

2017 ACCESSORIES & EQUIPMENT

Mirrors - Encore, Trax

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 Screw	2 N.m (18 lb in)
Outside Rearview Mirror Gasket Fastener	3 N.m (27 lb in)
Outside Rearview Mirror Housing Cover Bezel Screws	1.5 N.m (13 lb in)
Outside Rearview Mirror Housing Upper Cover Bolt	1.5 N.m (13 lb in)
Outside Rearview Mirror Inner Actuator Screw	5 N.m (44 lb in)
Outside Rearview Mirror Nut	9 N.m (80 lb in)

ADHESIVES, FLUIDS, LUBRICANTS, AND SEALERS

Application	Type of Material	GM Part Number
Inside Mirror Adhesive Kit	Adhesive	Refer to Electronic Parts Catalog

SCHEMATIC WIRING DIAGRAMS

INSIDE REARVIEW MIRROR WIRING SCHEMATICS (BUICK)

Inside Review Mirror (Buick)

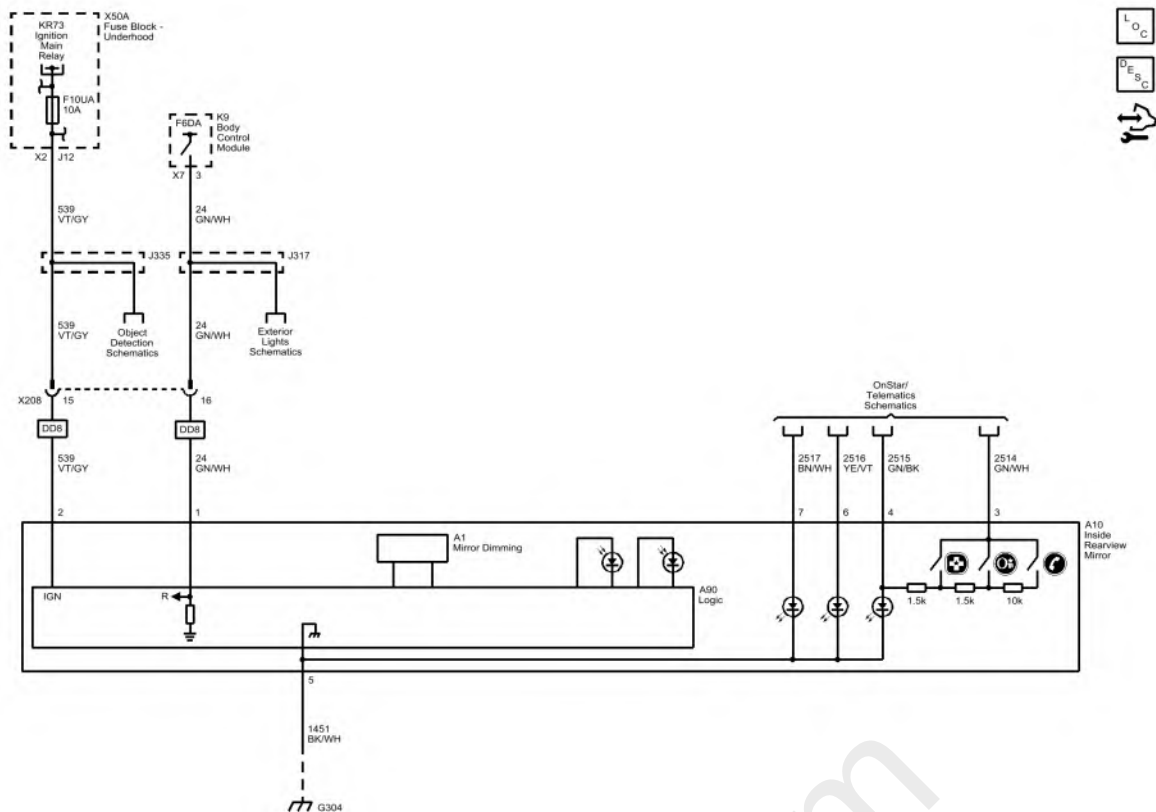


Fig. 1: Inside Review Mirror (Buick)
 Courtesy of GENERAL MOTORS COMPANY

INSIDE REARVIEW MIRROR WIRING SCHEMATICS (CHEVROLET)

Inside Rearview Mirror (Chevrolet)

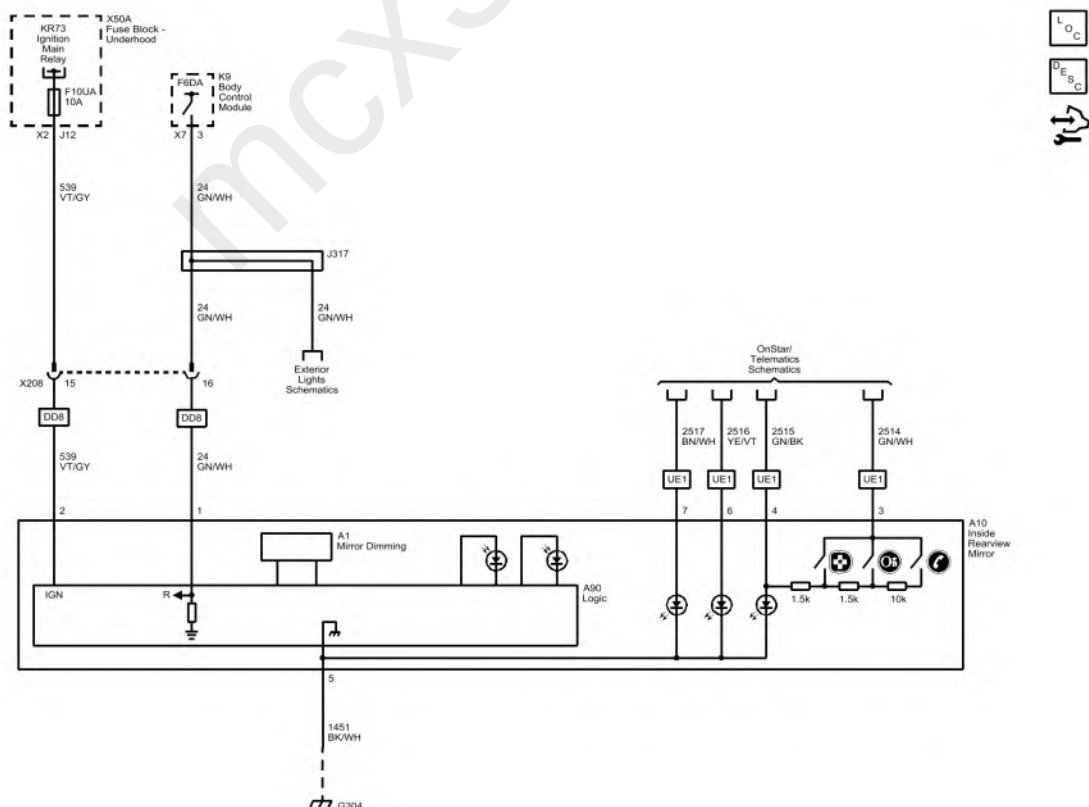


Fig. 2: Inside Rearview Mirror (Chevrolet)
 Courtesy of GENERAL MOTORS COMPANY

OUTSIDE REARVIEW MIRROR WIRING SCHEMATICS (BUICK)

Mirrors (Buick without AAG)

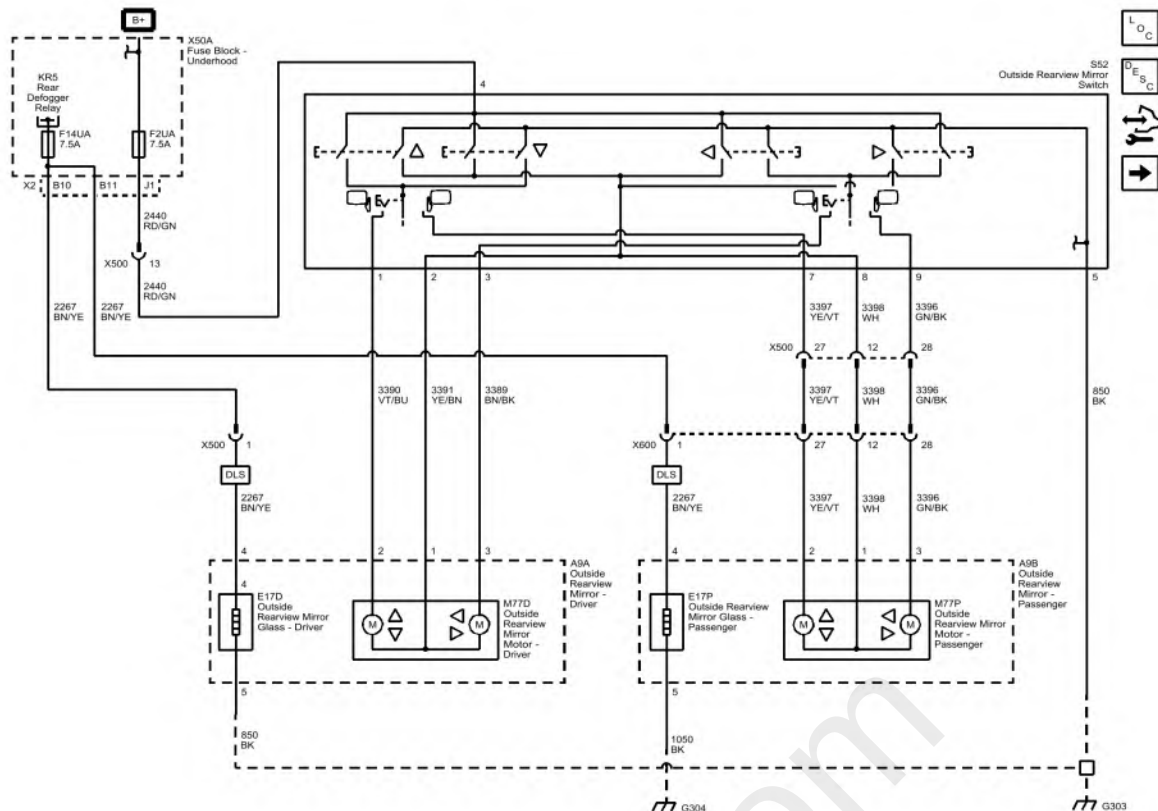


Fig. 3: Mirrors (Buick without AAG).

Courtesy of GENERAL MOTORS COMPANY

Driver Mirror (Buick with AAG)

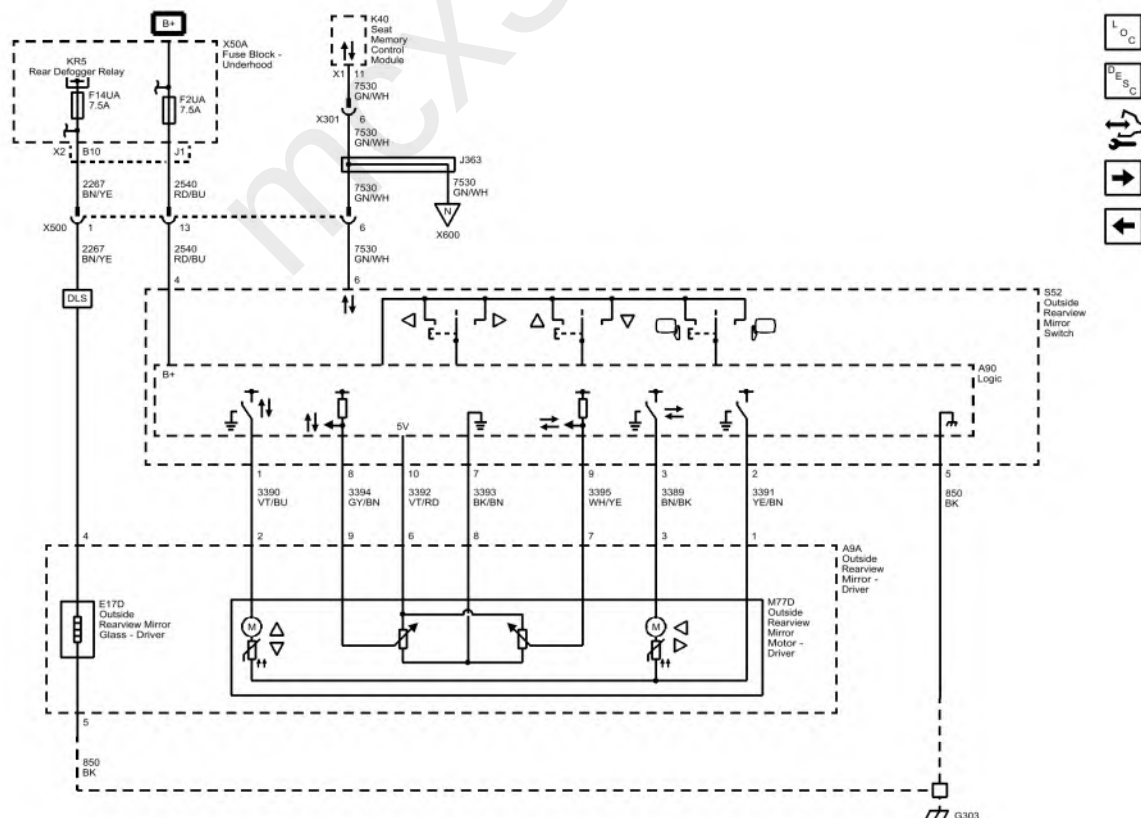


Fig. 4: Driver Mirror (Buick with AAG).

Courtesy of GENERAL MOTORS COMPANY

Passenger Mirror (Buick with AAG)

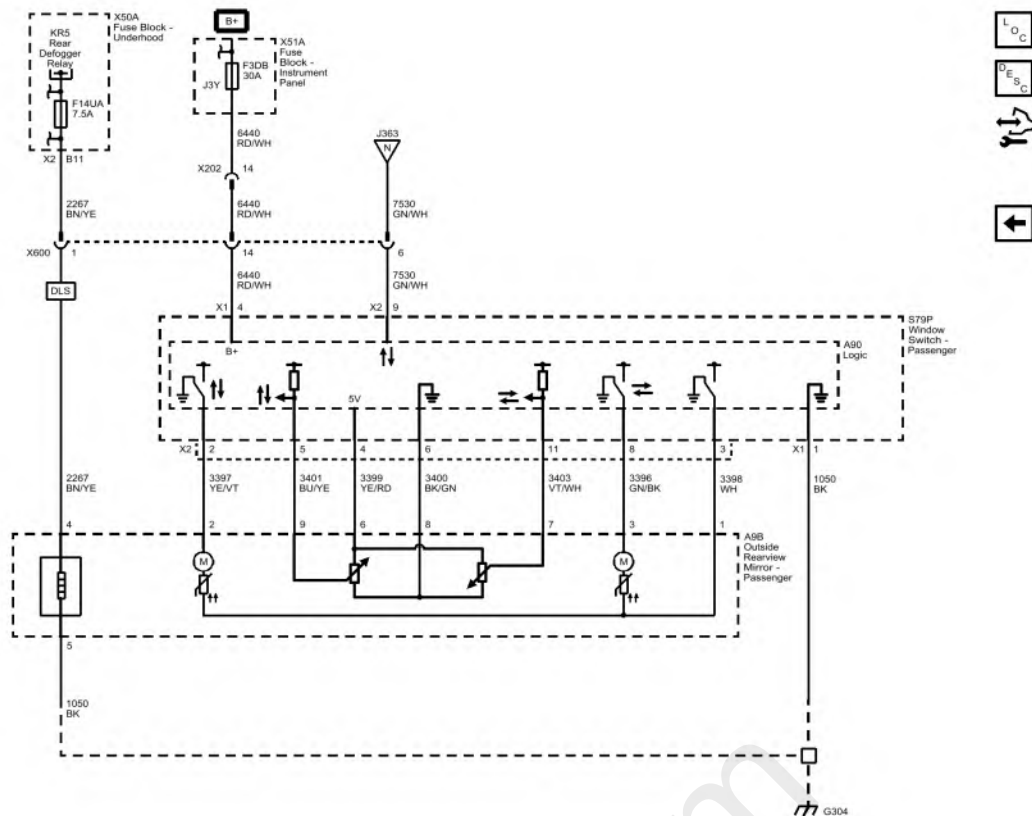


Fig. 5: Passenger Mirror (Buick with AAG)
Courtesy of GENERAL MOTORS COMPANY

OUTSIDE REARVIEW MIRROR WIRING SCHEMATICS (CHEVROLET)

Outside Rearview Mirrors (Chevrolet)

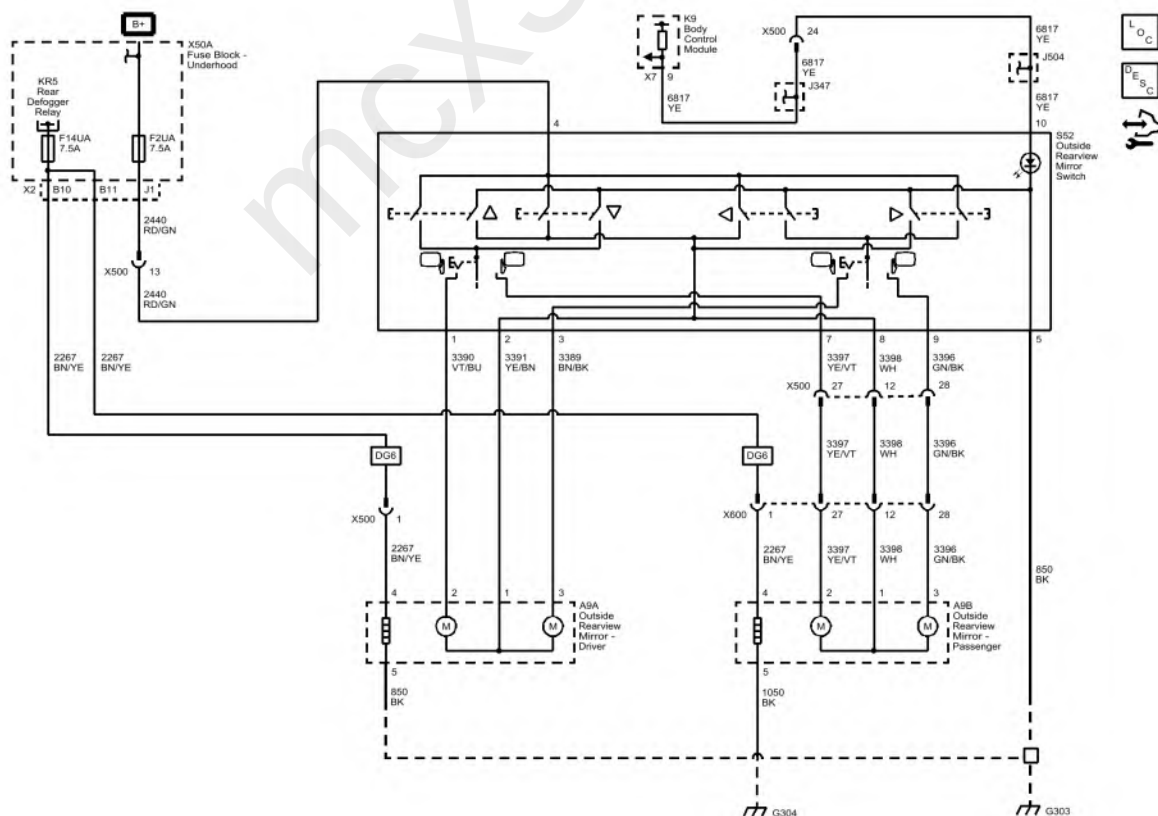


Fig. 6: Outside Rearview Mirrors (Chevrolet)
Courtesy of GENERAL MOTORS COMPANY

DIAGNOSTIC INFORMATION AND PROCEDURES

DTC B154A OR B154B: DRIVER/PASSENGER MIRROR INTERNAL 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.
- Refer to [Diagnostic Procedure Instructions](#) to provide 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.

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

Reference Information

Schematic Reference

Outside Rearview Mirror Schematics (Buick)**Outside Rearview Mirror Schematics (Chevrolet)**

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX (ENCORE), **COMPONENT CONNECTOR END VIEWS - INDEX (TRAX)**

Description and Operation

Outside Mirror Description and Operation (With Memory Seats)**Outside Mirror Description and Operation (Without Memory Seats)**

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.
 - **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.
 - **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.

Refer to **Outside Rearview Mirror Inner 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 [Outside Mirror Description and Operation \(With Memory Seats\)](#)[Outside Mirror Description and Operation \(Without Memory Seats\)](#).

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:

- [Heated Mirrors Malfunction](#)
- [Power Mirror Malfunction \(With DG6, DL6 or DI7\)](#)[Power Mirror Malfunction \(With AAG\)](#)

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.
- Refer to [Diagnostic Procedure Instructions](#) to provide an overview of each diagnostic category.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Mirror Defogger Control	1, 3	1	2	-
Driver Outside Rearview Mirror Ground	-	1	-	-
Passenger Mirror Defogger Control	1, 3	3	4	-
Passenger Outside Rearview Mirror Ground	-	3	-	-
1. Driver Heated Mirror Inoperative 2. Driver Heated Mirror Always On 3. Passenger Heated Mirror Inoperative 4. Passenger Heated Mirror Always On				

Circuit/System Description

The rear defogger relay supplies voltage to the outside rearview mirror heater elements based on the current state of the rear window defogger. The relay supplies B+ through the driver/passenger mirror heating element control circuit when a request is seen.

Reference Information

Schematic Reference

- [Outside Rearview Mirror Schematics \(Buick\)](#)[Outside Rearview Mirror Schematics \(Chevrolet\)](#)
- [Defogger Schematics \(Buick\)](#) [Defogger Schematics \(Chevrolet\)](#)

Connector End View Reference

[COMPONENT CONNECTOR END VIEWS - INDEX \(ENCORE\)](#) [COMPONENT CONNECTOR END VIEWS - INDEX \(TRAX\)](#)

Description and Operation

- [Outside Mirror Description and Operation \(With Memory Seats\)](#)[Outside Mirror Description and Operation \(Without Memory Seats\)](#)
- [Rear Window Defogger 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. 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](#) .
 - **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 Mirror Defogger Malfunction.
 - **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 harness connector at the appropriate 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 5 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.
 - **If less than 10 Ω**
- 3. Engine running, connect a test lamp between the control circuit terminal 4 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 X2 harness connector at the X50A Fuse Block - Underhood.
 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 X50A Fuse Block - Underhood.
 - **If the test lamp turns ON**
- 5. Test or replace the E17 Outside Rearview Mirror Glass.

Both Outside Mirror Defogger Malfunction

1. Ignition OFF, disconnect the harness connector at the appropriate A9 Outside Rearview Mirror. Engine running
2. Connect a test lamp between the control circuit terminal 4 and ground.
3. Verify the test lamp turns ON and OFF when commanding the Rear Defogger On and Off with a scan tool.
 - **If the lamp is always ON**
 1. Ignition OFF, remove the test lamp, disconnect the X2 harness connector at X50A Fuse Block - Underhood, 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 [Rear Window Defogger Malfunction](#).
 - **If the lamp is always OFF**
 1. Ignition OFF, remove the test lamp, disconnect the X2 harness connector at X50A Fuse Block - Underhood, 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.
 - If infinite resistance, refer to [Rear Window Defogger Malfunction](#)
 - **If the lamp turns on and off**
4. Replace the E17 Outside Rearview Mirror Glass.

Repair Instructions

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

- Refer to [Outside Rearview Mirror Glass Replacement](#)
- Refer to [Front Compartment Fuse 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
- Refer to [Diagnostic Procedure Instructions](#) to provide an overview of each diagnostic category

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Ignition	1	1	-	-
Backup Lamp Control	B2545 02	2	2	-
Ground	-	1	-	-
1. Automatic Mirror Dimming Inoperative 2. Mirror Automatic Day-Night Disable Feature 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.

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 mirror clearly when backing up, regardless of the rear light sensor status.

Reference Information

Schematic Reference

[Inside Rearview Mirror Schematics \(Buick\)](#)[Inside Rearview Mirror Schematics \(Chevrolet\)](#)

Connector End View Reference

[COMPONENT CONNECTOR END VIEWS - INDEX \(ENCORE\)](#), [COMPONENT CONNECTOR END VIEWS - INDEX \(TRAX\)](#)

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](#)

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
 - **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.**

- **If the A10 Inside Rearview Mirror transitions between bright and dim states**

5. 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.
 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.
 - **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.
 2. Test for infinite resistance between the ignition circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, replace the A10 Inside Rearview Mirror.
 - **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.
 - 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 \(Automatic Transmission\)](#).
 - **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 \(Automatic Transmission\)](#).

- If the test lamp turns ON and OFF

4. Replace the A10 Inside Rearview Mirror.

Repair Instructions

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

Refer to [Inside Rearview Mirror Replacement](#)

POWER MIRROR MALFUNCTION (WITH DG6, DL6 OR DI7)

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
- Refer to [Diagnostic Procedure Instructions](#) to provide 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+	1	1	-	-
Driver Mirror Motor Horizontal Control	1	2	2	-
Driver Mirror Motor Vertical Control	1	2	2	-
Passenger Mirror Motor Horizontal Control	1	3	3	-
Passenger Mirror Motor Vertical Control	1	3	3	-
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 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 from the power mirror fuse and when a movement position switch is selected, 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 the applied through the switch.

Reference Information

Schematic Reference

[Outside Rearview Mirror Schematics \(Buick\)](#)[Outside Rearview Mirror Schematics \(Chevrolet\)](#)

Connector End View Reference

[COMPONENT CONNECTOR END VIEWS - INDEX \(ENCORE\)](#) [COMPONENT CONNECTOR END VIEWS - INDEX \(TRAX\)](#)

Description and Operation

[Outside Mirror Description and Operation \(With Memory Seats\)](#)[Outside Mirror Description and Operation \(Without Memory Seats\)](#)

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

Circuit/System Verification

1. Verify the mirror glass of the A9A Outside Rearview Mirror-Driver and the A9B Outside Rearview Mirror-Passenger move UP, DOWN, LEFT and RIGHT with the S52 Outside Rearview Mirror Switch.
 - **If both outside mirror glasses do not move**
Refer to Circuit/System Testing - Both Outside Rearview Mirrors Inoperative.
 - **If the driver outside mirror glass does not move UP, DOWN, LEFT or RIGHT**
Refer to Circuit/System Testing - Driver Outside Mirror Movement Malfunction.
 - **If the passenger outside mirror glass does not move UP, DOWN, LEFT or RIGHT**
Refer to Circuit/System Testing - Passenger Outside Mirror Movement Malfunction.
 - **If the mirror glass of 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 Rearview Mirrors Inoperative

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the S52 Outside Rearview Mirror Switch. 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.
 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.
 - **If less than 10 Ω**
3. 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**
 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.
 - If infinite resistance
3. Test for infinite resistance between each of the control circuit terminals listed below and ground:
 - Control circuit terminal 1
 - Control circuit terminal 2

- Control circuit terminal 3
 - Control circuit terminal 7
 - Control circuit terminal 8
 - Control circuit terminal 9
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, replace the appropriate M77 Outside Rearview Mirror Motor.
 - **If the test lamp illuminates**
4. Test or replace the S52 Outside Rearview Mirror Switch.

Driver Outside Mirror Movement Malfunction

1. Ignition OFF, disconnect the harness connector at the A9A Outside Rearview Mirror-Driver. Ignition ON
2. Connect a test lamp between the control circuit terminal 1 and control circuit terminal 2.
3. Verify the test lamp turns ON when commanding the UP and DOWN states with the S52 Outside Rearview Mirror Switch.
 - **If the test lamp remains OFF during either of the commands**
 1. Ignition OFF, remove the test lamp, disconnect the harness connector at the S52 Outside Rearview Mirror Switch.
 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
 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 , test or replace the S52 Outside Rearview Mirror Switch.
 - **If the test lamp is always ON**
 1. Ignition OFF, remove the test lamp, disconnect the harness connector at the S52 Outside Rearview Mirror Switch, 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, test or replace the S52 Outside Rearview Mirror Switch
 - **If the test lamp turns ON during each of the commands**
4. Connect a test lamp between the control circuit terminal 1 and control circuit terminal 3.
5. Verify the test lamp turns ON when commanding the LEFT and RIGHT states with the S52 Outside Rearview Mirror Switch.
 - **If the test lamp remains OFF during either of the commands**
 1. Ignition OFF, remove the test lamp, disconnect the harness connector at the S52 Outside Rearview Mirror Switch.
 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
 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 , test or replace the S52 Outside Rearview Mirror Switch.
 - **If the test lamp is always ON**
 1. Ignition OFF, remove the test lamp, disconnect the harness connector at the S52 Outside Rearview Mirror Switch, 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, test or replace the S52 Outside Rearview Mirror Switch
 - **If the test lamp turns ON during each of the commands**

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

Passenger Outside Mirror Movement Malfunction

1. Ignition OFF, disconnect the harness connector at the A9B Outside Rearview Mirror-Passenger. Ignition ON
2. Connect a test lamp between the control circuit terminal 1 and control circuit terminal 2.
3. Verify the test lamp turns ON when commanding the UP and DOWN states with the S52 Outside Rearview Mirror Switch.
 - **If the test lamp remains OFF during either of the commands**
 1. Ignition OFF, remove the test lamp, disconnect the harness connector at the S52 Outside Rearview Mirror Switch.
 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
 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 , test or replace the S52 Outside Rearview Mirror Switch.
 - **If the test lamp is always ON**
 1. Ignition OFF, remove the test lamp, disconnect the harness connector at the S52 Outside Rearview Mirror Switch, 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, test or replace the S52 Outside Rearview Mirror Switch
 - **If the test lamp turns ON during each of the commands**
4. Connect a test lamp between the control circuit terminal 1 and control circuit terminal 3.
5. Verify the test lamp turns ON when commanding the LEFT and RIGHT states with the S52 Outside Rearview Mirror Switch.
 - **If the test lamp remains OFF during either of the commands**
 1. Ignition OFF, remove the test lamp, disconnect the harness connector at the S52 Outside Rearview Mirror Switch.
 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
 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 , test or replace the S52 Outside Rearview Mirror Switch.
 - **If the test lamp is always ON**
 1. Ignition OFF, remove the test lamp, disconnect the harness connector at the S52 Outside Rearview Mirror Switch, 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, test or replace the S52 Outside Rearview Mirror Switch
 - **If the test lamp turns ON during each of the commands**
6. Test or replace the M77P Outside Rearview Mirror Motor-Passenger.

Repair Instructions

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

- Refer to [Outside Rearview Mirror Inner Actuator Replacement](#)
- Refer to [Outside Rearview Mirror Remote Control Switch Replacement \(Buick\)](#)[Outside Rearview Mirror Remote Control Switch Replacement \(Chevrolet\)](#)

POWER MIRROR MALFUNCTION (WITH AAG)

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.
- Refer to [Diagnostic Procedure Instructions](#) to provide 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+	U1519 00	U1519 00	-	-
Passenger Window Switch B+	U151B 00	U151B 00	-	-
Position Sensor 5 V Reference	2	2	2	-
Left/Right Mirror Horizontal Position Sensor Signal	2	2	1, 2	-
Left/Right Mirror Vertical Position Sensor Signal	2	2	2	-
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	-
Left/Right Mirror Position Low Reference	-	2	-	-
Outside Rearview Mirror Switch Ground	-	U1519 00	-	-
Passenger Window Switch Ground	-	U151B 00	-	-
1. Power Mirror Malfunction 2. Power Mirror Memory Feature 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.

Reference Information

Schematic Reference

Outside Rearview Mirror Schematics (Buick)

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX (ENCORE)

Description and Operation

Outside Mirror Description and Operation (With Memory Seats)

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 S52 Outside Rearview Mirror Switch between the center, left and right positions.
 - **If the parameter does not change**
Replace the S52 Outside Rearview Mirror Switch.
 - **If the parameter does change**
3. Verify the scan tool Mirror Direction Command parameter changes between Up, Down, Right and Left while cycling the S52 Outside Rearview Mirror Switch UP, DOWN, RIGHT and LEFT.
 - **If the parameter does not change**
Replace the S52 Outside Rearview Mirror Switch.
 - **If the parameter does change**
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.
 - **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.
 - **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**
Refer to Circuit/System Testing - Driver Mirror Position Sensor Circuit Test.
 - **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.

- **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.

- **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.

- **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](#).

- **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

NOTE: You must perform the Circuit/System Verification prior to performing the Circuit/System Testing procedures.

Driver Outside Mirror Movement Malfunction

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the S52 Outside Rearview Mirror Switch. 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.

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.

- **If less than 10 Ω**

3. Ignition ON.

4. 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**

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.
 - If infinite resistance
3. Test for infinite resistance between the control circuits listed below and ground:
 - Control circuit terminal 1
 - Control circuit terminal 2
 - Control circuit terminal 3
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, replace the S52 Outside Rearview Mirror Switch.

- **If the test lamp illuminates**

5. Ignition OFF, connect the harness connector at the S52 Outside Rearview Mirror Switch and disconnect the harness connector at the A9A Outside Rearview Mirror-Driver. Ignition ON
6. Connect a test lamp between the control circuit terminal 1 and control circuit terminal 2.
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 S52 Outside Rear View Mirror Switch.
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
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 S52 Outside Rear View Mirror Switch.

- **If the test lamp is always ON**

1. Ignition OFF, remove the test lamp, disconnect the harness connector at the S52 Outside Rear View Mirror Switch, 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 S52 Outside Rear View Mirror Switch

- **If the test lamp turns ON during each of the commands**

8. Connect a test lamp between the control circuit terminal 1 and control circuit terminal 3.
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 S52 Outside Rear View Mirror Switch.
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
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 S52 Outside Rear View Mirror Switch.

- **If the test lamp is always ON**

1. Ignition OFF, remove the test lamp, disconnect the harness connector at the S52 Outside Rear View Mirror Switch, 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 S52 Outside Rear View Mirror Switch

- **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 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 8 and ground.
 - **If 10 Ω or greater**
 1. Ignition OFF, disconnect the harness connector at the S52 Outside Rear View Mirror Switch.
 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 S52 Outside Rear View Mirror Switch.
 - **If less than 10 Ω**
3. Ignition ON.
4. Test for 4.8-5.2 V between the 5 V reference circuit terminal 6 and ground.
 - **If less than 4.8 V**
 1. Ignition OFF, disconnect the harness connector at the S52 Outside Rear View Mirror Switch.
 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.
 - 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 S52 Outside Rear View Mirror Switch.
 - **If greater than 5.2 V**
 1. Ignition OFF, disconnect the harness connector at the S52 Outside Rear View Mirror Switch, 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 S52 Outside Rear View Mirror Switch.
 - **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 harness connector at the S52 Outside Rear View Mirror Switch, ignition ON.
 2. Test for less than 1 V between the signal circuit terminal 11 and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V, replace the S52 Outside Rear View Mirror Switch.
 - **If less than 4.6 V**
6. Install a 3 A fused jumper wire between the signal circuit terminal 9 and the 5 V reference circuit terminal 6.
7. Verify the scan tool Driver Mirror Vertical Position or the 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 S52 Outside Rear View Mirror Switch.
 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.
 - 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 S52 Outside Rear View Mirror Switch.
 - **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 S52 Outside Rear View Mirror Switch, 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 S52 Outside Rear View Mirror Switch.
 - **If less than 4.6 V**
 9. Install a 3 A fused jumper wire between the signal circuit terminal 7 and the 5 V reference circuit terminal 6.
 10. Verify the scan tool Driver Mirror Horizontal Position or the 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 S52 Outside Rear View Mirror Switch.
 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.
 - 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 S52 Outside Rear View Mirror Switch.
 - **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 and all vehicle systems OFF, disconnect the X2 harness connector at the S79P Window Switch-Passenger. 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 1 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.
 - **If less than 10 Ω**
3. Ignition ON.
4. 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**
 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.
 - If infinite resistance
 3. Test for infinite resistance between the control circuits listed below and ground:
 - Control circuit terminal 2

- Control circuit terminal 3
 - Control circuit terminal 8
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, replace the S79P Window Switch-Passenger.
 - **If the test lamp illuminates**
5. Ignition OFF, connect the X2 harness connector at the S79P Window Switch-Passenger and disconnect the harness connector at the A9B Outside Rearview Mirror-Passenger. Ignition ON
 6. Connect a test lamp between the control circuit terminal 1 and control circuit terminal 2.
 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 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
 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
 - **If the test lamp turns ON during each of the commands**
 8. Connect a test lamp between the control circuit terminal 1 and control circuit terminal 3.
 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 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
 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
 - **If the test lamp turns ON during each of the commands**
 10. 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 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 8 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 $2\ \Omega$ in the low reference circuit end to end.
 - If $2\ \Omega$ or greater, repair the open/high resistance in the circuit.
 - If less than $2\ \Omega$, replace the S79P Window Switch-Passenger.
- **If less than $10\ \Omega$**
3. Ignition ON.
4. Test for 4.8-5.2 V between the 5 V reference circuit terminal 6 and ground.
 - **If less than 4.8 V**
 1. Ignition OFF, disconnect the X2 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.
 - If infinite resistance
 3. Test for less than $2\ \Omega$ in the 5 V reference circuit end to end.
 - If $2\ \Omega$ or greater, repair the open/high resistance in the circuit.
 - If less than $2\ \Omega$, replace the S79P Window Switch-Passenger.
 - **If greater than 5.2 V**
 1. Ignition OFF, disconnect the X2 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.
 - **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 X2 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.
 - **If less than 4.6 V**
6. Install a 3 A fused jumper wire between the signal circuit terminal 9 and the 5 V reference circuit terminal 6.
7. Verify the scan tool Passenger Mirror Vertical Position or the 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 9 and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance
 3. Test for less than $2\ \Omega$ in the signal circuit end to end.
 - If $2\ \Omega$ or greater, repair the open/high resistance in the circuit.
 - If less than $2\ \Omega$, replace the S79P Window Switch-Passenger.
 - **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 X2 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.

- **If less than 4.6 V**
9. Install a 3 A fused jumper wire between the signal circuit terminal 7 and the 5 V reference circuit terminal 6.
 10. Verify the scan tool Passenger Mirror Horizontal Position or the 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.
 - 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.
 - **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.

- Refer to [Outside Rearview Mirror Inner Actuator Replacement](#)
- Refer to [Outside Rearview Mirror Remote Control Switch Replacement \(Buick\)](#)
- Refer to [Front Side Door Window Switch Replacement \(Driver Side, Buick\)](#), [Front Side Door Window Switch Replacement \(Passenger Side, Buick\)](#)

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.
- Refer to [Diagnostic Procedure Instructions](#) to provide 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

The Park Tilt Mirror in Reverse is a feature in the Personalization Menu of the audio system controls that allows the operator to program the driver and/or passenger outside rearview mirrors to tilt

downward when the vehicle is shifted into R (reverse). Verify that this feature has been correctly programmed into the system before performing extensive diagnostics

Reference Information

Schematic Reference

[Outside Rearview Mirror Schematics \(Buick\)](#)[Outside Rearview Mirror Schematics \(Chevrolet\)](#)

Connector End View Reference

[COMPONENT CONNECTOR END VIEWS - INDEX \(ENCORE\)](#), [COMPONENT CONNECTOR END VIEWS - INDEX \(TRAX\)](#)

Description and Operation

[Outside Mirror Description and Operation \(With Memory Seats\)](#)[Outside Mirror Description and Operation \(Without Memory Seats\)](#)

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**

Refer to [Power Mirror Malfunction \(With DG6, DL6 or DI7\)](#)[Power Mirror Malfunction \(With AAG\)](#).
 - **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**

Refer to [Power Mirror Malfunction \(With DG6, DL6 or DI7\)](#)[Power Mirror Malfunction \(With AAG\)](#).
 - **If the A9B Outside Rearview Mirror-Passenger moves RIGHT, LEFT, UP and DOWN**
4. All OK.

Circuit/System Testing

1. Engine running, shift the vehicle in REVERSE.
2. Verify that the appropriate A9 Outside Rearview Mirror moves DOWN.
 - **If the A9 Outside Rearview Mirror does not move DOWN**

Replace the K40 Seat Memory Control Module

- If the A9 Outside Rearview Mirror does move DOWN

3. All OK.

Repair Instructions

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

Refer to [Control Module References](#) for the seat memory control module replacement, programming and setup

REPAIR INSTRUCTIONS

OUTSIDE REARVIEW MIRROR REPLACEMENT

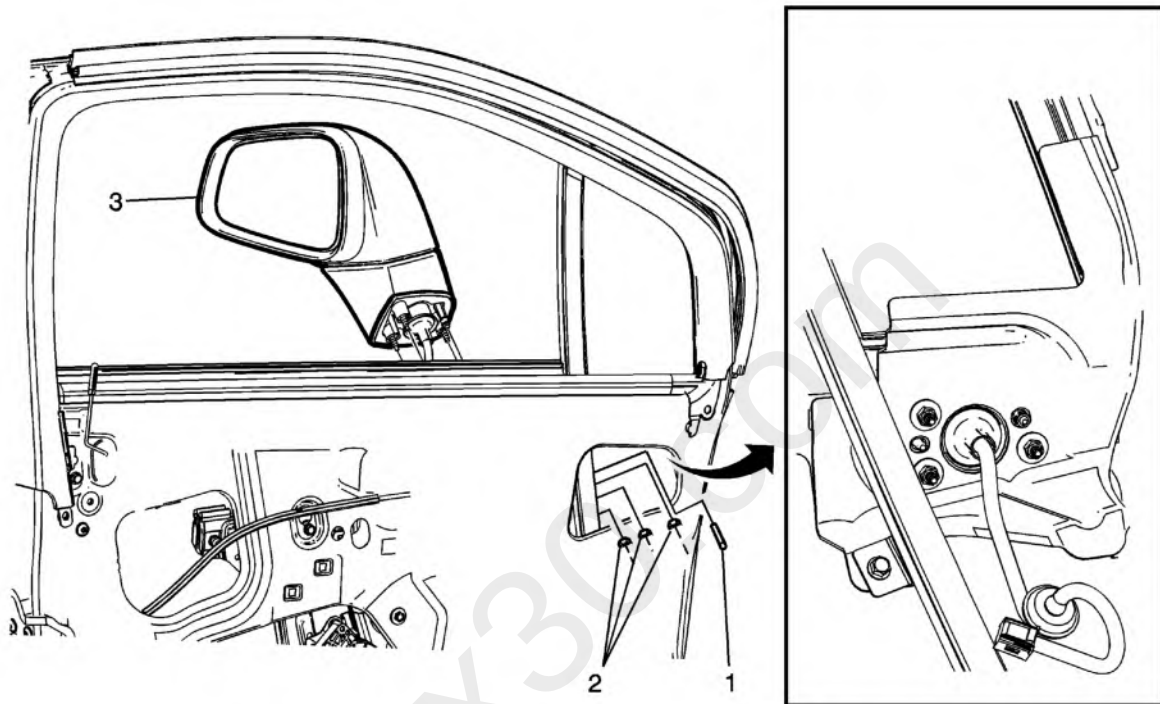


Fig. 7: Outside Rearview Mirror

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to Glass and Sheet Metal Handling Warning . Preliminary Procedure Remove the front side door trim. Refer to Front Side Door Trim Replacement (Buick) Front Side Door Trim Replacement (Chevrolet) .	
1	Outside Rearview Mirror Locator NOTE: When install the outside rearview mirror align the locator pin to the door hole.

Callout	Component Name
2	Outside Rearview Mirror Nuts (Qty: 3) CAUTION: Refer to Fastener Caution . Procedure 1. Remove the water deflector to access the nuts. 2. Disconnect the electrical connector. Tighten 9 N.m (80 lb in)
3	Outside Rearview Mirror Procedure Inspect the outside mirror for proper operation before installing the door trim.

OUTSIDE REARVIEW MIRROR BRACKET COVER REPLACEMENT

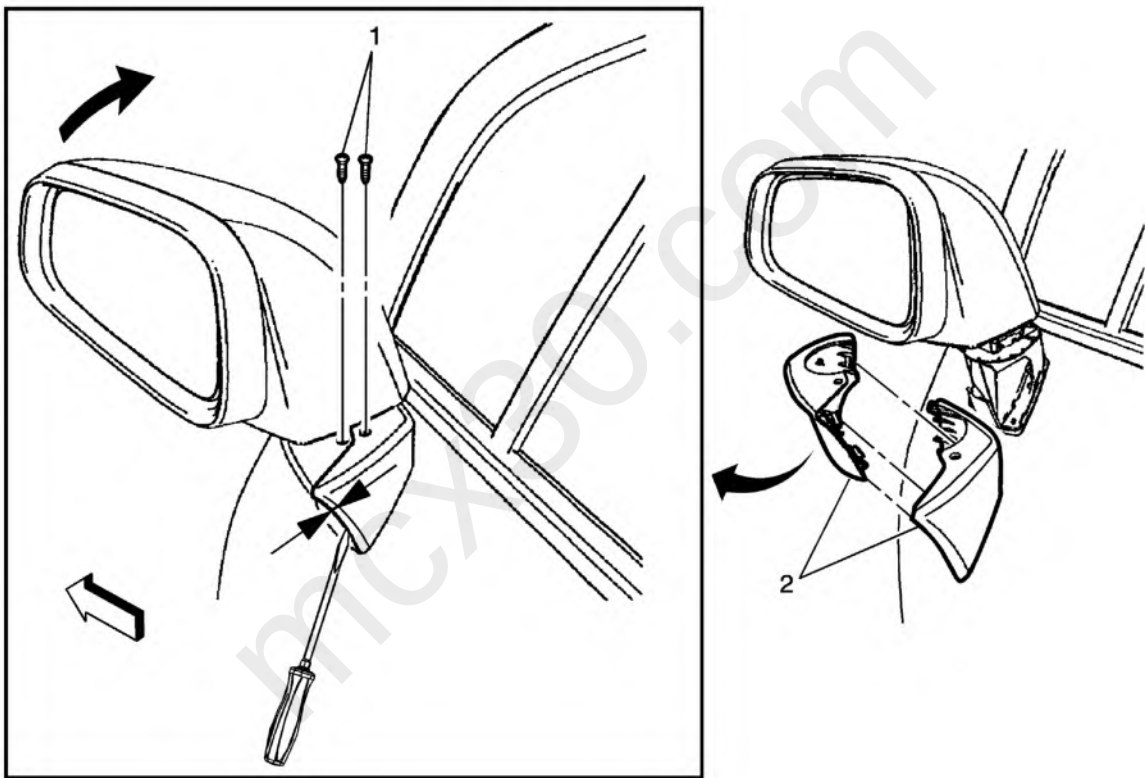


Fig. 8: Outside Rearview Mirror Bracket Cover
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Outside Rearview Mirror Bracket Cover Screw (Qty: 2) CAUTION: Refer to Fastener Caution . Procedure 1. Rotate the mirror top part of the assembly to the forward direction to access the mirror bracket cover screws. 2. Remove the screws to open the bracket cover.

Callout	Component Name
2	Outside Rearview Mirror Bracket Cover Procedure 1. Using the appropriate tool, insert the tool to the front edge of the bracket cover and turn in a clockwise direction releasing the bracket cover from the base of the outside rearview mirror. 2. When installing the bracket covers align the tabs and press them together.

OUTSIDE REARVIEW MIRROR HOUSING BEZEL REPLACEMENT

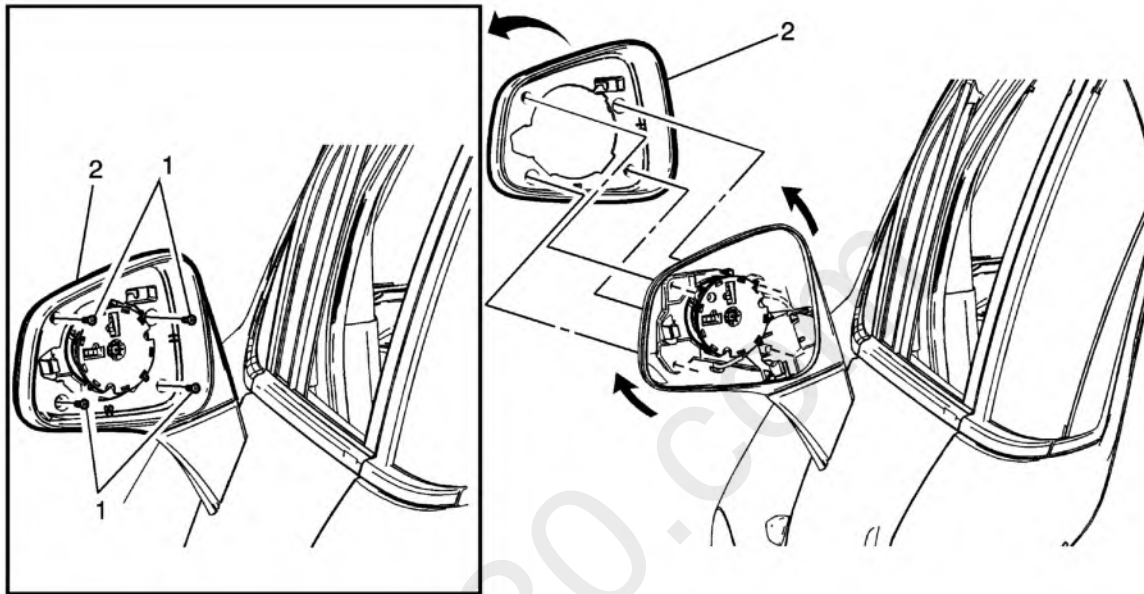


Fig. 9: Outside Rearview Mirror Housing Bezel
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures Remove the outside rearview mirror glass. Refer to Outside Rearview Mirror Glass Replacement .	
1	Outside Rearview Mirror Housing Cover Bezel Screws (Qty: 4) CAUTION: Refer to Fastener Caution . Tighten 1.5 N.m (13 lb in)
2	Outside Rearview Mirror Housing Bezel

OUTSIDE REARVIEW MIRROR REMOTE CONTROL SWITCH REPLACEMENT (BUICK)

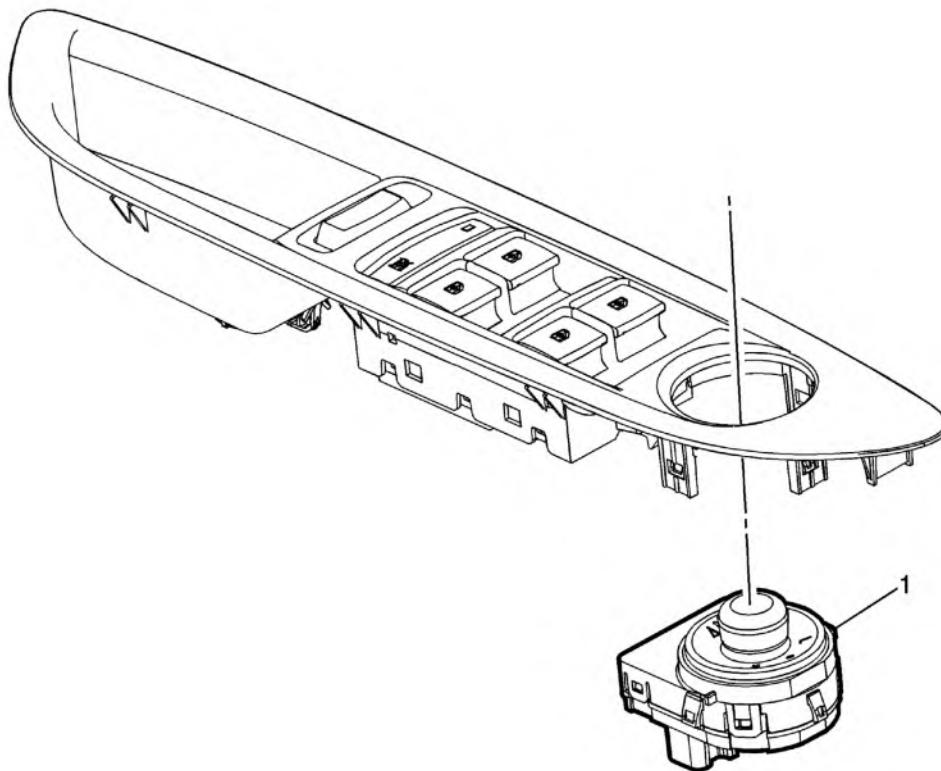


Fig. 10: Outside Rearview Mirror Remote Control Switch (Encore).

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the front side door armrest switch mount plate - drivers side door. Refer to Front Side Door Armrest Switch Mount Plate Replacement (Driver Side Door, Buick) .	
1	Outside Remote Control Rearview Mirror Switch Assembly Procedure 1. Release tabs on switch to remove from the front side door accessory switch mount plate. 2. Refer to Control Module References for programming and set up procedures.

OUTSIDE REARVIEW MIRROR REMOTE CONTROL SWITCH REPLACEMENT (CHEVROLET)

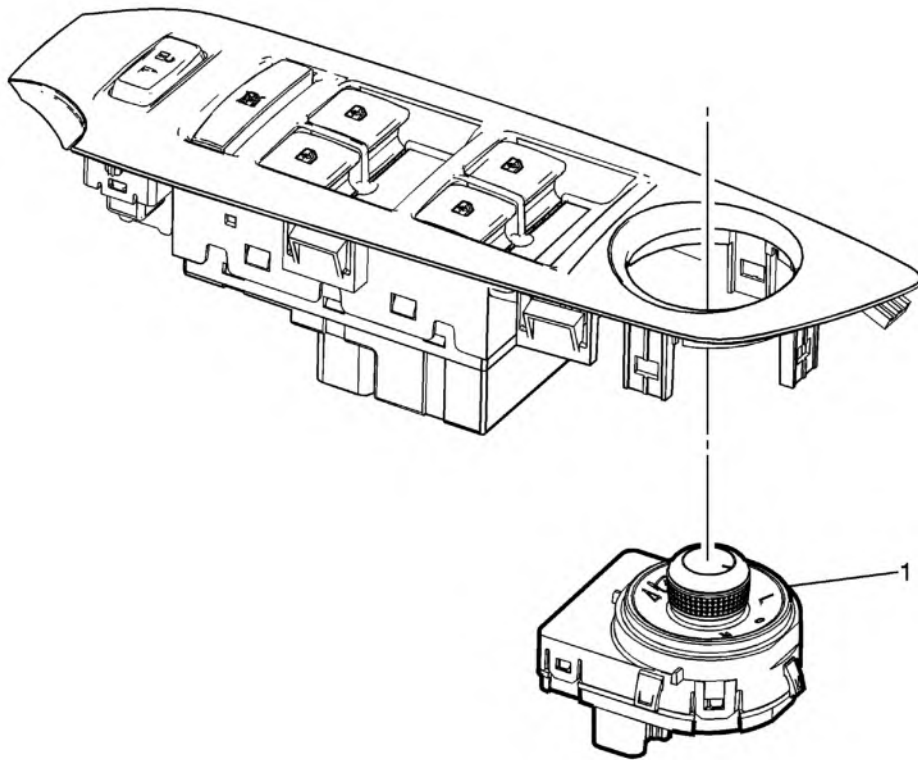


Fig. 11: Outside Rearview Mirror Remote Control Switch (Trax)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the front side door armrest switch mount plate - driver side door. Refer to Front Side Door Armrest Switch Mount Plate Replacement (Driver Side Door, Chevrolet) .	
1	Outside Remote Control Rearview Mirror Switch Assembly Procedure 1. Release tabs on switch to remove from the front side door accessory switch mount plate. 2. Refer to Control Module References for programming and set up procedures.

OUTSIDE REARVIEW MIRROR INNER ACTUATOR REPLACEMENT

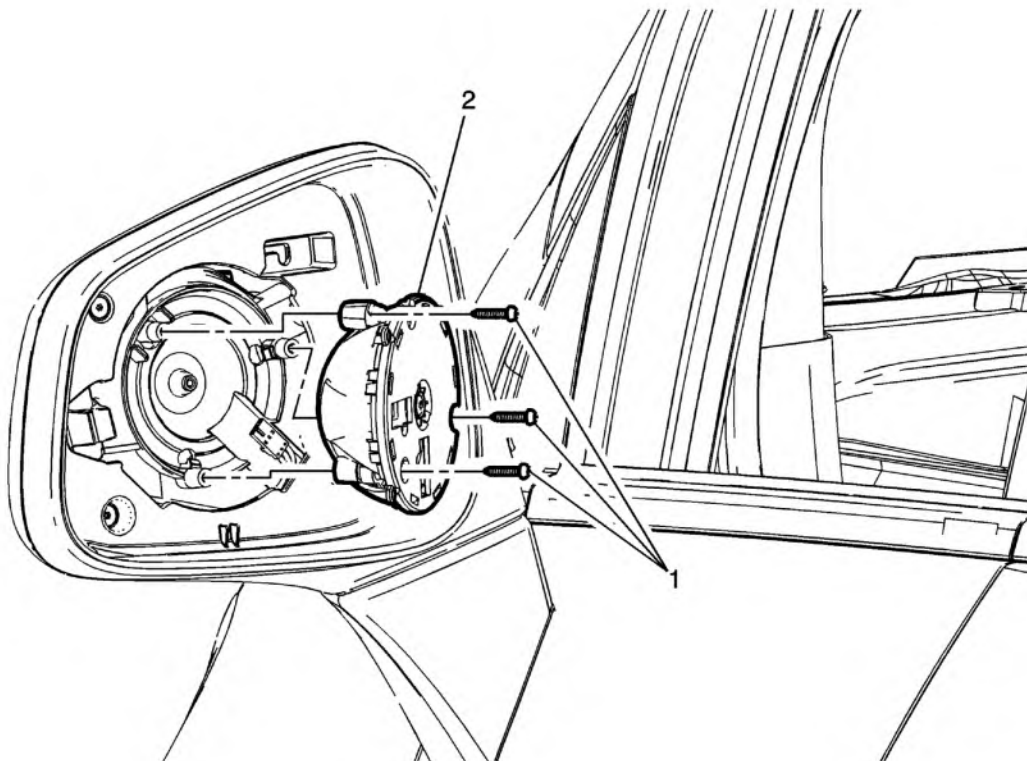


Fig. 12: Outside Rearview Mirror Inner Actuator
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the outside rearview mirror glass. Refer to Outside Rearview Mirror Glass Replacement .	
1	Outside Rearview Mirror Inner Actuator Screw (Qty: 3) CAUTION: Refer to Fastener Caution . Procedure Disconnect the outside mirror inner actuator electrical connectors. Tighten 5 N.m (44 lb in)
2	Outside Rearview Mirror Inner Actuator

OUTSIDE REARVIEW MIRROR GLASS REPLACEMENT

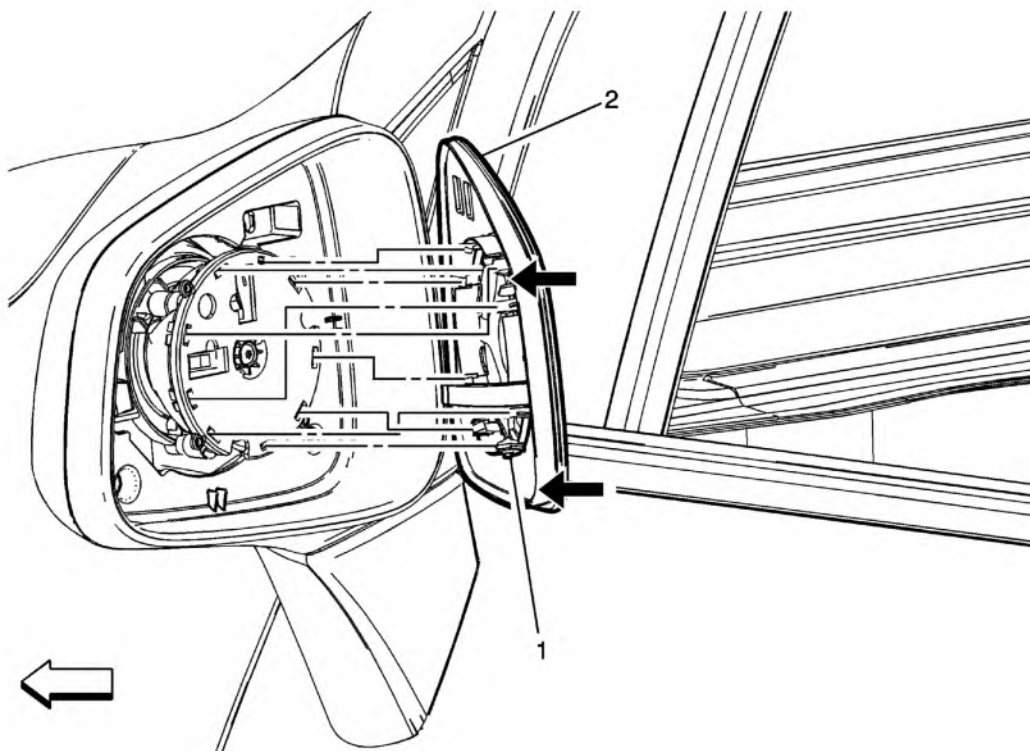


Fig. 13: Outside Rearview Mirror Glass
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Outside Rearview Mirror Glass Retainers (Qty: 9) WARNING: Approved safety glasses and gloves should be worn when performing this procedure to reduce the chance of personal injury. Procedure 1. Place masking tape over the mirror glass and around the mirror housing. 2. Carefully push the outside rearview mirror glass upward and into the right corner of the mirror housing, allowing access to the bottom edge. 3. Grasp the bottom edge of the mirror glass firmly, lift upward and pull rearward until the mirror glass releases the motor ring. 4. Disconnected the connectors from the back of the mirror glass.
2	Outside Rearview Mirror Glass Procedure 1. Place the mirror glass on the lower motor ring retainers. 2. Place one hand on the back of the mirror housing, using the flat palm of the other hand press inward locking the mirror glass to the motor ring.

INSIDE REARVIEW MIRROR REPLACEMENT

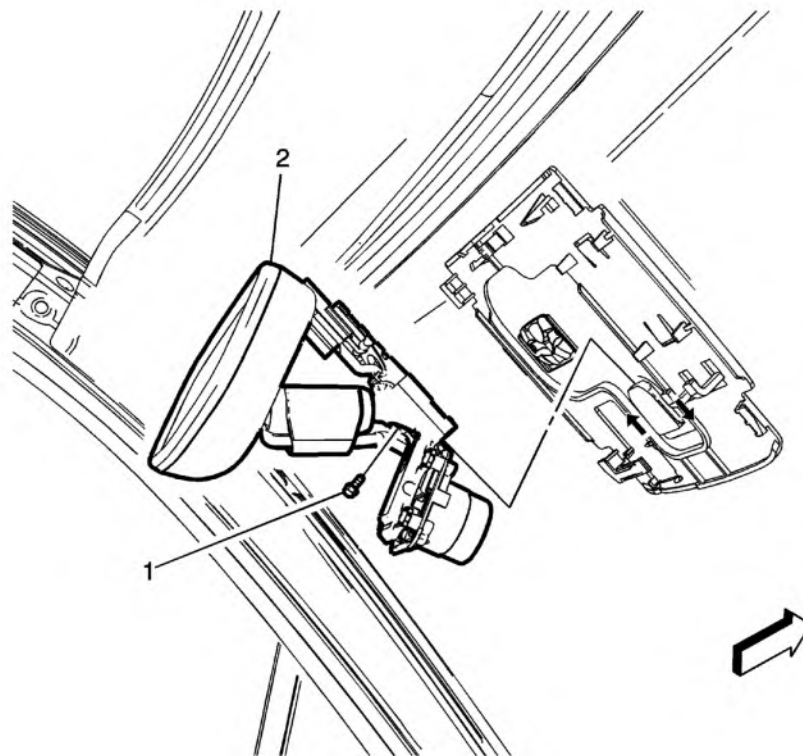


Fig. 14: Inside Rearview Mirror

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to Glass and Sheet Metal Handling Warning .	
Preliminary Procedure Remove the outside moisture sensor covers to view the base to mounting pad support screw. Refer to Windshield Outside Moisture Sensor Cover Replacement (Buick) . Windshield Outside Moisture Sensor Cover Replacement (Chevrolet) .	
1	Inside Rearview Mirror Screw CAUTION: Refer to Fastener Caution . Procedure 1. Disconnected the electrical connectors from the mirror. 2. Adjust the mirror to the full upward position, loosen the screw at the base in order to remove the mirror from the base to mounting pad screw. 3. Slide the mirror upward motion in order to remove. Tighten 2 N.m (18 lb in)
2	Inside Rearview Mirror

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 (WITH MEMORY SEATS)

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

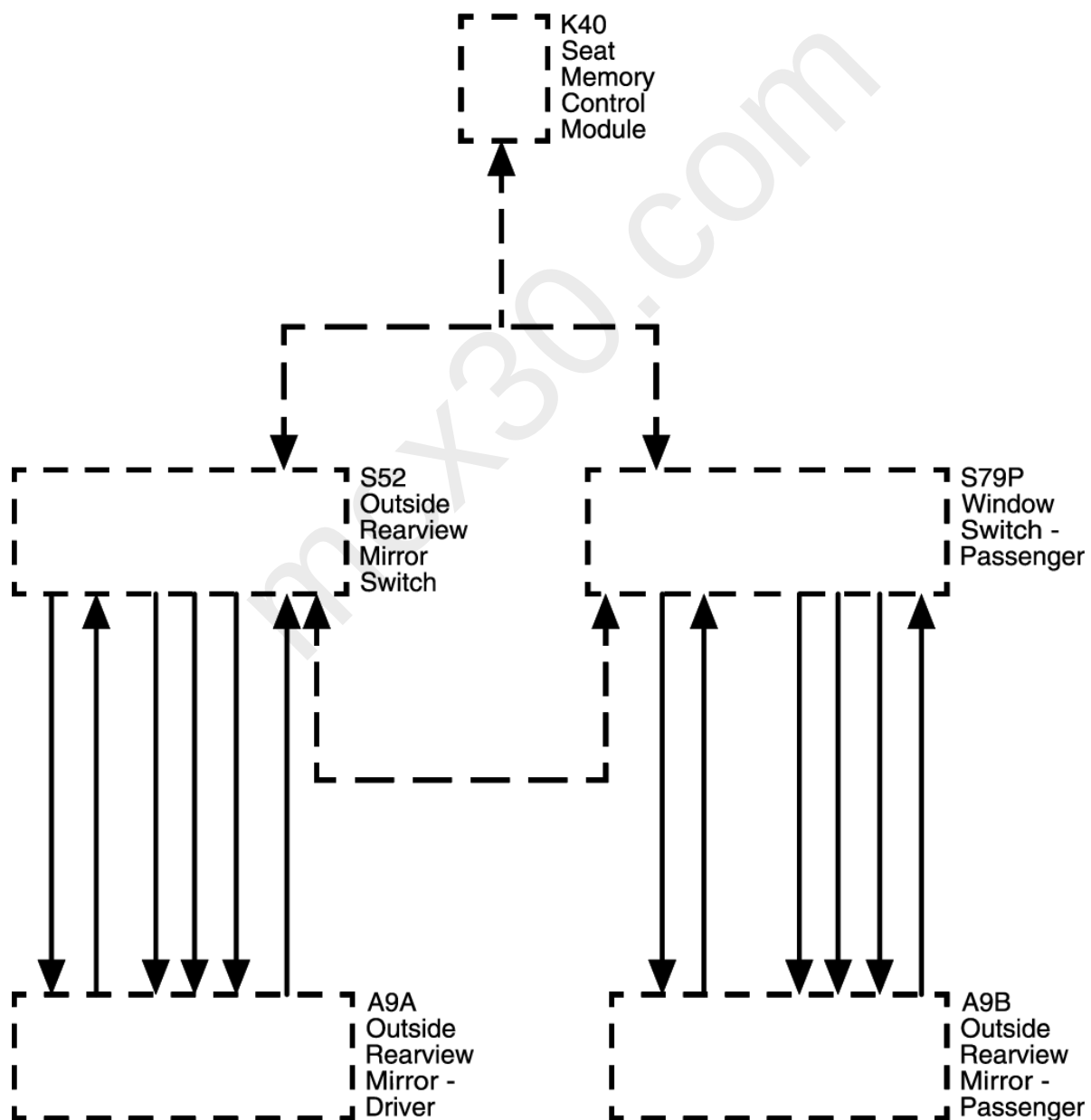


Fig. 15: Power Mirror System Block Diagram (With A45)

Courtesy of GENERAL MOTORS COMPANY

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.

OUTSIDE MIRROR DESCRIPTION AND OPERATION (WITHOUT MEMORY SEATS)

Power Mirror System Components

The power mirror system consists of the following components:

- Outside rearview mirror switch
- Mirror selector switch
- Driver outside rearview mirror
- Passenger outside rearview mirror

Each of the outside rearview mirror contains two motors. The vertical motor operates the mirror in the up and down directions, and the horizontal motor operates the mirror in the left and right directions.

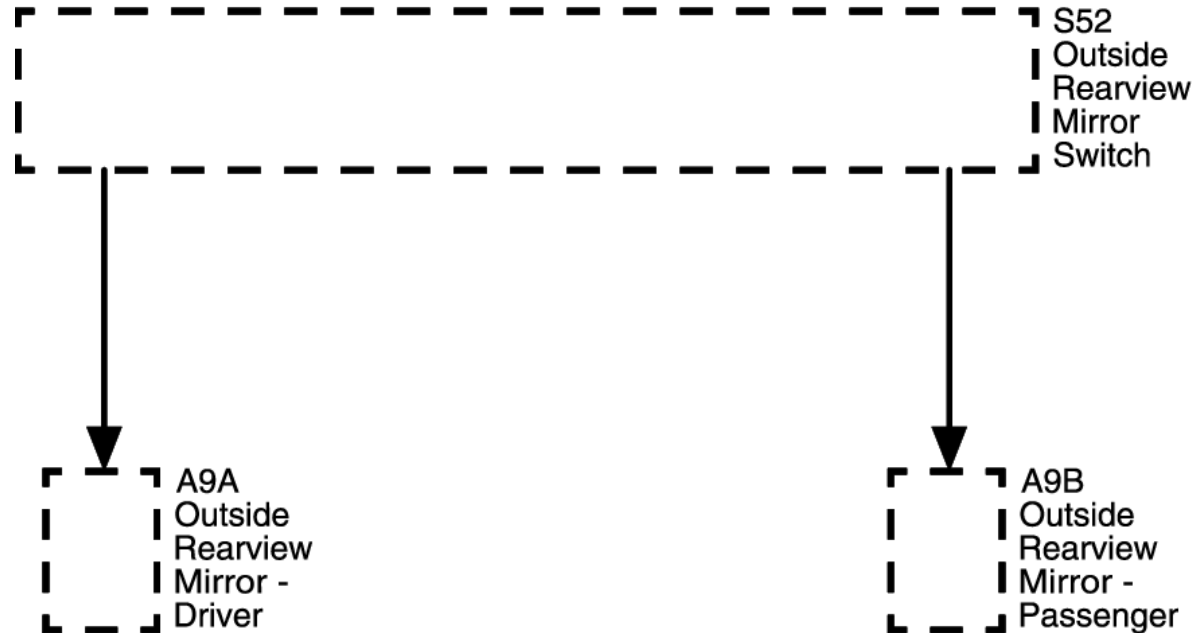


Fig. 16: Power Mirror System Block Diagram (Without A45).
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
S52	S52 Outside Rearview Mirror Switch
A9A	A9A Outside Rearview Mirror - Driver
A9B	A9B Outside Rearview Mirror - Passenger

Power Mirror System Controls

The outside rearview mirror switch is a four position directional switch: Up, Down, Left and Right.

The mirror select switch is a three position switch: left, neutral/fold, and right.

Power Mirror System Operation

The outside rearview mirror switch receives battery voltage from the underhood fuse block. The power mirror switch also receives a constant ground.

The four positions of the direction switch have dual switch contacts. Each of the contacts are connected to opposing sides of the appropriate power mirror motors through the selector switch. The selector switch completes these circuits depending on the position of the selector switch, L or R.

If the selector switch is placed in the L position and the up switch is pressed, battery voltage will be supplied to the left outside rearview mirror vertical motor through the left mirror motor vertical control circuit and ground through the left mirror motor common control circuit. If the down switch is pressed, battery voltage will be supplied to the left outside rearview mirror vertical motor through the left mirror motor common control circuit and ground through the left mirror motor vertical control circuit.

The remainder of the mirror functions operate in the same manner as described above. Placing the power mirror switch in opposing positions, left/right or up/down, will reverse the polarity to the mirror motor, reversing the direction of movement.

Heated Mirrors (If Equipped)

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.

mcx30.com