

2010 ACCESSORIES & EQUIPMENT

Immobilizer - SRX

SPECIFICATIONS

ASSEMBLY TIGHTENING SPECIFICATIONS

Application	Specification	
	Metric	English
Theft Deterrent Module Bolt Screw	2 N.m	18 lb in

SCHEMATIC AND ROUTING DIAGRAMS

IMMOBILIZER SCHEMATICS

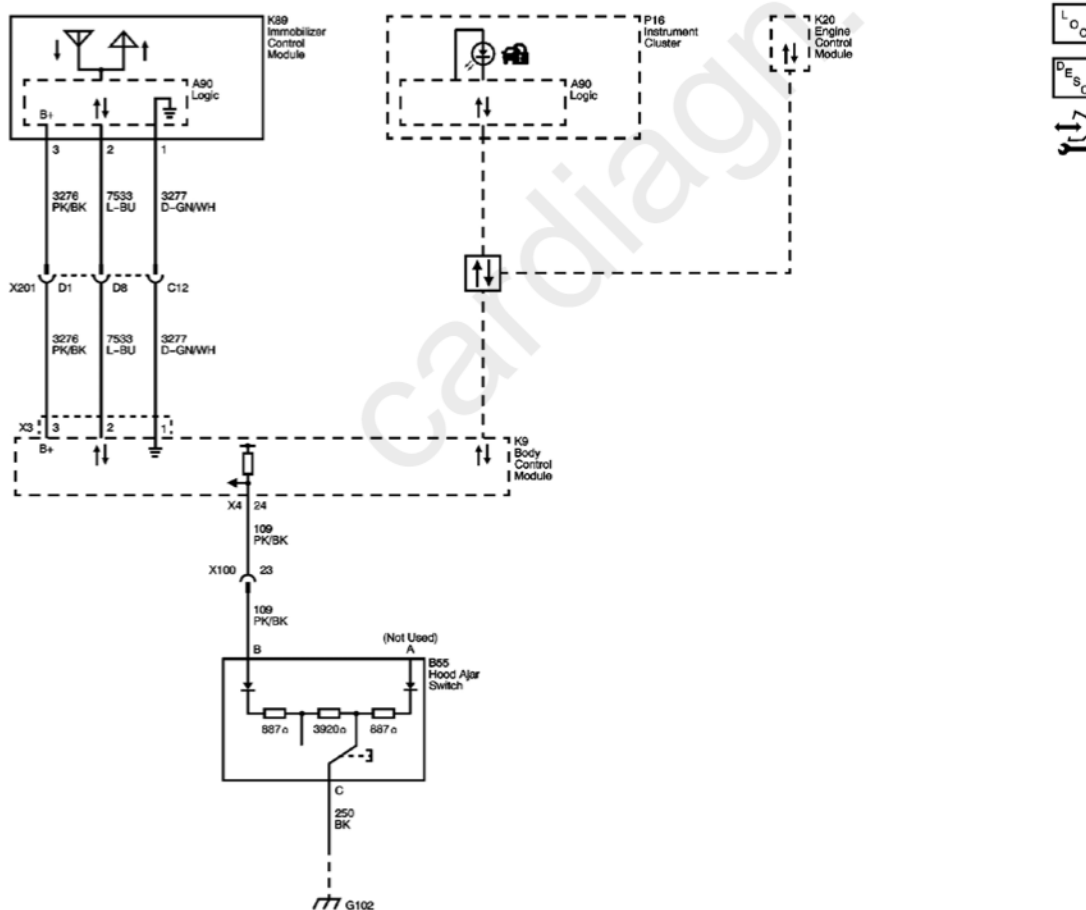


Fig 1 Immobilizer Circuit Schematic
 Courtesy of GENERAL MOTORS CORP

2010 Cadillac SRX

2010 ACCESSORIES & EQUIPMENT Immobilizer - SRX

DIA NOSTIC INFORMATION AND PROCEDURES**DIA NOSTIC CODE I DE****DIA NOSTIC CODE I DE**

DTC	Description
DTC B2 55	B29 00: Security Sensor Data Circuit
DTC B300	B300 01: Hood A ar Circuit Short to Battery B300 02: Hood A ar Circuit Short to ground B300 03: Hood A ar Circuit Open
DTC B302A	B302A 00: Mobile Telephone Communications Interface Requested Immobilization Malfunction
DTC B3031	B3031 00: Security Controller In learn Mode Malfunction
DTC B3055	B30 00: No Transponder Modulation or No Transponder
DTC B30 0	B30 0 00: Unprogrammed Transponder Identification Code Received Malfunction
DTC B3 8A	B389A 00: Environment Identification
DTC B3 02	B3902 00: Incorrect Immobilizer Identifier Received
DTC B3 35	B393 00: Transponder Authentication Error
DTC B3 9	B39 00: Unconfigured Transponder
DTC B3 8	B398 00: Device 1 Environment Identifier Not Programmable
DTC P0513	P0 13: Immobilizer Key Incorrect
DTC P0 33	P0 33: Immobilizer Key Not Programmed
DTC P1 2B	P1 2B: Remote Vehicle Speed Limiting Signal Message Counter Incorrect
DTC P1 31	P1 31: Immobilizer Fuel Enable Signal Not Correct
DTC P1 9	P1 9: Immobilizer Security Code Not Programmed

DTC B2 55**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 B2 55 00**

Security Sensor Data Circuit

Diagnostic Fault Information

--	--	--	--	--

2010 Cadillac SRX

2010 ACCESSORIES & EQUIPMENT Immobilizer - SRX

Circuit	Short to ground	Open/High Resistance	Short to Voltage	Signal Performance
B	B29 00	B29 00	-	-
Serial Data	B29 00	B29 00	B29 00	B29 00
Low Reference	-	B29 00	-	-

Circuit/System Description

When an ignition key is inserted into the ignition lock cylinder and the ignition is switched ON, the transponder embedded in the key is energized by the exciter coils surrounding the ignition lock cylinder. The transponder transmits a signal to the body control module (BCM). The BCM then compares this value to a value stored in memory. If the value is correct, the BCM will send the prerelease password via the serial data circuit to the engine control module (ECM). If the learned key code does not match or a transponder value is not received, the BCM will send the start disable password to the ECM.

Conditions for Running the DTC

Ignition is in the Accessory or Run position.

Conditions for Setting the DTC

The BCM detects a circuit fault between itself and the immobilizer control module.

Action Taken When the DTC Sets

- Vehicle starting will be disabled.
- The security indicator in the instrument cluster will be illuminated. A service message will be displayed in the driver information center.

Conditions for Clearing the DTC

- A current DTC will be cleared when the condition for setting the DTC are no longer present.
- A history DTC will be cleared after 100 malfunction-free ignition cycles or when a scan tool is used to clear DTCs.

Reference Information

Schematic Reference

Immobilizer Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Immobilizer 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, disconnect the harness connector at the K89 immobilizer control module.
2. Ignition OFF, test for less than 10 ohms between the low reference circuit terminal 1 and ground.
 - If greater than the specified range, test the low reference circuit for an open high resistance. If the circuit tests normal, replace the K9 BCM.
3. Ignition ON, test for B₊ between the B₊ circuit terminal 3 and ground.
 - If less than the specified value, test the B₊ circuit for a short to ground or an open high resistance. If the circuit tests normal, replace the K9 BCM.
- . Test for 12-13 V between the serial data circuit terminal 2 and ground.
 - If less than the specified range, test the serial data circuit for a short to ground or an open high resistance. If the circuit tests normal, replace the K9 BCM.
 - If greater than the specified range, test the serial data circuit for a short to voltage. If the circuit tests normal, replace the K9 BCM.
- . If all circuits test normal, replace the K89 immobilizer control module. Verify DTC B29₀₀ is not set.
 - If the DTC is set, replace the K9 BCM.

Repair Procedures

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

- **Theft Deterrent Module Replacement**
- **Control Module References** for BCM replacement, setup, and programming

DTC B300

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.

2010 Cadillac SRX

2010 ACCESSORIES & EQUIPMENT Immobilizer - SRX

DTC Descriptors

DTC B300 01

Hood A ar Circuit Short to Battery

DTC B300 02

Hood A ar Circuit Short to round

DTC B300 0

Hood A ar Circuit Open

Diagnostic Fault Information

Circuit	Short to round	Open/High Resistance	Short to Voltage	Signal Performance
Signal	B300 02	B300 0	B300 01	-
round	-	B300 0	-	-

Circuit/System Description

The body control module (BCM) applies B to the hood a ar signal circuit and monitors the voltage to determine the position of the hood. The hood a ar switch contains a multiplexed resistor. This resistor will vary the voltage seen by the BCM by pulling down the applied voltage based on the position of the switch.

Conditions for Running the DTC

The BCM continuously monitors for this DTC

Conditions for Setting the DTC

B300 01

The BCM detects that the hood a ar switch signal circuit is shorted to battery.

B300 02

The BCM detects that the hood a ar switch signal circuit is shorted to ground.

B300 0

The BCM detects that the hood a ar switch signal circuit is open.

Action Taken When the DTC Sets

- The hood a ar switch input will be ignored as a content theft deterrent trigger.

2010 Cadillac SRX

2010 ACCESSORIES & EQUIPMENT Immobilizer - SRX

- Remote vehicle start will be disabled.

Conditions for Clearing the DTC

- A current DTC will clear when the conditions for setting the DTC are no longer present.
- A history DTC will clear after 0 malfunction free ignition cycles.

Reference Information

Schematic Reference

Immobilizer Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Keyless Entry System Description and Operation (without ATH) or Keyless Entry System Description and Operation (with ATH)

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, observe the scan tool BCM Hood A ar Switch parameter. With the hood open, the Hood A ar Switch parameter should be Open. With the hood closed, the Hood A ar Switch parameter should be Closed.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the B hood a ar switch.
2. Ignition OFF, test for less than ohms between the ground circuit terminal C and ground.
 - If greater than the specified range, test the ground circuit for an open high resistance.
3. Ignition ON, verify DTC B300 0 is set as current.
 - If DTC B300 01 is set as current, test the signal circuit for a short to voltage. If the circuit tests

2010 Cadillac SRX

2010 ACCESSORIES & EQUIPMENT Immobilizer - SRX

normal, replace the K9 BCM.

- If DTC B300 02 is set as current, test the signal circuit for a short to ground. If the circuit tests normal, replace the K9 BCM.

• Install a 15 A fused jumper wire between the signal circuit terminal B and ground. Verify DTC B300 02 is set as current.

- If DTC B300 00 is set as current, test the signal circuit for an open high resistance. If the circuit tests normal, replace the K9 BCM.

• If all circuits test normal, test or replace the Body Hood Latch Switch.

Repair Procedures

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

- **Hood Primary and Secondary Latch Replacement**
- **Control Module References** for BCM replacement, programming and setup

DTC B302A

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 B302A 00

Mobile Telephone Communications Interface Requested Immobilization Malfunction

Circuit/System Description

As part of the vehicle telematics enhanced services, a request may be sent to the body control module (BCM) to disable vehicle starting. If a valid message is received by the BCM requesting that starting be disabled, the start enable message will not be sent to the engine control module (ECM).

Conditions for Running the DTC

The BCM continuously monitors for this DTC.

Conditions for Setting the DTC

A valid start disable from telematics will set DTC B302A only as a history DTC.

Action Taken When the DTC Sets

2010 Cadillac SRX

2010 ACCESSORIES & EQUIPMENT Immobilizer - SRX

Vehicle starting will be suspended and the security indicator will be illuminated.

Conditions for Clearing the DTC

- A current DTC will clear when the telematic start disable request is no longer seen.
- A history DTC will clear after 100 ignition cycles in which the telematic start disable request is not seen.

Diagnostic Aids

DTC B302A is only an indicator that a start disable request has been received from the vehicle telematics system and does not indicate a fault in the immobilizer system. DTC will only set as a history.

Reference Information

Schematic Reference

Immobilizer Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Immobilizer 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. With a master vehicle key, turn the ignition ON.
2. Observe the security indicator. After approximately 10 minutes, the indicator will turn off.
3. Turn the ignition OFF and wait 5 s.
 - Repeat steps 2- two more times for a total of 3 cycles or 30 minutes.
 - With a master vehicle key, turn the ignition ON. The start disable will now be cleared.
 - Using the Red Emergency Button, notify the advisor that the Ignition Block on the vehicle has been

cleared and to update the account status.

DTC B3031**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 B3031 00**

Security Controller In Learn Mode Malfunction

Circuit/System Description

When learning a coded key, the body control module (BCM) is placed in learn mode. DTC B3031 will set automatically as an indicator that the system is in learn mode and not as a fault indicator. Once the coded key is learned, learn mode will be exited and the DTC cleared. If the BCM does not exit learn mode, B3031 will remain current and indicate a fault. The instrument cluster security indicator will illuminate and the driver information center will display a message.

Conditions for Running the DTC

The immobilizer system is the learn coded keys state.

Conditions for Setting the DTC

DTC B3031 will set any time the BCM enters the learn coded keys state.

Action Taken When the DTC Sets

The security indicator will illuminate. The driver information center will display a message.

Conditions for Clearing the DTC

- A current DTC B3031 will be cleared upon the successful exit of learn mode.
- A history DTC will be cleared after 100 malfunction-free ignition cycles or when a scan tool is used to clear DTCs.

Reference Information**Schematic Reference****Immobilizer Schematics**

Connector End View Reference**Component Connector End Views****Description and Operation****Immobilizer 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**

Perform the Vehicle Key Relearn procedure. Refer to **Replacing Keys**. The BCM should learn the vehicle key and exit the learn coded key state.

- If the BCM does not exit the learn coded key state after the programming attempt, replace the K9 Body Control Module.

Repair Procedures

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

Control Module References for BCM replacement, setup and programming**DTC B3055****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 B3055 00**

No Transponder Modulation or No Transponder

2010 Cadillac SRX

2010 ACCESSORIES & EQUIPMENT Immobilizer - SRX

Circuit/System Description

When an ignition key is inserted into the ignition lock cylinder and the ignition mode is changed, the transponder embedded in the head of the key is energized by the exciter coils surrounding the ignition lock cylinder. The energized transponder transmits a signal that contains its unique value, which is received by the body control module (BCM). The BCM then compares this value to a value stored in memory. If the value is not correct, the BCM disables engine start.

Conditions for Running the DTC

Ignition is in the Accessory or Run position.

Conditions for Setting the DTC

The BCM is unable to measure the ignition key transponder value.

Action Taken When the DTC Sets

- Vehicle starting will be disabled.
- The security indicator will illuminate. A service message will be displayed in the driver information center.

Conditions for Clearing the DTC

- A current DTC will be cleared when the BCM detects a valid transponder value from the ignition key.
- A history DTC will be cleared after 100 malfunction-free ignition cycles.

Reference Information

Schematic Reference

Immobilizer Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Immobilizer 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. Inspect all available vehicle keys that they are correct vehicle keys.
 - o If not a correct vehicle key, replace the key.
2. While viewing the scan tool BCM Key Part Number, turn ON the ignition with each of the available vehicle keys. The parameter should display a Key Part Number for all available keys.
 - o If any key results in the parameter not reading a Key Part Number, replace the appropriate key.

Repair Procedures

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

Replacing Keys**DTC B3060****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 B3060 00**

Unprogrammed Transponder Identification Code Received Malfunction

Circuit/System Description

When an ignition key is inserted into the ignition lock cylinder and the ignition mode is changed, the transponder embedded in the head of the key is energized by the exciter coils surrounding the ignition lock cylinder. The energized transponder transmits a signal that contains its unique value, which is received by the body control module (BCM). The BCM then compares this value to a value stored in memory. If the value is not correct, the BCM disables engine start.

Conditions for Running the DTC

Ignition is in the Accessory or Run position.

Conditions for Setting the DTC

The transponder value measured by the BCM is incorrect or not learned to the vehicle.

2010 Cadillac SRX

2010 ACCESSORIES & EQUIPMENT Immobilizer - SRX

Action Taken When the DTC Sets

- Vehicle starting will be disabled.
- The security indicator in the instrument cluster will be illuminated. The driver information center will display a service message.

Conditions for Clearing the DTC

- A current DTC will be cleared when the BCM detects a valid transponder value from the ignition key.
- A history DTC will be cleared after 100 malfunction-free ignition cycles or when a scan tool is used to clear DTCs.

Reference Information

Schematic Reference

Immobilizer Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Immobilizer 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. Perform the Vehicle Key Relearn procedure. Refer to Replacing Keys.
2. While viewing the scan tool BCM Key Part Number parameter, turn ON the ignition with each of the available vehicle keys. The parameter should read a Key Part Number with all available keys.
 - If not the specified value, replace the appropriate key.

Repair Procedures

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

Replacing Keys

DTC B3 9A

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 B3 9A 00

Environment Identification

Circuit/System Description

When certain modules are programmed and configured during installation, the module learns a specific environment identifier which is unique to the vehicle. The environment identifier is used to prevent the swapping modules between vehicles. The body control module (BCM) is the keeper of the environment identifier. The instrument cluster, electronic brake control module (EBCM), HVAC control module, sensing and diagnostic module (SDM), engine control module (ECM), and steering column lock control module, if equipped, each learn the environment identifier during their configuration process. During vehicle operation, each of these modules compare their environment identifier to that of the BCM. If the identifiers match, vehicle starting is allowed. If an environment identifier does not match, vehicle starting is disabled.

Conditions for Running the DTC

Ignition is in the ACCESSORY or RUN position.

Conditions for Setting the DTC

An incorrect environment identifier is stored by the BCM.

Action Taken When the DTC Sets

- The security indicator in the instrument cluster will illuminate.
- Vehicle starting will be disabled.

Conditions for Clearing the DTC

A current DTC will be cleared when the BCM learns a correct environment identifier.

Diagnostic Aids

2010 Cadillac SRX

2010 ACCESSORIES & EQUIPMENT Immobilizer - SRX

If BCM programming is not properly completed after BCM replacement, the environment identifier will not be properly learned. If DTC B389A sets immediately after the replacement and programming of a BCM, perform the programming procedure again.

Reference Information

Schematic Reference

Immobilizer Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Immobilizer 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. Verify DTC B389A did not set immediately following the replacement and programming of a BCM.
 - If the DTC set immediately after the replacement and programming of a BCM, the immobilizer learn procedure was not properly completed. Perform the BCM immobilizer learn using the Body Control Module IMMO Function with Existing Transponder or Remote Key in SPS. Refer to Immobilizer System Component Programming.
2. Verify DTC B3902 is not set in the any of the following control modules:
 - ECM
 - SDM
 - EBCM
 - HVAC control module
 - Instrument cluster
 - Steering column lock control module, if equipped
 - If DTC B3902 is set in any of the modules, refer to DTC B3902.

2010 Cadillac SRX

2010 ACCESSORIES & EQUIPMENT Immobilizer - SRX

3. Perform the BCM immobilizer learn using Body Control Module IMMO Function with Existing Transponder or Remote Key in SPS. Refer to **Immobilizer System Component Programming**. Verify DTC B3 9A does not set after programming.
 - If DTC B3 9A is set after programming, replace the K9 BCM.

Repair Procedures

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

Control Module References for K9 BCM replacement, programming, and setup

DTC B3902

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 B3902 00

Incorrect Immobilizer Identifier Received

Circuit/System Description

When certain modules are programmed and configured during installation, the module learns a specific environment identifier which is unique to the vehicle. The environment identifier is used to prevent the swapping modules between vehicles. The body control module (BCM) is the keeper of the environment identifier. The instrument cluster, electronic brake control module (EBCM), HVAC control module, sensing and diagnostic module (SDM), engine control module (ECM), and steering column lock control module, if equipped, each learn the environment identifier during their configuration process. During vehicle operation, each of these modules compare their environment identifier to that of the BCM. If the identifiers match, vehicle starting is allowed. If an environment identifier does not match, vehicle starting is disabled.

Conditions for Running the DTC

Ignition is in the ACCESSORY or RUN position.

Conditions for Setting the DTC

The control module's environment identifier does not match the environment identifier stored by the BCM.

Action Taken When the DTC Sets

- The security indicator in the instrument cluster will illuminate.

2010 Cadillac SRX

2010 ACCESSORIES & EQUIPMENT Immobilizer - SRX

- Vehicle starting will be disabled.

Conditions for Clearing the DTC

A current DTC will be cleared when the module learns a correct environment identifier.

Reference Information

Schematic Reference

Immobilizer Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Immobilizer 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

Perform the Programming and Setup procedure for the control module that set DTC B3902. Verify the DTC does not reset after programming.

- If the DTC resets, replace the appropriate control module.

Repair Procedures

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

Control Module References for instrument cluster, EBCM, HVAC control module, SDM, ECM, or steering column lock control module replacement, setup, and programming

DTC B3935

2010 Cadillac SRX

2010 ACCESSORIES & EQUIPMENT Immobilizer - SRX

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 B3935 00

Transponder Authentication Error

Circuit/System Description

When an ignition key is inserted into the ignition lock cylinder and the ignition mode is changed, the transponder embedded in the head of the key is energized by the exciter coils surrounding the ignition lock cylinder. The energized transponder transmits a signal that contains its unique value, which is received by the body control module (BCM). The BCM then compares this value to a value stored in memory. If the value is not correct, the BCM disables engine start.

Conditions for Running the DTC

- Ignition is in the Accessory or Run position.
- A valid transponder value has been read.

Conditions for Setting the DTC

- The transponder value is valid and matches the value stored in the BCM memory.
- The transponder calculation of the challenge from the BCM does not match the BCM calculation.

Action Taken When the DTC Sets

- Vehicle starting will be disabled.
- The security indicator will illuminate. The driver information center will display a service message.

Conditions for Clearing the DTC

- A current DTC will be cleared when a valid transponder value has been read and authenticated.
- A history DTC will be cleared after 100 malfunction-free ignition cycles.

Reference Information

Schematic Reference

Immobilizer Schematics

Connector End View Reference

Component Connector End Views**Description and Operation****Immobilizer 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**

If DTC B3935 is set, replace the suspected inoperative or malfunctioning key. If the DTC resets, replace the K9 Body Control Module.

Repair Procedures

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

- **Replacing Keys**
- **Control Module References** for BCM replacement, setup, and programming

DTC B3976**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 B3976 00**

Unconfigured Transponder

Circuit/System Description

When the body control module (BCM) is in the learn coded key state, the BCM checks the current key to ensure

2010 Cadillac SRX

2010 ACCESSORIES & EQUIPMENT Immobilizer - SRX

it has been configured as a proper vehicle key.

Conditions for Running the DTC

- Ignition is in the Accessory or Run position.
- The BCM is in the learn coded key state.

Conditions for Setting the DTC

The BCM has determined the current key is not configured as a proper vehicle key.

Action Taken When the DTC Sets

- Vehicle starting will be disabled.
- The security indicator in the instrument cluster will be illuminated. A service message will be displayed in the driver information center.

Conditions for Clearing the DTC

- A current DTC will be cleared when the BCM detects a properly configured vehicle key.
- A history DTC will be cleared after 100 malfunction-free ignition cycles or when a scan tool is used to clear DTCs.

Reference Information

Schematic Reference

Immobilizer Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Immobilizer Description and Operation

Electrical Information Reference

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

Scan Tool Reference

2010 Cadillac SRX

2010 ACCESSORIES & EQUIPMENT Immobilizer - SRX

Control Module References for scan tool information

Circuit/System Verification

While viewing DTCs with a scan tool, attempt to start the vehicle using all of the available keys. The vehicle should start with all available keys.

- If any key results in inoperative starting and DTC B3976 setting as current, replace the appropriate key.

Repair Procedures

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

Replacing keys

DTC B

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 B

Device 1 Environment Identifier Not Programmable

Circuit/System Description

When certain modules are programmed and configured during installation, the module learns a specific environment identifier which is unique to the vehicle. The environment identifier is used to prevent the swapping modules between vehicles. The body control module (BCM) is the keeper of the environment identifier. The instrument cluster, electronic brake control module (EBCM), HVAC control module, sensing and diagnostic module (SDM), engine control module (ECM), and steering column lock control module, if equipped, each learn the environment identifier during their configuration process. During vehicle operation, each of these modules compare their environment identifier to that of the BCM. If the identifiers match, vehicle starting is allowed. If an environment identifier does not match, vehicle starting is disabled.

Conditions for Running the DTC

Ignition is in the ACCESSORY or RUN position.

Conditions for Setting the DTC

An incorrect environment identifier is programmed or no environment identifier is programmed.

2010 Cadillac SRX

2010 ACCESSORIES & EQUIPMENT Immobilizer - SRX

Action Taken When the DTC Sets

- The security indicator in the instrument cluster will illuminate.
- Vehicle starting will be disabled.

Conditions for Clearing the DTC

A current DTC will be cleared when the module learns a correct environment identifier.

Reference Information

Schematic Reference

Immobilizer Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Immobilizer 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

Perform the Programming and Setup procedure for the control module that set DTC B3902. Verify the DTC does not reset after programming.

- If the DTC resets, replace the appropriate control module.

Repair Procedures

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

Control Module References for instrument cluster, EBCM, HVAC control module, SDM, ECM, or steering column lock control module replacement, setup, and programming

DTC P**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 P**

Immobilizer Key Incorrect

Circuit/System Description

The body control module (BCM) sends the pre-release information to the engine control module (ECM) via the serial data circuit. The ECM then sends a challenge to the BCM. Both the ECM and BCM perform a calculation on this challenge. If the calculated response from the BCM equals the calculation performed by the ECM, the ECM will allow vehicle starting.

Conditions for Running the DTC

Ignition is in the ACCESSORY or RUN position.

Conditions for Setting the DTC

The calculated response from the BCM does not equal the calculation performed by the ECM.

Action Taken When the DTC Sets

- The security indicator in the instrument cluster will illuminate.
- Vehicle starting will be disabled.

Conditions for Clearing the DTC

- A current DTC P0513 will be cleared when a valid calculation is received.
- A history DTC will be cleared after 40 malfunction-free ignition cycles or when a scan tool is used to clear DTCs.

Diagnostic Aids

The key referenced in the DTC descriptor does not refer to the vehicle key. In this case, key is referring to the challenge response.

Reference Information

Schematic Reference**Immobilizer Schematics****Connector End View Reference****Component Connector End Views****Description and Operation****Immobilizer 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**

NOTE: Because of normal system communications between the BCM and ECM, any immobilizer B-codes must be diagnosed prior to the diagnosis of P-codes.

Perform the BCM immobilizer learn using the Body Control Module IMMO Function with Existing Transponder or Remote Key in SPS. Refer to **Immobilizer System Component Programming**. The BCM should successfully complete the learn and the vehicle should start.

- If vehicle starting is not restored, perform the ECM immobilizer learn using the Engine Control Module IMMO Learn in SPS. Refer to **Immobilizer System Component Programming**.

DTC P**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 P**

2010 Cadillac SRX

2010 ACCESSORIES & EQUIPMENT Immobilizer - SRX

Immobilizer Key Not Programmed

Circuit/System Description

When learning the immobilizer data, as well as the challenge and response sequence, the engine control module (ECM) is placed in learn mode. DTC P0633 will set automatically as an indicator that the system is in learn mode and not as a fault indicator. Once the immobilizer data and challenge/response are learned, learn mode will be exited when the engine is successfully started. If the ECM does not exit learn mode, DTC P0633 will remain current and indicate a fault.

Conditions for Running the DTC

The ECM is in learn mode.

Conditions for Setting the DTC

DTC P0633 will set any time the ECM enters learn mode.

Action Taken When the DTC Sets

The security indicator in the instrument cluster will illuminate.

Conditions for Clearing the DTC

- A current DTC P0633 will be cleared upon a successful engine start after exit of learn mode.
- A history DTC will be cleared after 100 malfunction-free ignition cycles or when a scan tool is used to clear DTCs.

Diagnostic Aids

The key referenced in the DTC descriptor does not refer to the vehicle key. In this case, key is referring to the challenge response.

Reference Information

Schematic Reference

Immobilizer Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Immobilizer Description and Operation

Electrical Information Reference

2010 Cadillac SRX

2010 ACCESSORIES & EQUIPMENT Immobilizer - SRX

- 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

NOTE: Because of normal system communications between the BCM and ECM, any immobilizer B-codes must be diagnosed prior to the diagnosis of P-codes.

Perform the ECM immobilizer learn using the Engine Control Module IMMO Learn function in SPS. Refer to Immobilizer System Component Programming. The ECM should successfully complete the password learn and the vehicle should start.

- If the ECM does not complete the learn or vehicle starting remains disabled, replace the K20 Engine Control Module.

Repair Procedures

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

Control Module References for ECM replacement, setup, and programming

DTC P1 2B

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 P1 2B

Remote Vehicle Speed Limiting Signal Message Counter Incorrect

Circuit/System Description

When a remote slow-down request is sent from OnStar, the vehicle communication interface module sends a serial data message to the engine control module (ECM) indicating that reduced vehicle speed has been requested. Once the request is active, the ECM begins reducing engine torque to match requested vehicle speed

2010 Cadillac SRX

2010 ACCESSORIES & EQUIPMENT Immobilizer - SRX

and the REDUCED ENGINE POWER message is displayed.

Conditions for Running the DTC

- The engine run time is greater than 5 seconds.
- A remote slow-down request is sent from OnStar

Conditions for Setting the DTC

- The VIN embedded in the slow-down request does not match the VIN stored in the ECM.
- The rolling code counter embedded in the slow-down request does not increment for ten consecutive messages.

Action Taken When the DTC Sets

- ECM ignores all reduced vehicle speed request messages from the vehicle communication interface module.
- The ECM stores DTC P162B in history.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- A history DTC will clear after 40 malfunction-free ignition cycles have occurred.

Reference Information

Schematic Reference

OnStar Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Remote Vehicle Speed Limiting Description and Operation

Electrical Information Reference

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

Scan Tool Reference

2010 Cadillac SRX

2010 ACCESSORIES & EQUIPMENT Immobilizer - SRX

Control Module References for scan tool information

Circuit/System Verification

Perform the scan tool Stolen Vehicle Slow-Down Clear. Verify DTC P162B is not set.

- If the DTC is set, replace the vehicle communication interface module and retest. If the DTC sets again, replace the ECM.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the repair.

Control Module References for vehicle communication interface module and ECM replacement, setup, and programming

DTC P1 31

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 P1 31

Immobilizer Fuel Enable Signal Not Correct

Circuit/System Description

The body control module (BCM) sends the pre-release information to the engine control module (ECM) via the serial data circuit. The ECM then sends a challenge to the BCM. Both the ECM and BCM perform a calculation on this challenge. If the calculated response from the BCM equals the calculation performed by the ECM, the ECM will allow vehicle starting. The BCM follows this action by sending the remaining immobilizer data to the ECM. If the immobilizer data sent by the BCM matches that stored by the ECM, the ECM will allow the engine to remain running.

Conditions for Running the DTC

Ignition is in the ACCESSOR or RUN position.

Conditions for Setting the DTC

The ECM receives incorrect immobilizer data from the BCM.

Action Taken When the DTC Sets

2010 Cadillac SRX

2010 ACCESSORIES & EQUIPMENT Immobilizer - SRX

- The security indicator in the instrument cluster will illuminate.
- Vehicle starting will be disabled.

Conditions for Clearing the DTC

- A current DTC P1631 will be cleared when correct immobilizer data is received.
- A history DTC will be cleared after 40 malfunction-free ignition cycles or when a scan tool is used to clear DTCs.

Reference Information

Schematic Reference

Immobilizer Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Immobilizer 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

NOTE: Because of normal system communications between the BCM and ECM, any immobilizer B-codes must be diagnosed prior to the diagnosis of P-codes.

Perform the BCM immobilizer learn using the Body Control Module IMMO Function with Existing Transponder or Remote Key in SPS. Refer to Immobilizer System Component Programming. The BCM should successfully complete the learn and the vehicle should start.

- If vehicle starting is not restored, perform the ECM immobilizer learn using the Engine Control Module IMMO Learn in SPS. Refer to Immobilizer System Component Programming.

DTC P1**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 P1**

Immobilizer Security Code Not Programmed

Circuit/System Description

When learning the security code, as well as the challenge and response sequence, the engine control module (ECM) is placed in learn mode. Once the security code and challenge/response are learned, learn mode will be exited when the engine is successfully started.

Conditions for Running the DTC

The ECM is in learn mode.

Conditions for Setting the DTC

The ECM has not learned a security code.

Action Taken When the DTC Sets

The security indicator in the instrument cluster will illuminate.

Conditions for Clearing the DTC

- A current DTC P164 will be cleared upon a successful engine start after exit of learn mode.
- A history DTC will be cleared after 100 malfunction-free ignition cycles or when a scan tool is used to clear DTCs.

Reference Information**Schematic Reference****Immobilizer Schematics****Connector End View Reference****Component Connector End Views**

Description and Operation

Immobilizer 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

Circuit/System Verification

NOTE: Because of normal system communications between the BCM and ECM, any immobilizer B-codes must be diagnosed prior to the diagnosis of P-codes.

Perform the ECM immobilizer learn using the Engine Control Module IMMO Learn in SPS. Refer to Immobilizer System Component Programming. The ECM should successfully complete the learn and the vehicle should start.

- If the ECM does not complete the learn or vehicle starting remains disabled, replace the K20 Engine Control Module.

Repair Procedures

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

Control Module References for ECM replacement, setup, and programming

SYMPTOMS - IMMOBILIZER

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

1. Perform the Diagnostic System Check - Vehicle before using the symptom tables 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 links.
2. Review the system operation in order to familiarize yourself with the system functions. Refer to Immobilizer Description and Operation.

Visual/Physical Inspection

2010 Cadillac SRX

2010 ACCESSORIES & EQUIPMENT Immobilizer - SRX

- Inspect for aftermarket devices which could affect the operation of the systems. 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 **OnStar Stolen Vehicle Slowdown Active** in order to diagnose the symptom.

ONSTAR STOLEN VEHICLE SLOWDOWN ACTIVE

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

When a remote slow-down request is sent from OnStar, the vehicle communication interface module sends a serial data message to the engine control module (ECM) indicating that reduced vehicle speed has been requested. Once the request is active, the ECM begins reducing engine torque to match requested vehicle speed and the REDUCED ENGINE POWER message is displayed.

Reference Information

Schematic Reference

OnStar Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Remote Vehicle Speed Limiting 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

Verify the vehicle is not in the OnStar initiated Stolen Vehicle Slowdown mode. Verify the scan tool BCM Telematics Enhanced Service Immobilization parameter is No.

- If the vehicle is in the Stolen Vehicle Slowdown mode, perform the scan tool telematics communication interface control Remote Vehicle Speed Limiting Reset procedure. After performing the speed limiting reset, press the blue OnStar button and inform the advisor that you need to be transferred to the stolen vehicle team to update the vehicle account.

REPAIR INSTRUCTIONS

THEFT DETERRENT MODULE REPLACEMENT

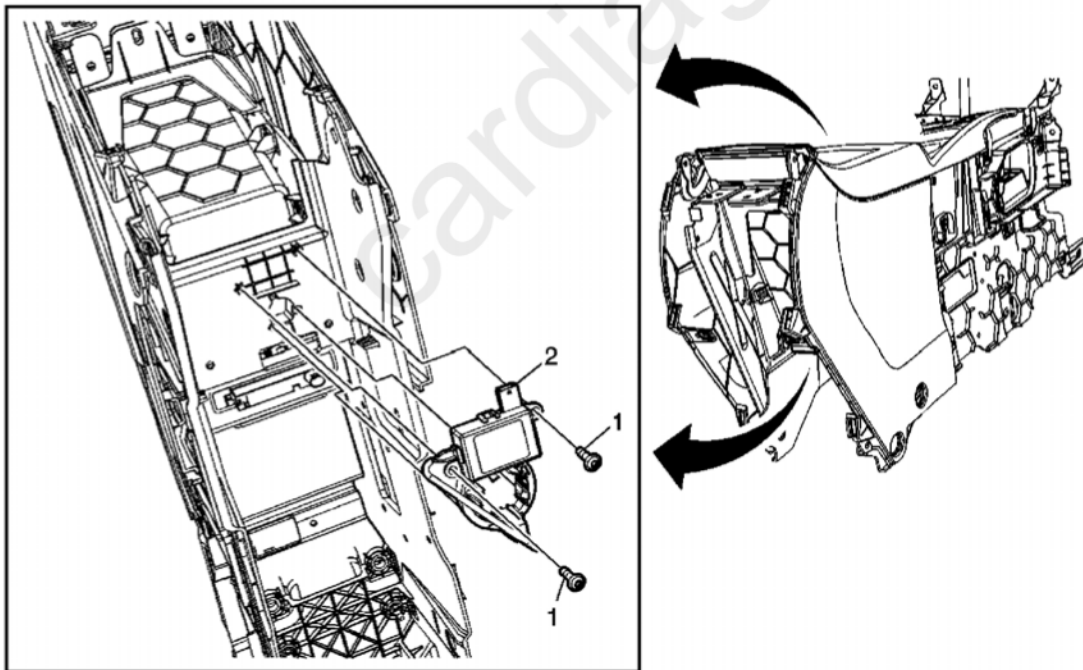


Fig. 2: Identifying Theft Deterrent Module
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name

2010 Cadillac SRX

2010 ACCESSORIES & EQUIPMENT Immobilizer - SRX

Preliminary Procedure

1. Remove the front floor console. Refer to **Front Floor Console Replacement** .
2. Remove the front floor console compartment. Refer to **Front Floor Console Compartment Replacement** .

1	Theft Deterrent Module Bolt/Screw (Qty: 2) CAUTION: Refer to <u>Fastener Caution</u> . Tighten: 2 N.m (18 lb in)
2	Theft Deterrent Module Procedure 1. Disconnect the electrical connector. 2. Disengage tabs and slide through opening. 3. Refer to <u>Control Module References</u> for programming and set up procedures.

IMMOBILIZER SYSTEM COMPONENT PROGRAMMING

This procedure will learn the immobilizer function and require greater than 15 minutes to complete. If the battery voltage is low, charge the battery before proceeding with the learn. If the body control module (BCM) or engine control module (ECM) have been replaced, they must be programmed before performing this learn procedure.

Depending on the immobilizer function being learned or the component replaced, different learn functions are required to be performed. These learn functions are as follows:

Function name on SPS tool:	Function description:	When the function should be used:	Notes:
Body Control Module IMMO Function with Existing Transponder or Remote Key	The BCM will relearn the immobilizer passwords and data while reusing the existing vehicle keys	The BCM has been replaced and the existing vehicle keys are being reused or a diagnostic has instructed to perform the learn	-
Body Control Module IMMO Function with New Transponder or Remote Key	The BCM will relearn the immobilizer passwords and data while using new vehicle keys	The BCM has been replaced and new vehicle keys are being reused	-
Engine Control Module IMMO Learn	The ECM will relearn the immobilizer passwords and data	The ECM has been replaced or a diagnostic has instructed to perform the learn	-

2010 Cadillac SRX

2010 ACCESSORIES & EQUIPMENT Immobilizer - SRX

Engine Control Module and Body Control Module IMMO Learn	The ECM and BCM will learn new immobilizer passwords and data	Both the ECM and BCM have been replaced (this selection will REQUIRE new vehicle keys be used)	Because both the ECM and BCM have been replaced and are learning new immobilizer passwords and data, all vehicle keys must also be replaced
Program Transponder or Remote Key (Add)	A new vehicle key will learn the immobilizer passwords and data	A new vehicle key is being added (does not affect other vehicle keys)	This function may not be available in all sales regions
Program Transponder or Remote Key (Delete)	All existing vehicle keys will be invalidated and any desired keys are relearned	All vehicle keys are desired to be invalidated and certain keys relearned or a diagnostic has instructed to perform the learn	This procedure may be used if a customer has had their keys lost or stolen and wishes to invalidate the keys, making them unable to start the vehicle

1. Connect a scan tool to the vehicle and access SPS. Refer to **Service Programming System (SPS)** .
2. Turn ON the ignition, with the engine OFF.
3. Ensure that all power consuming devices are turned OFF on the vehicle.
4. Select SPS application and follow the on-screen instructions.
5. Select Reprogram ECU.
6. Select IMMO Immobilizer Learn - Setup.
7. Select the appropriate programming function based on the component that was replaced or is being programmed. Refer to the table at the top of this document for assistance in choosing the correct programming function.

NOTE:

- At multiple times during the learn procedure, SPS will instruct you to turn the ignition to the run position. Make sure the vehicle is actually in the run mode before continuing on the SPS terminal. If the igniting is not in the run mode, the learn procedure will fail. To verify the vehicle is in Run mode, verify the green LED is illuminated on the ignition mode switch.
- Depending on the vehicle build date and BCM software level, the method to place the vehicle in the run mode will be different. Early vehicles that have not had the BCM replaced or reprogrammed will require two presses of the igniting mode switch to enter run mode. Late vehicles and vehicles that have had the BCM replaced or reprogrammed require the ignition mode switch be pressed and held for 5 seconds to enter run mode.
- The key pocket is located inside the center console storage area. The key must be placed flat in the pocket with the buttons facing up and the keyring at the rear. If a large keyring prevents the key from laying

2010 Cadillac SRX

2010 ACCESSORIES & EQUIPMENT Immobilizer - SRX

flat in the pocket, remove the keyring and place the key in the pocket. Failure to position the key flat in the pocket will result in an inability to program.

- . Follow the on-screen instructions.
- . After programming all keys Programming Complete is displayed.
- 1 . Press and hold the ignition mode switch for 1 seconds.
- 11. With a scan tool, clear any DTCs.

ADDING KEYS

Adding Key (Without SPS)

NOTE:

- To initiate, this procedure requires that 1 learned key be available.
- A total of 8 keys may be learned to a single vehicle.
- This procedure adds keys only. The procedure does not erase previously learned keys.
- The keys to be learned must duplicate the mechanical cut of the current key.

1. Place the recognized keys in the vehicle cupholder.
2. Insert the mechanical key of the new transmitter into the key lock cylinder located on the outside of the driver door and turn the key to the unlock position five times within ten seconds. The Driver Information Center (DIC) will display Ready For Remote 2, 3, or 4.

NOTE:

The key pocket is located inside the center console storage area. The key must be placed flat in the pocket with the buttons facing up and the keyring at the rear. If a large keyring prevents the key from laying flat in the pocket, remove the keyring and place the key in the pocket. Failure to position the key flat in the pocket will result in an inability to program.

3. Place the new key into the key pocket.
 - . Press the ignition mode switch. When the key is learned the DIC will indicate that it is ready to program the next key.
 - . Remove the key from the key pocket and press the unlock button. To program additional transmitters, repeat Steps 3 through 4.
 - . When all additional transmitters are programmed, press and hold the ignition mode switch for 5 seconds to exit programming mode.

Adding Key (With SPS)

NOTE:

- This procedure may be used with or without existing learned keys being present.

- This procedure will take more than 15 minutes to complete.
- A total of 8 keys maybe be learned to a single vehicle.
- This procedure will only learn the vehicle key information. This procedure will not learn any immobilizer information between the body control module (BCM) and engine control module (ECM).
- If the battery voltage is low, charge the battery before continuing with the procedure.

1. Connect a scan tool to the vehicle and access SPS. Refer to Service Programming System (SPS).
2. Ensure that all power consuming devices are turned OFF on the vehicle.
3. Select the SPS application and follow the on-screen instructions.
 - . Select Reprogram ECU.
 - . Select IMMO Immobilizer Learn - Setup.
 - . Select the Program Transponder or Remote Key Add function.

NOTE:

- At multiple times during the learn procedure, SPS will instruct you to turn the ignition to the run position. Make sure the vehicle is actually in the run mode before continuing on the SPS terminal. If the igniting is not in the run mode, the learn procedure will fail. To verify the vehicle is in Run mode, verify the green LED is illuminated on the ignition mode switch.
- Depending on the vehicle build date and BCM software level, the method to place the vehicle in the run mode will be different. Early vehicles that have not had the BCM replaced or reprogrammed will require two presses of the igniting mode switch to enter run mode. Late vehicles and vehicles that have had the BCM replaced or reprogrammed require the ignition mode switch be pressed and held for 5 seconds to enter run mode.
- The key pocket is located inside the center console storage area. The key must be placed flat in the pocket with the buttons facing up and the keyring at the rear. If a large keyring prevents the key from laying flat in the pocket, remove the keyring and place the key in the pocket. Failure to position the key flat in the pocket will result in an inability to program.

- . Follow the on-screen instructions.
 - . After programming all keys, Programming Complete, is displayed.
 - . Press and hold the ignition mode switch for 1 seconds.
1. With a scan tool, clear any DTCs.

REPLACING KEYS**Replacing Key (Without SPS)**

NOTE:

- This procedure will unlearn all previously learned keys. All keys that are to be programmed must be with the vehicle.
- This procedure will take approximately 30 minutes to complete.
- A total of 8 keys maybe be learned to a single vehicle.
- This procedure will only learn the vehicle key information. This procedure will not learn any immobilizer information between the body control module (BCM) and engine control module (ECM).
- This procedure may be used with or without existing learned keys being present. If existing keys are present, keep the keys away from the vicinity of the vehicle. Failure to keep learned keys away from the vehicle will result in the learn changing to the Adding Keys procedure.
- The keys to be learned must duplicate the mechanical cut of the current key.

1. Insert the mechanical key of the new transmitter into the key lock cylinder located on the outside of the driver door and turn the key to the unlock position five times within ten seconds. The Driver Information Center DIC will display Remote Learn Pending, Please Wait.
2. After ten minutes, the DIC will display Press Engine Start Button To Learn. Press the ignition mode switch. The DIC will again display Remote Learn Pending, Please Wait.
3. Repeat Step 2 two additional times, for a total of thirty minutes. All previously known keys have now been unlearned. Remaining keys can be relearned during the next steps. The DIC display will now display Ready For Remote 1.

NOTE:

The key pocket is located inside the center console storage area. The key must be placed flat in the pocket with the buttons facing up and the keyring at the rear. If a large keyring prevents the key from laying flat in the pocket, remove the keyring and place the key in the pocket. Failure to position the key flat in the pocket will result in an inability to program.

- Place the new key into the key pocket.
- Press the ignition mode switch. When the key is learned the DIC will indicate that it is ready to program the next key.
- Remove the key from the key pocket and press the unlock button. To program additional transmitters, repeat Steps through .
- When all additional transmitters are programmed, press and hold the ignition mode switch for seconds to exit programming mode.

Replacing Key (ith SPS)

NOTE:

- This procedure will unlearn all previously learned keys. All keys that are to be programmed must be with the vehicle.
- This procedure may be used with or without existing learned keys being present.

- This procedure will take more than 15 minutes to complete.
- A total of 8 keys maybe be learned to a single vehicle.
- This procedure will only learn the vehicle key information. This procedure will not learn any immobilizer information between the body control module (BCM) and engine control module (ECM).
- If the battery voltage is low, charge the battery before continuing with the procedure.

1. Connect a scan tool to the vehicle and access SPS. Refer to Service Programming System (SPS).
2. Ensure that all power consuming devices are turned OFF on the vehicle.
3. Select the SPS application and follow the on-screen instructions.
 - . Select Reprogram ECU.
 - . Select IMMO Immobilizer Learn - Setup.
 - . Select the Program Transponder or Remote Key Delete function.

NOTE:

- At multiple times during the learn procedure, SPS will instruct you to turn the ignition to the run position. Make sure the vehicle is actually in the run mode before continuing on the SPS terminal. If the igniting is not in the run mode, the learn procedure will fail. To verify the vehicle is in Run mode, verify the green LED is illuminated on the ignition mode switch.
- Depending on the vehicle build date and BCM software level, the method to place the vehicle in the run mode will be different. Early vehicles that have not had the BCM replaced or reprogrammed will require two presses of the igniting mode switch to enter run mode. Late vehicles and vehicles that have had the BCM replaced or reprogrammed require the ignition mode switch be pressed and held for 5 seconds to enter run mode.
- The key pocket is located inside the center console storage area. The key must be placed flat in the pocket with the buttons facing up and the keyring at the rear. If a large keyring prevents the key from laying flat in the pocket, remove the keyring and place the key in the pocket. Failure to position the key flat in the pocket will result in an inability to program.

- . Follow the on-screen instructions.
 - . After programming all keys, Programming Complete, is displayed.
 - . Press and hold the ignition mode switch for 1 seconds.
1. With a scan tool, clear any DTCs.

DESCRIPTION AND OPERATION**IMMOBILIZER DESCRIPTION AND OPERATION**

2010 Cadillac SRX

2010 ACCESSORIES & EQUIPMENT Immobilizer - SRX

The immobilizer system functions are provided by the body control module BCM and the engine control module ECM, as well as any modules which store and report the security code.

When an ignition key if equipped is inserted into the ignition lock cylinder and the ignition is switched ON, the encrypted code in the key is energized by the immobilizer coil surrounding the ignition lock cylinder. This immobilizer coil is part of the immobilizer antenna. The encrypted code transmits a signal that contains its unique value, which is received by the BCM. The BCM then compares this value to a value stored in memory. The BCM also monitors various modules to determine that the stored environment ID matches.

If equipped with push button start, this immobilizer antenna is part of the console. Place key/fob in the pocket in the console. The inscribed code transmits a signal that contains its unique value, which is received by the BCM. The BCM then compares this value to a value stored in memory. The BCM also monitors various modules to determine that the stored security code matches.

If both the environment ID and the value received from the transponder match, the BCM will send the prerelease password via serial data to the ECM. If the encrypted codes unique value is incorrect or the environment ID does not match, the BCM will send the fuel disable message to the ECM.

When the ECM receives the BCM prerelease password, the ECM will challenge the password. The ECM sends this challenge back to the BCM via serial data. Both the ECM and BCM perform a calculation on this challenge. If the calculated response from the BCM equals the calculation performed by the ECM, the ECM will allow vehicle starting.

The components of the theft system are as follows:

- BCM
- ECM
- Immobilizer antenna
- Ignition key/fob
- Security indicator
- Various modules which store and report the environment ID are BCM, IPC, VAC, EBCM, ECM and SDM

BCM is programmed with the environment ID at the manufacturer.

Body Control Module (BCM)

The immobilizer system is an integral part of the BCM and is controlled internally within the BCM. The BCM can learn up to keys/fob transponder values.

The BCM uses the following inputs:

- Environment ID exchange with various modules
- Encrypted code from key/fob from immobilizer coil

The BCM uses the following outputs:

2010 Cadillac SRX

2010 ACCESSORIES & EQUIPMENT Immobilizer - SRX

- Prerelease password communication with ECM
- Challenge/response with ECM

When an ignition key is inserted into the ignition lock cylinder and the ignition is switched ON, the encrypted code in the key is energized by the immobilizer coil surrounding the ignition lock cylinder. The energized transponder transmits a signal that contains its unique value, which is received by the BCM. The BCM then compares this value to the learned key code stored in memory. The BCM then performs one of the following functions:

- If the encrypted code value matches the values stored in the BCM memory, the BCM will send the prerelease password to the ECM via serial data.
- If the encrypted code unique value does not match the value stored in the BCM, the BCM will send the start disable message to the ECM via serial data.
- If the BCM is unable to measure the ignition key encrypted code value, the BCM will not send any messages to the ECM.

Engine Control Module (ECM)

When the ECM receives the BCM prerelease password, the ECM will challenge the password. The ECM sends this challenge back to the BCM via the serial data circuit. Both the ECM and BCM perform a calculation on this challenge. If the calculated response from the BCM equals the calculation performed by the ECM, the ECM will allow vehicle starting.

The ECM will disable vehicle starting if any of the following conditions occur:

- The prerelease password is invalid.
- The start disable password is sent by the BCM.
- No passwords are received. There is no communication with the BCM.
- The BCM calculated response to the challenge does not equal the calculation performed by the ECM.

Immobilizer Antenna

The immobilizer antenna contains an immobilizer coil which surrounds the ignition cylinder. The coil passively powers the key/fob located in the ignition key when the key is in the ignition. When powered, the key/fob transmits its unique value to the immobilizer antenna, which is then relayed to the BCM via a LIN serial data circuit. The immobilizer antenna also receives B+ and ground from the BCM.

Immobilizer antenna is used to:

1. Learn key/keys
2. To start vehicle with or without RF interference
3. To start vehicle when key/fob battery is dead

The Ignition Key/Fob

2010 Cadillac SRX

2010 ACCESSORIES & EQUIPMENT Immobilizer - SRX

The ignition key/fob encrypted value is fixed and unable to be changed. The immobilizer system uses the ignition key transponder value to determine if a valid ignition key is being used to start the vehicle. There are approximately 3 trillion possible encrypted code values. There are no visible electrical contacts. The keys are identified by + symbol in a circle stamped into the steel shank of the key.

Environment ID

Various modules throughout the vehicle learn a specific environment ID during the module programming process. The environment ID learned by each individual module matches the security code stored in the BCM, which is the environment ID master. Prior to starting, each of the modules which store a environment ID will compare their ID to that of the ID stored in the BCM. If all the IDs match, the engine starting process will continue. If the environment ID do not match, engine starting will be disabled.

Security Indicator

The BCM will command the instrument panel cluster to illuminate the security indicator when the ignition key is in the ON position to indicate a fault is noted in the immobilizer system and when the engine starting is disabled.

REMOTE VEHICLE SPEED LIMITING DESCRIPTION AND OPERATION

Certain vehicles equipped with OnStar® now have an additional feature that allows for remote limiting of the vehicle's speed. This OnStar® feature is called Stolen Vehicle Slow-Down and is now part of the OnStar® Stolen Vehicle Assistance service. This feature, when used in conjunction with local law enforcement and strict guidelines at the OnStar® Call Center, will slow the vehicle by interacting with the engine control system.

When the engine control system receives a valid request from the OnStar® telematics communications interface module, it will enter into a reduced engine power/vehicle speed limiting mode, which will decelerate the vehicle. Once the request is active the engine control module begins reducing engine torque to match requested vehicle speed and a REDUCED ENGINE POWER indication is displayed. No DTCs will be set during this process.

