

2018 ACCESSORIES & EQUIPMENT

Mirrors - Traverse

SPECIFICATIONS

FASTENER SPECIFICATIONS

Reusable Threaded Fastener Tightening Specifications

NOTE:

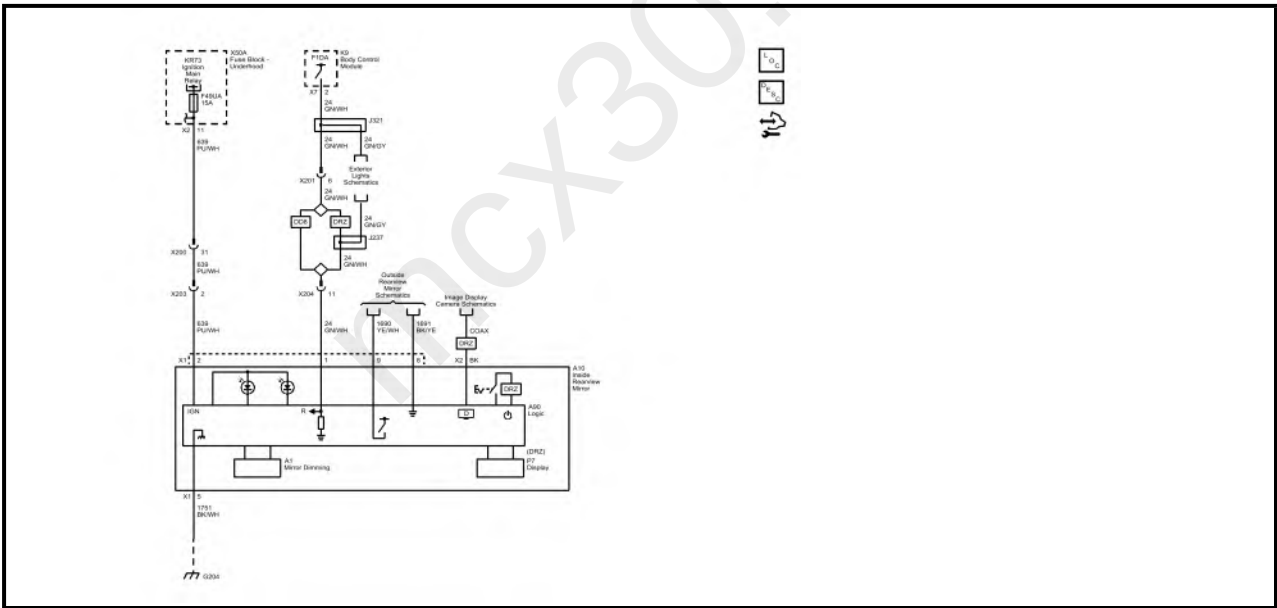
All fasteners listed in this table can be reused after removal.

Application	Specification
	Metric (English)
Inside Rearview Mirror Set Screw	1.8 N.m (16 lb in)
Outside Rearview Mirror Fastener	10 N.m (89 lb in)
Outside Rearview Mirror Inner Actuator Fastener	2 N.m (18 lb in)
Outside Rearview Mirror Opening Applique Bolt	2 N.m (18 lb in)

SCHEMATIC WIRING DIAGRAMS

INSIDE REARVIEW MIRROR WIRING SCHEMATICS

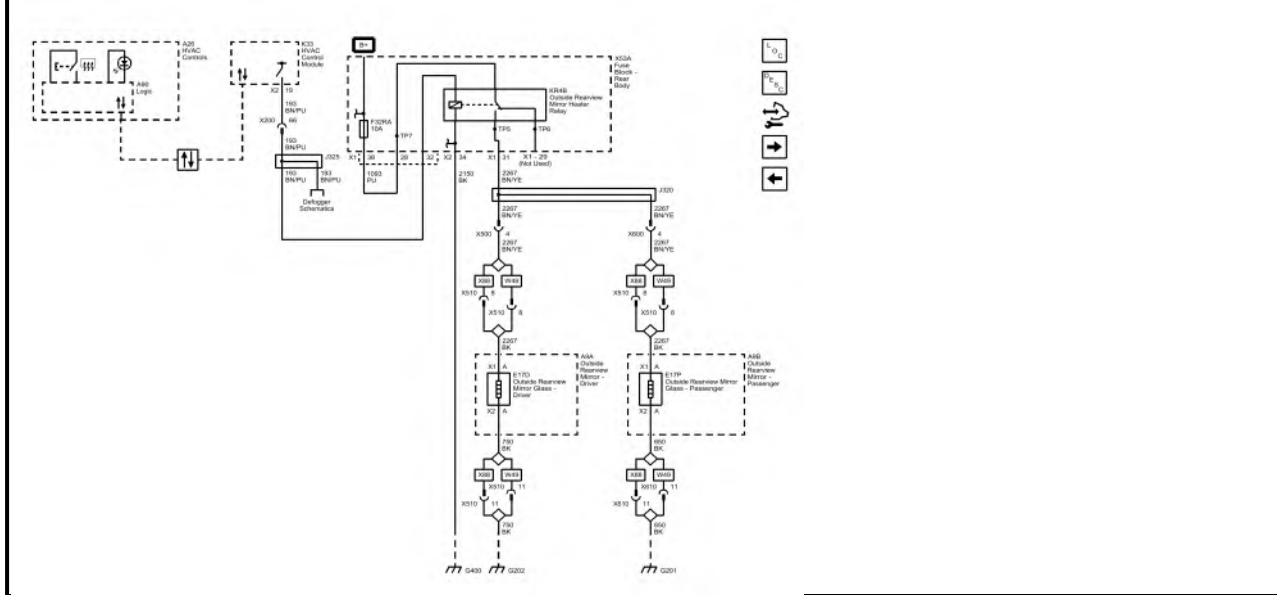
Inside Rearview Mirror (DD8 or DRZ)



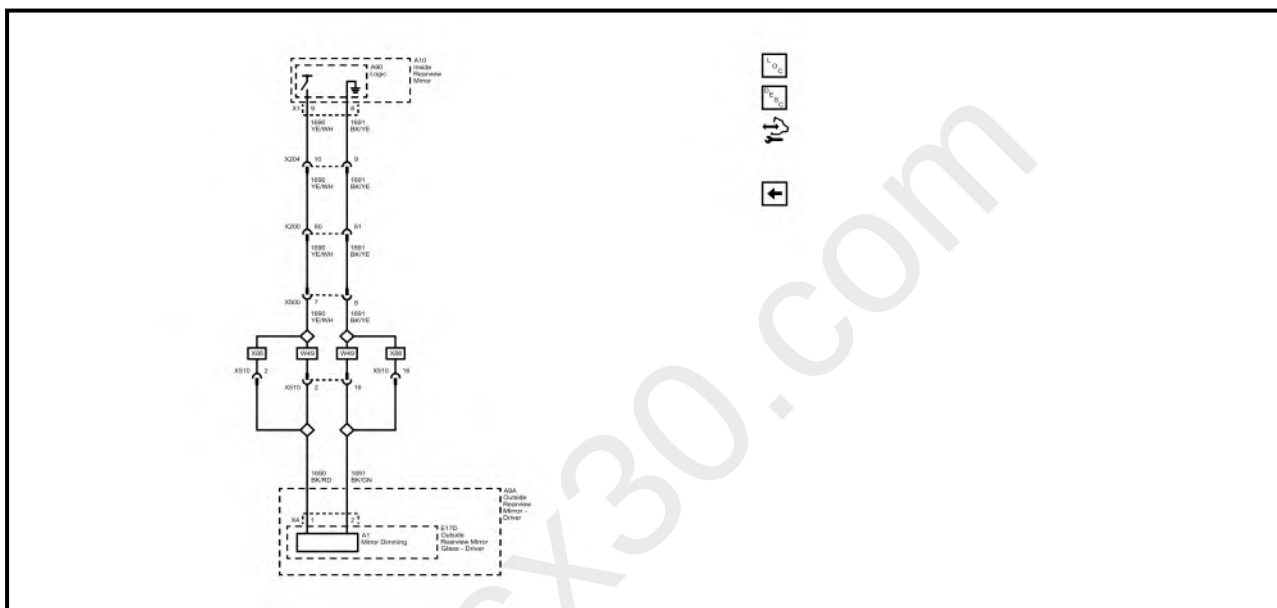
OUTSIDE REARVIEW MIRROR WIRING SCHEMATICS

Driver and Passenger Controls (Without AAB)





Dimming (DD8 or DRZ)



DIAGNOSTIC INFORMATION AND PROCEDURES

DTC B154A OR B154B

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 B154A 39

Driver Mirror Internal Malfunction

DTC B154B 39

Passenger Mirror Internal Malfunction

Circuit/System Description

The outside mirror switch and passenger window switch are on a serial data circuit with the memory seat module as the master. The mirror select and directional control switches are inputs to the memory seat module through the serial data circuit. When the memory seat module receives switch inputs from the outside mirror switch, mirror output commands are sent to the appropriate switch through the serial

data circuit. The outside mirror switch and passenger window switch control the left and right outside rear view mirrors through bi-directional motor control circuits. The motor control circuits are floating while in an inactive state and the switches will apply power and ground to the control circuits as necessary to move the mirror in the commanded direction.

Mirror position is determined by both horizontal and vertical position sensors in each of the power mirrors. The outside mirror switch and passenger window switch supply a 5 V reference, low reference, and horizontal and vertical position signal circuits to these sensors. The signal circuits are referenced from 5 V by the switches and the signal circuit voltage levels represent the mirror positions. The mirror positions are sent to the memory seat module through the serial data circuit where they are stored for memory mirror operation. When the memory seat module receives a memory recall command, the memory seat module will send the go to position commands to the outside mirror switch and passenger window switch. The switches will then drive the appropriate mirror motors to the commanded position sensor settings.

Conditions for Running the DTC

Battery voltage must be between 9 - 16 V.

Conditions for Setting the DTC

B154A 39

An internal malfunction has been detected by the outside rearview mirror switch while commanding the driver outside rearview mirror UP, DOWN, LEFT or RIGHT.

B154B 39

An internal malfunction has been detected by the passenger window switch while commanding the passenger outside rearview mirror UP, DOWN, LEFT or RIGHT.

Action Taken When the DTC Sets

The affected outside rearview mirror will be inoperative.

Conditions for Clearing the DTC

B154A 39

The driver outside rearview mirror must be replaced before the DTC can be cleared.

B154B 39

The passenger outside rearview mirror must be replaced before the DTC can be cleared.

Reference Information

Schematic Reference

Outside Rearview Mirror Wiring Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Outside Mirror Description and Operation

Electrical Information Reference

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

- [Wiring Repairs](#)

Scan Tool Reference

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

Circuit/System Verification

1. Ignition ON.
2. Verify the A9A Outside Rearview Mirror - Driver moves when commanding the Driver Mirror Horizontal Movement Right/Left and Driver Mirror Vertical Movement Up/Down with a scan tool.
 - **If the A9A Outside Rearview Mirror - Driver does not move RIGHT or LEFT or UP or DOWN**

Replace the M77D Outside Rearview Mirror Motor - Driver.

 - **Go to next step: If the A9A Outside Rearview Mirror-Driver moves RIGHT, LEFT, UP and DOWN**
3. Verify the A9B Outside Rearview Mirror-Passenger moves when commanding the Passenger Mirror Horizontal Movement Right/Left and Passenger Mirror Vertical Movement Up/Down with a scan tool.
 - **If the A9B Outside Rearview Mirror-Passenger does not move RIGHT or LEFT or UP or DOWN**

Replace the M77P Outside Rearview Mirror Motor - Passenger.

 - **Go to next step: If the A9B Outside Rearview Mirror-Passenger moves RIGHT, LEFT, UP and DOWN**
4. All OK.

Repair Instructions

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

Outside Rearview Mirror Actuator Replacement.

SYMPTOMS - MIRRORS

NOTE: 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 link.
2. Review the system operation in order to familiarize yourself with the system functions. Refer to the following system descriptions:
 - [Automatic Day-Night Mirror Description and Operation](#)
 - [OnStar Description and Operation \(without UI3\)](#), [OnStar Description and Operation \(UI3\)](#)
 - [Outside Mirror Description and Operation](#)

Visual/Physical Inspection

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

- [Automatic Day-Night Mirrors Malfunction](#)
- [Heated Mirrors Malfunction](#)
- [OnStar Button LED Malfunction](#)
- [OnStar Button Malfunction](#)
- [Power Mirror Folding Malfunction](#)
- [Power Mirror Malfunction \(Without AAB\)Power Mirror Malfunction \(With AAB\)](#)
- [Power Mirror Tilt Inoperative in Reverse](#)

HEATED MIRRORS MALFUNCTION

Diagnostic Instructions

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

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Left Heated Mirror Element Control	2	1	3	-
Driver Outside Rearview Mirror Ground	-	1	-	-
Right Heated Mirror Element Control	2	1	3	-
Passenger Outside Rearview Mirror Ground	-	1	-	-
1. Single Heated Mirror Inoperative 2. Both Heated Mirrors Inoperative 3. Heated Mirrors Always On				

Circuit/System Description

When the HVAC control module receives a rear window defog request from the radio/HVAC controls, the HVAC control module will provide B+ voltage to the coil side of the rear defogger relay. This will energize the relay causing the contacts within the relay to close and provide B+ voltage to the rear window defogger grid, the driver outside review mirror and passenger outside rearview mirror heating elements.

Reference Information

Schematic Reference

[Outside Rearview Mirror Wiring Schematics](#)

Connector End View Reference

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

Description and Operation

[Outside Mirror Description and Operation](#)

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

Scan Tool Reference

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

Circuit/System Verification

1. Engine running
2. Verify the E18 Rear Defogger Grid turns ON and OFF when commanding the Rear Defogger On and Off with a scan tool
 - **If the E18 Rear Defogger Grid does not turn ON or OFF**

Refer to [Rear Window Defogger Malfunction](#) .
 - **Go to next step: If the E18 Rear Defogger Grid turns ON and OFF**
3. Verify the E17D Outside Rearview Mirror Glass-Driver and the E17P Outside Rearview Mirror Glass-Passenger become warm when commanding the Rear Defogger On with a scan tool.
 - **If the E17D Outside Rearview Mirror Glass-Driver or E17P Outside Rearview Mirror Glass-Passenger do not become warm**

Refer to Circuit/System Testing - Single Outside Mirror Defogger Inoperative.
 - **If both E17D Outside Rearview Mirror Glass-Driver and E17P Outside Rearview Mirror Glass-Passenger never become warm or are always warm**

Refer to Circuit/System Testing - Both Outside Mirrors Defogger Malfunction.
 - **Go to next step: If both the E17D Outside Rearview Mirror Glass-Driver and the E17P Outside Rearview Mirror Glass-Passenger become warm**
4. All OK.

Circuit/System Testing

Single Outside Mirror Defogger Inoperative

1. Ignition OFF and all vehicle systems OFF, disconnect the appropriate X510 or X610 inline harness connector at the A9 Outside Rearview Mirror. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 11 and ground.
 - **If 10 Ω or greater**
 1. Ignition OFF.
 2. 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.
 - **Go to next step: If less than 10 Ω**
3. Engine running, connect a test lamp between the control circuit terminal 8 and the ground circuit terminal 5.
4. Verify the test lamp turns ON when commanding the Rear Defogger On with a scan tool.
 - **If the test lamp is always OFF**
 1. Ignition OFF, remove the test lamp, disconnect the X1 harness connector at the X53A Fuse Block - Rear Body.
 2. Test for less than 2 Ω in the control circuit end to end.

- If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the E17 Outside Rearview Mirror Glass.
 - **Go to next step: If the test lamp turns ON**
5. Test or replace the E17 Outside Rearview Mirror Glass.

Both Outside Mirrors Defogger Malfunction

1. Ignition OFF, disconnect the X510 inline harness connector at the A9A Outside Rearview Mirror-Driver and the X610 inline harness connector at the A9B Outside Rearview Mirror-Passenger.
2. Connect a test lamp between the control circuit terminal 8 and ground, Engine running.
3. Verify the test lamp does not turn ON and OFF pressing the rear window defogger switch.

- **If the test lamp turns ON and OFF**

Test or replace the E17D Outside Rearview Mirror Glass - Driver and E17P Outside Rearview Mirror Glass - Passenger.

- **Go to next step: If the test lamp does not turn ON and OFF**

4. Ignition OFF, connect the X510 and X610 inline harness connector at the A9A Outside Rearview Mirror-Driver and the A9B Outside Rearview Mirror-Passenger. Disconnect the X1 harness connector at the X53A Fuse Block-Rear Body, Ignition ON.
5. Verify the E17D Outside Rearview Mirror Glass - Driver and E17P Outside Rearview Mirror Glass - Passenger are not activated.
 - **If the E17D Outside Rearview Mirror Glass - Driver and E17P Outside Rearview Mirror Glass - Passenger are activated**
 1. Ignition OFF, disconnect the inline harness connector at the A9 Outside Rearview Mirror, Ignition On/Vehicle in Service Mode.
 2. Test for less than 1 V between the X53A Fuse Block-Rear Body control circuit terminal 31 and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V, test or replace the E17D Outside Rearview Mirror Glass - Driver and E17P Outside Rearview Mirror Glass - Passenger.
 - **Go to next step: If the E17D Outside Rearview Mirror Glass - Driver and E17P Outside Rearview Mirror Glass - Passenger are not activated**
6. Connect a 10 A fused jumper wire between the control circuit terminal 31 and B+.
7. Verify the E17D Outside Rearview Mirror Glass - Driver and E17P Outside Rearview Mirror Glass - Passenger activates.

- **If the E17D Outside Rearview Mirror Glass - Driver and E17P Outside Rearview Mirror Glass - Passenger do not activate**

1. Ignition OFF, remove the jumper wire, disconnect the inline harness connector at the A9 Outside Rearview Mirror.
2. Test for infinite resistance between the X53A Fuse Block-Rear Body control circuit terminal 31 and ground.
 - If less than Infinite resistance, repair the short to ground on the circuit.
 - Go to next step: If infinite resistance
3. Test for less than 2 Ω in the control circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , test or replace the E17D Outside Rearview Mirror Glass - Driver and E17P Outside Rearview Mirror Glass - Passenger
- **Go to next step: If the E17D Outside Rearview Mirror Glass - Driver and E17P Outside Rearview Mirror Glass - Passenger activates**
8. Ignition OFF and all vehicle systems OFF, connect the X1 harness connector and disconnect the X2 harness connector at the X53A Fuse Block-Rear Body, it may take up to 2 minutes for all vehicle systems to power down.
9. Test for less than 10 Ω between the ground circuit terminal 34 and ground.

- **If 10 Ω or greater**

1. Ignition OFF.
2. 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.
- **Go to next step: If less than 10 Ω**
10. Connect the X2 harness connector at the X53A Fuse Block-Rear Body. Disconnect the X2 harness connector at the K33 HVAC Control Module, Ignition ON.
11. Verify the E17D Outside Rearview Mirror Glass - Driver and E17P Outside Rearview Mirror Glass - Passenger are not activated.
 - **If the E17D Outside Rearview Mirror Glass - Driver and E17P Outside Rearview Mirror Glass - Passenger are activated**
 1. Ignition OFF, disconnect the X1 harness connector at the X53A Fuse Block-Rear Body. Ignition ON
 2. Test for less than 1 V between the K33 HVAC Control Module control circuit terminal 19 and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V, replace the X50A Fuse Block-Underhood.
 - **Go to next step: If the E17D Outside Rearview Mirror Glass - Driver and E17P Outside Rearview Mirror Glass - Passenger are not activated**
12. Connect a 3 A fused jumper wire between the control circuit terminal 19 and B+.
13. Verify the E17D Outside Rearview Mirror Glass - Driver and E17P Outside Rearview Mirror Glass - Passenger activates.
 - **If the E17D Outside Rearview Mirror Glass - Driver and E17P Outside Rearview Mirror Glass - Passenger do not activate**
 1. Ignition OFF, remove the jumper wire, disconnect the X1 harness connector at the X53A Fuse Block-Rear Body, Ignition ON.
 2. Test for infinite resistance between the K33 HVAC Control Module control circuit terminal 19 and ground.
 - If less than Infinite resistance, repair the short to ground on the circuit.
 - Go to next step: If infinite resistance
 3. Test for less than 2 Ω in the control circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the X53A Fuse Block-Rear Body.
 - **Go to next step: If the E17D Outside Rearview Mirror Glass - Driver and E17P Outside Rearview Mirror Glass - Passenger activates**
14. All OK.

Repair Instructions

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

- [Outside Rearview Mirror Glass Replacement](#)
- [Body Wiring Harness Junction Block Replacement](#)

AUTOMATIC DAY-NIGHT MIRRORS MALFUNCTION

Diagnostic Instructions

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

Diagnostic Fault Information

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Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Ignition	1	1	-	-
Automatic Day/Night Mirror Signal	2	2	2	-
Backup Lamp Control	B2545 02	1	1	-
Automatic Day/Night Mirror Low Reference	-	2	2	-
Ground	-	1	-	-
1. Inside and Outside Rearview Mirror Automatic Dimming Malfunction 2. Outside Rearview Mirror Automatic Dimming Malfunction				

Circuit/System Description

The inside rearview mirror uses 2 photocell sensors. One sensor is the rear light sensor, located on the face side of the mirror, facing the rear of the vehicle. The rear light sensor is used to determine light conditions present at the mirror face. The other sensor is the front light sensor, located on the backside of the mirror, facing the front of the vehicle. The front light sensor is used to determine the exterior light conditions at the front of the vehicle. With a low exterior light condition detected by the front light sensor and a high light condition from the rear light sensor, the inside rearview mirror will automatically darken the face of the inside rearview mirror and the driver outside rearview mirror. The inside rearview mirror provides a control circuit and a low reference circuit to the driver outside rearview mirror to darken the mirror when needed.

With the gear selector lever in the REVERSE position and the engine running, backup lamp control voltage is supplied as an input to the inside rearview mirror. The mirror monitors this input to disable the automatic day-night feature. This allows the driver to see objects in the mirrors clearly when backing up, regardless of the rear light sensor status.

Reference Information

Schematic Reference

- [Inside Rearview Mirror Wiring Schematics](#)
- [Outside Rearview Mirror Wiring Schematics](#)

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Automatic Day-Night Mirror Description and Operation

Electrical Information Reference

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

Scan Tool Reference

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

Circuit/System Verification

1. Ignition ON.
2. Cover the windshield with a blanket or other suitable item.
3. Verify the A10 Inside Rearview Mirror face dims when shining a bright light into the rear light sensor

- **If the A10 Inside Rearview Mirror does not dim**

Refer to Circuit/System Testing - Inside Review Mirror Dimming Inoperative

- **Go to next step: If the A10 Inside Rearview Mirror dims**

4. Verify the A10 Inside Rearview Mirror face transitions from dim to bright while commanding the Backup Lamps Active and Inactive with a scan tool.

- **If the A10 Inside Rearview Mirror does not transition between dim and bright.**

Refer to Circuit/System Testing - Day-Night Disable Malfunction

- **Go to next step: If the A10 Inside Rearview Mirror transitions between bright and dim states**

5. Verify the A9A Outside Rearview Mirror-Driver face dims when shining a bright light into the rear light sensor.

- **If the A9A Outside Rearview Mirror-Driver does not dim**

Refer to Outside Rearview Mirror Dimming Malfunction.

- **Go to next step: If the A9A Outside Rearview Mirror-Driver dims**

6. Verify the A9A Outside Rearview Mirror-Driver face transitions from dim to bright while commanding the Backup Lamps Active and Inactive with a scan tool.

- **If the A9A Outside Rearview Mirror-Driver does not transition between bright and dim states**

Refer to Outside Rearview Mirror Dimming Malfunction.

- **Go to next step: If the A9A Outside Rearview Mirror-Driver transitions between bright and dim states**

7. All OK.

Circuit/System Testing

Inside Review Mirror Dimming Inoperative

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the A10 Inside Rearview Mirror. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 5 and ground.

- **If 10 Ω or greater**

1. Ignition OFF, remove the test lamp.

2. 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.

- **Go to next step: If less than 10 Ω**

3. Ignition ON.

4. Verify a test lamp illuminates between the ignition circuit terminal 2 and ground.

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

1. Ignition OFF.

2. Test for less than 2 Ω in the ignition circuit end to end.

- If 2 Ω or greater, repair the open/high resistance in the circuit.
- If less than 2 Ω , refer to [Retained Accessory Power Malfunction](#).

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

1. Ignition OFF, remove the test lamp.

2. Test for infinite resistance between the ignition circuit and ground.

- If less than infinite resistance, repair the short to ground on the circuit.
- Go to next step: If infinite resistance

3. Test for infinite resistance between the signal circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - **Go to next step: If the test lamp illuminates**

5. Replace the A10 Inside Rearview Mirror.

Day-Night Disable Malfunction

1. Ignition OFF, disconnect the harness connector at the A10 Inside Rearview Mirror.
2. Connect a test lamp between the control circuit terminal 1 and ground
3. Ignition ON, verify the test lamp turns ON and OFF while commanding the Backup Lamps Active and Inactive with a scan tool.
 - **If the test lamp is always OFF**
 1. Ignition OFF, remove the test lamp, disconnect the harness connector at the K9 Body Control Module.
 2. Test for infinite resistance between the control circuit terminal 1 and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - Go to next step: If infinite resistance
 3. Test for less than 2 Ω in the control circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , refer to [Backup Lamps Malfunction](#) .
 - **If the test lamp is always ON**
 1. Ignition OFF, remove the test lamp, disconnect the harness connector at the K9 Body Control Module, ignition ON.
 2. Test for less than 1 V between the control circuit and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V, refer to [Backup Lamps Malfunction](#)
 - **Go to next step: If the test lamp turns ON and OFF**
4. Replace the A10 Inside Rearview Mirror.

Outside Rearview Mirror Dimming Malfunction

1. Ignition OFF and all vehicle systems OFF, disconnect the X510 inline harness connector at the A9A Outside Rearview Mirror-Driver. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 Ω between the low reference circuit terminal 16 and ground.
 - **If 10 Ω or greater**
 1. Ignition OFF, disconnect the harness connector at the A10 Inside Rearview Mirror.
 2. Test for less than 2 Ω in the low reference circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the A10 Inside Rearview Mirror.
 - **Go to next step: If less than 10 Ω**
3. Ignition ON.
4. Test for less than 1 V between the control circuit terminal 2 and ground.
 - **If 1 V or greater**
 1. Ignition OFF, disconnect the harness connector at the A10 Inside Rearview Mirror, ignition ON.
 2. Test for less than 1 V between the control circuit and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V replace the A10 Inside Rearview Mirror.
 - **Go to next step: If less than 1 V**
5. Ignition ON, headlamps ON, vehicle in PARK, cover the front light sensor with a towel or other suitable item. Shine a flashlight at the rear light sensor.

6. Test for greater than 1 V between the control circuit terminal 2 and ground.

- **If 1 V or less**

1. Ignition OFF, disconnect the harness connector at the A10 Inside Rearview Mirror, ignition ON.

2. Test for infinite resistance between the control circuit and ground.

- If less than infinite resistance, repair the short to ground on the circuit.
- Go to next step: If infinite resistance

3. Test for less than 2 Ω in the control circuit end to end.

- If 2 Ω or greater, repair the open/high resistance in the circuit.
- If less than 2 Ω , test or replace the A10 Inside Rearview Mirror.

- **Go to next step: If greater than 1 V**

7. Replace E17D Outside Rearview Mirror Glass-Driver.

Repair Instructions

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

- [Inside Rearview Mirror Replacement](#)
- [Outside Rearview Mirror Glass Replacement](#)

POWER MIRROR FOLDING MALFUNCTION

Diagnostic Instructions

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

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Folding Mirror Motor Fold Control	1	1	-	-
Folding Mirror Motor Unfold Control	1	1	-	-
1. Power Folding Mirror Inoperative				

Circuit/System Description

The outside mirror switch and passenger window switch control the fold/unfold motors through bi-directional control circuits, voltage is sent to the commanded mirror via a mirror control circuit. The opposite mirror control circuit acts as a ground circuit for the bi-directional mirror motor. Ground is applied through the switch, The outside rearview mirror switch will also send a serial data message to the seat memory control module requesting the mirror fold/unfold command, the seat memory control module will then send the command to the passenger window switch which will also command the passenger mirror to fold or unfold.

Reference Information

Schematic Reference

[Outside Rearview Mirror Wiring Schematics](#)

Connector End View Reference

[COMPONENT CONNECTOR END VIEWS - INDEX](#)

[INLINE HARNESS CONNECTOR END VIEWS - INDEX](#)

Outside Mirror Description and Operation

Electrical Information Reference

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

Circuit/System Verification

1. Ignition ON.
2. Verify the A9A Outside Rearview Mirror-Driver and the A9B Outside Rearview Mirror-Passenger FOLD and UNFOLD when pressing the mirror fold switch on the S79D Window Switch - Driver.
 - **If the A9A Outside Rearview Mirror-Driver does not FOLD and UNFOLD**

Refer to Circuit/System Testing - Driver Outside Mirror Folding Command Malfunction.
 - **Go to next step: If the A9A Outside Rearview Mirror-Driver does FOLD and UNFOLD**
3. Verify the A9B Outside Rearview Mirror-Passenger FOLD and UNFOLD when commanding the Passenger Mirror Fold Motor to Fold and Unfold with a scan tool.
 - **If the A9B Outside Rearview Mirror-Passenger does not FOLD and UNFOLD**

Refer to Circuit/System Testing - Passenger Outside Mirror Folding Command Malfunction.
 - **Go to next step: If the A9B Outside Rearview Mirror-Passenger does FOLD and UNFOLD**
4. All OK.

Circuit/System Testing

Driver Outside Mirror Folding Command Malfunction

1. Ignition OFF and all vehicle systems OFF, disconnect the X510 inline harness connector at the A9A Outside Rearview Mirror-Driver. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 Ω between the control circuit terminal 4 and ground.
 - **If 10 Ω or greater**
 1. Ignition OFF, disconnect the harness connector at the S79D Window Switch - Driver.
 2. Test for less than 2 Ω in the control circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the S79D Window Switch - Driver.
 - **Go to next step: If less than 10 Ω**
3. Test for less than 10 Ω between the control circuit terminal 18 and ground.
 - **If 10 Ω or greater**
 1. Ignition OFF, disconnect the harness connector at the S79D Window Switch - Driver.
 2. Test for less than 2 Ω in the control circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the S79D Window Switch - Driver.
 - **Go to next step: If less than 10 Ω**
4. Connect a test lamp between control circuit terminal 4 and control circuit terminal 18, ignition ON.

5. Verify the test lamp turns ON when commanding the FOLD and UNFOLD with the S79D Window Switch - Driver.

- **If the test lamp remains OFF during either of the commands**

1. Ignition OFF, remove the test lamp, disconnect the harness connector at the S79D Window Switch - Driver.
2. Test for infinite resistance between each control circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, replace the S79D Window Switch - Driver.

- **Go to next step: If the test lamp turns ON during each of the commands**

6. Test or replace the A9A Outside Rearview Mirror-Driver.

Passenger Outside Mirror Folding Command Malfunction

1. Ignition OFF and all vehicle systems OFF, disconnect the X610 inline harness connector at the A9B Outside Rearview Mirror-Passenger. It may take up to 2 minutes for all vehicle systems to power down.

2. Test for less than 10 Ω between the control circuit terminal 4 and ground.

- **If 10 Ω or greater**

1. Ignition OFF, disconnect the X2 harness connector at the S79P Window Switch-Passenger.
2. Test for less than 2 Ω in the control circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the S79P Window Switch-Passenger.

- **Go to next step: If less than 10 Ω**

3. Test for less than 10 Ω between the control circuit terminal 18 and ground.

- **If 10 Ω or greater**

1. Ignition OFF, disconnect the X2 harness connector at the S79P Window Switch-Passenger.
2. Test for less than 2 Ω in the control circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the S79P Window Switch-Passenger.

- **Go to next step: If less than 10 Ω**

4. Connect a test lamp between control circuit terminal 4 and control circuit terminal 18, ignition ON.

5. Verify the test lamp turns ON when commanding the FOLD and UNFOLD states with the S79D Window Switch - Driver.

- **If the test lamp remains OFF during either of the commands**

1. Ignition OFF, remove the test lamp, disconnect the X2 harness connector at the S79P Window Switch-Passenger.
2. Test for infinite resistance between each control circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, replace the S79P Window Switch-Passenger.

- **Go to next step: If the test lamp turns ON during each of the commands**

6. Test or replace the A9B Outside Rearview Mirror-Passenger.

Component Testing

Outside Rearview Mirror

1. Ignition OFF, disconnect the inline harness connector at the appropriate A9 Outside Rearview Mirror.

2. Install a 10 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 A9 Outside Rearview Mirror should perform the FOLD and UNFOLD functions.

- **If the function does not perform the FOLD and UNFOLD functions**

Replace the A9 Outside Rearview Mirror.

- **Go to next step: If the function performs the FOLD and UNFOLD functions**

3. All OK

Repair Instructions

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

- [Front Side Door Window Switch Replacement - Right Side](#)
- [Front Side Door Window Control Switch Replacement](#)

POWER MIRROR MALFUNCTION (WITHOUT AAB)

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
Outside Rearview Mirror Switch B+	U1538 00, U1548 00, 1	U1538 00, U1548 00, 1	-	-
Driver Left/Right Mirror Horizontal Motor Control	1	2	2	-
Driver Left/Right Mirror Vertical Motor Control	1	2	2	-
Driver Mirror Motor Left/Up Control	1	2	2	-
Passenger Left/Right Mirror Horizontal Motor Control	1	3	3	-
Passenger Left/Right Mirror Vertical Motor Control	1	3	3	-
Passenger Mirror Motor Left/Up Control	1	2	2	-
Outside Rearview Mirror Switch Ground	-	1	-	-
1. Both Outside Power Mirrors Inoperative 2. Driver Outside Power Mirror Malfunction 3. Passenger Outside Power Mirror Malfunction				

Circuit/System Description

The outside rearview mirror switch controls the functions of the outside rearview mirrors based on the position of the mirror selector switch and which movement position is selected. The outside rearview mirror switch has four positions: up, down, left, and right. B+ is applied to the switch and when a movement position switch is selected, B+ is sent to the mirror via a motor control circuit. The opposite motor control circuit acts as a ground circuit for the bi-directional mirror motor.

Reference Information

Schematic Reference

[Outside Rearview Mirror Wiring Schematics](#)

Connector End View Reference

[COMPONENT CONNECTOR END VIEWS - INDEX](#)

Outside Mirror Description and Operation

Electrical Information Reference

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

Circuit/System Verification

1. Verify the A9A Outside Rearview Mirror-Driver and the A9B Outside Rearview Mirror-Passenger operates UP, DOWN, LEFT and RIGHT with the S79D Window Switch - Driver.

- **If both the A9A Outside Rearview Mirror-Driver and the A9B Outside Rearview Mirror-Passenger do not move**

Refer to Circuit/System Testing - Both Outside Mirrors Inoperative.

- **If only the A9A Outside Rearview Mirror-Driver or the A9B Outside Rearview Mirror-Passenger does not move UP, DOWN, LEFT or RIGHT**

Refer to Circuit/System Testing - Single Outside Mirror Malfunction.

- **Go to next step: If both the A9A Outside Rearview Mirror-Driver and the A9B Outside Rearview Mirror-Passenger move UP, DOWN, LEFT and RIGHT**

2. All OK.

Circuit/System Testing

Both Outside Mirrors Inoperative

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the S79D Window Switch - Driver. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 24 and ground.

- **If 10 Ω or greater**

1. Ignition OFF.

2. 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.

- **Go to next step: If less than 10 Ω**

3. Verify a test lamp illuminates between the B+ circuit terminal 23 and ground.

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

1. Ignition OFF.

2. Test for less than 2 Ω in the B+ circuit end to end.

- If 2 Ω or greater, repair the open/high resistance in the circuit.
- 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**

1. Ignition OFF.

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

- If less than infinite resistance, repair the short to ground on the circuit.
- Go to next step: If infinite resistance

3. Test for infinite resistance between each of the control circuit terminals listed below and ground:

- Terminal 2 control circuit

- Terminal 3 control circuit
 - Terminal 4 control circuit
 - Terminal 6 control circuit
 - Terminal 7 control circuit
 - Terminal 8 control circuit
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, test or replace the appropriate M77 Outside Rearview Mirror Motor.
 - **Go to next step: If the test lamp illuminates**
4. Test or replace the S79D Window Switch - Driver.

Single Outside Mirror Malfunction

1. Ignition OFF, disconnect the harness connector at the appropriate A9 Outside Rearview Mirror. Ignition ON.
2. Connect a test lamp between the control circuit terminal 9 and the control circuit terminal 12.
3. Verify the test lamp illuminates when commanding the UP and DOWN functions with the S79D Window Switch - Driver.
 - **If the test lamp does not illuminate during either of the UP and DOWN commands**
 1. Ignition OFF, remove the test lamp, disconnect the harness connector at the S79D Window Switch - Driver.
 2. Test for infinite resistance between each control circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - Go to next step: If infinite resistance
 3. Test for less than 2 Ω in each control circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace at the S79D Window Switch - Driver.
 - **Go to next step: If the test lamp is always ON**
 4. Ignition OFF, remove the test lamp, disconnect the harness connector at the S79D Window Switch - Driver, ignition ON.
 5. Test for less than 1 V between each control circuit and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V, replace the S79D Window Switch - Driver.
 - **Go to next step: If the test lamp illuminates during UP and DOWN the commands**
4. Connect a test lamp between the control circuit terminal 10 and the control circuit terminal 12.
5. Verify the test lamp illuminates when commanding the LEFT and RIGHT functions with the S79D Window Switch - Driver.
 - **If the test lamp does not illuminate during either of the LEFT and RIGHT commands**
 1. Ignition OFF, remove the test lamp, disconnect the harness connector at the S79D Window Switch - Driver.
 2. Test for infinite resistance between each control circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - Go to next step: If infinite resistance
 3. Test for less than 2 Ω in each control circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace at the S79D Window Switch - Driver.
 - **Go to next step: If the test lamp is always ON**
 4. Ignition OFF, remove the test lamp, disconnect the harness connector at the S79D Window Switch - Driver, ignition ON.
 5. Test for less than 1 V between each control circuit and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.

- If less than 1 V, replace the S79D Window Switch - Driver.
 - **Go to next step: If the test lamp illuminates during the LEFT and RIGHT commands**
6. Test or replace the M77 Outside Rearview Mirror Motor.

Repair Instructions

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

- [Front Side Door Window Control Switch Replacement](#)

POWER MIRROR MALFUNCTION (WITH AAB)

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
Position Sensor 5 V Reference	1	1	1	-
Left/Right Mirror Horizontal Position Sensor Signal	1	1	1	-
Left/Right Mirror Vertical Position Sensor Signal	1	1	1	-
Left/Right Mirror Motor Horizontal Control	1	1	1	-
Left/Right Mirror Motor Common Control	1	1	1	-
Left/Right Mirror Motor Vertical Control	1	1	1	-
Low Reference	-	1	-	-
1. Power Mirror Malfunction				

Circuit/System Description

The outside mirror switch (which is part of the driver window switch) and passenger window switch are on a serial data circuit with the memory seat module as the master. The mirror select and directional control switches are inputs to the memory seat module through the serial data circuit. When the memory seat module receives switch inputs from the outside mirror switch, mirror output commands are sent to the appropriate switch through the serial data circuit. The outside mirror switch and passenger window switch control the left and right outside rear view mirrors through bi-directional motor control circuits. The motor control circuits are floating while in an inactive state and the switches will apply power and ground to the control circuits as necessary to move the mirror in the commanded direction.

Mirror position is determined by both horizontal and vertical position sensors in each of the power mirrors. The outside mirror switch and passenger window switch supply a 5 V reference, low reference, and horizontal and vertical position signal circuits to these sensors. The signal circuits are referenced from 5 V by the switches and the signal circuit voltage levels represent the mirror positions. The mirror positions are sent to the memory seat module through the serial data circuit where they are stored for memory mirror operation. When the memory seat module receives a memory recall command, the memory seat module will send the go to position commands to the outside mirror switch and passenger window switch. The switches will then drive the appropriate mirror motors to the commanded position sensor settings.

Reference Information

Schematic Reference

Outside Rearview Mirror Wiring Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

INLINE HARNESS CONNECTOR END VIEWS - INDEX

Description and Operation

Outside Mirror Description and Operation

Electrical Information Reference

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

Scan Tool Reference

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

Circuit/System Verification

1. Ignition ON.
2. Verify the scan tool Mirror Select Switch parameter changes between Left, Right, and None when cycling the S79D Window Switch - Driver between the LEFT, RIGHT, and NONE positions.
 - **If the parameter does not cycle between the specified values**
Replace the S79D Window Switch - Driver.
 - **Go to next step: If the parameter does cycle between the specified values**
3. Verify the scan tool Mirror Direction Command parameter changes between Up, Down, Right and Left while cycling the S79D Window Switch - Driver UP, DOWN, RIGHT and LEFT.
 - **If the parameter does not cycle between the specified values**
Replace the S79D Window Switch - Driver.
 - **Go to next step: If the parameter does cycle between the specified values**
4. Verify the A9A Outside Rearview Mirror - Driver moves when commanding the Driver Mirror Horizontal Movement Right/Left and Driver Mirror Vertical Movement Up/Down with a scan tool.
 - **If the A9A Outside Rearview Mirror - Driver does not move RIGHT or LEFT or UP or DOWN**
Refer to Circuit/System Testing - Driver Outside Mirror Movement Malfunction.
 - **Go to next step: If the A9A Outside Rearview Mirror - Driver moves RIGHT, LEFT, UP and DOWN**
5. Verify the scan tool Driver Mirror Vertical Position parameters are between 0.2 - 4.8 V and change when commanding the Driver Mirror Vertical Movement Up/Down with a scan tool.
 - **If not between 0.2 - 4.8 V or does not change**
Refer to Circuit/System Testing - Driver Mirror Position Sensor Circuit Test.
 - **Go to next step: If between 0.2 - 4.8 V and changes**
6. Verify the scan tool Driver Mirror Horizontal Position parameters are between 0.2 - 4.8 V and change when commanding the Driver Mirror Horizontal Movement Right/Left with a scan tool.
 - **If not between 0.2 - 4.8 V or does not change**

- **Go to next step: If between 0.2 - 4.8 V and changes**

7. Verify the A9B Outside Rearview Mirror-Passenger moves when commanding the Passenger Mirror Horizontal Movement Right/Left and Passenger Mirror Vertical Movement Up/Down with a scan tool.

- **If the A9B Outside Rearview Mirror-Passenger does not move RIGHT or LEFT or UP or DOWN**

Refer to Circuit/System Testing - Passenger Outside Mirror Movement Malfunction.

- **Go to next step: If the A9B Outside Rearview Mirror-Passenger moves RIGHT, LEFT, UP and DOWN**

8. Verify the scan tool Passenger Mirror Vertical Position parameters are between 0.2 - 4.8 V and change while commanding the Passenger Mirror Horizontal Movement Right/Left with a scan tool.

- **If not between 0.2 - 4.8 V or does not change**

Refer to Circuit/System Testing - Passenger Mirror Position Sensor Circuit Test.

- **Go to next step: If between 0.2 - 4.8 V and changes**

9. Verify the scan tool Passenger Mirror Horizontal Position parameters are between 0.2 - 4.8 V and change while commanding the Passenger Mirror Vertical Movement Up/Down with a scan tool.

- **If not between 0.2 - 4.8 V or does not change**

Refer to Circuit/System Testing - Passenger Mirror Position Sensor Circuit Test.

- **Go to next step: If between 0.2 - 4.8 V and changes**

10. Verify the A9A Outside Rearview Mirror - Driver and A9B Outside Rearview Mirror-Passenger adjust to the stored memory positions when operating the S47D Driver Seat Memory Switch.

- **If a A9 Outside Rearview Mirror does not adjust to the stored memory position**

Refer to [Memory Seat Feature Malfunction](#) .

- **Go to next step: If the A9A Outside Rearview Mirror - Driver and A9B Outside Rearview Mirror-Passenger adjust to the stored memory positions**

11. All OK.

Circuit/System Testing

Driver Outside Mirror Movement Malfunction

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the S79D Window Switch - Driver. It may take up to 2 minutes for all vehicle systems to power down.

2. Test for less than 10 Ω between the ground circuit terminal 24 and ground.

- **If 10 Ω or greater**

1. Ignition OFF.

2. 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.

- **Go to next step: If less than 10 Ω**

3. Ignition ON.

4. Verify a test lamp illuminates between the B+ circuit terminal 23 and ground.

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

1. Ignition OFF.

2. Test for less than 2 Ω in the B+ circuit end to end.

- If 2 Ω or greater, repair the open/high resistance in the circuit.

- 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**
 1. Ignition OFF.
 2. Test for infinite resistance between the B+ circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - Go to next step: If infinite resistance
 3. Test for infinite resistance between the control circuits listed below and ground:
 - Control circuit terminal 6
 - Control circuit terminal 7
 - Control circuit terminal 8
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, replace the S79D Window Switch - Driver.
 - **Go to next step: If the test lamp illuminates**
- 5. Ignition OFF, connect the harness connector at the S79D Window Switch - Driver and disconnect the X510 inline harness connector at the A9A Outside Rearview Mirror-Driver. Ignition ON
- 6. Connect a test lamp between the control circuit terminal 12 and control circuit terminal 9.
- 7. Verify the test lamp turns ON when commanding the Up and Down states with a scan tool.
 - **If the test lamp remains OFF during either of the commands**
 1. Ignition OFF, remove the test lamp, disconnect the harness connector at the S79D Window Switch - Driver.
 2. Test for infinite resistance between each control circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - Go to next step: If infinite resistance
 3. Test for less than 2 Ω in each control circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the S79D Window Switch - Driver.
 - **If the test lamp is always ON**
 1. Ignition OFF, remove the test lamp, disconnect the harness connector at the S79D Window Switch - Driver, ignition ON.
 2. Test for less than 1 V between each control circuit and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V, replace the S79D Window Switch - Driver.
 - **Go to next step: If the test lamp turns ON during each of the commands**
- 8. Connect a test lamp between the control circuit terminal 12 and control circuit terminal 10.
- 9. Verify the test lamp turns ON when commanding the Left and Right states with a scan tool.
 - **If the test lamp remains OFF during either of the commands**
 1. Ignition OFF, remove the test lamp, disconnect the harness connector at the S79D Window Switch - Driver.
 2. Test for infinite resistance between each control circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - Go to next step: If infinite resistance
 3. Test for less than 2 Ω in each control circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the S79D Window Switch - Driver.
 - **If the test lamp is always ON**
 1. Ignition OFF, remove the test lamp, disconnect the harness connector at the S79D Window Switch - Driver, ignition ON.
 2. Test for less than 1 V between each control circuit and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V, replace the S79D Window Switch - Driver.

- **Go to next step: If the test lamp turns ON during each of the commands**

10. Test or replace the M77D Outside Rearview Mirror Motor-Driver.

Driver Mirror Position Sensor Circuit Test

1. Ignition OFF and all vehicle systems OFF, disconnect the X510 inline harness connector at the A9A Outside Rearview Mirror-Driver. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 Ω between the low reference circuit terminal 3 and ground.
 - **If 10 Ω or greater**
 1. Ignition OFF, disconnect the harness connector at the S79D Window Switch - Driver.
 2. Test for less than 2 Ω in the low reference circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the S79D Window Switch - Driver.
 - **Go to next step: If less than 10 Ω**
3. Ignition ON.
4. Test for 4.8 - 5.2 V between the 5 V reference circuit terminal 17 and ground.
 - **If less than 4.8 V**
 1. Ignition OFF, disconnect the harness connector at the S79D Window Switch - Driver.
 2. Test for infinite resistance between the 5 V reference circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - Go to next step: If infinite resistance
 3. Test for less than 2 Ω in the 5 V reference circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the S79D Window Switch - Driver.
 - **If greater than 5.2 V**
 1. Ignition OFF, disconnect the harness connector at the S79D Window Switch - Driver, ignition ON.
 2. Test for less than 1 V between the 5 V reference circuit and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V, replace the S79D Window Switch - Driver.
 - **Go to next step: If between 4.8 - 5.2 V**
5. Verify the scan tool Driver Mirror Vertical Position parameter is less than 4.6 V.
 - **If 4.6 V or greater**
 1. Ignition OFF, disconnect the X1 harness connector at the S79D Window Switch - Driver, ignition ON.
 2. Test for less than 1 V between the signal circuit terminal 18 and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V, replace the S79D Window Switch - Driver.
 - **Go to next step: If less than 4.6 V**
6. Install a 3 A fused jumper wire between the signal circuit terminal 18 and the 5 V reference circuit terminal 17.
7. Verify the scan tool Driver Mirror Vertical Position parameter is greater than 0.6 V.
 - **If 0.6 V or less**
 1. Ignition OFF, remove the jumper wire, disconnect the harness connector at the S79D Window Switch - Driver.
 2. Test for infinite resistance between the signal circuit terminal 18 and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - Go to next step: If infinite resistance
 3. Test for less than 2 Ω in the signal circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.

- If less than 2 Ω , replace the S79D Window Switch - Driver.
 - **Go to next step: If greater than 0.6 V**
8. Verify the scan tool Driver Mirror Horizontal Position parameter is less than 4.6 V.
 - **If 4.6 V or greater**
 1. Ignition OFF, disconnect the harness connector at the S79D Window Switch - Driver, ignition ON.
 2. Test for less than 1 V between the signal circuit terminal 16 and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V, replace the S79D Window Switch - Driver.
 - **Go to next step: If less than 4.6 V**
 9. Install a 3 A fused jumper wire between the signal circuit terminal 16 and the 5 V reference circuit terminal 17.
 10. Verify the scan tool Driver Mirror Horizontal Position parameter is greater than 0.6 V.
 - **If 0.6 V or less**
 1. Ignition OFF, remove the jumper wire, disconnect the harness connector at the S79D Window Switch - Driver.
 2. Test for infinite resistance between the signal circuit terminal 16 and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - Go to next step: If infinite resistance
 3. Test for less than 2 Ω in the signal circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the S79D Window Switch - Driver.
 - **Go to next step: If greater than 0.6 V**
 11. Test or replace the M77D Outside Rearview Mirror Motor-Driver.

Passenger Outside Mirror Movement Malfunction

1. Ignition OFF, disconnect the X610 inline harness connector at the A9B Outside Rearview Mirror-Passenger. Ignition ON
2. Connect a test lamp between the control circuit terminal 9 and control circuit terminal 12.
3. Verify the test lamp turns ON when commanding the Up and Down states with a scan tool.
 - **If the test lamp remains OFF during either of the commands**
 1. Ignition OFF, remove the test lamp, disconnect the X2 harness connector at the S79P Window Switch-Passenger.
 2. Test for infinite resistance between each control circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - Go to next step: If infinite resistance
 3. Test for less than 2 Ω in each control circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the S79P Window Switch-Passenger.
 - **If the test lamp is always ON**
 1. Ignition OFF, remove the test lamp, disconnect the X2 harness connector at the S79P Window Switch-Passenger, ignition ON.
 2. Test for less than 1 V between each control circuit and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V, replace the S79P Window Switch-Passenger
 - **Go to next step: If the test lamp turns ON during each of the commands**
4. Connect a test lamp between the control circuit terminal 10 and control circuit terminal 12.
5. Verify the test lamp turns ON when commanding the Left and Right states with a scan tool.
 - **If the test lamp remains OFF during either of the commands**

1. Ignition OFF, remove the test lamp, disconnect the harness connector at the S79P Window Switch-Passenger.
2. Test for infinite resistance between each control circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - Go to next step: If infinite resistance
3. Test for less than 2 Ω in each control circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the S79P Window Switch-Passenger.
- **If the test lamp is always ON**
1. Ignition OFF, remove the test lamp, disconnect the harness connector at the S79P Window Switch-Passenger, ignition ON.
2. Test for less than 1 V between each control circuit and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V, replace the S79P Window Switch-Passenger
- **Go to next step: If the test lamp turns ON during each of the commands**
6. Test or replace the M77P Outside Rearview Mirror Motor-Passenger.

Passenger Mirror Position Sensor Circuit Test

1. Ignition OFF and all vehicle systems OFF, disconnect the X610 inline harness connector at the A9B Outside Rearview Mirror-Passenger. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 Ω between the low reference circuit terminal 3 and ground.
 - **If 10 Ω or greater**
 - 1. Ignition OFF, disconnect the harness connector at the S79P Window Switch-Passenger.
 - 2. Test for less than 2 Ω in the low reference circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the S79P Window Switch-Passenger.
 - **Go to next step: If less than 10 Ω**
3. Ignition ON.
4. Test for 4.8 - 5.2 V between the 5 V reference circuit terminal 17 and ground.
 - **If less than 4.8 V**
 - 1. Ignition OFF, disconnect the harness connector at the S79P Window Switch-Passenger.
 - 2. Test for infinite resistance between the 5 V reference circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - Go to next step: If infinite resistance
 - 3. Test for less than 2 Ω in the 5 V reference circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the S79P Window Switch-Passenger.
 - **If greater than 5.2 V**
 - 1. Ignition OFF, disconnect the harness connector at the S79P Window Switch-Passenger, ignition ON.
 - 2. Test for less than 1 V between the 5 V reference circuit and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V, replace the S79P Window Switch-Passenger.
 - **Go to next step: If between 4.8 - 5.2 V**
5. Verify the scan tool Passenger Mirror Vertical Position parameter is less than 4.6 V.
 - **If 4.6 V or greater**
 - 1. Ignition OFF, disconnect the harness connector at the S79P Window Switch-Passenger, ignition ON.
 - 2. Test for less than 1 V between the signal circuit terminal 7 and ground.

- If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V, replace the S79P Window Switch-Passenger.
 - **Go to next step: If less than 4.6 V**
6. Install a 3 A fused jumper wire between the signal circuit terminal 7 and the 5 V reference circuit terminal 6.
 7. Verify the scan tool Passenger Mirror Vertical Position parameter is greater than 0.6 V.
 - **If 0.6 V or less**
 1. Ignition OFF, remove the jumper wire, disconnect the X2 harness connector at the S79P Window Switch-Passenger.
 2. Test for infinite resistance between the signal circuit terminal 7 and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - Go to next step: If infinite resistance
 3. Test for less than 2 Ω in the signal circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the S79P Window Switch-Passenger.
 - **Go to next step: If greater than 0.6 V**
 8. Verify the scan tool Passenger Mirror Horizontal Position parameter is less than 4.6 V.
 - **If 4.6 V or greater**
 1. Ignition OFF, disconnect the harness connector at the S79P Window Switch-Passenger, ignition ON.
 2. Test for less than 1 V between the signal circuit terminal 9 and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V, replace the S79P Window Switch-Passenger.
 - **Go to next step: If less than 4.6 V**
 9. Install a 3 A fused jumper wire between the signal circuit terminal 9 and the 5 V reference circuit terminal 6.
 10. Verify the scan tool Passenger Mirror Horizontal Position parameter is greater than 0.6 V.
 - **If 0.6 V or less**
 1. Ignition OFF, remove the jumper wire, disconnect the harness connector at the S79P Window Switch-Passenger.
 2. Test for infinite resistance between the signal circuit terminal 9 and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - Go to next step: If infinite resistance
 3. Test for less than 2 Ω in the signal circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the S79P Window Switch-Passenger.
 - **Go to next step: If greater than 0.6 V**
 11. Test or replace the M77P Outside Rearview Mirror Motor-Passenger.

Repair Instructions

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

- [Front Side Door Window Control Switch Replacement](#)
- [Front Side Door Window Switch Replacement - Right Side](#)

POWER MIRROR TILT INOPERATIVE IN REVERSE

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 outside mirror switch and passenger window switch are on a serial data circuit with the memory seat module as the master. The mirror select and directional control switches are inputs to the memory seat module through the serial data circuit. When the memory seat module receives switch inputs from the outside mirror switch, mirror output commands are sent to the appropriate switch through the serial data circuit. The outside mirror switch and passenger window switch control the left and right outside rear view mirrors through bi-directional motor control circuits. The motor control circuits are floating while in an inactive state and the switches will apply power and ground to the control circuits as necessary to move the mirror in the commanded direction.

Mirror position is determined by both horizontal and vertical position sensors in each of the power mirrors. The outside mirror switch and passenger window switch supply a 5 V reference, low reference, and horizontal and vertical position signal circuits to these sensors. The signal circuits are referenced from 5 V by the switches and the signal circuit voltage levels represent the mirror positions. The mirror positions are sent to the memory seat module through the serial data circuit where they are stored for memory mirror operation. When the memory seat module receives a memory recall command, the memory seat module will send the go to position commands to the outside mirror switch and passenger window switch. The switches will then drive the appropriate mirror motors to the commanded position sensor settings.

Diagnostic Aids

Not all vehicles have the Park Tilt Mirror feature, verify that the Park Tilt Mirrors option is available in the DIC Vehicle Customization Feature Setting Menu before attempting diagnosis.

Reference Information

Schematic Reference

Outside Rearview Mirror Wiring Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Outside Mirror Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Ignition ON.
2. Verify the park assist option is activated in the driver information center (DIC).
3. Select the driver outside mirror on S52 Outside Rearview Mirror Switch.
4. Verify mirror functions properly when operating the S52 Outside Rearview Mirror Switch in UP/DOWN and LEFT/RIGHT positions.
 - **If the mirror does not function properly**

Refer to **Power Mirror Malfunction (Without AAB)****Power Mirror Malfunction (With AAB)**.

- **Go to next step: If the mirror functions properly**

5. Select the passenger outside mirror on S52 Outside Rearview Mirror Switch.

6. Verify mirror functions properly when operating the S52 Outside Rearview Mirror Switch in UP/DOWN and LEFT/RIGHT positions.

- **If the mirror does not function properly**

Refer to [Power Mirror Malfunction \(Without AAB\)](#)[Power Mirror Malfunction \(With AAB\)](#).

- **Go to next step: If the mirror functions properly**

7. Operate the memory 1 and 2 recall switches on S47D Seat Memory Switch - Driver.

8. Verify the outside rearview mirrors adjust to the stored memory positions.

- **If the mirrors do not adjust to the stored positions**

Refer to [Power Mirror Malfunction \(Without AAB\)](#)[Power Mirror Malfunction \(With AAB\)](#).

- **Go to next step: If the mirrors adjust to the stored positions**

9. Park brake on, vehicle running, shift the vehicle in REVERSE.

10. Verify that the outside rearview mirrors tilt.

- **If the driver outside mirror does not tilt**

1. Ignition OFF.

2. Replace the S52 Outside Rearview Mirror Switch.

3. Park brake on, vehicle running, shift the vehicle in REVERSE.

4. Verify the driver mirror tilts.

- If the mirror does not tilt, replace the K40 Memory Seat Module.
- Go to next step: If the mirror tilts

5. All OK.

- **If the passenger outside mirror does not tilt**

1. Ignition OFF.

2. Replace the S79P Passenger Window Switch.

3. Park brake on, vehicle running, shift the vehicle in REVERSE.

4. Verify the driver mirror tilts.

- If the mirror does not tilt, replace the K40 Memory Seat Control Module.
- Go to next step: If the mirror tilts

5. All OK.

- **Go to next step: If the mirrors tilt**

11. All OK.

Repair Instructions

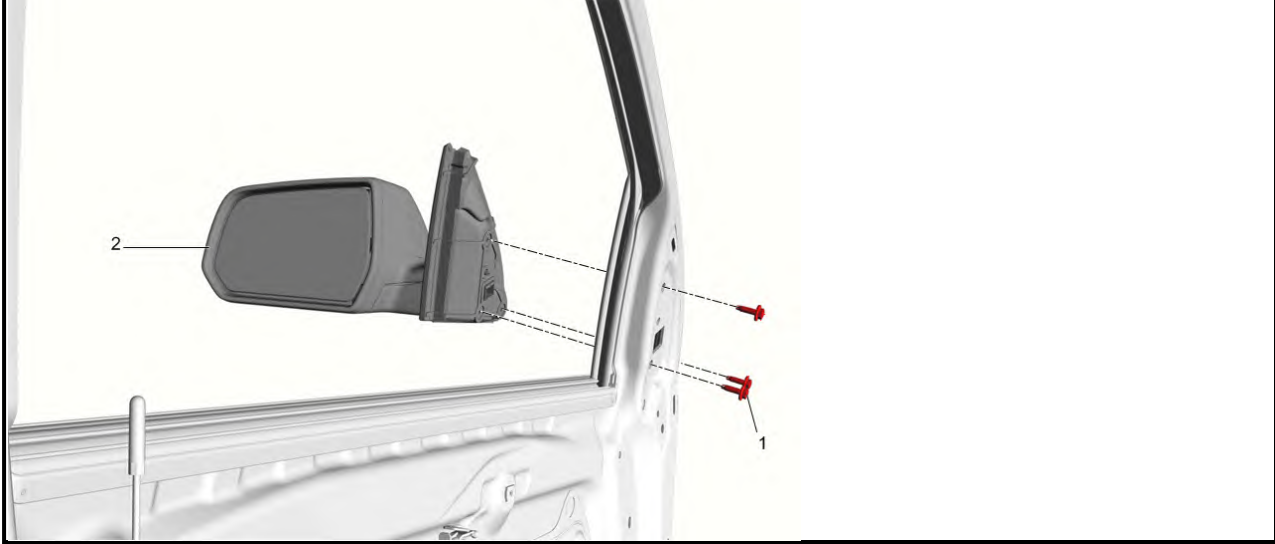
Perform the [Diagnostic Repair Verification](#) after completing the repair.

[Control Module References](#) for door lock/window switches and memory seat control module replacement, programming and setup

REPAIR INSTRUCTIONS

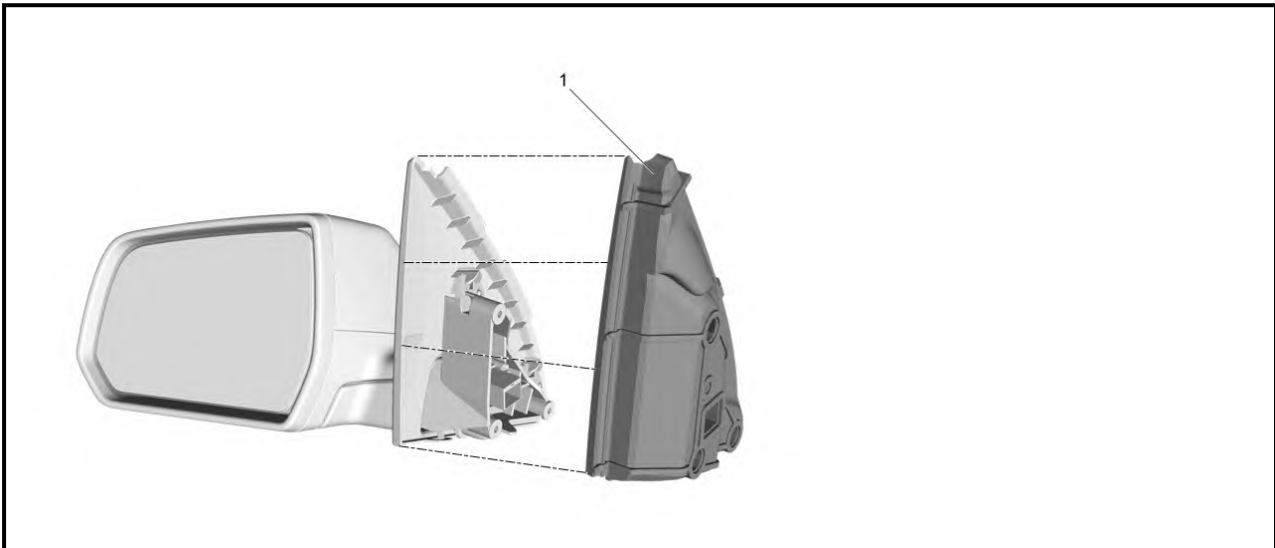
OUTSIDE REARVIEW MIRROR REPLACEMENT





Callout	Component Name
WARNING: Refer to Glass and Sheet Metal Handling Warning	
Preliminary Procedures 1. Front Side Door Window Garnish Molding Replacement 2. Front Side Door Window Upper Reveal Molding Replacement 3. Disconnect the electrical connector.	
1	Outside Rearview Mirror Fastener [3x] CAUTION: Refer to Fastener Caution . Tighten 10 N.m (89 lb in)
2	Outside Rearview Mirror Procedure Inspect the mirror for proper operation before installing the door trim.

OUTSIDE REARVIEW MIRROR GASKET REPLACEMENT

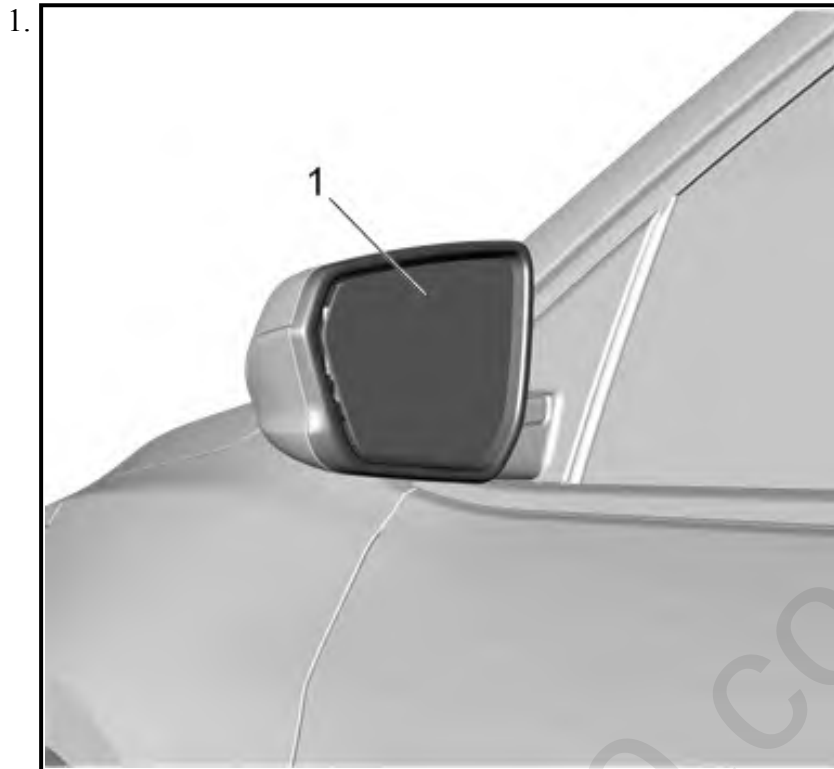


Callout	Component Name
Preliminary Procedure Outside Rearview Mirror Replacement	

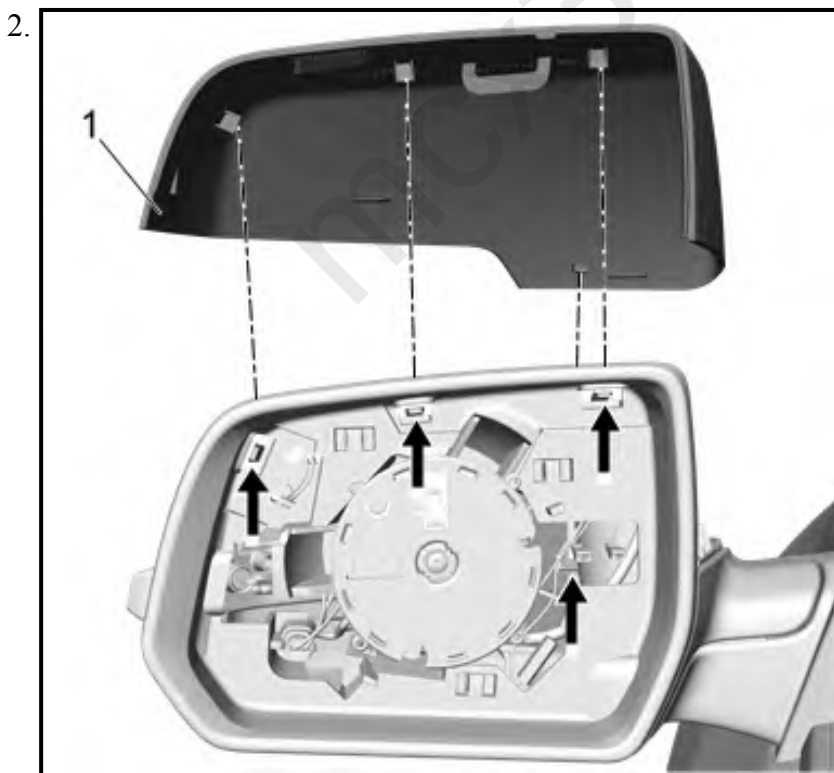
Callout	Component Name
1	Outside Rearview Mirror Gasket Procedure Inspect the mirror for proper operation before installing the door trim.

OUTSIDE REARVIEW MIRROR HOUSING COVER MOLDING REPLACEMENT

Removal Procedure

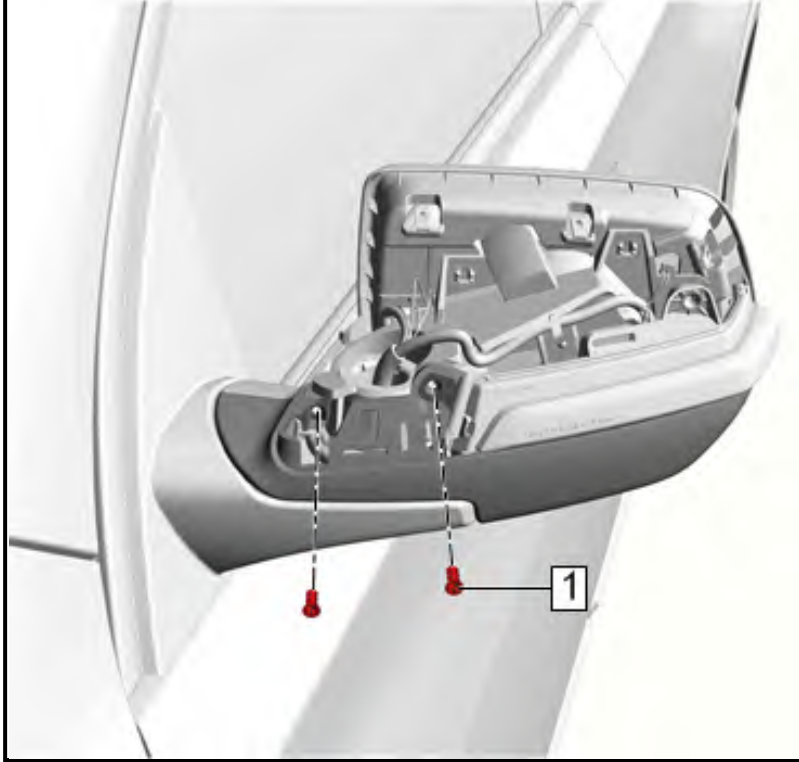


Outside Rearview Mirror Glass (1) - Remove - [Outside Rearview Mirror Glass Replacement](#)

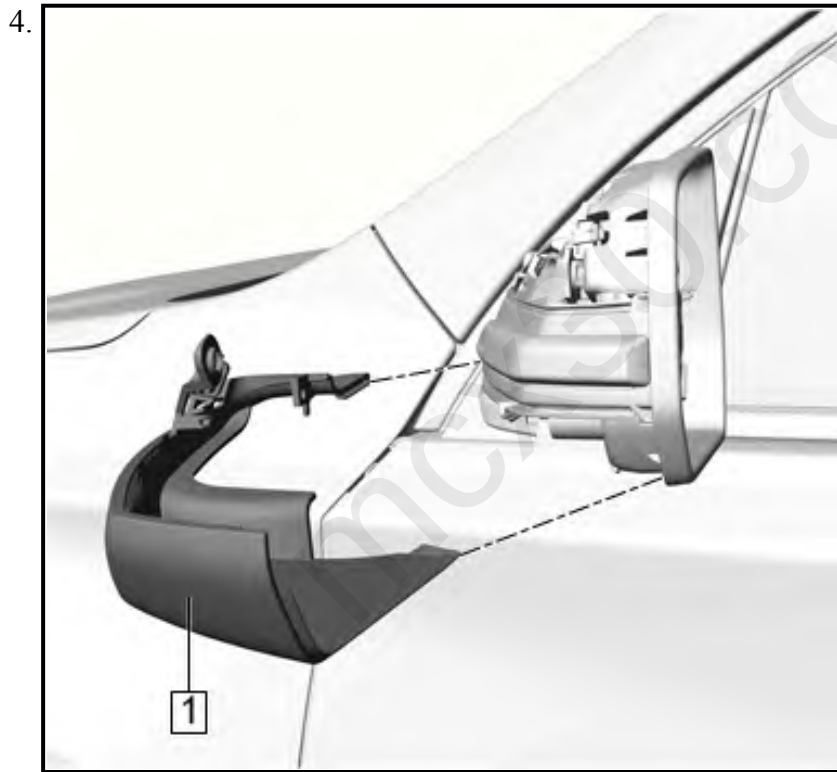


Outside Rearview Mirror Upper Housing Cover (1) - Remove





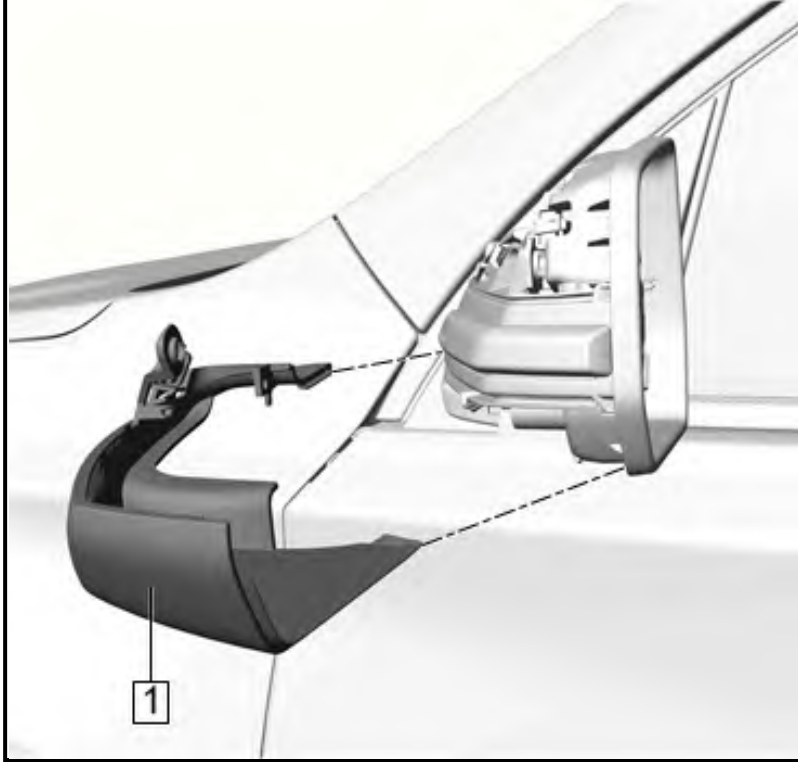
Outside rearview mirror opening applique bolt (1) - Remove [2x]



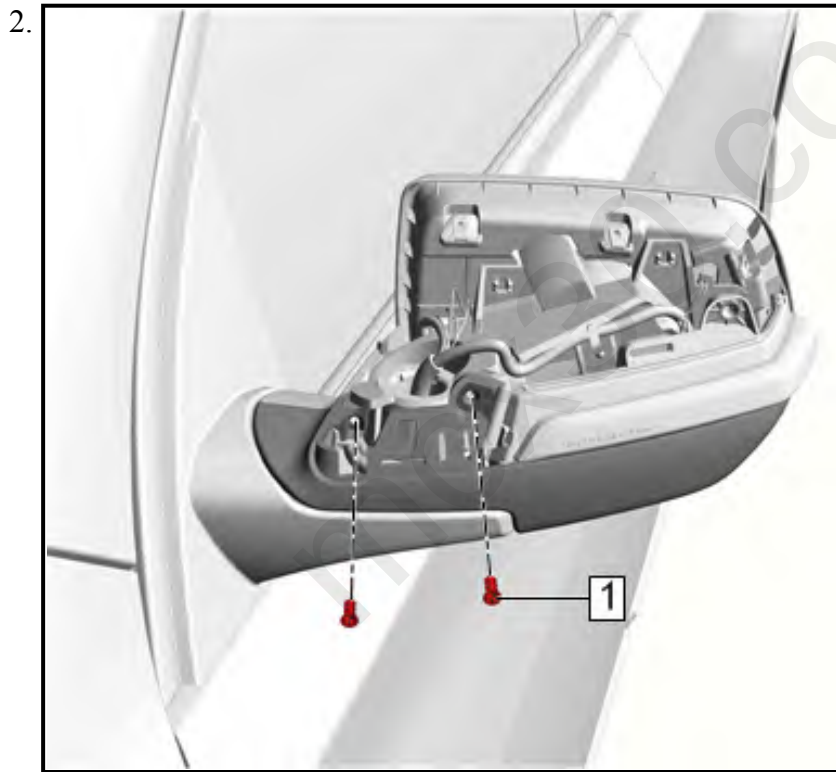
Outside rearview mirror housing cover molding (1) - Remove

Installation Procedure





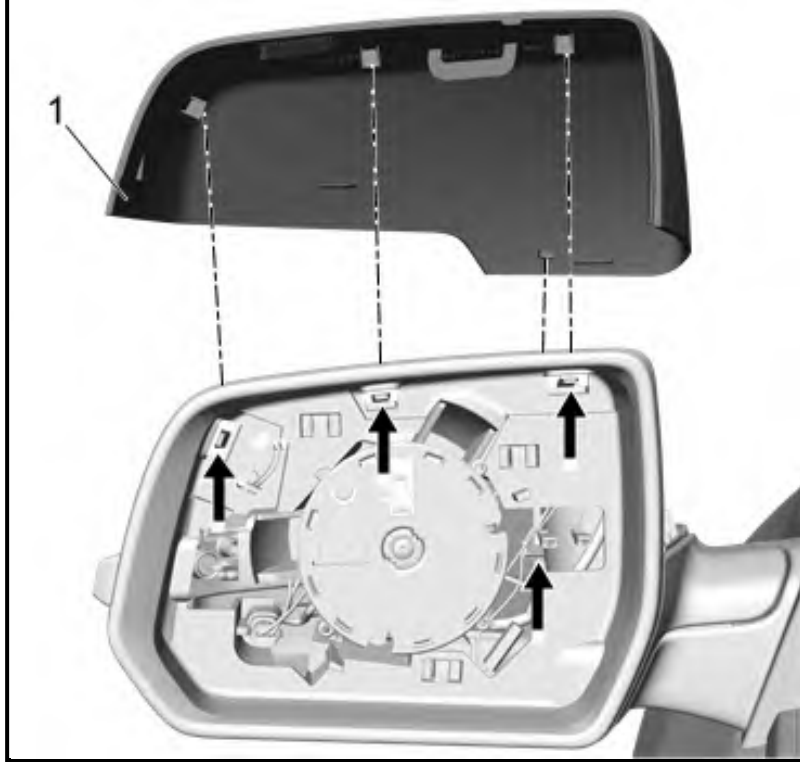
Outside rearview mirror housing cover molding (1) - Install



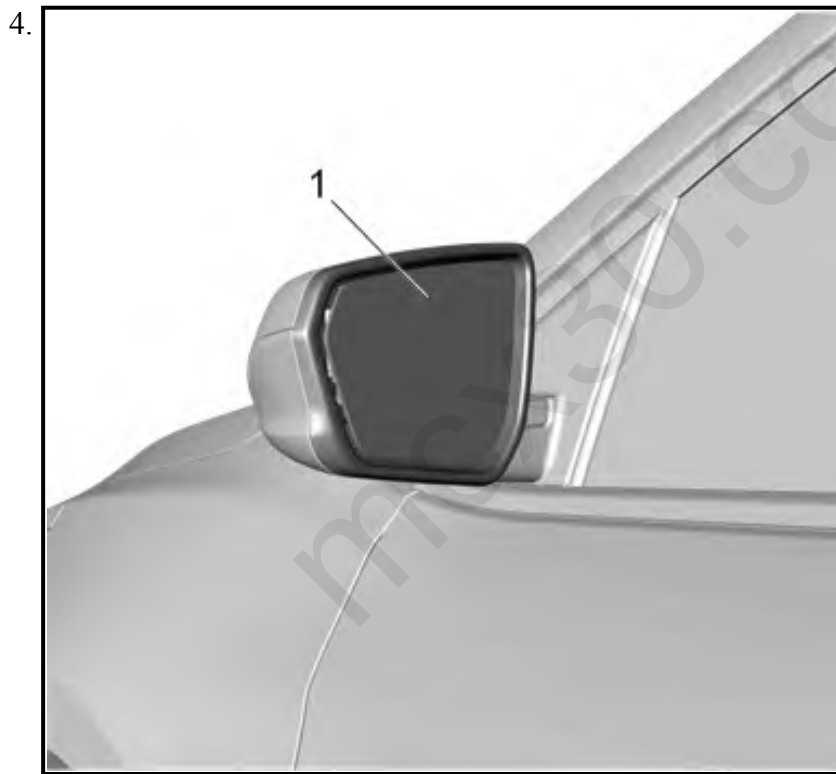
CAUTION: Refer to [Fastener Caution](#) .

Outside rearview mirror opening applique bolt (1) - Install and tighten [2x] 2 N.m (18 lb in)





Outside Rearview Mirror Upper Housing Cover (1) - Install



NOTE: Inspect the outside rearview mirror for proper operation.

Outside Rearview Mirror Glass (1) - Install - [Outside Rearview Mirror Glass Replacement](#)

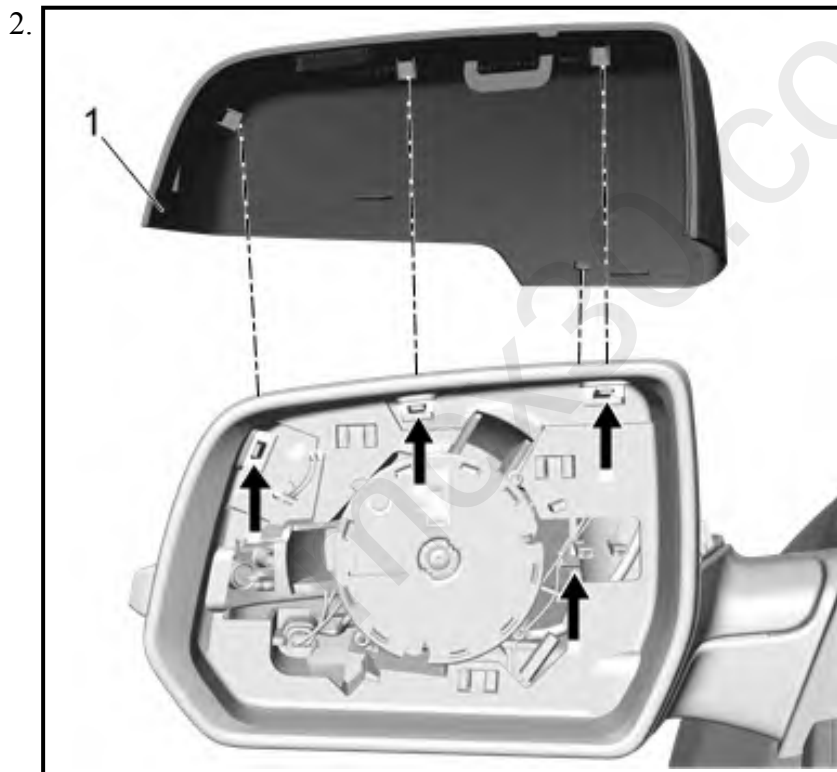
OUTSIDE REARVIEW MIRROR HOUSING UPPER COVER REPLACEMENT

Removal Procedure





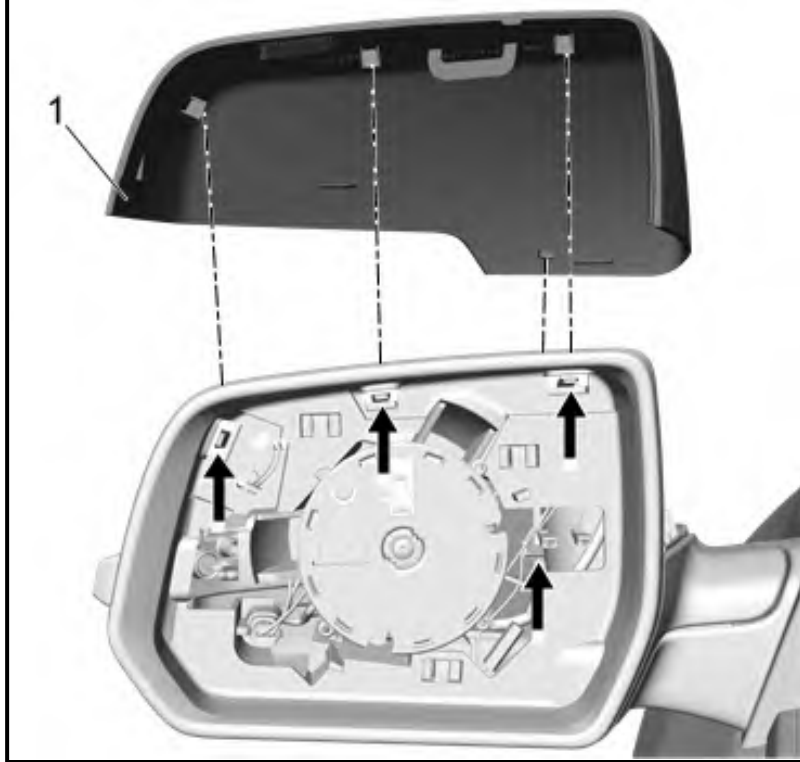
Outside Rearview Mirror Glass (1) - Remove - [Outside Rearview Mirror Glass Replacement](#)



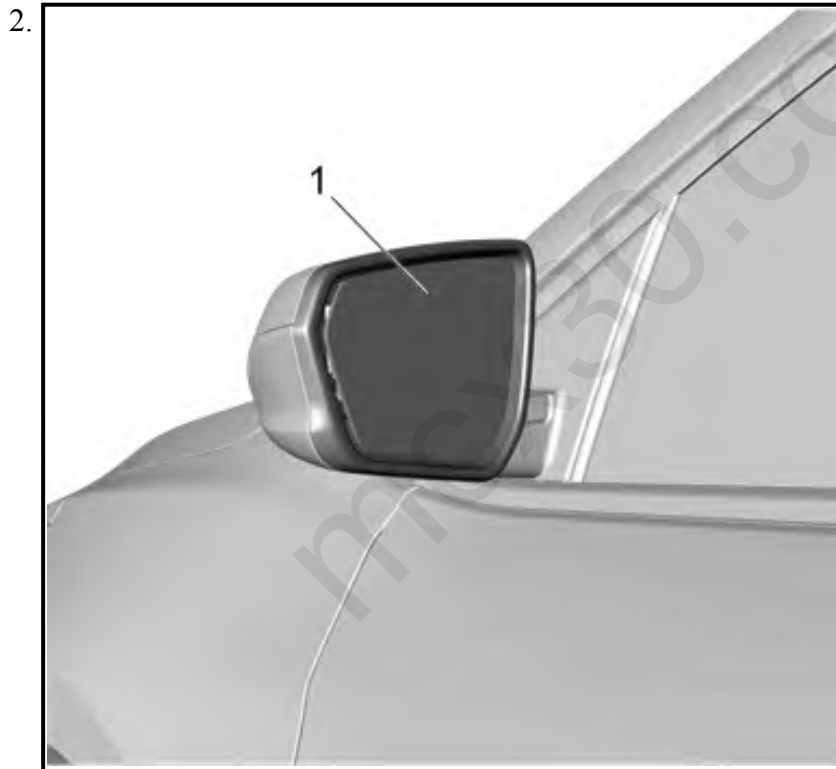
Outside Rearview Mirror Upper Housing Cover (1) - Remove

Installation Procedure





Outside Rearview Mirror Upper Housing Cover (1) - Install



NOTE: Inspect the outside rearview mirror for proper operation.

Outside Rearview Mirror Glass (1) - Install - [Outside Rearview Mirror Glass Replacement](#)

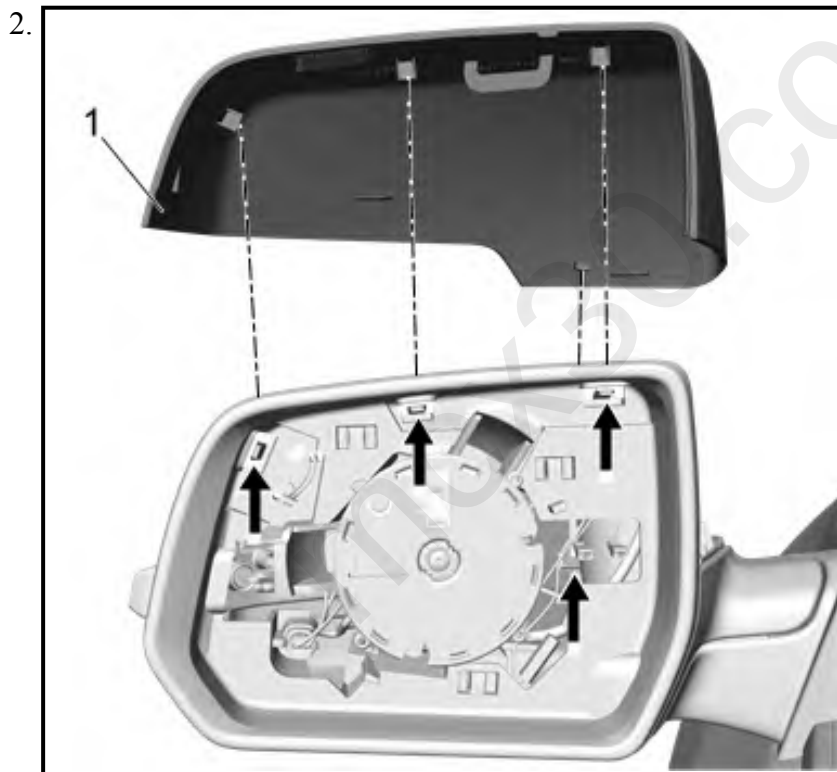
OUTSIDE REARVIEW MIRROR HOUSING BEZEL REPLACEMENT

Removal Procedure

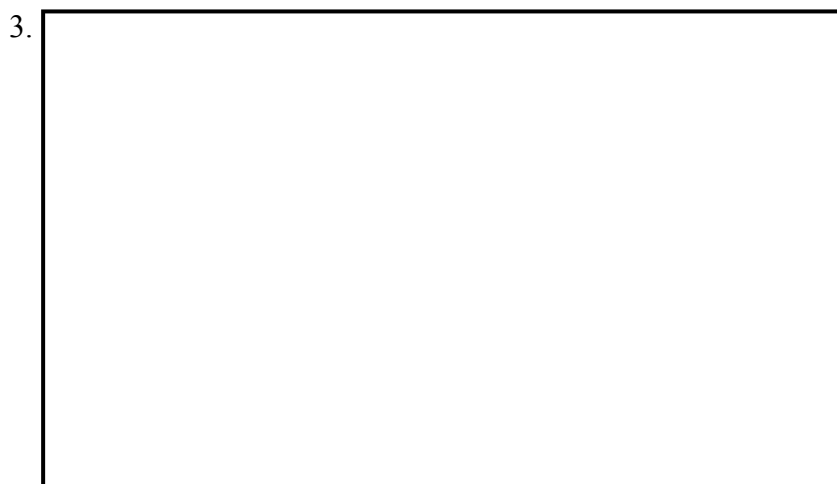


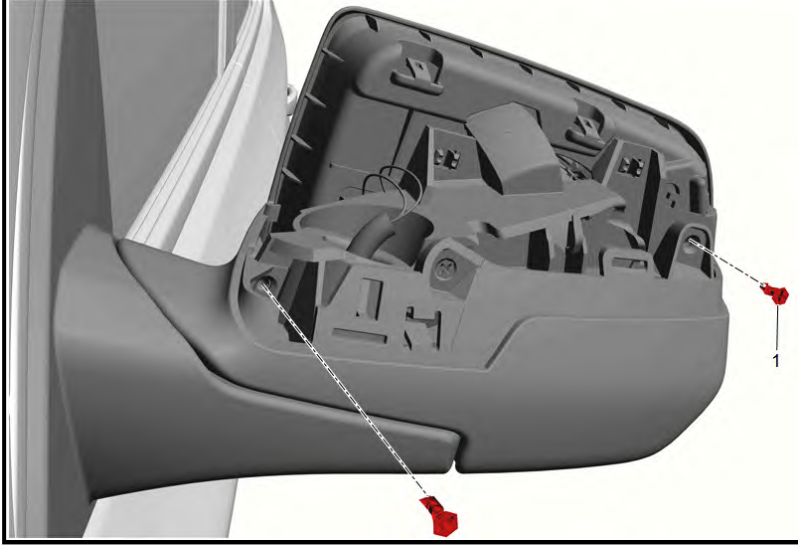


Outside Rearview Mirror Glass (1) - Remove - [Outside Rearview Mirror Glass Replacement](#)

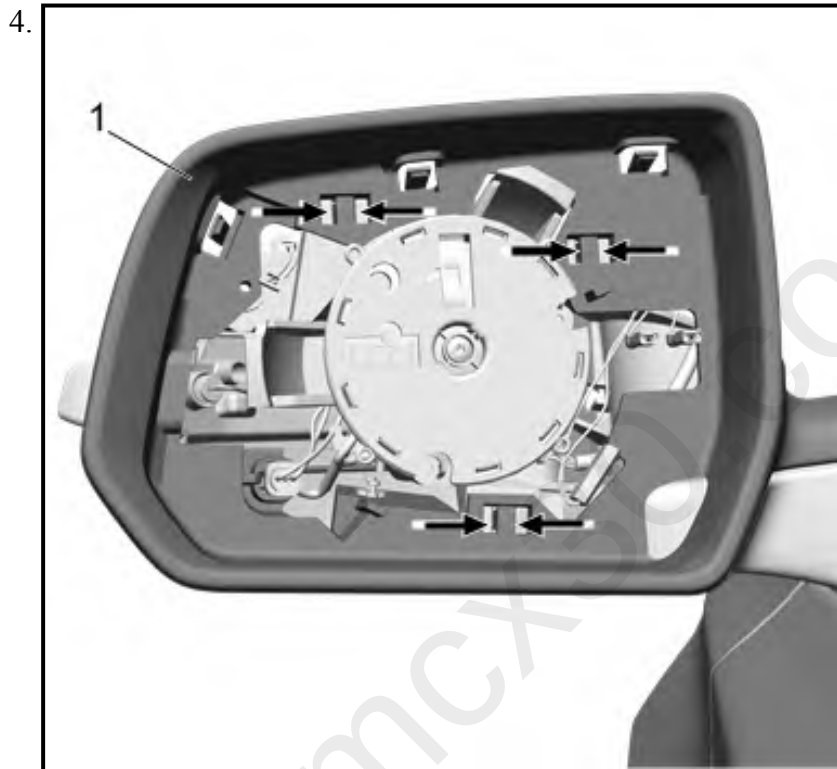


Outside Rearview Mirror Upper Housing Cover (1) - Remove - [Outside Rearview Mirror Housing Upper Cover Replacement](#)



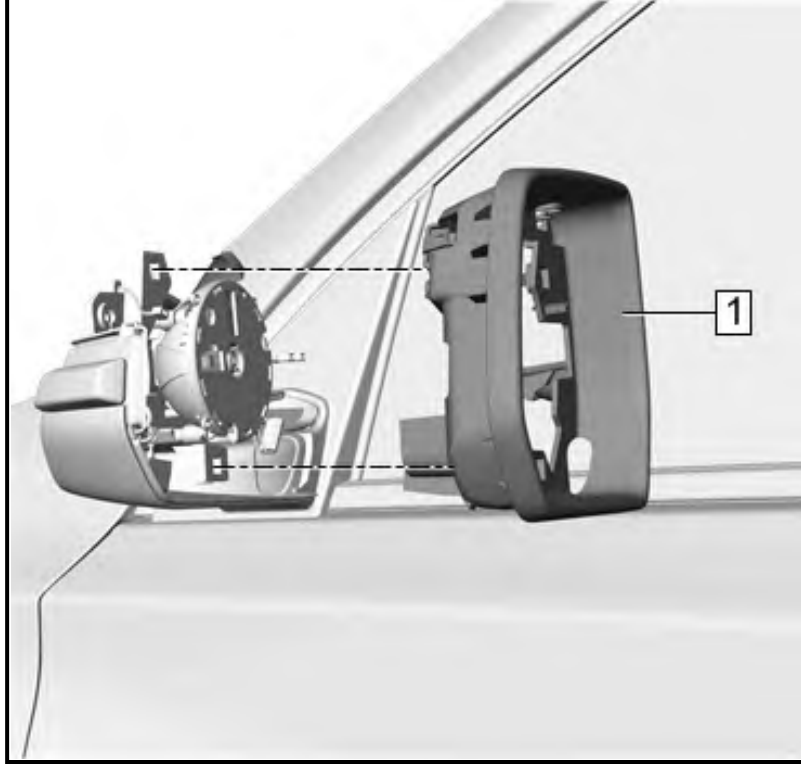


Outside rearview mirror housing bezel screw (1) - Remove [2x]



Squeeze the retaining clips to release the outside rearview mirror housing bezel. (1) - Remove



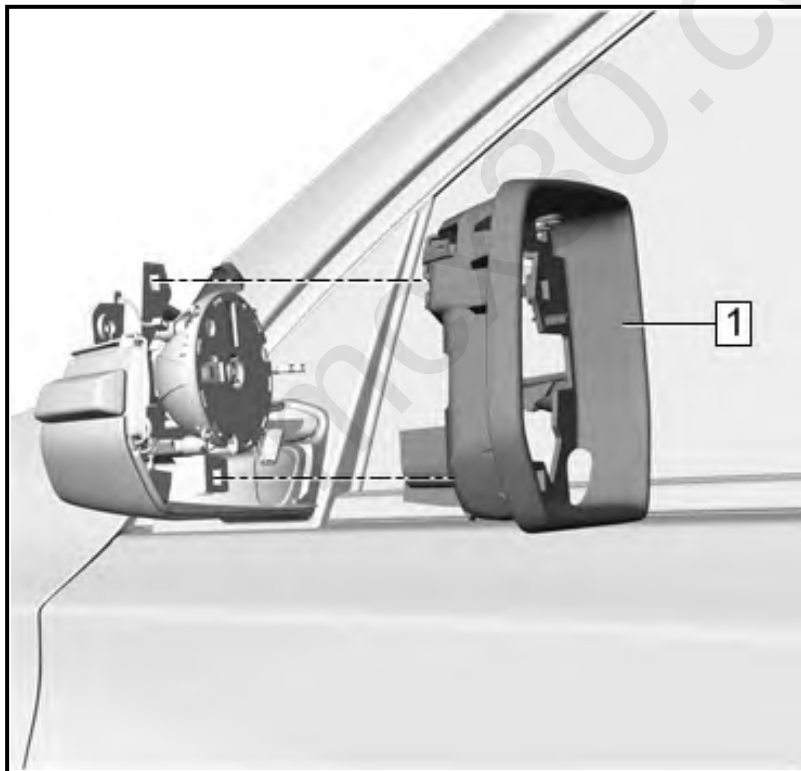


Disconnect harness from bezel (1).

6. Outside Rearview Mirror Housing Bezel (1) - Remove

Installation Procedure

1.

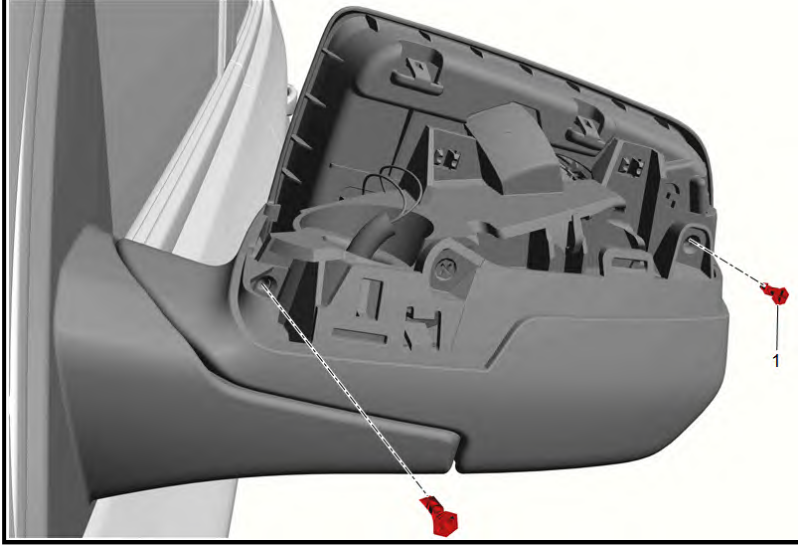


Push the outside rearview mirror housing bezel (1) into the retaining clips until seated.

2. Connect harness to bezel (1).

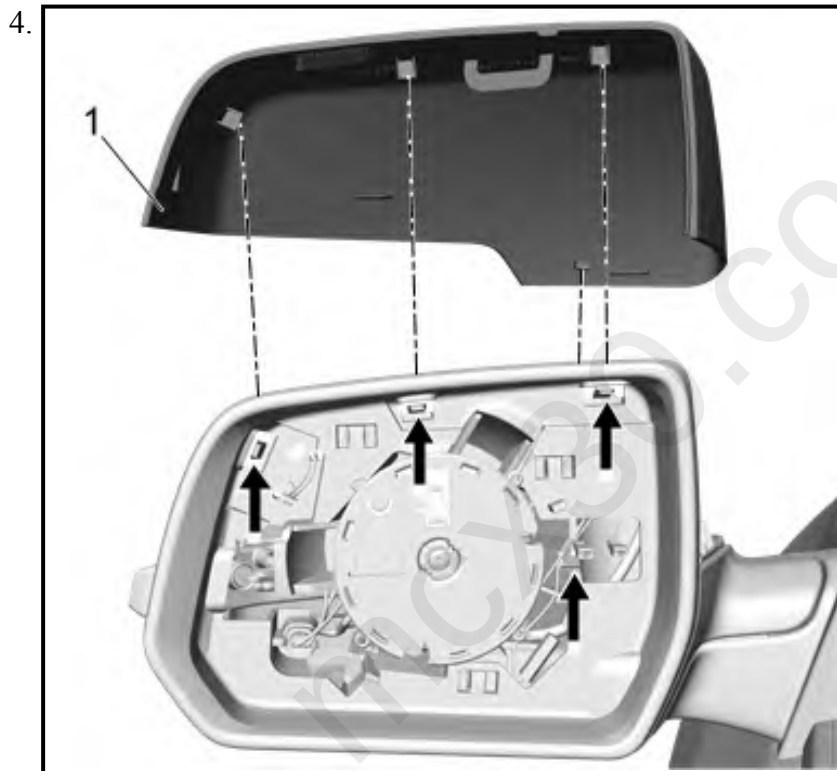
3.





CAUTION: Refer to [Fastener Caution](#) .

Outside rearview mirror housing bezel screw (1) - Install and tighten [2x] 2 N.m (18 lb in)



Outside Rearview Mirror Upper Housing Cover (1) - Install - [Outside Rearview Mirror Housing Upper Cover Replacement](#)

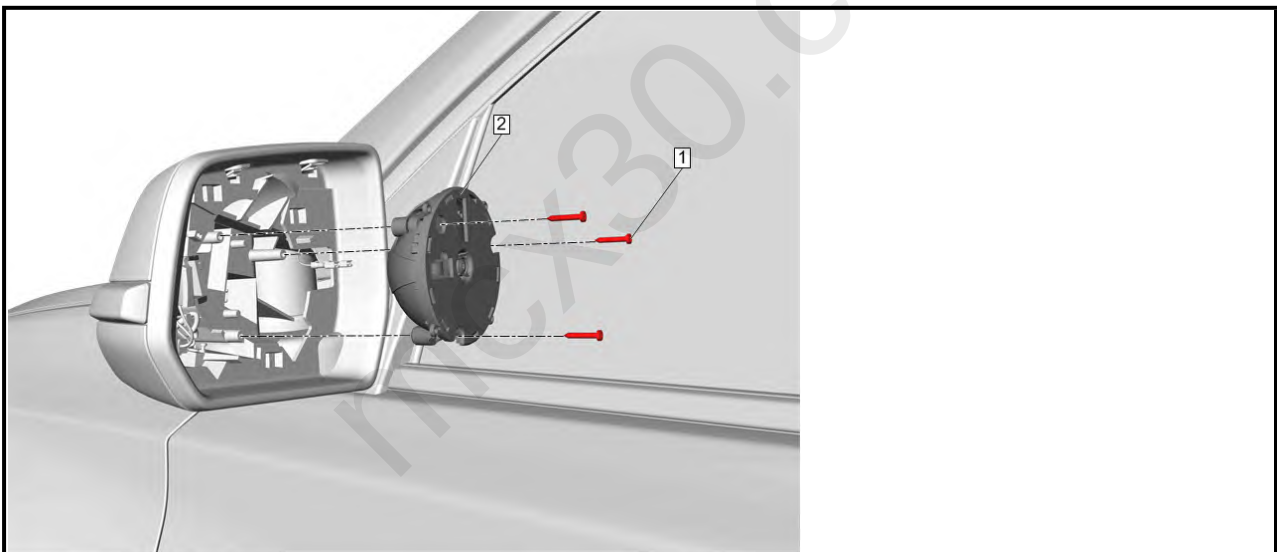




NOTE: Inspect the outside rearview mirror for proper operation.

Outside Rearview Mirror Glass (1) - Install - [Outside Rearview Mirror Glass Replacement](#)

OUTSIDE REARVIEW MIRROR ACTUATOR REPLACEMENT

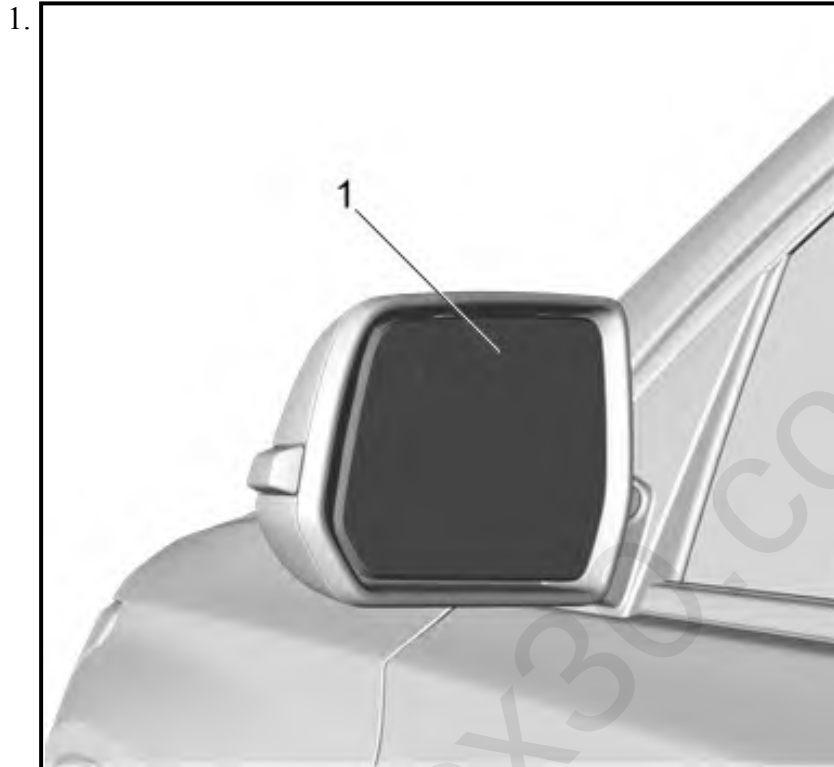


Callout	Component Name
Preliminary Procedure Outside Rearview Mirror Glass Replacement	
1	Outside Rearview Mirror Inner Actuator Fastener [3x] CAUTION: Refer to Fastener Caution . Tighten 2 N.m (18 lb in)

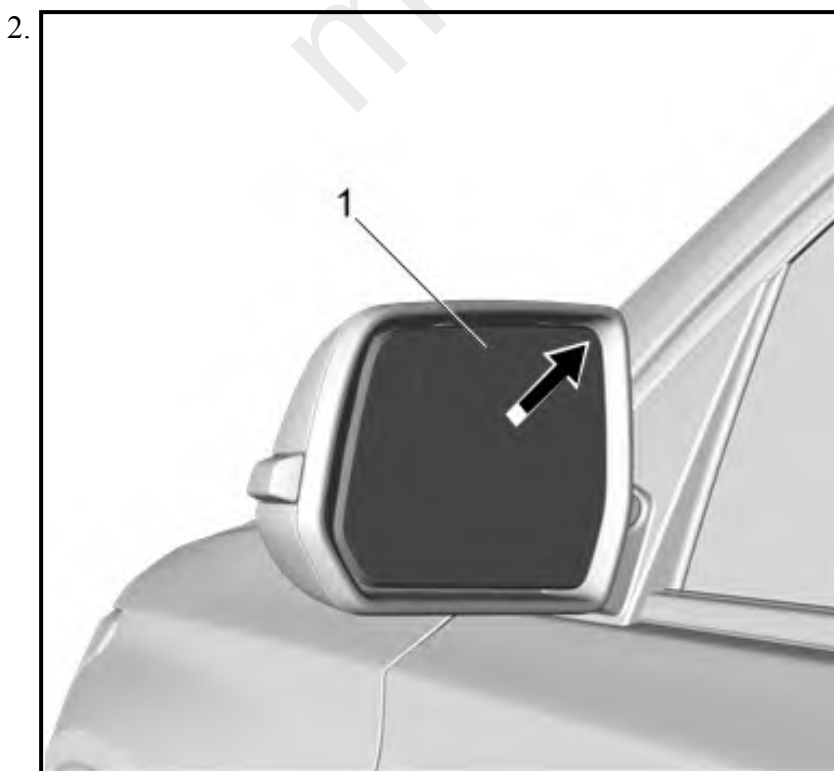
Callout	Component Name
2	Outside Rearview Mirror Inner Actuator Procedure Disconnect the electrical connector. NOTE: Inspect the outside rearview mirror for proper operation before installing the door trim.

OUTSIDE REARVIEW MIRROR GLASS REPLACEMENT

Removal Procedure



Place masking tape over the outside rearview mirror glass. (1)



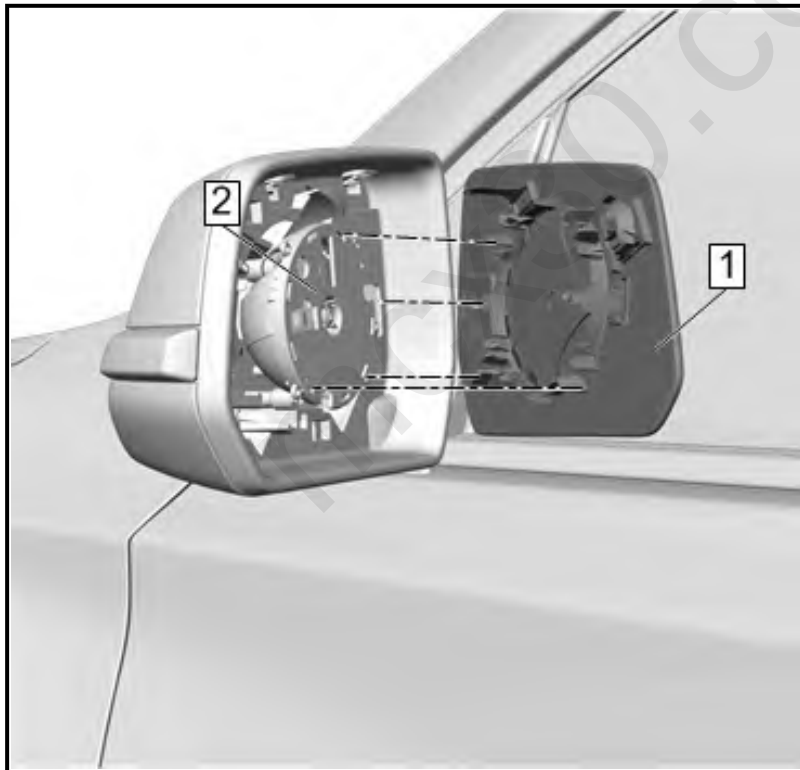
Carefully push the outside rearview mirror glass (1) upward and into the inside corner of the mirror housing.

3.



Grasp the bottom edge of the outside rearview mirror glass firmly. (1)

4.



lift up on the outside rearview mirror glass (1) and pull rearward until the outside rearview mirror glass retainers release from the actuator motor ring. (2)

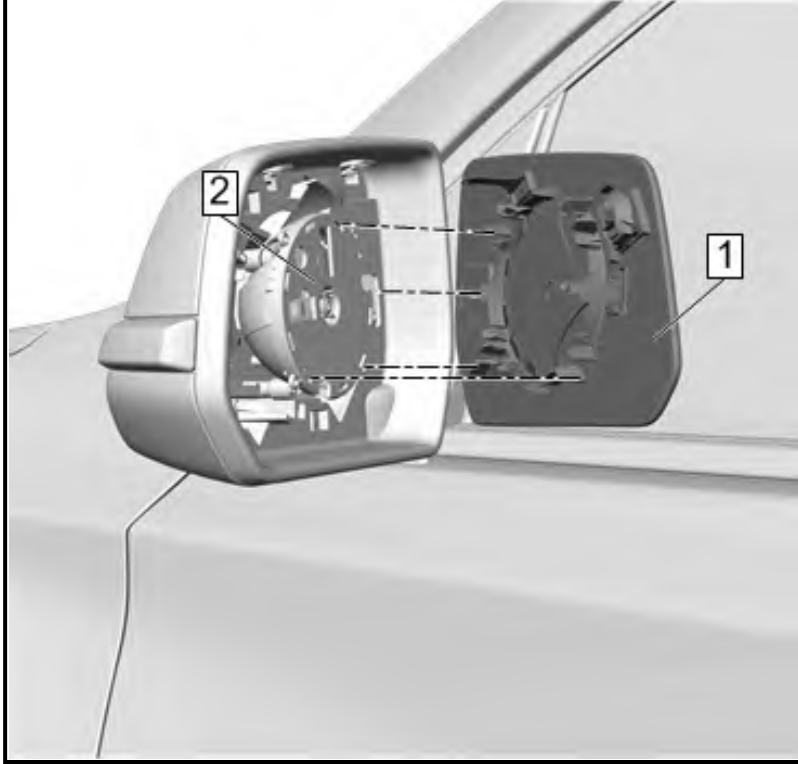
5. Disconnect the electrical connectors.

Installation Procedure

1. Connect the electrical connectors.

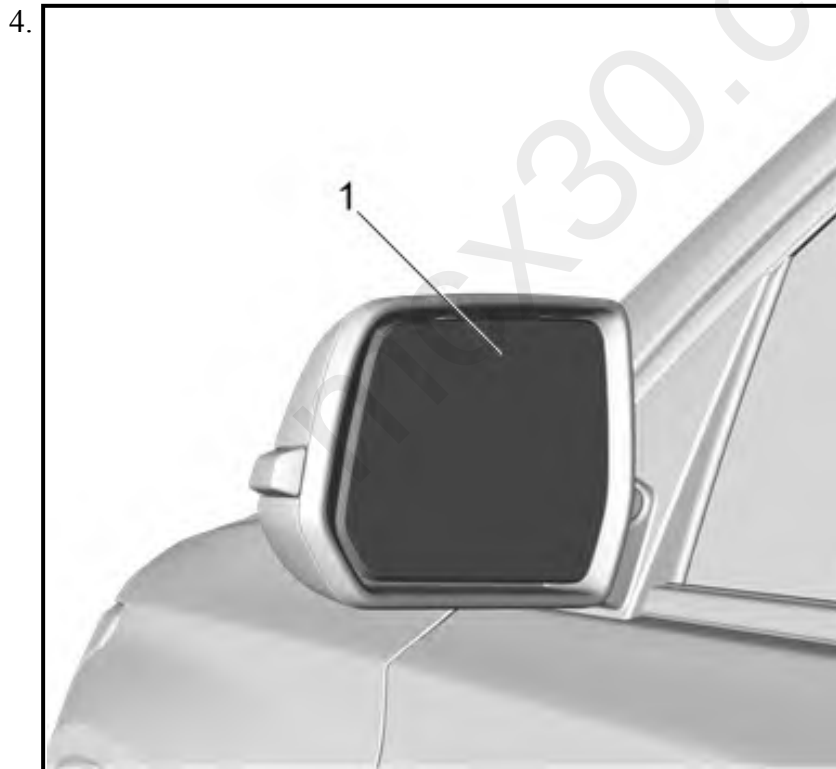
2.





Place the outside rearview mirror glass (1) retainers in line with the lower inner actuator motor ring. (2)

3. Place one hand on the back of the mirror housing, using the flat palm of the other hand press inward locking the outside rearview mirror glass (1) retainers to the inner actuator motor ring. (2)

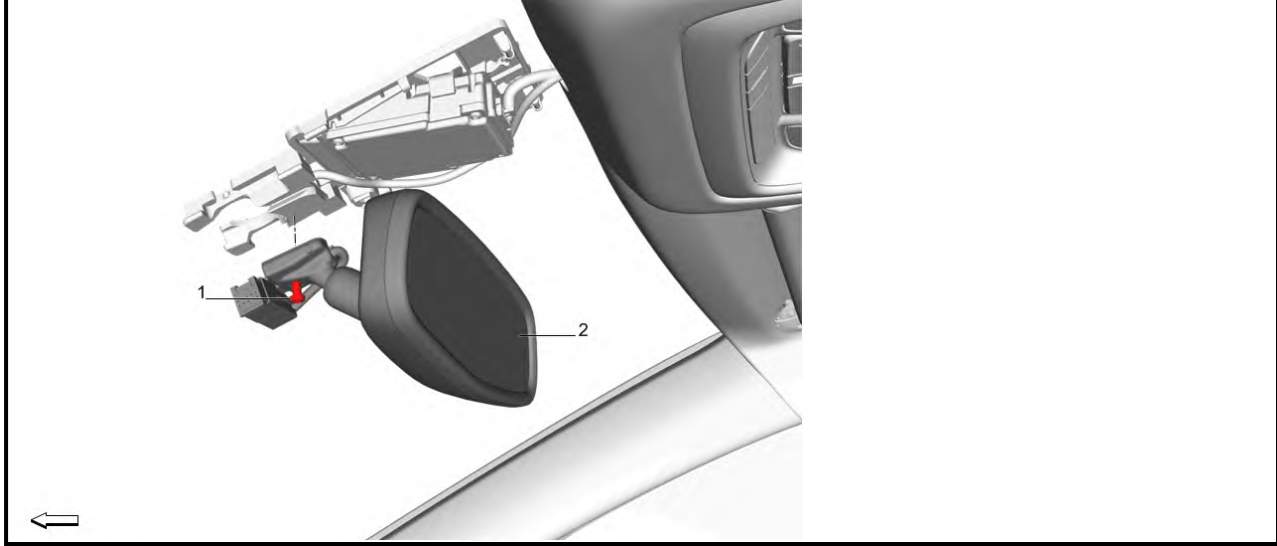


NOTE: Inspect the outside rearview mirror for proper operation.

Remove the masking tape from the outside rearview mirror glass. (1)

INSIDE REARVIEW MIRROR REPLACEMENT





Callout	Component Name
Preliminary Procedure <u>Windshield Multifunction Sensor Mount Bracket Cover Replacement (With UHX)</u> <u>Windshield Multifunction Sensor Mount Bracket Cover Replacement (Without UHX)</u>	
1	Inside Rearview Mirror Set Screw CAUTION: Refer to <u>Fastener Caution</u> . Procedure Loosen the set screw located at the base of the mirror. Tighten 1.8 N.m (16 lb in)
2	Inside Rearview Mirror Procedure 1. Slide the mirror off the rearview mirror button. 2. Disconnect the electrical connector.

DESCRIPTION AND OPERATION

AUTOMATIC DAY-NIGHT MIRROR DESCRIPTION AND OPERATION

Inside Rearview Mirror with the Automatic Day-Night Feature System Operation

The inside rearview mirror uses 2 photocell sensors. One sensor is the headlight sensor, located on the face side of the mirror. The headlight sensor is used to determine light conditions present at the mirror face. The other sensor is the ambient light sensor, located on the rear of the mirror or windshield side. The ambient light sensor is used to determine the exterior light conditions. With a low exterior light condition detected, and a high light condition from behind of the car, at the headlight sensor, the inside rearview mirror will automatically darken the face of the mirror.

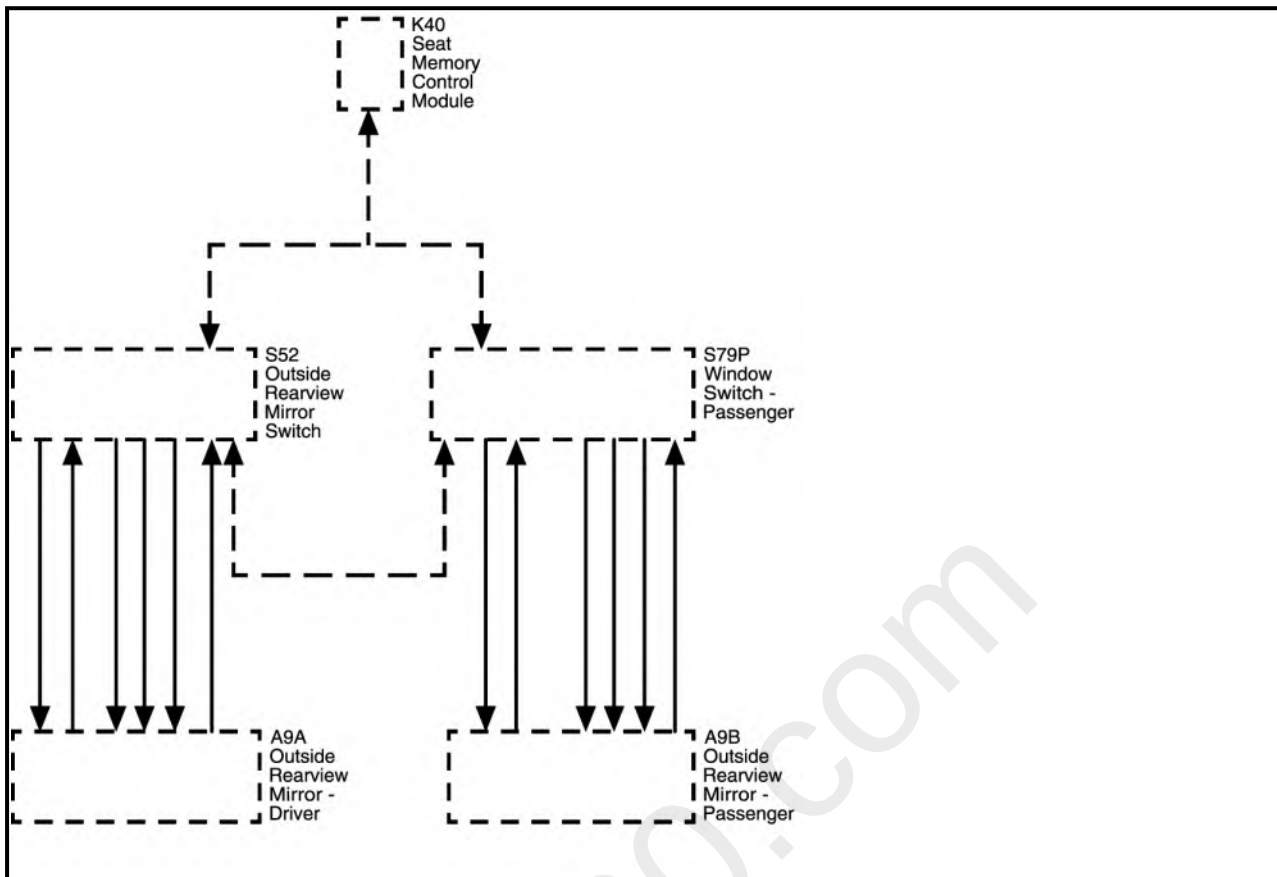
In the daytime, the mirror is in a normal state because of the high exterior light condition that is indicated by the ambient light sensor. With the gear selector lever in the REVERSE position, backup lamp supply voltage is supplied as an input to the inside rearview mirror. The mirror monitors this input to disable the automatic day-night feature. This allows the driver to see objects in the mirror clearly when backing up, even during the night.

OUTSIDE MIRROR DESCRIPTION AND OPERATION

Power Mirror System Components

The power mirror system consists of the following components:

- Memory Seat Control Module
- Outside Rearview Mirror Switch
- Passenger Window Switch
- Driver Outside Rearview Mirror
- Passenger Outside Rearview Mirror



Callout	Component Name
K40	K40 Seat Memory Control Module
S52	S52 Outside Rearview Mirror Switch
S79P	S79P Window Switch - Passenger
A9A	A9A Outside Rearview Mirror - Driver
A9B	A9B Outside Rearview Mirror - Passenger

Power Mirror System Controls

The outside mirror switch and passenger window switch are on a serial data circuit with the memory seat control module as the master. The mirror select and directional control switches are inputs to the memory seat module through the serial data circuit. When the memory seat module receives switch inputs from the outside mirror switch, mirror output commands are sent to the appropriate switch through the serial data circuit. The outside mirror switch and passenger window switch control the left and right outside rear view mirrors through bi-directional motor control circuits. The motor control circuits are floating while in an inactive state and the switches will apply power and ground to the control circuits as necessary to move the mirror in the commanded direction.

Mirror position is determined by both horizontal and vertical position sensors in each of the power mirrors. The outside mirror switch and passenger window switch supply a 5 V reference, low reference, and horizontal and vertical position signal circuits to these sensors. The signal circuits are referenced from 5 V by the switches and the signal circuit voltage levels represent the mirror positions. The mirror positions are sent to the memory seat module through the serial data circuit where they are stored for memory mirror operation. When the memory seat module receives a memory recall command, the memory seat module will send the go to position commands to the outside mirror switch and passenger window switch. The switches will then drive the appropriate mirror motors to the commanded position sensor settings.

Heated Mirrors

The heated mirrors are controlled through the rear defog relay. Whenever the rear window defogger is turned on battery voltage is supplied to the mirror heater elements through the left and right mirror heater element control circuits.

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