

ACCESSORIES & EQUIPMENT

Fixed and Moveable Windows - Coupe And Wagon

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Front Side Door Window Clamp Fasteners	11 N.m	98 lb in
Front Side Door Window Belt Reveal Molding Screw	1.5 N.m	13 lb in
Front Side Door Window Outer Sealing Strip Screw	1.5 N.m	13 lb in
Front Side Door Window Regulator Fastener	9 N.m	80 lb in
Front Side Door Window Regulator Motor Fastener	4 N.m	62 lb in
Rear Side Door Window Clamp Fasteners	11 N.m	98 lb in
Rear Side Door Window Outer Sealing Strip Screw	1.5 N.m	13 lb in
Rear Side Door Stationary Window and Front Channel Bolt	9 N.m	80 lb in
Rear Side Door Window Regulator Bolt	9 N.m	80 lb in
Rear Side Door Window Regulator Motor Bolt	9 N.m	80 lb in
Stationary Window Post Bolts	9 N.m	80 lb in

SCHEMATIC WIRING DIAGRAMS

MOVEABLE WINDOW WIRING SCHEMATICS

Front Window System

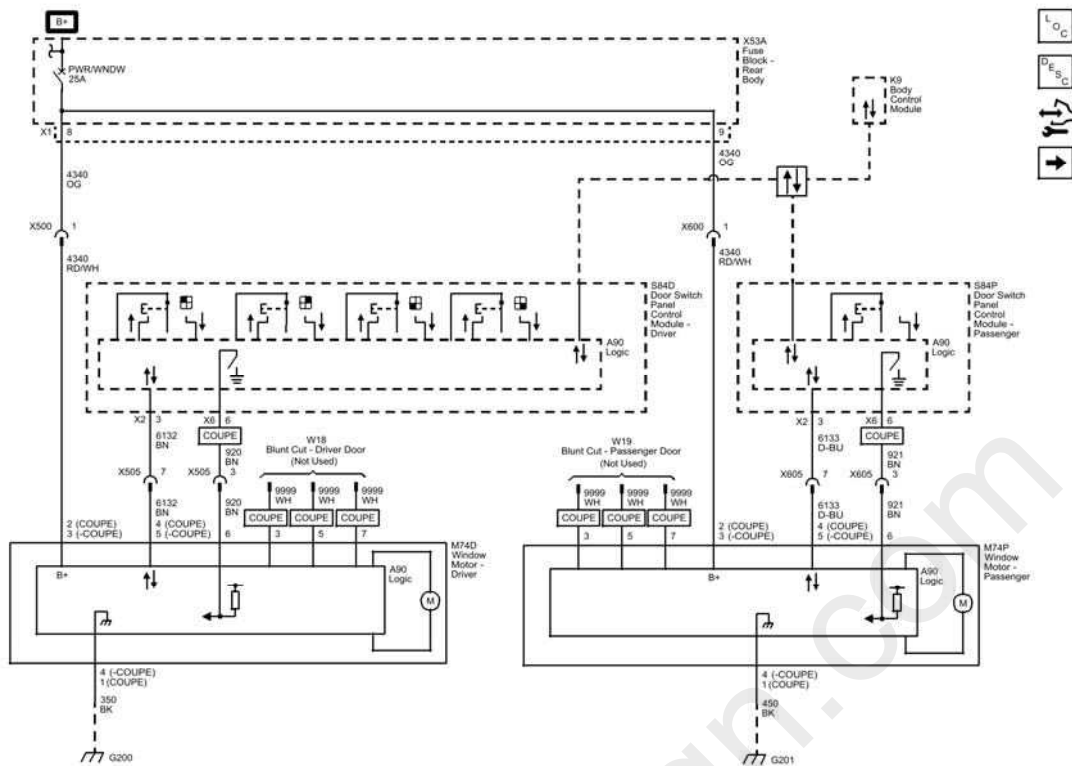


Fig. 1: Front Window System

Courtesy of GENERAL MOTORS COMPANY

Rear Window System(Wagon)

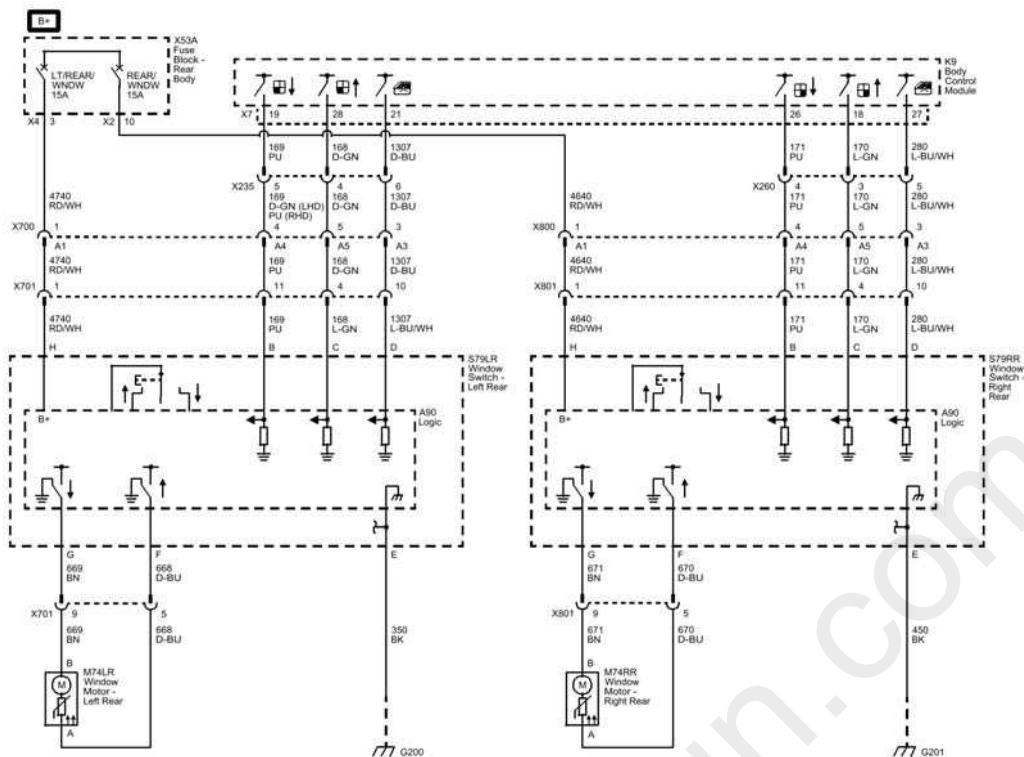


Fig. 2: Rear Window System(Wagon)
 Courtesy of GENERAL MOTORS COMPANY

DEFOGGER WIRING SCHEMATICS

Rear Window Defogger System (Wagon)

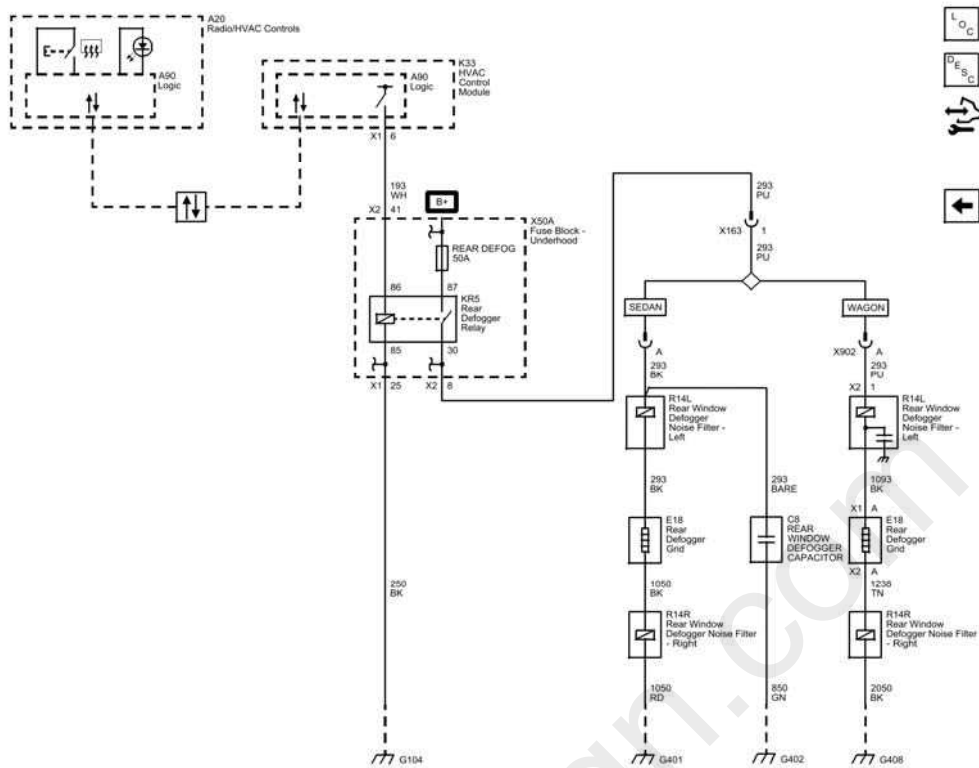


Fig. 3: Rear Window Defogger System (Wagon)
 Courtesy of GENERAL MOTORS COMPANY

Rear Window Defogger System (Coupe)

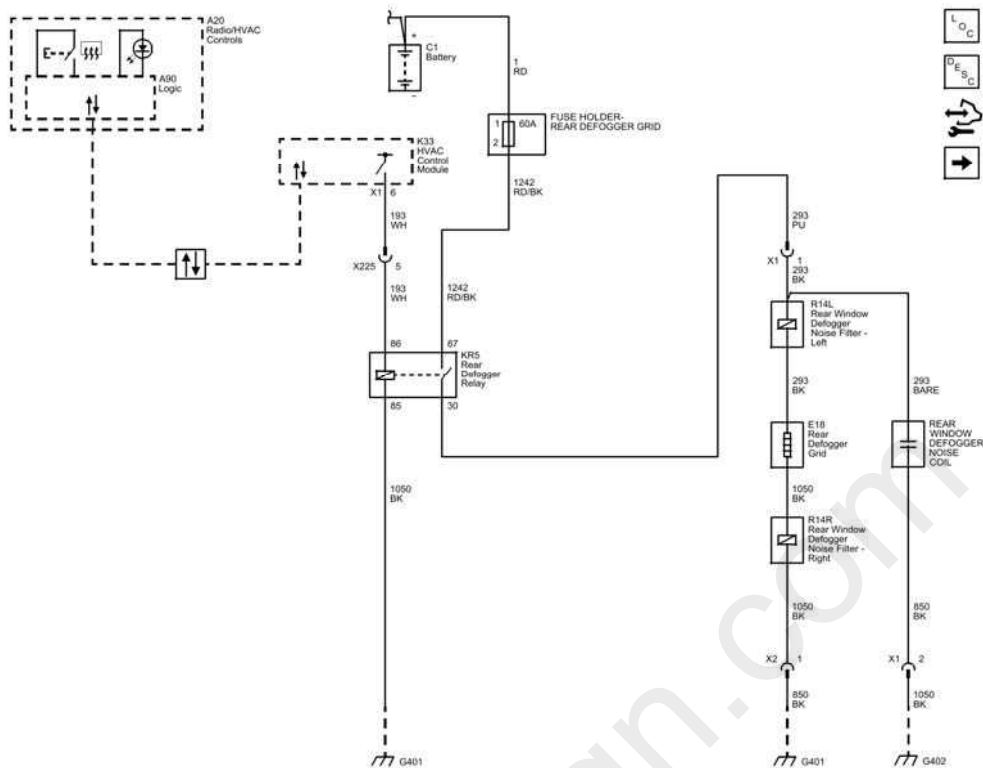


Fig. 4: Rear Window Defogger System (Coupe)
Courtesy of GENERAL MOTORS COMPANY

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC CODE INDEX

DIAGNOSTIC CODE INDEX

DTC	Description
<u>DTC B0283</u>	DTC B0283 02 Electric Rear Defrost Circuit Short to Ground DTC B0283 05 Electric Rear Defrost Circuit Short to Battery or Open
<u>DTC B320A</u>	DTC B320A 39 Front Door Window Motor Internal Electronic Failure DTC B320A 42 Front Door Window Motor Calibration Data Set Not Programmed DTC B320A 4B Front Door Window Motor Calibration Not Learned
<u>DTC B3819, B3820, B3822, or B3823</u>	DTC B3819 00 Left Rear Window Up Control Circuit DTC B3820 00 Left Rear Window Down Control Circuit DTC B3822 00 Right Rear Window Up Control Circuit DTC B3823 00 Right Rear Window Down Control Circuit
<u>DTC B3821 or B3824</u>	DTC B3821 00 Left Rear Window Relay Power Circuit DTC B3824 00 Right Rear Window Relay Power Circuit

DTC B0283: ELECTRIC REAR DEFROST CIRCUIT SHORT

Diagnostic Instructions

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

DTC Descriptors

DTC B0283 02

Electric Rear Defrost Circuit Short to Ground

DTC B0283 05

Electric Rear Defrost Circuit Short to Battery or Open

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Rear Defog Relay Switch B+	1	1	-	-
Rear Defog Relay Control	B0283 02	B0283 05	B0283 05	-
Rear Defog Relay Switch Control	1	1	1	-
Rear Defog Relay Coil Ground	-	B0283 05	-	-
Rear Window Defogger Grid Ground	-	1	-	-
1. Rear Window Defogger Malfunction				

Circuit/System Description

When the rear window defogger switch is activated, the radio/HVAC control panel sends a serial data message to the HVAC control module requesting the rear defogger be activated. The HVAC control module responds by energizing the rear defog relay by applying voltage to the rear defog relay control circuit. When the rear defog relay coil is energized, the switch contacts of the rear defog relay close allowing battery voltage to flow from the REAR DEFOG fuse through the closed switch contacts and out the relay switched output to the rear window defogger grid.

Conditions for Running the DTC

Battery voltage is between 9-16 volts.

Conditions for Setting the DTC

B0283 02

The HVAC control module detects a short to ground in the rear defog relay control circuit for 1 second or greater.

B0283 05

The HVAC control module detects a short to voltage or an open/high resistance in the rear defog relay control circuit or an open/high resistance in the rear defog relay ground circuit for greater than 1 second.

Action Taken When the DTC Sets

B0283 02

The rear window defogger will be inoperative.

B0283 05

The rear window defogger will be inoperative or will operate continuously.

Conditions for Clearing the DTC

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

Reference Information

Schematic Reference

Defogger Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX - COUPE AND WAGON

Description and Operation

Rear Window Defogger Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

Command the Rear Defog Request ON and OFF with the scan tool. The rear window defogger should turn ON and OFF when changing between the commanded states.

Circuit/System Testing

1. Ignition OFF, disconnect the REAR DEFOG relay.
2. Test for less than 1 ohm between the ground circuit terminal 85 and ground.
 - If greater than the specified range, test the ground circuit for an open/high resistance
3. Connect a test lamp between the control circuit terminal 86 and the ground circuit terminal 85.
4. Ignition ON, command Rear Defog Request ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always ON, test the control circuit for a short to voltage. If the circuit tests normal, replace the HVAC control module.
 - If the test lamp is always OFF, test the control circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the HVAC control module.
5. If all circuits test normal, test or replace the REAR DEFOG relay.

Component Testing

Relay Test

1. Ignition OFF, disconnect the REAR DEFOG relay.
2. Test for 60-180 ohms between terminals 85 and 86.
 - If not within the specified range, replace the relay.
3. Test for infinite resistance between the following terminals:
 - 30 and 86
 - 30 and 87
 - 30 and 85
 - 85 and 87
 - If not the specified value, replace the relay.
4. Install a 25-amp fused jumper wire between relay terminal 85 and 12 volts. Install a jumper wire between relay terminal 86 and ground. Test for less than 2 ohms between terminals 30 and 87.
 - If greater than the specified range, replace the relay.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

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

DTC B320A: FRONT DOOR WINDOW MOTOR

Diagnostic Instructions

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

DTC Descriptors

DTC B320A 39

Front Door Window Motor Internal Electronic Failure

DTC B320A 42

Front Door Window Motor Calibration Data Set Not Programmed

DTC B320A 4B

Front Door Window Motor Calibration Not Learned

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Window Motor B+	U1511 00	U1511 00	-	B320A 4B
Passenger Window Motor B+	U1511 00	U1511 00	-	B320A 4B
Driver Window Motor Serial Data	U1500 02	U1500 02	U1500 02	B320A 4B
Passenger Window Motor Serial Data	U1500 02, U1511 00	U1511 00	U1511 00	B320A 4B
Driver Window Motor Ground	-	U1511 00	-	B320A 4B
Passenger Window Motor Ground	-	U1511 00	-	B320A 42, B320A 4B

Circuit/System Description

The front door power window motors communicate with the driver door lock/window switch and passenger door lock/window switch via serial data. The motors contain a logic module which must be normalized or programmed any time the window motor is serviced to provide proper operation and communication between door modules and window motors.

Conditions for Running the DTC

Ignition ON

Conditions for Setting the DTC

B320A 39

An internal malfunction or a momentary voltage spike has been detected by the driver door lock/window switch or passenger door lock/window switch in the front power window motor while commanding the window UP and DOWN.

B320A 42 or B320A 4B

A not normalized or programmed driver or front passenger door power window motor occur under the following conditions:

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

Action Taken When the DTC Sets

B320A 39

The motor will be inoperative.

B320A 42, B320A 4B

The motor will not perform the express up or express down functions.

Conditions for Clearing the DTC

B320A 39

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

B320A 42

The appropriate power window motor must be programmed before the DTC can be cleared.

B320A 4B

The appropriate power window motor must be calibrated before the DTC can be cleared.

Reference Information

Schematic Reference

Moveable Window Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX - COUPE AND WAGON

Description and Operation

Power Windows Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Ignition ON.
2. Verify the driver and passenger functions while commanding the Door Window Test with a scan tool.
 - **If the Up and Down does not work**

Replace the appropriate window motor .
 - **If the Up and Down works**
3. Verify the driver and passenger window performs the Express Up and Express Down functions with the driver window switch.
 - **If a window does not Express Up and Express Down**

Normalize the window motor, refer to **Window Motor Programming - Express Function**.
 - **If the window performs the Express Up and Express Down functions**
4. All OK.

Repair Instructions

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

Front Side Door Window Regulator Motor Replacement (Wagon)

DTC B3819, B3820, B3822, OR B3823: REAR WINDOW UP/DOWN CONTROL CIRCUIT

Diagnostic Instructions

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

DTC Descriptors

DTC B3819 00

Left Rear Window Up Control Circuit

DTC B3820 00

Left Rear Window Down Control Circuit

DTC B3822 00

Right Rear Window Up Control Circuit

DTC B3823 00

Right Rear Window Down Control Circuit

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Window Master Switch Left Rear Down Signal	B3820 00	1	1	-
Window Master Switch Left Rear Up Signal	B3819 00	2	2	-
Window Master Switch Right Rear Down Signal	B3823 00	3	3	-
Window Master Switch Right Rear Up Signal	B3822 00	4	4	-
1. Left Rear Down Command Inoperative From Driver Window Switch 2. Left Rear Up Command Inoperative From Driver Window Switch 3. Right Rear Down Command Inoperative From Driver Window Switch 4. Right Rear Up Command Inoperative From Driver Window Switch				

Circuit/System Description

The body control module (BCM) monitors the window UP/DOWN request from the driver door lock/window switch. When the rear window UP or DOWN command is received, the BCM sends a signal to the appropriate rear window switch. The rear window switches continuously monitors the voltage difference between the B+

voltage and the voltage in the up and down signal circuits, if no function is being commanded, the signal voltage equal to the B+ voltage. If the UP or DOWN function is commanded, the BCM signal voltage drops approximately 0.5 volts in the appropriate signal circuit and the rear window switch will then command the window in the UP or DOWN direction.

Conditions for Running the DTC

Ignition is ON.

Conditions for Setting the DTC

B3819 00

The BCM detects a short to ground in the left rear window up signal circuit.

B3820 00

The BCM detects a short to ground in the left rear window down signal circuit.

B3822 00

The BCM detects a short to ground in the right rear window up signal circuit.

B3823 00

The BCM detects a short to ground in the right rear window down signal circuit.

Action Taken When the DTC Sets

The left or right rear power window normal operation from local rear window switch but will be inoperative from the driver door lock/window switch.

Conditions for Clearing the DTC

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

Reference Information

Schematic Reference

Moveable Window Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX - COUPE AND WAGON

Description and Operation

Power Windows Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

Ignition ON, command the appropriate rear door window UP and DOWN by using the window switch on the driver door lock/window switch. The rear door window should perform UP and DOWN function.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the appropriate rear window switch.
2. Ignition ON, test for greater than 9 V between the signal circuit terminal C and ground.
 - If less than the specified range, test the signal circuit for a short to ground or open/high resistance. If the circuit tests normal, replace the BCM.
3. Test for greater than 9 V between the signal circuit terminal B and ground.
 - If less than the specified range, test the signal circuit for a short to ground or open/high resistance. If the circuit tests normal, replace the BCM.
4. If all circuits test normal, replace the rear window switch.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Rear Side Door Window Switch Replacement (Wagon)**
- **Control Module References** for BCM replacement, setup, and programming

DTC B3821 OR B3824: REAR WINDOW RELAY POWER

Diagnostic Instructions

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

DTC Descriptors

DTC B3821 00

Left Rear Window Relay Power Circuit

DTC B3824 00

Right Rear Window Relay Power Circuit

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Window Master Switch LR Down Control	B3820 00	B3820 00	B3820 00	-
LR Window Master Switch Lockout Control	B3821 00	B3821 00	B3821 00	-
RR Window Master Switch Lockout Control	B3824 00	B3824 00	B3824 00	-
Window Master Switch LR Up Control	B3819 00	B3819 00	B3819 00	-
Window Master Switch RR Down Control	B3823 00	B3823 00	B3823 00	-
Window Master Switch RR Up Control	B3822 00	B3822 00	B3822 00	-

Circuit/System Description

The body control module (BCM) monitors the window lockout command from the driver door module (DDM). When the rear window switch operation is authorized, the BCM signal voltage drops approximately 5 V to the rear window switches allowing for normal window operation from the rear switches. If the rear window lockout function is commanded, the BCM signal voltage is at B+ voltage which disables the rear window switches and the rear windows will only operate when the BCM receives a command from the driver master control.

Conditions for Running the DTC

- Battery voltage is between 9-16 V.
- The ignition is ON.

Conditions for Setting the DTC

B3821 00

The BCM detects a fault in the left rear window lockout circuit.

B3824 00

The BCM detects a fault in the right rear window lockout circuit.

Action Taken When the DTC Sets

The left or right rear power window will be inoperative.

Conditions for Clearing the DTC

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

Reference Information

Schematic Reference

Moveable Window Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX - COUPE AND WAGON

Description and Operation

Power Windows Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

Ignition ON, command the appropriate rear door window UP and DOWN by using the rear door window switch. The rear door window should perform UP and DOWN function.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the appropriate rear window switch.

NOTE: Check the lockout switch on the driver door switch and verify the rear window switches are enabled.

2. Ignition ON, test for greater than 9 V between the control circuit terminal D and ground.
 - If less than the specified range, test the control circuit for a short to ground or open/high resistance. If the circuit tests normal, replace the BCM.
3. If all circuits test normal, replace the rear window switch.

Repair Instructions

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

- **Rear Side Door Window Switch Replacement (Wagon)**
- **Control Module References** for BCM replacement, programming and setup

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 module(s) can communicate via serial data link.
2. Review the system description and operation in order to familiarize yourself with the system functions. Refer to the following:
 - **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 windows or rear window defogger. Refer to **Checking Aftermarket Accessories**.
- Inspect the easily accessible or visible system components for obvious damage or conditions which could cause the symptom.

Intermittent

Thoroughly inspect the wiring and connectors. An incomplete inspection of the wiring and connectors may result in misdiagnosis causing part replacement with the reappearance of the malfunction. If an intermittent malfunction exists, refer to **Testing for Intermittent Conditions and Poor Connections**.

Symptom List

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

- **Rear Window Defogger Malfunction**
- **Power Windows Malfunction (Wagon), Power Windows Malfunction (Coupe)**

DEFOGGER GRID LINES DIAGNOSIS

NOTE: If it has been observed during use that a grid line is inoperative, the following procedure can be used to find the break. If none of the grid lines is operating, a full system diagnosis should be completed before attempting to test the grid lines

NOTE: Lightly touch the grid lines when testing with the test lamp. If the test lamp point is scraped through the grid line it can cause an open in the circuit

1. Engine running, command the Rear Defogger ON with a scan tool.
2. Verify that a test lamp illuminates between each rear window defogger grid line and ground. The test lamp should be off when testing at the ground side of the grid and get brighter as the test lamp moves closer to the voltage supply side of the grid. The test lamp should be dim when testing each grid line in the middle

- **If the test lamp remains bright at the middle of the grid line.**

The grid line is open between the test point and the ground side of the grid.

Replace the rear window

- **If the test lamp remains off at the middle of the grid line.**

The grid line is open between the test point and the voltage supply side of the grid.

Replace the rear window

- **If the test lamp remains dim at the middle of each grid line.**

3. All OK

REAR WINDOW DEFOGGER MALFUNCTION

Diagnostic Instructions

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

Diagnostic Fault Information

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

Rear Defog Relay Switch B+	1	1	-	-
Rear Defog Relay Control	B0283 02	B0283 05	B0283 05	-
Rear Window Defogger Grid Control	1	1	1	-
Rear Defog Relay Coil Ground	-	B0283 05	-	-
Rear Window Defogger Grid Ground	-	1	-	-
1. Rear Window Defogger Malfunction				

Circuit/System Description

When the rear defogger button is pressed, voltage is supplied to the relay coil by the HVAC control module which also illuminates the rear window defogger indicator. B+ voltage is supplied at all times to the relay switched input and the relay coil is always grounded. This allows battery positive voltage from the relay switched input through the switch contacts and out the relay switched output to the rear window defogger.

Reference Information

Schematic Reference

Defogger Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX - COUPE AND WAGON

Description and Operation

Rear Window Defogger Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Ignition ON, observe the scan tool Rear Defrost State parameter while pressing the rear window defogger switch. The parameter should change between On and Off.
 - If the value does not change between the commanded states, replace the Radio/HVAC control.
2. Observe the operation of the rear window defogger indicator while pressing the rear window defogger

switch. The indicator should turn ON or OFF each time the rear window defogger switch is pressed.

- If the indicator does not turn ON or OFF with each switch press, replace the Radio/HVAC control.
- 3. Command the Rear Defog Request ON and OFF with a scan tool. The rear window defogger should turn ON and OFF when changing between the commanded states.

Circuit/System Testing

1. Ignition OFF, disconnect the REAR DEFOG relay.
2. Test for less than 1 ohms between the ground circuit terminal 85 and ground.
 - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, verify that a test lamp does not illuminate between the control circuit terminal 30 and ground.
 - If the test lamp illuminates, test the control circuit for a short to voltage.
4. Verify that a test lamp illuminates between the B+ circuit terminal 87 and ground.
 - If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance.
5. Ignition OFF, disconnect the X2 harness connector at the defogger grid.
6. Test for less than 1 ohms between the ground circuit terminal A and ground.
 - If greater than the specified range, test the ground circuit for an open/high resistance.
7. Connect the harness connector at the defogger grid.
8. Ignition ON, connect a 50A fused jumper wire between the B+ circuit terminal 87 and the control circuit terminal 30. Verify the defogger grid is activated.
 - If the defogger grid does not activate, test the control circuit for a short to ground or an open/high resistance. If the circuit tests normal, refer to **Defogger Grid Lines Diagnosis**.
9. Connect a test lamp between the control circuit terminal 86 and the ground circuit terminal 85.
10. Command the Rear Defog Request ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always ON, test the control circuit for a short to voltage. If the circuit tests normal, replace the HVAC control module.
 - If the test lamp is always OFF, test the control circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the HVAC control module.
11. If all circuits test normal, test or replace the REAR DEFOG relay.

Component Testing

Relay Test

1. Ignition OFF, disconnect the REAR DEFOG relay.
2. Test for 60-180 ohms between terminals 85 and 86.
 - If not within the specified range, replace the relay.
3. Test for infinite resistance between the following terminals:
 - 30 and 86

- 30 and 87
 - 30 and 85
 - 85 and 87
 - If not the specified value, replace the relay.
4. Install a 30-A fused jumper wire between relay terminal 85 and 12 volts. Install a jumper wire between relay terminal 86 and ground. Test for less than 2 ohms between terminals 30 and 87.
- If greater than the specified range, replace the relay.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

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

POWER WINDOWS MALFUNCTION (WAGON)

Diagnostic Instructions

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

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Window Motor B+	U1511 00	U1511 00	-	B320A 4B
LR Window Switch B+	3	3	-	-
Passenger Window Motor B+	U1511 00	U1511 00	-	B320A 4B
RR Window Switch B+	4	4	-	-
Driver Window Motor Serial Data	U1500 02	U1500 02	U1500 02	B320A 4B
Passenger Window Motor Serial Data	U1500 02, U1511 00	U1511 00	U1511 00	B320A 4B
LR Window Motor Control	3	3	3	-
RR Window Motor Control	4	4	4	-
Window Master Switch LR Down Control	B3820 00	B3820 00	B3820 00	-
LR Window Master Switch Lockout Control	B3821 00	B3821 00	B3821 00	-

RR Window Master Switch Lockout Control	B3824 00	B3824 00	B3824 00	-
Window Master Switch LR Up Control	B3819 00	B3819 00	B3819 00	-
Window Master Switch RR Down Control	B3823 00	B3823 00	B3823 00	-
Window Master Switch RR Up Control	B3822 00	B3822 00	B3822 00	-
LR Window Switch Ground	-	3	3	-
Driver Window Motor Ground	-	U1511 00	1	B320A 4B
Passenger Window Motor Ground	-	U1511 00	2	B320A 42, B320A 4B
RR Window Switch Ground	-	4	4	-
1. Driver Window Malfunction 2. Passenger Window Malfunction 3. Left Rear Window Malfunction 4. Right Rear Window Malfunction				

Circuit/System Description

The front and rear power windows are controlled by the driver door lock/window switch and passenger door lock/window switch. The driver door lock/window switch and passenger door lock/window switch each contain power window switches that are integrated into the module. The driver door lock/window switch contains the master power window switches that control all power window operations. The power window switch contained in the passenger door lock/window switch controls the front passenger window operation only.

When the driver power window switch is activated to a desired position, the driver door lock/window switch examines the request and checks for messages from other vehicle control modules prohibiting window movement. If no prohibitive messages have been received, the driver door lock/window switch will send a serial data message to the driver door window motor to move the window to the desired position.

When the driver door lock/window switch receives a request to operate the right side passenger windows from the master switch, a serial data message is sent to the passenger door lock/window switch. The passenger door lock/window switch examines the request and checks for messages from other vehicle control modules prohibiting the window movement. If no prohibitive messages have been received, the passenger door lock/window switch will send a serial data message to the appropriate window motor to move the window as requested.

When the driver door lock/window switch receives a request to operate a rear window from the master switch, a serial data message is sent to the BCM. The BCM examines the request and checks for messages from other vehicle control modules prohibiting the window movement. If no prohibitive messages have been received, the BCM will send a serial data message to the appropriate rear window switch which will command the window motor as requested.

Reference Information

Schematic Reference

- **Moveable Window Schematics**
- **Door Control Module Schematics**

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX - COUPE AND WAGON

Description and Operation

Power Windows Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Ignition ON, observe the operation of each power window while commanding the window UP and DOWN by using their local door window switches, each window should perform the UP and DOWN function from each switch.
 - If the driver window does not perform as specified, refer to Front Window Malfunction.
 - If the front passenger window does not perform as specified, refer to Front Window Malfunction.
 - If either rear power window does not perform as specified, refer to Rear Window Malfunction.
2. Command the left rear window and right rear window UP and DOWN by using the switch on the driver door lock/window switch, each rear window should perform the UP and DOWN function.
 - If either rear window does not perform as specified, refer to Rear Window Malfunction.
3. Observe the scan tool Driver Window RF Switch, Driver Window LR Switch and Driver Window RR Switch parameters while using the window switches on the driver door lock/window switch. The parameter should change between Off/Up/Down/Express Down.
 - If the value does not change, replace the driver door lock/window switch.
4. Observe the scan tool Window Lockout Switch parameter while pressing and depressing the window lockout switch on the driver door lock/window switch. The parameter should change between On and Off.
 - If the value does not change, replace the driver door lock/window switch.
5. Command the driver window and passenger window to express UP and express DOWN by using the

driver and passenger door lock/window switches. The each window should perform the express UP and express DOWN functions.

- If the function does not perform as specified, refer to **Window Motor Programming - Express Function**.

Circuit/System Testing

Front Window Malfunction

1. Ignition OFF, disconnect the X1 harness connector at the appropriate front door lock/window switch.
2. Test for less than 1 ohms between the ground circuit terminal 6 and ground.
 - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, verify that a test lamp illuminates between the B+ circuit 4 and ground.
 - If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance.
4. Ignition OFF, connect the X1 harness connector at the front door lock/window switch.
5. Ignition ON, observe the scan tool Driver LF Window Switch parameters while using the driver power window switch on the driver door lock/window switch and the scan tool Passenger Window Switch parameters while using the passenger window switch on the passenger door lock/window switch. The parameter should change between Off, Up, Down, Express Up, and Express Down.
 - If the value does not change between commanded states, replace the front door lock/window switch.
6. Ignition OFF, disconnect the harness connector at the window motor.
7. Test for less than 5 ohms between the ground circuit terminal 4 and ground.
 - If greater than the specified range, test the ground circuit for an open/high resistance.
8. Ignition ON, verify that a test lamp illuminates between the B+ circuit terminal 3 and ground.
 - If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance.
9. If all circuits test normal, replace the window motor.

Rear Window Malfunction

1. Ignition OFF, disconnect the harness connector at the appropriate rear window switch.
2. Test for less than 1 ohms between the ground circuit terminal E and ground.
 - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, verify that a test lamp illuminates between the B+ circuit terminal H and ground.
 - If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance.

NOTE: Check the lockout switch on the driver door lock/window switch and verify the rear window switches are enabled.

4. Test for greater than 9 V between the control circuit terminal D and ground.

- If less than the specified range, test the control circuit for a short to ground or open/high resistance. If the circuit tests normal, replace the BCM.
- 5. Test for greater than 9 V between the signal circuit terminal B and ground while commanding the rear window DOWN by using the window switch on the driver door lock/window switch.
 - If less than the specified range, test the signal circuit for a short to ground or open/high resistance. If the circuit tests normal, replace the BCM.
- 6. Test for greater than 9 V between the signal circuit terminal C and ground while commanding the rear window UP by using the window switch on the driver door lock/window switch.
 - If less than the specified range, test the signal circuit for a short to ground or open/high resistance. If the circuit tests normal, replace the BCM.
- 7. Ignition OFF, connect the rear window switch and disconnect the harness connector at the rear window motor.
- 8. Connect a test lamp between the control circuit terminal A and control circuit terminal B.
- 9. Ignition ON, command the rear window UP and DOWN by using the rear window switch. The test lamp should illuminate when commanding the UP and DOWN states.
 - If the test lamp is always OFF during either of the commands, test either control circuit for a short to ground or open/high resistance. If the circuits test normal, replace the rear window switch
 - If the test lamp is always ON, test either control circuit for a short to voltage. If the circuits test normal, replace the rear window switch.
- 10. If all circuits test normal, test or replace the rear window motor.

Component Testing

Rear Window Motor

1. Ignition OFF, disconnect the harness connector at the appropriate window motor.
2. Install a 25 A fused jumper wire between one of the control terminals and 12 V. Momentarily install a jumper wire between the other control terminal and ground. Reverse the jumper wires at least two times, the window motor should perform the UP and DOWN functions.
 - If it does not perform as specified, replace the window motor.

Repair Instructions

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

- **Front Side Door Window Regulator Motor Replacement (Wagon)**
- **Rear Side Door Window Regulator Motor Replacement**
- **Rear Side Door Window Switch Replacement (Wagon)**
- **Door Lock and Side Window Switch Replacement - Driver Side**
- **Door Lock and Side Window Switch Replacement - Passenger Side**
- **Control Module References** for BCM, driver door lock/window switch, or passenger door lock/window switch replacement, programming and setup

POWER WINDOWS MALFUNCTION (COUPE)

Diagnostic Instructions

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

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Window Motor B+	U1511 00	U1511 00	-	B320A 4B
Passenger Window Motor B+	U1511 00	U1511 00	-	B320A 4B
Driver Window Motor Serial Data	U1500 02	U1500 02	U1500 02	B320A 4B
Passenger Window Motor Serial Data	U1500 02, U1511 00	U1511 00	U1511 00	B320A 4B
Driver Window Motor Ground	-	U1511 00	1	B320A 4B
Passenger Window Motor Ground	-	U1511 00	2	B320A 42, B320A 4B
1. Driver Window Malfunction 2. Passenger Window Malfunction				

Circuit/System Description

The front power windows are controlled by the driver door lock/window switch and passenger door lock/window switch. The driver door lock/window switch and passenger door lock/window switch each contain power window switches that are integrated into the module. The driver door lock/window switch contains the master power window switches that control both power window operations. The power window switch contained in the passenger door lock/window switch controls the front passenger window operation only.

When the driver power window switch is activated to a desired position, the driver door lock/window switch examines the request and checks for messages from other vehicle control modules prohibiting window movement. If no prohibitive messages have been received, driver door lock/window switch will send a serial data message to the driver door window motor to move the window to the desired position.

When the driver door lock/window switch receives a request to operate the passenger window from the right front window switch, a serial data message is sent to the passenger door lock/window switch. The passenger door lock/window switch examines the request and checks for messages from other vehicle control modules prohibiting the window movement. If no prohibitive messages have been received, the passenger door lock/window switch will send a serial data message to the appropriate window motor to move the window as requested.

Reference Information

Schematic Reference

- **Moveable Window Schematics**
- **Door Control Module Schematics**

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX - COUPE AND WAGON

Description and Operation

Power Windows Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Ignition ON, observe the operation of the power windows while commanding each window UP and DOWN by using their respective window switches, each window should perform the UP and DOWN function.
 - If the driver window malfunctions, perform the Circuit/System Testing.
 - If the passenger window malfunctions, perform the Circuit/System Testing.
2. Observe the scan tool Driver Window RF Switch parameters while using the appropriate driver window switch. The parameter should change between Off/Up/Down/Express Up/Express Down.
 - If the values do not change, replace the S84D door lock/window switch-driver.
3. Command the express up and express down functions of the driver and passenger door windows by pressing their window switches past the first detent and releasing and pulling their window switches past the first detent and releasing. The appropriate window should perform the express up and express down function.
 - If the function does not perform as specified, refer to **Window Motor Programming - Express Function**.

Circuit/System Testing

1. Ignition OFF, disconnect the X1 harness connector at the appropriate S84 door lock/window switch.
2. Test for less than 30 ohms between the ground circuit terminal 6 and ground.
 - If greater than the specified range, test the ground circuit for an open/high resistance.

3. Ignition ON, verify that a test lamp illuminates between the B+ circuit terminal 4 and ground.
 - If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance.
4. Ignition OFF, connect the X1 harness connector at the S84 door lock/window switch.
5. Ignition ON, observe the scan tool Window Switch parameters while using the power window switch on the S84 door lock/window switch. The parameter should change between Off, Up, Down, Express Up, and Express Down.
 - If the value does not change, replace the S84 door lock/window switch.
6. Ignition OFF, disconnect the harness connector at the appropriate M74 window motor.
7. Test for less than 30 ohms between the ground circuit terminal 4 and ground.
 - If greater than the specified range, test the ground circuit for an open/high resistance.
8. Ignition ON, verify that a test lamp illuminates between the B+ circuit terminal 3 and ground.
 - If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance.
9. If all circuits test normal, replace the M74 window motor.

Repair Instructions

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

- **Front Side Door Window Regulator Motor Replacement (Wagon)**
- **Control Module References** for driver door lock/window switch and passenger door lock/window switch replacement, programming and setup

SIDE DOOR WINDOW MECHANICAL DIAGNOSIS

Side Door Window Mechanical Diagnosis

Cause	Correction
DEFINITION: A mechanical condition that requires a correction for proper operation of the side door window.	
Refer to <u>Symptoms - Fixed and Moveable Windows</u> prior to beginning this table.	
Intermittent Operation	Check proper glass alignment/attachment and door seal installation.
	Check switch and switch bezel to see if sticking.
	Check wire harness for pinched/shorted wire.
	THIS STEP APPLIES TO ALL TWO PIN MOTOR CONNECTORS ONLY. Perform electrical diagnostics, by first applying 12 volt power supply to the regulator motor to verify motor function.
Glass Binds	Check proper glass alignment/attachment.
	Check for defective seal and/or proper seal installation.
	Check for debris in glass run channel.
	Check for glass run channel position.
Regulator/Glass Rattles	Check for loose fasteners and retorque if required.
	Check that the glass is in the channel and reinstall if not positioned

	correctly.
Noisy Operation	Check for other components in the glass path such as wire harness, impact foam, lock rods, or cables.
	Check for proper glass alignment/attachment and door seal installation.
Windnoise	Check seals, mirror patch, and glass alignment.
False glass reversal, the glass goes down unexpectedly.	Check seals, reinitialize the glass and/or realign the glass.
	Check for debris in the glass run channel.

REPAIR INSTRUCTIONS

WINDSHIELD REPLACEMENT

Special Tools

- **BO-24402-A** Glass Sealant Remover (Cold Knife)
- **BO-39032** Stationary Glass Removal Tool
- Use an adhesive that is approved by GM

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

Removal Procedure

1. Open the hood.
2. Remove the windshield wiper arms. Refer to **Windshield Wiper Arm Replacement** .
3. Remove the air inlet grille. Refer to **Air Inlet Grille Panel Replacement** .
4. Remove the rearview mirror. Refer to **Inside Rearview Mirror Replacement** .
5. Remove the outside moisture sensor, if equipped. Refer to **Windshield Outside Moisture Sensor Replacement** .
6. Remove the interior windshield garnish moldings. Refer to **Windshield Side Garnish Molding Replacement** .

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

7. Cover to protect the following parts from broken glass:
 - Upper dash pad
 - Defroster outlets and A/C outlets
 - Seats and carpeting

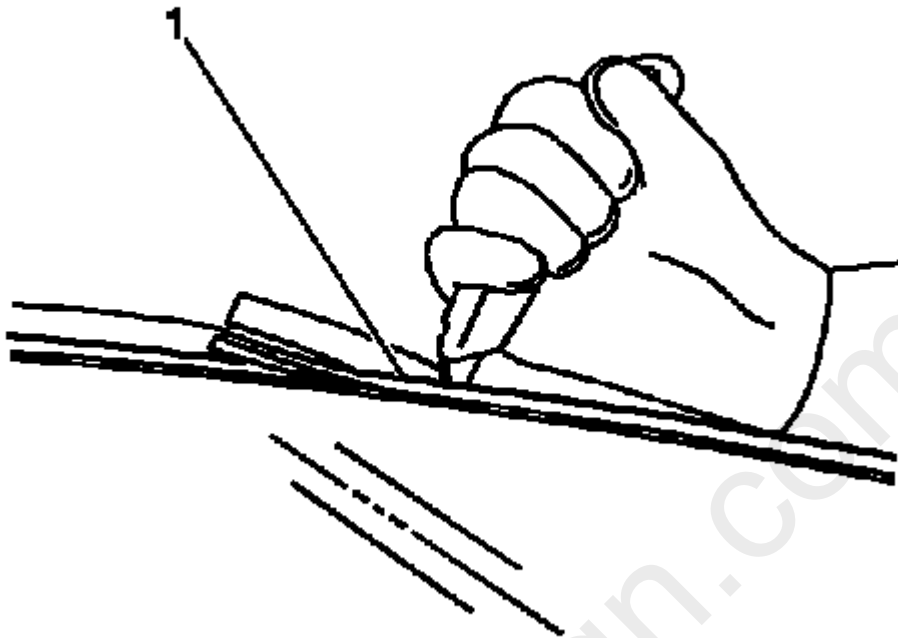


Fig. 5: Using Utility Knife To Remove Reveal Molding
Courtesy of GENERAL MOTORS COMPANY

WARNING: Refer to Glass and Sheet Metal Handling Warning .

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

8. Using a utility knife, carefully cut the windshield lace molding (1) in order to access the urethane adhesive bead.

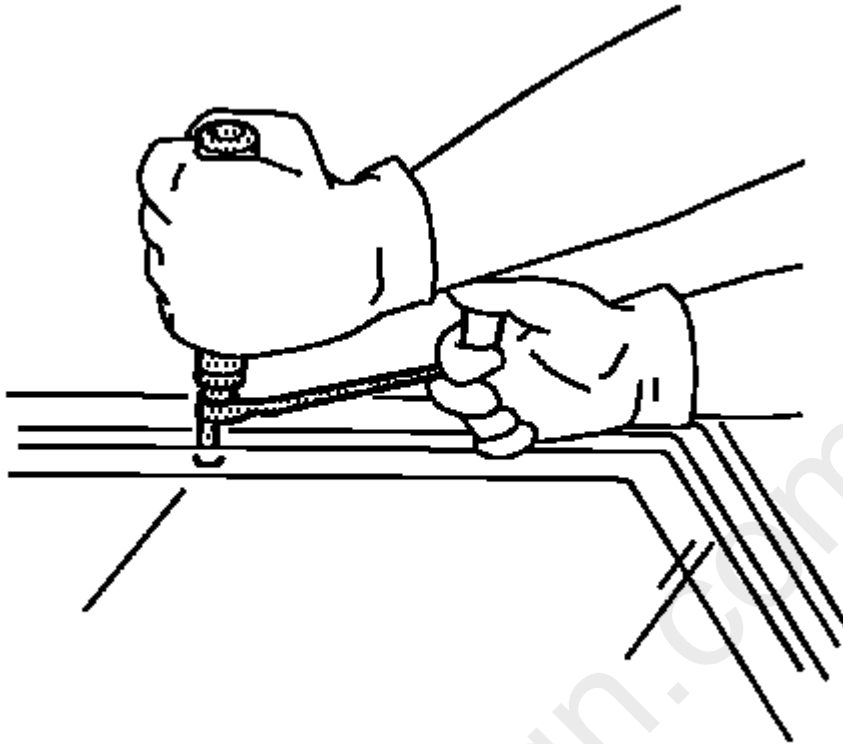


Fig. 6: Separating Urethane Adhesive From Window
Courtesy of GENERAL MOTORS COMPANY

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

9. This will allow the urethane adhesive to be separated from the window.
 - Leave a base of urethane on the pinchweld flange.
 - The only suitable lubrication is clean water.
 - Use **BO-24402-A** Glass Sealant Remover (Cold Knife).
 - **BO-39032** Stationary Glass Removal Tool , or equivalent in order to remove the window.

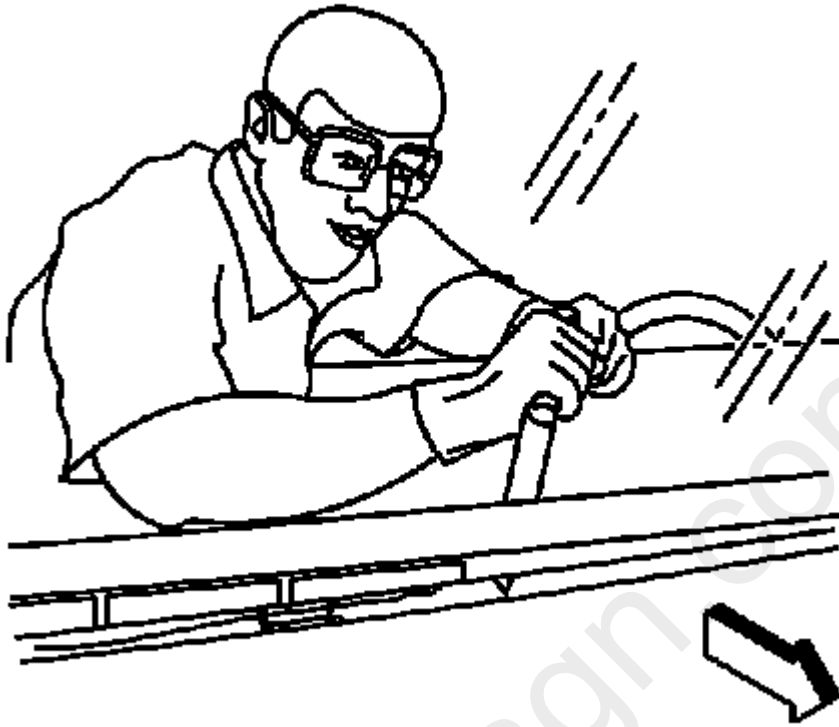


Fig. 7: Separating Bottom Of Window
Courtesy of GENERAL MOTORS COMPANY

10. 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. Do this from inside the vehicle.

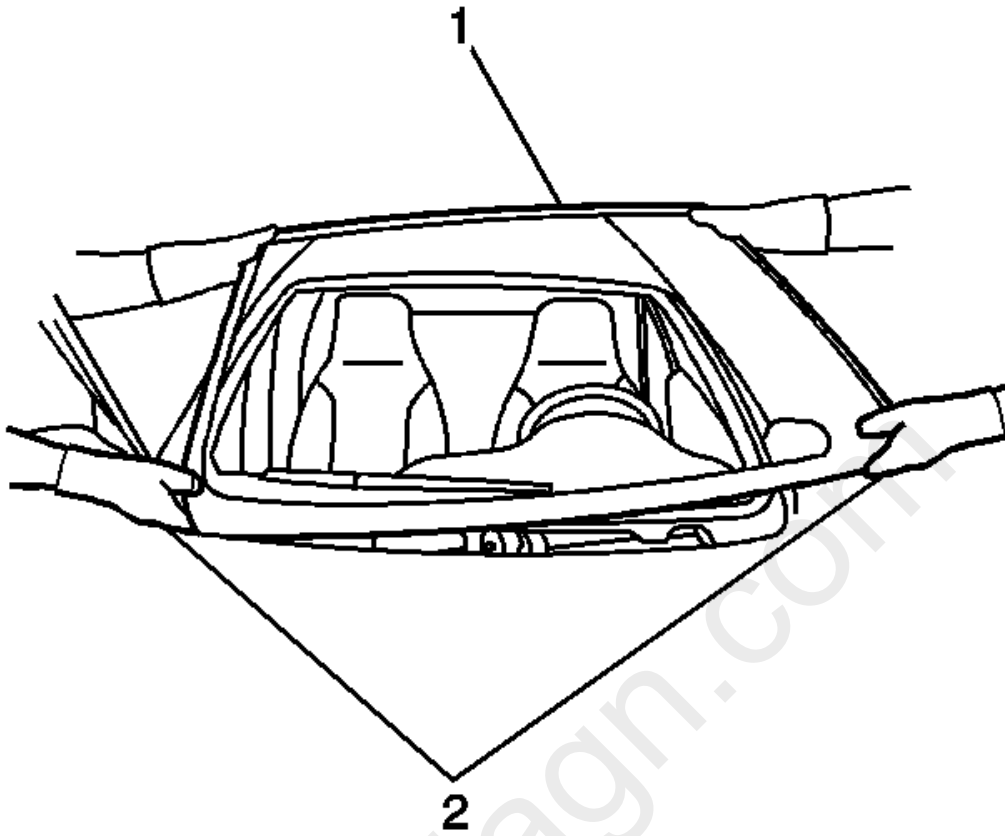


Fig. 8: Removing/Installing Windshield
Courtesy of GENERAL MOTORS COMPANY

11. Remove the windshield (1) from the vehicle.

Installation Procedure

1. Install the windshield into the opening. Refer to **Adhesive Installation of Windshields**.
2. Install the outside moisture sensor, if equipped. Refer to **Windshield Outside Moisture Sensor Replacement**.
3. Install the rearview mirror. Refer to **Inside Rearview Mirror Replacement**.
4. Install the interior windshield garnish moldings. Refer to **Windshield Side Garnish Molding Replacement**.
5. Install the air inlet grille. Refer to **Air Inlet Grille Panel Replacement**.
6. Install the windshield wipers arms. Refer to **Windshield Wiper Arm Replacement**.
7. Remove the double layer of masking tape around the perimeter of the painted surfaces and the interior trim.

8. Close the hood.

DOOR WINDOW ADJUSTMENT

Removal Procedure

cardiagn.com

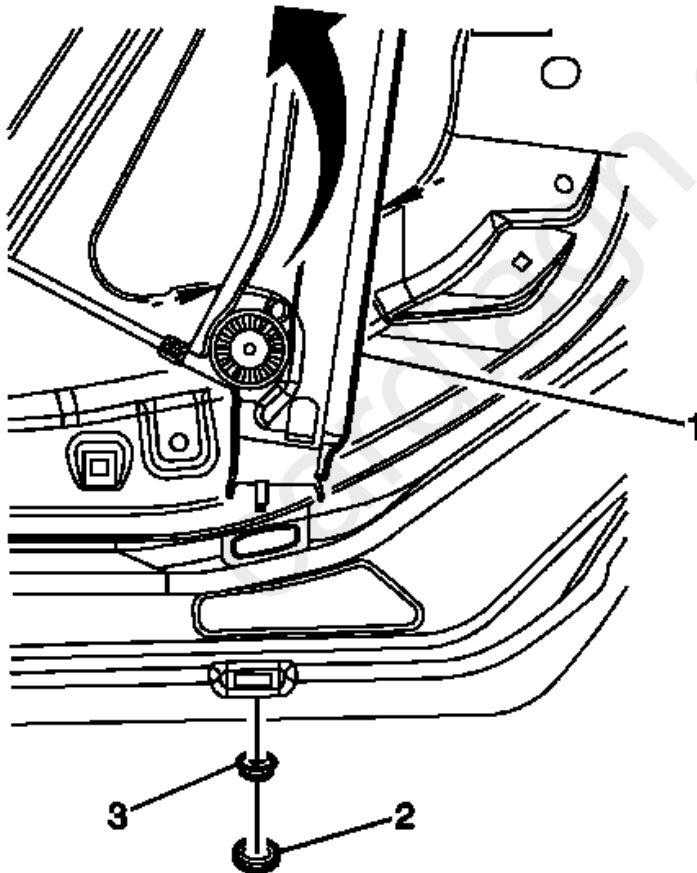
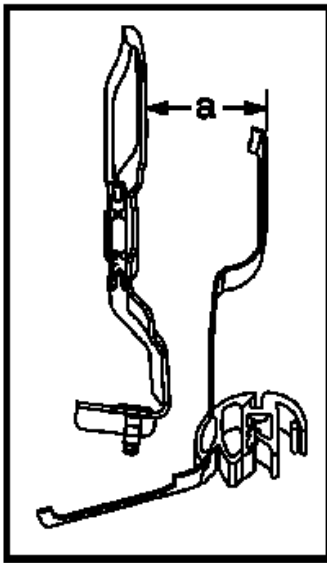


Fig. 9: Inner Panel To Rear Regulator Rail
 Courtesy of GENERAL MOTORS COMPANY

NOTE: The following will adjust the top edge of the window to tip in to the body

seal.

1. Verify that the measurement from the inboard surface of the inner panel to the rear regulator rail (1) is 30 mm (1.2 in), if correct go to next step. If not do the following:
 1. Remove the access plug (2) in the lower inside edge of the door.
 2. Loosen the nut (3) that secures the bottom of the regulator rail (3) to the door.
 3. Adjust the regulator rail (1) to achieve 30 mm (1.2 in).

CAUTION: Refer to Fastener Caution .

4. Re-torque the nut (2).

Tighten

Tighten the nut to 11 N.m (97 lb in).

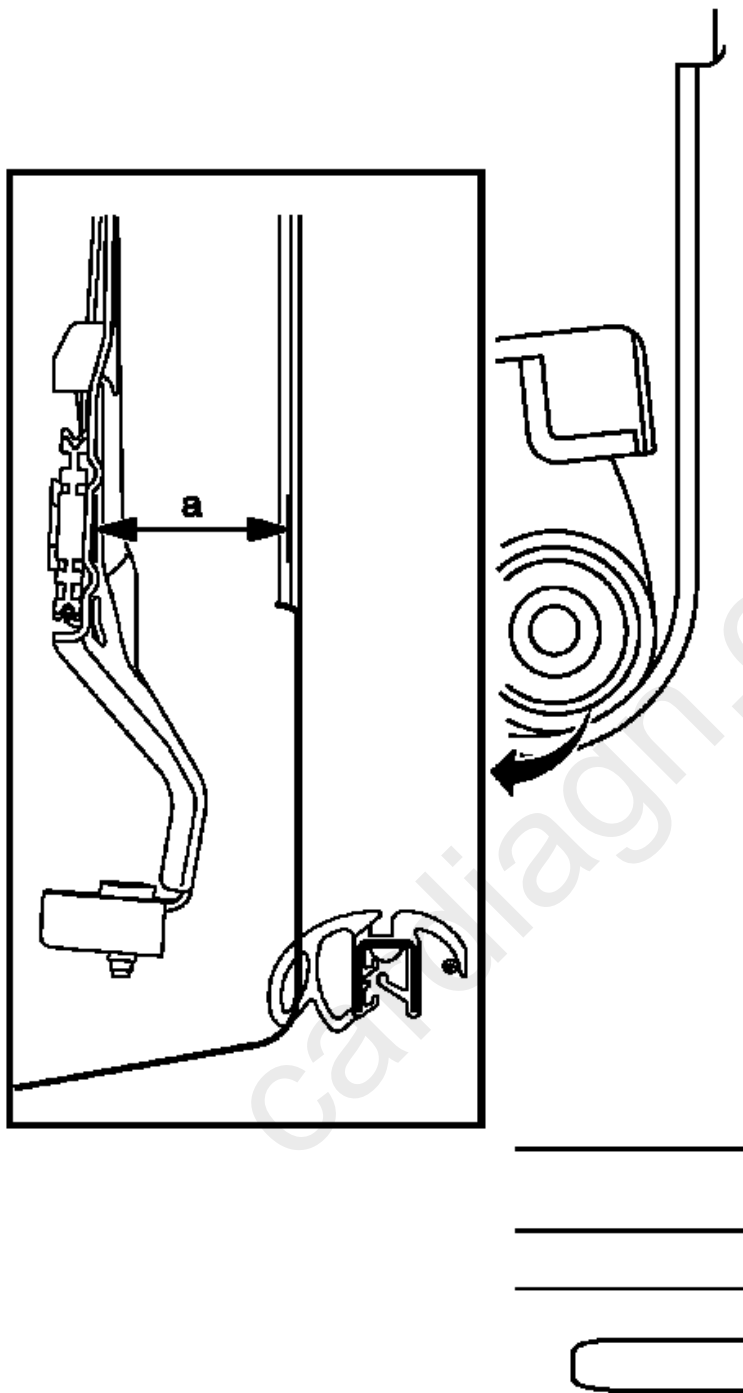


Fig. 10: Inner Panel To Front Regulator Rail
Courtesy of GENERAL MOTORS COMPANY

2. Verify that the measurement (a) from the inboard surface of the inner panel to the front regulator rail is 30 mm (1.2 in), if correct go to the next step. If not do the following:

1. Remove the access plug.
2. Loosen the nut that secures the bottom of the regulator rail to the door.
3. Adjust the regulator rail to achieve 30 mm (1.2 in).
4. Re-torque the nut.

Tighten

Tighten the nut to 11 N.m (97 lb in).

cardiagn.com

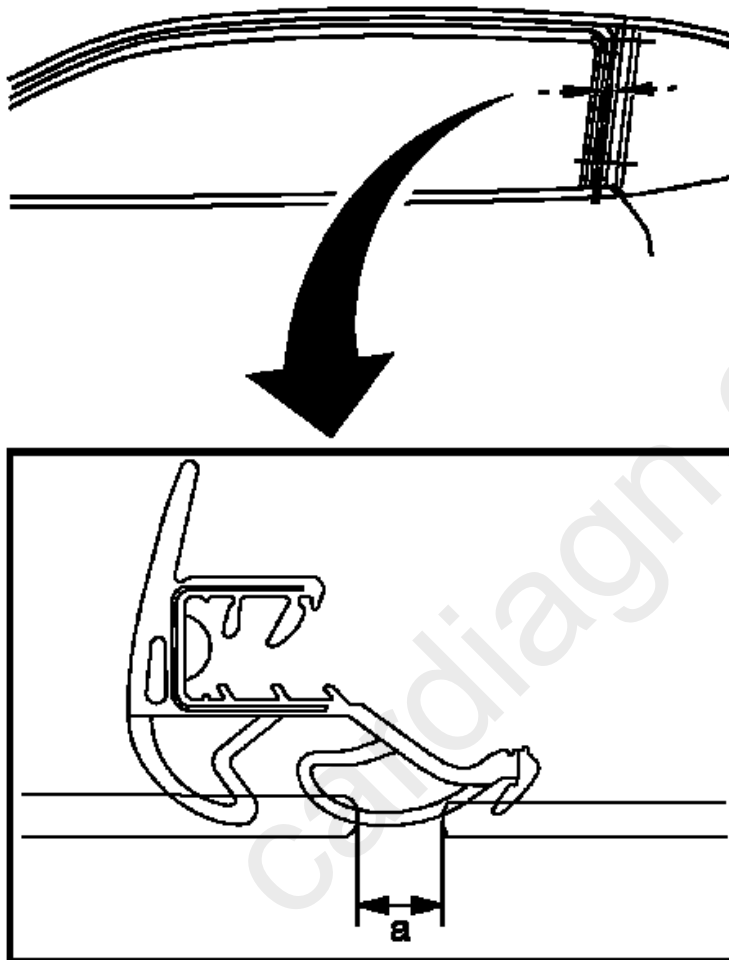


Fig. 11: Door Window Gap

Courtesy of GENERAL MOTORS COMPANY

3. Measure the gap (a) between door window and the 1/4 window, at 2 locations. 10 mm (0.39 in) $\pm$ 1.5 mm (0.06 in) and parallel within 1.5 mm (0.060 in), go to the next step.

- Record the measurements on the repair order for future reference.

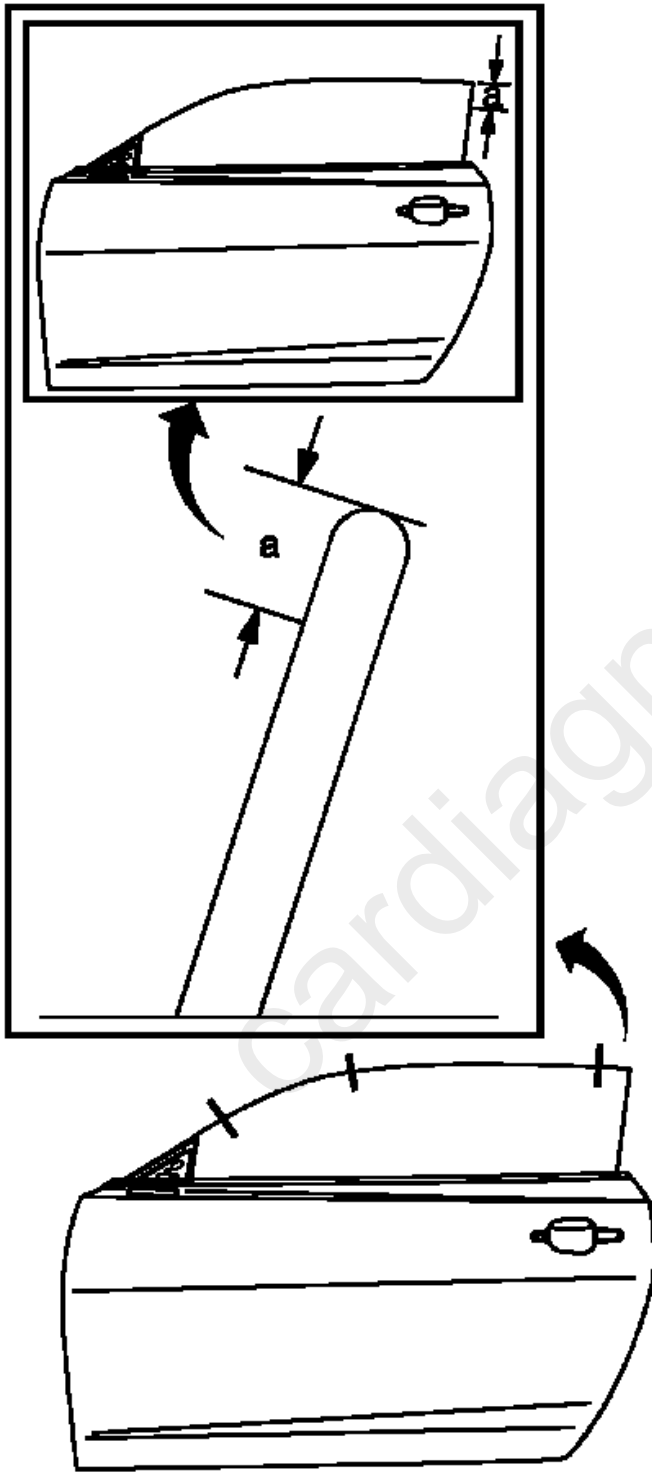


Fig. 12: Window Seal Penetration
Courtesy of GENERAL MOTORS COMPANY

NOTE: Record and save the measurement on the repair order for warranty/engineering request.

5. Measure the door window for proper seal penetration (a), at three locations. Record the measurements future reference. Adjust the door window seal for penetration.

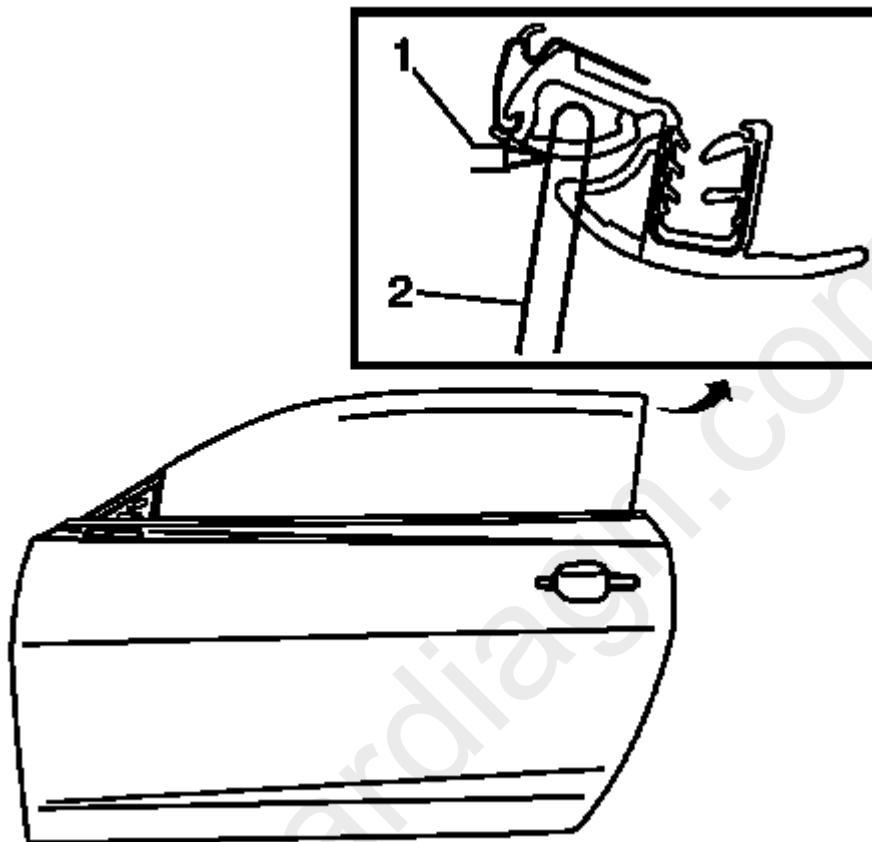


Fig. 13: Marking Window
Courtesy of GENERAL MOTORS COMPANY

6. Adjust the door window seal for penetration, Do the following:
 1. Using a felt tip pen (1) to mark the window is preferred, this washes off easily and does not scratch the window.

NOTE: Ensure that the parking brake is set and the right door is unlocked do the following.

2. With the window in the full up position and engine running close the door and mark the window as follows:
3. Mark the window along the top edge and the seal (1), were the window contact.
4. Mark the window (2) in three locations.

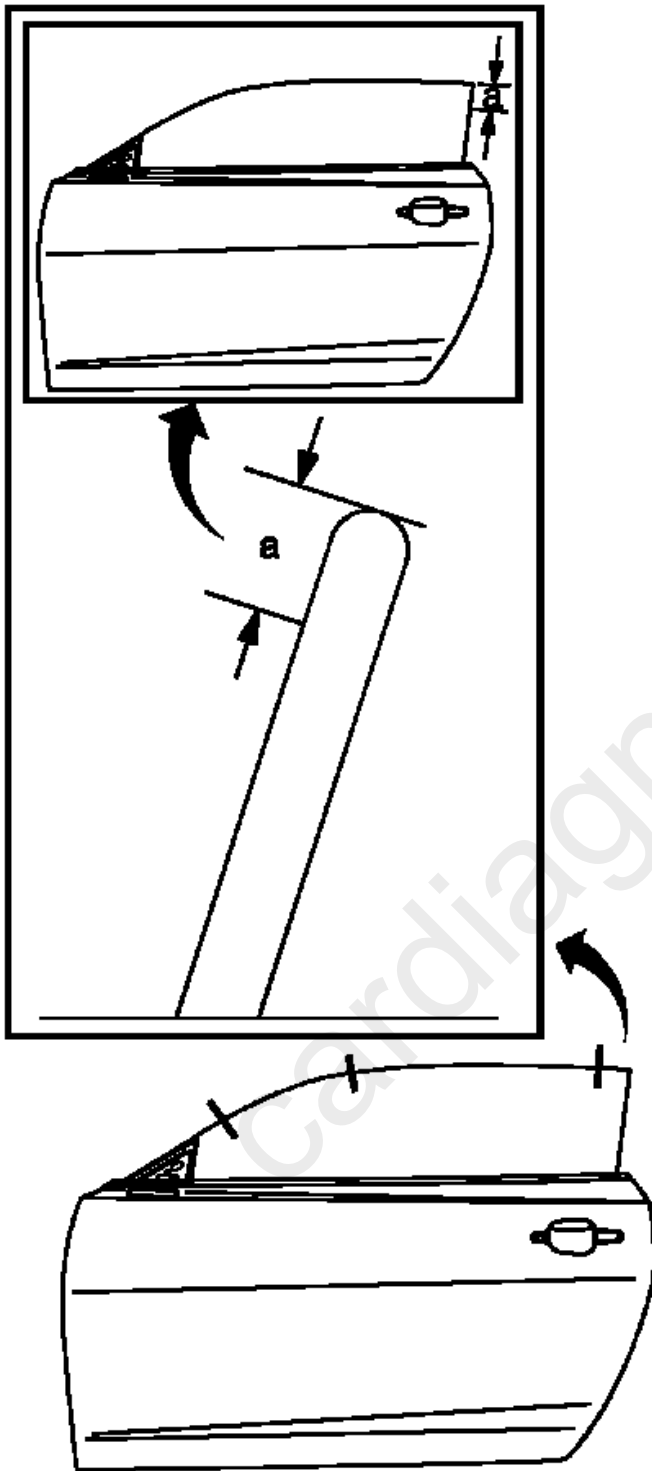


Fig. 14: Window Seal Penetration

Courtesy of GENERAL MOTORS COMPANY

7. Open the door, measure window for seal penetration in three locations above to 4.5 mm (0.18 in) $\pm$ 1.5 mm (0.06 in).

All three 3 locations must be within 1.5 mm (0.06 in) of each other.

NOTE: If all measurements meet the requirements , no additional repair is required.

8. The door window will need to be adjusted if any of the previous measurements were out of the specification: Do the following:
 1. If the door window to 1/4 window gap measured in step 6 is not 10 mm (0.39 in) +/-1.5 mm (0.06 in) and parallel within 1.5 mm (0.06 in) (this step may not be needed).
 2. If the window penetration measured in step 7 is less than 3mm (0.19 in).

NOTE: If any window adjustment are to be made, both clamps Must be loosened to eliminate regulator bind. At the front clamp, ensure that the rubber isolator is not stuck to the window after loosening.

9. This will require loosening both of the regulator clamps bolts to adjust the window. Do the following:
 1. Before the regulator clamp bolts are loosened to adjust the window, the following should be performed.
 2. With the door open , run the window to the full up position.
 3. Place the door window in the service position.
 4. Locate the door latch bolt on the body pillar.
 5. Push the latch bolt until it reaches the second detent or full lock position.
 6. The window will automatically move up to the full close position.
 7. Leave the window in this position during all adjustments while the regulator clamps are loose.

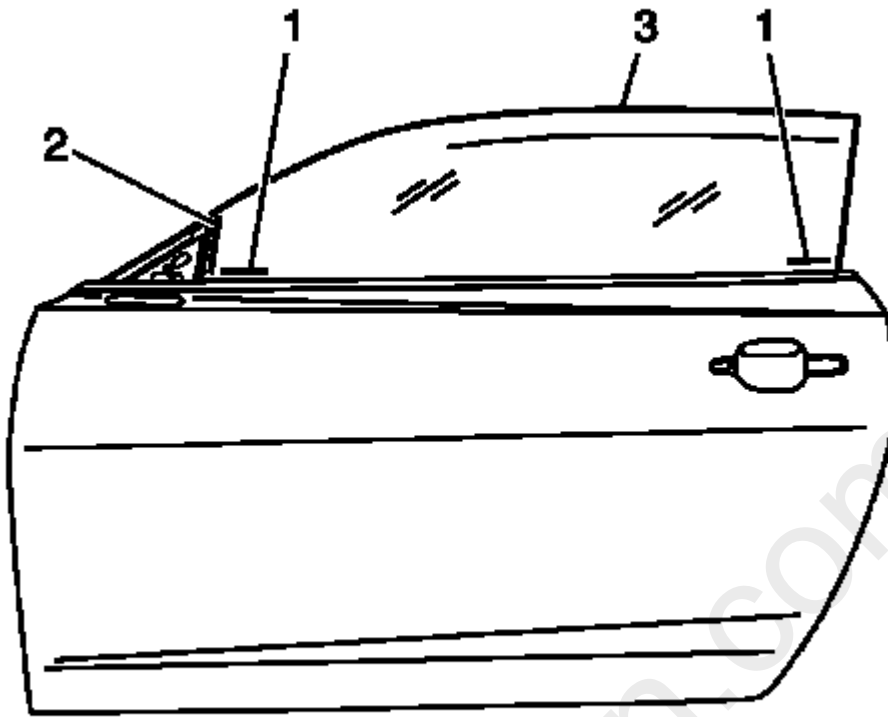


Fig. 15: Outer Reveal Belt Seal & Mirror Patch
Courtesy of GENERAL MOTORS COMPANY

10. Locate the outer reveal belt seal (1) and mirror patch (2), mark the window (3) in 3 places for the initial window position before adjustments are performed. These marks will aid in positioning the window to the desired location during adjustment.

NOTE: Ensure that the rubber isolator at the front regulator clamp is not stuck to the window after loosening.

11. Loosen the regulator clamp bolts and adjust the window as required to achieve the dimensions in step 8.
12. Tighten the regulator clamps bolts to the window.

Tighten

Tighten the regulator clamp bolts to the window to 11 N.m(97 lb in).

13. After all adjustments are complete, and the regulator clamps are torqued, activate door touch pad to release the latch bolt before closing the door.
14. After all adjustments are complete and verified, do the following:
 1. This step is only required if the regulator clamp bolts were loosened and the window was adjusted).

2. Access the fuse box in the rear compartment. Remove the power window circuit breaker and reinstall.
3. Get inside the vehicle, close both doors. Start the engine and follow the instructions found Window Motor Programming. Refer to **Window Motor Programming - Express Function**.

Installation Procedure

1. Inspect the window for proper operation with the door opened and closed.
2. Install the water deflector.
3. Install the front side door trim panel. Refer to **Front Side Door Trim Panel Replacement (Coupe)** , **Front Side Door Trim Panel Replacement (Wagon)** .
4. Clear all current and historical DTCs.
5. Clean the door window.

FRONT SIDE DOOR WINDOW REPLACEMENT (WAGON)

Removal Procedure

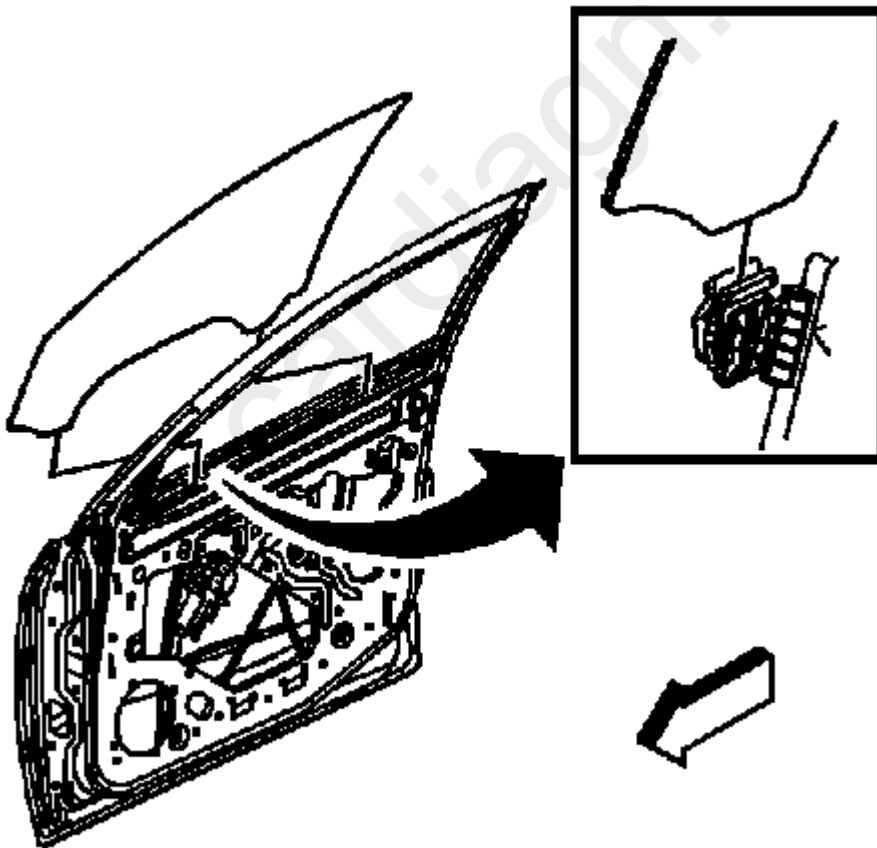


Fig. 16: View Of Front Window Regulator Clamp
Courtesy of GENERAL MOTORS COMPANY

1. Run the window to the full closed position.

WARNING: Refer to Glass and Sheet Metal Handling Warning .

WARNING: Refer to Express Window Down Warning .

2. Remove the door trim panel. Refer to Front Side Door Trim Panel Replacement (Wagon) .
3. Remove the water deflector.
4. Remove the window inner belt sealing strip. Refer to Front Side Door Window Belt Inner Sealing Strip Replacement (Wagon).
5. Tape the window in the closed position.
6. Loosen the window regulator clamp fasteners.
7. Connect the door trim panel electrical connector.
8. Using the power window switch, lower the window regulator to separate the window from the clamps.
9. Remove the tape.
10. Remove the window by tilting the window forward, pull the window up and out of the door.

Installation Procedure

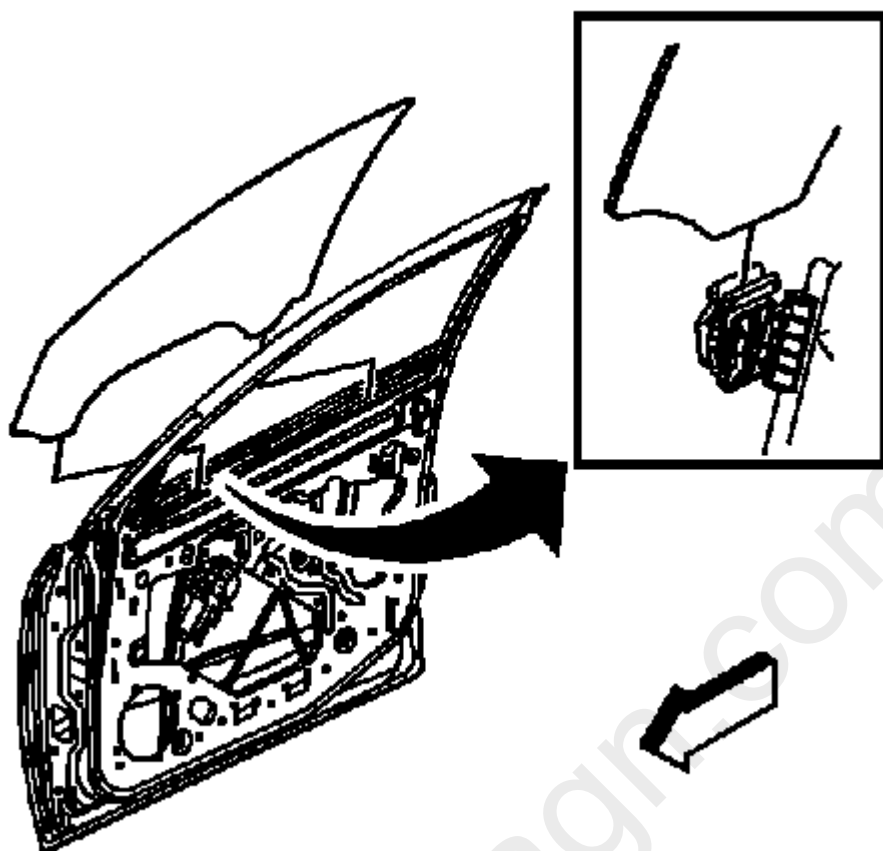


Fig. 17: View Of Front Window Regulator Clamp
Courtesy of GENERAL MOTORS COMPANY

NOTE: The window regulator should be at least 1/2 way down before installing the window.

1. Install the window into the door.
2. Position the window into the two window regulator clamps.

NOTE: Start the vehicle to ensure maximum power to the window motor. This is required in order to fully seat the window for adjustment.

3. Start the vehicle.

CAUTION: Refer to Fastener Caution .

4. Using the power window switch, raise the window to the fully closed position. Tighten the window clamp fasteners to 11 N.m (98 lb in).
5. Install the window inner belt sealing strip. Refer to Front Side Door Window Belt Inner Sealing Strip

Replacement (Wagon).

6. Inspect for proper window operation and a tight seal.
7. Shut off the vehicle.
8. Install the water deflector.
9. Install the door trim panel. Refer to **Front Side Door Trim Panel Replacement (Wagon)** .

FRONT SIDE DOOR WINDOW REPLACEMENT (COUPE)

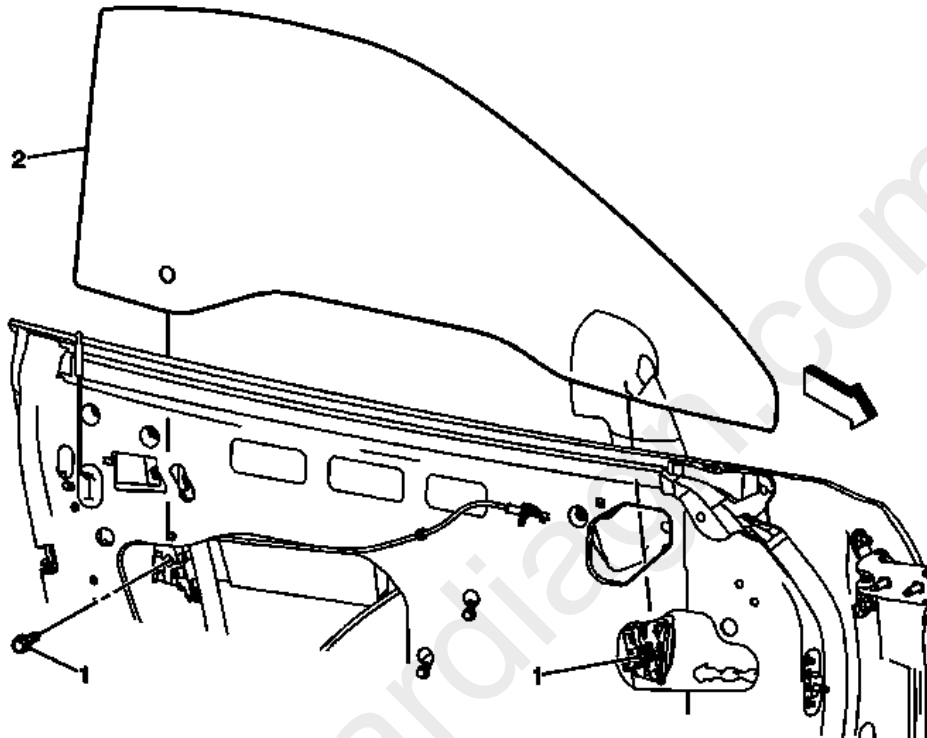


Fig. 18: Front Door Window
Courtesy of GENERAL MOTORS COMPANY

Front Side Door Window Replacement (Coupe)

Callout	Component Name
WARNING: Refer to <u>Glass and Sheet Metal Handling Warning</u> .	
WARNING: Refer to <u>Express Window Down Warning</u> .	
Preliminary Procedure	
1. Raise the window to the full up position. 2. Remove the front side door trim panel. Refer to <u>Front Side Door Trim Panel Replacement (Coupe)</u> .	

3.	Remove the inner sealing strip. Refer to <u>Front Side Door Window Belt Inner Sealing Strip Replacement (Wagon)</u> .
1	Front Side Door Window Regulator Window Fastener (Qty: 2) CAUTION: Refer to <u>Fastener Caution</u> . Procedures 1. Remove the water deflector. 2. Loosen the front fastener. 3. Remove the rear bolt and retainer clip that secure the window to the regulator. NOTE: 1. Loosen the front window clamp fastener, Do Not remove it from the clamp. 2. The rear window fastener goes through the window and must be removed before removing the window from the regulator. Tighten 11 N.m (98 lb in)
2	Front Side Door Window Procedure 1. Inspect the door for proper operation before installing the door trim panel. Refer to <u>Door Window Adjustment</u>. 2. After replacing the window it is necessary to reprogramming. Refer to <u>Control Module References</u> .

REAR SIDE DOOR WINDOW REPLACEMENT

Removal Procedure

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

1. Lower the window all the way down.
2. Remove the door trim panel. Refer to **Rear Side Door Trim Panel Replacement (Wagon)** .
3. Remove the water deflector.
4. Remove the window inner belt sealing strip. Refer to **Rear Side Door Window Inner Sealing Strip Replacement**.
5. Remove the rear side door stationary window. Refer to **Rear Side Door Stationary Window**

Replacement.

6. Remove the window outer belt sealing strip. Refer to **Rear Side Door Window Outer Sealing Strip Replacement.**
7. Connect the door trim panel electrical connector.
8. Run the window to the full up position.
9. Tape the window in the up position.

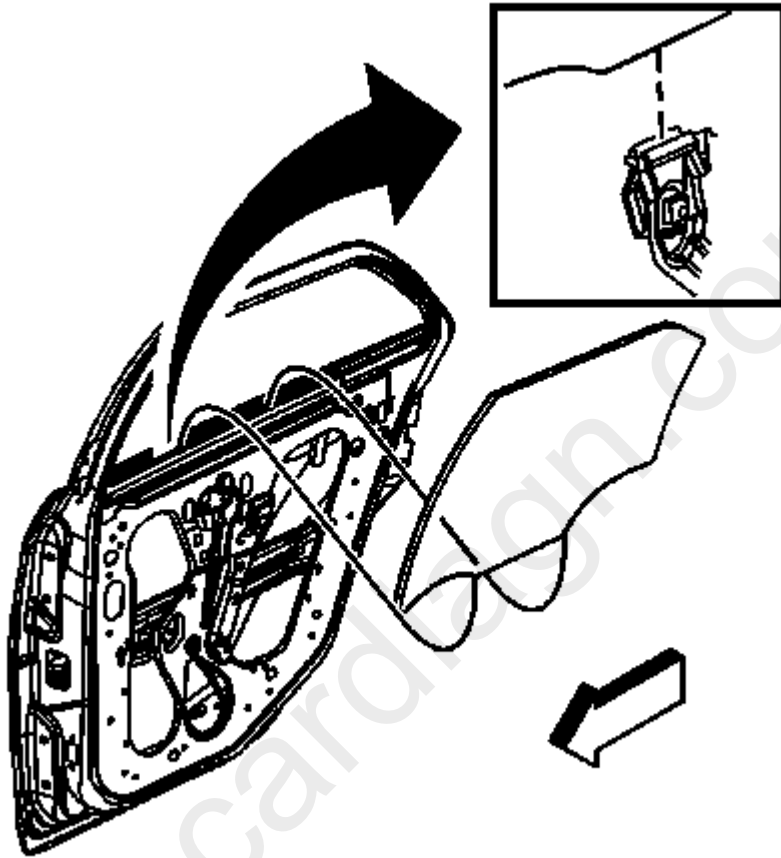


Fig. 19: View of Rear Door Window & Frame
Courtesy of GENERAL MOTORS COMPANY

10. Loosen the window clamp nuts 4 revolutions.
11. Using the power window switch, lower the window regulator to the full down position.
12. Remove the tape.
13. Slide the window down past the window regulator clamps and out of the front window run channel.
14. Lift the window out of the door.

Installation Procedure

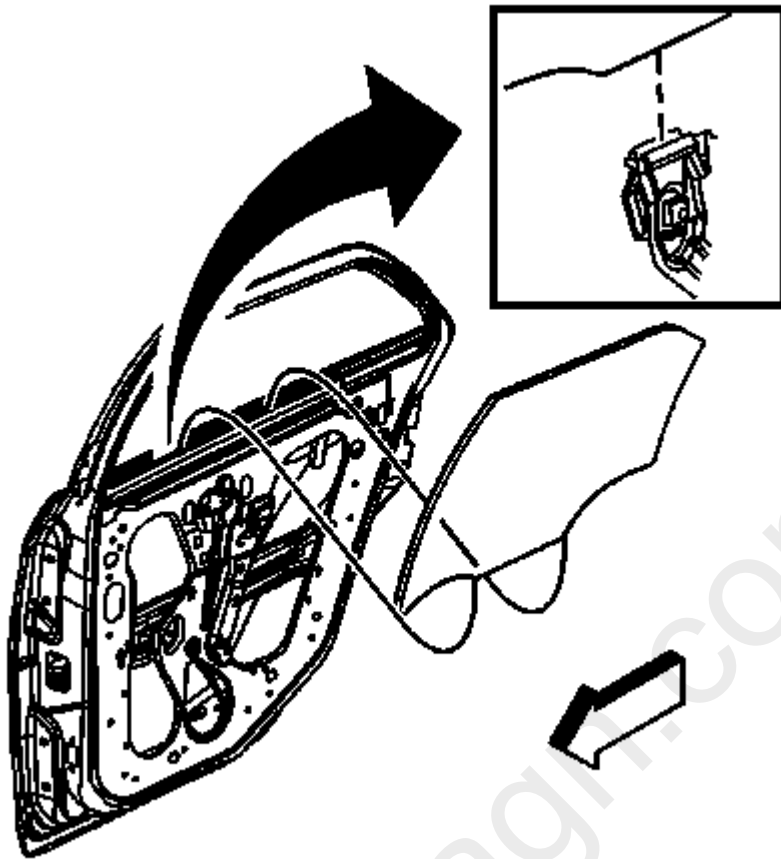


Fig. 20: View of Rear Door Window & Frame
Courtesy of GENERAL MOTORS COMPANY

1. Install the window down into the door assembly, inboard of the rear door stationary post, past the window clamps.
2. Position the glass into the stationary window post channel.
3. Raise the window past the window clamps.
4. Lower the window into the window clamps.

CAUTION: Refer to Fastener Caution .

5. Install the stationary window post bolt and tighten to 9 N.m (80 lb in).
6. Push the glass forward into the front glass run channel.

**NOTE: Start the vehicle in order to ensure maximum power to the window motor.
 This is required to fully seat the window for adjustment.**

7. Start the vehicle.

8. Using the power window switch, raise the window to the full up position. Tighten the window clamp nuts to 11 N.m (98 lb in).
9. Inspect the window for proper operation and a tight seal.
10. Shut off the vehicle.
11. Install the rear side door stationary window. Refer to **Rear Side Door Stationary Window Replacement**.
12. Install the window outer belt sealing strip. Refer to **Rear Side Door Window Outer Sealing Strip Replacement**.
13. Install the window inner belt sealing strip. Refer to **Rear Side Door Window Inner Sealing Strip Replacement**.
14. Install water deflector.
15. Install the door trim panel. Refer to **Rear Side Door Trim Panel Replacement (Wagon)**.

REAR SIDE DOOR STATIONARY WINDOW REPLACEMENT

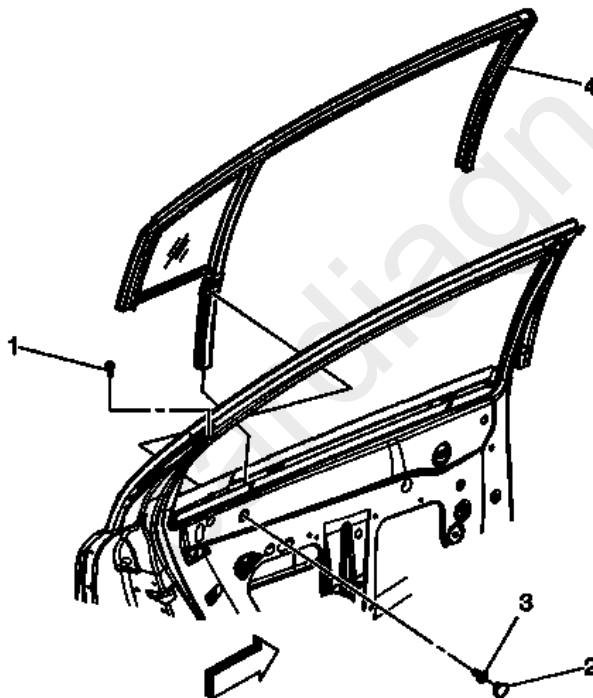


Fig. 21: View Of Rear Side Door Stationary Window
 Courtesy of GENERAL MOTORS COMPANY

Rear Side Door Stationary Window Replacement

Callout	Component Name
Preliminary Procedures	
1.	Remove the rear side door trim panel. Refer to <u>Rear Side Door Trim Panel Replacement (Wagon)</u> .

2. Remove the rear side door outer belt sealing strip. Refer to **Rear Side Door Window Outer Sealing Strip Replacement**.
3. Remove the rear side door inner belt sealing strip. Refer to **Rear Side Door Window Inner Sealing Strip Replacement**.
4. Remove the rear side door window. Refer to **Rear Side Door Window Replacement**.

1	Rear Side Door Stationary Window Screw CAUTION: Refer to <u>Fastener Caution</u> . Procedure 1. Pull back the upper door weatherstrip from the door frame to expose the screw. 2. Using masking tape, tape off the outer door frame to prevent scratching. 3. Remove the water deflector.
2	Rear Side Door Stationary Window Bolt Access Plug
3	Rear Side Door Stationary Window Bolt Tighten 10 N.m (89 lb in)
4	Rear Side Door Stationary Window

QUARTER WINDOW REPLACEMENT (WAGON)

Special Tools

- **BO-24402-A** Glass Sealant Remover (Cold Knife)
- **BO-39032** Stationary Glass Removal Tool
- Use an adhesive that is approved by GM

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

Removal Procedure

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

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

1. Remove the rear quarter panel upper trim.

WARNING: Refer to **Defroster Outlet Warning** .

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

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

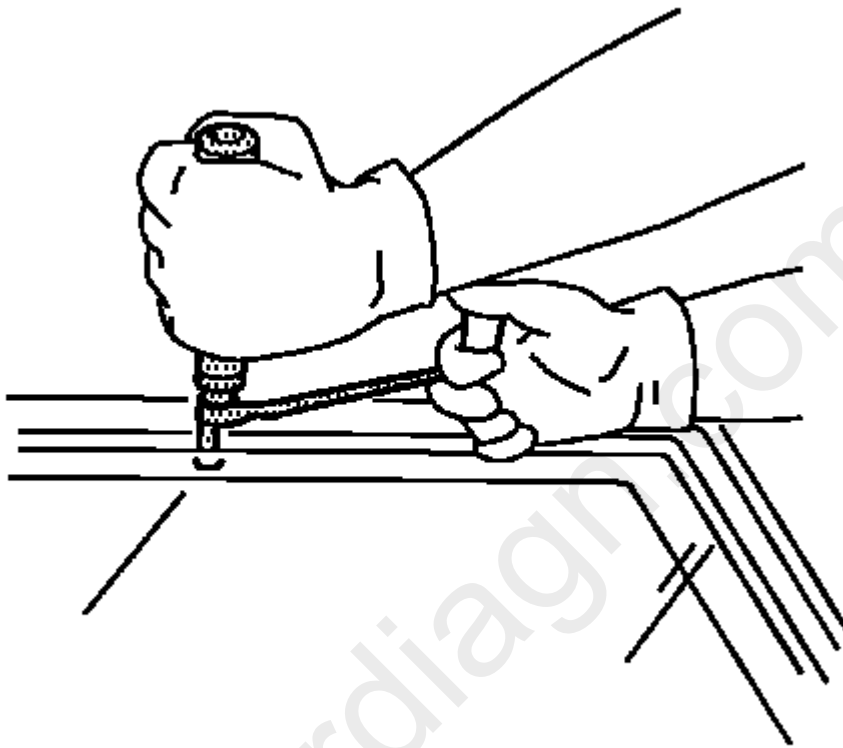


Fig. 22: Separating Urethane Adhesive From Window

Courtesy of GENERAL MOTORS COMPANY

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

Keep the cutting edge of the tool against the window.

3. Remove the window from the urethane adhesive.

- Leave a base of urethane approximately 2 mm (0.078 in) on the pinch-weld flange.
- The only suitable lubrication is clear water.
- Use **BO-24402-A** Glass Sealant Remover (Cold Knife).

- **BO-39032 Stationary Glass Removal Tool** , or equivalent in order to remove the window.

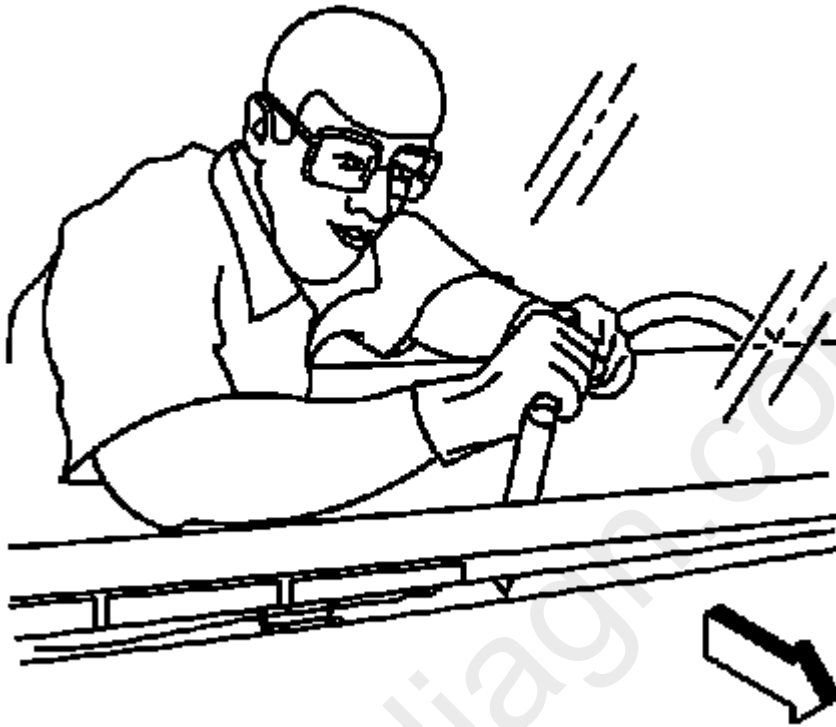


Fig. 23: Separating Bottom Of Window
Courtesy of GENERAL MOTORS COMPANY

NOTE: Keep the cutting edge of the knife/tool against the window. Do this from inside the vehicle.

4. If necessary, use a long utility knife or similar tool to remove the bottom corners of the window from the urethane adhesive.

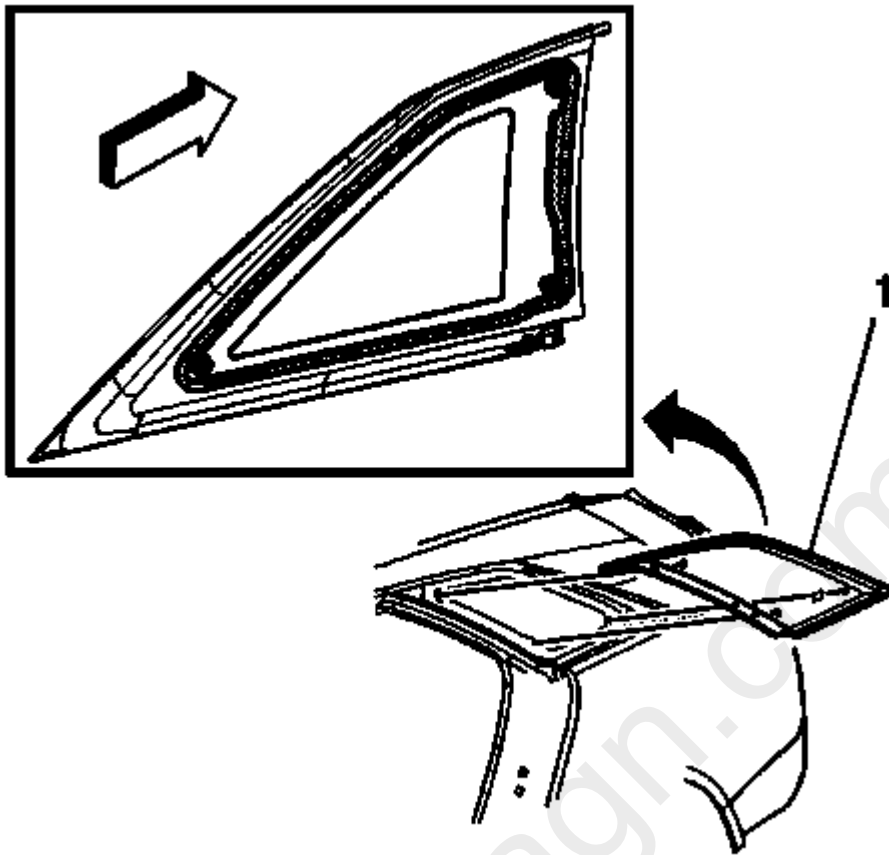


Fig. 24: Identifying Quarter Window
 Courtesy of GENERAL MOTORS COMPANY

5. Remove the quarter window (1) from the vehicle.

Installation Procedure

1. Install the quarter window into the opening. Refer to **Adhesive Installation of Encapsulated Stationary Windows (Wagon)**.
2. Install the rear quarter panel upper trim.
3. Remove the double layer of masking tape around the perimeter of the painted surfaces and the interior trim.
4. Close the rear compartment lid/liftgate.

QUARTER WINDOW REPLACEMENT (COUPE)

Special Tools

- **BO-24402-A** Glass Sealant Remover (Cold Knife)
- **BO-39032** Stationary Glass Removal Tool
- Use an adhesive that is approved by GM

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

Removal Procedure

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

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

1. Remove the rear quarter panel upper trim.

WARNING: Refer to **Defroster Outlet Warning** .

2. Cover the following parts to protect from broken glass:
 - Upper dash pad
 - Defroster outlets and A/C outlets
 - Seats and carpeting

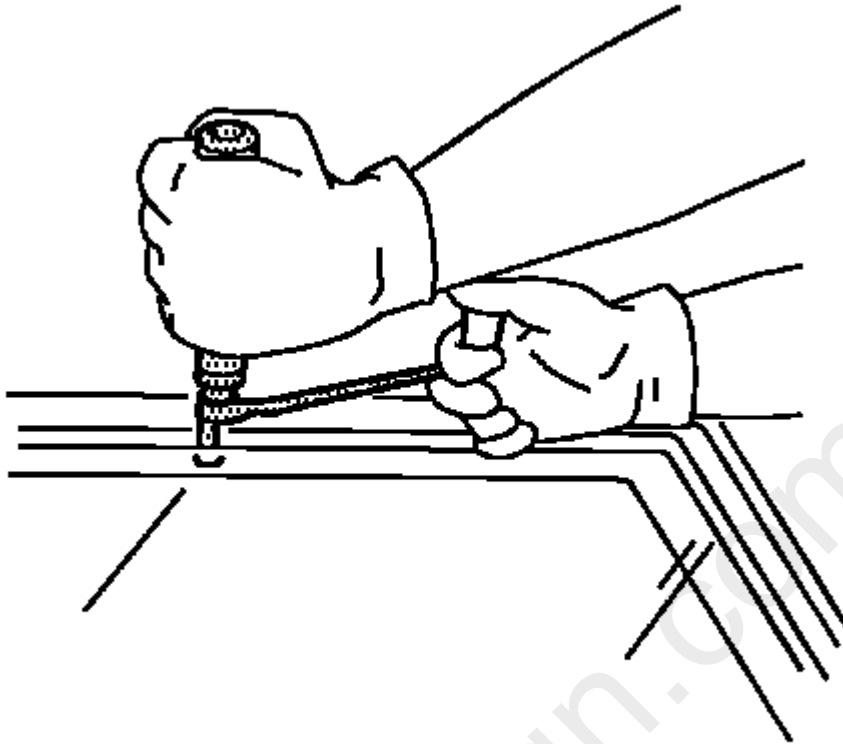


Fig. 25: Separating Urethane Adhesive From Window
Courtesy of GENERAL MOTORS COMPANY

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

Keep the cutting edge of the tool against the window.

3. Remove the window from the urethane adhesive.
 - Leave a base of urethane approximately 2 mm (0.078 in) on the pinch-weld flange.
 - The only suitable lubrication is clear water.
 - Use **BO-24402-A** Glass Sealant Remover (Cold Knife).
 - **BO-39032** Stationary Glass Removal Tool , or equivalent in order to remove the window.



Fig. 26: Separating Bottom Of Window
Courtesy of GENERAL MOTORS COMPANY

NOTE: Keep the cutting edge of the knife/tool against the window. Do this from inside the vehicle.

4. If necessary, use a long utility knife or similar tool to remove the bottom corners of the window from the urethane adhesive.

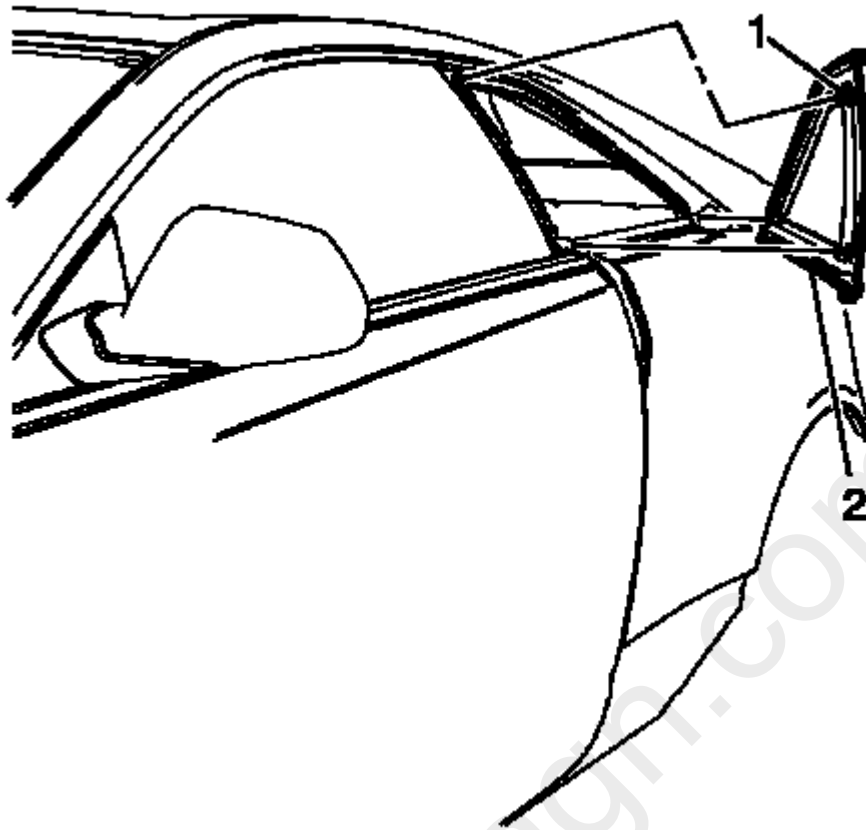


Fig. 27: Quarter Window

Courtesy of GENERAL MOTORS COMPANY

5. Remove the quarter window (1) from the vehicle.

Installation Procedure

1. Install the quarter window into the opening. Refer to **Adhesive Installation of Encapsulated Stationary Windows (Coupe)**.
2. Install the rear quarter panel upper trim.
3. Remove the double layer of masking tape around the perimeter of the painted surfaces and the interior trim.

REAR WINDOW REPLACEMENT (COUPE)

Special Tools

- **BO-24402-A** Glass Sealant Remover (Cold Knife)
- **BO-39032** Stationary Glass Removal Tool
- Use an adhesive that is approved by GM

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

Removal Procedure

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

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

1. Open the rear compartment lid in order to access the reveal molding.
2. Disconnect the rear window defogger electrical connectors.
3. Disconnect the rear window radio antenna, diversity antenna, and the television antenna. Refer to **Radio Antenna Module Replacement (Coupe)** , and **Television Antenna Cable Replacement**

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

4. Cover to protect the following parts from broken glass:
 - Upper dash pad
 - Defroster outlets and A/C outlets
 - Seats and carpeting

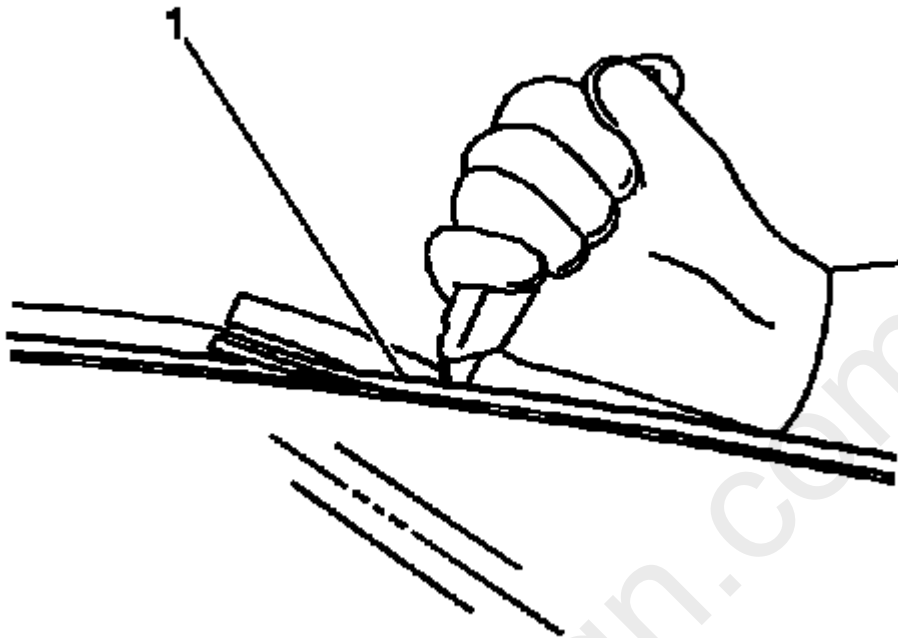


Fig. 28: Using Utility Knife To Remove Rear Molding
Courtesy of GENERAL MOTORS COMPANY

WARNING: Refer to Glass and Sheet Metal Handling Warning .

5. Using a utility knife, carefully cut the rear window lace molding (1) in order to access the urethane adhesive bead.

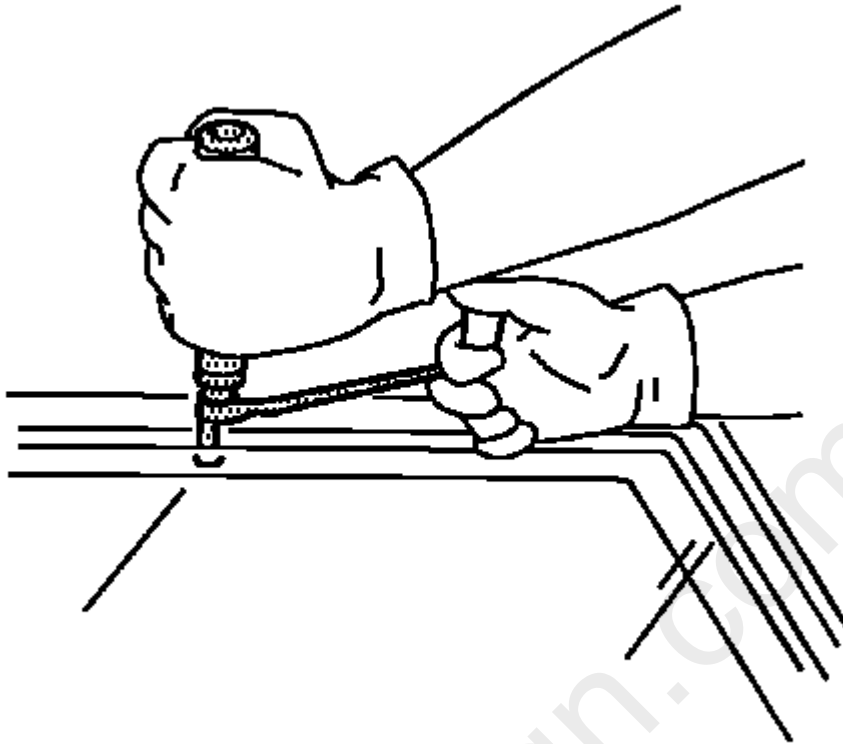


Fig. 29: Separating Urethane Adhesive From Window
Courtesy of GENERAL MOTORS COMPANY

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

6. This will allow the urethane adhesive to be separated from the window.
 - Leave a base of urethane on the pinchweld flange.
 - The only suitable lubrication is clean water.
 - Use **BO-24402-A** Glass Sealant Remover (Cold Knife).
 - **BO-39032** Stationary Glass Removal Tool , or equivalent in order to remove the window.

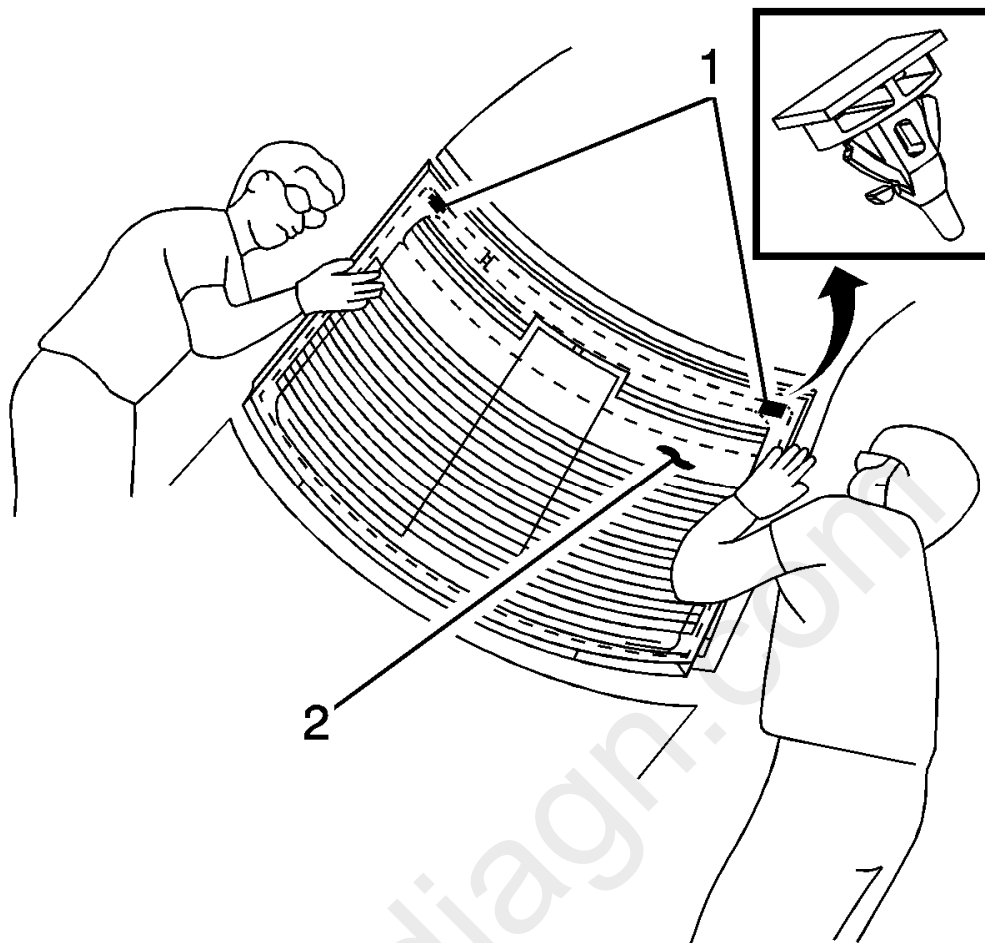


Fig. 30: Installing Rear Window
Courtesy of GENERAL MOTORS COMPANY

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

Installation Procedure

1. Install the rear window into the opening.
2. Connect the rear window defogger electrical connectors.
3. Connect the rear window radio antenna, diversity antenna, and the television antenna. Refer to **Radio Antenna Module Replacement (Coupe)** , and **Television Antenna Cable Replacement**
4. Check the radio and OnStar® system to verify reception.
5. Close the rear compartment lid.
6. Remove the double layer of masking tape around the perimeter of the painted surfaces and the interior trim.

REAR WINDOW REPLACEMENT (WAGON)

Special Tools

- **BO-24402-A** Glass Sealant Remover (Cold Knife)
- **BO-39032** Stationary Glass Removal Tool
- Use an adhesive that is approved by GM

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

Removal Procedure

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

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

1. Open the liftgate.
2. Disconnect the rear window defogger electrical connectors.
3. Remove the rear window wiper arm. Refer to **Rear Window Wiper Arm Replacement (Wagon)** .
4. Remove the liftgate upper applique. Refer to **Liftgate Upper Applique Replacement (Wagon)** .

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

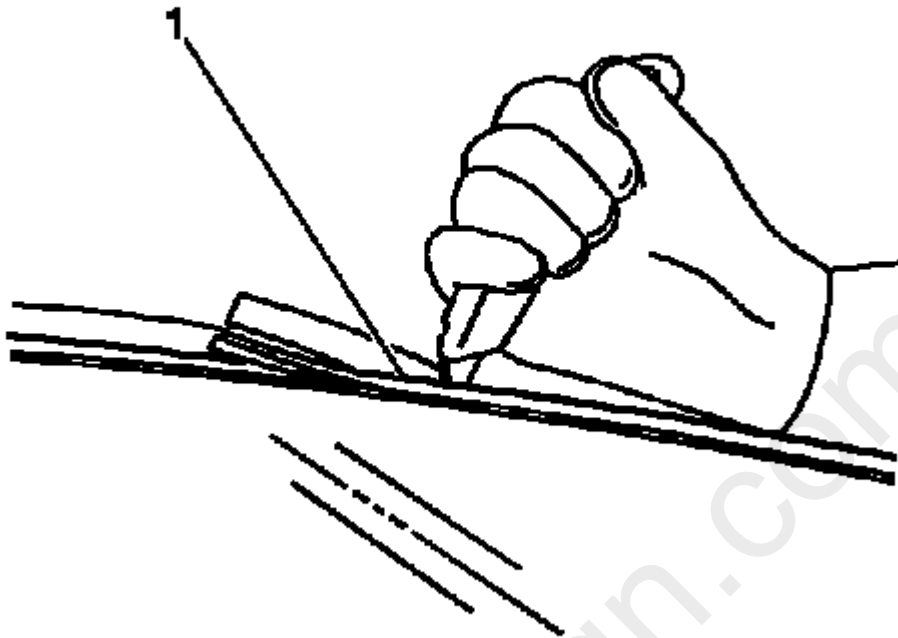


Fig. 31: Using Utility Knife To Remove Reveal Molding
Courtesy of GENERAL MOTORS COMPANY

WARNING: Refer to Glass and Sheet Metal Handling Warning .

6. Using a utility knife, carefully cut the rear window lace molding (1) in order to access the urethane adhesive bead.

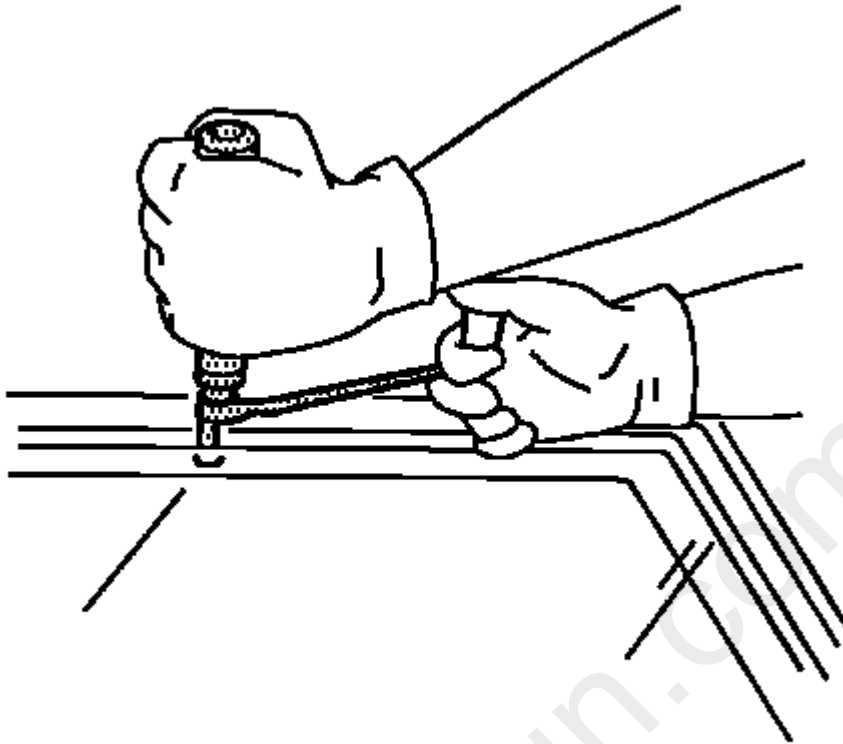


Fig. 32: Separating Urethane Adhesive From Window
Courtesy of GENERAL MOTORS COMPANY

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

7. This will allow the urethane adhesive to be separated from the window.
 - Leave a base of urethane on the pinchweld flange.
 - The only suitable lubrication is clean water.
 - Use **BO-24402-A** Glass Sealant Remover (Cold Knife).
 - **BO-39032** Stationary Glass Removal Tool , or equivalent in order to remove the window.

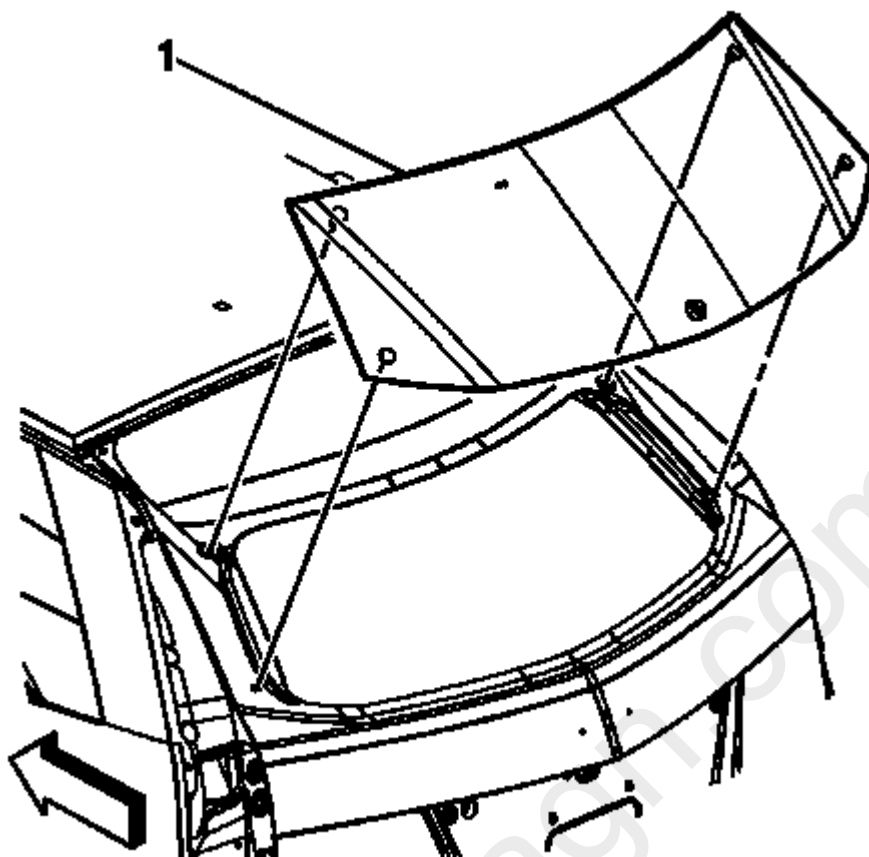


Fig. 33: Identifying Rear Window
Courtesy of GENERAL MOTORS COMPANY

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

Installation Procedure

1. Install the rear window into the opening. Refer to **Adhesive Installation of Rear Windows (Wagon)**.
2. Connect the rear window defogger electrical connectors.
3. Install the rear window wiper arm. Refer to **Rear Window Wiper Arm Replacement (Wagon)** .
4. Install the liftgate upper applique. Refer to **Liftgate Upper Applique Replacement (Wagon)** .
5. Remove the double layer of masking tape around the perimeter of the painted surfaces and the interior trim.

REAR SIDE DOOR WINDOW SWITCH REPLACEMENT (WAGON)

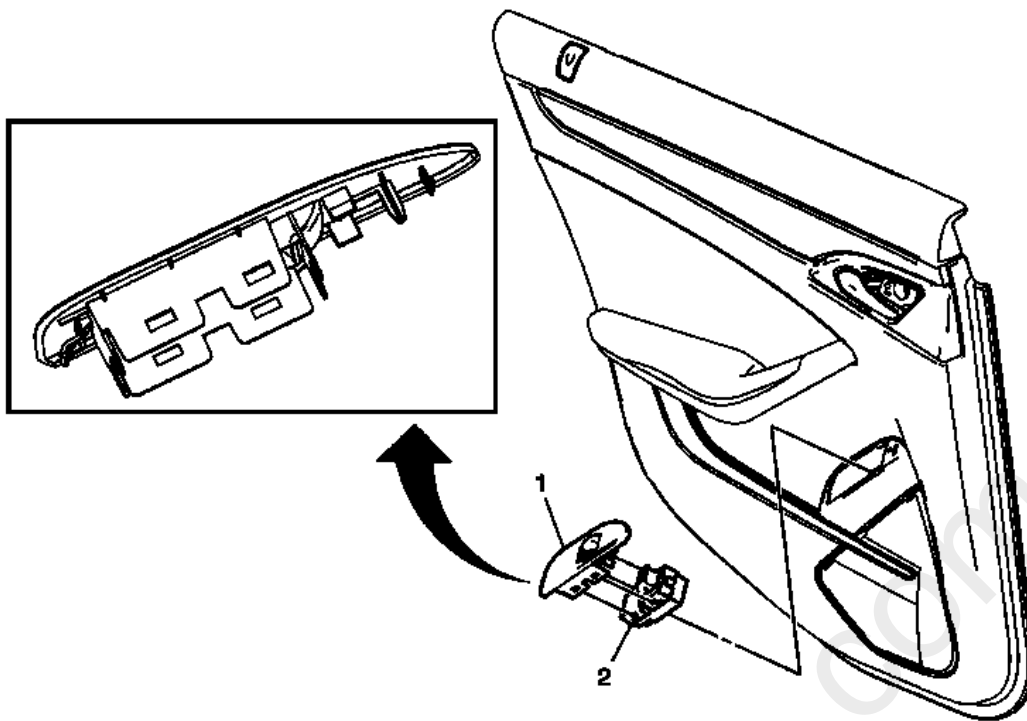


Fig. 34: Rear Side Door Window Switch
 Courtesy of GENERAL MOTORS COMPANY

Rear Side Door Window Switch Replacement (Wagon)

Callout	Component Name
1	Rear Side Door Window Switch Bezel Procedure 1. Insert a flat-bladed plastic tool under the front edge of the window switch bezel. 2. Disengage the front retainer then disengage the side retainers. 3. Lift up on the rear of the switch bezel to remove it from the door trim panel.
2	Rear Side Door Window Switch Procedure Disconnect the electrical connector.

FRONT SIDE DOOR WINDOW REGULATOR REPLACEMENT (WAGON)

Removal Procedure

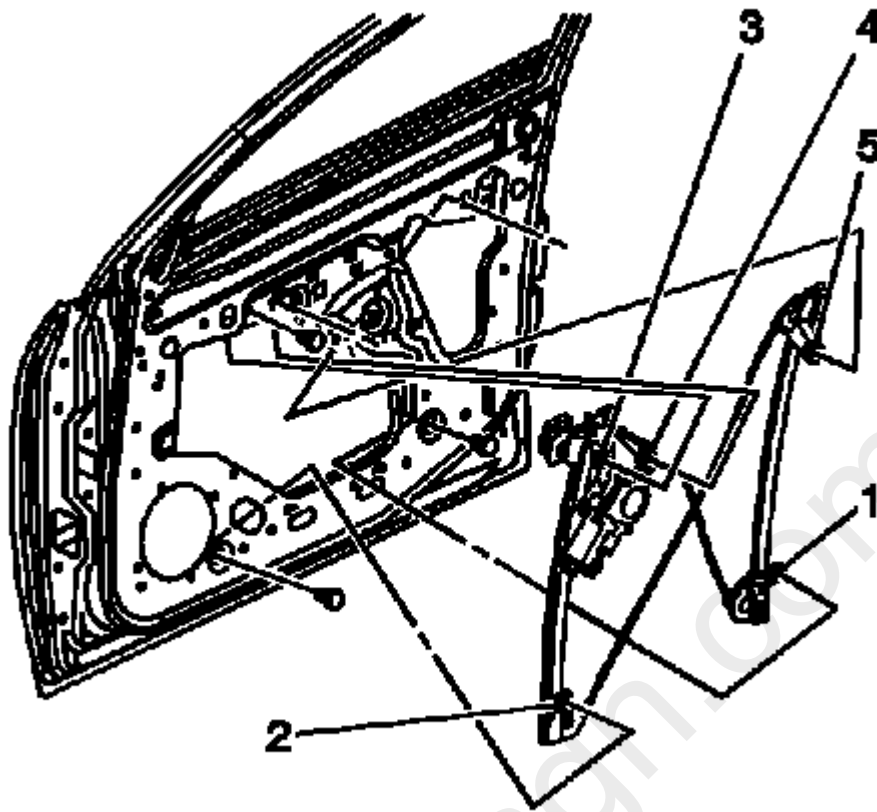


Fig. 35: View Of Front Door Window Regulator
Courtesy of GENERAL MOTORS COMPANY

1. Run the window to the full up position.
2. Remove the door trim panel. Refer to **Front Side Door Trim Panel Replacement (Wagon)** .
3. Remove the water deflector.
4. Tape the window in the full up position.
5. Through the access holes in the inner door panel, loosen the window clamp fasteners 4 revolutions.
6. Connect the door trim panel wiring harness.
7. Lower the window regulator 3/4 of the way down.
8. Disconnect the electrical connector from the window regulator motor.
9. Remove the window regulator fasteners (1, 2, 3, 4, 5).
10. Remove the window regulator from the door.

Installation Procedure

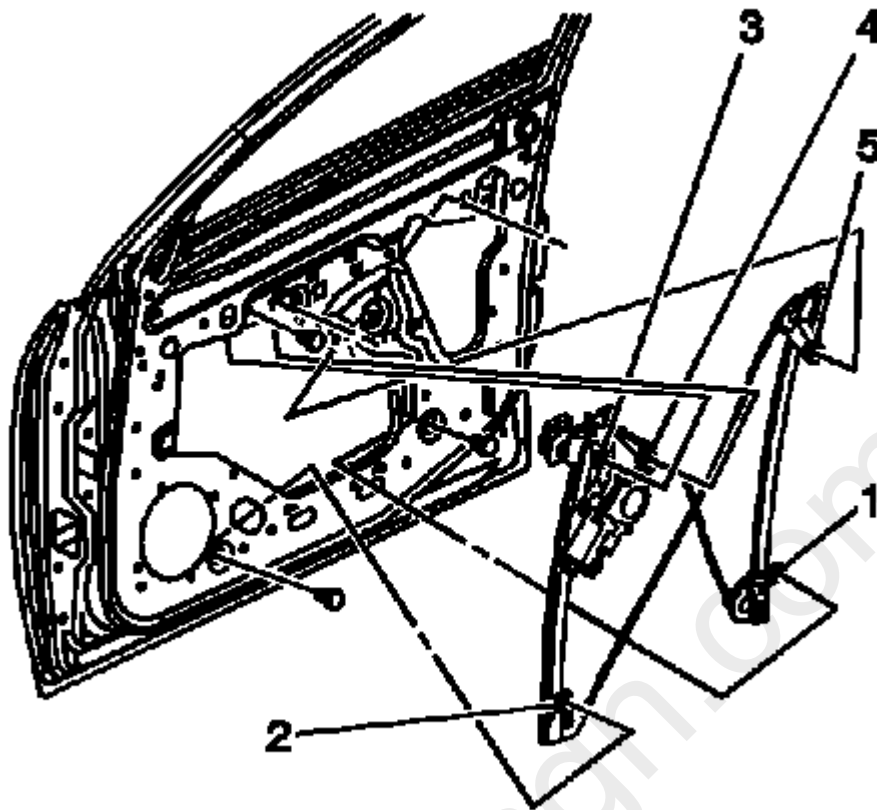


Fig. 36: View Of Front Door Window Regulator
Courtesy of GENERAL MOTORS COMPANY

1. Install the window regulator into the door.

CAUTION: Refer to Fastener Caution .

2. Install the window regulator fasteners (1, 2, 3, 4, 5) and tighten to 9 N.m (80 lb in).
3. Remove the tape from the window.
4. Lower the window into the window regulator clamps.

The glass must be fully rearward into the window channel when it is seated in the window clamps.

5. Connect the power window motor electrical connector.

NOTE: **Start the vehicle to ensure maximum power to the window motor. This is required to fully seat the window for adjustment.**

6. Start the vehicle.

7. Raise the window to the full up position. Tighten the window clamp Fasteners to 11 N.m (98 lb in).
8. Check window for proper operation and a tight seal before installing the trim panel.
9. Shut off the vehicle.
10. Install the water deflector.
11. Install the door trim panel. Refer to **Front Side Door Trim Panel Replacement (Wagon)** .

FRONT SIDE DOOR WINDOW REGULATOR REPLACEMENT (COUPE)

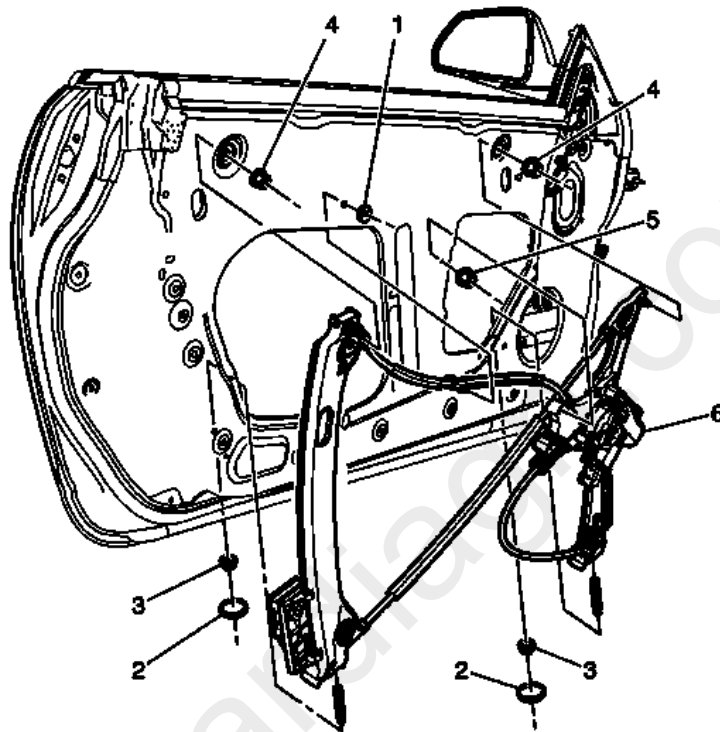


Fig. 37: Front Side Door Window Regulator & Components (Coupe)
 Courtesy of GENERAL MOTORS COMPANY

Front Side Door Window Regulator Replacement (Coupe)

Callout	Component Name
Preliminary Procedure	
Remove the front side door window. Refer to <u>Front Side Door Window Replacement (Coupe)</u> .	
1	Front Side Door Window Regulator Cable Retainer Procedure 1. Remove the water deflector from the door. 2. Disconnect the electrical connect from the power window motor.
2	Front Side Door Window Regulator Lower Access Nut Cover (Qty: 2)

	NOTE: The lower access covers are located in the bottom of the door.
3	Front Side Door Window Regulator Lower Nuts (Qty: 2) CAUTION: Refer to <u>Fastener Caution</u> . NOTE: The lower nuts for the window regulator are located in the bottom of the door. Tighten 10 N.m (89 lb in)
4	Front Side Door Window Regulator Upper Nuts (Qty: 2) Tighten 10 N.m (89 lb in)
5	Front Side Door Window Regulator Motor Nuts (Qty: 2) Tighten 10 N.m (89 lb in)
6	Front Side Door Window Regulator

WINDOW MOTOR PROGRAMMING - EXPRESS FUNCTION

Express Window Programming and Setup

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

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

Follow the procedure below to program the power windows:

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

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

3. Pull the power window switch up until the window is fully closed and continue holding the switch up for approximately 5 seconds after the window is completely closed.

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

FRONT SIDE DOOR WINDOW REGULATOR MOTOR REPLACEMENT (WAGON)

Removal Procedure

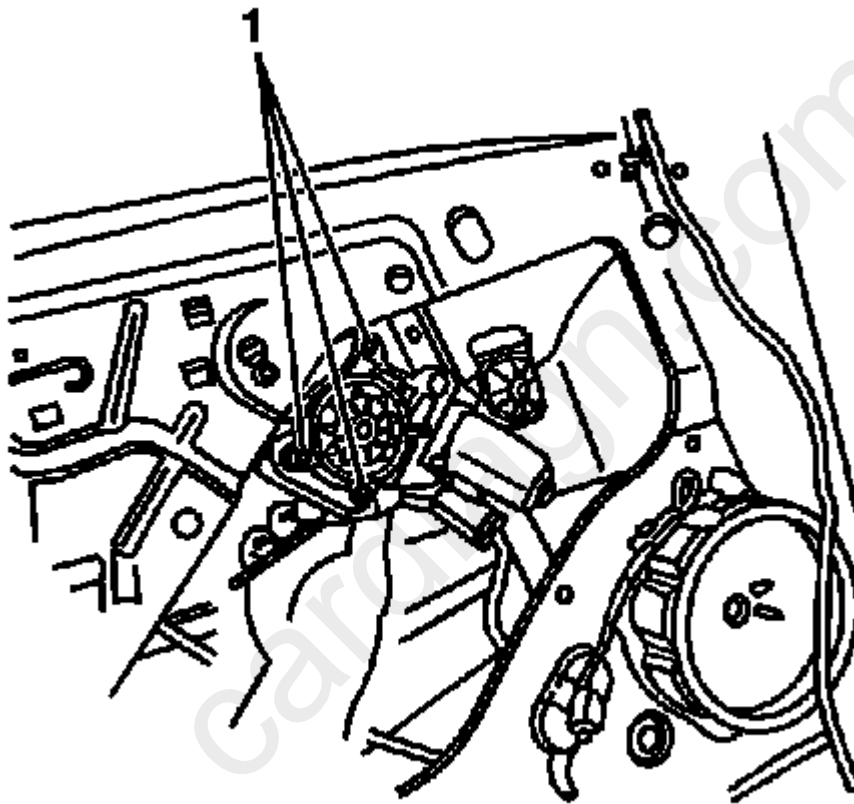


Fig. 38: Front Door Window Regulator & Fasteners
Courtesy of GENERAL MOTORS COMPANY

NOTE: There is a binding effect on the power window motor drive when the window is in the fully closed or open position.

1. Partially open the window, if possible.
2. Remove the front side door trim panel. Refer to **Front Side Door Trim Panel Replacement (Wagon)** .
3. Remove the water deflector.
4. Remove the wire harness inline retaining bracket.

5. Remove the fasteners (1) securing the power window motor to the window regulator.
6. Disconnect the electrical connector.
7. Remove the power window motor.

Installation Procedure

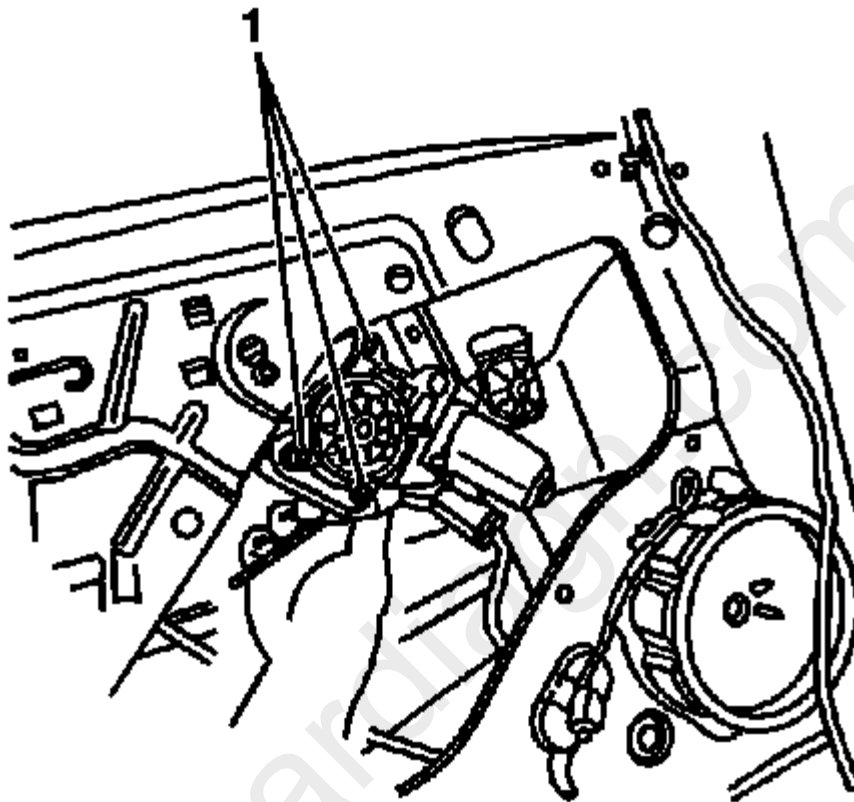


Fig. 39: Front Door Window Regulator & Fasteners
Courtesy of GENERAL MOTORS COMPANY

1. Install the power window motor to the window regulator.

CAUTION: Refer to Fastener Caution .

2. Install the power window motor to regulator fastener (1) and tighten to 4 N.m (62 lb in).
3. Install the wire harness inline retainer bracket.
4. Connect the electrical connector.
5. Install the water deflector.
6. Install the front side door trim panel. Refer to **Front Side Door Trim Panel Replacement (Wagon)** .

REAR SIDE DOOR WINDOW REGULATOR REPLACEMENT

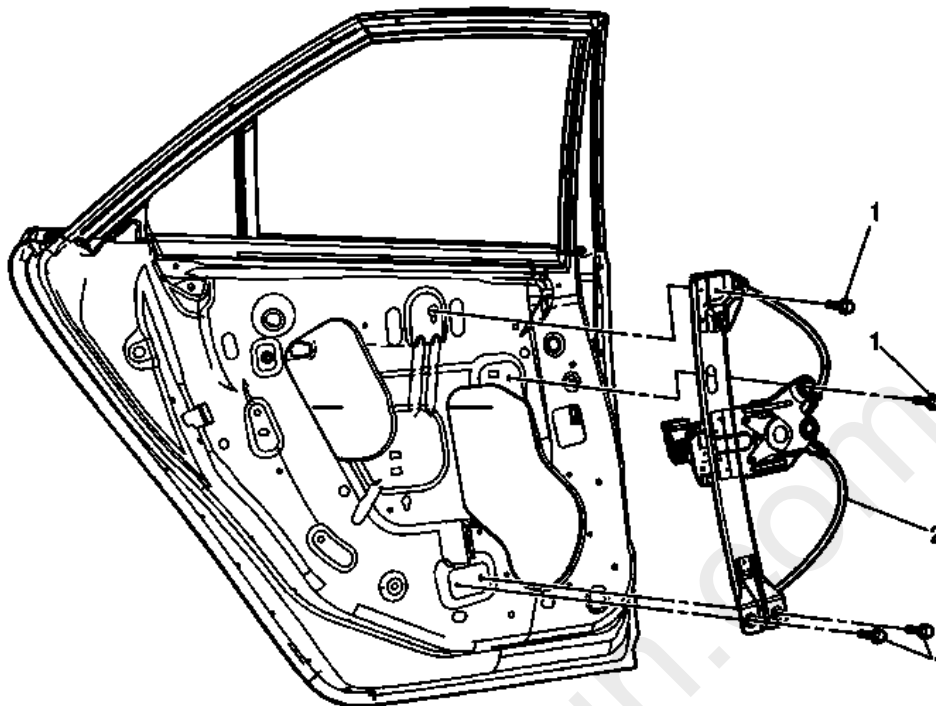


Fig. 40: Rear Side Door Window Regulator
Courtesy of GENERAL MOTORS COMPANY

Rear Side Door Window Regulator Replacement

Callout	Component Name
Preliminary Procedure Remove the rear door trim panel. Refer to <u>Rear Side Door Trim Panel Replacement (Wagon)</u> .	
1	Rear Side Door Window Regulator Bolts (Qty: 4)
	CAUTION: Refer to <u>Fastener Caution</u> .
	Procedure
	1. Remove the water deflector.
	2. Tape the window in the full up position.
	3. Connect the door trim panel wire harness connector.
	4. Loosen the window regulator to window clamp nuts 4 revolutions. Refer to <u>Rear Side Door Window Replacement</u> .
	5. Using the power window switch, lower the window regulator about 1/2 way down.
	6. Disconnect the electrical connector from the power window motor.

	Tighten Tighten the bolt (1,2,3) to 9 N.m (80 lb in).
2	Rear Side Door Window Regulator Procedure 1. Remove the tape from the window. 2. Start the vehicle to ensure maximum power to the window motor. This is required to fully seat the window for adjustment.

REAR SIDE DOOR WINDOW REGULATOR MOTOR REPLACEMENT

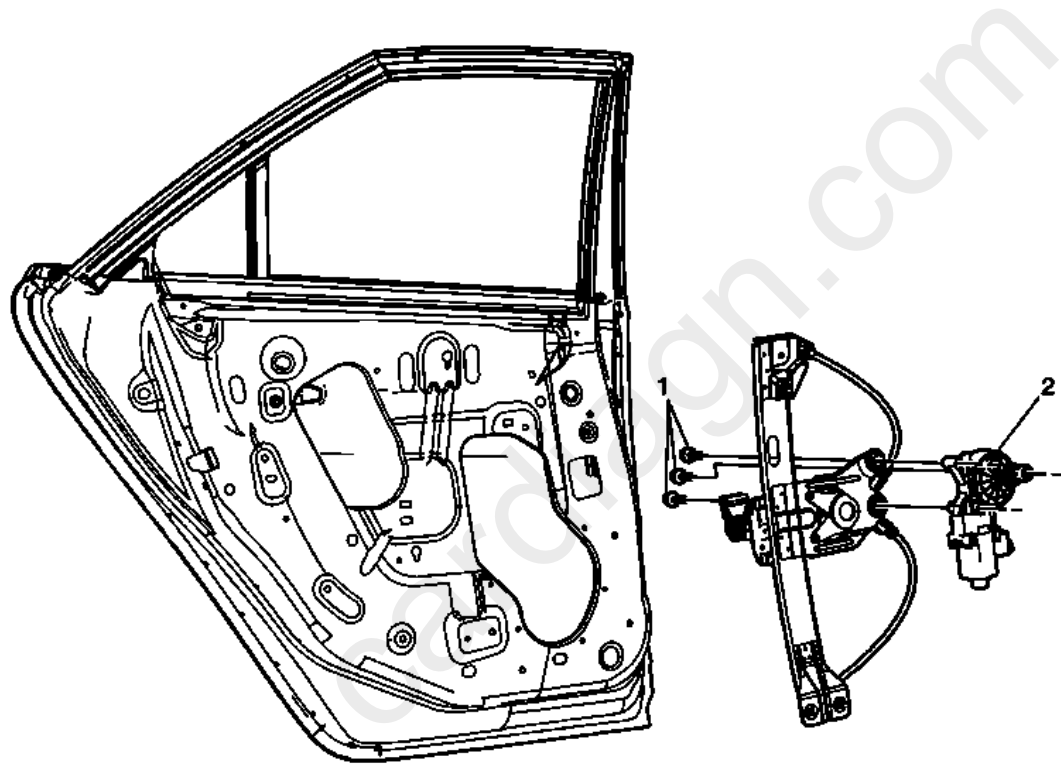


Fig. 41: Rear Side Door Window Regulator Motor
 Courtesy of GENERAL MOTORS COMPANY

Rear Side Door Window Regulator Motor Replacement

Callout	Component Name
Preliminary Procedure 1. Remove the rear door trim panel. Refer to <u>Rear Side Door Trim Panel Replacement (Wagon)</u> . 2. Remove the rear side door window regulator. Refer to <u>Rear Side Door Window Regulator Replacement</u>.	
	Rear Side Door Window Regulator Motor Bolts (Qty: 3)

1	CAUTION: Refer to <u>Fastener Caution</u> . Procedure 1. Using the power window switch, lower the window regulator about 1/2 way down. 2. Disconnect the electrical connector from the power window motor. Tighten Tighten the bolt (1,2,3) to 9 N.m (80 lb in).
2	Rear Side Door Window Regulator Motor Procedure 1. The bolts are located on the back side of the window regulator. 2. Remove the tape from the window. 3. Start the vehicle to ensure maximum power to the window motor. This is required to fully seat the window for adjustment.

FRONT SIDE DOOR WINDOW BELT OUTER SEALING STRIP REPLACEMENT

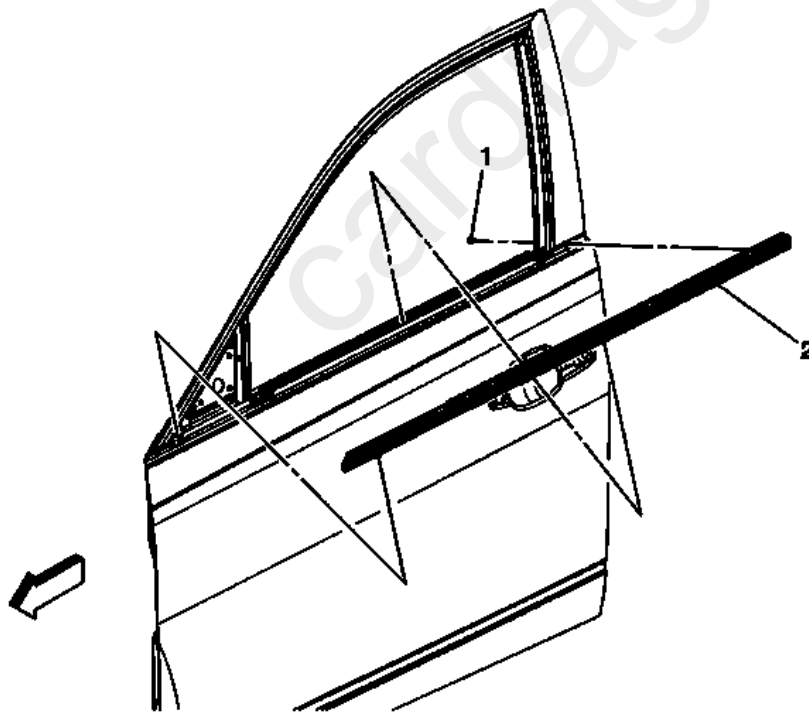


Fig. 42: Front Side Door Window Belt Outer Sealing Strip
Courtesy of GENERAL MOTORS COMPANY

Front Side Door Window Belt Outer Sealing Strip Replacement

Callout	Component Name
Preliminary Procedure Remove the outside rearview mirror. Refer to <u>Power Mirror Replacement (Wagon)</u> , <u>Power Mirror Replacement (Coupe)</u> .	
1	Front Side Door Window Belt Outer Sealing Strip Screw CAUTION: Refer to <u>Fastener Caution</u> . TIP: Lift upward to release front clip. Tighten 1.5 N.m (13 lb in)
2	Front Side Door Window Belt Outer Sealing Strip Procedure 1. Align the sealing strip to the door. 2. Ensure that the end cap is flush to the door cutline. 3. Rotate the sealing strip downward. 4. Align the sealing strip clips to the slots in the door pinch-weld flange. 5. Push the sealing strip downward to fully seat and secure the strip to the door.

FRONT SIDE DOOR WINDOW BELT INNER SEALING STRIP REPLACEMENT (WAGON)

Removal Procedure

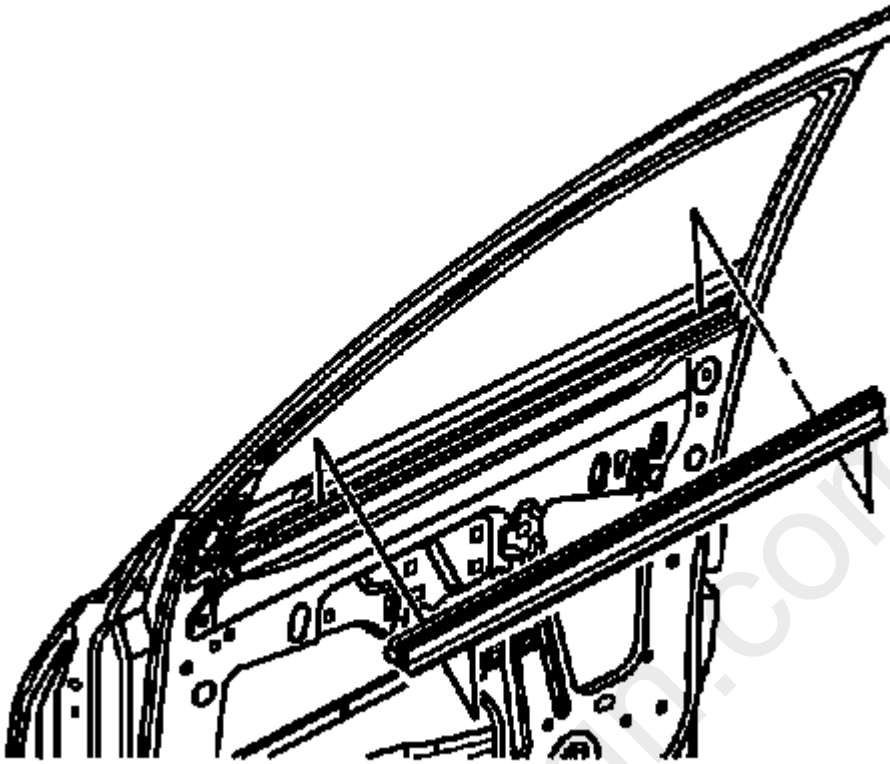


Fig. 43: View Of Front Door Window Inner Sealing Strip
Courtesy of GENERAL MOTORS COMPANY

1. Lower the window to the full down position.
2. Remove the door trim panel. Refer to **Front Side Door Trim Panel Replacement (Wagon)** .
3. Starting at one end of the window inner belt sealing strip, pull upward to release the strip.

Installation Procedure

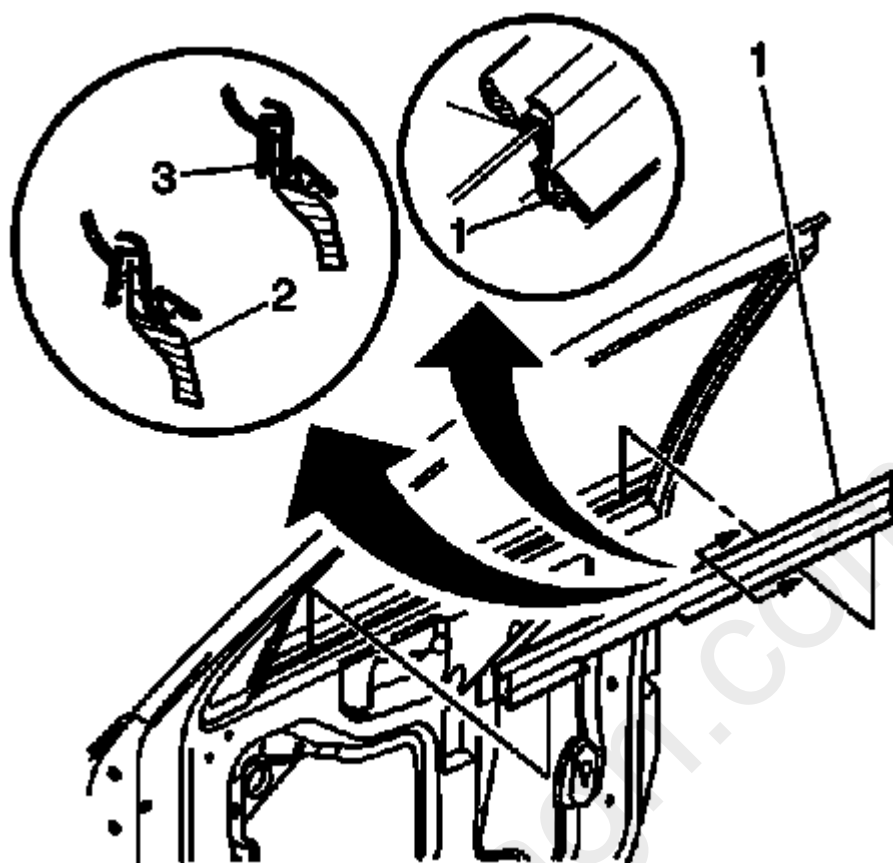


Fig. 44: Installing Front Door Window Inner Sealing Strip
Courtesy of GENERAL MOTORS COMPANY

IMPORTANT: When reusing the inner belt sealing strip, the flange mounting area must be pinched together in order to counteract the splaying effect when removed. Use a thumb and an index finger to pinch the carrier (3) back together.

1. Install the sealing strip (1) to the door flange on the door inner panel.

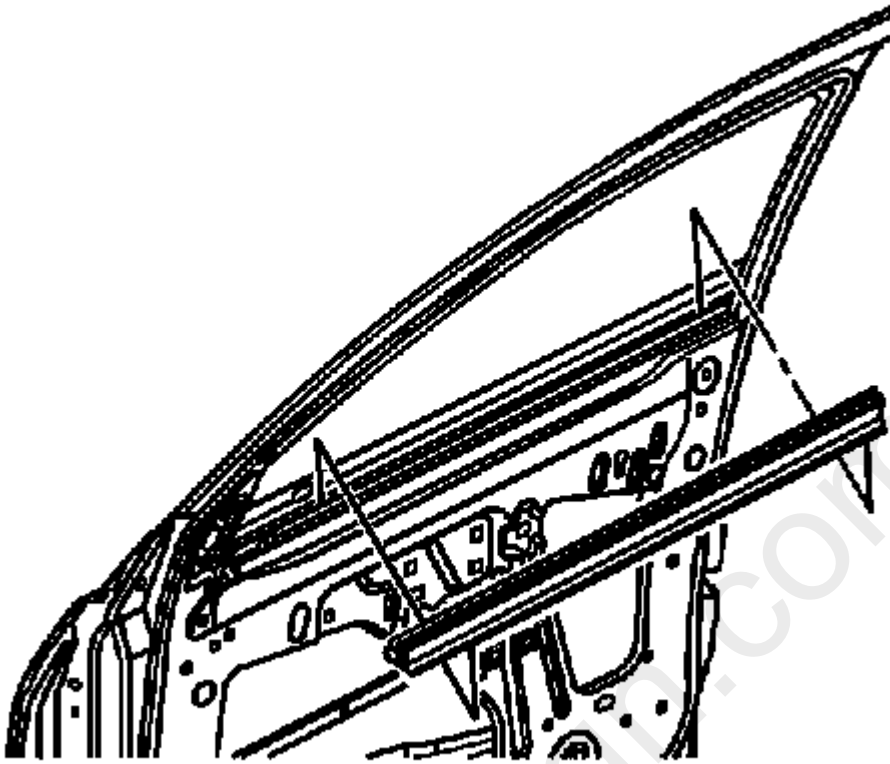


Fig. 45: View Of Front Door Window Inner Sealing Strip
Courtesy of GENERAL MOTORS COMPANY

IMPORTANT: Do not distort the sealing strip.

2. Press downward to engage the sealing strip the entire length of the door.
3. Install the door trim panel. Refer to **Front Side Door Trim Panel Replacement (Wagon)** .

FRONT SIDE DOOR WINDOW BELT INNER SEALING STRIP REPLACEMENT (COUPE)

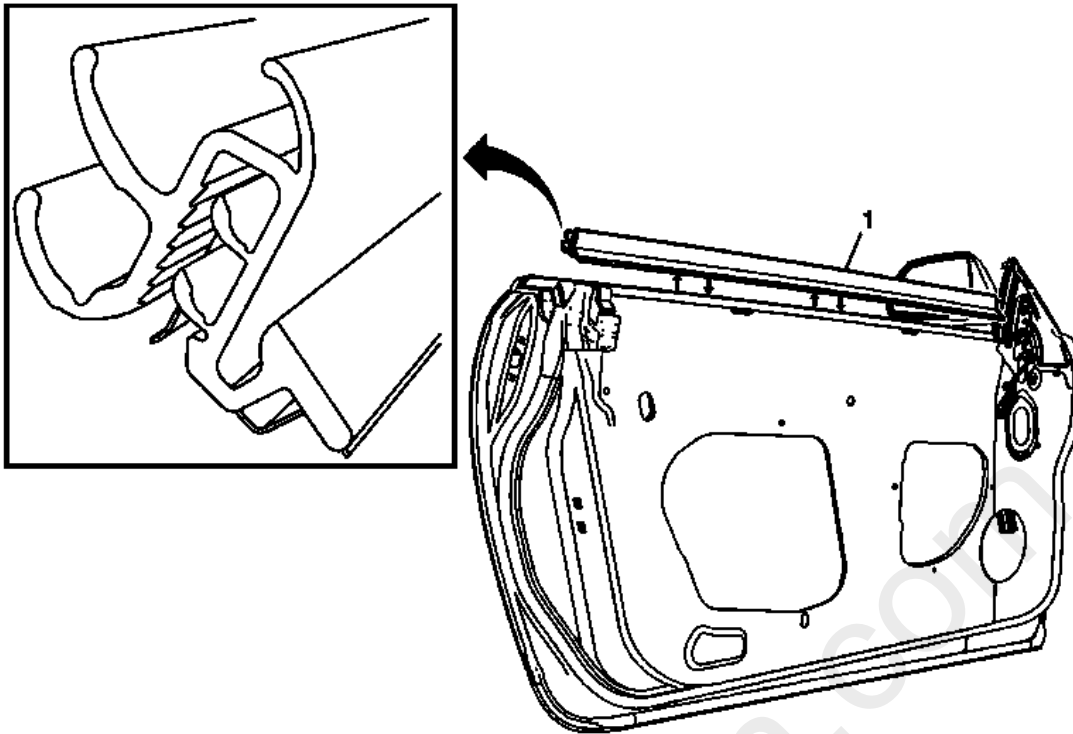


Fig. 46: Front Side Door Window Belt Inner Sealing Strip (Coupe)
 Courtesy of GENERAL MOTORS COMPANY

Front Side Door Window Belt Inner Sealing Strip Replacement (Coupe)

Callout	Component Name
Preliminary Procedure	
Remove the front side door trim panel. Refer to Front Side Door Trim Panel Replacement (Coupe) .	
1	Front Side Door Window Belt Inner Sealing Strip Procedure 1. Grasp one end of the sealing strip lift upward to release it from the pinchweld flange. 2. Start at one end fully seating the sealing strip on the pinchweld flange of the door.

FRONT SIDE DOOR WINDOW BELT REVEAL MOLDING REPLACEMENT (COUPE)

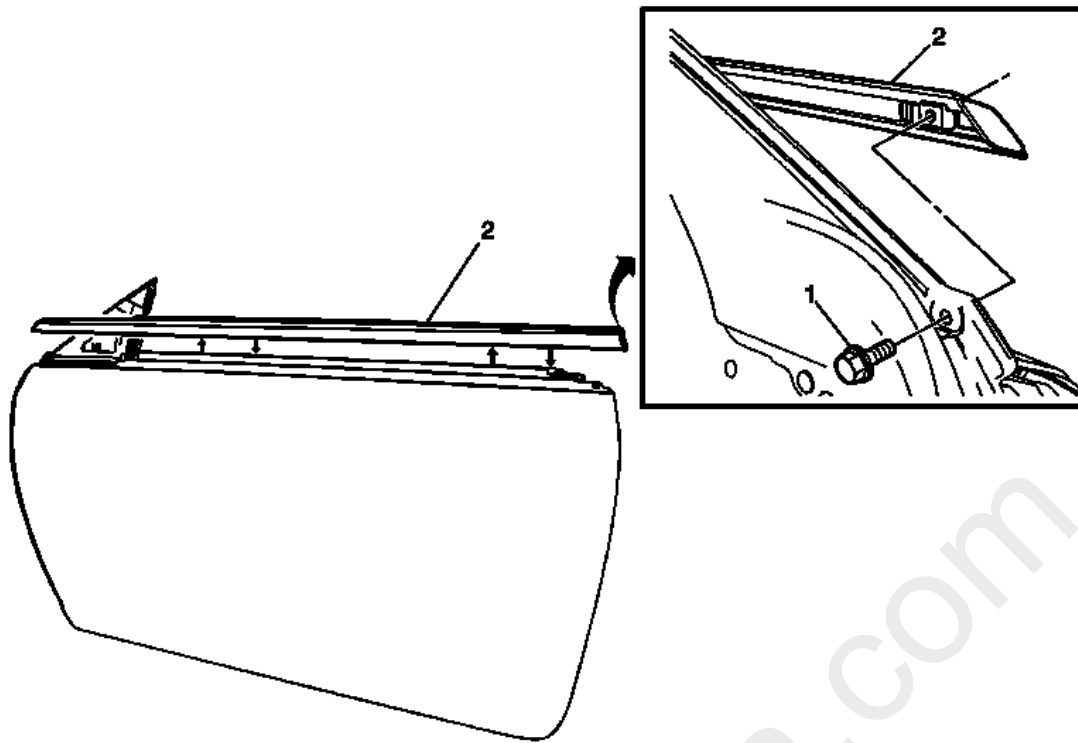


Fig. 47: Front Side Door Window Belt Reveal Molding & Screw (Coupe)
 Courtesy of GENERAL MOTORS COMPANY

Front Side Door Window Belt Reveal Molding Replacement (Coupe)

Callout	Component Name
Preliminary Procedure Remove the outside rearview mirror. Refer to Power Mirror Replacement (Coupe) .	
1	Front Side Door Window Belt Reveal Molding Screw CAUTION: Refer to Fastener Caution . Tighten 1.5 N.m (13 lb in) TIP: Lift upward to release rear clip.
2	Front Side Door Window Belt Outer Sealing Strip Procedure 1. Align the reveal molding clip to the slots in the rear door pinch-weld flange. 2. Push the reveal molding downward to fully seat and secure the molding to the door.

REAR SIDE DOOR WINDOW INNER SEALING STRIP REPLACEMENT

Removal Procedure

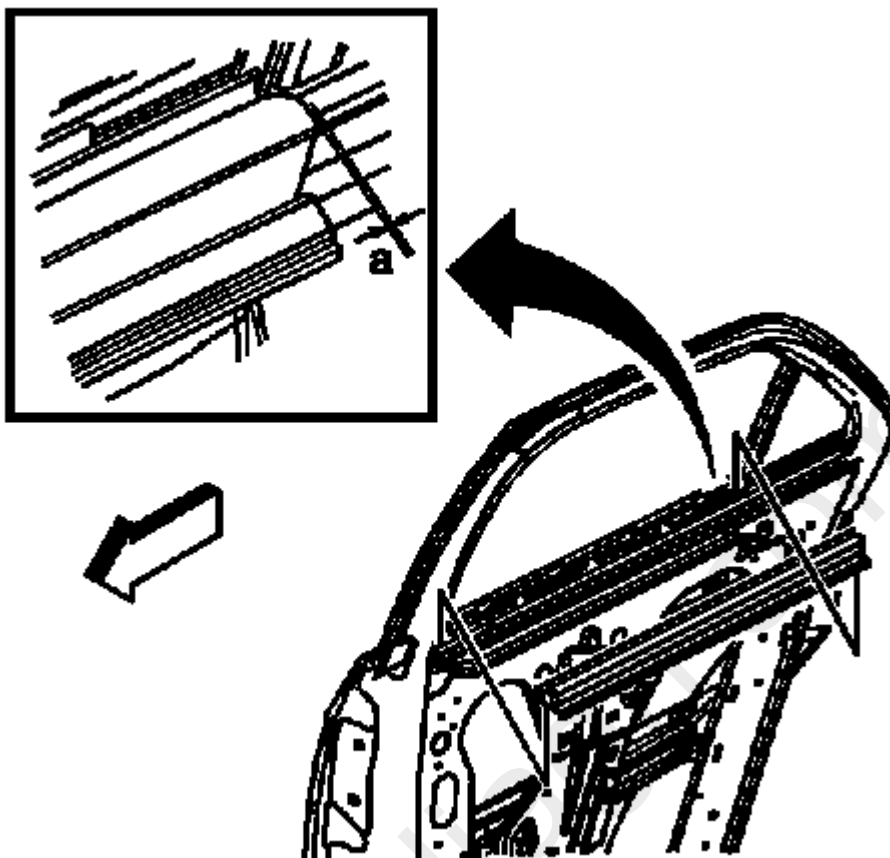


Fig. 48: Removing & Installing Rear Door Window Belt Inner Sealing Strip
Courtesy of GENERAL MOTORS COMPANY

1. Lower the window to the full down position.
2. Remove the door trim panel. Refer to **Rear Side Door Trim Panel Replacement (Wagon)** .
3. Starting at the forward end of the inner belt sealing strip, pull upward to release the strip.

Installation Procedure

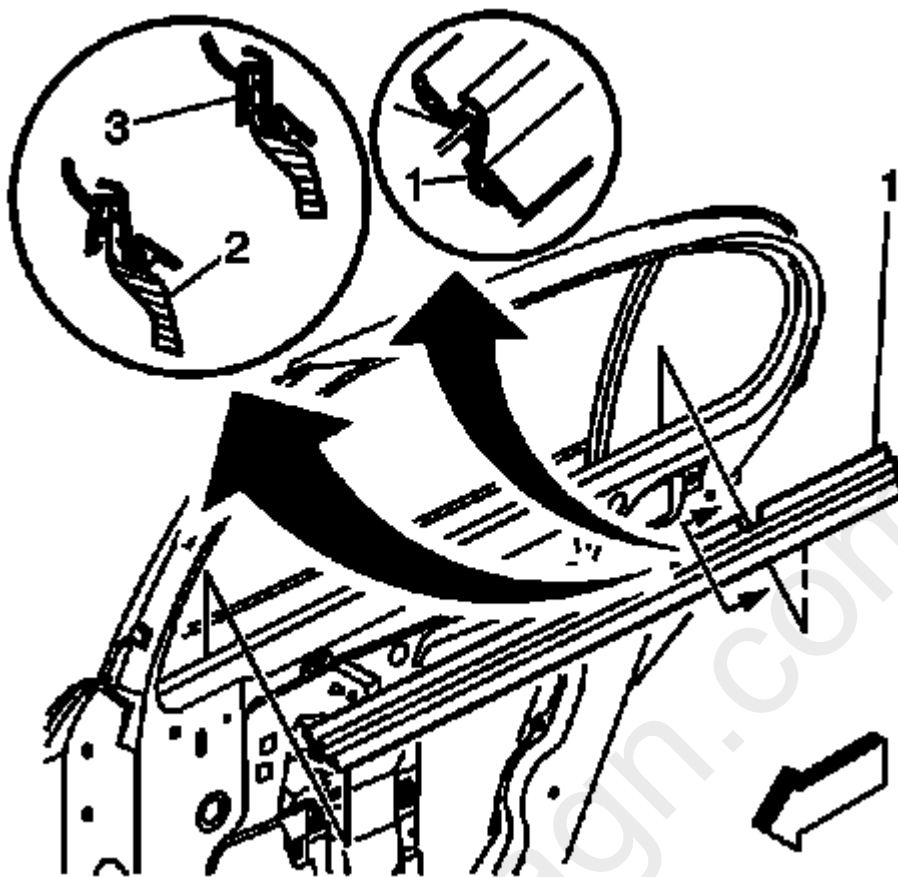


Fig. 49: Removing/Installing Rear Door Window Belt Inner Sealing Strip
Courtesy of GENERAL MOTORS COMPANY

IMPORTANT: When reusing the inner belt sealing strip, the flange mounting area must be pinched together in order to counteract the splaying effect when removed. Use a thumb and an index finger to pinch the carrier (3) back together.

1. Work from one end of the sealing strip to the other.

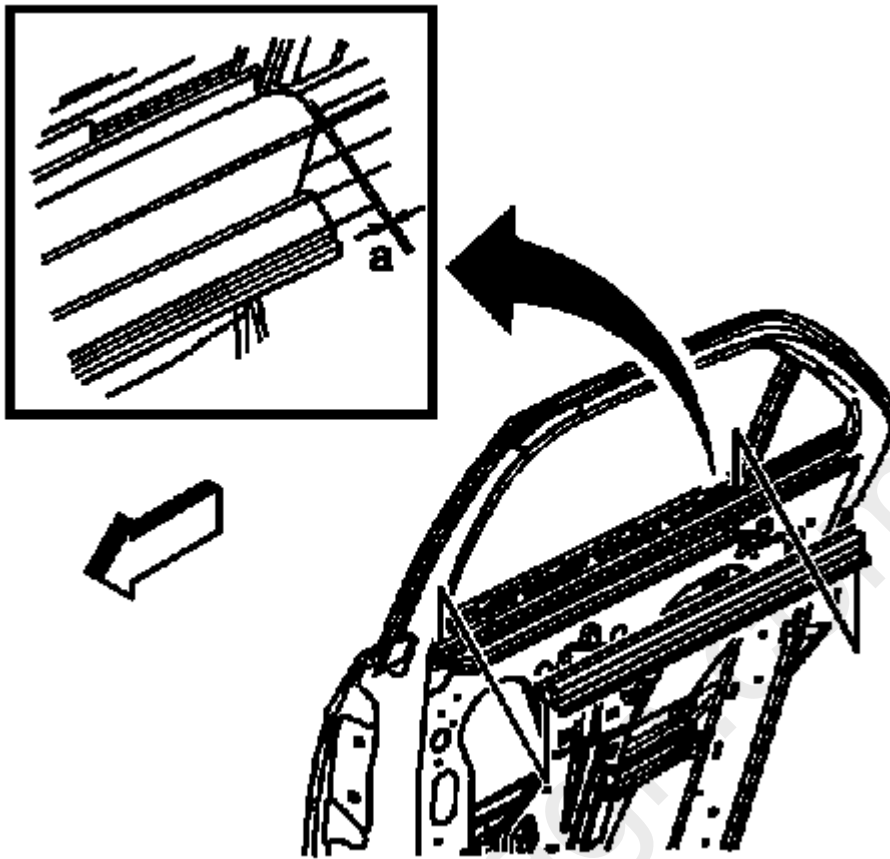


Fig. 50: Removing & Installing Rear Door Window Belt Inner Sealing Strip
Courtesy of GENERAL MOTORS COMPANY

2. Position the inner belt sealing strip over the flange of the door inner panel.

IMPORTANT: Do not distort the seal strip.

3. Adjust seal strip gap (a) at the division post to 1.0 mm (0.04 in) maximum.
4. Press downward to engage the sealing strip the entire length of the door.
5. Install the door trim panel. Refer to **Rear Side Door Trim Panel Replacement (Wagon)** .

REAR SIDE DOOR WINDOW OUTER SEALING STRIP REPLACEMENT

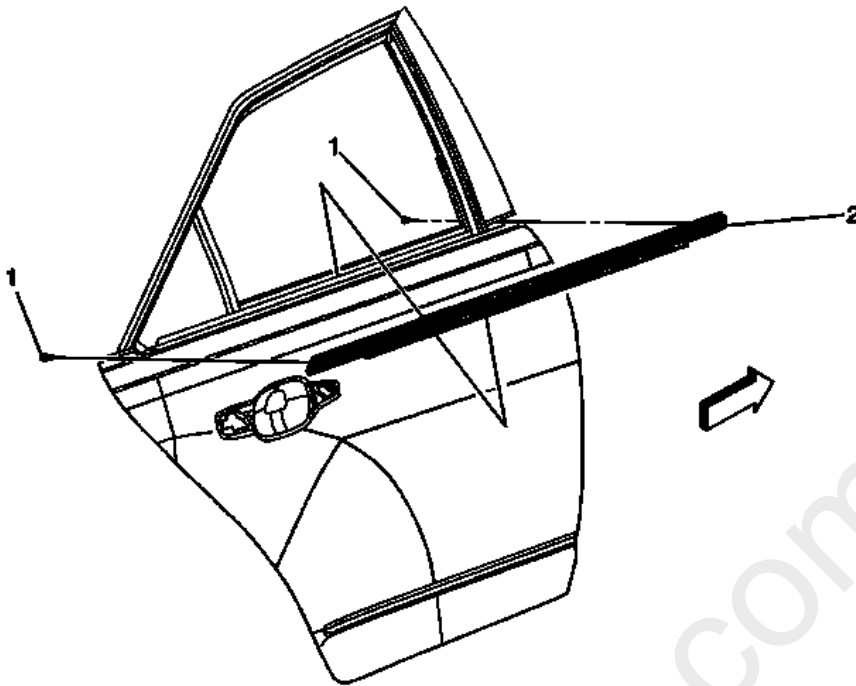


Fig. 51: Rear Door Window Belt Outer Sealing Strip
 Courtesy of GENERAL MOTORS COMPANY

Rear Side Door Window Outer Sealing Strip Replacement

Callout	Component Name
1	Rear Side Door Window Belt Outer Sealing Strip Screw (Qty: 2) CAUTION: Refer to <u>Fastener Caution</u> . Procedure 1. Lower the window to the full down position. 2. Lift upward at the rear of the molding to release it from the pinch-weld. Tighten 1.5 N.m (13 lb in)
2	Rear Side Door Window Belt Outer Sealing Strip Procedure 1. Align the sealing strip to the door. 2. Ensure that the end cap is flush to the door cutline.

3. Rotate the sealing strip downward.
4. Align the sealing strip clips to the slots in the door pinch-weld flange.
5. Push the sealing strip downward to fully seat and secure the strip to the door.

FRONT SIDE DOOR WINDOW INNER WEATHERSTRIP REPLACEMENT

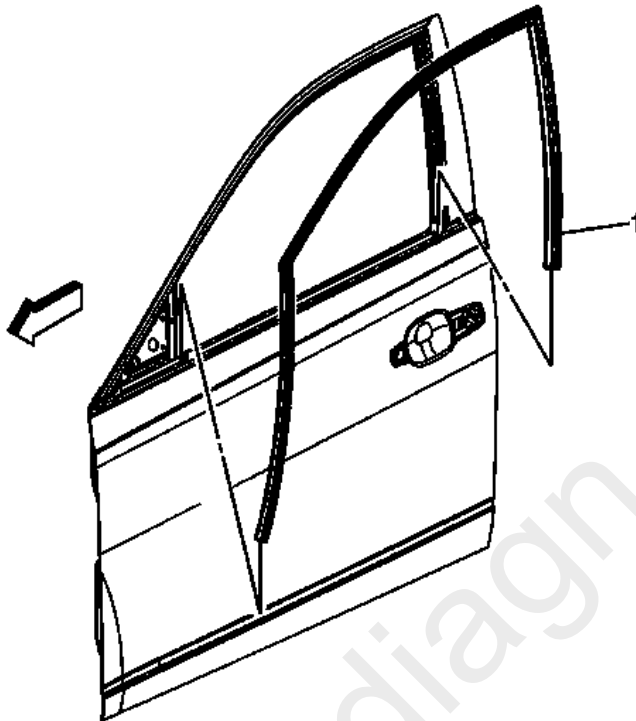


Fig. 52: Front Side Door Window Inner Weatherstrip
 Courtesy of GENERAL MOTORS COMPANY

Front Side Door Window Inner Weatherstrip Replacement

Callout	Component Name
Preliminary Procedures	
1. Lower the window to the full down position. 2. Remove the door trim panel. Refer to <u>Front Side Door Trim Panel Replacement (Coupe)</u> , <u>Front Side Door Trim Panel Replacement (Wagon)</u> . 3. Remove the window inner belt sealing strip. Refer to <u>Front Side Door Window Belt Inner Sealing Strip Replacement (Wagon)</u>, <u>Front Side Door Window Belt Inner Sealing Strip Replacement (Coupe)</u>.	
	Front Side Door Window Inner Weatherstrip
	Procedure
	1. Remove the water deflector.

1	2. Pull the window weatherstrip out of the door header. 3. Removing the weatherstrip starting at the rear lower end, pull the inner window weatherstrip away from the door header. 4. Install the weatherstrip at the upper, rear corner, install the inner window weatherstrip to the door pinchweld flange.
---	---

ADHESIVE INSTALLATION OF WINDSHIELDS

WARNING: Refer to Glass and Sheet Metal Handling Warning .

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

NOTE: If corrosion of the pinch-weld flange is present or if sheet metal repairs or replacements are required, the pinch-weld flange must be refinished in order to restore the bonding area strength. If paint repairs are required, mask the flange bonding area prior to applying the color coat in order to provide a clean primer only surface. Materials such as BASF DE15®, DuPont 2610®, Sherwin-Williams PSE 4600 and NP70® and Martin-Semour 5120 and 5130® PPG DP90LF SPIES/ HECKER 3688/8590 - 3688/5150 - 4070/5090 STANDOX 11158/13320 - 14653/14980 products are approved for this application.

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

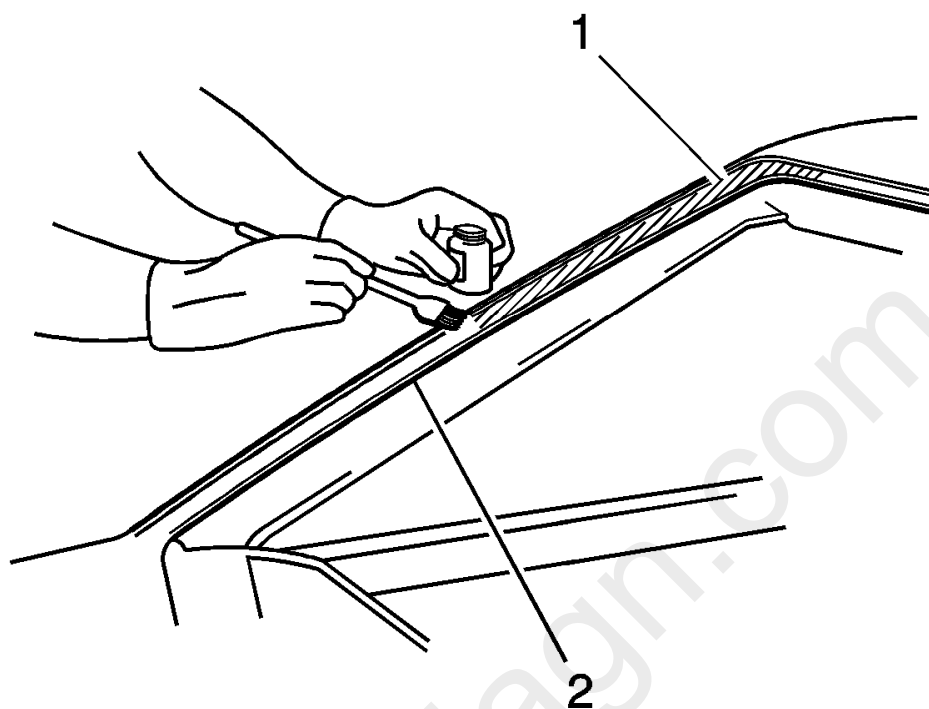


Fig. 53: Applying Pinch-Weld Primer
Courtesy of GENERAL MOTORS COMPANY

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

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

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

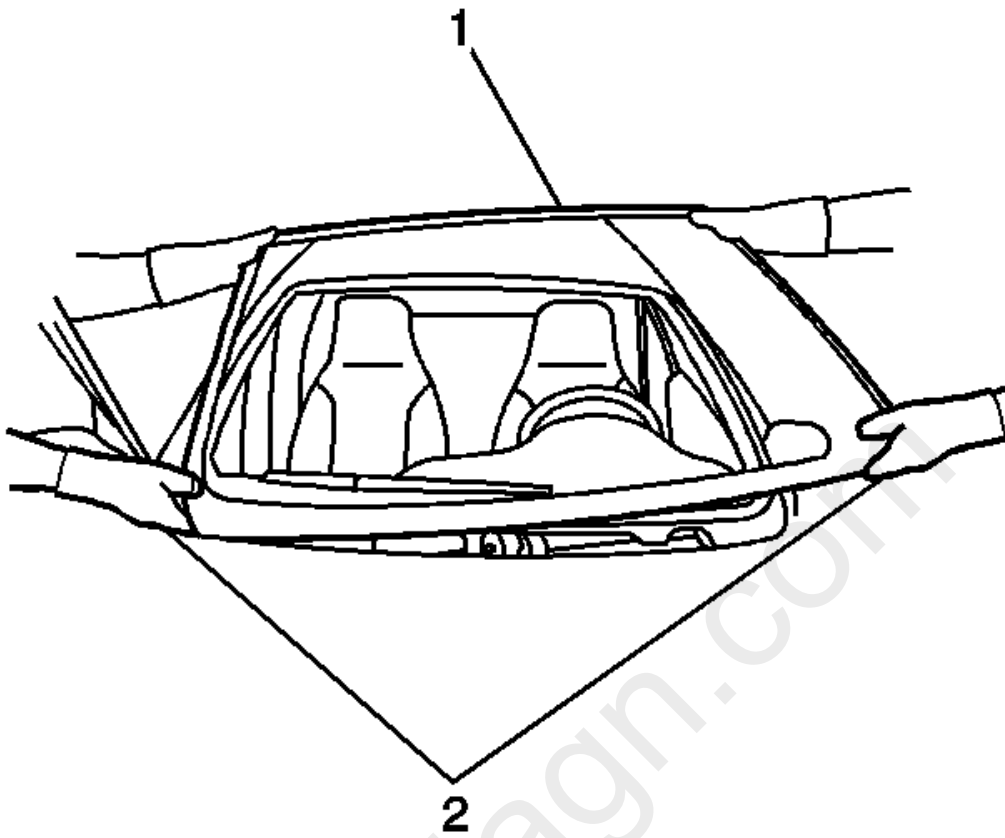


Fig. 54: Removing/Installing Windshield
Courtesy of GENERAL MOTORS COMPANY

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

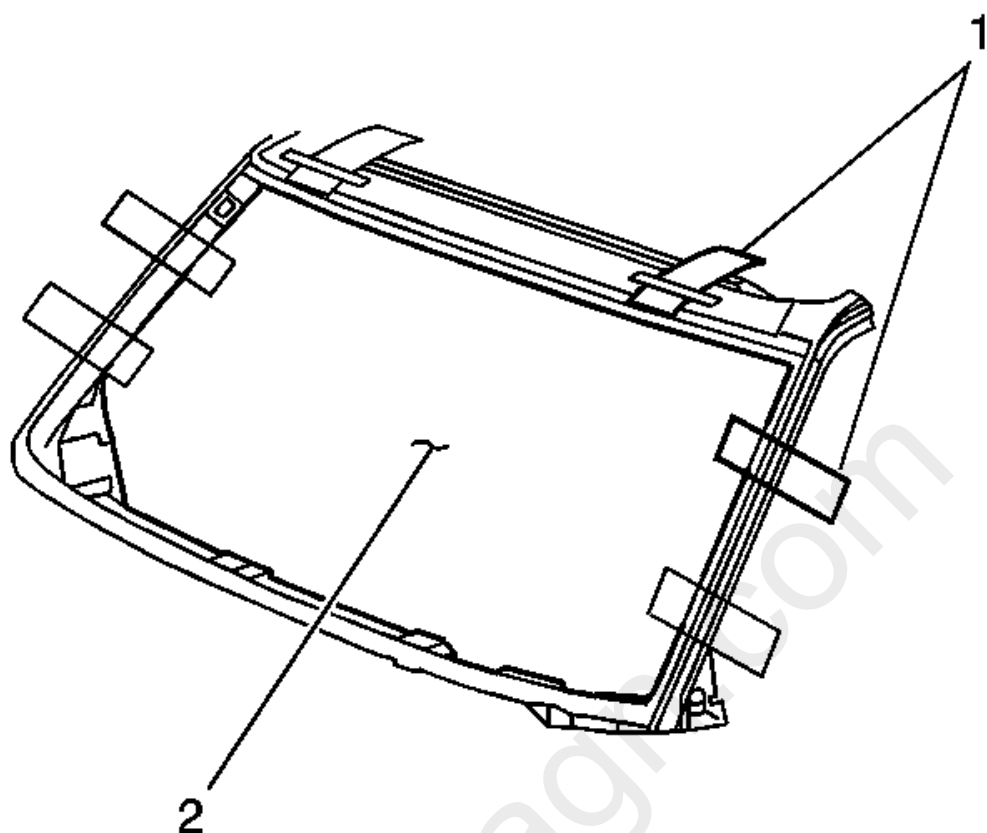


Fig. 55: Aligning Tape Lines On Window To Body
Courtesy of GENERAL MOTORS COMPANY

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

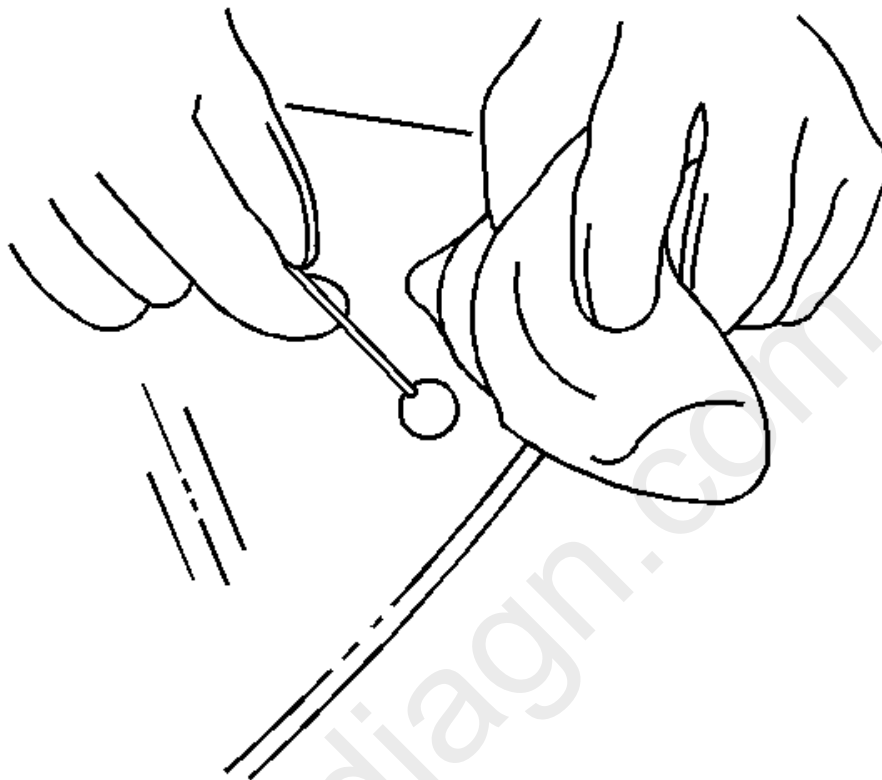


Fig. 56: Applying Glass Prep

Courtesy of GENERAL MOTORS COMPANY

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

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

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

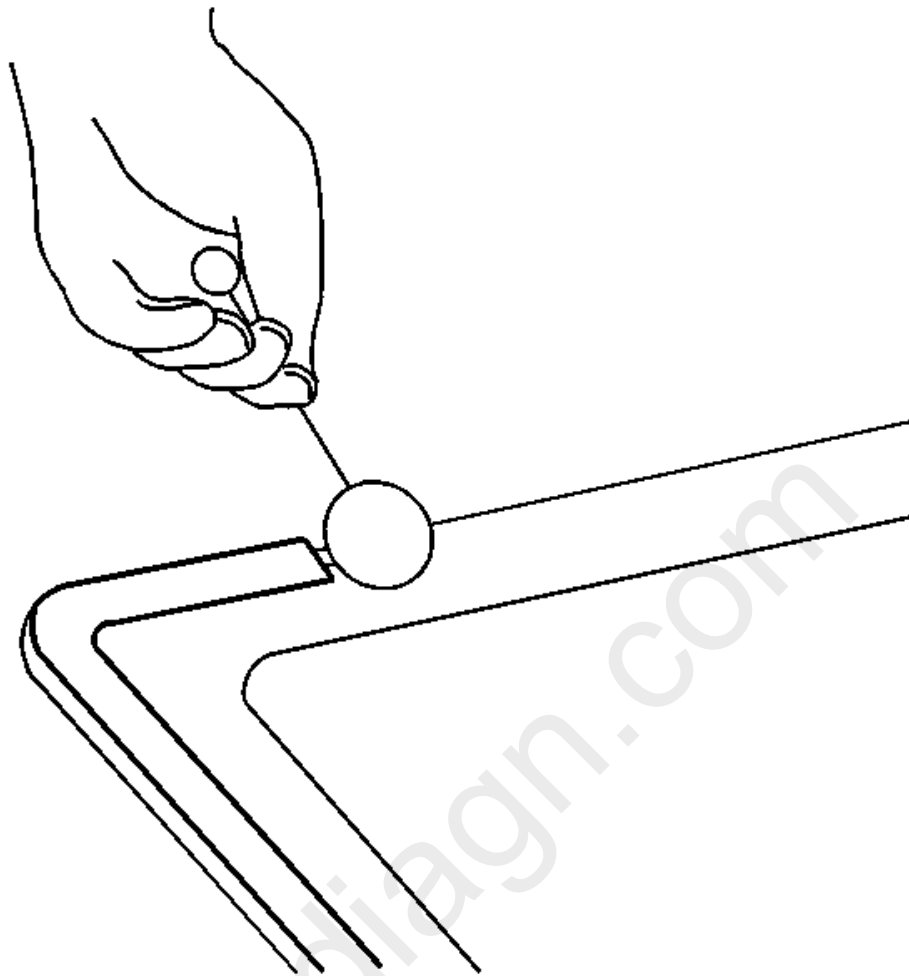


Fig. 57: Applying Glass Prep
Courtesy of GENERAL MOTORS COMPANY

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

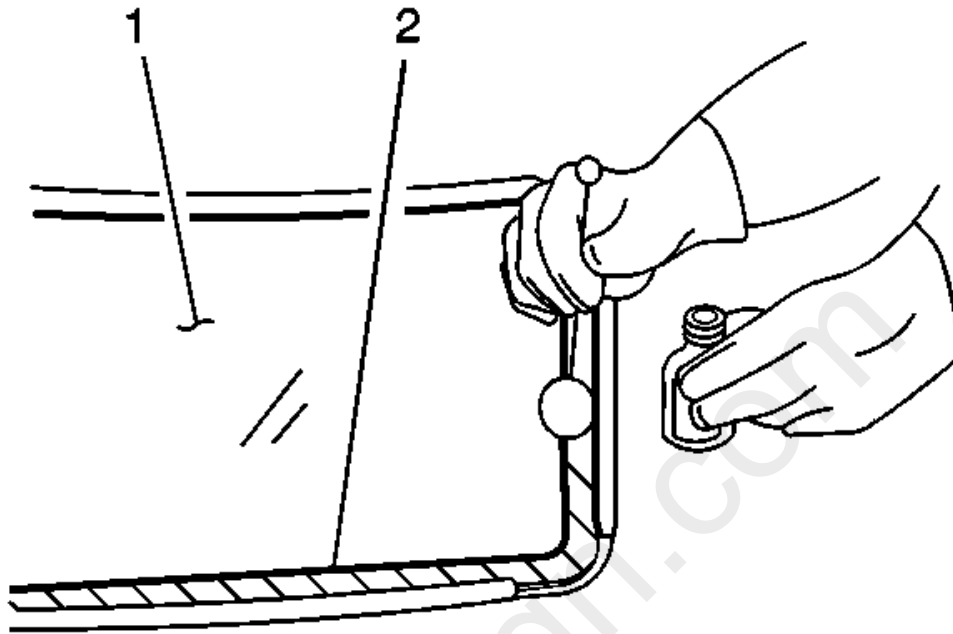


Fig. 58: Applying Glass Primer

Courtesy of GENERAL MOTORS COMPANY

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

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

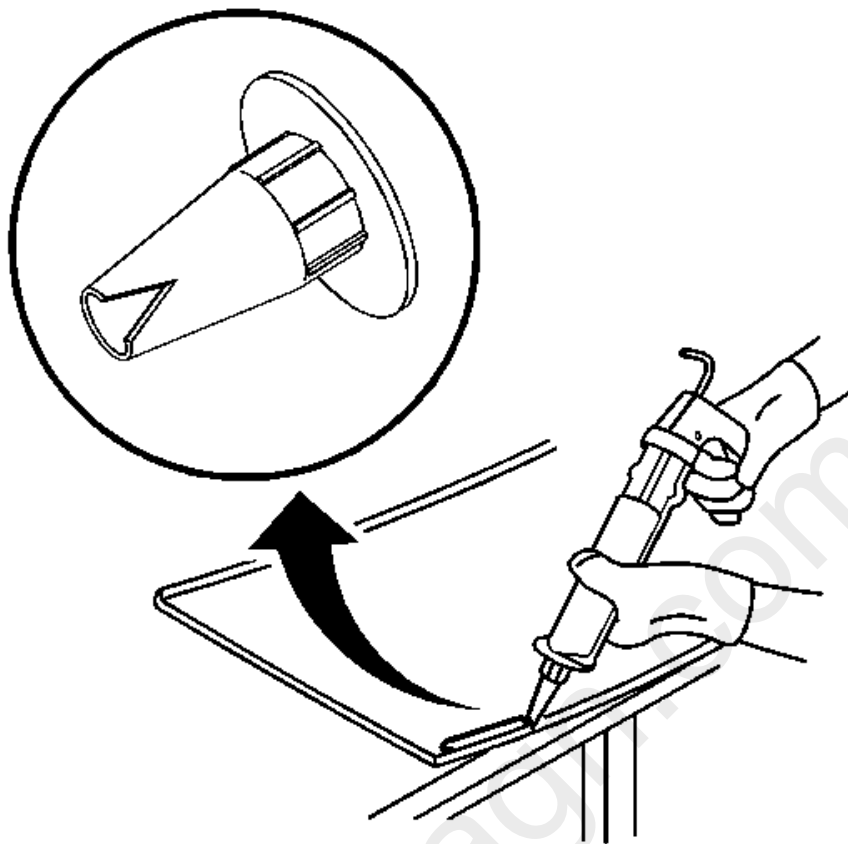


Fig. 59: View Of Modified Applicator Nozzle
Courtesy of GENERAL MOTORS COMPANY

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

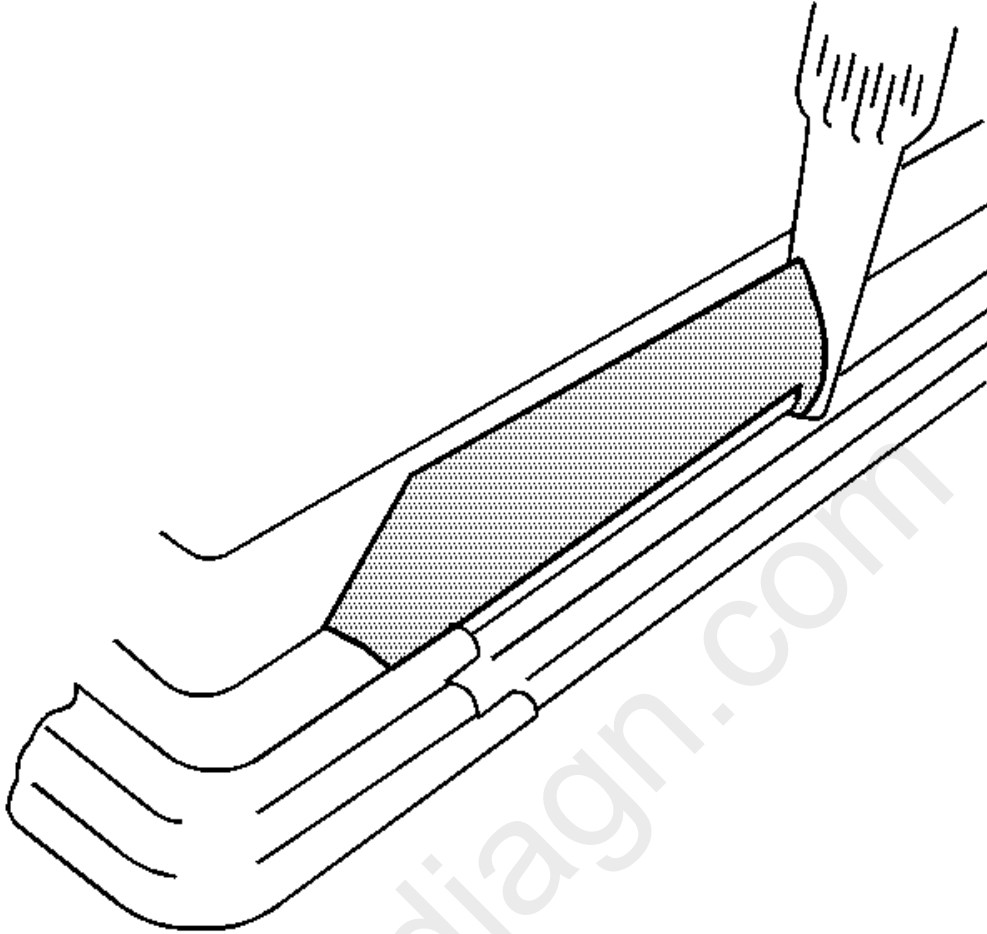


Fig. 60: Applying Continuous Bead Of Urethane Adhesive
Courtesy of GENERAL MOTORS COMPANY

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

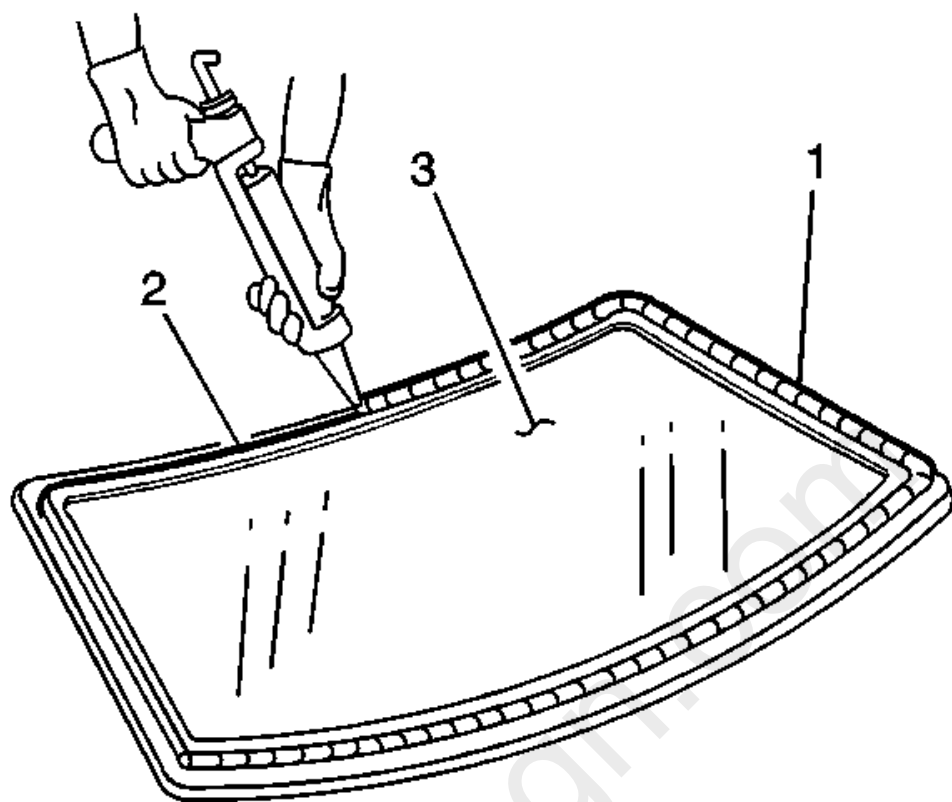


Fig. 61: Applying Urethane Adhesive To Inner Surface Of Window
Courtesy of GENERAL MOTORS COMPANY

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

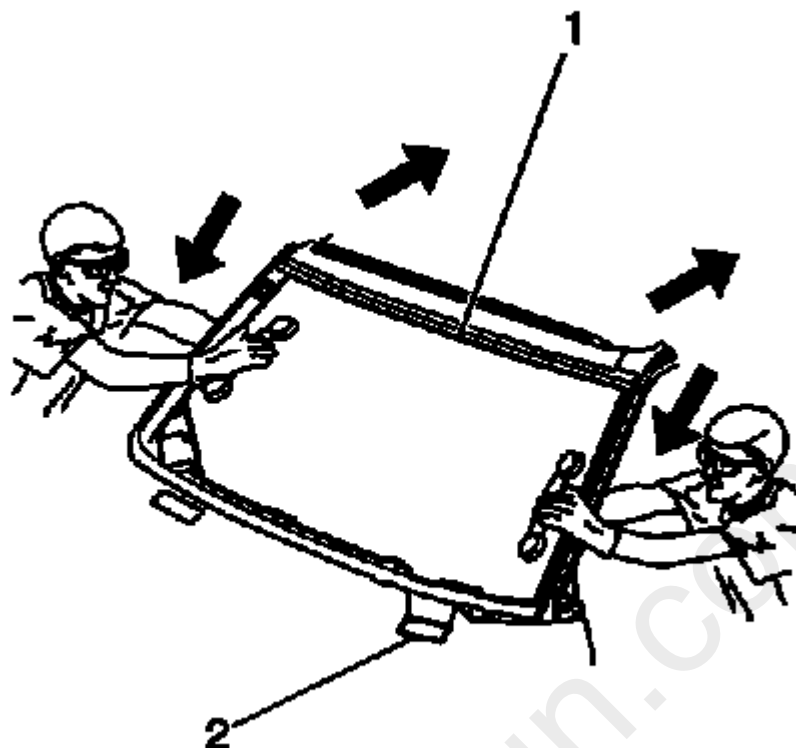


Fig. 62: Installing Windshield

Courtesy of GENERAL MOTORS COMPANY

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

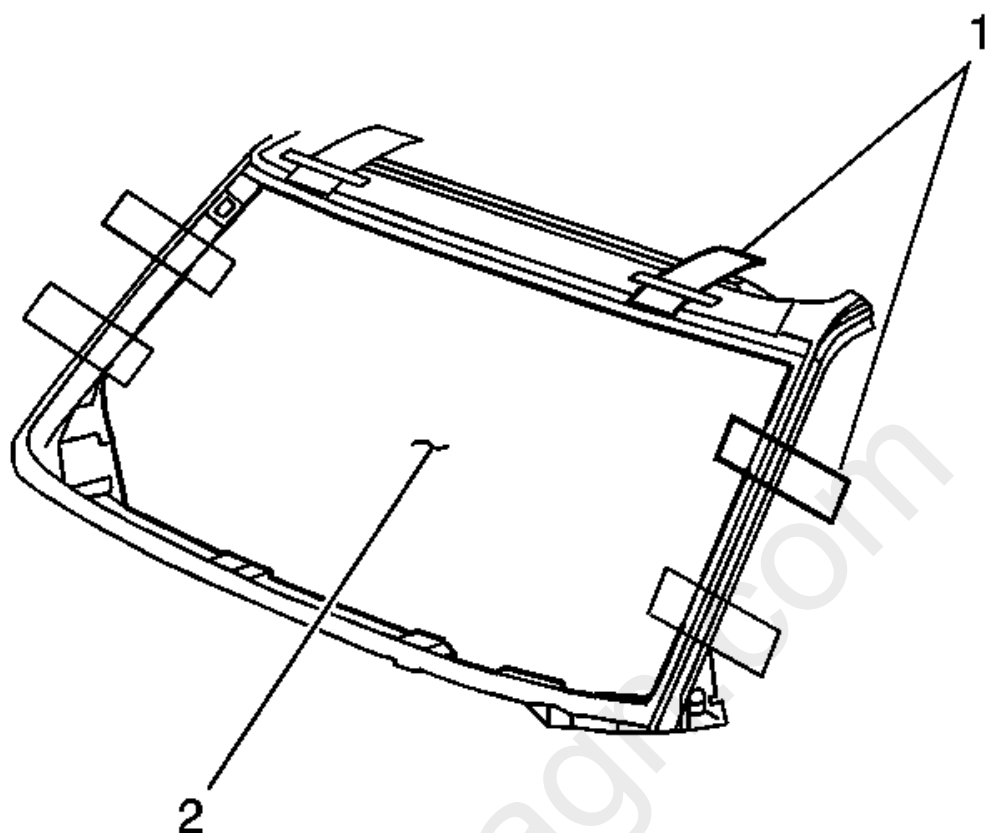


Fig. 63: Aligning Tape Lines On Window To Body
Courtesy of GENERAL MOTORS COMPANY

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

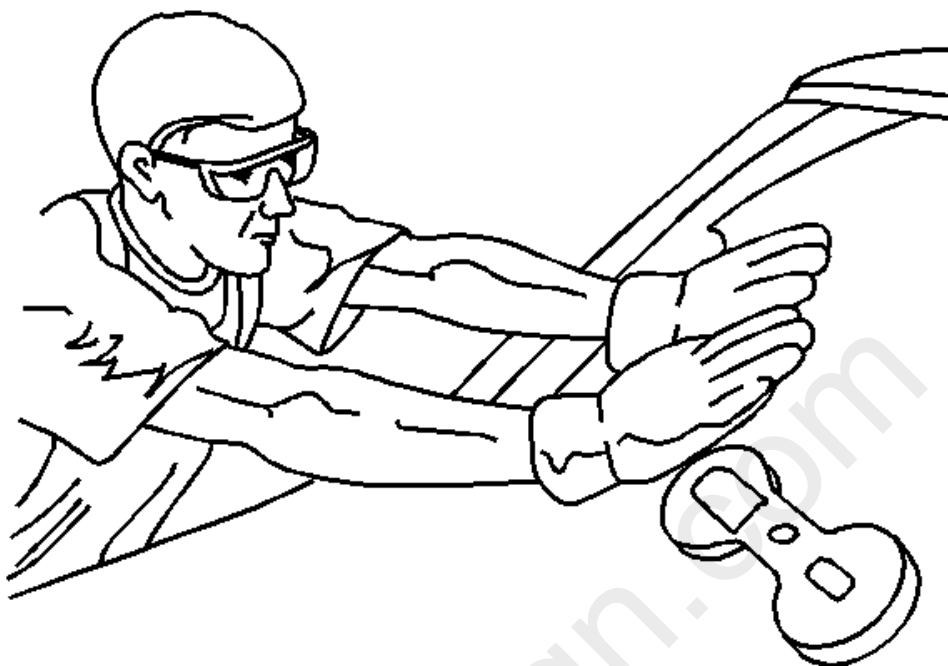


Fig. 64: Pressing Window Into Place
Courtesy of GENERAL MOTORS COMPANY

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

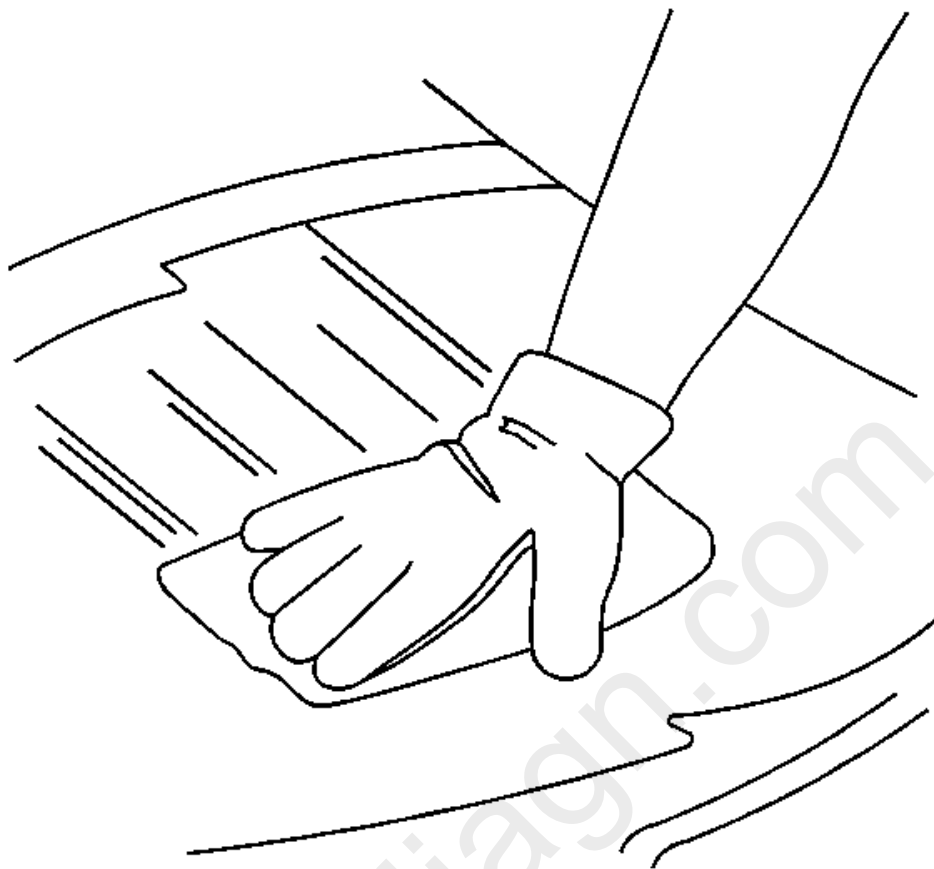


Fig. 65: Cleaning Excess Urethane Adhesive From Body
Courtesy of GENERAL MOTORS COMPANY

25. Clean any excess urethane adhesive from the body.

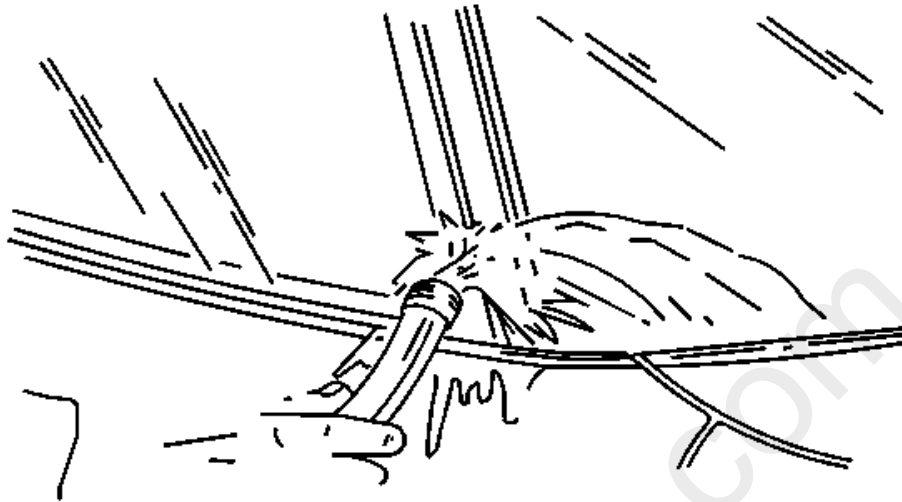


Fig. 66: Performing Water Hose Test
Courtesy of GENERAL MOTORS COMPANY

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

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

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

- For the moisture-curing type of urethane adhesive, allow a minimum of 6 hours at 21°C (70°F) or greater and with at least

30 percent relative humidity. Allow at least 24 hours for the complete curing of the urethane adhesive.

- **For the chemical-curing type of urethane adhesive, allow a minimum of 1 hour .**

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

30. Maintain the following conditions in order to properly cure the urethane adhesive:
 - Partially lower a door window in order to prevent pressure buildups when closing doors before the urethane adhesive cures.
 - Do not drive the vehicle until the urethane adhesive is cured. Refer to the above curing times.
 - Do not use compressed air in order to dry the urethane adhesive.
31. Complete the window installation.

ADHESIVE INSTALLATION OF ENCAPSULATED STATIONARY WINDOWS (COUPE)

WARNING: Refer to Glass and Sheet Metal Handling Warning .

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

NOTE: If corrosion of the pinch-weld flange is present or if sheet metal repairs or replacements are required, the pinch-weld flange must be refinished in order to restore the bonding area strength. If paint repairs are required, mask the flange bonding area prior to applying the color coat in order to provide a clean primer only surface. Materials such as BASF DE15®, DuPont 2610®, Sherwin-Williams PSE 4600 and NP70® and Martin-Semour 5120 and 5130® PPG DP90LF SPIES/HECKER 3688/8590 - 3688/5150 - 4070/5090 STANDOX 11158/13320 - 14653/14980 products are approved for this application.

5. After repairing the opening as indicated, perform the following steps:

6. Use an abrasive pad if necessary to remove mold release buildup from the encapsulated window. Use a dampened lint free cloth to remove any debris remaining on the window.

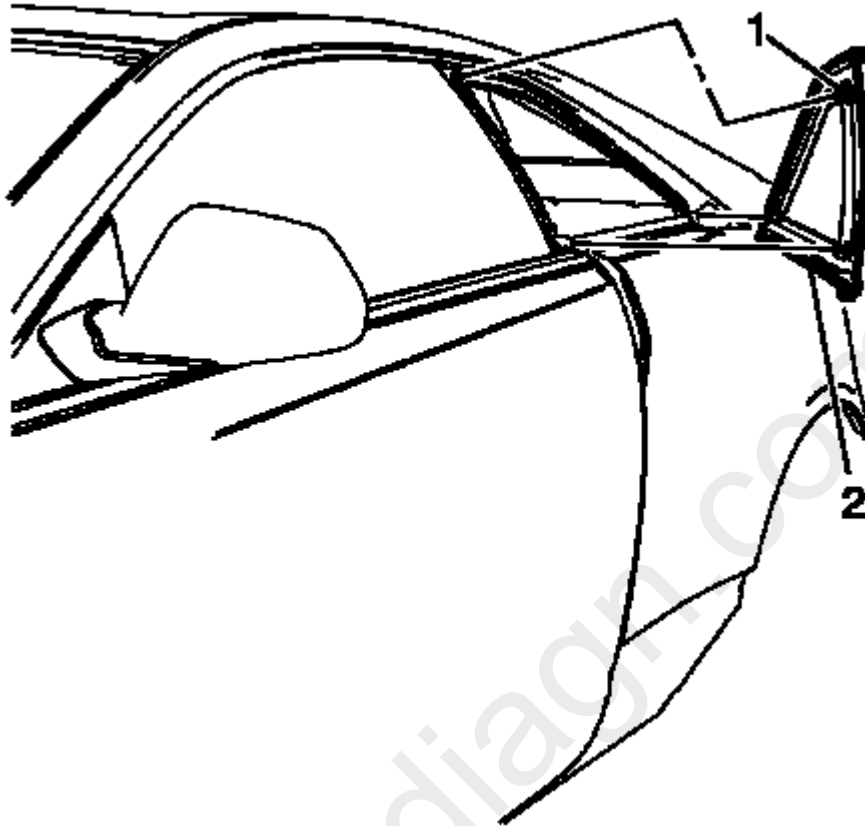


Fig. 67: Quarter Window

Courtesy of GENERAL MOTORS COMPANY

7. Dry fit the window (1) to the opening in order to determine the correct position.
8. Ensure that the window locator pins are positioned to the pinch-weld flange.
9. Use masking tape to mark the locations of the window in the opening.
10. Cut the masking in the center and remove the window from the opening.
11. Verify all primers and urethane adhesive are within expiration dates.

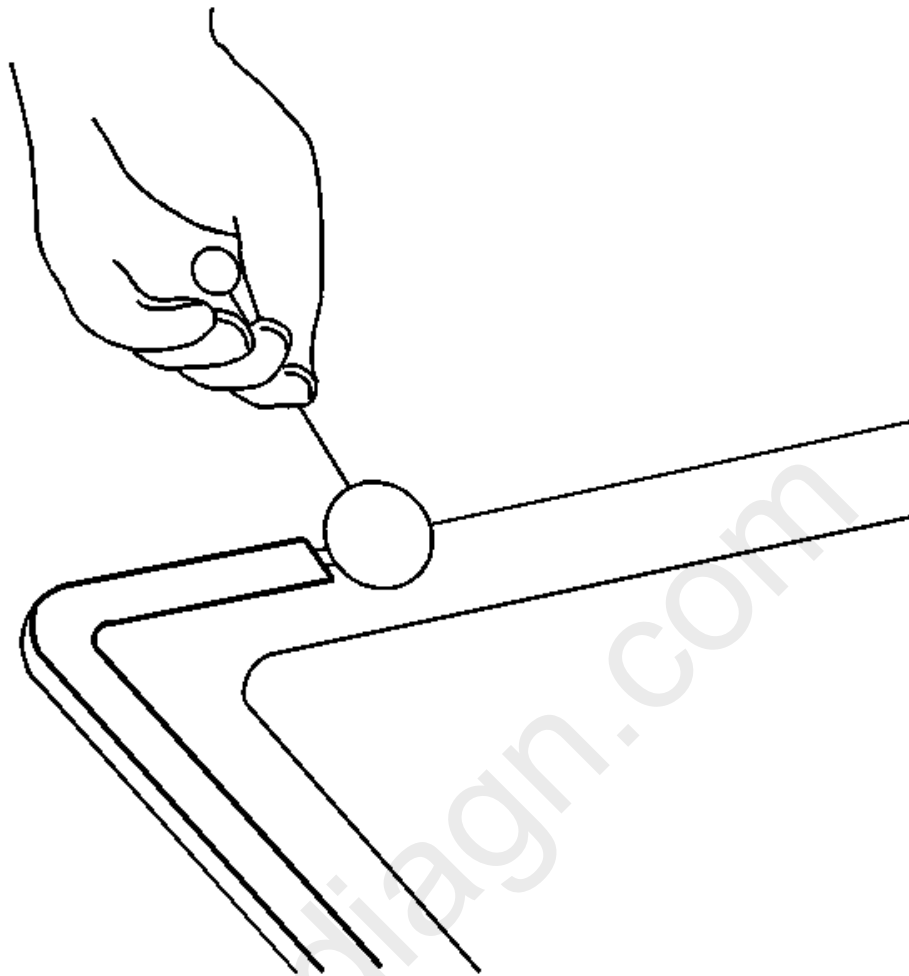


Fig. 68: Applying Glass Prep

Courtesy of GENERAL MOTORS COMPANY

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

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

12. Shake the primer clear for at least 1 minute.
13. Use a new dauber in order to apply the primer to the surface of the encapsulated window.
14. Allow the primer to dry for approximately 6 minutes.

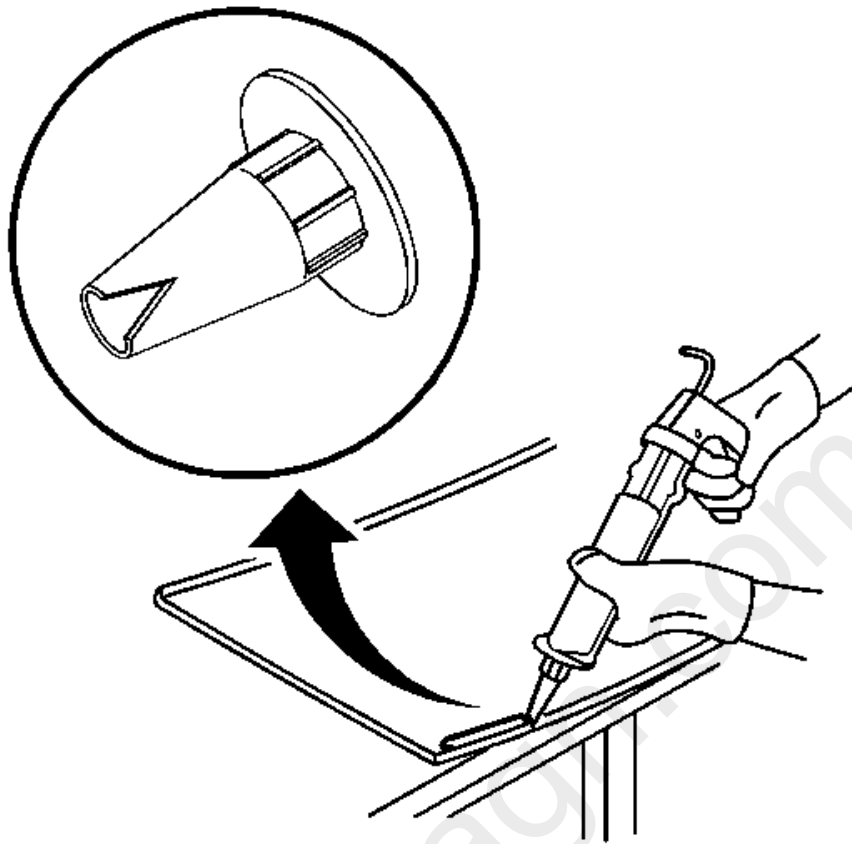


Fig. 69: View Of Modified Applicator Nozzle
Courtesy of GENERAL MOTORS COMPANY

15. Cut the applicator nozzle in order to provide a bead of 8 mm (0.31 in) wide, 12 mm (0.50 in) high.

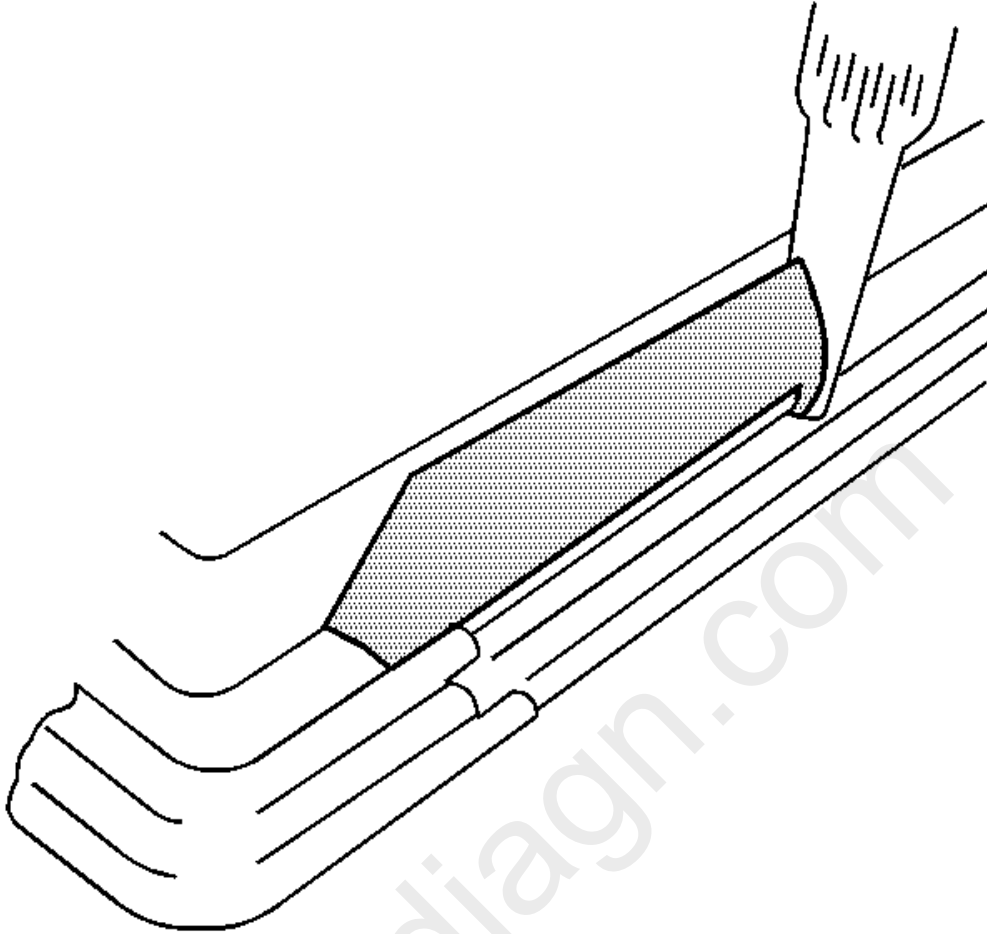


Fig. 70: Applying Continuous Bead Of Urethane Adhesive
Courtesy of GENERAL MOTORS COMPANY

16. Use a cartridge-type caulking gun in order to apply a smooth, continuous bead of urethane adhesive.
17. Use the edge of the inside encapsulated window track as a guide for the nozzle in order to apply the urethane adhesive.
18. Place the window in the opening.
19. Align the masking tape lines on the window and the body.
20. Press firmly around the entire periphery of the window in order to wet-out the urethane bead.
21. Tape the window to the body in order to minimize movement until the urethane adhesive cures.
22. Clean any excess urethane adhesive from the body.

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

23. Use a soft spray of warm water in order to immediately water test the window.

24. Inspect the window for leaks.
25. If any leaks are found, use a plastic paddle in order to apply extra urethane adhesive at the leak point.
26. Retest the window for leaks.

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

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

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

27. 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.
28. Complete the window installation.

ADHESIVE INSTALLATION OF ENCAPSULATED STATIONARY WINDOWS (WAGON)

WARNING: Refer to Glass and Sheet Metal Handling Warning .

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

NOTE: If corrosion of the pinch-weld flange is present or if sheet metal repairs or replacements are required, the pinch-weld flange must be refinished in

order to restore the bonding area strength. If paint repairs are required, mask the flange bonding area prior to applying the color coat in order to provide a clean primer only surface. Materials such as BASF DE15®, DuPont 2610®, Sherwin-Williams PSE 4600 and NP70® and Martin-Semour 5120 and 5130® PPG DP90LF SPIES/HECKER 3688/8590 - 3688/5150 - 4070/5090 STANDOX 11158/13320 - 14653/14980 products are approved for this application.

5. After repairing the opening as indicated, perform the following steps:
6. Use an abrasive pad if necessary to remove mold release buildup from the encapsulated window. Use a dampened lint free cloth to remove any debris remaining on the window.

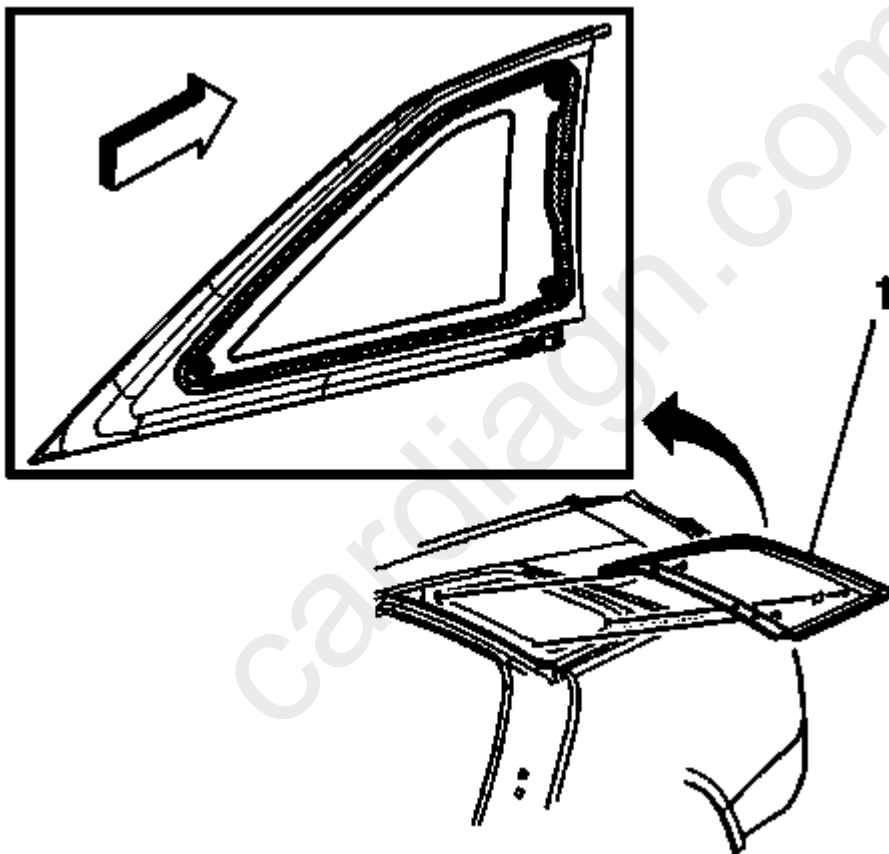


Fig. 71: Identifying Quarter Window
Courtesy of GENERAL MOTORS COMPANY

7. Dry fit the window (1) to the opening in order to determine the correct position.
8. Ensure that the window locator pins are positioned to the pinch-weld flange.
9. Use masking tape to mark the locations of the window in the opening.
10. Cut the masking in the center and remove the window from the opening.
11. Verify all primers and urethane adhesive are within expiration dates.

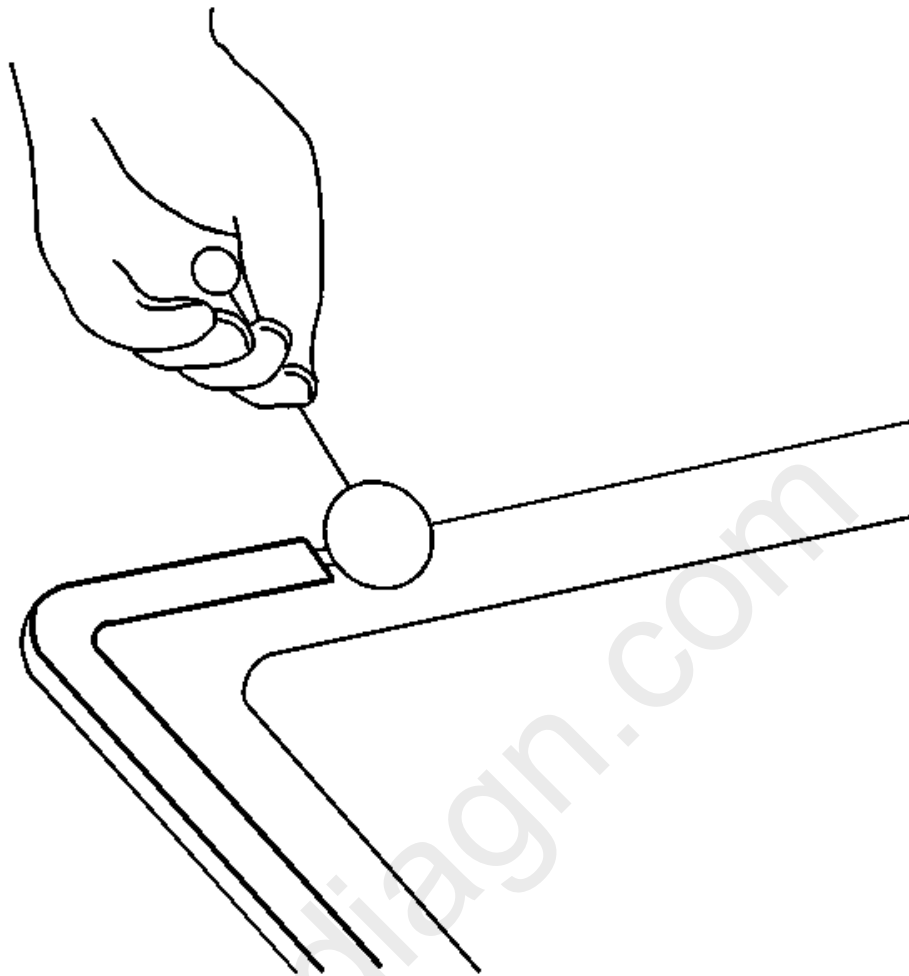


Fig. 72: Applying Glass Prep

Courtesy of GENERAL MOTORS COMPANY

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

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

12. Shake the primer clear for at least 1 minute.
13. Use a new dauber in order to apply the primer to the surface of the encapsulated window.
14. Allow the primer to dry for approximately 6 minutes.

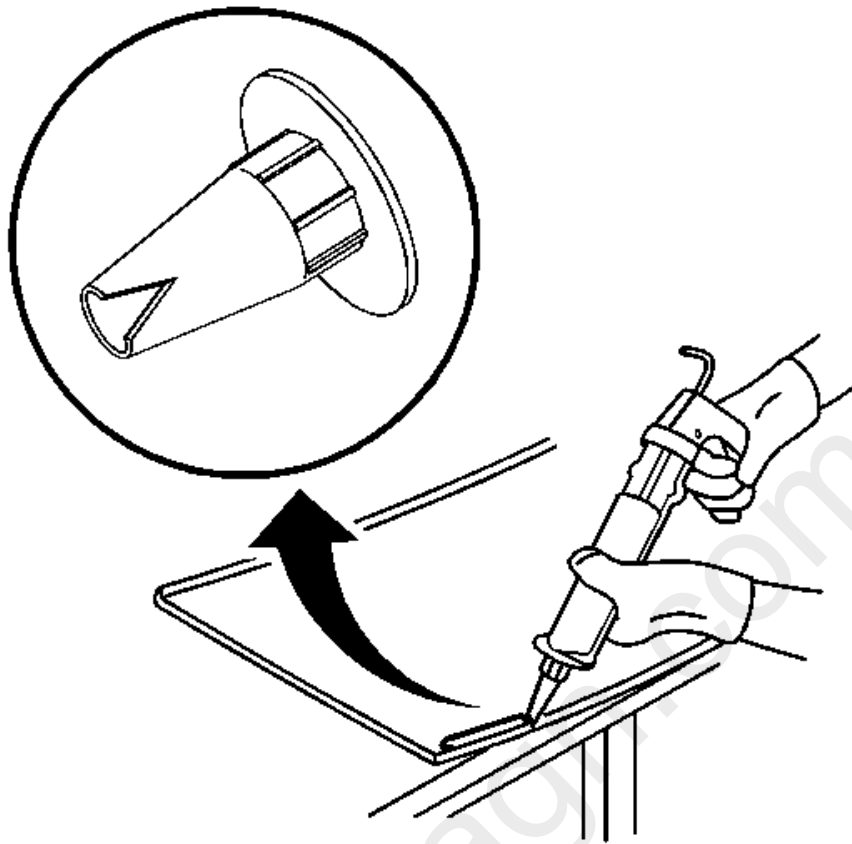


Fig. 73: View Of Modified Applicator Nozzle
Courtesy of GENERAL MOTORS COMPANY

15. Cut the applicator nozzle in order to provide a bead of 8 mm (0.31 in) wide, 12 mm (0.50 in) high.

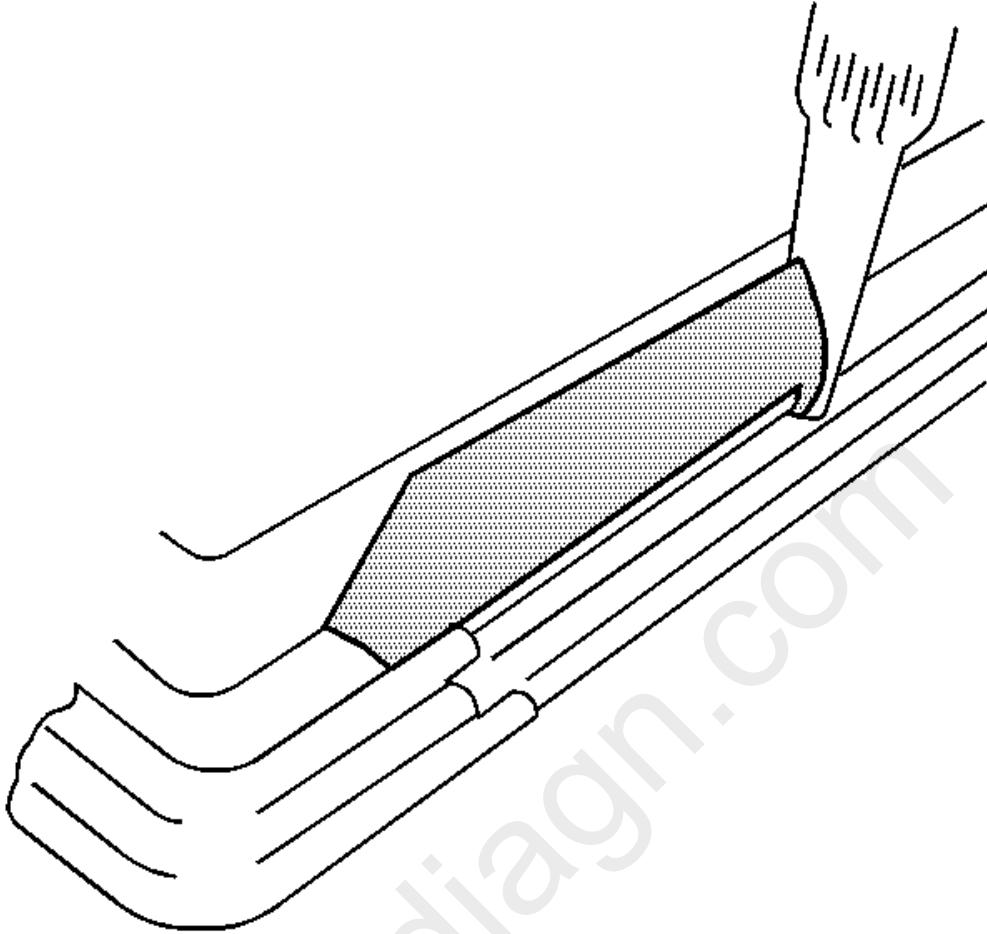


Fig. 74: Applying Continuous Bead Of Urethane Adhesive
Courtesy of GENERAL MOTORS COMPANY

16. Use a cartridge-type caulking gun in order to apply a smooth, continuous bead of urethane adhesive.
17. Use the edge of the inside encapsulated window track as a guide for the nozzle in order to apply the urethane adhesive.
18. Place the window in the opening.
19. Align the masking tape lines on the window and the body.
20. Press firmly around the entire periphery of the window in order to wet-out the urethane bead.
21. Tape the window to the body in order to minimize movement until the urethane adhesive cures.
22. Clean any excess urethane adhesive from the body.

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

23. Use a soft spray of warm water in order to immediately water test the window.

24. Inspect the window for leaks.
25. If any leaks are found, use a plastic paddle in order to apply extra urethane adhesive at the leak point.
26. Retest the window for leaks.

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

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

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

27. 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.
28. Complete the window installation.

ADHESIVE INSTALLATION OF REAR WINDOWS (WAGON)

WARNING: Refer to Glass and Sheet Metal Handling Warning .

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

NOTE: If corrosion of the pinch-weld flange is present or if sheet metal repairs or replacements are required, the pinch-weld flange must be refinished in

order to restore the bonding area strength. If paint repairs are required, mask the flange bonding area prior to applying the color coat in order to provide a clean primer only surface. Materials such as BASF DE15®, DuPont 2610®, Sherwin-Williams PSE 4600 and NP70® and Martin-Semour 5120 and 5130® PPG DP90LF SPIES/HECKER 3688/8590 - 3688/5150 - 4070/5090 STANDOX 11158/13320 - 14653/14980 products are approved for this application.

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

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

NOTE: Do not apply the black #3 primer to the existing bead 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.
9. Allow the pinch-weld primer to dry for approximately 10 minutes.

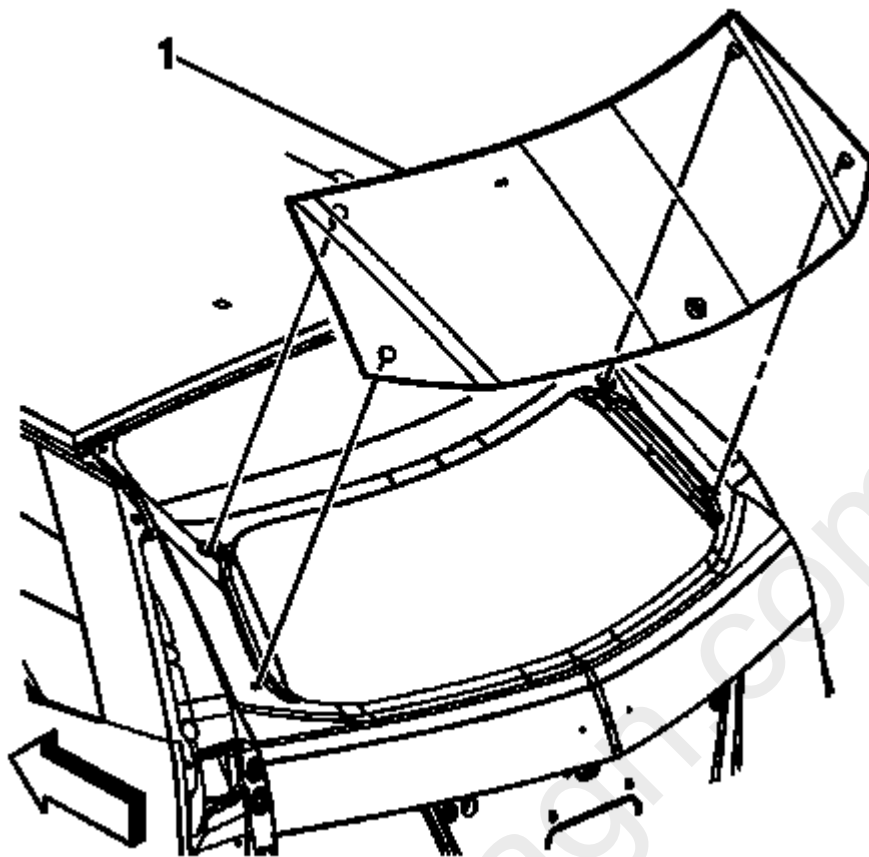


Fig. 75: Identifying Rear Window
Courtesy of GENERAL MOTORS COMPANY

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

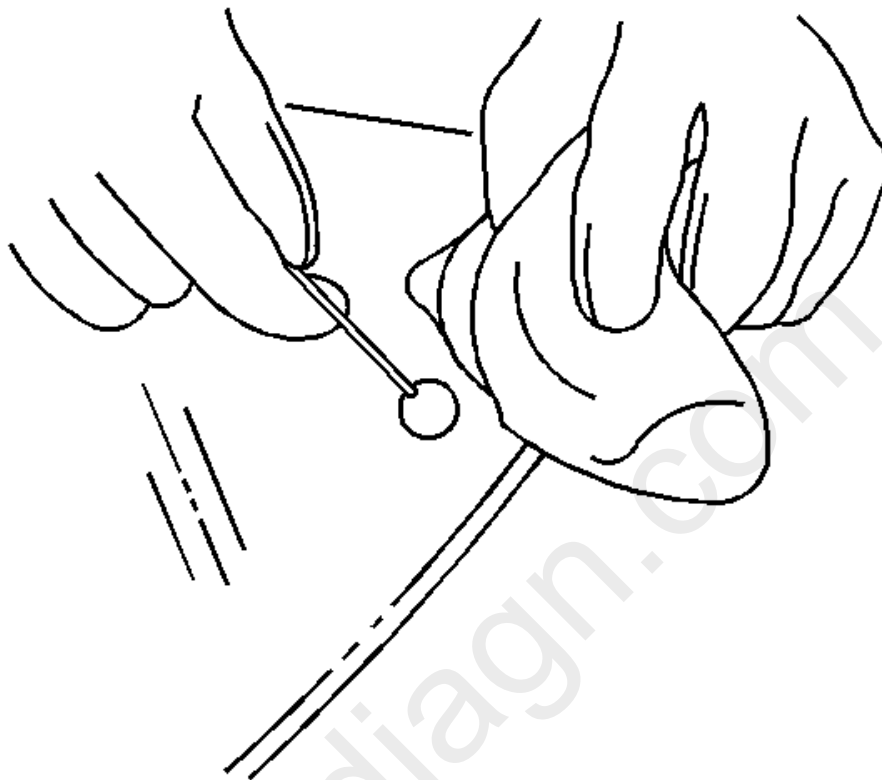


Fig. 76: Applying Glass Prep

Courtesy of GENERAL MOTORS COMPANY

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

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

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

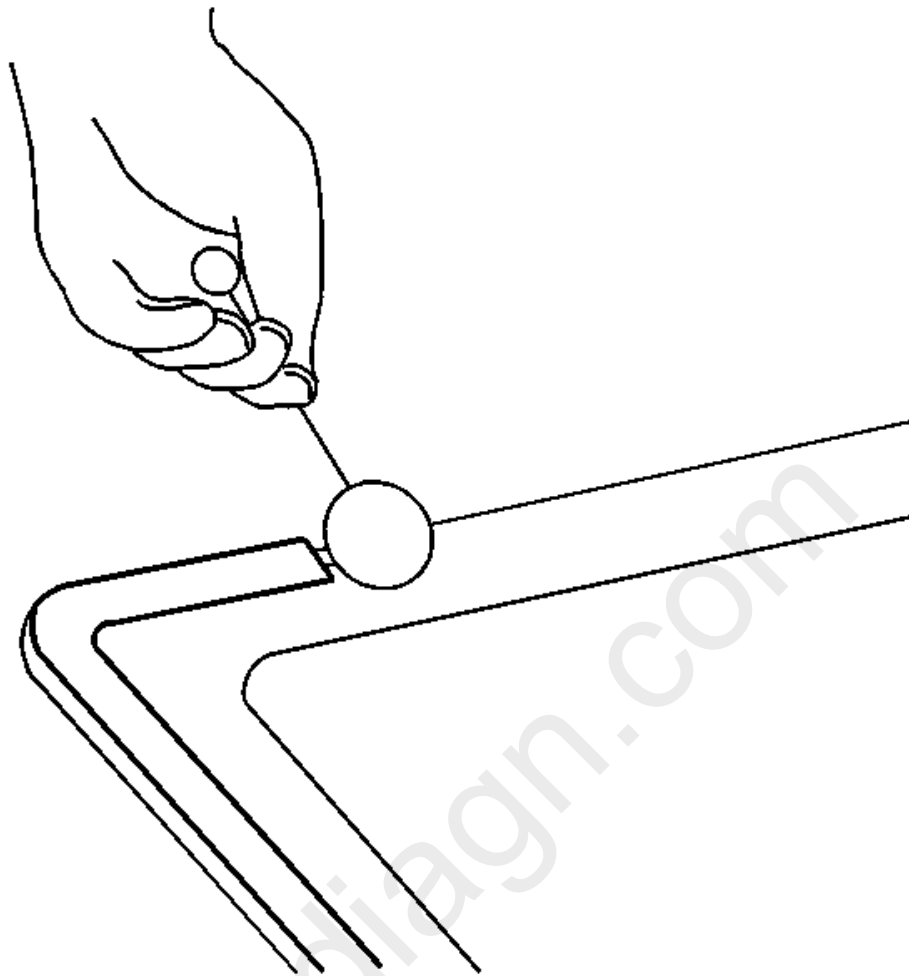


Fig. 77: Applying Glass Prep
Courtesy of GENERAL MOTORS COMPANY

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

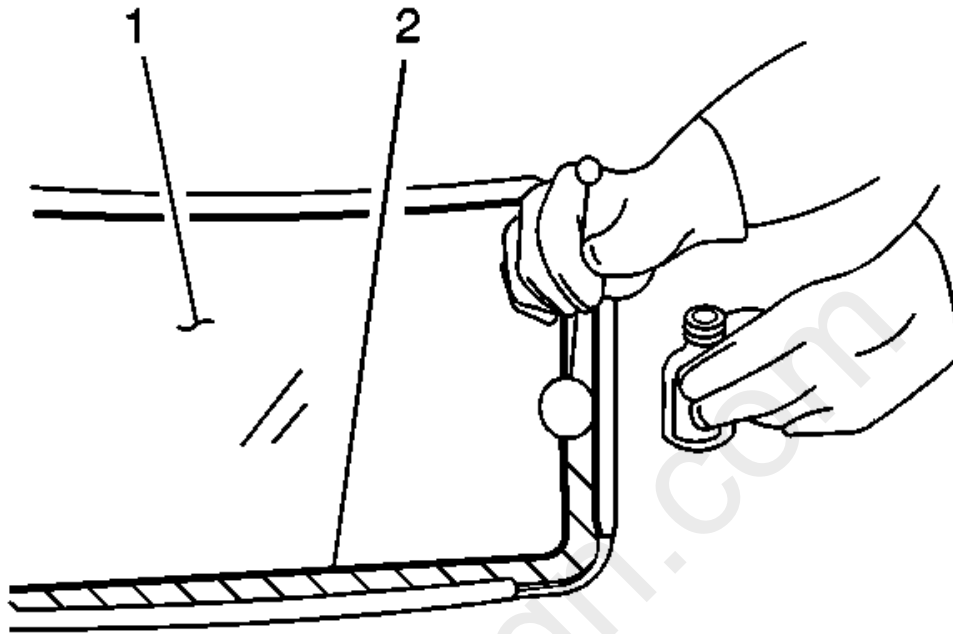


Fig. 78: Applying Glass Primer

Courtesy of GENERAL MOTORS COMPANY

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

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

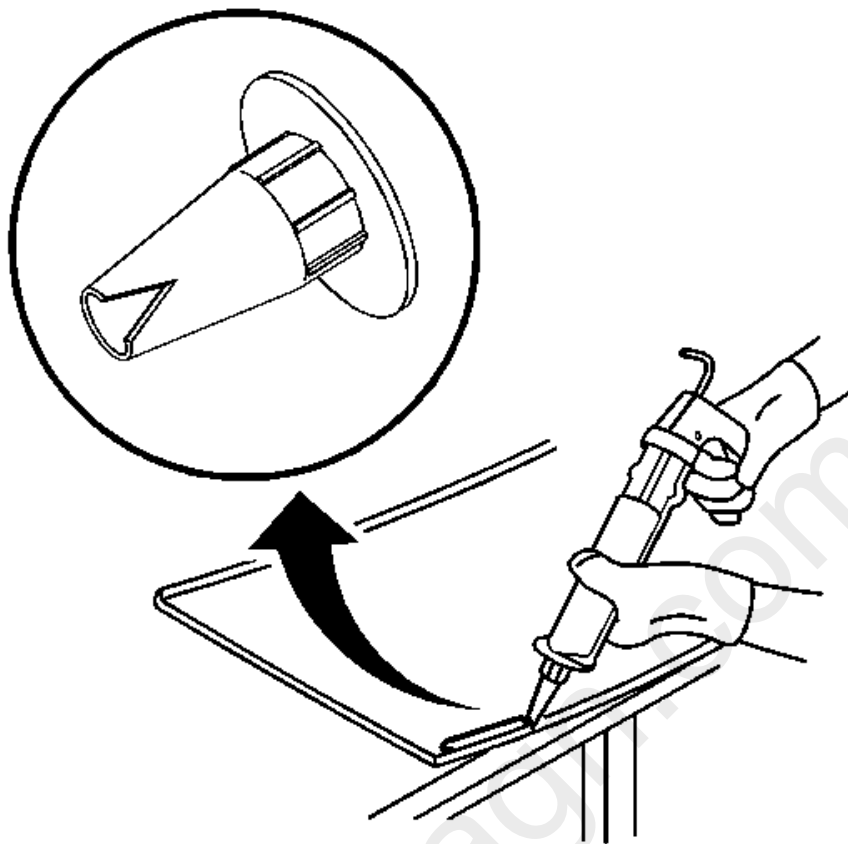


Fig. 79: View Of Modified Applicator Nozzle
Courtesy of GENERAL MOTORS COMPANY

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

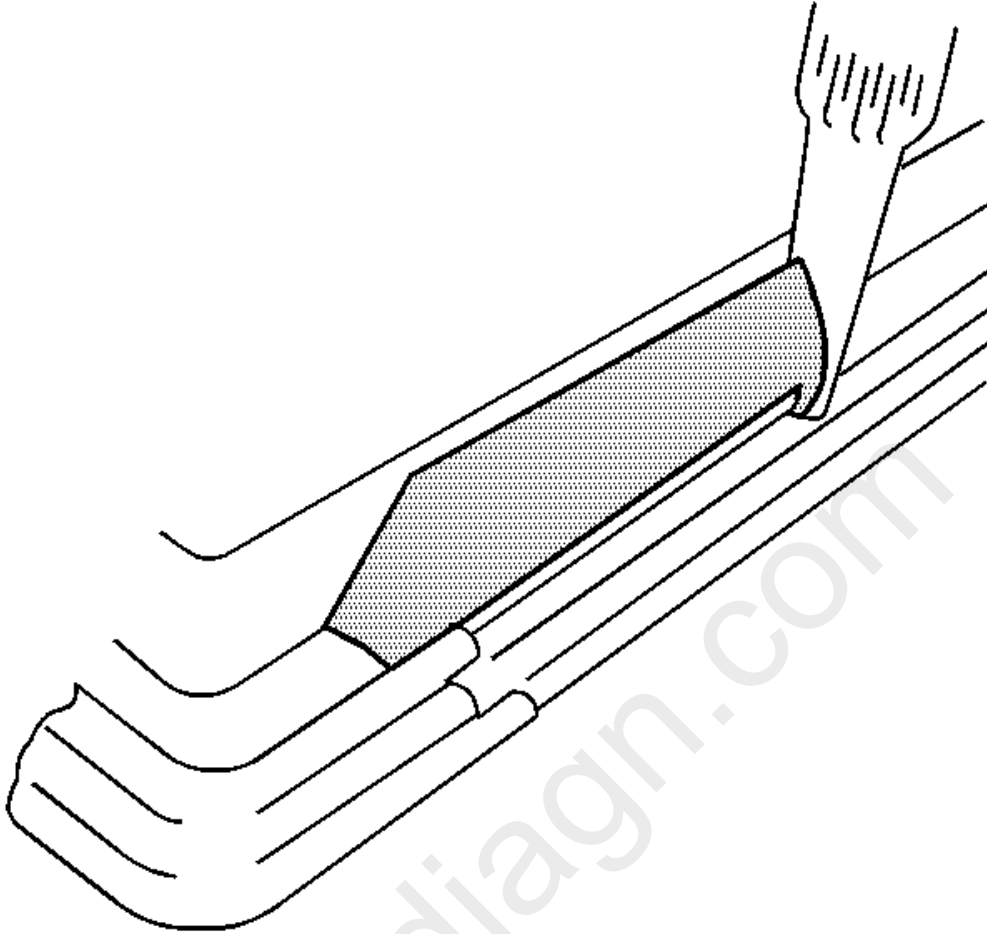


Fig. 80: Applying Continuous Bead Of Urethane Adhesive
Courtesy of GENERAL MOTORS COMPANY

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

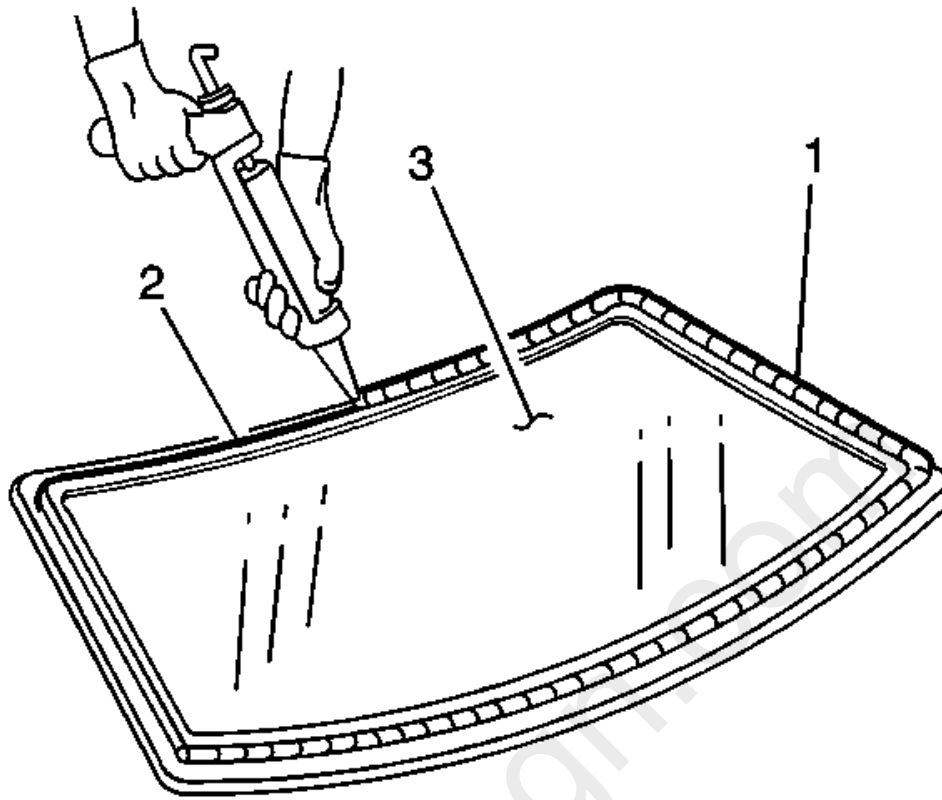


Fig. 81: Applying Urethane Adhesive To Inner Surface Of Window
Courtesy of GENERAL MOTORS COMPANY

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

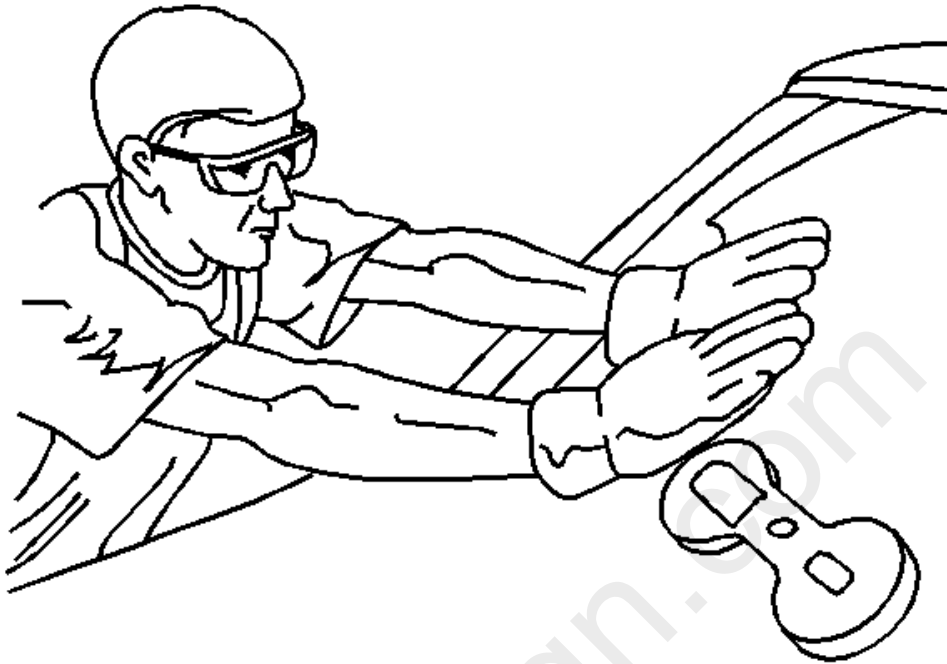


Fig. 82: Pressing Window Into Place
Courtesy of GENERAL MOTORS COMPANY

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

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

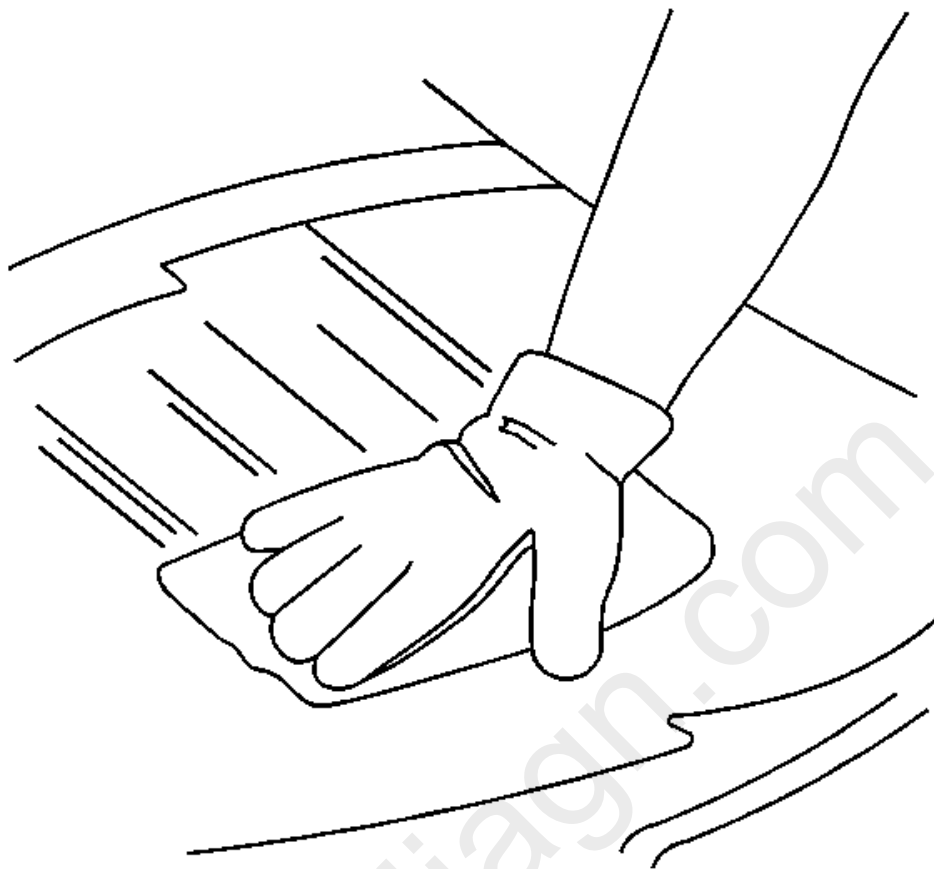


Fig. 83: Cleaning Excess Urethane Adhesive From Body
Courtesy of GENERAL MOTORS COMPANY

26. Clean any excess urethane adhesive from the body.

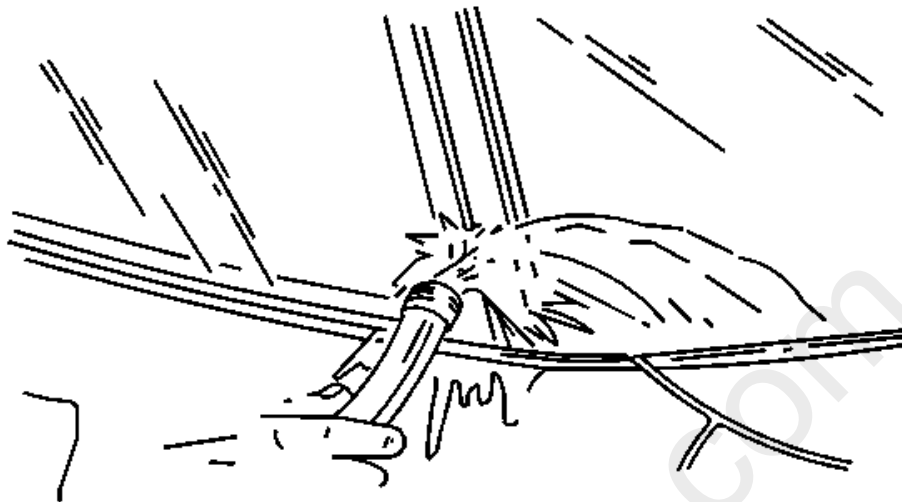


Fig. 84: Performing Water Hose Test
Courtesy of GENERAL MOTORS COMPANY

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

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

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

- For the moisture-curing type of urethane adhesive, allow a minimum of 6 hours at 21°C (70°F) or greater and with at least

30 percent relative humidity. Allow at least 24 hours for the complete curing of the urethane adhesive.

- **For the chemical-curing type of urethane adhesive, allow a minimum of 1 hour .**

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

31. Maintain the following conditions in order to properly cure the urethane adhesive:
 - Partially lower a door window in order to prevent pressure buildups when closing doors before the urethane adhesive cures.
 - Do not drive the vehicle until the urethane adhesive is cured. Refer to the above curing times.
 - Do not use compressed air in order to dry the urethane adhesive.
32. Complete the window installation.

ADHESIVE INSTALLATION OF REAR WINDOWS (COUPE)

WARNING: Refer to Glass and Sheet Metal Handling Warning .

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

NOTE: **If corrosion of the pinch-weld flange is present or if sheet metal repairs or replacements are required, the pinch-weld flange must be refinished in order to restore the bonding area strength. If paint repairs are required, mask the flange bonding area prior to applying the color coat in order to provide a clean primer only surface. Materials such as BASF DE15®, DuPont 2610®, Sherwin-Williams PSE 4600 and NP70® and Martin-Semour 5120 and 5130® PPG DP90LF SPIES/HECKER 3688/8590 - 3688/5150 - 4070/5090 STANDOX 11158/13320 - 14653/14980 products are approved for this application.**

5. After repairing the opening as indicated, perform the following steps:

1. Remove all traces of broken glass from the outer cowl panel, seats, floor and defroster ducts.
2. Clean around the edge of the inside surface of the window with a 50/50 mixture of isopropyl alcohol and water by volume on a dampened lint free cloth.
6. Verify all primers and urethane adhesive are within expiration dates.

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

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

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

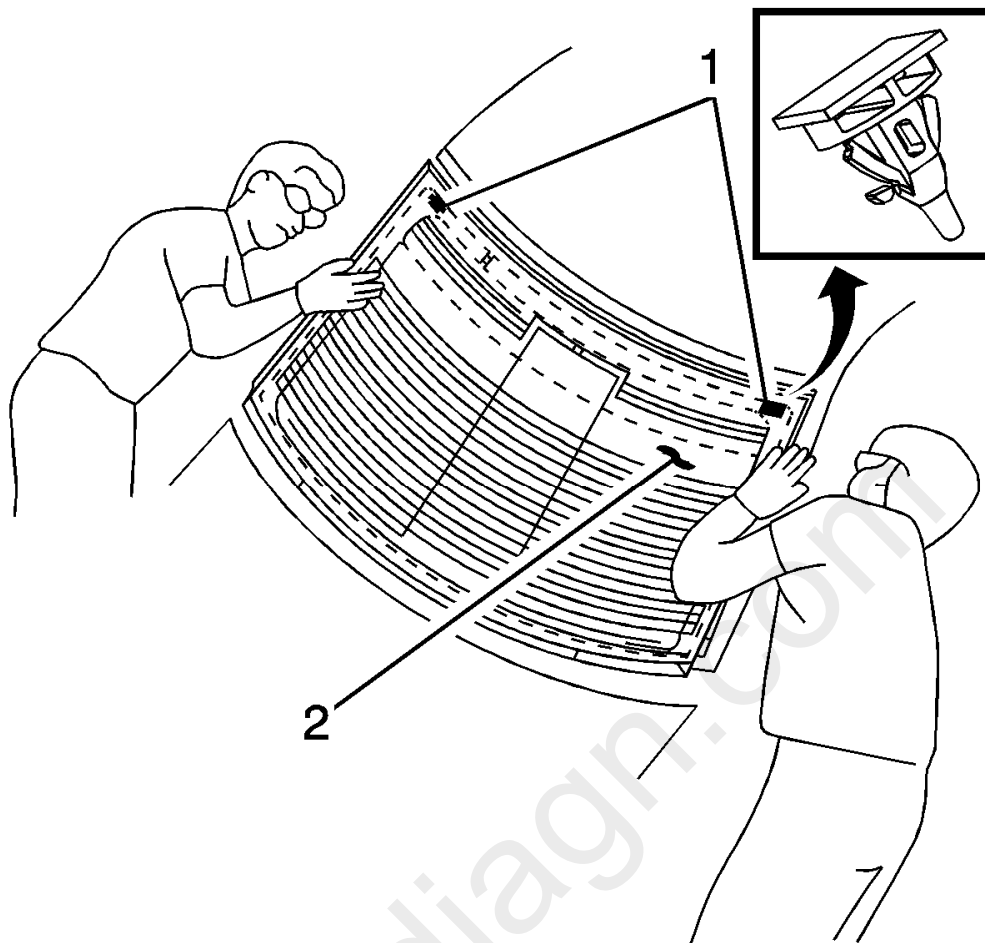


Fig. 85: Installing Rear Window
Courtesy of GENERAL MOTORS COMPANY

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

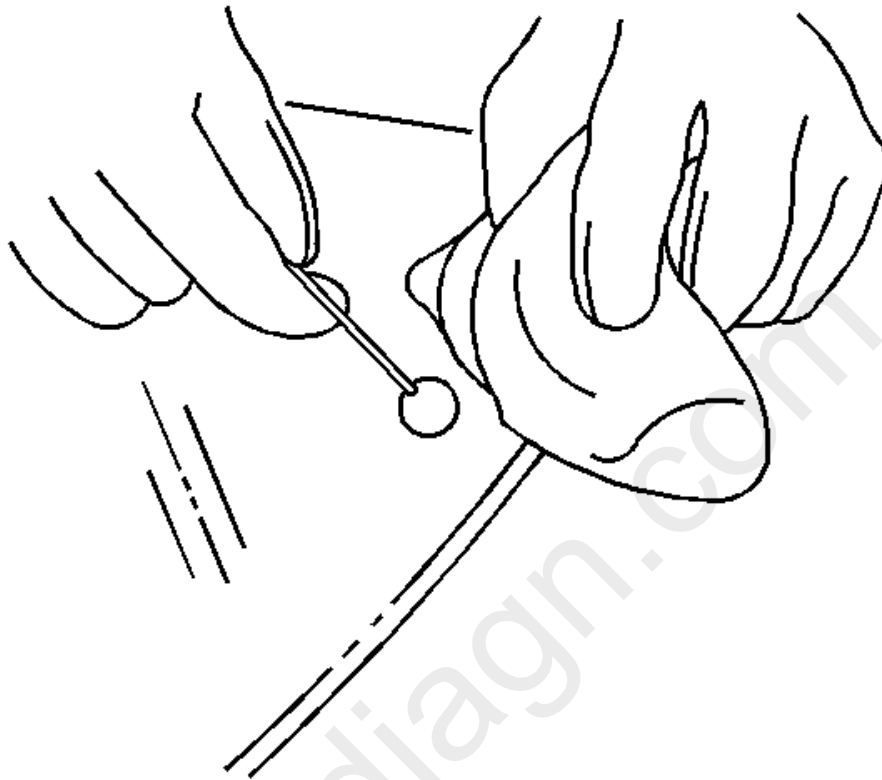


Fig. 86: Applying Glass Prep

Courtesy of GENERAL MOTORS COMPANY

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

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

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

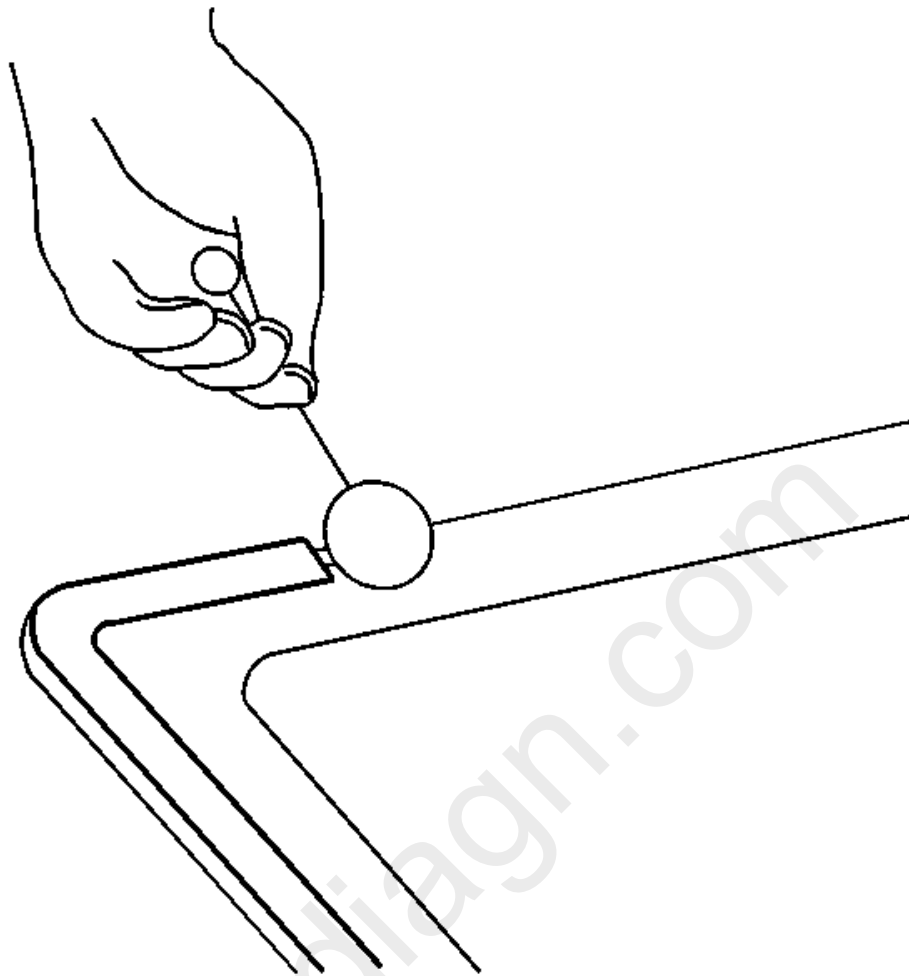


Fig. 87: Applying Glass Prep
Courtesy of GENERAL MOTORS COMPANY

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

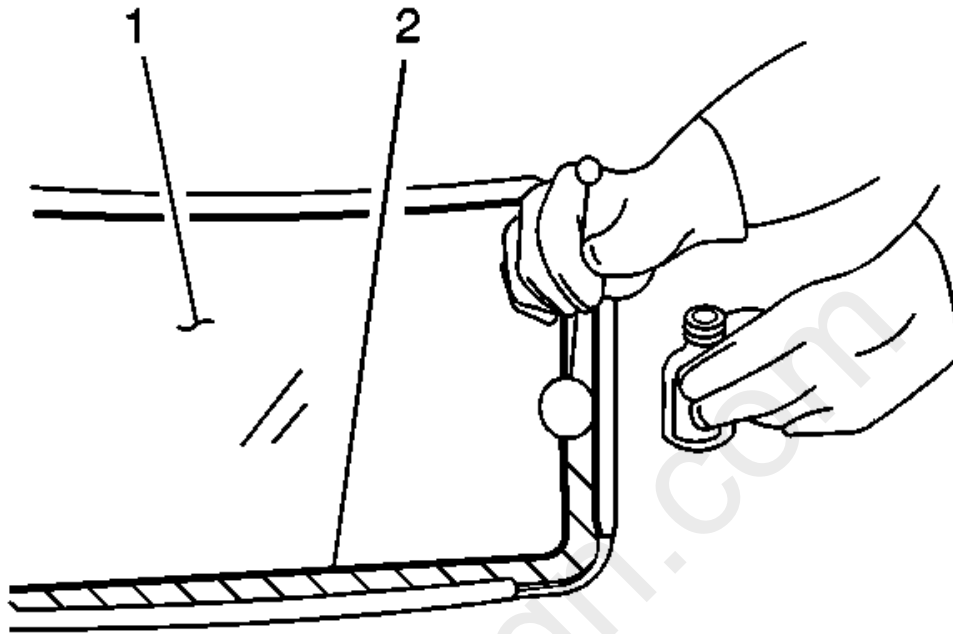


Fig. 88: Applying Glass Primer

Courtesy of GENERAL MOTORS COMPANY

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

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

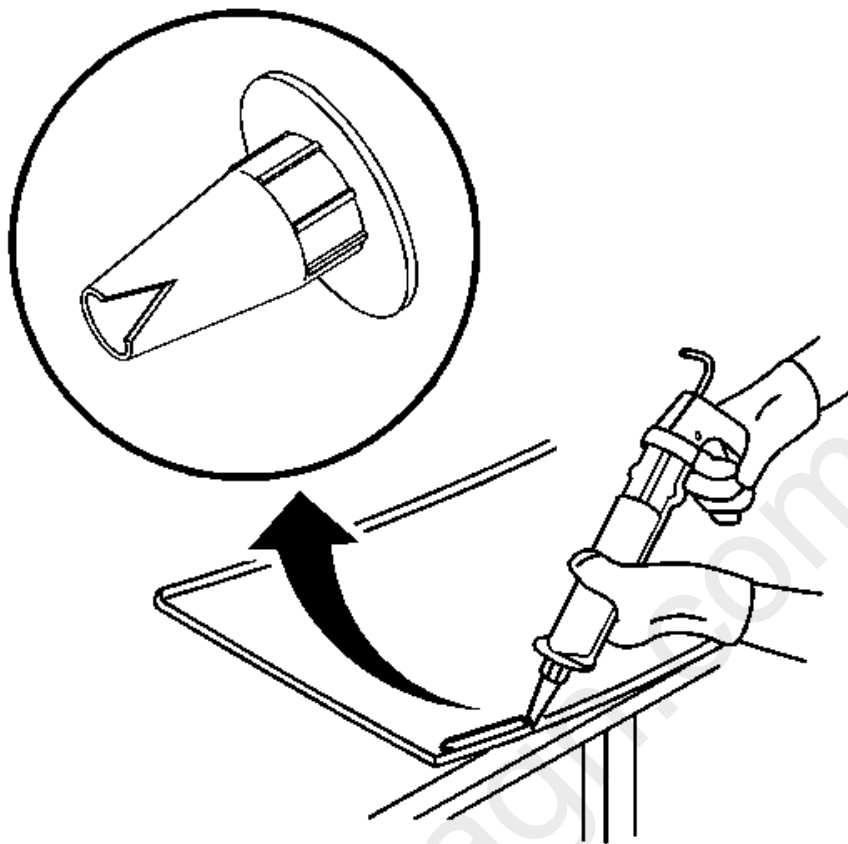


Fig. 89: View Of Modified Applicator Nozzle
Courtesy of GENERAL MOTORS COMPANY

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

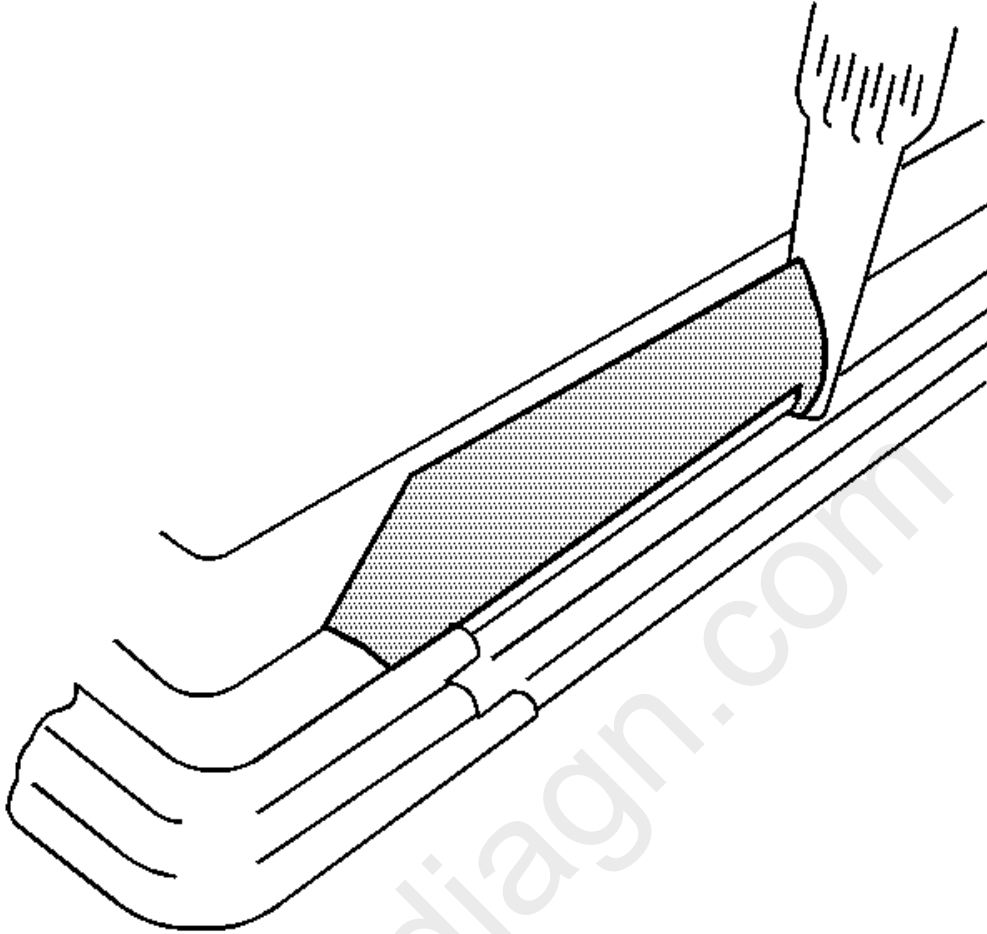


Fig. 90: Applying Continuous Bead Of Urethane Adhesive
Courtesy of GENERAL MOTORS COMPANY

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

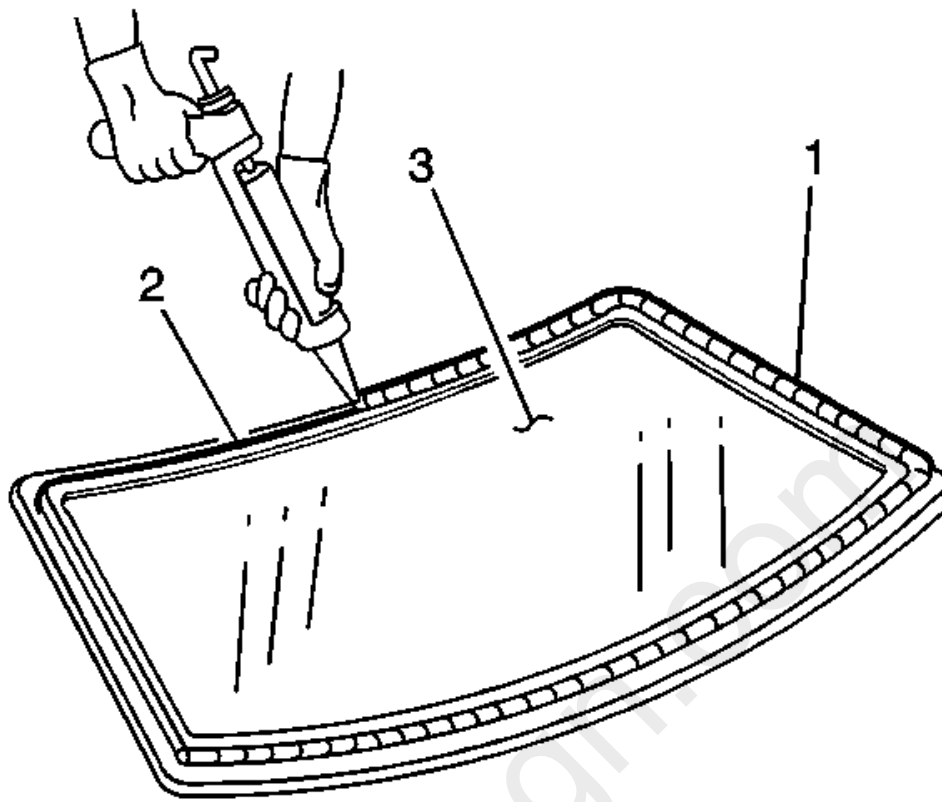


Fig. 91: Applying Urethane Adhesive To Inner Surface Of Window
Courtesy of GENERAL MOTORS COMPANY

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

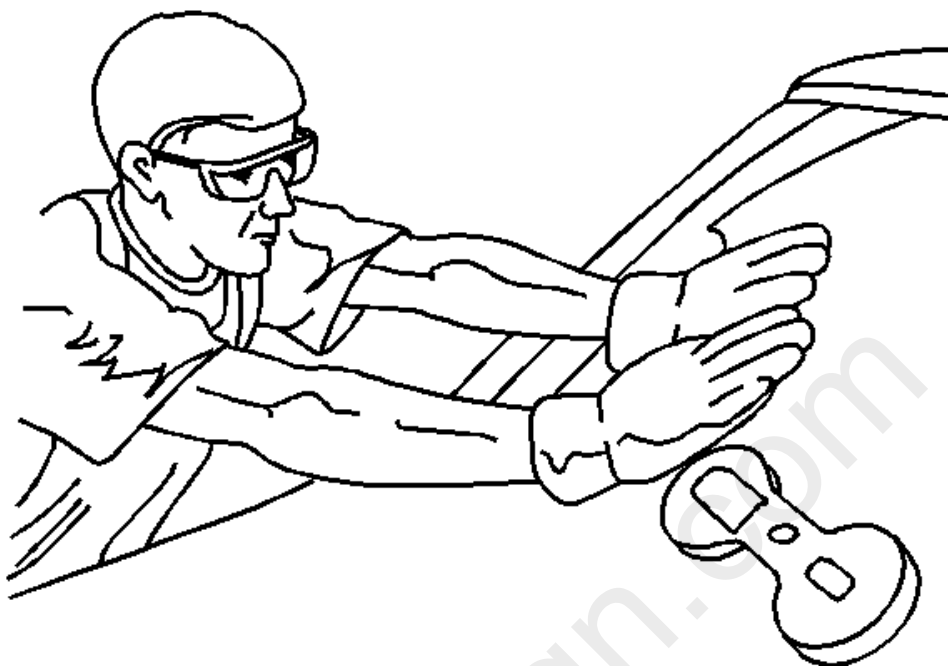


Fig. 92: Pressing Window Into Place
Courtesy of GENERAL MOTORS COMPANY

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

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

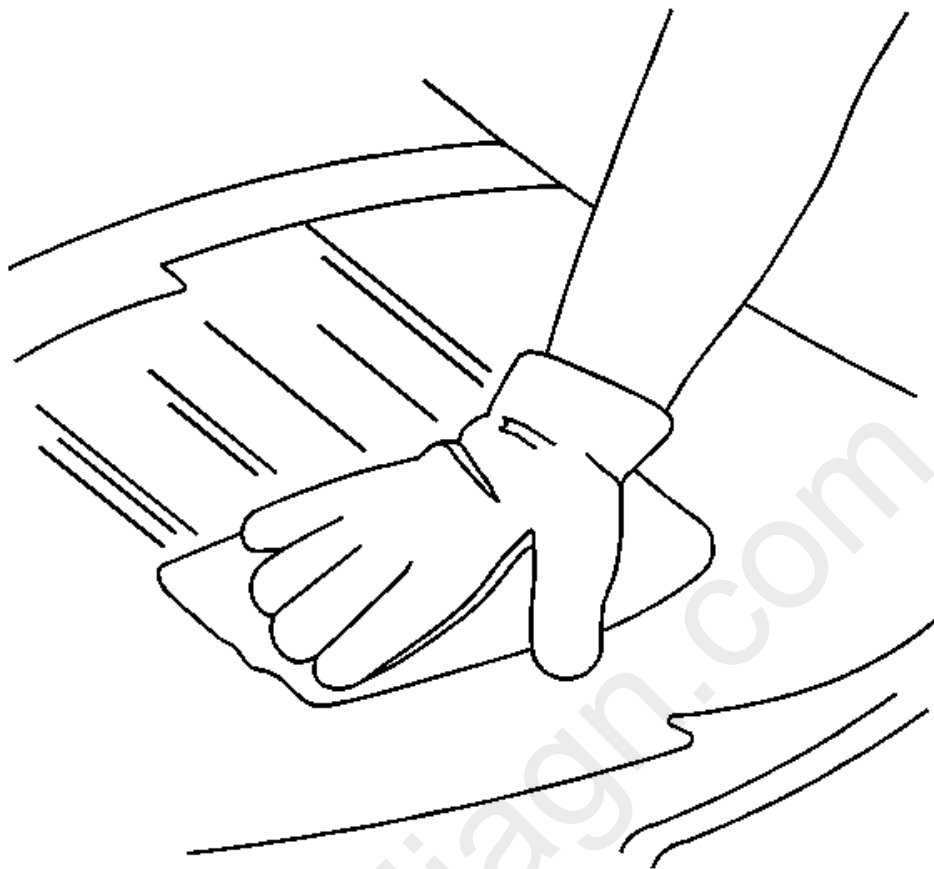


Fig. 93: Cleaning Excess Urethane Adhesive From Body
Courtesy of GENERAL MOTORS COMPANY

26. Clean any excess urethane adhesive from the body.

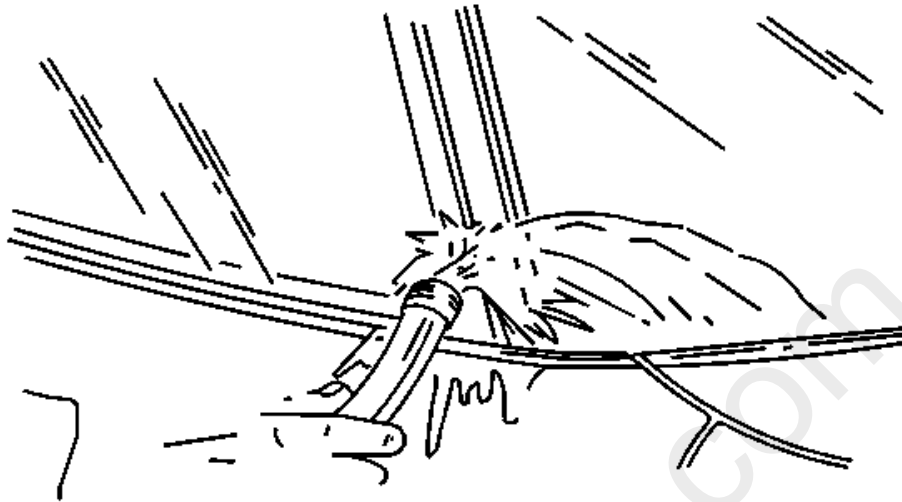


Fig. 94: Performing Water Hose Test
Courtesy of GENERAL MOTORS COMPANY

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

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

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

- For the moisture-curing type of urethane adhesive, allow a minimum of 6 hours at 21°C (70°F) or greater and with at least

30 percent relative humidity. Allow at least 24 hours for the complete curing of the urethane adhesive.

- **For the chemical-curing type of urethane adhesive, allow a minimum of 1 hour .**

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

31. Maintain the following conditions in order to properly cure the urethane adhesive:

- Partially lower a door window in order to prevent pressure buildups when closing doors before the urethane adhesive cures.
- Do not drive the vehicle until the urethane adhesive is cured. Refer to the above curing times.
- Do not use compressed air in order to dry the urethane adhesive.

32. Complete the window installation.

DESCRIPTION AND OPERATION

FULL-CUT METHOD DESCRIPTION

IMPORTANT:

- **If corrosion of the pinch-weld flange is present, or if sheet metal repairs or replacements are required, refinish the pinch-weld flange in order to present a clean, primer-only surface.**
- **If paint repairs are required, mask the flange bonding area, prior to applying the color coat, in order to provide a clean, primer-only surface.**
- **Appropriate materials for these primer applications are typically 2 component catalyzed products. Use materials such as BASF 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, use adhesive systems which meet GM Specification GM 3651G.**

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

This method includes the following:

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

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

POWER WINDOWS DESCRIPTION AND OPERATION

Power Windows System Components

The power windows system consists of the following components:

- Body control module.
- Driver door lock/window switch
- Passenger door lock/window switch.
- Left rear window switch.
- Right rear window switch
- Driver window motor
- Passenger window motor
- Left rear window motor
- Right rear window motor
- DR/LCK fuse (15-amp)
- PDM fuse (15-amp)
- PWR/WNDW Circuit Breaker (25-amp) - front
- LT/REAR/WNDW fuse (15-amp) - rear
- REAR/WNDW fuse (15-amp) - rear

Driver Power Window Operation

The switch for the driver power window has 4 positions; up, down, express up and express down and its position is a direct input into the driver door lock/window switch. When the driver power window motor module receives a serial data message from the driver door lock/window switch, the driver power window motor module will apply power and ground to the driver door window motor to move the window as requested.

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

Front Passenger Power Window Operation

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

The front passenger power window can also be operated from a switch on the driver door lock/window switch. The right front switch on the driver door lock/window switch has 4 positions up, down, and express up and express down and its position is a direct input into the driver door lock/window switch. Upon receiving a request for front passenger power window operation, the driver door lock/window switch transmits a serial data

message indicating the changed switch position to the body control module (BCM) which then sends a command to the passenger door lock/window switch. When the passenger door lock/window switch receives a passenger door window switch request from the BCM, it will send a command to the passenger power window motor module which will apply power and ground to the passenger door window motor to move the window as requested.

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

Rear Window Operation (Wagon)

The rear passenger power window switches have their own battery voltage and respective grounds, when the switch is pushed down or pulled up, the logic circuit within the rear passenger power window switch will provide power and ground to the window motor causing the window to open or by reversing polarity, the window will close.

The rear power windows can also be operated from switches on the driver door lock/window switch. When the rear switches on the driver door lock/window switch are pushed down or pulled up, their position is signaled to the BCM via the driver door lock/window switch. When the BCM receives this command, the appropriate signal is sent to the rear door window switch which will provide power and ground to the window motor causing the window to open or close.

Rear Window Lockout Feature

The rear window lockout function is operated from the driver door lock/window switch, when the rear window lockout switched is pressed, an indicator light will illuminate and a serial message will be sent to the BCM via the driver door lock/window switch. When the BCM receives a lockout command, the rear door power window switches will be disabled (rear window operation is still possible from the driver door lock/window switch). Once activated, the rear power window switches will be disabled until the ignition switch is cycled or the switch is pressed again to enable the rear window switches.

REAR WINDOW DEFOGGER DESCRIPTION AND OPERATION

Rear Window Defogger System Components

The rear window defogger system consists of the following components:

- HVAC control module
- Radio/HVAC control panel
- REAR DEFOG relay
- Rear window defogger grid
- REAR DEFOG 50-amp fuse

Rear Window Defogger System Operation

The HVAC control module controls the REAR DEFOG relay located in the underhood fuse block. The rear window defogger switch is located on the radio/HVAC control panel at the center of the dash. When the rear window defogger switch is activated ON, the radio/HVAC control panel sends a serial data message to the HVAC control module requesting the rear defogger be activated. The HVAC control module responds by energizing the rear defog relay by applying voltage to the relay coil via the rear defog relay control circuit. Ground for the relay coil is provided at ground G104. When the rear defog relay coil is energized, the switch contacts of the rear defog relay close allowing battery voltage to flow from the REAR DEFOG fuse through the closed switch contacts and out the relay switched output circuit to the rear window defogger grid. Ground for the rear window defogger grid is provided at grounds G401 and G402. The information display module also illuminates the rear defog indicator LED located on the information display module panel.

When you start the engine and activate the rear window defogger switch, the defogger cycle lasts for 15 minutes. Further operation will result in 7.5 minute defogger cycles. The rear window defogger cycle resets to 15 minutes when the ignition is cycled from OFF to ON.

The rear window defogger will not time out if vehicle speed is above 50 mph (80 km/h).

STATIONARY WINDOW DESCRIPTION

Most stationary windows, specifically windshields, are retained to the body with adhesive which adheres the window to the body, increasing structural integrity. The reinstallation of the windows with adhesive requires complete replacement of the adhesive bead, and is known as the full cut method. All stationary windows must use a adhesive systems which meet GM Specification GMW-15672.

URETHANE ADHESIVE DESCRIPTION

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

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

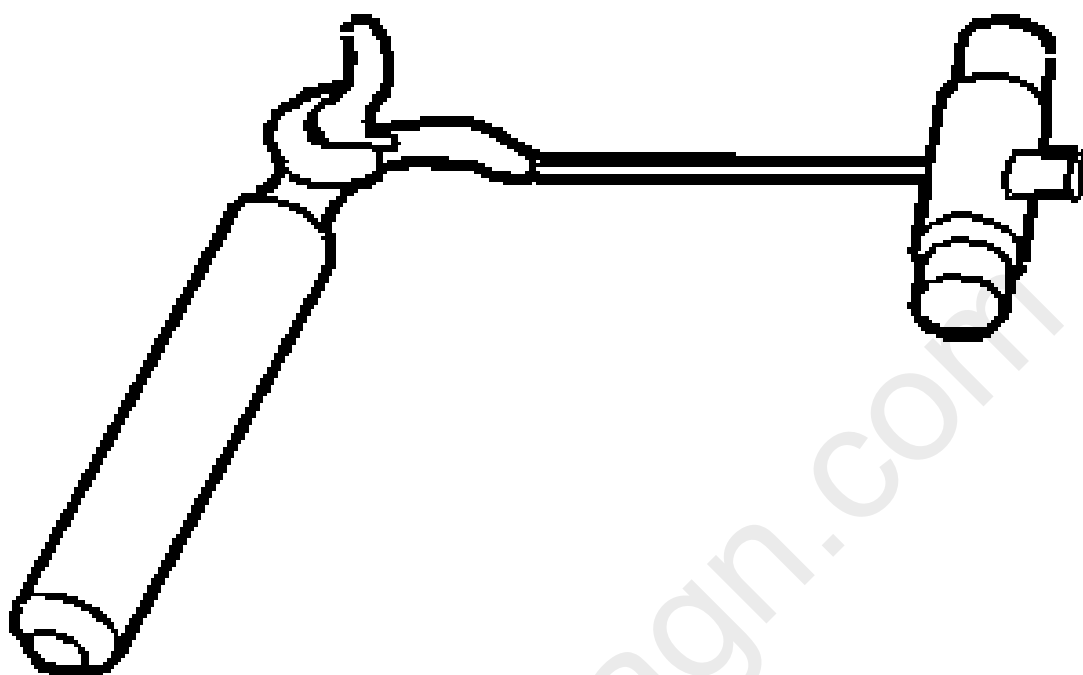
Use these materials based on specific manufacturer. Do NOT intermix primers or adhesives from one manufacturer to another.

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

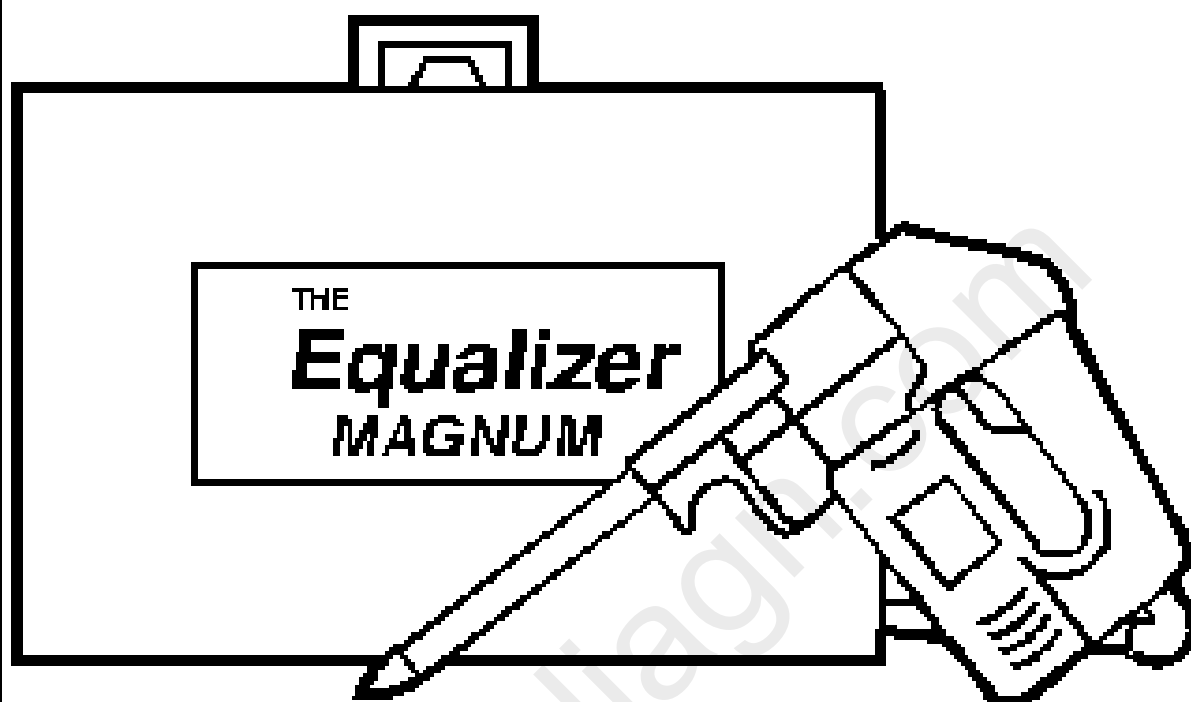
SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

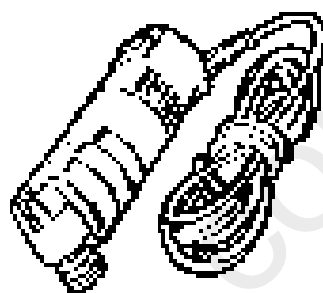
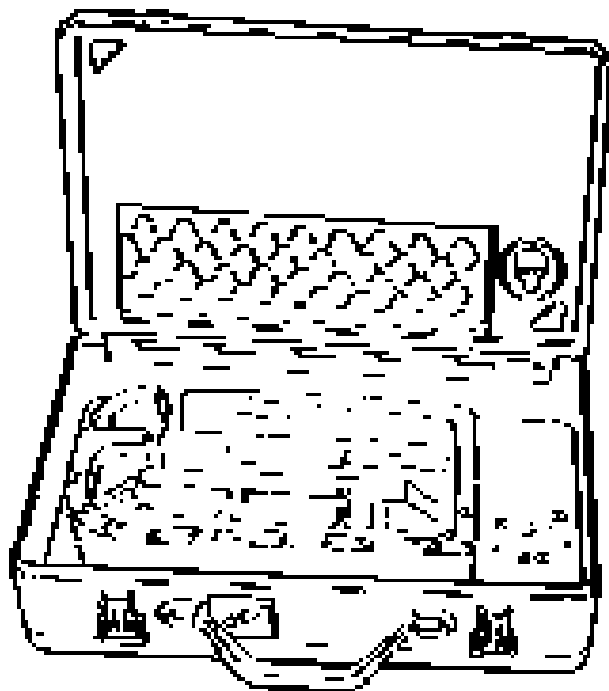
Illustration	Tool Number/ Description



BO-24402-
A
J-24402-A
Glass
Sealant
Cold Knife
Remover



BO-39032
J-39032
Stationary
Glass
Removal
Tool



BO-39040
J-39040
Quarter
Window
Remover

