the arming timer until all doors are closed.
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 by the transmitter.

Locking the Vehicle Without Arming the CTD System

Locking the vehicle may be accomplished without arming the content theft deterrent (CTD) system. Use of the manual door locks or using the key to lock the doors will lock the vehicle, but will not arm the CTD 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.

IMPORTANT: Using the power door unlock switch or manually unlocking the doors does not disable the content theft deterrent (CTD) arm mode. Also, disconnecting the battery or pulling fuses does not disable the arm mode, since the BCM stores the CTD mode status in memory.

- To disarm the CTD system in standby mode, perform one of the following:
 - Press either power door unlock switch.
 - Use the vehicle key to unlock the driver door.
 - Press the UNLOCK button on the keyless entry transmitter.
 - Insert a valid key into the ignition and switch to the ON position.
- To disarm the CTD system in the armed mode (non-event) or when activated (during an alarm event):
 - Use the vehicle key to unlock the driver door.
 - Press the UNLOCK button on the keyless entry transmitter.
 - Insert a valid key into the ignition and switch to the ON position.

CTD Circuit Description

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

Keyless Entry Module (Remote Control Door Lock Receiver)

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

Door Ajar Switches

The CTD system uses the door ajar switches in the door latch assemblies as one method to activate the alarm. The BCM monitors all door ajar switches via a discrete input from each door ajar switch. If the BCM receives a signal from a door ajar switch when the CTD system is armed, the BCM activates the alarm.

Body Control Module (BCM)

The CTD system is an internal function of the BCM which utilizes serial data and various switch inputs information to perform CTD 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 CTD system. The different modes are described below.

1. The BCM has the CTD 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 forced entry activates the alarm mode.
4. When the BCM detects a forced 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.

Front Door Lock Cylinder Switch

The door lock cylinder switch located in the driver door and is a discrete input to the BCM. The BCM utilizes this input to disarm the CTD system. Inserting a key and turning to the unlock position will disarm the CTD system.

Power Door Lock Switches

The power door lock switches are used to either arm the CTD system at any time, or disarm the system if it is still in standby (not during an event). Pressing the lock position will cause the CTD to arm after all doors are closed, while pressing unlock will disarm the CTD if it is in standby.

Hood Ajar Switch

The hood ajar switch (if equipped) is located in the hood latch assembly and is a discrete input to the BCM. The BCM utilizes this input as a means to active the alarm if the vehicle hood is opened while CTD is armed.

Rear Compartment Lid Ajar Switch

The rear compartment lid ajar switch is located in the rear compartment lid latch assembly and is a discrete input to the BCM. The BCM utilizes this input as a means to active the alarm if the rear compartment is opened while CTD is armed.

IMPORTANT: The CTD system can be armed with the windows or sunroof open.

Inputs

The BCM monitors the following inputs:

- Driver and passenger door ajar switches
- Driver and passenger power door lock/unlock switches
- Front door lock cylinder disarm switch
- Hood ajar switch
- Rear compartment lid ajar switch
- Transmitter LOCK/UNLOCK buttons, a serial data from the remote keyless entry (RKE) module.

Outputs

The BCM controls the following :

- The horn relay
- The exterior lights.

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