SPECIFICATIONS

FASTENER SPECIFICATIONS

Reusable Threaded Fastener Tightening Specifications

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

Application	Specification
	Metric (English)
Front Side Door Window Belt Reveal Molding Bolt	3 N.m (27 lb in)
Front Side Door Window Rear Channel Bolt	11 N.m (97 lb in)
Front Side Door Window Regulator Guide Bolt	11 N.m (97 lb in)
Front Side Door Window Regulator Motor Bolt	7 N.m (62 lb in)
Front Side Door Window Regulator Nut	11 N.m (97 lb in)
Rear Side Door Window Belt Reveal Molding Bolt	3 N.m (27 lb in)
Rear Side Door Window Channel Retainer Bolt	11 N.m (97 lb in)
Rear Side Door Window Rear Channel Retainer Bolt	11 N.m (97 lb in)
Rear Side Door Window Regulator Guide Bolt	11 N.m (97 lb in)
Rear Side Door Window Regulator Motor Bolt	7 N.m (62 lb in)
Rear Side Door Window Regulator Nut	11 N.m (97 lb in)
Rear Side Door Window Weatherstrip Bolt	11 N.m (97 lb in)
Rear Sliding Window Bolt	9 N.m (80 lb in)
Rear Sliding Window Module Nut	9 N.m (80 lb in)
Rear Sliding Window Regulator Bolt	9 N.m (80 lb in)

SCHEMATIC WIRING DIAGRAMS

MOVEABLE WINDOW WIRING SCHEMATICS

Driver Door (A31)

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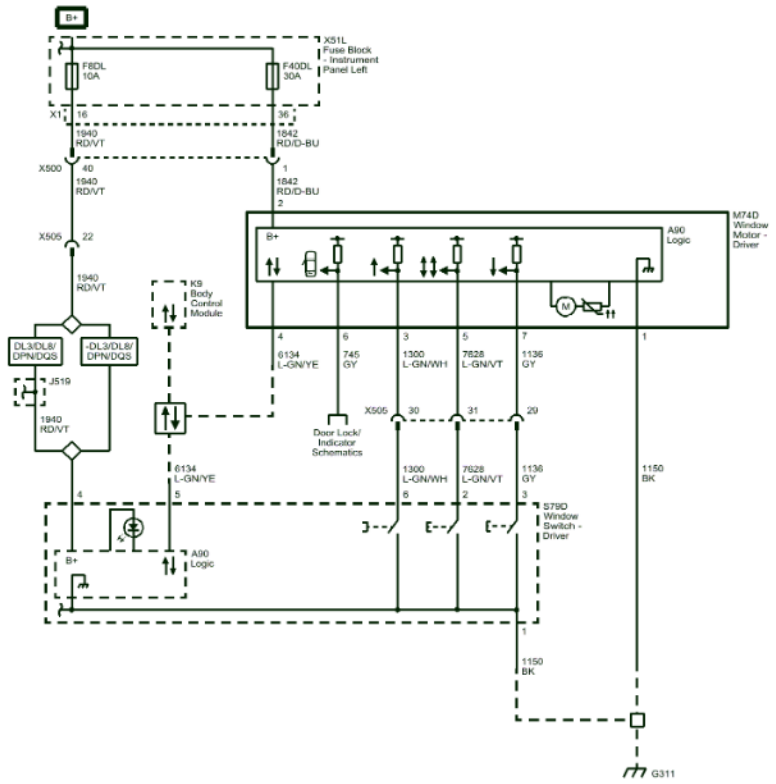


Fig. 1: Driver Door (A31)
Courtesy of GENERAL MOTORS COMPANY

Passenger Door (A31)

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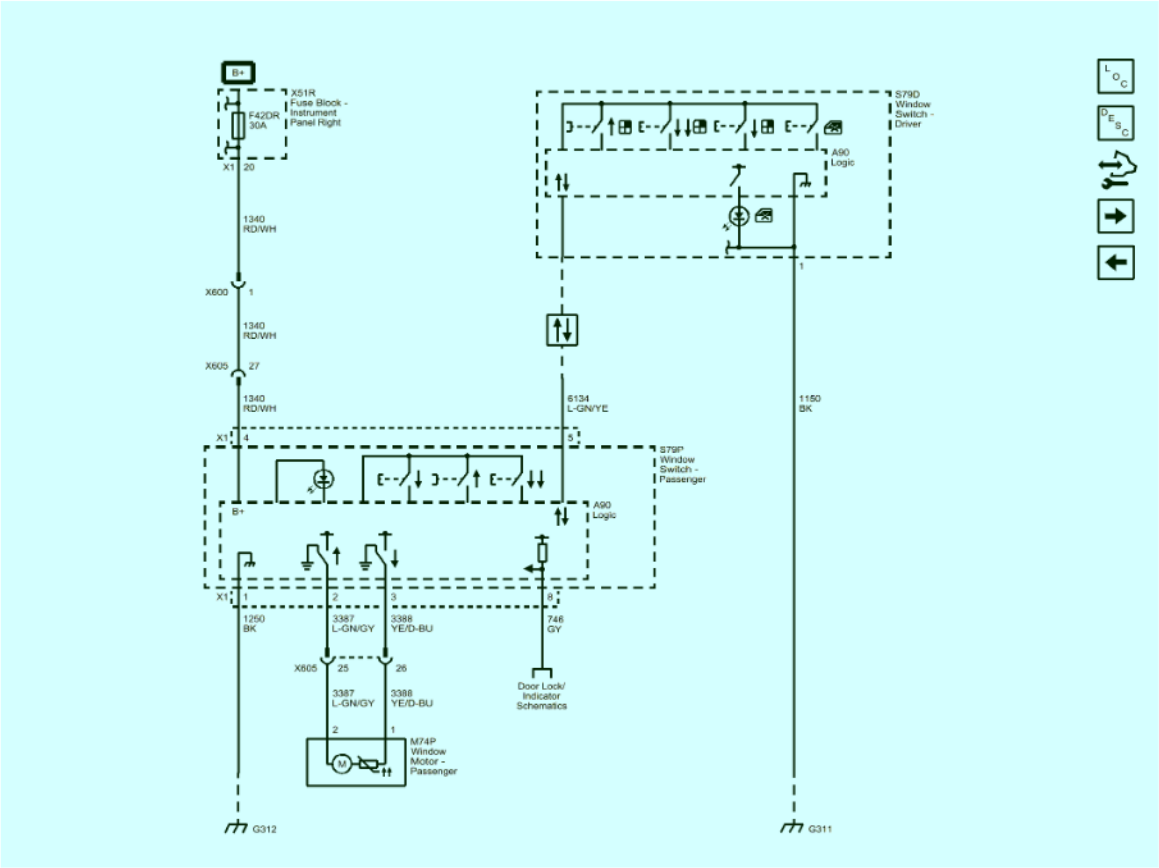


Fig. 2: Passenger Door (A31)
Courtesy of GENERAL MOTORS COMPANY

Rear Doors (Extended or Crew Cab)

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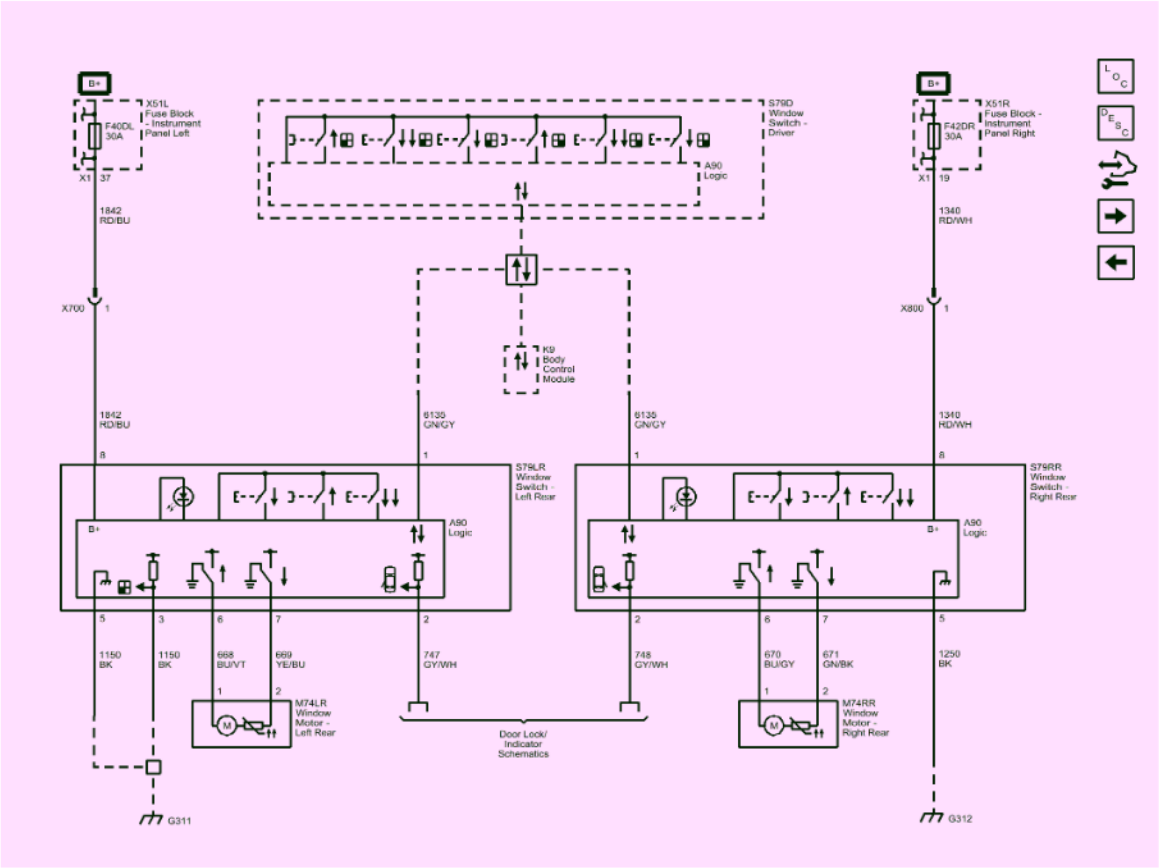


Fig. 3: Rear Doors (Extended or Crew Cab)
Courtesy of GENERAL MOTORS COMPANY

Rear Sliding Window (A48)

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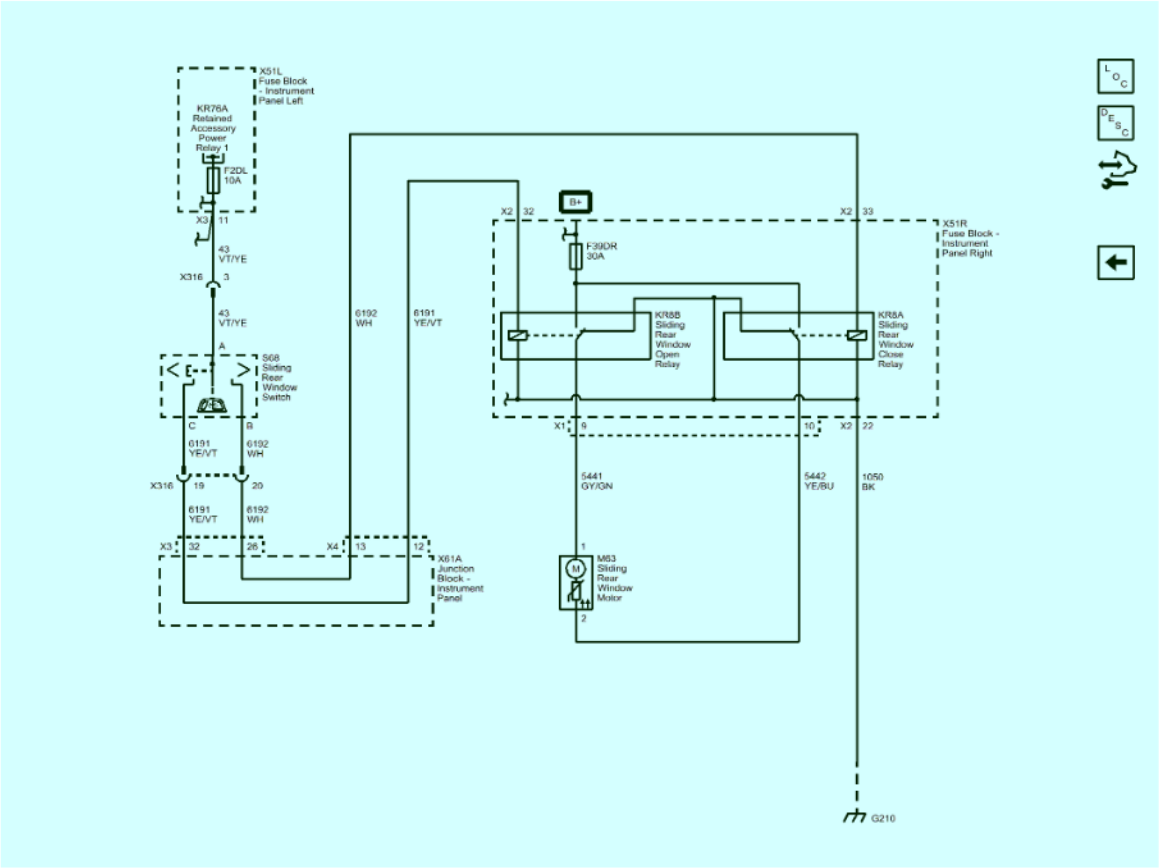


Fig. 4: Rear Sliding Window (A48)
Courtesy of GENERAL MOTORS COMPANY

DEFOGGER WIRING SCHEMATICS

Defogger

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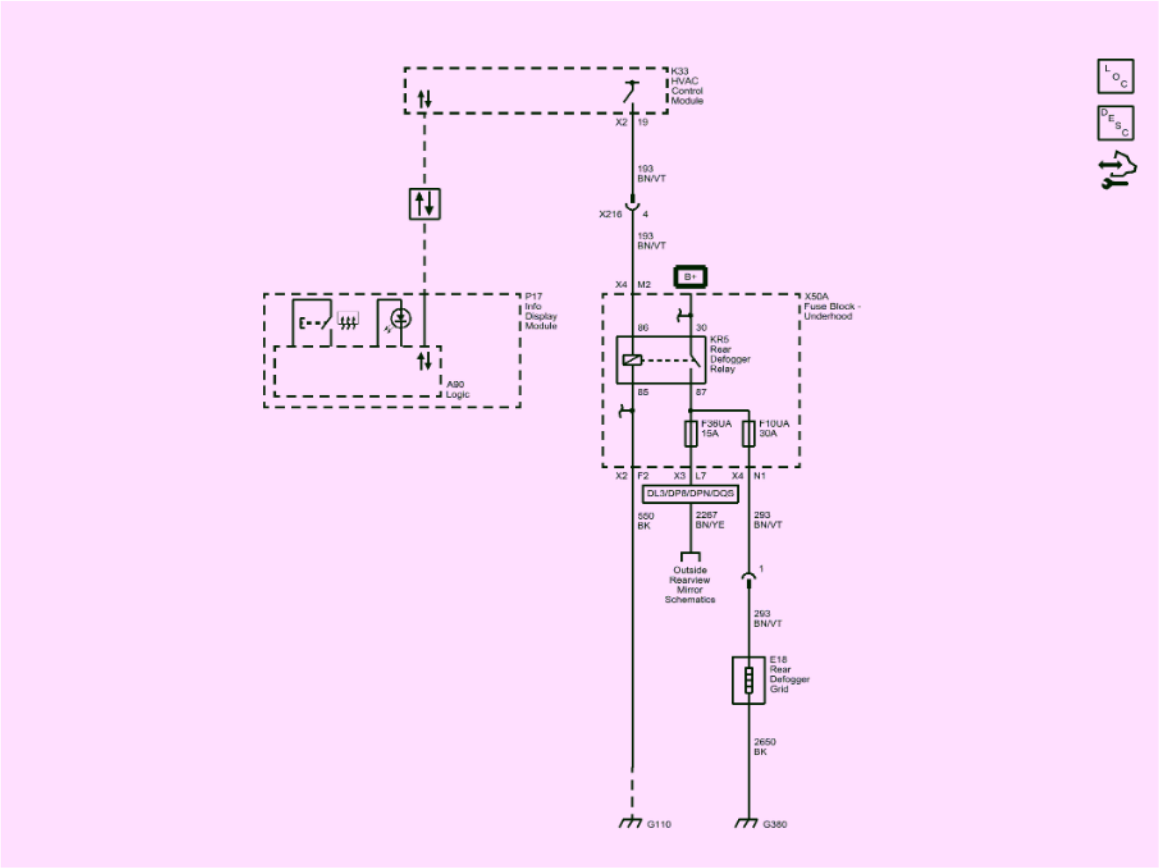


Fig. 5: Defogger
Courtesy of GENERAL MOTORS COMPANY

DIAGNOSTIC INFORMATION AND PROCEDURES

DTC B0283: REAR DEFOGGER

Diagnostic Instructions

- Perform the Diagnostic System Check prior to using this diagnostic procedure:**Diagnostic System Check - Vehicle**
- Review the description of Strategy Based Diagnosis:**Strategy Based Diagnosis**
- An overview of each diagnostic category can be found here:**Diagnostic Procedure Instructions**

DTC Descriptor

NOTE: **This procedure may also diagnose malfunctions that are not detected by a DTC.**

DTC B0283

Rear Defogger Circuit

Symptom Byte Information: **Symptom Byte List**

Diagnostic Fault Information

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

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Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Control - Relay Coil	B0283 02	B0283 05	B0283 05	-
Ground - Relay Coil	-	B0283 05	-	-

Circuit/System Description

For an overview of the component/system, refer to:**Rear Window Defogger Description and Operation**

Circuit	Description
B+ - Relay Switch	Supplied from a fuse.
E18 Rear Defogger Grid Control - Component	The output circuit is switched to 12 V to activate the component.
Control - Relay Coil	The output circuit is switched to 12 V to activate the component.
E18 Rear Defogger Grid Ground - Component	Chassis Ground
Ground - Relay Coil	Chassis Ground

Component	Description
KR5 Rear Defogger Relay	A relay is a switch that is actuated by a solenoid.
E18 Rear Defogger Grid	Window defoggers are parallel resistive conductors in or on the glass that heat up when electric power is applied.
K33 HVAC Control Module	The control module controls a series of actuators to ensure optimal heating, ventilation and air conditioning of the passenger compartment. The control module does this by reading values from a variety of sensors and interprets the data and adjusts the actuators accordingly.
A26 HVAC Controls	This device is the user interface to control the HVAC system. Some buttons and indicators are hardwired, some functions use serial data communication.

Conditions for Running the DTC

If within 9-16 V of the battery voltage

Conditions for Setting the DTC

- B0283 02 Control Circuit=Short to Ground
- B0283 05 Control Circuit=Open or Short to Battery

Actions Taken When the DTC Sets

- B0283 02E18 Rear Defogger Grid=Disabled
- B0283 05E18 Rear Defogger Grid=Disabled or Always On

Conditions for Clearing the DTC

- A current DTC will clear when the diagnostic runs and passes.
- A history DTC will clear after 50 consecutive malfunction-free ignition cycles.

Reference Information

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Schematic Reference

Defogger Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Component View Reference

Front of Vehicle/Engine Compartment Component Views

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Relay Replacement (Attached to Wire Harness)** **Relay Replacement (Within an Electrical Center)**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

Control Module References

Circuit/System Verification

1. Ignition - On / Vehicle - In Service Mode
2. Perform the scan tool control function: Rear Defogger - On and Off

   Verify the component turns On and Off:E18 Rear Defogger Grid

   - **If the component does not turn On and Off**

     Refer to: Circuit/System Testing

   - **If the component turns On and Off**
3. All OK.

Circuit/System Testing

NOTE: **It may take up to 2 min for all vehicle systems to power down before an accurate ground or low reference circuit continuity test can be performed.**

1. Ignition/Vehicle & All vehicle systems - Off
2. Remove the component:KR5 Rear Defogger Relay
3. Test for less than 10 ohms between the test points: Ground circuit terminal 85 & Ground
   - **If 10 ohms or greater**
   1. Ground Connection - Disconnect
   2. Test for less than 2 ohms between the test points: Ground circuit terminal 85 & Ground Connection
      - If 2 ohms or greater - Repair the open/high resistance in the circuit.
      - If less than 2 ohms - Repair the open/high resistance in the ground connection.
   - **If less than 10 ohms**

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4. Connect a test lamp between the test points: Control circuit terminal 86 & Ground circuit terminal 85
5. Ignition - On / Vehicle - In Service Mode
6. Perform the scan tool control function: Rear Defogger - On and Off

   Verify the test lamp turns On and Off.

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

   1. Ignition/Vehicle - Off & Remove - Test lamp
   2. Disconnect the electrical connector:K33 HVAC Control Module
   3. Test for infinite resistance between the test points: Control circuit terminal 86 @Relay Socket & Ground
      - If less than infinite resistance - Repair the short to ground on the circuit.
      - If infinite resistance
   4. Test for less than 2 ohms between the test points:Control circuit terminal 86 @Relay Socket & Terminal 19 X2 @Control module harness
      - If 2 ohms or greater - Repair the open/high resistance in the circuit.
      - If less than 2 ohms - Replace the component:K33 HVAC Control Module

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

   1. Ignition/Vehicle - Off & Remove - Test lamp
   2. Disconnect the electrical connector:K33 HVAC Control Module
   3. Ignition - On / Vehicle - In Service Mode
   4. Test for less than 1 V between the test points:Control circuit terminal 86 @Relay Socket & Ground
      - If 1 V or greater - Repair the short to voltage on the circuit.
      - If less than 1 V - Replace the component:K33 HVAC Control Module

   - **If the test lamp turns On and Off**

7. Test or replace the component:KR5 Rear Defogger Relay

Component Testing

Relay Test

1. Ignition/Vehicle - Off
2. Remove the component:KR5 Rear Defogger Relay
3. Test for 70 to 110 ohms between the test points:Component terminal 85 & 86
   - **If not between 70 to 110 ohms**

     Replace the component:KR5 Rear Defogger Relay

   - **If between 70 to 110 ohms**
4. Test for infinite resistance between the test points:
   - Component terminal 30 & 85
   - Component terminal 30 & 86
   - Component terminal 30 & 87
   - Component terminal 85 & 87
   - **If less than infinite resistance**

     Replace the component:KR5 Rear Defogger Relay

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- **If infinite resistance**

5. Connect a 3 A fused jumper wire between the test points:Component terminal 86 & 12 V

   Connect a jumper wire between the test points:Component terminal 85 & Ground

6. Test for less than 2 ohms between the test points:Component terminal 85 & ground
   - **If 2 ohms or greater**

     Replace the component:KR5 Rear Defogger Relay

   - **If less than 2 ohms**
7. All OK.

Repair Instructions

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

- **Relay Replacement (Attached to Wire Harness)** **Relay Replacement (Within an Electrical Center)**
- For control module replacement, programming, and setup refer to: **Control Module References**

DTC B316B, B317A, B318A, OR B319A: WINDOW SWITCH

Diagnostic Instructions

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

DTC Descriptors

DTC B316B

Driver Window Switch

DTC B317A

Passenger Window Switch

DTC B318A

Left Rear Window Switch

DTC B319A

Right Rear Window Switch

For symptom byte information refer to: **Symptom Byte List**

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Window Switch Down Signal	B316B 02	1	1	-

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Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Window Switch Up Signal	B316B 02	2	2	-
Driver Window Switch Express Signal	B316B 02	3	3	-
1. Driver window switch down function inoperative 2. Driver window switch up function inoperative 3. Driver window switch express function inoperative				

Circuit/System Description

The driver window motor supplies 12V signal circuits to the driver window switch, when a window switch has been activated, a switch closes providing a ground to the appropriate signal circuit causing the voltage to drop to 0V. The driver window motor will detect the voltage drop in the signal circuit and will command the window to move in the desired direction.

The driver window master control switch also contains control switches for the passenger, left rear and right rear window functions. When a window switch is pressed, a serial data message is sent to the body control module (BCM). The BCM examines the request and checks for messages from other power window motors that may prohibit window movement. If no prohibitive messages have been received, the BCM will send a serial data message to the appropriate passenger or rear window switch which will perform the command as requested.

Conditions for Running the DTC

Battery voltage must be between 9-16 V.

Conditions for Setting the DTC

B316B 00

The BCM has detected a control switch on the driver window switch has been active for greater than 60 seconds.

B316B 02

The driver window motor has detected the driver window switch is active for greater than 60 seconds.

B316B 39

The driver window motor has detected an internal failure within the driver window switch

B317A 02

The BCM has detected the passenger window switch is active for greater than 60 seconds.

B317A 39

The BCM has detected an internal failure within the passenger window switch

B318A 02

The BCM has detected the left rear window switch is active for greater than 60 seconds

B318A 39

The BCM has detected an internal failure within the left rear window switch

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B319A 02

The BCM has detected the right rear window switch is active for greater than 60 seconds

B319A 39

The BCM has detected an internal failure within the right rear window switch

Action Taken When the DTC Sets

The affected power window will malfunction.

Conditions for Clearing the DTC

B316B 00, B316B 02, B317A 02, B318A 02, B319A 02

- The DTC will be current for as long as the fault is present.
- The DTC will change from current to history when the fault is no longer present.
- A history DTC will clear after 100 consecutive ignition cycles if the condition for the malfunction is no longer present.

B316B 39, B317A 39, B318A 39, B319A 39

If the DTC is current, the affected window switch must be replaced before the DTC can be cleared.

Reference Information

Schematic Reference

Moveable Window Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Power Windows Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Ignition ON.
2. Verify the scan tool parameters listed below change when pressing and pulling the switches for the passenger, left rear and right rear window on the S79D Window Switch-Driver;

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- Left Rear Main Control Down Switch - Inactive and Active
- Left Rear Main Control Express Switch - Inactive and Active
- Left Rear Main Control Up Switch - Inactive and Active
- Right Rear Main Control Down Switch - Inactive and Active
- Right Rear Main Control Express Switch - Inactive and Active
- Right Rear Main Control Up Switch - Inactive and Active
- Front Passenger Main Control Down Switch - Inactive and Active
- Front Passenger Main Control Express Switch - Inactive and Active
- Front Passenger Main Control Up Switch - Inactive and Active
- **If any parameter does not change**

  Replace the S79D Window Switch-Driver.

- **If the parameters change**

3. Verify the scan tool parameters listed below change when pressing and pulling the driver window control switch on the S79D Window Switch-Driver:
   - Driver Window Main Control Down Switch - Inactive and Active
   - Driver Window Main Control Up Switch - Inactive and Active
   - Driver Window Main Control Express Down Switch - Inactive and Active
   - Driver Window Main Control Express Up Switch - Inactive and Active
   - **If any parameter does not change**

     Refer to Circuit/System Testing.

   - **If all the parameters change**
4. Verify the scan tool parameters listed below change when pressing and pulling the S79P Window Switch-Passenger, the S79LR Window Switch-Left Rear and the S79RR Window Switch-Right Rear.
   - Passenger Window Switch at Door - Inactive, Up, Down, Express Down
   - Left Rear Window Switch at Door - Inactive, Up, Down, Express Down
   - Right Rear Window Switch at Door - Inactive, Up, Down, Express Down
   - **If any parameter does not change**

     Test or replace the appropriate passenger or rear S79 Window Switch

   - **If all the parameters change**
5. All OK.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the S79D Window Switch-Driver. Ignition ON.
2. Verify the scan tool Driver Window Main Control Down Switch parameter is Inactive.
   - **If not Inactive**
   1. Ignition OFF, disconnect the harness connector at the M74D Window Motor-Driver.
   2. Test for infinite resistance between the S79D Window Switch-Driver signal circuit terminal 3 and ground.
      - If less than infinite resistance, repair the short to ground on the circuit.
      - If infinite resistance, replace the M74D Window Motor-Driver.

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- **If Inactive**

3. Install a 3 A fused jumper wire between the signal circuit terminal 3 and the ground circuit terminal 1.
4. Verify the scan tool Driver Window Main Control Down Switch parameter is Active
   - **If not Active**
   1. Ignition OFF, remove the 3 A fused jumper wire, disconnect the harness connector at the M74D Window Motor-Driver, Ignition ON.
   2. Test for less than 1 V between the S79D Window Switch-Driver signal circuit terminal 3 and ground.
      - If 1 V or greater, repair the short to voltage on the circuit.
      - If less than 1 V
   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 M74D Window Motor-Driver.
   - **If Active**
5. Verify the scan tool Driver Window Main Control Up Switch parameter is Inactive.
   - **If not Inactive**
   1. Ignition OFF, disconnect the harness connector at the M74D Window Motor-Driver.
   2. Test for infinite resistance between the S79D Window Switch-Driver signal circuit terminal 6 and ground.
      - If less than infinite resistance, repair the short to ground on the circuit.
      - If infinite resistance, replace the M74D Window Motor-Driver.
   - **If Inactive**
6. Install a 3 A fused jumper wire between the signal circuit terminal 6 and the ground circuit terminal 1.
7. Verify the scan tool Driver Window Main Control Up Switch parameter is Active
   - **If not Active**
   1. Ignition OFF, remove the 3 A fused jumper wire, disconnect the harness connector at the M74D Window Motor-Driver, Ignition ON.
   2. Test for less than 1 V between the S79D Window Switch-Driver signal circuit 6 and ground.
      - If 1 V or greater, repair the short to voltage on the circuit.
      - If less than 1 V
   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 M74D Window Motor-Driver.
   - **If Active**
8. Verify the scan tool Driver Window Main Control Express Switch parameter is Inactive.
   - **If not Inactive**
   1. Ignition OFF, disconnect the harness connector at the M74D Window Motor-Driver.
   2. Test for infinite resistance between the S79D Window Switch-Driver signal circuit terminal 2 and ground.
      - If less than infinite resistance, repair the short to ground on the circuit.
      - If infinite resistance, replace the M74D Window Motor-Driver.
   - **If Inactive**
9. Install a 3 A fused jumper wire between the signal circuit terminal 2 and the ground circuit terminal 1.
10. Verify the scan tool Driver Window Main Control Express Switch parameter is Active

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- **If not Active**

1. Ignition OFF, remove the 3 A fused jumper wire, disconnect the harness connector at the M74D Window Motor-Driver, Ignition ON.
2. Test for less than 1 V between the S79D Window Switch-Driver signal circuit 2 and ground.
    - If 1 V or greater, repair the short to voltage on the circuit.
    - If less than 1 V
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 M74D Window Motor-Driver.

- **If Active**

11. Test or replace the S79D Window Switch-Driver.

Repair Instructions

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

- **Rear Side Door Window Switch Replacement**
- **Front Side Door Window Control Switch Replacement**
- **Front Side Door Window Switch Replacement - Right Side**
- **Front Side Door Window Regulator Motor Replacement**

DTC B3205: DRIVER WINDOW MOTOR

Diagnostic Instructions

- Perform the Diagnostic System Check prior to using this diagnostic procedure:**Diagnostic System Check - Vehicle**
- Review the description of Strategy Based Diagnosis:**Strategy Based Diagnosis**
- An overview of each diagnostic category can be found here:**Diagnostic Procedure Instructions**

DTC Descriptor

NOTE: This procedure may also diagnose malfunctions that are not detected by a DTC.

DTC B3205

Driver Window Motor

Symptom Byte Information: **Symptom Byte List**

Circuit/System Description

For an overview of the component/system, refer to:**Power Windows Description and Operation**

Circuit	Description
B+ - M74D Window Motor - Driver	Supplied from a fuse.
Ground	Chassis Ground

Component	Description
M74D Window Motor - Driver	• Power Window Control

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Component	Description
	• The control module and the DC motor are one assembly.

Conditions for Running the DTC

Ignition - On / Vehicle - In Service Mode

Conditions for Setting the DTC

B3205 00

M74D Window Motor - Driver=Incompatible Hardware or Equipment

B3205 39

M74D Window Motor - Driver=Internal Malfunction

B3205 42

Calibration Update=Failed

B3205 4B

- Battery - Disconnected/Replaced
- Front Side Door Wiring Harness - Disconnected
- M74 Window Motor - Disconnected

Actions Taken When the DTC Sets

B3205 00, B3205 39, B3205 42

M74D Window Motor - Driver=Inoperative

B3205 4B

- Window Express Up System Not Initialized
- Driver Information Display=Open, then Close Driver Window

Conditions for Clearing the DTC

B3205 00

M74D Window Motor - Driver - Replaced - A current DTC can be cleared after the procedure is performed.

B3205 39, B3205 42

M74D Window Motor - Driver - Replaced - A current DTC can be cleared after the procedure is performed.

B3205 4B

M74D Window Motor - Driver - Normalized - A current DTC can be cleared after the procedure is performed.

Reference Information

Schematic Reference

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Moveable Window Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Component View Reference

Door Component Views

Electrical Information Reference

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

Scan Tool Reference

Control Module References

Circuit/System Verification

1. Ignition - On / Vehicle - In Service Mode
2. Perform the scan tool control function:Driver Window Motor - Up & Down

   Verify the component works as specified:M74D Window Motor - Driver =Up & Down

   - **If not the specified state**

     Test or replace the component: - M74D Window Motor - Driver

   - **If the specified state**
3. Perform the scan tool control function:Driver Window Motor - Down
4. Operate the component:S79D Window Switch - Driver-Pulled=Up and release

   Verify the component works as specified:M74D Window Motor - Driver =Express Up

   - **If not the specified state**

     Use the following procedure: **Window Motor Programming - Express Function**

   - **If the specified state**
5. Ignition/Vehicle & All vehicle systems - Off-For greater than 2 min
6. Ignition - On / Vehicle - In Service Mode
7. Perform the scan tool control function:Driver Window Motor - Down
8. Operate the component:S79D Window Switch - Driver-Pulled=Up and release

   Verify the component works as specified:M74D Window Motor - Driver =Express Up

   - **If not the specified state**

     Test or replace the component: M74D Window Motor - Driver.

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- **If the specified state**

9. All OK.

Repair Instructions

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

Front Side Door Window Regulator Motor Replacement

SYMPTOMS - FIXED AND MOVEABLE WINDOWS

IMPORTANT: 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:
   - **Power Windows Description and Operation**
   - **Rear Window Defogger 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:

- **Rear Window Defogger Malfunction**
- **Power Windows Malfunction (A31 Standard Cab)Power Windows Malfunction (A31 Extended/Crew Cab)**
- **Power Rear Sliding Window Malfunction**

REAR WINDOW DEFOGGER MALFUNCTION

Diagnostic Instructions

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

Diagnostic Fault Information

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Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Relay B+ - Relay Switch	1	1	-	-
Control - Relay Coil	B0283 02	B0283 05	B0283 05	-
Control - E18 Rear Defogger Grid	1	1	2	-
Ground - Relay Coil	-	B0283 05	-	-
Ground-E18 Rear Defogger Grid	-	1	-	-
1. E18 Rear Defogger Inoperative 2. E18 Rear Defogger Always ON				

Circuit/System Description

For an overview of the component/system, refer to: Rear Window Defogger Description and Operation

Circuit	Description
B+ - Relay Switch	Supplied from a fuse.
E18 Rear Defogger Grid Control - Component	The output circuit is switched to 12 V to activate the component.
Control - Relay Coil	The output circuit is switched to 12 V to activate the component.
E18 Rear Defogger Grid Ground - Component	Chassis Ground
Ground - Relay Coil	Chassis Ground

Circuit	Description
KR5 Rear Defogger Relay	A relay is a switch that is actuated by a solenoid.
E18 Rear Defogger Grid	Window defoggers are parallel resistive conductors in or on the glass that heat up when electric power is applied.
K33 HVAC Control Module	The control module controls a series of actuators to ensure optimal heating, ventilation and air conditioning of the passenger compartment. The control module does this by reading values from a variety of sensors and interprets the data and adjusts the actuators accordingly.
P17 Info Display Module	The position of the defogger switch is read by the control module P17 and, via CAN bus, forwarded to the control module K33, which translates the bus message into a control signal for E18.

Reference Information

Schematic Reference

Defogger Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Rear Window Defogger Description and Operation

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Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Relay Replacement (Attached to Wire Harness)** **Relay Replacement (Within an Electrical Center)**
- **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 scan tool parameter:Rear Defogger Switch=Off
   - **If not the specified state**

     Test or replace the component:P17 Info Display Module

   - **If the specified state**
3. Operate the component:Rear Defogger Switch - Pressed

   Verify the scan tool parameter:Rear Defogger Switch=On

   - **If not the specified state**

     Test or replace the component:P17 Info Display Module

   - **If the specified state**
4. Perform the scan tool control function:Rear Defogger - On and Off

   Verify the component turns On and Off:E18 Rear Defogger Grid

   - **If the component does not turn On and Off**

     Refer to: Circuit/System Testing

     If the component turns On and Off
5. All OK.

Circuit/System Testing

NOTE: **It may take up to 2 min for all vehicle systems to power down before an accurate ground or low reference circuit continuity test can be performed.**

1. Ignition/Vehicle & All vehicle systems - Off
2. Remove the component:KR5 Rear Defogger Relay
3. Test for less than 10 Ω between the test points: ground circuit terminal 85 and ground.
   - **If 10 Ω or greater**
   1. Ground Connection - Disconnect

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2. Test for less than 2 Ω between the test points:Ground circuit terminal 85 & ground Connection
    - 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**

4. Connect a test lamp between the test points: Control circuit terminal 86 & ground circuit terminal 85
5. Ignition - On / Vehicle - In Service Mode
6. Verify a test lamp illuminates between the B+ circuit terminal 30 and ground.

   Verify the test lamp turns On and Off.

   - **If the test lamp is always off**
   1. Ignition/Vehicle - Off & Remove - Test lamp
   2. Disconnect the electrical connector:K33 HVAC Control Module
   3. Ignition - On / Vehicle - In Service Mode
   4. Test for less than 1 V between the test points:Control circuit terminal 86@Relay Socket & ground
      - If 1 V or greater - Repair the short to voltage on the circuit.
      - If less than 1 V - Replace the component:K33 HVAC Control Module
   - **If the test lamp turns On and Off**
7. Momentarily connect a 30 A fused jumper wire between the test points:B+ circuit terminal 30 & control circuit terminal 87

   Verify the component does not turn On and Off when connecting and disconnecting the jumper wire:E18 Rear Defogger Grid

   - **If the test lamp is always OFF**
   - Test or replace the component:KR5 Rear Defogger Relay
   - **If the component does not turn On and Off**
8. Ignition ON, connect a 30 A fused jumper wire between the B+ circuit terminal 30 and the control circuit terminal 87.
9. Install the component:KR5 Rear Defogger Relay
10. Disconnect the electrical connector:E18 Rear Defogger Grid
11. Connect a test lamp between the test points:Control circuit terminal 1 and ground
12. Ignition - On / Vehicle - In Service Mode
13. Perform the scan tool control function:Rear Defogger - On and Off

    Verify the test lamp turns On and Off.

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

      Repair the open/high resistance in the circuit:Control Circuit

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

      Repair the short to voltage on the circuit:Control Circuit

    - **If the test lamp turns On and Off**
14. Test or replace the component:E18 Rear Defogger Grid

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Component Testing

Relay Test

1. Ignition/Vehicle - Off
2. Remove the component:KR5 Rear Defogger Relay
3. Test for 70 to 110 Ω between the test points:Component terminal 85 and component terminal 86
   - **If not between 70 and 110 Ω**

     Replace the KR5 Rear Defogger Relay.

   - **If between 70 and 110 ohms**
4. 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 KR5 Rear Defogger Relay.

   - **If infinite resistance**
5. Connect a 3 A fused jumper wire between the test points:Component terminal 86 & 12 V

   &12 V

6. Test for less than 2 Ω between Component terminal 30 an component terminal 87
   - **If 2 Ω or greater**

     Replace the KR5 Rear Defogger Relay.

   - **If less than 2 Ω**
7. All OK

Repair Instructions

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

- **Relay Replacement (Attached to Wire Harness)** **Relay Replacement (Within an Electrical Center)**
- **Rear Window Replacement**
- **Control Module References** for the HVAC control module or HVAC controls replacement, setup and programming

POWER REAR SLIDING WINDOW MALFUNCTION

Diagnostic Instructions

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

Diagnostic Fault Information

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Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Right Instrument Panel Fuse Block B+	2	2	-	-
Sliding Rear Window Switch Ignition	1	1	-	-
Sliding Rear Window Close Relay Control	2	2	2	-
Sliding Rear Window Open Relay Control	2	2	2	-
Sliding Rear Window Motor Control	2	2	2	-
Right Instrument Panel Fuse Block Ground	-	2	-	-
1. Sliding Rear Window Switch Malfunction 2. Sliding Rear Window Motor Malfunction				

Circuit/System Description

The power sliding rear window motor is controlled from the sliding rear window switch through sliding rear window open and sliding rear window close relays. The sliding rear window switch is supplied voltage from the retained accessory voltage output circuit. When the switch is pressed in the open or close position, the sliding rear window open relay or the sliding rear window close relay coil will be supplied accessory voltage and energized through the appropriate relay control circuit. While the sliding rear window open relay or the sliding rear window close relay are in a de-energized state both motor control circuits will be closed to ground. When one of the relays is energized its motor control circuit will be closed to the battery voltage supply circuit and the other motor control circuit will remain grounded through the de-energized relay.

Reference Information

Schematic Reference

Moveable Window Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Power Windows Description and Operation

Electrical Information Reference

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

Circuit/System Verification

1. Ignition ON.
2. Verify the sliding rear window performs the OPEN and CLOSE functions when using the S68 Sliding Rear

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Window Switch.

- **If the sliding rear window does not OPEN or CLOSE**

  Refer to Circuit/System Testing.

- **If the sliding rear window does OPEN and CLOSE**

3. All OK.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the S68 Sliding Rear Window Switch. Ignition ON.
2. Verify a test lamp illuminates between the ignition circuit terminal A and ground.
   - **If the test lamp does not illuminate and the circuit fuse is good**
   1. Ignition OFF.
   2. Test for less than 2 Ω in the ignition circuit end to end.
      - If 2 Ω or greater, repair the open/high resistance in the circuit.
      - If less than 2 Ω, refer to **Retained Accessory Power Malfunction** .
   - **If the test lamp does not illuminate and the circuit fuse is open**
   1. Ignition OFF.
   2. Test for infinite resistance between the ignition circuit and ground.
      - If less than infinite resistance, repair the short to ground on the circuit.
      - If infinite resistance, test or replace the S68 Sliding Rear Window Switch.
   - **If the test lamp illuminates**
3. Ignition OFF and all vehicle systems OFF, disconnect the X2 harness connector at the X51R Fuse Block-Instrument Panel Right. It may take up to 2 minutes for all vehicle systems to power down
4. Test for less than 10 Ω between the ground circuit terminal 22 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**
5. Ignition ON
6. Connect a test lamp between the control circuit terminal 32 and ground.
7. Ignition ON, verify the test lamp turns ON and OFF when pressing and releasing the Open switch on the S68 Sliding Rear Window Switch.
   - **If the test lamp is always OFF**
   1. Ignition OFF, remove the test lamp, disconnect the harness connector at the S68 Sliding Rear Window Switch.
   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 S68 Sliding Rear Window 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 S68 Sliding Rear Window Switch, 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, test or replace the S68 Sliding Rear Window Switch.

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

8. Connect a test lamp between the control circuit terminal 33 and ground.
9. Ignition ON, verify the test lamp turns ON and OFF when pressing and releasing the Close switch on the S68 Sliding Rear Window Switch.

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

1. Ignition OFF, remove the test lamp, disconnect the harness connector at the S68 Sliding Rear Window Switch.
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 S68 Sliding Rear Window Switch.

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

1. Ignition OFF, remove the test lamp, disconnect the harness connector at the S68 Sliding Rear Window Switch, 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, test or replace the S68 Sliding Rear Window Switch.

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

10. Ignition OFF, connect the X2 harness connector at the X51R Fuse Block-Instrument Panel Right. Disconnect the harness connector at the M63 Sliding Rear Window Motor
11. Test for less than 5 Ω between the control circuit terminal 1 and ground.

- **If 5 Ω or greater**

1. Ignition OFF, disconnect the harness connector at the X51R Fuse Block-Instrument Panel Right.
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 X51R Fuse Block-Instrument Panel Right

- **If less than 5 Ω**

12. Test for less than 5 Ω between the control circuit terminal 2 and ground.

- **If 5 Ω or greater**

1. Ignition OFF, disconnect the harness connector at the X51R Fuse Block-Instrument Panel Right.
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 X51R Fuse Block-Instrument Panel Right.

- **If less than 5 Ω**

13. Connect a test lamp between the control circuit terminal 1 and control circuit terminal 2, ignition ON.

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14. Verify the test lamp turns ON when commanding the OPEN and CLOSE states with the S68 Sliding Rear Window 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 X51R Fuse Block-Instrument Panel Right.
    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 X51R Fuse Block-Instrument Panel Right.
    - **If the test lamp remains ON**
    1. Ignition OFF, remove the test lamp, disconnect the harness connector at the X51R Fuse Block-Instrument Panel Right, 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 X51R Fuse Block-Instrument Panel Right.
    - **If the test lamp turns ON when commanding the OPEN and CLOSE states**
15. Test or replace the M63 Sliding Rear Window Motor.

Component Testing

Driver Door Lock Switch

1. Ignition OFF, disconnect the harness connector at the S68 Sliding Rear Window Switch.
2. Test for infinite resistance between the ignition terminal A and the control terminal B with the switch in the center position.
    - **If less than infinite resistance**

      Replace the S68 Sliding Rear Window Switch.

    - **If infinite resistance**
3. Test for infinite resistance between the ignition terminal A and the control terminal C with the switch in the center position.
    - **If less than infinite resistance**

      Replace the S68 Sliding Rear Window Switch

    - **If infinite resistance**
4. Test for less than 2 Ω between the ignition terminal A and the control terminal B with the switch in the Close position.
    - **If 2 Ω or greater**

      Replace the S68 Sliding Rear Window Switch.

    - **If less than 2 Ω**
5. Test for less than 2 Ω between the ignition terminal A and the control terminal C with the switch in the Open position.
    - **If 2 Ω or greater**

      Replace the S68 Sliding Rear Window Switch.

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- **If less than 2 Ω**

6. All OK

Sliding Rear Window Motor

1. Ignition OFF, disconnect the harness connector at the M63 Sliding Rear Window Motor.
2. Install a 25 A fused jumper wire between one of the control terminals and 12 V. Momentarily install a jumper wire between the other control terminal and ground. Reverse the jumper wires at least two times, the M63 Sliding Rear Window Motor should perform the OPEN and CLOSE functions.
   - **If the M63 Sliding Rear Window Motor does not perform the OPEN and CLOSE functions**

     Replace the M63 Sliding Rear Window Motor.

   - **If the M63 Sliding Rear Window Motor performs the OPEN and CLOSE functions**
3. All OK

Repair Instructions

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

- **Rear Sliding Window Module Replacement**
- **Roof Console Replacement**

POWER WINDOWS MALFUNCTION (A31 STANDARD CAB)

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
Driver Window Switch B+	U1538 00	U1538 00	-	-
Driver Window Switch Serial Data	U1534 00, U1538 00, U153A 00	U1538 00	U1538 00	-
Driver Window Switch Ground	-	U1538 00	-	-
Driver Window Motor B+	U1534 00	U1534 00	-	-
Driver Window Motor Serial Data	U1534 00, U1538 00, U153A 00	U1534 00	U1534 00	-
Driver Window Motor Down Control	B316B 02	1	1	-
Driver Window Motor Express Control	B316B 02	1	1	-
Driver Window Motor Up Control	B316B 02	1	1	-
Driver Window Motor Ground	-	U1534 00	-	-
Passenger Window Switch B+	U153A 00	U153A 00	-	-

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Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Passenger Window Switch Serial Data	U1534 00, U1538 00, U153A 00	U153A 00	U153A 00	-
Passenger Window Switch Ground	-	U153A 00	-	-
Passenger Window Motor Control	2	2	2	-
1. Driver Window Malfunction 2. Passenger Window Inoperative				

Circuit/System Description

The driver window motor supplies 12V signal circuits to the driver window switch, when a window switch has been activated, a switch closes providing a ground to the appropriate signal circuit causing the voltage to drop to 0V. The driver window motor will detect the voltage drop in the signal circuit and will command the window to move in the desired direction.

The driver window master control switch also contains control switches for the passenger window functions. When a window switch is pressed, a serial data message is sent to the body control module (BCM). The BCM examines the request and checks for messages from other power window motor that may prohibit window movement. If no prohibitive messages have been received, the BCM will send a serial data message to the passenger switch which will perform the command as requested.

Diagnostic Aids

The loss of the express up and express down functions for the driver window may have occurred for the following reasons:

- The battery was disconnected
- The battery was replaced
- A door wiring harness was disconnected
- A window motor was disconnected or replaced

The window motor will need to be normalized in order to restore the express functions, refer to **Window Motor Programming - Express Function** for the proper procedure.

Reference Information

Schematic Reference

Moveable Window Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

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- **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 driver window functions while commanding the Driver Window Motor Up and Down with a scan tool.
    - **If the driver window does not move UP and DOWN as commanded**

      Refer to Circuit/System Testing - Driver Window Motor Malfunction.

    - **If the driver window moves UP and DOWN as commanded**
3. Verify the driver window functions while commanding the window UP, express UP, DOWN and express DOWN with the S79D Window Switch-Driver.
    - **If the driver window does not move UP or DOWN as commanded**

      Refer to Circuit/System Testing - Driver Window Switch Malfunction.

    - **If the driver window does not express UP or express DOWN**

      Normalize the M74D Window Motor-Driver, refer to **Window Motor Programming - Express Function**.

    - **If after normalization, the driver window does not express UP or express DOWN**

      Refer to Circuit/System Testing - Driver Window Switch Malfunction.

    - **If the driver window moves UP, express UP, DOWN and express DOWN as commanded**
4. Verify the scan tool parameters listed below change when pressing and pulling the switches for the passenger window on the driver window master control;
    - Front Passenger Main Control Down Switch - Inactive and Active
    - Front Passenger Main Control Express Switch - Inactive and Active
    - Front Passenger Main Control Up Switch - Inactive and Active
    - **If any parameter does not change**

      Replace the S79D Window Switch-Driver.

    - **If the parameters change**
5. Verify the passenger window functions while commanding the Passenger Window Motor Up and Down with a scan tool.
    - **If the passenger window does not move Up and Down as commanded**

      Refer to Circuit/System Testing - Passenger Power Window Inoperative.

    - **If the passenger window moves Up and Down as commanded**

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6. All OK.

Circuit/System Testing

Driver Window Motor Malfunction

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the M74D Window Motor-Driver. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 1 and ground.
    - **If 10 Ω or greater**
    1. Ignition OFF.
    2. Test for less than 2 Ω in the ground circuit end to end.
        - If 2 Ω or greater, repair the open/high resistance in the circuit.
        - If less than 2 Ω, repair the open/high resistance in the ground connection.
    - **If less than 10 Ω**
3. Ignition ON.
4. Verify a test lamp illuminates between the B+ circuit terminal 2 and ground.
    - **If the test lamp does not illuminate and the circuit fuse is good**
    1. Ignition OFF.
    2. Test for less than 2 Ω in the 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 the test lamp illuminates**
5. Test or replace the M74D Window Motor-Driver.

Driver Window Switch Malfunction

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the S79D Window Switch-Driver. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 1 and ground.
    - **If 10 Ω or greater**
    1. Ignition OFF.
    2. Test for less than 2 Ω in the ground circuit end to end.
        - If 2 Ω or greater, repair the open/high resistance in the circuit.
        - If less than 2 Ω, repair the open/high resistance in the ground connection.
    - **If less than 10 Ω**
3. Ignition ON.
4. Verify a test lamp illuminates between the B+ circuit terminal 4 and ground.
    - **If the test lamp does not illuminate and the circuit fuse is good**
    1. Ignition OFF.
    2. Test for less than 2 Ω in the B+ circuit end to end.

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- 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, replace the S79D Window Switch-Driver.

- **If the test lamp illuminates**

5. Verify the scan tool Driver Window Main Control Down Switch parameter is Inactive.
    - **If not Inactive**
    1. Ignition OFF, disconnect the harness connector at the M74D Window Motor-Driver.
    2. Test for infinite resistance between the S79D Window Switch-Driver signal circuit terminal 3 and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
        - If infinite resistance, replace the M74D Window Motor-Driver.
    - **If Inactive**
6. Install a 3 A fused jumper wire between the signal circuit terminal 3 and the ground circuit terminal 1.
7. Verify the scan tool Driver Window Main Control Down Switch parameter is Active
    - **If not Active**
    1. Ignition OFF, remove the 3 A fused jumper wire, disconnect the harness connector at the M74D Window Motor-Driver, ignition ON.
    2. Test for less than 1 V between the S79D Window Switch-Driver signal circuit terminal 3 and ground.
        - If 1 V or greater, repair the short to voltage on the circuit.
        - If less than 1 V
    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 M74D Window Motor-Driver.
    - **If Active**
8. Verify the scan tool Driver Window Main Control Up Switch parameter is Inactive.
    - **If not Inactive**
    1. Ignition OFF, disconnect the harness connector at the M74D Window Motor-Driver.
    2. Test for infinite resistance between the S79D Window Switch-Driver signal circuit terminal 6 and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
        - If infinite resistance, replace the M74D Window Motor-Driver.
    - **If Inactive**
9. Install a 3 A fused jumper wire between the signal circuit terminal 6 and the ground circuit terminal 1.
10. Verify the scan tool Driver Window Main Control Up Switch parameter is Active
    - **If not Active**
    1. Ignition OFF, remove the 3 A fused jumper wire, disconnect the harness connector at the M74D Window Motor-Driver, ignition ON.
    2. Test for less than 1 V between the S79D Window Switch-Driver signal circuit 6 and ground.
        - If 1 V or greater, repair the short to voltage on the circuit.

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- If less than 1 V

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 M74D Window Motor-Driver.

- **If Active**

11. Verify the scan tool Driver Window Main Control Express Switch parameter is Inactive.
    - **If not Inactive**
    1. Ignition OFF, disconnect the harness connector at the M74D Window Motor-Driver.
    2. Test for infinite resistance between the S79D Window Switch-Driver signal circuit terminal 2 and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
        - If infinite resistance, replace the M74D Window Motor-Driver.

    - **If Inactive**

12. Install a 3 A fused jumper wire between the signal circuit terminal 2 and the ground circuit terminal 1.
13. Verify the scan tool Driver Window Main Control Express Switch parameter is Active
    - **If not Active**
    1. Ignition OFF, remove the 3 A fused jumper wire, disconnect the harness connector at the M74D Window Motor-Driver, ignition ON.
    2. Test for less than 1 V between the S79D Window Switch-Driver signal circuit 2 and ground.
        - If 1 V or greater, repair the short to voltage on the circuit.
        - If less than 1 V
    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 M74D Window Motor-Driver.

    - **If Active**

14. Test or replace the S79D Window Switch-Driver.

Passenger Power Window Inoperative

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the S79P Window Switch-Passenger. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 1 and ground.
    - **If 10 Ω or greater**
    1. Ignition OFF.
    2. Test for less than 2 Ω in the ground circuit end to end.
        - If 2 Ω or greater, repair the open/high resistance in the circuit.
        - If less than 2 Ω, repair the open/high resistance in the ground connection.

    - **If less than 10 Ω**

3. Ignition ON.
4. Verify a test lamp illuminates between the B+ circuit terminal 4 and ground.
    - **If the test lamp does not illuminate and the circuit fuse is good**
    1. Ignition OFF.
    2. Test for less than 2 Ω in the B+ circuit end to end.

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- 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, replace the S79P Window Switch-Passenger

- **If the test lamp illuminates**

5. Ignition OFF, connect the harness connector at the S79P Window Switch-Passenger and disconnect the harness connector at the M74P Window Motor-Passenger.
6. Test for less than 5 Ω between the control circuit terminal 1 and ground.

- **If 5 Ω or greater**

1. Ignition OFF, disconnect the harness connector at the S79P Window Switch-Passenger.
2. Test for less than 2 Ω in the 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 5 Ω**

7. Test for less than 5 Ω between the control circuit terminal 2 and ground.

- **If 5 Ω or greater**

1. Ignition OFF, disconnect the harness connector at the S79P Window Switch-Passenger.
2. Test for less than 2 Ω in the 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 5 Ω**

8. Connect a test lamp between the control circuit terminal 1 and control circuit terminal 2, ignition ON.
9. Verify the test lamp turns ON when commanding the UP and DOWN states with the S79P Window Switch-Passenger.

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

1. Ignition OFF, remove the test lamp, disconnect the harness connector at the S79P Window Switch-Passenger.
2. Test for infinite resistance between each control circuit and ground.
    - If less than infinite resistance, repair the short to ground on the circuit.
    - If infinite resistance
3. Test for less than 2 Ω in each control circuit end to end.
    - If 2 Ω or greater, repair the open/high resistance in the circuit.
    - If less than 2 Ω, replace the S79P Window Switch-Passenger.

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

1. Ignition OFF, remove the test lamp, disconnect the harness connector at the S79P Window Switch-Passenger, ignition ON.
2. Test for less than 1 V between each control circuit and ground.
    - If 1 V or greater, repair the short to voltage on the circuit.
    - If less than 1 V, replace the S79P Window Switch-Passenger.

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

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10. Test or replace the M74P Window Motor-Passenger.

Component Testing

Passenger Window Motor

1. Ignition OFF, disconnect the harness connector at the M74P Window Motor-Passenger.
2. Install a 25 A fused jumper wire between one of the control terminals and 12 V. Momentarily install a jumper wire between the other control terminal and ground. Reverse the jumper wires at least two times, the M74P Window Motor-Passenger should perform the UP and DOWN functions.
   - **If the function does not perform the UP and DOWN functions**

     Replace the M74P Window Motor-Passenger.

   - **If the function performs the UP and DOWN functions**
3. All OK

Repair Instructions

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

- **Front Side Door Window Switch Replacement - Right Side**
- **Front Side Door Window Control Switch Replacement**
- **Front Side Door Window Regulator Motor Replacement**

POWER WINDOWS MALFUNCTION (A31 EXTENDED/CREW CAB)

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
Driver Window Switch B+	U1538 00	U1538 00	-	-
Driver Window Switch Serial Data	U1534 00, U1538 00, U153A 00	U1538 00	U1538 00	-
Driver Window Switch Ground	-	U1538 00	-	-
Driver Window Motor B+	U1534 00	U1534 00	-	-
Driver Window Motor Serial Data	U1534 00, U1538 00, U153A 00	U1534 00	U1534 00	-
Driver Window Motor Down Control	B316B 02	1	1	-
Driver Window Motor Express Control	B316B 02	1	1	-
Driver Window Motor Up Control	B316B 02	1	1	-
Driver Window Motor Ground	-	U1534 00	-	-

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Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Passenger Window Switch B+	U153A 00	U153A 00	-	-
Passenger Window Switch Serial Data	U1534 00, U1538 00, U153A 00	U153A 00	U153A 00	-
Passenger Window Switch Ground	-	U153A 00	-	-
Passenger Window Motor Control	2	2	2	-
Left Rear Window Switch B+	U1534 00	U1534 00	-	-
Left Rear Window Switch Serial Data	U1534 00, U154A 00	U1534 00	U1534 00	-
Left Rear Window Switch Ground	-	U1534 00	-	-
Left Rear Window Motor Control	3	3	3	-
Right Rear Window Switch B+	U154A 00	U154A 00	-	-
Right Rear Window Switch Serial Data	U154A 00, U1548 00	U154A 00	U154A 00	-
Right Rear Window Switch Ground	-	U154A 00	-	-
Right Rear Window Motor Control	4	4	4	-
1. Driver Window Malfunction 2. Passenger Window Inoperative 3. Left Rear Window Inoperative 4. Right Rear Window Inoperative				

Circuit/System Description

The driver window motor supplies 12 V signal circuits to the driver window switch, when a window switch has been activated, a switch closes providing a ground to the appropriate signal circuit causing the voltage to drop to 0 V. The driver window motor will detect the voltage drop in the signal circuit and will command the window to move in the desired direction.

The driver window master control switch also contains control switches for the passenger, left rear and right rear window functions. When a window switch is pressed, a serial data message is sent to the Body Control Module (BCM). The BCM examines the request and checks for messages from other power window motors that may prohibit window movement. If no prohibitive messages have been received, the BCM will send a serial data message to the appropriate passenger or rear window switch which will perform the command as requested.

Diagnostic Aids

The loss of the express up and express down functions for the driver window may have occurred for the following reasons:

- The battery was disconnected
- The battery was replaced
- The door wiring harness was disconnected
- The window motor was disconnected

The driver window motor will need to be normalized in order to restore the express functions, refer to **Window Motor Programming - Express Function** for the proper procedure.

Reference Information

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Schematic Reference

Moveable Window Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Power Windows Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Ignition ON.
2. Verify the driver window functions while commanding the Driver Window Motor Up and Down with a scan tool.
    - **If the window does not move UP and DOWN as commanded**

      Refer to Circuit/System Testing - Driver Window Motor Malfunction.

    - **If the window moves UP and DOWN as commanded**
3. Verify the driver window functions while commanding the window UP, express UP, DOWN and express DOWN with the S79D Window Switch-Driver.
    - **If the driver window does not move UP or DOWN as commanded**

      Refer to Circuit/System Testing - Driver Window Switch Malfunction.

    - **If the driver window does not express UP or express DOWN**

      Normalize the M74D Window Motor-Driver, refer to **Window Motor Programming - Express Function**.

    - **If after normalization, the driver window does not express UP or express DOWN**

      Refer to Circuit/System Testing - Driver Window Switch Malfunction.

    - **If the driver window moves UP, express UP, DOWN and express DOWN as commanded**
4. Verify the scan tool parameters listed below change when pressing and pulling the switches for the passenger, left rear and right rear window on the driver window master control;
    - Left Rear Main Control Down Switch - Inactive and Active
    - Left Rear Main Control Express Switch - Inactive and Active

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- Left Rear Main Control Up Switch - Inactive and Active
- Right Rear Main Control Down Switch - Inactive and Active
- Right Rear Main Control Express Switch - Inactive and Active
- Right Rear Main Control Up Switch - Inactive and Active
- Front Passenger Main Control Down Switch - Inactive and Active
- Front Passenger Main Control Express Switch - Inactive and Active
- Front Passenger Main Control Up Switch - Inactive and Active
- **If any parameter does not change**

  Refer to Circuit/System Testing - Driver Window Switch Malfunction.

- **If the parameters change**

5. Verify the passenger, left rear and right rear window functions while commanding the Passenger Window Motor, Left Rear Window Motor and Right Rear Window Motor Up and Down with a scan tool.
   - **If the window does not move UP and DOWN as commanded**

     Refer to Circuit/System Testing - Passenger/Rear Power Window Inoperative.

   - **If the window moves UP and DOWN as commanded**
6. All OK.

Circuit/System Testing

Driver Window Motor Malfunction

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the M74D Window Motor-Driver. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 1 and ground.
   - **If 10 Ω or greater**
   1. Ignition OFF.
   2. Test for less than 2 Ω in the ground circuit end to end.
      - If 2 Ω or greater, repair the open/high resistance in the circuit.
      - If less than 2 Ω, repair the open/high resistance in the ground connection.
   - **If less than 10 Ω**
3. Ignition ON.
4. Verify a test lamp illuminates between the B+ circuit terminal 2 and ground.
   - **If the test lamp does not illuminate and the circuit fuse is good**
   1. Ignition OFF.
   2. Test for less than 2 Ω in the 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, replace the M74D Window Motor-Driver.

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- **If the test lamp illuminates**

5. Test or replace the M74D Window Motor-Driver.

Driver Window Switch Malfunction

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the S79D Window Switch-Driver. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 1 and ground.
   - **If 10 Ω or greater**
   1. Ignition OFF.
   2. Test for less than 2 Ω in the ground circuit end to end.
      - If 2 Ω or greater, repair the open/high resistance in the circuit.
      - If less than 2 Ω, repair the open/high resistance in the ground connection.
   - **If less than 10 Ω**
3. Ignition ON.
4. Verify a test lamp illuminates between the B+ circuit terminal 4 and ground.
   - **If the test lamp does not illuminate and the circuit fuse is good**
   1. Ignition OFF.
   2. Test for less than 2 Ω in the B+ circuit end to end.
      - If 2 Ω or greater, repair the open/high resistance in the circuit.
      - If less than 2 Ω, verify the fuse is not open and there is voltage at the fuse.
   - **If the test lamp does not illuminate and the circuit fuse is open**
   1. Ignition OFF.
   2. Test for infinite resistance between the B+ circuit and ground.
      - If less than infinite resistance, repair the short to ground on the circuit.
      - If infinite resistance, replace the S79D Window Switch-Driver.
   - **If the test lamp illuminates**
5. Verify the scan tool Driver Window Main Control Down Switch parameter is Inactive.
   - **If not Inactive**
   1. Ignition OFF, disconnect the harness connector at the M74D Window Motor-Driver.
   2. Test for infinite resistance between the S79D Window Switch-Driver signal circuit terminal 3 and ground.
      - If less than infinite resistance, repair the short to ground on the circuit.
      - If infinite resistance, replace the M74D Window Motor-Driver.
   - **If Inactive**
6. Install a 3 A fused jumper wire between the signal circuit terminal 3 and the ground circuit terminal 1.
7. Verify the scan tool Driver Window Main Control Down Switch parameter is Active
   - **If not Active**
   1. Ignition OFF, remove the 3 A fused jumper wire, disconnect the harness connector at the M74D Window Motor-Driver, Ignition ON.
   2. Test for less than 1 V between the S79D Window Switch-Driver signal circuit terminal 3 and ground.
      - If 1 V or greater, repair the short to voltage on the circuit.
      - If less than 1 V

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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 M74D Window Motor-Driver.

- **If Active**

8. Verify the scan tool Driver Window Main Control Up Switch parameter is Inactive.
    - **If not Inactive**
    1. Ignition OFF, disconnect the harness connector at the M74D Window Motor-Driver.
    2. Test for infinite resistance between the S79D Window Switch-Driver signal circuit terminal 6 and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
        - If infinite resistance, replace the M74D Window Motor-Driver.
    - **If Inactive**
9. Install a 3 A fused jumper wire between the signal circuit terminal 6 and the ground circuit terminal 1.
10. Verify the scan tool Driver Window Main Control Up Switch parameter is Active
    - **If not Active**
    1. Ignition OFF, remove the 3 A fused jumper wire, disconnect the harness connector at the M74D Window Motor-Driver, Ignition ON.
    2. Test for less than 1 V between the S79D Window Switch-Driver signal circuit 6 and ground.
        - If 1 V or greater, repair the short to voltage on the circuit.
        - If less than 1 V
    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 M74D Window Motor-Driver.
    - **If Active**
11. Verify the scan tool Driver Window Main Control Express Switch parameter is Inactive.
    - **If not Inactive**
    1. Ignition OFF, disconnect the harness connector at the M74D Window Motor-Driver.
    2. Test for infinite resistance between the S79D Window Switch-Driver signal circuit terminal 2 and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
        - If infinite resistance, replace the M74D Window Motor-Driver.
    - **If Inactive**
12. Install a 3 A fused jumper wire between the signal circuit terminal 2 and the ground circuit terminal 1.
13. Verify the scan tool Driver Window Main Control Express Switch parameter is Active
    - **If not Active**
    1. Ignition OFF, remove the 3 A fused jumper wire, disconnect the harness connector at the M74D Window Motor-Driver, Ignition ON.
    2. Test for less than 1 V between the S79D Window Switch-Driver signal circuit 2 and ground.
        - If 1 V or greater, repair the short to voltage on the circuit.
        - If less than 1 V
    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 M74D Window Motor-Driver.

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- **If Active**

14. Test or replace the S79D Window Switch-Driver.

Passenger/Rear Power Window Inoperative

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the appropriate passenger or rear S79 Window 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 listed below and ground:
    - S79P Window Switch-Passenger - ground circuit terminal 1
    - S79LR Window Switch-Left Rear - ground circuit terminal 5
    - S79RR Window Switch-Right Rear - ground circuit terminal 5
    - **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 listed below and ground:
    - S79P Window Switch-Passenger - B+ circuit terminal 4
    - S79LR Window Switch-Left Rear - B+ circuit terminal 8
    - S79RR Window Switch-Right Rear - B+ circuit terminal 8
    - **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, replace the S79 Window Switch
    - **If the test lamp illuminates**
5. Ignition OFF, connect the harness connector at the S79 Window Switch and disconnect the harness connector at the M74 Window Motor.
6. Test for less than 5 Ω between the control circuit terminal 1 and ground.
    - **If 5 Ω or greater**
    1. Ignition OFF, disconnect the harness connector at the S79 Window 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 S79 Window Switch.
    - **If less than 5 Ω**
7. Test for less than 5 Ω between the control circuit terminal 2 and ground.

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- **If 5 Ω or greater**

1. Ignition OFF, disconnect the harness connector at the S79 Window 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 S79 Window Switch.

- **If less than 5 Ω**

8. Connect a test lamp between control circuit terminal 1 and control circuit terminal 2, Ignition ON.
9. Verify the test lamp turns ON when commanding the UP and DOWN states with the S79 Window 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 S79 Window 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 S79 Window Switch.

    - **If the test lamp turns ON during each of the commands**
10. Test or replace the M74 Window Motor.

Component Testing

1. Ignition OFF, disconnect the harness connector at the appropriate passenger or rear M74 Window Motor.
2. Install a 25 A fused jumper wire between one of the control terminals and 12 V. Momentarily install a jumper wire between the other control terminal and ground. Reverse the jumper wires at least two times, the M74 Window Motor should perform the UP and DOWN functions.
    - **If the M74 Window Motor does not perform the UP and DOWN functions**

      Replace the passenger or rear M74 Window Motor.

    - **If the M74 Window Motor performs the UP and DOWN functions**
3. All OK

Repair Instructions

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

- **Front Side Door Window Switch Replacement - Right Side**
- **Front Side Door Window Control Switch Replacement**
- **Rear Side Door Window Switch Replacement**
- **Front Side Door Window Regulator Motor Replacement**
- **Rear Side Door Window Regulator Motor Replacement**

SIDE DOOR WINDOW MECHANICAL DIAGNOSIS

Cause	Correction
DEFINITION: A mechanical condition that requires a correction for proper operation of the side door window. Refer to **Symptoms - Fixed and Moveable Windows** prior to beginning this table.	
Intermittent Operation	Check proper glass alignment/attachment and door seal installation.
	Check switch and switch bezel to see if sticking.
	Check wire harness for pinched/shorted wire.

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Cause	Correction
Glass Binds	THIS STEP APPLIES TO ALL TWO PIN MOTOR CONNECTORS ONLY. Perform electrical diagnostics, by first applying 12 volt power supply to the regulator motor to verify motor function.
	Check proper glass alignment/attachment.
	Check for defective seal and/or proper seal installation.
	Check for debris in glass run channel.
	Check for glass run channel position.
Regulator/Glass Rattles	Check for loose fasteners and retorque if required.
	Check that the glass is in the channel and reinstall if not positioned correctly.
Noisy Operation	Check for other components in the glass path such as wire harness, impact foam, lock rods, or cables.
	Check for proper glass alignment/attachment and door seal installation.
Windnoise	Check seals, mirror patch, and glass alignment.
False glass reversal, the glass goes down unexpectedly.	Check seals, reinitialize the glass and/or realign the glass.
	Check for debris in the glass run channel.

REPAIR INSTRUCTIONS

WINDSHIELD REPLACEMENT

Special Tools

- **BO-39032** Stationary Glass Removal Tool
- Use a urethane adhesive systems which meet GM Specification GMW 15672

For equivalent regional tools, refer to **Special Tools**.

Removal Procedure

1. Remove the radio antenna. Refer to **Radio Antenna Replacement** .
2. Open the hood.
3. Remove the windshield wiper arms. Refer to **Windshield Wiper Arm Replacement (LD)** **Windshield Wiper Arm Replacement (Diesel)** **Windshield Wiper Arm Replacement (HD)** .
4. Remove the air inlet grille. Refer to **Air Inlet Grille Panel Replacement (LD)** **Air Inlet Grille Panel Replacement (Diesel)** **Air Inlet Grille Panel Replacement (HD)** .
5. Remove the sunshade. Refer to **Sunshade Replacement (Crew Cab, Extended Cab)** **Sunshade Replacement (Regular Cab)** .
6. Lower the front section of the headliner only to access the urethane adhesive bead. Refer to **Headlining Trim Panel Replacement (Crew Cab Without Sunroof)** **Headlining Trim Panel Replacement (Crew Cab With Sunroof)** **Headlining Trim Panel Replacement (Extended Cab)** **Headlining Trim Panel Replacement (Regular Cab)** .

NOTE: **If the windshield is equipped with a blackout area around the mirror base bracket Care Must be used not to cut or scrape the blackout. If the mount bracket come off the windshield it can Not be reinstalled and the windshield must be replaced. If the bracket is bonded to the windshield it is Not reusable. Remove all sensor, cover, electrical devices, and bracket. from the pins. If the bracket is bonded to the windshield it is Not reusable.**

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7. Remove the inside rearview mirror. Refer to **Inside Rearview Mirror Replacement (With UE1)** **Inside Rearview Mirror Replacement (Without UE1)** .

WARNING: **If broken glass falls into the defroster outlets, it can be blown into the passenger compartment and cause personal injury.**

8. Cover to protect the following parts from broken glass:
   - Upper dash pad
   - Defroster outlets and A/C outlets
   - Seats and carpeting
9. Using the appropriate tool, carefully cut the lace from around the window in order to access the urethane adhesive bead.

WARNING: **Refer to Glass and Sheet Metal Handling Warning .**

NOTE: **If reusing the window use care not to cut off the locator pins located in the upper corners. If the locating pins are cut off in the removal it will be necessary to use masking tape to tape the window in place until the urethane adhesive cures.**

10. Do the following steps when separated the window from the urethane adhesive:
    - Leave a base of urethane adhesive on the pinchweld flange.
    - The only suitable lubrication is clean water, no oils, lubes or soaps.
    - **BO-39032** Stationary Glass Removal Tool , or equivalent in order to remove the window.

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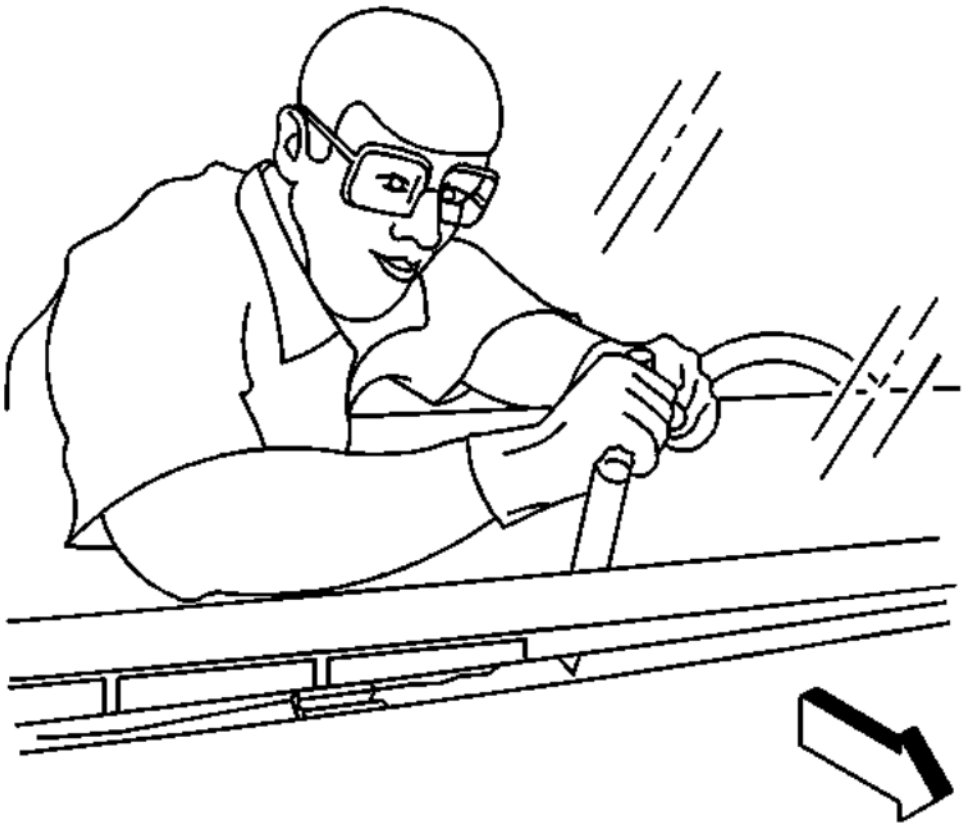


Fig. 6: Separating Bottom Of Window
Courtesy of GENERAL MOTORS COMPANY

11. Using the appropriate tool, cut along the bottom of the window separating the window from urethane adhesive. Keep the cutting edge of the tool against the window. Do this from inside the vehicle. While cutting from inside the vehicle, reposition the tool to cut the urethane adhesive along the top and both sides to release the window completely.

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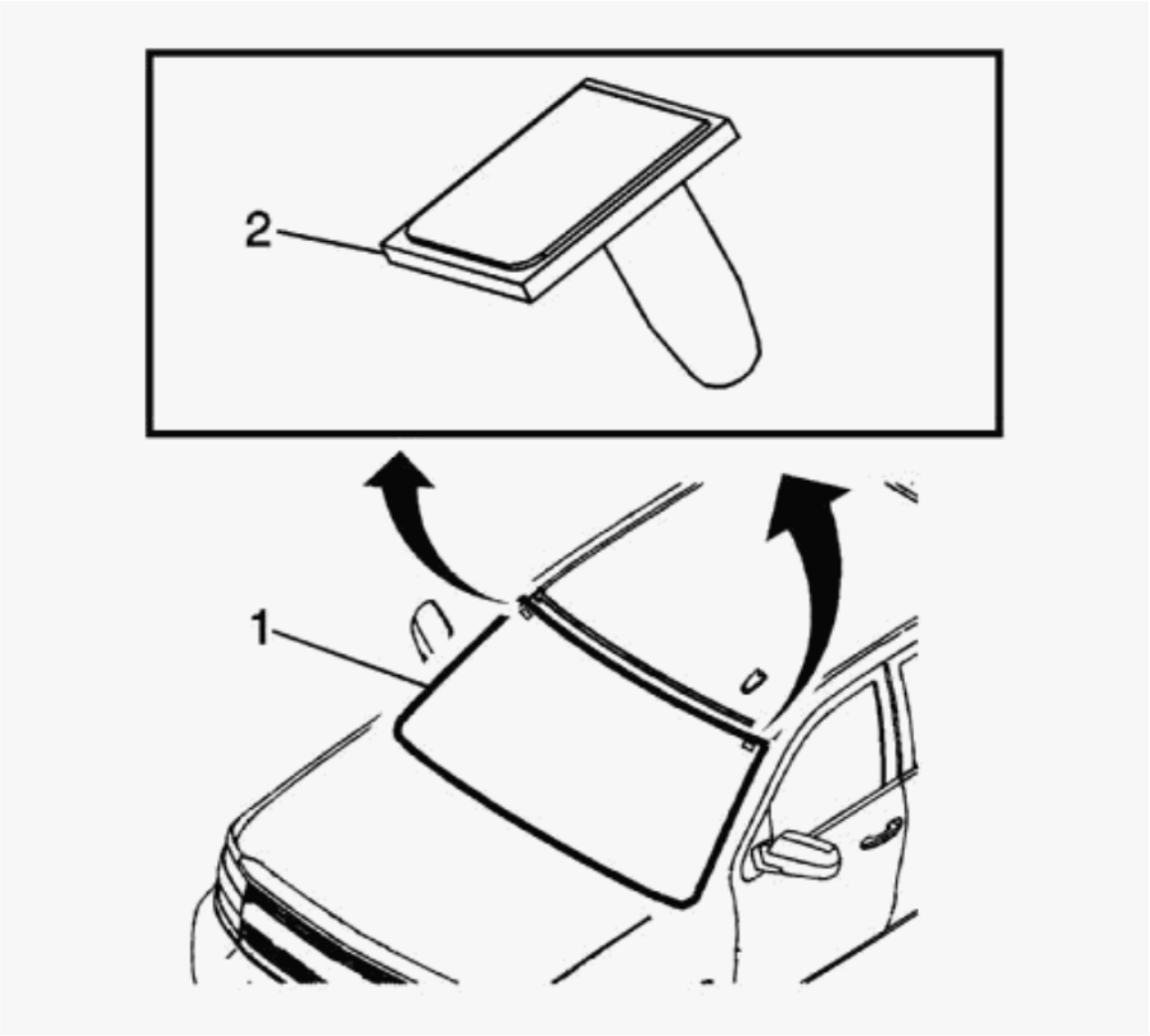


Fig. 7: Removing Window
Courtesy of GENERAL MOTORS COMPANY

12. Remove the window (1) from the vehicle with an assistant and Do the following:
    1. After removing the window spacers, mark the location of each one, If equipped.
    2. Check that the locator pins (2) are still attached to each upper corner of the window (1) for installing, if reusing.
    3. Remove all mounds or loose pieces of urethane adhesive from the pinchweld area.
    4. If the original window (1) is being reused, remove all but approximately 2 mm (0.078 in) of the existing bead of urethane adhesive from the pinchweld flange surface, using a clean utility knife or razor blade scraper.
13. Inspect for any of the following conditions in order to help prevent future breakage of the window:
    - High weld
    - Solder spots
    - Hardened sealer
    - Any other obstruction or irregularity in the pinchweld flange

NOTE: **If corrosion of the pinchweld flange is present or if sheet metal repairs or replacements are required, the pinchweld flange must be refinished in order to restore the bonding area strength. If paint repairs are required, mask the flange bonding area prior to applying the color coat in order to provide a**

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clean primer only surface. Materials such as BASF DE15Â®, DuPont 2610Â®, Sherwin-Williams PSE 4600 and NP70Â® and Martin-Semour 5120 and 5130Â® PPG DP90LF SPIES/HECKER 3688/8590 - 3688/5150 - 4070/5090 STANDOX 11158/13320 - 14653/14980 products are approved for this application.

14. After repairing the opening as indicated, perform the following steps:
    1. Remove all traces of broken glass from the outer cowl panel, seats, floor and defroster ducts.
    2. Clean around the edge of the inside surface of the window with a 50/50 mixture of isopropyl alcohol and water by volume on a dampened lint free cloth.

Installation Procedure

WARNING: Failure to prep the area prior to the application of primer may cause insufficient bonding of urethane adhesive. Insufficient bonding of urethane adhesive may allow unrestrained occupants to be ejected from the vehicle resulting in personal injury.

1. Verify that all primers and urethane adhesive being used are within expiration dates.
2. If reusing or replacing the window, use the appropriate tool, remove the urethane adhesive bead on the window surface and pinchweld flange to approximately 2 mm (0.078 in).

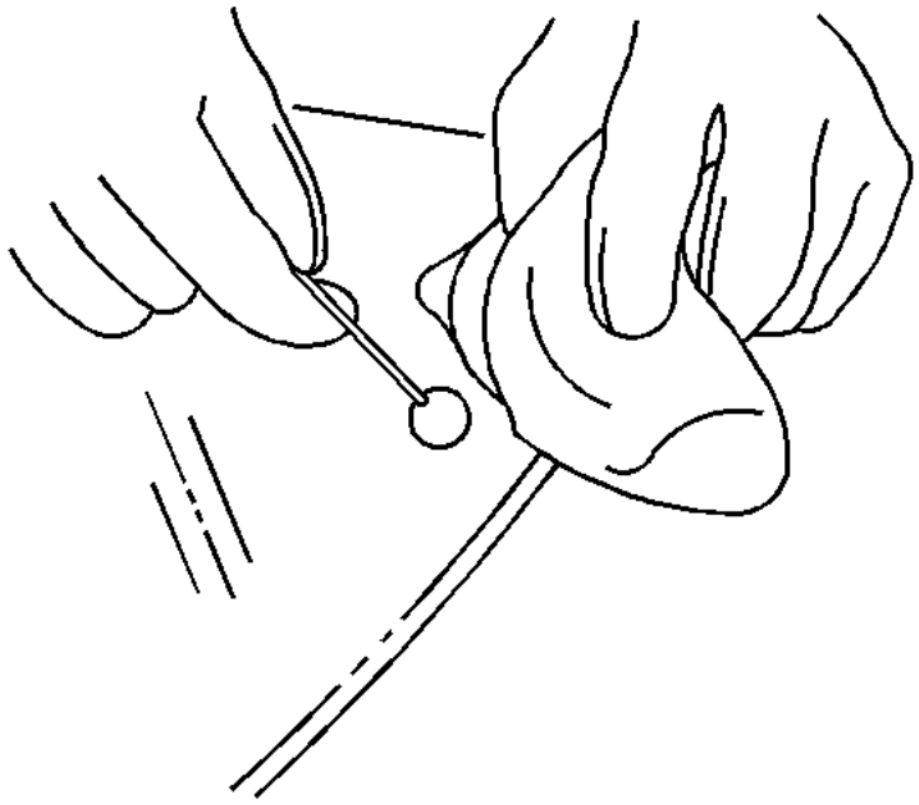


Fig. 8: Applying Glass Prep

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Courtesy of GENERAL MOTORS COMPANY

NOTE: **Use Prep #1 Clear**

3. Apply the Prep #1 clear primer to the bonding surface of the windows inside edge and the bonding surface of the pinchweld flange opening, refer to the instructions of the manufacturer's.

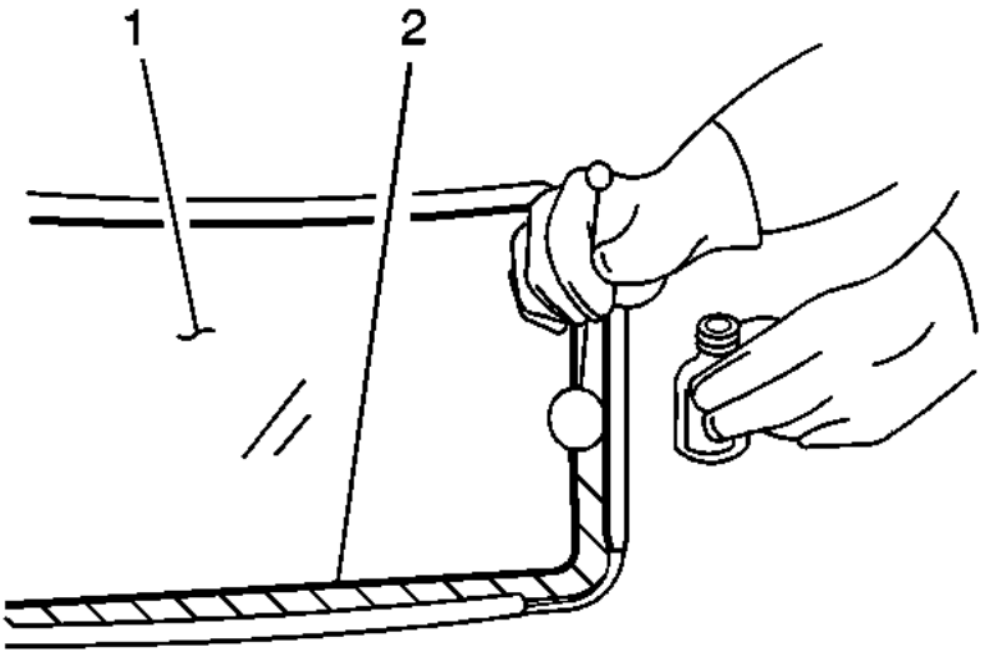


Fig. 9: Applying Glass Primer
Courtesy of GENERAL MOTORS COMPANY

NOTE: **Do not apply the black primer to the existing bead of the urethane adhesive on the pinch-weld flange. Apply the primer only to nicks, scratches or the primed surfaces.**

NOTE: **Following the urethane adhesive installation instructions, using P/N 9981062 (VM/P Naphtha) or equivalent to remove any excess of urethane adhesive within 3 minutes, otherwise it may not be possible to remove the urethane adhesive excess unless using mechanical means.**

NOTE: **The Prep #2 Black Primer is for, Blackout primer, UV Blackout.**

4. Apply the Prep #2 urethane adhesive primer (2) around the perimeter of the window (1), refer to the instructions of the manufacturer's.

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5. Install the spacers for the window to the marked locations on the pinchweld flange, If equipped

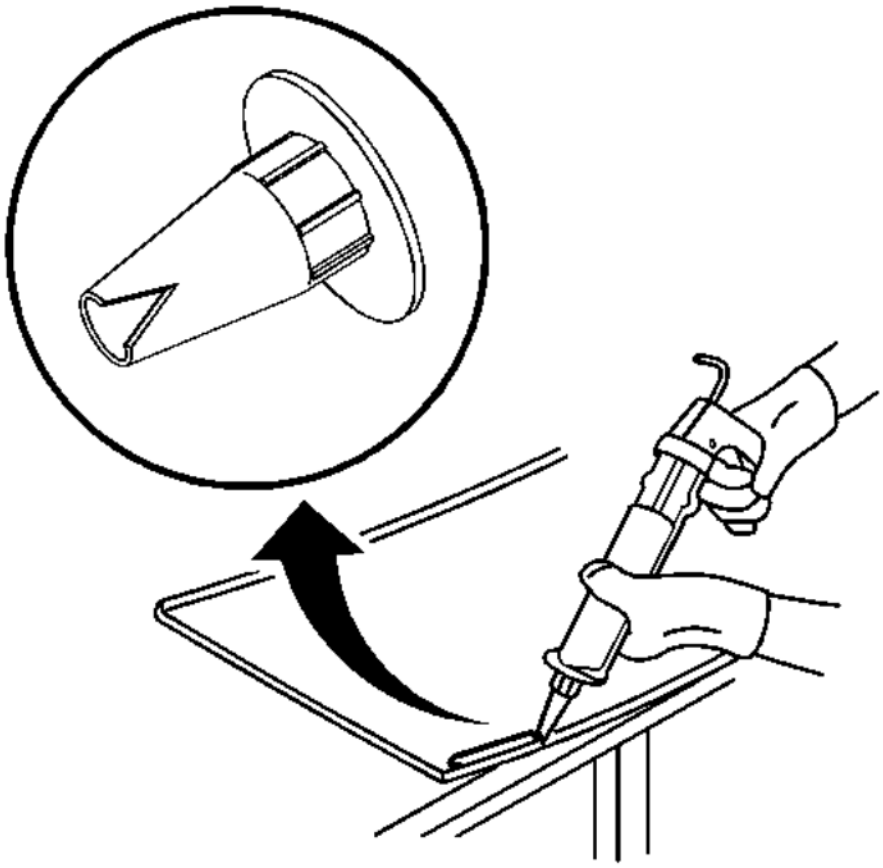


Fig. 10: View Of Modified Applicator Nozzle
Courtesy of GENERAL MOTORS COMPANY

6. Cut the applicator nozzle in order to provide a bead of 12.7 mm (1/2 in) wide and 12.7 mm (1/2 in) high.

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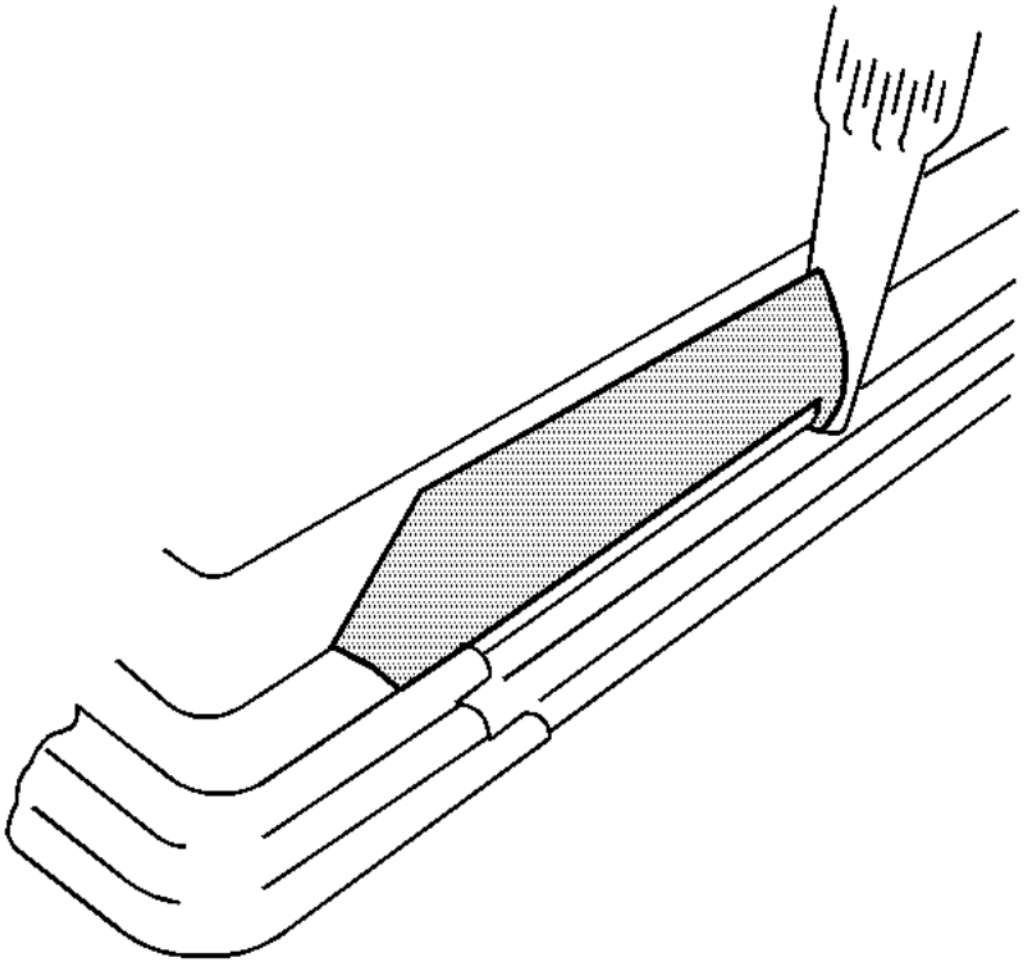


Fig. 11: Applying Continuous Bead Of Urethane Adhesive
Courtesy of GENERAL MOTORS COMPANY

7. Use the appropriate tool in order to apply a smooth, continuous bead of urethane adhesive to the window or the pinchweld flange.

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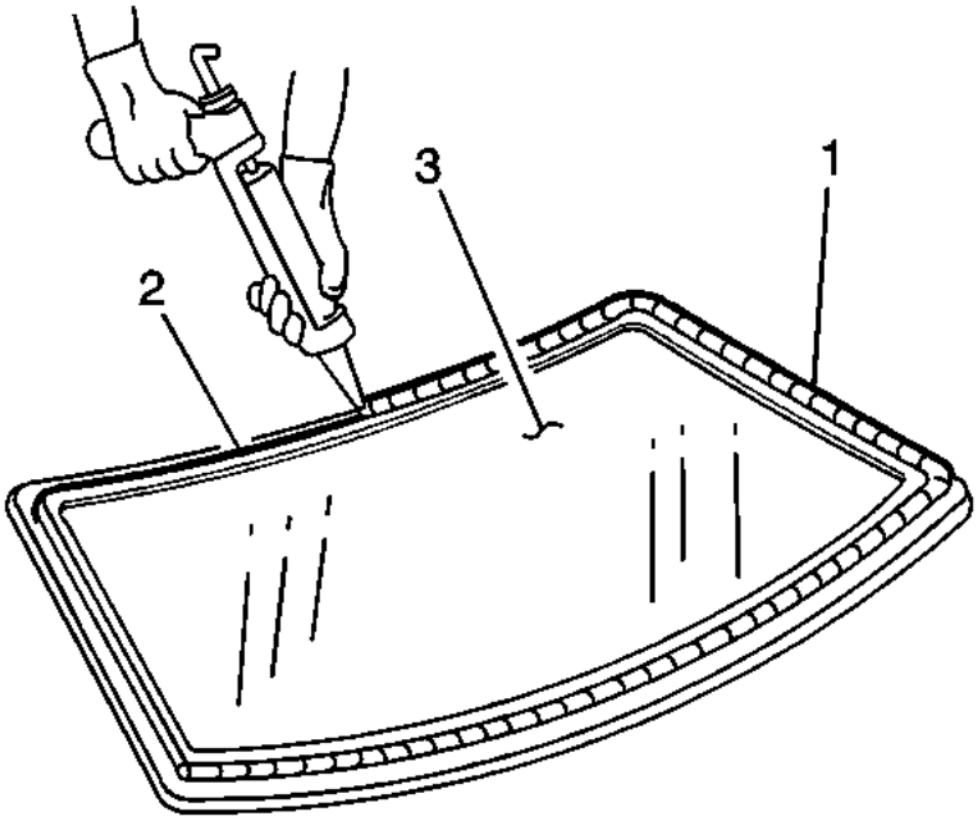


Fig. 12: Applying Urethane Adhesive To Inner Surface Of Window
Courtesy of GENERAL MOTORS COMPANY

8. Use the edge of the window as a guide for the nozzle in order to apply a continuous bead of urethane adhesive (1) to the inner surface of the window (3).

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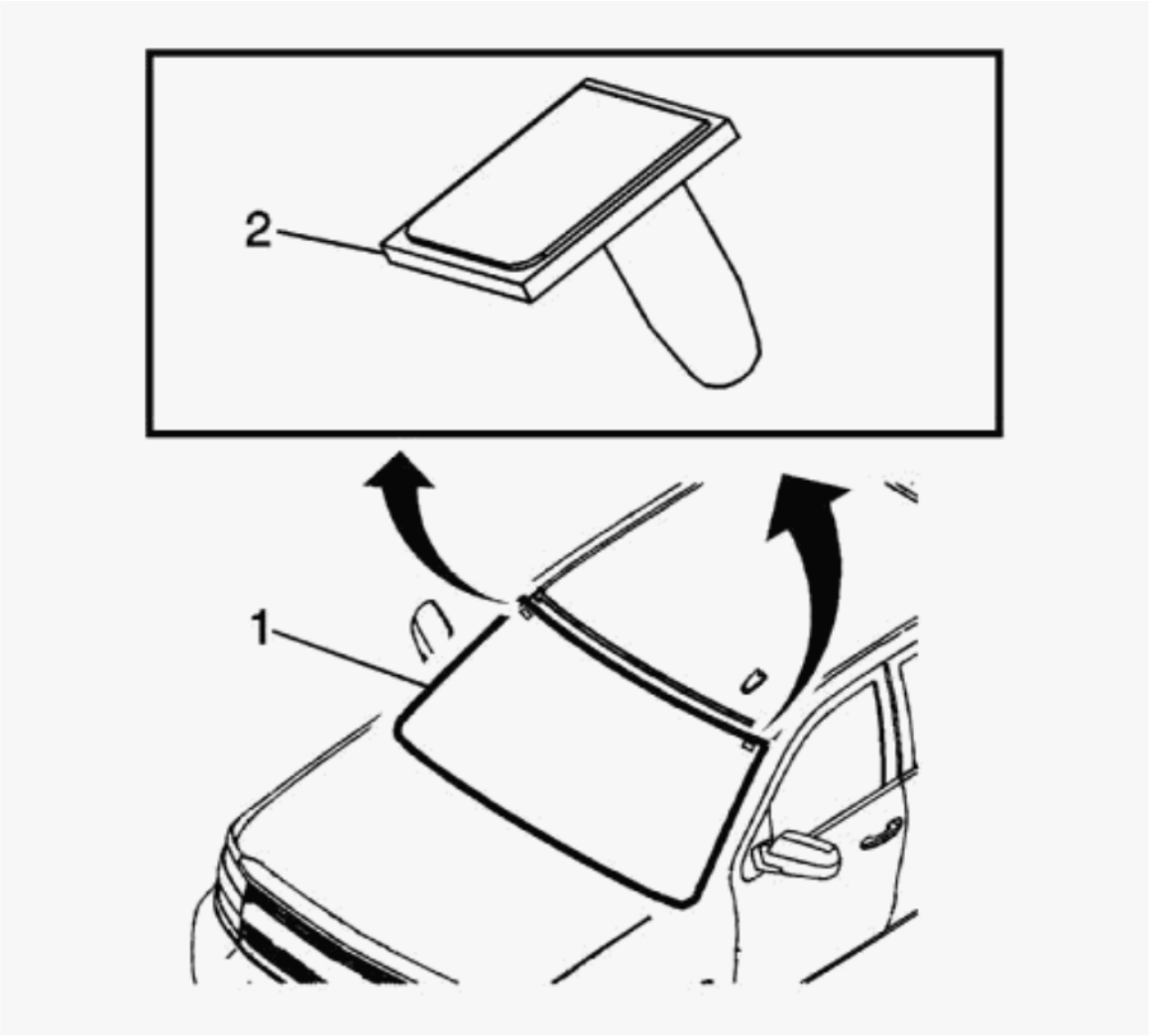


Fig. 13: Removing Window
Courtesy of GENERAL MOTORS COMPANY

9. With an assistant, place the window (1) and locator pins (2) into the locator slots in the pinchweld flange of the vehicle.

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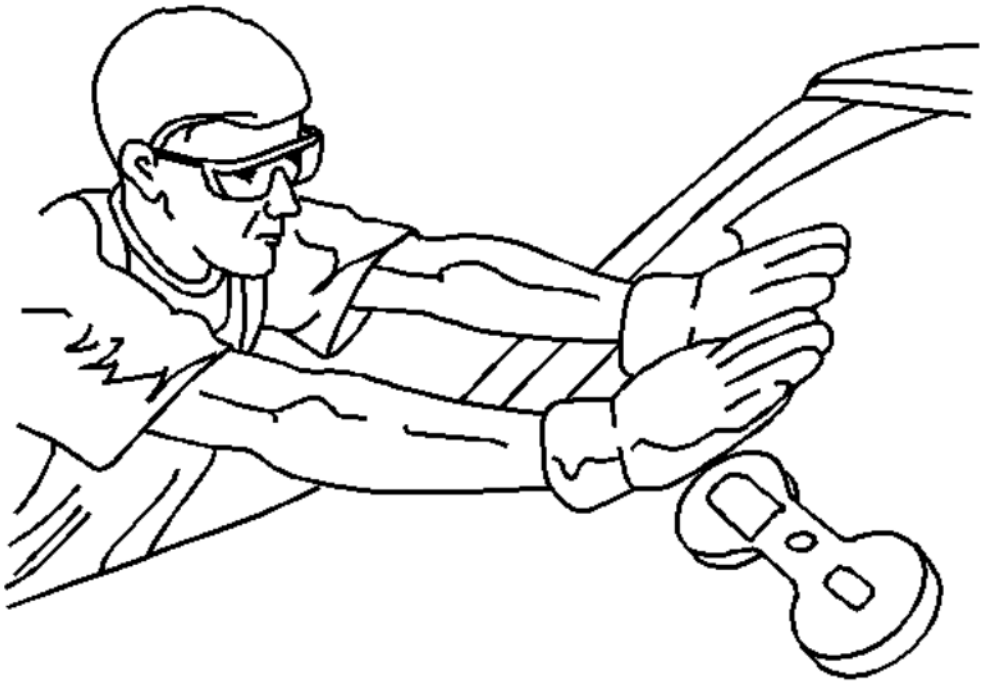


Fig. 14: Pressing Window Into Place
Courtesy of GENERAL MOTORS COMPANY

NOTE: **To prevent damage to the window due to objects impacting an exposed edge, upon installation, the window must rest 1 mm (0.040 in) below the surface of the roof sheet metal.**

10. Press firmly around the entire periphery of the window in order to wet-out the urethane adhesive bead.

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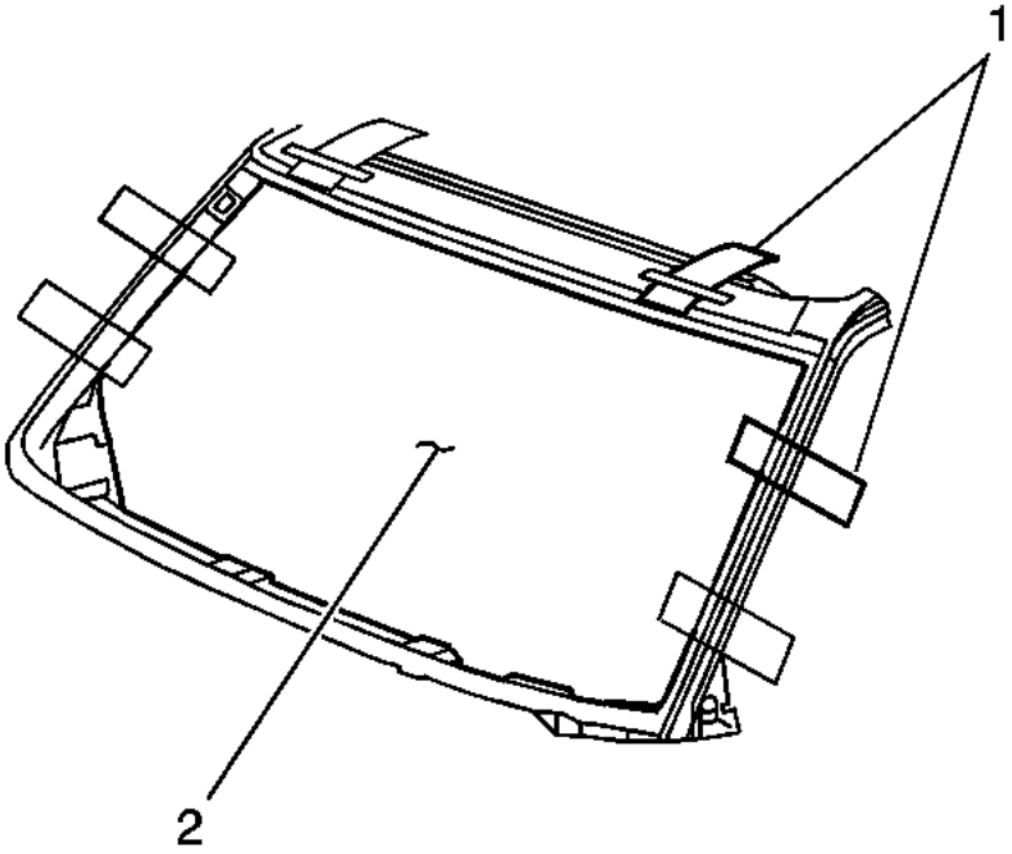


Fig. 15: Aligning Tape Lines On Window To Body
Courtesy of GENERAL MOTORS COMPANY

11. Use masking tape (1) to hold the window (2) in the position until the urethane adhesive completely cures.
12. Remove the double layer of masking tape around the perimeter of the painted surfaces and the interior trim.

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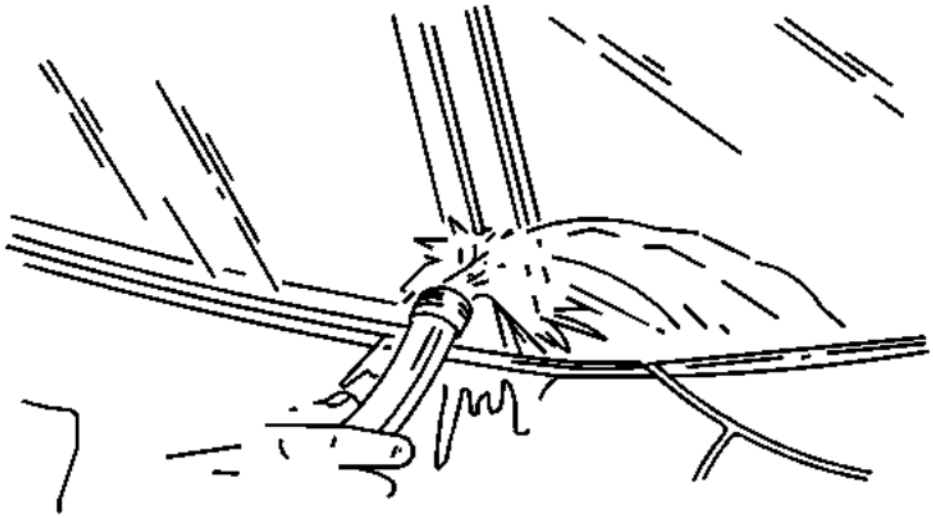


Fig. 16: Performing Water Hose Test
Courtesy of GENERAL MOTORS COMPANY

NOTE: **Do not direct a hard stream of high pressure water to the freshly applied urethane adhesive.**

13. Use a soft spray of warm water in order to immediately water test the window.
14. Inspect the window for leaks.
15. If any leaks are found, use a plastic paddle in order to apply extra urethane adhesive at the leak point.
16. Retest the window for leaks.

WARNING: **Insufficient curing of urethane adhesive may allow unrestrained occupants to be ejected from the vehicle resulting in personal injury.**

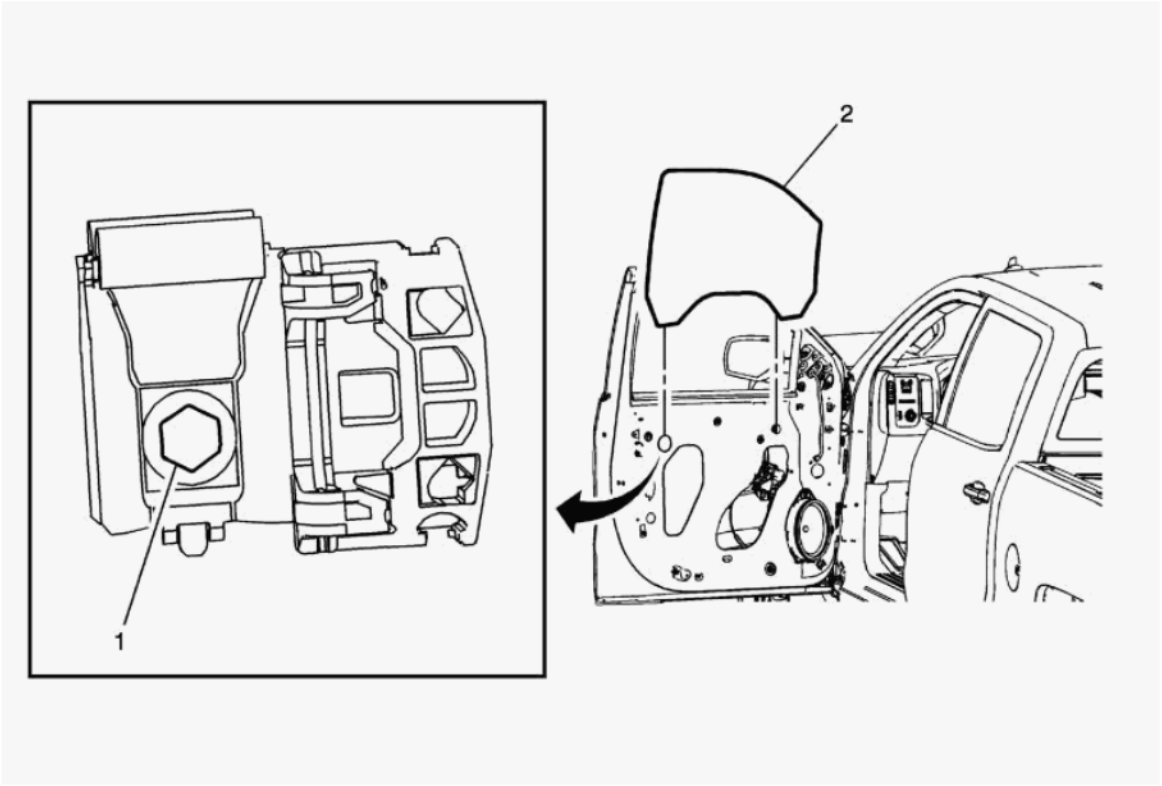
- **For the moisture-curing type of urethane adhesive, allow a minimum of 6 hours at 21Â°C (70Â°F) or greater and with at least 30 percent relative humidity. Allow at least 24 hours for the complete curing of the urethane adhesive.**
- **For the chemical-curing type of urethane adhesive, allow a minimum of 1 hour .**

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Do NOT physically disturb the repair area until after these minimum times have elapsed.

17. Maintain the following conditions in order to properly cure the urethane adhesive by manufacturers instructions:
    - Partially lower a door window in order to prevent pressure buildups when closing doors before the urethane adhesive cures.
    - Do not drive the vehicle until the urethane adhesive is cured. Refer to the instructions of the manufacturers curing times.
    - Do not use compressed air in order to dry the urethane adhesive.
18. Install the air inlet grille. Refer to **Air Inlet Grille Panel Replacement (LD)** **Air Inlet Grille Panel Replacement (Diesel)** **Air Inlet Grille Panel Replacement (HD)** .
19. Install the windshield wipers arms. Refer to **Windshield Wiper Arm Replacement (LD)** **Windshield Wiper Arm Replacement (Diesel)** **Windshield Wiper Arm Replacement (HD)** .
20. Install the front section of the headliner only. Refer to **Headlining Trim Panel Replacement (Crew Cab Without Sunroof)** **Headlining Trim Panel Replacement (Crew Cab With Sunroof)** **Headlining Trim Panel Replacement (Extended Cab)** **Headlining Trim Panel Replacement (Regular Cab)** .
21. Install the sunshade. Refer to **Sunshade Replacement (Crew Cab, Extended Cab)** **Sunshade Replacement (Regular Cab)** .
22. Install the rearview mirror. Refer to **Inside Rearview Mirror Replacement (With UE1)** **Inside Rearview Mirror Replacement (Without UE1)** .
23. Remove the double layer of masking tape around the perimeter of the painted surfaces and the interior trim.
24. Close the hood.
25. Install the radio antenna. Refer to **Radio Antenna Replacement** .

FRONT SIDE DOOR WINDOW REPLACEMENT (CREW CAB, EXTENDED CAB)



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Fig. 17: Front Side Door Window (Crew Cab, Extended Cab)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: **Refer to Glass and Sheet Metal Handling Warning .** **WARNING:** **Disconnect the power window switch when working inside the door. When operated, the Express Up/Down Feature allows the door window to move very quickly, without stopping, which could cause personal injury.** **Preliminary Procedures** 1. Remove the front side door inner sealing strip. Refer to **Front Side Door Window Inner Sealing Strip Replacement (Crew Cab, Extended Cab)**. 2. Remove the front side door pull handle bracket. Refer to **Front Side Door Pull Handle Bracket Replacement** . 3. Remove the front side door water deflector.	
1	Front Side Door Window Regulator Guide Bolts (Qty: 2) **CAUTION:** **Refer to Fastener Caution .** **Procedure**

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Callout	Component Name
	1. Use masking tape, tape off the outer door frame to prevent scratching. 2. Lower the window to align the guide bolts with the access holes in the inner door panel. 3. Loosen the bolts that attach the window to the window regulator guides. **Tighten** 11 N.m (97 lb in)
2	Front Side Door Window 1. Do not operate the regulator motor without supporting the window. Ensure that the window remains in the guide when operating the regulator motor. 2. Carefully grasp and tilt the window as you guide the window up and forward. **NOTE:** **Inspect the window for proper operation before installing the door trim.**

FRONT SIDE DOOR WINDOW REPLACEMENT (REGULAR CAB)

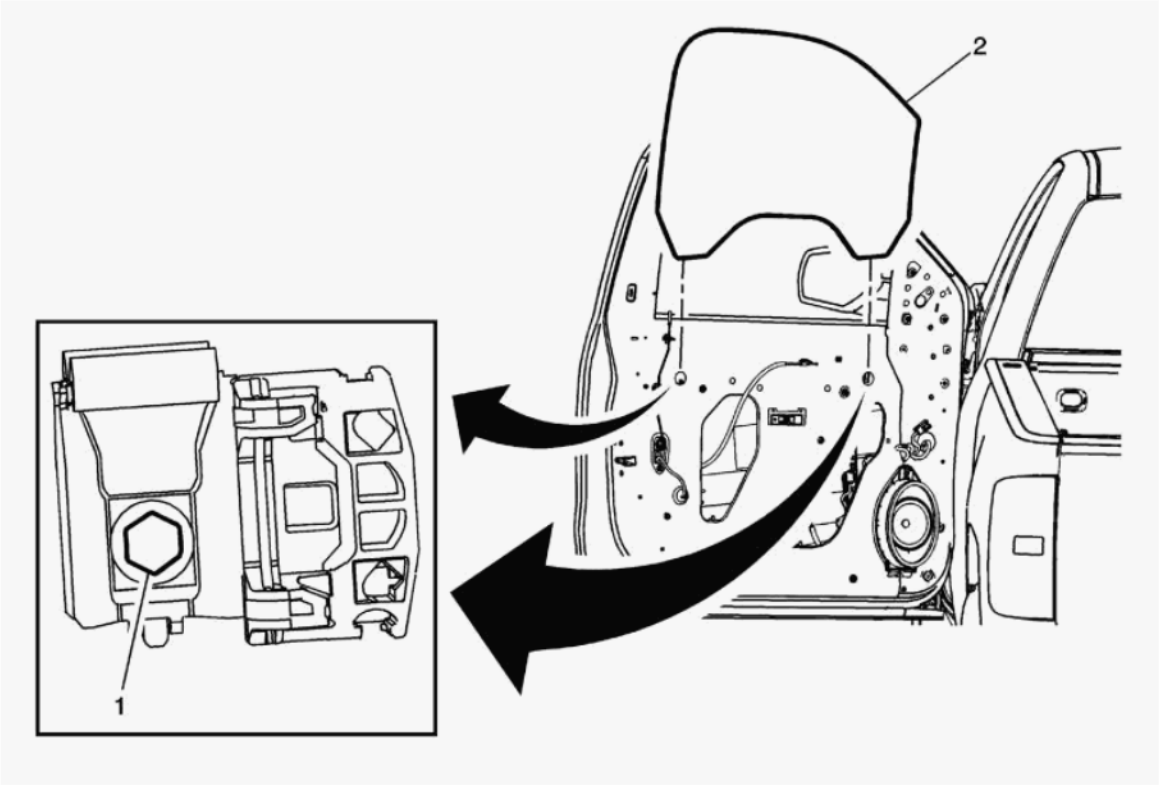


Fig. 18: Front Side Door Window (Regular Cab)
Courtesy of GENERAL MOTORS COMPANY

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Callout	Component Name
WARNING: **Refer to Glass and Sheet Metal Handling Warning .** **Preliminary Procedures** 1. Remove the front side door inner sealing strip. Refer to **Front Side Door Window Inner Sealing Strip Replacement (Regular Cab)**. 2. Remove the front side door pull handle bracket, if equipped. Refer to **Front Side Door Pull Handle Bracket Replacement** . 3. Remove the front side door water deflector.	
1	Front Side Door Window Regulator Guide Bolts (Qty: 2) **CAUTION:** **Refer to Fastener Caution .** **Procedure** 1. Use masking tape, tape off the outer door frame to prevent scratching. 2. Lower the window to align the guide bolts with the access holes in the inner door panel. 3. Loosen the bolts that attach the window to the window regulator guides. **Tighten** 11 N.m (97 lb in)
2	Front Side Door Window 1. Do not operate the regulator motor without supporting the window. Ensure that the window remains in the guide when operating the regulator motor. 2. Carefully grasp and tilt the window as you guide the window up and forward. **NOTE:** **Inspect the window for proper operation before installing the door trim.**

REAR SIDE DOOR WINDOW REPLACEMENT (CREW CAB)

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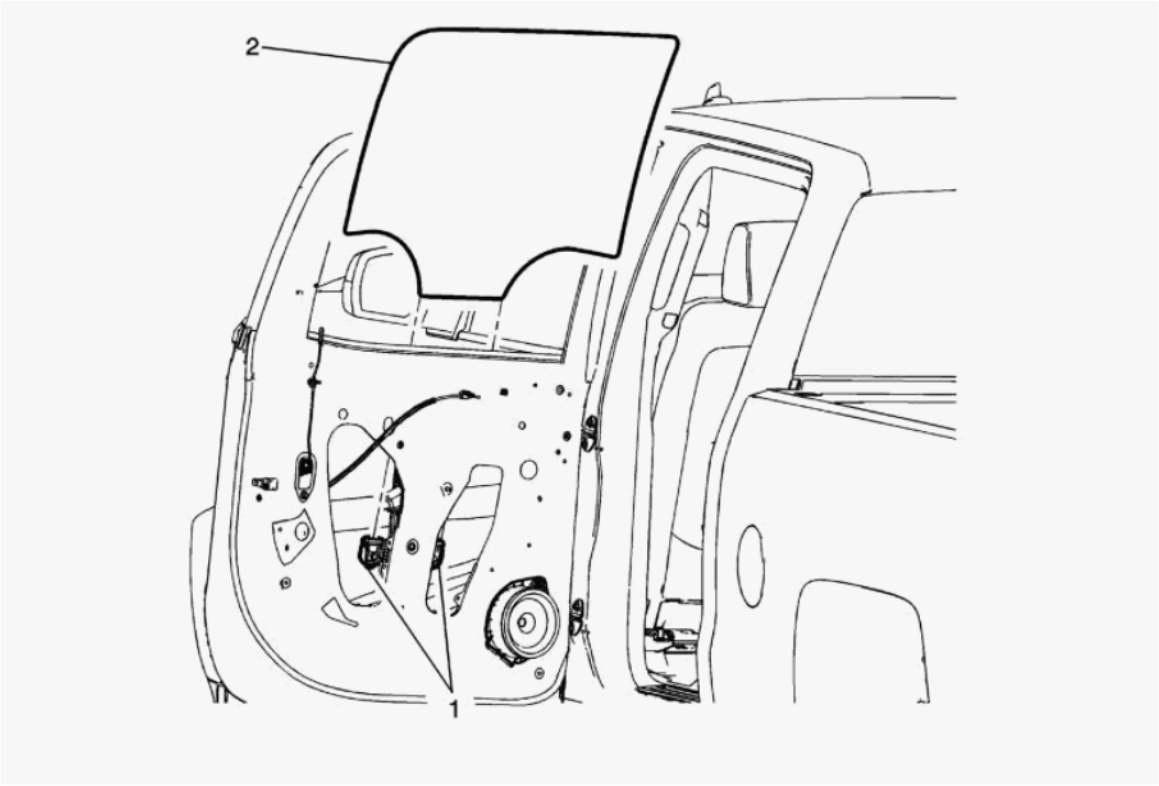


Fig. 19: Rear Side Door Window (Crew Cab)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to Glass and Sheet Metal Handling Warning . **WARNING:** Disconnect the power window switch when working inside the door. When operated, the Express Up/Down Feature allows the door window to move very quickly, without stopping,	

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Callout	Component Name
which could cause personal injury. **Preliminary Procedures** 1. Position the rear side door window as needed for service. 2. Remove the rear side door pull handle bracket. Refer to **Rear Side Door Pull Handle Bracket Replacement** . 3. Remove the rear side door water deflector. 4. Remove the rear side door window garnish molding. Refer to **Rear Side Door Window Garnish Molding Replacement (Crew Cab)** . 5. Remove the rear side door window channel retainer. Refer to **Rear Side Door Window Channel Retainer Replacement (Crew Cab)**.	
1	Rear Side Door Window Regulator Guide Bolt (Qty: 2) **CAUTION:** **Refer to Fastener Caution .** **Procedure** 1. Use masking tape, tape off the outer door frame and applique to prevent scratching. 2. Loosen bolts on the guide so that the window can be removed. 3. In order to remove the window out of the frame, carefully grasp and tilt the window as you guide the window up and forward. **Tighten** 11 N.m (97 lb in)
2	Rear Side Door Window **Procedure** 1. Align the window guide with the access holes in the inner door panel. 2. Install the window to the guide. 3. Do not operate the regulator motor without supporting the window. Ensure that the window remains in the guide when operating the regulator motor. 4. Carefully move the regulator upward for short slow intervals, while ensuring that the window remains in the guide. Tighten the bolts to the window guide. **NOTE:** **Inspect the door window for proper operation**

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Callout	Component Name
	before installing the door trim.

REAR SIDE DOOR WINDOW REPLACEMENT (EXTENDED CAB)

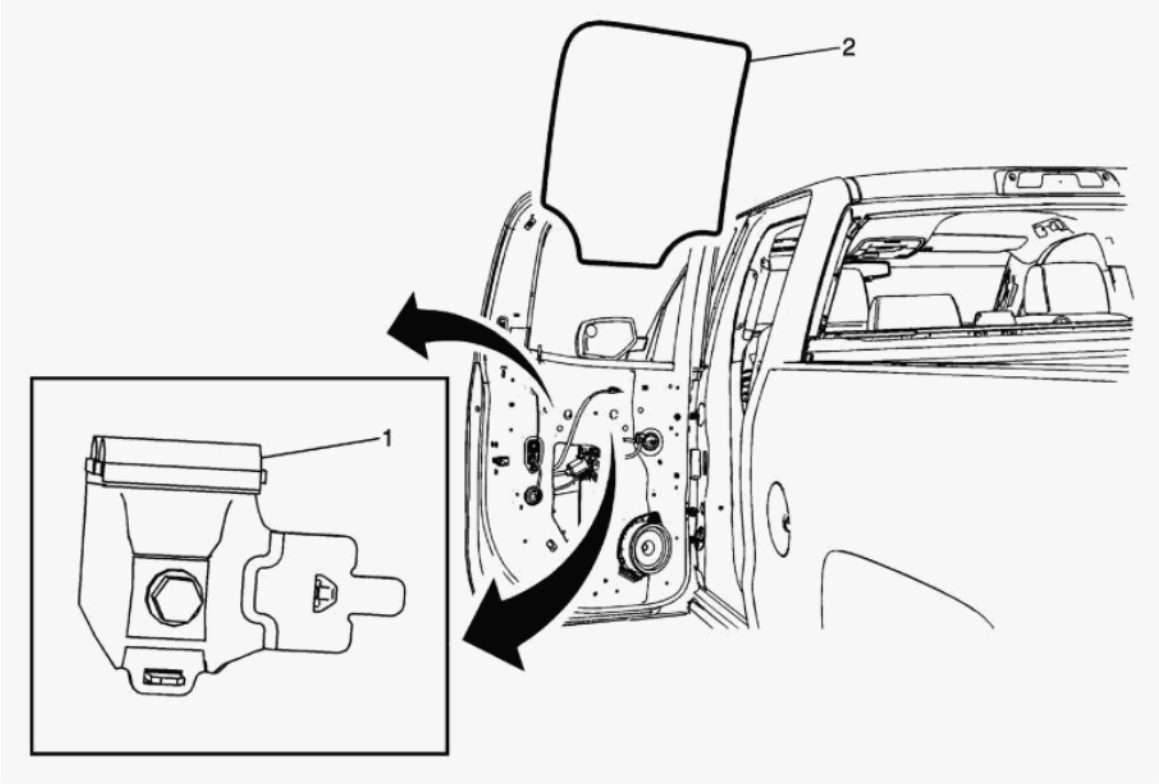


Fig. 20: Rear Side Door Window (Extended Cab)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to Glass and Sheet Metal Handling Warning . **WARNING:** Disconnect the power window switch when working inside the door. When operated, the Express Up/Down	

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Callout	Component Name
Feature allows the door window to move very quickly, without stopping, which could cause personal injury. **Preliminary Procedures** 1. Position the rear side door window as needed for service. 2. Remove the rear side door pull handle bracket. Refer to **Rear Side Door Pull Handle Bracket Replacement** . 3. Remove the rear side door water deflector. 4. Remove the rear side door window garnish molding. Refer to **Rear Side Door Window Garnish Molding Replacement (Extended Cab)** . 5. Remove the rear door window channel retainer. Refer to **Rear Side Door Window Channel Retainer Replacement (Extended Cab)** .	
1	Rear Side Door Window Regulator Guide Bolt (Qty: 2) **CAUTION:** **Refer to Fastener Caution .** **Procedure** 1. Use masking tape, tape off the outer door frame and applique to prevent scratching. 2. Loosen bolts on the guide so that the window can be removed. 3. In order to remove the window out of the frame, carefully grasp and tilt the window as you guide the window up and forward. **Tighten** 11 N.m (97 lb in)
2	Rear Side Door Window **Procedure** 1. Align the window guide with the access holes in the inner door panel. 2. Install the window to the guide. 3. Do not operate the regulator motor without supporting the window. Ensure that the window remains in the guide when operating the regulator motor. 4. Carefully move the regulator upward for short slow intervals, while ensuring that the

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Callout	Component Name
	window remains in the guide. Tighten the bolts to the window guide. **NOTE:** **Inspect the rear side door window for proper operation before installing the door trim.**

REAR WINDOW REPLACEMENT

Special Tools

- **BO-39032** Stationary Glass Removal Tool or equivalent
- Use a urethane adhesive systems which meet GM Specification GMW 15672.

For equivalent regional tools, refer to **Special Tools**.

Removal Procedure

WARNING: **When working with any type of glass or sheet metal with exposed or rough edges, wear approved safety glasses and gloves in order to reduce the chance of personal injury.**

WARNING: **Refer to Cracked Window Warning .**

NOTE: **Before cutting out a stationary window, apply a double layer of masking tape around the perimeter of the painted surfaces and the interior trim.**

1. Remove the rear window lower garnish molding. Refer to **Rear Window Lower Garnish Molding Replacement (Crew Cab, Extended Cab)** **Rear Window Lower Garnish Molding Replacement (Regular Cab)** .
2. Disconnect the electrical connectors from the rear window defogger bus bar.
3. Cover the following parts to protect from broken glass, seats and carpeting.

NOTE: **Keep the cutting edge of the appropriate tool against the window. There are window locating pins, one in each upper corner of the window. Use care Not to remove or cut them off when removing the window. If the window locator pins are cut, it will be necessary to tape the window in place.**

4. This will allow the auto-adhesive to be separated from the window.
   - Leave a base of urethane adhesive on the pinchweld flange.
   - The only suitable lubrication is clean water, no oils, lubes or soaps.
   - **BO-39032** Stationary Glass Removal Tool , or equivalent in order to remove the window.

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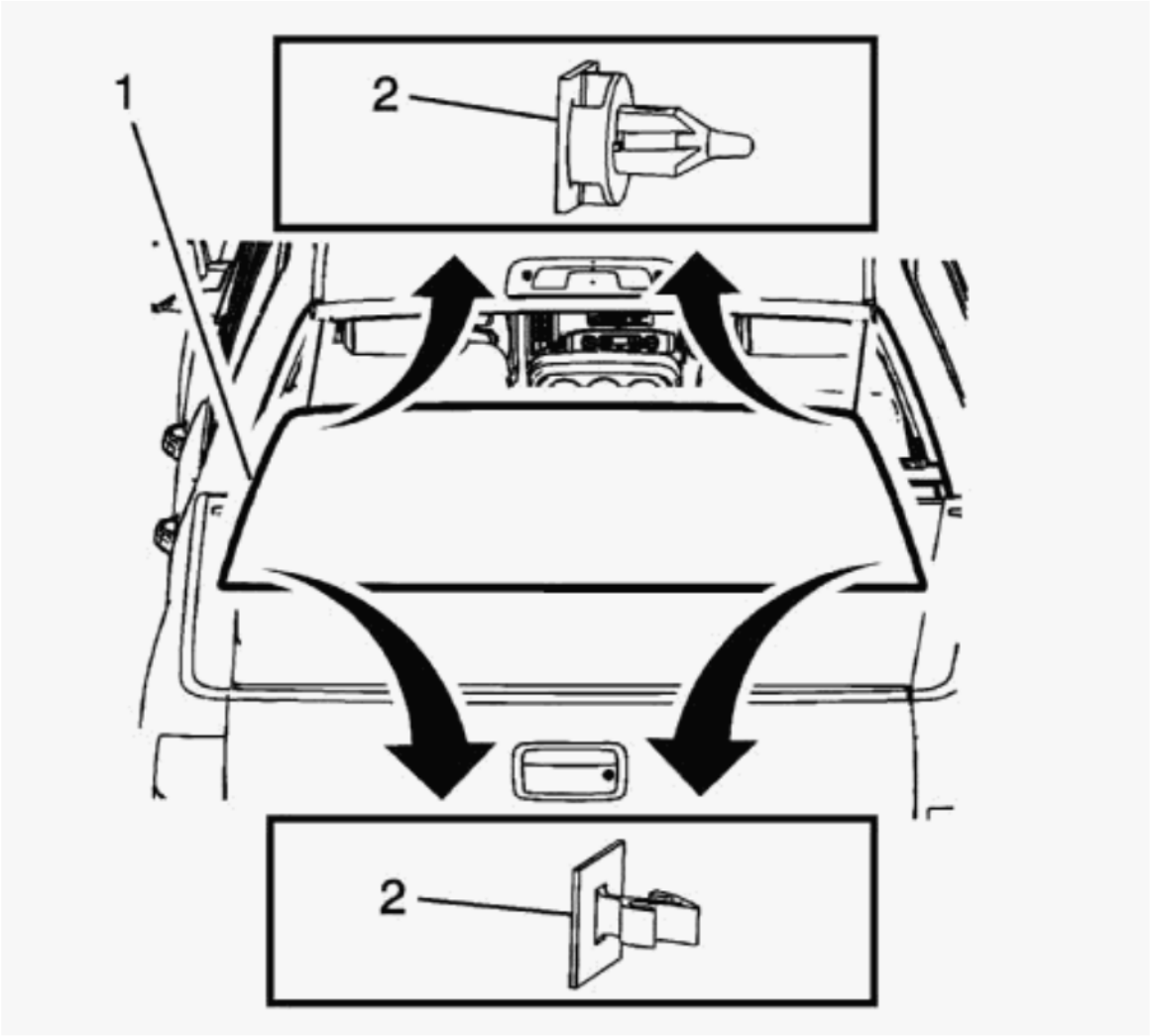


Fig. 21: Removing Window
Courtesy of GENERAL MOTORS COMPANY

5. Remove the window (1) from the vehicle with an assistant and Do the following:
    1. After removing the window spacers, mark the location of each one, If equipped.
    2. Check that the locator pins (2) are still attached to each upper corner of the window (1) for installing, if reusing.
    3. Remove all mounds or loose pieces of urethane adhesive from the pinchweld area.
    4. If the original window (1) is being reused, remove all but approximately 2 mm (0.078 in) of the existing bead of urethane adhesive from the pinchweld flange surface, using a clean utility knife or razor blade scraper.
6. Inspect for any of the following conditions in order to help prevent future breakage of the window:
    - High weld
    - Solder spots
    - Hardened sealer
    - Any other obstruction or irregularity in the pinchweld flange

NOTE: **If corrosion of the pinchweld flange is present or if sheet metal repairs or replacements are required, the pinchweld flange must be refinished in order to restore the bonding area strength. If paint repairs are required, mask the flange bonding area prior to applying the color coat in order to provide a**

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clean primer only surface. Materials such as BASF DE15Â®, DuPont 2610Â®, Sherwin-Williams PSE 4600 and NP70Â® and Martin-Semour 5120 and 5130Â® PPG DP90LF SPIES/HECKER 3688/8590 - 3688/5150 - 4070/5090 STANDOX 11158/13320 - 14653/14980 products are approved for this application.

7. After repairing the opening as indicated, perform the following steps:
    1. Remove all traces of broken glass from the outer cowl panel, seats, floor and defroster ducts.
    2. Clean around the edge of the inside surface of the window with a 50/50 mixture of isopropyl alcohol and water by volume on a dampened lint free cloth.

Installation Procedure

WARNING: Failure to prep the area prior to the application of primer may cause insufficient bonding of urethane adhesive. Insufficient bonding of urethane adhesive may allow unrestrained occupants to be ejected from the vehicle resulting in personal injury.

1. Verify that all primers and urethane adhesive being used are within expiration dates.
2. If reusing or replacing the window, use the appropriate tool, remove the urethane adhesive bead on the window surface and pinchweld flange to approximately 2 mm (0.078 in).

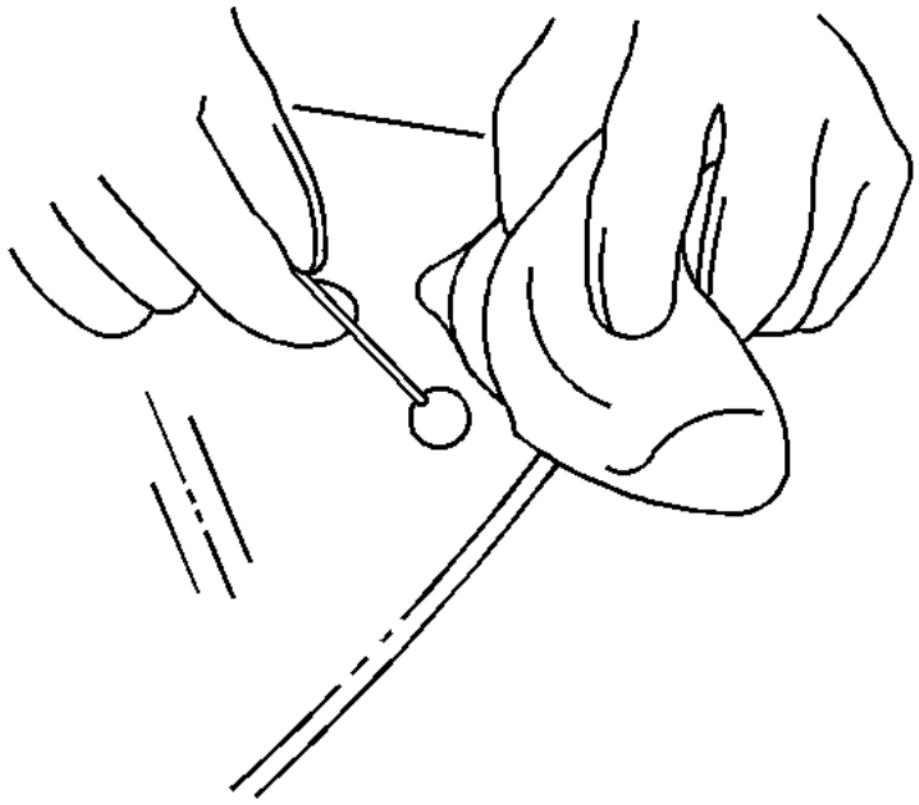


Fig. 22: Applying Glass Prep

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Courtesy of GENERAL MOTORS COMPANY

NOTE: **Use Prep #1 Clear**

3. Apply the Prep #1 clear primer to the bonding surface of the windows inside edge and the bonding surface of the pinchweld flange opening, refer to the instructions of the manufacturer's.

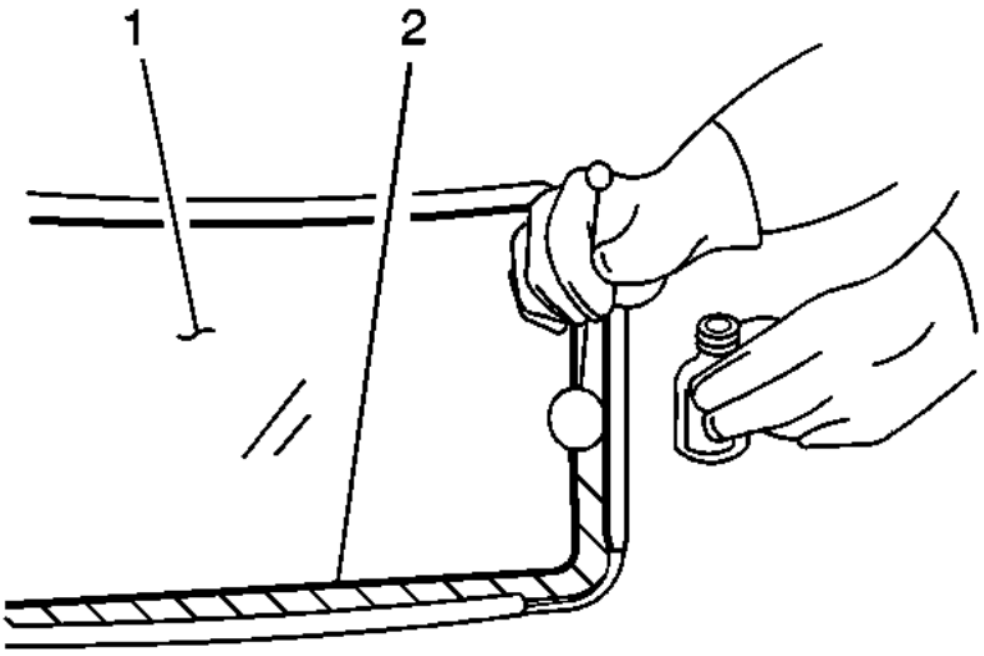


Fig. 23: Applying Glass Primer
Courtesy of GENERAL MOTORS COMPANY

NOTE: **Do not apply the black primer to the existing bead of the urethane adhesive on the pinch-weld flange. Apply the primer only to nicks, scratches or the primed surfaces.**

NOTE: **Following the urethane adhesive installation instructions, using P/N 9981062 (VM/P Naphtha) or equivalent to remove any excess of urethane adhesive within 3 minutes, otherwise it may not be possible to remove the urethane adhesive excess unless using mechanical means.**

NOTE: **The Prep #2 Black Primer is for, Blackout primer, UV Blackout.**

4. Apply the Prep #2 urethane adhesive primer (2) around the perimeter of the window (1), refer to the instructions of the manufacturer's.

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5. Install the spacers for the window to the marked locations on the pinchweld flange. If equipped

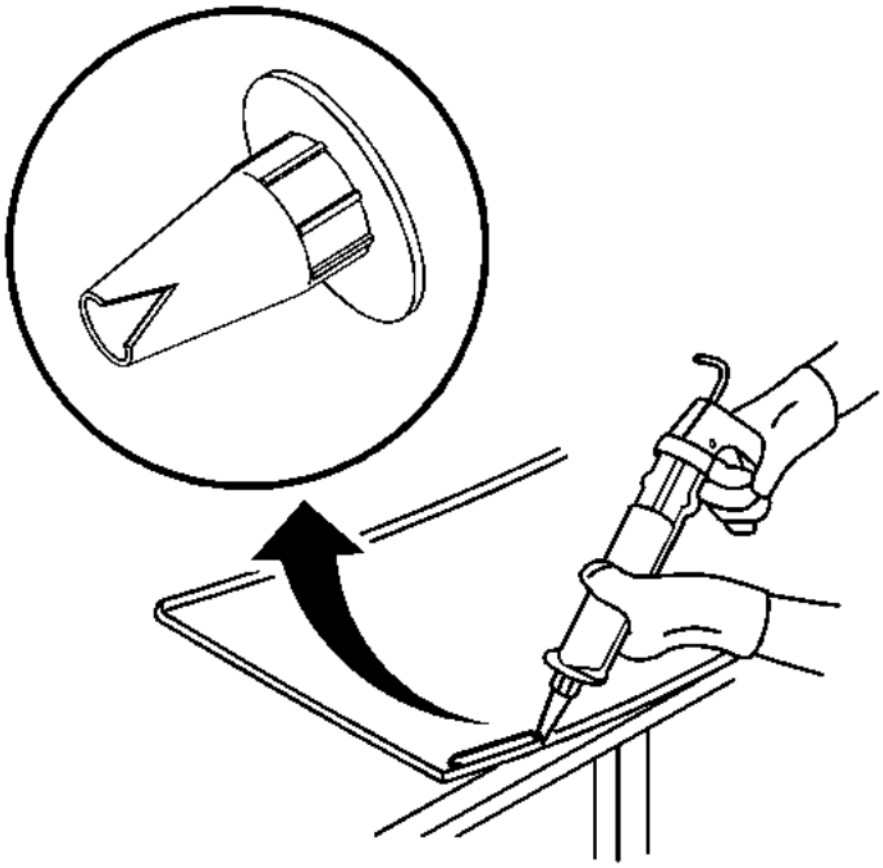


Fig. 24: View Of Modified Applicator Nozzle
Courtesy of GENERAL MOTORS COMPANY

6. Cut the applicator nozzle in order to provide a bead of 12.7 mm (1/2 in) wide and 12.7 mm (1/2 in) high.

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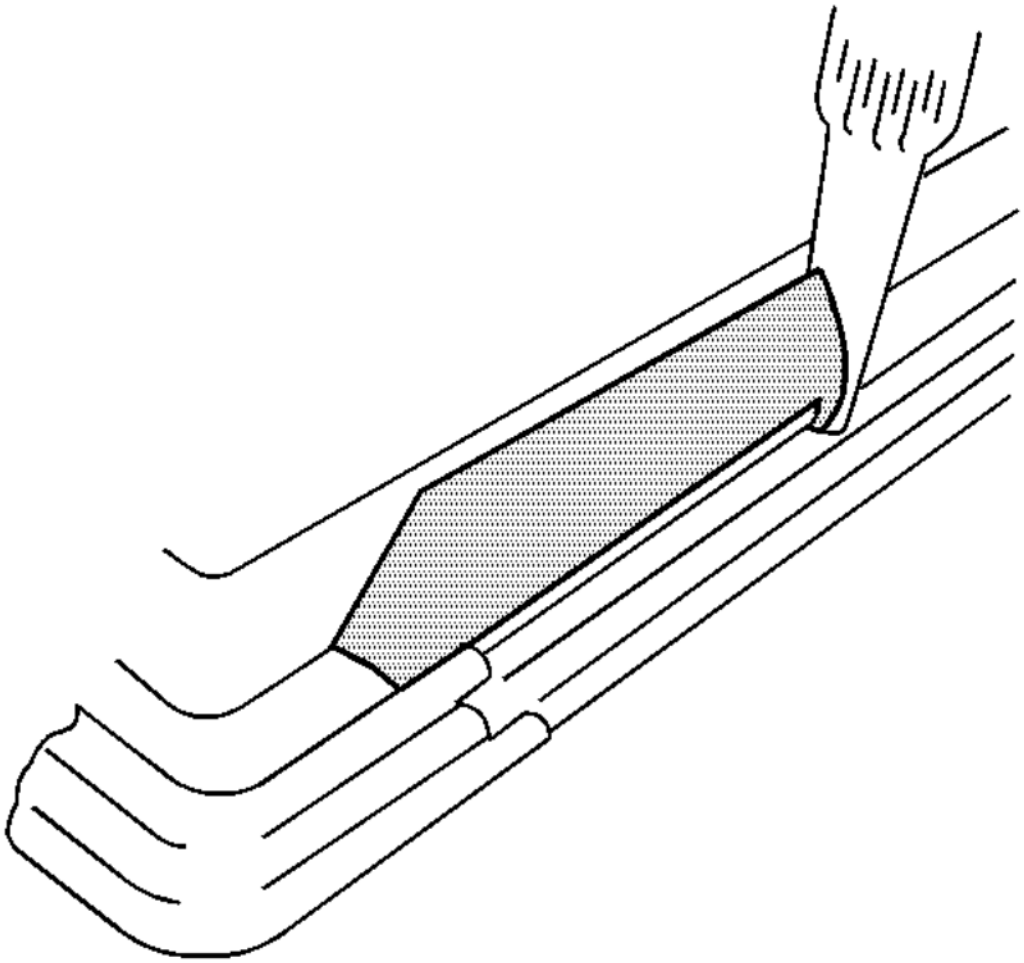


Fig. 25: Applying Continuous Bead Of Urethane Adhesive
Courtesy of GENERAL MOTORS COMPANY

7. Use the appropriate tool in order to apply a smooth, continuous bead of urethane adhesive to the window or the pinchweld flange.

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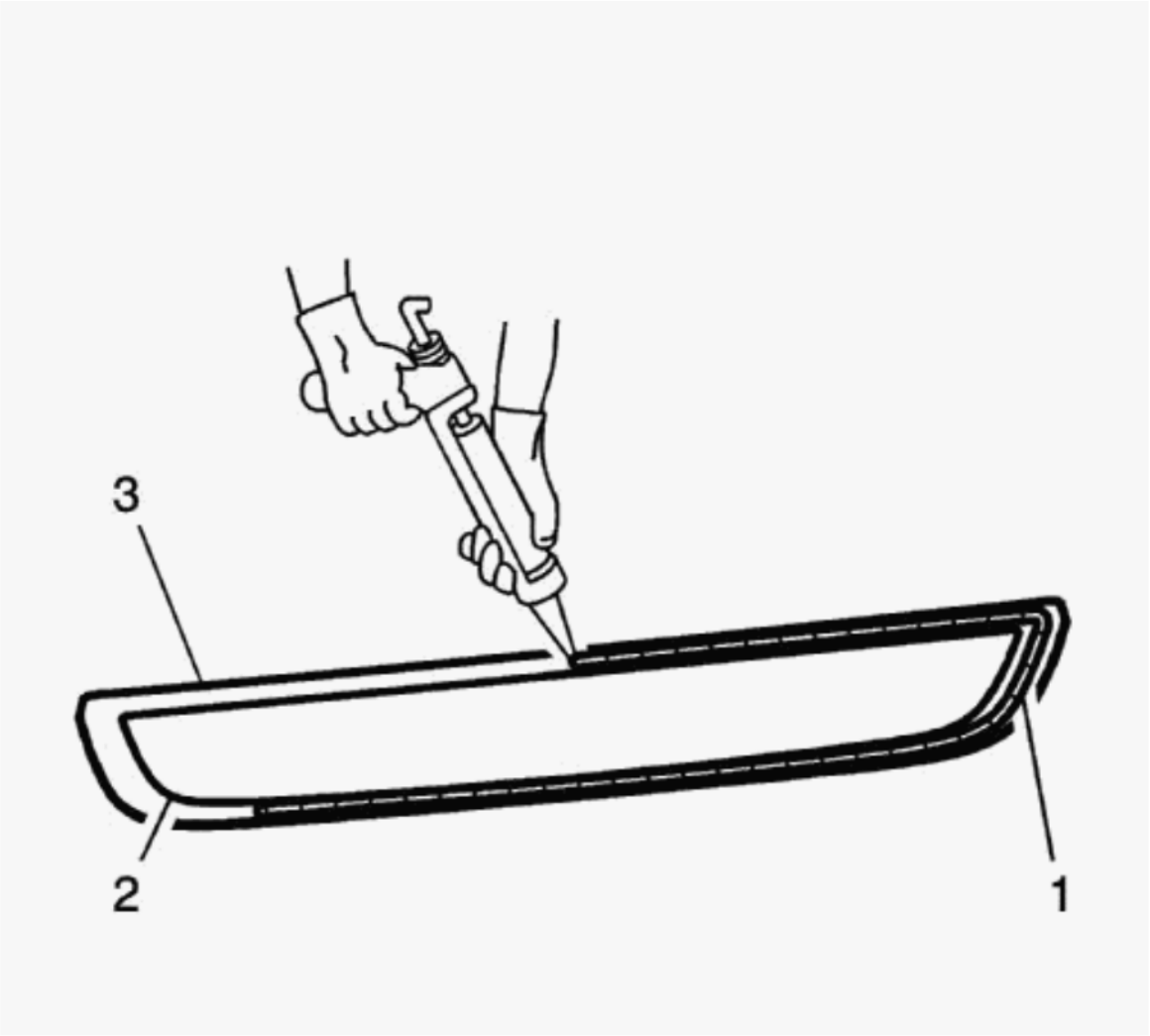


Fig. 26: Applying Continuous Bead Of Urethane Adhesive To Inner Surface Of Window
Courtesy of GENERAL MOTORS COMPANY

8. Use the edge of the window as a guide for the nozzle in order to apply a continuous bead of urethane adhesive (1) to the inner surface (2) of the window (3).

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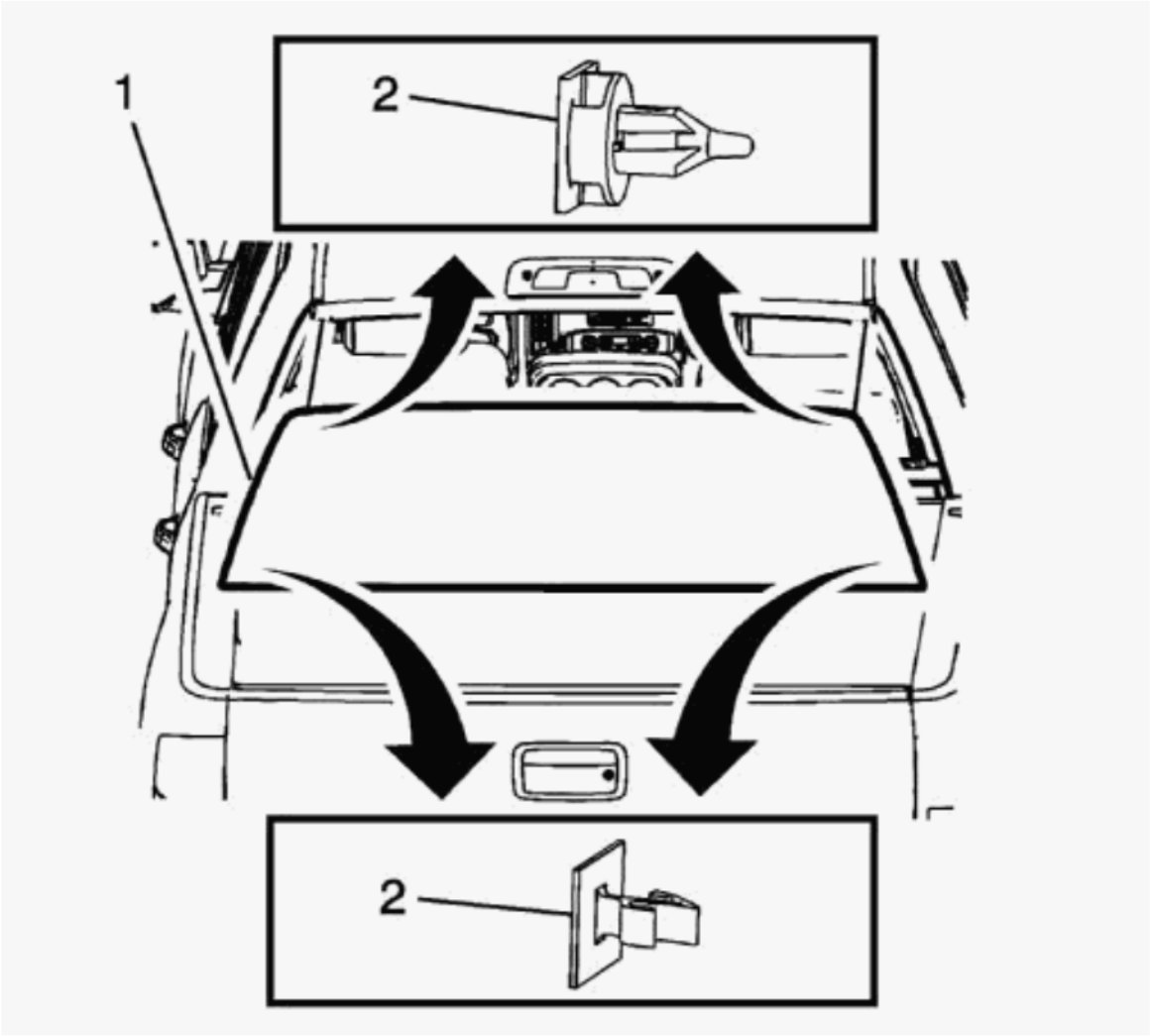


Fig. 27: Removing Window
Courtesy of GENERAL MOTORS COMPANY

9. With an assistant, place the window (1) and locator pins (2) into the locator slots in the pinchweld flange of the vehicle.

NOTE: **To prevent damage to the window due to objects impacting an exposed edge, upon installation, the window must rest 1 mm (0.040 in) below the surface of the roof sheet metal.**

10. Press firmly around the entire periphery of the window in order to wet-out the urethane adhesive bead.
11. Use masking tape, secure the rear window in position until the urethane adhesive completely cures.
12. Remove the double layer of masking tape around the perimeter of the painted surfaces and the interior trim.

NOTE: **Do not direct a hard stream of high pressure water to the freshly applied urethane adhesive.**

13. Use a soft spray of warm water in order to immediately water test the window.
14. Inspect the window for leaks.
15. If any leaks are found, use a plastic paddle in order to apply extra urethane adhesive at the leak point.
16. Retest the window for leaks.

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WARNING: **Insufficient curing of urethane adhesive may allow unrestrained occupants to be ejected from the vehicle resulting in personal injury.**

- **For the moisture-curing type of urethane adhesive, allow a minimum of 6 hours at 21Â°C (70Â°F) or greater and with at least 30 percent relative humidity. Allow at least 24 hours for the complete curing of the urethane adhesive.**
- **For the chemical-curing type of urethane adhesive, allow a minimum of 1 hour .**

Do NOT physically disturb the repair area until after these minimum times have elapsed.

17. Maintain the following conditions in order to properly cure the urethane adhesive by manufacturers instructions:
    - Partially lower a door window in order to prevent pressure buildups when closing doors before the urethane adhesive cures.
    - Do not drive the vehicle until the urethane adhesive is cured. Refer to the instructions of the manufacturers curing times.
    - Do not use compressed air in order to dry the urethane adhesive.
18. Connect the rear window defogger electrical connectors to the bus bar.
19. Install the rear window lower garnish molding. Refer to **Rear Window Lower Garnish Molding Replacement (Crew Cab, Extended Cab)** **Rear Window Lower Garnish Molding Replacement (Regular Cab)** .

REAR SLIDING WINDOW REPLACEMENT (CENTER GLASS)

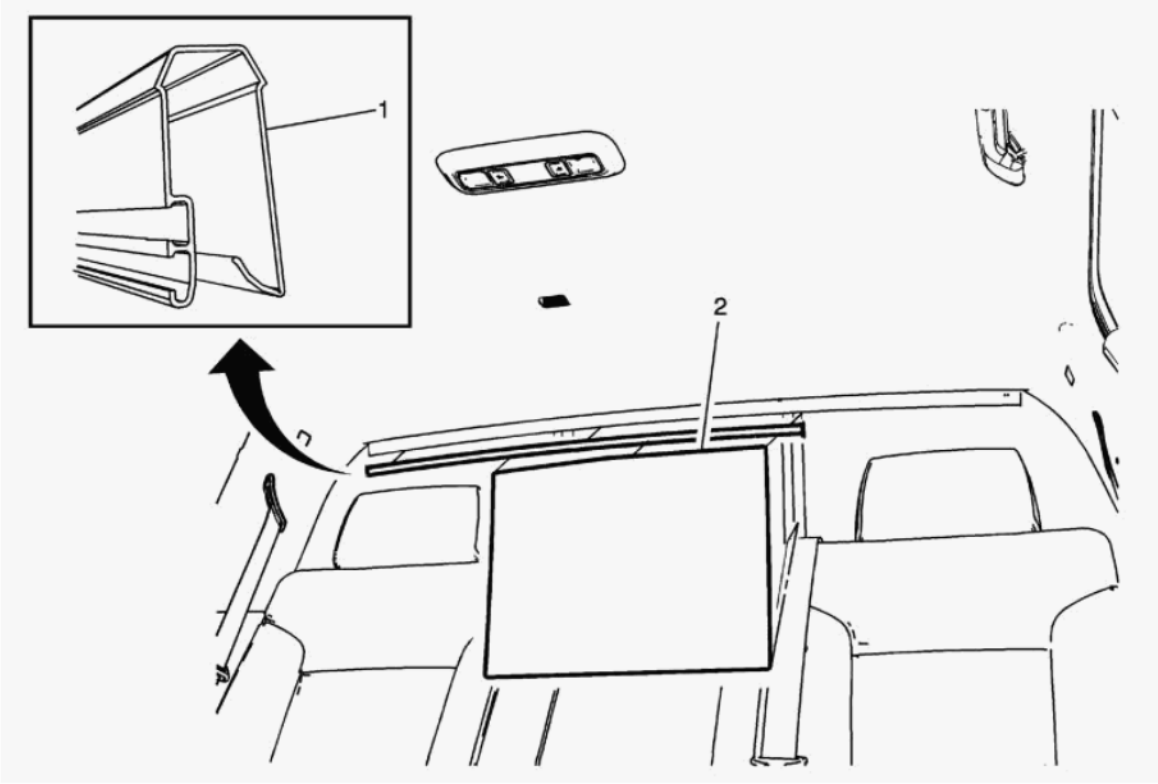


Fig. 28: Rear Sliding Window (Center Glass)
Courtesy of GENERAL MOTORS COMPANY

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Callout	Component Name
1	Rear Sliding Window Center Stop **Procedure** 1. Open the rear sliding window approximately 3.5 in (89 mm). 2. From the passenger side, pull down and slide the rear sliding window center stop from between the frame and sliding window. **NOTE:** • **Ensure the center stop is installed the same way as removed.** • **The 2 grooved side should face forward towards the front of the vehicle.**
2	Rear Sliding Window-Center Glass **Procedure** Remove the window from the upper frame by pushing upward on the window, pulling outward and down on the bottom of the window. **NOTE:** **Ensure proper operation of the rear sliding window.**

REAR SLIDING WINDOW REGULATOR REPLACEMENT (CREW CAB)

Removal Procedure

NOTE: **Remove rear seats as one piece. DO NOT separate seats.**

1. Remove rear seat and reposition seat forward to gain access to rear sliding window regulator and cables. Refer to **Rear Seat Removal and Installation (Heavy Duty Crew Cab with A68)** **Rear Seat Removal and Installation (Light Duty Crew Cab with A68)** .

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NOTE:

- **The new rear sliding window regulator and cables are serviced as an assembly.**
- **Opening the window will help relieve tension from the regulator cables.**

2. Open the rear sliding window approximately 3.5 in (89 mm).
3. Remove rear sliding window center stop. Refer to **Rear Sliding Window Replacement (Center Glass)**.
4. Remove the rear window lower garnish molding. Refer to **Rear Window Lower Garnish Molding Replacement (Crew Cab, Extended Cab)** .

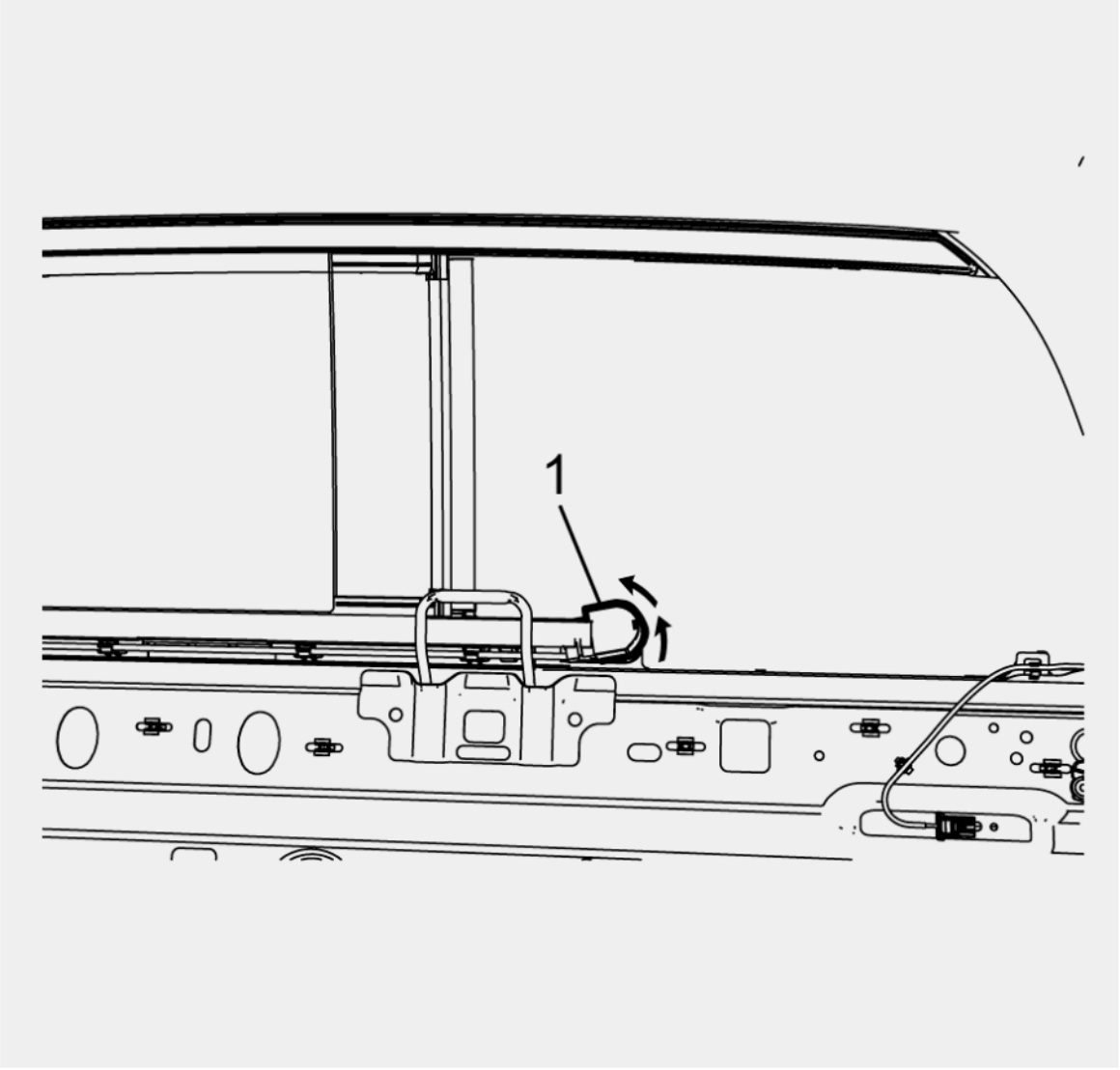


Fig. 29: Drivers Side Rear Sliding Window Block
Courtesy of GENERAL MOTORS COMPANY

5. Remove drivers side rear sliding window block (1) by turning upwards and lifting off of window guide.

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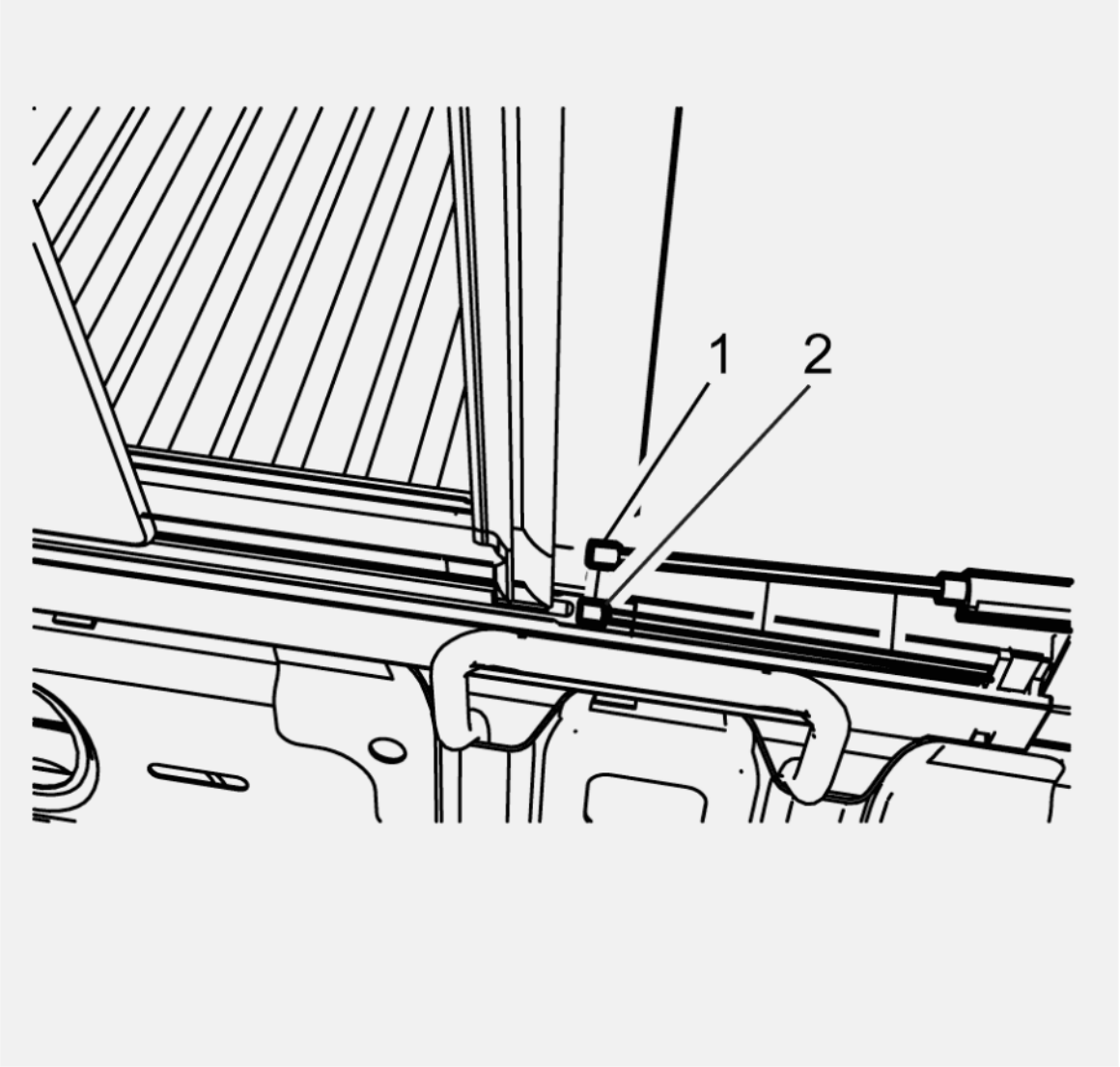


Fig. 30: Drivers Side Rear Sliding Window Cable End
Courtesy of GENERAL MOTORS COMPANY

6. Remove drivers side rear sliding window cable end (1) from window guide (2).

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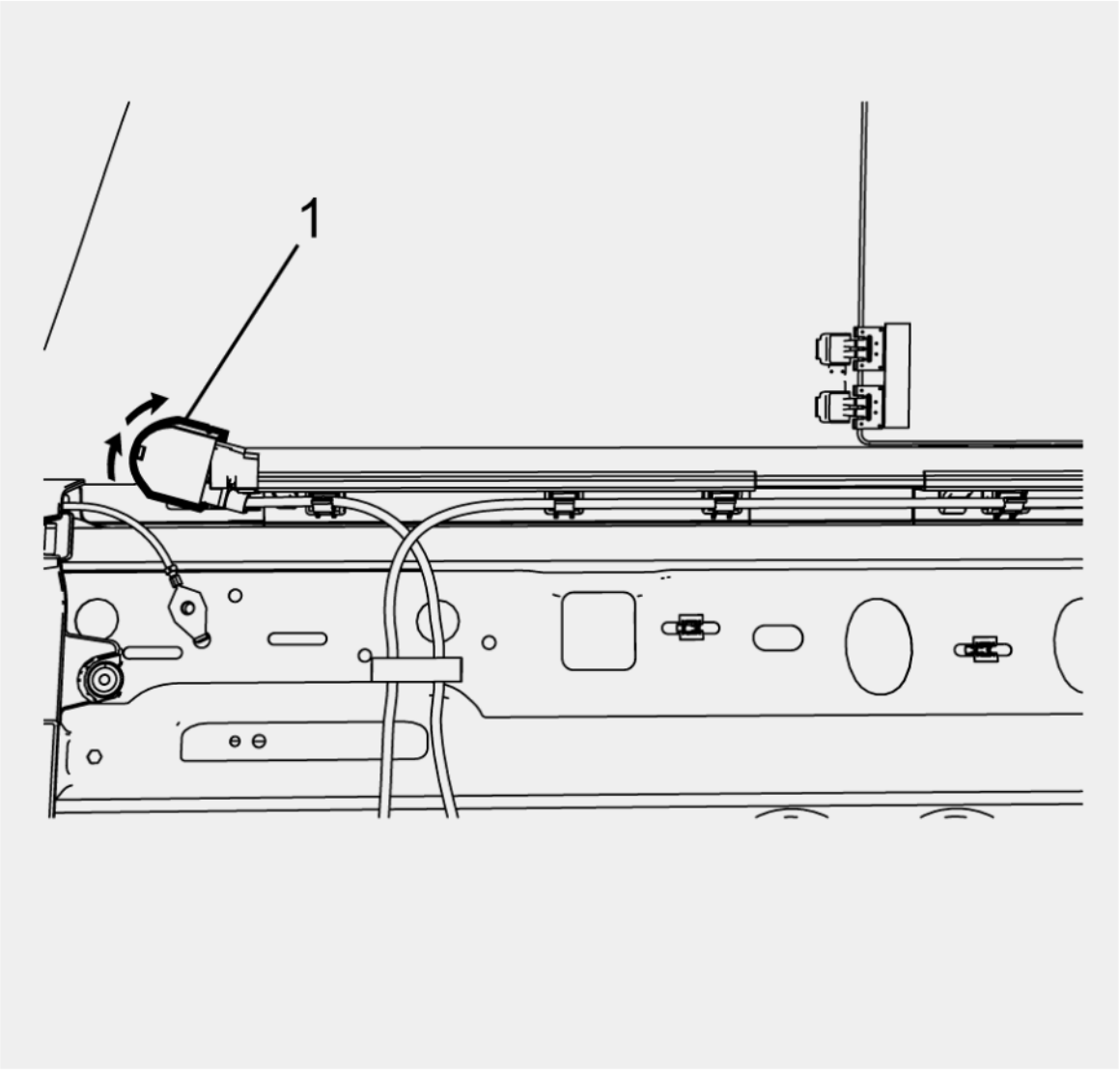


Fig. 31: Passenger Side Rear Sliding Window Block
Courtesy of GENERAL MOTORS COMPANY

7. Remove passenger side rear sliding window block (1) by turning upwards and lifting off of window guide.

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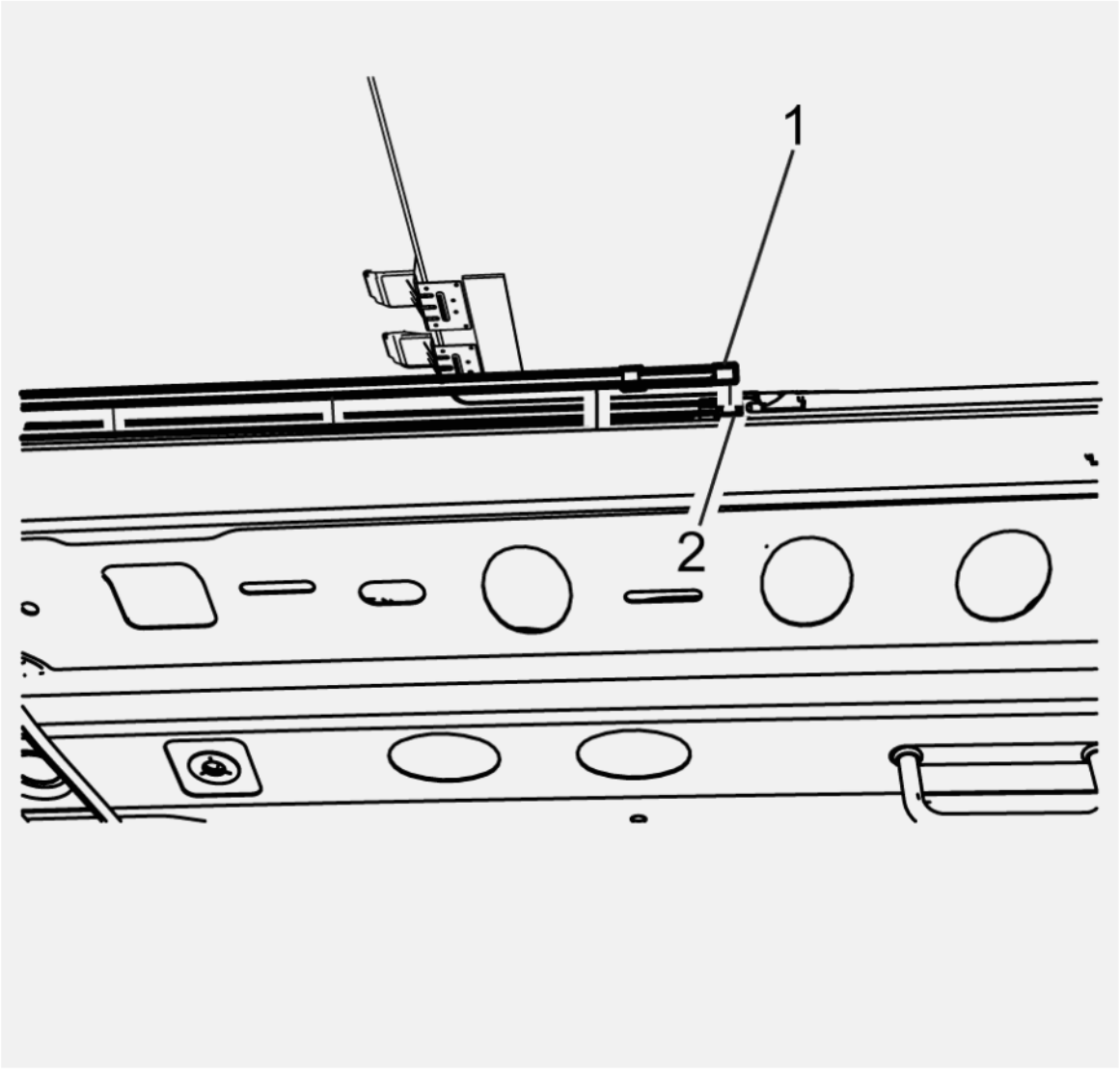


Fig. 32: Passenger Side Rear Sliding Window Cable End
Courtesy of GENERAL MOTORS COMPANY

8. Tilt passenger lower side of rear sliding window upwards and remove passenger side rear sliding window cable end (1) from window guide (2).

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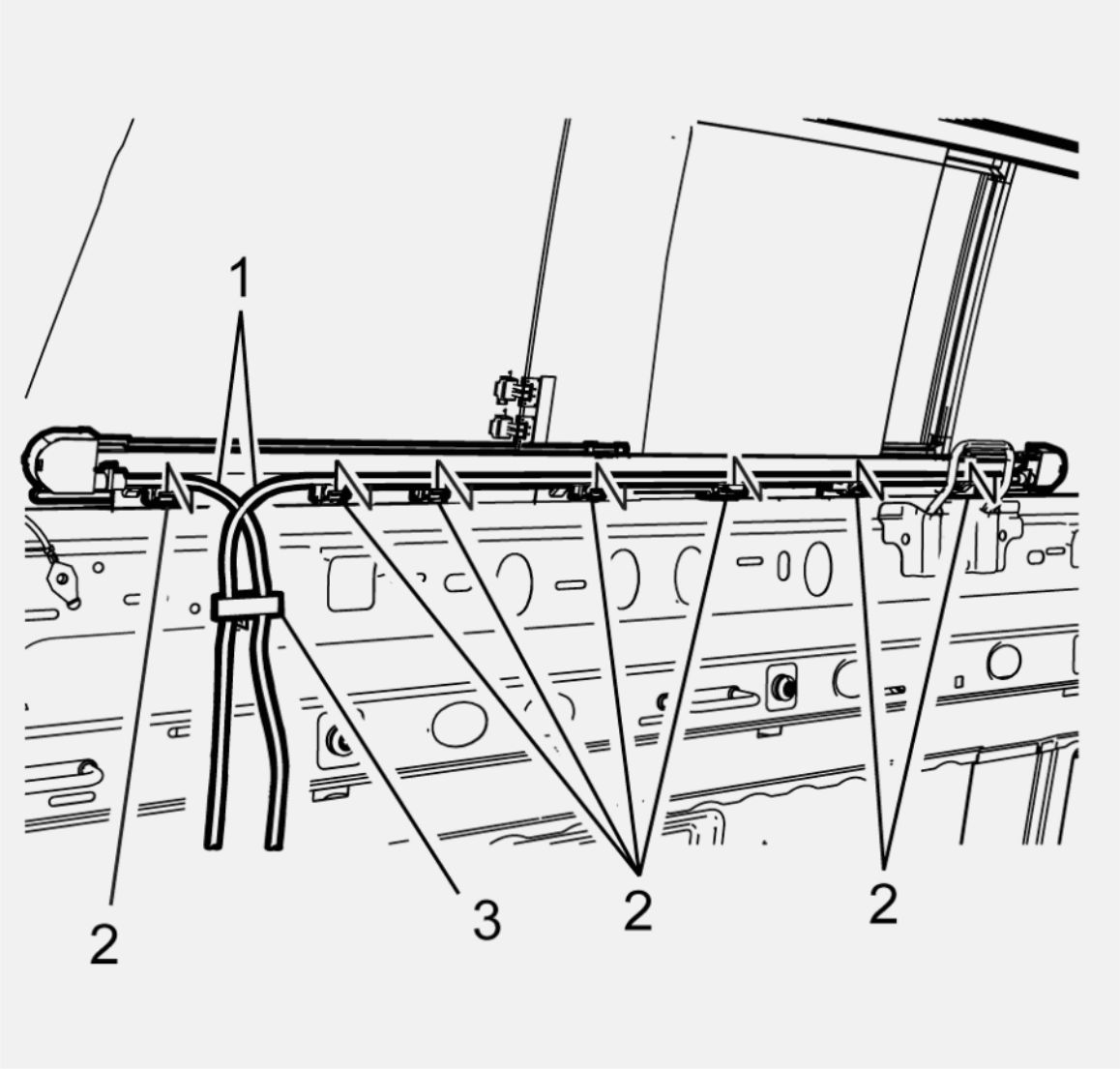


Fig. 33: Rear Sliding Window Regulator Cables
Courtesy of GENERAL MOTORS COMPANY

NOTE: **Be careful not to stress or break clips while removing rear sliding window regulator cables.**

9. Carefully unclip rear sliding window regulator cables (1) from 7 window module snaps (2).
10. Remove rear sliding window regulator clip (3) from vehicle.
11. Rotate clip 180 degrees and open cover door on insulator pad.

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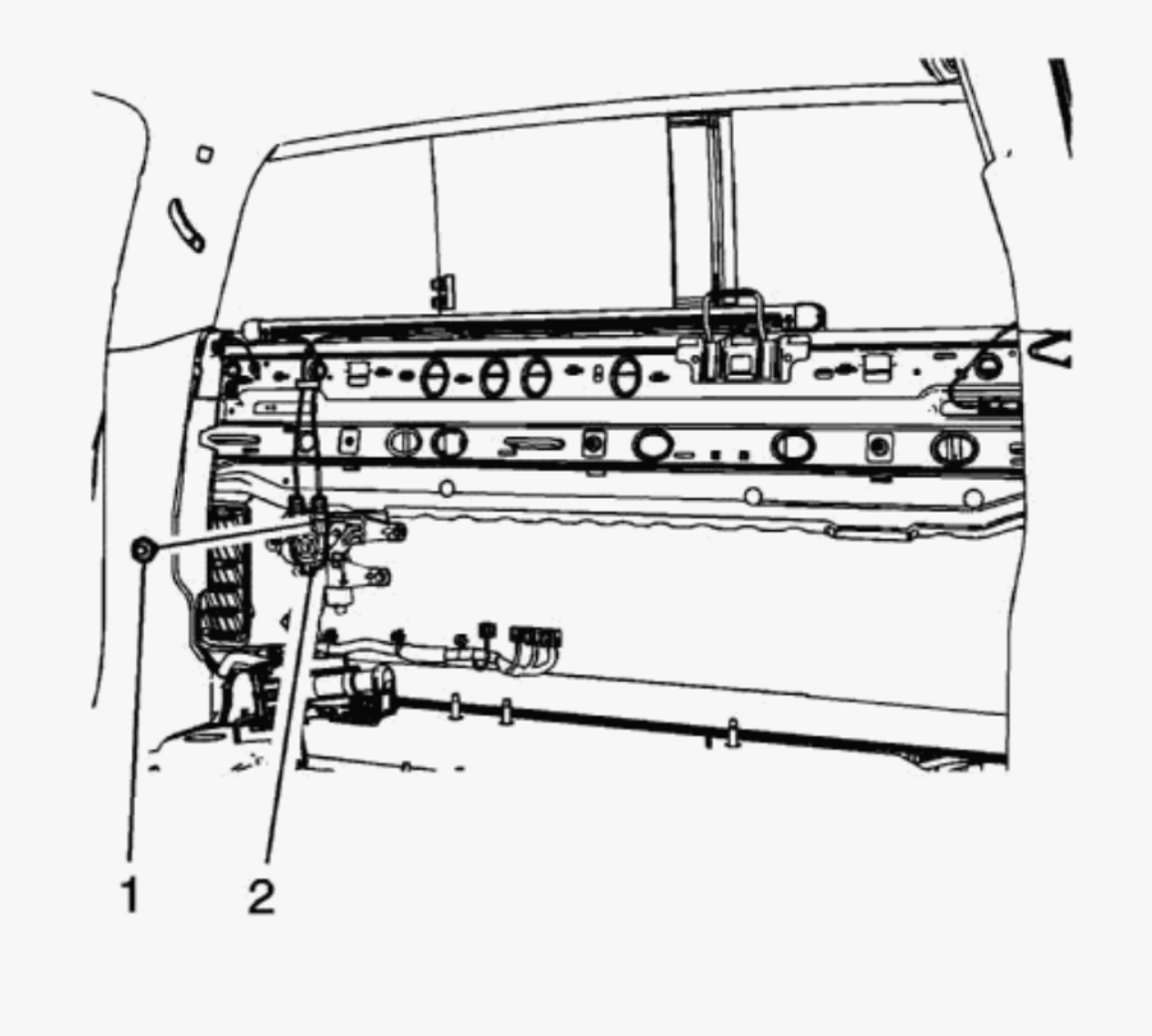


Fig. 34: Bolt And Regulator
Courtesy of GENERAL MOTORS COMPANY

12. Remove rear sliding window bolt (1) from regulator (2).

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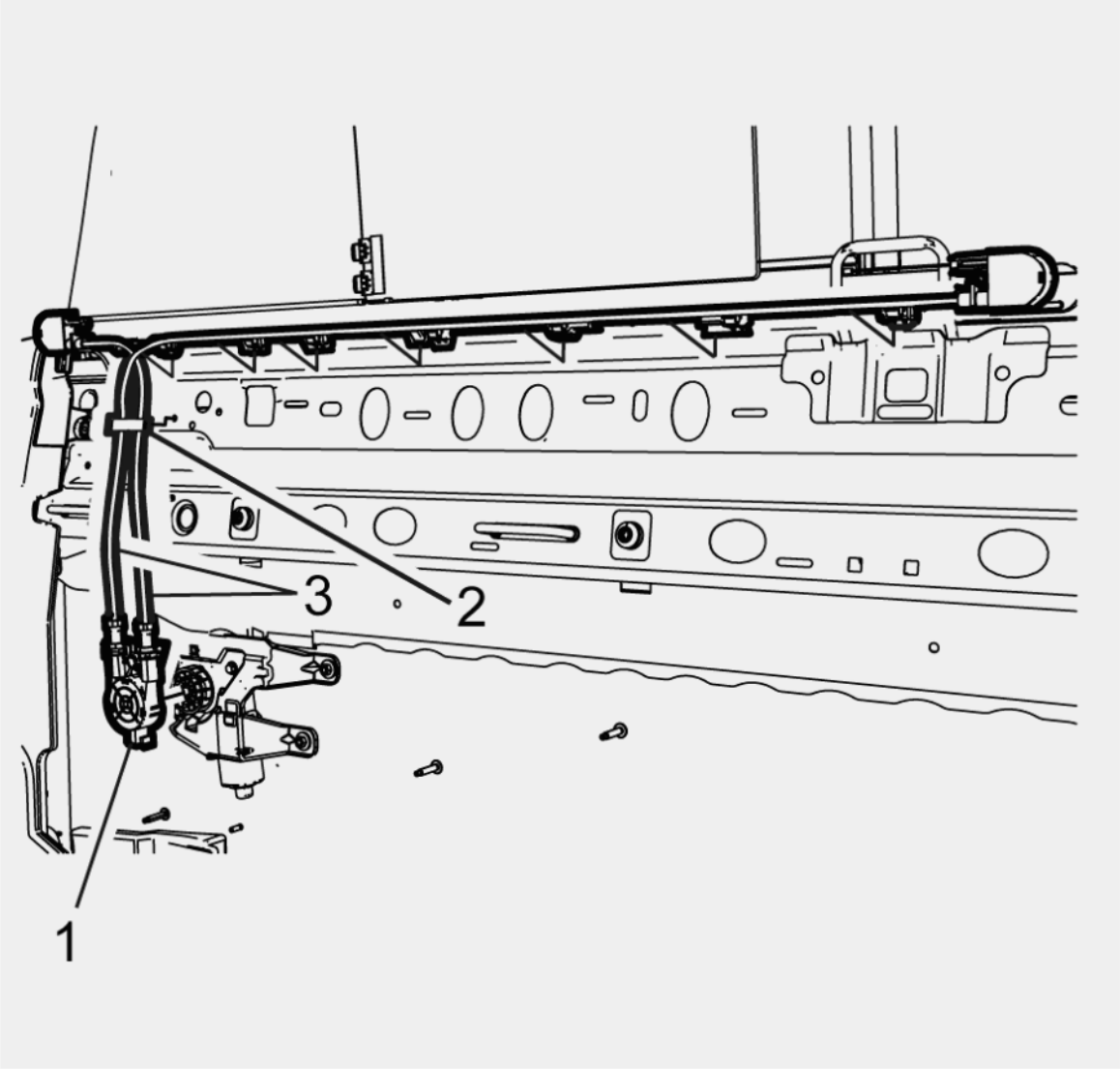


Fig. 35: Rear Sliding Window Regulator
Courtesy of GENERAL MOTORS COMPANY

13. Remove rear sliding window regulator (1), clip (2) and cables (3) from vehicle.

Installation Procedure

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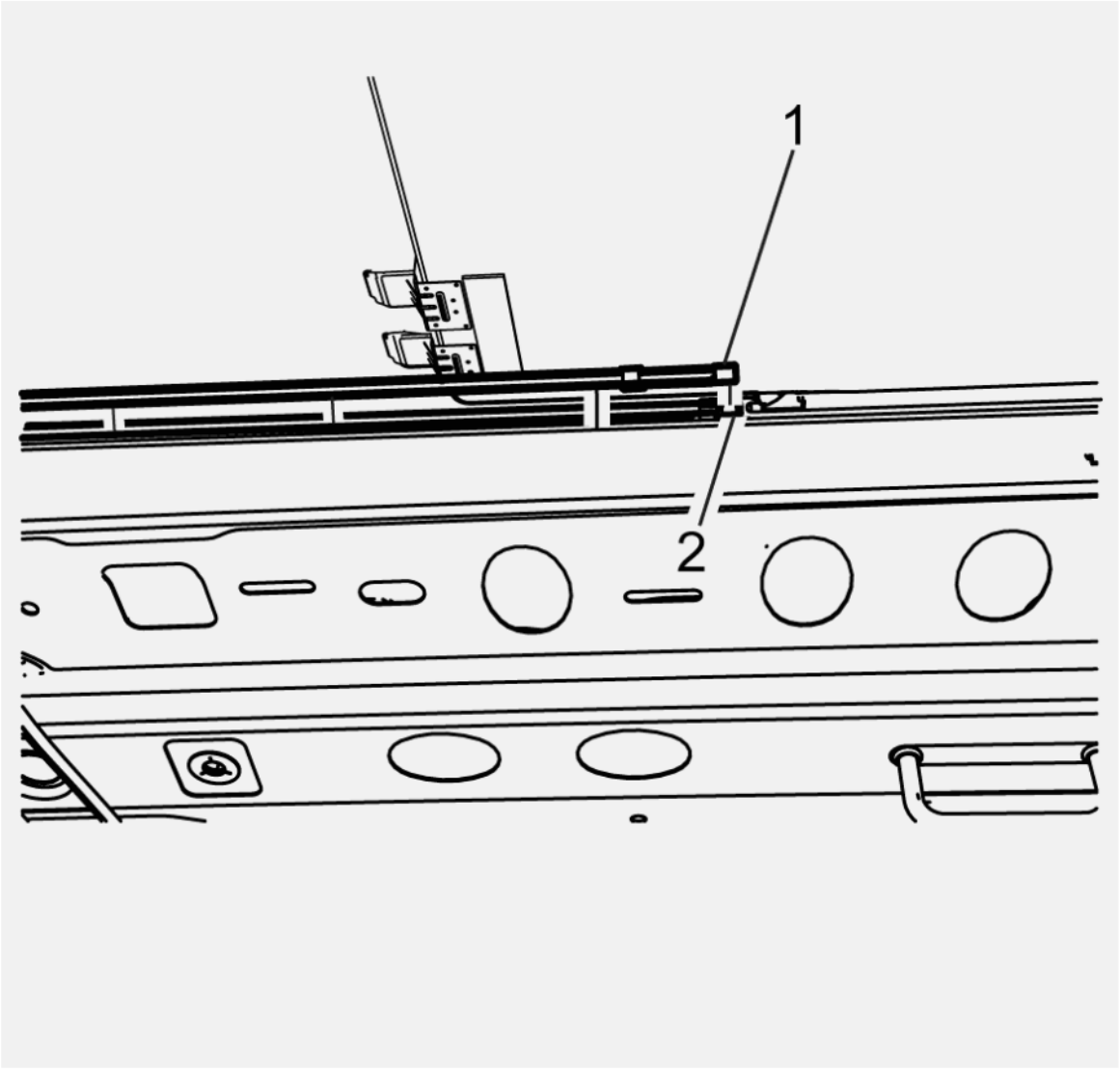


Fig. 36: Passenger Side Rear Sliding Window Cable End
Courtesy of GENERAL MOTORS COMPANY

1. Tilt passenger lower side of rear sliding window upwards and install passenger side rear sliding window cable end (1) to window guide (2).

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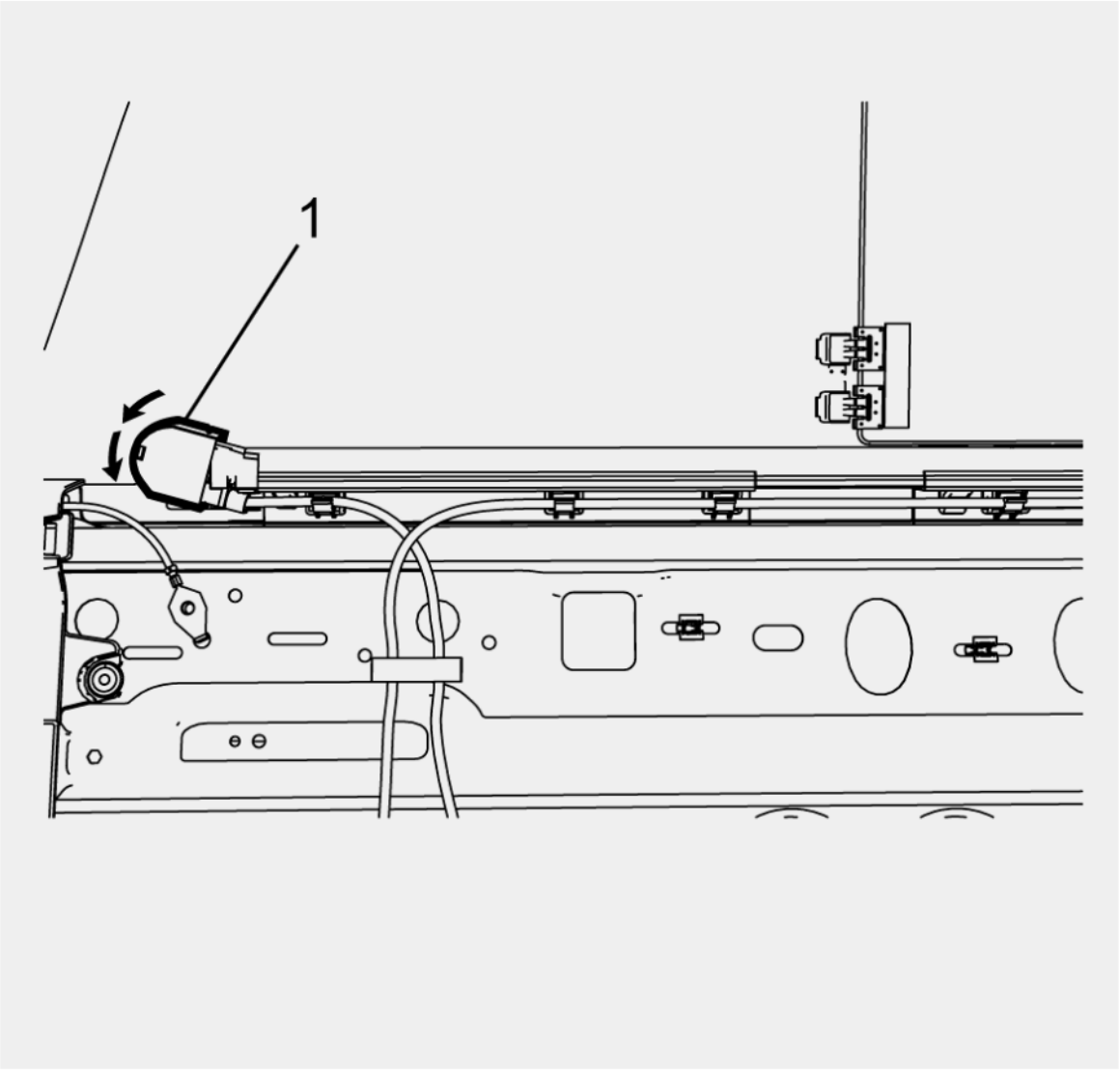


Fig. 37: Passenger Side Rear Sliding Window Block
Courtesy of GENERAL MOTORS COMPANY

NOTE: **If rear sliding window block is not properly installed, damage to rear sliding window regulator and cables may occur.**

2. Install passenger side rear sliding window block (1) by turning downwards and sliding on window guide.

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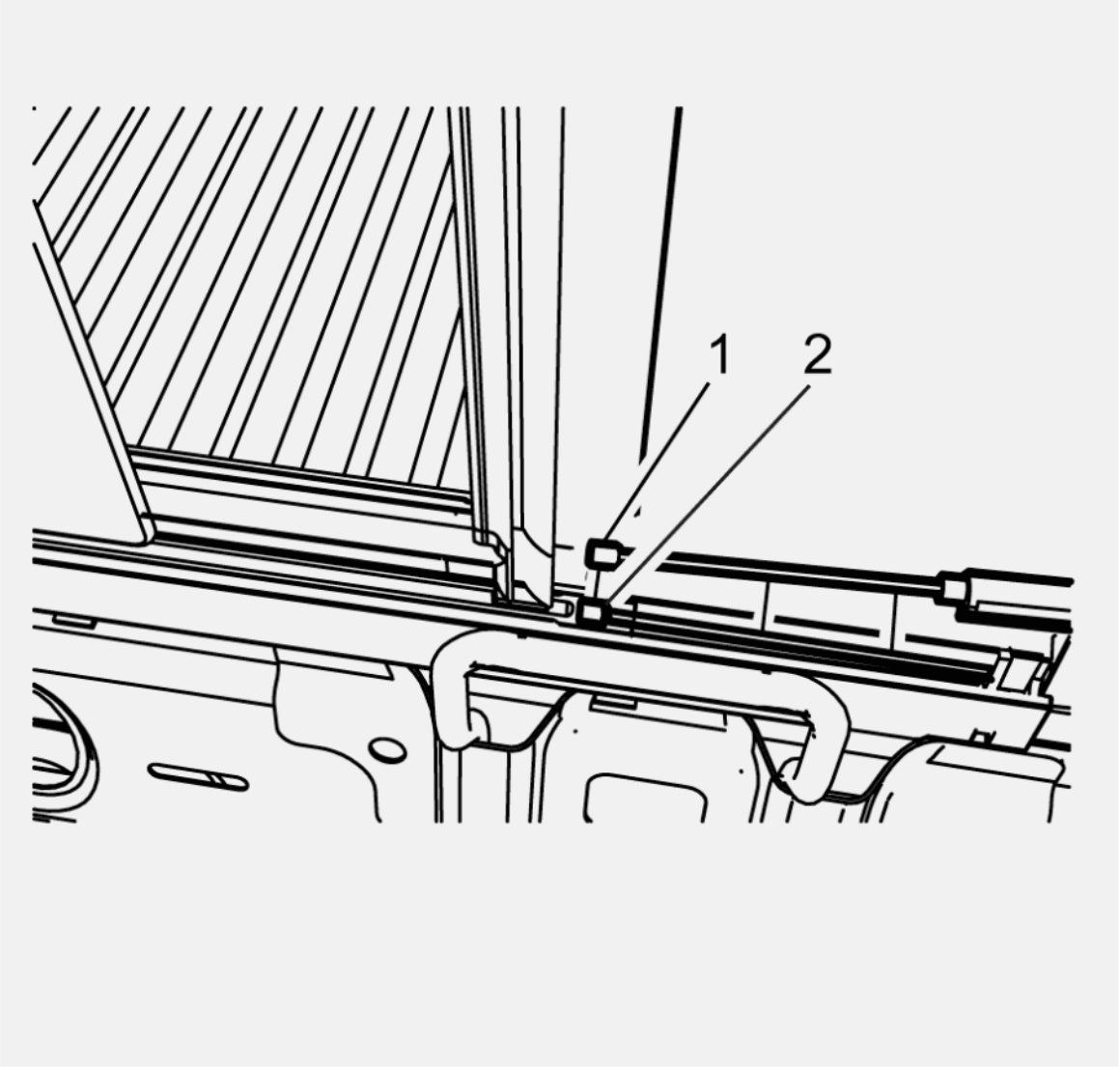


Fig. 38: Drivers Side Rear Sliding Window Cable End
Courtesy of GENERAL MOTORS COMPANY

NOTE: **Depress and hold both springs on the regulator to remove tension from cables before installing cable ends.**

3. Install drivers side rear sliding window cable end (1) to window guide (2).

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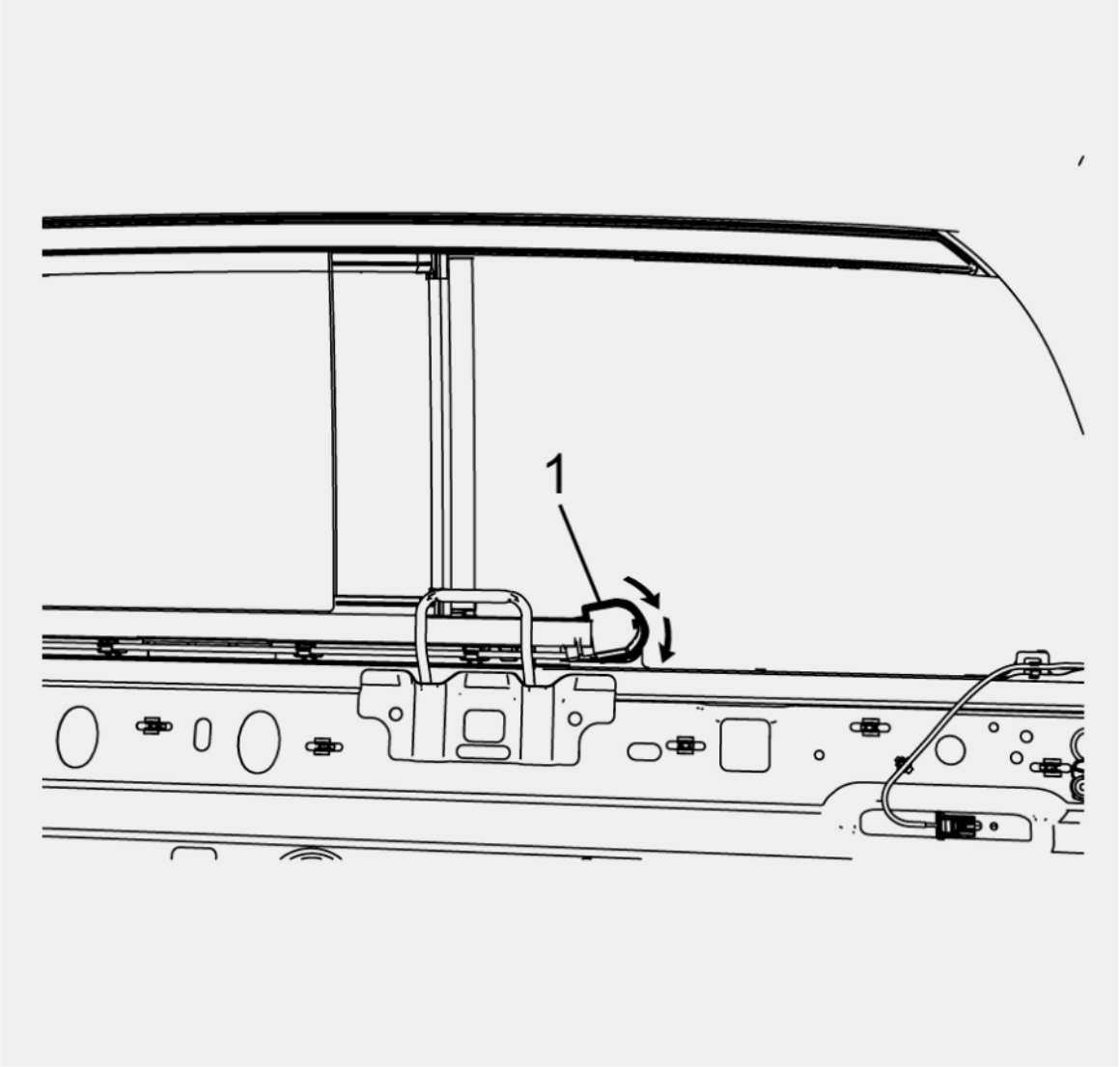


Fig. 39: Drivers Side Rear Sliding Window Block
Courtesy of GENERAL MOTORS COMPANY

NOTE: **If rear sliding window block is not properly installed, damage to rear window regulator and cables may occur.**

4. Install drivers side rear sliding window block (1) by turning downwards and sliding on window guide.

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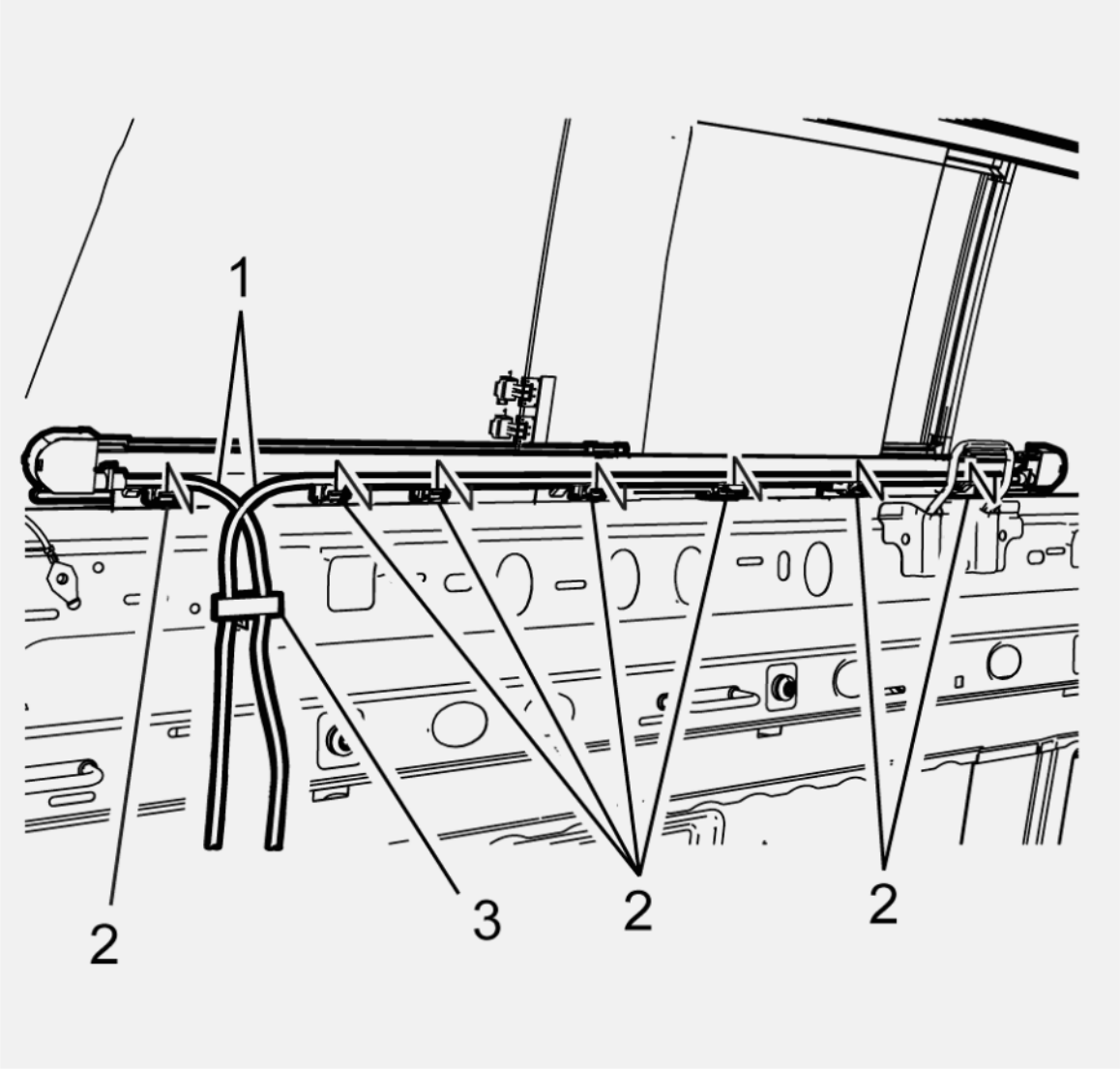


Fig. 40: Rear Sliding Window Regulator Cables
Courtesy of GENERAL MOTORS COMPANY

NOTE: **Be careful not to stress or break module clips while removing regulator cables.**

5. Carefully clip regulator cables (1) into 7 rear window module snaps (2).
6. Install rear sliding window regulator clip (3) to frame.

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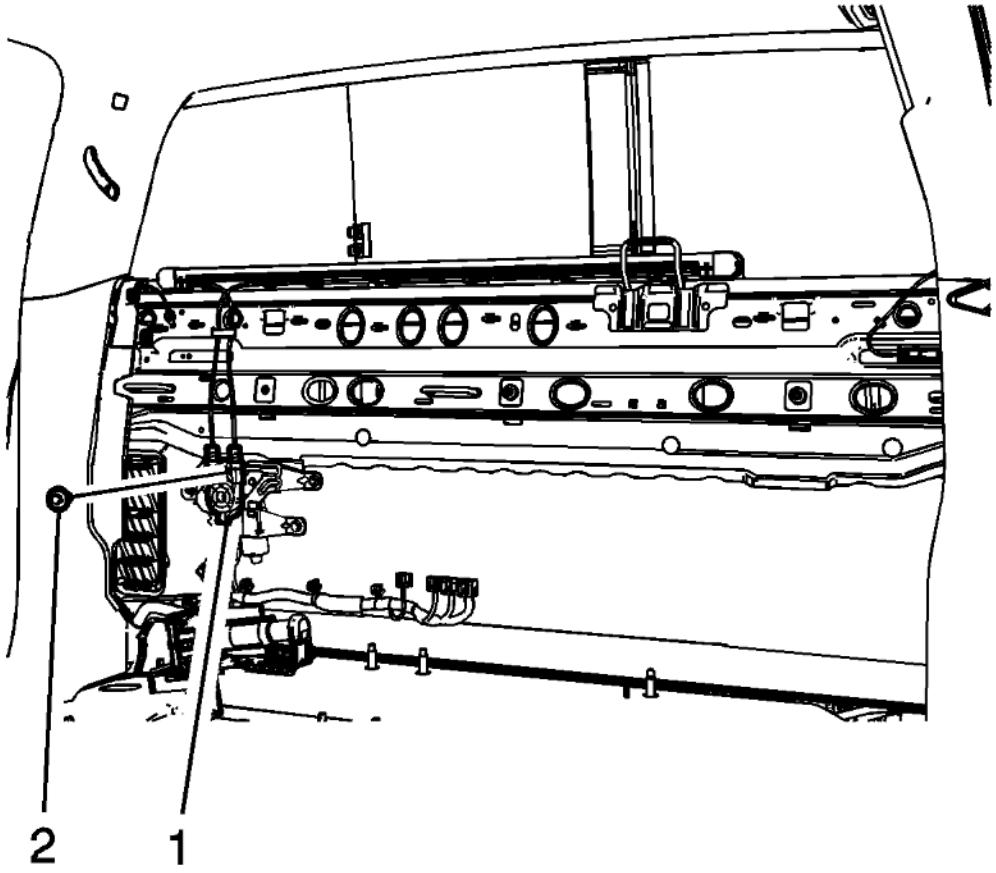


Fig. 41: Rear Sliding Window Regulator
Courtesy of GENERAL MOTORS COMPANY

NOTE: **When installing rear sliding window regulator (1), align gear to motor drive gear before installing screw.**

7. Install rear sliding window regulator (1) to module.

CAUTION: **Refer to Fastener Caution .**

8. Install rear sliding window bolt (2) to module.

Tighten

Tighten bolt to 9 N.m (80 lb in).

9. Install rear sliding window center stop. Refer to **Rear Sliding Window Replacement (Center Glass)**.
10. Cycle rear sliding window to fully closed position.
11. Inspect rear sliding window for proper operation.
12. Install rear window lower garnish molding. Refer to **Rear Window Lower Garnish Molding Replacement (Crew Cab, Extended Cab)** .
13. Rotate clip 180 degrees and close cover door on insulator pad.

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14. Install rear seats. Refer to **Rear Seat Removal and Installation (Heavy Duty Crew Cab with A68)** **Rear Seat Removal and Installation (Light Duty Crew Cab with A68)** .
15. Clean the window, if necessary.

REAR SLIDING WINDOW REGULATOR REPLACEMENT (EXTENDED CAB)

Removal Procedure

NOTE: **Remove rear seats as one piece. DO NOT separate seats.**

1. Remove rear seat to gain access to rear sliding window regulator and cables. Refer to **Rear Seat Removal and Installation (Extended Cab with AM7)** **Rear Seat Removal and Installation (Heavy Duty Crew Cab with A68)** **Rear Seat Removal and Installation (Light Duty Crew Cab with A68)** **Rear Seat Removal and Installation (Extended Cab with A68)** .

NOTE:

- **The new rear sliding window regulator and cables are serviced as an assembly.**
- **Opening the window will help relieve tension from the regulator cables.**

2. Open the rear sliding window approximately 3.5 in (89 mm).
3. Remove rear sliding window center stop. Refer to **Rear Sliding Window Replacement (Center Glass)**.
4. Remove the rear window lower garnish molding. Refer to **Rear Window Lower Garnish Molding Replacement (Crew Cab, Extended Cab)** **Rear Window Lower Garnish Molding Replacement (Regular Cab)** .

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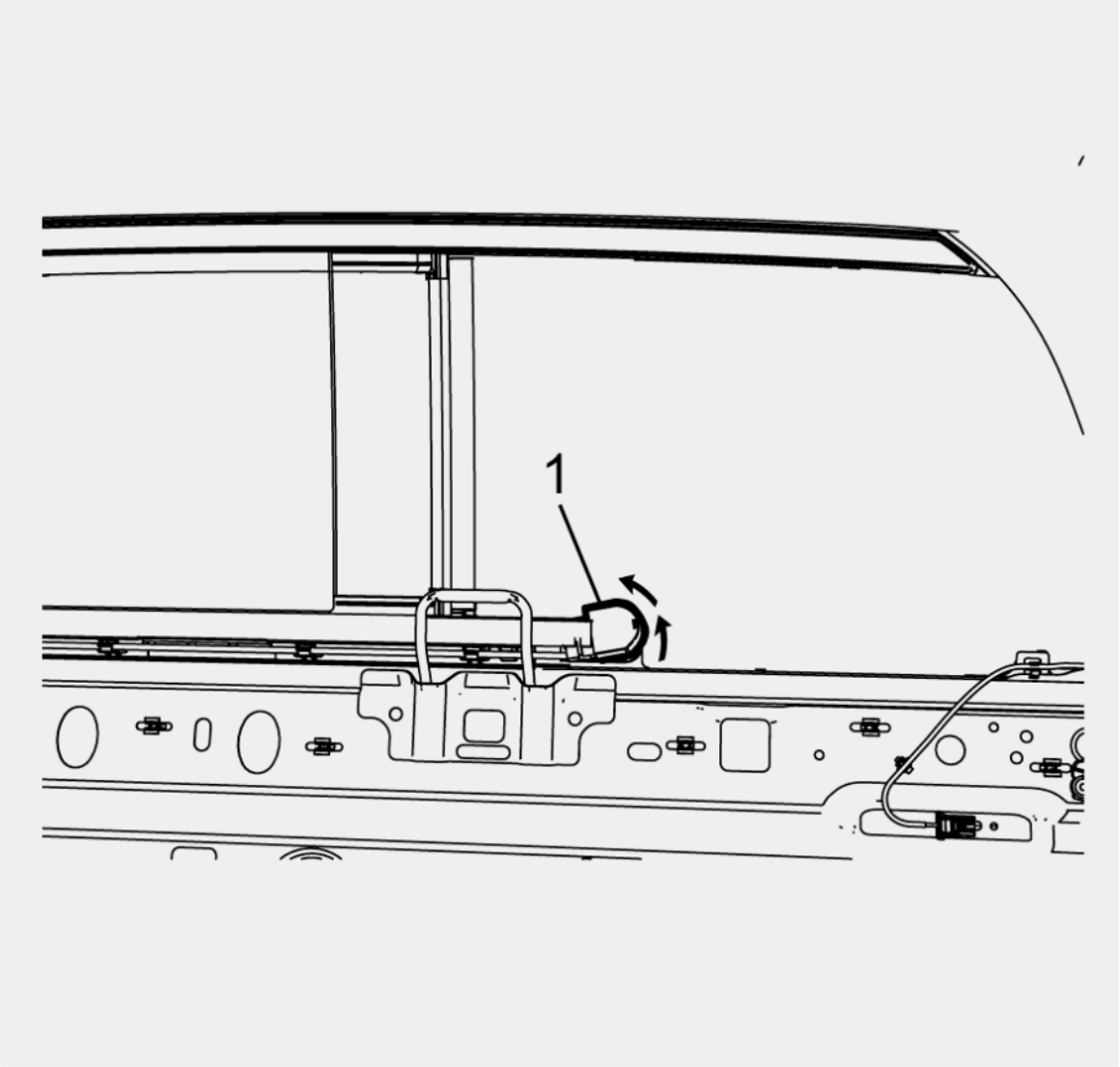


Fig. 42: Drivers Side Rear Sliding Window Block
Courtesy of GENERAL MOTORS COMPANY

5. Remove drivers side rear sliding window block (1) by turning upwards and lifting off of window guide.

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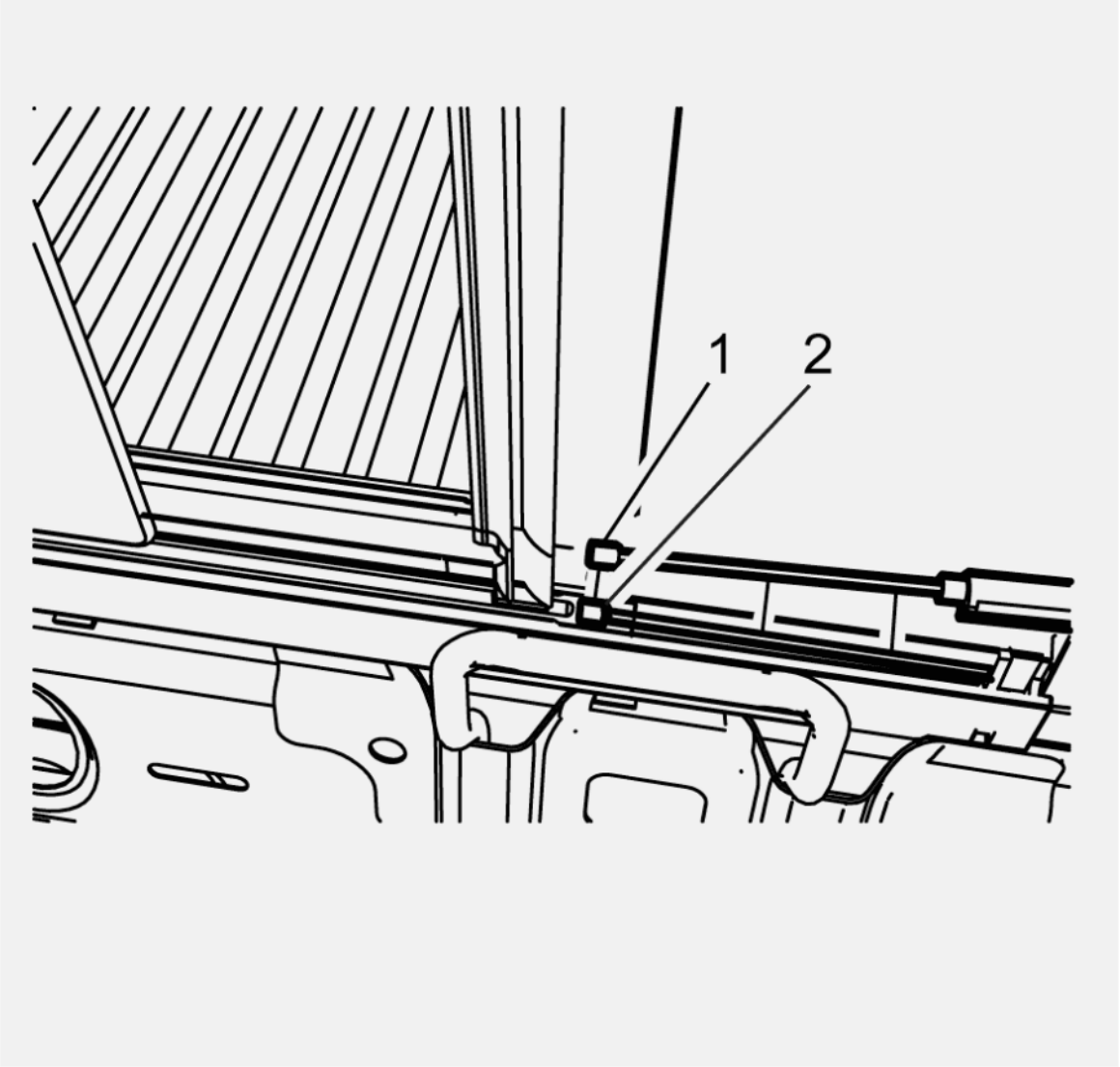


Fig. 43: Drivers Side Rear Sliding Window Cable End
Courtesy of GENERAL MOTORS COMPANY

6. Remove drivers side rear sliding window cable end (1) from window guide (2).

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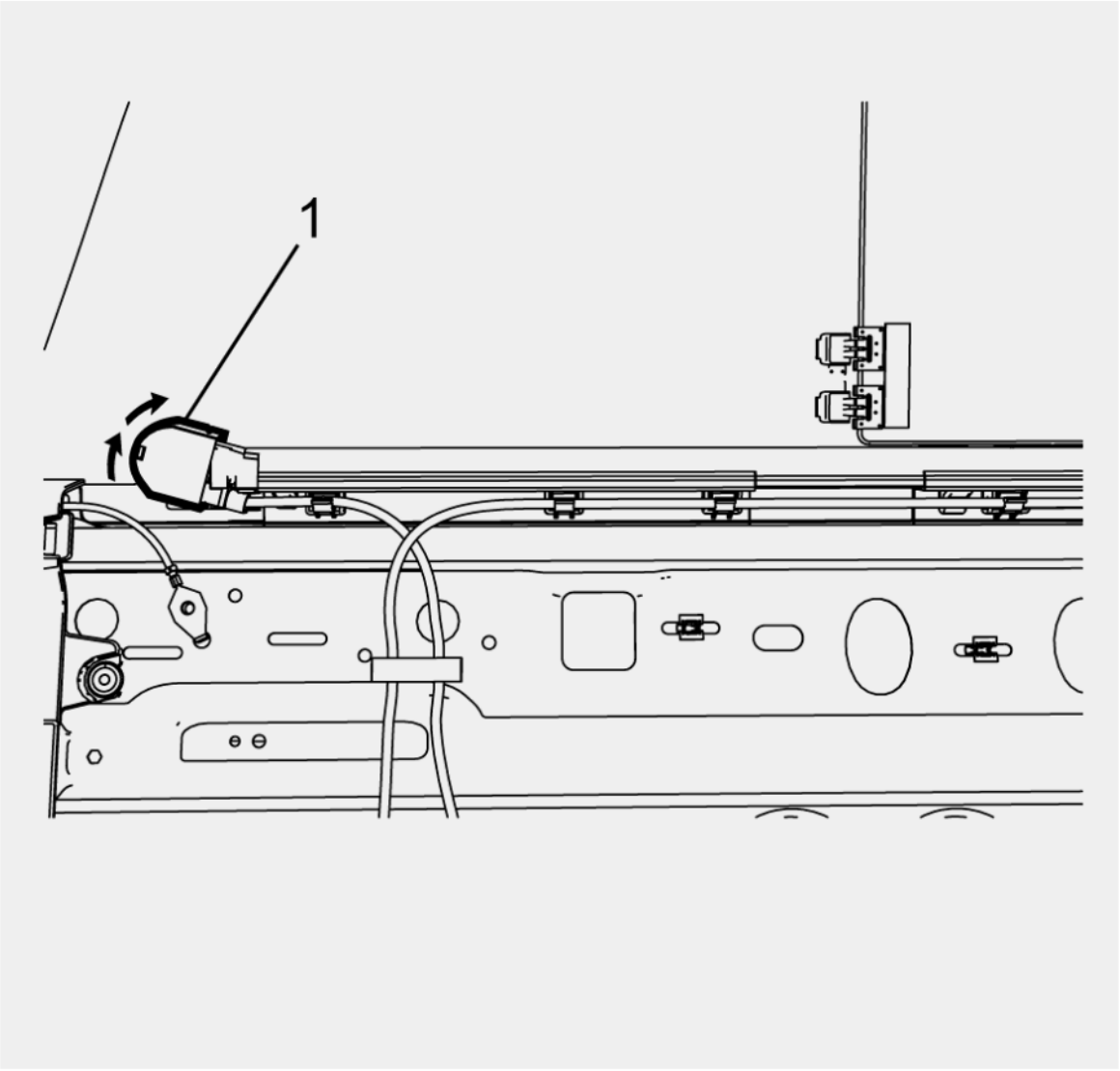


Fig. 44: Passenger Side Rear Sliding Window Block
Courtesy of GENERAL MOTORS COMPANY

7. Remove passenger side rear sliding window block (1) by turning upwards and lifting off of window guide.

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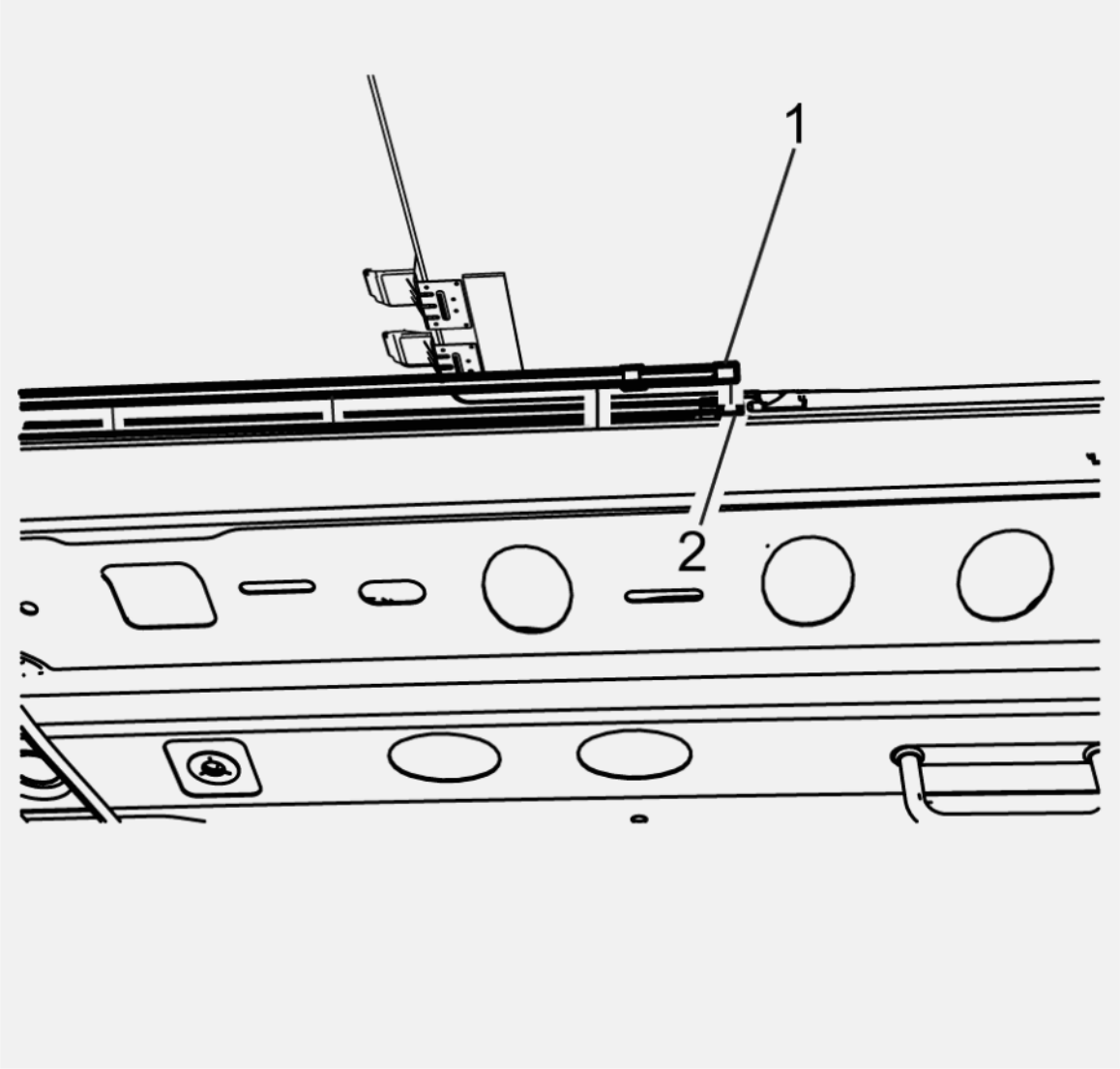


Fig. 45: Passenger Side Rear Sliding Window Cable End
Courtesy of GENERAL MOTORS COMPANY

8. Tilt passenger lower side of rear sliding window upwards and remove passenger side rear sliding window cable end (1) from window guide (2).

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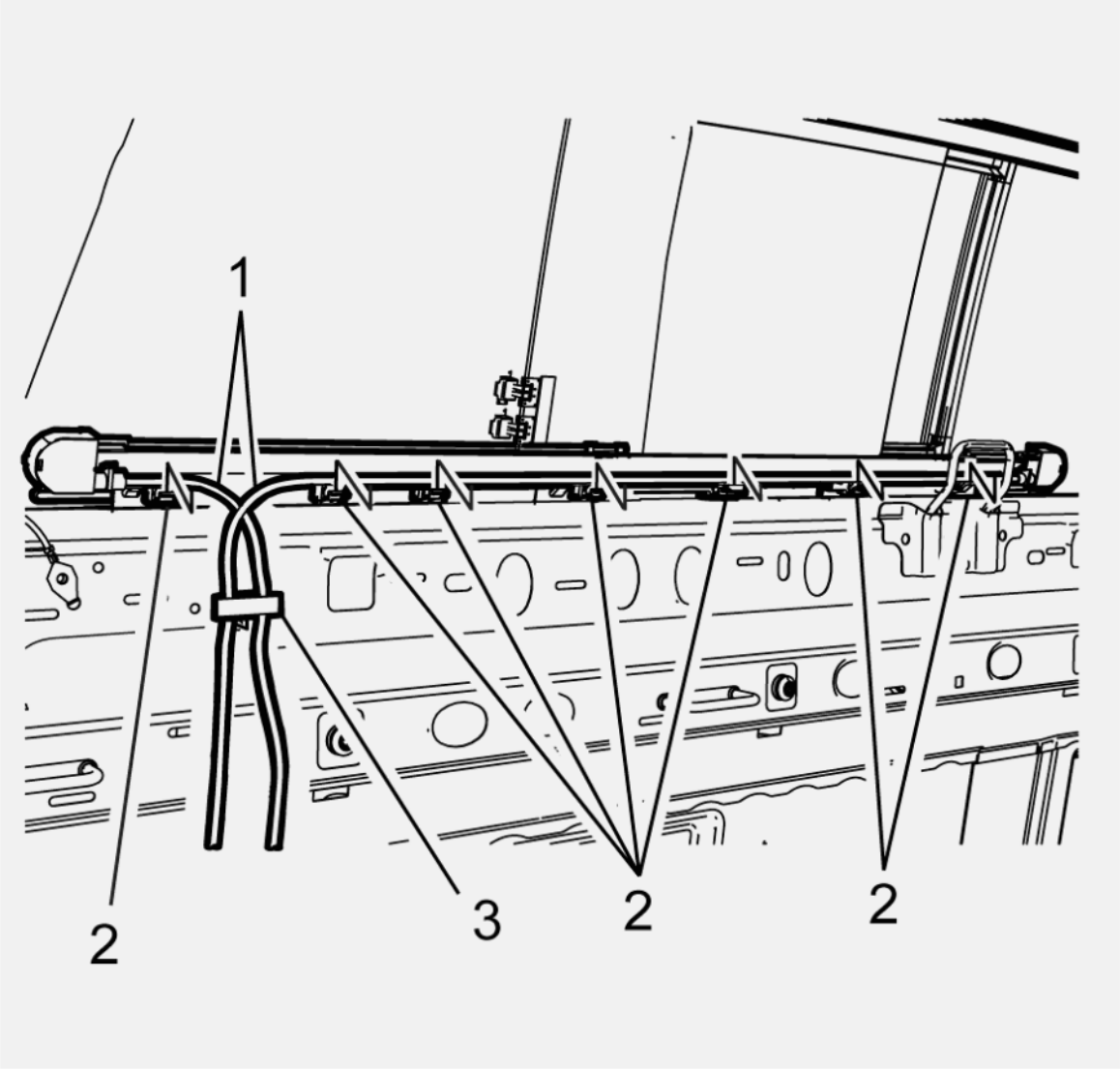


Fig. 46: Rear Sliding Window Regulator Cables
Courtesy of GENERAL MOTORS COMPANY

NOTE: **Be careful not to stress or break clips while removing rear sliding window regulator cables.**

9. Carefully unclip rear sliding window regulator cables (1) from 7 window module snaps (2).
10. Remove rear sliding window regulator clip (3) from vehicle.
11. Rotate clip 180 degrees and open cover door on insulator pad.

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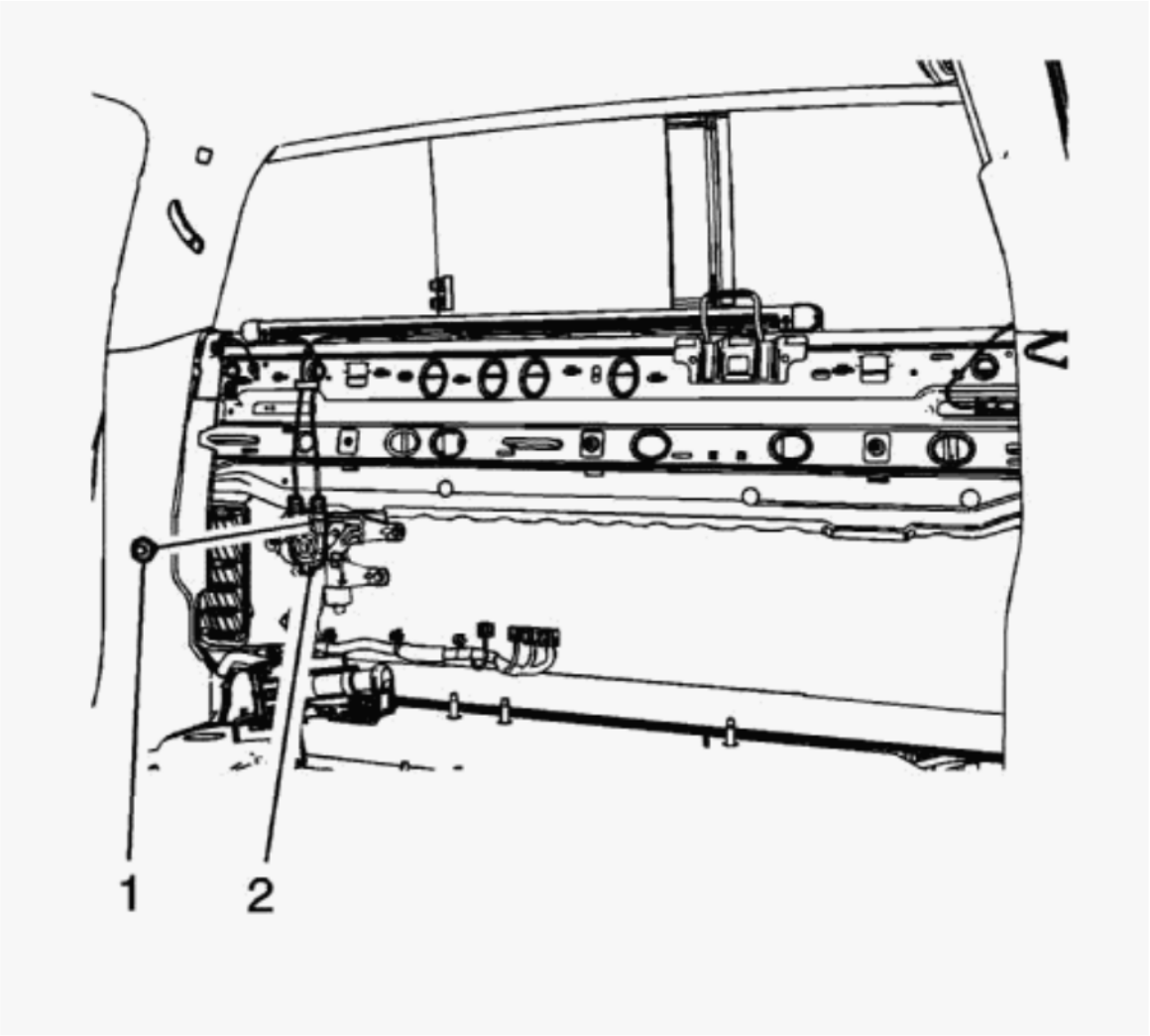


Fig. 47: Bolt And Regulator
Courtesy of GENERAL MOTORS COMPANY

12. Remove rear sliding window bolt (1) from regulator (2).

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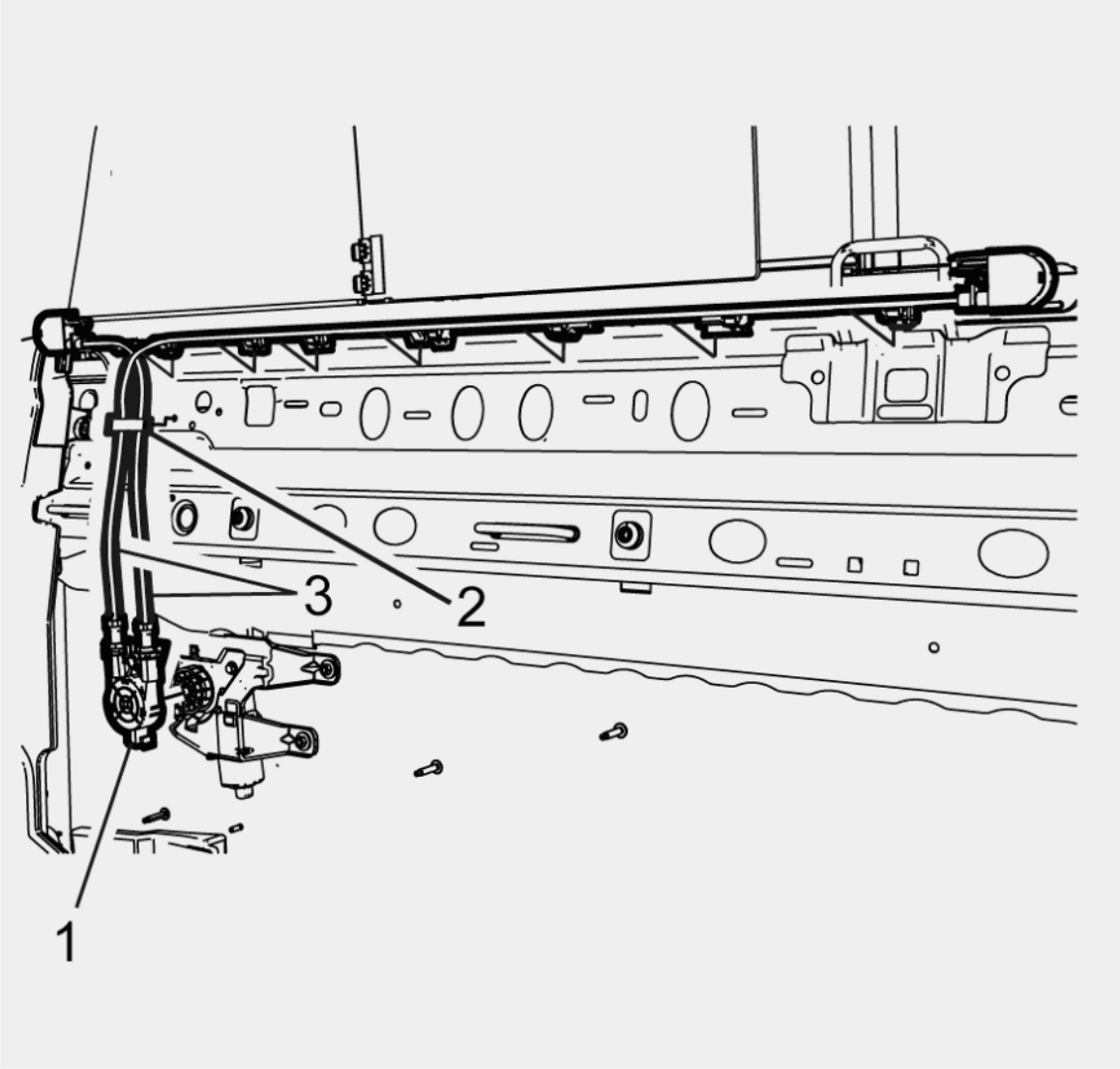


Fig. 48: Rear Sliding Window Regulator
Courtesy of GENERAL MOTORS COMPANY

13. Remove rear sliding window regulator (1), clip (2) and cables (3) from vehicle.

Installation Procedure

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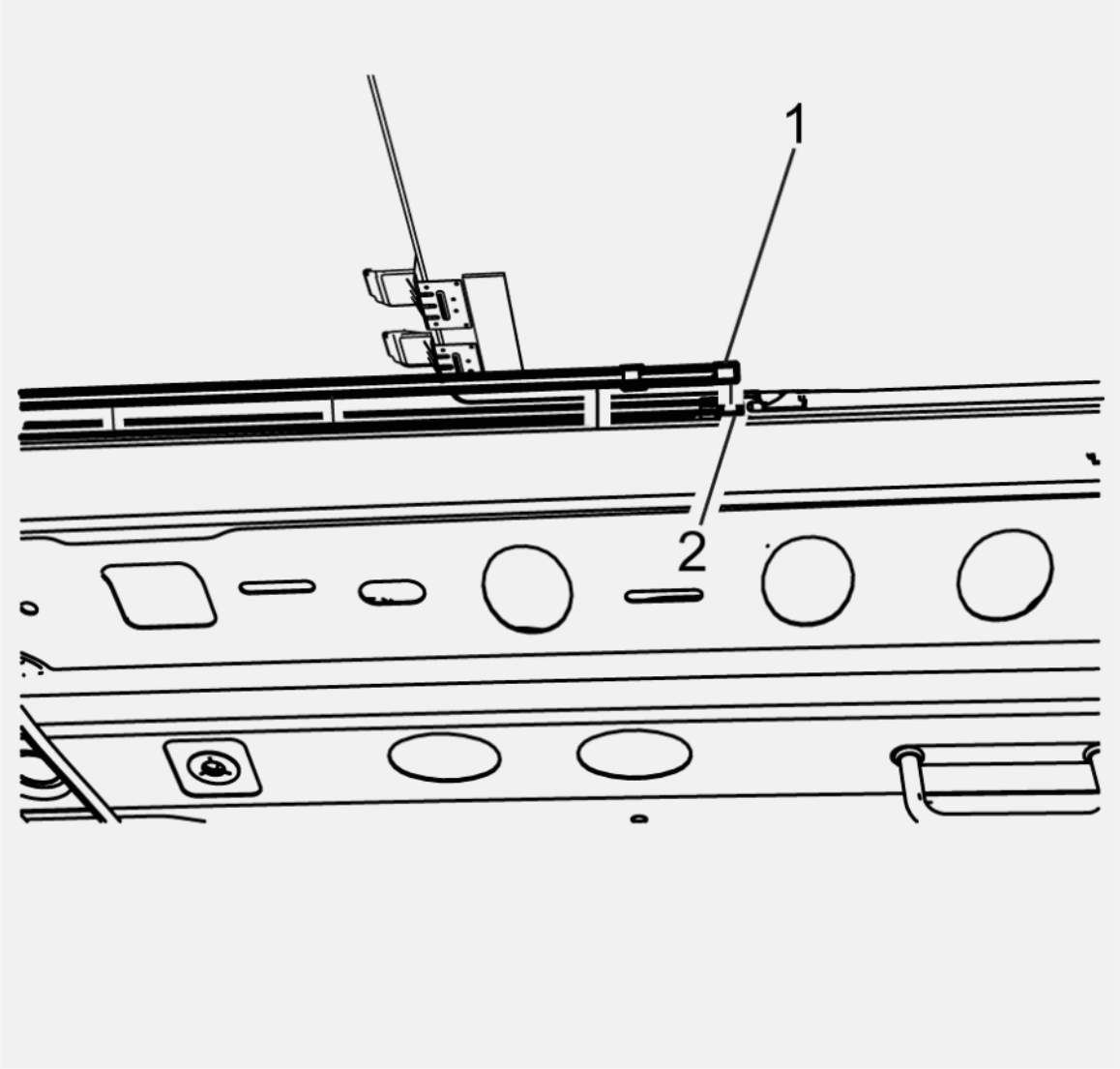


Fig. 49: Passenger Side Rear Sliding Window Cable End
Courtesy of GENERAL MOTORS COMPANY

1. Tilt passenger lower side of rear sliding window upwards and install passenger side rear sliding window cable end (1) to window guide (2).

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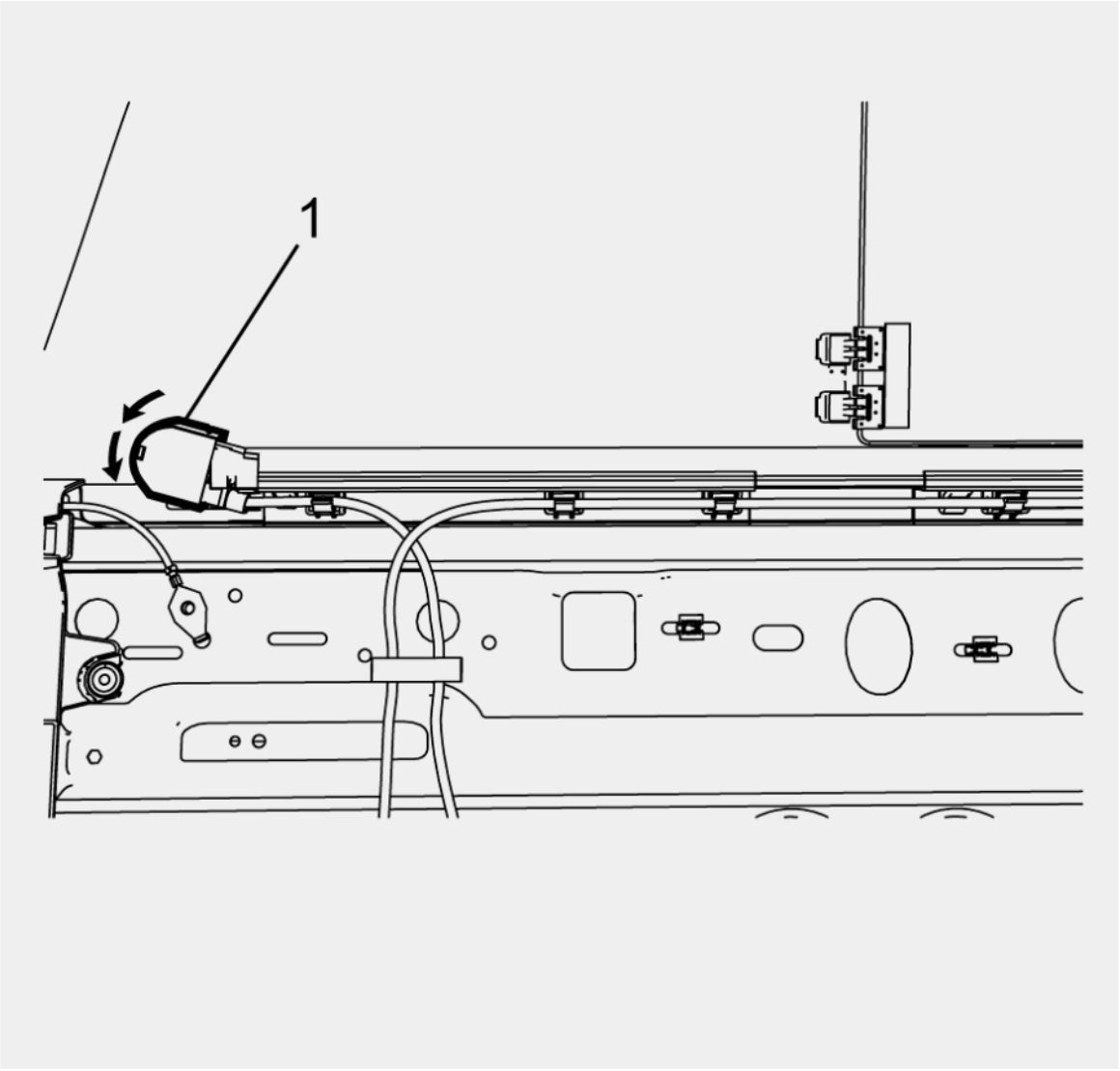


Fig. 50: Passenger Side Rear Sliding Window Block
Courtesy of GENERAL MOTORS COMPANY

NOTE: **If rear sliding window block is not properly installed, damage to rear sliding window regulator and cables may occur.**

2. Install passenger side rear sliding window block (1) by turning downwards and sliding on window guide.

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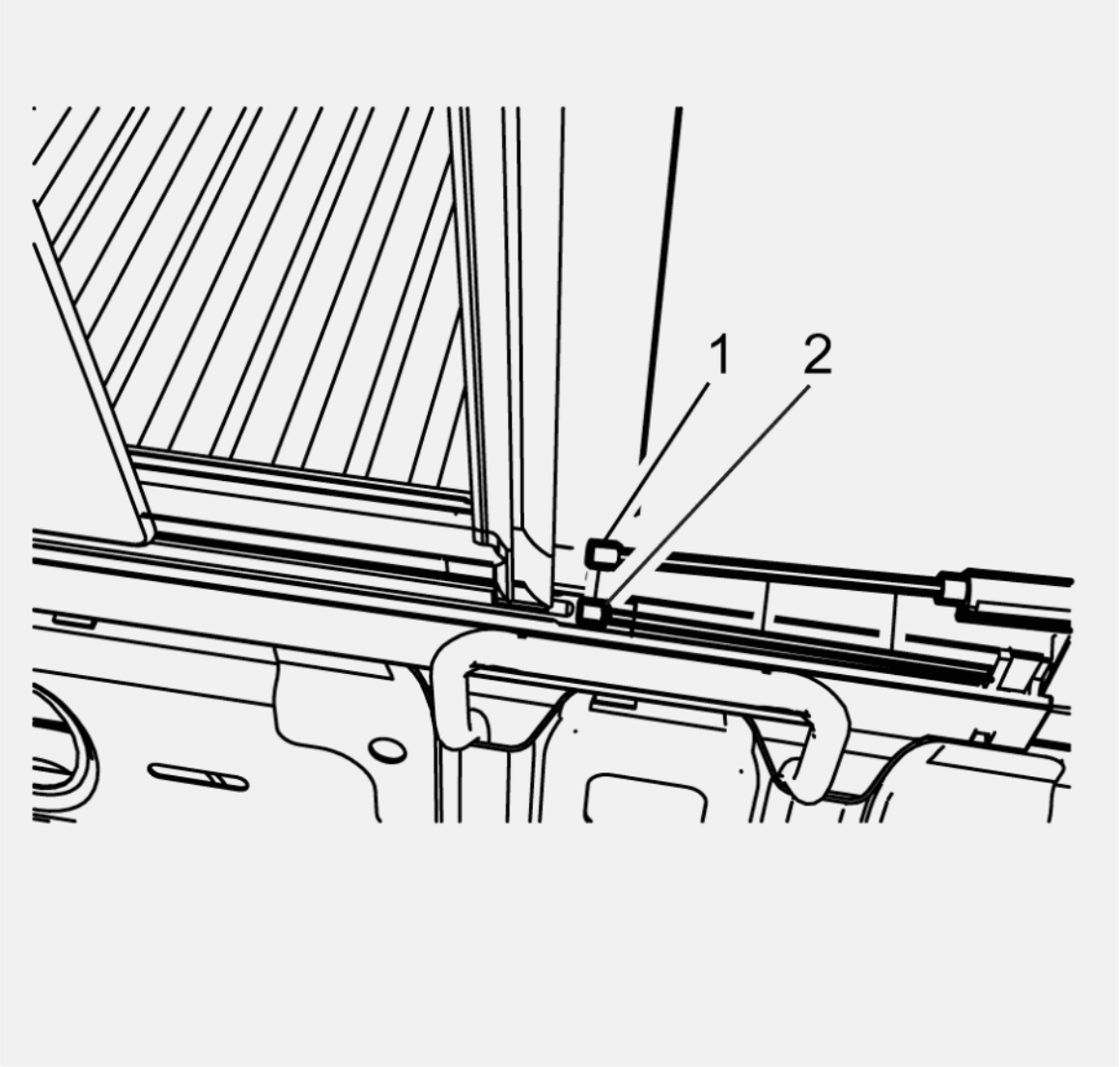


Fig. 51: Drivers Side Rear Sliding Window Cable End
Courtesy of GENERAL MOTORS COMPANY

NOTE: **Depress and hold both springs on the regulator to remove tension from cables before installing cable ends.**

3. Install drivers side rear sliding window cable end (1) to window guide (2).

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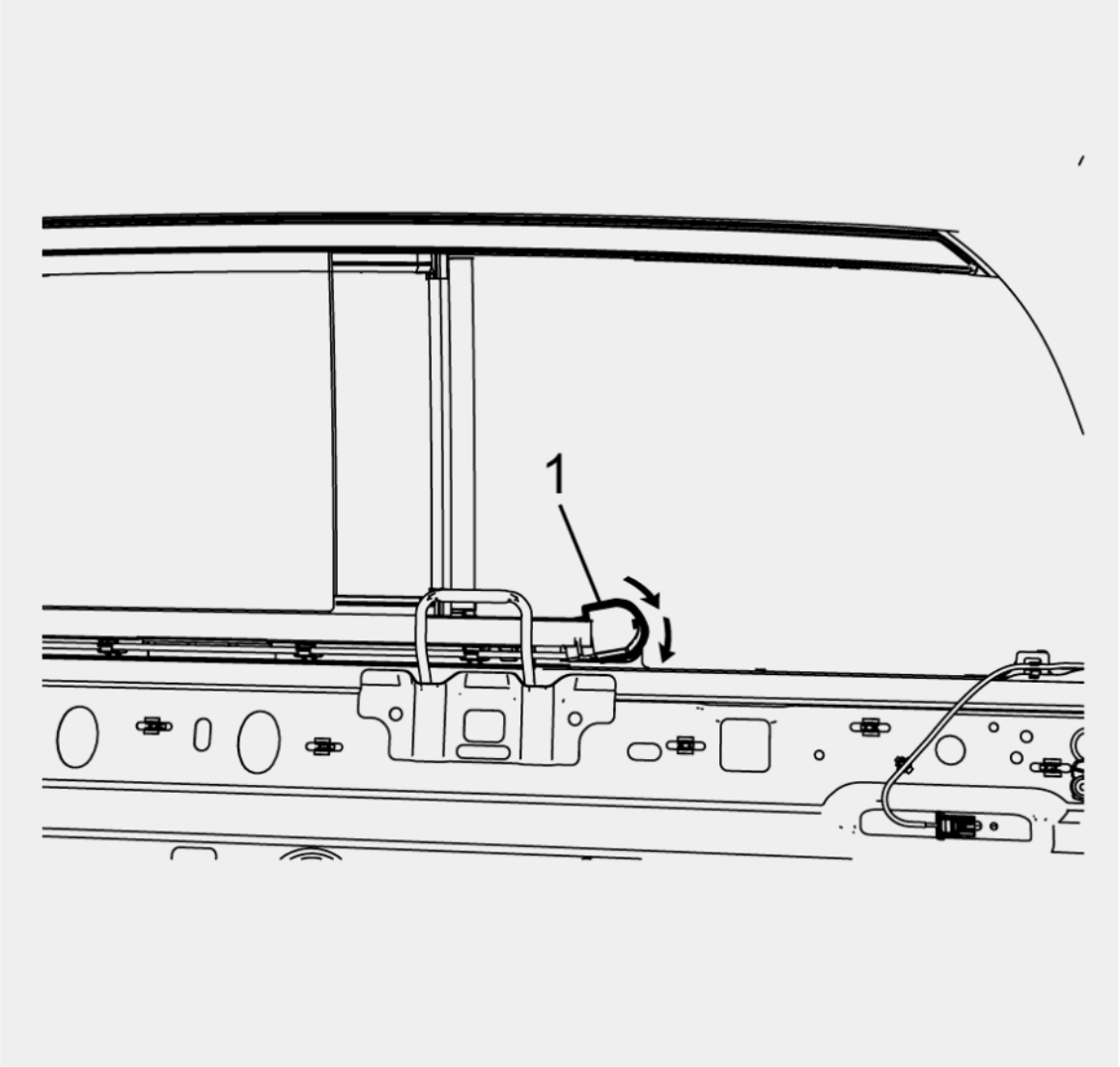


Fig. 52: Drivers Side Rear Sliding Window Block
Courtesy of GENERAL MOTORS COMPANY

NOTE: **If rear sliding window block is not properly installed, damage to rear window regulator and cables may occur.**

4. Install drivers side rear sliding window block (1) by turning downwards and sliding on window guide.

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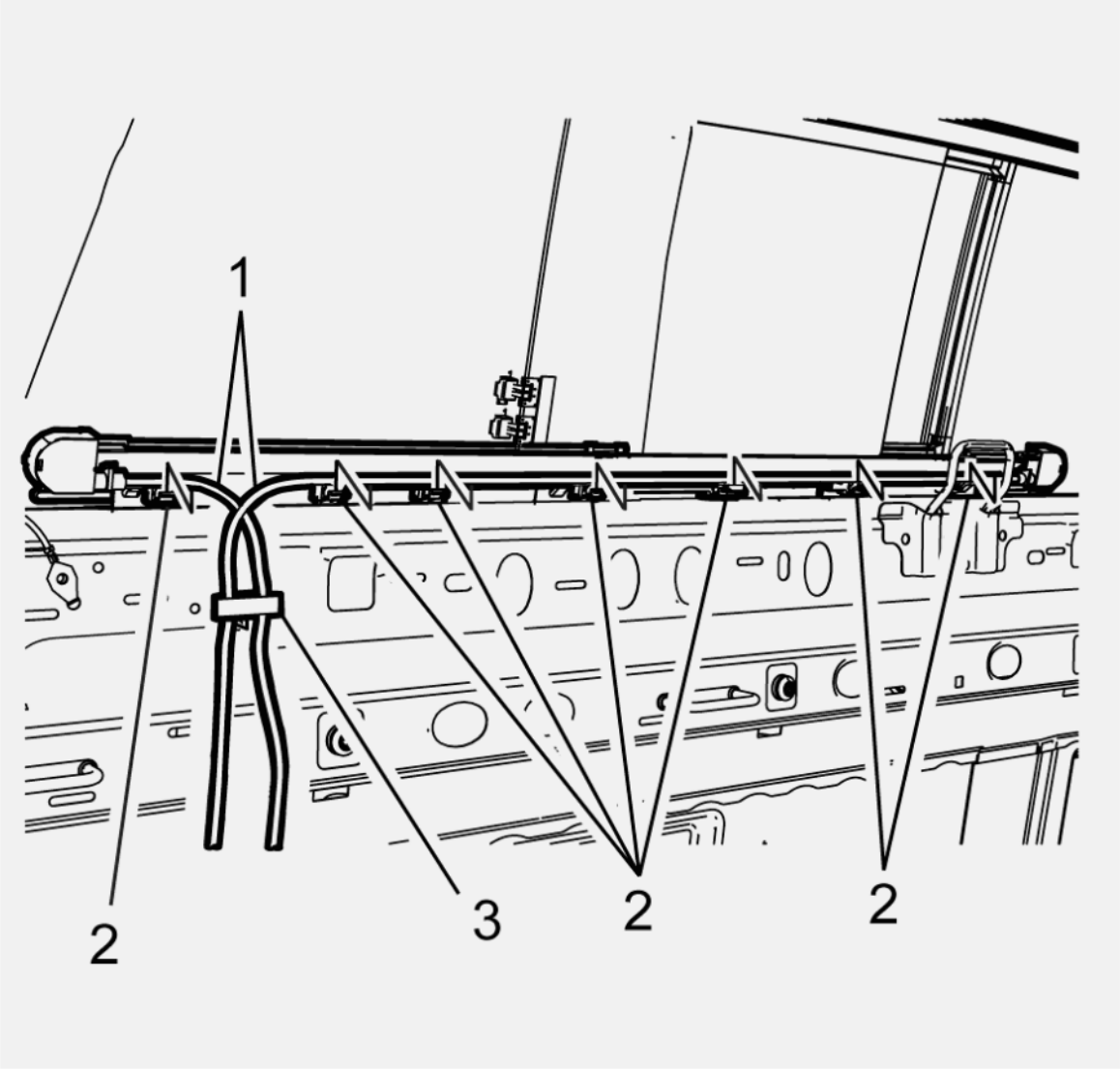


Fig. 53: Rear Sliding Window Regulator Cables
Courtesy of GENERAL MOTORS COMPANY

NOTE: **Be careful not to stress or break module clips while removing regulator cables.**

5. Carefully clip regulator cables (1) into 7 rear window module snaps (2).
6. Install rear sliding window regulator clip (3) to frame.

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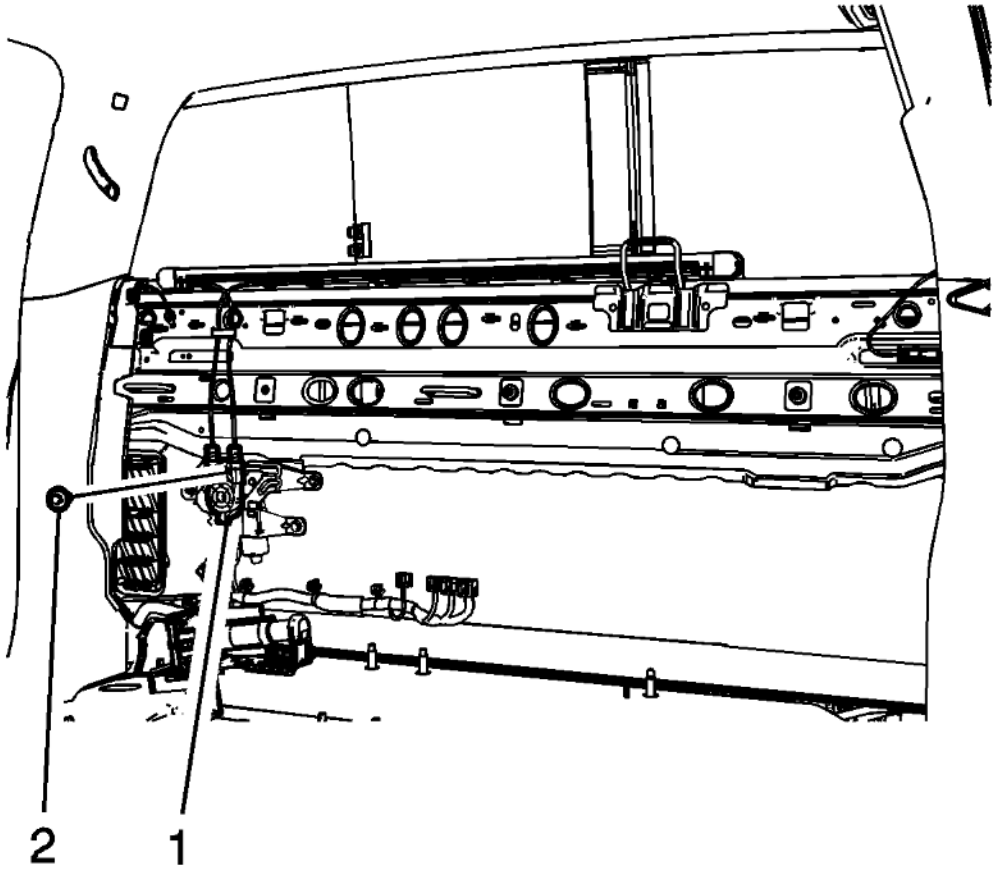


Fig. 54: Rear Sliding Window Regulator
Courtesy of GENERAL MOTORS COMPANY

NOTE: **When installing rear sliding window regulator (1), align gear to motor drive gear before installing screw.**

7. Install rear sliding window regulator (1) to module.

CAUTION: **Refer to Fastener Caution .**

8. Install rear sliding window bolt (2) to module.

Tighten

Tighten bolt to 9 N.m (80 lb in).

9. Install rear sliding window center stop. Refer to **Rear Sliding Window Replacement (Center Glass)**.
10. Cycle rear sliding window to fully closed position.
11. Inspect rear sliding window for proper operation.
12. Install rear window lower garnish molding. Refer to **Rear Window Lower Garnish Molding Replacement (Crew Cab, Extended Cab)** **Rear Window Lower Garnish Molding Replacement (Regular Cab)** .
13. Rotate clip 180 degrees and close cover door on insulator pad.

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14. Install rear seat. Refer to **Rear Seat Removal and Installation (Extended Cab with AM7)** **Rear Seat Removal and Installation (Heavy Duty Crew Cab with A68)** **Rear Seat Removal and Installation (Light Duty Crew Cab with A68)** **Rear Seat Removal and Installation (Extended Cab with A68)** .
15. Clean the window, if necessary.

REAR SLIDING WINDOW MODULE REPLACEMENT

Removal Procedure

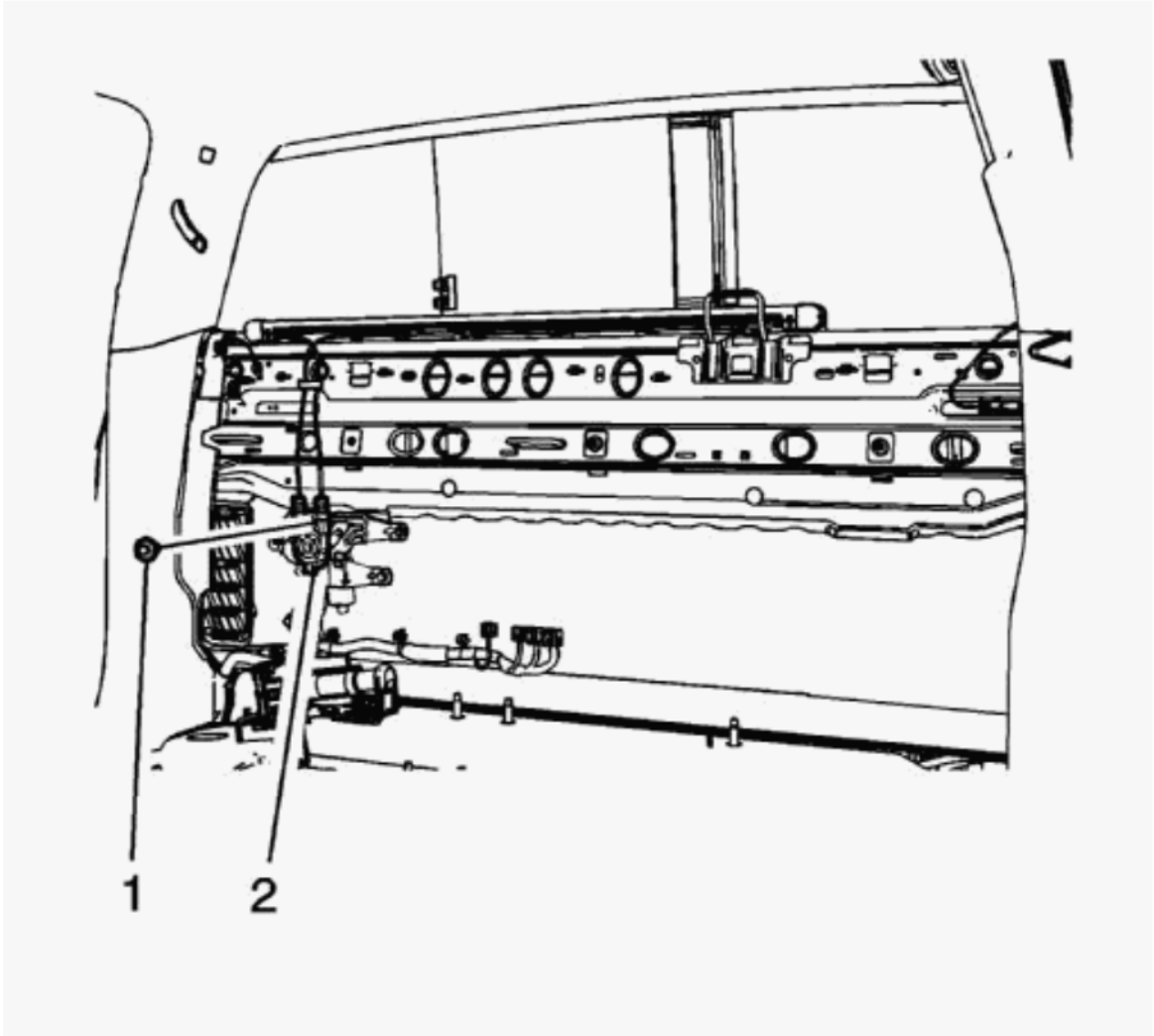


Fig. 55: Bolt And Regulator
Courtesy of GENERAL MOTORS COMPANY

1. Open the rear sliding window approximately 3.5 in (89 mm).
2. Remove the bolt (1) from the rear sliding window regulator and cables (2).
3. Pull forward on the regulator and cables (2) to release it from the module.
4. Remove the body rear panel insulator. Refer to **Body Rear Panel Insulator Replacement** .

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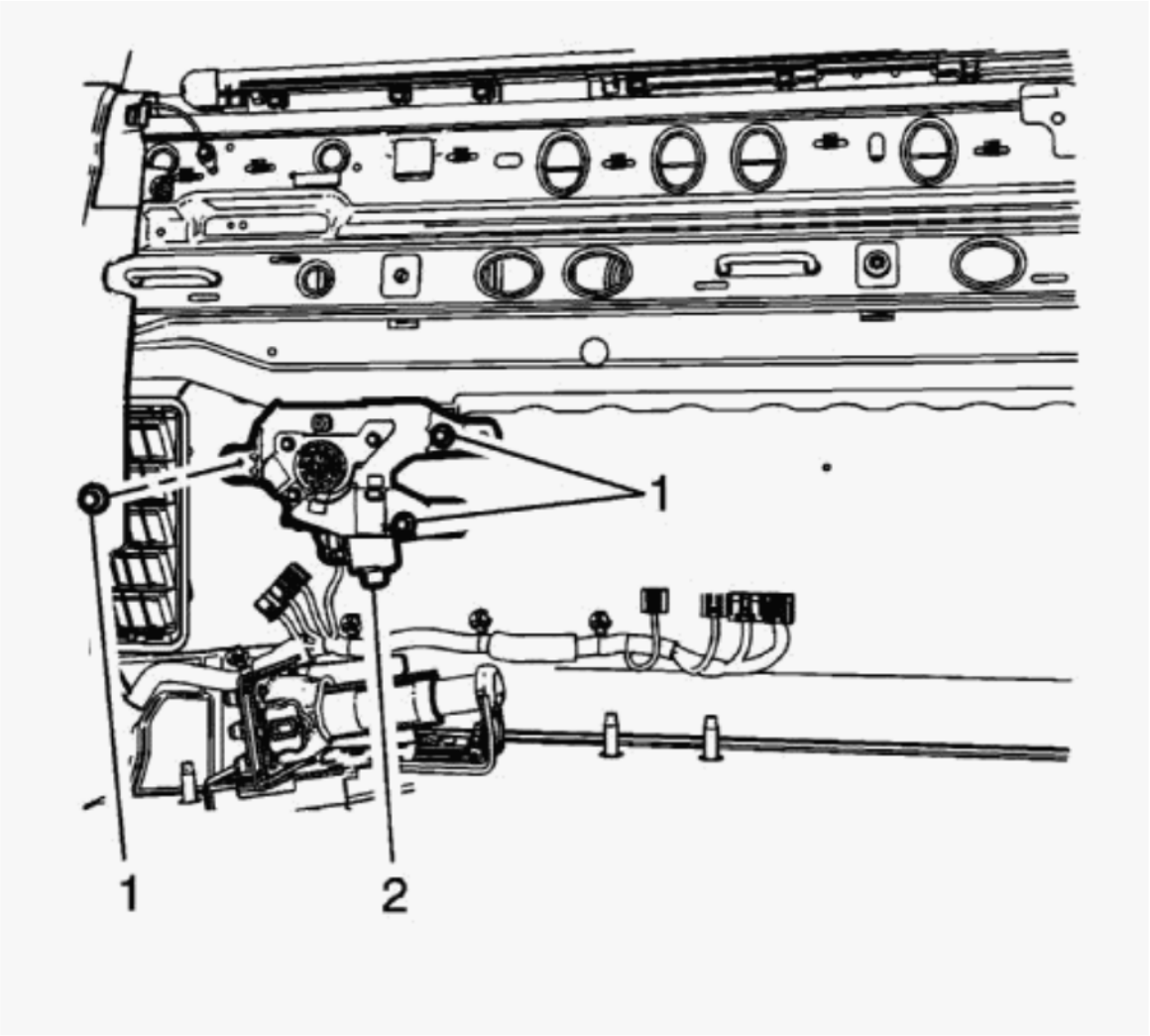


Fig. 56: Rear Sliding Window Module Nuts
Courtesy of GENERAL MOTORS COMPANY

5. Remove the rear sliding window module nuts (1).
6. Disconnect the rear sliding window electrical connector from the module (2).
7. Remove the rear sliding window module assembly from the vehicle.

Installation Procedure

1. Install the rear sliding window module assembly to the vehicle.

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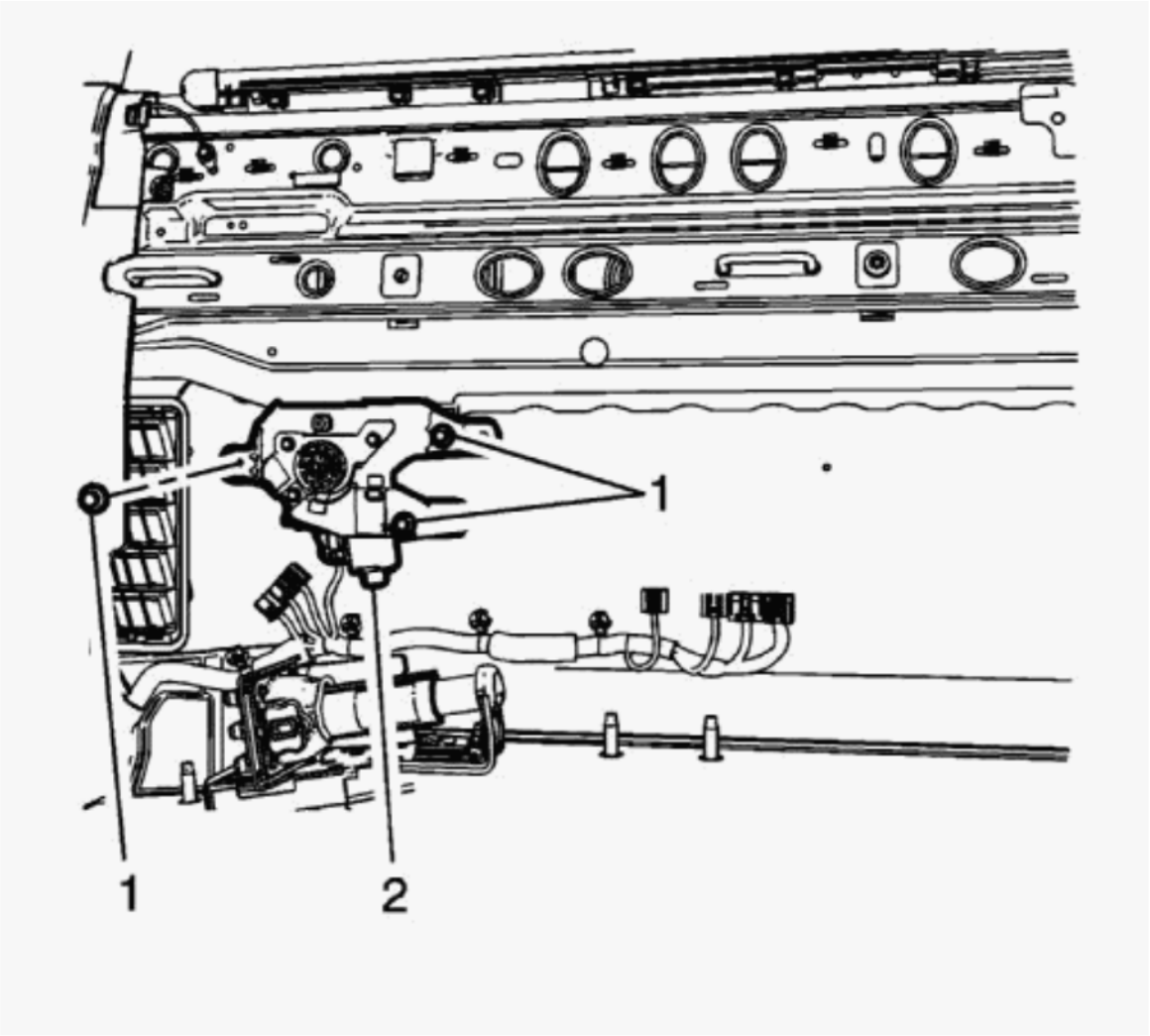


Fig. 57: Rear Sliding Window Module Nuts
Courtesy of GENERAL MOTORS COMPANY

2. Connect the rear sliding window electrical connector to the module (2).

CAUTION: **Refer to Fastener Caution .**

3. Install the rear sliding window module nuts (1).

Tighten

Tighten nuts to 9 N.m (80 lb in).

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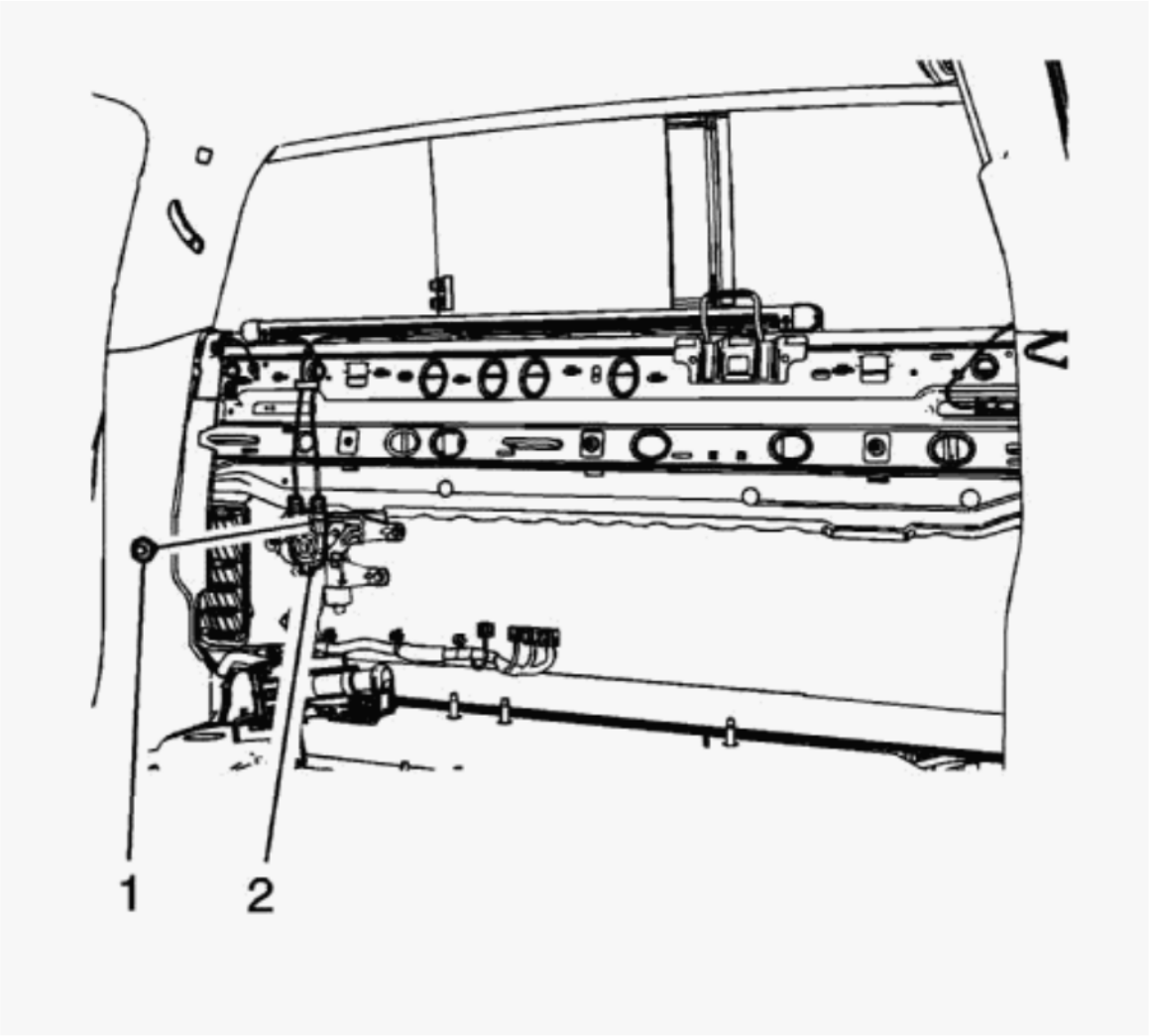


Fig. 58: Bolt And Regulator
Courtesy of GENERAL MOTORS COMPANY

4. Install the rear sliding window regulator and cables (2) to the module.
5. Install the bolt (1) to the rear sliding window regulator and cables (2).

Tighten

Tighten bolt to 9 N.m (80 lb in).

6. Install the body rear panel insulator. Refer to **Body Rear Panel Insulator Replacement** .
7. Inspect the rear sliding window for proper operation.

FRONT SIDE DOOR WINDOW CONTROL SWITCH REPLACEMENT

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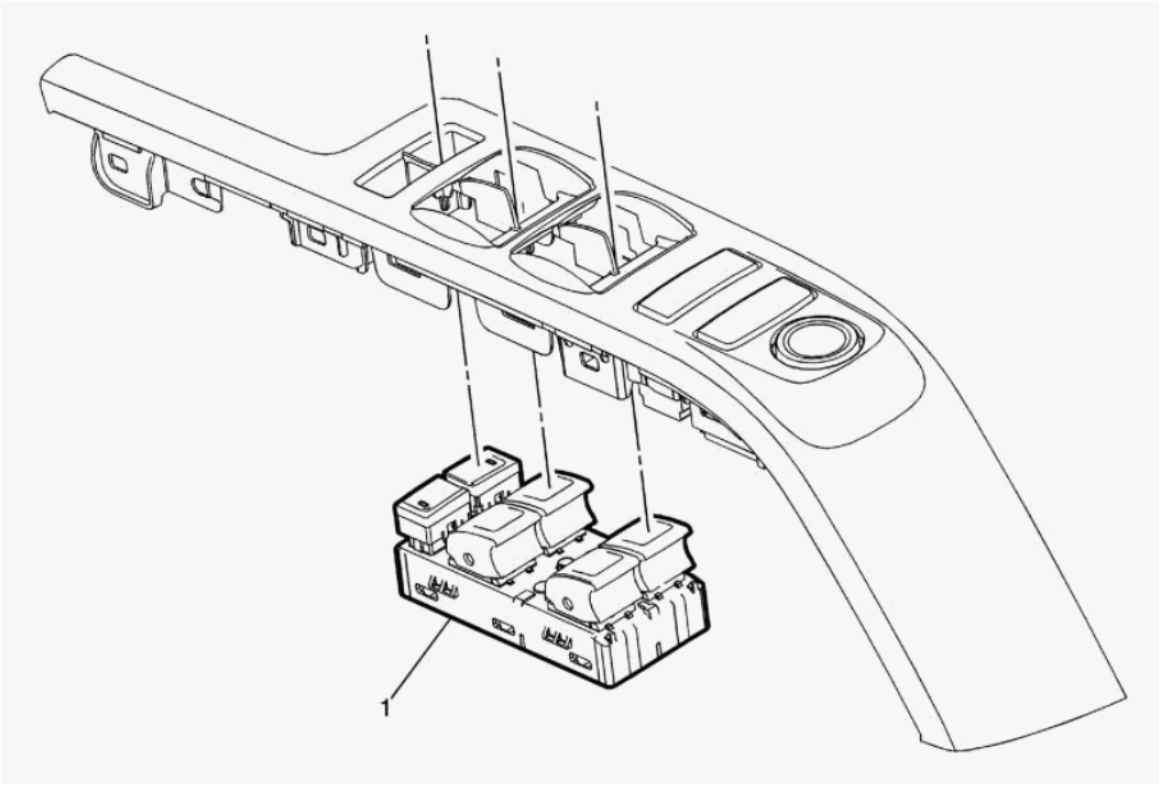


Fig. 59: Front Side Door Window Control Switch
Courtesy of GENERAL MOTORS COMPANY

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 (With A31)** .	
1	Front Side Door Window 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.

FRONT SIDE DOOR WINDOW SWITCH REPLACEMENT - RIGHT SIDE

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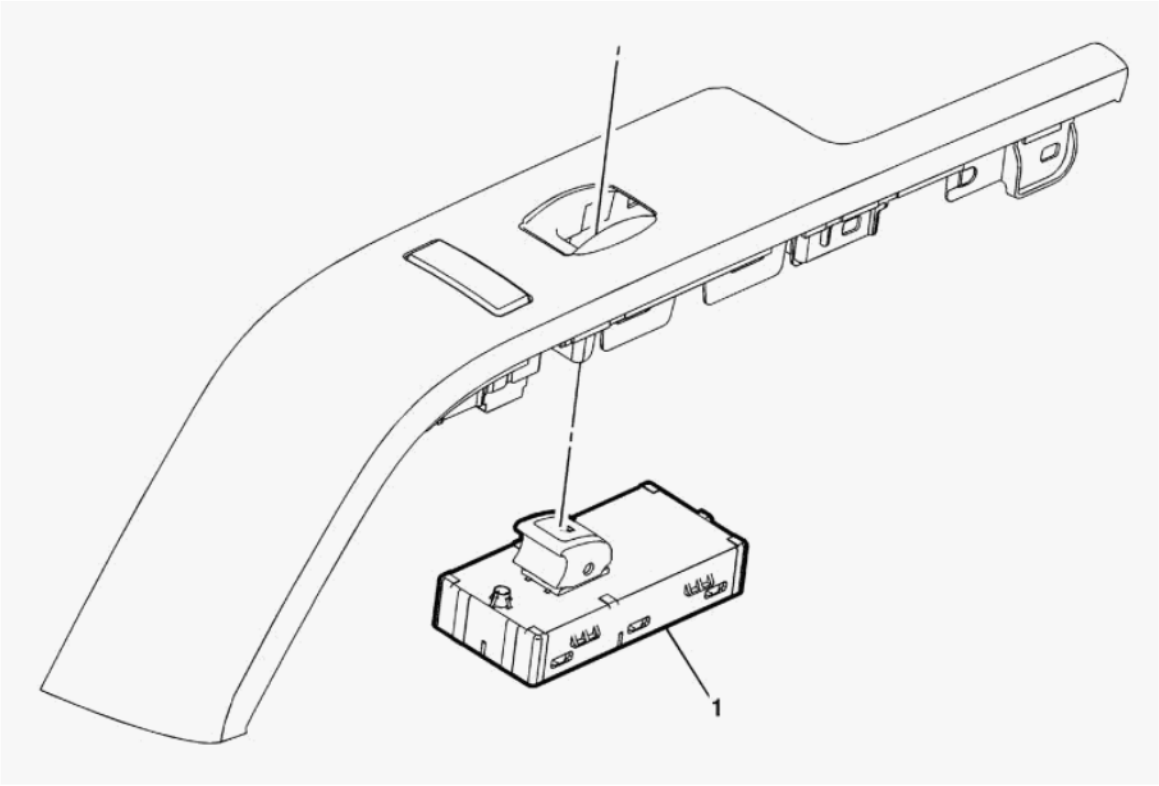


Fig. 60: Front Side Door Window Switch - Right Side
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the front side door accessory switch mount plate - passenger side. Refer to **Front Side Door Accessory Switch Mount Plate Replacement - Passenger Side** .	
1	Front Side Door Window Switch Assembly **Procedure** 1. Release tabs on switch to remove from front side door accessory switch mount plate - passenger side. 2. Refer to **Control Module References** for programming and set up procedures.

REAR SIDE DOOR WINDOW SWITCH REPLACEMENT

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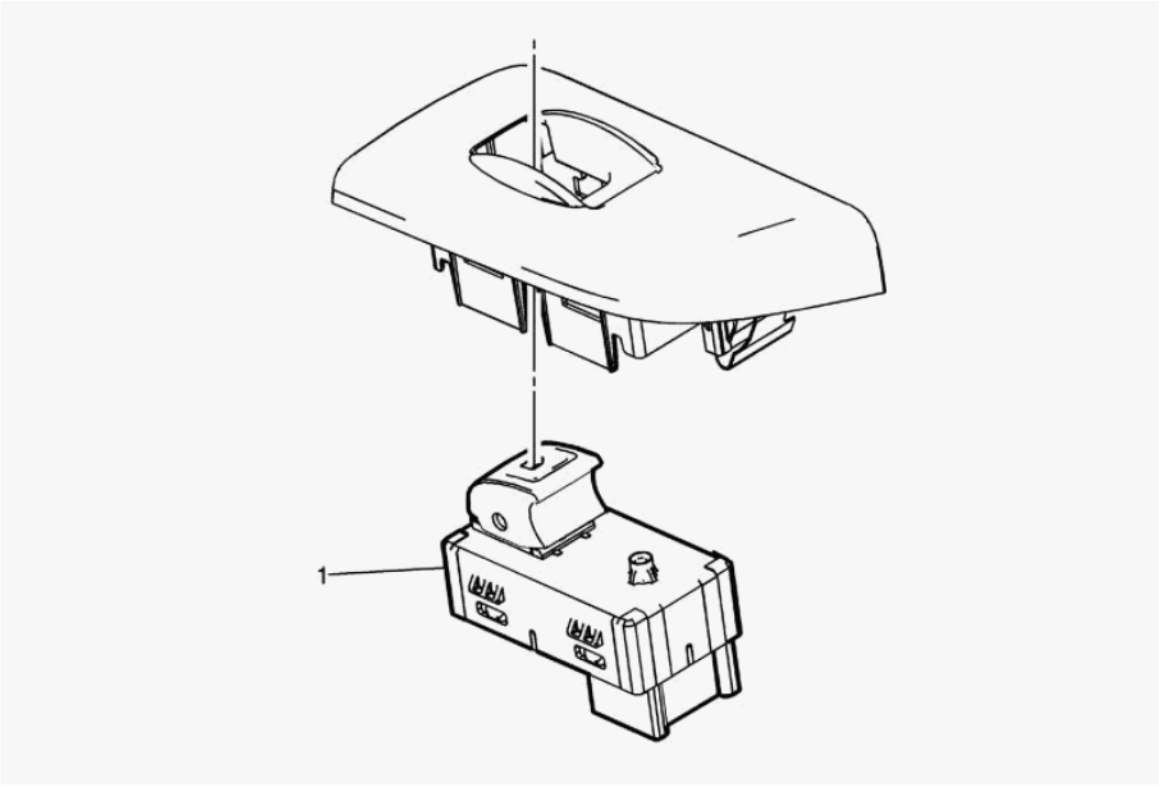


Fig. 61: Rear Side Door Window Switch
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the rear side door accessory switch mount plate. Refer to **Rear Side Door Accessory Switch Mount Plate Replacement (Crew Cab)** **Rear Side Door Accessory Switch Mount Plate Replacement (Extended Cab)** .	
1	Rear Side Door Window Switch Assembly **Procedure** Release the tabs on switch to remove from the rear side door accessory switch mount plate.

FRONT SIDE DOOR WINDOW REGULATOR REPLACEMENT (POWER)

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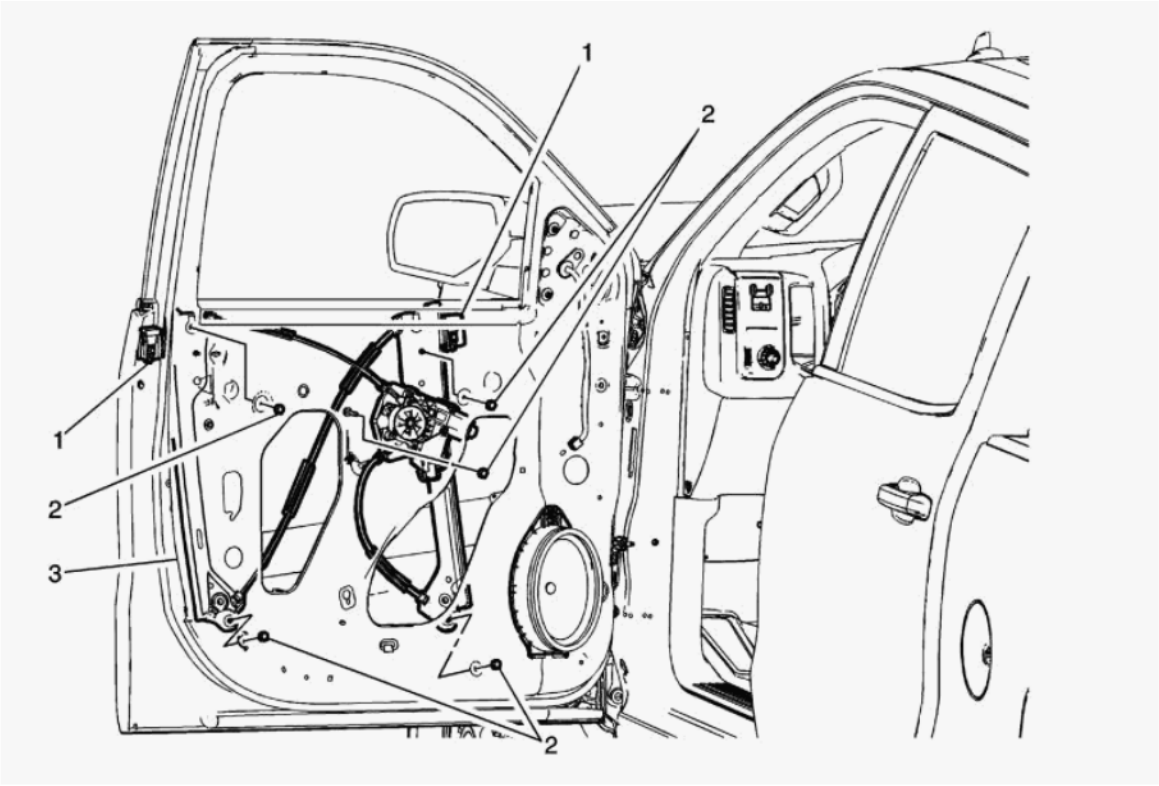


Fig. 62: Front Side Door Window Regulator (Power)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Remove the front side door pull handle bracket. Refer to **Front Side Door Pull Handle Bracket Replacement** . 2. Remove the front side door water deflector.	
1	Front Side Door Window Regulator Guide Bolt (Qty: 2) **CAUTION:** **Refer to** **Fastener Caution** . **Procedure** 1. Tape the window to the door frame to prevent it from moving. 2. Loosen the 2 bolts that attach the window to the window regulator. 3. Disconnect the front side door window regulator electrical connector. **Tighten** 11 N.m (97 lb in)
2	Front Side Door Window Regulator Nut (Qty: 5) **Tighten** 11 N.m (97 lb in)

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Callout	Component Name
3	Front Side Door Window Regulator **Procedure** Transfer the power window motor and program after installing in the vehicle. Refer to **Window Motor Programming - Express Function**. **NOTE:** **Inspect the door window for proper operation before installing the door trim.**

FRONT SIDE DOOR WINDOW REGULATOR REPLACEMENT (MANUAL)

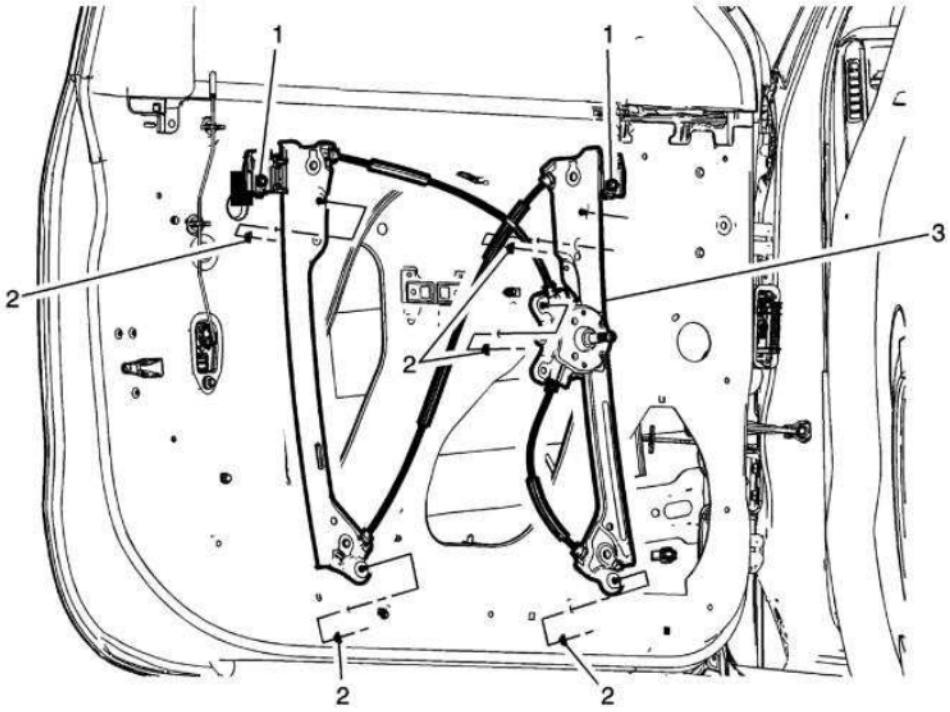


Fig. 63: Front Side Door Window Regulator (Manual)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Remove the front side door pull handle bracket. Refer to **Front Side Door Pull Handle Bracket Replacement** . 2. Remove the front side door water deflector.	
1	Front Side Door Window Regulator Guide Bolt (Qty: 2)

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Callout	Component Name
	CAUTION: **Refer to Fastener Caution Procedure.** 1. Tape the window to the door frame to prevent it from moving. 2. Loosen the 2 bolts that attach the window to the window regulator. **Tighten** 11 N.m (97 lb in)
2	Front Side Door Window Regulator Nut (Qty: 5) **Tighten** 11 N.m (97 lb in)
3	Front Side Door Window Regulator **NOTE:** **Inspect the door window for proper operation before installing the door trim.**

WINDOW MOTOR PROGRAMMING - EXPRESS FUNCTION

Window Motor Normalized Procedure

A window motor that has not been normalized will no longer perform the express up and express down functions, this may occur during the following conditions:

- When a window motor has been disconnected or replaced
- When a door harness has been disconnected
- When the battery has been disconnected or replaced

NOTE: **When DTC B3205 4B & 3210 4B are set, the following warnings will be displayed on the driver information center:**

Open, then Close Driver Window

Open, then Close Passenger Window

These warnings will clear once the windows have been "Normalized" and the respective DTC will clear.

To normalize the window motor, follow these steps:

NOTE: **The doors must be completely closed prior to normalizing the windows, a door that is open or ajar may cause the power window to function abnormally or to become inoperative while performing the normalizing procedure. If this occurs, verify that the door is completely closed then repeat the normalizing**

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procedure.

NOTE: **For vehicles equipped with a folding convertible top, the top must be closed and firmly latched prior to normalizing the windows. If attempting to normalize a power window with the folding convertible top not secured, the driver information center may display Top Not Secured and power window normalizing will not be permitted.**

1. Ignition ON.
2. Starting with the window completely UP, press and hold the power window switch until the window is fully open and continue holding the switch down for approximately 5 seconds after the window is completely open.
3. Pull the power window switch up until the window is fully closed and continue holding the switch up for approximately 5 seconds after the window is completely closed.

The window should now be normalized and the window should perform the express up and express down functions.

Window Motor Relearn Procedure

A relearn procedure may need to be performed for any Local Interconnect Network (LIN) window motor for the following conditions:

- When the window glass is out of alignment
- When the window glass has been replaced
- When the door has been replaced
- When the window regulator has been replaced

NOTE: **Prior to performing the relearn procedure the vehicle must have all 4 wheels properly inflated and mounted, the vehicle must be sitting on a level surface and all doors must be completely closed and for vehicles equipped with a folding convertible top, the top must be closed and firmly latched.**

To relearn the window motor, follow these steps:

1. Ignition ON.
2. With a scan tool, select Module Diagnosis, Body Control Module, Configuration/Reset Functions and then select the appropriate Clear Window Learn Values for the window motor requiring the relearn procedure.
3. After the learn procedure, exit the scan tool learn procedure completely, the power window cannot be normalized and will not function until you exit the program.
4. Starting with the window completely UP, press and hold the power window switch until the window is fully open and continue holding the switch down for approximately 5 seconds after the window is completely open.
5. Pull the power window switch up until the window is fully closed and continue holding the switch up for approximately 5 seconds after the window is completely closed.

The window is now reprogrammed.

FRONT SIDE DOOR WINDOW REGULATOR MOTOR REPLACEMENT

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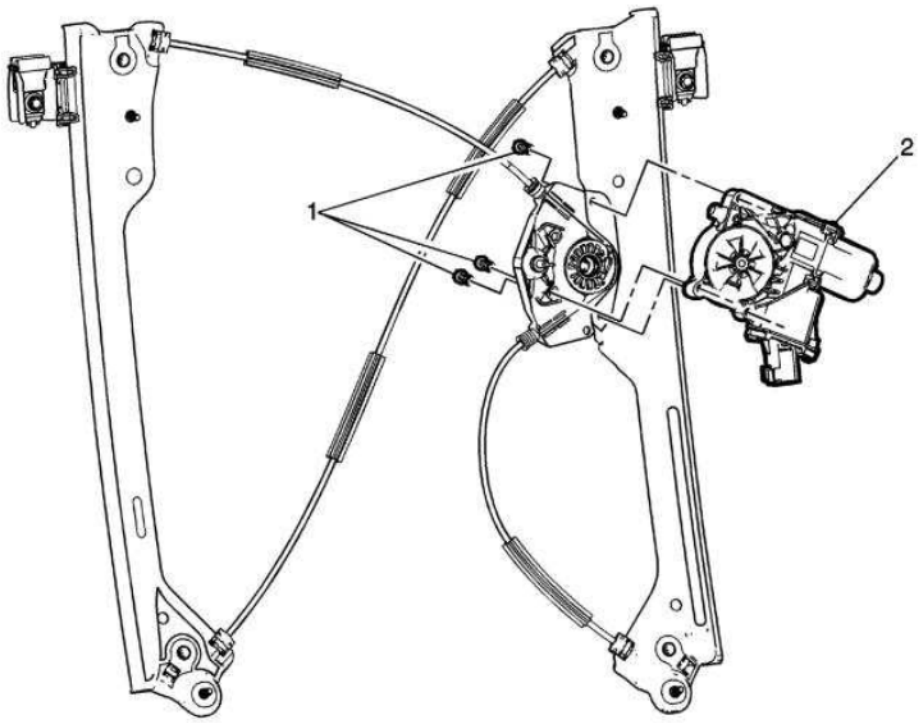


Fig. 64: Front Side Door Window Regulator Motor
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the front side door window regulator. Refer to **Front Side Door Window Regulator Replacement (Power)Front Side Door Window Regulator Replacement (Manual)**.	
1	Front Side Door Window Regulator Motor Bolt (Qty: 3) **Tighten** 7 (62 lb in)
2	Front Side Door Window Regulator Motor **NOTE:** **Inspect the door window for proper operation before installing the door trim.**

REAR SIDE DOOR WINDOW REGULATOR REPLACEMENT (CREW CAB)

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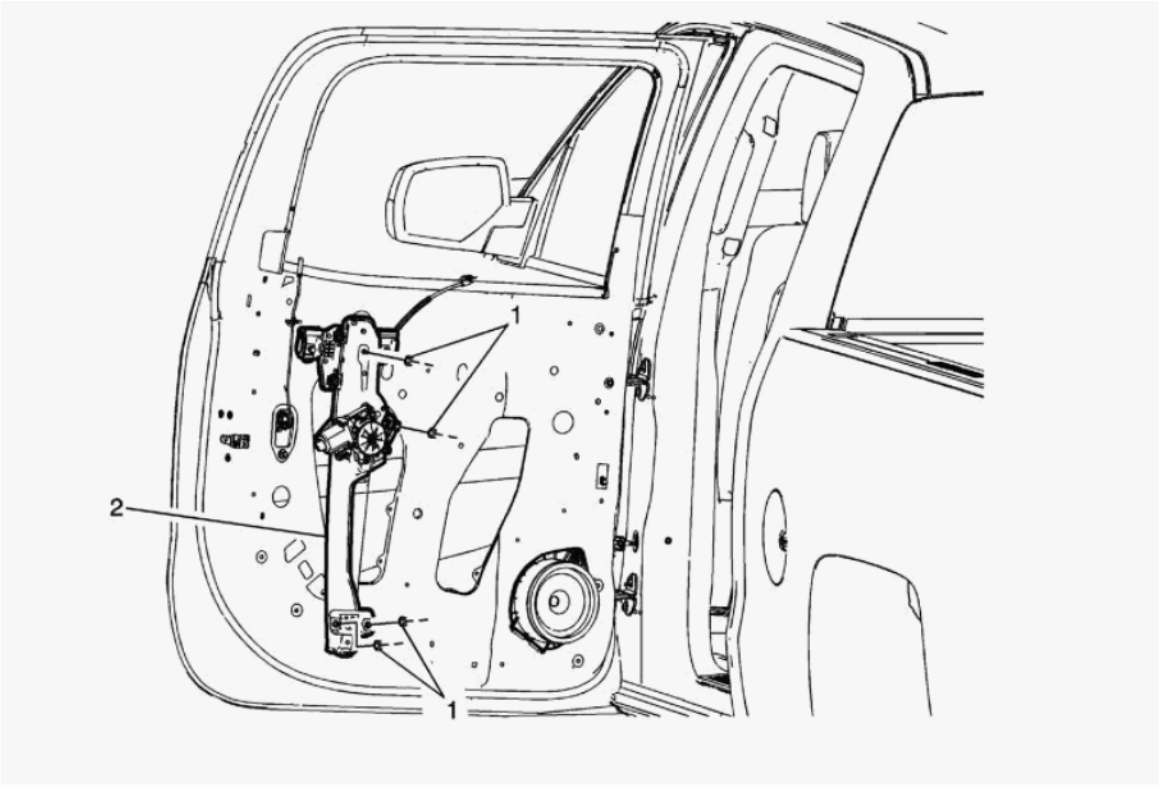


Fig. 65: Rear Side Door Window Regulator (Crew Cab)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to Glass and Sheet Metal Handling Warning . **Preliminary Procedure** 1. Remove the rear side door pull handle bracket. Refer to Rear Side Door Pull Handle Bracket Replacement . 2. Remove the rear side door water deflector.	

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Callout	Component Name
1	Rear Side Door Window Regulator Nut (Qty: 4) **CAUTION:** **Refer to Fastener Caution .** **Procedure** 1. Tape the window to the door frame to prevent the window from moving. 2. Loosen the window guide bolts, Do Not remove the bolts from the guide. 3. Disconnect the door electrical connector. **Tighten** 11 N.m (97 lb in)
2	Rear Side Door Window Regulator **Procedure** Transfer the rear side door window regulator motor. Refer to **Rear Side Door Window Regulator Motor Replacement**. **NOTE:** • **Ensure that the electrical connector is properly connected to motor and both front side door window regulator guide bolts are properly torqued to specification.** • **Inspect the door window for proper operation before installing the door trim.**

REAR SIDE DOOR WINDOW REGULATOR REPLACEMENT (EXTENDED CAB)

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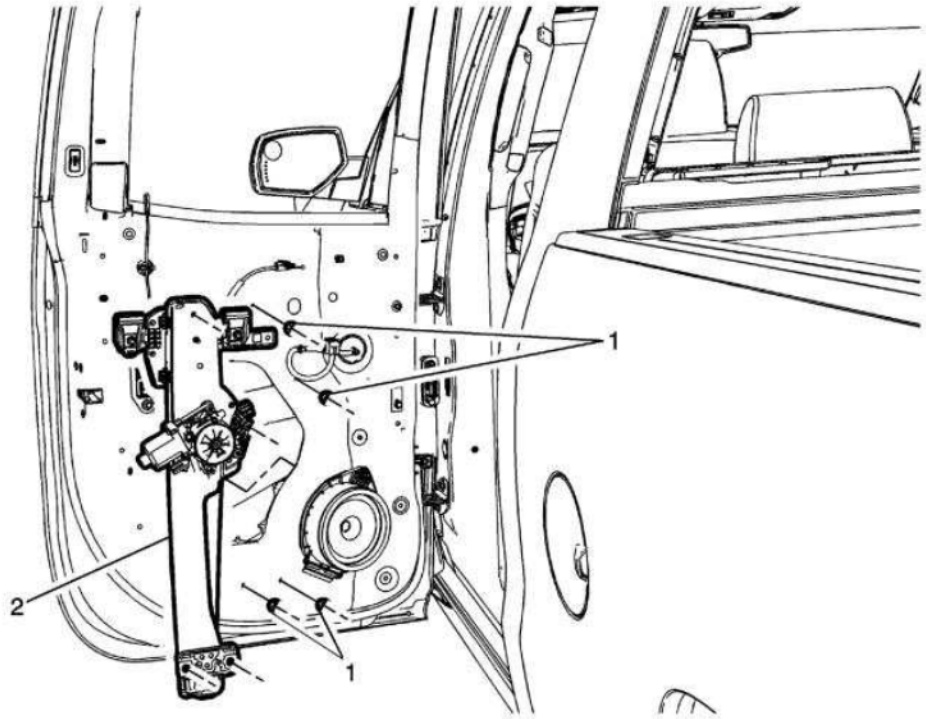


Fig. 66: Rear Side Door Window Regulator (Extended Cab)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: **Refer to Glass and Sheet Metal Handling Warning .** **Preliminary Procedure** 1. Remove the rear side door pull handle bracket. Refer to **Rear Side Door Pull Handle Bracket Replacement** . 2. Remove the rear side door water deflector.	

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Callout	Component Name
1	Rear Side Door Window Regulator Nut (Qty: 4) **CAUTION:** **Refer to Fastener Caution .** **Procedure** 1. Tape the window to the door frame to prevent the window from moving. 2. Loosen the window guide bolts, Do Not remove the bolts from the guide. 3. Disconnect the door electrical connector. **Tighten** 11 N.m (97 lb in)
2	Rear Side Door Window Regulator **Procedure** Transfer the rear side door window regulator motor. Refer to **Rear Side Door Window Regulator Motor Replacement**. **NOTE:** • **Ensure that the electrical connector is properly connected to motor and both front side door window regulator guide bolts are properly torqued to specification.** • **Inspect the door window for proper operation before installing the door trim.**

REAR SIDE DOOR WINDOW REGULATOR MOTOR REPLACEMENT

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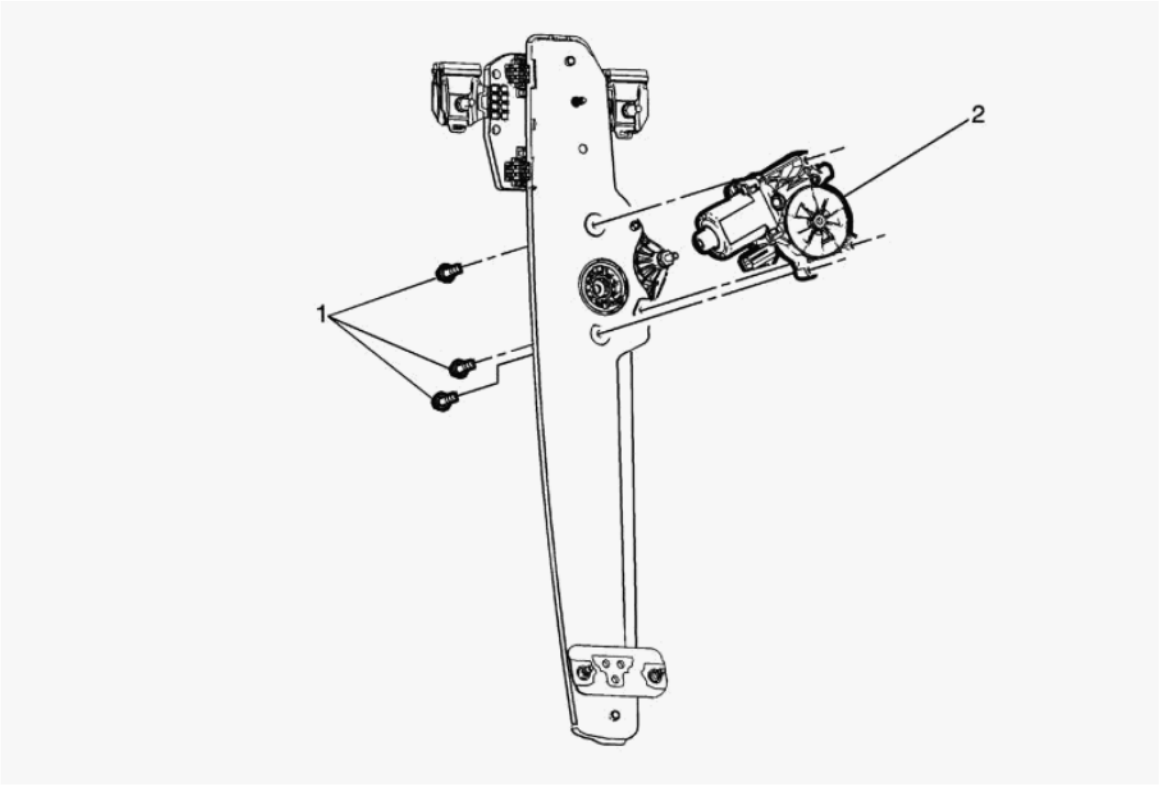


Fig. 67: Rear Side Door Window Regulator Motor
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to Glass and Sheet Metal Handling Warning . **Preliminary Procedure** Remove the rear side door window regulator. Refer to Rear Side Door Window Regulator Replacement (Crew Cab)Rear Side Door Window Regulator Replacement (Extended Cab).	
1	Rear Side Door Window Regulator Motor Bolt (Qty: 3). **CAUTION:** Refer to Fastener Caution . **Tighten** 7 (62 lb in)
2	Rear Side Door Window Regulator Motor **NOTE:** Inspect the door window for proper

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Callout	Component Name
	operation before installing the door trim.

FRONT SIDE DOOR WINDOW REGULATOR HANDLE REPLACEMENT

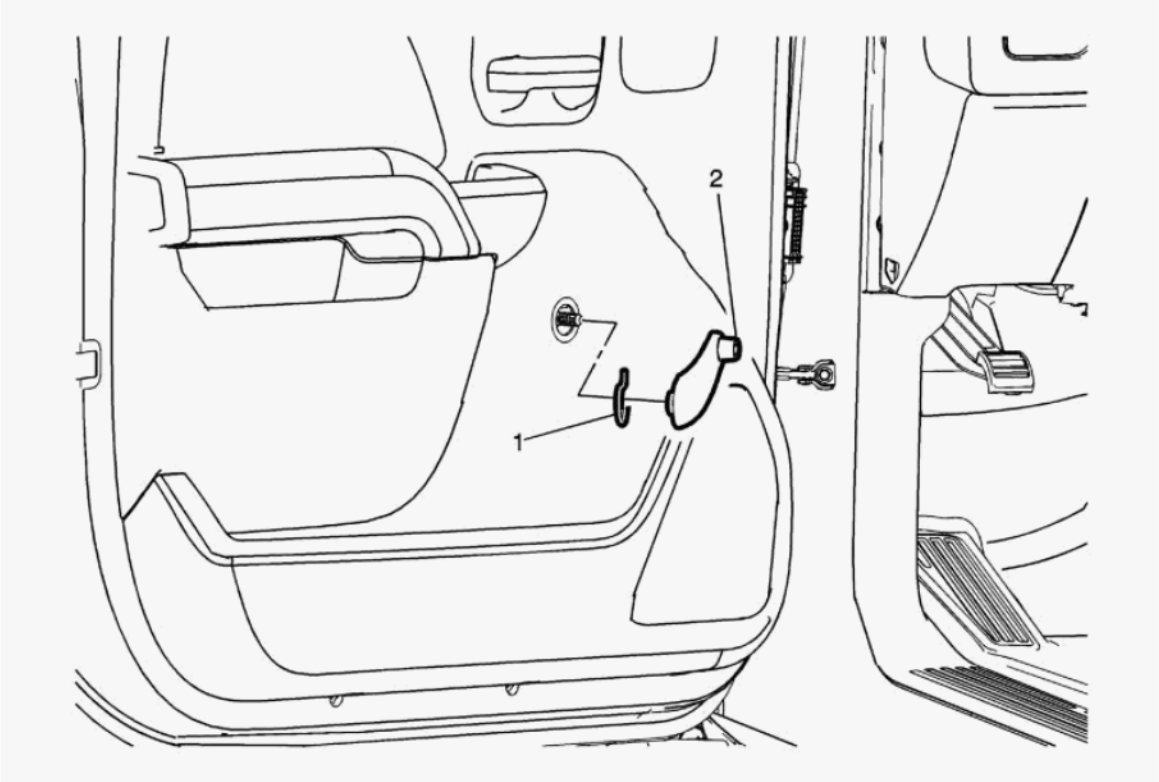


Fig. 68: Front Side Door Window Regulator Handle
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Front Side Door Window Regulator Handle Retainer Clip **Procedure** Using a suitable tool, remove the front side door window regulator handle clip.
2	Front Side Door Window Regulator Handle

FRONT SIDE DOOR WINDOW REAR CHANNEL RETAINER REPLACEMENT (CREW CAB, EXTENDED CAB)

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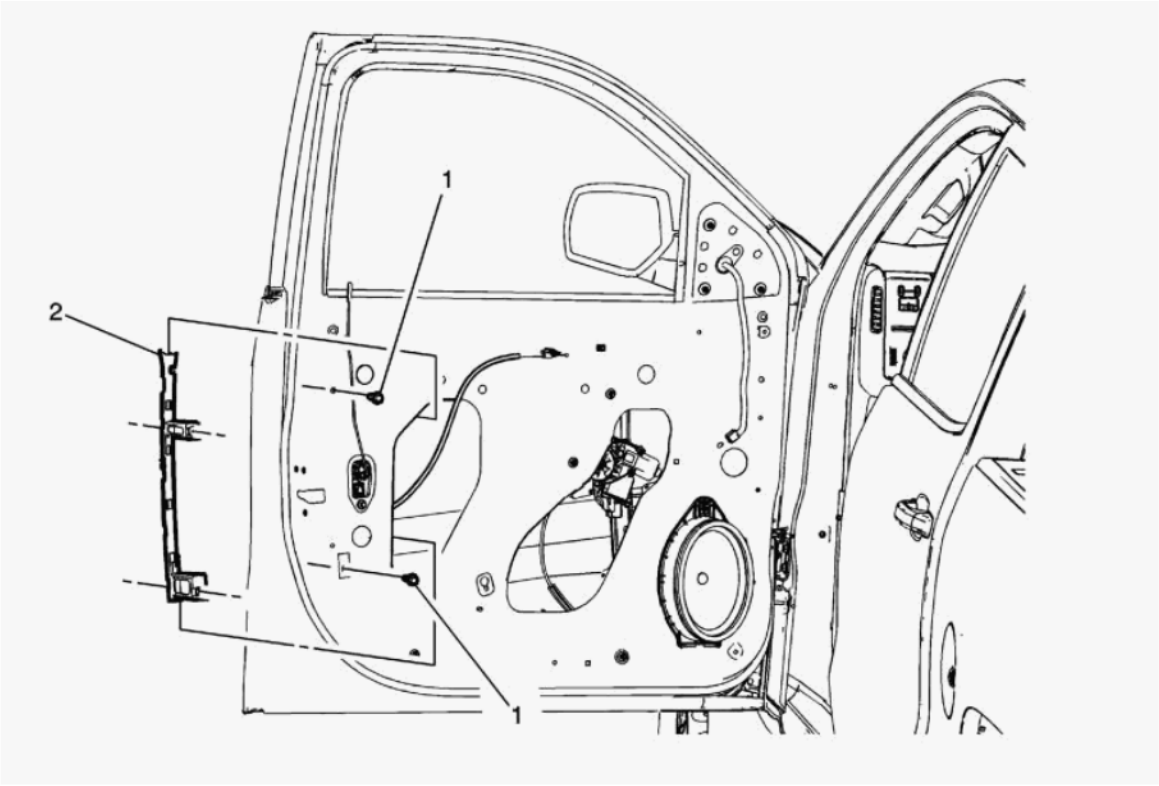


Fig. 69: Front Side Door Window Rear Channel Retainer (Crew Cab, Extended Cab)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Remove the front side door inner sealing strip. Refer to **Front Side Door Window Inner Sealing Strip Replacement (Crew Cab, Extended Cab)Front Side Door Window Inner Sealing Strip Replacement (Regular Cab)**. 2. Remove the front side door pull handle bracket. Refer to **Front Side Door Pull Handle Bracket Replacement** . 3. Remove the front side door water deflector.	
1	Front Side Door Window Rear Channel Bolt (Qty:2) **CAUTION:** **Refer to Fastener Caution .** **Tighten** 11 N.m (97 lb in)
2	Front Side Door Window Rear Channel **NOTE:** **Inspect the window for proper**

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Callout	Component Name
	operation before installing the door trim.

FRONT SIDE DOOR WINDOW REAR CHANNEL RETAINER REPLACEMENT (REGULAR CAB)

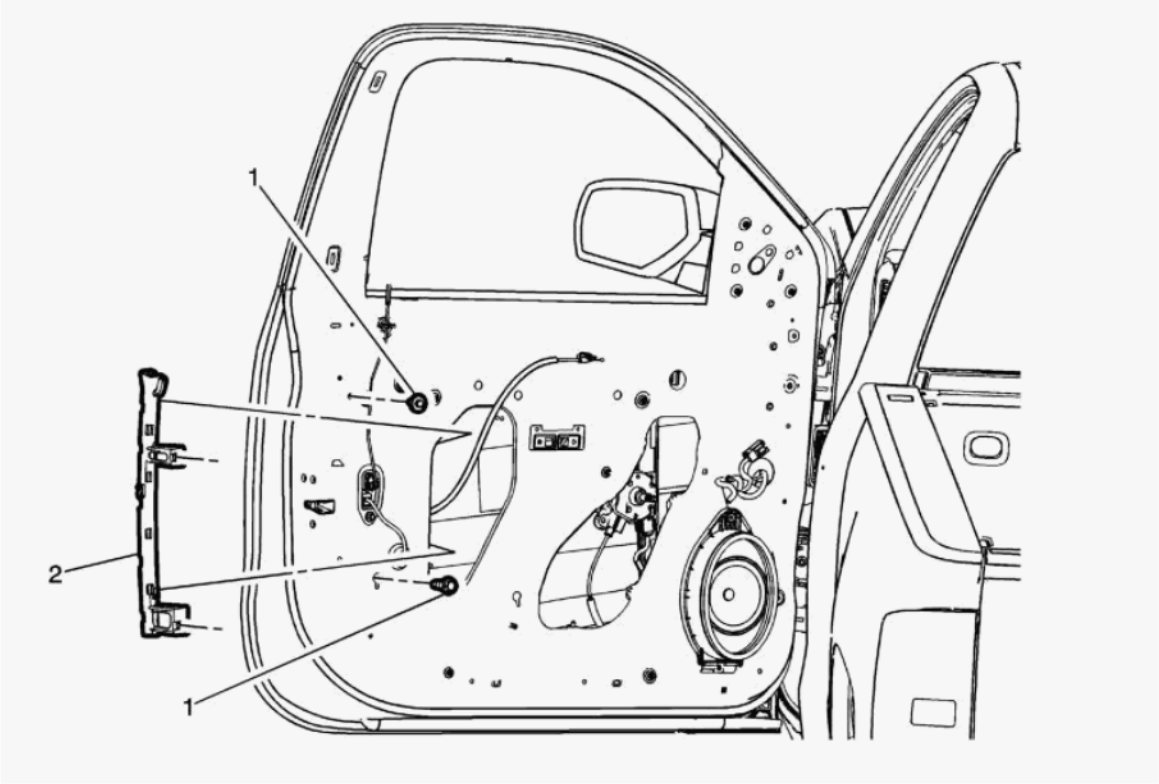


Fig. 70: Front Side Door Window Rear Channel Retainer (Regular Cab)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Remove the front side door inner sealing strip. Refer to **Front Side Door Window Inner Sealing Strip Replacement (Crew Cab, Extended Cab)Front Side Door Window Inner Sealing Strip Replacement (Regular Cab)**. 2. Remove the front side door pull handle bracket, if equipped. Refer to **Front Side Door Pull Handle Bracket Replacement** . 3. Remove the front side door water deflector.	
1	Front Side Door Window Rear Channel Bolt (Qty:2) **CAUTION:** **Refer to Fastener Caution .**

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Callout	Component Name
	Tighten 11 N.m (97 lb in)
2	Front Side Door Window Rear Channel **NOTE:** **Inspect the window for proper operation before installing the door trim.**

REAR SIDE DOOR WINDOW CHANNEL RETAINER REPLACEMENT (CREW CAB)

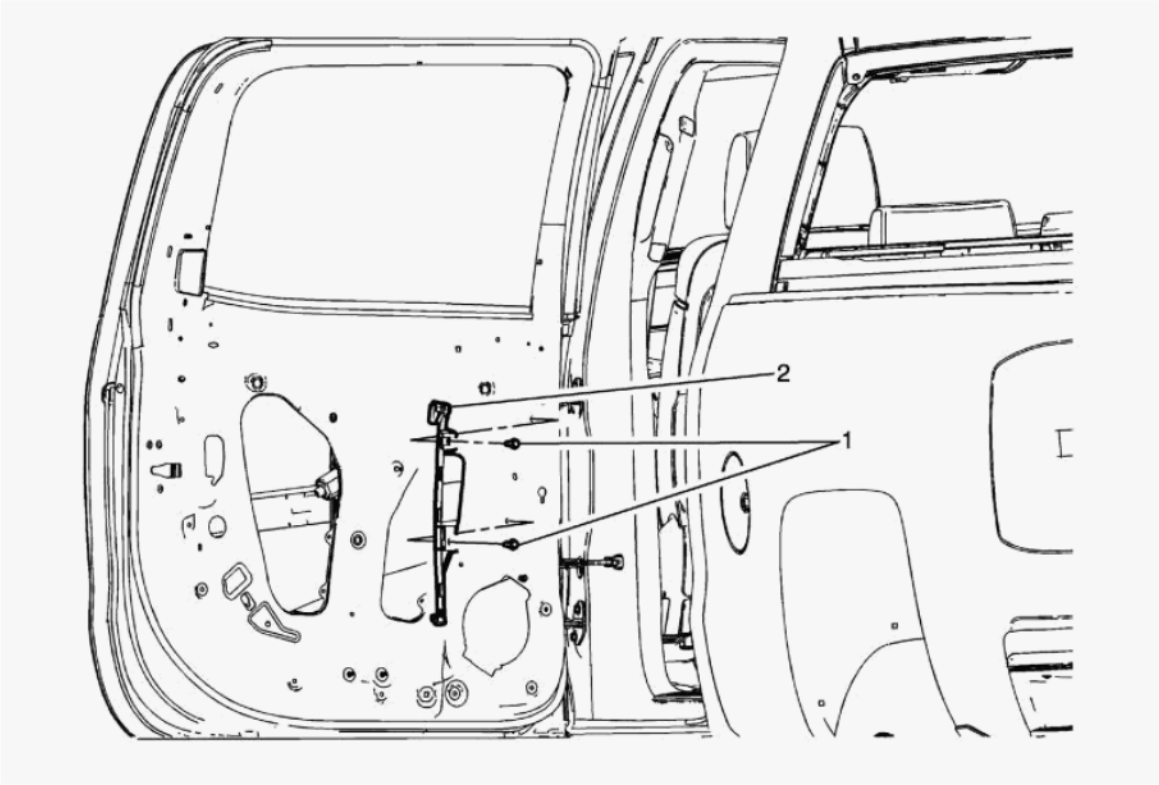


Fig. 71: Rear Side Door Window Channel Retainer (Crew Cab)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Remove the rear side door pull handle bracket. Refer to **Rear Side Door Pull Handle Bracket Replacement** . 2. Remove the rear side door water deflector. 3. Remove the rear side door speaker. Refer to **Radio Rear Side Door Speaker Replacement** .	

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Callout	Component Name
1	Rear Side Door Window Channel Retainer Bolt (Qty:2) **CAUTION:** **Refer to Fastener Caution .** **Tighten** 11 N.m (97 lb in)
2	Rear Side Door Window Channel Retainer **NOTE:** **Inspect the window for proper operation before installing the door trim.**

REAR SIDE DOOR WINDOW CHANNEL RETAINER REPLACEMENT (EXTENDED CAB)

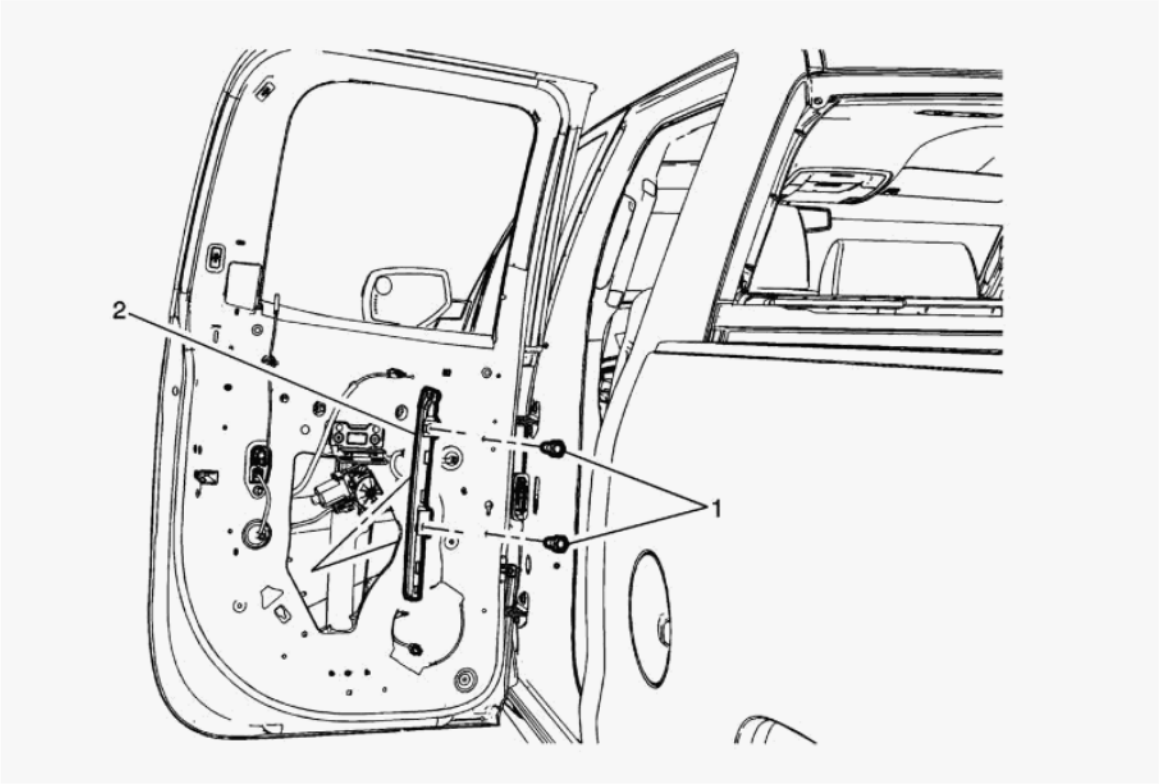


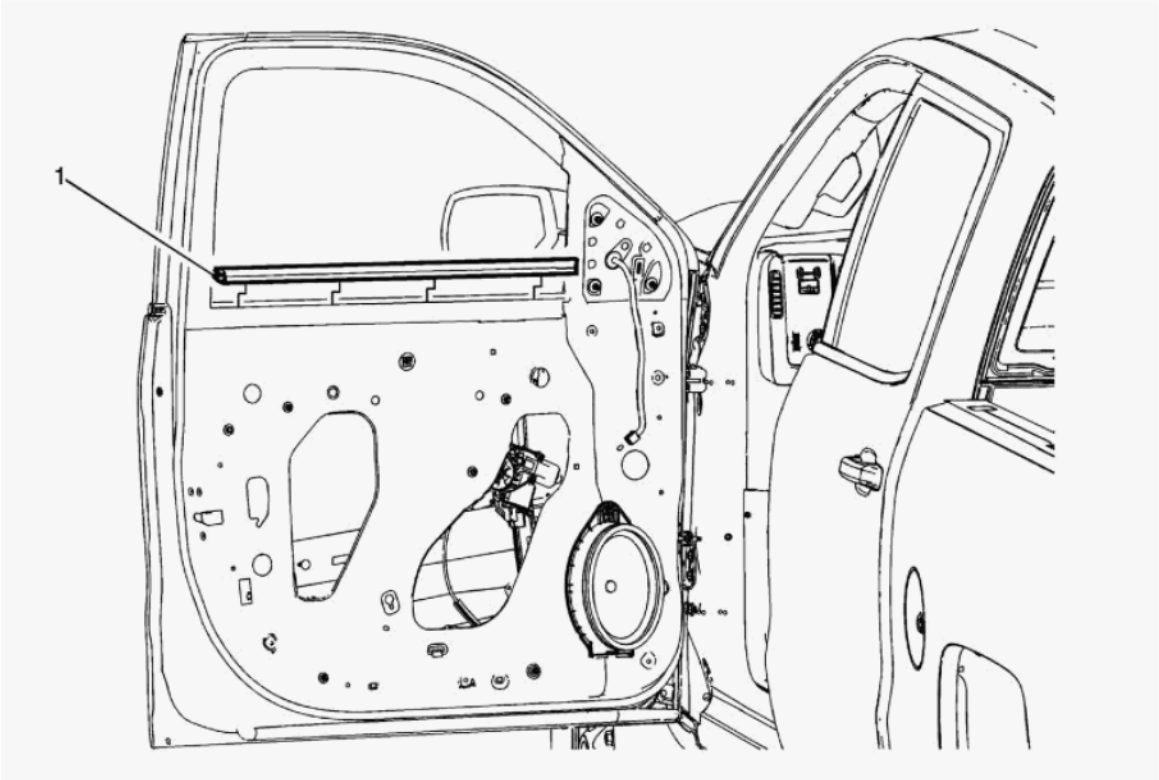
Fig. 72: Rear Side Door Window Channel Retainer (Extended Cab)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures	

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Callout	Component Name
1. Remove the rear side door pull handle bracket. Refer to **Rear Side Door Pull Handle Bracket Replacement** . 2. Remove the rear side door water deflector. 3. Remove the rear side door speaker. Refer to **Radio Rear Side Door Speaker Replacement** .	
1	Rear Side Door Window Channel Retainer Bolt (Qty:2) **CAUTION:** **Refer to Fastener Caution .** **Tighten** 11 N.m (97 lb in)
2	Rear Side Door Window Channel Retainer **NOTE:** **Inspect the window for proper operation before installing the door trim.**

FRONT SIDE DOOR WINDOW INNER SEALING STRIP REPLACEMENT (CREW CAB, EXTENDED CAB)



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Fig. 73: Front Side Door Window Inner Sealing Strip (Crew Cab, Extended Cab)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the front side door window garnish molding. Refer to **Front Side Door Window Garnish Molding Replacement (Crew Cab, Extended Cab)** **Front Side Door Window Garnish Molding Replacement (Regular Cab)** .	
1	Front Side Door Window Inner Sealing Strip **Procedure** Pull upward on the sealing strip to release it from the inside door flange. **NOTE:** **Inspect the window for proper operation before installing the door trim.**

FRONT SIDE DOOR WINDOW INNER SEALING STRIP REPLACEMENT (REGULAR CAB)

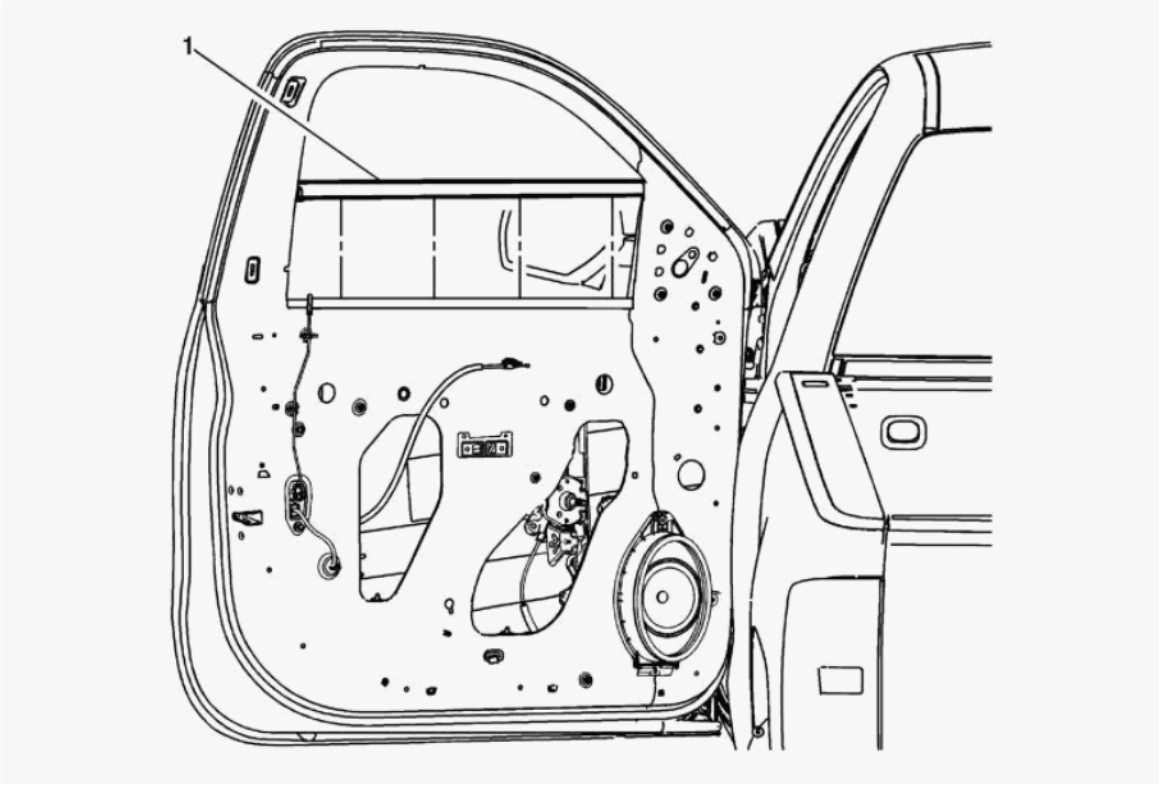


Fig. 74: Front Side Door Window Inner Sealing Strip (Regular Cab)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the front side door window garnish molding. Refer to **Front Side Door Window Garnish Molding**	

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Callout	Component Name
Replacement (Crew Cab, Extended Cab) Front Side Door Window Garnish Molding Replacement (Regular Cab) .	
1	Front Side Door Window Inner Sealing Strip **Procedure** Pull upward on the sealing strip to release it from the inside door flange. **NOTE:** **Inspect the window for proper operation before installing the door trim.**

REAR SIDE DOOR WINDOW BELT REVEAL MOLDING REPLACEMENT (CREW CAB)

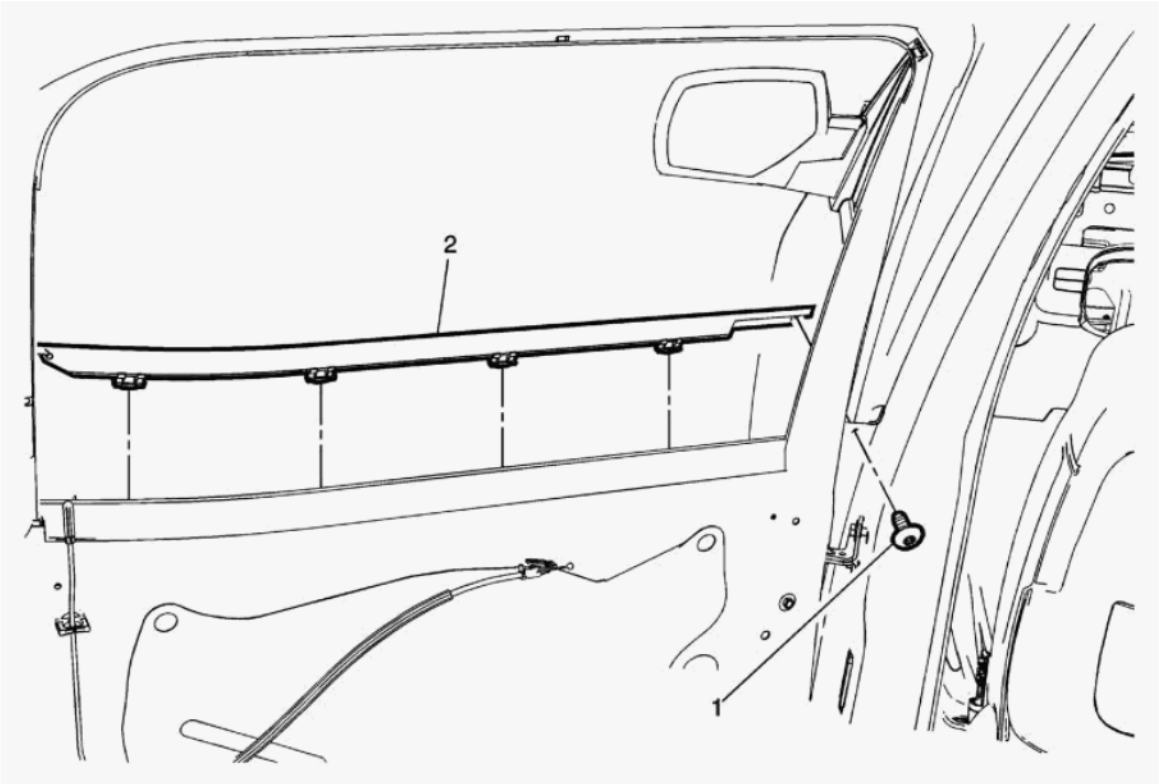


Fig. 75: Rear Side Door Window Belt Reveal Molding (Crew Cab)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure 1. Position the door window as needed for service. 2. Tape off the lower window frame to prevent damage to the door. 3. Remove the rear side door window garnish molding. Refer to Rear Side Door Window Garnish Molding Replacement (Crew Cab) Rear Side Door Window Garnish Molding Replacement (Extended Cab) .	

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Callout	Component Name
4. Remove the rear side door window weatherstrip. Refer to **Rear Side Door Weatherstrip Replacement - Door Side (Crew Cab)** **Rear Side Door Weatherstrip Replacement - Door Side (Extended Cab)** .	
1	Rear Side Door Window Belt Reveal Molding Bolt **CAUTION:** **Refer to Fastener Caution** **Tighten** 3 N.m (27 lb in)
2	Rear Side Door Window Belt Reveal Molding **Procedure** 1. Lift upward on the reveal molding in order to unhook it from the door flange. 2. Install the reveal molding to the flange of the door and push downward until fully seated. **NOTE:** **Inspect the door window for proper operation.**

REAR SIDE DOOR WINDOW BELT REVEAL MOLDING REPLACEMENT (EXTENDED CAB)

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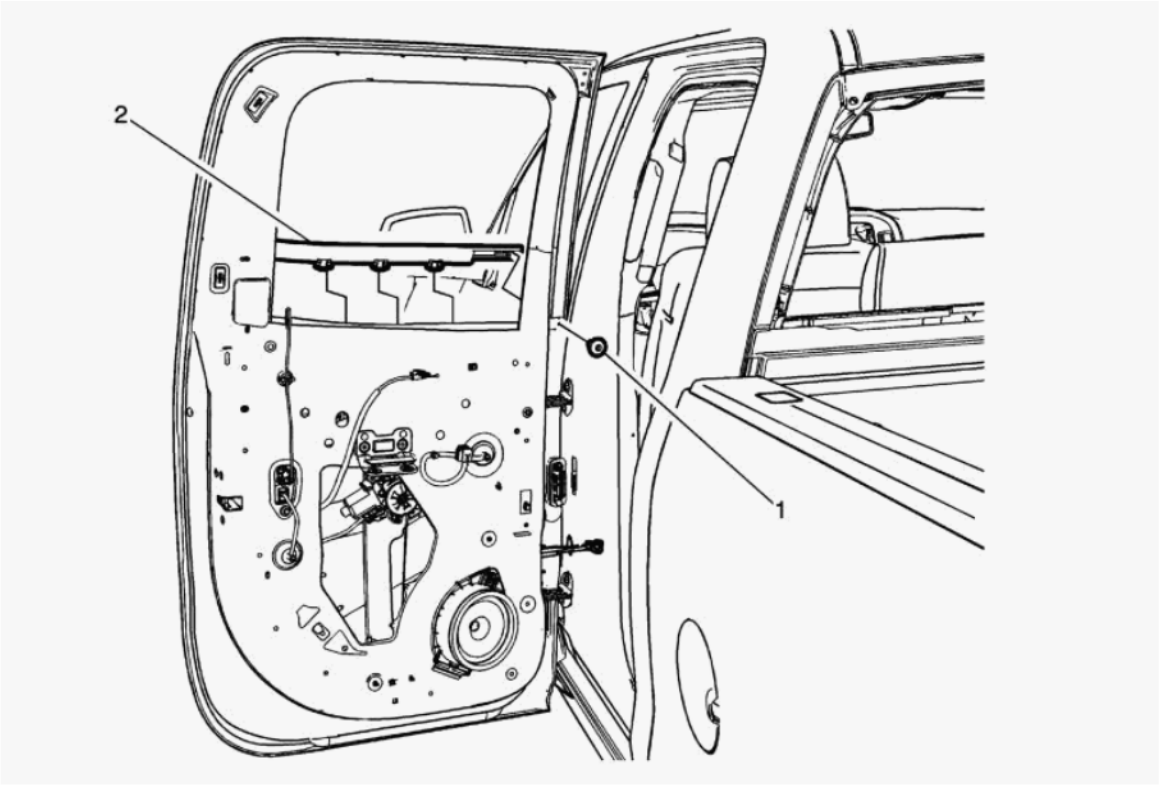


Fig. 76: Rear Side Door Window Belt Reveal Molding (Extended Cab)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure 1. Position the door window as needed for service. 2. Tape off the lower window frame to prevent damage to the door. 3. Remove the rear side door window garnish molding. Refer to **Rear Side Door Window Garnish Molding Replacement (Crew Cab)** **Rear Side Door Window Garnish Molding Replacement (Extended Cab)** . 4. Remove the rear side door window weatherstrip. Refer to **Rear Side Door Weatherstrip Replacement - Door Side (Crew Cab)** **Rear Side Door Weatherstrip Replacement - Door Side (Extended Cab)** .	
1	Rear Side Door Window Belt Reveal Molding Bolt **CAUTION:** **Refer to** **Fastener Caution** **Tighten** 3 N.m (27 lb in)
2	Rear Side Door Window Belt Reveal Molding **Procedure**

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Callout	Component Name
	1. Lift upward on the reveal molding in order to unhook it from the door flange. 2. Install the reveal molding to the flange of the door and push downward until fully seated. **NOTE:** **Inspect the door window for proper operation.**

FRONT SIDE DOOR WINDOW BELT REVEAL MOLDING REPLACEMENT

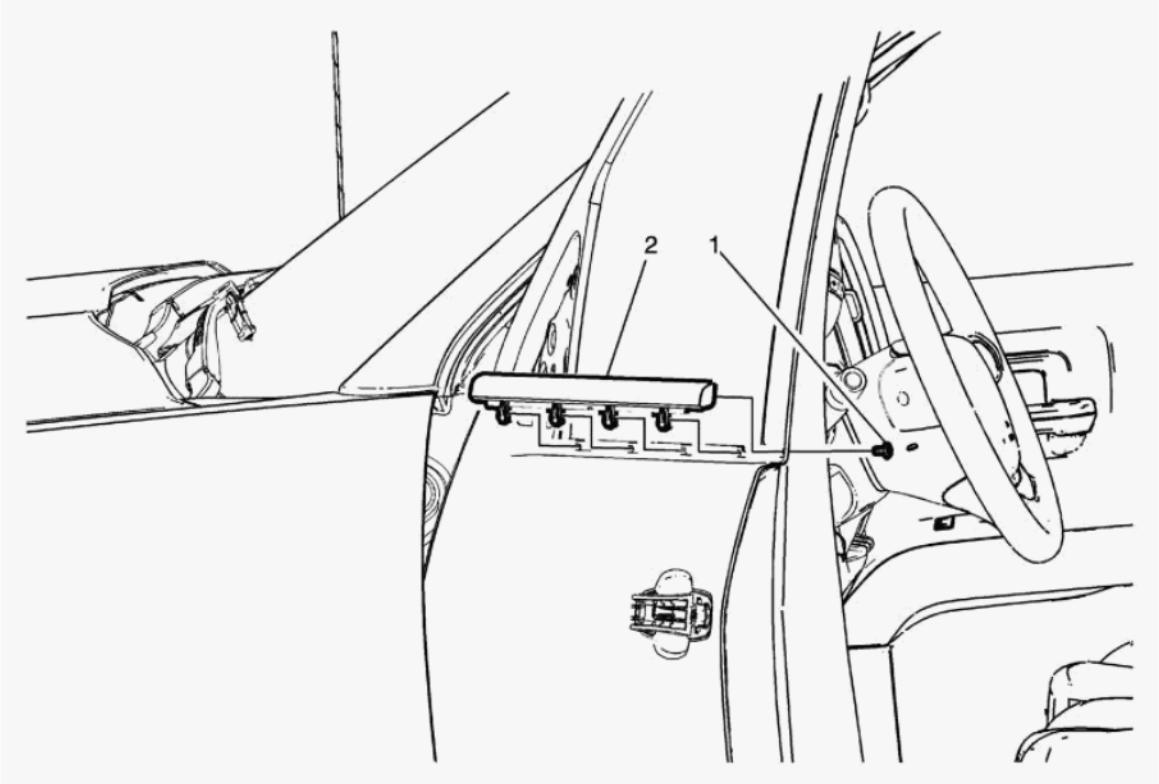


Fig. 77: Front Side Door Window Belt Reveal Molding
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure	
	1. Position the door window as needed for service. 2. Tape off the lower window frame to prevent damage to the door. 3. Remove the outside rearview mirror. Refer to **Outside Rearview Mirror Replacement (DL3, DL8)** **Outside Rearview Mirror Replacement (DE2)** **Outside Rearview Mirror Replacement (DPN)** **Outside Rearview Mirror Replacement (DQS)** **Outside Rearview Mirror Replacement (DF2)** . 4. Remove the front side door window garnish molding. Refer to **Front Side Door Window Garnish Molding Replacement (Crew Cab, Extended Cab)** **Front Side Door Window Garnish Molding Replacement (Regular Cab)** .

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Callout	Component Name
1	Front Side Door Window Belt Reveal Molding Bolt **CAUTION:** **Refer to** **Fastener Caution** **Tighten** 3 N.m (27 lb in)
2	Front Side Door Window Belt Reveal Molding **Procedure** 1. Lifting upward on the sealing strip end in order to unhook it from the outside door flange. 2. Install the sealing strip to the flange of the door and push downward until fully seated.

REAR SIDE DOOR WINDOW INNER SEALING STRIP REPLACEMENT (CREW CAB)

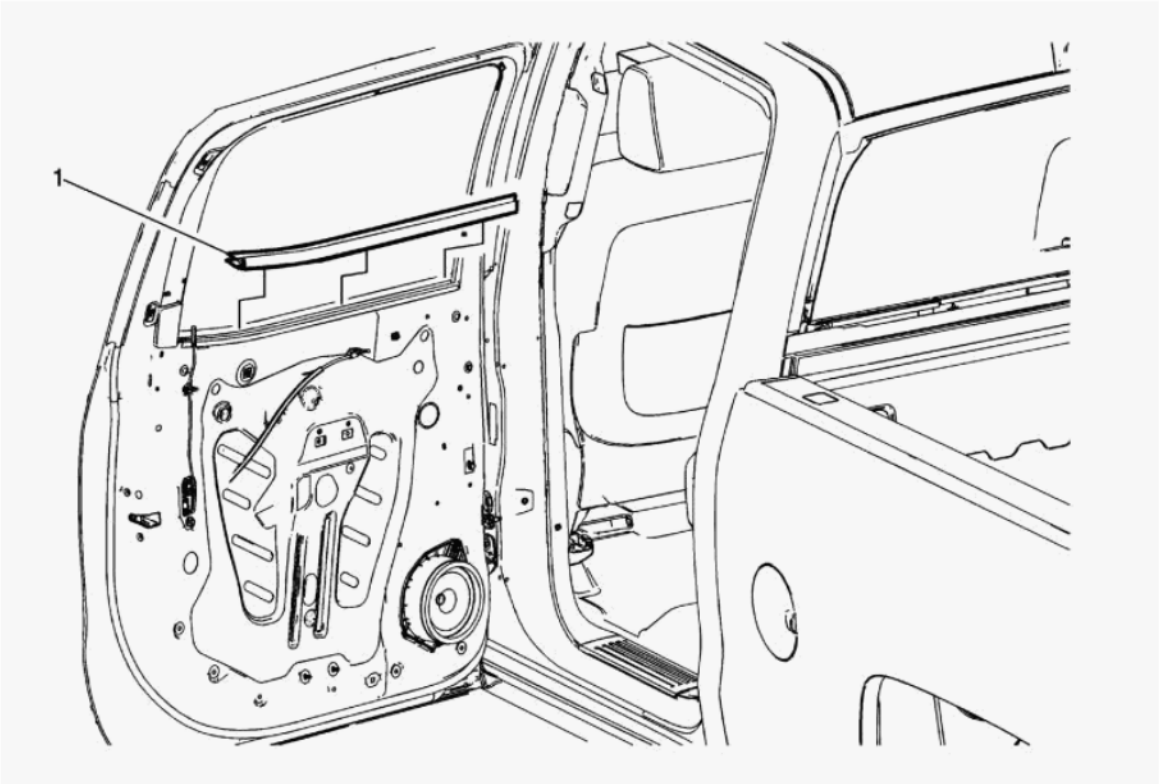


Fig. 78: Rear Side Door Window Inner Sealing Strip (Crew Cab)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the rear side door window garnish molding. Refer to **Rear Side Door Window Garnish Molding Replacement (Crew Cab)** **Rear Side Door Window Garnish Molding Replacement (Extended Cab)** .	

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Callout	Component Name
1	Rear Side Door Inner Belt Sealing Strip **Procedure** 1. Lifting upward on the sealing strip end in order to unhook it from the door flange. 2. Install the sealing strip to the flange of the door and push downward until fully seated. **NOTE:** **Inspect the door window for proper operation before installing the door trim.**

REAR SIDE DOOR WINDOW INNER SEALING STRIP REPLACEMENT (EXTENDED CAB)

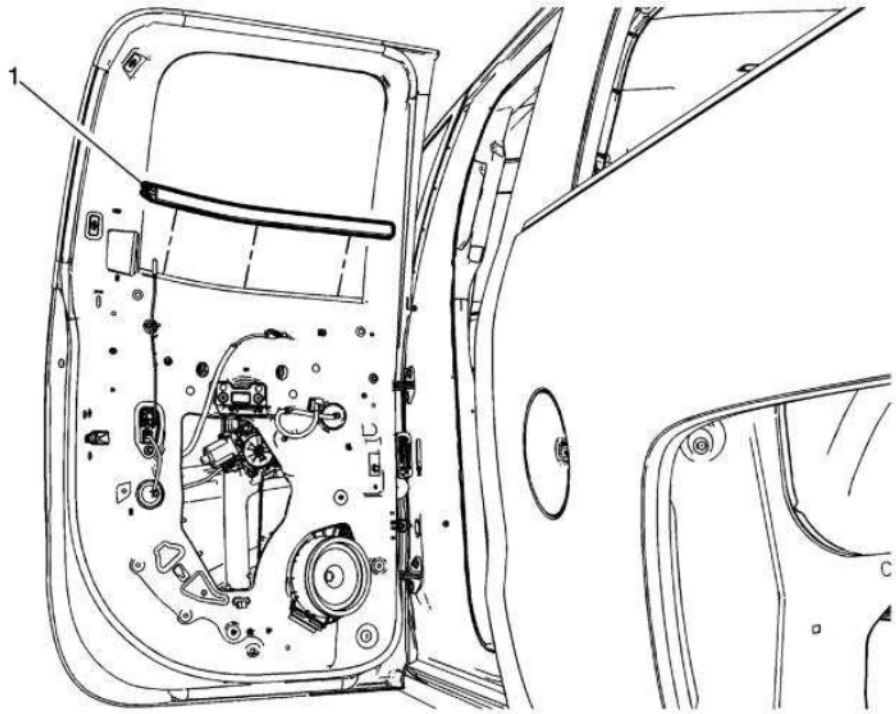


Fig. 79: Rear Side Door Window Inner Sealing Strip (Extended Cab)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the rear side door window garnish molding. Refer to **Rear Side Door Window Garnish Molding Replacement (Crew Cab)** **Rear Side Door Window Garnish Molding Replacement (Extended Cab)** .	
1	Rear Side Door Inner Belt Sealing Strip **Procedure**

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Callout	Component Name
	1. Lifting upward on the sealing strip end in order to unhook it from the door flange. 2. Install the sealing strip to the flange of the door and push downward until fully seated. **NOTE:** **Inspect the door window for proper operation before installing the door trim.**

FRONT SIDE DOOR WINDOW WEATHERSTRIP REPLACEMENT (CREW CAB, EXTENDED CAB)

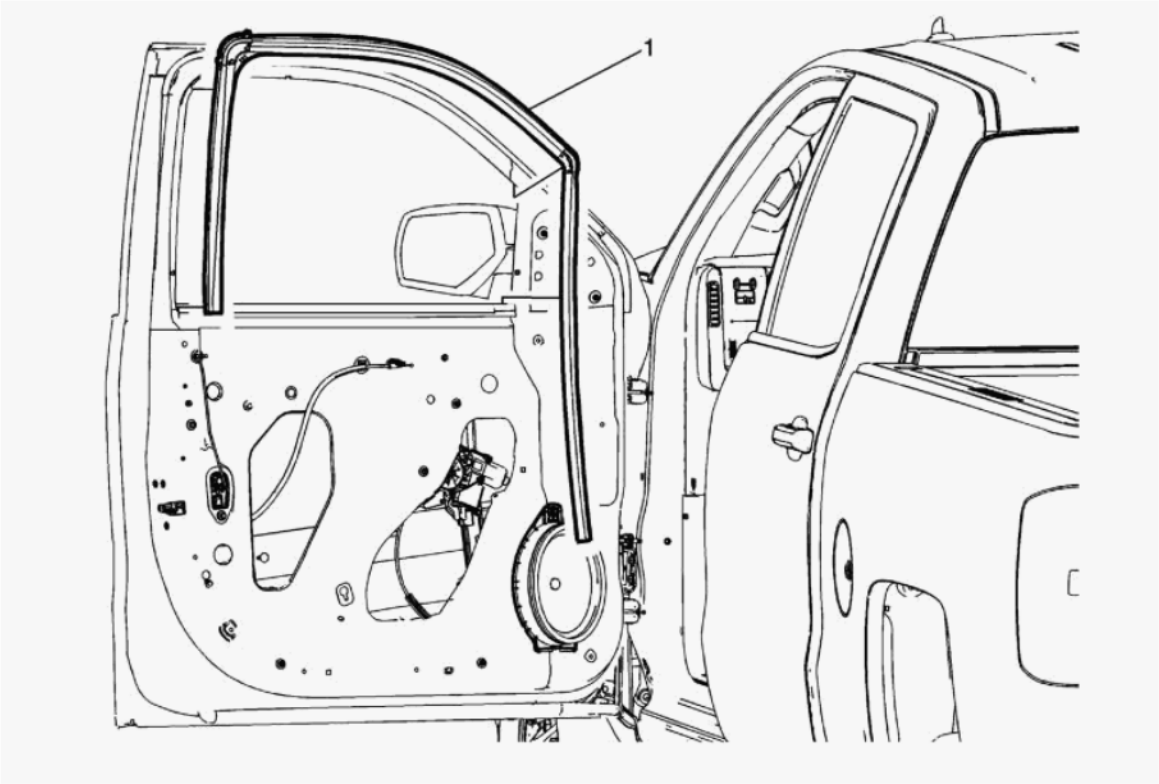


Fig. 80: Front Side Door Window Weatherstrip (Crew Cab, Extended Cab)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Remove the front side door window. Refer to **Front Side Door Window Replacement (Crew Cab, Extended Cab)Front Side Door Window Replacement (Regular Cab)**. 2. Remove the water deflector.	
1	Front Side Door Window Weatherstrip **Procedure**

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Callout	Component Name
	1. Grasp both upper corners of the window weatherstrip, pull downward releasing the assembly from the door frame. 2. Insert the weatherstrip downward in the front guide until fully seated. 3. Position the window weatherstrip in the upper rear corner of the frame, work the weatherstrip around the door frame. 4. Carefully move the regulator upward for short slow intervals, while ensuring that the window remains in the guide. **NOTE:** **Inspect the door window for proper operation before installing the door trim.**

FRONT SIDE DOOR WINDOW WEATHERSTRIP REPLACEMENT (REGULAR CAB)

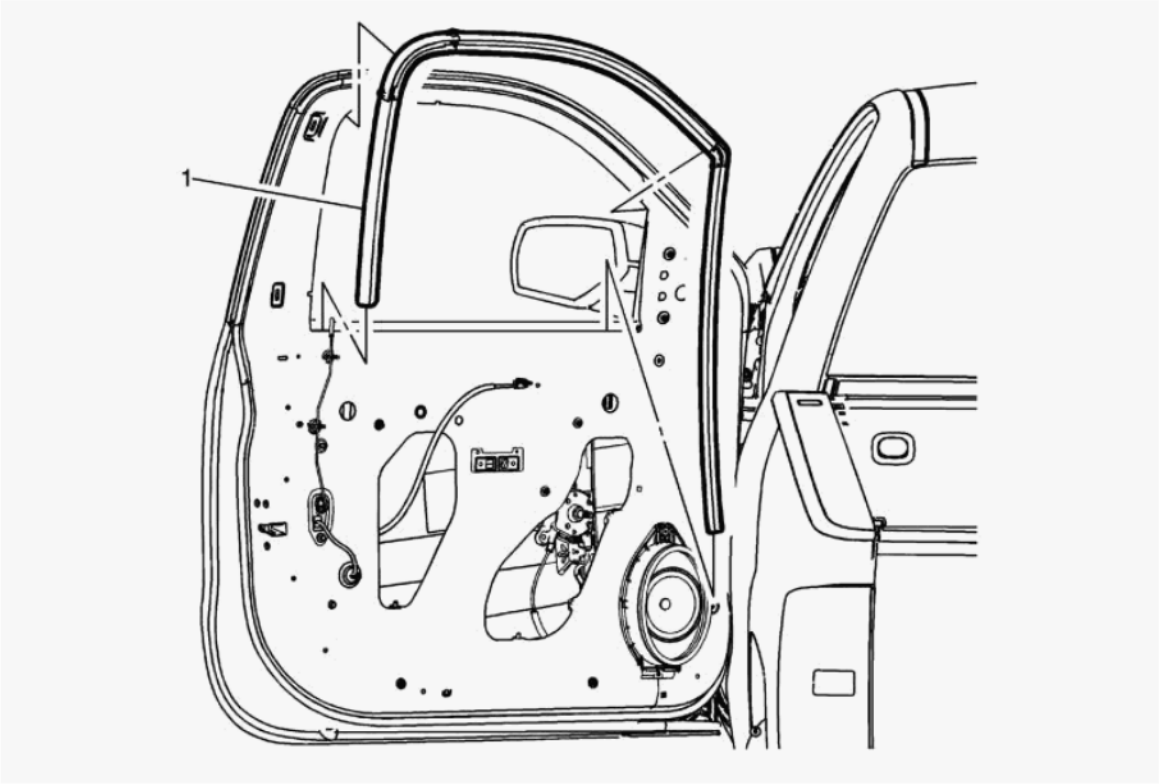


Fig. 81: Front Side Door Window Weatherstrip (Regular cab)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures	
	1. Remove the front side door window. Refer to **Front Side Door Window Replacement (Crew Cab, Extended Cab)Front Side Door Window Replacement (Regular Cab)**.

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Callout	Component Name
2. Remove the water deflector.	
1	Front Side Door Window Weatherstrip **Procedure** 1. Grasp both upper corners of the window weatherstrip, pull downward releasing the assembly from the door frame. 2. Insert the weatherstrip downward in the front guide until fully seated. 3. Position the window weatherstrip in the upper rear corner of the frame, work the weatherstrip around the door frame. 4. Carefully move the regulator upward for short slow intervals, while ensuring that the window remains in the guide. **NOTE:** **Inspect the door window for proper operation before installing the door trim.**

REAR SIDE DOOR WINDOW WEATHERSTRIP REPLACEMENT (CREW CAB)

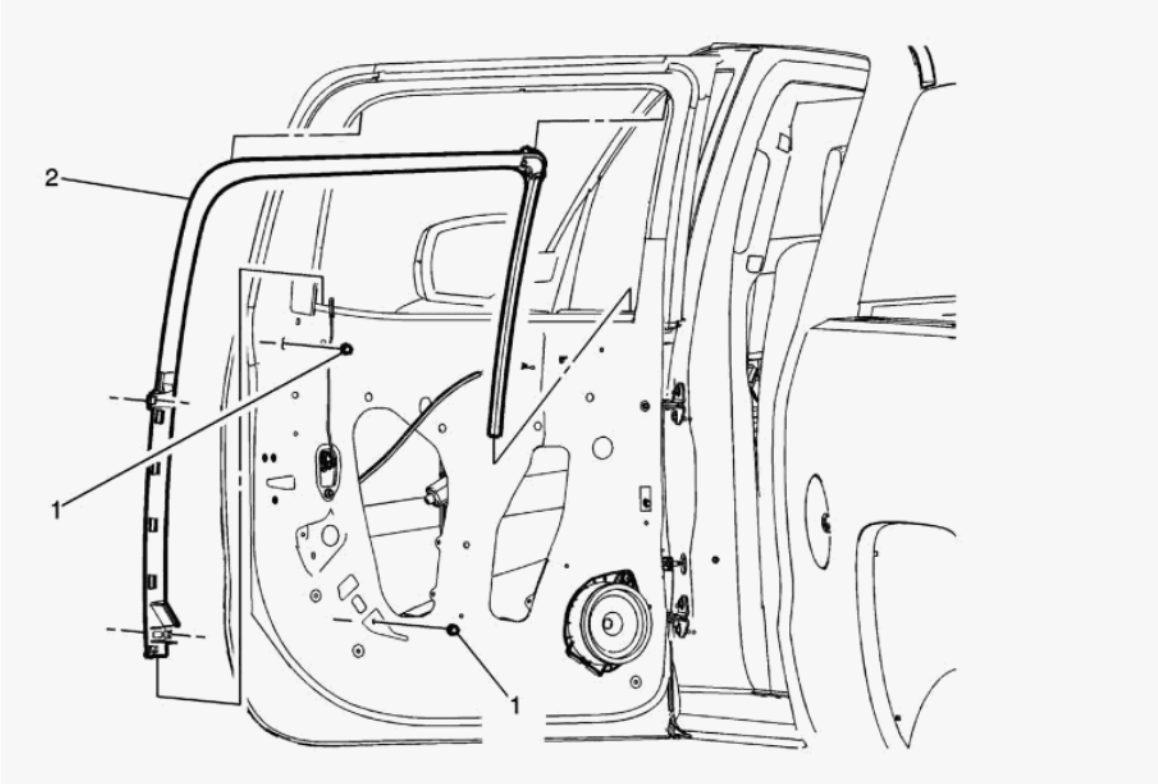


Fig. 82: Rear Side Door Window Weatherstrip (Crew Cab)
Courtesy of GENERAL MOTORS COMPANY

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Callout	Component Name
WARNING: **Refer to Glass and Sheet Metal Handling Warning .** **Preliminary Procedures** Remove the rear side door window. Refer to **Rear Side Door Window Replacement (Crew Cab)Rear Side Door Window Replacement (Extended Cab)**.	
1	Rear Side Door Window Weatherstrip Bolt (Qty: 2) **CAUTION:** **Refer to Fastener Caution** **Tighten** 11 N.m (97 lb in)
2	Rear Side Door Window Weatherstrip **Procedures** 1. Grasp both upper corners of the window weatherstrip, pull downward releasing it from the door frame. 2. Insert the weatherstrip downward in the guide until fully seated. 3. Position the weatherstrip in the upper rear corner of the frame, working the weatherstrip around the door frame. 4. Carefully move the regulator upward for short slow intervals, while ensuring that the window remains in the guides. **NOTE:** **Inspect the door window for proper operation before installing the door trim.**

REAR SIDE DOOR WINDOW WEATHERSTRIP REPLACEMENT (EXTENDED CAB)

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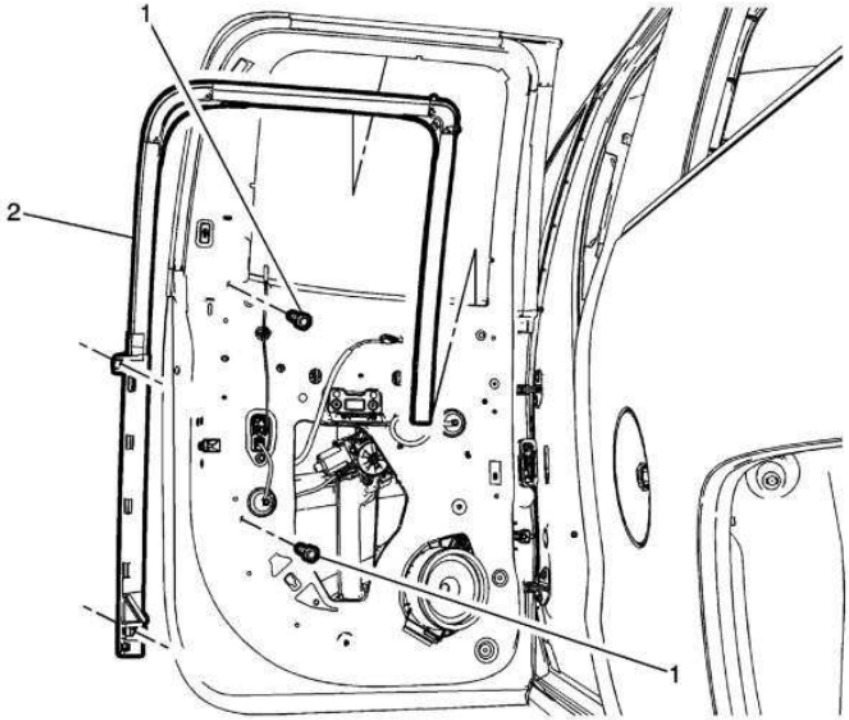


Fig. 83: Rear Side Door Window Weatherstrip (Extended Cab)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to Glass and Sheet Metal Handling Warning . **Preliminary Procedures** Remove the rear side door window. Refer to Rear Side Door Window Replacement (Crew Cab)Rear Side Door Window Replacement (Extended Cab).	
1	Rear Side Door Window Rear Channel Retainer Bolts **CAUTION:** Refer to Fastener Caution . **Tighten** 11 N.m (97 lb in)
2	Rear Side Door Window Weatherstrip **Procedures** 1. Grasp both upper corners of the window weatherstrip, pull downward releasing it from the door frame.

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Callout	Component Name
	2. Insert the weatherstrip downward in the guide until fully seated. 3. Position the weatherstrip in the upper rear corner of the frame, working the weatherstrip around the door frame. 4. Carefully move the regulator upward for short slow intervals, while ensuring that the window remains in the guides. **NOTE:** **Inspect the door window for proper operation before installing the door trim.**

DESCRIPTION AND OPERATION

FULL-CUT METHOD DESCRIPTION

IMPORTANT:

- If corrosion of the pinch-weld flange is present, or if sheet metal repairs or replacements are required, refinish the pinch-weld flange in order to present a clean, primer-only surface.
- If paint repairs are required, mask the flange bonding area, prior to applying the color coat, in order to provide a clean, primer-only surface.
- Appropriate materials for these primer applications are typically 2 component catalyzed products. Use materials such as BASF DE15Â®, DuPont 2610Â®, Sherwin-Williams PSE 4600 and NP70Â® and Martin-Semour 5120 ,5130Â® , PPG DP90LF SPIES/HECKER 3688/8590 - 3688/5150 - 4070/5090 STANDOX 11158/13320 - 14653/14980 products are approved for this application. Follow the manufacturer's directions for the mix, the application, and the drying times.
- After repairing the opening as indicated, use adhesive systems which meet GM Specification GM 3651G.

Use only the full cut method, also known in the field as full strip method, when installing windows.

This method includes the following:

- The replacement of a majority of the adhesive bead. Remove all but approximately 2 mm (3/64 in) of the existing bead of adhesive from the pinch-weld flange.
- Apply pinch-weld primer to any exposed painted areas on the pinch-weld flange.

No mounds or loose pieces of adhesive should remain on the pinch-weld flange. Do not remove all traces of adhesive.

POWER WINDOWS DESCRIPTION AND OPERATION

Power Windows System Components

The power window system consists of the following components:

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- Driver window switch
- Passenger window switch
- Left rear window switch (Extended Cab and Crew Cab)
- Right rear window switch (Extended Cab and Crew Cab)
- Window motors in each of the doors
- Sliding rear window switch
- Sliding rear window relays
- Sliding rear window motor
- 30A Fuse
- Body control module (BCM)

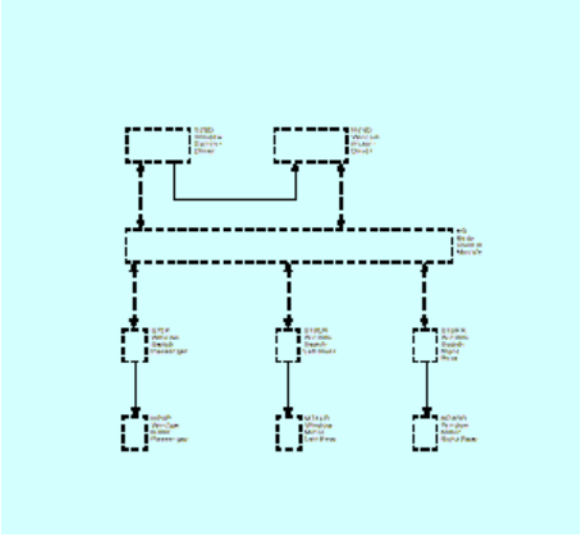


Fig. 84: Power Window Block Diagram
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
S79D	S79D Window Switch - Driver
M74D	M74D Window Motor - Driver
K9	K9 Body Control Module
S79P	S79P Window Switch - Passenger
S79LR	S79LR Window Switch - Left Rear
S79RR	S79RR Window Switch - Right Rear
M74P	M74P Window Motor - Passenger
M74LR	M74LR Window Motor - Left Rear
M74RR	M74RR Window Motor - Right Rear

Driver Express Up and Express Down Power Window

The driver door contains a window motor is smart motor that will detect excessive resistance while performing the express up function and automatically reverse direction to prevent injury to any occupants that may become trapped between the closing window and the door frame. The automatic reverse safety feature can be overridden by pulling and holding the window switch.

The logic circuit within the window motor monitors the up, down and express signal circuits which are normally equal to B+ voltage. When a switch is used on the window switch, the contacts close causing a voltage drop within

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the appropriate signal circuit. The window motor will detect the voltage drop and will command the window to move in the direction requested.

The driver window switch communicates to the BCM by a serial data circuit. When the driver wishes to control the passenger window, the driver will use the appropriate switch on the driver window switch. When this switch is used, a serial data message is sent to the BCM requesting the passenger window motor command, the BCM will then send a serial data message to the passenger window motor which will then move in the direction requested

Passenger, Left Rear and Right Rear Express Down Power Windows

For the passenger, right rear and left rear doors, when their window switch is pressed in the down position, battery positive voltage is applied to their respective window motor control circuit and ground to the other window motor control circuit causing that window to open. When the individual window switch is pulled in the up position, voltage and ground is applied to the window motor in the opposite direction causing that window to close. The return path to ground is supplied through the inactive control circuit being normally grounded through the window switch.

Each passenger and rear window switch communicates to the BCM by a serial data circuit. When the driver wishes to control the passenger, left rear or right rear window, the driver will use the appropriate switch on the driver window switch. When this switch is used, a serial data message is sent to the BCM requesting a window motor command, the BCM will then send a serial data message to the appropriate door window switch which will then command that window to move in the direction requested.

Rear Window and Rear Door Lockout Operation (Extended Cab and Crew Cab)

The driver power window switch contains a window lockout switch, when the driver presses the window lockout switch, a serial data message is sent to the BCM which will send a disable command to the rear window motors, the rear window motors will then ignore all voltage drops in the window motor control circuits caused by using the rear window switches. The rear windows will still function normally from the switches on the driver window switch.

Power Sliding Rear Window

NOTE: Power window lockout switch disables left rear and right rear passenger window switches only and has no effect on the operation of the power sliding window switch.

The power sliding rear window motor is controlled from the rear window OPEN/CLOSE switch through OPEN and CLOSE relays. The OPEN/CLOSE switch is supplied voltage from the body control module accessory voltage output circuit. When the switch is pressed in the OPEN or CLOSED position the OPEN or CLOSED relay coil will be supplied accessory voltage and energized through the appropriate relay control circuit. While the OPEN and CLOSE relays are in a de-energized state both motor control circuits will be closed to ground. When one of the relays is energized its motor control circuit will be closed to the battery voltage supply circuit and the other motor control circuit will remain grounded through the de-energized relay.

REAR WINDOW DEFOGGER DESCRIPTION AND OPERATION

Rear Window Defogger System Components

The rear window defogger system consists of the following components:

- HVAC control module
- Rear defogger relay
- Rear defogger grid
- 40A fuse

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Fig. 85: Rear Window Defogger Block Diagram
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
A9B	A9B Outside Rearview Mirror - Passenger
E18	E18 Rear Defogger Grid
A9A	A9A Outside Rearview Mirror - Driver
K33	K33 HVAC Control Module

Rear Window Defogger Operation

The rear defog control system utilizes a single zone backlight design, driven with a single relay configuration. Additionally, up to two outside rear view mirrors can be heated if equipped. A switch for the customer to control the system is provided within the HVAC control module, also included in the HVAC control module is an indicator to inform the customer with the current state of the system. The system is only operational when engine is running or during remote start.

Pressing the heated rear window switch on the HVAC control module causes the HVAC control module to provide voltage to the coil side of the rear defogger relay, this will energize the relay causing the relay switch contacts to close allowing B+ voltage to flow through the rear defogger grid control circuit to the rear defogger grid.

When the rear heated rear window switch is pressed and the engine is running, the rear window defogger grid will activate and will turn off automatically depending upon the vehicle speed (refer to owner's manual for rear window defogger operation cycles)

STATIONARY WINDOW DESCRIPTION

Most stationary windows, specifically windshields, are retained to the body with urethane adhesive which adheres the window to the body, increasing structural integrity. The reinstallation of the windows with urethane adhesive requires complete replacement of the urethane adhesive bead, and is known as the full cut method.

URETHANE ADHESIVE DESCRIPTION

For replacement of any adhesive-installed window, use the full cut method only.

Use an adhesive that is approved by GM, Specification GMW-15672.

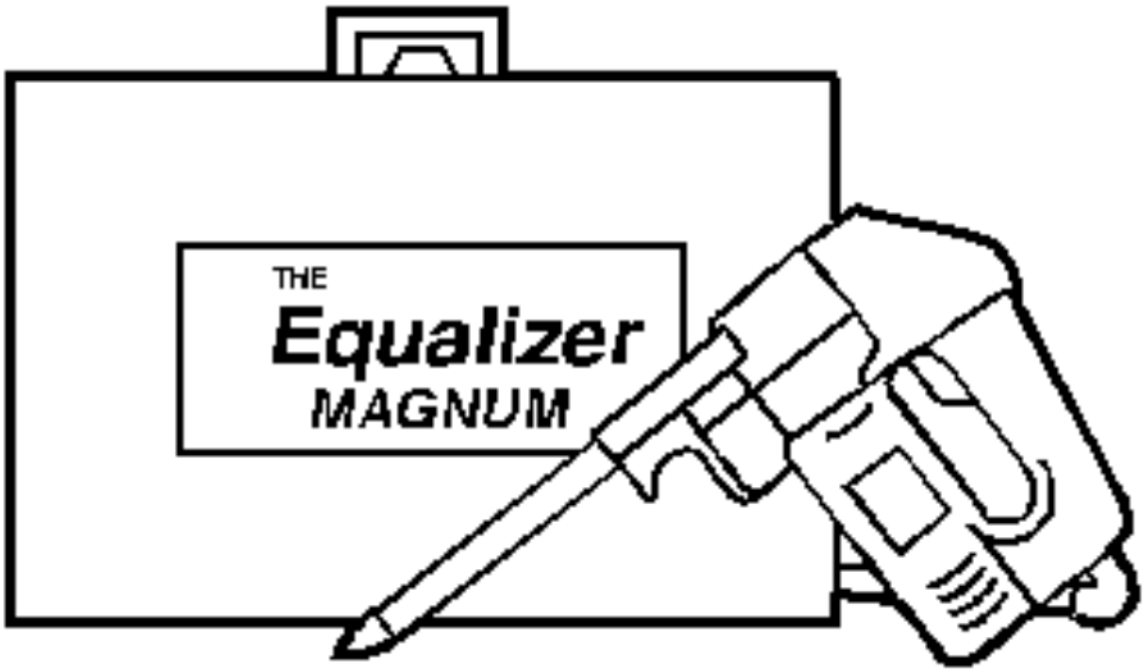
Use these materials based on specific manufacturer. Do NOT intermix primers or adhesives from one manufacturer to another.

Always follow the system manufacturers instructions for application, handling, and curing.

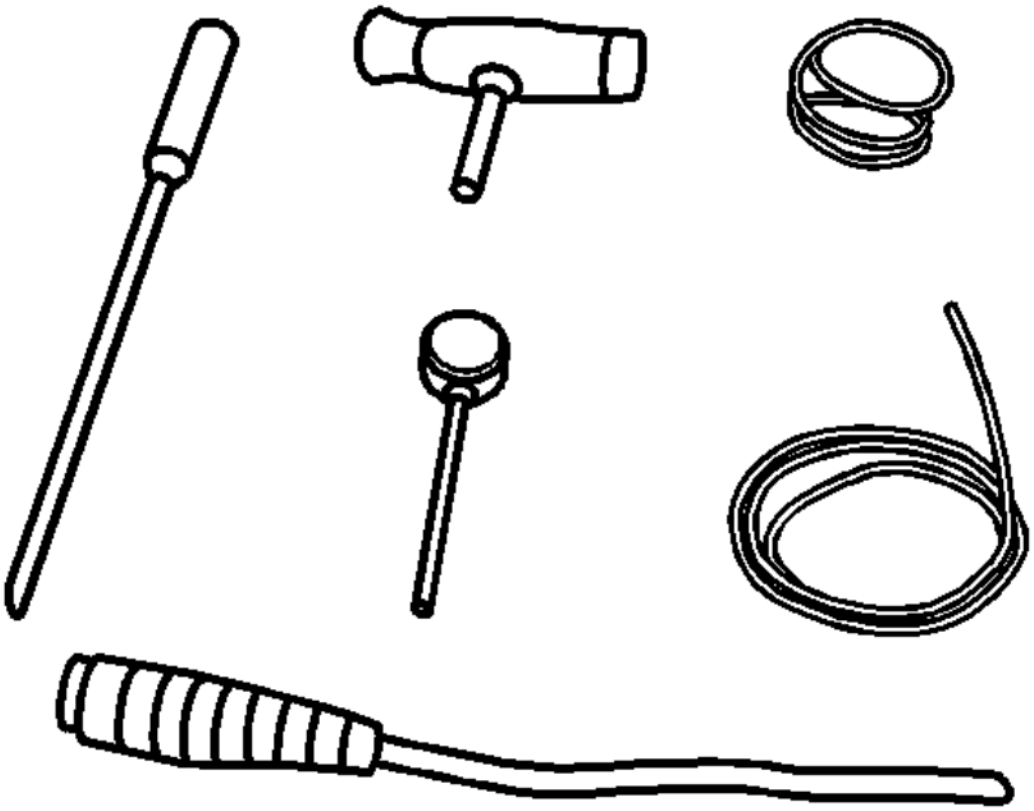
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SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

Illustration	Tool Number/Description
	BO-39032 J-39032 Stationary Glass Removal Tool

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Illustration	Tool Number/Description
	BO-0201964 S-0201964 Bonded-Glass Removing Device Brazil-Use local equivalent

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