

Remote Functions - Equinox & Terrain

SCHEMATIC AND ROUTING DIAGRAMS

REMOTE FUNCTION SCHEMATICS

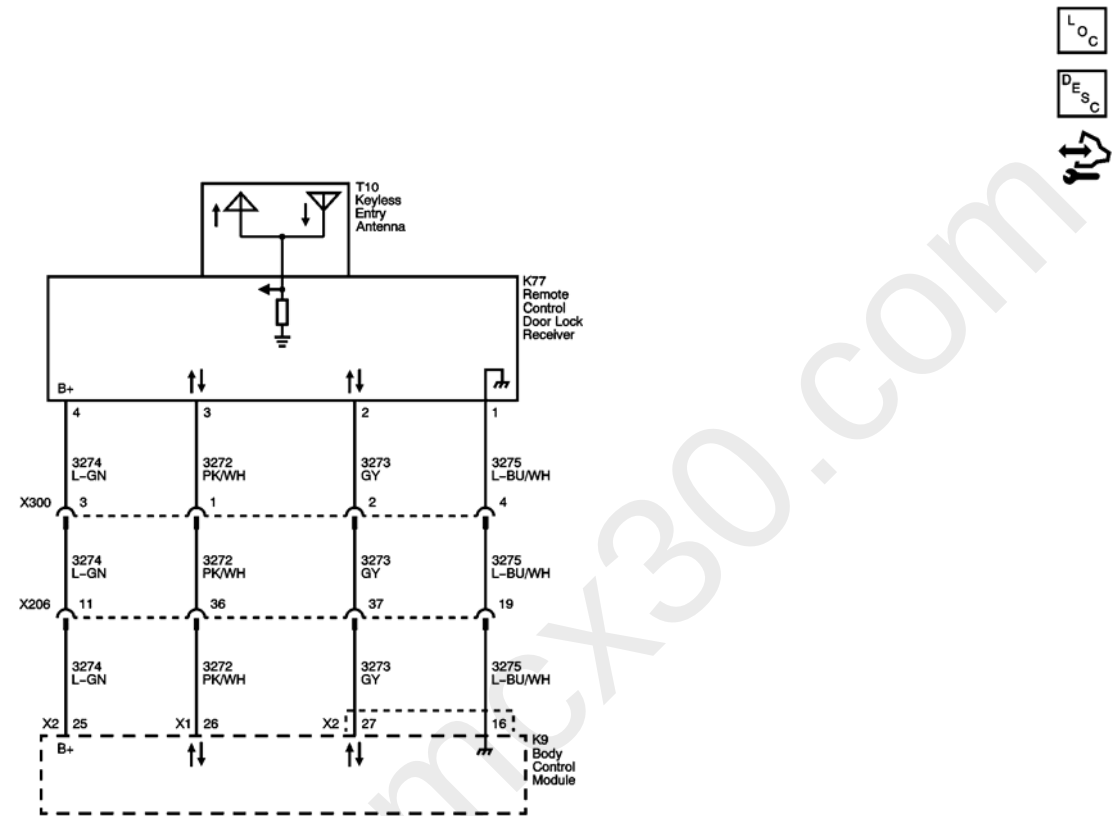


Fig. 1: View Of Remote Function Schematic
Courtesy of GENERAL MOTORS CORP.

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC CODE INDEX

DIAGNOSTIC CODE INDEX

DTC	Description
<u>DTC B3101</u>	B3101 00: Keyless Entry Data Link Circuit
<u>DTC B3105</u>	B3105 00: Keyless Entry System Key Fobs
<u>DTC B3106</u>	B3106 00: Keyless Entry Data Link
<u>DTC B3109-B3113</u>	B3109 00: Keyless Entry Transmitter 1 Battery

	B3110 00: Keyless Entry Transmitter 2 Battery B3111 00: Keyless Entry Transmitter 3 Battery B3112 00: Keyless Entry Transmitter 4 Battery B3113 00:: Keyless Entry Transmitter 5 Battery
<u>DTC B310D-B310F</u>	B310D 00: Keyless Entry Transmitter 6 Battery B310E 00: Keyless Entry Transmitter 7 Battery B310F 00: Keyless Entry Transmitter 8 Battery

DTC B3101

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 B3101 00

Keyless Entry Data Link Circuit

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
B+	B3101 00	B3101 00	-	-
Serial Data - Enable Line	B3101 00	B3101 00	B3101 00	B3101 00
Serial Data - Receive	B3101 00	B3101 00	B3101 00	B3101 00
Low Reference	-	B3101 00	-	-

Circuit/System Description

The body control module (BCM) communicates with the remote control door lock receiver through the keyless entry serial data circuits. When any button on the keyless entry transmitter is pressed, the transmitter sends a signal to the remote control door lock receiver. The remote control door lock receiver sends a function request to the BCM, depending on which button is pressed on the transmitter. The BCM receives the message and performs the appropriate function.

Conditions for Running the DTC

A button is pressed on the keyless entry transmitter.

Conditions for Setting the DTC

No response is received from the remote control door lock receiver after the BCM requests information from or

sends configuration commands to the remote control door lock receiver.

Action Taken When the DTC Sets

In case of power failure the remote control door lock receiver is disabled for 65 seconds, otherwise no action is taken.

Conditions for Clearing the DTC

- A current DTC will clear when the fault is no longer present.
- A history DTC will clear after 40 consecutive ignition cycles without a fault present.

Reference Information

Schematic Reference

Remote Function Schematics

Component Connector End Views

Component Connector End Views

Description and Operation

Keyless Entry System 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 K77 remote control door lock receiver.
2. Ignition OFF, doors closed, key out of the ignition switch, scan tool disconnected. It may take up to 2 minutes for all vehicle systems to power down. Test for less than 50 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 K77 remote control door lock receiver.
3. Ignition ON, verify that a test lamp illuminates between the B+ circuit terminal 4 and ground.

- If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the K9 BCM.
- 4. Ignition ON, test for less than 3 to above 5 V between the serial data circuit terminal 3 and ground after inserting key in ignition cylinder.
 - 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 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.
- 5. Disconnect the X1 and X2 harness connectors at the K9 BCM.
- 6. Test for less than 1 V between the serial data circuit terminal 27 and ground.
 - If greater than the specified range, test the serial data circuit for a short to voltage.
- 7. Ignition OFF, test for infinite resistance between the serial data circuit terminal 27 and ground.
 - If not the specified value, test the serial data circuit for a short to ground.
- 8. Test for less than 2 ohms between the K9 BCM terminal 27 X2 and K77 remote control door lock receiver terminal 2.
 - If greater than the specified range, test the serial data circuit for an open/high resistance.
- 9. If all circuits test normal, replace the K77 remote control door lock receiver. Check if the B3101 is no longer set as current.
- 10. After K77 remote control door lock receiver replacement, if B3101 is still current, replace the K9 BCM.

Repair Procedures

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

Control Module References for BCM or remote control door lock receiver replacement, programming and setup

DTC B3105

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 B3105 00

Keyless Entry System Key Fobs

Circuit/System Description

The body control module (BCM) monitors the number of keyless entry transmitters programmed. Until at least

one transmitter is programmed, the BCM determines a malfunction condition exists.

Conditions for Running the DTC

The BCM has been set up without transmitters being programmed.

Conditions for Setting the DTC

No keyless entry transmitter programmed to the BCM.

Action Taken When the DTC Sets

The keyless entry system is inoperative.

Conditions for Clearing the DTC

A current DTC is cleared when at least one transmitter has been programmed to the BCM.

Reference Information

Schematic Reference

Remote Function Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Keyless Entry System 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

Attempt to program the keyless entry transmitter. Refer to **Replacing Keys (Erases All Existing Keys)** . The transmitter should program.

Circuit/System Testing

1. Verify that the transmitter is the correct transmitter for the vehicle.
 - If not correct, replace the transmitter.
2. Attempt to program the transmitter. Refer to **Replacing Keys (Erases All Existing Keys)** . The transmitter should program.
 - If the transmitter does not program, replace the transmitter.

Repair Procedures

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

Control Module References for BCM replacement, setup, and programming

DTC B3106

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 B3106 00

Keyless Entry Data Link

Circuit/System Description

The remote control door lock receiver receives a signal from the keyless entry transmitters when a button is pressed; it then sends the request to the BCM.

Conditions for Setting the DTC

The transmitter that is sending a signal to the remote control door lock receiver is different from those transmitters stored in the body control module (BCM).

Action Taken When the DTC Sets

No action is taken.

Conditions for Clearing the DTC

- A current DTC will clear when the fault is no longer present and the ignition switch is cycled.
- The history DTC will clear after 40 consecutive ignition cycles without a fault present.

Reference Information

Schematic Reference

Remote Function Schematics

Component Connector End Views

Component Connector End Views

Description and Operation

Keyless Entry System 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 valid transmitter, press a button on the transmitter.
2. Verify that DTC B3106 is not set.
 - If the DTC is set, replace the K77 remote control door lock receiver.

Repair Procedures

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

Control Module References for remote control door lock receiver replacement, setup, and programming

DTC B3109-B3113

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 B3109 00

Keyless Entry Transmitter 1 Battery

DTC B3110 00

Keyless Entry Transmitter 2 Battery

DTC B3111 00

Keyless Entry Transmitter 3 Battery

DTC B3112 00

Keyless Entry Transmitter 4 Battery

DTC B3113 00:

Keyless Entry Transmitter 5 Battery

Circuit/System Description

With each press of a keyless entry transmitter button, a message containing the current battery state of the transmitter is sent to the remote control door lock receiver, along with the commanded keyless entry function. The remote control door lock receiver sends this to the body control module (BCM) to determine what action to perform.

Conditions for Running the DTC

A keyless transmitter button is pressed.

Conditions for Setting the DTC

The DTC sets after 3 consecutive low battery signals from the same programmed transmitter.

Action Taken When the DTC Sets

The keyless entry system is inoperative.

Conditions for Clearing the DTC

The DTC is cleared when a normal transmitter voltage signal is received from the programmed transmitter that set the DTC.

Reference Information

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Remote Function Schematics

Connector End View Reference

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- **Circuit Testing**
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- **Wiring Repairs**

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

Verify none of the following DTCs are set:

- DTC B3109
 - DTC B3110
 - DTC B3111
 - DTC B3112
 - DTC B3113
- If any of the DTCs are set, replace the battery in the appropriate keyless entry transmitter. Operate the transmitter 3 consecutive times. If the DTC resets, replace the keyless entry transmitter.

Repair Procedures

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

- **Replacing Keys (Erases All Existing Keys)**
- **Control Module References** for remote control door lock receiver replacement, setup, and programming

DTC B310D-B310F

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 B310D 00

Keyless Entry Transmitter 6 Battery

DTC B310E 00

Keyless Entry Transmitter 7 Battery

DTC B310F 00

Keyless Entry Transmitter 8 Battery

Circuit/System Description

With each press of a keyless entry transmitter button, a message containing the current battery state of the transmitter is sent to the body control module (BCM) along with the commanded keyless entry function.

Conditions for Running the DTC

A keyless transmitter button is pressed.

Conditions for Setting the DTC

The DTC sets after 3 consecutive low battery signals from the same programmed transmitter.

Action Taken When the DTC Sets

The keyless entry system is inoperative.

Conditions for Clearing the DTC

The DTC is cleared when a normal transmitter voltage signal is received from the programmed transmitter that set the DTC.

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- **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 none of the following DTCs are set:

- DTC B310D
- DTC B310E
- DTC B310F
- If any of the DTCs are set, replace the battery in the appropriate keyless entry transmitter. Operate the transmitter 3 consecutive times. If the DTC resets, replace the keyless entry transmitter.

Repair Procedures

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

Replacing Keys (Erases All Existing Keys)

SYMPTOMS - REMOTE FUNCTIONS

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

1. Perform **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 link.
2. Review the system operation in order to familiarize yourself with the system functions. Refer to **Keyless Entry System Description and Operation**.

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the Keyless Entry 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:

- **Keyless Entry System Malfunction**
- **Remote Vehicle Start Malfunction**

KEYLESS ENTRY SYSTEM 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.

Circuit/System Description

The keyless entry system is a vehicle entry device. The keyless entry will unlock the vehicle doors or open the rear compartment when a corresponding button on the keyless entry fob/key is pressed. This is accomplished by the keyless entry fob/key sending a radio frequency to the remote control door lock receiver, which then sends the signal to the body control module (BCM). The BCM interprets the signal and activates the requested function. A low fob/key battery or radio frequency (RF) interference from aftermarket devices such as 2-way radios, power inverters, cellular phone chargers, computers, etc. may cause a system malfunction. High RF traffic areas, such as gas stations which use pay-at-the-pump RF transponders, may also cause interference that could lead to a malfunction.

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

Attempt to learn the keyless entry fob/key, refer to Replacing Keys (Erases All Existing Keys) . The fob/key should learn.

Circuit/System Testing

1. Verify that the fob/key is the correct fob/key for the vehicle.
 - If not the correct fob/key, replace the fob/key.
2. Place the fob/key on the test pad of the J 43241 and press each fob/key button one at a time. The tester should sound a tone and illuminate a green light with each button press.
 - If one or more buttons does not sound the tone and illuminate the green light, replace the fob/key battery and retest with the J 43241. If the condition continues after battery replacement, replace the fob/key.
3. Operate the fob/key while observing the scan tool Fob Function parameter for the appropriate fob/key. The parameter should correspond with the function selected on the fob/key.
 - If the parameter does not match the function selected on the fob/key, replace the fob/key.
4. Attempt to learn the fob/key, refer to Replacing/Adding Keys. The fob/key should learn.
 - If the fob/key does not learn, test the keyless entry antenna for an open/high resistance. If the circuit tests normal, replace the K9 BCM.

Repair Procedures

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

- Replacing Keys (Erases All Existing Keys)
- Control Module References for remote control door lock receiver replacement, setup, and programming

REMOTE VEHICLE START 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

Remote vehicle start begins as a radio frequency message received by the BCM (BCM) from a keyless entry transmitter. The BCM monitors system conditions such as content theft deterrent, hood ajar status, and body DTCs to determine if a remote vehicle start event will occur. If conditions are determined to be acceptable, the remote vehicle start message is sent to the engine control module (ECM). The ECM monitors system conditions such as engine control parameters and vehicle theft deterrent to determine if engine starting will be allowed. If conditions are acceptable, the ECM will initiate engine starting. During the engine run time in a remote vehicle start attempt, before the operator enters the vehicle, the ECM may discontinue engine operation if system conditions require it or a message is received from the BCM requesting the engine be turned OFF.

Diagnostic Aids

NOTE: If the vehicle has a current vehicle DTC that illuminates the malfunction indicator lamp (MIL), the cause of the DTC must be diagnosed before proceeding with the Remote Vehicle Start Inoperative diagnostic.

The remote vehicle start system will not operate if any of the following conditions are present:

- A current vehicle DTC that illuminates the malfunction indicator lamp (MIL)
- The vehicle is in valet mode.
- More than 2 remote starts have been attempted.
- The hazard switch is in the ON position.
- A current hazard switch DTC is set.
- The vehicle hood is ajar.
- A current hood ajar DTC is set.
- The content theft deterrent system detects an alarm trigger.
- Excessive engine RPM
- Excessive coolant temperature
- Accelerator pedal position greater than 0 percent
- Vehicle not in park
- Vehicle theft deterrent malfunction
- A current automatic transmission shift lock control system DTC is set.
- A vehicle speed sensor signal is detected by the ECM.

Reference Information

Schematic Reference

Remote Function Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Keyless Entry System 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 that remote vehicle start is enabled through vehicle personalization.
 - If remote vehicle start is not enabled, use vehicle personalization to turn on remote vehicle start functionality. Refer to the vehicle owners manual.
2. Verify that the keyless entry functions operate with all available keyless entry transmitters.
 - If the keyless entry system does not function properly, refer to **Keyless Entry System Malfunction**.
3. Observe the scan tool BCM Remote Start Diagnostic Status History and the ECM Remote Vehicle Start Disable History parameters. Verify that no Diagnostic Status History or Start Disable items are present.
 - If remote vehicle start disable history items are present, refer to the appropriate subsection in which the failure occurred.
4. Verify the scan tool BCM Content Theft Trigger History parameters displays None.
 - If not specified value, refer to **Content Theft Deterrent Malfunction**.

REPAIR INSTRUCTIONS

REMOTE CONTROL DOOR LOCK RECEIVER REPLACEMENT

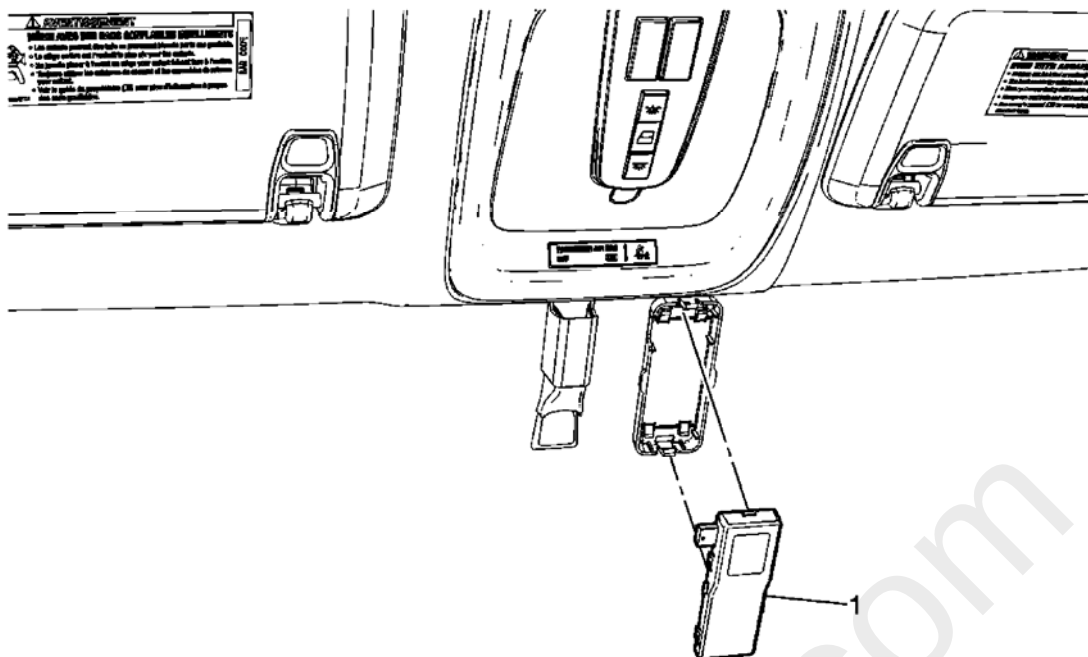


Fig. 2: Identifying Remote Control Door Lock Receiver
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure: Remove the inside rearview mirror mount plate cover.	
1	Remote Control Door Lock Receiver Procedure 1. Disconnect the electrical connector. 2. Unsnap the receiver from the windshield bracket. 3. For programming and set up, refer to <u>Control Module References</u>

REMOTE CONTROL DOOR LOCK TRANSMITTER PROGRAMMING

Because the keyless entry transmitter and the vehicle key are integrated as one unit, the transmitter is learned during the normal key learn procedure. Except for the vehicle key learn, there is no specific learn procedure for the keyless entry transmitter.

DESCRIPTION AND OPERATION

KEYLESS ENTRY SYSTEM DESCRIPTION AND OPERATION

The keyless entry system is a vehicle entry device. The keyless entry system is used in conjunction with the

remote control door lock receiver and the body control module (BCM) to remotely activate certain vehicle features. Keyless entry will lock/unlock the doors/liftgate when a corresponding button on the keyless entry transmitter is pressed. This is accomplished by the transmitter sending a radio frequency to the remote control door lock receiver. The remote control door lock receiver passes this signal to the BCM via serial data. The BCM interprets the signal and performs the requested function. A low transmitter or vehicle battery or radio frequency interference from aftermarket devices, such as 2-way radios, power inverters, computers, etc., may cause a system malfunction. High radio frequency traffic areas may also cause interference that could lead to a malfunction. Keyless entry allows you to operate the following components:

- Door locks
- Liftgate lock
- Power liftgate, if equipped
- Remote vehicle starting
- Illuminated entry lamps
- Vehicle locator/Panic alarm

The keyless entry system has the following components:

- Keyless entry transmitters
- Remote control door lock receiver
- BCM

Keyless Entry Transmitters

The keyless entry transmitters are used to lock and unlock the vehicle door while away from the immediate area of the vehicle. Vehicles without remote vehicle start will operate at a distance of up to 20 m (65 ft) away, except for Japanese and South Korean vehicles, which are limited to 4 m (16 feet). Vehicles with remote vehicle start will operate at a distance of up to 60 m (195 ft) away. Up to 8 transmitters may be programmed to a single vehicle.

Remote Control Door Lock Receiver

The remote control door lock receiver is responsible for receiving signals from the keyless entry transmitters. The remote control door lock receiver receives constant B+ and ground and communicates with the BCM via two serial data circuits. When a signal is received by the remote control door lock receiver, a message is sent to the BCM via serial data indicating the function that has been requested.

Body Control Module (BCM)

The BCM receives the function message from the remote control door lock receiver when a transmitter request is received. The BCM will perform the requested function.

Unlock Driver Door Only

Momentarily press the transmitter UNLOCK button in order to perform the following functions:

- Unlock only the driver door.
- Illuminate the interior lamps for a determined length of time, or until the ignition is turned ON.
- Flash the exterior lights, if enabled through personalization.
- Disarm the content theft deterrent system.
- Deactivate the content theft deterrent system when in the alarm mode.

Unlock All Doors - Second Operation

Momentarily press the transmitter UNLOCK button a second time, within 5 seconds of the first press, to perform the following functions:

- Unlock the remaining doors.
- Unlock the liftgate.

Lock All Doors

Press the transmitter LOCK button to perform the following functions:

- Lock all vehicle doors.
- Immediately turn OFF the interior lamps.
- Flash the exterior lights, if enabled through personalization.
- Chirp the horn, if enabled through personalization.
- Arm the content theft deterrent system.

Power Liftgate, if equipped

Press and hold the power liftgate button to perform the following functions:

- Open or close the liftgate using the power liftgate function.
- Flash the tail lamps.
- Sound the interior power liftgate chime.

Vehicle Locator/Panic Alarm

A single press of the panic button performs the following functions. Some functions may be dependent on personalization settings:

- Pulse the horn 3 times.
- Flash the exterior lamps 3 times.

A press and hold of the panic button performs the following functions:

- Illuminate the interior lamps.
- Pulse the horn and flash the exterior lamps for 30 seconds or until the following conditions occur:

- The panic button is pressed.
- The ignition switch is turned to the RUN position with a valid key.

Remote Vehicle Start, if equipped

NOTE: This pertains to vehicles without RPO UYS Navigation Radio and with rearview camera display in the inside rearview mirror. If a vehicle is remote started in the dark and the unlock button is selected on the key fob, the rearview camera display will come on in the rearview mirror. This is a normal behavior. The key point here is darkness, If started in daylight this does not occur.

The remote vehicle start function allows engine starting while not in the vehicle. It also allows the vehicle HVAC system and other vehicle systems to enable, providing a comfortable vehicle upon entry. Remote Vehicle Start functions have an operating range of up to 195 feet, depending on conditions. The remote vehicle start sequence begins by pressing and releasing the lock button and then pressing and holding the remote vehicle start buttons on the keyless entry transmitter. The turn signal lamps will illuminate to indicate the vehicle has received the remote start request. Each time an remote vehicle start is performed, the vehicle doors are locked, however they may then be unlocked/locked with the transmitter or vehicle key at any time. Once activated, the engine is allowed to run for 10 minutes. The remote vehicle start time may be extended by an additional 10 minutes by again pressing and releasing the lock button and then pressing and holding the remote vehicle start buttons on the transmitter. This feature is called a remote vehicle start continue and allows a maximum of 20 minutes of engine running. If the remote vehicle start continue is performed at 7 minutes into the initial 10 minute time-out, a total of 17 minutes of engine running would occur. The remote vehicle start event may be suspended at any time by pressing only the remote vehicle start button on the transmitter or by entering the vehicle and turning ON the hazard lamps.

In between ignition cycles, only 2 remote vehicle start events may occur or be attempted. Once 2 events or attempts have been made, future remote vehicle start events will be suspended until the vehicle is started using the ignition.

Enable/Disable Remote Vehicle Start

Using the driver information center, remote vehicle start may be enabled or disabled as a part of vehicle personalization. Refer to the vehicle owners manual for more information.

Hood Ajar Switch

The hood switch provides status of the hood to the BCM for remote vehicle start purposes. The switch is integrated into the hood latch assembly. The hood ajar switch provides 2 separate inputs to the BCM. These separate inputs allow the BCM to actively monitor for a hood ajar switch fault.

Remote Vehicle Start Circuit Description

The BCM receives a signal from the keyless entry transmitter indicating a remote vehicle start request. A message is then sent to the BCM which determines if a crank request message will be sent to the ECM to allow engine starting. To determine if conditions are correct for an remote vehicle start event, the BCM will ensure the following conditions are met:

- All vehicle doors are closed.
- A valid hood ajar switch closed signal is present.
- The doors are locked.
- The hazard switch is OFF.
- The vehicle power mode is correct.
- No content theft deterrent alarm triggers are present.
- The vehicle is not in valet mode, if equipped.

When the BCM determines all conditions meet those required for an remote vehicle start event, a message is sent via serial data to the ECM. The ECM relies on the remote vehicle start message from BCM to enable remote vehicle start when the crank request signal is received. If the ECM does not receive a valid remote vehicle start message, it will not attempt to start the engine. While the ECM is in remote vehicle start mode it will suspend engine operation if any of the following additional conditions occur:

- Vehicle speed is greater than 0.
- Transmission is not in PARK.
- Excessive engine coolant temperature
- Low oil pressure
- The malfunction indicator lamp (MIL) is commanded ON.
- Engine crank time is greater than 30 seconds.
- Excessive engine speed
- Accelerator pedal position too high
- Remote start timer equals 0.
- Immobilizer system indicates tamper

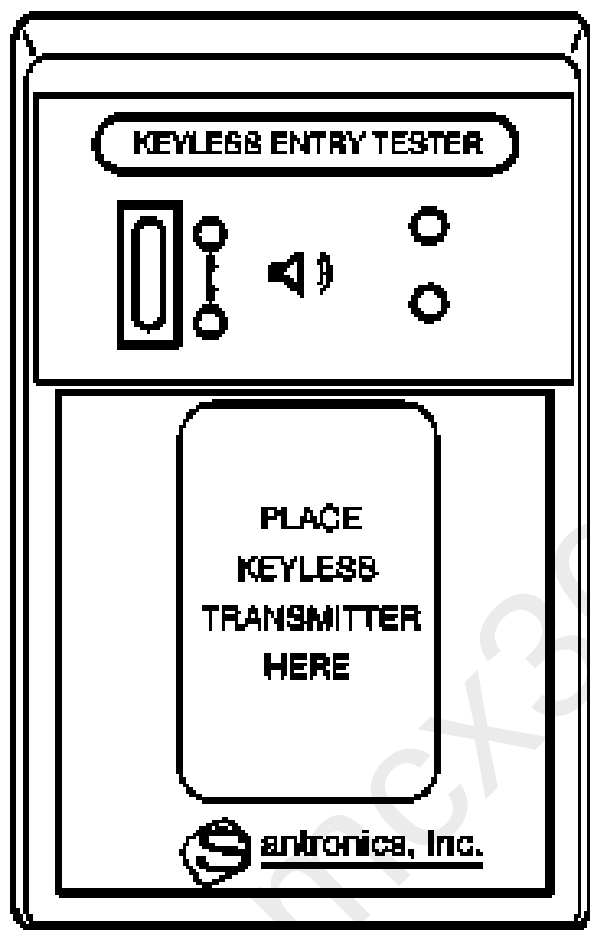
Keyless Entry Personalization

Vehicle lock/unlock functions and remote vehicle start remote vehicle start settings may be personalized. For functional descriptions and personalization instructions, refer to the vehicle owners manual.

SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

Illustration	Tool Number/ Description



J 43241
Keyless Entry Tester