

2013 ACCESSORIES & EQUIPMENT

Fixed and Moveable Windows - Malibu

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

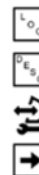
Fastener Tightening Specifications

Application	Specification	
	Metric	English
Front Side Door Window Rear Channel Fasteners	10 N.m	89 lb in
Front Side Door Window Regulator Fastener	10 N.m	89 lb in
Front Side Door Window Regulator Motor Fastener	10 N.m	89 lb in
Rear Side Door Window Rear Channel Fasteners	10 N.m	89 lb in
Rear Side Door Window Regulator Fastener	10 N.m	89 lb in
Rear Side Door Window Regulator Motor Fastener	10 N.m	89 lb in

SCHEMATIC WIRING DIAGRAMS

MOVEABLE WINDOW WIRING SCHEMATICS

Driver Door (AEC) Wiring Schematics



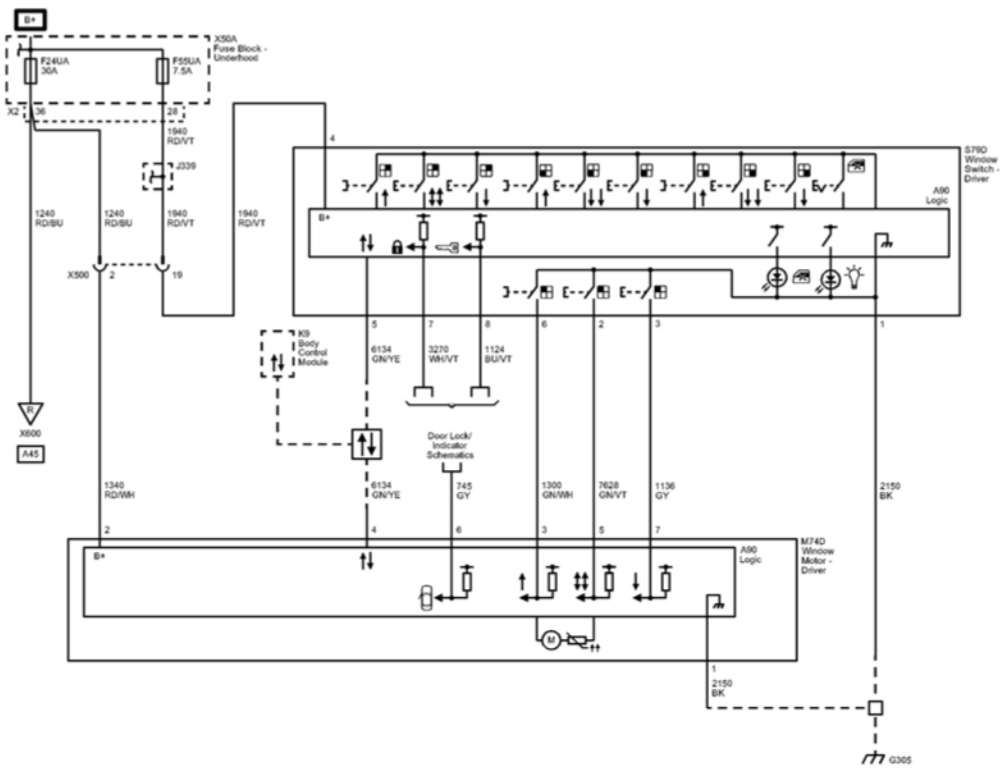


Fig. 2: Driver Door (AXG) Wiring Schematics
 Courtesy of GENERAL MOTORS COMPANY

Passenger Door Wiring Schematics

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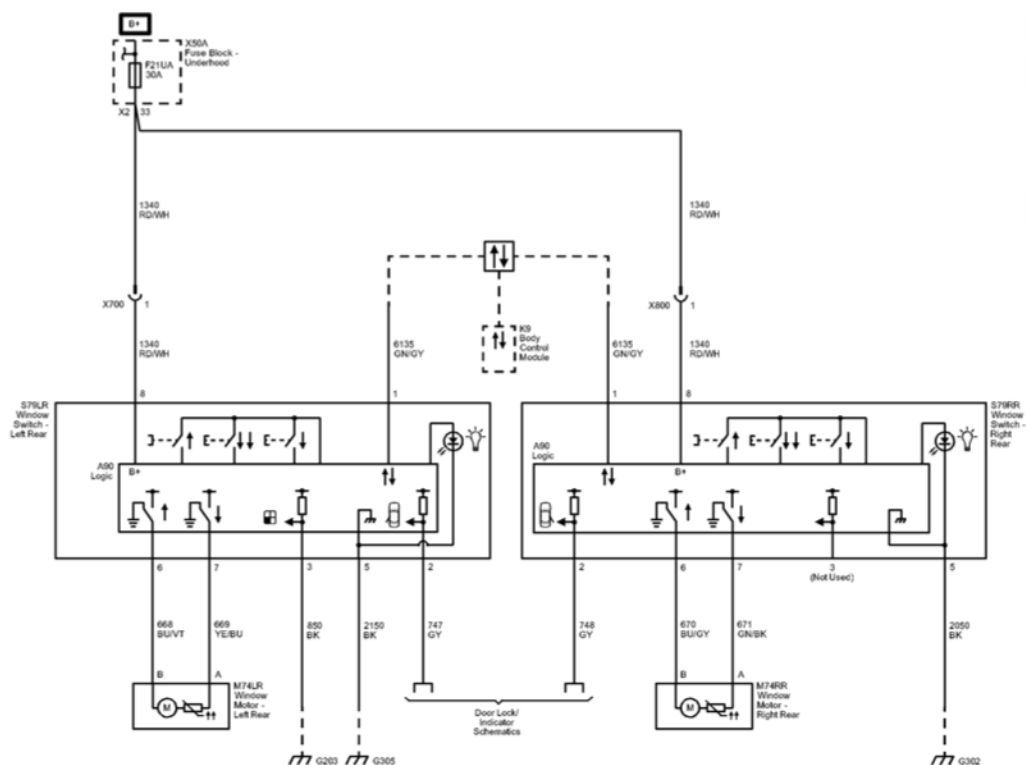


Fig. 4: Rear Doors Wiring Schematics
Courtesy of GENERAL MOTORS COMPANY

DEFOGGER WIRING SCHEMATICS

Rear Window Defogger Wiring Schematics

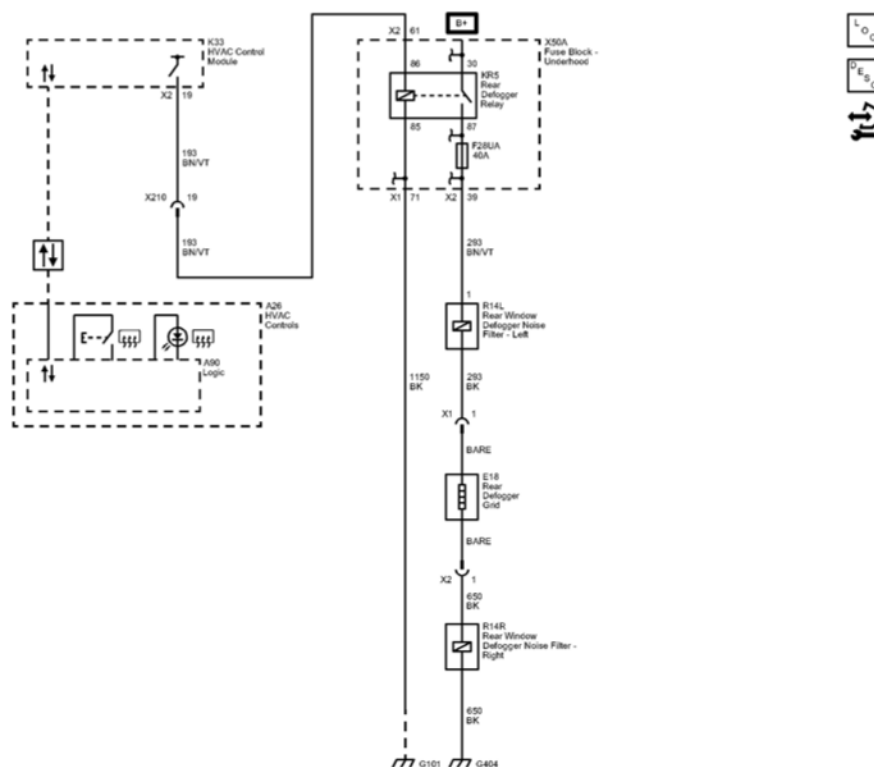


Fig. 5: Rear Window Defogger Wiring Schematics
 Courtesy of GENERAL MOTORS COMPANY

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC CODE INDEX

DIAGNOSTIC CODE INDEX

DTC	Description
DTC B0283	DTC B0283 02 Rear Defrost Circuit Short To Ground DTC B0283 05 Rear Defrost Circuit Short To Battery or Open
DTC B316B, B317A, B318A, or B319A (AXG)	DTC B316B Driver Window Switch DTC B317A Passenger Window Switch DTC B318A Left Rear Window Switch DTC B319A Right Rear Window Switch
DTC B316B, B317A, B318A, or B319A (AEC)	DTC B316B Driver Window Switch DTC B317A Passenger Window Switch DTC B318A Left Rear Window Switch DTC B319A Right Rear Window Switch
DTC B3205	DTC B3205 Driver Window Motor

DTC B0283

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 B0283 02

Rear Defrost Circuit Short To Ground

DTC B0283 05

Rear Defrost Circuit Short To Battery or Open

Diagnostic Fault Information

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

Circuit/System Description

When the HVAC control module receives a rear window defog request from the HVAC face plate, the HVAC control module control the coil side of the rear defogger relay. This will energize the relay causing the contacts within the relay to close and provide B+ voltage to the rear window defogger grid.

Conditions for Running the DTC

When the relay is being actively commanded by the HVAC control module

Conditions for Setting the DTC

B0283 02

The HVAC control module detects a short to ground in the relay coil control circuit.

B0283 05

The HVAC control module detects a short to voltage or an open/high resistance in the relay coil control circuit or an open/high resistance in the relay coil ground circuit

Action Taken When the DTC Sets

B0283 02

The rear window defogger will be inoperative.

B0283 05

The rear window defogger will be inoperative or continuously active depending upon the fault.

Conditions for Clearing the DTC

- The DTC will be current for as long as the fault is present.
- When the fault is no longer present, the DTC will be a history DTC.
- A history DTC will clear after 50 ignition cycles.

Reference Information

Schematic Reference

Defogger Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Rear Window Defogger Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Engine Running.
2. Verify the rear window defogger turns ON and OFF when commanding the Rear Defogger On and Off with a scan tool.
 - **If the rear window defogger does not turn ON or OFF**

Refer to Circuit/System Testing

○ **If the rear window defogger turns ON and OFF**

3. All OK.

Circuit/System Testing

1. Ignition OFF and all vehicle systems OFF, disconnect the KR5 rear defogger relay. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 ohms between the ground circuit terminal 2 and ground.

○ **If 10 ohms or greater**

1. Ignition OFF.
2. Test for less than 2 ohms in the ground circuit end to end.
 - 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**

3. Connect a test lamp between the control circuit terminal 1 and the ground circuit terminal 2, Engine Running.
4. Verify the test lamp turns ON and OFF when commanding the Rear Defogger On and Off with a scan tool.

○ **If the test lamp is always OFF**

1. Ignition OFF, disconnect the harness connector at the K33 HVAC control module.
2. Test for infinite resistance between the control circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance
3. Test for less than 2 ohms in the control circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, replace the K33 HVAC control module.

○ **If the test lamp is always ON**

1. Ignition OFF, disconnect the harness connector at the K33 HVAC control module, Engine Running.
2. Test for less than 1 V between the control circuit and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V, replace the K33 HVAC control module.

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

5. Test or replace the KR5 rear defogger relay.

Component Testing

Relay Test

1. Ignition OFF, disconnect the KR5 rear defogger relay.
2. Test for 60-180 ohms between terminals 1 and 2.

- **If less than 60 ohms or greater than 180 ohms**

Replace the KR5 rear defogger relay.

- **If between 60-180 ohms**

3. Test for infinite resistance between the terminals listed below:

- 1 and 3
- 1 and 5
- 2 and 3
- 2 and 5

- **If less than infinite resistance**

Replace the KR5 rear defogger relay.

- **If infinite resistance**

4. Install a 3 A fused jumper wire between relay terminal 1 and 12 V. Install a jumper wire between relay terminal 2 and ground.
5. Test for less than 2 ohms between terminals 3 and 5.

- **If 2 ohms or greater**

Replace the KR5 rear defogger relay.

- **If less than 2 ohms**

6. All OK

Repair Instructions

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

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

DTC B316B, B317A, B318A, OR B319A (AXG)

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 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	-
1. Driver Window Malfunction				

Circuit/System Description

The driver window motor supplies 12 V signal circuits to the driver window switch, when the 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.

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 master switch has been active for greater than 60 seconds.

B316B 02

The driver window motor has detected the driver window master 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.

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

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 driver window master control:
 - 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 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**

4. Verify the scan tool parameters listed below change when pressing and pulling the driver window control switch on the driver window master control:

- 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**

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 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**

3. Install a 3 A fused jumper wire between the signal circuit terminal 3 and ground.
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 signal circuit terminal and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V
3. Ignition OFF, test for less than 2 ohms in the signal circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, 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 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 ground.
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 signal circuit and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V
3. Ignition OFF, test for less than 2 ohms in the signal circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, 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 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 ground.
10. 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 signal circuit and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V
3. Ignition OFF, test for less than 2 ohms in the signal circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, 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.

- **Front Side Door Window Switch Replacement (Passengers Side Door)**
- **Rear Side Door Window Switch Replacement**
- **Front Side Door Window Regulator Replacement**

DTC B316B, B317A, B318A, OR B319A (AEC)

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**

Circuit/System Description

The body control module (BCM) monitors, receives and transmits serial data messages to each of the door window switches. The driver master control contains switches to control the passenger and rear windows. When a switch is used on the driver master control, a serial data message is sent to the BCM which sends a serial data message to the appropriate passenger or rear window switch to move in the window in the direction commanded.

Conditions for Running the DTC

Ignition ON.

Conditions for Setting the DTC

B316B 00

The BCM has detected the right front or left rear or right rear switch on the driver master control is active for greater than 60 seconds.

B316B 02

The BCM has detected the driver left front window switch is active for greater than 60 seconds.

B316B 39

The BCM has received simultaneous conflicting commands from the driver window switch

B317A 02

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

B318A 02

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

B319A 02

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

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

If the DTC is current, the driver 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

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 moves while commanding the window UP and DOWN with the driver window master control
 - If the driver window does not move, refer to Circuit/System Testing.

- If the driver window moves
- 3. Verify the passenger, left rear and right rear windows move while commanding each window UP and DOWN with the switches on the driver window master control.
 - If a window does not move, refer to Circuit/System Testing below.
 - If the passenger, left rear and right rear windows move
- 4. Verify the passenger window moves while commanding the window UP and DOWN with the S79P Window Switch - Passenger.
 - If the passenger window does not move, refer to Circuit/System Testing below.
 - If the passenger window moves
- 5. Verify the left rear window moves while commanding the window UP and DOWN with the S79LR Window Switch - Left Rear.
 - If the left rear window does not move, refer to Circuit/System Testing.
 - If the left rear window moves
- 6. Verify the right rear window moves while commanding the window UP and DOWN with the S79RR Window Switch - Right Rear.
 - If the right rear window does not move, refer to Circuit/System Testing.
 - If the right rear window moves
- 7. All OK.

Circuit/System Testing

1. Ignition ON.
2. Verify the scan tool Left Rear Window Main Control Down Switch, Left Rear Window Main Control Express Switch, Left Rear Window Main Control Up Switch, Right Rear Window Main Control Down Switch, Right Rear Window Main Control Express Switch, Right Rear Window Main Control Up Switch, Front Passenger Window Main Control Down Switch, Front Passenger Window Main Control Express Switch, and the Front Passenger Window Main Control Up Switch parameter changes between Inactive and Active when pressing and pulling the right front, right rear and left rear switches on the S79D Window Switch - Driver.
 - **If the parameters do not change**

Replace the S79D Window Switch - Driver.
 - **If the parameters changes**
3. Verify the scan tool Left Rear Window Switch at Door parameter changes between Inactive and Active when pressing and pulling the S79LR Window Switch - Left Rear.
 - **If the parameters do not change**

Replace the S79LR Window Switch - Left Rear.
 - **If the parameters changes**
4. Verify the scan tool Passenger Window Switch at Door parameter changes between Inactive and Active when pressing and pulling the S79P Window Switch - Passenger.

- **If the parameters do not change**

Replace the S79P Window Switch - Passenger.

- **If the parameters changes**

5. Verify the scan tool Right Rear Window Switch at Door parameter changes between Inactive and Active when pressing and pulling the S79RR Window Switch - Right Rear.

- **If the parameters do not change**

Replace the S79RR Window Switch - Right Rear.

- **If the parameters changes**

6. All OK.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair.

- Front Side Door Window Switch Replacement (Passengers Side Door)
- Rear Side Door Window Switch Replacement
- Front Side Door Window and Multifunction Switch Replacement (Drivers Side Door)

DTC B3205

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 B3205

Driver Window Motor

For symptom byte information refer to: Symptom Byte List

Circuit/System Description

The body control module (BCM) monitors, receives and transmits serial data to each of the doors switches and window motors. When a window switch has been activated on the driver window switch, a signal is sent to the BCM which sends a signal to the appropriate window motor and the window motor will move in the direction commanded.

Conditions for Running the DTC

- The ignition switch is in the ON position.
- Battery voltage must be between 9-16 V.

Conditions for Setting the DTC

B3205 00

The BCM has detected that the compatibility code stored in the driver window motor does not match the compatibility code stored in the BCM.

B3205 39

An internal malfunction has been detected by the BCM in the driver window motor while commanding the window UP or DOWN.

B3205 42

The BCM will automatically attempt to download the calibration program into the driver window motor (As will occur when the window motor has been replaced), if the first calibration program fails to load, the BCM will attempt to download the calibration program a second time. If this download fails, the BCM will set appropriate DTC.

B3205 4B

The BCM has detected that the driver window is not "normalized" and can be caused for the following reasons:

- When the battery has been disconnected
- When the battery has been replaced
- When the door wiring harness has been disconnected
- When the window motor has been disconnected.

Action Taken When the DTC Sets

The driver power window may be inoperative or the express UP function will be disabled.

Conditions for Clearing the DTC

B3205 00

Installing a compatible window motor for that specific make and model vehicle.

B3205 39

The driver window motor must be replaced before the DTC can be cleared.

B3205 42

The driver window motor must be replaced before the DTC can be cleared.

B3205 4B

The DTC will always be a history DTC until the driver window motor has been normalized, then DTC will automatically clear.

Reference Information

Schematic Reference

Moveable Window Schematics

Connector End View Reference

Component Connector End Views

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 Up and Down does not work**

Replace the M74D Window Motor - Driver.
 - **If the UP and DOWN works**
3. Verify the driver window performs the Express Up and Express Down functions with the driver window switch.
 - **If the driver window does not Express Up and Express Down**

Normalize the driver window motor, refer to **Window Motor Programming - Express Function**.

- If the driver window performs the Express Up and Express Down functions

4. All OK.

Repair Instructions

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

Front Side Door Window Regulator Motor Replacement

SYMPTOMS - FIXED AND MOVEABLE WINDOWS

Important Preliminary Checks Before Starting:

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 power window system operation or rear window defogger system operation in order to familiarize yourself with the system functions. Refer to the following:
 - **Rear Window Defogger Description and Operation**
 - **Power Windows Description and Operation**

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the rear window defogger. Refer to **Checking Aftermarket Accessories**.
- Inspect the easily accessible or visible system components for obvious damage or conditions which could cause the symptom.

Intermittent

NOTE:

- Inspect for proper installation of electrical components if an intermittent condition exists. Inspect for aftermarket theft deterrent devices, lights, and cellular phones. Ensure that no aftermarket equipment is connected to the class 2 circuit. If you can not locate an intermittent condition, a cellular phone signal may cause the condition. Faulty electrical connections or wiring may be the cause of intermittent conditions. Refer to **Testing for Intermittent Conditions and Poor Connections**.
- The problem may or may not turn ON the SERVICE VEHICLE SOON indicator or store a DTC. Do not use the symptom tables to diagnose intermittent conditions. The malfunction must be present in order to locate the problem.

Poor electrical connections or wiring cause most intermittent conditions. Perform a careful visual/physical check for the following conditions:

- Poor mating of the connector halves or a terminal not fully seated in the connector body
- An improperly formed or damaged terminal
- Reform or replace connector terminals in the problem circuit in order to ensure proper contact tension.
- Poor terminal to wire connection requires removing the terminal from the connector body in order to perform the check.

Use a scan tool in order to help detect intermittent conditions. The scan tool has several features that can be used to locate an intermittent condition. The snapshot feature can capture and store data parameters within the scan tool when the malfunction occurs. This information can then be reviewed in order to see what caused the malfunction.

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 (AEC), Power Windows Malfunction (AXG)**

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

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

Circuit/System Description

When the HVAC control module receives a rear window defog request from the HVAC face plate, the HVAC control module will supply 12V to the coil side of the rear defogger relay. This will energize the relay causing the contacts within the relay to close and provide B+ voltage to the rear window defogger grid.

Reference Information

Schematic Reference

Defogger Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Rear Window Defogger Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Engine running.
2. Verify the scan tool Rear Defogger Switch parameter changes between On and Off when pressing the rear window defogger switch.
 - **If the parameter does not change between On and Off**

Replace the A26 HVAC controls.
 - **If the parameter changes between On and Off**
3. Verify the rear window defogger turns ON and OFF when commanding the Rear Defogger On and Off with a scan tool.
 - **If the rear window defogger does not turn ON and OFF**

Refer to Circuit/System Testing

- **If the rear window defogger turns ON and OFF**

4. Verify the rear window defogger indicator turns ON and OFF when pressing the rear window defogger switch.

- **If the indicator does not turn ON and OFF**

Replace the A26 HVAC controls.

- **If the indicator turns ON and OFF**

5. All OK.

Circuit/System Testing

1. Ignition OFF and all vehicle systems OFF, disconnect the KR5 rear defogger relay. It may take up to 2 minutes for all vehicle systems to power down.

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

- **If 10 ohms or greater**

1. Ignition OFF.
2. Test for less than 2 ohms in the ground circuit end to end.
 - 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**

3. Ignition ON.
4. Verify a test lamp illuminates between the B+ circuit terminal 3 and ground.
 - **If the test lamp does not illuminate**
 1. Ignition OFF.
 2. Test for less than 2 ohms in the B+ circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, verify the fuse is OK and there is voltage at the fuse.
 - **If the test lamp illuminates**

5. Connect a test lamp between the control circuit terminal 1 and the ground circuit terminal 2. Engine running

6. Verify the test lamp turns ON and OFF when commanding the Rear Defogger On and Off with a scan tool.

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

1. Ignition OFF, disconnect the harness connector at the K33 HVAC control module.
2. Test for infinite resistance between the control circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance
3. Test for less than 2 ohms in the control circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.

- If less than 2 ohms, replace the K33 HVAC control module.
- **If the test lamp is always ON**
 1. Ignition OFF, disconnect the harness connector at the K33 HVAC control module, ignition ON.
 2. Test for less than 1 V between the control circuit and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V, replace the K33 HVAC control module.
- **If the test lamp turns ON and OFF**
- 7. Verify that a test lamp does not illuminate between the control circuit terminal 5 and ground.
 - **If the test lamp illuminates**

Repair the short to voltage on the control circuit
 - **If the test lamp does not illuminate**
- 8. Ignition OFF and all vehicle systems OFF, disconnect the X2 harness connector at the E18 rear defogger grid. It may take up to 2 minutes for all vehicle systems to power down.
- 9. Test for less than 10 ohms between the E18 rear defogger grid ground circuit terminal 1 and ground.
 - **If 10 ohms or greater**
 1. Ignition OFF.
 2. Test for less than 2 ohms in the ground circuit end to end.
 - 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**
- 10. Connect the X2 harness connector at the E18 rear defogger grid.
- 11. Ignition ON, connect a 40 A fused jumper wire between the B+ circuit terminal 3 and the control circuit terminal 5.
- 12. Verify the E18 rear defogger grid is activated.
 - **If the E18 rear defogger grid does not activate**
 1. Ignition OFF, disconnect the X1 harness connector at the E18 rear defogger grid.
 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 ohms in the control circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, replace the E18 rear defogger grid.
 - **If the E18 rear defogger grid activates**
- 13. Test or replace the KR5 rear defogger relay.

Component Testing

Relay Test

1. Ignition OFF, disconnect the KR5 rear defogger relay.
2. Test for 60-180 ohms between terminals 1 and 2.
 - **If less than 60 ohms or greater than 180 ohms**

Replace the KR5 rear defogger relay.

- **If between 60-180 ohms**

3. Test for infinite resistance between the terminals listed below:
 - 3 and 1
 - 3 and 5
 - 3 and 2
 - 2 and 5
 - **If less than infinite resistance**

Replace the KR5 rear defogger relay.

- **If infinite resistance**

4. Install a 3 A fused jumper wire between relay terminal 1 and 12 V. Install a jumper wire between relay terminal 2 and ground.
5. Test for less than 2 ohms between terminals 3 and 5.
 - **If 2 ohms or greater**

Replace the KR5 rear defogger relay.

- **If less than 2 ohms**

6. All OK

Repair Instructions

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

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

POWER WINDOWS MALFUNCTION (AEC)

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 Ignition	U1538 00, U153A 00	U1538 00	-	-
Driver Window Switch Serial Data	U1538 00, U153A 00	U1538 00	U1538 00	-
Driver Window Switch Ground	-	U1538 00	-	-
Driver Window Motor Control	1	1	1	-
Passenger Window Switch Ignition	U1538 00, U153A 00	U153A 00	-	-
Passenger Window Switch Serial Data	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 Ignition	U1548 00, U154A 00	U1548 00	-	-
Left Rear Window Switch Serial Data	U1548 00, U154A 00	U1548 00	U1548 00	-
Left Rear Window Switch Ground	-	U1548 00	-	-
Left Rear Window Motor Control	3	3	3	-
Right Rear Window Switch Ignition	U1548 00, 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 Motor Inoperative 2. Passenger Window Motor Inoperative 3. Left Rear Window Motor Inoperative 4. Right Rear Window Motor Inoperative				

Circuit/System Description

When the ignition switch is in the RUN or ACCY position, or retained accessory power is enabled and the driver or passenger window switch or rear window switch is pressed in the down position, voltage is applied to

the appropriate window motor causing that window to open. When the driver or passenger window switch is pulled in the up position, voltage is applied to the appropriate window motor in the opposite direction causing that window to close.

When the driver wishes to command a passenger or rear window, a window switch is pressed on the driver window switch. A serial data message is then sent to the body control module (BCM) from the driver window switch. The BCM will examine the request and check for messages from other power window switches that may prohibit the window movement. If no prohibitive messages have been received, the BCM will send a serial data message to the passenger or rear window switch which will command the window motor to perform as requested.

Reference Information

Schematic Reference

Moveable Window Schematics

Connector End View Reference

Component Connector End Views

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, passenger, left rear and right rear window functions while commanding the Driver Window Motor, Passenger Window Motor, Left Rear Window Motor and Right Rear Window Motor Up and Down with a scan tool.
 - **If the Up and Down does not work**

Refer to Circuit/System Testing.

○ **If the window moves Up and Down as commanded**

3. Verify the scan tool Left Rear Main Control Down Switch, Left Rear Main Control Express Switch, Left Rear Main Control Up Switch, Right Rear Main Control Down Switch, Right Rear Main Control Express Switch, Right Rear Main Control Up Switch, Front Passenger Main Control Down Switch, Front Passenger Main Control Express Switch, and the Front Passenger Main Control Up Switch parameter changes between Inactive and Active when pressing and pulling each switch on the S79D Window Switch-Driver.

○ **If the parameters do not change**

Replace the S79D Window Switch-Driver.

○ **If the parameters change**

4. Verify the scan tool Child Security Lockout Switch parameter changes between Inactive and Active when pressing the window lockout switch.

○ **If the parameters do not change**

Refer to **Power Door Child Lock Malfunction**

○ **If the parameters changes**

5. Verify the lockout indicator turns ON and OFF when commanding the Child Security Lock Indicator On and Off with a scan tool.

○ **If the indicator does not turn ON and OFF**

Replace the S79D Window Switch-Driver.

○ **If the indicator turns ON and OFF**

6. Command the rear window lockout by pressing the window lockout switch on the S79D Window Switch-Driver..
7. Verify the left rear and right rear window does not move while commanding the window UP and DOWN with the S79LR Window Switch-Left Rear. and S79RR Window Switch-Right Rear.

○ **If a rear window moves UP and DOWN as commanded**

Refer to **Power Door Child Lock Malfunction** .

○ **If the rear windows do not move UP and DOWN**

8. All OK.

Circuit/System Testing

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the appropriate S79 Window Switch. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 ohms between the ground circuit terminal listed below and ground:
 - S79D Window Switch-Driver - ground circuit terminal 1
 - 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 ohms or greater**
- 1. Ignition OFF.
- 2. Test for less than 2 ohms in the ground circuit end to end.
 - 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**
- 3. Ignition ON.
- 4. Verify a test lamp illuminates between the B+ circuit terminal listed below and ground:
 - S79D Window Switch-Driver - B+ circuit terminal 4
 - 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 ohms in the B+ circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, 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 ohms between the control circuit terminal A and ground.
 - **If 5 ohms or greater**
 - 1. Ignition OFF, disconnect the harness connector at the S79 Window Switch.
 - 2. Test for less than 2 ohms in the control circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, replace the S79 Window Switch.
 - **If less than 5 ohms**
- 7. Test for less than 5 ohms between the control circuit terminal B and ground.
 - **If 5 ohms or greater**
 - 1. Ignition OFF, disconnect the harness connector at the S79 Window Switch.
 - 2. Test for less than 2 ohms in the control circuit end to end.

- If 2 ohms or greater, repair the open/high resistance in the circuit.
- If less than 2 ohms, replace the S79 Window Switch.
- **If less than 5 ohms**
- 8. Connect a test lamp between control circuit terminal A and control circuit terminal B, ignition ON.
- 9. Verify the test lamp illuminates when commanding the UP and DOWN states with the S79 Window Switch.
 - **If the test lamp does not illuminate 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 illuminates during each of the commands**
- 10. Test or replace the M74 Window Motor.

Component Testing

Window Motor

1. Ignition OFF, disconnect the harness connector at the appropriate 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 function does not perform the UP and DOWN functions**
 - Replace the M74 Window Motor.
 - **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 Regulator Replacement**
- **Front Side Door Window and Multifunction Switch Replacement (Drivers Side Door)**
- **Rear Side Door Window Regulator Motor Replacement**
- **Rear Side Door Window Switch Replacement**
- **Front Side Door Window Switch Replacement (Passengers Side Door)**

POWER WINDOWS MALFUNCTION (AXG)

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	-	-
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	U154A 00	U154A 00	-	-

B+				
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 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.

Diagnostic Aids

If the driver window is not performing the express up and express down functions, this may indicate that it has not been normalized. This may occur during the following conditions:

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

To normalize the driver window motor, refer to **Window Motor Programming - Express Function**.

Reference Information

Schematic Reference

Moveable Window Schematics

Connector End View Reference

Component Connector End Views

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 driver window does not move UP and DOWN as commanded**

Refer to Circuit/System Testing - Driver/Passenger 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, 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

- 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 S79 Window Switch-Driver.

- **If the parameters change**

5. Verify the scan tool Child Security Lockout Switch parameter changes between Inactive and Active when pressing the window lockout switch on the S79D Window Switch-Driver.

- **If the parameters do not change**

Refer to **Power Door Child Lock Malfunction**

- **If the parameters changes**

6. Verify the lockout indicator turns ON and OFF when commanding the Child Security Lock Indicator On and Off with a scan tool.

- **If the lockout indicator does not turn ON and OFF**

Replace the S79D Window Switch-Driver.

- **If the lockout indicator turns ON and OFF**

7. 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 Power Window Inoperative.

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

8. Command the rear window lockout by pressing the window lockout switch on the S79D Window Switch-Driver.

9. Verify the left rear and right rear window does not move while commanding the window UP and DOWN with the S79LR Window Switch-Left Rear and S79RR Window Switch-Right Rear.

- **If a rear window moves UP and DOWN as commanded**

Refer to **Power Door Child Lock Malfunction** .

- **If the rear windows do not move UP and DOWN**

10. 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 ohms between the ground circuit terminal 1 and ground.
 - **If 10 ohms or greater**
 1. Ignition OFF.
 2. Test for less than 2 ohms in the ground circuit end to end.
 - 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**
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 ohms in the B+ circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, 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 ohms between the ground circuit terminal 1 and ground.
 - **If 10 ohms or greater**
 1. Ignition OFF.
 2. Test for less than 2 ohms in the ground circuit end to end.
 - 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**
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 ohms in the B+ circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, 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 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 signal circuit terminal 7 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 ohms in the signal circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, 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 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 signal circuit 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 ohms in the signal circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, 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 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 signal circuit 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 ohms in the signal circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, 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 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 ohms 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 ohms or greater**
 1. Ignition OFF.
 2. Test for less than 2 ohms in the ground circuit end to end.
 - 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**
- 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 ohms in the B+ circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, 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 ohms between the control circuit terminal A and ground.
 - **If 5 ohms or greater**
 1. Ignition OFF, disconnect the harness connector at the S79 Window Switch.
 2. Test for less than 2 ohms in the control circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, replace the S79 Window Switch.
 - **If less than 5 ohms**
- 7. Test for less than 5 ohms between the control circuit terminal B and ground.
 - **If 5 ohms or greater**
 1. Ignition OFF, disconnect the harness connector at the S79 Window Switch.
 2. Test for less than 2 ohms in the control circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, replace the S79 Window Switch.

- **If less than 5 ohms**
- 8. Connect a test lamp between the control circuit terminal A and control circuit terminal B, 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 is always ON**
- 10. Ignition OFF, remove the test lamp, disconnect the harness connector at the S79 Window Switch, ignition ON.
- 11. 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 S79 Window Switch
 - **If the test lamp turns ON during each of the commands**
- 12. Test or replace the M74 Window Motor.

Component Testing

Passenger Window Motor

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 function does not perform the UP and DOWN functions**

Replace the passenger or rear M74 Window Motor.
 - **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 Regulator Replacement**
- **Front Side Door Window and Multifunction Switch Replacement (Drivers Side Door)**
- **Rear Side Door Window Regulator Motor Replacement**
- **Rear Side Door Window Switch Replacement**
- **Front Side Door Window Switch Replacement (Passengers Side Door)**

SIDE DOOR WINDOW MECHANICAL DIAGNOSIS

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.
	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.
Glass Binds	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 an adhesive that is approved by GM.

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

Removal Procedure

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. Open the hood.
2. Remove the windshield wiper arms and blades. Refer to Windshield Wiper Arm Replacement .
3. Remove the air inlet grille panel. Refer to Air Inlet Grille Panel Replacement .
4. Remove the left and right side corner weatherstrip by the air inlet panel.
5. Remove the left and right windshield side garnish moldings. Refer to Windshield Side Garnish Molding Replacement .
6. Remove the rearview mirror. Refer to Inside Rearview Mirror Replacement .
7. Disconnect the rain sensor connector, if equipped.

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

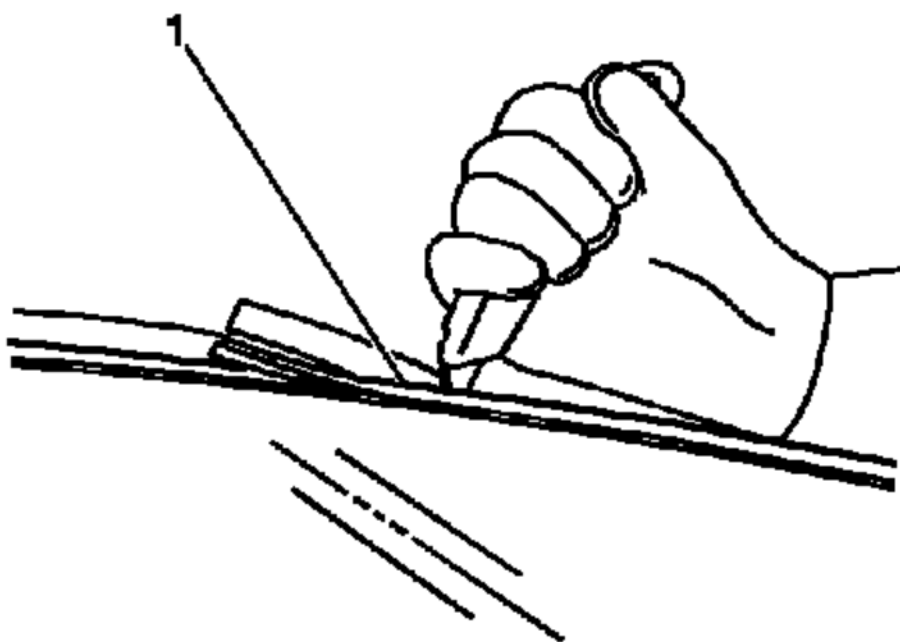


Fig. 6: Using Utility Knife To Remove Reveal Molding
Courtesy of GENERAL MOTORS COMPANY

9. Use a utility knife to cut the around the windshield lace (1) this will allow access to the urethane adhesive bead.

WARNING: Refer to Glass and Sheet Metal Handling Warning

NOTE: Keep the cutting edge of the tool against the window. Use care Not to damage the window corner retainers. If the window retainers get cut off when removing the window it will be necessary to tape the window in place until cured.

10. This will allow the urethane adhesive to be separated from the window.
 - Leave a base of urethane on the pinchweld flange.
 - The only suitable lubrication is clear water.
 - **BO-39032** Stationary Glass Removal Tool

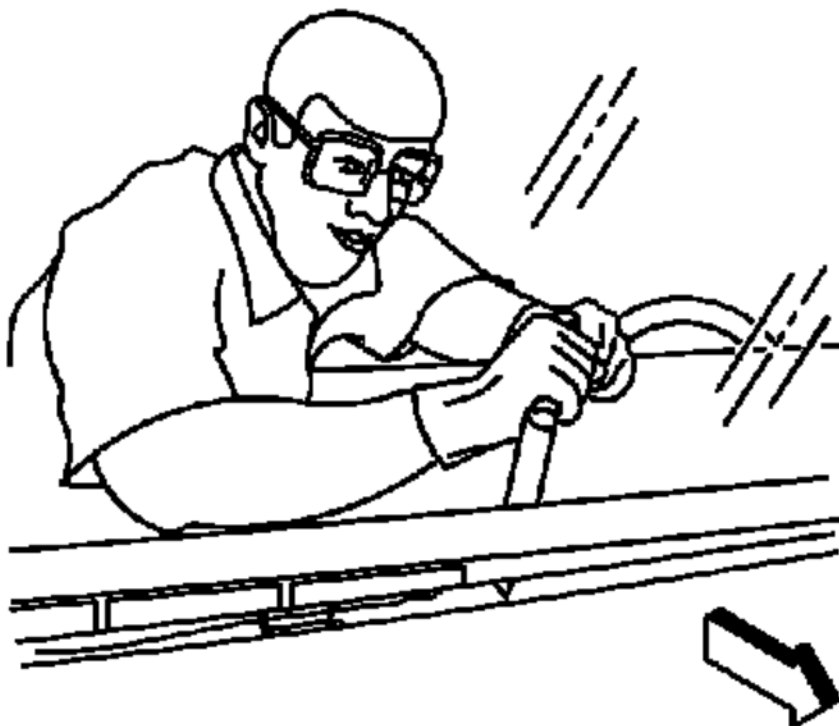


Fig. 7: Separating Bottom Of Window

Courtesy of GENERAL MOTORS COMPANY

11. Remove the bottom of the windshield from the urethane adhesive using a long utility knife or similar tool. Keep the cutting edge of the utility knife against the glass. Do this from inside the vehicle.

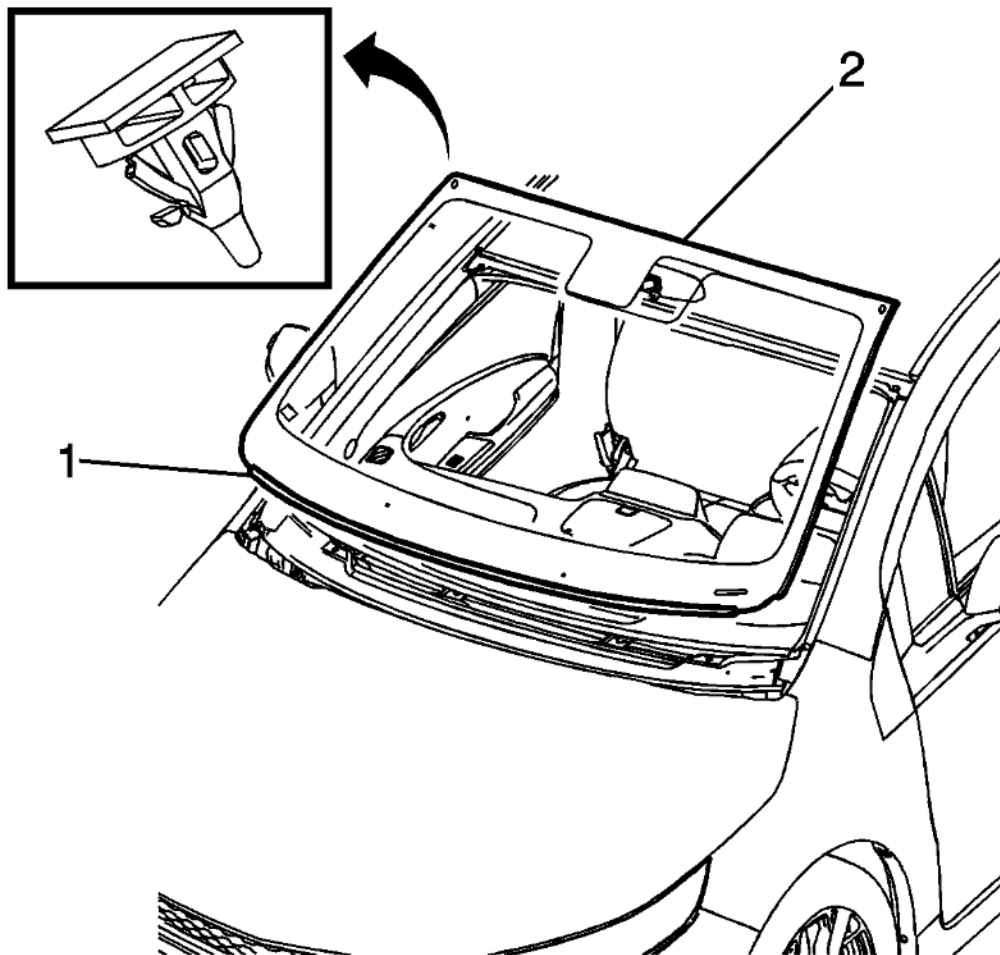


Fig. 8: Ensuring Proper Windshield Fit
Courtesy of GENERAL MOTORS COMPANY

12. Remove the windshield (2) from the vehicle with an assistant, place the window on a clean soft surface.

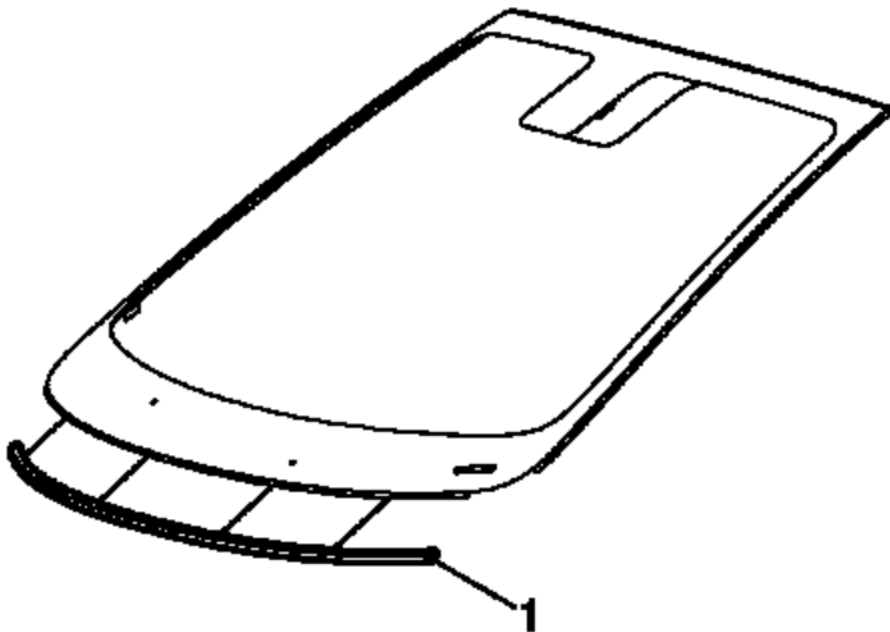


Fig. 9: Lower Windshield Molding
Courtesy of GENERAL MOTORS COMPANY

13. Remove the molding (1) from the lower edge of the old windshield if the new windshield is not equipped.

Installation Procedure

1. Install the windshield into the opening. Refer to **Adhesive Installation of Windshields**.
2. Install the air inlet grille panel. Refer to **Air Inlet Grille Panel Replacement**.
3. Install the windshield wipers arms and blades. Refer to **Windshield Wiper Arm Replacement**.
4. Install the left and right windshield garnish molding. Refer to **Windshield Side Garnish Molding Replacement**.
5. Install the rearview mirror. Refer to **Inside Rearview Mirror Replacement**.
6. Connect the rain sensor connector, if equipped.
7. Remove the double layer of masking tape around the perimeter of the painted surfaces and the interior trim.
8. Close the hood.

FRONT SIDE DOOR WINDOW ADJUSTMENT

Causes of Slow Moving Window

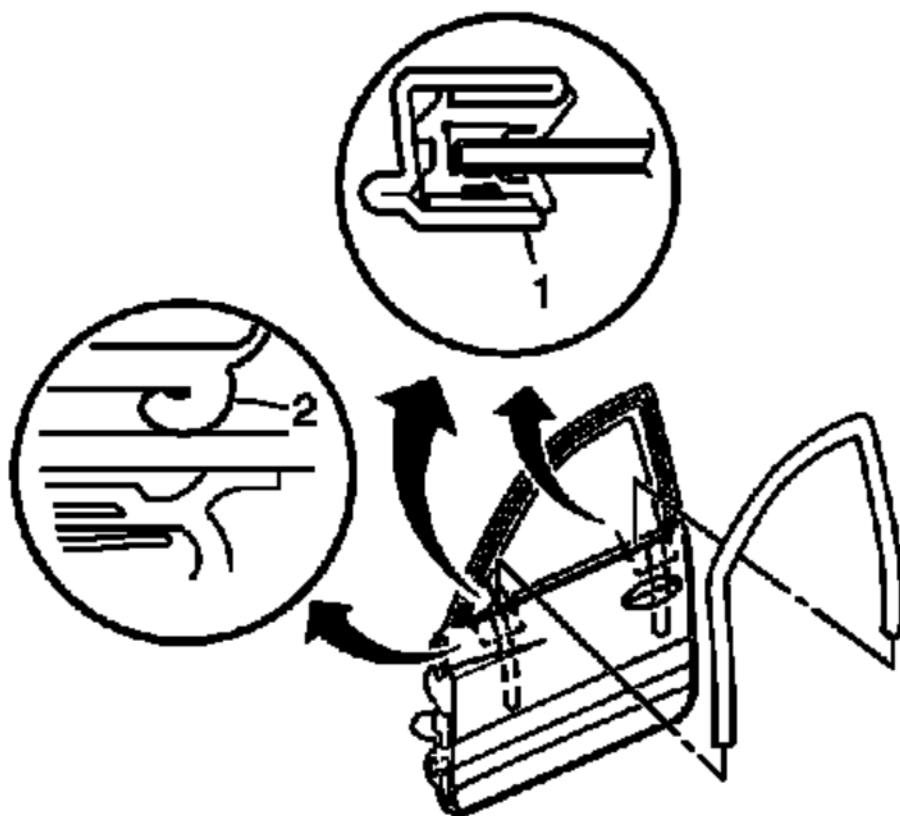


Fig. 10: Internal Detail For Front Door Window Adjustment
Courtesy of GENERAL MOTORS COMPANY

WARNING: Disconnect the power window switch when working inside the driver door. When operated, the Express Up/Down Feature allows the door window to move very quickly, without stopping, which could cause personal injury.

NOTE: Owners may comment that the windows operate slowly when going up or down.

1. Listed below are conditions that may cause a slow moving window.
 - The window run channel outboard lip at the rearview mirror is rolled over or the window run channel outboard lip at the rear of door frame (2).
 - The window is not seated in the run channel.
 - The window is misaligned in the opening.
 - The regulator is misaligned causing misalignment of the window.
 - Inspect the power window motor for being loose.

2. After inspecting the conditions above, do the following:

Remove the front door trim.

3. Remove the water deflector.
4. Ensure that the window guide is fully seated and clipped.
5. Ensure that the window is fully seated into the window guide run channel.
6. Inspect the window for equal distance between the front and rear run channels.

Adjustment Procedure

1. Inspect for the following conditions before making adjustments.
 - Using a flat-bladed tool, straighten the run channel lip by pulling it out to its correct position.
 - Use a flat-bladed tool to push the run channel rearward to seat it in the door frame.
 - Inspect the window guide retainer to window for the proper alignment to the slots in the window.
 - Inspect the window to be straight up and down position.

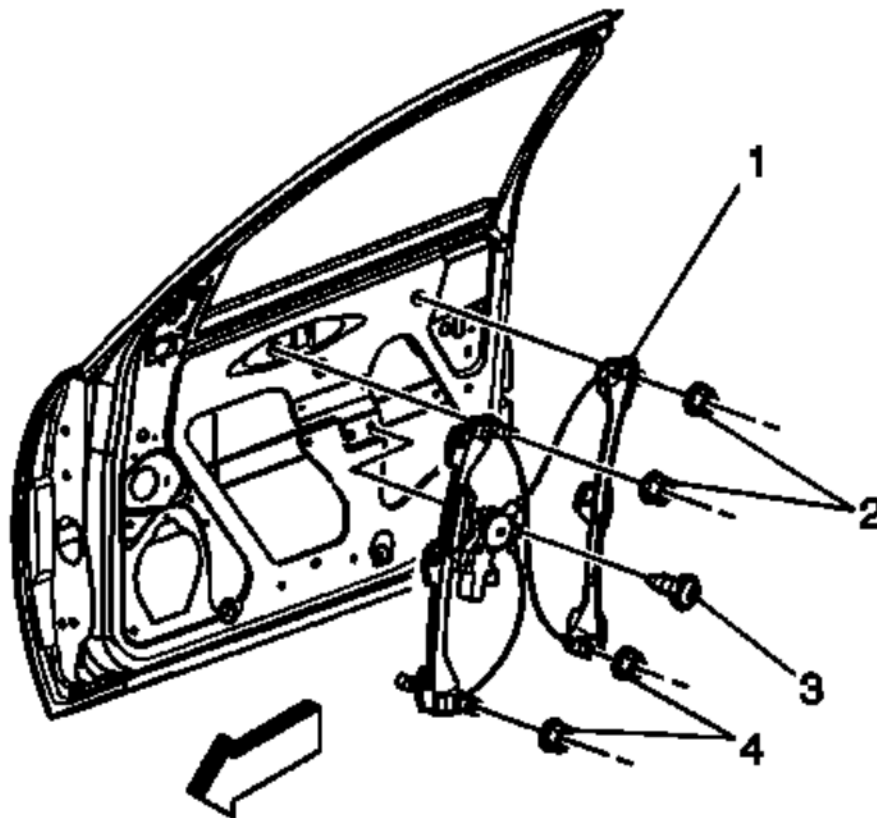


Fig. 11: Window Regulator
Courtesy of GENERAL MOTORS COMPANY

- Loosen the fasteners that attach the window regulator (1) to the inner door panel, in the specified sequence (2, 3, 4).

CAUTION: Refer to Fastener Caution .

2. Tighten the fasteners that attach the front side door window regulator (1) to the inner door panel in the specified sequence (2, 3, 4) to 10 N.m (89 lb in).
3. Inspect the window for proper operation before installing the door trim.
4. Install the water deflector.
5. Install the front door trim.

FRONT SIDE DOOR WINDOW REPLACEMENT

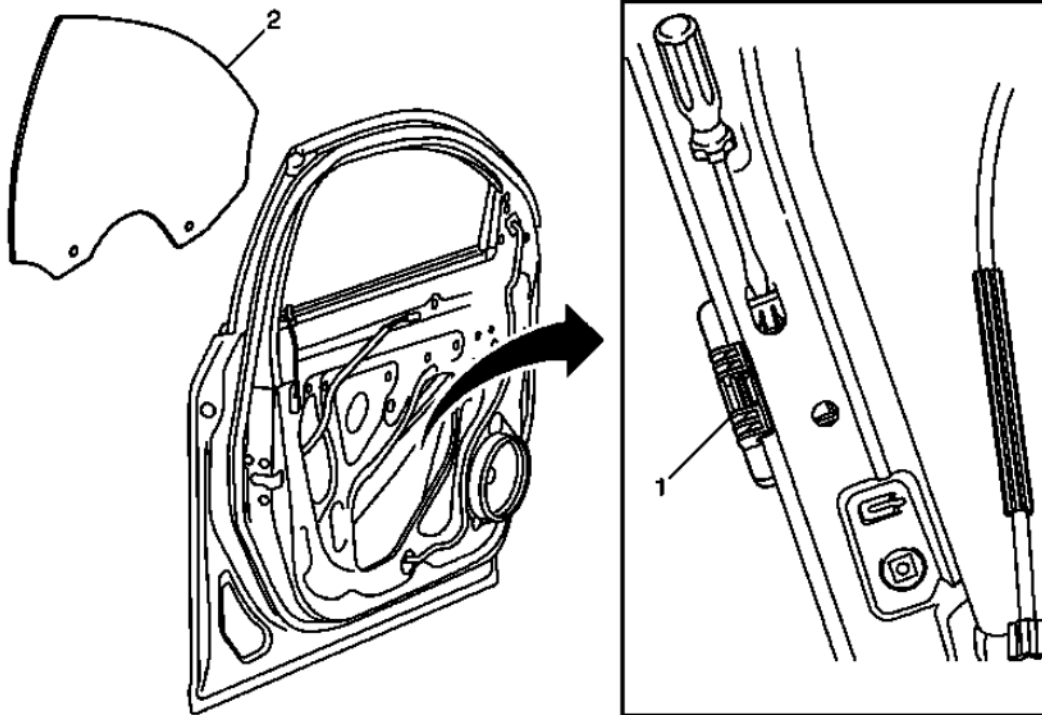


Fig. 12: Front Side Door Window & Retainers
Courtesy of GENERAL MOTORS COMPANY

Front Side Door Window Replacement

Callout	Component Name
WARNING: Disconnect the power window switch when working inside the driver door. When operated, the Express Up/Down Feature allows the door window to move very quickly, without stopping, which could cause personal injury.	

CAUTION:

Refer to Paint Damage Caution .

Preliminary Procedures

1. Place the door window in a service position.
2. Remove the front side door inner sealing strip. Refer to Front Side Door Window Inner Sealing Strip Replacement.

1	Front Side Door Window Guide Retainer Clip (Qty: 2) Procedure 1. Apply masking tape to the outer applique and frame. 2. Remove the front door water deflector. 3. Position the window approximately half way down in the door until the opening come into view for the front retaining clip. 4. Using a flat bladed trim tool to release the rear retaining clip. 5. Push inward on the window guide retaining clips located on the left and right sides. Pull the window out of the retainer clips. 6. Tilt the window downward in the front, pull up on the back of the window and pull it out from the frame.
2	Front Side Door Window Procedure 1. Refer to window regulator motor programming and set-up if necessary. 2. Inspect the window for proper operation before installing the door trim.

REAR SIDE DOOR WINDOW ADJUSTMENT**Causes of Slow Moving Window**

NOTE: Owners may comment that the windows operate slowly when going up or down.

1. Listed below are conditions that may cause a slow moving window:
 - The window run channel outboard lip at the rear of door frame.
 - The window is not seated in the run channel.
 - The window is misaligned in the opening.
 - The regulator is misaligned causing misalignment of the window.
2. After inspecting the conditions above, do the following:

1. Remove the rear door trim.
2. Remove the water deflector.
3. Ensure that the window guide is fully seated and clipped.

Ensure that the window is fully seated in the window guide run channel.

4. Inspect the window for equal distance between the front and rear run channels.
5. Inspect the power window motor for being loose.
6. Inspect the window for alignment.

Adjustment Procedure

1. Remove the rear side door trim.

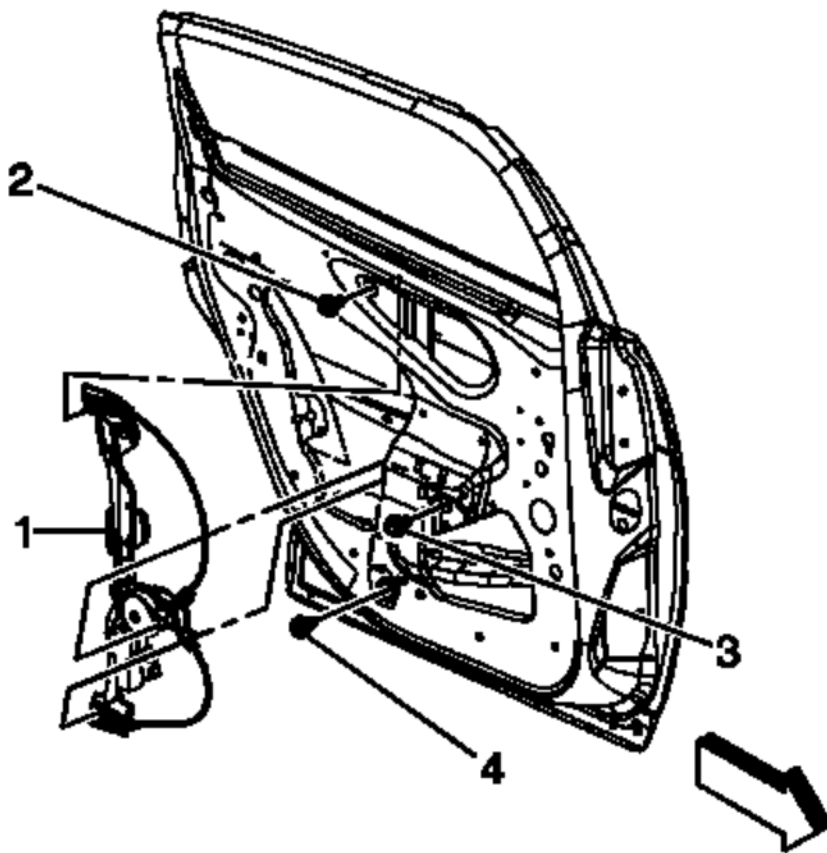


Fig. 13: Window Regulator

Courtesy of GENERAL MOTORS COMPANY

2. Inspect for the following conditions before making adjustments:
 - Using a flat-bladed tool, straighten the run channel lip by pulling it out to its correct position.
 - Use a flat-bladed tool to push the run channel rearward to seat it in the door frame.

- Inspect the window guide channel to window fasteners to ensure that they are in the proper slots and the window is not tilted forward.
- Inspect the window to be straight up and down position.
- Loosen the fasteners that attach the window regulator (1) to the inner door panel, in the specified sequence (2, 3, 4).

CAUTION: Refer to Fastener Caution .

3. Loosen the fasteners that attach the rear side door window regulator (1) to the inner door panel in the specified sequence (2, 3, 4).

Tighten the fasteners to 10 N.m (89 lb in).

4. Inspect the window for proper operation before installing the door trim.
5. Install the water deflector.
6. Install the rear door trim.

REAR SIDE DOOR WINDOW REPLACEMENT

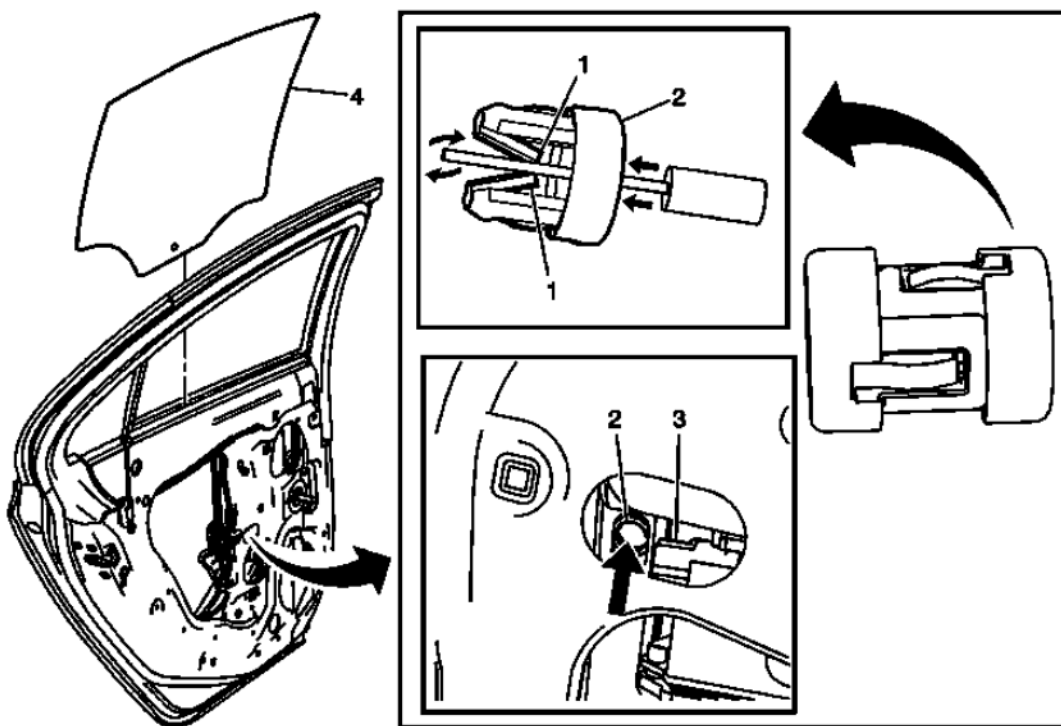


Fig. 14: Rear Side Door Window, Retainer & Tabs
Courtesy of GENERAL MOTORS COMPANY

Rear Side Door Window Replacement

Callout	Component Name
CAUTION: Refer to <u>Paint Damage Caution</u> .	
Preliminary Procedures 1. Place the door window in a service position. 2. Remove the rear side door window upper garnish molding. Refer to <u>Rear Side Door Window Garnish Molding Replacement</u> . 3. Remove the rear door window belt molding. Refer to <u>Rear Side Door Window Belt Reveal Molding Replacement</u>. 4. Remove the rear side door inner sealing strip. Refer to <u>Rear Side Door Window Inner Sealing Strip Replacement</u> 5. Remove the rear side door window rear channel. Refer to <u>Rear Side Door Window Rear Channel Replacement</u>.	
1	Rear Side Door Window Guide Retainer Tabs Procedure 1. Apply masking tape to the outer applique and frame. 2. Raise the window. 3. Remove the rear side door water deflector. 4. Remove the energy absorber retainers and energy absorber from the door. 5. Loosen the rear side door window rear channel guide fasteners. 6. Position the window half way down or enough in order to gain access through the inner panel. 7. Position the window in a suitable working position. 8. Install a suitable tool in the center of the center guide retainer, push inward to release the tabs.
2	Rear Side Door Window Guide Retainer Procedure Separate the window guide retainer in half.
3	Rear Side Door Window Guide Procedure 1. Lift upward on the window until it released from the guide. 2. Pull the window downward and away from the bracket 3. Tilt the window downward in the rear, pull up on the front of the window and pull it out from the frame.
	Rear Side Door Window

NOTE:

Inspect the window for proper operation before installing the door trim.

REAR WINDOW REPLACEMENT

Special Tools

- **BO-39032** Stationary Glass Removal Tool
- Use an adhesive that is approved by GM

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

Removal Procedure

WARNING: If a window is cracked but still intact, crisscross the window with masking tape in order to reduce the risk of damage or personal injury.

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. Open the rear compartment lid in order to access the reveal molding.
2. Disconnect the rear window defogger electrical connectors.
3. Disconnect the rear window radio antenna.

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

4. Cover to protect the following parts from broken glass:

- Upper dash pad
- Defroster outlets and A/C outlets
- Seats and carpeting

NOTE: Keep the cutting edge of the tool against the window. There are window locating pins, one in each 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.

5. This will allow the urethane adhesive to be separated from the window.
 - Leave a base of urethane on the pinchweld flange.
 - The only suitable lubrication is clean water.
 - **BO-39032** Stationary Glass Removal Tool, or equivalent in order to remove the window.

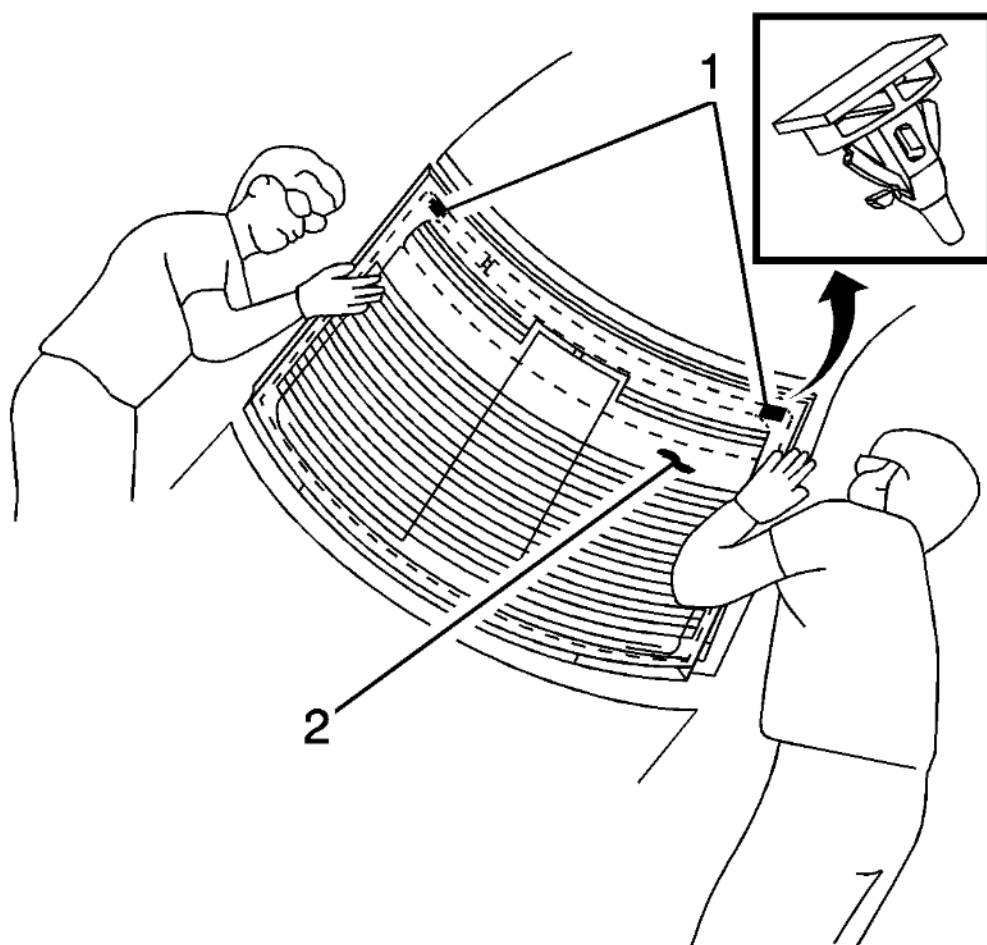


Fig. 15: Installing Rear Window
 Courtesy of GENERAL MOTORS COMPANY

6. Remove the rear window (1) with an assistant (2) from the vehicle.

Installation Procedure

1. Install the rear window into the opening. Refer to **Adhesive Installation of Rear Windows**.
2. Connect the rear window defogger electrical connectors.
3. Connect the rear window radio antenna.
4. Close the rear compartment lid.
5. Remove the double layer of masking tape around the perimeter of the painted surfaces and the interior trim.

REAR SIDE DOOR WINDOW REAR CHANNEL REPLACEMENT

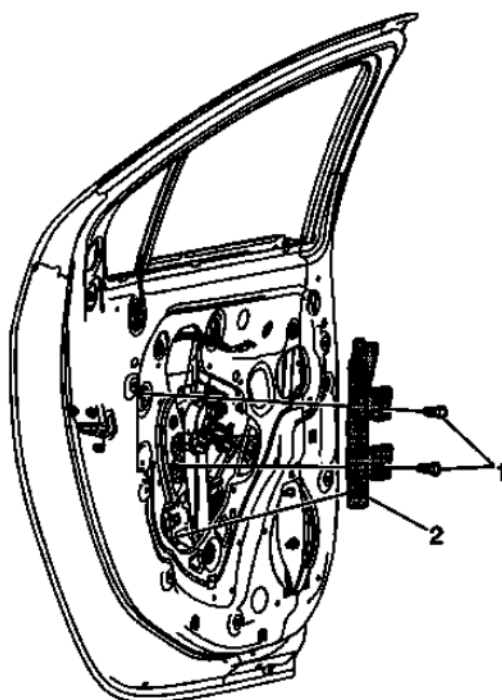


Fig. 16: Rear Side Door Window Rear Channel
 Courtesy of GENERAL MOTORS COMPANY

Rear Side Door Window Rear Channel Replacement

Callout	Component Name
Preliminary Procedures 1. Place the door window in a service position. 2. Remove the rear side door trim. Refer to Rear Side Door Trim Replacement.	
1	Rear Side Door Window Rear Channel Fasteners (Qty :2) CAUTION: Refer to Fastener Caution . Procedure 1. Remove the water deflector. 2. Remove the weatherstrip from the rear channel. Tighten 10 N.m (89 lb in)
	Rear Side Door Window Rear Channel

2

NOTE:

Inspect the window for proper operation before installing the door trim.

FRONT SIDE DOOR WINDOW FRAME REAR APPLIQUE REPLACEMENT

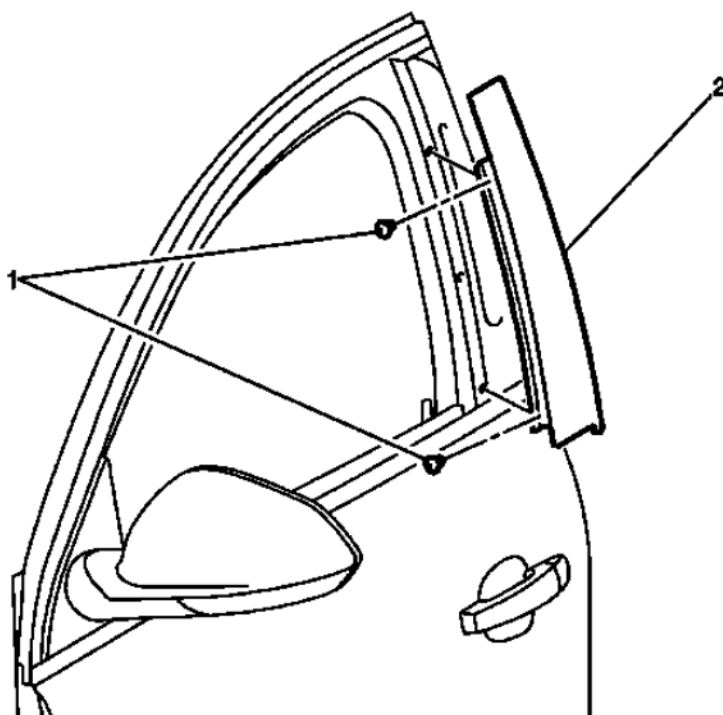


Fig. 17: Front Side Door Window Frame Rear Applique
Courtesy of GENERAL MOTORS COMPANY

Front Side Door Window Frame Rear Applique Replacement

Callout	Component Name
Preliminary Procedures 1. Place the door window in a service position. 2. Remove the front side door window belt reveal molding. Refer to Front Side Door Window Belt Reveal Molding Replacement.	
1	Front Side Door Window Frame Applique Fastener (Qty: 2) CAUTION: Refer to Fastener Caution . Procedure Pull the front side door window weatherstrip from the applique to

	expose the fasteners.
2	Front Side Door Window Frame Applique Procedure Pull downward on the applique in order to release it from under the upper molding then pull upward on the assembly to remove it from the door frame. NOTE: Inspect the window for proper operation before installing the door trim.

REAR SIDE DOOR WINDOW FRAME FRONT APPLIQUE REPLACEMENT

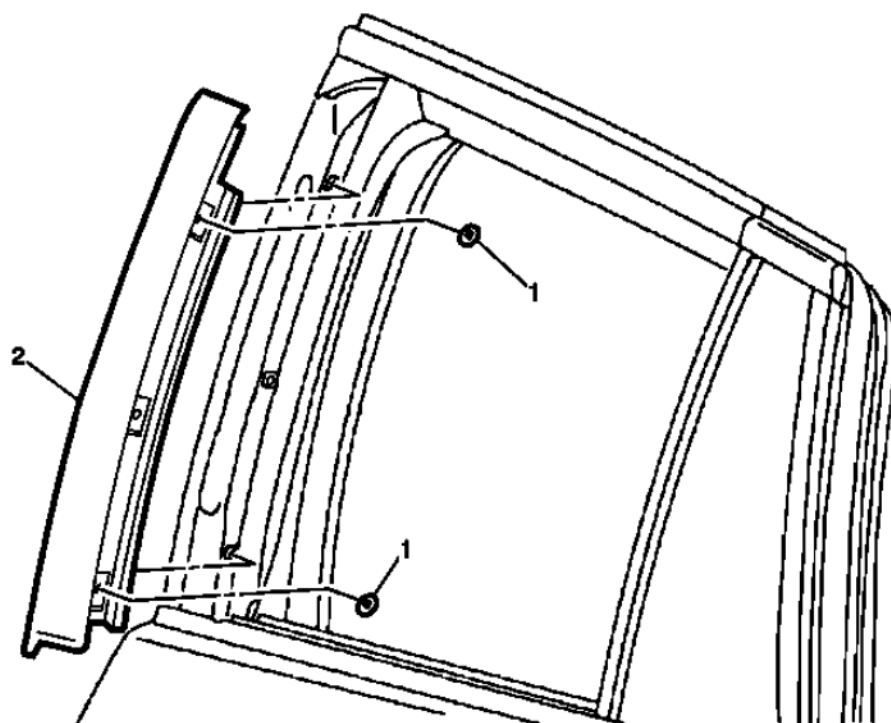


Fig. 18: Rear Side Door Window Frame Front Applique
 Courtesy of GENERAL MOTORS COMPANY

Rear Side Door Window Frame Front Applique Replacement

Callout	Component Name
Preliminary Procedures	
1. Place the door window in a service position. 2. Remove the rear side door window belt reveal molding. Refer to <u>Rear Side Door Window Belt Reveal Molding Replacement.</u>	
	Rear Side Door Window Frame Front Applique Fastener (Qty: 2)

1	CAUTION: Refer to <u>Fastener Caution</u> . Procedure Pull the rear side door window weatherstrip from the applique to expose the fasteners.
2	Rear Side Door Window Frame Front Applique Procedure Pull the rear side door window weatherstrip from the applique. NOTE: Inspect the window for proper operation before installing the door trim.

FRONT SIDE DOOR WINDOW SWITCH REPLACEMENT (PASSENGERS SIDE DOOR)

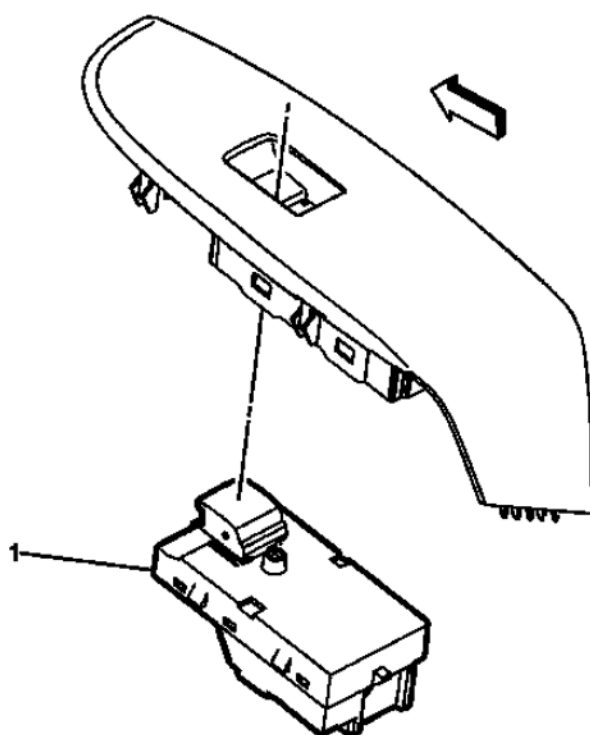


Fig. 19: Front Side Door Window Switch (Passengers Side Door)
Courtesy of GENERAL MOTORS COMPANY

Front Side Door Window Switch Replacement (Passengers Side Door)

Callout	Component Name
Preliminary Procedure Remove the front side door accessory switch mount plate passengers side door. Refer to Front Side Door Accessory Switch Mount Plate Replacement (Drivers Side Door) , Front Side Door Accessory	

Switch Mount Plate Replacement (Passenger Side Door) .

1	Front Side Door Window Switch Assembly TIP: Disconnect electrical connector.
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FRONT SIDE DOOR WINDOW AND MULTIFUNCTION SWITCH REPLACEMENT (DRIVERS SIDE DOOR)

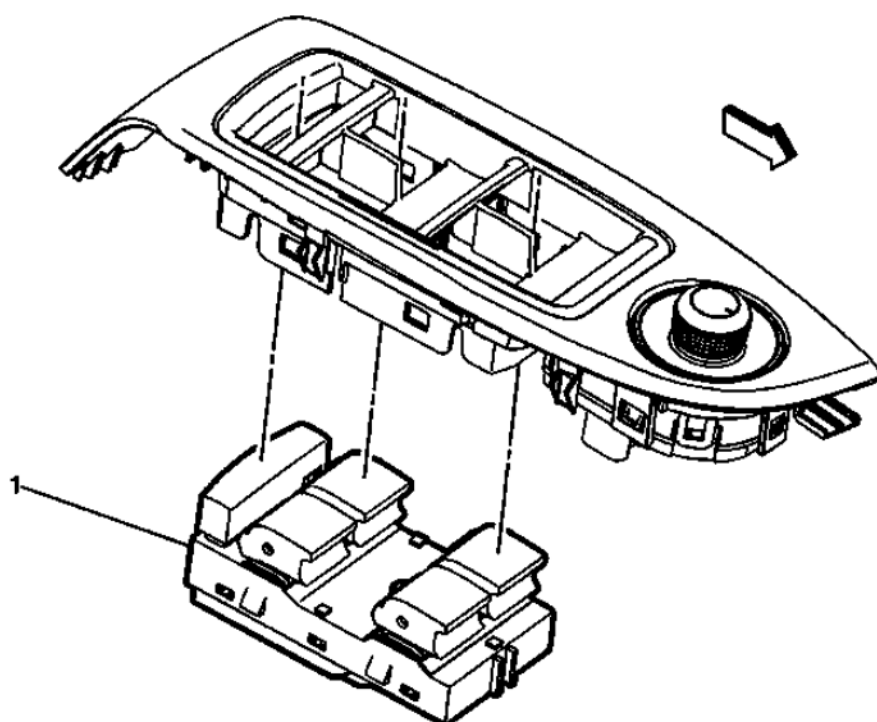


Fig. 20: Front Side Door Window and Multifunction Switch (Drivers Side Door)

Courtesy of GENERAL MOTORS COMPANY

Front Side Door Window and Multifunction Switch Replacement (Drivers Side Door)

Callout	Component Name
Preliminary Procedure Remove the front side door accessory switch mount plate drivers side door. Refer to Front Side Door Accessory Switch Mount Plate Replacement (Drivers Side Door) , Front Side Door Accessory Switch Mount Plate Replacement (Passenger Side Door) .	
1	Front Side Door Window and Multifunction Switch Assembly TIP: Disconnect electrical connector.

REAR SIDE DOOR WINDOW SWITCH REPLACEMENT

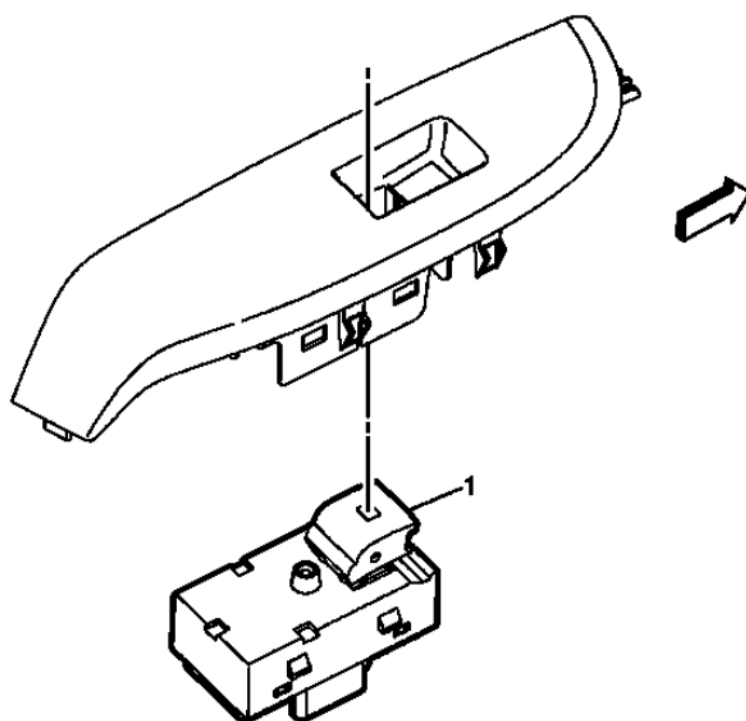


Fig. 21: Rear Side Door Window Switch
 Courtesy of GENERAL MOTORS COMPANY

Rear Side Door Window Switch Replacement

Callout	Component Name
Preliminary Procedure Remove the rear side door accessory switch mount plate. Refer to <u>Rear Side Door Accessory Switch Mount Plate Replacement</u> .	
1	Rear Side Door Window Switch Assembly Procedure 1. Disconnect electrical connector. 2. Refer to <u>Control Module References</u> for programming and setup procedures.

FRONT SIDE DOOR WINDOW REGULATOR REPLACEMENT

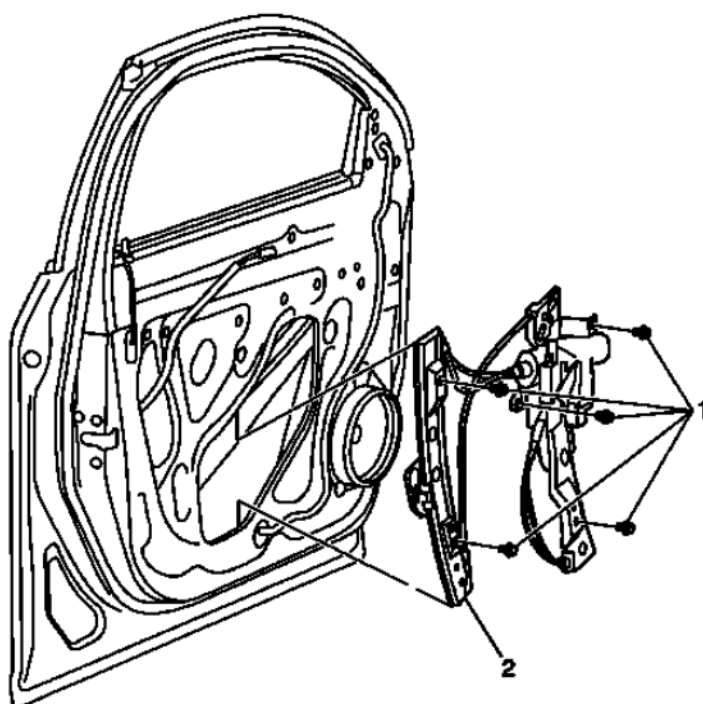


Fig. 22: Front Side Door Window Regulator & Fasteners
 Courtesy of GENERAL MOTORS COMPANY

Front Side Door Window Regulator Replacement

Callout	Component Name
WARNING: Disconnect the power window switch when working inside the driver 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. Place the door window in a service position. 2. Release the door window from the guide retaining clips. Refer to <u>Front Side Door Window Replacement</u>.	
1	Front Side Door Window Regulator Fastener (Qty: 5) CAUTION: Refer to <u>Fastener Caution</u> . Procedure After releasing the window from the guide retaining clips, tape the window to the upper door frame before removing the regulator bolts. Tighten

	10 N.m (89 lb in)
2	Front Side Door Window Regulator Procedure 1. Disconnect the electrical connector. 2. Transfer all parts as necessary. NOTE: Inspect the 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 procedure.

NOTE: For vehicles equipped with a folding convertible top, the top must be closed and firmly latched prior to normalizing the windows.

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

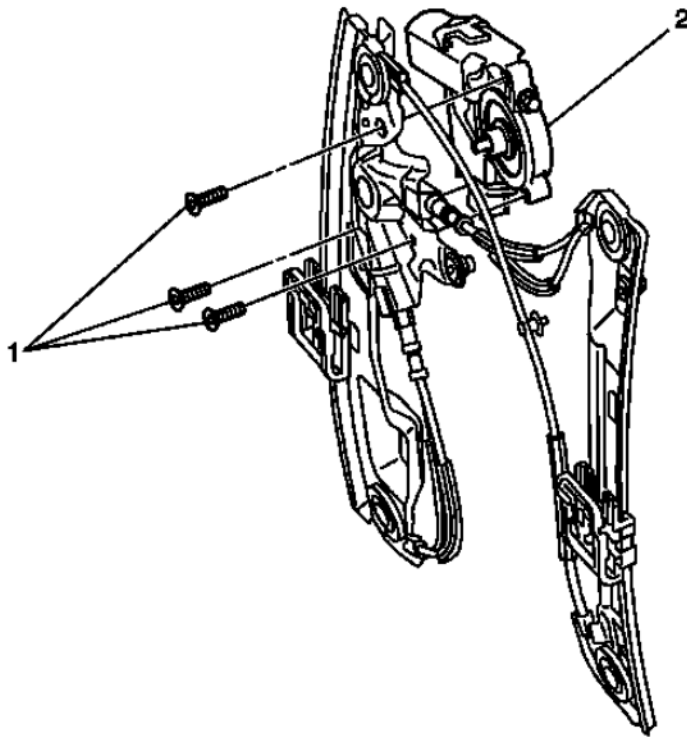


Fig. 23: Front Side Door Window Regulator Motor & Fasteners
 Courtesy of GENERAL MOTORS COMPANY

Front Side Door Window Regulator Motor Replacement

Callout	Component Name
Preliminary Procedures 1. Place the door window in a service position. 2. Remove the front side door window regulator. <u>Front Side Door Window Regulator Replacement.</u>	
1	Front Side Door Window Regulator Motor Fastener (Qty: 3) CAUTION: Refer to <u>Fastener Caution</u> . Tighten 10 N.m (89 lb in)
2	Front Side Door Window Regulator Motor Procedure Transfer all parts as necessary. NOTE: Inspect the window for proper operation before installing the

door trim.

REAR SIDE DOOR WINDOW REGULATOR REPLACEMENT

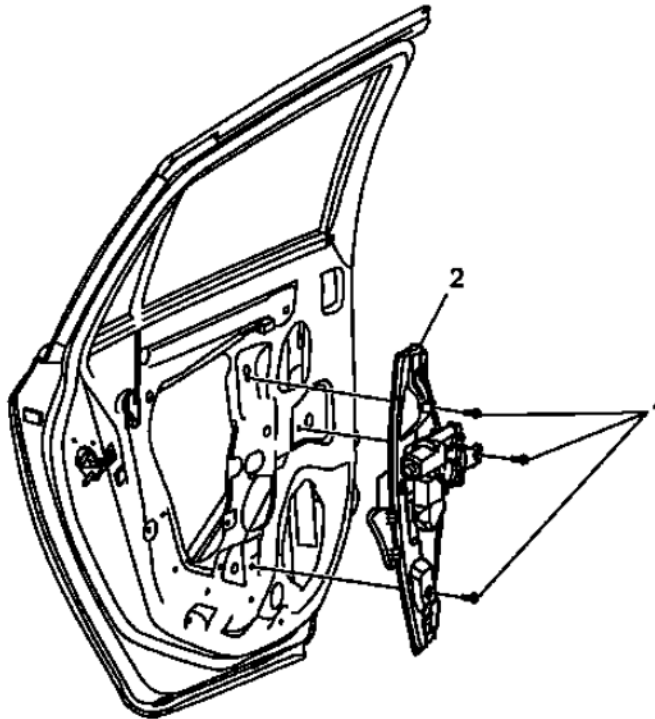


Fig. 24: Rear Side Door Window Regulator & Fasteners
Courtesy of GENERAL MOTORS COMPANY

Rear Side Door Window Regulator Replacement

Callout	Component Name
Preliminary Procedures	
1. Place the door window in a service position. 2. Release the door window from the guide retaining clips. Refer to <u>Rear Side Door Window Replacement</u>	
1	Rear Side Door Window Regulator Fasteners (Qty: 3) CAUTION: Refer to <u>Fastener Caution</u> . Procedure After releasing the window from the guide retaining clips, tape the window to the door frame before removing the regulator bolts. Tighten

	10 N.m (89 lb in)
2	Rear Side Door Window Regulator Procedure 1. Disconnect the electrical connector. 2. Transfer all parts as necessary. NOTE: Inspect the window for proper operation, adjust if necessary before installing the door trim.

REAR SIDE DOOR WINDOW REGULATOR MOTOR REPLACEMENT

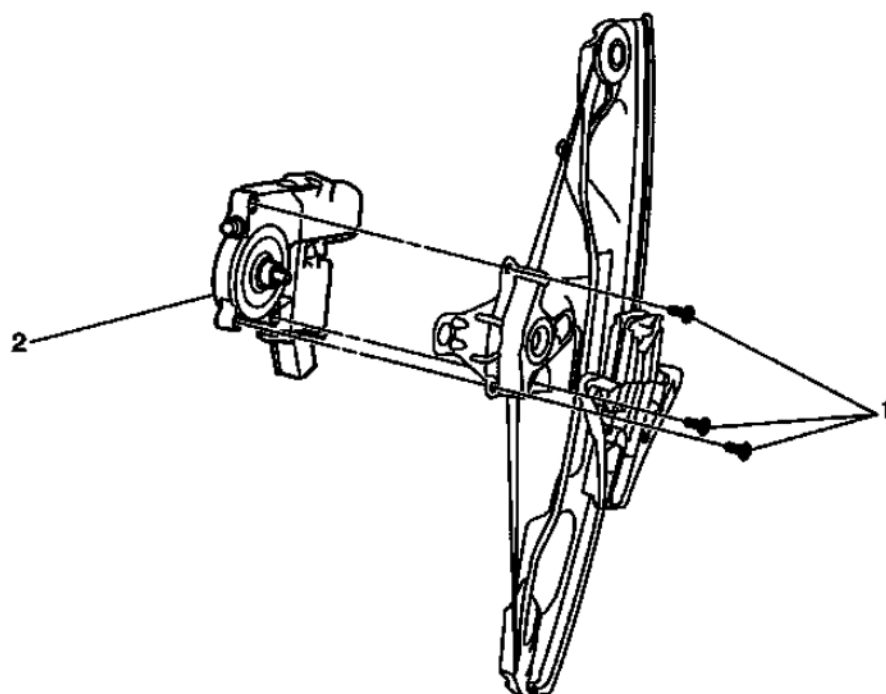


Fig. 25: View Of Rear Side Door Window Regulator Motor & Bolts
Courtesy of GENERAL MOTORS COMPANY

Rear Side Door Window Regulator Motor Replacement

Callout	Component Name
Preliminary Procedures 1. Place the door window in a service position. 2. Remove the rear side door window regulator. Refer to <u>Rear Side Door Window Regulator Replacement</u> .	

1	Rear Side Door Window Regulator Motor Fasteners (Qty: 3) CAUTION: Refer to <u>Fastener Caution</u> . Tighten 10 N.m (89 lb in)
2	Rear Side Door Window Regulator Motor Procedure Transfer all parts as necessary. NOTE: Inspect the window for proper operation before installing the door trim.

FRONT SIDE DOOR WINDOW INNER SEALING STRIP REPLACEMENT

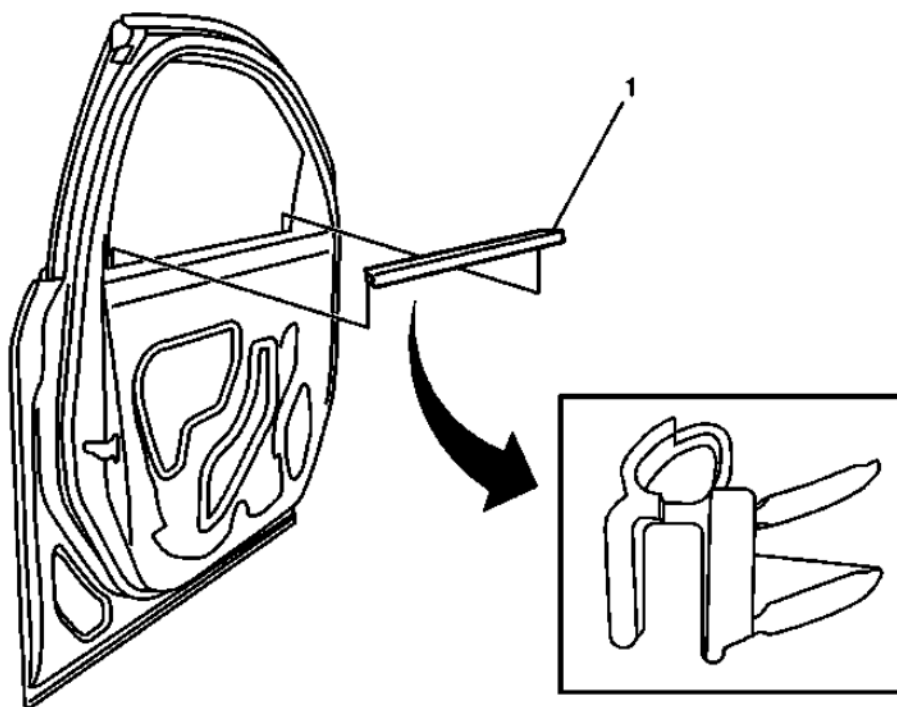


Fig. 26: Front Side Door Window Inner Sealing Strip
Courtesy of GENERAL MOTORS COMPANY

Front Side Door Window Inner Sealing Strip Replacement

Callout	Component Name
Preliminary Procedures	

1. Place the door window in a service position.
2. Remove the front side door trim. Refer to **Front Side Door Trim Replacement**.

Front Side Door Window Inner Sealing Strip

Procedures

1

1. Lift the front side door window inner strip off the pinch-weld flange.
2. Press firmly to insert the front side door window inner strip back on the door flange.

NOTE:

Inspect the window for proper operation before installing the door trim.

REAR SIDE DOOR WINDOW UPPER REVEAL MOLDING REPLACEMENT

Removal Procedure

1. Place the rear door window in the full down position.

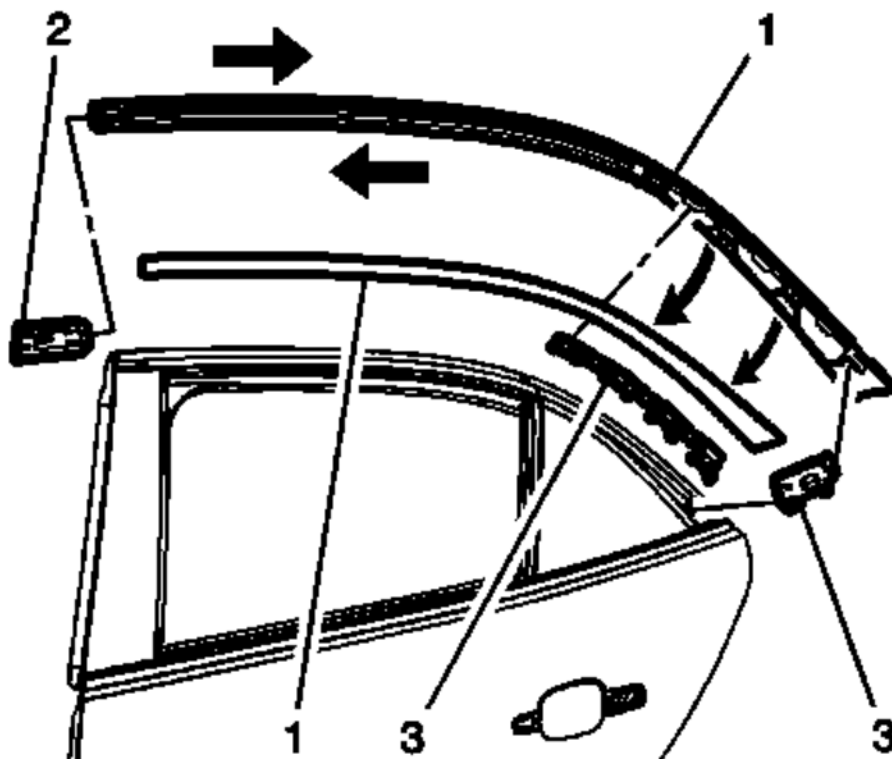


Fig. 27: Reveal Molding

Courtesy of GENERAL MOTORS COMPANY

NOTE: The reveal molding can be replaced without the removal of the rear side door stationary window from the door.

NOTE: Use care Not to break the reveal molding (1) end cap (2). When removing the end cap pin use a suitable tool, push in on the pin releasing it from the glass run channel. The reveal molding must slide forward on the upper door frame to disengage it from the weatherstrip.

2. Remove the reveal molding end cap (2) by first insert a suitable plastic tool between the end cap pin and glass run channel up corner, press in on the pin releasing it from the glass run channel.

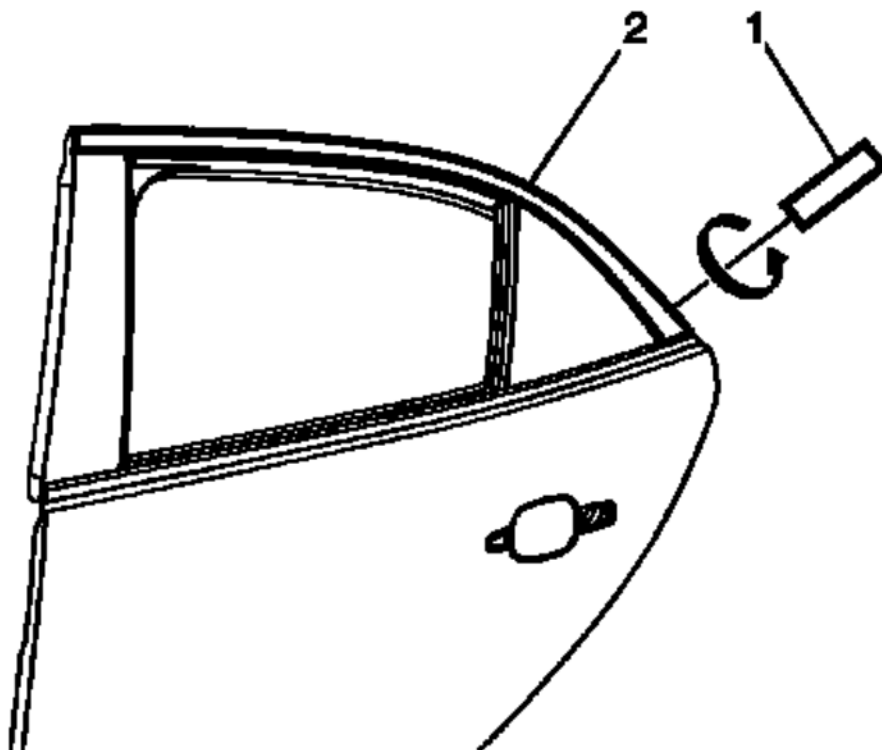


Fig. 28: Suitable Plastic Tool And Reveal Molding

Courtesy of GENERAL MOTORS COMPANY

NOTE: Work the suitable tool up and down the rear back corner of the reveal molding releasing all the retainers before pull upward completely.

3. Remove the reveal molding, place the suitable plastic tool (1) between the reveal molding (2) and the

weatherstrip, turn the tool counterclockwise while pulling upward. This will allow the four reveal molding retainers (3) to release the stationary window frame. Continue to gently lift the and turn the suitable tool releasing the reveal molding retainers. Working from the rear to front of the door, slide the reveal molding forward releasing it from the window weatherstrip and door.

Installation Procedure

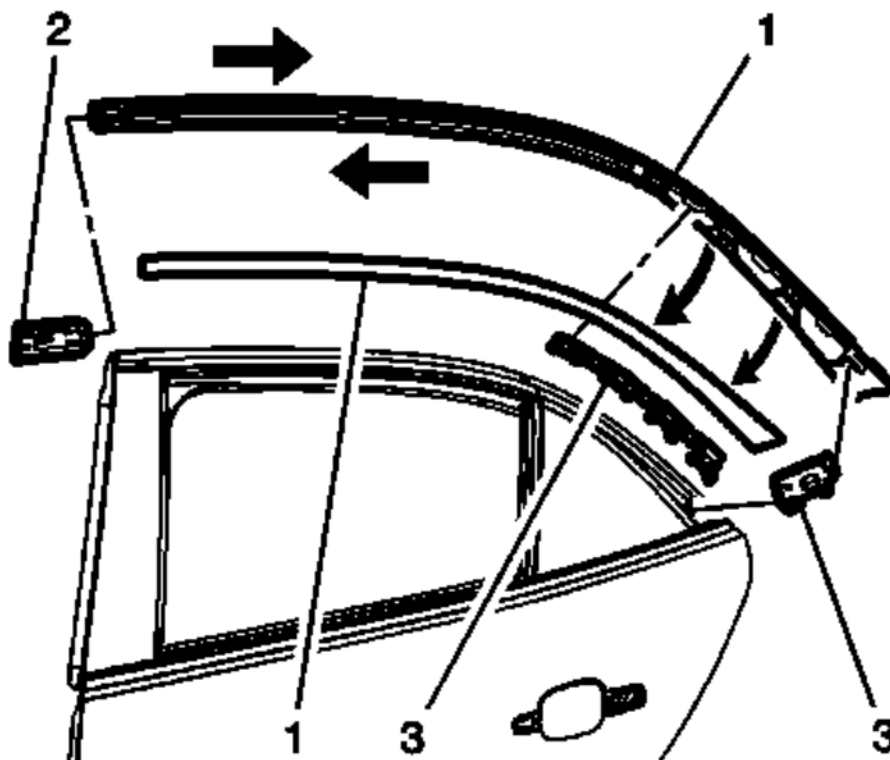


Fig. 29: Reveal Molding

Courtesy of GENERAL MOTORS COMPANY

1. Position the reveal molding (1) into the retaining edges of the window weatherstrip located at the top of the door frame, With the palm of your hand, push inward firmly seating the reveal molding around the entire upper door frame with the reveal molding retainers.
2. Ensure that all the reveal molding retainers are fully seated into the stationary window frame.
3. Install the end cap pin (2) into the end of the reveal molding and the glass run channel upper front corner of the rear door.
4. Ensure that the end cap pin is fully seated.
5. Place the door window in the full up position.

REAR SIDE DOOR WINDOW BELT REVEAL MOLDING REPLACEMENT

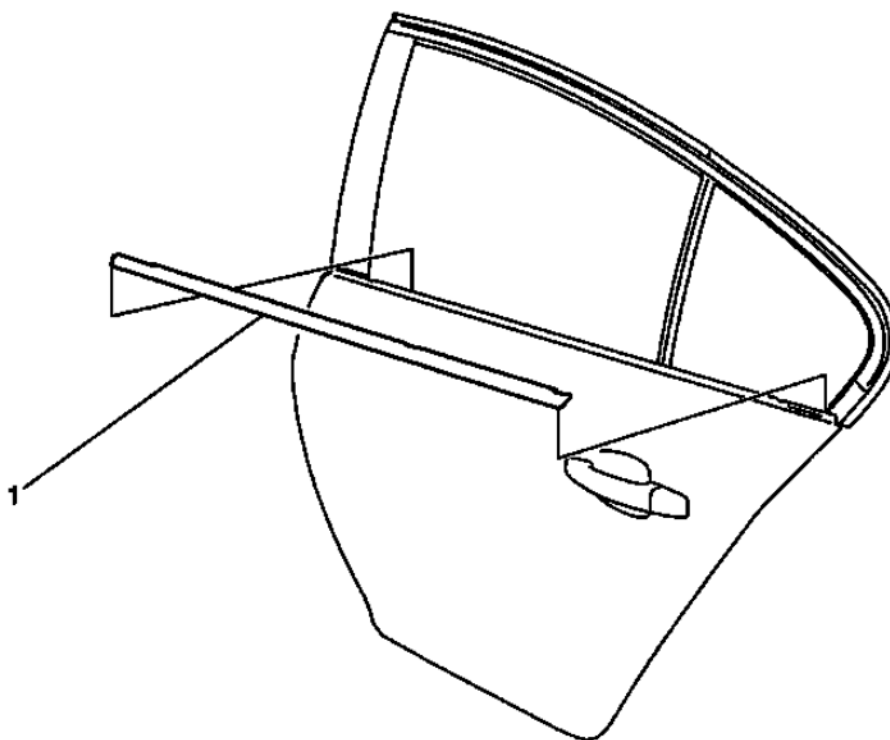


Fig. 30: Rear Side Door Window Belt Reveal Molding
 Courtesy of GENERAL MOTORS COMPANY

Rear Side Door Window Belt Reveal Molding Replacement

Callout	Component Name
1	Rear Side Door Window Belt Reveal Molding CAUTION: Refer to <u>Paint Damage Caution</u> . Procedure 1. Place the rear door window in the service position. 2. Apply masking tape to the door frame and applique. 3. Using a small flat-bladed tool, lift the sealing strip up to remove it from the door flange. 4. Insert the retaining clip into the rear hole of the rear door and push down firmly to lock in place. NOTE: Inspect the window for proper operation before installing the door trim.

FRONT SIDE DOOR WINDOW BELT REVEAL MOLDING REPLACEMENT

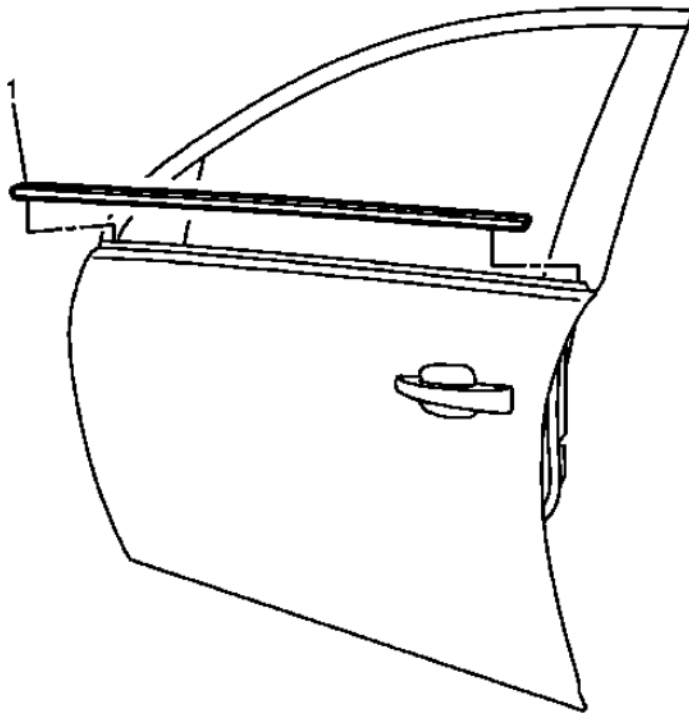


Fig. 31: Front Side Door Window Belt Reveal Molding
 Courtesy of GENERAL MOTORS COMPANY

Front Side Door Window Belt Reveal Molding Replacement

Callout	Component Name
CAUTION: Refer to <u>Paint Damage Caution</u> .	
Preliminary Procedure Remove the outside rearview mirror. Refer to <u>Outside Rearview Mirror Replacement</u> .	
1	Front Side Door Window Belt Reveal Molding Procedure 1. Apply masking tape to the door frame and applique. 2. Using a small flat-bladed tool, lift the sealing strip up to remove it from the door flange. 3. Insert the retaining clip into the rear hole of the front door and push down firmly to lock in place. NOTE: Inspect the window for proper operation before installing the door trim.

FRONT SIDE DOOR WINDOW UPPER REVEAL MOLDING REPLACEMENT

Removal Procedure

1. Place the front door window in the full down position.
2. Remove the outside rearview mirror. Refer to Outside Rearview Mirror Replacement .

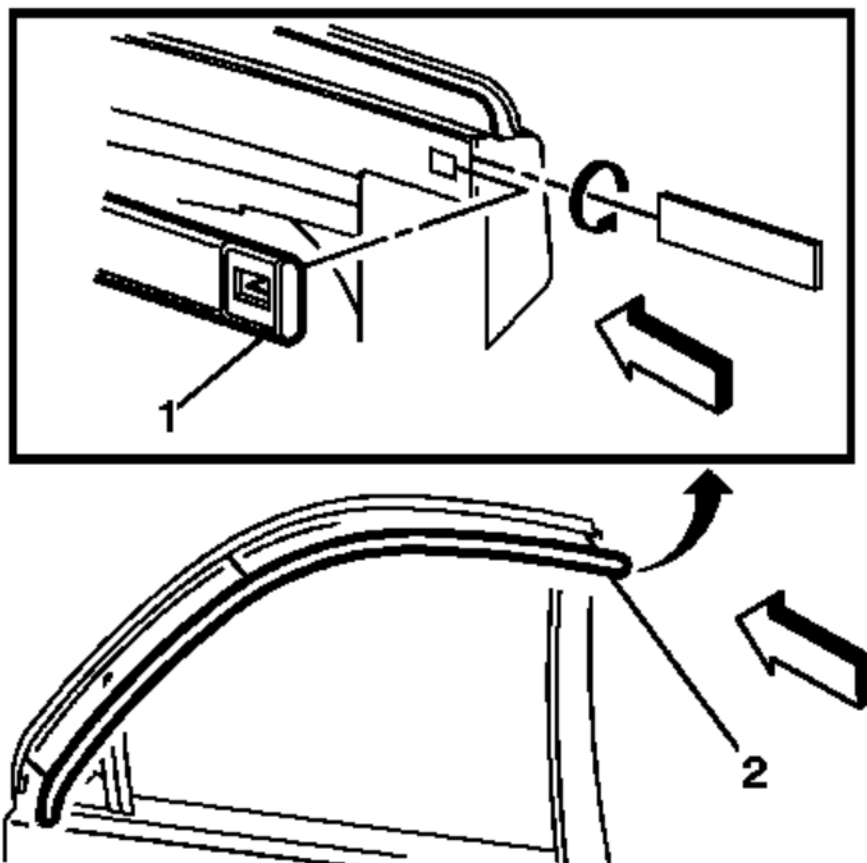


Fig. 32: Reveal Molding End Cap

Courtesy of GENERAL MOTORS COMPANY

NOTE: The front side door upper reveal molding can be replaced without remove the run channel weatherstrip.

NOTE: Use care Not to break the reveal molding (1) end cap (2). When removing end cap pin use a suitable tool, push in on the pin releasing it from the glass run channel. The reveal molding must slide rearward on the upper door frame to disengage it from the weatherstrip.

3. Remove the reveal molding end cap (1) by first insert a suitable plastic tool between the end cap pin and glass run channel up corner, press in on the pin releasing it from the glass run channel.

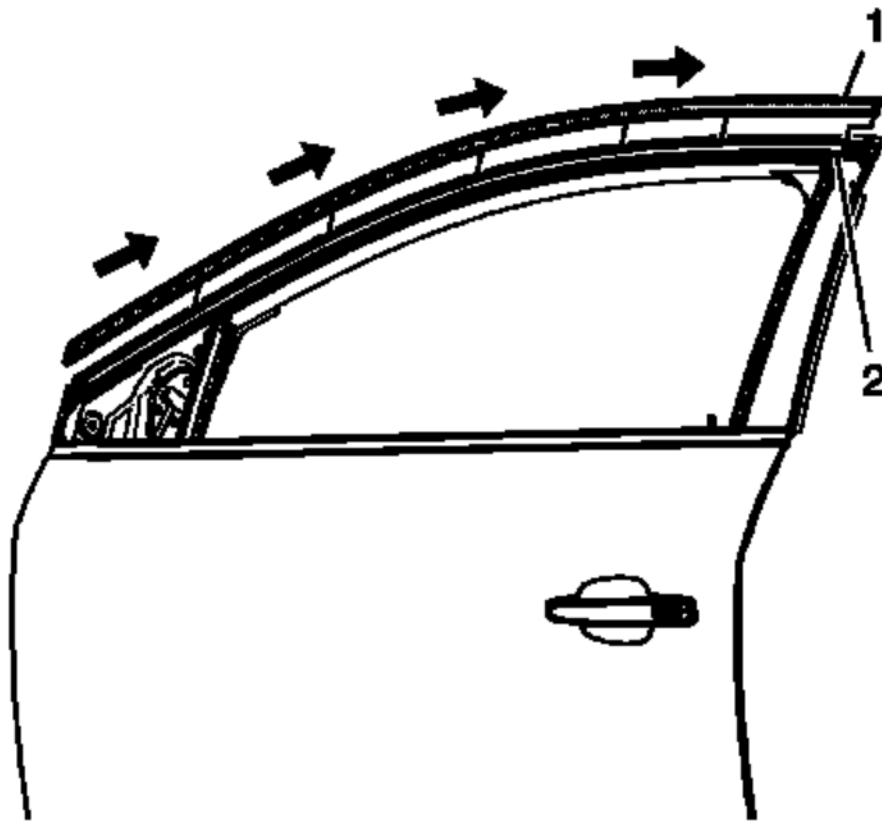


Fig. 33: Reveal Molding

Courtesy of GENERAL MOTORS COMPANY

4. Remove the reveal molding, place the suitable plastic tool between the reveal molding (2) and the weatherstrip, turn the tool counterclockwise while pulling upward, this will allow the reveal molding to release. Continue to gently lift the and turn the suitable tool releasing the reveal molding retainers. Working from front to rear, slide the reveal molding rearward releasing it from the window weatherstrip and door.

Installation Procedure

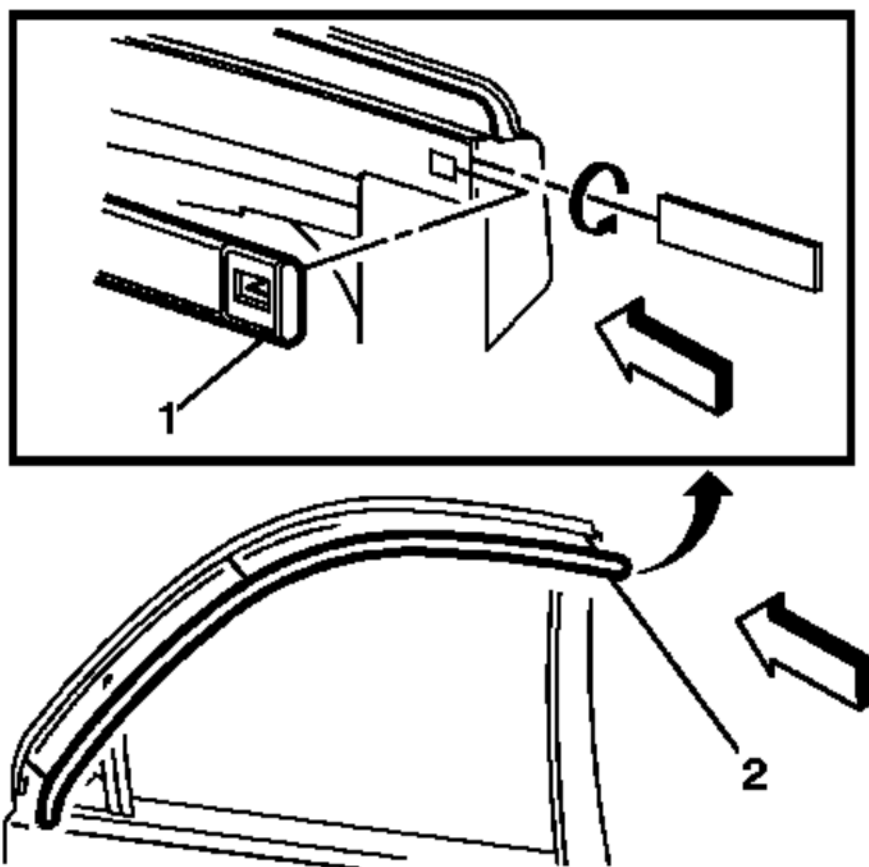


Fig. 34: Reveal Molding End Cap

Courtesy of GENERAL MOTORS COMPANY

1. Position the reveal molding (1) into the retaining edges of the window weatherstrip located at the top of the door frame. With the palm of your hand, push inward firmly seating the reveal molding around the entire upper door frame.
2. Install the end cap pin (2) to glass run channel up rear upper corner of the front door. Ensure that the end cap pin is fully seated.
3. Install the outside rearview mirror. Refer to **Outside Rearview Mirror Replacement**.
4. Place the door window in the full up position.

REAR SIDE DOOR WINDOW INNER SEALING STRIP REPLACEMENT

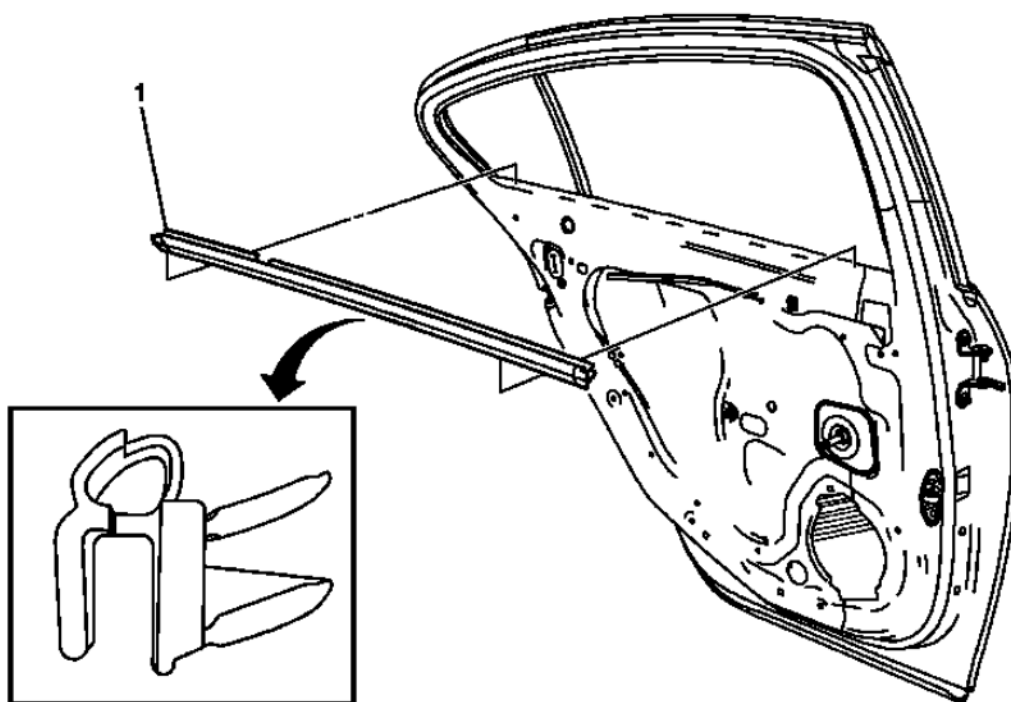


Fig. 35: Rear Side Door Window Inner Sealing Strip
 Courtesy of GENERAL MOTORS COMPANY

Rear Side Door Window Inner Sealing Strip Replacement

Callout	Component Name
Preliminary Procedures	
1. Place the door window in the service position. 2. Remove the rear side door trim. Refer to Rear Side Door Trim Replacement .	
1	Rear Side Door Window Inner Sealing Strip Procedure 1. Lift the rear side door window inner strip off the pinch-weld flange. 2. Press firmly to insert the rear side door window inner strip back on the door flange. NOTE: Inspect the window for proper operation before installing the door trim.

FRONT SIDE DOOR WINDOW WEATHERSTRIP REPLACEMENT

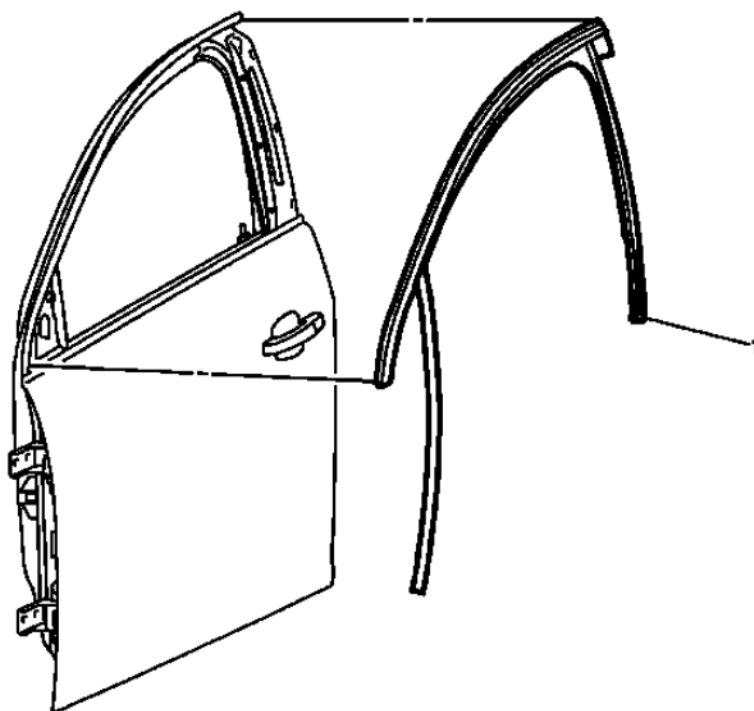


Fig. 36: Front Side Door Window Weatherstrip
 Courtesy of GENERAL MOTORS COMPANY

Front Side Door Window Weatherstrip Replacement

Callout	Component Name
Preliminary Procedures 1. Place the door window in the service position. 2. Remove the front side door window frame garnish molding. Refer to <u>Front Side Door Window Garnish Molding Replacement</u>. 3. Remove the outside rearview mirror. Refer to <u>Outside Rearview Mirror Replacement</u>. 4. Remove the front side door window frame rear applique. Refer to <u>Front Side Door Window Frame Rear Applique Replacement</u>. 5. Remove front side door upper reveal molding. Refer to <u>Front Side Door Window Upper Reveal Molding Replacement</u>.	
1	Front Side Door Window Weatherstrip Procedure 1. Remove the water deflector. 2. Grasp the center of the weatherstrip, downward releasing the weatherstrip assembly from the upper door frame. 3. Install the rear section of the rear side door weatherstrip to the door frame, then work the weatherstrip as assembly around the door

upper door frame.

NOTE:

Inspect the window for proper operation before installing the door trim.

REAR SIDE DOOR WINDOW WEATHERSTRIP REPLACEMENT

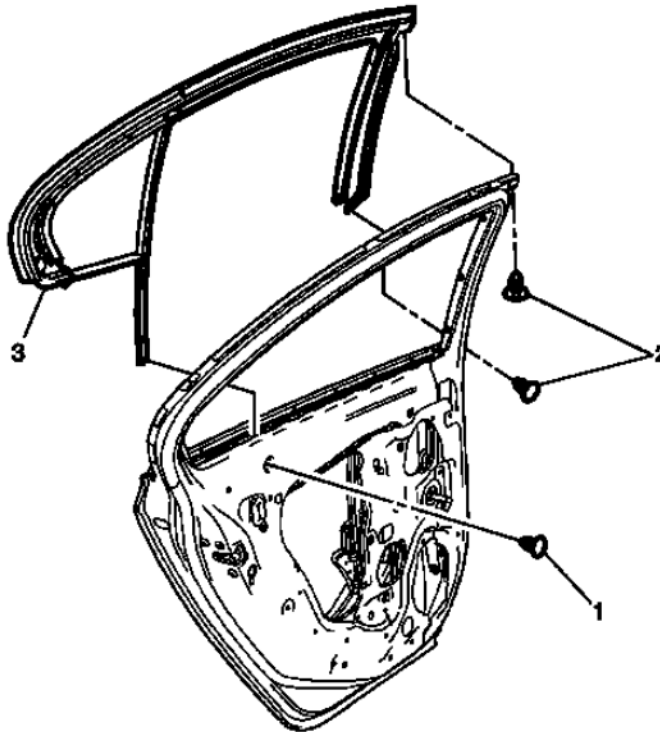


Fig. 37: Rear Side Door Window Weatherstrip & Fasteners
Courtesy of GENERAL MOTORS COMPANY

Rear Side Door Window Weatherstrip Replacement

Callout	Component Name
Preliminary Procedures	
1. Place the door window in the service position.	
2. Remove the rear side door window garnish molding. Refer to <u>Rear Side Door Window Garnish Molding Replacement</u> .	
3. Remove the rear side door inner sealing strip. Refer to <u>Front Side Door Window Inner Sealing Strip Replacement</u>	
4. Remove the rear side door window frame front applique. Refer to <u>Rear Side Door Window Frame Front Applique Replacement</u> .	
	Rear Side Door Window Weatherstrip Fastener

	CAUTION: Refer to <u>Fastener Caution</u> . Procedure 1. Remove the water deflector. 2. Grasp the center of the weatherstrip, downward releasing the weatherstrip assembly from the upper door frame. Tighten 10 N.m (89 lb in)
2	Rear Side Door Window Weatherstrip Fastener (Qty: 2)
3	Rear Side Door Window Weatherstrip Procedure Install the rear section of the rear side door weatherstrip to the door frame, then work the weatherstrip as assembly around the door upper door frame. NOTE: The rear door window weatherstrip comes as an assembly with the window. Inspect the window for proper operation before installing the door trim.

ADHESIVE INSTALLATION OF WINDSHIELDS

WARNING: Refer to Glass and Sheet Metal Handling Warning .

1. Use a urethane adhesive systems which meet GM Specification GM 3651G.
2. Remove all mounds or loose pieces of urethane adhesive from the pinchweld area.
3. If the original window is being reused, remove all but approximately 2 mm (3/64 in) of the existing bead of urethane adhesive from the pinchweld flange by using a clean utility knife or razor blade scraper.
4. Inspect for any of the following problems in order to help prevent future breakage of the window:
 - The flange of the window opening
 - High weld
 - Solder spots
 - Hardened sealer
 - Any other obstruction or irregularity in the pinchweld flange

NOTE: If corrosion of the pinch-weld flange is present or if sheet metal repairs or replacements are required, the pinch-weld 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 clean primer only surface. Materials such as BASF DE15®, DuPont 2610®, Sherwin-Williams PSE 4600 and NP70® and Martin-Semour 5120 and 5130® PPG DP90LF SPIES/ HECKER 3688/8590 - 3688/5150 - 4070/5090 STANDOX 11158/13320 - 14653/14980 products are approved for this application.

5. 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.
6. Verify all primers and urethane adhesive are within expiration dates.

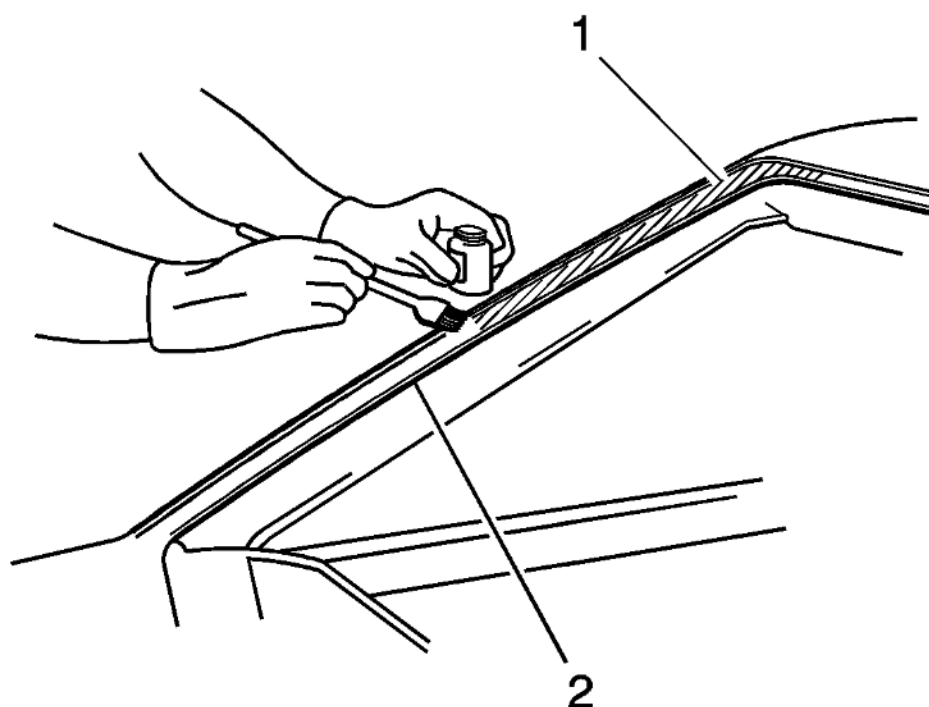


Fig. 38: Applying Pinch-Weld Primer
Courtesy of GENERAL MOTORS COMPANY

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.

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.

7. Shake the pinch-weld primer for at least 1 minute.
8. Use a new dauber in order to apply the primer to the surface of the pinch-weld flange (1).
9. Allow the pinch-weld primer to dry for approximately 10 minutes.

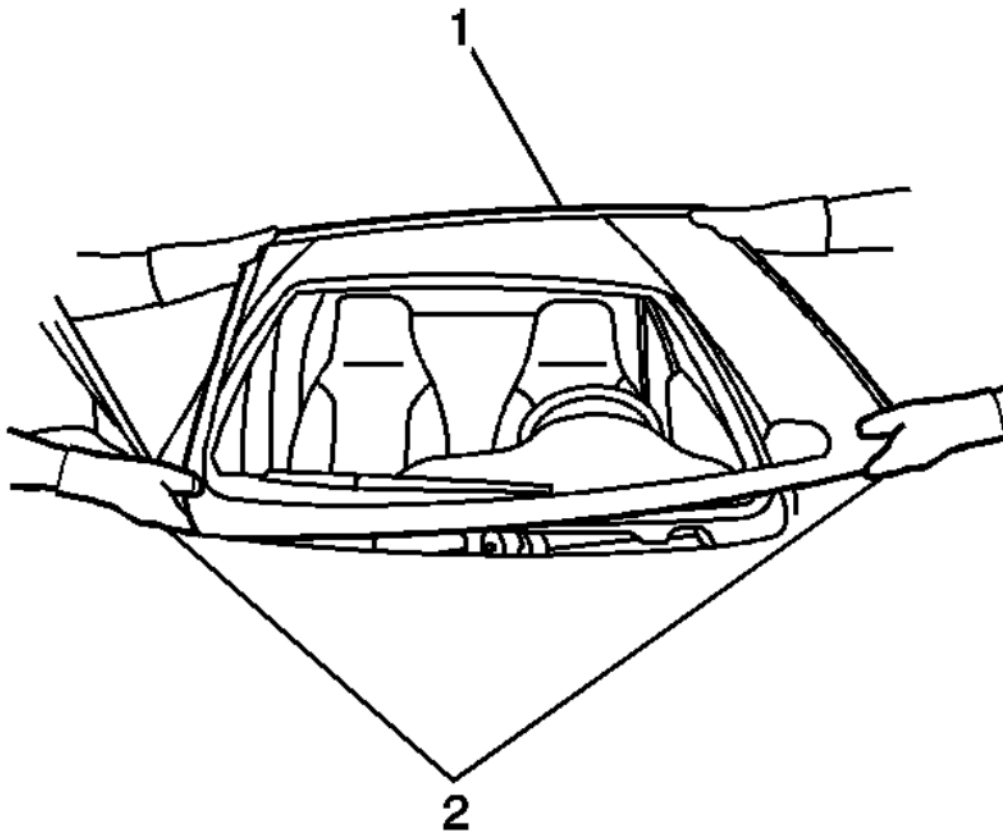


Fig. 39: Removing/Installing Windshield
Courtesy of GENERAL MOTORS COMPANY

10. With the an assistant, dry fit the window (1) to the opening in order to determine the correct position.

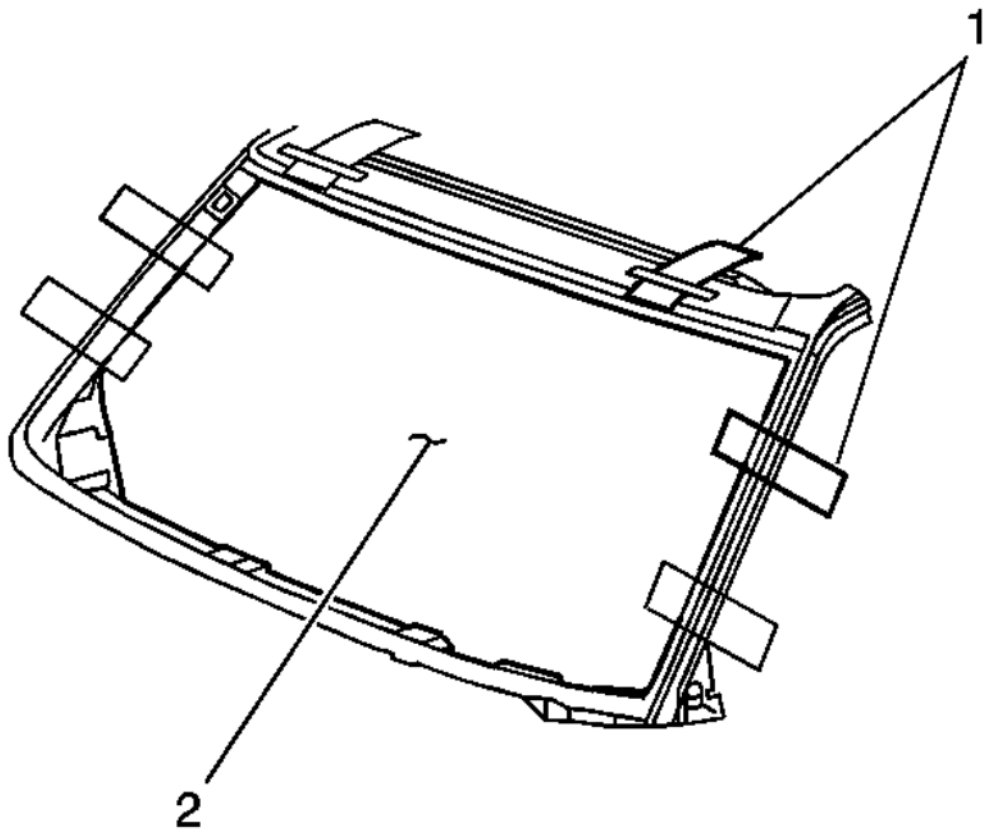


Fig. 40: Aligning Tape Lines On Window To Body
Courtesy of GENERAL MOTORS COMPANY

11. Use masking tape in order to mark the locations (1) of the window (2) in the opening.
12. Cut the masking tape in the center and remove the window from the opening.

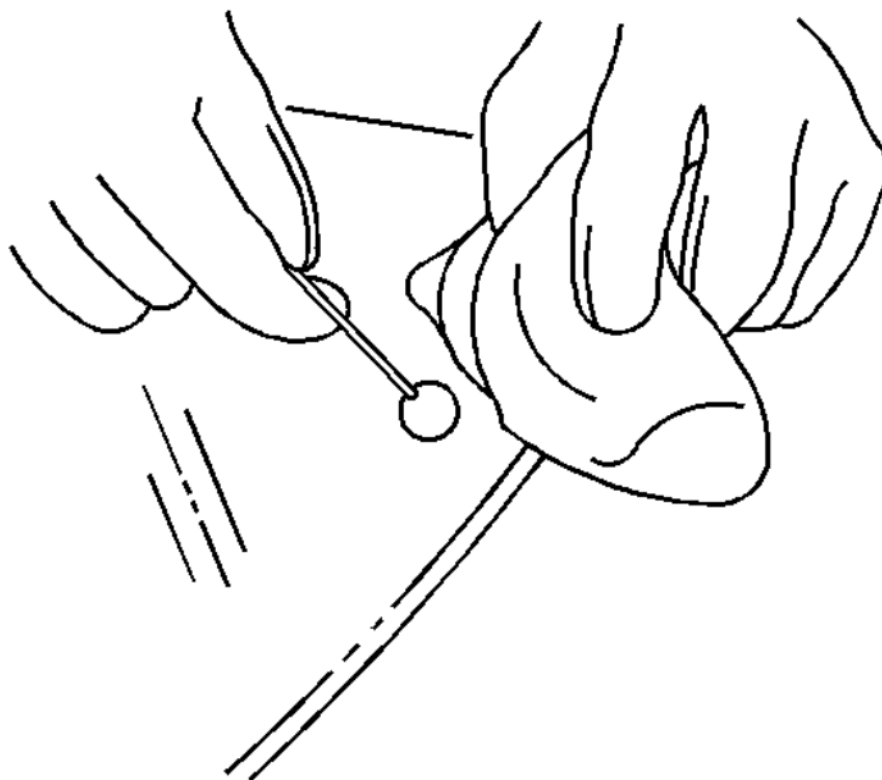


Fig. 41: Applying Glass Prep

Courtesy of GENERAL MOTORS COMPANY

NOTE: Use care when applying glass prep clear on the window. This primer dries almost instantly, and may stain the viewing area of the window if not applied evenly.

13. Use a new dauber in order to apply glass prep clear to the area approximately 10-16 mm (3/8-5/8 in) around the entire perimeter of the window inner surface.

Immediately wipe the glass primed area using a clean, lint-free cloth.

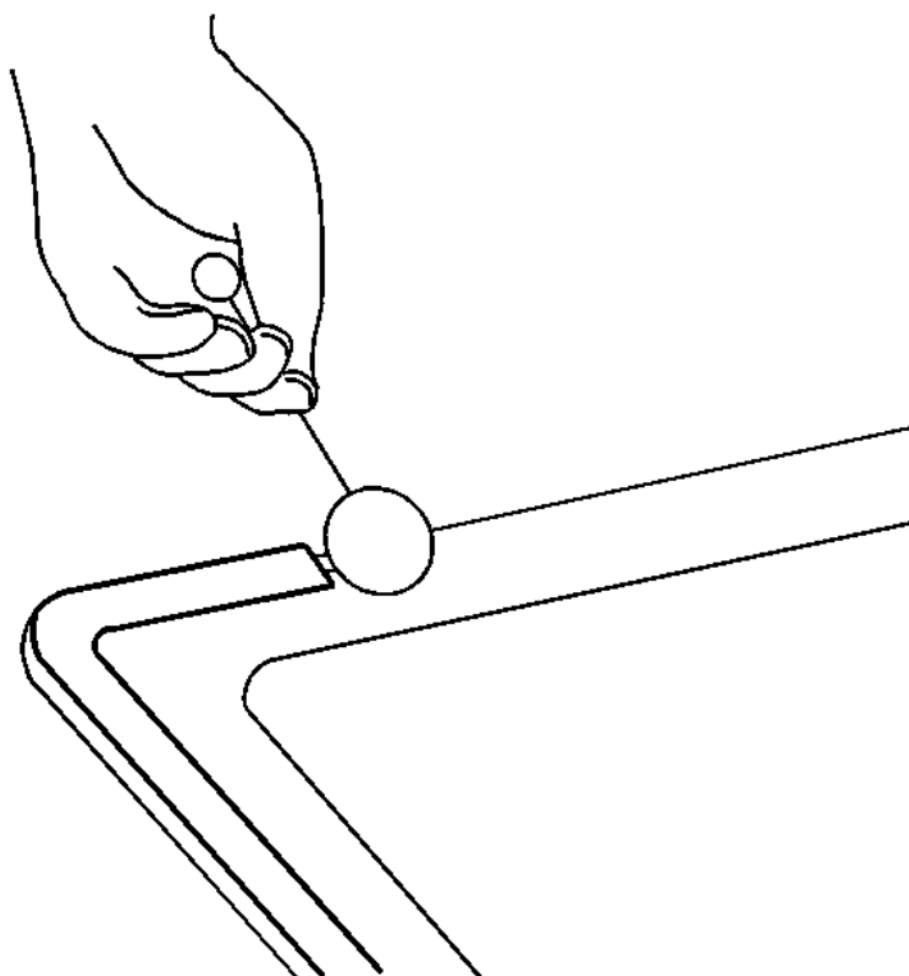


Fig. 42: Applying Glass Prep

Courtesy of GENERAL MOTORS COMPANY

14. Apply a second coat of the glass prep clear to the same area of the glass.

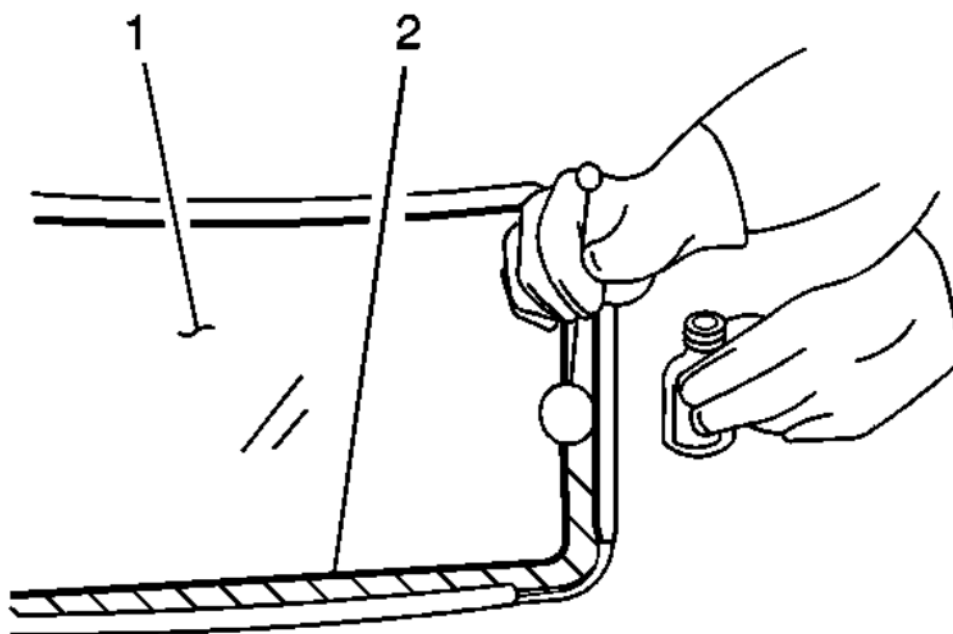


Fig. 43: Applying Glass Primer

Courtesy of GENERAL MOTORS COMPANY

NOTE: The glass primer black is effective up to 8 hours after applying it to the glass. The primed surface of the glass must be kept clean.

15. Shake the glass primer black for at least 1 minute.
16. Use a new dauber in order to apply the glass primer black to the same areas (2) that glass prep clear was applied.
17. Allow the glass primer to dry for approximately 10 minutes.

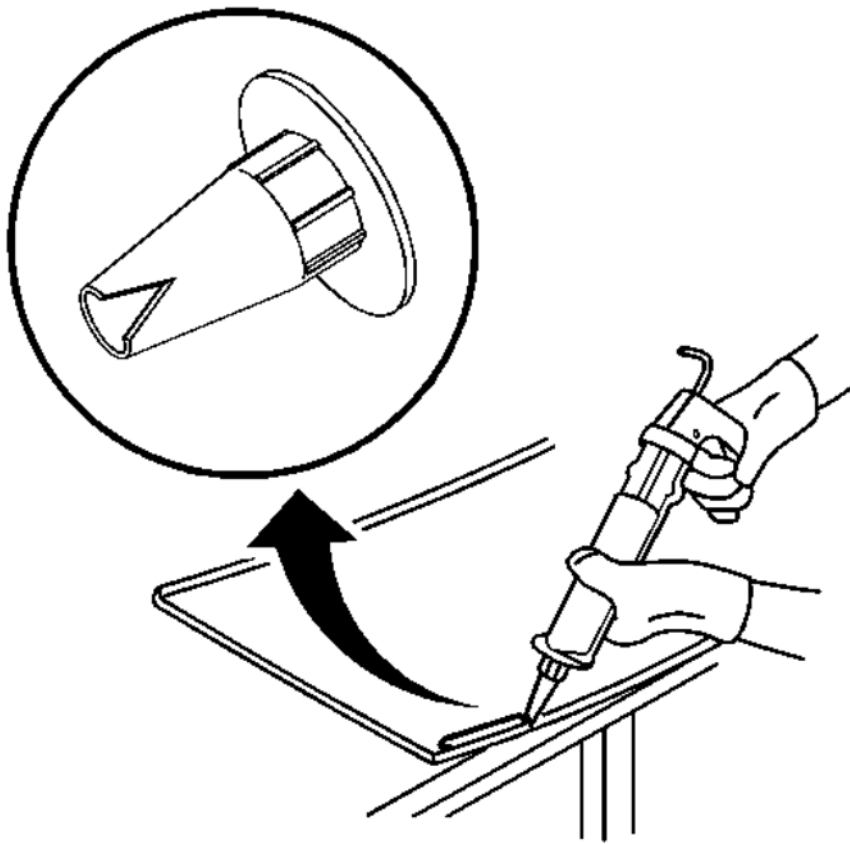


Fig. 44: View Of Modified Applicator Nozzle
Courtesy of GENERAL MOTORS COMPANY

18. 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.

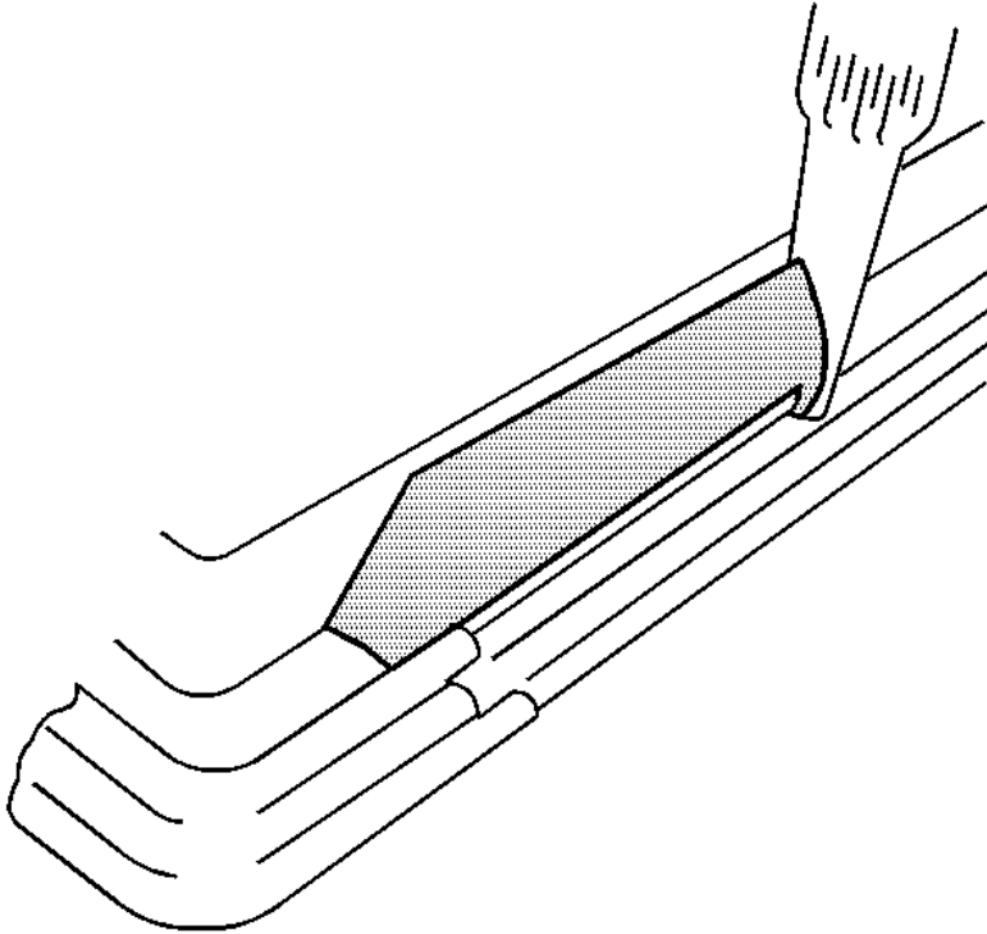


Fig. 45: Applying Continuous Bead Of Urethane Adhesive
Courtesy of GENERAL MOTORS COMPANY

19. Use a cartridge-type caulking gun in order to apply a smooth, continuous bead of urethane adhesive.

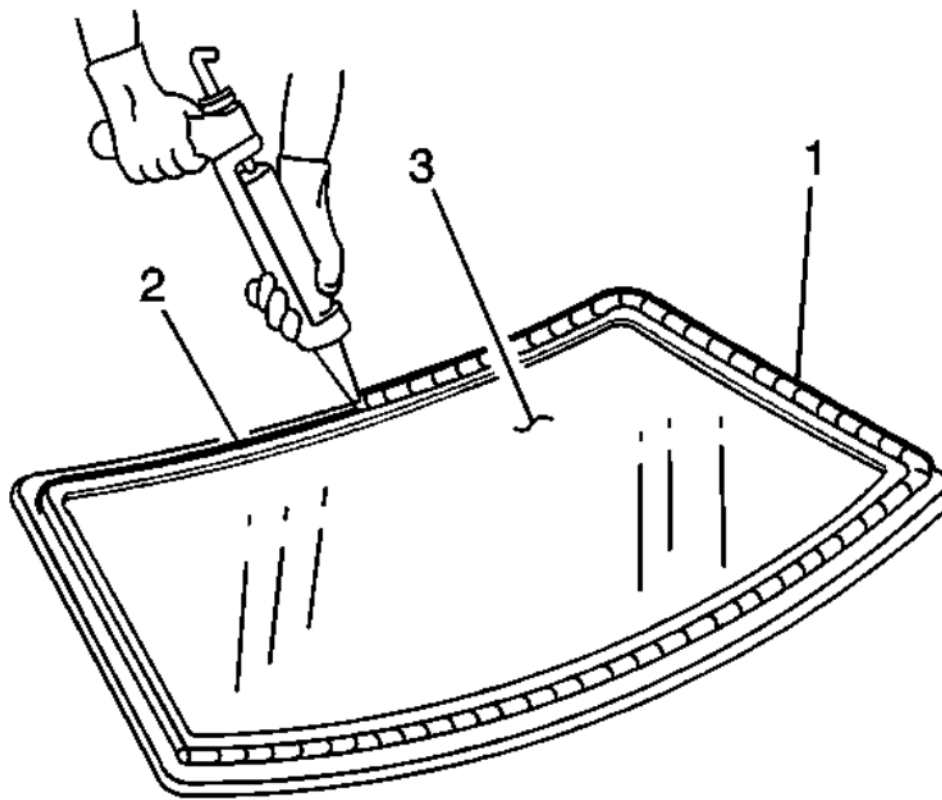


Fig. 46: Applying Urethane Adhesive To Inner Surface Of Window
Courtesy of GENERAL MOTORS COMPANY

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

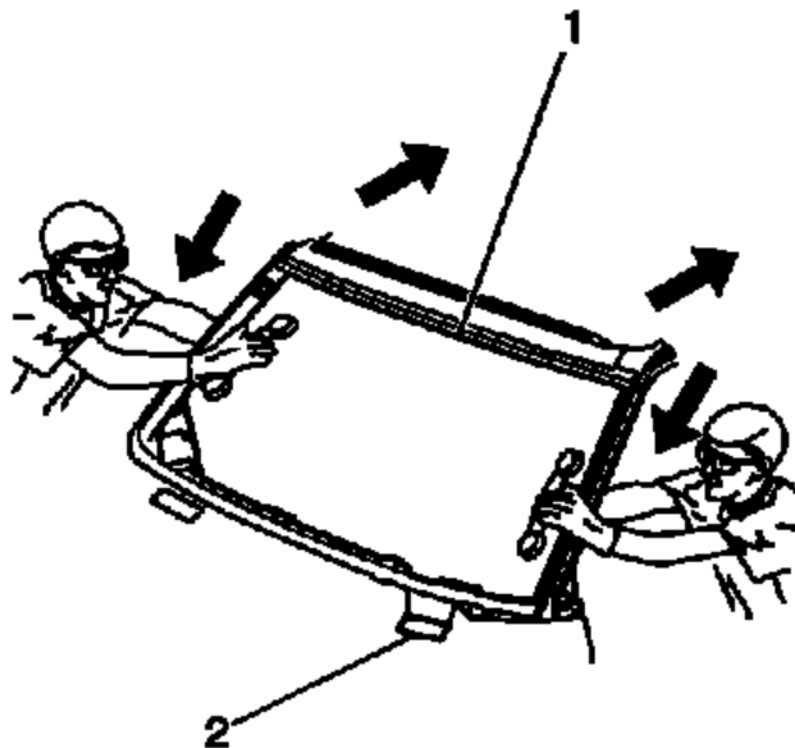


Fig. 47: Installing Windshield

Courtesy of GENERAL MOTORS COMPANY

21. With an assistant, installing the windshield (1) to the locator pins to the slots located in each corner of the upper pinch-weld flange.

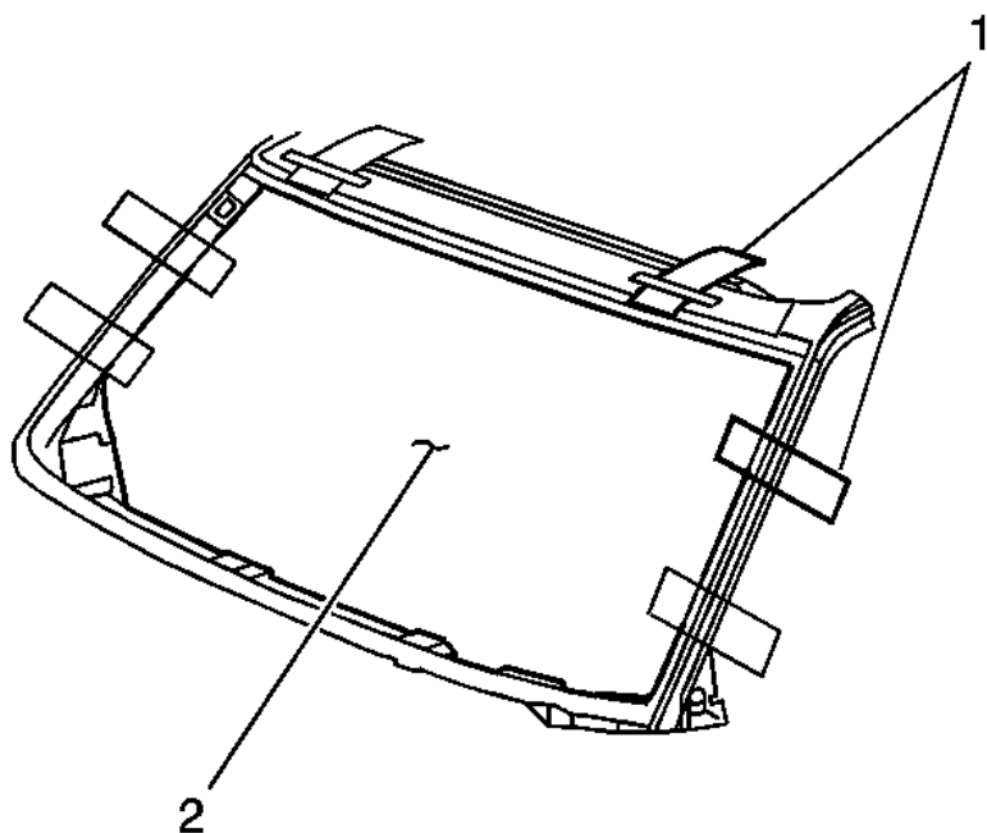


Fig. 48: Aligning Tape Lines On Window To Body
Courtesy of GENERAL MOTORS COMPANY

22. Align the masking tape (1) lines on the window (2) and the body.

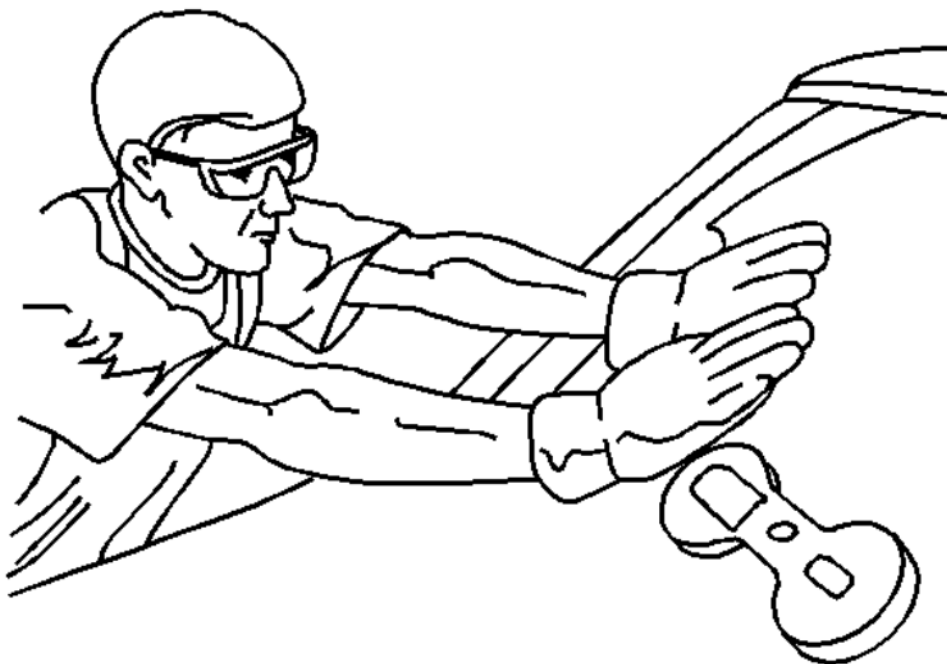


Fig. 49: Pressing Window Into Place
Courtesy of GENERAL MOTORS COMPANY

23. Press the window firmly into place, 1 mm (0.039 in) below surface.
24. Tape the window to the body in order to minimize movement until the urethane adhesive cures.

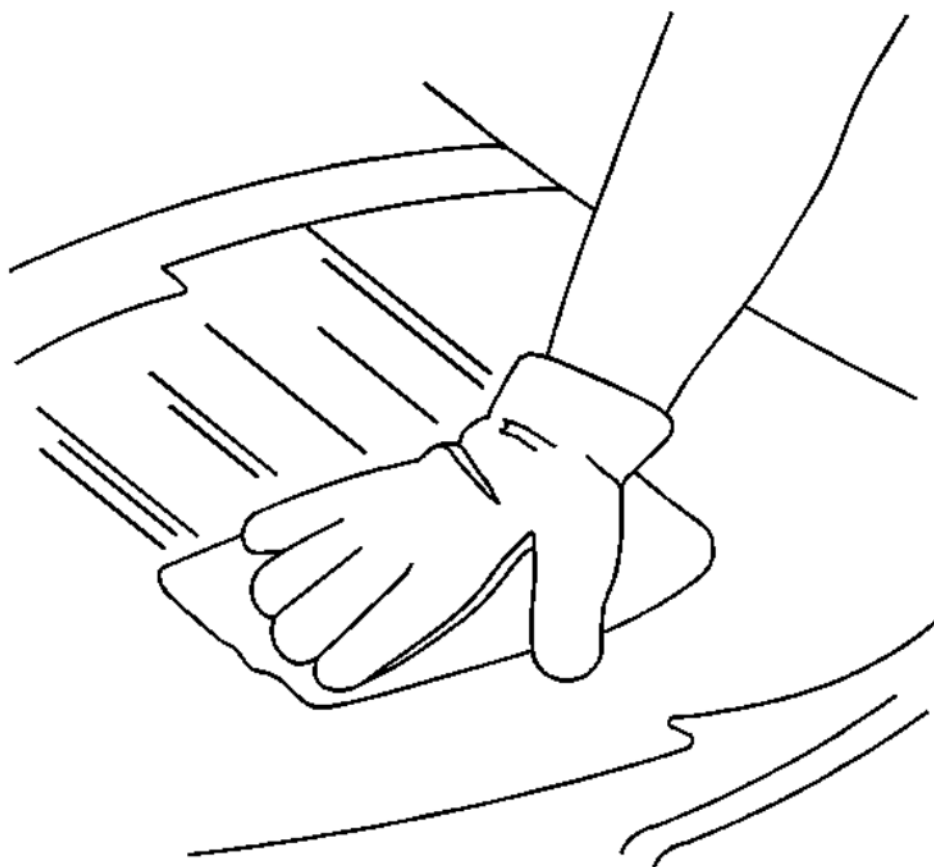


Fig. 50: Cleaning Excess Urethane Adhesive From Body
Courtesy of GENERAL MOTORS COMPANY

25. Clean any excess urethane adhesive from the body.

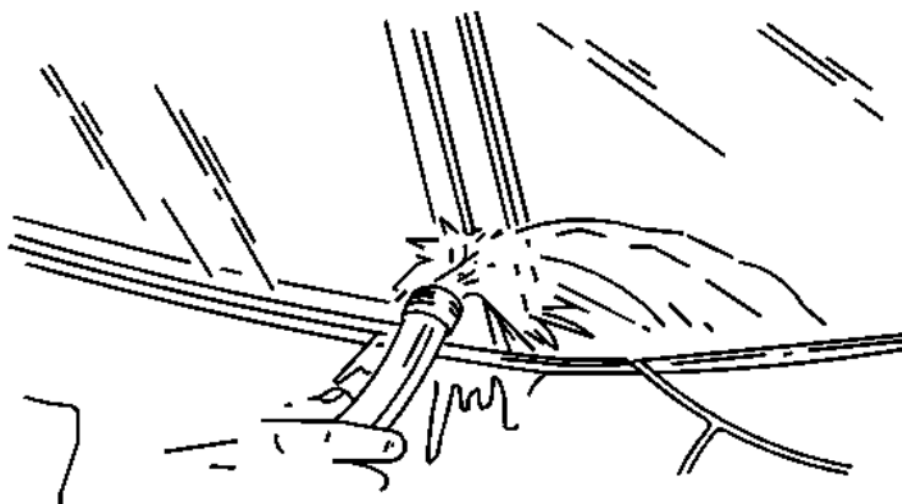


Fig. 51: Performing Water Hose Test
Courtesy of GENERAL MOTORS COMPANY

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

26. Use a soft spray of warm water in order to immediately water test the window.
27. Inspect the window for leaks.
28. If any leaks are found, use a plastic paddle in order to apply extra urethane adhesive at the leak point.
29. 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 21°C (70°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.

30. Maintain the following conditions in order to properly cure the urethane adhesive:
 - 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 above curing times.
 - Do not use compressed air in order to dry the urethane adhesive.
31. Complete the window installation.

ADHESIVE INSTALLATION OF REAR WINDOWS

WARNING: Refer to Glass and Sheet Metal Handling Warning .

1. Use a urethane adhesive systems which meet GM Specification GM 3651G.
2. Remove all mounds or loose pieces of urethane adhesive from the pinchweld area.
3. If the original window is being reused, remove all but approximately 2 mm (3/64 in) of the existing bead of urethane adhesive from the pinchweld flange by using a clean utility knife or razor blade scraper.
4. Inspect for any of the following problems in order to help prevent future breakage of the window:
 - The flange of the window opening
 - High weld
 - Solder spots
 - Hardened sealer
 - Any other obstruction or irregularity in the pinchweld flange

NOTE: If corrosion of the pinch-weld flange is present or if sheet metal repairs or replacements are required, the pinch-weld 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 clean primer only surface. Materials such as BASF DE15®, DuPont 2610®, Sherwin-Williams PSE 4600 and NP70® and Martin-Semour 5120 and 5130® PPG DP90LF SPIES/HECKER 3688/8590 - 3688/5150 - 4070/5090 STANDOX 11158/13320 - 14653/14980 products are approved for this application.

5. 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.
6. Verify all primers and urethane adhesive are within expiration dates.

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.

NOTE: Do not apply the black #3 primer to the existing bead (1) of the urethane adhesive on the pinch-weld flange. Apply the primer only to nicks, scratches or the primed surfaces.

7. Shake the pinch-weld primer black #3 for at least 1 minute.
8. Use a new dauber in order to apply the primer to the surface of the pinch-weld flange (1).
9. Allow the pinch-weld primer to dry for approximately 10 minutes.

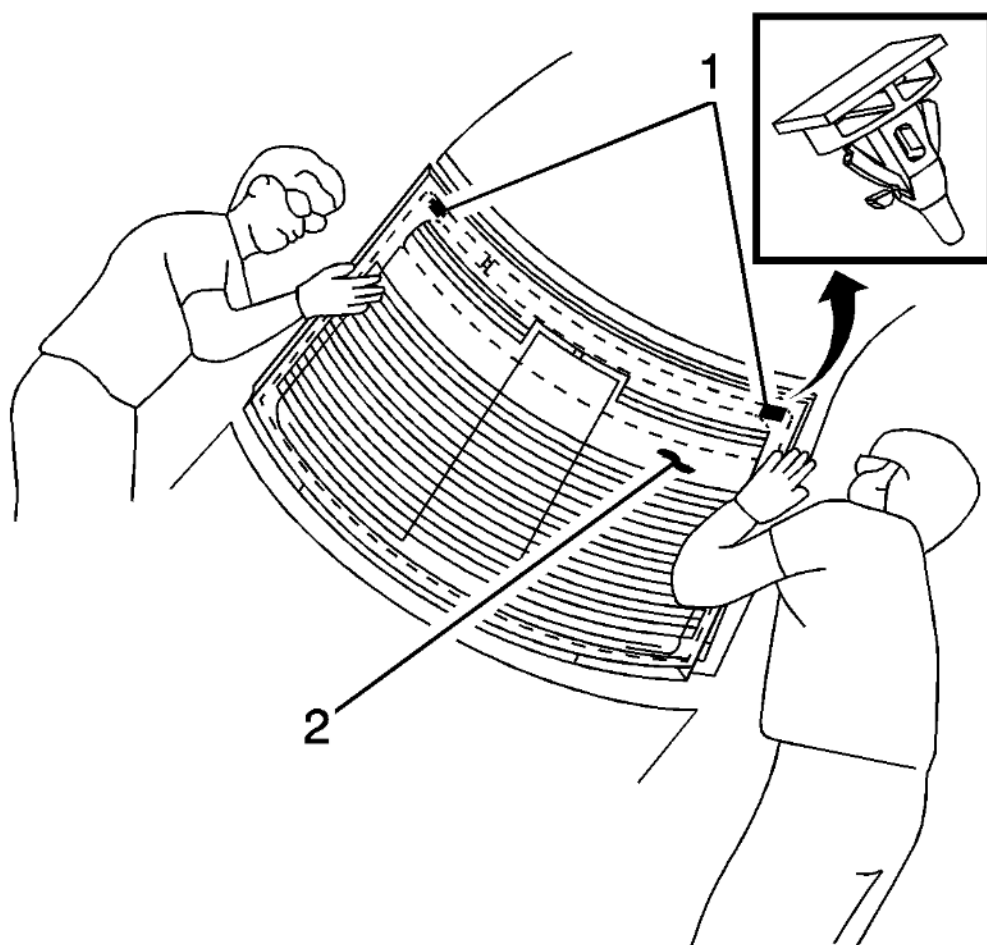


Fig. 52: Installing Rear Window

Courtesy of GENERAL MOTORS COMPANY

10. With the aid of an assistant, dry fit the window (1) to the opening in order to determine the correct position.
11. Ensure the window locator pins are positioned into the locator slots in the pinch-weld flange.
12. Use masking tape to mark the locations of the window in the opening.
13. Cut the masking in the center and remove the window from the opening.

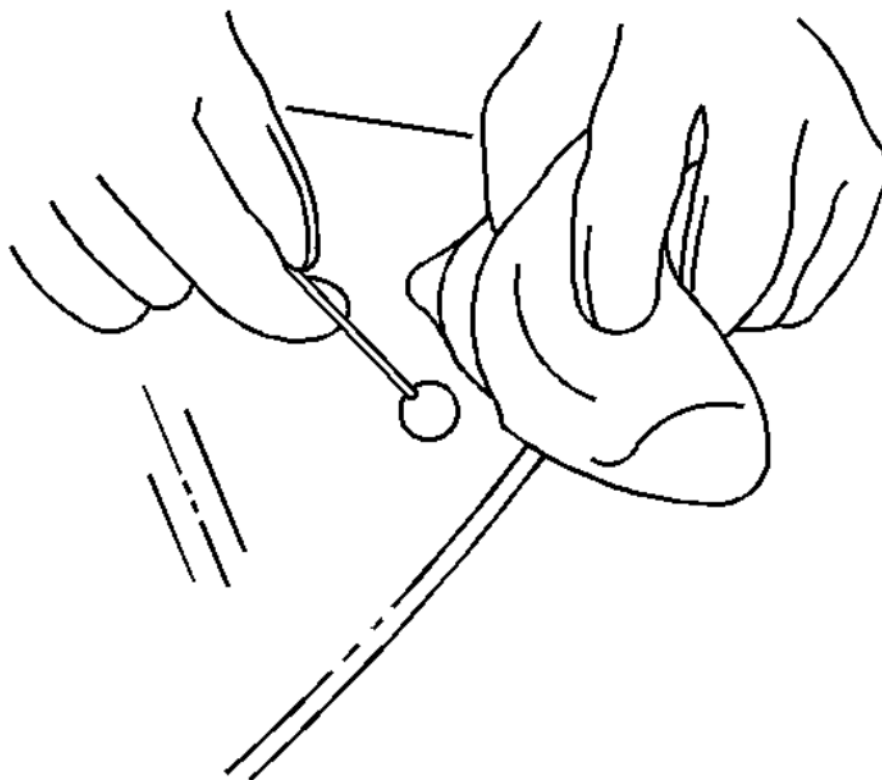


Fig. 53: Applying Glass Prep

Courtesy of GENERAL MOTORS COMPANY

NOTE: Use care when applying glass prep clear on the window. This primer dries almost instantly, and may stain the viewing area of the window if not applied evenly.

14. Use a new dauber in order to apply glass prep clear to the area approximately 18 mm (0.71 in) around the entire perimeter of the window inner surface.

Immediately wipe the glass primed area using a clean, lint-free cloth.

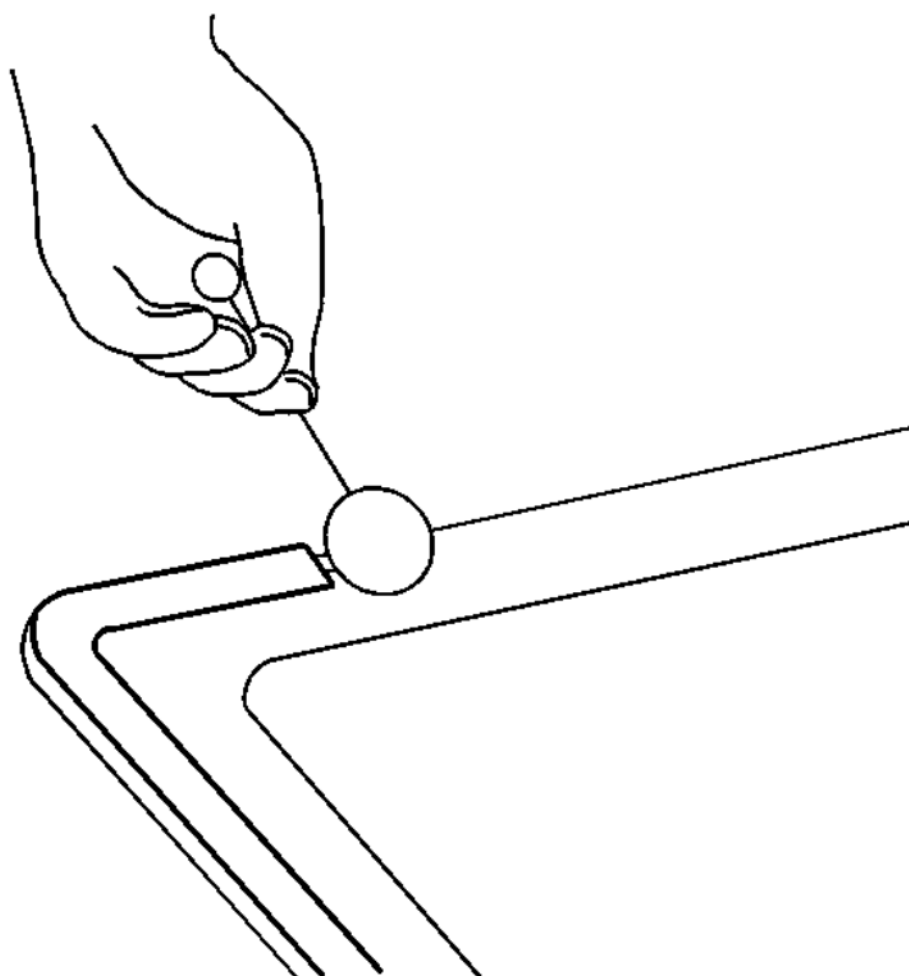


Fig. 54: Applying Glass Prep

Courtesy of GENERAL MOTORS COMPANY

15. Apply a second coat of the glass prep clear to the same area of the glass.

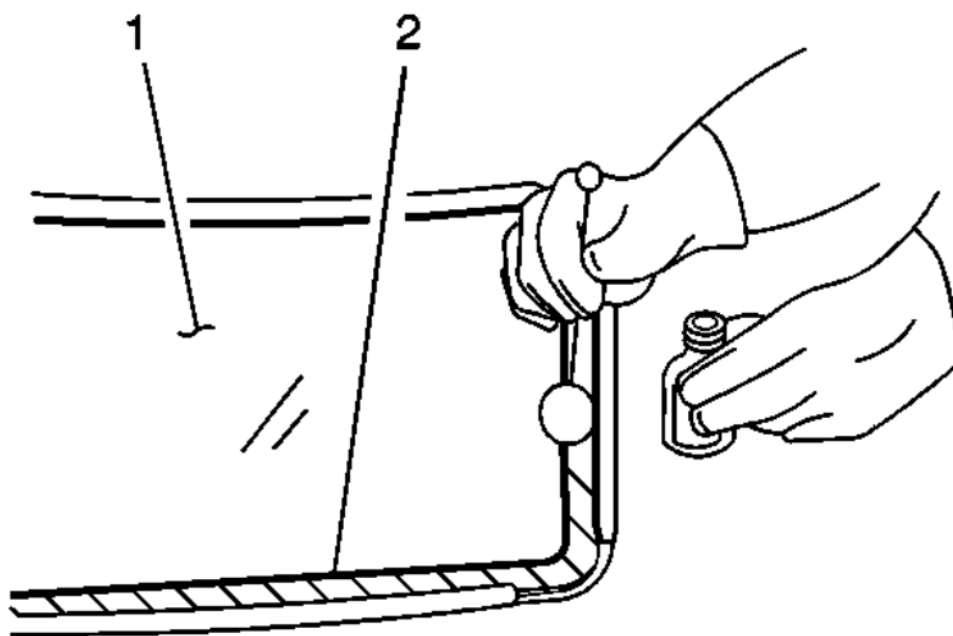


Fig. 55: Applying Glass Primer

Courtesy of GENERAL MOTORS COMPANY

NOTE: The glass primer black is effective up to 8 hours after applying it to the glass. The primed surface of the glass must be kept clean.

16. Shake the glass primer black for at least 1 minute.
17. Use a new dauber in order to apply the glass primer black to the same areas (2) that glass prep clear was applied.
18. Allow the glass primer to dry for approximately 10 minutes.

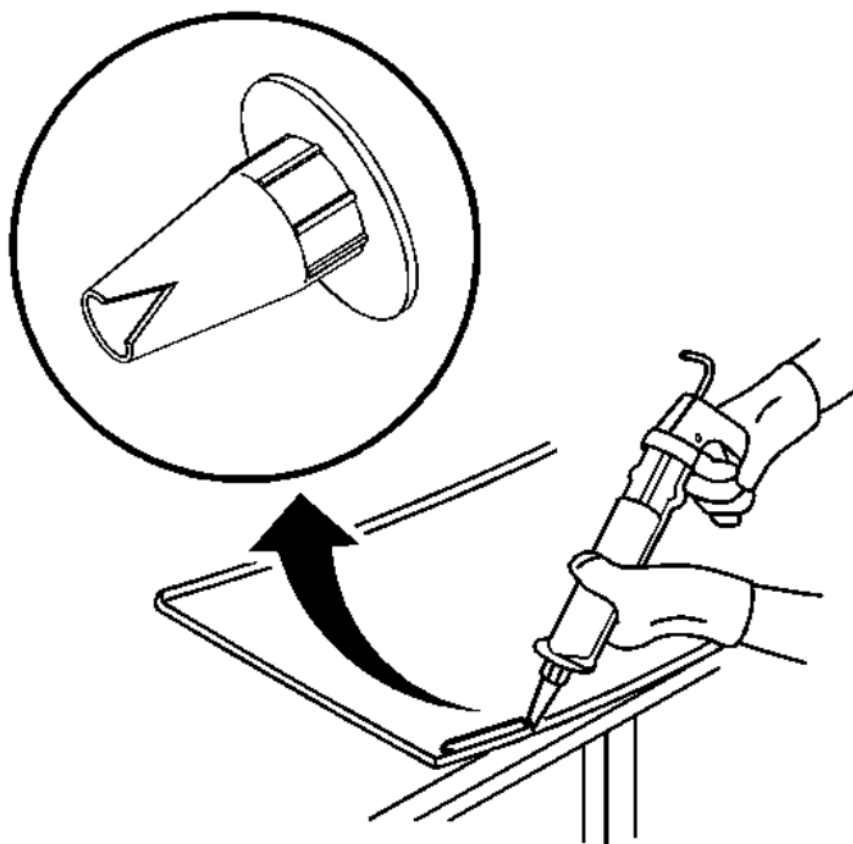


Fig. 56: View Of Modified Applicator Nozzle
Courtesy of GENERAL MOTORS COMPANY

19. 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.

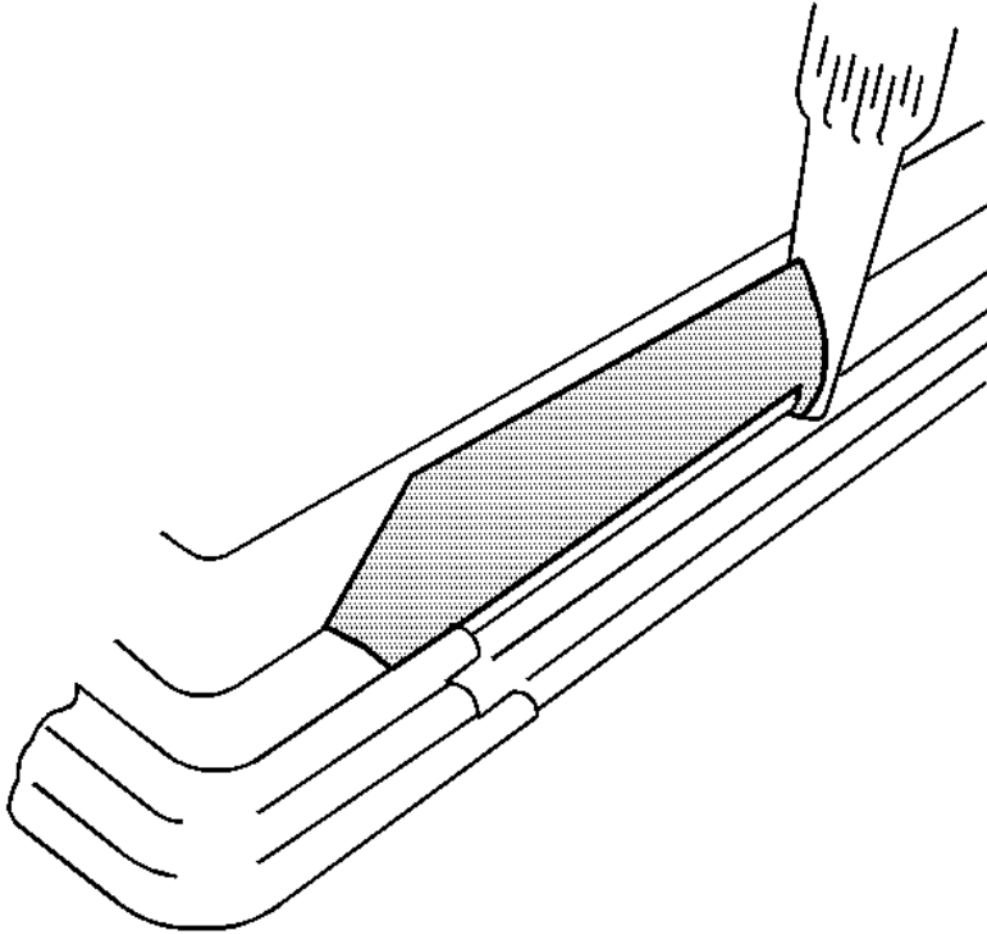


Fig. 57: Applying Continuous Bead Of Urethane Adhesive
Courtesy of GENERAL MOTORS COMPANY

20. Use a cartridge-type caulking gun in order to apply a smooth, continuous bead of urethane adhesive.

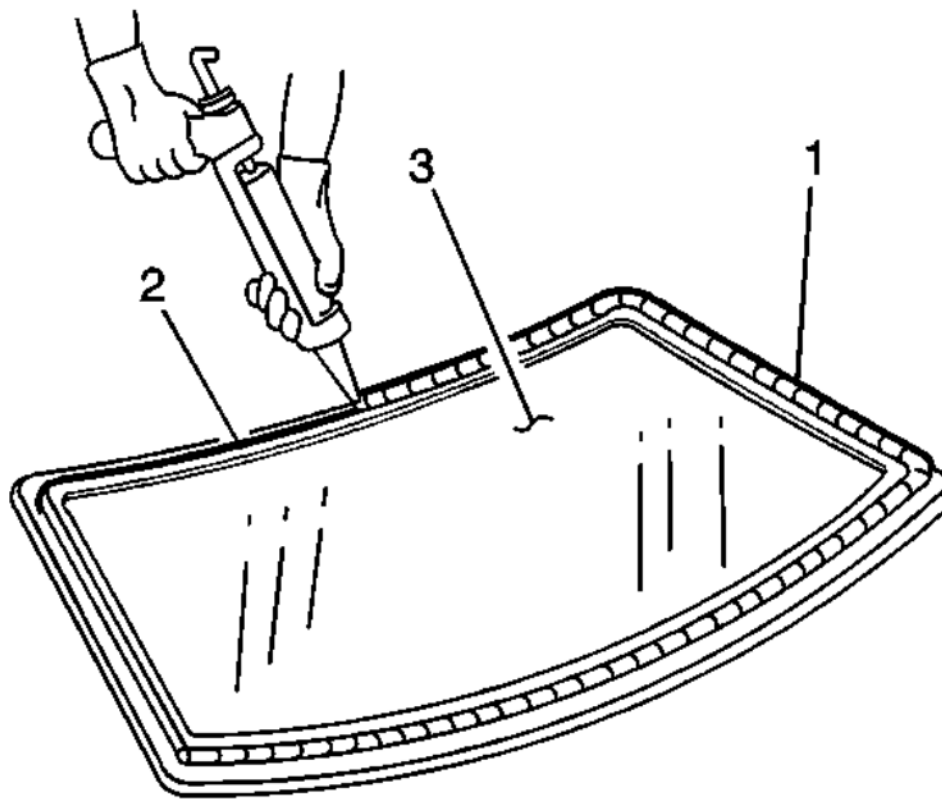


Fig. 58: Applying Urethane Adhesive To Inner Surface Of Window
Courtesy of GENERAL MOTORS COMPANY

21. Use the edge of the window as a guide for the nozzle in order to apply the urethane adhesive (1) to the inner surface of the window (3).
22. With the aid of an assistant, place the window in the opening.
23. Align the masking tape lines on the window and the body.

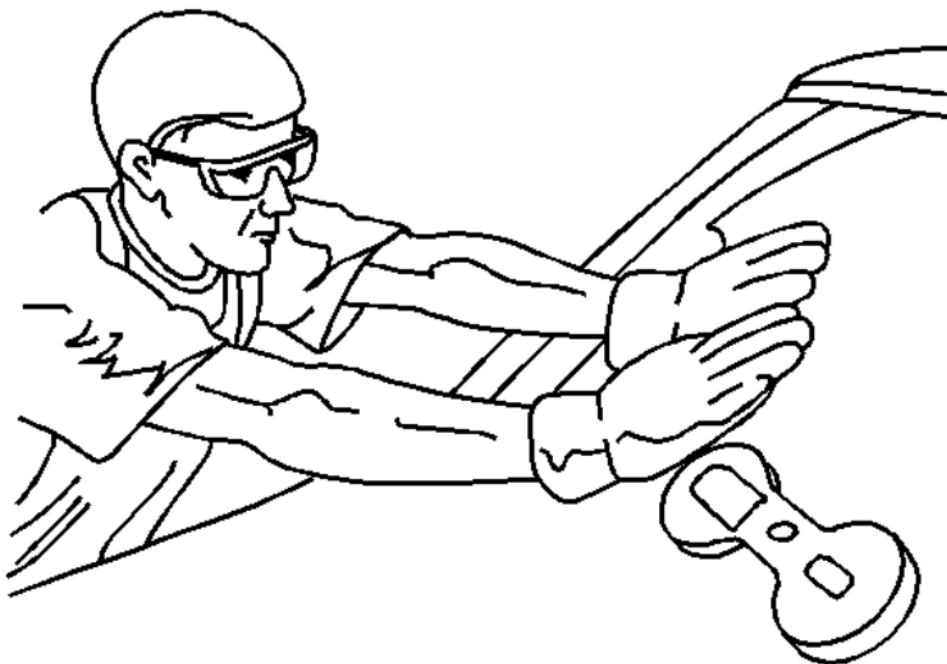


Fig. 59: Pressing Window Into Place
Courtesy of GENERAL MOTORS COMPANY

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 sheet metal.

24. Press firmly around the entire periphery of the window in order to wet-out the urethane bead.
25. Tape the window to the body in order to minimize movement until the urethane adhesive cures.

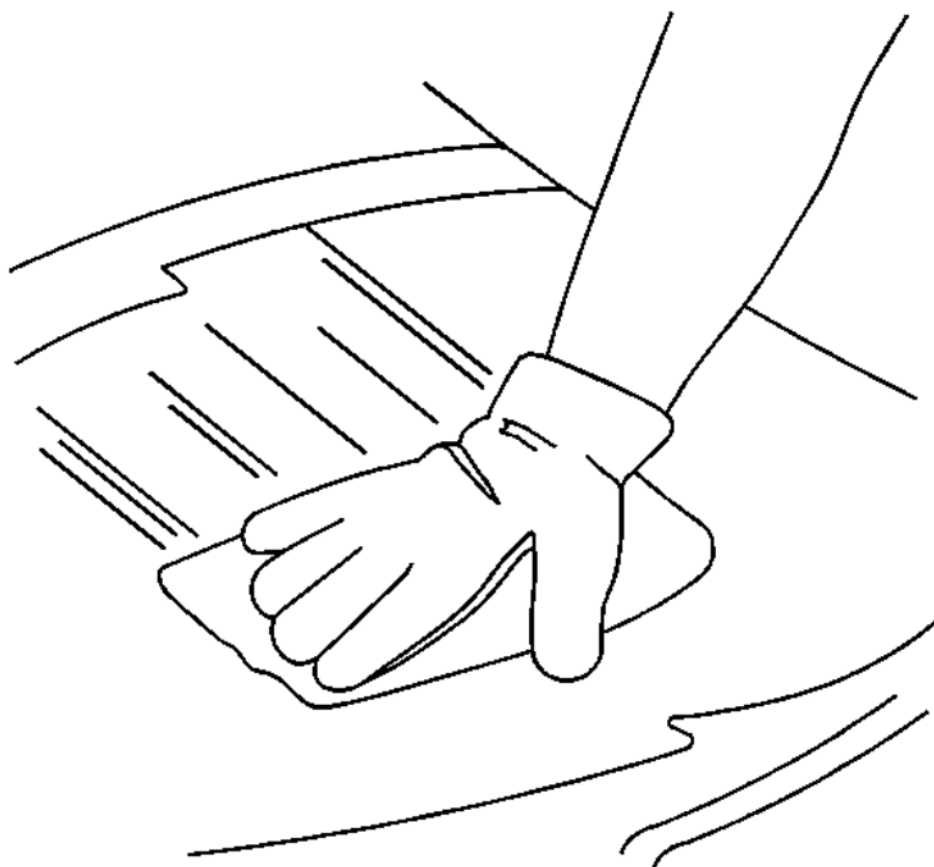


Fig. 60: Cleaning Excess Urethane Adhesive From Body
Courtesy of GENERAL MOTORS COMPANY

26. Clean any excess urethane adhesive from the body.

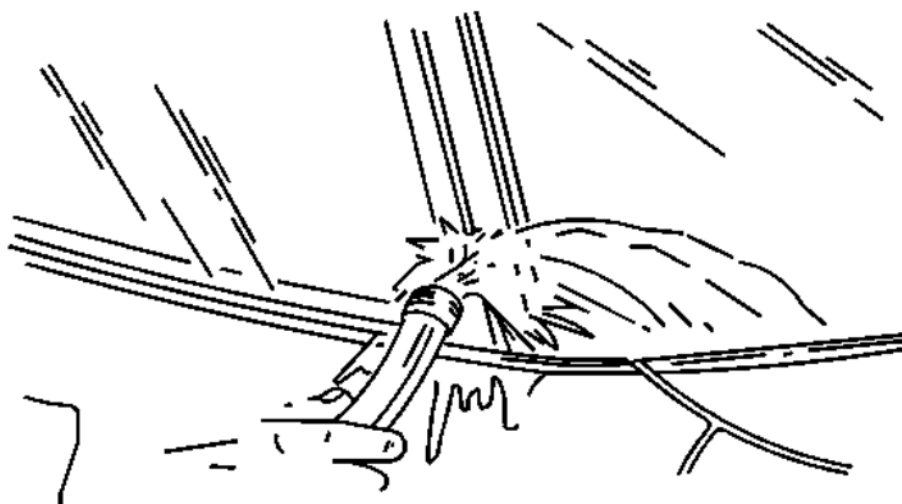


Fig. 61: Performing Water Hose Test
Courtesy of GENERAL MOTORS COMPANY

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

27. Use a soft spray of warm water in order to immediately water test the window.
28. Inspect the window for leaks.
29. If any leaks are found, use a plastic paddle in order to apply extra urethane adhesive at the leak point.
30. 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 21°C (70°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.

31. Maintain the following conditions in order to properly cure the urethane adhesive:
 - 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 above curing times.
 - Do not use compressed air in order to dry the urethane adhesive.
32. Complete the window installation.

FRONT SIDE DOOR WINDOW REAR CHANNEL REPLACEMENT

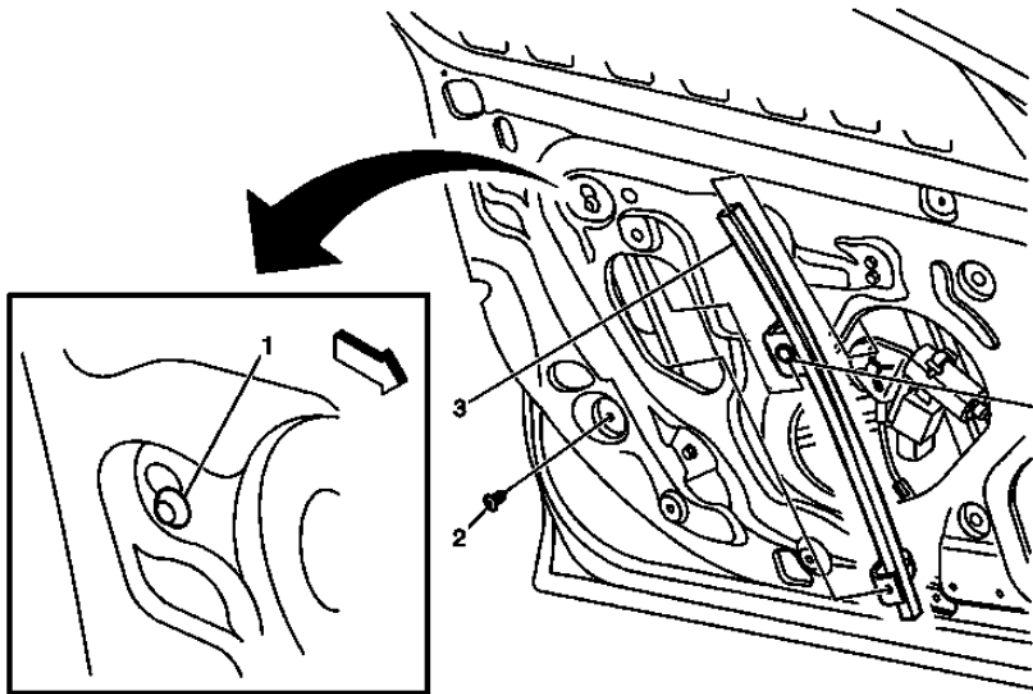


Fig. 62: Front Side Door Window Rear Channel
Courtesy of GENERAL MOTORS COMPANY

Front Side Door Window Rear Channel Replacement

Callout	Component Name
Preliminary Procedure	
Remove the bolts from the left side of the regulator only. Refer to Front Side Door Window Regulator	

Replacement.

1	Front Side Door Window Rear Channel Upper Fastener CAUTION: Refer to <u>Fastener Caution</u> . Procedure 1. Remove the water deflector. 2. Remove the weatherstrip from the channel before removing fasteners. Tighten 10 N.m (89 lb in)
2	Front Side Door Window Rear Channel Lower Fastener Tighten 10 N.m (89 lb in)
3	Front Side Door Window Rear Channel NOTE: Inspect the window for proper operation before installing the door trim.

DESCRIPTION AND OPERATION

FULL-CUT METHOD DESCRIPTION

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 urethane adhesive bead. Remove all but approximately 2 mm (3/64 in) of the existing bead of urethane 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 urethane adhesive should remain on the pinch-weld flange. Do not remove all traces of urethane adhesive.

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 DE15®, DuPont 2610®, Sherwin-Williams PSE 4600 and NP70® and Martin-Semour 5120, 5130®, 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, shake the pinch-weld primer black well. Using a new dauber, apply the primer to the primed surface of the flange in the bonding area. Allow the primer to dry for 10 minutes.**

POWER WINDOWS DESCRIPTION AND OPERATION

Power Windows System Components

The power window system consists of the following components:

- Driver window switch
- Passenger window switch
- Left rear window switch
- Right rear window switch
- Window motors in each of the doors
- 30A Fuse
- Body control module (BCM)

Power Window System

This vehicle can be configured as follows:

- Driver express up and express down power window motor (Optional)
- Driver, passenger, left rear and right rear express down only window motors

Driver Express Up and Express Down Window Motor

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 driver window switch, the contacts close causing a voltage drop within the appropriate signal circuit. The driver window motor will detect the voltage drop and will command the window to move in the direction requested.

All Doors with Express Down Only Window Motors

For the driver, 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 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.

Lockout Switch Feature

The child door lockout switch is on the driver door lock/window switch and controls the child locks on the rear doors as well as the rear window switches. When the BCM receives a command from the window lockout switch, it will apply voltage to the door lock security relay coil, this will energize the relay and the contact within the relay will then direct the voltage to lock the left rear and right rear child locks and then isolate them from the normal door lock system to prevent the rear doors from being opened by using the interior rear door handles.

The BCM monitors the voltage level of the rear lock status signal circuits to determine if the rear door latches have been locked out. A switch within the rear door latch will be open or closed depending upon the lockout status of the rear latch. If the rear latches are locked out, the switch will be open and the BCM will disable the functions of the rear window switches. If the latches have not been lockout, the switch will be closed, pulling the voltage within the signal circuit to 0 volts and the BCM will permit normal rear window switch functions.

REAR WINDOW DEFOGGER DESCRIPTION AND OPERATION

Rear Window Defogger System Components

The rear window defogger system consists of the following components:

- HVAC Control Module
- HVAC Control Head
- Rear Window Defogger Relay
- Rear Defogger Grid
- F28UA 40A Fuse

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 required. A switch for the customer to control the system is provided within the HVAC control head. Also included in the HVAC control head 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 face plate causes the HVAC control head to send a serial data message to the HVAC control module requesting rear window defog operation. The HVAC control module upon receipt of the serial data message will provide voltage to the coil side of the rear window 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 window switch is pressed and the engine is running, the rear defog control system will remain active for 10 minutes. After the initial cycle has lapsed, pressing the switch again will continue rear window defogger operation, but the cycle will only last 5 minutes. The rear defog control system will function continuously if the vehicle speed is greater than 70 kilometers per hour (45 mph).

STATIONARY WINDOW DESCRIPTION

Most stationary windows, specifically windshields, are retained to the body with urethane adhesive which adheres the window to the body. This increases structural integrity. The reinstallation of windows with urethane adhesive requires complete replacement of the urethane adhesive bead:

The extended method (also known as long method, full strip or full cut) is the only recommended procedure for General Motor Vehicle. Use an adhesive that is approved by GM, Specification GMW-15672

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.

SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

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