

Fig. 1: Driver Door Schematic
 Courtesy of GENERAL MOTORS CORP.

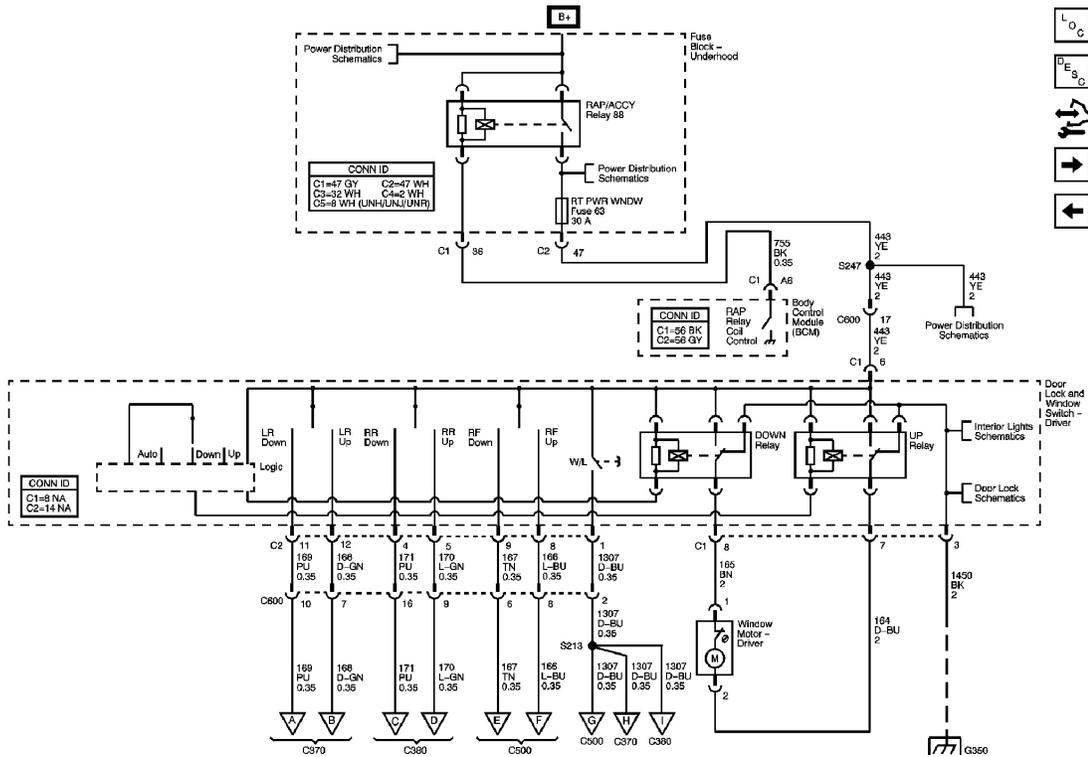


Fig. 2: Driver Door Schematic - RHD
 Courtesy of GENERAL MOTORS CORP.

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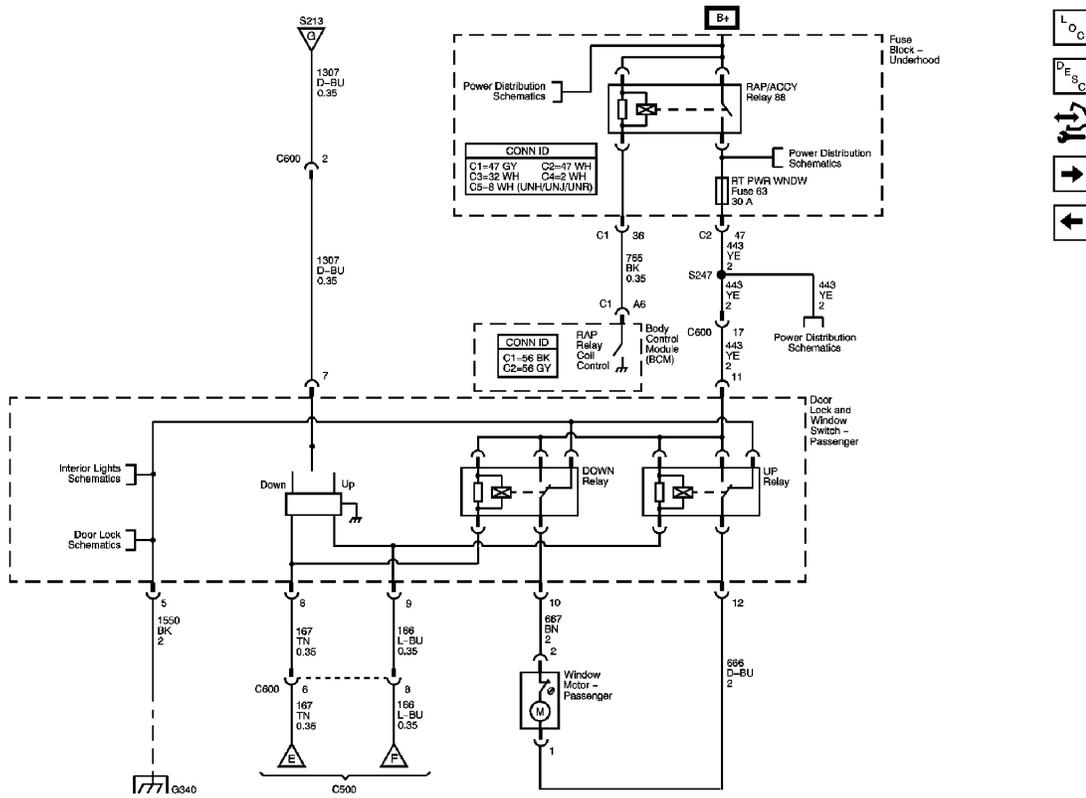


Fig. 3: Front Passenger Door Schematic
 Courtesy of GENERAL MOTORS CORP.

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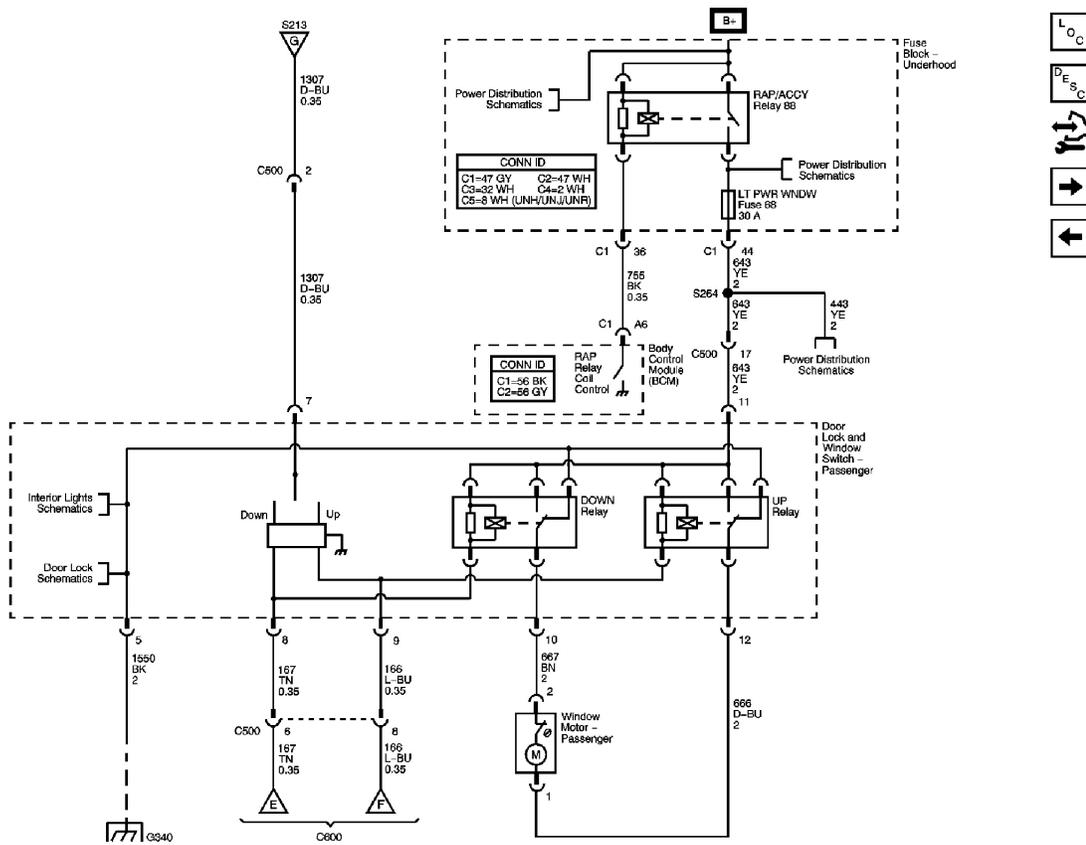


Fig. 4: Front Passenger Door Schematic - RHD
Courtesy of GENERAL MOTORS CORP.

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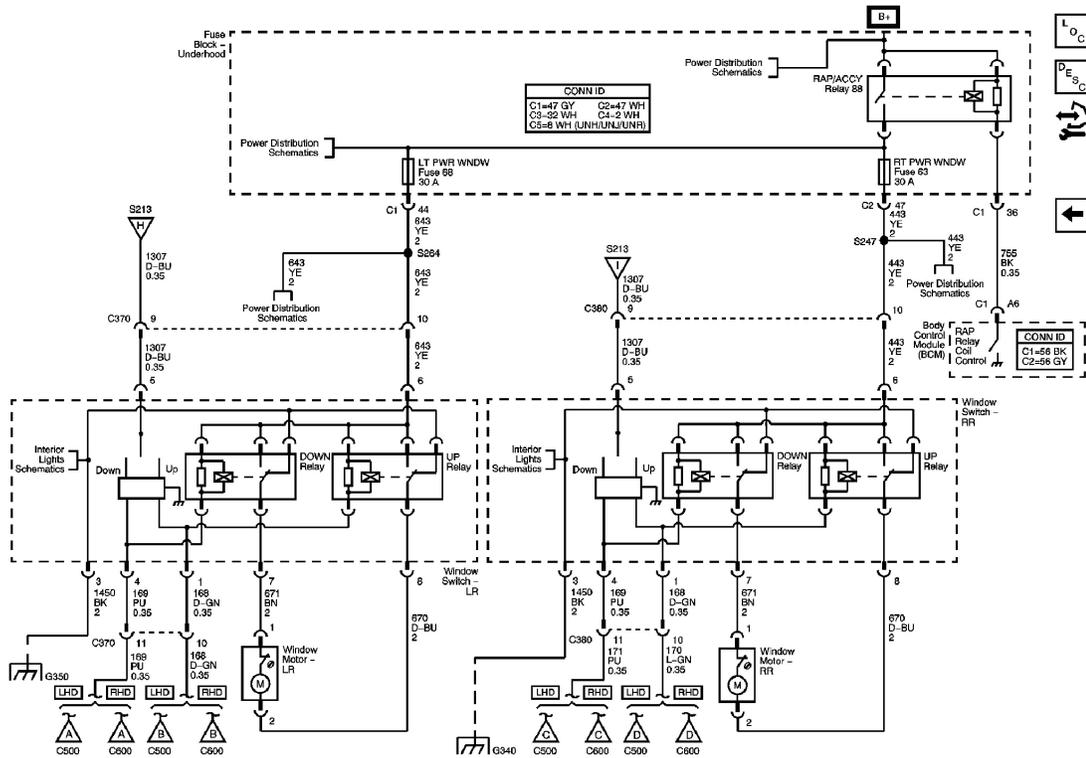


Fig. 5: Rear Doors Schematic
 Courtesy of GENERAL MOTORS CORP.

DEFOGGER SCHEMATICS

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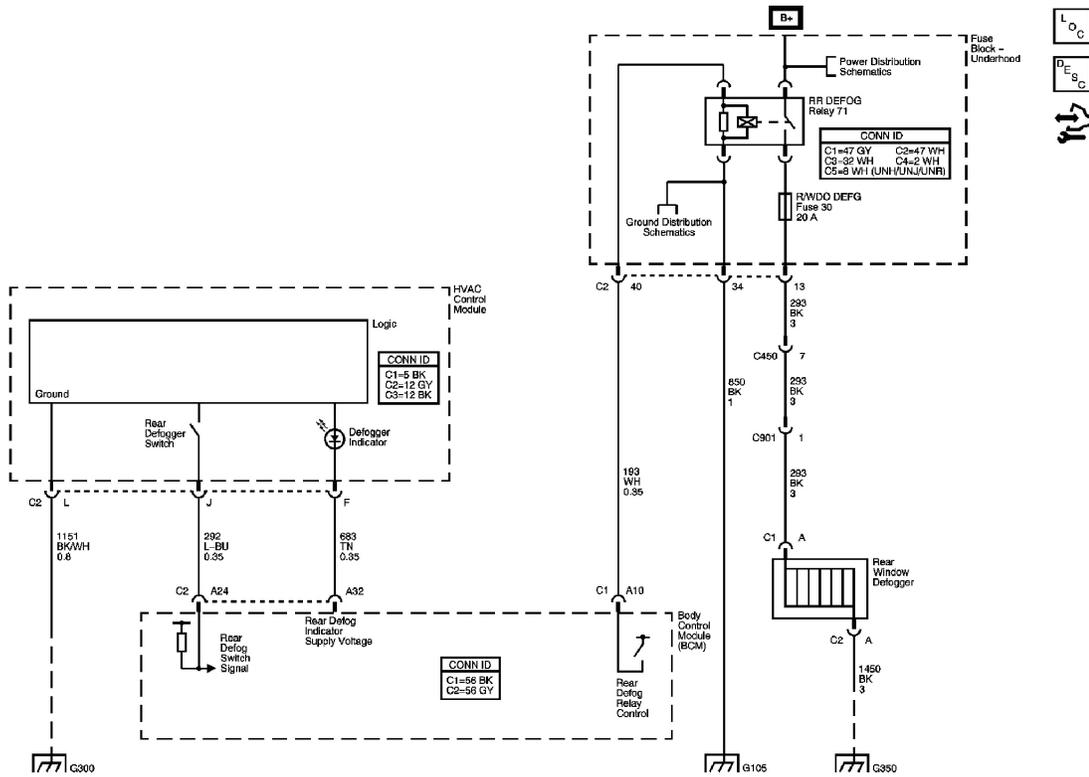


Fig. 6: Defogger Schematic
Courtesy of GENERAL MOTORS CORP.

COMPONENT LOCATOR

WINDOW SYSTEMS COMPONENT VIEWS

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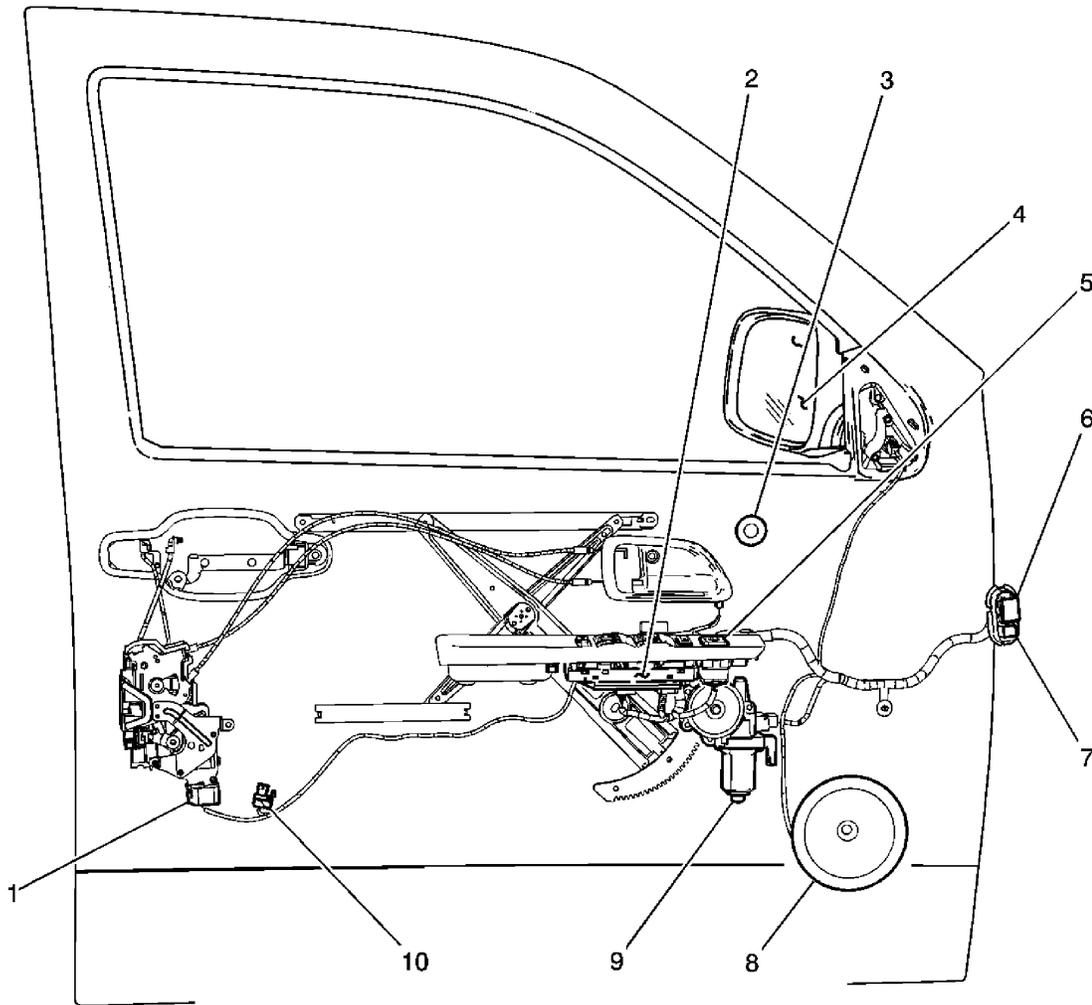


Fig. 7: Driver Door Component View
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 7

Callout	Component Name
1	Door Lock Actuator - Driver
2	Door Lock and Window Switch - Driver
3	Speaker - LF Door Tweeter (UQ2)
4	Outside Rearview Mirror - Driver
5	Outside Rearview Mirror Switch
6	C202
7	C209
8	Speaker - LF Door

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9	Window Motor - Driver
10	Inflatable Restraint Side Impact Sensor (SIS) - Left Connector (ASF)

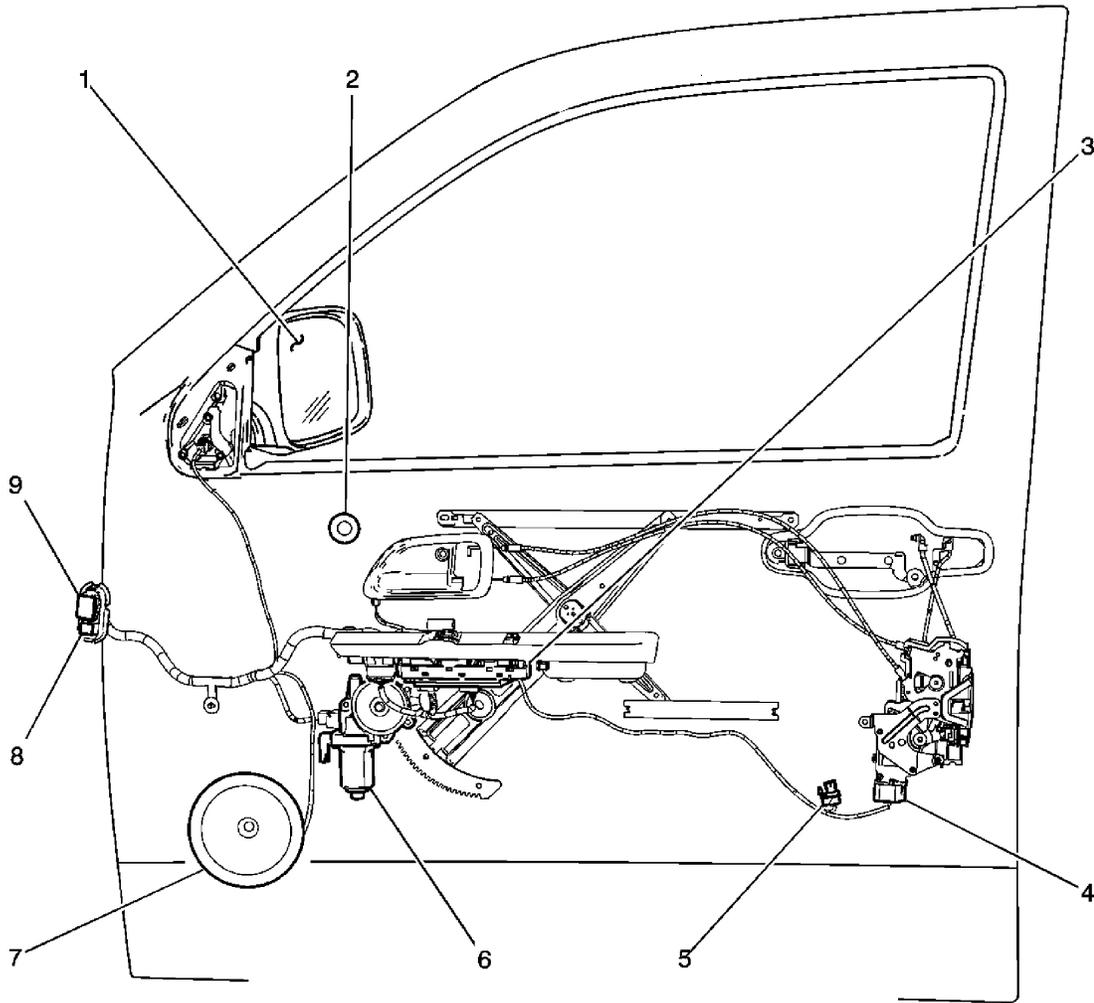


Fig. 8: Front Passenger Door Component View
 Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 8

Callout	Component Name
1	Outside Rearview Mirror - Front Passenger
2	Speaker - RF Door Tweeter (UQ2)
3	Door Lock and Window Switch - Front Passenger
4	Door Lock Actuator - Front Passenger
5	Inflatable Restraint Side Impact Sensor (SIS) - Right Connector (ASF)

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6	Window Motor - Front Passenger
7	Speaker - RF Door
8	C211
9	C210

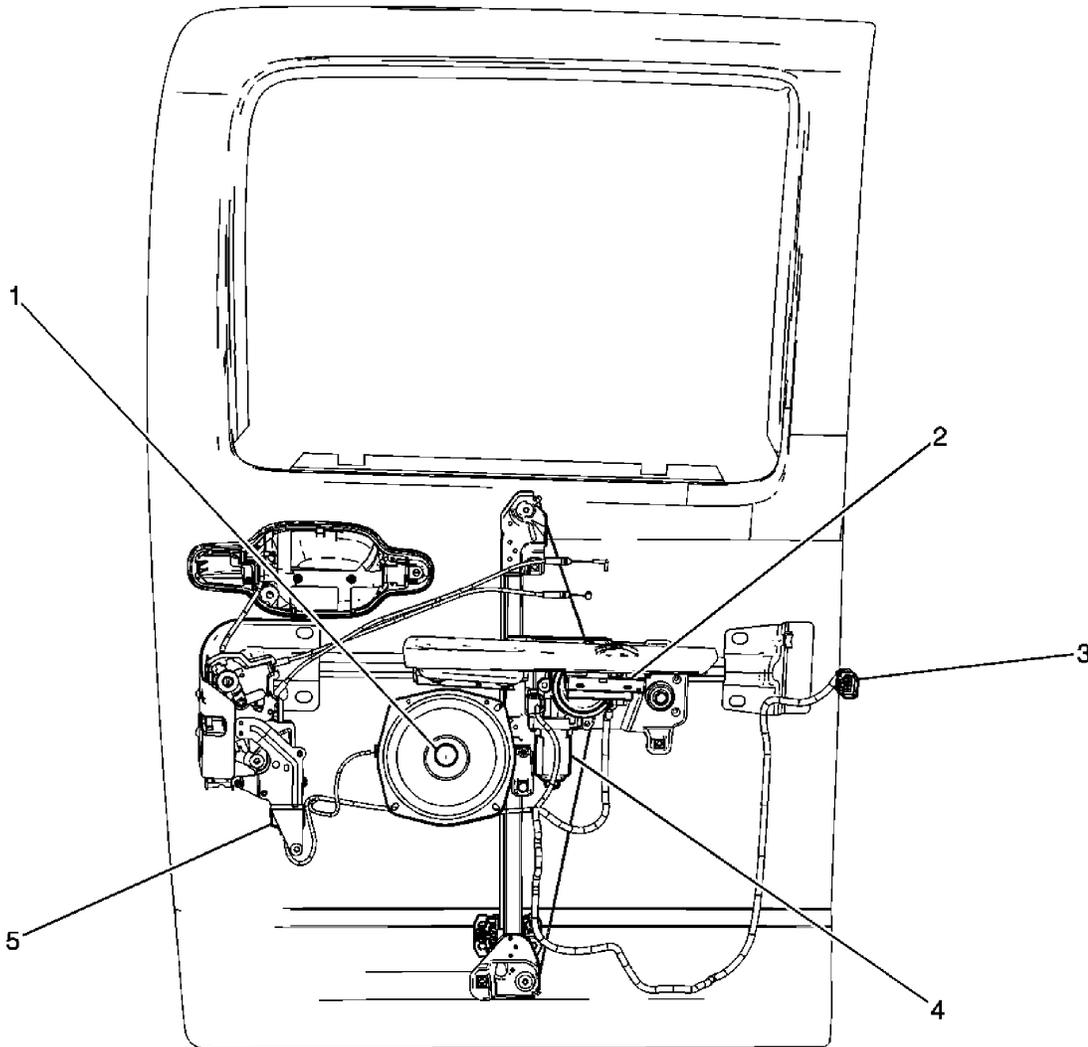


Fig. 9: Left Rear Door (Crew Cab) Component View
 Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 9

Callout	Component Name
1	Speaker - LR Door
2	Door Lock and Window Switch - LR

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3	C316
4	Window Motor - LR
5	Door Lock Actuator - LR

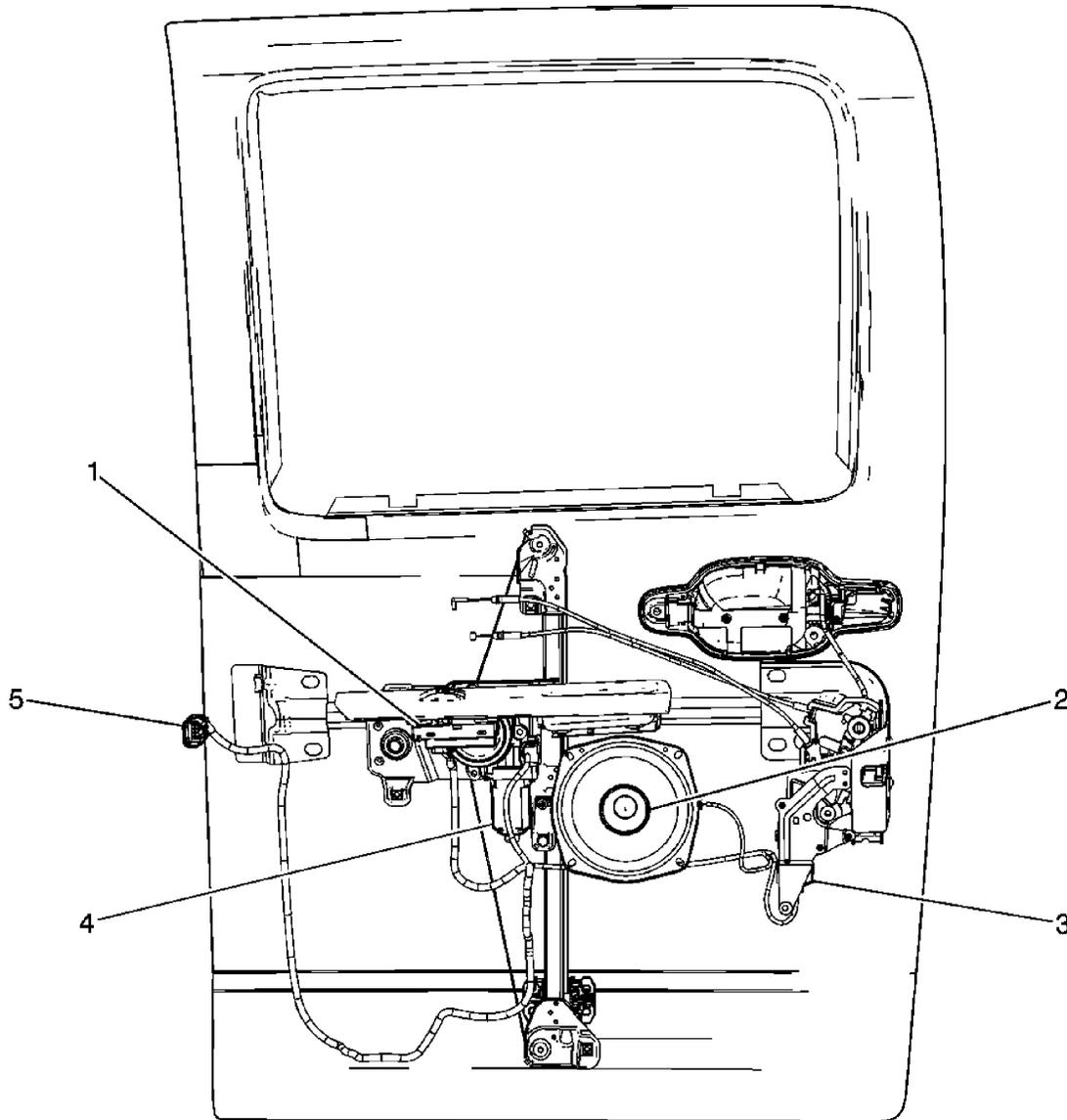


Fig. 10: Right Rear Door (Crew Cab) Component View
 Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 10

Callout	Component Name
1	Door Lock and Window Switch - RR

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2	Speaker - RR Door
3	Door Lock Actuator - RR
4	Window Motor - RR
5	C317

WINDOW SYSTEMS CONNECTOR END VIEWS

Ambient Air Temperature Sensor

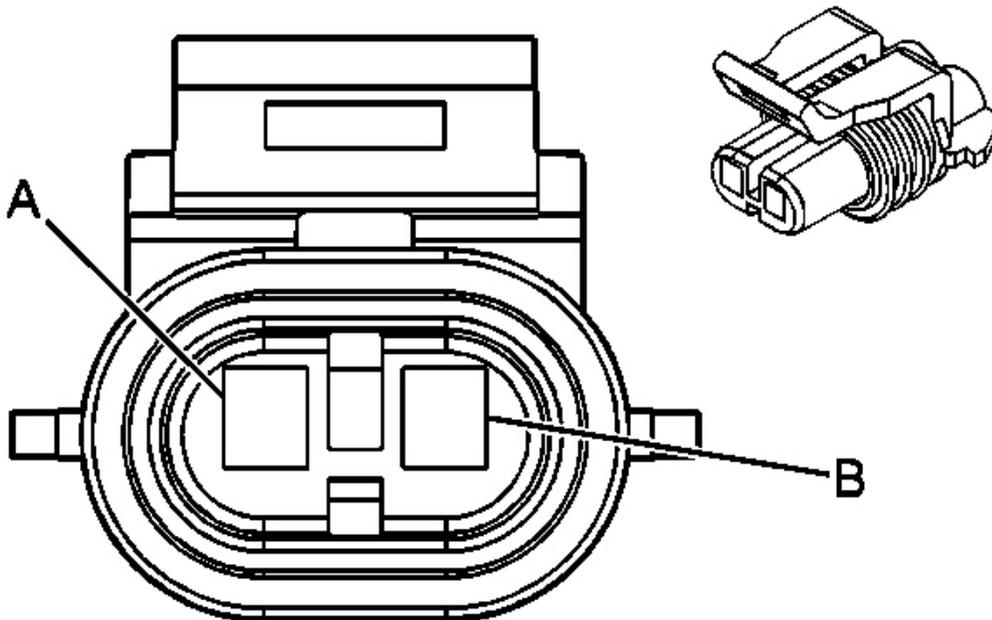


Fig. 11: Sliding Door Detent Switch - (E58/E59) Connector End Views
Courtesy of GENERAL MOTORS CORP.

Ambient Air Temperature Sensor Connector Parts Information

Connector Part Information

- OEM: 12052642
- Service: 12101856
- Description: 2-Way F Metri-Pack 150 Series, Sealed (BK)

Terminal Part Information

- Terminal/Tray: 12048074/2
- Core/Insulation Crimp: E/1
- Release Tool/Test Probe: 12094429/J-35616-2A (GY)

Ambient Air Temperature Sensor Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
A	D-GN/WH	636	Ambient Air Temperature Sensor Signal
B	YE	61	Low Reference

Rear Window Defogger C1

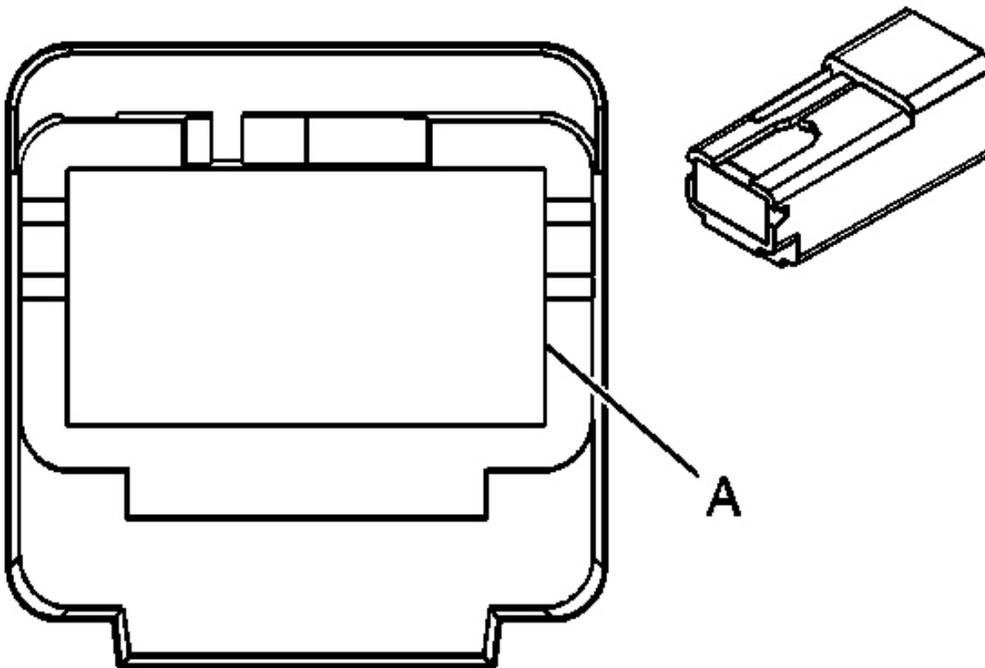


Fig. 12: Rear Window Defogger Grid - C1/C2 Connector End View
 Courtesy of GENERAL MOTORS CORP.

Rear Window Defogger C1 Connector Parts Information

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Connector Part Information

- OEM: 12092133
- Service: 12167133
- Description: 1-Way F Metri-Pack 630 Series (BK)

Terminal Part Information

- Terminal/Tray: 12034110/18
- Core/Insulation Crimp: F/G
- Release Tool/Test Probe: 12094430/J-35616-42 (RD)

Rear Window Defogger C1 Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
A	BK	293	Rear Defog Element Supply Voltage

Rear Window Defogger C2

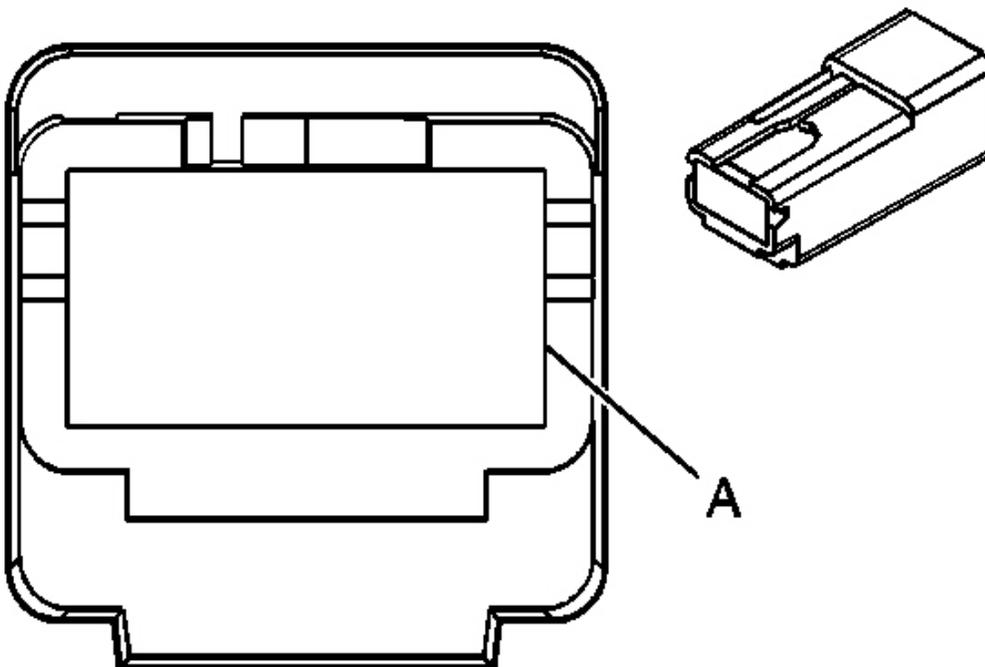


Fig. 13: Rear Window Defogger Grid - C1/C2 Connector End View
 Courtesy of GENERAL MOTORS CORP.

Rear Window Defogger C2 Connector Parts Information

Connector Part Information

- OEM: 12092133
- Service: 12167133
- Description: 1-Way F Metri-Pack 630 Series (BK)

Terminal Part Information

- Terminal/Tray: 12034110/18
- Core/Insulation Crimp: F/G
- Release Tool/Test Probe: 12094430/J-35616-42 (RD)

Rear Window Defogger C2 Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
A	BK	1450	Ground

Door Lock and Window Switch - Driver C1

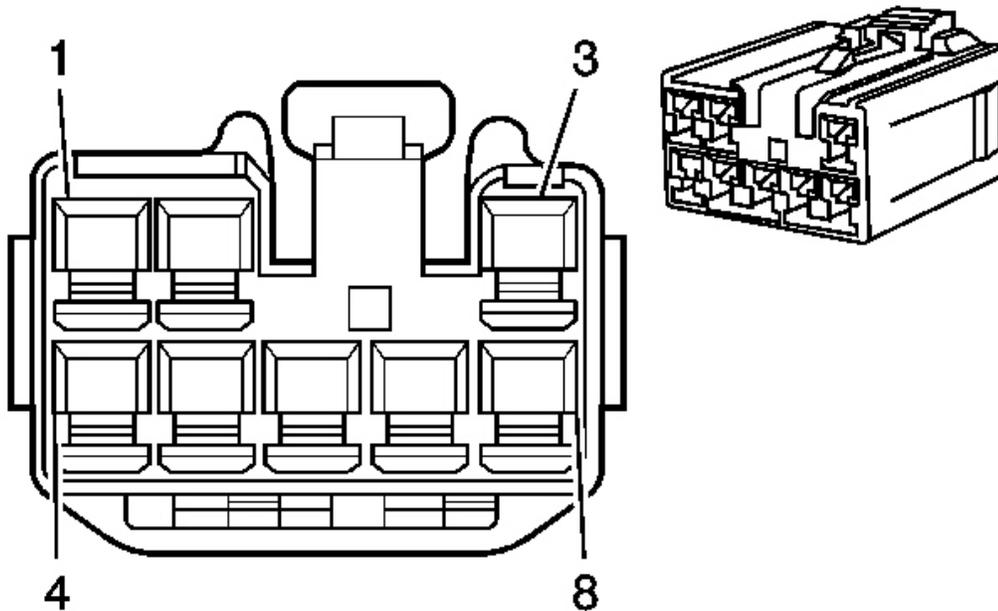


Fig. 14: Window Switch Connector End Views
 Courtesy of GENERAL MOTORS CORP.

Driver Door Lock and Window Switch C1 Connector Parts Information

Connector Part Information

- OEM: 6240-5068
- Service: 88987940
- Description: 8-Way F TS 090 Series (BU)

Terminal Part Information

- Pins: 1-2, 4-5
- Terminal/Tray: 8240-4892/22
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 15315247/J-35616-18 (BK)
- Pins: 3, 6-8
- Terminal/Tray: 8240-4942/22

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- Core/Insulation Crimp: 2/1
- Release Tool/Test Probe: 15315247/J-35616-18 (BK)

Driver Door Lock and Window Switch C1 Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
1	OG	1240	Battery Positive Voltage
2	TN	694	Driver Door Lock Actuator Unlock Control
3	BK	1450	Ground
4	GY	295	Door Lock Actuator Lock Control
5	TN	294	Door Lock Actuator Unlock Control
6	YE	643	Accessory Voltage
7	D-BU	164	Power Window Motor Left Front Up Control
8	BN	165	Power Window Motor Left Front Down Control

Door Lock and Window Switch - Driver C2

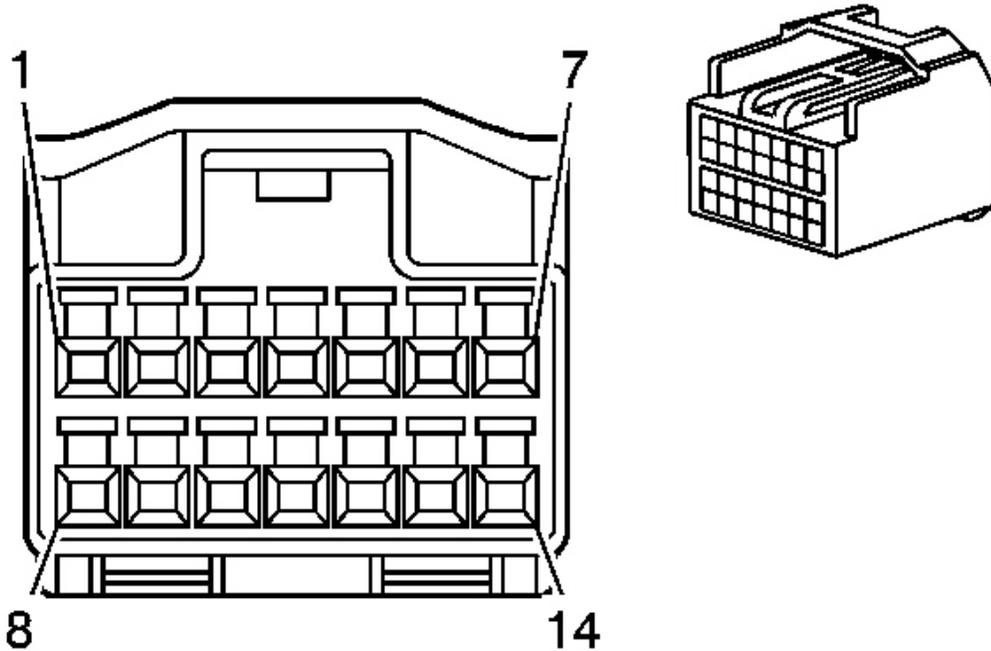


Fig. 15: Door Lock and Window Switch Connector End Views
 Courtesy of GENERAL MOTORS CORP.

Driver Door Lock and Window Switch C2 Connector Parts Information

Connector Part Information

- OEM: 7283-5832
- Service: See Catalog
- Description: 14-Way F 040-III, Class II (WH)

Terminal Part Information

- Terminal/Tray: 7116-4231-08/14
- Core/Insulation Crimp: K/K
- Release Tool/Test Probe: 15315247/J-35616-64A (L-BU)

Driver Door Lock and Window Switch C2 Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function

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1	D-BU	1307	Power Window Master Switch Lockout Signal
2	BN	9	Park Lamp Supply Voltage
3	-	-	Not Used
4	PU	171	Power Window Master Switch Right Rear Down Signal
5	L-GN	170	Power Window Master Switch Right Rear Up Signal
6	D-BU	245	Passenger Door Lock Switch Unlock Control
7	L-BU	244	Passenger Door Lock Switch Lock Control
8	L-BU	166	Power Window Master Switch Right Front Up Signal
9	TN	167	Power Window Master Switch Right Front Down Signal
10	-	-	Not Used
11	PU	169	Power Window Master Switch Left Rear Down Signal
12	D-GN	168	Power Window Master Switch Left Rear Up Signal
13	WH	194	Door Unlock Control
14	-	-	Not Used

Door Lock and Window Switch - Passenger

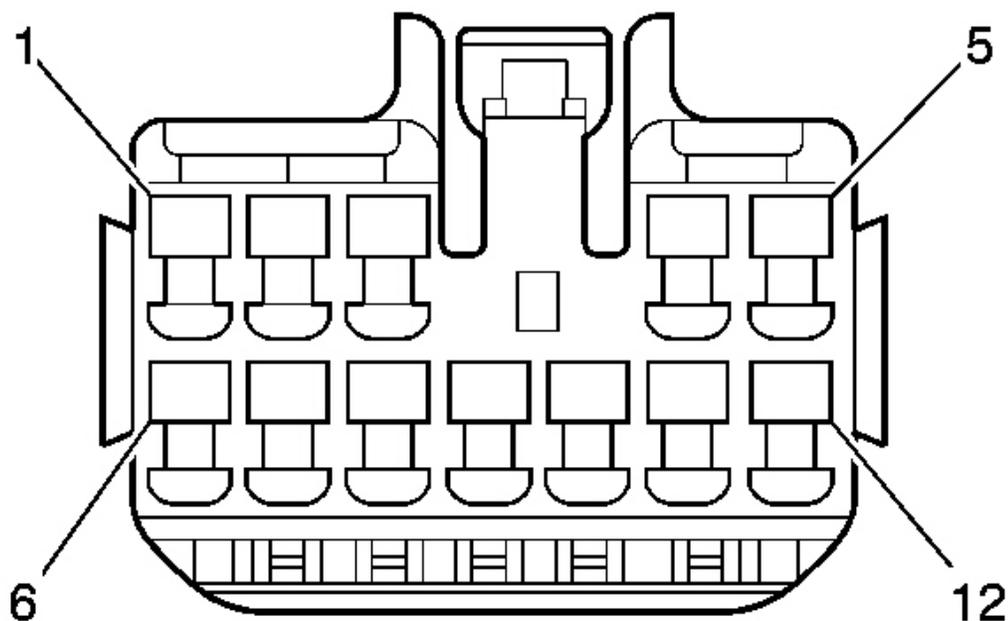


Fig. 16: Door Lock and Window Switch - Passenger Connector End Views
 Courtesy of GENERAL MOTORS CORP.

Passenger Door Lock and Window Switch Connector Parts Information

Connector Part Information

- OEM: 7283-1120
- Service: See Catalog
- Description: 12-Way F 090-II (WH)

Terminal Part Information

- Pins: 3-4, 6-9
- Terminal/Tray: 7116-4020/11
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 15315247/J-35616-18 (BK)
- Pins: 5, 10-12
- Terminal/Tray: 7116-4022/11

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- Core/Insulation Crimp: 4/A
- Release Tool/Test Probe: 15315247/J-35616-18 (BK)

Passenger Door Lock and Window Switch Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
1-2	-	-	Not Used
3	D-BU	245	Passenger Door Lock Switch Unlock Control
4	L-BU	244	Passenger Door Lock Switch Lock Control
5	BK	1550	Ground
6	BN	9	Park Lamp Supply Voltage
7	D-BU	1307	Power Window Master Switch Lockout Signal
8	TN	167	Power Window Master Switch Right Front Down Signal
9	L-BU	166	Power Window Master Switch Right Front Up Signal
10	BN	667	Power Window Motor Right Front Down Control
11	YE	443	Accessory Voltage
12	D-BU	666	Power Window Motor Right Front Up Control

Window Motor - Driver

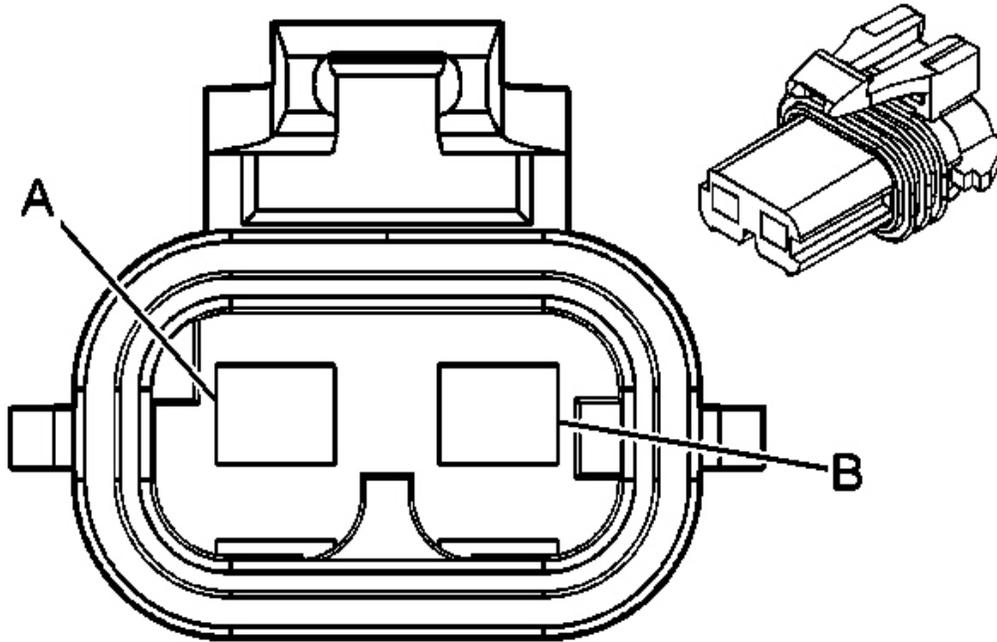


Fig. 17: Window Motor Connector End View
 Courtesy of GENERAL MOTORS CORP.

Driver Window Motor Connector Parts Information

Connector Part Information

- OEM: 12129487
- Service: 88988609
- Description: 2-Way F Metri-Pack 280 Series Flexlock, Sealed (GY)

Terminal Part Information

- Terminal/Tray: 12129409/4
- Core/Insulation Crimp: See Terminal Kit
- Release Tool/Test Probe: See Terminal Kit

Driver Window Motor Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function

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A	BN	165	Power Window Motor Left Front Down Control
B	D-BU	164	Power Window Motor Left Front Up Control

Window Motor - Passenger

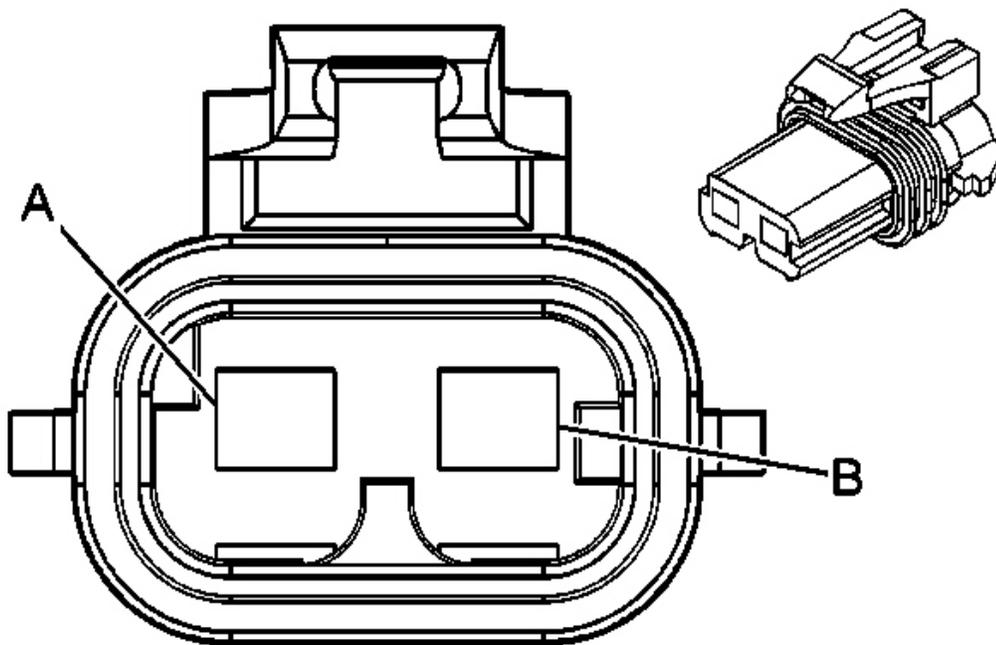


Fig. 18: Window Motor Connector End View
Courtesy of GENERAL MOTORS CORP.

Passenger Window Motor Connector Parts Information

Connector Part Information

- OEM: 12129487
- Service: 88988609
- Description: 2-Way F Metri-Pack 280 Series Flexlock, Sealed (GY)

Terminal Part Information

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- Terminal/Tray: 12129409/4
- Core/Insulation Crimp: See Terminal Kit
- Release Tool/Test Probe: See Terminal Kit

Passenger Window Motor Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
A	BN	667	Power Window Motor Right Front Down Control
B	D-BU	666	Power Window Motor Right Front Up Control

Window Motor - Left Rear

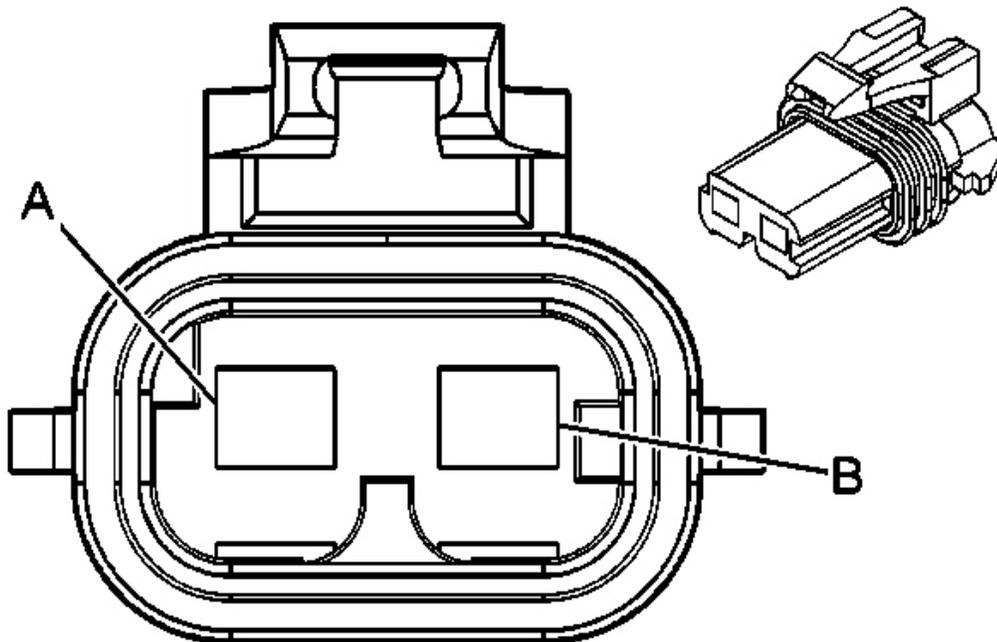


Fig. 19: Window Motor Connector End View
Courtesy of GENERAL MOTORS CORP.

Left Rear Window Motor Connector Parts Information

Connector Part Information

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- OEM: 12129487
- Service: 88988609
- Description: 2-Way F Metri-Pack 280 Series Flexlock, Sealed (GY)

Terminal Part Information

- Terminal/Tray: 12129409/4
- Core/Insulation Crimp: See Terminal Kit
- Release Tool/Test Probe: See Terminal Kit

Left Rear Window Motor Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
A	D-BU	670	Power Window Motor Right Rear Up Control
B	BN	671	Power Window Motor Right Rear Down Control

Window Motor - Right Rear

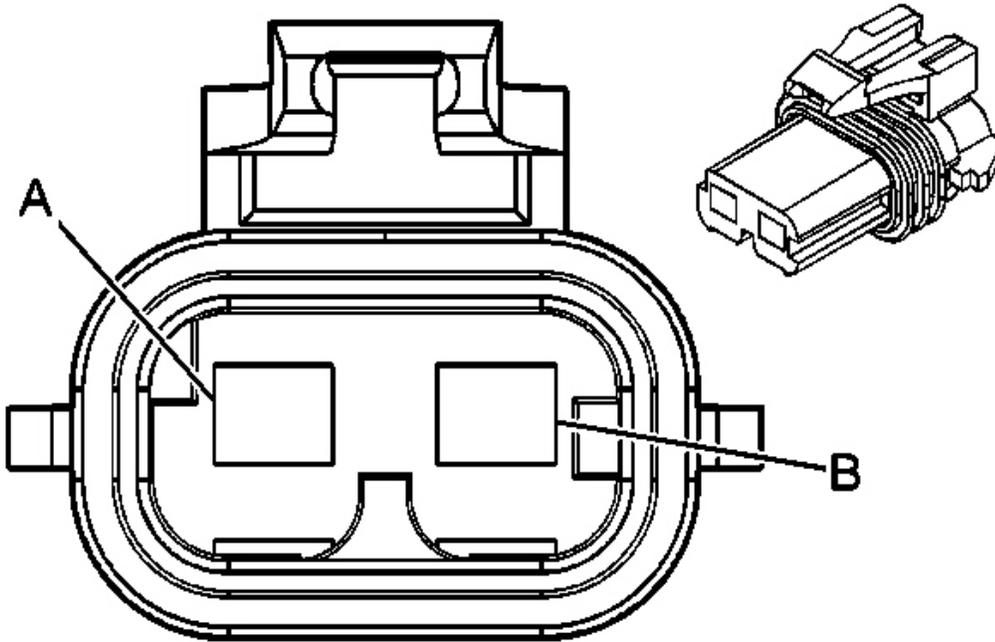


Fig. 20: Window Motor Connector End View
 Courtesy of GENERAL MOTORS CORP.

Right Rear Window Motor Connector Parts Information

Connector Part Information

- OEM: 12129487
- Service: 88988609
- Description: 2-Way F Metri-Pack 280 Series Flexlock, Sealed (GY)

Terminal Part Information

- Terminal/Tray: 12129409/4
- Core/Insulation Crimp: See Terminal Kit
- Release Tool/Test Probe: See Terminal Kit

Right Rear Window Motor Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function

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A	D-BU	670	Power Window Motor Right Rear Up Control
B	BN	671	Power Window Motor Right Rear Down Control

Window Switch - Left Rear

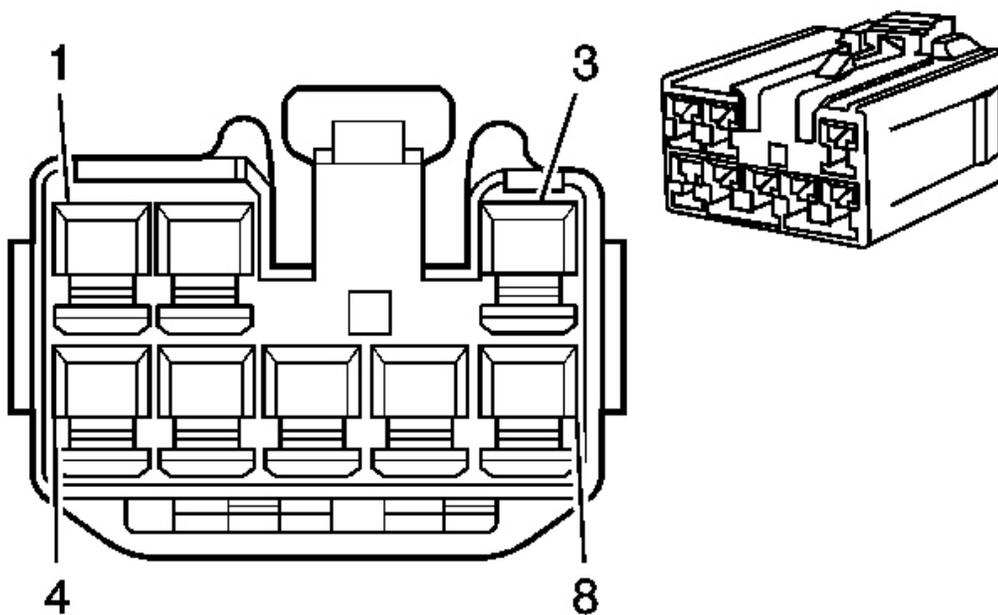


Fig. 21: Window Switch Connector End Views
Courtesy of GENERAL MOTORS CORP.

Left Rear Window Switch Connector Parts Information

Connector Part Information

- OEM: 6240-5068
- Service: 88987940
- Description: 8-Way F 090 TS Series (BU)

Terminal Part Information

- Pins: 1-2, 4-5

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- Terminal/Tray 8240-4882/22
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 15315247/J-35616-18 (BK)

- Pins: 3, 6-8
- Terminal/Tray: 8240-4942/22
- Core/Insulation Crimp: 2/1
- Release Tool/Test Probe: 15315247/J-35616-18 (BK)

Left Rear Window Switch Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
1	D-GN	168	Power Window Master Switch Left Rear Up Signal
2	BN	9	Park Lamp Supply Voltage
3	BK	1450	Ground
4	PU	169	Power Window Master Switch Left Rear Down Signal
5	D-BU	1307	Power Window Master Switch Lockout Signal
6	YE	643	Accessory Voltage
7	BN	671	Power Window Motor Right Rear Down Control
8	D-BU	670	Power Window Motor Right Rear Up Control

Window Switch - Right Rear

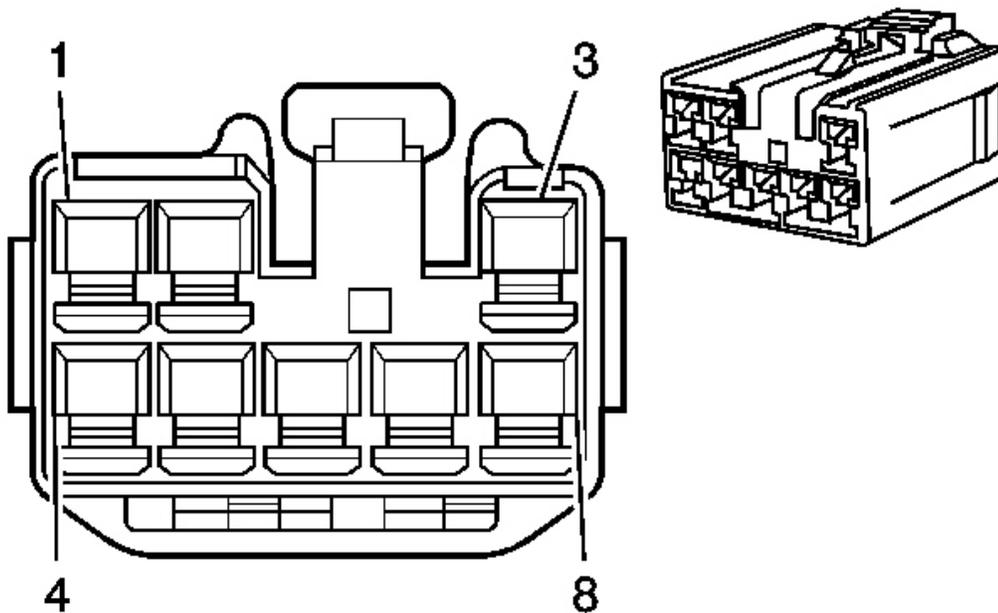


Fig. 22: Window Switch Connector End Views
 Courtesy of GENERAL MOTORS CORP.

Right Rear Window Switch Connector Parts Information

Connector Part Information

- OEM: 6240-5068
- Service: 88987940
- Description: 8-Way F 090 TS Series (BU)

Terminal Part Information

- Pins: 1-2, 4-5
- Terminal/Tray: 8240-4882/22
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 15315247/J-35616-18 (BK)
- Pins: 3, 6-8
- Terminal/Tray: 8240-4942/22

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- Core/Insulation Crimp: 2/1
- Release Tool/Test Probe: 15315247/J-35616-18 (BK)

Right Rear Window Switch Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
1	D-GN	168	Power Window Master Switch Right Rear Up Signal
2	BN	9	Park Lamp Supply Voltage
3	BK	1450	Ground
4	PU	169	Power Window Master Switch Right Rear Down Signal
5	D-BU	1307	Power Window Master Switch Lockout Signal
6	YE	443	Accessory Voltage
7	BN	671	Power Window Motor Right Rear Down Control
8	D-BU	670	Power Window Motor Right Rear Up Control

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC STARTING POINT - FIXED AND MOVEABLE WINDOWS

Begin the system diagnosis with the **Diagnostic System Check - Vehicle** . The Diagnostic System Check will provide the following information:

- The identification of the control modules which command the system
- The ability of the control modules to communicate through the serial data circuit
- The identification of any stored diagnostic trouble codes (DTCs) and their status

The use of the Diagnostic System Check will identify the correct procedure for diagnosing the system and where the procedure is located.

SCAN TOOL DATA DEFINITIONS

Accy. Relay Command

The scan tool displays On/Off. The body control module will indicate if it is commanding

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the RAP/ACCY relay On or Off.

Rear Defog Relay Cmd.

The scan tool displays On/Off. The body control module will indicate if it is commanding the rear defog relay On or Off.

Rear Defog Switch

The scan tool displays Active/Inactive. The BCM receives an input from the HVAC control head indicating Active when the rear defog system is turned On.

SCAN TOOL DATA LIST

Body Control Module

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
Operating Conditions: Ignition in RUN, Engine OFF, All Doors Closed, Park Brake Applied (DRLs OFF)			
Accy. Relay Cmd.	Outputs	On/Off	Off
Rear Defog Switch	Inputs	Active/Inactive	Inactive
Rear Defog Relay Cmd.	Outputs	On/Off	Off

SCAN TOOL OUTPUT CONTROLS

Body Control Module (BCM)

Scan Tool Output Control	Additional Menu Selections	Description
Body Control Module	Rear Defogger Relay	The body control module (BCM) actuates the Rear Defogger relay when ON is selected. The rear window defogger grid should become warm.

DTC B0285 OR B0286

Circuit Description

The body control module (BCM) monitors the rear defogger switch input. When the rear

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defogger is turned ON, the rear defog switch is closed and the BCM supplies the battery positive voltage to the coil side of the rear defog relay. This will energize the relay activating the rear defogger.

The first time that the rear defogger is activated in an ignition cycle, the rear defogger will remain ON for 10 minutes or until the ignition switch is turned OFF. If the rear defogger is activated again during the same ignition cycle, the rear defogger will remain ON for 5 minutes or until the ignition switch is turned OFF.

DTC Descriptors

This diagnostic procedure supports the following DTCs:

- DTC B0285 Electronic Rear Defrost Circuit Low
- DTC B0286 Electronic Rear Defrost Circuit High

Conditions for Running the DTC

The ignition is in RUN.

Conditions for Setting the DTC

- The BCM detects an open, short to ground or short to voltage in the rear defog relay control circuit.
- The condition exists for 30 seconds.
- The BCM is not requesting the Rear Defogger System.

Action Taken When the DTC Sets

- The rear window defogger will be inoperative if the circuit is open or shorted to ground.
- The rear window defogger will be ON if the circuit is shorted to voltage.
- The rear defogger indicator may not illuminate when the rear defogger switch is activated or may always be illuminated.

Conditions for Clearing the DTC

- This 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.

Test Description

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The numbers below refer to the step numbers on the diagnostic table.

2: Listen for an audible click when the rear defog relay operates. Command both the ON and OFF states. Repeat the commands, as necessary.

3: This step verifies that the BCM is providing battery positive voltage input to the rear defog relay.

5: This step tests for a short to ground or short to voltage on the rear defog relay control circuit of the rear defog relay coil.

DTC B0285 or B0286

Step	Action	Yes	No
Schematic Reference: <u>Defogger Schematics</u>			
Connector End View Reference: <u>Master Electrical Component List</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	<ol style="list-style-type: none"> 1. Turn ON the ignition, with the engine OFF. 2. With a scan tool, select from Special Functions the Rear Defogger Relay output control from the body control module (BCM) output controls menu. 3. Command the Rear Defogger Relay ON and OFF. <p>Do you hear a click when you command the Rear Defogger Relay ON and OFF?</p>	Go to <u>Testing for Intermittent Conditions and Poor Connections</u>	Go to Step 3
3	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect the rear defog relay. 3. Turn ON the ignition, with the engine OFF. 4. Connect a test lamp between the rear defog relay connector control circuit of the rear defog relay coil and ground. 5. With a scan tool, command the rear defog relay ON and OFF. 		

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	Does the test lamp turn ON and OFF with each command?	Go to Step 4	Go to Step 5
4	<ol style="list-style-type: none"> 1. Connect a test lamp between the supply voltage circuit of the rear defog relay connector and the rear defog relay control circuit. 2. With a scan tool, command the rear defog relay ON and OFF. <p>Does the test lamp turn ON and OFF with each command?</p>	Go to Step 6	Go to Step 8
5	<p>Test the rear defog relay control circuit and rear defog indicator control circuit for the following:</p> <ul style="list-style-type: none"> • An open • A high resistance • A short to ground • A short to voltage <p>Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> .</p> <p>Did you find and correct the condition?</p>	Go to Step 11	Go to Step 7
6	<p>Inspect for poor connections at the rear defog relay. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> .</p> <p>Did you find and correct the condition?</p>	Go to Step 11	Go to Step 9
7	<p>Inspect for poor connections at the harness connector of the BCM. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> .</p> <p>Did you find and correct the condition?</p>	Go to Step 11	Go to Step 10
8	<p>Repair an open or high resistance in the ground circuit of the rear defog relay. Refer to <u>Wiring Repairs</u> .</p> <p>Did you complete the repair?</p>	Go to Step 11	-

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9	Replace the rear defog relay. Refer to <u>Relay Replacement (Attached to Wire Harness)</u> or <u>Relay Replacement (Within an Electrical Center)</u> . Did you complete the replacement?	Go to Step 11	-
10	Replace the BCM. Refer to <u>Control Module References</u> for replacement, setup and programming. Did you complete the replacement?	Go to Step 11	-
11	1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Setting the DTC, as specified in the supporting text. Does the DTC reset?	Go to Step 2	System OK

SYMPTOMS - FIXED AND MOVEABLE WINDOWS

IMPORTANT: The following steps must be completed before using the symptom tables.

1. Perform the **Diagnostic System Check - Vehicle** before using the Symptom Tables in order to verify that all of the following are true:
 - There are no DTCs set.
 - The control modules can communicate via the serial data link.
2. Review the system operation in order to familiarize yourself with the system functions. Refer to the following system descriptions:
 - **Power Windows Description and Operation**
 - **Rear Window Defogger Description and Operation**

Visual/Physical Inspection

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

Intermittent

Faulty electrical connections or wiring may be the cause of intermittent conditions. Refer to **Testing for Intermittent Conditions and Poor Connections** .

Symptom List

Refer to a symptom diagnostic procedure from the following list in order to diagnose the symptom:

- **Rear Window Defogger Always On**
- **Defogger Grid Lines Diagnosis**
- **Rear Window Defogger Inoperative**
- **Power Window Inoperative - Driver Door**
- **Power Window Inoperative - Passenger Door**
- **Power Windows Inoperative - All**
- **Power Window Express Down Function Inoperative**
- **Power Window Lockout Function Inoperative**

REAR WINDOW DEFOGGER ALWAYS ON

Rear Window Defogger Always On

Step	Action	Yes	No
Schematic Reference: <u>Defogger Schematics</u>			
Connector End View Reference: <u>Window Systems Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	Verify that the rear window defogger is always ON. Does the rear window defogger operate normally?	Go to <u>Testing for Intermittent Conditions and Poor Connections</u>	Go to Step 3
3	With a scan tool, observe the Rear Defog Switch data parameter in the Body Control Module data list. Does the scan tool display Inactive?	Go to Step 4	Go to Step 6

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4	Remove the rear defog relay. Refer to <u>Relay Replacement (Attached to Wire Harness)</u> or <u>Relay Replacement (Within an Electrical Center)</u> . Did the rear window defog turn OFF?	Go to Step 5	Go to Step 8
5	Test for a voltage signal at the rear defog relay control circuit terminal for the rear defog relay in the underhood fuse block. Refer to <u>Electrical Center Identification Views</u> and <u>Circuit Testing</u> . Was a voltage signal present?	Go to Step 7	Go to Step 10
6	Test for a short to ground in the rear defogger switch signal circuit. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct a condition?	Go to Step 12	Go to Step 11
7	Inspect for poor connections at the harness connector of the body control module (BCM). Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct a condition?	Go to Step 12	Go to Step 9
8	Repair the short to voltage in the rear defog element supply voltage circuit. Refer to <u>Wiring Repairs</u> . Did you complete the repair?	Go to Step 12	-
9	Replace the BCM. Refer to <u>Control Module References</u> for replacement, setup and programming. Did you complete the replacement?	Go to Step 12	-
10	Replace the rear defog relay. Refer to <u>Relay Replacement (Attached to Wire Harness)</u> or <u>Relay Replacement (Within an Electrical Center)</u> . Did you complete the repair?	Go to Step 12	-
11	Replace the HVAC control module. Refer to <u>Control Module References</u> for replacement, setup and programming. Did you complete the repair?	Go to Step 12	-
	1. Use the scan tool in order to clear		

12	any induced DTCs. 2. Operate the system in order to verify the repair.	System OK	Go to Step 3
Did you correct the condition?			

DEFOGGER GRID LINES DIAGNOSIS

This test is for reference only. A grid line fault requires the rear window replacement. Refer to **Endgate Window Replacement**.

1. Start the engine.
2. Activate the rear window defogger system.
3. Connect a test lamp to a good ground.

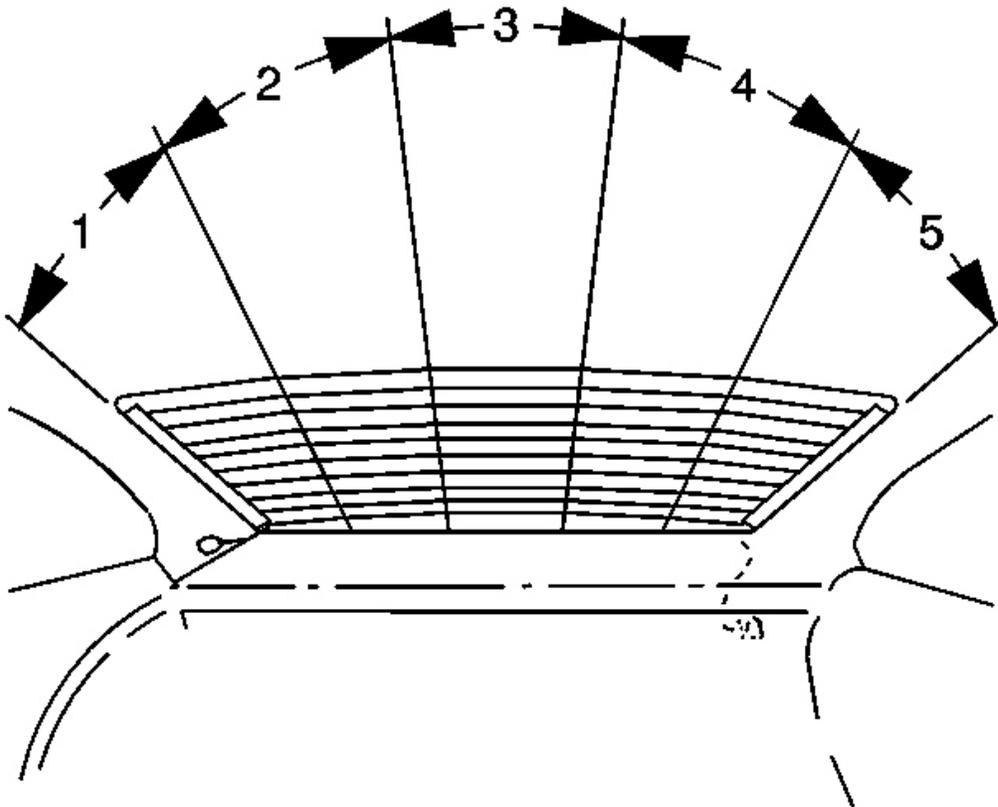


Fig. 23: Identifying Defogger Grid Line Zones
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: The test lamp brilliance will decrease proportionately to the increased resistance in the grid line as the probe is moved from the battery positive bus wire to the ground bus wire. The test lamp brilliance may vary from one window to another.

4. Move the test lamp probe from zone 5 to zone 1 along each grid line.
 - If the test lamp shows full brilliance at both ends of the grid lines, inspect for an open or poor connection in the ground circuit of the rear window defogger grid. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs.

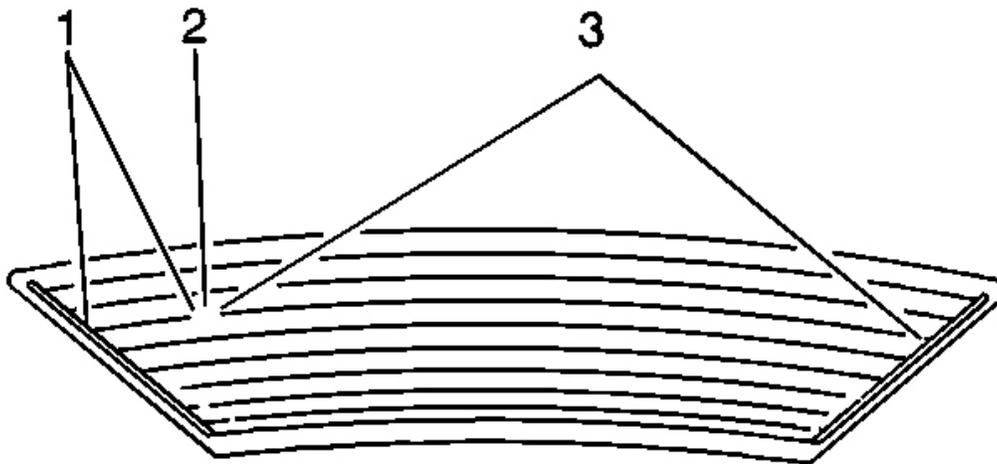


Fig. 24: Identifying Grid Line Test Locations
Courtesy of GENERAL MOTORS CORP.

- If the test lamp goes out, test the grid line in at least 2 places (1, 3) to eliminate the possibility of bridging the open (2) in the grid line.

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Test Description

The number below refers to the step number on the diagnostic table.

8: Listen for an audible click when the relay operates. Command both the ON and OFF states of the rear defog relay. Repeat the commands, as necessary.

Rear Window Defogger Inoperative

Step	Action	Yes	No
Schematic Reference: <u>Defogger Schematics</u>			
Connector End View Reference: <u>Master Electrical Component List</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	1. Start the engine. 2. Depress the rear defogger switch. 3. Observe the rear defogger indicator on the HVAC control module. Does the rear defogger indicator illuminate?	Go to Step 3	Go to Step 5
3	Connect a test lamp between the supply voltage side of the rear defogger grid and a good ground. Does the test lamp illuminate?	Go to Step 4	Go to Step 8
4	Connect a test lamp between the left side and the right side of the rear defogger grid. Does the test lamp illuminate?	Go to <u>Testing for Intermittent Conditions and Poor Connections</u>	Go to Step 17
5	1. With a scan tool, observe the Rear Defog Switch parameter in the body control module (BCM) switch Input data list. 2. Depress the rear window defogger switch.		

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	Does the scan tool display On?	Go to Step 7	Go to Step 6
6	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect the harness that contains the rear defogger switch signal circuit connector of the BCM. 3. Turn ON the ignition, with the engine OFF. 4. Connect a test lamp between battery voltage and the rear defogger switch signal circuit at the BCM connector. 5. Depress the rear defogger switch. 		
	Does the test lamp illuminate?	Go to Step 16	Go to Step 10
7	<ol style="list-style-type: none"> 1. Connect a test lamp between the defogger relay control circuit and ground. 2. Depress the rear window defogger switch. 		
	Does the test lamp illuminate?	Go to Step 13	Go to Step 11
8	<ol style="list-style-type: none"> 1. With a scan tool, select from the Special Functions the Rear Defogger Relay in the BCM output controls. 2. Command the Rear Defogger Relay ON and OFF. 		
	Do you hear a click when you command the relay ON and OFF?	Go to Step 12	Go to Step 9
9	<p>Connect a test lamp between the supply voltage circuit of the rear defog relay switched input and a good ground.</p> <p>Does the test lamp illuminate?</p>	Go to Step 11	Go to Step 12
10	Test the rear defogger switch signal circuit and the rear defogger switch ground circuit of the HVAC control module for an open or short to voltage. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> .		

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	Did you find and correct the condition?	Go to Step 20	Go to Step 12
11	Test for an open or high resistance in the rear defogger relay control circuit and ground circuit. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 21	Go to Step 16
12	Test the supply voltage circuit for the following conditions: <ul style="list-style-type: none"> • An open • A high resistance • A short to ground Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 21	Go to Step 13
13	Test for the following in the rear defogger indicator supply voltage circuit: <ul style="list-style-type: none"> • An open • A high resistance • A short to ground Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 21	Go to Step 15
14	Inspect for poor connections at the rear defog relay. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> . Did you find and correct the condition?	Go to Step 21	Go to Step 18
15	Inspect for poor connections at the harness connector of the HVAC control module. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> .		

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	Did you find and correct the condition?	Go to Step 21	Go to Step 19
16	Inspect for poor connections at the harness connector of the BCM. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> . Did you find and correct the condition?	Go to Step 21	Go to Step 20
17	Repair an open or high resistance in the ground circuit of the rear defogger. Refer to <u>Wiring Repairs</u> . Did you complete the repair?	Go to Step 21	-
18	Replace the rear defog relay. Refer to <u>Relay Replacement (Attached to Wire Harness)</u> or <u>Relay Replacement (Within an Electrical Center)</u> . Did you complete the replacement?	Go to Step 21	-
19	Replace the HVAC control module. Refer to <u>Control Module References</u> for replacement, setup and programming. Did you complete the replacement?	Go to Step 21	-
20	Replace the BCM. Refer to <u>Control Module References</u> for replacement, setup and programming. Did you complete the replacement?	Go to Step 21	-
21	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

POWER WINDOW INOPERATIVE - DRIVER DOOR

Power Window Inoperative - Driver Door

Step	Action	Yes	No
Schematic Reference: <u>Moveable Window Schematics</u>			
Connector End View Reference: <u>Window Systems Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
	Verify that the driver door power window	Go to Testing	

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2	is inoperative. Does the driver door power window operate normally?	<u>for Intermittent Conditions and Poor Connections</u>	Go to Step 3
3	Are the power door locks inoperative also?	Go to Step 6	Go to Step 4
4	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect the driver window motor. 3. Turn ON the ignition, with the engine OFF. 4. Probe the power window motor left front up control circuit of the driver window motor harness connector with a test lamp that is connected to a good ground. 5. Activate the driver window switch to the UP position. 		
	Does the test lamp illuminate?	Go to Step 5	Go to Step 7
5	<ol style="list-style-type: none"> 1. Connect a test lamp between the power window motor left front up control circuit of the driver window motor harness connector and the power window motor left front down control circuit of the driver window motor harness connector. 2. Activate the driver window switch to the DOWN position. 		
	Does the test lamp illuminate?	Go to Step 10	Go to Step 8
6	Test the battery positive voltage circuit of the drivers switch assembly for a short to ground or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 14	Go to Step 9
7	Test the power window motor left front up control circuit of the driver window motor for an open. Refer to <u>Circuit Testing</u> and		

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	<u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 14	Go to Step 11
8	Test the power window motor left front down control circuit of the driver window motor for an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 14	Go to Step 11
9	Test the driver switch assembly ground circuit for an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 14	Go to Step 11
10	Inspect for poor connections at the harness connector of the driver window motor. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> . Did you find and correct the condition?	Go to Step 14	Go to Step 12
11	Inspect for poor connections at the harness connector of the driver window switch. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and to <u>Connector Repairs</u> . Did you find and correct the condition?	Go to Step 14	Go to Step 13
12	Replace the driver window motor. Refer to <u>Front Side Door Window Regulator Motor Replacement</u> . Did you complete the repair?	Go to Step 14	-
13	Replace the driver window switch. Refer to <u>Door Lock and Side Window Switch Replacement - Driver Side (1st Design)</u> or <u>Door Lock and Side Window Switch Replacement - Driver Side (2nd Design)</u> or <u>Door Lock and Side Window Switch Replacement - Passenger Side</u> . Did you complete the repair?	Go to Step 14	-
14	Operate the system in order to verify the repair. Did you find and correct the condition?	System OK	Go to Step 2

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POWER WINDOW INOPERATIVE - PASSENGER DOOR

Power Window Inoperative - Passenger Door

Step	Action	Yes	No
Schematic Reference: <u>Moveable Window Schematics</u>			
Connector End View Reference: <u>Window Systems Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	Verify that the passenger door power window is inoperative. Do the passenger door power windows operate normally?	Go to <u>Testing for Intermittent Conditions and Poor Connections</u>	Go to Step 3
3	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect the appropriate passenger window switch. 3. Turn ON the ignition, with the engine OFF. 4. Probe the power window master switch lockout control circuit of the appropriate passenger window switch harness connector with a test lamp that is connected to a good ground. <p>Does the test lamp illuminate?</p>	Go to Step 4	Go to Step 6
4	<ol style="list-style-type: none"> 1. Connect a test lamp between the power window master switch up signal circuit of the appropriate passenger window switch harness connector and the power window master switch down signal circuit of the appropriate passenger window switch harness connector. 2. Activate the driver window switch to the UP and DOWN positions. 		

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	Does the test lamp illuminate in both positions?	Go to Step 5	Go to Step 7
5	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Connect the appropriate passenger window switch. 3. Disconnect the appropriate passenger window motor. 4. Turn ON the ignition, with the engine OFF. 5. Connect a test lamp between the power window motor up circuit of the appropriate passenger window motor harness connector and the power window motor down circuit of the appropriate passenger window motor harness connector. 6. Activate the appropriate passenger window switch to the UP and DOWN positions. 		
	Does the test lamp illuminate in both positions?	Go to Step 9	Go to Step 8
6	<p>Test the power window master switch lockout control circuit of the appropriate passenger window switch for an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> .</p> <p>Did you find and correct the condition?</p>	Go to Step 15	Go to Step 10
7	<p>Test the power window master switch signal circuits of the appropriate passenger window switch for a short to voltage or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> .</p> <p>Did you find and correct the condition?</p>	Go to Step 15	Go to Step 10
8	<p>Test the power window motor control circuits of the appropriate passenger window motor for a short to voltage or an open. Refer to <u>Circuit Testing</u> and</p>		

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	Wiring Repairs . Did you find and correct the condition?	Go to Step 15	Go to Step 11
9	Inspect for poor connections at the harness connector of the appropriate passenger window motor. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs . Did you find and correct the condition?	Go to Step 15	Go to Step 12
10	Inspect for poor connections at the harness connector of the driver window switch. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs . Did you find and correct the condition?	Go to Step 15	Go to Step 13
11	Inspect for poor connections at the harness connector of the appropriate passenger window switch. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs . Did you find and correct the condition?	Go to Step 15	Go to Step 14
12	Replace the appropriate passenger window motor. Refer to Front Side Door Window Regulator Motor Replacement or Rear Side Door Window Regulator Motor Replacement. Did you complete the replacement?	Go to Step 15	-
13	Replace the driver window switch. Refer to Door Lock and Side Window Switch Replacement - Driver Side (1st Design) or Door Lock and Side Window Switch Replacement - Driver Side (2nd Design) . Did you complete the replacement?	Go to Step 15	-
14	Replace the appropriate passenger window switch. Refer to Door Lock and Side Window Switch Replacement - Passenger Side .		

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	Did you complete the replacement?	Go to Step 15	-
15	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

POWER WINDOWS INOPERATIVE - ALL

Power Windows Inoperative - All

Step	Action	Yes	No
Schematic Reference: <u>Moveable Window Schematics</u>			
Connector End View Reference: <u>Window Systems Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	Verify that all the power windows are inoperative. Do the power windows operate normally?	Go to <u>Testing for Intermittent Conditions and Poor Connections</u>	Go to Step 3
3	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect the driver window switch. 3. Turn ON the ignition, with the engine OFF. 4. Probe the accessory voltage circuit of the driver window switch harness connector with a test lamp that is connected to a good ground. Does the test lamp illuminate?	Go to Step 4	Go to Step 5
4	Connect a test lamp between the accessory voltage circuit of the driver window switch harness connector and the ground circuit of the driver window switch harness connector. Does the test lamp illuminate?	Go to Step 7	Go to Step 8
	Test the power window master switch lockout signal circuit for a short to ground.		

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5	Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 10	Go to Step 6
6	Test the accessory voltage circuit of the driver window switch for a short to ground or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 10	Go to <u>Symptoms - Wiring Systems</u>
7	Inspect for poor connections at the harness connector of the driver window switch. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> . Did you find and correct the condition?	Go to Step 10	Go to Step 9
8	Repair the open in the ground circuit. Refer to <u>Wiring Repairs</u> . Did you complete the repair?	Go to Step 10	-
9	Replace the driver window switch. Refer to <u>Door Lock and Side Window Switch Replacement - Driver Side (1st Design)</u> or <u>Door Lock and Side Window Switch Replacement - Driver Side (2nd Design)</u> or <u>Door Lock and Side Window Switch Replacement - Passenger Side</u> . Did you complete the replacement?	Go to Step 10	-
10	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

POWER WINDOW EXPRESS DOWN FUNCTION INOPERATIVE

Power Window Express Down Function Inoperative

Step	Action	Yes	No
Schematic Reference: <u>Moveable Window Schematics</u>			
Connector End View Reference: <u>Window Systems Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?		Go to <u>Diagnostic System Check -</u>

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		Go to Step 2	<u>Vehicle</u>
2	Verify that the power windows express down function is inoperative. Does the power windows express down function operate normally?	Go to <u>Testing for Intermittent Conditions and Poor Connections</u>	Go to Step 3
3	Inspect for poor connections at the harness connector of the driver window switch. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> . Did you find and correct the condition?	Go to Step 5	Go to Step 4
4	Replace the driver window switch. Refer to <u>Door Lock and Side Window Switch Replacement - Driver Side (1st Design)</u> or <u>Door Lock and Side Window Switch Replacement - Driver Side (2nd Design)</u> or <u>Door Lock and Side Window Switch Replacement - Passenger Side</u> . Did you complete the replacement?	Go to Step 5	-
5	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

POWER WINDOW LOCKOUT FUNCTION INOPERATIVE

Power Window Lockout Function Inoperative

Step	Action	Yes	No
Schematic Reference: <u>Moveable Window Schematics</u>			
Connector End View Reference: <u>Window Systems Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	Verify that the power windows lockout function is inoperative. Does the power windows lockout function operate normally?	Go to <u>Testing for Intermittent Conditions and Poor</u>	

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		<u>Connections</u>	Go to Step 3
3	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect the driver window switch. 3. Turn ON the ignition, with the engine OFF. 4. Probe the power window master switch lockout control circuit of the driver window switch harness connector with a test lamp that is connected to a good ground. <p>Does the test lamp illuminate?</p>	Go to Step 4	Go to Step 5
4	<p>Repair the short to voltage in the power window master switch lockout control circuit. Refer to <u>Wiring Repairs</u> .</p> <p>Did you find and correct the condition?</p>	Go to Step 7	Go to Step 5
5	<p>Inspect for poor connections at the harness connector of the driver window switch. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> .</p> <p>Did you find and correct the condition?</p>	Go to Step 7	Go to Step 6
6	<p>Replace the driver window switch. Refer to <u>Door Lock and Side Window Switch Replacement - Driver Side (1st Design)</u> or <u>Door Lock and Side Window Switch Replacement - Driver Side (2nd Design)</u> or <u>Door Lock and Side Window Switch Replacement - Passenger Side</u> .</p> <p>Did you complete the replacement?</p>	Go to Step 7	-
7	<p>Operate the system in order to verify the repair.</p> <p>Did you correct the condition?</p>	System OK	Go to Step 2

REPAIR INSTRUCTIONS

WINDSHIELD REPLACEMENT

Tools Required

- **J 24402-A** Cold Knife Glass Sealant Remover. See Special Tools.
- **J 39032** Stationary Glass Removal Tool. See Special Tools.
- Urethane Adhesive Kit GM P/N 12346392 or Equivalent
- Isopropyl Alcohol or Equivalent
- Cartridge-type Caulking Gun
- Commercial-type Utility Knife
- Razor Blade Scraper
- Suction Cups
- Plastic Paddle

Removal Procedure

IMPORTANT: 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 window wiper arms. Refer to Windshield Wiper Arm Replacement .
3. Remove the window side reveal moldings from the vehicle. Refer to Windshield Side Reveal Molding Replacement .
4. Remove the cowl air inlet grille panel. Refer to Non-Functional Air Inlet Grille Panel Replacement .

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

5. Cover to protect the following parts from broken glass:
 - The upper dash pad
 - The defroster outlets and A/C outlets
 - The seats and carpeting
6. Remove the rearview mirror. Refer to Inside Rearview Mirror Replacement .

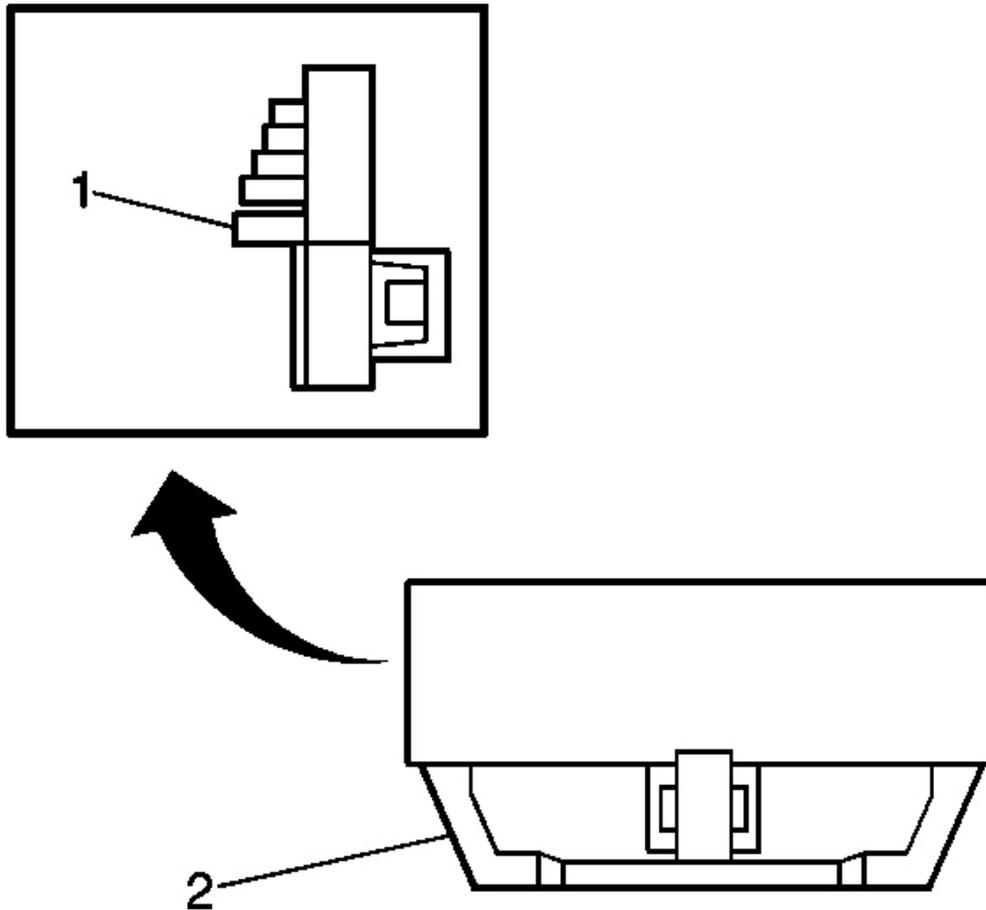


Fig. 25: Identifying Window Lower Supports

Courtesy of GENERAL MOTORS CORP.

IMPORTANT: The window lower supports (1) have molded in locks with an urethane adhesive strip (2) on the back side. Once the window lower stops have been removed they must be replaced.

7. If necessary, remove the window lower supports (1) by using a flat-bladed tool, lightly prying upward in the middle until it releases.

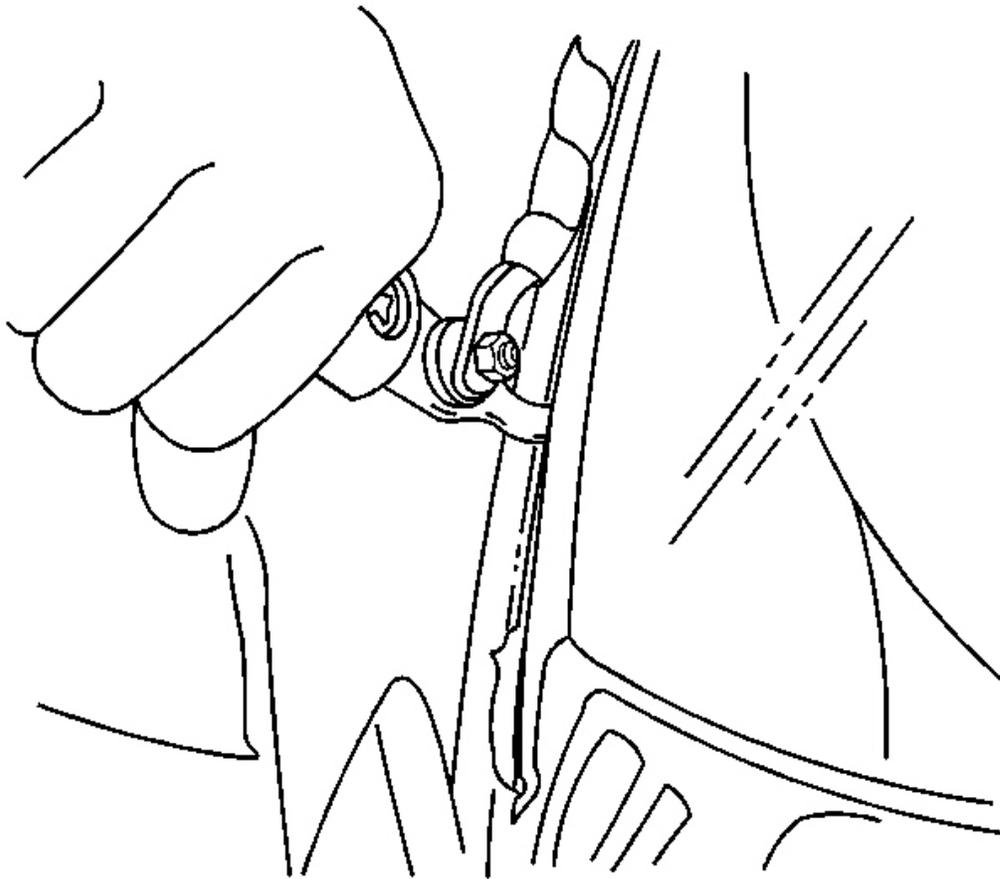


Fig. 26: Separating Urethane Adhesive From Window
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Keep the cutting edge of the tool against the window.

8. 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.
 - Use **J 24402-A** , **J 39032** or equivalent in order to remove the window. See **Special Tools**.

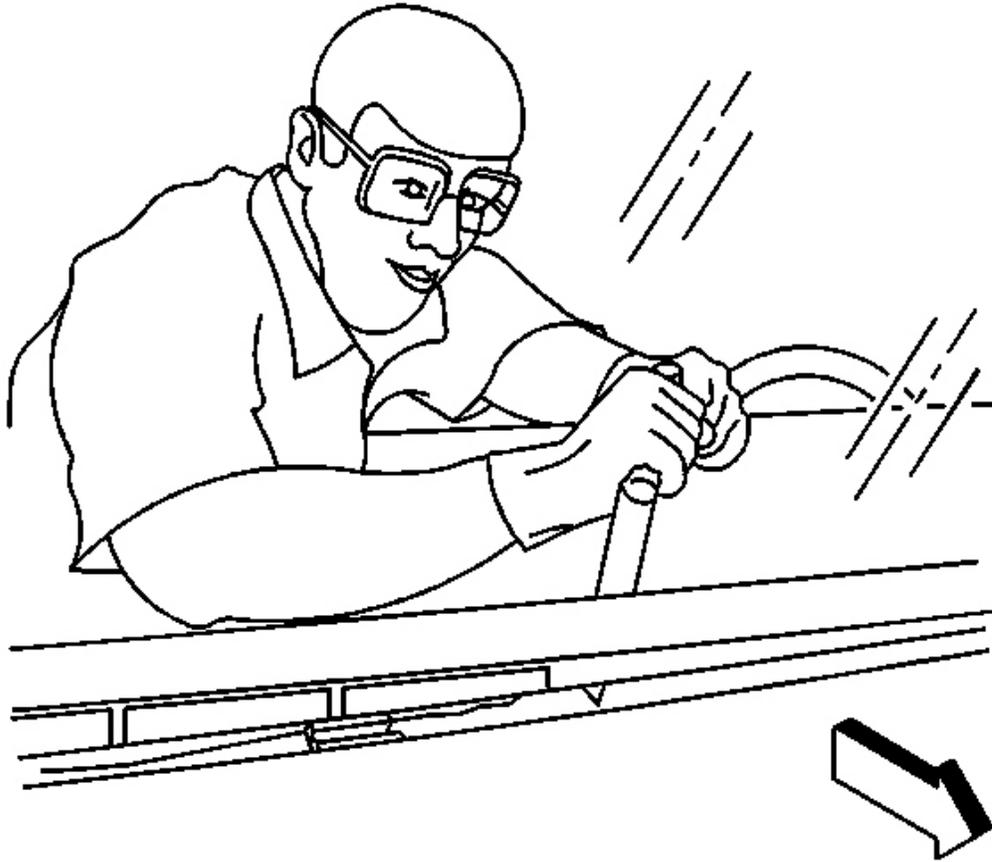


Fig. 27: Separating Bottom Of Window From Urethane Adhesive
Courtesy of GENERAL MOTORS CORP.

9. Remove the bottom of the window from the urethane adhesive using a long utility knife or similar tool. Keep the cutting edge of the utility knife against the glass.

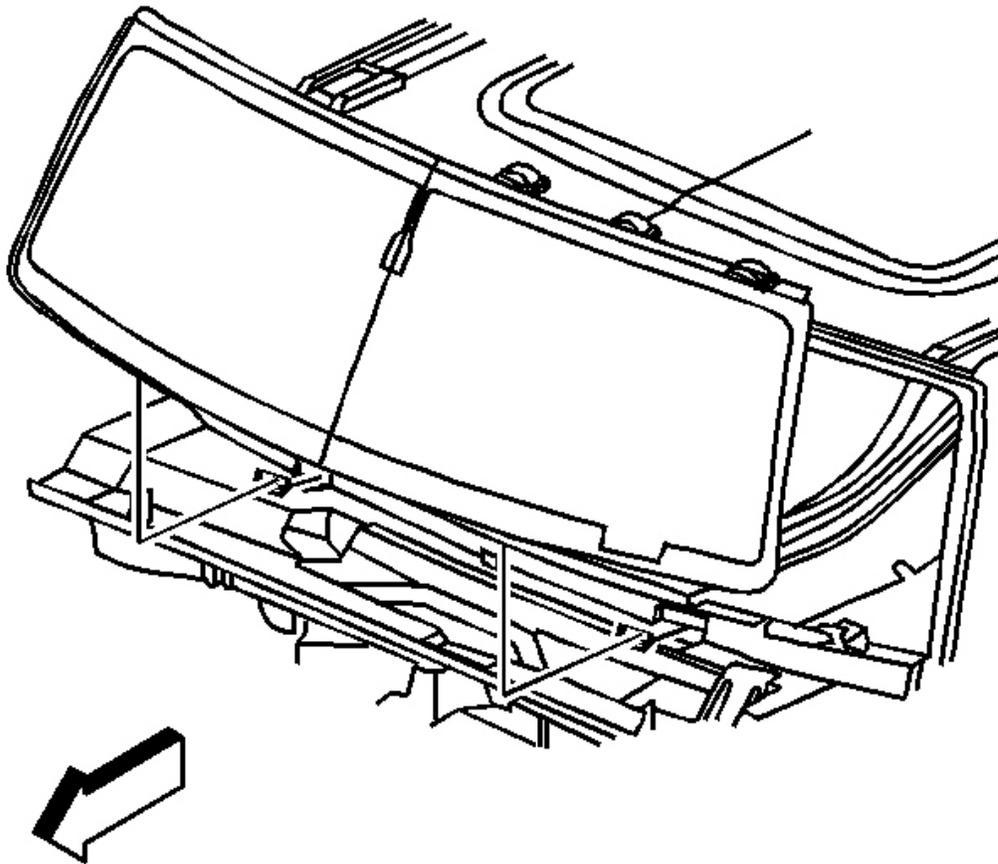


Fig. 28: Identifying Windshield
Courtesy of GENERAL MOTORS CORP.

10. With the aid of an assistant remove the window from the vehicle.

Installation Procedure

1. Install the windshield into the opening. Refer to **Adhesive Installation of Stationary Windows**.
2. Install the cowl air inlet grille panel. Refer to **Non-Functional Air Inlet Grille Panel Replacement** .

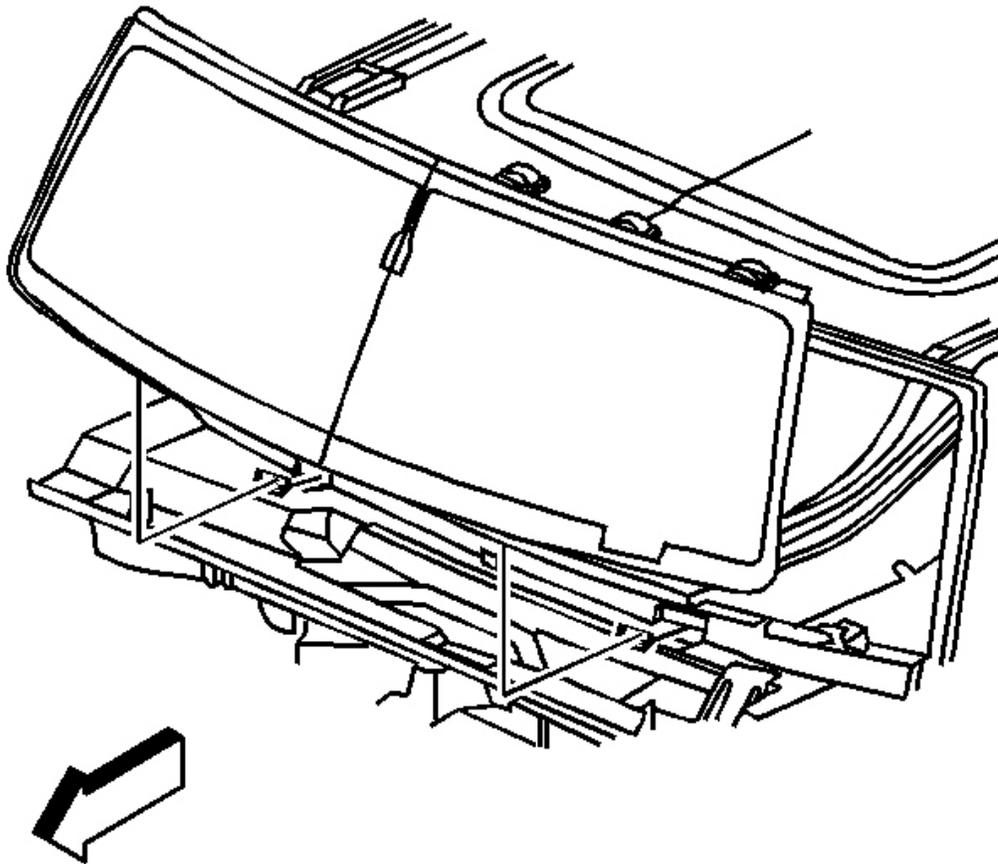


Fig. 29: Identifying Windshield
Courtesy of GENERAL MOTORS CORP.

3. Install the window side reveal moldings to the vehicle. Refer to **Windshield Side Reveal Molding Replacement** .
4. Install the window wiper arms. Refer to **Windshield Wiper Arm Replacement** .
5. Install the rearview mirror. Refer to **Inside Rearview Mirror Replacement** .
6. Close the hood.
7. Remove the double layer of masking tape around the perimeter of the painted surfaces and the interior trim.

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The windshield reveal molding is an applied molding design separate from the window. The reveal molding is bonded to the windshield and may be bonded to the body. The reveal molding may be replaced with the windshield as an assembly or the reveal molding may be available as a separate service part. Refer to **Adhesive Installation of Stationary Windows**.

FRONT SIDE DOOR WINDOW REPLACEMENT

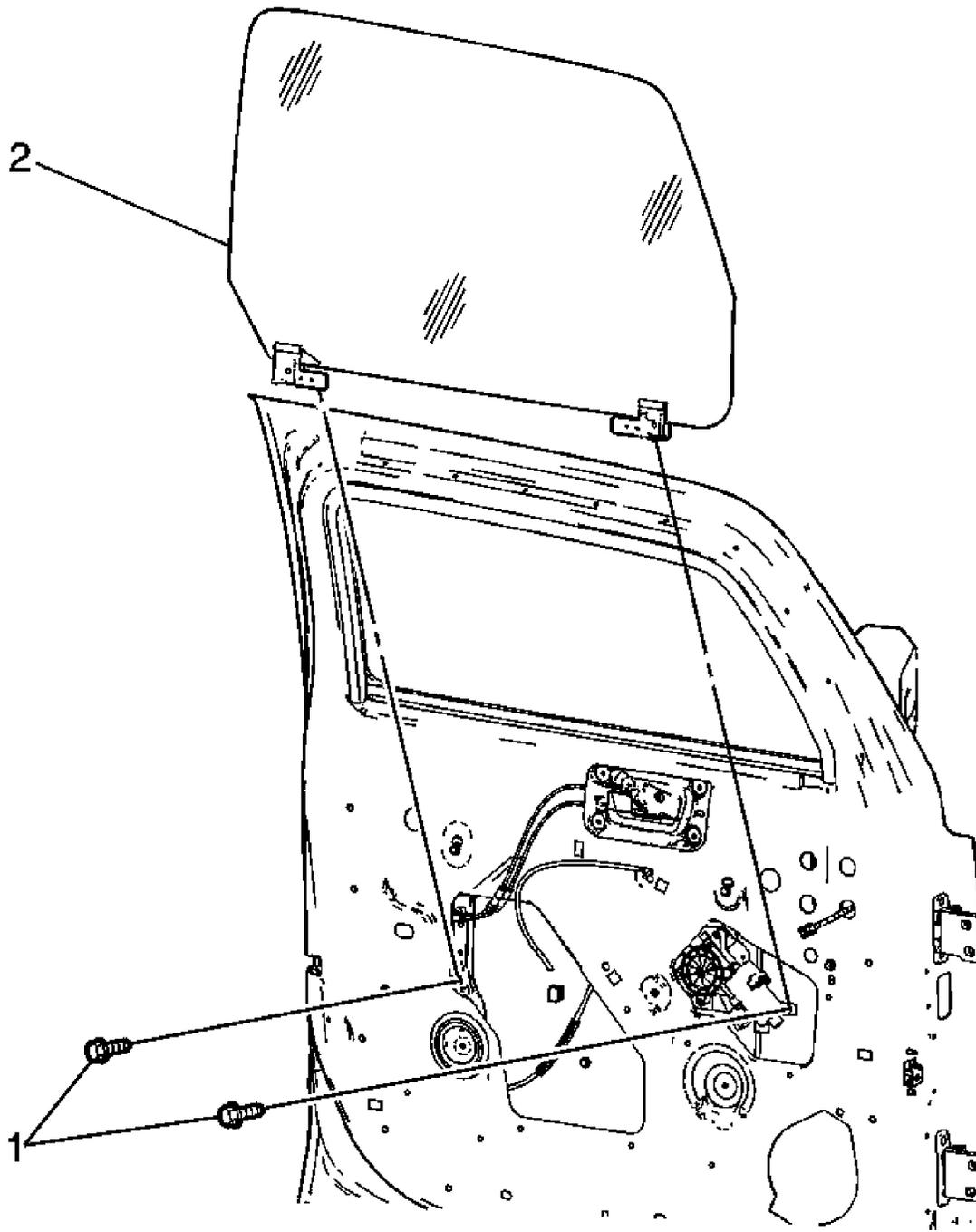


Fig. 30: Window Replacement - Front Door
 Courtesy of GENERAL MOTORS CORP.

Front Side Door Window Replacement

Callout	Component Name
NOTE:	

Refer to Fastener Notice .

Fastener Tightening Specifications: Refer to Fastener Tightening Specifications .

Preliminary Procedures

1. Position the window about half way down in the door.
2. Remove the interior trim panel. Refer to Front Side Door Trim Panel Replacement .
3. Remove the water deflector. Refer to Front Side Door Water Deflector Replacement .
4. Remove the side door window outer sealing strip. Refer to Front Side Door Window Outer Sealing Strip Replacement

1	Bolt, Front Side Door Window to Regulator (Qty: 2) Tip: Tilt the window inward and remove through the outside of the side door window opening. Tighten: 10 N.m (89 lb in)
2	Window, Front Door Body Side

REAR SIDE DOOR WINDOW REPLACEMENT

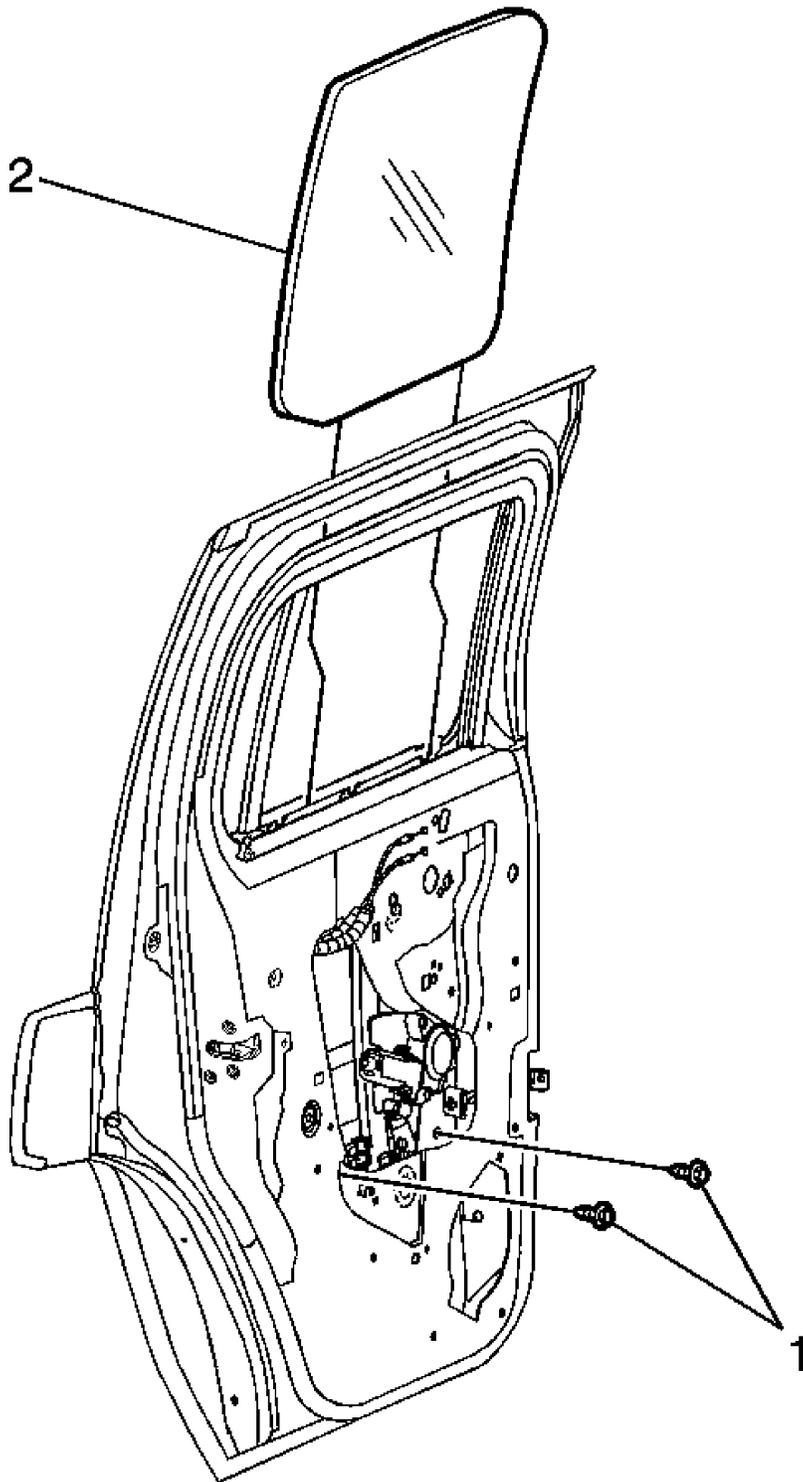


Fig. 31: Window Replacement - Rear Door
Courtesy of GENERAL MOTORS CORP.

Rear Side Door Window Replacement

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Callout	Component Name
<p>NOTE: Refer to <u>Fastener Notice</u> .</p> <p>Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u> .</p> <p>Preliminary Procedures</p> <ol style="list-style-type: none">1. Position the window about half way down in the door.2. Remove the interior trim panel. Refer to <u>Rear Side Door Trim Panel Replacement</u> .3. Remove the water deflector. Refer to <u>Rear Side Door Water Deflector Replacement</u> .4. Remove the side door window outer sealing strip. Refer to <u>Rear Door Window Belt Outer Sealing Strip Replacement</u> .	
1	<p>Bolt, Rear Side Door Window to Regulator (Qty: 2)</p> <p>Tip: Tilt the window inward and remove through the outside of the side door window opening.</p> <p>Tighten: 10 N.m (89 lb in)</p>
2	Window, Rear Door Body Side

REAR SIDE DOOR STATIONARY WINDOW REPLACEMENT

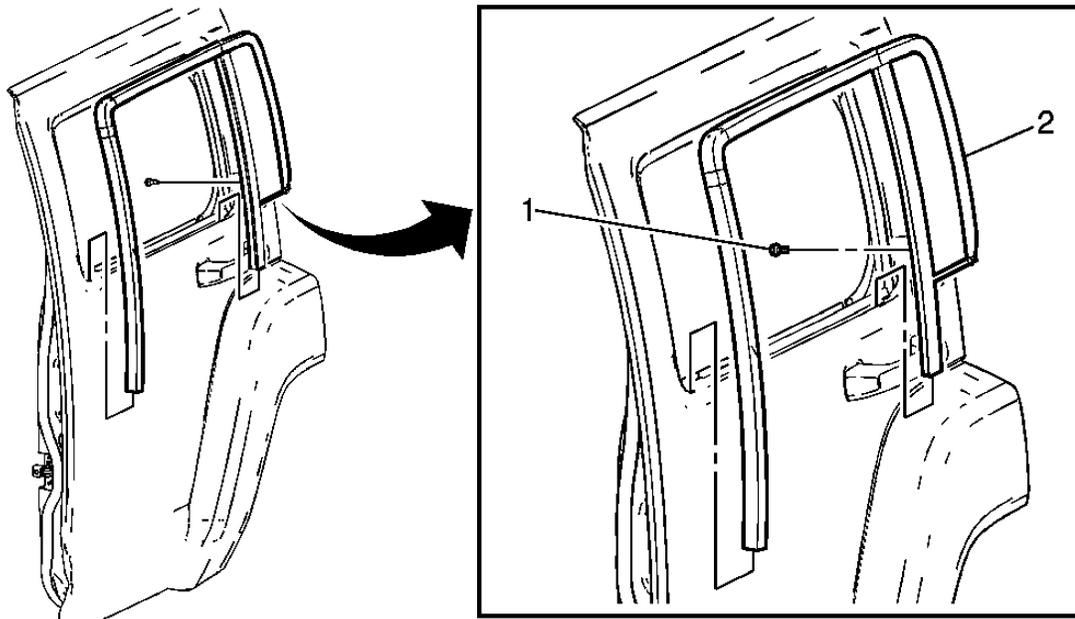


Fig. 32: Window Replacement - Rear Door Stationary
 Courtesy of GENERAL MOTORS CORP.

Rear Side Door Stationary Window Replacement

Callout	Component Name
NOTE:	
Refer to <u>Fastener Notice</u> .	
Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u> .	
Preliminary Procedures	
1. Remove the interior trim panel. Refer to <u>Rear Side Door Trim Panel Replacement</u> .	
2. Remove the water deflector. Refer to <u>Rear Side Door Water Deflector Replacement</u> .	
3. Remove the armrest bracket. Refer to <u>Armrest Bracket Replacement</u> .	
4. Remove the side door window outer sealing strip. Refer to <u>Rear Door Window Belt Outer Sealing Strip Replacement</u> .	
5. Remove the rear side door inner belt sealing strip. Refer to <u>Rear Door Window Belt Inner Sealing Strip Replacement</u> .	
6. Remove the rear window. Refer to <u>Rear Side Door Window Replacement</u> .	

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1	Bolt, Rear Side Door Stationary Window Tighten: 10 N.m (89 lb in)
2	Window, Rear Side Door Stationary Tip: Disengage the stationary window from the door window frame and remove.

QUARTER WINDOW REPLACEMENT

Tools Required

- **J 24402-A** Glass Sealant Remover (Cold Knife). See **Special Tools**.
- **J 39032** Stationary Glass Removal Tool. See **Special Tools**.
- **J 34940** Rivet Gun
- Urethane Adhesive Kit GM P/N 12346392 or Equivalent
- Isopropyl Alcohol or Equivalent
- Cartridge-type Caulking Gun
- Commercial-type Utility Knife
- Razor Blade Scraper
- Suction Cups
- Plastic Paddle

Removal Procedure

CAUTION: 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.

1. Apply a double layer of masking tape around the perimeter of the painted surfaces and the interior trim, to help prevent damage.

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

2. Cover to protect the following parts from broken glass as necessary:

The seats and carpeting

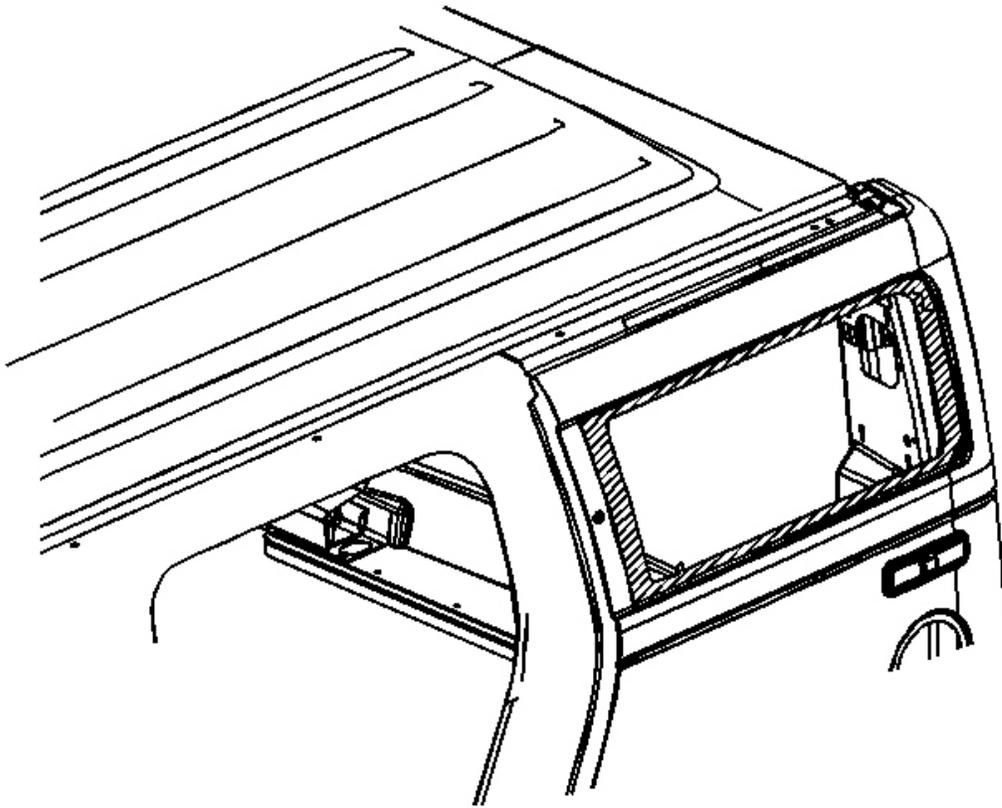


Fig. 33: View Of Quarter Window (SUV Body Side Quarter Window)
Courtesy of GENERAL MOTORS CORP.

CAUTION: Refer to Glass and Sheet Metal Handling Caution .

IMPORTANT: Keep the cutting edge of the tool against the quarter window.

3. This will allow the urethane adhesive to be separated from the quarter window.
 - Leave a base of urethane on the pinchweld flange.
 - The only suitable lubrication is clear water.
 - Use **J 24402-A** , **J 39032** or equivalent in order to remove the quarter window. See **Special Tools**.
4. If the locator pins were damaged during removal, they must be replaced.

5. With the aid of an assistant, use the suction cups to remove the window from the opening.

Installation Procedure

1. Install the quarter window into the opening. Refer to **Adhesive Installation of Stationary Windows**.

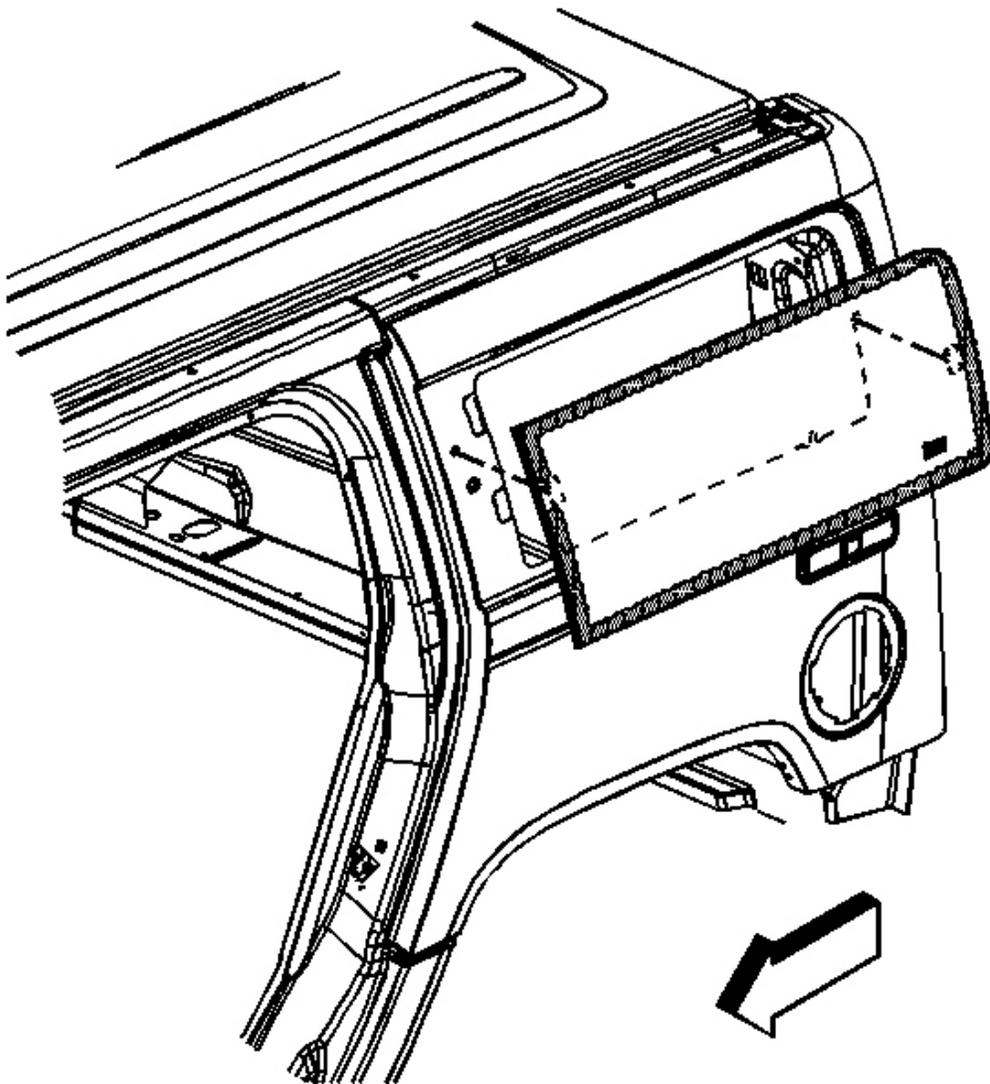


Fig. 34: Identifying Quarter Window (SUV Body Side Quarter Window)

Courtesy of GENERAL MOTORS CORP.

2. Insure the pinchweld is primed properly.
3. Remove the double layer of masking tape around the perimeter of the painted surfaces and the interior trim.

ENDGATE WINDOW REPLACEMENT

Tools Required

- **J 24402-A** Glass Sealant Remover (Cold Knife). See **Special Tools**.
- **J 39032** Stationary Glass Removal Tool. See **Special Tools**.
- Urethane Adhesive Kit GM P/N 12346392 or Equivalent
- Isopropyl Alcohol or Equivalent
- Cartridge-type Caulking Gun
- Commercial-type Utility Knife
- Razor Blade Scraper
- Suction Cups
- Plastic Paddle

Removal Procedure

1. Remove the spare tire. **Tire and Wheel Removal and Installation** .

CAUTION: 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.

2. Apply a double layer of masking tape around the perimeter of the painted surfaces and the interior trim, to help prevent damage.

CAUTION: Refer to Defroster Outlet Caution .

3. Cover to protect the following parts from broken glass as necessary:

The seats and carpeting

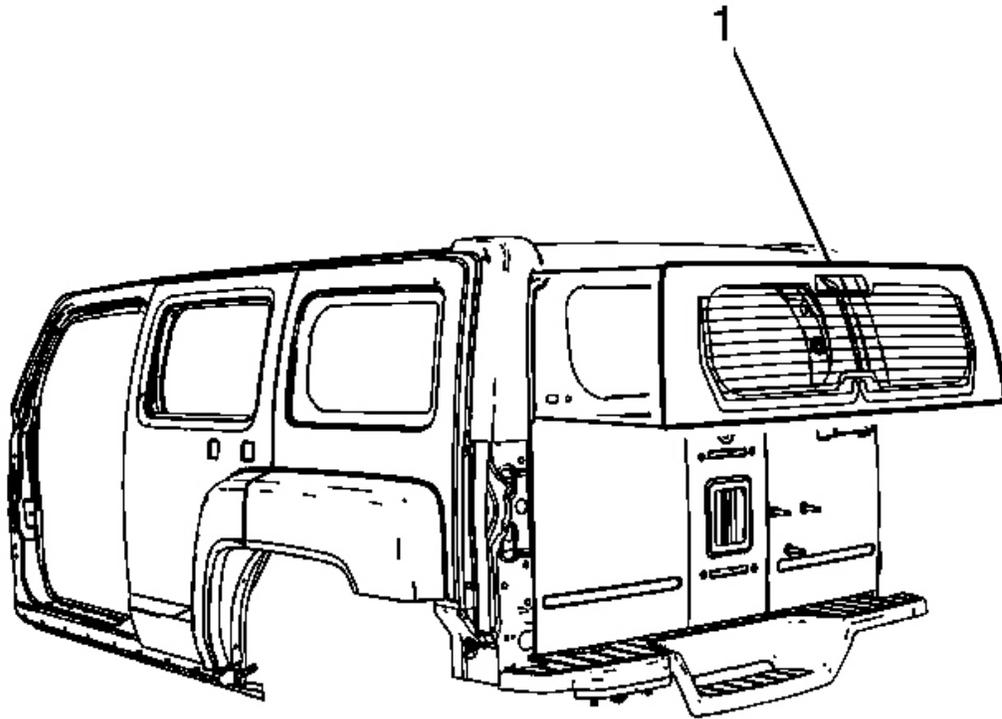


Fig. 35: View Of Endgate Window
Courtesy of GENERAL MOTORS CORP.

CAUTION: Refer to Glass and Sheet Metal Handling Caution .

IMPORTANT: Keep the cutting edge of the tool against the endgate window (1).

4. This will allow the urethane adhesive to be separated from the endgate window (1).
 - Leave a base of urethane on the pinchweld flange.
 - The only suitable lubrication is clear water.
 - Use **J 24402-A** , **J 39032** or equivalent in order to remove the endgate window (1). See **Special Tools**.
5. If the locator pins were damaged during removal, they must be replaced.
6. With the aid of an assistant, use the suction cups to remove the endgate window from the

opening.

Installation Procedure

1. Install the endgate window into the opening. Refer to **Adhesive Installation of Stationary Windows**.

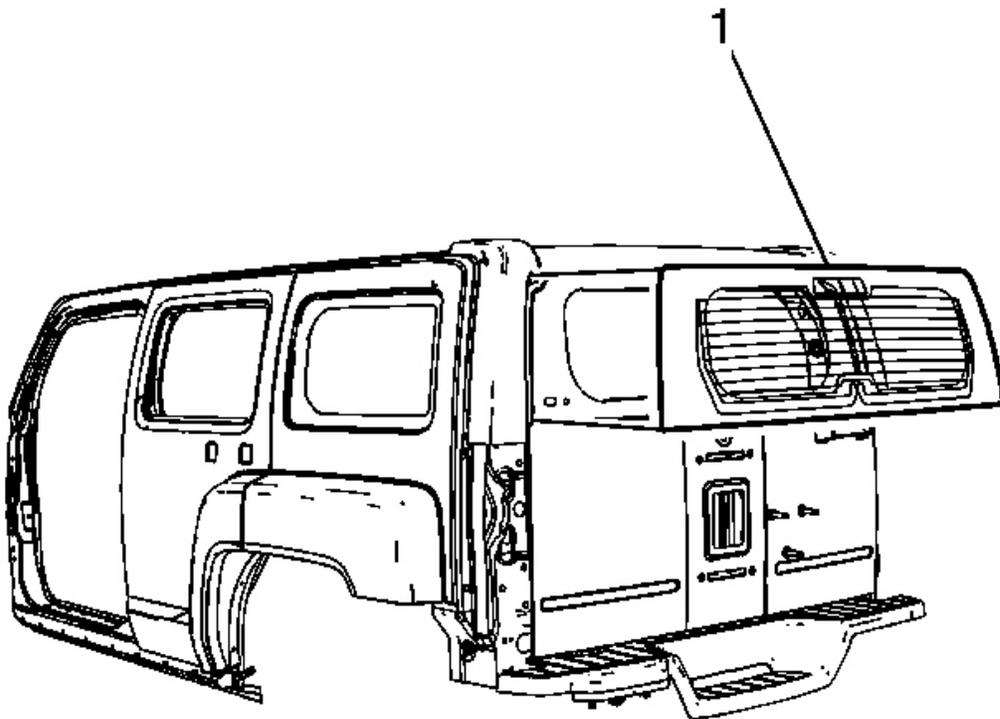


Fig. 36: View Of Endgate Window
Courtesy of GENERAL MOTORS CORP.

2. Insure the pinchweld is primed properly.
3. Remove the double layer of masking tape around the perimeter of the painted surfaces and the interior trim.

FRONT SIDE DOOR WINDOW CHANNEL REPLACEMENT

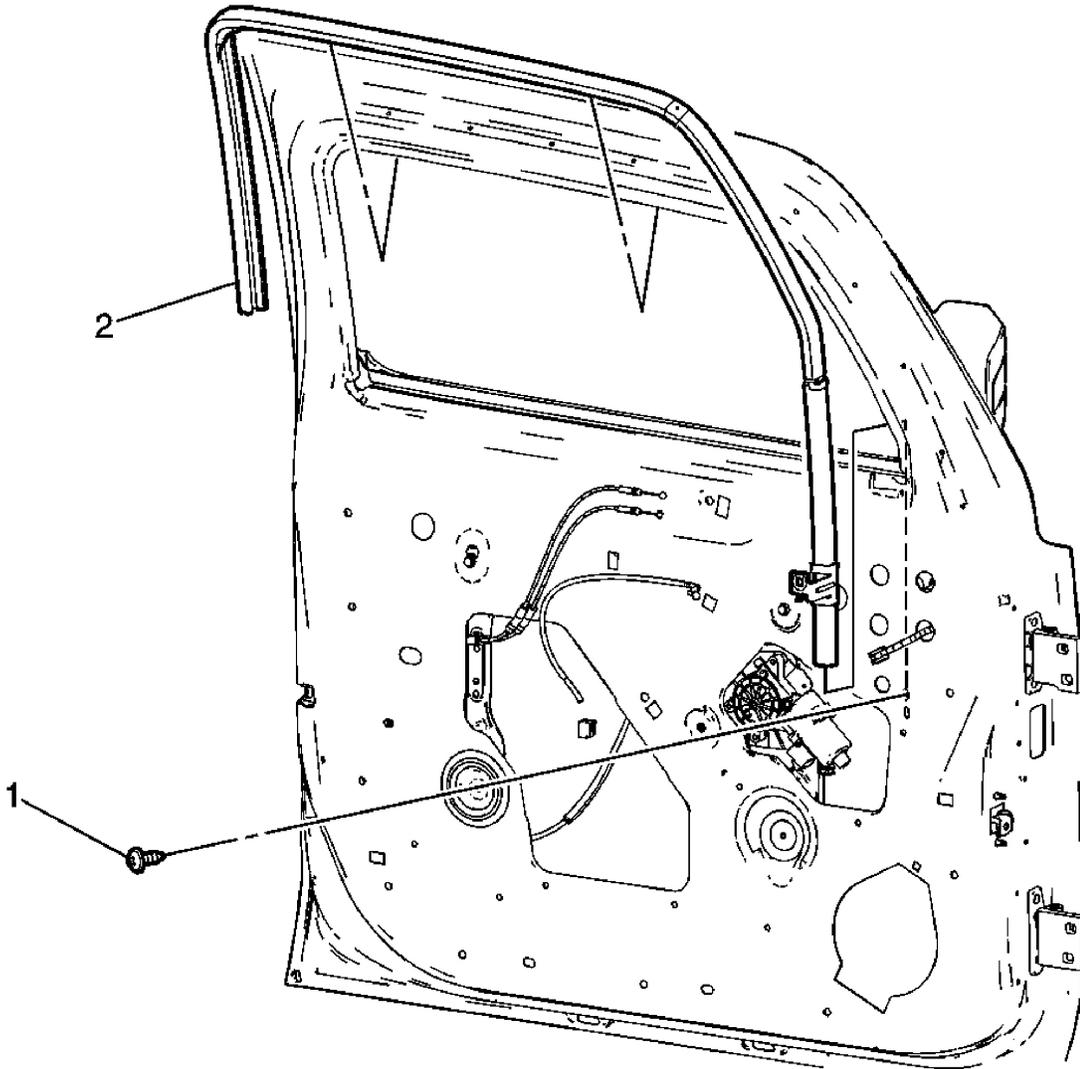


Fig. 37: Window Weatherstrip Run Channel Assembly Replacement - Front
 Courtesy of GENERAL MOTORS CORP.

Front Side Door Window Channel Replacement

Callout	Component Name
<p>NOTE:</p>	
<p>Refer to <u>Fastener Notice</u> .</p>	
<p>Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u>.</p>	
<p>Preliminary Procedures</p>	
<p>1. Remove the interior trim panel. Refer to Front Side Door Trim Panel</p>	

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Replacement .

2. Remove the water deflector. Refer to **Front Side Door Water Deflector Replacement** .
3. Remove the front side door window. Refer to **Front Side Door Window Replacement**.

1	Bolt, Front Side Door Window Weatherstrip Run Channel Tighten: 10 N.m (89 lb in)
2	Weatherstrip Run Channel, Front Door Window Tip: Pull the weatherstrip run channel down from the window frame then up to remove it from the door.

STATIONARY WINDOW REVEAL MOLDING REPAIR

Removal Procedure

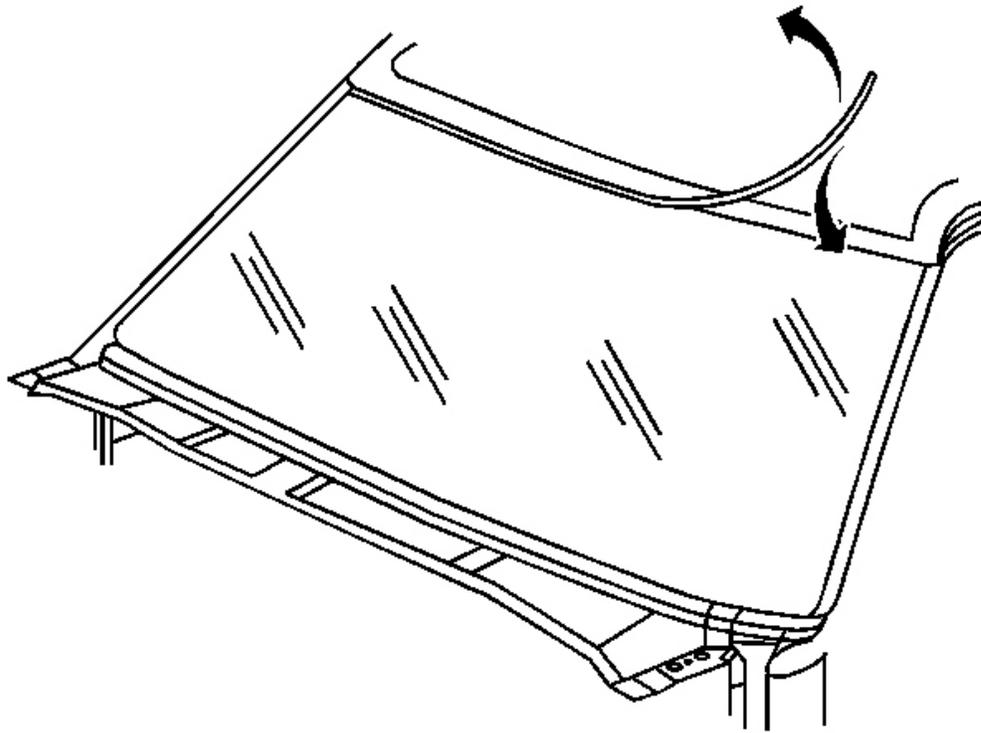


Fig. 38: Identifying Reveal Molding
Courtesy of GENERAL MOTORS CORP.

CAUTION: Refer to Glass and Sheet Metal Handling Caution.

IMPORTANT: The window reveal molding fills the cavity between the body and window. If the reveal molding is stretched or damaged, it cannot be reused and it must be replaced.

1. Lift up on the loose area of the reveal molding.
2. Clean the top edge of the window surface and the reveal molding with a 50/50 mixture of

isopropyl alcohol and water by volume on a dampened lint-free cloth.

Installation Procedure

CAUTION: Refer to Window Retention Caution .

1. Verify all primers and urethane adhesive are within expiration dates.

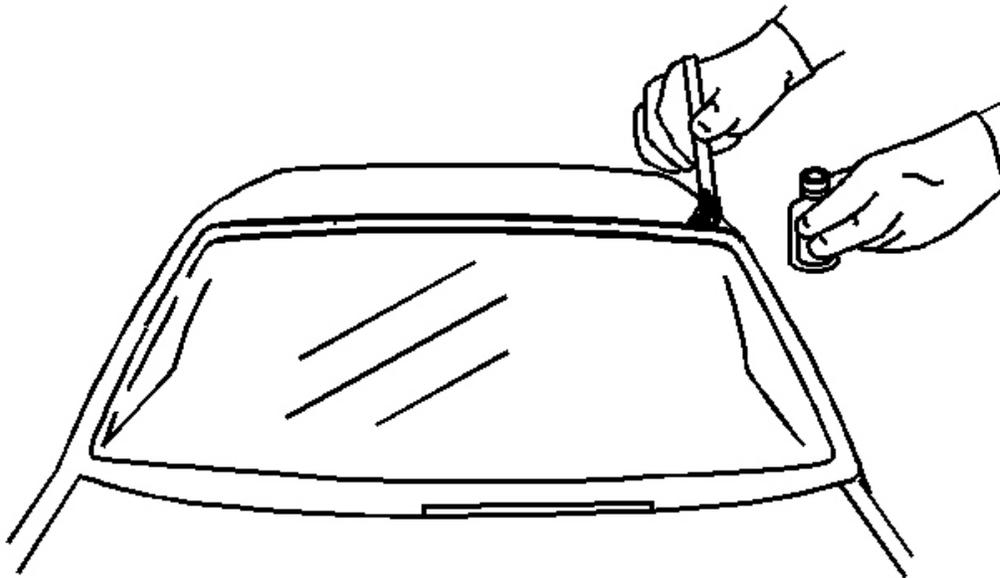


Fig. 39: Applying Glass Prep
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Use care when applying the prep, clear #1, to the window. This primer dries almost instantly and may stain the viewing area of the window if not applied evenly.

2. Use a new dauber in order to apply glass prep, clear #1, to the channel area approximately 13 mm (1/2 in) to the upper edge of the window.
3. Wipe the glass primed area immediately with a clean lint-free cloth.
4. Shake the glass primer, black #2, for at least 1 minute.

5. Use a new dauber in order to apply glass primer, black #2, to the top edge of the window.

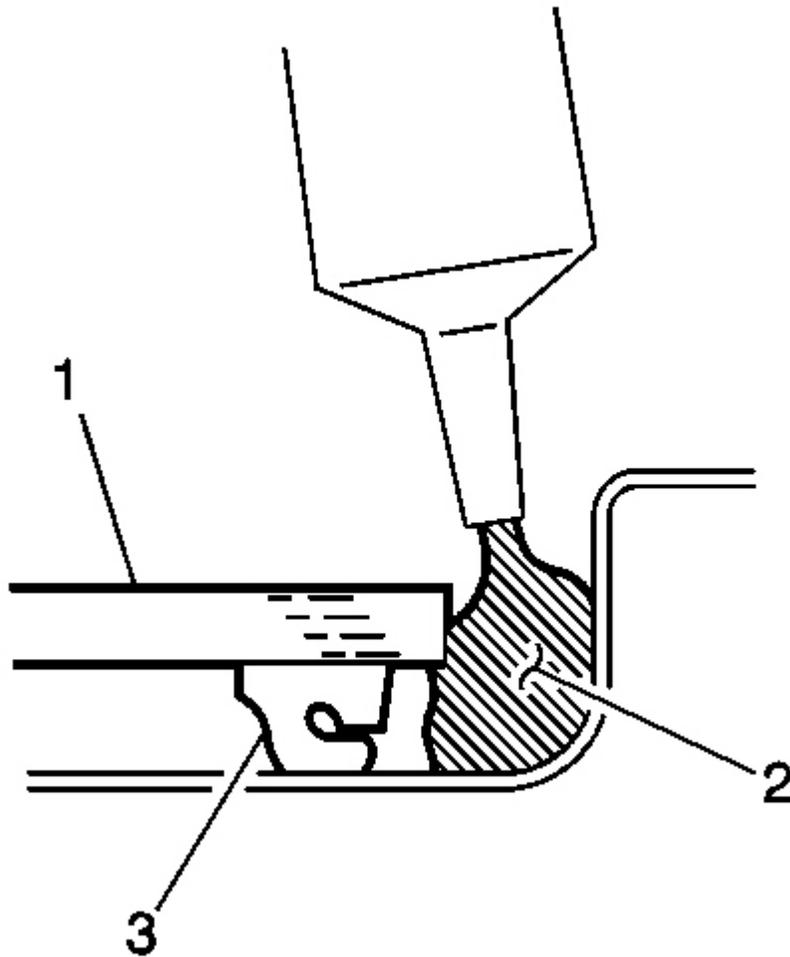


Fig. 40: Applying Urethane Adhesive Between Window & Pinch-Weld
Courtesy of GENERAL MOTORS CORP.

6. Apply a small bead of urethane adhesive (2) between the window (1) and the pinch-weld.

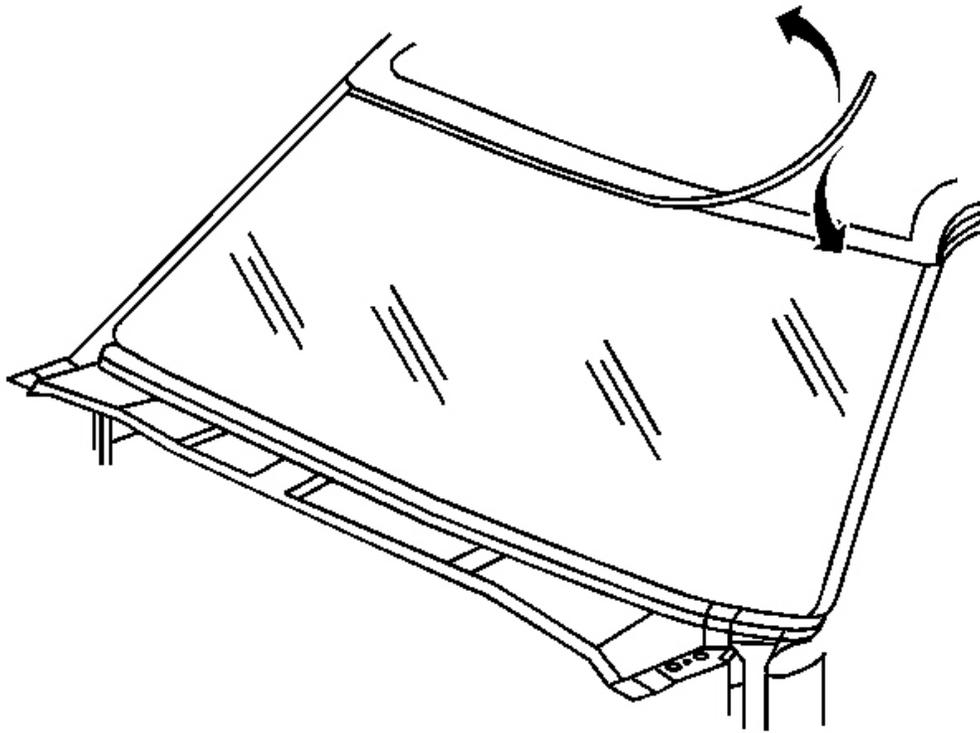


Fig. 41: Identifying Reveal Molding
Courtesy of GENERAL MOTORS CORP.

7. Reinstall the window reveal molding.
 1. Start from the loose area and hand-press the reveal molding into place over the edge of the window.
 2. Run warm water over the reveal molding in order to speed the setup time of the urethane adhesive.
 3. Tape should be applied in order to retain the reveal molding to the window. This will maintain a flush fit with the body.
 4. The tape is to be removed after 6 hours.

FRONT SIDE DOOR WINDOW MODULE REPLACEMENT

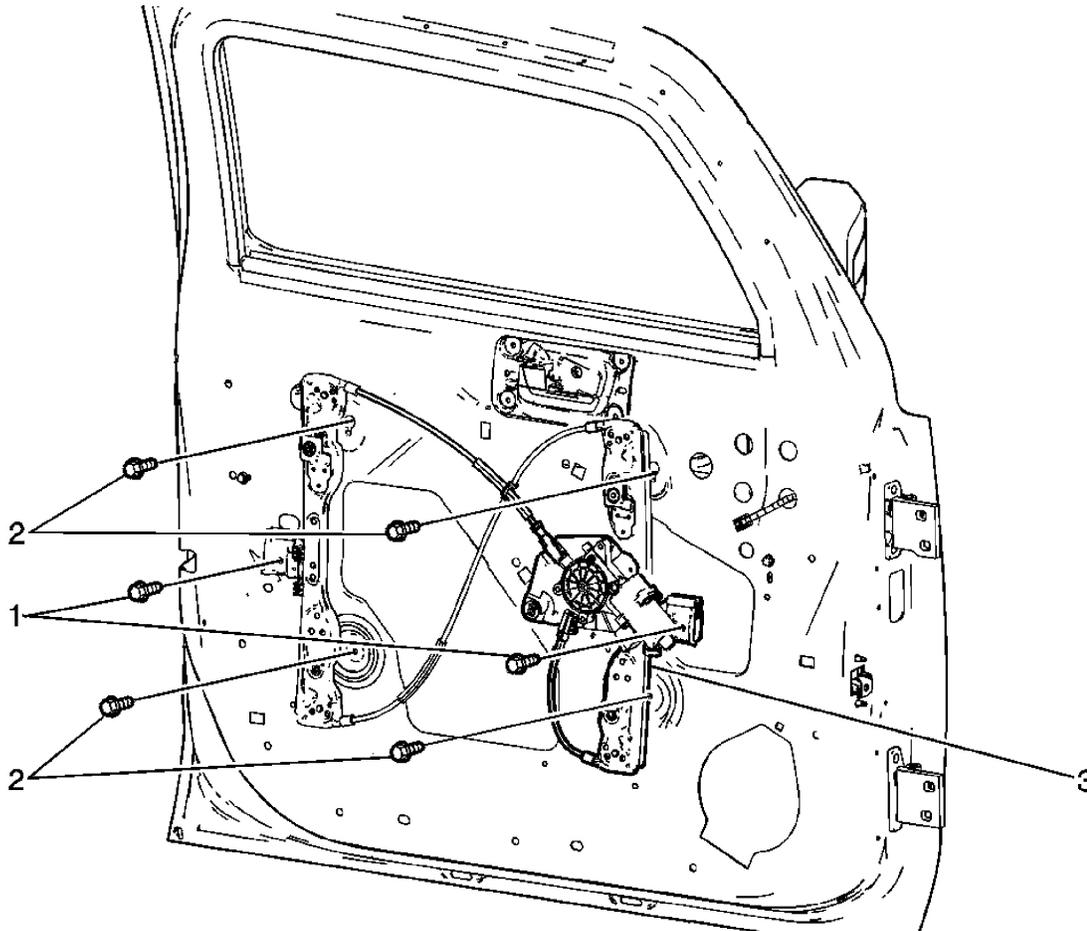


Fig. 42: Module Replacement - Front Power Window
 Courtesy of GENERAL MOTORS CORP.

Front Side Door Window Module Replacement

Callout	Component Name
<p>NOTE: Refer to <u>Fastener Notice</u> .</p>	
<p>Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u> .</p>	
<p>Preliminary Procedures</p>	
<p>1. Remove the interior trim panel. Refer to <u>Front Side Door Trim Panel Replacement</u> .</p>	

2. Remove the water deflector. Refer to **Front Side Door Water Deflector Replacement** .
3. Move the window to the full up position and secure in place with tape.

1	Bolt, Front Side Door Window to Regulator (Qty: 2) Tighten: 10 N.m (89 lb in)
2	Bolt, Front Side Door Window Regulator (Qty: 4) Tighten: 10 N.m (89 lb in)
3	Regulator Assembly, Front Side Door Window Tip: Disconnect the electrical connector.

REAR SIDE DOOR WINDOW MODULE REPLACEMENT

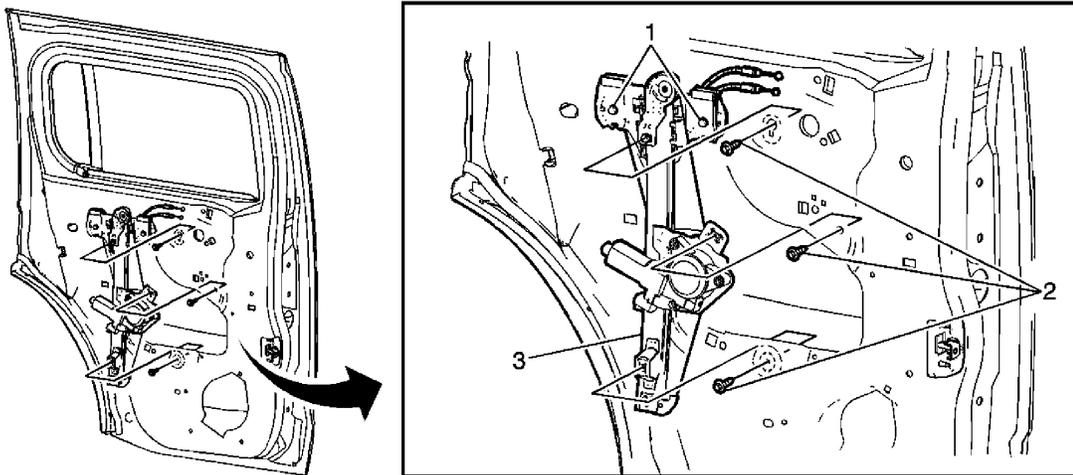


Fig. 43: Module Replacement - Rear Power Window
Courtesy of GENERAL MOTORS CORP.

Rear Side Door Window Module Replacement

Callout	Component Name
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NOTE:
Refer to **Fastener Notice** .

Fastener Tightening Specifications: Refer to **Fastener Tightening Specifications** .

Preliminary Procedures

1. Move the window to the full up position and secure in place with tape.
2. Remove the interior trim panel. Refer to **Rear Side Door Trim Panel Replacement** .
3. Remove the water deflector. Refer to **Rear Side Door Water Deflector Replacement** .
4. Remove the armrest bracket. Refer to **Armrest Bracket Replacement** .

1	Bolt, Rear Side Door Window to Regulator (Qty: 2) Tighten: 10 N.m (89 lb in)
2	Bolt, Rear Side Door Window Regulator (Qty: 3) Tighten: 10 N.m (89 lb in)
3	Regulator Assembly, Rear Side Door Window Tip: Disconnect the electrical connector.

REAR SIDE DOOR WINDOW SWITCH REPLACEMENT

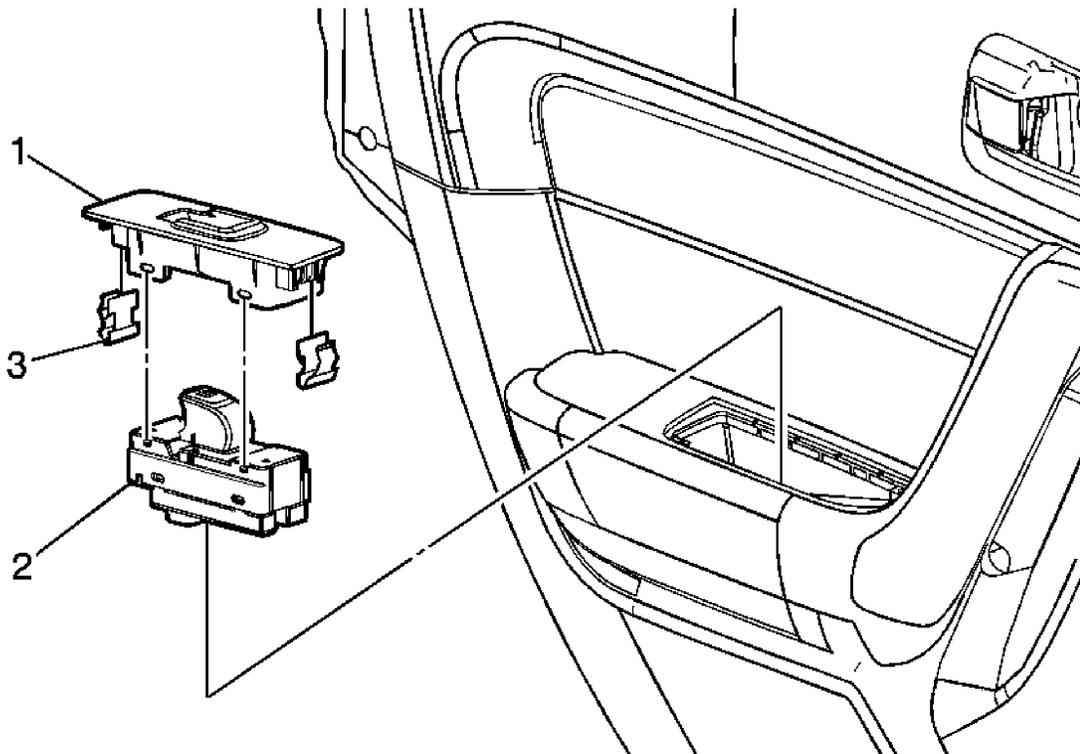


Fig. 44: Power Window Switch Replacement - Rear Door
 Courtesy of GENERAL MOTORS CORP.

Rear Side Door Window Switch Replacement

Callout	Component Name
Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u>.	
1	Plate Assembly, Rear Side Door Accessory Switch Mount
2	Switch Assembly, Front Side Door Accessory
3	Clip, Switch Assembly Rear Side Door Accessory

FRONT SIDE DOOR WINDOW REGULATOR MOTOR REPLACEMENT

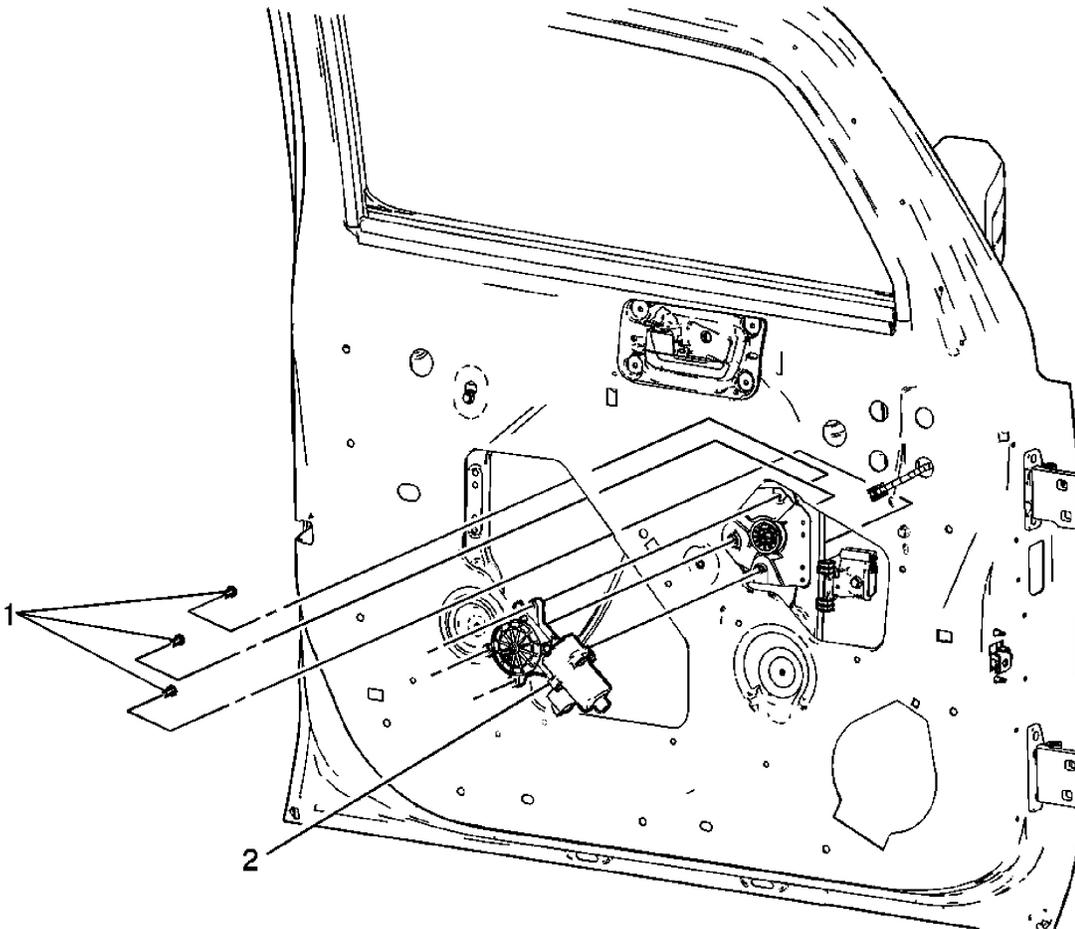


Fig. 45: Window Regulator Motor Replacement - Front Door
 Courtesy of GENERAL MOTORS CORP.

Front Side Door Window Regulator Motor Replacement

Callout	Component Name
NOTE:	

Refer to Fastener Notice .

Fastener Tightening Specifications: Refer to Fastener Tightening Specifications .

Preliminary Procedures

1. Remove the interior trim panel. Refer to Front Side Door Trim Panel Replacement .
2. Remove the water deflector. Refer to Front Side Door Water Deflector Replacement .

1	Bolt, Front Side Door Window Regulator Motor (Qty: 3) Tighten: 10 N.m (89 lb in)
2	Motor, Front Side Door Window Tip: Disconnect the electrical connector.

REAR SIDE DOOR WINDOW REGULATOR MOTOR REPLACEMENT

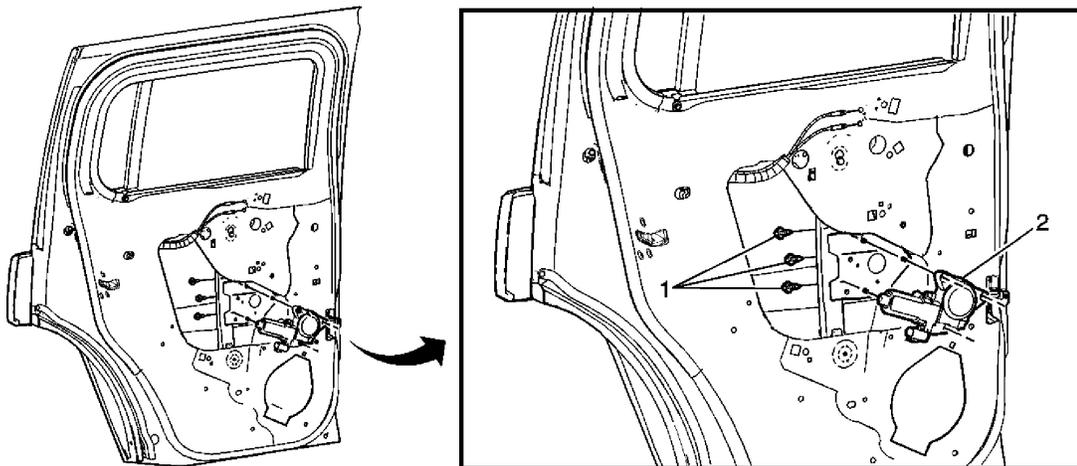


Fig. 46: Window Regulator Motor Replacement - Rear Door
Courtesy of GENERAL MOTORS CORP.

Rear Side Door Window Regulator Motor Replacement

Callout	Component Name
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NOTE:
Refer to Fastener Notice .

Fastener Tightening Specifications: Refer to **Fastener Tightening Specifications** .

Preliminary Procedures

1. Remove the interior trim panel. Refer to **Rear Side Door Trim Panel Replacement** .
2. Remove the water deflector. Refer to **Rear Side Door Water Deflector Replacement** .
3. Remove the armrest bracket. Refer to **Armrest Bracket Replacement** .

1	Bolt, Rear Side Door Window Regulator Motor (Qty: 3) Tighten: 10 N.m (89 lb in)
2	Motor, Rear Side Door Window Tip: Disconnect the electrical connector.

FRONT SIDE DOOR WINDOW OUTER SEALING STRIP REPLACEMENT

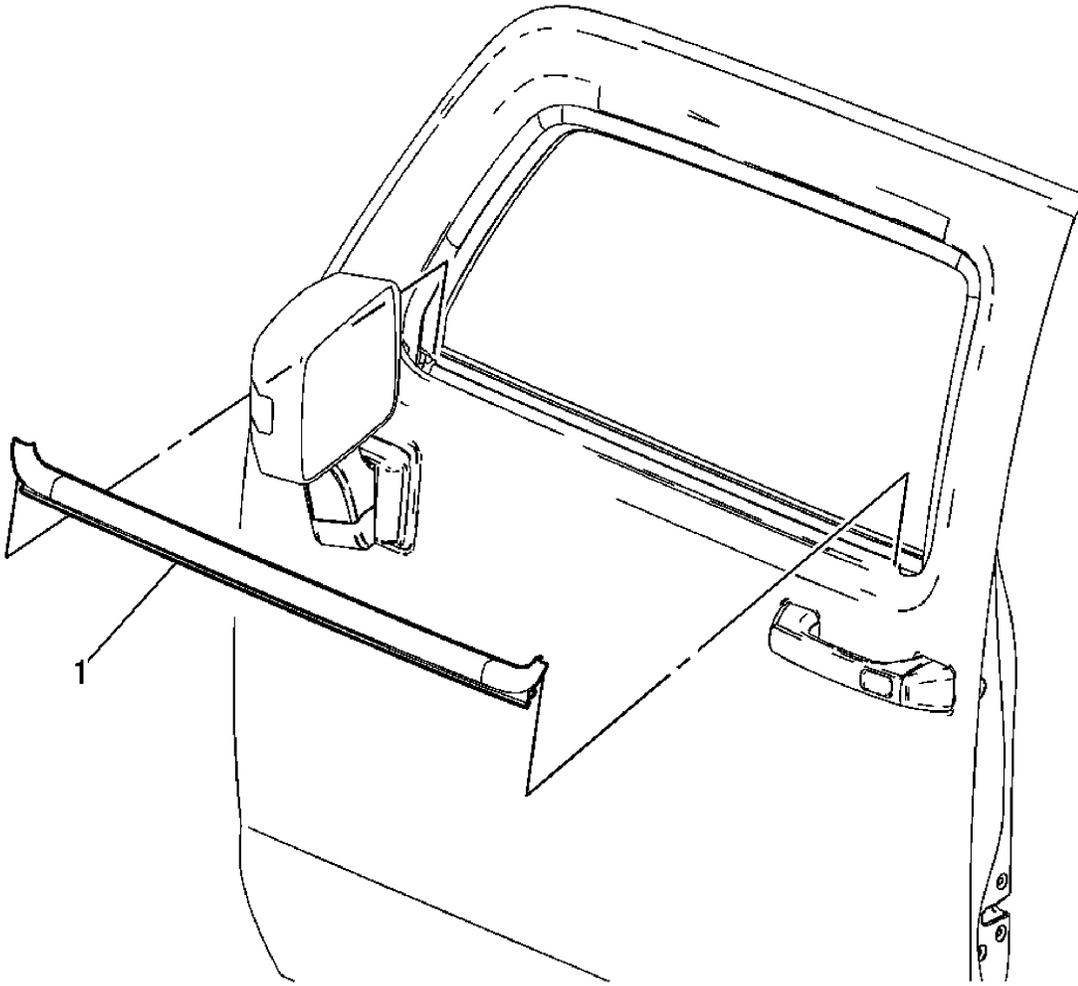


Fig. 47: Sealing Strip Replacement - Front Door Window Belt Outer
 Courtesy of GENERAL MOTORS CORP.

Front Side Door Window Outer Sealing Strip Replacement

Callout	Component Name
Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u>	
1	Sealing Strip, Front Door Window Belt Outer Tip: <ol style="list-style-type: none"> 1. Place the window in the full down position to remove the outer belt sealing strip. 2. Pull the sealing strip from the door flange to remove.

FRONT SIDE DOOR WINDOW BELT INNER SEALING STRIP REPLACEMENT

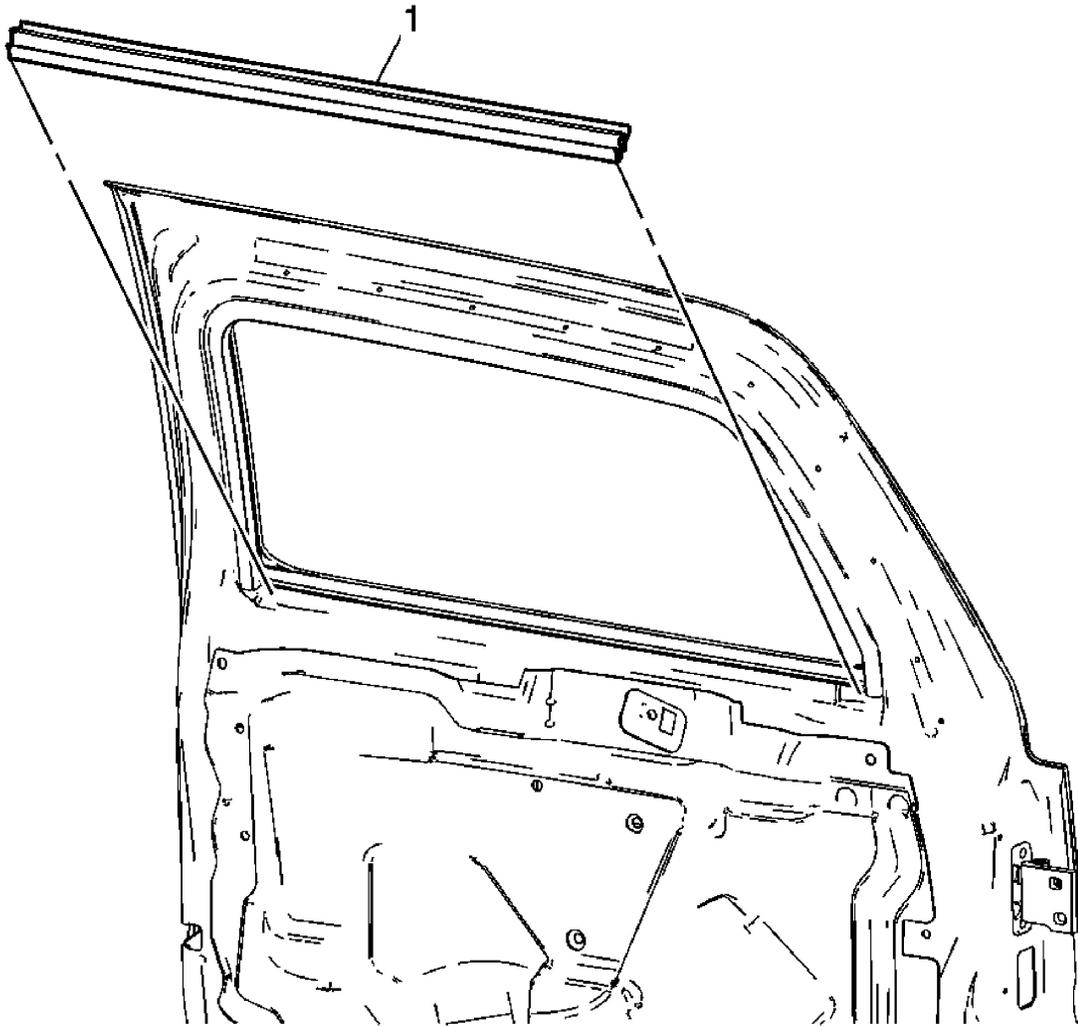


Fig. 48: Sealing Strip Replacement - Front Door Window Belt Inner
 Courtesy of GENERAL MOTORS CORP.

Front Side Door Window Belt Inner Sealing Strip Replacement

Callout	Component Name
Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u> .	
Preliminary Procedure:	
Remove the interior trim panel. Refer to <u>Front Side Door Trim Panel Replacement</u> .	
1	Sealing Strip, Front Door Window Inner Belt Tip: Pull up and away to remove the seal from the door.

REAR DOOR WINDOW BELT INNER SEALING STRIP REPLACEMENT

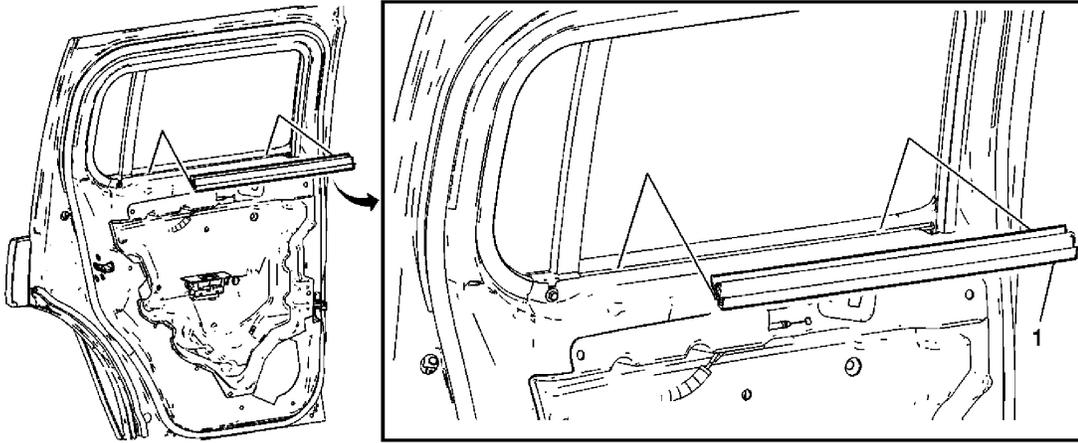


Fig. 49: Sealing Strip Replacement - Rear Door Window Belt Inner
 Courtesy of GENERAL MOTORS CORP.

Rear Door Window Belt Inner Sealing Strip Replacement

Callout	Component Name
Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u> .	
Preliminary Procedure:	
Remove the interior trim panel. Refer to <u>Rear Side Door Trim Panel Replacement</u> .	
1	Sealing Strip, Rear Door Window Inner Belt Tip: Pull up and away to remove the seal from the door flange.

REAR DOOR WINDOW BELT OUTER SEALING STRIP REPLACEMENT

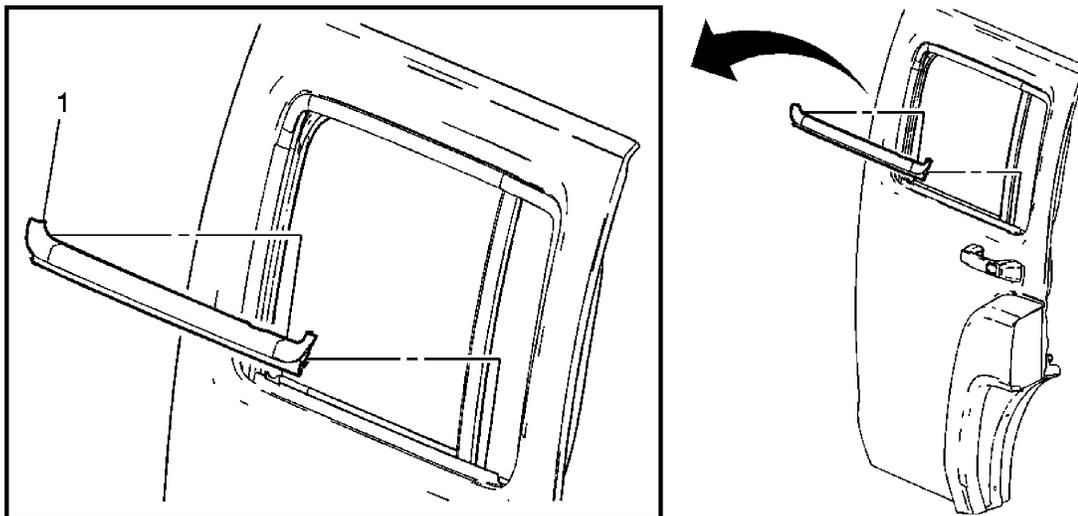


Fig. 50: Sealing Strip Replacement - Rear Door Window Belt Outer
Courtesy of GENERAL MOTORS CORP.

Rear Door Window Belt Outer Sealing Strip Replacement

Callout	Component Name
Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u> .	
1	Sealing Strip, Rear Door Window Belt Outer Tip: <ol style="list-style-type: none"> 1. Place the window in the full down position to remove the outer belt sealing strip. 2. Pull the sealing strip from the door flange to remove.

FRONT SIDE DOOR WINDOW INNER WEATHERSTRIP REPLACEMENT

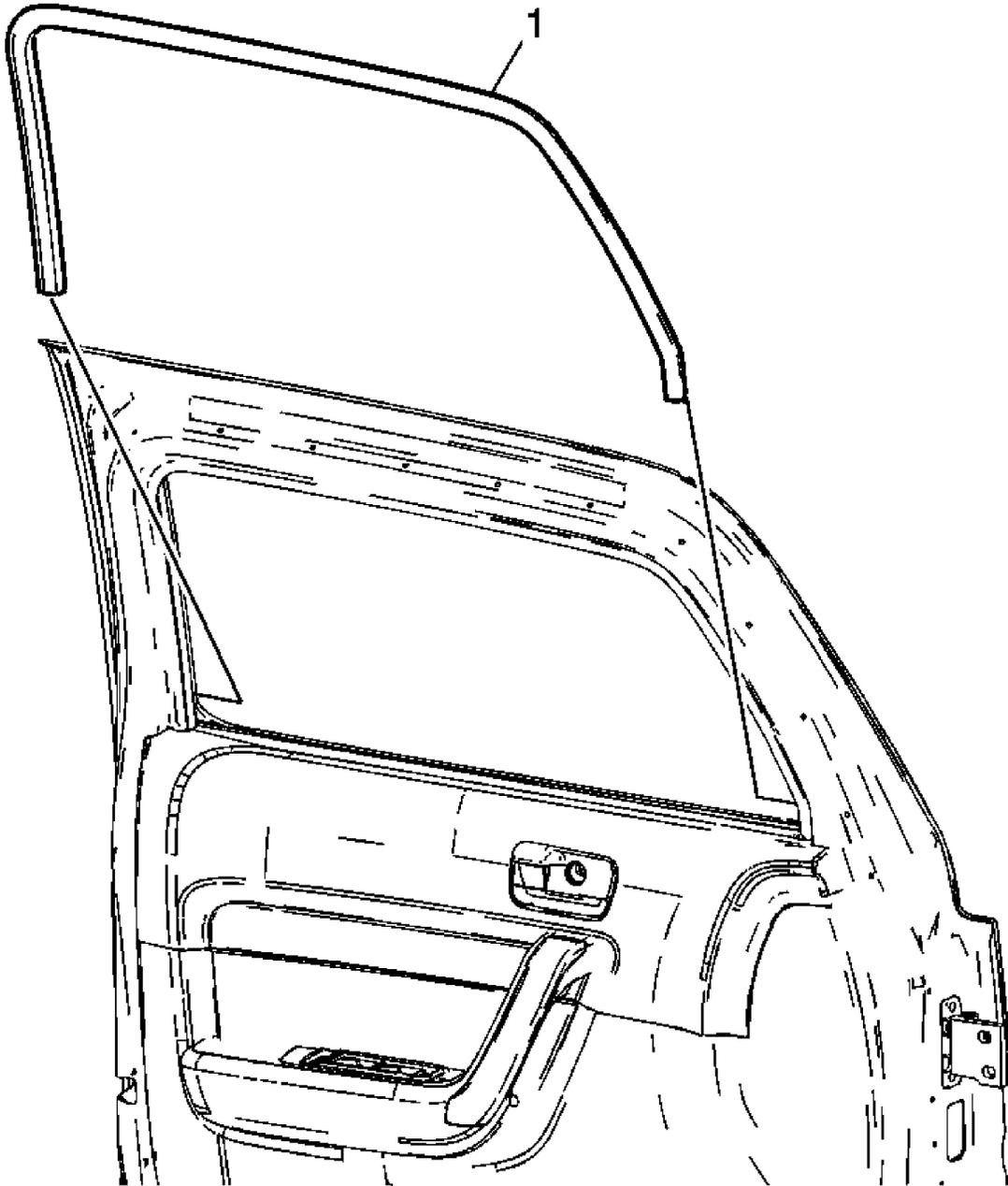


Fig. 51: Weatherstrip Replacement - Front Door Window - Inner
 Courtesy of GENERAL MOTORS CORP.

Front Side Door Window Inner Weatherstrip Replacement

Callout	Component Name
Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u> .	
	Weatherstrip, Front Door Window Inner Tip:

1

1. Place the window in the full down position to remove the weatherstrip.
2. Pull the weatherstrip from the window frame to remove.

REAR SIDE DOOR WINDOW INNER WEATHERSTRIP REPLACEMENT

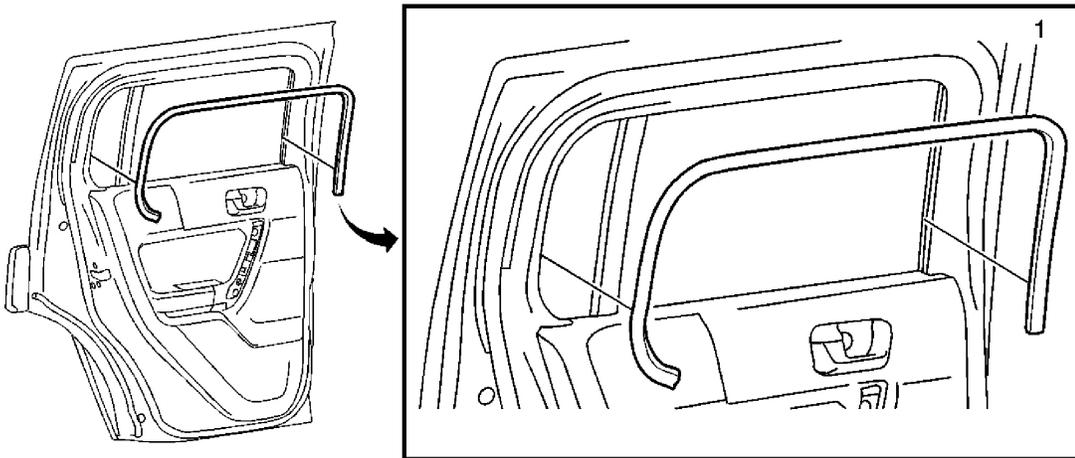


Fig. 52: Replacing Rear Door Window Inner Weatherstrip
 Courtesy of GENERAL MOTORS CORP.

Rear Side Door Window Inner Weatherstrip Replacement

Callout	Component Name
Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u> .	
1	Weatherstrip, Front Door Window Inner Tip: <ol style="list-style-type: none"> 1. Place the window in the full down position to remove the weatherstrip. 2. Pull the weatherstrip from the window frame to remove.

ADHESIVE INSTALLATION OF STATIONARY WINDOWS

CAUTION: Refer to Glass and Sheet Metal Handling Caution .

IMPORTANT: Remove all but approximately 2 mm (3/64 in) of the existing

bead of urethane adhesive from the pinch-weld flange.

1. Remove all mounds or loose pieces of urethane adhesive from the pinch-weld area.
2. If the original window is being reused, remove all but a thin film of the existing urethane adhesive from the window surface by using a clean utility knife or razor blade scraper.
3. Inspect the following components for the causes of a broken window:
 - The flange of the window opening
 - The window reveal molding
4. Inspect for any of the following problems in order to help prevent future breakage of the window:
 - High weld
 - Solder spots
 - Hardened sealer
 - Any other obstruction or irregularity in the pinch-weld flange

IMPORTANT: 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.

CAUTION: Refer to Window Retention Caution.

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

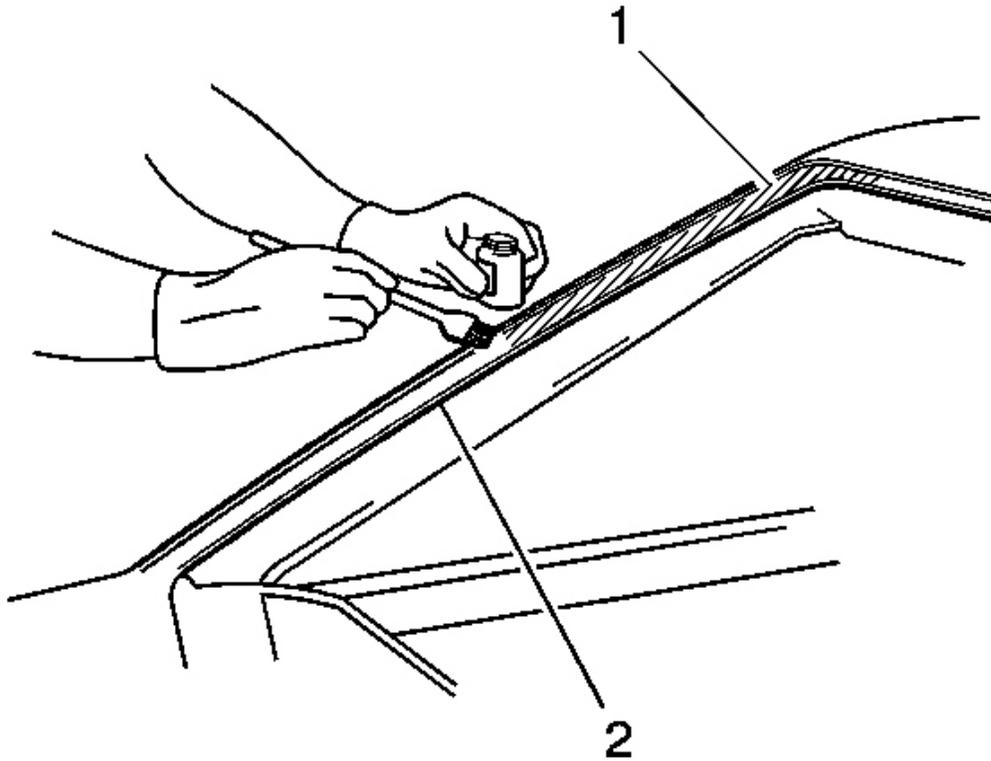


Fig. 53: Applying Pinch-Weld Primer
Courtesy of GENERAL MOTORS CORP.

CAUTION: Refer to Failure to Prep Primer Caution .

IMPORTANT: 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.

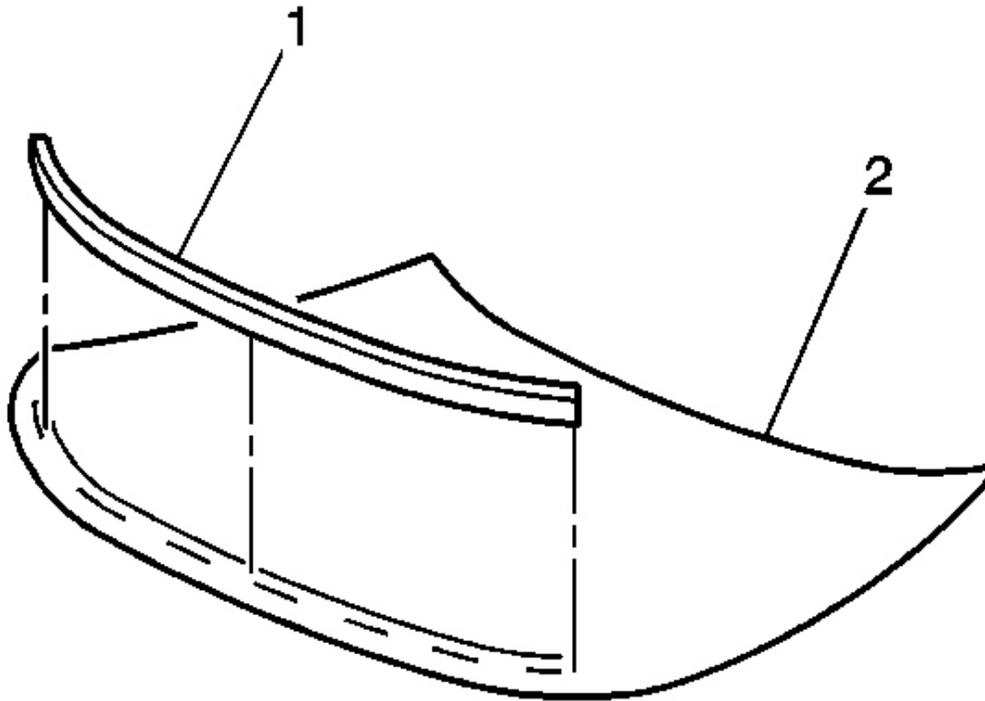


Fig. 54: Identifying Windshield Acoustic Strip
Courtesy of GENERAL MOTORS CORP.

10. Install the new windshield acoustic strip (1) to the windshield (2), if equipped or damaged.
The acoustic strip aids in reducing noise.
11. If the original windshield is being reused and the windshield reveal molding is damaged or becomes detached, replace the windshield reveal molding. Refer to **Windshield Reveal Molding Replacement**.

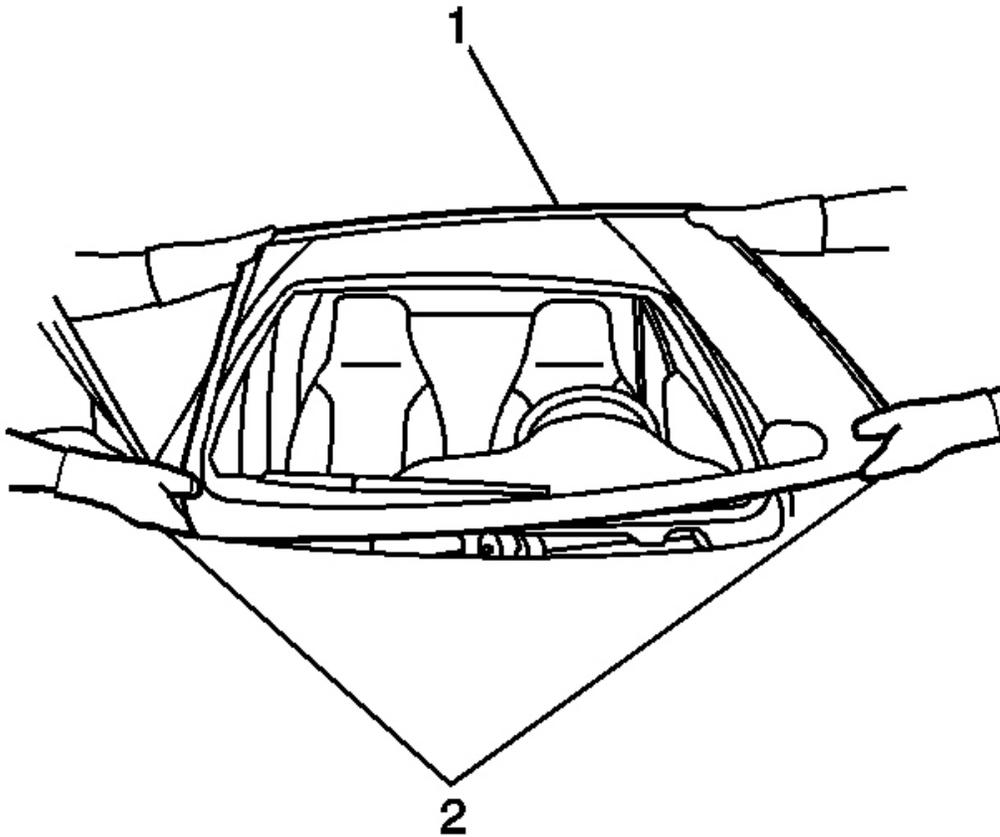


Fig. 55: Removing/Installing Windshield
Courtesy of GENERAL MOTORS CORP.

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

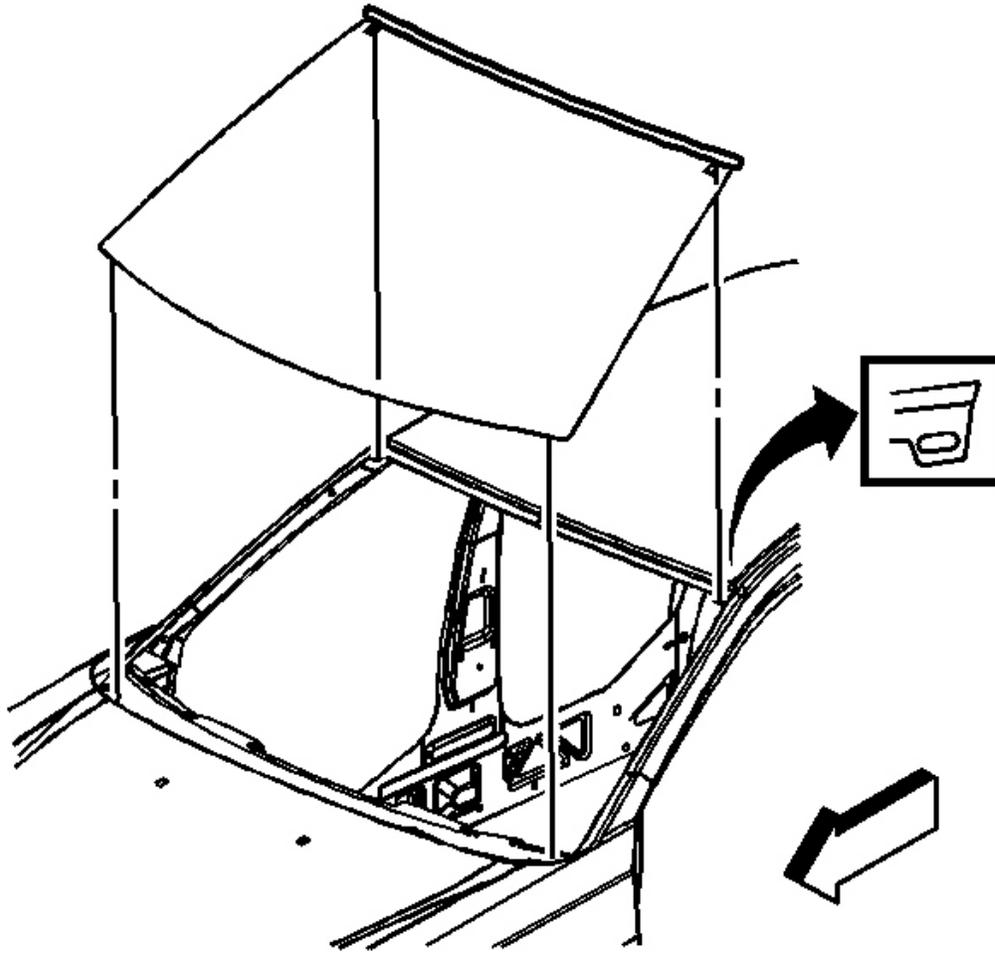


Fig. 56: Identifying Upper Sheet Metal Window Slots
Courtesy of GENERAL MOTORS CORP.

13. If equipped, ensure that the windshield locator pins are positioned into the locator slots on the upper pinch-weld flange.

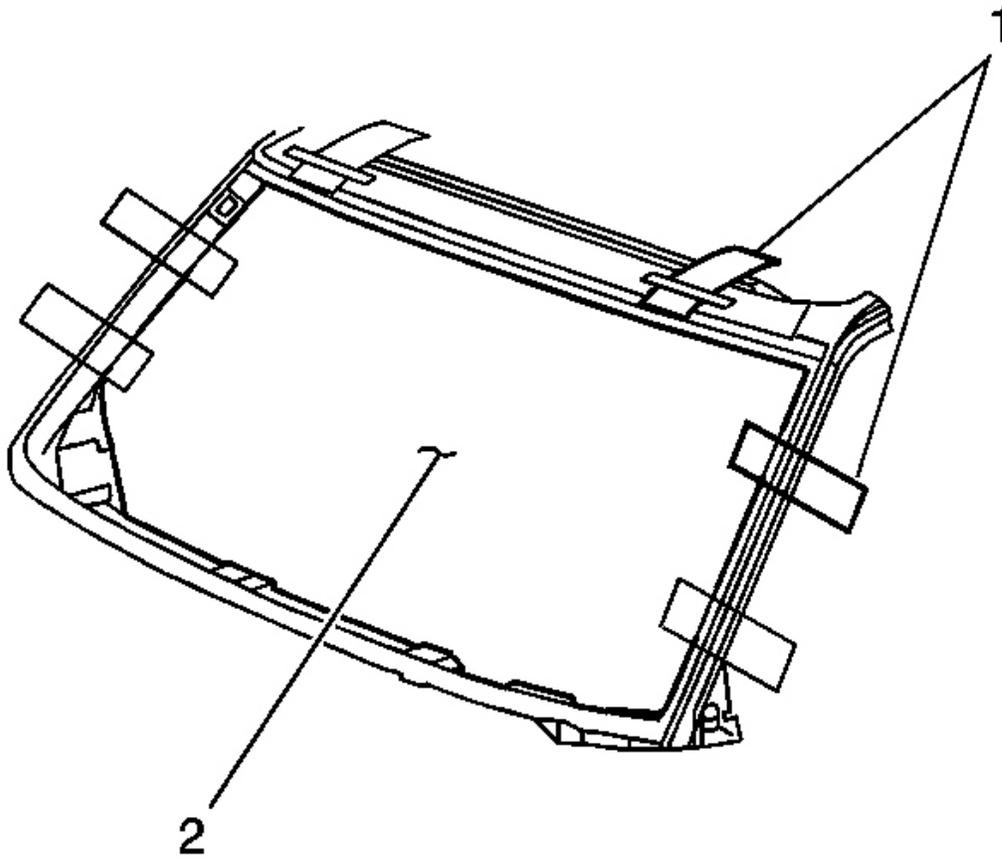


Fig. 57: Aligning Tape Lines On Window To Body
Courtesy of GENERAL MOTORS CORP.

14. Using masking tape in order to mark the locations (1) of the window (2) in the opening.
15. Cut the masking tape in the center and remove the window from the opening.

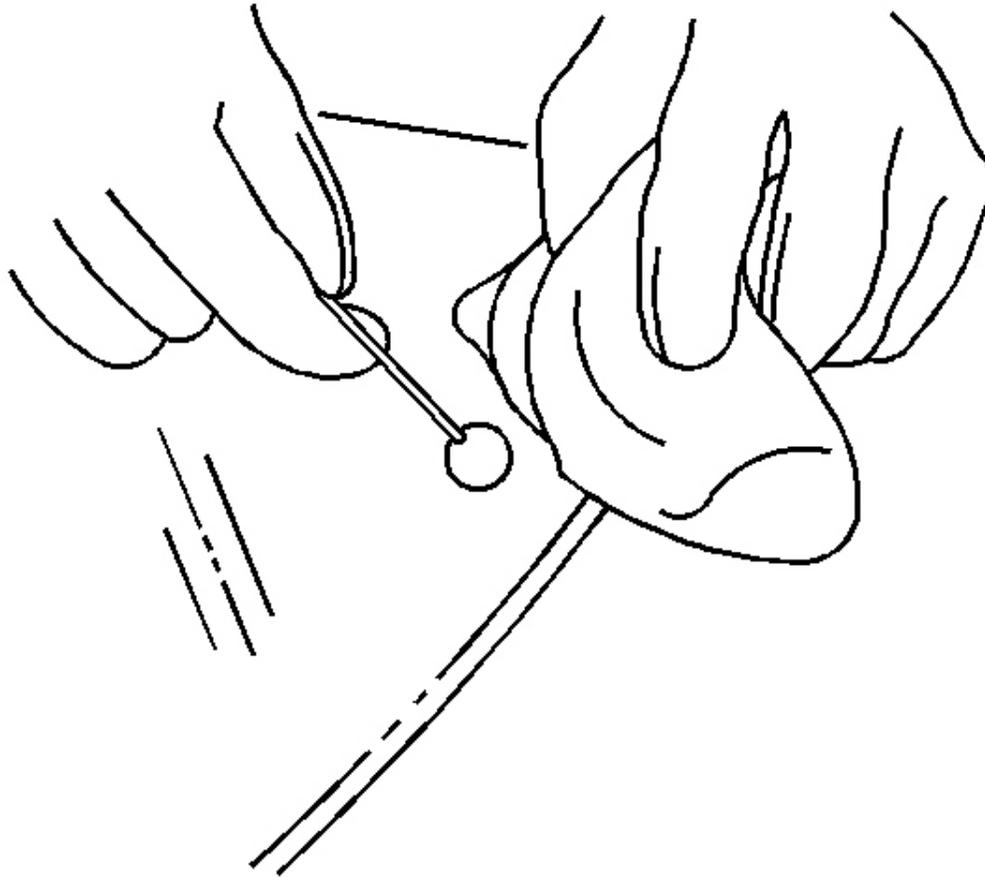


Fig. 58: Applying Glass Prep
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Use care when applying glass prep clear #1 on the window. This primer dries almost instantly and may stain the viewing area of the window if not applied evenly.

16. Use a new dauber in order to apply glass prep clear #1 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.

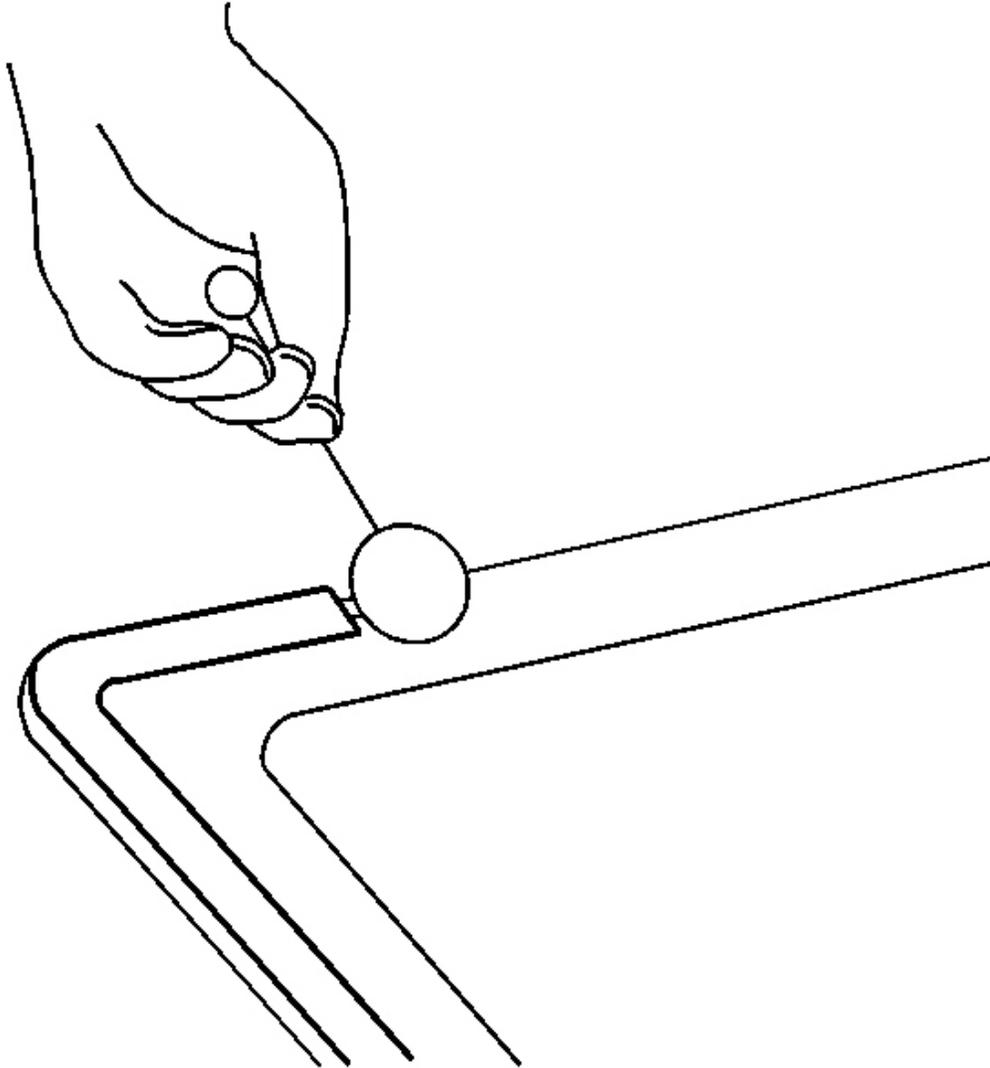


Fig. 59: Applying Glass Prep
Courtesy of GENERAL MOTORS CORP.

17. Apply a second coat of the glass prep clear #1 to the same area of the glass.

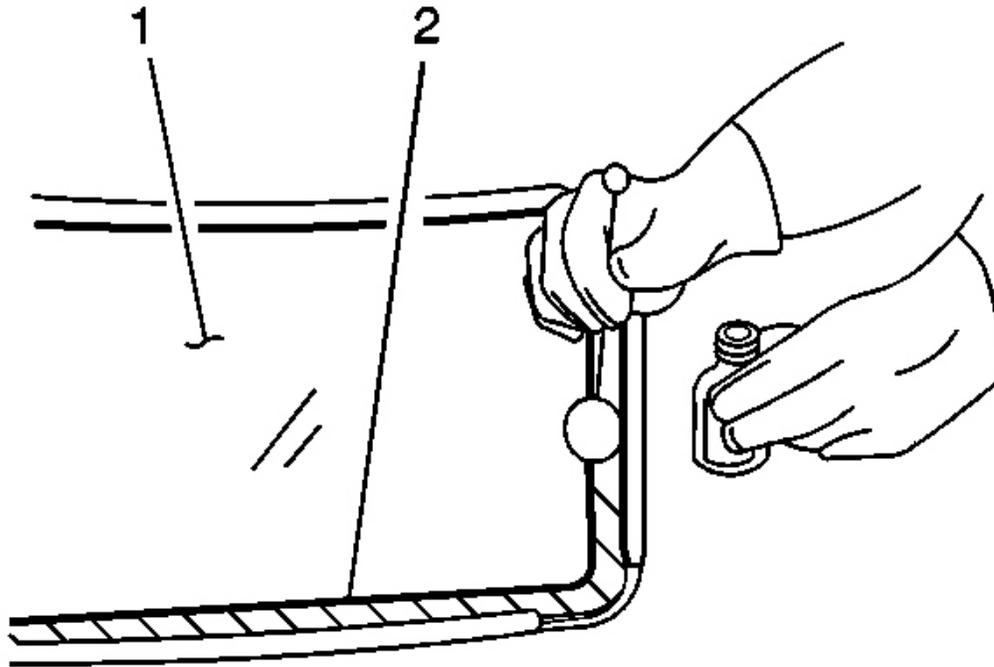


Fig. 60: Applying Glass Primer
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: The glass primer black #2 is effective up to 8 hours after applying it to the glass. The primed surface of the glass must be kept clean.

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

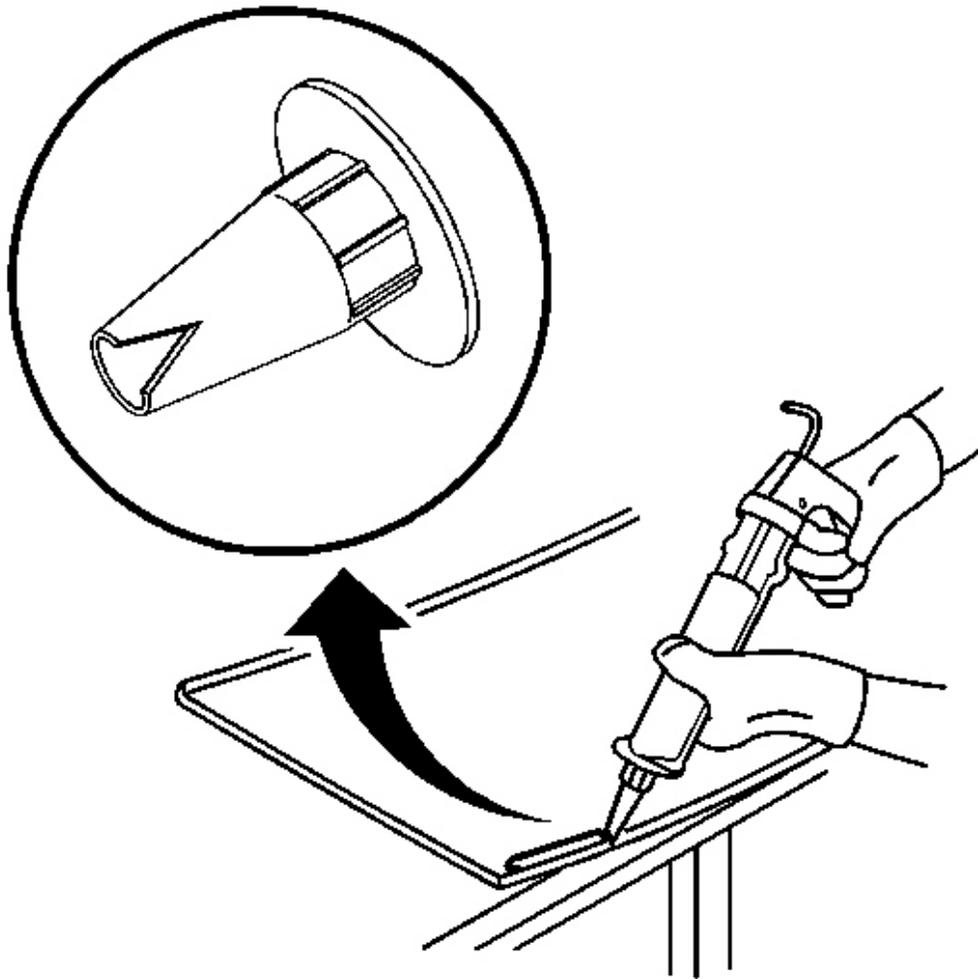


Fig. 61: View Of Modified Applicator Nozzle
Courtesy of GENERAL MOTORS CORP.

21. Cut the applicator nozzle in order to provide a minimum urethane bead of 8 mm (0.31 in) wide and 14 mm (0.60 in) high.

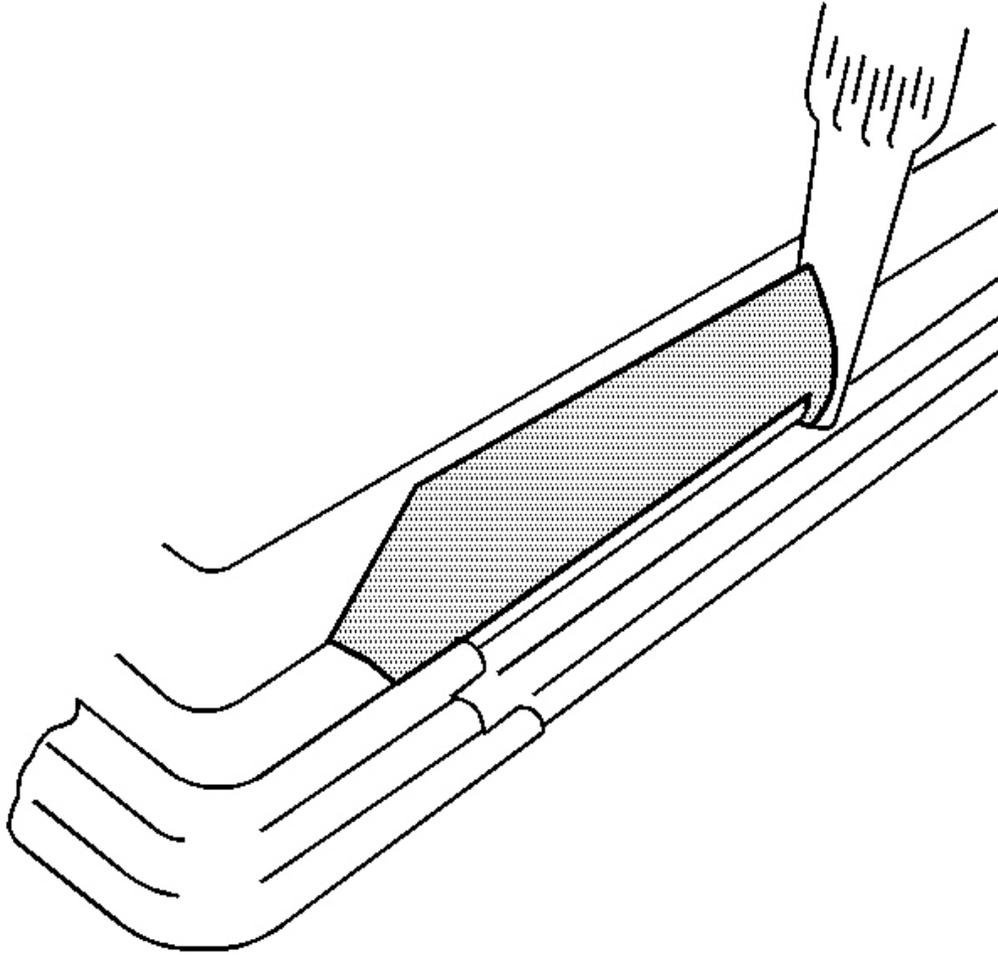


Fig. 62: Applying Bead Of Urethane Adhesive
Courtesy of GENERAL MOTORS CORP.

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

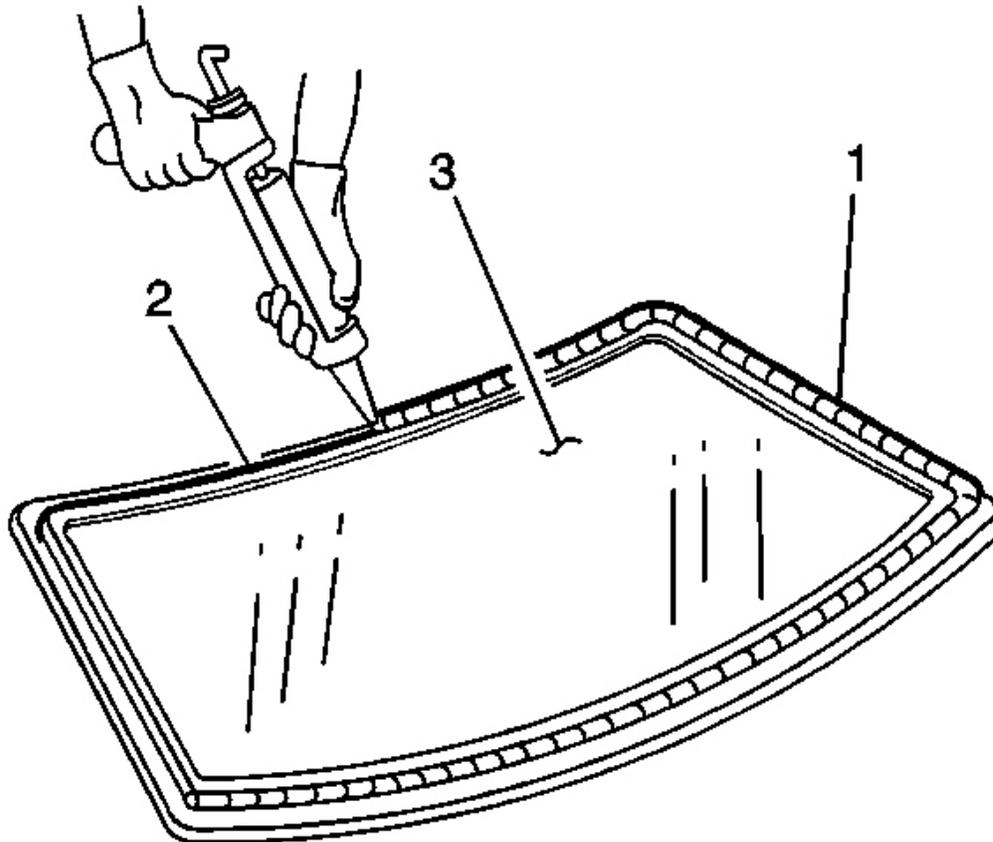


Fig. 63: Applying Urethane Adhesive To Inner Surface Of Window
Courtesy of GENERAL MOTORS CORP.

23. Use the edge of the window or the inside edge of the reveal molding as a guide for the nozzle in order to apply the urethane adhesive (1) to the inner surface of the window (3).

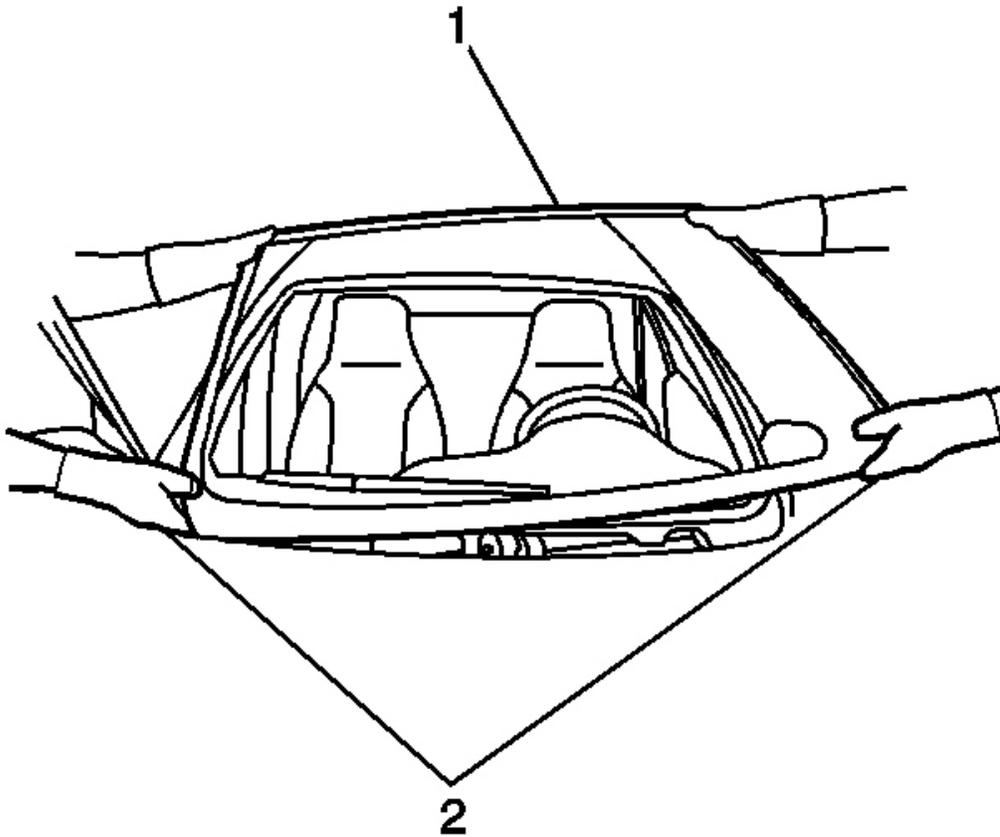


Fig. 64: Removing/Installing Windshield
Courtesy of GENERAL MOTORS CORP.

24. With the aid of an assistant (2), place the window (1) in the opening.

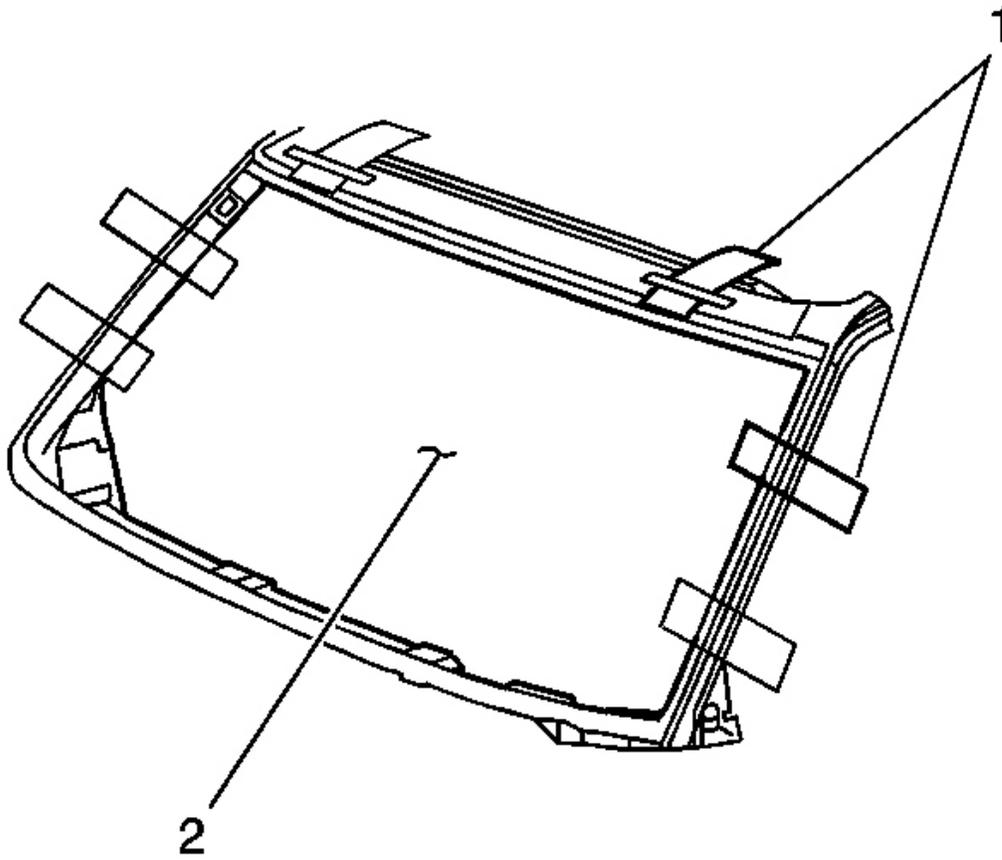


Fig. 65: Aligning Tape Lines On Window To Body
Courtesy of GENERAL MOTORS CORP.

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

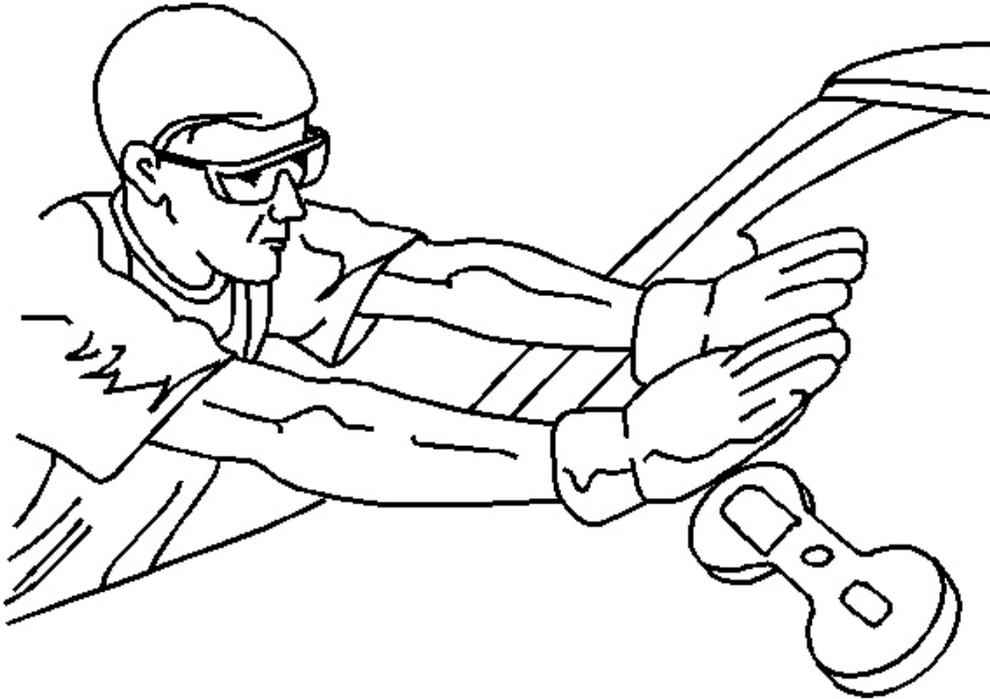


Fig. 66: Pressing Window Into Place
Courtesy of GENERAL MOTORS CORP.

NOTE: **Avoid damage to the window from impacting objects due to an exposed edge. The window must be 1 mm (0.025 in) below the surface of the sheet metal to avoid window damage.**

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

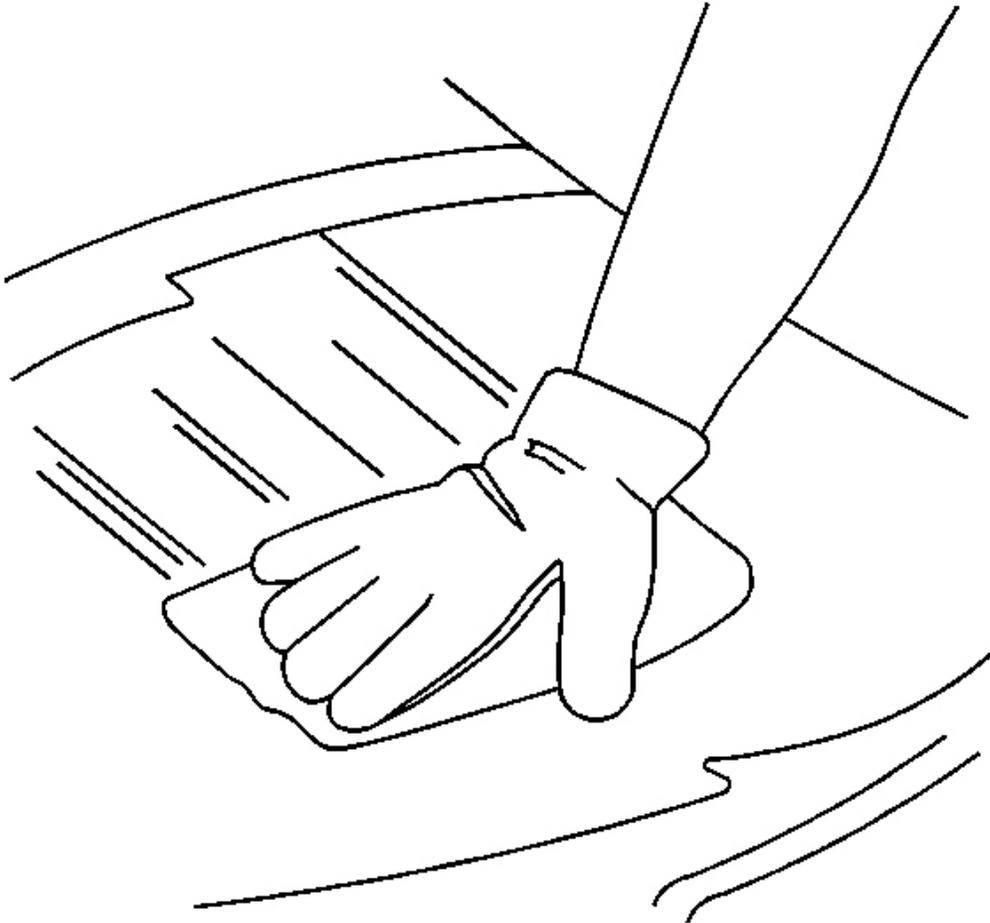


Fig. 67: Cleaning Window
Courtesy of GENERAL MOTORS CORP.

28. Clean any excess urethane adhesive from the body.

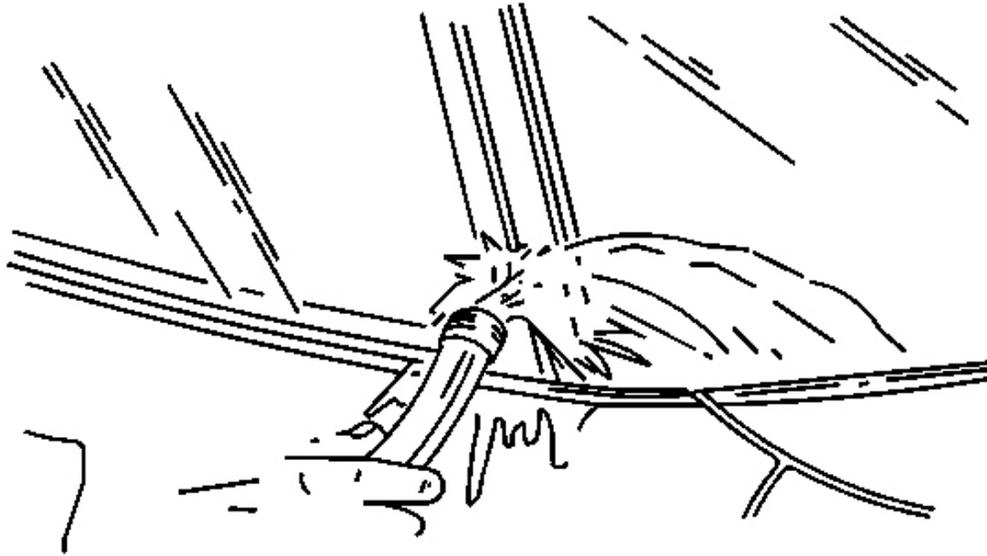


Fig. 68: Performing Water Hose Test
Courtesy of GENERAL MOTORS CORP.

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

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

CAUTION: 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.

33. 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.
34. Complete the window installation.

ADHESIVE INSTALLATION OF BODYSIDE STATIONARY WINDOWS

CAUTION: Refer to Glass and Sheet Metal Handling Caution .

IMPORTANT: Remove all but approximately 2 mm (3/64 in) of the existing bead of urethane adhesive from the pinch-weld flange.

1. Remove all mounds or loose pieces of urethane adhesive from the pinch-weld area.
2. If the original window is being reused, remove all but a thin film of the existing urethane adhesive from the window surface by using a clean utility knife or razor blade scraper.
3. Inspect the following components for the causes of a broken window:
 - The flange of the window opening
 - The window reveal molding
4. Inspect for any of the following problems in order to help prevent future breakage of the window:
 - High weld
 - Solder spots
 - Hardened sealer

- Any other obstruction or irregularity in the pinch-weld flange

IMPORTANT: 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.

CAUTION: Refer to WINDOW RETENTION CAUTION .

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

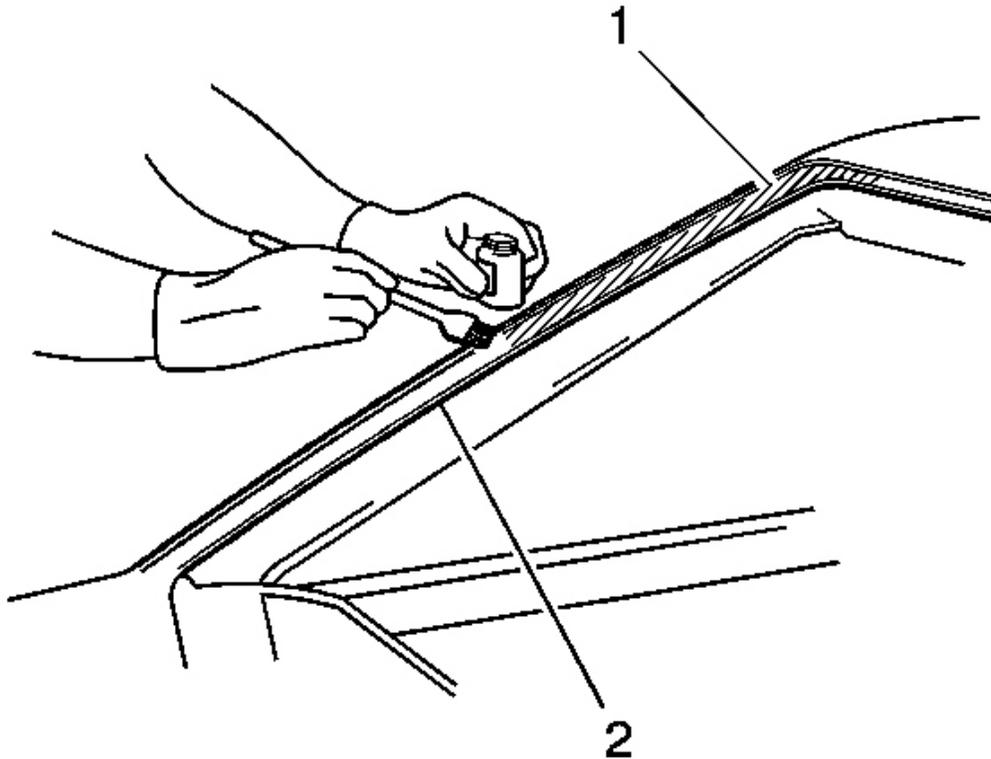


Fig. 69: Applying Pinch-Weld Primer
Courtesy of GENERAL MOTORS CORP.

CAUTION: Refer to Failure to Prep Primer Caution .

IMPORTANT: 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.
10. With the aid of an assistant, dry fit the window (2) to the opening in order to determine the correct position.

11. Ensure that the locator pins (1) are positioned into the locator slots on the upper 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.

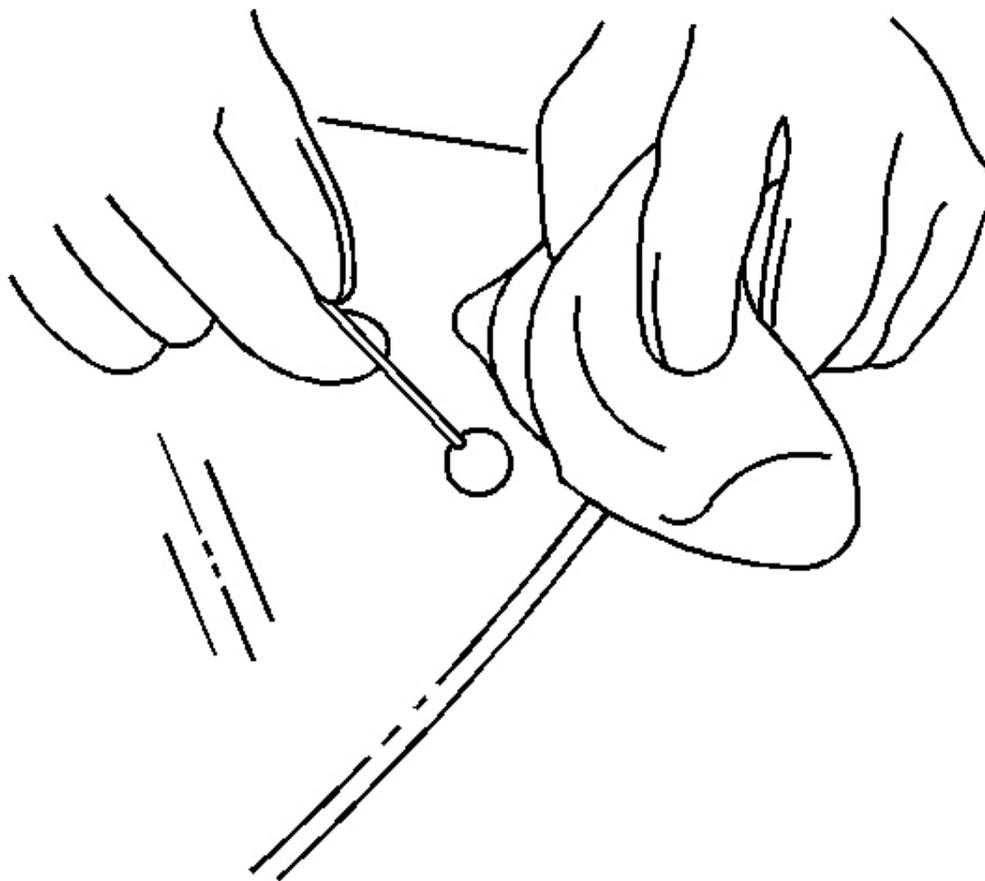


Fig. 70: Applying Glass Prep
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Use care when applying glass prep clear #1 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 #1 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.

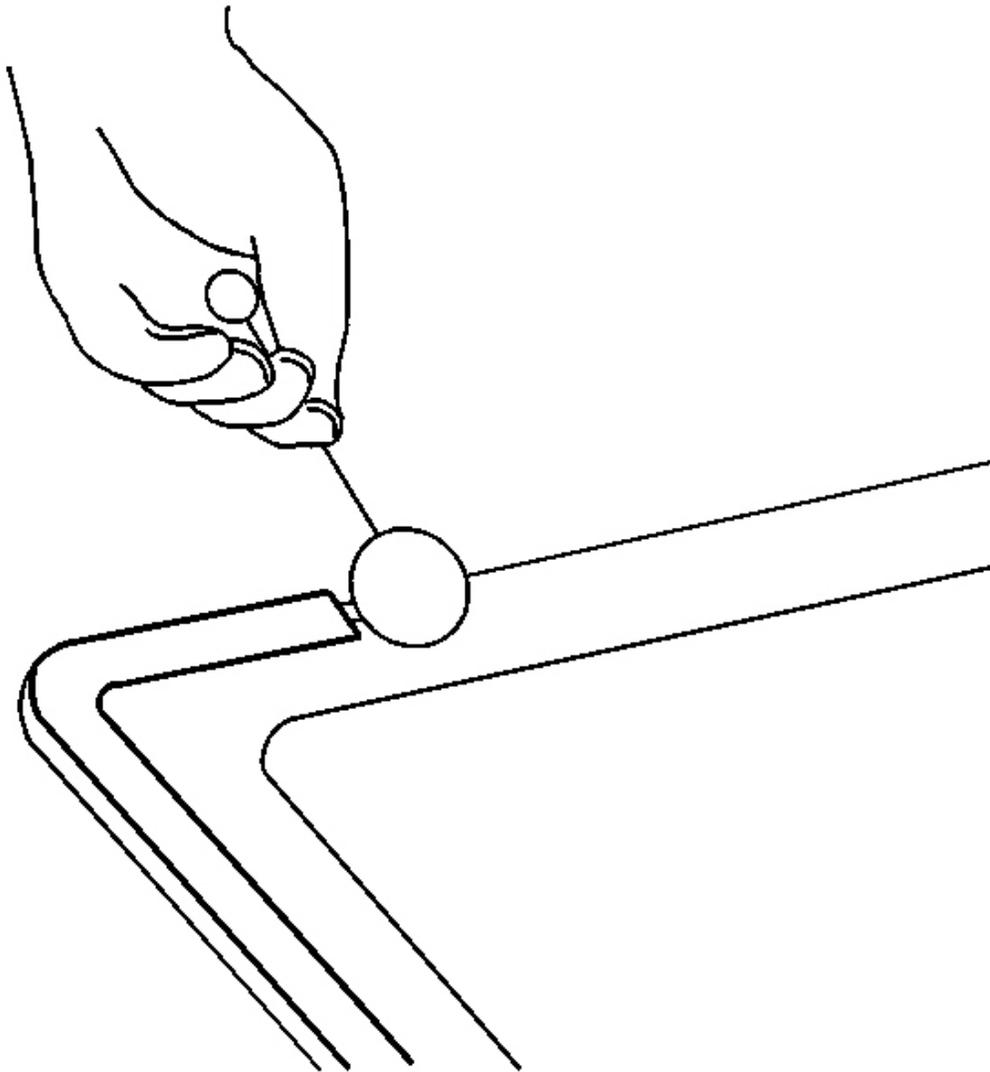


Fig. 71: Applying Glass Prep
Courtesy of GENERAL MOTORS CORP.

15. Apply a second coat of the glass prep clear #1 to the same area of the glass.

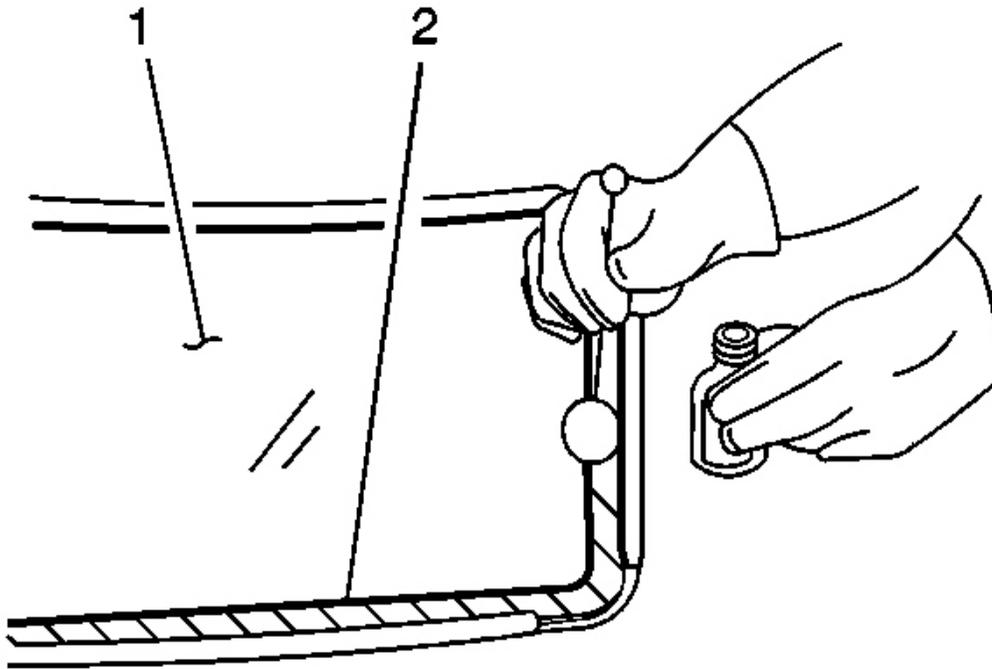


Fig. 72: Applying Glass Primer
Courtesy of GENERAL MOTORS CORP.

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

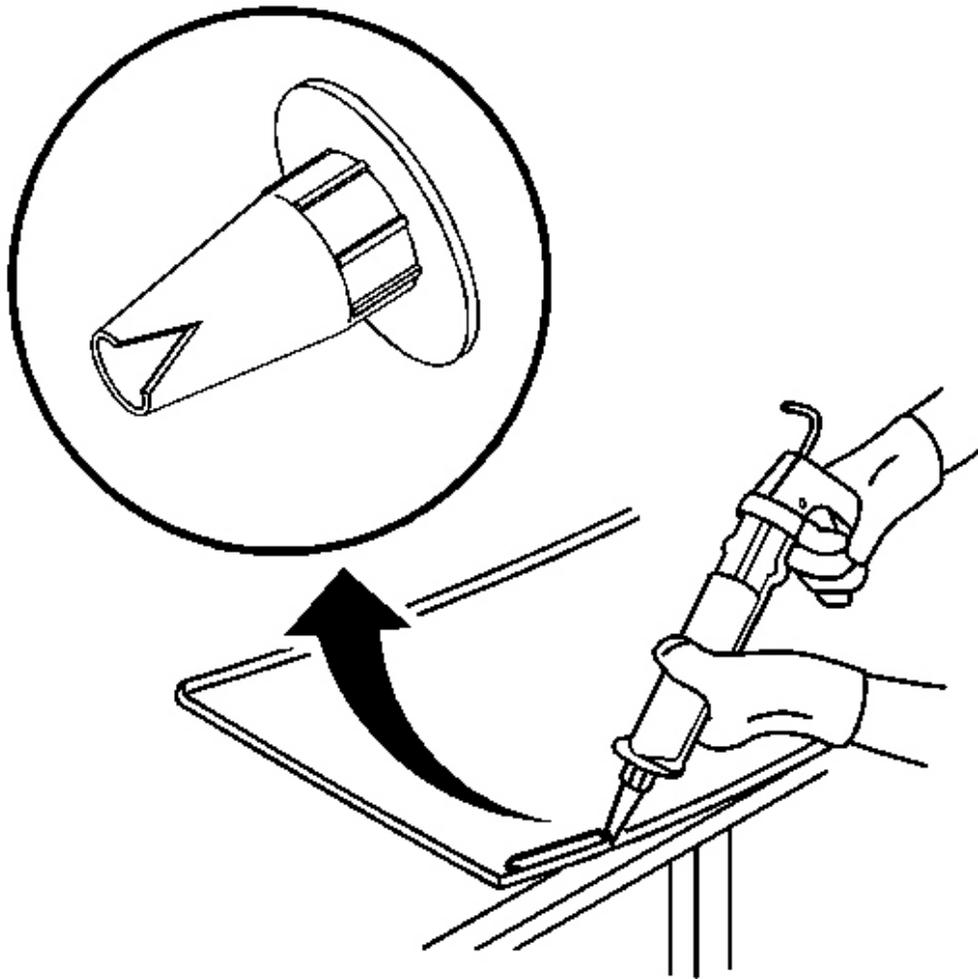


Fig. 73: View Of Modified Applicator Nozzle
Courtesy of GENERAL MOTORS CORP.

19. Cut the applicator nozzle in order to provide a minimum urethane bead of 8 mm (0.31 in) wide and 13 mm (0.5 in) high.

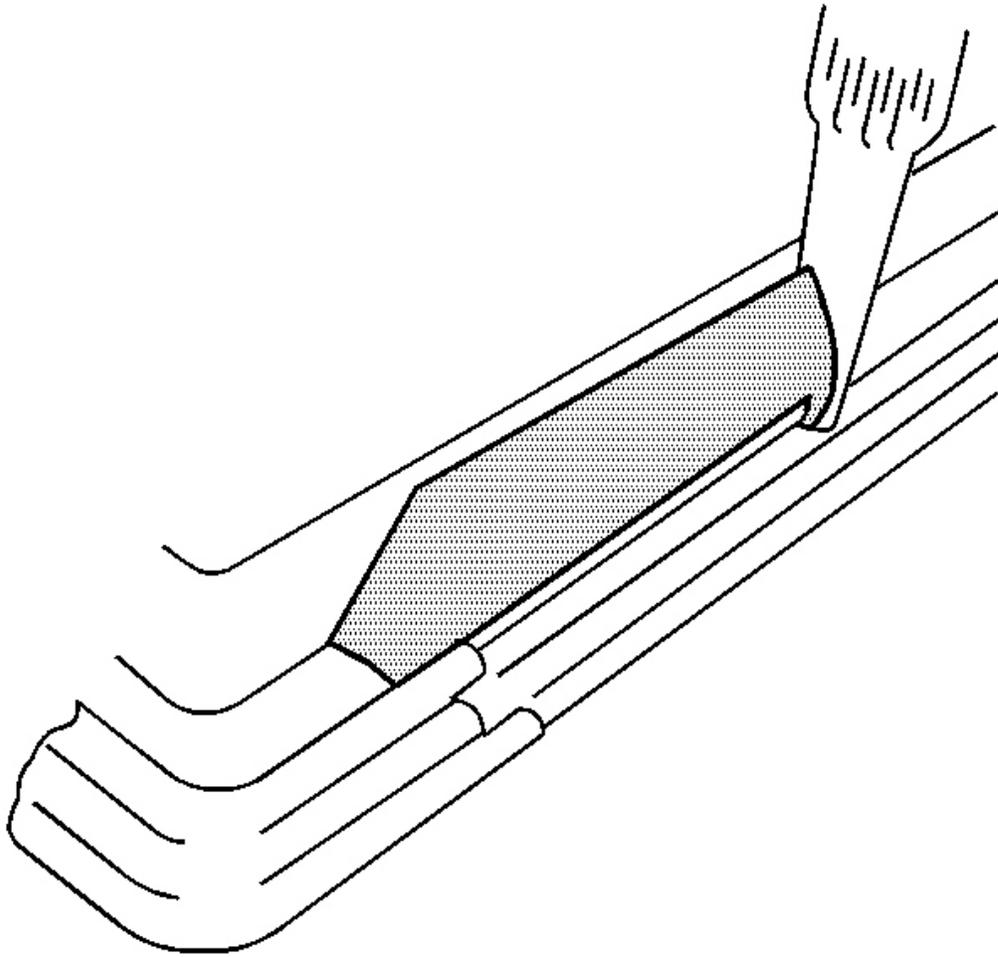


Fig. 74: Applying Bead Of Urethane Adhesive
Courtesy of GENERAL MOTORS CORP.

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

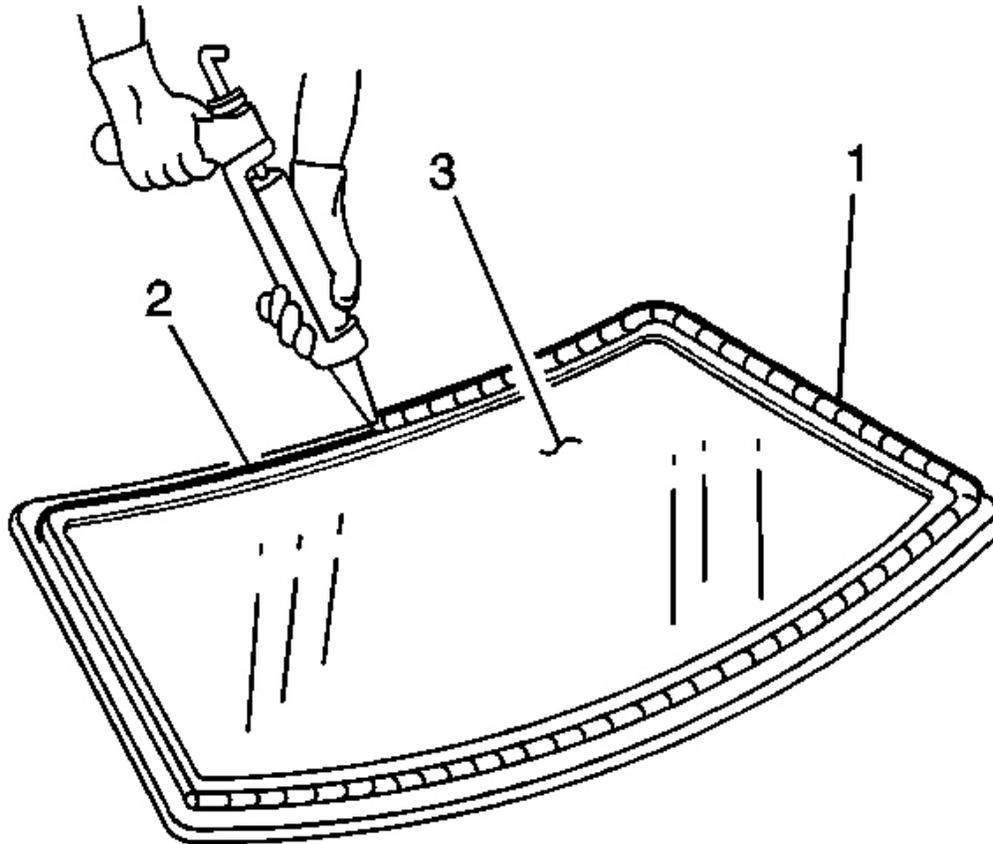


Fig. 75: Applying Urethane Adhesive To Inner Surface Of Window
Courtesy of GENERAL MOTORS CORP.

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.

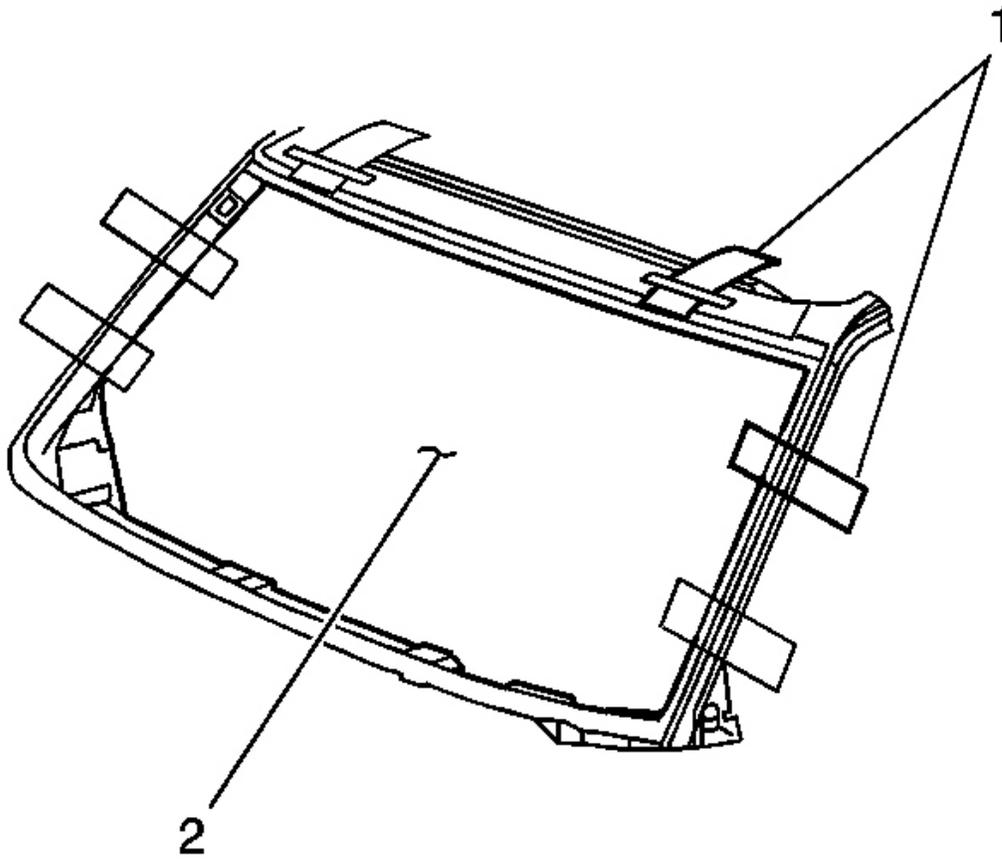


Fig. 76: Aligning Tape Lines On Window To Body
Courtesy of GENERAL MOTORS CORP.

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

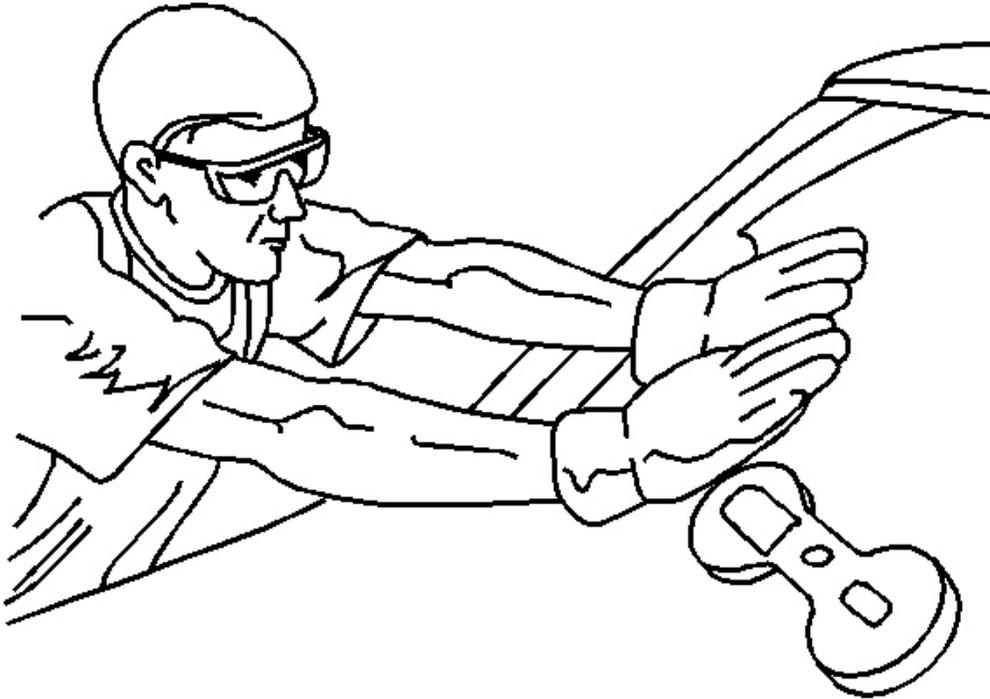


Fig. 77: Pressing Window Into Place
Courtesy of GENERAL MOTORS CORP.

NOTE: **Avoid damage to the window from impacting objects due to an exposed edge. The window must be 1 mm (0.025 in) below the surface of the sheet metal to avoid window damage.**

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.

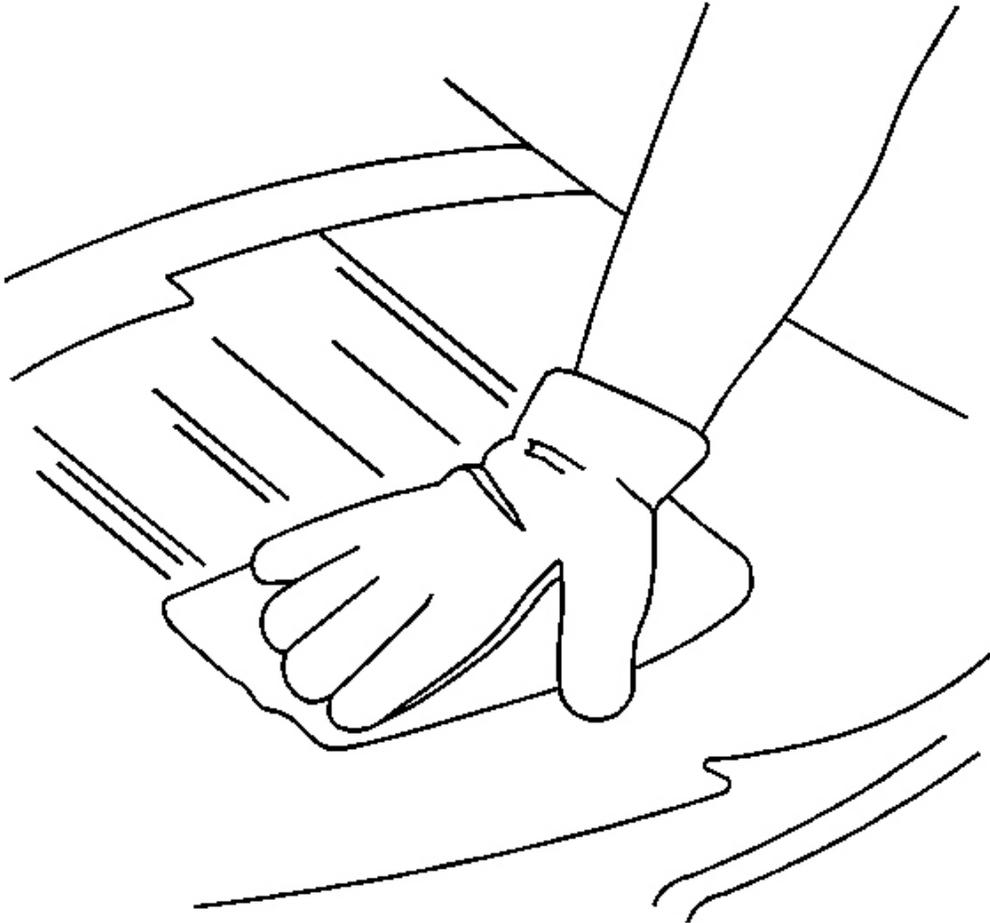


Fig. 78: Cleaning Window
Courtesy of GENERAL MOTORS CORP.

26. Clean any excess urethane adhesive from the body.

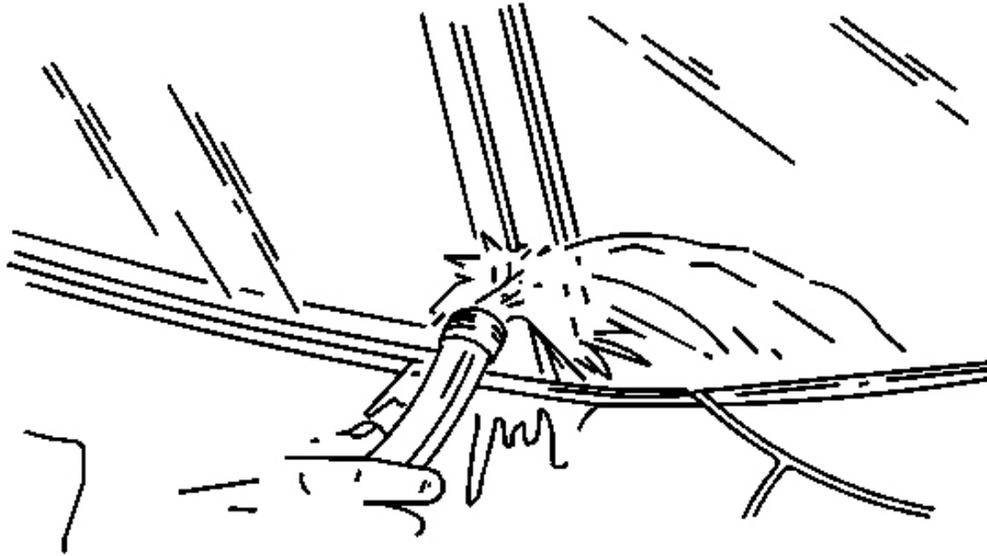


Fig. 79: Performing Water Hose Test
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: 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.

CAUTION: 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.

ADHESIVE INSTALLATION OF ENDGATE STATIONARY WINDOWS

CAUTION: Refer to Glass and Sheet Metal Handling Caution .

IMPORTANT: Remove all but approximately 2 mm (3/64 in) of the existing bead of urethane adhesive from the pinch-weld flange.

1. Remove all mounds or loose pieces of urethane adhesive from the pinch-weld area.
2. If the original window is being reused, remove all but a thin film of the existing urethane adhesive from the window surface by using a clean utility knife or razor blade scraper.
3. Inspect the following components for the causes of a broken window:
 - The flange of the window opening
 - The window reveal molding
4. Inspect for any of the following problems in order to help prevent future breakage of the window:
 - High weld
 - Solder spots
 - Hardened sealer

- Any other obstruction or irregularity in the pinch-weld flange

IMPORTANT: 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.

CAUTION: Refer to WINDOW RETENTION CAUTION .

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

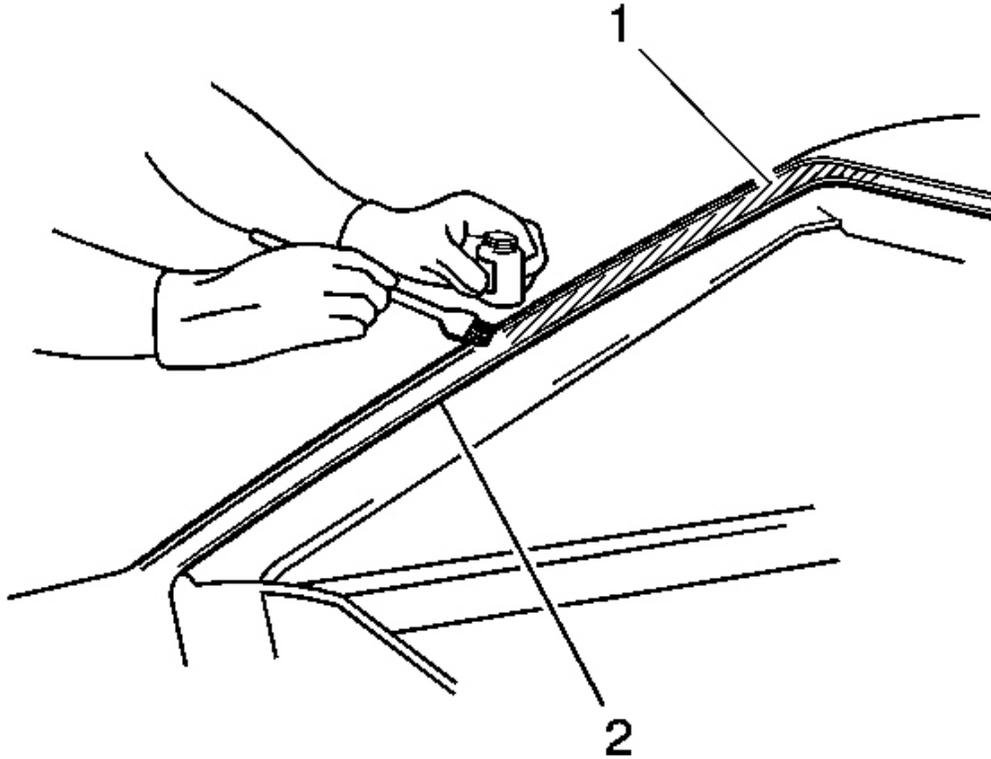


Fig. 80: Applying Pinch-Weld Primer
Courtesy of GENERAL MOTORS CORP.

CAUTION: Refer to Failure to Prep Primer Caution .

IMPORTANT: 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.

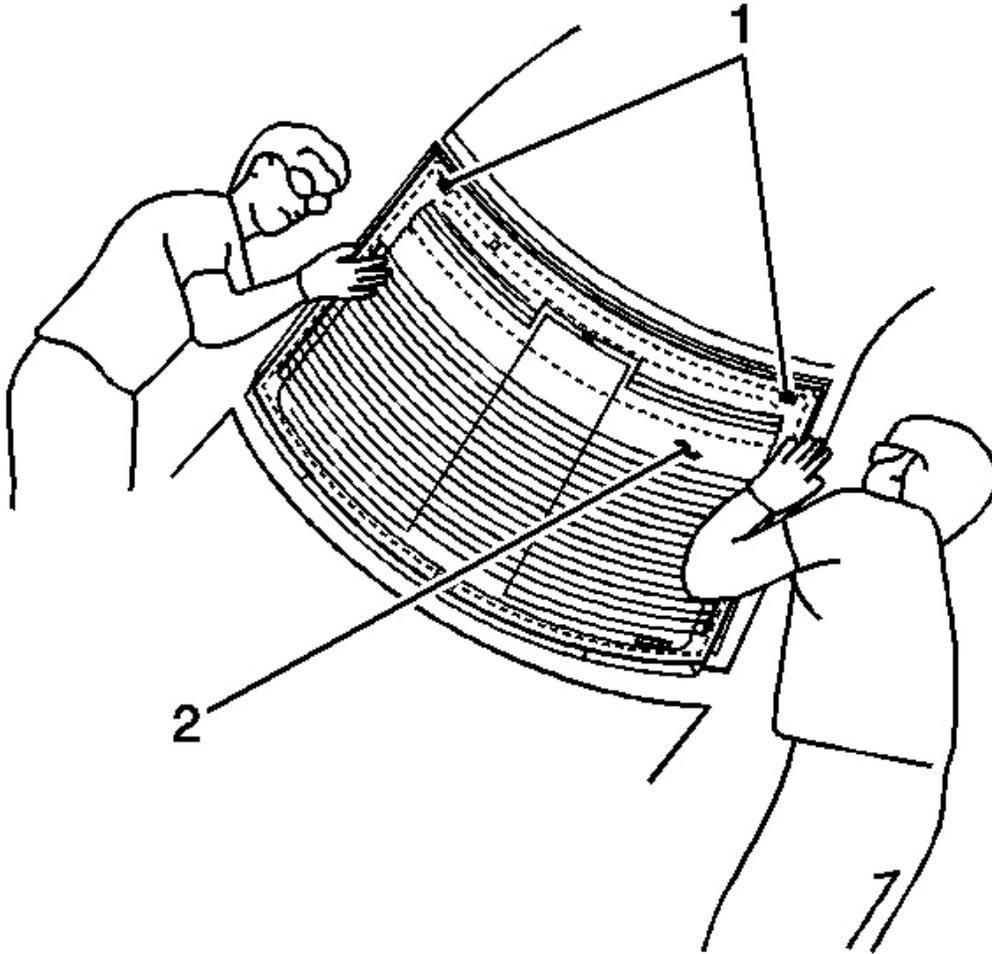


Fig. 81: Installing Rear Window
Courtesy of GENERAL MOTORS CORP.

10. With the aid of an assistant, dry fit the window (2) to the opening in order to determine the correct position.
11. Ensure that the locator pins (1) are positioned into the locator slots on the upper pinch-weld flange.

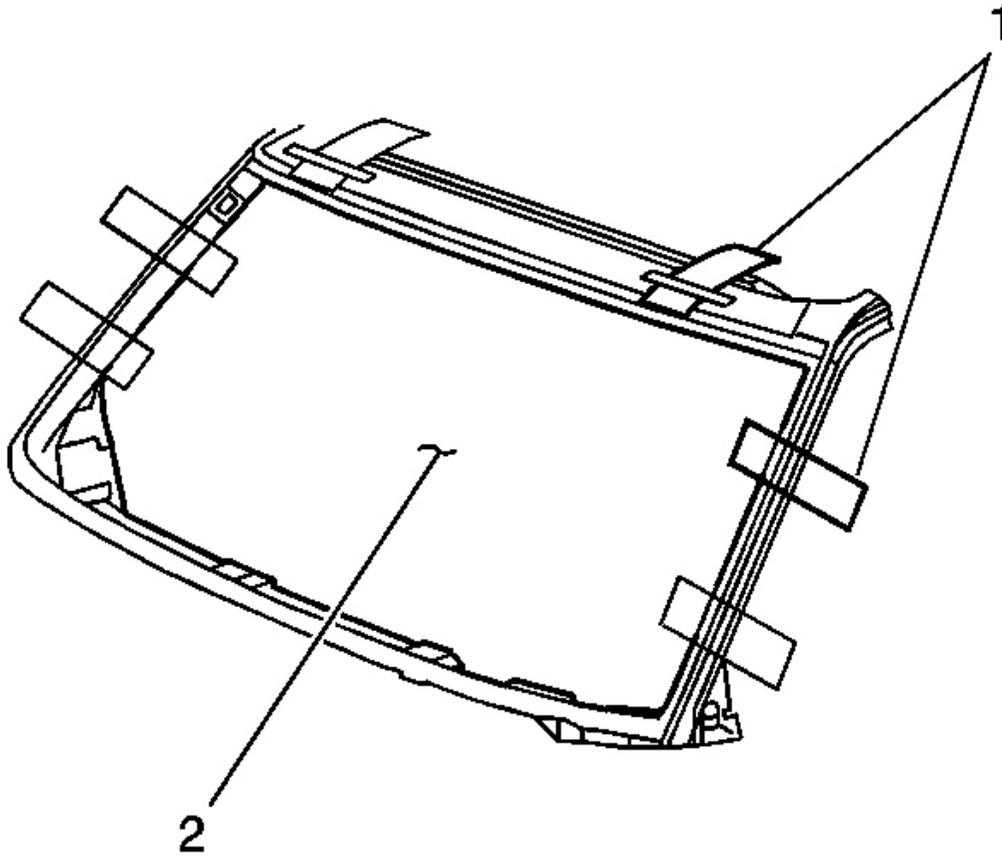


Fig. 82: Aligning Tape Lines On Window To Body
Courtesy of GENERAL MOTORS CORP.

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

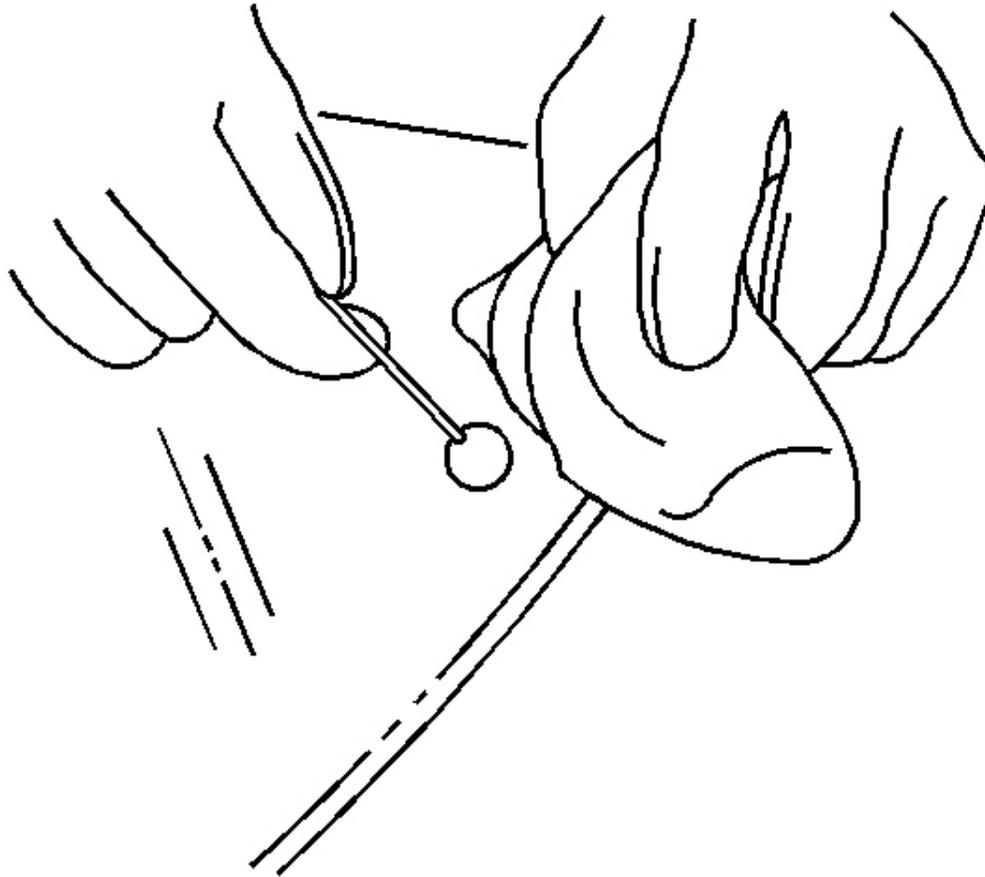


Fig. 83: Applying Glass Prep
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Use care when applying glass prep clear #1 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 #1 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.

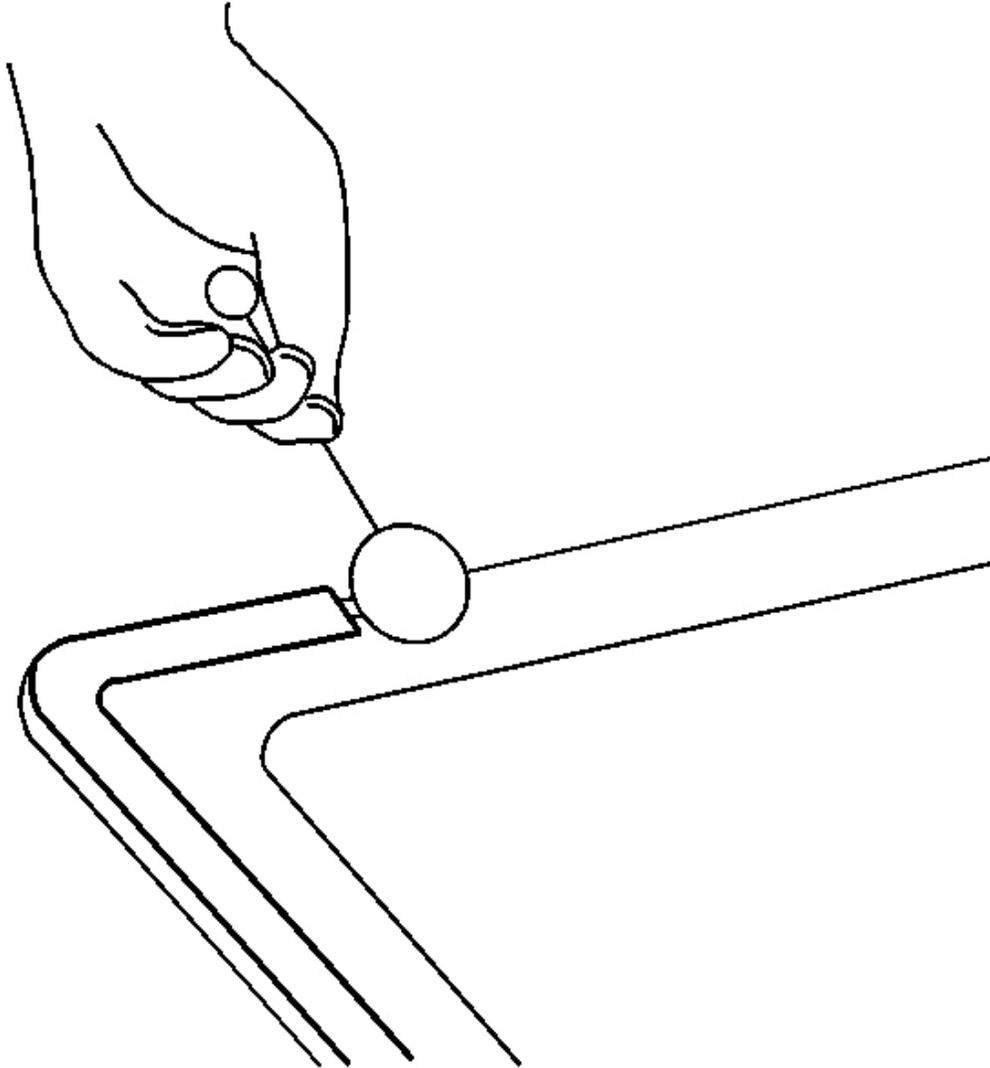


Fig. 84: Applying Glass Prep
Courtesy of GENERAL MOTORS CORP.

15. Apply a second coat of the glass prep clear #1 to the same area of the glass.

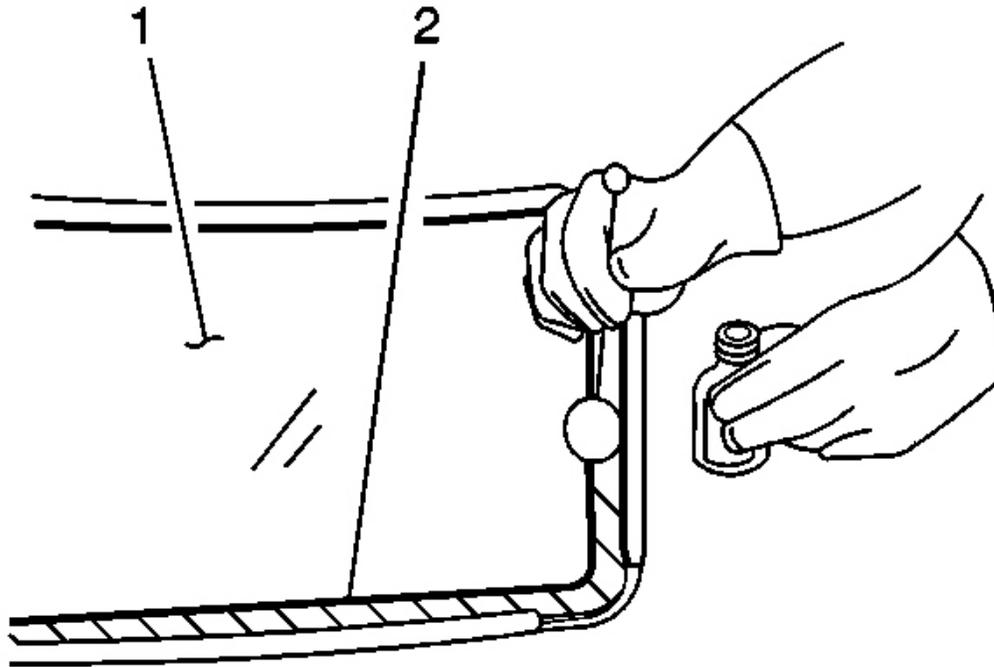


Fig. 85: Applying Glass Primer
Courtesy of GENERAL MOTORS CORP.

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

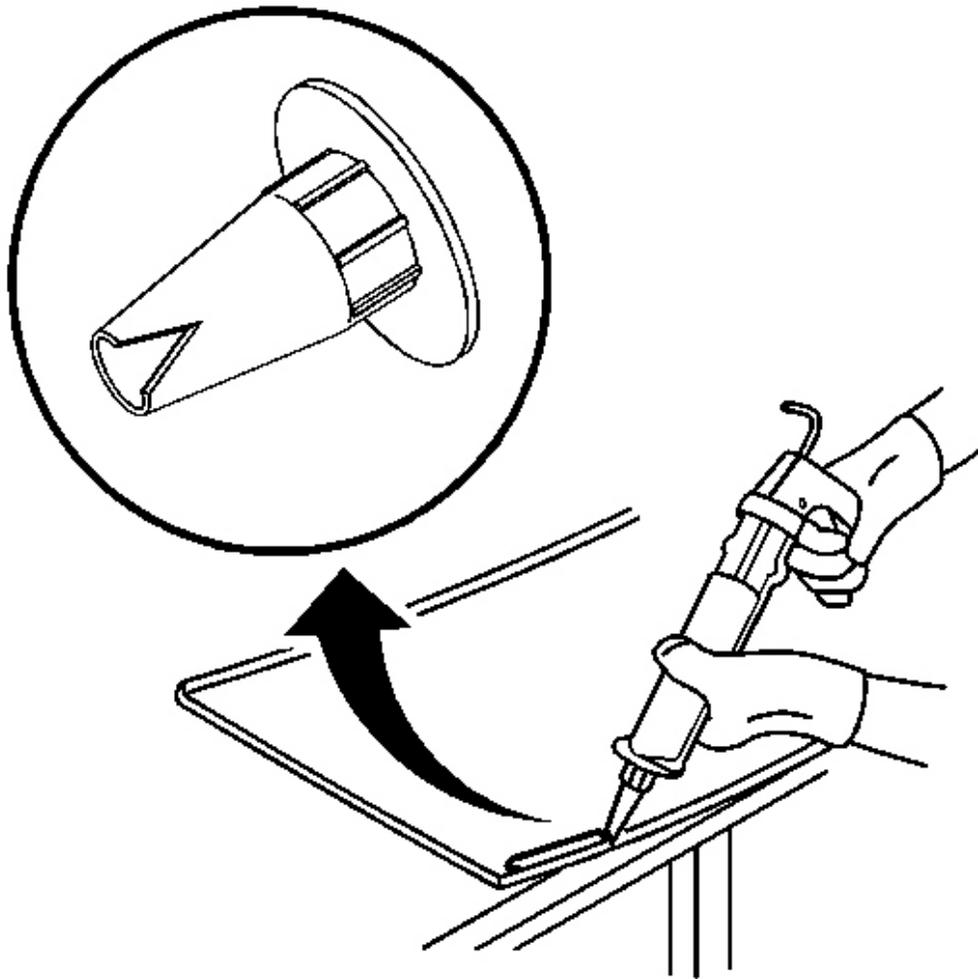


Fig. 86: View Of Modified Applicator Nozzle
Courtesy of GENERAL MOTORS CORP.

19. Cut the applicator nozzle in order to provide a minimum urethane bead of 8 mm (0.31 in) wide and 13 mm (0.5 in) high.

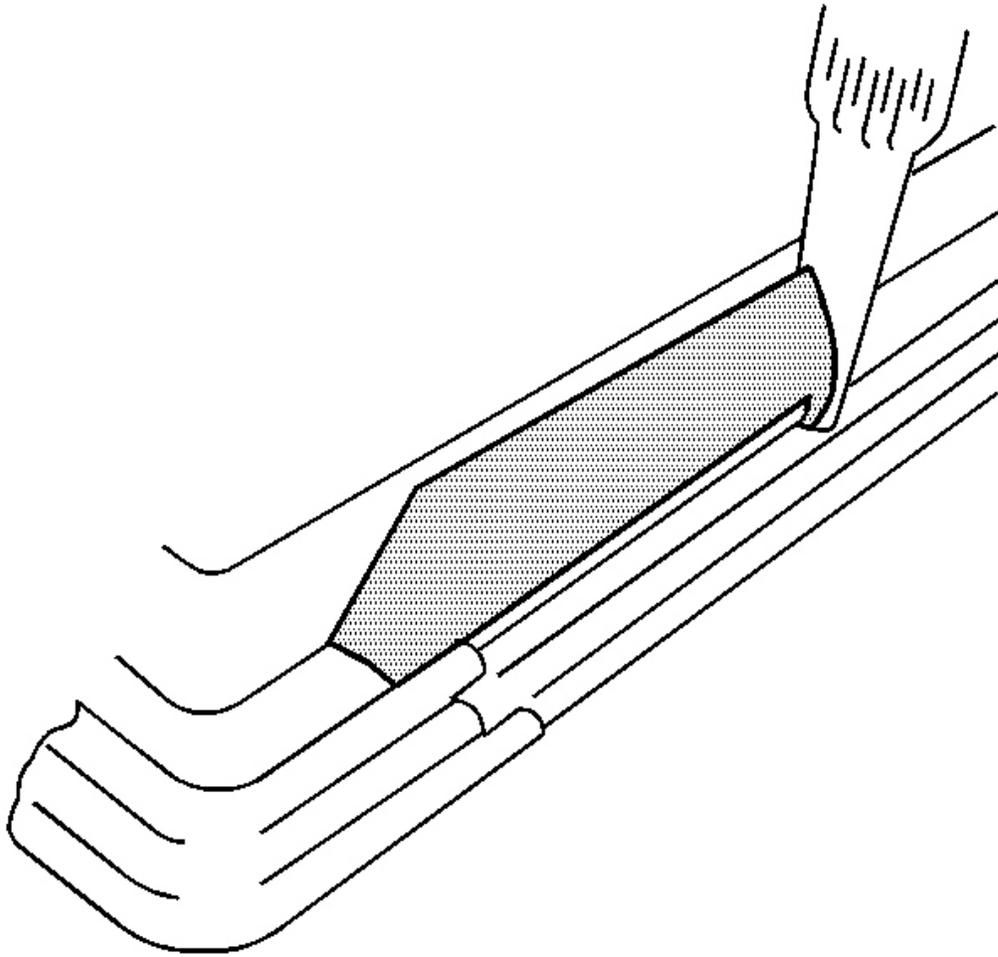


Fig. 87: Applying Bead Of Urethane Adhesive
Courtesy of GENERAL MOTORS CORP.

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

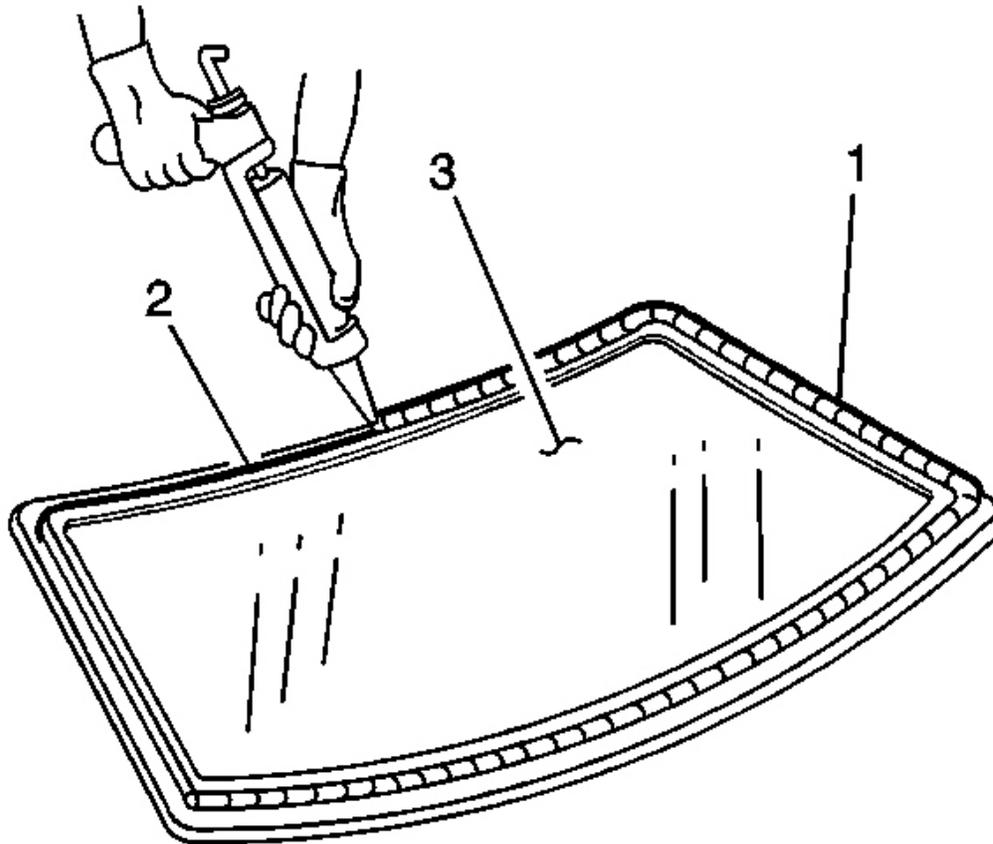


Fig. 88: Applying Urethane Adhesive To Inner Surface Of Window
Courtesy of GENERAL MOTORS CORP.

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).

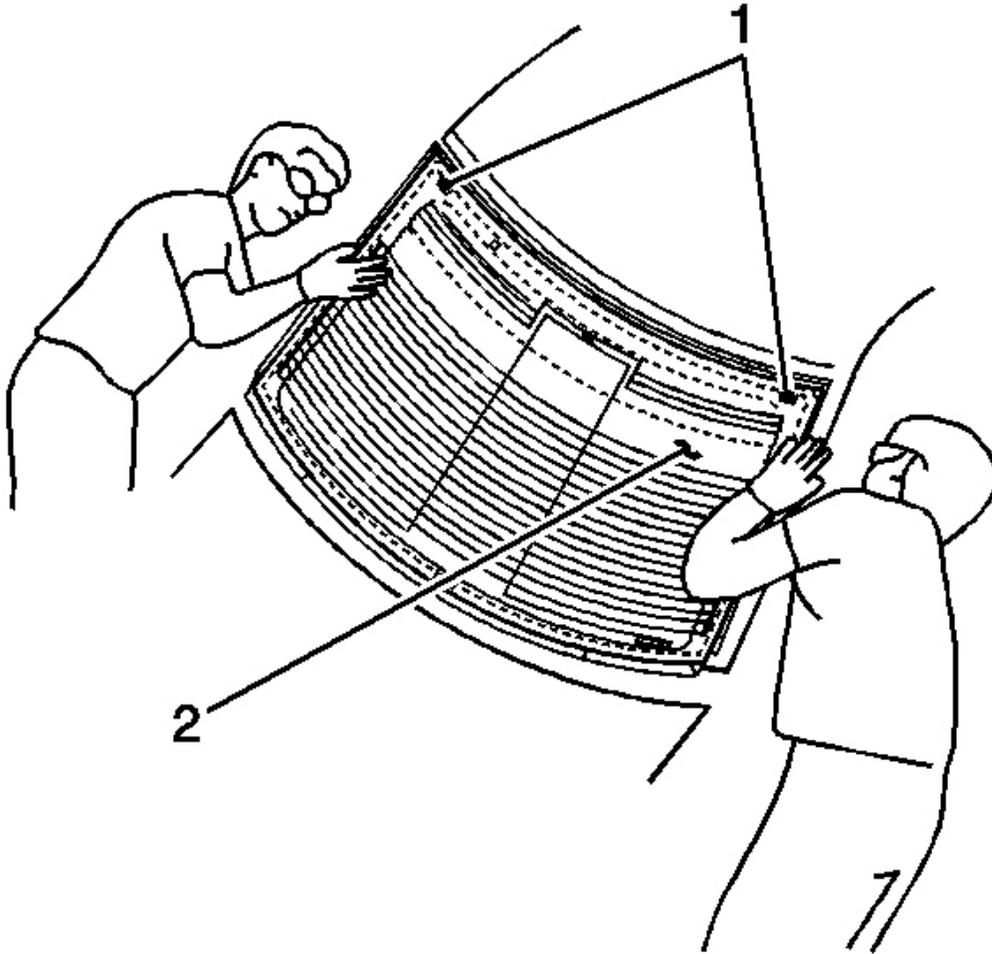


Fig. 89: Installing Rear Window
Courtesy of GENERAL MOTORS CORP.

22. With the aid of an assistant, place the window in the opening.

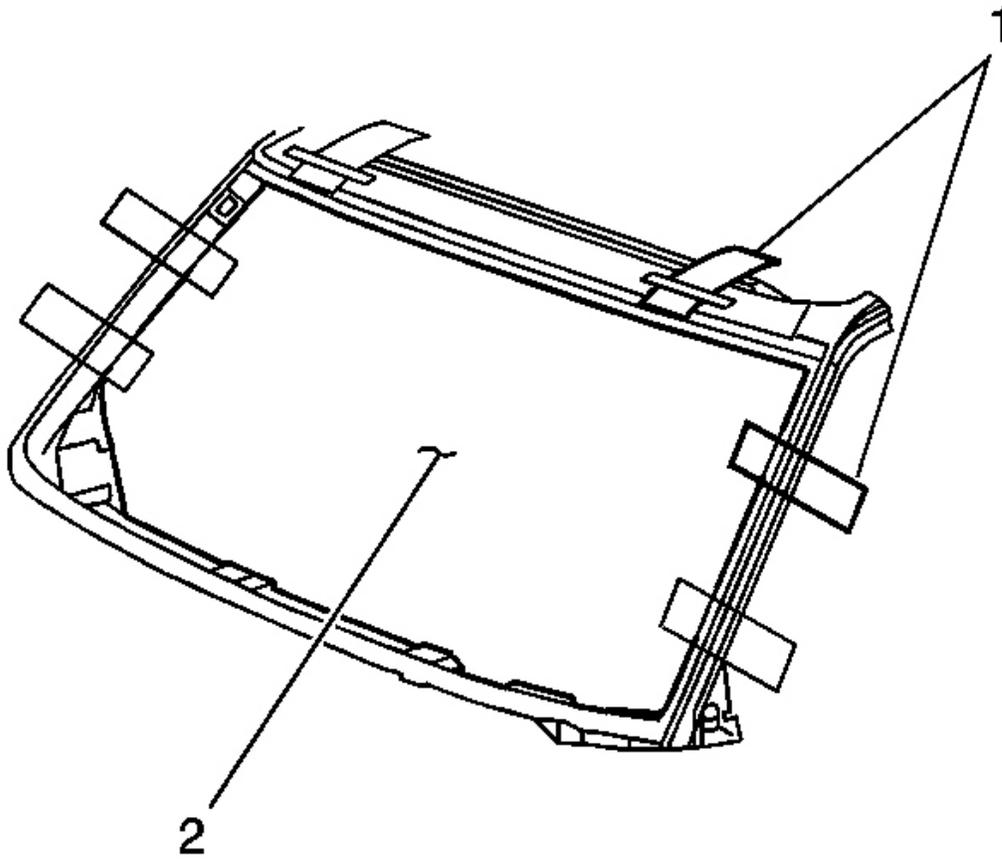


Fig. 90: Aligning Tape Lines On Window To Body
Courtesy of GENERAL MOTORS CORP.

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

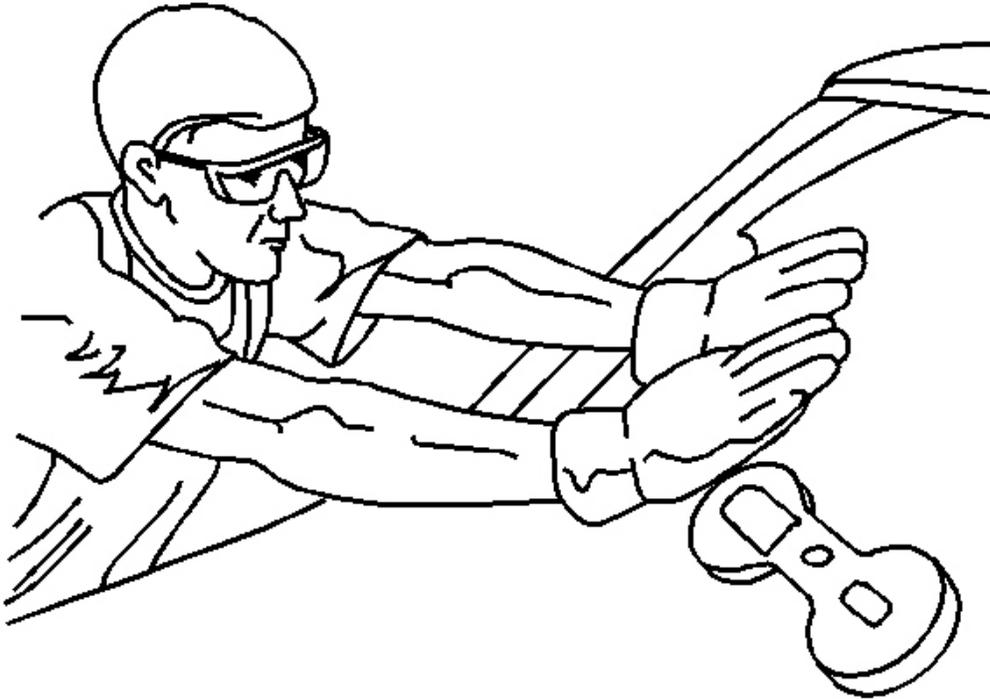


Fig. 91: Pressing Window Into Place
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: 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.

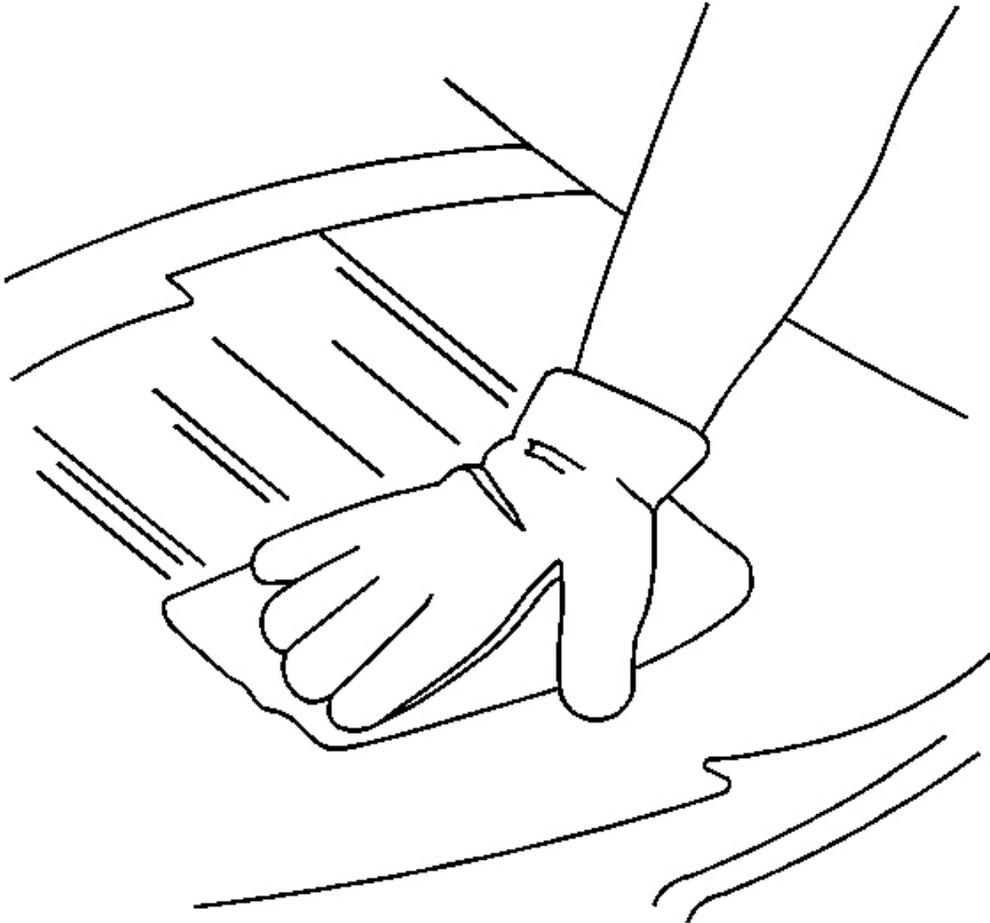


Fig. 92: Cleaning Window
Courtesy of GENERAL MOTORS CORP.

26. Clean any excess urethane adhesive from the body.

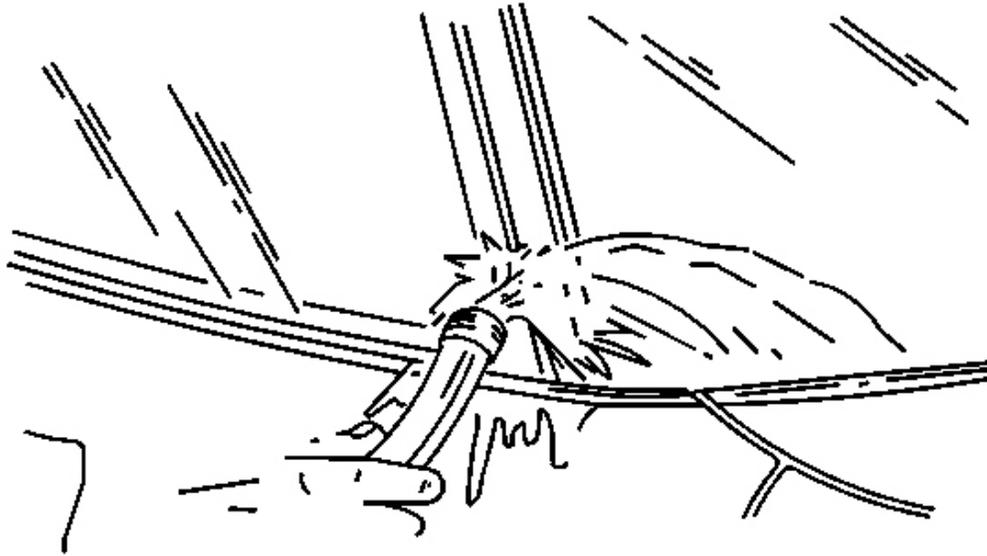


Fig. 93: Performing Water Hose Test
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: 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.

CAUTION: 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.

DESCRIPTION AND OPERATION

FULL-CUT METHOD DESCRIPTION

Use only the full cut method also know as 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.
- Applying 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 #3 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.**

ADHESIVE SERVICE KIT DESCRIPTION

The GM Adhesive Caulking Kit P/N 12346392 contains the following items:

- 4 different primers
- A tube of urethane adhesive with a nozzle
- 4 daubers
- Instructions with warnings
- Use the urethane adhesive caulking kit for replacement of any urethane adhesive-installed window using the Full Cut Method.

You may use an equivalent urethane adhesive system if the system meets GM Specification GM 3651M. Always follow the system manufacturer's instructions for application, handling and curing.

STATIONARY WINDOW DESCRIPTION

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

POWER WINDOWS DESCRIPTION AND OPERATION

Power Windows System Components

The power window system consists of the following components:

- Driver window switch
- Right front window switch
- LR window switch
- RR window switch
- Window motors in each of the doors
- PWR WDO 30A Circuit Breaker

Power Windows System Controls

The power windows system can be controlled by a power window up or down switch activation.

Driver Window Operation

When the ignition switch is in the RUN or ACCY position or retained accessory power (RAP) is enabled and the window master switch is activated to the DOWN position, battery positive voltage is applied to the window motor causing the window to open. When the window master switch is activated to the UP position, battery positive voltage is applied to the window motor in the opposite direction and the window closes.

The window master switch also controls the front passenger, LR and RR windows.

Express Down Feature

The driver window will travel to the fully down position when the window master switch is pressed past the first detent. Activating the window master switch to the UP position will cancel the express down feature.

Lockout Switch Feature

The window master switch has a lockout switch which disconnects the battery positive voltage to the right front, LR and RR window switches, disabling them.

Individual Window Operation

When the ignition switch is in the RUN or ACCY position or retained accessory power (RAP) is enabled and an individual window switch is activated to the DOWN position, battery positive voltage is applied to the window motor causing that window to open. When the individual window switch is activated to the UP position, battery positive voltage is applied to the window

motor in the opposite direction causing that window to close.

REAR WINDOW DEFOGGER DESCRIPTION AND OPERATION

Rear Window Defogger System Components

The rear window defogger system consist of the following components:

- Heating ventilation air conditioning control module
- Body control module (BCM)
- DEFOG relay
- Rear window that has a number of grid lines

Rear Window Defogger Operation

When you turn the ignition to the ON position, ignition voltage is supplied to the rear defogger relay coil. Battery positive voltage is supplied at all times to the rear defogger relay switched input. When the rear window defogger switch is depressed. The body control module (BCM) illuminates the rear window defogger indicator in the HVAC control module and sends a ground signal to the BCM. The BCM energizes the rear defogger relay by supplying battery positive voltage through the control circuit of the relay. This allows battery positive voltage from the relay switched input through the switch contacts and out the relay switched output to the rear window defogger grid.

When you turn ON the ignition and press the rear window defogger switch for the first time, the defogger cycle lasts 10 minutes. Further operation results in 5 minute defogger cycles.

SPECIAL TOOLS AND EQUIPMENT

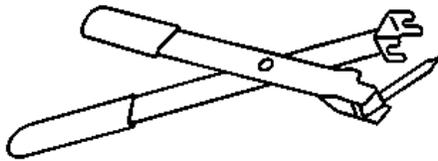
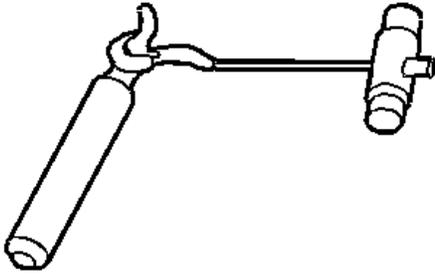
SPECIAL TOOLS

Special Tools

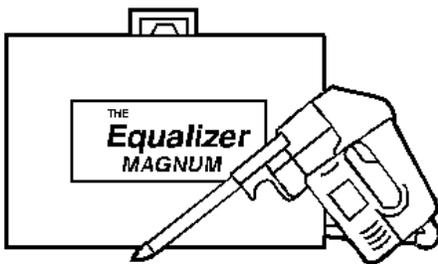
Illustration	Tool Number/Description
	J-24402-A Glass Sealant Cold Knife Remover

2007 Hummer H3

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J-34946
Window Pin Remover



J-39032
Stationary Glass Removal Tool

J-39040
Quarter Window Remover

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