Component Procedures: Locks

Table of Contents

Component Procedures: Locks

Power Door Locks (Article 10456)

Door Lock System Components

The power door lock system consists of the following components:

- Door lock switch —located in the center of the instrument panel
- Driver door lock switch
- Passenger door lock switch
- Body control module (BCM)
- Driver door latch
- Passenger door latch

Figure 1: Power Door Locks Block Diagram

Door Lock System Controls

The power door lock system can be controlled by any of the following:

- Power door lock switch activation
- Keyless entry lock or unlock command
- Delayed locking command
- Automatic door lock command

Door Lock and Unlock Operation

When a door lock switch is activated in the lock or unlock position the BCM will receive a ground signal on either the door lock switch lock or unlock signal circuits.

The BCM, upon receipt of a lock switch lock or unlock signal, will supply battery voltage to the door lock actuator lock or unlock control circuits. Since the opposite side of the lock actuator is connected to ground through the other lock actuator control circuit the doors will then lock or unlock as commanded.

The following three circuits are used to operate the lock:

- Driver door unlock
- Passenger door unlock
- All door lock

The driver door lock actuator is isolated so it can be unlocked by itself using the keyless entry transmitter .

Automatic Door Lock Operation

This feature can be personalized to driver preference.

The BCM will automatically lock the vehicle doors if the following conditions exist:

- All vehicles doors are closed.
- The ignition is in the ON position
- The vehicle is shifted out of Park.

The BCM will then unlock the doors when vehicle is shifted back into Park.

Delayed Locking Operation

With any door open and a door lock switch is activated in the lock position, the BCM will give three audible chimes. When the door is closed, the BCM will cycle the internal door lock relay to lock the doors after approximately five seconds. This feature can be overridden by activating the door lock switch a second time and the doors will lock even with a door open.

Lockout Prevention Operation

The BCM will lock all doors and unlock the driver door with a door lock switch lock activation if a vehicle door is open and the ignition key is fully inserted in the ignition. The lockout prevention feature can be overridden if a lock command is received from the keyless entry system .

Door Lock/Indicator Schematics (Article 10494)

Figure 1: Door Locks and Indicators

Figure 2: Door Lock Controls

Release Systems Schematics (Article 10495)

Figure 1: Rear Compartment

Door Lock and Ignition Lock Folding and Non-Folding Key Cutting (Article 12559)

High Security keys are available from the service parts system.

Obtain the key code from GM Dealer World, Parts, Key Code Look Up system.

If you have the key code and access to a Triax-E., BD Laser or other code key cutting machine from the GM Dealer Equipment Catalog, you may cut a new key.

If you have the original key and access to a Matrix S, BD Laser or other key duplicating machine, you may duplicate the key.
If you do not have a high security key cutting machine, order the side cut key from the service parts system. Include the key code in the NOTE field. Indicate the timing and the method of the shipment.
Inspect the new key operation in the lock cylinder. Ensure the new key operates effectively.

Instrument Panel Compartment Door Lock Cylinder Coding (Article 12563)

The internal lock cylinder only uses 4 of the 8 cut positions, 5–8. The tumbler positions are on both sides, are not self-retaining, and are not snap in.
- Hold the instrument panel (I/P) cylinder assembly (4) so the side with the tumbler spring pocket located closest to the head of the cylinder is facing up. This side of the cylinder uses left tumbler. Click for full-size image
- Insert the tumbler spring (6) into each of the 2 spring pockets of the cylinder assembly. This side uses left tumblers.
- The first tumbler (5) to be loaded (closest to the head of the cylinder) will be the fifth key cut position, which is the fifth number in the key code. Install the tumbler in the slot over the spring. Install the remaining tumblers following the key code and same process, pressing the tumblers in place until they are secure.
- Rotate the cylinder assembly. Insert the tumbler spring (6) into each of the spring pockets of the cylinder assembly. This side uses right tumblers.
- The first tumbler (5) to be loaded will be the sixth key cut position, the sixth number in the key code. Install the first tumbler in the slot over the spring. Install the remaining tumblers following the key code and same process, pressing the tumblers in place until they are secure.
- Inspect for correct loading of the tumblers by inserting the key into the cylinder. All tumblers should drop flush with the lock cylinder body diameter.
- Insert the sleeve (3) into the cylinder, the inner sleeve slot must be oriented to the head cylinder side. Rotate the sleeve until the slot match with the tab.
- Insert the retainer spring (2) into the pocket and the tumbler retainer (1) over the spring. Make sure the tumbler retainer is properly seated and cannot pull out.
- Lightly lubricate the outside surface in the tumbler area of the lock body and down the key slot using the provided grease. Insert and extract the key 5 times to lubricate the keyway.
- When the key is removed, the lock should stay together.
- Insert the key and function the lock 3 times to distribute the grease inside the sleeve.
- Verify the key position for inserting the lock into the I/P compartment door.

Front Side Door Lock Cylinder Coding (Article 12562)

Special Tools
BO-49753 - Assembly Tool
The door lock cylinder uses 8 of the 8 cut positions. The tumbler positions are staggered from side to side, 4 on one side and 4 on the other, are not self-retaining, and are not snap in.
- Hold the door lock cylinder (1) so the side with the 4 tumbler spring pockets faces up, pocket nearest to the cylinder head.
- Insert the tumbler springs (2) into the 4 spring pockets. This side uses left tumblers.
- Install the tumbler (3) for key cut position one in the slot nearest to the front of the lock cylinder. Install the remaining tumblers, key cut positions 3, 5, and 7, following the key code and same process. Press the tumblers in place until they are secure.
- Check the correct loading of the tumblers by inserting the key into the cylinder. All tumblers should be flush with the lock cylinder body.
- Turn the cylinder so the side with the 4 tumbler spring wells faces up. This side uses right tumblers.
- Insert the tumbler springs into the 4 spring pockets.
- The first tumbler closest to the front of the lock cylinder to be loaded will be the second key cut position, the second number in the key code. Install the remaining tumblers for the key cut positions 4, 6, and 8. Press the tumblers in place until they are secure.
- Insert the key and lightly lubricate the cylinder body diameter and tumbler surfaces and a small amount in the head of the cylinder using the supplied grease.
- Insert the sleeve (4) onto the cylinder assembly.
- Insert the clutch (5) and driver (6) onto the cylinder (1).
- Load the cylinder into the BO-49753 - assembly tool so that the clutch (1) indexes with the notch in the opening of the tool (2). Click for full-size image

- Load the assembly tool with the lock cylinder into a vice and tighten the vice ONLY enough to hold the tool and lock the cylinder in place. Click for full-size image
- Insert the roll pin (7) into the driver (6) and install it using a 1/16 inch pin punch. Click for full-size image
- Insert the buffer (8) in the case (9), verify the buffer is properly seated.
- Install the free wheel pin (11) in the sleeve (4) and clutch (5) and insert the assembly into the case (9).
- With the lock cylinder assembly installed in the case (9), install the retainer (10) and stake the retainer in place using a small punch and hammer to peen the case material onto the exposed ends of the installed retainer (10).
- Insert the key into the lock and function the lock to check for proper assembly and smooth operation.

Lock Cylinder Coding - Ignition (Article 12565)

The ignition lock cylinder uses 8 key cut positions, 1–8. The ignition cylinder tumblers (3) are located on alternate sides of the cylinder (5). They are not snap-in and are not self-retaining. It follows the key code with the first tumbler being the first depth of the key code, closest to the head of the key.
- Hold the ignition cylinder assembly (5) so the side with the tumbler spring pocket located closest to the head of the cylinder is facing up.
- Insert the tumbler spring (7) into each of the 4 spring pockets of the cylinder assembly. This side of the cylinder used left tumblers.
- The first tumbler (3) to be loaded will be the first key cut position, which is the first number in the key code. Install the tumbler in the slot over the spring. Install the remaining tumblers following the key code and same process, pressing the tumblers in place until they are secure.
- Rotate the cylinder assembly. Insert the tumbler spring into each of the spring pockets of the cylinder assembly. This side of the cylinder used right tumblers.
- The first tumbler (3) to be loaded will be the second key cut position, the second number in the key code. Install the first tumbler in the slot over the spring. Install the remaining tumblers following the key code and same process, pressing the tumblers in place until they are secure.
- Inspect for correct loading of the tumblers by inserting the key into the cylinder. All tumblers should drop flush with the lock cylinder body diameter.
- With the key in the cylinder assembly insert the round connector (6), insert the retainer spring (2) in the retainer slot located in the cylinder assembly. Insert the retainer (1) lining it up in the slot over the spring. Depress the retainer and hold.
- Insert the cylinder into the sleeve (4) as shown in the print. Make sure the actuator stays located properly in the cylinder.
- When the key is removed, the lock should stay together.
- Lightly lubricate the outside surface in the tumbler area of in the lock body and down the key slot using the provided grease. Insert and extract the key 5 times to lubricate the keyway.
- Insert the key and function the lock 3 times to distribute the grease inside the sleeve.
- Verify the key position for inserting the lock into the column.

Rear Compartment Lid Lock Cylinder Coding (Article 12566)

The door lock cylinder uses 8 of the 8 cut positions, 1–8. The tumbler positions are staggered from side to side, 4 on one side and 4 on the other, are not self-retaining, and are not snap in.
- Hold the cylinder (5) so the side with the 4 tumbler spring pockets nearest the cylinder head faces up. This side uses left tumblers. Click for full-size image
- Insert the tumbler springs (8) into the 4 spring pockets.
- Install the tumbler (6) for key cut position one in the slot nearest to the front of the lock cylinder.
Install the remaining tumblers, key cut positions 3, 5, and 7, following the key code and same process. Press the tumblers in place until they are secure.
- Check the correct loading of the tumblers by inserting the key into the cylinder. All tumblers should be flush with the lock cylinder body.
- Turn the cylinder so the opposite side spring pockets faces up. This side uses the right tumbler.
- Insert the tumbler springs into the 4 spring pockets.
- The first tumbler closest to the front of the lock cylinder to be loaded will be the second key cut position, the second number in the key code. Install the remaining tumblers for the key cut positions 4, 6, and 8. Press the tumblers in place until they are secure.
- Insert the key and lightly lubricate the cylinder body diameter and tumbler surfaces and a small amount in the head of the cylinder using the supplied grease.
- Install 2 springs (4) into the 2 spring pockets in the head of the lock cylinder.

- Holding the tumblers snap the shutter assembly (3) onto the cylinder.
- Insert the cylinder into the case assembly (7) and install the cap (2) and the gasket double (1) around the cap.
- Add the torsion spring (9).
- Insert the rod clip (11) in the lever (10) and place it in the cylinder assembly.
- Insert the E-clip (12) to securely hold the lever to the cylinder.
- Insert the key into the lock and rotate it to check for proper assembly and smooth operation.

Door Lock and Ignition Lock Folding Key Blade Removal (Article 12560)

Special Tools
BO-51098 - Flip Key Blade Fixture
For equivalent region tools, refer to Special Tools .
- Insert the RKE transmitter in the fixture as shown. Click for full-size image
- Using the BO-51098 - fixture , drive the retention pin from the transmitter assembly as shown. Click for full-size image
- Remove the key blade from the transmitter assembly. Click for full-size image

Vehicle Access - Fastener Specifications (Article 10496)

Application Specification
Metric English
Front Side Door Lock Cylinder Clamp Screw 5 Nm 44 lb in
Front Side Door Latch Screws 10 Nm 89 lb in
Front Side Door Interlock Striker Bolt 10 Nm 89 lb in
Front Side Door Outside Handle Screw 10 Nm 89 lb in
Front Side Door Latch Striker Screws 25 Nm 18 lb ft
Front Side Door Interlock Striker Plate Screws 10 Nm 89 lb in
Rear Compartment Lid Latch Bolts 10 Nm 89 lb in
Rear Compartment Lid Latch Striker Bolts 10 Nm 89 lb in

All New Technical Service Bulletins (itype_432)

Tsbs
- Diagnostic Tip - Unable to Learn RKE Transmitters (PIT4945H, 2019/02/19)
- Diagnostic Tip - Security Light on Intermittently / No Crank/No Start or Start Stall / Keyless Access Vehicles May Display No Remote/Fob Detected / Poor or No RKE Range / Service TPM (PIC5650M, 2025/08/06)
- Key Code Security Rules and Information on GM KeyCode Look-Up Application (U.S. Only) (10-00-89-009G, 2025/07/23)

All Technical Service Bulletins (itype_100)

Tsbs
- Normal Characteristic - Heated Seat Operation After Performing A Remote Vehicle Start (RVS) (PIC5322D, 2015/05/29)
- Key & Transmitter Programming (PIC6401, 2020/02/03)
- Requesting a New Key Code for Customer with Lost or Stolen Keys (12-00-89-002E, 2021/11/17)
- N192223230 — Incorrect Service Ignition Key (N192223230, 2020/01/08)
- Information for Fleet Vehicles - Ignition Key, Fob and Key Rings Configuration (14-00-89-004D, 2017/10/23)
- 14294C – Ignition Key (14294C, 2021/03/23)
- Tire Monitor System - TPMS Lamp On, No Tire Pressures Displayed (PI1241, 2014/05/16)
- Recall 14V346000: Ignition Key Replacement (NHTSA14V346000, 2014/06/20)
- Information on How to Prevent Inadvertent Vehicle Starting from Key Fob or OnStar Mobile Application (17-NA-244, 2017/07/25)
- Diagnostic Tip - Key Does Not Fold Or Will Not Stay Closed (PIC4788G, 2016/06/23)
- Key Cutting Procedure for Obtaining Replacement Key (09-00-89-029L, 2014/04/22)
- Key Code Security Rules and Information on GM KeyCode Look-Up Application (U.S. Only) (10-00-89-009G, 2025/07/23)
- Vehicles with Key Codes Improperly Handled by Third Party (44180-03, 2017/03/23)
- Intermittently Key Will Not Rotate in Door or Ignition Lock Cylinder (PI0091B, 2015/04/28)
- Information on Poor, Limited, Reduced Remote Keyless Entry (RKE) or Remote Vehicle Start (RVS) Range (PI1018A, 2015/02/05)
- Power Door Locks Unlock Unwanted After Auto Locking (PIC6014A, 2023/03/09)

- Diagnostic Tip - Unable to Learn RKE Transmitters (PIT4945H, 2019/02/19)
- Information on Using MyBuick, MyCadillac, MyChevrolet, and MyGMC Phone Applications to Control GM Accessory Remote Start Kits (16-NA-355, 2018/10/22)
- Locks - Key Code Security Rules, Applications (Canada) (10-00-89-010C, 2013/07/12)
- Intermittent Remote Keyless Entry Inoperative (PIT5119F, 2017/11/20)
- Diagnostic Tip - Security Light on Intermittently / No Crank/No Start or Start Stall / Keyless Access Vehicles May Display No Remote/Fob Detected / Poor or No RKE Range / Service TPM (PIC5650M, 2025/08/06)
- Keyless Start Transmitter - Poor Appearence After Blade Removal (15-09-83-001A, 2015/07/20)

Customer Interest Bulletins (itype_109)

Tsbs
- Keyless Start Transmitter - Poor Appearence After Blade Removal (15-09-83-001A, 2015/07/20)

Repair Tips (itype_110)

Tsbs
- Locks - Key Code Security Rules, Applications (Canada) (10-00-89-010C, 2013/07/12)
- Tire Monitor System - TPMS Lamp On, No Tire Pressures Displayed (PI1241, 2014/05/16)

Symptoms - Vehicle Access (Article 10470)

- Perform the Diagnostic System Check - Vehicle before using a symptom table in order to verify that all of the following conditions are true:
- There are no DTCs set.
- The control modules can communicate via the serial data link.
- Review the system description and operation in order to familiarize yourself with the system functions. Refer to the following:
- Luggage Compartment Description and Operation
- Power Door Locks Description and Operation
- Door Ajar Indicator Description and Operation

Visual/Physical Inspection
- Inspect for aftermarket devices which could affect the operation of the power door lock s or trunk release. Refer to Checking Aftermarket Accessories .
- Inspect the easily accessible or visible system components for obvious damage or conditions which could cause the symptom.

Intermittent
Thoroughly inspect the wiring and connectors. An incomplete inspection of the wiring and connectors may result in misdiagnosis causing part replacement with the reappearance of the malfunction. If an intermittent malfunction exists, 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:
- Door Ajar Indicator Malfunction
- Power Door Locks Malfunction
- Trunk Release Malfunction
- Trunk Ajar Indicator Malfunction
- Door Will Not Open/Close, Door Binding, or Locks, Handles, or Cylinders Do Not Function

Power Door Locks Malfunction (Article 10469)

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

Diagnostic Fault Information
Circuit Short to Ground Open/High Resistance Short to Voltage Signal Performance
BCM B+ B3125 02, B3130 02, B3135 02 B3125 02, B3130 02, B3135 02 — —
Central Door Lock Switch Lock Signal B3150 00 1 1 —
Central Door Lock Switch Unlock Signal B3140 00 2 2 —
Driver Door Lock Switch Lock Signal B3150 00 4 4 —
Driver Door Lock Switch Unlock Signal B3150 00 5 5 —
Driver Door Lock Switch Ground — 3 3 —
Passenger Door Lock Switch Lock Signal B3150 00 6 6 —

Passenger Door Lock Switch Unlock Signal B3150 00 7 7 —
Passenger Door Lock Switch Ground — 8 — —
Door Latch Control B3125 02, B3130 02, B3135 02 B3125 04, B3130 04, B3135 04 B3125 01, B3130 01, B3135 01 —
Driver Door Lock Motor Lock Control B3125 02, B3130 02, B3135 02 B3125 04, B3130 04, B3135 04 B3125 01, B3130 01, B3135 01 —
Door Lock Actuator Unlock Control B3125 02, B3130 02, B3135 02 B3125 04, B3130 04, B3135 04 B3125 01, B3130 01, B3135 01 —
1. Central Door Lock Switch Lock Inoperative 2. Central Door Lock Switch Unlock Inoperative 3. Driver Door Lock Switch Inoperative 4. Driver Door Lock Switch Lock Inoperative 5. Driver Door Lock Switch Unlock Inoperative 6. Passenger Door Lock Switch Lock Inoperative 7. Passenger Door Lock Switch Unlock Inoperative 8. Passenger Door Lock Switch Inoperative

Circuit/System Description

The body control module (BCM) monitors the voltage level of the door lock and door unlock signal circuits. When the central door lock switch is in the open position, the voltage level in the signal circuit will be near 12 V. When the central door lock switch is pressed to the lock or unlock position, a signal will be sent to the BCM requesting a lock or unlock command.

The body control module (BCM) powers the reversible door latch assemblies by providing battery positive voltage and ground to the appropriate lock and unlock control circuits of the door latch assemblies. The lock and unlock control circuits of the rear door s and passenger door latch assemblies are all connected together. When the door latch assemblies are not active, all actuator lock and unlock control circuits are supplied a floating voltage used by the BCM to perform diagnostic functions on the circuits. Transitioning of the lock actuator s to the lock or unlocked position depends upon which control circuits receive voltage and which control circuits receive ground.

Diagnostic Aids

Verify the smooth and consistent mechanical operation of each part of the door latch system prior to performing extensive electrical diagnostics

Any door that does not function smoothly or consistently, refer to Door Will Not Open/Close, Door Binding, or Locks, Handles, or Cylinders Do Not Function .

Reference Information

Schematic Reference
Door Lock/Indicator Schematics
Connector End View Reference
Component Connector End Views
Description and Operation
Power Door Locks Description and Operation
Electrical Information Reference
- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

Scan Tool Reference
Control Module References for scan tool information

Circuit/System Verification

- Ignition ON.
- Verify door latches LOCK and UNLOCK when pushing the appropriate switch on the S13P Door Lock Switch—Passenger.
- If the door latches do not LOCK or UNLOCK Refer to Circuit/System Testing — Passenger Door Lock Switch Malfunction.
- If the door latches LOCK and UNLOCK
- Verify the scan tool Central Door Lock Switch on Console parameter changes from Inactive to Lock and Unlock when pushing the appropriate switch on the S13D Door Lock Switch—Driver.
- If the value is always Inactive Refer to Circuit/System Testing — Driver Door Lock Switch Malfunction .
- If the value changes from Inactive to Lock only Refer to Circuit/System Testing — Driver Door Lock Switch Malfunction .
- If the value changes from Inactive to Unlock only Refer to Circuit/System Testing — Driver Door Lock Switch Malfunction .
- If the value is always Lock or Unlock Refer to Circuit/System Testing — Lock and Unlock Circuit Test .
- If the parameter changes
- Verify the scan tool Central Door Lock Switch on Console parameter changes from Inactive to Lock and Unlock when pushing the appropriate switch on the central door lock switch.

- If the value is always Inactive Refer to Circuit/System Testing — Central Door Lock Switch Malfunction .
- If the value changes from Inactive to Lock only Refer to Circuit/System Testing — Central Door Lock Switch Malfunction .
- If the value changes from Inactive to Unlock only Refer to Circuit/System Testing — Central Door Lock Switch Malfunction.
- Verify both vehicle doors LOCK and UNLOCK when commanding the All Doors Lock/Unlock with a scan tool.
- If only the driver door LOCK or UNLOCK functions do not work Refer to Circuit/System Testing – Driver Door Lock Malfunction.
- If the passenger door LOCK or UNLOCK functions do not work Refer to Circuit/System Testing – Passenger Door Lock Malfunction.
- If both door LOCK and UNLOCK functions do not work Refer to Circuit/System Testing – Both Door Lock Inoperative.
- If the LOCK and UNLOCK function for both doors works
- All OK.

Circuit/System Testing

Passenger Door Lock Switch Malfunction

- Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the S13P Door Lock Switch—Passenger. It may take up to 2 minutes for all vehicle systems to power down.
- Test for less than 10 Ω between the ground circuit terminal 4 and ground.
- If 10 Ω or greater
- Ignition OFF.
- Test for less than 2 Ω in the ground circuit end to end.
- If 2 Ω or greater, repair the open/high resistance in the circuit.
- If less than 2 Ω, repair the open/high resistance in the ground connection.
- If less than 10 Ω
- Test for greater than 10 V between the signal circuit terminal 2 and ground.
- If 10 V or less
- Ignition OFF, disconnect the harness connector at the K9 Body Control Module.
- Test for infinite resistance between the signal circuit and ground.
- If less than infinite resistance, repair the short to ground on the circuit.
- Test for less than 2 Ω in the signal circuit end to end.
- If less than 2 Ω, replace the K9 Body Control Module.
- If greater than 10 V
- Test for greater than 10 V between the signal circuit terminal 3 and ground.
- Test or replace the S13P Door Lock Switch—Passenger.

Driver Door Lock Switch Malfunction

- Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the S13D Door Lock Switch—Driver. It may take up to 2 minutes for all vehicle systems to power down.
- Test or replace the S13D Door Lock Switch—Driver.

Central Door Lock Switch Malfunction

- Ignition OFF, disconnect the harness connector at the A20 Radio/HVAC Controls, Ignition ON
- Test for greater than 10 V between the signal circuit terminal 12 and ground.
- Test for greater than 10 V between the signal circuit terminal 13 and ground.
- Replace the A20 Radio/HVAC Controls.

Lock and Unlock Circuit Test

- Ignition OFF, disconnect the harness connector at the A20 Radio/HVAC Controls and disconnect the harness connector at the S13D Door Lock Switch—Driver. Ignition ON
- Verify the scan tool Central Door Lock Switch on Console parameter is Inactive.
- If not Inactive
- Ignition OFF, disconnect the X2 harness connector at the K9 Body Control Module.
- Test for infinite resistance between the K9 Body Control Module signal circuit terminal 15 and ground.
- Test for infinite resistance between the K9 Body Control Module signal circuit terminal 19 and ground.
- If infinite resistance, replace the K9 Body Control Module.
- If Inactive
- Connect the harness connector at the S13D Door Lock Switch—Driver.
- If the value is always Lock or Unlock Test or replace the S13D Door Lock Switch—Driver.
- If the value changes from Inactive to Lock and Unlock
- Connect the harness connector at the A20 Radio/HVAC Controls.
- If the value is always Lock or Unlock Replace the A20 Radio/HVAC Controls.

Driver Door Lock Malfunction

- Ignition OFF, disconnect the X6 harness connector at the K9 Body Control Module, ignition ON.
- Test for less than 1 V between the control circuit terminal 1 and ground.
- If 1 V or greater
- Ignition OFF, disconnect the harness connector at the A23D Door Latch Assembly – Driver ignition ON.
- Test for less than 1 V between the control circuit and ground.
- If 1 V or greater, repair the short to voltage on the circuit.
- If less than 1 V
- Ignition OFF, connect the X6 harness connector at the K9 Body Control Module. Disconnect the harness connector at the A23D Door Latch Assembly–Driver, ignition ON.
- Test for greater than 3 V between the control circuit terminal listed below and ground:
- Control circuit terminal 3
- Control circuit terminal 2
- If 3 V or less
- Ignition OFF, disconnect the X6 harness connector at the K9 Body Control Module.
- Test for infinite resistance between the control circuit and ground.
- If infinite resistance
- Test for less than 2 Ω in the control circuit end to end.
- If 2 Ω or greater, repair the open/high resistance on the circuit.
- If greater than 3 V
- Install a DMM between the control circuit terminal 2 and control circuit terminal 3. Set the DMM to capture DC voltage using the MIN MAX function. Turn off autorange and manually set the DMM range to 00.00 V.
- Lock and unlock the vehicle doors using the door lock switch.
- Verify the MAX voltage captured by the DMM is greater than 10 V.
- If 10 V or less Replace the K9 Body Control Module.
- Test or replace the A23D Door Latch Assembly–Driver.

Passenger Door Lock Malfunction

- Ignition OFF, disconnect the harness connector at the A23P Door Latch Assembly-Passenger.
- Control circuit terminal 8
- Control circuit terminal 7
- Install a DMM between the control circuit terminal 7 and control circuit terminal 8. Set the DMM to capture DC voltage using the MIN MAX function. Turn off autorange and manually set the DMM range to 00.00 V.
- Lock and unlock the vehicle doors using the central door lock switch.
- Test or replace the A23P Door Latch Assembly-Passenger.

Both Door Locks Inoperative

- Ignition OFF and all vehicle systems OFF, disconnect the X6 harness connector at the K9 Body Control Module. It may take up to 2 minutes for all vehicle systems to power down.
- Test for less than 10 Ω between the ground circuit terminal 3 and ground.
- Disconnect the X2 harness connector at the K9 Body Control Module, ignition ON.
- Verify a test lamp illuminates between the B+ circuit terminal 4 and ground.
- If the test lamp does not illuminate and the circuit fuse is good
- Test for less than 2 Ω in the B+ circuit end to end.
- If less than 2 Ω, verify the fuse is not open and there is voltage at the fuse.
- If the test lamp does not illuminate and the circuit fuse is open
- Test for infinite resistance between the B+ circuit and ground.
- Disconnect the harness connector at each of the A23 Door Latch Assemblies.
- Test for infinite resistance between each control circuit and ground.
- If infinite resistance, replace the appropriate A23 Door Latch Assembly.
- If the test lamp illuminates
- Ignition OFF, connect the X2 harness connector at the K9 Body Control Module.
- Test for less than 1 V between the control circuit terminals listed below and ground:
- Control circuit terminal 1 X6
- Control circuit terminal 2 X6
- Control circuit terminal 4 X6
- Ignition OFF, disconnect the harness connector at the A23D Door Latch Assembly – Driver and A23P Door Latch Assembly – Passenger, ignition ON.
- Test for infinite resistance between the control circuit terminals listed below and ground:
- If less than infinite resistance
- Ignition OFF, disconnect the harness connector at the A23D Door Latch Assembly – Driver and A23P Door Latch Assembly – Passenger.
- Test for less than 10 Ω between the control circuit terminal 1 and the control circuit terminal 4.

- Ignition OFF, disconnect the harness connector at the A23D Door Latch Assembly – Driver.
- Test for less than 2 Ω between the K9 Body Control Module control circuit terminal 4 and the A23D Door Latch Assembly – Driver control circuit terminal 2.
- Test or replace the K9 Body Control Module.

Component Testing

Door Latch Assembly

- Ignition OFF, disconnect the harness connector at the appropriate A23 Door Latch Assembly.
- Install a 25 A fused jumper wire between one of the control terminals and 12 V. Momentarily install a jumper wire between the other control terminal and ground. Reverse the jumper wires at least two times, the A23 Door Latch Assembly should perform the LOCK and UNLOCK function.
- If the actuator does not perform the LOCK and UNLOCK function Replace the A23 Door Latch Assembly.
- If the actuator performs the LOCK and UNLOCK function
- All OK

Driver Door Lock Switch

- Ignition OFF, disconnect the harness connector at the S13D Door Lock Switch—Driver.
- Test for infinite resistance between the signal terminal 2 and the ground terminal 4 with the switch in the center position.
- If less than infinite resistance Replace the S13D Door Lock Switch—Driver.
- Test for infinite resistance between the signal terminal 3 and the ground terminal 4 with the switch in the center position.
- If less than infinite resistance Replace the S13D Door Lock Switch—Driver
- Test for less than 2 Ω between the signal terminal 2 and the ground terminal 4 with the switch in the Lock position.
- If 2 Ω or greater Replace the S13D Door Lock Switch—Driver.
- If less than 2 Ω
- Test for less than 2 Ω between the signal terminal 3 and the ground terminal 4 with the switch in the Unlock position.

Passenger Door Lock Switch

- Ignition OFF, disconnect the harness connector at the S13P Door Lock Switch—Passenger.
- If less than infinite resistance Replace the S13P Door Lock Switch—Passenger.
- If less than infinite resistance Replace the S13P Door Lock Switch—Passenger
- If 2 Ω or greater Replace the S13P Door Lock Switch—Passenger.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair.

- Front Side Door Latch Replacement
- Door Lock Switch Replacement - Driver Side
- Door Lock Switch Replacement - Passenger Front
- Control Module References for BCM and radio/HVAC controls replacement, programming and setup

Door Will Not Open/Close, Door Binding, or Locks, Handles, or Cylinders Do Not Function (Article 10459)

Step Action Yes No

DEFINITION: This diagnostic table is designed to address the mechanical diagnosis of the door latching system, which could include the inside and outside handles, latch rods/cables, latches, or latch cylinders.

1 Did you perform the Diagnostic System Check – Vehicle? Go to Step 2 Go to Diagnostic System Check - Vehicle

2 Were you sent here from a Vehicle Access Symptom Table? Go to Step 3 Go to Symptoms - Vehicle Access

3 Does the door open with the outside handle? Go to Step 4 Go to Step 10

4 Does the door open with the inside handle? Go to Step 5 Go to Step 11

5 Does the manual latch knob latch and unlatch the latch smoothly without binding? Go to Step 6 Go to Step 12

6 Does the door latch switch and/or the keyless entry transmitter latch and unlatch the door latch or door latches? Go to Step 7 Go to Step 14

7 Is the outside key cylinder loose or does it rattle or fall out? (if equipped) Go to Step 15 Go to Step 8

8 Does the outside key cylinder latch and unlatch the latch and function smoothly without binding? (if equipped) Go to Step 9 Go to Step 16

9 Does the door bind, does it take excessive effort to open, or is it misaligned? Go to Step 17 Go to Step 18

10 If the door will not open with the outside handle, or the handle is obstructed or loose, check the following: For cold weather freezing, thaw as necessary. Check the handle for foreign material. Remove material as necessary. Check the handle grab bar for looseness or damage. Repair as necessary. Check the handle for full travel. If the issue is not resolved, remove the trim panel as necessary to gain access to door hardware and check the following: Check the handle chassis for loose fasteners, broken chassis inserts,

loose or missing spring, or a loose, missing or bent rod lever. Check for bent rod to the outside handle. Check that the handle grab bar engages the rod lever properly. Check for interference of rod and handle to other components in the door. Check that handle rod is securely attached at both latch and handle. Check if rod is positioned properly in the clip on the latch. At rest position, the handle should be fully against the down stop and the latch lever should be at the bottom of its travel. Correct by opening clip, repositioning rod in clip and closing clip till it snaps, as necessary. Did you find and correct the condition? Go to Step 18 Go to Step 11

- For cold weather freezing, thaw as necessary.
- Check the handle for foreign material. Remove material as necessary.
- Check the handle grab bar for looseness or damage. Repair as necessary.
- Check the handle for full travel.
- Check the handle chassis for loose fasteners, broken chassis inserts, loose or missing spring, or a loose, missing or bent rod lever.
- Check for bent rod to the outside handle.
- Check that the handle grab bar engages the rod lever properly.
- Check for interference of rod and handle to other components in the door.
- Check that handle rod is securely attached at both latch and handle.
- Check if rod is positioned properly in the clip on the latch. At rest position, the handle should be fully against the down stop and the latch lever should be at the bottom of its travel. Correct by opening clip, repositioning rod in clip and closing clip till it snaps, as necessary.

11 Door will not open with the inside handle: Check the inside handle for foreign material. Remove material as necessary. Check that the handle is secure. Correct as necessary. If rear door , verify child security is not engaged. Remove the trim panel as necessary to and check the inside handle rod/cable attachments at both the latch and handle. If the cable is kinked or pinched, correct as necessary. Did you find and correct the condition? Go to Step 18 Go to Step 12

- Check the inside handle for foreign material. Remove material as necessary.
- Check that the handle is secure. Correct as necessary.
- If rear door , verify child security is not engaged.
- Remove the trim panel as necessary to and check the inside handle rod/cable attachments at both the latch and handle. If the cable is kinked or pinched, correct as necessary.

12 The door will not or is difficult to unlatch with the inside manual latch knob: For cold weather freezing, thaw as necessary Check the latch knob for a loose condition. Repair or replace as necessary. Check the latch knob for binding or dragging using the following procedure: Remove the latch knob. If condition goes away, check for drag/interference of the latch knob against the inner belt seal, or the trim panel. Correct as required. If further action is required, remove the trim panel and check the latch rod and latch knob for interference with the following: Water deflector/paper Side impact foam Rod grommet in sheet metal Glass run channel Other rods or cables Trim panel Did you find and correct the condition? Go to Step 18 Go to Step 13

- For cold weather freezing, thaw as necessary
- Check the latch knob for a loose condition. Repair or replace as necessary.
- Remove the latch knob.
- If condition goes away, check for drag/interference of the latch knob against the inner belt seal, or the trim panel. Correct as required.
- Water deflector/paper
- Side impact foam
- Rod grommet in sheet metal
- Glass run channel
- Other rods or cables
- Trim panel

13 With a manual lock, if the latch will not function properly do the following: Function the lock/unlatch lever on the latch to unlatch the latch. Check for high internal resistance. With the door open, manually close the latch with a screwdriver. Check the latch for internal binding by actuating the latch with the inside door handle lever. Manually close the latch with a screwdriver again. Check the latch for internal binding by actuating the latch with the outside door handle lever. Did you find and correct the condition? Go to Step 18 Go to Step 14

- Function the lock/unlatch lever on the latch to unlatch the latch. Check for high internal resistance.
- With the door open, manually close the latch with a screwdriver.
- Check the latch for internal binding by actuating the latch with the inside door handle lever.
- Manually close the latch with a screwdriver again.
- Check the latch for internal binding by actuating the latch with the outside door handle lever.

14 If power locks are included in vehicle options and do not function with either the keyless entry

transmitter or switch: For cold weather freezing, thaw as necessary. Remove trim pad as required and check the following: Verify door harness has appropriate power connectors for switches and latch. Check harness connector pins for corrosion. Assure wire harness connectors are seated and locked properly at latch and switch. Remove and re-seat if required. Check door harness for cuts/chafing/corrosion. Correct/replace as required. Check for 12V at latch and door switch. Correct/proceed accordingly. Check BCM for trouble codes. Correct/proceed accordingly. If power locks still do not function do the following: Remove latch from door cavity. Connect latch to electrical connector outside the door. Function power lock/unlatch switch in both latch and unlatch directions. Watch for lock/unlatch lever on latch to move completely from one position to the other. If lever does not move, remove connector from old latch and attach to new latch outside of door cavity. Verify new latch is functional, if so, attach rods and install new latch in door. Did you find and correct the condition? Go to Step 18 Go to Step 15

- Remove trim pad as required and check the following:
- Verify door harness has appropriate power connectors for switches and latch.
- Check harness connector pins for corrosion.
- Assure wire harness connectors are seated and locked properly at latch and switch. Remove and re-seat if required.
- Check door harness for cuts/chafing/corrosion. Correct/replace as required.
- Check for 12V at latch and door switch. Correct/proceed accordingly.
- Check BCM for trouble codes. Correct/proceed accordingly.
- If power locks still do not function do the following:
- Remove latch from door cavity.
- Connect latch to electrical connector outside the door.
- Function power lock/unlatch switch in both latch and unlatch directions. Watch for lock/unlatch lever on latch to move completely from one position to the other.
- If lever does not move, remove connector from old latch and attach to new latch outside of door cavity.
- Verify new latch is functional, if so, attach rods and install new latch in door.

15 If the key cylinder is loose do the following: Remove the trim if necessary. Check that the retaining clip is properly seated. (if equipped) Check that the fastener is properly torqued. (if equipped) Did you find and correct the condition? Go to Step 18 Go to Step 16

- Remove the trim if necessary.
- Check that the retaining clip is properly seated. (if equipped)
- Check that the fastener is properly torqued. (if equipped)

16 The outside key cylinder will not latch and unlatch the latch and function smoothly without binding: For cold weather freezing, thaw as necessary Remove trim if required. Check that the key cylinder rod is securely attached both to the key cylinder pawl and the latch. Check that key cylinder lever, rod and latch lever are free of interferences. Remove interferences as required. Check that latch cylinder rod is routed properly. Re-route as required. Remove rod from latch cylinder and actuate cylinder. Check for internal resistance. Lubricate latch cylinder as required Verify Cylinder rotates with vehicle key. If not, code and replace cylinder to match vehicle key. See latch cylinder coding and replacing. Did you find and correct the condition? Go to Step 18 Go to Step 17

- Remove trim if required.
- Check that the key cylinder rod is securely attached both to the key cylinder pawl and the latch.
- Check that key cylinder lever, rod and latch lever are free of interferences. Remove interferences as required.
- Check that latch cylinder rod is routed properly. Re-route as required.
- Remove rod from latch cylinder and actuate cylinder. Check for internal resistance. Lubricate latch cylinder as required
- Verify Cylinder rotates with vehicle key. If not, code and replace cylinder to match vehicle key. See latch cylinder coding and replacing.

17 The door is difficult to open: Check for interference with the fender , adjacent door, body opening or door striker and adjust as necessary. Check for binding door hinges. Lubricate or align/adjust as necessary. Check the door check link for binding. Lubricate as necessary. Adjust the door as necessary. Did you find and correct the condition? Go to Step 18 Go to appropriate Door Lock Striker Adjustment procedure.

- Check for interference with the fender , adjacent door, body opening or door striker and adjust as necessary.
- Check for binding door hinges. Lubricate or align/adjust as necessary.
- Check the door check link for binding. Lubricate as necessary.
- Adjust the door as necessary.

18 Verify proper operation of the door closing system. Outside handle Inside handle Manual lock/unlatch Outside key cylinder Inside latch knob Double pull handle Power lock/unlatch Key fob Door switches Door

opening/closing effort Is the condition still present? Go to Step 1 System OK
- Outside handle
- Inside handle
- Manual lock/unlatch
- Outside key cylinder
- Inside latch knob
- Double pull handle
- Power lock/unlatch
- Key fob
- Door switches
- Door opening/closing effort

Erratic Operation (itype_132)

Tsbs
- Diagnostic Tip - Unable to Learn RKE Transmitters (PIT4945H, 2019/02/19)
- Diagnostic Tip - Key Does Not Fold Or Will Not Stay Closed (PIC4788G, 2016/06/23)
- Keyless Start Transmitter - Poor Appearence After Blade Removal (15-09-83-001A, 2015/07/20)

Inoperative (itype_148)

Tsbs
- Intermittent Remote Keyless Entry Inoperative (PIT5119F, 2017/11/20)

Out of specification (itype_158)

Tsbs
- N192223230 — Incorrect Service Ignition Key (N192223230, 2020/01/08)

Poor performance (itype_162)

Tsbs
- Intermittently Key Will Not Rotate in Door or Ignition Lock Cylinder (PI0091B, 2015/04/28)
- Information on Poor, Limited, Reduced Remote Keyless Entry (RKE) or Remote Vehicle Start (RVS) Range (PI1018A, 2015/02/05)

Miscellaneous Information (itype_111)

Tsbs
- Normal Characteristic - Heated Seat Operation After Performing A Remote Vehicle Start (RVS) (PIC5322D, 2015/05/29)
- Information on Using MyBuick, MyCadillac, MyChevrolet, and MyGMC Phone Applications to Control GM Accessory Remote Start Kits (16-NA-355, 2018/10/22)
- Information for Fleet Vehicles - Ignition Key, Fob and Key Rings Configuration (14-00-89-004D, 2017/10/23)
- Information on How to Prevent Inadvertent Vehicle Starting from Key Fob or OnStar Mobile Application (17-NA-244, 2017/07/25)

OEM Policies and Procedures (itype_120)

Tsbs
- Key & Transmitter Programming (PIC6401, 2020/02/03)
- Requesting a New Key Code for Customer with Lost or Stolen Keys (12-00-89-002E, 2021/11/17)
- Key Cutting Procedure for Obtaining Replacement Key (09-00-89-029L, 2014/04/22)
- Key Code Security Rules and Information on GM KeyCode Look-Up Application (U.S. Only) (10-00-89-009G, 2025/07/23)

Safety (itype_107)

Tsbs
- N192223230 — Incorrect Service Ignition Key (N192223230, 2020/01/08)
- 14294C – Ignition Key (14294C, 2021/03/23)
- Recall 14V346000: Ignition Key Replacement (NHTSA14V346000, 2014/06/20)

Service Campaigns (itype_108)

Tsbs

- Vehicles with Key Codes Improperly Handled by Third Party (44180-03, 2017/03/23)