ACCESSORIES & EQUIPMENT Mirrors -

Escalade, Suburban, Tahoe, Yukon

SPECIFICATIONS

FASTENER SPECIFICATIONS

Application	Specification	
	Metric	English
Outside Rearview Mirror Inner Actuator Screw	2 N.m	18 lb in
Outside Rearview Mirror Lower Glass Retainer Screw	17 N.m	12 lb ft
Outside Rearview Mirror Nuts	9 N.m	80 lb in
Inside Rearview Mirror Screw	1.8 N.m	16 lb in

ADHESIVES, FLUIDS, LUBRICANTS, AND SEALERS

Application	Type of Material	GM Part Number	
		United States	Canada
Inside Mirror Adhesive Kit	Adhesive	89021329	89020893

SCHEMATIC WIRING DIAGRAMS

INSIDE REARVIEW MIRROR WIRING SCHEMATICS

DD8

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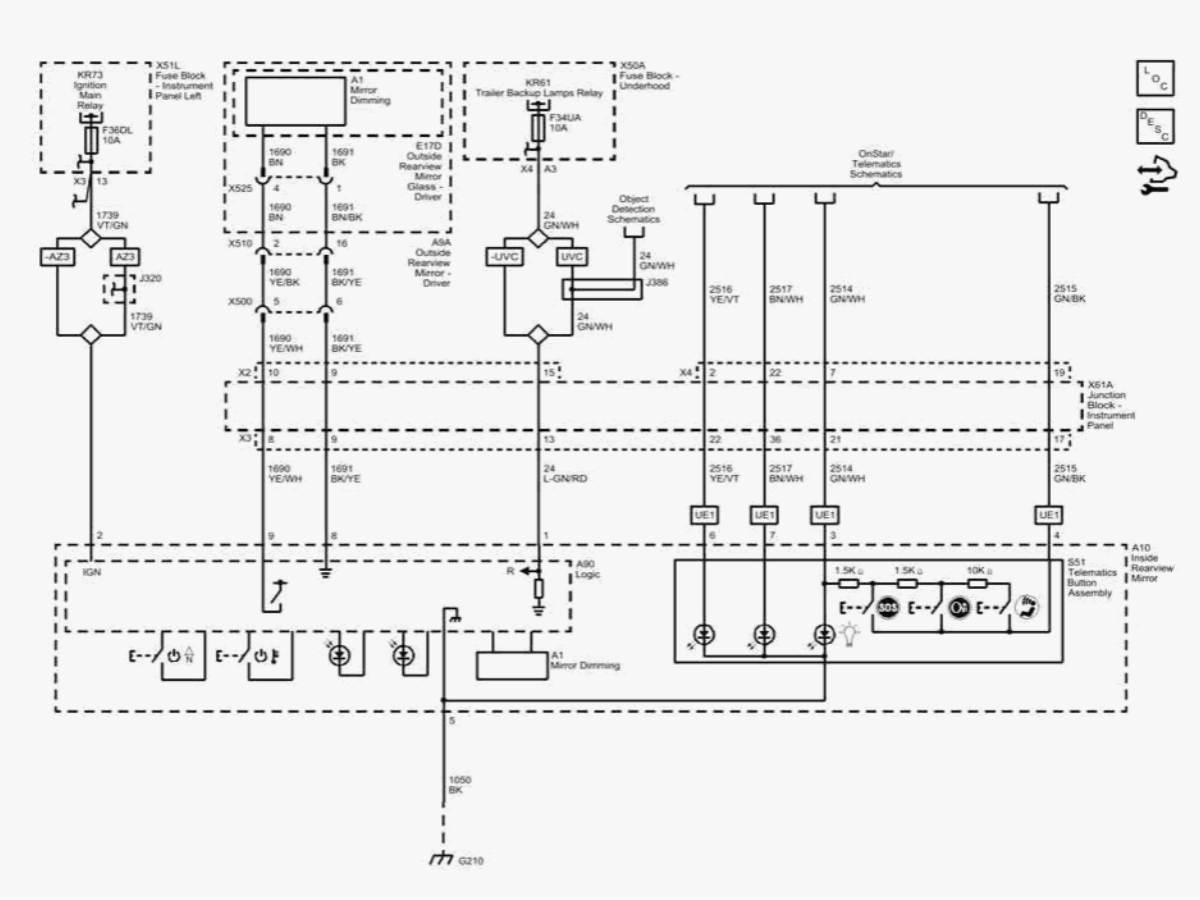

Fig. 1: DD8

Courtesy of GENERAL MOTORS COMPANY

OUTSIDE REARVIEW MIRROR WIRING SCHEMATICS

Controls, Driver Position and Folding (A45)

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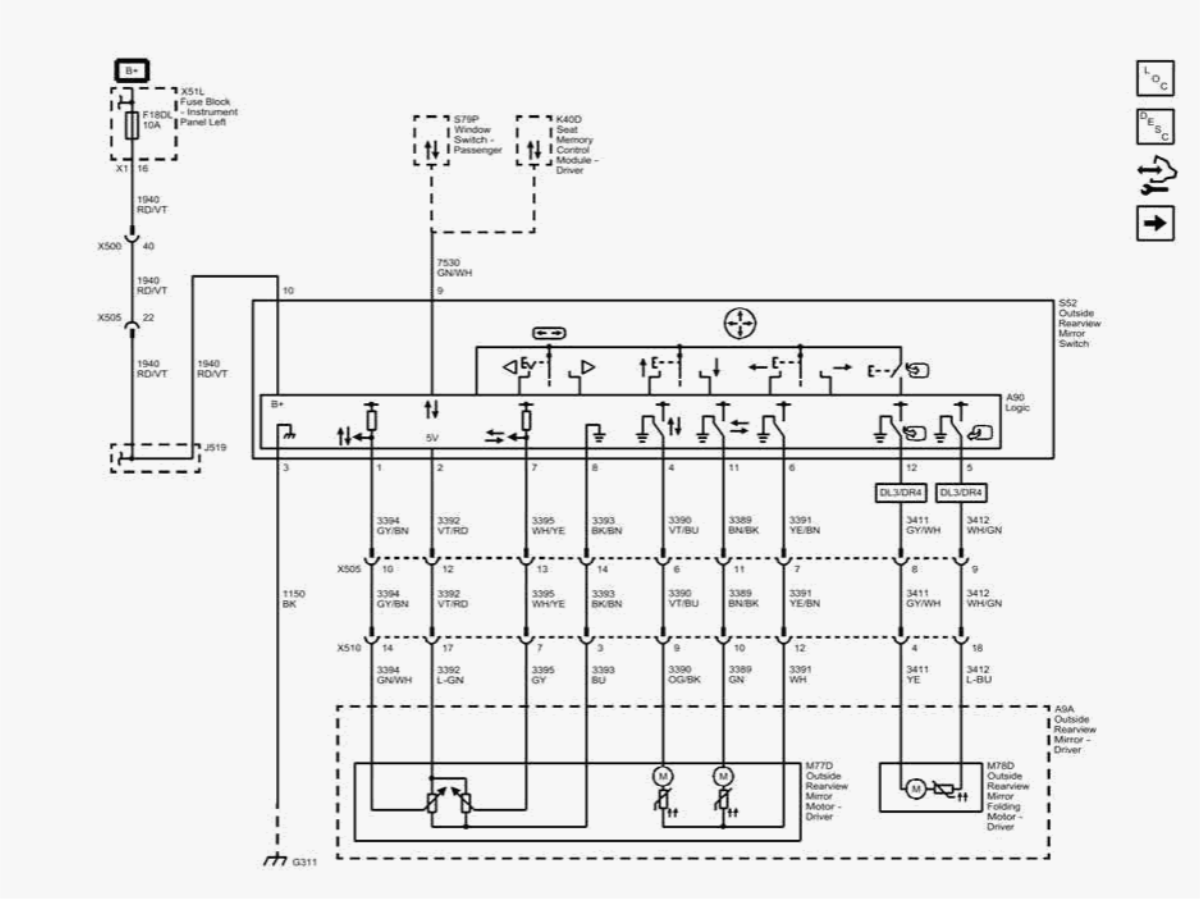

Fig. 2: Controls, Driver Position and Folding (A45)
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Passenger Position and Folding (A45)

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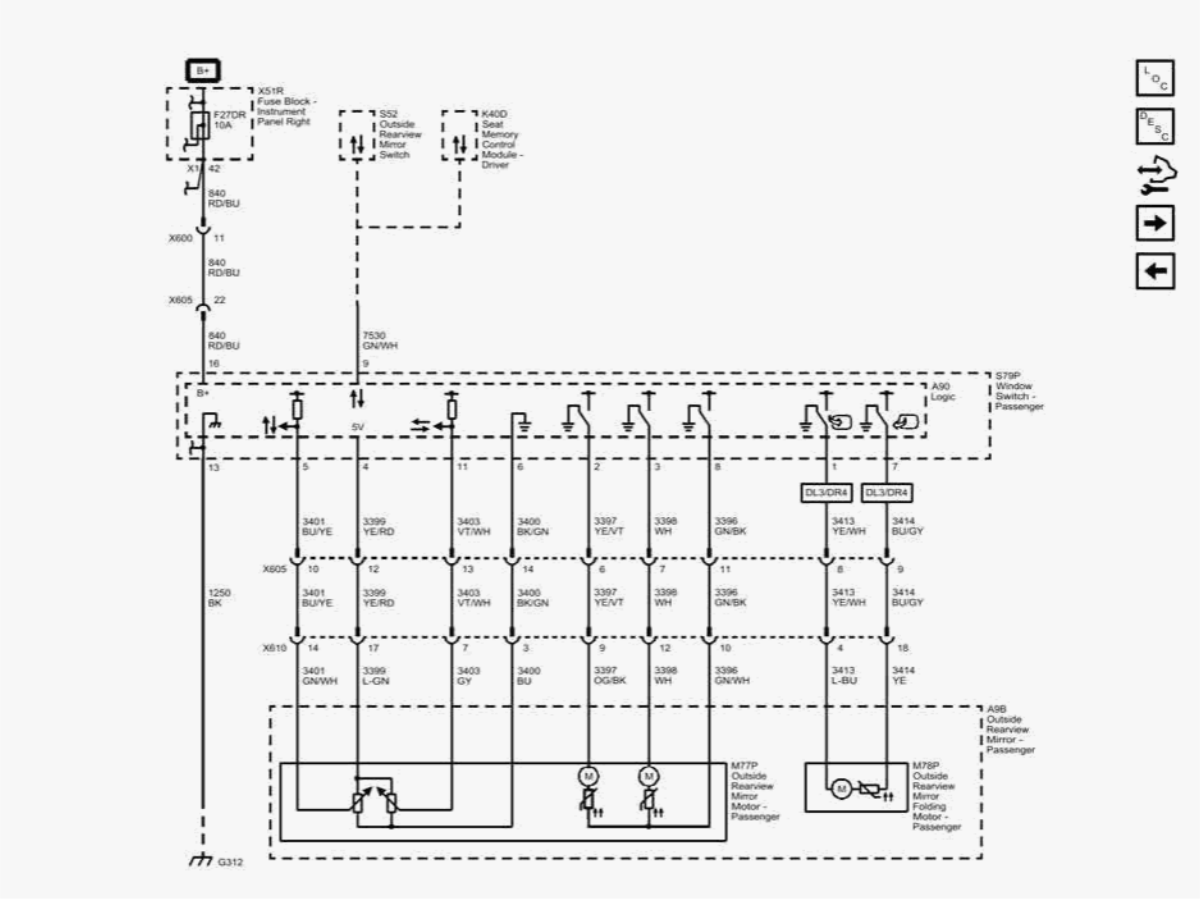

Fig. 3: Passenger Position and Folding (A45)
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Position (without A45)

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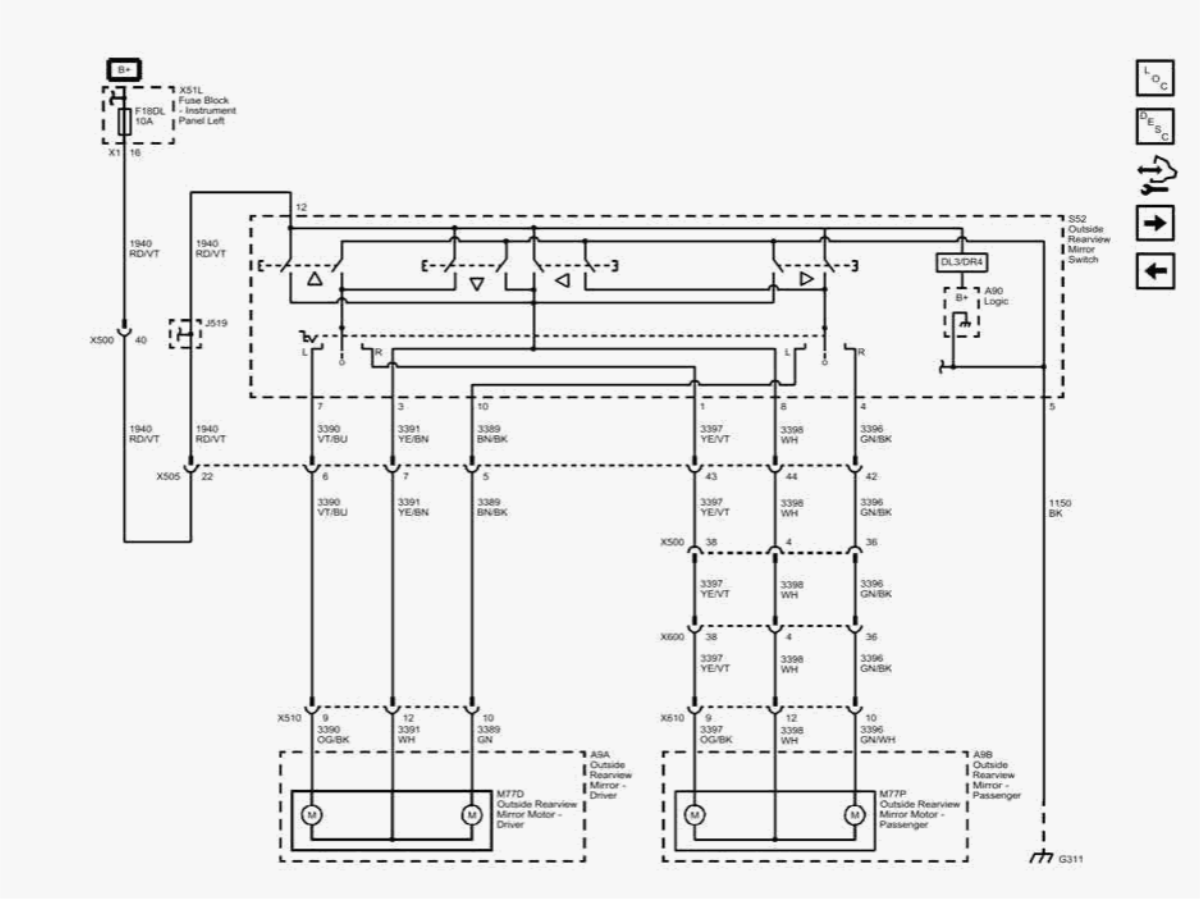

Fig. 4: Position (without A45)

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Folding (DL3 or DR4 without A45)

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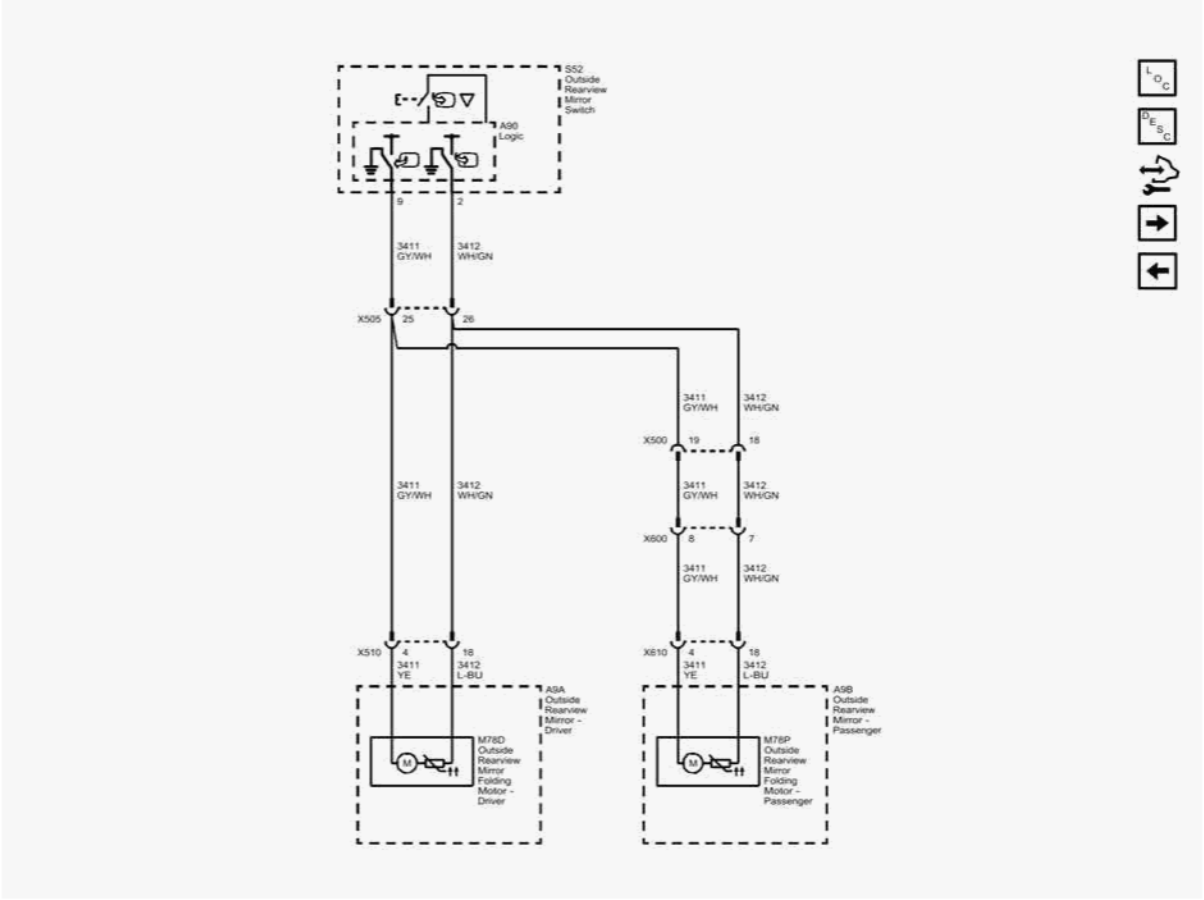

Fig. 5: Folding (DL3 or DR4 without A45)
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Dimming (DL3 or DR4) and Heating

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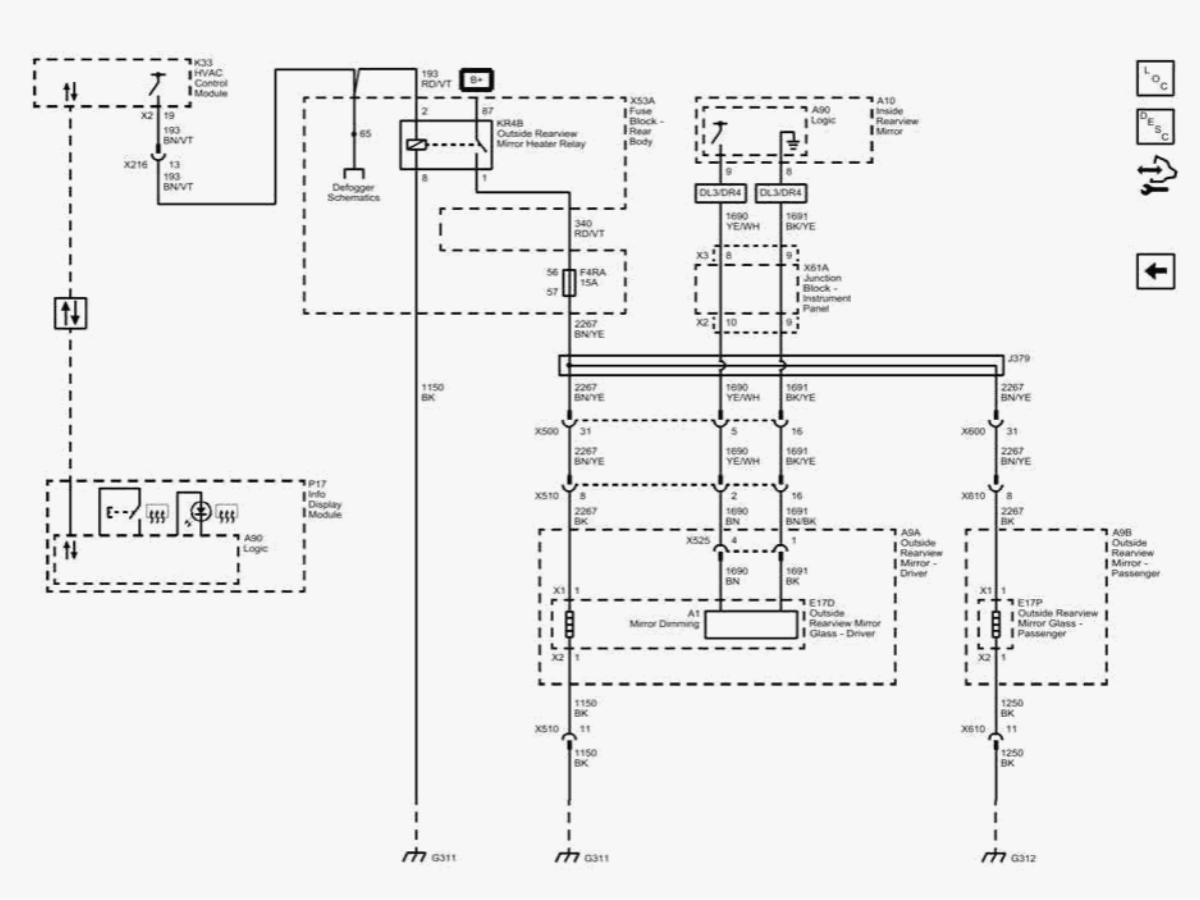

Fig. 6: Dimming (DL3 or DR4) and Heating
Courtesy of GENERAL MOTORS COMPANY

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.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

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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

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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 Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Outside Mirror Description and Operation (With A45)Outside Mirror Description and Operation (Without A45)

Electrical Information Reference

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

Scan Tool Reference

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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.

Outside Rearview Mirror Inner Actuator Replacement (DL3, DL8)Outside Rearview Mirror Inner Actuator Replacement (DR4).

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:
   - **Outside Mirror Description and Operation (With A45)Outside Mirror Description and Operation (Without A45)**

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- **Automatic Day-Night 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:

- **Heated Mirrors Malfunction**
- **Automatic Day-Night Mirrors Malfunction**
- **Power Mirror Malfunction (Without A45)Power Mirror Malfunction (With A45)**

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
Relay B+	1, 2	1, 2	-	-
Relay Control	B0283 02	B0283 05	B0283 05	-
Heated Mirror Control	1, 2	1, 2	3	-
Relay Ground	-	B0283 05	-	-
Driver Outside Rearview Mirror Ground	-	1	-	-

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Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Passenger Outside Rearview Mirror Ground	-	2	-	-
1. Driver Heated Outside Mirror Inoperative 2. Passenger Heated Outside Mirror Inoperative 3. Heated Outside Mirrors Always ON				

Circuit/System Description

When the rear defogger switch is pressed, the HVAC control module will supply voltage to the relay coil. Battery positive voltage is supplied at all times to the relay switched input and the relay coil is always grounded. This allows battery positive voltage from the relay switched input through the switch contacts and out the relay switched output to the driver and passenger outside rearview mirrors.

Reference Information

Schematic Reference

Outside Rearview Mirror Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

INLINE HARNESS CONNECTOR END VIEWS - INDEX

Description and Operation

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

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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 pressing the rear window defogger switch.
   - **If the E18 Rear Defogger Grid does not turn ON and 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 Oustide Rearview Mirror Glass - Passenger become warm when commanding the Rear Defogger Command On with a scan tool.
   - **If the E17D Outside Rearview Mirror Glass - Driver and the E17P Oustide Rearview Mirror Glass - Passenger do not become warm**

     Refer to Circuit/System Testing - Both Outside Heated Rearview Mirrors Inoperative

   - **If the E17D Outside Rearview Mirror Glass - Driver does not become warm**

     Refer to Circuit/System Testing - Driver/Passenger Outside Heated Rearview Mirror Malfunction

   - **If the E17D Outside Rearview Mirror Glass - Driver and the E17P Oustide Rearview Mirror Glass - Passenger do become warm**
4. All OK.

Circuit/System Testing

Both Outside Heated Rearview Mirrors Inoperative

1. Ignition OFF and all vehicle systems OFF, disconnect the KR4B Outside Rearview Mirror Heater Relay. 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 8 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.

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- If less than 2 Ω, repair the open/high resistance in the ground connection.
- **If less than 10 Ω**

3. Engine Running.
4. Verify a test lamp illuminates between the B+ circuit terminal 87 and ground.
   - **If the test lamp does not illuminate**
   - Replace the X53A Fuse Block-Rear Body
   - **If the test lamp illuminates**
5. Connect a test lamp between the control circuit terminal 2 and the ground circuit terminal 8.
6. Verify the test lamp turns ON and OFF when commanding the Rear Defogger Command On and Off with a scan tool.
   - **If the test lamp is always OFF**
   1. Ignition OFF, remove the test lamp, disconnect the harness connector at the K33 HVAC Control Module.
   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
   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 K33 HVAC Control Module.
   - **If the test lamp is always ON**
   1. Ignition OFF, remove the test lamp, disconnect the harness connector at the K33 HVAC 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, replace the K33 HVAC Control Module.
   - **If the test lamp turns ON and OFF**
7. Verify that a test lamp does not illuminate between the control circuit terminal 1 and ground.
   - **If the test lamp illuminates**

     Repair the short to voltage on the control circuit

   - **If the test lamp does not illuminate**
8. Ignition ON, connect a 15 A fused jumper wire between the B+ circuit terminal 87 and the control circuit terminal 1.

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9. Verify the E17D Outside Rearview Mirror Glass - Driver and the E17P Oustide Rearview Mirror Glass - Passenger are activated.
    - **If the E17D Outside Rearview Mirror Glass - Driver and the E17P Oustide Rearview Mirror Glass - Passenger do not activate**
    1. Ignition OFF, disconnect the X510 and X610 inline harness connectors
    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
    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 the E17P Oustide Rearview Mirror Glass - Passenger.
    - **If the E17D Outside Rearview Mirror Glass - Driver and the E17P Oustide Rearview Mirror Glass - Passenger activates**
10. Test or replace the KR4B Outside Rearview Mirror Heater Relay.

Driver/Passenger Outside Heated Rearview Mirror Malfunction

1. Ignition OFF and all vehicle systems OFF, disconnect the appropriate X510 or X610 inline harness connector. 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.
    - **If less than 10 Ω**
3. Engine running.
4. Connect a test lamp between the control circuit terminal 8 and ground.
5. Verify the test lamp turns ON and OFF when commanding the Rear Defogger Command On and Off with a scan tool.
    - **If the test lamp is always OFF**
    1. Ignition OFF, remove the test lamp, disconnect the KR4B Outside Rearview Mirror Heater Relay.
    2. Test for infinite resistance between the control circuit and ground.

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- 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 the test lamp turns ON and OFF**

6. Replace the E17 Outside Rearview Mirror Glass.

Component Testing

Relay Test

1. Ignition OFF, disconnect the KKR4B Outside Rearview Mirror Heater Relay.
2. Test for 60-180 Ω between terminals 85 and 86.
   - **If less than 60 Ω or greater than 180 Ω**

     Replace the KR4B Outside Rearview Mirror Heater Relay.

   - **If between 60-180 Ω**
3. Test for infinite resistance between the terminals listed below:
   - 30 and 86
   - 30 and 87
   - 30 and 85
   - 85 and 87
   - **If less than infinite resistance**

     Replace the KR4B Outside Rearview Mirror Heater Relay.

   - **If infinite resistance**
4. Install a 3 A fused jumper wire between relay terminal 85 and 12 V. Install a jumper wire between relay terminal 86 and ground.
5. Test for less than 2 Ω between terminals 30 and 87.
   - **If 2 Ω or greater**

     Replace the KR4B Outside Rearview Mirror Heater Relay.

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- **If less than 2 Ω**

6. All OK

Repair Instructions

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

- **Outside Rearview Mirror Glass Replacement (DR4)Outside Rearview Mirror Glass Replacement (DL3, DL8)**
- **Relay Replacement (Attached to Wire Harness) Relay Replacement (Within an Electrical Center)**
- **Control Module References** for HVAC control module replacement, setup, and programming

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

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

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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 signal circuit and a low reference circuit to the driver mirror face 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 mirror clearly when backing up, regardless of the rear light sensor status.

Reference Information

Schematic Reference

- **Inside Rearview Mirror Schematics**
- **Outside Rearview Mirror 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.

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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.**

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

   - **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.

   - **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.

   - **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.

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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.
    - **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, remove the test lamp.
    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, 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, 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.
        - 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.
        - 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. Ignition ON
2. Connect a test lamp between the control circuit terminal 1 and ground
3. Verify the test lamp turns ON and OFF while commanding the Backup Lamps Active and Inactive with a scan tool.

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- **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** .

- **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**

- **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 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.

    - **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**

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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.

- **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.
    - 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.

- **If greater than 1 V**

7. Test or replace A9A Outside Rearview Mirror-Driver.

Repair Instructions

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

- **Inside Rearview Mirror Replacement (With UE1)Inside Rearview Mirror Replacement (Without UE1)**
- **Outside Rearview Mirror Glass Replacement (DR4)Outside Rearview Mirror Glass Replacement (DL3, DL8)**

POWER MIRROR FOLDING MALFUNCTION (WITH A45)

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.

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- **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 Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

INLINE HARNESS CONNECTOR END VIEWS - INDEX

Description and Operation

Outside Mirror Description and Operation (With A45)

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**

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

Circuit/System Verification

1. Verify the outside folding mirrors is fully extended or fully retracted, refer to **Power Folding Mirrors Resetting Procedure**.
2. Ignition ON.
3. 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 S52 Outside Rearview Mirror Switch.
   - **If the A9A Outside Rearview Mirror-Driver does not FOLD and UNFOLD**

     Refer to Circuit/System Testing - Driver Outside Mirror Folding Command Malfunction.

   - **If the A9A Outside Rearview Mirror-Driver does FOLD and UNFOLD**
4. 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.

   - **If the A9B Outside Rearview Mirror-Passenger does FOLD and UNFOLD**
5. 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 S52 Outside Rearview Mirror Switch.
   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.

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- If less than 2 Ω, replace the S52 Outside Rearview Mirror Switch.

- **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 S52 Outside Rearview Mirror Switch.
   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 S52 Outside Rearview Mirror Switch.
   - **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 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, replace the S52 Outside Rearview Mirror Switch.
   - **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.
   - **If less than 10 Ω**

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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.
    - **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 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 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.
    - **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.

    - **If the function performs the FOLD and UNFOLD functions**
3. All OK

Repair Instructions

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

- **Outside Rearview Mirror Remote Control Switch Replacement (Chevrolet, GMC)Outside Rearview Mirror Remote Control Switch Replacement (Cadillac)**
- **Front Side Door Window Switch Replacement - Right Side (Chevrolet, GMC) Front Side Door Window Switch Replacement - Right Side (Cadillac)**
- **Outside Rearview Mirror Replacement (DL3, DL8)Outside Rearview Mirror Replacement (DR4)**

POWER MIRROR FOLDING MALFUNCTION (WITHOUT A45)

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 controls the power fold/unfold functions of the outside rearview mirrors. The folding mirror motors are controlled by using bi-directional motor controls through the folding mirror motor fold control circuit and the folding mirror motor unfold control circuit.

Diagnostic Aids

Power folding mirrors only operate when the mirror selector switch is in the no mirror select position.

Reference Information

Schematic Reference

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Outside Rearview Mirror Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Outside Mirror Description and Operation (Without A45)

Electrical Information Reference

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

Circuit/System Verification

1. Verify the outside folding mirrors is fully extended or fully retracted, refer to **Power Folding Mirrors Resetting Procedure**.
2. Ignition ON.
3. Verify the A9A Outside Rearview Mirror-Driver and the A9B Outside Rearview Mirror-Passenger FOLD and UNFOLD with the S52 Outside Rearview Mirror Switch.
   - **If the A9A Outside Rearview Mirror-Driver or the A9B Outside Rearview Mirror-Passenger do not FOLD or UNFOLD**

     Refer to Circuit/System Testing

   - **If the A9A Outside Rearview Mirror-Driver and the A9B Outside Rearview Mirror-Passenger FOLD and UNFOLD**
4. All OK.

Circuit/System Testing

1. Ignition OFF, disconnect the inline harness connector at the appropriate A9 Outside Rearview Mirror. Ignition ON
2. Connect a test lamp between the control circuit terminal 4 and control circuit terminal 18.
3. Verify the test lamp turns ON when commanding the FOLD and UNFOLD states with the S52 Outside Rearview Mirror Switch.
   - **If the test lamp remains OFF during either of the commands**

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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. Test or replace the A9 Outside Rearview Mirror.

Repair Instructions

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

- **Outside Rearview Mirror Remote Control Switch Replacement (Chevrolet, GMC)Outside Rearview Mirror Remote Control Switch Replacement (Cadillac)**
- **Outside Rearview Mirror Replacement (DL3, DL8)Outside Rearview Mirror Replacement (DR4)**

POWER MIRROR MALFUNCTION (WITHOUT A45)

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
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

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Outside Mirror Description and Operation (Without A45)

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**

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- **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**

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3. Verify a test lamp illuminates between the B+ circuit terminal 12 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 3
        - Control circuit terminal 4
        - Control circuit terminal 7
        - Control circuit terminal 8
        - Control circuit terminal 10
        - 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 X510 inline harness connector at the A9A Outside Rearview Mirror-Driver. 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 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.

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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 10 and control circuit terminal 12.
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.

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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 12 and control circuit terminal 9.
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 12 and control circuit terminal 10.
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.

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- **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.

- **Outside Rearview Mirror Inner Actuator Replacement (DL3, DL8)Outside Rearview Mirror Inner Actuator Replacement (DR4)**
- **Outside Rearview Mirror Remote Control Switch Replacement (Chevrolet, GMC)Outside Rearview Mirror Remote Control Switch Replacement (Cadillac)**

POWER MIRROR MALFUNCTION (WITH A45)

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	-

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Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
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 Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

INLINE HARNESS CONNECTOR END VIEWS - INDEX

Description and Operation

Outside Mirror Description and Operation (With A45)

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

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 LEFT, RIGHT, and NONE positions.
   - **If the parameter does not cycle between the specified values**

     Replace the S52 Outside Rearview Mirror Switch.

   - **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 S52 Outside Rearview Mirror Switch UP, DOWN, RIGHT and LEFT.
   - **If the parameter does not cycle between the specified values**

     Replace the S52 Outside Rearview Mirror Switch.

   - **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.

   - **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.

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- **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.

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- **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

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 3 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 10 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

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3. Test for infinite resistance between the control circuits listed below and ground:
    - Control circuit terminal 4
    - Control circuit terminal 6
    - Control circuit terminal 11
    - 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 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 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, 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, replace the S52 Outside Rearview Mirror Switch
    - **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 S52 Outside Rearview Mirror Switch.

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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 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, replace the S52 Outside Rearview 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 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 S52 Outside Rearview 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 Rearview 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 17 and ground.
    - **If less than 4.8 V**

    1. Ignition OFF, disconnect the harness connector at the S52 Outside Rearview Mirror Switch.
    2. Test for infinite resistance between the 5 V reference circuit and ground.

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- 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 Rearview Mirror Switch.

- **If greater than 5.2 V**

1. Ignition OFF, disconnect the harness connector at the S52 Outside Rearview 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 Rearview 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 X1 harness connector at the S52 Outside Rearview Mirror Switch, ignition ON.
    2. Test for less than 1 V between the signal circuit terminal 14 and ground.
        - If 1 V or greater, repair the short to voltage on the circuit.
        - If less than 1 V, replace the S52 Outside Rearview Mirror Switch.

    - **If less than 4.6 V**

6. Install a 3 A fused jumper wire between the signal circuit terminal 14 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 S52 Outside Rearview Mirror Switch.
    2. Test for infinite resistance between the signal circuit terminal 14 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 Rearview Mirror Switch.

    - **If greater than 0.6 V**

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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 Rearview 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 Rearview 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 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 S52 Outside Rearview 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 Rearview 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, 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 12 and control circuit terminal 9.
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.
        - If infinite resistance

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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**

4. Connect a test lamp between the control circuit terminal 12 and control circuit terminal 10.
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 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**

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

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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 X2 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.
    - **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 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 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 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 14 and ground.
        - If 1 V or greater, repair the short to voltage on the circuit.

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- 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 14 and the 5 V reference circuit terminal 17.
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 14 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**

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 17.
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 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.

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- 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.

- **Outside Rearview Mirror Remote Control Switch Replacement (Chevrolet, GMC)Outside Rearview Mirror Remote Control Switch Replacement (Cadillac)**
- **Outside Rearview Mirror Inner Actuator Replacement (DL3, DL8)Outside Rearview Mirror Inner Actuator Replacement (DR4)**
- **Front Side Door Window Switch Replacement - Right Side (Chevrolet, GMC) Front Side Door Window Switch Replacement - Right Side (Cadillac)**

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

Mirror position is determined by both horizontal and vertical position sensors in each of the power mirrors. The mirror control module 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 park tilt mirror in reverse command, the memory seat module will send the tilt down command to the mirror control module and the passenger window switch. The mirror control module and the passenger window switch will then drive the appropriate mirror motors to the commanded position.

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

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Reference Information

Schematic Reference

Outside Rearview Mirror Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Outside Mirror Description and Operation (With A45)Outside Mirror Description and Operation (Without A45)

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/Vehicle in Service Mode.
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 (Without A45)Power Mirror Malfunction (With A45)**.

   - **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.

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

  Refer to **Power Mirror Malfunction (Without A45)Power Mirror Malfunction (With A45)**.

- **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.

Control Module References for the seat memory control module replacement, programming and setup

REPAIR INSTRUCTIONS

OUTSIDE REARVIEW MIRROR REPLACEMENT (DL3, DL8)

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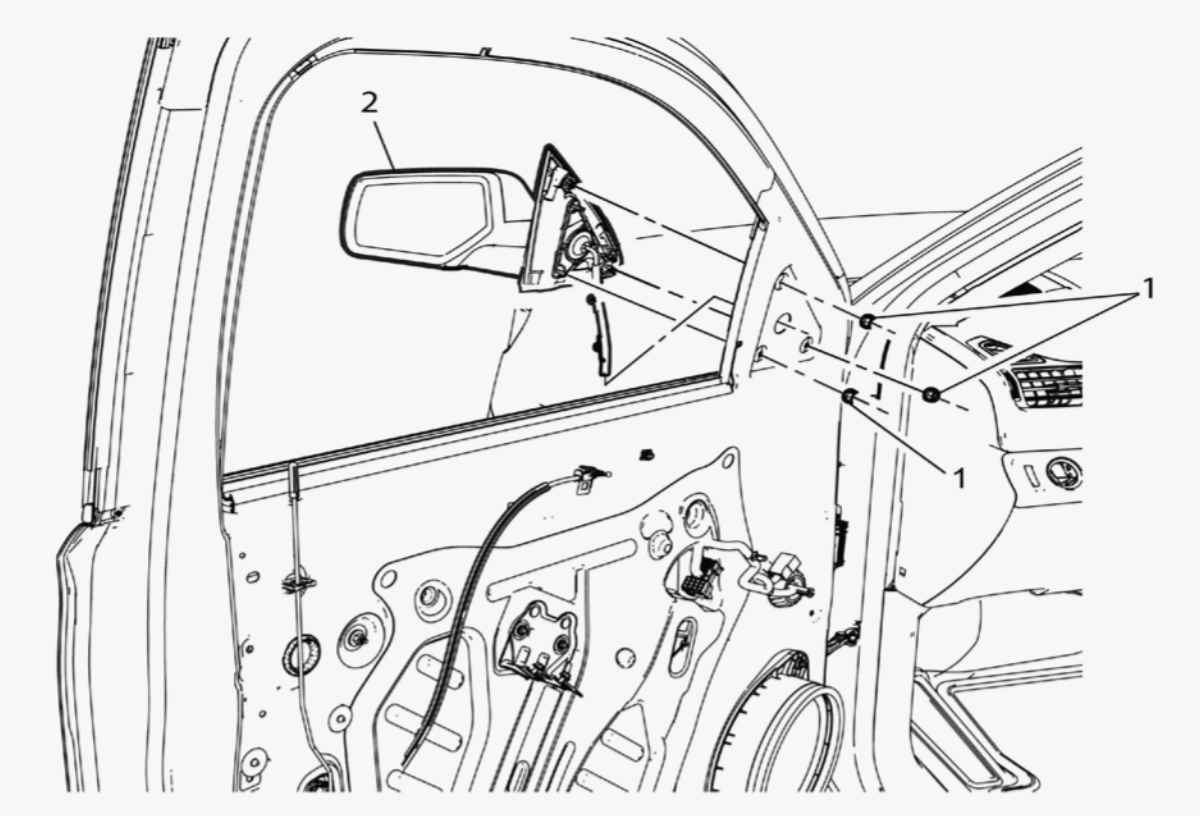

Fig. 7: Outside Rearview Mirror (DL3, DL8)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures Remove the front side door window garnish trim. Refer to **Front Side Door Window Garnish Molding Replacement** .	
1	Outside Rearview Mirror Nut (Qty: 3) **CAUTION:** **Refer to** **Fastener** **Caution** . **Procedure**

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Callout	Component Name
	1. Disconnect the electrical connector. 2. Using the appropriate tool, release the clip from the door. **Tighten** 9 N.m (80 lb in)
2	Outside Rearview Mirror **Procedure** Reprogram the mirror. Refer to **Power Folding Mirrors Resetting Procedure**. **NOTE:** **Inspect the outside mirror for proper operation before installing the door trim.**

OUTSIDE REARVIEW MIRROR REPLACEMENT (DR4)

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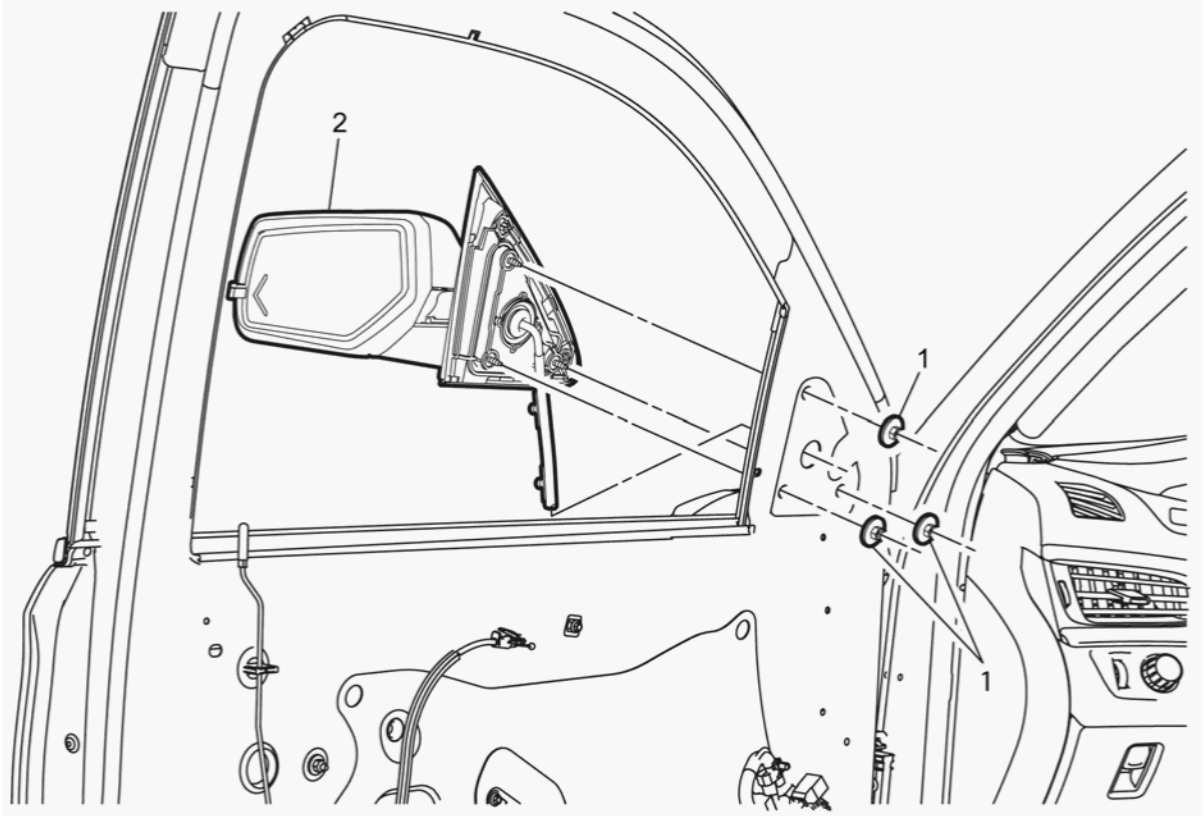

Fig. 8: Outside Rearview Mirror (DR4)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures Remove the front side door window garnish trim. Refer to **Front Side Door Window Garnish Molding Replacement** .	
1	Outside Rearview Mirror Nut (Qty: 3) **CAUTION:** **Refer to** **Fastener** **Caution** .

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Callout	Component Name
	Procedure Disconnect the electrical connector. **Tighten** 9 N.m (80 lb in)
2	Outside Rearview Mirror **Procedure** Reprogram the mirror. Refer to **Power Folding Mirrors Resetting Procedure**. **NOTE:** **Inspect the outside mirror for proper operation before installing the door trim.**

OUTSIDE REARVIEW MIRROR GASKET REPLACEMENT

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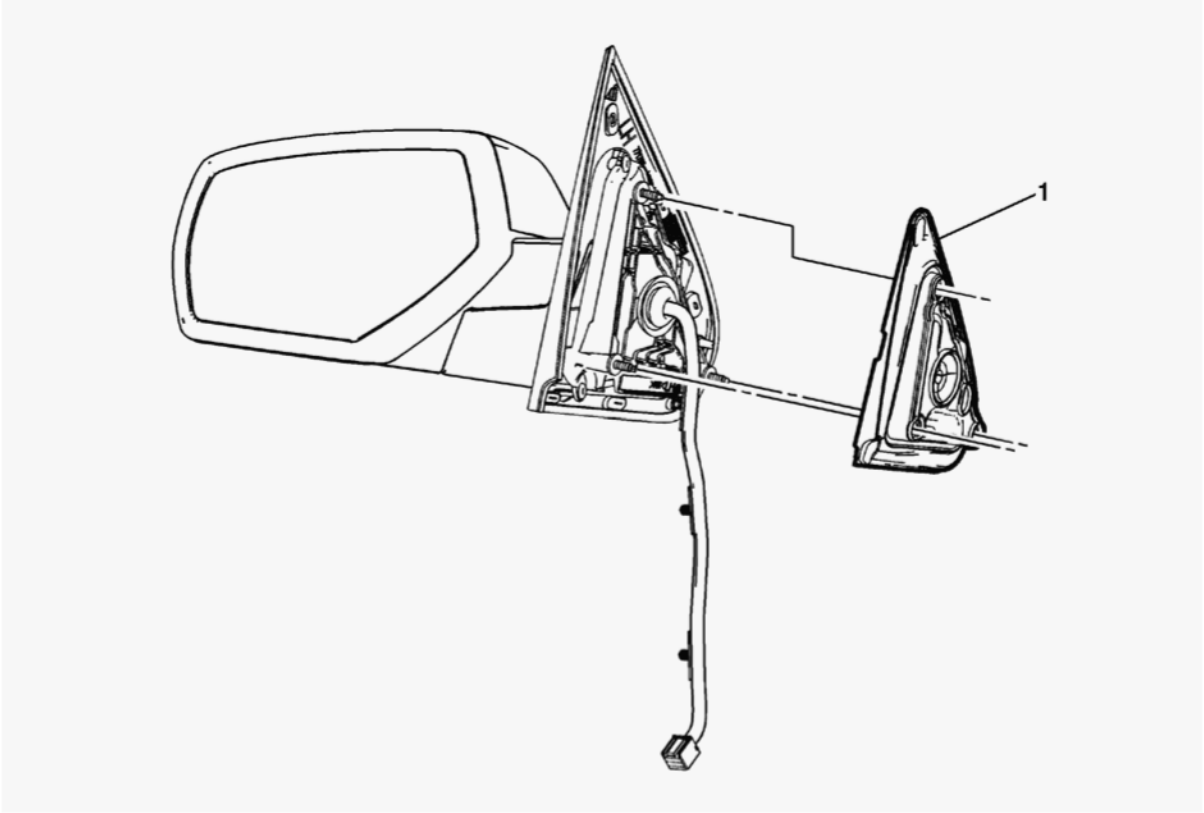

Fig. 9: Outside Rearview Mirror Gasket
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the outside rearview mirror. Refer to **Outside Rearview Mirror Replacement (DL3, DL8)Outside Rearview Mirror Replacement (DR4)**.	
1	Outside Rearview Mirror Gasket **NOTE:** **Inspect the outside rearview mirror for**

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Callout	Component Name
	proper operation.

OUTSIDE REARVIEW MIRROR REMOTE CONTROL SWITCH REPLACEMENT (CHEVROLET, GMC)

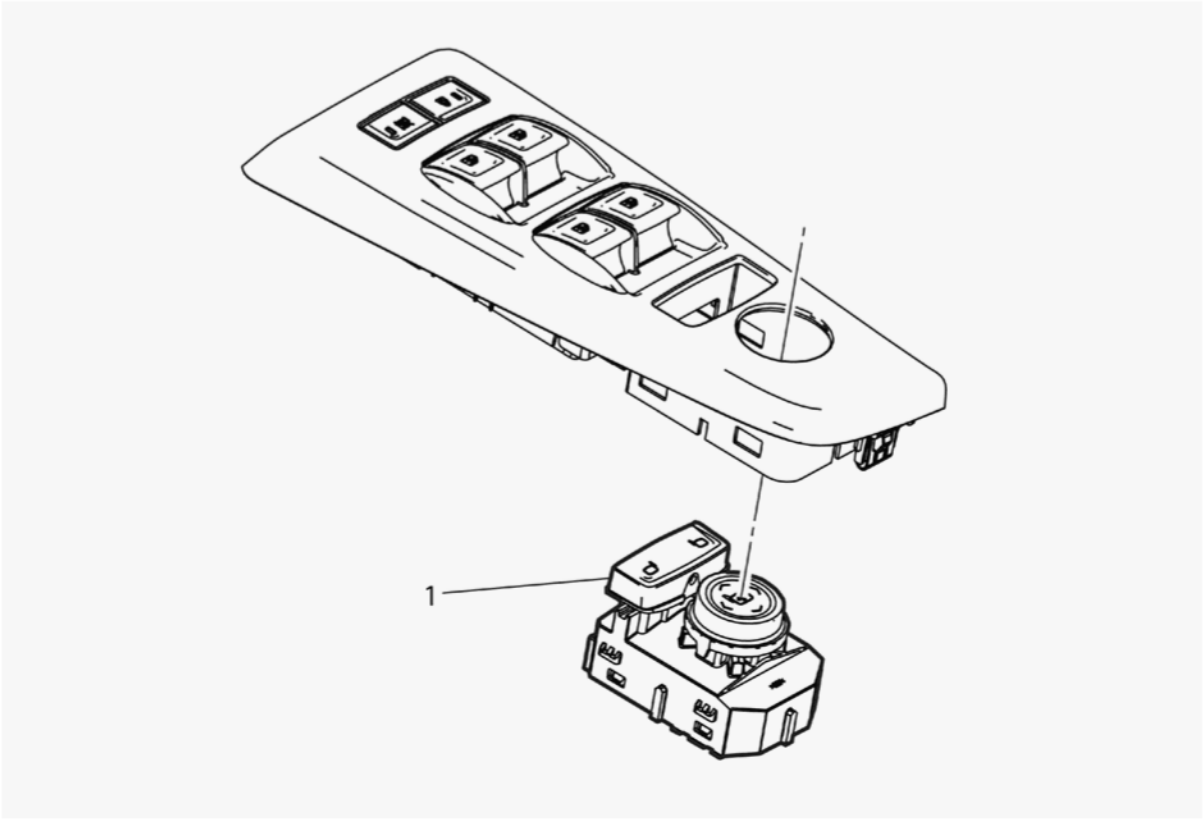

Fig. 10: Outside Rearview Mirror Remote Control Switch (Chevrolet, GMC)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the front side door accessory switch mount plate - driver side. Refer to **Front Side Door Accessory Switch Mount Plate Replacement - Driver Side (Chevrolet, GMC)** .	

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Callout	Component Name
1	Outside Rearview Mirror Remote Control Switch Assembly **Procedure** 1. Release tabs on switch to remove from front side door accessory switch mount plate - driver side. 2. Refer to **Control Module References** for programming and set up procedures, if required.

OUTSIDE REARVIEW MIRROR REMOTE CONTROL SWITCH REPLACEMENT (CADILLAC)

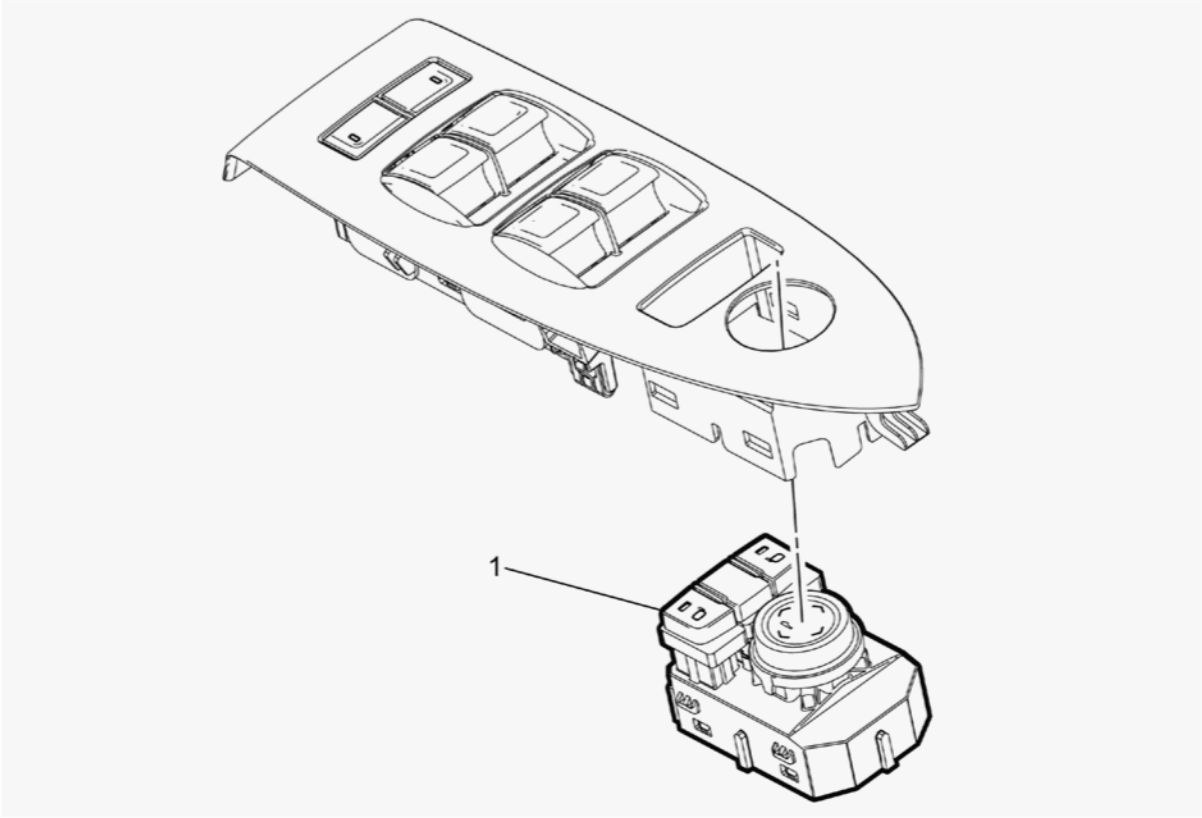

Fig. 11: Outside Rearview Mirror Remote Control Switch (Cadillac)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name

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

POWER FOLDING MIRRORS RESETTING PROCEDURE

Initialization Procedure

Reset the power folding mirrors in the following scenarios:

- The mirrors are accidentally obstructed while folding.
- They are accidentally manually folded/unfolded.
- The mirrors will not stay in the unfolded position.
- The mirrors vibrate at normal driving speeds.

Until the motor assembly has been initialized, the express open and close switch inputs and manual open inputs are disregarded. During the process of initialization, anti-pinch detection is not active.

Resetting the Power Folding Mirrors:

Fold and unfold the mirrors one time using the mirror folding control to reset them to their normal position. A popping noise may be heard during the resetting of the power folding mirrors. This sound is normal after a manual folding operation.

OUTSIDE REARVIEW MIRROR INNER ACTUATOR REPLACEMENT (DL3, DL8)

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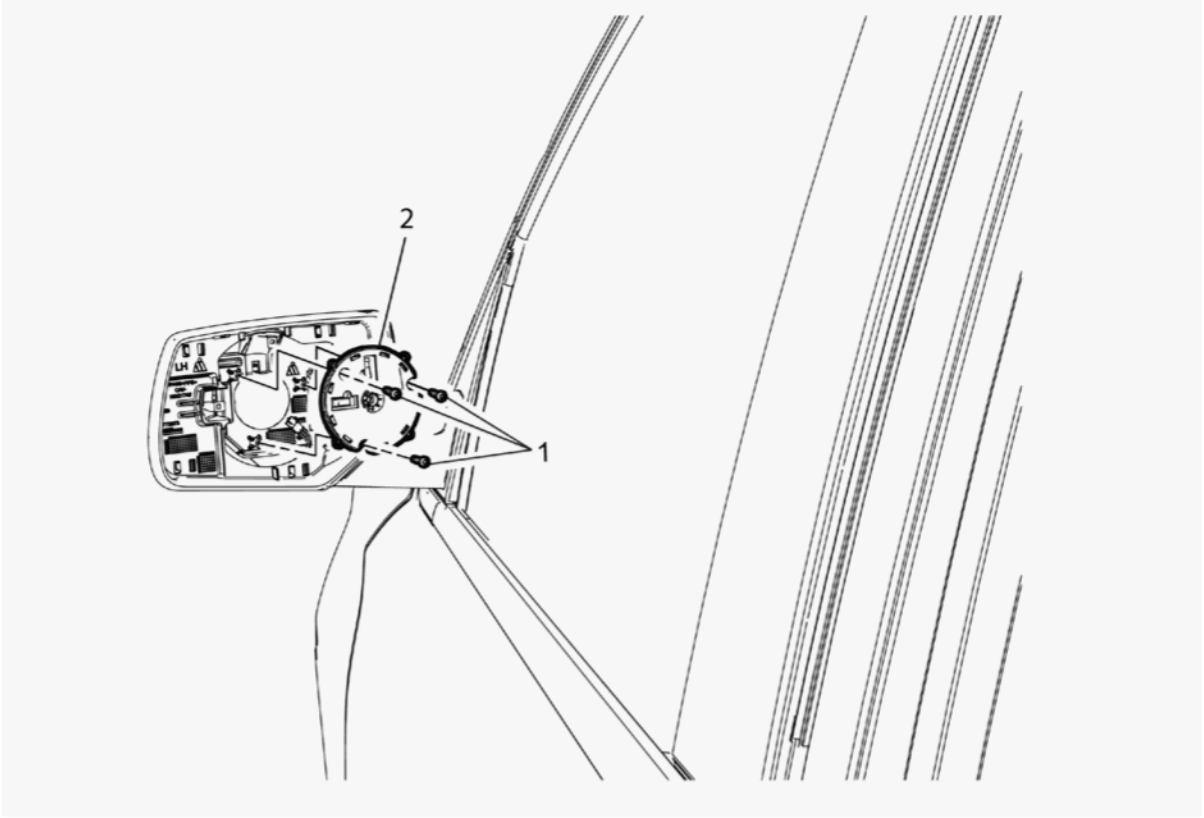

Fig. 12: Outside Rearview Mirror Inner Actuator (DL3, DL8)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the outside rearview mirror glass. Refer to **Outside Rearview Mirror Glass Replacement (DL3, DL8)**.	
1	Outside Rearview Mirror Inner Actuator Screw (Qty: 3) **CAUTION:** **Refer to Fastener Caution .**

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Callout	Component Name
	Procedure Disconnect the electrical connectors. **Tighten** 2 N.m (18 lb in)
2	Outside Rearview Mirror Inner Actuator **NOTE:** **Inspect the outside rearview mirror for proper operation.**

OUTSIDE REARVIEW MIRROR INNER ACTUATOR REPLACEMENT (DR4)

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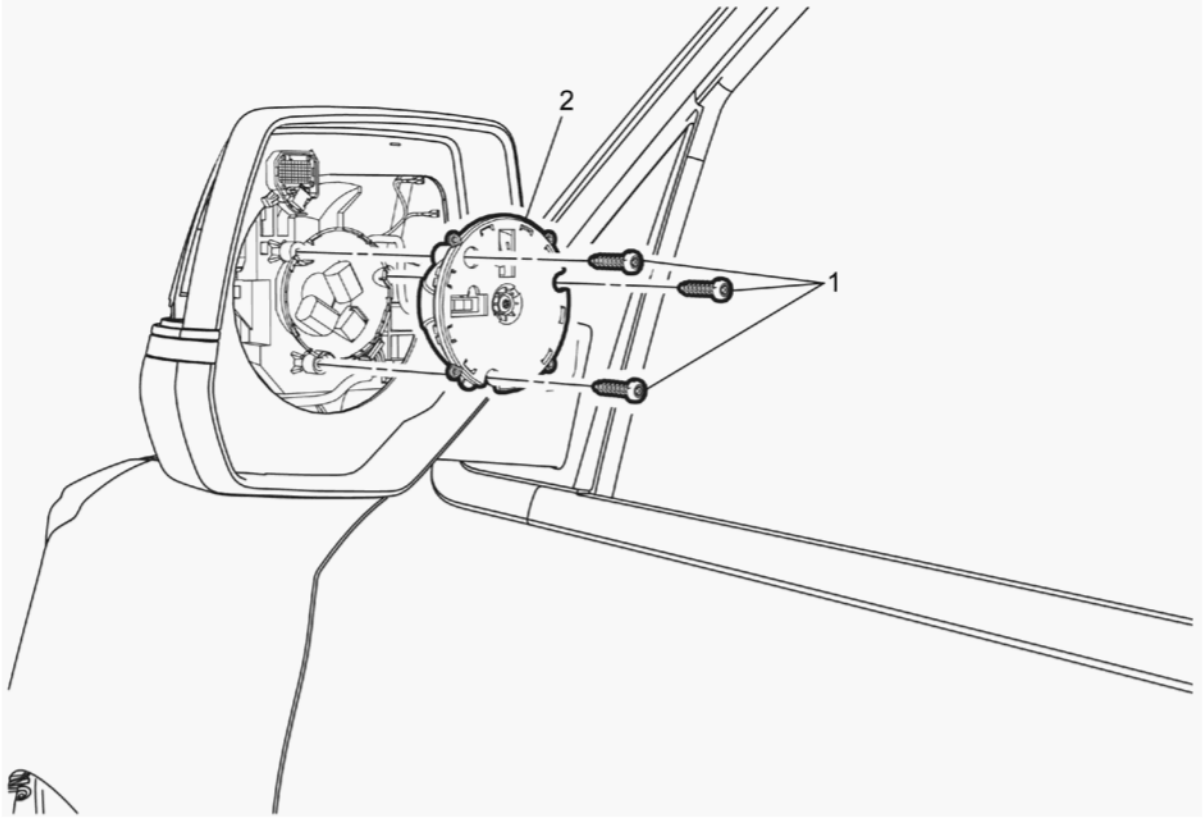

Fig. 13: Outside Rearview Mirror Inner Actuator (DR4)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the outside rearview mirror glass. Refer to **Outside Rearview Mirror Glass Replacement (DR4)**.	
1	Outside Rearview Mirror Inner Actuator Screw (Qty: 3) **CAUTION:** **Refer to Fastener Caution .**

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Callout	Component Name
	Procedure Disconnect the electrical connectors. **Tighten** 2 N.m (18 lb in)
2	Outside Rearview Mirror Inner Actuator **NOTE:** **Inspect the outside rearview mirror for proper operation.**

OUTSIDE REARVIEW MIRROR GLASS REPLACEMENT (DR4)

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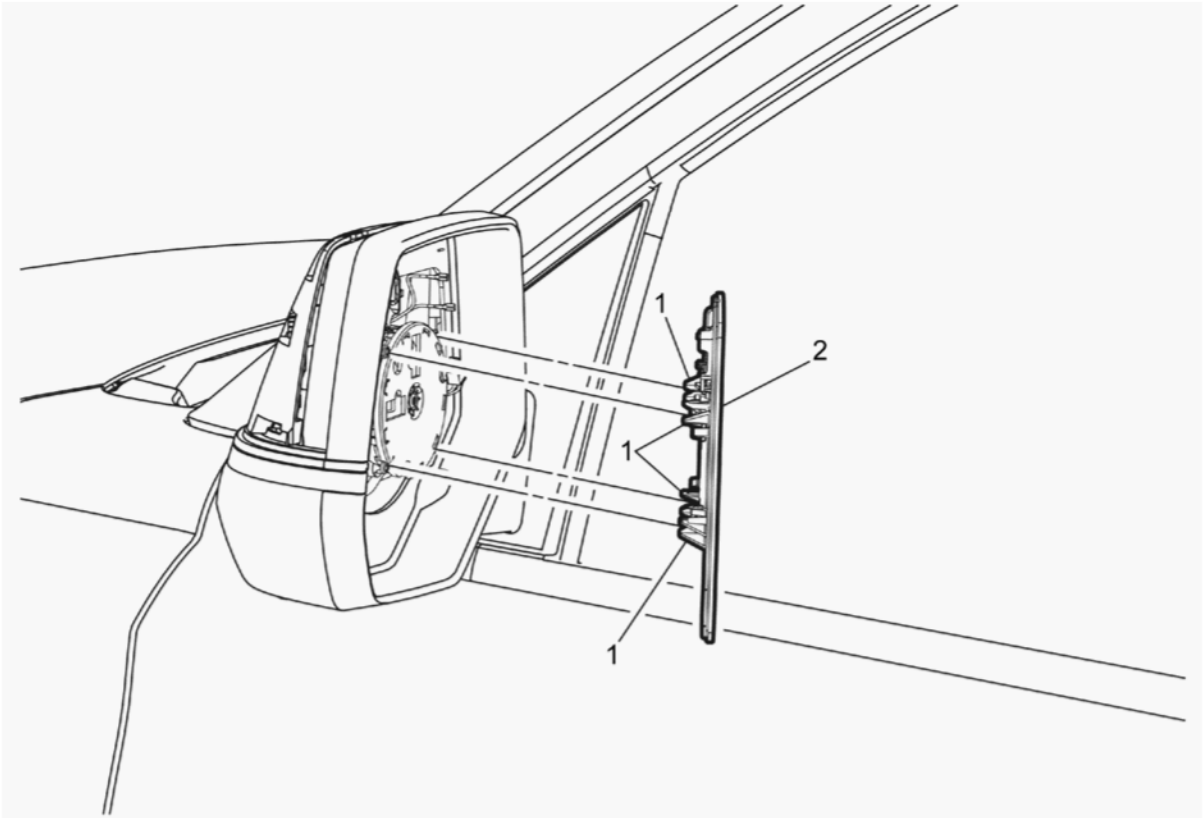

Fig. 14: Outside Rearview Mirror Glass (DR4)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Outside Rearview Mirror Glass Retainer (Qty: 8) **WARNING:** **Approved safety glasses and gloves should be worn when performing**

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Callout	Component Name
	this procedure to reduce the chance of personal injury. **Procedure** 1. Place masking tape over the mirror glass. 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. Insert a suitable tool, between the lower housing and the mirror glass turn it clockwise releasing the mirror retainers from the mirror inner actuator motor. 4. Grasp the bottom edge of the mirror glass firmly, lift it up and pull rearward until the mirror glass retainers release the actuator motor ring. 5. Disconnect the outside mirror glass electrical connectors.
2	Outside Rearview Mirror Glass **Procedure** 1. Place the mirror glass in line with the lower inner actuator 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 retainers to the inner actuator ring. 3. Remove the masking tape from the mirror glass. **NOTE:** **Inspect the outside rearview mirror for proper**

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Callout	Component Name
	operation.

OUTSIDE REARVIEW MIRROR GLASS REPLACEMENT (DL3, DL8)

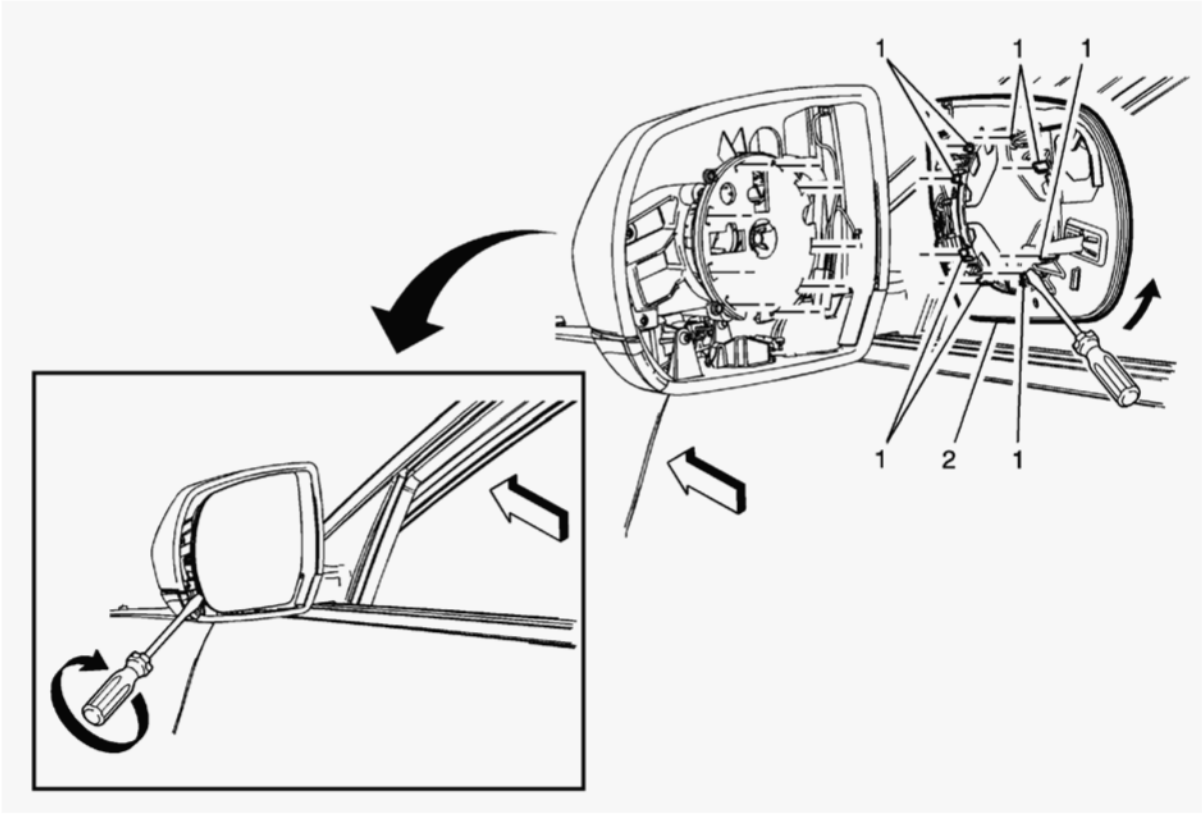

Fig. 15: Outside Rearview Mirror Glass (DL3, DL8)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Outside Rearview Mirror Glass Retainers (Qty: 8) **WARNING:** **Approved** **safety**

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Callout	Component Name
	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. 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. Insert a suitable tool, between the lower housing and the mirror glass turn it clockwise releasing the mirror retainers from the mirror inner actuator motor. 4. Grasp the bottom edge of the mirror glass firmly, lift it up and pull rearward until the mirror glass retainers release the actuator motor ring. 5. Disconnect the outside mirror glass electrical connectors.
2	Outside Rearview Mirror Glass **Procedure** 1. Place the mirror glass in line with the lower inner actuator 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 retainers to the inner actuator ring. 3. Remove the masking tape from the mirror glass. **NOTE:**

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Callout	Component Name
	Inspect the outside rearview mirror for proper operation.

OUTSIDE REARVIEW MIRROR HOUSING REPLACEMENT

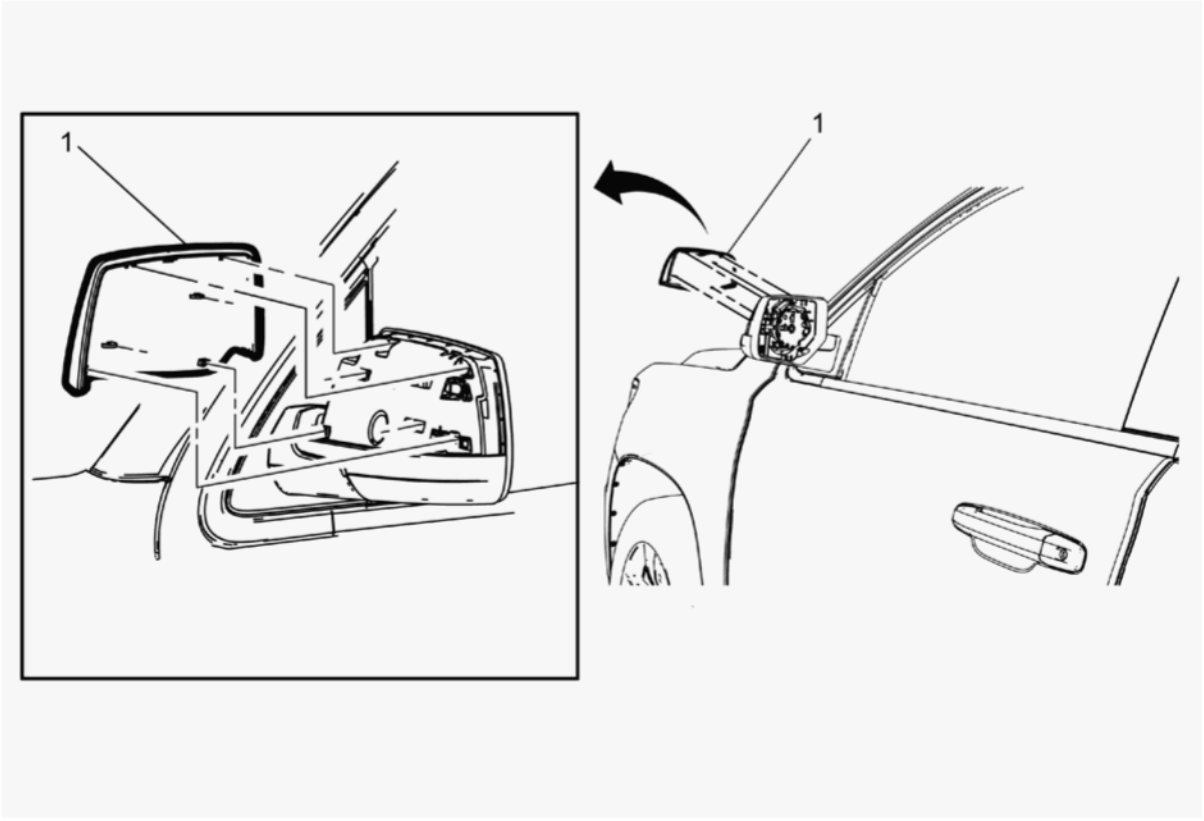

Fig. 16: Outside Rearview Mirror Housing
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name

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Callout	Component Name
1	Outside Rearview Mirror Housing **Procedure** Firmly grasp mirror housing and lift upwards then outwards from the mirror to release the retainers. **NOTE:** **Inspect the outside rearview mirror for proper operation.**

INSIDE REARVIEW MIRROR REPLACEMENT (WITH UE1)

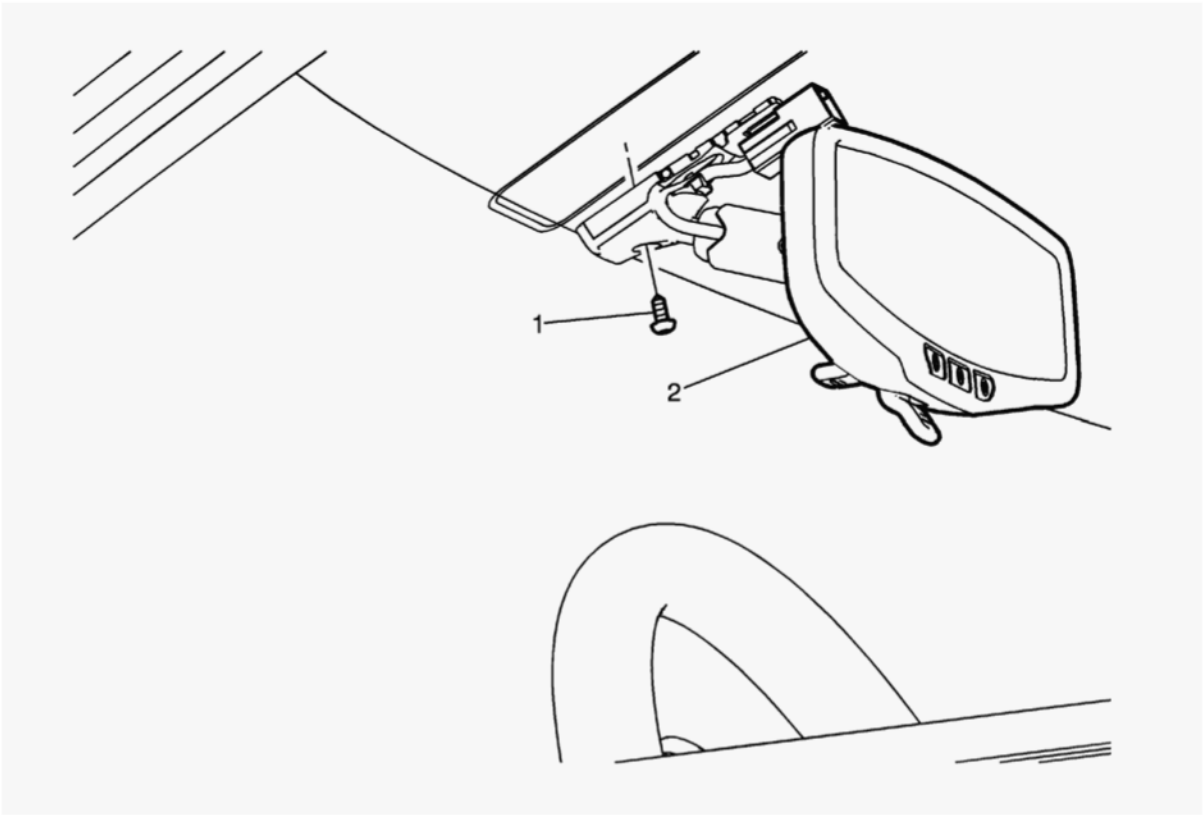

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Fig. 17: Inside Rearview Mirror (With UE1)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the windshield multifunction sensor mount bracket cover. Refer to **Windshield Multifunction Sensor Mount Bracket Cover Replacement** .	
1	Inside Rearview Mirror Screw **CAUTION:** **Refer to Fastener Caution .** **Procedure** 1. Disconnect electrical connector. 2. Adjust the mirror to the full upward position. 3. 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 upward off of the rearview mirror button. 2. Refer to **Control Module References** for programming and setup information, if required.

INSIDE REARVIEW MIRROR REPLACEMENT (WITHOUT UE1)

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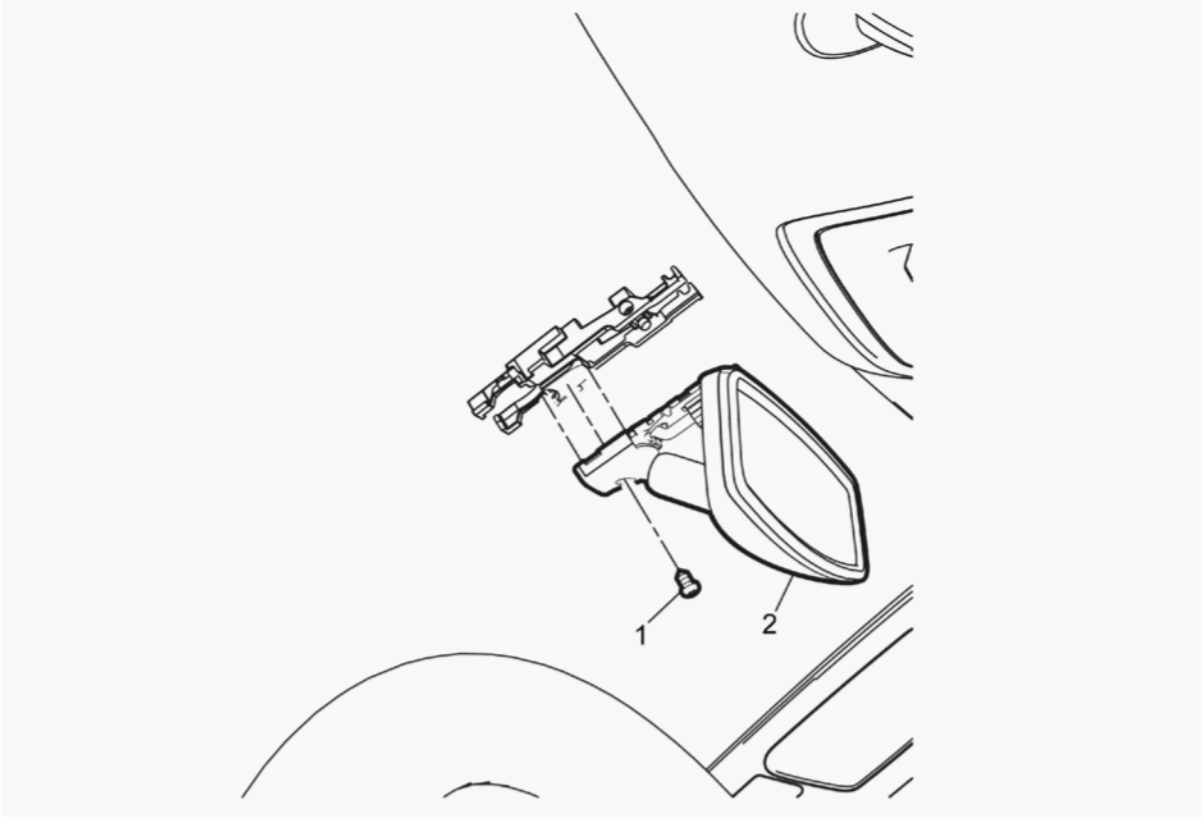

Fig. 18: Inside Rearview Mirror (Without UE1)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Inside Rearview Mirror Screw **CAUTION:** **Refer to** **Fastener** **Caution** . **Procedures** 1. Remove the windshield multifunction sensor mount bracket cover. Refer to **Windshield Multifunction Sensor**

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Callout	Component Name
	Mount Bracket Cover Replacement . 2. Disconnect the electrical connector. 3. Adjust the mirror to the full upward position. 4. Loosen the set screw located at the base of the mirror. **Tighten** 1.8 N.m (16 lb in)
2	Inside Rearview Mirror **Procedure** Slide the mirror upward off of the rearview mirror button.

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 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 and the engine running, 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.

Driver Outside Rearview Mirror with Automatic Day-Night System Operation (If Equipped)

The automatic day-night feature of the driver outside rearview mirror is controlled by the inside rearview mirror. The inside rearview mirror supplies control and low reference to the driver outside rearview mirror. At night, with the automatic day-night feature enabled, the driver outside rearview mirror will automatically darken with the inside rearview mirror to reduce glare from headlamps behind the vehicle.

OUTSIDE MIRROR DESCRIPTION AND OPERATION (WITH A45)

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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

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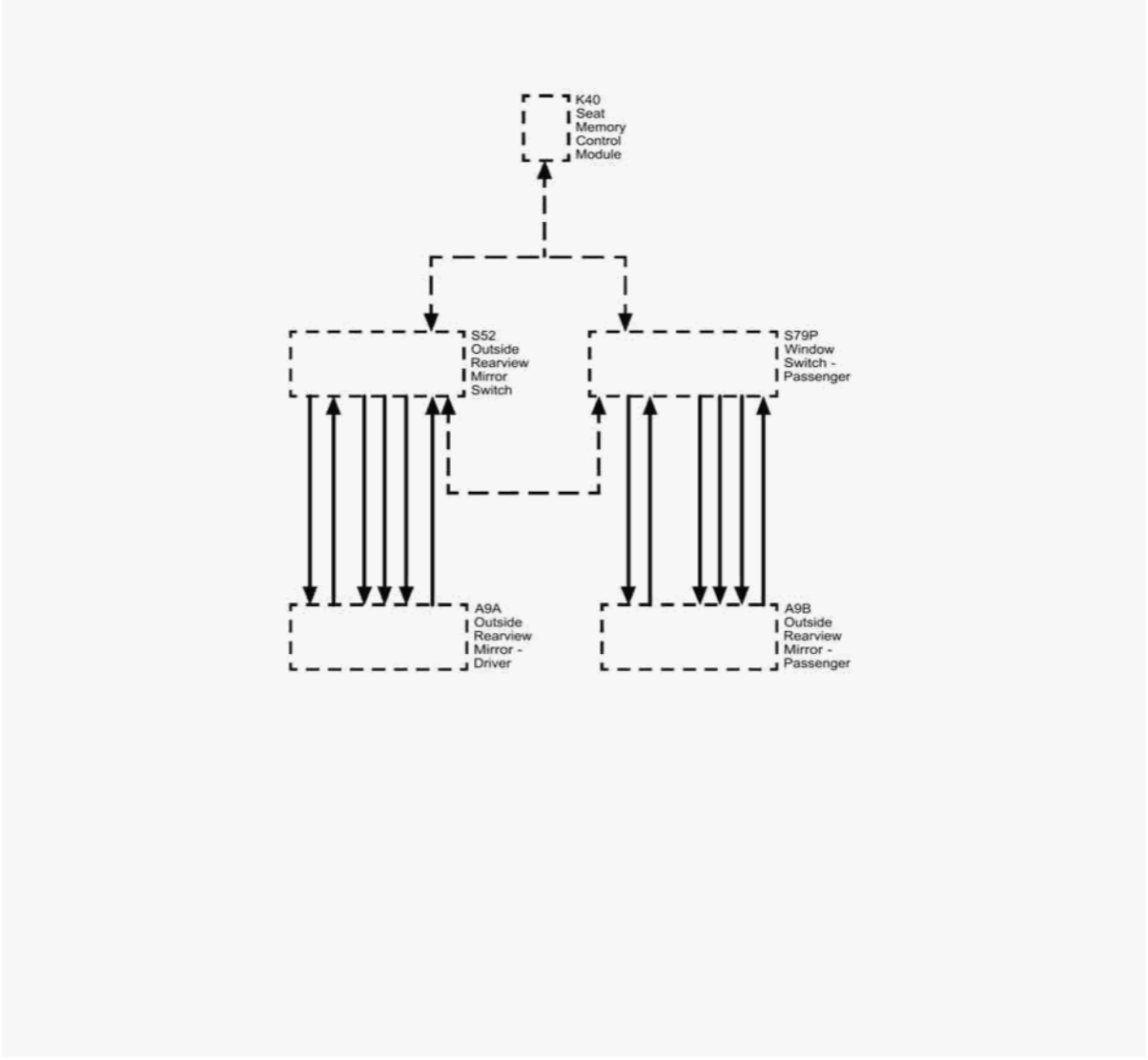

Fig. 19: Power Mirror System Diagram (With A45)
Courtesy of GENERAL MOTORS COMPANY

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

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Callout	Component Name
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 A45)

Power Mirror System Components

The power mirror system consists of the following components:

- Mirror direction switch - Controls the left, right, up and down movements of the mirrors
- Mirror select switch - Allows the operator to select the mirror to be moved
- Left outside mirror - Contains both the horizontal and vertical mirror motors
- Right outside mirror - Contains both the horizontal and vertical mirror motors

Each of the outside power mirrors contains 2 motors. The up-down motor operates the vertical directions and the left-right motor operates the

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horizontal directions. Each of the power mirror motors are internally circuit breaker protected.

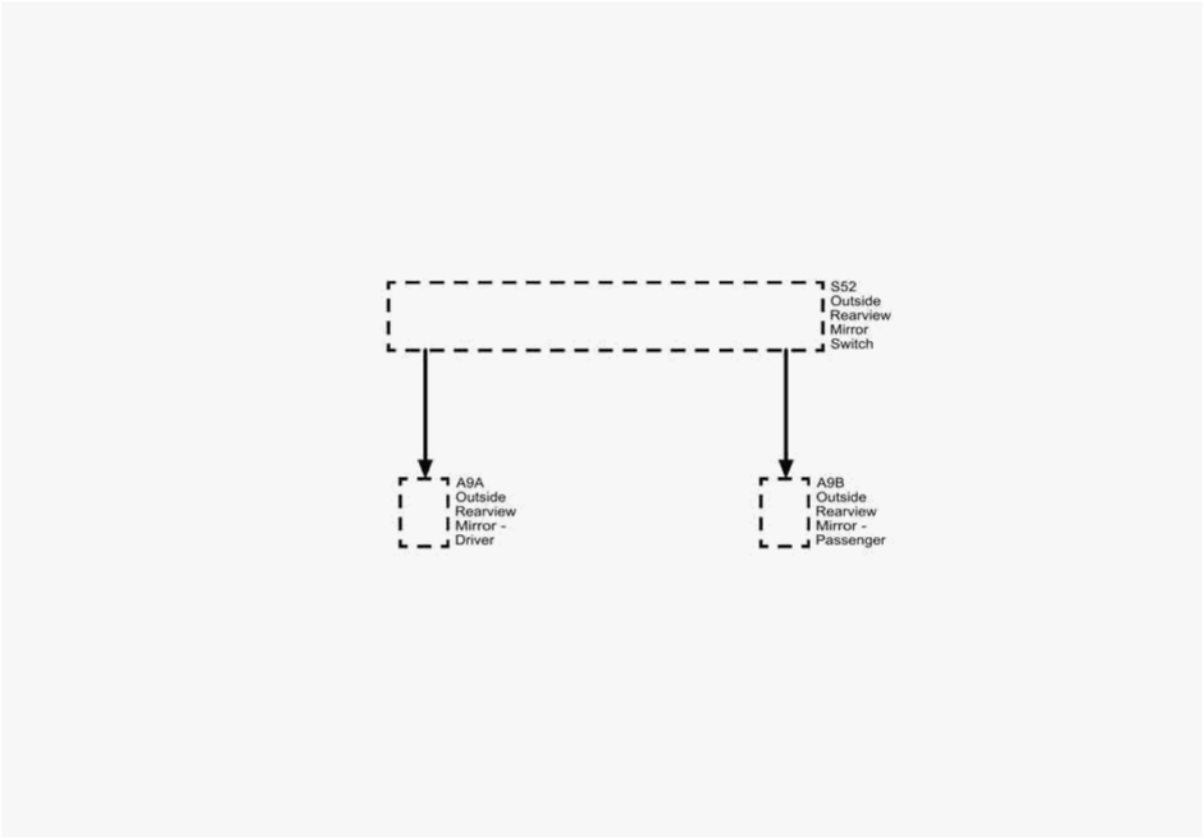

Fig. 20: Power Mirror System Diagram (Without A45)
Courtesy of GENERAL MOTORS COMPANY

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 mirror switch incorporates a mirror select switch and a 4 position mirror direction switch.

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The mirror select switch allows the driver to select the mirror to be moved by turning the switch to L position enabling the left outside mirror or turning the switch to R position enabling the right outside mirror.

The mirror direction switch is a 4 position switch that allows the operator to move the selected mirror up, down, left or right.

Power Mirror System Operation

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

The 4 positions of the direction switch have multiple switch contacts. When not in use, the directional contacts are isolated from any circuit. Each of the contacts are connected to opposing sides of the appropriate mirror motors through the selector switch. The selector switch interrupts or completes these circuits depending on the position of the selector switch, L or R.

If the mirror select switch is placed in the L position and the up switch is pressed, battery voltage will be supplied to the driver outside mirror vertical motor through the driver mirror motor up control circuit and return to the mirror switch through the driver mirror motor left/down control circuit, then to ground and the mirror will move up. If the down switch is pressed, the driver mirror motor left/down control circuit supplies battery voltage and the driver mirror motor up control circuit completes the path to the mirror switch, then to ground and the mirror will move down.

The remainder of the mirror functions operate in the same manner as described above. Placing the mirror control switch in opposing positions, left/right or up/down, will reverse the voltage polarity to the mirror motor, utilizing the same circuits and the mirror will move accordingly.

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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